MHF® 4L Connector

Part No. Plug:20632-001R-37 Receptacle:20579-001E-**

Test Report

Product Specification no. PRS-2925

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Rev.	ECN	Date	Prepared by	Checked by	Approved by

MHF 4L Connecter Test Report

1. Purpose

To evaluate the performance of MHF 4L Connector in accordance with PRS-2925.

2. Specimen

(1) MHF 4L PLUG （Part No. 20632-001R-37）
(2) MHF 4L RECEPTACLE （Part No. 20579-001E-**）

3. Test Sequence

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

4. Result

See Table 2, Graph 1 to 11. For the details of the testing conditions and requirements, see PRS-2925.
The “n” in the tables show the number of measurement points.

5. Conclusion

All the specimens met the requirements of PRS-2925.

Table 1 Test Sequence and Sample Quantity

Test Item	Testing Groups														
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
Contact resistance					1,3		1,3	1,3	1,5	1,5	1,3	1,3	1,3		
Insulation resistance									2,6	2,6					
Dielectric withstanding voltage	1								3,7	3,7					
VSWR		2													
Mating force			1												
Unmating force				1											
Durability					2										
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	10

※Numbers indicate test sequences

Table 2-1

	Test items	Measurements		Spec.	n	Unit	AVE.	MAX.	MIN.	S	Judge
A	Dielectric withstanding voltage	Initial		Spec : No creeping discharge,flashover,nor insulator breakdown shall occur.							----------
				----------	10	----------	Results : No abnormality				Pass
B	VSWR PLUG	0.1~3GHz		1.30 MAX.	10	----------	1.087	1.10	1.08	0.006	Pass
		3~6GHz		1.40 MAX.	10	----------	1.188	1.22	1.17	0.014	Pass
		6~9GHz		1.50 MAX.	10	----------	1.192	1.23	1.16	0.019	Pass
		9~12GHz		1.60 MAX.	10	----------	1.186	1.27	1.14	0.040	Pass
	VSWR Receptacle	0.1~3GHz		1.30 MAX.	5	----------	1.050	1.06	1.04	0.005	Pass
		3~6GHz		1.40 MAX.	5	----------	1.119	1.12	1.12	0.002	Pass
		6~9GHz		1.50 MAX.	5	----------	1.301	1.32	1.28	0.013	Pass
		9~12GHz		1.65 MAX.	5	----------	1.469	1.52	1.43	0.032	Pass
C	Mating force	Initial		30 MAX.	10	N	20.25	22.5	18.0	1.45	Pass
		30 cycles			10	N	9.77	10.3	9.2	0.40	Pass
D	Unmating force	Initial		20 MAX., 5 MIN.	10	N	13.71	15.4	12.3	0.94	Pass
		30 cycles		20 MAX., 3 MIN.	10	N	8.80	9.6	7.8	0.47	Pass
E	Durability										
		Contact resistance of inner contact									
			Initial	20 MAX.	10	mΩ	6.30	7.3	5.3	0.58	Pass
			After testing	----------	10	mΩ	6.61	7.3	5.7	0.64	----------
			⊿R	20 MAX.	10	mΩ	0.31	1.5	-0.4	0.58	Pass
		Contact resistance of ground contact									
			Initial	20 MAX.	10	mΩ	5.56	6.8	5.1	0.56	Pass
			After testing	----------	10	mΩ	6.53	8.2	5.9	0.67	----------
			⊿R	20 MAX.	10	mΩ	0.97	1.7	0.1	0.51	Pass
		Appearance	Spec:No abnormality adversely affecting the performance shall occur.								
			Initial	No abnormality	10	----------	No abnormality				Pass
			After testing	No abnormality	10	----------	No abnormality				Pass
F	Cable retention force			15 MIN.	10	N	22.63	23.8	21.6	0.672	Pass
G	Vibration										
		Contact resistance of inner contact									
			Initial	20 MAX.	10	mΩ	5.95	7.0	5.4	0.52	Pass
			After testing	----------	10	mΩ	6.71	7.4	6.2	0.47	----------
			⊿R	20 MAX.	10	mΩ	0.76	2.0	0.0	0.59	Pass
		Contact resistance of ground contact									
			Initial	20 MAX.	10	mΩ	6.05	6.7	5.4	0.42	Pass
			After testing	----------	10	mΩ	6.94	8.1	5.9	0.73	----------
			⊿R	20 MAX.	10	mΩ	0.89	2.0	-0.6	0.87	Pass
		Electrical discontinuity		Spec. : No electrical discontinuity grater than 1μsec. shall occur.							----------
				----------	10	----------	Results : No discontinity				Pass
		Appearance	Spec:No abnormality adversely affecting the performance shall occur.								
			Initial	No abnormality	10	----------	No abnormality				Pass
			After testing	No abnormality	10	----------	No abnormality				Pass

Table 2-2

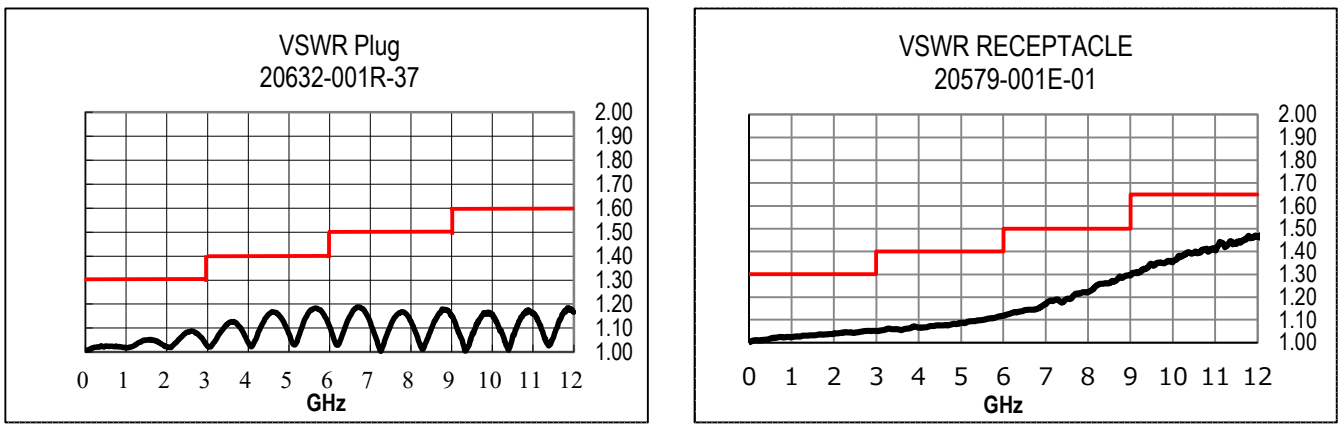
	Test items	Measurements		Spec.	n	Unit	AVE.	MAX.	MIN.	S	Judge
H	Shock										
		Contact resistance of inner contact									
			Initial	20 MAX.	10	mΩ	6.71	7.4	6.2	0.47	Pass
			After testing	----------	10	mΩ	7.19	7.8	6.4	0.43	----------
			⊿R	20 MAX.	10	mΩ	0.48	1.6	-0.9	0.79	Pass
		Contact resistance of ground contact									
			Initial	20 MAX.	10	mΩ	6.94	8.1	5.9	0.73	Pass
			After testing	----------	10	mΩ	7.32	8.4	6.2	0.70	----------
			⊿R	20 MAX.	10	mΩ	0.38	1.5	-0.3	0.55	Pass
		Electrical discontinuity		Spec. : No electrical discontinuity grater than 1μsec. shall occur.							----------
				----------	10	----------	Results : No discontinity				Pass
		Appearance	Spec:No abnormality adversely affecting the performance shall occur.								
			Initial	No abnormality	10	----------	No abnormality				Pass
			After testing	No abnormality	10	----------	No abnormality				Pass
J	Humidity(Steady State)										
		Contact resistance of inner contact									
			Initial	20 MAX.	10	mΩ	6.65	7.0	5.9	0.40	Pass
			After testing	----------	10	mΩ	7.03	8.2	6.1	0.74	----------
			⊿R	20 MAX.	10	mΩ	0.38	1.8	-0.9	0.90	Pass
		Contact resistance of ground contact									
			Initial	20 MAX.	10	mΩ	5.94	6.7	5.2	0.51	Pass
			After testing	----------	10	mΩ	6.91	8.1	6.2	0.59	----------
			⊿R	20 MAX.	10	mΩ	0.97	2.2	-0.4	0.86	Pass
		Insulation resistance									
			Initial	500 MIN.	10	MΩ	10,000 (minimum value)				Pass
			After testing	100 MIN.	10	MΩ	10,000 (minimum value)				Pass
		Dielectric withstanding voltage	Initial	No abnormality	10	----------	No abnormality				Pass
			After testing	No abnormality	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	10	----------	No abnormality				Pass

Table 2-3

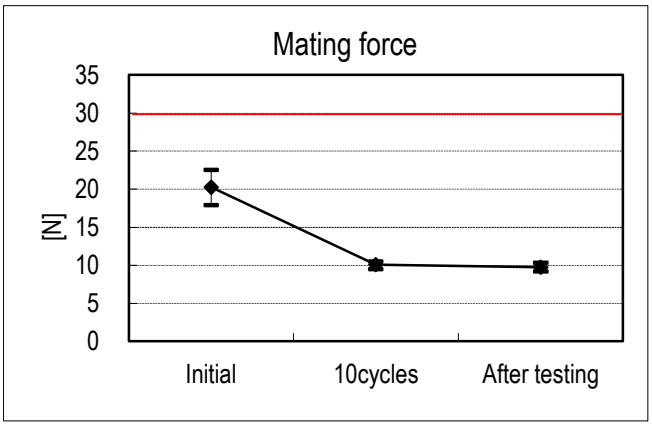
	Test items	Measurements		Spec.	n	Unit	AVE.	MAX.	MIN.	S	Judge
K	Thermal shock										
		Contact resistance of inner contact									
			Initial	20 MAX.	10	mΩ	6.23	6.9	5.5	0.42	Pass
			After testing	----------	10	mΩ	6.90	7.6	6.3	0.41	----------
			⊿R	20 MAX.	10	mΩ	0.68	1.4	-0.4	0.51	Pass
		Contact resistance of ground contact									
			Initial	20 MAX.	10	mΩ	5.69	6.6	5.1	0.65	Pass
			After testing	----------	10	mΩ	6.90	8.0	6.0	0.62	----------
			⊿R	20 MAX.	10	mΩ	1.21	2.3	-0.5	0.86	Pass
		Insulation resistance	Initial	500 MIN.	10	MΩ	10,000 (minimum value)				Pass
			After testing	100 MIN.	10	MΩ	10,000 (minimum value)				Pass
		Dielectric withstanding voltage	Initial	No abnormality	10	----------	No abnormality				Pass
			After testing	No abnormality	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	10	----------	No abnormality				Pass
L	High temperature life										
		Contact resistance of inner contact									
			Initial	20 MAX.	10	mΩ	6.31	7.3	5.4	0.74	Pass
			After testing	----------	10	mΩ	7.00	7.6	6.1	0.44	----------
			⊿R	20 MAX.	10	mΩ	0.69	2.0	-0.3	0.78	Pass
		Contact resistance of ground contact									
			Initial	20 MAX.	10	mΩ	6.17	6.8	5.4	0.43	Pass
			After testing	----------	10	mΩ	6.77	7.6	6.1	0.52	----------
			⊿R	20 MAX.	10	mΩ	0.60	2.2	-0.3	0.68	Pass
		Appearance	Spec:No abnormality adversely affecting the performance shall occur.								
			Initial	No abnormality	10	----------	No abnormality				Pass
			After testing	No abnormality	10	----------	No abnormality				Pass

Table 2-4

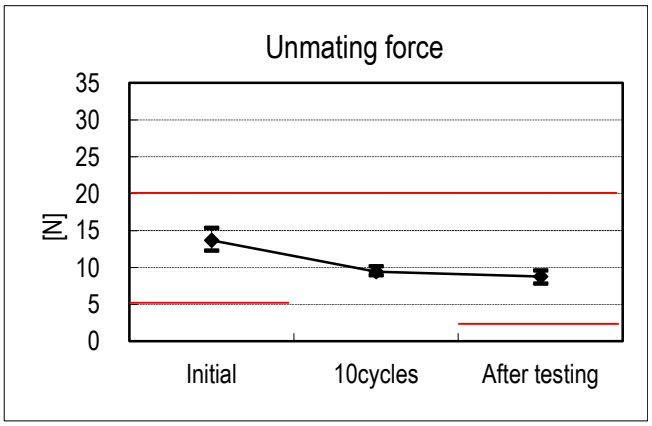
	Test items	Measurements		Spec.	n	Unit	AVE.	MAX.	MIN.	S	Judge
M	H_2S Gas										
		Contact resistance of inner contact									
			Initial	20 MAX.	10	mΩ	6.68	7.3	6.1	0.40	Pass
			After testing	----------	10	mΩ	6.74	7.9	6.1	0.60	----------
			⊿R	20 MAX.	10	mΩ	0.05	1.2	-1.2	0.78	Pass
		Contact resistance of ground contact									
			Initial	20 MAX.	10	mΩ	6.30	6.7	5.7	0.36	Pass
			After testing	----------	10	mΩ	7.28	8.1	6.4	0.54	----------
			⊿R	20 MAX.	10	mΩ	0.98	1.7	0.0	0.58	Pass
		Appearance	Spec:No abnormality adversely affecting the performance shall occur.								
			Initial	No abnormality	10	----------	No abnormality				Pass
			After testing	No abnormality	10	----------	No abnormality				Pass
N	Salt water spray										
		Contact resistance of inner contact									
			Initial	20 MAX.	10	mΩ	6.47	7.3	5.5	0.68	Pass
			After testing	----------	10	mΩ	7.17	8.3	6.5	0.56	----------
			⊿R	20 MAX.	10	mΩ	0.71	1.5	-0.4	0.60	Pass
		Contact resistance of ground contact									
			Initial	20 MAX.	10	mΩ	6.04	6.8	5.4	0.51	Pass
			After testing	----------	10	mΩ	6.73	7.9	5.9	0.62	----------
			⊿R	20 MAX.	10	mΩ	0.70	1.9	-0.5	0.75	Pass
		Appearance	Spec:No abnormality adversely affecting the performance shall occur.								
			Initial	No abnormality	10	----------	No abnormality				Pass
			After testing	No abnormality	10	----------	No abnormality				Pass
P	Solderability			Spec.:More than 95% of the dipped surface becomes wet and the pinhole that should not gather at one point is less than 5%.							
				----------	10	----------	No abnormality				Pass
Q	Soldering heat resistance			Spec.:Abnormality adversely affecting the performance should not occur.							
				----------	10	----------	No abnormality				Pass



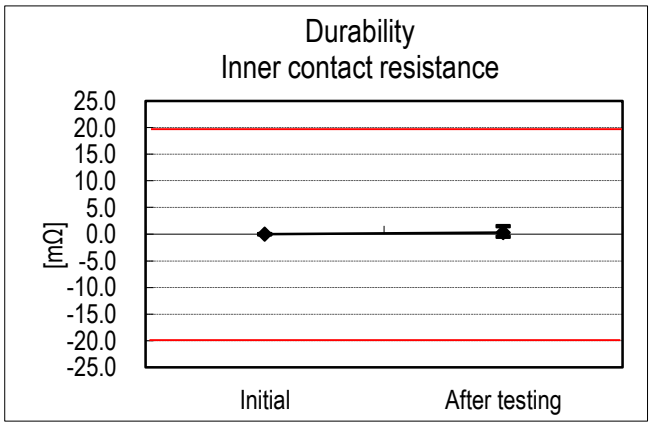
Graph 1 VSWR

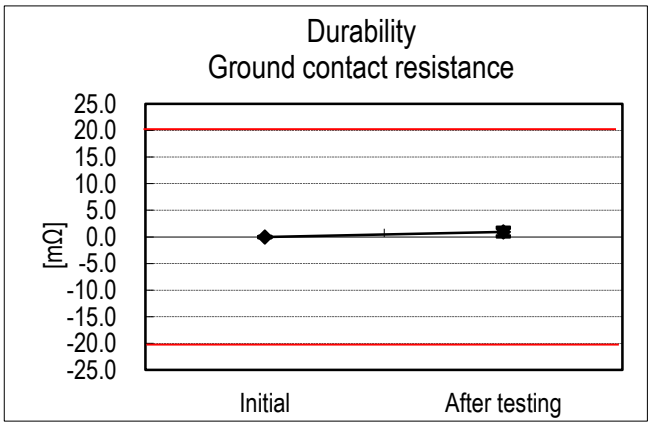


Graph 2 Mating force

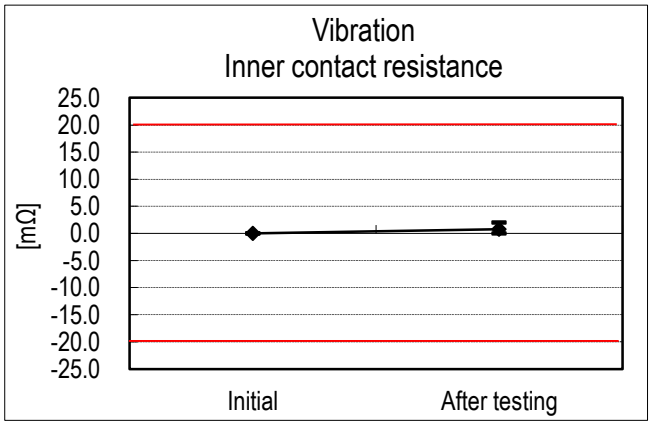


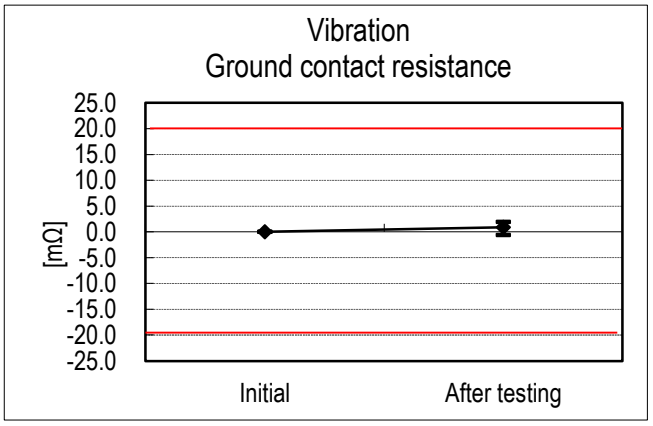
Graph 3 Unating force



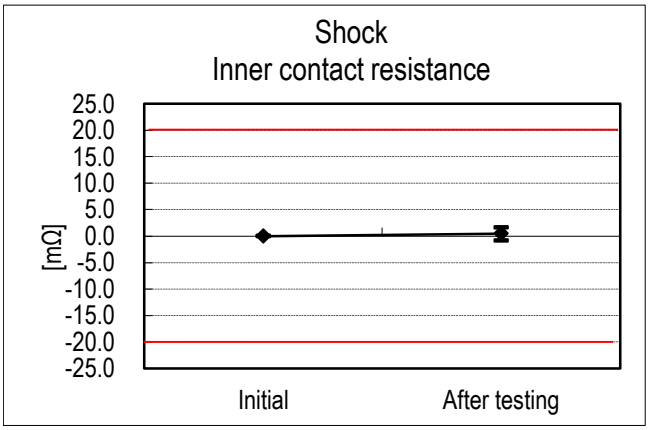


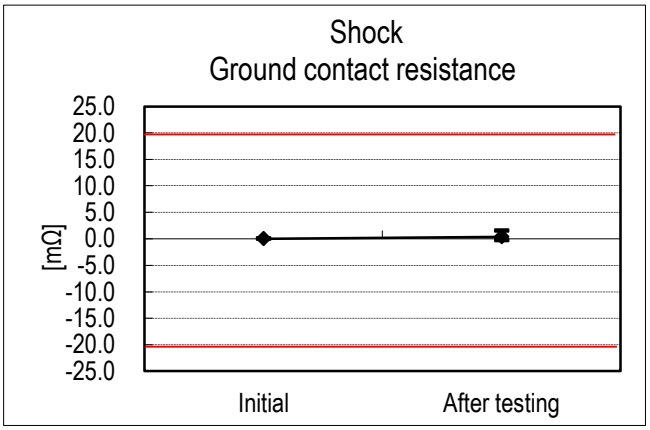
Graph 4 Durability



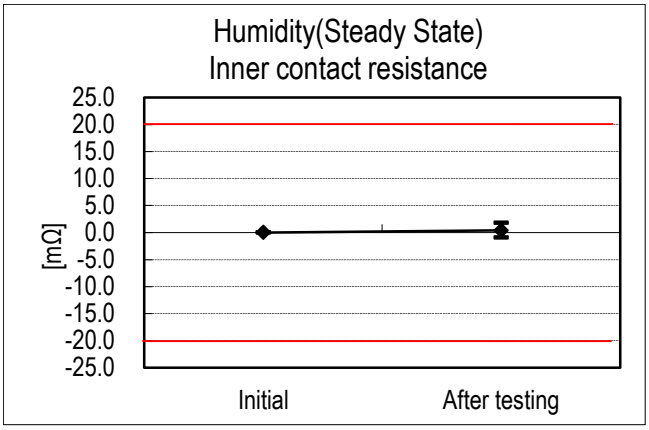


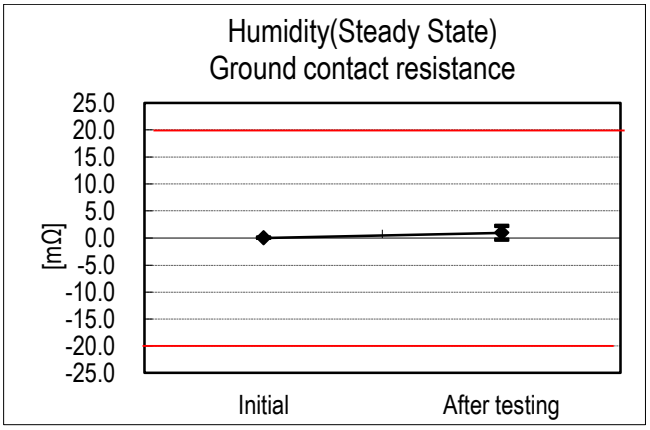
Graph 5 Vibration



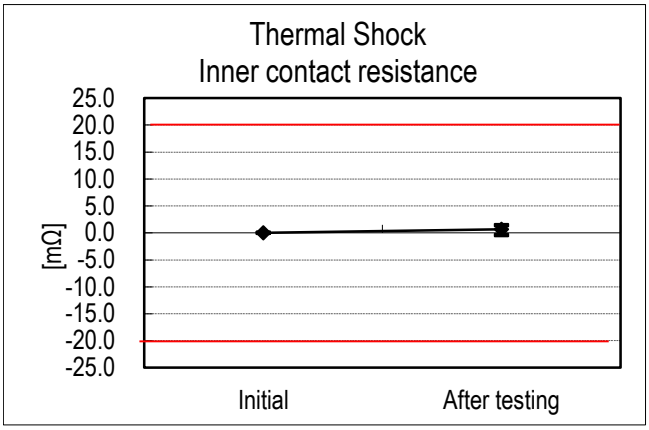


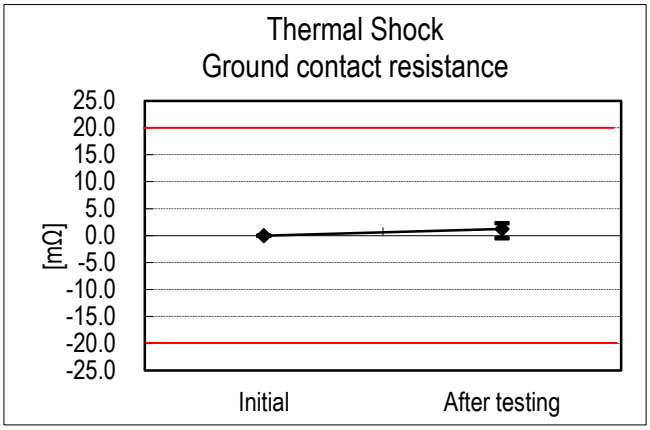
Graph 6 Shock



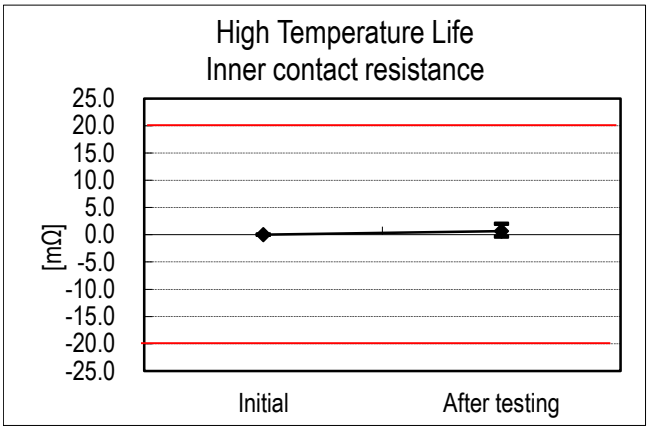


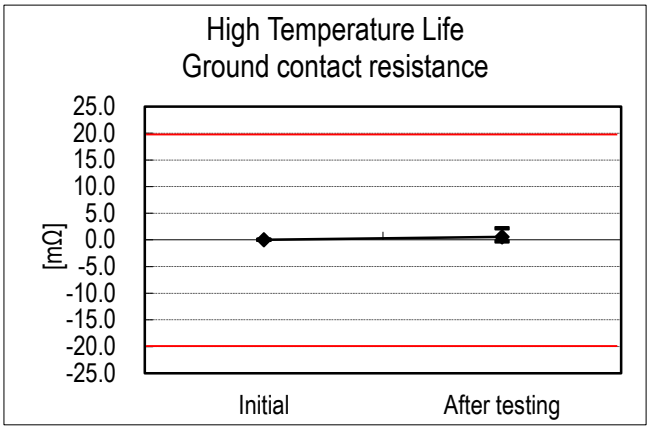
Graph 7 Humidity(Steady State)



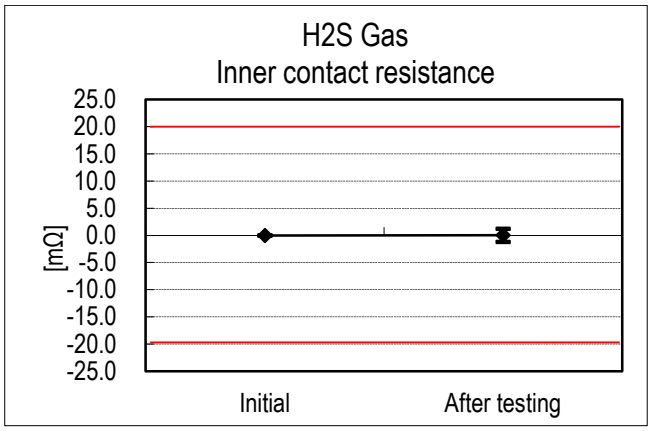


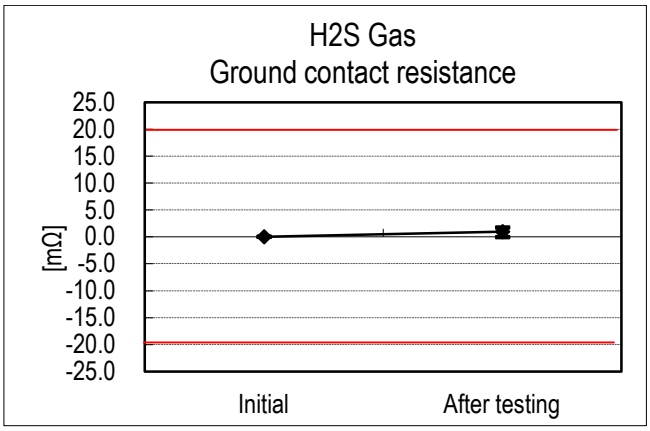
Graph 8 Thermal shock



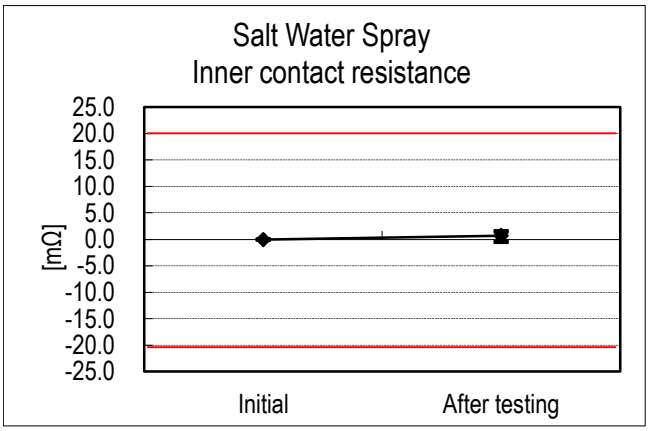


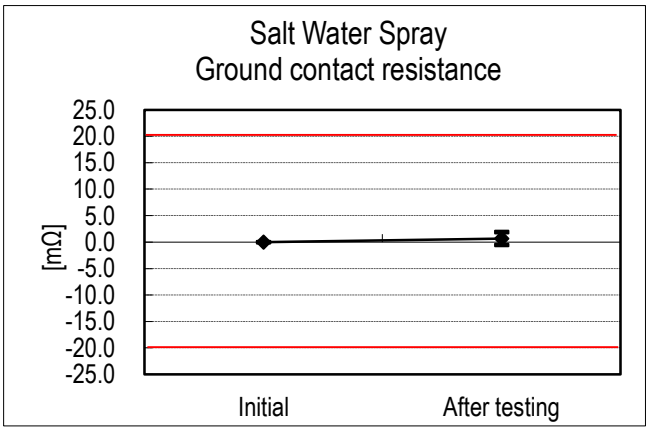
Graph 9 High temperature life





Graph 10 H_2S Gas





Graph 11 Salt water spray