

IBM supports the need to have defined test procedures for any measurements that are used to set criteria. In this case, the monitor On-mode power will be incorporated into an energy related benchmark, which will be used to verify if a product qualifies for the ENERGY STAR (superscript: R) label.

The test criteria proposed (see attached document from the EPA (7/19/2002) should be revised based upon the following items:

Item C- "Contrast Ratio: Contrast ratio shall be measured according to VESA FPD Standard 2.0, 302-3" should be deleted. This parameter has nearly no effect on energy measurements. The variation on power consumption caused by contrast will be below the statistical variations.

Item E - Power Measurement test conditions. The draft proposal attempts to compromise the acceptable refresh rate for both FPD (60 Hz preferred) and CRTs (85 Hz/ 75 Hz preferred) to an artificial one of 77 Hz for both.

However, when considering what is being attempted here, the BEST test conditions should be to those that are specific to the technology and comparable to those conditions already performed (e.g. during testing for TCO'99 labeling).

Therefore IBM proposes that specific test conditions be applied to each of the various technologies (CRT, LCD, as well as future developments). The current proposed test procedure is not applicable to all known display technologies. Examples are that many flat panels are not capable of running over 75Hz and darkroom measurements are not applicable to reflective displays, which do not have a back lighting system. Using the specific test conditions already being utilized by manufacturers would eliminate the need to do increasingly more measurements at other modes, which offer no additional value add.

IBM also proposes that modes are selected that are VESA standards, with the option of using the VESA GTF definition for any monitors that do not fit neatly into an existing VESA mode. The preferred mode for Flat Panel Displays should be set to 60 Hz and for CRTs set to 85 Hz. The brightness should also be set at 100 cd/m², which is in line with the current TCO'99 test procedure.

Item D - Power Measurement Protocols: The EPA defined these to be measured using five randomly chosen units measured at 100V AC at 50 Hz, 117V at 60 Hz, and 230V at 50 Hz. Although this represents the major voltage/frequency combinations worldwide, IBM suggests that before the final testing procedure is reached, that industry reports their raw data during the test procedure verification phase. The method above requires extensive testing which adds both time and cost to the product. The actual data collected during the test procedure verification phase can then be evaluated by the EPA and industry to ensure this extensive

testing is justified, especially when considering the allowable errors.
A simpler testing protocol which takes into account differences at these frequency ranges may be possible.

The TCO'99 test procedure is more objective, requiring less human judgment, and is far less time consuming than the more elaborate procedure outlined in the VESA flat panel standard. Again, the TCO'99 conditions are the accepted standard and adding more elaborate testing, requiring more time and cost for minimal to no gain, is not warranted.

Summary :

IBM supports a test method for power consumption that is objective and cost effective. Taking into account testing that is already being performed and considered acceptable in terms of accuracy required, IBM proposes using specific testing methods per the technology and utilizing comparable wording as already exists in TCO'99. Modifying test methods and conditions for the purpose to incorporate into one document does not provide the best data, but an artificial number for the sole purpose of this MOU - with added cost.

Until there is an acceptable test procedure which offers the best data for the products under consideration, criteria cannot be drawn for qualifying products - and be meaningful.

Also, this draft test procedure addresses only On-power, it is recommended that the test procedures for the inactive modes (Off and Sleep) be updated also to reflect the voltage/frequency concerns worldwide.

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