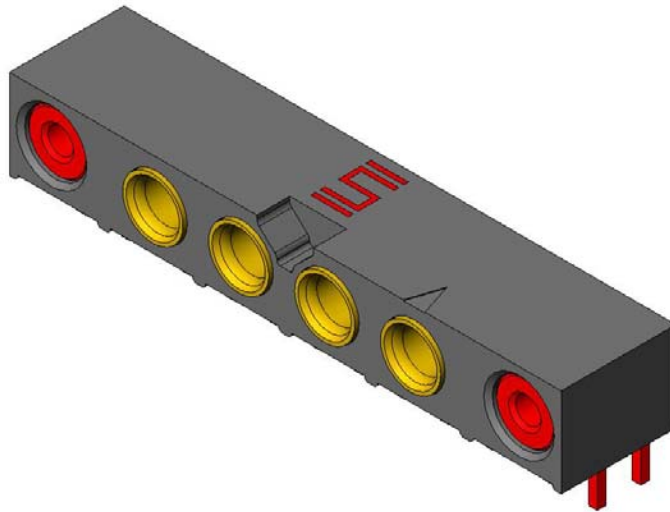




Project Number:		Tracking Code: TC0630--1114	
Requested by: Patrick Brumley		Date: 7/25/2006	Product Rev: 1
Part #: GRF1-J-P-08-E-RA-TH1		Lot #: 1	Tech: Tony Wagoner / Troy Cook
Part description: GRF1-J-P-08-E-RA-TH1			Qty to test: 100
Test Start: 08/04/2006		Test Completed: 8/25/2006	



**GRF1-J-P-08-E-RA-TH1**

**DVT Report**

**Mated with GRF1-P-P-08-E-ST-TH1**

## **CERTIFICATION**

All instruments and measuring equipment were calibrated to National Institute for Standards and Technology (NIST) traceable standards according to ISO 10012-1 and ANSI/NCSL 2540-1, as applicable.

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## **SCOPE**

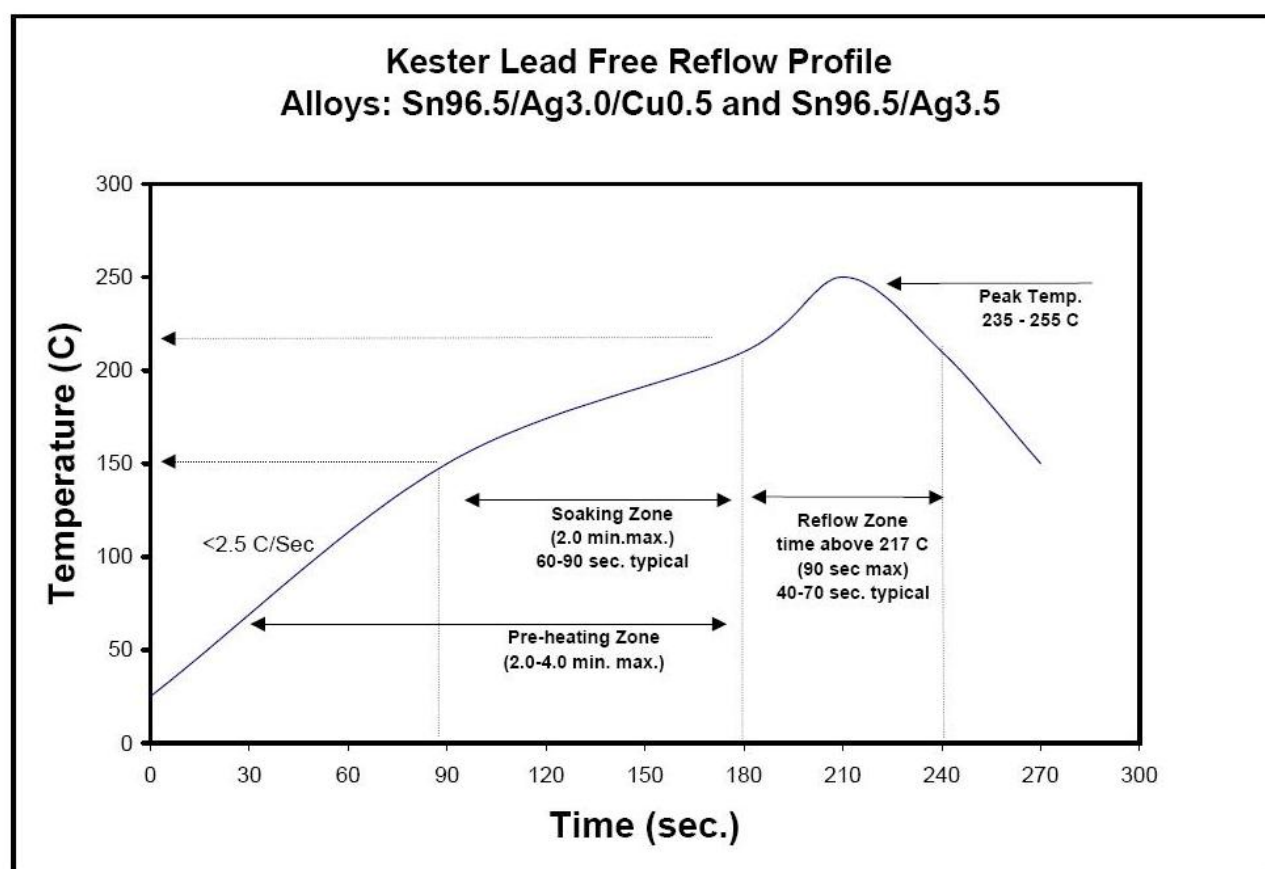
To perform the following tests: Using Ganged RF 082304 that is located in dwg/applicat/npdocs/epms/projects/ganged rf/ 50 assemblies provided of the longest position and 50 mates provided

## **APPLICABLE DOCUMENTS**

Standards: EIA Publication 364

## **TEST SAMPLES AND PREPARATION**

- 1) All materials were manufactured in accordance with the applicable product specification.
- 2) All test samples were identified and encoded to maintain traceability throughout the test sequences.
- 3) After soldering, the parts to be used for LLCR and DWV/IR testing were cleaned according to TLWI-0001.
- 4) Either an automated cleaning procedure or an ultrasonic cleaning procedure may be used.
- 5) The automated procedure is used with aqueous compatible soldering materials.
- 6) Parts not intended for testing LLCR and DWV/IR are visually inspected and cleaned if necessary.
- 7) Any additional preparation will be noted in the individual test sequences.
- 8) Solder Information: Lead Free
- 9) Re-Flow Time/Temp: See accompanying profile.
- 10) Internal Test PCBs used: PCB-100436-TST-XX

**OVEN PROFILE (Soldering Parts to Test Boards)**

## FLOWCHARTS

### Mating/Unmating

TEST STEP	GROUP A 10 Mated Assemblies 500 Cycles-SIG & GND
01	Samtec
02	Mating / Unmating
03	Data Review
04	500 Cycles
05	Mating / Unmating
06	Data Review
07	Thermal Aging (Mated)
08	Mating / Unmating
09	Data Review
10	Humidity (Mated)
11	Mating / Unmating

Thermal Aging = EIA-364-17, Test Condition 3, 85 deg C;

Time Condition 'A' (96 hours)

Humidity =EIA-364-31, Test Condition A' (96 hours)

and Method III (+25 ° C to +65 ° C @ 90%RH to 98% RH)

ambient pre-condition and delete steps 7a and 7b

Mating/Un-Mating Forces = EIA-364-13

**IR / DWV**

<b>8 Mated Assemblies</b>				
<b><u>Samtec</u></b>				
<b>TEST STEP</b>	<b>GROUP A 2 Mated Assemblies Ambient</b>	<b>GROUP B1 2 Mated Assemblies Ambient</b>	<b>GROUP B2 2 Mated Assemblies Thermal</b>	<b>GROUP B3 2 Mated Assemblies Humidity</b>
<b>01</b>	IR	DWV/Working Voltage	Thermal Aging	Humidity
<b>02</b>	Data Review		DWV/Working Voltage	DWV/Working Voltage
<b>03</b>	Thermal Aging			
<b>04</b>	IR			
<b>05</b>	Data Review			
<b>06</b>	Humidity			
<b>07</b>	IR			

Thermal Aging = EIA-364-17, Test Condition 3, 85 deg C;

Time Condition 'A' (96 hours)

Humidity = EIA-364-31, Test Condition A' (96 hours)

and Method III (+25 ° C to +65 ° C @ 90%RH to 98% RH)

ambient pre-condition and delete steps 7a and 7b

IR = EIA-364-21

DWV = EIA-364-20

**FLOWCHARTS Continued****Durability/Thermal Age/Cyclic Humidity**

TEST STEP	8 Mated Assemblies
	GROUP A 32 Points/500 Cycles Signal & Ground
01	LLCR-1
02	Data Review
03	500 Cycles
04	LLCR-2
05	Data Review
06	Thermal Age
07	LLCR-3
08	Data Review
09	Cyclic Humidity
10	LLCR-4

Thermal Aging = EIA-364-17, Test Condition 3, 85 deg C;

Time Condition 'A' (96 hours)

Humidity =EIA-364-31, Test Condition A' (96 hours)

and Method III (+25 ° C to +65 ° C @ 90%RH to 98% RH)

ambient pre-condition and delete steps 7a and 7b

LLCR = EIA-364-23, LLCR

use Keithley 580 in the dry circuit mode, 10 mA Max

## ATTRIBUTE DEFINITIONS

The following is a brief, simplified description of attributes.

### THERMAL:

- 1) EIA-364-17, *Temperature Life with or without Electrical Load Test Procedure for Electrical Connectors*.
- 2) Test Condition 3 at 85° C.
- 3) Test Time Condition A for 96 hours.
- 4) Connectors are sometimes mated and all samples are pre-conditioned at ambient.

### HUMIDITY:

- 1) Reference document: EIA-364-31, *Humidity Test Procedure for Electrical Connectors*.
- 2) Test Condition A, 96 Hours.
- 3) Method III, +25° C to + 65° C, 90% to 98% Relative Humidity excluding sub-cycles 7a and 7b.
- 4) Connectors are sometimes mated and all samples are pre-conditioned at ambient.

### MATING/UNMATING:

- 1) Reference document: EIA-364-13, *Mating and Unmating Forces Test Procedure for Electrical Connectors*.
- 2) The full insertion position was to within 0.003" to 0.004" of the plug bottoming out in the receptacle to prevent damage to the system under test.
- 3) One of the mating parts is secured to a floating X-Y table to prevent damage during cycling.

### INSULATION RESISTANCE (IR):

To determine the resistance of insulation materials to leakage of current through or on the surface of these materials when a DC potential is applied.

- 1) PROCEDURE:
  - a. Reference document: EIA-364-21, *Insulation Resistance Test Procedure for Electrical Connectors*.
  - b. Test Conditions:
    - i. Between Adjacent Contacts or Signal-to-Ground
    - ii. Electrification Time 2.0 minutes
    - iii. Test Voltage (500 VDC) corresponds to calibration settings for measuring resistances.
- 2) MEASUREMENTS:
- 3) When the specified test voltage is applied (VDC), the insulation resistance shall not be less than 5000 megohms.

### DIELECTRIC WITHSTANDING VOLTAGE (DWV):

To determine if the sockets can operate at its rated voltage and withstand momentary over potentials due to switching, surges, and other similar phenomenon. Separate samples are used to evaluate the effect of environmental stresses so not to influence the readings from arcing that occurs during the measurement process.

- 1) PROCEDURE:
  - a. Reference document: EIA-364-20, *Withstanding Voltage Test Procedure for Electrical Connectors*.
  - b. Test Conditions:
    - i. Between Adjacent Contacts or Signal-to-Ground
    - ii. Rate of Application 500 V/Sec
    - iii. Test Voltage (VAC) until breakdown occurs
- 2) MEASUREMENTS/CALCULATIONS
  - a. The breakdown voltage shall be measured and recorded.
  - b. The dielectric withstanding voltage shall be recorded as 75% of the minimum breakdown voltage.
  - c. The working voltage shall be recorded as one-third (1/3) of the dielectric withstanding voltage (one-fourth of the breakdown voltage).

**LLCR:**

- 1) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
- 2) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
- 3) The following guidelines are used to categorize the changes in LLCR as a result from stressing
  - a.  $\leq +5.0$  mOhms: ----- Stable
  - b.  $+5.1$  to  $+10.0$  mOhms:----- Minor
  - c.  $+10.1$  to  $+15.0$  mOhms: ----- Acceptable
  - d.  $+15.1$  to  $+50.0$  mOhms: ----- Marginal
  - e.  $+50.1$  to  $+2000$  mOhms: ----- Unstable
  - f.  $>+2000$  mOhms:----- Open Failure



## RESULTS

### Mating – Unmating Forces

- **Initial**
  - **Mating**
    - **Min** -----11.7 Lbs.
    - **Max** -----16.9 Lbs.
  - **Unmating**
    - **Min** -----9.2 Lbs.
    - **Max** -----13.8 Lbs.
- **After 500 Cycles**
  - **Mating**
    - **Min** -----11.1 Lbs.
    - **Max** -----18.5 Lbs.
  - **Unmating**
    - **Min** -----7.3 lbs.
    - **Max** -----12.0 Lbs.
- **Thermal**
  - **Mating**
    - **Min** -----6.3 Lbs.
    - **Max** -----8.6 Lbs.
  - **Unmating**
    - **Min** -----5.2 Lbs.
    - **Max** -----7.9 Lbs.
- **Humidity**
  - **Mating**
    - **Min** -----5.2 Lbs.
    - **Max** -----7.8 Lbs.
  - **Unmating**
    - **Min** -----4.4 Lbs.
    - **Max** -----8.0 Lbs.

### Insulation Resistance minimums, IR

- **Initial**
  - **Mated** -----25,000 Meg  $\Omega$  ----- Pass
  - **Unmated** -----100,000 Meg  $\Omega$
- **Thermal**
  - **Mated** -----15,000 Meg  $\Omega$
  - **Unmated** -----100,000 Meg  $\Omega$
- **Humidity**
  - **Mated** -----100,000 Meg  $\Omega$
  - **Unmated** -----100,000 Meg  $\Omega$

### Dielectric Withstanding Voltage minimums, DWV

- **Initial**
  - **Breakdown**
    - **Mated** -----2,000 VAC
    - **Unmated** -----2,700 VAC
  - **DWV**
    - **Mated** -----1,500 VAC
    - **Unmated** -----2,025 VAC
  - **Working voltage**
    - **Mated** -----500 VAC
    - **Unmated** -----675 VAC

- **Thermal**
  - **Breakdown**
    - Mated -----2,400 VAC
    - Unmated-----2,500 VAC
  - **DWV**
    - Mated -----1,800 VAC
    - Unmated-----1,875 VAC
  - **Working voltage**
    - Mated -----600 VAC
    - Unmated-----625 VAC
- **Humidity**
  - **Breakdown**
    - Mated -----2,600 VAC
    - Unmated-----2,700 VAC
  - **DWV**
    - Mated -----1,950 VAC
    - Unmated-----2,025 VAC
  - **Working voltage**
    - Mated -----650 VAC
    - Unmated-----675 VAC

**LLCR Durability - Signal - (32 LLCR test points)**

- **Initial**-----9.8 mOhms Max
- **Durability, 500 Cycles**
  - <= +5.0 mOhms ----- 32 Points ----- Stable
  - +5.1 to +10.0 mOhms -----0 Points ----- Minor
  - +10.1 to +15.0 mOhms -----0 Points ----- Acceptable
  - +15.1 to +50.0 mOhms -----0 Points ----- Marginal
  - +50.1 to +2000 mOhms -----0 Points ----- Unstable
  - >+2000 mOhms -----0 Points ----- Open Failure
- **Thermal**
  - <= +5.0 mOhms ----- 27 Points ----- Stable
  - +5.1 to +10.0 mOhms -----5 Points ----- Minor
  - +10.1 to +15.0 mOhms -----0 Points ----- Acceptable
  - +15.1 to +50.0 mOhms -----0 Points ----- Marginal
  - +50.1 to +2000 mOhms -----0 Points ----- Unstable
  - >+2000 mOhms -----0 Points ----- Open Failure
  -
- **Humidity**
  - <= +5.0 mOhms ----- 24 Points ----- Stable
  - +5.1 to +10.0 mOhms -----8 Points ----- Minor
  - +10.1 to +15.0 mOhms -----0 Points ----- Acceptable
  - +15.1 to +50.0 mOhms -----0 Points ----- Marginal
  - +50.1 to +2000 mOhms -----0 Points ----- Unstable
  - >+2000 mOhms -----0 Points ----- Open Failure

### Results (continued)

#### LLCR Durability - Ground - (32 LLCR test points)

- Initial ----- 1.8 mOhms Max
- Durability, 500 Cycles
  - ≤ +5.0 mOhms ----- 32 Points ----- Stable
  - +5.1 to +10.0 mOhms ----- 0 Points ----- Minor
  - +10.1 to +15.0 mOhms ----- 0 Points ----- Acceptable
  - +15.1 to +50.0 mOhms ----- 0 Points ----- Marginal
  - +50.1 to +2000 mOhms ----- 0 Points ----- Unstable
  - >+2000 mOhms ----- 0 Points ----- Open Failure
- Thermal
  - ≤ +5.0 mOhms ----- 32 Points ----- Stable
  - +5.1 to +10.0 mOhms ----- 0 Points ----- Minor
  - +10.1 to +15.0 mOhms ----- 0 Points ----- Acceptable
  - +15.1 to +50.0 mOhms ----- 0 Points ----- Marginal
  - +50.1 to +2000 mOhms ----- 0 Points ----- Unstable
  - >+2000 mOhms ----- 0 Points ----- Open Failure
  -
- Humidity
  - ≤ +5.0 mOhms ----- 32 Points ----- Stable
  - +5.1 to +10.0 mOhms ----- 0 Points ----- Minor
  - +10.1 to +15.0 mOhms ----- 0 Points ----- Acceptable
  - +15.1 to +50.0 mOhms ----- 0 Points ----- Marginal
  - +50.1 to +2000 mOhms ----- 0 Points ----- Unstable
  - >+2000 mOhms ----- 0 Points ----- Open Failure

**DATA SUMMARIES****MATING/UNMATING:**

	Initial				After 500 Cycles			
Minimum	100.8	6.3	82.9	5.2	82.9	5.2	70.4	4.4
Maximum	136.9	8.6	125.7	7.9	125.1	7.8	127.5	8.0
<b>Average</b>	<b>118.6</b>	<b>7.4</b>	<b>106.8</b>	<b>6.7</b>	<b>110.7</b>	<b>6.9</b>	<b>93.3</b>	<b>5.8</b>

**INSULATION RESISTANCE (IR):**

	Initial, Meg Ohms		Thermal, Meg Ohms		Humidity, Meg Ohms	
	Mated	Unmated	Mated	Unmated	Mated	Unmated
	<u>Insulation Resistance</u>	<u>Insulation Resistance</u>	<u>Insulation Resistance</u>	<u>Insulation Resistance</u>	<u>Insulation Resistance</u>	<u>Insulation Resistance</u>
<b>Average</b>	37500	100000	32500	100000	100000	100000
<b>Min</b>	25000	100000	15000	100000	100000	100000
<b>Max</b>	50000	100000	50000	100000	100000	100000

**DIELECTRIC WITHSTANDING VOLTAGE (DWV):**

	Initial, VAC Mated			Initial, VAC Unmated		
	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>
<b>Average</b>	2333	1750	583	2633	1975	658
<b>Min</b>	2000	1500	500	2500	1875	625
<b>Max</b>	2600	1950	650	2700	2025	675

	Thermal, VAC Mated			Thermal, VAC Unmated		
	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>
<b>Average</b>	2400	1800	600	2500	1875	625
<b>Min</b>	2400	1800	600	2500	1875	625
<b>Max</b>	2400	1800	600	2500	1875	625

	Humidity, VAC Mated			Humidity, VAC Unmated		
	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>
<b>Average</b>	2600	1950	650	2700	2025	675
<b>Min</b>	2600	1950	650	2700	2025	675
<b>Max</b>	2600	1950	650	2700	2025	675

**DATA SUMMARIES Continued****LLCR:**

- 1) A total of 200 points were measured.
- 2) EIA-364-23, *Low Level Contact Resistance Test Procedure for Electrical Connectors and Sockets*.
- 3) A computer program, *LLCR 221.exe*, ensures repeatability for data acquisition.
- 4) The following guidelines are used to categorize the changes in LLCR as a result from stressing.
  - a.  $\leq +5.0$  mOhms: ----- Stable
  - b.  $+5.1$  to  $+10.0$  mOhms:----- Minor
  - c.  $+10.1$  to  $+15.0$  mOhms: ----- Acceptable
  - d.  $+15.1$  to  $+50.0$  mOhms: ----- Marginal
  - e.  $+50.1$  to  $+2000$  mOhms ----- Unstable
  - f.  $>+2000$  mOhms:----- Open Failure

**LLCR for Signal**

Date	Aug. 04 2006	Aug. 08 2006	Aug. 14 2006	Aug. 25 2006
Room Temp C	19	21	21	21
RH	51%	49%	40%	53%
Name	Troy Cook	Tony Wagoner	Troy Cook	Tony Wagoner
mOhm values	Actual Initial	Delta 500 Cycles	Delta Thermal	Delta Humidity
Average	8.3	0.7	2.4	3.2
St. Dev.	0.8	1.1	2.0	2.3
Min	6.7	0.1	0.1	0.3
Max	9.8	4.6	6.8	8.3
Count	32	32	32	32

**LLCR for Ground**

Date	Aug. 04 2006	Aug. 08 2006	Aug. 14 2006	Aug. 25 2006
Room Temp C	19	21	21	21
RH	50%	50%	40%	53%
Name	Troy Cook	Tony Wagoner	Troy Cook	Tony Wagoner
mOhm values	Actual Initial	Delta 500 Cycles	Delta Thermal	Delta Humidity
Average	1.4	0.0	0.2	0.2
St. Dev.	0.2	0.1	0.3	0.2
Min	0.9	-0.2	-0.1	-0.2
Max	1.8	0.5	0.9	1.0
Count	32	32	32	32

**DATA****MATING/UNMATING:**

	Initial				After 500 Cycles			
	Mating		Unmating		Mating		Unmating	
Sample#	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
1	271.1	16.94	150.7	9.42	218.2	13.64	192.7	12.04
2	211.7	13.23	190.1	11.88	212.2	13.27	179.9	11.25
3	216.0	13.50	192.2	12.01	208.0	13.00	186.8	11.68
4	192.5	12.03	182.2	11.39	181.5	11.34	184.1	11.51
5	186.9	11.68	147.6	9.23	206.5	12.91	181.5	11.34
6	187.1	11.70	169.3	10.58	188.2	11.76	165.4	10.34
7	216.3	13.52	153.1	9.57	188.4	11.77	162.5	10.16
8	236.0	14.75	187.5	11.72	244.4	15.28	152.2	9.52
9	245.5	15.34	221.4	13.84	295.2	18.45	116.9	7.31
10	223.7	13.98	174.2	10.89	176.9	11.05	155.0	9.69

	After Thermal				After Humidity			
	Mating		Unmating		Mating		Unmating	
Sample#	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)	Force (Oz)	Force (Lbs)
1	134.6	8.41	125.7	7.86	95.4	5.96	74.6	4.66
2	136.9	8.56	117.3	7.33	111.2	6.95	127.5	7.97
3	109.3	6.83	108.8	6.80	124.3	7.77	117.8	7.36
4	106.2	6.64	82.9	5.18	102.2	6.39	85.3	5.33
5	130.9	8.18	116.8	7.30	117.6	7.35	91.8	5.74
6	100.8	6.30	91.2	5.70	82.9	5.18	70.4	4.40
7	118.0	7.37	104.4	6.53	125.1	7.82	97.8	6.11
8	111.2	6.95	112.0	7.00	121.1	7.57	91.8	5.74
9	119.0	7.44	108.3	6.77	111.4	6.96	95.2	5.95
10	118.7	7.42	100.5	6.28	115.8	7.24	81.3	5.08

**INSULATION RESISTANCE (IR):**

Sample #	Initial, Meg Ohms		Thermal, Meg Ohms		Humidity, Meg Ohms	
	Mated	Unmated	Mated	Unmated	Mated	Unmated
	<u>Insulation Resistance</u>	<u>Insulation Resistance</u>	<u>Insulation Resistance</u>	<u>Insulation Resistance</u>	<u>Insulation Resistance</u>	<u>Insulation Resistance</u>
1	50000	100000	15000	100000	100000	100000
2	25000	100000	50000	100000	100000	100000

**DATA Continued****DIELECTRIC WITHSTANDING VOLTAGE (DWV):**

<u>Sample #</u>	<u>Initial, VAC Mated</u>			<u>Initial, VAC Unmated</u>		
	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>
1	2000	1500	500	2700	2025	675

<u>Sample #</u>	<u>Thermal, VAC Mated</u>			<u>Thermal, VAC Unmated</u>		
	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>
1	2400	1800	600	2500	1875	625

<u>Sample #</u>	<u>Humidity, VAC Mated</u>			<u>Humidity, VAC Unmated</u>		
	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>
1	2600	1950	650	2700	2025	675

**LLCR for Signal:**

<u>mOhm values</u>		<u>Actual</u>	<u>Delta</u>	<u>Delta</u>	<u>Delta</u>
<u>Board</u>	<u>Position</u>	<u>Initial</u>	<u>500 Cycles</u>	<u>Thermal</u>	<u>Humidity</u>
1	P1	7.0	0.1	0.3	0.3
1	P2	7.1	0.3	0.5	3.4
1	P3	7.7	0.3	1.0	5.1
1	P4	8.0	0.2	0.8	0.9
1	P5	8.1	0.1	0.4	0.4
1	P6	7.7	0.2	0.5	0.6
1	P7	7.1	0.2	1.2	2.9
1	P8	6.7	0.6	3.7	3.9
2	P1	7.6	3.8	3.9	6.0
2	P2	8.5	0.1	2.8	8.3
2	P3	8.9	0.2	3.0	3.3
2	P4	9.2	0.6	2.0	8.3
2	P5	9.3	0.4	6.5	4.0
2	P6	9.3	0.4	5.4	5.4
2	P7	8.8	0.8	2.3	7.0
2	P8	8.2	4.6	6.4	3.7
3	P1	7.9	0.4	2.6	1.8
3	P2	8.7	0.4	2.2	1.4

Tracking Code: TC0630--1114	Part #: GRF1-J-P-08-E-RA-TH1
Part description: GRF1-J-P-08-E-RA-TH1	

3	P3	9.1	0.5	1.9	1.4
3	P4	9.4	0.3	4.1	1.8
3	P5	9.8	0.5	6.8	0.8
3	P6	9.7	0.2	3.2	2.6
3	P7	9.2	0.4	1.9	3.0
3	P8	8.5	0.3	2.0	1.1
4	P1	7.4	3.5	5.3	5.5
4	P2	7.9	0.9	3.4	4.2
4	P3	8.4	0.1	0.9	1.2
4	P4	8.5	0.2	1.0	3.2
4	P5	8.5	0.1	0.3	1.5
4	P6	8.4	0.1	0.1	0.3
4	P7	7.8	0.2	0.2	3.8
4	P8	7.2	0.2	0.1	5.3

#### LLCR for Ground:

mOhm values		Actual	Delta	Delta	Delta
Board	Position	Initial	500 Cycles	Thermal	Humidity
1	P1	1.5	0.1	0.1	0.0
1	P2	1.5	0.0	0.1	0.0
1	P3	1.6	0.0	0.2	0.0
1	P4	1.6	0.0	0.0	0.0
1	P5	1.6	0.1	0.1	0.0
1	P6	1.5	0.2	0.1	0.1
1	P7	1.5	-0.1	0.1	0.1
1	P8	1.4	0.1	0.2	0.2
2	P1	1.3	0.1	0.8	0.1
2	P2	1.3	0.1	0.3	0.1
2	P3	1.3	0.1	0.2	0.1
2	P4	1.3	0.2	0.3	0.3
2	P5	1.2	0.2	0.4	0.3
2	P6	1.2	0.3	0.5	0.3
2	P7	1.0	0.1	0.7	0.4
2	P8	0.9	0.5	0.9	0.7
3	P1	1.6	0.2	0.3	0.2
3	P2	1.8	-0.1	0.1	0.1
3	P3	1.8	0.0	0.0	0.2
3	P4	1.8	0.0	0.0	0.1
3	P5	1.7	0.0	0.1	0.2
3	P6	1.8	0.1	0.1	0.1
3	P7	1.8	-0.1	0.0	0.2
3	P8	1.6	0.2	0.9	0.5
4	P1	1.2	-0.1	0.1	0.0
4	P2	1.3	-0.1	0.0	-0.1
4	P3	1.3	-0.1	-0.1	-0.2
4	P4	1.4	-0.1	0.3	0.1



Tracking Code: TC0630--1114	Part #: GRF1-J-P-08-E-RA-TH1
Part description: GRF1-J-P-08-E-RA-TH1	

4	P5	1.3	0.0	0.3	0.2
4	P6	1.2	-0.1	0.3	0.2
4	P7	1.2	-0.2	0.2	1.0
4	P8	1.3	-0.1	0.0	0.3

**EQUIPMENT AND CALIBRATION SCHEDULES****Equipment #:** THL-02**Description:** Temperature/Humidity Chart Recorder**Manufacturer:** Dickson**Model:** THDX**Serial #:** 00120351**Accuracy:** Temp: +/- 1C; Humidity: +/-2% RH (0 - 60%) +/- 3% RH (61 - 95%).

... Last Cal: 06/16/05, Next Cal: 06/16/06

**Equipment #:** TCT-03**Description:** Dillon Quantrol TC2 Test Stand**Manufacturer:** Dillon Quantrol**Model:** TC2**Serial #:** 02-1033-03**Accuracy:** Speed Accuracy: +/- 5% of indicated speed; Displacement: +/- 5 micrometers.

... Last Cal: 5/12/06, Next Cal: 5/12/07

**Equipment #:** LC-5N(icell)**Description:** 5 N Load Cell for Dillon Quantrol**Manufacturer:** Dillon Quantrol**Model:** icell**Serial #:** 02-0159-03**Accuracy:** .10% of capacity

... Last Cal: 6/13/06, Next Cal: 6/13/07

**Equipment #:** OV-03**Description:** Cascade Tek Forced Air Oven**Manufacturer:** Cascade Tek**Model:** TFO-5**Serial #:** 0500100**Accuracy:** Temp. Stability: +/- .1C/C change in ambient

... Last Cal: 05/12/06, Next Cal: 05/12/07

**Equipment #:** THC-01**Description:** Temperature/Humidity Chamber**Manufacturer:** Thermotron**Model:** SM-8-7800**Serial #:** 30676**Accuracy:** See Manual

... Last Cal: 8/18/2006, Next Cal: 8/18/2007

Tracking Code: TC0630--1114	Part #: GRF1-J-P-08-E-RA-TH1
Part description: GRF1-J-P-08-E-RA-TH1	

**Equipment #:** HPM-01  
**Description:** Hipot Megommeter  
**Manufacturer:** Hipotronics  
**Model:** H306B-A  
**Serial #:** M9905004  
**Accuracy:** 2 % Full Scale Accuracy  
 ... Last Cal: 5/12/06, Next Cal: 05/12/07

**Equipment #:** MO-01  
**Description:** Micro-Ohmeter  
**Manufacturer:** Keithley  
**Model:** 580  
**Serial #:** 0772740  
**Accuracy:** See Manual See Manual  
 ... Last Cal: 05/12/06, Next Cal: 05/12/07

**Equipment #:** MO-03  
**Description:** Multimeter /Data Acquisition System  
**Manufacturer:** Keithley  
**Model:** 2700  
**Serial #:** 0791975  
**Accuracy:** See Manual  
 ... Last Cal: 05/12/06, Next Cal: 05/12/07

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