Measuring and Reducing TV Power Use

International Stakeholder Meeting

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Presented by Bob Harrison

European Policy Overview for TV Energy Efficiency Performance

- All current Energy Efficiency Programmes and Schemes at EU or National level are voluntary.
- They have traditionally used Standby Power requirement as a unique or key criterion.
- Probably driven by developments for the Japanese “Top Runner” Programme, TV Standby is a “won cause”.

European Policy Overview for TV Energy Efficiency Performance

- Principal EU TV Energy Efficiency programme is the Consumer Electronics Industry voluntary “Self Commitment”
- Involves all major International TV manufacturers.
- Covers all TV display technologies.
- Commits to improve, TV standby and “duty cycle” energy efficiency, against an agreed “Roadmap”

European Policy Overview for TV Energy Efficiency

- Results of “Self Commitment” are declared annually and based on an Energy Efficiency Index for each display technology using the principle criteria of:
- On-mode power requirement
- Standby Power requirement
- “Progress” is measured by reference to a base energy efficiency Index (set in 2003 for CRT TVs - other technologies from 2005)

European Policy Overview for TV Energy Efficiency

- Each manufacturer participating in the “Self Commitment” provides fleet TV data to a steering group. The group calculates a fleet, sales weighted average, Efficiency Index and Standby Power for each manufacturer and declares an overall average (by Screen display Technology) Specific averages for individual manufacturers are confidential and not identified in any reports to the European Commission or stakeholders.

European Policy Overview for TV Energy Efficiency

- Signatories to the “Self Commitment” must allow general access to declared power requirement performance of individual TVs but not sales data.
- Each Manufacturer has undertaken to apply an obvious (removable) label on each new TV design from June 2004 declaring the annual energy consumption and standby power of the TV based on declared values for the “Self Commitment”

European Policy Overview for TV Energy Efficiency

- 2004 – 2005 Standby Average for all TVs is 2.1W. (firm prediction of 1W for all new chassis in 2007)
- Energy Efficiency Index for CRT TVs is on track for 10 –15% reduction target by 2010
- **Problem:** No Agreed Cross-Industry Test Methodology for On-Mode Power Requirement Declaration.

A New Test Methodology – Possible Goals

- Simple to set up and complete for consistent results (repeatable results)
- Measurement results should be “fair” to the Characteristics of Current and emerging Display Technologies.
- Measurement results should reflect “in home use” power requirement.

A New Test Methodology –Possible Goals

- Agree a test signal that can be easily and consistently generated.
- The test signal should generate a power requirement, from the TV, representative of “average” broadcast and DVD material.
- The test signal should readily show up errors in display “line up” (e.g. extremes of contrast or brightness, introduced through line-up error or transit damage, that unacceptably qualifies the displayed image)

A New Test Methodology – Preliminary Work

- In close Co-operation with AGO, Australian TV Industry and UK / European TV Industry Bodies, TV test signal sequence suggested for trial purposes is video sequence CCIR 16 sourced from DVD
- This signal has a typical average picture level with constant changes in data rate
- This signal is easily judged by eye to reveal gross display line up errors or an unrepresentative luminance level

A New Test methodology – Preliminary Work

- TV should be tuned to an RF source (analogue and digital where appropriate)
- For signal APL consistency, composite line input should be used for the test video sequence unless an accurate peak luminance can be confirmed for other line signal formats. (initial tests show that HDMI interconnection is also consistent from player to player)
- The display should be full picture (no format curtaining – 4X3 and 16X9 sequences used)

A New Test Methodology – Preliminary Work

- TV tested “out of the box” as delivered by manufacturer.
- Sound muted but all supplied speakers connected.

A New Test Methodology – UK results

- Manufacturers declared power (all display technologies) is consistently higher than test sequence average power (around 10% higher)
- Re-test on CRT TVs with 3-Bar B&W pattern showed similar results.
- Re-Tests using various Labs on identical TVs showed very consistent results (2% window of results spread)

A New Test Methodology – UK Results

- Tests on New to European Market 42” PDP TV show:
- As delivered power requirement (Average)
- CCIR 16 -150W
- TV Broadcast (16 hours total four UK National Networks) 180W
- “Contrasty” DVD Film -126W
- Average DVD + Broadcast – 153W

A New Test Methodology – Urgent Needs

- International Stakeholder Expertise and Input to Evaluation Process
- Fast track development of Internationally accepted “de-facto standard” test material (video sequence) and test methodology
- Expert input on feasibility of formulating a Generic, TV Energy Efficiency Index
- Full International Standard Development