

MHF[®] 5 Plug Ass'y Selective Ni Type (AWG#38φ0.48 Cable)

Part No. PLUG: 20615-002R-48 RECEPTACLE: 20566-001E-01

Test Report

Product Specification no. PRS-2032

2	T21102	October 26, 2021	K. Ikeshtia		M. Takemoto
1	T16072	May 4, 2016	M.N		Ken
0	T15046	April 17, 2015	H.Tagomori	K.Narita	T.Takano
Rev.	ECN	Date	Prepared by	Checked by	Approved by

1. Purpose

To evaluate the performance of MHF5 Connector Plug Ass'y Selective Ni Type Connector in accordance with PRS-2032.

2. Specimen

Plug: 20615-002R-48

Receptacle: 20566-001E-01

3. Test Sequence

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

4. Result

See Table 2, Graph 1 to 10. For the details of the testing conditions and requirements, see PRS-2032.

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

5. Conclusion

All the specimens met the requirements of PRS-2032.

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, 3	1, 3	1, 3		
Insulation Resistance								2, 6	2, 6					
D. W. Voltage								3, 7	3, 7					
VSWR	1													
Unmating force		1												
Durability			2											
Crimp Strength				1										
Cable Retention Force					1									
Vibration						2								
Shock							2							
Humidity (Steady State)								4						
Thermal Shock									4					
High Temperature Life										2				
H2S Gas											2			
Salt Water Spray												2		
Solder ability													1	
Soldering Heat Resistance														1
Specimen quantity	10	10	10	10	10	10	10	10	10	10	10	10	10	10

Numbers indicate sequence in which tests are performed.

Table 2-1

Group	Test items	Specification	n	Unit	AVE.	MAX.	MIN.	S	Judgement	
	Measurements									
A	VSWR									
	Plug									
	0.1~3.0GHz	1.3 MAX.	10	-	1.198	1.21	1.18	0.008	Pass	
	3.0~6.0GHz	1.5 MAX.		-	1.269	1.29	1.24	0.016	Pass	
	Receptacle									
	0.1~3.0GHz	1.3 MAX.	10	-	1.071	1.07	1.07	0.003	Pass	
3.0~6.0GHz	1.4 MAX.	-		1.086	1.10	1.08	0.008	Pass		
B	Unmating force									
	Initial	4N MIN.	10	N	9.12	10.3	8.4	0.60	Pass	
	After 30 cycles	2N MIN.			5.89	6.6	5.5	0.35	Pass	
C	Durability									
	Contact resistance of main contact									
	Initial	20mΩ MAX.	10	mΩ	7.54	8.8	5.9	1.03	Pass	
	After testing	△20mΩ MAX.			-0.69	0.7	-2.1	0.83	Pass	
	Contact resistance of Ground contact									
	Initial	20mΩ MAX.	10	mΩ	7.17	8.0	6.4	0.48	Pass	
	After testing	△20mΩ MAX.			1.15	2.2	0.4	0.65	Pass	
	Appearance									
	Spec: No abnormality adversely affecting the performance shall occur.									
	Initial	No abnormality	10	-	No abnormality				Pass	
After testing	No abnormality				Pass					
D	Crimp strength									
	-	7N MIN.	10	N	10.82	11.41	10.24	0.36	Pass	
E	Cable retention force									
	Electrical discontinuity									
	Spec: No electrical discontinuity greater than 1μs 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 2-2

Group	Test items	Specification	n	Unit	AVE.	MAX.	MIN.	S	Judgement	
	Measurements									
F	Vibration									
	Contact resistance of main contact									
		Initial	20mΩ MAX.	10	mΩ	9.19	11.2	7.4	1.75	Pass
		ΔR	Δ20mΩ MAX.			-0.25	1.4	-2.1	1.36	Pass
	Contact resistance of Ground contact									
		Initial	20mΩ MAX.	10	mΩ	7.20	7.9	6.7	0.56	Pass
		ΔR	Δ20mΩ MAX.			1.13	2.0	0.3	0.67	Pass
	Electrical discontinuity									
	Spec: No electrical discontinuity greater than 1μs 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
G	Shock									
	Contact resistance of main contact									
		Initial	20mΩ MAX.	10	mΩ	10.07	10.9	9.4	0.52	Pass
		ΔR	Δ20mΩ MAX.			-0.86	-0.4	-1.5	0.44	Pass
	Contact resistance of Ground contact									
		Initial	20mΩ MAX.	10	mΩ	7.50	7.7	7.4	0.11	Pass
		ΔR	Δ20mΩ MAX.			1.24	1.7	0.7	0.37	Pass
	Electrical discontinuity									
	Spec: No electrical discontinuity greater than 1μs 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 (Steady State)									
	Contact resistance of main contact									
		Initial	20mΩ MAX.	10	mΩ	9.57	10.1	8.4	0.53	Pass
		ΔR	Δ20mΩ MAX.			-1.30	-0.2	-2.2	0.67	Pass
	Contact resistance of Ground contact									
		Initial	20mΩ MAX.	10	mΩ	7.32	7.9	6.7	0.37	Pass
		ΔR	Δ20mΩ MAX.			-0.53	0.0	-1.3	0.43	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, nor insulator breakdown shall occur.									
		Initial	-	10	-	No abnormality				Pass
		After testing	-			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	

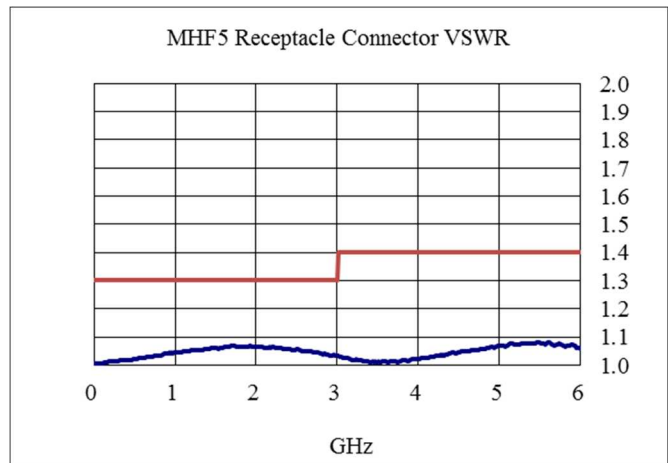
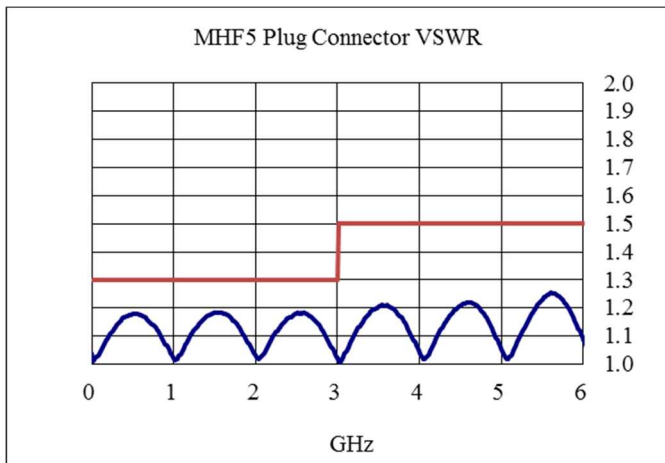
Table 2-3

Group	Test items	Specification	n	Unit	AVE.	MAX.	MIN.	S	Judgement	
	Measurements									
J	Thermal shock									
	Contact resistance of main contact									
		Initial	20mΩ MAX.	10	mΩ	9.33	11.9	8.5	1.03	Pass
		ΔR	Δ20mΩ MAX.			1.47	3.9	-1.3	1.69	Pass
	Contact resistance of Ground contact									
		Initial	20mΩ MAX.	10	mΩ	7.36	8.1	6.0	0.68	Pass
		ΔR	Δ20mΩ MAX.			4.43	5.8	3.3	0.91	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, nor insulator breakdown shall occur.								
		Initial	-	10	-	No abnormality				Pass
		After testing	-			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	7.25	9.6	6.4	0.93	Pass
		ΔR	Δ20mΩ MAX.			-0.92	0.4	-2.6	0.92	Pass
	Contact resistance of Ground contact									
		Initial	20mΩ MAX.	10	mΩ	6.92	8.1	6.1	0.55	Pass
		ΔR	Δ20mΩ MAX.			1.34	3.0	0.4	0.80	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	8.13	13.0	6.3	2.19	Pass
		ΔR	Δ20mΩ MAX.			-1.56	0.8	-7.3	2.35	Pass
	Contact resistance of Ground contact									
		Initial	20mΩ MAX.	10	mΩ	6.19	7.7	5.2	0.69	Pass
		ΔR	Δ20mΩ MAX.			-0.56	0.7	-2.2	0.82	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

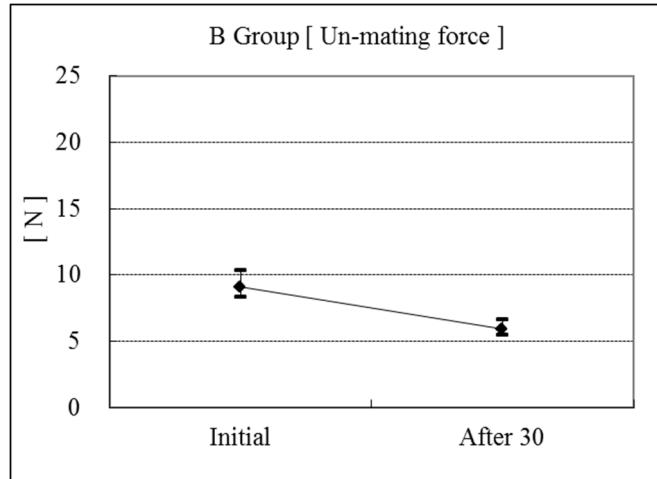
Group	Test items	Specification	n	Unit	AVE.	MAX.	MIN.	S	Judgement	
	Measurements									
M	Saltwater spray									
	Contact resistance of main contact									
		Initial	20mΩ MAX.	10	mΩ	8.90	10.0	7.7	0.71	Pass
		ΔR	Δ20mΩ MAX.			2.20	3.7	0.6	1.02	Pass
	Contact resistance of Ground contact									
		Initial	20mΩ MAX.	10	mΩ	7.44	8.4	6.7	0.57	Pass
		ΔR	Δ20mΩ MAX.			1.63	3.4	0.0	1.17	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	

•A Group



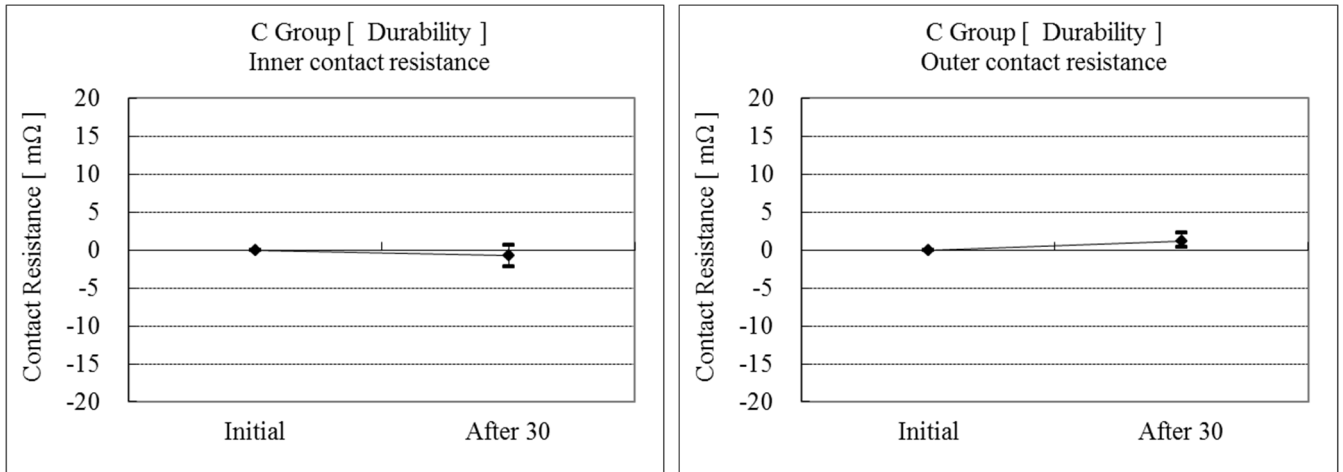
Graph 1 VSWR

•B Group



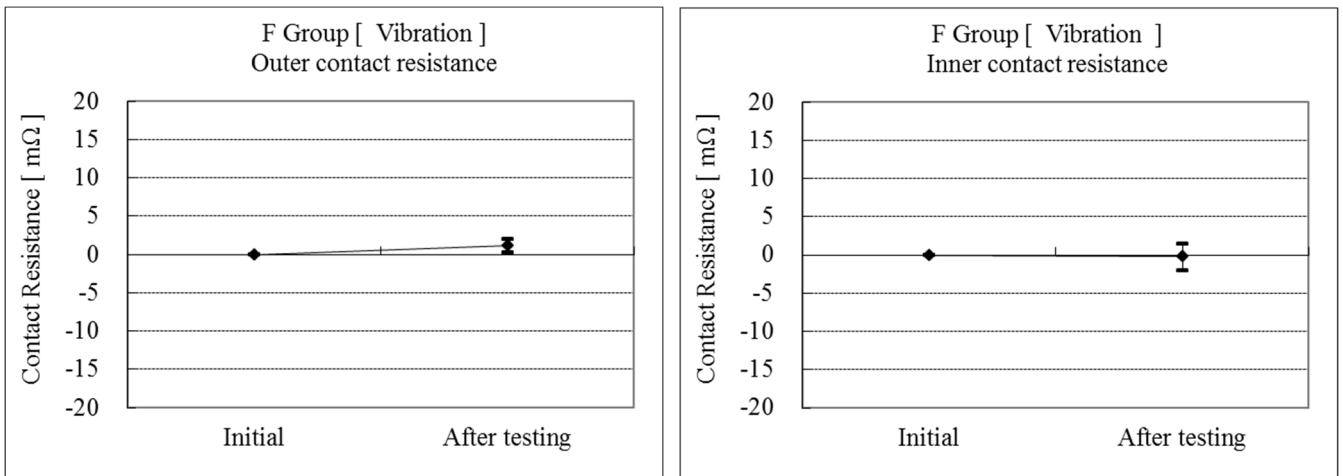
Graph 2 Unmating force

•C Group



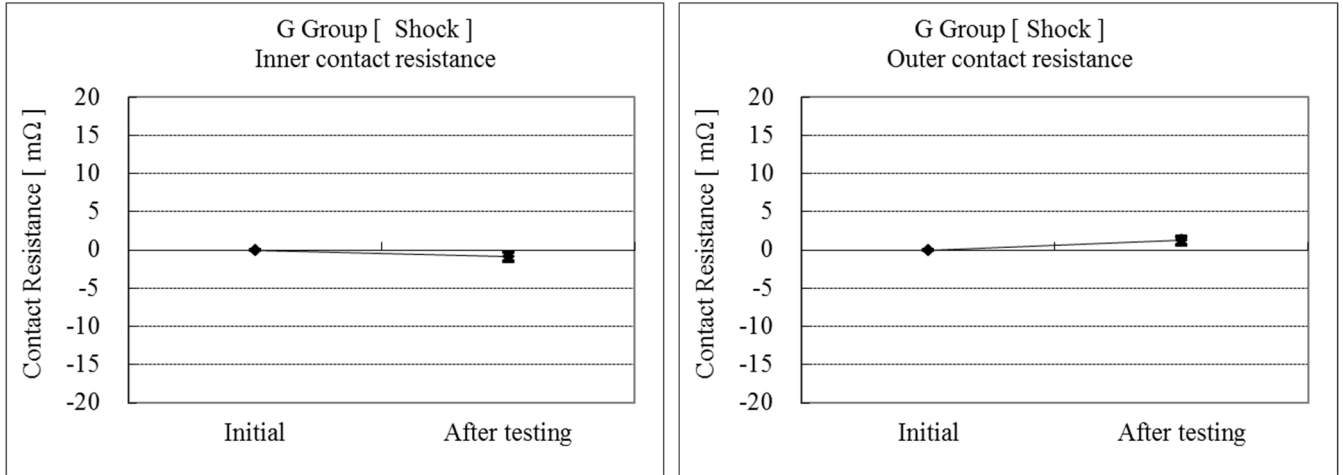
Graph 3 Durability

•F Group



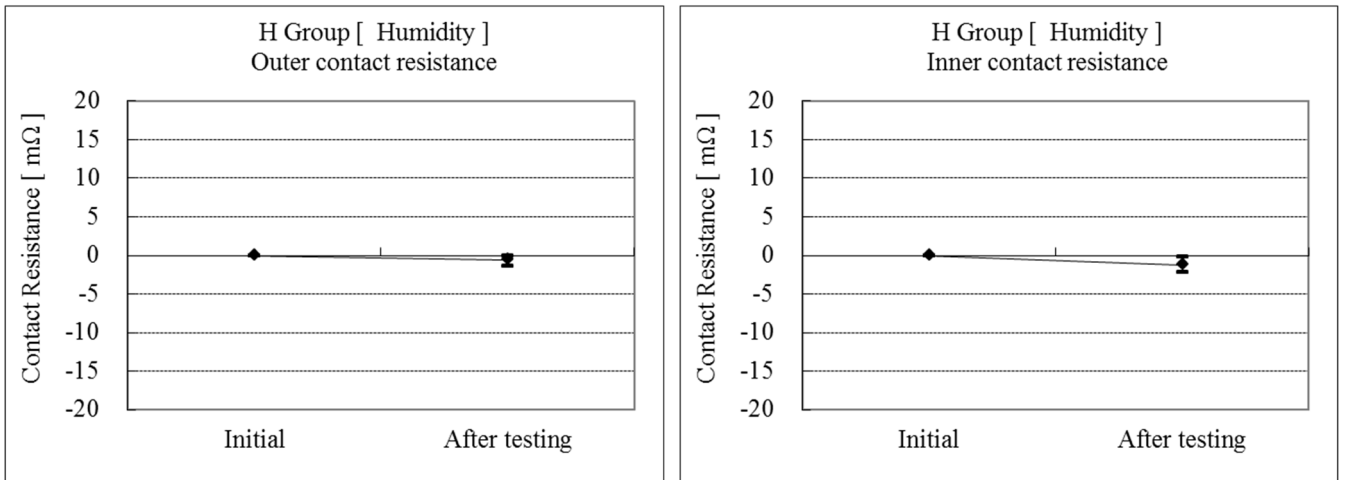
Graph 4 Vibration

•G Group



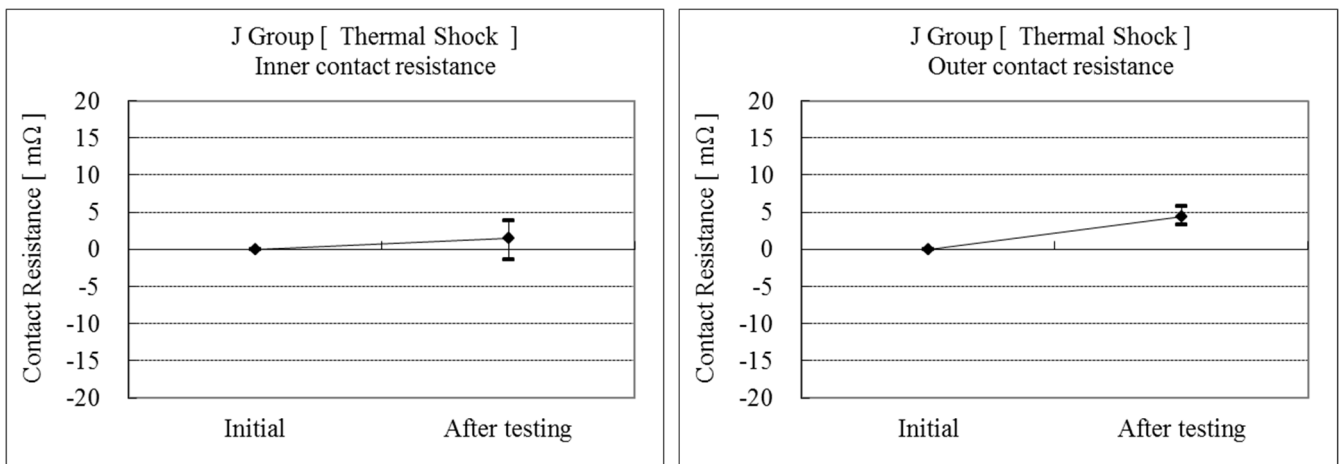
Graph 5 Shock

•H Group



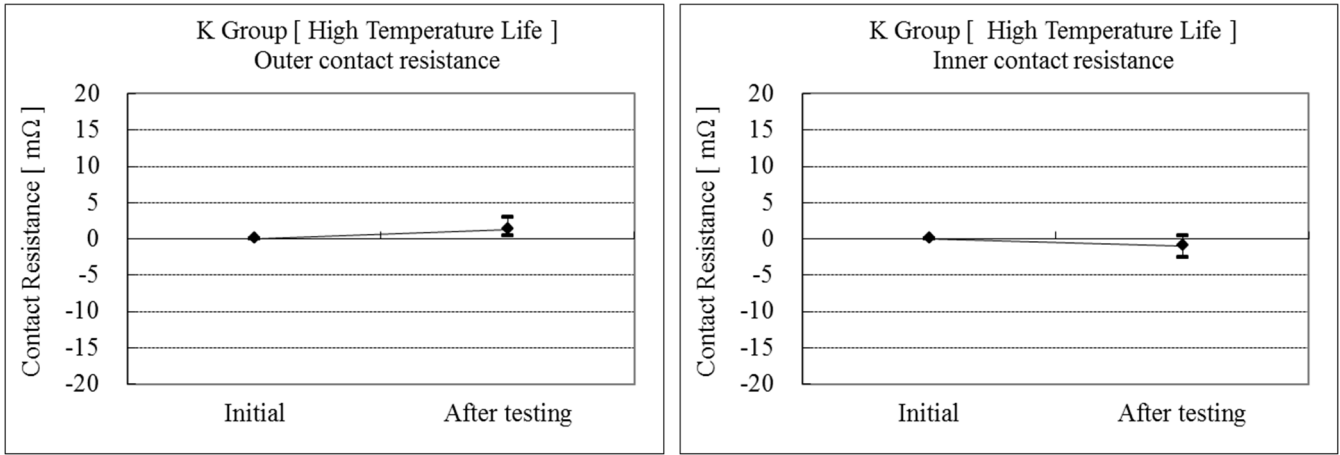
Graph 6 Humidity

•J Group



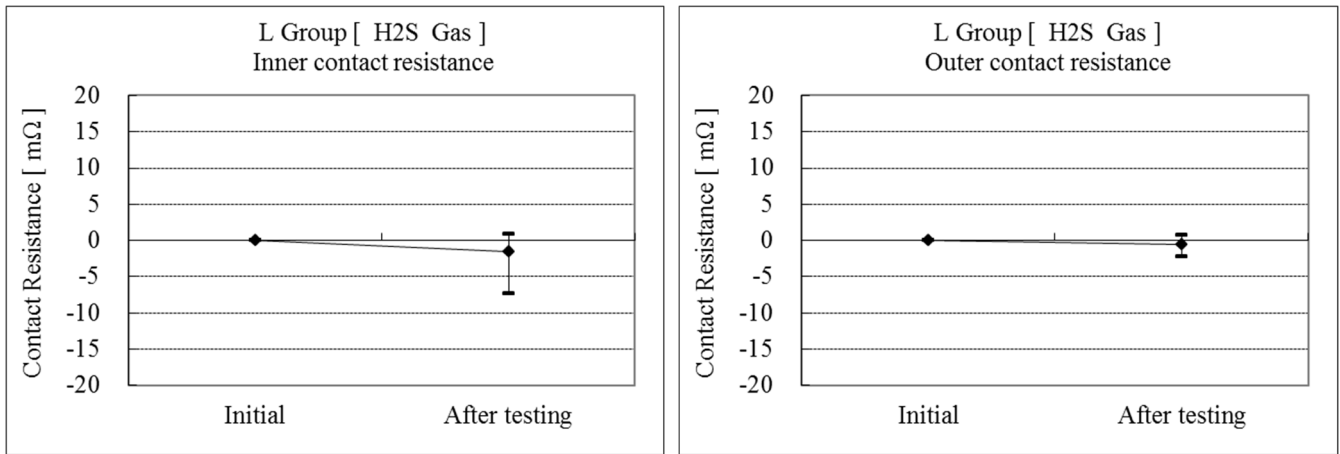
Graph 7 Thermal Shock

•K Group



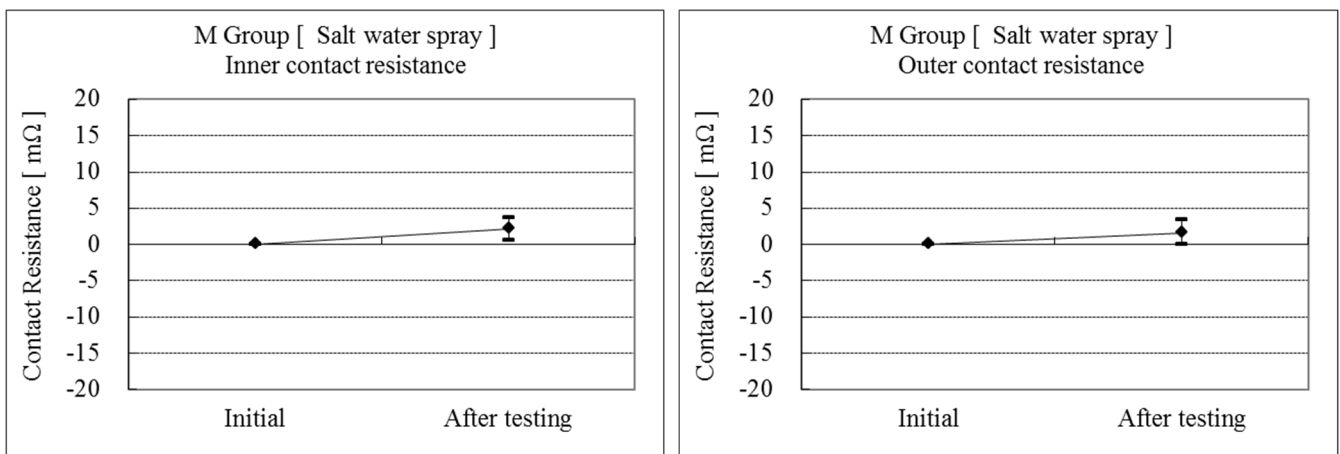
Graph 8 High Temperature Life

•L Group



Graph 9 H2S Gas

•M Group



Graph 10 Salt water spray