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| 27 | Test Procedure Document | 3/2/2009 | Best Buy Exclusive Brands | Nancy Gezella | NA | Device Charging | What about device charging via iPod docks or USB when device is in active mode? | Included in revised test procedure. |
| 42 | Test Procedure Document | 3/4/2009 | Vtech | Steve Whitesell | Section 2, Item 4 | Amplifier Testing | Section 2, Item 4 indicates that amplifier tests "should be performed on any product that offers audio amplification." The application of this to items such as an A/V receiver is obvious. However, is it also intended to apply to something as simple as a radio that obviously must have an internal amplifier to drive its loudspeaker, but may have no readily accessible amplifier input and output terminals? | EPA will take this into consideration as we utilize the testing and feedback gathered to further refine the product list and what requirements are placed on what products. |
| 43 | Test Procedure Document | 3/4/2009 | Vtech | Steve Whitesell | Section 2 | Web Audio Devices | The list of products currently under consideration in Section 2 specifically mentions a Web Video Device and gives examples (Vudu, Apple TV), but fails to mention a Web Audio Device. Currently available products in this category include the ASUS Internet Radio, Grace Wireless Internet Radio, and Logitech Squeezebox Internet Radio Player. Perhaps they could be considered as falling into the Digital Media Server category, but that isn't obvious to me. It seems that if you separately identify a Web Video Device, then you should also identify a Web Audio Device (although I would use the word "Internet" instead of "Web" in both cases). | Included in revised test procedure. |
| 44 | Test Procedure Document | 3/4/2009 | Vtech | Steve Whitesell | Section 3.2 | Auto-Power Down | An Auto-Power Down (APD) mode is defined in Section 3.2 as occurring "without user input, generally based on the amount of time the component has remained "idle" from last active use, i.e., user input such as channel change, volume change, menu access, etc." This is perhaps a reasonable definition unless it is expected that all products will have an ADP mode. If I am using a radio to provide background music in my place of business, or watching the Superbowl on TV, I certainly don't want the device to go into a APD mode because I haven't touched a control in an hour, or two, or three, or even eight for the case of background music in the office! | Included in revised test procedure. |
| 45 | Test Procedure Document | 3/4/2009 | Vtech | Steve Whitesell | Section 3.3 | Pink Noise | Section 3.3 defines pink noise as having "constant audio power per frequency increment." This is not correct. As the "(A=1/f)" at the beginning of the definition indicates, the amplitude is inversely proportional to frequency. White noise has a constant output per frequency increment. Pink noise has a constant output per logarithmic frequency increment such as per octave (doubling of frequency), per decade (10-fold increase in frequency), etc. | Included in revised test procedure. |
| 46 | Test Procedure Document | 3/4/2009 | Vtech | Steve Whitesell | Section 4.1 | Digital Signal Generator | Section 4.1 lists a Digital Signal Generator "to produce sine waves and noise spectrum inputs for amplifier testing." Is this generator intended to product analog output signals or digital representations of the defined analog signals? There may be cases where an analog signal input is appropriate, and other cases where a digital input might be appropriate, but the specifics for the digital signal would depend on the nature of the amplifier's expected input signal and the type of codec(s) it uses. | Included in revised test procedure. |
| 47 | Test Procedure Document | 3/4/2009 | Vtech | Steve Whitesell | Section 4.4(d) | Output volume | Section 4.4(d) indicates the "output volume should be set to zero" when doing all tests except the amplifier tests in Section 8. I believe "minimum" would be a better choice of words than "zero" because there is a possibility that some products may still create some amount of background hum or noise when the volume control is set to minimum. | Included in revised test procedure. |
| 48 | Test Procedure Document | 3/4/2009 | Vtech | Steve Whitesell | Section 5 | Auto-Power Down | Section 5 identifies three tests, including an APD mode test, to be made on all products "as applicable." I am in hope that the "as applicable" here is in recognition that some products may not have an APD mode. | Included in revised test procedure. |
| 49 | Test Procedure Document | 3/4/2009 | Vtech | Steve Whitesell | Section 8 | Audio Power Amplifier | The tests in Section 8 are supposed to be performed "on any product that contains an audio power amplifier". If we take the case of a simple radio receiving over-the-air FM broadcast signals, is it expected that the testing will be carried out by finding the appropriate place in the internal circuitry to inject an analog input signal from the "digital signal generator" and another appropriate place in the circuit to measure the amplifier output signal? This comment also applies to a lot of other "covered products" in addition to a simple radio. | EPA will take this into consideration as we utilize the testing and feedback gathered to further refine the product list and what requirements are placed on what products. |
| 50 | Test Procedure Document | 3/4/2009 | Vtech | Steve Whitesell | Section 8.1 | Amplifier Power | I also note at least two problems with the Section 8.1 test procedure in that calls for increasing the "amplifier power" (volume control setting?) to a level that produces 1% THD for the applied sine wave. First, it is very likely that the distortion will be a function of frequency and there is no frequency specified for the test. Second, if the UUT has a codec that requires a digitally encoded input signal, there is no guarantee that a sine wave test has any real meaning. Some codecs do not do a particularly good job of reproducing pure sine waves, and some types of devices may interpret a pure sine wave as a noise signal and have circuitry that acts to suppress the signal. | EPA has updated the test procedure per your comments. Can you please identify specific devices that would suffer this problem? |
| 51 | Test Procedure Document | 3/4/2009 | Vtech | Steve Whitesell | Section 8.1 | Noise Test Procedure | There are problems with the statements of the noise test procedures in steps 9-11 of Section 8.1. They say to "repeat the test procedure" for the various nose signals. Repeat the test procedure beginning at what step in the process? I don't believe it can be from the beginning because trying to determine THD for a noise signal input would be virtually impossible. If the intent is to repeat the test procudure beginning at step 4, it should be so stated. In addition, I am not sure about how various types of devices may react to the various noise signals specified in steps 9-11 of Section 8.1. It is possible they may interpret the constant level noise signal as "noise" and activate "squelch" circuitry to suppress it. While this standard does not apply to telephony devices, I know that many telephones use circuits that reduce the gain for any constant level input signal, whether a sine wave or broadband noise. They are looking for "speech-like" fluctuations in the input level. Could there be products in the AV category that are similarly looking for "speech-like" or "music-like" fluctuations in the input signal? It seems like that might be a desirable feature for a PA system or a radio with an AM band. | EPA has updated the test procedure per your comments. Can you please identify specific devices that would suffer this problem? |
| 52 | Test Procedure Document | 3/4/2009 | ANSI-ASQ National Accreditation Board | Keith Greenway | Section 4.2 | Test Equipment Calibration | Insert the following language after the word accreditation: "that has been accredited by an ILAC recognized accreditation body," and delete the words "or equivalent": OR rephrase the section to state: "All test equipment shall be annually calibrated by a laboratory accredited to ISO/IEC 17025:2005 by an ILAC recognized accreditation body." | Included in revised test procedure. |

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| 53 | Test Procedure Document | 3/4/2009 | Orion America, Inc. | Ed Beller | Page 5 Paragraph 4 | Source signal reference | In review of the material provided covering "preliminary test procedure" for the above subject....it is noted on page (5) under paragraph 4) that "input signal shall comply to the requirements in Section 2.3(a) above". There is NO section 2.3(a), and I wonder if the reference should be to section 4.3(c).....entitled "source signal". | Included in revised test procedure. |
| 54 | Test Procedure Document | 3/6/2009 | Biamp Systems Corporation | Larry Copley | N/A | Amplifier Efficiency Tests | Biamp wishes to reiterate and expand on our proposal that EnergySTAR specification for amplifier efficiency tests be compared in the 1/8 power range since this is most representative of actual real world use. Although amplifier outputs are typically rated in peak watts, these levels are only reached for brief moments in time at the loudest points within the audio signal's dynamic range. Average power output for the purpose of worst case thermal testing (typical range for average speech and music at high volume levels) is considered by industry to be 1/8 peak output power. For example, a 500 watt rated amplifier would more typically be operated at an average power of approximately 61 watts. Please see the graph in the Supplemental Info #1 Tab for an illustratation of Class A and Class D amplifier efficiencies. Note that both Class A and Class D amplifiers only approach their theoretical maximum efficiencies of 50% and 85% respectively when they are operated at maximum rated output of 500 Watts with a continuous tone signal (quite annoying to listen to). (Part 1 of 2) | Included in revised test procedure. |
| 55 | Test Procedure Document | 3/6/2009 | Biamp Systems Corporation | Larry Copley | N/A | Amplifier Efficiency Tests | The difference in efficiencies becomes more pronounced at 1/8 power. At 61 watts, Class A amplifier is around 12% efficient while Class D amplifier is about 34% or nearly three times as efficient. While Bruce Hofer, Audio Precision Inc., suggest the only true way to accurately compare amplifier efficiencies would be ratio of Input electrical wattage to output sound levels measured in a controlled room, I believe that it would be impractical to specify a very specific and resource intensive test room and speaker description. Therefore, please consider comparing input power to output power to a resistive load at 1/8 power as determined by max power 1KHz sine wave reproduction with no more than 1% Total Harmonic Distortion. (Part 2 of 2). | Included in revised test procedure. |
| 56 | Test Procedure Document | 3/9/2009 | U.K. Market Transformation Programme | Geoff Bellingham | Section 3.2 | Device power modes | The sleep mode definition can encompass several power states (as highlighted in the original ENERGY STAR framework document) therefore it is worth noting in the Auto-power Down (APD) section that when APD is triggered, the unit may not switch from the on state to a single sleep state. It is not uncommon for complex equipment during APD to transition through several "sleep" states before arriving at a final sleep state. These events may be separated by some time and so it will be important to recognize these transitions to ensure the correct powers are measured under test. The test duration may need to be adjusted to accommodate these steps. | ENERGY STAR only recognizes one sleep state and understands that this state is dynamic because of various functions that can periodically occur within that state. We feel the best way to handle this is to increase the measurement time to ensure that a true average of behavior is captured. |
| 57 | Test Procedure Document | 3/9/2009 | U.K. Market Transformation Programme | Geoff Bellingham | Section 4.3 (c) | Source signals | The use of live signals clearly represents "real world" conditions, but this does pose several problems as follows:<br>• If the product is manufactured overseas, the live signal may not exist in that territory as AV broadcast systems vary across the globe. Manufacturers in territories without such signals would be unable to perform verification tests on their products.<br>• Live signals vary enormously – for example, video signals are heavily dependent on image content , audio signals on modulation depth etc. This could lead to poor repeatability of test measurements, or worse, selective content could be used to generate optimum results - thereby undermining the value of the test specification.<br>MTP would recommend that standard content is developed for these tests – this could be taken from international standards. | The test procedure as laid out was taken from the ENERGY STAR set top box specification. Once we are sure that the list of devices covered here will not include any typically connected to head-ends, we will reevaluate utilizing the IEC TV test procedure as a source signal. Any source signal must include both HD and SD content. |
| 58 | Test Procedure Document | 3/9/2009 | U.K. Market Transformation Programme | Geoff Bellingham | Section 4.3 (e) | Component level Data Collection | The draft specification states, "All components may be tested simultaneously, but each power-consuming device must be metered separately". It will be important to specify how highly integrated equipment should be dealt with, as varied or incorrect isolation of the components to be measured could lead to erroneous results, or results with poor repeatability between test facilities. | Included in revised test procedure. |
| 59 | Test Procedure Document | 3/9/2009 | U.K. Market Transformation Programme | Geoff Bellingham | Section 5.1 | Auto-Power Down (APD) Function (Test time: 5 minutes) | Part 3 of the procedure is to "verify that the device is in the expected APD low power state". Care should be taken to specify which low power state the specification seeks to measure as there may be several possible – see MTP comment under 3.2 device power modes above. | See #56 |
| 60 | Test Procedure Document | 3/9/2009 | U.K. Market Transformation Programme | Geoff Bellingham | Section 5.3 | Sleep Mode (Test time: 5 minutes) | Care should be taken to offer guidance on which sleep mode is to be measured, as the power consumption measured immediately after the sleep button is activated may well be higher than some time later when the product has reached its final sleep mode state. | EPA put in place an time frame under which to average out the power. We have not settled on a specific time value for that averaging and welcome any feedback stakeholders provide on where to set that number. The current 2 min value is designed to keep preliminary testing moving along. We can increase this value as evidence warrants. |
| 61 | Test Procedure Document | 3/9/2009 | U.K. Market Transformation Programme | Geoff Bellingham | Section 6 | Test Procedures for Video Devices | ALL SECTIONS - The use of a live video signal source could lead to poor repeatability of measurement – see MTP comment on clause 4.3 (c) above. | See #57 |
| 62 | Test Procedure Document | 3/9/2009 | U.K. Market Transformation Programme | Geoff Bellingham | Section 7 | Test Procedures for Removable Media Players | Both sections (playback and record) measure the power to load the media as part of the 5 minute test. This implies that the user may be loading media every 5 minutes whereas users of DVD or BD players are more likely to load media once every hour or 2 hours. MTP would recommend that the test procedure is modified either:<br>• To remove the media loading power from the test if the loading power overhead is generally very small.<br>• Or To use a more appropriate ratio of loading time to playback/record time if it is considered that the loading power is significant - to avoid distorting the steady state playback/record value. | Included in revised test procedure. |

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| 63 | Test Procedure Document | 3/13/2009 | Consumer Electronics Association | Bill Belt | Section 4.3 ( c ) | Video Source Signals | Section 4.3(c) specifies too many reference video source signals. Unless it can be demonstrated that there is a significant power consumption difference between the reference channels, the number and type of reference channels should be simplified. For example, it is sufficient to specify “an appropriate SD source” and “an appropriate HD source” and leave it to the discretion of the tester to identify and document the appropriate source. | An HD video stream has about 5 times the amount of data an SD stream does and if a device uses no less amount of power in SD than in HD, this represents a savings oportunity. EPA does not require a manufacturer take advantage of this opportunity but we must lay out test procedures and frameworks that do not preclude those who do wish to from deriving benefit. |
| 64 | Test Procedure Document | 3/13/2009 | Consumer Electronics Association | Bill Belt | Section 4.3(e) | Component level Data Collection | Section 4.3(e) requires that products with many sub-components should have each sub-component metered separately. However, for many such devices, including the home theater in a box that is cited, it makes more sense to measure the power consumption of the entire systems, and report that finding alone. | See #58 |
| 65 | Test Procedure Document | 3/13/2009 | Consumer Electronics Association | Bill Belt | Sections 5, 6, and 7 | “Test Track” Procedures | Sections 5, 6, and 7 specify test procedures that are cumbersome, difficult to understand and not standardized. The “test track” procedures appear to be based on a procedure whereby the product is manipulated in a number of steps while recording the power consumption. For many devices it may be preferable to measure the average power consumption for various modes of operation. The collected data can then be plugged into a formula to determine Average Annual Power Consumption. This is the approach taken in with IEC 62087 V3.0, which is currently being drafted. | IEC 62087 standardizes something very similar and once it is out of committee draft, we plan to adopt it for this specification. |
| 66 | Test Procedure Document | 3/13/2009 | Consumer Electronics Association | Bill Belt | NA | Test Procedure Exceptions | There should be an exception for performing certain tests. If it can be demonstrated, for example, that a specific type of device does not increase/decrease by a specified amount under certain test conditions, the manufacturer should not have to perform those tests. For example:<br>• HD/SD video: If there is no significant difference in power consumption, it should be sufficient to measure HD Only (or SD for a non-HD device).<br>• Rewind, Fast Forward, Pause: If there is no significant difference in power consumption between such functions and primary functions such as Play and Record, it should be sufficient to measure only the primary functions. | See #65 |
| 67 | Test Procedure Document | 3/13/2009 | Consumer Electronics Association | Bill Belt | Section 8 | Noise Test Procedure | The test procedures in Section 8 are also overly complicated. At most, the specified tests should be performed with a sine wave input and a pink noise input. For the purposes of this test, it is excessive to repeat with grey Noise and Brownian noise. In fact, there is often no availability of the latter signals in manufacturer’s existing test equipment. | Included in revised test procedure. |
| 68 | Test Procedure Document | 3/13/2009 | Consumer Electronics Association | Bill Belt | NA | Harmonization with other ENERGY STAR specs | Finally, we note that many of the operational power modes, protocols and test procedures defined and otherwise specified in the test procedure are different than modes, protocols and procedures commonly used in other parts of the world. As always, we urge the EPA to harmonize ENERGY STAR modes, protocols and test procedures with globally recognized standards and test procedures whenever practical. | Pending |
| 69 | Test Procedure Document | 3/13/2009 | Vtech | Steve Whitesell | Section 8 | Noise Test Procedure | Section 3.3 defines three types of noise sources (pink or 1/f noise, brownian or 1/f^2 noise, and grey or inverted A-weighting noise). Section 8 requires all three types of noise sources in addition to sine waves be used for amplifier measurements. While pink noise sources are readily available in standard laboratory test equipment, brownian and grey noise sources are not. In addition, repeating the tests with these additional noise sources will at least double the testing time over that required for just using sine waves and pink noise. Since the value added by doing these additional tests is also questionable, they should be be deleted. | See #67 |
| 97 | Test Procedure Document | 4/1/2009 | AVI Systems | Kurt Elfers | N/A | Amplifier Testing | Current manufacturer attempts at energy savings have often caused us, as integrators, troubles. Some devices when they go to "Sleep" mode will turn off the RS232 control port. This means a control system loses all communications and control ability. For most devices we have found ways to defeat this. Sometimes a setting in a menu accessed via IR remote, others have a RS232 serial string we can send when it is communicating that defeats a portion of the energy saver leaving the RS232 port active. | Pending |
| 98 | Test Procedure Document | 4/1/2009 | AVI Systems | Kurt Elfers | N/A | Amplifier Testing | Document specifies to increase amplifier power until THD (Total Harmonic Distortion) of the output is 1% or greater. 1% is probably good for utility/paging quality amplifiers. Most commercial amplifiers are rated in the range of 0.1% - 0.5%. Testing these at 1% would be forcing one to operate the amplifier above its rated power. Perhaps the specified 1% should be replaced with "Manufacturers specified maximum power or 1% if not specified." | Pending |
| 99 | Test Procedure Document | 4/1/2009 | AVI Systems | Kurt Elfers | N/A | Amplifier Efficiency Tests | Specifications state to turn down the amplifier until 30% of maximum volume. Is this 30% of maximum output voltage or 30% of maximum output power? I think it should be power for these measurements to be meaningful. Note that the relationship of voltage to power mathematically is a square function. 1/2 the voltage would equal 1/4 the power.<br><br>Similar concern for the test at 12.5% output. The 12.5% output (if measuring power) is probably the most realistic indicator of power consumption. This is where one would typically operate an amplifier for normal program content. 12.5% of max power equates to 9dB. For most systems this 9dB of headroom would be considered a minimum. The power above this level is to cover peaks in audio program without distortion. When we figure power consumption and heat loads we usually use this amplifier loading.<br><br>I would eliminate the 30% test. Do not see it being too useful. | Pending |
| 100 | Test Procedure Document | 4/1/2009 | AVI Systems | Kurt Elfers | N/A | Amplifier Efficiency Tests | Document should specify that amplifier output needs to be terminated with an appropriate impedance load. Many amplifiers can operate safely into several different load impedances. Test results will vary depending on selected impedance. | Pending |