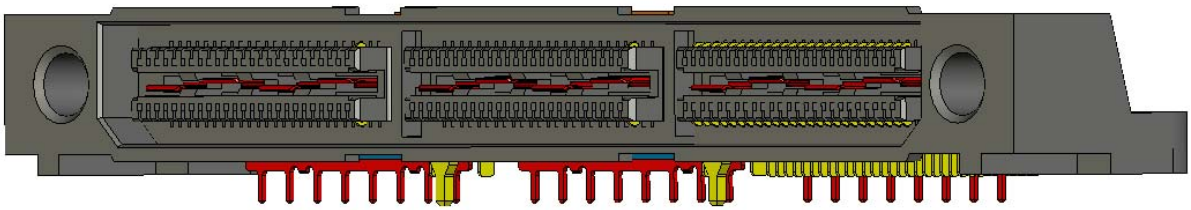
Project Number:	Tracking Code: TC0748--1505			
Requested by: Mark Shireman	Date: 11/28/2007	Product Rev: Current		
Part #: QSS-100-01-L-D-RA-WT/QTS-100-01-L-D-RA-WT	Lot #: IH	Tech: Jerry Smallwood	Eng: Troy Cook	
Part description: QSS/QTS-RA			Qty to test: 20	
Test Start: 01/14/2008	Test Completed: 1/16/2008			



CURRENT CARRYING CAPACITY REPORT

QSS-100-01-L-D-RA-WT/QTS-100-01-L-D-RA-WT

CERTIFICATION

All instruments and measuring equipment were calibrated to National Institute for Standards and Technology (NIST) traceable standards according to IS0 10012-l and ANSI/NCSL 2540-1, as applicable.

SCOPE

1. Temperature Rise/Current Carrying Capacity
   1.1. To determine the amount of current the device under test (DUT) can safely carry over the operating temperature range of the DUT.
   1.2. Contact loading will also be addressed in this document which will determine how much current can be carried as the number of energized contacts is varied.

2. Current Cycling
   2.1. To determine the performance of the device under test (DUT) when subjected to the power-on/power-off cycling that heats and cools the DUT in normal everyday use.
   2.2. Contact loading will set to 100% throughout the test.

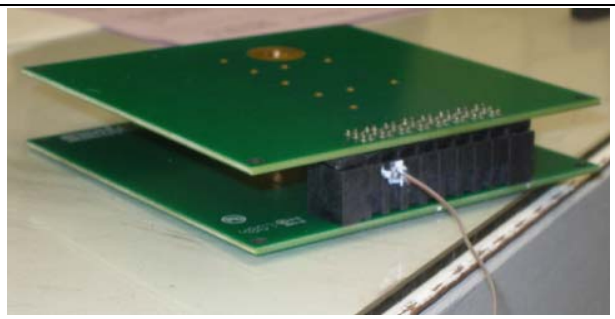
APPLICABLE DOCUMENTS

Standards: EIA Publication 364-70 Temperature Rise
EIA Publication 364-06 Contact Resistance
EIA Publication 364-55 Current Cycling
TLPM-032 Current Carrying Capacity
TLPM-084 Current Cycling

TEST SAMPLES AND PREPARATION

1) All materials shall be manufactured in accordance with the applicable product specification.
2) All test samples shall be identified and encoded to maintain traceability throughout the test sequences.
3) After soldering, the parts to be used shall be cleaned according to TLWI-0001.
4) All samples shall be visually inspected and cleaned as necessary.
5) Any additional preparation shall be noted in the individual test sequences.
6) Solder Information: Lead Free
7) Re-Flow Time/Temp: See accompanying profile.
8) All products designed to operate mounted on a printed circuits board shall be tested mounted to test boards in accordance with EIA-364-70
9) Solder Information: Lead Free
10) Samtec Test PCBs used: PCB-100992-TST-XX

PREPARED TEST SAMPLE (Typical)



11) The following loading configurations shall be tested for Temperature Rise/Current Carrying Capacity testing of single row connector systems:

- 11.1.1 One contact energized only
- 11.1.2 Two contacts energized adjacent to each other
- 11.1.3 Three contacts energized adjacent to each other
- 11.1.4 Four contacts energized adjacent to each other
- 11.1.5 All contacts energized

Test Condition as in 11.1 above

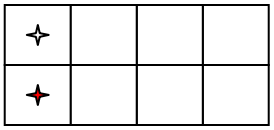
✧ Indicates energized contacts

✦ Indicates thermocouple monitored, energized contacts

12) The following loading configurations shall be tested for Temperature Rise/Current Carrying Capacity testing of two row connector systems:

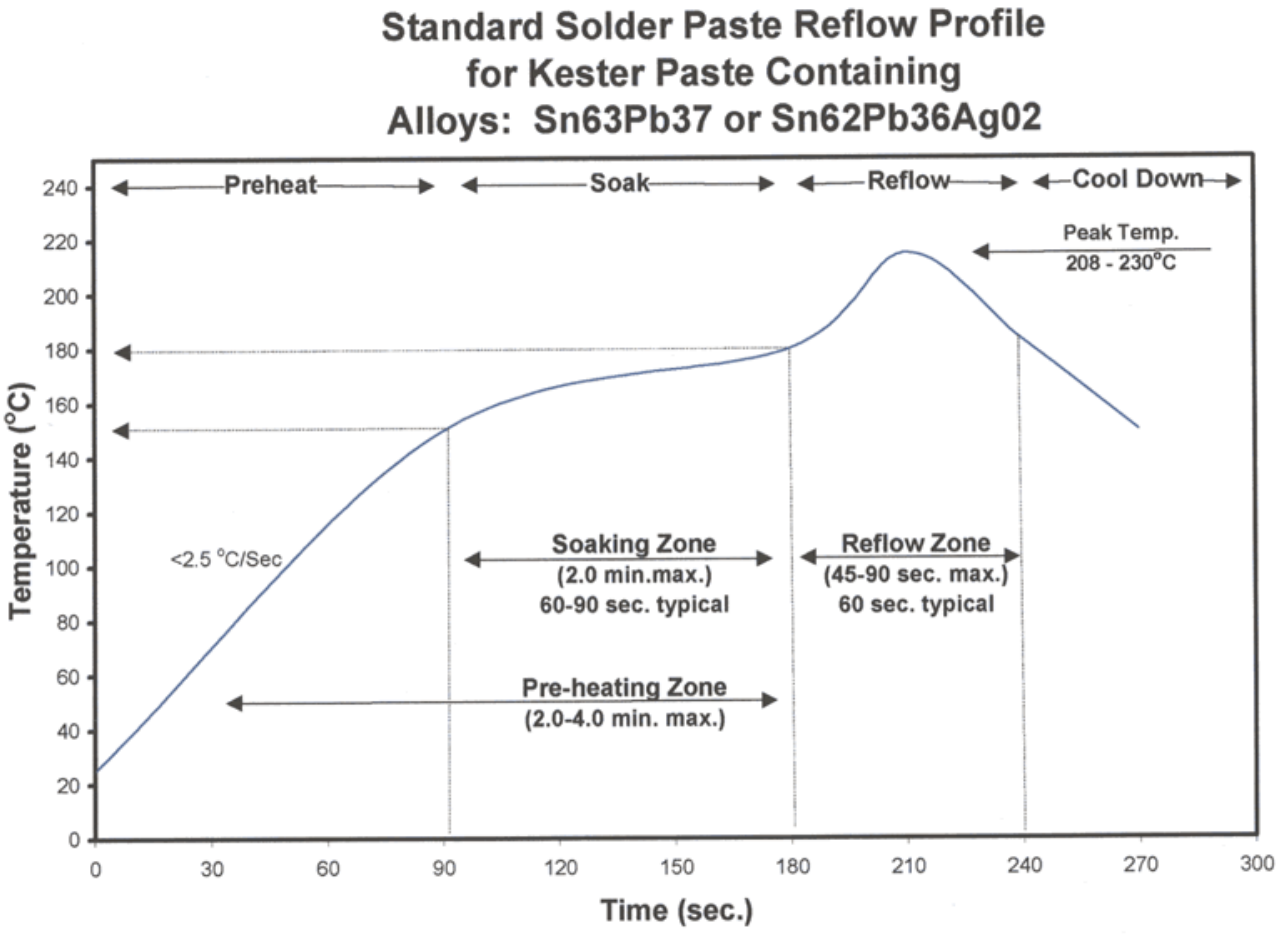
- 12.1.1 Two by One contact energized
- 12.1.2 Two by Two contacts energized adjacent to each other
- 12.1.3 Two by Three contacts energized adjacent to each other
- 12.1.4 Two by Four contacts energized adjacent to each other
- 12.1.5 All contacts energized

Test Condition as in 12.1 above



13) For Current Cycling, only 100 % loading will be tested.

TYPICAL OVEN PROFILE (Soldering Parts to Test Boards)



FLOWCHARTS

Current Carrying Capacity - Contacts

TEST STEP	GROUP A 3 Mated Assembies 1 CONTACT POWERED	GROUP B 3 Mated Assembies 2 CONTACTS POWERED	GROUP C 3 Mated Assembies 3 CONTACTS POWERED	GROUP D 3 Mated Assembies 4 CONTACTS POWERED	GROUP E 3 Mated Assembies ALL CONTACTS POWERED
01	CCC	CCC	CCC	CCC	CCC

(GOLD PLATING) - Tabulate calculated current at RT, 85° C, 95° C and 115° C
after derating 20% and based on 125° C
CCC, Temp rise = EIA-364-70

Current Carrying Capacity - Ground Planes

TEST STEP	GROUP A 3 Mated Assembies 1 GROUND PLANE POWERED	GROUP B 3 Mated Assembies 2 GROUND PLANES POWERED	GROUP C 3 Mated Assembies 3 GROUND PLANES POWERED	GROUP D 3 Mated Assembies 4 GROUND PLANES POWERED
01	CCC	CCC	CCC	CCC

(GOLD PLATING) - Tabulate calculated current at RT, 85° C, 95° C and 115° C
after derating 20% and based on 125° C
CCC, Temp rise = EIA-364-70

TEST PROCEDURES

Part No.		**Mating Part No.**	
Sample Size		**Technician**	
Start Date		**Complete Date**	
Room Ambient		**Relative Humidity**	
Equipment ID#:			

TEMPERATURE RISE (Current Carrying Capacity, CCC):

13 Thermocouples shall be calibrated in accordance with Samtec documents; TLWI 0003, Thermocouple Welding Procedure and TLWI 0005, Thermocouple Calibration

14 The thermocouples shall be placed at a location to sense the maximum temperature generated during testing.

15 Temperature stability shall be defined as the temperature at which three successive readings, 5 minutes apart, differ not more than 1° C (computer controlled data acquisition). This is the Temperature Rise that the Current Carrying Capacity and De-rating curves are based on.

16 The following loading configurations shall be tested (double for two row systems):
- 16.1 One contact energized only
- 16.2 Two contacts energized adjacent to each other
- 16.3 Three contacts energized adjacent to each other
- 16.4 Four contacts energized adjacent to each other
- 16.5 All contacts energized

17 The following loading configurations shall be tested for Temperature Rise/Current Carrying Capacity testing of two row connector systems:
- 17.1 Two by One contact energized
- 17.2 Two by Two contacts energized adjacent to each other
- 17.3 Two by Three contacts energized adjacent to each other
- 17.4 Two by Four contacts energized adjacent to each other
- 17.5 All contacts energized

18 Three samples shall be tested for each of the above configurations for a total of eighteen assemblies.

19 Temperature Rise measurements shall be made at 5 different current levels yielding temperature rises in the 10 to 70°C range.

20 The maximum temperature rise data for each current of each loading configuration shall be used to calculate the Current De-rating curve in accordance with EIA-364-70 and thereby the Current Carrying Capacity versus ambient temperature of the system under test.

RESULTS

CONTACTS POWERED - Temperature Rise, CCC at a 20% de-rating

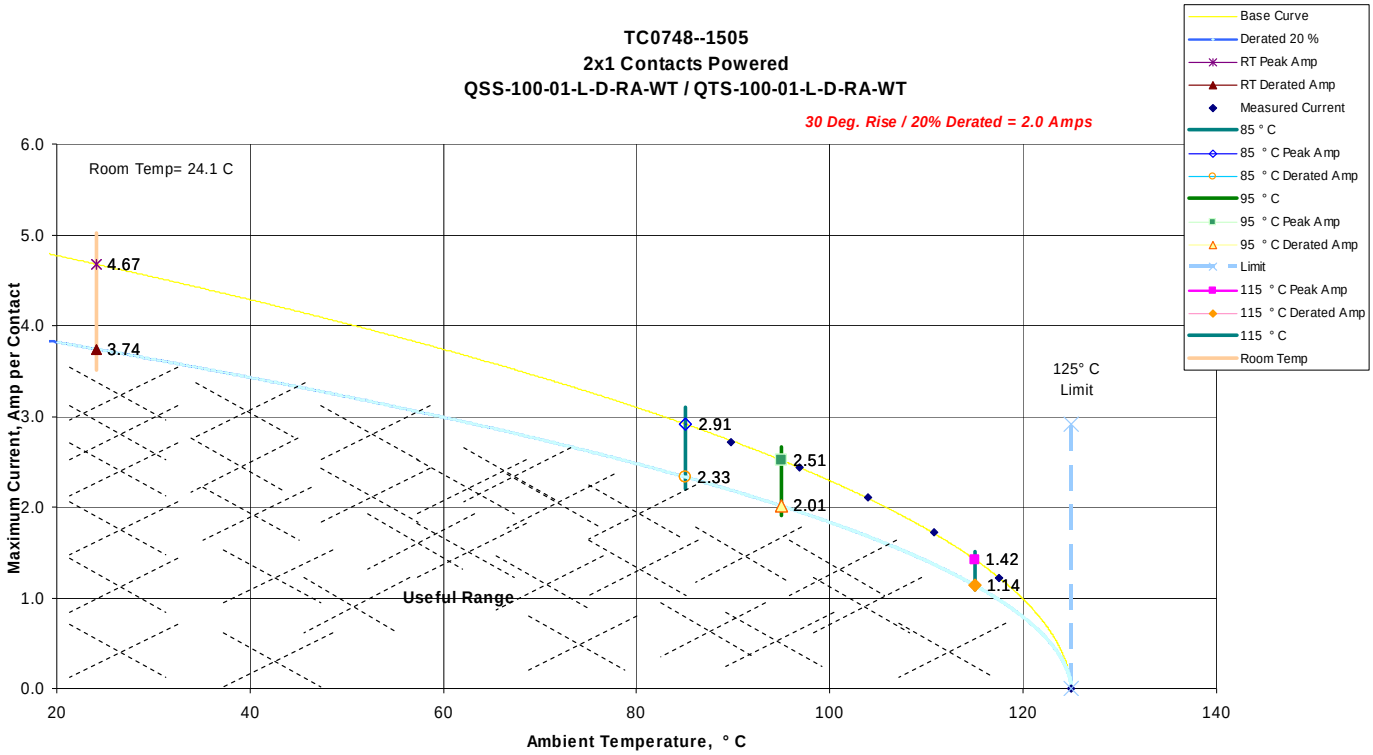
- **CCC for a 30°C Temperature Rise ----------2.0 A per contact with 2 contacts (2 x 1) powered**
- **CCC for a 30°C Temperature Rise ----------1.7 A per contact with 4 contacts (2 x 2) powered**
- **CCC for a 30°C Temperature Rise ----------1.3 A per contact with 6 contacts (2 x 3) powered**
- **CCC for a 30°C Temperature Rise ----------1.2 A per contact with 8 contacts (2 x 4) powered**
- **CCC for a 30°C Temperature Rise ----------0.5 A per contact with 200 contacts (2 x 100) powered**

GROUND PLANES POWERED - Temperature Rise, CCC at a 20% de-rating

- **CCC for a 30°C Temperature Rise ----------15.7 A per ground plane with 1 ground plane powered**
- **CCC for a 30°C Temperature Rise ----------12.7 A per ground plane with 2 ground planes powered**
- **CCC for a 30°C Temperature Rise ----------11.8 A per ground plane with 3 ground planes powered**
- **CCC for a 30°C Temperature Rise ----------9.5 A per ground plane with 4 ground planes powered**

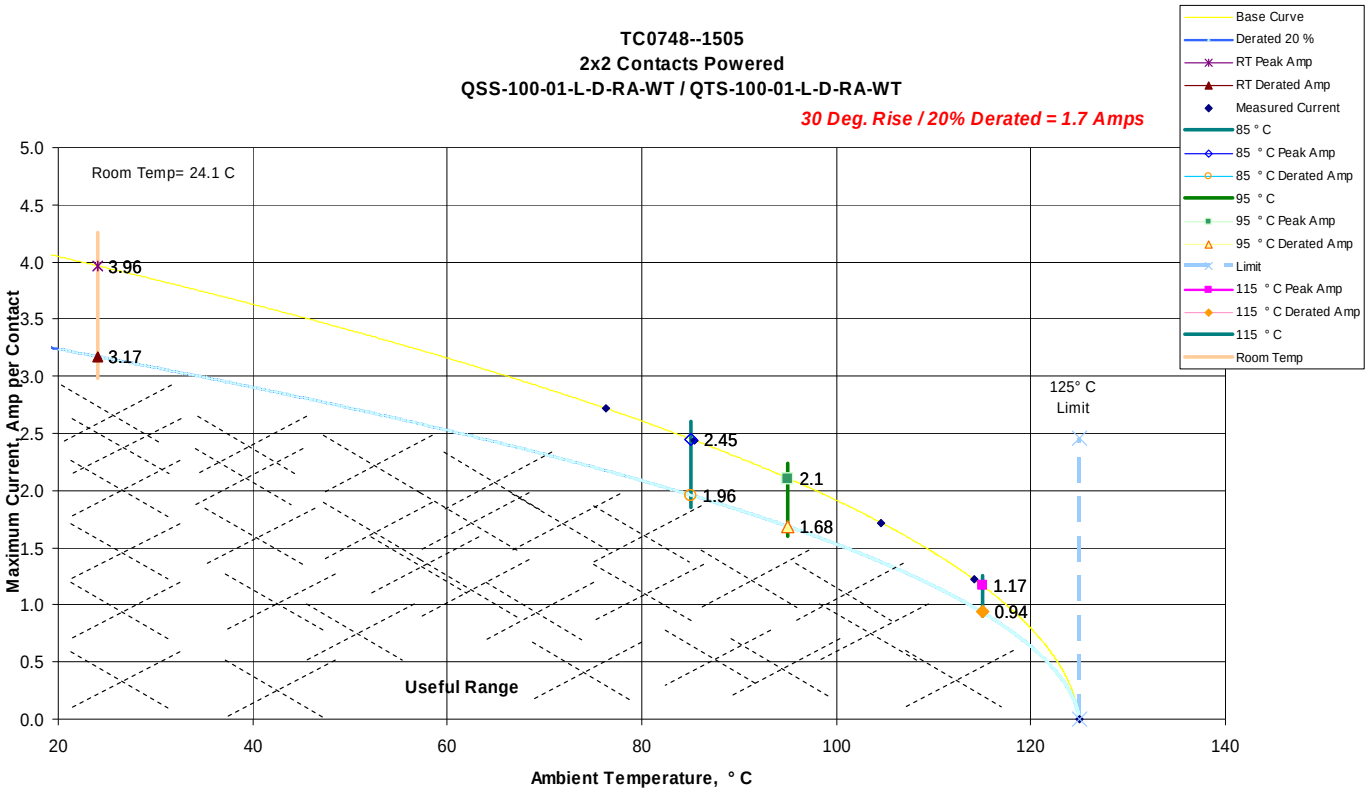
CURRENT CARRYING CAPACITY DATA

CONTACT CCC – 2 POWERED (2 X 1)



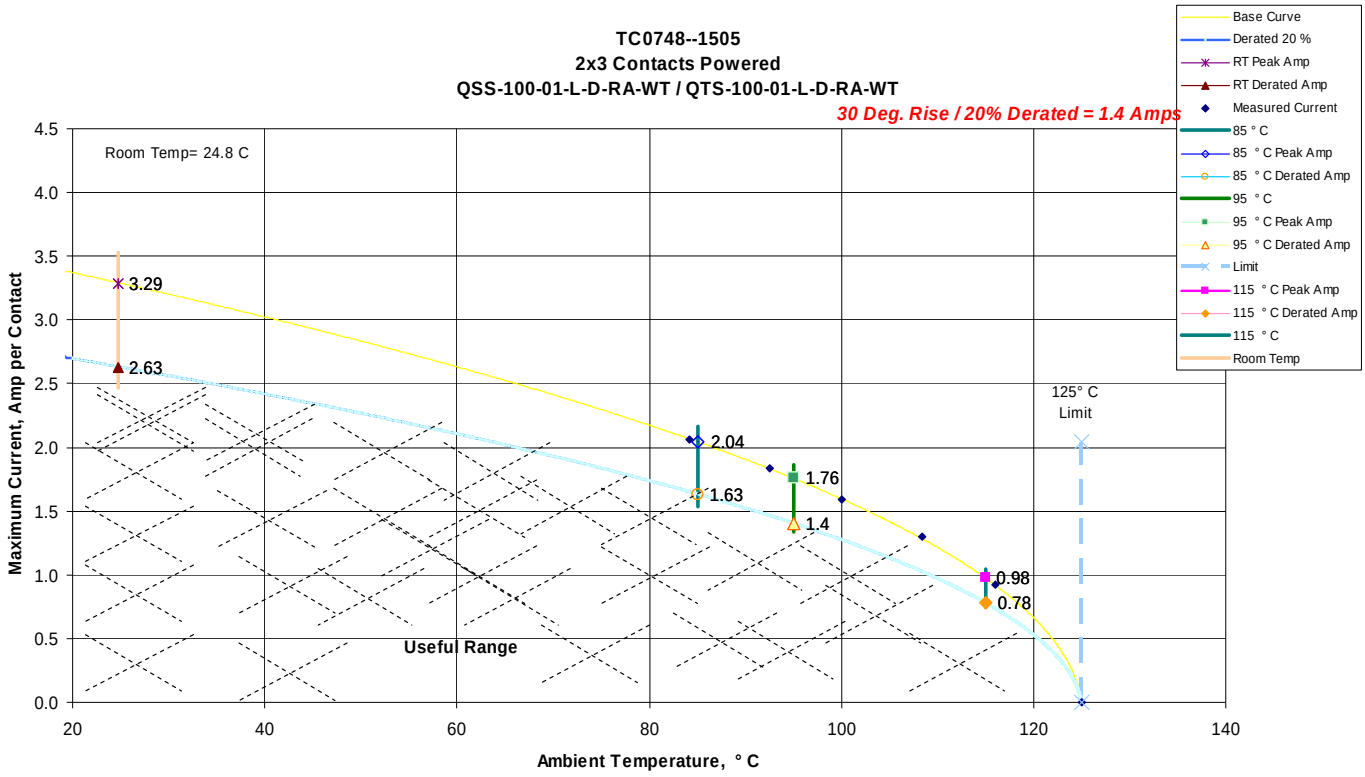
CURRENT CARRYING CAPACITY DATA continued

CONTACT CCC – 4 POWERED (2 X 2)



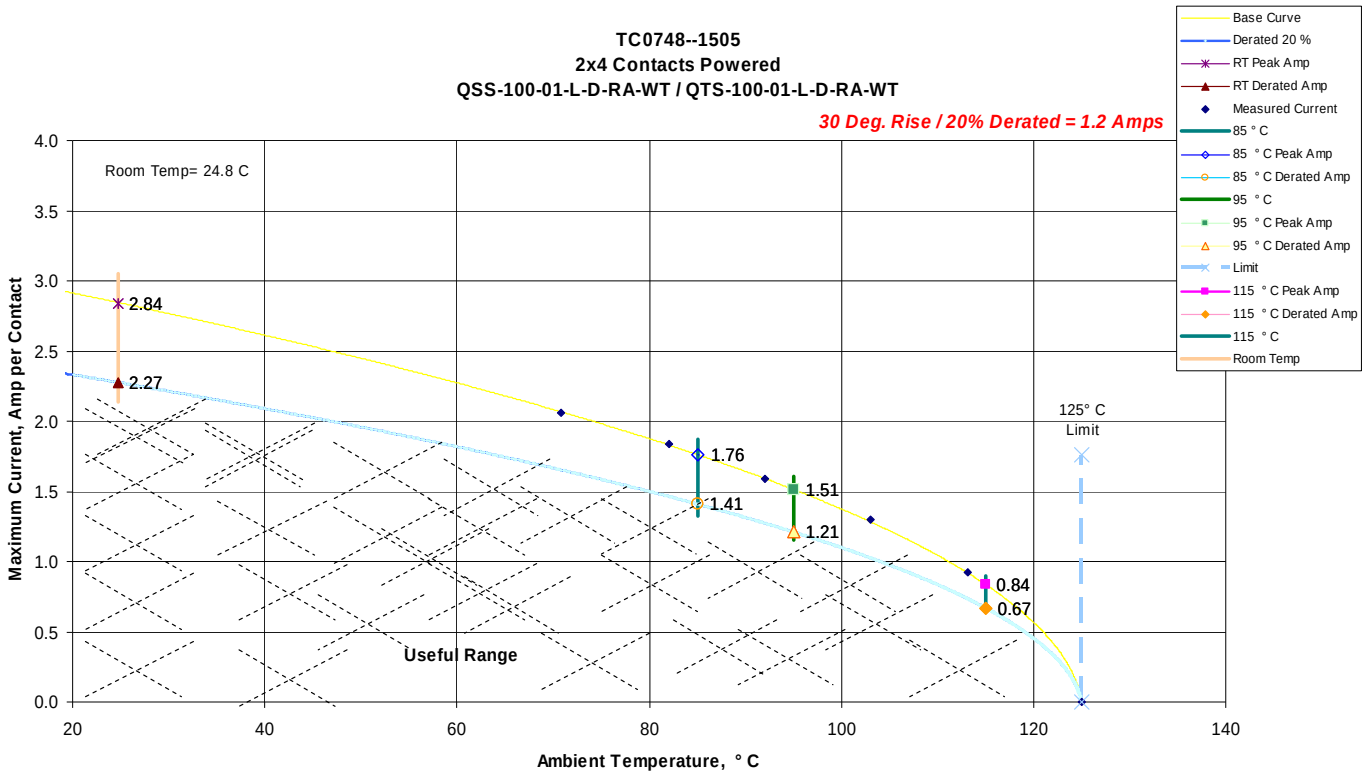
CURRENT CARRYING CAPACITY DATA continued

CONTACT CCC – 6 POWERED (2 X 3)



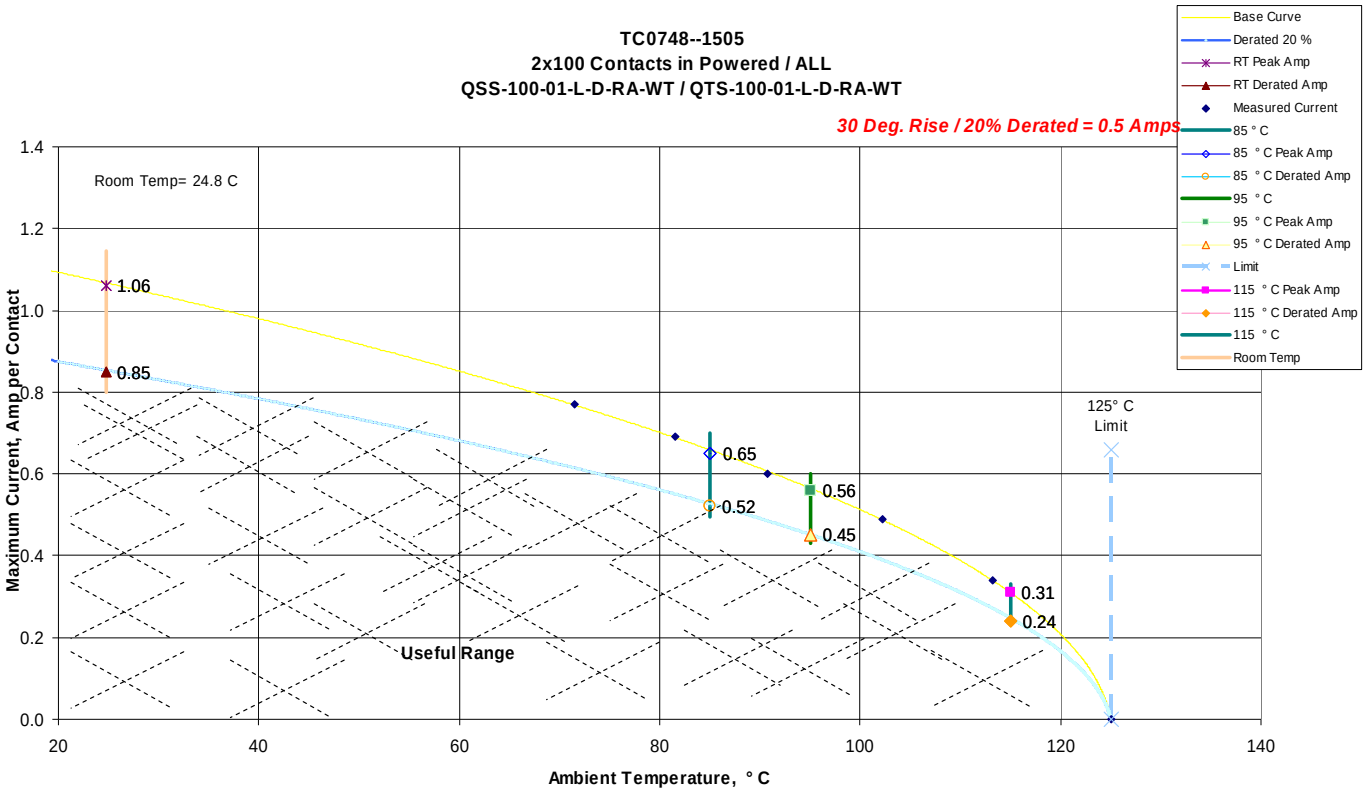
CURRENT CARRYING CAPACITY DATA continued

CONTACT CCC – 8 POWERED (2 X 4)



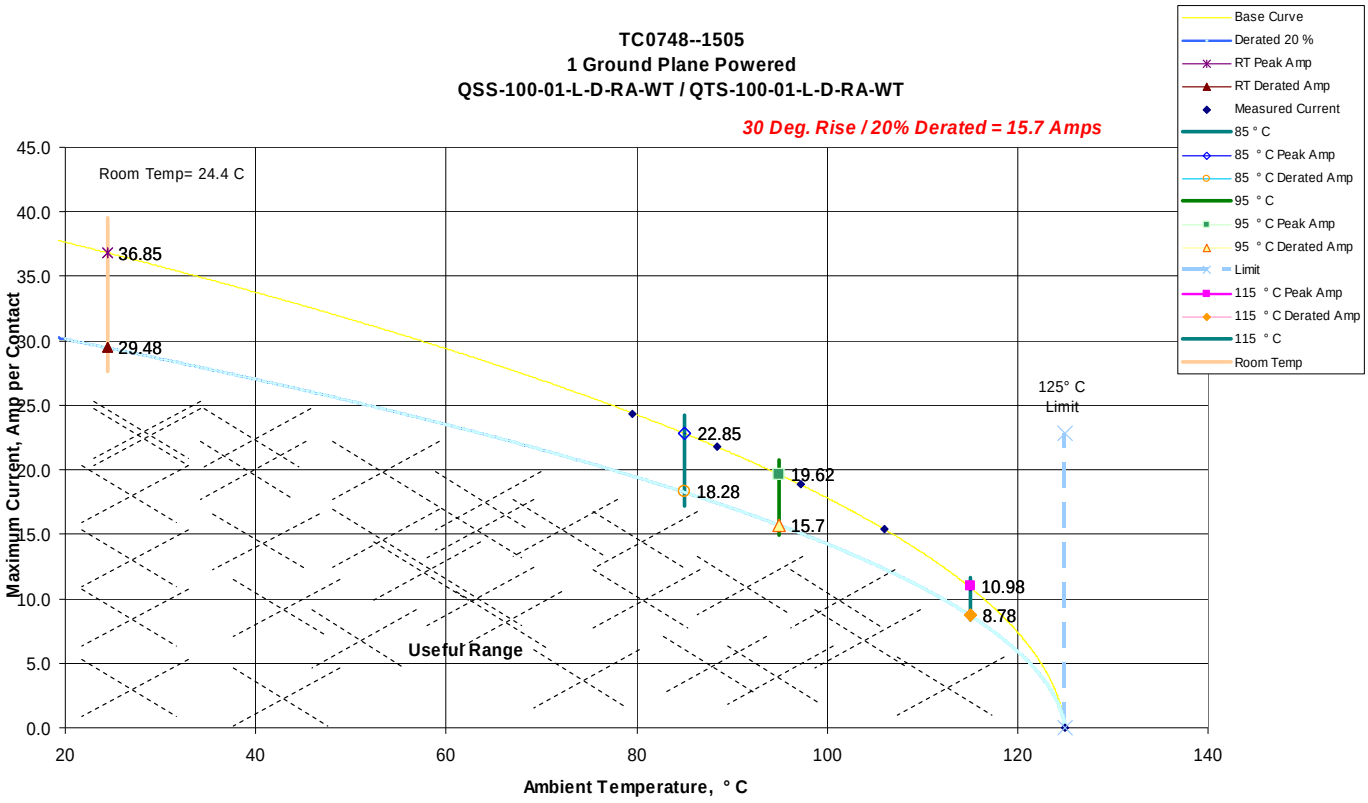
CURRENT CARRYING CAPACITY DATA continued

CONTACT CCC – 200 POWERED (2 X 100)



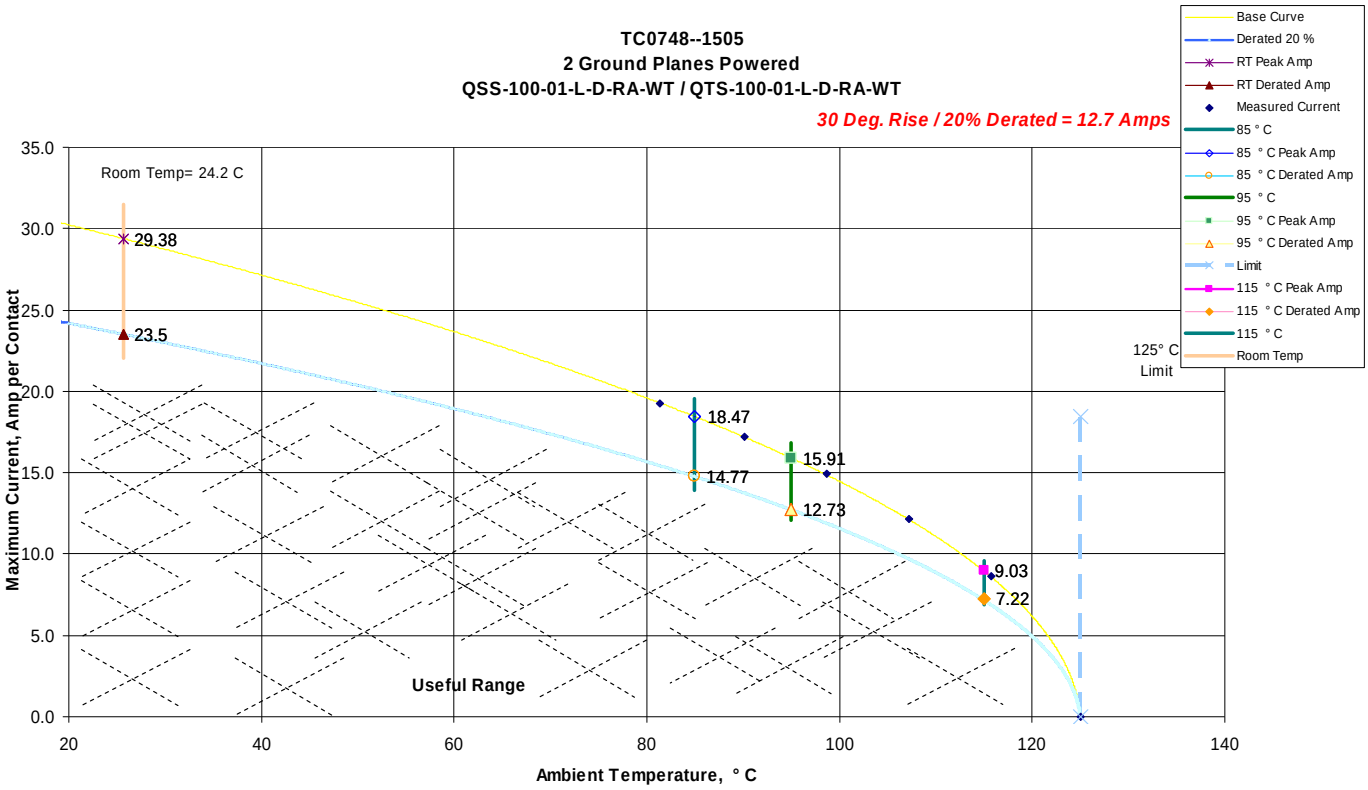
CURRENT CARRYING CAPACITY DATA continued

GROUND PLANE CCC – 1 POWERED



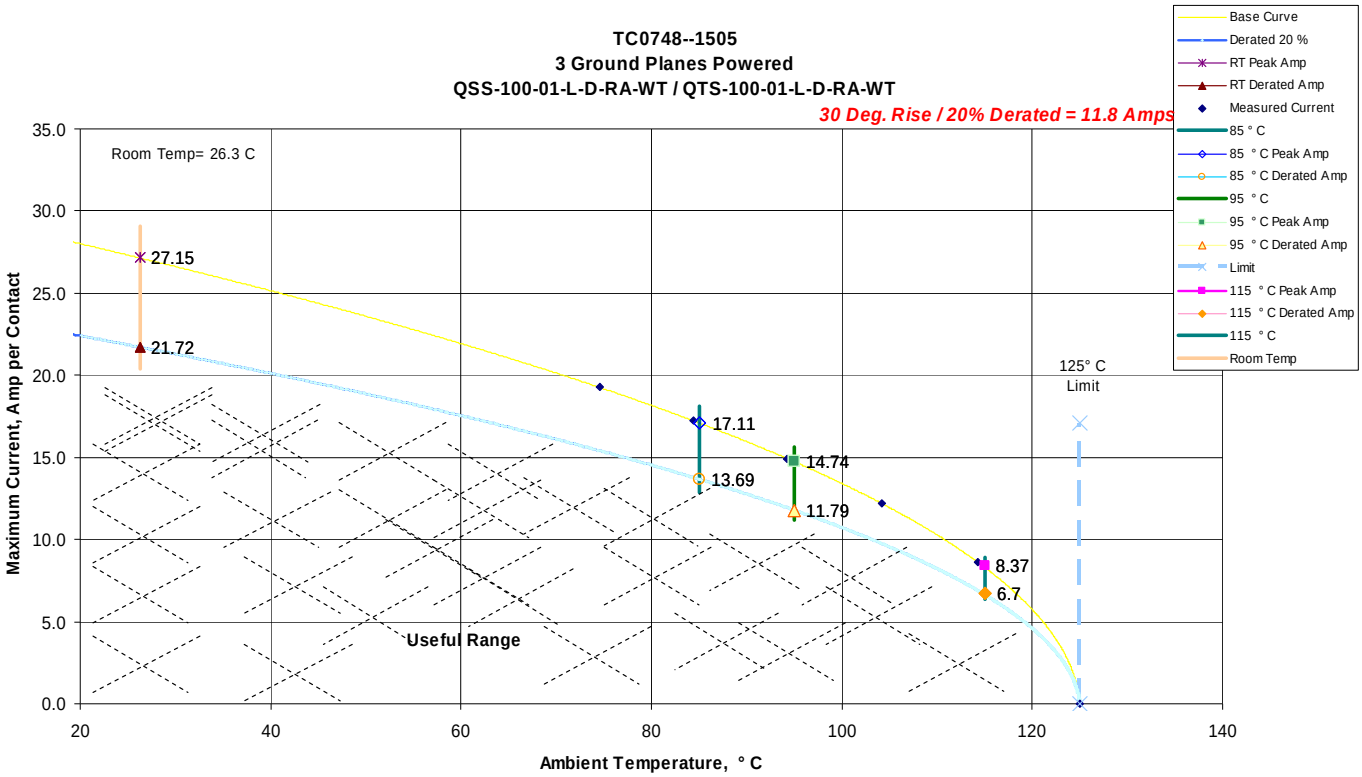
CURRENT CARRYING CAPACITY DATA continued

GROUND PLANE CCC – 2 POWERED



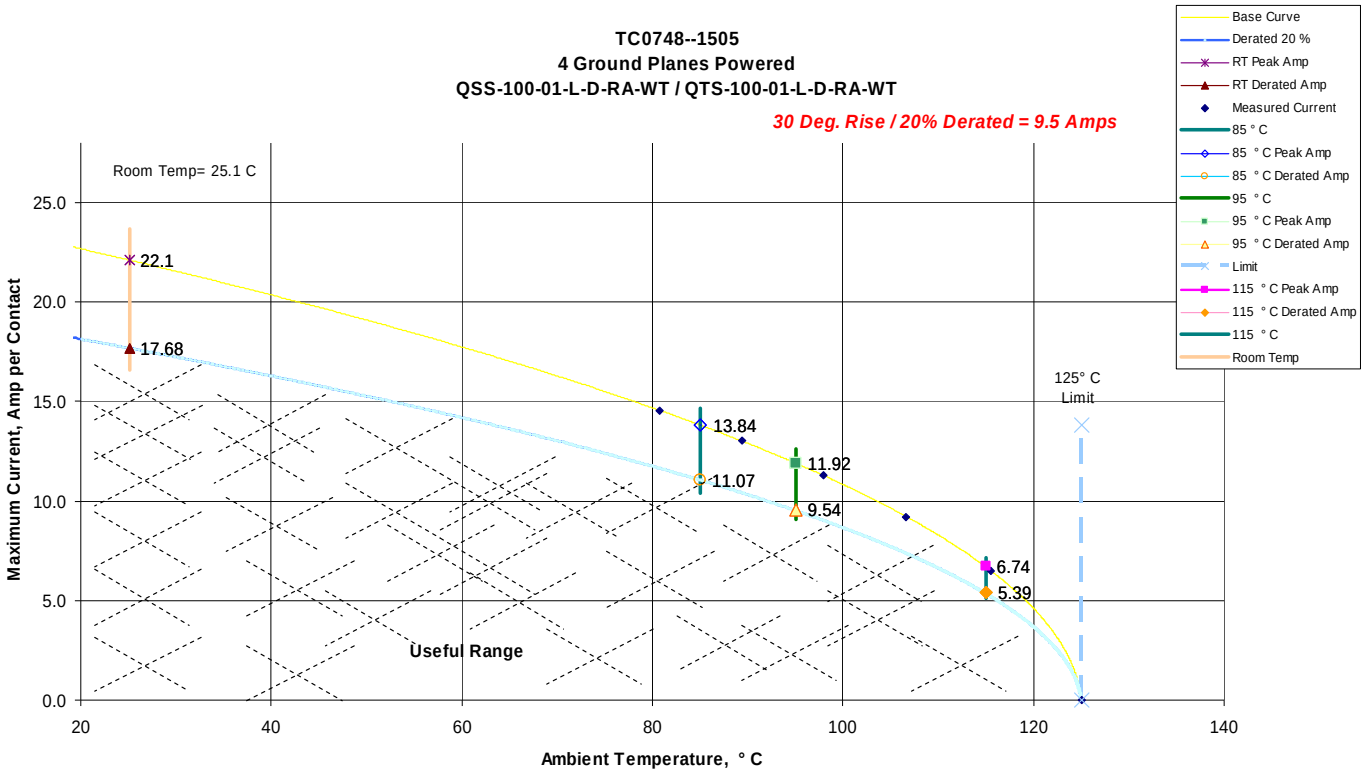
CURRENT CARRYING CAPACITY DATA continued

GROUND PLANE CCC – 3 POWERED



CURRENT CARRYING CAPACITY DATA continued

GROUND PLANE CCC – 4 POWERED



EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: PS-07
Description: 20 V, 120 A DC Power Supply - AutoRanging SO/HPIB
Manufacturer: Hewlett Packard / Agilent
Model: AT-6031A
Serial #: 2721A00648
Accuracy: See Manual Current Carrying Capacity (CCC) Chamber
… Last Cal: 10/25/2007, Next Cal: 10/25/2008

Equipment #: MO-04
Description: Multimeter /Data Acquisition System
Manufacturer: Keithley
Model: 2700
Serial #: 0798688
Accuracy: See Manual
… Last Cal: 03/8/07, Next Cal: 03/8/08

Equipment #: TC111307-(001 - 017)
Description: CCC Chamber Thermocouples
Manufacturer: Samtec
Model:
Serial #: TC111307-(001 - 017)
Accuracy: +/- 1 Deg.
… Last Cal: 11/30/2007, Next Cal: 11/30/2008

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