AUGUST 24, 2005

TEST REPORT #204881

QUALIFICATION TESTING
LGA SOCKETS

ARDENT CONCEPTS, INC.

APPROVED BY: MAX PEEL
SENIOR FELLOW
CONTECH RESEARCH, INC.

1478 - 01
ACCREDITED
1478 - 02

Contech Research
An Independent Test and Research Laboratory

REVISION HISTORY

DATE	REV. NO.	DESCRIPTION	ENG.
8/24/2005	1.0	Initial Issue	MP

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 Ardent Concepts of Hampton, NH 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.

Max Peel
Senior Fellow
Contech Research

MP:js

SCOPE

To perform qualification testing on sockets as manufactured and submitted by the test sponsor Ardent Concepts, 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. Standards: EIA Publication 364

TEST SAMPLES AND PREPARATION

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

   a) RC12-06, 1.27 mm
   b) RC10-05, 1.00 mm
   c) RC10-04, 1.00 mm (Burn in applications)

2. Unless otherwise indicated, all materials were certified by the manufacturer to be in accordance with the applicable product specification.

3. The test samples as submitted were certified 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. 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.

5. Test samples were assembled to test boards. The test boards were fabricated from FR-4 with 3.0 ounce copper material using typical production techniques. Special circuit lines and/or plated though hole patterns were provided for ease of efficient test lead attachment.

TEST SAMPLES AND PREPARATION - Continued

6. Two sets of test boards were used. The first set of boards contained special traces to allow current carrying test to be performed (See Sequence D, figure #10). The second set of boards had special traces to allow performance of low level circuit resistance measurements. (See Figures #1 and 2 following).

7. Special leads were attached to the test boards for the current rating test as well as to the second set of boards for the creation of a series circuit for monitoring contact interruption. Said preparation was performed prior to the assembly of the sockets to the boards.

8. All test boards were ultrasonically cleaned after test lead attachment, preparation and/or soldering using the following process:

   A) Test samples were immersed into the Branson 8210 cleaner which contained Kyzen Ionex HC cleaning solution with the following conditions:

      a) Temperature : 55° ± 4°C
      b) Frequency : 43 KHz
      c) Immersion Time : 3 to 5 Minutes

   B) Test samples were slowly removed and placed into the Branson 5210 cleaner which contained DI water with the following conditions:

      a) Temperature : 55° ± 4°C
      b) Frequency : 47 KHz
      c) Immersion Time : 1 to 2 Minutes

   C) Test samples were removed and placed in a Fisher Thermix agitator containing DI water warmed to 55° ± 5°C for 1 to 2 minutes.

   D) Upon removal, the test samples were rinsed for 1 to 2 minutes in free flowing DI water at 55° ± 5°C.

   E) After final rinse, test samples were dried in an air circulating oven for 2 to 3 minutes minimum at 50° ± 2°C.

   F) Test samples were allowed to recover to room ambient conditions prior to testing.

TEST SAMPLES AND PREPARATION - Continued

9. After cleaning sockets were assembled to the test boards. The simulated mating devices were assembled. Special locators on the sockets allowed proper location relative to the pads on the board.

10. Hardware supplied by the test sponsor fixed the assembly in place. The torque used was in accordance with the recommended torque for 0-80 hardware.

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

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

TEST SELECTION

1. All tests were performed in accordance with the applicable sequences and procedures as specified in Ardent Concepts test plan. The interchangeability (dimensional inspection) was not performed by Contech Research.

2. The following test sequences were established for this program:

SEQUENCE A

A-1	A-2	A-3
LLCR Vs. Deflection	Measure Cont.Heights	Measure Cont.Heights
	Force Vs. Deflection	LLCR
	Measure Cont.Heights	T-Life
		LLCR
		Measure Cont.Heights

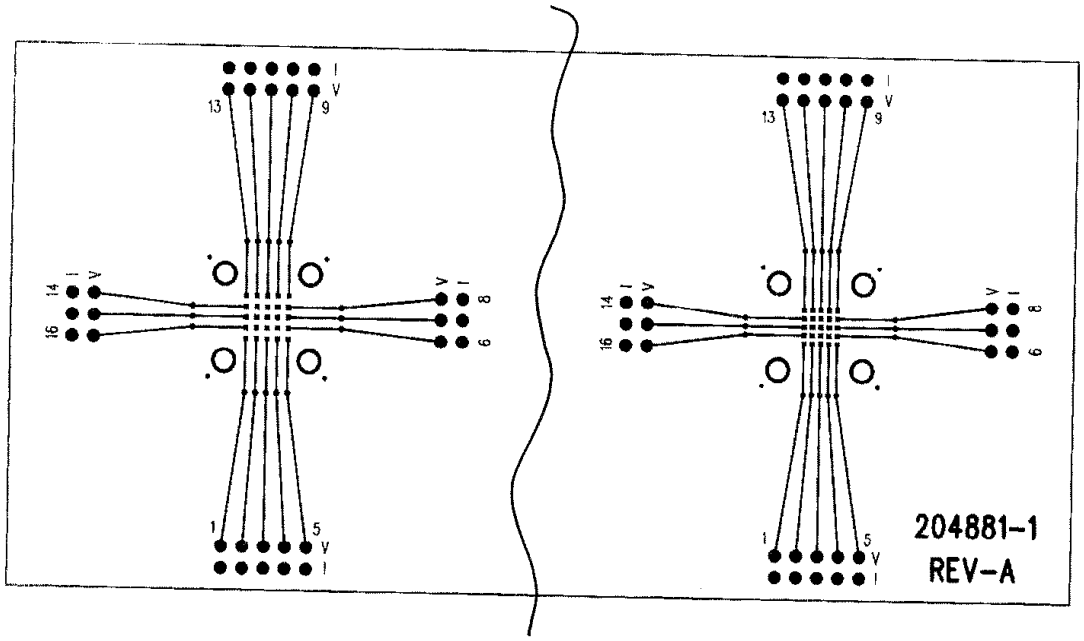
SEQUENCE B	SEQUENCE C	SEQUENCE D
LLCR	LLCR	Cont.Rating-1 Cont. Energized
DURABILITY	SHOCK	Cont.Rating-2 Cont. Energized
LLCR	LLCR	Cont.Rating-4 Cont. Energized
THER.CYCLE	VIBRATION	
LLCR	LLCR	

3. The assemblies were exposed to the following sequences:

   a) RC12-06: A,B,C,D
   b) RC10-04: A,B,D
   c) RC10-05: C,D

RC 12-06

RC10-05
RC10-04



TOP SIDE

FIGURE #1

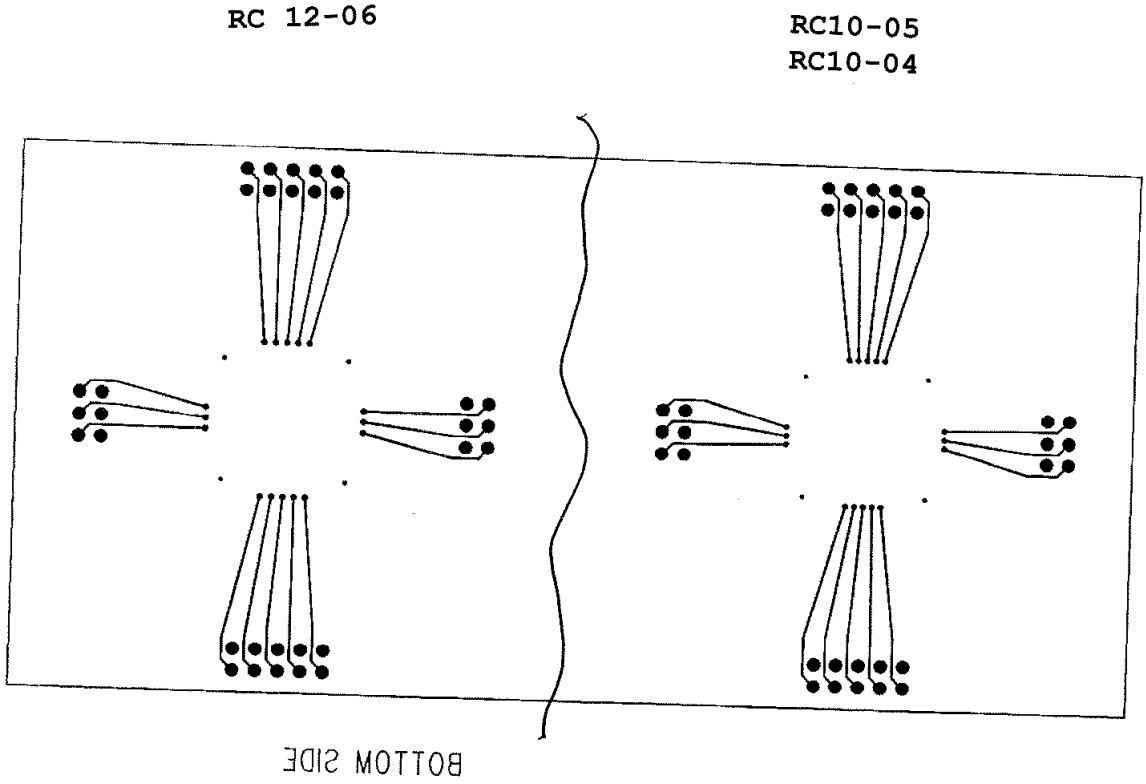


FIGURE #2

DATA SUMMARY

TEST	REQUIREMENT	RESULTS RC10-4	RC10-5	RC12-06
SEQUENCE A				
NORMAL FORCE	PLOT	PERFORMED	N/A	PERFORMED
PERMANENT SET	RECORD	<0.0024 IN.	N/A	<0.0017 IN.
LLCR Vs. DEFLECTION	PLOT	PERFORMED	N/A	PERFORMED
LLCR	RECORD	<80.9 mΩ		<56.9 mΩ
T-LIFE	PERFORM	PERFORMED	N/A	PERFORMED
LLCR,ΔR	<+20.0 mΩ	<+15.4 mΩ	N/A	<+7.9 mΩ
STRESS RELAXATION	RECORD	<0.0025 IN.	N/A	<0.0044 IN.
SEQUENCE B				
LLCR	RECORD	<84.6 mΩ		<57.2 mΩ
DURABILITY	PERFORM	PERFORMED	N/A	PERFORMED
LLCR,ΔR	<+20.0 mΩ	<+22.6 mΩ	N/A	<+7.5 mΩ
THERMAL CYCLE	PERFORM	PERFORMED	N/A	PERFORMED
LLCR,ΔR				
100 CYCLES	<+20.0 mΩ	<+5.8 mΩ	N/A	<+3.8 mΩ
1000 CYCLES	<+20.0 mΩ	<+12.5 mΩ	N/A	<+10.5 mΩ
2000 CYCLES	<+20.0 mΩ	<+12.8 mΩ	N/A	<+6.4 mΩ
SEQUENCE C				
LLCR	RECORD	N/A	<85.6 mΩ	<54.7 mΩ
SHOCK	NO DAMAGE	N/A	PASSED	PASSED
	1.0 μSEC	N/A	PASSED	PASSED
LLCR,ΔR	<+20.0 mΩ	N/A	<+8.7 mΩ	<+17.9 mΩ
VIBRATION	NO DAMAGE	N/A	PASSED	PASSED
	1.0 μSEC	N/A	PASSED	PASSED
LLCR,ΔR	<+20.0 mΩ	N/A	<15.2 mΩ	<9.3 mΩ
SEQUENCE D				
CURRENT CAPACITY	PLOT&RECORD	PERFORMED	PERFORMED	PERFORMED
CURRENT @ 30°C RISE				
One Cont.Energized	---	3.4 amp	3.4 amp	3.6 amp
Two Cont.Energized	---	2.3 amp	2.5 amp	3.1 amp
Four Cont.Energized	---	1.9 amp	1.9 amp	2.2 amp

EQUIPMENT LIST

ID#	Next Cal	Last Cal	Equipment Name	Manufacturer	Model #	Serial #	Accuracy	Freq.Cal
30	4/1/2006	4/1/2005	Discontinuity Monitor	Assoc. Test Lab	DM-600-01	382-1	See Cal Cert	12mon
34			Shock Machine	Avco	SM110-3	1047	See ID# 14 & 117	Ea Test
278			Positioner (M24308/12-1)	Daniels MFG	K325-1	FSCM 11851	N/A	N/A
547			Temp Humid Chamber	CSZ	ZH-8-1-H-AC	ZG9442057	See Cal Cert	Ea Test
553	12/6/2005	12/6/2004	12 channel Power Unit	PCB Co.	483A	1303	See Cal Cert	12mon
585	7/1/2006	7/1/2005	Digitizing Scope	Hewlett Packard Co.	54200A	2740A-02154	±2%	12mon
601			Computer	A.M.I.	P111-450	082714	N/A	N/A
684	6/22/2006	6/22/2005	Accelerometer	PCB. Co.	353B04	47648	See Cal Cert.	12mon
1116			Computer	ARC. Co.	P111-450		N/A	N/A
1137	5/10/2006	5/10/2005	Accelerometer	PCB	353BO4	57874	See Cal.Cert.	12mon
1161	3/15/2006	3/15/2005	Multimeter	Fluke	75-III	75281029	See Cal Cert	12mon
1166	7/19/2006	7/19/2005	Sine/Rndm Vib Control Digitizer	Hewlett Packard	E1432A	US39342279	See Cal Cert	12 mon
1167			Interface	Hewlett Packard	E8491B	US390100753	N/A	N/A
1168			Mainframe	Hewlett Packard	E8408A	US39000357	N/A	N/A
1169			Computer	ARC	PC133	none	N/A	N/A
1271			Amplifier	Unholtz Dickie	SA15	3483	See Manual	N/A
1272			Shaker Table	Unholtz Dickie	S202PB	263	N/A	N/A
1278	7/29/2006	7/29/2005	Microohm mtr	Keithley	580	0803947	See Manual	12 mon.
1314	12/8/2005	12/8/2004	Multiplexer card	Keithley Co.	7708	0862544	See CERT	12mon
1315	12/8/2005	12/8/2004	Data Aquisition Multimeter	Keithley Co.	2700	0862680	See CERT	12mon
1363			Temp Humid Chamber	Blue M	BTH-4 100-C	BTH-140	See Cert	EaTest

TEST RESULTS

SEQUENCE A

PROJECT NO.: 204881	SPECIFICATION: Ardent Test Plan
PART NO.: RC10-04 RC12-06	PART DESCRIPTION: LGA Sockets
SAMPLE SIZE: 5 Contacts Each	TECHNICIAN: BE
START DATE: 5-27-05	COMPLETE DATE: 6-1-05
ROOM AMBIENT: 24°C	RELATIVE HUMIDITY: 45%
EQUIPMENT ID#: 53, 92, 93, 99, 99-1, 99-2, 455, 631, 683, 1139, 1400	

NORMAL FORCE

PROCEDURE:

1. The test sample was mounted to test board and fixed into place.

2. The prepared sample was placed in a special holding fixture on a X-Y moveable table.

3. The preparation was accomplished so as not to disturb the contact locking system or location within the plastic housing.

4. The sample was positioned in such a manner so as to allow a special probe attached to a force transducer to deflect the contact element to a given distance as specified.

5. The probe/force traducer is interconnected with a linear transducer, amplifier, data acquisition/computer system and plotter.

6. As the contact element is deflected to the level desired, the normal force characteristic is plotted directly and simultaneously.

7. The test was performed in accordance with EIA 364, Test Procedure 04.

8. The contact height was measured and recorded prior to and after completion of the force vs. deflection test.

9. The test was performed with the contact (in or outside of) its plastic housing.

REQUIREMENTS:

1. The force/deflection characteristic shall be plotted.

2. The contact heights shall be measured and recorded.

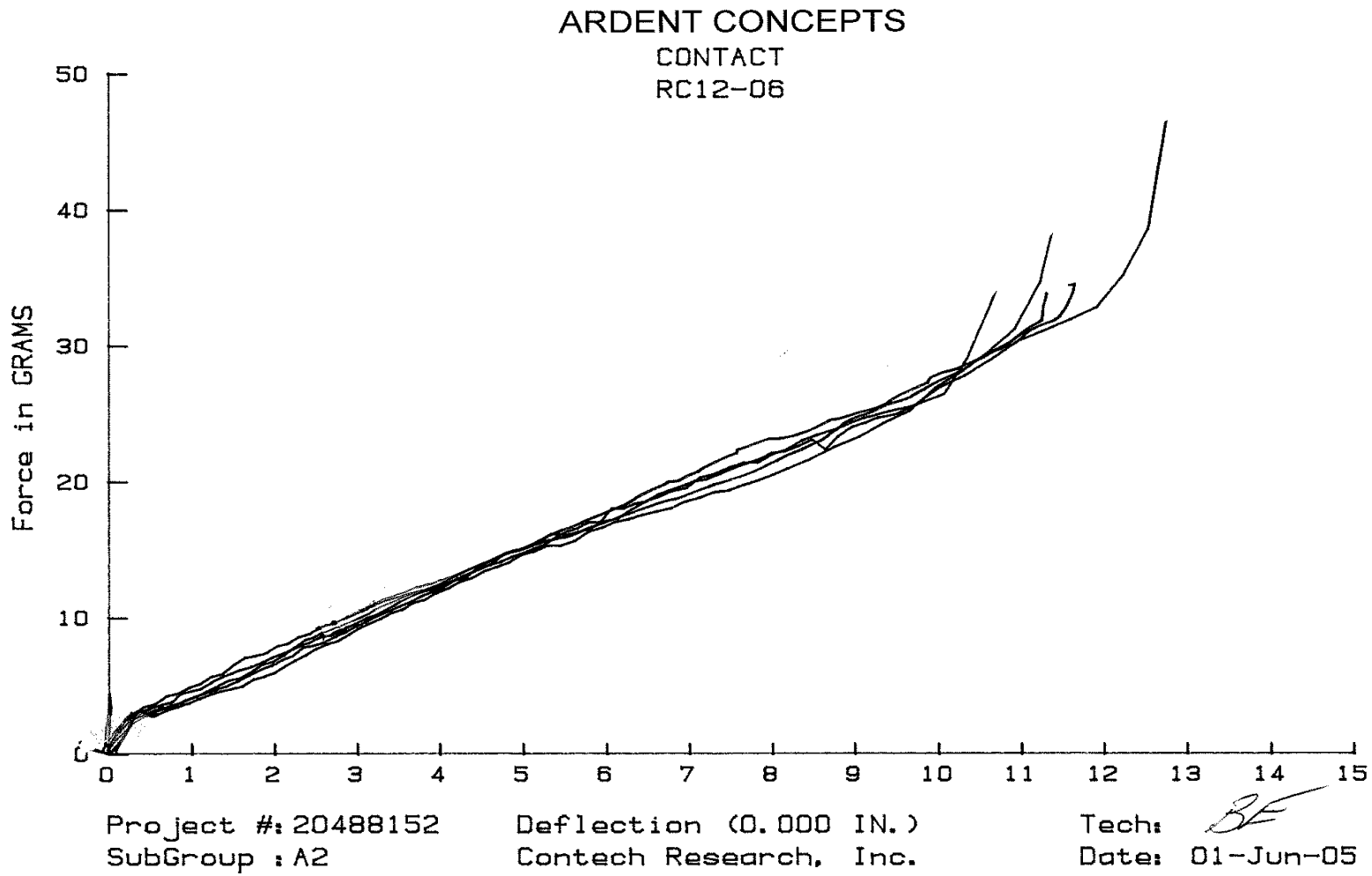
RESULTS:

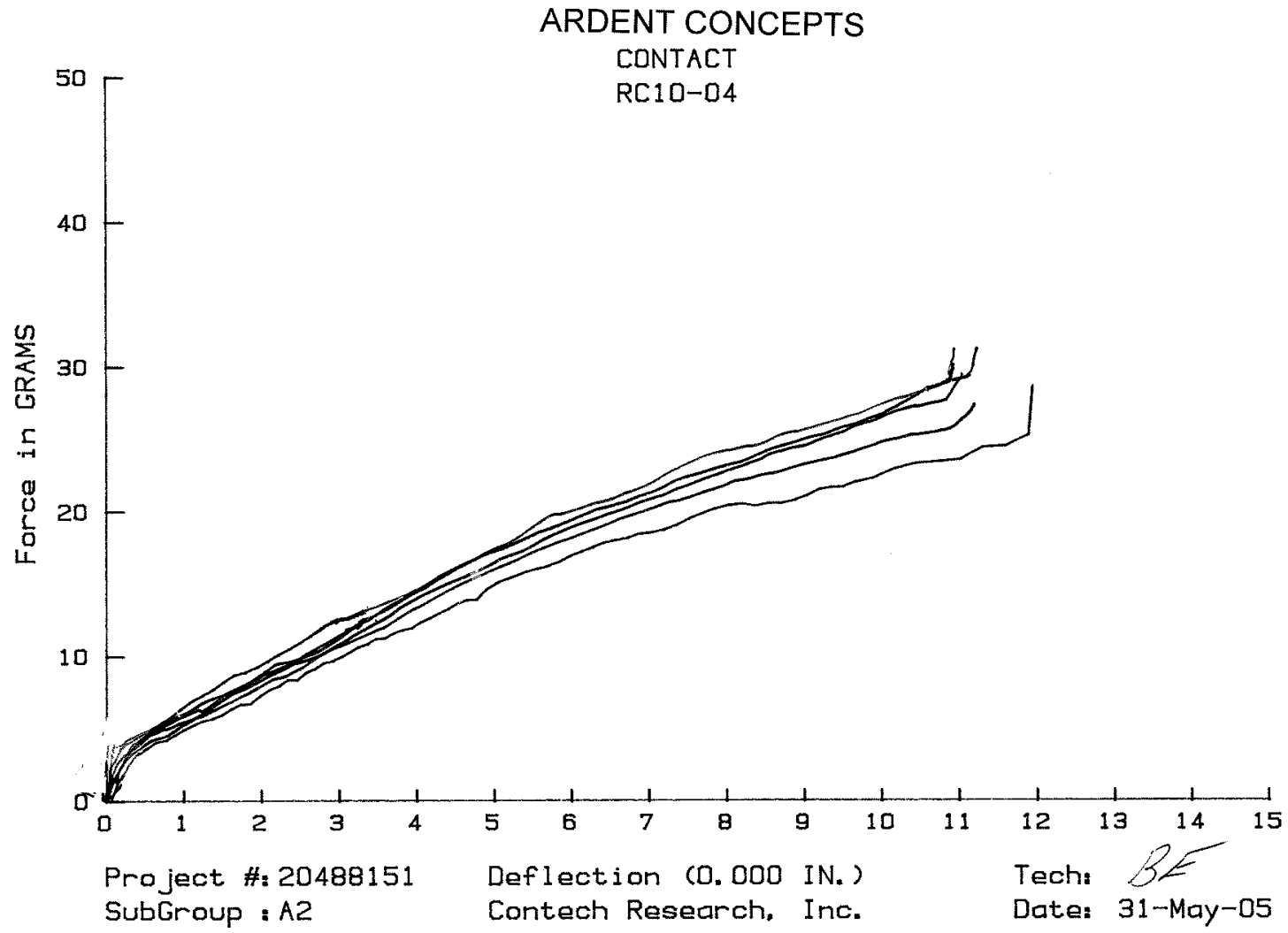
1. The force/deflection characteristic is shown in Figures #20488151 and 20488152.

2. See File 50 for the individual contact heights measured. The following is a summary of the stress relaxation observed.

STRESS RELAXATION
(0.0000 Inch)

RC10-04	0.0014 to 0.0024
RC12-06	0.0011 to 0.0017


ARDENT CONCEPTS
CONTACT
RC12-06
Force in GRAMS
50
40
30
20
10
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Project #: 20488152
SubGroup : A2
Deflection (0.000 IN.)
Contech Research, Inc.
Tech:
Date: 01-Jun-05


ARDENT CONCEPTS
CONTACT
RC10-04
Force in GRAMS
50
40
30
20
10
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
Project #: 20488151
SubGroup : A2
Deflection (0.000 IN.)
Contech Research, Inc.
Tech: BE
Date: 31-May-05

CONTACT HEIGHT

Project No. 204881		Gp.No.	A2	Tech.	BE	Eng.	MP
Customer	Ardent Concepts	Spec.			Par.No.		
Date Started	5/27/05	Date Completed	6/01/05	Temp.(°C)	24	R.H.(%)	45
MIL-STD-202		MIL-STD-1344		US CAR PF1		EIA 364	
Method or TP				Other			
Samples Tested (ID No.) RC10-04 & RC12-06				File		Cont Height	
Equipment ID				99, 99-1, & 99-2			
Mated		Unmated	X	Mounted	X	Unmounted	

DESCRIPTION:

Screw Head up; ID# on Top; Clockwise; Back to Front; Contacts 1 thru 5

RC10-04		RC10-04				RC12-06			RC12-06		
P#	Initial	Final	P#	Delta		P#	Initial	Final	P#	Delta	
1	0.0111	0.0094	1	0.0014			0.0100	0.0086	1	0.0014	
2	0.0103	0.0079	2	0.0024			0.0104	0.0092	2	0.0012	
3	0.0119	0.0104	3	0.0015			0.0100	0.0083	3	0.0017	
4	0.0109	0.0088	4	0.0021			0.0093	0.0079	4	0.0014	
5	0.0114	0.0095	5	0.0019			0.0108	0.0097	5	0.0011	

1478 - 01
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PROJECT NO.: 204881 SPECIFICATION: Ardent Test Plan

PART NO.: RC10-04 PART DESCRIPTION: LGA Sockets
RC12-06

SAMPLE SIZE: 5 Contacts Each TECHNICIAN: BE

START DATE: 6-1-05 COMPLETE DATE: 6-1-05

ROOM AMBIENT: 24°C RELATIVE HUMIDITY: 44%

EQUIPMENT ID#: 99-2, 1278

LOW LEVEL CIRCUIT RESISTANCE (LLCR) Vs. DEFLECTION

PROCEDURE:

1. A plated test flat pad was attached to a probe was in turn attached to the normal force test. The apparatus for measuring force was disconnected.

2. The applicable socket was mounted and fixed in place. The test platform was mounted to a flat plate on a test stand.

3. The probe was advanced so that it contacted the contact tip and established contact (< than 0.001 deflection level).

4. The resistance (LLCR) test was performed in accordance with EIA 364, Test Procedure 23 with the following conditions:

5. Test Conditions:

   a) Test Current : 100 ma maximum
   b) Open Circuit Voltage : 20 mv

6. A voltage and current probes were attached to opposite sides of the test pad attached to the deflection probe. A second set of probes were placed on applicable pth's of the test board.

7. The deflection probe was moved until a 0.001 deflection was achieved and low level circuit resistance measured and recorded.

8. The probe was advanced in 0.001 inch increments up to 0.008 deflection and low level circuit resistance measured and recorded.

PROCEDURE: Continued

9. From the 0.008 deflection level to the 0.014 level, the probe was advanced in 0.002 increments and low level circuit resistance measured and recorded at each interval.

10. The above process was performed on 5 contacts per part number.

REQUIREMENTS:

The average low level circuit resistance at each deflection level shall be calculated and plotted (LLCR vs. deflection).

RESULTS:

1. See Figure #3 for said plots.

2. See data file #49 for individual data points for the normal force vs. LLCR measurements.

3. The bulk resistance of the test board traces has been removed.

			DATA SHEET					
PROJECT	204881		TEST :	Resistance vs Deflection			REQ. :	
SPEC :			PAR. :		T.P.		TECH :	BE
START :	6/1/2005		SAMPLE ID # :		RC10-04 & RC12-06			
FINISH :	6/1/2005		TEMP :ºC	24	R.H. %	44	UNITS :	milliohms
EQUIPMENT ID #:		99-2 & 1278				FILE 49		
				RC10-4				
		Pin # 1	Pin # 2	Pin # 3	Pin # 4	Pin # 5		
	0.000	85.8	97.7	98.3	97.2	94.8		
	0.001	77.4	94.5	96.3	86.6	84.9		
	0.002	76.9	91.3	91.5	79.6	80.8		
	0.003	75.0	92.1	91.1	75.1	79.6		
	0.004	74.7	92.7	88.0	73.1	77.6		
	0.005	74.4	91.5	84.0	71.4	77.1		
	0.006	72.4	89.5	81.8	71.7	74.5		
	0.007	69.3	89.0	81.2	71.6	75.5		
	0.008	68.8	84.8	80.6	71.5	75.6		
	0.010	69.4	81.6	80.6	72.5	70.9		
	0.012	69.8	79.2	78.7	72.3	70.7		
	0.014	69.6	79.0	76.0	72.6	67.8		
				RC12-06				
		Pin # 1	Pin # 2	Pin # 3	Pin # 4	Pin # 5		
	0.000	88.3	99.8	88.9	104.6	93.5		
	0.001	80.5	89.6	78.3	91.2	73.9		
	0.002	74.5	84.3	73.8	85.6	68.3		
	0.003	73.2	77.7	71.4	80.3	58.9		
	0.004	66.9	72.1	69.9	77.1	56.2		
	0.005	62.2	69.7	65.6	73.5	53.8		
	0.006	58.7	65.2	64.7	70.8	51.9		
	0.007	56.5	64.6	65.1	70.9	49.8		
	0.008	55.8	62.0	64.8	67.0	47.5		
	0.010	52.0	57.9	65.0	64.4	44.4		
	0.012	49.7	55.6	61.7	61.9	43.3		
	0.014	48.5	53.0	59.1	58.5	42.0		

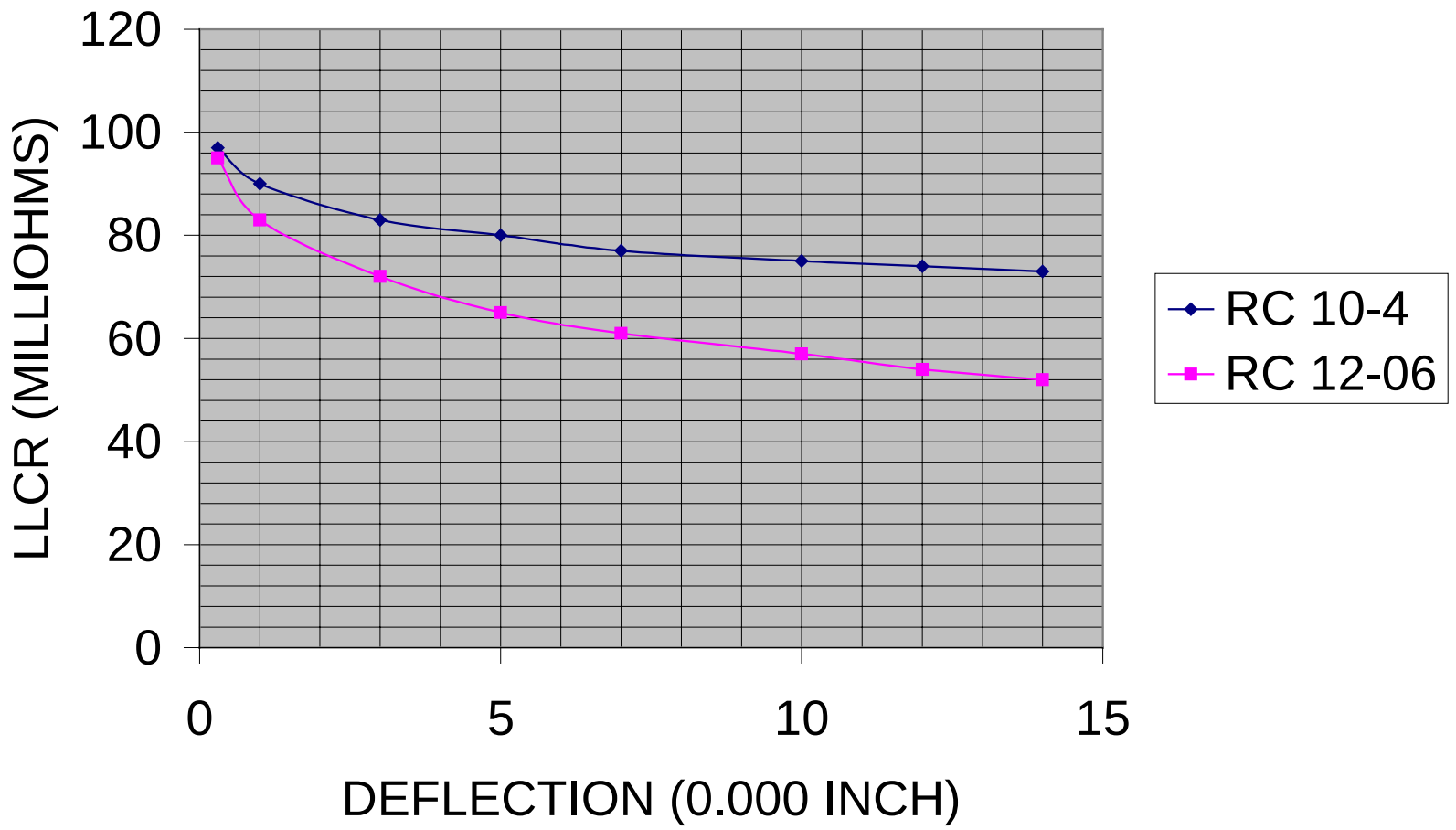

LLCR VS. DEFLECTION
LLCR (MILLIOHMS)
120
100
80
60
40
20
0
0
5
10
15
DEFLECTION (0.000 INCH)
RC 10-4
RC 12-06

FIGURE # 3

PROJECT NO.: 204881	SPECIFICATION: Ardent Test Plan
PART NO.: RC10-04 RC12-06	PART DESCRIPTION: LGA Sockets
SAMPLE SIZE: 2 Each P/N	TECHNICIAN: BE
START DATE: 5-18-05	COMPLETE DATE: 5-23-05
ROOM AMBIENT: 23°C	RELATIVE HUMIDITY: 38%
EQUIPMENT ID#: 99, 99-1, 99-2, 550, 601, 632, 1276	

TEMPERATURE LIFE

PROCEDURE:

1. The test samples were mounted to their test boards. A simulated mating device was applicably placed on the socket mating area and the assembly fixed in place.

2. The following sequence was performed:

    a) Initial Contact Heights were measured and recorded.
    b) Initial Low Level Circuit Resistance was performed
    c) T-Life
    d) Final Low Level Circuit Resistance was performed
    e) Final Contact Heights were measured and recorded

3. The test samples were placed in the test chamber after it had reached equilibrium at the specified temperature level. The test exposure was performed in accordance with EIA 364, Test Procedure 17, with the following conditions:

4. Test Condition:

    a) Temperature : 160°C ± 3°C
    b) Duration : 96 hours
    c) Mated Condition : Mated

5. Prior to performing variable measurements, the test samples were allowed to recover to room ambient conditions.

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

REQUIREMENTS:

1. There shall be no evidence of physical damage or deterioration of the test samples so exposed.

2. The initial resistance shall be measured and recorded.

3. The change in low level circuit resistance shall not exceed +20.0 mΩ.

4. The stress relaxation shall be determined.

RESULTS:

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

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

LOW LEVEL CIRCUIT RESISTANCE
(Milliohms)

	Initial		Change In	
	Avg.	Max.	Avg.	Max.
RC12-06	50.8	56.9	+1.9	+7.9
RC10-04	67.8	80.9	+5.7	+15.4

3. See data files 20488103 and 20488104 for individual data points.

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

AVERAGE STRESS RELAXATION
(0.0000 Inch)

RC12-06	0.0044
RC10-04	0.0025

5. See data file 48 for individual data points.

Low Level Contact Resistance

	Project:	204881				Spec:	Ardent Test Plan	
	Customer:	Ardent				Subgroup:	A3	
	Product:	RC10-04				File #:	20488103	
	Description: LGA Socket							
	Open circuit voltage:		20mv			Current:	100ma	
				Delta values				
				units: milliohms				
	Temp ºC	23	23					
	R.H. %	38	38					
	Date:	18May05	23May05					
	Pos. ID	Initial	T-Life					
	4-1	62.4	9.5					
	4-2	62.5	11.6					
	4-3	58.6	6.6					
	4-4	62.9	-1.4					
	4-5	71.1	2.6					
	4-6	62.0	3.5					
	4-7	73.1	9.8					
	4-8	75.5	8.8					
	4-9	68.5	8.4					
	4-10	75.4	9.8					
	4-11	80.9	5.1					
	4-12	70.3	13.0					
	4-13	60.4	3.3					
	4-14	60.5	9.5					
	4-15	77.5	10.8					
	4-16	63.4	2.6					
	5-1	63.7	11.7					
	5-2	61.3	-0.2					
	5-3	77.5	3.8					
	5-4	63.4	4.8					
	5-5	79.1	-5.5					
	5-6	62.7	-0.3					
	5-7	60.7	6.1					
	5-8	70.9	0.2					
	5-9	78.6	9.2					
	5-10	66.5	-0.2					
	5-11	68.7	5.0					
	5-12	67.9	4.6					
	5-13	69.8	-4.5					
	5-14	72.2	15.4					

				Delta values				
				units: milliohms				
	Temp ºC	23	23					
	R.H. %	38	38					
	Date:	18May05	23May05					
	Pos. ID	Initial	T-Life					
	5-15	63.3	5.4					
	5-16	57.2	12.1					
	MAX	80.9	15.4					
	MIN	57.2	-5.5					
	AVG	67.8	5.7					
	STD	6.8	5.2					
	Open	0	0					
	Tech	BE	BE					
	Equip ID	601	601					
		1278	1278					

		Low Level Contact Resistance						
	Project:	204881				Spec:	Ardent Test Plan	
	Customer:	Ardent				Subgroup:	A3	
	Product:	RC12-06				File #:	20488104	
	Description: LGA Socket							
	Open circuit voltage:		20mv			Current:	100ma	
				Delta values				
				units: milliohms				
	Temp ºC	23	23					
	R.H. %	38	38					
	Date:	18May05	23May05					
	Pos. ID	Initial	T-Life					
	4-1	50.9	1.4					
	4-2	56.2	-3.7					
	4-3	51.7	-1.7					
	4-4	56.9	-2.7					
	4-5	51.1	2.4					
	4-6	51.1	-0.4					
	4-7	52.1	0.5					
	4-8	53.0	-2.3					
	4-9	54.2	-0.1					
	4-10	49.4	1.0					
	4-11	52.9	2.4					
	4-12	53.4	-4.0					
	4-13	53.6	7.9					
	4-14	54.1	2.8					
	4-15	51.4	5.3					
	4-16	50.8	4.8					
	5-1	48.0	7.1					
	5-2	45.3	2.5					
	5-3	47.6	5.9					
	5-4	51.2	1.1					
	5-5	48.7	4.9					
	5-6	48.6	-4.6					
	5-7	50.3	-2.7					
	5-8	46.1	0.8					
	5-9	45.0	7.8					
	5-10	46.5	6.1					
	5-11	48.1	5.5					
	5-12	48.5	4.1					
	5-13	54.3	-5.5					
	5-14	54.6	3.9					

				Delta values				
				units: milliohms				
	Temp ºC	23	23					
	R.H. %	38	38					
	Date:	18May05	23May05					
	Pos. ID	Initial	T-Life					
	5-15	50.4	5.2					
	5-16	49.0	6.0					
	MAX	56.9	7.9					
	MIN	45.0	-5.5					
	AVG	50.8	1.9					
	STD	3.1	3.8					
	Open	0	0					
	Tech	BE	BE					
	Equip ID	601	601					
		1278	1278					

CONTACT HEIGHT

Project No.204881			Gp.No.A3			Tech.		BE	Eng.		MP
Customer	Ardent		Spec.						Par.N.		
Date Started	5/18/05		Date Completed		5/23/05			Temp.23°C			R.H.38%
MIL-STD-202		MIL-STD-1344			US CAR PF1			EIA 364			
Method or TP			Other								
Samples Tested (ID No.)			RC10-04 #4&5 RC12-06 #4&5				File 48		Cont Height		
Equipment ID		99, 99-1, & 99-2									
Mated		Unmated	X	Mounted		X	Unmounted				

DESCRIPTION:

Screw Head up; ID# on Top; Clockwise; Back to Front; 3 Contacts each Side; 4 Sides

RC10-04-4				RC10-04-5			RC12-06-4			RC12-06-5	
P#	Initial	Final		Initial	Final	P #	Initial	Final	P #	Initial	Final
13	0.0104	0.0100	13	0.0136	0.0082	13	0.0129	0.0077	13	0.0127	0.0073
12	0.0131	0.0100	12	0.0143	0.0091	12	0.0127	0.0084	12	0.0128	0.0078
11	0.0146	0.0097	11	0.0140	0.0091	11	0.0119	0.0074	11	0.0121	0.0081
8	0.0094	0.0098	8	0.0127	0.0104	8	0.0113	0.0099	8	0.0130	0.0104
7	0.0084	0.0095	7	0.0101	0.0090	7	0.0115	0.0089	7	0.0142	0.0090
6	0.0108	0.0095	6	0.0118	0.0080	6	0.0123	0.0072	6	0.0145	0.0087
5	0.0125	0.0099	5	0.0148	0.0095	5	0.0141	0.0087	5	0.0136	0.0087
4	0.0132	0.0097	4	0.0127	0.0106	4	0.0146	0.0078	4	0.0126	0.0093
3	0.0118	0.0099	3	0.0147	0.0101	3	0.0134	0.0075	3	0.0130	0.0085
16	0.0145	0.0103	16	0.0143	0.0108	16	0.0125	0.0091	16	0.0130	0.0091
15	0.0121	0.0104	15	0.0126	0.0099	15	0.0116	0.0081	15	0.0123	0.0082
14	0.0145	0.0104	14	0.0142	0.0101	14	0.0121	0.0087	14	0.0137	0.0086
Max	0.0146	0.0104		0.0148	0.0108		0.0146	0.0099		0.0145	0.0104
Min	0.0084	0.0095		0.0101	0.0080		0.0113	0.0072		0.0121	0.0073
Avg	0.0121	0.0099		0.0133	0.0096		0.0126	0.0083		0.0132	0.0086

TEST RESULTS

SEQUENCE B

PROJECT NO.: 204881	SPECIFICATION: Ardent Test Plan
PART NO.: RC12-06 RC10-04	PART DESCRIPTION: LGA Sockets
SAMPLE SIZE: 3 Each	TECHNICIAN: BE
START DATE: 5-17-05	COMPLETE DATE: 5-17-05
ROOM AMBIENT: 24°C	RELATIVE HUMIDITY: 36%
EQUIPMENT ID#: 601, 1278	

DURABILITY

PROCEDURE:

1. The test was performed in accordance with EIA 364, Test Procedure 09.

2. The test samples were axially aligned to accomplish the mating and unmating function allowing for self-centering movement.

3. Test Conditions:

   a) No. of Cycles : 500
   b) Rate : One cycle every 6 to 8 seconds

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

REQUIREMENTS:

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

2. The initial low level circuit resistance shall be measured and recorded.

3. The change in low level circuit resistance shall not exceed +20.0 mΩ.

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:

LOW LEVEL CIRCUIT RESISTANCE
(Milliohms)

	Initial		Change In	
	Avg.	Max.	Avg.	Max.
RC10-04	67.6	84.6	+4.4	+22.6
RC12-06	50.2	57.2	+0.9	+7.5

3. See data files 20488101 and 20488102 for individual data points.

PROJECT NO.: 204881 SPECIFICATION: Ardent Test Plan

PART NO.: RC12-06
RC10-04 PART DESCRIPTION: LGA Sockets

SAMPLE SIZE: 2 and 3 TECHNICIAN: BE

START DATE: 5-19-05 COMPLETE DATE: 8-5-05

ROOM AMBIENT: 24°C RELATIVE HUMIDITY: 39%

EQUIPMENT ID#: 547, 1161, 1314, 1315, 1363

THERMAL CYCLING

PROCEDURE:

1. The test environment was performed in accordance with EIA 364, Test Procedure 110 (proposed) with the following conditions:

2. Test Conditions:

   a) Number of Cycles : 2000 Cycles
   b) Hot Extreme : +85 ± 3°C
   c) Cold Extreme : +15 ± 3°C
   d) Time at Temperature : 10 Minutes
   e) Ramp Time Hot to Cold : 15 Minutes
   f) Ramp Time Cold to Hot : 15-20 Minutes

3. The total number of cycles were performed continuously.

4. All subsequent variable testing was performed in accordance with the procedures as 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 not exceed +20.0 mΩ.

RESULTS: See next page.

RESULTS:

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

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

CHANGE IN LOW LEVEL CIRCUIT RESISTANCE
(Milliohms)

	Avg.	Max.
A) RC12-06		
After 100 Cycles	-3.3	+3.8
After 1000 Cycles	+2.3	+10.5
After 2000 Cycles	-0.3	+6.4
B) RC10-04		
After 100 Cycles	-2.1	+5.8
After 1000 Cycles	+5.0	+12.5
After 2000 Cycles	+1.9	+12.8

3. See data files 20488101 and 20488102 for individual data points.

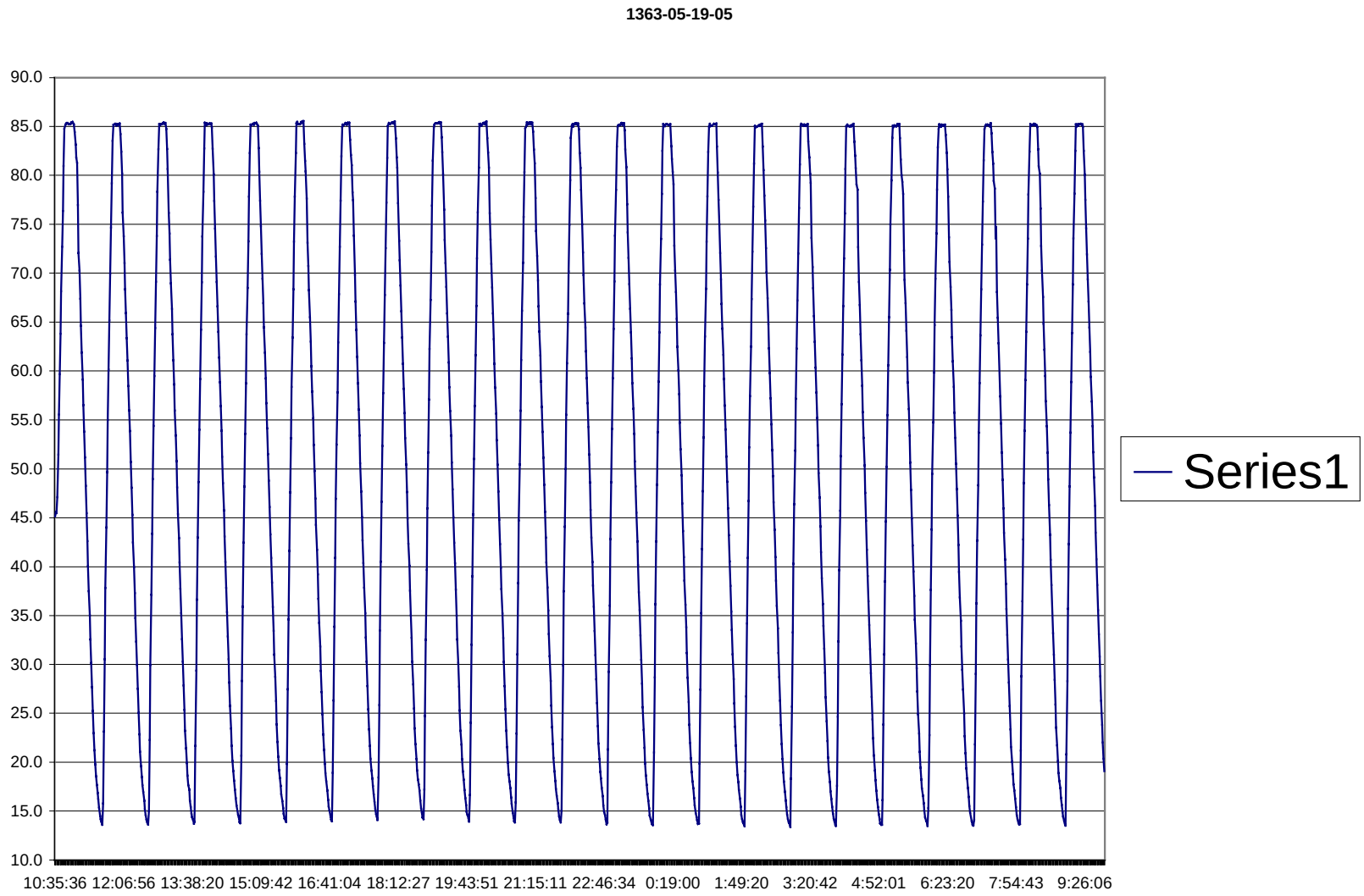
4. See typical thermal cycle plots follow.

			Low Level Contact Resistance					
	Project:	204881				Spec:	Ardent Test Plan	
	Customer:	Ardent				Subgroup:	B	
	Product:	RC10-04				File #:	20488101	
	Description: LGA Socket							
	Open circuit voltage:		20mv			Current:	100ma	
				Delta values				
				units: milliohms				
	Temp ºC	24	24	22	24	23		
	R.H. %	39	39	40	44	50		
	Date:	17May05	17May05	24May05	30Jun05	05Aug05		
	Pos. ID	Initial	Durability	T-Cycle	T-Cycle	T-Cycle		
				100Cy	1000Cy	2000Cy		
	1-1	75.0	5.3	-5.2	6.2	0.1		
	1-2	68.9	3.5	-5.4	2.6	1.5		
	1-3	62.2	3.2	-3.0	8.9	3.6		
	1-4	57.5	9.1	2.6	12.4	12.8		
	1-5	63.9	5.6	-2.2	6.3	4.2		
	1-6	73.8	22.6	-7.3	0.3	-3.6		
	1-7	58.6	6.6	-1.8	6.4	1.5		
	1-8	67.8	0.6	-3.7	4.9	-1.0		
	1-9	60.2	2.9	0.3	6.5	5.0		
	1-10	71.8	6.7	-4.6	3.0	-0.3		
	1-11	67.4	8.9	-1.9	4.1	2.6		
	1-12	61.0	13.5	4.8	12.5	7.1		
	1-13	60.8	5.4	-2.4	5.0	3.5		
	1-14	65.1	4.7	-4.9	5.8	-3.6		
	1-15	71.6	0.1	-2.2	-2.0	-2.7		
	1-16	73.7	6.6	-0.3	-3.3	0.7		
	2-1	65.1	6.9	2.2	10.2	4.5		
	2-2	67.5	0.4	-2.7	4.6	3.9		
	2-3	59.0	0.2	-3.1	6.9	7.6		
	2-4	77.7	-1.4	-2.2	-0.6	-0.2		
	2-5	67.2	-1.5	-5.8	2.2	4.7		
	2-6	67.0	-0.6	-2.5	-0.9	-2.7		
	2-7	71.8	1.9	-3.9	2.6	-2.4		
	2-8	66.3	9.3	-0.1	4.8	-0.1		
	2-9	61.3	2.8	0.6	8.4	6.5		
	2-10	66.5	7.3	-2.8	6.0	2.3		
	2-11	60.9	6.4	-1.1	9.6	3.7		
	2-12	65.2	4.9	-1.9	6.1	4.9		
	2-13	64.8	-0.6	-2.4	1.6	0.1		
	2-14	77.6	2.7	-3.5	-2.7	-0.5		

				Delta values				
				units: milliohms				
	Temp ºC	24	24	22	24	23		
	R.H. %	39	39	40	44	50		
	Date:	17May05	17May05	24May05	30Jun05	05Aug05		
	Pos. ID	Initial	Durability	T-Cycle	T-Cycle	T-Cycle		
				100Cy	1000Cy	2000Cy		
	2-15	73.0	1.5	-5.4	0.8	-3.3		
	2-16	69.3	-1.3	-2.0	-1.7	-4.8		
	3-1	71.8	-1.5	-2.2	2.5	-4.3		
	3-2	71.2	3.4	-0.9	4.2	-3.6		
	3-3	62.3	0.6	-3.3	11.9	9.3		
	3-4	67.4	1.9	-2.1	9.8	8.2		
	3-5	65.9	0.8	-4.2	7.4	-2.1		
	3-6	65.5	5.9	1.0	5.6	1.4		
	3-7	69.5	4.5	-2.9	5.4	2.5		
	3-8	63.1	7.0	0.8	5.8	7.4		
	3-9	61.5	6.4	-1.1	9.1	8.5		
	3-10	61.3	2.1	5.8	8.1	5.5		
	3-11	69.3	1.2	-3.9	6.2	1.9		
	3-12	77.5	3.8	-1.8	4.9	1.9		
	3-13	84.6	1.9	-6.2	3.5	-1.3		
	3-14	73.9	8.1	-3.7	7.8	-3.1		
	3-15	63.4	5.1	0.1	10.8	8.7		
	3-16	78.1	14.8	-1.8	1.1	-5.3		
	MAX	84.6	22.6	5.8	12.5	12.8		
	MIN	57.5	-1.5	-7.3	-3.3	-5.3		
	AVG	67.6	4.4	-2.1	5.0	1.9		
	STD	6.0	4.6	2.6	3.9	4.3		
	Open	0	0	0	0	0		
	Tech	BE	BE	BE	BE	BE		
	Equip ID	601	601	601	601	601		
		1278	1278	1278	1278	1278		

			Low Level Contact Resistance					
	Project:	204881				Spec:	Ardent Test Plan	
	Customer:	Ardent				Subgroup:	B	
	Product:	RC12-06				File #:	20488102	
	Description: LGA Socket							
	Open circuit voltage:		20mv			Current:	100ma	
				Delta values				
				units: milliohms				
	Temp ºC	24	24	22	24	23		
	R.H. %	39	39	40	44	50		
	Date:	17May05	17May05	24May05	30Jun05	05Aug05		
	Pos. ID	Initial	Durability	T-Cycle	T-Cycle	T-Cycle		
				100Cy	1000Cy	2000 Cy		
	1-1	43.2	1.2	0.1	7.5	6.4		
	1-2	47.1	1.4	-0.8	6.0	3.9		
	1-3	47.7	1.3	-4.0	4.5	-3.2		
	1-4	49.9	7.5	3.8	10.5	1.9		
	1-5	47.0	2.4	-1.4	6.8	4.8		
	1-6	48.3	-1.5	-2.9	2.8	-0.7		
	1-7	48.2	0.8	-4.4	0.8	-0.8		
	1-8	48.4	1.2	-2.3	3.3	-0.1		
	1-9	49.4	2.6	-4.0	2.5	-0.7		
	1-10	48.9	3.5	-3.0	4.1	0.2		
	1-11	52.7	3.7	-6.0	0.6	0.0		
	1-12	52.7	-1.4	-3.2	-1.0	-2.1		
	1-13	49.9	3.9	1.6	3.7	1.8		
	1-14	52.5	0.3	-2.8	-1.7	0.4		
	1-15	50.5	2.1	-4.1	1.0	-0.9		
	1-16	48.8	0.6	-5.0	0.7	-3.6		
	2-1	46.8	-1.0	-4.2	2.2	2.3		
	2-2	46.6	0.6	-2.9	4.2	4.9		
	2-3	50.5	-1.3	-5.6	0.9	-0.5		
	2-4	50.8	-0.2	-3.2	-2.0	-3.5		
	2-5	44.6	2.3	-0.8	7.1	1.9		
	2-6	46.1	-0.4	-2.2	0.1	-0.8		
	2-7	47.8	-0.6	-4.8	-1.1	0.0		
	2-8	47.0	0.2	-4.6	0.5	-0.3		
	2-9	51.1	-1.3	-5.5	2.5	-3.1		
	2-10	48.2	1.8	-4.0	4.4	-0.4		
	2-11	47.3	0.9	-4.0	3.9	0.1		
	2-12	47.5	-0.9	-4.3	3.7	0.1		
	2-13	46.4	-0.5	-4.5	4.3	0.1		
	2-14	46.1	0.1	-2.9	2.6	-2.3		

				Delta values				
				units: milliohms				
	Temp ºC	24	24	22	24	23		
	R.H. %	39	39	40	44	50		
	Date:	17May05	17May05	24May05	30Jun05	05Aug05		
	Pos. ID	Initial	Durability	T-Cycle	T-Cycle	T-Cycle		
				100Cy	1000Cy	2000 Cy		
	2-15	49.3	-1.1	-5.3	2.6	-1.7		
	2-16	45.5	-0.2	-5.0	0.3	-3.8		
	3-1	49.9	-0.3	-3.8	5.6	-1.2		
	3-2	55.6	0.3	-5.9	2.3	-2.2		
	3-3	51.9	1.5	-4.9	4.8	0.9		
	3-4	52.7	1.6	-4.9	4.8	3.8		
	3-5	57.2	0.5	-1.3	1.5	-0.7		
	3-6	54.5	-1.5	-2.1	-3.2	-3.7		
	3-7	55.9	-0.9	-5.2	-1.1	-1.2		
	3-8	53.8	2.6	-3.0	-2.5	-1.6		
	3-9	55.0	-1.9	-0.4	-0.4	-1.8		
	3-10	54.2	-0.7	-4.1	2.5	0.0		
	3-11	55.5	0.5	-5.1	4.8	-0.1		
	3-12	55.3	6.9	-5.8	3.9	-0.1		
	3-13	53.2	4.4	-0.9	3.0	-1.4		
	3-14	52.5	0.1	-0.4	-0.9	-1.9		
	3-15	55.0	-1.2	-4.1	-2.7	0.1		
	3-16	52.2	1.7	-3.7	-1.5	-1.7		
	MAX	57.2	7.5	3.8	10.5	6.4		
	MIN	43.2	-1.9	-6.0	-3.2	-3.8		
	AVG	50.2	0.9	-3.3	2.3	-0.3		
	STD	3.4	2.0	2.1	3.0	2.3		
	Open	0	0	0	0	0		
	Tech	BE	BE	BE	BE	BE		
	Equip ID	601	601	601	601	601		
		1278	1278	1278	1278	1278		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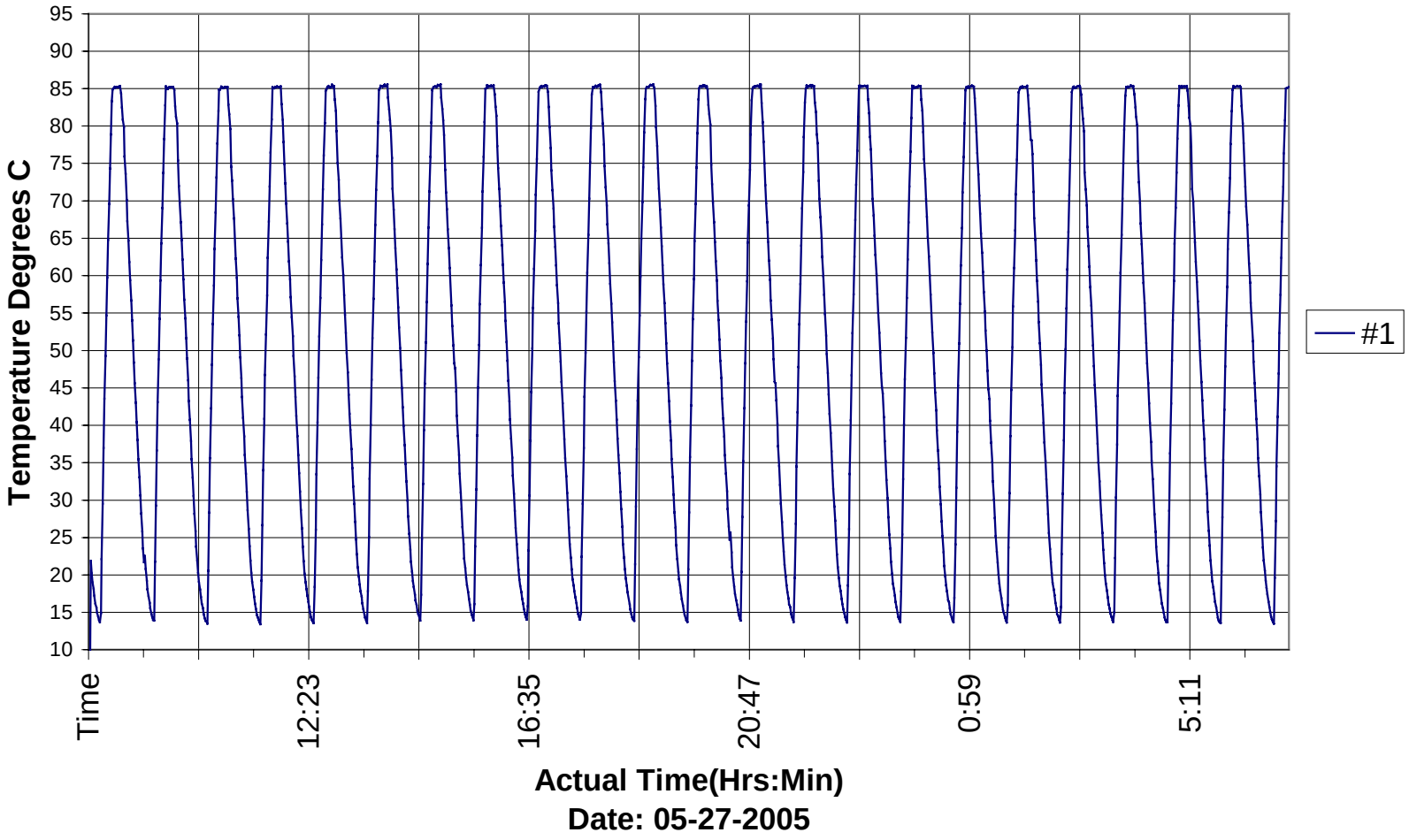
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30
25
20
15
10
Time
12:23
16:35
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Actual Time(Hrs:Min)
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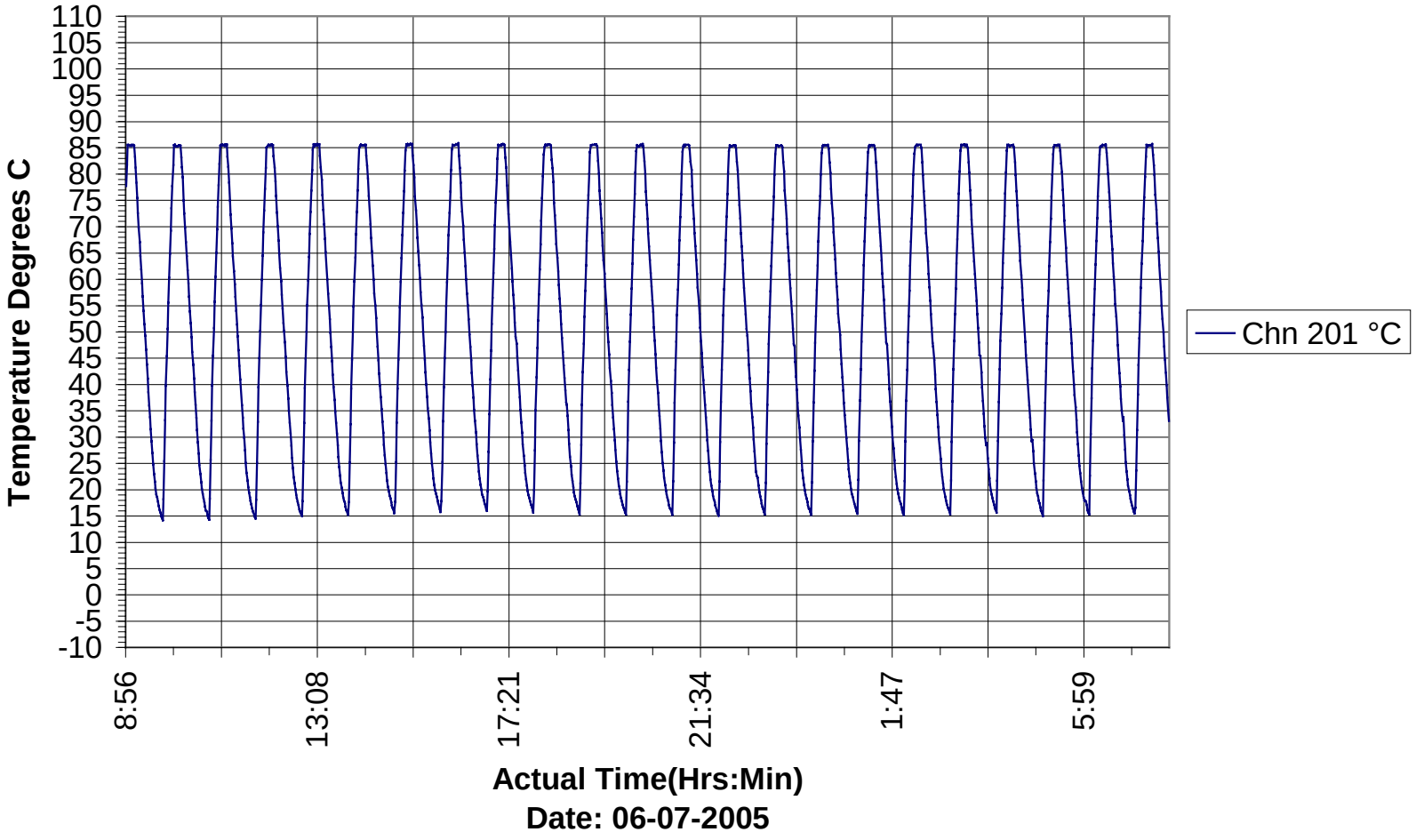
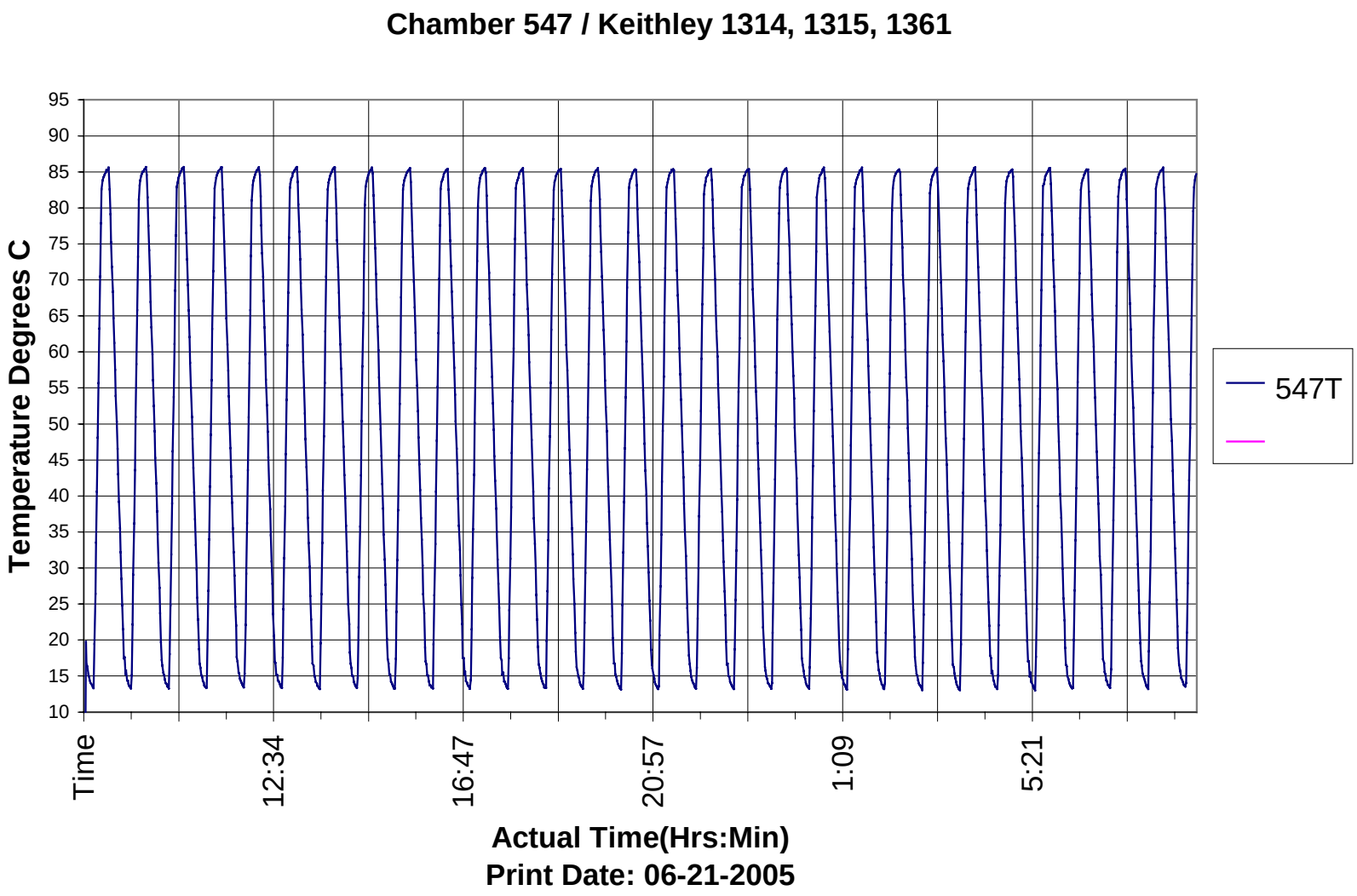
Chamber 1363 / Keithley 1314, 1315, 1361

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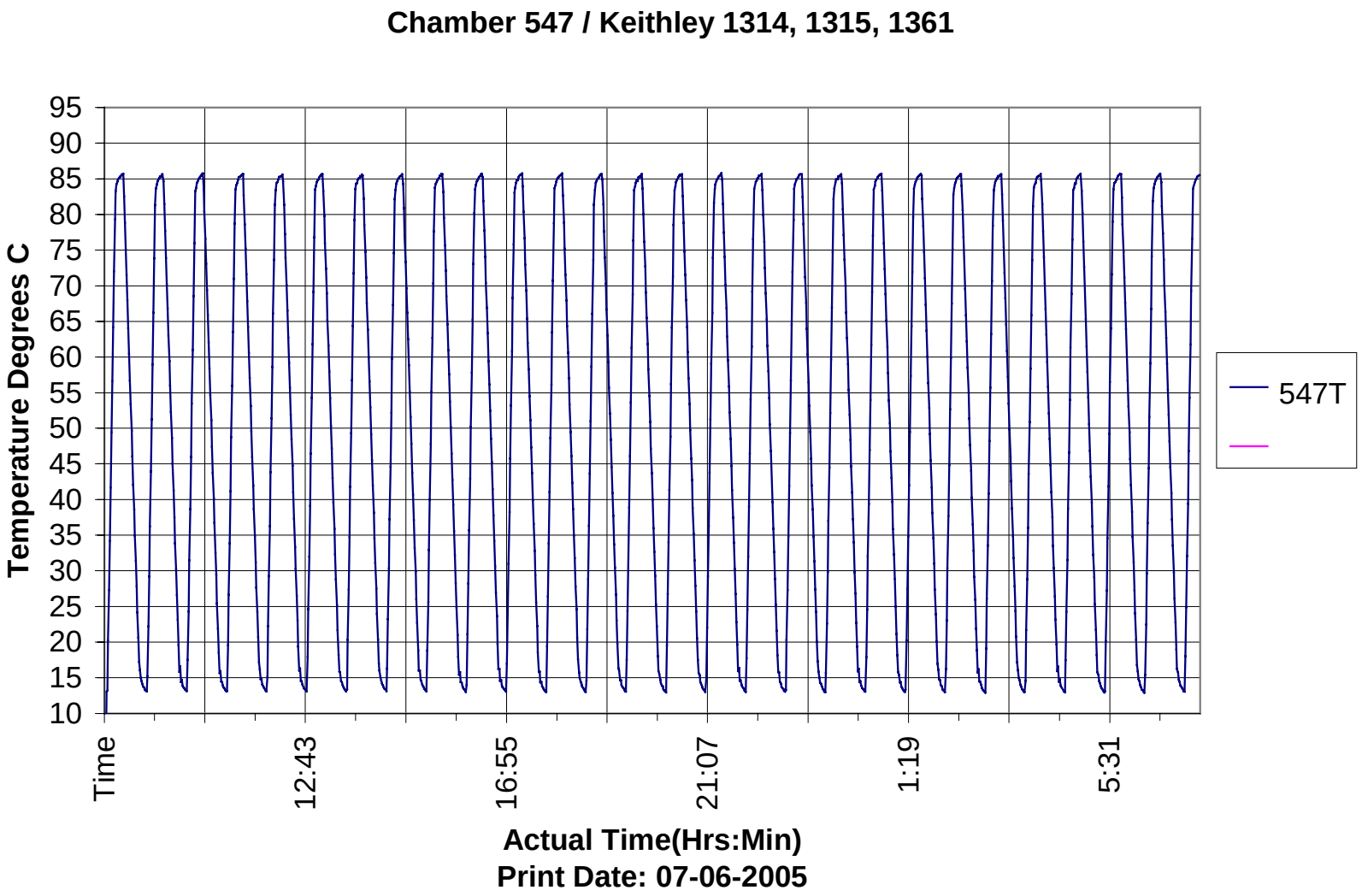
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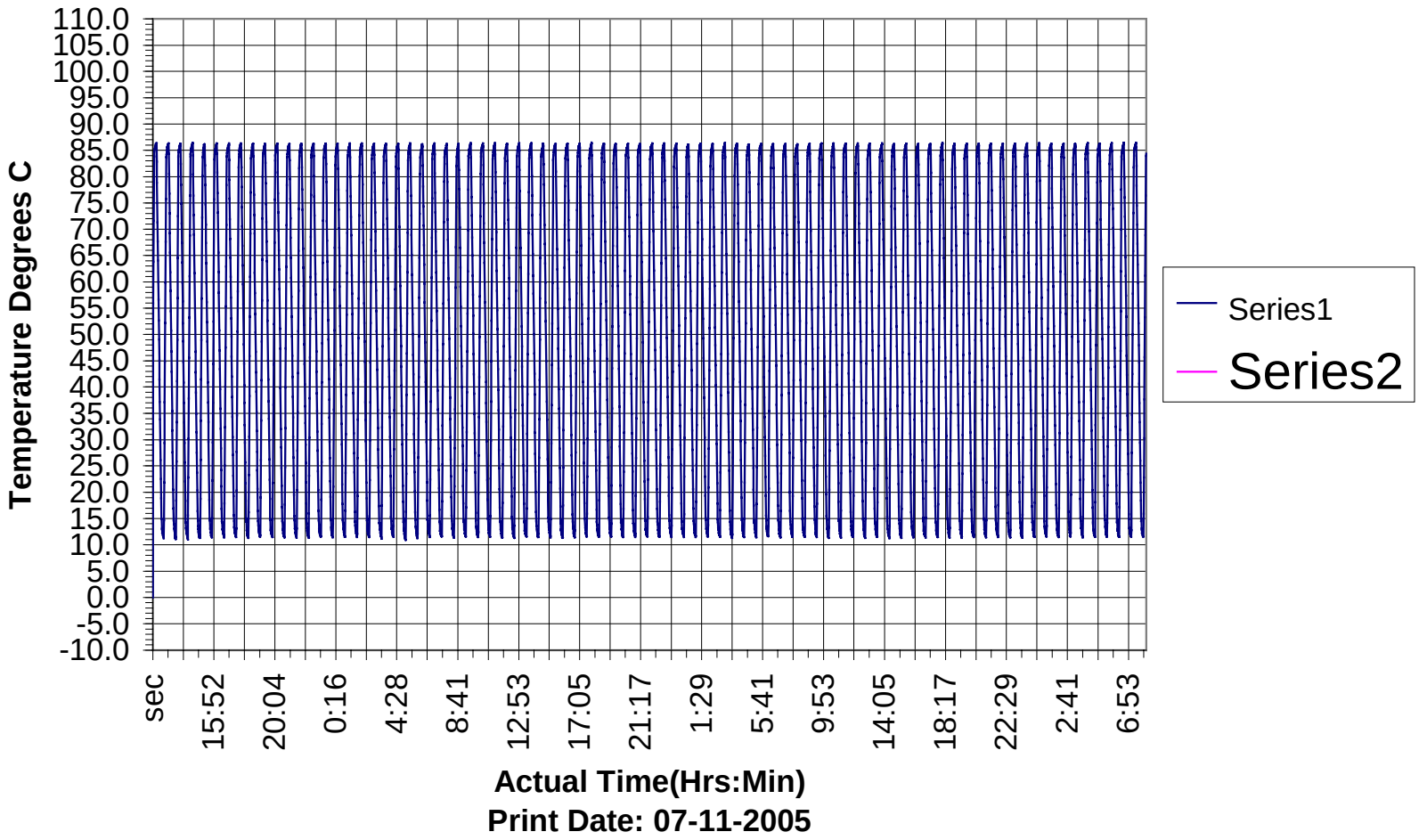
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5:41
9:53
14:05
18:17
22:29
2:41
6:53
Actual Time(Hrs:Min)
Print Date: 07-11-2005
Series1
Series2

TEST RESULTS

SEQUENCE C

PROJECT NO.: 204881 SPECIFICATION: Ardent Test Plan

PART NO.: RC12-06 PART DESCRIPTION: LGA Sockets
RC10-05

SAMPLE SIZE: 2 and 3 TECHNICIAN: BE

START DATE: 6-2-05 COMPLETE DATE: 6-3-05

ROOM AMBIENT: 24°C RELATIVE HUMIDITY: 44%

EQUIPMENT ID#: 30, 34, 585, 601, 684, 1116, 1278

MECHANICAL SHOCK (SPECIFIED PULSE)

PROCEDURE:

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

2. Test Conditions:

   a) Peak Value : 100 G
   b) Duration : 6 Milliseconds
   c) Wave Form : Sawtooth
   d) Velocity : 9.7 feet Per Second
   e) No. of Shocks : 3 Shocks/Direction, 3 Axis (18 Total)

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

REQUIREMENTS:

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

2. There shall be no contact interruption greater than 1.0 microsecond.

3. The low level circuit resistance shall be measured and recorded.

4. The change in low level circuit resistance shall not exceed 20.0 mΩ.

RESULTS: See next page.

RESULTS:

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

2. There was no contact interruption greater than 1.0 microsecond.

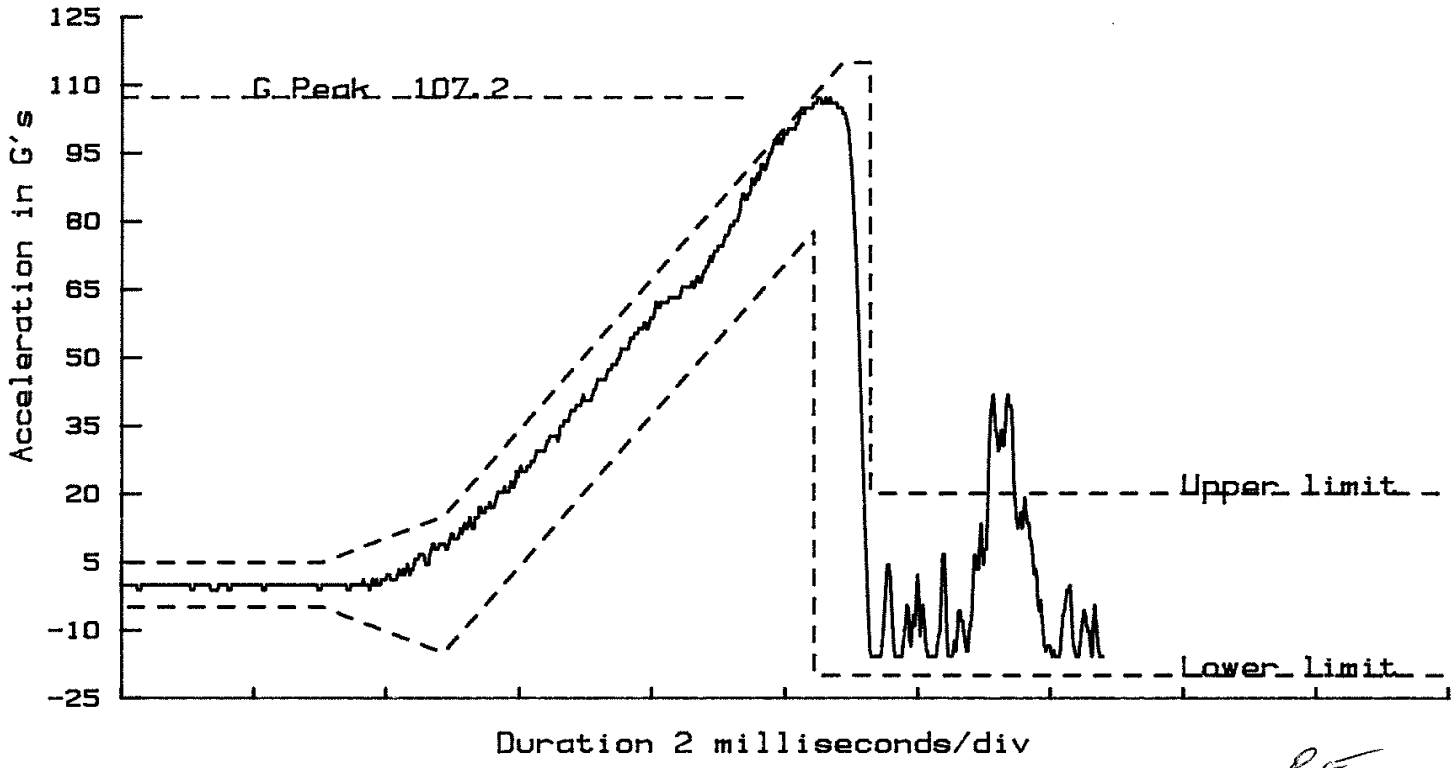
3. The following is a summary of the data observed:

LOW LEVEL CIRCUIT RESISTANCE
(Milliohms)

	Initial		Change In	
	Avg.	Max.	Avg.	Max.
RC12-06	50.7	54.7	+3.0	+17.9
RC10-05	70.9	85.6	+3.4	+8.7

4. See data files 20488105 and 20488106 for individual data points.

Ardent Concepts, Inc.
Contact
EIA-Std 364 TC G

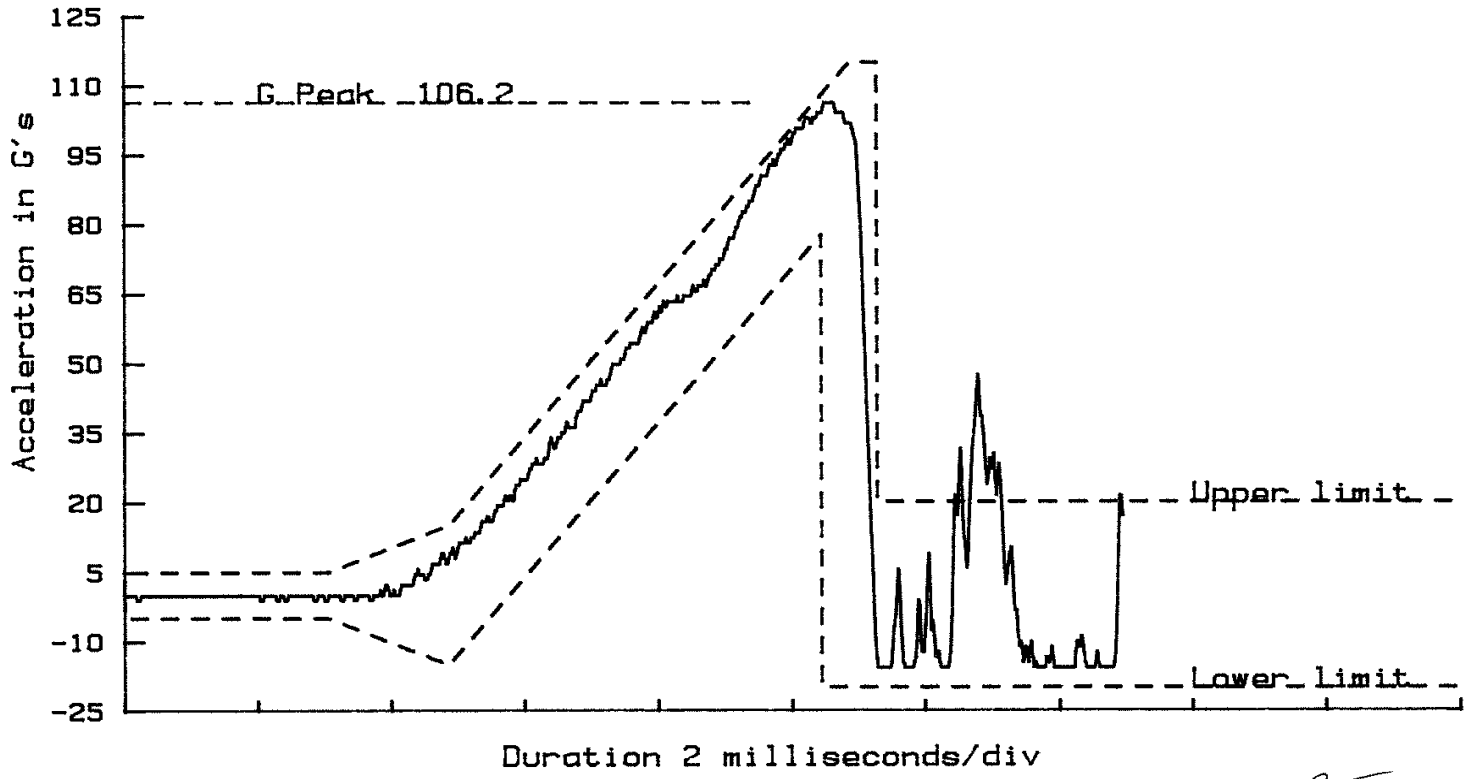


Project #: 204881 CAL.
File #: 01 Contech Research Inc
Tech: BF
Date: 6/02/05

1478 - 01
ACCREDITED
1478 - 02

Contech Research
An Independent Test and Research Laboratory

Ardent Concepts, Inc.
Contact
EIA-Std 364 TC G

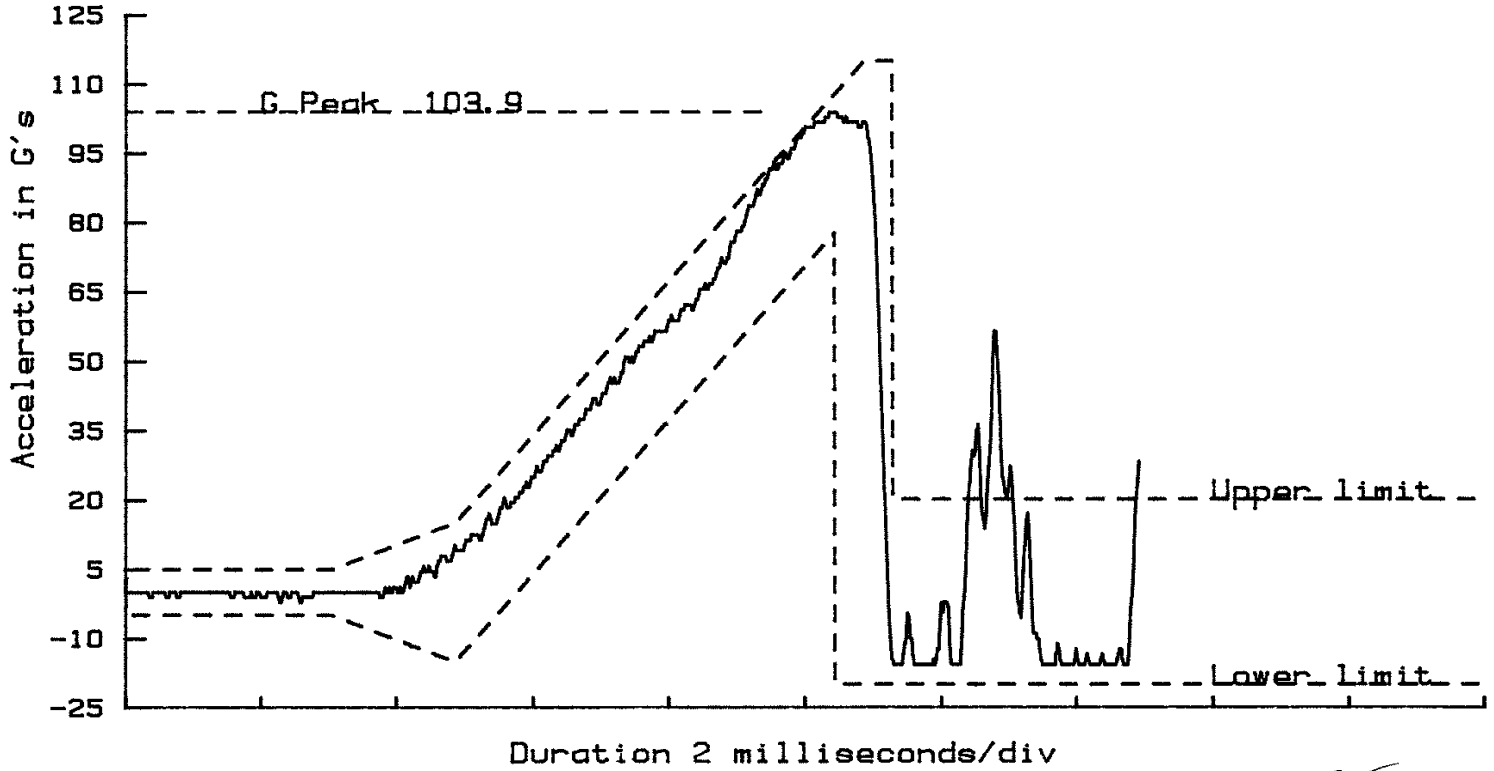


Project #: 204881 CAL.
File #: 02 Contech Research Inc
Tech: BE
Date: 6/08/05

1478 - 01
ACCREDITED
1478 - 02

Contech Research
An Independent Test and Research Laboratory

Ardent Concepts, Inc.
Contact
EIA-Std 364 TC G



Project #: 204881 ACT.
File #: 03 Contech Research Inc
Tech: BE
Date: 4/02/05

1478 - 01
ACCREDITED
1478 - 02

PROJECT NO.: 204881 SPECIFICATION: Ardent Test Plan

PART NO.: RC12-06, RC10-05 PART DESCRIPTION: LGA Sockets

SAMPLE SIZE: 2 and 3 TECHNICIAN: BE

START DATE: 6-3-05 COMPLETE DATE: 6-6-05

ROOM AMBIENT: 24°C RELATIVE HUMIDITY: 44%

EQUIPMENT ID#: 30, 278, 553, 601, 1137, 1166, 1167, 1168, 1169, 1271, 1272

VIBRATION, SINUSOIDAL

PROCEDURE:

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

2. Test Conditions:

   a) Frequency : 10 to 2000 to 10 Hz
   b) Amplitude : 0.06" da or 15 G's
   c) Duration : 4.0 hrs/axis, 3 axis total
   d) Test Current : 100 ma
   e) Sweep Time : 20 minutes

3. 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. There shall be no contact interruption greater than 1.0 microsecond.

3. The change in low level circuit resistance shall not exceed +20.0 milliohms.

RESULTS: See next page.

RESULTS:

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

2. There was no interruption greater than 1.0 microsecond.

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

CHANGE IN LOW LEVEL CIRCUIT RESISTANCE
(Milliohms)

	Avg.	Max.
RC12-06	+1.0	+9.3
RC10-05	+4.4	+15.2

4. See data files 20488105 and 20488106 for individual data points.

			Low Level Contact Resistance					
	Project:	204881				Spec:	Ardent Test Plan	
	Customer:	Ardent				Subgroup:	C	
	Product:	RC12-06				File #:	20488105	
	Description: LGA Socket							
	Open circuit voltage:		20mv			Current:	100ma	
				Delta values				
				units: milliohms				
	Temp ºC	22	24	24				
	R.H. %	40	44	46				
	Date:	24May05	03Jun05	06Jun05				
	Pos. ID	Initial	M-Shock	Vibration				
	6-1	45.5	-0.4	-0.5				
	6-2	52.2	-0.7	-3.2				
	6-3	48.1	7.2	-0.4				
	6-4	50.8	-1.9	4.8				
	6-5	50.9	-0.3	-0.4				
	6-6	49.3	-1.5	2.3				
	6-7	51.3	-0.4	2.5				
	6-8	54.5	-1.2	-1.6				
	6-9	46.6	0.7	5.1				
	6-10	47.9	-0.9	-1.0				
	6-11	46.4	-0.7	-0.7				
	6-12	51.0	-0.9	0.6				
	6-13	51.3	-0.6	-0.7				
	6-14	50.6	-0.2	-0.4				
	6-15	48.5	-0.6	-1.0				
	6-16	49.2	-0.4	0.2				
	7-1	52.1	-4.2	3.7				
	7-2	50.4	-0.1	-0.1				
	7-3	49.8	-0.2	-0.3				
	7-4	52.3	1.2	0.0				
	7-5	48.9	2.3	2.3				
	7-6	53.3	-2.2	-1.9				
	7-7	50.0	-0.3	-0.4				
	7-8	51.0	0.1	-0.1				
	7-9	50.4	-2.8	-2.2				
	7-10	51.2	-2.1	-2.1				
	7-11	52.7	10.2	-1.1				
	7-12	50.1	15.2	4.0				
	7-13	47.2	17.9	7.1				
	7-14	52.5	-2.4	-2.9				

				Delta values				
				units: milliohms				
	Temp ºC	22	24	24				
	R.H. %	40	44	46				
	Date:	24May05	03Jun05	06Jun05				
	Pos. ID	Initial	M-Shock	Vibration				
	7-15	50.9	6.9	6.0				
	7-16	53.1	3.6	2.7				
	8-1	49.8	9.3	0.4				
	8-2	51.6	-0.3	-0.2				
	8-3	51.7	11.3	0.5				
	8-4	52.2	10.7	3.8				
	8-5	53.8	10.1	0.6				
	8-6	50.7	6.3	0.2				
	8-7	53.6	0.4	-0.3				
	8-8	50.6	6.8	0.4				
	8-9	49.3	-0.5	-0.8				
	8-10	51.2	9.5	-0.2				
	8-11	50.8	10.1	8.4				
	8-12	52.3	9.7	1.1				
	8-13	51.6	10.0	9.3				
	8-14	54.7	-1.2	-2.4				
	8-15	49.8	5.6	4.4				
	8-16	51.1	5.1	4.7				
	MAX	54.7	17.9	9.3				
	MIN	45.5	-4.2	-3.2				
	AVG	50.7	3.0	1.0				
	STD	2.0	5.4	2.9				
	Open	0	0	0				
	Tech	BE	BE	BE				
	Equip ID	601	601	601				
		1278	1278	1278				

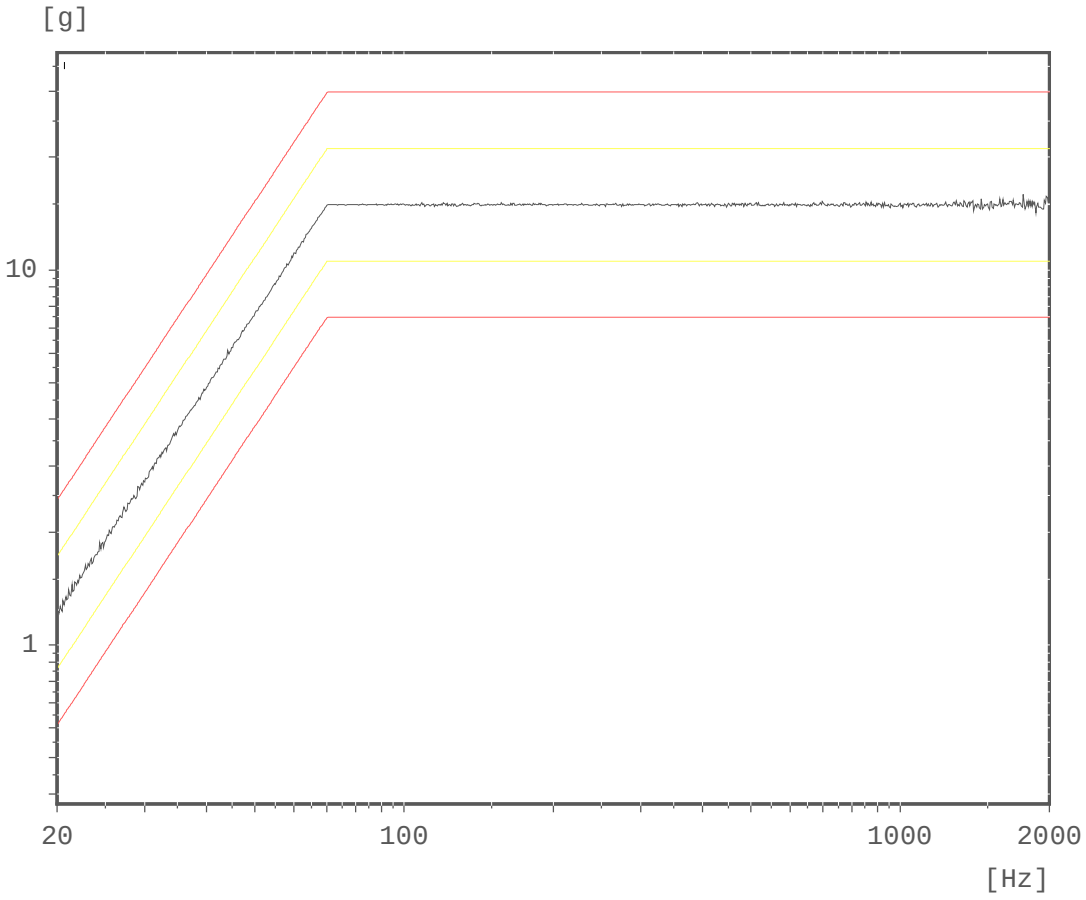
			Low Level Contact Resistance					
	Project:	204881				Spec:	Ardent Test Plan	
	Customer:	Ardent				Subgroup:	C	
	Product:	RC10-05				File #:	20488106	
	Description: LGA Socket							
	Open circuit voltage:		20mv			Current:	100ma	
				Delta values				
				units: milliohms				
	Temp ºC	22	24	24				
	R.H. %	40	44	46				
	Date:	24May05	03Jun05	06Jun05				
	Pos. ID	Initial	M-Shock	Vibration				
	1-1	71.3	7.8	8.0				
	1-2	72.7	-0.3	-1.5				
	1-3	72.8	8.7	6.0				
	1-4	82.1	3.1	15.2				
	1-5	66.4	0.8	4.6				
	1-6	69.6	-0.8	-5.2				
	1-7	70.5	-1.5	-3.4				
	1-8	62.5	-1.4	-1.9				
	1-9	66.8	8.7	8.8				
	1-10	67.5	-1.2	-0.8				
	1-11	74.7	-4.0	1.6				
	1-12	70.6	-0.6	-1.6				
	1-13	70.8	7.8	-0.6				
	1-14	69.4	-0.2	-0.9				
	1-15	70.5	-3.6	-4.1				
	1-16	75.5	2.5	0.0				
	2-1	60.4	-1.2	-1.2				
	2-2	64.8	-1.6	-1.9				
	2-3	60.0	-1.4	-1.7				
	2-4	72.8	-2.4	2.0				
	2-5	81.2	-1.6	-2.6				
	2-6	61.2	0.0	0.1				
	2-7	72.7	0.6	4.2				
	2-8	70.0	-1.9	-1.4				
	2-9	73.8	-0.8	-1.8				
	2-10	77.1	0.1	7.6				
	2-11	77.5	-1.5	-2.0				
	2-12	74.0	-2.4	-2.0				
	2-13	85.5	-2.6	1.4				

				Delta values				
				units: milliohms				
	Temp ºC	22	24	24				
	R.H. %	40	44	46				
	Date:	24May05	03Jun05	06Jun05				
	Pos. ID	Initial	M-Shock	Vibration				
	2-14	66.1	2.4	-1.3				
	2-15	66.8	-2.4	-1.2				
	2-16	71.6	-0.2	0.1				
	MAX	85.5	8.7	15.2				
	MIN	60.0	-4.0	-5.2				
	AVG	70.9	0.3	0.7				
	STD	6.0	3.4	4.4				
	Open	0	0	0				
	Tech	BE	BE	BE				
	Equip ID	601	601	601				
		1278	1278	1278				

FIGURE #1

Sine

Channel 1

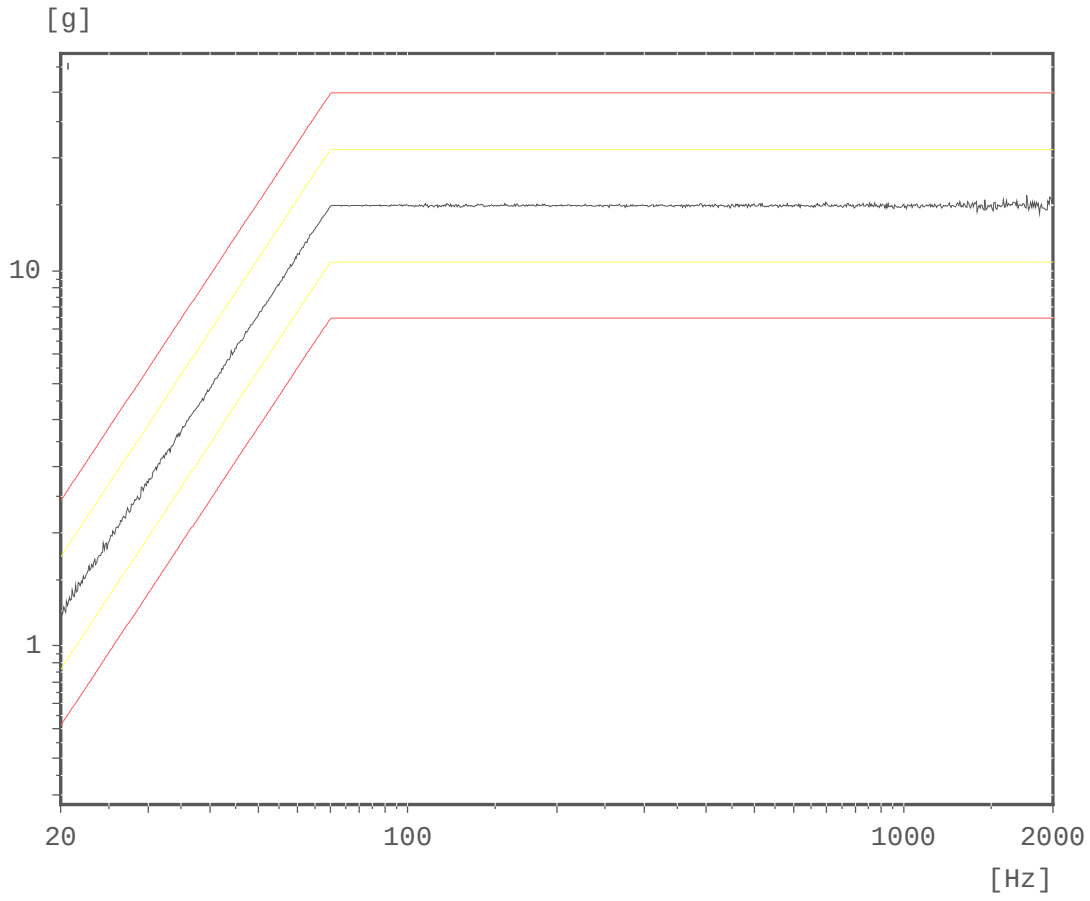


Project# 204881
Ardent Concepts
X -Axis
Date: 6/03/05
Test Conditions:
15 g's 4 Hr Axis
Tech: BE

FIGURE #2

Sine

Channel 1

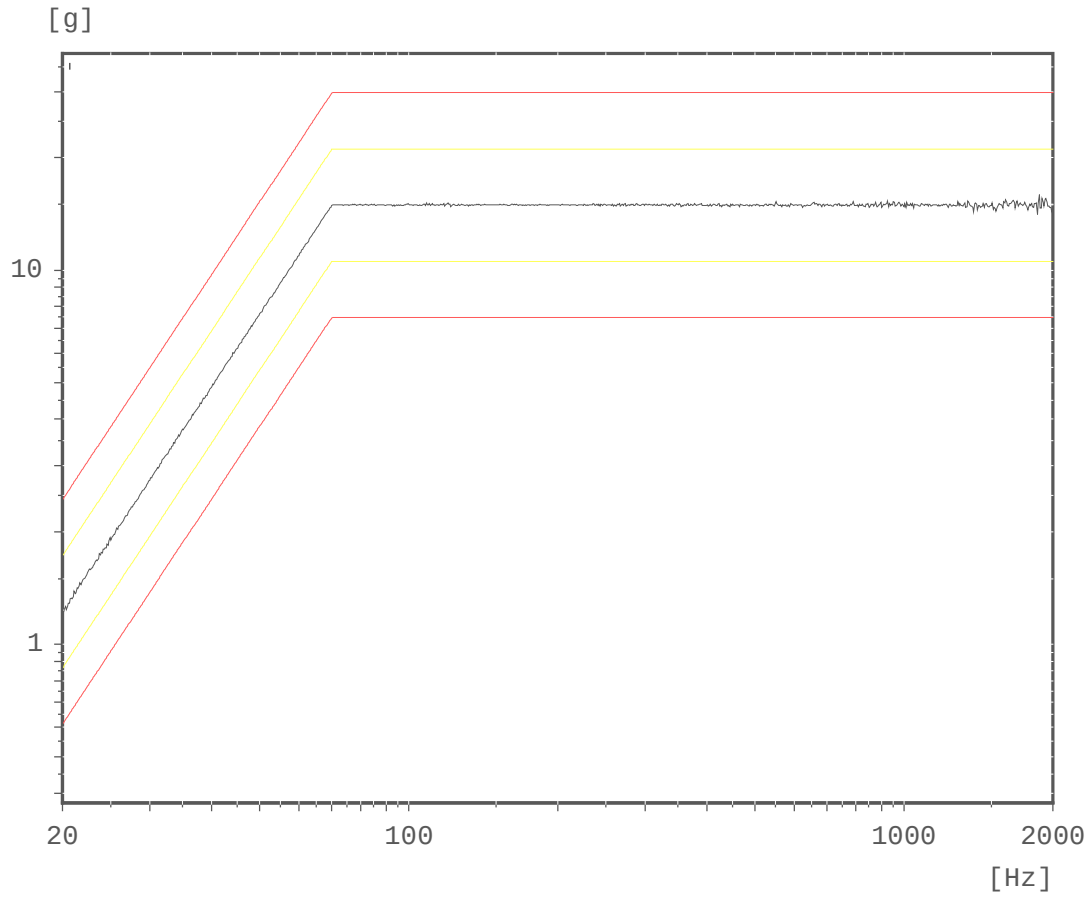


Project# 204881
Ardent Concepts
Y -Axis
Date: 6/04/05
Test Conditions:
15 g's 4 Hr Axis
Tech: BE

FIGURE #3

Sine

Channel 1



Project# 204881
Ardent Concepts
Z -Axis
Date: 6/06/05
Test Conditions:
15 g's 4 Hr Axis
Tech:BE

TEST RESULTS

CURRENT CARRYING CAPACITY

PROJECT NO.: 204881	SPECIFICATION: Ardent Test Plan
PART NO.: RC12-06 RC10-05 RC10-04	PART DESCRIPTION: LGA Sockets
SAMPLE SIZE: Two Each P/N	TECHNICIAN: BE
START DATE: 3-15-05	COMPLETE DATE:
ROOM AMBIENT: 22°C	RELATIVE HUMIDITY: 38%
EQUIPMENT ID#: 462, 539, 634, 654, 1173	

CURRENT CARRYING CAPACITY

PROCEDURE:

1. The test was performed in accordance with EIA 364, Test Procedure 70.

2. Special test boards were designed to perform the test. The trace layout is shown in Figure #10. The basic characteristics of these boards were as follows:

   a) Material : Glass Epoxy FR-4
   b) Thickness : 0.093 inch
   c) 3 Oz Copper
   d) All traces were plated with 50 microinch min. of hard gold over 100 microinches of nickel
   e) Single sided

3. The board was designed in a manner, that flipping the board over it becomes the mating half for a socket assembly. As shown , it is the socket mounting board.

4. A small via hole is indicated. The via hole location is such that when the board is "flipped" over it is located in the middle of a 4 position pattern. A thermocouple was inserted thru said hole for measurement of T-rise.

5. An additional thermocouple was placed 2″ outside of the test samples adjacent to the locations to be monitored. This is accomplished to evaluate the impact of ambient conditions.

6. Sealing compound was used to “block off” any drilled holes in the housing used for this purpose.

PROCEDURE: Continued

7. The thermocouples were attached to a data acquisition/ scanner system.

8. The test specimen was placed in a chamber or room which prevents air currents and the like from influencing the observations.

9. The currents shown were applied until temperature stabilization was achieved.

10. Temperature stabilization is defined as no change in T-Rise greater than ± 1°C over a 15 minute interval.

11. Three separate tests were performed:

    a) Single Contact Energized
    b) Two Contacts Energized
    c) Four Contacts Energized

12. The following current levels were applied:

    a) RC10-4 : 0.1, 1.0, 2.0, 3.0, 3.5 amps
    b) RC10-5 : 0.1, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5 amps
    c) RC12-06 : 0.1, 1.0, 2.0, 2.5, 2.75, 3.0, 3.5, 4.0 amps

13. It was left to the discretion of the laboratory as to the selection of the number of runs to perform. The selection was contingent on the number of contacts energized and the resultant T-rise generated.

14. A minimum of three currents were used per part number and energized condition.

REQUIREMENTS:

1. The temperature rise shall be measured and recorded.

2. The tests for each socket part number and energized condition was terminated when approximately a 30°C t-rise was observed.

3. T-rise vs. current plots shall be created for the conditions tested.

RESULTS: See next page.

RESULTS:

1. See plots following of T-Rise Vs current.

2. The individual data points used to create said plots are the average T-rise of the two sockets per part number tested.

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

AVERAGE TEMPERATURE RISE (°C)

No. of Contacts Energized

A) RC10-4 Current Level	1	2	4
0.1	0.2	0.7	1.0
1.0	2.5	6.7	6.4
2.0	---	---	31.9
3.0	20.9	49.0	---
3.5	36.0	---	---

B) RC10-5	1	2	4
0.1	0.6	0.7	0.6
1.0	2.5	6.6	8.5
1.5	---	12.1	33.9
2.0	---	20.2	---
2.5		31.2	---
3.0	22.8	---	---
3.5	31.3	---	---

C) RC12-6	1	2	4
0.1	0.7	0.5	0.8
1.0	2.2	3.4	5.8
2.0	---	12.2	22.9
2.5	---	18.4	36.4
2.75	---	22.3	---
3.0	15.0	27.1	---
3.5	20.6	---	---
4.0	35.4	---	---

5. Due to the magnitude of data generated, data files are not included herein. A disc as well as a hard copy has been supplied to the test sponsor and shall be considered as part of this report.

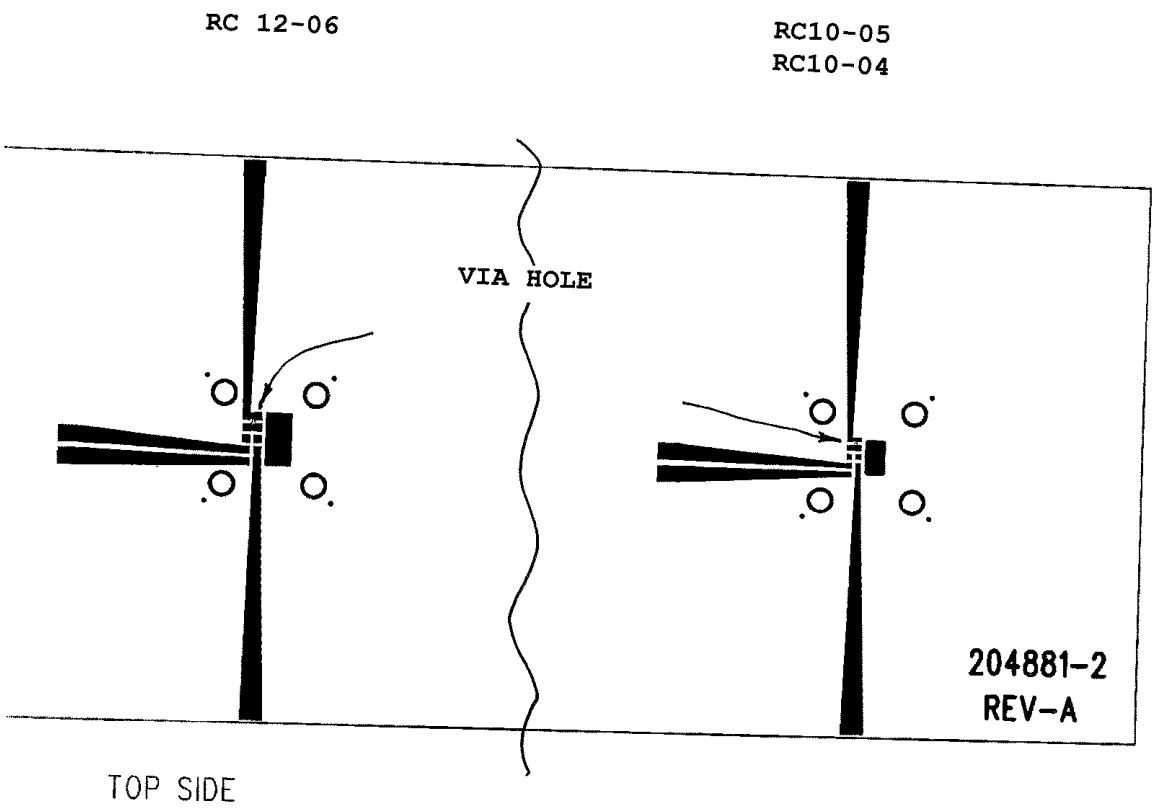


FIGURE #10

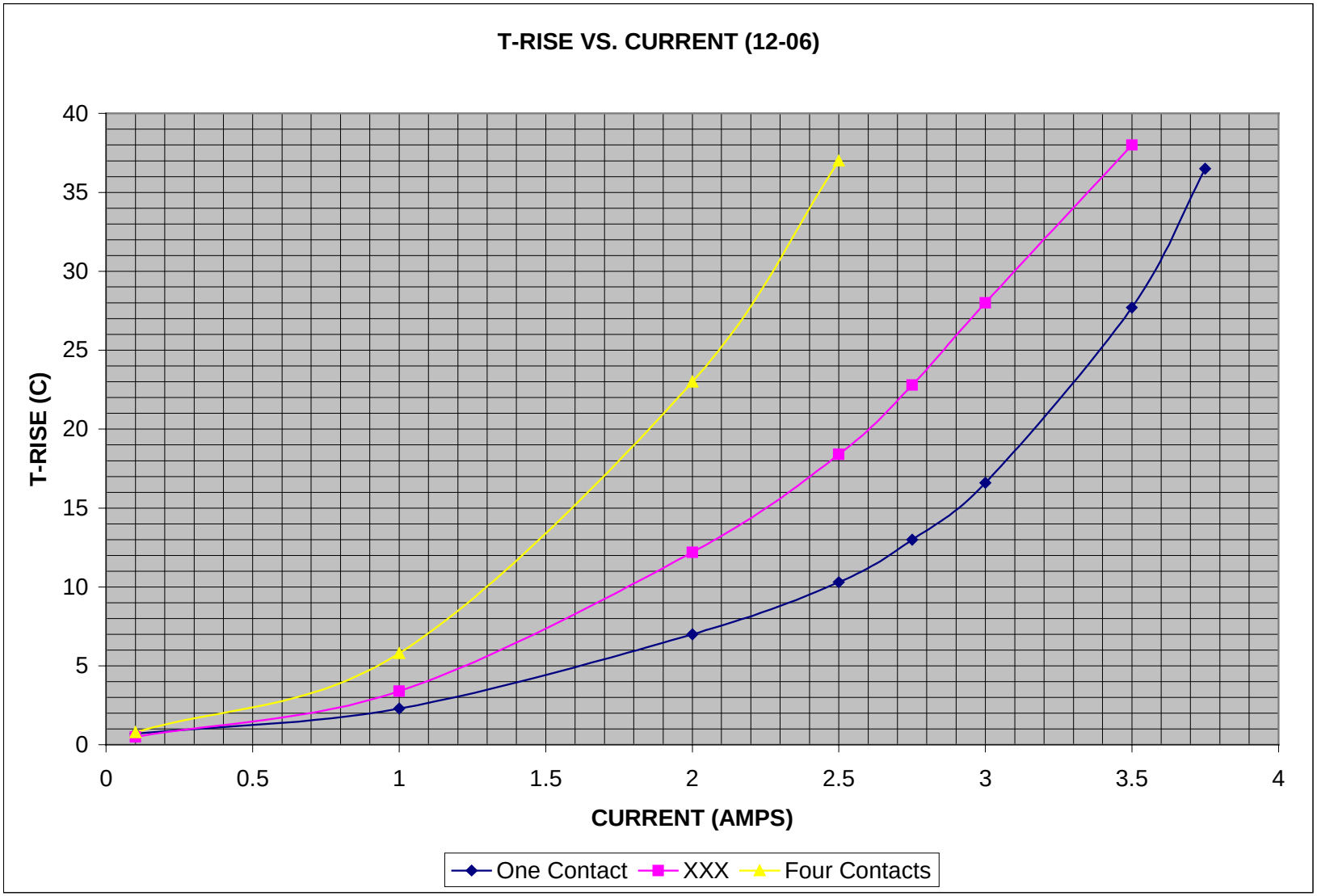

T-RISE VS. CURRENT (12-06)
T-RISE (C)
40
35
30
25
20
15
10
5
0
0
0.5
1
1.5
2
2.5
3
3.5
4
CURRENT (AMPS)
One Contact
XXX
Four Contacts

FIGURE #11

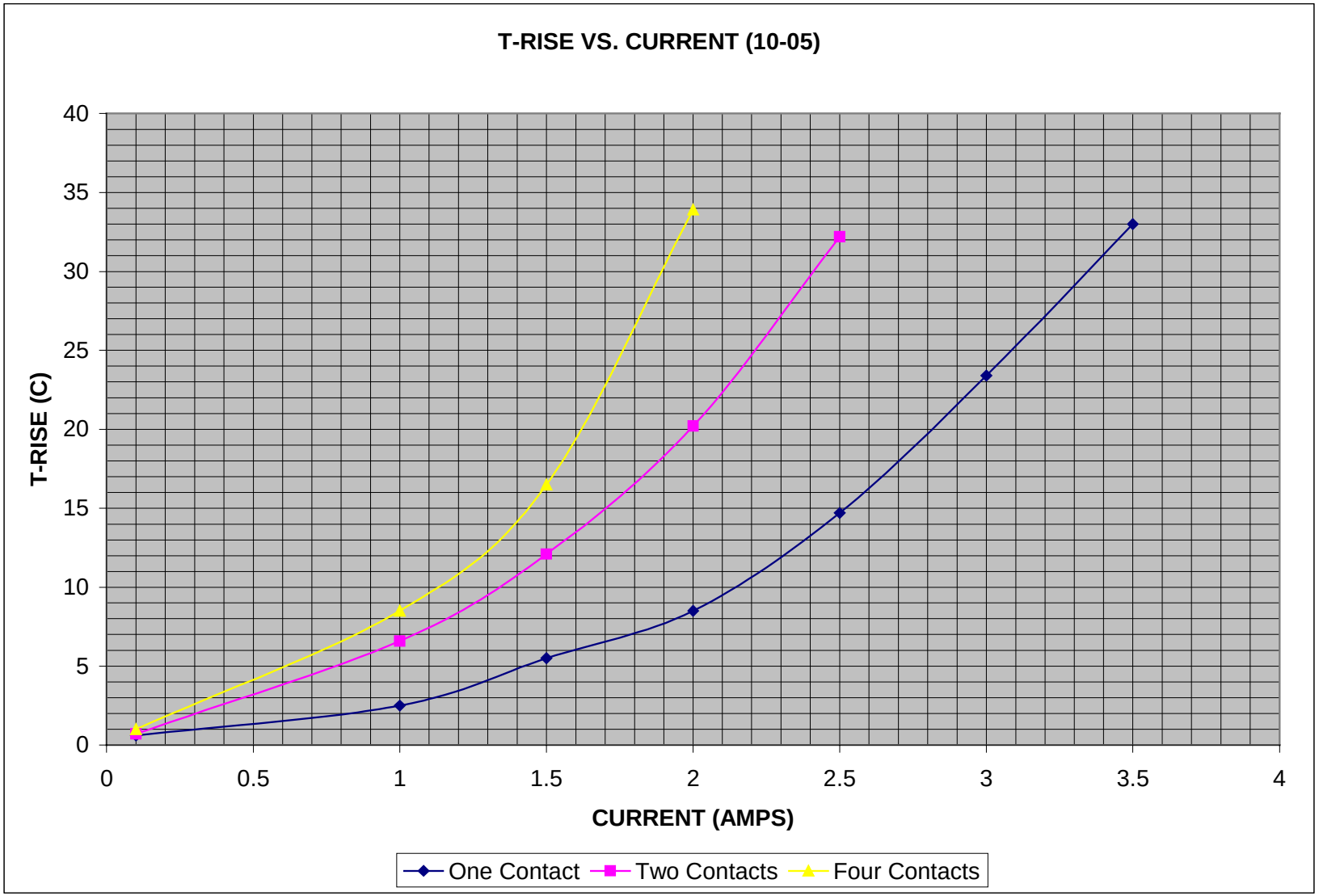

T-RISE VS. CURRENT (10-05)
T-RISE (C)
0
5
10
15
20
25
30
35
40
0
0.5
1
1.5
2
2.5
3
3.5
4
CURRENT (AMPS)
One Contact
Two Contacts
Four Contacts

FIGURE #12

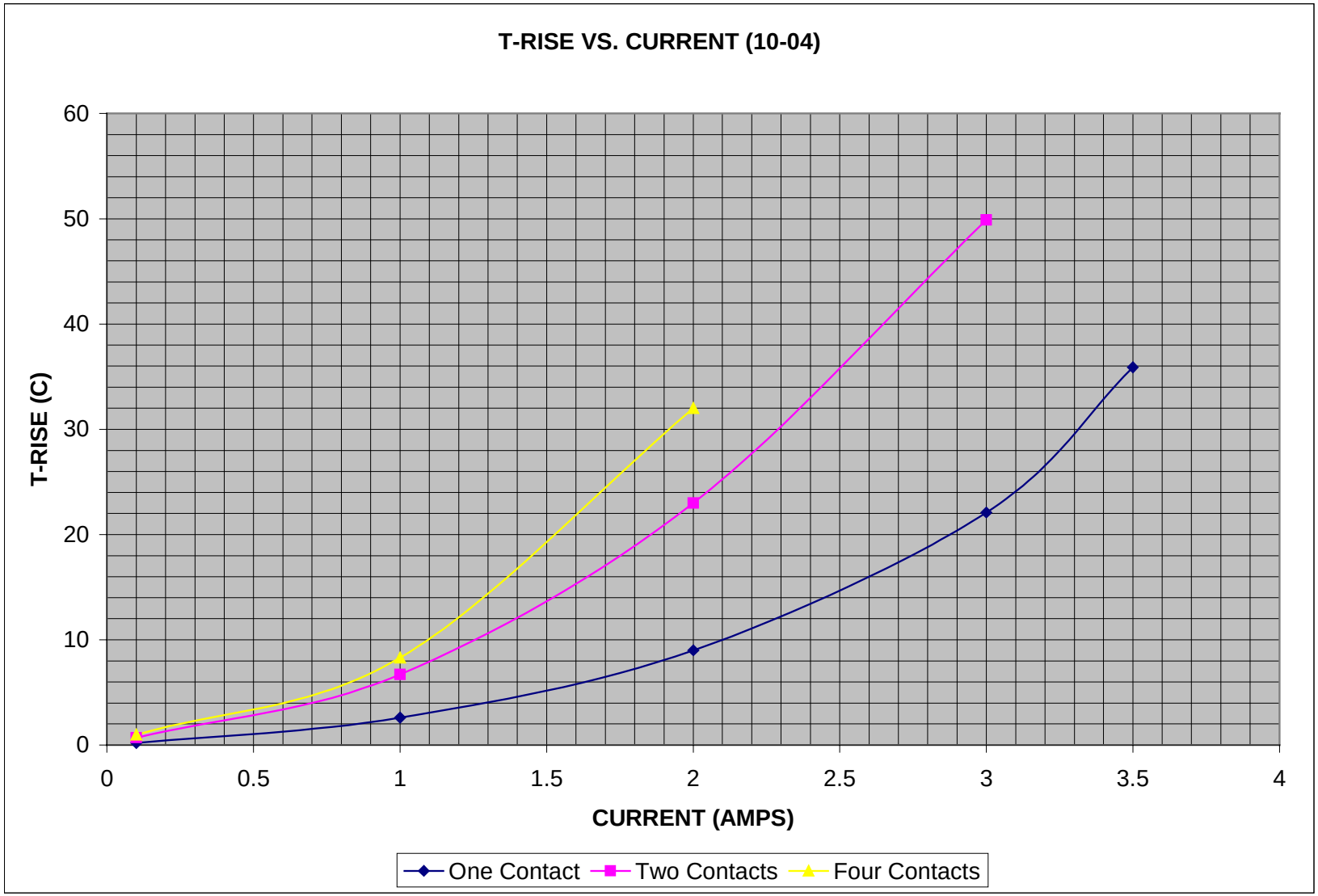

T-RISE VS. CURRENT (10-04)
T-RISE (C)
60
50
40
30
20
10
0
0
0.5
1
1.5
2
2.5
3
3.5
4
CURRENT (AMPS)
One Contact
Two Contacts
Four Contacts

FIGURE #13