

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

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1	T16072	May 4, 2016	M.N		Ken
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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 (pcs.)	Plug	10	10	10	-	10	10	10	10	10	10	10	10	-	-
	Receptacle	5			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	1.30 Max.	10	-	1.180	1.19	1.17	0.008	Pass
	3.0~6.0GHz	1.50 Max.		-	1.245	1.26	1.22	0.011	Pass
	6.0~9.0GHz	1.60 Max.		-	1.289	1.31	1.26	0.015	Pass
	9.0~12.0GHz	1.60 Max.		-	1.283	1.32	1.24	0.018	Pass
	Receptacle								
	0.1~3.0GHz	1.30 MAX.	5	-	1.083	1.09	1.07	0.008	Pass
	3.0~6.0GHz	1.40 MAX.		-	1.180	1.20	1.17	0.012	Pass
	6.0~9.0GHz	1.50 MAX.		-	1.213	1.23	1.19	0.018	Pass
9.0~12.0GHz	1.50 MAX.	-		1.234	1.26	1.22	0.017	Pass	
12.0~15.0GHz	1.65 MAX.	-		1.410	1.455	1.382	0.033	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			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 grater 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			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 grater 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 grater 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		

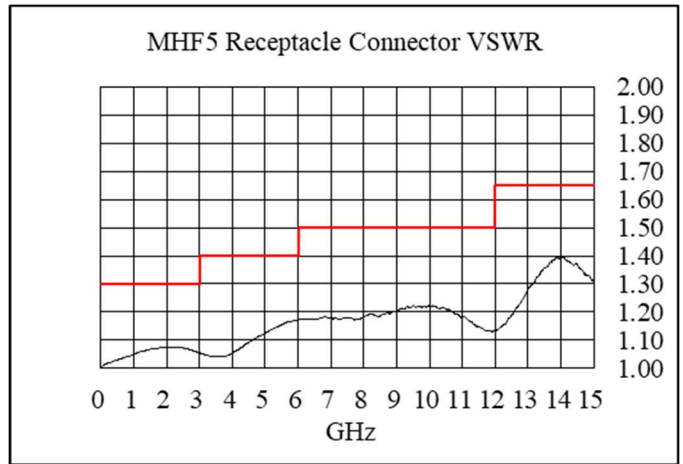
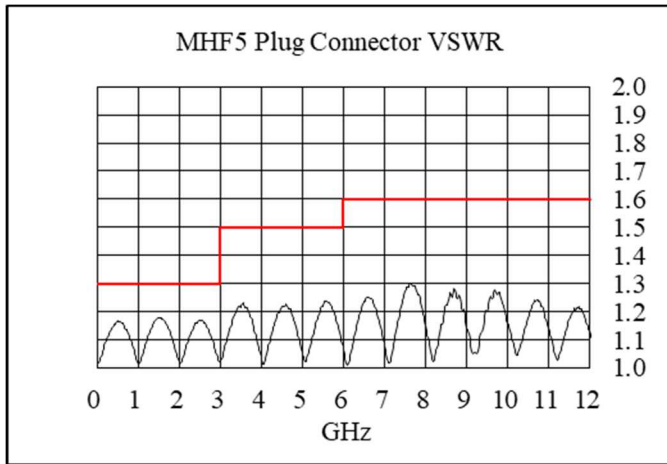
Table 2-3

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			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	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	No abnormality				Pass			

Table 2-4

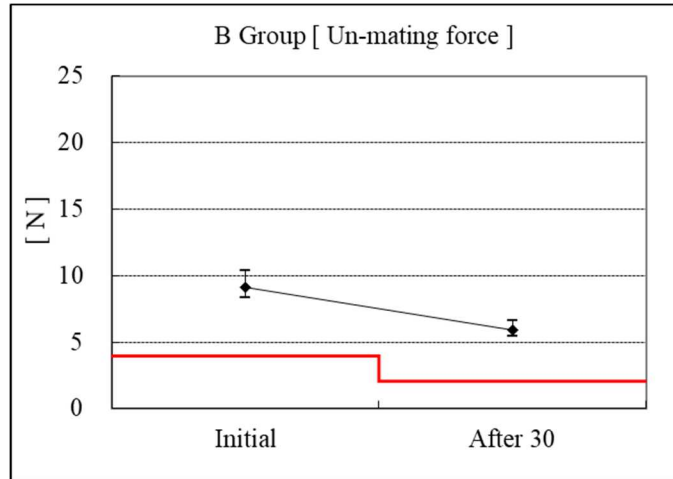
Group	Test items	Specification	n	Unit	AVE.	MAX.	MIN.	S	Judgement	
	Measurements									
M	Saltwater spray									
	Contact resistance of main contact									
		Initial	20mΩ MAX.	10	mΩ	8.90	10.0	7.7	0.71	Pass
		ΔR	Δ20mΩ MAX.			2.20	3.7	0.6	1.02	Pass
	Contact resistance of Ground contact									
	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



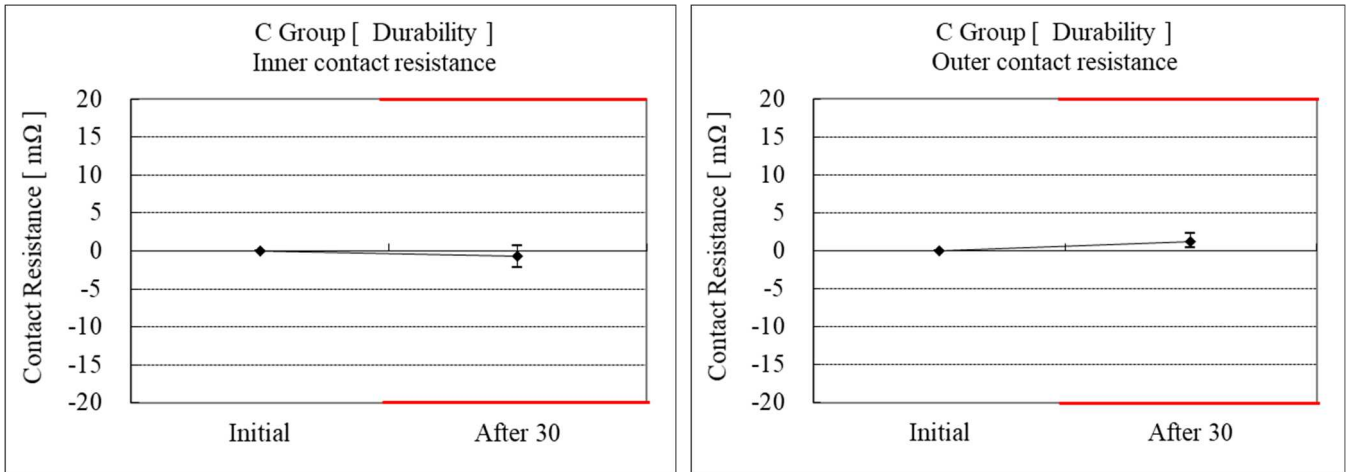
Graph 1 VSWR

•B Group



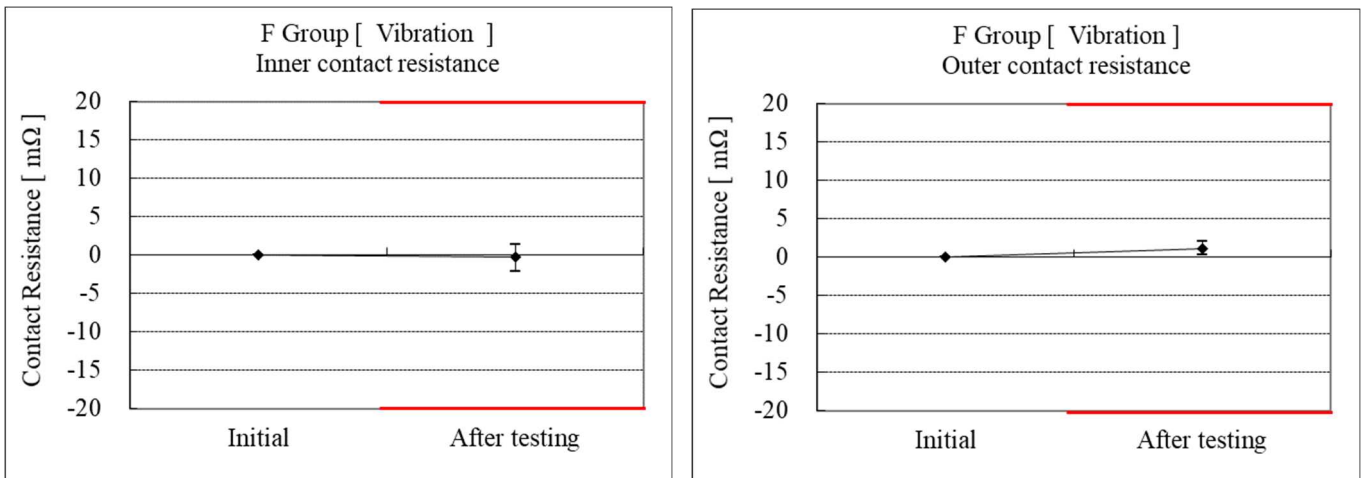
Graph 2 Unmating force

•C Group



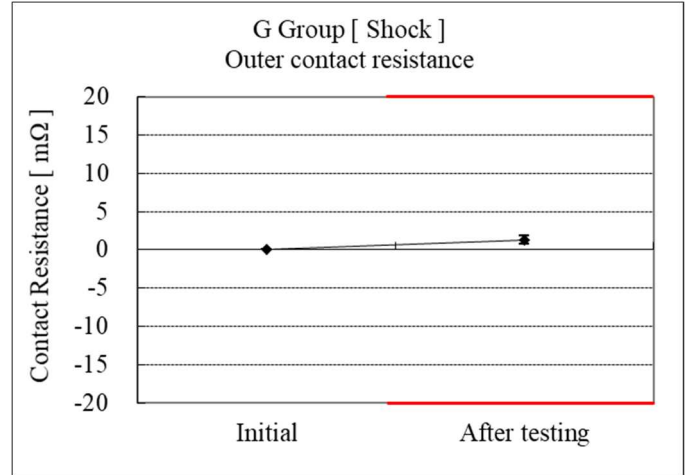
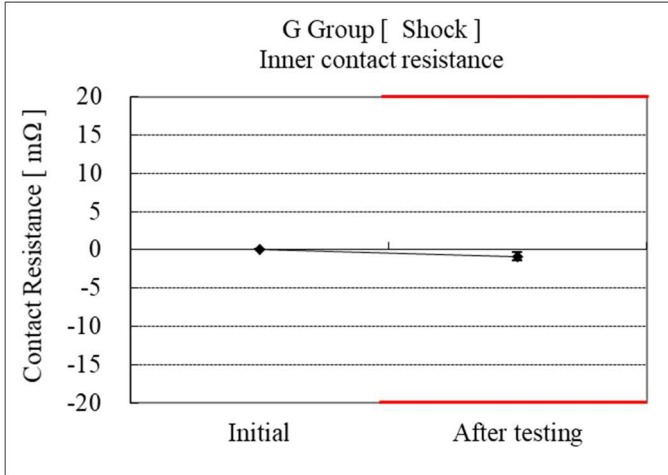
Graph 3 Durability

•F Group



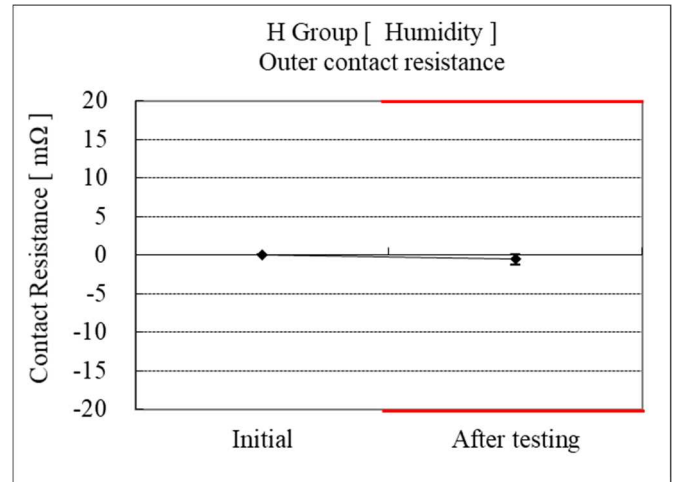
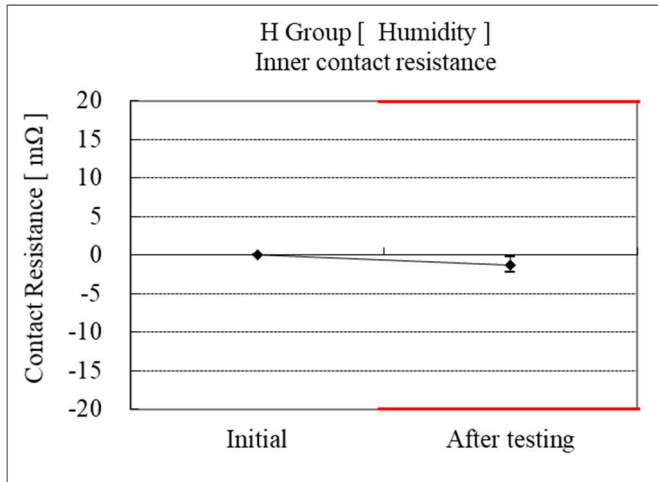
Graph 4 Vibration

•G Group



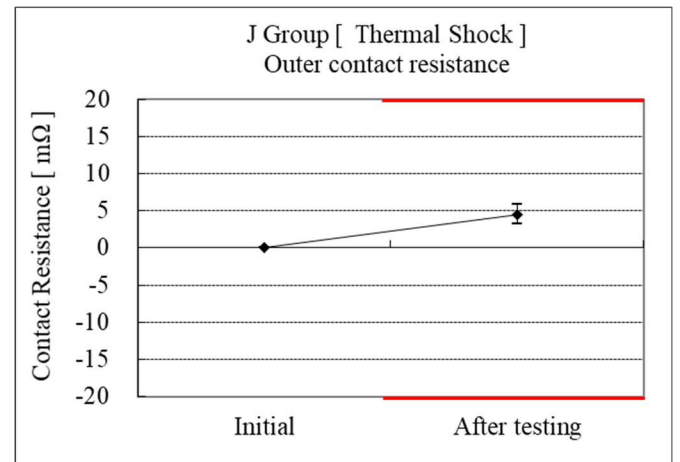
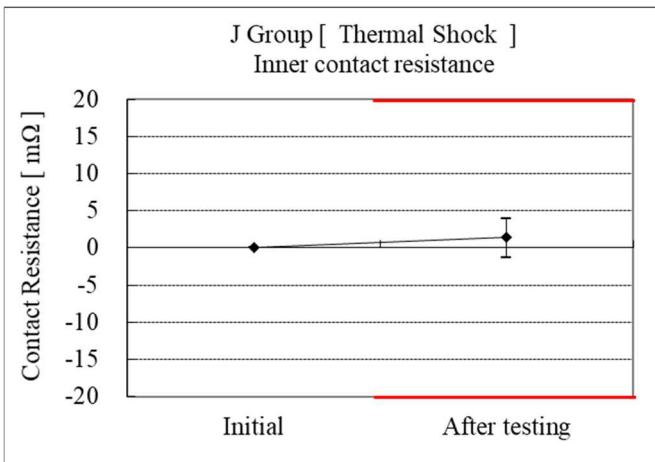
Graph 5 Shock

•H Group



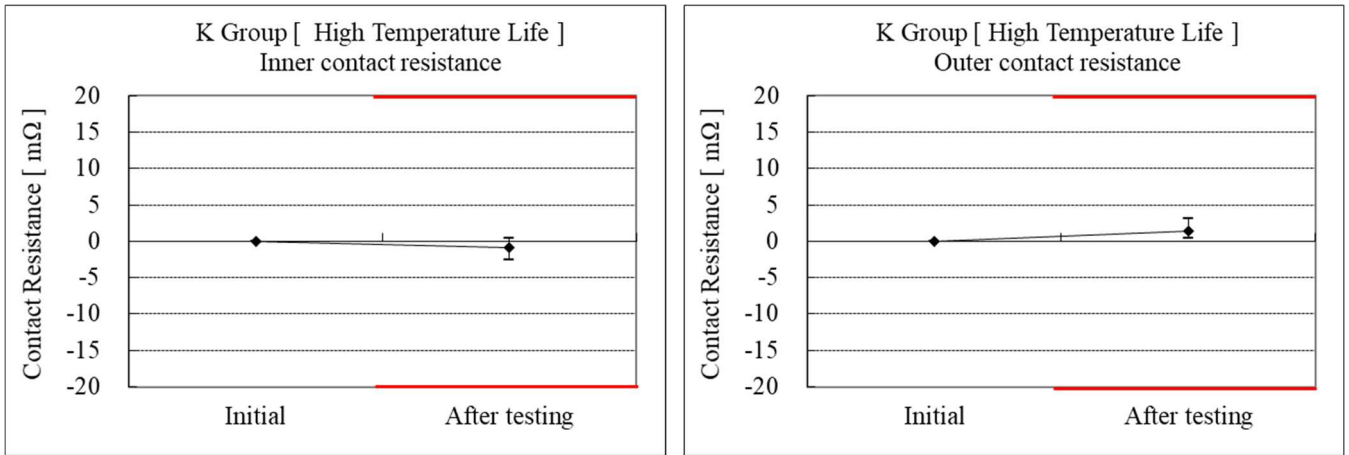
Graph 6 Humidity

•J Group



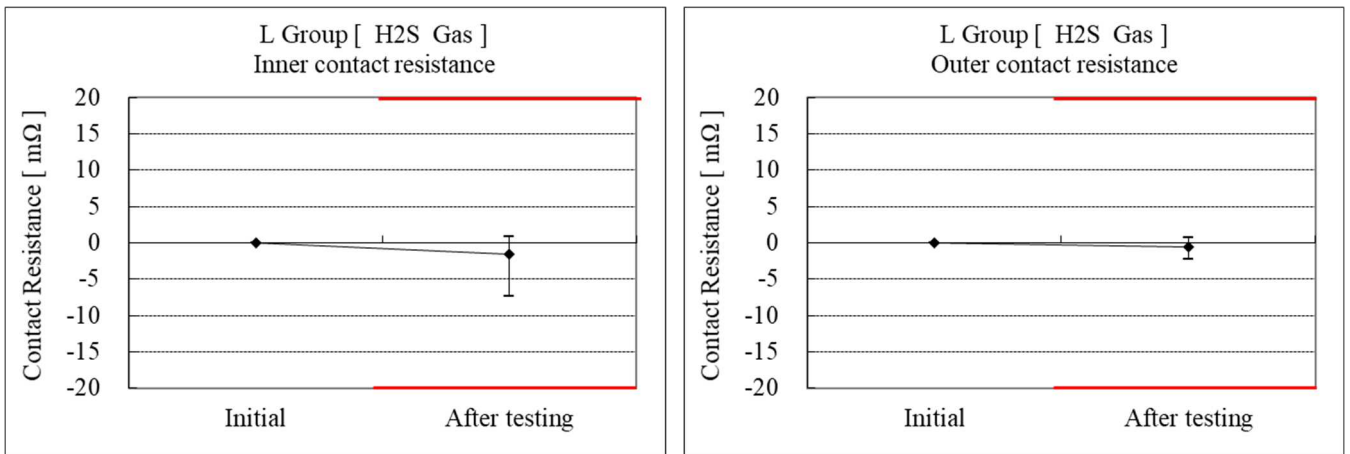
Graph 7 Thermal Shock

•K Group



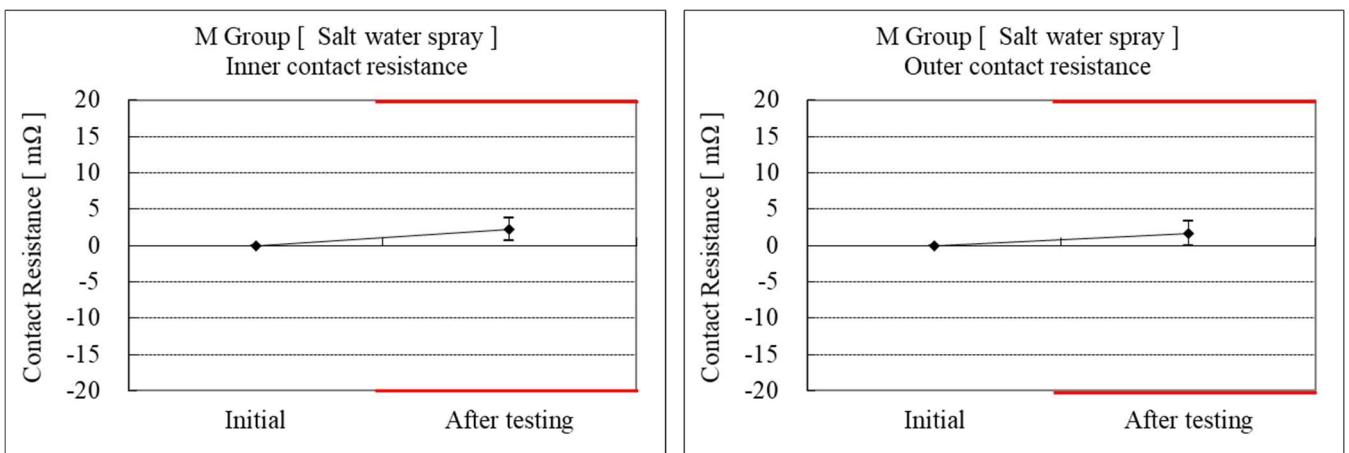
Graph 8 High Temperature Life

•L Group



Graph 9 H2S Gas

•M Group



Graph 10 Salt water spray