MHF® I Connector with Lock

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

Test Report

Product Specification no. PRS-2396

1	T22058	March 14, 2022	S.Taguchi	-	M.Takemoto
0	T17117	August 9, 2017	K.Ikeshita	-	T.Matsumoto
Rev.	ECN	Date	Prepared by	Checked by	Approved by

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-13）
(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 / Measurements	Specification	Number of samples	Unit	AVE.	MAX.	MIN.	S	Judgement
A	Dielectric withstanding voltage								
	Initial	Spec: No creeping discharge, flashover, no insulator breakdown shall occur.							
		-	10	-	No abnormality				Pass
B	VSWR								
	Plug								
	0.1～3.0GHz	1.3 MAX.	5	-	1.037	1.04	1.03	0.004	Pass
	3.0～6.0GHz	1.5 MAX.	5	-	1.121	1.14	1.11	0.009	Pass
	6.0～9.0GHz	1.9 MAX.	5	-	1.260	1.31	1.21	0.028	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	16.85	18.6	15.2	0.97	Pass
F	Durability								
	Contact resistance of main contact								
	Initial	20 MAX.	10	mΩ	6.45	7.1	6.1	0.30	Pass
	After testing	25 MAX.			6.40	6.8	6.1	0.23	Pass
	Contact resistance of ground contact								
	Initial	10 MAX.	10	mΩ	5.29	6.8	3.5	0.82	Pass
	After testing	15 MAX.			5.46	6.0	4.1	0.59	Pass

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Group	Test items / Measurements	Specification	Number of samples	Unit	AVE.	MAX.	MIN.	S	Judgement
G	Contact resistance with force on the cable								
	Contact resistance of main contact								
	Initial	20 MAX.	10	mΩ	6.84	7.8	5.6	0.74	Pass
	After testing	25 MAX.			6.67	7.7	6.0	0.53	Pass
	Contact resistance of ground contact								
	Initial	10 MAX.	10	mΩ	4.19	4.8	4.0	0.26	Pass
	After testing	15 MAX.			4.32	5.0	4.0	0.26	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	6.90	7.5	6.6	0.30	Pass
	After testing	25 MAX.			6.76	7.4	6.5	0.27	Pass
	Contact resistance of ground contact								
	Initial	10 MAX.	10	mΩ	4.71	6.6	4.0	0.87	Pass
	After testing	15 MAX.			4.66	6.5	4.0	0.79	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	6.90	7.5	6.6	0.30	Pass
	After testing	25 MAX.			7.07	8.0	6.7	0.37	Pass
	Contact resistance of ground contact								
	Initial	10 MAX.	10	mΩ	4.71	6.6	4.0	0.87	Pass
	After testing	15 MAX.			5.01	8.3	4.3	1.19	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

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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	7.05	7.7	6.5	0.48	Pass
	After testing	25 MAX.			6.94	7.8	6.3	0.52	Pass
	Contact resistance of ground contact								
	Initial	10 MAX.	10	mΩ	4.61	5.0	4.0	0.33	Pass
	After testing	15 MAX.			4.84	5.7	4.1	0.44	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	5.48	5.9	5.1	0.29	Pass
	After testing	25 MAX.			6.39	7.2	5.8	0.45	Pass
	Contact resistance of ground contact								
	Initial	10 MAX.	10	mΩ	5.78	6.8	5.0	0.53	Pass
	After testing	15 MAX.			5.99	7.1	4.7	0.87	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	6.08	6.4	5.6	0.28	Pass
	After testing	25 MAX.			6.44	6.9	6.2	0.24	Pass
	Contact resistance of ground contact								
	Initial	10 MAX.	10	mΩ	4.53	5.7	3.7	0.51	Pass
	After testing	15 MAX.			5.04	5.7	4.6	0.35	Pass
	Appearance								
	Initial	No abnormality adversely affecting the performance shall occur.	10	-	No abnormality				Pass
	After testing				No abnormality				Pass

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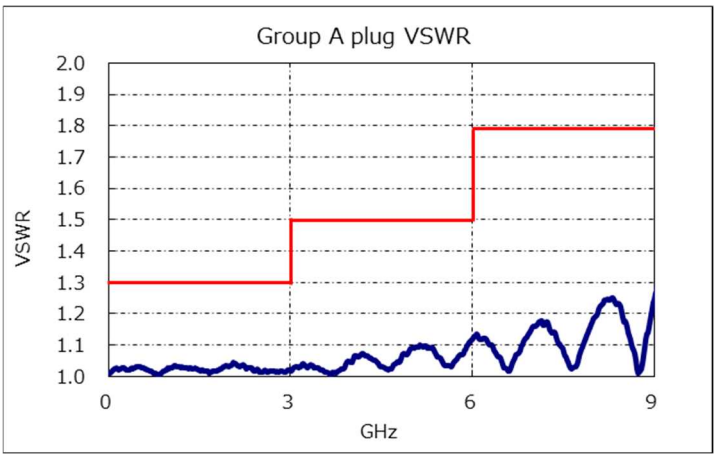
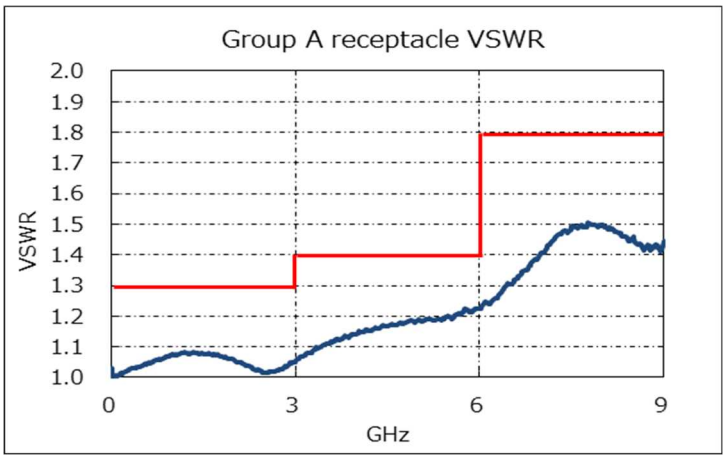
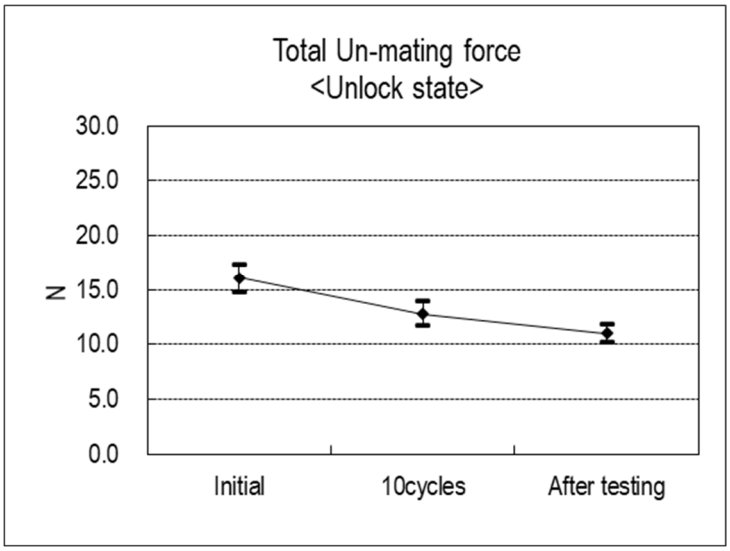
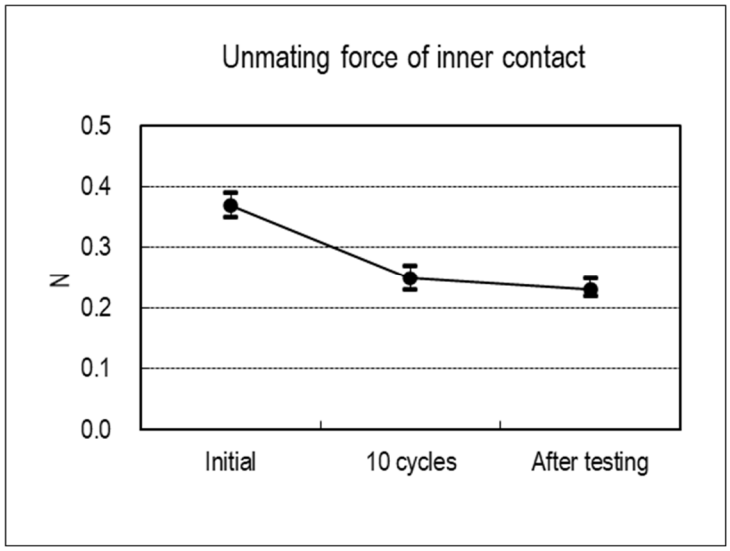
Group	Test items / Measurements	Specification	Number of samples	Unit	AVE.	MAX.	MIN.	S	Judgement
N	High Temperature Life								
	Contact resistance of main contact								
	Initial	20 MAX.	10	mΩ	5.93	7.5	5.3	0.69	Pass
	After testing	25 MAX.			6.94	7.8	6.3	0.45	Pass
	Contact resistance of ground contact								
	Initial	10 MAX.	10	mΩ	5.72	7.6	4.6	1.08	Pass
	After testing	15 MAX.			7.19	8.9	6.1	1.14	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



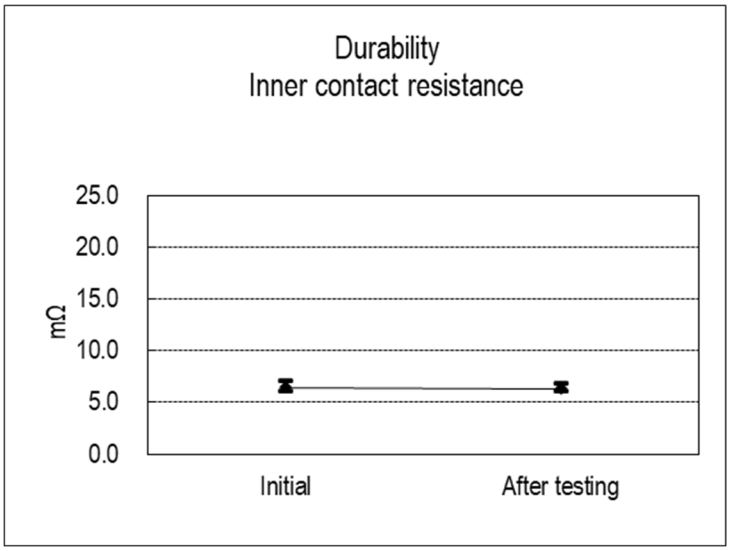


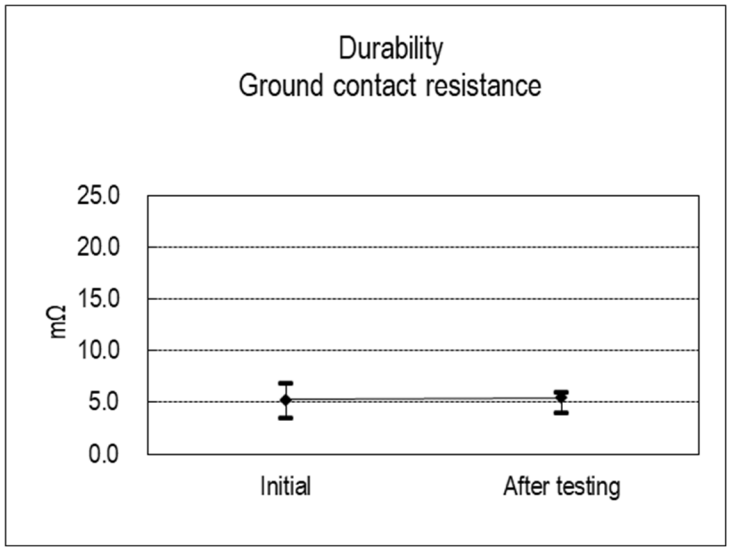
(Graph 1) VSWR



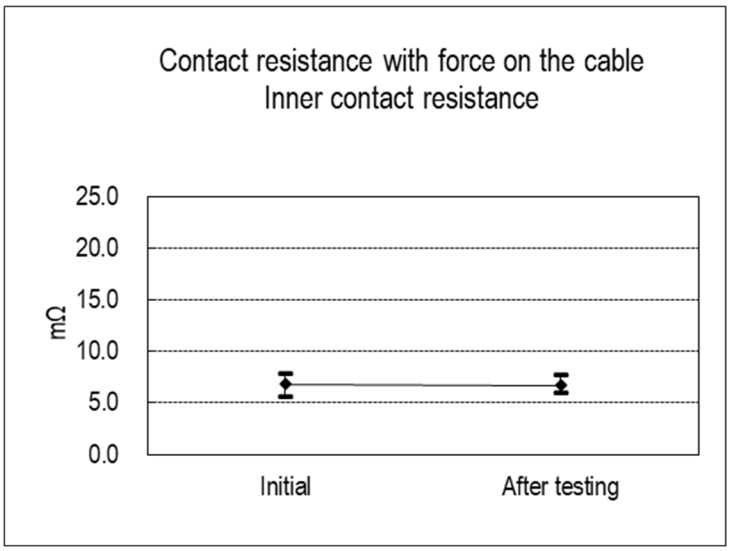


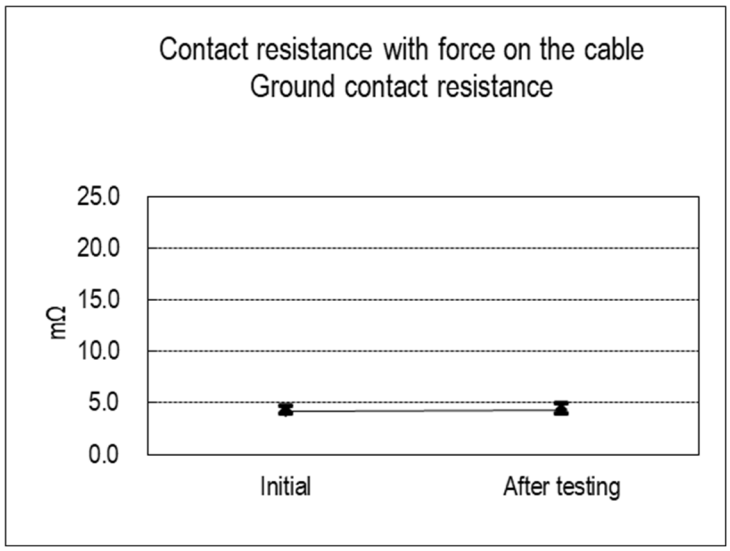
(Graph 2) Unmating force



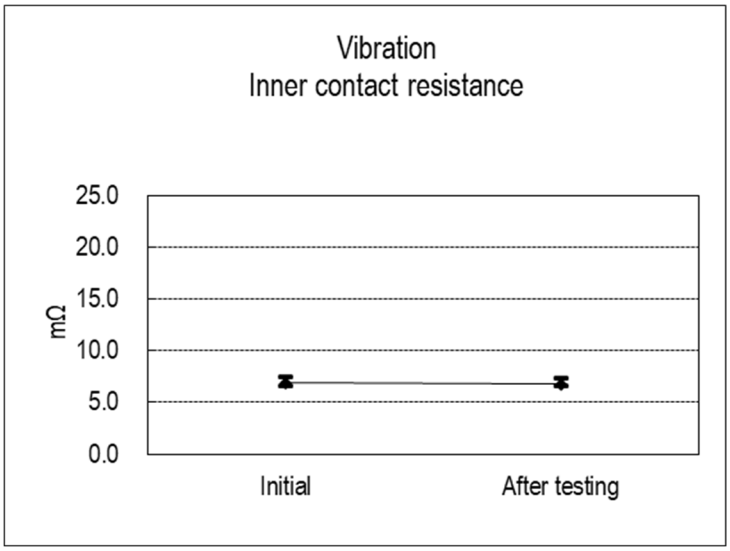


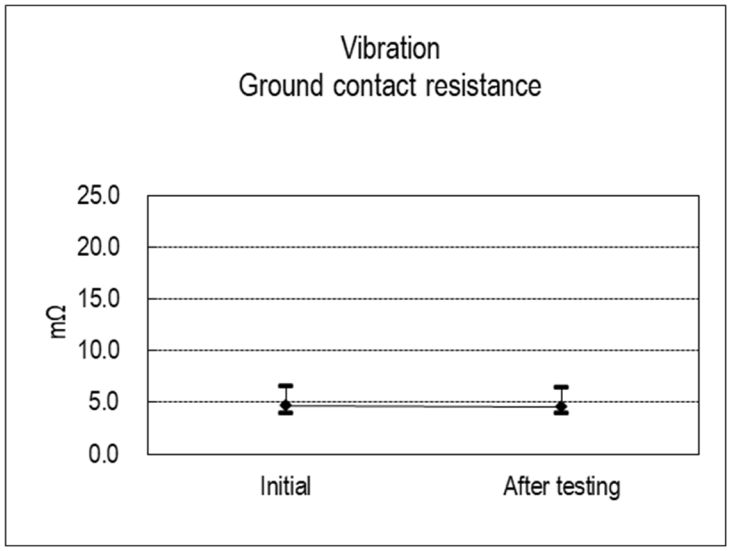
(Graph 3) Durability



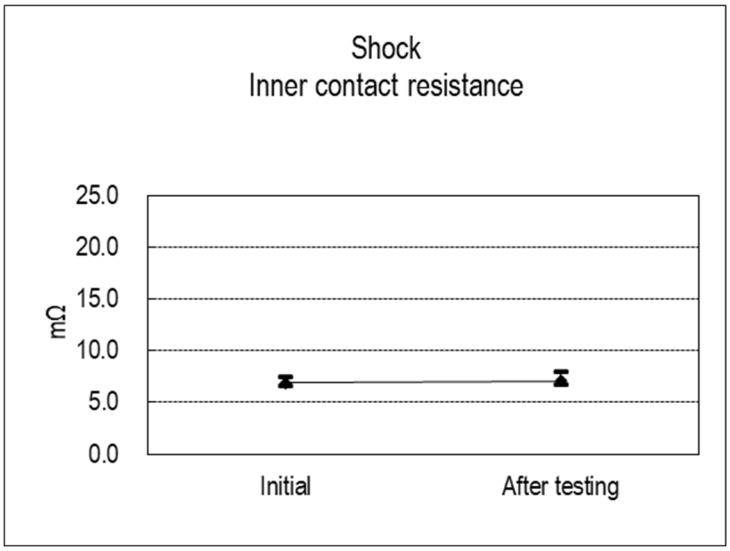


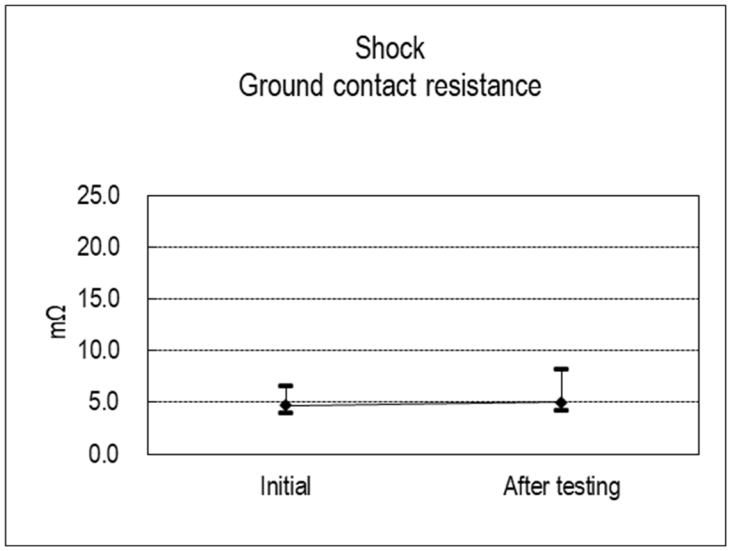
(Graph 4) Cable Retention Force



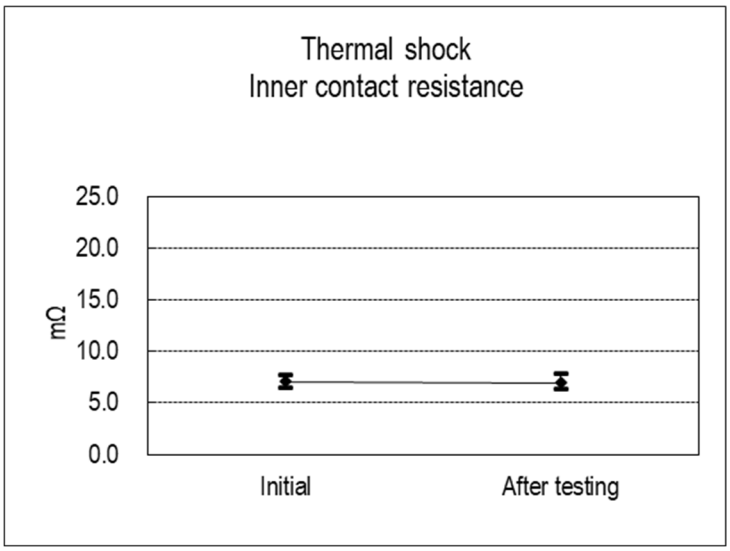


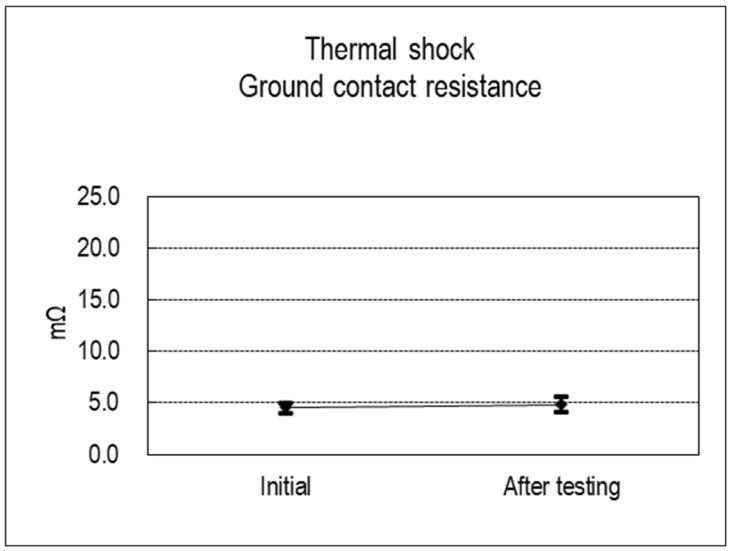
(Graph 5) Vibration



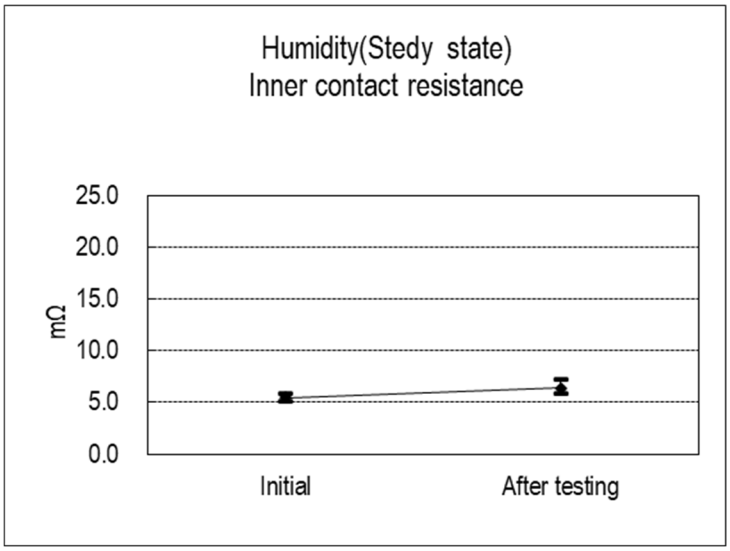


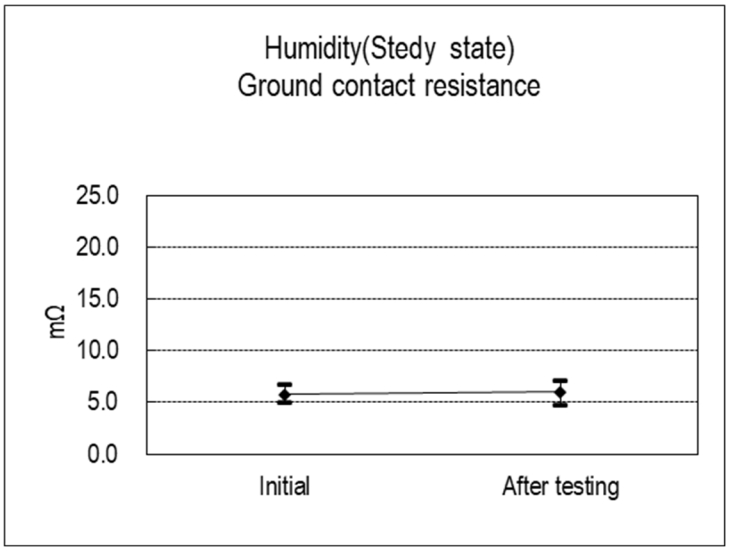
(Graph 6) Shock



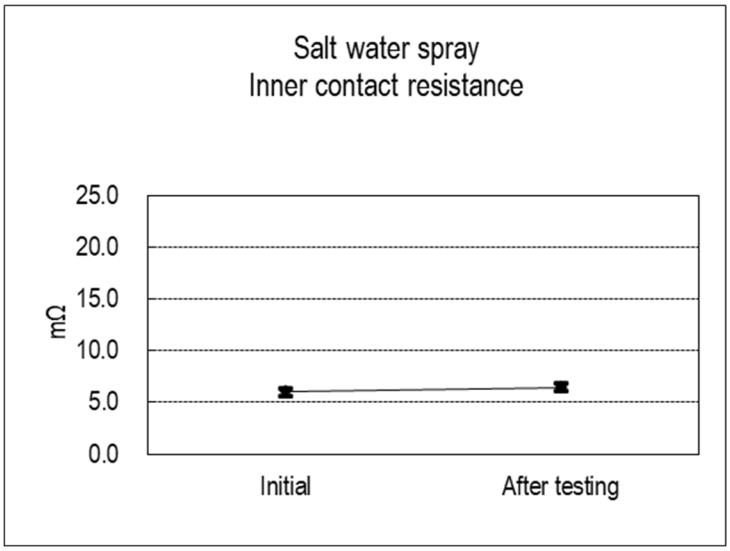


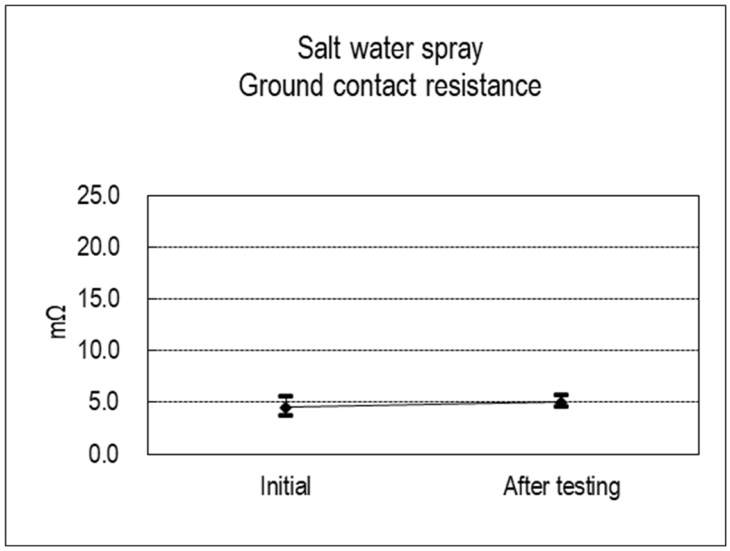
Graph 7) Thermal Shock



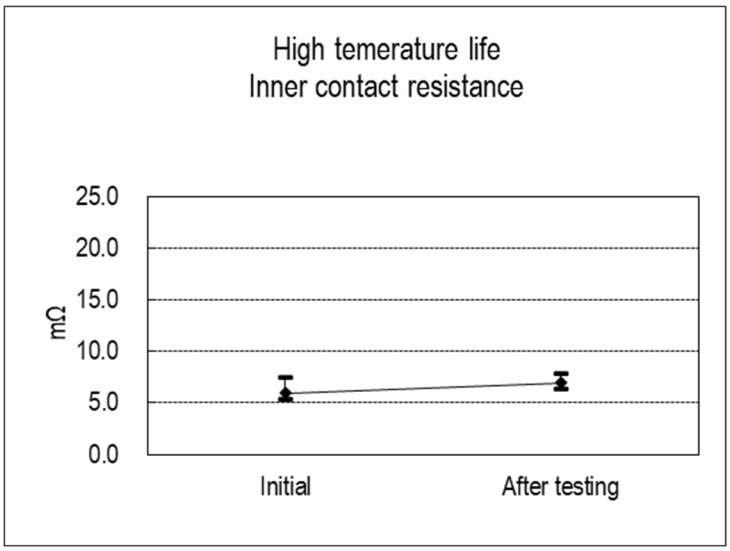


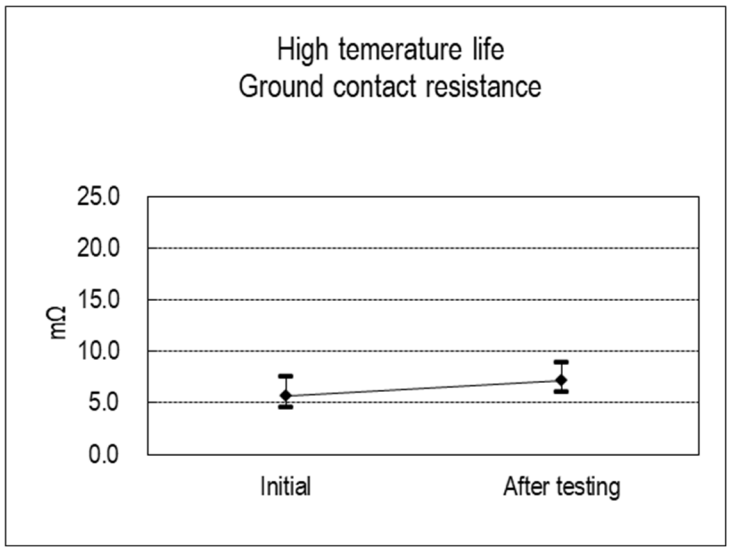
(Graph 8) Humidity (Steady State)





(Graph 9) Salt Water Spray





(Graph 10) High Temperature Life