

CABLINE®-CBL

Part No. 20472-#**T-10, Receptacle: 20474-0**E-12

Test Report

Product Specification no. PRS-1421

7	T23010	February 28, 2023	R.Morita	M.Nakamura	T.Masunaga
6	T21140	November 4, 2021	R.Morita	T.Masunaga	H.Ikari
5	T17172	October 26, 2017	R.Hoshino	S.Kawamura	M.Takemoto
4	T15123	October 30, 2015	R.Nishiyama	-	K.Narita
Rev.	ECN	Date	Prepared by	Checked by	Approved by

1. Purpose

To evaluate the performance of CABLINE-CBL Connector in accordance with PRS-1421.

2. Specimen

- (1) CABLINE-CBL PLUG CABLE ASS'Y (Part No. 20472-#**T-10)
 - CABLINE-CBL PLUG HOUSING ASS'Y (Part No. 20473-0**T-10)
 - CABLINE-CBL PLUG SHELL A (Part No. 2618-0**1)
 - CABLINE-CBL PLUG LATCH BAR (Part No. 2619-#**0)
- (2) CABLINE-CBL RECEPTACLE ASS'Y (Part No. 20474-0**E-12)

3. Test Sequence

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

4. Result

See Table 2-1 to 2-4, Graph 1 to 18. For the details of the testing conditions and requirements, see PRS-1421.

The "n" in the tables show the number of measurement points.

5. Conclusion

All the specimens met the requirements of PRS-1421.

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	2,6			1,3,5	1,3	1,3	1,5	1,5,7	1,3	1,3			
Insulation resistance							2,6	2,8					
Dielectric withstanding voltage							3,7	3,9					
Temperature rising													1
Mating force	1,5												
Un-mating force	3,7												
Durability	4							4 <small>(10cycles)</small>					
Contact retention force		1,3											
Conn. Lock			1										
Cable retention force	8												
Vibration				2									
Shock				4									
Thermal shock					2								
High temperature life		2				2							
Humidity (Steady State)							4						
Humidity (Cycling)								6					
Saltwater spray									2				
H ₂ S gas										2			
Solder ability											1		
Soldering heat resistance												1	
Specimen quantity.	5 pcs.	20 pos.	5 pcs	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	10 pcs.	10 pcs.	5 pcs.

※Numbers indicate test sequence in which tests are performed.

Table. 2-1 Test result

Test Item	Contents of Measurement		Specifications	Sample q'ty	n	Data					
						AVE.	MAX.	MIN.	s	X±3s	Judge
A Group Durability ↓ Cable Retention Force	Contact Resistance (mΩ)	Initial	AWG#42 700 mΩMAX	5	150	674.134	682.27	663.10	4.068	686.338	Pass
		After Testing	AWG#42 ΔR=40 mΩMAX.			1.172	5.00	-3.74	1.851	6.725	Pass
	Ground Resistance (mΩ)	Initial	50 mΩMAX.	5	10	15.383	15.72	15.07	0.247	16.124	Pass
		After Testing	ΔR=40 mΩMAX.			-0.023	0.16	-0.39	0.216	0.625	Pass
	30P Mating Force (N)	Initial	10.0 N MAX.	5	5	5.676	5.81	5.48	0.140	6.096	Pass
		After Testing	10.0 N MAX.			4.414	4.72	4.19	0.200	5.014	Pass
	30P Un-mating Force (N)	Initial	3.0 N MIN.	5	5	5.312	5.54	5.18	0.137	4.901	Pass
		After Testing	3.0 N MIN.			4.118	4.18	4.06	0.045	3.983	Pass
	30P Cable Retention Force(N)		14.7 N MIN.	5	5	70.400	77.20	65.60	4.704	56.288	Pass
	40P Mating Force (N)	Initial	12.0 N MAX.	5	5	7.672	7.91	7.17	0.297	8.563	Pass
		After Testing	12.0 N MAX.			4.874	5.51	4.28	0.456	6.242	Pass
	40P Un-mating Force (N)	Initial	4.0 N MIN.	5	5	6.572	7.01	5.84	0.437	5.261	Pass
		After Testing	4.0 N MIN.			4.842	4.93	4.73	0.099	4.545	Pass
	40P Cable Retention Force(N)		19.6 N MIN.	5	5	77.070	81.30	72.30	3.657	66.099	Pass
B Group High Temperature Life	RECE Contact Retention Force (N)	Initial	0.2 N MIN.	—	20	0.712	0.81	0.59	0.085	0.457	Pass
		After Testing	0.2 N MIN.	—	20	0.644	0.75	0.56	0.082	0.398	Pass

Table. 2-2 Test result

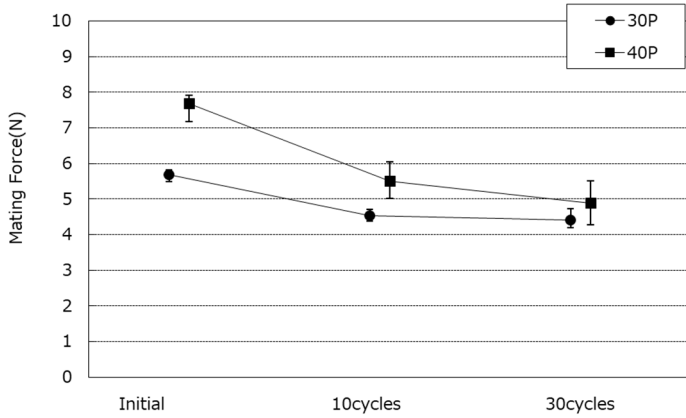
Test Item	Contents of Measurement		Specifications	Sample q'ty	n	Data					Judge
						AVE.	MAX.	MIN.	s	X±3s	
C Group Conn. Lock	Initial		The lock does not damage and cancel.	5	5	No Abnormality					Pass
D Group Vibration ↓ Shock	Contact Resistance (mΩ)	Initial	AWG#42 700 mΩMAX.	5	150	678.148	686.55	672.00	3.022	687.214	Pass
		After Vibration	AWG#42 ΔR=40 mΩMAX.			0.096	4.87	-4.33	1.904	5.808	Pass
		After Shock	AWG#42 ΔR=40 mΩMAX.			0.764	5.66	-6.18	2.474	8.186	Pass
	Ground Resistance (mΩ)	Initial	50 mΩMAX.	5	10	18.551	19.28	17.63	0.606	20.369	Pass
		After Vibration	ΔR=40 mΩMAX.			-0.045	1.58	-1.40	1.074	3.177	Pass
		After Shock	ΔR=40 mΩMAX.			-0.571	0.67	-1.54	0.839	1.946	Pass
	Electrical discontinuity	During Vibration	1 μsec. MAX.	5	5	No Electrical discontinuity					Pass
		During Shock				No Electrical discontinuity					Pass
	Appearance	After Vibration	No abnormality adversely affecting the performance shall occur.	5	5	No Abnormality					Pass
		After Shock				No Abnormality					Pass
E Group Thermal Shock	Contact Resistance (mΩ)	Initial	AWG#42 700 mΩMAX.	5	150	678.148	686.55	672.00	3.022	687.214	Pass
		After Testing	AWG#42 ΔR=40 mΩMAX.			-0.582	5.50	-6.18	2.806	7.836	Pass
	Ground Resistance (mΩ)	Initial	50 mΩMAX.	5	10	18.551	19.28	17.63	0.606	20.369	Pass
		After Testing	ΔR=40 mΩMAX.			0.150	2.70	-1.79	1.640	5.070	Pass

Table. 2-3 Test result

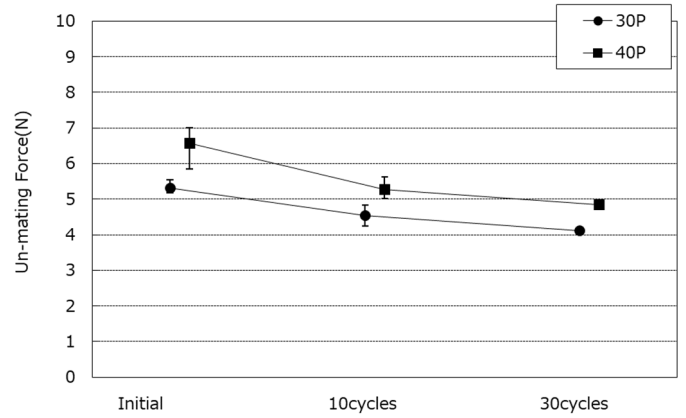
Test Item	Contents of Measurement		Specifications	Sample q'ty	n	Data					judge
						AVE.	MAX.	MIN.	s	X±3s	
F Group High Temperature Life	Contact Resistance (mΩ)	Initial	AWG#42 700 mΩMAX.	5	150	676.478	683.64	669.92	3.174	686.000	Pass
		After Testing	AWG#42 ΔR=40 mΩMAX.			-0.146	6.51	-5.31	2.411	7.087	
	Ground Resistance (mΩ)	Initial	50 mΩMAX.	5	10	15.696	16.46	15.20	0.554	17.358	Pass
		After Testing	ΔR=40 mΩMAX.			0.422	1.16	-0.05	0.511	1.955	
G Group Humidity (Steady State)	Contact Resistance (mΩ)	Initial	AWG#42 700 mΩMAX.	5	150	676.651	686.56	670.06	3.546	687.289	Pass
		After Testing	AWG#42 ΔR=40 mΩMAX.			0.414	4.72	-4.88	2.322	7.380	Pass
	Ground Resistance (mΩ)	Initial	50 mΩMAX.	5	10	16.312	16.54	16.05	0.187	16.873	Pass
		After Testing	ΔR=40 mΩMAX.			0.323	0.89	-0.06	0.387	1.484	Pass
	Insulation Resistance (MΩ)	Initial	1,000 MΩMIN.	5	75	2.5×10 ⁵ MΩMIN.					Pass
		After Testing	500 MΩMIN.			3.0×10 ⁵ MΩMIN.					Pass
D. W. Voltage	Initial	No abnormalities such as creeping discharge, flashover, insulator breakdown occur.	5	75	No Abnormality					Pass	
	After Testing				No Abnormality					Pass	
H Group Humidity (Cycling)	Contact Resistance (mΩ)	Initial	AWG#42 700 mΩMAX.	5	150	672.560	680.47	666.96	2.328	679.544	Pass
		After Testing	AWG#42 ΔR=40 mΩMAX.			1.215	6.80	-4.31	2.210	7.845	Pass
	Ground Resistance (mΩ)	Initial	50 mΩMAX.	5	10	16.414	17.08	15.66	0.670	18.424	Pass
		After Testing	ΔR=40 mΩMAX.			0.310	0.80	-0.30	0.310	1.240	Pass
	Insulation Resistance (MΩ)	Initial	1,000 MΩMIN.	5	75	2.5×10 ⁵ MΩMIN.					Pass
		After Testing	500 MΩMIN.			2.7×10 ⁵ MΩMIN.					Pass
	D. W. Voltage	Initial	No abnormalities such as creeping discharge, flashover, insulator breakdown occur.	5	75	No Abnormality					Pass
		After Testing				No Abnormality					Pass

Table. 2-4 Test result

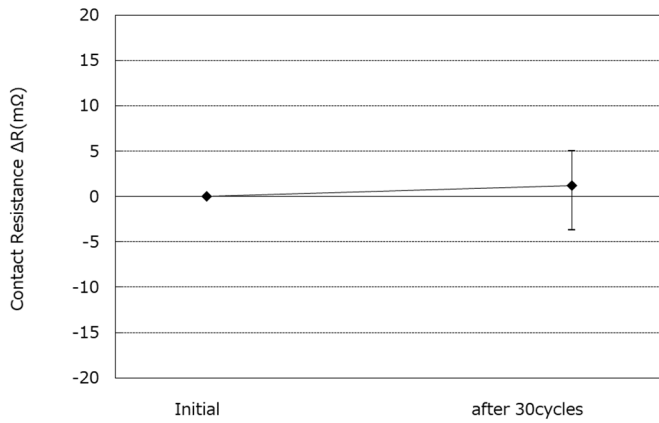
Test Item	Contents of Measurement		Specifications	Sample q'ty	n	Data					
						AVE.	MAX.	MIN.	s	X±3s	Judge
J Group Salt Water Spray	Contact Resistance (mΩ)	Initial	AWG#42 700 mΩMAX.	5	150	670.641	675.73	666.76	1.744	675.873	Pass
		After Testing	AWG#42 ΔR=40 mΩMAX.			3.715	9.02	-1.33	2.029	9.802	Pass
	Ground Resistance (mΩ)	Initial	50 mΩMAX.	5	10	16.194	16.54	15.94	0.300	17.094	Pass
		After Testing	ΔR=40 mΩMAX.			0.823	1.36	0.17	0.525	2.398	Pass
K Group Gas (H ₂ S)	Contact Resistance (mΩ)	Initial	AWG#42 700 mΩMAX.	5	150	673.426	678.82	668.19	2.453	680.785	Pass
		After testing	AWG#42 ΔR=40 mΩMAX.			1.321	8.68	-6.92	2.769	9.628	Pass
	Ground Resistance (mΩ)	Initial	50 mΩMAX.	5	10	15.655	16.08	15.32	0.314	16.597	Pass
		After Testing	ΔR=40 mΩMAX.			0.164	0.65	-0.35	0.390	1.334	Pass
L Group Solder ability	Appearance		More than 95 % of the dipped surface shall be evenly wet.	10	10	95 % and over was wet.					Pass
M Group Soldering Heat Resistance	Appearance		No abnormality adversely affecting the performance shall occur.	10	10	No Abnormality					Pass
N Group Temperature Rising	AWG#42: 0.24 A(40 P)		ΔT=30 °C MAX.	5	5	ΔT=25.2 MAX.					Pass



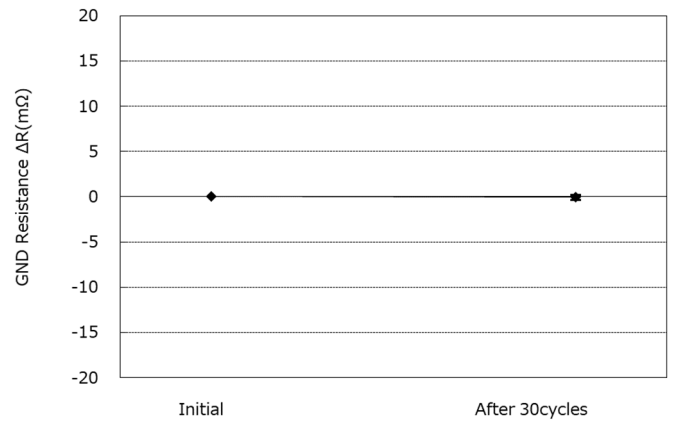
Graph 1. Mating force (A Group: Durability)



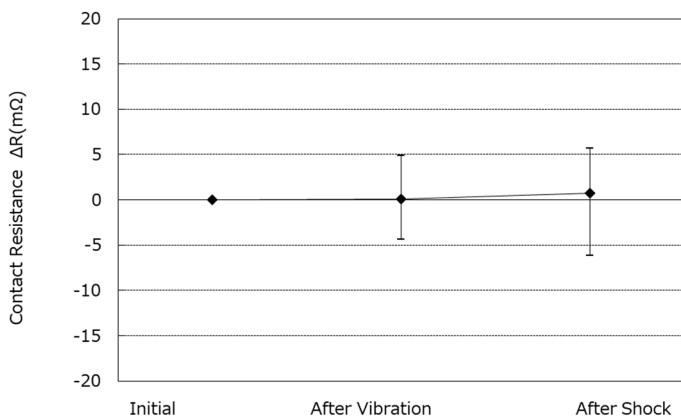
Graph 2. Un-mating force (A Group: Durability)



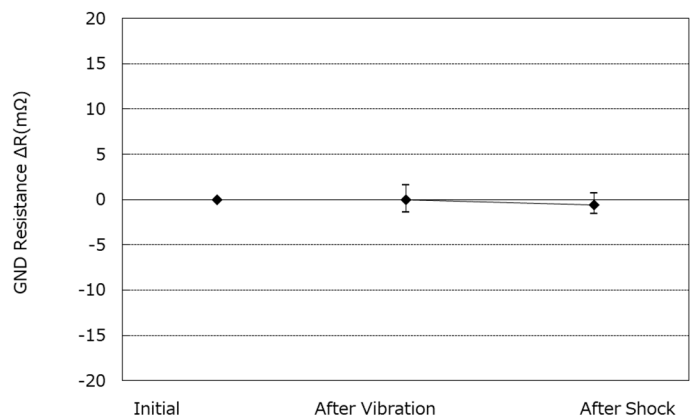
Graph 3. Contact resistance (A Group: Durability)



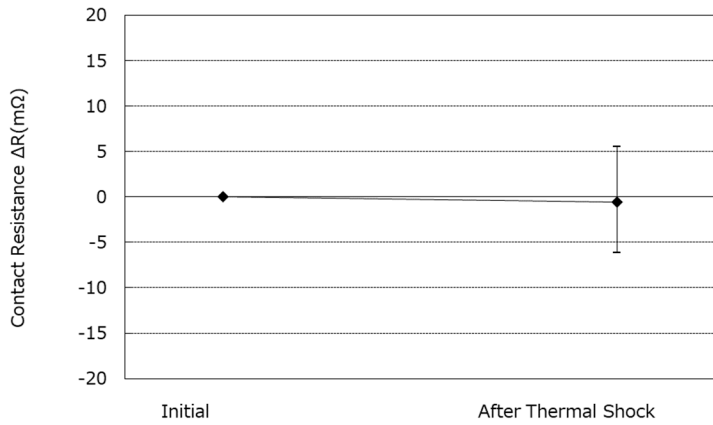
Graph 4. Ground resistance (A Group: Durability)



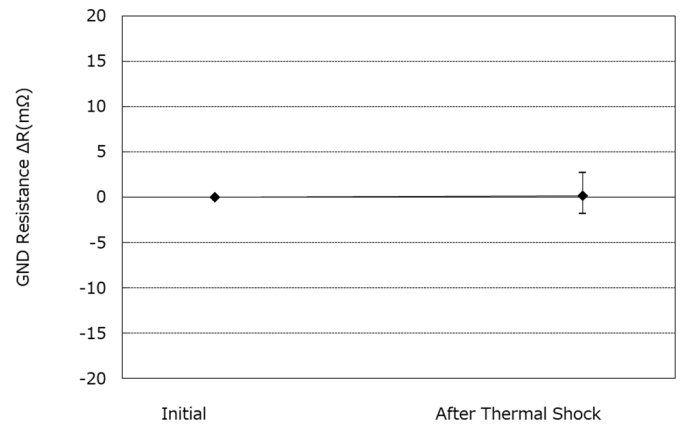
Graph 5. Contact resistance (D Group: Vibration/Shock)



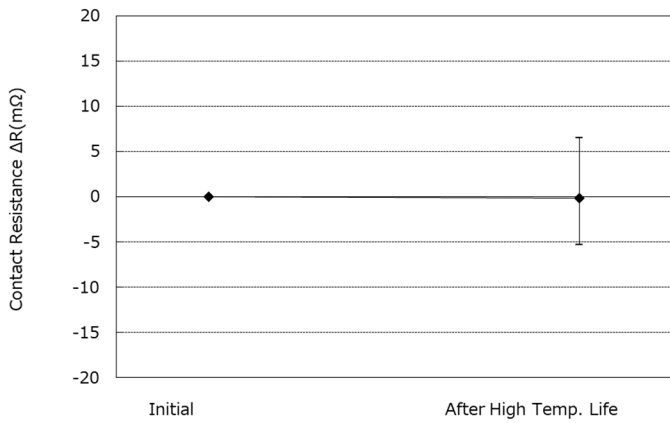
Graph 6. Ground resistance (D Group: Vibration/Shock)



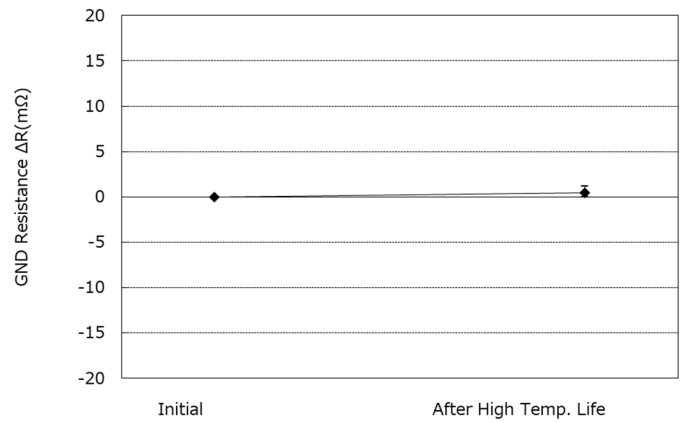
Graph 7. Contact resistance (E Group: Thermal shock)



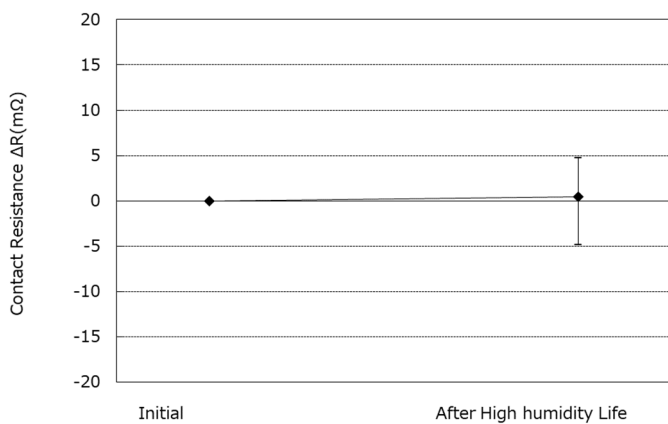
Graph 8. Ground resistance (E Group: Thermal shock)



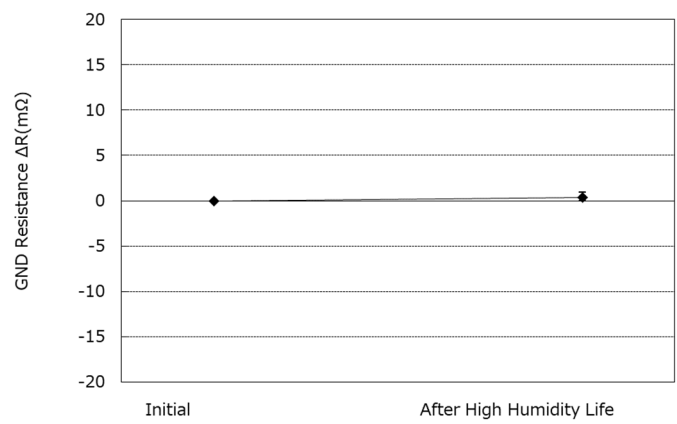
Graph 9. Contact resistance (F Group: High temperature life)



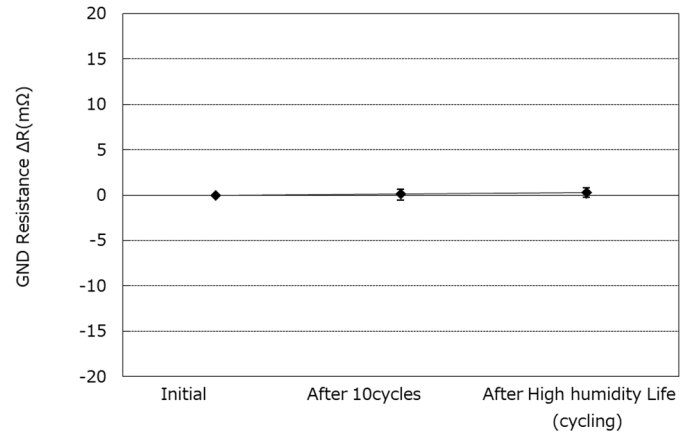
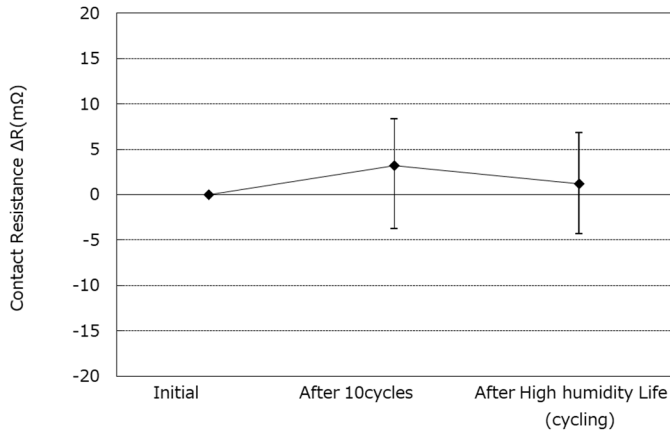
Graph 10. Ground resistance (F Group: High temperature life)



Graph 11. Contact resistance (G Group: Humidity (Steady state))

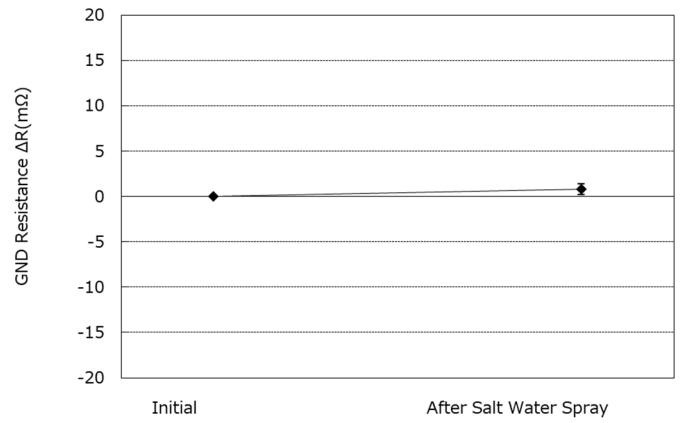
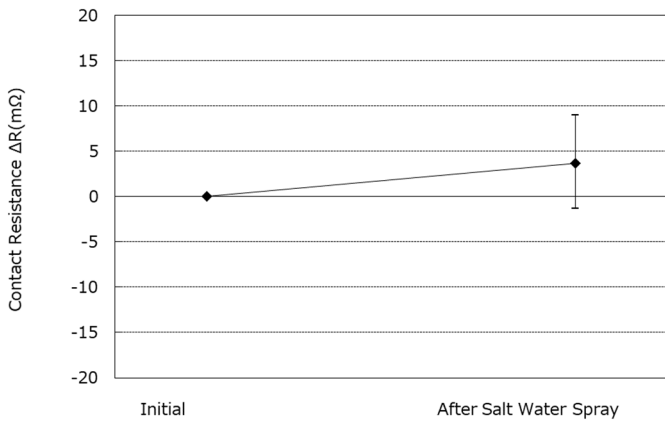


Graph 12. Ground resistance (G Group: Humidity (Steady state))



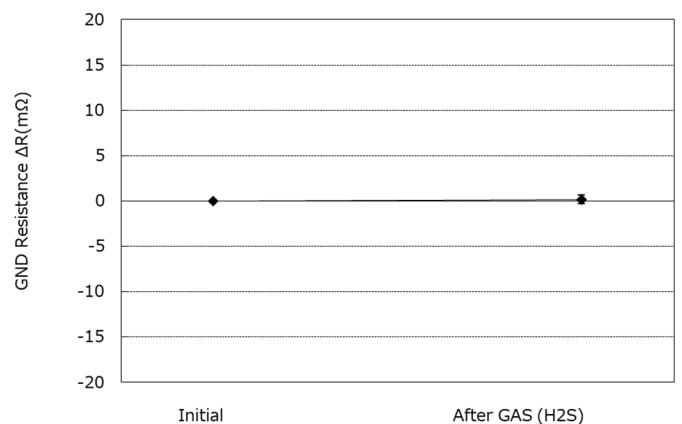
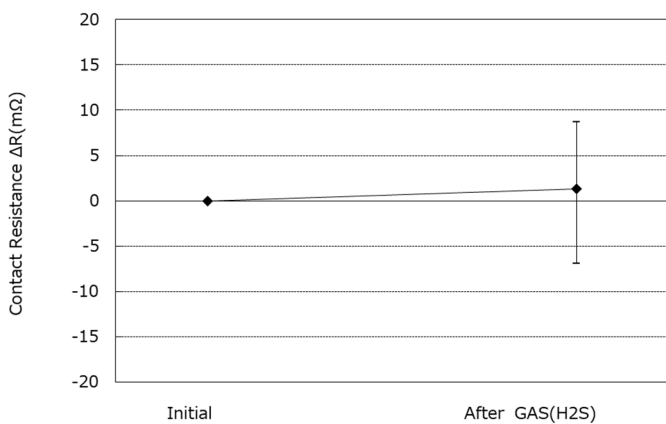
Graph 13. Contact resistance Graph(H Group: Humidity(Cycling))

14. Ground resistance(H Group: Humidity(Cycling))



Graph 15. Contact resistance(J Group: Salt water spray)

Graph 16. Ground resistance (J Group: Salt water spray)



Graph 17. Contact resistance (K Group: Gas(H₂S))

Graph 18. Ground resistance (K Group: Gas(H₂S))