

NOVASTACK®-B Connector

Part No. PLUG: 20712-004E-0* RECEPTACLE: 20713-004E-0*

Test Report

Product Specification no. PRS-2284

| | | | | | |
|------|--------|--------------------|-------------|------------|-------------|
| | | | | | |
| 1 | T16154 | September 30, 2016 | H.I | | Y.S |
| 0 | T16136 | September 2, 2016 | H.Ikari | | Y.Shimada |
| Rev. | ECN | Date | Prepared by | Checked by | Approved by |

1. 目的/Purpose

NOVASTACK-B コネクタの性能を PRS-2284 に基づいて評価する。

To evaluate the performance of NOVASTACK-B Connector in accordance with PRS-2284.

2. 試料/Specimen

(1) NOVASTACK-B PLUG ASS'Y (P/N: 20712-004E-0*)

(2) NOVASTACK-B RECE. ASS'Y (P/N: 20713-004E-0*)

3. 試験順序/Test Sequence

全ての評価は表 1 の試験順序に従って行った。

All the evaluations were performed in accordance with Table 1. Test Sequence.

4. 結果/Result

表 2-1～2-4、グラフ 1～10 参照。試験条件の詳細は PRS-2284 参照。

n 数は測定データを意味する。

See Table 2-1 to 2-4, Graph 1 to 10. For the details of the testing conditions and requirements, see PRS-2284.

The "n" in the tables show the number of measurement points.

表(Table)1 試験順序と試料数 / Test Sequence and Sample Quantity

| 試験項目 Test Item | グループ / Group | | | | | | | | | | | | |
|---|--------------|------------|-----------|-----------|-----------|-----------|-----------------|-----------|-----------|-----------|------------|------------|-----------|
| | A | B | C | D | E | F | G | H | J | K | L | M | N |
| 接触抵抗 Contact Resistance | 2,6 | | 1,3,5 | 1,3 | 1,3 | 1,5 | 1,5,7 | 1,3 | 1,3 | 1,3 | | | |
| 絶縁抵抗 Insulation Resistance | | | | | | 2,6 | 2,8 | | | | | | |
| 耐電圧 D. W. Voltage | | | | | | 3,7 | 3,9 | | | | | | |
| 温度上昇 Temperature Rising | | | | | | | | | | | | | 1 |
| 挿入力 Mating Force | 1,5 | | | | | | | | | | | | |
| 抜去力 Unmating Force | 3,7 | | | | | | | | | | | | |
| 耐久性 Durability | 4 | | | | | | 4 (10cycles) | | | | | | |
| 端子保持力 Contact Retention Force | | 1,3 | | | | | | | | | | | |
| 振動 Vibration | | | 2 | | | | | | | | | | |
| 衝撃 Shock | | | 4 | | | | | | | | | | |
| 熱衝撃 Thermal Shock | | | | 2 | | | | | | | | | |
| 高温寿命 High Temperature Life | | 2 | | | 2 | | | | | | | | |
| 湿度 (定常状態) Humidity (Steady State) | | | | | | 4 | | | | | | | |
| 湿度 (サイクリク) Humidity (Cycling) | | | | | | | 6 | | | | | | |
| 低温放置 Cold Temperature Life | | | | | | | | 2 | | | | | |
| 塩水噴霧 Salt Water Spray | | | | | | | | | 2 | | | | |
| ガス (H ₂ S) Gas (H ₂ S) | | | | | | | | | | 2 | | | |
| 半田付け性 Solderability | | | | | | | | | | | 1 | | |
| 半田耐熱性 Soldering Heat Resistance | | | | | | | | | | | | 1 | |
| 試料数 Sample QTY. | 5 pcs. | 20 pos. | 5 pcs. | 5 pcs. | 5 pcs. | 5 pcs. | 5 pcs. | 5 pcs. | 5 pcs. | 5 pcs. | 10 pcs. | 10 pcs. | 5 pcs. |

※グループ表中の番号は、試験順序を示す。

The number of group is test sequence.

表 2-1. 試験結果 (Table.2-1 Test result)

| 試験項目 Test Item | 測定内容 Contents of Measurement | | 規格 Specifications | Set | n | データ/Data | | | | | 判定 Judge |
|--|--|--------------------------|----------------------|-----|--------|----------|-------|-------|--------|--------|-------------|
| | | | | | | AVE. | MAX. | MIN. | s | X±3s | |
| A Group 耐久性 Durability | 接触抵抗 Contact Resistance (mΩ) 【Signal】 | 初期 Initial | 40mΩMAX. | 5 | 20 | 5.924 | 6.68 | 5.39 | 0.390 | 7.094 | OK |
| | | 30 回挿抜後 After Testing | ΔR=20mΩ MAX. | | | -0.494 | 0.35 | -1.56 | 0.455 | 0.871 | OK |
| | 接触抵抗 Contact Resistance (mΩ) 【Power】 | 初期 Initial | 20mΩMAX. | 5 | 20 | 2.522 | 3.07 | 2.06 | 0.247 | 3.263 | OK |
| | | 30 回挿抜後 After Testing | ΔR=20mΩ MAX. | | | -0.114 | 0.41 | -0.43 | 0.234 | 0.588 | OK |
| | 挿入力 Mating Force (N) | 初期 Initial | 40.0N MAX. | 5 | 5 | 23.450 | 25.73 | 21.37 | 1.583 | 28.199 | OK |
| | | 30 回挿抜後 After Testing | | | | 11.213 | 11.41 | 11.01 | 0.170 | 11.723 | OK |
| 抜去力 Unmating Force (N) | 初期 Initial | 10.0N MIN. | 5 | 5 | 14.843 | 14.96 | 14.73 | 0.087 | 14.582 | OK | |
| | 30 回挿抜後 After Testing | 7.0N MIN. | | | 10.647 | 10.98 | 10.3 | 0.276 | 9.819 | OK | |
| B Group 高温寿命 High Temperature Life | 端子保持力 (RECE) Contact Retention Force (N) 【Signal】 | 初期 Initial | 0.1N MIN. | - | 20 | 0.385 | 0.48 | 0.28 | 0.064 | 0.193 | OK |
| | | 試験後 After Testing | | - | 20 | 0.380 | 0.53 | 0.27 | 0.084 | 0.128 | OK |
| | 端子保持力 (RECE) Contact Retention Force (N) 【Power】 | 初期 Initial | 0.1N MIN. | - | 20 | 0.341 | 0.45 | 0.24 | 0.067 | 0.140 | OK |
| | | 試験後 After Testing | | - | 20 | 0.333 | 0.44 | 0.23 | 0.067 | 0.132 | OK |

表 2-2. 試験結果(Table.2-2 Test result)

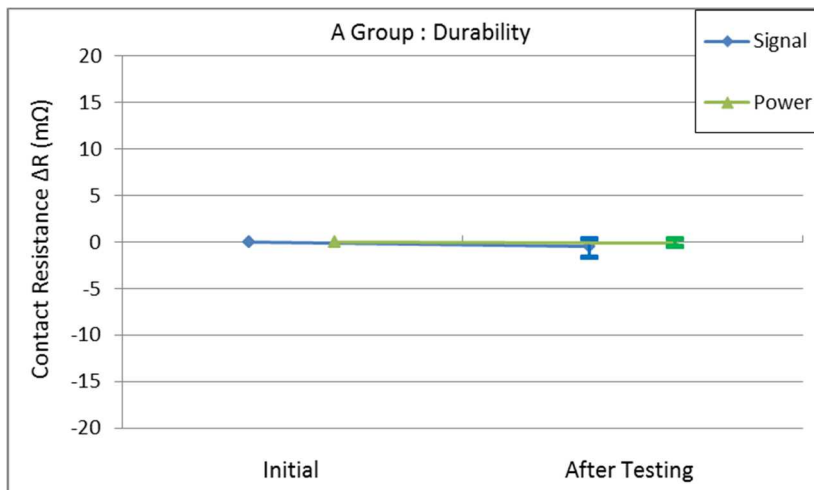
| 試験項目 Test Item | 測定内容 Contents of Measurement | | 規格 Specifications | Set | N | データ/Data | | | | | 判定 Judge |
|--|---|------------------------------|--|-----|----|-------------------------------------|------|-------|-------|-------|-------------|
| | | | | | | AVE. | MAX. | MIN. | s | X±3s | |
| C Group 振動 ↓ 衝撃 Shock | 接触抵抗 Contact Resistance (mΩ) 【Signal】 | 初期 Initial | 40mΩMAX. | 5 | 20 | 5.761 | 7.31 | 4.51 | 0.794 | 8.143 | OK |
| | | 振動後 After Vibration | ΔR=20mΩ MAX. | | | -0.464 | 0.83 | -1.68 | 0.765 | 1.831 | OK |
| | | 衝撃後 After Shock | ΔR=20mΩ MAX. | | | -0.212 | 0.80 | -1.86 | 0.859 | 2.365 | OK |
| | 接触抵抗 Contact Resistance (mΩ) 【Power】 | 初期 Initial | 20mΩMAX. | 5 | 20 | 3.009 | 3.97 | 2.15 | 0.529 | 4.596 | OK |
| | | 振動後 After Vibration | ΔR=20mΩ MAX. | | | -0.085 | 1.60 | -1.36 | 0.729 | 2.102 | OK |
| | | 衝撃後 After Shock | ΔR=20mΩ MAX. | | | 0.133 | 1.85 | -1.53 | 0.794 | 2.515 | OK |
| | 電氣的瞬断 Electrical discontinuity | 振動試験中 During Vibration | 1μsec. MAX. | 5 | 5 | 瞬断無し No Electrical discontinuity | | | | | OK |
| | | 衝撃試験中 During Shock | | | | 瞬断無し No Electrical discontinuity | | | | | OK |
| | 外観 Appearance | 振動後 After Vibration | 異常無き事 Abnormality shall not occur. | 5 | 5 | 異常無し No Abnormality | | | | | OK |
| | | 衝撃後 After Shock | | | | 異常無し No Abnormality | | | | | OK |
| D Group 熱衝撃 Thermal Shock | 接触抵抗 Contact Resistance (mΩ) 【Signal】 | 初期 Initial | 40mΩMAX. | 5 | 20 | 5.597 | 6.54 | 4.83 | 0.532 | 7.193 | OK |
| | | 試験後 After Testing | ΔR=20mΩ MAX. | | | 0.249 | 1.78 | -0.67 | 0.676 | 2.277 | OK |
| | 接触抵抗 Contact Resistance (mΩ) 【Power】 | 初期 Initial | 20mΩMAX. | 5 | 20 | 2.650 | 3.95 | 1.98 | 0.601 | 4.453 | OK |
| | | 試験後 After Testing | ΔR=20mΩ MAX. | | | 0.267 | 1.14 | -1.33 | 0.642 | 2.193 | OK |
| E Group 高温寿命 High Temperature Life | 接触抵抗 Contact Resistance (mΩ) 【Signal】 | 初期 Initial | 40mΩMAX. | 5 | 20 | 5.688 | 6.75 | 4.36 | 0.520 | 7.248 | OK |
| | | 試験後 After Testing | ΔR=20mΩ MAX. | | | 0.187 | 1.39 | -0.99 | 0.776 | 2.515 | OK |
| | 接触抵抗 Contact Resistance (mΩ) 【Power】 | 初期 Initial | 20mΩMAX. | 5 | 20 | 2.789 | 4.46 | 1.98 | 0.590 | 4.559 | OK |
| | | 試験後 After Testing | ΔR=20mΩ MAX. | | | 0.360 | 1.78 | -1.02 | 0.752 | 2.616 | OK |

表 2-3. 試験結果 (Table.2-3 Test result)

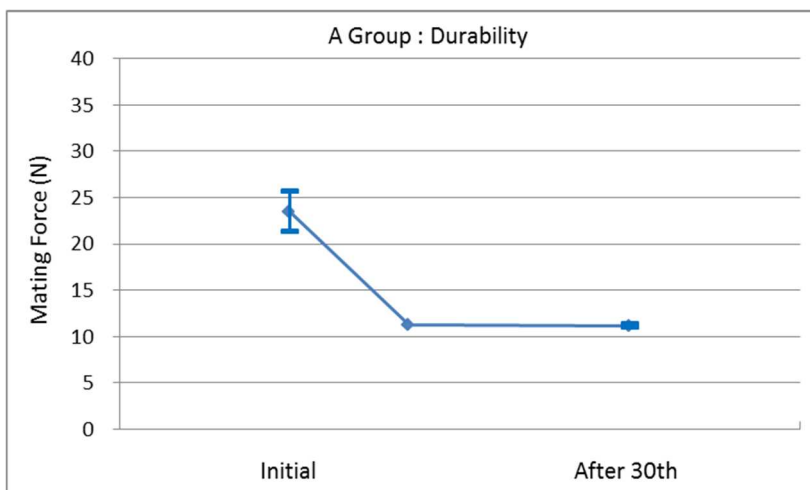
| 試験項目 Test Item | 測定内容 Contents of Measurement | | 規格 Specifications | Set | N | データ/Data | | | | | 判定 Judge | |
|---|--|---|--|-----------------|----|----------------------------|-------|-------|-------|-------|-------------|----|
| | | | | | | AVE. | MAX. | MIN. | s | X±3s | | |
| F Group 湿度 (定常状態) Humidity (Steady State) | 接触抵抗 Contact Resistance (mΩ) 【Signal】 | 初期 Initial | 40mΩMAX. | 5 | 20 | 5.664 | 7.10 | 4.01 | 0.820 | 8.124 | OK | |
| | | 試験後 After Testing | ΔR=20mΩ MAX. | | | 1.499 | 2.95 | 0.23 | 0.800 | 3.899 | OK | |
| | 接触抵抗 Contact Resistance (mΩ) 【Power】 | 初期 Initial | 20mΩMAX. | 5 | 20 | 2.697 | 3.35 | 2.26 | 0.242 | 3.423 | OK | |
| | | 試験後 After Testing | ΔR=20mΩ MAX. | | | 0.906 | 3.04 | -0.96 | 0.845 | 3.441 | OK | |
| | 絶縁抵抗 Insulation Resistance (MΩ) | 初期 Initial | 1000MΩMIN. | 5 | 5 | 2.39×10 ⁴ MΩMIN | | | | | OK | |
| | | 試験後 After Testing | 100MΩMIN. | | | 2.54×10 ⁴ MΩMIN | | | | | OK | |
| | 耐電圧 D. W. Voltage | 初期 Initial | 異常無き事 Abnormality shall not occur. | 5 | 5 | 異常無し No Abnormality | | | | | OK | |
| | | 試験後 After Testing | | | | 異常無し No Abnormality | | | | | OK | |
| | G Group 湿度 (サイクリング) Humidity (Cycling) | 接触抵抗 Contact Resistance (mΩ) 【Signal】 | 初期 Initial | 40mΩMAX. | 5 | 20 | 5.661 | 6.93 | 4.47 | 0.764 | 7.953 | OK |
| | | | 10回挿抜後 After Durability | ΔR=20mΩ MAX. | | | 0.813 | 2.60 | -0.44 | 0.949 | 3.660 | OK |
| 試験後 After Testing | | | ΔR=20mΩ MAX. | 1.641 | | | 3.74 | 0.05 | 0.901 | 4.344 | OK | |
| 接触抵抗 Contact Resistance (mΩ) 【Power】 | | 初期 Initial | 20mΩMAX. | 5 | 20 | 2.632 | 4.64 | 1.86 | 0.735 | 4.837 | OK | |
| | | 10回挿抜後 After Durability | ΔR=20mΩ MAX. | | | 0.940 | 2.34 | -0.51 | 0.720 | 3.100 | OK | |
| | | 試験後 After Testing | ΔR=20mΩ MAX. | | | 2.283 | 4.60 | -0.13 | 1.452 | 6.639 | OK | |
| 絶縁抵抗 Insulation Resistance (MΩ) | | 初期 Initial | 1000MΩMIN. | 5 | 5 | 2.84×10 ⁴ MΩMIN | | | | | OK | |
| | | 試験後 After Testing | 100MΩMIN. | | | 4.36×10 ⁴ MΩMIN | | | | | OK | |
| 耐電圧 D. W. Voltage | | 初期 Initial | 異常無き事 Abnormality shall not occur. | 5 | 5 | 異常無し No Abnormality | | | | | OK | |
| | | 試験後 After Testing | | | | 異常無し No Abnormality | | | | | OK | |

表 2-4. 試験結果 (Table.2-4 Test result)

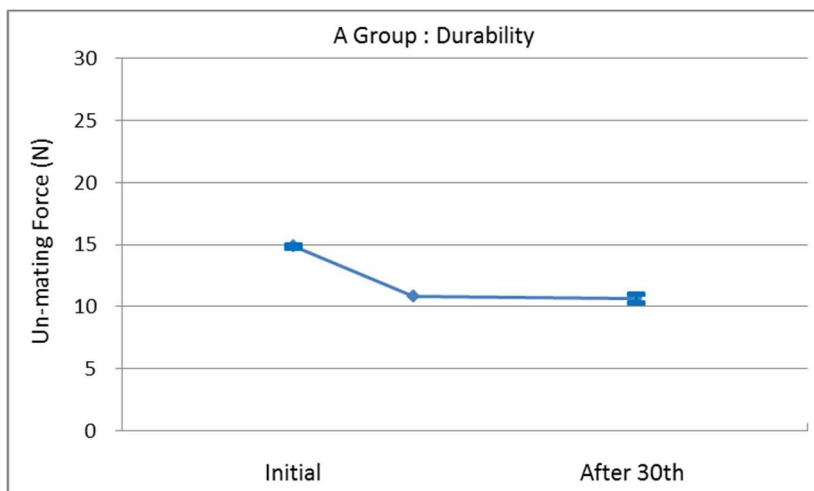
| 試験項目 Test Item | 測定内容 Contents of Measurement | | 規格 Specifications | Set | N | データ/Data | | | | | 判定 Judge |
|--|---|----------------------|--|-----|----|--------------------------|------|-------|-------|-------|-------------|
| | | | | | | AVE. | MAX. | MIN. | s | X±3s | |
| H Group 低温放置 Cold Temperature Life | 接触抵抗 Contact Resistance (mΩ) 【Signal】 | 初期 Initial | 40mΩMAX. | 5 | 20 | 5.977 | 6.78 | 5.23 | 0.466 | 7.375 | OK |
| | | 試験後 After Testing | ΔR=20mΩ MAX. | | | -0.426 | 0.90 | -1.18 | 0.556 | 1.242 | OK |
| | 接触抵抗 Contact Resistance (mΩ) 【Power】 | 初期 Initial | 20mΩMAX. | 5 | 20 | 2.732 | 3.85 | 2.08 | 0.515 | 4.277 | OK |
| | | 試験後 After Testing | ΔR=20mΩ MAX. | | | -0.181 | 0.64 | -0.87 | 0.389 | 0.986 | OK |
| J Group 塩水噴霧 Salt Water Spray | 接触抵抗 Contact Resistance (mΩ) 【Signal】 | 初期 Initial | 40mΩMAX. | 5 | 20 | 5.786 | 6.91 | 4.60 | 0.546 | 7.424 | OK |
| | | 試験後 After Testing | ΔR=20mΩ MAX. | | | -0.613 | 0.72 | -1.53 | 0.741 | 1.610 | OK |
| | 接触抵抗 Contact Resistance (mΩ) 【Power】 | 初期 Initial | 20mΩMAX. | 5 | 20 | 2.749 | 3.85 | 2.14 | 0.492 | 4.225 | OK |
| | | 試験後 After Testing | ΔR=20mΩ MAX. | | | -0.216 | 0.70 | -1.54 | 0.511 | 1.317 | OK |
| K Group ガス(H ₂ S) Gas(H ₂ S) | 接触抵抗 Contact Resistance (mΩ) 【Signal】 | 初期 Initial | 40mΩMAX. | 5 | 20 | 5.884 | 7.01 | 4.56 | 0.729 | 8.071 | OK |
| | | 試験後 After testing | ΔR=20mΩ MAX. | | | 0.305 | 2.01 | -2.21 | 0.913 | 3.044 | OK |
| | 接触抵抗 Contact Resistance (mΩ) 【Power】 | 初期 Initial | 20mΩMAX. | 5 | 20 | 2.913 | 4.62 | 2.07 | 0.651 | 4.866 | OK |
| | | 試験後 After Testing | ΔR=20mΩ MAX. | | | -0.066 | 1.57 | -1.03 | 0.680 | 1.974 | OK |
| L Group 半田付け性 Solderability | 外観 Appearance | | 95%以上 濡れる事 More than 95% of the dipped surface shall be evenly wet. | 10 | 10 | 95%以上濡れる Wet 95% MIN. | | | | | OK |
| M Group 半田耐熱性 Soldering Heat Resistance | 外観 Appearance | | 異常無き事 Abnormality shall not occur. | 10 | 10 | 異常無し No Abnormality | | | | | OK |
| N Group 温度上昇 Temperature Rising | 【Signal】 1.0A/Contact 【Power】 6.0A/Contact | | ΔT=30℃MAX. | 5 | 5 | ΔT = 27.1℃ MAX. | | | | | OK |



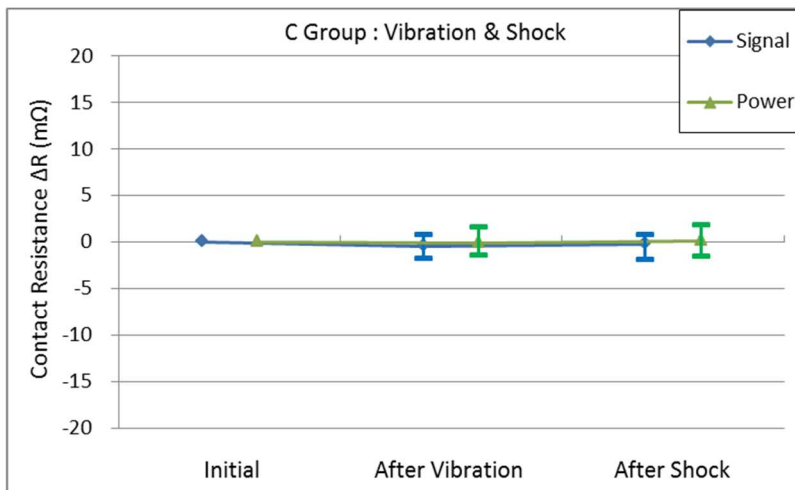
Graph.1



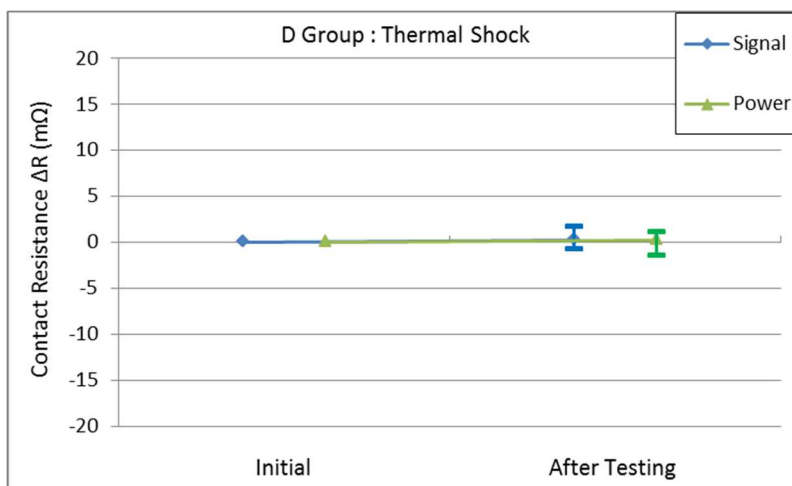
Graph.2



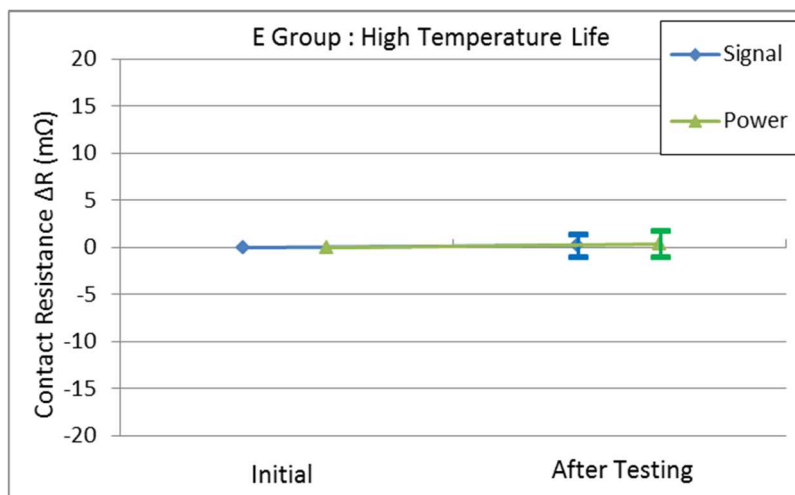
Graph.3



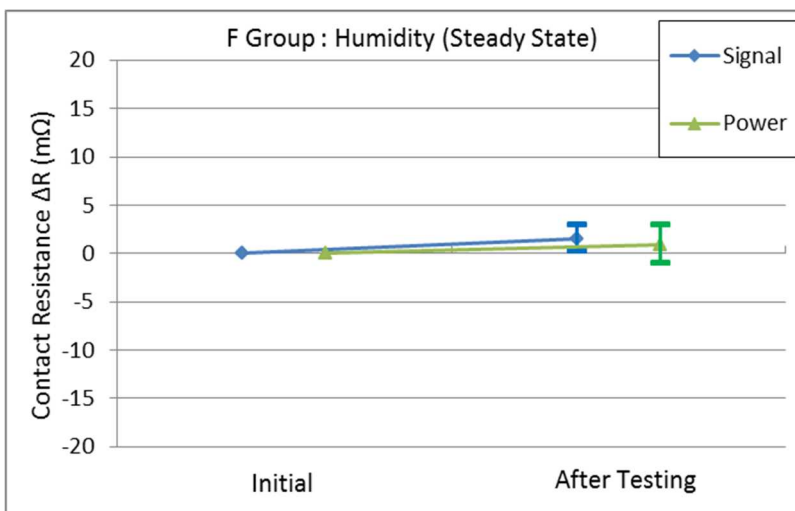
Graph.4



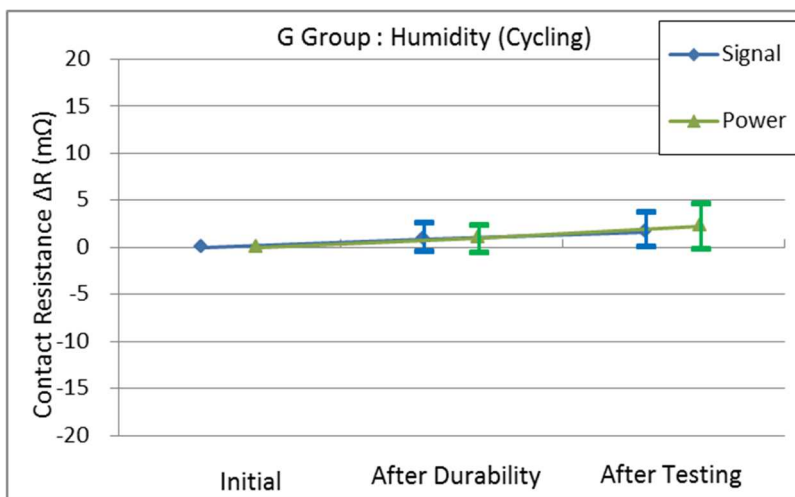
Graph.5



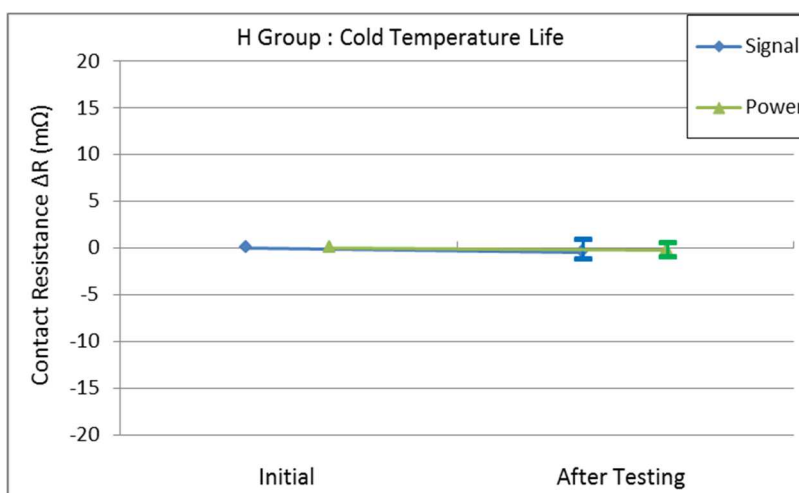
Graph.6



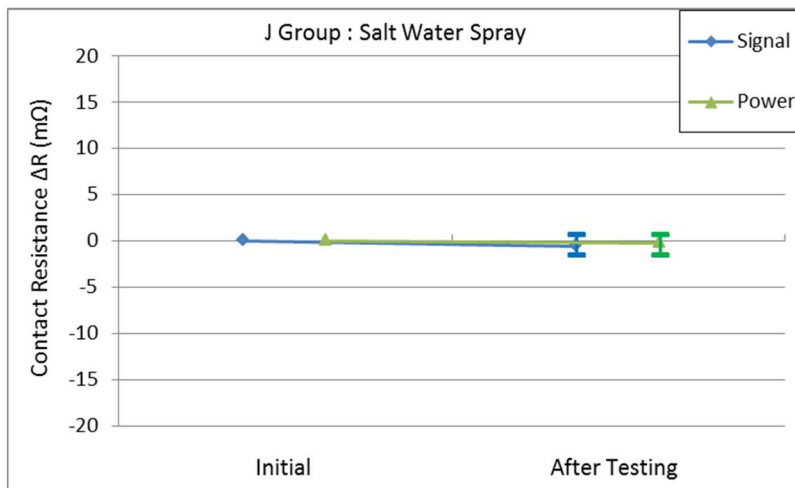
Graph.7



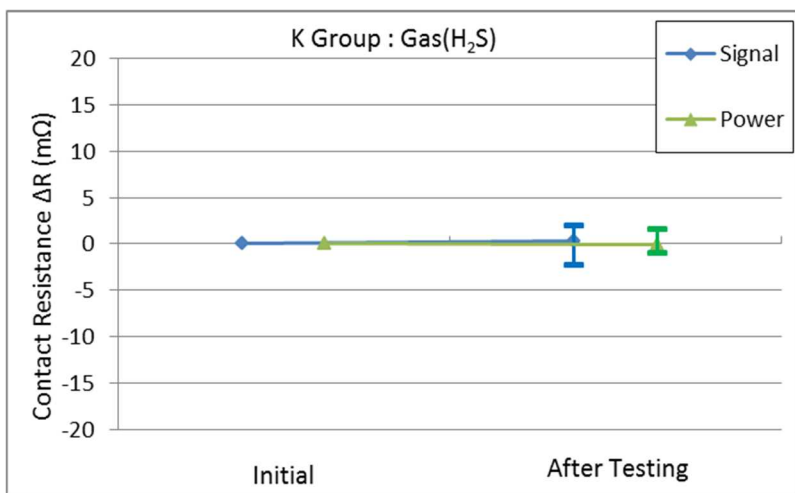
Graph.8



Graph.9



Graph.10



Graph.11