

MHF® 4 / 4L Connector (AWG#33φ0.83 Cable)

Part No. MHF 4L Plug: 20565-001R-83 / MHF 4 Receptacle: 20449-001E-**

Test Report

Product Specification no. PRS-2062

3	T22116	July 1, 2022	K.Watanabe	K.Yufu	Y.Hashimoto
2	T22112	June 27, 2022	H. Lu	Y. Shimizu	M. Takemoto
1	T21104	October 27, 2021	K. Ikeshita		M. Takemoto
0	T15054	May 7, 2015	S.Suzuki	T.Tagawa	T.Takano
Rev.	ECN	Date	Prepared by	Checked by	Approved by

1. Purpose

To evaluate the performance of MHF 4 / 4LConnector in accordance with PRS-2062.

2. Specimen

- (1) MHF 4L Plug Connector (Part No. 20565-001R-83)
Cable: AWG#33 coaxial cable (jacket diameter 0.83mm)
- (2) MHF4 Receptacle Connector (Part No. 20449-001E-**))

3. Test Sequence

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

4. Result

See Table 2, Graph 1 to 10. For the details of the testing conditions and requirements, see PRS-2062.
The “n” in the tables show the number of measurement points.

5. Conclusion

All the specimens met the requirements of PRS-2062.

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	1,5	1,3	1,5	1,3	1,3		
Insulation resistance									2,6		2,6				
Dielectric withstanding voltage		1							3,7		3,7				
VSWR			1												
Mating force / Unmating force				1											
Crimp strength					1										
Durability						2									
Vibration							2								
Shock								2							
Thermal shock									4						
High temperature life										2					
Humidity (Steady State)											4				
Saltwater spray												2			
H ₂ S gas													2		
Solder ability														1	
Soldering heat resistance															1
Specimen Quantity (pcs.)	Plug	10	10	10	10	10	10	-	10	10	10	10	10	-	-
	Receptacle		5		-			10						10	10

※Numbers indicate test sequences.

MHF 4 / 4L Connector (AWG#33φ0.83 Cable) Test Report

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TR-15011-03EN

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.							-----		
		20565-001R-83(φ0.83)	-----	10	-----	Results : No abnormality				OK		
B	VSWR Plug	20565-001R-83 (φ0.83)	0.1~3GHz	1.30 MAX.	10	-----	1.129	1.14	1.12	0.006	OK	
			3~6GHz	1.45 MAX.	10	-----	1.184	1.21	1.16	0.012	OK	
			6~9GHz	1.60 MAX.	10	-----	1.214	1.26	1.17	0.024	OK	
			9~12GHz	1.90 MAX.	10	-----	1.291	1.33	1.23	0.033	OK	
	VSWR Receptacle	20449-001E-*	0.1~3GHz	1.30 MAX.	5	-----	1.067	1.08	1.06	0.007	OK	
			3~6GHz	1.40 MAX.	5	-----	1.176	1.19	1.16	0.010	OK	
			6~9GHz	1.55 MAX.	5	-----	1.465	1.50	1.43	0.021	OK	
C	Mating force	20565-001R-83 (φ0.83)	Initial	30 MAX.	10	N	17.65	18.4	16.7	0.76	OK	
			30 cycles		10	N	9.38	9.9	8.9	0.37	OK	
	Un mating force	20565-001R-83 (φ0.83)	Initial	20 MAX. 5 MIN.	10	N	13.12	14.5	11.9	1.19	OK	
			30 cycles	20 MAX. 3 MIN.	10	N	9.57	11.3	8.4	1.16	OK	
D	Cable retention force	20565-001R-83(φ0.83)	8 MIN.	10	N	13.73	14.6	13.3	0.43	OK		
E	Durability											
	20565-001R-83 (φ0.83)	Contact resistance of inner contact										
		Initial	20 MAX.	10	mΩ	8.86	10.7	7.1	1.28	OK		
		After testing	-----	10	mΩ	8.41	9.8	7.5	0.80	-----		
		ΔIR	20 MAX.	10	mΩ	-0.45	2.0	-2.6	1.61	OK		
		Contact resistance of ground contact										
		Initial	20 MAX.	10	mΩ	6.29	7.1	5.3	0.61	OK		
		After testing	-----	10	mΩ	6.30	6.8	5.8	0.33	-----		
		ΔIR	20 MAX.	10	mΩ	0.01	1.0	-0.8	0.58	OK		
		Appearance	Spec:No abnormality adversely affecting the performance shall occur.									
		Initial	No abnormality	10	-----	No abnormality				OK		
		After testing	No abnormality	10	-----	No abnormality				OK		
F	Vibration											
	20565-001R-83 (φ0.83)	Contact resistance of inner contact										
		Initial	20 MAX.	10	mΩ	5.97	7.1	5.2	0.65	OK		
		After testing	-----	10	mΩ	6.85	9.7	5.2	1.21	-----		
		ΔIR	20 MAX.	10	mΩ	0.88	2.8	-0.1	0.96	OK		
		Contact resistance of ground contact										
		Initial	20 MAX.	10	mΩ	5.63	6.6	4.8	0.53	OK		
		After testing	-----	10	mΩ	5.00	6.0	4.2	0.70	-----		
		ΔIR	20 MAX.	10	mΩ	-0.63	0.5	-1.4	0.59	OK		
		Electrical discontinuity		Spec. : No electrical discontinuity grater than 1μsec. shall occur.							-----	
				-----	10	-----	Results : No discontinity				OK	
		Appearance		Spec:No abnormality adversely affecting the performance shall occur.								
		Initial		No abnormality	10	-----	No abnormality				OK	
		After testing		No abnormality	10	-----	No abnormality				OK	

Table 2-2

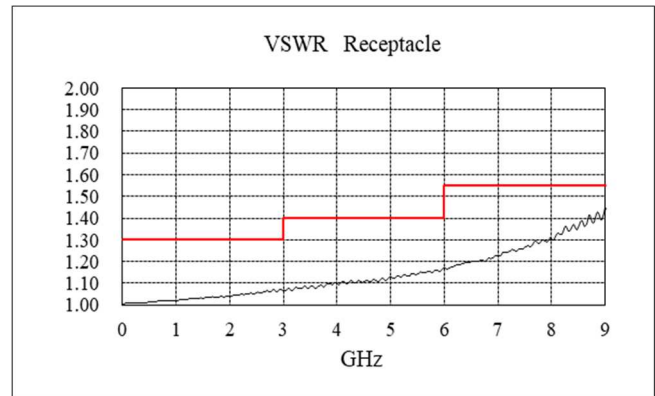
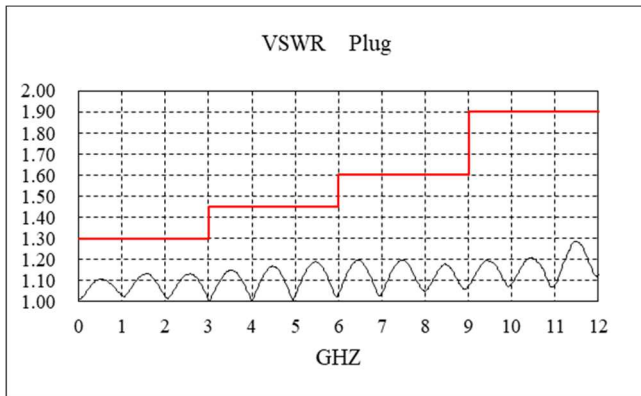
	Test items	Measurements	Spec.	n	Unit	AVE.	MAX.	MIN.	S	Judge	
G	Shock										
	20565-001R-83 (φ0.83)	Contact resistance of inner contact									
		Initial	20 MAX.	10	mΩ	6.85	9.7	5.2	1.21	OK	
		After testing	-----	10	mΩ	6.96	9.3	5.2	1.25	-----	
		ΔR	20 MAX.	10	mΩ	0.11	1.2	-1.0	0.84	OK	
		Contact resistance of ground contact									
		Initial	20 MAX.	10	mΩ	5.00	6.0	4.2	0.70	OK	
		After testing	-----	10	mΩ	5.09	6.2	4.5	0.52	-----	
		ΔR	20 MAX.	10	mΩ	0.09	0.9	-1.1	0.74	OK	
		Electrical discontinuity	Spec. : No electrical discontinuity grater than 1μsec. shall occur.								-----
			-----	10	-----	Results : No discontinuity				OK	
		Appearance	Spec:No abnormality adversely affecting the performance shall occur.								
			Initial	No abnormality	10	-----	No abnormality				OK
			After testing	No abnormality	10	-----	No abnormality				OK
H	Thermal shock										
	20565-001R-83 (φ0.83)	Contact resistance of inner contact									
		Initial	20 MAX.	10	mΩ	6.34	9.0	5.2	1.15	OK	
		After testing	-----	10	mΩ	6.98	8.6	4.8	1.30	-----	
		ΔR	20 MAX.	10	mΩ	0.64	2.7	-0.8	1.16	OK	
		Contact resistance of ground contact									
		Initial	20 MAX.	10	mΩ	5.63	6.6	4.8	0.53	OK	
		After testing	-----	10	mΩ	5.00	6.0	4.2	0.70	-----	
		ΔR	20 MAX.	10	mΩ	-0.63	0.5	-1.4	0.59	OK	
		Insulation resistance	Initial	500 MIN.	10	MΩ	10,000 (minimum vale)				OK
			After testing	100 MIN.	10	MΩ	10,000 (minimum vale)				OK
		Dielectric withstanding voltage	Initial	No abnormality	10	-----	No abnormality				OK
			After testing	No abnormality	10	-----	No abnormality				OK
		Appearance	Spec:No abnormality adversely affecting the performance shall occur.								
Initial	No abnormality		10	-----	No abnormality				OK		
After testing	No abnormality		10	-----	No abnormality				OK		
J	High temperature life										
	20565-001R-83 (φ0.83)	Contact resistance of inner contact									
		Initial	20 MAX.	10	mΩ	6.02	7.4	5.2	0.76	OK	
		After testing	-----	10	mΩ	7.01	8.7	6.1	0.92	-----	
		ΔR	20 MAX.	10	mΩ	0.99	1.9	0.3	0.57	OK	
		Contact resistance of ground contact									
		Initial	20 MAX.	10	mΩ	5.75	7.0	5.1	0.60	OK	
		After testing	-----	10	mΩ	6.61	7.3	6.1	0.40	-----	
		ΔR	20 MAX.	10	mΩ	0.86	1.9	-0.2	0.67	OK	
		Appearance	Spec:No abnormality adversely affecting the performance shall occur.								
			Initial	No abnormality	10	-----	No abnormality				OK
			After testing	No abnormality	10	-----	No abnormality				OK

Table 2-3

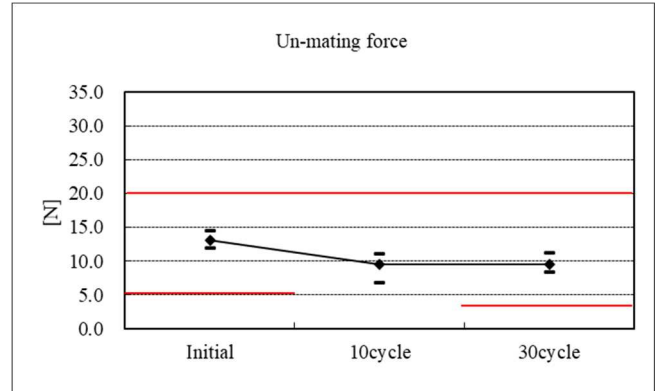
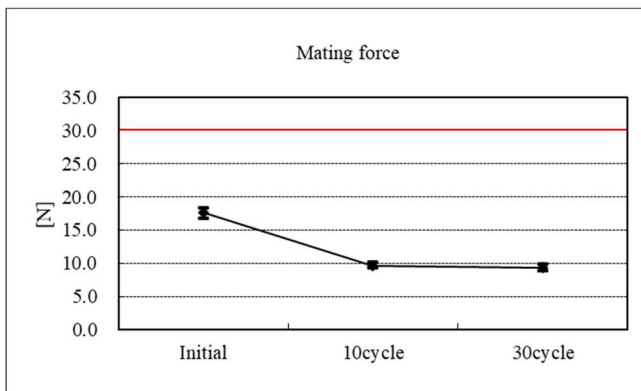
	Test items	Measurements	Spec.	n	Unit	AVE.	MAX.	MIN.	S	Judge		
K	Humidity(Steady State)											
	20565-001R-83 (φ0.83)	Contact resistance of inner contact										
		Initial	20 MAX.	10	mΩ	6.04	7.0	5.1	0.68	OK		
		After testing	-----	10	mΩ	6.06	7.7	5.0	0.87	-----		
		ΔR	20 MAX.	10	mΩ	0.02	1.6	-1.7	1.22	OK		
		Contact resistance of ground contact										
		Initial	20 MAX.	10	mΩ	5.94	6.5	5.4	0.35	OK		
		After testing	-----	10	mΩ	6.30	7.4	5.4	0.71	-----		
		ΔR	20 MAX.	10	mΩ	0.36	1.1	-0.8	0.70	OK		
		Insulation resistance										
			Initial	500 MIN.	10	MΩ	10,000 (minimum vale)				OK	
			After testing	100 MIN.	10	MΩ	10,000 (minimum vale)				OK	
		Dielectric withstanding voltage	Initial	No abnormality	10	-----	No abnormality				OK	
			After testing	No abnormality	10	-----	No abnormality				OK	
		Appearance	Spec:No abnormality adversely affecting the performance shall occur.									
			Initial	No abnormality	10	-----	No abnormality				OK	
			After testing	No abnormality	10	-----	No abnormality				OK	
L	Salt water spray											
	20565-001R-83 (φ0.83)	Contact resistance of inner contact										
		Initial	20 MAX.	10	mΩ	7.41	8.4	6.5	0.59	OK		
		After testing	-----	10	mΩ	6.08	7.2	5.2	0.58	-----		
		ΔR	20 MAX.	10	mΩ	-1.33	0.4	-2.7	0.84	OK		
		Contact resistance of ground contact										
		Initial	20 MAX.	10	mΩ	5.89	6.6	5.3	0.44	OK		
		After testing	-----	10	mΩ	6.14	6.8	5.3	0.51	-----		
		ΔR	20 MAX.	10	mΩ	0.24	1.5	-0.3	0.59	OK		
		Appearance	Spec:No abnormality adversely affecting the performance shall occur.									
			Initial	No abnormality	10	-----	No abnormality				OK	
			After testing	No abnormality	10	-----	No abnormality				OK	
		M	H ₂ S Gas									
			20565-001R-83 (φ0.83)	Contact resistance of inner contact								
				Initial	20 MAX.	10	mΩ	6.68	7.9	5.4	0.93	OK
				After testing	-----	10	mΩ	6.31	7.5	5.1	0.84	-----
				ΔR	20 MAX.	10	mΩ	-0.37	0.7	-1.3	0.77	OK
Contact resistance of ground contact												
Initial	20 MAX.			10	mΩ	5.72	6.3	5.1	0.43	OK		
After testing	-----			10	mΩ	6.57	7.3	6.1	0.42	-----		
ΔR	20 MAX.			10	mΩ	0.84	1.6	-0.1	0.49	OK		
Appearance	Spec:No abnormality adversely affecting the performance shall occur.											
	Initial			No abnormality	10	-----	No abnormality				OK	
	After testing			No abnormality	10	-----	No abnormality				OK	

Table 2-4

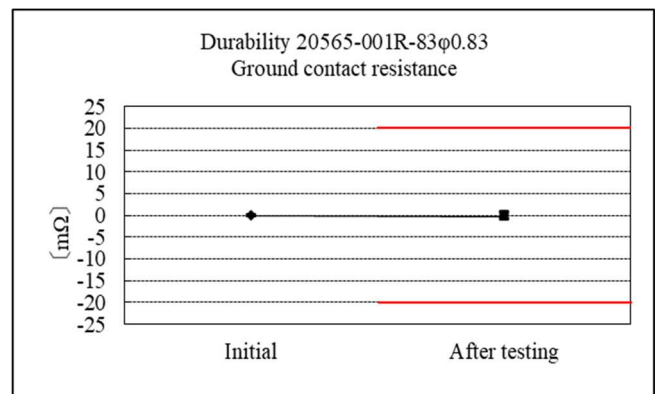
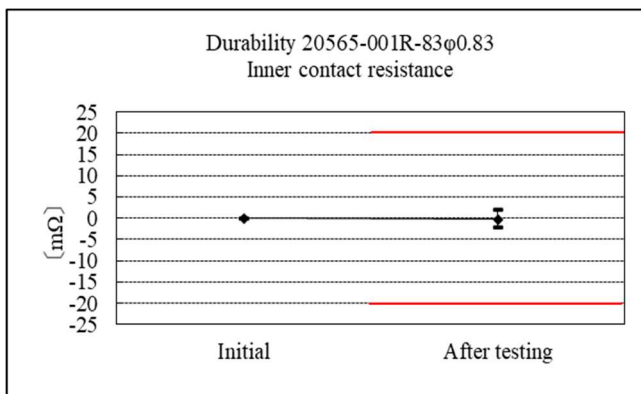
	Test items	Measurements	Spec.	n	Unit	AVE.	MAX.	MIN.	S	Judge
N	Solderability		Spec.:More than 95% of the dipped surface becomes wet and the pinhole that should not gather at one point is less than 5%.							
			-----	10	-----	No abnormality				OK
P	Reflow soldering heat resistance		Spec.:Abnormality adversely affecting the performance should not occur.							
			-----	10	-----	No abnormality				OK



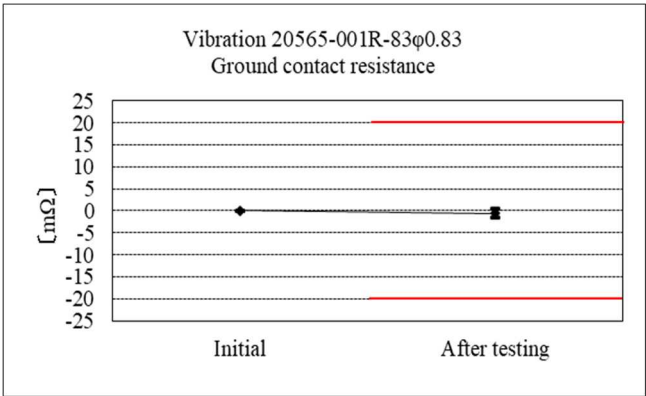
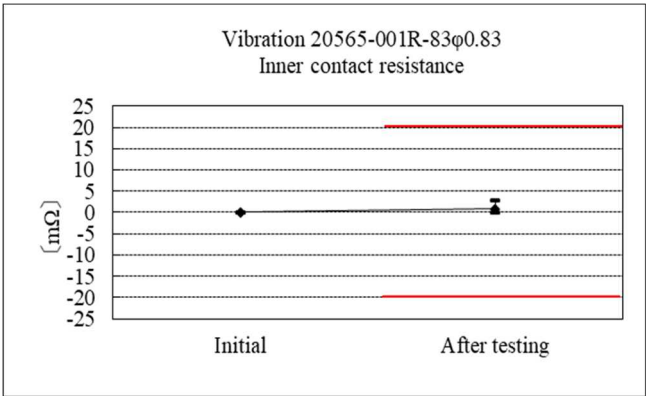
Graph 1 VSUR



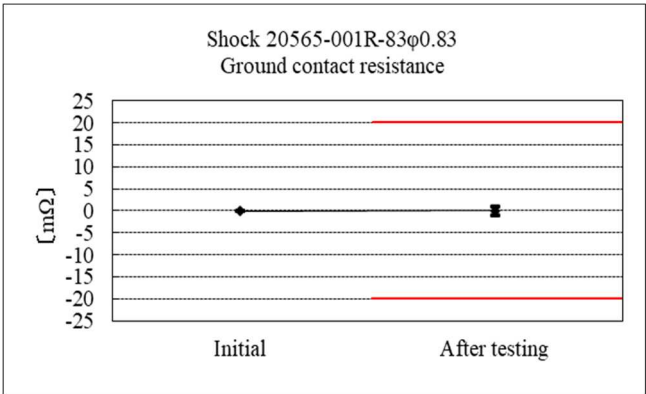
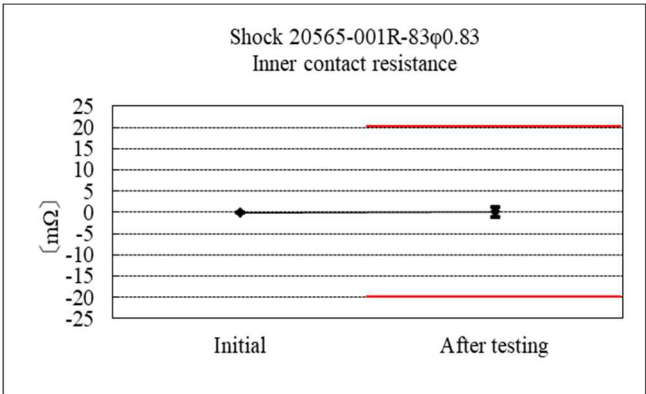
Graph 2 Mating force and Unmating force



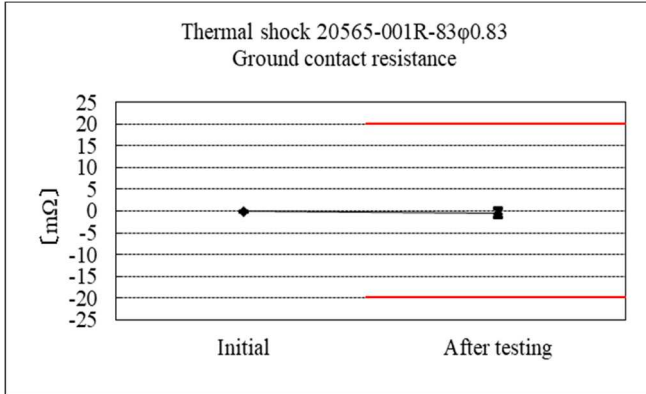
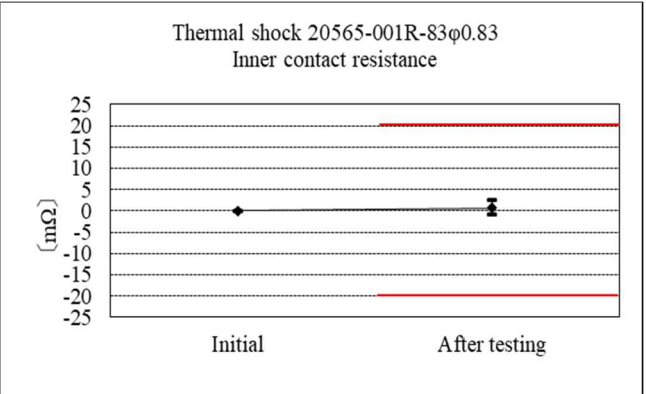
Graph 3 Durability



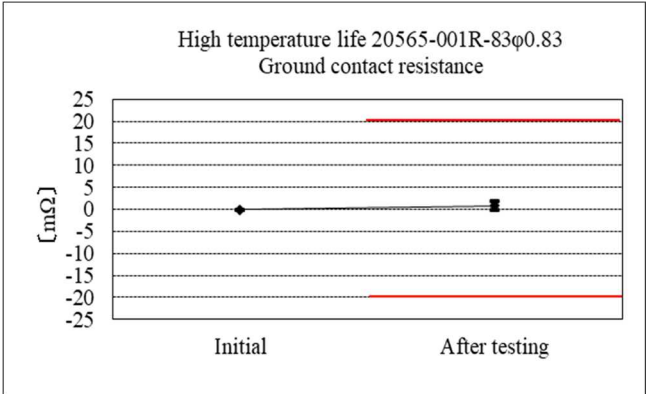
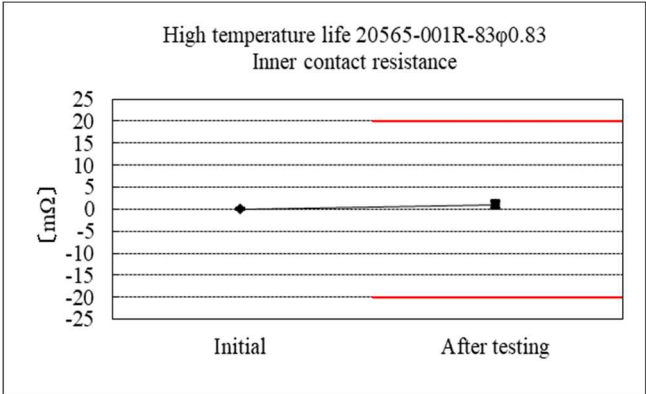
Graph 4 Vibration



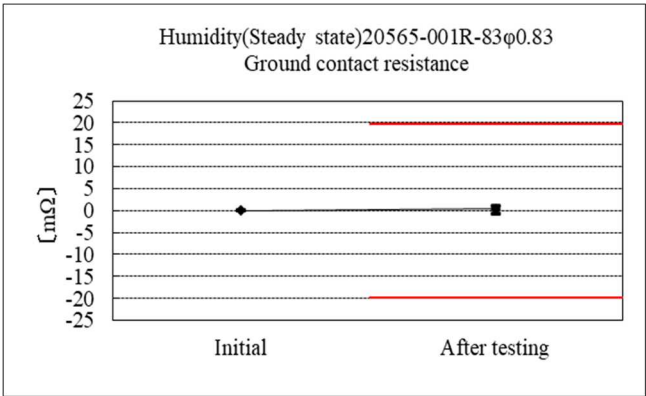
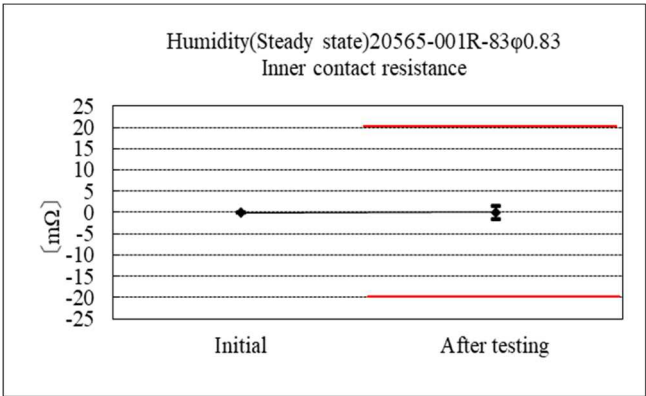
Graph 5 Shock



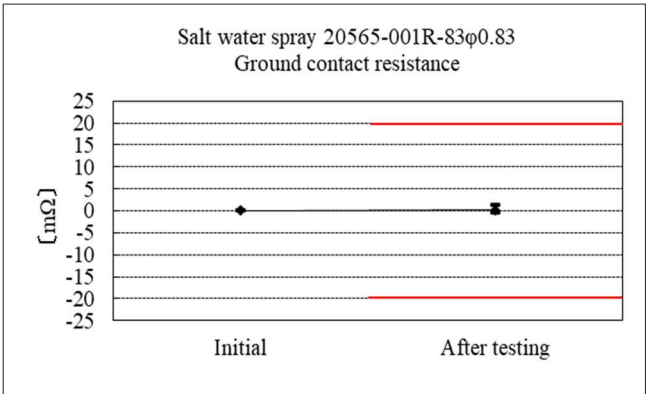
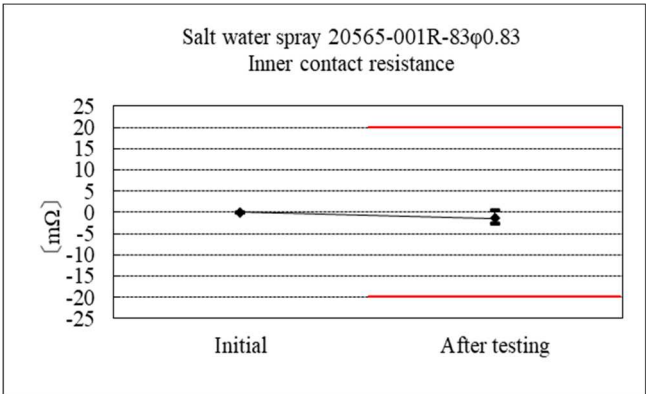
Graph 6 Thermal shock



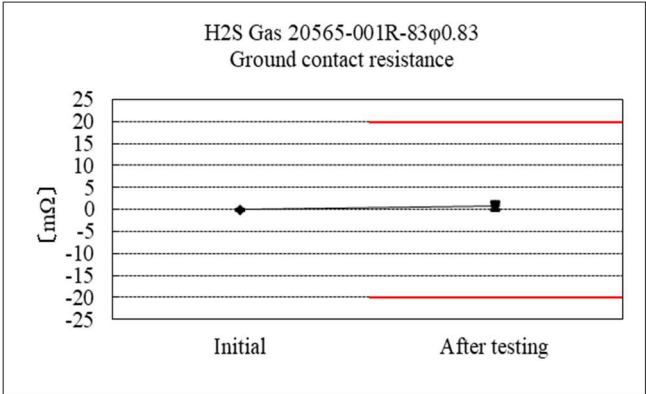
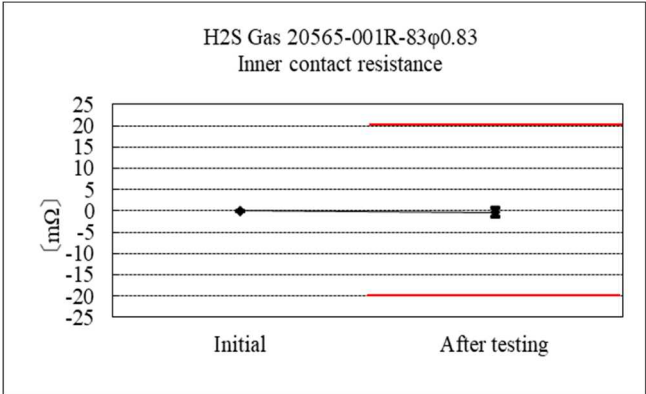
Graph 7 High temperature life



Graph 8 Humidity(Steady state)



Graph 9 Salt water spray



Graph 10 H₂S Gas