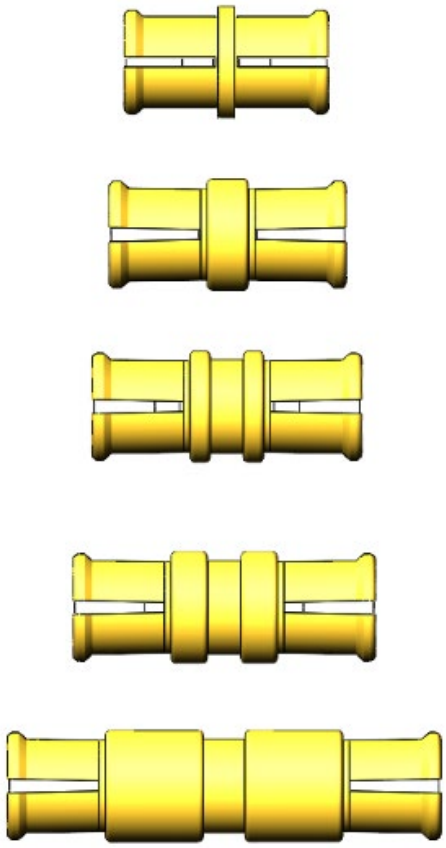
Project Number: Design Qualification Test Report	Tracking Code: CR-1148402_Report_Rev_1
Requested by: Joe Huang	Date: 11/22/2024
Part #: SMP-J-B-HG-ST-XXXX	
Part description: SMP BULLETS JACK	Tech: Keney Chen
Test Start: 9/25/2024	Test Completed: 11/11/2024



DESIGN QUALIFICATION TEST REPORT

SMP BULLETS JACK
SMP-PF-P-HG-ST-EM/SMP-J-B-HG-ST-0625
SMP-PF-P-HG-ST-EM/SMP-J-B-HG-ST-0725
SMP-PF-P-HG-ST-EM/SMP-J-B-HG-ST-0825
SMP-PF-P-HG-ST-EM/SMP-J-B-HG-ST-0925
SMP-PF-P-HG-ST-EM/SMP-J-B-HG-ST-1325

REVISION HISTORY

DATA	REV.NUM.	DESCRIPTION	ENG
11/15/2024	**1**	**Initial Issue**	**KC**

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: MIL-PRF-39012, 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) Parts not intended for testing LLCR and DWV/IR are visually inspected and cleaned if necessary.
4) Any additional preparation will be noted in the individual test sequences.

FLOWCHARTS

Mating/Unmating/Durability

Note: 1. Record the graphs to go with cycling force.
2. Record the MAX and min force for both insert and withdrawal.

Group 1
SMP-J-B-HG-ST-0925
AT-3397-200
5 Assemblies
Full Detent Insert Force -0925 Bullet
Note: A. 100 cycles, only one side required.
B. Record engagement and disengagement force
C. Engagement Force<=68N,

Step	Description
1.	Interface Gaging *Note: Measure and record center contact interface reference plan*
2.	Mating/Unmating Force (1)
3.	Cycles Cycles = 100 Cycles
4.	Air Blow Debris *Note: Blow debris from the interface surfaces at intervals. Solvents or tools shall not be used for cleaning.*
5.	Mating/Unmating Force (1)
6.	Interface Gaging *Note: Measure and record center contact interface reference plan*

Group 2
SMP-J-B-HG-ST-0925
AT-3397-201
5 Assemblies
Full Detent Withdrawal Force -0925 Bullet
Note: A. 100 cycles, only one side required.
B. Record engagement and disengagement force
C. Disengagement Force>=22N,

Step	Description
1.	Interface Gaging *Note: Measure and record center contact interface reference plan*
2.	Mating/Unmating Force (1)
3.	Cycles Cycles = 100 Cycles
4.	Air Blow Debris *Note: Blow debris from the interface surfaces at intervals. Solvents or tools shall not be used for cleaning.*
5.	Mating/Unmating Force (1)
6.	Interface Gaging *Note: Measure and record center contact interface reference plan*

Group 3
SMP-J-B-HG-ST-0925
AT-3397-202
5 Assemblies
Limit Detent Insert Force -0925 Bullet
Note: A. 500 cycles, only one side required.
B. Record engagement and disengagement force
C. Engagement Force<=45N,

Step	Description
1.	Interface Gaging *Note: Measure and record center contact interface reference plan*
2.	Mating/Unmating Force (1)
3.	Cycles Cycles = 500 Cycles
4.	Air Blow Debris *Note: Blow debris from the interface surfaces at intervals. Solvents or tools shall not be used for cleaning.*
5.	Mating/Unmating Force (1)
6.	Interface Gaging *Note: Measure and record center contact interface reference plan*

Group 4
SMP-J-B-HG-ST-0925
AT-3397-203
5 Assemblies
Limit Detent Withdrawal Force -0925 Bullet
Note: A. 500 cycles, only one side required.
B. Record engagement and disengagement force
C. Disengagement Force>=9N,

Step	Description
1.	Interface Gaging *Note: Measure and record center contact interface reference plan*
2.	Mating/Unmating Force (1)
3.	Cycles Cycles = 500 Cycles
4.	Air Blow Debris *Note: Blow debris from the interface surfaces at intervals. Solvents or tools shall not be used for cleaning.*
5.	Mating/Unmating Force (1)
6.	Interface Gaging *Note: Measure and record center contact interface reference plan*

Group 5
SMP-J-B-HG-ST-0925
AT-3397-204
5 Assemblies
Smooth Bore Insert Force -0925 Bullet
Note: A. 1000 cycles, only one side required.
B. Record engagement and disengagement force
C. Engagement Force<=9N,

Step	Description
1.	Interface Gaging *Note: Measure and record center contact interface reference plan*
2.	Mating/Unmating Force (1)
3.	Cycles Cycles = 1000 Cycles
4.	Air Blow Debris *Note: Blow debris from the interface surfaces at intervals. Solvents or tools shall not be used for cleaning.*
5.	Mating/Unmating Force (1)
6.	Interface Gaging *Note: Measure and record center contact interface reference plan*

Group 6
SMP-J-B-HG-ST-0925
AT-3397-205
5 Assemblies
Smooth Bore Withdrawal Force -0925 Bullet
Note: A. 1000 cycles, only one side required.
B. Record engagement and disengagement force
C. Disengagement Force>=2.2N,

Step	Description
1.	Interface Gaging *Note: Measure and record center contact interface reference plan*
2.	Mating/Unmating Force (1)
3.	Cycles Cycles = 1000 Cycles
4.	Air Blow Debris *Note: Blow debris from the interface surfaces at intervals. Solvents or tools shall not be used for cleaning.*
5.	Mating/Unmating Force (1)
6.	Interface Gaging *Note: Measure and record center contact interface reference plan*

(1) Mating/Unmating Force = EIA-364-13

FLOWCHARTS Continued

IR/DWV

Note: 5000 megaohms min IR

Pin-to-Ground

Group 1
SMP-J-B-HG-ST-0625
SMP-PF-P-HG-ST-EM
5 Assemblies
-0625 Bullet

Step	Description
1.	IR (2) - Non Standard
2.	DWV at Test Voltage (1) - Non Standard Test Voltage = 500 V
3.	LLCR (3)
4.	Thermal Shock (4) - Non Standard
5.	IR (2) - Non Standard *Note: 5000M ohm min*
6.	DWV at Test Voltage (1) - Non Standard Test Voltage = 500 V
7.	LLCR (3) Max Delta = 15 mOhm

Group 2
SMP-J-B-HG-ST-0725
SMP-PF-P-HG-ST-EM
5 Assemblies
-0725 Bullet

Step	Description
1.	IR (2) - Non Standard
2.	DWV at Test Voltage (1) - Non Standard Test Voltage = 500 V
3.	LLCR (3)
4.	Thermal Shock (4) - Non Standard
5.	IR (2) - Non Standard *Note: 5000M ohm min*
6.	DWV at Test Voltage (1) - Non Standard Test Voltage = 500 V
7.	LLCR (3) Max Delta = 15 mOhm

Group 3
SMP-J-B-HG-ST-0825
SMP-PF-P-HG-ST-EM
5 Assemblies
-0825 Bullet

Step	Description
1.	IR (2) - Non Standard
2.	DWV at Test Voltage (1) - Non Standard Test Voltage = 500 V
3.	LLCR (3)
4.	Thermal Shock (4) - Non Standard
5.	IR (2) - Non Standard *Note: 5000M ohm min*
6.	DWV at Test Voltage (1) - Non Standard Test Voltage = 500 V
7.	LLCR (3) Max Delta = 15 mOhm

Group 4
SMP-J-B-HG-ST-0925
SMP-PF-P-HG-ST-EM
5 Assemblies
-0925 Bullet

Step	Description
1.	IR (2) - Non Standard
2.	DWV at Test Voltage (1) - Non Standard Test Voltage = 500 V
3.	LLCR (3)
4.	Thermal Shock (4) - Non Standard
5.	IR (2) - Non Standard *Note: 5000M ohm min*
6.	DWV at Test Voltage (1) - Non Standard Test Voltage = 500 V
7.	LLCR (3) Max Delta = 15 mOhm

Group 5
SMP-J-B-HG-ST-1325
SMP-PF-P-HG-ST-EM
5 Assemblies
-1325 Bullet

Step	Description
1.	IR (2) - Non Standard
2.	DWV at Test Voltage (1) - Non Standard Test Voltage = 500 V
3.	LLCR (3)
4.	Thermal Shock (4) - Non Standard
5.	IR (2) - Non Standard *Note: 5000M ohm min*
6.	DWV at Test Voltage (1) - Non Standard Test Voltage = 500 V
7.	LLCR (3) Max Delta = 15 mOhm

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(1) DWV at Test Voltage = Other
500Vrms min. at sea level per DSCC94008
DWV test voltage is equal to 75% of the lowest breakdown voltage
Test voltage applied for 60 seconds per DSCC94008

(2) IR = Other
5000 megohms min per DSCC94008
MIL-PRF-39012

(3) LLCR = EIA-364-23
Open Circuit Voltage = 20 mV Max
Test Current = 100 mA Max

(4) Thermal Shock = Other
MIL-STD-202-107
Test condition B per DSCC 94008. Exception - high temperature to be +165°C. Visual inspection for damage.

FLOWCHARTS Continued

Mechanical Shock/Random Vibration/Event Detection

Group 1
SMP-J-B-HG-ST-0625
SMP-PF-P-HG-ST-EM
5 Assemblies
-0625 Bullet

Step	Description
1.	LLCR (1)
2.	Nanosecond Event Detection (Mechanical Shock) (2) - Non Standard
3.	High Frequency Vibration *Note: MIL-STD-202 Method 204 Test condition D(20g peak) per DSCC 94008. EXCEPTION - 50 ns max. electrical interruption.*
4.	LLCR (1) Max Delta = 15 mOhm

Group 2
SMP-J-B-HG-ST-0725
SMP-PF-P-HG-ST-EM
5 Assemblies
-0725 Bullet

Step	Description
1.	LLCR (1)
2.	Nanosecond Event Detection (Mechanical Shock) (2) - Non Standard
3.	High Frequency Vibration *Note: MIL-STD-202 Method 204 Test condition D(20g peak) per DSCC 94008. EXCEPTION - 50 ns max. electrical interruption.*
4.	LLCR (1) Max Delta = 15 mOhm

Group 3
SMP-J-B-HG-ST-0825
SMP-PF-P-HG-ST-EM
5 Assemblies
-0825 Bullet

Step	Description
1.	LLCR (1)
2.	Nanosecond Event Detection (Mechanical Shock) (2) - Non Standard
3.	High Frequency Vibration *Note: MIL-STD-202 Method 204 Test condition D(20g peak) per DSCC 94008. EXCEPTION - 50 ns max. electrical interruption.*
4.	LLCR (1) Max Delta = 15 mOhm

Group 4
SMP-J-B-HG-ST-0925
SMP-PF-P-HG-ST-EM
5 Assemblies
-0925 Bullet

Step	Description
1.	LLCR (1)
2.	Nanosecond Event Detection (Mechanical Shock) (2) - Non Standard
3.	High Frequency Vibration *Note: MIL-STD-202 Method 204 Test condition D(20g peak) per DSCC 94008. EXCEPTION - 50 ns max. electrical interruption.*
4.	LLCR (1) Max Delta = 15 mOhm

Group 5
SMP-J-B-HG-ST-1325
SMP-PF-P-HG-ST-EM
5 Assemblies
-1325 Bullet

Step	Description
1.	LLCR (1)
2.	Nanosecond Event Detection (Mechanical Shock) (2) - Non Standard
3.	High Frequency Vibration *Note: MIL-STD-202 Method 204 Test condition D(20g peak) per DSCC 94008. EXCEPTION - 50 ns max. electrical interruption.*
4.	LLCR (1) Max Delta = 15 mOhm

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(1) LLCR = EIA-364-23
Open Circuit Voltage = 20 mV Max
Test Current = 100 mA Max

(2) Nanosecond Event Detection (Mechanical Shock) = Other
Test condition I per DSCC 94008 (100g). EXCEPTION: 50 ns max. electrical interruption.
MIL-STD-202-213

FLOWCHARTS Continued

Retention

Group 1
SMP-J-B-HG-ST-0625

5 Assemblies
-0625 Bullet

Step	Description
1.	Center Pin Retention *Note: A. push the center pin out, and record the value* *B. Standard>=1.57lbs*

Group 2
SMP-J-B-HG-ST-0625

5 Assemblies
-0625 Bullet

Step	Description
1.	Insulator Retention *Note: A. push insulator out of the body, and record the value*

Group 3
SMP-J-B-HG-ST-0725

5 Assemblies
-0725 Bullet

Step	Description
1.	Center Pin Retention *Note: A. push the center pin out, and record the value* *B. Standard>=1.57lbs*

Group 4
SMP-J-B-HG-ST-0725

5 Assemblies
-0725 Bullet

Step	Description
1.	Insulator Retention *Note: A. push insulator out of the body, and record the value*

Group 5
SMP-J-B-HG-ST-0825

5 Assemblies
-0825 Bullet

Step	Description
1.	Center Pin Retention *Note: A. push the center pin out, and record the value* *B. Standard>=1.57lbs*

Group 6
SMP-J-B-HG-ST-0825

5 Assemblies
-0825 Bullet

Step	Description
1.	Insulator Retention *Note: A. push insulator out of the body, and record the value*

Group 7
SMP-J-B-HG-ST-0925

5 Assemblies
-0925 Bullet

Step	Description
1.	Center Pin Retention *Note: A. push the center pin out, and record the value* *B. Standard>=1.57lbs*

Group 8
SMP-J-B-HG-ST-0925

5 Assemblies
-0925 Bullet

Step	Description
1.	Insulator Retention *Note: A. push insulator out of the body, and record the value*

Group 9
SMP-J-B-HG-ST-1325

5 Assemblies
-1325 Bullet

Step	Description
1.	Center Pin Retention *Note: A. push the center pin out, and record the value* *B. Standard>=1.57lbs*

Group 10
SMP-J-B-HG-ST-1325

5 Assemblies
-1325 Bullet

Step	Description
1.	Insulator Retention *Note: A. push insulator out of the body, and record the value*

FLOWCHARTS Continued

Retention After Thermal

Group 1
SMP-J-B-HG-ST-0625

5 Assemblies
-0625 Bullet

Step	Description
1.	Thermal Shock (1) - Non Standard
2.	Center Contact Retention *Note: A. push the center pin out, and record the value*

Group 2
SMP-J-B-HG-ST-0625

5 Assemblies
-0625 Bullet

Step	Description
1.	Thermal Shock (1) - Non Standard
2.	Insulator Retention *Note: A. push insulator out of the body, and record the value*

Group 3
SMP-J-B-HG-ST-0725

5 Assemblies
-0725 Bullet

Step	Description
1.	Thermal Shock (1) - Non Standard
2.	Center Contact Retention *Note: A. push the center pin out, and record the value*

Group 4
SMP-J-B-HG-ST-0725

5 Assemblies
-0725 Bullet

Step	Description
1.	Thermal Shock (1) - Non Standard
2.	Insulator Retention *Note: A. push insulator out of the body, and record the value*

Group 5
SMP-J-B-HG-ST-0825

5 Assemblies
-0825 Bullet

Step	Description
1.	Thermal Shock (1) - Non Standard
2.	Center Contact Retention *Note: A. push the center pin out, and record the value*

Group 6
SMP-J-B-HG-ST-0825

5 Assemblies
-0825 Bullet

Step	Description
1.	Thermal Shock (1) - Non Standard
2.	Insulator Retention *Note: A. push insulator out of the body, and record the value*

Group 7
SMP-J-B-HG-ST-0925

5 Assemblies
-0925 Bullet

Step	Description
1.	Thermal Shock (1) - Non Standard
2.	Center Contact Retention *Note: A. push the center pin out, and record the value*

Group 8
SMP-J-B-HG-ST-0925

5 Assemblies
-0925 Bullet

Step	Description
1.	Thermal Shock (1) - Non Standard
2.	Insulator Retention *Note: A. push insulator out of the body, and record the value*

Group 9
SMP-J-B-HG-ST-1325

5 Assemblies
-1325 Bullet

Step	Description
1.	Thermal Shock (1) - Non Standard
2.	Center Contact Retention *Note: A. push the center pin out, and record the value*

Group 10
SMP-J-B-HG-ST-1325

5 Assemblies
-1325 Bullet

Step	Description
1.	Thermal Shock (1) - Non Standard
2.	Insulator Retention *Note: A. push insulator out of the body, and record the value*

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(1) Thermal Shock = Other
MIL-STD-202-107
Test condition B per DSCC 94008. Exception - high temperature to be +165°C. Visual inspection for damage.

ATTRIBUTE DEFINITIONS

The following is a brief, simplified description of attributes.

THERMAL SHOCK:

1) MIL-PRF-39012, paragraph. 4.6.17 per MIL-STD-202-107.
2) Test Condition I: -65°C to +165°C
3) Test Time: ½ hour dwell at each temperature extreme
4) Test Duration: test condition B per DSCC 94008. Exception-High temperature to be +165°C.
5) All test samples are pre-conditioned at ambient.
6) All test samples are exposed to environmental stressing in the mated condition.

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 +1000 mOhms:----------Unstable
    f. >+1000 mOhms: ----------Open Failure

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.

ATTRIBUTE DEFINITIONS Continued

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: MIL-PRF-39012, paragraph. 4.6.8 per MIL-STD-202-302.
    b. Test Conditions:
        i. Between Adjacent Contacts or Signal-to-Ground
        ii. Electrification Time 2.0 minutes
        iii. Test Voltage (500 VDC) corresponds to calibration settings for measuring resistances.
2) MEASUREMENTS:
3) When the specified test voltage is applied (VDC), the insulation resistance shall not be less than 5000 megohms.

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

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

1) PROCEDURE:
    a. Reference document: MIL-PRF-39012, paragraph. 4.6.14 per MIL-STD-202-301.
    b. Test Conditions:
        i. Between Adjacent Contacts or Signal-to-Ground
        ii. Barometric Test Condition 1(Sea Level) Test voltage applied for 60 seconds.
        iii. Rate of Application 500 V/Sec
        iv. 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).

RESULTS

Insulator Retention

0625 Bullet

- **Min ---------- 7.60 lbs**
- **Max ---------- 9.32 lbs**

0725 Bullet

- **Min ---------- 6.94 lbs**
- **Max ---------- 7.35 lbs**

0825 Bullet

- **Min ---------- 6.78 lbs**
- **Max ---------- 8.46 lbs**

0925 Bullet

- **Min ---------- 7.27 lbs**
- **Max ---------- 8.59 lbs**

1325 Bullet

- **Min ----------13.00 lbs**
- **Max ----------20.53 lbs**

Center Contact Retention

0625 Bullet

- **Min ---------- 3.50 lbs**
- **Max ---------- 4.10 lbs**

0725 Bullet

- **Min ---------- 3.64 lbs**
- **Max ---------- 4.12 lbs**

0825 Bullet

- **Min ---------- 2.90 lbs**
- **Max ---------- 3.94 lbs**

0925 Bullet

- **Min ---------- 3.59 lbs**
- **Max ---------- 4.60 lbs**

1325 Bullet

- **Min ----------11.96 lbs**
- **Max ----------12.24 lbs**

RESULTS Continued

Insulator Retention After Thermal

0625 Bullet

- **Min ---------- 7.31 lbs**
- **Max ---------- 9.62 lbs**

0725 Bullet

- **Min ---------- 6.29 lbs**
- **Max ---------- 7.24 lbs**

0825 Bullet

- **Min ---------- 6.68 lbs**
- **Max ---------- 9.70 lbs**

0925 Bullet

- **Min ---------- 6.61 lbs**
- **Max ---------- 8.12 lbs**

1325 Bullet

- **Min ----------16.51 lbs**
- **Max ----------24.83 lbs**

Center Contact Retention After Thermal

0625 Bullet

- **Min ---------- 4.47 lbs**
- **Max ---------- 4.75 lbs**

0725 Bullet

- **Min ---------- 3.46 lbs**
- **Max ---------- 4.73 lbs**

0825 Bullet

- **Min ---------- 3.95 lbs**
- **Max ---------- 4.56 lbs**

0925 Bullet

- **Min ---------- 4.38 lbs**
- **Max ---------- 5.52 lbs**

1325 Bullet

- **Min ----------12.18 lbs**
- **Max ----------12.85 lbs**

RESULTS Continued

Insulation Resistance minimums, IR

Pin to Ground

0625 Bullet

- **Initial**
  - **Mated ---------- 45000 Meg Ω ---------- Passed**
- **Thermal Shock**
  - **Mated ---------- 45000 Meg Ω ---------- Passed**

0725 Bullet

- **Initial**
  - **Mated ---------- 45000 Meg Ω ---------- Passed**
- **Thermal Shock**
  - **Mated ---------- 45000 Meg Ω ---------- Passed**

0825 Bullet

- **Initial**
  - **Mated ---------- 45000 Meg Ω ---------- Passed**
- **Thermal Shock**
  - **Mated ---------- 45000 Meg Ω ---------- Passed**

0925 Bullet

- **Initial**
  - **Mated ---------- 45000 Meg Ω ---------- Passed**
- **Thermal Shock**
  - **Mated ---------- 45000 Meg Ω ---------- Passed**

1325 Bullet

- **Initial**
  - **Mated ---------- 45000 Meg Ω ---------- Passed**
- **Thermal Shock**
  - **Mated ---------- 45000 Meg Ω ---------- Passed**

Dielectric Withstanding Voltage minimums, DWV

- **Test Voltage ---------- 500 VAC**

Pin to Ground

0625 Bullet

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

0725 Bullet

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

0825 Bullet

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

0925 Bullet

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

1325 Bullet

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

RESULTS Continued

Interface Gaging

MUD Group

Full Detent Insert

Initial

- **Min ---------- 0.0015 inch (0.0381mm)**
- **Max ---------- 0.0050 inch (0.1270mm)**

After 100 Cycles

- **Min ---------- 0.0025 inch (0.0635mm)**
- **Max ---------- 0.0055 inch (0.1397mm)**

Full Detent Withdrawal

Initial

- **Min ---------- 0.0030 inch (0.0762mm)**
- **Max ---------- 0.0045 inch (0.1143mm)**

After 100 Cycles

- **Min ---------- 0.0025 inch (0.0635mm)**
- **Max ---------- 0.0045 inch (0.1143mm)**

Limit Detent Insert

Initial

- **Min ---------- 0.0030 inch (0.0762mm)**
- **Max ---------- 0.0050 inch (0.1270mm)**

After 500 Cycles

- **Min ---------- 0.0030 inch (0.0762mm)**
- **Max ---------- 0.0050 inch (0.1270mm)**

Limit Detent Withdrawal

Initial

- **Min ---------- 0.0025 inch (0.0635mm)**
- **Max ---------- 0.0040 inch (0.1016mm)**

After 500 Cycles

- **Min ---------- 0.0020 inch (0.0508mm)**
- **Max ---------- 0.0050 inch (0.1270mm)**

Smooth Bore Insert

Initial

- **Min ---------- 0.0025 inch (0.0635mm)**
- **Max ---------- 0.0050 inch (0.1270mm)**

After 1000 Cycles

- **Min ---------- 0.0020 inch (0.0508mm)**
- **Max ---------- 0.0040 inch (0.1016mm)**

Smooth Bore Withdrawal

Initial

- **Min ---------- 0.0025 inch (0.0635mm)**
- **Max ---------- 0.0045 inch (0.1143mm)**

After 1000 Cycles

- **Min ---------- 0.0015 inch (0.0381mm)**
- **Max ---------- 0.0045 inch (0.1143mm)**

RESULTS Continued

Mating/Unmating Forces

Mating-Unmating Durability (Full Detent Insert)

- **Initial**
  - **Mating**
    - **Min ---------- 7.37 Lbs**
    - **Max---------- 7.88 Lbs**
- **After 100 Cycles**
  - **Mating**
    - **Min ---------- 6.29 Lbs**
    - **Max---------- 7.51 Lbs**

Mating-Unmating Durability (Full Detent Withdrawal)

- **Initial**
  - **Unmating**
    - **Min ---------- 5.38 Lbs**
    - **Max---------- 8.99 Lbs**
- **After 100 Cycles**
  - **Unmating**
    - **Min ---------- 4.60 Lbs**
    - **Max---------- 6.60 Lbs**

Mating-Unmating Durability (Limit Detent Insert)

- **Initial**
  - **Mating**
    - **Min ---------- 4.97 Lbs**
    - **Max---------- 6.21 Lbs**
- **After 500 Cycles**
  - **Mating**
    - **Min ---------- 4.90 Lbs**
    - **Max---------- 5.87 Lbs**

Mating-Unmating Durability (Limit Detent Withdrawal)

- **Initial**
  - **Unmating**
    - **Min ---------- 2.00 Lbs**
    - **Max---------- 2.74 Lbs**
- **After 500 Cycles**
  - **Unmating**
    - **Min ---------- 2.68 Lbs**
    - **Max---------- 4.45 Lbs**

Mating-Unmating Durability (Smooth Bore Insert)

- **Initial**
  - **Mating**
    - **Min ---------- 1.16 Lbs**
    - **Max---------- 1.38 Lbs**
- **After 1000 Cycles**
  - **Mating**
    - **Min ---------- 1.13 Lbs**
    - **Max---------- 1.79 Lbs**

Mating-Unmating Durability (Smooth Bore Withdrawal)

- **Initial**
  - **Unmating**
    - **Min ---------- 0.45 Lbs**
    - **Max---------- 0.73 Lbs**
- **After 1000 Cycles**
  - **Unmating**
    - **Min ---------- 0.43 Lbs**
    - **Max---------- 0.74 Lbs**

RESULTS Continued

LLCR IR/DWV (5 ground and 5 signal LLCR test points)

0625 Bullet

Ground pin

- **Initial ---------- 1.32 mOhms Max**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 5 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 +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**

Signal pin

- **Initial ---------- 7.36 mOhms Max**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 5 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 +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**

0725 Bullet

Ground pin

- **Initial ---------- 1.28 mOhms Max**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 5 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 +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**

Signal pin

- **Initial ---------- 7.37 mOhms Max**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 5 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 +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**

RESULTS Continued

LLCR IR/DWV (5 ground and 5 signal LLCR test points)

0825 Bullet

Ground pin

- **Initial ---------- 1.40 mOhms Max**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 5 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 +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**

Signal pin

- **Initial ---------- 7.52 mOhms Max**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 5 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 +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**

0925 Bullet

Ground pin

- **Initial ---------- 1.39 mOhms Max**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 5 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 +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**

Signal pin

- **Initial ---------- 7.79 mOhms Max**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 5 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 +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**

RESULTS Continued

LLCR IR/DWV (5 ground and 5 signal LLCR test points)

1325 Bullet

Ground pin

- **Initial ---------- 1.54 mOhms Max**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 5 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 +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**

Signal pin

- **Initial ---------- 8.44 mOhms Max**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 5 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 +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**

LLCR Shock & Vibration (5 ground and 5 signal LLCR test points)

0625 Bullet

Ground pin

- **Initial ---------- 1.38 mOhms Max**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 5 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 +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**

Signal pin

- **Initial ---------- 7.18 mOhms Max**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 5 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 +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**

RESULTS Continued

LLCR Shock & Vibration (5 ground and 5 signal LLCR test points)

0725 Bullet

Ground pin

- **Initial ---------- 1.48 mOhms Max**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 5 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 +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**

Signal pin

- **Initial ---------- 7.38 mOhms Max**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 5 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 +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**

LLCR Shock & Vibration (5 ground and 5 signal LLCR test points)

0825 Bullet

Ground pin

- **Initial ---------- 1.40 mOhms Max**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 5 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 +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**

Signal pin

- **Initial ---------- 7.54 mOhms Max**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 5 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 +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**

RESULTS Continued

LLCR Shock & Vibration (5 ground and 5 signal LLCR test points)

0925 Bullet

Ground pin

- **Initial ---------- 1.37 mOhms Max**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 5 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 +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**

Signal pin

- **Initial ---------- 7.55 mOhms Max**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 5 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 +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**

LLCR Shock & Vibration (5 ground and 5 signal LLCR test points)

1325 Bullet

Ground pin

- **Initial ---------- 1.45 mOhms Max**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 5 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 +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**

Signal pin

- **Initial ---------- 8.12 mOhms Max**
- **Thermal Shock**
  - **<= +5.0 mOhms ---------- 5 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 +1000 mOhms ---------- 0 Points ---------- Unstable**
  - **>+1000 mOhms ---------- 0 Points ---------- Open Failure**

DATA SUMMARIES

INSULATION RESISTANCE (IR):

	Pin to Ground
	Mated
Minimum	**0625 Bullet**
Initial	45000
Thermal Shock	45000

	Pin to Ground
	Mated
Minimum	**0725 Bullet**
Initial	45000
Thermal Shock	45000

	Pin to Ground
	Mated
Minimum	**0825 Bullet**
Initial	45000
Thermal Shock	45000

	Pin to Ground
	Mated
Minimum	**0925 Bullet**
Initial	45000
Thermal Shock	45000

	Pin to Ground
	Mated
Minimum	**1325 Bullet**
Initial	45000
Thermal Shock	45000

DATA SUMMARIES Continued

DIELECTRIC WITHSTANDING VOLTAGE (DWV):

IR/DWV Group

Voltage Rating Summary	
Minimum	**0625 Bullet**
Test Voltage	500

Pin to Ground	
Initial Test Voltage	Pass
After Thermal Shock Test Voltage	Pass

Voltage Rating Summary	
Minimum	**0725 Bullet**
Test Voltage	500

Pin to Ground	
Initial Test Voltage	Pass
After Thermal Shock Test Voltage	Pass

Voltage Rating Summary	
Minimum	**0825 Bullet**
Test Voltage	500

Pin to Ground	
Initial Test Voltage	Pass
After Thermal Shock Test Voltage	Pass

Voltage Rating Summary	
Minimum	**0925 Bullet**
Test Voltage	500

Pin to Ground	
Initial Test Voltage	Pass
After Thermal Shock Test Voltage	Pass

Voltage Rating Summary	
Minimum	**1325 Bullet**
Test Voltage	500

Pin to Ground	
Initial Test Voltage	Pass
After Thermal Shock Test Voltage	Pass

DATA SUMMARIES Continued

Center Contact Force:

0625 Bullet	Force (lbs)	Force (N)
Minimum	**3.50**	**15.56**
Maximum	4.10	18.24
Average	3.81	16.94

0725 Bullet	Force (lbs)	Force (N)
Minimum	**3.64**	**16.20**
Maximum	4.12	18.32
Average	3.85	17.15

0825 Bullet	Force (lbs)	Force (N)
Minimum	**2.90**	**12.91**
Maximum	3.94	17.54
Average	3.47	15.45

0925 Bullet	Force (lbs)	Force (N)
Minimum	**3.59**	**15.97**
Maximum	4.60	20.46
Average	4.03	17.94

1325 Bullet	Force (lbs)	Force (N)
Minimum	**11.96**	**53.24**
Maximum	12.24	54.47
Average	12.13	53.97

Center Contact Force After Thermal:

0625 Bullet	Force (lbs)	Force (N)
Minimum	**4.47**	**19.90**
Maximum	4.75	21.13
Average	4.66	20.75

0725 Bullet	Force (lbs)	Force (N)
Minimum	**3.46**	**15.38**
Maximum	4.73	21.04
Average	4.06	18.06

DATA SUMMARIES Continued

0825 Bullet	Force (lbs)	Force (N)
Minimum	**3.95**	**17.59**
Maximum	4.56	20.30
Average	4.23	18.81

0925 Bullet	Force (lbs)	Force (N)
Minimum	**4.38**	**19.50**
Maximum	5.52	24.55
Average	5.03	22.38

1325 Bullet	Force (lbs)	Force (N)
Minimum	**12.18**	**54.19**
Maximum	12.85	57.20
Average	12.52	55.69

Insulator Retention Force:

0625 Bullet	Force (lbs)	Force (N)
Minimum	**7.60**	**33.82**
Maximum	9.32	41.48
Average	8.30	36.94

0725 Bullet	Force (lbs)	Force (N)
Minimum	**6.94**	**30.87**
Maximum	7.35	32.72
Average	7.08	31.49

0825 Bullet	Force (lbs)	Force (N)
Minimum	**6.78**	**30.15**
Maximum	8.46	37.63
Average	7.88	35.05

0925 Bullet	Force (lbs)	Force (N)
Minimum	**7.27**	**32.36**
Maximum	8.59	38.23
Average	8.07	35.90

1325 Bullet	Force (lbs)	Force (N)
Minimum	**13.00**	**57.87**
Maximum	20.53	91.36
Average	17.08	76.01

DATA SUMMARIES Continued

Insulator Retention Force After Thermal:

0625 Bullet	Force (lbs)	Force (N)
Minimum	**7.31**	**32.52**
Maximum	9.62	42.81
Average	8.38	37.29

0725 Bullet	Force (lbs)	Force (N)
Minimum	**6.29**	**27.97**
Maximum	7.24	32.20
Average	6.77	30.11

0825 Bullet	Force (lbs)	Force (N)
Minimum	**6.68**	**29.70**
Maximum	9.70	43.18
Average	7.81	34.76

0925 Bullet	Force (lbs)	Force (N)
Minimum	**6.61**	**29.41**
Maximum	8.12	36.13
Average	7.29	32.42

1325 Bullet	Force (lbs)	Force (N)
Minimum	**16.51**	**73.48**
Maximum	24.83	110.48
Average	20.83	92.69

DATA SUMMARIES Continued

MATING-UNMATING FORCE:

Mating-Unmating Durability Group (Full Detent Insert)

	Initial		100 Cycles	
	Mating		**Mating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	32.78	7.37	27.98	6.29
Maximum	35.05	7.88	33.40	7.51
Average	33.87	**7.61**	30.53	**6.86**
St Dev	0.82	0.19	2.08	0.47
Count	5	5	5	5

Mating-Unmating Durability Group (Full Detent Withdrawal)

	Initial		100 Cycles	
	Unmating		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	23.93	5.38	20.46	4.60
Maximum	39.99	8.99	29.36	6.60
Average	35.41	**7.96**	26.80	**6.03**
St Dev	6.50	1.46	3.60	0.81
Count	5	5	5	5

Mating-Unmating Durability Group (Limit Detent Insert)

	Initial		500 Cycles	
	Mating		**Mating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	22.11	4.97	21.80	4.90
Maximum	27.62	6.21	26.11	5.87
Average	25.02	**5.63**	23.56	**5.30**
St Dev	2.21	0.50	2.18	0.49
Count	5	5	5	5

Mating-Unmating Durability Group (Limit Detent Withdrawal)

	Initial		500 Cycles	
	Unmating		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	8.90	2.00	11.92	2.68
Maximum	12.19	2.74	19.79	4.45
Average	10.58	**2.38**	15.20	**3.42**
St Dev	1.29	0.29	3.33	0.75
Count	5	5	5	5

DATA SUMMARIES Continued

MATING-UNMATING FORCE:

Mating-Unmating Durability Group (Smooth Bore Insert)

	Initial		1000 Cycles	
	Mating		**Mating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	5.16	1.16	5.03	1.13
Maximum	6.14	1.38	7.96	1.79
Average	5.73	**1.29**	6.08	**1.37**
St Dev	0.36	0.08	1.20	0.27
Count	5	5	5	5

Mating-Unmating Durability Group (Smooth Bore Withdrawal)

	Initial		1000 Cycles	
	Unmating		**Unmating**	
	Newtons	Force (Lbs)	Newtons	Force (Lbs)
Minimum	2.00	0.45	1.91	0.43
Maximum	3.25	0.73	3.29	0.74
Average	2.61	**0.59**	2.54	**0.57**
St Dev	0.54	0.12	0.67	0.15
Count	5	5	5	5

DATA SUMMARIES Continued

LLCR IR/DWV (0625 Bullet):

1) A total of 5 signal and 5 ground 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 +1000 mOhms: ----------Unstable
   f. >+1000 mOhms:----------Open Failure

	LLCR Measurement Summaries by Pin Type			
Date	10/7/2024	10/9/2024		
Room Temp (Deg C)	22	22		
Rel Humidity (%)	50	50		
Technician	Keney Chen	Keney Chen		
mOhm values	Actual **Initial**	**Delta Thermal Shock**		
	Pin Type: Signal 1			
Average	7.27	0.08		
St. Dev.	0.08	0.05		
Min	7.18	0.05		
Max	7.36	0.17		
Summary Count	5	5		
Total Count	5	5		
	Pin Type: GND 1			
Average	1.24	0.07		
St. Dev.	0.06	0.04		
Min	1.18	0.03		
Max	1.32	0.11		
Summary Count	5	5		
Total Count	5	5		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
After Thermal Shock	**10**	**0**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

LLCR IR/DWV (0725 Bullet):

1) A total of 5 signal and 5 ground 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 +1000 mOhms: ----------Unstable
   f. >+1000 mOhms:----------Open Failure

	LLCR Measurement Summaries by Pin Type			
Date	10/7/2024	10/9/2024		
Room Temp (Deg C)	22	22		
Rel Humidity (%)	50	50		
Technician	Keney Chen	Keney Chen		
mOhm values	Actual **Initial**	**Delta Thermal Shock**		
	Pin Type: Signal 1			
Average	7.14	0.17		
St. Dev.	0.13	0.09		
Min	7.04	0.02		
Max	7.37	0.24		
Summary Count	5	5		
Total Count	5	5		
	Pin Type: GND 1			
Average	1.24	0.02		
St. Dev.	0.04	0.02		
Min	1.19	0.00		
Max	1.28	0.06		
Summary Count	5	5		
Total Count	5	5		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
After Thermal Shock	**10**	**0**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

LLCR IR/DWV (0825 Bullet):

1) A total of 5 signal and 5 ground 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 +1000 mOhms: ----------Unstable
   f. >+1000 mOhms:----------Open Failure

	LLCR Measurement Summaries by Pin Type			
Date	10/7/2024	10/9/2024		
Room Temp (Deg C)	22	22		
Rel Humidity (%)	50	50		
Technician	Keney Chen	Keney Chen		
mOhm values	Actual **Initial**	**Delta Thermal Shock**		
	Pin Type: Signal 1			
Average	7.33	0.13		
St. Dev.	0.16	0.12		
Min	7.11	0.01		
Max	7.52	0.33		
Summary Count	5	5		
Total Count	5	5		
	Pin Type: GND 1			
Average	1.33	0.03		
St. Dev.	0.06	0.03		
Min	1.26	0.00		
Max	1.40	0.08		
Summary Count	5	5		
Total Count	5	5		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
After Thermal Shock	**10**	**0**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

LLCR IR/DWV (0925 Bullet):

1) A total of 5 signal and 5 ground 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 +1000 mOhms: ----------Unstable
   f. >+1000 mOhms:----------Open Failure

	LLCR Measurement Summaries by Pin Type			
Date	10/7/2024	10/9/2024		
Room Temp (Deg C)	22	22		
Rel Humidity (%)	50	50		
Technician	Keney Chen	Keney Chen		
mOhm values	Actual **Initial**	**Delta Thermal Shock**		
	Pin Type: Signal 1			
Average	7.62	0.08		
St. Dev.	0.13	0.03		
Min	7.47	0.06		
Max	7.79	0.13		
Summary Count	5	5		
Total Count	5	5		
	Pin Type: GND 1			
Average	1.34	0.08		
St. Dev.	0.05	0.06		
Min	1.26	0.01		
Max	1.39	0.14		
Summary Count	5	5		
Total Count	5	5		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
After Thermal Shock	**10**	**0**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

LLCR IR/DWV (1325 Bullet):

1) A total of 5 signal and 5 ground 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 +1000 mOhms: ----------Unstable
   f. >+1000 mOhms:----------Open Failure

	LLCR Measurement Summaries by Pin Type			
Date	10/7/2024	10/9/2024		
Room Temp (Deg C)	22	22		
Rel Humidity (%)	50	50		
Technician	Keney Chen	Keney Chen		
mOhm values	Actual **Initial**	**Delta Thermal Shock**		
	Pin Type: Signal 1			
Average	8.25	0.08		
St. Dev.	0.12	0.07		
Min	8.14	0.03		
Max	8.44	0.20		
Summary Count	5	5		
Total Count	5	5		
	Pin Type: GND 1			
Average	1.43	0.05		
St. Dev.	0.07	0.03		
Min	1.37	0.01		
Max	1.54	0.09		
Summary Count	5	5		
Total Count	5	5		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
After Thermal Shock	**10**	**0**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

LLCR Shock & Vibration Group (0625 Bullet) :

1) A total of 5 signal and 5 ground 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 +1000 mOhms----------Unstable
   f. >+1000 mOhms: ----------Open Failure

LLCR Measurement Summaries by Pin Type				
Date	10/16/2024	11/7/2024		
Room Temp (Deg C)	22	22		
Rel Humidity (%)	39	50		
Technician	Nicola Ansell	Richard Ison		
mOhm values	Actual **Initial**	**Delta Shock-Vib**		
	Pin Type: Signal 1			
Average	7.07	0.07		
St. Dev.	0.08	0.04		
Min	6.98	0.01		
Max	7.18	0.11		
Summary Count	5	5		
Total Count	5	5		
	Pin Type: GND 1			
Average	1.34	0.36		
St. Dev.	0.04	0.72		
Min	1.27	0		
Max	1.38	1.65		
Summary Count	5	5		
Total Count	5	5		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Shock-Vib	**10**	**0**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

LLCR Shock & Vibration Group (0725 Bullet) :

1) A total of 5 signal and 5 ground 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 +1000 mOhms----------Unstable
   f. >+1000 mOhms: ----------Open Failure

LLCR Measurement Summaries by Pin Type				
Date	10/16/2024	11/7/2024		
Room Temp (Deg C)	22	22		
Rel Humidity (%)	39	50		
Technician	Nicola Ansell	Richard Ison		
mOhm values	Actual **Initial**	**Delta Shock-Vib**		
	Pin Type: Signal 1			
Average	7.3	0.06		
St. Dev.	0.05	0.05		
Min	7.24	0.02		
Max	7.38	0.14		
Summary Count	5	5		
Total Count	5	5		
	Pin Type: GND 1			
Average	1.34	0.04		
St. Dev.	0.09	0.04		
Min	1.26	0.01		
Max	1.48	0.1		
Summary Count	5	5		
Total Count	5	5		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Shock-Vib	**10**	**0**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

LLCR Shock & Vibration Group (0825 Bullet) :

1) A total of 5 signal and 5 ground 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 +1000 mOhms----------Unstable
   f. >+1000 mOhms: ----------Open Failure

LLCR Measurement Summaries by Pin Type				
Date	10/16/2024	11/7/2024		
Room Temp (Deg C)	22	22		
Rel Humidity (%)	39	50		
Technician	Nicola Ansell	Richard Ison		
mOhm values	Actual **Initial**	**Delta Shock-Vib**		
	Pin Type: Signal 1			
Average	7.43	0.04		
St. Dev.	0.08	0.04		
Min	7.32	0		
Max	7.54	0.1		
Summary Count	5	5		
Total Count	5	5		
	Pin Type: GND 1			
Average	1.34	0.22		
St. Dev.	0.04	0.41		
Min	1.31	0		
Max	1.4	0.96		
Summary Count	5	5		
Total Count	5	5		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Shock-Vib	**10**	**0**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

LLCR Shock & Vibration Group (0925 Bullet) :

1) A total of 5 signal and 5 ground 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 +1000 mOhms----------Unstable
   f. >+1000 mOhms: ----------Open Failure

LLCR Measurement Summaries by Pin Type				
Date	10/16/2024	11/1/2024		
Room Temp (Deg C)	22	22		
Rel Humidity (%)	39	43		
Technician	Nicola Ansell	Richard Ison		
mOhm values	Actual **Initial**	**Delta Shock-Vib**		
	Pin Type: Signal 1			
Average	7.51	0.08		
St. Dev.	0.05	0.05		
Min	7.44	0.03		
Max	7.55	0.16		
Summary Count	5	5		
Total Count	5	5		
	Pin Type: GND 1			
Average	1.34	0.11		
St. Dev.	0.02	0.19		
Min	1.32	0.01		
Max	1.37	0.45		
Summary Count	5	5		
Total Count	5	5		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Shock-Vib	**10**	**0**	**0**	**0**	**0**	**0**

DATA SUMMARIES Continued

LLCR Shock & Vibration Group (1325 Bullet) :

1) A total of 5 signal and 5 ground 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 +1000 mOhms----------Unstable
   f. >+1000 mOhms: ----------Open Failure

LLCR Measurement Summaries by Pin Type				
Date	10/16/2024	11/1/2024		
Room Temp (Deg C)	22	22		
Rel Humidity (%)	39	43		
Technician	Nicola Ansell	Richard Ison		
mOhm values	Actual **Initial**	**Delta Shock-Vib**		
	Pin Type: Signal 1			
Average	8.02	0.16		
St. Dev.	0.06	0.19		
Min	7.96	0		
Max	8.12	0.48		
Summary Count	5	5		
Total Count	5	5		
	Pin Type: GND 1			
Average	1.43	0.04		
St. Dev.	0.02	0.03		
Min	1.41	0		
Max	1.45	0.06		
Summary Count	5	5		
Total Count	5	5		

LLCR Delta Count by Category						
	Stable	**Minor**	**Acceptable**	**Marginal**	**Unstable**	**Open**
mOhms	**<=5**	**>5 & <=10**	**>10 & <=15**	**>15 & <=50**	**>50 & <=1000**	**>1000**
Shock-Vib	**10**	**0**	**0**	**0**	**0**	**0**

Nanosecond Event Detection:

Shock and Vibration Event Detection Summary	
Contacts tested	16
Test Condition	MIL-STD-202, Method 213 Cond. I
Shock Events	0
Test Condition	MIL-STD-202-204, Condition D
Vibration Events	0
Total Events	0

EQUIPMENT AND CALIBRATION SCHEDULES

Equipment #: HZ-TCT-01
Description: Normal force analyzer
Manufacturer: Mecmesin Multitester
Model: Mecmesin Multitester 2.5-i
Serial #: 08-1049-04
Accuracy: Last Cal: 3/4/2024, Next Cal: 3/3/2025

Equipment #: HZ-TSC-01
Description: Vertical Thermal Shock Chamber
Manufacturer: Cincinnatti Sub Zero
Model: VTS-3-6-6-SC/AC
Serial #: 10-VT14994
Accuracy: See Manual
… Last Cal: 04/16/2024, Next Cal: 04/15/2025

Equipment #: DG-HPT-01
Description: Hipot Safety Tester
Manufacturer: Vitrek
Model: V73
Serial #: 025866
Accuracy:
… Last Cal: 04/16/2024, Next Cal: 04/15/2025

Equipment #: HZ-MO-05
Description: Micro-ohmmeter
Manufacturer: Keithley
Model: 3706
Serial #: 1285188
Accuracy: Last Cal: 12/17/2023, Next Cal: 12/16/2024

Equipment #: MO-11
Description: Switch/Multimeter
Manufacturer: Keithley
Model: 3706
Serial #: 120169
Accuracy: See Manual
… Last Cal: 08/21/2024, Next Cal: 08/21/2025

Equipment #: SVC-01
Description: Shock & Vibration Table
Manufacturer: Data Physics
Model: LE-DSA-10-20K
Serial #: 10037
Accuracy: See Manual
… Last Cal: 11/31/2023, Next Cal: 11/31/2024

EQUIPMENT AND CALIBRATION SCHEDULES Continued

Equipment #: ACLM-01
Description: Accelerometer
Manufacturer: PCB Piezotronics
Model: 352C03
Serial #: 115819
Accuracy: See Manual
… Last Cal: 07/09/2024, Next Cal: 07/09/2025

Equipment #: ED-03
Description: Event Detector
Manufacturer: Analysis Tech
Model: 32EHD
Serial #: 1100604
Accuracy: See Manual
… Last Cal: 06/04/2024, Next Cal: 06/04/2025