

MHF® I Connector (Plug: 2.00 Type)

Part No. Plug: 20767-001R-20 Receptacle: 20279-001E-** / 20431-001E-01 / 20441-001E-01

Test Report

Product Specification no. PRS-2490

3	T23069	December 22, 2023	M.Toida	K. Yufu	Y. Hashimoto
2	T23059	November 28, 2023	K.Tanaka	K. Yufu	Y. Hashimoto
1	T22091	June 10, 2022	S. Tsuboki	K. Yufu	Y. Hashimoto
0	T18069	June 26, 2018	M. Nomoto	K. Motomura	K. Yotsutani
Rev.	ECN	Date	Prepared by	Checked by	Approved by

1. Purpose

To evaluate the performance of MHF I Connector in accordance with PRS-2490.

2. Specimen

(1) MHF I PLUG (Part No:20767-001R-20)

Cable:AWG#26 coaxial cable (Jacket diameter 2.00mm)

(2) MHF I RECEPTACLE (Part No:20279-001E-0* / 20431-001E-01 / 20441-001E-01)

*The evaluation results are representative of 20279-001E-01.

3 Test Sequence

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

4. Result

See Table 2-1 to 2-3, Graph 1 to 18. For the details of the testing conditions and requirements, see PRS-2490.

The “n” in the tables show the number of measurement points.

5. Conclusion

All the specimens met the requirements of PRS-2490.

Table 1 Test Sequence and Sample Quantity

Test Item	Group													
	A	B	C	D	E	F	G	H	J	K	L	M	N	
Contact resistance					1,3	1,3	1,3	1,4	1,4		1,3			
Insulation resistance								2,5	2,5					
D. W. Voltage	1													
VSWR		1												
Unmating force			1											
Crimp strength				1										
Durability					2									
Vibration						2								
Shock							2							
Thermal shock								3						
Humidity (Steady state)									3					
Salt water spray										1				
High temperature life											2			
Solder ability												1		
Soldering heat resistance													1	
Sample Quantity	Plug	10	10	10	10	10	10	10	10	10	10	10	-	-
	Receptacle	10	5	10	-	10	10	10	10	10	10	10	10	10
Test board (pcs.)	10	5	10	-	10	10	10	10	10	10	10	10	-	10

※Numbers indicate sequence in which tests are performed.

Table 2-1 Test Result

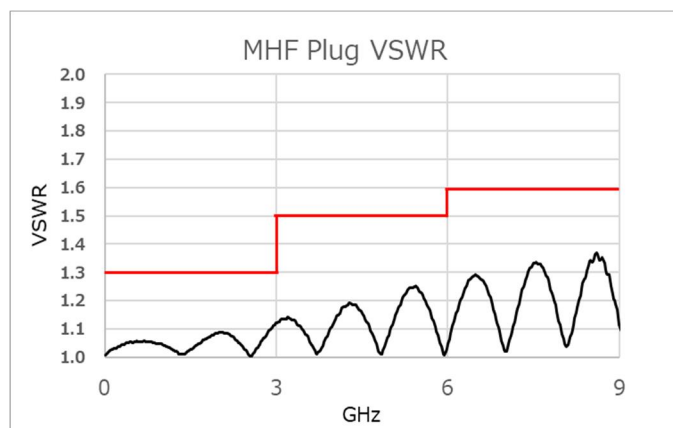
	Test items	Measurements	Spec.	n	Unit	Data				Judge	
						AVE	MAX	MIN	S		
A	D.W.Voltage	Initial	No abnormality	5	-	No abnormality				OK	
B	VSWR Plug	0.1~3GHz	1.30 MAX.	10	----	1.118	1.13	1.11	0.005	OK	
		3~6GHz	1.50 MAX.		----	1.237	1.25	1.21	0.013	OK	
		6~9GHz	1.60 MAX.		----	1.344	1.37	1.32	0.017	OK	
	VSWR Rece.	0.1~3GHz	1.30 MAX.	5	----	1.085	1.09	1.08	0.006	OK	
		3~6GHz	1.40 MAX.		----	1.233	1.27	1.18	0.033	OK	
		6~9GHz	1.80 MAX.		----	1.515	1.60	1.41	0.068	OK	
C	Un-mating force	Initial	5N MIN.	10	N	12.74	13.5	12.0	0.50	OK	
		30 cycles	3N MIN.		N	8.03	9.1	7.5	0.46	OK	
D	Crimp strength	Initial	15N MIN.	10	N	30.75	32.4	29.1	0.91	OK	
E	Durability	Contact resistance of inner contact									
		Initial	20mΩ MAX.	10	mΩ	7.91	8.89	6.9	0.81	OK	
		After testing	----	10	mΩ	7.03	8.3	6.1	0.72	OK	
		ΔR	20mΩ MAX.	10	mΩ	-1.03	2.16	-2.58	1.51	OK	
		Contact resistance of ground contact									
		Initial	20mΩ MAX.	10	mΩ	3.95	4.2	3.7	0.18	OK	
After testing	----	10	mΩ	4.22	5.6	3.6	0.55	OK			
ΔR	100mΩ MAX.	10	mΩ	0.27	1.76	-0.38	1.51	OK			
F	Vibration	Contact resistance of inner contact									
		Initial	20mΩ MAX.	10	mΩ	6.71	7.2	6.3	0.30	OK	
		After testing	----	10	mΩ	8.18	8.9	7.8	0.33	OK	
		ΔR	20mΩ MAX.	10	mΩ	-0.35	0.31	-1.02	0.94	OK	
		Contact resistance of ground contact									
		Initial	20mΩ MAX.	10	mΩ	4.09	4.3	3.9	0.15	OK	
		After testing	----	10	mΩ	4.17	4.6	3.6	0.33	OK	
		ΔR	100mΩ MAX.	10	mΩ	0.03	0.68	-0.60	0.46	OK	
		Electrical Discontinuity	Spec. : No electrical discontinuity grater than 1μ sec. shall occur.								
		-----	10	-----	No discontinuity				OK		
Appearance	Initial	10	-----	No abnormality				OK			
	After testing	10	-----	No abnormality				OK			
G	Shock	Contact resistance of inner contact									
		Initial	20mΩ MAX.	10	mΩ	6.58	7.0	5.6	0.48	OK	
		After testing	----	10	mΩ	6.58	7.3	5.8	0.56	OK	
		ΔR	20mΩ MAX.	10	mΩ	0.00	0.91	-0.95	0.68	OK	
		Contact resistance of ground contact									
		Initial	20mΩ MAX.	10	mΩ	4.23	4.7	3.8	0.32	OK	
		After testing	----	10	mΩ	4.33	4.9	3.9	0.32	OK	
		ΔR	100mΩ MAX.	10	mΩ	0.10	0.7	-0.6	0.40	OK	
		Electrical Discontinuity	Spec. : No electrical discontinuity grater than 1μ sec. shall occur.								
		-----	10	-----	No discontinuity				OK		
Appearance	Initial	10	-----	No abnormality				OK			
	After testing	10	-----	No abnormality				OK			

Table 2-2 Test Result

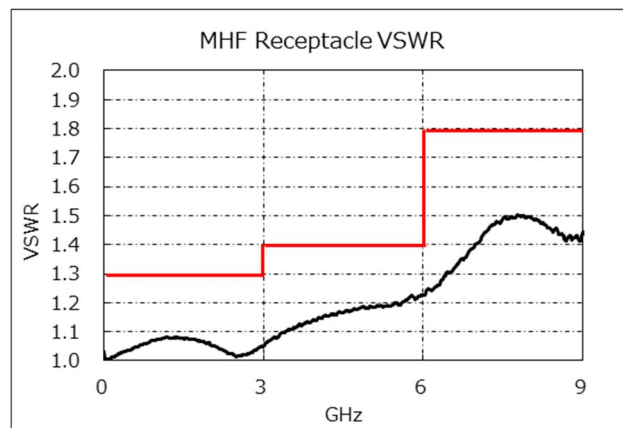
	Test items	Measurements	Spec.	n	Unit	Data				Judge
						AVE	MAX	MIN	S	
H	Thermal shock	Contact resistance of inner contac								
		Initial	20mΩ MAX.	10	mΩ	7.76	9.0	7.1	0.62	OK
		After testing	-----	10	mΩ	7.88	9.2	6.7	0.71	OK
		ΔR	20mΩ MAX.	10	mΩ	0.13	0.8	-0.5	0.43	OK
		Contact resistance of ground contact								
		Initial	20mΩ MAX.	10	mΩ	4.00	4.2	3.9	0.10	OK
		After testing	-----	10	mΩ	5.66	6.0	5.5	0.15	OK
		ΔR	100mΩ MAX.	10	mΩ	1.67	1.9	1.4	0.15	OK
		Insulation resistance	Initial	10	MΩ	10,000 (minimum value)				OK
			After testing	10	MΩ	10,000 (minimum value)				OK
		Appearance	Initial	10	-----	No abnormality				OK
			After testing	10	-----	No abnormality				OK
		J	Humidity Steady state	Contact resistance of inner contact						
Initial	20mΩ MAX.			10	mΩ	7.08	7.6	6.6	0.32	OK
After testing	-----			10	mΩ	7.16	8.3	6.1	0.63	OK
ΔR	20mΩ MAX.			10	mΩ	0.09	1.1	-1.1	0.65	OK
Contact resistance of ground contact										
Initial	20mΩ MAX.			10	mΩ	4.40	5.1	4.1	0.26	OK
After testing	-----			10	mΩ	4.46	4.7	4.3	0.10	OK
ΔR	100mΩ MAX.			10	mΩ	0.05	0.4	-0.4	0.24	OK
Insulation resistance	Initial			10	MΩ	10,000 (minimum value)				OK
	After testing			10	MΩ	10,000 (minimum value)				OK
Appearance	Initial			10	-----	No abnormality				OK
	After testing			10	-----	No abnormality				OK
K	Salt water spray			Contact resistance of inner contact						
		Initial	20mΩ MAX.	10	mΩ	7.14	7.7	6.2	0.56	OK
		After testing	-----	10	mΩ	6.71	7.2	6.3	0.30	OK
		ΔR	20mΩ MAX.	10	mΩ	-0.43	0.3	-1.1	0.46	OK
		Contact resistance of ground contact								
		Initial	20mΩ MAX.	10	mΩ	3.81	4.2	3.6	0.21	OK
		After testing	-----	10	mΩ	5.74	6.3	5.5	0.27	OK
		ΔR	100mΩ MAX.	10	mΩ	1.93	2.6	1.3	0.39	OK
		Appearance	Initial	10	-----	No abnormality				OK
			After testing	10	-----	No abnormality				OK

Table 2-3 Test Result

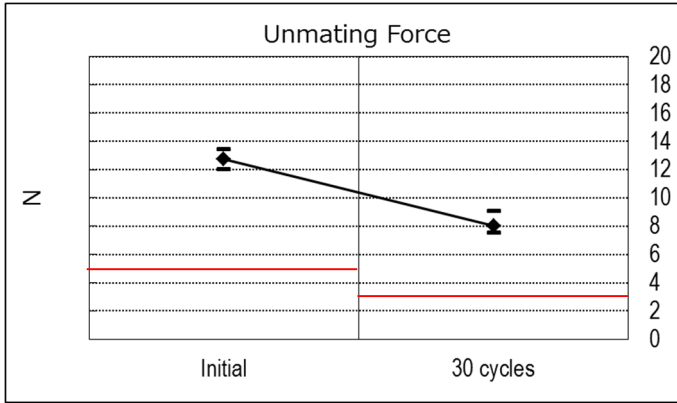
	Test items	Measurements	Spec.	n	Unit	Data				Judge
						AVE	MAX	MIN	S	
L	High temperature Life	Contact resistance of inner contact								
		Initial	20mΩ MAX.	10	mΩ	7.33	8.9	6.2	0.90	OK
		After testing	-----	10	mΩ	9.01	10.1	7.4	1.04	OK
		ΔR	20mΩ MAX.	10	mΩ	1.68	3.0	0.7	0.86	OK
		Contact resistance of ground contact								
		Initial	20mΩ MAX.	10	mΩ	4.14	4.3	4.0	0.10	OK
		After testing	-----	10	mΩ	5.95	6.2	5.7	0.17	OK
		ΔR	100mΩ MAX.	10	mΩ	1.81	2.1	1.5	0.16	OK
		Appearance	Initial	10	-----	No abnormality				OK
			After testing	10	-----	No abnormality				OK
M	Solder ability	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				OK	
N	Reflow soldering heat resistance	Spec. : Abnormality adversely affecting the performance should not occur.								
		-----	10	-----	No abnormality				OK	



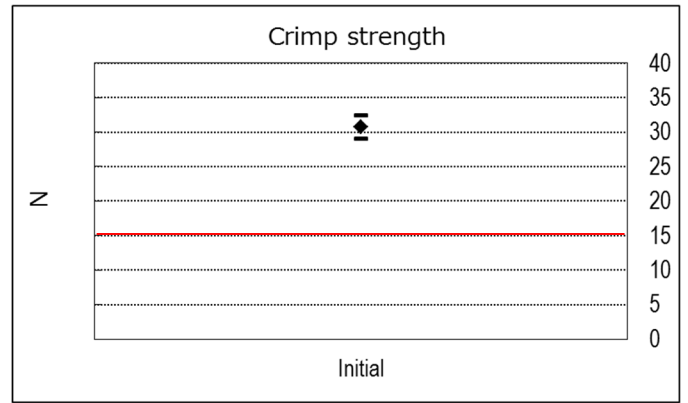
(Graph 1) MHF I Plug VSWR



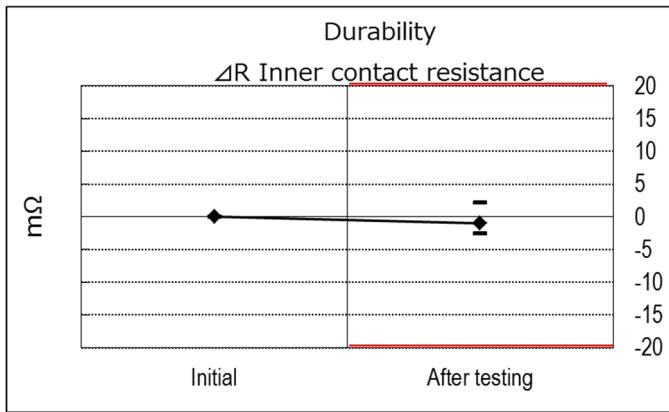
(Graph 2) MHF I Receptacle VSWR



(Graph 3) Unmating Force

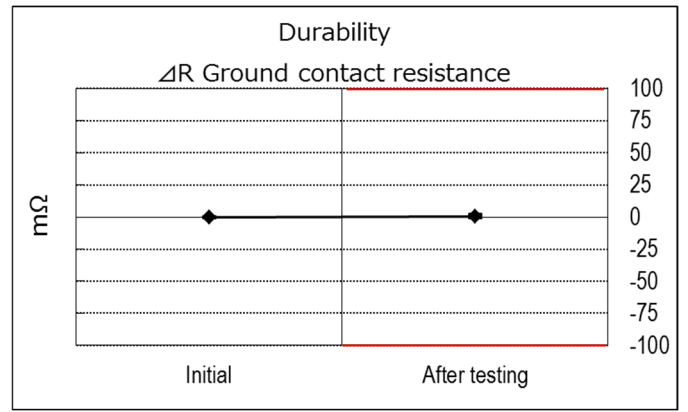


(Graph 4) Crimp strength



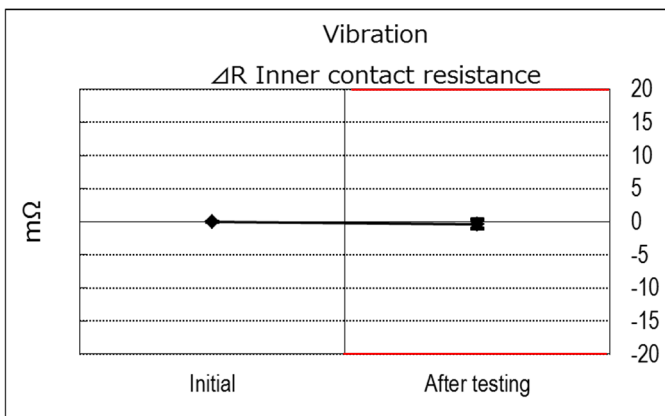
(Graph 5) Durability

ΔR Inner contact resistance



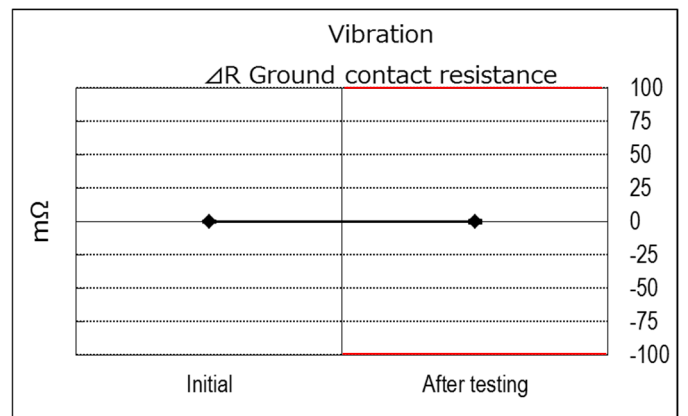
(Graph 6) Durability

ΔR Ground contact resistance



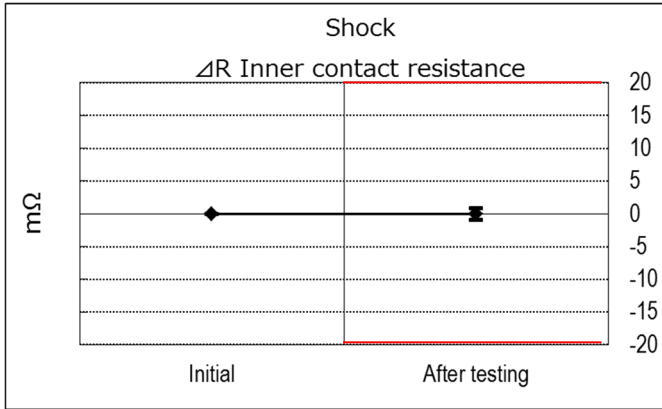
(Graph 7) Vibration

ΔR Inner contact resistance



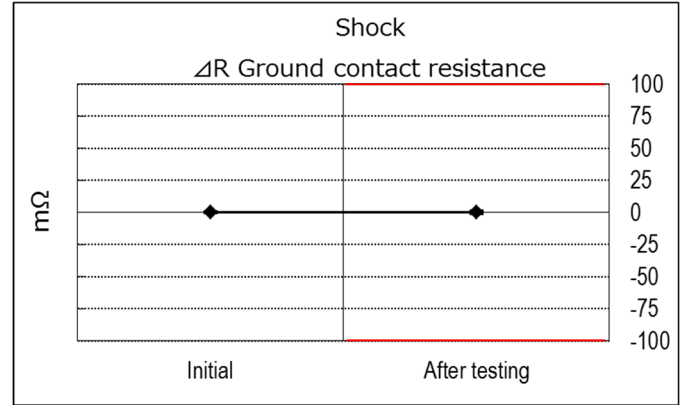
(Graph 8) Vibration

ΔR Ground contact resistance



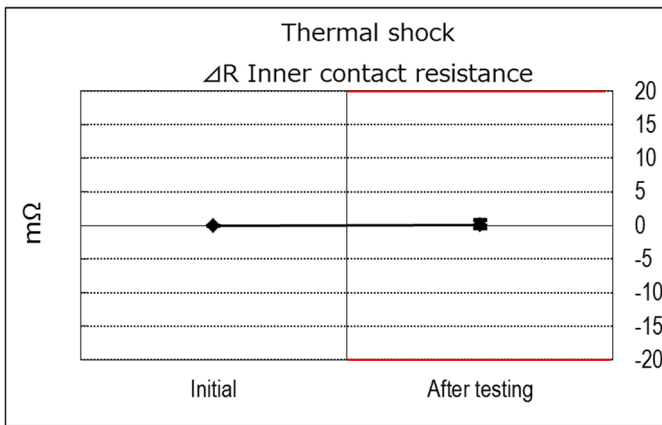
(Graph 9) Shock

ΔR Inner contact resistance



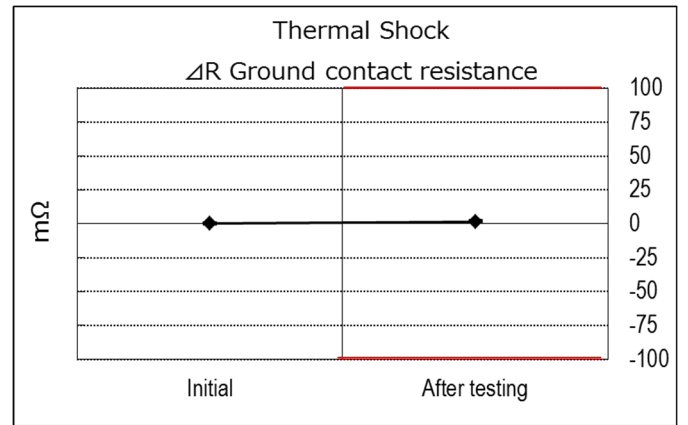
(Graph 10) Shock

ΔR Ground contact resistance



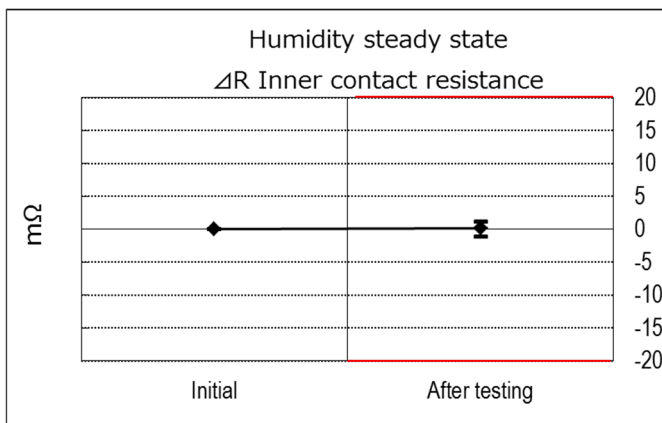
(Graph 11) Thermal Shock

ΔR Inner contact resistance



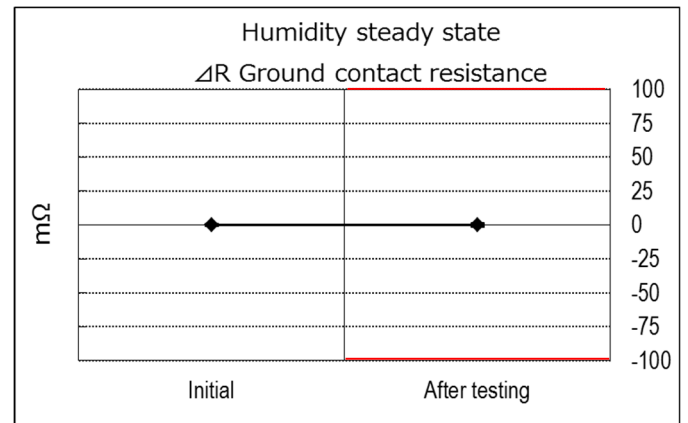
(Graph 12) Thermal Shock

ΔR Ground contact resistance



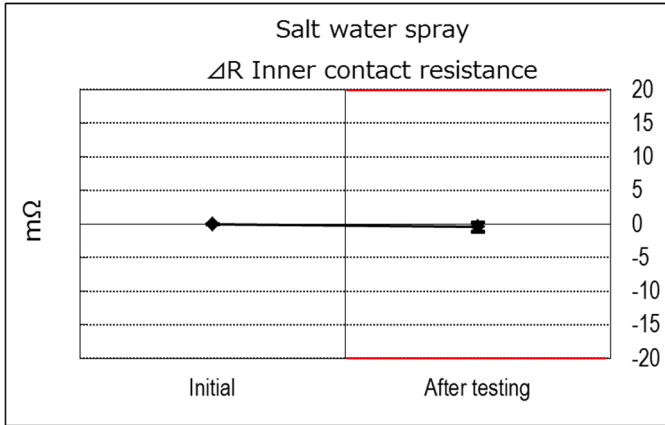
(Graph 13) Humidity steady state

ΔR Inner contact resistance

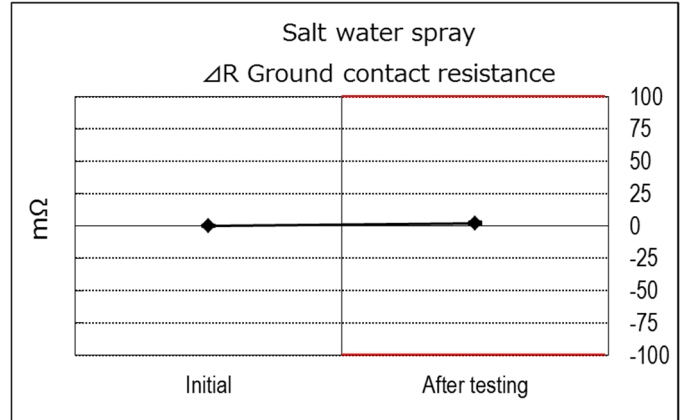


(Graph 14) Humidity steady state

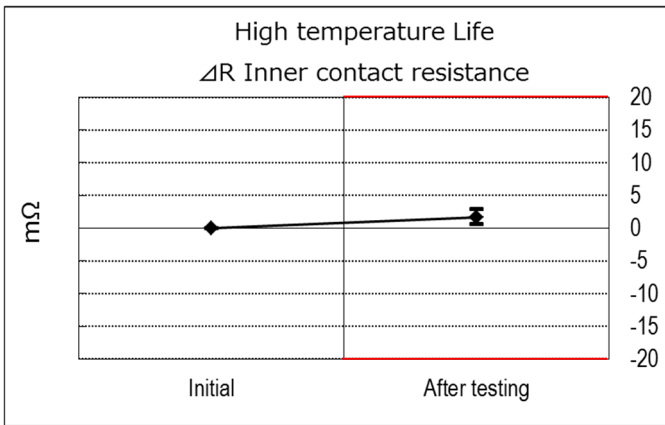
ΔR Ground contact resistance



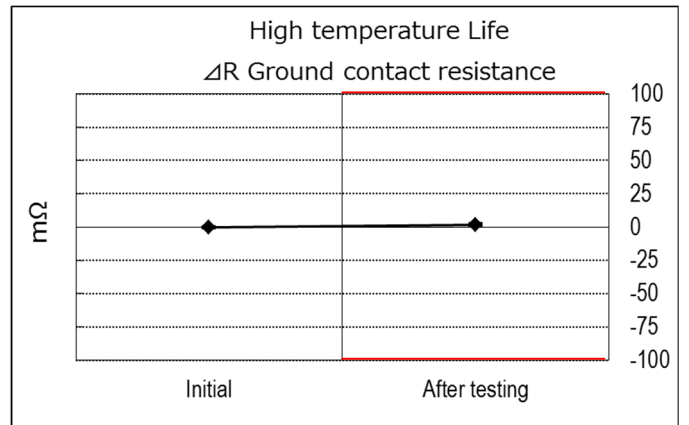
(Graph 15) Salt water spray
ΔR Inner contact resistance



(Graph 16) Salt water spray
ΔR Ground contact resistance



(Graph 17) High temperature life
ΔR Inner contact resistance



(Graph 18) High temperature life
ΔR Ground contact resistance