MHF®-A Connector

Part No. PLUG: 20428-001R RECEPTACLE: 20429-001E

Test Report

Product Specification no. PRS-1350

2	T22113	June 27, 2022	Y. Imaji	K. Yufu	Y. Hashimoto
1	T12114	July 6, 2012	C.S		E.K
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Rev.	ECN	Date	Prepared by	Checked by	Approved by

1. Purpose

To evaluate the performance of MHF-A Connector in accordance with PRS-1350.

2. Specimen

20428-001R : (MHF-A PLUG)
20429-001E : (MHF-A RECEPTACLE)
Cable : AWG#32 coaxial cable /jacket diameter 1.13mm

3. Test Sequence

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

4. Result

See Table 2-1 to 2-4, Graph 1 to 22. For the details of the testing conditions and requirements, see PRS-1350.
The “n” in the tables show the number of measurement points.

5. Conclusion

All the specimens met the requirements of PRS-1350.

Table 1 Test Sequence and Sample Quantity

Test Item	Group													
	A	B	C	D	E	F	G	H	J	K	L	M	N	P
Contact Resistance				1,3	1,3	1,3	1,5	1,5	1,5	1,3	1,3	1,3		
Insulation Resistance							2,6	2,6	2,6					
Dielectric Withstanding Voltage							3,7	3,7	3,7					
VSWR	1													
Mating & Un-mating Force		1												
Cable Retention Force			1											
Durability				2										
Vibration					2									
Shock						2								
Humidity (Steady State)							4							
Humidity (Cycling)								4						
Thermal Shock									4					
High Temperature Life										2				
H2S Gas											2			
Salt Water Spray												2		
Solder Ability													1	
Soldering Heat Resistance (Reflow, Hand Soldering)														1
Sample Quantity	10	10	10	10	10	10	10	10	10	10	10	10	-	-
	5		-										10	10

※Numbers indicate test sequences

Table 2-1 Test Result

Group	Test items / Measurements	Specification	n	Unit	AVE.	MAX.	MIN.	S	Judgement
A	VSWR								
	Plug								
	0.1～3GHz	1.30 MAX.	10	-	1.140	1.16	1.11	0.011	Pass
	3～6GHz	1.50 MAX.		-	1.332	1.37	1.28	0.022	Pass
	6～9GHz	1.90 MAX.		-	1.558	1.65	1.48	0.042	Pass
	Receptacle								
	0.1～3GHz	1.30 MAX.	5	-	1.085	1.10	1.07	0.008	Pass
	3～6GHz	1.40 MAX.		-	1.214	1.25	1.18	0.021	Pass
	6～9GHz	1.50MAX.		-	1.302	1.35	1.25	0.030	Pass
B	Total mating force								
	Initial	15N MIN.	10	N	12.612	13.20	12.18	0.375	Pass
	After testing	15N MIN.			6.672	6.99	6.36	0.272	Pass
	Total unmating force								
	Initial	4N MIN.	10	N	10.880	12.50	10.00	1.008	Pass
	After testing	2N MIN.			6.260	6.90	5.70	0.532	Pass
C	Cable retention force								
	Initial	8N MIN.	10	N	16.788	17.94	15.06	1.091	Pass
D	Durability								
	Contact resistance of main contact								
	Initial	20mΩ MAX.	10	mΩ	7.416	8.16	6.54	0.628	Pass
	⊿R	⊿20mΩ MAX.			-4.113	-3.27	-4.75	0.629	Pass
	Contact resistance of Ground contact								
	Initial	20mΩ MAX.	10	mΩ	2.220	2.32	2.10	0.088	Pass
	⊿R	⊿20mΩ MAX.			0.630	0.80	0.40	0.176	Pass
	Appearance								
	Spec: No abnormality adversely affecting the performance shall occur.								
	Initial	No abnormality	10	-	No abnormality				Pass
	After testing				No abnormality				Pass
E	Vibration								
	Contact resistance of main contact								
	Initial	20mΩ MAX.	10	mΩ	6.493	7.16	6.18	0.393	Pass
	⊿R	⊿20mΩ MAX.			2.802	3.80	2.06	0.671	Pass
	Contact resistance of Ground contact								
	Initial	20mΩ MAX.	10	mΩ	4.986	5.26	4.72	0.232	Pass
	⊿R	⊿20mΩ MAX.			2.353	3.56	1.69	0.781	Pass
	Electrical discontinuity								
	Spec: No electrical discontinuity grater than 1μs shall occur.								
	After testing	-	10	-	No discontinity				Pass
	Appearance								
	Spec: No abnormality adversely affecting the performance shall occur.								
	Initial	No abnormality	10	-	No abnormality				Pass
	After testing				No abnormality				Pass

Table 2-2 Test Result

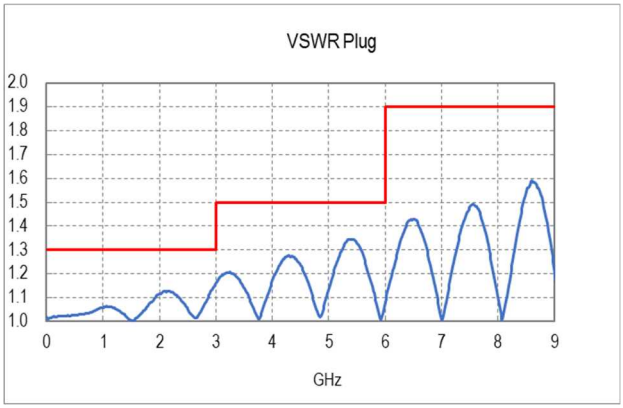
Group	Test items / Measurements	Specification	n	Unit	AVE.	MAX.	MIN.	S	Judgement
F	Shock								
	Contact resistance of main contact								
	Initial	20mΩ MAX.	10	mΩ	6.510	7.16	6.18	0.390	Pass
	⊿R	⊿20mΩ MAX.			2.779	3.39	1.82	0.584	Pass
	Contact resistance of Ground contact								
	Initial	20mΩ MAX.	10	mΩ	5.025	5.26	4.72	0.206	Pass
	⊿R	⊿20mΩ MAX.			2.252	3.91	1.38	0.979	Pass
	Electrical discontinuity								
	Spec: No electrical discontinuity grater than 1μs shall occur.								
	After testing	-	10	-	No discontinity				Pass
	Appearance								
	Spec: No abnormality adversely affecting the performance shall occur.								
	Initial	No abnormality	10	-	No abnormality				Pass
	After testing				No abnormality				Pass
G	Humidity(Steady State)								
	Contact resistance of main contact								
	Initial	20mΩ MAX.	10	mΩ	7.344	7.54	7.21	0.136	Pass
	⊿R	⊿20mΩ MAX.			3.754	4.25	2.98	0.521	Pass
	Contact resistance of Ground contact								
	Initial	20mΩ MAX.	10	mΩ	5.646	6.23	5.16	0.445	Pass
	⊿R	⊿20mΩ MAX.			2.076	2.38	1.42	0.384	Pass
	Insulation residence								
	Initial	500MΩ MIN.	10	MΩ	10,000MΩ MIN.				Pass
	After testing	100MΩ MIN.			10,000MΩ MIN.				Pass
	Dielectric withstanding voltage								
	Spec: No creeping discharge, flashover, no insulator breakdown shall occur.								
	After testing	-	10	-	No abnormality				Pass
	Appearance								
	Spec: No abnormality adversely affecting the performance shall occur.								
	Initial	No abnormality	10	-	No abnormality				Pass
	After testing				No abnormality				Pass
H	Humidity (Cycling)								
	Contact resistance of main contact								
	Initial	20mΩ MAX.	10	mΩ	6.881	7.18	6.26	0.361	Pass
	⊿R	⊿20mΩ MAX.			4.985	6.09	3.50	1.033	Pass
	Contact resistance of Ground contact								
	Initial	20mΩ MAX.	10	mΩ	4.910	5.30	4.63	0.267	Pass
	⊿R	⊿20mΩ MAX.			6.189	7.62	85.00	0.969	Pass
	Insulation residence								
	Initial	500MΩ MIN.	10	MΩ	10,000MΩ MIN.				Pass
	After testing	100MΩ MIN.			10,000MΩ MIN.				Pass
	Dielectric withstanding voltage								
	Spec: No creeping discharge, flashover, no insulator breakdown shall occur.								
	After testing	-	10	-	No abnormality				Pass
	Appearance								
	Spec: No abnormality adversely affecting the performance shall occur.								
	Initial	No abnormality	10	-	No abnormality				Pass
	After testing				No abnormality				Pass

Table 2-3 Test Result

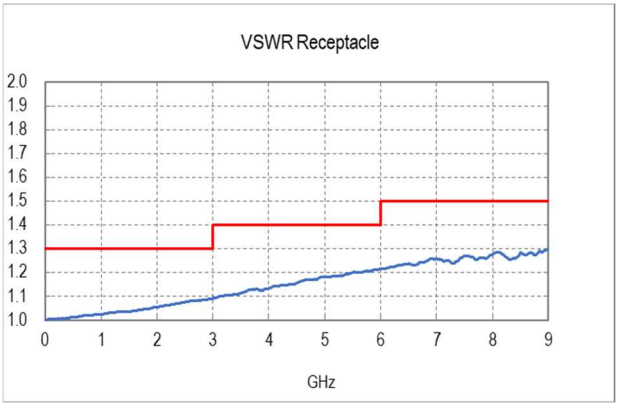
Group	Test items / Measurements	Specification	n	Unit	AVE.	MAX.	MIN.	S	Judgement
J	Thermal shock								
	Contact resistance of main contact								
	Initial	20mΩ MAX.	10	mΩ	6.657	6.83	6.36	0.179	Pass
	⊿R	⊿20mΩ MAX.			1.622	2.70	0.81	0.702	Pass
	Contact resistance of Ground contact								
	Initial	20mΩ MAX.	10	mΩ	5.151	5.49	5.00	0.198	Pass
	⊿R	⊿20mΩ MAX.			2.167	2.86	1.29	0.628	Pass
	Insulation residence								
	Initial	500MΩ MIN.	10	MΩ	10,000MΩ MIN.				Pass
	After testing	100MΩ MIN.			10,000MΩ MIN.				Pass
	Dielectric withstanding voltage								
	Spec: No creeping discharge, flashover, no insulator breakdown shall occur.								
	After testing	-	10	-	No abnormality				Pass
	Appearance								
	Spec: No abnormality adversely affecting the performance shall occur.								
	Initial	No abnormality	10	-	No abnormality				Pass
	After testing				No abnormality				Pass
K	High temperature life								
	Contact resistance of main contact								
	Initial	20mΩ MAX.	10	mΩ	6.283	6.96	5.29	0.628	Pass
	⊿R	⊿20mΩ MAX.			0.066	0.63	-0.76	0.594	Pass
	Contact resistance of Ground contact								
	Initial	20mΩ MAX.	10	mΩ	5.252	5.44	5.14	0.114	Pass
	⊿R	⊿20mΩ MAX.			0.781	0.91	0.56	0.144	Pass
	Appearance								
	Spec: No abnormality adversely affecting the performance shall occur.								
	Initial	No abnormality	10	-	No abnormality				Pass
	After testing				No abnormality				Pass
L	H2S gas								
	Contact resistance of main contact								
	Initial	20mΩ MAX.	10	mΩ	5.882	6.38	5.47	0.333	Pass
	⊿R	⊿20mΩ MAX.			2.649	4.68	1.06	1.473	Pass
	Contact resistance of Ground contact								
	Initial	20mΩ MAX.	10	mΩ	5.313	5.64	4.99	0.298	Pass
	⊿R	⊿20mΩ MAX.			-0.002	0.55	-0.41	0.371	Pass
	Appearance								
	Spec: No abnormality adversely affecting the performance shall occur.								
	Initial	No abnormality	10	-	No abnormality				Pass
	After testing				No abnormality				Pass

Table 2-4 Test Result

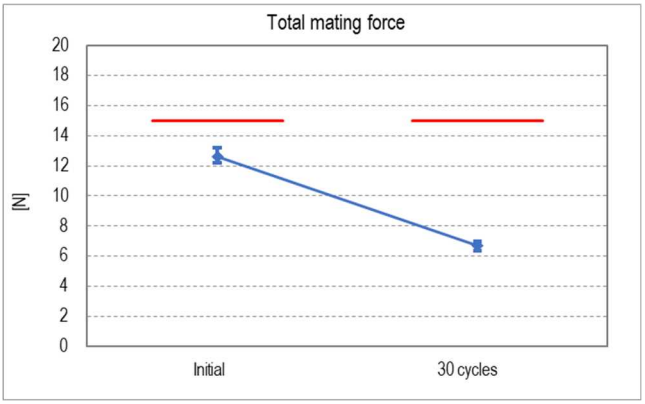
Group	Test items / Measurements	Specification	n	Unit	AVE.	MAX.	MIN.	S	Judgement
M	Saltwater spray								
	Contact resistance of main contact								
	Initial	20mΩ MAX.	10	mΩ	6.239	6.64	5.71	0.338	Pass
	⊿R	⊿20mΩ MAX.			1.610	3.07	-0.11	1.522	Pass
	Contact resistance of Ground contact								
	Initial	20mΩ MAX.	10	mΩ	5.367	5.98	4.59	0.499	Pass
	⊿R	⊿20mΩ MAX.			0.047	1.08	-0.57	0.633	Pass
	Appearance								
	Spec: No abnormality adversely affecting the performance shall occur.								
	Initial	No abnormality	10	-	No abnormality				Pass
	After testing				No abnormality				Pass
N	Solder ability								
	Spec: More than 95% of the dipped surface shall be evenly wet.								
	After testing	-	10	-	No abnormality				Pass
P	Reflow soldering heat resistance								
	Appearance								
	Spec: No abnormality adversely affecting the performance shall occur.								
	After testing	-	10	-	No abnormality				Pass



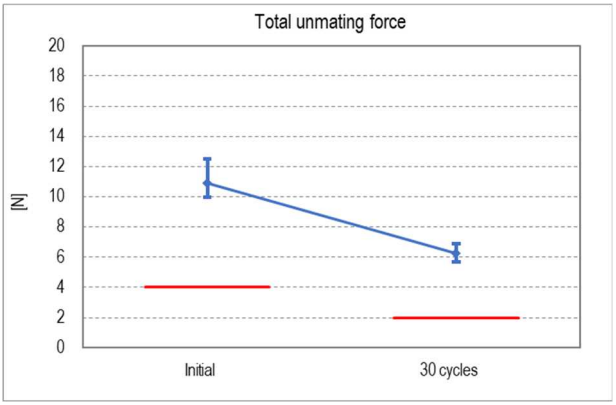
Graph 1 Group A VSWR Plug



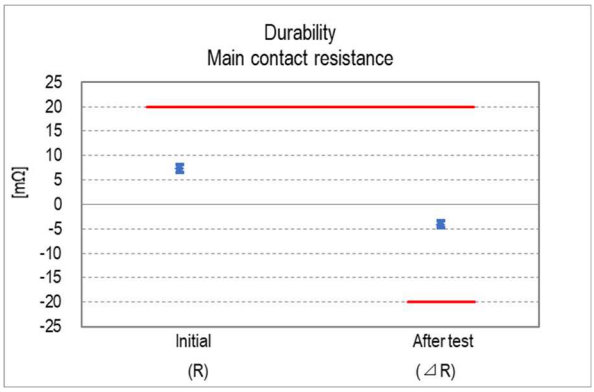
Graph 2 Group A VSWR Receptacle



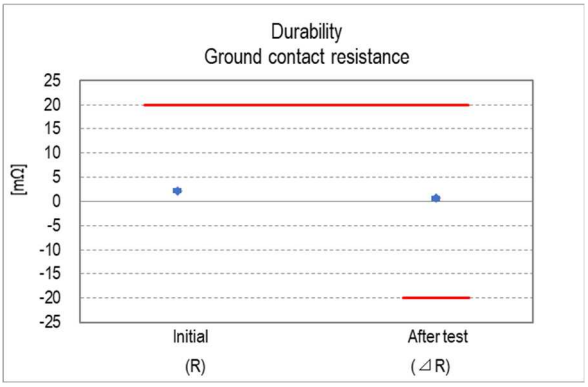
Graph 3 Group B Total mating force



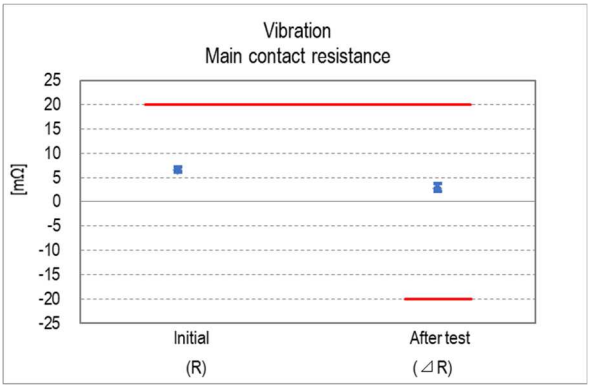
Graph 4 Group B Total unmating force



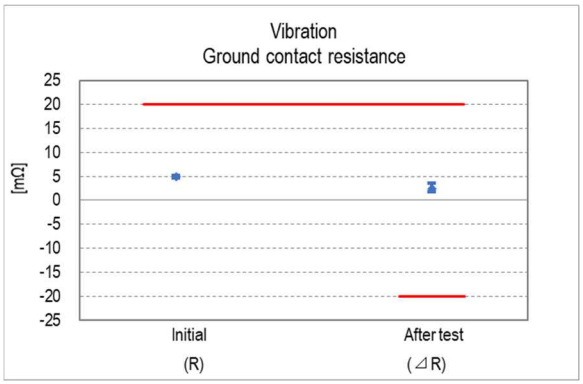
Graph 5 Group D Durability Main contact



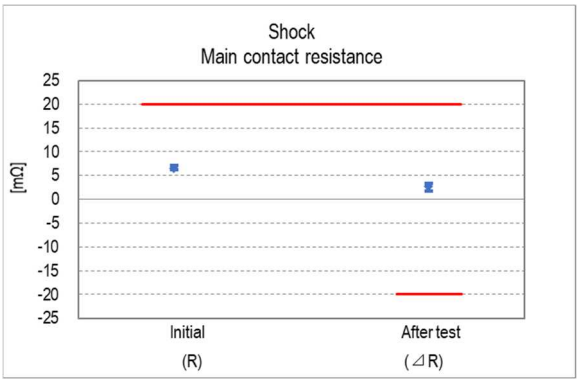
Graph 6 Group D Durability Ground contact



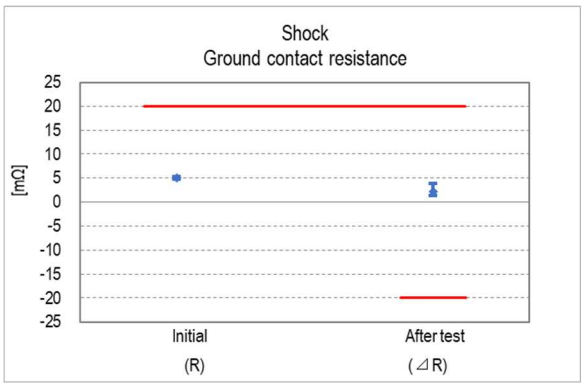
Graph 7 Group E Vibration Main contact



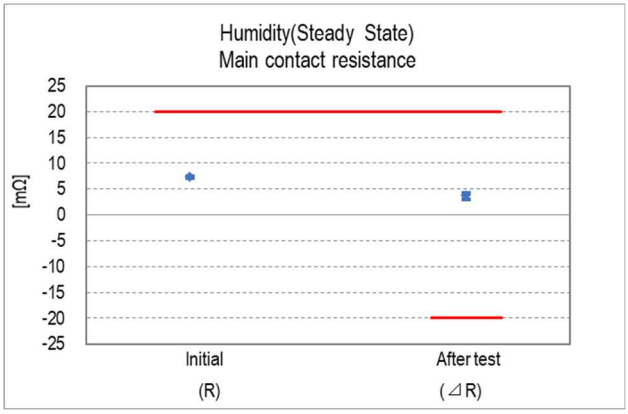
Graph 8 Group E Vibration Ground contact



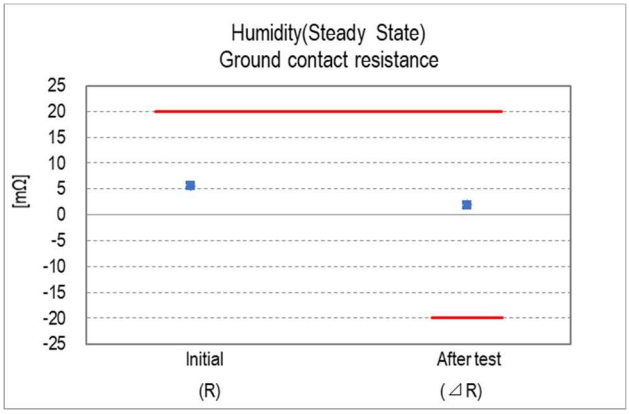
Graph 9 Group F Shock Main contact



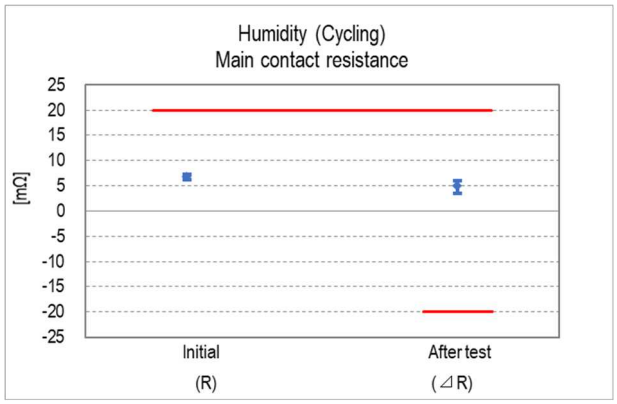
Graph 10 Group F Shock Ground contact



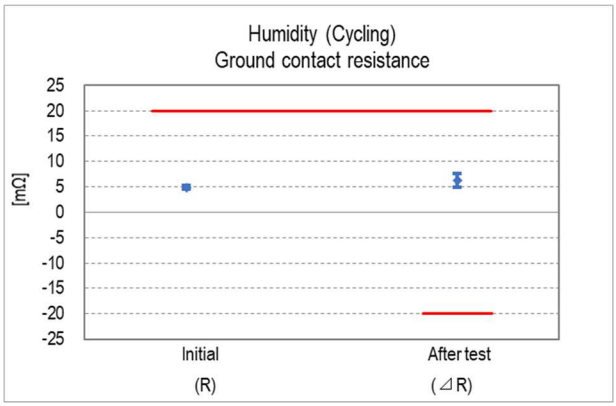
Graph 11 Group G Humidity(Steady state)
Main contact



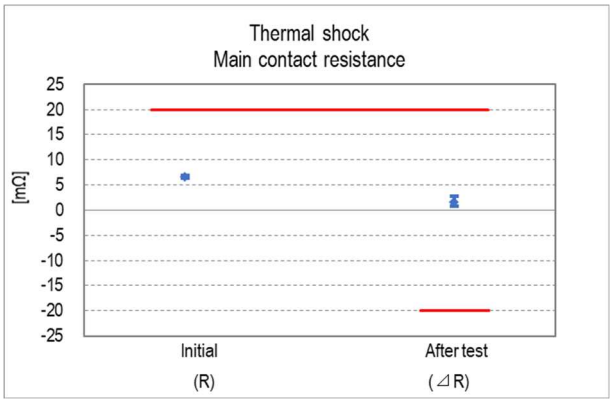
Graph 12 Group G Humidity(Steady state)
Ground contact



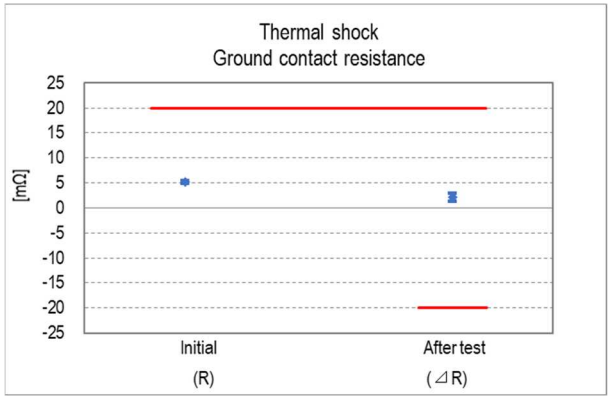
Graph 13 Group H Humidity(Cycling)
Main contact



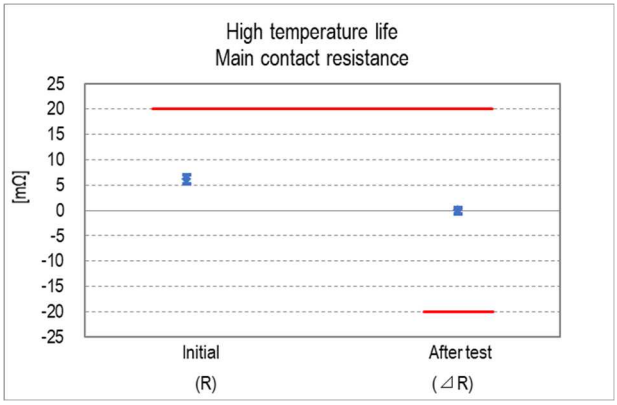
Graph 14 Group H Humidity(Cycling)
Ground contact



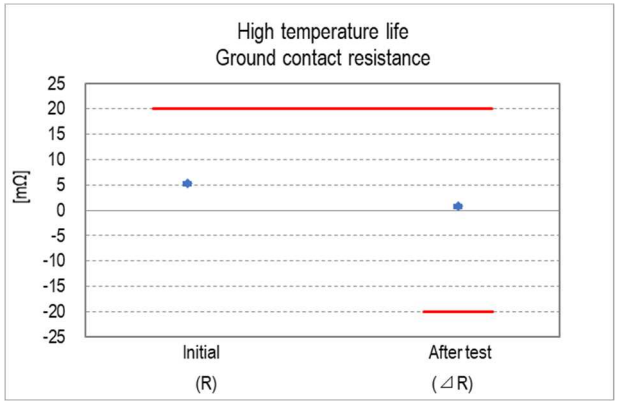
Graph 15 Group J Thermal Shock Main contact



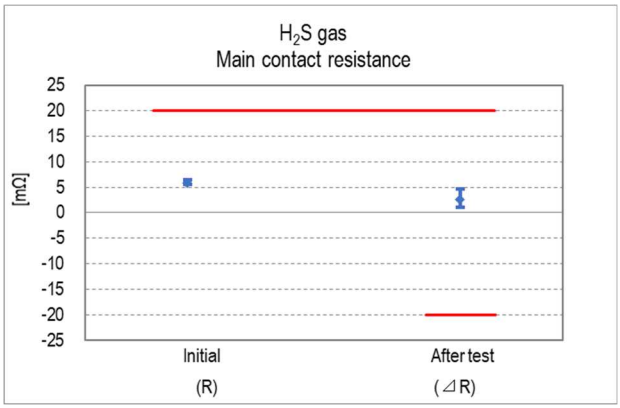
Graph 16 Group J Thermal Shock Ground contact



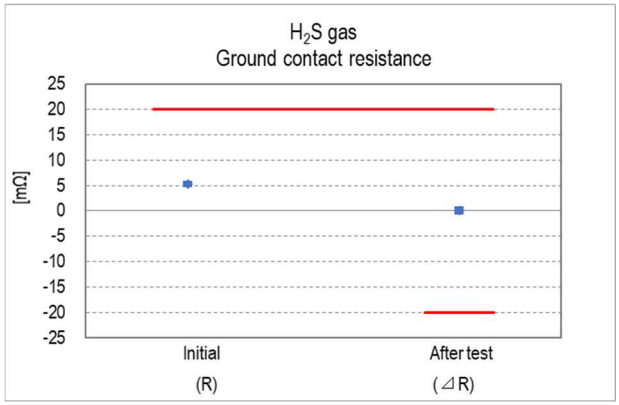
Graph 17 Group K High temperature life
Main contact



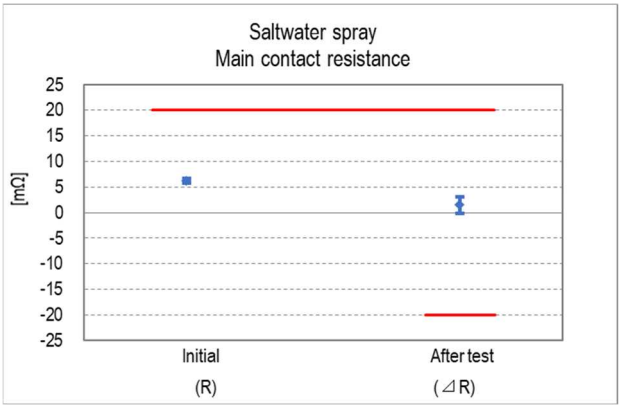
Graph 18 Group K High temperature life
Ground contact



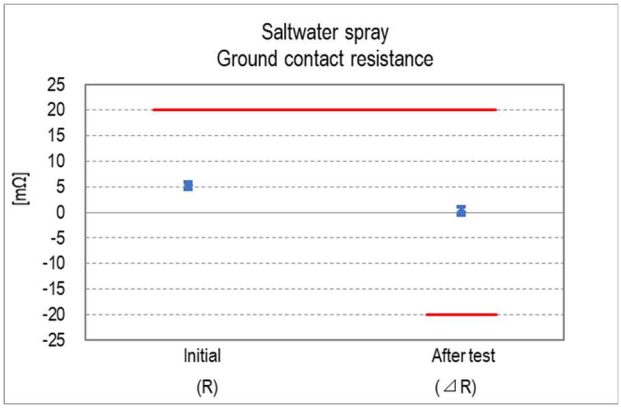
Graph 19 Group L H_2S Gas Main contact



Graph 20 Group L H_2S Gas Ground contact



Graph 21 Group M H_2S Gas Main contact



Graph 22 Group M H_2S Gas Ground contact