

MHF® I Connector with Lock

Part No. Plug: 20278-112R-32, Lock: 3376-000*

Test Report

Product Specification no. PRS-2396

Rev.	ECN	Date	Prepared by	Checked by	Approved by
1	T22057	March 11, 2022	S.Taguchi	-	M.Takemoto
0	T19171	December 19, 2019	K, Ikeshita	J. Tonai	Y. Hashimoto

1. Purpose

To evaluate the performance of MHF I Connector with LockConnector in accordance with PRS-2396.

2. Specimen

- (1) MHF I PLUG ASS'Y (Part No. 20278-112R-32)
- (2) LOCK (Part No. 3376-000*)
- (3) MHF I/II RECEPTACLE ASS'Y (Part No. 20279-001E-0*)

3. Test Sequence

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

4. Result

See Table 1 to 2, Graph 1 to 10. For the details of the testing conditions and requirements, see PRS-2396.

5. Conclusion

All the specimens met the requirements of PRS-2396.

5-1 Test Sequence and Sample Quantity

Table.1 Test Sequence and Sample Quantity

Test Item	Group														
	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
Contact resistance						1,3	1,3	1,3	1,3	1,4	1,4	1,3	1,3		
Insulation resistance										2,5	2,5				
Dielectric Withstanding Voltage	1														
VSWR		1													
Un-mating force <Unlock state>			1												
Un-mating force <Lock state>				1											
Crimp strength					1										
Durability						2									
Contact resistance with force on the cable							2								
Vibration								2							
Shock									2						
Thermal shock										3					
Humidity(Steady state)											3				
Salt water spray												2			
High temperature life													2		
Solder ability														1	
Soldering heat Resistance															1
Sample Quantity	10	5	10	10	10	10	10	10	10	10	10	10	10	10	10

※Numbers indicate test sequences in which tests are performed.

Table.2 Test Result

Group	Test items		Specification	Number of samples	Unit	AVE.	MAX.	MIN.	S	Judgement
		Measurements								
A	Dielectric withstanding voltage		Spec: No creeping discharge, flashover, no insulator breakdown shall occur.	10	-	No abnormality				Pass
		Initial								
B	VSWR									
	Plug									
		0.1~3.0GHz	1.3 MAX.	5	-	1.082	1.11	1.06	0.012	Pass
		3.0~6.0GHz	1.5 MAX.	5	-	1.178	1.21	1.15	0.019	Pass
		6.0~9.0GHz	1.9 MAX.	5	-	1.294	1.38	1.25	0.038	Pass
	Receptacle									
		0.1~3.0GHz	1.3 MAX.	5	-	1.085	1.09	1.08	0.006	Pass
	3.0~6.0GHz	1.4 MAX.	5	-	1.233	1.27	1.18	0.033	Pass	
	6.0~9.0GHz	1.8 MAX.	5	-	1.515	1.60	1.41	0.068	Pass	
C	Unmating force									
	Total force<Unlock state>									
		Initial	5 MIN.	10	N	16.11	17.4	14.8	0.77	Pass
		30 cycles	3 MIN.	10	N	11.04	11.9	10.2	0.56	Pass
	Inner contact									
	Initial	0.15 MIN.	10	N	0.369	0.39	0.35	0.014	Pass	
	30 cycles	0.10 MIN.	10	N	0.230	0.25	0.22	0.011	Pass	
D	Un-mating force <Lock state>									
		Initial	20 MIN.	10	N	36.89	38.0	35.9	0.88	Pass
E	Crimp strength									
		-	10N MIN.	10	N	19.52	20.9	18.3	0.86	Pass
F	Durability									
	Contact resistance of main contact									
		Initial	20 MAX.	10	mΩ	6.77	7.0	6.5	0.22	Pass
		After testing	25 MAX.			7.27	7.8	6.9	0.28	Pass
	Contact resistance of ground contact									
	Initial	10 MAX.	10	mΩ	4.96	5.5	4.5	0.26	Pass	
	After testing	15 MAX.			6.53	7.6	4.9	0.80	Pass	

Group	Test items	Specification	Number of samples	Unit	AVE.	MAX.	MIN.	S	Judgement	
	Measurements									
G	Contact resistance with force on the cable									
	Contact resistance of main contact									
		Initial	20 MAX.	10	mΩ	6.90	7.5	6.1	0.41	Pass
		After testing	25 MAX.			7.20	8.2	6.6	0.43	Pass
	Contact resistance of ground contact									
		Initial	10 MAX.	10	mΩ	4.85	6.0	3.4	0.92	Pass
		After testing	15 MAX.			5.51	6.3	4.9	0.49	Pass
	Electrical discontinuity									
	Spec: No creeping discharge, flashover, no insulator breakdown shall occur.									
		After testing	-	10	-	No abnormality			Pass	
	Appearance									
		Initial	No abnormality adversely affecting the performance shall occur.	10	-	No abnormality			Pass	
	After testing	No abnormality				Pass				

H	Vibration									
	Contact resistance of main contact									
		Initial	20 MAX.	10	mΩ	6.67	7.2	6.1	0.37	Pass
		After testing	25 MAX.			6.67	7.1	6.1	0.37	Pass
	Contact resistance of ground contact									
		Initial	10 MAX.	10	mΩ	5.03	5.7	4.6	0.38	Pass
		After testing	15 MAX.			5.17	6.5	4.5	0.62	Pass
	Electrical discontinuity									
	Spec: No creeping discharge, flashover, no insulator breakdown shall occur.									
		After testing	-	10	-	No abnormality			Pass	
	Appearance									
		Initial	No abnormality adversely affecting the performance shall occur.	10	-	No abnormality			Pass	
	After testing	No abnormality				Pass				

J	Shock									
	Contact resistance of main contact									
		Initial	20 MAX.	10	mΩ	6.67	7.2	6.1	0.37	Pass
		After testing	25 MAX.			6.73	7.4	6.4	0.39	Pass
	Contact resistance of ground contact									
		Initial	10 MAX.	10	mΩ	5.03	5.7	4.6	0.38	Pass
		After testing	15 MAX.			5.19	6.0	4.7	0.48	Pass
	Electrical discontinuity									
	Spec: No creeping discharge, flashover, no insulator breakdown shall occur.									
		After testing	-	10	-	No abnormality			Pass	
	Appearance									
		Initial	No abnormality adversely affecting the performance shall occur.	10	-	No abnormality			Pass	
	After testing	No abnormality				Pass				

Group	Test items	Measurements	Specification	Number of samples	Unit	AVE.	MAX.	MIN.	S	Judgement	
K	Thermal shock										
	Contact resistance of main contact										
		Initial	20 MAX.	10	mΩ	6.62	8.0	6.1	0.54	Pass	
		After testing	25 MAX.			6.61	7.6	5.9	0.52	Pass	
	Contact resistance of ground contact										
		Initial	10 MAX.	10	mΩ	4.98	6.5	4.2	0.70	Pass	
		After testing	15 MAX.			5.26	6.4	4.3	0.75	Pass	
	Insulation residence										
		Initial	500MΩ MIN.	10	MΩ	10,000MΩ MIN.				Pass	
		After testing	100MΩ MIN.			10,000MΩ MIN.				Pass	
	Appearance										
		Initial	No abnormality adversely affecting the performance shall occur.	10	-	No abnormality				Pass	
	After testing	No abnormality				Pass					

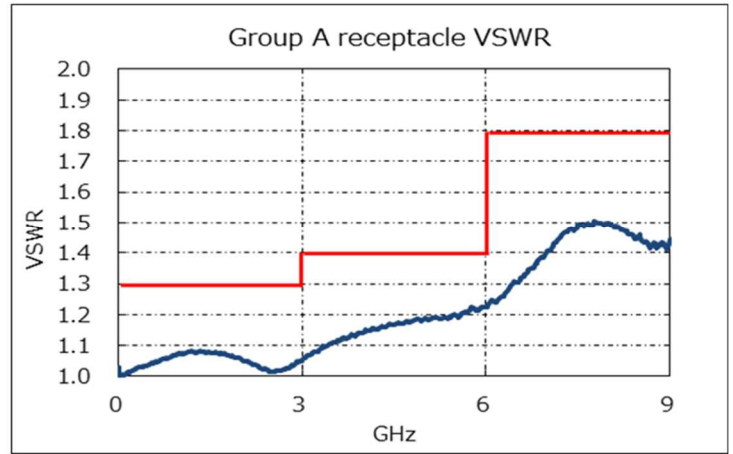
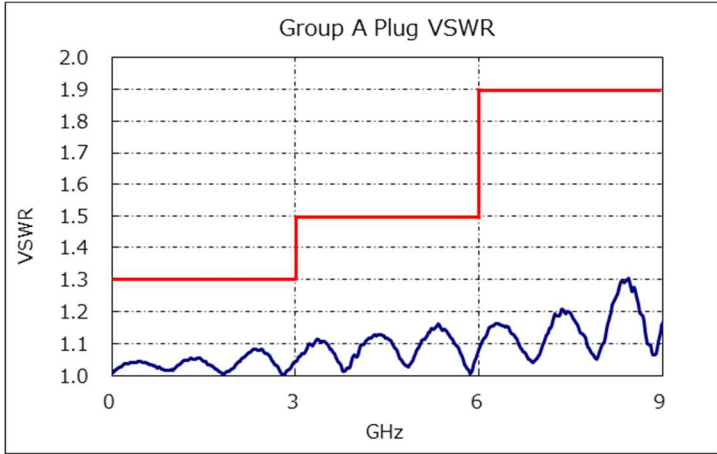
L	Humidity(Steady State)										
	Contact resistance of main contact										
		Initial	20 MAX.	10	mΩ	6.76	7.2	6.4	0.27	Pass	
		After testing	25 MAX.			6.41	6.9	6.0	0.26	Pass	
	Contact resistance of ground contact										
		Initial	10 MAX.	10	mΩ	4.55	6.5	3.3	1.08	Pass	
		After testing	15 MAX.			4.97	6.8	4.2	0.78	Pass	
	Insulation residence										
		Initial	500MΩ MIN.	10	MΩ	10,000MΩ MIN.				Pass	
		After testing	100MΩ MIN.			10,000MΩ MIN.				Pass	
	Appearance										
		Initial	No abnormality adversely affecting the performance shall occur.	10	-	No abnormality				Pass	
	After testing	No abnormality				Pass					

M	Salt water spray										
	Contact resistance of main contact										
		Initial	20 MAX.	10	mΩ	7.07	8.6	6.3	0.75	Pass	
		After testing	25 MAX.			6.53	7.2	6.1	0.36	Pass	
	Contact resistance of ground contact										
		Initial	10 MAX.	10	mΩ	4.73	5.8	3.6	0.63	Pass	
		After testing	15 MAX.			5.11	6.9	4.1	0.90	Pass	
	Appearance										
		Initial	No abnormality adversely affecting the performance shall occur.	10	-	No abnormality				Pass	
		After testing				No abnormality				Pass	

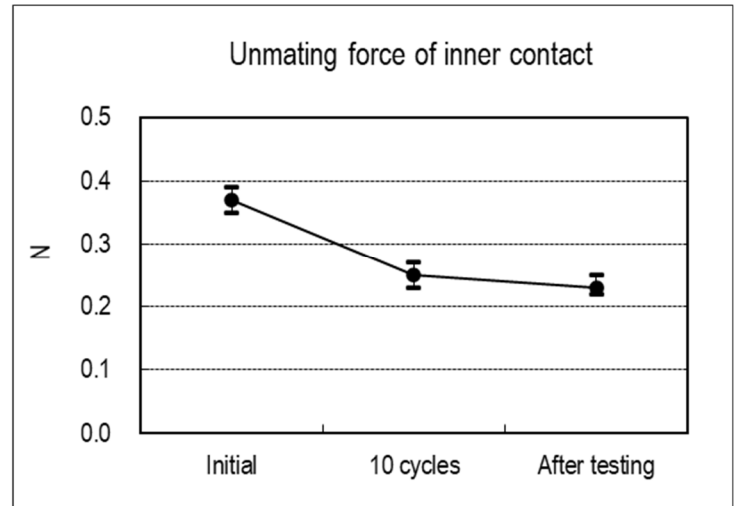
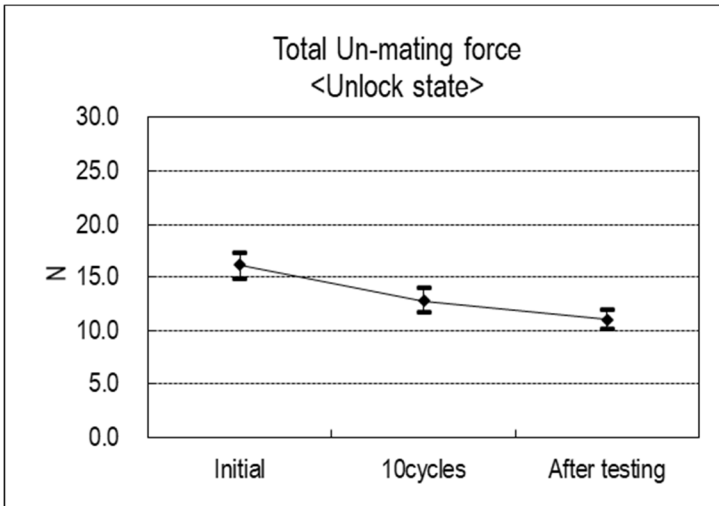
Group	Test items	Specification	Number of samples	Unit	AVE.	MAX.	MIN.	S	Judgement
	Measurements								
N	High Temperature Life								
	Contact resistance of main contact								
	Initial	20 MAX.	10	mΩ	6.97	7.5	6.4	0.35	Pass
	After testing	25 MAX.			7.34	8.2	6.6	0.50	Pass
	Contact resistance of ground contact								
	Initial	10 MAX.	10	mΩ	5.00	5.9	4.4	0.41	Pass
	After testing	15 MAX.			5.97	7.4	5.3	0.67	Pass
	Appearance								
	Initial	No abnormality adversely affecting the performance shall occur.	10	-	No abnormality				Pass
	After testing				No abnormality				Pass

P	Solder ability								
	Spec: More than 95% of the dipped surface shall be evenly wet.								
	After testing	-	10	-	No abnormality				Pass

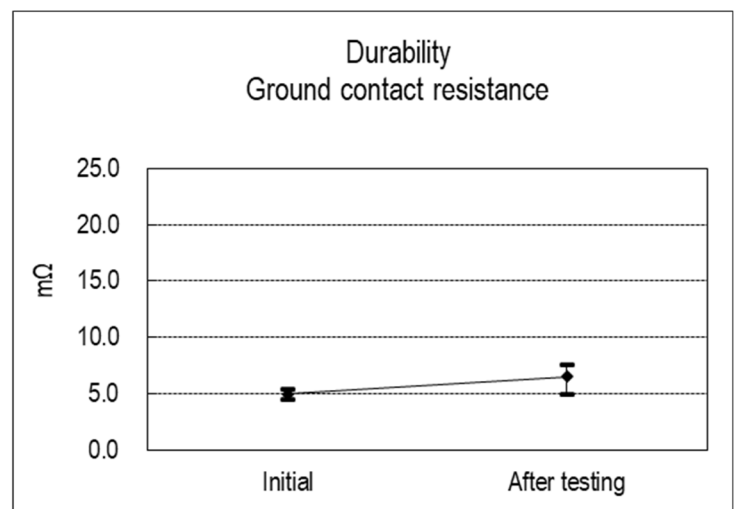
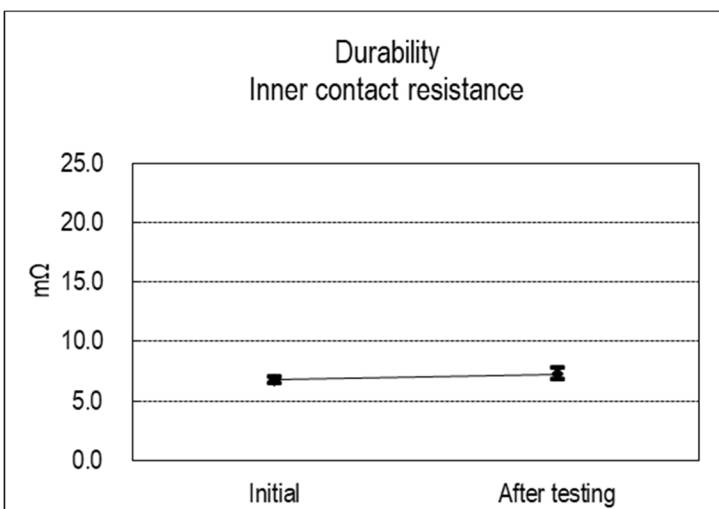
Q	Reflow soldering heat resistance								
	Appearance								
	Spec: No abnormality adversely affecting the performance shall occur.								
After testing	-	10	-	No abnormality				Pass	



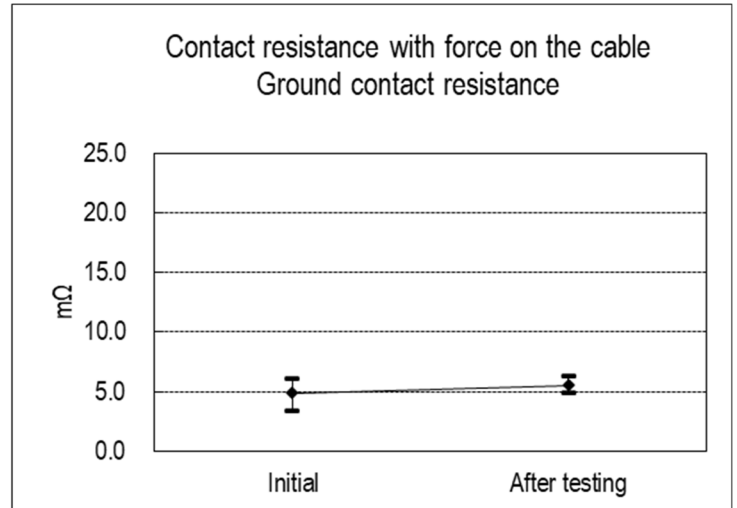
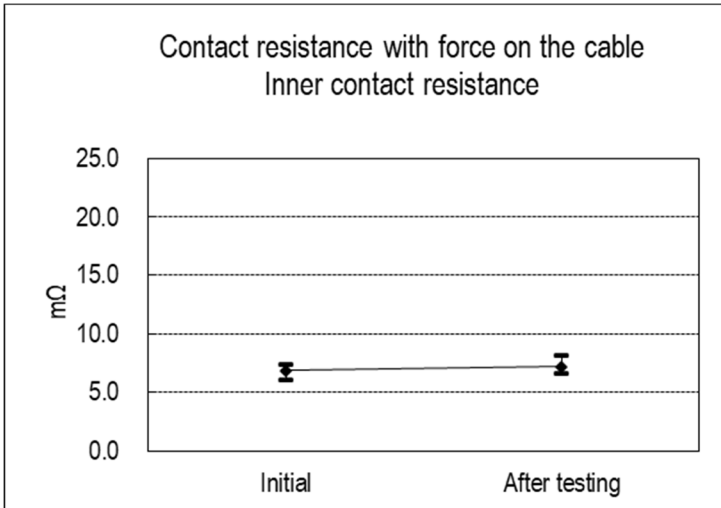
(Graph 1) VSWR



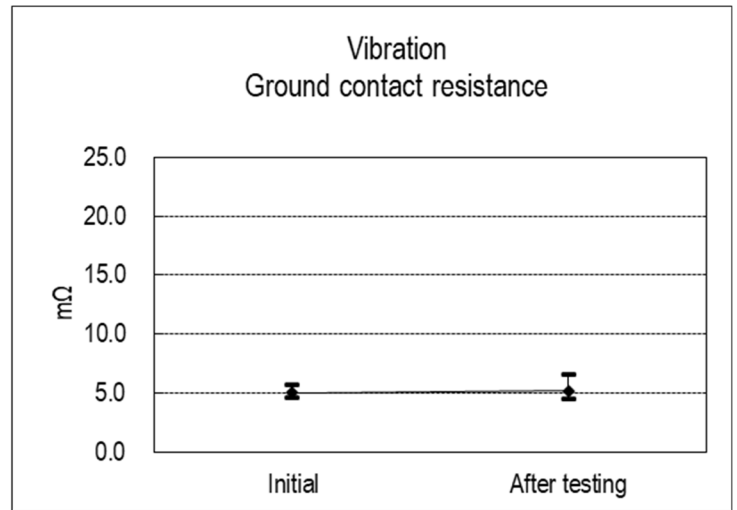
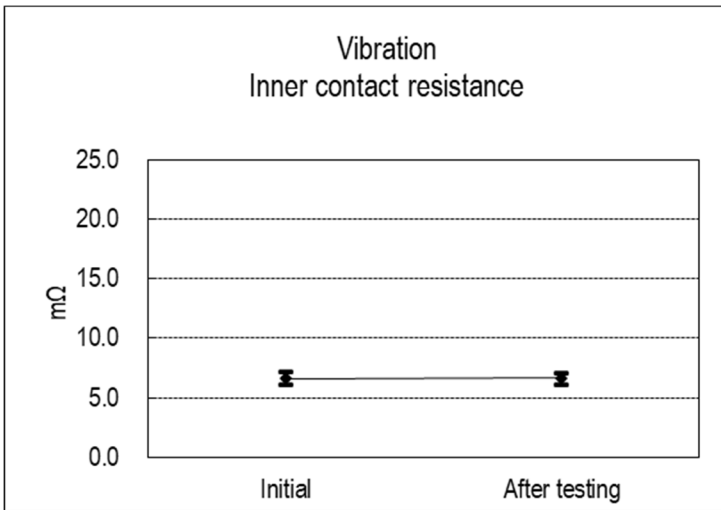
(Graph 2) Unmating force



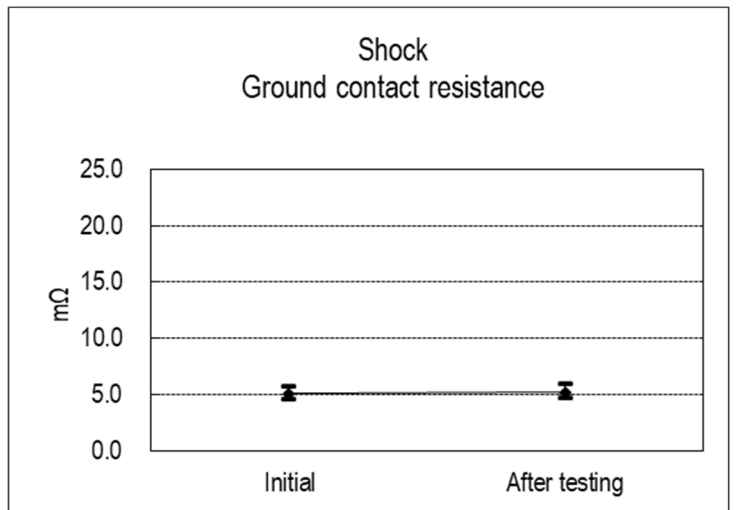
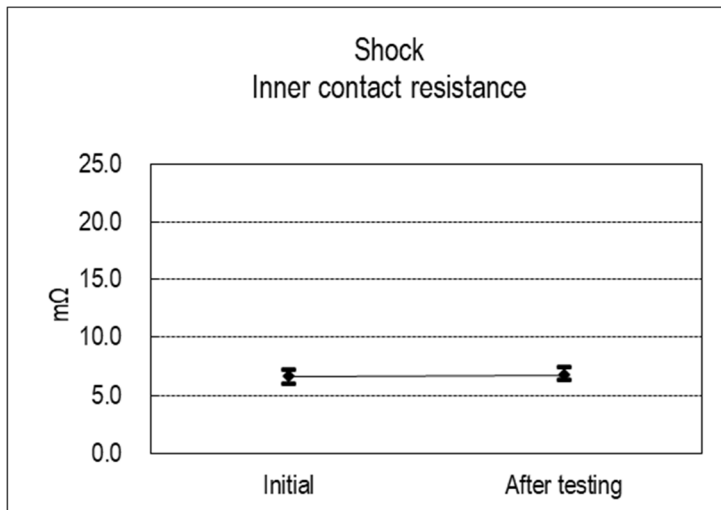
(Graph 3) Durability



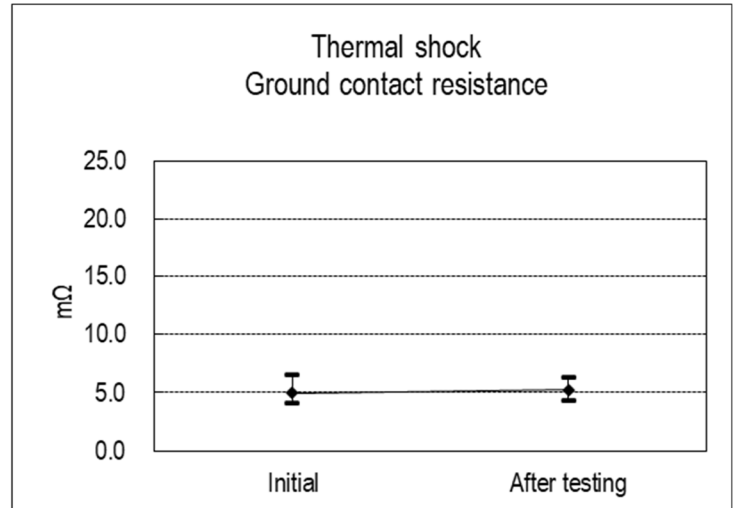
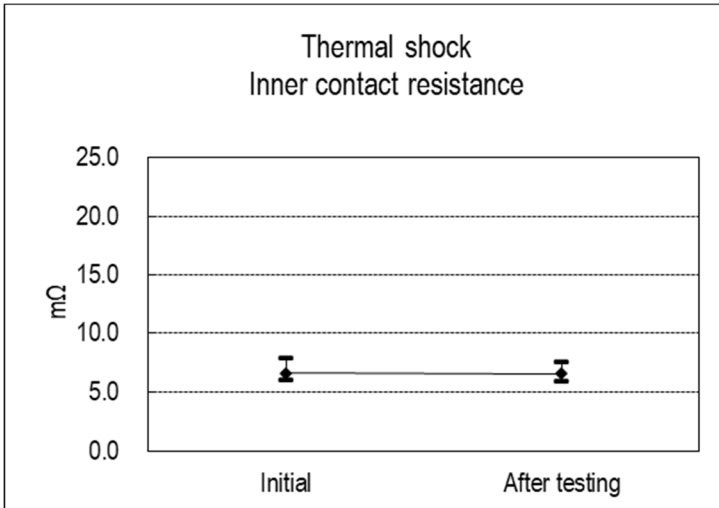
(Graph 4) Cable Retention Force



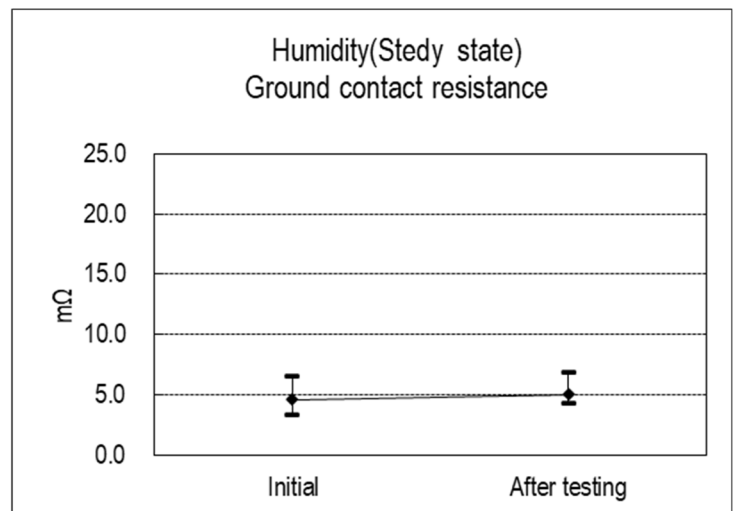
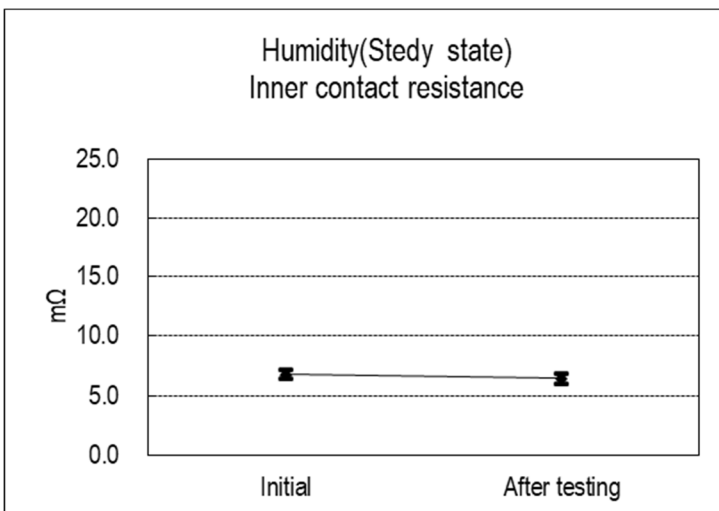
(Graph 5) Vibration



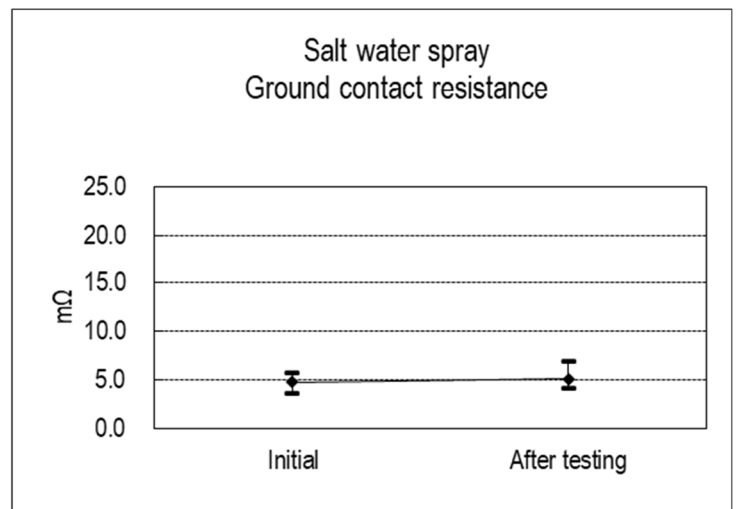
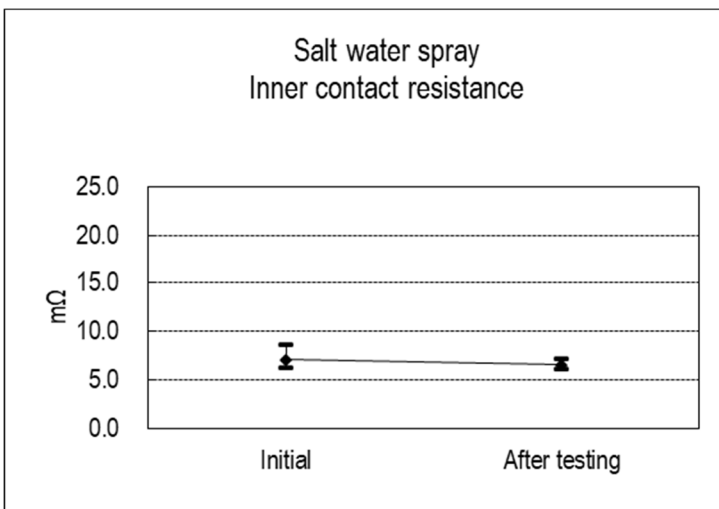
(Graph 6) Shock



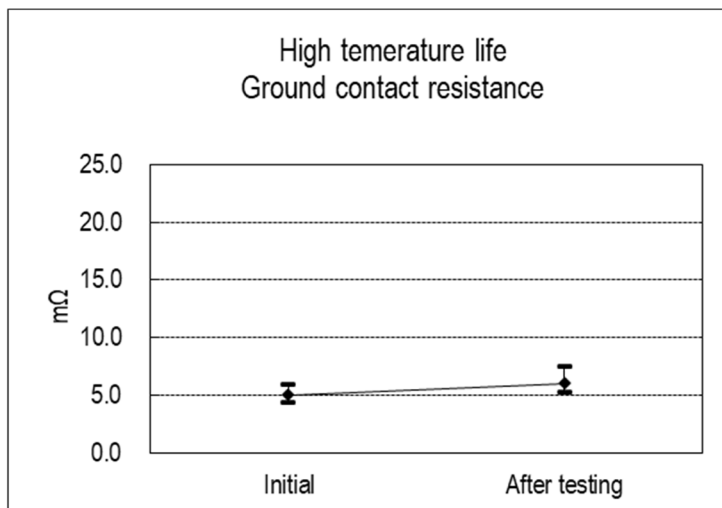
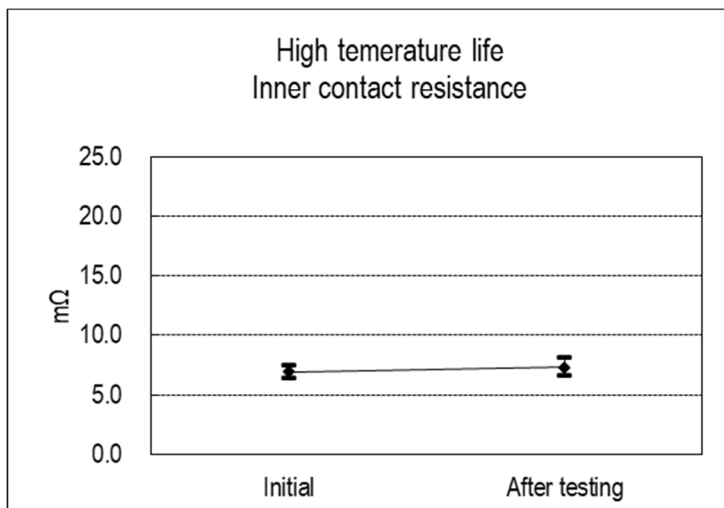
Graph 7) Thermal Shock



(Graph 8) Humidity (Steady State)



(Graph 9) Salt Water Spray



(Graph 10) High Temperature Life