MHF®-TI Connector

Part No. Plug: 20859-001R-0* Receptacle: 20860-001E-0*

Test Report

Product Specification no. PRS-2573

Rev.	ECN	Date	Prepared by	Checked by	Approved by
3	T25005	January 30, 2025	T. Takuno	-	K. Yufu
2	T21044	June 24, 2021	S. Taguchi	-	M. Takemoto
1	T20043	July 7, 2020	K. Tanaka	Y. Fukumoto	T. Yamauchi
0	T20012	January 28, 2020	K. Tanaka	T. Yamauchi	Y. Shimada

1. Purpose

To evaluate the performance of MHF-TI Connector in accordance with PRS-2573.

2. Specimen

(1) MHF-TI PLUG （Part No. 20859-001R-01）
Cable : AWG#25 coaxial cable (jacket diameter 3.00 mm)
(2) MHF-TI RECEPTACLE （Part No. 20860-001E-0*）

3. Test Sequence

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

4. Result

See Table 2, and graphs following Graph 1-13.
For the details of the testing conditions and requirements, see PRS-2573.
The “n” in the tables show the number of measurement points.

5. Conclusion

All the specimens met the requirements of PRS-2573.

Table 1 Test Sequence and Sample Quantity

Test Item	Group															
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q
Contact Resistance			1,3			1,3	1,3	1,3	1,3	1,5	1,5	1,5	1,3			
Insulation Resistance										2,6	2,6	2,6				
D. W. Voltage										3,7	3,7	3,7				
VSWR	1															
Mating Force		1														
Durability			2													
Mating lock strength				1												
Cable Retention Force					1											
Vibration						2										
Shock							2									
High Temperature Life								2								
Low Temperature Life									2							
Humidity(Steady state)										4						
Thermal shock											4					
Temperature and humidity cycling												4				
SO_2 gas													2			
Sn whisker														1		
Solder ability															1	
Soldering heat resistance																1
Specimen Quantity.	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

※Numbers indicate sequence in which tests are performed.

Table 2-1 Test Result

Group	Test items / Measurements	Pass criteria	n	Unit	AVE.	MAX.	MIN.	S	Judgement
A	Transmission characteristics								
	Voltage Standing Wave Ratio								
	0.1～3.0GHz	1.5 MAX.	5	-	1.248	1.29	1.20	0.034	Pass
	3.0～6.0GHz	1.5 MAX.		-	1.363	1.40	1.34	0.018	Pass
B	Mating force								
	Initial	45 N MAX.	5	N	11.45	13.4	9.2	1.58	Pass
	After 30 cycles	45 N MAX.			5.96	6.9	4.6	1.03	Pass
C	Durability								
	Contact resistance of main contact								
	Initial	20mΩ MAX.	5	mΩ	4.97	5.1	4.7	0.15	Pass
	After testing	30mΩ MAX.			4.75	4.9	4.5	0.18	Pass
	Contact resistance of ground contact								
	Initial	15mΩ MAX.	5	mΩ	2.15	2.4	1.8	0.29	Pass
	After testing	25mΩ MAX.			2.38	2.6	2.1	0.24	Pass
D	Mating lock strength								
	After testing	110 N MIN.	5	N	185.96	194.3	175.5	3.27	Pass
E	Cable retention force								
	After testing	90 N MIN.	5	N	142.72	150.3	136.6	5.48	Pass
F	Vibration								
	Contact resistance of main contact								
	Initial	20mΩ MAX.	5	mΩ	5.07	5.2	4.9	0.14	Pass
	After testing	30mΩ MAX.			6.14	7.5	5.4	0.89	Pass
	外部導体接触抵抗／Contact resistance of ground contact								
	Initial	15mΩ MAX.	5	mΩ	2.69	2.8	2.6	0.10	Pass
	After testing	25mΩ MAX.			2.73	2.9	2.2	0.30	Pass
	Electrical discontinuity								
	Pass criteria: No electrical discontinuity greater than 1μs shall occur.								
	After testing	-	5	-	No discontinity				Pass
	Appearance								
	After testing	No abnormality	5	-	No abnormality				Pass

Table 2-2 Test Result

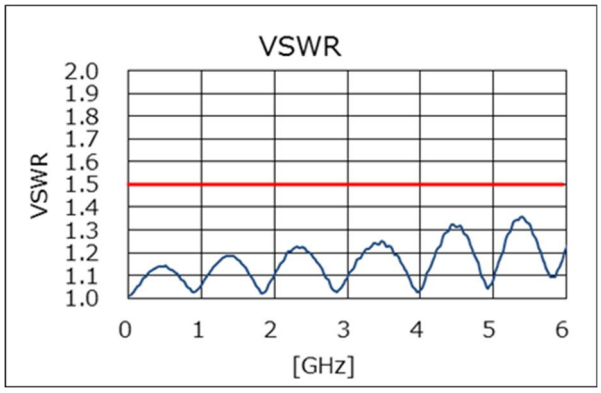
Group	Test items / Measurements	Pass criteria	n	Unit	AVE.	MAX.	MIN.	S	Judgement
G	Shock								
	Contact resistance of main contact								
	Initial	20mΩ MAX.	5	mΩ	5.10	5.2	5.0	0.08	Pass
	After testing	30mΩ MAX.			6.06	7.3	5.5	0.71	Pass
	Contact resistance of ground contact								
	Initial	15mΩ MAX.	5	mΩ	2.72	2.8	2.6	0.07	Pass
	After testing	25mΩ MAX.			2.91	3.2	2.7	0.25	Pass
	Electrical discontinuity								
	Pass criteria: No electrical discontinuity greater than 1μs shall occur.								
	After testing	-	5	-	No discontinity				Pass
	Appearance								
	After testing	No abnormality	5	-	No abnormality				Pass
H	High Temperature Life								
	Contact resistance of main contact								
	Initial	20mΩ MAX.	5	mΩ	4.99	5.2	4.9	0.10	Pass
	After testing	30mΩ MAX.			10.00	12.6	7.8	2.04	Pass
	Contact resistance of ground contact								
	Initial	15mΩ MAX.	5	mΩ	2.66	2.8	2.6	0.07	Pass
	After testing	25mΩ MAX.			4.51	5.8	2.9	1.13	Pass
	Insulation resistance								
	Initial	500 MΩ MIN.	5	mΩ	10,000 MΩ MIN.				Pass
	After testing	100 MΩ MIN.			10,000 MΩ MIN.				Pass
	Appearance								
	After testing	No abnormality	5	-	No abnormality				Pass
I	Low temperature life								
	Contact resistance of main contact								
	Initial	20mΩ MAX.	5	mΩ	5.00	5.1	4.9	0.07	Pass
	After testing	30mΩ MAX.			5.52	5.9	5.2	0.34	Pass
	Contact resistance of ground contact								
	Initial	15mΩ MAX.	5	mΩ	2.76	2.9	2.7	0.06	Pass
	After testing	25mΩ MAX.			2.78	3.0	2.6	0.19	Pass
	Insulation resistance								
	Initial	500 MΩ MIN.	5	mΩ	10,000 MΩ MIN.				Pass
	After testing	100 MΩ MIN.			10,000 MΩ MIN.				Pass
	Appearance								
	Initial	No abnormality	5	-	No abnormality				Pass
	After testing	No abnormality			No abnormality				Pass

Table 2-3 Test Result

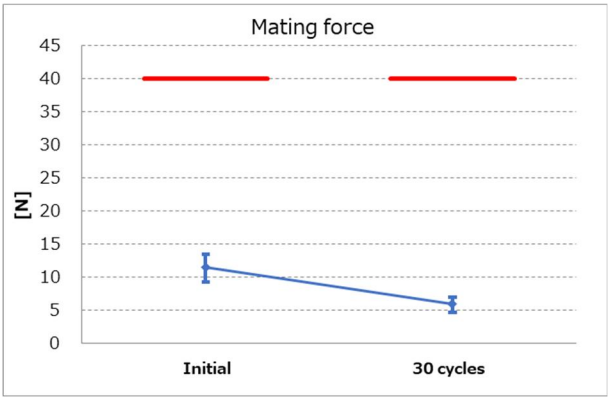
Group	Test items / Measurements	Pass criteria	n	Unit	AVE.	MAX.	MIN.	S	Judgement
J	Humidity(Steady state)								
	Contact resistance of main contact								
	Initial	20mΩ MAX.	5	mΩ	5.08	5.3	5.0	0.13	Pass
	After testing	30mΩ MAX.			5.93	6.2	5.7	0.20	Pass
	Contact resistance of ground contact								
	Initial	15mΩ MAX.	5	mΩ	2.73	2.8	2.6	0.07	Pass
	After testing	25mΩ MAX.			2.50	2.6	2.3	0.14	Pass
	Insulation resistance								
	Initial	500 MΩ MIN.	5	mΩ	10,000 MΩ MIN.				Pass
	After testing	100 MΩ MIN.			10,000 MΩ MIN.				Pass
	Dielectric withstanding voltage								
	No creeping discharge, flashover, nor insulator breakdown shall occur.								
	After testing	-	5	-	No abnormality				Pass
	Appearance								
	Initial	No abnormality	5	-	No abnormality				Pass
	After testing	No abnormality			No abnormality				Pass
K	Thermal shock								
	Contact resistance of main contact								
	Initial	20mΩ MAX.	5	mΩ	5.21	5.3	5.1	0.09	Pass
	After testing	30mΩ MAX.			8.44	10.4	6.9	1.42	Pass
	Contact resistance of ground contact								
	Initial	15mΩ MAX.	5	mΩ	2.71	2.8	2.6	0.08	Pass
	After testing	25mΩ MAX.			6.62	7.0	6.1	0.35	Pass
	Insulation resistance								
	Initial	500 MΩ MIN.	5	mΩ	10,000 MΩ MIN.				Pass
	After testing	100 MΩ MIN.			10,000 MΩ MIN.				Pass
	Dielectric withstanding voltage								
	No creeping discharge, flashover, nor insulator breakdown shall occur.								
	After testing	-	5	-	No abnormality				Pass
	Appearance								
	Initial	No abnormality	5	-	No abnormality				Pass
	After testing	No abnormality			No abnormality				Pass
L	Temperature and humidity cycling								
	Contact resistance of main contact								
	Initial	20mΩ MAX.	5	mΩ	5.19	5.5	5.0	0.21	Pass
	After testing	30mΩ MAX.			5.27	6.0	4.4	0.63	Pass
	Contact resistance of ground contact								
	Initial	15mΩ MAX.	5	mΩ	2.64	2.8	2.5	0.10	Pass
	After testing	25mΩ MAX.			2.83	3.5	2.2	0.51	Pass
	Insulation resistance								
	Initial	500 MΩ MIN.	5	mΩ	10,000 MΩ MIN.				Pass
	After testing	100 MΩ MIN.			10,000 MΩ MIN.				Pass
	Dielectric withstanding voltage								
	No creeping discharge, flashover, nor insulator breakdown shall occur.								
	After testing	-	5	-	No abnormality				Pass
	Appearance								
	Initial	No abnormality	5	-	No abnormality				Pass
	After testing	No abnormality			No abnormality				Pass

Table 2-4 Test Result

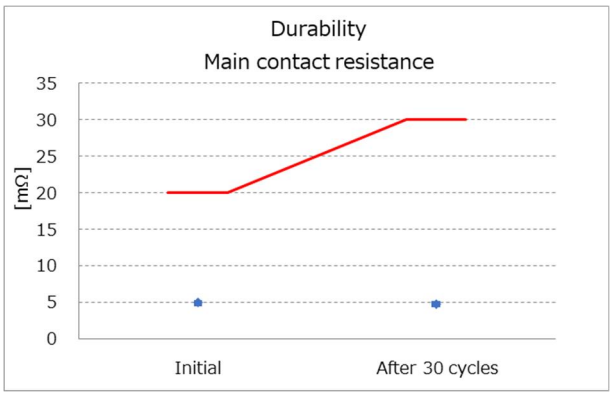
Group	Test items / Measurements	Pass criteria	n	Unit	AVE.	MAX.	MIN.	S	Judgement
M	SO2 Gas								
	Contact resistance of main contact								
	Initial	20mΩ MAX.	5	mΩ	5.05	5.1	5.0	0.06	Pass
	After testing	30mΩ MAX.			9.67	11.6	8.0	1.29	Pass
	Contact resistance of ground contact								
	Initial	15mΩ MAX.	5	mΩ	2.78	2.9	2.6	0.11	Pass
	After testing	25mΩ MAX.			5.49	7.1	4.0	1.13	Pass
	Appearance								
	Initial	No abnormality	5	-	No abnormality				Pass
	After testing	No abnormality			No abnormality				Pass
N	Sn whisker								
	Appearance								
	Pass criteria: No outbreak of whisker more than 50μm.								
	<Mating condition>								
	Condition 1 After testing	50μm MAX.	5	μm	50μm MAX.				Pass
	Condition 2 After testing	50μm MAX.	5		50μm MAX.				Pass
	Condition 3 After testing	50μm MAX.	5		50μm MAX.				Pass
	<Plug only>								
	Condition 1 After testing	50μm MAX.	5	μm	50μm MAX.				Pass
	Condition 2 After testing	50μm MAX.	5		50μm MAX.				Pass
	Condition 3 After testing	50μm MAX.	5		50μm MAX.				Pass
	<Receptacle only>								
	Condition 1 After testing	50μm MAX.	5	μm	50μm MAX.				Pass
	Condition 2 After testing	50μm MAX.	5		50μm MAX.				Pass
	Condition 3 After testing	50μm MAX.	5		50μm MAX.				Pass
P	Solder ability								
	Pass criteria: More than 95% of the dipped surface shall be evenly wet.								
	After testing	-	5	-	No abnormality				Pass
Q	Soldering Heat Resistance								
	Appearance								
	Pass criteria: No abnormality adversely affecting the performance shall not occur.								
	After testing	No abnormality	5	-	No abnormality				Pass

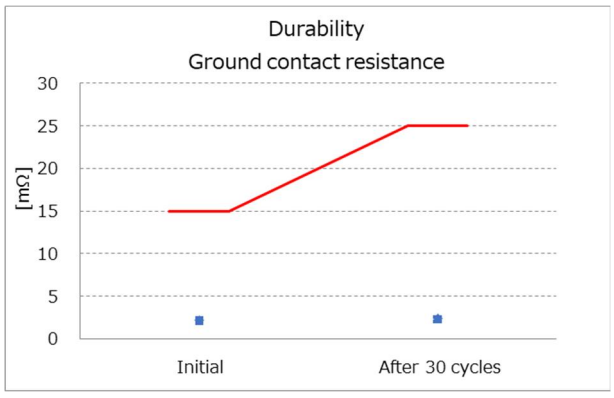


(Graph 1) VSWR

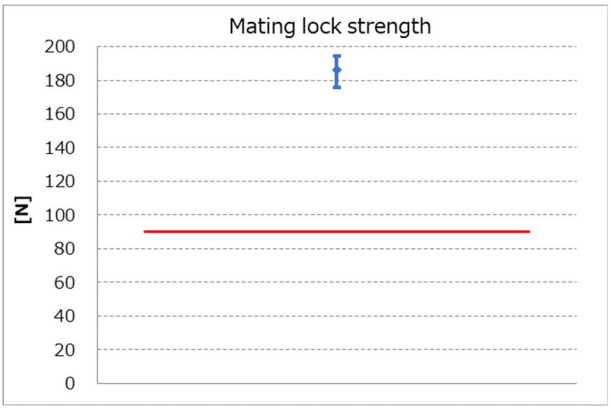


(Graph 2) Mating force

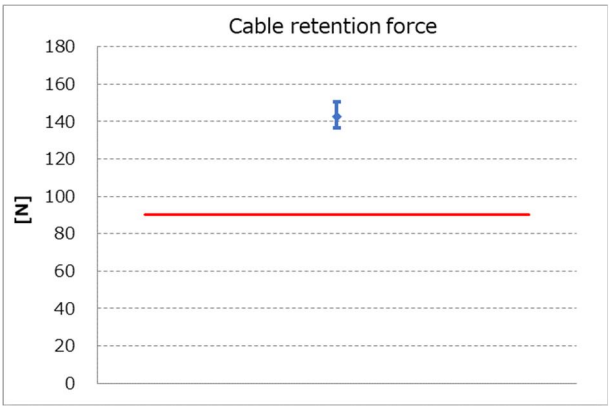




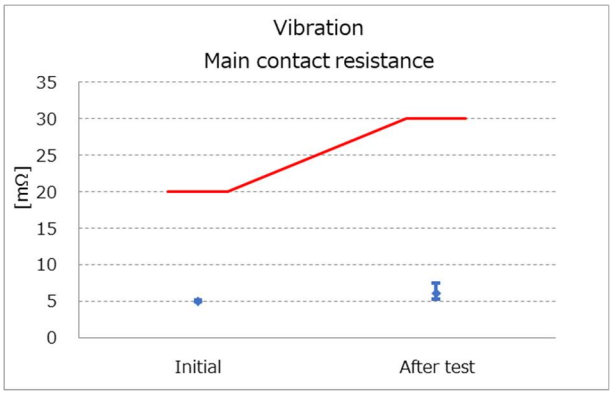
(Graph 3) Durability

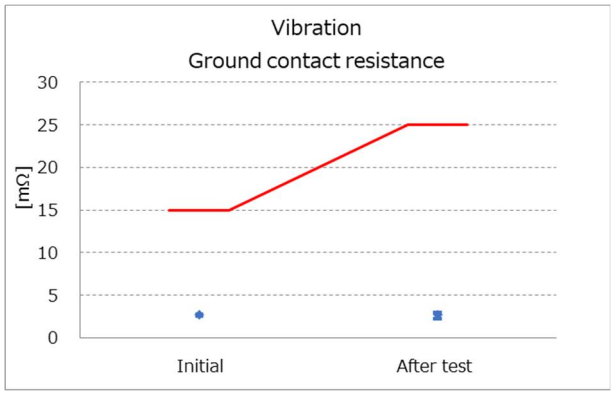


(Graph 4) Mating lock strength

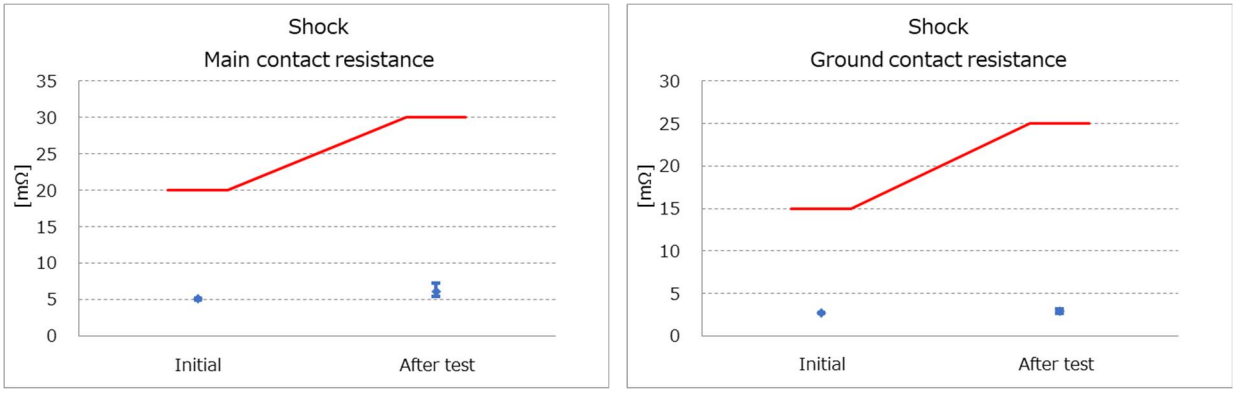


(Graph 5) Cable Retention Force

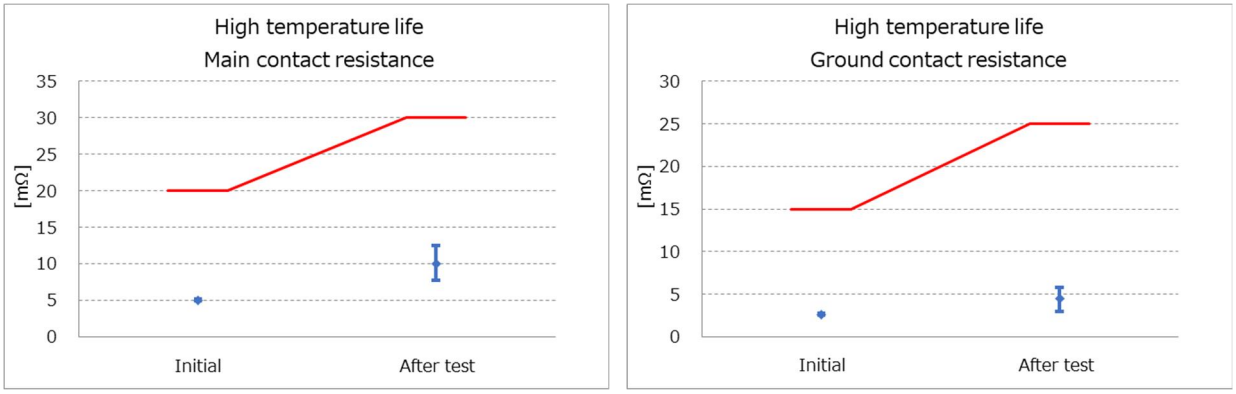




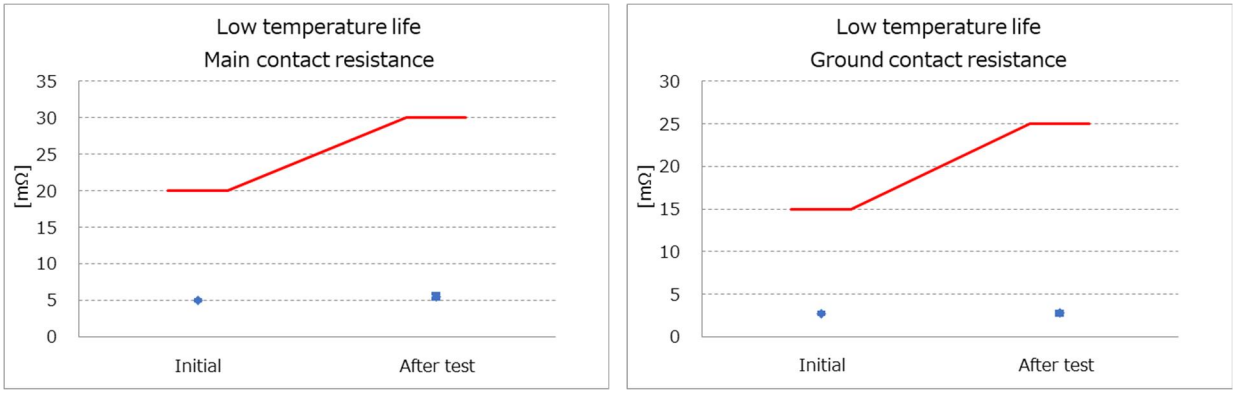
(Graph 6) Vibration



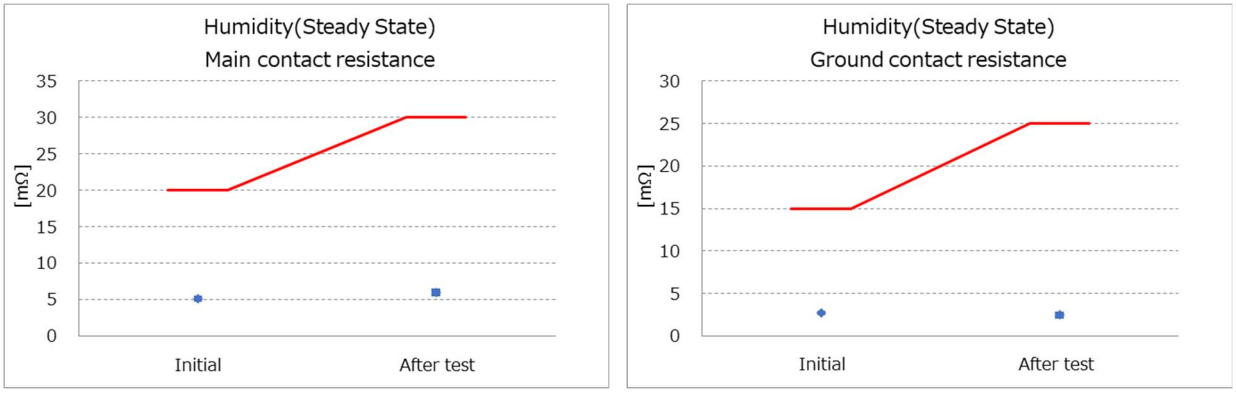
(Graph 7) Shock



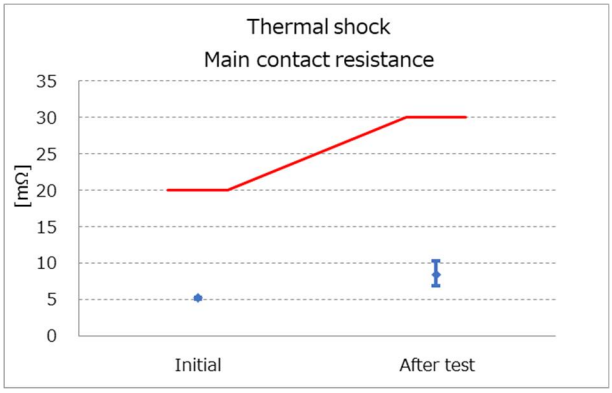
(Graph 8) High Temperature Life

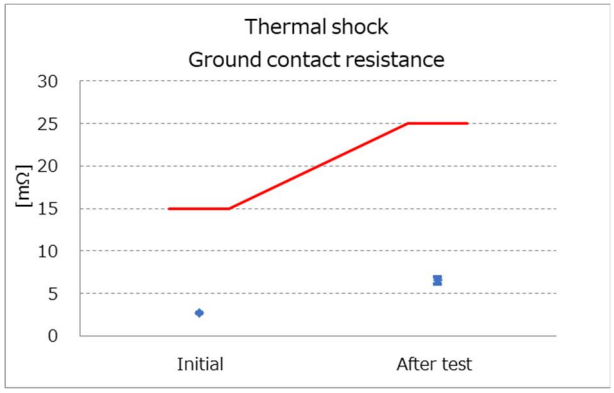


(Graph 9) Low Temperature Life

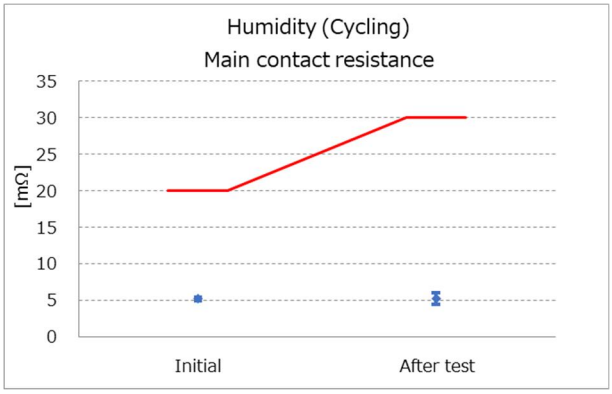


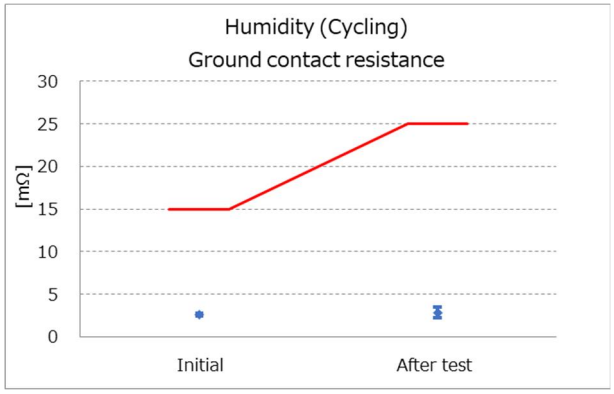
(Graph 10) Humidity(Steady state)



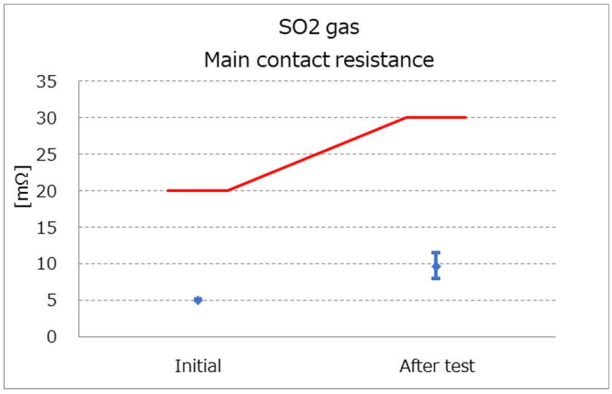


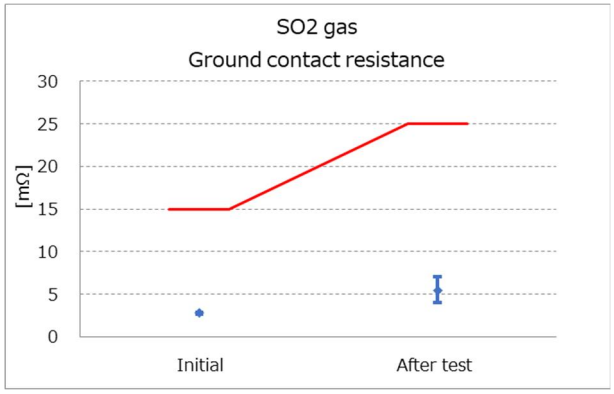
(Graph 11) Thermal shock





(Graph 12) Temperature and humidity cycling





(Graph 13) SO2 gas