

MAY 7, 1997

TEST REPORT #95704

MECHANICAL SHOCK/RANDOM VIBRATION

EGA SOCKET
256 POSITION (21mm)



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CERTIFICATION

This is to certify that the evaluation described herein was designed and executed by personnel of Contech Research, Inc.

All equipment and measuring instruments used during testing were calibrated and traceable to NIST according to ISO 10012-1 and ANSI/NCSL 2540-1, as applicable.

All data, raw and summarized, analysis and conclusions presented herein are the property of the test sponsor. No copy of this report, in part or in full, shall be forwarded to any agency, customer, etc., by Contech Research without the written approval of the test sponsor.



Thomas Peel
Vice President and
Director of Test Program Development

TP:js



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SCOPE

To perform Mechanical Shock and Random Vibration Testing on the 21mm (256 position), BGA Sockets

APPLICABLE DOCUMENTS

1. Unless otherwise specified, the following documents of issue in effect at the time of testing performed form a part of this report to the extent as specified herein. The requirements of sub-tier specifications and/or standards apply only when specifically referenced in this report.
2. Product Specifications: EIA Interim Standard - EIA/IS701
3. Standards: EIA Publication 364

TEST SAMPLES AND PREPARATION

1. The following test samples were submitted by the test sponsor, _____ for the evaluation to be performed by Contech Research, Inc.

Description

a) 21mm BGA Sockets (256 position)

2. Unless otherwise indicated, all materials were certified by the manufacturer to be in accordance with the applicable product specification.
3. Applicable qualified mating devices were supplied by IBM Microelectronics Division.
4. The BGA Sockets were surface mounted to test boards and reflowed as follows:
 - a) Solder Paste (0.005 inch thick) was screened on to the BGA pattern on the test board.
 - b) The BGA sockets were assembled to the test boards via a computerized "pick and place" system.



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TEST SAMPLES AND PREPARATION - Continued

- c) The test samples were reflowed via a hot air convection oven.
- d) The test samples were cleaned ultrasonically.
- 5. Test headers were attached and soldered to the test boards at designated locations. These headers are used to interconnect the test units to the computerized data acquisition system.
- 6. The BGA devices were assembled to each socket and "locked" in place.
- 7. In performing initial and all subsequent low level circuit resistance measurements, the test sample was placed in a holding fixture with no stress or pressure being applied to the contact interface. Receptacle connectors were mated to the applicable header connectors on the test board. The connectors were interconnected to a DAM/power supply, scanner system and data acquisition system.
- 8. Low level circuit resistance was measured across daisy chained contact positions and were automatically monitored each measurement operation.
- 9. Figure #1 indicates the position locations within the mating device. Said positions are shown through the mating device.
- 10. The positions monitored were distributed as equally as possible throughout each connector row. Corner and middle positions in each pattern were monitored.
- 11. Unless otherwise specified in the test procedures used, no further preparation was used.

TEST SELECTION

The following test groups were established, see Test Plan Flow Diagram, Figure #2.



SAMPLE CODING

1. All samples were coded. Mated test samples remained with each other throughout the test group/sequences for which they were designated. Coding was performed in a manner which remained legible for the test duration.
2. The test samples were coded in the following manner:

STEAM AGED SAMPLES

ID# 1,2,4,8,10,12

NON STEAM AGED SAMPLES

ID# 17,18,19,20,21,22,23,24,25,27,28,30

FIGURE #1

Position Locations

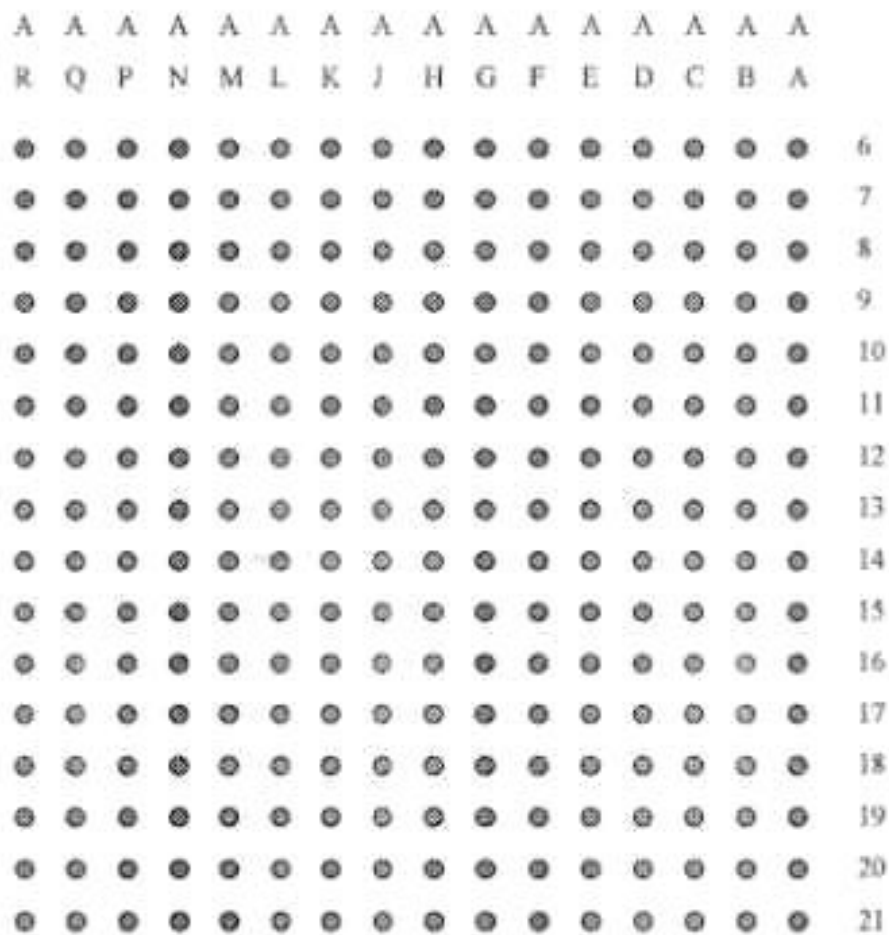


FIGURE #2

TEST PLAN FLOW DIAGRAM

SAMPLE PREPARATION



LLCR



MECHANICAL
SHOCK



RANDOM
VIBRATION



LLCR

GROUP 1

DATA SUMMARY

TEST

REQUIREMENT

RESULTS

GROUP 1 (SEQUENCE II)

LLCR

- STEAM AGED	RECORD	193.3 mΩ MAX.
- NON STEAM AGED	RECORD	1145.1 mΩ MAX.

MECHANICAL SHOCK

- STEAM AGED	NO DAMAGE	PASSED
- NON STEAM AGED	NO DAMAGE	PASSED

LLCR

- STEAM AGED	+20.0 mΩ MAX.CHG.	+6.3 mΩ MAX.CHG.
- NON STEAM AGED	+20.0 mΩ MAX.CHG.	+83.7 mΩ MAX.CHG.

RANDOM VIBRATION

- STEAM AGED	NO DAMAGE	PASSED
- NON STEAM AGED	NO DAMAGE	PASSED

LLCR

- STEAM AGED	+20.0 mΩ MAX.CHG.	+14.8 mΩ MAX.CHG.
- NON STEAM AGED	+20.0 mΩ MAX.CHG.	+487.3 mΩ MAX.CHG.



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