

# MHF III Connector

Part No. Plug: 20367-001R Receptacle: 20369-001E

## Test Report

Product Specification no. PRS-1238

4	T22109	June 27, 2022	S. Tsuboki	K. Yufu	Y. Hashimoto
3	T13066	June 4, 2013	S. S		Tom
2	T12058	April 21, 2012	H. M		E. K
1	T05004	January 21, 2005	TAK		T. H
Rev.	ECN	Date	Prepared by	Checked by	Approved by

## 1. Purpose

To evaluate the performance of MHF III Connector in accordance with PRS-1238.

## 2. Specimen

- (1) Plug: Part No. 20367-001R (Cable AWG#36 coaxial cable /jacket diameter 0.81mm)
- (2) Receptacle: Part No. 20369-001E

## 3. Test Sequence

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

## 4. Result

See Table 2-1 to 2-3. For the details of the testing conditions and requirements, see PRS-1238.  
The "n" in the tables show the number of measurement points.

## 5. Conclusion

All the specimens met the requirements of PRS-1238.

**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	1,3	1,5	1,5	1,3	1,3	1,3			
Insulation resistance								2,6	2,6						
Dielectric withstanding voltage								3,7	3,7						
VSWR	1														
Un-mating force		1													
Crimp strength			1												
Durability				2											
Contact resistance with force on the cable					2										
Vibration						2									
Shock							2								
Humidity (Steady State)								4							
Thermal shock									4						
High temperature life										2					
H <sub>2</sub> S gas											2				
Saltwater spray												2			
Solder ability													1		
Soldering heat resistance														1	
Specimen quantity.	Plug	10	10	10	10	10	10	10	10	10	10	10	10	-	-
	Receptacle	5		-										10	10

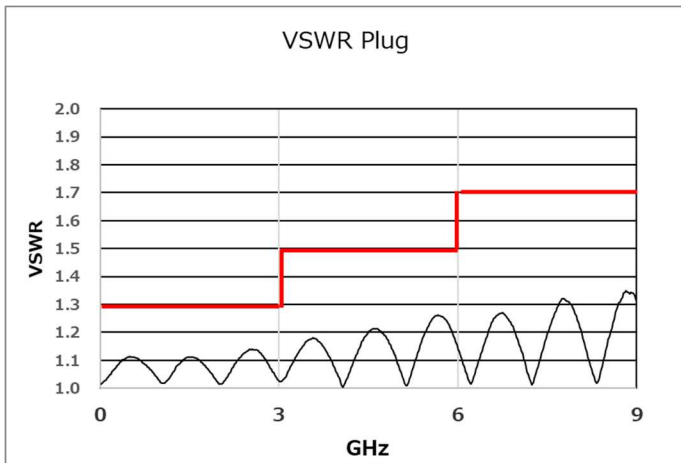
※Numbers indicate test sequences

Test items	Measurements	Spec.	n	Unit	Data				Judge		
					AVE.(X)	MAX.	MIN.	S			
A	Plug with Cable.1	0.1~3GHz	1.30 MAX.	10	-----	1.159	1.18	1.14	0.012	OK	
		3~6GHz	1.50 MAX.	10	-----	1.26	1.3	1.23	0.021	OK	
		6~9GHz	1.70 MAX.	10	-----	1.35	1.38	1.33	0.016	OK	
	Receptacle	0.1~3GHz	1.30 MAX.	5	-----	1.08	1.09	1.07	0.0091	OK	
		3~6GHz	1.40 MAX.	5	-----	1.231	1.25	1.22	0.009	OK	
		6~9GHz	1.60 MAX.	5	-----	1.467	1.5	1.43	0.0199	OK	
B	Un mating force										
		Initial	4 MIN.	10	N	8.79	9.60	7.20	1.03	OK	
		30 cycles	2 MIN.	10	N	4.80	6.20	4.10	0.81	OK	
C	Crimp strength										
			7 MIN.	10	N	9.66	10.7	9	0.68	OK	
D	Durability										
	Contact resistance of inner contact										
		Initial	20 MAX.	10	mΩ	6.32	6.6	5.7	0.36	OK	
		After testing	∠20 MAX.	10	mΩ	0.56	1.6	-0.6	0.58	OK	
	Contact resistance of ground contact										
		Initial	20 MAX.	10	mΩ	4.78	5.9	3.9	0.87	OK	
		After testing	∠20 MAX.	10	mΩ	0.54	1.1	0.2	0.29	OK	
	Appearance	Initial	No abnormality	10	-----	No abnormality				OK	
		After testing	No abnormality	10	-----	No abnormality				OK	
	E	Cable retention force									
Contact resistance of inner contact											
		Initial	20 MAX.	10	mΩ	8.97	10	8.3	0.68	OK	
		After testing	∠20 MAX.	10	mΩ	1.7	3.5	-0.5	1.22	OK	
Contact resistance of ground contact											
		Initial	20 MAX.	10	mΩ	0.03	4.7	3.3	0.61	OK	
		After testing	∠20 MAX.	10	mΩ	1.46	4.9	-0.6	1.68	OK	
Electrical discontinuity		Spec. : No electrical discontinuity grater than 1.0μsec. shall occur.									
				10	-----	Results : No discontinuity				OK	
Appearance		Initial	No abnormality	10	-----	No abnormality				OK	
		After testing	No abnormality	10	-----	No abnormality				OK	

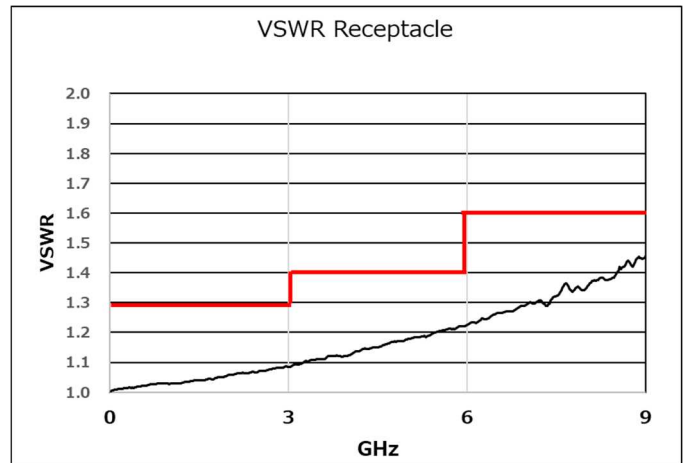
Test items	Measurements	Spec.	n	Unit	Data				Judge		
					AVE.(X)	MAX.	MIN.	S			
F	Vibration	Contact resistance of inner contact									
		Initial	20 MAX.	10	mΩ	8.97	10	8.3	0.68	OK	
		After testing	∇20 MAX.	10	mΩ	1.7	3.5	-0.5	1.22	OK	
		Contact resistance of ground contact									
		Initial	20 MAX.	10	mΩ	0.03	4.7	3.3	0.61	OK	
		After testing	∇20 MAX.	10	mΩ	1.46	4.9	-0.6	1.68	OK	
		Electrical discontinuity	Spec. : No electrical discontinuity greater than 1.0μsec. shall occur.								
				10		Results : No discontinuity				OK	
		Appearance	Initial	No abnormality	10		No abnormality				OK
			After testing	No abnormality	10		No abnormality				OK
		G	Shock	Contact resistance of inner contact							
				Initial	20 MAX.	10	mΩ	7.77	8.7	6.1	1.07
After testing	∇20 MAX.			10	mΩ	-0.34	2.3	-1.6	1.1	OK	
Contact resistance of ground contact											
Initial	20 MAX.			10	mΩ	4.34	4.9	3.3	0.64	OK	
After testing	∇20 MAX.			10	mΩ	0.93	2.5	-1	1.11	OK	
Electrical discontinuity	Spec. : No electrical discontinuity greater than 1.0μsec. shall occur.										
				10		Results : No discontinuity				OK	
Appearance	Initial			No abnormality	10		No abnormality				OK
	After testing			No abnormality	10		No abnormality				OK
H	Humidity			Contact resistance of inner contact							
				Initial	20 MAX.	10	mΩ	9.05	9.4	8.7	0.24
		After testing	∇20 MAX.	10	mΩ	1.29	3.1	0	1.05	OK	
		Contact resistance of ground contact									
		Initial	20 MAX.	10	mΩ	4.17	5.6	3.5	0.89	OK	
		After testing	∇20 MAX.	10	mΩ	1.79	2.7	1	0.56	OK	
		Insulation resistance									
		Initial	500 MIN.	10	MΩ	10,000 (Minimum value)				OK	
		After testing	100 MIN.	10	MΩ	10,000 (Minimum value)				OK	
		Dielectric Withstanding Voltage									
		Appearance	Initial	No abnormality	10		No abnormality				OK
			After testing	No abnormality	10		No abnormality				OK
Appearance	Initial	No abnormality	10		No abnormality				OK		
	After testing	No abnormality	10		No abnormality				OK		

Test items	Measurements	Spec.	n	Unit	Data				Judge	
					AVE.(X)	MAX.	MIN.	S		
J Thermal shock	Contact resistance of inner contact									
	Initial	20 MAX.	10	mΩ	8.15	8.6	7.6	0.54	OK	
	After testing	∇20 MAX.	10	mΩ	1.26	2.8	-0.2	0.98	OK	
	Contact resistance of ground contact									
	Initial	20 MAX.	10	mΩ	4.97	5.9	3.8	0.98	OK	
	After testing	∇20 MAX.	10	mΩ	2.46	3.6	1.2	0.88	OK	
	Insulation resistance									
	Initial	500 MIN.	10	MΩ	10,000 (Minimum value)				OK	
	After testing	100 MIN.	10	MΩ	10,000 (Minimum value)				OK	
	Dielectric Withstanding Voltage									
	Initial	No abnormality	10	-----	No abnormality				OK	
	After testing	No abnormality	10	-----	No abnormality				OK	
	Appearance	Initial	No abnormality	10	-----	No abnormality				OK
		After testing	No abnormality	10	-----	No abnormality				OK
K High Temperature Life	Contact resistance of inner contact									
	Initial	20 MAX.	10	mΩ	8.7	9.8	8	0.68	OK	
	After testing	∇20 MAX.	10	mΩ	0.23	2.7	-0.6	0.92	OK	
	Contact resistance of ground contact									
	Initial	20 MAX.	10	mΩ	4.04	4.2	3.8	0.17	OK	
	After testing	∇20 MAX.	10	mΩ	1.4	2.7	-0.3	0.86	OK	
	Insulation resistance									
	Initial	500 MIN.	10	MΩ	10,000 (Minimum value)				OK	
	After testing	100 MIN.	10	MΩ	10,000 (Minimum value)				OK	
	Appearance	Initial	No abnormality	10	-----	No abnormality				OK
		After testing	No abnormality	10	-----	No abnormality				OK
	L H2S Gas	Contact resistance of inner contact								
		Initial	20 MAX.	10	mΩ	8.78	9.5	7.3	0.9	OK
		After testing	∇20 MAX.	10	mΩ	0.71	1.7	0.1	0.47	OK
Contact resistance of ground contact										
Initial		20 MAX.	10	mΩ	4.3	5.1	3.5	0.77	OK	
After testing		∇20 MAX.	10	mΩ	2.55	3.8	0	1.03	OK	
Appearance		Initial	No abnormality	10	-----	No abnormality				OK
		After testing	No abnormality	10	-----	No abnormality				OK

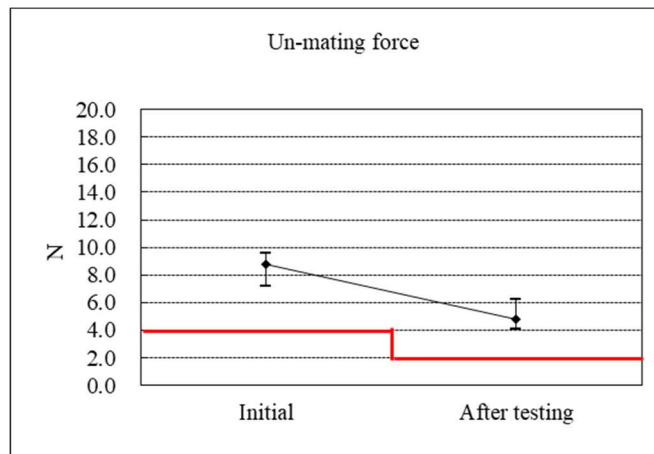
	Test items	Measurements	Spec.	n	Unit	Data				Judge	
						AVE.(X)	MAX.	MIN.	S		
M	Salt water spray	Contact resistance of inner contact									
		Initial	20 MAX.	10	mΩ	8.79	9.3	8.4	0.42	OK	
		After testing	△20 MAX.	10	mΩ	3.48	4.5	2.7	0.55	OK	
		Contact resistance of ground contact									
		Initial	20 MAX.	10	mΩ	3.44	4.2	2.8	0.63	OK	
		After testing	△20 MAX.	10	mΩ	2.06	2.5	1.3	0.36	OK	
		Appearance	Initial	No abnormality	10	-----	No abnormality				OK
			After testing	No abnormality	10	-----	No abnormality				OK
N	Solderability	Wetness 518K(245°C)/5sec.	95%MIN.	10	-----	Wet 95% MIN.				OK	
P	Soldering Heat Resistance	Appearance	Initial	No abnormality	10	-----	No abnormality				OK
			After testing	No abnormality	10	-----	No abnormality				OK



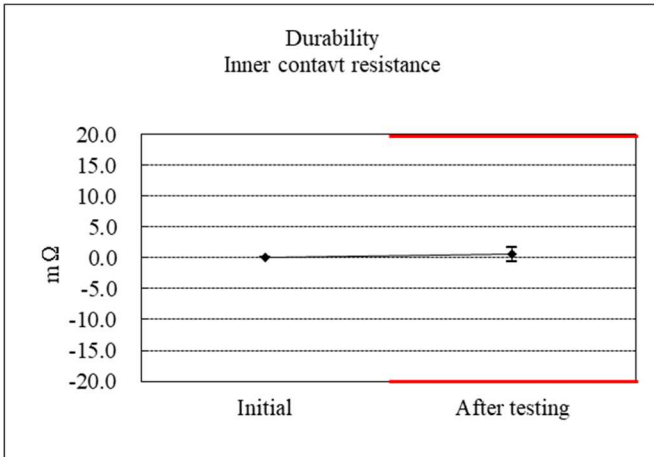
(Graph 1) MHF III Plug VSWR



(Graph 2) MHF III Receptacle VSWR

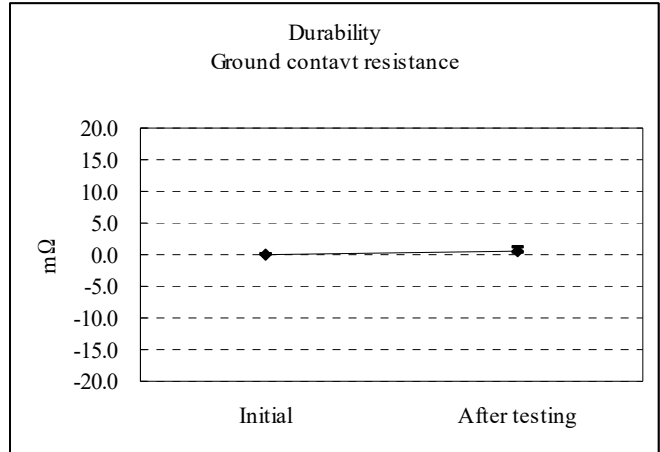


(Graph 3) Unmating Force



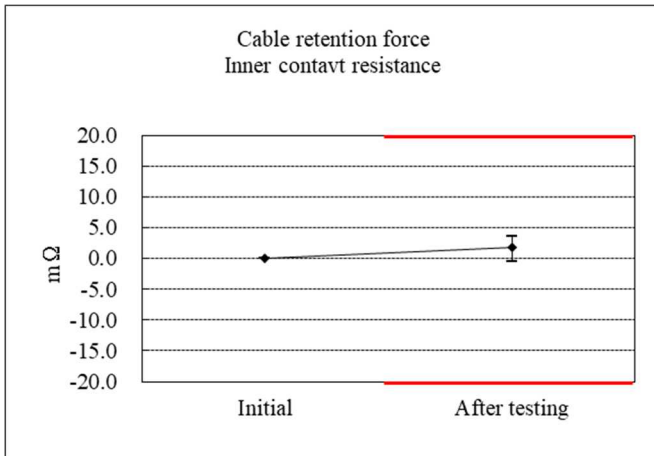
(Graph 4) Durability

$\Delta R$  Inner contact resistance



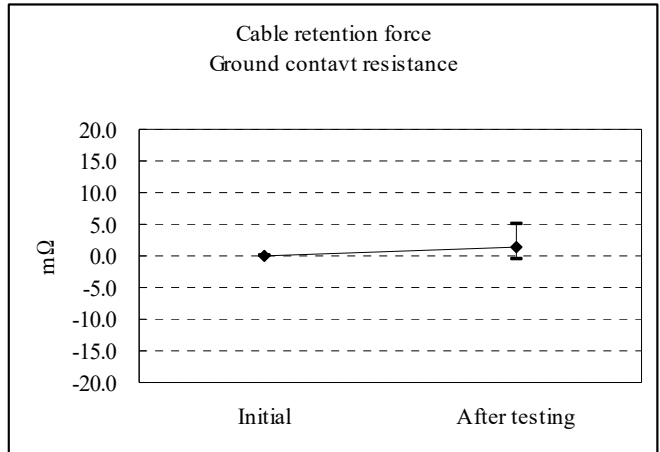
(Graph 5) Durability

$\Delta R$  Ground contact resistance



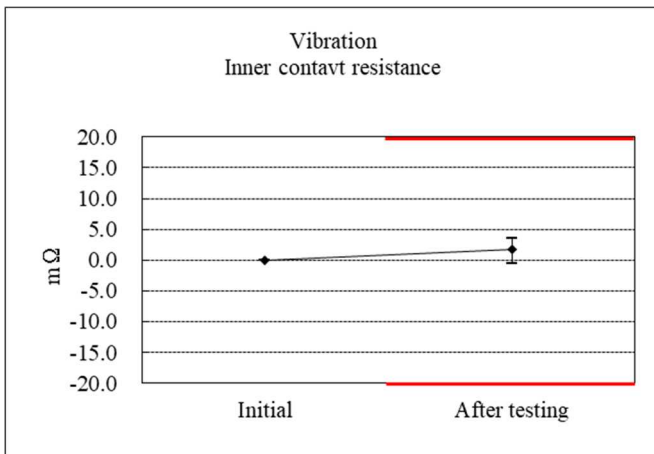
(Graph 6) Cable retention force

$\Delta R$  Inner contact resistance



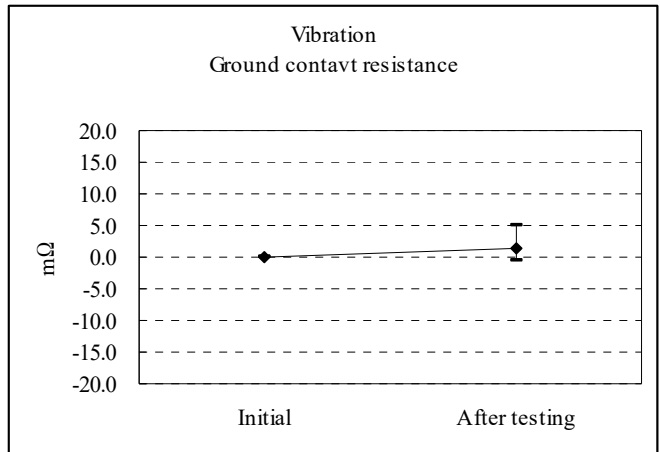
(Graph 7) Cable retention force

$\Delta R$  Ground contact resistance



(Graph 8) Vibration

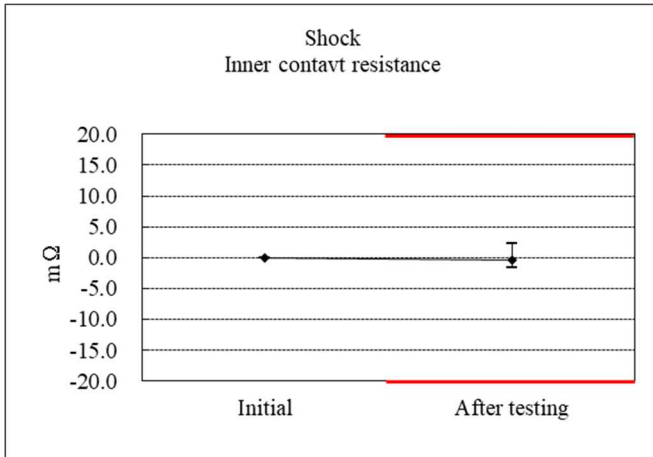
$\Delta R$  Inner contact resistance



(Graph 9) Vibration

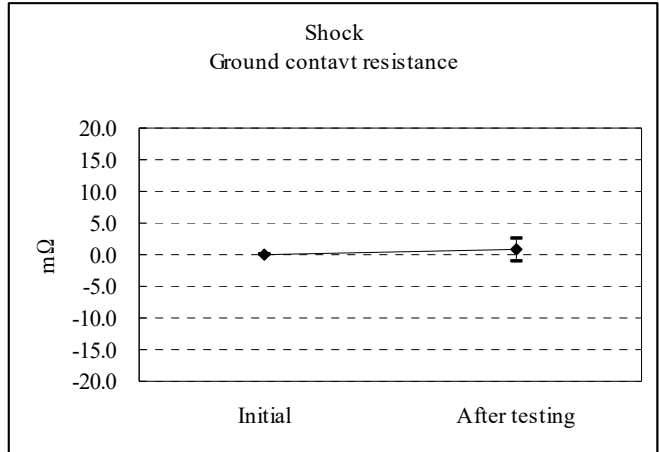
$\Delta R$  Ground contact resistance





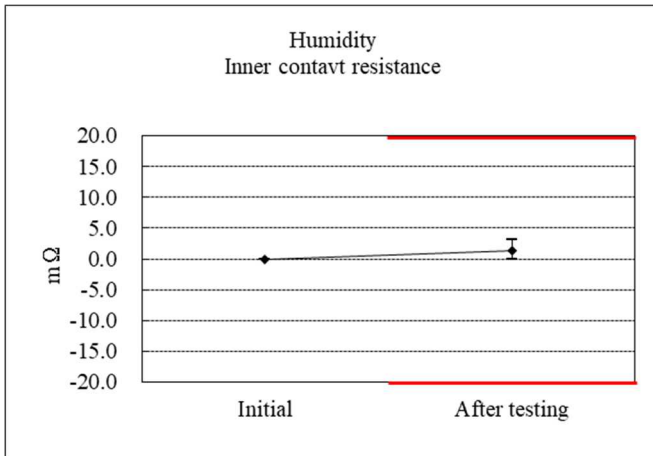
(Graph 10) Shock

$\Delta R$  Inner contact resistance



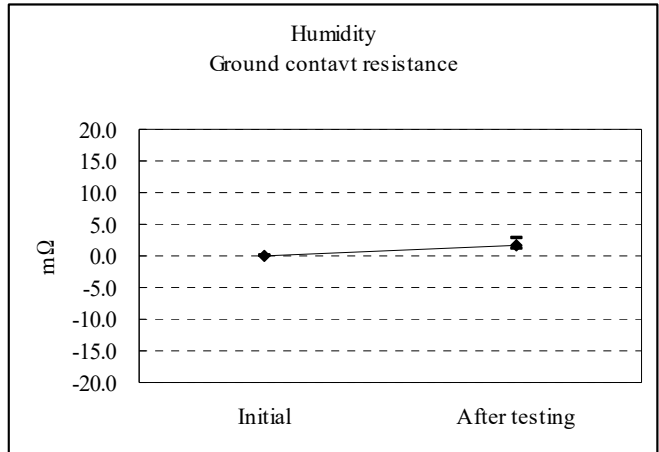
(Graph 11) Shock

$\Delta R$  Ground contact resistance



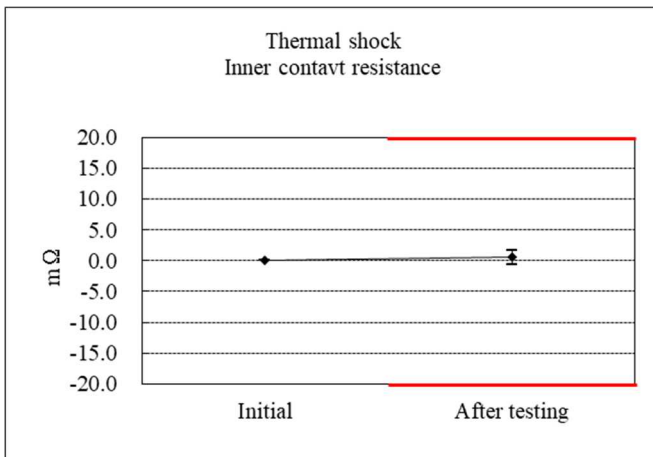
(Graph 12) Humidity

$\Delta R$  Inner contact resistance



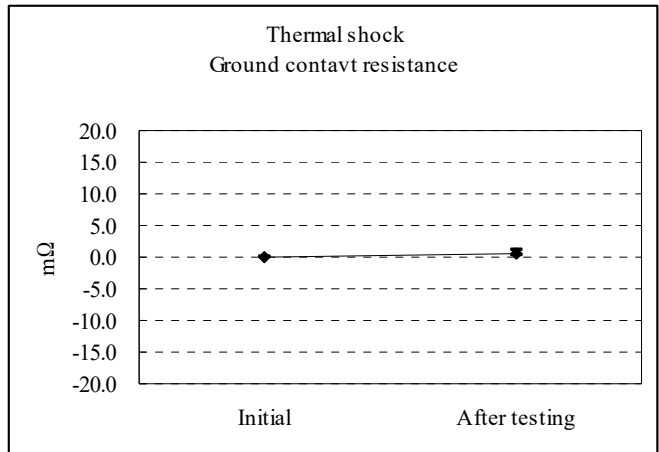
(Graph 13) Humidity

$\Delta R$  Ground contact resistance



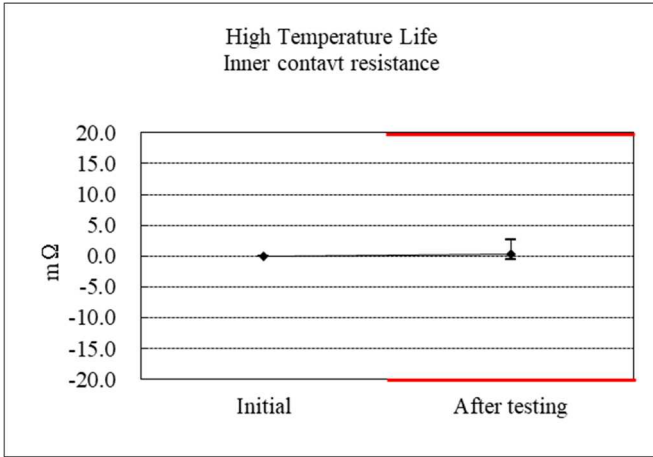
(Graph 14) Thermal Shock

$\Delta R$  Inner contact resistance



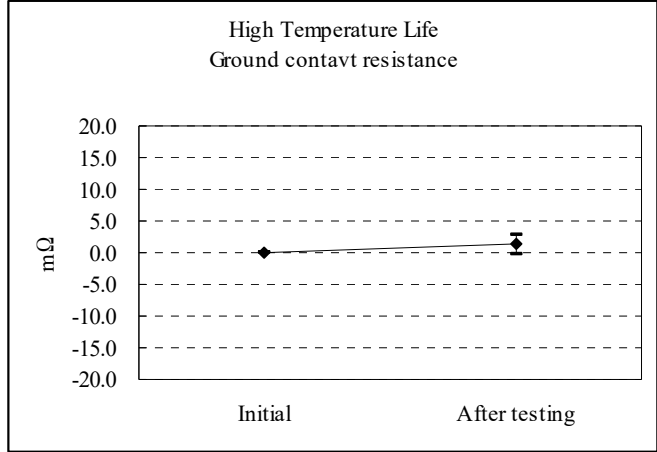
(Graph 15) Thermal Shock

$\Delta R$  Ground contact resistance



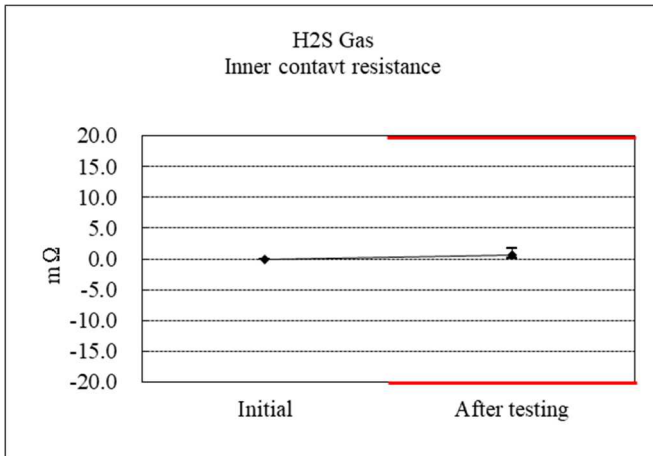
(Graph 16) High temperature life

$\Delta R$  Inner contact resistance



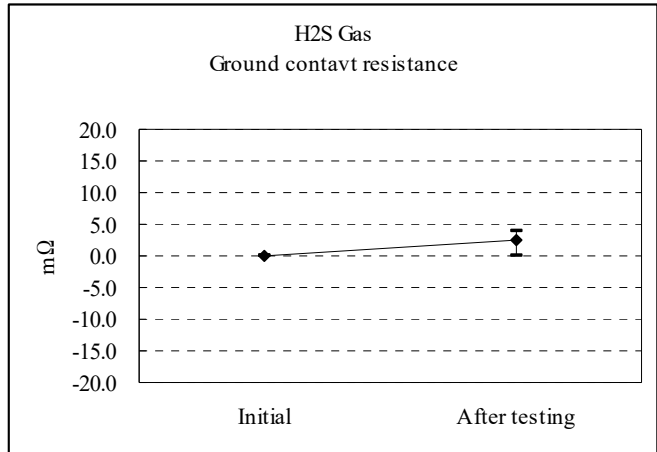
(Graph 17) High temperature life

$\Delta R$  Ground contact resistance



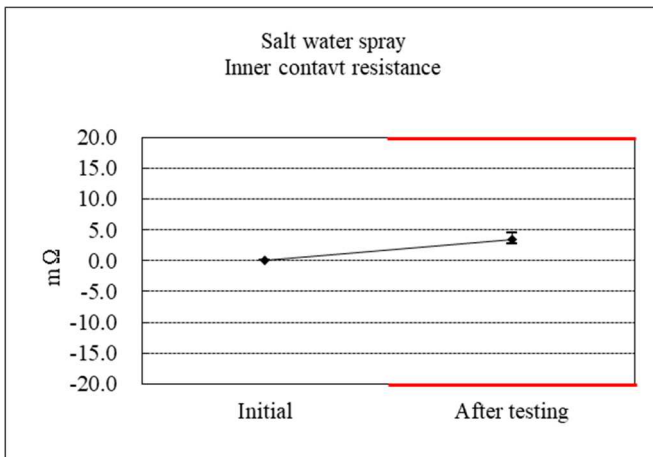
(Graph 18) H2S Gas

$\Delta R$  Inner contact resistance



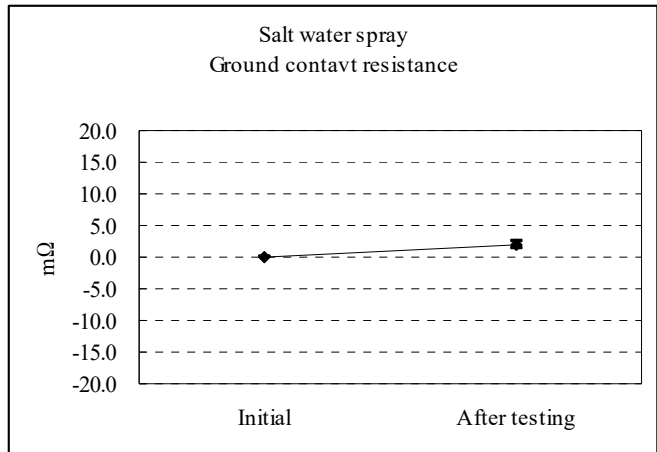
(Graph 19) H2S Gas

$\Delta R$  Ground contact resistance



(Graph 20) Salt water spray

$\Delta R$  Inner contact resistance



(Graph 21) Salt water spray

$\Delta R$  Ground contact resistance