AUGUST 12, 2010

TEST REPORT #210329
REVISION 1.2

QUALIFICATION TESTING

PART NUMBERS

SEAF8-30-05.0-L-06-2
SEAM8-30-S05.0-L-06-2

SAMTEC, INC.

APPROVED BY: ALICE HATHAWAY
PROJECT ENGINEER
CONTECH RESEARCH, INC.

ilac-MRA
1478 - 01
ACCREDITED
Test Laboratory
1478 - 02

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REVISION HISTORY

DATE	REV. NO.	DESCRIPTION	ENG.
8/12/2010	1.0	Initial Issue	APH
9/9/2010	1.1	Sequence c data updated at test sponsor's request.	
		Appendix A added.	APH
8/11/2011	1.2	Part numbers revised at test sponsor's request	APH

CERTIFICATION

This is to certify that the evaluation described herein was designed and executed by personnel of Contech Research, Inc. It was performed with the concurrence of Samtec, Inc. of New Albany, IN who was the test sponsor.

All equipment and measuring instruments used during testing were calibrated and traceable to NIST according to ISO 10012-1 and ANSI/NCSL Z540-1 and MIL-STD-45662 as applicable.

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

APPROVED BY: ALICE HATHAWAY
PROJECT ENGINEER
CONTECH RESEARCH, INC.

APH:cf

SCOPE

To perform Qualification testing on SEAF8 connectors as manufactured and submitted by the test sponsor Samtec, Inc.

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. Samtec Test Plan: TC1021-3407 Rev. B

3. Standard: EIA Publication 364

TEST SAMPLES AND PREPARATION

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

   Part Numbers

   a) Part - SEAF8-30-05.0-L-06-2
   b) Mating Part - SEAM8-30-S05.0-L-06-2

2. Test samples were supplied assembled and terminated to test boards by the test sponsor. Specific boards were supplied for the following tests:

   - LLCR,
   - Shock & Vibration, nanosecond event detection

3. Test leads were attached to the appropriate measurement areas of the test samples and applicable mating elements.

4. The test samples were tested in their ‘as received’ condition.

5. Unless otherwise specified in the test procedures used, no further preparation was used.

6. The mated test samples were secured via a stabilizing medium to maintain mechanical stability during testing.

TEST SELECTION

1. See Test Plan Flow Diagram, Figure #1, for test sequences used.

2. Test set ups and/or procedures which are standard or common are not detailed or documented herein provided they are certified as being performed in accordance with the applicable (industry or military) test methods, standards and/or drawings as specified in the detail specification.

SAMPLE CODING

1. All samples were coded by Contech Research. 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:

Sequence C: Group A – C-A-1 through C-A-8

Sequence D: Group A – D-A-1, D-A-2, D-A-3

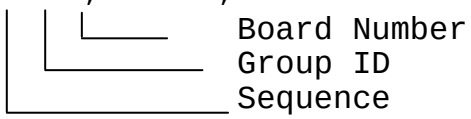
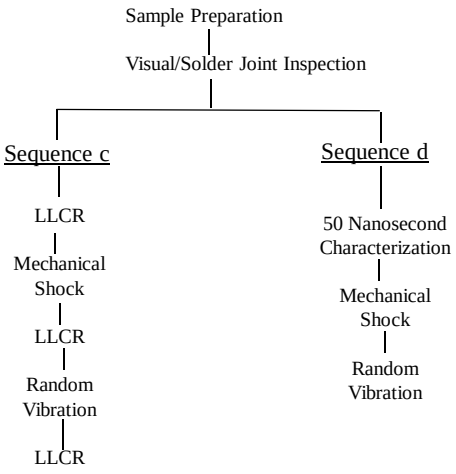


FIGURE #1

TEST PLAN FLOW DIAGRAM

Part: SEAF8-30-05.0-L-06-2
Mating Part: SEAM8-30-S05.0-L-06-2



Group A
192 points,
8 connector pairs

Group A
3 connector pairs
4th for control channel

DATA SUMMARY

TEST	REQUIREMENTS	RESULTS
SEQUENCE C		
GROUP A		
LLCR	RECORD	20.7 mΩ MAX.
MECHANICAL SHOCK	NO DAMAGE	PASSED
LLCR	+10.0 mΩ MAX.CHG.	+20.6 mΩ MAX.
RANDOM VIBRATION	NO DAMAGE	PASSED
LLCR	+10.0 mΩ MAX.CHG.	+19.0 mΩ MAX.
SEQUENCE D		
GROUP A		
MECHANICAL SHOCK	NO DAMAGE	PASSED
	50 NANOSECOND	PASSED
RANDOM VIBRATION	NO DAMAGE	PASSED
	50 NANOSECOND	PASSED

LLCR: Low Level Circuit Resistance

EQUIPMENT LIST

ID#	Next Cal	Last Cal	Equipment Name	Manufacturer	Model #	Serial #	Accuracy	Freq.Cal
553	3/19/2011	3/19/2010	12 channel Power Unit	PCB Co.	483A	1303	See Cal Cert	12mon
601			Computer	A.M.I.	P111-450	082714	N/A	N/A
673	8/19/2010	8/19/2009	Microohm Meter	Keithley Co.	580	0681911	See Cal Cert	12 mon.
677	10/20/2010	10/20/2009	Microohm Meter	Keithley Co.	580	0685122	See Cal Cert	12 mon
1028	2/16/2011	2/16/2010	Event Detector	Analysis Tech	32 EHD	981019	See Cal.Cert	12mon
1147	12/10/2010	12/10/2009	Digital O-Scope	Tektronix	11801C	B030915	See Cal Cert	12mon.
1166	8/24/2010	8/24/2009	Sine/Rndm Vib Control Digitizer	Hewlett Packard	E1432A	US39342279	See Cal Cert	12mon
1167			Interface	Hewlett Packard	E8491B	US390100753	N/A	N/A
1168			Mainframe	Hewlett Packard	E8408A	US39000357	N/A	N/A
1271			Amplifier	Unholtz Dickie	SA15	3483	N/A	N/A
1272			Shaker Table	Unholtz Dickie	S202PB	263	N/A	N/A
1276			Computer	ARC.Co.	Pent-450	N/A	N/A	N/A
1395			Vib Slip Table	M Rad	Vibraglide	100-3889	N/A	N/A
1426			Computer	E-Machines	T2341	QL235-703-00880	N/A	N/A
1521	4/28/2011	4/28/2010	Accelerometer	PCB	353B04	118492	See Cal Cert	12mon
1634	9/11/2010	9/11/2009	Vibration Controller	HP Agilent	E1434A	US38090307	See Cal Cert	12 mon
5045	12/10/2010	12/10/2009	TDR -Sampling Head	Tektroniks	SD-24	B0221502	See Cal Cert	12 mon

TEST RESULTS

SEQUENCE C
GROUP A

PROJECT NO.: 210329	SPECIFICATION: TC1021-3407 Rev. B
PART NO.: See Page 4	PART DESCRIPTION: See Page 4
SAMPLE SIZE: 8 Pairs	TECHNICIAN: GL
START DATE: 7/26/10	COMPLETE DATE: 7/26/10
ROOM AMBIENT: 22ºC	RELATIVE HUMIDITY: 50%
EQUIPMENT ID#: 601, 677	

LOW LEVEL CIRCUIT RESISTANCE (LLCR)

PURPOSE:

1. To evaluate contact resistance characteristics of the contact systems under conditions were applied voltages and currents do not alter the physical contact interface and will detect oxides and films which degrade electrical stability. It is also sensitive to and may detect the presence of fretting corrosion induced by mechanical or thermal environments as well as any significant loss of contact pressure.

2. This attribute was monitored after each preconditioning and/or test exposure in order to determine said stability of the contact systems as they progress through the applicable test sequences.

3. The electrical stability of the system is determined by comparing the initial resistance value to that observed after a given test exposure. The difference is the change in resistance occurring whose magnitude establishes the stability of the interface being evaluated.

PROCEDURE:

1. The test was performed in accordance with EIA 364, Test Procedure 23 with the following conditions.

-continued on next page.

PROCEDURE: -continued

2. Test Conditions:

a) Test Current : 10 milliamps maximum
b) Open Circuit Voltage : 20 millivolts
c) No. of Positions Tested : 24 per test sample

REQUIREMENTS:

Low level circuit resistance shall be measured and recorded.

RESULTS:

1. The following is a summary of the data observed:

LOW LEVEL CIRCUIT RESISTANCE
(milliohms)

SIGNAL DATA

Sample ID#	Avg.	Max.	Min.
C-A-1	16.8	17.2	16.2
C-A-2	17.7	20.7	17.0
C-A-3	17.2	18.0	16.7
C-A-4	17.6	19.6	16.8
C-A-5	17.3	18.1	16.7
C-A-6	17.0	18.1	16.1
C-A-7	17.1	18.2	16.6
C-A-8	17.2	18.4	16.6

2. See data files 21032901 through 21032908 for individual data points.

PROJECT NO.: 210329 SPECIFICATION: TC1021-3407 Rev. B

PART NO.: See Page 4 PART DESCRIPTION: See Page 4

SAMPLE SIZE: 8 Pairs TECHNICIAN: GL

START DATE: 7/27/10 COMPLETE DATE: 7/28/10

ROOM AMBIENT: 22ºC RELATIVE HUMIDITY: 50%

EQUIPMENT ID#: 553, 673, 1166, 1167, 1168, 1271, 1272, 1276, 1395, 1426, 1521, 1634

MECHANICAL SHOCK (SPECIFIED PULSE)

PURPOSE:

To determine the mechanical and electrical integrity of connectors for use with electronic equipment subjected to shocks such as those expected from handling, transportation, etc.

PROCEDURE:

1. The test was performed in accordance EIA 364, Test Procedure 27.

2. Test Conditions:

    a) Peak Value : 100 G
    b) Duration : 6 Milliseconds
    c) Wave Form : Half-Sine
    d) Velocity : 12.3 Feet Per Second
    e) No. of Shocks : 3 Shocks/Direction, 3 Axis (18 Total)

3. A stabilizing medium was used such that the mated test samples did not separate during the test.

4. Figure #2 illustrates the test sample fixturing utilized during the test.

5. All subsequent variable testing was performed in accordance with the procedures previously indicated.

REQUIREMENTS: See Next Page

REQUIREMENTS:

1. There shall be no evidence of physical damage to the test samples as tested.

2. The change in low level circuit resistance shall be less than +10.0 milliohms.

RESULTS:

1. There was no evidence of physical damage to the test samples as tested.

2. The following is a summary of the data observed:

CHANGE IN
LOW LEVEL CIRCUIT RESISTANCE
(milliohms)

SIGNAL DATA

Sample ID#	Avg. Change	Max. Change
C-A-1	+0.4	+1.4
C-A-2	+0.5	+20.6
C-A-3	-0.0	+0.9
C-A-4	-0.3	+0.6
C-A-5	+0.4	+1.7
C-A-6	+0.9	+4.0
C-A-7	-0.0	+0.7
C-A-8	+1.0	+6.9

3. See data files 21032901 through 21032908 for individual data points.

4. There was no evidence of physical damage to the test samples as tested.

5. The Mechanical Shock characteristics are shown in Figures #3 (Calibration Pulse) and #4 (Test Pulse). Each figure displays the shock pulse contained within the upper and lower limits as defined by the appropriate test specification.

FIGURE #2

TYPICAL FIXTURING – MECHANICAL SHOCK

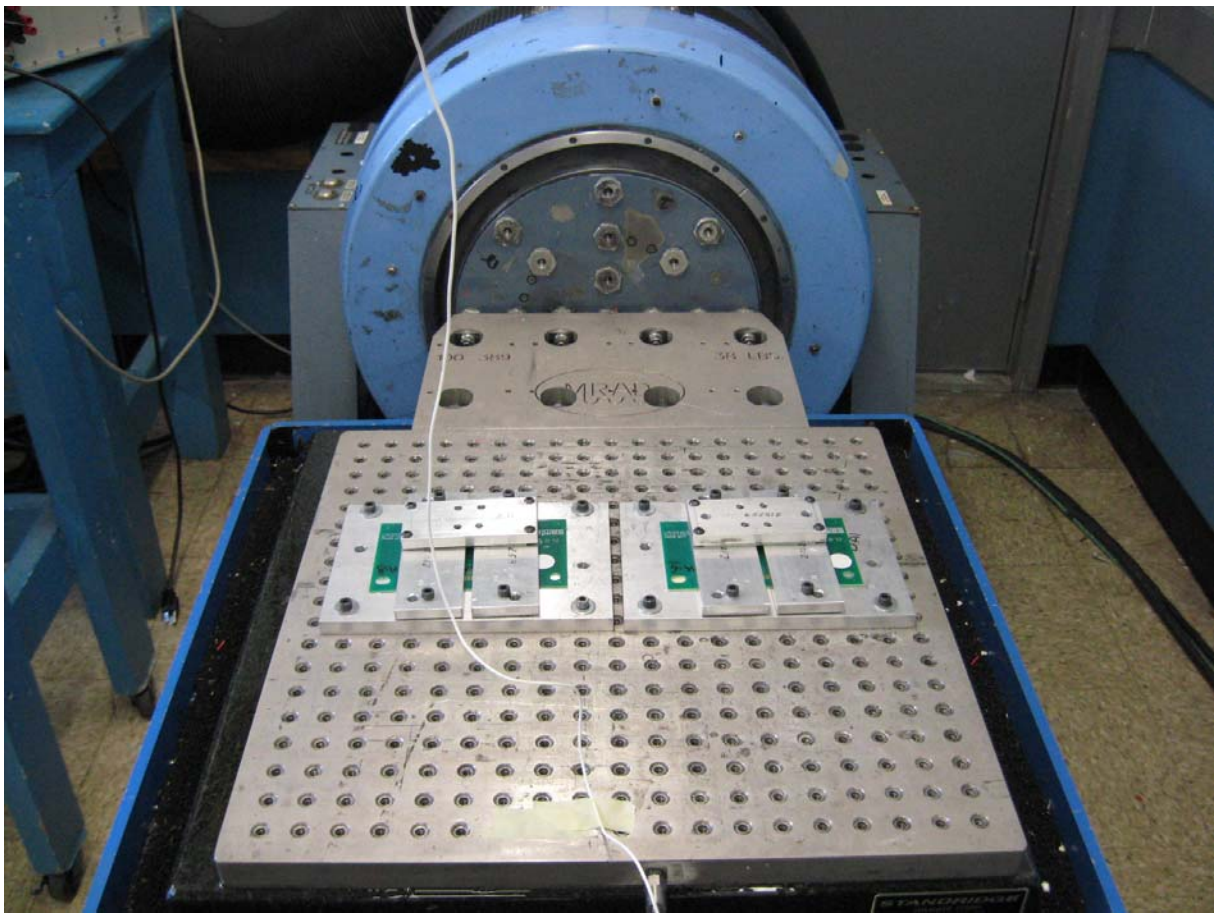
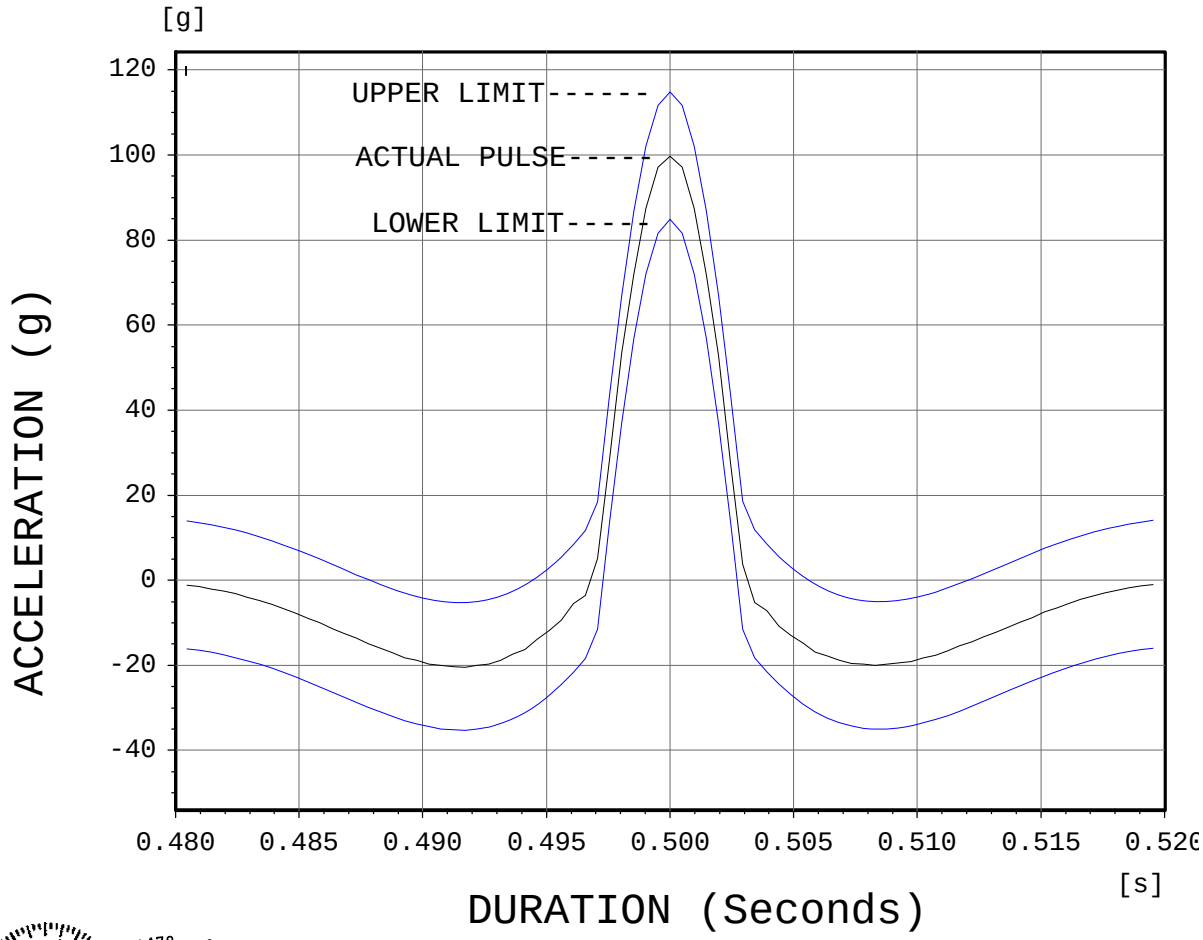


FIGURE #3

Classical Shock **Channel 1**



Project 210329
Samtec
100 G's 6 mS
Half Sine Wave
Cal Wave 1
7-27-2010

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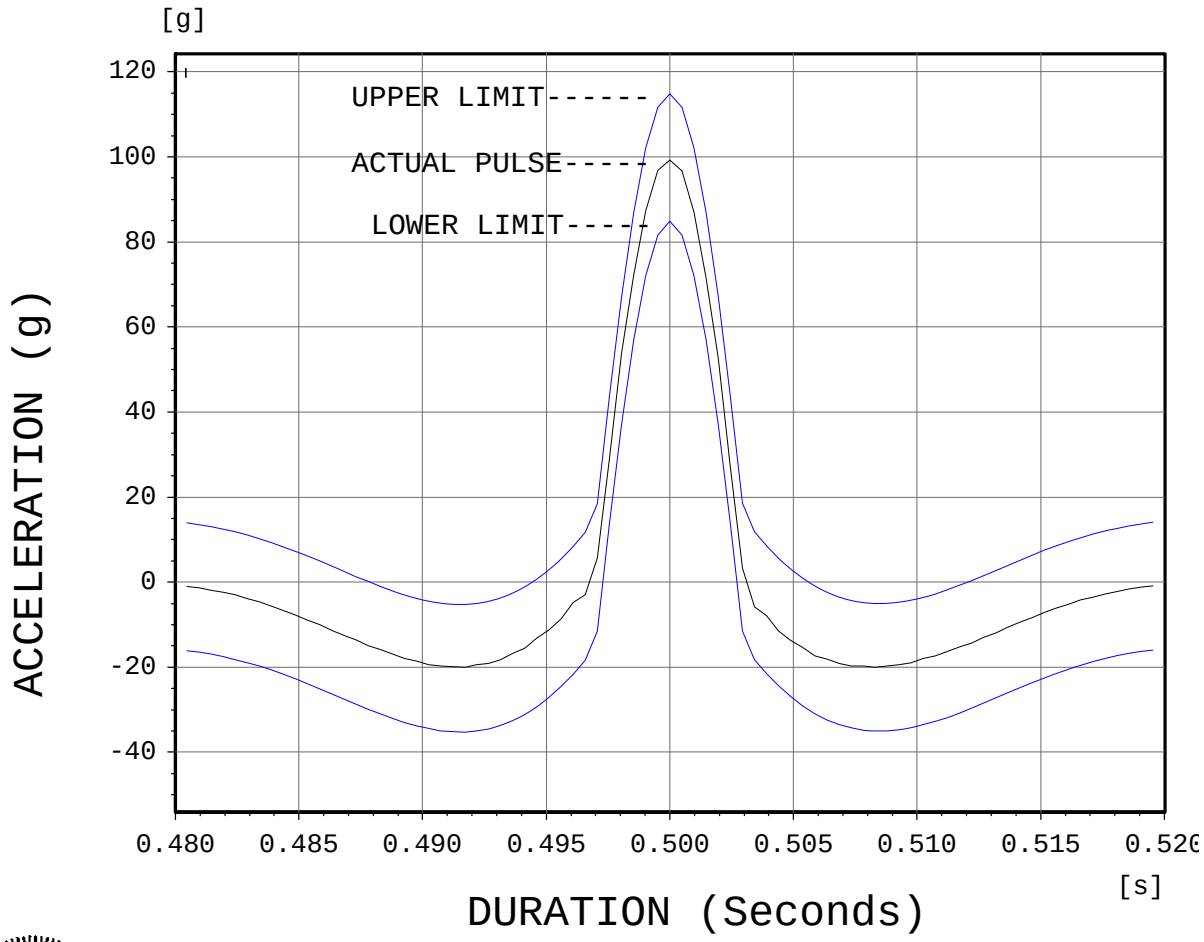
FIGURE #4

Classical Shock

Channel 1



Project 210329
Samtec
100 G's 6 mS
Half Sine Wave
Actual Wave
7-27-2010

PROJECT NO.: 210329	SPECIFICATION: TC1021-3407 Rev. B
PART NO.: See Page 4	PART DESCRIPTION: See Page 4
SAMPLE SIZE: 8 Pairs	TECHNICIAN: GL
START DATE: 7/28/10	COMPLETE DATE: 7/30/10
ROOM AMBIENT: 22ºC	RELATIVE HUMIDITY: 52%
EQUIPMENT ID#: 553, 601, 677, 1166, 1167, 1168, 1271, 1272, 1395, 1426, 1521, 1634	

VIBRATION, RANDOM

PURPOSE:

1. To establish the mechanical integrity of the test samples exposed to external mechanical stresses.

2. To determine if the contact system is susceptible to fretting corrosion.

3. To determine if the electrical stability of the system has degraded when exposed to a vibratory environment.

PROCEDURE:

1. The test was performed in accordance with EIA 364, Test Procedure 28.

2. Test Conditions:

   a) Power Spectral Density : 0.01 G^2/Hz
   b) G 'RMS' : 7.56
   c) Frequency : 50 to 2000 Hz
   d) Duration : 2.0 hour per axis (3 axes total)

3. A stabilizing medium supplied by the test sponsor was used so that the mated test samples did not separate during the test.

4. Figure #5 illustrates the test sample fixturing utilized during the test.

-continued on next page.

PROCEDURE:-continued

5. All subsequent variable testing was performed in accordance with procedures previously indicated.

REQUIREMENTS:

1. There shall be no evidence of physical damage to the test samples as tested.

2. The change in low level circuit resistance shall be less than +10.0 milliohms.

RESULTS:

1. There was no evidence of physical damage to the test samples as tested.

2. The following is a summary of the data observed:

CHANGE IN
LOW LEVEL CIRCUIT RESISTANCE
(milliohms)

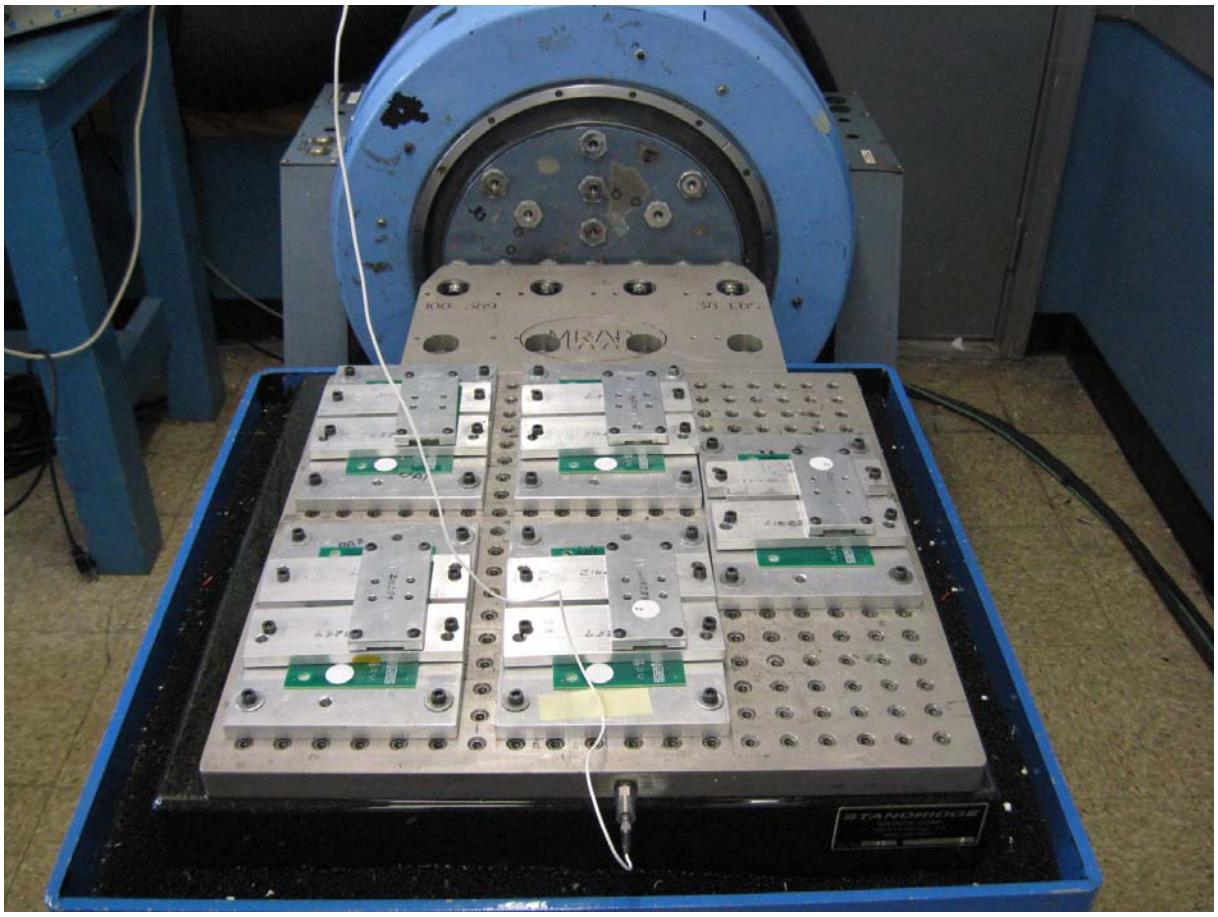
SIGNAL DATA

Sample ID#	Avg. Change	Max. Change
C-A-1	+0.6	+3.5
C-A-2	+0.4	+19.0
C-A-3	+0.3	+1.2
C-A-4	-0.2	+0.7
C-A-5	+0.1	+1.0
C-A-6	+0.4	+1.9
C-A-7	+0.1	+8.1
C-A-8	+1.3	+16.9

3. See data files 21032901 through 21032908 for individual signal data points.

FIGURE #5

TYPICAL FIXTURING - RANDOM VIBRATION



LLCR DATA FILES

FILE NUMBERS

21032901
21032902
21032903
21032904
21032905
21032906
21032907
21032908

Low Level Circuit Resistance - Delta Values				
Project:	210329		Tech:	GL
Customer:	Samtec		Subgroup:	Seq C Gr A
Product:	SEAF8/SEAM8 Connector		File No:	21032901
Description:	ID# C-A-1			
Open circuit voltage:		20mv	Current:	10ma
Units: milliohms				
Temp ºC	22	22	22	
R.H. %	50	52	48	
Date:	26Jul10	28Jul10	30Jul10	
Pos. ID	Initial	M Shock	Vibration	
1	16.6	0.6	0.6	
2	16.7	0.4	1.4	
3	16.9	1.4	1.1	
4	16.5	0.3	0.6	
5	17.0	0.8	0.8	
6	16.5	0.7	3.5	
8	17.0	0.5	0.7	
9	16.8	0.1	-0.4	
10	16.7	0.2	0.5	
11	16.6	0.3	0.7	
12	16.6	0.7	0.8	
13	16.8	0.2	0.3	
14	17.2	0.5	0.9	
15	16.6	0.7	1.0	
16	16.8	0.1	-1.7	
17	16.2	0.8	1.0	
18	16.5	0.1	-0.1	
19	17.1	0.7	1.7	
20	17.6	0.3	-0.5	
21	16.5	0.5	0.2	
22	17.0	-0.2	-0.1	
23	17.0	0.1	0.1	
24	17.1	0.0	0.1	
MAX	17.6	1.4	3.5	
MIN	16.2	-0.2	-1.7	
AVG	16.8	0.4	0.6	
STD	0.3	0.4	1.0	
Open	0	0	0	
Tech	BE	GL	BE	
Equip ID	601	673	601	
	677	1276	677	

Low Level Circuit Resistance - Delta Values				
Project:	210329		Tech:	GL
Customer:	Samtec		Subgroup:	Seq C Gr A
Product:	SEAF8/SEAM8 Connector		File No:	21032902
Description:	ID# C-A-2			
Open circuit voltage:		20mv	Current:	10ma
Units: milliohms				
Temp ºC	22	22	22	
R.H. %	50	52	48	
Date:	26Jul10	28Jul10	30Jul10	
Pos. ID	Initial	M Shock	Vibration	
1	17.4	-0.4	-0.5	
2	17.2	-0.4	-0.2	
3	18.0	-0.4	-0.3	
4	17.6	-0.4	-0.3	
5	17.0	0.0	0.2	
6	17.5	-0.8	-0.2	
7	19.2	20.6	2.1	
8	17.1	-0.2	0.2	
9	17.2	-0.4	-0.3	
10	17.2	-0.5	-0.2	
11	17.1	-0.2	-0.3	
12	17.7	-0.4	-0.8	
13	17.2	-0.2	-0.7	
14	17.3	-0.4	-0.2	
15	20.7	-3.7	-3.9	
17	17.3	0.0	0.3	
18	20.5	-3.6	-2.7	
19	17.4	6.0	19.0	
20	17.3	-0.4	0.3	
21	18.7	-1.8	-1.6	
22	17.2	0.3	0.7	
23	17.3	-0.8	-0.6	
24	17.1	0.4	0.1	
MAX	20.7	20.6	19.0	
MIN	17.0	-3.7	-3.9	
AVG	17.7	0.5	0.4	
STD	1.0	4.7	4.2	
Open	0	0	0	
Tech	BE	GL	BE	
Equip ID	601	673	601	
	677	1276	677	

Low Level Circuit Resistance - Delta Values				
Project:	210329		Tech:	GL
Customer:	Samtec		Subgroup:	Seq C Gr A
Product:	SEAF8/SEAM8 Connector		File No:	21032903
Description:	ID# C-A-3			
Open circuit voltage:		20mv	Current:	10ma
Units: milliohms				
Temp ºC	22	22	22	
R.H. %	50	52	48	
Date:	26Jul10	28Jul10	30Jul10	
Pos. ID	Initial	M Shock	Vibration	
1	18.0	-0.9	-0.5	
2	16.7	0.7	0.7	
3	17.3	-0.1	0.7	
4	17.4	0.0	0.2	
5	16.8	0.1	1.2	
6	16.8	0.9	1.1	
7	17.0	0.5	1.0	
8	17.2	-0.3	0.1	
9	17.2	-0.1	0.6	
10	17.2	0.1	0.2	
11	16.9	-0.2	0.0	
12	17.0	0.1	0.3	
13	16.9	0.2	0.2	
14	17.4	-0.4	0.0	
15	17.1	-0.3	0.3	
16	17.3	0.0	0.3	
17	17.1	-0.2	0.4	
18	16.9	-0.2	0.0	
19	17.4	0.4	0.01	
21	17.2	0.0	0.0	
22	17.0	0.1	-0.1	
23	17.6	-0.2	-0.1	
24	18.0	-0.5	0.0	
MAX	18.0	0.9	1.2	
MIN	16.7	-0.9	-0.5	
AVG	17.2	0.0	0.3	
STD	0.3	0.4	0.4	
Open	0	0	0	
Tech	BE	GL	BE	
Equip ID	601	673	601	
	677	1276	677	

Low Level Circuit Resistance - Delta Values				
Project:	210329		Tech:	GL
Customer:	Samtec		Subgroup:	Seq C Gr A
Product:	SEAF8/SEAM8 Connector		File No:	21032904
Description:	ID# C-A-4			
Open circuit voltage:		20mv	Current:	10ma
Units: milliohms				
Temp ºC	22	22	22	
R.H. %	50	52	54	
Date:	26Jul10	28Jul10	29Jul10	
Pos. ID	Initial	M Shock	Vibration	
1	16.9	0.1	0.7	
2	17.1	-0.2	-0.2	
3	19.6	-1.3	-0.6	
4	18.2	-0.8	-0.7	
5	18.0	-0.6	-0.3	
6	18.6	-1.2	-0.9	
7	18.0	-0.4	-0.5	
8	18.9	-0.5	-0.5	
9	17.4	-0.3	-0.6	
10	17.5	-0.3	0.1	
11	17.7	-0.1	0.1	
12	17.8	-0.2	-0.2	
13	17.4	0.3	0.2	
14	17.8	-0.3	0.3	
15	17.3	-0.2	0.3	
16	17.3	-0.3	-0.5	
17	17.4	-0.2	-0.2	
18	16.8	0.3	0.3	
19	16.9	0.2	0.3	
20	17.1	0.0	-0.1	
21	17.3	0.3	-0.2	
22	17.2	-0.5	-0.7	
23	17.0	0.6	0.3	
24	17.7	-0.7	-0.9	
MAX	19.6	0.6	0.7	
MIN	16.8	-1.3	-0.9	
AVG	17.6	-0.3	-0.2	
STD	0.7	0.5	0.4	
Open	0	0	0	
Tech	BE	GL	GL	
Equip ID	601	673	673	
	677	1276	1276	

Low Level Circuit Resistance - Delta Values				
Project:	210329		Tech:	GL
Customer:	Samtec		Subgroup:	Seq C Gr A
Product:	SEAF8/SEAM8 Connector		File No:	21032905
Description:	ID# C-A-5			
Open circuit voltage:		20mv	Current:	10ma
Units: milliohms				
Temp ºC	22	22	22	
R.H. %	50	52	48	
Date:	26Jul10	28Jul10	30Jul10	
Pos. ID	Initial	M Shock	Vibration	
1	16.9	0.6	0.2	
2	17.0	0.1	0.1	
3	17.7	1.7	1.0	
4	16.7	0.0	0.4	
5	17.4	1.6	0.4	
6	16.7	0.5	0.2	
7	17.9	-0.1	-0.2	
8	18.1	0.7	0.8	
9	17.6	0.4	0.2	
10	17.2	0.8	-0.1	
11	17.8	0.1	0.1	
12	17.3	0.6	0.7	
13	16.9	0.6	0.4	
14	17.0	-0.2	0.0	
15	16.8	0.3	0.0	
16	17.1	-0.1	-0.3	
17	18.0	0.1	-0.3	
18	17.1	-0.1	-0.6	
19	16.9	0.0	-0.1	
20	17.0	0.0	0.1	
21	17.5	0.4	-0.4	
22	17.1	0.3	0.2	
23	16.8	0.4	0.0	
24	17.6	0.2	0.1	
MAX	18.1	1.7	1.0	
MIN	16.7	-0.2	-0.6	
AVG	17.3	0.4	0.1	
STD	0.4	0.5	0.4	
Open	0	0	0	
Tech	BE	GL	BE	
Equip ID	601	673	601	
	677	1276	677	

Low Level Circuit Resistance - Delta Values				
Project:	210329		Tech:	GL
Customer:	Samtec		Subgroup:	Seq C Gr A
Product:	SEAF8/SEAM8 Connector		File No:	21032906
Description:	ID# C-A-6			
Open circuit voltage:		20mv	Current:	10ma
Units: milliohms				
Temp ºC	22	22	22	
R.H. %	50	52	48	
Date:	26Jul10	28Jul10	30Jul10	
Pos. ID	Initial	M Shock	Vibration	
1	16.9	0.2	-0.1	
2	17.2	1.1	0.4	
3	17.3	4.0	1.2	
4	17.0	1.6	0.6	
5	17.1	1.3	1.9	
6	17.1	0.9	0.6	
7	17.6	0.6	-0.1	
8	18.1	1.0	0.4	
9	18.1	-0.3	-0.7	
10	17.0	0.8	0.2	
11	16.8	0.3	0.2	
12	16.7	1.2	0.5	
13	16.6	1.8	1.0	
14	16.6	1.2	1.2	
15	17.1	0.8	0.5	
16	17.0	0.3	0.2	
17	16.6	0.7	0.5	
18	17.0	-0.1	-0.2	
19	17.1	0.4	-0.1	
20	16.6	1.1	0.6	
21	16.1	1.0	0.7	
22	17.1	0.3	0.0	
23	16.7	0.5	0.5	
24	17.6	0.3	0.2	
MAX	18.1	4.0	1.9	
MIN	16.1	-0.3	-0.7	
AVG	17.0	0.9	0.4	
STD	0.5	0.8	0.5	
Open	0	0	0	
Tech	BE	GL	BE	
Equip ID	601	673	601	
	677	1276	677	

Low Level Circuit Resistance - Delta Values				
Project:	210329		Tech:	GL
Customer:	Samtec		Subgroup:	Seq C Gr A
Product:	SEAF8/SEAM8 Connector		File No:	21032907
Description:	ID# C-A-7			
Open circuit voltage:		20mv	Current:	10ma
Units: milliohms				
Temp ºC	22	22	22	
R.H. %	50	52	48	
Date:	26Jul10	28Jul10	30Jul10	
Pos. ID	Initial	M Shock	Vibration	
1	16.9	-0.2	-0.5	
2	16.7	0.0	0.0	
3	17.5	-0.4	-0.3	
4	17.0	-0.2	-0.1	
5	17.0	0.4	-0.2	
6	17.3	-0.4	-0.4	
7	18.2	0.7	8.1	
8	17.2	-0.1	-0.1	
9	17.4	-0.4	0.0	
10	16.8	0.2	-0.1	
11	16.7	0.1	-0.1	
12	17.0	-0.1	-0.4	
13	17.0	0.2	0.1	
14	16.6	0.0	-0.3	
15	17.1	0.1	0.0	
16	17.2	0.1	-0.2	
17	17.3	-0.2	-0.3	
18	16.7	-0.2	-0.1	
19	17.2	0.0	-0.1	
20	17.3	0.0	-0.4	
21	17.1	-0.2	-0.4	
22	17.5	-0.3	-0.7	
23	16.9	-0.2	-0.3	
24	17.1	0.0	0.0	
MAX	18.2	0.7	8.1	
MIN	16.6	-0.4	-0.7	
AVG	17.1	0.0	0.1	
STD	0.3	0.3	1.7	
Open	0	0	0	
Tech	BE	GL	BE	
Equip ID	601	673	601	
	677	1276	677	

Low Level Circuit Resistance - Delta Values				
Project:	210329		Tech:	GL
Customer:	Samtec		Subgroup:	Seq C Gr A
Product:	SEAF8/SEAM8 Connector		File No:	21032908
Description:	ID# C-A-8			
Open circuit voltage:		20mv	Current:	10ma
Units: milliohms				
Temp ºC	22	22	22	
R.H. %	50	52	48	
Date:	26Jul10	28Jul10	30Jul10	
Pos. ID	Initial	M Shock	Vibration	
1	17.7	0.0	-0.6	
2	17.2	0.5	0.2	
3	17.4	2.2	1.9	
4	17.2	1.0	1.0	
5	17.0	1.3	1.6	
6	17.0	0.3	-2.0	
7	17.0	0.8	0.3	
8	17.1	1.8	1.2	
9	16.8	0.8	0.3	
10	17.5	0.0	0.1	
11	16.6	2.1	2.0	
12	18.0	1.7	5.0	
13	16.8	1.4	0.3	
14	16.9	0.6	0.4	
15	17.3	1.0	1.4	
16	17.7	-0.3	-0.8	
17	17.3	0.5	-0.1	
18	16.9	0.1	0.0	
19	18.4	6.9	16.9	
20	17.8	1.3	3.5	
21	16.8	0.4	0.2	
22	17.7	-0.4	-0.7	
23	16.8	0.2	0.1	
24	17.1	0.3	0.2	
MAX	18.4	6.9	16.9	
MIN	16.6	-0.4	-2.0	
AVG	17.2	1.0	1.3	
STD	0.4	1.4	3.6	
Open	0	0	0	
Tech	BE	GL	BE	
Equip ID	601	673	601	
	677	1276	677	

TEST RESULTS

SEQUENCE D
GROUP A

PROJECT NO.: 210329 SPECIFICATION: TC1021-3407 Rev. B

PART NO.: See Page 4 PART DESCRIPTION: See Page 4

SAMPLE SIZE: 3 Pairs TECHNICIAN: GL

START DATE: 7/27/10 COMPLETE DATE: 7/28/10

ROOM AMBIENT: 22°C RELATIVE HUMIDITY: 50%

EQUIPMENT ID#: 553, 1028, 1147, 1166, 1167, 1168, 1271, 1272, 1395, 1426, 1521, 1634, 5045

MECHANICAL SHOCK (SPECIFIED PULSE)

PURPOSE:

To determine the mechanical and electrical integrity of connectors for use with electronic equipment subjected to shocks such as those expected from handling, transportation, etc.

PROCEDURE:

1. The test was performed in accordance with EIA 364, Test Procedure 27, Test Condition C.

2. Test Conditions:

    a) Peak Value : 100 G
    b) Duration : 6 Milliseconds
    c) Wave Form : Half Sine
    d) Velocity : 12.3 feet Per Second
    e) No. of Shocks : 3 Shocks/Direction, 3 Axes (18 Total)

3. Figure #6 illustrates the test sample fixturing utilized during the test.

4. The samples were characterized to assure that the low nanosecond event being monitored will trigger the detector.

5. After characterization, it was determined the samples could be monitored for a 50 nanosecond event.

-continued on next page.

PROCEDURE: -continued

6. The low nanosecond monitoring was performed in accordance with EIA 364, Test Procedure 87.

REQUIREMENTS:

1. There shall be no evidence of physical damage to the test samples as tested.

2. There shall be no low nanosecond event detected greater than 50 nanoseconds.

RESULTS:

1. There was no evidence of physical damage to the test samples as tested.

2. There was no low nanosecond event detected greater than 50 nanoseconds.

3. The Mechanical Shock characteristics are shown in Figures #7 (Calibration Pulse) and #8 (Test Pulse). Each figure displays the shock pulse contained within the upper and lower limits as defined by the appropriate test specification.

FIGURE #6

TYPICAL FIXTURING – MECHANICAL SHOCK

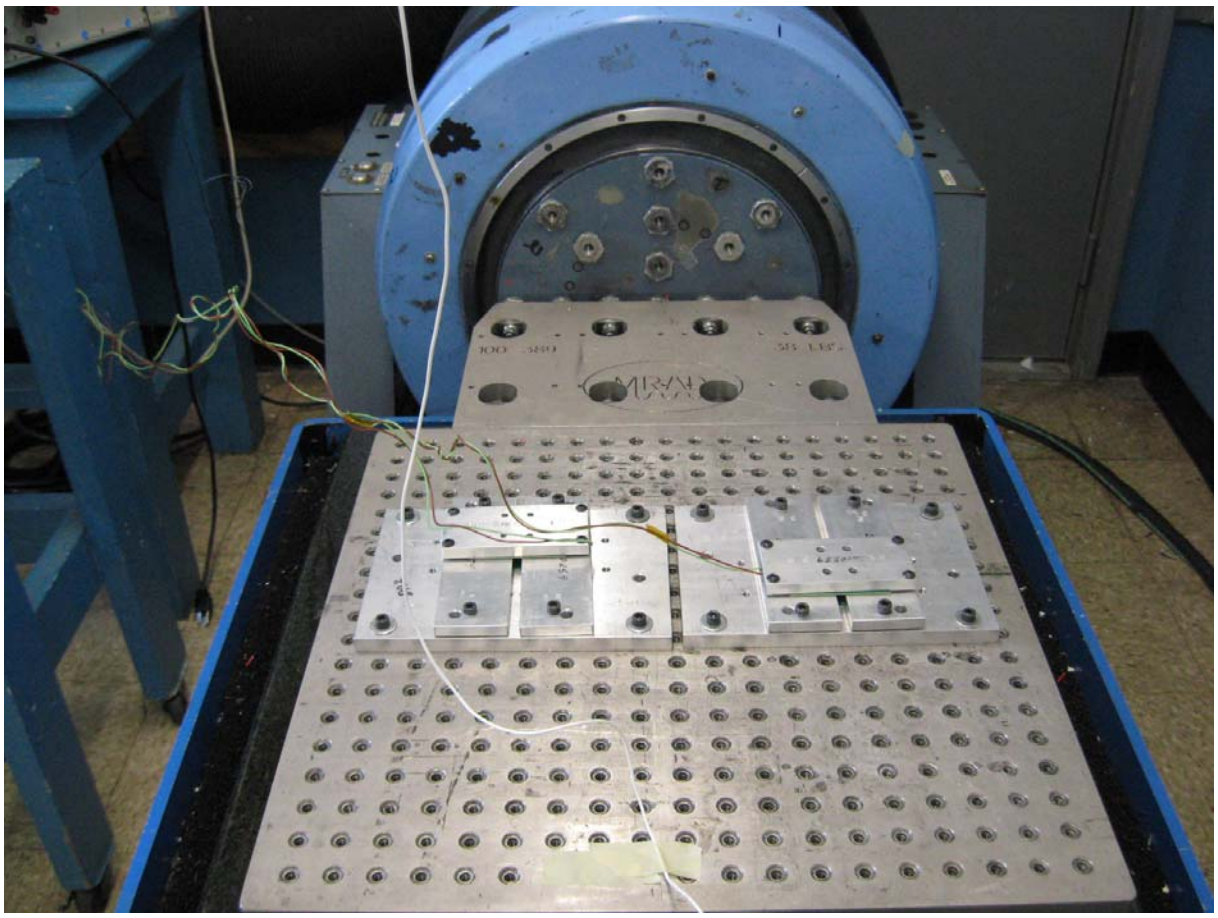
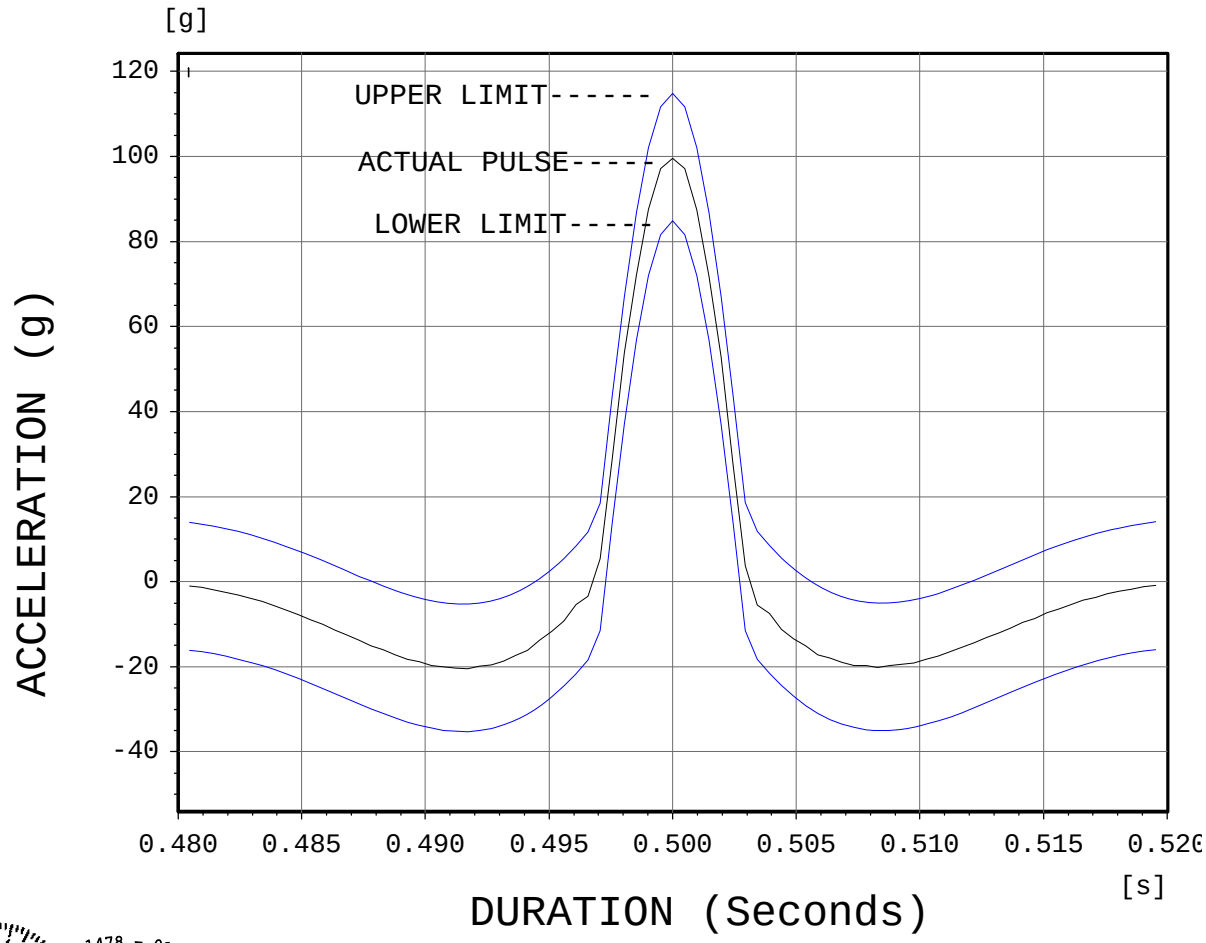


FIGURE #7

Classical Shock

Channel 1

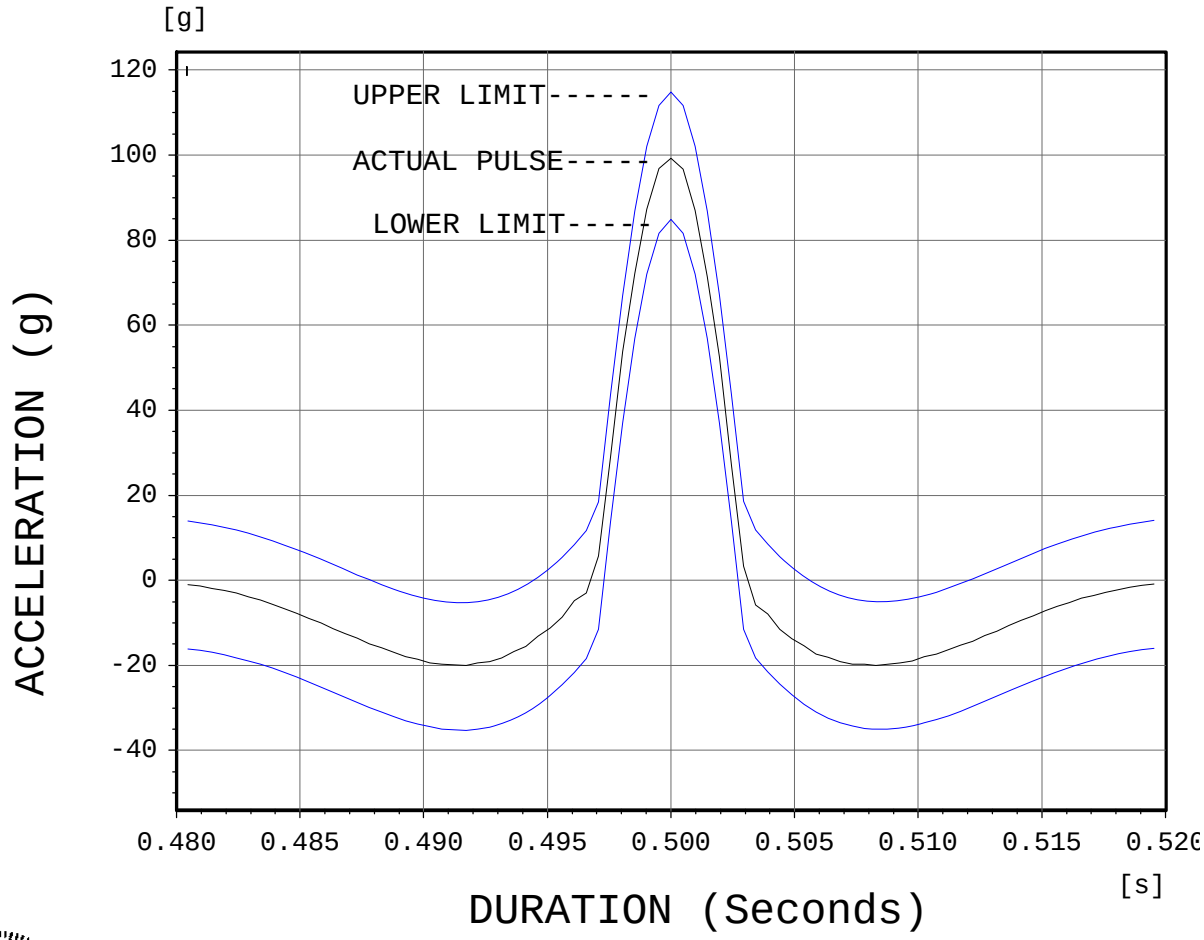


Project 210329
Samtec
100 G's 6 mS
Half Sine Wave
Cal Wave 2
7-27-2010

FIGURE #8

Classical Shock

Channel 1



Project 210329
Samtec
100 G's 6 mS
Half Sine Wave
Actual Wave
7-27-2010

PROJECT NO.: 210329 SPECIFICATION: TC1021-3407 Rev. B

PART NO.: See Page 4 PART DESCRIPTION: See Page 4

SAMPLE SIZE: 3 Pairs TECHNICIAN: GL

START DATE: 7/28/10 COMPLETE DATE: 7/29/10

ROOM AMBIENT: 22°C RELATIVE HUMIDITY: 52%

EQUIPMENT ID#: 553, 1028, 1147, 1166, 1167, 1168, 1271, 1272, 1395, 1426, 1521, 1634, 5045

VIBRATION, RANDOM

PURPOSE:

1. To determine if electrical discontinuities at the level specified exist.

2. To determine if the contact system is susceptible to fretting corrosion.

3. To determine if the electrical stability of the system has degraded when exposed to a vibratory environment.

PROCEDURE:

1. The test was performed in accordance with EIA 364, Test Procedure 28, Test Condition V, Test Letter B.

2. Test Conditions:
   a) Power Spectral Density : 0.01 G^2/Hz
   b) G 'RMS' : 7.56
   c) Frequency : 50 to 2000 Hz
   d) Duration : 2.0 hours per axis (3 axes total)

3. Figure #9 illustrates the test sample fixturing utilized during the test.

4. Prior to testing, the connectors were characterized to assure that the desired event being monitored was capable of being detected.

-continued on next page.

PROCEDURE:-continued

5. After characterization, it was determined the samples could be monitored for a 50 nanosecond event.

6. The low nanosecond event detection was performed in accordance with EIA 364, Test Procedure 87.

REQUIREMENTS:

1. There shall be no evidence of physical damage to the test samples as tested.

2. There shall be no events detected greater than 50 nanoseconds.

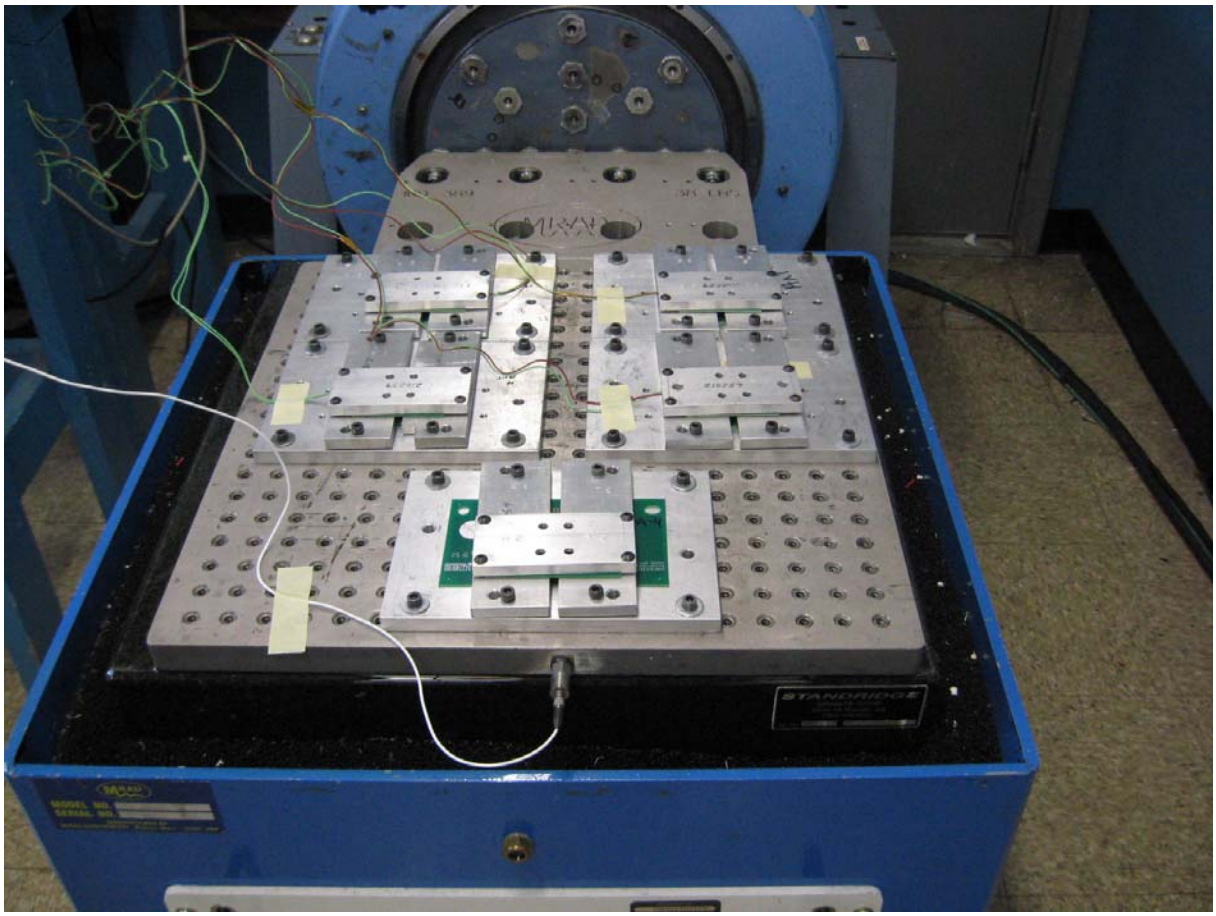
RESULTS:

1. There was no evidence of physical damage to the test samples as tested.

2. There was no evidence of low nanosecond events in excess of 50 nanoseconds.

FIGURE #9

TYPICAL FIXTURING – RANDOM VIBRATION



APPENDIX A

TEST ANOMALY REPORT

DST
D-SCOPE-TECH, INC.

307 OLD COUNTY ROAD
SMITHFIELD, RI 02917
TEL: 812-786-2623

TEST ANOMALY REPORT

DATE: September 3, 2010

DST REFERENCE NUMBER: 090310A

CERTIFICATION:

DST is an independent laboratory and science consulting corporation performing the service called out in the scope below. All data and analysis is the property of the test sponsor, Samtec and shall not be reproduced or disseminated without written permission by Samtec.

APPROVED BY: David P. Scopelliti, DST, Inc.

SCOPE:

To evaluate high/open Low Level Contact Resistance (LLCR) measurements on electrical connectors returned to Samtec from Contech Research (CR), Attleboro, MA as part of CR test project 210329.

CONCLUSION:

The high readings were a result of improper solder joints. The solder joints do not appear damaged by the testing; just poorly soldered. Other solder joints that happened to not be measured for LLCR can also be seen to be open.

PROCEDURE:

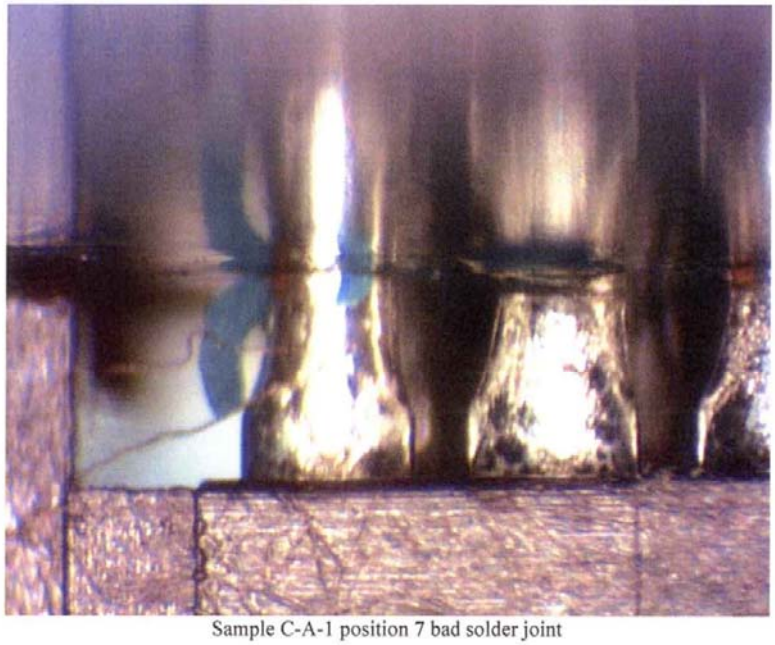
1. Three contact positions were identified exhibiting high or open LLCR readings following Mechanical shock and Vibration testing..
2. Positions evaluated:
   Sample C-A-1, position 7
   Sample C-A-2, position 16
   Sample C-A-3, position 20
3. Said contact positions were examined under optical magnification of 10 to 50X.
4. Micrographs were taken and analyzed of each of the suspect positions.

RESULTS:

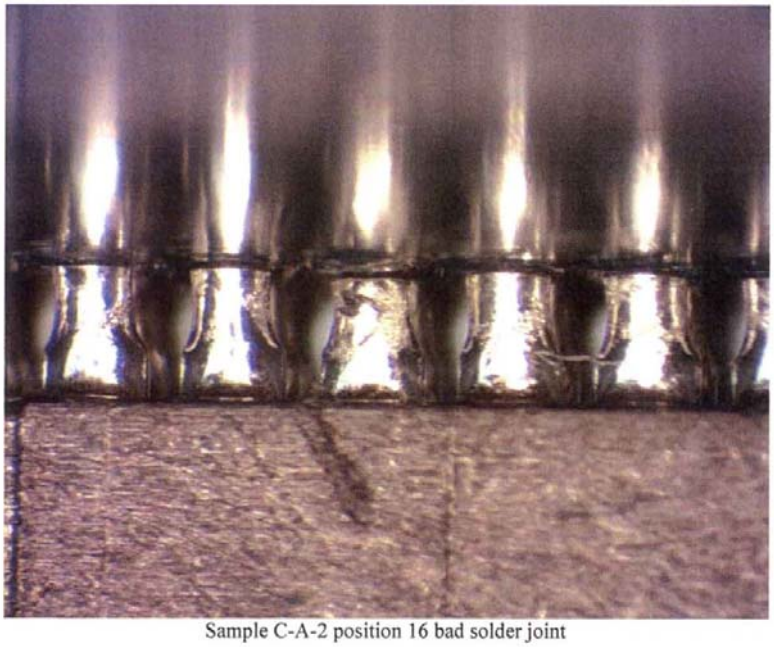
The three positions in question exhibited open/intermittent solder joints as shown in the following photographs:

DST
D-SCOPE-TECH, INC.

307 OLD COUNTY ROAD
SMITHFIELD, RI 02917
TEL: 812-786-2623



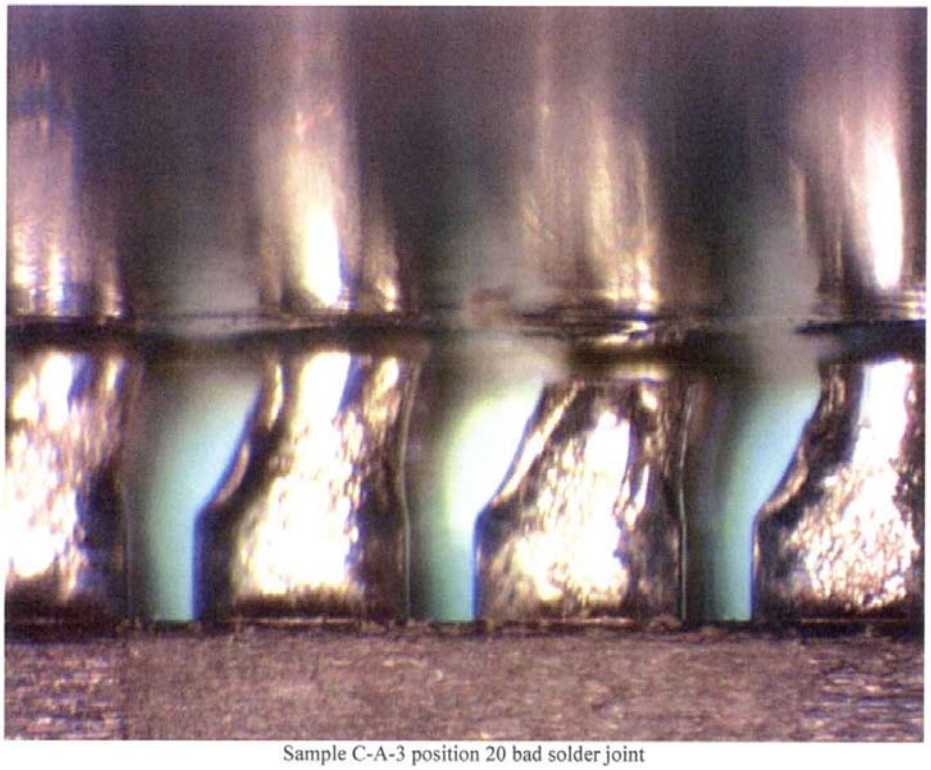
Sample C-A-1 position 7 bad solder joint



Sample C-A-2 position 16 bad solder joint

DST
D-SCOPE-TECH, INC.

307 OLD COUNTY ROAD
SMITHFIELD, RI 02917
TEL: 812-786-2623



Sample C-A-3 position 20 bad solder joint