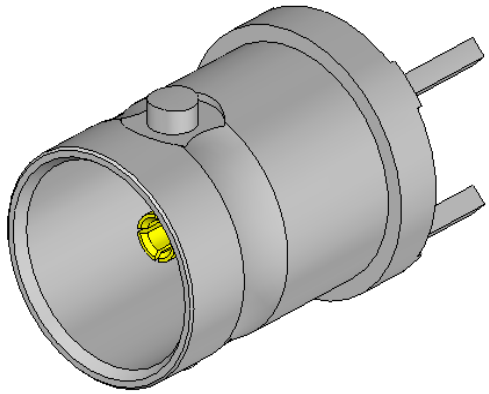
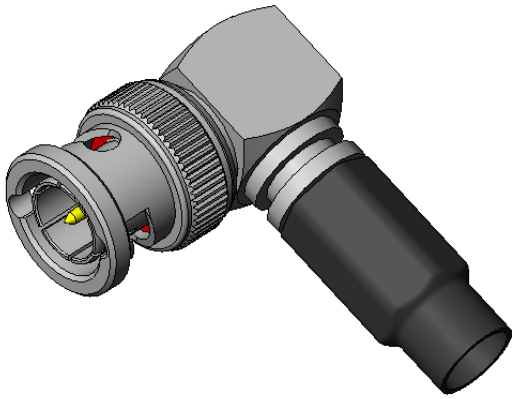
Project Number: Design Qualification Test Report	Tracking Code: TC0934-2704_Report_Rev_1		
Requested by: Dipesh Parmar	Date: 8/23/2011	Product Rev: 1	
Part #:BNC7T-J-P-HN-ST-TH1\BNC7T-P-C-MN-RA-CA6	Lot #: 1	Tech: Tory Cook	Eng: Eric Mings
Part description: BNC7T		Qty to test: 75	
Test Start: 11/16/2009	Test Completed: 12/15/2009		





DESIGN QUALIFICATION TEST REPORT

BNC7T

BNC7T-J-P-HN-ST-TH1\BNC7T-P-C-MN-RA-CA6

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

To perform the following tests: Design Qualification Test, Please see test plan.

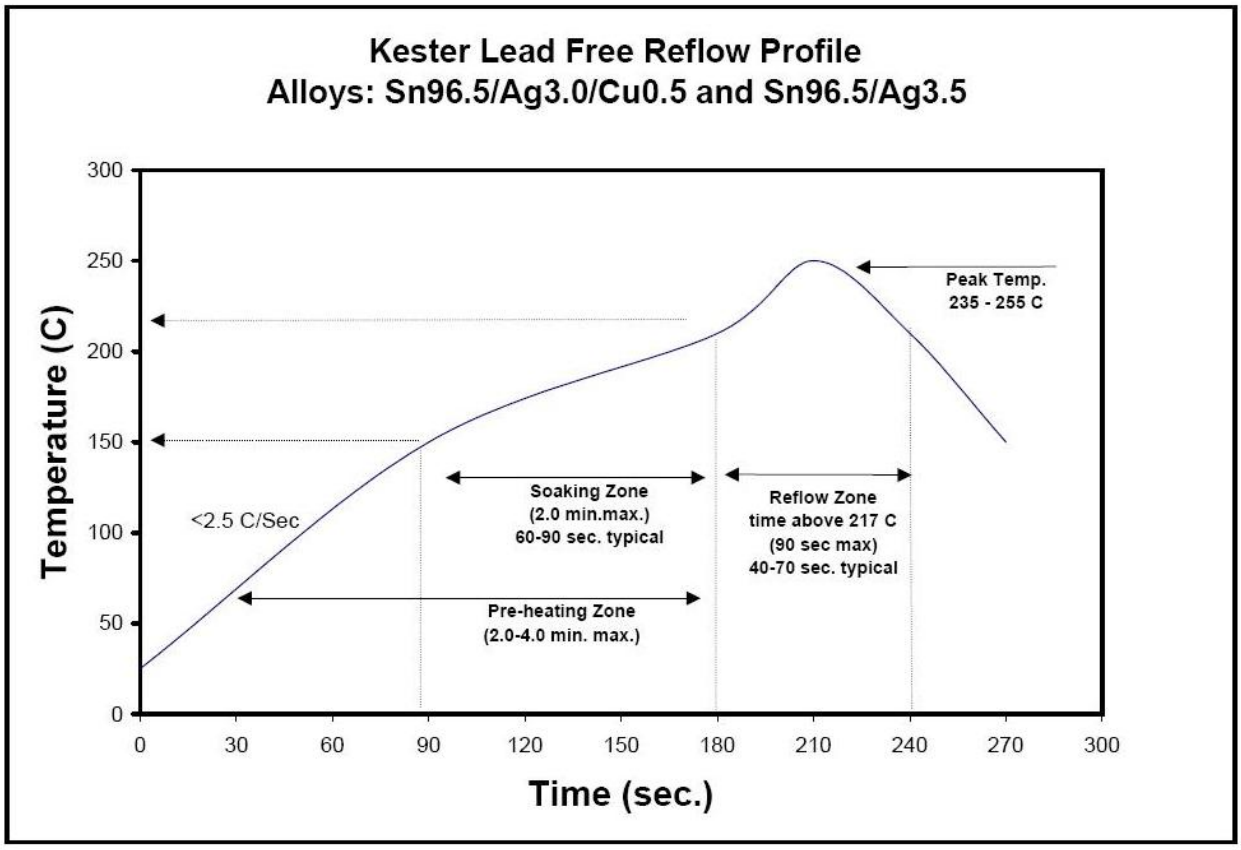
APPLICABLE DOCUMENTS

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-101942-TST-XX

TYPICAL OVEN PROFILE (Soldering Parts to Test Boards)



FLOWCHARTS

Center Contact Insertion/Withdrawal Force/Normal Force

TEST STEP	GROUP A Individual Contacts 0 degree insertion	GROUP B1 Individual Contacts 5 samples	GROUP B2 Individual Contacts 5 samples
01	Visual	Setup Approve	Setup Approve
02	Measure/Record Mating Pin Diameter	Normal Force (Jack only)	Thermal Aging
03	Contact Gaps (Jack only)		Normal Force (Jack only)
04	Insertion/Withdrawal		
05	Contact Gaps (Jack only)		
06	4 Cycles (5 Total)		
07	Insertion/Withdrawal		
08	Contact Gaps (Jack only)		
09	5 Cycles (10 Total)		
10	Insertion/Withdrawal		
11	Contact Gaps (Jack only)		

Normal Force = EIA-364-04
(Perpendicular) displacement Force = 12.7 mm/min +/- 6 mm/min
Spec is 50 N @ 1 mm displacement
Thermal Aging = EIA-364-17, Test Condition 4, 105 deg C;
Time Condition 'B' (250 hours)

Outer Contact Insertion/Withdrawal Force

TEST STEP	GROUP A Individual Contacts 0 degree insertion	GROUP B1 Individual Contacts 5 samples	GROUP B2 Individual Contacts 5 samples
01	Visual	Setup Approve	Setup Approve
02	Measure/Record Mating Shield Diameter	Normal Force (Plug only)	Thermal Aging
03	Contact Gaps (Plug only)		Normal Force (Plug only)
04	Insertion/Withdrawal		
05	Contact Gaps (Plug only)		
06	4 Cycles (5 Total)		
07	Insertion/Withdrawal		
08	Contact Gaps (Plug only)		
09	5 Cycles (10 Total)		
10	Insertion/Withdrawal		
11	Contact Gaps (Plug only)		

Thermal Aging = EIA-364-17, Test Condition 4, 105 deg C;
Time Condition 'B' (250 hours)

FLOWCHARTS Continued

Center Contact Retention

TEST STEP	GROUP A 10 Assy (min) Center Conductor Retention Ambient
01	Pull on Contact
02	Data Review

6 lbs minimum

Durability/Thermal Age/Cyclic Humidity

TEST STEP	GROUP A 8 samples 100 Cycles
01	LLCR-1
02	100 cycles
03	clean mating interface
04	LLCR-2
05	Thermal Aging (mated and undisturbed)
06	LLCR-3
07	Cyclic Humidity (mated and undisturbed)
08	LLCR-4

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)
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

12 cycles per minute maximum

FLOWCHARTS Continued

Cable Retention Force

TEST STEP	GROUP A1 5 samples SIG 0°	GROUP A2 5 samples SIG 90°
01	Pull Test	Pull Test
02	Record Force	Record Force

40 lbs minimum
Secure Cable
Monitor Continuity and pull
Record forces when continuity fails or 50 lbs is reached

Contact Resistance

TEST STEP	GROUP A 5 samples mated
01	Apply specified current
02	Measure and record forward voltage drop
03	Measure and record reverse voltage drop
04	Calculate resistance

Contact Resistance = EIA-364-06B
Center contact: 1.5 milliohms maximum
Outer Contact: 0.4 milliohms maximum
Braid to body: 0.1 milliohms maximum
Compute Contact Resistance:
Contact Resistance (milliohms) = e (millivolts) / 1 ampere

FLOWCHARTS Continued

IR & DWV

TEST STEP	GROUP A1 2 Mated Sets Break Down - Pin to Ground	GROUP A2 2 Unmated of Part # Being Tested Break Down - Pin to Ground	GROUP A3 2 Unmated of Mating Part # Break Down - Pin to Ground	GROUP B 2 Mated Sets Pin to Ground
01	DWV/Break Down Voltage	DWV/Break Down Voltage	DWV/Break Down Voltage	IR & DWV at test voltage (on both mated sets and on each connector unmated)
02				Thermal Aging (both sets unmated)
03				IR & DWV at test voltage (on both mated sets and on each connector unmated)
04				Cyclic Humidity (both sets unmated)
05				IR & DWV at test voltage (on both mated sets and on each connector unmated)

*** - DWV on group B to be performed at Test Voltage**
DWV test voltage is equal to 75% of the lowest break down voltage from group A1, A2 or A3
1500 V rms
Thermal Aging = EIA-364-17, Test Condition 4 (105 °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)
ambient pre-condition and delete steps 7a and 7b
IR = EIA-364-21
DWV = EIA-364-20, Test Condition 1
Perform testing with completed cable assemblies

FLOWCHARTS Continued

Mating/Unmating/Torque

TEST STEP	GROUP A 5 Samples
01	Contact Gaps (shield on Plug, center contact on Jack)
02	Mating / Unmating
03	Torque
04	25 Cycles
05	Clean w/Compressed Air
06	Mating / Unmating
07	Torque
08	25 Cycles (50 Total)
09	Clean w/Compressed Air
10	Mating / Unmating
11	Torque
12	25 Cycles (75 Total)
13	Clean w/Compressed Air
14	Mating / Unmating
15	Torque
16	25 Cycles (100 Total)
17	Clean w/Compressed Air
18	Mating / Unmating
19	Torque
20	Contact Gaps (shield on Plug, center contact on Jack)
21	Thermal Aging (Mated)
22	Mating / Unmating
23	Torque
24	Contact Gaps (shield on Plug, center contact on Jack)
25	Cyclic Humidity (Mated)
26	Mating / Unmating
27	Torque
28	Contact Gaps (shield on Plug, center contact on Jack)

Thermal Aging = EIA-364-17, Test Condition 4 (105 °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)
ambient pre-condition and delete steps 7a and 7b
Mating/Un-Mating Forces = EIA-364-13
Longitudinal force: 3 lbs maximum
Torque: 2.5 in-lbs maximum

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 4 at 105° C.
3) Test Time Condition B for 250 hours.
4) All test samples are pre-conditioned at ambient.
5) All test samples are exposed to environmental stressing in the mated condition.

HUMIDITY:

1) Reference document: EIA-364-31, *Humidity Test Procedure for Electrical Connectors.*
2) Test Condition B, 240 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.

CONTACT GAPS:

1) Contact Gaps were measured before and after stressing the contacts (e.g. thermal aging, mechanical cycling, etc.).
2) Typically, all contacts on the connector are measured.

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.

NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):

1) Reference document: EIA-364-04, *Normal Force Test Procedure for Electrical Connectors*.
2) The contacts shall be tested in the connector housing.
3) If necessary, a "window" shall be made in the connector body to allow a probe to engage and deflect the contact at the same attitude and distance (plus 0.05 mm [0.002"]) as would occur in actual use.
4) The connector housing shall be placed in a holding fixture that does not interfere with or otherwise influence the contact force or deflection.
5) Said holding fixture shall be mounted on a floating, adjustable, X-Y table on the base of the Dillon TC^2, computer controlled test stand with a deflection measurement system accuracy of 5.0 µm (0.0002").
6) The nominal deflection rate shall be 5 mm (0.2")/minute.
7) Unless otherwise noted a minimum of five contacts shall be tested.
8) The force/deflection characteristic to load and unload each contact shall be repeated five times.
9) The system shall utilize the TC^2 software in order to acquire and record the test data.
10) The permanent set of each contact shall be measured within the TC^2 software.
11) The acquired data shall be graphed with the deflection data on the X-axis and the force data on the Y-axis and a print out will be stored with the Tracking Code paperwork.

CONTACT INSERTION, RELEASE AND REMOVAL:

1) Reference document: EIA-364-29, *Contact Retention Test Procedure for Electrical Connectors*
2) The ability of the contact retaining system to withstand axial mechanical stresses is measured before and after stressing the contacts (e.g. thermal aging, mechanical cycling, etc.).

ATTRIBUTE DEFINITIONS

The following is a brief, simplified description of attributes.

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
        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
        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. <= +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

ATTRIBUTE DEFINITIONS

The following is a brief, simplified description of attributes.

CONNECTOR PULL:

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

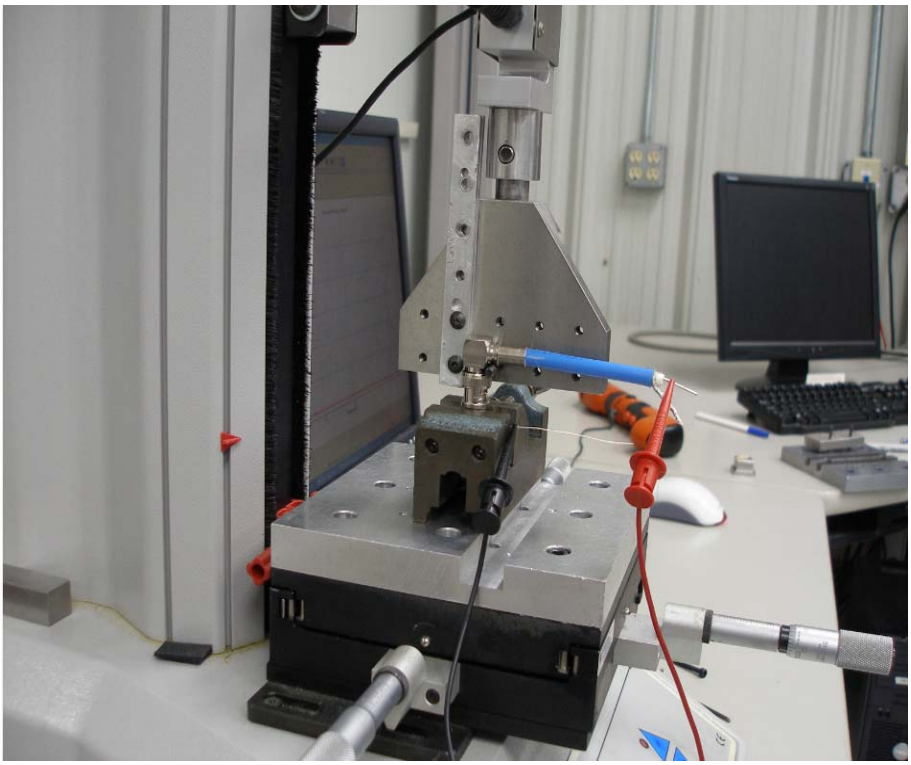


Fig. 1
(Typical set-up, actual part not depicted.)
0° Connector pull, notice the electrical continuity hook-up wires.

RESULTS

Contact Gaps

Center Contact Insertion/Withdrawal Force

Center contact (Gap A)

- **Initial**
  - **Min ---------- 0.0483 inch**
  - **Max ---------- 0.0487 inch**
- **After 1 Cycles**
  - **Min ---------- 0.0488 inch**
  - **Max ---------- 0.0490 inch**
- **After 5 Cycles**
  - **Min ---------- 0.0489 inch**
  - **Max ---------- 0.0499 inch**
- **After 10 Cycles**
  - **Min ---------- 0.0489 inch**
  - **Max ---------- 0.0495 inch**

Center contact (Gap B)

- **Initial**
  - **Min ---------- 0.0476 inch**
  - **Max ---------- 0.0489 inch**
- **After 1 Cycles**
  - **Min ---------- 0.0487 inch**
  - **Max ---------- 0.0495 inch**
- **After 5 Cycles**
  - **Min ---------- 0.0486 inch**
  - **Max ---------- 0.0496 inch**
- **After 10 Cycles**
  - **Min ---------- 0.0483 inch**
  - **Max ---------- 0.0497 inch**

Outer contact (Gap A)

- **Initial**
  - **Min ---------- 0.0483 inch**
  - **Max ---------- 0.0487 inch**
- **After 1 Cycles**
  - **Min ---------- 0.0488 inch**
  - **Max ---------- 0.0492 inch**
- **After 5 Cycles**
  - **Min ---------- 0.0489 inch**
  - **Max ---------- 0.0499 inch**
- **After 10 Cycles**
  - **Min ---------- 0.0489 inch**
  - **Max ---------- 0.0495 inch**

Outer contact (Gap B)

- **Initial**
  - **Min ---------- 0.0476 inch**
  - **Max ---------- 0.0489 inch**
- **After 1 Cycles**
  - **Min ---------- 0.0487 inch**
  - **Max ---------- 0.0495 inch**
- **After 5 Cycles**
  - **Min ---------- 0.0486 inch**
  - **Max ---------- 0.0496 inch**
- **After 10 Cycles**
  - **Min ---------- 0.0483 inch**
  - **Max ---------- 0.0497 inch**

RESULTS Continued

Mating - Unmating force

Center contact (Gap A)

- **Initial**
  - **Min ---------- 0.3218 mm**
  - **Max ---------- 0.3255 mm**
- **After 100 Cycles**
  - **Min ---------- 0.3190 mm**
  - **Max ---------- 0.3250 mm**
- **After thermal**
  - **Min ---------- 0.3182 mm**
  - **Max ---------- 0.3232 mm**
- **After humidity**
  - **Min ---------- 0.3192 mm**
  - **Max ---------- 0.3215 mm**

Center contact (Gap B)

- **Initial**
  - **Min ---------- 0.3206 mm**
  - **Max ---------- 0.3273 mm**
- **After 100 Cycles**
  - **Min ---------- 0.3216 mm**
  - **Max ---------- 0.3274 mm**
- **After thermal**
  - **Min ---------- 0.3197 mm**
  - **Max ---------- 0.3219 mm**
- **After humidity**
  - **Min ---------- 0.3175 mm**
  - **Max ---------- 0.3235 mm**

Outer contact (Gap A)

- **Initial**
  - **Min ---------- 0.0480 inch**
  - **Max ---------- 0.0490 inch**
- **After 100 Cycles**
  - **Min ---------- 0.0486 inch**
  - **Max ---------- 0.0509 inch**
- **After thermal**
  - **Min ---------- 0.0498 inch**
  - **Max ---------- 0.0513 inch**
- **After humidity**
  - **Min ---------- 0.0493 inch**
  - **Max ---------- 0.0508 inch**

Outer contact (Gap B)

- **Initial**
  - **Min ---------- 0.0479 inch**
  - **Max ---------- 0.0489 inch**
- **After 100 Cycles**
  - **Min ---------- 0.0485 inch**
  - **Max ---------- 0.0495 inch**
- **After thermal**
  - **Min ---------- 0.0495 inch**
  - **Max ---------- 0.0505 inch**
- **After humidity**
  - **Min ---------- 0.0499 inch**
  - **Max ---------- 0.0517 inch**

RESULTS Continued

Mating – Unmating Forces

Insertion/Withdrawal Force

Center contact

- **Initial**
  - **Mating**
    - **Min ---------- 9.69 oz**
    - **Max----------12.49 oz**
  - **Unmating**
    - **Min ----------12.29 oz**
    - **Max----------15..62 oz**
- **After 5 Cycles**
  - **Mating**
    - **Min ----------10.13 oz**
    - **Max----------14.47 oz**
  - **Unmating**
    - **Min ----------10.36 oz**
    - **Max----------14.42 oz**
- **After 10 Cycles**
  - **Mating**
    - **Min ---------- 9.95 oz**
    - **Max----------13.58 oz**
  - **Unmating**
    - **Min ---------- 9.50 oz**
    - **Max----------13.05 oz**

Outer contact

- **Initial**
  - **Mating**
    - **Min ---------- 0.99 Lbs**
    - **Max---------- 1.84 Lbs**
  - **Unmating**
    - **Min ---------- 0.86 Lbs**
    - **Max---------- 1.35 Lbs**
- **After 5 Cycles**
  - **Mating**
    - **Min ---------- 0.94 Lbs**
    - **Max---------- 1.64 Lbs**
  - **Unmating**
    - **Min ---------- 0.83 Lbs**
    - **Max---------- 1.48 Lbs**
- **After 10 Cycles**
  - **Mating**
    - **Min ---------- 0.99 Lbs**
    - **Max---------- 1.63 Lbs**
  - **Unmating**
    - **Min ---------- 0.79 Lbs**
    - **Max---------- 1.43 Lbs**

RESULTS Continued

Mating – Unmating Forces

- **Initial**
  - **Mating**
    - **Min ---------- 1.12 Lbs**
    - **Max---------- 1.91 Lbs**
  - **Unmating**
    - **Min ---------- 1.18 Lbs**
    - **Max---------- 1.80 Lbs**
- **After 25 Cycles**
  - **Mating**
    - **Min ---------- 2.29 Lbs**
    - **Max---------- 4.45 Lbs**
  - **Unmating**
    - **Min ---------- 1.34 Lbs**
    - **Max---------- 3.35 Lbs**
- **After 50 Cycles**
  - **Mating**
    - **Min ---------- 0.86 Lbs**
    - **Max---------- 4.34 Lbs**
  - **Unmating**
    - **Min ---------- 0.92 Lbs**
    - **Max---------- 3.91 Lbs**
- **After 75 Cycles**
  - **Mating**
    - **Min ---------- 1.67 Lbs**
    - **Max---------- 2.57 Lbs**
  - **Unmating**
    - **Min ---------- 1.38 Lbs**
    - **Max---------- 2.29 Lbs**
- **After 100 Cycles**
  - **Mating**
    - **Min ---------- 1.33 Lbs**
    - **Max---------- 2.55 Lbs**
  - **Unmating**
    - **Min ---------- 1.12 Lbs**
    - **Max---------- 2.36 Lbs**
- **After thermal**
  - **Mating**
    - **Min ---------- 0.56 Lbs**
    - **Max---------- 2.14 Lbs**
  - **Unmating**
    - **Min ---------- 0.43 Lbs**
    - **Max---------- 2.81 Lbs**
- **After humidity**
  - **Mating**
    - **Min ---------- 0.69 Lbs**
    - **Max---------- 4.28 Lbs**
  - **Unmating**
    - **Min ---------- 0.54 Lbs**
    - **Max---------- 3.97 Lbs**

RESULTS Continued

Torque test

Torque on

- **Initial**
  - **Min ---------- 4.55 Lbs-inch**
  - **Max----------15.23 Lbs-inch**
- **After 25 Cycles**
  - **Min ---------- 5.07 Lbs-inch**
  - **Max----------13.62 Lbs-inch**
- **After 50 Cycles**
  - **Min ---------- 4.49 Lbs-inch**
  - **Max----------11.83 Lbs-inch**
- **After 75 Cycles**
  - **Min ---------- 6.26 Lbs-inch**
  - **Max----------10.44 Lbs-inch**
- **After 100 Cycles**
  - **Min ---------- 6.91 Lbs-inch**
  - **Max----------14.01 Lbs-inch**
- **After thermal**
  - **Min ---------- 2.42 Lbs-inch**
  - **Max---------- 9.41 Lbs-inch**
- **After humidity**
  - **Min ---------- 8.03 Lbs-inch**
  - **Max----------14.31 Lbs-inch**

Torque off

- **Initial**
  - **Min ---------- 4.95 Lbs-inch**
  - **Max---------- 8.41 Lbs-inch**
- **After 25 Cycles**
  - **Min ---------- 1.81 Lbs-inch**
  - **Max----------13.24 Lbs-inch**
- **After 50 Cycles**
  - **Min ---------- 1.15 Lbs-inch**
  - **Max----------10.21 Lbs-inch**
- **After 75 Cycles**
  - **Min ---------- 1.54 Lbs-inch**
  - **Max---------- 7.03 Lbs-inch**
- **After 100 Cycles**
  - **Min ---------- 4.51 Lbs-inch**
  - **Max----------11.22 Lbs-inch**
- **After thermal**
  - **Min ---------- 2.63 Lbs-inch**
  - **Max---------- 9.78 Lbs-inch**
- **After humidity**
  - **Min ---------- 4.89 Lbs-inch**
  - **Max---------- 9.38 Lbs-inch**

RESULTS Continued

Normal Force at .003" deflection

Center contact

- **Initial**
  - **Min----------81.00 grams Set -------.0000"**
  - **Max ---------- 109.60 grams Set -------.0001"**
- **Thermal**
  - **Min----------88.30 grams Set------.0000"**
  - **Max ---------- 103.10 grams Set------.0000"**

Outer contact

- **Initial**
  - **Min---------- 149.30 grams Set -------.0000"**
  - **Max ---------- 644.00 grams Set -------.0005"**
- **Thermal**
  - **Min---------- 430.00 grams Set------.0003"**
  - **Max ---------- 619.30 grams Set------.0016"**

Center Contact Retention

- **Min---------- 4.49 Lbs**
- **Max ---------- 5.50 Lbs**

Cable Pull Force

0 Deg. Pull

- **Min----------Exceeded 50 Lbs.**

90 Deg. Pull

- **Min----------Exceeded 50 Lbs.**

RESULTS Continued

Insulation Resistance minimums, IR

Pin to Ground

- **Initial**
  - **Mated----------100,000 Meg Ω ---------- Pass**
  - **Unmated ----------100,000 Meg Ω ---------- Pass**
- **Thermal**
  - **Mated----------100,000 Meg Ω ---------- Pass**
  - **Unmated ----------100,000 Meg Ω ---------- Pass**
- **Humidity**
  - **Mated---------- 50,000 Meg Ω ---------- Pass**
  - **Unmated ---------- 50,000 Meg Ω ---------- Pass**

Dielectric Withstanding Voltage minimums, DWV

- **Minimums**
  - **Breakdown Voltage---------- 1800VAC**
  - **Test Voltage ---------- 1350VAC**
  - **Working Voltage ----------450VAC**

Pin to Ground

- **Initial DWV----------Passed**
- **Thermal DWV----------Passed**
- **Humidity DWV----------Passed**

RESULTS Continued

LLCR Durability (10 signal and 10 ground LLCR test points)

Signal pin:

- **Initial ----------5.7mOhms Max**
- **Durability, 100 Cycles**
  - **<= +5.0 mOhms ---------- 10 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 ---------- 10 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms ----------0 Point ---------- 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 ---------- 10 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**

Ground pin:

- **Initial ----------2.8mOhms Max**
- **Durability, 100 Cycles**
  - **<= +5.0 mOhms ---------- 10 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 ---------- 10 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms ----------0 Point ---------- 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 ----------9 Points ---------- Stable**
  - **+5.1 to +10.0 mOhms ----------1 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

CONTACT GAPS:

Center Contact

Unit: inch	INITIAL		AFTER 1 CYCLE		AFTER 5 CYCLES		AFTER 10 CYCLES	
Sample:	Gap "A"	Gap "B"	Gap "A"	Gap "B"	Gap "A"	Gap "B"	Gap "A"	Gap "B"
1	0.0483	0.0478	0.0488	0.0487	0.0489	0.0486	0.0489	0.0486
2	0.0485	0.0476	0.0488	0.0487	0.0489	0.0487	0.0491	0.0488
3	0.0487	0.0483	0.0492	0.0489	0.0499	0.0490	0.0495	0.0490
4	0.0484	0.0483	0.0489	0.0491	0.0491	0.0491	0.0493	0.0483
5	0.0487	0.0489	0.0491	0.0495	0.0491	0.0496	0.0494	0.0497
Min.	0.0483	0.0476	0.0488	0.0487	0.0489	0.0486	0.0489	0.0483
Max.	0.0487	0.0489	0.0492	0.0495	0.0499	0.0496	0.0495	0.0497
Average	**0.0485**	**0.0482**	0.0490	0.0490	0.0492	0.0490	0.0492	0.0489
Overall Ave.=		0.0484		0.0490		0.0491		0.0491

Outer Contact

Unit: inch	INITIAL		AFTER 1 CYCLE		AFTER 5 CYCLES		AFTER 10 CYCLES	
Sample:	Gap "A"	Gap "B"	Gap "A"	Gap "B"	Gap "A"	Gap "B"	Gap "A"	Gap "B"
1	0.0483	0.0478	0.0488	0.0487	0.0489	0.0486	0.0489	0.0486
2	0.0485	0.0476	0.0488	0.0487	0.0489	0.0487	0.0491	0.0488
3	0.0487	0.0483	0.0492	0.0489	0.0499	0.0490	0.0495	0.0490
4	0.0484	0.0483	0.0489	0.0491	0.0491	0.0491	0.0493	0.0483
5	0.0487	0.0489	0.0491	0.0495	0.0491	0.0496	0.0494	0.0497
Min.	0.0483	0.0476	0.0488	0.0487	0.0489	0.0486	0.0489	0.0483
Max.	0.0487	0.0489	0.0492	0.0495	0.0499	0.0496	0.0495	0.0497
Average	**0.0485**	**0.0482**	**0.0490**	**0.0490**	**0.0492**	**0.0490**	**0.0492**	**0.0489**
Overall Ave.=		0.0484		0.0490		0.0491		0.0491

DATA SUMMARIES Continued

Center contact

Unit: mm	INITIAL		AFTER 100 CYCLES		AFTER THERMAL		AFTER HUMIDITY	
Sample:	Gap "A"	Gap "B"	Gap "A"	Gap "B"	Gap "A"	Gap "B"	Gap "A"	Gap "B"
1	0.3255	0.3273	0.3204	0.3227	0.3194	0.3197	0.3192	0.3213
2	0.3218	0.3255	0.3250	0.3243	0.3232	0.3219	0.3215	0.3235
3	0.3251	0.3206	0.3218	0.3216	0.3200	0.3200	0.3195	0.3206
4	0.3251	0.3263	0.3190	0.3247	0.3182	0.3218	0.3204	0.3170
5	0.3253	0.3258	0.3219	0.3225	0.3200	0.3217	0.3201	0.3220
Min.	0.3218	0.3206	0.3190	0.3216	0.3182	0.3197	0.3192	0.3170
Max.	0.3255	0.3273	0.3250	0.3247	0.3232	0.3219	0.3215	0.3235
Average	**0.3245**	**0.3251**	**0.3216**	**0.3232**	**0.3202**	**0.3210**	**0.3201**	**0.3209**
Overall Ave.=		0.3248		0.3224		0.3206		0.3205

Outer contact

Unit: inch	INITIAL		AFTER 100 CYCLES		AFTER THERMAL		AFTER HUMIDITY	
Sample:	Gap "A"	Gap "B"	Gap "A"	Gap "B"	Gap "A"	Gap "B"	Gap "A"	Gap "B"
1	0.0484	0.0480	0.0509	0.0495	0.0513	0.0502	0.0508	0.0517
2	0.0486	0.0487	0.0491	0.0490	0.0505	0.0503	0.0502	0.0505
3	0.0480	0.0479	0.0486	0.0485	0.0498	0.0495	0.0493	0.0493
4	0.0490	0.0487	0.0492	0.0487	0.0506	0.0504	0.0502	0.0493
5	0.0487	0.0489	0.0496	0.0491	0.0509	0.0505	0.0504	0.0507
Min.	0.0480	0.0479	0.0486	0.0485	0.0498	0.0495	0.0493	0.0499
Max.	0.0490	0.0489	0.0509	0.0495	0.0513	0.0505	0.0508	0.0517
Average	**0.0485**	**0.0484**	**0.0495**	**0.0489**	**0.0506**	**0.0502**	**0.0502**	**0.0503**
Overall Ave.=		0.0485		0.0492		0.0504		0.0502

DATA SUMMARIES Continued

MATING/UNMATING:
Center Contact

		INITIAL		AFTER 5 CYCLES		AFTER 10 CYCLES	
Sample:	Mating Pin Size	Insertion Force(OZ)	Withdrawal Force(OZ)	Insertion Force(OZ)	Withdrawal Force(OZ)	Insertion Force(OZ)	Withdrawal Force(OZ)
1	0.0531	12.26	15.62	14.47	14.42	13.39	12.73
2	0.0531	12.49	12.29	14.03	13.58	13.58	13.05
3	0.0531	9.76	12.47	12.16	10.36	9.95	9.50
4	0.0531	11.22	14.13	12.97	10.96	12.06	11.28
5	0.0532	9.69	12.77	10.13	10.58	12.21	11.96
Min.	0.0531	9.69	12.29	10.13	10.36	9.95	9.50
Max.	0.0532	12.49	15.62	14.47	14.42	13.58	13.05
Average	**0.0531**	11.08	13.46	12.75	11.98	12.24	11.70

Outer Contact

		INITIAL		AFTER 5 CYCLES		AFTER 10 CYCLES	
Sample:	Mating Pin Size	Insertion Force(lbs)	Withdrawal Force(lbs)	Insertion Force(lbs)	Withdrawal Force(lbs)	Insertion Force(lbs)	Withdrawal Force(lbs)
1	0.3796	1.48	1.33	1.64	1.48	1.63	1.43
2	0.3796	1.84	1.35	1.38	1.29	1.28	1.13
3	0.3796	0.99	0.86	0.94	0.87	0.99	0.79
4	0.3794	1.00	1.00	1.11	0.83	1.27	0.80
5	0.3794	1.37	1.02	1.21	1.00	1.10	0.90
Min.	0.3794	0.99	0.86	0.94	0.83	0.99	0.79
Max.	0.3796	1.84	1.35	1.64	1.48	1.63	1.43
Average	**0.3795**	1.34	1.11	1.26	1.09	1.25	1.01

DATA SUMMARIES Continued

Mating Unmating force

	Initial				After 25 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	4.97	1.12	5.26	1.18	10.18	2.29	5.97	1.34
Maximum	8.50	1.91	8.01	1.80	19.78	4.45	14.89	3.35
Average	7.07	**1.59**	6.86	**1.54**	13.37	**3.01**	10.44	**2.35**
St Dev	1.50	0.34	1.28	0.29	3.85	0.87	3.56	0.80
Count	5	5	5	5	5	5	5	5

	After 50 Cycles				After 75 Cycles			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	3.83	0.86	4.11	0.92	7.42	1.67	6.14	1.38
Maximum	19.30	4.34	17.39	3.91	11.44	2.57	10.20	2.29
Average	10.41	**2.34**	8.31	**1.87**	9.07	**2.04**	8.00	**1.80**
St Dev	6.49	1.46	5.65	1.27	1.69	0.38	1.90	0.43
Count	5	5	5	5	5	5	5	5

	After 100 Cycles				After Thermals			
	Mating		**Unmating**		**Mating**		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	5.91	1.33	4.96	1.12	2.48	0.56	1.93	0.43
Maximum	11.35	2.55	10.48	2.36	9.53	2.14	12.50	2.81
Average	8.90	**2.00**	7.49	**1.68**	4.67	**1.05**	4.92	**1.11**
St Dev	2.42	0.54	2.40	0.54	3.27	0.74	5.06	1.14
Count	5	5	5	5	4	4	4	4

	After Humidity			
	Mating		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	3.08	0.69	2.40	0.54
Maximum	19.03	4.28	17.64	3.97
Average	9.21	**2.07**	8.52	**1.92**
St Dev	7.26	1.63	6.46	1.45
Count	4	4	4	4

DATA SUMMARIES Continued

Torque test

	TORQUE-ON	TORQUE-ON	TORQUE-ON	TORQUE-ON	TORQUE-ON	TORQUE-ON	TORQUE-ON
	in-lbs	in-lbs	in-lbs	in-lbs	in-lbs	in-lbs	in-lbs
Minimum	4.55	5.07	4.49	6.26	6.91	2.42	8.03
Maximum	15.23	13.62	11.83	10.44	14.01	9.41	14.31
Average	**9.31**	**8.57**	**9.32**	**8.51**	**10.26**	**6.45**	**10.73**
	TORQUE-OFF	TORQUE-OFF	TORQUE-OFF	TORQUE-OFF	TORQUE-OFF	TORQUE-OFF	TORQUE-OFF
Minimum	4.95	1.81	1.15	1.54	4.51	2.63	4.89
Maximum	8.41	13.24	10.21	7.03	11.22	9.78	9.38
Average	**6.42**	**7.56**	**6.29**	**4.26**	**7.18**	**5.27**	**6.90**

DATA SUMMARIES Continued

NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):

1) Calibrated force gauges are used along with computer controlled positioning equipment.
2) Typically, 8-10 readings are taken and the averages reported.

Center contact

Initial	Deflections in inches Forces in Grams										
	0.0003	**0.0006**	**0.0009**	**0.0012**	**0.0015**	**0.0018**	**0.0021**	**0.0024**	**0.0027**	**0.0030**	***SET***
Averages	9.70	19.51	29.26	39.23	49.73	59.59	70.18	80.83	91.56	96.95	0.0000
Min	6.90	14.80	21.20	30.10	39.00	46.90	55.60	61.60	71.40	81.00	0.0000
Max	14.10	24.40	34.70	43.40	53.70	64.90	77.00	90.10	101.40	109.60	0.0001
St. Dev	2.237	2.903	4.000	4.675	5.452	6.841	8.010	10.122	10.963	9.370	0.0000
Count	8	8	8	8	8	8	8	8	8	8	8

After Thermals	Deflections in inches Forces in Grams										
	0.0003	**0.0006**	**0.0009**	**0.0012**	**0.0015**	**0.0018**	**0.0021**	**0.0024**	**0.0027**	**0.0030**	***SET***
Averages	9.10	19.03	29.60	40.28	50.58	61.43	71.95	82.93	93.28	96.35	0.0000
Min	8.60	17.20	26.20	37.30	46.00	55.60	65.10	75.50	85.20	88.30	0.0000
Max	10.10	20.80	32.50	42.80	54.30	65.60	76.80	89.00	99.30	103.10	0.0000
St. Dev	0.678	1.702	2.726	2.887	3.585	4.545	5.473	5.801	6.571	6.594	0.0000
Count	4	4	4	4	4	4	4	4	4	4	4

Outer contact

Initial	Deflections in inches Forces in Grams										
	0.0004	**0.0008**	**0.0012**	**0.0016**	**0.0020**	**0.0024**	**0.0028**	**0.0032**	**0.0036**	**0.0040**	***SET***
Averages	66.99	140.95	206.12	269.79	333.06	393.55	451.56	508.03	557.00	572.50	0.0003
Min	56.20	127.00	149.30	149.30	149.30	149.30	149.30	149.30	149.30	149.30	0.0000
Max	73.30	150.10	227.20	300.40	374.60	448.10	524.50	593.00	631.30	644.00	0.0005
St. Dev	5.043	7.298	21.184	40.204	59.885	79.401	98.359	116.219	131.032	134.786	0.0001
Count	12	12	12	12	12	12	12	12	12	12	12

After Thermals	Deflections in inches Forces in Grams										
	0.0004	**0.0008**	**0.0012**	**0.0016**	**0.0020**	**0.0024**	**0.0028**	**0.0032**	**0.0036**	**0.0040**	***SET***
Averages	69.16	139.38	205.56	269.92	331.01	389.08	443.24	494.70	542.91	563.67	0.0007
Min	59.90	120.70	177.60	227.40	272.50	314.90	346.50	378.00	404.10	430.00	0.0003
Max	74.90	153.90	221.30	292.50	361.60	428.40	486.20	544.30	601.90	619.30	0.0016
St. Dev	6.289	10.718	15.174	22.223	31.032	39.364	51.111	63.486	76.179	73.932	0.0005
Count	9	9	9	9	9	9	9	9	9	9	9

DATA SUMMARIES Continued

Center Contact Retention

	Center Conductor Retention
	Force (Lbs)
Minimum	*4.49*
Maximum	*5.50*
Average	***5.20***

Cable Pull Force

	0 Deg. Pull	***90 Deg. Pull***
	Force (Lbs)	Force (Lbs)
Minimum	***Exceeded 50 Lbs.***	***Exceeded 50 Lbs.***
Maximum		
Average		

DATA SUMMARIES Continued

INSULATION RESISTANCE (IR):

	Pin to Ground		
	Mated	Unmated	Unmated
Minimum	BNC7T-J-P-HN-ST-TH1/BNC7T-P-C-MN-RA-CA6	BNC7T-J-P-HN-ST-TH1	BNC7T-P-C-MN-RA-CA6
Initial	**100000**	**100000**	**100000**
Thermal	**100000**	**100000**	**100000**
Humidity	**50000**	**50000**	**50000**

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

Voltage Rating Summary	
Minimum	BNC7T-J-P-HN-ST-TH1/BNC7T-P-C-MN-RA-CA6
Breakdown Voltage	**1800**
Test Voltage	**1350**
Working Voltage	**450**

Pin to Ground	
Initial Test Voltage	**Passed**
After Thermal Test Voltage	**Passed**
After Humidity Test Voltage	**Passed**

DATA SUMMARIES Continued

LLCR:

1) A total of 20(include 10 signal pin and 10 ground pin) 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. <= +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

SIGNALS

Date	11/16/2009	11/16/2009	12/4/2009	12/15/2009
Room Temp C	22.3	23	21	22.2
RH	40%	40%	34%	27%
Name	Troy Cook	Troy Cook	Troy Cook	Troy Cook
mOhm values	**Actual Initial**	**Delta 100 Cycles**	**Delta Thermal**	**Delta Humidity**
Average	5.2	0.2	0.8	1.5
St. Dev.	0.3	0.5	0.7	1.2
Min	4.5	-0.8	-0.5	-0.8
Max	5.7	0.9	1.8	2.9
Count	10	10	10	10

How many samples are being tested?	10
How many contacts are on each board?	1

	Stable	Minor	Acceptable	Marginal	Unstable	Open
100 Cycles	10	0	0	0	0	0
Thermal	10	0	0	0	0	0
Humidity	10	0	0	0	0	0

DATA SUMMARIES Continued

GROUNDS

Date	11/16/2009	11/16/2009	12/4/2009	12/15/2009
Room Temp C	22.3	23	21	22.2
RH	40%	40%	34%	27%
Name	Troy Cook	Troy Cook	Troy Cook	Troy Cook
mOhm values	**Actual Initial**	**Delta 100 Cycles**	**Delta Thermal**	**Delta Humidity**
Average	2.1	-0.9	-0.5	1.0
St. Dev.	0.5	0.5	0.7	2.2
Min	1.4	-1.6	-1.6	-0.8
Max	2.8	-0.1	0.7	6.9
Count	10	10	10	10

How many samples are being tested? 10

How many contacts are on each board? 1

	Stable	Minor	Acceptable	Marginal	Unstable	Open
100 Cycles	10	0	0	0	0	0
Thermal	10	0	0	0	0	0
Humidity	9	1	0	0	0	0

DATA

NORMAL FORCE (FOR CONTACTS TESTED IN THE HOUSING):

Center contact

Initial	Deflections in inches, Forces in Grams										
Sample #	**0.0003**	**0.0006**	**0.0009**	**0.0012**	**0.0015**	**0.0018**	**0.0021**	**0.0024**	**0.0027**	**0.0030**	***SET***
2	6.9	14.8	21.2	30.1	39.0	46.9	55.6	61.6	71.4	81.0	0.0000
3	11.3	21.7	29.8	41.0	49.6	58.8	69.7	79.6	90.8	93.8	0.0000
4	9.1	18.6	28.8	39.1	52.3	64.1	77.0	89.2	101.4	109.6	0.0000
7	8.6	19.8	30.9	42.2	52.5	64.3	75.2	86.8	96.4	100.9	0.0001
8	7.8	16.9	26.7	34.2	43.8	51.5	60.2	69.8	78.4	86.9	0.0000
9	9.9	19.9	31.9	42.5	53.5	64.7	74.7	85.7	96.7	103.3	0.0000
10	14.1	24.4	34.7	43.4	53.4	61.5	72.6	83.8	96.2	102.7	0.0000
11	9.9	20.0	30.1	41.3	53.7	64.9	76.4	90.1	101.2	97.4	0.0000

After Thermals	Deflections in inches, Forces in Grams										
Sample #	**0.0003**	**0.0006**	**0.0009**	**0.0012**	**0.0015**	**0.0018**	**0.0021**	**0.0024**	**0.0027**	**0.0030**	***SET***
3	8.9	20.8	30.9	42.7	52.3	64.4	75.9	85.6	97.9	100.1	0.0000
4	8.6	17.2	26.2	37.3	46.0	55.6	65.1	75.5	85.2	88.3	0.0000
6	10.1	20.1	32.5	42.8	54.3	65.6	76.8	89.0	99.3	103.1	0.0000
10	8.8	18.0	28.8	38.3	49.7	60.1	70.0	81.6	90.7	93.9	0.0000

Outer contact

Initial	Deflections in inches, Forces in Grams										
Sample #	**0.0004**	**0.0008**	**0.0012**	**0.0016**	**0.0020**	**0.0024**	**0.0028**	**0.0032**	**0.0036**	**0.0040**	***SET***
1	73.3	149.9	227.2	300.4	374.6	448.1	524.5	593.0	606.1	603.6	0.0000
2	56.2	127.0	193.6	266.6	337.1	400.3	464.5	527.4	585.8	608.6	0.0003
3	68.4	143.3	215.3	288.3	361.9	434.9	499.8	566.9	631.3	644.0	0.0002
4	62.2	135.9	210.2	282.6	353.3	419.2	486.9	549.3	607.0	619.8	0.0003
5	67.0	141.5	149.3	149.3	149.3	149.3	149.3	149.3	149.3	149.3	0.0002
6	73.2	150.1	223.8	292.1	364.0	429.1	490.7	552.9	609.9	627.7	0.0004
7	60.9	132.2	192.2	254.0	318.4	374.3	426.3	483.0	530.0	566.3	0.0005
8	67.5	134.6	200.1	265.3	332.1	394.0	452.7	515.5	566.2	591.2	0.0003
9	67.8	141.9	213.3	281.3	348.9	415.7	480.2	540.3	602.3	619.3	0.0004
10	67.5	147.0	223.6	294.8	362.4	430.5	496.1	555.7	615.3	629.5	0.0003
11	68.5	140.6	208.7	278.8	345.9	411.6	470.3	533.6	597.1	612.0	0.0003
12	71.4	147.4	216.1	284.0	348.8	415.6	477.4	529.5	583.7	598.7	0.0004

After Thermals	Deflections in inches, Forces in Grams										
Sample #	**0.0004**	**0.0008**	**0.0012**	**0.0016**	**0.0020**	**0.0024**	**0.0028**	**0.0032**	**0.0036**	**0.0040**	***SET***
1	59.9	130.1	196.1	258.9	319.0	381.3	441.0	495.5	550.3	583.3	0.0006
2	74.7	144.8	215.9	286.0	354.0	416.2	478.6	541.1	601.0	616.8	0.0004
3	74.7	148.4	219.6	290.0	355.9	417.8	482.1	541.0	596.4	617.1	0.0004
4	74.9	153.9	221.3	292.5	361.6	428.4	486.2	544.3	601.9	608.9	0.0004
5	73.4	146.6	217.7	284.2	352.4	417.9	478.1	540.9	599.5	619.3	0.0003
6	60.2	120.7	177.6	227.4	272.5	314.9	346.5	378.0	404.1	430.0	0.0016
7	64.0	131.5	192.8	255.3	316.9	374.1	427.2	477.6	523.6	556.0	0.0005
8	68.2	134.3	197.2	253.0	298.1	341.6	375.9	404.1	430.9	446.9	0.0015
10	72.4	144.1	211.8	282.0	348.7	409.5	473.6	529.8	578.5	594.7	0.0004

DATA Continued

Mating – Unmating force

	Initial		After 25 Cycles		After 50 Cycles		After 75 Cycles	
Sample#	Mating	Unmating	Mating	Unmating	Mating	Unmating	Mating	Unmating
1	1.91	1.80	2.38	3.35	0.86	0.92	1.70	1.38
2	1.12	1.28	2.29	1.34	2.12	1.12	2.01	1.46
3	1.76	1.75	2.89	1.77	3.25	2.32	1.67	1.65
4	1.80	1.70	3.03	2.80	4.34	3.91	2.24	2.29
5	1.36	1.18	4.45	2.48	1.14	1.08	2.57	2.22

	After 100 Cycles		After Thermals		After Humidity	
Sample#	Mating	Unmating	Mating	Unmating	Mating	Unmating
1	1.33	1.12	0.56	0.43	2.31	1.61
2	2.34	1.48	0.80	0.60	0.69	0.54
3	1.51	1.32	2.14	2.81	4.28	3.97
4	2.55	2.36	N/A	N/A	N/A	N/A
5	2.27	2.15	0.70	0.58	1.00	1.55

Torque test

TORQUE - ON

Sample #	Initial Torque (in-lbs)	Torque after 25 Cycles (in-lbs)	Torque after 50 Cycles (in-lbs)	Torque after 75 Cycles (in-lbs)	Torque after 100 Cycles (in-lbs)	Torque after Thermal (in-lbs)	Torque after Humidity (in-lbs)
1	6.91	6.55	8.03	8.84	10.94	5.33	12.25
2	4.55	9.80	10.58	10.44	6.91	2.42	8.35
3	6.84	13.62	11.83	8.74	9.18	9.41	14.31
4	15.23	7.84	4.49	6.26	14.01	8.65	8.03
5	13.00	5.07	11.69	8.29	N/A	N/A	N/A

TORQUE - OFF

Sample #	Initial Torque (in-lbs)	Torque after 25 Cycles (in-lbs)	Torque after 50 Cycles (in-lbs)	Torque after 75 Cycles (in-lbs)	Torque after 100 Cycles (in-lbs)	Torque after Thermal (in-lbs)	Torque after Humidity (in-lbs)
1	6.11	8.90	10.21	7.03	5.56	4.00	9.38
2	4.95	10.00	6.72	4.45	4.51	2.63	6.81
3	5.73	13.24	9.09	2.93	7.43	9.78	6.55
4	8.41	3.87	4.29	1.54	11.22	4.67	4.89
5	6.93	1.81	1.15	5.35	N/A	N/A	N/A

DATA Continued

Center Contact Retention

	Center Conductor Retention	
Sample#	Maximum Force (Lbs)	Failure Mode
1	5.28	Contact pushed out of insulator housing.
2	5.50	Contact pushed out of insulator housing.
3	4.49	Contact pushed out of insulator housing.
4	4.94	Contact pushed out of insulator housing.
5	5.35	Contact pushed out of insulator housing.
6	5.47	Contact pushed out of insulator housing.
7	5.29	Contact pushed out of insulator housing.
8	4.95	Contact pushed out of insulator housing.
9	5.27	Contact pushed out of insulator housing.
10	5.43	Contact pushed out of insulator housing.

Cable Retention Force

	0 Deg. Pull	***90 Deg. Pull***
Sample#	Force (Lbs)	Force (Lbs)
1	Exceeded 50 Lbs. (57.04). See Note#1	Exceeded 50 Lbs. (52.00). See Note#2
2	Exceeded 50 Lbs. (52.35). See Note#1	Exceeded 50 Lbs. (51.63). See Note#2
3	Exceeded 50 Lbs. (64.53). See Note#1	Exceeded 50 Lbs. (95.00). See Note#2
4	Exceeded 50 Lbs. (55.70). See Note#1	Exceeded 50 Lbs. (80.01). See Note#2
5	Exceeded 50 Lbs. (66.80). See Note#1	Exceeded 50 Lbs. (86.84). See Note#2

DATA Continued

	Center Conductor: 1.5 milliohms maximum				
	Contact Resistance - Signal Pin				
Data--Forward	0.1954	0.1882	0.1794	0.1790	0.1786
Data--Reverse					
RESULTS (Milli-ohms)					
Minimum	0.1786				
Maximum	**0.1954**				
Average	0.1841				
	Braid to Body: 0.1 milliohms maximum				
	Contact Resistance - Shield				
Data--Forward	0.0328	0.0303	0.0307	0.0303	0.0328
Data--Reverse					
RESULTS (Milli-ohms)					
Minimum	0.030252				
Maximum	**0.032773**				
Average	0.031345				
	Outer Contact: 0.4 milliohms maximum				
	Contact Resistance - Body				
Data--Forward	0.0029	0.0042	0.0038	0.0050	0.0042
Data--Reverse					
RESULTS (Milli-ohms)					
Minimum	0.002941				
Maximum	**0.005042**				
Average	0.004034				

DATA Continued

INSULATION RESISTANCE (IR):

Initial Insulation Resistance
Measured In Meg Ohms

	Pin to Ground		
	Mated	Unmated	
	x	x	x
Sample#	BNC7T-J-P-HN-ST-TH1/BNC7T-P-C-MN-RA-CA6	BNC7T-J-P-HN-ST-TH1	BNC7T-P-C-MN-RA-CA6
1	100000	100000	100000
2	100000	100000	100000

Thermal Insulation Resistance
Measured In Meg Ohms

	Pin to Ground		
	Mated	Unmated	
	x	x	x
Sample#	BNC7T-J-P-HN-ST-TH1/BNC7T-P-C-MN-RA-CA6	BNC7T-J-P-HN-ST-TH1	BNC7T-P-C-MN-RA-CA6
1	100,000	100,000	100,000
2	100,000	100,000	100,000

Humidity Insulation Resistance
Measured In Meg Ohms

	Pin to Ground		
	Mated	Unmated	
	x	x	x
Sample#	BNC7T-J-P-HN-ST-TH1/BNC7T-P-C-MN-RA-CA6	BNC7T-J-P-HN-ST-TH1	BNC7T-P-C-MN-RA-CA6
1	50,000	50,000	100,000
2	100,000	100,000	50,000

DATA Continued

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

Initial Breakdown Voltage
Test Voltage ***Until Breakdown Occurs***

	Pin to Ground		
	Mated	Unmated	
	x		
Sample#	BNC7T-J-P-HN-ST-TH1/BNC7T-P-C-MN-RA-CA6	BNC7T-J-P-HN-ST-TH1	BNC7T-P-C-MN-RA-CA6
1	3500	3400	3200
2	3400	2800	3100

Initial DWV
Test Voltage= 2100

	Pin to Ground		
	Mated	Unmated	
Sample#	BNC7T-J-P-HN-ST-TH1/BNC7T-P-C-MN-RA-CA6	BNC7T-J-P-HN-ST-TH1	BNC7T-P-C-MN-RA-CA6
1	2100	2100	2100
2	2100	2100	2100

Thermal Test Voltage
Test Voltage= 2100

	Pin to Ground		
	Mated	Unmated	
Sample#	BNC7T-J-P-HN-ST-TH1/BNC7T-P-C-MN-RA-CA6	BNC7T-J-P-HN-ST-TH1	BNC7T-P-C-MN-RA-CA6
1	2100	2100	2100
2	2100	2100	2100

Humidity Test Voltage
Test Voltage= 2100

	Pin to Ground		
	Mated	Unmated	
Sample#	BNC7T-J-P-HN-ST-TH1/BNC7T-P-C-MN-RA-CA6	BNC7T-J-P-HN-ST-TH1	BNC7T-P-C-MN-RA-CA6
1	2100	2100	2100
2	2100	2100	2100

DATA Continued

LLCR:

Signal Pin

Board	mOhm values Position	Actual Initial	Delta 100 Cycles	Delta Thermal	Delta Humidity
1	1A-1-S	5.5	-0.3	-0.5	-0.8
1	1A-2-S	5.1	0.4	1.3	2.9
1	1A-3-S	5.4	0.9	0.4	1.4
1	1A-4-S	5.0	0.6	1.8	2.3
1	1A-5-S	5.2	0.5	1.1	2.6
1	1A-6-S	5.5	-0.4	0.0	0.1
1	1A-7-S	5.3	0.3	1.1	1.3
1	1A-8-S	5.7	-0.8	0.8	1.3
1	1A-9-S	5.2	0.2	0.9	2.9
1	1A-10-S	4.5	0.4	0.7	1.0

Ground Pin:

Board	mOhm values Position	Actual Initial	Delta 100 Cycles	Delta Thermal	Delta Humidity
1	1A-1-G	2.1	-0.8	0.7	6.9
1	1A-2-G	2.5	-1.3	-0.9	-0.3
1	1A-3-G	1.9	-0.7	-0.5	1.9
1	1A-4-G	1.5	-0.4	0.1	0.7
1	1A-5-G	1.7	-0.5	-0.6	1.6
1	1A-6-G	2.1	-0.8	-0.1	0.5
1	1A-7-G	2.8	-1.6	-1.6	0.0
1	1A-8-G	2.1	-1.0	-1.0	-0.8
1	1A-9-G	1.4	-0.1	-0.1	0.5
1	1A-10-G	2.7	-1.4	-1.2	-0.6

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: THC-01
Description: Temperature/Humidity Chamber
Manufacturer: Thermotron
Model: SM-8-7800
Serial #: 30676
Accuracy: See Manual
… Last Cal: 8/18/2008, Next Cal: 8/18/2009

Equipment #: MO-02
Description: Multimeter /Data Acquisition System
Manufacturer: Keithley
Model: 2700
Serial #: 0780546
Accuracy: See Manual
… Last Cal: 05/12/2009, Next Cal: 05/12/2010

Equipment #: MO-04
Description: Multimeter /Data Acquisition System
Manufacturer: Keithley
Model: 2700
Serial #: 0798688
Accuracy: See Manual
… Last Cal: 01/31/2009, Next Cal: 01/31/2010

Equipment #: PS-01
Description: System Power Supply
Manufacturer: Hewlett Packard
Model: HP 6033A
Serial #: (HP) 3329A-07330
Accuracy: See Manual
… Last Cal: 05/12/2009, Next Cal: 05/12/2010

Equipment #: OGP-01
Description: 6"X 6" Video Measuring Machine
Manufacturer: Optical Gauging Products
Model: Smartscope 200 CFOV
Serial #: SF2001956
Accuracy: See Manual
… Last Cal: 04/12/2009, Next Cal: 04/12/2010

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; Speed Accuracy: +/- 5% of indicated speed;
… Last Cal: 5/12/2009, Next Cal: 5/12/2010

Equipment #: LC-250N (icell)
Description: 250 Newton load cell for Dillon Quantrol test stand
Manufacturer: Dillon Quantrol
Model: icell
Serial #: 04-0020-08
Accuracy: .10 % of Capacity
… Last Cal: 5/10/2009, Next Cal: 5/10/2010

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: 05/12/2009, Next Cal: 05/12/2010

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