

CABLINE®-UM

Part No. Plug: 20877-#**T-0#, Receptacle: 20879-#**E-01

Test Report

Product Specification no. PRS-2514

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7	T23036	June 26, 2023	R.Morita	M.Nakamura	T.Masunaga
6	T22147	November 22, 2022	T.Masunaga	-	H.Ikari
5	T22121	August 2, 2022	T.Masunaga	-	H.Ikari
Rev.	ECN	Date	Prepared by	Checked by	Approved by

1. Purpose

To evaluate the performance of CABLINE-UM Connector in accordance with PRS-2514.

2. Specimen

- (1) CABLINE-UM PLUG ASS'Y (Part No. 20877-#**T-0#)
- (2) CABLINE-UM RECEPTACLE ASSEMBLY (Part No. 20879-#**E-01)

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-2514.
The "n" in the tables show the number of measurement points.

5. Conclusion

All the specimens met the requirements of PRS-2514.

Table.1 Test Sequence and Sample Quantity

No.	Test Item	Testing Groups													
		A	B	C	D	E	F	G	H	I	J	K	L	M	
4.1 Electrical Performance	1	Contact resistance	2,6			1,3,5	1,5	1,3	1,5	1,5,7	1,3	1,3			
	2	Insulation resistance					2,6		2,6	2,8					
	3	Dielectric withstanding voltage					3,7		3,7	3,9					
	4	Temperature rising													1
4.2 Mechanical Performance	1	Mating force	1,5												
		Unmating force	3,7												
	2	Durability	4							4 (10cycle)					
	3	Contact retention force		1,3											
	4	Conn.Lock			1										
	5	Cable retention force	8												
	6	Vibration				2									
7	Shock				4										
4.3 Environmental Performance	1	Thermal shock					4								
	2	High temperature life		2				2							
	3	Humidity (Steady State)							4						
	4	Humidity (Cycling)								6					
	5	Saltwater spray									2				
	6	H ₂ S gas										2			
4.4 Others	1	Solder ability											1		
	2	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 sequences.

Table.2-1 Test result

Test Item	Contents of Measurement		Specifications	Set	n	Data					Judge	
						AVE.	MAX.	MIN.	s	X±3s		
A Group	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	428.657	460.56	406.33	12.169	465.164	OK	
		After Testing	AWG#40 ΔR=40mΩ MAX.			0.418	2.31	-1.57	0.809	2.845	OK	
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	10.632	10.83	10.39	0.172	11.148	OK	
		After Testing	ΔR=40mΩ MAX.			-0.146	0.26	-0.84	0.413	1.093	OK	
	30P	Mating Force (N)	Initial	34.0N MAX.	5	5	10.740	11.18	10.46	0.269	11.547	OK
			After Testing	34.0N MAX.			9.510	10.05	9.24	0.365	10.605	OK
		Unmating Force (N)	Initial	3.0N MIN.	5	5	8.638	9.10	8.19	0.349	7.591	OK
			After Testing	3.0N MIN.			8.446	8.76	7.87	0.353	7.387	OK
	Cable Retention Force		14.70N MIN.	5	5	It does not pull out, even if applies the power of 100N to a terminal.					OK	
	Cable Retention Force	Mating Force (N)	Initial	40.0N MAX.	5	5	14.632	15.51	13.97	0.589	16.399	OK
			After Testing	40.0N MAX.	5	5	13.740	14.28	13.22	0.411	14.973	OK
		Unmating Force (N)	Initial	4.0N MIN.	5	5	10.612	10.75	10.44	0.146	10.174	OK
			After Testing	4.0N MIN.	5	5	10.444	10.79	10.15	0.246	9.706	OK
		Cable Retention Force		19.60N	5	5	It does not pull out, even if applies the power of 100N to a terminal.					OK
	60P	Mating Force (N)	Initial	52.0N MAX.	5	5	19.892	20.63	19.22	0.684	21.944	OK
			After Testing	52.0N MAX.	5	5	18.142	18.63	17.54	0.458	19.516	OK
		Unmating Force (N)	Initial	6.0N MIN.	5	5	14.206	15.20	13.20	0.818	11.752	OK
			After Testing	6.0N MIN.	5	5	13.858	14.83	13.28	0.616	12.010	OK
		Cable Retention Force		29.40N MIN.	5	5	It does not pull out, even if applies the power of 100N to a terminal.					OK
	B Group High Temperature Life	(RECE) Contact Retention Force (N)	Initial	0.2N MIN.	—	20	1.240	1.42	1.08	0.079	1.003	OK
After Testing			0.2N MIN.	—	20	0.969	1.19	0.80	0.105	0.654	OK	
C Group Conn. Lock		Initial	The lock does not damage and cancel.	5	5	No Abnormality					OK	

Table.2-2 Test result

Test Item	Contents of Measurement		Specifications	Set	n	Data					Judge
						AVE.	MAX.	MIN.	s	X±3s	
D Group Vibration ↓ Shock	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	428.129	453.00	399.17	13.800	469.529	OK
		After Vibration	AWG#40 ΔR=40mΩ MAX.			1.270	4.52	-2.43	1.289	5.137	OK
		After Shock	AWG#40 ΔR=40mΩ MAX.			2.478	4.98	-1.25	1.365	6.573	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	11.186	12.30	10.08	0.883	13.835	OK
		After Vibration	ΔR=40mΩ MAX.			0.062	0.68	-0.88	0.614	1.904	OK
		After Shock	ΔR=40mΩ MAX.			0.004	0.65	-0.40	0.419	1.261	OK
	Electrical discontinuity	During Vibration	1μsec. MAX.	5	5	No Electrical discontinuity					OK
		During Shock				No Electrical discontinuity					OK
	Appearance	After Vibration	No abnormality adversely affecting the performance shall occur.	5	5	No Abnormality					OK
		After Shock				No Abnormality					OK
E Group Thermal Shock	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	430.424	448.54	414.10	7.496	452.912	OK
		After Testing	AWG#40 ΔR=40mΩ MAX.			11.196	17.07	5.52	2.173	17.715	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	11.198	11.77	10.80	0.416	12.446	OK
		After Testing	ΔR=40mΩ MAX.			0.044	0.53	-0.50	0.367	1.145	OK
F Group High Temperature Life	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	424.075	452.24	397.77	14.763	468.364	OK
		After Testing	AWG#40 ΔR=40mΩ MAX.			-1.101	4.01	-5.88	1.803	4.308	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	10.996	12.24	10.27	0.772	13.312	OK
		After Testing	ΔR=40mΩ MAX.			0.344	0.60	0.14	0.181	0.887	OK

Table.2-3 Test result

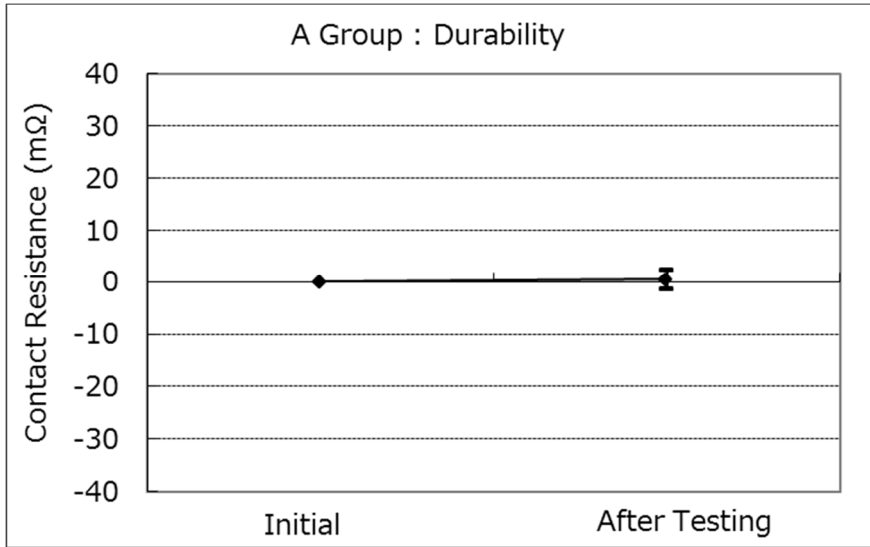
Test Item	Contents of Measurement		Specifications	Set	n	Data					Judge	
						AVE.	MAX.	MIN.	s	X±3s		
G Group Humidity (Steady State)	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX	5	200	424.826	437.94	413.40	6.844	445.358	OK	
		After Testing	AWG#40 ΔR=40mΩ MAX.			-0.494	2.41	-3.03	0.986	2.464	OK	
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	11.380	11.61	11.06	0.205	11.995	OK	
		After Testing	ΔR=40mΩ MAX.			-0.184	0.05	-0.39	0.160	0.296	OK	
	Insulation Resistance (MΩ)	Initial	1000MΩMIN.	5	100	1.4×10 ⁵ MΩMIN.					OK	
		After Testing	500MΩMIN.			3.4×10 ⁴ MΩMIN.					OK	
	D. W. Voltage	Initial	No abnormality adversely affecting the performance shall occur.	5	100	No Abnormality					OK	
		After Testing				No Abnormality					OK	
	H Group Humidity (Cycling)	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	417.913	455.84	401.55	15.317	463.864	OK
			After Durability	AWG#40 ΔR=40mΩ MAX.			-1.095	2.38	-3.41	1.251	2.658	OK
After Testing			AWG#40 ΔR=40mΩ MAX.	0.075			3.50	-3.28	1.316	4.023	OK	
GND Resistance (mΩ)		Initial	50mΩMAX.	5	5	11.436	11.63	11.18	0.171	11.949	OK	
		After Durability	ΔR=40mΩ MAX.			-0.212	-0.04	-0.38	0.130	0.178	OK	
		After Testing	ΔR=40mΩ MAX.			-0.066	0.16	-0.40	0.217	0.585	OK	
Insulation Resistance (MΩ)		Initial	1000MΩMIN.	5	100	1.7×10 ⁵ MΩMIN.					OK	
		After Testing	500MΩMIN.			2.4×10 ⁴ MΩMIN.					OK	
D. W. Voltage		Initial	No abnormality adversely affecting the performance shall occur.	5	100	No Abnormality					OK	
		After Testing				No Abnormality					OK	

Table.2-4 Test result

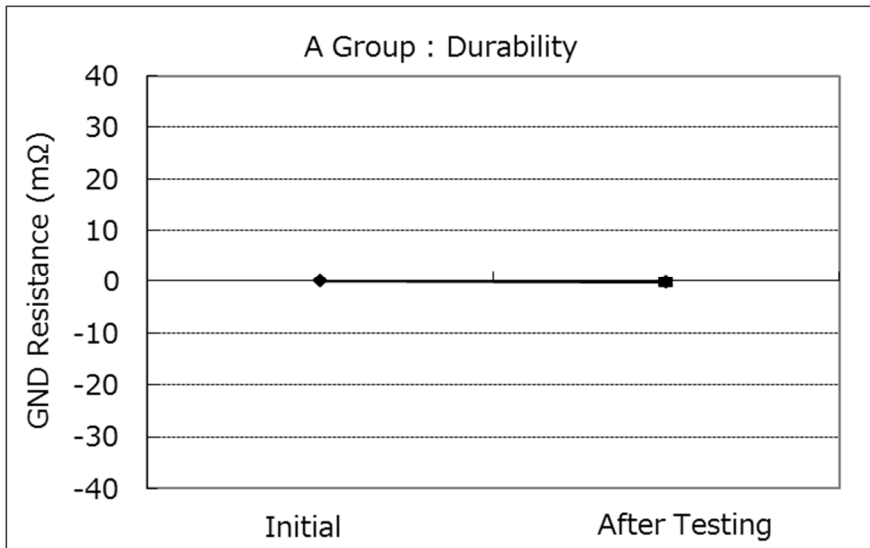
Test Item	Contents of Measurement		Specifications	Set	n	Data					Judge
						AVE.	MAX.	MIN.	s	X±3s	
I Group Salt Water Spray	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	423.830	455.28	405.78	12.941	462.653	OK
		After Testing	AWG#40 ΔR=40mΩ MAX.			1.673	6.33	-3.12	1.877	7.304	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	10.928	11.07	10.86	0.085	11.183	OK
		After Testing	ΔR=40mΩ MAX.			1.268	1.86	0.94	0.356	2.336	OK
J Group H ₂ S Gas	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	429.904	443.95	418.40	6.978	450.838	OK
		After testing	AWG#40 ΔR=40mΩ MAX.			-0.821	1.48	-3.03	0.785	1.534	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	11.690	11.80	11.52	0.113	12.029	OK
		After Testing	ΔR=40mΩ MAX.			0.098	0.20	-0.01	0.097	0.389	OK
K Group Solderability	Appearance		More than 95% of the dipped surface shall be evenly wet.	10	10	Wet 95% MIN.					OK
L Group Soldering Heat Resistance	Appearance		No deformation nor defect adversely affecting the performance occur.	10	10	No Abnormality					OK
M Group Temperature Rising	AWG#44 0.15A/Contact		ΔT=30°C MAX.	5	5	ΔT=22.8°C MAX.					OK

*The Temperature Rising Test is a result when applied ratings current (0.15A/contact) between the neighboring contacts for 60pos. (With the whole connector 9.0A.)

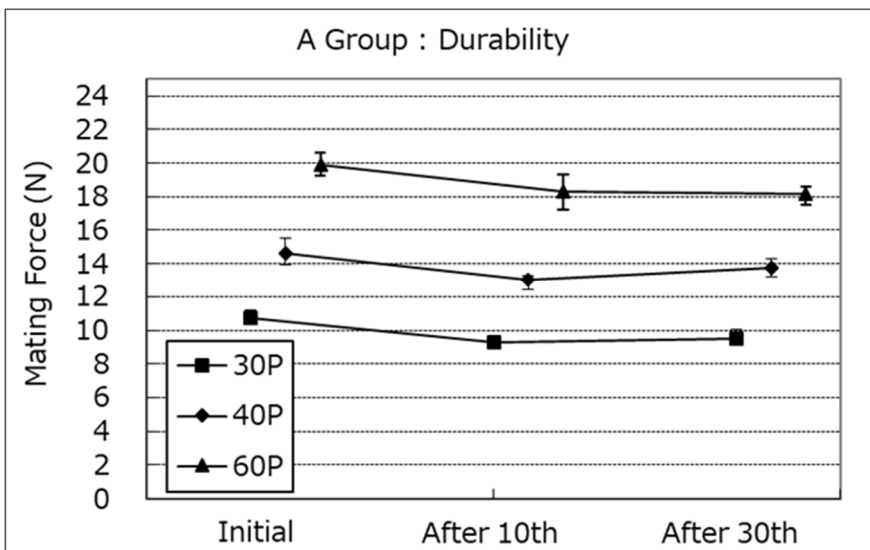
Graph.1



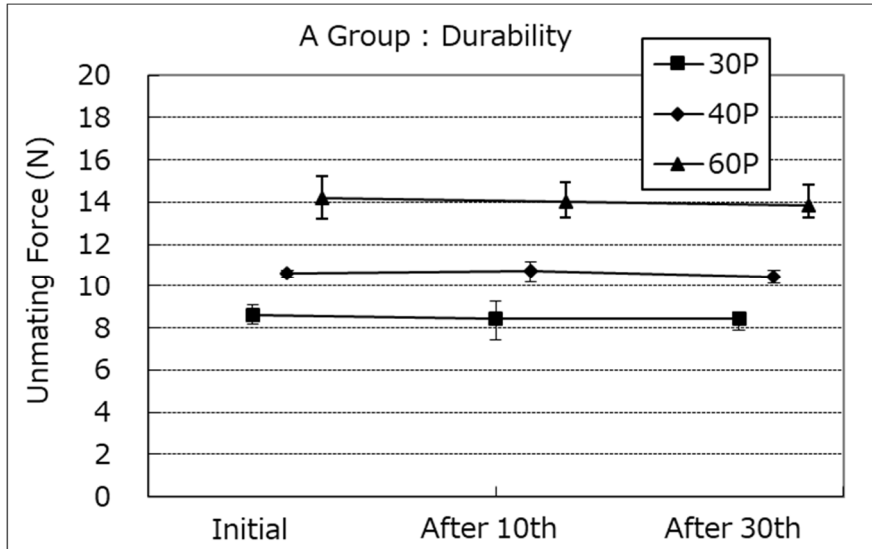
Graph.2



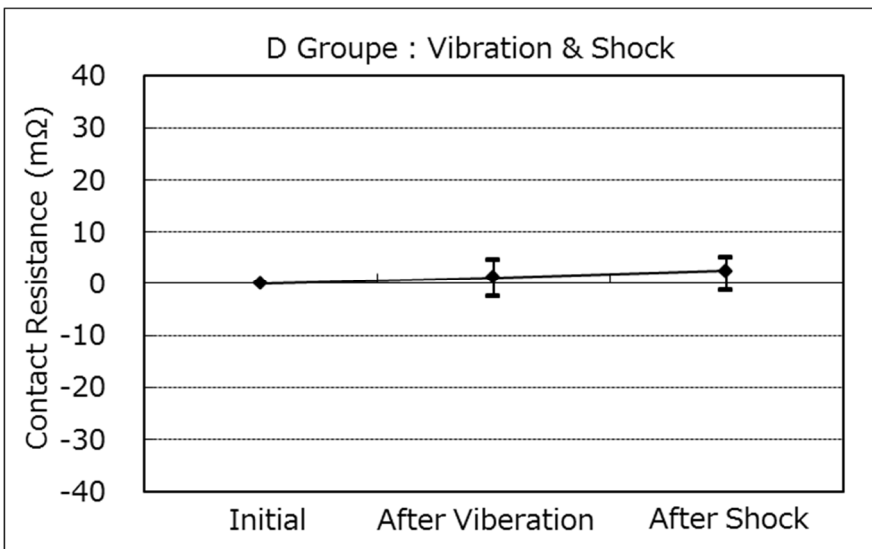
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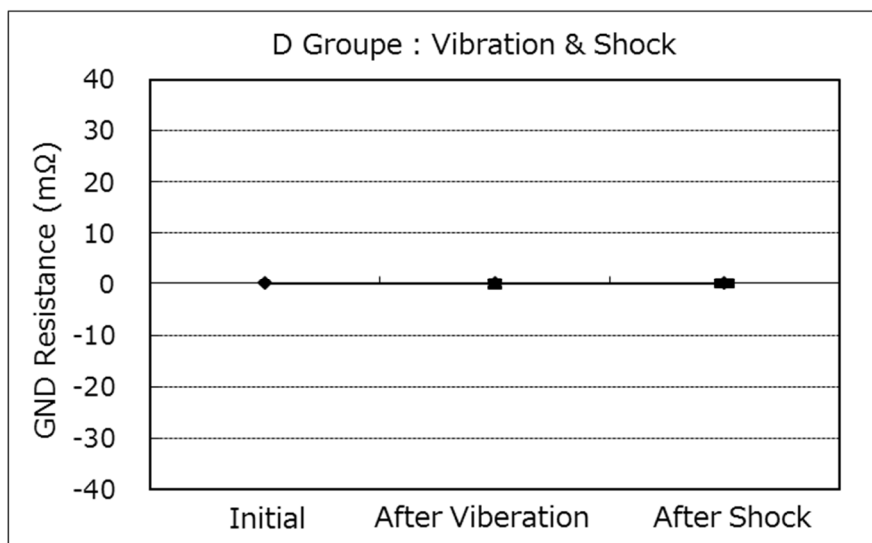
Graph.4



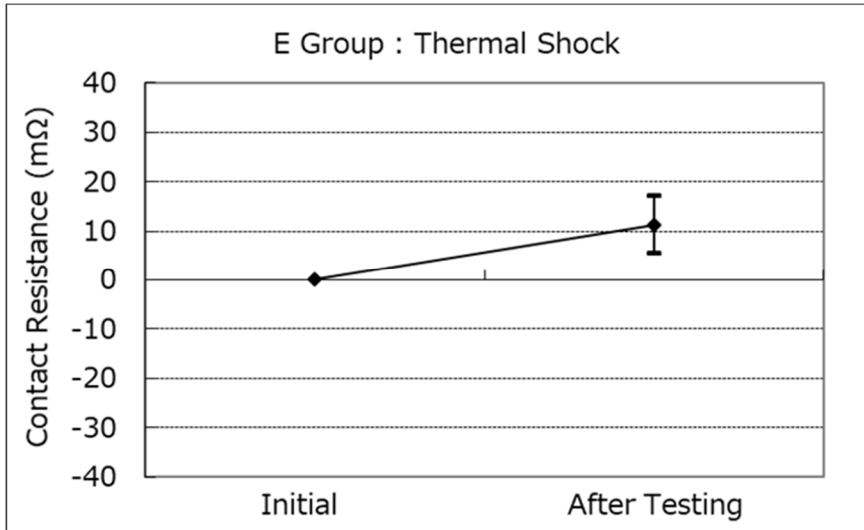
Graph.5



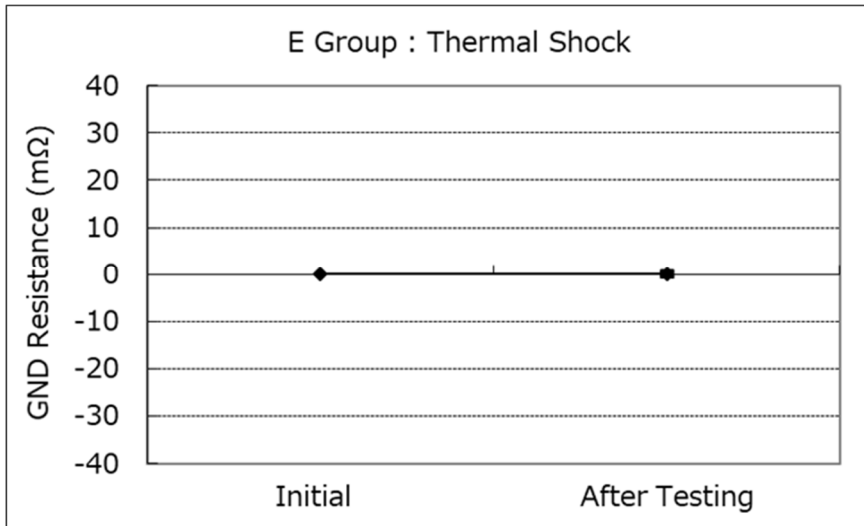
Graph.6



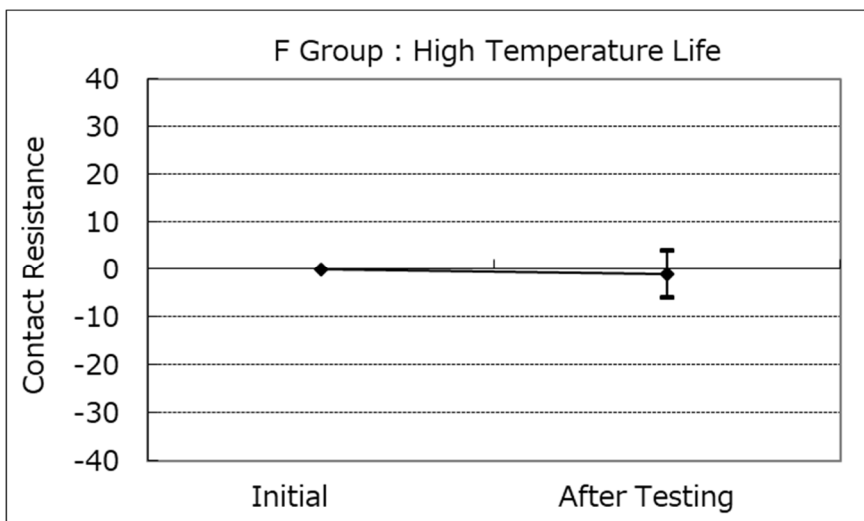
Graph.7



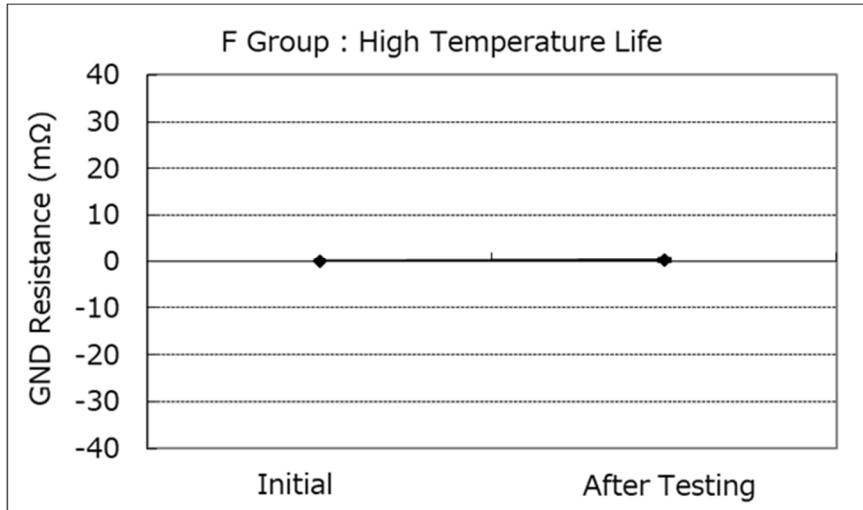
Graph.8



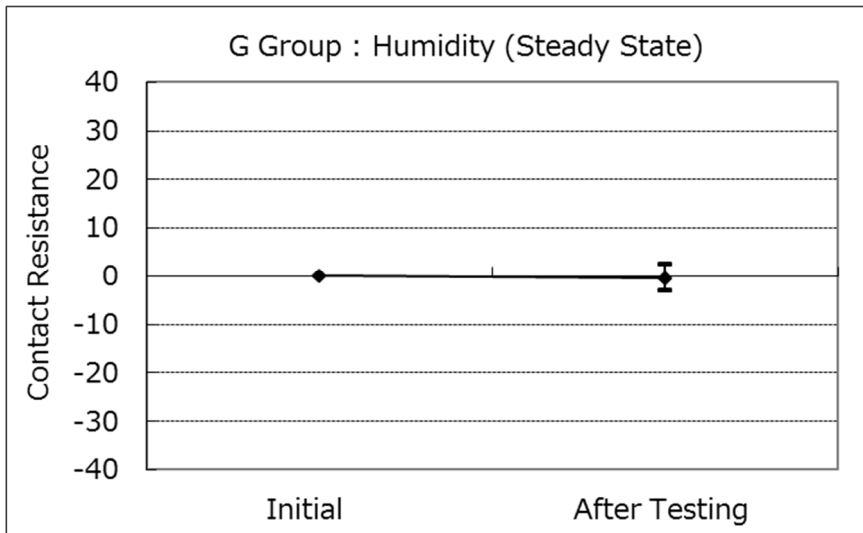
Graph.9



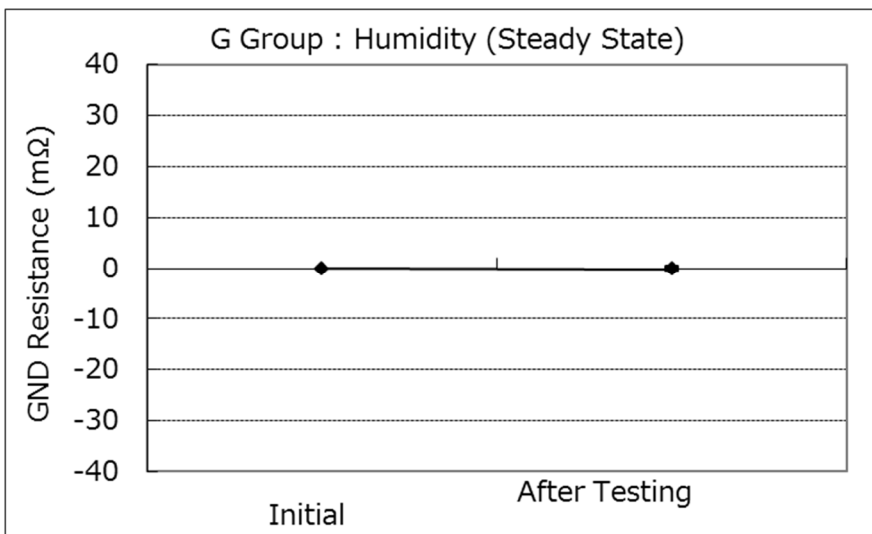
Graph.10



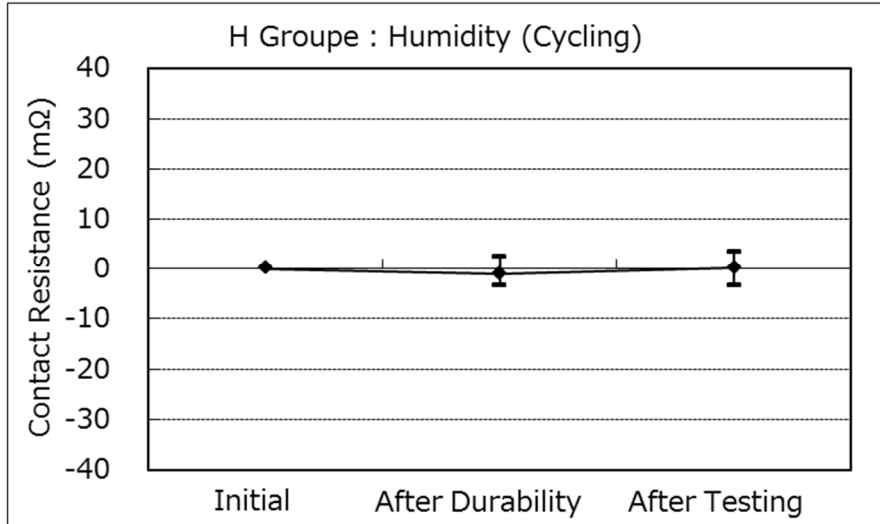
Graph.11



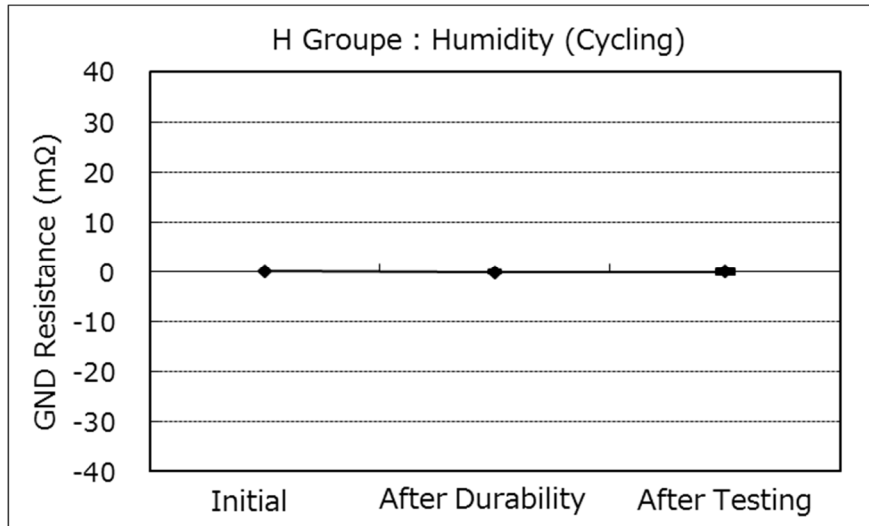
Graph.12



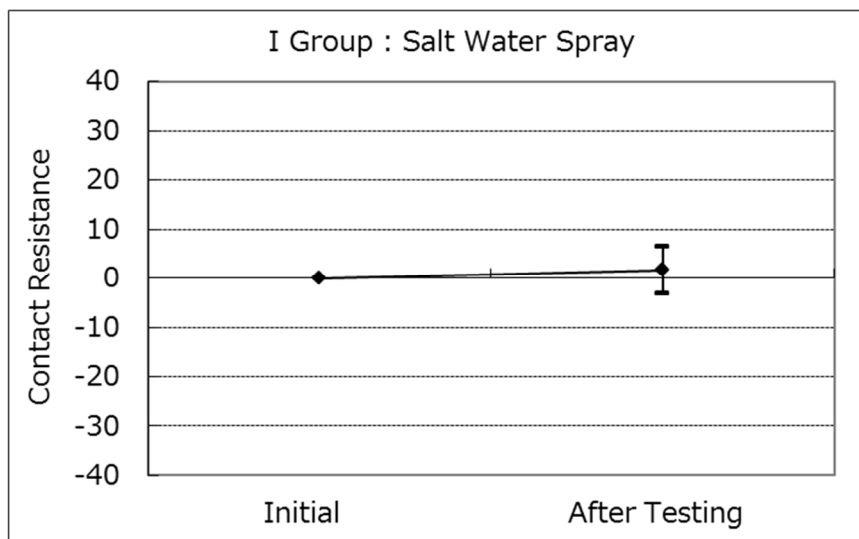
Graph.13



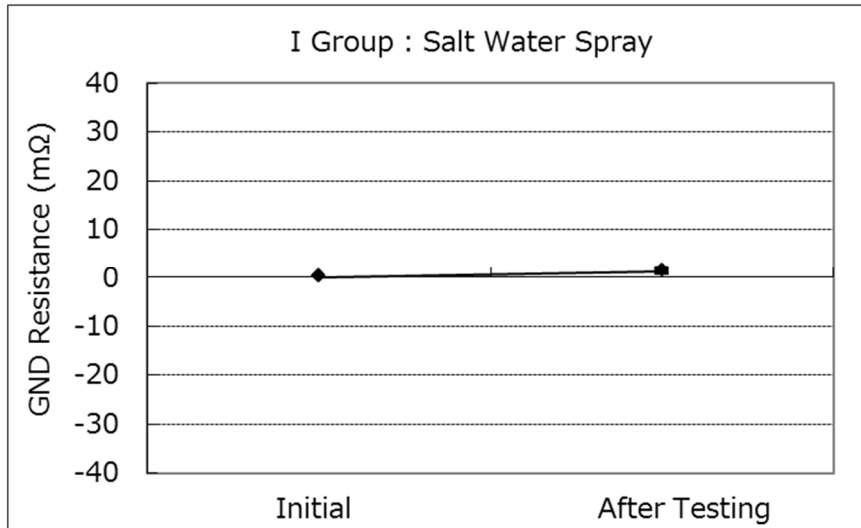
Graph.14



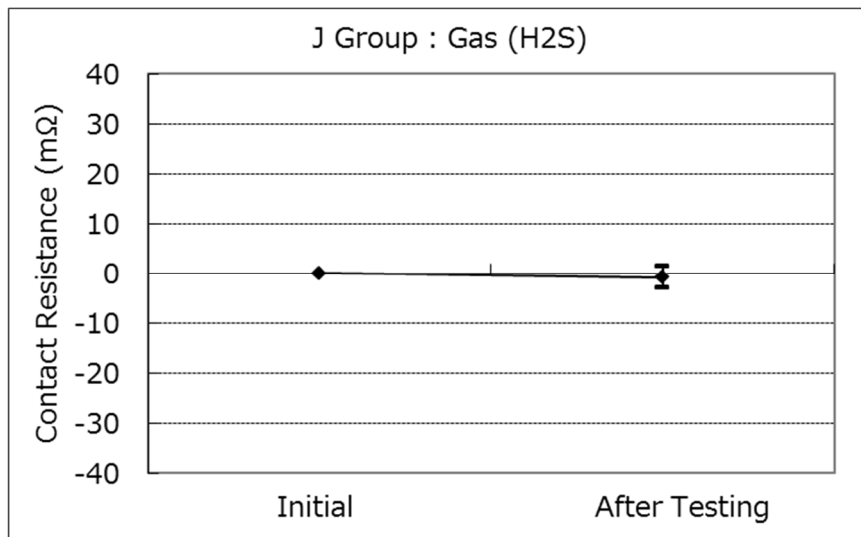
Graph.15



Graph.16



Graph.17



Graph.18

