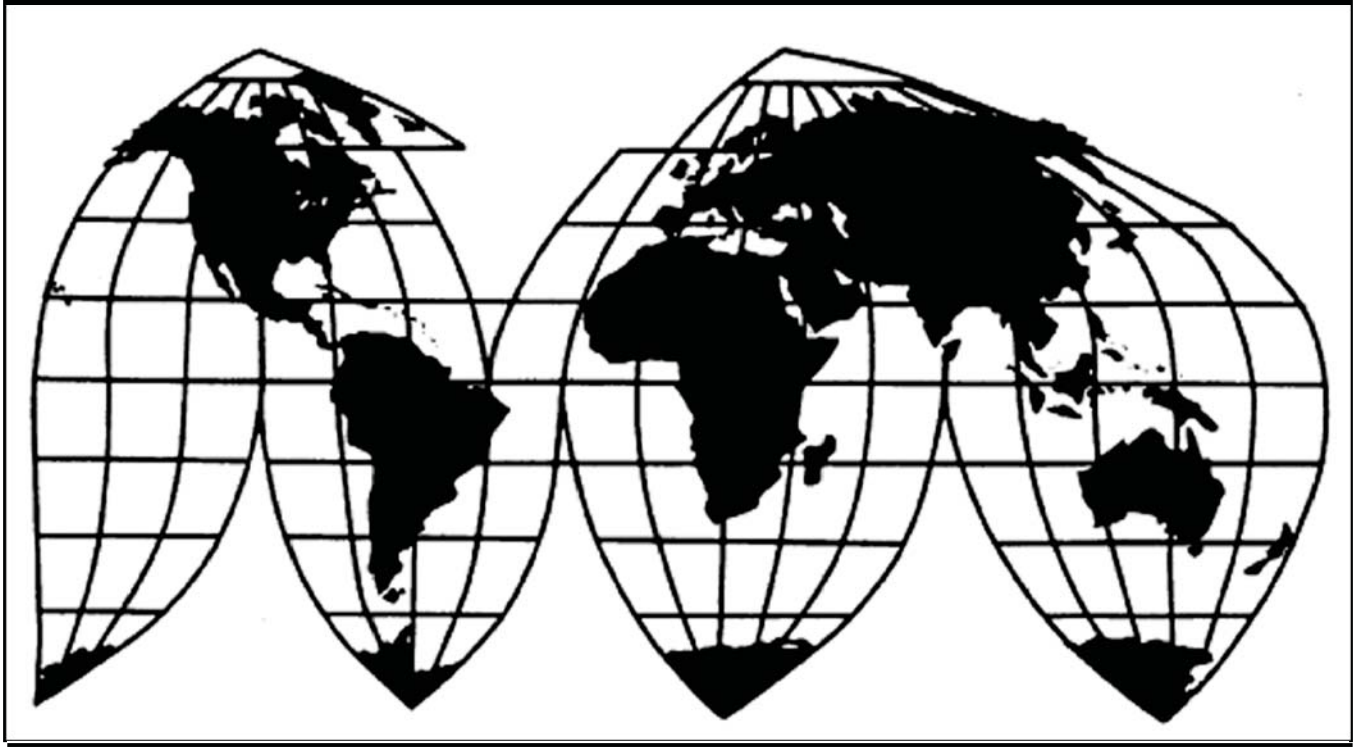
In the Matter of

Certain Ink Cartridges and Components Thereof

Investigation No. 337-TA-565
Vol. 2 of 2

Publication 4195 **December 2010**

U.S. International Trade Commission



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device, and that said device must be on the "housing."[69] Said semiconductor storage device is not part of the housing, but is a separate limitation of the ink cartridge. Based on the foregoing, the administrative law judge rejects complainants' argument that the "housing," as used in the '902 patent, may be understood as the ink cartridge itself.

Respondents argued that "housing" is constructed of external walls (RBr at 88) and complainants argued that "housing" is an external structure of the cartridge (CBr at 20.) There is no explicit requirement in the claims for the walls of the housing to be external, or for the housing to be an external structure. The plain language of the claimed phrase "configured for removable mounting on the printhead" from the first limitation of claim 1 of the '902 patent in issue, however, indicates that the housing must have the ability of mounting on the printhead. Also, as the administrative law judge found, supra, the housing may contain one or more chambers; thereby indicating that the walls of the housing are outside the chamber or chambers. Nothing in the specification describes additional structure or structures containing the housing. Therefore, the administrative law judge finds that the housing must be external.

Based on the foregoing, the administrative law judge does not equate the claimed term "housing" to the claimed term "chamber," but rather interprets the claimed phrase "housing" as a structure which holds ink, where said "housing" structure may contain more than one "chamber," where said "housing" structure is external, and where said "housing" structure is configured for removable mounting on the printhead.

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[69] No party has disputed the plain language of said third limitation of claim 1 of the '902 patent.

C. Packing/Sealing Member Patent

The packing/sealing member patent is United States Patent No. 5,488,401 (the '401 patent). It is entitled "Ink-Jet Recording Apparatus and Ink Tank Cartridge Thereof" (CX-6.) The '401 patent issued on January 30, 1996, the named inventors Seiji Mochizuki, Kazuhisa Kawakami, Masahiro Nakamura, Keiichi Ohshima and Masanori Yoshida. It is based on an application (Application No. 928,936) filed August 11, 1992, which is a continuation-in-part of Serial No. 742,529 filed on August 7, 1991, now U.S. Patent No. 5,255,019, which is a continuation of Serial No. 642,761 filed January 18, 1991, now U.S. Patent No 5,070,346. The '401 patent further claims priority to Japanese application nos. 2-21022 (dated Jan. 30, 1990), 2-70318 (dated Mar. 20, 1990), 2-332640 (dated Nov. 29, 1990), 4-12834 (dated Jan. 28, 1992), 4-32226 (dated Feb. 19, 1992), 4-58151 (dated Mar. 16, 1992), 4-193402 (dated Jun. 26, 1992). See CX-6 (Certificate of Correction). Each of complainants and the active respondents characterize the '401 patent as the Packing/Sealing member patent. (CBr at 33, RBr at 51.)

The abstract of the '401 patent reads:

> An ink tank cartridge is provided removably mountable onto an ink supply needle of the ink-jet type recording apparatus body. The cartridge has a housing provided with an ink supply port extending through and projecting from a wall of the housing and into the chamber of the housing. A porous member having ink impregnated thereon is positioned inside the chamber of the housing abutting against the ink supply port. A filter is mounted on the inner end opening of the ink supply port. The ink tank cartridge is further provided with a packing member for resiliently abutting against the outer periphery of the ink supply needle and is positioned adjacent one end of the ink supply port. The outer opening of the ink supply port is sealed with a sealing member through which the ink supply needle penetrates. A further porous member may be positioned in the ink supply port between the packing member and the filter to prevent a false ink end indication caused by air reaching an electrode of an ink end sensor positioned between the filter and the further porous member when the ink tank cartridge is removed from the recording apparatus.

(CX-6.) As seen from the foregoing, there is disclosed in the '401 patent a packaging and sealing member for use in a removable cartridge in an inkjet printer. (See also Murch, Tr. at 403:4-8; CX-6 at 2:42-45, 2:55-62.)

1. Asserted Claim Of the '401 Patent

The '401 patent has 106 claims. Only claim 1, an independent claim, is at issue in this investigation. See CX-6. Asserted claim 1 reads as follows:

> 1. An ink tank cartridge for an ink-jet type recording apparatus being removably mountable onto an ink supply needle of said ink jet type recording apparatus, said ink supply needle having at least one-throughhole to allow ink from said ink tank cartridge to pass therethrough, the ink tank cartridge comprising:
>
> a housing formed with a chamber therein;
>
> an ink supply port extending through and projecting from a wall of said housing, said ink supply port having a first opening directed towards said chamber of said housing and a second opening directed away from said wall of said housing;
>
> at least one porous member accommodated in said chamber of said housing for having ink impregnated therein, said porous member resiliently abutting against said first opening of said ink supply port;
>
> a packing member provided within said ink supply port towards said second opening, said packing member being formed with a hole therethrough dimensioned to receive said ink supply needle and to resiliently abut against an outer periphery of said ink supply needle of said ink jet type recording apparatus, said packing member preventing the flow of ink through said ink supply port other than through said ink supply needle when said needle is positioned in said ink supply port; and
>
> a sealing member separate from said packing member positioned to seal said second opening of said ink supply port before said ink tank cartridge is mounted on said ink supply needle and to be penetrated by said ink supply needle when said ink tank cartridge is mounted on said ink supply needle.

(CX-6 (emphasis added).)

The parties have put in issue the language identified, infra, of asserted claim 1.

a. "said porous member resiliently abutting said first opening of said ink supply port"

Complainants argued that the nature of the dispute with respect to the claimed phrase "said porous member resiliently abutting said first opening of said ink supply port" relates not to the construction of the term, but rather to its application. Complainants noted that the active respondents may assert that the claimed phrase cannot be met if there is a filter between the porous member and the ink supply port. (CBr. at 45.) According to complainants, that argument should be rejected based upon the language of claim 2 which specifically requires that the porous member "resiliently abut" both a filter and the first opening of the ink supply port. (See id. (citing CFF V.C.156-163).)

The active respondents argued that the phrase "said porous member resiliently abutting against said first opening of said ink supply port" requires that there must be direct contact between the porous member and the first opening of the ink supply port. (RBr. at 81.) In reaching said construction, they relied upon the testimony of their expert Perry. According to the active respondents, the interpretation of complainants' expert Murch, "reads out of the language of claim 1 the express requirement that the porous member is 'resiliently abutting against said first opening of said ink supply port.'" (Id. at 82.)

The staff noted that the parties "appear not to dispute any terms for claim 1 of the '401 patent." (SBr. at 21.)

The claimed phrase "said porous member resiliently abutting against said first opening of said ink supply port" appears in claim 1 of the '401 patent in the context of "[a]n ink cartridge ....

comprising: .... at least one porous member accommodated in said chamber of said housing for having ink impregnated therein, said porous member resiliently abutting against said first opening of said ink supply port."[70] (CX-6 at col. 13:44-60.) The sole issue with respect to the claimed term "said porous member resiliently abutting said first opening of said ink supply port" appears to be whether the "porous member" must touch "said first opening of said ink supply port" referred to in claim 1 in order to "abut" it.

The language of claim 1 alone does not resolve the claim interpretation issue at hand. However, the language of unasserted claim 2, which depends from claim 1, does provide further insight into the meaning of the term "abutting." Claim 2 of the '401 patent reads as follows:

> The ink tank cartridge of claim 1 further including a filter essentially positioned at the first opening of said ink supply port so that said porous member resiliently abuts against said filter (emphasis added).

As claim 2 depends from claim 1, claim 2 must be construed to include each of the limitations of claim 1 in addition to those specifically recited in claim 2 itself. See 35 U.S.C. § 112 ("A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers.") Thus, in addition to the requirement that the claimed ink cartridge must have a porous member that "abut[s] the first opening of the ink supply port," claim 2 imposes the requirement that the "porous member" must also "abut" against a filter "essentially positioned at the first opening of the ink supply port." See Claim 2. Any construction of the term "abut" in claim 1 must, therefore, accommodate and read on the specific language of claim 2.

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[70] The referenced "first opening" in claim 1 is defined in the Summary of the Invention as the opening in the ink supply port "directed towards the interior of the chamber of the housing." (CX-6 at Col. 2:49-52.)

"[C]laims must [also] be construed so as to be consistent with the specification of which they are a part." Phillips, 415 F.3d at 1316 (citations omitted). In this case, the specification supports a conclusion that the "porous member" can abut both the "first opening of the ink supply port" and a "filter" even though the filter covers that first opening. Thus, in each description or drawing of an embodiment in the '401 specification, a filter covers the inner opening while a porous member is described or shown as having contact with the filter, rather than the first opening of the ink supply port. For example, Figure 2 shows "a mesh filter 17 having a pore size of about 20 to 100 μm [] fuse bonded onto an inner opening 16 of ink supply port 15 projecting towards the inner chamber of housing 11." (See CX-6 at 5:23-26.) The specification continues that "the lower end of porous member 21 faces filter 17 of ink supply port 15," thereby indicating that porous member 21 is separated from ink supply port 15 by filter 17. (CX-6 at 5:51-52.)

With respect to Figure 9A, the specification indicates "[i]nk supply port 53 is provided with an opening 54 onto which a filter 55, formed of high polymer or anti-corrosion metal, is fuse bonded thereon." (CX-6 at 9:37-40.) Figure 9A further depicts porous member 64 as directly contacting the filter 55. The embodiment disclosed in Figure 9B differs from 9A only in that the porous member 64 is divided into an upper and a lower portion. (See CX-6 at 9:60-10:4.) The other elements of that embodiment are the same as in Figure 9A including the location of filter 55 between the porous member 64 and ink supply port 53. See id.

Likewise with Figure 12, the specification describes "[a] filter fixed to an opening 79 of the ink supply port 71." (CX-6 at 11:4-5.) In this case, Figure 12 does not show the porous member, but the specification does disclose that the porous member is similar to porous member

21 of Figure 2 which has direct contact with the filter in that figure. (CX-6 at 10:67-11:3.)

The active respondents argued, based upon the testimony of their expert Perry, that "[i]n order to abut, it is necessary that the porous member and the first opening contact each other along a boundary." (Active respondents' response to CFF V.C. 157, 159, 161-163 (citing Perry, Tr. at 2046-50).) Trying to reconcile their position with what is disclosed in the specification, the active respondents further argued, that while Figures 14 A and B "disclose an arrangement in which a filter (72) is situated between the porous member and the first opening[,] ...[t]his is accomplished by recessing the filter into a chamfer in the first opening so that the porous member and the first opening abut." Id. The active respondents, however, provided no citation for their argument. In addition, the administrative law judge finds no support for that interpretation in the specification of the '401 patent which does not even mention the word "chamfer" and does not indicate that the filter is "recessed" in some way. To the contrary in fact, the specification specifically notes with respect to several of the preferred embodiments that the filter is fused onto the opening of the ink supply port. (See CX-6 at 5:23-26; 9:37-40.) Accordingly, the administrative law judge finds that the active respondents' argument is not supported by the intrinsic evidence and, therefore, must be rejected.

From the intrinsic evidence, the administrative law judge concludes that the term "abut" or "abutting" in claim 1 of the '401 patent does not require direct contact between the porous member and the first opening of the ink supply port. A different conclusion would not read on dependent claim 2 and would improperly exclude each preferred embodiment from the coverage of claim 1. See Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1583 (Fed. Cir. 1996)(holding that it is "rarely, if ever, correct" to construe a claim term in a way that excludes

the preferred embodiment). Thus, a porous member may "resiliently abut" an ink supply port, even though a filter is covering the opening to the port, and still fall within the scope of the claim.

D. Lever and Chip/Retaining Member Patents

The lever and chip patent is United States Patent No. 6,955,422 (the '422 patent). It is entitled "Ink Cartridge." (CX-9.) The '422 patent issued on October 18, 2005 and the named inventors are Hisashi Miyazawa, Munehide Kanaya,Yasuto Sakai, Masaki Shimomura, Satoshi Nakata, Yoshihiro Koizumi, and Hiroshige Owaki. It is based on Application No. 10/116,499 filed April 3, 2002. The '401 patent claims priority to Japanese application nos. P2001-104526 (dated Apr. 3, 2001), P2001-149315 (dated May 18, 2001), P2001-149788 (dated May 18, 2001), P2001-264225 (dated Aug. 31, 2001). Each of complainants and the active respondents refer to the '422 patent as the Lever and Chip patent. (CBr at 27, RBr at 55.)

The abstract of the '422 patent reads:

> An ink cartridge having a container for storing ink therein and having an ink supply port formed at a leading end side in an insertion direction of the container, a memory device disposed on a first of two opposite surfaces parallel to the insertion direction of the container, the memory device having an electrode for electrical connection to the recording device; a retaining member disposed on the first surface and located at a trailing end side relative to the memory device in the insertion direction, the retaining member serving to selectively engage with the recording device; and another retaining member disposed on the second surface and which also serves to selectively engage with the recording device.

(CX-9.)

The retaining member patent is United States Patent No.7,008,053 (the '053 patent). It is entitled "Ink Cartridge and Recording Apparatus" and the named inventors are Kazuhiro Hashii, Satoshi Shinada, Yasuto Sakai, Kazumasa Harada, and Kazuaki Aoki. (CX-11). The '053 patent

issued on March 7, 2006 based on Application No. 11/058,033 filed February 14, 2005. The '053 patent claims priority to Japanese application nos. P2002-341826 (dated Nov. 26, 2002), P2003-076890 (dated March 20, 2003), P2003-076891 (dated Mar. 20, 2003), P2003-128049 (dated May 6, 2003), and P2003-204804 (dated Jul. 31, 2003). (See CX-11.) Complainants characterized the '053 patent as the "Retaining Member" patent. (CBr at 28.) Respondents do not dispute that the '053 patent discloses an ink cartridge with a retaining member. (RBr at 23.)

The abstract of the '053 patent reads:

> The ink cartridge includes an ink supply port formed at a position, offset to one side, of a wall configuring an ink container body; a positioning projecting portion, formed on one wall out of two opposing walls adjacent the wall, whose upper surface and side portion are regulated in position when the cartridge has been mounted on a recording apparatus; a lever, formed on the other wall out of the two walls, maintaining a normal hinged-open state and having a projection that is forcibly displaced outward when the cartridge is mounted on the recording apparatus; and electrodes that are connected to a memory unit storing information on the ink in an ink container and formed on the positioning projecting portion.

(CX-11.)

1. Asserted Claims Of The '422 Patent

The '422 patent has 62 claims. Only claims 1, 10, and 14 are at issue in this investigation. Claims 1, 10 and 14 are all independent claims. Asserted claim 1 reads as follows:

1. An ink cartridge detachably mountable on a carriage which is reciprocally movable in a recording apparatus and which has a electrode, an engagement portion and an ink supply needle, the ink cartridge comprising:

a container that stores ink therein and has an ink supply port connectable to the ink supply needle, the ink supply port being located in a leading end side in an insertion direction of

the container into the carriage, the container further having first and second surfaces opposite each other, the first surface being substantially parallel to the insertion direction of the container into the carriage;

a memory device having at least one electrode for electrical connection to the electrode of the carriage, the at least one electrode of the memory device being fixed relative to the first surface of the container; and

a retaining member disposed on the first surface of the container, and having a movable engagement portion that can shift position relative to the first surface of the container and which is located at a trailing end side relative to the at least one electrode of the memory device in the insertion direction of the container into the carriage, and which is engageable with the engagement portion of the carriage.

Asserted claim 10 reads as follows:

10. An ink cartridge detachably mountable on a carriage which is reciprocally movable in a recording apparatus and which has a electrode and an engagement portion, comprising: a container that stores ink therein and has an ink supply port in a leading end side in an insertion direction of the container;

a memory device having at least one electrode for electrical connection to the recording device, the at least one electrode being fixed relative to a first of two opposite surfaces substantially parallel with the insertion direction of the container;

a retaining member disposed on the first surface and located at a trailing end side relative to the at least one electrode in the insertion direction, the retaining member being movable and engageable with the engagement portion of the carriage; and

a guide recess located substantially at the center of the container and extending in the insertion direction.

Asserted claim 14 reads as follows:

14. An ink cartridge comprising:

a container body having a first wall; at least one electrode connected to main circuit components of a memory device, the at least one electrode being fixed relative to the first wall; and

a movable engagement portion, which is engageable with the engagement portion of a carriage, the cartridge's engagement portion being movable relative to the first wall and being higher in a Y-axis direction than the at least one electrode,

wherein the at least one electrode contacts the at least one electrode of the carriage when the engagement portion of the ink cartridge is engaged with the engagement portion of the carriage.

(CX-9.)

The parteis have put in issue the language identified, infra, of the asserted claims.

a. "container"

Complainants argued that the plain and ordinary meaning of "container" is "a component that encloses." (CBr. at 51 (citing V.C.262-263).)

The active respondents argued that a container is "the part of the ink cartridge which contains the ink and includes the ink supply port." (RFF 11.17.) According to the active respondents, "[e]ach ink cartridge includes a container body having an ink supply port and cover member." (Id. (citing CX-9 at 2:15-16).)

The staff made no argument on this point.

The claimed term "container" appears in claim 1 of the '422 patent in the context of

> [a]n ink cartridge .... comprising: a container that stores ink therein and has an ink supply port connectable to the ink supply needle, the ink supply port being located in a leading end side in an insertion direction of the container into the carriage (emphasis added);

in the context of claim 10 as:

> [a]n ink cartridge ....comprising: a container that stores ink therein and has an ink supply port in a leading end side in an insertion direction of the container (emphasis added);

and in claim 14 as:

> An ink cartridge comprising: a container body having a first wall (emphasis added.)

From an examination of the claims of the '422 patent, the administrative law judge further finds that each of the independent claims, except claim 14, provides that a "container" stores ink. (CX-9 (claims 1, 10, 41, 45, 52 and 55).) The specification further supports a finding that a "container" should be interpreted as a container that stores ink. First the Abstract indicates that the invention is directed to "[a]n ink cartridge having a container for storing ink therein." (CX-9 (Abstract).) Furthermore, with respect to Figures 7 and 8, the specification makes a specific reference to "[a]n injection hole 20 through which the container body 2 is filled with ink ....," each section of the specification thereby confirming that a container stores the ink of the ink cartridge. (CX-9 at 5:57-59.) Accordingly, based on the language of the claims and the specification, the administrative law judge finds that the claimed "container" stores ink.

While each of the "container bod[ies] 2 or 2"' as described or depicted in the preferred embodiment has an "ink supply port 4 or 4"' which engages the ink supply needle 102, see, e.g. Figures 1A, 1B, 16A, 16B, and 16C, the administrative law judge finds that the claimed container does not have to have an ink supply port, which interpretation is supported by the specification. For example, the Abstract describes the present invention as "[a]n ink cartridge having a container for storing ink therein and having an ink supply port formed at a leading end side in an insertion direction of the container ..." (CX-9 (Abstract).) There is nothing in the Abstract which requires that the ink supply port actually be a part of the container, only that the cartridge must have both a container and an ink supply port. Also, though several independent claims are written such that the container itself must have the ink supply port, see claims 1, 10, and 41, there are other claims in which the requirement of an ink supply port is written as an element entirely separate from the container, thereby indicating that the ink supply port does not

have to be part of the container. (See CX-9 (claims 45 and 55).)

In support of their position, the active respondents cite to a portion of the Summary of the Invention which states that one object of the invention is to "provide ink cartridges respectively storing different types of ink which can be mounted as a set in an ink jet recording device. Each ink cartridge includes a container body having an ink supply port and a cover member ..." (CX-9 at 2:12-16.) The Summary of the Invention, however, further indicates that another object of the invention is to "provide an ink cartridge that is detachably joined to an ink supply needle inserted thereinto and that can be mounted in a manner which insures precise positioning of the ink cartridge to facilitate communication with the memory device provided in the cartridge." (CX-9 at col. 1:59-4.) There is no indication in the summary that the ink supply has to be part of the container and the administrative law judge finds that nothing in the specification of the '422 patent forecloses the possibility that the container could be indirectly connected to the ink supply port rather than directly connected. Thus, the administrative law judge interprets the "container" of the claimed ink cartridge as a container that stores ink.

b. "at least one electrode being fixed relative to"

The active respondents argued that the claimed phrase "at least one electrode being fixed relative to" in claims 1, 10 and 14 of the '422 patent requires that "the electrodes [be] mounted on one of the surfaces of the container parallel to the insertion direction." (NRFOF 11.18 (citing CX-9 at col. 2:5-7).)

In response, complainants argued that the active respondents have ignored the actual language of the claims which require only that the electrode be fixed relative to the first wall of the container. (CRBr at 53.)

The staff made no claim construction argument for the claimed phrase "at least one electrode being fixed relative to."

At issue is whether the "at least one electrode" recited in claims 1, 10, and 14 of the '422 patent must be affixed to a wall of the claimed container in order to fall within the scope of claims 1, 10 and 14. The claimed phrase "at least one electrode being fixed relative to" appears in claim 1 in the context of:

> a memory device having at least one electrode for electrical connection to the electrode of the carriage, the at least one electrode of the memory device being fixed relative to the first surface of the container (emphasis added);

In claim 10 in the context of:

> a memory device having at least one electrode for electrical connection to the recording device, the at least one electrode being fixed relative to a first of two opposite surfaces substantially parallel with the insertion direction of the container (emphasis added);

and in claim 14 in the context of:

> at least one electrode connected to main circuit components of a memory device, the at least one electrode being fixed relative to the first wall (emphasis added.)

From a reading of the specification and the claims, the administrative law judge finds that the plain language of the claims does not require that the "at least one electrode" be fixed directly to a surface of the container. (See CX-9 at 10:12-19.) Instead the administrative law judge finds that the claim language only requires that the electrode be fixed "relative to" a surface of the container. (CX-9 (claims 1, 10, 14, 52 and 55).) For example, at column 10, lines 65-68, the specification indicates that "the present invention provides, at least, the following arrangements:

(1) An ink cartridge comprising: a container body having a first wall; at least one electrode connected to a memory device, the at least one electrode being fixed relative to the wall ...." (CX-9 at col. 10:12-19 (emphasis added).) Here, the specification makes plain that the electrode is not required to be on the wall of the container itself, but rather only fixed relative to such wall.

In support of their argument, the active respondents cite to a passage from the specification which indicates that "the electrode [is] disposed on one of the opposite surfaces parallel to the insertion direction of the container." (CX-9 at 2:5-7.) However, it is evident from the language quoted by the active respondents that the only requirement is that the electrode be on a surface that is "parallel" to the insertion direction of the cartridge, not specifically on a wall of the container. Moreover, the administrative law judge finds no support in other parts of the specification for the active respondents' position. Thus, the administrative law judge concludes that the claimed "at least one electrode" does not have to be attached to a wall of the container.

2. Asserted Claim Of The Retaining Member '053 Patent

The '053 patent has 39 claims. Only claim 1 is at issue in this investigation. Claim 1 is an independent claim. Asserted claim 1 reads as follows:

1. An ink cartridge, comprising:

an ink container having an upper wall, a bottom wall, a first side wall and a second side wall;

an ink supply port disposed on the bottom wall closer to the first side wall than the second side wall, the ink supply port having an axis;

a retaining member disposed on the first side wall, the retaining member having a protruding engagement portion;

a projecting portion located in a region where a plane of the second side wall and a plane of the bottom wall intersect, and extending away from the first side wall, the projecting portion having a surface lying in a plane that is substantially parallel to the axis;
a memory unit disposed on the ink jet cartridge; and

a plurality of electrodes disposed on the surface and which are in electrical communication with the memory unit.

(CX-11 (emphasis added).)

The parties have put in issue the language identified, infra, of asserted claim 1.

a. "a projecting portion located in a region where a plane of the second side wall and a plane of the bottom wall intersect"

Complainants argued that the claimed phrase in issue "uses readily understandable terms that do not require further elucidation." (CBr at 50 (citing CFF V.C.258-259.) According to complainants, the active respondents' proposed construction of the term to mean "a projecting portion that's located at the intersection of the bottom wall and the second wall" improperly reads out the terms "plane" and "region" from the claimed phrase. Id. (citing CFF V.C.260-261).

The active respondents argued, based upon the testimony of their expert Perry, that "when properly interpreted, the projection portion is located on an external front wall of the ink container holding the ink, which has been referred to as the ink chamber." (RBr at 92.) They further argued that complainants' expert Murch agreed that the projecting portion must extend from an external or outer wall of the ink chamber. (Id. (citing NRFOF 15.50).) However, the active respondents asserted that Murch's "plain and ordinary" meaning of the term, which would include "at least two separate adjacent walls" is "expansive" and "completely without support in the intrinsic record or even in the language of claim 1." (Id. at 92.)

The staff does not assert an interpretation of the claimed phrase "region where a plane of the second side wall and a plane of the bottom wall intersect".

The claimed phrase "a projecting portion located in a region where a plane of the second side wall and a plane of the bottom wall intersect" appears in claim 1 of the '053 patent. See supra. The administrative law judge finds that the plain language of the phrase in issue would indicate to a person skilled in the art that a projecting portion is located in a region where planes of the second side wall and bottom wall intersect.

At issue also is whether claim 1 requires that the projecting portion be located only at the intersection of the second side wall and the bottom wall, and not in an area around that intersection. Claim 1 specifically states that a "projecting portion" is located "in a region where a plane of the second side wall and a plane of the bottom wall intersect," not simply where the two walls intersect. (CX-11 at 28:38-52.) "All limitations in a claim must be considered meaningful." Lantech, Inc. v. Kelp Mach. Co., 32 F.3d 542, 564 (Fed. Cir. 1994). Thus the patentees' choice of language makes unambiguous that the metes and bounds of claim 1 extend beyond the exact intersection between "a plane of the second side wall and a plane of the bottom wall intersect" to a region around that intersection. Hence, the administrative law judge finds that the claimed phrase "in a region where a plane of the second side wall and a plane of the bottom wall intersect" is not limited to the intersection between the bottom wall and the second side wall.

E. Valve Patent

The valve patent is United States Patent No. 7,011,397 (the '397 patent). It is entitled Ink Cartridge and Method of Regulating Fluid Flow," and was issued on March 14, 2006.

(CX-12.) The named inventors of the '397 patent are Hisashi Miyazawa, Atsushi Kobayashi and Satoshi Shinada. (CX-12.) The '397 patent issued on March 14, 2006, based on an application (Application Serial No. 10/367,232) filed on February 14, 2003, which claimed priority from Japan Application No. P2002-266824 filed on September 12, 2002, Japan Application No. P2002-292337 filed on October 4, 2002, Japan Application No. P2002-355470 filed on December 6, 2002 and Japan Application No. P2002-357040 filed on December 9, 2002. The '397 patent will expire on August 17, 2023. (CX-12.) Complainants have characterized the '397 patent as the valve patent. (CBr at 51.)

The '397 patent is asserted against respondents Mipo, Mipo America, Tully, Wellink, Ribbon Tree Macao, Inkjetwarehouse, Apex and Ribbon Tree USA. (CFF VI.BB.6.21.) It is not asserted against the active respondents.

The abstract of the '397 patent reads:

> In an ink cartridge, a negative pressure generating mechanism is disposed between an ink storage region and an ink supply port, and has a wall surface having two through-holes for ink flow, and a valve member contacted with and separated from the through-hole by receiving a pressure in an ink supply port side. Ink flowing via the through-hole is supplied via the through-hole to the ink supply port.

(CX-12.)

1. Asserted Claims Of The Valve '397 Patent

In issue are claims 21, 45, 53 and 54 of the '397 patent. Claim 21 of the '397 patent reads:

> An ink cartridge comprising:
>
> an ink storage chamber;

an ink supply port that is in fluid communication with the ink storage chamber through an ink flow path; and

a negative pressure generating mechanism which selectively blocks the ink flow path and opens as a consequence of consumption of ink, the negative pressure generating mechanism including,

an elastic member having first and second surfaces;

a communicating portion facing the first surface of the elastic member and communicating with the ink storage chamber, the communicating portion including an inlet through which ink enters into the communicating portion and an outlet both being located on a same side with respect to the elastic member; and

a space portion facing the second surface of the elastic member and communicating with the ink supply port

wherein the communicating portion forms a part of the ink flow path, and the first surface of the elastic member contacts with and separates from the outlet.

(CX-12 at 21:11-32.) Claim 45 of the '397 patent reads:

The ink cartridge according to claim 21, wherein, when the ink flow path is blocked, the first surface of the elastic member has a first area that is exposed to a first pressure from the ink storage chamber and a second area that is exposed to a second pressure from the ink supply port, and the first area is substantially larger than the second area.

(CX-12 at 22:65-23:3.) Claim 53 of the '397 patent reads:

An ink cartridge for detachable mounting to an ink supply needle of an ink jet recording device, comprising:

an ink container having an interior and an ink supply port that receives the ink supply needle when the ink cartridge is mounted; and

a flow controller contained within the ink container, the flow controller comprising;

> a housing having a floor having and inner side and an outer side, an inlet opening in the floor running between the inner and outer sides and which is in fluid communication with the interior of the ink container, a perimeter wall extending from inner side of the floor, a projection extending from the inner side of the floor, the projection having an outlet opening therethrough, and a groove formed in the outer side that is in fluid communication with both the outlet opening and the ink supply port,
>
> a cover contacting the perimeter wall,
>
> an elastic member disposed between the cover and the inner side of the floor,
>
> a space portion facing a surface of the elastic member so pressure in the ink supply port is applied to the surface of the elastic member, and
>
> an urging member located between the cover and the elastic member, the urging member applying force to the elastic member to press the elastic member toward the projection,
>
> wherein the inlet opening and the outlet opening both are located on a same side with respect to the elastic member.

(CX-12 at 23:51-24:12.) Claim 54 of the '397 patent reads:

> The ink cartridge according to claim 53, wherein at least one of the cover and the perimeter wall has a notch positioned such that a space between the elastic member and the cover is in fluid communication, through the notch, with the ink supply port.

(CX-12 at 24:13-17.)

The language in the asserted claims of the '397 patent is not in dispute. Hence said language is given its plain meaning.

VI. Whether Certain Claims Of The '917 Patent, The '422 Patent And The '053 Patent Are Invalid Based On Prior Art

The active respondents argued that the testimony of their expert Perry establishes that

each of the features claimed in independent claim 1, dependent claims 2 and 3 and independent claim 9 of the '917 patent are obvious based on the combination of the U.S. Patent No. 5,610,635 (RX-26) ('635 patent) and the '401 patent (CX-6)[71]; that Perry's unrebutted testimony also establishes that claim 1 of the '422 patent is obvious in light of the '635 patent in combination with European Patent No. 0 822 084 A2 (RX-60) ('084 patent); and that each of these references is indisputably directed to an ink cartridge or tank for an ink-jet printer, in that the '635 patent states that "[t]he present invention relates generally to the field of printer ink cartridges.... Ink cartridges are used in ink jet printers." (RX-26, col. 1, lines 7-12) and the '084 patent states that '[t]he ink jet recording head of the present invention ... enables its ink tank to be separated from or coupled with the head ...." (RX-60, col. 4, lines 4-6.) (RBr at 188.) It is also argued that the testimony of Perry clearly and convincingly establishes that each and every feature of claim 1, the only asserted claim of the '053 patent,[72] is found in the disclosure of the '422 patent, save one in that the '053 patent requires that the cartridge have an ink supply port which is closer to the wall opposite the wall containing the electrodes of the chip, while in the '422 patent the ink supply port is closer to the wall which contains the electrodes of the chip. It was further argued that the unrebutted evidence clearly and convincingly establishes that it was well within the level of skill in the art to move the location of the ink supply port as a matter of design choice. (RBr at 193-94.)

Complainants, referring to the active respondents' argument that claims 1 and 9 of the

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[71] Complainants have accused the active respondents of infringing claim 1 of the '401 patent.

[72] Complainants have accused the active respondents of infringing claims 1, 10 and 14 of the '422 patent.

'917 patent are made obvious by the '635 patent in view of Epson's '401 patent argued that the '635 reference was duly considered by the Examiner during prosecution of the '917 patent and the asserted claims were issued over it; that the '635 reference discloses a cartridge that is integrated with a print head in contrast to Epson's claimed inventions that teaches a cartridge that is separate and removable from a needle on the print head; that Perry agreed that those two types of cartridges face different problems; that because the '635 reference teaches an integrated cartridge, it does not disclose, as Perry concedes, an ink supply port that delivers ink through an ink supply needle to a separate print head unit; that the manifold assembly 54 that is "vaguely" described in the '635 reference is not an "ink supply port for receiving said ink supply needle" as recited in claims 1 and 9 of the '917 patent because it neither delivers ink from the cartridge nor receives a needle; and that therefore the '635 reference cannot disclose critical limitations of claims 1 and 9 concerning the centerline of the ink supply port, namely:

> an ink supply port having [an exit opening and] a centerline and communicating with the chamber (claims 1 and 9);
>
> contacts being formed in a plurality of rows lying essentially in a plane parallel to the centerline of the ink supply port (claim 1); and
>
> each said row being centered relative to the centerline of the said ink supply port (claim 1).

Complainants also argued that although the '401 patent does disclose a cartridge with an ink supply port for receiving a needle, it does not teach or suggest the use of a semiconductor storage device or contacts and thus one of ordinary skill in the art would not be motivated to combine it with the '635 patent to solve the unique problems faced by cartridges that are mounted on a needle and electrically communicate with the printer. It is further argued that

neither asserted reference teaches the last limitation of claim 9:

> the row of said contacts which is closest to said exit opening of said ink supply port being longer than the row of said contacts which is furthest from said exit opening of said ink supply port.

Hence complainants argued that the combination of the '635 and the '401 cannot invalidate claim 9 of the '917 as a matter of law. (CBr at 167-68.)

Complainants, referring to the active respondents' challenge of the validity of asserted claim 1 of the '422 patent, argued that both the '635 reference and the European Patent 0 822 084 A2 (the '084 reference) were considered and rejected by the Examiner during prosecution of the '422 patent; and that those prior art references do not disclose each and every limitation of the asserted claims, either alone or in combination. It is argued that the '635 reference does not disclose an ink supply port connectable to an ink supply needle as required by claim 1; that it does not teach or suggest the use of a lever; that the subject matter of the '635 patent is so different from the '084 reference that one skilled in the art would be unmotivated to read those two references together; that the '084 reference does not teach, for example, an integrated print head nor does it teach the use of a memory device or electrodes on the cartridge; that one of ordinary skill in the art would be unmotivated to modify the '084 reference to incorporate a memory device because it teaches the use of optical means, rather than electrical means, to determine the ink volume; that in addition, there is no motivation to combine the references to position the lever of the '084 reference on the trailing end side of the cartridge relative to the electrodes, as required by the asserted claim 1 of the '422 patent; and that the '084 reference teaches away from such a structure. (CBr at 168-169.)

With respect to the active respondents' argument that claim 1 of the '053 patent is not valid, complainants argued that the Examiner considered the application of the '422 patent during prosecution of the '053 patent and determined it was not a bar to the patentability of claim 1; that the active respondents' expert Perry concedes that the '422 patent does not disclose a critical limitation of the '053 patent, namely that the ink supply port be positioned on the opposite side of the cartridge from the projecting portion on which the electrodes are disposed; and that the only embodiment of the '422 patent that has such a projecting portion, shown in Figure 20, positions it on the same side of the cartridge as the ink supply port. It is argued that Perry's conclusory assertion that it would be an obvious "design choice" to move the projecting portion away from the ink supply port is contrary to the evidence; and that this positioning of the projecting portion at a distance from the port is an integral aspect of the invention of claim 1 of the '053 patent that provides advantages over the prior art, including disclosing a cartridge design that: (1) ensures reliable alignment of the contacts with the printer, (2) prevents the ink supply needle and sealing member from being subject to deformation during mounting and removal, and (3) lessens the susceptibility of the contacts to contamination by ink leakage. It is also argued that because the '422 specification teaches that the projecting portion and the memory device should be located near the ink supply port, the '422 patent teaches away from modifying the embodiment in Figure 20 in the manner disclosed by the '053 patent, and hence there can be no, motivation. (CBr at 169-170.)

The staff argued that the evidence does not show clearly and convincingly that the

asserted claims of the '917 patent would have been obvious to a person of ordinary skill in the art at the time of the invention; that the active respondents provided little to no evidence or analysis as to how said claims would have been obvious; that they also neglected to factor in the secondary considerations that must be considered when evaluating whether an invention is obvious, such as copying by others and commercial success of the patented products; and that there was also no testimony or other evidence discussing any motivation to combine or modify the prior art. (SBr at 113.) Identical arguments were made by the staff with respect to the asserted claims of the '053 patent and '422 patent put in issue by the active respondents. (SBr at 114-15.)

Referring to the arguments of the active respondents relating to the '917 patent, the '917 patent is directed to an ink cartridge that is mounted on an ink supply needle, and in particular, claims 1 and 9 disclose "an ink cartridge for mounting on a carriage of an ink jet printing apparatus and for supplying ink to a print head of said ink jet printing apparatus through an ink supply needle." (CFF VIII.14 (undisputed).) The '917 patent addresses the issue of the cartridge rocking and rotating around the ink supply needle while the carriage is traversing the carriage. (CFF VIII..15 (undisputed).) The ink supply needle is the fulcrum point for the movement of the cartridge within the carriage. (CFF VIII.16 (undisputed).) The '917 patent further teaches that by arranging the contacts in two rows where the lower row is longer than the upper row, the movement of the contacts may be minimized when the cartridge rocks and rotates around the needle as the carriage traverses across the printer. (CFF VIII.17 (undisputed).)

Similarly, the '917 patent teaches that by arranging the two rows of contacts so that they are centered on the centerline of the ink supply port, the movement of the contacts may be minimized when the cartridge rocks and rotates around the needle as the carriage traverses across the printer. (CFF VIII.18 (undisputed).) Moreover if the movement is not minimized, then as the cartridge moves back and forth with the carriage, the resulting displacement between the contacts and the contact-forming mechanisms in the carriage will cause a loss of electrical continuity or a short between adjacent contacts. (CFF VIII.19 (undisputed).) As the specification explains, "even if there is a play between the carriage and the cartridge, the cartridge is moved according to a locus defined by the ink supply needle and ink supply port, the contacts are connected to the external control means in a defined order and data stored in the semiconductor storage means can be securely prevented from being lost by the application of signals in an unprepared order." (CFF VIII.20 (undisputed).)

The '917 patent explains the benefit of centering the circuit board, including the contacts, relative to the ink supply needle. Thus "[a]s the circuit board 31 is located in the center in the width of the cartridge 40 on the vertical wall 45 in the vicinity of the ink supply port, the vertical wall 45 on which the circuit board 31 is fixed is moved possibly in parallel with a locus on which the ink supply port 44 is regulated by the ink supply needle 6." (CFF VIII. 21 (undisputed).) According to the specification, locating the contacts in the vicinity of the ink supply port is also advantageous. Hence "[i]n the meantime, as the circuit board 31 is located in the vicinity of the ink supply needle 6 even if the cartridge 40 rattles when it is installed and a

turn is caused with the ink supply needle 6 in the center, the quantity a of a turn is extremely small as shown in FIG 10. (CFF VIII.22 (undisputed).) The active respondents' expert Perry agreed that the '917 patent goes through "some extremes" to limit the effects of the movement of the cartridge as it rocks on the needle because of the motion of the carriage. (CFF VIII.23 (undisputed).)

The patentees submitted the '635 reference for the Examiner's consideration during the prosecution of the '917 patent as part of an Information Disclosure Statement filed on August 9, 2001. (CFF VIII.12 (undisputed).) The Examiner considered the '635 prior art reference during prosecution of the '917 patent and determined that the '635 reference was not a bar to patentability of the asserted claims of the '917 patent, either alone or in combination with any of the other references he considered.

Referring to the '635 patent, the cartridge shown in figure 2 of the '635 patent is integrated with the print head and therefore, unlike the type of ink cartridge addressed by the '917 patent is not removably mounted on the print head. (Perry, Tr. at 2210:12-23; RX-26 at 5:19-29, 5:60-6:38, Fig. 2.) Moreover Perry testified that the '635 patent does not disclose an ink supply port. Thus he admitted that "we don't have an ink supply port and "we do not have an ink supply port." (Perry, Tr. at 2083:21-22, 2084:16-17.) He concluded that "in summary, the difference is an ink supply port is not portrayed in the Encad patent, '635." (Perry, Tr. at 2085:2-4.) In addition the ink cartridges discussed in the '917 patent, are separable from the print head, and therefore, once the ink is consumed, the spent cartridge may be removed and replaced by a new cartridge without also changing the print head. (Murch, Tr. at 341:13-20.)

Perry agreed that there are unique problems associated with a cartridge that is mounted on a ink supply needle (such as the cartridges disclosed in the '917 patent) that are not faced by integrated cartridges (such as the cartridges disclosed in the '635 patent.) (CFF VII.28 (undisputed).) These unique problems include the movement of the cartridge about the needle and the potential for leakage of ink from the cartridge at the interface between the cartridge and the needle, thereby necessitating the use of a robust sealing system. (CFF VIII.29 (undisputed).) Also Perry conceded that the '635 reference does not teach the use of an "ink supply port" as required by each of the asserted claims of the '917 patent. (Perry, Tr. at 2083:21-22, 2084:17-18, 2085:2-6.) Thus the '635 specification describes a manifold 54 that delivers ink from the ink reservoir 52 to the ink jet plate assembly 44, so that in other words, the manifold delivers ink from one area inside the cartridge to another. (CFF VIII.32 (undisputed).)

The "ink supply port" of the '917 patent, is described in the preamble of claims 1 and 9 as supplying ink to an external print head from the cartridge. (CFF VIII.35 (undisputed).) Moreover, the configuration of the manifold is not depicted in the '635 reference, and therefore, there is no teaching concerning the existence or location of a centerline. (RX-26 at 5:27-29, Fig. 2.) Although the '635 patent states that "the design of such a manifold 54 is known to those of skill in the art," Perry provided no evidence of what that design would be, and there is no evidence that such a manifold would be of any particular configuration. (RX-26 at 5:27-29.) Hence, because the '635 patent does not disclose an ink supply port (including the location of its centerline), the '635 reference does not teach the limitation of claim 1 of the '917 patent that requires "the contacts being formed in a plurality of rows lying essentially in a plane parallel to the centerline of the ink supply port, each row being centered relative to the centerline of said

ink supply port." (Perry, Tr. at 2083:21-22, 2084:17-18, 2085:2-6; CX-7.)

In addition because the '635 patent does not disclose an ink supply port, the '635 patent does not teach the limitation of claim 9 of the '917 patent that requires "one of said rows is closer to said exit opening of said ink supply port than an other of said rows." (Perry, Tr. at 2083:21-22, 2084:17-18, 2085:2-6; CX-7.) Moreover, the '635 patent only depicts rows of contacts that are of equal length and provides no discussion about the benefits of a particular contact arrangement. (CFF VIII.41 (undisputed).) Therefore, the '635 patent does not disclose the limitation of claim 9 of the '917 patent that requires "the row of said contacts which is closest to said exit opening of said ink supply port being longer than the row of said contacts which is furthest from said exit opening of said ink supply port." (Perry, Tr. at 2211:6-13; CX-7.)

Referring to the '401 patent, although the '401 patent teaches an ink cartridge with an ink supply port that is removably mounted on an ink supply needle, it does not disclose any elements of the asserted claims of the '917 patent, including the use of a semiconductor storage device or the use of contacts for connecting such a device to the printer. (CX-6.)

As for secondary consideration, Epson's products embodying the inventions in its asserted claims, including claims 1 and 9 of the '917 patent, have resulted in sales worth { } of dollars. (CX-1352C - CX-1359C; CX-1384C - CX-1388C; CX-956 (Response to Interrogatory No. 18).)

Based on the deficiencies of the '635 patent and a lack of any suggestion in the prior art for combining the '635 patent with the '401 patent, the administrative law judge finds that the active respondents have not established, by clear and convincing evidence, that claims 1, 2, 3,

and 9 of the '917 patent are obvious.

Referring to the active respondents' challenge of the validity of claim 1 of the '422 patent based on the '635 patent and '084 patent, the asserted claims of the '422 patent are directed to an ink cartridge with a retaining member having a moveable engagement portion that is located above the memory device (trailing end side in relation to insertion direction) and that locks the cartridge into place when it is installed on the print carriage. (CFF VIII.53 (undisputed).) The asserted claims of the '422 patent also describe a cartridge with a semiconductor chip (memory device) having electrodes that are connectable to a printer, where the semiconductor chip is disposed on the front wall of the cartridge under the retaining lever. (CFF VIII.54 (undisputed).)

It is a fact that the patentees submitted the '635 patent for the Examiner's consideration during the prosecution of the '422 patent as part of an Information Disclosure Statement filed on September 14, 2002. (CFF VIII.50 (undisputed).) The patentees also submitted the '084 patent for the Examiner's consideration during the prosecution of the '422 patent as part of an Information Disclosure Statement filed on September 20, 2004. (CFF VIII.51(undisputed).) The Examiner considered the '635 and '084 patents during prosecution of the '422 patent and determined that neither is a bar to patentability of the asserted claims of the '422 patent, either alone or in combination with each other. (CFF VIII.52 (undisputed).) The '635 patent does not teach an ink supply port, and therefore, does not disclose the "ink supply port" limitations of claims 1 and 10 of the '422 patent. (Perry, Tr. at 2083:21-22, 2084:17-18, 2085:2-6.)

The '635 patent also has no disclosure of the use of a lever or retaining member, and therefore, does not disclose either the "a retaining member disposed on the first surface" or

"movable engagement portion" limitations of claims 1, 10 and 14 of the '422 patent. (RX-26 at Fig. 2; RDX-6, slide 1.) Although the '084 patent discloses a removable cartridge, like the '635 patent it does not mount to an ink supply needle and, therefore, does not disclose the "ink supply port connectable to the ink supply needle" limitation of claim 1 of the '422 patent. (Perry, Tr. at 2216:19-2217:5.) As described in the '422 patent, the ink supply port receives the ink supply needle which provides one locking point for the cartridge, and the positioning of the retaining member close to ink supply port provides a second locking point, such that the ink supply port and retaining member secure the position of the cartridge when it is installed on the print carriage. (CFF VIII.58 (undisputed).) To the extent that the '084 reference teaches electrical communication, the electrodes are on the print head portion, and the communication is between the receptacle (or carriage) and the printer and not between the cartridge and the carriage. Moreover, Perry conceded since "we're trying to be expedient"[73] that the '084 reference does not disclose placing a memory device or electrodes on the ink cartridge. (Perry, Tr. at 2215:19-2216:16.) Further, as Perry conceded, the lever disclosed in the '084 reference is on the opposite side of the cartridge from the ink supply opening 8 and the electrodes that are disposed on the carriage. (Perry, Tr. at 2217:9-16, 2217:25-2218:2.)

As to moving the lever to the other side of the cartridge the '084 patent teaches the use of holder member 6 on the opposite side of the carriage from lever 30, as depicted on Figure 5 of the '084 reference, and holder member 6 is not part of the cartridge. (CFF VIII.63 (undisputed).) Moreover, while the '084 reference discloses a lever, because it does not disclose electrodes on the cartridge, it cannot teach the benefits of placing the lever at a trailing end side

[73] Perry did not explain the use of the word "expedient."

relative to an electrode as required by claims 1, 10 and 14 of the '422 patent.

The '422 patent describes that it is beneficial to arrange the retaining lever above the electrodes because it prevents misalignment of the contacts and electrical shorting by using both the retaining lever and the ink supply port to ensure stability and proper alignment. (CFF VIII.65 (undisputed).) The administrative law judge finds that the '635 reference and the '084 reference are therefore different because (1) the '635 reference teaches the use of a memory device and electrodes on the cartridge while the '084 reference does not; and (2) the '084 reference teaches the use of a lever while the '635 reference does not. (Perry, Tr. at 2215:19-2216:16; RX-26 at Fig. 2; RDX-6, slides 1, 3.) In addition, the administrative law judge finds that the '084 reference teaches away from combining it with '635 reference because the '084 reference suggests the use of optical means, not electronic means, to determine the volume of ink remaining in the cartridge. (RX-60 at 5:9-22.) He further finds that neither the '635 reference nor the '084 reference disclose the use of a guide recess as required by claim 10 of the '422 patent. (RDX-6, slides 1, 3.) In contrast the '422 patent describes various advantages of the guide recess, or slot, including that it aids in installation of the cartridge, prevents misalignment, ensures that the printer ink-supply needle penetrates the ink supply port, and stabilizes the cartridge after installation on the print carriage. (CFF VIII.70 (undisputed).)

Based on the foregoing, the administrative law judge finds that the active respondents have not established, by clear and convincing evidence, that claim 1 of the '422 patent is obvious.

Referring to the active respondents' arguments that claim 1 of the '053 patent is obvious in view of the '422 patent, the projecting portion, as described in claim 1 of the '053 patent,

provides numerous advantages, such as assisting in positioning and aligning the electrodes, as well as providing a pivot point at the back of the cartridge so that when it is moved into place, the lever engages the corresponding element of the carriage. (CFF VIII.89 (undisputed).) Accordingly, the '053 teaches that

> "a further benefit of this invention is that the ink supply port 4 is located on the lever 9 side at a position spaced apart from the projecting portion 12, which serves as a rotation fulcrum. Owing to this arrangement, during cartridge mounting and removal the ink supply port 4 moves as parallel as possible to the axis of the ink supply needle 36, thus preventing the generation of undesirable forces that would tend to deform undesirably the elastic seal member 6a disposed in the ink supply port 4."

(CFF VIII.90 (undisputed).) Thus, because the port is positioned away from the fulcrum point,

> "this arrangement can reduce the adverse effects of any bending force (torque) applied to the ink supply needle 36 in cooperation with a cushioning function of the elastic seal member 6a that elastically contacts the cylindrical portion of the ink supply needle 36. Because the deformation of the elastic seal member 6a is minimized, the ink supply needle is not subject to damage."

(CFF VIII.91 (undisputed).)

Another benefit of the projecting portion of the '053 patent is that it allows the electrodes on its surface to make contact with their corresponding contact members within the carriage simultaneously rather than sequentially. (CFF VIII.92 (undisputed).) As described in the specification:

> "Moreover, by rotation in this manner, the electrodes 14 can be brought into electrical communication with the elastic contacts 41 without substantial rubbing between the electrodes 14 and those elastic contacts 41. This eliminates not only wear of and damage to the electrodes 14 and the elastic contacts 12, but also damage to data stored in an EEPROM (the memory device), which could otherwise be caused by improper contact."

(CFF VII.93 (undisputed).)

The patentees submitted the application that culminated in the '422 patent for the Examiner's consideration during the prosecution of the '053 patent as part of an Information Disclosure Statement filed on February 14, 2005. (CFF VIII.73 (undisputed).) The Examiner considered the '422 patent application during prosecution of the '053 patent and determined that it was not a bar to patentability of the asserted claims of the '053 patent, either alone or in combination with any of the other references he considered. (CFF VIII.73 (undisputed).)

Perry admitted that the '422 patent does not disclose all of the limitations of the '053 patent. However, Perry testified that the "only" feature not present in the '422 patent is the location of the ink supply port. (Perry, Tr. at 2073, lines 12-18).

Claim 1 of the '053 describes that the "ink supply port disposed on the bottom wall is closer to the first side wall than the second side wall." (CX-11.) Because the ink supply port in Figure 20 of the '422 patent is closer to the right side wall than the left side wall, the "first side wall" of that embodiment is the right side wall while the "second side wall" is the left side wall. (CX-9 at Fig. 20.)

Claim 1 of the '053 patent also requires that the projecting portion be "located in a region where a plane of the second side wall and a plane of the bottom wall intersect." (CX-11.) The projecting portion in Figure 20 of the '422 patent, however, is located in a region where a plane of the "first side wall" and bottom wall intersect, and therefore does not meet the limitation of the '053 patent. (CX-9, Fig. 20.) Perry acknowledged that the '422 patent teaches that the ink supply port is on the same side of the cartridge as the projecting portion, while the '053 patent requires just the opposite. (CFF VIII.80 (undisputed).)

Perry contended that the concept of placing the projecting portion with the electrodes on the far side of the cartridge from the ink supply port was a "design choice" by the inventors of the '053 patent, but conceded that a "design choice" can be inventive. (Perry, Tr. at 2073:19-11; 2213:21-25, 2214:2-4.) Moreover he admitted that by designing a cartridge with the electrodes on a projecting portion located away from the port, the inventors of the '053 patent minimized the potential for contamination, such as by ink, and increased the reliability of the electrical interface. (CFF VIII.83 (undisputed).) Complainants' expert Murch agreed that by moving the electrodes away from the ink supply port, as described in the '053 patent, this cartridge design provides the electrodes with protection from potential contamination by small amounts of ink leakage that may short the electrodes. (CFF VIII.84 (undisputed).)

In addition, the common specification of the '917 and '902 patents, recognized that ink contamination was a problem, but still taught that the circuit board with the contacts "is mounted on a wall of an ink cartridge in the vicinity of the side on which the ink supply port is formed." (CFF VIII.86 (undisputed).) Indeed, the administrative law judge finds that the '422 reference teaches away from repositioning the port because it depicts the projecting portion in the vicinity of the ink supply port. (CX-9, Fig. 20.) Moreover, the specification of the '422 patent describes that the "memory device 7 is provided under the retaining member 5 located closer to the ink supply port." (CFF VIII.88 (undisputed).)

Based on the foregoing, the administrative law judge finds that the active respondents have not established, by clear and convincing evidence, that claim 1 of the '053 patent is obvious.

VII. Whether Claims 2 And 3 Of The '917 Patent And Claim 93 Of The '439 Patent

Are Invalid As Indefinite

The active respondents referenced claim 1, 2, and 3 of the '917 patent reproduced infra:

> 1. An ink cartridge for mounting on a carriage of an inkjet printing apparatus and for supplying ink to a printhead of said ink jet printing apparatus through an ink supply needle, the ink cartridge comprising: a plurality of external walls, including a first wall and a second wall, defining at least some of a chamber; an ink supply port for receiving said ink supply needle, the ink supply port having a centerline and communicating with the chamber, a semiconductor storage device storing information about the ink carried by said cartridge; and a plurality of contacts for connecting the semiconductor storage device to the ink jet printing apparatus, the contacts being formed in a plurality of rows lying essentially in a plane parallel to the centerline of the ink supply port, each said row being centered relative to the centerline of said ink supply port.
>
> ***
>
> 2. The ink cartridge according to claim 1, wherein said semiconductor storage device is disposed on said second wall of said housing.
>
> ***
>
> 3. The ink cartridge according to claim 1, wherein said semiconductor storage device is disposed on said second wall of said housing in the vicinity of said ink supply port.

It is argued that each of claims 2 and 3 depend from claim 1 and each refer to "said second wall of said housing;" that no housing is defined in claim 1 or in claims 2 and 3, nor is there a "second wall of said housing" defined in the claims. Hence it is argued that claims 2 and 3 are invalid for indefiniteness. (RBr at 197-8.)

The active respondents also referenced claims 81, 82 and 93 of the '439 patent reproduced infra:

> 81. An ink-supply tank for a dot matrix printer comprising:

an ink-supply tank having a first wall and a second wall extending substantially in a perpendicular direction to said first wall, said first wall having a length as viewed in a direction therealong extending from said second wall;

an ink absorbing member mounted within said ink-supply tank; and

said ink-supply tank being formed with an ink supply port positioned to receive ink from said ink absorbing member and constructed to transmit ink from said ink-supply tank through said first wall for delivery to a dot matrix printer, said ink supply port being positioned at a position between the midpoint of said length of said first wall and said second wall said ink supply port being free of porous material at least in the region thereof facing said ink absorbing member.

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82. The ink-supply tank of claim 81, wherein said at least the portion of said ink supply port adjacent said ink absorbing material is free of ink absorbing material.

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93. The ink-supply tank of claim 82, wherein said ink-supply tank includes a further wall facing the end of said elongated member, said ink absorbing member being compressingly contained in the space intermediate said further wall and said elongated member.

It is argued that claim 93 depends from claim 82, which in turn depends from claim 81; that claim 93 requires that the ink absorbing member be "compressingly contained in the space intermediate said further wall and said elongated member." (Emphasis added by the active respondents); that no elongated member is defined in independent claim 81, dependent claim 82 or in dependent claim 93 itself; and that as with claims 2 and 3 of the '917 patent, claim 93 of the '439 patent fails to apprise the public of what structure constitutes "said elongated member" and is invalid for indefiniteness. (RBr at 199-200.)

Complainants, responding to the arguments of the active respondents, argued that while the active respondents contend, without any evidence, that dependent claims 2 and 3 of the '917 patent are indefinite because those claims inadvertently use the term "housing" in place of the term "chamber" that is used in independent claim 1, the active respondents' position that this error "fail[s] to apprise the public of what structure constitutes 'said housing'" is inconsistent with the active respondents' own proposed finding of fact which states that the words "chamber" and "housing" have the same meaning; and that common sense indicates that a person of ordinary skill in the art would understand that "housing," as used in claims 2 and 3 of the '917 patent, was referring to the "chamber" of claim 1. It is also argued that while the active respondents contend, again without evidence, that dependent claim 93 of the '439 is indefinite because it uses the term "elongated member" in place of the term "ink supply port" used in independent claim 81, complainants' expert Murch testified that one of ordinary skill in the art in 1984 would understand that the term "elongated member" as used in claim 93 is referring to the same element as "ink supply port" recited in claim 81; and that indeed, the active respondent proposed a Finding of Fact that accords with Murch's testimony. (CRBr at 66-77.)

The staff argued that although the active respondents did not raise the indefinite defense in their prehearing brief, they now argue that certain claims are indefinite and therefore invalid; that those arguments have been waived; that in their prehearing brief, the active respondents identified "Invalidity" among "Other Issues to Be Considered At Trial." (Active respondents' Prehearing Br. at 44); that they specifically stated: "Respondents contest the validity of the asserted patents based upon the numerous prior art citations shown in the table attached hereto as Exhibit 4a" Id. at 44; see also id. at 72 (prior art statement also referring to Exhibit 4) and

thus it was clear that they contested invalidity based on the prior art, and not on other grounds; that while the exhibit attached to the prehearing brief did mention indefiniteness, the prehearing brief did not identify invalidity grounds other than the prior art; that no testimony was offered at the hearing concerning whether any claims were indefinite; and that the arguments concerning whether certain claims are indefinite should be rejected as waived, or alternatively as having not been proved by clear and convincing evidence. (SRBr at 7.)

The test for definiteness is whether one skilled in the art would understand the bounds of the claim when read in light of the specification. Miles Labs, Inc. v. Shandon Inc., 997 F.2d 870, 874-75 (Fed. Cir. 1993). If the scope of a claim would be reasonably ascertainable by those skilled in the art, then the claim is not indefinite. Id.; Energizer Holdings. v. Int'l Trade Com'n, 435 F.3d 1366, 1370-1371 (Fed. Cir. 2006) (reversing the finding of invalidity and concluding that "anode gel" is by implication the antecedent basis for "said zinc anode"). Moreover, any fact critical to a holding on indefiniteness must be proven by the challenger by clear and convincing evidence. Intel Corp. v. VIA Tech., Inc., 319 F.3d 1357, 1366 (Fed. Cir. 2003).

Referring to claims 2 and 3 of the '917 patent, the plain language of said claim 1 indicates that the ink cartridge comprises external walls, "including a first wall and a second wall, defining at least some of a chamber." The "first wall" and "second wall" of claim 1 is in reference to the chamber. Each of dependent claims 2 and 3 of the '917 patent recites "said second wall." Hence based on the specific language of independent claim 1 and dependent claims 2 and 3 of the '917 patent, the administrative law judge finds that a person skilled in the

art would equate the word "housing" in said claims 2 and 3, each dependent on claim 1, to"chamber" in independent claim 1. See Energizer Holdings, supra.

Referring to claim 93 of the '439 patent, it is a fact that the active respondents in their RFF 8.32 stated:

> . . . the recited elongated member in Claim 93 of the '439 Patent corresponds to the recited ink supply port in Claims 81 and 82. Murch, Tr. at 564, lines 7 - 18. More particularly, Murch testified as follows:
>
> Q. And how would that person understand that language specifically related to the language, let's look at, for example, claim 82, the ink-supply tank of claim 81 wherein said at least the portion at said ink-supply port adjacent said ink absorbing material and so on, how would elongated member be understood with respect to that claim 82?
>
> A. I think it would be understood that the description was of the ink-supply port, which is describing the same element as the elongated member.

(Murch, Tr. at 564, lines 7-18 (emphasis added).)

Based on the foregoing, the administrative law judge finds that the active respondents have not established, by clear and convincing evidence, that claims 2 and 3 of the '917 patent and claim 93 of the '439 patent are indefinite.

VIII. Infringement

Under the provisions of 35 U.S.C. § 271, liability for infringement arises if "whoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States any patented invention during the term of the patent therefor." 35 U.S.C. § 271(a). This infringement of a patented invention is the usual meaning of

the expression "direct infringement." See Joy Techs., Inc. v. Flakt, Inc., 6 F.3d 770, 773 (Fed. Cir. 1993).

A determination of infringement requires a two-step analysis. First, the patent claim must be properly construed to determine its scope and meaning. Second, the claim as properly construed must be compared to the accused device or process. Zelinski v. Brunswick Corp., 185 F.3d 1311, 1315 (Fed. Cir. 1999), citing Markman v. Westview Instruments, Inc., 52 F.3d 967, 976 (Fed. Cir. 1995). Whereas claim construction is a matter of law and therefore, the exclusive province of the court, "whether a claim encompasses an accused device, either literally or under the doctrine of equivalents, is a question of fact." Zelinski, 185 F.3d at 1315, citing N. Am. Vaccine, Inc. v. Am. Cyanamid Co., 7 F.3d 1571, 1574 (Fed. Cir. 1993).

To prove literal infringement, the patentee must show, by a preponderance of the evidence, that the accused device contains every limitation in the asserted claims. WMS Gaming Inc. v. Int'l Game Tech., 184 F.3d 1339, 1350 (Fed. Cir. 1999), citing Mas-Hamilton Group v. LaGard, Inc., 156 F.3d 1206, 1211 (Fed. Cir. 1998).

A device that does not literally infringe a patent claim may nonetheless infringe under the doctrine of equivalents. The infringement analysis under the doctrine of equivalents requires a determination of whether the differences between the recited claim element and the accused device are insubstantial, i.e. if the accused device performs substantially the same function in substantially the same way to achieve substantially the same result as that required by the particular claim element.[74] Graver Tank & Mfg. Co., Inc. v. Linde Air Prods., 339 U.S. 605, 609

[74] In addition, other "objective evidence" may be relevant to determining whether the differences between the accused device and the claimed invention are insubstantial, which "may include evidence of known interchangeability to one of ordinary skill in the art, copying, and

(1950); see Kemco Sales, Inc. v. Control Papers Co., 208 F.3d 1352, 1365 (Fed. Cir. 2000) (discussing applicability of doctrine of equivalents to means-plus-function claims). To prove infringement under the doctrine of equivalents, a patentee must prove equivalency on a limitation-by-limitation basis, which requires "particularized testimony and linking argument." Texas Instr. Inc. v. Cypress Semiconductor Corp., 90 F.3d 1558, 1566 (Fed. Cir. 1996). Thus, Federal Circuit precedent requires that:

> a patentee must . . . provide particularized testimony and linking argument as to the 'insubstantiality of the differences' between the claimed invention and the accused device or process, or with respect to the function, way, result test when such evidence is presented to support a finding of infringement under the doctrine of equivalents.

Id. Moreover equivalence of a structure to claim limitation can be shown by establishing that the accused equivalent structure performs the primary or key function(s) performed by that claimed limitation, even if it does not perform other functions performed by the claimed limitation. See Toro Co. v. White Consol. Indus., Inc., 266 F.3d 1367, 1372 (Fed. Cir. 2001).

A. Accused Products

To reduce the number of Ninestar accused products which must be analyzed for infringement in this investigation, complainants and the Ninestar respondents have entered a stipulation, "Stipulation and Order re Application of Infringement Determinations of Representative Cartridges to Remaining Products" (the Matrix Stipulation, JX-39), that sets forth 10 Representative Cartridges for analysis of infringement of the asserted patents. (CFF VI.A.1

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designing around." Texas Instr. Inc. v. Cypress Semiconductor Corp., 90 F.3d 1558, 1566 (Fed. Cir. 1996).

(undisputed).)[75] Complainants and the active respondents have also agreed that any findings made with respect to the 10 Representative Cartridges will be applied to the remaining accused Ninestar cartridges. (CFF VI.A.2 (undisputed).) The 10 Representative Cartridges are Representative Cartridge 1 (CPX-12), Representative Cartridge 2 (CPX-289), Representative Cartridge 3 (CPX-21), Representative Cartridge 4 (CPX-23), Representative Cartridge 5 (CPX-59), Representative Cartridge 6 (CPX-25), Representative Cartridge 7 (CPX-81), Representative Cartridge 8 (CPX-103), Representative Cartridge 9 (CPX-193), and Representative Cartridge 10 (CPX-52). (CFF VI.A.3, 5-14 (undisputed).) With respect to the '397 patent which is not asserted against the active respondents, the infringement analysis of said patent was shown during the hearing with respect to a Representative Cartridge of respondent Mipo identified as Cartridge 11. (CPX-607) (CFF VI. BB.6-21 (undisputed).)

B. The '397 "Valve" Patent

The '397 patent is asserted against defaulting respondents Mipo, Mipo America, Tully, Wellink, and Ribbon Tree Macao, and settling respondents Inkjetwarehouse, Apex and Ribbon Tree USA. It is not asserted against the active respondents nor the MMC respondents. The infringement analysis of the '397 patent through representative cartridge 11 (CPX-607) (CFF VI.A.17 (undisputed).) applies equally, and in the same way, to certain cartridges of said defaulting respondents, which cartridges are identical in all relevant respects to representative cartridge 11 (CPX-607.) (CFF VI.BB.6-21 (undisputed).)

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[75] Each cartridge need not be necessarily considered for analysis of infringement of each of the asserted claims of the patents in issue.

The cartridges of the defaulting respondents that infringe the '397 patent are set out in the sections of CDX-2 applicable to each of said respondent, and on the slides of each such section applicable to asserted claims 21, 45, 53 and 54 of the '397 patent. (CFF VI.BB.7, 9, 11, 13, 15, 17, 19, 21 (undisputed).)[76] In addition to such direct proof of infringement of the '397 patent, there is the finding of default.

The staff is inconsistent, as to its position with respect to the asserted claims of the '397 patent. For example the staff argued that the "evidence shows that claims 21 and 45 are infringed by defaulting Respondent Mipo's Rep. Crt. 11," and only relied on "Murch Tr. 1166." (SBr at 104, 106.) However, in response to CFF VI.Z.4 which read:

> CPX-607 (Representative Cartridge 11) literally infringes claim 45 of the '397 patent. (Murch Tr. 1166:2-1169:7; CPX-607; Mipo CDX-2, Slide 30.)

and also referenced Murch Tr. 1116, the staff stated:

> **STAFF RESPONSE:** not supported by evidence cited; no competent testimony offered.

From the foregoing it is unclear how the staff is interpreting "Murch Tr. 1166," and what the staff's position is as to infringement of said claim 45.[77]

As to evidence that defaulting respondents Mipo, Mipo America, Tully, Wellink, and Ribbon Tree Macao infringe claims 21, 45, 53 and 54 of the '397 patent, claim 21 of the '397 patent states:

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[76] Since respondents Inkjetwarehouse, Apex, and Ribbon Tree USA have been terminated from the investigation through consent order, this section is only treating the defaulting respondents.

[77] In the future, the staff when referring to evidence should not merely reference citations to the record but should state also its interpretation of any citation.

21. An ink cartridge comprising:

an ink storage chamber;

an ink supply port that is in fluid communication with the ink storage chamber through an ink flow path; and

a negative pressure generating mechanism which selectively blocks the ink flow path and opens as a consequence of consumption of ink, the negative pressure generating mechanism including,

an elastic member having first and second surfaces;

a communicating portion facing the first surface of the elastic member and communicating with the ink storage chamber, the communicating portion including an inlet through which ink enters into the communicating portion and an outlet through which ink leaves the communicating portion, the inlet and outlet both being located on a same side with respect to the elastic member; and

a space portion facing the second surface of the elastic member and communicating with the ink supply port

wherein the communicating portion forms a part of the ink flow path, and the first surface of the elastic member contacts with and separates from the outlet.

(CFF VI.Y.2 (undisputed).)

Representative cartridge 11 (CPX-607) is an ink cartridge, and therefore it is found to literally meet the preamble "[a]n ink cartridge comprising." (CFF VI.Y.7 (undisputed).)

Representative cartridge 11 (CPX-607) literally meets the first limitation "an ink storage chamber" because it includes, on one side of a partition wall, a chamber which stores ink (ink storage chamber). (CFF VI.Y.8. (undisputed).)

Representative cartridge 11 (CPX-607) literally meets the second limitation "an ink supply port that is in fluid communication with the ink storage chamber through an ink flow path

because (i) it includes an ink-supply port, (CFF VI.Y.11(undisputed)); (ii) ink flows from the ink storage chamber to the ink supply port through an ink flow path, (CFF VI.Y.12 (undisputed)); and (iii) the ink supply port is in fluid communication with the ink storage chamber through this ink flow path. (CFF VI.Y.11-13 (undisputed).)

Representative cartridge 11 (CPX-607) is found to literally meet the following portion of the third limitation "a negative pressure generating mechanism which selectively blocks the ink flow path and opens as a consequence of consumption of ink, the negative pressure generating mechanism including," because it includes a negative pressure generating mechanism. (CFF VI.Y.15 (undisputed).) The negative pressure generating mechanism selectively blocks the ink flow path and opens as ink is consumed. (CFF VI.Y.16-18 (undisputed).)

Representative cartridge 11 (CPX-607) is found to literally meet the following portion of the third limitation "an elastic member having first and second surfaces" because the negative pressure generating mechanism includes an elastic member located on the opposite side of the partition wall from the ink storage chamber. (CFF VI.Y.19-20 (undisputed).) The elastic member has a first surface (facing the partition wall) and second surface (facing away from the partition wall). (CFF VI.Y.20 (undisputed).)

Representative cartridge 11 (CPX-607) is found to literally meet the following portion of the third limitation

> "a communicating portion facing the first surface of the elastic member and communicating with the ink storage chamber, the communicating portion including an inlet through which ink enters into the communicating portion and an outlet through which ink leaves the communicating portion, the inlet and outlet both being located on a same side with respect to the elastic member; . . ."

because the negative pressure generating mechanism also includes a compartment (communicating portion) that faces the first surface of the elastic member and is defined in part by the partition wall. (CFF VI.Y.21(undisputed).) The compartment (communicating portion) includes an ink inlet into the compartment from the ink-storage chamber (through an offset hole in the partition wall). (CFF VI.Y.22(undisputed).) The compartment (communicating portion) also includes an ink outlet out of the compartment (through a center hole in the partition wall). (CFF VI.Y.23 (undisputed).) Ink enters the compartment (communicating portion) through the inlet and leaves the compartment through the outlet. (CFF VI.Y.21-23 (undisputed).)

Representative cartridge 11 (CPX-607) is found to literally meet the following portion of the third limitation:

> a space portion facing the second surface of the elastic member and communicating with the ink supply port

because the negative pressure generating mechanism includes a space portion. (CFF VI.Y.25 (undisputed).) The space (space portion) faces the other side (second surface side) of the elastic member opposite the partition wall. (CFF VI.Y.24-26 (undisputed).)

Representative cartridge 11 (CPX-607) is found to literally meet the following portion of the third limitation:

> "wherein the communicating portion forms a part of the ink flow path, and the first surface of the elastic member contacts with and separates from the outlet."

because ink enters the compartment (communicating portion) through the inlet and leaves through the outlet, so the communicating portion forms a part of the ink flow path. As ink is

used, the first surface of the elastic member repeatedly contacts with and separates from the outlet of the communicating portion, controlling the flow of ink. (CFF VI.Y.25-26 (undisputed).)

Claim 45 of the '397 patent depends from claim 21. Claim 45 reads:

> The ink cartridge according to claim 21, wherein, when the ink flow path is blocked, the first surface of the elastic member has a first area that is exposed to a first pressure from the ink storage chamber and a second area that is exposed to a second pressure from the ink supply port, and the first area is substantially larger than the second area.

Representative cartridge 11 (CPX-607) is found to literally infringe claim 45 because the first surface of the elastic member has a second area (over the ink outlet) and a first area (over the rest of the surface that is exposed to the ink inlet). (CFF VI.Z.4-5 (undisputed).) The first area is substantially larger than the second area. When the ink flow path is blocked (for example, because the first surface of the elastic member is in contact with the outlet of the communicating portion), the first area of the elastic member is exposed to a first pressure from the ink storage chamber through the inlet and the second area of the elastic member is exposed to a second pressure from the ink supply port through the outlet. (CFF VI.Z.5 (undisputed).)

Based on the foregoing the administrative law judge finds that complainants have established that the defaulting respondents literally infringe each of claims 21 and 45 of the '397 patent. Moreover even in the absence of such evidence the administrative law judge finds that the allegations of infringement of claims 21 and 45 of the '397 patent are deemed admitted against the defaulting respondents. See Section XI.A, infra.

The analysis of claims 53 and 54, which are set forth in Section V.E.1 supra, is similar to that of claims 21 and 45. See (CFF VI.AA.1-15; CFF VI.BB.1-5 (undisputed).). Accordingly,

for the same reasons the administrative law judge found with respect to claims 21 and 45, he finds representative cartridge 11 (CPX-607) literally infringes claims 53 and 54 of the '397 patent. (CFF VI.AA.1-15, CFF VI.BB.1-5 (undisputed).) Moreover even in the absence of such evidence, the administrative law judge finds that the allegations of infringement of claims 53 and 54 of the '397 patent are deemed admitted against the defaulting respondents. See Section XI.A, infra.

C. Sponge Patents

The active respondents and the MMC respondents are accused of infringing the following asserted claims of the sponge patents: claim 7 of the '957 patent; claims 18, 81, 93, 149 and 164 of the '439 patent; claims 83 and 84 of the '377 patent; and claims 19 and 20 of the '148 patent. (CBr at 57.) The non-active respondents (i.e. the defaulting respondents) are accused of infringing said asserted claims of the sponge patents, and additionally claim 165 of the '439 patent and claims 29, 31, 34 and 38 of the '472 patent.

Pursuant to the agreement between Complainants and the Ninestar Respondents[78], as reflected in the Matrix Stipulation (JX-39) there are only two representative cartridges which must be analyzed for infringement, namely Representative Cartridge 1 (RC-1) and Representative Cartridge 2 (RC-2). (CFF VI.B.3 (undisputed); CFF VI.C.2 (undisputed); CFF VI.H.2 (undisputed); CFF VI.I.2 (undisputed) CFF VI.J.2 (undisputed); CFF VI.K.3 (undisputed).). RC-1 and RC-2 are both ink cartridges originating from the active respondents for use with Epson printers. (See JX-39.)

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[78]In this section, "Ninestar Respondents" include respondents Nine Star Technology Co., Ltd., Ninestar Technology Company, Ltd. and Town Sky, Inc.

Complainants argued that infringement has been established literally and/or under the doctrine of equivalents. (CBr at 57-85.) The staff argued that infringement has been established. (SBr at 41-64.) However, it does not differentiate between literal infringement and infringement under the doctrine of equivalents. (Id.)

1. Claim 7 Of The '957 Patent

Claim 7 of the '957 patent is reproduced in Section V.A.1, supra. Referring to the preamble of the claim 7 the administrative law judge has interpreted "dot matrix printer" as "any type of printer which causes a matrix of ink dots to be placed on an ink-receiving surface to form a character, figure, graphic image, or the like, including ink-jet type dot matrix printers." (See Section V.A.1.a, supra.)

The administrative law judge finds that both RC-1 and RC-2 include an ink supply tank for a ink jet printer, and thus, both RC-1 and RC-2 include an ink supply tank for a dot matrix printer. (See CPX-12, CPX-289, Murch, Tr. at 340:24-341:6, 342:7-20, 349:2-351:5, 447:8-13, 455:9-458:3, 489:10-18, 496:1-7, 500:5-10.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the preamble of claim 7 of the '957 patent.

Referring to the first limitation of claim 7, based on his examination, the administrative law judge finds that RC-1 has a first and second spaced opposed wall because it has a top wall and an opposing bottom wall. (See CDX-1, Slide 6, CPX-12.) He also finds that said walls, in part, define the interior space that exists within RC-1. (See CDX-1, Slide 6, CPX-12.) He further finds that said walls and said interior space comprise the tank housing of RC-1. (See CDX-1, Slide 6, CPX-12.)

The administrative law judge also finds, based on his examination, that RC-2 differs from RC-1, because RC-2 has an internal wall approximately at its center and said internal wall divides the cartridge. (See CDX-1, Slide 11, CPX-289.) However, he finds that RC-2 also has a first and second spaced opposed wall because it has a top wall and an opposing bottom wall that run between the internal wall that divides the cartridge, and the rightmost mall at the right side of the cartridge. (See CDX-1, Slide 11, CPX-289.) He further finds that said walls, in part, define the interior space that exists within RC-2. (See CDX-1, Slide 11, CPX-289.) In addition he finds that said walls and said interior space comprise the tank housing of RC-2. (See CDX-1, Slide 11, CPX-289.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the first limitation of claim 7 of the '957 patent.

The active respondents argued that RC-1 does not literally meet the first limitation of claim 7 of the '957 patent because the active respondents challenge the meaning of tank housing as used in claim 7 of the '957 patent.[79] (Active respondents' response to CFF VI.B.13.) However, after reviewing the post-hearing submissions of the active respondents, the administrative law judge finds that said respondents did not actually challenge the term "tank housing" with respect to any of the asserted claims of the sponge patents. (See RBr at 64-81; RRBr at 7-23.) He finds that they only challenged the term "ink supply tank," with respect to any

[79] The active respondents failed to articulate why the fact that they challenged the meaning of tank housing as used in claim 7 of the '957 patent shows that RC-1 does not literally meet the first limitation of claim 7 of the '957 patent. (See active respondents' response to CFF VI B.13.)

of the asserted claims of the sponge patents. (See RBr at 64-81; RRBr at 7-23.)[80] Furthermore, the administrative law judge rejected their interpretation of "ink supply tank," and interpreted "ink supply tank" as "a structure that holds ink for supply to a printer." (See Section V A.1.b, supra.) Thus, the administrative law judge rejects said argument of the active respondents.

The active respondents argued that RC-2 does not literally meet the first limitation of claim 7 of the '957 patent because the tank housing or ink supply tank is the entire tank area, not just the right-hand side of the tank housing. (Active respondents' response to CFF VI.B.15-18.) However, the administrative law judge has already rejected this argument in the claim interpretation section, stating that the specification of each of the sponge patents does not require that the ink tank contain the entire volume of ink that will be dispensed to the printer head and that one of the preferred embodiments in the specification allows for a "double construction" where the ink tank is comprised of two smaller ink tanks:

> The ink tank 2 is of a double construction composed of a first ink tank 2b for holding black ink and a second ink tank 2a which is divided into three sections for color inks.

(See CX-1 at 3:53-56; CX-2 at 3:62-65; CX-3 at 3:63-66; CX-4 at 3:63-66; CX-5 at 3:63-66 (emphasis added).) Thus, the administrative law judge rejects said argument of the active respondents.

The active respondents also argued that RC-2 does not have an internal wall that divides the cartridge into two areas because complainants' expert, Murch, confirmed that the two areas are "in fluid communication with each other," and that in other words, "ink flows between the

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[80] The administrative law judge finds that "ink supply tank" is recited in the preamble of claim 7 of the '957 patent, and is the antecedent basis of "tank housing" as recited in claim 7 of the '957 patent. (See CX-1 at 10:24)

two areas, which form one tank housing or ink supply tank." (Active respondents' response to CFF VI.B.14.) However, the administrative law judge finds that this does not change the fact that slide 11 of CDX-1 clearly shows that RC-2 has an internal wall that divides the cartridge into two areas. (See CDX-1, Slide 11, CPX-289.) Thus, the administrative law judge rejects said argument of the active respondents.

Referring to the second limitation of claim 7, the administrative law judge has interpreted "ink supply delivery port" as "a structure with an opening for the movement of ink." The administrative law judge finds that RC-1 has a cylindrical structure located on the first wall of the tank housing, that said structure extends through said first wall, that said structure also extends into the interior space of the tank housing, that said structure has an opening to the interior space, and that said opening permits the passage of ink from said interior space to the exterior of said tank housing. (See CDX-1, Slide 7, CPX-12.)

The administrative law judge further finds that RC-2 has a cylindrical structure located on the first wall of the tank housing, that said structure extends through said first wall, that said structure also extends into the interior space of the tank housing, that said structure has an opening to the interior space, and that said opening permits the passage of ink from said interior space to the exterior of said tank housing. (See CDX-1, Slide 12, CPX-289.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the second limitation of claim 7 of the '957 patent.

The active respondents argued that RC-1 and RC-2 do not literally meet the second limitation of claim 7 of the '957 patent because in order for an ink cartridge to infringe, the ink cartridge must have an ink supply delivery port, as properly interpreted, namely, grooves of the

ink supply guide, which is on the print head side of the printer, and which is received within an opening in the ink cartridge, and that RC-1 and RC-2 do not have an ink supply delivery port, as properly interpreted. (RBr at 104-105, 107-108.) However, the administrative law judge has already rejected said interpretation of "ink supply delivery port." (See Section V A.1.b, supra.) Thus, he rejects the argument.

Referring to the third limitation of claim 7, the administrative law judge has interpreted "an ink absorbing member substantially filling said interior space of said tank housing" as "an ink absorbing member largely but not necessarily completely filling said interior space of said tank housing." (See Section V.A.1.e, supra.)

The administrative law judge finds that RC-1 has a yellow substance (which he finds is the ink absorbing member) that largely, but not necessarily completely, fills the previously-identified interior space of the previously-identified tank housing. (See CDX-1, Slide 8; CPX-12.) He further finds that the ink absorbing member is a sponge-like porous material, and thus, the ink absorbing member is formed of a porous material. (See CPX-12.) He also finds that the ink absorbing member is in contact with the ink supply delivery port, and thus has a region that is facing and engaging the opening of said ink supply delivery port. (See CPX-12.)

The administrative law judge further finds that RC-2 has a yellow substance (which he finds is the ink absorbing member) that largely, but not necessarily completely, fills the previously-identified interior space of the previously-identified tank housing. (See CDX-1, Slide 13; CPX-289.) He further finds that the ink absorbing member is a sponge-like porous material, and thus, the ink absorbing member is formed of a porous material. (See CPX-289.) He also

finds that the ink absorbing member is in contact with the ink supply delivery port, and thus has a region that is facing and engaging the opening of said ink supply delivery port. (See CPX-289.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the third limitation of claim 7 of the '957 patent.

The active respondents argued that RC-1 and RC-2 do not have "an ink absorbing member having a region facing and at least engaging said opening to said ink supply delivery port" because, based on the interpretation of "ink supply delivery port," the ink absorbing member must engage the guide grooves 12b of the ink supply guide 12, as shown in the specification of each of the sponge patents, and RC-1 and RC-2 do not have an ink supply guide having guide grooves. (RBr at 106, 108.) However, the administrative law judge has previously rejected said interpretation of "ink supply delivery port" and "said ink absorbing member having a region facing and at least in part engaging said opening to said ink supply delivery port." (See Section V.A.1.b, supra.) Thus, the administrative law judge rejects said argument.

The active respondents also argued that, even if the administrative law judge adopted complainants' interpretation of "ink supply delivery port," RC-1 and RC-2 do not have "an ink absorbing member having a region facing and at least in part engaging said opening to said ink supply delivery port" because the ink absorbing member in RC-1 and RC-2 engages a filter not an opening to said ink supply delivery port as required by claim 7 of the '957 patent. (RBr at 106, 108.)

The administrative law judge finds that while the active respondents offered an interpretation of the claimed phrase "said ink absorbing member having a region facing and at least in part engaging said opening to said ink supply delivery port" (an interpretation that the

administrative law judge rejected), they never offered an interpretation for the claimed phrase "engaging" that limited said claimed phrase to "direct contact." Furthermore, the administrative law judge finds that he would not have adopted such an interpretation because the specification of the '957 patent does not support such a narrow interpretation of "engaging" in its disclosure of the ink absorbing member:

> Compression in the vicinity of the ink supply port is also achieved where the ink absorbing member overlies the opening (141) in the tank as shown in FIGS. 9 and 10, since arm 12d of ink supply guide 12 is inserted through the opening into compressing engagement with the ink absorbing member in such a construction (compare FIGS. 2, 4, 9 and 10).

(CX-1 at 8:51-57 (emphasis added).)

The administrative law judge further finds that in both RC-1 and RC-2, the ink absorbing member presses up against the opening of the port and overlies the port opening, regardless of the fact that the opening is covered by a thin filter. (See CPX-12, CPX-289.) Furthermore, the administrative law judge finds that the thin filter does not completely cover the opening, and instead, contains holes that permit the ink to flow through the filter, a fact that the respondents did not dispute. (CFF VI.B.39 (undisputed); see also CPX-12, CPX-289.) Thus, the administrative law judge finds that the ink absorbing member also engages the opening of the port, through the holes of the filter. For the foregoing reasons, the administrative law judge rejects the argument of the active respondents.

Referring to the fourth limitation of claim 7 the administrative law judge finds that the second wall of the tank housing of RC-1 has projections extending from said wall. (See CDX-1, Slide 9, CPX-12.) He further finds that said projections press down and push the ink absorbing

member away from said wall, thus creating sufficient space between said second wall of said tank housing and said ink absorbing member to provide an air communication space. (See CDX-1, Slide 9, CPX-12.) He also finds that said second wall of said tank housing also contains an air communication hole. (See CDX-1, Slide 9, CPX-12.) He finds that said air communication hole allows said air communication space to be in fluid communication with ambient air outside the tank housing. (See CDX-1, Slide 9, CPX-12.)

The administrative law judge finds that the second wall of the tank housing of RC-2 has projections extending from said wall. (See CDX-1, Slide 14, CPX-289.) He further finds that said projections press down and push the ink absorbing member away from said wall, thus creating sufficient space between said second wall of said tank housing and said ink absorbing member to provide an air communication space. (See CDX-1, Slide 14, CPX-289.) He further finds that said second wall of said tank housing also contains an air communication hole. (See CDX-1, Slide 14, CPX-289.) He finds that said air communication hole allows said air communication space to be in fluid communication with ambient air outside the tank housing. (See CDX-1, Slide 14, CPX-289.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the fourth limitation of claim 7 of the '957 patent.

The active respondents argued that RC-1 and RC-2 do not literally meet the fourth limitation of claim 7 of the '957 patent because they challenge the meaning of tank housing as used in claim 7 of the '957 patent. (Active respondents' response to CFF VI.B.46-47.) The administrative law judge rejected this non-infringement argument, with respect to the first

limitation of claim 7 of the '957 patent, supra. Thus, the administrative law judge rejects said argument, with respect to the fourth limitation of claim 7 of the '957 patent.

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally infringe claim 7 of the '957 patent.

With respect to the represented cartridges, pursuant to the Matrix Stipulation, (JX-39), the parties agreed that findings made with respect to certain representative cartridges can be applied to other represented cartridges for the purpose of finding infringement. (JX-39 at 2.) Appendix B to the Matrix Stipulation specifies that for claim 7 of the '957 patent, RC-1 and RC-2 represent the Ninestar and Town Sky cartridges listed in Lists 1 and 2 of the Matrix Stipulation, respectively. (JX-39.) Under the terms of the Matrix Stipulation, findings made with respect to RC-1 and RC-2, apply to said cartridges. (JX-39 at 2.) The administrative law judge has found, supra, that RC-1 and RC-2 infringe claim 7 of the '957 patent. Based upon the Matrix Stipulation, the administrative law judge finds that the Ninestar and Town Sky cartridges listed in Lists 1 and 2 of the Matrix Stipulation also infringe claim 7 of the '957 patent.

With respect to cartridges of other respondents, in addition to the Ninestar and Town Sky cartridges, complainants have accused the cartridges of other respondents of infringing claim 7 of the '957 patent. CDX-2 contains a compilation of the cartridges of respondents that Murch analyzed with respect to infringement of the asserted patents. (CFF VI.A.19 (undisputed by the staff).)

With respect to the cartridges of the MMC respondents, the administrative law judge finds, based upon the claim interpretation of asserted claim 7, see supra, that the MMC respondents' cartridges listed in CDX-2 under the "MMC" tab at pages 1-8 infringe claim 7 of

the '957 patent. (CFF VI.B.52-53 (undisputed).) Further, the MMC respondents do not contest that the accused cartridges infringe claim 7 of the '957 patent. (CFF VI.B.54 (undisputed.)) Therefore, the administrative law judge finds that the cartridges of the MMC respondents listed in CDX-2 infringe claim 7 of the '957 patent.

As to the cartridges of Dataproducts, there is testimony by Murch that those cartridges literally infringe claim 7 of the '957 patent based upon Murch's analysis of the representative cartridges. (Murch Tr. at 517:21-518:16.) Based on the claim interpretation of asserted claim 7, see supra, the administrative law judge finds that the Dataproducts cartridges listed in CDX-2 under the "Dataproducts" tab at pages 1-3 infringe claim 7 of the '957 patent.

With respect to the defaulting respondents, each have been found in default. (CFF VI.55, 58, 61, 64, 66, 68, 71, 74.) Thus, the administrative law judge draws adverse inferences and makes findings of fact therefrom that the defaulting respondents have admitted to infringement of the asserted claims against them as set forth in the complainant and amended complaint which they received. Thus, the administrative law judge finds that the allegations of infringement of claim 7 of the '957 patent are deemed admitted against the defaulting respondents.

With respect to the consenting respondents, both complainants and the staff argued that the consenting respondents infringe claim 7 of the '957 patent, as well as the other asserted claims of the sponge patents, in order to support a finding of a widespread pattern of unauthorized use necessary for a general exclusion order. (See CBr at 11, 14, 81-84; SBr at 46-48, 57-58, 60, 62.) However, in the post-hearing submissions of both the complainants and the staff, it is not always clear whether the complainants and the staff are addressing alleged infringement of the sponge patents by the consenting respondents for the purpose of determining

whether a violation has occurred, or determining whether the remedy should be in the form of a general exclusion order. (See generally Complainant's Post-Hearing Brief, Posthearing Brief of the Commission Investigative Staff.) Thus, to clarify the record, the administrative law judge reiterates that alleged infringement of respondents that have been terminated through a consent order is relevant only with respect to determining the appropriate remedy, not in determining whether a violation has occurred. Thus, the administrative law judge addresses any infringement of the consenting respondents in the remedy section, infra. (See Section XI.A, infra.)

2. Claims 18, 81, 93, 149 And 164 Of The '439 patent

Claim 18

Claim 18 of the '439 patent is reproduced in Section V.A.1, supra. Referring to the preamble of claim 18 the administrative law judge has interpreted "dot matrix printer" as "any type of printer which causes a matrix of ink dots to be placed on an ink-receiving surface to form a character, figure, graphic image, or the like, including ink-jet type dot matrix printers." (See Section V.A.1.a, supra.)

The administrative law judge finds that both RC-1 and RC-2 include an ink-supply tank for a ink jet printer, and thus, both RC-1 and RC-2 include an ink-supply tank for a dot matrix printer. (See CPX-12, CPX-289, Murch, Tr. at 340:24-341:6, 342:7-20, 349:2-351:5, 447:8-13, 455:9-458:3, 489:10-18, 496:1-7, 500:5-10.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the preamble of claim 18 of the '439 patent.

Referring to the first limitation of claim 18, the administrative law judge has interpreted "ink-supply tank" as "a structure that holds ink for supply to a printer." The administrative law

judge, based on his examination, finds that RC-1 has a ink-supply tank because RC-1 has a cartridge interior that holds ink. (See CDX-1, Slide 16, CPX-12.) He further finds that said ink-supply tank has a first wall, which is the bottom wall of said ink-supply tank. (See CDX-1, Slide 16, CPX-12.) He also finds that said ink-supply tank has a second wall, the rightmost wall of the ink-supply tank, and that said second wall extends substantially in a perpendicular direction to said first wall. (See CDX-1, Slide 16, CPX-12.) He further finds that said first wall has a length that extends from said second wall. (See CDX-1, Slide 16, CPX-12.)

The administrative law judge in addition, based on his examination, finds that RC-2 differs from RC-1, because RC-2 has an internal wall approximately at its center and said internal wall divides the cartridge. (See CDX-1, Slide 20, CPX-289.) However, he finds that RC-2 has an ink-supply tank because RC-2 has an area on the right-hand side of the internal center wall that holds ink. (See CDX-1, Slide 20, CPX-289.) He further finds that said ink-supply tank has a first wall, which is the bottom wall. (See CDX-1, Slide 20, CPX-289.) He also finds that said ink-supply tank has a second wall, which is the internal center wall, and that said second wall extends substantially in a perpendicular direction to said first wall. (See CDX-1, Slide 20, CPX-289.) He further finds that said first wall has a length that extends from said second wall. (See CDX-1, Slide 20, CPX-289.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the first limitation of claim 18 of the '439 patent.

The active respondents argued that RC-1 does not literally meet the first limitation of claim 18 of the '439 patent because they challenge the meaning of ink-supply tank as used in claim 18 of the '439 patent. (Active respondents' response to CFF VI..C.12.) However, the

administrative law judge has already rejected said interpretation of "ink-supply tank." (See Section V.A.1.d, supra.) Thus, he rejects said argument.

The active respondents argued that RC-2 does not literally meet the first limitation of claim 18 of the '439 patent because the tank housing or ink supply tank is the entire tank area, not just the right-hand side of the tank housing. (Active respondents' response to CFF VI.C.13.) However, the administrative law judge has already rejected this argument in the claim interpretation section. (See Section V.A.1.b, supra.) Thus, he rejects said argument.

Referring to the second limitation of claim 18 of the '439 patent the administrative law judge finds that RC-1 has an ink absorbing member mounted within the ink-supply tank because it has a sponge mounted within the ink-supply tank. (See CPX-12, CDX-1, Slide 17.) He further finds that RC-2 has an ink absorbing member mounted within the ink-supply tank because it has a sponge mounted within the ink-supply tank. (See CPX-289, CDX-1, Slide 21.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the second limitation of claim 18 of the '439 patent.

The active respondents argued that RC-1 does not literally meet the second limitation of claim 18 of the '439 patent because they challenge the meaning of ink-supply tank as used in claim 18 of the '439 patent. (Active respondents' response to CFF VI.C.15.) However, the administrative law judge has already rejected said interpretation of "ink-supply tank." (See Section V.A.1.d, supra.) Thus, he rejects said argument.

The active respondents argued that RC-2 does not literally meet the second limitation of claim 18 of the '439 patent because the tank housing or ink supply tank is the entire tank area, not just the right-hand side of the tank housing. (Active respondents' response to CFF VI.C.16.)

However, the administrative law judge has already rejected this argument in the claim interpretation section. (See Section V.A.1.d., supra.) Thus, he rejects said argument.

Referring to the third limitation of claim 18 of the '439 patent the administrative law judge has interpreted "ink receiving and transmitting member comprising an elongated member" as "a component structure having an extended length for receiving and transmitting ink;" and "said elongated member extending from said first wall into the interior of said tank at a position between the midpoint of said length of said first wall and said second wall" as "the elongated member extending from the first wall into the interior of the tank and positioned by its passage that is located between the midpoint of the length of the first wall and the second wall." (See Section V.A.1.c, supra.)

The administrative law judge finds that, based on his examination, RC-1 contains an ink receiving and transmitting member comprising an elongated member, because RC-1 contains a structure that extends from the first wall into the interior of the ink-supply tank and is located between the midpoint of the first wall and the second wall, and that said structure receives and transmits ink. (See CPX-12; CDX-1, Slide 18.) He further finds that said elongated member contains an opening inside the interior of the tank, at its distal end inside the ink-supply tank, and has a passage, which is formed of non-porous plastic material, from the opening to the exterior of the tank permitting ink to flow away from the distal end opening. (See CPX-12; CDX-1, Slide 18.) He also finds that said elongated member comes into contact, and thus engages, the ink absorbing member. (See CPX-12; CDX-1, Slide 18.)

The administrative law judge finds that the preceding infringement analysis of RC-1 applies equally to RC-2. (See CPX-289; CDX-1, Slide 22.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the third limitation of claim 18 of the '439 patent.

The active respondents argued that RC-1 and RC-2 do not literally meet the third limitation of claim 18 of the '439 patent because neither RC-1 nor RC-2 have an "ink receiving and transmitting member," as properly interpreted. (RBr at 111-112.) It is argued that the phrase "ink receiving and transmitting member" as recited in claims 18, 149 and 164 of the '439 patent has the same meaning as ink supply delivery port as used, for example, in claim 7 of the '957 patent. (RBr at 111-112.) Accordingly, it is argued, that the arguments made with respect to "ink supply delivery port" apply to the phrase "ink receiving and transmitting member." (RBr at 111-112.) However, the administrative law judge has rejected said interpretation of the active respondents for both "ink supply delivery port" and "ink receiving and transmitting member comprising an elongated member." (See Section V.A.1.b, c, supra.) Thus, he rejects said argument.

The active respondents also argued that the elongated member of RC-1 and RC-2 do not "[engage] a portion of said ink absorbing member" because the ink absorbing member in RC-1 and RC-2 engages a filter not the elongated member of the ink receiving and transmitting member as required by claim 18 of the '439 patent. (Active respondents' response to CFF VI.C.30; see also RBr at 162-166.) The administrative law judge has already rejected said non-infringement argument, with respect to the filter, for the '957 patent, supra. Thus, the administrative law judge rejects said non-infringement argument, with respect to the '439 patent.

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally infringe claim 18 of the '439 patent.

Claim 81

Claim 81 of the '439 patent is reproduced in Section V.A.1, supra. Referring to the preamble of claim 81 the administrative law judge finds that the infringement analysis of the preamble of claim 18 of the '439 patent with respect to RC-1 and RC-2 applies equally to the application of the preamble of claim 81 of the '439 patent to RC-1 and RC-2 because the claim language of the preamble of claim 18 of the '439 patent is identical to the preamble of claim 81 of the '439 patent. (See CX-2 at 10:35-36, 15:35-36; CPX-12; CDX-1, Slides 16, 24; CPX-289; CDX-1, Slides 20, 28.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the preamble of claim 81 of the '439 patent.

Referring to the first limitation of claim 81 the administrative law judge finds that the infringement analysis of the first limitation of claim 18 of the '439 patent with respect to RC-1 and RC-2 applies equally to the application of the first limitation of claim 81 of the '439 patent to RC-1 and RC-2 because the claim language of the first limitation of claim 18 of the '439 patent is identical to the first limitation of claim 81 of the '439 patent. (See CX-2 at 10:37-41, 15:33-41; CPX-12; CDX-1, Slides 17, 25; CPX-289; CDX-1, Slides 21, 29.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the first limitation of claim 81 of the '439 patent.

Referring to the second limitation of claim 81, the administrative law judge finds that the infringement analysis of the second limitation of claim 18 of the '439 patent with respect to RC-1 and RC-2 applies equally to the application of the second limitation of claim 81 of the '439 patent to RC-1 and RC-2 because the claim language of the second limitation of claim 18 of the '439

patent is identical to the second limitation of claim 81 of the '439 patent. (See CX-2 at 10:35-36, 15:35-36; CPX-12; CDX-1, Slide 16, Slide 24; CPX-289; CDX-1, Slide 20, 28.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the second limitation of claim 81 of the '439 patent.

Referring to the third limitation of claim 81, the administrative law judge has interpreted "ink supply port" as "a structure with an opening for the movement of ink;" and "said ink supply port being positioned at a position between the midpoint of said length of said first wall and said second wall" as the ink supply being positioned by its passage that is located between the midpoint of said length of said first wall and said second wall. (See Section V.A.1.b, supra.)

The administrative law judge finds that RC-1 has a ink supply port because it has a passageway (formed of plastic non-porous material) that extends into the interior of the tank from the bottom wall and that said ink supply port is located between the midpoint of the bottom wall and the front wall and said ink supply support is free of porous material in its region where it faces the ink absorbing member that is also contained within RC-1. (See CPX-12, CDX-1, Slide 26.)

The administrative law judge finds that RC-2 has a ink supply port because it has a passageway (formed of plastic non-porous material) that extends into the interior of the tank from the bottom wall and that said ink supply port is located between the midpoint of the bottom wall and the front wall and said ink supply support is free of porous material in its region where it faces the ink absorbing member that is also contained within RC-2. (See CPX-289; CDX-1, Slide 30.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the third limitation of claim 81 of the '439 patent.

The active respondents argued that RC-1 and RC-2 do not literally meet the third limitation of claim 81 of the '439 patent because in order for an ink cartridge to infringe, the ink cartridge must have an ink supply port, as properly interpreted, namely, grooves of the ink supply guide, which is on the print head side of the printer, and which is received within an opening in the ink cartridge, and that RC-1 and RC-2 do not have an ink supply delivery port, as properly interpreted. (RBr at 114-115.) However, the administrative law judge has already rejected the active respondents' interpretation of "ink supply port." (See Section V.A.1.b, supra.) Thus, he rejects said argument.

The active respondents also argued that RC-1 and RC-2 do not literally meet the third limitation of claim 81 of the '439 patent because claim 81 requires that "said ink supply port [be] free of porous material at least in the region thereof facing said ink absorbing member" and that this phrase, properly interpreted, requires the guide grooves 12b (i.e. opening) of the ink supply guide as being free of porous material. (RBr at 115, 116.) However, the administrative law judge has already rejected said interpretation of "said ink supply port being free of porous material at least in the region thereof facing said ink absorbing member." (See Section V.A.1.g, supra.) Thus, he rejects said argument.

The active respondents further argued that, "even if Complainants' incorrect interpretation of ink supply delivery point was adopted by the ALJ, representative cartridge 1 [and representative cartridge 2] would not have an ink absorbing member having a region facing and at least in part engaging said opening to said ink supply port delivery port. As shown in

RDX-1-1C the ink absorbing member engages a filter not an opening to said ink supply delivery port as required by claim 7 of the '957 patent." (RBr at 116.) However, the administrative law judge finds that said argument is irrelevant, as the requirements of claim 7 of the '952 patent have no bearing on whether RC-1 and RC-2 infringe claim 81 of the '439 patent. Thus, he rejects said argument.

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally infringe claim 81 of the '439 patent.

Claim 93

Claim 93 of the '439 patent is reproduced in Section V.A.1, supra. As found supra, claim 93 of the '439 patent depends on non-asserted claim 82 of the '439 patent, which depends on claim 81 of the '439 patent. The limitations of claims 82 and 93 of the '439 patent are as follows:

> 82. The ink-supply tank of claim 81, wherein said at least the portion of said ink supply port adjacent said ink absorbing material is free of ink absorbing material.
>
> 93. The ink-supply tank of claim 82, wherein said ink-supply tank includes a further wall facing the end of said elongated member, said ink absorbing member being compressingly contained in the space intermediate said further wall and said elongated member.

As found supra, both RC-1 and RC-2 literally meet the limitations of claim 81 of the '439 patent.

Referring to the claim 82 limitation,[81] as found supra, RC-1 contains an ink supply port, and an ink absorbing member. The administrative law judge finds that a portion of said ink supply port adjacent to said ink absorbing member is free of ink absorbing material. (See CPX-12; CDX-1, Slide 32.)

As found supra, RC-2 contains an ink supply port, and an ink absorbing member. The administrative law judge finds that a portion of said ink supply port adjacent to said ink absorbing member is free of ink absorbing material. (See CPX-289; CDX-1, Slide 35.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the limitation of claim 82 of the '439 patent.

Referring to the claim 93 limitation, the administrative law judge finds that RC-1 contains a further wall which faces the end of the elongated member (i.e. the ink supply port) and that the absorbing member is compressingly contained in the space intermediate said further wall and said elongated member (i.e. said ink supply port.) The administrative law judge further finds that RC-2 contains a further wall which faces the end of the elongated member (i.e. the ink supply port) and that the absorbing member is compressingly contained in the space intermediate said further wall and said elongated member (i.e. said ink supply port.) Hence, the administrative law judge finds that RC-1 and RC-2 literally meet the limitation of claim 93 of the '439 patent.

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[81] Claim 82 of the '439 patent recites the following limitation: "The ink-supply tank of claim 81, wherein said at least the portion of said ink supply port adjacent said ink absorbing material is free of ink absorbing material. (CX-2 at 15-53-55 (emphasis added).) First, the administrative law judge finds that "wherein said at least the portion..." Second, the administrative law judge finds that claim 81 of the '439 patent recites a "ink absorbing member" not a "ink absorbing material." (CX-2 at 15-42-43, 46-47, 52.) Because claims 81 and 82 of the '439 patent do not recite an antecedent basis for "said ink-absorbing material," the administrative law judge finds that "said ink absorbing material..." should read "said ink absorbing member..."

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally infringe claim 93 of the '439 patent.

Claim 149

Claim 149 of the '439 patent is reproduced in Section V.A.1, supra. Referring to the preamble of claim 149, the administrative law judge has interpreted "dot matrix printer" as "any type of printer which causes a matrix of ink dots to be placed on an ink-receiving surface to form a character, figure, graphic image, or the like, including ink-jet type dot matrix printers." (See Section V.A.1.a, supra.)

The administrative law judge finds that both RC-1 and RC-2 are ink-supply systems for an ink jet printer, and thus, both RC-1 and RC-2 are ink-supply systems[82] for a dot matrix printer. (See CPX-12, CPX-289, Murch, Tr. at 569:25-573:21, 581:10-583:5.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the preamble of claim 149 of the '439 patent.

Referring to the first limitation of claim 149, based on his examination, the administrative law judge finds that RC-1 has an ink-supply tank; that said ink-supply tank has a bottom wall (i.e. first wall); that said first wall includes a first side that faces the interior of said ink-supply tank (i.e. first side); and that said first wall includes a second side that faces the exterior of said ink-supply tank (i.e. second side). (See CPX-12, CDX-1, Slide 38.)

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[82] At the hearing, Murch testified that the "ink-supply system" is a "mechanism by which ink is supplied through a dot matrix printer" but that in the case of claim 149 of the '439 patent, "ink-supply system" is limited to "the ink-supply tank as part of the system that supplies ink." (Murch, Tr. at 569:25-573:21.) The administrative law judge finds that the active respondents failed to offer an interpretation of "ink-supply system." (See Section VI.A.1, supra.)

The administrative law judge, based on his examination, also finds that RC-2 has an ink-supply tank; that said ink-supply tank has a bottom wall (i.e. first wall); that said first wall includes a first side that faces the interior of said ink-supply tank (i.e. first side); and that said first wall include a second side that faces the exterior of said ink-supply tank (i.e. second side.) (See CPX-289, CDX-1, Slide 42.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the first limitation of claim 149 of the '439 patent.

The active respondents argued that RC-2 does not literally meet the first limitation of claim 149 of the '439 patent because the tank housing or ink supply tank is the entire tank area, not just the right-hand side of the tank housing. (Active respondents' response to CFF VI.F.10.) However, the administrative law judge has already rejected this argument in both the claim interpretation section, and the infringement section. (See Section V.A.1.b, supra.) Thus, he rejects said argument.

Referring to the second limitation of claim 149, the administrative law judge finds that the infringement analysis of the second limitation of claim 18 of the '439 patent with respect to RC-1 and RC-2 applies equally to the second limitation of claim 149 of the '439 patent because the claim language of the second limitation of claim 18 of the '439 patent is identical to the claim language of the second limitation of claim 149 of the '439 patent. (See CX-2 at 10:42-43, 20:40-41; CPX-12; CDX-1, Slide 39; CPX-289; CDX-1, Slide 43.)

The active respondents argued that RC-2 does not literally meet the second limitation of claim 149 of the '439 patent because the tank housing or ink supply tank is the entire tank area, not just the right-hand side of the tank housing. (Active respondents' response to CFF VI.F.13.)

However, the administrative law judge has already rejected this argument in the claim interpretation section. (See Section V.A.1.b, supra.) Thus, he rejects said argument.

Referring to the third limitation of claim 149, the administrative law judge has interpreted "an ink receiving and transmitting member positioned to receive ink from said ink absorbing member and constructed to transmit ink from said ink-supply tank through said wall for delivery to a dot matrix printer, said ink receiving and transmitting member including an elongated member" as "a component structure having an extended length for receiving and transmitting ink." (See Section V.A.1.c, supra.)

The administrative law judge finds that RC-1 contains an ink receiving and transmitting member positioned to receive ink from said ink absorbing member and constructed to transmit ink from said ink-supply tank through said wall for delivery to a dot matrix printer, and that said ink receiving and transmitting member includes an elongated member because, based on his examination, RC-1 contains a structure that has an extended length and extends into and below the tank; that passes through said first wall; and allows the delivery of ink from the ink tank to the dot matrix printer. (See CPX 12; CDX-2, Slide 40.) He further finds that said elongated member extends into said ink-supply tank from said first side of said first wall because said elongated member passes through the bottom wall and passes through the side facing the interior of said ink-supply tank and extends into said ink-supply tank. (See CPX 12; CDX-2, Slide 40.) He also finds that the slide detailing RC-1 shows that the area in red labeled "opening and passage of elongated member at the distal end" shows the distal end of the elongated member; that there is a passageway longitudinally therealong from the opening of said elongated member and said ink and receiving transmitting member; that said passageway is free of porous material

in the region of the ink absorbing member; and that said passageway is formed of a nonporous or plastic material, at least in said region. (See CPX 12; CDX-2, Slide 40.)

The administrative law judge finds that the preceding infringement analysis of RC-1 applies equally to RC-2. (See CPX 289; CDX-2, Slide 44.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the third limitation of claim 149 of the '439 patent.

The active respondents argued that RC-1 and RC-2 do not literally meet the third limitation of claim 18 of the '439 patent because neither RC-1 nor RC-2 have an "ink receiving and transmitting member ... including an elongated member" as properly interpreted. (RBr at 111-112.) It is argued that the phrase "ink receiving and transmitting member" as recited in claims 18, 149 and 164 of the '439 patent has the same meaning as ink supply delivery port as used, for example, in claim 7 of the '957 patent. (RBr at 111-112.) Accordingly, it is argued, that the arguments made with respect to "ink supply delivery port" apply to the phrase "ink receiving and transmitting member." (RBr at 111-112.) However, the administrative law judge has rejected said interpretation of the active respondents for both "ink supply delivery port" and "ink receiving and transmitting member comprising an elongated member." (See Section V.A.1.c, supra.) Hence, the administrative law judge rejects the active respondents' argument, with respect to claim 149 of the '439 patent.

The active respondents also argued that the elongated member of RC-1 and RC-2 does not "[engage] a portion of said ink absorbing member" because the ink absorbing member in RC-1 and RC-2 engages a filter not the elongated member of the ink receiving and transmitting member as required by claim 149 of the '439 patent. (Active respondents' response to CFF

VI.F.19; see also RBr at 162-166.) The administrative law judge has already rejected said non-infringement argument, with respect to the filter, for other asserted claims of the '439 patent, supra. Thus, the administrative law judge rejects said non-infringement argument, with respect to claim 149 of the '439 patent.

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally infringe claim 149 of the '439 patent.

Claim 164

Claim 164 of the '439 patent is reproduced in Section V.A.1, supra. As found supra, claim 164 of the '439 patent depends on non-asserted claim 163 of the '439 patent, which depends on non-asserted claim 161 of the '439 patent, which depends on claim 149 of the '439 patent. The limitations of claims 161, 163, and 164 of the '439 patent are as follows:

> 161. The ink-supply system of claim 149, wherein said ink-supply tank includes a further wall facing the end of said elongated member, said ink absorbing member being compressingly contained in the space intermediate said further wall and said ink elongated member.
>
> 163. The ink-supply system of claim 161, wherein said ink absorbing member carries substantially all of the ink in said ink-supply tank when said ink-supply tank is filled to the designed capacity of the ink-supply tank, said ink-supply tank including an inner wall surface having projections to provide a space between said ink absorbing member and said wall surface.
>
> 164. The ink-supply system of claim 163, wherein said further wall of said ink-supply tank facing said elongated member is a cover bearing on said ink absorbing member when assembled to said ink-supply tank to at least in party apply a compressive force to effect compression of said ink absorbing member, at least a portion of said projections extending from the inner wall surface of said cover.

As found supra, both RC-1 and RC-2 literally meet the limitations of claim 149 of the '439 patent.

Referring to the claim 161 limitation, the administrative law judge finds that RC-1 contains a top wall (i.e. further wall) which faces the end of the elongated member (i.e. the ink supply port) and that the ink absorbing member is compressingly contained in the space intermediate said further wall and said elongated member (i.e. said ink supply port.) (See CPX-12, CDX-1, Slide 46.)

The administrative law judge further finds that RC-2 contains a top wall (i.e. further wall) which faces the end of the elongated member (i.e. the ink supply port) and that the ink absorbing member is compressingly contained in the space intermediate said further wall and said elongated member (i.e. said ink supply port.) (See CPX-289, CDX-1, Slide 50.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the limitation of claim 161 of the '439 patent.

Referring to the claim 163 limitation, the administrative law judge finds that the ink absorbing member of RC-1 carries substantially all the ink in the ink-supply tank when said ink-supply tank is filled to the designed capacity of the ink-supply tank; and that said ink-supply tank has a top wall (i.e. inner wall surface) which has projections to provide air space at the top of the cartridge (i.e. a space) between said ink absorbing member and said wall surface. (See CPX-12; CDX-1, Slide 47; Murch, Tr. at 580:2-21.)

The administrative law judge further finds that the ink absorbing member of RC-2 carries substantially all the ink in the ink-supply tank when said ink-supply tank is filled to the designed capacity of the ink-supply tank; and that said ink-supply tank has a top wall (i.e. inner wall

surface) which has projections to provide air space at the top of the cartridge (i.e. a space) between said ink absorbing member and said wall surface. (See CPX-289; CDX-1, Slide 51; Murch, Tr. at 584:8-585:24.)

For the foregoing reasons, the administrative jaw judge finds that RC-1 and RC-2 literally meet the limitation of claim 163 of the '439 patent.

The active respondents argued that complainants failed to meet their burden in establishing that the ink supply tank of RC-1 and RC-2 is filled to the designed capacity of the tank. (Active respondents' response to CFF VI.G.8, 13.) The active respondents failed to elaborate on this conclusory statement in their post-hearing submissions, with respect to RC-1. (See Respondent Ninestar and DataProducts' Post Hearing Memorandum; Respondents Ninestar and Dataproducts' Reply Memorandum to Complainants' and Staff's Post Hearing Briefs.) However, with respect to RC-2, the active respondents argued in their post-hearing submissions, because "ink supply tank," as properly interpreted, should include the entire tank area of RC-2, not just the area on the right-hand side of the tank that contains the ink absorbing member. (RBr at 112-113; RRBr 50-53.) Thus, the active respondents argued, that complainants have failed to meet their burden to demonstrate that claim 164 of the '439 patent, is literally infringed by RC-2, because RC-2 does not have an ink absorbing member that carries substantially all of the ink in said ink-supply tank when said ink-supply tank is filled to the designed capacity of the ink-supply tank.

However, the administrative law judge has already rejected this argument in both the claim interpretation section, and the infringement section. (See Section V.A.1.b, supra.) Thus, the administrative law judge rejects the active respondents' argument.

Referring to the claim 164 limitation, the administrative law judge finds that the further wall of RC-1 is a cover bearing on said ink absorbing member when said further wall is assembled to the ink-supply tank; that said further wall, at least in part, applies a compressive force to effect compression of said ink absorbing member; and that at least a portion of the projections of said further wall extend from the inner wall surface. (See CPX-12; CDX-1, Slide 48; Murch, Tr. at 580:22-581:9.) The administrative law judge also finds that the further wall of RC-2 is a cover bearing on said ink absorbing member when said further wall is assembled to the ink-supply tank; that said further wall, at least in part, applies a compressive force to effect compression of said ink absorbing member; and that at least a portion of the projections of said further wall extend from the inner wall surface. (See CPX-289; CDX-1, Slide 52; Murch, Tr. at 588:7-589:6.) Hence, the administrative jaw judge finds that RC-1 and RC-2 literally meet the limitation of claim 164 of the '439 patent.

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally infringe claim 164 of the '439 patent.

The active respondents argued that neither RC-1 nor RC-2 infringe claim 164 of the '439 patent because claim 164 depends on claim 149, claim 149 requires an "ink receiving and transmitting member," and that neither RC-1 nor RC-2 has an "ink receiving and transmitting member" as properly interpreted. (RBr at 111-112; Active respondents' response to CFF VI.G.6-14.) However, the administrative law judge has already rejected the active respondents' argument with respect to claim 149 of the '439 patent, supra. Thus, he rejects said argument with respect to claim 164 of the '439 patent.

The active respondents argued that RC-2 does not literally infringe claim 164 of the '439 patent because the tank housing or ink supply tank is the entire tank area, not just the right-hand side of the tank housing. (Active respondents' response to CFF VI.G.12.) However, the administrative law judge has already rejected this argument in both the claim interpretation section, and the infringement section. (See Section V.A.1.b, supra.) Thus, he rejects said argument.

With respect to the represented cartridges, based upon the Matrix Stipulation, the administrative law judge finds that the Ninestar and Town Sky cartridges listed in Lists 1 and 2 of the Matrix Stipulation also infringe claims 18, 81, 93, 149, and 164 of the '439 patent.

In addition to the Ninestar and Town Sky cartridges, complainants have accused the cartridges of other respondents of infringing claims 18, 81, 93, 149, and 164 of the '439 patent. With respect to the cartridges of the MMC respondents, based on the claim interpretation of asserted claims 18, 81, 93, 149 and 164, see supra, the administrative law judge finds that the cartridges of the MMC respondents listed in CDX-2 infringe claims 18, 81, 93, 149, and 164 of the '439 patent. As to the cartridges of Dataproducts, there is testimony by Murch that those cartridges literally infringe claims 18, 81, 93, 149, and 164 of the '439 patent based upon Murch's analysis of the representative cartridges. (Murch Tr. at 594:22-595:20) Based on the claim interpretation of asserted claims 18, 81, 93, 149 and 164, see supra, the administrative law judge finds that the Dataproducts cartridges listed in CDX-2 under the "Dataproducts" tab at pages 4-17 infringe claims 18, 81, 93, 149, and 164 of the '439 patent. As for the defaulting respondents, the administrative law judge finds that the allegations of infringement of claims 18, 81, 93, 149 and '164 of the '439 patent are deemed admitted against the defaulting respondents.

With respect to the consenting respondents, the administrative law judge will address any infringement of the consenting respondents in the remedy section, infra. (See Section XI.A, infra.)

3. Claims 83 And 84 Of The '377 Patent

Claim 83

Claim 83 of the '377 patent is reproduced in Section V.A.1, supra. Referring to the preamble of claim 83, the administrative law judge has interpreted "dot matrix printer" as "any type of printer which causes a matrix of ink dots to be placed on an ink-receiving surface to form a character, figure, graphic image, or the like, including ink-jet type dot matrix printers." (See Section V.A.1.a, supra.)

The administrative law judge finds that both RC-1 and RC-2 are ink-supply systems for an ink jet printer, and thus, both RC-1 and RC-2 are ink-supply systems[83] for a dot matrix printer. (See CPX-12, CPX-289, Murch, Tr. at 570:1-573:21, 597:12-589:2, 604:21-605:5, 619:17-620:1.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the preamble of claim 83 of the '377 patent.

Referring to the first limitation of claim 83, the administrative law judge has interpreted "ink-supply tank" as "a structure that holds ink for supply to a printer," and "ink-supply delivery port" as "a structure with an opening for the movement of ink." The administrative law judge,

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[83] At the hearing, Murch testified that "ink-supply system" means the same in claim 83 of the '439 patent as it does in claim 149 of the '439 patent." (Murch ,Tr. at 597:22-598:2.) The administrative law judge finds that respondents failed to offer an interpretation of "ink-supply system." (See Section VI.A.1, supra.)

based on his examination, finds that RC-1 has a cartridge interior that holds ink (i.e. ink-supply tank) and that said ink-supply tank is formed with a cylindrical structure that extends up into the ink-supply tank from the bottom wall of the cartridge and from the bottom wall (i.e. ink-supply deliver port) that has an opening for the passage of ink from said ink-supply tank. (See CPX-12; CDX-1, Slide 54.)

The administrative law judge, based on his examination, also finds that RC-2 differs from RC-1, because RC-2 has an internal wall approximately at its center; that said internal wall divides the cartridge; that said cartridge has two components, one on the left side, and one on the right side; that the left-side component only contains free ink and does not contain an ink absorbing member; and that the right-side component contains ink and an ink-absorbing member. (See CDX-1, Slide 58, CPX-289.) However, the administrative law judge further finds that the right-side component of RC-2 comprises the ink-supply tank and that said ink-supply tank is formed with a cylindrical structure that extends up into the ink-supply tank from the bottom wall of the cartridge and from the bottom wall (i.e. ink-supply deliver port) that has an opening for the passage of ink from said ink-supply tank. (See CPX-289; CDX-1, Slide 58.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the first limitation of claim 83 of the '377 patent.

The active respondents argued that RC-1 and RC-2 do not literally meet the first limitation of claim 83 of the '377 patent because both RC-1 and RC-2 do not have an ink-supply delivery port, as properly interpreted. (RBr at 117-118; Active respondents' response to CFF VI.H.13, 19.) However, the administrative law judge has already rejected respondents'

interpretation of "ink-supply delivery port." (See Section V.A.1.b, supra.) Thus, he rejects said argument.

The active respondents argued that RC-2 does not literally meet the first limitation of claim 83 of the '377 patent because the tank housing or ink supply tank is the entire tank area, not just the right-hand side of the tank housing. (Active respondents' response to CFF VI.H.20, 23-25.) However, the administrative law judge has already rejected this argument in both the claim interpretation section, and the infringement section. (See Section V.A.1.b, supra.) Thus, he rejects said argument.

Referring to the second limitation of claim 83, the administrative law judge finds that RC-1 has a yellow structure (i.e. ink absorbing member) formed of a porous material mounted within the ink-supply tank. (See CPX-12; CDX-1, Slide 55.) He further finds that said ink-absorbing member has a region that faces the opening of the ink-supply delivery port. (See CPX-12; CDX-1, Slide 55.) He also finds that said region is being compressingly contained by said ink-supply tank against said ink-supply delivery port so that the portion of the ink absorbing member at the port is compressed more than some other region (i.e. at least the region of the ink absorbing member facing said opening is compressed relative to at least another region of the ink absorbing member.) (See CPX-12; CDX-1, Slide 55.)

The administrative law judge finds that RC-2 has a yellow structure (i.e. ink absorbing member) formed of a porous material mounted within the ink-supply tank. (See CPX-289; CDX-1, Slide 59.) He further finds that said ink-absorbing member has a region that faces the opening of the ink-supply delivery port. (See CPX-289; CDX-1, Slide 59.) He further finds that said region is being compressingly contained by said ink-supply tank against said ink-supply delivery

port so that the portion of the ink absorbing member at the port is compressed more than some other region (i.e. at least the region of the ink absorbing member facing said opening is compressed relative to at least another region of the ink absorbing member.) (See CPX-289; CDX-1, Slide 59.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the second limitation of claim 83 of the '377 patent.

Referring to the third limitation of claim 83, the administrative law judge has interpreted "said ink absorbing member substantially filling said ink-supply tank" as "said ink absorbing member largely but not necessarily completely filling said ink-supply tank." (See Section V.A.1.d, supra.) The administrative law judge finds that RC-1 has an ink absorbing member that largely but not necessarily completely fills the ink-supply tank. (See CPX-12; CDX-1, Slide 56.) He further finds that said ink-supply tank of RC-1 includes a cover that has projections extending down in the direction of the ink-supply port (i.e. inner wall surface having projections) which provides a space between said ink absorbing member and said wall surface. (See CPX-12; CDX-1, Slide 56.)

The administrative law judge finds that RC-2 has an ink absorbing member that largely but not necessarily completely fills the ink-supply tank. (See CPX-289; CDX-1, Slide 60.) He further finds that said ink-supply tank of RC-2 includes a cover that has projections extending down in the direction of the ink-supply port (i.e. inner wall surface having projections) which provides a space between said ink absorbing member and said wall surface. (See CPX-289; CDX-1, Slide 60.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the third limitation of claim 83 of the '377 patent.

The active respondents argued that RC-2 does not literally meet the third limitation of claim 83 of the '377 patent because the tank housing or ink supply tank is the entire tank area, not just the right-hand side of the tank housing. (RBr at 118-119; Active respondents' response to CFF VI.H.35.) However, the administrative law judge has already rejected this argument in both the claim interpretation section, and the infringement section. (See Section V.A.1.b, supra.) Thus, he rejects said argument.

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally infringe claim 83 of the '377 patent.

Claim 84

Claim 84 of the '377 patent is reproduced in Section V.A.1, supra. As found supra, claim 84 of the '377 patent depends on claim 83 of the '377 patent. As also found supra, both RC-1 and RC-2 literally meet the limitations of claim 83 of the '377 patent.

Referring to the claim 84 limitation, based on his examination, the administrative law judge finds that RC-1 has an air communication hole for providing air from the external area of the cartridge to the space between the ink absorbing member and the top wall (i.e. means for providing provides ambient air to the space between said ink absorbing member and said wall surface.) (See CPX-12; CDX-1, Slide 62.) The administrative law judge, based on his examination, further finds that RC-2 has an air communication hole for providing air from the external area of the cartridge to the space between the ink absorbing member and the top wall (i.e. means for providing ambient air to the space between said ink absorbing member and said

wall surface.) (See CPX-289; CDX-1, Slide 64.) Hence, the administrative law judge finds that RC-1 and RC-2 literally meet the limitation of claim 84 of the '377 patent.

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally infringe claim 84 of the '377 patent.

With respect to the represented cartridges, based upon the Matrix Stipulation, the administrative law judge finds that the Ninestar and Town Sky cartridges listed in Lists 1 and 2 of the Matrix Stipulation also infringe claims 83 and 84 of the '377 patent.

In addition to the Ninestar and Town Sky cartridges, complainants have accused the cartridges of other respondents of infringing claims 83 and 84 of the '377 patent. With respect to the cartridges of the MMC respondents, based on the claim interpretation of asserted claims 83 and 84, see supra, the administrative law judge finds that the cartridges of the MMC respondents listed in CDX-2 infringe claims 83 and 84 of the '377 patent. As to the cartridges of Dataproducts, there is testimony by Murch that those cartridges literally infringe claims 83 and 84 of the '377 patent based upon Murch's analysis of the representative cartridges. (Murch Tr. at 610:24-612:4) Based on the claim interpretation of asserted claims 83 and 84, see supra, the administrative law judge finds that the Dataproducts cartridges listed in CDX-2 under the "Dataproducts" tab at pages 18-23 infringe claims 83 and 84 of the '377 patent. As for the defaulting respondents, the administrative law judge finds that the allegations of infringement of claims 83 and 84 of the '377 patent are deemed admitted against the defaulting respondents. With respect to the consenting respondents, the administrative law judge will address any infringement of the consenting respondents in the remedy section, infra. (See Section XI.A, infra.)

4. Claims 19 And 20 Of The '148 Patent

Claim 19

Claim 19 of the '148 patent is reproduced in Section V.A.1, supra. Referring to the preamble of claim 19, the administrative law judge has interpreted "dot matrix printer" as "any type of printer which causes a matrix of ink dots to be placed on an ink-receiving surface to form a character, figure, graphic image, or the like, including ink-jet type dot matrix printers." (See Section V.A.1.a, supra.)

The administrative law judge finds that both RC-1 and RC-2 are ink-supply systems for an ink jet printer, and thus, both RC-1 and RC-2 are ink-supply systems[84] for a dot matrix printer. (See CPX-12, CPX-289, Murch, Tr. at 570:1-573:21, 614:3-13, 619:13-620:1.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the preamble of claim 19 of the '148 patent.

Referring to the first limitation of claim 19, the administrative law judge has interpreted "ink-supply tank" as "a structure that holds ink for supply to a printer," and "ink-supply delivery port" as "a structure with an opening for the movement of ink." (See Section V.A.1.b, d, supra.) The administrative law judge, based on his examination, finds that RC-1 has a cartridge interior that holds ink (i.e. ink-supply tank) and that said ink-supply tank is formed with a cylindrical structure that extends up into the ink-supply tank from the bottom wall of the cartridge and from

[84] At the hearing, Murch testified that "ink-supply system" means the same in claim 19 of the '148 patent as it does in claim 83 of the '439 patent and claim 149 of the '439 patent." (Murch, Tr. at 614:9-13.) The administrative law judge finds that the active respondents failed to offer an interpretation of "ink-supply system." (See Section VI.A.1, supra.)

the bottom wall (i.e. ink-supply deliver port) that has an opening for the passage of ink from said ink-supply tank. (See CPX-12; CDX-1, Slide 66.)

The administrative law judge, based on his examination, also finds that RC-2 differs from RC-1, because RC-2 has an internal wall approximately at its center; that said internal wall divides the cartridge; that said cartridge has two components, one on the left side, and one on the right side; that the left-side component only contains free ink and does not contain an ink absorbing member; and that the right-side component contains ink and an ink-absorbing member. (See CDX-1, Slide 69, CPX-289.) However, the administrative law judge further finds that the right-side component of RC-2 comprises the ink-supply tank and that said ink-supply tank is formed with a cylindrical structure that extends up into the ink-supply tank from the bottom wall of the cartridge and from the bottom wall (i.e. ink-supply deliver port) that has an opening for the passage of ink from said ink-supply tank. (See CPX-289; CDX-1, Slide 69.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the first limitation of claim 19 of the '148 patent.

The active respondents argued that RC-1 and RC-2 do not literally meet the first limitation of claim 19 of the '148 patent because both RC-1 and RC-2 do not have an ink-supply delivery port, as properly interpreted. (RBr at 120-121; Active respondents' response to CFF VI.J.13, 20.) However, the administrative law judge has already rejected respondents' interpretation of "ink-supply delivery port." Thus, he rejects said argument.

The active respondents argued that RC-2 does not literally meet the first limitation of claim 19 of the '148 patent because the tank housing or ink supply tank is the entire tank area, not just the right-hand side of the tank housing. (Active respondents' response to CFF VI.J.20,

23-25.) However, the administrative law judge has already rejected this argument in both the claim interpretation section, and the infringement section. (See Section V.A.1.b, supra.) Thus, he rejects said argument.

Referring to the second limitation of claim 19, the administrative law judge has interpreted "an ink absorbing member formed of a porous material and dimensioned to substantially fill the ink-supply tank" as "an ink absorbing member formed of a porous material and dimensioned to largely but not necessarily completely fill the ink-supply tank;" and "said ink absorbing member being filled with ink substantially to the desired capacity of the ink-supply tank" as "said ink absorbing member being filled with ink largely but not necessarily completely all of the ink that the tank could be desired to hold." (See Section V.A.1.a, supra.)

The administrative law judge finds that RC-1 has an ink absorbing member formed of a porous material and that said ink absorbing member is dimensioned to largely, but not necessarily completely, fill the ink-supply tank. (See CPX-12; CDX-1, Slide 67.) He further finds that the ink absorbing member of RC-1 is filled with ink largely but not necessarily completely all of the ink that the ink-supply tank could be desired to hold. (See CPX-12; CDX-1, Slide 67.) He also finds that the ink-supply tank of RC-1 includes a top wall with projections that extend down (i.e. an inner wall surface having projections) to create a space between said ink absorbing member and said top wall (i.e. to provide a space between said ink absorbing member and said wall surface.) (See CPX-12; CDX-1, Slide 67.)

The administrative law judge also finds that RC-2 has an ink absorbing member formed of a porous material and that said ink absorbing member is dimensioned to largely, but not necessarily completely, fill the ink-supply tank. (See CPX-289; CDX-1, Slide 70.) He further

finds that the ink absorbing member of RC-2 is filled with ink largely but not necessarily completely all of the ink that the ink-supply tank could be desired to hold. (See CPX-289; CDX-1, Slide 70.) He further finds that the ink-supply tank of RC-2 includes a top wall with projections that extend down (i.e. an inner wall surface having projections) to create a space between said ink absorbing member and said top wall (i.e. to provide a space between said ink absorbing member and said wall surface.) (See CPX-289; CDX-1, Slide 70.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally meet the second limitation of claim 19 of the '148 patent.

The active respondents argued that RC-2 does not literally meet the second limitation of claim 19 of the '148 patent because the tank housing or ink supply tank is the entire tank area, not just the right-hand side of the tank housing. (RBr at 121-122; Active respondents' response to CFF VI.J.28.) However, the administrative law judge has already rejected this argument in both the claim interpretation section, and the infringement section. See Section V.A.1.b, supra.) Thus, he rejects said argument.

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally infringe claim 19 of the '148 patent.

Claim 20

Claim 20 of the '148 patent is reproduced in Section V.A.1, supra. As found supra, claim 20 of the '148 patent depends on claim 19 of the '148 patent. As also found supra, both RC-1 and RC-2 literally meet the limitations of claim 19 of the '148 patent.

Referring to the claim 20 limitation, based on his examination, the administrative law judge finds that RC-1 has an air communication hole for providing air from the external area of

the cartridge to the space between the ink absorbing member and the top wall (i.e. means for providing ambient air to the space between said ink absorbing member and said wall surface.) (See CPX-12; CDX-1, Slide 62.)

The administrative law judge, based on his examination, further finds that RC-2 has an air communication hole for providing air from the external area of the cartridge to the space between the ink absorbing member and the top wall (i.e. means for providing ambient air to the space between said ink absorbing member and said wall surface.) (See CPX-289; CDX-1, Slide 64.)

For the foregoing reasons, the administrative law judge finds that RC-1 and RC-2 literally infringe claim 20 of the '148 patent

With respect to the represented cartridges, based upon the Matrix Stipulation, the administrative law judge finds that the Ninestar and Town Sky cartridges listed in Lists 1 and 2 of the Matrix Stipulation also infringe claims 19 and 20 of the '148 patent.

In addition to the Ninestar and Town Sky cartridges, complainants have accused the cartridges of other respondents of infringing claims 19 and 20 of the '148 patent.

With respect to the cartridges of the MMC respondents, based on the claim interpretation of asserted claims 19 and 20, see supra, the administrative law judge finds that the cartridges of the MMC respondents listed in CDX-2 infringe claims 19 and 20 of the '148 patent. As to the cartridges of Dataproducts, there is testimony by Murch that those cartridges literally infringe claims 19 and 20 of the '148 patent based upon Murch's analysis of the representative cartridges. (Murch Tr. at 626:1-627:2) Based on the claim interpretation of asserted claims 19 and 20, see supra, the administrative law judge finds that the Dataproducts cartridges listed in CDX-2 under

the "Dataproducts" tab at pages 24-29 infringe claims 19 and 20 of the '148 patent. As for the defaulting respondents, the administrative law judge finds that the allegations of infringement of claims 19 and 20 of the '148 patent are deemed admitted against the defaulting respondents. With respect to the consenting respondents, the administrative law judge will address any infringement of the consenting respondents in the remedy section, infra. (See Section XI.A, infra.)

5. Claims 29, 31, 34 And 38 Of The '472 Patent And Claim 165 Of The '439 Patent

Complainants argued that claims 29, 31, 34 and 38 of the '472 patent and claim 165 of the '439 patent have been asserted against "defaulting respondents Glory South, Butterfly, Acujet, Mipo, Mipo America, Tully, Wellink and Ribbon Tree Macao." (CBr at 84.) It is argued that because the allegations of infringement in complainants' amended complaint are deemed admitted against defaulting parties, the defaulting respondents infringe claims 29, 31, 34, and 38 of the '472 patent and claim 165 of the '439 patent. (CBr at 84.) As for the staff's position on defaulting respondents, see Section XI.A, infra.

With respect to the defaulting respondents, the administrative law judge finds that the allegations of infringement of claims 29, 31, 34 and 38 of the '472 patent and claim 165 of the '439 patent are deemed admitted against the defaulting respondents. See Section XI.A, infra.

D. Claim 1 Of The '401 patent

Pursuant to the Matrix Stipulation (JX-39), representative cartridge 1 (CPX-12) is the only representative cartridge which must be analyzed with respect to the infringement of claim 1 of the '401 patent, the only claim of the '401 patent in issue. (CFF VI.M.3 (undisputed).) Only the third element of claim 1 of the '401 patent is at issue with respect to representative cartridge

1 which requires that a porous member resiliently abut the inner opening of the ink supply port of an ink cartridge.[85]

Specifically, the limitation at issue with respect to the third element of claim 1 states that "said porous member resiliently abutting against said first opening of said ink supply port." Complainants asserted that representative cartridge 1 does meet that limitation; and that because the porous member is pressed up against the opening of the port, it is literally "resiliently abutting against" the inner opening of the port, even in the presence of the filter. (CBr at 88.) It is further argued that a filter has holes to allow the ink to pass through; that by resiliently abutting against the holes in the filter, the porous member "resiliently abuts" the opening of the ink supply port through the holes in that way as well; and that claim 2, which depends from claim 1 "makes clear that the porous member resiliently abuts the opening of the ink-supply port even in the presence of a filter. (Id.) Finally, complainants argued that even if the "resiliently abutting" limitation is not met literally, it is met under the doctrine of equivalents. (Id. at 88-9.)

On the other hand, the active respondents argued that representative cartridge 1 does not have a porous member resiliently abutting against the first opening of the ink supply port required by claim 1. According to the active respondents, Murch misapplies the express

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[85] In their responses to complainants' proposed findings of fact, the active respondents make the following boilerplate objections to statements that the remaining elements of claim 1 of the '401 patent are met by representative cartridge 1: "Disputed since Dr. Murch's testimony has proven to be unreliable because of its self-serving and self-contradictory nature. Accordingly, conclusory assertions by Murch are insufficient to meet Complainants' burden of demonstrating infringement by a preponderance of the evidence." (active respondents' response to CFF VI.M.11-13, 16, 26, 28.) Referring to claim interpretation the administrative law judge found Murch's testimony regarding claim interpretation consistent with the intrinsic evidence. He has also determined Murch's testimony to be reliable. Consequently, the boilerplate objections from the active respondents are found to be insufficient to challenge complainants' proposed findings of fact.

language of claim 1 and transforms the language of the limitation at issue into "resiliently abutting" any part of the ink supply port. (RBr at 123 (citing Murch, Tr. at 637, 640, 643, 660).) The active respondents further asserted that Murch acknowledges that the porous member abuts the filter, not the opening. (RBr at 123 (citing Murch, Tr. at 123).) Therefore, the active respondents concluded that the representative cartridge 1 does not infringe claim 1 of the '401 patent. (RBr at 123.)

The staff argued that the evidence shows that representative cartridge 1 does have a sponge that resiliently abuts the opening of the ink supply port and that a filter covering the opening of the port is within the scope of claim 1. (SBr at 64 (citing Perry, Tr. at 2148-49).)

The administrative law judge has visually examined representative cartridge 1. (CPX-12.) Based upon said examination and expert testimony, the administrative law judge finds that the ink cartridge has an ink supply port with a filter covering the interior opening[86] to the ink supply port. (CPX-12; Murch, Tr. at 637; Perry Tr. at 2047.) In addition, he finds that representative cartridge 1 has a "unitary porous member" in the form of a sponge which fills the chamber of the housing of the cartridge and the area around the filter and the inner opening of the ink supply port, (Murch, Tr. at 631; CPX-12; CDX-1-76 - CDX-1-78), and that when representative cartridge 1 is assembled, the sponge is compressed by the ink supply port. (CPX-12; CDX-1-78.)

The question of whether representative cartridge 1 meets the limitation at issue here depends on whether the presence of the filter covering the inner opening to the ink supply-port

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[86] The administrative law judge finds that the "first opening of the ink supply port" is the interior opening of the ink supply port inside the cartridge. ((CFF VI.M.16)(undisputed by staff); Murch, Tr. at 630:19-631:9.)

prevents the sponge (porous member) from "resiliently abutting" against that opening.[87] The administrative law judge has already specifically found that the term "abutting" in claim 1 of the '401 patent does not require direct contact between the porous member and the first opening of the ink supply port. (See Section V C.1.a. supra) Thus, the administrative law judge finds that the porous member of representative cartridge 1 does resiliently abut" the interior opening of the ink supply port and therefore, representative cartridge 1 is found to literally infringe claim 1 of the '401 patent.

As for the represented cartridges, pursuant to the Matrix Stipulation, (JX-39), the parties agreed that findings made with respect to certain representative cartridges can be applied to other represented cartridges for the purpose of finding infringement. (JX-39 at 2). Appendix B to the Matrix Stipulation specifies that for claim 1 of the '401 patent, representative cartridge 1 represents those Ninestar and Town Sky cartridges listed in List 3 to the Matrix Stipulation. (JX 39). Under the terms of the Matrix Stipulation then, findings made with respect to representative cartridge 1 and claim 1 of the '401 patent apply to those cartridges in List 3. (JX-39 at 2.) The administrative law judge has found, supra, that representative cartridge 1 infringes claim 1 of the '401 patent. Based upon the Matrix Stipulation, the administrative law judge also concludes that the Ninestar and Town Sky cartridges listed in List 3 to the Matrix Stipulation also infringe claim 1 of the '401 patent.

In addition to the Ninestar and Town Sky cartridges, complainants have accused the cartridges of other respondents of infringing claim 1 of the '401 patent. CDX-2 contains a

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[87] There is no issue among the parties that the porous member (sponge) "resiliently abuts" something. The only question raised is whether the porous member resiliently abuts the interior opening of the ink supply port in the presence of a filter over the opening.

compilation of cartridges of all respondents that Murch analyzed with respect to infringement of the asserted patents. (CFF VI.A.19 (undisputed).)

As to the cartridges of the MMC respondents the administrative law judge finds, based upon the claim interpretation of asserted claim 1, that the MMC respondents' cartridges listed in CDX-2 under the "MMC" tab at pages 72-78 infringe claim 1 of the '401 patent. (CFF VI.M.31 (undisputed).) Further, the MMC respondents do not contest that their accused cartridges infringe claim 1 of the '401 patent. (CFF VI.M.32 (undisputed).) Therefore, the administrative law judge finds that the MMC respondents' cartridges as listed in CDX-2 infringe claim 1 of the '401 patent.

As to cartridges of Dataproducts, there is testimony by Murch that those cartridges literally infringe claim 1 of the '401 patent based upon Murch's analysis of the representative cartridges. (Murch, Tr. at 663-64.) Based on the claim interpretation of asserted claim 1, see supra, the administrative law judge finds that the Dataproducts cartridges listed in CDX-2 under the "Dataproducts" tab at page 30 infringe claim 1 of the '401 patent.

Each of respondents Glory South, Butterfly, Acujet, Mipo, Mipo America, Tully, Wellink, and Ribbon Tree Macao has defaulted (defaulting respondents). Accordingly, as with the sponge patents, the administrative law judge finds that the allegations of infringement in the complaint are deemed admitted against the defaulting respondents. (CFF VI.M.33, 35, 37, 41, 43, 45, 49, 51(undisputed).)

E. Claims 1, 10 And 14 Of The '422 Patent

Pursuant to the Matrix Stipulation (JX-39), representative cartridge 7 (PCX-81) and representative cartridge 8 (CPX-103) are the only representative cartridges which must be

analyzed with respect to the infringement of asserted claims 1, 10 and 14 of the '422 patent. (CFF VI.U.2 (undisputed).)

Claim 1

Referring to representative cartridge 7, complainants argued that representative cartridge 7 meets each of the limitations of claim 1 of the '422 patent. (CBr at 137-142.) With respect to the first limitation of claim 1, complainants argued that representative cartridge 7 literally meets the first limitation because it has, inter alia, a first surface (the front wall of the cartridge which carries the memory device) that is substantially parallel to the insertion direction (the vertical direction in which the cartridge is inserted into the carriage). (Id. at 139.)

The active respondents do not address representative cartridge 7 at all in their post-hearing briefs. Instead, the active respondents argued in their responses to complainants' findings of fact that complainants had failed to establish by a preponderance of the evidence that "the 'first surface is substantially parallel to the insertion direction' as is required by the [first limitation of the] claim." The active respondents admit that the remaining elements of claim 1 of the '422 are met by representative cartridge 7. (See active respondents' responses to CFF VI.U.11, 18, and 24.)

Citing to Murch testimony, the staff argued that representative cartridge 7 infringes claim 1 of the '422 patent. (SBr at 97-8 (citing Murch, Tr. at 1062-65).)

The first element of claim 1 of the '422 patent requires:

> a container that stores ink therein and has an ink supply port connectable to the ink supply needle, the ink supply port being located in a leading end side in an insertion direction of the container into the carriage, the container further having first and

second surfaces opposite each other, the first surface being substantially parallel to the insertion direction of the container into the carriage. (CX-9, claim 1.)

With respect to the first element of claim 1 of the '422 patent and representative cartridge 7, complainants' expert Murch provided the following testimony:

Q. The entire limitation from "a container that stores" through the end of that paragraph where it says, it ends with "the container into the carriage," did you find that that language was met by representative cartridge 7?

A. Yes.

Q. And how did you conclude that?

A. If I may make reference to the photograph on the right of the cartridge, the cartridge itself is a container that stores ink therein. It has an ink-supply, the container being the cartridge itself or the interior portion of the cartridge. It has an ink-supply port, which from the outside is the element that extends below this bottom wall of the cartridge.

Q. And you are pointing to the front portion of the photograph?

A. That's right, the port being closest to the wall containing the semiconductor.

Q. And that extends down, you are pointing where it extends down below the wall there?

A. It extends below the bottom wall. It is denoted by the red line, an ink-supply port located at a leading end inside at an insertion direction of the cartridge. As I mentioned, this cartridge is installed by pushing it directly on to the carriage, so the insertion direction shown by the arrow on the right side indicates the cartridge would be pushed down on to the ink-supply needle.

Q. Okay. And where did you find the container further having first and second surfaces off of each other?

A. The container having further, further having first and second surfaces opposite each other, the first surface being substantially parallel to the insertion direction of the container into the carriage, again, at this point the first surface can be taken as the surface containing the electrode, and the second surface being a surface parallel to that surface.

Q. And when you say parallel to that surface, the second surface parallel to the first surface, where are you pointing to as the second surface?

A. The first surface would be what would be the front surface containing the electrode. The second surface would be the surface of the tank that is opposite it on the back side of the cartridge.

(Tr. at 1063:8-1065:12 (emphasis added).) Later Murch explained:

Q. And when you -- can you show the Court how you would insert that in, into the carriage?

A. In its normal use, the user would push the top of the carriage straight down, and when this engagement lever meets the element within the carriage, it locks it into place.

(Murch, Tr. at 1070:2-8 (emphasis added).)

The active respondents have raised only one challenge to complainants' allegations of infringement regarding representative cartridge 7: that Murch did not indicate that the "first surface is substantially parallel to the insertion direction" as described in claim 1. (active respondents' response to CFF VI.U.7.) According to the active respondents, Murch only indicated that the first and second surfaces were parallel to one another. (Id.) The administrative

law judge, however, finds that complainants have proven that the first element of claim 1 of the '422 patent does read on representative cartridge 7. Importantly, Murch specifically indicated that representative cartridge 7 is inserted by pushing the top of the cartridge "straight down." (Murch, Tr. at 1070:6; see also Murch, Tr. at 1064:11-16; CDX-1-311.) Murch also specifically identified the "first surface" as "the surface containing the electrode." (Murch, Tr. at 1064:24-1065:1; CDX-1-311.) From Murch's testimony and the administrative law judge's own visual inspection of representative cartridge 7, the administrative law judge concludes that the first surface of representative cartridge 7 (the surface containing the electrode) is substantially parallel to the vertical insertion direction of representative cartridge 7 identified by Murch, supra. (CPX-81.) Accordingly, the administrative law judge finds that representative cartridge 7 does infringe claim 1 of the '422 patent, as there are no other claim elements in dispute.

Referring to representative cartridge 8, complainants described representative cartridge 8 (CPX-103) as a "two-piece structure ... in which the pieces (an outer shell and an inner insert) snap together solidly to form a unitary cartridge when assembled and used." (CBr at 139 (citing CFF VI.U.6).) Complainants argued that each element of claim 1 is satisfied by representative cartridge 8. (CBr at 138-42.)

The active respondents argued that representative cartridge 8 does not infringe claim 1 of the '422 patent because claim 1 requires at least one electrode be "fixed" relative to a surface of the container and that to be "fixed" requires that there be a "permanent and secure mounted relationship between the electrode and a "container" wall surface. (RBr at 144). The active respondents further argued that the electrodes in representative cartridge 8 are mounted on the

outer shell and are not fixed relative to any surface of the removable ink container. (Id. (citing CPX-103).)

The staff agreed with complainants that representative cartridge 8 literally infringes claim 1 of the '422 patent. (SBr at 98-99 (citing Murch, Tr. at 1072-84).) The staff provided no specific argument on each claimed element, but instead cites to the Murch testimony in support of its position. (Id.)

With respect to the preamble of claim 1 the active respondents admitted that when representative cartridge 8 is assembled it is an ink cartridge that is detachably mountable on a carriage which is reciprocally movable in a recording apparatus (printer) which has an electrode, and engagement portion and an ink supply needle. (active respondents' response to CFF VI.U.13.)

Regarding the first limitation of claim 1 there is no dispute that representative cartridge 8 has a container that stores ink therein and has an ink supply port connectable to the ink supply needle, the ink supply port being located in a leading end side in an insertion direction of the container into the carriage, as is required by the first limitation of claim 1. (See active respondents' response to CFF VI.U.16.) The first limitation, however, further requires that the container must have a first and second surface opposite each other with the first surface being substantially parallel to the insertion direction of the container into the carriage. (CX-9, claim 1.) The parties dispute in this case what constitutes the "first surface" and the "second surface." According to complainants, the "first surface" is "formed by the front wall of the outer shell with the front wall of the inner insert while the "second surface" is "formed by the back wall of the outer shell together with the back wall of the inner insert." (See CBr at 139 (citing CFF VI.U.16);

CDX-1-315.) On the other hand, the active respondents asserted that the "first surface" and the "second surface" are on the front and back wall of only the inner insert, not the outer shell. (active respondents' response to CFF VI.U.16.)

The administrative law judge has construed the term "container" to mean a container that stores ink. From an examination of representative cartridge 8, the administrative law judge finds that the claimed terms first and second surfaces refer to the walls of the inner insert which contains the ink. Complainants have offered little support for their view that the first surface is a combination of both the front wall from the inner insert along with the front wall of the outer shell, except the testimony of Murch. (See CFF VI.U.16.) The administrative law judge notes, however, that Murch's testimony does not support complainants' position as Murch identified the first surface as the "surface containing the semiconductor." (Murch, Tr. at 1073:17-20.) Murch does not assert that the first surface is a combination of two separate walls. Complainants' argument is, therefore, rejected.

Murch's testimony did, however, indicate that the first surface is the end of the cartridge which contains the memory device/electrode. (Id.) Murch further concluded that the opposing wall of the cartridge constituted the back side of the cartridge. (Id.) The active respondents do not object to the complainants' determination of which end constitutes the front end (first surface) and which constitute the back end (second) surface. The administrative law judge finds that Murch's determination of the direction of the first side (front) and the second side (back) is supported by the specification. See CX-9 at col. 2:30-33 and 49-51, which label the view of FIGS. 1A and 7 showing the side with the electrode as "front" and "first" side. As the claim requires the "container" to have a first and second surfaces, the administrative law judge finds

that the "first surface" refers to the front side of the inner container which is inserted near the side of the outer shell with the memory device. The administrative law judge further finds that the "second surface" is the opposing wall of the inner container.

Thus, with respect to the inner insert or container, the administrative law judge finds that the inner insert does have first and second surfaces opposite to each other as required by the first limitation of claim 1. With respect to the question of whether the first surface of the container is substantially parallel to the insertion direction of the container, Murch testified that the container is "pushed directly onto the carriage." (Murch, Tr. at 1074:2-6; CDX-1-315.) From a visual inspection of representative cartridge 8, and in particular the "first surface" of the container, the administrative law judge finds that the first surface is substantially parallel to the insertion direction of the container. (CPX-103; CDX-1-315.) Accordingly, the administrative law judge finds that representative cartridge 8 satisfies the first limitation of claim 1.

With respect to the second limitation of claim 1, complainants argued that representative cartridge 8 meets the limitation literally under either parties' view of what constitutes the first surface. (CBr at 140-41.) According to complainants, if the first surface is found to be on the inner insert, the memory device is still fixed relative to the first surface of the container even though it is not located physically on the first surface. (CBr at 140.)

The active respondents argued that representative cartridge 8 does not meet the second limitation because the memory device is not located on a wall of the ink container. Further the active respondents argued that even after the ink container has been inserted into the outer shell, there is "movement and play" between the outer wall carrying the electrodes and the first wall of

the ink container" and therefore, the electrodes cannot be fixed relative to the inner insert. (active respondents' response to CFF VI.U.19.)

The second limitation requires:

> a memory device having at least one electrode for electrical connection to the electrode of the carriage, the at least one electrode of the memory device being fixed relative to the first surface of the container. (CX-9, claim1.)

Murch testified that for representative cartridge 8, the memory device having at least one electrode for electrical connection to the electrode of the carriage is located on the "greenish area" which is clearly labeled as the green board on CDX-1-316. (CPX-103; Murch, Tr. at 1074:7-22.) The active respondents do not dispute the location of the memory device. The active respondents however, do argue that the memory device is not fixed relative to the first surface of the container because of the asserted movement and play between the insert and the outer shell. (active respondents' response to CFF VI.U.19.) In support of their argument, the active respondents cited to the testimony of their expert Perry regarding CPX-193 indicating that "there is a fair amount of movement" in that two piece design. (See Active respondents' response to CFF VI.U.19-20; Perry, Tr. at 2060-61.) In rebuttal, complainants argued that the assembled cartridge remains essentially fixed relative to the shell, including the electrodes. (CBr at 53 n.38.) The administrative law judge finds that Murch's testimony that a two piece cartridge will form "a fairly solid mounting when it's assembled" supports complainants' argument. (Murch, Tr. at 771:14-25.) Regardless of the fact that Perry's testimony does not relate to representative cartridge 8 (CPX-103), the administrative law judge finds that a physical inspection of representative cartridge 8 shows in actuality that there is very little movement between the outer

shell and the inner insert. Thus, the administrative law judge finds that the memory device affixed to the outer shell is "fixed relative to the first surface of the container," and therefore, representative cartridge 8 satisfies the second limitation of claim 1 of the '422 patent.[88]

Referring to the third limitation of claim 1 complainants argued once again that the first surface is a combination of the front wall of the insert together with the front wall of the outer shell. (CBr at 142.) Based upon Murch's testimony, complainants concluded that representative cartridge 8 meets the third limitation of claim 1.

The active respondents disagreed with complainants' assertion regarding what constitutes the "first surface," arguing that the first surface is on the insert. (active respondents' response to CFF VI.U.25.)

The third limitation requires:

> a retaining member disposed on the first surface of the container, and having a movable engagement portion that can shift position relative to the first surface of the container and which is located at a trailing end side relative to the at least one electrode of the memory device in the insertion direction of the container into the carriage, and which is engageable with the engagement portion of the carriage. (CX-9, claim 1.)

The administrative law judge has already determined, supra, that the first surface of the container is on the inner insert. With respect to the identification of the claimed "retaining member" and "moveable engagement portion," Murch provided the following testimony during the hearing:

> Q. All right. Let's go to slide CDX-1-317. Did you form an opinion as to whether the limitation that

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[88] As analyzed, in the section on claim construction, the administrative law judge has already determined that to be "fixed relative to the first surface" does not require that the memory device actually be affixed to that first surface.

begins "a retaining member disposed on" and concludes with the end of the claim was found in representative cartridge 8?

A. Yes, I did.

Q. And did you so find?

A. Yes.

Q. And how did you find that?

A. The limitation calls for a retaining member disposed on the first surface of the container. We identified the first surface as being the surface containing the electrode. The retaining member is above the electrode, extends out and away from the first surface. It has a moveable engagement portion, which is shown on the right-hand drawing as an arced arrow, indicating that the retainer can be moved towards the cartridge.

It can shift position relative to the first surface, i.e., towards the cartridge or the container. And it is located at the trailing end side relative to the at least one electrode of the memory device. Upon insertion as the cartridge moves into the carriage, the memory device engages first and the lever is on the trailing end. And that lever is engageable with a corresponding portion within the carriage, so all of the limitations of the claim are met.

(Tr. at 1075:22-1077:2 (emphasis added).)

Murch identified, supra, that the "retaining member" is the lever above the electrode and extending away from the first surface." (Murch, Tr. at 1076:11-12.) Murch further identified, supra, that the "moveable engagement portion" is the protrusion on the retaining member as identified in CDX-1-317. (Murch, Tr. at 1076:13-16.) The active respondents do not dispute Murch's identification of the "retaining member" or the "moveable engagement portion." (See

active respondents' response to CFF VI.U.25.) From this testimony and a visual inspection of representative cartridge 8, the administrative law judge finds that the "retaining member" is attached to the inner insert (first surface) and extends outward above the electrode. (CPX-103; CDX-1-317.) The administrative law judge further finds that the protrusion on the retaining member, as identified in CDX-1-317, is the "moveable engagement portion" which upon visual inspection by the administrative law judge can shift position relative to the first surface of the container as it is moveable toward the ink container. (Id.; see also Murch, Tr. at 1076:13-16.) Also, the administrative law judge finds upon his visual inspection that the "moveable engagement portion" is located above the electrode at the end opposite the insertion direction of the cartridge which has been established as a downward movement, and therefore the "moveable engagement portion" is located "at a trailing end side relative to the at least one electrode of the memory device in the insertion direction of the container into the carriage." (CPX-103; CDX-1-317; see also Murch, Tr. at 1074:2-6) Finally, the administrative law judge finds that the "moveable engagement portion" of the lever engages with the engagement portion of the carriage. (See Murch, Tr. at 1076:24-1077:2, supra.) Accordingly, the administrative law judge finds that representative cartridge 8 meets the third limitation; and therefore, that it literally infringes claim 1 of the '422 patent.

Claim 10

Referring to representative cartridge 7, complainants argued that representative cartridge 7 meets each of the limitations of claim 10 of the '422 patent and further argued that the active respondents did not dispute infringement of claim 10 of the '422 patent by representative cartridge 7. (CBr at 143-45.)

The active respondents have presented their primary infringement arguments with respect to representative cartridge 7 in their responses to complainants' findings of fact. In particular, the active respondents argued that complainants had failed to establish by a preponderance of the evidence that "the 'first surface [of representative cartridge 7] is substantially parallel to the insertion direction' as is required by the [second limitation of the] claim." According to the active respondents, "Dr. Murch's testimony merely speaks of the first and second surfaces being parallel to one another." (active respondents' response to CFF VI.V.17.) The active respondents admit that the remaining elements of claim 10 of the '422 are met by representative cartridge 7. (See active respondents' responses to CFF VI.V.11, 15, 24, and 30.)

Citing to Murch testimony, the staff argued that representative cartridge 7 infringes claim 14 of the '422 patent. (SBr at 99-100)(citing Murch, Tr. at 1084-90.)

The second element of claim 10 of the '422 patent requires:

> a memory device having at least one electrode for electrical connection to the recording device, the at least one electrode being fixed relative to a first of two opposite surfaces substantially parallel with the insertion direction of the container.

With respect to claim 10 of the '422 patent and representative cartridge 7, Murch provided the following testimony:

> Q. And did you -- let's go to CDX-1-320, please. Did you form an opinion as to whether the limitation that begins "a memory device having at least one electrode" and concludes at that end of that paragraph with "insertion direction of the container" was met by representative cartridge 7?
>
> A. I did.
>
> Q. And how did you find that?

A. The memory device having at least one electrode, electrical connection for electrical connection to the recording device is located here on the first surface. That's the green area with the gold electrodes.

"At least one electrode being fixed relative to a first of two opposite surfaces substantially parallel with the insertion direction of the container," again, the insertion direction of the container is straight down, shown by the arrow. And the limitation requires that that electrode be fixed relative to a first surface, the first of two opposite surfaces substantially parallel with the insertion direction, so that would be this surface upon which the electrode is contained.

Q. For the record, excuse me, when you said "that this", that would be this surface, what are you referring to?

A. "This surface" would be the first surface containing the electrode. And the second surface would be the back side, the opposite side in parallel to the first surface.

Q. Okay. And so the first surface would be the front side?

A. The front side, correct.

(Tr. at 1087:6-1088:16 (emphasis added).)

The active respondents have raised only one challenge to complainants' contention that representative cartridge 7 infringes claim 10 of the '422: that complainants have failed to show by a preponderance of the evidence that the first surface is parallel to the insertion direction of the cartridge. (See active respondents' response to CFF VI.V.17.) The administrative law judge, however, finds that complainants have carried the necessary burden to prove infringement of claim 10 of the '422 patent by representative cartridge 7. First, Murch plainly identified the "first

surface" as "th[e] surface on which the electrode is contained" or "[t]he front side." (Murch, Tr. at 1088:5-16.) Murch further identified the gold electrodes as located on the green area on the front of the cartridge. (Id. at 1087:15-19) In addition, Murch testified that the insertion direction of representative cartridge 7 is "straight down" as illustrated by CDX-1-320. (Murch, Tr. at 1087:20-25.) From such testimony and a visual inspection by the administrative law judge of representative cartridge 7, the administrative law judge finds that "the at least one electrode [is] fixed relative to a first of two opposite surfaces substantially parallel with the insertion direction of the container." (CPX-81.) Accordingly, the administrative law judge finds that representative cartridge 7 does infringe claim 10 of the '422 patent.

With respect to representative cartridge 8, complainants argued that the analysis of the first three limitations is similar to the analysis set forth for claim 1. (CBr at 144.) Complainants further argued that each limitation of claim 10 is met by representative cartridge 8. (Id. at 144-45.)

The active respondents made the same arguments with regard to infringement of claim 10 that they did for claim 1. Only the second and third limitations are at issue here as the active respondents have admitted that representative cartridge 8 meets the remaining limitations of claim 10. (See active respondents' response to CFF VI.V.12, 15, and 31.)

The second limitation of claim 10 contains the disputed term "the at least one electrode being fixed relative to a first of two opposite surfaces ...." (CX-9, claim 10.) The active respondents argued that because of the "movement and play" between the outer wall carrying the electrodes and the first wall of the ink container, the second limitation is not met. According to the active respondents, due to that movement, one is not fixed relative to the other. (RBr at 144;

active respondents' response to CFF VI.V.19-20.) As found, supra, the administrative law judge has already determined that with respect to representative cartridge 8 that the memory device having at least one electrode affixed to the outer shell is "fixed relative to the first surface of the container." It has also already been established that the insertion direction of representative cartridge 8 is straight downward. See also Murch, Tr. at 1092:16-1093:16; CDX-1-326. Thus upon visual inspection by the administrative law judge of representative cartridge 8, the administrative law judge finds that representative cartridge 8 has "a memory device having at least one electrode for electrical connection to the recording device, the at least one electrode being fixed relative to a first of two opposite surfaces substantially parallel with the insertion direction of the container." (CPX-103; Murch, Tr. at 1192:5-15 ; CDX-1-326.) The administrative law judge, therefore, finds that representative cartridge 8 satisfies the requirements of the second limitation of claim 10.

The third limitation of claim 10 requires that a retaining member be "disposed on the first surface." (CX-9, claim 10.) At issue is whether the "first surface" is located on the inner insert. (See CFF VI.V.26 and active respondents' response to CFF VI.V.26.) The remainder of the limitation is not in dispute by the parties.

The administrative law judge has already determined that the "first surface" is located on the inner insert of representative cartridge 8. With respect to the claimed retaining member, Murch testified that the retaining member of representative cartridge 8 is depicted in CDX-1-326. From a visual inspection by the administrative law judge of representative cartridge 8 and the testimony of Murch the administrative law judge finds that representative cartridge 8 does have a retaining member as labeled on CDX-1-326. However, the administrative law judge finds that

the retaining member is located on the first side of the ink cartridge rather than the outer shell. (CPX-103.) Thus, representative cartridge 8 has a retaining member disposed on the first surface such that representative cartridge 8 also meets that requirements of the third limitation of claim 10.

Based on the foregoing, the administrative law judge finds that representative cartridge 8 infringes claim 10 of the '422 patent as all limitations of claim 10 are met.

Claim 14

With respect to representative cartridge 7, complainants argued that the analysis of claim 14 is similar to that of claim 1 and that representative cartridge 7 meets each of the limitations of claim 14 of the '422 patent. (CBr at 145-46.)

The active respondents argued in their responses to complainants' findings of fact that complainants had failed to establish by a preponderance of the evidence that "the 'electrode [is] connected to main circuit components.'" (See active respondents' response to CFF VI.W.18.) According to the active respondents, Murch "makes no attempt to address the limitation requiring connection to the main circuit components." (Id.) Thus, only the second element of claim 14 is at issue. The active respondents admit that the remaining elements of claim 14 of the '422 are met by representative cartridge 7. (See active respondents' responses to CFF VI.W.12, 15, 25, and 29.)

Citing to the Murch testimony, the staff concluded that representative cartridge 7 does infringe claim 14 of the '422 patent. (SBr at 101 (citing CPX-81); Murch, Tr. at 1099-1102; CDX-1-332.)

The second element of claim 14 of the '422 patent requires:

> at least one electrode connected to the main circuit components of a memory device, the at least one electrode being fixed relative to the first wall. (CX-9, claim 14.)

At issue is whether complainants have proven by a preponderance of the evidence that "at least one electrode [is] connected to the main circuit components of a memory device." With respect to claim 14 and representative cartridge 7, Murch provided the following testimony:

> Q. And let's go to CDX-1-330. Did you form an opinion as to whether the language "at least one electrode connected to make circuit components of a memory device, the at least one electrode being fixed relative to the first wall" is found in representative cartridge 7?
>
> A. Yes, I did.
>
> Q. And what did you conclude?
>
> A. The electrode on the -- excuse me. The at least one electrode connected to the main circuit components of a memory device, the memory device is located on the first wall, the greenish area with the electrodes shown as a gold denoted in the photograph as with a pointer "electrodes connected to the memory device."
>
> At least one electrode being fixed relative to the first wall, the electrodes are fixed relative to the first wall, the first wall being the electrodes, the wall upon which the electrodes are located.

(Murch, Tr. at 1100:3-23 (emphasis added).) In the emphasized passage above, the administrative law judge finds, contrary to the assertions of the active respondents, that Murch did identify that representative cartridge 7 does have "at least one electrode connected to main circuit components of a memory device" and further identified said electrodes as "shown as a gold." (Murch, Tr. at 1100:14-18.) Thus, the administrative law judge finds that the

representative cartridge 7 meets the second limitation of claim 14 of the '422 and therefore, that representative cartridge 7 infringes claim 14 of the '422 patent.

Referring to representative cartridge 8 complainants argued that the analysis of the claim 14 is similar to the analysis set forth for claim 1. (CBr at 146.) Complainants further argued that each limitation of claim 14 is met by representative cartridge 8. (Id. at 146.)

The active respondents made the same arguments with regard to infringement of claim 14 that they did for claim 1. (RBr at 144.) Only the first and second limitation are at issue here as the active respondents have admitted that representative cartridge 8 meets the remaining limitations of claim 14. (See active respondents' response to CFF VI.W.13, 26, and 29.)

Citing to Murch testimony, the staff argued that representative cartridge 8 infringes claim 14 of the '422 patent. (SBr at 101-02 (citing CPX-103); Murch, Tr. at 1102-06; CDX-1.)

The first limitation of claim 14 reads simply "a container with a first wall." (CX-9, claim 14.) In issue is whether the "first wall" of the container is on the inner insert or somewhere else. As found several times, supra, the administrative law judge has determined that the ink "container" in representative cartridge 8 is the inner insert and therefore, the "first wall" of the container is also on the inner insert. The parties do not dispute that the "first wall is in the direction of the electrode, as was the "first surface" in claims 1 and 10. (See Murch, Tr. at 1103:10-12.) As the inner insert of representative cartridge 8 has a front wall in the direction of the electrode, the administrative law judge finds that representative cartridge 8 meets the first limitation of claim 14.

Referring to the second limitation of claim 14, complainants argued that the analysis of claim 14 is similar to claim 1 and that representative cartridge 8 infringes claim 14 of the '422 patent. (CBr at 146.)

The active respondents argued that complainants failed to establish by a preponderance of the evidence that representative cartridge 8 meets the second limitation because Murch does not specifically state that the electrode is connected to the main circuit component. (active respondents' response to CFF VI.W.20.) Further, the active respondents contended that because of the "movement and play" between the outer shell and the inner insert, the electrode on the outer shell cannot be fixed relative to a first wall, which is on the inner insert. (RBr at 144 (citing NRFOF 11.20).)

The second limitation recites "at least one electrode connected to main circuit components of a memory device, the at least one electrode being fixed relative to the first wall." (CX-9, claim14.) With respect to whether the complainants have proven that the "at least one electrode" is connected to the main circuit components, Murch provided the following testimony:

> Q. Okay. Can we go to the next slide, please, CDX-1-335. Did you form an opinion as to whether the limitation that begins "at least one electrode" and ends up at the end of that paragraph was found with respect to representative cartridge 8?
>
> A. Yes, I did.
>
> Q. And how do you find that?
>
> A. The at least one electrode, the electrodes are the gold area on the memory device, and the limitation requires that at least one electrode which is connected to the main circuit of that memory device, the at least one electrode being fixed relative

> to the first wall. This is the first wall. And the electrodes are fixed relative to the first wall.

(Murch, Tr. at 1103:16-1104:7 (emphasis added).) From that testimony, the administrative law judge finds that the "at least one electrode" is the "gold area on the memory device" and that the "at least one electrode" is connected to the "main circuit of the memory device." Thus, the administrative law judge finds that complainants have established that representative cartridge 8 has "at least one electrode connected to main circuit components of a memory device."

With respect to whether the at least one electrode is fixed relative to the first wall, the administrative law judge has already found with respect to claim 1 of the '422 and representative cartridge 8 that the walls of the container are on the inner insert and the "at least one electrode" affixed on the outer shell is indeed fixed relative to the first wall of the inner insert despite a very slight movement between the shell and the insert when they are connected. Thus, the administrative law judge finds that representative cartridge 8 meets the requirements of the second limitation of claim 14, and therefore, that representative cartridge 8 infringes claim 14 of the '422 patent.

Referring to represented cartridges, pursuant to the Matrix Stipulation, (JX-39), the parties agreed that findings made with respect to certain representative cartridges can be applied to other represented cartridges for the purpose of finding infringement. (JX-39 at 2.) Appendix B to the Matrix Stipulation specifies that for claims 1, 10, and 14 of the '422 patent, representative cartridges 7 and 8 represent those Ninestar and Town Sky cartridges listed in Lists 40 and 41, respectively, to the Matrix Stipulation. (JX 39.) Under the terms of the Matrix Stipulation then, findings made with respect to representative cartridges 7 and 8 and claims 1, 10, and 14 of the

'422 patent apply to those cartridges in Lists 40 and 41. (JX-39 at 2.) The administrative law judge has found, supra, that representative cartridges 7 and 8 infringe claims 1, 10 and 14 of the '422 patent. Based upon the Matrix Stipulation, the administrative law judge also concludes that the Ninestar and Town Sky cartridges listed in Lists 40 and 41 to the Matrix Stipulation also infringe claims 1, 10 and 14 of the '422 patent.

In addition to the Ninestar and Town Sky cartridges, complainants have accused the cartridges of other respondents of infringing claims 1, 10 and 14 of the '422 patent. CDX-2 contains a compilation of cartridges of all respondents that Murch analyzed with respect to infringement of the asserted patents. (CFF VI.A.19 (undisputed).)

As to the cartridges of the MMC respondents, the administrative law judge finds, based upon the claim interpretation of asserted claims 1, 10 and 14, see supra, that the cartridges listed in CDX-2 under the "MMC" tab at pages 123-125 infringe claims 1, 10 or 14 of the '442 patent. (CFF VI.U.32, VI.V.36, VI.W.34 (undisputed).) Further, the MMC respondents do not contest that the accused cartridges infringe claims 1, 10 and 14 of the '422 patent. (CFF VI.U.33, CFF VI.V.37, CFF VI.W.35 (undisputed).) Therefore, the administrative law judge finds that the cartridges of the MMC respondents listed in CDX-2 infringe claims 1, 10 and 14 of the '422 patent as listed in CDX-2. (CFF VI.U.33; CFF VI.V.37; CFF VI.W.35 (undisputed).)

As to the cartridges of Dataproducts, there is testimony by Murch that those cartridges literally infringe claims 1, 10 and 14 of the '422 patent based upon Murch's analysis of the representative cartridges. (Murch, Tr. at 1114-16; 1305-06.) Based on the claim interpretation of asserted claims 1, 10 and 14, see supra, the administrative law judge finds that the

Dataproducts cartridges listed in CDX-2 under the "Dataproducts" Tab at pages 58-60 infringe claims 1, 10 or 14 of the '422 patent as specified in CDX-2.

Each of respondents Glory South, Butterfly, Acujet, Mipo, Mipo America, Tully, Wellink, and Ribbon Tree Macao has defaulted (defaulting respondents). Accordingly, as with claim 1 of the '401 patent, the administrative law judge finds that the allegations of infringement in the complaint as to claims 1, 10 and 14 of the '422 patent are deemed admitted against the defaulting respondents. (CFF VI.U.34, 36, 38, 40, 42, 44, 46, 48, CFF VI.V.38, 40, 42, 44, 46, 48, 50, 52, CFF VI.W.36, 38, 40, 42, 44, 46, 48, 50 (undisputed).)

F. Claim 1 of the '053 patent

Pursuant to the Matrix Stipulation (JX-39), representative cartridge 2 (CPX-289) and representative cartridge 9 (CPX-193) are the only representative cartridges which must be analyzed with respect to the infringement of claim 1 of the '053 patent, the only claim of the '053 patent in issue. (CFF VI.X.3 (undisputed).)

Referring to representative cartridge 2 only the third limitation is at issue as the active respondents have admitted that representative cartridge 2 (CPX-289) meets the remaining limitations of claim 1 of the '053 patent. (See active respondents' responses to CFF VI.X.9, 12, 15, 21, 28, 31.) Complainants argued that representative cartridge 2 meets each of the limitations of claim 1 of the '053 patent. (CBr at 149-53.) Specifically with respect to the third limitation, complainants further argued that the "retaining member" of representative cartridge 2 is the "structure that extends away from the front wall in an upward direction." (CBr at 150 (citing CFF VI.X.18-19).) According to complainants, the retaining member also has a bump or "protruding engagement portion." (Id.)

The active respondents argued that the third limitation does not read on representative cartridge 2 because the testimony that complainants cited in support of their assertions of infringement does not support a conclusion that the protruding engagement portion extends below the bottom wall.[89] (See active respondents' response to CFF VI.X.18.)

Citing to Murch testimony, the staff argued that representative cartridge 2 infringes claim 1 of the '053 patent. (SBr at 103 (citing Murch, Tr. at 1129-35).)

The third limitation of claim 1 of the '053 patent reads:

> a retaining member disposed on the first side wall, the retaining member having a protruding engagement portion (CX-11, claim 1.)

With respect to representative cartridge 2, Murch testified that:

> Q. Can we see CDX-1-341, please. Did you form an opinion as to whether the limitation "a retaining member disposed on the first side wall, the retaining member having a protruding engagement portion" is found with respect to representative cartridge 2?
>
> A. Yes.
>
> Q. And how do you find that?
>
> A. The retaining member is disposed on the first side wall, as we defined the first side wall being the wall closer to the ink-supply port, the extension that extends below the bottom wall, and that the retaining member has a protruding engagement portion on the member, as shown with the arrow pointing to the protruding engagement portion.

(Murch, Tr. at 1132:1-8 (emphasis added).)

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[89] The active respondents have placed their arguments with respect to representative cartridge 2 only in their responses to complainants' proposed findings of fact. The administrative law judge has nevertheless considered those arguments despite the fact that they should have been, at the very least, referenced in the post-hearing briefing.

Importantly, Murch specifically identified the "retaining member," "first wall," and "protruding engagement portion" of representative cartridge 2.[90] From his visual inspection of representative cartridge 2, the administrative law judge finds that representative cartridge 2 does meet the requirements of the third limitation of the '053 patent. (CPX-289; see also Murch, Tr. at 1131-32.) Specifically, the administrative law judge finds that the retaining member is the lever that is disposed on the first side wall of the ink container, which according to the second limitation of claim one, is the side wall closest to the ink supply port. (CPX-289; CX-11, claim 1.) Further, the administrative law judge finds that the "retaining member" has a "protruding engagement portion" that appears on the "retaining member" in the form of a bump. (CPX-289; see also Murch, Tr. at 1131:18-1132:8; CDX-1-341.) Thus, the requirements of the third limitation of claim 1 are satisfied by representative cartridge 2, and therefore, the administrative law judge finds that representative cartridge 2 infringes claim 1 of the '053 patent.

Referring to representative cartridge 9, complainants argued that representative cartridge 9 meets each of the limitations of claim 1 of the '053 patent. (CBr at 149-53; Murch, Tr. at 1135:14-25.)

The active respondents argued that representative cartridge 9 does not infringe claim 1 of the '053 patent. Only the third and fourth limitations are at issue as the active respondents have

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[90] Murch's analysis accords with the specification of the '053 patent. For example, Figures 1A and 1B of the specification of the '053 patent identify lever 9 as a retaining member, see CX-11 at col. 11:10, and in his testimony. Murch has identified such a lever on representative cartridge 2 to be the claimed "retaining member." (Murch, Tr. at 1132:1-8; CDX-1-341.)

admitted that representative cartridge 9 meets the remaining limitations of claim 1 of the '053 patent. (See active respondents' responses to CFF VI.X.10, 13, 16, 29 and 32.)

Citing to Murch testimony, the staff argued that representative cartridge 9 infringes claim 1 of the '053 patent. (SBr at 103-04 (citing Murch, Tr. at 1136-48).)

The third limitation of claim 1 of the '053 patent requires:

> a retaining member disposed on the first side wall, the retaining having a protruding engagement portion. (CX-11, claim 1.)

At issue is whether representative cartridge 9 (CPX-193) infringes claim 1 of the '053 patent. In his testimony, Murch described representative cartridge 9 as follows:

> Again, this is the cartridge that assembles from two pieces, an inner insert and an outer shell. When they are snapped together, they fit together solidly and form the complete ink cartridge. (Murch, Tr. at 1140:2-11.)

Before assessing whether representative cartridge 9 has the required "retaining member," the administrative law judge must first determine where the "first side wall" is located. The administrative law judge finds that the first limitation of claim 1 of the '053 patent specifies that "the first side wall" is on the "ink container" of the claimed ink cartridge.[91] Following a visual inspection by the administrative law judge of representative cartridge 9, the administrative law judge finds that the "ink container" is the inner insert of representative cartridge 9 because it contains the ink, and that the claimed "first wall" is, therefore, on the inner insert rather than the outer housing.

With respect to which end of the cartridge is the first side, Murch testified:

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[91] The first limitation of claim 1 recites "an ink container having an upper wall, a bottom wall, a first side wall and a second side wall" (CX-11, claim1 (emphasis added).)

> Q. Okay. And have you indicated -- how have you indicated, for example, the second side wall on CDX-1-346?
>
> A. I have indicated the second side wall to be the back wall or the wall containing the projection and the semiconductor, and the first side wall being the front wall or the wall closest to the port. (Murch, Tr. at 1140:21-1141:3 (emphasis added).)

The active respondents do not object to complainants' determination of which end constitutes the front (first side wall) and which end constitutes the back (second side wall). (See RBr at 145-46.) The administrative law judge finds that Murch's determination of the direction of the first side wall (front) and the second side wall (back) is supported by the language of claim 1 which recites that the ink supply port[92] is closer to the first side wall than the second side wall. (CX-11, claim 1.) Thus, with respect to the inner insert (or ink container), the administrative law judge finds that the "first side wall" of the "ink container" of representative cartridge 9 is the side of the inner insert that is closest to the ink supply port, or the front end of the inner insert.

In addition, Murch testified with respect to the claimed "retaining member" and "protruding engagement portion" as follows:

> Q. And let's go to CDX-1-348. Did you form an opinion as to whether a retaining member disposed on the first side wall of the retaining member having a protruding engagement portion is found with respect to representative cartridge 9?
>
> A. Yes, I did.
>
> Q. And how did you find that?
>
> A. The first side wall is defined as the wall closest to the ink-supply port, the element exiting the bottom one. There is a retaining member

[92] Murch identified the ink supply port as "the element exiting the bottom." (Murch, Tr. at 1143:1-7, CDX-1-346.)

> disposed in the first side wall, which is shown here marked as the retaining member that extends upward and away from the wall.
>
> Q. In an angular --
>
> A. At an angle off from the first wall. And it contains a protruding engagement portion, which is basically a bump or a little element on that retaining lever, which is marked as the protruding engagement portion, so, again, all the limitations are contained in the, are contained. (Murch, Tr. at 1142:18-1143:15 (emphasis added).)

Importantly, Murch specifically identified the "retaining member" and the "protruding engagement portion" of representative cartridge 9. From a visual inspection by the administrative law judge, the administrative law judge finds that the representative cartridge 9 does have a retaining member which is a lever disposed on the first side wall of the ink container (inner insert). (CPX-193.) The administrative law judge further finds that there is a protruding engagement portion (bump) on the retaining member of representative cartridge 9. (CPX-193; CDX-1-341.) Thus, the administrative law judge finds that representative cartridge 9 meets the requirements of the third element of claim 1 of the '053 patent.

As for the fourth limitation, the parties agreed that the claimed "projecting portion" extends outward from outer shell. (CBr at 151; RBr at 145.) Complainants argued that the projection portion is on the second side wall, and therefore, is "in a region where a plane of the second side wall and a plane of the bottom wall intersect" as required by the fourth limitation of claim 1. (CX-11, claim 1.)

The active respondents, however, contended that the fourth limitation is not met because the "projecting portion" is on the outer shell, and therefore, is not "in a region where a plane of

the second side wall and a plane of the bottom wall intersect" as both the second side wall and bottom wall are located on the inner insert. (RBr at 145 (referring to Perry testimony).)

The fourth limitation of claim 1 requires:

> a projecting portion located in a region where a plane of the second side wall and a plane of the bottom wall intersect, and extending away from the first side wall, the projecting portion having a surface lying in a plane that is substantially parallel to the axis.

(CX-11, claim 1.) Referring to CDX-1-349, Murch identified the "projecting portion" of representative cartridge 9 as extending away from the back of the outer shell of the ink cartridge. (Murch, Tr. at 1145:23-1146:9; CDX-1-349.) From his visual inspection, the administrative law judge finds that the claimed projecting portion is located on the outer shell near its bottom edge, and not on the second side wall of the ink container (inner insert).[93] (CPX-193.) However, the administrative law judge finds that the "projecting portion" of representative cartridge 9 is nevertheless located "in a region where a plane of the second side wall and a plane of the bottom wall intersect" as the phrase "in a region where" is a broad term that encompasses a situation in which the projecting portion is not positioned on the second side wall itself. The administrative law judge further finds that there is nothing in the language of the claims or the specification that requires the projecting portion actually to be on the second side wall of the ink container. Also, the administrative law judge finds that the "projecting portion" of representative cartridge 9 extends away from the first side wall, as required by the fourth limitation of claim 1. (CPX-193; CDX-1-349.)

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[93] As discussed, supra, the administrative law judge found that the first and second side walls are located on the inner insert of representative cartridge 9. (CX-11, claim 1; CPX-193.)

With respect to whether the "projecting portion" is substantially parallel to the axis, Murch testified:

> The projection portion then is required to extend away from the first side wall and the projection portion having a surface lying in a plane that is substantially parallel to the axis, so the axis was previously defined as a line drawn through the center of the ink port through the cartridge.
>
> Q. Is that vertical?
>
> A. Which would be a vertical line extending up through the supply port of the cartridge. The projection portion is parallel to that axis. (Murch, Tr. at 1146:17-1147:3 (emphasis added).)

From his visual inspection of representative cartridge 9, the administrative law judge find that the projecting portion of representative cartridge 9 has "a surface lying in a plane that is substantially parallel to the axis," as defined by Murch. (CPX-193; CDX-1-349.) Thus, the administrative law judge finds that representative cartridge 9 meets the requirements of the fourth limitation of claim 1, and therefore, infringes claim 1 of the '053 patent.

Referring to the represented cartridges pursuant to the Matrix Stipulation, (JX-39), the parties agreed that findings made with respect to certain representative cartridges can be applied to other represented cartridges for the purpose of finding infringement. (JX-39 at 2.) Appendix B to the Matrix Stipulation specifies that for claim 1 of the '053 patent, representative cartridges 2 and 9 represent those Ninestar and Town Sky cartridges listed in Lists 42 and 43, respectively, to the Matrix Stipulation. (JX 39.) Under the terms of the Matrix Stipulation then, findings made with respect to representative cartridges 2 and 9 and claim 1 of the '053 patent apply to those cartridges in Lists 42 and 43. (JX-39 at 2.) The administrative law judge has found, supra, that representative cartridges 2 and 9 infringe claim 1 of the '053 patent. Based upon the Matrix

Stipulation, the administrative law judge also concludes that the Ninestar and Town Sky cartridges listed in Lists 42 and 43 to the Matrix Stipulation also infringe claim 1 of the '053 patent.

In addition to the Ninestar and Town Sky cartridges, complainants have accused the cartridges of other respondents of infringing claim 1 of the '053 patent. CDX-2 contains a compilation of cartridges of all respondents that Murch analyzed with respect to infringement of the asserted patents. (CFF VI.A.19 (undisputed).)

As to the cartridges of the MMC respondents, the administrative law judge finds, based upon the claim interpretation of claim 1, see supra, that the cartridges of the MMC respondents listed in CDX-2 under the "MMC" tab at pages 126-127 infringe claim 1 of the '053 patent. (CFF VI.X.37 (undisputed).) Further, said respondents do not contest that their accused cartridges infringe claim 1 of the '053 patent. (CFF VI.X.38(undisputed).) Therefore, the administrative law judge finds that the cartridges of the MMC respondents specified in CDX-2 infringe claim 1 of the '053 patent. (CFF VI.X.37-38 (undisputed).)

As to the cartridges of Dataproducts, there is testimony by Murch that certain Dataproducts cartridges literally infringe claim 1 of the '053 patent based upon Murch's analysis of the representative cartridges. (Murch, Tr. at 1153-54; 1304-06) Based on the claim interpretation of asserted claim 1, see supra, the administrative law judge finds that the Dataproducts cartridges listed in CDX-2 under the "Dataproducts" Tab at page 61 infringe claim 1 of the '053 patent as specified in CDX-2.

Each of respondents Glory South, Butterfly, Acujet, Mipo, Mipo America, Tully, Wellink, and Ribbon Tree Macao has defaulted (defaulting respondents). Accordingly, as with

claims 1, 10, and 14 of the '422 patent, the administrative law judge finds that the allegations of infringement in the complaint are deemed admitted against the defaulting respondents. (CFF VI.X.39, 41, 43, 47, 49, 53, 55, 57 (undisputed).)

G. The Chip Or Contact Patents

Pursuant to the Matrix Stipulation (JX-39), there are eight representative cartridges which must be analyzed for infringement of each limitation of claims 1, 2, and 3 of the '917 patent, except for the fourth limitation of claim 1 which is addressed in the next paragraph. (CFF VI.A.3 (undisputed).) These eight representative cartridges are RC-2 (CPX-289), RC-3 (CPX-21) RC-4 (CPX-23), RC-6 (CPX-25), RC-7 (CPX-81), RC-8 (CPX-103), RC-9 (CPX-193) and RC-10 (CPX-52). (CFF VI.A.3, 7-14 (undisputed).) As for claim 9 of the '917 patent, except for the fourth limitation of said claim, nine representative cartridges must be analyzed for infringement. These nine include said eight cartridges as well as RC-5 (CPX-59). (CFF VI.R.2 (undisputed); CDX-1 at 1.)

As to the fourth limitation of each of claims 1 and 9 of the '917 patent, there are six representative cartridges to be analyzed, namely, RC-3, RC-4, RC-5, RC-6, RC-7 and RC-10. (CFF VI.N.291-297 (undisputed).) This lesser number of representative cartridges is required because there are only six conductive patterns used on Ninestar's[94] accused products. (CFF VI.N.291, 292-297 (undisputed).) As a result, adjudication of whether these six conductive patterns contain the fourth limitation of claims 1 and 9 will suffice to determine whether any or all of the conductive patterns used by Ninestar also meet that limitation. The Matrix Stipulation

[94] As stipulated by the parties in JX-39 at 2, "Ninestar" includes "Respondents Nine Star Technology Co., Ltd., Ninestar Technology Company, Ltd. and Town Sky, Inc."

then determines which cartridges are covered by such an adjudication. (CFF VI.A.1-3 (undisputed).)

As for claim 1 of the '902 patent, the same eight representative cartridges analyzed for the '917 patent must be analyzed for infringement as well as one additional cartridge, RC-5 (CPX-59). As for claims 31 and 34 of the '902 patent, seven[95] of the cartridges analyzed for claim 1 must be analyzed for infringement as well as one additional cartridge RC-5 (CPX-59). The same six cartridges analyzed for the '917 patent regarding the conductive patterns should be analyzed for the '902 patent with respect to the conductive patterns.

All of the respondents are accused of infringing claims 1, 2, 3, and 9 of the '917 patent and claims 1, 31, and 34 of the '902 patent. Complainants argued that infringement has been established literally and/or under the doctrine of equivalents. (CBr at 92-137.) The staff argued that infringement has been established. (SBr at 65-96.) However, it does not differentiate between literal infringement and infringement under the doctrine of equivalents. (Id.)[96]

1. Claims 1, 2, 3 And 9 Of The '917 Patent

Claim 1

Claim 1 of the '917 patent is reproduced in Section V.B.1, supra. With respect to the preamble of claim 1, cartridges RC-2, RC-3, RC-4, RC-6, RC-7, RC-8, RC-9 and RC-10 are found to literally meet the preamble because the cartridges are ink cartridges for mounting on a

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[95] RC-9 is not accused of infringing said claims 31 and 34.

[96] The staff provided counter arguments against arguments made by the active respondents and complainants regarding infringement, and makes a blanket statement that the active respondents' products infringe. Rather than providing its own claim by claim infringement analyses, however, the staff provided "claim charts" containing nothing more than mere references to exhibit numbers and pages of the transcript.

carriage of an inkjet printing apparatus and for supplying ink to a printhead of the ink jet printing apparatus through an ink supply needle. (CFF VI.N.24-32 (undisputed).) At the outset, the active respondents agree that RC-2, RC-3, RC-4, and RC-7 literally meet the first limitation. (CFF VI.N.33-39, 45-46 (undisputed).) Hence, only RC-6, RC-8, RC-9 and RC-10 (which are multi-piece cartridges) remain in issue for the first limitation.

Referring to the first limitation of claim 1, viz. the cartridge containing "a plurality of external walls, including a first wall and a second wall, defining at least some of a chamber" (see Section V.B.1, supra), the administrative law judge has interpreted the claimed phrase "chamber" as a structure which holds ink where some of the structure is constructed of external walls while the remaining structure may be constructed of non-external walls. At issue is whether the cartridges in issue have said first limitation.

The administrative law judge finds that RC-6, RC-8 and RC-10 in issue literally meet the first limitation because the cartridges have a plurality of external walls that define at least some of a chamber, including a first wall that is the bottom wall of a ink chamber and a second wall that is the front wall of the ink chamber, near the ink supply port. (See CPX-25, CPX-103 and CPX-52.) The administrative law judge further finds that RC-9 (CPX-193) in issue literally meet the first limitation because the cartridges have a plurality of external walls that define at least some of a chamber, including a first wall that is the bottom wall of a ink chamber and a second wall that is the back wall of the ink chamber away from the ink supply port. (See CPX-193.)

The active respondents, as to RC-6, RC-8, RC-9 and RC-10 in issue, argued that these accused products do not literally meet the first limitation because said products are multi-piece cartridges. (Active respondents' responses to CFF VI.N.40-44, 47-53, 54-61, 62-65.) For

example, it is argued that RC-6 (CPX-25) "has a multi-piece design having an outer shell and five replaceable ink tanks or chambers holding different color inks," and that "[t]he outer shell having external walls does not define a chamber as required by the claims, nor do each of the individual interior tanks define a chamber as required by the claims." It is also argued, for example, that because RC-8 (CPX-103) "consists of a separate ink tank or chamber insert and an outer shell," that "it is substantially different from a one piece cartridge." However, the administrative law judge has already rejected the active respondents' interpretation of "chamber." (See section V.B.1.c, supra.) Further, the administrative law judge has found, supra, that the ink chambers of each of the multi-piece cartridges RC-6, RC-8, RC-9 and RC-10 have a plurality of external walls that define at least some of a chamber, including a first wall that is the bottom wall of a ink chamber and a second wall that is the front wall of the ink chamber (for RC-6, RC-8 and RC-10) near the ink supply port or the back wall of the ink chamber (for RC-9) away from the ink supply port. In addition, the structures of the multi-piece cartridges RC-6, RC-8, RC-9 and RC-10 in issue are found to consist of separate ink tank or chamber inserts and an outer shell, and when assembled, the components form a complete cartridge. (See Murch, Tr. at 800:21-802:4.) Thus, he rejects the active respondents' argument.

Based on the foregoing, the administrative law judge finds that RC-6, RC-8, RC-9 and RC-10 in issue literally meet the first limitation of claim 1 of the '917 patent.

Referring to the second limitation of claim 1, at issue is whether the accused products have "an ink supply port for receiving said ink supply needle, the ink supply port having a centerline and communicating with the chamber." See Section V.B.1, supra. The administrative law judge finds that RC-2, 3, 4, 6, 7, 8, 9 and 10 literally meet said second limitation of claim 1

of the '917 patent because each of the cartridges has an ink supply port on the bottom of the cartridge for receiving an ink supply needle, and the ink supply port has a centerline and communicates with the chamber of the cartridge. (CPX-289, CPX-21, CPX-23, CPX-25, CPX-81, CPX-103, CPX-193 and CPX-52.)

The active respondents argued, as to multi-piece cartridges such as RC-6 (made up of ink inserts and an outer shell which components assemble to form a complete cartridge (Murch, Tr. at 800:21-802:4)), argued that those accused products do not literally meet the second limitation because said products do not have an ink supply port that communicates with a chamber defined at least in part by first and second external walls. (Active respondents' response to CFF VI.N.70, 74.) However, in cartridge RC-6 as assembled, there are ink supply ports on the bottom of the cartridge for receiving said ink supply needles, and the middle ink supply port has a centerline and all ink supply ports communicate with the chamber of the cartridge. (Murch, Tr. at 804:22-805:20; CDX-1, Slide 98.) Also, the administrative law judge has found, supra, that the ink chamber(s) of each of the multi-piece cartridges, such as RC-6, have a plurality of external walls that define at least some of a chamber, including a first wall that is the bottom wall of a ink chamber and a second wall that is the front wall or the back wall of the ink chamber. Thus, he rejects the argument of the active respondents.

With respect to the third limitation of claim 1, at issue is whether the accused products have "a semiconductor storage device storing information about the ink carried by said cartridge." See Section V.B.1, supra. The specification of the '917 patent provides examples of what "information about the ink" may include. The specification states:

> The semiconductor storage means 61 may store data of the quantity of ink housed in the ink cartridge 40 or 50 to which the semiconductor storage means is provided, the manufacturing date of the ink, its trademark and the like.

(CX-7 at 5:37-43 (emphasis added).) Hence, the administrative law judge finds that "information about the ink" may include information such as the manufacturing date of the ink, its trademark, and the like. Words and phrases such as "may" and "and the like" make clear that "information about the ink" may include other information as long as said information concerns the ink. Thus, as complainants' expert Murch testified, the types of information contained on a semiconductor device that constitute "information about the ink" may include the date of manufacture, the color of ink in the cartridge, and the volume of ink in the cartridge. (Murch, Tr. at 411:23-412:15, 692:4-16; CFF V1.N,78 (undisputed).)

As to this third limitation, the active respondents argued that "complainants have failed to show that the accused cartridges store any information about the ink in a semiconductor storage device on the accused cartridges" (RBr at 140) because complainants' expert Murch, and complainants' consultant Vanteon referenced by Murch, performed testing that was inadequate to support complainants' arguments regarding the third claim limitation of claim 1 of the '917 patent. (RBr at 140.) It is argued specifically that no testing was done on any representative cartridge; that cartridges chosen for testing "were not selected on a statistically random basis and cannot be relied upon as evidence about the characteristics of the universe of accused cartridges" (RBr at 140); that "[b]ecause Dr. Murch, offered no testimony . . . concerning how the print utility of the computer, or the Epson printer actually generates the information displayed, there is no evidence in the record which ties the displayed information to values stored on the chips of

the tested Ninestar cartridges" (RBr at 141); that Vanteon downloaded information from the chips, but did not know how that information was interpreted or what the data represented (RBr at 141); that Vanteon downloaded that information from the printer, and said printer sent a signal to the chip, and "Vanteon did nothing to determine whether this signal provided by the printer to the chip alters the information contained on the chip" (RBr at 141); and that any manufacturers date on the chip "could not be the date of manufacture of the cartridge, since the chips come pre-programmed from Ninestar's supplier, independent of cartridge manufacturing date" (RBr at 142).

Complainants argued that the testing by Murch proved information about the ink must be stored on the semiconductor storage device. (CBr at 97.) Specifically, it is argued that Murch found that when a printer ink cartridge with a semiconductor storage device was installed in a printer, the printer displayed ink levels that changed as ink was consumed (CBr at 97; CFF VI.N.106-110); that when said cartridge was removed and reinstalled, the same ink level was displayed (CBr at 97; CFF VI.N.111); and that when a cartridge with no semiconductor storage device was installed, however, the ink level always displayed at 'full', even if the ink cartridge was empty. (CBr at 97; CFF VI.N.96-97.) Complainants further argued that Vanteon's testing showed that cartridges of the active respondents store data concerning the amount of ink consumed, manufacturing time, and the color of the ink in the cartridge. (CBr at 97-98; CFF VI.N.131-37, 142-43, 145-52, 154-59, 161-65, 167-71, 173-76, 178-80, 182-83, 186-90, 192-96, 198-201, 203-07, 209-12, 214-18, 220-22, 224-29, 231-35, 237-41, 243-48, 250, 252-55.) Complainants also argued that discovery produced by the active respondents, and testimony at the hearing by said respondents' witnesses, was sufficient to prove that the accused cartridges

meet the third limitation of claim 1 of the '917 patent. (CBr at 98-99; CRBr at 44-45; CFF VI.N.256-65, 267, 268-71.) Finally, complainants argued that users expect inkjet cartridges to provide information concerning the ink, and therefore the accused ink cartridges must have such information. (CBr at 99, CFF VI.N.79-86.)

It is a fact that the active respondents admitted that the volume of ink, the color of ink, and the manufacturing date may each constitute "information about the ink" as required by the third limitation of claim 1 of the '917 patent. (CFF VI.N.78 (undisputed).) The cartridges chosen by Murch and Vanteon for testing were not formally a random sample in the statistical sense, but were random in the sense that Murch chose the cartridges at random. (CRRFF 10.216C.) Moreover, the active respondents admitted that it was their cartridges that Murch tested by installing each of the cartridges he tested into their corresponding model of Epson printer. (CFF VI.N.93-95, 98 (undisputed in relevant part).) Although Murch randomly chose which of the active respondents' cartridges to test, the active respondents did not provide evidence contradicting Murch's conclusion that all of the active respondents' cartridges would act the same way under the same testing conditions. Regarding the active respondents' argument concerning a lack of evidence about print utility software and Epson printers, the administrative law judge finds that the limitation in issue concerns a semiconductor storage device storing information about ink and does not concern how that information is displayed or used, or even if said information is used. While the limitation does require that information about ink be stored on the semiconductors of the cartridges, the administrative law judge finds that the testing performed by Murch is evidence that said information is stored on the semiconductors of the cartridges. Regarding Vanteon downloading information from the printer rather than directly

from the semiconductor, even if the signal which the active respondents claim was sent from the printer to the semiconductor changed the information contained on the semiconductor, the test is evidence that some information regarding the ink was taken from the semiconductor. Thus, the stored ink information would likely have to change occasionally to remain useful, for example, to update ink levels. Finally, the administrative law judge does not find credible the implicit assertion of the active respondents that they neither program nor even know what is stored on the semiconductors they install on their cartridges, especially as there is evidence to the contrary in the record. For example, the following quotes from a Ninestar email concerning testing by Dataproducts:

> 1) "When the ink is almost out, the chip on the cartridge will communicate this to the printer, which turns flashing, signaling that ink is almost out . . ." (CX-1212C at NST009422.); and
>
> 2) "Our T0431 chip and T0441 is not programmed to take that much ink." (CX-1212C at NST009423).

Also, a memory map supplied by Ninestar concerning its chips shows memory labeled specifically as "Controlling Digit/Position for Ink Volume" or "Ink level control" for the T0431 chip model and "indicating volume of ink" or "Representing Ink Cartridge" for their chip model T007." (CX-1467C; CX-1468C.) There is also the testimony of the active respondents' witness, Wu:

> Q. Do you test the Epson compatible cartridges that you make at Ninestar?
>
> A. Yes. People who work in the R&D and also people who work in the quality assurance will conduct tests.

Q. And, among other things, do they test to see whether or not when the cartridge -- withdrawn. Did they test the cartridge in a printer?

A. Yes.

Q. And did they test Epson compatible cartridges in Epson printers?

A. That's the way.

Q. And in doing that, do the testers run any kind of operations with the printer to see what information they're getting from the chip on the cartridge?

A. Okay. So I don't know where they can get that sort of information. But, to my knowledge, the screen on the computer will show something.

Q. It will show how much ink is remaining in the cartridge, correct?

A. Okay. So then when the machine is printing, then the status of the machine will be shown.

Q. By status, do you mean the amount of ink remaining?

A. Okay. The computer will indicate that, during the printing process.

Q. Will indicate how much ink is remaining?

A. Yes.

Q. And is that true for all the Epson compatible ink cartridges made by Ninestar that have a chip on them?

A. Some of them do. Not all of them.

Q. Which ones don't?

A. Okay. I do not recall at this point. I probably will have to do a search.

* * *

Q. Sir, is it true that for some of the ink cartridges made by Ninestar with a chip, when it's used, the printer will show the amount of ink remaining?

A. Okay. So, actually, I have not done a statistical analysis as to how many of those cartridges would do that.

Q. But some of them do, correct?

A. And some of them will show in the computer.

(Wu, Tr. at 2424:14 - 2426:3, 2427:15-2427:24 (emphasis added).) Wu also states later that when a Ninestar-made ink cartridge is taken out of a printer and put back into the printer, the computer screen shows the user the amount of ink remaining in the cartridge, as per the following:

Q. Okay. I understand what you're saying. And if -- withdrawn. And when you put the cartridge back in the printer and start using it, will the computer show you how much ink is remaining, taking into account the amount of ink you used in your first usage of it? Let me try to make that more simple. If you take the cartridge out of the printer and put it back in and begin using it, it will show you the amount of ink remaining in the cartridge, correct?

A. Yes. The display on the computer will show that.

(Wu, Tr. at 2482:15-2483:3 (emphasis added).) Furthermore, the active respondents admitted that one of the commercial advantages of having a printer cartridge with a semiconductor storage device is that information about the ink in that cartridge was stored on that cartridge. (CFF VI.N.97 (undisputed).) Based on the foregoing, the administrative law judge rejects the

arguments of the active respondents concerning the sufficiency of the Murch and Vanteon testing.

Referring to the cartridges in issue and the third limitation, RC-2 (CPX-289) has a semiconductor storage device for storing information about the ink carried in the cartridge, and information about the ink in the cartridge is stored in the semiconductor. (Murch, 831:13-20, 894:15-895:8; CPX-289; CDX-1, Slide 84.) RC-3 (CPX-21) has a semiconductor storage device on its front wall, and the semiconductor storage device stores information about the ink that is carried in the cartridge. (Murch, Tr. at 687:21-688:21, CPX-21; CDX-1, Slide 89.) RC-4 (CPX-23) has a semiconductor storage device on its front wall, and the semiconductor storage device stores information about the ink that is carried in the cartridge, the same as RC-3. (Murch, Tr. at 687:21-688:21, 823:18-824:12, 824:17-22, 825:3-21; 826:5-12, 832:17-833:12; CPX-21; CPX-23; CDX-1, Slide 89.) RC-6 (CPX-25) has a semiconductor storage device on the cartridge and the device carries information about the ink carried in the cartridge, similar to RC-3 except that the semiconductor on RC-6 stores information about the five different inks in the cartridge, rather than one ink, as with RC-3. (Murch, Tr. at 687:21-688:21, 805:24-807:4; CPX-21; CPX-25; CDX-1, Slide 99.) RC-7 (CPX-81) has a semiconductor storage device storing information about the ink carried by said cartridge. (Murch, Tr. at 831:21-25, 898:5-18; CPX-81; CDX-1, Slide 104.) RC-8 (CPX-103) has a semiconductor storage device on the vertical wall nearest the ink supply port, which stores information about the ink carried by the cartridge. (Murch, Tr. at 778:6-779:6; CDX-1, Slide 109.) RC-9 (CPX-193) has a semiconductor storage device which stores information about the ink carried by the cartridge, similar to RC-8. (Murch, Tr. at 778:6-779:6, 794-795:9, 796:9-798:4; CPX-103; CPX-193; CDX-1, Slide 109.) RC-10

(CPX-52) has a semiconductor storage device on the first wall of the cartridge and the device carries information about the ink carried in the cartridge, the same as RC-6. (Murch, Tr. at 805:24-807:4, 811:24-814:12; CPX-25; CPX-52; CDX-1, Slide 99.)

Based on the foregoing, the administrative law judge finds that all eight representative cartridges in issue, viz., RC-2, RC-3, RC-4, RC-6, RC-7, RC-8, RC-9 and RC-10, literally meet the third limitation of claim 1 of the '917 patent because they all have a semiconductor device (chip) storing information about the ink carried by the cartridge.

Referring to the fourth limitation of claim 1, it is undisputed that there are six conductive patterns used on the semiconductor storage devices on the accused cartridges; that Conductive Pattern 1 is found on RC-3 (CPX-21); that Conductive Pattern 2 is found on RC-4 (CPX-23); that Conductive Pattern 3 is found on RC-6 (CPX-25); that Conductive Pattern 4 is found on RC-5 (CPX-59); that Conductive Pattern 5 is found on RC-7 (CPX-81); and that Conductive Pattern 6 is found on RC-8 (CPX-103), RC-9 (CPX-193) and RC-10 (CPX-52). (CFF VI.N.291-297 (undisputed).) The active respondents further admitted that RC-3 (Conductive Pattern 1) and RC-5 (Conductive Pattern 4)[97] literally meet said fourth limitation. (CFF VI.N.300-303, 305, 326-27, 329-30 (undisputed).)

At issue then is whether Conductive Patterns 2, 3, 5, and 6 have "a plurality of contacts for connecting the semiconductor storage device to the ink jet printing apparatus, the contacts being formed in a plurality of rows lying essentially in a plane parallel to the centerline of the ink supply port, each said row being centered relative to the centerline of said ink supply port." See

[97] However, RC-5 (Conductive Pattern 4) is not in issue for claim 1 of the '917 patent.

Section V.B.1.a, supra. The administrative law judge has interpreted the claimed phrase "contacts" as the portions of conductive material on the printer cartridge that touch the portions of conductive material on the printer when said cartridge is mounted.

The active respondents argued that Conductive Patterns 2, 3, 5, and 6 form a single row of contacts, rather than forming at least two rows. (Active respondents' response to CFF VI.N.308, VI.N.319, VI.N.333, VI.N.343.) Complainants' expert Murch, stated, however, that regardless of the shape of the conductive material on the cartridge, the contact pattern made by the contact forming member remains the same, as per the following excerpt:

> Q. Now, what is shown on CDX-1, slide 3, Dr. Murch?
>
> A. This actually shows six different variations of conductive patterns for semiconductors on different cartridges.
>
> Q. And have you analyzed these six different conductive patterns as how -- with respect to the limitations of claim 1 of the '917 patent?
>
> A. Yes, I have.
>
> Q. And how did you -- and did you find that -- what was your conclusion with respect to the limitation that talks about a plurality of contacts. I think you know what I'm referring to.
>
> A. Yes. The plurality of contacts. Despite the different physical appearance of the conductive patterns, the contacts are still the same, as they mate with the corresponding contact forming member within the printer.
>
> Q. All right. And do you have a slide that shows how you would locate the contacts on each of these conductive patterns?

A. Yes, I do.

Q. Okay. Could we see CDX-1, slide 4. And what is shown on CDX-1, slide 4?

A. This shows, on each of these different contact patterns that have different conductive material patterns, that the contacts would still be the same. In each case, they would be the plurality of rows, with a shorter row on the top and the longer row on the bottom, as that's the point where the contact forming member comes into contact with the electroconductive device.

Q. And the -- what's shown in red?

A. What's shown in red is the upper row or the shorter row of contacts. Shown in blue is the bottom row, the one closest to the ink supply port --

Q. Okay.

A. -- which is --

Q. Now, the left-most -- top left-most conductive pattern, that's from representative cartridge 3.

A. Yes, it is.

Q. Okay. And you already gave testimony about that, correct?

A. Correct.

Q. And representative cartridge 4 is – strike that. Let me rephrase it. The middle top cartridge, is that from representative cartridge 4?

A. Yes.

Q. And the right-most conductive pattern is from representative cartridge 6?

A. That's correct.

Q. Okay. And you gave testimony about that already, correct?

A. Yes.

Q. And representative cartridge 5 is in the bottom left corner; is that right?

A. That's correct.

Q. Okay. And representative cartridge 7 in the middle lower?

A. Correct.

Q. And representative cartridge 10 in the lower right; is that right?

A. That's correct.

Q. Okay. And you gave testimony about that as well, correct?

A. Yes.

Q. Okay. And is -- did you form -- let's -- can we just show the claim language of the '917, claim 1. Slide -- there we go.

A. Yeah.

Q. We're looking at CDX-1-96. And so this language, a plurality of contacts for connecting the semiconductor storage device to the inkjet printing apparatus, the contacts being formed in a plurality of rows lying essentially in a plane parallel to the centerline of the ink supply port, each said row being centered relative to the centerline of said ink supply port. Did you form a conclusion as to the conductive patterns that we looked at on CDX-1, slide 4, and whether they met that limitation?

A. Yes. I would find that each of the conductive patterns that we looked at would meet that limitation.

Q. Okay. And what's your reasoning for that as explained in CDX-1, slide 4?

A. The plurality of contacts for connecting the semiconductor storage device to the inkjet printing apparatus are located to form the -- excuse me, the contacts form the plurality of contacts in a plurality of rows. And they lie in a plane essentially parallel to the centerline of the ink supply port. Each row is again centered relative to the centerline of the ink supply port. So each of those contact patterns meets literally the language of that limitation.

* * *

Q. CDX-1, slide 4 is shown. Does CDX-1, slide 4 show how your analysis of these conductive patterns applies with respect to the limitation we just discussed?

A. Yes. In all cases, the plurality of rows. And just as described in the limitation that we just read.

Q. So -- and let's look at this representative cartridge 4 conductive pattern. Does that appear to have any relation to figure 20 in the '917 patent?

A. Yes, it does.

Q. In what way?

A. The layout of the excess material on the electrode is similar.

Q. And would -- how would that concept apply to some of these other conductive patterns, like the conductive pattern for representative cartridge 7 and cartridge 10 and cartridge 6, if at all?

A. Again, the conductive material is of a different shape. But the contacts still remain in the same place as formed by the contact forming member. So the rest is excess material of conductive pattern that doesn't form the contact.

(Murch, Tr. at 814:23-818:24, 819:10-820:10 (emphasis added).) Moreover, CDX-1, Slide 4, as described in the Murch transcript excerpt, supra, gives a visual representation of the pattern formed by the contract forming member. Said pattern is the same for each of the conductive patterns in issue. The contacts of each of Conductive Pattern 2, Conductive Pattern 3, Conductive Pattern 5, and Conductive Pattern 6 are the points where the contact forming members of the printer touch the electrodes of the semiconductor of the cartridge, which are outlined in red for the top row of contacts and are outlined in blue for the bottom row of contacts in CDX-1, at 4. (Murch, Tr. at 815:17-817:14; CDX-1, Slide 4.) Said rows are also lying in a plane parallel to the center line of the ink supply port, and centered relative to the centerline of said ink supply port. (Murch, Tr. at 818:14-20; CDX-1, Slide 4.) Therefore, each of Conductive Pattern 2 (as shown on RC-4 (CPX-23) and CDX-1, Slides 3 and 4), Conductive Pattern 3 (as shown on RC-6 (CPX-25) and CDX-1, Slides 3 and 4), Conductive Pattern 5 (as shown on RC-7 (CPX-81), RC-2 (CPX-289) and CDX-1, Slides 3 and 4), and Conductive Pattern 6 (as shown on RC-8 (CPX-103), RC-9 (CPX-193), RC-10 (CPX-52), and CDX-1, Slides 3 and 4) is found to contain the fourth limitation of claim 1 because each of the conductive patterns has a plurality of contacts for connecting the semiconductor storage device to the ink jet printing apparatus, the contacts being formed in a plurality of rows lying essentially in a plane parallel to the centerline of the ink supply port, each said row being centered relative to the centerline of said ink supply port. (Murch, Tr. at 815:3-816:5, 817:23-818:24; CPX-23; CPX-25; CDX-1, Slide 3, 4.) As

indicated, supra, the administrative law judge has found that "contacts" are the portions of conductive material on the printer cartridge that touch the portions of conductive material on the printer when said cartridge is mounted. Hence, the excess conductive material on the accused cartridges, whatever the shape of said conductive material, is found to be irrelevant.

As seen supra, the active respondents argued that cartridges RC-2 (Conductive Pattern 5), RC-4 (Conductive Pattern 2), RC-6 (Conductive Pattern 3), RC-7 (Conductive Pattern 5), RC-8 (Conductive Pattern 6), RC-9 (Conductive Pattern 6) and RC-10 (Conductive Pattern 6) do not literally meet the fourth limitation of claim 1 because the contacts of each of said cartridges lie in a single row, not two rows. (Active respondents' response to CFF VI.N.308, VI.N.319, VI.N.333, VI.N.343.) The administrative law judge, however, has interpreted the claimed phrase "contacts" as the portions of conductive material on the printer cartridge that touch the portions of conductive material on the printer when said cartridge is mounted, and rejected the active respondents' claim interpretation arguments. As shown in CDX-1, slide 4, and discussed, supra, the contacts of each of the accused cartridges in issue lie in two rows and not in a single row. Under proper interpretation of "contacts," the contacts of each of the accused cartridges in issue are found to meet the fourth claim limitation. Hence, the argument of the active respondents is rejected.

Based on the foregoing, the administrative law judge finds that Conductive Pattern 2 (RC-4), Conductive Pattern 3 (RC-6), Conductive Pattern 5 (RC-2, RC-7), and Conductive Pattern 6 (RC-8, RC-9, RC-10) in issue literally meet the fourth limitation of claim 1 of the '917 patent.

Based on the foregoing, the administrative law judge finds that all eight representative cartridges in issue, viz., RC-2, RC-3, RC-4, RC-6, RC-7, RC-8, RC-9 and RC-10 literally infringe independent claim 1 of the '917 patent.

Claim 2

As indicated supra, dependent claim 2 of the '917 patent recites:

> 2. The ink cartridge according to claim 1, wherein said semiconductor storage device is disposed on said second wall of said housing.

(CX-7 at 11:48-50.)[98]

The eight representative cartridges at issue for infringement of claim 2 are RC-2, RC-3, RC-4, RC-6, RC-7, RC-8, RC-9 and RC-10. (CFF VI.O.3 (undisputed).) The administrative law judge has found supra, that RC-2, RC-3, RC-4, RC-6, RC-7, RC-8, RC-9 and RC-10 literally infringe claim 1 of the '917 patent. Pursuant to the agreement between complainants and Ninestar as reflected in the Matrix Stipulation, "any Ninestar cartridges that are found to infringe claim 1 of the '917 patent also infringe claim 2 of the '917 patent." (CFF VI.O.2 (undisputed).) Based on the foregoing, the administrative law judge finds that all eight representative cartridges RC-2, RC-3, RC-4, RC-6, RC-7, RC-8, RC-9 and RC-10 in issue literally infringe dependent claim 2 of the '917 patent.

Claim 3

As indicated supra, dependent claim 3 of the '917 patent recites:

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[98] The administrative law judge found in Section VI, supra, that a person skilled in the art would equate the word "housing" in said dependent claim 2 to "chamber" in independent claim 1.

> 3. The ink cartridge according to claim 1, wherein said semiconductor storage device is disposed on said second wall of said housing in the vicinity of said ink supply port.

(CX-7 at 11:51-53.)[99]

The six representative cartridges at issue for claim 3 of the '917 patent are RC-3, RC-4, RC-6, RC-7, RC-8, and RC-10. (CFF VI.P.2 (undisputed).) RC-2 and RC-9 are not accused of infringing claim 3 of the '917 patent. (CFF VI.P.3 (undisputed).) The administrative law judge has found supra, that RC-3, RC-4, RC-6, RC-7, RC-8 and RC-10 literally infringe claim 1 of the '917 patent. Pursuant to the agreement between complainants and Ninestar as reflected in the Matrix Stipulation, "any Ninestar cartridges in Lists 6-18, 21 22 of the Matrix Stipulation found to infringe claim 1 of the '917 [patent] also infringe claim 3 of the '917 patent." (CFF VI.P.2 (undisputed).) Based on the foregoing, the administrative law judge finds that all six representative cartridges RC-3, RC-4, RC-6, RC-7, RC-8 and RC-10 in issue literally infringe dependent claim 3 of the '917 patent.

Claim 9

Claim 9 of the '917 patent is reproduced in Section V.B, supra. With respect to the preamble of claim 9, the administrative law judge finds that the nine accused cartridges, viz. RC-2, RC-3, RC-4, RC-5, RC-6, RC-7, RC-8, RC-9 and RC-10, literally meet the preamble because they are ink cartridges for mounting in the carriage of an inkjet printing apparatus and for

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[99] The administrative law judge found in Section VI, supra, that a person skilled in the art would equate the word "housing" in said dependent claim 3 to "chamber" in independent claim 1.

supplying ink to the printhead of the printing apparatus through the ink supply needle. (CFF VI.Q.24-32 (undisputed).)

Referring to the first limitation of claim 9, as indicated supra, the administrative law judge has interpreted the claimed phrase "chamber" as a structure which holds ink where some of the structure is constructed of external walls while the remaining structure may be constructed of non-external walls. At the outset, the active respondents agreed that RC-2, RC-3, RC-4, RC-5 and RC-7 literally meet the first limitation. (CFF VI.Q.33-37, 40 (undisputed).) Hence, only RC-6, RC-8, RC-9 and RC-10 (which are multi-piece cartridges) remain in issue for the first limitation.

The first limitation of claim 9 is essentially identical to the first limitation of claim 1 of the '917 patent, except the reference to first and second walls in claim 1 is omitted in claim 9. Accordingly, the analysis supra, for the first limitation of claim 1 also applies here, for the four representative cartridges in issue for claim 9.

The active respondents, as to cartridges RC-6, RC-8, RC-9 and RC-10, argued that said cartridges do not literally meet the first limitation because said cartridges are multi-piece cartridges. (Active respondents' response to CFF VI.Q.38-39, 41-48.) For the same reasons he rejected the active respondents' argument with respect to the first limitation of claim 1, the administrative law judge rejects the active respondents' argument regarding the first limitation of claim 9. Hence, the administrative law judge finds that RC-6, RC-8, RC-9 and RC-10 in issue literally meet the first limitation of claim 9 of the '917 patent.

Referring to the second limitation of claim 9, at the outset, the active respondents agreed that RC-2, 3, 4, 5, 7, 8 and 9 literally meet said second limitation. (CFF VI.Q.50-53, 55-57 (undisputed).) Hence, only RC-6 and RC-10 remain in issue for the second limitation.

The second limitation of claim 9 is essentially identical to the second limitation of claim 1, except this limitation of claim 9 makes reference to the ink supply port having an exit opening. (CFF VI.N.66.) Accordingly, the analysis, supra, for the second limitation of claim 1 also applies here, for the two representative cartridges in issue for claim 9.

The active respondents, as to RC-6 and RC-10, argued that these accused products do not literally meet the second limitation because said products do not have an ink supply port that communicates with a chamber defined at least in part by first and second external walls. (Active respondents' response to CFF VI.Q.54, 58.) For the same reasons he rejected the active respondents' argument with respect to the second limitation of claim 1, the administrative law judge rejects the active respondents' argument regarding the second limitation of claim 9. Hence, the administrative law judge finds that RC-6 and RC-10 in issue literally meet the second limitation of claim 9 of the '917 patent.

With respect to the third limitation of claim 9, said limitation is identical to the third limitation of claim 1 of the '917 patent. Therefore, the analysis, supra, for the third limitation of claim 1 also applies here, for all nine representative cartridges relevant to claim 9; including RC-5, which was not accused of infringing claim 1. Hence, for the same reasons he found that the cartridges in issue literally meet the third limitation of claim 1 of the '917 patent, the administrative law judge finds that RC-2, RC-3, RC-4, RC-5, RC-6, RC-7, RC-8, RC-9 and RC-10 literally meet the third limitation of claim 9 of the '917 patent.

Referring to the fourth limitation of claim 9, the administrative law judge has interpreted the claimed phrase "contacts" as the portions of conductive material on the printer cartridge that touch the portions of conductive material on the printer when said cartridge is mounted.

At the outset, the active respondents agreed that RC-3 (Conductive Pattern 1) and RC-5[100] (Conductive Pattern 4) literally meet said fourth limitation. (CFF VI.Q.71-72, 74 (undisputed).) Hence, only Conductive Patterns 2, 3, 5 and 6 and the corresponding representative cartridges remain in issue for the fourth limitation.

The fourth limitation of claim 9 of the '917 patent is essentially identical to the fourth limitation of claim 1 of the '917 patent. The only additional requirement in the fourth limitation of claim 9 of the '917 patent, as compared to claim 1 of the '917 patent, is that said claim 9 requires that the row of contacts closer to the opening of the port are longer than the upper row of contacts furthest from the port opening (i.e., the bottom row is longer). Thus, the analysis supra, for the fourth limitation of claim 1 also applies here, for the four conductive patterns (Conductive Patterns 2, 3, 5 and 6) in issue for claim 9. In addition, review of the representation of the rows of contacts shows that the row of contacts closer to the exit opening of said ink supply port is longer than the top row of contacts. (CDX-1 at 4.) The active respondents present no argument against the infringement of the fourth limitation of claim 9 that is different than their arguments against infringement of the fourth limitation of claim 1. Hence, for the same reasons he found

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[100] Complainants have not accused RC-5 of infringing claim 1 of the '917 patent, but has accused RC-5 of infringing claim 9 of the '917 patent. Based on his personal observation, the administrative law judge presumes this is because in contrast to the fourth limitation of claim 1, which requires that the rows of contacts be formed "centered relative to the center line of [the] ink supply port," the fourth limitation of claim 9 does not require that the rows of contacts be "centered relative to the center line of [the] ink supply port.

that the cartridges in issue literally meet the fourth limitation of claim 1 of the '917 patent, the administrative law judge finds that Conductive Pattern 2 (RC-4), Conductive Pattern 3 (RC-6), Conductive Pattern 5 (RC-2, RC-7), and Conductive Pattern 6 (RC-8, RC-9, RC-10) in issue literally meet the fourth limitation of claim 9 of the '917 patent.

Based on the foregoing, the administrative law judge finds that all nine representative cartridges RC-2, RC-3, RC-4, RC-5, RC-6, RC-7, RC-8, RC-9 and RC-10 in issue literally infringe independent claim 9 of the '917 patent.

Referring to the represented cartridges, the parties have entered into a stipulation by which the adjudication of eight Representative Cartridges RC-2, 3, 4, 6, 7, 8, 9 and 10 (and the six Conductive Patterns), and Representative Cartridge RC-5 (for claim 9), in issue also applies to the remaining Ninestar and Town Sky cartridges as set forth in the Matrix Stipulation. (CFF VI.A.1-3 (undisputed).) For RC-2, 3, 4, 5, 6, 7, 8, 9 and 10, the Matrix Stipulation sets forth, at pages 4-7, 9-11 of Attachment B of JX-39, lists of infringing cartridges that correspond to findings as to claims 1, 2, 3, and 9 of the '917 patent regarding the structures of the eight Representative Cartridges and the six Conductive Patterns (shown on CDX 1, Slides 3-4). The administrative law judge has found, supra, that the eight representative cartridges RC-2, 3, 4, 6, 7, 8, 9 and 10 infringe claims 1, 2, 3, and 9 of the '917 patent, and that RC-5 infringes claim 9 of the '917 patent. Based upon the Matrix Stipulation, the administrative law judge also concludes that the Ninestar and Town Sky cartridges listed in Lists 4-22 to the Matrix Stipulation infringe claims 1 and 2 of the '917 patent; that the Ninestar and Town Sky cartridges in Lists 6-18, 21, and 22 to the Matrix Stipulation infringe dependant claim 3 of the '917 patent; and that the

Ninestar and Town Sky cartridges Lists 4-7, 10-14, 16-21, 23, 24-28 to the Matrix Stipulation also infringe claim 9 of the '917 patent. (JX-39 at pages 4-8 of Attachment B.)

In addition to the Ninestar and Town Sky cartridges, complainants have accused the cartridges of other respondents of infringing claims 1, 2, 3 and 9 of the '917 patent. CDX-2 contains a compilation of cartridges of all respondents that Murch analyzed with respect to infringement of the asserted patents. (CFF VI.A.19 (undisputed).)

As to the cartridges of the MMC respondents, the administrative law judge finds, based upon the claim interpretation of asserted claims 1, 2, 3 and 9 of the '917 patent, that the MMC respondents' cartridges listed in CDX-2 under the "MMC" tab at pages 79-102 infringe said asserted claims. (CFF VI.N.371, VI.O.43, VI.P.36, VI.Q.162 (undisputed).) Further, the MMC respondents do not contest that their accused cartridges infringe claims 1, 2, 3 and 9 of the '917 patent. (CFF VI.N.372, VI.O.44, VI.P.37, VI.Q.163 (undisputed).) Therefore, the administrative law judge finds that the MMC respondents' cartridges as listed in CDX-2 infringe claims 1, 2, 3 and 9 of the '917 patent.

As to the cartridges of respondent Dataproducts, there is testimony by Murch that those cartridges literally infringe asserted claims 1, 2, 3 and 9 of the '917 patent based upon Murch's analysis of representative cartridges in issue. (Murch, Tr. at 905:2-13.) Based on the claim interpretation of said asserted claims 1, 2, 3 and 9, see supra, the administrative law judge finds that the Dataproducts cartridges listed in CDX-2 under the "Dataproducts" Tab at pages 31-45 infringe said asserted claims 1, 2, 3 and 9 of the '917 patent as specified in CDX-2.

Each of respondents Glory South, Butterfly, Acujet, Mipo, Mipo America, Tully, Wellink, and Ribbon Tree Macao has defaulted (defaulting respondents). Accordingly, the

administrative law judge finds that the allegations of infringement in the complaint are deemed admitted against the defaulting respondents as to claims 1, 2, 3 and 9 of the '917 patent. (CFF VI.N.373-407, VI.O.45-79, VI.P.38-72, VI.Q.164-198 (undisputed).)

2. Claims 1, 31 And 34 Of The '902 Patent

Claim 1

Claim 1 of the '902 patent is reproduced in Section V.B, supra. Nine representative cartridges are in issue for claim 1, i.e., RC-2, RC-3, RC-4, RC-5, RC-6, RC-7, RC-8, RC-9 and RC-10.

With respect to the preamble of claim 1 of the '902 patent, the nine cartridges, viz., RC-2, RC-3, RC-4, RC-5, RC-6, RC-7, RC-8, RC-9 and RC-10, literally meet the preamble because the administrative law judge finds that said cartridges are ink cartridges mountable on a movable carriage of an inkjet printing apparatus that has a printhead and an ink supply needle and which ejects ink droplets onto a recording medium. (CFF VI.R.24-39 (undisputed).) In fact, accused cartridges at issue in this investigation are designed to operate compatibly with and supply ink to Epson's inkjet printers as evidenced by the fact that they are marketed and/or sold in a box advertising compatibility with one or more specific Epson inkjet printers. For example, as shown on the box in which CPX-21 (Representative Cartridge 3) is packaged, CPX-21 (Representative Cartridge 3) is marketed and sold as compatible with inkjet printers "Epson Stylus Photo 780/785EPX/790/825/870/870LE/875/875DC/890/895/900/915/1270/1280/1290/ 1290S." (CPX-21, Box.) Also Epson's ink jet printers have a printhead, on the moveable carriage, that ejects ink droplets onto a recording medium, such a paper. (CFF VI.R.24-39 (undisputed).) When mounted, each ink cartridge supplies ink to the printhead of the ink jet printer through an

ink supply needle (the needle, which is part of the printhead in the carriage of the ink jet printer and not part of the cartridge, has a passage that allows ink to pass from the ink tank cartridge through the needle). (CFF VI.R.24-39 (undisputed).)

Referring to the first limitation of claim 1 of the '902 patent, said first limitation recites:

> a housing containing an ink therein and configured for removable mounting on the printhead, said housing having a first wall and a second wall, the second wall having both a first upper corner and a second upper corner.

(CX-8 at 11:23-28.) The administrative law judge has interpreted, supra, the claimed phrase "housing" as a structure which holds ink, where said "housing" structure may contain more than one "chamber," where said "housing" structure is external, and where said "housing" structure is configured for removable mounting on the printhead. At the outset, the active respondents agreed that RC-2, RC-3, RC-4, RC-5 and RC-7 literally meet the first limitation. (CFF VI.R.41-43, 45-47, 56 (undisputed).) Hence, only RC-6, RC-8, RC-9 and RC-10 (which are multi-piece cartridges) remain in issue for the first limitation.

The administrative law judge finds that RC-6, RC-8, RC-9 and RC-10 (CPX-25, CPX-103, CPX-193 and CPX-52, respectively) made of multi-piece structures literally meet the first limitation because consistent with the administrative law judge's claim interpretation of "housing," each of the cartridges have a "housing" which holds ink, where said "housing" structure may contain more than one "chamber," where at least some of said "housing" structure is external, and where said "housing" structure is configured for removable mounting on the printhead.

The active respondents, as to the cartridges RC-6, RC-8, RC-9 and RC-10, argued that said cartridges do not literally meet the first limitation because said cartridges are multi-piece cartridges. (Active respondents' responses to CFF VI.R.48, 57, 65 and 70.) Specifically, as to the issue of literal infringement regarding cartridge RC-6, the active respondents argued:

> As explained by Mr. Perry the "housing" claimed by the '902 patent describes the ink supply tank that is constructed of external walls that holds the volume of ink that is supplied to the printing mechanism through the ink supply needle in an ink jet printer. NRFOF 15.44. The claimed "housing" therefore cannot be properly considered the combination of the shell and internal tank of CPX-25 (Representative Cartridge 6).

(Active respondents' response to CFF VI.R.48 (emphasis added).)[101] However, the administrative law judge has rejected the active respondents' arguments with respect to the claim interpretation of "housing." Moreover, he finds that cartridge RC-6 for example as assembled from the cartridge components has a housing which contains five ink chambers; that said housing is configured for removable mounting on the printhead; and that said housing has a first wall (bottom wall) and a second wall (front wall) which walls are external. Moreover, the second wall has a first upper corner and a second upper corner, as shown in CDX 1, Slide 219. In addition, the administrative law judge has specifically found, supra, that a "housing" as used in claim 1 of the '902 patent may contain more than one "chamber," and further contains ink because the chambers contain ink. Further, the administrative law judge finds that the active

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[101] Complainants' proposed finding CFF VI.R.48 states:

> CPX-25 (Representative Cartridge 6) literally meets the first limitation of claim 1 of the '902 patent because it is a multi-piece cartridge that forms a housing containing ink and configured for removable mounting on a printhead when assembled. (Murch, Tr. at 964:20-966:20; CDX-1, Slide 1; CDX-1, Slide 219.)

respondents' arguments with respect to RC-8, RC-9 and RC-10 are identical to the argument regarding RC-6. (See active respondents' responses to CFF VI.R.57, 65 and 70.) In addition, the administrative law judge finds no language in the asserted claims, the specification and the non-asserted claims which precludes making the chamber(s) replaceable. Hence, he rejects the active respondents' argument that the cartridges RC-6, RC-8, RC-9 and RC-10 do not literally meet the first limitation because said cartridges are multi-piece cartridges.

With respect to the second limitation of claim 1 of the '902 patent, said second limitation recites:

> an ink supply port formed on said first wall for receiving the ink supply needle of the printhead and supplying the ink from said housing to the printhead, the ink supply port having an exit opening and a centerline.

(CX-8 at 11:29-32.) At the outset, as in the first limitation of said claim, the active respondents agreed that RC-2, RC-3, RC-4, RC-5 and RC-7 literally meet the first limitation. (CFF VI.R.76-81, 83 (undisputed).) Hence, only RC-6, RC-8, RC-9 and RC-10 (which are multi-piece cartridges) remain in issue for the second limitation.

The active respondents, as to the cartridges RC-6, RC-8, RC-9 and RC-10, argued that said cartridges do not literally meet the second limitation because said cartridges are multi-piece cartridges. (Active respondents' responses to CFF VI.R.82, 84, 86 and 88.) The active respondents' arguments with respect to said cartridges for the second limitation in issue are identical to their arguments regarding said cartridges for the first limitation, supra. Thus, for the same reasons the administrative law judge rejected the active respondents' arguments with respect to the first limitation of claim 1, the administrative law judge rejects the active

respondents' argument regarding the second limitation of claim 1. Hence, the administrative law judge finds that RC-6, RC-8, RC-9 and RC-10 in issue literally meet the second limitation of claim 1 of the '902 patent.

As to the third limitation of claim 1 of the '902 patent, said limitation is essentially identical to the third limitation of claim 1 of the '917 patent.[102] Therefore, the administrative law judge finds that the analysis supra, for the third limitation of claim 1 of the '917 patent also applies here, for all nine representative cartridges relevant to claim 1 of the '902 patent. Hence, for the same reasons he found that the cartridges in issue literally meet the third limitation of claim 1 of the '917 patent, the administrative law judge finds that RC-2, RC-3, RC-4, RC-5, RC-6, RC-7, RC-8, RC-9 and RC-10 literally meet the third limitation of claim 1 of the '902 patent.

Referring to the fourth limitation of claim 1 of the '902 patent, the administrative law judge has interpreted the claimed phrase "contacts" as the portions of conductive material on the printer cartridge that touch the portions of conductive material on the printer when said cartridge is mounted.

At the outset, the active respondents agreed that RC-3 (Conductive Pattern 1) and RC-5 (Conductive Pattern 4) literally meet said fourth limitation. (CFF VI.R.109-113, 122-123 (undisputed).) Hence, only Conductive Patterns 2, 3, 5 and 6 and the corresponding representative cartridges remain in issue for the fourth limitation.

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[102] The pertinent portion of each of the third limitations of claim 1 of the '902 patent and claim 1 of the '917 patent are identical: "a semiconductor storage device storing information about the ink." As indicated, supra, the '902 patent and the '917 patent share a common specification.

The fourth limitation of claim 1 of the '902 patent is very similar to the fourth limitation of claim 9 of the '917 patent. The analysis of the fourth limitation of claim 9 of the '917 patent can be applied directly to the fourth limitation of claim 1 of the '902 patent for the four conductive patterns (Conductive Patterns 2, 3, 5 and 6)[103] in issue because both limitations require at least two rows positioned one above the other when the cartridge is held upright, i.e., claim 9 of the '917 patent requires a plurality of rows where one row is closer to the ink supply port, whereas claim 1 of the '902 requires a plurality of rows where one row closer to the upper corners of the cartridge. (See e.g., CFF VI.R.112, 123 (undisputed).) Hence, for the same reasons he found that the cartridges in issue literally meet the fourth limitation of claim 9 of the '917 patent, the administrative law judge finds that RC-2, RC-4, RC-6, RC-7, RC-8, RC-9 and RC-10 in issue literally meet the fourth limitation of claim 1 of the '902 patent.

With respect to the fifth limitation of claim 1 of the '902 patent, said fifth limitation recites:

> a first overhang disposed between the first upper corner and the second upper corner.

(CX-8 at 11:42-43.) The administrative law judge has interpreted, supra, the claimed phrase "overhang" as recited in the fifth limitation of claim 1 as a protruding structure which is not limited to a perpendicular orientation and which includes each of the elements 46, 56, 45c, 45d, 55c and 55d and which structure helps protect circuit board 31. The administrative law judge also found, supra, that (1) the upper corners in issue are on the face or plane of the second wall;

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[103] These are the same cartridges that were in issue with respect to the fourth limitation of claim 1 of the '917 patent.

and (2) the term "between" should be construed such that an overhang should be located in the upper part of the second wall.

At the outset, as found supra, all parties agreed that claim 1 requires that the overhang be located on the second wall of the ink cartridge. (CFF V.C.201 (undisputed).) Also, the active respondents agreed that RC-3 and RC-4 literally meet the fifth limitation of claim 1. (CFF VI.R.156, 161 (undisputed).) Hence, only RC-2, RC-5, RC-6, RC-7, RC-8, RC-9 and RC-10 remain in issue for the fifth limitation.

The administrative law judge finds that six of the seven cartridges RC-2, RC-5, RC-6, RC-7, RC-9 and RC-10 in issue literally meet the fifth limitation because each of the cartridges have "a first overhang disposed between the first upper corner and the second upper corner." Thus, complainants' expert Murch, testified that each cartridge in issue has a protrusion or element that juts out from the upper part of the second wall. (Murch, Tr. at 937:23-939:7, 940:14-941:14, 972:26-973:4, 989:18-990:24, 941:15-942:11, 958:7-960:24, 1430:17-22, 962:25-963:17, 1427:14-1428:8.) Thus, for RC-2 (CPX-289), the overhangs are visible in the upper part of the second wall as the elements that protrude above the circuit board (chip). (CPX-289; CDX 1, Slide 199; Murch, Tr. at 937:23-939:7.) The overhang element of RC-5 is the "thicker" upper portion of the cartridge above the chip in the upper part of the second wall. (CPX-59; CDX-1, Slide 217; Murch, Tr. at 940:14-941:14.) RC-6 (CPX-25) and RC-10 (CPX-52), which are single and multi-color versions of the same cartridge, have protrusions jutting from the top of the cartridge. (CPX-25; CPX-52; CDX-1, Slides 223 and 247; Murch, Tr. at 972:26-973:4, 989:18-990:24.) The overhang element of RC-7 (CPX-81) is located above the chip (CPX-81; CDX-1, Slide 229; Murch, Tr. at 941:15-942:11.) For cartridge RC-9 (CPX-193),

the overhang is the upper piece of the protruding structure above the chip. (CPX-193; CDX-1, Slide 241; Murch, Tr. at 962:25-963:17, 1427:14-1428:8.) In addition, personal visual inspection by the administrative law judge shows that each of the cartridges in issue has a protruding structure on the upper part of the second wall.

The active respondents, as to the cartridges RC-2, RC-5, RC-6, RC-7, RC-9 and RC-10 in issue, argued that said cartridges do not literally meet the fifth limitation. (Active respondents' responses to CFF VI.R.153, 164, 167, 170, 176, 179.) Specifically, as to the issue of literal infringement regarding cartridge RC-5, the active respondents argued:

> Disputed. Epson has not sustained its burden of establishing that CPX-59 (Representative Cartridge 5) has "a first overhang disposed between the first upper corner and the second upper corner." NRFOF 10.185, 15.67. Respondents Ninestar and Dataproducts' Post Hearing Memorandum at 136-138 The bumped out portion identified in this proposed finding is neither an overhang, nor located between the two upper corners of the second wall as those terms are properly construed. Dr. Murch's constructions of the claim terms first and second upper corners and "overhang" are legally erroneous. They are contrary to the express language of the claim which describes corners of the second wall, rather than between the second wall and adjoining walls. They are contrary to the specification's teachings and are contrary to the prosecution history which, in response to an indefiniteness rejection under 35 U.S.C. § 112, makes clear both the structure and location of claimed "overhang." See Ninestar Respondents' Responses to CFF V.C.211 - 245.

(Active respondents' response to CFF VI.R.164 (emphasis added).)[104] However, the administrative law judge already rejected the active respondents' arguments, as set forth, supra, with respect to the claim interpretation of the fifth limitation. (See section V.B.1.b) Moreover, he finds that cartridge RC-5, based on physical examination, has a "bumped out portion" or protruding structure that is on the second wall of said cartridge, which portion is in the upper part of said second wall, and which portion is positioned to help protect the circuit board (chip). Therefore, the administrative law judge finds that RC-5 literally has "a first overhang disposed between the first upper corner and the second upper corner" because the overhang is a protruding structure not limited to a perpendicular orientation, said structure helps protect circuit board (chip) and said upper corners are on the face or plane of the second wall and said overhang is located in the upper part of said second wall. Further, the administrative law judge finds that the active respondents' arguments with respect to RC-2, RC-6, RC-7, RC-9 and RC-10 in issue are identical to the argument regarding RC-5. (See active respondents' responses to CFF VI.R.153, 167, 170, 176, 179.) Hence, he rejects the active respondents' arguments that the cartridges RC-2, RC-5, RC-6, RC-7, RC-9 and RC-10 in issue do not literally meet the fifth limitation.

Referring to the two-piece cartridge RC-8 (CPX-103), complainants argued that said cartridge literally meets said limitation because "when assembled, the overhang is substantively

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[104] Complainants' proposed finding CFF VI.R.164 states:

> CPX-59 (Representative Cartridge 5) literally meets the fifth limitation of claim 1 of the '902 patent because the overhang extends from the second, or back, wall and its entire area, which is a thickness creating the overhang, is located between the first upper corner and second upper corner, as shown on CDX-1, Slide 217. (Murch, Tr. at 940:14-941:14; CPX-21; CPX-59; CDX-1, Slide 1; CDX-1, Slide 217.)

indistinguishable from that of a single-piece cartridge because it extends from the wall of the contacts and over the contacts just as it does in a single-piece cartridge." (CBr at 128.) Also, complainant argued that "[RC-8] contains a lever constituting an overhang that protrudes out from the unitary second, or front, wall when the cartridge is assembled and becomes a completed ink cartridge..." (CFF.VI.R.173.) As found, supra, the parties agreed that claim 1 requires that the overhang be located on the second wall of the ink cartridge. (CFF V.C.201 (undisputed).) Although when assembled, the overhang of RC-8 extends beyond the second wall of the housing, protecting the contacts (chip), said overhang is physically located on the chamber not on said second wall. (CPX-103.) Therefore, based on his visual examination, the administrative law judge finds that said overhang is not physically located on said second wall. (CPX-103.) Further, the administrative law judge has found, supra, that even if the ink chambers are removable, when assembled, the whole is an ink cartridge; that "housing" and "chamber" are not identical; and that a "housing" is not itself an ink cartridge. Therefore, the administrative law judge finds that the act of assembling said ink cartridge does not make both a wall of the "chamber" and a wall of the "housing" become the second wall of the "housing." In other words, two physically separate and distinct walls do not become a single wall merely by placing said walls in close proximity. Hence, the administrative law judge rejects the argument of complainants that RC-8 literally infringes the fifth limitation of claim 1 of the '902 patent, and finds that said cartridge does not literally meet said fifth limitation.

Regarding whether RC-8 (CPX-103) is found to meet the fifth limitation under the doctrine of equivalents, the administrative law judge finds that the overhang element of the two-piece cartridge RC-8 (CPX-103), when the two pieces are assembled to form a printer cartridge,

is located between the first upper corner and the second upper corner of the second wall, and said overhang member helps to protect the circuit board (chip). In other words, he finds RC-8 in issue meets the fifth limitation under the doctrine of equivalents because the overhang element of cartridge RC-8 when said cartridge is assembled from the two pieces, performs substantially the same function of providing protection to the chip, in substantially the same way by providing a protrusion or means of protecting the chip so that for example if the cartridge is dropped, the overhang element reduces the likelihood of the chip hitting another object, to achieve the same result of protecting the chip. Thus, complainants' expert Murch testified:

> Q. Okay. Well, if you were to assume, based on positions asserted by Ninestar, that the overhang limitation in claim 1 of the '902 patent was not met with respect to any of the cartridges, representative cartridge 2 through 10 literally, and such a finding was made by the Court, do you have an opinion as to whether those overhang – that overhang limitation would nevertheless be present in representative cartridges 2 through 10?
>
> A. Well, as I indicated, I felt that the infringement was literal. Again, one could apply the doctrine of equivalents in the sense that the function of the overhang is to provide a protection to the chip and for rough handling or insertion of the cartridge. And the structures that we've discussed all provide the way in the sense that it does provide a means of protecting the chip with the result that the chip is protected by the protrusions or elements, if they're not called overhangs, that extend from the second wall.
>
> Q. Okay. Is that true for each of the cartridges, representative cartridge 2 through 10?
>
> A. I believe it is true of all cartridges 2 through 10, yes.
>
> * * *

Q. And the retaining member is used to secure the cartridge within the printer; isn't that right?

A. As well as to protect the chip.

(Murch, Tr. 1004:14-1005:13, 1430:23-1431:1; CPX-103.) Therefore, the administrative law judge finds that the overhang element of the assembled cartridge RC-8 performs substantially the same function of providing protection to the chip, in substantially the same way to achieve substantially the same result.

The active respondents, as to the cartridge RC-8 in issue, argued that said cartridge does not meet the fifth limitation under the doctrine of equivalents. (Active respondents' response to CFF VI.R.174, 175.) Specifically, the active respondents argued:

> Disputed. Dr. Murch has not properly or fully identified the function, way and result of the claim limitation at issue. Dr. Murch has failed to recognize in his analysis that the claimed limitation has the function, way and result of providing both a structure to assist in the insertion and removal of the cartridge through interaction with a lever and maximized triangulation for protection of the chip NRFOF 10.10, 10.46, 10.147, 10.163, 10.164, 10.165, 10.168,10.170, 10.196. Respondents Ninestar and Dataproducts' Post Hearing Memorandum at 171-177. Instead, his "analysis" simply characterizes the function of the claim limitation as a "means of protecting the chip," without any consideration of the insertion and removal function or the maximization of triangulation. NRFOF 10.240. The accused Ninestar cartridges have protrusions located too low on the vertical extent of the second wall and not shaped to interact with a lever and do not maximize triangulation. NRFOF 10.196 - 10.203. They are not equivalents to the claim requirements. Ninestar and Dataproducts' Post Hearing Memorandum at 171- 177.

(Active respondents' response to CFF VI.R.175 (emphasis added).)[105] However, the administrative law judge, relying on Phillips, 415 F.3d at 1326-27, has already rejected in claim interpretation Section V.B.1.b, the active respondents' arguments, as set forth, supra, with respect to the claim interpretation of the fifth limitation. (See Section V.B.1.b) Importantly, the administrative law judge specifically rejected in said Section, supra, the active respondents' argument regarding the overhang's function of assisting the installation and removal of the ink cartridge and the "maximized triangulation." Thus, the administrative law judge found, supra, that Figures 6(a) and 6(b) show that the "overhangs" 45c, 45d, 55c and 55d have nothing to do with installing or removing the ink cartridge. He also found nothing in said specification or said figures, supra, that requires that the placement of the overhang must "maximize triangulation." Hence, the administrative law judge rejects the active respondents' arguments that cartridge RC-8 does not meet the fifth limitation under the doctrine of equivalents.

As indicated, supra, the staff did not differentiate between literal infringement and infringement under the doctrine of equivalents regarding RC-8. Thus, the administrative law

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[105] Complainants' proposed finding CFF VI.R.175 states:

> The fifth limitation of claim 1 of the '902 patent would be met under the doctrine of equivalents because the protrusion or element that extends from the second wall of CPX-103 (Representative Cartridge 8) performs substantially the same function of protruding and providing protection to the chip with respect to rough handling, in substantially the same way by providing a protrusion or means of protecting the chip so that the angle created if the cartridge is dropped reduces the likelihood of the chip contacting another object, to achieve the same result of protecting the chip. (Murch Tr. 1004:14-1005:13, 1430:23-1431:1; CPX-103; CDX-1, Slide 1; CDX-1, Slide 235.)

judge does not have the staff's position, if any, regarding the arguments for or against infringement by RC-8 under the doctrine of equivalents.

Based on the foregoing, the administrative law judge finds that eight of the nine representative cartridges in issue, viz., RC-2, RC-3, RC-4, RC-5, RC-6, RC-7, RC-9 and RC-10, literally infringe independent claim 1 of the '902 patent. The administrative law judge further finds that RC-8 in issue infringes said claim 1, as RC-8 literally meets the preamble and the first four limitations of said claim 1, and meets the fifth limitation of said claim 1 under the doctrine of equivalents.

Claim 31

Claim 31 of the '902 patent is reproduced in Section V.B, supra. Eight representative cartridges are in issue for claim 31, i.e., RC-2, RC-3, RC-4, RC-5, RC-6, RC-7, RC-8 and RC-10.

With respect to the preamble of claim 31 of the '902 patent, because the preambles of claims 1 and 31 of the '902 patent are identical, the infringement analysis of the eight representative cartridges in issue with respect to the preamble of claim 1 applies equally to the preamble of claim 31, such that each of said cartridges in issue meets the elements of the preamble. (CFF VI.S.21-28 (undisputed).)

Referring to the first limitation of claim 31 of the '902 patent, because the first limitations of claims 1 and 31 of the '902 patent are identical, the infringement analysis of the representative cartridges in issue with respect to the first limitation of claim 1 applies equally to the first limitation of claim 31. Hence, for the same reasons he found the representative cartridges in issue for claim 1 literally met the first limitation of claim 1, the administrative law judge finds

that the representative cartridges in issue for claim 31, i.e., RC-2, RC-3, RC-4, RC-5, RC-6, RC-7, RC-8 and RC-10, literally meet the first limitation of claim 31 of the '902 patent.

As to the second limitation of claim 31 of the '902 patent, said second limitation is essentially identical to the second limitation of claim 1 of the '902 patent, except said limitation of claim 31 does not require that the ink supply port have a centerline. Accordingly, the analysis supra, for the second limitation of claim 1 also applies here, for the representative cartridges in issue for claim 31. Hence, for the same reasons he found the representative cartridges in issue for claim 1 literally met the second limitation of claim 1, the administrative law judge finds that the representative cartridges in issue for claim 31, i.e., RC-2, RC-3, RC-4, RC-5, RC-6, RC-7, RC-8 and RC-10, literally meet the second limitation of claim 31 of the '902 patent.

Referring to the third limitation of claim 31 of the '902 patent, because the third limitations of claims 1 and 31 of the '902 patent are identical, the infringement analysis of the representative cartridges in issue with respect to the third limitation of claim 1 applies equally to the third limitation of claim 31. Hence, for the same reasons he found the representative cartridges in issue for claim 1 literally met the third limitation of claim 1, the administrative law judge finds that the representative cartridges in issue for claim 31, i.e., RC-2, RC-3, RC-4, RC-5, RC-6, RC-7, RC-8 and RC-10, literally meet the third limitation of claim 31 of the '902 patent.

With respect to the fourth limitation of claim 31 of the '902 patent, the active respondents admitted that all of the representative cartridges in issue for claim 31, i.e., RC-2, RC-3, RC-4, RC-5, RC-6, RC-7, RC-8 and RC-10, literally meet said fourth limitation. (CFF VI.S.57-66 (undisputed).)

As to the fifth limitation of claim 31 of the '902 patent, said fifth limitation recites:

> at least a first overhang member extending beyond a plane of the wall of said housing where said contacts are disposed, the first overhang member being located between the first upper corner and the second upper corner.

(CX-8 at 13:36-40 (emphasis added).) At the outset, the active respondents agreed that RC-3 and RC-4 literally meet the fifth limitation of claim 31. (CFF VI.S.71, 74 (undisputed).) Hence, only RC-2, RC-5, RC-6, RC-7, RC-8 and RC-10 remain in issue for the fifth limitation. Further, the administrative law judge finds that said fifth limitation of claim 31 is similar to the fifth limitation of claim 1 of the '902 patent, except that said limitation of claim 31 adds the additional requirement of the "overhang member extending beyond a plane of the wall of said housing where said contacts are disposed." The administrative law judge already found, supra, that cartridges RC-2, RC-5, RC-6, RC-7 and RC-10 in issue literally met the fifth limitation of claim 1 of the '902 patent and that RC-8 in issue met said fifth limitation under the doctrine of equivalents. Thus, there is only the issue of whether the cartridges in issue for claim 31 meet the additional requirement of the "overhang member extending beyond a plane of the wall of said housing where said contacts are disposed."

The administrative law judge finds that cartridges RC-2, RC-5, RC-6, RC-7, RC-8 and RC-10 in issue literally meet said additional requirement. Thus, Murch testified that each cartridge in issue has an overhang member extending beyond a plane of the wall of the housing where said contracts are disposed. (See Murch, Tr. at 1012:2-1013:22, 1016:21-1018:9, 1018:10-1019:12, 1019:13-1020:18, Murch Tr. 1023:7-1025:8, 1022:3-1023:6.) In addition, upon the personal visual inspection of each of the cartridges in issue (RC-2 (CPX-289), RC-5 (CPX-59), RC-6 (CPX-25), RC-7 (CPX-81), RC-8 (CPX-103) and RC-10 (CPX-52) by the

administrative law judge, he finds that each of the cartridges RC-2, RC-5, RC-6, RC-7, RC-8 and RC-10 in issue literally has a "overhang member extending beyond a plane of the wall of said housing where said contacts are disposed."

The active respondents, as to the cartridges RC-2, RC-5, RC-6, RC-7, RC-8 and RC-10 in issue, argued that said cartridges do not literally meet the fifth limitation. Said arguments with respect to the single-piece cartridges RC-2, RC-5 and RC-7 in issue for the fifth limitation of claim 31 of the '902 patent are identical to their arguments regarding said cartridges for the fifth limitation of claim 1 of the '902 patent. (See active respondents' responses to CFF VI.S.68, 77 and 83.) Thus, for the same reasons he rejected the active respondents' arguments with respect to said fifth limitation of claim 1, the administrative law judge rejects the active respondents' argument regarding said fifth limitation of claim 31.

The active respondents, as to the multi-piece cartridges RC-6, RC-8 and RC-10, argued that said cartridges do not literally meet the fifth limitation because said cartridges are multi-piece cartridges. (Active respondents' responses to CFF VI.S.80 and 89.) Specifically, as to the issue of literal infringement regarding cartridge RC-6, the active respondents argued:

> Moreover, this finding fails to make even a prima facie assertion that contacts are disposed on a wall of the housing containing the ink as required by the fifth limitation. Epson has not sustained its burden of establishing that CPX-25 (Representative Cartridge 6) has "at least two electrical contacts" on "the wall of said housing [containing the ink]." Rather, CPX-25 (Representative Cartridge 6) has a multi-piece design having an outer shell and five replaceable ink tanks or housings containing different color inks. NRFOF 10.105. The outer shell having external walls does not define a "housing containing an ink therein." Since the contacts are on a wall of this outer shell, rather than on a wall of the inner housings containing the ink, the limitation "at least two electrical contacts' on "the wall of said housing" is not met. Respondents

> Ninestar and Dataproducts' Post Hearing Memorandum at 131-132. RNRFOF1.33.

(Active respondents' response to CFF VI.S.80 (emphasis added).)[106] The administrative law judge, however, in his analysis of the first limitation of claim 1 of the '902 patent, supra, found that cartridge RC-6 has a "housing" which contains five ink chambers, and that the "housing" as used in claim 1 of the '902 patent thus contains ink." Thus, the "housing" as properly construed is the "outer shell". Since the active respondents admit that the contacts are on the "outer shell," and the administrative law judge has found the outer shell can be a housing, the administrative law judge rejects the active respondents' argument regarding multi-piece cartridges RC-6 and RC-10.[107]

For the foregoing reasons, the administrative law judge finds that RC-2, RC-5, RC-6, RC-7 and RC-10 in issue literally meet the fifth limitation of claim 31 of the '902 patent and that RC-8 in issue meets a portion of said fifth limitation literally and a portion of said fifth limitation under the doctrine of equivalents.

Based on the foregoing, the administrative law judge finds that seven of the eight representative cartridges in issue, viz., RC-2, RC-3, RC-4, RC-5, RC-6, RC-7 and RC-10,

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[106] Complainants' proposed finding CFF VI.S.80 states:

> CPX-25 (Representative Cartridge 6) literally meets the fifth limitation because the protruding pieces, or overhangs, on the front wall, are located above the midpoint of the wall in the upper part of the wall near the top of the cartridge, and are therefore located between the first upper corner and second upper corner, as shown in CDX-1, Slide 277. (Murch, Tr. 1018:10-10,19:12; CPX-25; CDX-1, Slide 1; CDX-1, Slide 277.)

[107] The active respondents' arguments with respect to RC-8 and RC-10 are identical to the argument regarding RC-6. (Active respondents' responses to CFF VI.S.86 and 89.)

literally infringe independent claim 31 of the '902 patent. The administrative law judge further finds that RC-8 in issue infringes said claim 31, as RC-8 literally meets the preamble, the first four limitations, and a portion of the fifth limitation of said claim 31 literally, and meets the remainder of said fifth limitation under the doctrine of equivalents.

Claim 34

Ninestar stipulated, as part of the Matrix Stipulation (JX-39), that any cartridge found to infringe independent claim 31 also infringes claim 34 which depends from said claim 31. (Matrix Stipulation (JX-39), Attachment B at 18.) As a result, the same eight representative cartridges analyzed for infringement of claim 31 are used to determine infringement of claim 34, i.e., RC-2, RC-3, RC-4, RC-5, RC-6, RC-7, RC-8 and RC-10. The administrative law judge has found supra, that seven of the eight representative cartridges RC-2, RC-3, RC-4, RC-5, RC-6, RC-7 and RC-10 in issue literally infringe independent claim 31 of the '902 patent and that RC-8 in issue infringes said claim 31, as it meets the preamble, the first four limitations, and a portion of the fifth limitation literally, and the remainder of said fifth limitation under the doctrine of equivalents. Hence, based on the Matrix Stipulation, the administrative law judge finds that RC-2, RC-3, RC-4, RC-5, RC-6, RC-7, RC-8 and RC-10 in issue infringe dependent claim 34 of the '902 patent.

Referring to the represented cartridges, as indicated supra, pursuant to the Matrix Stipulation, (JX-39), complainants and Ninestar agreed that findings made with respect to certain representative cartridges can be applied to other represented cartridges for the purpose of finding infringement. (JX-39 at 2.) Attachment B (at 12-16) to the Matrix Stipulation specifies that for claim 1 of the '902 patent, representative cartridges RC-2, 3, 4, 5, 6, 7, 8, 9 and 10 represent

those Ninestar and Town Sky cartridges listed in Lists 4-13, 29A, 29B, 30A, 30B, 31A, 31B and 14-22 to the Matrix Stipulation. (JX 39.) Under the terms of the Matrix Stipulation then, findings made with respect to representative cartridges RC-2, 3, 4, 5, 6, 7, 8, 9 and 10 and claim 1 of the '902 patent apply to those cartridges in Lists 4-13, 29A, 29B, 30A, 30B, 31A, 31B and 14-22. (JX-39 at 2.) The administrative law judge has found, supra, that representative cartridges RC-2, 3, 4, 5, 6, 7, 8, 9 and 10 infringe claim 1 of the '902 patent. Based upon the Matrix Stipulation, the administrative law judge concludes that the Ninestar and Town Sky cartridges listed in Lists 4-13, 29A, 29B, 30A, 30B, 31A, 31B and 14-22 to the Matrix Stipulation also infringe claim 1 of the '902 patent. Using the same approach for claim 31 of the '902 patent, the administrative law judge also concludes that the Ninestar and Town Sky cartridges listed in Lists 32-34, 35A, 35B, 35C, 35D and 36-39 (corresponding to representative cartridges RC-2, 3, 4, 5, 6, 7, 8 and 10) to the Matrix Stipulation also infringe said claim 31. (See Matrix Stipulation (JX-39), Attachment B at 17.) Again, using the same approach for claim 34 of the '902 patent, the administrative law judge further concludes that the Ninestar and Town Sky cartridges listed in Lists 32-34, 35A, 35C and 36-39 (corresponding to representative cartridges RC-2, 3, 4, 5, 6, 7, 8 and 10) to the Matrix Stipulation also infringe said claim 34. (See Matrix Stipulation (JX-39), Attachment B at 18.)

In addition to the Ninestar and Town Sky cartridges, complainants have accused the cartridges of other respondents of infringing claims 1, 31 and 34 of the '902 patent. CDX-2 contains a compilation of cartridges of all respondents that Murch analyzed with respect to infringement of the asserted patents. (CFF VI.A.19 (undisputed).)

As to the cartridges of the MMC respondents the administrative law judge finds, based upon the claim interpretation of asserted claims 1, 31 and 34 of the '902 patent, that the MMC respondents' cartridges listed in CDX-2 under the "MMC" tab at pages 103-122 infringe said asserted claims. (CFF VI.R.214-217, VI.S.110-113, VI.T.60-63 (undisputed).) Further, the MMC respondents do not contest that their accused cartridges infringe claims 1, 31 and 34 of the '902 patent. (CFF VI.R.218, VI.S.114, VI.T.64 (undisputed).) Therefore, the administrative law judge finds that the MMC respondents' cartridges as listed in CDX-2 infringe claims 1, 31 and 34 of the '902 patent.

As to the cartridges of respondent Dataproducts, there is testimony by Murch that those cartridges literally infringe asserted claims 1, 31 and 34 of the '902 patent based upon Murch's analysis of representative cartridges in issue. (Murch, Tr. at 1035:9-21.) Based on the claim interpretation of said asserted claims 1, 31 and 34, see supra, the administrative law judge finds that the Dataproducts cartridges listed in CDX-2 under the "Dataproducts" Tab at pages 46-57 infringe said asserted claims 1, 31 and 34 of the '902 patent as specified in CDX-2.

Each of respondents Glory South, Butterfly, Acujet, Mipo, Mipo America, Tully, Wellink, and Ribbon Tree Macao has defaulted (defaulting respondents). Accordingly, the administrative law judge finds that the allegations of infringement in the complaint with respect to claims 1, 31 and 34 of the '902 patent are deemed admitted against the defaulting respondents. (CFF VI.R.219-304,VI.S.115-195, VI.T.65-142 (undisputed).)

IX. Domestic Industry

There can be a violation of section 337 "only if an industry in the United States, relating to articles protected by the patent ... exists or is in the process of being established." 19 U.S.C. §

1337(a)(2); see also Certain Methods of Making Carbonated Candy Products, Inv. No. 337-TA-292, USITC Pub. 2390, (Mar. 1990). The existence of a domestic industry is measured at the time the complaint is filed. See Bally/Midway Mfg. Co. v. U.S. Int'l Trade Comm'n, 714 F.2d 1117, 1121-22 (Fed. Cir. 1983).

The Commission has established a two-prong test for determining whether a complainant has satisfied the domestic industry requirement. The technical prong considers "whether the complainant is exploiting or practicing the patent in controversy," while the economic prong addresses "whether there is significant or substantial commercial exploitation." Certain Microsphere Adhesives, Process for Making Same, and Products Containing Same, Including Self-Stick Repositionable Notes, Inv. No. 337-TA-366, USITC Pub. 2949 (Jan. 1995). A complainant bears the burden of proving that it has satisfied both the technical prong and the economic prong.

A. Economic Prong

In Order No. 25, the administrative law judge issued an Initial Determination granting complainants' Motion for Summary Determination of the Economic Prong of the Domestic Industry Requirement. On January 17, 2007, the Commission decided not to review the initial determination and thereby adopted it.

B. Technical Prong

Complainants argued that an industry exists in the United States, as required by subsection (a)(2) of section 337, that exploits each of the '957, '439, '377, '148, '472, '401, '917, '902, '422, '053 and '397 patents in issue. It is argued that complainants practice claim 7 of the '957 patent, complainants practice claim 18 of the '439 patent, complainants practice claim 84 of

the '377 patent, complainants practice claim 20 of the '148 patent, complainants practice claim 29 of the '472 patent, complainants practice claim 1 of the '401 patent, complainants practice claim 3 of the '917 patent, complainants practice claim 34 of the '902 patent, complainants practice claim 10 of the '422 patent, complainants practice claim 1 of the '053 patent, and complainants practice claim 21 of the '397 patent. (CFF 308-19.)

The active respondents in response to CFF VII.A.5, CFF VII.B.2, CFF VII.C.3, CFF VII.D.2, CFF VII.E.3, CFF VII.F1, CFF VII.G.3, CFF VII.H.2, CFF VII.I.2, CFF VII.J.1, disputed complainants' allegation that complainants practice the '957 patent, the '439 patent, the '377 patent, the '148 patent, the '472 patent, the '401 patent, the '917 patent, the '902 patent, the '422 patent, the '053 patent and the '397 patent.

It is not understood on what ground the active respondents are asserting that complainants do not practice the '472 and '397 patents. It is a fact that the that the active respondents have represented that the '472 patent and '397 patent are not being asserted against them. See RBr at 9, 64. In addition, with respect to the '397 patent, in the rebuttal findings of the active respondents it was stated:

> "2. CPX-1125 (Epson Representative Cartridge 4) literally practices claim 21 of the '397 patent. (Murch, Tr. 1273:22-1274:4, 1278:3-1287:25; CPX-1125; CDX-11, Slide 1; CX-12; CDX-11, Slides 61-67.)
>
> NINESTAR RESPONDENTS' RESPONSE TO CFF VII.K8:
>
> Admitted"

(emphasis added). However, the active respondents later stated:

> "8. CPX-1125 (Epson Representative Cartridge 4) literally practices the second limitation of claim 21

> of the '397 patent because it has an ink supply that is in fluid communication with the ink storage chamber through an ink flow path. (Murch, Tr. at 1279:7-1281:24; CPX-1125; CDX-11, Slide 62.)
>
> NINESTAR RESPONDENTS' RESPONSE TO CFF VII.K8:
>
> Disputed. Seiko's claims that its cartridges literally practice the claims of the asserted patents suffer from the same flawed claim interpretation as Seiko's infringement analysis."

(emphasis added.) The administrative law judge finds said representations totally inconsistent. Moreover, mere boiler plate language is used to dispute CFF VII.K8 which language is employed repeatedly in other responses to complainants' proposed findings. Such language conflicts with the ground rules and the administrative law judges' statements at the hearing with respect to post-hearing submissions. Moreover, the administrative law judge does not understand how lawyers could even sign off on such filings.

The staff argued that the evidence shows that complainants practice all the elements of the claims of the patents relied on by complainants. (SBr at 107-08.)

Based on the administrative law judge's interpretation of the disputed language of the claims in issue, the administrative law judge finds that complainants have established the technical prong of the domestic injury requirement through practice of the claims relied on by complainants.

Referring to the eleven patents in issue, the preamble of claim 7 of the '957 patent states:

> An ink supply tank for a dot matrix printer, comprising:

(CX-1 at 10:24.) CPX-1111 (Epson Representative Cartridge 1) (McEvers, Tr. at 171:3-16; CDX-11, Slide 1.) is found to literally practice the preamble of claim 7 of the '957 patent

because it is an ink-supply tank for a dot matrix printer, which printers include ink jet printers. (Murch, Tr. at 1181:21-1182:6,[108] 1183:22-1184:9, 340:24-341:6, 342:7-20, 349:2-351:5, 455:9-458:3; CPX-1111; CDX-11, Slide 4; CDX-4, Slide 11.) The first limitation of claim 7 of the '957 patent states:

> a tank housing having an interior space defined in part by first and second spaced opposed walls;

(CX-1 at 10:25-26.) CPX-1111 is found to literally practice the first limitation of claim 7 of the '957 patent because it has a tank housing having an interior space defined in part by a first spaced opposed wall (bottom wall) and a second spaced opposed wall (top wall). (Murch, Tr. at 1183:4-19; CPX-1111; CDX-11, Slide 5.) The second limitation of claim 7 of the '957 patent states:

> an ink supply delivery port extending through a first wall of said tank housing said port having an opening to said interior space to permit the passage of ink from said interior space to the exterior of said tank housing;

(CX-1 at 10:27-31.) CPX-1111 is found to literally practice the second limitation of claim 7 of the '957 patent because it has an ink supply delivery port (which has a passageway made of plastic material) extending through a first wall (the bottom wall) of the tank housing, the port having an opening (shown by a red circle in the right-hand photograph on CDX-11, Slide 5) to the interior space where the opening permits the passage of ink from the interior space to the exterior of the tank housing. (Murch, Tr. at 1184:10-1185:12; CPX-1111; CDX-11, Slide 5.) The third limitation of claim 7 of the '957 patent states:

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[108] The administrative law judge finds that Murch's hearing testimony here and hereafter cited in this section, as it relates to claim interpretation and the particular claims of the asserted patents in issue, is consistent with the intrinsic evidence.

> an ink absorbing member substantially filling said interior space of said tank housing and being formed of a porous material, said ink absorbing member having a region facing and at least in part engaging said opening to said ink supply delivery port;

(CX-1 at 10:32-36.) CPX-1111 is found to literally practice the third limitation of claim 7 of the '957 patent because it has an ink absorbing member (darkish green area shown in CDX-11, Slide 6) substantially filling the interior space of the tank housing and being formed of a porous material, the ink absorbing member having a region facing and at least in part engaging the opening to the ink supply delivery port (shown by a red circle in the lower part of the left-hand photograph on CDX-11, Slide 6). (Murch, Tr. at 1185:13-1186:6; CPX-1111; CDX-11, Slide 6.) The fourth limitation of claim 7 of the '957 patent states:

> said second wall of said tank housing being spaced at least in part sufficiently apart from said ink absorbing member to provide an air communication space therebetween, said tank housing being formed with an air communication hole therethrough, said air communication space being in fluid communication with ambient air through said air communication hole.

(CX-1 at 10:37-43.) CPX-1111 literally practices the fourth limitation of claim 7 of the '957 patent because it has a top wall (second wall) of the tank housing that is spaced sufficiently apart (through the use of projections extending down from the top wall) from the ink absorbing member such that it provides an air communication space that is in fluid communication with ambient air through an air communication hole, also in the top wall. (Murch, Tr. at 1187:10-1188:25; CPX-1111; CDX-11, Slide 7.)

CPX-1111 (Epson Representative Cartridge 1) is found to literally practice claim 18 of the '439 patent. (Murch, Tr. at 1197:4-1203:11; CPX-1111; CDX-11, Slides 1, 8-11; CX-2.) The preamble of claim 18 of the '439 patent states:

An ink-supply tank for a dot matrix printer comprising:

(CX-2 at 10:35-36.) CPX-1111 is found to literally meet the preamble of claim 18 of the '439 patent because it is an ink-supply tank for a dot matrix printer, which includes inkjet printers. (Murch, Tr. at 1197:12-19; CPX-1111; CX-2; CDX-11, Slide 9.) The first limitation of claim 18 of the '439 patent states:

> an ink-supply tank having a first wall and a second wall extending substantially in a perpendicular direction to said first wall, said first wall having a length as viewed in a direction therealong extending from said second wall;

(CX-2 at 10:37-41.) CPX-1111 is found to literally meet the first limitation of claim 18 of the '439 patent because it is an ink-supply tank with a first wall (the bottom wall through which the ink-supply port passes) and a second wall (with reference to CDX-11, Slide 9, the front wall of the cartridge and indicated as the second wall on the slide) extending substantially in a perpendicular direction to the first wall, the first wall having a length as seen in a direction therealong extending from the second wall. (Murch, Tr. at 1197:23-1198:17; CPX-1111; CX-2; CDX-11, Slide 9.) The second limitation of claim 18 of the '439 patent states:

> an ink absorbing member mounted within the ink-supply tank; and

(CX-2 at 10:42-43.) CPX-1111 is found to literally meet the second limitation of claim 18 of the '439 patent because it has an ink absorbing member mounted within the ink-supply tank. In CDX-11, Slide 10, the ink absorbing member is represented as the green area that is mounted within the ink-supply tank as required by the claim. (Murch, Tr. at 1198:18-25; CPX-1111; CX-2; CDX-11, Slide 10.) The third limitation of claim 18 of the '439 patent states:

> an ink receiving and transmitting member comprising an elongated member, said elongated member extending from said first wall into

> the interior of said tank at a position between the midpoint of said length of said first wall and said second wall, said elongated member being formed with an opening at the distal end thereof and with a passage extending longitudinally therealong from said opening along the length of said elongated member to permit ink to flow away from said opening, at least a portion of said elongated member defining at least said opening and a portion of said passage being defined by a non-porous material, said elongated member engaging a portion of said ink absorbing member at least in the region of said ink absorbing member facing said opening.

(CX-2 at 10:44-58.) CPX-1111 is found to literally meet the third limitation of claim 18 of the '439 patent. (Murch, Tr. at 1199:1-7; CPX-1111; CX-2; CDX-11, Slide 11.) In the upper portion of CDX, 11, Slide 11, the elongated member can be seen that extends from the first wall (the bottom wall) up into the interior of the ink tank. (Murch, Tr. at 1199:8-21; CPX-1111; CX-2; CDX-11, Slide 11.) As represented in CDX, 11, Slide 11, the elongated member of CPX-1111 passes up into the interior of the tank. It has an opening in the distal end (the interior end as seen from the view above, the red circle in the lower right-hand picture of CDX-11, Slide 11). The location of the elongated member is halfway down the bottom wall. The second wall is the first front vertical wall. (Murch, Tr. at 1199:22-1200:14; CPX-1111; CX-2; CDX-11, Slide 11.) As represented in CDX, 11, Slide 11, the elongated member of CPX-1111 is positioned between the midpoint and the second wall. The elongated member has an opening (as can been seen from above in the right-hand view of CDX-11, Slide 11) on the distal end and that opening extends through the entire passageway and forms the exit opening of the elongated member through the portion that extends from the bottom wall (the red portion that can be seen in the right-hand side of the first wall). (Murch, Tr. at 1200:15-1201:7; CPX-1111; CX-2; CX-501 at EPS 0202104; CDX-11, Slide 11.) The elongated member of CPX-1111 has a portion of the passageway

defined by a nonporous material. That nonporous material is a resin or plastic that forms the passageway. The elongated member engages a portion of the absorbing member in the area that protrudes to the interior of the tank from the first wall. (Murch, Tr. 1201:8-22; CPX-1111; CX-2; CDX-11, Slide 11.) The passageway of the elongated member is formed at the interior of the elongated member of CPX-1111 and extends from the interior to the exterior of the ink tank. (Murch, Tr. at 1201:23-1202:8; CPX-1111; CX-2; CDX-11, Slide 11.) The presence of a filter in CPX-1111 and/or an ink-supply needle would not change the analysis of whether CPX-1111 practices claim 18 of the '439 patent literally or under the doctrine of equivalents. (Murch, Tr. at 1202:9-1203:5; CPX-1111; CX-2; CDX-11, Slides 8-11.

Claim 84 of the '377 patent is dependent on claim 83 of the '377 patent. (CX-3 at 19:42-44.) CPX-1111 is found to literally practice claim 83 of the '377 patent. (Murch, Tr. at 1203:14-1204:14; CPX-1111; CDX-11, Slide 1; CDX-11, Slides 12-15.) Thus the preamble of claim 83 of the '377 patent reads as follows:

> An ink-supply system for a dot matrix printer comprising:

(CX-3 at 19:24-25.) CPX-1111 is found to literally meet the preamble of claim 83 of the '377 patent because it is an ink-supply system for a dot matrix printer (which includes inkjet printers). (Murch, Tr. at 1204:1-7, 1205:9-19; CPX-1111; CDX-11, Slide 13.) The first limitation of claim 83 of the '377 patent reads as follows:

> an ink-supply tank formed with an ink-supply delivery port having an opening for the passage of ink from said ink-supply tank;

(CX-3 at 19:26-28.) CPX-1111 literally meets the first limitation of claim 83 of the '377 patent because this cartridge has an ink-supply tank formed with an ink-supply delivery port (the

passageway that starts at the interior of the tank and passes through the bottom wall to form the exit port, the element extends up into the interior of the tank and below the bottom wall as shown on CDX-11, Slide 13) having an opening for the passage of ink from said ink-supply tank. (Murch, Tr. at 1204:15-1205:8; CPX-1111; CDX-11, Slide 13.) The second limitation of claim 83 of the '377 patent reads as follows:

> an ink absorbing member formed of a porous material mounted within said tank, said ink absorbing member having a region facing said opening and being compressingly contained by the ink-supply tank against the ink-supply delivery port so that at least the region of the ink absorbing member facing said opening is compressed relative to at least another region of the ink absorbing member; and

(CX-3 at 19:29-36.) CPX-1111 is found to literally meet the second limitation of claim 83 of the '377 patent because this cartridge has an ink absorbing member (the greenish area shown on CDX-11, Slide 14 and identified as the ink absorbing member) formed of a porous material (porous sponge-like material) mounted within the tank, the ink absorbing member having a region facing the opening which is compressingly contained by the fact that the region exactly extends up to the interior of the tank) by the ink-supply tank against the ink-supply delivery port (between the cover and the ink-supply delivery port, so that the region facing the port is compressed by the projections from the top wall of the tank and the ink absorbing member is compressed by the ink-supply delivery port) so that at least the region of the ink absorbing member facing said opening is compressed relative to at least another region of the ink absorbing member (the portion of the ink absorbing member at the port is compressed more than some other region). (Murch, Tr. at 1205:20-1208:2; CPX-1111; CDX-11, Slide 14.) The third limitation of claim 83 of the '377 patent reads as follows:

> said ink absorbing member substantially filling said ink-supply tank, said ink-supply tank including an inner wall surface having projections to provide a space between said ink absorbing member and said wall surface.

(CX-3 at 19:37-41.) CPX-1111 is found to literally meet the third limitation of claim 83 of the '377 patent because this cartridge has an ink absorbing member (the greenish area shown on CDX-11, Slide 15) substantially filling said ink-supply tank (the interior of the cartridge), said ink-supply tank including an inner wall surface (the cover or top wall) having projections to provide a space between said ink absorbing member and said wall surface. (Murch, Tr. at 1208:3-23; CPX-1111; CDX-11, Slide 15.) Claim 84 of the '377 patent states:

> The ink-supply system of claim 83, and including means for providing ambient air to the space between said ink absorbing member and said wall surface.

(CX-3 at 19:42-44.) CPX-1111 is found to literally meet this limitation of claim 84 of the '377 patent because this cartridge has a means for (an air communication hole, which can be seen in the right-hand pictorial on CDX-11, Slide 17 of the cover, the position of the air communication hole in the assembled cartridge is shown on the left-hand pictorial on CDX-11, Slide 17) providing ambient air (the air in the space is exchanged with air from the external atmosphere) to the space between the ink absorbing member and the wall surface (the top wall or cover surface of the cartridge). (Murch, Tr. at 1208:24-1210:1; CPX-1111; CDX-11, Slides 1, 16-17.)

CPX-1111 (Epson Representative Cartridge 1) is found to literally practice claim 19 of the '148 patent. (Murch, Tr. at 1212:14-23; CPX-1111; CDX-11, Slide 1; CDX-11, Slides 18-20.) The preamble of claim 19 of the '148 patent reads as follows:

> An ink-supply system for a dot matrix printer comprising:

(CX 4 at 11:54-55.) CPX-1111 is found to literally meet the preamble of claim 19 of the '148 patent because it is an ink-supply system for a dot matrix printer (which includes inkjet printers). (Murch, Tr. at 1213:24; CPX-1111; CDX-11, Slide 19.) The first limitation of claim 19 of the '148 patent reads as follows:

> an ink-supply tank formed with an ink-supply delivery port; and

(CX-4 at 11:56-57.) CPX-1111 is found to literally meet the first limitation of claim 19 of the '148 patent because this cartridge has an ink-supply tank formed with an ink-supply delivery port (the passageway that starts at the interior of the tank and passes through the bottom wall to form the exit port, the element extends up into the interior of the tank and below the bottom wall as shown on CDX-11, Slide 19). (Murch, Tr. at 1213:25-1214:17; CPX-1111; CDX-11, Slide 19.) The second limitation of claim 19 of the '148 patent reads as follows:

> an ink absorbing member formed of a porous material and dimensioned to substantially fill the ink-supply tank, said ink absorbing member being filled with ink substantially to the desired capacity of the ink-supply tank, said ink-supply tank including an inner wall surface having projections to provide a space between said ink absorbing member and said wall surface.

(CX-4 at 11:58-12:4.) CPX-1111 is found to literally meet the second limitation of claim 19 of the '148 patent because this cartridge has an ink absorbing member formed of a porous material and dimensioned to substantially fill the ink-supply tank (the greenish area shown on CDX-11, Slide 20 and identified as the ink absorbing member substantially fills the interior of the tank), said ink absorbing member being filled with ink substantially to the desired capacity of the ink-supply tank (the interior of the tank is filled to the manufacturer's desired capacity contained by the ink absorbing member), said ink-supply tank including an inner wall surface (the cover of

top wall) having projections to provide a space between said ink absorbing member and said wall surface (the projections can be seen emanating from the inside of the cover and forming a space by compressing the ink absorbing member as shown on CDX-11, Slide 20). (Murch, Tr. at 1214:18-1216:3; CPX-1111; CDX-11, Slide 20.)

CPX-1111 (Epson Representative Cartridge 1) is found to literally practice claim 29 of the '472 patent. (Murch, Tr. at 1216:4-9; 1217:11-1220:12; CPX-1111; CDX-11, Slide 1; CDX-11, Slides 23-26.) The preamble of claim 29 of the '472 states:

An ink-supply system for a dot matrix printer head, comprising:

(CX-5 at 12:38-39.) CPX-1111 is found to literally meets the preamble of claim 29 of the '472 patent because CPX-1111 is an ink-supply system for a dot matrix printer head. (Murch, Tr. at 1217:18-24; CPX-1111; CDX-11, Slide 24; CX-5 at 12:38-39.) The first limitation of claim 29 of the '472 states:

> an ink-supply tank having an ink-supply delivery port;

(CX-5 at 12:40-41.) CPX-1111 is found to literally meet the first limitation of claim 29 of the '472 patent because CPX-1111 has an ink-supply tank (the interior portion of the cartridge) having an ink-supply delivery port (the passageway formed of nonporous material that extends into the tank). (Murch, Tr. at 1218:4-19; CPX-1111; CDX-11, Slide 24; CX-5 at 12:40-41.) The second limitation of claim 29 of the '472 states:

> an ink absorbing member formed of a porous material within said ink-supply tank; and

(CX-5 at 12:42-43.) CPX-1111 is found to literally meet the second limitation of claim 29 of the '472 patent because CPX-1111 has an ink absorbing member (the green foam material in

CDX-11, Slide 25) formed of a porous material within the ink-supply tank. (Murch, Tr. at 1218:20-1219:6; CPX-1111; CDX-11, Slide 25; CX-5 at 12:42-43.) The third limitation of claim 29 of the '472 states:

> ink impregnated in said ink absorbing member under a pressure sufficiently low to substantially eliminate air bubbles within the ink impregnated member, wherein air bubbles which would adversely affect operation of the printer are substantially eliminated.

(CX-5 at 12:44-49.) CPX-1111 is found to literally meet the third limitation of claim 29 of the '472 patent. (Murch, Tr. at 1219:7-1220:12; CPX-1111; CDX-11, Slide 26; CX-5 at 12:44-49.) The ink within CPX-1111 is impregnated in the ink absorbing member under a low pressure to substantially eliminate air bubbles within the impregnated member; thus the air bubbles that would adversely affect printing operation are substantially eliminated. (Murch, Tr. at 1219:7-1220:12; McEvers, Tr. at 168:12-170:14; CPX-1111; CDX-11, Slide 26; CX-5 at 12:44-49.) CPX-1111 is impregnated by complainants at Epson Portland{

} Epson Portland manufactures the cartridge model embodied by CPX-1111. (McEvers, Tr. at 171:3-16; CDX-11, Slide 1.)

CPX-1111 is found to literally practice claim 1 of the '401 patent. (Murch, Tr. at 1221:3-1227:19; CPX-1111; CX-6.) The preamble of claim 1 of the '401 patent reads as follows:

> An ink tank cartridge for an ink-jet type recording apparatus being removably mountable onto an ink supply needle of said ink jet type recording apparatus, said ink supply needle having at least one

throughhole to allow ink from said ink tank cartridge to pass therethrough, the ink tank cartridge comprising:

(CX-6 at 13:44-49.) CPX-1111 is found to literally meet the preamble of claim 1 of the '401 patent because CPX-1111 is an ink cartridge for an inkjet-type recording apparatus that is removably mountable on to an ink-supply needle of the inkjet type recording apparatus and the ink-supply needle has at least one through hole to allow ink from the ink tank cartridge to pass through. (Murch, Tr. at 1221:14-25; CDX-11, Slides 27-32.) The first limitation of claim 1 of the '401 patent reads as follows:

a housing formed with a chamber therein;

(CX-6 at 13:50.) CPX-1111 is found to literally practice the first limitation of claim 1 of the '401 patent because this cartridge comprises a housing formed with a chamber therein (the housing is comprised of the walls making up the ink cartridge and the chamber is created by that). (Murch, Tr. at 1222:1-12; CDX-11, Slides 27-28.) The second limitation of claim 1 of the '401 patent reads as follows:

an ink supply port extending through and projecting from a wall of said housing, said ink supply port having a first opening directed towards said chamber of said housing and a second opening directed away from said wall of said housing;

(CX-6 at 13:51-56.) CPX-1111 is found to literally practice the second limitation of claim 1 of the '401 patent because the cartridge has an ink-supply port extending through and projecting from a wall of the housing, the first opening to the ink supply tank from the interior and the port has a first opening directed towards the chamber which is the first opening on the view from the chamber above in CDX-11, Slide 29. The cartridge also has a second opening directed away from the wall of the housing which can be seen from the bottom view on the right hand side in

CDX-11, Slide 29. This constitutes the second opening of the ink-supply port. (Murch, Tr. at 1222:13-1223:8; CDX-11, Slide 29.) The third limitation of claim 1 of the '401 patent reads as follows:

> at least one porous member accommodated in said chamber of said housing for having ink impregnated therein, said porous member resiliently abutting against said first opening of said ink supply port;

(CX-6 at 13:57-60.) CPX-1111 is found to literally meet the third limitation of claim 1 of the '401 patent because this cartridge has at least one porous member in the chamber of the housing for having ink impregnated therein and the porous member is resiliently abutting against the first opening of the ink supply port. (Murch, Tr. at 1223:9-1224:5, CDX-11, Slide 30.) The porous member of CPX-1111 is represented by the greenish sponge-like material in CDX-11, Slide 30. (Murch, Tr. at 1223:9-1224:5, CDX-11, Slide 30.) The porous member of CPX-1111 resiliently abuts the first opening of the ink-supply port as shown in the circled area in CDX-11, Slide 30. (Murch, Tr. at 1223:9-1224:5, CDX-11, Slide 30.) The fourth limitation of claim 1 of the '401 patent reads as follows:

> a packing member provided within said ink supply port towards said second opening, said packing member being formed with a hole therethrough dimensioned to receive said ink supply needle and to resiliently abut against an outer periphery of said ink supply needle of said ink jet type recording apparatus, said packing member preventing the flow of ink through said ink supply port other than through said ink supply needle when said needle is positioned in said ink supply port; and

(CX-6 at 13:61-14:3.) CPX-1111 is found to literally meet the fourth limitation of claim 1 of the '401 patent because the cartridge has a packing member provided within the ink-supply port towards the second opening. The packing member is inside the opening and is formed with a

hole. That hole is dimensioned to receive the ink-supply needle and to resiliently abut against an outer periphery of the ink-supply needle of the ink jet recording apparatus. The packing member is further preventing the flow of ink through the ink tank supply port anywhere other than in to the ink-supply needle when the ink supply needle is positioned in the ink-supply port. (Murch, Tr. at 1224:6-1225:8; CDX-11, Slide 31.) Throughhole on the packing member of CPX-1111 can be seen in the middle of the circle marked in CDX-11, Slide 31. The circle is marked as the packing member. (Murch, Tr. at 1224:6-1225:8:, CDX-11, Slide 31.) The dimensioned throughhole of the packing member of CPX-1111 can be confirmed visually or by removing the packing member and fitting it over the ink-supply needle to ensure that it is dimensioned to accommodate the ink-supply needle or simply mounting a cartridge to a printer. (Murch, Tr. at 1225:9-24.) The fifth limitation of claim 1 of the '401 patent reads as follows:

> a sealing member separate from said packing member positioned to seal said second opening of said ink supply port before said ink tank cartridge is mounted on said ink supply needle and to be penetrated by said ink supply needle when said ink tank cartridge is mounted on said ink supply needle.

(CX-6 at 14:4-9.) CPX-1111 is found to practice the fifth limitation of claim 1 of the '401 patent because this cartridge has a sealing member that covers the exit opening. The sealing member seals the second opening of the ink-supply port before the ink cartridge is mounted on the ink-supply needle. It is designed to be penetrated by the ink supply needle when the ink tank is mounted on the ink supply needle (made of a plastic that can be penetrated by the ink-supply needle when the cartridge is mounted on the carriage). (Murch, Tr. at 1225:25-1226:25, CDX-11, Slide 32.) The sealing member of CPX-1111 can be seen on the right hand side in CDX-11, Slide 32. It covers the exit opening and is made up of a plastic-like material that seals the outside

of the port. (Murch, Tr. at 1225:25-1226:25, CDX-11, Slide 32.) Epson Portland manufactures the cartridge model embodied by CPX-1111 (McEvers, Tr. at 171:3-16; CDX-11, Slide 1.)

Claim 1 of the '917 patent states:

> An ink cartridge for mounting on a carriage of an inkjet printing apparatus and for supplying ink to a printhead of said ink jet printing apparatus through an ink supply needle, the ink cartridge comprising:
>
> a plurality of external walls, including a first wall and a second wall, defining at least some of a chamber;
> an ink supply port for receiving said ink supply needles, the ink supply port having a centerline and communicating with the chamber;
>
> a semiconductor storage device storing information about the ink carried by said cartridge; and
>
> a plurality of contacts for connecting the semiconductor storage device to the ink jet printing apparatus, the contacts being formed in a plurality of rows lying essentially in a plane parallel to the centerline of the ink supply port, each said row being centered relative to the centerline of said ink supply port.

(CX-7 at 11:30-47.) CPX-1114 is "Epson Representative Cartridge 2," a genuine Epson cartridge, manufactured by Complainant Epson Portland Inc. (Murch, Tr. at 1228:14-1229:6; McEvers Tr. at 171:3-16; CDX-11, Slide 1.) CPX-1114 is found to literally practice claim 1 of the '917 patent. (Murch, Tr. at 1229:2-1230:2; CPX-1114; CDX-11, Slides 33-37.) The preamble of claim 1 of the '917 patent states:

> An ink cartridge for mounting on a carriage of an inkjet printing apparatus and for supplying ink to a printhead of said ink jet printing apparatus through an ink supply needle, the ink cartridge comprising.

(CX-7 at 11:30-34.) CPX-1114 is found to literally practices the preamble of claim 1 of the '917 patent because it is an ink cartridge for mounting on the carriage of an inkjet printing apparatus and for supplying ink to the printhead through an ink supply needle. (Murch, Tr. at 1229:24-1230:11; CPX-1114; CDX-11, Slide 34.) The first limitation of claim 1 of the '917 patent states:

> A plurality of external walls, including a first wall and a second wall, defining at least some of a chamber.

(CX-7 at 11:35-36.) CPX-1114 is found to literally practice the first limitation of claim 1 of the '917 because CPX-1114 has a plurality of external walls, including a first wall (the bottom wall through which the ink-supply port exits the cartridge) and a second wall (the perpendicular front wall), defining at least some of a chamber. (Murch, Tr. at 1230:12-24; CPX-1114; CDX-11, Slide 34.) The second limitation of claim 1 of the '917 patent states:

> An ink supply port for receiving said ink supply needles, the ink supply port having a centerline and communicating with the chamber.

(CX-7 at 11:37-39.) CPX-1114 is found to literally practice the second limitation of claim 1 of the '917 because CPX-1114 has an ink supply port exiting the bottom of the cartridge for receiving an ink supply needle, and the ink supply port has a centerline and communicates with the chamber of the cartridge. (Murch, Tr. at 1230:25-1231:23; CPX-1114; CDX-11, Slide 35.) The third limitation of claim 1 of the '917 patent states:

> A semiconductor storage device storing information about the ink carried by said cartridge.

(CX-7 at 11:40-41.) CPX-1114 (Model No. T017), has a semiconductor storage device. (Murch, Tr. at 1228:18-21, 1231:24-1232:9; CDX-11, slide 1, slide 36; CPX-1114.) Based on Murch's

own testing of Epson Model No. T017 and the data extracted from the semiconductor storage device at his request by Vanteon, Epson Representative Cartridge 2 is found to literally practice the limitation of "a semiconductor storage device storing information about the ink" found in claim 1 of the '917 patent. (Murch, Tr. at 1232:10-1233:3; CX1495C.030.) It is found that Epson Model No. T017 had an initial Ink Consumption Volume reading of "00," as shown in the column for Procedure Step Decoded 3. (CX-1495C.030.) After use, Epson Model No. T017 had an hexadecimal Ink Consumption Volume reading of "04" as shown in the first column for Procedure Step Decoded 5. (CX-1495C.030.) It is also found that Epson Model No. T017 has a manufacture date of May 1, 2001 at 5:41 p.m. as shown by the Manufacturing Year, Month, Date, Hour and Minute rows. (CX1495C.030.) This date is the date the ink cartridge was manufactured. (Murch, Tr. at 731:5-17, 724:4-9, 724:21-725:8.) The semiconductors on Epson cartridges also have an ASCII file identifying that the ink in the cartridge was made by Epson. (Murch, Tr. at 701:2-702:10.) Genuine Epson cartridges display the Epson logo in the print utility window. (Murch, Tr. at 693:19-20.) The administrative law judge finds that the semiconductor on Epson Representative Cartridge 2 literally practices the limitation of "a semiconductor storage device storing information about the ink" found in claim 1 of the '917 patent because it stores the date and time of manufacture, color of ink, the amount of ink, and the type of ink in the cartridge. (Murch, Tr. at 1232:10-18, 1233:4-21; CX1495C.030.) CPX-1114 is found to practice the third limitation of claim 1 of the '917 because CPX-1114 (Epson Representative Cartridge 2) has a semiconductor storage device for storing information about the ink carried in the cartridge, and information about the ink in the cartridge is stored in the semiconductor. (Murch, Tr. at 1231:24-1233:21; CPX-1114; CDX-11, Slide 36.) With respect to

the third limitation of claim 1 of the '917, the semiconductor storage device on CPX-1114 stores information about the ink carried in the cartridge, including the date of manufacture to the minute, the amount of ink in the cartridge at any point in time, and the color of ink in the cartridge. (Murch, Tr. at 1231:24-1233:21; CPX-1114.) The fourth limitation of claim 1 of the '917 patent states:

> A plurality of contacts for connecting the semiconductor storage device to the ink jet printing apparatus, the contacts being formed in a plurality of rows lying essentially in a plane parallel to the centerline of the ink supply port, each said row being centered relative to the centerline of said ink supply port.

(CX-7 at 11:40-47.) CPX-1114 is found to literally practice the fourth limitation of claim 1 of the '917 patent because the cartridge has a semiconductor storage device with a plurality of contacts for connecting the semiconductor storage device to the ink jet printing apparatus, the contacts being formed in a plurality of rows lying essentially in a plane parallel to the centerline of the ink supply port, with each row being centered relative to the centerline of the ink supply port. (Murch, Tr. at 1233:22-1236:8; CPX-1114; CDX-11, Slide 37.) Conductive Pattern 4 is found on CPX-1114. (CPX-1114; CDX-1, Slide 3.)

CPX-1114 is found to literally practice claim 34 of the '902 patent, which depends from Claim 31. (Murch, Tr. at 1229:3-10; CPX-1114; CDX-11, Slide 1; CDX-11, Slides 41-45.) The preamble of claim 31 of the '902 patent reads as follows:

> An ink cartridge for an ink jet printing apparatus having a printhead which ejects ink droplets onto a recording medium, the printhead having a ink supply needle, and is mounted on a movable carriage, the ink cartridge comprising:

(CX-8 at 13:16-20.) CPX-1114 is found to literally practice the preamble of claim 31 of the '902 patent because CPX-1114 is an ink cartridge for an inkjet printing apparatus which is mountable on a movable carriage. (Murch, Tr. at 1236:25-1237:16; CPX-1114; CDX-11, Slide 41.) The first limitation of claim 31 of the '902 patent reads as follows:

> a housing containing an ink therein and configured for removable mounting on the printhead, said housing having a first wall and a second wall, the second wall having both a first upper corner and a second upper corner;

(CPX 8 at 13:21-25.) CPX-1114 is found to literally practice the first limitation of claim 31 of the '902 patent because CPX-1114 has a housing containing an ink therein and configured for removable mounting on the printhead, with the housing having a first wall and a second wall, with the second wall having both a first upper corner and a second upper corner. (Murch, Tr.1237:17-1238:11; CPX-1114; CDX-11, Slide 41.) The first upper corner and second upper corner on CPX-1114 are the intercepts of the second wall (the wall containing the semiconductor) and the top of the cartridge, and are located between the midpoint of the second wall and the top of the cartridge. (Murch, Tr. at 1237:17-1238:11; CPX-1114; CDX-11, Slide 41.) The second limitation of claim 31 of the '902 patent reads as follows:

> an ink supply port formed on said first wall for receiving the ink supply needle of the printhead, having an exit opening, and supplying the ink from said housing to the printhead;

(CPX 8 at 13:26-29.) CPX-1114 is found to literally practice the second limitation of claim 31 of the '902 patent because CPX-1114 has an ink supply port formed on said first wall (the bottom wall) for receiving the ink supply needle of the printhead, the ink supply port has an exit opening,

and the ink supply port is for supplying the ink from the housing to the printhead. The third limitation of claim 31 of the '902 patent reads as follows:

> a semiconductor storage device storing information about the ink disposed on said housing;

(CPX 8 at 13:30-31.) CPX-1114 is found to literally practice the third limitation of claim 31 of the '902 patent because CPX-1114 has a semiconductor storage device storing information about the ink disposed on its housing. (Murch, Tr. at 1239:6-25; CPX-1114; CDX-11, Slide 43.) The fourth limitation of claim 31 of the '902 patent reads as follows:

> at least two electrical contacts for connecting the semiconductor storage device to the ink jet printing apparatus, and

(CPX 8 at 13:33-35.) CPX-1114 is found to literally practice the fourth limitation of claim 31 of the '902 patent because CPX-1114 has at least two electrical contacts for connecting the semiconductor storage device to the ink jet printing apparatus. (Murch, Tr. at 1240:1-17; CPX-1114; CDX-11, Slide 44.) The fifth limitation of claim 31 of the '902 patent reads as follows:

> at least a first overhang member extending beyond a plane of the wall of said housing where said contacts are disposed, the first overhang member being located between the first upper corner and the second upper corner.

(CPX 8 at 13:36-40.) CPX-1114 is found to literally practice the fifth limitation of claim 31 of the '902 patent because CPX-1114 has at least a first overhang member extending beyond a plane of the wall of the housing where the contacts are disposed, the first overhang member being located between the first upper corner and the second upper corner. (Murch, Tr. at 1240:18-1241:17; CPX-1114; CDX-11, Slide 45.) In CPX-1114, the upper corners are between

the midpoint of the wall containing the semiconductor and the top of the cartridge, and the overhang is located in that quadrant between the midpoint of the wall containing the semiconductor and the top of the cartridge. (Murch, Tr. at 1240:18-1241:17; CPX-1114; CDX-11, Slide 45.) Claim 34 of the '902 patent depends on claim 31 and states:

> The ink cartridge according to claim 31, wherein, viewing the ink cartridge in a direction perpendicular to a plane of the contacts, at least one of said contacts is intersected by a plane passing through the centerline of said ink supply port.

(CX-8 at 13:48-52.) The administrative law judge finds that CPX-1114 literally practices claim 34 of the '902 patent. (Murch, Tr. at 1229:3-10; CPX-1114; CDX-11, Slide 1; CDX-11, Slides 41-45.) Thus CPX-1114 practices the added limitation of dependent claim 34 of the '902 because when viewing CPX-1114 in a direction perpendicular to a plane of the contacts on the cartridge, at least one of the contacts (the middle contact in the upper row of contacts) is intersected by a plane passing through the centerline of said ink supply port. (Murch, Tr. at 1242:14-1243:3, 1243:13-1244:7; CPX-1114; CDX-11, Slide 47.)

CPX-1124 is "Epson Representative Cartridge 3," a genuine Epson cartridge, manufactured by Complainant Epson Portland Inc. (Murch, Tr. at 1171:19-24; McEvers Tr. at 171:3-16; CPX-1124; CDX-1, Slide 1; CDX-11, Slides 49-52.) The administrative law judge finds that CPX-1124 literally practices claim 10 of the '422 patent. (Murch, Tr. at 1259:24-1260:21; CPX-1124; CDX-11, Slide 1; CDX-11, Slides 49-52.) The preamble of claim 10 of the '422 patent reads as follows:

> An ink cartridge detachably mountable on a carriage which is reciprocally movable in a recording apparatus and which has a electrode and an engagement portion, comprising:

(CX-9 at 14:26-29.) CPX-1124 is found to literally meet the preamble of claim 10 of the '422 patent because it is an ink cartridge detachably mountable on a carriage which is reciprocally movable in a recording apparatus (printer) and which has an electrode and an engagement portion. (Murch, Tr. at 1260:25-1261:10; CPX-1124; CDX-11, Slide 49.) The first limitation of claim 10 of the '422 patent reads as follows:

> a container that stores ink therein and has an ink supply port in a leading end side in an insertion direction of the container;

(CX-9 at 14:30-32.) CPX-1124 is found to literally meet the first limitation of claim 10 of the '422 patent because this cartridge comprises a container that stores ink therein (the interior of the cartridge is a container that stores ink) and has an ink supply port (the element that protrudes from the bottom wall of the cartridge, as shown on CDX-11, Slide 49) in a leading end side in an insertion direction of the container (the cartridge is inserted by pushing it directly down on to the ink-supply needle and the arrow shown on CDX-11, Slide 49 indicates the insertion direction). (Murch, Tr. at 1261:11-1262:7; CPX-1124; CDX-11, Slide 49.) The second limitation of claim 10 of the '422 patent reads as follows:

> a memory device having at least one electrode for electrical connection to the recording device, the at least one electrode being fixed relative to a first of two opposite surfaces substantially parallel with the insertion direction of the container;

(CX-9 at 14:33-37.) CPX-1124 is found to literally meet the second limitation of claim 10 of the '422 patent because this cartridge has a memory device (the memory device is on the first surface of the cartridge as a green circuit board with gold electrodes as shown on CDX-11, Slide 50) having at least one electrode for electrical connection to the recording device, the at least one electrode being fixed relative to a first of two opposite surfaces (the first surface is the front wall

of the cartridge upon which the electrode is mounted and the opposite surface is the back wall of the cartridge, as shown on CDX-11, Slide 50) substantially parallel with the insertion direction of the container (the cartridge is mounted by pushing the cartridge straight down on to the ink-supply needle, so the first surface of the cartridge is substantially parallel with the insertion direction of the container as shown on CDX-11, Slide 50). (Murch, Tr. at 1262:8-1263:16; CPX-1124; CDX-11, Slide 50.) The third limitation of claim 10 of the '422 patent reads as follows:

> a retaining member disposed on the first surface and located at a trailing end side relative to the at least one electrode in the insertion direction, the retaining member being movable and engageable with the engagement portion of the carriage; and

(CX-9 at 14:38-43.) CPX-1124 is found to literally meet the third limitation of claim 10 of the '422 patent because this cartridge has a retaining member disposed on the first surface (the arm that extends and angles away from the first surface which is the surface that has the semiconductor device as shown on CDX-11, Slide 51) and located at a trailing end side relative to the at least one electrode in the insertion direction (the electrodes being located towards the bottom part of the first surface, so when the cartridge is inserted, the retaining member is located in a trailing direction such that it would follow the electrodes into the carriage, the insertion of the cartridge, as shown on CDX-11, Slide 51), the retaining member being movable (the blue arrow shown on CDX-11, Slide 51 indicates the direction that the retaining member can be moved) and engageable with the engagement portion of the carriage (the retaining member having a nub indicated by a red line on CDX-11, Slide 51 that engages with an element within a carriage and produces an audible click when it is installed). (Murch, Tr. at 1263:17-1265:11;

CPX-1124; CDX-11, Slide 51.) The fourth limitation of claim 10 of the '422 patent reads as follows:

> a guide recess located substantially at the center of the container and extending in the insertion direction.

(CX-9 at 14:44-45.) CPX-1124 is found to literally meet the fourth limitation of claim 10 of the '422 patent because this cartridge has a guide recess (the element that starts at the very base of the cartridge, the lowest point and extends up into the cartridge as shown on CDX-11, Slide 52) located substantially at the center of the container and extending in the insertion direction (when the cartridge is pushed down on the carriage, the extension of the guide is up into the chamber). (Murch, Tr. at 1265:12-1266:10; CPX-1124; CDX-11, Slide 52.)

Epson Portland manufactures the cartridge model embodied by CPX-1125. (McEvers Tr. at 171:3-16; CDX-11, Slide 1.) It is found by the administrative law judge that Epson literally practices claim 1 of the '053 patent. (Murch, Tr. at 1266:11-1268:6.) The preamble of claim 1 of the '053 patent reads as follows:

> An ink cartridge comprising:

(CX-11 at 28:38.) CPX-1125 is found to literally meet the preamble of claim 1 of the '053 patent because CPX-1125 is an ink cartridge. (Murch, Tr. at 1267:7-19; CDX-11, Slides 53-59.) The first limitation of claim 1 of the '053 patent reads as follows:

> An ink container having an upper wall, a bottom wall, a first side wall and a second side wall;

(CX-11 at 28:39-40.) CPX-1125 is found to literally practice the first limitation of claim 1 of the '053 patent because this cartridge comprises a container (the area within the cartridge holding ink) which has an upper wall (the top wall of the cartridge), a bottom wall (the lowest wall of the

cartridge), a first side wall (the front wall of the cartridge, in reference to the ink-supply port which protrudes from the bottom wall and is closer to the first side wall) and a second side wall (the back wall of the cartridge). (Murch, Tr. at 1267:20-1268:15; CDX-11, Slide 54.) The second limitation of claim 1 of the '053 patent reads as follows:

> an ink supply port disposed on the bottom wall closer to the first side wall than the second side wall, the ink supply port having an axis;

(CX-11 at 28:41-43.) CPX-1125 is found to literally practice the second limitation of claim 1 of the '053 patent because this cartridge has an ink supply port (the feature that protrudes from the bottom wall identified in limitation one) disposed on the bottom wall closer to the first side wall (the front wall of the cartridge as shown in CDX-11, Slide 55) than the second side wall (the back wall of the cartridge as shown in CDX-11, Slide 55), the ink supply port having an axis (shown in CDX-11, Slide 55 as the dotted line that would extend vertically through the ink-supply port and through the cartridge). (Murch, Tr. at 1268:16-1269:20; CDX-11, Slide 55.) The third limitation of claim 1 of the '053 patent reads as follows:

> a retaining member disposed on the first side wall, the retaining member having a protruding engagement portion;

(CX-11 at 28:44-46.) CPX-1125 is found to literally meet the third limitation of claim 1 of the '053 patent because this cartridge has a retaining member (feature on the first side wall), disposed on the first side wall (it extends out away from the wall as seen in side view of CDX-11, Slide 56 and is identified with a red line pointing to it), the retaining member having a protruding engagement portion. (Murch, Tr. at 1269:21-1270:16, CDX-11, Slide 56.) In CPX-1125 there is a nub (the engagement portion) on the outside of the lever which engages the

corresponding element within the carriage. (Murch, Tr. at 1269:21-1270:16, CDX-11, Slide 56.) The fourth limitation of claim 1 of the '053 patent reads as follows:

> a projection portion located in a region where a plane of the second side wall and a plane of the bottom wall intersect, and extending away from the first side wall, the projecting portion having a surface lying in a plane that is substantially parallel to the axis;

(CX-11 at 28:47-51.) CPX-1125 is found to literally meet the fourth limitation of claim 1 of the '053 patent because it has a projection portion located in a region where a plane of the second side wall (in CDX-11, Slide 57, the pictorial on the left-hand side of the picture shows in a pink color the plane of the second side wall (which would be the back wall of the cartridge)) and a plane of the bottom wall (referenced in CDX-11, Slide 57) intersect, and extending away from the first side wall, the projecting portion (the element that extends or projects from the second wall and extends away from the first side wall) having a surface lying in plane that is substantially parallel to the axis. (Murch, Tr. at 1270:17-1272:18:, CDX-11, Slide 57.) In CPX-1125 as represented in CDX-11, Slide 57, the projection portion is a three dimensional element and can be identified in terms of the semiconductor which is the greenish element that is contained on the side of the projection. (Murch, Tr. at 1270:17-1272:18:, CDX-11, Slide 57.) In CPX-1125, as represented in CDX-11, Slide 57, the projection portion lies in a plane that is parallel to the axis of the ink-supply port, which is represented as a dotted line extending through the cartridge from the ink-supply port. (Murch, Tr. at 1270:17-1272:18:, CDX-11, Slide 57.) The fifth limitation of claim 1 of the '053 patent reads as follows:

> a memory unit disposed on the ink cartridge;

(CX-11 at 28:52.) CPX-1125 is found to literally practice the fifth limitation of claim 1 of the '053 patent because this cartridge has a memory unit disposed on the ink cartridge. (Murch, Tr. at 1272:19-1273:7, CDX-11, Slide 58.) In CPX-1125 as represented in CDX-11, Slide 58, a "memory unit disposed on the ink cartridge" is seen by looking directly on the back wall of the cartridge. The memory unit located there is the slightly greenish area containing electrodes (which are gold) in CDX-11, Slide 58. (Murch, Tr. at 1272:19-1273:7, CDX-11, Slide 58.) The sixth limitation of claim 1 of the '053 patent reads as follows:

> a plurality of electrodes disposed on the surface and which are in electrical communication with the memory unit;

(CX-11 at 28:52-55.) CPX-1125 is found to literally practice the sixth limitation of claim 1 of the '053 patent because on the memory unit of the cartridge there are a plurality of electrodes (represented in the gold area to the right of the text in CDX-11, Slide 59) disposed on the surface and which are in electrical communication with the memory unit (the entire unit which is depicted in green). (Murch, Tr. at 1273:8-21:, CDX-11, Slide 59.)

CPX-1125 (Epson Representative Cartridge 4) is found to literally practice claim 21 of the '397 patent. (Murch, Tr. at 1273:22-1274:4, 1278:3-1287:25; CPX-1125; CDX-11, Slide 1; CX-12; CDX-11, Slides 61-67.) The preamble of claim 21 of the '397 patent states:

> An ink cartridge comprising:

(CX-12 at 21:11.) CPX-1125 is found to literally practice the preamble of claim 21 of the '397 patent because it is an ink cartridge. (Murch, Tr. at 1278:14-21; CPX-1125; CDX-11, Slide 61.) The first limitation of claim 21 of the '397 patent states:

> an ink storage chamber;

(CX-12 at 21:12.) CPX-1125 is found to literally practice the first limitation of claim 21 of the '397 patent because it has ink storage chambers (the interior of the cartridge contains ink storage chambers). For example, the upper right-hand portion in the pictorial to the right of CDX-11, Slide 61 is a storage chamber. (Murch, Tr. at 1278:22-1279:6; CPX-1125; CDX-11, Slide 61.) The second limitation of claim 21 of the '397 patent states:

> an ink supply port that is in fluid communication with the ink storage chamber through an ink flow path; and

(CX-12 at 21:13-14.) CPX-1125 is found to literally practice the second limitation of claim 21 of the '397 patent because it has an ink supply that is in fluid communication with the ink storage chamber through an ink flow path. (Murch, Tr. at 1279:7-1281:24; CPX-1125; CDX-11, Slide 62.) The ink-supply port (the mechanism by which the ink exits the cartridge) in CPX-1125 is represented by the element that protrudes from the bottom wall which is shown as the ink-supply port in the two pictures in CDX-11, Slide 62. The ink-supply port is in fluid communication with the ink storage chamber. (Murch, Tr. at 1279:7-1280:3; CPX-1125; CDX-11, Slide 62.) The ink storage chambers in CPX-1125 is represented by the elements on the right-hand cartridge of CDX-11, Slide 62 to which arrows point. (Murch, Tr. at 1279:7-1280:3; CPX-1125; CDX-11, Slide 62.) The flow of ink is represented in the right hand picture of CDX-11, Slide 62 by a bluish purple line that traces the direction of the ink-supply path as it exits the ink-supply chamber and enters the valve, which in turn will allow the ink to flow to the ink-supply port. The flow path goes from an ink-supply chamber into the back side of the valve assembly in said right hand-picture. (CDX-11, Slide 62.) The key-shaped area in said right hand picture of CDX-11, Slide 62 represents the path from the center opening to the ink-supply port. (CDX-11,

Slide 62.) In the left hand picture of CDX-11, Slide 62, the purple represents where the ink enters the valve and where it exists the valve to flow to the ink-supply port. (CDX-11, Slide 62.) The hole in the center of this picture is the hole that allows the ink to flow when the membrane moves back to enter the flow path. (Murch, Tr. at 1280:4-1281:24; CPX-1125; CDX-11, Slide 62.) The third limitation of claim 21 of the '397 patent states:

> a negative pressure generating mechanism which selectively blocks the ink flow path and opens as a consequence of consumption of ink, the negative pressure generating mechanism including,
>
> an elastic member having first and second surfaces;
>
> a communicating portion facing the first surface of the elastic member and communicating with the ink storage chamber, the communicating portion including an inlet through which ink enters into the communicating portion and an outlet both being located on a same side with respect to the elastic member; and
>
> a space portion facing the second surface of the elastic member and communicating with the ink supply port
>
> wherein the communicating portion forms a part of the ink flow path, and the first surface of the elastic member contacts with and separates from the outlet.

(CX-12 at 21:15-32.) CPX-1125 is found to literally practice the third limitation of claim 21 of the '397 patent. (Murch, Tr. at 1281:25-1287:25; CPX-1125; CDX-11, Slides 63-67.) The "negative pressure generating mechanism" of CPX-1125 is a valve assembly that responds to changes in pressure due to the consumption of ink via the printhead. The negative pressure generating mechanism selectively blocks the ink flow path and opens, as a consequence, the consumption of ink. It consists of a membrane, spring and a cover that hold it in place and is represented in CDX-11, Slide 63 as the element that sits on the left-hand picture within a circular

opening. (Murch, Tr. at 1281:25-1282:23; CPX-1125; CDX-11, Slide 63.) The "negative pressure generating mechanism' of CPX-1125 selectively blocks the ink flow path and opens the flow of ink by moving back and forth and allowing the ink to flow through the opening and enter the ink-supply port. The membrane on the upper right hand portion of picture in CDX-11, Slide 63 sits over a small hole in the center which is the exit opening to the ink-supply port. In a closed position, it is held in abutment to that hole via the tension of the spring which sits in the center of the membrane and attaches to the outer cover. As the pressure changes, the pressure change overcomes the tension of the spring, allowing the back and forth movement that allows the ink flow described above. (Murch, Tr. at 1282:24-1283:16; CPX-1125; CDX-11, Slide 63.) The consumption of ink creates the change of pressure within the printhead. That change in pressure is great enough to overcome the tension by the spring closing the valve. (Murch, Tr. at 1283:17-24; CPX-1125; CDX-11, Slide 63.) The elastic member of CPX-1125 is the element that sits inside the valve and comes in contact with the opening that permits the flow of ink. It has a first surface that faces the partition wall and a second surface facing away from that wall. (Murch, Tr. at 1283:25-1284:14; CPX-1125; CDX-11, Slide 64.) The communicating portion of the elastic member CPX-1125 is represented in CDX-11, Slide 65 as the area that closes and shown as the communicating portion shown in the enlarged version of the cartridge in the slide. This portion of the elastic member communicates with the ink storage chamber. (Murch, Tr. at 1284:15-1285:8; CPX-1125; CDX-11, Slide 65.) The communicating portion includes an inlet (represented by a dot on CDX-11, Slide 65) through which ink enters into the communicating portion. It also includes an outlet through which the ink leaves the communicating portion (the center hole in the middle of the valve element). The inlet and outlet are both located on the same

side with respect to the elastic member (the elastic member sits above these two so they are actually on the same side with respect to the elastic member). (Murch, Tr. at 1285:9-1286:3; CPX-1125; CDX-11, Slide 65.) The "space portion facing the second surface of the elastic member and communicating with the ink-supply port" in CPX-1125 is represented in CDX-11, Slide 66, as the space portion facing the second surface (the surface that communicates with the ink-supply port). The space portion is how the cover sits on the membrane. (Murch, Tr. at 1286:4-1287:2; CPX-1125; CDX-11, Slide 66.) The communicating portion forms a part of the ink flow path in that the elastic member that is in contact with the opening to the ink-supply port contacts that port and separates from it as ink is consumed by the printhead. There is a spring holding the membrane in place over the opening. When ink is consumed and sufficient pressure change is generated, the membrane moves back as that pressure overcomes the tension created by the spring, and ink then flows to the ink-supply port. (Murch, Tr. at 1287:3-25; CPX-1125; CDX-11, Slide 67.)

X. Enforceability

Complainants, in their posthearing brief, addressed the active respondents' "affirmative defenses of implied license, repair, and unclean hands." (CBr at 170-86.) The active respondents, in their posthearing brief, merely argued under the title "Under The Repair Doctrine, There Can Be No Contributory Infringement" that "[t]o the extent that any of the claims at issue are found to be directed to a combination of a cartridge with non-cartridge structure, e.g., an ink supply needle, the repair doctrine precludes a finding that any Ninestar

cartridges infringes such claims" and then only referenced law. (RBr at 185-87.)[109] The active respondents, in rebuttal findings, did argue for example that "Seiko refused to produce any discovery concerning such relationships or communications" as to any implied license defense (response to CFF IX.A.6.) A similar statement was made as to the unclean hands defense. See response of active respondents to CFF IX.B.2.

The staff rejected any permissible repair defense. (SBr at 115-7.) It also rejected any implied license defense on the ground that "Ninestar's argument for such a defense is not well developed in its pretrial brief and no testimony or other evidence was offered at the hearing concerning the defense, and therefore further discussion concerning the same is difficult." (SBr. at 117.) The staff further argued that the unclean hands defense is "[w]holly lacking in supporting evidence" and hence should be rejected. (SBr at 118.)

The active respondents have the burden of establishing any affirmative defense. As indicated, supra, the active respondents merely argued that "[t]o the extent that any of the claims at issue are found to be directed to a combination of a cartridge with non-cartridge structure, e.g. an ink supply needle" and did not identify any specific claims. It is a fact for example that claim claim 1 of the '401 patent in issue reads in relevant part:

> An ink tank cartridge for an ink-jet type recording apparatus being removably mountable onto an ink supply needle of said ink jet type recording apparatus, said ink supply needle having at least one-throughhole to allow ink from said ink tank cartridge to pass therethrough, the ink tank cartridge comprising:
>
> * * *

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[109] Order No. 22, which issued on December 20, 2006, granted a motion of complainants to the extent that equitable estoppel and patent misuse defenses of the active respondents were stricken.

> a packing member provided within said ink supply port towards said second opening, said packing member being formed with a hole therethrough dimensioned to receive said ink supply needle and to resiliently abut against an outer periphery of said ink supply needle of said ink jet type recording apparatus, said packing member preventing the flow of ink through said ink supply port other than through said ink supply needle when said needle is positioned in said ink supply port;. . . .

(CFF VI.M.2 (emphasis added).) Also claim 1 of the '902 patent in issue, which includes references to a "printing apparatus," "printhead" and an "ink supply needle," read:

> An ink cartridge for an ink jet printing apparatus having a printhead which ejects ink droplets onto a recording medium, the printhead having an ink supply needle, and is mounted on a movable carriage, the ink cartridge comprising:
>
> a housing containing an ink therein and configured for removable mounting on the printhead, said housing having a first wall and a second wall, the second wall having both a first upper corner and a second upper corner;
>
> an ink supply port formed on said first wall for receiving the ink supply needle of the printhead and supplying the ink from said housing to the printhead, the ink supply port having an exit opening and a centerline;
>
> a semiconductor storage device storing information about the ink disposed on said housing;
>
> at least two electrical contacts on said second wall and allowing electrical communication between the semiconductor storage device and the ink jet printing apparatus, the contacts lying in at least a first row and a second row, the first row being closer to a line connecting the first and the second upper corner than the second row; and
>
> a first overhang disposed between the first upper corner and the second upper corner.

(CFF VI.R.2 (emphasis added).) The administrative law judge finds that the terms supra emphasized describe the environment in which the claimed cartridge is to operate. In re Stencel, 828 F.2d at 751.

As to any failure of complainants to provide discovery, the active respondents had ample opportunity to file motions to compel. Based on the evidence in the record, the claim interpretation of the asserted claims by the administrative law judge and the language of the asserted claims as well as consideration of the post hearing submissions of the active respondents, the administrative law judge finds that said respondents have not established the affirmative defenses of implied license, permissible repair and unclean hands.

XI. Remedy

Complainants seek the issuance of a general exclusion order barring entry into the United States of infringing cartridges to prevent respondents and other foreign manufacturers and domestic distributors from engaging in violation of section 337. (CBr at 186-219.) Should the Commission conclude that a general exclusion order is inappropriate, complainants argued that the Commission should issue a limited exclusion order directed at all infringing ink cartridges for use with Epson printers that are manufactured by or for each respondent. (CBr at 219.)

With respect to any cease and desist orders, complainants argued that the domestic respondents Ninestar U.S., Town Sky, Dataproducts and MMC each have a commercially significant amount of infringing Epson-compatible ink cartridges in inventory in the United States; that the domestic respondents that have defaulted, viz. Glory South, AcuJet, and Mipo America, also have a commercially significant amount of infringing Epson-compatible ink cartridges in inventory in the United States; and that cease and desist orders are therefore

warranted against each of those respondents. It is further argued that the cease and desist orders against Ninestar U.S., Town Sky, Dataproducts, MMC, Glory South, AcuJet and Mipo America should encompass their Internet activities; that each of said respondents maintains a website for the purpose of accepting or facilitating sales orders, and such websites provide information about respondents' infringing Epson-compatible ink cartridges; that Ninestar U.S. and Town Sky have acknowledged that 100% of their sales involve the Internet; and that MMC's and AcuJet's websites allow consumers to directly place orders for ink cartridges. (CBr at 219-20.)

The active respondents argued that an exclusion order against them is not appropriate because complainants have failed to establish that their cartridges infringe any valid claims of the patents asserted against them. To the extent the administrative law judge determines that an exclusion order is appropriate against the active respondents, it is argued that a general exclusion order is not warranted; that complainants have not set forth sufficient evidence of a widespread pattern of infringement or of the required "certain business conditions;" that Epson's investigators failed to provide sufficient evidence to establish widespread infringement or ease of entry to market and gathered information through extensive, deliberate misrepresentation; that testimony of Epson's investigators regarding importation is untrustworthy; that Epson's primary witness on the likelihood of other foreign manufacturers entering the U.S. market was not competent to testify on that subject; and that much of the testimony of said primary witness was inconsistent with his position that foreign manufactured cartridges were of lower quality and that he was uncertain whether foreign manufacturers can obtain product labeling for less money that Epson. (RBr at 200-04.)

Regarding the issuance of any cease and desist orders, it was argued by the active respondents that a cease and desist order directed against them is inappropriate because complainants have failed to set forth sufficient proof necessary to support a cease and desist order and that to the extent that the administrative law judge determines that cease and desist orders are warranted, Commission precedent dictates that any such order should not be issued as against the foreign respondent, Ninestar Zhuhai, as it is neither a domestic respondent nor does it maintain any inventory within the United States. (RBr at 205-08.)

With respect to the MMC respondents, said respondents on February 12, 2007 filed "Post-hearing Submission of Respondents MMC Consumables, Inc. and Zhuhai Gree Magneto-Electric Co., Ltd. Regarding Findings of Fact and Conclusions of Law." No other filing was made. In said filing of February 12, no reference is made to remedy. It stated:

> With regard to Proposed Findings Of Facts, MMC and Zhuhai Gree submit to, and agree with, the Proposed Findings Of Facts submitted by Respondents Ninestar Technology Co., Ltd., Ninestar Technology Company, Ltd., Town Sky Inc. and Dataproducts USA LLC (collectively "Ninestar").

The staff argued that if a violation of section 337 is found, entry of a general exclusion order is appropriate. However it was argued that for the '472 patent that is not being asserted against the active respondents the evidence is not adequate to show a violation, and hence only limited exclusion orders directed at the defaulting respondents are appropriate. (SBr at 118-19.) As to any cease and desist orders, the staff argued that the "U.S. based Respondents maintain a commercially significant inventory of accused products" and hence cease and desist orders against said respondents are appropriate. (SBr at 119-20.)

Where a violation of section 337 has been found, the Commission must consider the issues of remedy, the public interest, and bonding. With respect to remedy, the Commission may issue a remedial order excluding the goods of the person(s) found in violation (a limited exclusion order) or, if certain criteria are met, against all infringing goods regardless of the source (a general exclusion order).

Depending on the circumstances, the Commission's authority to issue a general exclusion order may be found in section 337(d)(2) which provides that:

> The authority of the Commission to issue an exclusion from entry of articles shall be limited to persons determined by the Commission to be violating this section unless the Commission determines that--
>
> (A) a general exclusion from entry of article is necessary to prevent circumvention of an exclusion order limited to products of named persons; or
>
> (B) there is a pattern of violation of this section and it is difficult to identify the source of infringing products.

19 U.S.C. § 1337(d)(2). Also Section 337(g)(2) provides that:

> In addition to the authority of the Commission to issue a general exclusion from entry of articles when a respondent appears to contest an investigation concerning a violation of the provisions of this section, a general exclusion from entry of articles, regardless of the source or importer of the articles, may be issued if--
>
> (A) no person appears to contest an investigation concerning a violation of the provisions of this section,
>
> (B) such a violation is established by substantial, reliable, and probative evidence, and
>
> (C) the requirement of subsection (d)(2) of this section are met.

Read together, section 337(g)(2) supplements the authority granted to the Commission under section 337(d)(2), empowering it to issue a general exclusion order when "no person appears to contest an investigation concerning violation of this section."

The Commission has noted that the criteria of section 337(d)(2), which are incorporated into section 337(g)(2), "do not differ significantly" from the factors in Certain Airless Paint Spray Pumps and Components Thereof, Inv. 337-TA-90, USITC Pub. 1199, 216 U.S.P.Q. 465 (USITC 1981) (Spray Pumps) and Certain Neodymium-Iron-Boron Magnets, Magnet Alloys, and Articles Containing Same, Inv. No. 337-TA-372, USITC Pub. 2694 (May 1996), Comm'n Op. at 5. In Spray Pumps, the Commission held that a complainant seeking a general exclusion order must show both (1) a widespread pattern of unauthorized use of its patented invention and (2) certain business conditions from which one might reasonably infer that foreign manufactures other than the respondents to the investigation may attempt to enter the U.S. market with infringing articles. Spray Pumps, 216 U.S.P.Q. at 473. The Commission stated that among the evidence which might be presented to prove a "widespread pattern of unauthorized use of the patented invention" would be:

> (1) a Commission determination of unauthorized importation into the United States of infringing articles by numerous foreign manufacturers; or
>
> (2) the pendency of foreign infringement suits based upon foreign patents which correspond to the domestic patent in issue;
>
> (3) other evidence which demonstrates a history of unauthorized use of the patented invention.

Id.

The evidence which might be presented to prove the "business conditions"

referred to includes:

(1) established demand for the patented product in the U.S. market and conditions of the world market;

(2) the availability of marketing and distribution networks in the United States for potential foreign manufactures;

(3) the cost to foreign entrepreneurs of building a facility capable of producing the patented article;

(4) the number of foreign manufacturers whose facilities could be retooled to produce the patented articles; or

(5) the cost to foreign manufacturers of retooling their facility to produce the patent articles.

Id.

The Commission may issue a cease and desist order against "any person violating [Section 337], or believed to be violating this section." 19 U.S.C. § 1337(f). A cease and desist order is warranted when there is a 'commercially significant' amount of infringing, imported product in the United States that could be sold so as to undercut the remedy provided by an exclusion order. A complainant bears the burden of proving that a respondent has a commercially significant inventory of the accused products in the United States. Certain Integrated Repeaters, Switches, Transceivers, and Products Containing Same, Inv. No. 337-TA-435, USITC Publication No. 3547, Comm'n Op. at 27 (October 2002).

A. Exclusion Order

Based on the evidence, should the Commission determine that there is a violation of section 337 as the administrative law judge has found, the administrative law judge recommends that a general exclusion order issue.

Referring to a preliminary matter, complainants, in the remedy phase of the investigation, offered testimony of Epson investigator Herb Seitz and Epson Portland employee Randall McEvers. However the active respondents challenged the credibility of the testimony of those witnesses. For example it is argued that the whole of Seitz's statements should be disregarded because he and his colleagues cast themselves as potential U.S. distributors of Epson-compatible ink cartridges as part of their investigation of the market for Epson-compatible ink cartridges.

During the course of their investigation for Epson, the Epson investigators identified themselves as representatives of a would-be distributor of ink cartridges in an effort to determine which foreign companies would be willing to ship their ink cartridges to distributors in the United States for resale. (Seitz, Tr. at 255:16-256:7.) They attended the 2005 Recharger Magazine World Expo, made inquiries as to whether they could purchase Epson-compatible ink cartridges from certain manufacturers and distributors, and ultimately did purchase such ink cartridges. (Seitz, Tr. at 252:9-258:15, 265:4-269:7.) In investigating the market for Epson-compatible ink cartridges, the Epson investigators also attended trade shows including the 2005 and 2006 Recharger Magazine World Expo shows held in Las Vegas, Nevada and the 2006 Asia Expo in Shanghai, China. (Seitz, Tr. at 252:9-258:15, 265:4-267:18.) To determine which companies would sell to U.S. distributors, the Epson investigators purchased Epson-compatible ink cartridges from many of the respondents in this investigation using the business name "K&R Supplies." (Seitz, Tr. at 269:1-3.)

The administrative law judge finds that by presenting themselves as would-be distributors, the Epson investigators were able to reliably determine which foreign manufacturer and distributors would sell Epson-compatible ink cartridges to U.S. distributors. Moreover, after

observing the demeanor of each of Seitz and McEvers, when they testified on January 17, 2007 at the hearing, the administrative law judge finds their testimony credible.

In support of a general exclusion order the administrative law judge finds that there is a widespread pattern of unauthorized use of Epson's patented inventions. Thus, the administrative law judge finds that eleven distinct respondents have manufactured and/or sold for importation into the U.S. infringing ink cartridges for use with Epson printers, viz., Ninestar Zhuhai, Zhuhai Gree, Butterfly, Mipo, Ink Lab, InkTec, Artech, Master Ink, Tully, Ribbon Tree Macao and Wellink. (CFF III.B.1-40, 42-71 (undisputed).) At least fourteen respondents have imported and/or sold after importation infringing Epson-compatible cartridges: Ninestar U.S., Town Sky, Dataproducts, MMC, Glory South, Mipo America, AcuJet, Ribbon Tree USA, Apex, InkTec America, Inkjetwarehouse, Nectron, Gerald Chamales and Rhinotek. (CFF III.B.1-40, 42-80 (undisputed).) In the course of this investigation, complainants have learned of hundreds of other companies that manufacture and distribute infringing Epson-compatible ink cartridges abroad and in the United States. (CFF X.H.3-31, CFF X.M.1-13 (undisputed).) As an indication of the scope of respondents' unauthorized use of Epson's patented inventions, in 2005 alone, respondents collectively sold in excess of 12.5 million Epson-compatible ink cartridges for over $15 million in revenue. (CFF X.A.1 (undisputed).)

The administrative law judge finds, as to respondent Ninestar Zhuhai, that Ninestar Zhuhai manufactures and exports to the United States at least several million units of such products each year, and that it has the capacity to produce much more. (CFF X.A.5-7, 13-16, 19-20(undisputed).) The only summary sales information that Ninestar Zhuhai provided shows sales to U.S. customers of 8,210,690 units of Epson-compatible ink cartridges between October

2005 and August 2006, for revenue of { }(CFF X.A.19-20 (undisputed).) Ninestar Zhuhai also admitted that, in 2005, it imported approximately{ } units of Epson-compatible ink cartridges with a value of approximately{ } (CFF X.A.10 (undisputed).)

Ninestar Zhuhai has stated that it has the capacity to produce several million ink cartridges per month, and it has reported that it currently has over 3 thousand employees and a brand new 110,000 square meters facility. (CFF X.A.6, 8-9 (undisputed).) Ninestar Zhuhai also discusses on its website its significant global presence and capacity to distribute its "distribution and sales stages in Los Angeles, San Francisco [and] New York," and its entry into "well known chain stores in America." (CFF X.H.1 (undisputed).)

In response to complainants' discovery requests seeking the identification of Ninestar Zhuhai's customers, Ninestar Zhuhai identified over 100 companies that appear to be located throughout the world. (CFF X.H.3 (undisputed).) Ninestar Zhuhai also identified fourteen of those customers as being "involved" in importing into the United States the Epson-compatible ink cartridges that it manufactures. (CFF X.H.5 (undisputed).) Finally, Ninestar Zhuhai identified ten companies as its customers in the United States that purchase Epson-compatible cartridges from it on an F.O.B. basis. (CFF X.H.4 (undisputed).)

Referring to Ninestar U.S., it has provided the following information concerning its annual sales of Epson-compatible ink cartridges in the U.S.:

{

}

(CFF X.A.27-31 (undisputed).) Ninestar U.S. identified approximately 530 customers, the majority of which are resellers. (CFF X.H.8-9 (undisputed).)

As for Town Sky, it has provided the following information concerning its annual sales of Epson-compatible ink cartridges:

{

}

(CFF X.A.50-53 (undisputed).) Town Sky identified approximately 265 customers. As with Ninestar U.S., the majority of Town Sky's customers are resellers. (CFF X.H.10-11 (undisputed).)

Referring to Dataproducts, Dataproducts, a subsidiary of Clover Holdings, Inc., has imported ink cartridges that it purchased directly from respondent Artech, or that it assembled in Mexico from shells and other components purchased from Artech. (CFF X.A.66-67, 72 (undisputed).) Dataproducts has imported such cartridges by truck from Mexico to its facility in Los Angeles County, California. (CFF X.I.1 (undisputed).) In 2005, Dataproducts imported approximately{ }aftermarket ink cartridges for use with Epson printers that it manufactured or purchased from Artech. (CFF III.B.8 (undisputed).)

During discovery, Dataproducts reported that between February 1, 2005 and December 31, 2005, it sold after importation{

} (CFF X.A.66-70 (undisputed).) Dataproducts recently stopped purchasing from Artech and has started buying ink cartridges from Ninestar Zhuhai. (CFF X.A.71 (undisputed).)

Dataproducts is affiliated with non-respondent Clover Technologies Group, LLC (Clover), which is also a wholly owned subsidiary of Clover Holdings, Inc., and is a major importer and seller after importation of ink cartridges and other printing supplies. (CFF X.A.72-83 (undisputed as to said sentence.) Clover purchases ink cartridges manufactured by Ninestar Zhuhai. (CFF X.A.78 (undisputed).) Clover's sales of ink cartridges for use with Epson printers are as follows:

{

}

(CFF X.A.80-83 (undisputed).)

Referring to Zhuhai Gree, Zhuhai Gree is another large Chinese manufacturer of printer consumables. (CFF X.A.84 (undisputed).) Zhuhai Gree is a wholly-owned subsidiary of Zhuhai Gree Group Corporation, a state-owned company that is among China's 500 largest. (CFF X.A.86-87 (undisputed).) Zhuhai Gree began producing ink cartridges in 1998, including ink cartridges for use with Epson printers. (CFF X.A.90-91 (undisputed).) Since then, the manufacture and sale of compatible ink cartridges has become Zhuhai Gree's most significant business line, and Epson-compatible ink cartridges have generated most of Zhuhai Gree's revenues. (CFF X.A.95-96, CFF X.L.49 (undisputed).)

Zhuhai Gree has 600 to 700 employees and currently has a monthly output of 1 million cartridges, with the capacity to produce more. (CFF X.A.89; CFF X.L.45-49 (undisputed).) Historically, over 50% of the ink cartridges it has produced have been Epson compatible ink cartridges. (CFF X.L.49 (undisputed).) Zhuhai Gree also reports of a worldwide sales network

consisting of "agents in America, Asia, Europe, Africa and Australia and all the big domestic cities." (CFF X.H.13 (undisputed).)

In approximately 2000, Zhuhai Gree began producing and selling Epson-compatible ink cartridges for importation into the United States through a distributor called Glee Group (U.S.A.), Inc. (Glee Group USA), that was formed by Zhuhai Gree's parent company, Zhuhai Gree Group Corporation. (CFF X.J.8-14 (undisputed).) After Glee Group USA was dissolved in 2004, Zhuhai Gree entered into a sales agency agreement with Respondent MMC for the sale of ink cartridges in the United States. (CFF X.A.103-108, 117-122, CFF X.J.16-19 (undisputed).) Zhuhai Gree has also continued to sell Epson compatible ink cartridges for importation into the United States through another non-respondent company called Fast Ink. (CFF X.A.98, X.H.14-21 (undisputed).)

Zhuhai Gree reported making the following sales of infringing Epson compatible ink cartridges to its U.S. distributors for the period between April 2002 and February 2006:

Sales to Glee Group USA

April 2002 - July 2004: 377,683 units for $540,860.60 in revenue

Sales to Fast Ink

December 2003 - January 2006: 365,570 units for $330,347.04 in revenue

Sales to MMC

January 2005 - February 2006: 748,438 units for $572,589.71 in revenue

(CFF X.A.97-99 (undisputed).)

As for MMC, MMC is Zhuhai Gree's agent in the United States for the sale of Epson-compatible ink cartridges. (CFF X.A.121-122 (undisputed).) MMC identified over 90

reseller customers to which it has sold infringing Epson compatible ink cartridges. (CFF X.H.22-24 (undisputed).) Those resellers, in turn, sell those products to other resellers or to end users. (CFF X.A.128-130, CFF X.H.22-24 (undisputed).) MMC has reported the following sales of Epson compatible ink cartridges since its inception in October 2004:

> October - December 2004: 40,129 units for $63,325 in revenue
> January - December 2005: 591,514 units for $788,479 in revenue
> January - February 2006: 166,347 units for $198,656 in revenue

(CFF X.A.131-133 (undisputed).)

As for respondents who have been terminated from the investigation on the basis of consent orders, in Certain Rare-Earth Magnets and Magnetic Materials and Articles Containing Same, Inv. No. 337-TA-413, Publication 3307 (May 2000) (Magnets) in which this administrative law judge was the presiding judge and in which he recommended a general exclusion order which the Commission issued, the Commission in its opinion dated December 10, 1999 stated:

> In formulating his recommendation for a remedy, the ALJ considered evidence regarding respondents who had been terminated from the investigation on the basis of consent orders, citing Magnets, Comm'n Op. at 21, fn. 18. See also Woodworking Machines, Inv. No. 337-TA-174, USITC Pub. 1979 at 49 (1987) (Commission considered evidence regarding terminated respondents that had entered into consent orders in finding a pattern of widespread unauthorized use of the complainant's patents and trademarks). In addition to Commission precedent, the ALJ noted that ¶6 of the consent orders signed by the terminated respondents in this investigation provides that :
>
> > [the respondent] understands and acknowledges that with regard to information it provided in the course of discovery in the Investigation, including but not limited to documents, interrogatory responses,

> transcripts of sworn deposition testimony, and sample magnets, Complainants may seek to introduce such information as evidence in the Investigation after [the respondent] has been terminated as a respondent.
>
> Notice Of A Commission Determination Not To Review An Initial Determination Terminating One Respondent On The Basis Of Consent Order; Issuance of Consent Order (February 1, 1999), and Notice Of A Commission Determination Not To Review Two Initial Determinations Terminating Four Respondents On The Basis Of Consent Orders; issuance Of Consent Orders (February 9, 1999).
>
> The ALJ concluded there was a widespread pattern of unauthorized use of the patented invention. He found that each of former respondents AUG, CYNNY, Houghes, IMI, and H.T.I.E. imported, sold for importation, or sold after importation articles that infringe the patents in issue. ID at 152; FF 241, 264. Moreover, each of respondents ARE, NEOCO, High End, Harvard, Beijing Jing Ma, Xin Huan, and Multi-Trend imported, sold for importation, or sold after importation articles that infringe the patents in issue. Finally, he found that there was evidence that certain non-parties, viz., GEC and AIWA, had imported infringing magnets. ID at 152; FF 270-271.

Referring to respondents who have been terminated on the basis of consent orders in this investigation, the administrative law judge finds that Ink Lab is among the largest Hong Kong manufacturers of ink cartridges, supplying importers and resellers with infringing Epson-compatible ink cartridges. (CFF X.A.134-139 (undisputed).) Ink Lab's customers include:{

} Also many of the ink cartridges sold by Ink Lab were manufactured by{

} Ink Lab reported the following

information concerning its importation and sales of Epson-compatible ink cartridges that it manufactured:

{

}

{ }

The administrative law judge finds that respondent Artech which was terminated via a consent order to be among the largest European manufacturers of ink cartridges. (CFF X.A.143-149 (undisputed).) It has supplied companies along various points of the distribution chain, including{ } with infringing ink cartridges for use with Epson printers. (CFF X.A.150 (undisputed).) In its Commission rule 210.13(b) statement, Artech reported 2005 imports of approximately{ }Later, Artech reported annual importation into the United States and sales of Epson-compatible ink cartridges that it manufactured as follows:

{

}

{ } Master Ink, which was terminated via a consent order, is a Chinese manufacturer of ink cartridges with its headquarters in Hong Kong and with factories in Shenzhen and Shanghai, China. (CFF III.B.26, CFF X.A.151 (undisputed).) Master Ink has sold for importation infringing Epson-compatible ink cartridges to{ } among others. (CFF X.A.154 (undisputed).) Master Ink estimates that from 2001 to 2006, it sold for

importation and/or imported{

}

Referring to InkTec and InkTec America, terminated via a consent order, InkTec manufactures in Korea its own infringing ink cartridges for use with Epson printers. (CFF X.A.155 (undisputed).) It also purchases infringing ink cartridges from{ }InkTec has sold its own and{ }ink cartridges to its U.S. affiliate, InkTec America. (CFF X.A.160-163 (undisputed).) InkTec America has distributed those cartridges to a number of resellers and retailers in the distribution chain. (CFF X.A.165 (undisputed).) InkTec America reported the following information concerning its importation and sales of Epson-compatible ink cartridges that it purchased from InkTec or Zhuhai Gree:

{

}

{ } In addition to the cartridges that it provided to InkTec America, InkTec reported the following sales in the United States of Epson-compatible ink cartridges that it or{ } manufactured:

{

}

{ } Nectron, terminated via a consent order is a Texas-based importer and seller after importation of ink cartridges. (CFF I.B.83 (undisputed).) Nectron has purchased most of its infringing Epson-compatible ink cartridges from{ } but also has purchased from{

} Nectron has identified over{ } customers, most of which are retailers and/or resellers. (CFF X.A.184 (undisputed).) Nectron reported the following information concerning its importation and sales in the United States of Epson-compatible ink cartridges, excluding Nectron's purchases from {

} Inkjetwarehouse, terminated via a consent order, is an internet-based importer and seller after importation with its headquarters in Connecticut. (CFF X.A.187 (undisputed).) Inkjetwarehouse principally purchased its infringing Epson-compatible ink cartridges from{

} Inkjetwarehouse has identified hundreds of customers, most of which are resellers. (CFF X.A.197 (undisputed).) Inkjetwarehouse reported the following information concerning its importation and sales after importation of Epson-compatible ink cartridges in the United States:

{

} Apex, which was terminated via a consent order, imports and sells after importation Epson-compatible ink cartridges. (CFF X.A.201 (undisputed).) Apex is an affiliate of Ribbon Tree USA, a defaulting respondent. (CFF I.B.97-106 (undisputed).) Apex

and Ribbon Tree USA purchase cartridges manufactured by{

} Apex reported the following revenue earned from sales after importation of Epson-compatible ink cartridges that it purchased from Wellink or Ribbon Tree Macao:

{

}

(CFF X.A.202-205 (undisputed).) Gerald Chamales and its successor-in-interest, Rhinotek, terminated via a consent order, are companies located in Los Angeles County, California that import and sell after importation Epson-compatible ink cartridges. (CFF I.B.85-91 (undisputed).) Gerald Chamales and Rhinotek have purchased ink cartridges for use with Epson printers from

{ }

Their customers include{ } among other retailers and resellers. (CFF X.A.214 (undisputed).) Between 2004 and 2006, Gerald Chamales imported{ } infringing aftermarket ink cartridges for use with Epson printers and sold such cartridges after importation for{ }In 2006, Rhinotek imported{ }infringing aftermarket ink cartridges for use with Epson printers manufactured by Shanghai Angel Printer Supplies Co. Ltd., and sold such cartridges after importation for { }[110]

[110] Respondents that have settled have admitted infringement as to the claims asserted against them. See, for example, where respondents Artech, Ink Lab, Ink Tec, Gerald Chamales/Rhinotek, Inkjetwarehouse, and Nectron, have admitted in written stipulations to infringement of claim 7 of the '957 patent; claims 18, 81, 93, 149, and 164 of the '439 patent;

As for respondents Glory South, Butterfly, AcuJet, Mipo, Mipo America, Tully, Wellink and Ribbon Tree Macao each have been found in default. The staff has argued that because the '472 patent is not being asserted against the active respondents, only limited exclusion orders directed to the defaulting respondents should issue because no evidence was offered to show that any of the non-active respondents practice the asserted method claims of the '472 patent. (SBr at 63, 118-19.) In addition the staff argued that complainants "do not assert it [claim 165 of the '439 patent] against the active respondents" and evidence was not presented to show that any of the "non-active respondents" actually infringe claim 165. (SBr at 59.) While the staff's position is unclear with respect to the asserted claims of the '397 patent, see Section VIII.B, supra, in its response to complainants' proposed findings it did state for example that complainants' evidence as to infringement of claim 45 of said patent is "not supported by evidence cited; no competent testimony offered." See Section VIII. B, supra.

Commission rule 210.16(c)(2) provides:

> In any motion requesting the entry of default or the termination of the investigation with respect to the last remaining respondent in the investigation, the complainant shall declare whether it is seeking a general exclusion order. The Commission may issue a general exclusion order pursuant to section 337(g)(2) of the Tariff Act of 1930, regardless of the source or importer of the articles concerned, provided that a violation of section 337 of the Tariff Act of 1930 is established by substantial, reliable, and probative evidence, and only after considering the aforementioned public interest factors and the requirement of § 210.50(c).

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claims 83 and 84 of the '377 patent; and claims 19 and 20 of the '148 patent. (CFF VI.B.77-89, CFF VI.C.67-79, CFF VI.D.52-64, CFF VI.E.42-54, CFF VI.F.52-64, CFF VI.G.44-56; CFF VI.H.69-81, CFF VI.I.39-51, CFF VI.J.62-74, CFF VI.K.40-52 (undisputed).)

However, Commission rule 210.17 does allow the administrative law judge to draw adverse inferences and to issue findings of fact therefrom. In this investigation, defaulting respondents Tully, Wellink and Ribbon Tree filed a "Notice Of Election To Default" which the administrative law judge treated as Motion No. 565-34 (see Order No. 16 which issued on August 23, 2006). Complainants in response argued that the administrative law judge should make certain adverse inferences. Said respondents did not respond to Order No. 16. Thus, the administrative law judge draws adverse inference and makes findings of fact therefrom that they have admitted to infringement of the asserted claims 29, 31, 34 and 38 of the '472 patent and asserted as well as claim 165 of the '439 patent against them as set forth in the complaint and amended complaint which they received. Order No. 9 ordered each of respondents Glory South, Butterfly, Mipo and AcuJet to show cause why each should not be found in default. Said respondents did not respond to Order No. 9 and hence Order No. 12 found them in default. As with respondents Tully, Wellink and Ribbon Tree, the administrative law judge draws adverse inferences and makes findings of fact therefrom that respondents Glory South, Butterfly, Mipo and AcuJet have admitted to infringement of the asserted claims 29, 31, 34 and 38 of the '472 patent as well as asserted claim 165 of the '439 patent and asserted claims 21, 45, 53 and 54 of the '397 patent set forth in the complaint and the amended complaint which they received. The administrative law judge finds that his findings with respect to the defaulting respondents in this investigation is consistent with what occurred and what he recommended in Magnets. In that investigation, his Order No. 56, which issued on June 20, 1999, was an initial determination granting complainants' Motion No. 413-47 to the extent that each of respondents A.R.E., Jing Ma and Xin Huan were found in default, pursuant to Commission rule 210.16 and hence held that each has

waived its right to appear, to be served with documents, and to contest the allegations at issue in this investigation. On August 6, the Commission determinated not to review Order No. 56. (Publication 3307, ID at 3-4.) Order No. 60, which issued on August 26, 1999 was an initial determination granting complainants' Motion No. 413-47 to the extent that respondent Multi-Trend was found in default, pursuant to Commission rule 210.16, and hence held that Multi-Trend had waived its right to appear, to be served with documents, and to contest the allegations at issue in this investigation. (Id. ID at 4.) There was also an active respondent NEOCO in that investigation. This administrative law judge in Magnets after a review of the record found that a violation of 337 had occurred[111] and recommended the issuance of cease and desist orders and only a general exclusion order. (Id.) On December 9, 1999, the Commission agreed with this administrative law judge that a general exclusion order was necessary and issued a general exclusion order. (Id.)

Non-respondent companies that have manufactured and sold for importation ink cartridges for use with Epson printers include{

} Non-respondent domestic distributors in the business of importing and selling after importation ink cartridges for use with Epson printers include{

}

In addition, there are hundreds of "reseller" customers in the business of distributing in the

---

[111] The violation involved infringement of several claims of a plurality of patents directed to rare earth alloys, a matter of some complexity. (Id. ID at 173-355.)

United States Respondents' infringing Epson-compatible cartridges. (CFF X.A.128-129, 184, 197, 206; CFF X.H.3, 8-11, CFF X.J.27-28 (undisputed).)

The administrative law judge further finds a documented history of unauthorized foreign use by other non-respondent companies. For example, in 1995 and 1997, Seiko Epson and Epson America filed suit in California federal court against Nu-kote International, Inc. and Pelikan Produktions AG, companies that manufacture and distribute worldwide Nukote and Pelikan brand printer consumables, for infringement of the '377, '148, '472 and '401 patents. (CFF X.B.1-2 (undisputed).) The litigation concluded in favor of Epson with the entry of a permanent injunction. (CFF X.B.3 (undisputed).)

Complainants also brought suit beginning in 2001 against Multi-Union Trading Company, Ltd., Dynamic Print USA, Inc., Print-Rite Holdings, Ltd., and Print-Rite Management Services Company in the District Court of Oregon, asserting infringement of the '957, '439, '377, '148, '472, '401, '917 and '902 patents. (CFF X.B.4-5 (undisputed).) Multi-Union is a Hong Kong-based distributor of Print-Rite products, including Epson-compatible ink cartridges. (CFF X.B.6 (undisputed).) After summary judgment was granted in favor of Epson on the issue of infringement, the litigation was resolved in June 2005 with the entry of stipulated permanent injunctions. (CFF X.B.7-8 (undisputed).)

Based on the foregoing the administrative law judge finds that respondents and many non-respondent companies have engaged in widespread unauthorized uses of Epson's patented ink cartridges, resulting in millions of dollars in revenue for each of the past several years.

The administrative law judge finds further that there are certain business conditions that would enable respondents to circumvent a limited exclusion order. Thus, respondent Ninestar

Zhuhai manufactures Epson-compatible ink cartridges and exports them into the United States from its factories in Zhuhai, China. (CFF X.A.3-5, 19, 20 (undisputed).) Ninestar Zhuhai distributes Epson-compatible ink cartridges under the brand names G&G, OA100, MyInk and Print Aid. (CFF X.A.17 (undisputed).) The current officers and directors of Ninestar Zhuhai are Rusong Lu, Yan Wei and Wang Dong Ying (who is also the former General Manager of Zhuhai Gree). (CFF X.C.1, 4-7, 9 (undisputed).) Ninestar Zhuhai is owned by Ninestar Technology Co., Ltd., of Hong Kong (Ninestar Tech. Hong Kong). (CFF X.C.33 (undisputed).) Ninestar Tech. Hong Kong is, in turn, owned by Apex Leader Limited, a British Virgin Islands investment company, and Pearl Business Connect, a German company. (CFF X.C.31, 34 (undisputed).) Apex Leader Limited, which was established in 2004, is owned by{

} and others. (CFF X.C.24-30 (undisputed).) Respondent Ninestar U.S. has locations in Montclair, California and South Plainfield, New Jersey. (CFF X.A.21, 23, 24 (undisputed).) Ninestar U.S. distributes in the United States Epson-compatible ink cartridges manufactured by Ninestar Zhuhai under the brand names G&G and MyInk. (CFF X.A.25, 26 (undisputed).) Wang Dong Ying and Rusong Lu are the directors of Ninestar U.S., William Dai is the Manager, and Yiding Yu is the Secretary and Chief Financial Officer. (CFF X.C.2, 8, 11-12, 14-15 (undisputed).) Ninestar U.S. is wholly owned by Ninestar Zhuhai. (CFF X.A.22 (undisputed).) Thus, as with Ninestar Zhuhai, the ultimate parent of Ninestar U.S. is Apex Leader Limited. (CFF X.C.24 (undisputed).)

Respondent Town Sky, located in South San Francisco, California, also distributes in the United States Epson-compatible ink cartridges manufactured by Ninestar Zhuhai. (CFF X.A.45-49 (undisputed).) Town Sky distributes those cartridges primarily under the OA100 and

Print Aid brand names. (CFF X.A.47 (undisputed).) Town Sky's officers and directors are Rusong Lu and Yan Wei. (CFF X.C.3, 10 (undisputed).) Town Sky is wholly owned by Ninestar Zhuhai, and its ultimate parent is Apex Leader Limited. (CFF X.A.44, CFF X.C.24 (undisputed).) In addition, the principals of the Ninestar Respondents, viz.{ }are affiliated with non-respondent companies that the active respondents have used to manufacture and distribute their infringing cartridges.

Moreover, the active respondents have used several non-respondent affiliated companies to export to the United States Ninestar Zhuhai's ink cartridges for use with Epson printers. (CFF X.C.83, 94, 111 (undisputed).) Among them, Ninestar Zhuhai has sold its Epson-compatible ink cartridges to at least four different foreign companies, viz. Ferri Limited, Broadway Circuit, Ltd., and Giant Will Hong Kong, which each, in turn, have re-sold Ninestar Zhuhai's products to Ninestar U.S. and/or to Town Sky, or to other Ninestar affiliates, either directly or through further "straw man" intermediary companies (Ferri Limited, Broadway Circuit, Ltd., Speed Leader, Ltd., and Giant Will Hong Kong are collectively referred to herein as the "Ninestar Foreign Intermediaries"). (CFF X.C.82-84, 87-88, 90-92, 93-96, 101, 103, 111 (undisputed).)

Each of the Ninestar foreign intermediaries is related to one or more active respondents in the sense that they at least share common principals and have certain relationships (CFF X.C.81, 84-85, 87-88, 90-92, 95-99, 102-105, 122-123 (undisputed).) For example, Ferri Limited is owned in part by{ } who also is an owner of Apex Leader Limited (the ultimate parent of each of the active respondents), the former General Manager of Ninestar Zhuhai, and the Secretary and CFO of Ninestar U.S. (CFF X.C.11, 24, 27-29, 90 (undisputed).) { }also has been a director of Broadway Circuit and Giant Will Hong Kong. (CFF X.C.98, 122

(undisputed).) Broadway Circuit maintains an address at the same British Virgin Islands location as Apex Leader Limited. (CFF X.C.97 (undisputed).) Wang Dong Ying, the General Manager of Ninestar Zhuhai{ } serves as the financial advisor to Ferri Limited. (CFF X.C.91 (undisputed).) Ferri Limited, is located at the same address as Ninestar Tech. Hong Kong, that owns Ninestar Zhuhai. (CFF X.C.89 (undisputed).) { } (CFF X.C.104, 105 (undisputed) as to preceding sentence.) As such, the Ninestar foreign intermediaries are connected with the active respondents through common principals and locations. The active respondents also have used, and could continue to use if necessary, non-respondents as the importers of record of their ink cartridges for use with Epson printers. Most notably, prior to its recent dissolution, Giant Will (USA), Inc. (Giant Will USA) purchased Epson-compatible ink cartridges manufactured by Ninestar Zhuhai and resold them to Ninestar U.S. and Town Sky. (CFF X.C.106-116 (undisputed).)

In addition, MyInk Technologies, Inc., located in Zhuhai, China (MyInk Zhuhai), a non-respondent company that shares the same ultimate parent company as Ninestar Zhuhai and common past and/or present principals, operates a factory in the same industrial area as Ninestar Zhuhai's factory. (CFF X.C.57-72 (undisputed).) MyInk Zhuhai manufactures Epson-compatible ink cartridges that it has sold to Ninestar Zhuhai and Ninestar U.S. (CFF X.C.59, 62 (undisputed).) MyInk Zhuhai's current production capacity is 1 million cartridges per month, and it maintains more than 20 production lines (almost as many as Ninestar Zhuhai uses to manufacture its Epson-compatible ink cartridges). (CFF X.C.14, 61 (undisputed).) The principals of the Ninestar respondents have further invested in and operated other ink cartridge

manufacturing plants. For example, Wang Dong Ying, the former General Manager of Zhuhai Gree and currently the General Manager of Ninestar Zhuhai and an owner of Apex Leader Limited, was previously an owner and director of Good Rainbow Hong Kong. (CFF X.C.73-80 (undisputed).) Good Rainbow Hong Kong has invested in ink cartridge manufacturing companies including Ninestar Zhuhai and Good Rainbow Zhong Shan, both of which have manufactured Epson-compatible ink cartridges. (CFF X.C.76-79 (undisputed).) In addition, although Dataproducts claims to be phasing itself out of the business of selling imported ink cartridges for use with Epson printers, its sister company, Clover, remains in the market, and may be taking over Dataproducts' former business operations. (CFF X.D.1-9 (undisputed).) Thus, the principals of Dataproducts and Clover could continue their unauthorized uses of Epson's patented inventions even if a limited exclusion order were to prohibit Dataproducts from engaging in such conduct.

The administrative law judge finds that other respondents also could evade a limited exclusion order by shipping unmarked, generic or private label products that bear no markings that identify their origin. Exhibit CPX-1173, which is a box that contained an Epson-compatible ink cartridge sold for importation by Tully to Inkjetwarehouse, is an example of such generic packaging, from which it is impossible to determine the source of the product without inside knowledge of manufacturer codes (CFF X.E.10, 15 (undisputed).) Dataproducts sells Epson-compatible ink cartridges in generic packaging from which consumers cannot identify the manufacturer. (CFF X.E.12 (undisputed).) Zhuhai Gree also has provided evidence showing that a significant portion of its sales of Epson-compatible ink cartridges are of generic brands. (CFF X.E.8-9 (undisputed).) Zhuhai Gree also has a private label service, whereby it manufactures ink

cartridges bearing the customer's identifying information, not its own. (CFF X.D.12-18 (undisputed).) Such cartridges, even when sold by Zhuhai Gree to a foreign private label customer, have been imported into the United States by that private label customer, with no indication that the products emanated from Zhuhai Gree. (CFF X.D.12-18 (undisputed).) Indeed, Zhuhai Gree's corporate representative testified at his deposition that it is of no concern to Zhuhai Gree "how [its customers] sell their goods and where they sell [them] to." (CFF X.E.15 (undisputed).) Finally, generic cartridges that do not indicate the manufacturer make up{

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Based on the foregoing, the administrative law judge finds that respondents, other than the active respondents, have the ability to take advantage of business conditions that would allow them to evade a limited exclusion order.

In addition, the administrative law judge finds that the demand for ink cartridges for use with Epson printers is strong. Epson's own sales in fiscal year 2006 of ink cartridges covered by the asserted patents were{ } As an example of respondents' strong sales of Epson-compatible ink cartridges, respondents identified over $15 million in sales to unaffiliated customers for 2005, a total that does not include the sales information of respondents who defaulted or otherwise did not provide complete information. (CFF X.A.1 (undisputed).) Moreover, most respondents have admitted that the United States is a large market for ink cartridges and is significant to their operations. (CFF X.F.18-28 (undisputed).)

In addition to high levels of sales and revenue, distributors of Epson-compatible ink cartridges in the United States enjoy strong profit margins. For example, Dataproducts earned

gross margins of $449,368 on its $758,103 of revenues received from the sale of Epson-compatible ink cartridges in the United States, thereby achieving 59.28% gross margins. (CFF X.F.29 (undisputed).) Over a two year period, Gerald Chamales earned revenues of

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The administrative law judge further finds that potential foreign manufacturers would have easy access to existing marketing and distribution networks in the United States for infringing cartridges. Respondents have thousands of U.S. customers, most of which are resellers, including office supply stores, electronics stores, big box superstores and internet website operators. (CFF X.H.1-31 (undisputed).) Those resellers have an established demand for Epson-compatible cartridges and would readily move to a new supplier if necessary. (CFF X.A.215 (undisputed).) Moreover, most of those resellers would be easily identifiable to potential foreign manufacturers through a simple search of the Internet or a visit to a trade show. (CFF X.A.216, CFF X.G.1, 7, 11, 21-22 (undisputed).) The administrative law judge finds that respondents have demonstrated that such domestic affiliates can be established with ease. For example, Ninestar Zhuhai uses two wholly owned subsidiaries to distribute its products in the

United States, viz. Ninestar U.S. and Town Sky, and also has used other domestic affiliates in its distribution chain, some of which have had overlapping office spaces and personnel. (CFF X.A.22, 25, 44, 46; CFF X.C.52-56, 110-111, 119, 128; CFF X.J.3 (undisputed).) Similarly, Zhuhai Gree's parent company set up Glee Group USA to distribute Zhuhai Gree's products. (CFF X.J.4-17 (undisputed).) Other foreign manufacturers have invested in existing, unrelated companies to secure channels for distributing their products, as{

} Distributors

contract with any number of readily available companies for handling the overseas shipping, clearing customs, and delivering products to their customers, including DHL and UPS. (CFF X.H.25, CFF X.K.1-7 (undisputed).)

In addition the administrative law judge finds that marketing networks also are readily available to potential foreign manufacturers. Most foreign manufacturers and their domestic distributors, including respondents, rely primarily on a few easily-accessible sources to publicize their products, including promoting their products through the Internet and operating websites, attending trade shows, and advertising in industry publications. (CFF X.G.1-27 (undisputed).) Accordingly, the availability of existing marketing and distribution networks is another business condition that could attract potential foreign manufacturers to enter the market. The costs of maintaining and operating a factory capable of producing ink cartridges compatible with Epson printers are found to be relatively small, especially considering the substantial profits that may be earned from sales of such products. (CFF X.F.29-43, CFF X.L.7-69 (undisputed).) In fact, a potential foreign manufacturer need not even own its manufacturing facility, as evidenced by Ninestar Zhuhai, which manufactures its Epson-compatible ink cartridges from a rented facility.

(CFF X.A.9 (undisputed).) Rent for facilities is low in China, particularly in the manufacturing hub of Zhuhai. (CFF X.A.66 (undisputed).)

The costs of the necessary manufacturing equipment are also low. Zhuhai-Gree disclosed that the costs incurred to acquire the equipment for the three production lines it uses to produce Epson-compatible ink cartridges totaled 990,216 RMB, or approximately $127,000 using current exchange rates. (CFF X.L.64 (undisputed).) Dataproducts also reported low capital costs, having spent only{ } to acquire the equipment and build the facilities used in its assembly of Epson-compatible ink cartridges. (CFF X.L.67 (undisputed).) Among Dataproducts' main equipment costs, a filling machine cost{

} (CFF X.L.67 (undisputed).)

The component parts needed to make ink cartridges are found to be inexpensive. Epson pays between{ } for the components of its ink cartridges, including retail packaging. (CFF X.L.8-21 (undisputed).) Foreign manufacturers can pay anywhere from 25% to 75% less on the principal components including the ink, the plastic resin and the semiconductor chip by using lower quality parts or using alternative procurement methods. (CFF X.L.23 (undisputed).) Asian manufacturers also have access to the cheapest possible prices for materials such as ink and plastic resin. (CFF X.L.22 (undisputed).)

In addition foreign labor is inexpensive. Epson Portland's Chinese and Mexican sister companies pay approximately{

} Dataproducts' labor costs to operate its production lines at its facility in Mexico are only{ } (CFF X.L.54-55 (undisputed).) Zhuhai Gree pays

considerably less; the assembly workers who run its production lines are paid only 1,334 RMB per month, or approximately $170 USD. (CFF X.L.51 (undisputed).) As a result, Zhuhai Gree's labor costs are approximately 2 cents per ink cartridge. (CFF X.L.47-52 (undisputed).)

The administrative law judge further finds that there are as many as 200 ink cartridge manufacturers in China alone, many of which are already in the business of manufacturing Epson-compatible ink cartridges and selling them for importation. (CFF X.M.3, 8, 10-13, 19, 23, 27, 31, 35, 39, 43, 45, 47, 49, 65, 67, 69, 71, 73 (undisputed).) Non-respondent foreign manufacturers such as ST Sanyo, Print-Rite/Multi-Union, Skyhorse, U-Tec, Nukote, KMP, Afex, Legacy, Kores, DCI, Pelikan, Color Lab, Zhongshan Yuzhou Printer Accessories Co., Ltd., and countless others currently manufacture Epson-compatible ink cartridges. (CFF X.M.1-79 (undisputed).) Virtually all ink cartridge manufacturers have unused production capacity. (CFF X.M.16-79 (undisputed).)

Companies that manufacture non-Epson compatible ink cartridges or even other consumable products face low barriers to retool their existing facilities to manufacture Epson's patented cartridges. For example, Ninestar Zhuhai's General Manager, Wang Dong Ying, testified that Ninestar Zhuhai, while it has "its own technology, can produce new models of Epson-compatible ink cartridges within one month after Epson releases the original cartridge. (CFF X.N.1 (undisputed).) Wang added that "90% of [different models of inkjet cartridges] are the same . . . [s]o that's why we can make compatible cartridges so quickly." (CFF X.N.2 (undisputed).) Zhuhai-Gree manufactures Epson cartridges on three production lines, but, when necessary, a fourth production line can be switched over from the production of other ink cartridges to make Epson compatible cartridges. (CFF X.L.45-49 (undisputed).)

Based on the foregoing the administrative law judge, in support of his recommendation for a general exclusion order, finds that complainants have established a "widespread pattern of unauthorized use" of complainants' patented inventions and "certain business conditions from which one might reasonably infer that foreign manufacturers other than the respondents to the investigation may attempt to enter the U.S. market with infringing articles."

B. Cease and Desist Orders

As of March 31, 2006, Ninestar U.S. had at least{ } units of Epson-compatible ink cartridges in its inventory. (CFFXI.A.1(undisputed).) As of April 1-4, 2006, Town Sky had at least{ } units of Epson-compatible ink cartridges in its inventory. (CFF XI.A.2(undisputed).). Town Sky tries to maintain an inventory of at least{ } units of Epson-compatible ink cartridges. (CFF XI.A.2(undisputed).) MMC's total inventory of all models of Epson-compatible ink cartridges as of August 10, 2006 was 94,673 units. (CX-874C MMC's fourth supplemental response to interrogatory no. 122(h) at 2.) (CFF XI.A.4 (undisputed).) Dataproducts' most recent inventory information disclosed in this Investigation shows an inventory of{ } Epson-compatible ink cartridges.

AcuJet lists in its catalog 50 models of Epson-compatible ink cartridges. (CFF XI. A.6 (undisputed).) AcuJet was able to ship 40 Epson-compatible ink cartridges to Epson's investigators on August 16, 2005, the same day the order was placed. (CFF XI.A.7 (undisputed).)

AcuJet was able to ship 54 Epson-compatible ink cartridges to Epson's investigators on November 22, 2005, the same day the order was placed. (CFF XI.A.8 (undisputed).) AcuJet's website says that "we are well equipped to handle and fill any orders whether they are large or small." (CFF XI.A.9 (undisputed).)

In e-mail correspondence with Epson's investigators who were posing as resellers of ink cartridges, Glory South's affiliate Butterfly wrote that "We can be your reliable supplier as we have stock in our warehouse in Buena Park," and "We are able to offer you competitive price and excellent quality of goods, in mass production. Our sales office/warehouse in Los Angeles can offer fast customer services in your local time zone." (CFF XI.A.10 (undisputed).) Glory South was able to fill an order placed by Epson's investigators for 42 Epson-compatible ink cartridges on September 6, 2005. (CFF XI.A.11(undisputed).) Glory South was able to fill an order placed by Epson's investigators for 23 Epson-compatible ink cartridges on November 21, 2005. (CFF XI.A.13 (undisputed).) Glory South was able to fill an order placed by Epson's investigators for 8 Epson-compatible ink cartridges on February 2, 2006. (CFF XI.A.14 (undisputed).) Mipo America was able to fill an order placed by Epson's investigators for 40 Epson-compatible ink cartridges on September 6, 2006. (CFF XI.A.15 (undisputed).) Mipo America was able to fill an order placed by Epson's investigators for 30 Epson-compatible ink cartridges on March 10, 2006. With respect to internet activity, Ninestar Zhuhai, Ninestar U.S. and Town Sky have acknowledged that 100% of their sales involve internet communications. (CFF XI.B.1 (undisputed).) Ninestar Zhuhai and Ninestar U.S. share an e-commerce website, www.ggimage.com, that includes contact information for Ninestar U.S. Said website sets forth information about all Ninestar's Epson-compatible ink cartridges. (CFF XI.B.2 (undisputed).) Said website also contains information about newly released Epson-compatible ink cartridges, and urges customers to "be the first to place your order." (CFF XI. B.3 (undisputed).) Town Sky has an e-commerce website, www.town-sky.com, that sets forth information about Town Sky's Epson-compatible ink cartridges it sells after importation into the United States and enables

customers to contact Town Sky's sales department via e-mail. (CX-1145 at TS000485-501.) Dataproducts has an e-commerce website, www.dataproducts.com, that sets forth information about Dataproducts' Epson-compatible ink cartridges it sells after importation into the United States, including the list price of such ink cartridges. (CFF XI.B.6 (undisputed).) Dataproducts acknowledges that it promotes its Epson-compatible ink cartridges through its e-commerce website, and that its website "contains information from which a customer may cross-reference the Dataproducts brand compatible part number with the corresponding Epson printer and Epson cartridge number." (CFF XI.B.7 (undisputed).)

The MMC respondents share an e-commerce website, www.mmcinkjet.com, that sets forth information about MMC's Epson-compatible ink cartridges it sells after importation into the United States and permits customers to "view" and "order" such ink cartridges. (CFF XI.B.8 (undisputed).) MMC admits that it contacts customers through e-mail. (CFF XI B.9 (undisputed).) MMC acknowledged that it has sold ink cartridges via the internet and e-mail, but "was unable to provide its sales for each model and/or SKU of each Accused Product made via Internet and/or electronic mail." (CFF XI.B.10 (undisputed).) Epson's investigators purchased 60 Epson-compatible ink cartridges from MMC with an internet order placed October 4, 2005. (CFF XI.B.11 (undisputed).) AcuJet has an e-commerce website, www.AcuJet.net, that accepts orders from individuals and provides order confirmations. (CFF XI.B.12 (undisputed).) AcuJet has an e-commerce website, www.AcuJetusa.com, that sells ink cartridges to distributors and resellers. (CFF XI.B.13 (undisputed).) Glory South's affiliate, Butterfly, has an e-commerce website, www.butterflyimage.com, that sets forth information about Butterfly's and Glory South's Epson-compatible ink cartridges being sold after importation into the United States.

(CFF XI. B. 14 (undisputed).) Epson's investigators purchased 73 ink cartridges from Glory South between September 2005 and February 2006 exclusively using internet communications. (CFF XI. B. 15 (undisputed).)

Respondents Mipo and Mipo America have an e-commerce website, www.mipoltd.com, that sets forth information about Mipo and Mipo America's Epson-compatible ink cartridges being sold after importation into the United States. (CFF XI.B.16 (undisputed).) Epson's investigators purchased 40 ink cartridges from Mipo America on September 6, 2005, exclusively using internet communications. (CFF XI. B.17(undisputed).)

Based on the foregoing, the administrative law judge recommends the issuance of cease and desist orders against each of domestic respondents Ninestar U.S., Town Sky, Dataproducts and MMC as well as defaulting respondents Glory South, AcuJet and Mipo American. Also such cease and desist orders should encompass their Internet activities. See Hardware Logic Emulation Systems and Components Thereof, Inv. No. 337-TA-383, Comm'n Op. on Remedy, the Public Interest and Bonding, at 20 (Apr. 1, 1998) (Commission entered cease and desist orders against electronic transmissions related to infringing products).

XII. Bond

During the Presidential review period, imported articles otherwise subject to a remedial order are entitled to conditional entry under bond, pursuant to section 337(j)(3). 19 U.S.C. § 1337(j)(3). The amount of the bond is specified by the Commission and must be an amount sufficient to protect the complainant from any injury. Id. 19 C.F.R. § 210.50(a)(3).

Complainants argued that as they have not licensed their patents using a royalty rate, it is appropriate to use the price differential formula to calculate the appropriate bond; that in its 2006

fiscal year (April 1, 2005 to March 31, 2006), complainant Epson America, Inc. sold{

}

Regarding imported value of accused products complainants proposed that the Commission set a single bond rate to apply to each of the active respondents and the MMC respondents and each of their affiliates or in the alternative, separate bond rates for each respondent. It is argued that Ninestar Zhuhai and Zhuhai Gree did not provide information from which their sales to unaffiliated customers can be discerned for any specific period of time, and therefore complainants proposed calculating respondents' average sale price based on the combined sales of Ninestar U.S., Town Sky, Dataproducts and MMC; and that in 2005, the most recent year for which respondents provided complete sales information, respondents' sales of Epson-compatible ink cartridges that practice the asserted patents were as follows:

{

}

It is argued that as respondents' average sale price is{ } per cartridge, a bond of{ } per cartridge, or 925.17%, is appropriate. In the alternative, complainants argued that it would be appropriate for the Commission to set a bond to be applied exclusively to the Ninestar and Town Sky respondents' imported Epson-compatible ink cartridges that practice the asserted patents, in the amount of{ } per cartridge, or 968.79%; that a bond of{ }per cartridge, or 92.20%, would be appropriate as to Dataproducts; and that, a bond of{ } or 1033.08%, would be appropriate as to MMC and Zhuhai Gree. (CBr at 221-22.)

The active respondents argued that complainants have not shown that the active respondents have anything more than relatively small economic impact on complainants' business and thus there is no realistic danger to complainants' business should respondents continue to import products during the Presidential review period for any exclusion order that issues as a result of this investigation, and therefore, a bond with respect to the active respondents for them to continue importation of the accused products during the Presidential review period is not warranted. It was further argued that should a bond be ordered, the amount of the bond could be set based upon a reasonable royalty; that many types and models of Ninestar products are accused in this investigation; that the complexity caused by this variety has forced the parties to streamline the issues of the investigation by the use of representative cartridges and even the representative cartridges require a matrix to apply them; that this large number of cartridges and types of cartridges makes it exceptionally difficulty to compare the actual price differences between respondents' cartridges and Seiko's cartridges on a cartridge by cartridge basis; and that given the lack of risk of damage, the large number of different products and the short review period, a low bond rate below 3% should be sufficient. (RBr at 208-09.)

The MMC respondents, in a joint submission regarding bonding dated January 16, 2007, argued that respondents MMC and Zhuhai Gree have historically had a relatively small economic impact on complainants' business and hence, there is no realistic danger of affecting complainants' business during the Presidential review period for any exclusion order that results from this investigation; and that there is no evidence of record showing that MMC and Zhuhai Gree significantly undercut complainants' prices. Hence, the MMC respondents do not believe a bond with respect to them is warranted. However, if a bond is ordered, it is argued that the

amount should be set according to what would be a reasonable royalty for the Presidential review period; that in this investigation there are many various types of ink cartridges at issue, to the point where the parties have been forced to streamline the issues by using representative groupings of the cartridges for the hearing; that the number of different types of ink cartridges involved makes it difficult to compare actual price differences, cartridge by cartridge; and that in this situation, in past investigations, the Commission has used a reasonable royalty measurement for a bond amount, citing e.g., Plastic Encapsulated Integrated Circuits, ITC Inc. No. 337-TA-315 Commission Op. (March 24, 1992) (Integrated Circuits; and that using the 2.5% royalty figure from Integrated Circuits), a bond based on a reasonably royalty in this investigation would be "$1,650.00."

The staff argued that the evidence shows that sales of the accused products produce very high margins based on supplemental prehearing statements concerning bonding filed by the private parties; that the evidence also shows a great price differential with complainants' ink cartridges selling for approximately{ } per unit compared to the accused products of the active respondents which sell for approximately{ } that the products of the active respondents appear to be typical of the respondents's products in general; and that thus a bond of 1000% would be needed to protect complainants during the Presidential review period. (SBr at 120.) The staff also supported complainants' proposal of a 925 % bond as to all imported infringing cartridges. (SRBr at 8.)

In its fiscal year running from April 1, 2005 to March 31, 2006, Epson America sold

{

}Epson's average sales price

for ink cartridges that practice the patent claims asserted in this Investigation is therefore{ } Ninestar Zhuhai did not provide complainants with information as to its sales in 2005 of Epson-compatible ink cartridges to unaffiliated parties Ninestar Zhuhai did provide sales from October to December 2005, but such sales were made predominantly to Ninestar U.S., Town Sky, and other affiliated companies. (CFF XII.3 (undisputed).)

In 2005, Ninestar U.S. sold in the United States{ } Epson-compatible ink cartridges that practice the asserted patents and earned revenues of{ } therefrom. (CX-928C at 6-8.) In 2005, Town Sky sold in the United States{ }Epson-compatible ink cartridges that practice the asserted patents and earned revenues of{ } therefrom. (CX-892C.) Combined, Ninestar U.S. and Town Sky sold in the United States{ } Epson-compatible ink cartridges that practice the asserted patents and earned total revenues of { } therefrom, and therefore the active respondents' average sale price for such ink cartridges was{ } Between February 1, 2005 and December 31, 2005, Dataproducts sold in the United States{ } Epson-compatible ink cartridges that practice the asserted patents and earned revenues of{ } therefrom, for an average sale price of{ }(CX-1042C; CX-1043C.) Zhuhai Gree provided only consolidated sales information for the period from 2003 to 2006 regarding sales made in the United States. (CX-1289C Zhuhai Gree supplemental response to interrogatory no. 117 at 3-11.) In 2005, MMC sold in the United States { } Epson-compatible ink cartridges that practice the asserted patents and earned revenues of { } therefrom, for an average sale price of{ } (CX-864C MMC supplemental response to interrogatory no. 122(a) at 4; CX-865C at 3-7.) Combined, Ninestar U.S., Town Sky, Dataproducts and MMC sold{ } Epson-compatible ink cartridges that practice the

asserted patents in the United States in 2005, and earned revenues of{ }therefrom, and therefore respondents' average sale price for such ink cartridges was{ }(CX-864C MMC supplemental response to interrogatory no. 122(a) at 4; CX-865C at 3-7; CX-892C; CX-928C at 6-8; CX-1042C; CX-1043C.)

The administrative law judge rejects any reliance on Integrated Circuits on the ground that that case was based on the particular evidence in that investigation concerning a royalty rate. See Integrated Circuits Commission Op. at 45. Based on the difference between complainants' average sales price of{ }cartridge and all respondents' average sale price of { }/cartridge, a bond of $13.60/cartridge is recommended. (See CX-864C MMC supplemental response to interrogatory no. 122(a) at 4; CX-865C at 3-7; CX-892C; CX-928C at 6-8; CX-1042C; CX-1043C; CX-1358C; CX-1508C.)

XIII. Additional Findings of Fact

A. Parties

Complainants

1. Seiko Epson Corporation (Seiko Epson) is a corporation organized under the laws of Japan with its principal place of business at 3-3-5 Owa, Suwa-Shi, Nagano-Ken, 392-8502, Japan. (CX-1443 Amended Complaint 5 at 3.)

2. Seiko Epson is a large multinational company that manufactures printers, scanners, multifunction printers, large format printers, cartridges, cameras, LCDs, chips, watches, and clocks, among other products. (McEvers Tr. at 154:17-23.)

3. Seiko Epson has a research and development department that designs and engineers new products. (McEvers Tr. at 154:24-155:4.)

4. Subject to the exclusive licenses described below, Seiko Epson owns all rights, title and interest in the following United States patents relating generally to ink cartridges for printers: the '957 patent, which was duly and legally issued to Seiko Epson by the United States Patent and Trademark Office on April 1, 1997; the '439 patent, which was duly and legally issued to Seiko Epson by the United States Patent and Trademark Office on April 22, 1997; the '377 patent, which was duly and legally issued to Seiko Epson by the United States Patent and Trademark Office on October 27, 1992; the '148 patent, which was duly and legally issued to Seiko Epson by the United States Patent and Trademark Office on June 22, 1993; the '472 patent, which was duly and legally issued to Seiko Epson by the United States Patent and Trademark Office on October 20, 1992; the '401 patent, which was duly and legally issued to Seiko Epson by the United States Patent and Trademark Office on January 30, 1996; the '917 patent, which was

duly and legally issued to Seiko Epson by the United States Patent and Trademark Office on January 7, 2003; the '902 patent, which was duly and legally issued to Seiko Epson by the United States Patent and Trademark Office on April 22, 2003; the '422 patent, which was duly and legally issued to Seiko Epson by the United States Patent and Trademark Office on October 18, 2005; the '053 patent, which was duly and legally issued to Seiko Epson by the United States Patent and Trademark Office on March 7, 2006; and the '397 patent, which was duly and legally issued to Seiko Epson by the United States Patent and Trademark Office on March 14, 2006. (CX-1 to CX-18.)

5. Epson Portland Inc. (Epson Portland) is an Oregon corporation with its principal place of business located at 3950 NW Aloclek Place, Hillsboro, Oregon 97124. (CX-1443 Amended Complaint 3 at 2.)

6. Epson Portland is a wholly owned subsidiary of US Epson Inc., which is a wholly owned subsidiary of Seiko Epson. (McEvers Tr. at 150:9-13.)

7. Seiko Epson has granted Epson Portland the exclusive right to manufacture ink cartridges in the United States that utilize the patents-in-suit. (McEvers Tr. at 150:14-20, 152:12-153:9; CX-763C at 1.)

8. Epson Portland has manufactured ink cartridges for Seiko Epson continuously since 1999. (McEvers Tr. at 149:22-150:8.)

9. Epson America, Inc. (Epson America) is a California corporation with its principal place of business at 3840 Kilroy Airport Way, Long Beach, California 90806. (CX-1443 Amended Complaint 4 at 2-3.)

10. Epson America has the exclusive right to market and sell ink cartridges in the

United States that utilize the patents-in-suit. (CX-761C 2-3 at 1-2.)

11. Epson America is responsible for sales and marketing in North America for the Seiko Epson brand of products, including ink cartridges. (McEvers Tr. at 211:21-25.)

Respondents

12. Ninestar Technology Co., Ltd. (Ninestar Zhuhai) is a corporation organized under the laws of China with its principal place of business at No. 63 Mingzhubei Road, Xiangzhou District, Guangdong, China. (CX-816C Ninestar Zhuhai Response to Amended Complaint 12 at 3-4.)

13. Prior to answering the complaint, Ninestar Zhuhai changed its English corporate name from Ninestar Image Co., Ltd. to Ninestar Technology Co. Ltd. (CX-800 Ninestar Zhuhai Response to Complaint 12 at 3.)

14. Ninestar Zhuhai manufactures and sells for importation into the United States ink cartridges. (CX-816C Ninestar Zhuhai Response to Amended Complaint 12 at 3-4.)

15. Ninestar Technology Company Ltd. (Ninestar U.S.) has a place of business located at 4620 Mission Boulevard, Montclair, California. (CX-817C Ninestar U.S. Response to Amended Complaint 13 at 4.)

16. Ninestar U.S. imports and sells after importation into the United States ink cartridges manufactured by Ninestar Zhuhai. (CX-817C Ninestar U.S. Response to Amended Complaint 13 at 4.)

17. Town Sky Inc. ("Town Sky") is a corporation organized under the laws of California with its principal place of business located at 5 South Linden Avenue, Suite 4, South San Francisco, California. (CX-820C Town Sky Response to Amended Complaint 14 at 4.)

18. Town Sky imports and sells after importation into the United States ink cartridges manufactured by Ninestar Zhuhai. (CX-820C Town Sky Response to Amended Complaint 14 at 4.)

19. Ninestar U.S. and Town Sky are United States distributors and resellers of ink cartridges manufactured by Ninestar Zhuhai. (CX-883C response to interrogatory no. 131 at 10-11.)

20. Ninestar Zhuhai, Ninestar U.S. and Town Sky are affiliates of each other. (CX-816C Ninestar Zhuhai Response to Amended Complaint 13, 14 at 4.)

21. Ninestar Zhuhai is the owner and parent company of Ninestar U.S. and Town Sky. (CX-879 response to interrogatory no. 7 at 7.)

22. Dataproducts USA LLC (Dataproducts) is a corporation organized under the laws of Delaware with its principal place of business located at 2001 Anchor Court, Thousand Oaks, California. (CX-808 Dataproducts Response to Amended Complaint 26 at 7.)

23. Dataproducts sells for importation into the United States, imports, and sells after importation into the United States ink cartridges for use with Epson printers. (CX-828C response to interrogatory no. 120 at 14-15.)

24. Zhuhai Gree Magneto-Electric Co. Ltd (Zhuhai Gree) is a corporation organized under the laws of China with its principal place of business located at 205, Shihua West Road, Zhuhai, Guangdong Province, China. (CX-823C Zhuhai Gree's Response to Amended Complaint 15 at 3; CX-1300C Zhuhai Gree's response to interrogatory no. 116(b) at 15.)

25. Zhuhai Gree manufactures and sells for importation into the United States ink cartridges, including ink cartridges for use with Epson printers. (CX-823C Zhuhai Gree's

Response to Amended Complaint 15 at 3.)

26. MMC Consumables Inc. (MMC) is a corporation organized under the laws of California with its principal place of business located at 20456 Carrey Road, Walnut, California. (CX-814C MMC's Response to Amended Complaint 16 at 3-4.)

27. MMC imports into the United States and sells after importation ink cartridges manufactured by Zhuhai Gree, including ink cartridges for use with Epson printers. (CX-814C MMC's Response to Amended Complaint 15-16 at 3-4.)

28. Butterfly Print Image Corporation (Butterfly) was found to be in default by Initial Determination (Order No. 12) entered on June 26, 2006. The Commission did not review and thus adopted the initial determination by notice dated July 19, 2006. (Notice of Commission Determination Not to Review Initial Determination Finding Five Respondents in Default.)

29. Butterfly is a corporation organized under the laws of Hong Kong and has a principal place of business located at Units 811-812, 8/F Park Sun Buliding, 103-107 Wo Yi Hop Rd., Kwai Chung, N.T., Hong Kong. (CX-1443 Amended Complaint 7 at 3-4.)

30. Butterfly manufactures and sells for importation into the United States ink cartridges, including ink cartridges for use with Epson printers. (CX-1443 Amended Complaint 7 at 3-4.)

31. Glory South Software Manufacturing Inc. (Glory South) was found to be in default by Initial Determination (Order No. 12) entered on June 26, 2006. The Commission did not review and thus adopted the initial determination by notice dated July 19, 2006. (Notice of Commission Determination Not to Review Initial Determination Finding Five Respondents in Default.)

32. Glory South was served by the Commission with the original and amended complaints. (Notice of Commission Determination Not to Review Initial Determination Finding Five Respondents in Default, July 19, 2006.)

33. Glory South is a California corporation with principal place of business located at 6481 Orangethorpe Avenue, Suite 6, Buena Park, California. (CX-1443 Amended Complaint 6 at 3.)

34. Glory South imports and sells after importation into the United States ink cartridges manufactured by Butterfly, including ink cartridges for use with Epson printers. (CX-1443 Amended Complaint 6 at 3.)

35. AcuJet U.S.A., Inc. (AcuJet) was found to be in default by initial determination (Order No. 12) entered on June 26, 2006. The Commission did not review and thus adopted the initial determination by notice dated July 19, 2006. (Notice of Commission Determination Not to Review Initial Determination Finding Five Respondents in Default.)

36. AcuJet was served by the Commission with the original and amended complaints. (Notice of Commission Determination Not to Review Initial Determination Finding Five Respondents in Default, July 19, 2006.)

37. AcuJet is a California corporation with its principal place of business located at 128 S. 6th Avenue, City of Industry, California. (CX-1443 Amended Complaint 29 at 10.)

38. AcuJet is affiliated with respondent Master Ink Co., Ltd. (Master Ink) and imports and sells after importation into the United States ink cartridges manufactured by Master Ink, including ink cartridges for use with Epson printers. (CX-1443 Amended Complaint 29 at 10.)

39. Mipo International Ltd. (Mipo) was found to be in default by initial determination

(Order No. 12) entered on June 26, 2006. The Commission did not review and thus adopted the initial determination by notice dated July 19, 2006. (Notice of Commission Determination Not to Review Initial Determination Finding Five Respondents in Default.)

40. Mipo is a private limited company organized under the laws of Hong Kong with its principal place of business located at Flat B, 11F, Wong Tze Building, 71 Hoe Yuen Road, Kwun Tong, Kowloon, Hong Kong. (CX-1443 Amended Complaint 10 at 4.)

41. Mipo manufactures and sells for importation into the United States ink cartridges, including ink cartridges for use with Epson printers. (CX-1443 Amended Complaint 10 at 4.)

42. Mipo America Ltd., dba Mextec Group Inc. (Mipo America) was found to be in default by Initial Determination (Order No. 12) entered on June 26, 2006. The Commission did not review and thus adopted the Initial Determination by notice dated July 19, 2006. (Notice of Commission Determination Not to Review Initial Determination Finding Five Respondents in Default.)

43. Mipo America was served by the Commission with the original and amended complaints. (Notice of Commission Determination Not to Review Initial Determination Finding Five Respondents in Default, July 19, 2006.)

44. Mipo America is a corporation organized under the laws of Florida with its principal place of business located at 3100 N.W. 72nd Avenue #106, Miami, Florida. (CX-1443 Amended Complaint 11 at 5.)

45. Mipo America is affiliated with Mipo and imports and sells after importation into the United States ink cartridges manufactured by Mipo, including ink cartridges for use with Epson printers. (CX-1443 Amended Complaint 10 at 4.)

46. Tully Imaging Supplies Ltd. (Tully) was found to be in default by Initial Determination (Order No. 16) entered on August 23, 2006. The Commission did not review and thus adopted the initial determination by notice dated October 25, 2006. (Notice of Commission Determination Not to Review Initial Determination Finding Three Respondents in Default.)

47. Tully responded to the Complaint and Amended Complaint on April 24, 2006 and June 19, 2006, respectively. (CX-804; CX-821.)

48. Tully is a corporation organized under the laws of Hong Kong with its principal place of business located at Room 902, 9/F., Island Place Tower, 510 King's Road, North Point, Hong Kong. (CX-1443 Amended Complaint 17 at 6-7.)

49. Tully sells for importation into the United States ink cartridges, including ink cartridges for use with Epson printers. (CX-1443 Amended Complaint 17 at 6-7.)

50. The ink cartridges Tully sells for importation are manufactured by non-respondent Zhongshan Yuzhou Printer Parts Manufacturing Co., Ltd. in China. (CX-821 Tully Response to Amended Complaint, Rule 210.13(b) Statement 3 at 74.)

51. Wellink Trading Co., Ltd. (Wellink) was found to be in default by Initial Determination (Order No. 16) entered on August 23, 2006. The Commission did not review and thus adopted the initial determination by notice dated October 25, 2006. (Notice of Commission Determination Not to Review Initial Determination Finding Three Respondents in Default.)

52. Wellink responded to the complaint and amended complaint on April 24, 2006 and June 19, 2006, respectively. (CX-805; CX-822.)

53. Wellink is a corporation organized under the laws of China with its principal place of business located at Avn. Venceslau Morais S/N, 11-P, Edf. C. Ind., Keck Seng Building

2, Macao, China. (CX-1443 Amended Complaint 19 at 7.)

54. Wellink sells for importation into the United States ink cartridges, including ink cartridges for use with Epson printers. (CX-1443 Amended Complaint 19 at 7.)

55. The ink cartridges Wellink sells for importation are manufactured by non-respondent Zhongshan Yuzhou Printer Parts Manufacturing Co., Ltd. in China. (CX-822 Wellink Response to Amended Complaint Rule, 210.13(b) Statement 1 at 76-77.)

56. Ribbon Tree (Macao) Trading Co., Ltd. (Ribbon Tree Macao) was found to be in default by Initial Determination (Order No. 16) entered on August 23, 2006. The Commission did not review and thus adopted the initial determination by notice dated October 25, 2006. (Notice of Commission Determination Not to Review Initial Determination Finding Three Respondents in Default.)

57. Ribbon Tree Macao responded to the Complaint and Amended Complaint on April 24, 2006 and June 19, 2006, respectively. (CX-801; CX-818.)

58. Ribbon Tree Macao is a corporation organized under the laws of China with its principal place of business located at Avn. Venceslau Morais S/N, 11-P, Edf. C. Ind., Keck Seng Building 2, Macao, China. (CX-1443 Amended Complaint 20 at 7-8.)

59. Ribbon Tree Macao sells for importation into the United States ink cartridges, including ink cartridges for use with Epson printers. (CX-1443 Amended Complaint 20 at 7-8.)

60. The ink cartridges Ribbon Tree Macao sells for importation are manufactured by non-respondent Zhongshan Yuzhou Printer Parts Manufacturing Co., Ltd. in China. (CX-818 Ribbon Tree Macao Response to Amended Complaint, Rule 210.13(b) Statement 2 at 79.)

61. Wellink and Ribbon Tree Macao are affiliated with each other and with

respondents Ribbon Tree (USA) Inc., dba Cana-Pacific Ribbons Inc. (Ribbon Tree USA), and Apex Distributing Inc. (Apex). (CX-1443 Amended Complaint 19 at 7.)

62. Ink Lab (H.K). Co. Ltd. (Ink Lab) is a corporation organized under the laws of Hong Kong with its principal place of business located at Flat A 11/F, Lucky Horse Industrial Building, 64 Tong Mi Road, Mongkok, Kowloon, Hong Kong. (CX-1005C 4 at 2-3.)

63. Ink Lab responded to the complaint and amended complaint on April 28, 2006 and June 22, 2006, respectively. (CX-793; CX-810.)

64. Ink Lab manufactures and sells for importation into the United States of ink cartridges, including ink cartridges for use with Epson printers. (CX-1005C 4 at 2-3.)

65. The Investigation was terminated as to Ink Lab by Initial Determination (Order No. 18) entered on November 2, 2006. The Commission did not review and thus adopted the Initial Determination by notice dated November 29, 2006, and issued a consent order as to Ink Lab concurrently therewith. (Notice of Commission Determination Not to Review and Initial Determination Terminating Three Respondents on the Basis of Settlement Agreements and Consent Orders; Issuance of Consent Orders.)

66. InkTec Co. Ltd (InkTec) is a corporation organized under the laws of Korea with its principal place of business located at 1124 Shingil-Dong Dawon-gu, Ansan-City, Kyungki-do, 425-839, Korea. (CX-1004C 4 at 2.)

67. InkTec responded to the complaint and amended complaint on April 20, 2006 and July 14, 2006, respectively. (CX-795; CX-812.)

68. InkTec manufactures and sells for importation into the United States ink cartridges, including ink cartridges for use with Epson printers. (CX-1004C 4 at 2.)

69. The investigation was terminated as to InkTec by Initial Determination (Order No. 18) entered on November 2, 2006. The Commission did not review and thus adopted the Initial Determination by notice dated November 29, 2006, and issued a consent order as to InkTec concurrently therewith. (Notice of Commission Determination Not to Review and Initial Determination Terminating Three Respondents on the Basis of Settlement Agreements and Consent Orders; Issuance of Consent Orders.)

70. InkTec America Corporation (InkTec America) is a corporation organized under the laws of Maryland with its principal place of business located at 7020 Troy Hill Drive, Suite H, Elkridge, Maryland (CX-1004C 5 at 2-3.)

71. InkTec America responded to the complaint and amended complaint on April 20, 2006 and July 14, 2006, respectively. (CX-794; CX-811.)

72. InkTec America imports into the United States and sells after importation ink cartridges manufactured by InkTec, including ink cartridges for use with Epson printers. (CX-1004C 5 at 2-3.)

73. The investigation was terminated as to InkTec America by initial determination (Order No. 18) entered on November 2, 2006. The Commission did not review and thus adopted the initial determination by notice dated November 29, 2006, and issued a consent order as to InkTec America concurrently therewith. (Notice of Commission Determination Not to Review and Initial Determination Terminating Three Respondents on the Basis of Settlement Agreements and Consent Orders; Issuance of Consent Orders.)

74. InkTec and InkTec America are affiliates of each other. (CX-1004C 6.)

75. Artech GmbH (Artech) is a corporation organized under the laws of Germany

with its principal place of business located at Feldbachacker 10, D-44 149, Dorfmund, German. (CX-1008C 1 at 1.)

76. Artech responded to the complaint and amended complaint on April 10, 2006 and June 20, 2006, respectively. (CX-790C; CX-807C.)

77. Artech manufactures and sells for importation into the United States ink cartridges, including ink cartridges for use with Epson printers. (CX-1008C 1 at 1.)

78. The investigation was terminated as to Artech by initial determination (Order No. 24) entered on December 21, 2006. The Commission did not review and thus adopted the Initial Determination by notice dated January 16, 2007 and issued a consent order as to Artech concurrently therewith. (Notice of Commission Determination Not to Review and Initial Determination Terminating Three Respondents on the Basis of Settlement Agreements and Consent Orders; Issuance of Consent Orders.)

79. Inkjetwarehouse.com Inc. (Inkjetwarehouse) is a corporation organized under the laws of Connecticut with its principal place of business located at 106 Powder Mill Rd., P.O. Box 368, Canton, Connecticut. (CX-1007C 4 at 3.)

80. Inkjetwarehouse responded to the complaint and amended complaint on April 11, 2006 and June 12, 2006, respectively. (CX-792C; CX-809C.)

81. Inkjetwarehouse imports and sells after importation into the United States ink cartridges, including ink cartridges for use with Epson printers. (CX-1007C 4 at 3.)

82. The investigation was terminated as to Inkjetwarehouse by Initial Determination (Order No. 24) entered on December 21, 2006. The Commission did not review and thus adopted the initial determination by notice dated January 16, 2007 and issued a consent order as

to Inkjetwarehouse concurrently therewith. (Notice of Commission Determination Not to Review and Initial Determination Terminating Three Respondents on the Basis of Settlement Agreements and Consent Orders; Issuance of Consent Orders.)

83. Nectron International, Ltd (Nectron) is a corporation organized under the laws of Texas with its principal place of business located at 725 Park Two, Sugar Land, Texas. (CX-1455C 4 at 3.)

84. Nectron responded to the complaint and amended complaint on April 11, 2006 and June 12, 2006, respectively. (CX-798C; CX-815C.)

85. Nectron imports and sells after importation into the United States ink cartridges, including ink cartridges for use with Epson printers, manufactured by respondents Ninestar Zhuhai, Ink Lab and other suppliers. (CX-1455C Attachment D at 302.)

86. The Investigation was terminated as to Nectron by initial determination (Order No. 28) entered January 16, 2007. The Commission did not review and thus adopted the initial determination notice dated February 12, 2007 and issued a consent order.

87. Gerald Chamales Corp., fdba Rhinotek Computer Products (Gerald Chamales) is a corporation organized under the laws of California with its principal place of business located at 2301 E. Del Amo Blvd., Compton, California. (CX-1003C I.4 at 2-3.)

88. Gerald Chamales responded to the Complaint on April 24, 2006. (CX-791.)

89. Gerald Chamales imports and sells after importation into the United States ink cartridges, including ink cartridges for use with Epson printers. (CX-1003C I.4 at 2-3.)

90. The Investigation was terminated as to Gerald Chamales by Initial Determination (Order No. 24) entered on December 21, 2006. The Comission did not review and thus adopted

the initial determination by notice dated January 16, 2007 and issued a consent order as to Gerald Chamales concurrently therewith. (Notice of Commission Determination Not to Review and Initial Determination Terminating Three Respondents on the Basis of Settlement Agreements and Consent Orders; Issuance of Consent Orders.)

91. Rhinotek Computer Products Inc. (Rhinotek) is a corporation organized under the laws of Delaware with its principal place of business located at 2301 E. Del Amo Blvd., Compton, California. (CX-1006C I.4 at 2.)

92. Rhinotek is the successor-in-interest to Gerald Chamales. (CX-1006C I.5 at 3.)

93. Rhinotek imports and sells after importation into the United States aftermarket ink cartridges, including ink cartridges for use with Epson printers. (CX-1006C I.4 at 2.)

94. Rhinotek was added to this investigation and this investigation was terminated as to Rhinotek by initial determination (Order No. 30) which issued on January 30, 2007. The Commission did not review and thus adopted the initial determination to add Rhinotek to this investigation and to terminate this investigation as to Rhinotek by notice dated February 22 and issued a consent order.

95. Master Ink is a corporation organized under the laws of Hong Kong with its principal place of business located at 604 Po Lung Centre, 11 Wang Chiu Road, Kowloon Bay, Hong Kong. (CX-1457C.)

96. Master Ink responded to the Complaint and Amended Complaint on May 1, 2006 and June 22, 2006, respectively. (CX-796; CX-813.)

97. Master Ink manufactures and sells for importation into the United States ink cartridges, including ink cartridges for use with Epson printers. (CX-1457C 1 at 1.)

98. Master Ink filed a Motion for an Order Terminating the Investigation by Entry of Consent Order on January 3, 2007. (Motion Docket No. 565-058.) On January 16, 2007, an initial determination issued terminating Master Ink from the Investigation based on a consent order. (Order No. 28.) In a notice dated February 12, 2007, the Commission determined not to review Order No. 28 and issued a consent order.

99. Apex is a corporation organized under the laws of Washington with its principal place of business located at 6920 Salashan Parkway, Unit D107, Ferndale, Washington. (CX-1458C.)

100. Apex responded to the Complaint and Amended Complaint on April 20, 2006 and June 19, 2006, respectively. (CX-802; CX-819.)

101. Apex imports and sells after importation into the United States ink cartridges manufactured by non-respondent Yuzhou, including ink cartridges for use with Epson printers. (CX-1458C.)

102. On January 16, 2007, an initial determination issued terminating Apex from the Investigation based on consent orders. (Order No. 28.) In a notice dated February 12, 2007, the Commission determined not to review Order No. 28 and issued a consent order.

103. Ribbon Tree USA is a corporation organized under the laws of Washington with its principal place of business located at 6920 Salashan Parkway, Unit D107, Ferndale, Washington. (CX-1456C 1 at 1.)

104. Ribbon Tree USA responded to the Complaint and Amended Complaint on April 20, 2006 and June 19, 2006, respectively. (CX-802; CX-819.)

105. Ribbon Tree USA is doing business as Cana-Pacific Ribbons Inc. (CX-1443

Amended Complaint 21 at 8.)

106. Ribbon Tree USA is affiliated with respondent Apex. (CX-1456C 2 and Attachment A at 1, 3.)

107. Ribbon Tree USA and Apex share two US addresses; one at 6920 Salashan Parkway, D107, Ferndale, WA 98248 and one at 16081 Flight Path Drive, Brooksville, FL 34604. (CX-1443 Amended Complaint 485 at 115.)

108. On January 16, 2007, an initial determination issued terminating Ribbon Tree USA from the Investigation based on consent orders. (Order No. 28.) In a notice dated February 12, 2007, the Commission determined not to review Order No. 28 and issued a consent order.

B. Live Witnesses

109. Herbert Seitz has been a private investigator since 1999 and operates his own firm under the name H.W. Seitz & Associates. (Tr. at 237 at 4-9.) Seitz first performed work on behalf of Epson America in January 2000. (Tr. at 238 at 10-12.) His work on behalf of Epson accounts for a substantial part of his business (Tr. at 239 at 9 to p. 240 at 8.)

110. Ronald McEvers has been an employee of Epson Portland since 1986. (Tr. at 145: 17-18.) From 1986 through 1999, Epson Portland manufactured printers. In 1999, Epson Portland first began manufacturing ink cartridges. (Tr. 175 at 15 to 176 at 5.) McEvers has held the following positions at Epson Portland: personnel manager, personnel and administrative manager, director of human resources, director of legal affairs, and director of general affairs and assistant corporation secretary. McEvers also oversees Epson Portland's facilities department and is familiar with Epson Portland's manufacturing operations. (Tr. at 148: 16-25, 155:21-157:6.)

111. Gerald Murch was qualified as an expert witness on behalf of Epson in inkjet and other dot matrix printer design and cartridge design and development. (Tr. at 337: 1-3.) Although Murch has never sat at a CAD machine and created a final design for an ink cartridge, he worked directly with designers while they did the designs and was responsible for ensuring that Xerox ink cartridges met the requisite technical specification (Tr. at 332:11-334:7.)

112. Jim Zhong Wu is a 40 year mechanical engineer form Zhuhai China. (Tr. at 2350, line 22 to p. 235.) He graduated from high school in 1985, and then received a degree in mechanical engineering in1989 from the Guangdong mechanical institution. (Tr. at 2351, lines 18-22.)

113. Wu has been employed by Ninestar Zhuhai since 2001, and is currently the general manager of the technical department and assistant general manager of the entire company. (Tr. at 2352, lines 8-20.) As general manager of the technical department of Ninestar Zhuhai, Wu supervises the design of Ninestar's Epson compatible cartridges. (JX-19C p. 27, lines 2-3 and 28, line 10.) The technical department of Ninestar Zhuhai is responsible for R&D of printer consumables. (Tr. at 2353, lines 12-16.)

114. Wang Dong Ying is 41 years old and is resident of Zhuhai China. (Tr. at 2250, lines 9-11.) Wang graduated from the university of Lan Zhou China in 1988 with a degree in solid state physics. (Tr. at 2250, lines 20-23. Wang is currently employed by Ninestar Zhuhai in Zuhuhai, China. (Tr. at 2251, lines 7-11.) He is a Director and the General Manager of Ninestar Zhuhai (Tr. at 2251, lines 22-23.)

115. As General Manager of Ninestar Zhuhai, Wang is responsible for ensuring the normal running of the company, including the production, research and development of products,

quality assurance, marketing, finance, personal resources, and the day to day operation of the company. (Tr. at 2257, line 20 to 2258, line 7.) Wang's authority and responsibility over the departments of Ninestar Zhuhai can be further seen on the organizational chart displayed on the company's website. (Tr. at 2254, lines 4-14.)

116. Francis J. Perry was qualified as an expert witness on behalf of the active respondents in the area of cartridges for inkjet printers and impact-type printers and inkjet and impact type printers. (Tr. at 1628: 18-25.)

C. Person of Ordinary Skill

117. A person of ordinary skill in the art in 1984 would have to be able to understand the patents in the context of the period of time in which the patent was ensued and have technical skill. (Murch Tr. at 378 :24-379:10.) Said person should have a background in some form of mechanical engineering or engineering physics, or some number of years of hands-on experience in the design and development of ink tanks. (Murch Tr. at 379:10-15; Perry at Tr 1789:14-1791:14.)

CONCLUSIONS OF LAW

1. The Commission has in personam jurisdiction over certain respondents and in rem jurisdiction.

2. There has been an importation involving each of the respondents of certain ink cartridge and components thereof, which are the subject of the alleged unfair unfair trade allegations.

3. An industry does exist in the United States, as required by subsection (a)(2) of section 337, that exploits each of the asserted patents in issue.

4. Ninestar Technology Co. Ltd. (formerly Ninestar Image Co. Ltd.) infringes claim 7 of the '957 patent.

5. Ninestar Technology Company Ltd. infringes claim 7 of the '957 patent.

6. Town Sky, Inc. infringes claim 7 of the '957 patent.

7. Dataproducts USA LLC infringes claim 7 of the '957 patent.

8. Zhuhai Gree Magneto-Electric Co. Ltd. infringes claim 7 of the '957 patent.

9. MMC Consumables Inc. infringes claim 7 of the '957 patent.

10. Butterfly Print Image Corp. Ltd. infringes claim 7 of the '957 patent.

11. Glory South Software Manufacturing Inc. infringes claim 7 of the '957 patent.

12. AcuJet U.S.A., Inc. infringes claim 7 of the '957 patent.

13. Mipo International Ltd. infringes claim 7 of the '957 patent.

14. Mipo America Ltd. infringes claim 7 of the '957 patent.

15. Tully Imaging Supplies Ltd. infringes claim 7 of the '957 patent.

16. Wellink Trading Co., Ltd. infringes claim 7 of the '957 patent.

17. Ribbon Tree (Macao) Trading Co., Ltd. infringes claim 7 of the '957 patent.

18. Ninestar Technology Co. Ltd. (formerly Ninestar Image Co. Ltd.) infringes claims 18, 81, 93, 149 and 164 of the '439 patent.

19. Ninestar Technology Company Ltd. infringes claims 18, 81, 93, 149 and 164 of the '439 patent.

20. Town Sky, Inc. infringes claims 18, 81, 93, 149 and 164 of the '439 patent.

21. Dataproducts USA LLC infringes claims 18, 81, 93, 149 and 164 of the '439 patent.

22. Zhuhai Gree Magneto-Electric Co. Ltd. infringes claims 18, 81, 93, 149 and 164 of the '439 patent.

23. MMC Consumables Inc. infringes claims 18, 81, 93, 149 and 164 of the '439 patent.

24. Butterfly Print Image Corp. Ltd. infringes claims 18, 81, 93, 149, 164 and 165 of the '439 patent.

25. Glory South Software Manufacturing Inc. infringes claims 18, 81, 93, 149, 164 and 165 of the '439 patent.

26. AcuJet U.S.A., Inc. infringes claims 18, 81, 93, 149, 164 and 165 of the '439 patent.

27. Mipo International Ltd. infringes claims 18, 81, 93, 149, 164 and 165 of the '439 patent.

28. Mipo America Ltd. infringes claims 18, 81, 93, 149, 164 and 165 of the '439 patent.

29. Tully Imaging Supplies Ltd. infringes claims 18, 81, 93, 149, 164 and 165 of the '439 patent.

30. Wellink Trading Co., Ltd. infringes claims 18, 81, 93, 149, 164 and 165 of the '439 patent.

31. Ribbon Tree (Macao) Trading Co., Ltd. infringes claims 18, 81, 93, 149, 164 and 165 of the '439 patent.

32. Ninestar Technology Co. Ltd. (formerly Ninestar Image Co. Ltd.) infringes claims 83 and 84 of the '377 patent.

33. Ninestar Technology Company Ltd. infringes claims 83 and 84 of the '377 patent.

34. Town Sky, Inc. infringes claims 83 and 84 of the '377 patent.

35. Dataproducts USA LLC infringes claims 83 and 84 of the '377 patent.

36. Zhuhai Gree Magneto-Electric Co. Ltd. infringes claims 83 and 84 of the '377 patent.

37. MMC Consumables Inc. infringes claims 83 and 84 of the '377 patent.

38. Butterfly Print Image Corp. Ltd. infringes claims 83 and 84 of the '377 patent.

39. Glory South Software Manufacturing Inc. infringes claims 83 and 84 of the '377 patent.

40. AcuJet U.S.A., Inc. infringes claims 83 and 84 of the '377 patent.

41. Mipo International Ltd. infringes claims 83 and 84 of the '377 patent.

42. Mipo America Ltd. infringes claims 83 and 84 of the '377 patent.

43. Tully Imaging Supplies Ltd. infringes claims 83 and 84 of the '377 patent.

44. Wellink Trading Co., Ltd. infringes claims 83 and 84 of the '377 patent.

45. Ribbon Tree (Macao) Trading Co., Ltd. infringes claims 83 and 84 of the '377 patent.

46. Ninestar Technology Co. Ltd. (formerly Ninestar Image Co. Ltd.) infringes claims 19 and 20 of the '148 patent.

47. Ninestar Technology Company Ltd. infringes claims 19 and 20 of the '148 patent.

48. Town Sky, Inc. infringes claims 19 and 20 of the '148 patent.

49. Dataproducts USA LLC infringes claims 19 and 20 of the '148 patent.

50. Zhuhai Gree Magneto-Electric Co. Ltd. infringes claims 19 and 20 of the '148 patent.

51. MMC Consumables Inc. infringes claims 19 and 20 of the '148 patent.

52. Butterfly Print Image Corp. Ltd. infringes claims 19 and 20 of the '148 patent.

53. Glory South Software Manufacturing Inc. infringes claims 19 and 20 of the '148 patent.

54. AcuJet U.S.A., Inc. infringes claims 19 and 20 of the '148 patent.

55. Mipo International Ltd. infringes claims 19 and 20 of the '148 patent.

56. Mipo America Ltd. infringes claims 19 and 20 of the '148 patent.

57. Tully Imaging Supplies Ltd. infringes claims 19 and 20 of the '148 patent.

58. Wellink Trading Co., Ltd. infringes claims 19 and 20 of the '148 patent.

59. Ribbon Tree (Macao) Trading Co., Ltd. infringes claims 19 and 20 of the '148 patent.

60. Butterfly Print Image Corp. Ltd. infringes claims 29, 31, 34 and 38 of the '472 patent.

61. Glory South Software Manufacturing Inc. infringes claims 29, 31, 34 and 38 of the '472 patent.

62. AcuJet U.S.A., Inc. infringes claims 29, 31, 34 and 38 of the '472 patent.

63. Mipo International Ltd. infringes claims 29, 31, 34 and 38 of the '472 patent.

64. Mipo America Ltd. infringes claims 29, 31, 34 and 38 of the '472 patent.

65. Tully Imaging Supplies Ltd. infringes claims 29, 31, 34 and 38 of the '472 patent.

66. Wellink Trading Co., Ltd. infringes claims 29, 31, 34 and 38 of the '472 patent.

67. Ribbon Tree (Macao) Trading Co., Ltd. infringes claims 29, 31, 34 and 38 of the '472 patent.

68. Ninestar Technology Co. Ltd. (formerly Ninestar Image Co. Ltd.) infringes claim 1 of the '401 patent.

69. Ninestar Technology Company Ltd. infringes claim 1 of the '401 patent.

70. Town Sky, Inc. infringes claim 1 of the '401 patent.

71. Dataproducts USA LLC infringes claim 1 of the '401 patent.

72. Zhuhai Gree Magneto-Electric Co. Ltd. infringes claim 1 of the '401 patent.

73. MMC Consumables Inc. infringes claim 1 of the '401 patent.

74. Butterfly Print Image Corp. Ltd. infringes claim 1 of the '401 patent.

75. Glory South Software Manufacturing Inc. infringes claim 1 of the '401 patent.

76. AcuJet U.S.A., Inc. infringes claim 1 of the '401 patent.

77. Mipo International Ltd. infringes claim 1 of the '401 patent.

78. Mipo America Ltd. infringes claim 1 of the '401 patent.

79. Tully Imaging Supplies Ltd. infringes claim 1 of the '401 patent.

80. Wellink Trading Co., Ltd. infringes claim 1 of the '401 patent.

81. Ribbon Tree (Macao) Trading Co., Ltd. infringes claim 1 of the '401 patent.

82. Ninestar Technology Co. Ltd. (formerly Ninestar Image Co. Ltd.) infringes claims 1, 2, 3 and 9 of the '917 patent.

83. Ninestar Technology Company Ltd. infringes claims 1, 2, 3 and 9 of the '917 patent.

84. Town Sky, Inc. infringes claims 1, 2, 3 and 9 of the '917 patent.

85. Dataproducts USA LLC infringes claims 1, 2, 3 and 9 of the '917 patent.

86. Zhuhai Gree Magneto-Electric Co. Ltd. infringes claims 1, 2, 3 and 9 of the '917 patent.

87. MMC Consumables Inc. infringes claims 1, 2, 3 and 9 of the '917 patent.

88. Butterfly Print Image Corp. Ltd. infringes claims 1, 2, 3 and 9 of the '917 patent.

89. Glory South Software Manufacturing Inc. infringes claims 1, 2, 3 and 9 of the '917 patent.

90. AcuJet U.S.A., Inc. infringes claims 1, 2, 3 and 9 of the '917 patent.

91. Mipo International Ltd. infringes claims 1, 2, 3 and 9 of the '917 patent.

92. Mipo America Ltd. infringes claims 1, 2, 3 and 9 of the '917 patent.

93. Tully Imaging Supplies Ltd. infringes claims 1, 2, 3 and 9 of the '917 patent.

94. Wellink Trading Co., Ltd. infringes claims 1, 2, 3 and 9 of the '917 patent.

95. Ribbon Tree (Macao) Trading Co., Ltd. infringes claims 1, 2, 3 and 9 of the '917 patent.

96. Ninestar Technology Co. Ltd. (formerly Ninestar Image Co. Ltd.) infringes claims

1, 31 and 34 of the '902 patent.

97. Ninestar Technology Company Ltd. infringes claims 1, 31 and 34 of the '902 patent.

98. Town Sky, Inc. infringes claims 1, 31 and 34 of the '902 patent.

99. Dataproducts USA LLC infringes claims 1, 31 and 34 of the '902 patent.

100. Zhuhai Gree Magneto-Electric Co. Ltd. infringes claims 1, 31 and 34 of the '902 patent.

101. MMC Consumables Inc. infringes claims 1, 31 and 34 of the '902 patent.

102. Butterfly Print Image Corp. Ltd. infringes claims 1, 31 and 34 of the '902 patent.

103. Glory South Software Manufacturing Inc. infringes claims 1, 31 and 34 of the '902 patent.

104. AcuJet U.S.A., Inc. infringes claims 1, 31 and 34 of the '902 patent.

105. Mipo International Ltd. infringes claims 1, 31 and 34 of the '902 patent.

106. Mipo America Ltd. infringes claims 1, 31 and 34 of the '902 patent.

107. Tully Imaging Supplies Ltd. infringes claims 1, 31 and 34 of the '902 patent.

108. Wellink Trading Co., Ltd. infringes claims 1, 31 and 34 of the '902 patent.

109. Ribbon Tree (Macao) Trading Co., Ltd. infringes claims 1, 31 and 34 of the '902 patent.

110. Ninestar Technology Co. Ltd. (formerly Ninestar Image Co. Ltd.) infringes claims 1, 10 and 14 of the '422 patent.

111. Ninestar Technology Company Ltd. infringes claims 1, 10 and 14 of the '422 patent.

112. Town Sky, Inc. infringes claims 1, 10 and 14 of the '422 patent.

113. Dataproducts USA LLC infringes claims 1, 10 and 14 of the '422 patent.

114. Zhuhai Gree Magneto-Electric Co. Ltd. infringes claims 1, 10 and 14 of the '422 patent.

115. MMC Consumables Inc. infringes claims 1, 10 and 14 of the '422 patent.

116. Butterfly Print Image Corp. Ltd. infringes claims 1, 10 and 14 of the '422 patent.

117. Glory South Software Manufacturing Inc. infringes claims 1, 10 and 14 of the '422 patent.

118. AcuJet U.S.A., Inc. infringes claims 1, 10 and 14 of the '422 patent.

119. Mipo International Ltd. infringes claims 1, 10 and 14 of the '422 patent.

120. Mipo America Ltd. infringes claims 1, 10 and 14 of the '422 patent.

121. Tully Imaging Supplies Ltd. infringes claims 1, 10 and 14 of the '422 patent.

122. Wellink Trading Co., Ltd. infringes claims 1, 10 and 14 of the '422 patent.

123. Ribbon Tree (Macao) Trading Co., Ltd. infringes claims 1, 10 and 14 of the '422 patent.

124. Ninestar Technology Co. Ltd. (formerly Ninestar Image Co. Ltd.) infringes claim 1 of the '053 patent.

125. Ninestar Technology Company Ltd. infringes claim 1 of the '053 patent.

126. Town Sky, Inc. infringes claim 1 of the '053 patent.

127. Dataproducts USA LLC infringes claim 1 of the '053 patent.

128. Zhuhai Gree Magneto-Electric Co. Ltd. infringes claim 1 of the '053 patent.

129. MMC Consumables Inc. infringes claim 1 of the '053 patent.

130. Butterfly Print Image Corp. Ltd. infringes claim 1 of the '053 patent.

131. Glory South Software Manufacturing Inc. infringes claim 1 of the '053 patent.

132. AcuJet U.S.A., Inc. infringes claim 1 of the '053 patent.

133. Mipo International Ltd. infringes claim 1 of the '053 patent.

134. Mipo America Ltd. infringes claim 1 of the '053 patent.

135. Tully Imaging Supplies Ltd. infringes claim 1 of the '053 patent.

136. Wellink Trading Co., Ltd. infringes claim 1 of the '053 patent.

137. Ribbon Tree (Macao) Trading Co., Ltd. infringes claim 1 of the '053 patent.

138. Mipo International Ltd. infringes claims 21, 45, 53 and 54 of the '397 patent.

139. Mipo America Ltd. infringes claims 21, 45, 53 and 54 of the '397 patent.

140. Tully Imaging Supplies Ltd. infringes claims 21, 45, 53 and 54 of the '397 patent.

141. Wellink Trading Co., Ltd. infringes claims 21, 45, 53 and 54 of the '397 patent.

142. Ribbon Tree (Macao) Trading Co., Ltd. infringes claims 21, 45, 53 and 54 of the '397 patent.

143. The asserted claims of the patents in issue are not invalid and are enforceable.

144. There is a violation of section 337.

145. Assuming there is an unfair act, the record supports issuance of a general exclusion order barring entry into the United States of infringing ink cartridges and components thereof and imposition of a bond in the amount of about $13.60 per imported infringing ink cartridge during the Presidential review period. The record also supports issuance of certain cease and desist orders.

ORDER

Based on the foregoing, and the record as a whole, it is the administrative law judge's Final Initial Determination that there is a violation of section 337 in the importation into the United States, sale for importation, and the sale within the United States after importation of certain ink cartridges and components thereof. It is also the administrative law judge's recommendation, if the Commission finds, a violation, as the administrative law judge has, that a general exclusion order should issue barring entry into the United States of infringing ink cartridges and components thereof as well as certain cease and desist orders. The administrative law judge further recommends that a bond of about $13.60 per infringing ink cartridge sought to be imported be imposed during the Presidential review period.

The administrative law judge hereby CERTIFIES to the Commission his Final Initial and Recommended Determinations together with the record consisting of the exhibits admitted into evidence. The pleadings of the parties filed with the Secretary and the transcript of the pre-hearing conference, and the hearing, are not certified, since they are already in the Commission's possession in accordance with Commission rules.

Further it is ORDERED that:

1. In accordance with Commission rule 210.39, all material heretofore marked in camera because of business, financial and marketing data found by the administrative law judge to be cognizable as confidential business information under Commission rule 201.6(a), is to be given in camera treatment continuing after the date this investigation is terminated.

2. Counsel for the parties shall have in the hands of the administrative law judge those portions of the final initial and recommended determinations which contain bracketed

confidential business information to be deleted from any public version of said determinations, no later than April 20, 2007. Any such bracketed version shall not be served via facsimile on the administrative law judge. If no such bracketed version is received from a party, it will mean that the party has no objection to removing the confidential status, in its entirety, from these initial and recommended determinations.

3. The initial determination portion of the Final Initial and Recommended Determinations, issued pursuant to Commission rule 210.42(h)(2), shall become the determination of the Commission forty-five (45) days after the service thereof, unless the Commission, within that period shall have ordered its review or certain issues therein or by order has changed the effective date of the initial determination portion. The recommended determination portion, issued pursuant to Commission rule 210.42(a)(1)(ii), will be considered by the Commission in reaching a determination on remedy and bonding pursuant to Commission rule 210.50(a).

Paul J. Luckern
Administrative Law Judge

Issued: March 30, 2007

CERTAIN INK CARTRIDGES AND COMPONENTS THEREOF

Investigation No. 337-TA-565

CERTIFICATE OF SERVICE

I, Marilyn R. Abbott, hereby certify that the attached **Final Initial and Recommended Determinations** was served by hand upon Commission Investigative Attorney Kevin Baer, Esq. and upon the following parties via first class mail, and air mail where necessary, on June 4, 2007.

Marilyn R. Abbott, Secretary
U.S. International Trade Commission
500 E Street, SW - Room 112
Washington, DC 20436

For Complainants Epson Portland, Inc.; Epson America, Inc.; Seiko Epson Corporation:

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CERTAIN INK CARTRIDGES AND COMPONENTS THEREOF

Investigation No. 337-TA-565

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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C. 20436

In the Matter of	)	
CERTAIN INK CARTRIDGES AND COMPONENTS THEREOF	)	**Inv. No. 337-TA-565**

NOTICE OF A COMMISSION DETERMINATION NOT TO REVIEW AN INITIAL DETERMINATION FINDING THREE RESPONDENTS IN DEFAULT

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has determined not to review an initial determination ("ID") of the presiding administrative law judge ("ALJ") in the above-captioned investigation finding three respondents in default. A party found in default is deemed to have waived its right to appear, to be served with documents, and to contest the allegations at issue in the investigation.

FOR FURTHER INFORMATION CONTACT: Michael K. Haldenstein, Esq., Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 205-3041. Copies of the public version of the ALJ's ID and all other nonconfidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone 202-205-2000.

General information concerning the Commission may also be obtained by accessing its Internet server (*http://www.usitc.gov*). The public record for this investigation may be viewed on the Commission's electronic docket (EDIS-ON-LINE) at *http://edis.usitc.gov*. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on 202-205-1810.

SUPPLEMENTARY INFORMATION: The Commission instituted this investigation on March 23, 2006, based on a complaint filed by Epson Portland, Inc. of Oregon; Epson America, Inc. of California; and Seiko Epson Corporation of Japan. 71 *Fed. Reg.* 14720 (March 23, 2006). The complaint, as amended, alleged violations of section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, in the importation into the United States, the sale for importation, and the sale within the United States after importation of certain ink cartridges and components thereof by reason of infringement of claim 7 of U.S. Patent No. 5,615,957; claims 18, 81, 93, 149, 164, and 165 of U.S. Patent No. 5,622,439; claims 83 and 84 of U.S. Patent No. 5,158,377; claims 19 and 20 of U.S. Patent No. 5,221,148; claims 29, 31, 34, and 38 of U.S. Patent No. 5,156,472; claim 1 of U.S. Patent No. 5,488,401; claims 1-3 and 9 of U.S. Patent No. 6,502,917; claims 1, 31, and 34 of U.S. Patent No. 6,550,902; claims 1, 10, and 14 of U.S. Patent No. 6,955,422; claim 1 of U. S. Patent No. 7,008,053; and claims 21, 45, 53, and 54 of U. S. Patent No.

7,011,397. The complaint further alleged that an industry in the United States exists as required by subsection (a)(2) of section 337. The complainants requested that the Commission issue a general exclusion order and cease and desist orders. The Commission named as respondents 24 companies located in China, Germany, Hong Kong, Korea, and the United States. The ALJ set June 25, 2007, as the target date for completion of the investigation.

On August 14, 2006, respondents Tully Imaging Supplies, Ltd.; Wellink Trading Co., Ltd.; and Ribbon Tree Trading Co., Ltd. filed a notice with the Commission indicating that they would no longer be participating in the investigation and had elected to default. On August 23, 2006, the ALJ issued an order (Order No. 16) to the three respondents requiring them to show why they should not be found in default. None of the three respondents filed a response to the order.

The ALJ issued the subject ID (Order No. 17) on October 3, 2006. The ALJ found that the three respondents have not cooperated in discovery and have indicated they will not do so. Consequently, the ALJ found these respondents in default pursuant to Commission Rule 210.16, 19 C.F.R. § 210.16. No petitions for review of the ID were filed. The Commission has determined not to review the ID.

This action is taken under the authority of section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, and Commission rule 210.42, 19 C.F.R. § 210.42.

By order of the Commission.

Marilyn R. Abbott
Secretary to the Commission

Issued: October 25, 2006

CERTAIN INK CARTRIDGES AND COMPONENTS THEREOF **337-TA-565**

CERTIFICATE OF SERVICE

I, Marilyn R. Abbott, hereby certify that the attached **NOTICE OF A COMMISSION DETERMINATION NOT TO REVIEW AN INITIAL DETERMINATION FINDING THREE RESPONDENTS IN DEFAULT** has been served on upon the Commission Investigative Attorney Kevin Baer, Esq. and all parties via first class mail and air mail where necessary on October 26, 2006.

Marilyn R. Abbott

Marilyn R. Abbott, Secretary
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UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, D.C. 20436

In the Matter of	)	
CERTAIN INK CARTRIDGES AND COMPONENTS THEREOF	)	**Inv. No. 337-TA-565**

NOTICE OF A COMMISSION DETERMINATION NOT TO REVIEW AN INITIAL DETERMINATION FINDING FIVE RESPONDENTS IN DEFAULT

AGENCY: U.S. International Trade Commission.

ACTION: Notice.

SUMMARY: Notice is hereby given that the U.S. International Trade Commission has determined not to review an initial determination ("ID") of the presiding administrative law judge ("ALJ") in the above-captioned investigation finding five respondents in default, and to have waived their respective rights to appear, to be served with documents, and to contest the allegations at issue in the investigation.

FOR FURTHER INFORMATION CONTACT: Michael K. Haldenstein, Esq., Office of the General Counsel, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone (202) 205-3041. Copies of the public version of the ALJ's ID and all other nonconfidential documents filed in connection with this investigation are or will be available for inspection during official business hours (8:45 a.m. to 5:15 p.m.) in the Office of the Secretary, U.S. International Trade Commission, 500 E Street, S.W., Washington, D.C. 20436, telephone 202-205-2000.

General information concerning the Commission may also be obtained by accessing its Internet server (*http://www.usitc.gov*). The public record for this investigation may be viewed on the Commission's electronic docket (EDIS-ON-LINE) at *http://edis.usitc.gov*. Hearing-impaired persons are advised that information on this matter can be obtained by contacting the Commission's TDD terminal on 202-205-1810.

SUPPLEMENTARY INFORMATION: The Commission instituted this investigation on March 23, 2006, based on a complaint filed by Epson Portland, Inc. of Oregon; Epson America, Inc. of California; and Seiko Epson Corporation of Japan. 71 *Fed. Reg.* 14720 (2006).

The complaint, as amended, alleged violations of section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, in the importation into the United States, the sale for importation, and the sale within the United States after importation of certain ink cartridges and components thereof by reason of infringement of claim 7 of U.S. Patent No. 5,615,957; claims 18, 81, 93, 149, 164, and 165 of U.S. Patent No. 5,622,439; claims 83 and 84 of U.S. Patent No. 5,158,377; claims 19 and 20 of U.S. Patent No. 5,221,148; claims 29, 31, 34, and 38 of U.S. Patent No. 5,156,472; claim 1 of U.S. Patent No. 5,488,401; claims 1-3 and 9 of U.S. Patent No. 6,502,917; claims 1, 31, and 34 of U.S. Patent No. 6,550,902; claims 1, 10, and 14 of U.S. Patent No. 6,955,422; claim 1 of United States Patent No. 7,008,053; and claims 21, 45, 53, and 54 of United States Patent No. 7,011,397. The complaint further

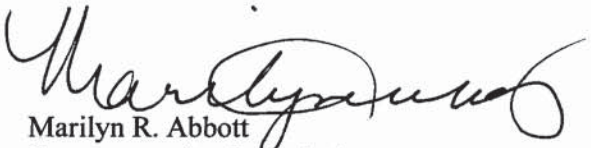
alleged that an industry in the United States exists as required by subsection (a)(2) of section 337. The complainants requested that the Commission issue a general exclusion order and cease and desist orders. The Commission named as respondents 24 companies located in China, Germany, Hong Kong, Korea, and the United States. The ALJ set June 25, 2007, as the target date for completion of the investigation.

On May 5, 2006, complainants filed a motion pursuant Commission rule 210.16, 19 C.F.R. § 210.16, for an order to show cause and entry of a default judgment against five respondents: Glory South Software Manufacturing Inc., Butterfly Print Image Corp. Ltd., Mipo International Ltd., Mipo America Ltd., and AcuJet U.S.A., Inc. The Commission investigative attorney supported the motion. None of the respondents filed a response to the motion. The ALJ issued a show cause order (Order No. 9) on May 19, 2006. The order required the five respondents to show cause why they should not be held in default, having not responded to the complaint and notice of investigation or the motion for a show cause order. None of the five respondents responded to Order No. 9.

The ALJ issued the subject ID (Order No. 12) on June 26, 2006. The ALJ states in the ID that the five respondents did not respond to the complaint, notice of investigation, or the order to show cause. Consequently, the ALJ found the five respondents in default, and pursuant to Commission Rule 210.16(b)(3), 19 C.F.R. § 210.16(b)(3), to have waived their right to appear, be served with documents, or contest the allegations in the complaint. No petitions for review of the ID were filed.

This action is taken under the authority of section 337 of the Tariff Act of 1930, as amended, 19 U.S.C. § 1337, and Commission rule 210.42, 19 C.F.R. § 210.42.

By order of the Commission.



Marilyn R. Abbott
Secretary to the Commission

Issued: July 19, 2006

CERTAIN INK CARTRIDGES AND COMPONENTS THEREOF **337-TA-565**

CERTIFCATE OF SERVICE

I Marilyn R. Abbott, hereby certify that the attached **Notice Of A Commission Determination Not To Review An Initial Determination Finding Five Respondents In Default** has been served on upon the Commission Investigative Attorney Kevin Baer, Esq. and all parties via first class mail and air mail where necessary on July 20, 2006.

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