

OCTOBER 4, 2013

C.O.C #213041B

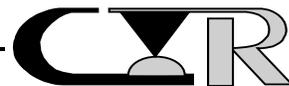
VITA 46 VPX CONNECTORS

QUALIFICATION TESTING

HYPERTRONICS CORPORATION



APPROVED BY: THOMAS PEEL
PRESIDENT AND
DIRECTOR OF TEST PROGRAM DEVELOPMENT
CONTECH RESEARCH, INC.
ATTLEBORO, MA

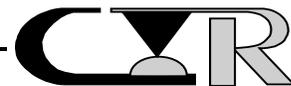


Contech Research

An Independent Test and Research Laboratory

REVISION HISTORY

DATE	REV. NO.	DESCRIPTION	ENG.
10/04/2013	1.0	Initial Release	TP



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 Hypertronics Corp. 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: Thomas Peel
President and
Director Of Test Program Development
Contech Research, Inc.
Attleboro, MA

TP:cf



SCOPE

To perform Qualification testing on VITA 46 connectors as manufactured and submitted by the test sponsor Hypertronics Corporation.

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. VITA 46 Connector/Module Test Plan, Rev. 6 (Jan, 2005)
3. EN-61000-4-2, Electrostatic Discharge Immunity Test
4. Standards:
 - a) MIL-STD-1344
 - b) EIA Publication 364
 - c) ASTM G85

TEST SAMPLES AND PREPARATION

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

BACKPLANE		
P.N.	DESCRIPTION	QTY
KX2HEP01C1TBH	72-Pin Module	1
KX2FCU01C1TAH	144-Pin Module	6

DAUGHTER CARD		
P.N.	DESCRIPTION	QTY
KX1HCP01C1TBH	Utility/Power Center Module	1
KX1FCD01C1TBH	Differential Center Module	4
KX1FED01C1TBH	Differential End Module	1
KX1FES01C1TBH	Single Ended End Module	1

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TEST SAMPLES AND PREPARATION -continued

2. The following additional materials were submitted by the test sponsor to assist and perform the testing of items listed in #1 above.

Description

- a) Vibration Test Fixture (see Figure #1)
3. The test samples as submitted were submitted by the manufacturer as being fabricated and assembled utilizing normal production techniques common for this type of product and inspected in accordance with the quality criteria as established for the product involved.
4. Connectors were supplied assembled and terminated to test boards by the test sponsor.
5. Test boards for mounting test samples were supplied by the test sponsor.
6. All test samples were coded and identified by Contech Research to maintain continuity throughout the test sequences. Upon initiating testing, mated test samples remained with each other throughout the test sequences for which they were designated.
7. Figure #2 illustrates the test sample used for the evaluation.
8. The test samples were tested in their 'as received' condition.
9. All equipment and measuring instruments used during testing were calibrated and traceable to NIST according to ISO 10012-1 and ANSI/NCCL Z540-1, as applicable.
10. Unless otherwise specified in the test procedures used, no further preparation was used.

TEST SELECTION

1. See Test Plan Flow Diagram, Figure #3, for test sequences used.

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TEST SELECTION -continued

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. 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:

Group A: A1 A2
Group B: B1
Group C: C1
Group D: D1
Group E: E1
Group F: F1
Group G: G1

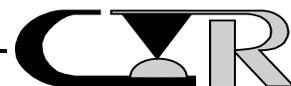


FIGURE #1

MECHANICAL SHOCK/VIBRATION TEST FIXTURE

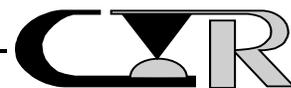
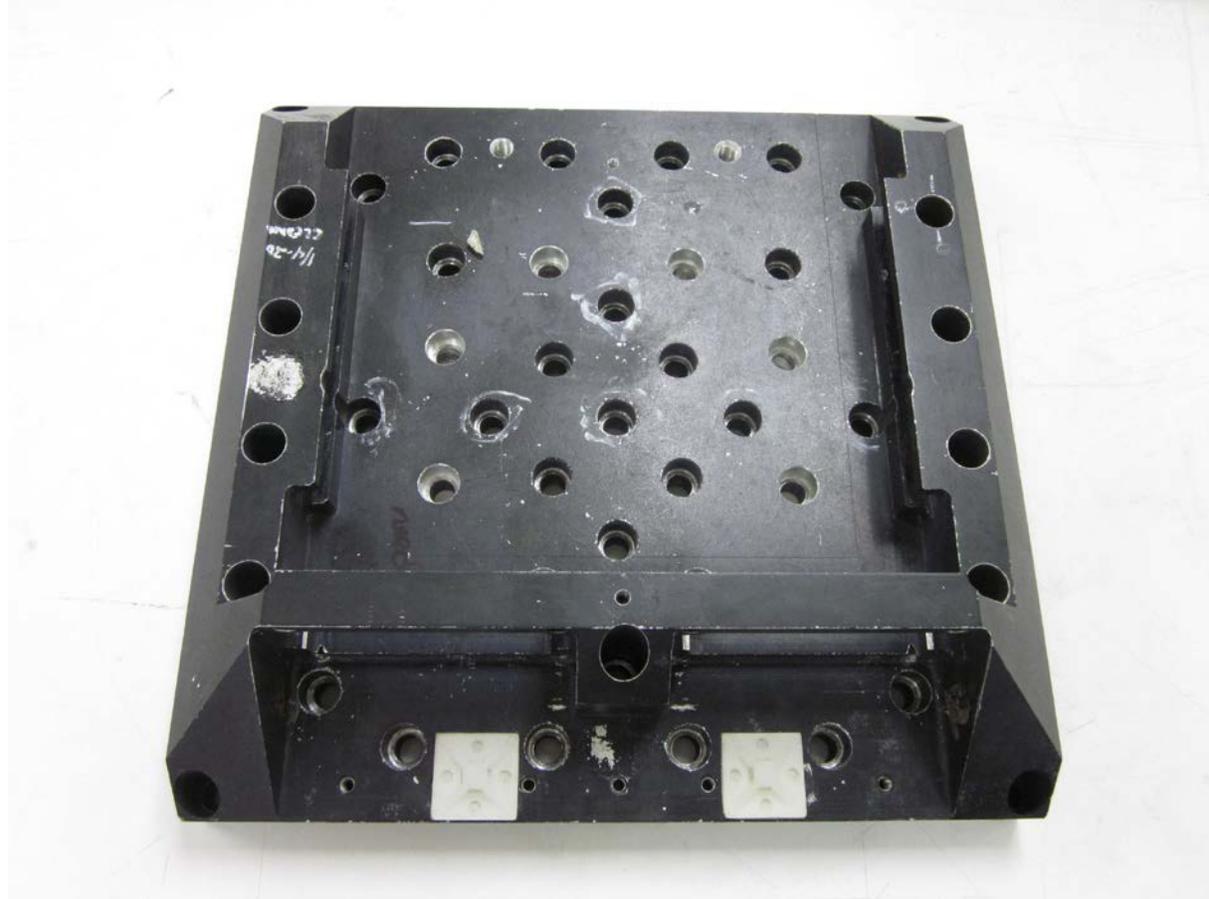
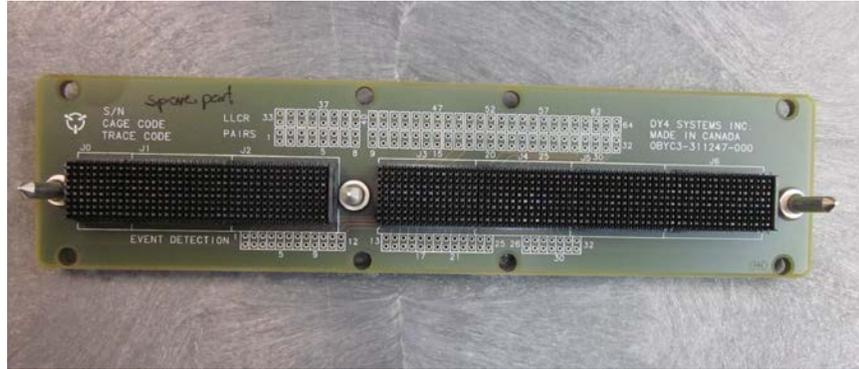
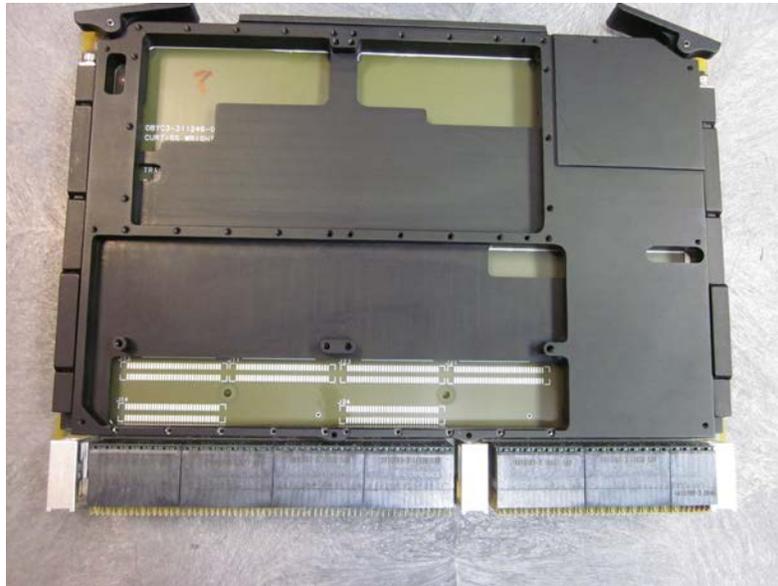


FIGURE #2

TYPICAL TEST SAMPLE



Receptacle side



Plug side

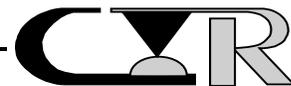
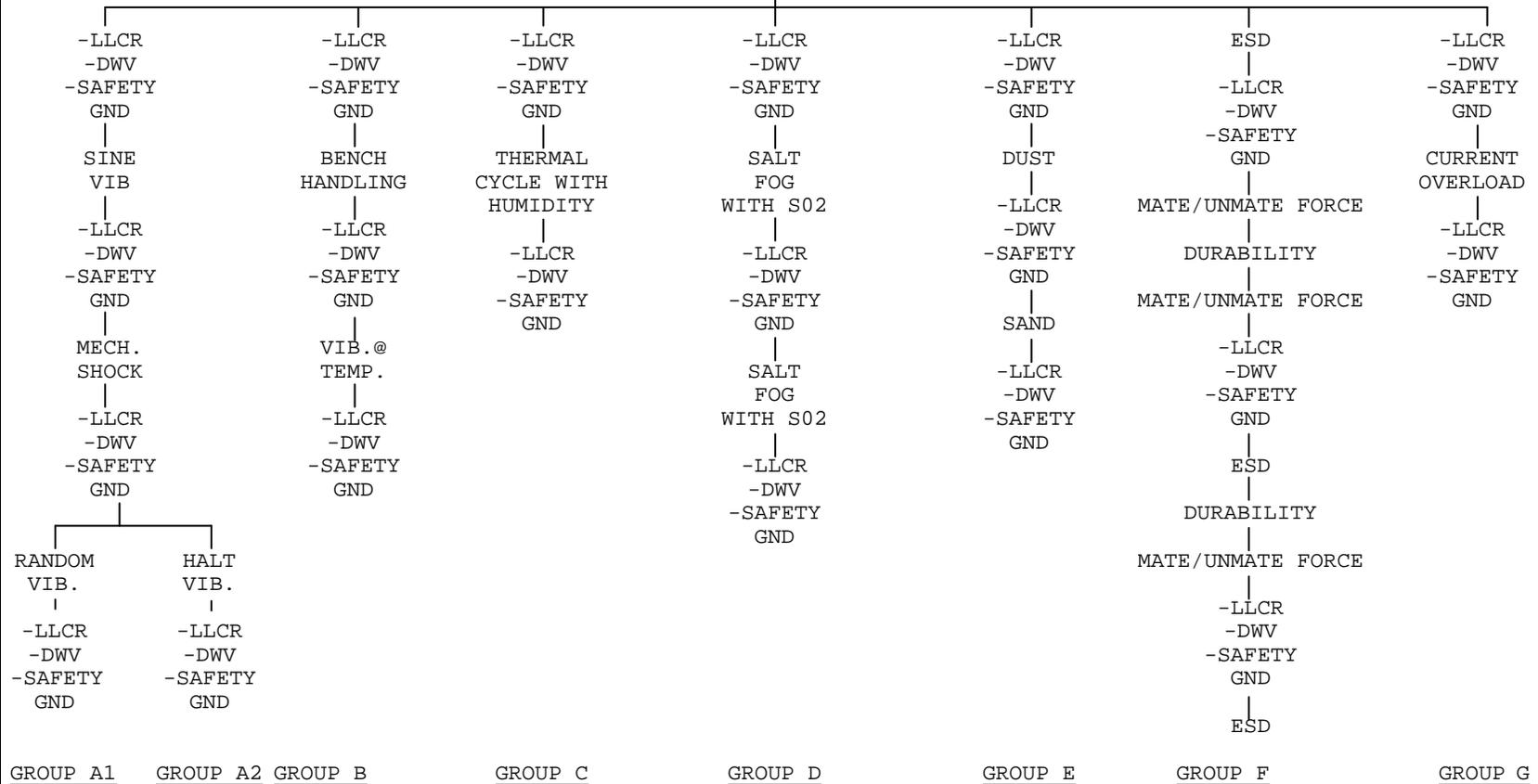


FIGURE #3

TEST PLAN FLOW DIAGRAM

SAMPLE PREPARATION



DATA SUMMARY

<u>TEST</u>	<u>REQUIREMENT</u>	<u>RESULTS</u>
<u>GROUP A</u>		
LLCR	RECORD	33.4 mΩ MAX.
DWV	NO BREAKDOWN, <5.0 mA LEAKAGE	
SAFETY GND	100.0 mΩ MAX	0.3 mΩ MAX.
RESONANCE	RECORD	
	X-AXIS	7.37G @ 1075.65 Hz
	Y-AXIS	49.818G @ 441.43 Hz
	x-AXIS	5.197G @ 1915.3 Hz
LLCR	+10.0 mΩ MAX.CHG.	+0.8 mΩ MAX.CHG.
	+5.0 mΩ MAX.AVG.CHG	+0.0 mΩ MAX.AVG.CHG
DWV	NO BREAKDOWN, <5.0 mA LEAKAGE	PASSED
SAFETY GND	100.0 mΩ MAX	0.4 mΩ MAX.
MECHANICAL SHOCK	NO DAMAGE	PASSED
	10.0 NANOSECOND	PASSED
LLCR	+10.0 mΩ MAX.CHG.	+1.2 mΩ MAX.CHG.
	+5.0 mΩ MAX.AVG.CHG	-0.1 mΩ MAX.AVG.CHG
DWV	NO BREAKDOWN, <5.0 mA LEAKAGE	PASSED
SAFETY GND	100.0 mΩ MAX	0.5 mΩ MAX.
<u>SAMPLE ID# 1A</u>		
RANDOM VIBRATION	NO DAMAGE	PASSED
	10.0 NANOSECOND	PASSED
LLCR	+10.0 mΩ MAX.CHG.	+1.4 mΩ MAX.CHG.
	+5.0 mΩ MAX.AVG.CHG	-0.1 mΩ MAX.AVG.CHG
DWV	NO BREAKDOWN, <5.0 mA LEAKAGE	PASSED
SAFETY GND	100.0 mΩ MAX	0.5 mΩ MAX.
<u>SAMPLE ID# 1B</u>		
HALT RANDOM VIB.	NO DAMAGE	PASSED
	10.0 NANOSECOND	PASSED
LLCR	+10.0 mΩ MAX.CHG.	+3.0 mΩ MAX.CHG.
	+5.0 mΩ MAX.AVG.CHG	+0.2 mΩ MAX.AVG.CHG
DWV	NO BREAKDOWN, <5.0 mA LEAKAGE	PASSED
SAFETY GND	100.0 mΩ MAX	1.2 mΩ MAX.

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DATA SUMMARY -continued

<u>TEST</u>	<u>REQUIREMENT</u>	<u>RESULTS</u>
<u>GROUP B</u>		
LLCR	RECORD	33.0 mΩ MAX.
DWV	NO BREAKDOWN, <5.0 mA LEAKAGE	PASSED
SAFETY GND	100.0 mΩ MAX	0.3 mΩ MAX.
BENCH HANDLING	NO DAMAGE	PASSED
	10.0 NANOSECOND	
LLCR	+10.0 mΩ MAX.CHG.	+6.6 mΩ MAX.CHG.
	+5.0 mΩ MAX.AVG.CHG	+0.3 mΩ MAX.AVG.CHG
DWV	NO BREAKDOWN, <5.0 mA LEAKAGE	PASSED
SAFETY GND	100.0 mΩ MAX	0.2 mΩ MAX.
VIBRATION @ TEMP.	NO DAMAGE	PASSED
	10.0 NANOSECOND	
LLCR	+10.0 mΩ MAX.CHG.	+6.2 mΩ MAX.CHG.
	+5.0 mΩ MAX.AVG.CHG	+0.3 mΩ MAX.AVG.CHG
DWV	NO BREAKDOWN, <5.0 mA LEAKAGE	PASSED
SAFETY GND	100.0 mΩ MAX	4.8 mΩ MAX.
<u>GROUP C</u>		
LLCR	RECORD	33.6 mΩ MAX.
DWV	NO BREAKDOWN, <5.0 mA LEAKAGE	PASSED
SAFETY GND	100.0 mΩ MAX	0.4 mΩ MAX.
TEMP./HUMIDITY	NO DAMAGE	PASSED
LLCR	+10.0 mΩ MAX.CHG.	+3.4 mΩ MAX.CHG.
	+5.0 mΩ MAX.AVG.CHG	+0.2 mΩ MAX.AVG.CHG
DWV	NO BREAKDOWN, <5.0 mA LEAKAGE	PASSED
SAFETY GND	100.0 mΩ MAX	0.4 mΩ MAX.

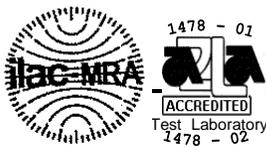
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DATA SUMMARY -continued

<u>TEST</u>	<u>REQUIREMENT</u>	<u>RESULTS</u>
<u>GROUP D</u>		
LLCR	RECORD	33.4 mΩ MAX.
DWV	NO BREAKDOWN, <5.0 mA LEAKAGE	PASSED
SAFETY GND	RECORD	0.4 mΩ MAX.
SALT FOG W/ SO2	NO DAMAGE	
LLCR	+10.0 mΩ MAX.CHG. +5.0 mΩ MAX.AVG. CHG.	+2.9 mΩ MAX.CHG. +0.1 mΩ MAX.AVG.CHG
DWV	NO BREAKDOWN, <5.0 mA LEAKAGE	PASSED
SAFETY GND	100.0 mΩ MAX	0.2 mΩ MAX.
SALT FOG W/ SO2	NO DAMAGE	PASSED
LLCR	+10.0 mΩ MAX.CHG. +5.0 mΩ MAX.AVG.CHG	+3.1 mΩ MAX.CHG. +0.3 mΩ MAX.AVG.CHG
DWV	NO BREAKDOWN, <5.0 mA LEAKAGE	PASSED
SAFETY GND	100.0 mΩ MAX	0.2 mΩ MAX.
<u>GROUP E</u>		
LLCR	RECORD	34.1 mΩ MAX.
DWV	NO BREAKDOWN, <5.0 mA LEAKAGE	PASSED
SAFETY GND	100.0 mΩ MAX	0.3 mΩ MAX.
SAND TEST	NO DAMAGE	PASSED
LLCR	+10.0 mΩ MAX.CHG. +5.0 mΩ MAX.AVG.CHG	+0.6 mΩ MAX.CHG. +0.0 mΩ MAX.AVG.CHG
DWV	NO BREAKDOWN, <5.0 mA LEAKAGE	PASSED
SAFETY GND	100.0 mΩ MAX	0.3 mΩ MAX.
DUST TEST	NO DAMAGE	
LLCR	+10.0 mΩ MAX.CHG. +5.0 mΩ MAX.AVG.CHG	+0.8 mΩ MAX.CHG. -0.1 mΩ MAX.AVG.CHG
DWV	NO BREAKDOWN, <5.0 mA LEAKAGE	PASSED
SAFETY GND	100.0 mΩ MAX	0.3 mΩ MAX.

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DATA SUMMARY -continued

<u>TEST</u>	<u>REQUIREMENT</u>	<u>RESULTS</u>
<u>GROUP F</u>		
ESD	<20.V DISCHARGE	TEST IN PROGRESS
<u>GROUP G</u>		
LLCR		
SIGNAL CONTACTS	RECORD	33.6 mΩ MAX.
SINGLE/DOUBLE	RECORD	35.6 mΩ MAX.
POWER CONTACTS	RECORD	4.7 mΩ MAX.
DWV	NO BREAKDOWN, <5.0 mA LEAKAGE	PASSED
SAFETY GND	100.0 mΩ MAX	+0.4 mΩ MAX.
CURRENT OVERLOAD	NO DAMAGE	PASSED
LLCR		
SIGNAL CONTACTS	+10.0 mΩ MAX.CHG.	+2.3 mΩ MAX.CHG
SINGLE/DOUBLE	+10.0 mΩ MAX.CHG.	+1.8 mΩ MAX.CHG
POWER CONTACTS	+10.0 mΩ MAX.CHG.	+0.2 mΩ MAX.CHG
DWV	NO BREAKDOWN, <5.0 mA LEAKAGE	PASSED
SAFETY GND	100.0 mΩ MAX	0.6 mΩ MAX.

