

MHF[®] 4 Connector

Part No. Plug: 20611-001R Receptacle: 20449-001E-**

Test Report

Product Specification no. PRS-2530

| | | | | | |
|------|--------|-------------------|-------------|------------|-------------|
| 3 | T21110 | October 29, 2021 | K. Ikeshita | | M. Takemoto |
| 2 | T19170 | December 13, 2019 | S.Kamada | S.Suzuki | Y.Shimada |
| 1 | T19022 | April 4, 2019 | S.Kamada | | T.Hirakawa |
| 0 | T19017 | February 7, 2019 | H.Takahashi | T.Yamauchi | T.Hirakawa |
| Rev. | ECN | Date | Prepared by | Checked by | Approved by |

1. 目的

MHF 4 コネクタの性能を PRS-2530 に基づいて評価する。

2. 試料

- (1) Plug: 20611-001R
- (2) Receptacle: 20449-001E-**

3. 試験順序

全ての評価は Table 1 の試験順序に従って行った。

4. 結果

Table 2、シート 7 以降参照。試験条件の詳細は PRS-2530 参照。

5. 結論

全ての資料が製品規格（PRS-2530）の必要条件を満足した。

Table 1 試験順序と試料数

| 試験項目 | グループ | | | | | | | | | | | | | | |
|------------|------|----|----|----|---------|----|---------|---------|---------|---------|---------|---------|---------|----|----|
| | A | B | C | D | E | F | G | H | J | K | L | M | N | P | Q |
| 接触抵抗 | | | | | 1, 3 | | 1, 3 | 1, 3 | 1, 5 | 1, 5 | 1, 3 | 1, 3 | 1, 3 | | |
| 絶縁抵抗 | | | | | | | | | 2, 6 | 2, 6 | | | | | |
| 耐電圧 | 1 | | | | | | | | 3, 7 | 3, 7 | | | | | |
| VSWR | | 1 | | | | | | | | | | | | | |
| 抜去力 | | | 1 | | | | | | | | | | | | |
| 引張強度 | | | | 1 | | | | | | | | | | | |
| 耐久性 | | | | | 2 | | | | | | | | | | |
| ケーブル保持力 | | | | | | 1 | | | | | | | | | |
| 耐振動性 | | | | | | | 2 | | | | | | | | |
| 耐衝撃性 | | | | | | | | 2 | | | | | | | |
| 湿度（定常状態） | | | | | | | | | 4 | | | | | | |
| 熱衝撃 | | | | | | | | | | 4 | | | | | |
| 高温寿命 | | | | | | | | | | | 2 | | | | |
| 硫化水素ガス | | | | | | | | | | | | 2 | | | |
| 塩水噴霧 | | | | | | | | | | | | | 2 | | |
| 半田付け性 | | | | | | | | | | | | | | 1 | |
| 半田耐熱性 | | | | | | | | | | | | | | | 1 |
| 試料数 (pcs.) | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |

※グループ表中の番号は、試験順序を示す。

Table 2-1 試験結果

| グループ | 試験項目 | 規格 | 試料数 | 単位 | 平均 | 最大 | 最小 | S | 判定 | |
|---------------|---------------|------------------------------|----------|------|-------|-------|------|-------|-------|------|
| | 測定項目 | | | | | | | | | |
| A | 耐電圧 | | | | | | | | | |
| | | 規格: 沿面放電, 空中放電, 絶縁破壊等の異常の無き事 | | | | | | | | |
| | After testing | 異常なき事 | 10 | - | 異常なし | | | | Pass | |
| B | VSWR | | | | | | | | | |
| | Plug | | | | | | | | | |
| | | 0.1~3.0GHz | 1.3 MAX. | 10 | - | 1.239 | 1.25 | 1.22 | 0.013 | Pass |
| | | 3.0~6.0GHz | 1.5 MAX. | | - | 1.377 | 1.38 | 1.37 | 0.009 | Pass |
| | Receptacle | | | | | | | | | |
| | | 0.1~3.0GHz | 1.3 MAX. | 10 | - | 1.138 | 1.14 | 1.14 | 0.002 | Pass |
| | 3.0~6.0GHz | 1.4 MAX. | - | | 1.123 | 1.14 | 1.11 | 0.017 | Pass | |
| C | 抜去力 | | | | | | | | | |
| | Initial | 4N MIN. | 10 | N | 13.11 | 13.8 | 12.6 | 0.44 | Pass | |
| | After testing | 2N MIN. | | | 8.48 | 9.3 | 7.7 | 0.59 | Pass | |
| D | 引張強度 | | | | | | | | | |
| | After testing | 5N MIN. | 10 | N | 7.04 | 7.60 | 6.35 | 0.37 | Pass | |
| E | 耐久性 | | | | | | | | | |
| | 中心導体接触抵抗 | | | | | | | | | |
| | Initial | 20mΩ MAX. | 10 | mΩ | 8.56 | 9.1 | 7.8 | 0.39 | Pass | |
| | After testing | - | | | 8.67 | 10.3 | 7.2 | 0.80 | - | |
| | ΔR | Δ20mΩ MAX. | | | 0.11 | 1.6 | -1.5 | 0.95 | Pass | |
| | 外部導体接触抵抗 | | | | | | | | | |
| | Initial | 20mΩ MAX. | 10 | mΩ | 5.86 | 6.9 | 5.2 | 0.50 | Pass | |
| | After testing | - | | | 7.31 | 9.8 | 6.0 | 1.06 | - | |
| | ΔR | Δ100mΩ MAX. | | | 0.93 | 2.9 | -2.6 | 1.42 | Pass | |
| | 外観 | | | | | | | | | |
| | | 規格: 機能を損なう異常無き事 | | | | | | | | |
| Initial | 異常なき事 | 10 | - | 異常なし | | | | Pass | | |
| After testing | | | | 異常なし | | | | Pass | | |
| F | ケーブル保持力 | | | | | | | | | |
| | 電流瞬断 | | | | | | | | | |
| | | 規格: 1μs以上の電流瞬断の無き事。 | | | | | | | | |
| | After testing | - | 10 | - | 瞬断無し | | | | Pass | |
| | 外観 | | | | | | | | | |
| | | 規格: 機能を損なう異常無き事 | | | | | | | | |
| Initial | 異常なき事 | 10 | - | 異常なし | | | | Pass | | |
| After testing | | | | 異常なし | | | | Pass | | |

Table 2-2 試験結果

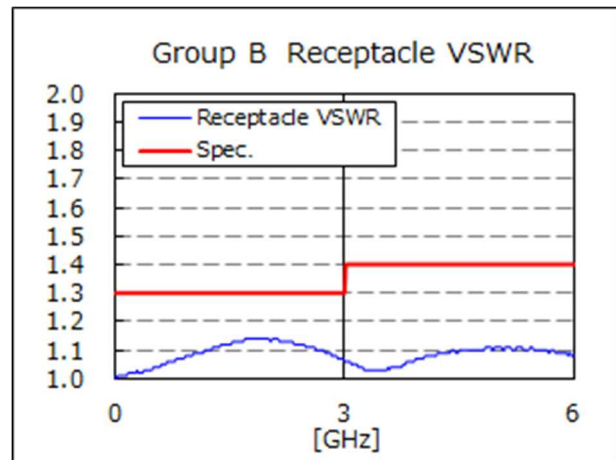
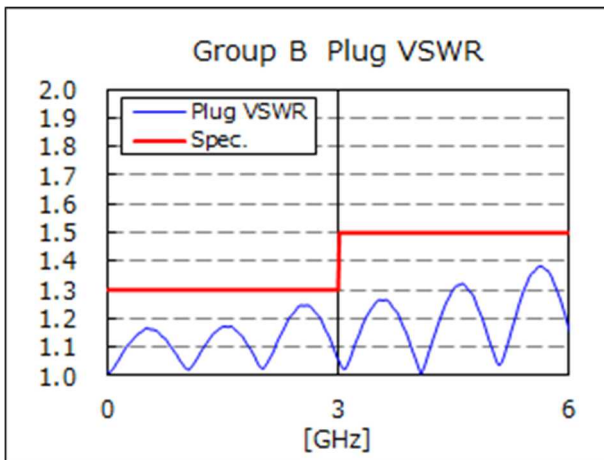
| グループ | 試験項目 | 規格 | 試料数 | 単位 | 平均 | 最大 | 最小 | S | 判定 | |
|------|----------------|---------------------------|-------------|----|------|---------------|------|------|------|------|
| | 測定項目 | | | | | | | | | |
| G | 耐振動性 | | | | | | | | | |
| | 中心導体接触抵抗 | | | | | | | | | |
| | | Initial | 20mΩ MAX. | 10 | mΩ | 7.73 | 8.7 | 6.4 | 0.76 | Pass |
| | | After testing | - | | | 7.68 | 8.7 | 6.1 | 0.85 | - |
| | | ΔR | Δ20mΩ MAX. | | | -0.05 | 0.7 | -0.6 | 0.50 | Pass |
| | 外部導体接触抵抗 | | | | | | | | | |
| | | Initial | 20mΩ MAX. | 10 | mΩ | 5.39 | 5.8 | 4.8 | 0.32 | Pass |
| | | After testing | - | | | 5.29 | 5.9 | 4.5 | 0.46 | - |
| | | ΔR | Δ100mΩ MAX. | | | -0.10 | 0.8 | -1.1 | 0.56 | Pass |
| | 電流瞬断 | | | | | | | | | |
| | | 規格：1μs以上の電流瞬断の無き事。 | | | | | | | | |
| | | After testing | - | 10 | - | 瞬断無し | | | | Pass |
| | 外観 | | | | | | | | | |
| | | 規格：機能を損なう異常無き事 | | | | | | | | |
| | | Initial | 異常なき事 | 10 | - | 異常なし | | | | Pass |
| | After testing | 異常なし | | | | Pass | | | | |
| H | 耐衝撃性 | | | | | | | | | |
| | 中心導体接触抵抗 | | | | | | | | | |
| | | Initial | 20mΩ MAX. | 10 | mΩ | 8.06 | 9.1 | 7.5 | 0.57 | Pass |
| | | After testing | - | | | 8.59 | 11.1 | 7.5 | 1.02 | - |
| | | ΔR | Δ20mΩ MAX. | | | 0.53 | 2.0 | -0.2 | 0.74 | Pass |
| | 外部導体接触抵抗 | | | | | | | | | |
| | | Initial | 20mΩ MAX. | 10 | mΩ | 5.08 | 5.6 | 4.6 | 0.29 | Pass |
| | | After testing | - | | | 5.40 | 5.7 | 4.9 | 0.25 | - |
| | | ΔR | Δ100mΩ MAX. | | | 0.32 | 0.7 | 0.0 | 0.22 | Pass |
| | 電流瞬断 | | | | | | | | | |
| | | 規格：1μs以上の電流瞬断の無き事。 | | | | | | | | |
| | | After testing | - | 10 | - | 瞬断無し | | | | Pass |
| | 外観 | | | | | | | | | |
| | | 規格：機能を損なう異常無き事 | | | | | | | | |
| | | Initial | 異常なき事 | 10 | - | 異常なし | | | | Pass |
| | After testing | 異常なし | | | | Pass | | | | |
| J | 湿度定常 | | | | | | | | | |
| | 中心導体接触抵抗 | | | | | | | | | |
| | | Initial | 20mΩ MAX. | 10 | mΩ | 8.69 | 10.5 | 7.1 | 0.82 | Pass |
| | | After testing | - | | | 9.89 | 10.7 | 8.7 | 0.75 | - |
| | | ΔR | Δ20mΩ MAX. | | | 1.21 | 2.0 | -0.3 | 0.75 | Pass |
| | 外部導体接触抵抗 | | | | | | | | | |
| | | Initial | 20mΩ MAX. | 10 | mΩ | 6.40 | 6.9 | 5.3 | 0.50 | Pass |
| | | After testing | - | | | 6.51 | 7.0 | 5.4 | 0.56 | - |
| | | ΔR | Δ100mΩ MAX. | | | 0.11 | 1.2 | -1.4 | 0.68 | Pass |
| | 絶縁抵抗 | | | | | | | | | |
| | | Initial | 500MΩ MIN. | 10 | MΩ | 10,000MΩ MIN. | | | | Pass |
| | | After testing | 100MΩ MIN. | | | 10,000MΩ MIN. | | | | Pass |
| | 耐電圧 | | | | | | | | | |
| | | 規格：沿面放電、空中放電、絶縁破壊等の異常無き事。 | | | | | | | | |
| | | After testing | 異常なき事 | 10 | - | 異常なし | | | | Pass |
| 外観 | | | | | | | | | | |
| | 規格：機能を損なう異常無き事 | | | | | | | | | |
| | Initial | 異常なき事 | 10 | - | 異常なし | | | | Pass | |
| | After testing | | | | 異常なし | | | | Pass | |

Table 2-3 試験結果

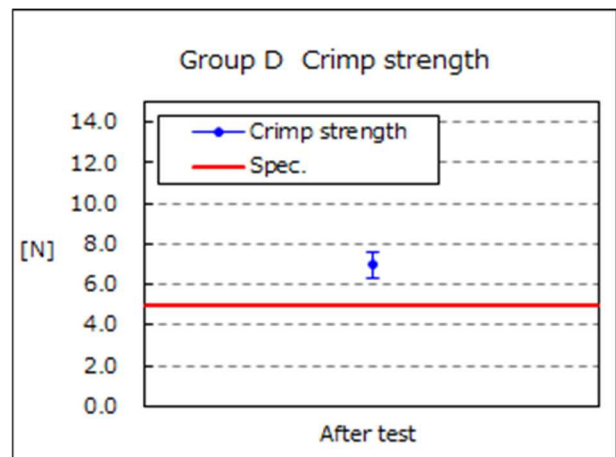
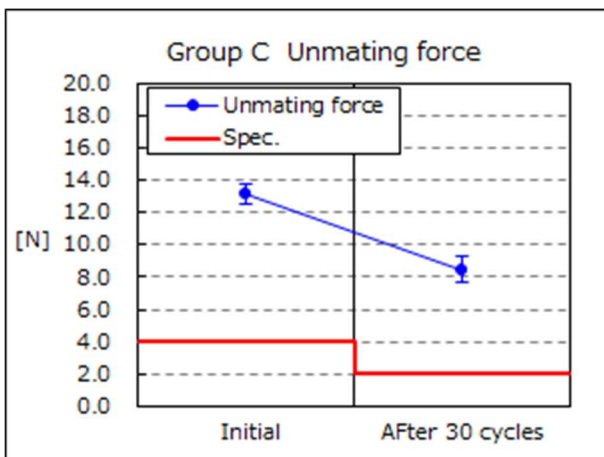
| グループ | 試験項目 | | 規 格 | 試料数 | 単位 | 平均 | 最大 | 最小 | S | 判定 | | |
|----------|----------------|---------------------------|-------------|-----|------|---------------|------|------|------|------|--|--|
| | 測定項目 | | | | | | | | | | | |
| K | 熱衝撃 | | | | | | | | | | | |
| | 中心導体接触抵抗 | | | | | | | | | | | |
| | | Initial | 20mΩ MAX. | 10 | mΩ | 6.99 | 9.4 | 5.1 | 1.19 | Pass | | |
| | | After testing | - | | | 7.41 | 9.6 | 4.4 | 1.69 | - | | |
| | | ΔR | Δ20mΩ MAX. | | | 0.42 | 2.7 | -5.0 | 2.05 | Pass | | |
| | 外部導体接触抵抗 | | | | | | | | | | | |
| | | Initial | 20mΩ MAX. | 10 | mΩ | 5.88 | 7.7 | 2.9 | 1.22 | Pass | | |
| | | After testing | - | | | 8.34 | 11.5 | 6.5 | 1.68 | - | | |
| | | ΔR | Δ100mΩ MAX. | | | 2.46 | 5.5 | 1.1 | 1.38 | Pass | | |
| | 絶縁抵抗 | | | | | | | | | | | |
| | | Initial | 500MΩ MIN. | 10 | MΩ | 10,000MΩ MIN. | | | | Pass | | |
| | | After testing | 100MΩ MIN. | | | 10,000MΩ MIN. | | | | Pass | | |
| | 耐電圧 | | | | | | | | | | | |
| | | 規格：沿面放電、空中放電、絶縁破壊等の異常無き事。 | | | | | | | | | | |
| | | After testing | 異常なき事 | 10 | - | 異常なし | | | | Pass | | |
| 外観 | | | | | | | | | | | | |
| | 規格：機能を損なう異常無き事 | | | | | | | | | | | |
| | Initial | 異常なき事 | 10 | - | 異常なし | | | | Pass | | | |
| | After testing | | | | 異常なし | | | | Pass | | | |
| L | 高温寿命 | | | | | | | | | | | |
| | 中心導体接触抵抗 | | | | | | | | | | | |
| | | Initial | 20mΩ MAX. | 10 | mΩ | 6.08 | 7.2 | 5.2 | 0.60 | Pass | | |
| | | After testing | - | | | 7.16 | 7.7 | 6.0 | 0.62 | - | | |
| | | ΔR | Δ20mΩ MAX. | | | 1.08 | 1.9 | 0.5 | 0.43 | Pass | | |
| | 外部導体接触抵抗 | | | | | | | | | | | |
| | | Initial | 20mΩ MAX. | 10 | mΩ | 5.24 | 6.8 | 4.3 | 0.93 | Pass | | |
| | | After testing | - | | | 11.03 | 24.9 | 5.8 | 5.66 | - | | |
| | | ΔR | Δ100mΩ MAX. | | | 5.79 | 18.3 | -0.4 | 5.56 | Pass | | |
| | 外観 | | | | | | | | | | | |
| | | 規格：機能を損なう異常無き事 | | | | | | | | | | |
| | | Initial | 異常なき事 | 10 | - | 異常なし | | | | Pass | | |
| | | After testing | | | | 異常なし | | | | Pass | | |
| | M | 硫化水素ガス | | | | | | | | | | |
| | | 中心導体接触抵抗 | | | | | | | | | | |
| | | Initial | 20mΩ MAX. | 10 | mΩ | 7.74 | 8.7 | 6.9 | 0.51 | Pass | | |
| | | After testing | - | | | 10.88 | 18.4 | 8.5 | 2.82 | - | | |
| | | ΔR | Δ20mΩ MAX. | | | 3.14 | 10.6 | 0.9 | 2.79 | Pass | | |
| 外部導体接触抵抗 | | | | | | | | | | | | |
| | | Initial | 20mΩ MAX. | 10 | mΩ | 5.61 | 6.6 | 5.0 | 0.44 | Pass | | |
| | | After testing | - | | | 8.40 | 9.7 | 7.0 | 0.95 | - | | |
| | | ΔR | Δ100mΩ MAX. | | | 2.79 | 4.2 | 1.4 | 0.75 | Pass | | |
| 外観 | | | | | | | | | | | | |
| | | 規格：機能を損なう異常無き事 | | | | | | | | | | |
| | | Initial | 異常なき事 | 10 | - | 異常なし | | | | Pass | | |
| | | After testing | | | | 異常なし | | | | Pass | | |

Table 2-4 試験結果

| グループ | 試験項目 | 規格 | 試料数 | 単位 | 平均 | 最大 | 最小 | S | 判定 |
|----------------|-------------------------------|-------------|-----|------|------|------|------|------|------|
| N | 塩水噴霧 | | | | | | | | |
| | 中心導体接触抵抗 | | | | | | | | |
| | Initial | 20mΩ MAX. | 10 | mΩ | 8.15 | 9.4 | 6.4 | 0.92 | Pass |
| | After testing | - | | | 9.42 | 10.9 | 7.2 | 1.11 | - |
| | ΔR | Δ20mΩ MAX. | | | 1.27 | 2.6 | 0.3 | 0.67 | Pass |
| | 外部導体接触抵抗 | | | | | | | | |
| | Initial | 20mΩ MAX. | 10 | mΩ | 5.66 | 6.1 | 5.1 | 0.37 | Pass |
| | After testing | - | | | 8.09 | 8.9 | 7.0 | 0.60 | - |
| | ΔR | Δ100mΩ MAX. | | | 2.44 | 3.2 | 1.2 | 0.72 | Pass |
| | 外観 | | | | | | | | |
| 規格：機能を損なう異常無き事 | | | | | | | | | |
| Initial | 異常なき事 | 10 | - | 異常なし | | Pass | | | |
| After testing | 異常なき事 | | | 異常なし | | Pass | | | |
| P | 半田付け性 | | | | | | | | |
| | 規格：浸した面線の95%以上に半田がむらなく付着すること。 | | | | | | | | |
| | After testing | - | 10 | - | 異常なし | | Pass | | |
| Q | 半田耐熱性 | | | | | | | | |
| | 規格：機能を損なう変形及び、欠陥の無い事。 | | | | | | | | |
| | After testing | - | 10 | - | 異常なし | | Pass | | |

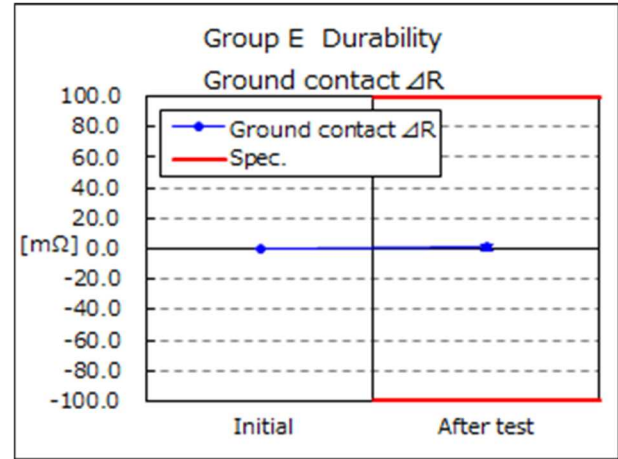
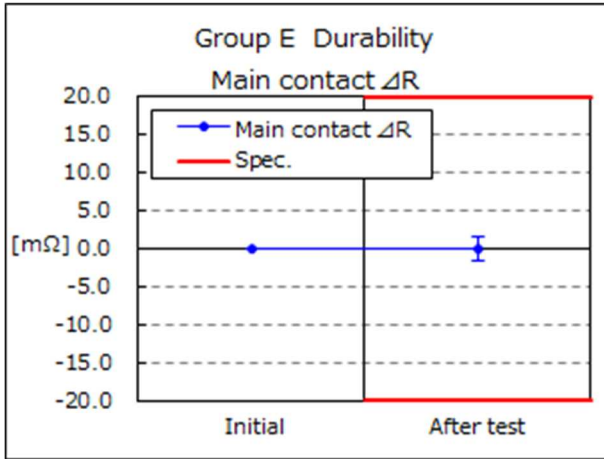


Graph 1 Group B VSWR

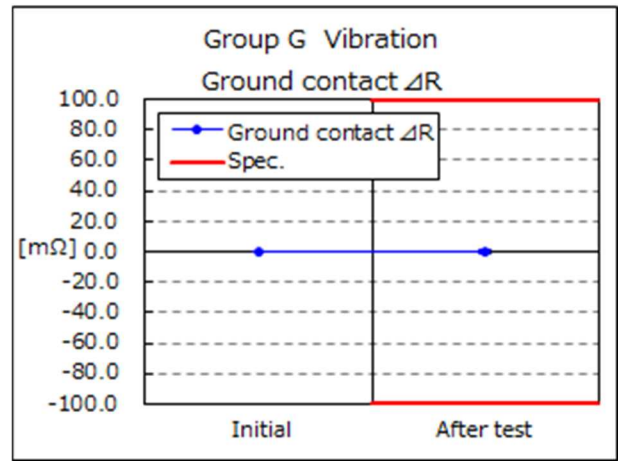
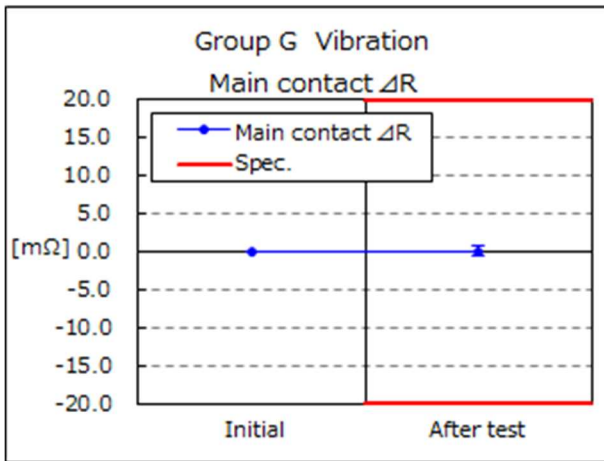


Graph 2 Group C 抜去力

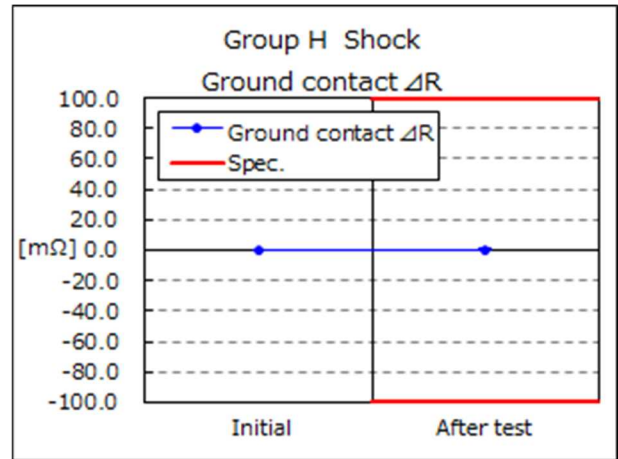
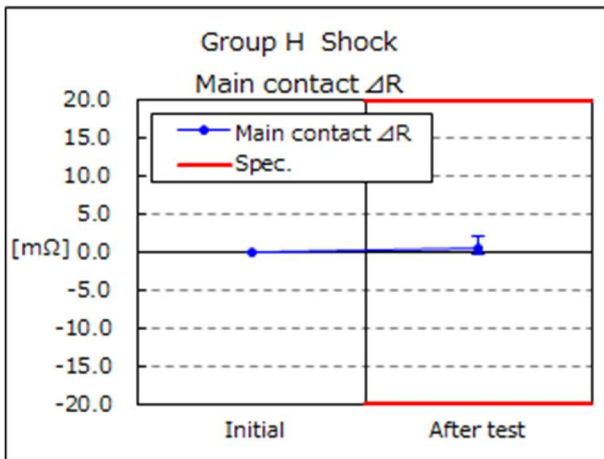
Graph 3 Group D 引張強度



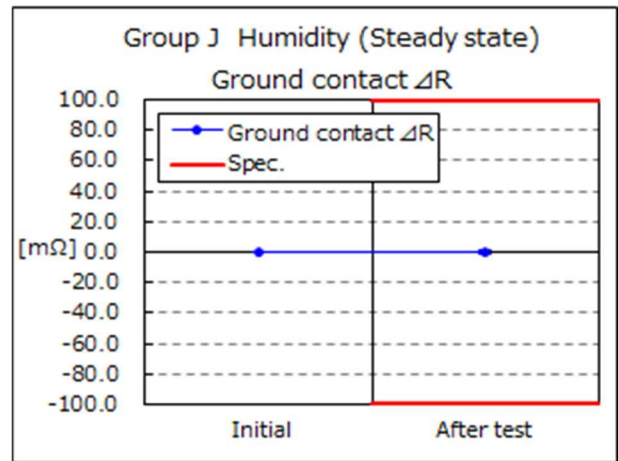
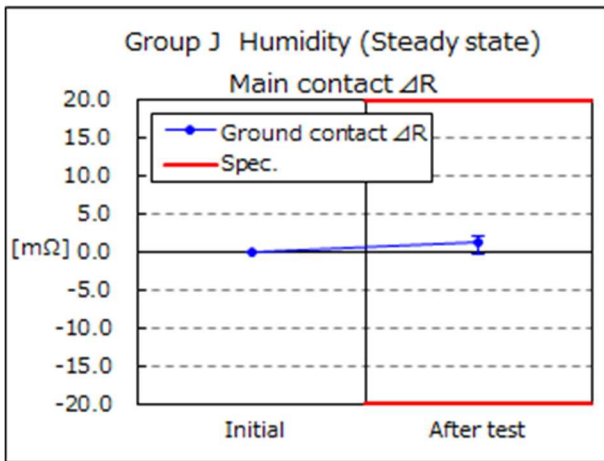
Graph 4 Group E 耐久性



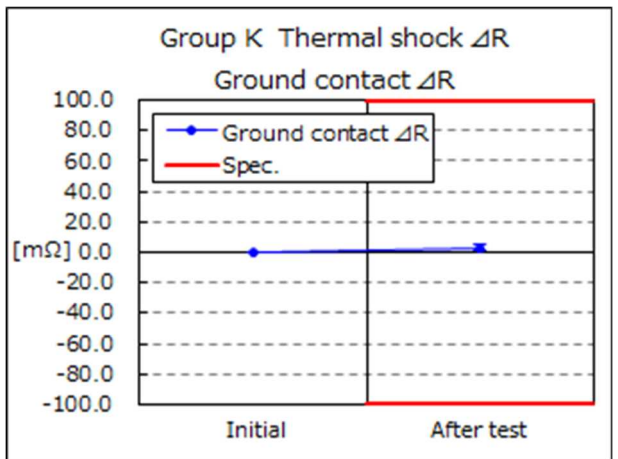
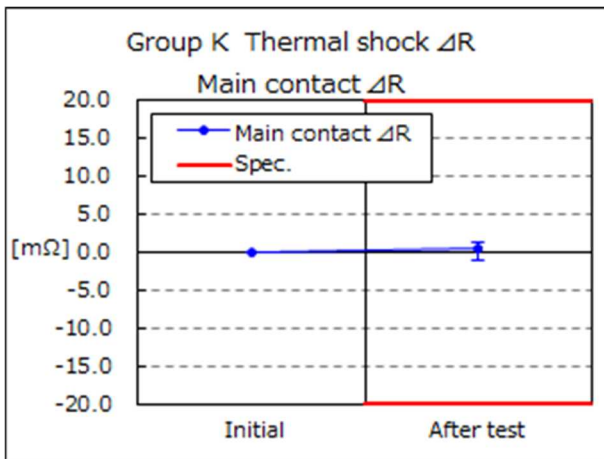
Graph 5 Group G 耐振動性



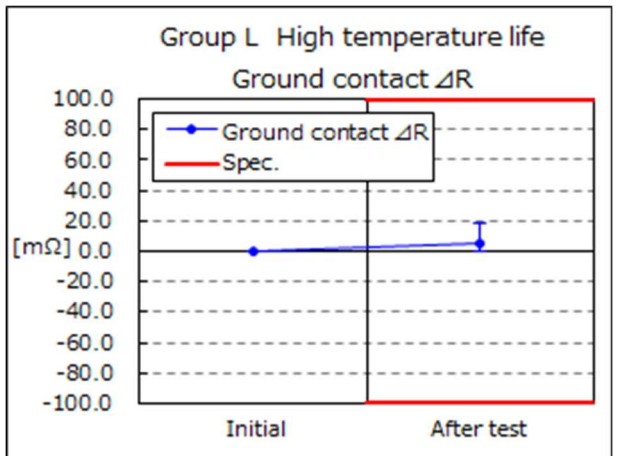
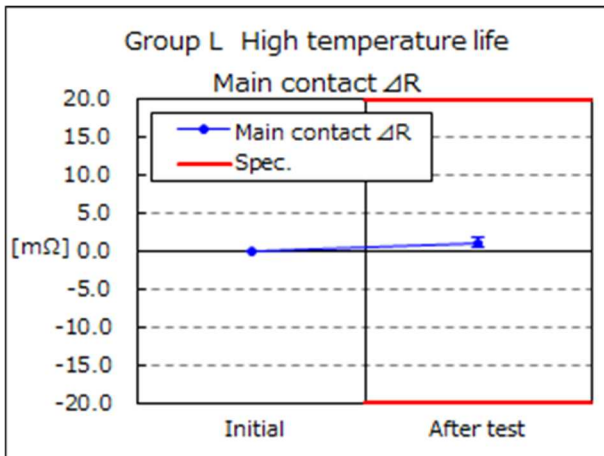
Graph 6 Group H 耐衝撃性



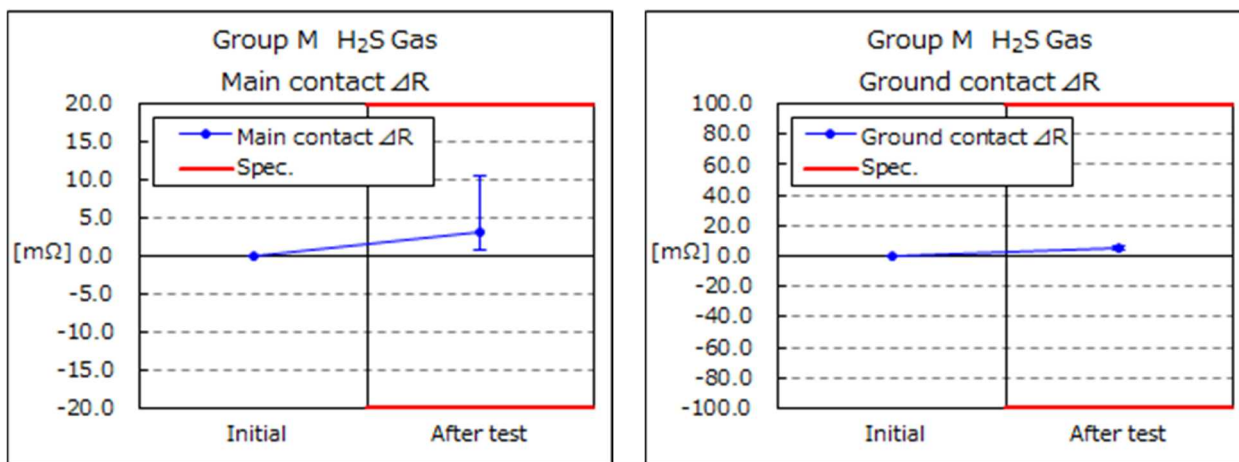
Graph 7 Group J 湿度 (定常状態)



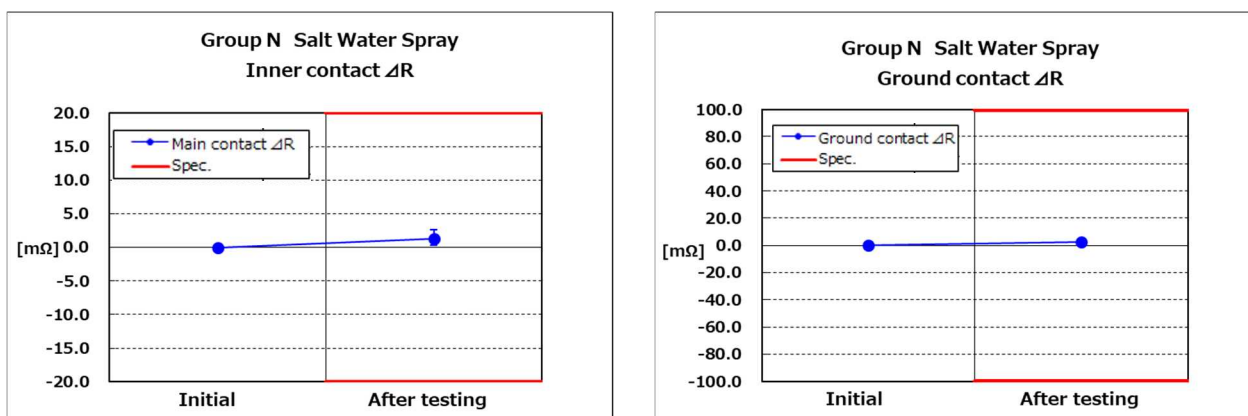
Graph 8 Group K 熱衝擊



Graph 9 Group L 高温寿命



Graph 10 Group M 硫化水素ガス



Graph 11 Group N 塩水噴霧