National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
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Presentation to G12 Space Subcommittee Meeting

New Orleans, LA

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Comments/Concerns

- **Microcircuits**
  - Audit Findings, New Technology Data Reviews
    - Burn-ins. On a recent audit, a review of the burn-in circuits for a QML device showed that the chip was in a disable state during the static burn-in. It wasn't drawing any current. Perhaps the new SMDs could add a statement under the burn-in paragraphs that the parts shall be kept in their enabled state during the burn-in.
    - As part of their new technology evaluation, one of the suppliers used thermal imaging to find hot spots on the die. For a device with hot spots, the thermal resistance, junction-to-case, would be much higher than the guidelines given in MIL-STD-1835. It is recommended that the effectiveness of thermal imaging technique at product development stage be investigated by a task group.
  - Class M
    - We have been told that class M parts with Q marking are equivalent to class Q parts. However, most SMDs from QML suppliers have both classes M and Q shown in table II. Is one part, one part number still a requirement? We would recommend keeping class Q and removing class M from the new SMDs.
  - Class Y Status
    - DLA-VA hosted meeting in Columbus was very well attended
    - Had the 7th meeting of the TG yesterday
    - The last issue of EEE Parts Bulletin was dedicated to Class Y

Comments/Concerns (Contd.)

- **Other Issues**
  - Relay Audit Findings
    - Relay specification does not require that the semiconductors used in their designs be QPL.
    - Some passive relay manufacturers do not have ESD controls in place.
  - 38534, ESD for Alternate Die
    - Monitor the situation for 38534 for ESD characterization of alternate die or bringing on a new die manufacturer. (Background: The 13.5 group apparently has a proposal to allow changing the die manufacturer as long as it is the same design.
  - Counterfeit
    - Examine the issue of monitoring franchise distributors

Comments/Concerns (Contd.)

- **MIL-STD-883**
  - Test Method 1014 Radioisotope Fine Leak for Flat Top Crystals (with background)
    - MIL-STD-883E, Test Method 1014.10, Dated March 1995 made no mention of limitation for counting station and so everything was fine on the use of flat top crystals.
    - However, a few years later MIL-STD-883G, Test Method 1014.12, Dated 2006 introduced limitation that the counting station shall have a minimum sensitivity of 10,000 counts per minute per micro-curie of krypton-85. Since there was no mention of any waiver for the Flat crystal (for which 10,000 was not practical or achievable; their norm is 5000-6000), it was assumed that the 10,000 min was required for all three crystals: Well, Tunnel and Flat. None of the certified labs in the country can meet this requirement for flat top.
    - At the last JEDEC, it was decided that in order to accommodate the flat crystals, the min. count requirement would change to “4500”.
    - 883 Rev J, we just received for comments, says: the counting station shall have a minimum Kr85 detectability of 500 counts per minute over and above ambient background (??).
    - An ECN type system would have helped to track why it was decided to propose a different language (who, why, technical justification).

Comments/Concerns (Contd.)

- **MIL-STD-883 (contd.)**
  - 2017 Internal Visual for Hybrids
    - NASA centers, the Aerospace Corporation and DLA-VQH spent considerable amount of effort in reviewing TM2017. They will coordinate their comments with 13.5 and DLA-VA.
  - Are the test equipment ESD safe?
    - Recommend specifying in the main body that all test equipment be ESD safe.
  - There may be additional comments as the review of MIL-STD-883J is still in progress.

Comments/Concerns (Contd.)

- **G12 Specific**
  - Some observations and recommendations to G12 to make it more effective
    - Have timeline and some sort of project management activity
    - Have clearly defined objectives. This would enable setting schedule targets rather than an open-ended best-effort type of undertaking. May also apply for G11.
    - Have a more ambitious G12 website, a database where all the contributions are collected. This encourages better presentations and makes repetitive presentations less likely.

Electronics Technology Workshop (ETW)

We are pleased to announce that registration is open for the

3rd Annual NASA Electronic Parts and Packaging (NEPP) Program's Electronics Technology Workshop (ETW).

This 2.5 day meeting focuses on providing status and plans from the NEPP Program's varying tasks on reliability and radiation aspects of electronic devices for space usage along with a few invited speakers on related topics. The meeting will be held on June 11-13th, 2012 at NASA/GSFC in Greenbelt, MD and will also have WebEx access for non-US citizens and those who are not able to travel. Space is limited, so early registration is encouraged.

A separate meeting will be held on June 14th for the AF/NRO High Reliability Virtual Electronics Center (HiREV) – registration for this meeting is not part of the ETW registration and will be handled separately.

Click the below weblink for info and to register for this free meeting:

https://nepp.nasa.gov/workshops/etw2012/

NEPAG Participants