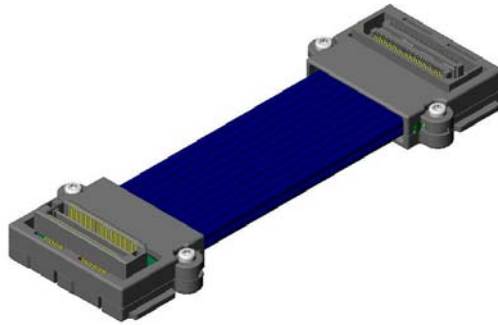




Project Number: NA		Tracking Code: TC0415--0409	
Requested by: John Reid		Date: 4/5/2004	Product Rev: 1
Part #: HQDP-020-12.00-TTR-STL-1		Lot #: 4/5/2004	Tech: TR & TC Eng: John Tozier
Part description: Twin-ax High Speed Cable Assy, 0.5 mm Pitch			Qty to test: 1
Test Start: 04/14/2004		Test Completed: 6/15/2004	



**DVT Summary Report**

**PART DESCRIPTION**

**HQDP-020-12.00-TTR-STL-1**

**Mated with QTH-DP/QTH-DP-020-X**

## 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: DVT

### 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 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) The ultrasonic procedure can be used with either aqueous or non-aqueous soldering components and follows:
  - a) Sample test boards are to be ultrasonically cleaned after test lead attachment, preparation and/or soldering using the following process.
  - b) Sample test boards are immersed into Branson 3510 cleaner containing Kyzen Ionox HC1 (or equivalent) with the following conditions:
    - i) Temperature: -----55° C +/- 5° C
    - ii) Frequency:-----40 KHz
    - iii) Immersion Time: -----5 to 10 Minutes
  - c) Sample test boards are removed and placed into the Branson 3510 cleaner containing deionized water with the following conditions:
    - i) Temperature: -----55° C +/- 5° C
    - ii) Frequency:-----40 KHz
    - iii) Immersion Time: -----5 to 10 Minutes
  - d) Sample test boards are removed and placed in a beaker positioned on a hot plate with a magnetic stirrer containing deionized water warmed to 55° C +/- 5° C for 1/2 to 1 minute.
  - e) Upon removal, the sample test boards are rinsed for 1/2 to 1 minute in room temperature free flowing deionized water.
  - f) After the final rinse, the sample test boards are dried in an air-circulating oven for 10 to 15 minutes at 50° C +/- 5° C.
  - g) Sample test boards are then allowed to set and recover to room ambient condition prior to testing.
- 7) Parts not intended for testing LLCR and DWV/IR are visually inspected and cleaned if necessary.
- 8) Any additional preparation will be noted in the individual test sequences

## FLOWCHARTS

TEST	GROUP 1		
STEP	Cable Center, Both Cables Powered		
	6 adjacent DP lines		
01	CCC		
Tabulate calculated current at RT, 45° C, 55° C and 75° C			
after derating 20% and based on 85° C			
CCC, Temp rise = EIA-364-70			

TEST	GROUP 1		
STEP	Sig-GND		
01	IR		
02	Data Review		
03	Thermal Aging		
04	IR		
05	Data Review		
06	Humidity		
07	IR		
Thermal Aging = EIA-364-17, Test Condition 4, 105 deg C;			
Time Condition 'B' (250 hours)			
Humidity =EIA-364-31, Test Condition B (240 Hours)			
and Method III (+25 ° C to +65 ° C @ 90%RH to 98% RH)			
delete steps 7a and 7b			
IR = EIA-364-21			

TEST	GROUP 1A	GROUP 1B	GROUP 1C	
STEP	Sig-GND	Sig-GND	Sig-GND	
	Ambient	Thermal	Humidity	
01	DWV/Working Voltage	Thermal Aging	Humidity	
02		DWV/Working Voltage	DWV/Working Voltage	
Thermal Aging = EIA-364-17, Test Condition 4, 105 deg C;				
Time Condition 'B' (250 hours)				
Humidity =EIA-364-31, Test Condition B (240 Hours)				
and Method III (+25 ° C to +65 ° C @ 90%RH to 98% RH)				
delete steps 7a and 7b				
DWV = EIA-364-20				

**FLOWCHARTS Continued**

TEST	GROUP 1	GROUP 2
STEP		
	GND 0°	GND 90°
01	Pull test, Continuity	Pull test, Continuity
<b>Secure both cables in the center.</b>		
<b>Monitor continuity resistance and pull</b>		
	<b>record forces when continuity fails.</b>	

TEST	GROUP 1	GROUP 2	GROUP 3	GROUP 4
STEP	Test w/8 Oz. weight	Test w/8 Oz. weight	Test w/8 Oz. weight	Test w/8 Oz. weight
	Sig ±90° Bend	Sig ±35° Bend	GND ±90° Bend	GND ±35° Bend
01	Resistance	Resistance	Resistance	Resistance
02	5000 Cycles	5000 Cycles	5000 Cycles	5000 Cycles
03	Data Review	Data Review	Data Review	Data Review
04	Resistance	Resistance	Resistance	Resistance
05	10000 Cycles	10000 Cycles	10000 Cycles	10000 Cycles
06	Data Review	Data Review	Data Review	Data Review
07	Resistance	Resistance	Resistance	Resistance
08	15000 Cycles	15000 Cycles	15000 Cycles	15000 Cycles
09	Data Review	Data Review	Data Review	Data Review
10	Resistance	Resistance	Resistance	Resistance
11	20000 Cycles	20000 Cycles	20000 Cycles	20000 Cycles
12	Data Review	Data Review	Data Review	Data Review
13	Resistance	Resistance	Resistance	Resistance
14	25000 Cycles	25000 Cycles	25000 Cycles	25000 Cycles
15	Resistance	Resistance	Resistance	Resistance
	<b>Monitor Cable Continuity Resistance</b>			

## ATTRIBUTE DEFINITIONS

The following is a brief, simplified description of attributes.

### THERMAL AGING:

- 1) EIA-364-17, *Temperature Life with or without Electrical Load Test Procedure for Electrical Connectors*.
  - a) Test Condition 4 at 105° C.
  - b) Test Time Condition B for 250 hours.
- 2) Connectors are mated.

### CYCLIC HUMIDITY:

- 1) Reference document: EIA-364-31, *Humidity Test Procedure for Electrical Connectors*.
  - a) Test Condition B, 240 Hours.
  - b) Method III, +25° C to + 65° C, 90% to 98% Relative Humidity excluding sub-cycles 7a and 7b.
- 2) Connectors are mated.

### TEMPERATURE RISE (Current Carrying Capacity, CCC):

- 1) EIA-364-70, *Temperature Rise versus Current Test Procedure for Electrical Connectors and Sockets*.
- 2) When current passes through a contact, the temperature of the contact increases as a result of  $I^2R$  (resistive) heating.
- 3) The number of contacts being investigated plays a significant part in power dissipation and therefore temperature rise.
- 4) The size of the temperature probe can affect the measured temperature.
- 5) Copper traces on PC boards will contribute to temperature rise:
  - a) Self heating (resistive)
  - b) Reduction in heat sink capacity affecting the heated contacts
- 6) A de-rating curve, usually 20%, is calculated.
- 7) Calculated de-rated currents at three temperature points are reported:
  - a) Ambient
  - b) 65 ° C
  - c) 75 ° C
  - d) 95 ° C
- 8) Typically, neighboring contacts (in close proximity to maximize heat build up) are energized.
- 9) The thermocouple (or temperature measuring probe) will be positioned at a location to sense the maximum temperature in the vicinity of the heat generation area.
- 10) A computer program, *TR 803.exe*, ensures accurate stability for data acquisition.
- 11) Hook-up wire cross section is larger than the cross section of any connector leads/PC board traces, jumpers, etc.
- 12) Hook-up wire length is longer than the minimum specified in the referencing standard.

**ATTRIBUTE DEFINITIONS Continued****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 (sig-GND)
  - ii) Mated with QTH-DP
  - iii) Mounted to PC board
  - iv) Rate of Application 500 V/Sec
  - v) 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).

**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:

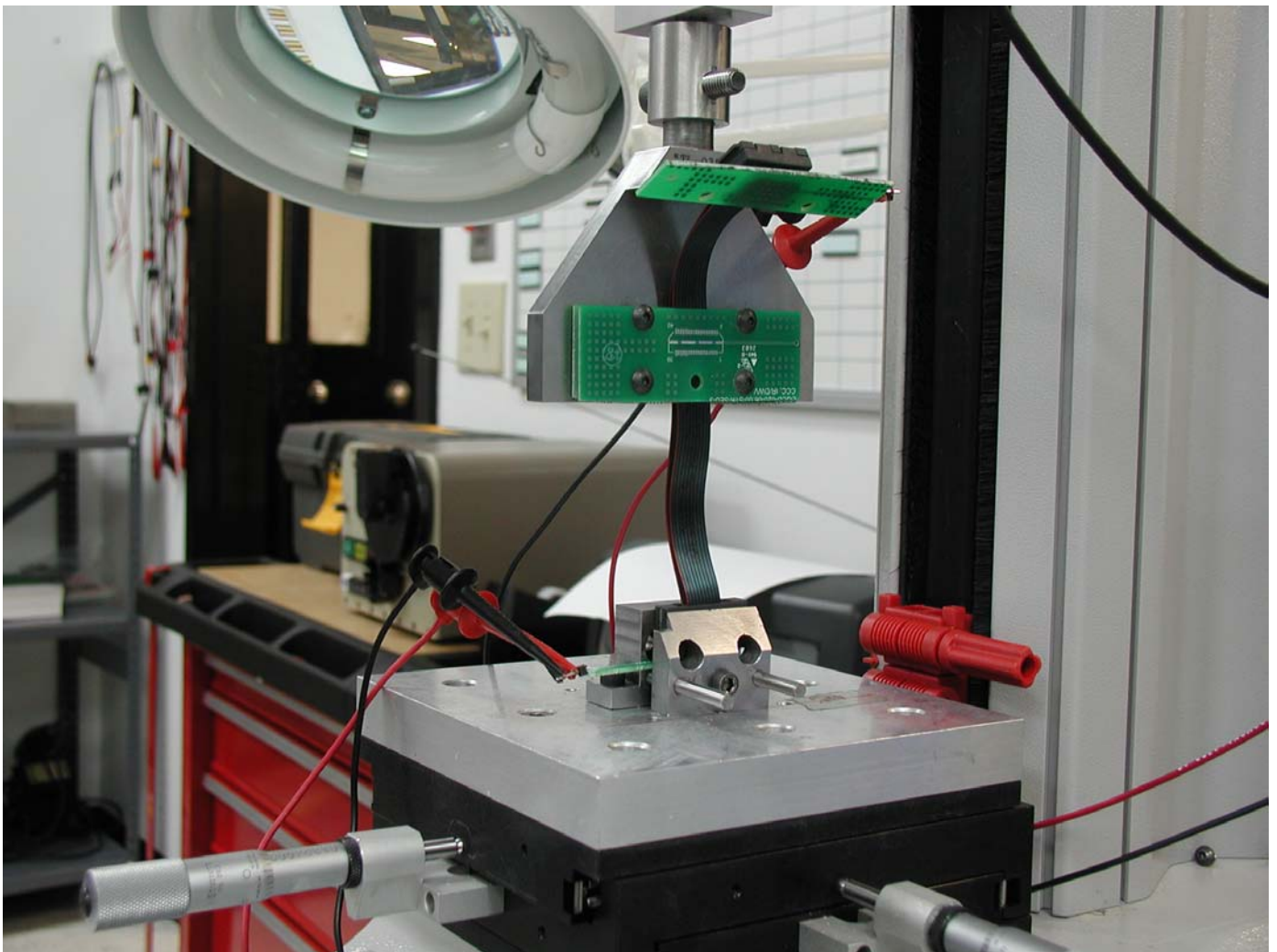
- a) Reference document: EIA-364-21, *Insulation Resistance Test Procedure for Electrical Connectors*.
- b) Test Conditions:
  - i) Between Adjacent Contacts (sig-GND)
  - ii) Mated with QTH-DP
  - iii) Mounted to PC board
  - iv) Electrification Time 2.0 minutes
  - v) Test Voltage (VDC) corresponding to calibration settings for measuring resistances

## 2) MEASUREMENTS:

- a) When the specified test voltage is applied (VDC), the insulation resistance shall not be less than 1000 megohms.

**SUPPLEMENTAL TESTS, Typical setup pictures and not necessarily of product under test:**

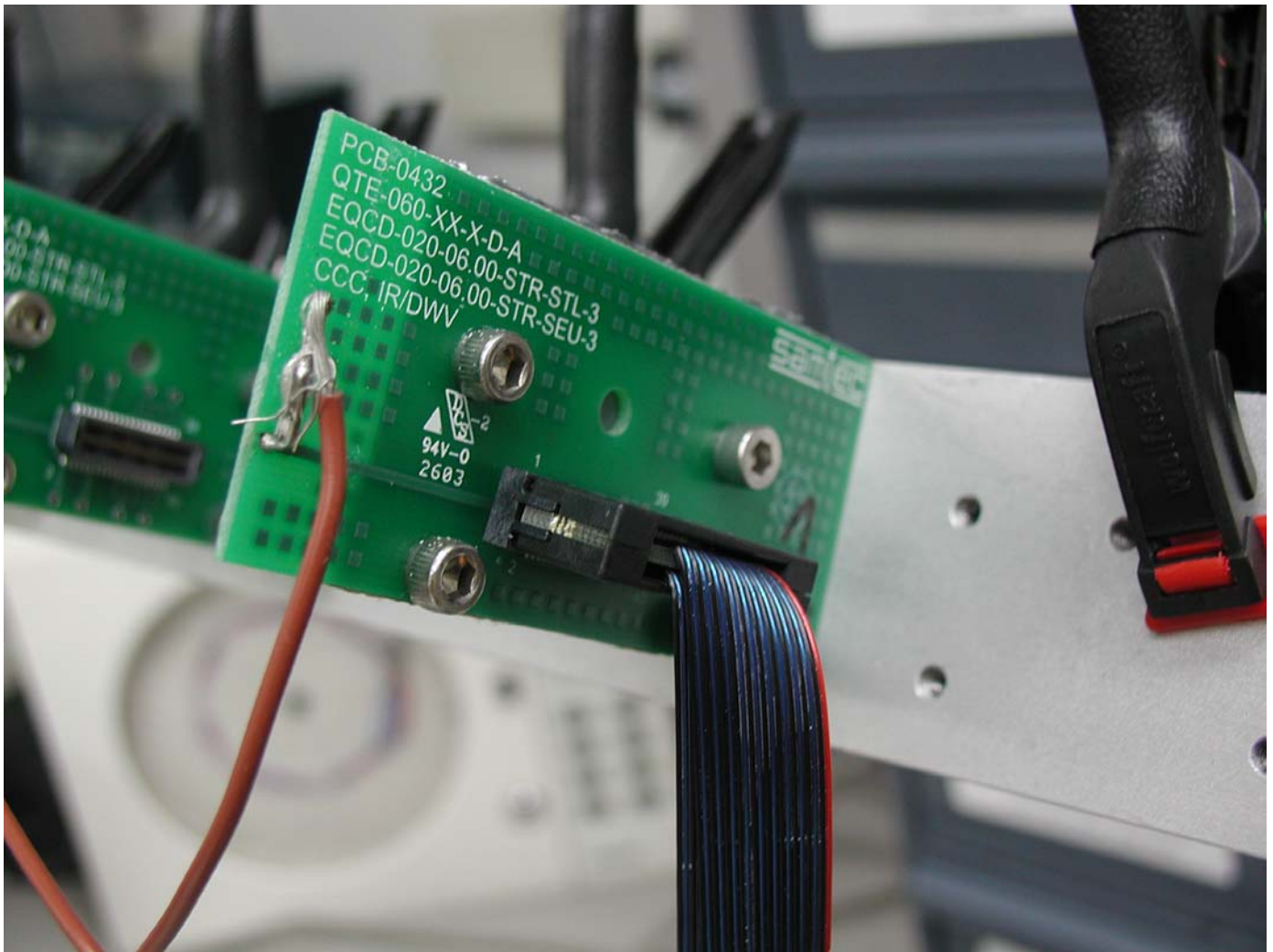
- 1) **Connector Pull ... Secure cable near cable center and pull on connector and monitor continuity resistance**
  - a) **At 90°, right angle to cable**
  - b) **At 0°, in-line with cable**



**Fig 1**  
**0° connector pull. Notice the electrical continuity hook-up wires. Typical set-up, actual part not depicted.**

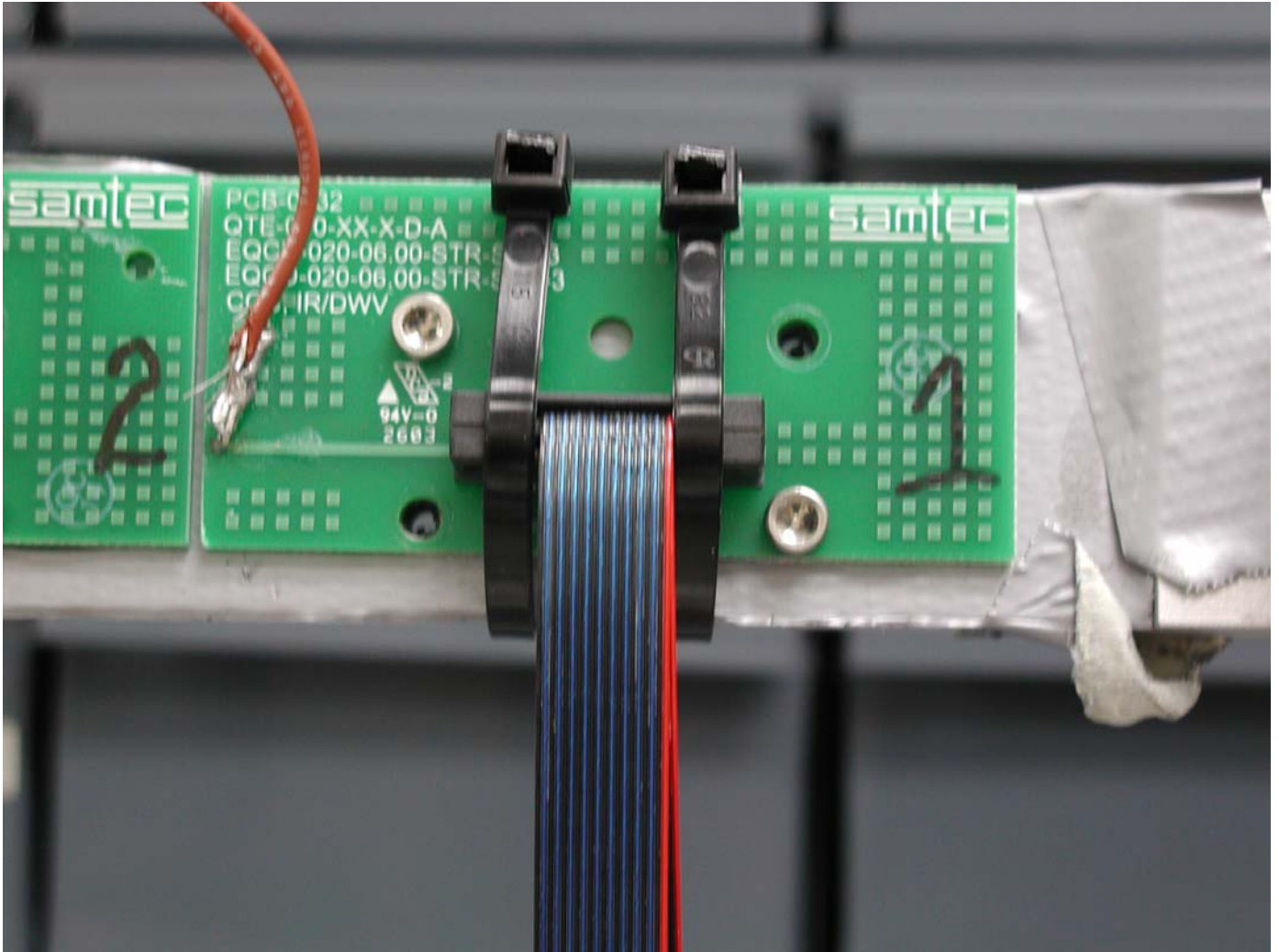
**2) Cable Durability, Bend up to 25,000 cycles with an 8 oz. load on cable end and monitor continuity resistance**

**a)  $\pm 35^\circ$  Pendulum Mode**



**Fig 2**

**Typical set-up, actual part not depicted.**

**b)  $\pm 90^\circ$  Flex Mode**

**Fig 3**  
**Typical set-up, actual part not depicted.**

**RESULTS****Temperature Rise, CCC At 95°C, relative to 105°C and 20% de-rated**

- 6 Adjacent Conductors Powered in each cable----- 0.4 A

**Insulation Resistance minimums, IR – SIG to GND**

- Initial ----- 50,000 Meg  $\Omega$  ----- Pass
- Thermal----- 50,000 Meg  $\Omega$
- Humidity----- 25,000 Meg  $\Omega$

**Dielectric Withstanding Voltage minimums, DWV – SIG to GND**

- Initial
  - Breakdown ----- 1200 VAC
  - DWV ----- 900 VAC
  - Working voltage----- 300 VAC
- Thermal
  - Breakdown ----- 1000 VAC
  - DWV ----- 750 VAC
  - Working voltage----- 250 VAC
- Humidity
  - Breakdown ----- 1300 VAC
  - DWV ----- 975 VAC
  - Working voltage----- 375 VAC

**Supplemental – Connector/Cable Pull**

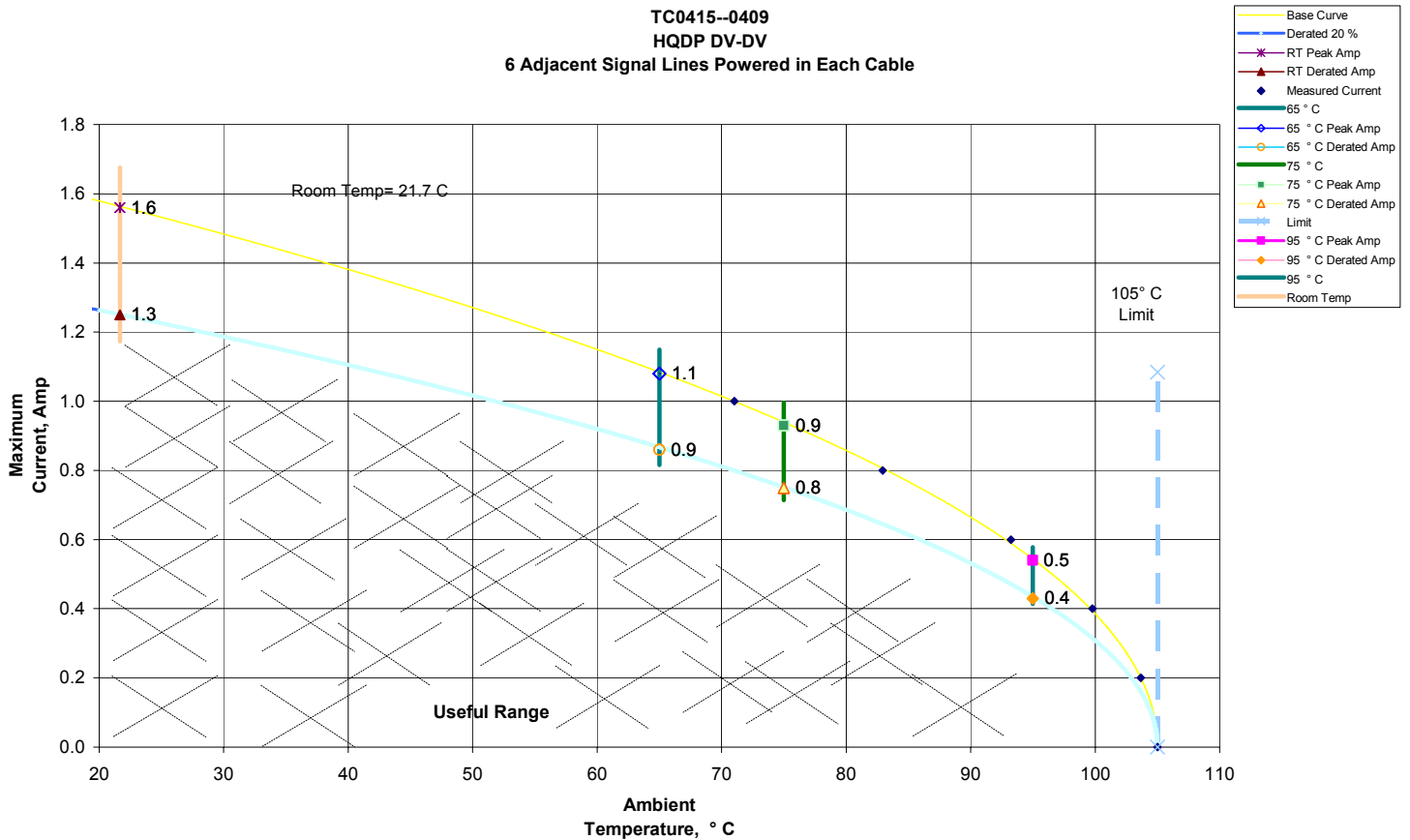
- 0° ----- 209.6 lbs min
- 90° ----- 245.9 lbs min

**Supplemental – Cable Bend 25,000 Cycles**

- 35° Pendulum Mode
  - Sig ----- Up to 25,000 Cycles
  - GND ----- Up to 25,000 Cycles
- 90° FLEX Mode
  - Sig ----- Up to 900 Cycles (open circuit)
  - GND ----- Up to 18,460 Cycles(open circuit)

**DATA SUMMARIES****TEMPERATURE RISE (Current Carrying Capacity, CCC):**

- 1) High quality thermocouples whose temperature slopes track one another were used for temperature monitoring.
- 2) The thermocouples were placed at a location to sense the maximum temperature generated during testing.
- 3) Temperature readings recorded are those for which three successive readings, 15 minutes apart, differ less than 1° C (computer controlled data acquisition).
  - a) Adjacent signal wires powered in both cables



**DATA SUMMARIES Continued****INSULATION RESISTANCE (IR):**

<b>Electrification Time <i>Two (2) minutes</i></b>	
<b>Initial, Meg Ohms</b>	
	<b>Mated</b>
	<b><u>Insulation Resistance</u></b>
<b>Average</b>	50000
<b>Min</b>	50000
<b>Max</b>	50000
<b>Thermal Meg Ohms</b>	
	<b>Mated</b>
	<b><u>Insulation Resistance</u></b>
<b>Average</b>	50000
<b>Min</b>	50000
<b>Max</b>	50000
<b>Humidity Meg Ohms</b>	
	<b>Mated</b>
	<b><u>Insulation Resistance</u></b>
<b>Average</b>	25000
<b>Min</b>	25000
<b>Max</b>	25000

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

<b>Voltage Rate 500 VAC Per Sec.</b>			
<b>Test Voltage Until Breakdown Occurs</b>			
<b>Initial, VAC Mated</b>			
	<b><u>Breakdown Voltage</u></b>	<b><u>DWV</u></b>	<b><u>Working Voltage</u></b>
<b>Average</b>	1200	900	300
<b>Min</b>	1200	900	300
<b>Max</b>	1200	900	300
<b>Thermal VAC Mated</b>			
	<b><u>Breakdown Voltage</u></b>	<b><u>DWV</u></b>	<b><u>Working Voltage</u></b>
<b>Average</b>	1000	750	250
<b>Min</b>	1000	750	250
<b>Max</b>	1000	750	250
<b>Humidity VAC Mated</b>			
	<b><u>Breakdown Voltage</u></b>	<b><u>DWV</u></b>	<b><u>Working Voltage</u></b>
<b>Average</b>	1300	975	325
<b>Min</b>	1300	975	325
<b>Max</b>	1300	975	325

**DATA SUMMARIES Continued****SUPPLEMENTAL TESTS: Connector Pull**

<b>Pull, 0 Degrees</b>	<u>Force (Lbs)</u>
Minimum	209.6
Maximum	209.6
<b>Average</b>	<b>209.6</b>

<b><i>Pull, 90 degrees</i></b>	<u>Force (Lbs)</u>
Minimum	233.9
Maximum	257.9
<b>Average</b>	<b>245.9</b>

**DATA SUMMARIES Continued****SUPPLEMENTAL TESTS: Cable Durability, Bend  $\pm 35^\circ$  Pendulum Mode**

		<b>35 degree Pendulum Mode - Sig</b>				
<b>Cable</b>	<b>Resistance, milli Ohms/Sig line</b>					
	<b>Initial Resistance</b>	<b>5000 Cycles</b>	<b>10000 Cycles</b>	<b>15000 Cycles</b>	<b>20000 Cycles</b>	<b>25000 Cycles</b>
1	29.4	28.8	28.9	29.1	29.0	28.9
2	28.4	27.5	27.6	27.8	27.9	27.7

		<b>35 degree Pendulum Mode - Gnd</b>				
<b>Cable</b>	<b>Resistance, milli-Ohms/ Gnd</b>					
	<b>Initial Resistance</b>	<b>5000 Cycles</b>	<b>10000 Cycles</b>	<b>15000 Cycles</b>	<b>20000 Cycles</b>	<b>25000 Cycles</b>
1	63.4	60.4	63.4	60.8	58.6	62.8
2	64.8	62.6	68.6	66.8	66.0	68.0

**DATA SUMMARIES Continued****SUPPLEMENTAL TESTS: Cable Durability, Bend  $\pm 90^\circ$  Flex Mode**

90 degree Bend Mode - Sig						
Cable	Resistance, milli Ohms/Sig line					
	Initial Resistance	5000 Cycles	10000 Cycles	15000 Cycles	20000 Cycles	25000 Cycles
1	32.8	Failed 905				
2	33.5	Failed 1798				

90 degree Bend Mode - GND						
Cable	Resistance, milli-Ohms/Gnd					
	Initial Resistance	5000 Cycles	10000 Cycles	15000 Cycles	20000 Cycles	25000 Cycles
1	73.8	71.2	74.8	76.2	Failed 18462	
2	65.4	61.2	64.0	67.4	Failed 18465	

**DATA****INSULATION RESISTANCE (IR):**

<b>Test Date:</b>	5/24/2004
<b>Operator:</b>	Troy Cook
<b>Temperature (C):</b>	23
<b>Humidity (RH):</b>	42%
<b>Equipment ID:</b>	HPM-01

<b>Test Conditions</b>	<b><u>YES</u></b>
<b><u>Adjacent Contacts</u></b>	<b>X</b>
<b><u>Mated w/ QTH-DP</u></b>	<b>X</b>
<b><u>PC Mounted</u></b>	<b>X</b>

Electrification Time *Two (2) minutes*

Initial, Meg Ohms

	<b>Mated</b>
<b><u>Sample #</u></b>	<b><u>Insulation Resistance</u></b>
1	50000

<b>Test Date:</b>	6/4/2004
<b>Operator:</b>	Troy Cook
<b>Temperature (C):</b>	24
<b>Humidity (RH):</b>	49%
<b>Equipment ID:</b>	HPM-01

<b>Test Conditions</b>	<b><u>YES</u></b>
<b><u>Adjacent Contacts</u></b>	<b>X</b>
<b><u>Mated w/ QTH-DP</u></b>	<b>X</b>
<b><u>PC Mounted</u></b>	<b>X</b>

Electrification Time *Two (2) minutes*

Thermal, Meg Ohms

	<b>Mated</b>
<b><u>Sample #</u></b>	<b><u>Insulation Resistance</u></b>
1	50000

Tracking Code: TC0415--0409

Part #: HQDP-020-12.00-TTR-STL-1

Part description: Twin-ax High Speed Cable Assy, 0.5 mm Pitch

**DATA Continued**

**INSULATION RESISTANCE (IR):**

<b>Test Date:</b>	6/14/2004
<b>Operator:</b>	Troy Cook
<b>Temperature (C):</b>	23
<b>Humidity (RH):</b>	43%
<b>Equipment ID:</b>	HPM-01

<b>Test Conditions</b>	<b>YES</b>
<b><u>Adjacent Contacts</u></b>	<b>X</b>
<b><u>Mated w/ QTH-DP</u></b>	<b>X</b>
<b><u>PC Mounted</u></b>	<b>X</b>

**Electrification Time** *Two (2) minutes*

**Humidity, Meg Ohms**

<b><u>Sample #</u></b>	<b>Mated</b>
	<b><u>Insulation Resistance</u></b>
1	25000

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

Test Date:	4/14/2004
Operator:	TR
Temperature (C):	23
Humidity (RH):	30%
Equipment ID:	HPM-01

Test Conditions	<u>YES</u>	<u>NO</u>
<u>Adjacent Contacts</u>	X	
<u>Mated</u>		X
<u>PC Mounted</u>		X

<b>Voltage Rate 500 VAC Per Sec.</b>			
<b>Test Voltage Until Breakdown Occurs</b>			
<b>Initial, VAC Mated</b>			
<u>Sample #</u>	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>
1	1200	900	300

Test Date:	4/28/2004
Operator:	Troy Cook
Temperature (C):	23
Humidity (RH):	33%
Equipment ID:	HPM-01

Test Conditions	<u>YES</u>	<u>NO</u>
<u>Adjacent Contacts</u>	X	
<u>Mated</u>	X	
<u>PC Mounted</u>	X	

<b>Voltage Rate 500 VAC Per Sec.</b>			
<b>Test Voltage Until Breakdown Occurs</b>			
<b>Thermal, VAC Mated</b>			
<u>Sample #</u>	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>
1	1000	750	250

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

<b>Test Date:</b>	6/14/2004
<b>Operator:</b>	Troy Cook
<b>Temperature (C):</b>	23
<b>Humidity (RH):</b>	44%
<b>Equipment ID:</b>	HPM-01
<b>Contact Part #:</b>	<u>N/A</u>
<b>Used In:</b>	<u>HQDP-DV-</u> <u>DV</u>

Test Conditions	<b>YES</b>	<b>NO</b>
<u>Adjacent Contacts</u>	X	
<u>Mated</u>	X	
<u>PC</u>		
<u>Mounted</u>	X	

<b>Voltage Rate 500 VAC Per Sec.</b>			
<b>Test Voltage Until Breakdown Occurs</b>			
<b>Humidity, VAC Mated</b>			
<u>Sample #</u>	<u>Breakdown Voltage</u>	<u>DWV</u>	<u>Working Voltage</u>
1	1300	975	325

**DATA Continued****SUPPLEMENTAL: Connector Pull**

<b>Test Date:</b>	4/12/2004	
<b>Operator:</b>	TR	
<b>Temperature (C):</b>	22	
<b>Humidity (RH):</b>	31%	
<b>Equipment ID:</b>	TCT-03	
<b>Load Cell:</b>	LC-2500N(icell)	
<b>Pull, 0 Degrees</b>		
<u>Sample#</u>	<u>Maximum Force (Lbs)</u>	<u>Failure Mode</u>
1	209.60	<i>both cables pulled from pcb</i>

<b>Test Date:</b>	4/12/2004	
<b>Operator:</b>	TR	
<b>Temperature (C):</b>	22	
<b>Humidity (RH):</b>	31%	
<b>Equipment ID:</b>	TCT-03	
<b>Load Cell:</b>	LC-2500N(icell)	
<b>Pull, 90 degrees</b>		
<u>Sample#</u>	<u>Maximum Force (Lbs)</u>	<u>Failure Mode</u>
1	257.90	<i>signals and ground pulled from pcb</i>
2	233.90	<i>signals and ground pulled from pcb</i>

**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: 6/02/04, Next Cal: 6/02/05

**Equipment #:** MO-02**Description:** Multimeter /Data Acquisition System**Manufacturer:** Keithley**Model:** 2700**Serial #:** 0780546**Accuracy:** See Manual

... Last Cal: 6/12/03, Next Cal: 6/12/04

**Equipment #:** MO-04**Description:** Multimeter /Data Acquisition System**Manufacturer:** Keithley**Model:** 2700**Serial #:** 0798688**Accuracy:** See Manual

... Last Cal: 6/12/03, Next Cal: 6/12/04

**Equipment #:** TC090601-103/105**Description:** IC Thermocouple-103/105**Manufacturer:** Samtec**Serial #:** TC090601-103/105**Accuracy:** +/- 1 degree C**Equipment #:** HPM-01**Description:** Hipot Megommeter**Manufacturer:** Hipotronics**Model:** H306B-A**Serial #:** M9905004**Accuracy:** 2 % Full Scale Accuracy

... Last Cal: 6/12/03, Next Cal: 6/12/04

**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: 6/20/03, Next Cal: 6/30/04

Tracking Code: TC0415--0409

Part #: HQDP-020-12.00-TTR-STL-1

Part description: Twin-ax High Speed Cable Assy, 0.5 mm Pitch

**Equipment #:** THC-01

**Description:** Temperature/Humidity Chamber

**Manufacturer:** Thermotron

**Model:** SM-8-7800

**Serial #:** 30676

**Accuracy:** See Manual See Manual

... Last Cal: 4/22/2004, Next Cal: 5/22/2005

**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: 6/12/03, Next Cal: 6/12/04

**Equipment #:** LC-2500N(icell)

**Description:** 2500 N Load Cell for Dillon Quantrol

**Manufacturer:** Dillon Quantrol

**Model:** icell

**Serial #:** 01-0132-01

**Accuracy:** .10% of capacity

... Last Cal: 4/27/04, Next Cal: 4/27/05

**Equipment #:** HDR - 01

**Description:** HDR Flex Tester

**Manufacturer:** Samtec Inc.

**Model:** AT-1440-000

**Serial #:** AT-1440-000

**Accuracy:** N/A

Calibration Not Required