

ENERGY STAR for Set-top Boxes
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383	Final Draft Service Providers	N/A	3/18/2008	Timeline	We are very supportive of the levels shown in the specification and EPA's decision to establish a relatively modest specification for Tier 1, coupled with a dramatically more stringent specification for Tier 2. Tier 2 includes a generous, yet appropriate 3-year lead time which will provide effected stakeholders the necessary time to make the R&D, middleware development and set top box production changes that may be necessary to meet these new levels which will yield incremental savings of 50% or greater.	Completed	
384	Final Draft Service Providers	N/A	3/18/2008	Speculative Recording	We appreciate EPA's inclusion of our recommendation for a user menu-option to disable speculative recording. We continue to believe a similar requirement is warranted to allow users to disable unwanted Service Provider-initiated movie downloads. This is because some of the satellite providers today "push" movies to all their customers in the middle of the night with the hope that they will access this content at a later time. These downloads have the potential to cause millions of set top boxes that would be in a low power sleep mode to wake up and use considerably more power for several hours each week. With the shift to high definition movies and their greater file size, the download times are expected to increase significantly . We believe a sizable portion of users will acquire their movies through other outlets and as such should have the ability to turn this feature off. From a societal point of view, users should be provided the choice to "opt out" as a means to help cut their electric bill and reduce their overall "carbon footprint".	Completed	EPA appreciates this suggestion, but believes that the limits placed on how long the device can wake up for uninitiated events per week balances the needs of the service providers with the energy efficiency of the device.
385	Final Draft Service Providers	N/A	3/18/2008	Speculative Recording	We believe our proposal provides a reasonable middle ground as we are not recommending a more stringent proposal which would require the service provider to install the boxes with the "automatic" service provider initiated movie download feature Off, and for user to have to opt-in for these downloads if truly interested. We recognize a certain percent of users will choose to access movies pushed onto their STBs and that pay per view movies represent an important profit center for service providers.	Completed	EPA appreciates this suggestion, but believes that the limits placed on how long the device can wake up for uninitiated events per week balances the needs of the service providers with the energy efficiency of the device.

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386	Final Draft Service Providers	505-508	3/18/2008	Section H) Movie Downloads	A reasonable alternative is to add to Section H) Movie Downloads Lines 505-508 of the Program Requirements for Set-top Boxes Partner Commitments: "Service Providers who schedule non-user-initiated downloads of movies must provide an easy to access menu option which allows the user to decline or disable this feature until they elect to turn it back on." Although it might be argued that this function is included in the 2-hour per day allowance on lines 115 -122 of the Service Providers Partner Commitments document Version 1.0, there is no reason to require users who do not use this feature to consume the additional kWh required. If the user at a later date changes their mind they can always go back into the menu and turn this feature back on.	Completed	EPA appreciates this suggestion, but believes that the limits placed on how long the device can wake up for uninitiated events per week balances the needs of the service providers with the energy efficiency of the device.
387	Final Draft Service Providers		3/18/2008	Optional Network Terminal	As currently deployed, we understand IPTV subscribers have a Optional Network Terminal (ONT) installed when they sign up for their service. The comments in the EPA document state that ONT power use has not been included in the Tier 1 specification. We believe further study of ONT power use is warranted and that despite the multifunction nature of the ONT (ONTs frequently serves as a gateway not only for TV service but also for hi-speed internet and/or phone service), additional power savings opportunities may exist. For example, it may be possible to reduce the ONT power use when the user is not watching or recording a show, without interfering with the other ONT functions. The results of EPA's study of these systems should be incorporated into the final Tier 2 specification for this category.	Completed	EPA plans on looking at these devices further and will decide on a best course of action at some point in the future.
388	Final Draft Service Providers		3/18/2008	Optional Network Terminal	For example, while IPTV may appear to be one of the lower energy consuming options on the market, this may be due to the fact that some of the power consumption is happening at the other box, and this incremental power use is not accounted for. In a Total Energy Consumption calculation, the exclusion of ONT may result in an underreporting of IPTV electricity use, relative to satellite or cable. This would create an unfair competitive advantage for IPTV, especially when service providers begin to differentiate and market their products based on their environmental attributes, as is already happening in Europe.	Pending	EPA plans on investigating these devices further and will decide on a best course of action at some point in the future.
389	Final Draft Service Providers	420	3/18/2008	Additional Tuner Usage	In the Eligibility Requirements document, Table 2, line 420, there should be explanatory language to clarify that the 53kWh allowance for "Additional tuners" and the 14kWh allowance for "Additional Tuners--Terrestrial/IP" is a total amount to cover all tuners, not per additional tuner.	Completed	Footnotes have been added to clarify the way in which additional tuner allowances are to be applied.

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390	Final Draft Service Providers	115-122	3/18/2008	Return to Sleep Mode	Although the test procedure Section 5.4.2 (no line numbers) verifies that the unit under test (UUT) automatically powers down, there is no procedure for verifying that a STB indeed returns back to sleep within 15 minutes after a download, scan, or user-scheduled activities, as described in the Partner Commitments document on lines 115-122. We recommend adding a new section "Section 5.4.3 Return to Sleep", with procedures for verifying that the box does, in the test environment, return to sleep within 15 minutes of completing one of the activities described on lines 115-122 of the Partner Commitments document.	Pending	EPA will utilize this feedback when working with stakeholders on standardizing the test procedure for inclusion in an IEC specification.
391	Final Draft Service Providers	N/A	3/18/2008	Satellite LNB	We are not fully clear on how the power consumed by satellite Low Noise Block (LNB) modules is treated in the specification. In the Test Procedure document, Section 5.2.4 a, is the allowance to deduct LNB permitted because LNB is included in the base allowance for satellite STBs? If not, please provide justification for this deduction.	Completed	LNBs are difficult to address. The unit will not run without at least one, but the need for, and sizing is site specific (based on geography, topography and installation factors). Therefore, in order to obtain real, comparable results from unit to unit, it is important to smooth out any contribution to the overall energy consumption from LNBs.
392	Final Draft Service Providers	N/A	3/18/2008	Link STB to Service Provider	Explicitly tie or link qualification to both the STB and the service provider. While a cable STB may be built by the manufacturer to be ENERGY STAR compliant, it may only achieve those levels on certain cable providers and not others. This STB might use more power than intended by the manufacturer because: a) the service provider has not made the necessary head end or middleware changes needed to achieve the power savings, or b) the service provider intentionally chooses to disable certain power saving features in the box prior to deployment.	Completed	The specification requires boxes to be tested on a representative system that mirrors what the MSO believes is in the field for a particular area. It would be unrealistic to ask a MSO to test all of their boxes in every municipality they provide service.
393	Final Draft Service Providers	N/A	3/18/2008	Link STB to Service Provider	As currently drafted, neither the STB test procedure nor the service provider partner agreement explicitly makes this linkage. From our point of view, we think it is much more important to get this point right than to require partners to test 5 samples of the same model as part of the qualification process. (The 5 samples are intended to address the potential power use variability within a given model, even though there is no historical reason to expect wide discrepancies between samples.). Below we reference the document sections that would benefit from further clarification on testing tied to a specific service provider's signal. If there is resistance to our recommendation due to the additional testing required, NRDC is completely comfortable with EPA relaxing the 5 samples per model requirement.	Completed	The specification requires boxes to be tested on a representative system that mirrors what the MSO believes is in the field for a particular area. It would be unrealistic to ask a MSO to test all of their boxes in every municipality they provide service.

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394	Final Draft Service Providers	N/A	3/18/2008	Ammend Section 5.2.2.f	No provision in the Test Procedure requires service providers to confirm qualification using their unique programming/update duty cycle and head end equipment (or equivalent simulation.). To remedy this situation Section 5.2.2.f in the Test Procedure document should be amended to include a requirement that a source signal be representative of the duty cycle offered by the service provider by whom the box is deployed. Section 5.2.3 should be amended to allow a true duty cycle that would accurately report the variations between service providers.	Completed	The specification requires boxes to be tested on a representative system that mirrors what the MSO believes is in the field for a particular area. It would be unrealistic to ask a MSO to test all of their boxes in every municipality they provide service.
395	Final Draft Manufacturers	663	4/3/2008	Terminology	Change "not user-scheduled" to "not user-requested" as the box or SP may do the actual scheduling, the user may just approve a request for a show, etc.	Completed	EPA agrees that these are equivalent and that the suggested language is clearer.
396	Final Draft Manufacturers	420	4/3/2008	Additional Tuners	Need to add a note that the Additional tuner allowance is per tuner – basically agree with feedback on 361. Customers are asking for up to 4,6 tuners.	Completed	The test procedure is structured to only exercise two tuners at any one time. EPA needs to provide proper incentives to shut down tuners when not in use. By providing a per tuner adder, this incentive would simply subsidize all additional tuners to be on when not in use.
397	Final Draft Manufacturers	420	4/3/2008	DOCSIS Modem	Docsis and MOCA(would be under Home Network Interface) allowances seem low if they include the tuner. Is there vendor data showing that these are achievable for Tier 1 timeframe?	Completed	EPA receives feedback from a variety of stakeholders while developing specifications and all such feedback is evaluated and taken into consideration.
398	Final Draft Manufacturers	420	4/3/2008	Multi-Rooms	Is the Multi Room allowance a single allowance or multiple depending on how many Rooms are supported? Please add clarification.	Completed	The multi-room allowance is applied only once independent of the number of rooms supported.
399	Final Draft Manufacturers	420	4/3/2008	Cable Card	Is the Cable Card allowance per Cable Card?	Completed	Yes, the cable card allowance is per card.
400	Final Draft Manufacturers	278, 435	4/3/2008	Terminology	DNLA should read DLNA	Completed	This change has been made.
401	Final Draft Manufacturers	420	4/3/2008	Additional Tuners	Under "Additional Tuners – Terrestrial / IP" – Can you provide an example of an IP tuner?	Completed	An IP tuner is any tuner that uses TCP/IP as its transport layer. This includes but is not limited to, Ethernet, WiFi, etc.
402	Final Draft Manufacturers	N/A	4/3/2008	Testing External Devices	Please confirm that external devices like hard drives, flash keys attached to external IO like USB, 1394 are excluded from the testing and their power does not need to be comprehended?	Completed	The test procedure has been updated to reflect the fact that external devices not required for operation are not required for testing.

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403	Final Draft Manufacturers	420	4/3/2008	Advanced Video Processing	Adv Video Processing/Codec – If multiple streams/decodes occur at the same time, are multiple allowances supported here?	Completed	No, this is a once per box adder.
404	Final Draft Manufacturers	287	4/3/2008	Terminology	Please provide more details on which CSA document and page/line number that the broadcast stream(type, bitrate, etc) is provided?	Completed	Some clarification has been added to the test procedure document.
405	Final Draft Manufacturers	452	4/3/2008	Cable Allowances	Under Examples - Seems that if this is a Cable STB then need to include other cable allowances like Moca, 2nd Tuner, Cable Card, etc.		EPA has created a separate Allowance Worksheet to help illustrate how base and additional functionality allowances can be applied under the technical specification.
406	Final Draft Manufacturers	618	4/3/2008	Table 3: Duty Cycle	Number of hours allocated for DVR record/playback are too few. Very few users of STB with DVR watch live program. Most of the program viewing occurs delayed, which requires that all programs watched are recorded and played. Even for program being viewed live, to allow rewind, it needs to be recorded and played. How were these DVR numbers created?	Completed	These numbers were well vetted among stakeholders so EPA does not think that any changes should be made at this point.
407	Final Draft Manufacturers and Service Providers	N/A	4/4/2008	Tier 2	Given the rapid innovation in this product category, we recognize the value to all stakeholders— particularly manufacturers—in predetermining a date for a new “Tier 2” specification level. We support this practice to the extent that the timing and level of the Tier 2 specification are consistent with the intended market meaning of ENERGY STAR at the time the new specification level takes effect.	Completed	EPA plans to reconfirm the applicability of the Tier 2 levels at least nine months prior to the Tier 2 effective date.
408	Final Draft Manufacturers	505	4/4/2008	Consumer Choice	We noted several opportunities including set-top box redesigns, software upgrades, and consumer management of box settings (e.g., enabling consumers to select less frequent or fewer downloads). We note that this Final Draft requires devices that provide speculative recording to have an easy to reach menu option to disable this feature (line 505). We encourage EPA to carefully consider whether enabling consumers to manage other download options would yield additional energy savings.	Completed	EPA appreciates this suggestion, but believes that the limits placed on how long the device can wake up for uninitiated events per week balances the needs of the service providers with the energy efficiency of the device. EPA will, as always, continue to look at ways to optimize energy use of these devices.
409	Final Draft Manufacturers	202	4/4/2008	Terminology	Change line 202 to: "Cable STB: A STB whose principal function is to receive television signals from a broadband, hybrid fiber/coaxial, community cable distribution system and deliver them to a consumer display and/or recording device. Source: CSA C380-06 modified."	Completed	This change has been made.
410	Final Draft Manufacturers	302	4/4/2008	Terminology	Change line 302 to: "a. the STB receives a notification from the user to enter a sleep state. The notification may be one of a power/standby button press on a remote control or front panel of the unit, or an electronic signal or data packet received via a digital interface on the STB. "	Completed	This change has been made, although the term "Standby" is not used.

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411	Final Draft Manufacturers	324	4/4/2008	Terminology	Change C380-06 to C380-08 as CSA has updated the specification.	Completed	This change has been made.
412	Final Draft Manufacturers	412 Table 1	4/4/2008	Table 1: Tier 2	Delete Tier 2 from Table 1 on line 412. Motorola has repeatedly requested and has yet to receive documentation that validates the values proposed for Tier 2. Without documentation to validate these numbers, these numbers have no meaning and place an unrealistic constraint on the deployment of products when the Tier 2 values become effective.	Completed	EPA continues to assert that it is important to provide stakeholders with an indication of EPA's current thinking regarding Tier 2 levels. Setting preliminary numbers now gives stakeholders the maximum amount of time to plan for more stringent energy efficiency criteria. EPA will reevaluate the appropriateness of the Tier 2 levels at least nine months prior to the Tier 2 effective date.
413	Final Draft Manufacturers	412 Table 1	4/4/2008	Table 1: Cable Values	Change cable values on Table 1 on line 412 to be the same as the satellite values.. Motorola does not comprehend why satellite STBs are receiving more base allowance, especially when they are allowed to exclude the power consumed by their LNBS (which is up to 5 these days given their MPEG4 roll out) and the fact that they do not have RF upstream transmitters (which Cable STBs must have in order to communicate with the CA system). This creates an unfair marketing advantage in that Satellite STBs have an additional 2watts of always on power that they can use to innovate additional features, compared to Cable STBs. The technology utilized by these products is very similar and where there are differences on the front end video acquisition, the differences on the reverse upstream communication path make up. These base values need to be the same and should be the higher of the two, i.e, 88.		EPA strives for technology neutral requirements. However, since currently not all consumers have access to all types of services (i.e., cable, satellite, IP), EPA did allow the equipment associated with one-way systems some additional power to further the likelihood that all consumers would have the opportunity to get a more efficient box.
414	Final Draft Manufacturers	420 Table 2	4/4/2008	Table 2: DOCSIS	Change DOCSIS on Table 2, line 420, to "DOCSIS/Out-of-Band Tuners" as there is no provision for SCTE-55 OOB technology. The Additional Tuners allowance explicitly excludes SCTE-55, thus SCTE-55 needs to be accounted for some where.	Completed	EPA provided a DOCSIS only adder because stakeholders felt the current state of DOCSIS, given its low deployment rates now and in the future, was better off as an adder and not as part of the cable base. EPA specifically rejected the idea of a blanket OOB adder and continues to do so.

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415	Final Draft Manufacturers	420 Table 2	4/4/2008	Table 2: Tier 2	Delete Tier 2 from Table 2 on line 420. Motorola has repeatedly requested and has yet to receive documentation that validates the values proposed for Tier 2. Without documentation to validate these numbers, these numbers have no meaning and place an unrealistic constraint on the deployment of products when the Tier 2 values become effective.	Completed	EPA continues to assert that it is important to provide stakeholders with an indication of EPA's current thinking regarding Tier 2 levels. Setting preliminary numbers now gives stakeholders the maximum amount of time to plan for more stringent energy efficiency criteria. EPA will reevaluate the appropriateness of the Tier 2 levels at least nine months prior to the Tier 2 effective date.
416	Final Draft Manufacturers	457	4/4/2008	EPSs	Change line 457 as follows: "To qualify, the external power supply (EPS) used with STBs manufactured after the effective date of this document must be ENERGY STAR qualified or meet the no-load and active mode efficiency levels provided in the ENERGY STAR Program Requirements for Single Voltage Ac-Ac and Ac-Dc External Power Supplies, Version 2.0. The ENERGY STAR specification and qualified product list can be found at: www.energystar.gov/powersupplies . STBs manufactured prior to the effective date of this document that can meet the energy efficiency performance requirements in the ENERGY STAR STB specification do not need to use an ENERGY STAR qualified (or equivalent) EPS. " Provide clarification that legacy/existing/deployed STBs that meet the Tier 1 values with their existing power supplies do not need to use a power supply that meets the criteria for a new STB.	Completed	This change has been made.
417	Final Draft Manufacturers	477	4/4/2008	Multi-Rooms	Change line 477 to: "This allowance may only be used for STBs that can provide independent content to more than one display device (e.g., TV, PC, portable media player, etc.)." TV constrains the implementation. With protocols such as UPnP, DLNA, HANA, etc., there are many devices other than a TV that can render content delivered by a STB over a home network. Multi-Room STBs should not be constrained to only working with TVs	Completed	EPA understands that the pace of innovation in CE products is moving fast and does not want to limit the possibilities of consumers using new and innovative display methods. EPA has made a change that we think balances those new display methods while preserving the spirit of specification.

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418	Final Draft Manufacturers	480	4/4/2008	Multi-Rooms	Change line 480 to: "First, test the multi-room STB and compare the results to the specification criteria assuming the STB will deliver content to only one display device, i.e., do not include the Multi-Room allowance. If the STB passes, then it qualifies as an ENERGY STAR qualified STB under any installation configuration, i.e., it can be used for one or more display devices." TV constrains the implementation. With protocols such as UPnP, DLNA, HANA, etc., there are many devices other than a TV that can render content delivered by a STB over a home network. Multi-Room STBs should not be constrained to only working with TVs.	Completed	EPA understands that the pace of innovation in CE products is moving fast and does not want to limit the possibilities of consumers using new and innovative display methods. EPA has made a change that we think balances those new display methods while preserving the spirit of specification.
419	Final Draft Manufacturers	493	4/4/2008	Multi-Rooms	Change line 493 to: "If the STB qualifies as a Multi-Room STB, manufacturer must clearly indicate in product literature that product only qualifies for ENERGY STAR when providing content to more than one display deviceTV." TV constrains the implementation. With protocols such as UPnP, DLNA, HANA, etc., there are many devices other than a TV that can render content delivered by a STB over a home network. Multi-Room STBs should not be constrained to only working with TVs	Completed	EPA understands that the pace of innovation in CE products is moving fast and does not want to limit the possibilities of consumers using new and innovative display methods. EPA has made a change that we think balances those new display methods while preserving the spirit of specification.
420	Final Draft Manufacturers	507	4/4/2008	Speculative Recording	Change line 507 to: "Devices that provide for speculative recording must have an user accessible menu option allowing the user to disable this feature at will." "...easy to reach..." is very ambiguous. What constitutes "easy to reach"? Who is the final judge that decides if a menu item is "easy to reach"? Without a clear definition of "easy to reach" a manufacturer is now incumbent on the EPA to get approval of their UI from the EPA before said UI can be utilized on a product or face not having their product qualified because someone within the EPA determined that the UI was not "easy to reach". This practice could have significant impact on the launch of a product and severely jeopardize the success of said product.	Completed	This language has been amended for clarity in the Final Specification.
421	Final Draft Manufacturers	515	4/4/2008	Terminology	Change line 515 to: "The test results produced by the ENERGY STAR test procedure... " C380-06 is not the correct reference, it is C380-08. The AKA also serves no purpose to the reader. It is cleaner to simply remove this.	Completed	This change has been made.

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422	Final Draft Manufacturers	712	4/4/2008	Timeline	Change line 712 to: "...appropriateness of other Tier 2 criteria at least sixteen months prior to the Tier 2 effective date." Nine months is not enough time to address Tier 2, especially if the numbers drop even lower than they are today. 16 months may not be enough time either, but it is a lot better than 9.	Completed	Since EPA has provided proposed Tier 2 criteria levels now, stakeholders have more than nine months to prepare for the changing levels. EPA will reconfirm the Tier 2 levels at least nine months prior to the Tier 2 effective date, but stakeholders are being given more advance notice of what EPA anticipates those levels to be.
423	Final Draft Service Providers	N/A	4/4/2008	Home Networking Technology	The title, definition and allowances for "Home Network Interface" are inconsistent with DIRECTV's expectation. At the meetings following the release of Draft 3, stakeholders discussed the need to address advanced home networking technologies such as Wi-Fi and MoCA. However, the Final Draft came out using a definition, "Home Network Interface", that encompassed these advanced technologies AND DLNA (which includes the use of plain-old Ethernet). DIRECTV believes this to have been incorrect.	Completed	EPA has made the necessary change.
424	Final Draft Service Providers	N/A	4/4/2008	Home Networking Technology	Home Network Point 1: DIRECTV expected that the Additional Functionality titled "Home Network Interface", introduced in this Final Draft, should have been titled "Advanced Home Networking Technologies" and it should not have included "DLNA" in the definition.	Completed	EPA has made the necessary change.
425	Final Draft Service Providers	N/A	4/4/2008	Home Networking Technology	Home Network Point 2: While a simple Ethernet interface can be expected to be found on the great majority of Multi-Room and thin client device, and therefore should be part of their baseline allowances, the Advanced Home Network Technologies will not be found in nearly so many of these devices. Thus, the second sentence of the definition Q must be deleted as it is not correct for MoCA or Wi-Fi.	Completed	The definition of HNI clearly stated it could not be added to either a MRU or a thin client device.
426	Final Draft Service Providers	N/A	4/4/2008	Home Networking Technology	Home Network Point 3: If a Multi-Room device implemented two advanced home networking technologies, e.g. both Wi-Fi and MoCA, then it must be granted an allowance for each of these that is used concurrently (as is done in the case of Additional Tuners). This is a perfectly reasonable scenario, allowing the Multi-Room device to (for example) auto-discover and communicate with clients having MoCA only and clients having wireless only.	Completed	EPA believes the approach as taken in the latest draft is reasonable.

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427	Final Draft Service Providers	N/A	4/4/2008	Home Networking Technology	Home Network Point 4: The allowance given in Table 2 for Home Network Interface is inadequate for Advanced Home Network Technologies. Stakeholder inputs to the EPA for these technologies were consistently that they required at least 4 Watts for Tier 1. These Advanced Home Network Technologies are transmitters designed to allow signals to transcend high loss environments (existing house wiring, walls, etc), which is very different from the very low loss CAT5 cable used for a simple Ethernet interface.	Completed	EPA believes the approach as taken in the latest draft is reasonable.
428	Final Draft Service Providers	N/A	4/4/2008	Qualification Procedures	The Tier 1 and Tier 2 guidelines were based on actual measurements of a handful of different products, and stakeholder inputs throughout the STB guideline development process were normally given as average performance values. It is not "apples to apples", then, for the STB guidelines to then be declared by the EPA to be absolute limits (i.e. all 5 randomly chosen devices must fall within the limits instead of an average of the 5 devices). If the limit must be absolute, as suggested in EPA's response in the Comments Matrix (see row 376) then it would be appropriate for EPA to increase all current allowances by a margin that accounts for variability around these average values. DIRECTV would find EPA's proposal of a 10% margin acceptable to be added to the current allowances.	Completed	EPA firmly believes that partners must deliver on consumer beliefs that all ENERGY STAR qualified products will save energy.
429	Final Draft Service Providers	N/A	4/4/2008	Picture in Picture	Picture in Picture cannot be required in the Energy Star STB test procedure. DIRECTV's products do not presently include Picture in Picture (PIP). The section of the test procedure requiring that the product be placed into PIP mode cannot be required, as many products will be unable to comply. This section should perhaps be deleted: PIP not only uses an extra tuner but also uses an extra decoder, system memory and processing which may result in more energy consumption in a compatible product than that of simply exercising another tuner.	Completed	EPA modified the test procedure to allow multi-tuner STBs with no PIP capability to follow an alternative test procedure.

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430	Final Draft Service Providers	N/A	4/4/2008	Timeline	Tier 2 guidelines and lead-time do not address the realities of one-way service provider networks and consumer electronics development timelines. Saying only that it will revisit the Tier 2 criteria as needed up to 9 months prior to their taking effect, the EPA didn't satisfactorily address DIRECTV concerns about the criteria and the lead time expressed in Draft 3 comments. Nine months only provides enough time for DIRECTV to plan for and implement an extrication from the voluntary Energy Star program. Even if, as DIRECTV has requested, separate Tier 2 criteria for one-way networks are developed, 9 months does not suffice to plan products that would ensure continued participation in Energy Star. We maintain that separate guidelines are needed for one-way and two-way networks, and that longer lead times are needed for the guidelines to be firmly established.	Completed	EPA strives for technology neutral requirements. However, since currently not all consumers have access to all types of services (i.e., cable, satellite, IP), EPA did allow the equipment associated with one-way systems some additional power to further the likelihood that all consumers would have the opportunity to get a more efficient box.
431	Final Draft Service Providers	N/A	4/4/2008	Separate Guidelines	As the Comment Matrix for Draft 3 did not include the text of DIRECTV's argument for separate guidelines (see row 371), it is repeated here in the hopes that it will be included in the Comment Matrix for this Final Draft and be shared with all stakeholders:	Completed	EPA designed this specification in such a way that does keep one-way and two-way systems segregated in order to fairly compare between like providers.
432	Final Draft Service Providers	N/A	4/4/2008	Two-Way STB Network	When a network is two-way, a STB can readily go into a sleep mode that consumes little energy, as it can at regular intervals briefly come out of that mode, power its communication interface and request updates to EPG and system information (such as authorizations) from the headend. This is true for Telco networks and most larger Cable networks, giving operators of these systems an ability to comply with the draft Tier 2 guidelines.	Completed	EPA designed this specification in such a way that does keep one-way and two-way systems segregated in order to fairly compare between like providers.

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433	Final Draft Service Providers	N/A	4/4/2008	One-Way STB Network	A one-way STB network, including the great majority of satellite installations as well as smaller cable systems, is incapable of this. A one-way STB has no way of requesting data and as a result must always be listening for EPG and system info. The functionality required for this precludes a sleep mode that consumes only a few watts (necessary to achieve the ~50% energy savings targeted by the Draft 3 Tier 2 guidelines). Furthermore, if the STBs in a one-way network were required to stop listening, a customer's experience with the service would be harmed: for example, DVR recordings requested by a customer who is away from home would be missed and STBs could readily miss authorizations requiring subsequent calls to customer service. By requiring one-way STBs to stop listening, the competitiveness of one-way systems is put at risk.	Completed	EPA designed this specification in such a way that does keep one-way and two-way systems segregated in order to fairly compare between like providers.
434	Final Draft Service Providers	N/A	4/4/2008	One-Way & Two-Way STB Networks	DIRECTV recognizes that if the Tier 2 guidelines were designed to be achievable by one-way networks, then the operators of two-way networks wouldn't necessarily take the additional measures of redesigning headends and STBs needed to get the 50% energy savings targeted by EPA. On the other hand, operators of one-way networks such as DIRECTV will not be able to participate in the ENERGY STAR STB program at all if they cannot foresee a path that can result in compliance with Tier 2 allowances. There is a simple solution to this problem, however: include separate Tier 2 guidelines for one-way and two-way networks. The Tier 2 allowances for one-way service provider installations would be based on improvements possible by more efficient implementations of STBs, and would be less aggressive than the Tier 2 allowances for 2-way presently proposed.	Completed	EPA designed this specification in such a way that does keep one-way and two-way systems segregated in order to fairly compare between like providers.
435	Final Draft Service Providers	N/A	4/4/2008	One-Way & Two-Way STB Networks	It is important to note that a service provider can have both one-way and two-way installations. For competitive reasons, both of the top satellite service providers have begun experimenting with connecting STBs to their customers' broadband services. In the case of DIRECTV, connected STBs number in the tens of thousands at present and are being used to deliver new Video On Demand services. In the next few years, as more customers have home networks and broadband connections, and as more satellite STBs have the ability to connect through these, more satellite service provider installations will assuredly be two-way. These two-way installations would comply with the two-way Tier 2 guidelines.	Completed	EPA designed this specification in such a way that does keep one-way and two-way systems segregated in order to fairly compare between like providers.

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436	Final Draft Service Providers	N/A	4/4/2008	Reporting Requirements	For monitoring purposes, it would be appropriate for the EPA to require service providers to report on the numbers of one-way and two-way installations as part of their annual reporting obligations.	Pending	EPA will take this consideration under advisement.
437	Final Draft Service Providers	N/A	4/4/2008	Refurbished STB Energy Savings	EPA's strong encouragement in the Comment Matrix (see row 374) that service providers improve energy efficiency of deployed products must necessarily be backed up with incentives. DIRECTV suggested a way for service providers to be incentivized to do this (by getting credit for equivalent gains achieved), and continues to suggest that a change of this type is warranted. DIRECTV did not ever suggest that these refurbished products could earn an Energy Star mark, as seems to be implied by the EPA response (see row 374).	Completed	EPA appreciates this suggestion and clarification of previous comments. At this time, EPA is retaining the requirements put forth in the service provider partnership requirements, which require partners to meet a percent of new purchases or percent of fleet. Refurbished boxes may be counted toward satisfying the fleet requirement.
438	Final Draft Service Providers	N/A	4/4/2008	Home Networking Interface and Overall Timeline for Specification	The changes from Draft 3 to the Final Draft were far more extensive than anticipated, and in at least one area (Home Networking Interface) it is DIRECTV's belief that the changes were implemented incorrectly. DIRECTV maintains that it would be appropriate for meetings to be held to discuss the changes to the Final Draft. Also, it may be necessary for another full drafting round to be planned for by EPA before a Final Spec is released.	Completed	Stakeholders were given the opportunity to comment on the Final Draft Specification, which contained changes from Draft 3. EPA carefully considered all comments in preparation of the Final Specification.
439	Final Draft Manufacturers	120-123	4/4/2008	Manufacturers Listed on ENERGY STAR Web site Option	Change lines 120-123 to: "...the Partner, at its discretion, may be listed on the ENERGY STAR Web site." As discussed at the February 1, 2008 stakeholders meeting, manufacturers who sell directly to service providers rather than through retail channels may not wish to be listed on the ENERGY STAR web site. These manufacturers should have the option of not participating in this aspect of the program.	Completed	EPA does not intend to change the language in the Final Specification, as it is important to be able to publicly display organizations with which it has a partnership. However, to address this concern and avoid possible consumer confusion, EPA will follow these guidelines for promoting partner lists on www.energystar.gov. 1) EPA will promote qualified products and Service Provider partners on the consumer-focused set-top box Web page on www.energystar.gov. 2) However, EPA will not provide a list of manufacturing partners on the consumer page. 3) Any stakeholder may search the full list of ENERGY STAR partners in the Partner Resources section of the site, including set-top box manufacturers.

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440	Final Draft Manufacturers	139-141	4/4/2008	Terminology	Change lines 139-141 to: "Any information used will be masked and aggregated by the EPA and will not reveal information specific to the Partner, including its customers, its specific industry segment, or its geographic location." We again respectfully and strongly request the EPA reconsider its previous decision to use its standard language in this area in order to better protect the confidentiality of manufacturers and the service providers participating in this new program. Left unchanged, service providers and manufactures may not participate in the ENERGY STAR program.	Completed	EPA appreciates this comment, but will continue to use the reporting language in these specifications that exists in all other specifications. A draft annual reporting form is included with distribution of the Final Specification to show stakeholders the level of data EPA believes will be sufficient to meet its reporting requirement.
441	Final Draft Manufacturers	202	4/4/2008	Terminology	Change line 202 to: "Cable STB: A STB whose principal function is to receive television signals from a broadband, hybrid fiber/coaxial, community cable distribution system and deliver them to a consumer display and/or recording device. Source: CSA C380-06 modified." The correct term should be "hybrid fiber/coaxial..."	Completed	This change has been made.
442	Final Draft Manufacturers	302	4/4/2008	Terminology	Change line 302 to: a. the STB receives a notification from the user to enter a sleep state. The notification may be one of a power/standby button press on a remote control or front panel of the unit, or an electronic signal or data packet received via a digital interface on the STB. " The existing language may be interpreted by some to mean that the only way to get the STB into sleep via the user is via the remote or front panel. However there are other options (e.g., HDMI CEC, 1394 AV/C, etc), that are available to put the STB into sleep via the user.	Completed	This change has been made, although the term "Standby" is not used.
443	Final Draft Manufacturers	324	4/4/2008	Terminology	Update C380-06 to C380-08 as CSA has updated the specification.	Completed	This change has been made.
444	Final Draft Manufacturers	Table 1	4/4/2008	Table 1 : Additional Power Requirements	Delete Tier 2 Annual Energy Allowances. We once again strongly and respectfully ask the EPA to eliminate Tier 2 criteria. Given our current set-top roadmaps, service providers cannot meet the Tier 2 criteria as specified by the dates specified. Left unchanged, service providers and manufactures may not participate in the ENERGY STAR program.	Completed	EPA believes establishing criteria for Tier 2 is important to provide a target for energy savings within the next few years. EPA will review these proposed levels with stakeholder engagement well in advance of the Tier 2 effective date to ensure they remain appropriate. Further, recognizing that there is no absolute guarantee that products will be developed that meet the criteria within the timeframe specified, EPA is not setting purchase and deployment criteria for Tier 2 products for service providers at this time.

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445	Final Draft Manufacturers	Table 2	4/4/2008	Table 2: Additional Functions	Change the term to "DOCSIS / Out-of-Band Tuners." Change the Annual Energy Allowance from 20 kWh/year to 26 kWh/year. There is no provision for ANSI/SCTE-55-1 2002 or ANSI/SCTE-55-2 2002 out-of-band tuner technology. The "Additional Tuners" allowance explicitly excludes these technologies, however they MUST be accounted for somewhere. Raising the allowance slightly to 26 kWh/year will provide the necessary energy allowance for the out-of-band tuner technologies used in set-top boxes, including DOCSIS, ANSI/SCTE-55-1 2002 or ANSI/SCTE-55-2 2002.	Completed	EPA provided a DOCSIS only adder because stakeholders felt the current state of DOCSIS, given its low deployment rates now and in the future, was better off as an adder and not as part of the cable base. EPA specifically rejected a blanket OOB adder and continues to do so.
446	Final Draft Manufacturers	Table 2	4/4/2008	Table 2: Additional Functions	Change the Annual Energy Allowance from 20 kWh/year to 35 kWh/year. 20 kWh/year is insufficient to account for the energy contribution of a home network interface such as MoCA and WiFi. We request that the EPA raise this allowance to sufficiently accommodate the energy contribution of the Home Network Interface.	Pending	EPA believes the approach as taken in the latest draft is reasonable.
447	Final Draft Manufacturers	Table 2	4/4/2008	Table 2: Additional Functions	Delete Tier 2 Annual Energy Allowances. We once again strongly and respectfully ask the EPA to eliminate Tier 2 criteria. Given our current set-top roadmaps, service providers cannot meet the Tier 2 criteria as specified by the dates specified. Left unchanged, service providers and manufactures may not participate in the ENERGY STAR program.	Completed	EPA provided a DOCSIS only adder because stakeholders felt the current state of DOCSIS, given its low deployment rates now and in the future, was better off as an adder and not as part of the cable base. EPA specifically rejected a blanket OOB adder and continues to do so.
448	Final Draft Manufacturers	Table 2	4/4/2008	Table 2: Additional Functions	Change the Annual Energy Allowance for Additional Tuners from 53 kWh/year to 35 kWh/year, and add a footnote clarifying that the annual energy allowance for Additional Tuners is a per tuner allowance. The existing text is ambiguous as to whether the allowance is applied to one or all tuners. We feel the allowance should apply to each tuner and recommend lowering the allowance to account for this approach.	Completed	The test procedure is structured to only exercise two tuners at any one time. EPA needs to provide proper incentives to shut down tuners when not in use. By providing a per tuner adder, this incentive would simply subsidize all additional tuners to be on when not in use.

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449	Final Draft Manufacturers	457-463	4/4/2008	EPSs	To qualify, the external power supply (EPS) used with STBs manufactured after the effective date of this document must be ENERGY STAR qualified or meet the no-load and active mode efficiency levels provided in the ENERGY STAR Program Requirements for Single Voltage Ac-Ac and Ac-Dc External Power Supplies, Version 2.0. The ENERGY STAR specification and qualified product list can be found at: www.energystar.gov/powersupplies . STBs manufactured prior to the effective date of this document that can meet the energy efficiency performance requirements in the ENERGY STAR STB specification do not need to use an ENERGY STAR qualified (or equivalent) EPS. The term "TV" constrains the implementation. With protocols such as UPnP, DLNA, HANA, etc., there are many devices other than a TV that can render content delivered by a STB over a home network. Multi-Room STBs should not be constrained to only working with TVs	Completed	These changes have been made.
450	Final Draft Manufacturers	476-478	4/4/2008	Multi-Rooms	This allowance may only be used for STBs that can provide independent content to more than one display device (e.g., TV, PC, portable media player, etc.). The term "TV" constrains the implementation. With protocols such as UPnP, DLNA, HANA, etc., there are many devices other than a TV that can render content delivered by a STB over a home network. Multi-Room STBs should not be constrained to only working with TVs	Completed	EPA understands that the pace of innovation in CE products is moving fast and does not want to limit the possibilities of consumers using new and innovative display methods. EPA has made a change that we think balances those new display methods while preserving the spirit of specification.
451	Final Draft Manufacturers	480-483	4/4/2008	Multi-Rooms	First, test the multi-room STB and compare the results to the specification criteria assuming the STB will deliver content to only one display device, i.e., do not include the Multi-Room allowance. If the STB passes, then it qualifies as an ENERGY STAR qualified STB under any installation configuration, i.e., it can be used for one or more display devices. The term "TV" constrains the test implementation. With protocols such as UPnP, DLNA, HANA, etc., there are many devices other than a TV that can render content delivered by a STB over a home network.	Completed	EPA understands that the pace of innovation in CE products is moving fast and does not want to limit the possibilities of consumers using new and innovative display methods. EPA has made a change that we think balances those new display methods while preserving the spirit of specification.
452	Final Draft Manufacturers	493-495	4/4/2008	Multi-Rooms	If the STB qualifies as a Multi-Room STB, manufacturer must clearly indicate in product literature that product only qualifies for ENERGY STAR when providing content to more than one display device. The term "TV" constrains the test implementation. With protocols such as UPnP, DLNA, HANA, etc., there are many devices other than a TV that can render content delivered by a STB over a home network.	Completed	EPA understands that the pace of innovation in CE products is moving fast and does not want to limit the possibilities of consumers using new and innovative display methods. EPA has made a change that we think balances those new display methods while preserving the spirit of specification.

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453	Final Draft Manufacturers	507-508	4/4/2008	Speculative Recording	Devices that provide for speculative recording must have an user accessible menu option allowing the user to disable this feature at will. The term "...easy to reach..." is ambiguous. What constitutes "easy to reach"? The EPA likely does not want to be placed in the position of determining whether a particular manufacturer's user interface is easy to reach.	Completed	This language has been amended for clarity in the Final Specification.
454	Final Draft Manufacturers	515	4/4/2008	Terminology	Replace CSA 380-06 with CSA 380-08.	Completed	This change has been made.
455	Final Draft Manufacturers	709-716	4/4/2008	Timeline	Replace "nine months" from lines 709-716 with "sixteen months". We feel the additional time is warranted, particularly given the large discrepancy between values contained in Tier 1 and Tier 2 currently contained in the document	Completed	Since EPA has provided most Tier 2 criteria levels now, stakeholders have more than nine months to prepare for the changing levels. EPA will reconfirm the Tier 2 levels at least nine months prior to the Tier 2 effective date, but stakeholders are being given more advance notice of what EPA anticipates those levels to be.
456	Final Draft Service Providers	62-65	4/4/2008	Purchase & Deployment %	Replace text on lines 62-65 with: "Purchase Requirement: ensure that 50% of all new STB purchases in a calendar year (e.g., 2009 and 2010) are ENERGY STAR qualified. "New purchases" are counted in the year in which the Service Provider takes delivery. STBs refurbished to meet ENERGY STAR may be counted towards the purchase requirement at the service provider's option." The requested changes would retain the EPA's previous language and allow refurbished boxes to be counted towards the 50% threshold (assuming they meet the necessary requirements), providing service providers with a further incentive to upgrade existing products where possible.	Completed	The Purchase requirement is intended to apply to new purchases only. Refurbished boxes may be counted toward the fleet requirement, however.
457	Final Draft Service Providers	69-70	4/4/2008	Fleet Requirement	Replace text on lines 69-70 with: "Fleet Requirement: ensure that at least 10% of all STBs used by subscribers during 2009 (15% of all STBs used by subscribers during 2010) are ENERGY STAR qualified." We feel the revised percentages represent a more attainable goal within the timeframe specified.	Completed	EPA has modified the fleet requirement for Service Providers to 10% during 2009 and 25% during 2010.

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458	Final Draft Service Providers	201-203	4/4/2008	Terminology	Replace text on 201-203 with: "Any information used will be masked and aggregated by the EPA and will not reveal information specific to the Partner, including its customers, its specific industry segment, or its geographic location."	Completed	EPA appreciates this comment, but will continue to use the reporting language in these specifications that exists in all other specifications. A draft annual reporting form is included with distribution of the Final Specification to show stakeholders the level of data EPA believes will be sufficient to meet its reporting requirement.
459	Final Draft Service Providers	427-461	4/4/2008	Testing Products for ENERGY STAR	Delete lines 427-461 because service providers do not have the equipment, facilities, nor human resources available to perform the same tests conducted by their manufacturer. Consistent with a previous position on this topic, we again feel the requirement placed on cable service providers to re-test a set-top box for ENERGY STAR® compliance after it has been previously qualified by the manufacturer is unnecessary. It is sufficient for service providers to rely on the manufacturer's statement of compliance.	Completed	EPA believes it is critical for partners to ensure that ENERGY STAR qualified products deliver on the energy savings expected by consumers. EPA feels the testing requirements outlined for Service Providers are fair and reasonable.
460	Final Draft Service Providers	472-474	4/4/2008	Tier 2	Delete text from lines 472-474 because manufacturers and service providers will be unable to meet the Tier 2 requirements as currently defined.	Completed	EPA believes establishing criteria for Tier 2 is important to provide a target for energy savings within the next few years. EPA will review these proposed levels with stakeholder engagement well in advance of the Tier 2 effective date to ensure they remain appropriate. Further, recognizing that there is no absolute guarantee that products will be developed that meet the criteria within the timeframe specified, EPA is not setting purchase and deployment criteria for Tier 2 products for service providers at this time.

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461	Final Draft Manufacturers	N/A	4/7/2008	General Comment	"Language informs thinking and unfortunately this specification introduces a new concept, Auto Power Down, without also naming the corresponding State. Greater power reductions can be achieved if the STB performs Auto Power Down, not only due to user inactivity but also due to user specified Sleep Time Periods."	Completed	The specification does not dictate into which power state the product must fall when APD occurs. This is to provide longevity to the specification in the event that manufacturers' future implementation of APD sends the product into a different low power mode. In addition, the definitions in this specification have been relatively constant throughout the development process and EPA is uncomfortable changing them at this late stage.
462	Final Draft Manufacturers	N/A	4/7/2008	Definitions	The specification is hampered by the lack of distinct names for the two Sleep states – user power down and auto power down – that may have different energy consumption characteristics. Since these two states figure as independent variables in the Annual energy (kWh/yr) formula, the specification will be improved by having separate names for each. Therefore, suggest the following three state names: (1) On/Active – An operational state in which the STB is actively delivering one or more of its principal function and some or all of its applicable secondary functions. [Unchanged] (2) Standby – A state in which the STB has less power consumption, capability and responsiveness than in the On/Active state. The STB may enter a Standby state from the On/Active state after the user pushes a power/standby button on the remote or on the unit. (3) Sleep – A state in which the STB has less power consumption, capability and responsiveness than in the On/Active state, and optionally less power consumption than the Standby state. The STB may enter the Sleep state from the On/Active state, after the us	Completed	The specification does not dictate into which power state the product must fall when APD occurs. This is to provide longevity to the specification in the event that manufacturers' future implementation of APD sends the product into a different low power mode. In addition, the definitions in this specification have been relatively constant throughout the development process and EPA is uncomfortable changing them at this late stage.

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463	Final Draft Manufacturers and Service Providers	N/A	4/7/2008	Auto Power Down	<ul style="list-style-type: none"> Auto Power Down: The capability to automatically switch from the On/Active state or from the Standby state to the Sleep state after: <ul style="list-style-type: none"> A period of time without user input, generally based on the amount of time the unit has remained "idle" from last active use (i.e., user input such as channel change, volume change, menu access, etc). Optionally based on user-settable parameters indicating Sleep Time Periods when human viewing is unlikely because they are away or asleep. This optional capability will enable the STB to be in the Sleep state for longer periods of time than if device idleness were the sole criteria for entry. User interface concepts of Programmable Thermostats are applicable: up to two Sleep time periods per day; potentially distinct programs for each day of the week, temporary exit from Sleep for user-specified number of hours and provision for a vacation override. 	Completed	The specification does not dictate into which power state the product must fall when APD occurs. This is to provide longevity to the specification in the event that manufacturers' future implementation of APD sends the product into a different low power mode. In addition, the definitions in this specification have been relatively constant throughout the development process and EPA is uncomfortable changing them at this late stage.
464	Final Draft Manufacturers	N/A	4/7/2008	TEC procedure	The TEC Assessment Formulas remain the same except for changing the names of the variables to correspond to the updated state names. Thus PTV, PSleep and PAutoPD become PTV, PStandby and PSleep, respectively.	Completed	The specification does not dictate into which power state the product must fall when APD occurs. This is to provide longevity to the specification in the event that manufacturers' future implementation of APD sends the product into a different low power mode. In addition, the definitions in this specification have been relatively constant throughout the development process and EPA is uncomfortable changing them at this late stage.
465	Final Draft Manufacturers and Service Providers	N/A	4/7/2008	General Comment	<ul style="list-style-type: none"> Introduce a distinct name for the Sleep state entered into as a result of Auto Power Down that is differentiated from the Standby state entered into as a result of user actions by pressing a button on the remote or on the unit. Modify the definition of Auto Power Down to include an optional capability for the user to specify a schedule for Sleep Time Periods. 	Completed	The specification does not dictate into which power state the product must fall when APD occurs. This is to provide longevity to the specification in the event that manufacturers' future implementation of APD sends the product into a different low power mode. In addition, the definitions in this specification have been relatively constant throughout the development process and EPA is uncomfortable changing them at this late stage.