

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF KENTUCKY
LEXINGTON

Eastern District of Kentucky
FILED
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AT LEXINGTON
LESLIE G WHITMER
CLERK U S DISTRICT COURT

CIVIL ACTION NO. 02-571-KSF

LEXMARK INTERNATIONAL, INC.

PLAINTIFF

V. **FINDINGS OF FACT AND CONCLUSIONS OF LAW**

STATIC CONTROL COMPONENTS, INC.

DEFENDANT

FINDINGS OF FACT

I. THE PARTIES

1. The Plaintiff, Lexmark International, Inc. ("Lexmark") is a Delaware corporation with its principal place of business in Lexington, Kentucky. Lexmark is a worldwide developer, manufacturer, and supplier of, *inter alia*, laser printers and toner cartridges. Lexmark Complaint ("Complaint") ¶ 2.

2. The Lexmark products that are the focus of this dispute are Lexmark's T520/522 and T620/622 laser printers and toner cartridges, and in particular, certain computer codes resident on microchips that are within the toner cartridges. *See generally*, Complaint ¶¶ 22-23; Declaration of Michael Robert Yaro ("Yaro Dec.") ¶ 1.

3. The Defendant, Static Control Components, Inc. ("SCC") is a North Carolina corporation with its principal place of business in Sanford, North Carolina. SCC manufactures and sells, *inter alia*, components for remanufactured toner cartridges. Affidavit of William K. Swartz ("Swartz Aff.") ¶¶ 4-5.

II. THE CAUSES OF ACTION AND PROCEDURAL POSTURE OF THE CASE

4. In the complaint in this action, filed December 30, 2002, Lexmark asserts three causes of action. Count One alleges that the "SMARTEK" microchip manufactured by SCC (for use in replacement toner cartridges for the T520/522 and T620/622 ("T-Series") Lexmark printers) infringes Lexmark's copyright in its "Toner Loading Programs." Counts Two and Three assert that the SMARTEK microchip circumvents a technological measure that controls access to Lexmark's Toner Loading Programs and its Printer Engine Program, in violation of the Digital Millennium Copyright Act of 1998, 17 U.S.C. § 1201 *et seq.* ("DMCA").

5. Concurrent with the filing of its Complaint, Lexmark moved for a preliminary injunction to prevent SCC from manufacturing, distributing, selling, or marketing the SMARTEK microchips.

6. On January 8, 2003, the Court, upon agreement of the parties, entered an order that enjoined SCC from making, selling, distributing, offering for sale, or otherwise trafficking the SMARTEK microchips until the hearing on Lexmark's motion for a preliminary injunction.

7. On February 7, 2003, the Court held an evidentiary hearing on Lexmark's motion for a preliminary injunction, at which time the parties presented evidence and argument regarding the issue involved in the motion. At the conclusion of the hearing, the Court extended the temporary injunctive relief until February 28, 2003.

III. LEXMARK'S PRODUCTS

8. The computer programs at issue in this case are used by laser printers and are sold either within the laser printers or within toner cartridges that are used with the laser printers.

9. A toner cartridge is a device that is inserted within a laser printer and contains the toner necessary for the printer to print.

10. Lexmark sells two types of toner cartridges for use with its T-Series printers, namely regular cartridges and Prebate cartridges. Lexmark's Reply in Support of its Motion for Preliminary Injunction ("Lexmark Reply"), Ex. G., Second Declaration of Michael Robert Yaro ("2nd Yaro Dec.") ¶ 2.

11. Customers can choose to buy either regular cartridges or Prebate cartridges for use with Lexmark's T-Series printers. 2nd Yaro Dec. ¶ 2.

12. Lexmark sells the Prebate cartridges at an up-front discount to consumers. Yaro Dec. ¶ 9; 2nd Yaro Dec. ¶ 2. The up-front discount could amount to approximately \$50 depending on the type of toner cartridge. Yaro Dec. ¶ 5.

13. In exchange for this discount, consumers agree to use the Prebate toner cartridge only once and return the used cartridge to Lexmark for remanufacturing and recycling. Yaro Dec. ¶ 9.

14. The Prebate agreement between Lexmark and the consumer is in the form of a shrink-wrap agreement that is placed across the top of every Prebate toner cartridge box.¹ Yaro Dec. ¶ 9.

15. Consumers that find the Prebate conditions objectionable can choose to purchase regular toner cartridges instead of Prebate toner cartridges. Yaro Dec. ¶ 10; 2nd Yaro Dec. ¶ 4.

¹The Prebate agreement states as follows: RETURN EMPTY CARTRIDGE TO LEXMARK FOR REMANUFACTURING AND RECYCLING. Please read before opening. Opening this package or using the patented cartridge inside confirms your acceptance of the following license/agreement. This all-new cartridge is sold at a special price subject to a restriction that it may be used only once. Following this initial use, you agree to return the empty cartridge only to Lexmark for remanufacturing and recycling. If you don't accept these terms, return the unopened package to your point of purchase. A regular price cartridge without these terms is available.

16. Regular toner cartridges do not contain the “use and return” conditions that accompany the Prebate cartridges. 2nd Yaro Dec. ¶ 4.

17. When consumers purchase regular toner cartridges, they do not receive up-front discounts and are not obligated to return the used regular cartridges to Lexmark. 2nd Yaro Dec. ¶ 4.

18. Consumers can purchase regular toner cartridges and refill them themselves or have them refilled by a third party remanufacturer. 2nd Yaro Dec. ¶ 4.

19. Consumers can purchase regular toner cartridges from numerous resellers or directly from Lexmark. 2nd Yaro Dec. ¶ 4.

20. Third party remanufacturers offer refilled versions of Lexmark’s regular toner cartridges for sale. 2nd Yaro Dec. ¶ 4. SCC has sold and continues to sell products for the remanufacturing of Lexmark’s regular toner cartridges. Hearing, p. 176, lines 11-20.

21. Lexmark’s regular toner cartridges contain microchips that utilize a technological measure. This technological measure, however, does not prevent third parties from remanufacturing the regular cartridges. Neither does this technological measure prohibit consumers from using remanufactured regular cartridges. 2nd Yaro Dec. ¶ 5.

IV. LEXMARK’S PROGRAMS

22. Lexmark’s T-Series printers utilize computer programs to control various operations of the printer and to monitor operational characteristics of its associated toner cartridge. The computer programs at issue in this case are the Printer Engine Program and the Toner Loading Programs. Lexmark’s Memorandum in Support of its Motion for Preliminary Injunction (“Lexmark Memo”), Ex. B, Declaration of Douglas Able (“Able Dec.”) ¶ 4.

23. Lexmark is the legal owner of the Printer Engine Program and the Toner Loading Programs. Lexmark Memo, Exs. D-F.

A. The Printer Engine Program

24. The Printer Engine Program resides within the Lexmark T-Series printers and controls various operations of the printer including, for example, paper feed, paper movement, motor control, fuser operation, and voltage control for the electrophotographic (EP) system. Able Dec. ¶ 5.

25. Slightly different Printer Engine Programs are used in each of the T-Series printers with the differences being minor variations to account for differences in operational characteristics and available options of the particular printer model. Able Dec. ¶ 5.

26. Lexmark has obtained a Certificate of Registration from the Register of Copyrights for its Printer Engine Program. The Printer Engine Program for the T620 model printers is covered by Certificate of Registration No. TX 5-624-273. Lexmark Memo, Ex. F.

27. The Printer Engine Programs used by each of the remaining T-Series models, namely the Lexmark T520/522 and T622 laser printers, are slight modifications of each other and are covered by the copyright registrations either as original or derivative works. Lexmark Memo at 2.

28. Lexmark applied for a Certificate of Registration for the Printer Engine Program under the Rule of Doubt due to trade secret information being contained in the program. Hearing, p. 68, lines 16-23. There has never been any question about the Printer Engine Program's eligibility for copyright protection. Hearing, p. 64, lines 18-25.

29. The Rule of Doubt for computer programs does not mean that it is not copyrightable. It merely means that the Copyright Office cannot determine copyrightability due to the deposit being in human-unreadable object code. Hearing, p.64, line 18 – p.65, line 25).

30. The Printer Engine Program contains a substantial amount of computer codes. Hearing, p. 67, lines 4-9.

31. The former head of the Copyright Office, Ralph Oman, in his expert opinion, testified at the preliminary injunction hearing that if the copyright registration application for the Printer Engine Program were filed with twenty (20) pages of its source code, there would be absolutely no question that the Printer Engine Program would have been registered without the Rule of Doubt. According to Oman, under the Copyright Office procedures, the Printer Engine Program meets the test for registrability because the Printer Engine Program contains the requisite amount of original expression. Hearing, p. 68, lines 7-15.

32. SCC does not dispute the copyrightability of the Printer Engine Program. SCC's computer programming expert, Dr. Benjamin Goldberg, has not offered any opinion on the Printer Engine Program and acknowledged at the preliminary injunction hearing that he did not review the Printer Engine Program source code. Hearing, p. 212, lines 14-17.

B. The Toner Loading Programs

33. The Toner Loading Programs reside within microchips attached to the toner cartridges for Lexmark's T-Series printers. Able Dec. ¶ 6. The Toner Loading Programs enable the printers to approximate the amount of toner remaining in the toner cartridges. Hearing, p. 88, lines 16-20; p. 101, lines 7-16. The printers, using the Printer Engine Program, use this information to display a "toner low" condition on the printer screen at the appropriate time. Able Dec. ¶ 6; Hearing, p. 102, lines 16-19.

34. The Toner Loading Programs are located on the toner cartridge for the purpose of allowing for future changes to the Toner Loading Programs should there be changes made to the toner or cartridge characteristics in future aftermarket cartridges. Hearing, p. 124, lines 1-16.

35. The T520/522 model laser printers use one Toner Loading Program and the T620/622 model laser printers use another Toner Loading Program. Different cartridge and toner characteristics dictate the differences between the two Toner Loading Programs. SCC's Opposition Memorandum ("SCC Opp."), App. 6, Tab B, p. 2.

36. The Toner Loading Program for the T520/522 printer contains an embedded "reference tag" or marker to aid Lexmark in detecting copyright infringers. In particular, the T520/522 printers' Toner Loading Program contains the ASCII code sequence "4C 58 4B" that spells out Lexmark's stock market ticker symbol, "LXK." This reference tag does not affect Toner Loading Program functionality. Its sole use is as an infringement detection tool. Able Dec. ¶ 7.

37. Lexmark has obtained Certificates of Registration from the Register of Copyrights for its Toner Loading Programs. The Toner Loading Program for the T520/522 model printers is covered by Certificate of Registration No. TX 5-609-284. Lexmark Memo, Ex. D. The Toner Loading Program for the T620/622 model printers is covered by Certificate of Registration No. TX 5-609-285. Lexmark Memo, Ex. E.

1. The Toner Loading Programs are not "Lock-Out Codes"

38. The size of the Toner Loading Program for the T520/522 printers is 37 bytes. None of this Toner Loading Program is used as input to the Secure Hash Algorithm-1 ("SHA-1"), a publicly available government standard, as part of Lexmark's authentication sequence between its T-Series printers and Prebate cartridges.

39. The Toner Loading Program for the T520/522 printers does not function, in whole or in part, as a lock-out code because it is not used in Lexmark's authentication sequence. Hearing, p. 115, line 12 – p. 116, line 1, lines 15-18; Lexmark Reply, Ex. E, Declaration of Bruce Maggs ("Maggs Dec.") ¶ 14.

40. The size of the Toner Loading Program for the T620/622 is 55 bytes. Only 7 of these 55 bytes are used as input to the SHA-1 as part of Lexmark's authentication sequence. Hearing, p. 112, line 22 – p. 113, line 6.

41. It does not matter what the values are for these 7 bytes of Toner Loading Program for the T620/622, which are used as an input to the SHA-1. These bytes could be any values at all. The contents of the Toner Loading Program are irrelevant to the authentication sequence. Hearing, p. 113, lines 11-25; Maggs Dec. ¶ 14.

42. The Toner Loading Program for the T620/622 printers does not function as a lock-out code because it is neither necessary nor required in Lexmark's authentication sequence.

43. For purposes of Lexmark's authentication sequence, it is irrelevant whether a Toner Loading Program is even stored on the toner cartridge. The authentication sequence can work correctly irrespective of the existence of a Toner Loading Program on the cartridge. Hearing, p. 113, lines 11-25; Maggs Dec. ¶ 14.

44. The Toner Loading Programs for the T520/522 and the T620/622 are readable directly from the microchips on the toner cartridges. Hearing, p. 115, lines 4-11.

45. The key to understanding Lexmark's authentication sequence is an 8-byte secret code called the Derived Secret. Hearing, p. 111, lines 17-24.

2. The Toner Loading Programs may be Expressed in Different Ways

46. Lexmark made a series of design choices when writing the Toner Loading Programs for purposes of estimating the amount of toner remaining in a toner cartridge. Maggs Dec. ¶ 23.

47. The Toner Loading Programs contain creative expression because of the creative choices made by Lexmark during the development of the Toner Loading Programs. Hearing, p. 88, line 21 – p. 89, line 3; p. 102, line 20 – p. 103, line 21.

48. The Toner Loading Programs may be expressed in different ways to perform the same function, namely estimating the amount of toner remaining in toner cartridges. Hearing, p. 101, lines 17-24; Maggs Dec. ¶ 30. Lexmark's computer programming expert, Dr. Bruce Maggs, in his testimony and his declaration, outlined a number of different possible methods of performing this function. These methods include applying other mathematical equations than the ones chosen by Lexmark, using a look-up table, and even abandoning the torque reading system relied upon by Lexmark in favor of an altogether different system. Hearing, p. 89, line 4 – p. 90, line 6, Maggs Dec. ¶ 30. Dr. Maggs also demonstrated that other options exist for expressing the Toner Loading Program even when the same approximation technique is used and the same formulas and constants are employed. Hearing, p. 104, lines 13-17, p. 105, lines 11-22; Maggs Dec. ¶ 30.

49. SCC's computer programming expert, Dr. Benjamin Goldberg, acknowledged, with some reservations regarding efficiency, that other ways of writing the Toner Loading Programs were possible. Hearing, p. 206, line 6 – p. 207, line 2. Dr. Goldberg also suggested that the Toner Loading Programs could have been expressed differently by writing the Toner

Loading Programs in a programming language other than Lexmark's custom programming language. Hearing, p. 209, lines 5-20.

50. Lexmark's unique computer programming language and its selection and arrangement of appropriate approximation techniques, including the selection, arrangement, and particular expression of formulas, constants, and variables that comprise the Toner Loading Programs constitutes creative expression and is entitled to copyright protection.

3. The Copyright Office Considered Copyrightability Issues of the Toner Loading Programs

51. The Copyright Office considered copyrightability issues when it examined the Toner Loading Programs and granted Certificates of Registration for those programs. Hearing, p. 69, line 6 – p. 71, line 12; Lexmark Reply, Ex. F., Declaration of Ralph Oman ("Oman Dec.") ¶ 18, 54. The correspondence between the Copyright Office and Lexmark describes the issues that the Copyright Office addressed with Lexmark. Oman Dec. ¶ 53; SCC Opp., App. 6.

52. The Copyright Office considered whether the Toner Loading Programs were mere mathematical formulas, and informed Lexmark that mathematical formulas are not copyrightable. Oman Dec. ¶ 62; SCC Opp., App. 6, Tab A.

53. The Copyright Office reviewed the information submitted by Lexmark and determined that both Toner Loading Programs constituted more than mere mathematical formulas. Rather, the programs were determined to contain source code and a series of symbols and numerical indicia that implement a particular formula, and that "set of . . . instructions to be used directly or indirectly in a computer in order to bring about a certain result," contains enough original authorship to qualify for copyright protection. Hearing, p. 75, line 13 – p. 76, line 12; Oman Dec. ¶ 62; *see* 17 U.S.C. § 101 (definition of computer program).

54. The Copyright Office's examining manual provides that a set of statements and instructions in a computer program that implement a mathematical formula or algorithm is entitled to copyright protection. For example, the Copyright Office will register "a program that calculates the orbit of a rocket" or "a program that computes wages and salaries for a payroll," even if the program uses a formula or an algorithm to perform these calculations. Hearing, p. 75, line 16 – p. 76, line 12; Lexmark Reply, Ex. C., *Compendium of Copyright Office Practices* § 321 at 300-16.

55. The Copyright Office considered merger issues, and sought to determine if the expressive elements in the Toner Loading Programs were dictated by the functional aspects of the printer or the toner cartridge. Hearing, p. 76, line 24 – p. 77, line 19; Oman Dec. ¶ 65.

56. The Copyright Office reviewed the information submitted by Lexmark and determined that both Toner Loading Programs contain a sufficient amount of original expression, and that Lexmark's expression does not merge with the ideas, procedures, processes, systems, or methods of operations that it has expressed. Hearing, p. 76, line 13 – p. 77, line 19; Oman Dec. ¶ 65.

57. The Copyright Office considered the two Toner Loading Programs to be independently copyrightable when it issued the Certificates of Registration for both programs. Hearing, p. 70, lines 5-15; Oman Dec. ¶ 58.

V. LEXMARK'S AUTHENTICATION SEQUENCE

58. Lexmark's authentication sequence prevents the unauthorized access to its Printer Engine Programs and Toner Loading Programs and is the subject of the DMCA counts in this case.

59. To protect the Printer Engine Programs and Toner Loading Programs and to prevent unauthorized toner cartridges from being used with Lexmark's T-Series printers, Lexmark uses an authentication sequence that runs each time a toner cartridge is inserted into a Lexmark printer, the printer is powered on, or whenever the printer is opened and closed. Able Dec. ¶ 8.

60. The first step of the authentication sequence requires the printer and the microchip on the toner cartridge to calculate a Message Authentication Code ("MAC"). Hearing, p. 107, lines 8-12; Maggs Dec. ¶ 6.

61. The second step requires the microchip on the toner cartridge to communicate its MAC to the printer. Hearing, p. 107, lines 13-17; Maggs Dec. ¶ 6.

62. The third step requires the printer to compare the MAC that it calculated with the MAC it received from the microchip on the toner cartridge. Hearing, p. 107, lines 18-19; Maggs Dec. ¶ 6.

63. The authentication sequence succeeds if the MAC calculated by the printer matches the MAC calculated by the microchip on the toner cartridge. Hearing, p. 107, line 20 – p. 108, line 9; Maggs Dec. ¶ 6.

64. The MAC computations on both the printer and the toner cartridge are calculated by using the SHA-1. Maggs Dec. ¶ 7.

65. There are six pre-defined inputs to the SHA-1 that are used to calculate the MAC on the Lexmark microchips. Hearing, p. 110, lines 7-24; Maggs Dec. ¶ 9. Those pre-defined inputs are located in certain memory portions on the Lexmark microchip. Hearing, p. 110, line 19 – p. 111, line 14; Maggs Dec. ¶ 9.

66. The Printer Engine Program uses these same six pre-defined inputs to calculate the MAC on the printer side. Hearing, p. 116, lines 2-8.

67. The contents of the Toner Loading Program are irrelevant to the SHA-1 for calculating the MAC. Maggs Dec. ¶ 14.

68. The effectiveness of Lexmark's authentication sequence has been widely acknowledged by aftermarket cartridge microchip manufacturers. Lexmark Memo, Ex. H.

A. Lexmark's Authentication Sequence Controls Access to Lexmark's Printer Engine Program

69. If the MAC calculated by the microchip matches the MAC calculated by the printer, the cartridge is authenticated and authorized for use by the printer. Able Dec. ¶ 8. The printer is then capable of running the Printer Engine Program to thereby print. Hearing, p. 108, lines 6-9, p. 107, line 22 – p. 108, line 1, p. 128, lines 8-12; Able Dec. ¶ 8.

70. If, on the other hand, the two MAC calculations do not match, the printer will issue an error message and will not run the Printer Engine Program. Hearing, p. 108, lines 10-17; Able Dec. ¶ 8.

71. By design, unless this authentication sequence successfully occurs, the printer will not recognize the toner cartridge as being an authorized cartridge and access to the Printer Engine Program will be disabled. Able Dec. ¶ 9.

B. Lexmark's Authentication Sequence Controls Access to Lexmark's Toner Loading Programs

72. If the MAC calculated by the microchip on the toner cartridge matches the MAC calculated by the printer, then the cartridge is authenticated and authorized for use by the printer. Able Dec. ¶ 8. The printer can then access the Toner Loading Program to monitor the toner

status of the authenticated toner cartridge. Hearing, p. 107, line 22 – p. 108, line 1, p. 128, lines 8 – 12; Able Dec. ¶ 8.

73. If, on the other hand, the MAC calculated by the printer does not match the MAC calculated by the microchip on the toner cartridge, the printer will issue an error message and the printer will not access the Toner Loading Program for toner status monitoring. Able Dec. ¶ 8.

74. By design, unless this authentication sequence successfully occurs, the printer will not recognize the toner cartridge as being an authenticated cartridge and the Toner Loading Program will not be accessed. Able Dec. ¶ 9.

C. The “Checksum” Operation is not Part of Lexmark’s Authentication Sequence nor is it a Secondary Authentication Sequence

75. Following the successful completion of Lexmark’s authentication sequence, the Printer Engine Program may download a copy of the Toner Loading Program from the microchip on the toner cartridge if a certain bit on the microchip is set. Hearing, p. 107, line 22 – p. 108, line 1, p. 120, line 4 -p. 121, lines 5-11.

76. In the event that the Toner Loading Program is downloaded from the toner cartridge, the Printer Engine Program will perform a checksum operation to ensure the integrity of the Toner Loading Program. Hearing, p. 117, line 24 – p. 118, line 16, p. 122, lines 8-11; Maggs Dec. ¶ 16.

77. Checksum operations are commonly used techniques to ensure data integrity when data is transmitted from one point to another. Hearing, p. 146, lines 8-16; Maggs Dec. ¶ 16.

78. The checksum operation can be summarized as follows. When a message is transmitted, a numerical checksum value is also transmitted. This checksum value represents the

result of a mathematical computation that is performed on the bits in the transmitted message. Upon receiving the transmitted message, the receiving station performs the same mathematical computation on the bits in the transmitted message and compares the computed result with the transmitted checksum value. If the result matches, then the receiving station has some assurance that the transmitted message is accurate. If not, the receiving station assumes that the message was somehow corrupted. Hearing, p. 94, line 24 – p. 95, line 15; Maggs Dec. ¶ 16.

79. The memory map for the microchips on Lexmark's toner cartridges identifies the existence of the checksum value, and specifies the checksum's location and size. Hearing, p. 118, line 23 – p. 120, line 1; Maggs Dec. ¶ 17.

80. If the checksum operation performed by the Printer Engine Program results in a value that matches the checksum value stored in the microchip on the toner cartridge, the Printer Engine Program assumes that the integrity of the Toner Loading Program was not compromised and continues operation. Hearing, p. 125, lines 12-16; Maggs Dec. ¶ 16.

81. If, on the other hand, the checksum operation performed by the Printer Engine Program results in a value that does not match the checksum value stored in the microchip on the toner cartridge, the Printer Engine Program assumes that the integrity of the Toner Loading Program was somehow compromised. Maggs Dec. ¶ 16. As a result, the Printer Engine Program issues a "32 Unsupported Print Cartridge" message. Hearing, p. 122, line 20 – p. 123, line 3; Maggs Dec. ¶ 17.

82. The "secondary authentication sequence" referred to at the hearing by SCC's computer programming expert, Dr. Benjamin Goldberg, is the checksum operation used by Lexmark to determine data integrity. Hearing, p. 192, lines 2-14, p. 197, lines 7-12, p. 203, lines 11-14.

83. The checksum process could successfully process any arbitrary computer program, whether or not toner related. The particular Toner Loading Programs used by Lexmark are not required for the checksum process to be successfully completed. The checksum process could be successfully completed for any Toner Loading Program as long as the proper checksum value was provided in the microchip. Hearing, p. 118, line 19 – p. 119, line 3, p. 125, line 21-24; Maggs Dec. ¶ 18.

84. There was some dispute at the hearing between Dr. Goldberg and Lexmark's computer programming expert, Dr. Bruce Maggs, as to the particular computation that the Printer Engine Program performs in determining the checksum value. Dr. Maggs testified that the Printer Engine Program performs a calculation, other than an SHA-1 computation, to determine the checksum value. Dr. Goldberg, on the other hand, testified that the Printer Engine Program performs an SHA-1 computation to determine the checksum value and therefore the checksum computation was a secondary authentication sequence. Hearing, p. 194, lines 10-16.

85. The Court finds little value in this distinction because the method used to calculate the checksum value is irrelevant. Hearing, p. 148, lines 2-9. Knowledge of the particular mathematical computation performed by the checksum process would not be needed to incorporate a different Toner Loading Program. Hearing, p. 148, lines 6-9.

86. Because the checksum value used in Lexmark's microchips is only eight (8) bits long, there are only a total of 256 possible values that the checksum value could have. Hearing, p. 121, lines 15-25. Accordingly, if one wanted to use another Toner Loading Program, the checksum value could be determined by trial and error and without having to know the actual method used to calculate the checksum value. Hearing, p. 121, lines 17-25.

87. Dr. Goldberg's byte-by-byte analysis of Lexmark's Toner Loading Programs did not pass the checksum check because Dr. Goldberg did not make a corresponding change to the checksum. If the checksum is not updated corresponding to a change in the Toner Loading Programs, the checksum operation will fail and the printer will issue a "32 Unsupported Cartridge Error" message. Hearing, p. 122, lines 1-24.

88. Dr. Goldberg does not dispute that with an understanding of the checksum, a different toner loading program having a correct checksum value could be employed. Dr. Goldberg acknowledges that with knowledge of the checksum information, it would only be a matter of 256 tries. Hearing, p. 197, lines 19-21.

89. It would be extraordinarily difficult to determine the existence and location of the checksum value on Lexmark's microchips without any contextual information to assist in determining the meaning and significance of the bytes on the microchips.

VI. SCC'S SMARTEK MICROCHIPS

90. SCC manufactures and sells components for use in the remanufacturing of toner cartridges for Lexmark's T-Series printers. One such component is its SMARTEK microchip, which is used to replace the microchip found in Lexmark's toner cartridges. SCC sells one SMARTEK microchip for use with Lexmark's T520/522 toner cartridges and another SMARTEK microchip for use with Lexmark's T620/622 toner cartridges. SCC Opp. at 1.

91. SCC's Imaging Supplies Division, which is one of two divisions in SCC, manufactures and sells a multitude of other products and parts to the toner cartridge remanufacturing industry. According to William Schwartz, the president of this division, SCC's product line includes over 3,000 products. Hearing at p. 163, lines 21-24, p. 164, lines 3-5.

A. SCC's SMARTEK Microchip Contains Identical Copies of Lexmark's Toner Loading Programs

92. SCC acknowledges that it copied Lexmark's Toner Loading Programs "in the exact format and order" in its SMARTEK microchips. Hearing, p. 196, line 22 – p. 197, line 1; SCC Opp. at 4 & 19.

93. The SMARTEK microchip for use with Lexmark's T520/522 toner cartridges contains an identical copy of Lexmark's T520/522 Toner Loading Program that is covered by Registration No. TX 5-609-284. Able Dec. ¶ 12.

94. The SMARTEK microchip for use with Lexmark's T520/522 toner cartridges also contains the ASCII code sequence "4C 58 4B" that spells out Lexmark's stock market ticker symbol, "LXK." Able Dec. ¶ 14; SCC Opp. at 4.

95. The SMARTEK microchip for use with Lexmark's T620/622 toner cartridges contains an identical copy of Lexmark's T620/622 Toner Loading Program that is covered by Registration No. TX 5-624-273. Able Dec. ¶ 12.

96. SCC admits that it had access to Lexmark's Toner Loading Programs and that it "slavishly copied" Lexmark's Toner Loading Programs. SCC Opp., App. 2 ¶ 7; SCC Opp. at 11.

97. According to one SCC press release dated October 10, 2002, the "new" SMARTEK microchip was introduced to be compatible with Lexmark's new firmware release for the T-Series printers. SCC was able to introduce its SMARTEK microchip within five (5) months after this new firmware release from Lexmark. Lexmark Memo, Ex. 1.

B. SCC's SMARTEK Microchip Circumvents Lexmark's Authentication Sequence

98. SCC acknowledges that it specifically designed its SMARTEK microchip to circumvent Lexmark's authentication sequence. SCC Opp. at 2-4.

99. SCC acknowledges that its SMARTEK microchip has no commercial purpose other than to circumvent Lexmark's authentication sequence. SCC Opp. at 2-4.

100. The SMARTEK microchip's method of circumvention involves the use of technology that mimics the authentication sequence performed by an original microchip on Lexmark's T-Series toner cartridges and the printer. SCC Opp. at 2-4.

101. Each time a consumer installs an unauthorized toner cartridge containing a SMARTEK microchip into a Lexmark T-Series laser printer, powers on, or opens and closes the printer containing such an unauthorized toner cartridge, the SMARTEK microchip circumvents Lexmark's authentication sequence, the technological measure that controls access to both the Printer Engine Program and the Toner Loading Program. Hearing, p. 90, line 2 – p. 91, line 1.

102. By circumventing Lexmark's technological measure, the SMARTEK microchip enables various printer functions by providing access to both Lexmark's Printer Engine Program resident on the controller board in the Lexmark T-Series laser printers and the unauthorized copy of Lexmark's Toner Loading Programs resident on the SMARTEK microchip. Hearing, p. 128, lines 8-16.

103. SCC sells and markets its SMARTEK microchips for use in circumventing Lexmark's authentication sequence. According to one SCC advertisement, the SMARTEK microchip circumvents the "secret code," which "even on the fastest computer available today. . . would take **Years** to run through all of the possible 8-byte combinations to break" Lexmark Memo, Ex. K (emphasis in original).

104. According to another SCC advertisement, the SMARTEK microchips are "[c]hips that send the *right* messages [to Lexmark's T-Series printers]. Lexmark Memo, Ex. S (emphasis in original).

VII. SCC'S PETITION TO EXEMPT ITS SMARTEK MICROCHIPS FROM COVERAGE UNDER THE DMCA

105. On January 23, 2003, SCC applied to the Copyright Office for an exemption to cover both the specific allegations lodged in this case with respect to toner cartridges and printers and, more broadly, embedded software without independent market value.

106. On February 5, 2003, the Copyright Office granted SCC's petition and will consider SCC's request to exempt its SMARTEK microchips from the prohibitions under the DMCA. Hearing, p. 9, lines 4-18.

VIII. THE BALANCE OF POTENTIAL HARMS

A. Lexmark

107. Lexmark expended significant time and financial resources developing its Printer Engine Program, Toner Loading Programs and the authentication sequence designed to prevent unauthorized access to the programs. Yaro Dec. ¶ 15.

108. Lexmark sells a significant number of toner cartridges for its T-Series printers under the Prebate agreement with consumers where the consumers agree to use the toner cartridge only once and then return the used cartridge to Lexmark for remanufacturing and recycling. Yaro Dec. ¶ 9. Approximately 90% of the toner cartridges sold by Lexmark for its T-Series printers are Prebate cartridges. Hearing, p. 19, lines 14-18.

109. The SMARTEK microchip allows consumers to reuse refilled Prebate cartridges without returning those cartridges for remanufacturing to Lexmark in accordance with the Prebate agreement. Yaro Dec. ¶ 16.

110. Lexmark's remanufacturing program is dependent upon the return of used Prebate cartridges, and consumers' failure to return those used Prebate cartridges to Lexmark may

significantly increase the cost of Lexmark's remanufacturing process and may limit Lexmark's ability to compete for remanufactured toner cartridges. Yaro Dec. ¶ 16.

111. In addition, third parties can sell reused Prebate cartridges containing the SMARTEK microchip to consumers in direct competition with Lexmark's authorized remanufactured toner cartridges. Yaro Dec. ¶ 14.

112. The sale of unauthorized toner cartridges at reduced prices to consumers could result in fewer customer orders for authorized Lexmark remanufactured toner cartridges and could significantly damage Lexmark's remanufactured toner cartridge sales for its T-Series printers. Yaro Dec. ¶ 14.

B. SCC

113. The issuance of a preliminary injunction will result in substantial lost profits for SCC on the sale of its SMARTEK microchip. Hearing, p. 161.

114. In addition to causing lost profits on the sale of the SMARTEK microchip and related components, the issuance of a preliminary injunction could affect SCC's sales of other components for older Lexmark cartridges, and have a depressing effect on the remanufacturing industry as a whole. Hearing, p. 160-61.

CONCLUSIONS OF LAW

1. This Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331, 1338(a), and 17 U.S.C. § 1203(a) and has personal jurisdiction over SCC.

2. Venue in this jurisdiction is proper under 28 U.S.C. §§ 1391 and 1400(a).

I. PRELIMINARY INJUNCTION STANDARD

3. In considering Lexmark's Motion for a Preliminary Injunction, four factors must be considered: (1) Lexmark's likelihood of success on the merits; (2) whether Lexmark will suffer irreparable harm if the injunction is not issued; (3) the public interest; and (4) the possibility of substantial harm to others. *Forry, Inc. v. Neundorfer, Inc.*, 837 F.2d 259, 262 (6th Cir. 1988).

4. These factors are to be balanced and the relative strength of one or more factors can offset the weakness of another. *In re DeLorean Motor Co.*, 755 F.2d 1223, 1229 (6th Cir. 1985).

5. The "likelihood of success" factor should be given the strongest weight in balancing all four tests, because irreparable harm and inadequate remedies at law can be presumed in cases involving registered copyrights and violations of the anti-trafficking provisions of the DMCA. *See Forry*, 837 F.2d at 267 (irreparable injury presumed in copyright infringement cases when the plaintiff establishes a likelihood of success on the merits); *Universal City Studios, Inc. v. Reimerdes*, 82 F. Supp. 2d 211, 215 (S.D.N.Y. 2000) (irreparable injury presumed when the plaintiff establishes a likelihood of success on DMCA claims); *Tree Publishing Co., Inc. v. Warner Bros. Records*, 785 F. Supp. 1272, 1276-77 (M.D. Tenn. 1991) (citing *Johnson Controls, Inc. v. Phoenix Control Sys., Inc.*, 886 F.2d 1173, 1174 (9th Cir. 1989)) ("plaintiff's burden for obtaining a preliminary injunction in most copyright cases collapses into the showing of a substantial likelihood of success on the merits, and that issue becomes determinative.").

II. LEXMARK HAS DEMONSTRATED A LIKELIHOOD OF SUCCESS ON THE MERITS OF ITS COPYRIGHT INFRINGEMENT CLAIM

6. The manufacture and/or sale of an unauthorized copy that is substantially similar to a protected work constitutes copyright infringement. *See* 17 U.S.C. §§ 106, 501(a).

7. To establish copyright infringement, Lexmark must prove (1) that it owns a valid copyright, and (2) that SCC copied protectable elements of the copyrighted work. *Feist Publ'n, Inc. v. Rural Tel. Serv. Co.*, 499 U.S. 340, 361 (1991); *Robert R. Jones Assocs., Inc. v. Nino Homes*, 858 F.2d 274, 276-77 (6th Cir. 1988).

A. Lexmark's Toner Loading Programs are Entitled to Copyright Protection

8. "A 'computer program' is a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result." 17 U.S.C. § 101.

9. A computer program, whether in object code or source code, is a "literary work" and is protected from unauthorized copying, whether from the object or source code version. *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240, 1249 (3d Cir. 1983).

10. "To qualify for copyright protection, a work must be original to the author." *Feist*, 499 U.S. at 345. "Original, as the term is used in copyright, means only that the work was independently created by the author . . . and that it possesses at least some minimal degree of creativity." *Id.*

11. "[T]he requisite level of creativity is extremely low; even a slight amount will suffice." *Id.* Indeed, "[t]he vast majority of works make the grade quite easily, as they possess some creative spark, 'no matter how crude, humble or obvious' it might be." *Id.*; *SAS Inst., Inc. v. S&H Computer Sys., Inc.*, 605 F. Supp. 816, 825 (M.D. Tenn. 1985) (determining that a program contained copyrightable expression and noting that "[e]ven in the case of simple

statistical calculations, there is room for variation, such as the order in which arithmetic operations are performed.”).

12. Lexmark’s unique creative computer programming language and its selection and arrangement of appropriate approximation techniques, including the selection, arrangement, and particular expression of formulas, constants, and variables that comprise the Toner Loading Programs contain the requisite amount of creativity for the Toner Loading Programs to qualify for copyright protection.

13. The Certificates of Registration for Lexmark’s Toner Loading Programs constitute *prima facie* evidence of copyright originality and validity. *See, e.g., Johnson Controls*, 886 F.2d at 1175. The burden therefore rests upon SCC to demonstrate that the Toner Loading Programs are not entitled to copyright protection. *See, e.g., Ets-Hokin v. Skyy Spirits, Inc.*, 225 F.3d 1068, 1075-76 (9th Cir. 2000) (“A certificate of copyright registration . . . shifts to the defendant the burden to prove the invalidity of the plaintiff’s copyrights.”).

14. Lexmark is likely to succeed at trial on the merits of its copyright infringement claim because SCC has failed to prove the invalidity of the Lexmark copyrights covering the Toner Loading Programs.

1. The Toner Loading Programs are not Lock-Out Codes

15. SCC’s primary defense to Lexmark’s copyright infringement claim is that the Toner Loading Programs are lock-out codes, and that the exact Toner Loading Program is required as a part of the authentication sequence performed between the toner cartridge and the printer.

16. The Toner Loading Programs are not required as a part of the authentication sequence. Hearing, p. 118, lines 5-18. Any Toner Loading Program could be used that would

result in a valid authentication sequence and a valid checksum operation. Hearing, p. 125, lines 17-24.

17. SCC does not deny that a valid authentication sequence and valid checksum operation could occur with any Toner Loading Program being used. Rather, SCC argues that there is no way that it could have known this because of the technological complexity of the microchips on Lexmark's toner cartridges. SCC Opp. at 5.

18. Innocent infringement, however, is still infringement. *See, e.g., Repp. v. Webber*, 132 F.3d 882, 889 (2d Cir. 1997) ("The fact that infringement is 'subconscious' or 'innocent' does not affect liability. . . ."); *Los Angeles News Serv. v. Conus Communications Co.*, 969 F. Supp. 579, 584 (C.D. Cal. 1997) ("[T]he innocent intent of the defendant will not constitute a defense to a finding of liability." (quoting 3 Melville B. Nimmer & David Nimmer, *Nimmer on Copyright* § 13.08 (1996))).

19. SCC's claim that it would have been extraordinarily difficult to know, without having access to Lexmark's confidential documents, that the Toner Loading Programs are not needed for a valid authentication sequence and a valid checksum operation to occur does not excuse infringement or change the fact that the Toner Loading Programs are not actually lock-out codes.

20. SCC's incomplete analysis of Lexmark's microchips is no excuse for being unable to determine that the Toner Loading Programs are not lock-out codes. *See, e.g., Brooktree Corp. v. Advanced Micro Devices, Inc.*, 977 F.2d 1555, 1570 (Fed. Cir. 1992) (in context of the Semiconductor Chip Prevention Act, 17 U.S.C. §§ 901-914, declining to find that the accused infringer had, as a matter of law, a defense against infringement when it spent two and a half years and in excess of three million dollars to reverse engineer its competitor's chip –

“an element of the defense of reverse engineering [is] that the product be original . . . The statute does not reflect an intent to excuse copying as a matter of law, if the copier had first tried and failed to do the job without copying.”).

21. The Toner Loading Programs do not need to be copied in whole or in part for a valid authentication sequence and a valid checksum to occur.

22. The lock-out cases relied upon by SCC are irrelevant because Lexmark’s Toner Loading Programs do not function as lock-out codes. *See Sega Enters. Ltd. v. Accolade, Inc.*, 977 F.2d 1510 (9th Cir. 1992); *Atari Games Corp. v. Nintendo of Am.*, No. C88-4805 FMS, C89-0027 FMS, 1993 U.S. Dist. LEXIS 8183 (N.D. Cal. Apr. 15, 1993). *Sega* and *Atari* do not apply in the instant case because the plaintiffs’ computer programs in those cases were, either in their entirety or in part, security codes that were required to circumvent the lock-out measures that prevented the use of unauthorized products with the plaintiffs’ game systems. This is simply not the case here where the use of any Toner Loading Program could still result in a valid authentication sequence and a valid checksum.

23. In *Sega*, the accused infringing activity focused on “intermediate copying” engaged in by the accused infringer for the sole purpose of reverse engineering. *Sega*, 977 F.2d at 1522 (“[Defendant] copied [plaintiff’s] software solely in order to discover the functional requirements for compatibility.”). The *Sega* Court, after a lengthy overview of the copyright fair use factors and public policy concerns, allowed this narrow exception of copying a copyrighted program for the limited purpose of allowing reverse engineering activities to analyze ideas embedded in computer programs. *Sega* did not involve allegations of an accused infringer copying a protected work and then incorporating that very work into a product offered for sale. *Sega*, 977 F.2d at 1515.

24. The instant case, on the other hand, does not deal with any intermediate copying that SCC may have engaged in for purposes of analyzing or testing Lexmark's Toner Loading Programs and creating an independent work using the ideas expressed by the Toner Loading Programs. Rather, this is a case of wholesale, identical copying of Lexmark's Toner Loading Programs for commercial exploitation and profit. Lexmark has not challenged, in this action, any reverse engineering activities SCC may have undertaken in its attempts to understand the Toner Loading Programs.

25. Even if the Toner Loading Programs were somehow considered to be lock-out codes, copyright infringement would still exist in the instant case. "Security systems are just like any other computer program and are not inherently unprotectable." *Atari*, 1993 U.S. Dist. LEXIS 8183 at *28-29. Infringement may still be found if there is substantial similarity and "that those similarities extend beyond those necessary to produce the sequence of bits that will unlock the [copyright owner's] console." *Id.* at *29.

26. "[T]he fact that multiple ways exist to generate the necessary signal stream may provide evidence that [the accused infringer] copied more than was necessary to achieve compatibility. *Id.*; see also *Atari Games Corp. v. Nintendo of Am., Inc.*, 975 F.2d 832, 845 (Fed. Cir. 1992) ("While Atari may freely reproduce the idea or process of Nintendo's 10NES code, copying of fully extraneous instructions unnecessary to the 10NES program's function strongly supports the district court's imposition of an injunction on the likelihood Nintendo will show infringement."). Public policy favors requiring competitors to carefully study security systems and discern what is truly necessary for compatibility. *Atari*, 975 F.2d at 843.

27. In the instant case, SCC's identical copying of Lexmark's Toner Loading Programs went beyond that which was necessary for compatibility because SCC could have

achieved a valid authentication sequence and a valid checksum operation without engaging in the verbatim copying of Lexmark's Toner Loading Programs.

2. The Fair Use Exception does not Apply

28. SCC's wholesale copying of Lexmark's Toner Loading Programs does not constitute fair use.

29. The cases relied upon by SCC do "not stand for the proposition that any form of copyright infringement is privileged as long as it is done as part of an effort to explore the operation of a product that uses copyrighted software." *DSC Communications Corp. v. Pulse Communications, Inc.*, 170 F.3d 1354, 1363 (Fed. Cir. 1999). Where the accused infringer's copying is part of the ordinary operation of the accused product, fair use does not apply. *Id.*; see also *Cable/Home Communication Corp. v. Network Prods., Inc.* 902 F.2d 829, 843-45 (11th Cir. 1990) (affirming grant of summary judgment of infringement in favor of the plaintiffs and holding that the defendant's copying of the plaintiff's copyrighted cable descrambling software is not fair use); *Allen-Myland, Inc. v. Int'l Bus. Machs. Corp.*, 746 F. Supp. 520, 533-35 (E.D. Pa. 1990) (holding that copying all or substantial portions of microcode was not fair use); *Compaq Computer Corp. v. Procom Tech., Inc.*, 908 F. Supp. 1409, 1419-21 (S.D. Tex. 1995) (issuing judgment for the plaintiff and permanent injunction and holding that the defendants' verbatim copying of copyrighted "threshold values" was not fair use); *Princeton Univ. Press v. Mich. Document Servs.*, 99 F.3d 1381, 1385-92 (6th Cir. 1996) (en banc) (holding that substantial verbatim copying by a copy service of materials to be used in "coursepacks" for college students was not fair use).

30. The fair use doctrine requires the balancing of four non-exclusive factors: (1) the purpose and character of the use, including whether the use is of a commercial nature or is for

nonprofit or educational purposes; (2) the nature of the copyrighted work; (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and (4) the effect of the use upon the potential market for or the value of the copyrighted work. 17 U.S.C. § 107 (2002).

31. *Purpose and Character of the Use* – “[T]he fact that copying is for a commercial purpose weighs against a finding of fair use.” *Sega*, 977 F.2d at 1522, *accord Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 585 (1994). It is clear that SCC has copied Lexmark’s Toner Loading Programs for the commercial purpose of developing its SMARTEK microchips for use with Lexmark’s T-Series toner cartridges and printers. SCC contends that commercial gain is only one factor to consider, and that the Court is also free to consider the public interest and benefit resulting from a particular use, such as the marketing of compatible and interoperable products, notwithstanding the fact that an accused party may gain commercially. *Sega*, 977 F.2d at 1522-23. While this is certainly the case, the Court finds that this factor weighs heavily in Lexmark’s favor because SCC engaged in the wholesale copying of Lexmark’s Toner Loading Programs for the purpose of developing the SMARTEK microchips and profiting from their sale.

32. *Nature of the Copyrighted Work* – Not all copyrighted works are entitled to the same degree of protection. Works that are essentially factual, have strong functional elements, or are essentially utilitarian articles, such as computer programs, are afforded a lower degree of copyright protection than more traditional literary works. *Sony Computer Entm’t, Inc. v. Connectix*, 203 F.3d 596, 603 (9th Cir. 2000); *Sega*, 977 F.2d at 1524-26. While computer programs are entitled to some copyright protection, the Court finds that this factor weighs slightly in SCC’s favor because of the lesser degree of protection frequently provided to computer programs.

33. *Amount and Substantiality of the Portion Used in Relation to the Copyrighted Work as a Whole* – In the instant case, it is clear that SCC copied Lexmark’s Toner Loading Programs in their entirety. This finding heavily favors Lexmark. *See Campbell*, 510 U.S. at 587-88 (“[A] work composed primarily of an original . . . with little added or changed, is more likely to be a merely superseding use, fulfilling demand for the original.”). SCC contends that copying an entire work can be deemed fair use. *See Sony Corp. of Am. v. Universal City Studios, Inc.*, 464 U.S. 417 (1984); *Sega*, 977 F.2d at 1523 (“The fact that an entire work was copied does not, however, preclude a finding of fair use.”). While this is certainly the case in some instances, the Court finds that this factor weighs heavily in Lexmark’s favor in the instant case because SCC did not have to engage in wholesale copying of the Toner Loading Programs in their entirety to enable interoperability, given that valid authentication sequences and checksum operations can occur with completely different Toner Loading Programs.

34. *The Effect of the Use upon the Potential Market for or Value of the Copyrighted Work* – Where, as here, a verbatim copy of a work is made with the intended purpose of commercial gain, a likelihood of significant market harm is presumed. *See Sony*, 464 U.S. at 451 (“If the intended use is for commercial gain, [the] likelihood [of significant market harm may be] presumed.”); *accord Campbell*, 510 U.S. at 591 (presumption of likelihood of significant market harm is presumed for “mere duplication for commercial purposes.”). Accordingly, the Court finds that this factor weighs in Lexmark’s favor.

35. In sum, three of the four fair use factors weigh heavily in Lexmark’s favor. The only factor that weighs in SCC’s favor, the nature of the protected work, only weighs slightly in SCC’s favor because computer programs are still entitled to some copyright protection, even if this protection does not rise to the level afforded to more traditional literary works. On balance,

the three factors in Lexmark's favor substantially outweigh the one factor in SCC's favor.

Accordingly, the Court finds that SCC's actions do not fall under the protective umbrella of the fair use doctrine.

3. The Toner Loading Programs are not Mere Formulas and Constants

36. The copyright protection for each of the Toner Loading Programs covers the unique creative computer programming language and selection and arrangement of appropriate approximation techniques, including the selection, arrangement, and particular expression of formulas, constants, and variables. *See, e.g., Feist*, 499 U.S. at 348 (“arrangement or selection of facts can be protected by copyright . . . however, the copyright is limited to the particular selection and arrangement.”); *Apple Computer, Inc. v. Formula Int'l, Inc.*, 725 F.2d 521, 525 (9th Cir. 1984) (a plaintiff “seeks to copyright only its particular set of instructions [i.e., the source code or object code], not the underlying computer process [i.e., performing a function].”).

37. External factors such as compatibility requirements, industry standards, and efficiency should be considered as part of the substantial similarity analysis rather than a copyrightability analysis. *See, e.g., Liberty Am. Ins. Group, Inc. v. Westpoint Underwriters, L.L.C.*, 199 F. Supp. 2d 1271, 1290 (M.D. Fla. 2001) (considering the effect of external factors during the substantial similarity analysis); *cf. Diamond Direct, L.L.C. v. Star Diamond Group, Inc.*, 116 F. Supp. 2d 525, 529-30 n. 29 (S.D.N.Y. 2000) (noting that the idea/expression distinction is not a limitation on copyrightability but rather “a measure of the degree of similarity that must exist between a copyrightable work and an unauthorized copy, in order to constitute the latter an infringement” (quoting Melville B. Nimmer & David Nimmer, 1 *Nimmer on Copyright* § 2.03[D] (2000))).

38. To determine whether Lexmark's Toner Loading Programs are entitled to copyright protection, the Court may consider "whether other programs can be written which perform the same function as the copyrighted program." *E.F. Johnson Co. v. Uniden Corp. of Am.*, 623 F. Supp. 1485, 1502 (D. Minn. 1985). Indeed, "[i]f other programs can be written or created which perform the same function as the copyrighted program, then that program is an expression of the idea and hence copyrightable." *Id.* at 1502 (granting preliminary injunction and determining that the plaintiff's computer program was copyrightable because the plaintiff's computer program contained an "H-matrix" consisting of "a series of ones and zeroes arranged in rows and columns in a matrix format" that could "be configured in any of 32 different ways.").

39. There are a number of ways that Toner Loading Programs may be written to approximate toner level. Hearing, p. 90, lines 4-6, p. 127, lines 6-15. Alternative Toner Loading Program possibilities exist even if one were to implement the same formulas used by Lexmark. Hearing, p. 123, lines 15-20. The Toner Loading Programs were written in a custom programming language created by Lexmark. Hearing, p. 94, lines 18-21, p. 138, lines 1-7.

40. Lexmark's Toner Loading Programs are entitled to copyright protection because they could be written in a number of different ways. This conclusion is consistent with the decisions of numerous other courts. *See, e.g., Formula Int'l*, 725 F.2d at 525 (affirming grant of preliminary injunction and determining that the plaintiff's computer programs were copyrightable on the basis that "[the plaintiff] introduced evidence that numerous other methods exist for writing the programs involved here, and [the defendant] does not contend to the contrary."); *Franklin Computer*, 714 F.2d at 1253 ("If other programs can be written or created which perform the same function as [the plaintiff's] operating system program, then [the plaintiff's] program is an expression of the idea and hence copyrightable."); *Whelan Assocs., Inc.*

v. Jaslow Dental Lab, Inc., 797 F.2d 1222, 1240 (3d Cir. 1986) (A computer program is copyrightable where “there are a variety of program structures through which that idea [i.e., the function performed by that program] can be expressed.”); *Allen-Myland*, 770 F. Supp. At 1011-12 (computer microcode was copyrightable because the plaintiff could have written the microcode in a different programming language, could have chosen different verbs for the command terms and could have used different values and numeric codes).

41. SCC’s reliance on *Gates Rubber Co. v. Bando Chem. Indus., Ltd.*, 9 F.3d 823 (10th Cir. 1993) for the proposition that constants are unprotectable facts is misplaced. Unlike the constants at issue in *Gates*, the constants at issue in the instant case are not simply observable scientific measurements that Lexmark merely recorded. Rather, substantial skill and ingenuity went into the selection of Lexmark’s constants.

42. While the programs at issue in *Gates* took direct measurements, Lexmark’s Toner Loading Programs do not directly measure toner level. They are expressions of creative approximation techniques. Indeed, Lexmark not only expended creative skill in selecting its hybrid approximation technique – as evidenced by the fact that numerous techniques could have been employed – but also exercised creative skill in selecting the specific constants at issue. That is, unlike the constants at issue in *Gates*, Lexmark’s constants were not simply observations of fact that were “mechanical or routine.” Additionally, as the United States Court of Appeals for the Tenth Circuit noted, the district court in *Gates* relied heavily upon the constants at issue in granting injunctive relief, finding that the constants “lie at the heart of the dispute.” *Gates*, 9 F.3d at 843.

43. In the instant case, the constants are not at the heart of the dispute. Rather, SCC copied Lexmark’s entire Toner Loading Programs. *See Adobe Sys. Inc. v. S. Software, Inc.*, No.

C95-20710 RMW(RPT), 1998 U.S. Dist. LEXIS 1941 at *16-17 (N.D. Cal. Jan. 30, 1998) (selection of x and y coordinates, or reference points, for use in a font generating software met the requisite degree of creativity and constituted copyrightable expression); *Compaq*, 908 F. Supp. at 1418 (selection of five threshold values for use in a computer hard drive monitor met the requisite degree of creativity and constituted copyrightable expression; *Allen-Myland*, 770 F. Supp. at 1011-12 (“choices as to whether and how to use a table structure, how to arrange the instructions and other information within the tables and within the entries in the tables were all” copyrightable expression; *SAS Inst.*, 605 F. Supp. at 825 (determining that the program contained copyrightable expressing and noting that “[e]ven in the case of simple statistical calculations, there is room for variation, such as the order in which arithmetic operations are performed.”)).

44. Even if, as SCC argues, there are only a limited number of ways to write a computer program that performs the same function as the Toner Loading Programs, Lexmark’s Toner Loading Programs are still protected against the type of identical copying that SCC performed in the instant case. *Homan v. Clinton*, 1999 U.S. App. LEXIS 13401, at *3 (6th Cir. June 14, 1999) (unpublished); *Concrete Mach. Co. v. Classic Lawn Ornaments, Inc.*, 843 F.2d 600, 606-07 (1st Cir. 1988).

B. SCC Copied the Entire Protectable Expression of Lexmark’s Toner Loading Programs

45. To prove copying, it is sufficient to show (1) that the accused work is “substantially similar” to the protected work, and (2) that the accused infringer had access to the protected work. *Robert R. Jones*, 858 F.2d at 276-77; *Johnson Controls*, 886 F.2d at 1176.

46. The general test for substantial similarity is “whether the accused work is so similar to the plaintiff’s work that an ordinary reasonable person would conclude that the

defendant unlawfully appropriated the plaintiff's protectable expression by taking material of substance and value." *Wildlife Express Corp. v. Carol Wright Sales, Inc.*, 18 F.3d 502, 509 (7th Cir. 1994).

47. Access need not be proven where the similarities between the protected computer program and the accused program are identical or so striking that copying may be inferred. *Ty, Inc. v. GMA Accessories, Inc.*, 132 F.3d 1167, 1170-71 (7th Cir. 1997).

48. The presence of non-functional elements of the protected work is evidence of access and copying. *See Williams Elecs, Inc. v. Arctic Int'l, Inc.*, 685 F.2d 870, 876 n. 6 (3d Cir. 1982) (the presence of identical errors in the copyrighted program and the accused program was evidence of copying); *E.F. Johnson Co.*, 623 F. Supp. at 1495-96 (the presence of identical, superfluous instructions in copyrighted program and the accused program was evidence of copying); *SAS Inst.*, 605 F. Supp. at 824 (the presence of identical, unnecessary instructions in the copyrighted program and the accused program was evidence of copying).

1. SCC's Works are "Substantially Similar" because they are Identical Copies of Lexmark's Toner Loading Programs

49. The "substantial similarity" requirement is satisfied in the instant case because the computer programs resident on SCC's SMARTEK microchips contain exact copies of Lexmark's Toner Loading Programs. *See Ty*, 132 F.3d at 1170-71.

50. Lexmark's Toner Loading Programs, in their entirety, constitute copyrightable expression. Hearing, p. 88, line 24 – p. 89, line 3. Lexmark's unique creative computer programming language and its selection and arrangement of appropriate approximation techniques, including the selection, arrangement, and particular expression of formulas, constants, and variables is entitled to copyright protection.

51. SCC admittedly copied Lexmark's Toner Loading Programs in their entireties. Moreover, the presence of the "LXK" infringement detector in SCC's SMARTEK microchips demonstrates that it engaged in wholesale copying of Lexmark's Toner Loading Programs.

2. The Abstraction-Filtration-Comparison Test

52. Because SCC admits that it engaged in the verbatim copying of Lexmark's Toner Loading Programs in its SMARTEK microchips, there is no dispute as to the copying element of the infringement analysis. The Court therefore need not perform any further analysis to determine whether SCC's copying amounts to infringement. *See, e.g., Wilcom Pty. Ltd. v. Endless Visions*, 128 F. Supp. 2d 1027, 1029-32 (E.D. Mich. 1998) (finding copyright infringement by simply comparing the plaintiff's copyrighted computer program with the defendant's accused program and not applying the abstraction-filtration-comparison test), *aff'd*, 229 F.3d 1155 (6th Cir. 2000).

53. As other federal courts have determined, the abstraction-filtration-comparison ("AFC") test is either unnecessary or simply does not apply in cases of literal copying.² *See Mitek Holdings, Inc. v. Arce Eng'g Co.*, 89 F.3d 1548, 1555-56 n.16 (11th Cir. 1996) (explaining that the AFC test "was designed to help assess nonliteral copying of a nonliteral element, not nonliteral copying of computer code (a literal element)"); *Lotus Dev. Corp. v. Borland Int'l, Inc.*,

²The terms "literal" and "non-literal" are used in two ways in copyright infringement cases involving computer software: to describe different types of elements of software and different types of copying. *See Mitek Holdings, Inc. v. Arce Eng'g Co.*, 89 F.3d 1548, 1555-56 n.16 (11th Cir. 1996). "The 'literal elements' of a computer program are its source and object code." *Id.* at 1555 n.15. The "non-literal elements" of a computer program "are the products that are generated by the code's interaction with the computer hardware and operating program[s]." *Id.* Examples of non-literal elements include "screen displays and the main menu and submenu command tree structure." *Id.* "Literal copying" means verbatim copying, whereas "non-literal copying" means non-verbatim copying. *See id.* at 1555-56 n.16.

49 F.3d 807, 815 (1st Cir. 1995) (“While the [AFC] test may provide a useful framework for assessing the alleged nonliteral copying of computer code, we find it to be of little help in assessing whether the literal copying of a menu command hierarchy constitutes copyright infringement.”); *ILOG, Inc. v. Bell Logic, LLC*, 181 F.Supp. 2d 3, 7 (D. Mass. 2002) (holding that literal copying is not governed by the AFC test); *Data Gen Corp. v. Grumman Sys. Support Corp.*, 803 F. Supp. 487, 490-91 (D. Mass. 1992) (“The complex [AFC] test . . . and such a detailed code examination are not applicable to the case before this court . . . Since [the accused infringer] has directly copied [the copyright holder’s object code], there is no need to confront the more difficult issue of evaluating ‘non-literal’ elements of a program.”), *aff’d*, 36 F.3d 1147 (1st Cir. 1994).

54. Accordingly, the Court finds that it is unnecessary to apply the AFC test in the instant case. All this Court needs to do is determine that SCC copied the protectable expression from Lexmark’s Toner Loading Programs. In the instant case, each of the Toner Loading Programs, in its entirety, is a protectable expression for approximating toner level within a toner cartridge. SCC admits that it “slavishly copied” both Toner Loading Programs in their entireties. As a result, SCC identically copied the entire protectable expression of each Toner Loading Program.

55. Application of the AFC test would result in the same result. Each of the Toner Loading Programs represents an expression (*i.e.*, the unique selection and arrangement of equations, variables, and constants written in a custom programming language created by Lexmark) of an idea (*i.e.*, approximating the amount of toner remaining in a toner cartridge based upon a sensed torque value) and SCC copied verbatim the protectable elements of both Toner Loading Programs.

C. Copyright Misuse

56. The misuse defense, while often asserted, has rarely been upheld as a defense to a claim of copyright infringement. Where the misuse defense has been upheld, it has been where a party has sought to extend its limited copyright monopoly beyond that to which it is entitled under the Copyright Act. *See* Nimmer § 13.09[A].

57. To establish copyright misuse, a defendant must establish either “(1) that [the plaintiff] violated the antitrust laws, or (2) that [the plaintiff] illegally extended its monopoly beyond the scope of the copyright or violated the public policies underlying the copyright laws.” *See Microsoft Corp. v. Compuserve Distributions, Inc.*, 115 F. Supp. 2d 800, 811 (E.D. Mich. 2000) (finding that the defendant failed to raise a genuine issue of material fact regarding copyright misuse that would preclude a grant of summary judgment in favor of the plaintiff).

58. In the instant case, other than merely accuse Lexmark’s Prebate program as being anticompetitive, SCC presents no factual or legal basis for there being an antitrust violation by Lexmark.³ SCC’s misuse defense is based on the mere allegation that Lexmark is “using copyright to secure an exclusive right or limited monopoly not expressly granted by copyright law.” SCC Opp. at p. 20. Contrary to SCC’s allegation, however, Lexmark is not seeking to improperly extend its copyright monopoly.

³An antitrust claim cannot succeed under an after-market antitrust theory when the accused party has not changed its policy and has been otherwise forthcoming about its policies. *See PSI Repair Serv., Inc. v. Honeywell, Inc.*, 104 F.3d 811 (6th Cir.), *cert. denied*, 520 U.S. 1265 (1997). Here, Lexmark’s Prebate program has been in existence and widely publicized since 1997, well before the sale of Lexmark’s T520/522 and T620/622 laser printers at issue here, and allows customers an unfettered choice in selecting remanufacturing options, *i.e.*, an up-front discount for a Prebate toner cartridge to be returned only to Lexmark for remanufacturing or a regular toner cartridge capable of being remanufactured by anyone.

59. Lexmark is simply attempting to enforce, and protect access to, its copyrighted computer programs.

60. Lexmark's copyright infringement claim against a party that has engaged in the wholesale copying of Lexmark's copyrighted computer programs cannot be considered misuse.

61. Lexmark's efforts to enforce the rights conferred to it under the DMCA cannot be considered an unlawful act undertaken to stifle competition. *Cf. Data Gen. Corp. v. Grumman Sys. Support Corp.*, 36 F.3d 1147 (1st Cir. 1994) (“[A]n author’s desire to exclude others from use of its copyrighted work is a presumptively valid business justification for any immediate harm to consumers.”).

62. SCC's argument is virtually identical to the argument asserted by the defendants and rejected by the court in *Sony Computer Entm't Am. Inc. v. GameMasters*, 87 F. Supp. 2d 976 (N.D. Cal. 1999). In *GameMasters*, the defendant argued that Sony was “misusing” its copyright rights by attempting to extend or enlarge those rights through use of an access control measure that precluded users from playing non-authorized video games on the Sony console. *Id.* at 988-89. The court rejected the defense because Sony's “targeting of the [product was] based upon a sound construction of the [DMCA].” *Id.*

III. LEXMARK HAS DEMONSTRATED A LIKELIHOOD OF SUCCESS ON THE MERITS OF ITS TWO SEPARATE AND DISTINCT CLAIMS UNDER SECTION 1201(a)(2) OF THE DIGITAL MILLENNIUM COPYRIGHT ACT

63. The DMCA was enacted to prohibit, *inter alia*, the trafficking of products or devices that circumvent the technological measures used by copyright owners to restrict access to their copyrighted works. *Universal City Studios, Inc. v. Corley*, 273 F.3d 429, 440-41 (2d Cir. 2001).

64. Section 1201(a)(2) of the DMCA, commonly referred to as the anti-trafficking provision, prohibits any product or device that circumvents a technological measure that prevents unauthorized access to a copyrighted work. *Universal City Studios*, 273 F.3d at 440-41.

65. It is a well-established rule of statutory construction that “the starting point is the language employed by Congress.” *Appleton v. First Nat’l Bank of Ohio*, 62 F.3d 791, 801 (6th Cir. 1995); accord *United States v. Ron Pair Enters., Inc.*, 489 U.S. 235, 241 (1989). “When a statute is unambiguous, resort to legislative history and policy considerations is improper.” *In re Koenig Sporting Goods, Inc.*, 203 F.3d 986, 988 (6th Cir. 2000).

66. The plain meaning of the DMCA is clear and it would be inappropriate for the Court to consider the legislative history in an effort to determine the “true” congressional intent. *See United States v. Elcom, Ltd.*, 203 F. Supp. 2d 1111, 1124 (N.D. Cal. 2002).

67. Section 1201(a)(2) of the DMCA contains three independent bases for liability. *RealNetworks, Inc. v. Streambox, Inc.*, No. C99-2070P, 2000 U.S. Dist. LEXIS 1889, at *20 (W.D. Wash. Jan. 18, 2000). To establish a violation of section 1201(a)(2), a party must prove that an accused product or device satisfies just one of those tests. *Id.* Section 1201(a)(2) prohibits the manufacture, distribution, and/or sale of any product or device that:

(A) is primarily designed or produced for the purpose of circumventing a technological measure that effectively controls access to a work protected under this title;

(B) has only a limited commercially significant purpose or use other than to circumvent a technological measure that effectively controls access to a work protected under this title; or

(C) is marketed by that person or another acting in concert with that person with that person’s knowledge for use in circumventing a technological measure that effectively controls access to a work protected under this title.

17 U.S.C. § 1201(a)(2)(A)-(C).

68. The DMCA explains that a technological measure “controls access” to a copyrighted work if that measure “requires the application of information, or a process or a treatment, with the authority of the copyright owner, to gain access to the work.” *Id.* at § 1201(a)(3)(B). In addition, the statute provides that a product or device “circumvents” a technological measure by “avoid[ing], bypass[ing], remov[ing], deactivat[ing] or [otherwise] impair[ing]” the operation of that technological measure. *Id.* at § 1201(a)(3)(A).

69. The DMCA does not specifically define the term “access.” Thus, the term should be given its ordinary, customary meaning. *See FDIC v. Meyer*, 510 U.S. 471, 476 (1994) (when the text of a statute contains an undefined term, that term receives its “ordinary or natural meaning.”). The ordinary, customary meaning of the term “access” is the “ability to enter, to obtain, or to make use of.” *Merriam-Webster’s Collegiate Dictionary* 6 (10th ed. 1999).

70. The authentication sequence that occurs between Lexmark’s printers and the microchips contained on authorized Lexmark toner cartridges constitutes a “technological measure” that “controls access” to a copyrighted work. This authentication sequence requires the application of information and the application of a process to gain access to Lexmark’s copyrighted Toner Loading Programs and Printer Engine Programs.

71. Lexmark’s authentication sequence effectively “controls access” to the Toner Loading Programs and the Printer Engine Program because it controls the consumer’s ability to make use of these programs. *See GameMasters*, 87 F. Supp. 2d at 987 (Sony’s PlayStation console contained a technological measure that controlled a consumer’s ability to make use of copyrighted computer programs).

A. SCC's SMARTEK Microchips Circumvent the Technological Measure that Controls Access to Lexmark's Copyrighted Toner Loading Programs

72. SCC admits that its SMARTEK microchips avoid or bypass Lexmark's authentication sequence. SCC Opp. at p. 4. The SMARTEK microchips mimic the technology for calculating and transmitting a MAC from Lexmark's toner cartridges to Lexmark's T-Series printers and circumvents the authentication sequence. As a result, the SMARTEK microchips are able to deceive the Lexmark T-Series printers into thinking that the SMARTEK microchips are, in fact, original microchips contained on authorized Lexmark toner cartridges. After the SMARTEK microchips bypass the authentication sequence, the printers access, without Lexmark's authority, the copyrighted Toner Loading Programs.

73. Lexmark has demonstrated that SCC's SMARTEK microchips satisfy all three tests for liability under section 1201(a)(2).

74. SCC's SMARTEK microchips satisfy the first independent test for liability because SCC acknowledges that it specifically developed the SMARTEK microchips to circumvent the authentication sequence that controls access to Lexmark's copyrighted Toner Loading Programs. SCC Opp. at pp. 2-4; Lexmark Memo, Exs. R, Q.

75. SCC's SMARTEK microchips satisfy the second independent test for liability because SCC acknowledges that its SMARTEK microchips have no commercial purpose other than to circumvent the authentication sequence that controls access to Lexmark's copyrighted Toner Loading Programs. SCC Opp. at pp. 2-4; Lexmark Memo, Exs. R, Q.

76. SCC's SMARTEK microchips satisfy the third independent test for liability because SCC markets the SMARTEK microchips as being capable of circumventing the access

control protections provided by the original microchips on Lexmark's T-Series toner cartridges.
Lexmark Memo, Exs. J, K, S.

B. SCC's SMARTEK Microchips Circumvent the Technological Measure that Controls Access to Lexmark's Copyrighted Printer Engine Program

77. SCC admits that its SMARTEK microchips avoid or bypass Lexmark's authentication sequence. SCC Opp. at p. 4. After the SMARTEK microchips bypass the authentication sequence, the printer accesses, without Lexmark's authority, the Printer Engine Program.

78. Lexmark has demonstrated that SCC's SMARTEK microchips satisfy all three tests for liability under section 1201(a)(2) of the DMCA.

79. SCC's SMARTEK microchips satisfy the first independent test for liability because SCC acknowledges that it specifically developed the SMARTEK microchips to circumvent the authentication sequence that controls access to Lexmark's copyrighted Printer Engine Program. SCC Opp. at pp. 2-4; Lexmark Memo, Exs. R, Q.

80. SCC's SMARTEK microchips satisfy the second independent test for liability because SCC acknowledges that its SMARTEK microchips have no commercial purpose other than to circumvent the authentication sequence that controls access to Lexmark's copyrighted Printer Engine Program. SCC Opp. at pp. 2-4; Lexmark Memo, Exs. R, Q.

81. SCC's SMARTEK microchips satisfy the third independent test for liability because SCC markets the SMARTEK microchips as being capable of circumventing the access control protections provided by the original microchips on Lexmark's T-Series toner cartridges.
Lexmark Memo, Exs. J, K, S.

C. SCC's Actions do not Fall under any of the Exceptions to Section 1201(a)(2)

1. SCC's Manufacture, Distribution and Sale of its SMARTEK Microchips Fall within the Plain Language of the DMCA

82. Because the language of the DMCA is clear, it is unnecessary to consider the legislative history or the policy arguments raised by SCC to determine congressional intent or the scope of the DMCA. *See Elcom*, 203 F. Supp. 2d at 1124. In addition, SCC does not cite to any portion of the legislative history that indicates that “the literal application of [the] statute will produce a result demonstrably at odds with the intentions of its drafters.” *Koenig Sporting Goods*, 203 F.3d at 988.

83. The protections provided by the DMCA are not, and were never intended to be, as limited as SCC asserts. The DMCA is clear that the right to protect against unauthorized access is a right separate and distinct from the right to protect against violations of exclusive copyright rights such as reproduction and distribution. Section 1201(b) prohibits trafficking in devices that circumvent measures that “effectively protect[] a right of a copyright owner under this title.” 17 U.S.C. § 1201(b)(1)(A). In contrast, section 1201(a)(2) more broadly prohibits trafficking in devices that circumvent measures that “effectively control[] access to a work protected under this title.” 17 U.S.C. § 1201(a)(2)(A).

84. If the DMCA were only intended to protect copyrighted works from digital piracy, that goal was accomplished through section 1201(b); SCC's argument would render section 1201(a)(2) mere surplusage. Section 1201(a) creates, and section 1201(a)(2) protects, a right of “access,” the violation of which is the “electronic equivalent [of] breaking into a castle.” 3 Nimmer § 12A.03[D][1] at 12A-29.

85. The few cases that have applied the DMCA are in accord. *See, e.g., RealNetworks, Inc.*, 2000 U.S. Dist. LEXIS 1889 at *3 (the plaintiff's "Secret Handshake" was species of access control governed by section 1201(a)(2)); *GameMasters*, 87 F. Supp. 2d at 987 (enjoining sale of device that circumvented technological measure that prevented access to software embedded in Sony's PlayStation console, even though the device did not facilitate piracy).

86. The DMCA is not limited to the protection of "copies of works (such as books, CD's and motion pictures) that have an independent market value." The DMCA broadly prohibits trafficking in a product or device that circumvents "a technological measure that effectively controls access to a work protected under this title." 17 U.S.C. § 1201(a)(2)(A), (B) (emphasis added).

87. Lexmark's Toner Loading Programs and Printer Engine Program are works protected under the Copyright Act.

88. Quite simply, if a work is entitled to protection under the Copyright Act, trafficking in a device that circumvents a technological measure that controls access to such work constitutes a violation under section 1201(a). The few cases decided under the DMCA prove that section 1201(a) applies to the very type of computer software that Lexmark seeks to protect, and the very type of access-protection regime Lexmark has employed to protect it.

89. The authentication sequence employed by Lexmark in this case is similar to the technological measure employed by Sony in the *Gamemasters* case that prevented access to the copyrighted computer software that operates with Sony's PlayStation video game console. The console employs a technological measure that verifies whether a CD-ROM game inserted into the console is "an authorized, legitimate [Sony] product licensed for distribution in the same

geographical territory of the console's sale." *Gamemasters*, 87 F. Supp. 2d at 981. If the console cannot verify that the game is, in fact, such an authorized product, the console will not operate and the game will not play. *Id.* The *Gamemasters* court found that Sony was likely to succeed on the merits of its 1201(a)(2)(A) claim, and thus granted injunctive relief, because the defendant's "GameEnhancer" device circumvented the access control measure on the console "that ensures the console operates only when encrypted data is read from an authorized CD-ROM [video game]." *Id.* at 987.

90. The access control measure upheld by the *Gamemasters* court is, as a technical matter, virtually identical to, and as a legal matter, indistinguishable from, the access control measure employed by Lexmark in the instant case. Like the PlayStation console, the Lexmark printer employs a technological measure—the authentication sequence—that verifies whether the toner cartridge inserted into the printer is authorized (e.g., it is either a Prebate cartridge, a non-Prebate cartridge, a refilled non-Prebate cartridge, or a Lexmark remanufactured cartridge, but it is not an unauthorized third-party refilled Prebate cartridge). If the printer cannot verify that the cartridge is, in fact, such a product, the Printer Engine Program will not operate and will not "play" the Toner Loading Program. SCC's SMARTEK microchips, like the "GameEnhancer" device in *Gamemasters*, circumvents the access control measure on the Lexmark printer "that ensures the [printer] operates only when encrypted data is read from an authorized [toner cartridge]." Thus, the allegations in Lexmark's complaint are hardly, as SCC claims, "novel."

2. The Reverse Engineering Exemption under Section 1201(f) of the DMCA does not Apply

91. Sections 1201(f)(2) and (3) of the DMCA are not broad exceptions that can be employed to excuse any behavior that makes some device “interoperable” with some other device.

92. Sections 1201(f)(2) and (3) provide that a person may develop a circumvention device and make that circumvention device available to others “*solely* for the purpose of enabling interoperability of *an independently created computer program* with other programs, and *to the extent that doing so does not constitute infringement under this title or violate applicable law other than this section.*” 17 U.S.C. § 1201(f)(3) (emphasis added).

a. SCC’s SMARTEK Microchips are not Independently Created Computer Programs

93. SCC contends that it was justified in developing the SMARTEK microchips because these circumvention devices enable independently created programs to interoperate with Lexmark’s Printer Engine Program and Toner Loading Programs. The independently created programs identified by SCC are programs contained on the SMARTEK microchips.

94. SCC’s SMARTEK microchips cannot be considered independently created computer programs. The SMARTEK microchips serve no legitimate purpose other than to circumvent Lexmark’s authentication sequence and the SMARTEK microchips cannot qualify as independently created when they contain exact copies of Lexmark’s Toner Loading Programs.

b. SCC’s Conduct Constitutes Copyright Infringement

95. SCC can only take advantage of the protection afforded by section 1201(f) of the DMCA if its conduct “does not constitute infringement under this title [the Copyright Act] or violate applicable law other than this section.” 17 U.S.C. § 1201(f)(3).

96. For reasons set forth above, SCC's exact copying of Lexmark's Toner Loading Programs into its SMARTEK microchips constitutes copyright infringement. Accordingly, section 1201(f) of the DMCA does not offer any protection to SCC.

IV. LEXMARK HAS DEMONSTRATED THAT IT WILL SUFFER IRREPARABLE HARM IF THE COURT REFUSES TO GRANT THE PRELIMINARY INJUNCTION

A. Irreparable Harm to Lexmark is Presumed as a Matter of Law

97. Irreparable harm is presumed as a matter of law because Lexmark has shown that it is likely to succeed on the merits of its copyright infringement and DMCA claims.

98. If a plaintiff in a copyright infringement action demonstrates a likelihood of success on the merits of its copyright infringement claim, then the irreparable harm to that plaintiff as a result of the infringement is presumed. *Forry*, 837 F.2d at 267. There is a well-established presumption that damages incurred by copyright infringement are, by their very nature, irreparable and not susceptible of monetary measurement, thus rendering any remedy at law inadequate. *See Atari*, 672 F.2d at 620; *ISC-Bunker Ramo Corp. v. Altech, Inc.*, 765 F. Supp. 1310, 1329 (N.D. Ill. 1990).

99. In copyright infringement cases, there simply is no need to prove irreparable harm. *See Concrete Mach.*, 843 F.2d at 612 (discussing the presumption of irreparable harm and stating that "[t]here is . . . no need actually to prove irreparable harm when seeking an injunction against copyright infringement."). In fact, some courts have held that a failure to consider the presumption of irreparable harm is reversible error. *See Franklin Computer*, 714 F.2d at 1254 (holding that the district court erred when it failed to consider the presumption of irreparable harm); *Atari*, 672 F.2d at 620-21 (reversing the district court's finding of noninfringement and

directing the district court to enter a preliminary injunction based upon the presumption of irreparable harm).

100. Similarly, a plaintiff that demonstrates a likelihood of success on the merits of its claim for violation of the anti-trafficking provisions of the DMCA is entitled to a presumption of irreparable injury. *See Reimerdes*, 82 F. Supp. 2d at 215 (determining that the plaintiff was entitled to a presumption of irreparable harm because the plaintiff demonstrated a likelihood of success on its claim for violation of section 1201(a)(2) of the DMCA). The damages incurred by violations of section 1201(a)(2) of the DMCA simply “cannot readily be measured, suggesting that the injury truly [is] irreparable.” *Id.*

101. SCC has failed to rebut the presumption that Lexmark will suffer irreparable injury as a result of SCC’s copyright infringement. SCC contends that money damages could adequately compensate Lexmark, but the alleged availability of money damages is not a sufficient reason to deny injunctive relief. *See Cadence Design Sys., Inc. v. Avant! Corp.*, 125 F.3d 824, 827 (9th Cir. 1997) (quoting Nimmer for the proposition that if a plaintiff establishes a likelihood of success on the merits of a copyright infringement claim, “it would seem erroneous to deny a preliminary injunction simply because actual damages can be precisely calculated.”). In any event, it would be incredibly difficult to precisely calculate Lexmark’s damages in the instant case because of the possibility of Lexmark suffering the loss of customer goodwill.

B. Even without the Presumption of Irreparable Harm, Lexmark has Established the Irreparable Harm that it will Suffer Absent an Injunction against SCC

102. Lexmark has demonstrated that it expended significant time and financial resources to develop its copyrighted programs and the authentication sequence that prevents

unauthorized access to those programs. Yaro Dec. ¶ 15. SCC copied Lexmark's Toner Loading Programs and sells identical copies of the programs to consumers in its SMARTEK microchips.

103. SCC's copyright infringement and the trafficking of the SMARTEK microchips could result in a multitude of harms to Lexmark that would be difficult to quantify. These harms include fewer customer orders, reduced margins, potential market share loss, damage to the reputation of Lexmark's products, and damage to Lexmark's relationships with consumers. *See, e.g., Basic Computer Corp. v. Scott*, 973 F.2d 507, 512 (6th Cir. 1992) ("The loss of customer goodwill often amounts to irreparable injury because the damages flowing from such losses are difficult to compute.").

104. Lexmark's potential damages are difficult to measure or quantify, and thus Lexmark will likely suffer irreparable injury absent an injunction against SCC.

V. THE PUBLIC INTEREST FACTOR FAVORS LEXMARK

105. In copyright infringement cases, as with the irreparable harm factor, it is ordinarily presumed that an injunction will serve the public interest if the copyright holder shows a likelihood of success on the merits. *Concrete Mach.*, 843 F.2d at 612. Further, "it is virtually axiomatic that the public interest can only be served by upholding copyright protections and, correspondingly, preventing the misappropriation of the skills, creative energies, and resources which are invested in the protected work." *Franklin Computer*, 714 F.2d at 1254. Moreover, a preliminary injunction is necessary "to preserve the integrity of the copyright laws which seek to encourage individual effort and creativity by granting valuable enforcement rights." *Atari*, 672 F.2d at 620.

106. SCC contends that policies of the United States government favor the recycling and remanufacturing of toner cartridges and further claims that "an injunction would threaten

significant and truly irreparable harm to the environment.” SCC Opp. at p. 30. This argument rests primarily upon the assumption that the majority of Lexmark’s Prebate toner cartridges will end up in landfills should the Court enjoin SCC from trafficking in its SMARTEK microchips. The Court finds this claim to be largely unsubstantiated. Lexmark, in fact, has an extensive remanufacturing program for all of its used Prebate cartridges. Accordingly, the Court does not accept SCC’s argument that an injunction will threaten significant environmental degradation.

107. SCC contends that public policy favors competition and supports the availability of multiple remanufacturers for toner cartridges. SCC further contends that public policy opposes the use of technological measures to prevent or limit remanufacturing. The Court has no trouble accepting SCC’s claim that public policy generally favors competition. The Court finds, however, that this general principle only favors legitimate competition. Public policy certainly does not support copyright infringement and violations of the DMCA in the name of competition.

VI. THE POSSIBILITY OF SUBSTANTIAL HARM TO OTHERS

A. SCC

108. “Advantages built [on] deliberately [copied software] do not . . . give [SCC] standing to complain that [its] vested interests will be disturbed.” *Atari*, 672 F.2d at 620. One cannot build a business based upon infringing another’s intellectual property rights, and then be allowed to complain that making them stop will cause harm. *See Cadence*, 125 F.3d at 829 (the district court erred by giving improper emphasis to harm to defendant that would devastate its business; “a defendant who knowingly infringes another’s copyright ‘cannot complain of the harm that will befall it when properly forced to desist from its infringing activities.’”); *Franklin Computer*, 714 F.2d at 1255 (reversing district court’s denial of a preliminary injunction because

of its “devastating effect” on the defendant’s business: “[i]f [the effect on the defendant] were the correct standard, then a knowing infringer would be permitted to construct its business around its infringement, a result we cannot condone.”).

109. SCC intentionally copied Lexmark’s Toner Loading Programs and purposely developed and sold a product that circumvents the access control measure that protects Lexmark’s copyrighted works. Thus, under the circumstances, the “Court should not consider a balancing of hardships as a determining factor in granting injunctive relief in a copyright matter” because “[a]llowing for a balancing of hardships would permit a knowing infringer to construct its entire business around infringement.” *Value Group, Inc. v. Mendham Lake Estates, L.P.*, 800 F. Supp. 1228, 1235 (D.N.J. 1992) (citing *Franklin Computer*, 714 F.2d at 1255). In any event, the Court finds that the harm that Lexmark would likely suffer absent an injunction outweighs the harm that SCC would likely suffer because of an injunction.

B. Third Parties

110. As has been stated by SCC and various amici, the issuance of an injunction in the instant case could have a significant impact upon the toner cartridge remanufacturing industry and some impact upon the remanufacturing industries as a whole. SCC and the various amici, however, have provided little evidentiary support for these claims and any possible impact that an injunction in the instant case would have on others in the remanufacturing industry appears to be almost entirely speculative.

111. SCC also contends that the issuance of an injunction in the instant case would have a negative impact upon consumers because they will not have the opportunity to have their Prebate cartridges refilled or remanufactured by third parties. While this may be the case, the Court feels little sympathy for consumers that accept the up-front discount when purchasing

Prebate cartridges and are subsequently required to comply with the Prebate agreement and return the used cartridges to Lexmark.

VII. LEGAL CONCLUSION

112. Lexmark is likely to prevail on the merits of its copyright infringement and DMCA claims. It is presumed that Lexmark will suffer irreparable harm in the absence of an injunction, and SCC has failed to rebut this presumption. Even in the absence of this presumption, Lexmark has shown that it will suffer irreparable harm. It is further presumed that the public interest favors granting the injunction, and SCC has failed to rebut this presumption. Even in the absence of this presumption, it is clear that the public interest favors discouraging copyright infringement and violations of the DMCA. SCC contends that certain third parties could be harmed should the Court issue an injunction, but the Court finds these claims to be unpersuasive. The Court has fully considered the four preliminary injunction factors, and, on balance, it is clear that injunctive relief is appropriate in the instant case.

CONCLUSION

For the reasons stated above, Lexmark's Motion for a Preliminary Injunction shall be granted by Order of this Court, contemporaneously entered in accordance with these Findings of Fact and Conclusions of Law. In announcing this decision, the Court has adopted a majority of Lexmark's Proposed Findings of Fact and Conclusions. The Court has, however, conducted an exhaustive independent review of this matter and has made changes to Lexmark's Proposed Findings of Fact and Conclusions of Law where appropriate.

This 27 day of February, 2003.


KARL S. FORESTER, CHIEF JUDGE