

**ENGINEERING PRACTICE STUDY**

**TITLE: Proposed Changes to MIL-PRF-38535  
for Additional Requirements  
on  
Test Optimization Data**

**October 15, 2008**

**STUDY PROJECT 5962-2008-009**

**FINAL REPORT**

**Study Conducted by DSCC  
on  
JEDEC JC-13.2 Request**

**Prepared by:**

**Charles Saffle**

- I. OBJECTIVE: The purpose of this Engineering Practice (EP) Study was to evaluate the requested changes to MIL-PRF-38535 revision H by the user community, and determine the DoD position regarding these requested changes.
- II. BACKGROUND: Changes to MIL-PRF-38535 were requested to add requirements that manufacturers must keep test optimization data for the life of their product line, and that the manufacturers test optimization data be made available to their customers upon request. This EP Study was requested by JC-13.2 when the G-12 members raised these issues during the Joint G-12/JC-13.2 session of the May 2008 JEDEC meetings.
- III. RESULTS: The EP Study project was opened. The EP Study changes were highlighted in the affected paragraphs of MIL-PRF-38535, and were distributed for review and comment during the time period of July 10, 2008 through August 25, 2008 (see attachment). Input was solicited from all interested parties, including the military services, microcircuit manufacturers, microcircuit distributors, original equipment manufacturers, and user communities, concerning the requested changes.

Comments were received and compiled concerning the requested changes. The results and comments were reported at the Joint JC-13.2/G-12 Meeting on September 24, 2008 of the JEDEC conference in Columbus, OH.

There were 9 responses to the EP Study. 4 responses were from the military services which were favor of the changes. 1 response was from a microcircuit manufacturer who was in favor of the changes, as the requested changes define their current practice. 4 responses were from microcircuit manufacturers who were extremely opposed to the changes. There were 0 responses from the G-12 members.

After discussion of the EP Study results and comments at the Joint JC-13.2/G-12 Meeting, coupled with the lack of consensus between the military services and microcircuit manufacturers, and the lack of response from the G-12 companies, a new G-12 Task Group was formed to look at the data retention requirements in MIL-PRF-38535.

- IV. CONCLUSIONS: The results of this EP Study are not sufficient to support making the proposed changes to MIL-PRF-38535 revision H. A new G-12 task Group (TG-08-03) has been formed to look at the data retention requirements in MIL-PRF-38535.
- V. RECOMMENDATION: DSCC recommends that the proposed changes of this EP Study not be made to the current MIL-PRF-38535 revision H.

## ATTACHMENT

### STUDY PROJECT 5962-2008-009

Modify the following paragraph, J.3.12, as highlighted, in appendix J of MIL-PRF-38535:

J.3.12 Test optimization. The process used by the manufacturer to optimize testing utilizing the best commercial practices available while still assuring all performance, quality and reliability requirements herein. All of the applicable JEP121 process elements shall be addressed for test optimization. Any screen or TCI test prescribed herein may be reduced, modified, moved, or eliminated by the QML manufacturer provided the following considerations are addressed as a minimum.

- a. Nodes critical to test outcome, called test critical nodes, have been identified and are in control in accordance with EIA-557.
- b. Test critical nodes have exhibited sufficient capability to assure low product defect rates.
- c. An understanding and control of assignable causes at test critical nodes.
- d. The long term reliability of devices remains unaffected or is improved.
- e. Low defect rates in the process and delivered product are maintained.
- f. Measurements taken for out of control conditions along with corrective actions are recorded and this data is maintained for ~~a time period consistent with data retention requirements herein~~ the life of the product line.
- g. Method and frequency for revalidation of optimized tests shall be defined in the manufacturer's documentation.
- h. All test optimization data shall be maintained for the life of the product line. The manufacturer's test optimization data shall be made available to the acquiring activity and to the QA upon request.**

The manufacturer is expected to maintain the established process control and evaluate the effect on quality and reliability of any out of control conditions that may exist at critical nodes. The manufacturer shall also evaluate if a relationship exists between any optimized test and any field failure returns, take appropriate corrective actions, and report this information as part of the TRB status reports. Regardless of testing modifications, the manufacturer shall supply product capable of passing any screening or TCI/QCI test prescribed herein. As a part of the QML philosophy and the conversion of customer requirements the manufacturer shall communicate variations in screening, end-of-line testing with customers as appropriate. This information shall be available from the manufacturer ~~and~~ to the QA.