

CABLINE®-UM

Part No. Plug: 20877-0**T-0#, Receptacle: 20879-0**E-02

Test Report

Product Specification no. PRS-2514

5	T22122	August 2, 2022	T.Masunaga	-	H.Ikari
4	T22062	April 15, 2022	H.Lu	Y.Shimizu	M.Takemoto
3	T21120	October 27, 2021	T.Masunaga	-	H.Ikari
2	T21031	May 13, 2021	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 CABLE ASS'Y (Part No. 20877-0**T-0#)
- (2) CABLINE-UM RECEPTACLE ASS'Y (Part No. 20879-0**E-02)

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

Test Item	Group												
	A	B	C	D	E	F	G	H	I	J	K	L	M
Contact Resistance	2,6			1,3,5	1,5	1,3	1,5	1,5,7	1,3	1,3			
Insulation Resistance					2,6		2,6	2,8					
D. W. Voltage					3,7		3,7	3,9					
Temperature rising													1
Mating Force	1,5												
Un-mating Force	3,7												
Durability	4							4 (10cycles)					
Contact Retention Force		1,3											
Conn.Lock			1										
Cable Retention Force	8												
Vibration				2									
Shock				4									
Thermal Shock					4								
High Temperature Life		2				2							
Humidity (Steady State)							4						
Humidity (Cycling)								6					
Salt Water 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 sequence in which tests are performed.

Table.2-1 Test result

Test Item	Contents of Measurement		Specifications	Set	n	Data					Judge	
						AVE.	MAX.	MIN.	s	X±3s		
A Group Durability Cable Retention Force	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	428.369	467.39	401.93	13.719	469.526	OK	
		After Testing	AWG#40 ΔR=40mΩ MAX.			0.336	4.94	-3.81	1.917	6.087	OK	
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	10.658	11.08	10.09	0.494	12.140	OK	
		After Testing	ΔR=40mΩ MAX.			-0.190	0.66	-0.98	0.643	1.739	OK	
	30P	Mating Force (N)	Initial	34.0N MAX.	5	5	10.810	11.34	10.17	0.494	12.292	OK
			After Testing	34.0N MAX.			9.380	9.73	8.94	0.343	10.409	OK
		Unmating Force (N)	Initial	3.0N MIN.	5	5	8.954	9.89	8.29	0.640	7.034	OK
			After Testing	3.0N MIN.			8.826	9.81	7.88	0.882	6.180	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
		40P	Mating Force (N)	Initial	40.0N MAX.	5	5	14.330	15.85	13.47	0.957	17.201
	After Testing			40.0N MAX.	5	5	12.740	13.28	12.03	0.540	14.360	OK
	Unmating Force (N)		Initial	4.0N MIN.	5	5	10.906	11.43	10.45	0.427	9.625	OK
			After Testing	4.0N MIN.	5	5	10.036	10.54	9.19	0.558	8.362	OK
	Cable Retention Force		19.60N MIN.	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	19.012	20.36	18.01	0.930	21.802	OK
			After Testing	52.0N MAX.	5	5	17.424	18.47	16.07	0.887	20.085	OK
		Unmating Force (N)	Initial	6.0N MIN.	5	5	13.856	14.50	13.17	0.587	12.095	OK
			After Testing	6.0N MIN.	5	5	13.234	13.89	12.40	0.614	11.392	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	1.255	1.53	0.87	0.151	0.802	OK
After Testing			0.2N MIN.	—	20	0.970	1.45	0.71	0.174	0.448	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	428.258	459.94	398.51	14.214	470.900	OK
		After Vibration	AWG#40 ΔR=40mΩ MAX.			1.139	4.96	-4.62	2.023	7.208	OK
		After Shock	AWG#40 ΔR=40mΩ MAX.			2.128	4.99	-2.93	1.830	7.618	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	11.314	12.35	10.30	0.911	14.047	OK
		After Vibration	ΔR=40mΩ MAX.			-0.118	0.78	-0.44	0.510	1.412	OK
		After Shock	ΔR=40mΩ MAX.			-0.104	1.62	-0.70	0.996	2.884	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	430.378	448.85	410.46	7.197	451.969	OK
		After Testing	AWG#40 ΔR=40mΩ MAX.			11.168	17.18	4.89	2.513	18.707	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	10.904	12.27	9.94	0.866	13.502	OK
		After Testing	ΔR=40mΩ MAX.			-0.160	0.11	-0.64	0.292	0.716	OK
F Group High Temperature Life	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	424.498	454.21	389.96	15.741	471.721	OK
		After Testing	AWG#40 ΔR=40mΩ MAX.			-1.014	4.19	-5.04	1.812	4.422	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	11.140	12.87	10.21	1.028	14.224	OK
		After Testing	ΔR=40mΩ MAX.			0.280	0.46	0.15	0.164	0.772	OK

Table.2-3 Test result

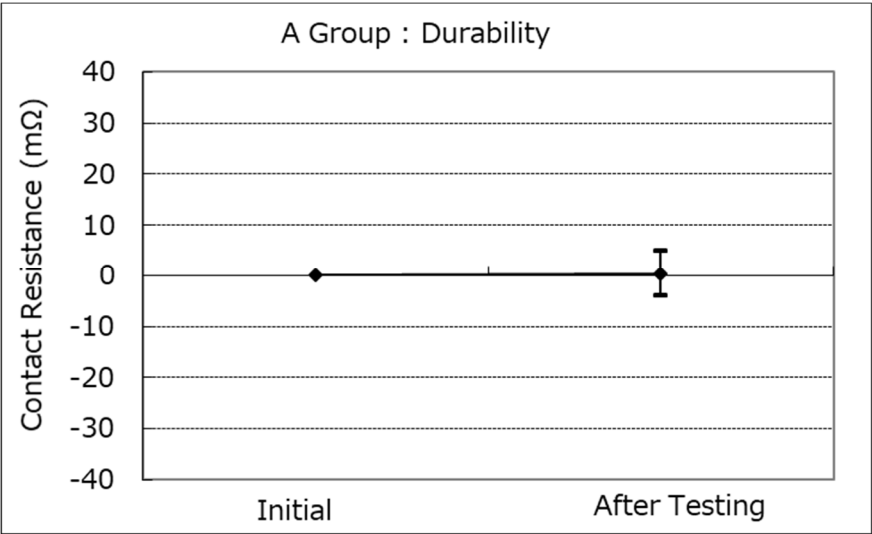
Test Item	Contents of Measurement		Specifications	Set	n	Data					Judge
						AVE.	MAX.	MIN.	s	X±3s	
G Group Humidity (Steady State)	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX	5	200	424.602	450.81	404.82	8.846	451.140	OK
		After Testing	AWG#40 ΔR=40mΩ MAX.			-0.364	4.55	-4.74	1.890	5.306	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	11.250	11.83	10.65	0.532	12.846	OK
		After Testing	ΔR=40mΩ MAX.			-0.160	0.17	-0.27	0.191	0.413	OK
	Insulation Resistance (MΩ)	Initial	1000MΩMIN.	5	100	1.6×10 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
	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	417.884	459.06	390.43	16.233	466.583	OK
		After Durability	AWG#40 ΔR=40mΩ MAX.			-1.160	3.88	-4.91	1.899	4.537	OK
		After Testing	AWG#40 ΔR=40mΩ MAX.			0.167	4.76	-4.63	2.119	6.524	OK
H Group Humidity (Cycling)	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	11.448	11.83	11.15	0.322	12.414	OK
		After Durability	ΔR=40mΩ MAX.			-0.278	0.16	-0.64	0.328	0.706	OK
		After Testing	ΔR=40mΩ MAX.			-0.172	0.08	-0.37	0.163	0.317	OK
	Insulation Resistance (MΩ)	Initial	1000MΩMIN.	5	100	1.7×10 ⁵ MΩMIN.					OK
		After Testing	500MΩMIN.			2.2×10 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

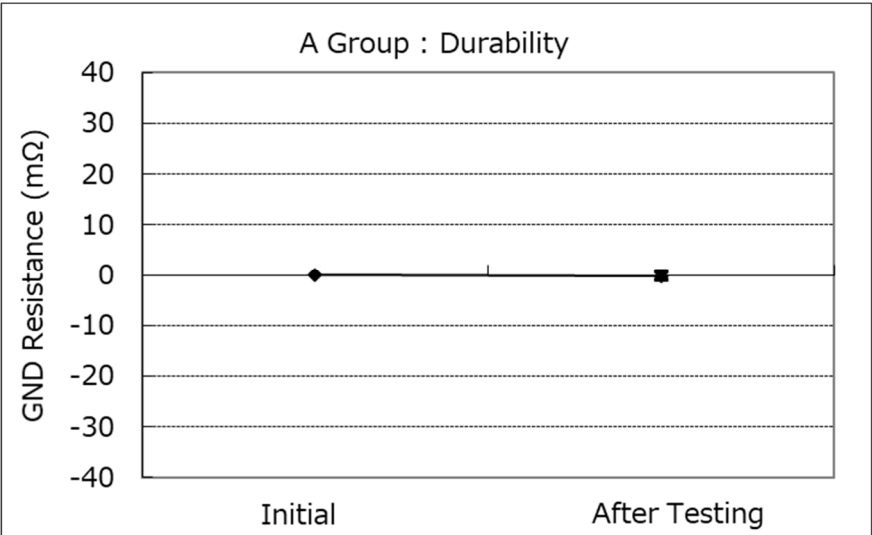
Test Item	Contents of Measurement		Specifications	Set	n	Data					Judge
						AVE.	MAX.	MIN.	s	$X \pm 3s$	
I Group Salt Water Spray	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	424.507	464.99	394.52	14.495	467.992	OK
		After Testing	AWG#40 $\Delta R=40m\Omega$ MAX.			1.766	7.96	-5.34	2.533	9.365	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	10.950	11.22	10.65	0.268	11.754	OK
		After Testing	$\Delta R=40m\Omega$ MAX.			1.364	1.73	0.93	0.346	2.402	OK
J Group H2S Gas	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	429.509	454.24	409.43	9.239	457.226	OK
		After testing	AWG#40 $\Delta R=40m\Omega$ MAX.			-0.692	3.76	-4.94	1.768	4.612	OK
	GND 抵抗 GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	11.674	11.89	11.47	0.185	12.229	OK
		After Testing	$\Delta R=40m\Omega$ MAX.			0.090	0.53	-0.15	0.315	1.035	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#40 0.3A/Contact		$\Delta T=30^{\circ}\text{C}$ MAX.	5	5	$\Delta T=28.6^{\circ}\text{C}$ MAX.					OK

The Temperature Rising Test is a result when applied ratings current (0.3A/contact) between the neighboring contacts for 40pos. (With the whole connector 12.0A.)

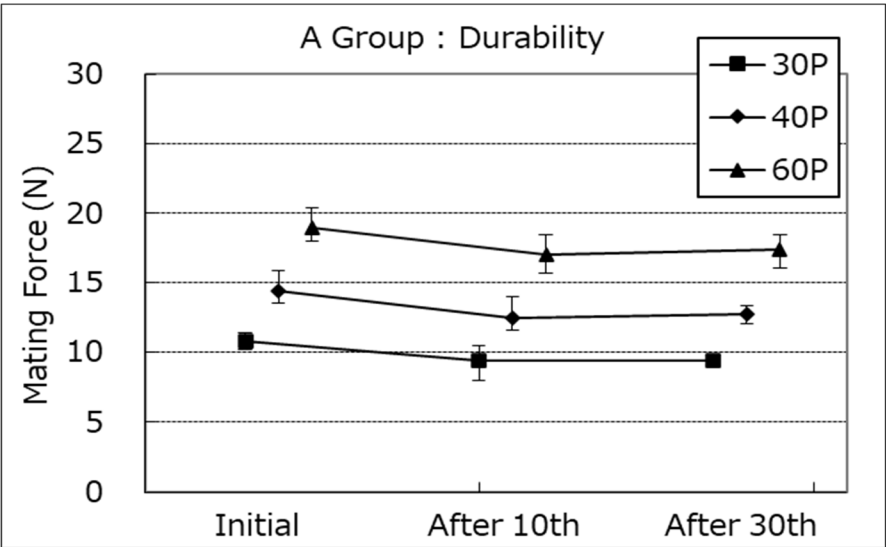
Graph.1



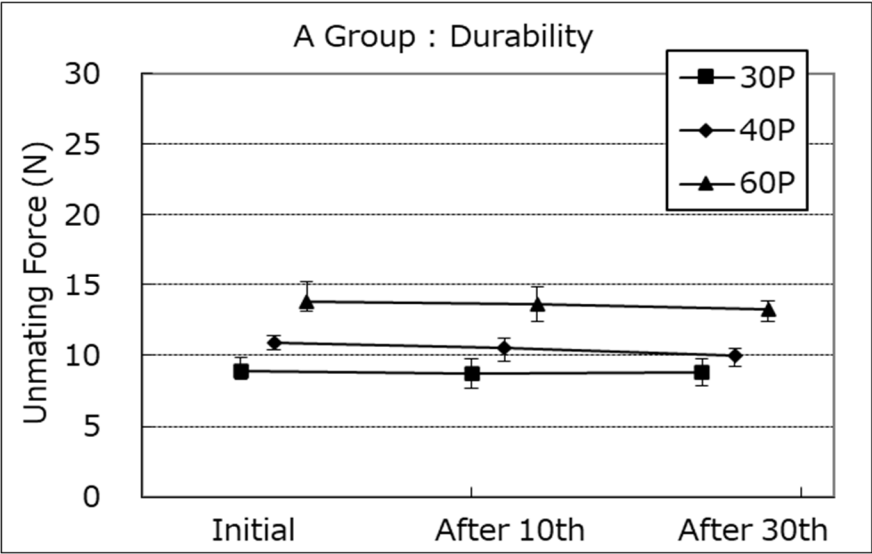
Graph.2



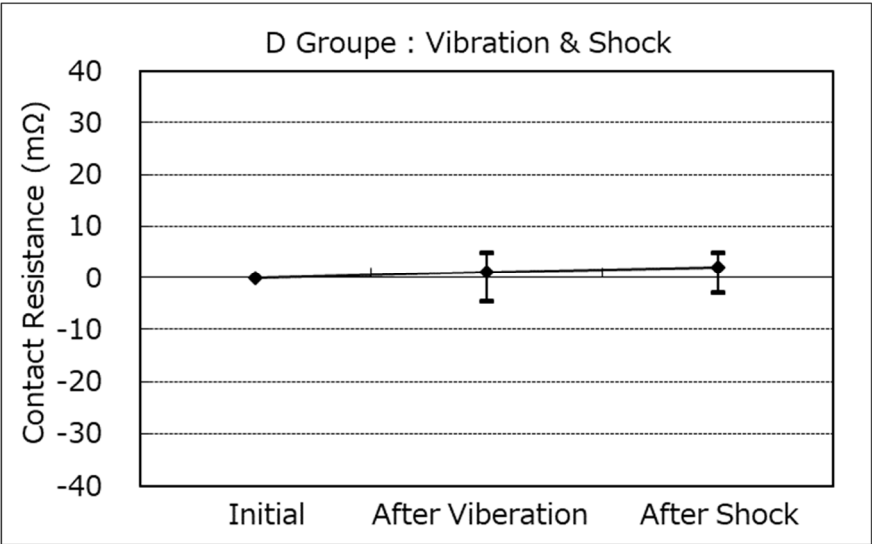
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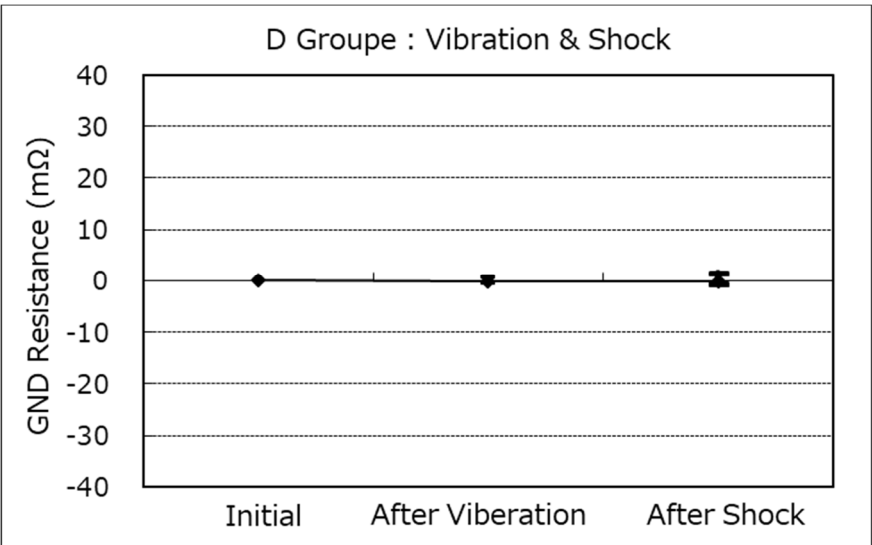
Graph.4



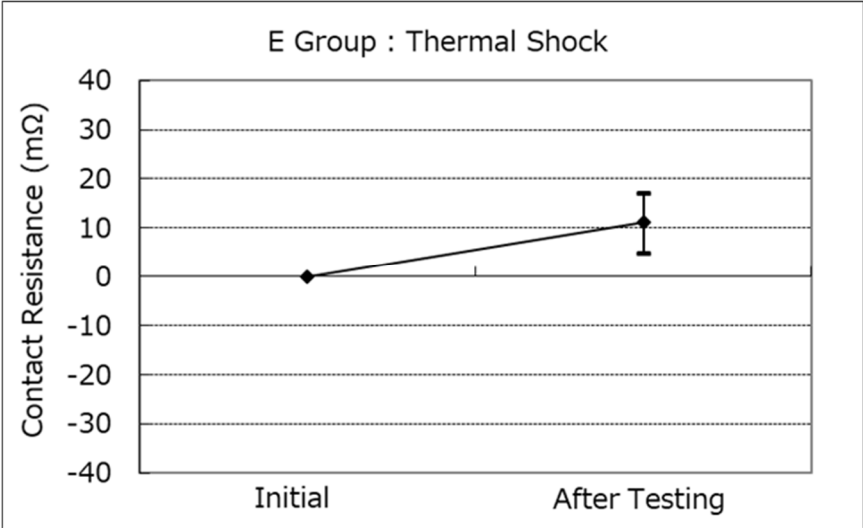
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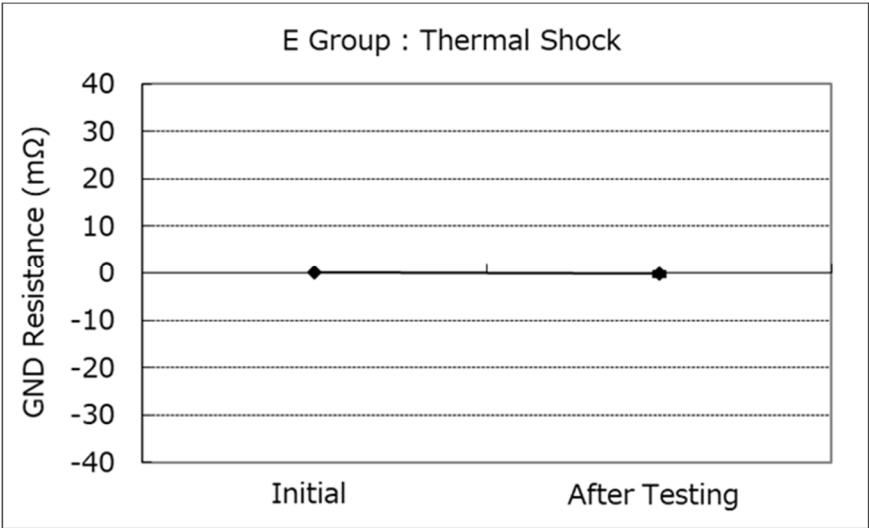
Graph.6



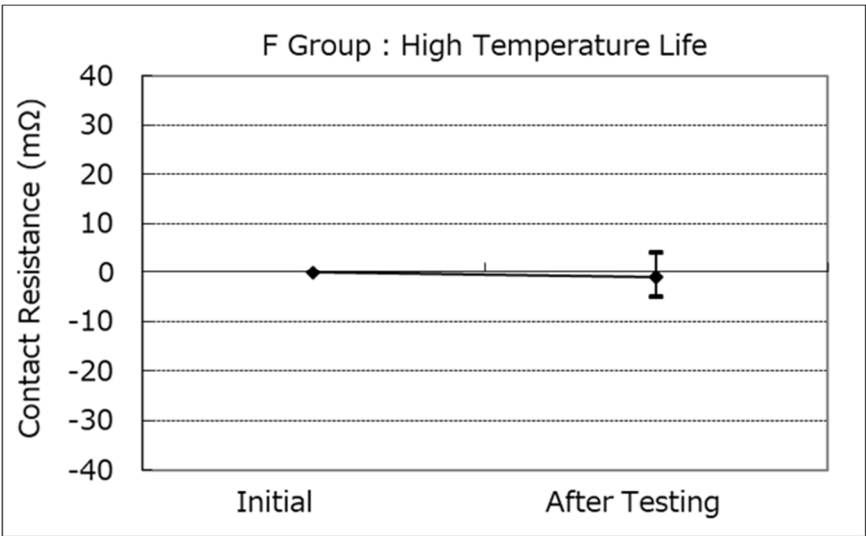
Graph.7



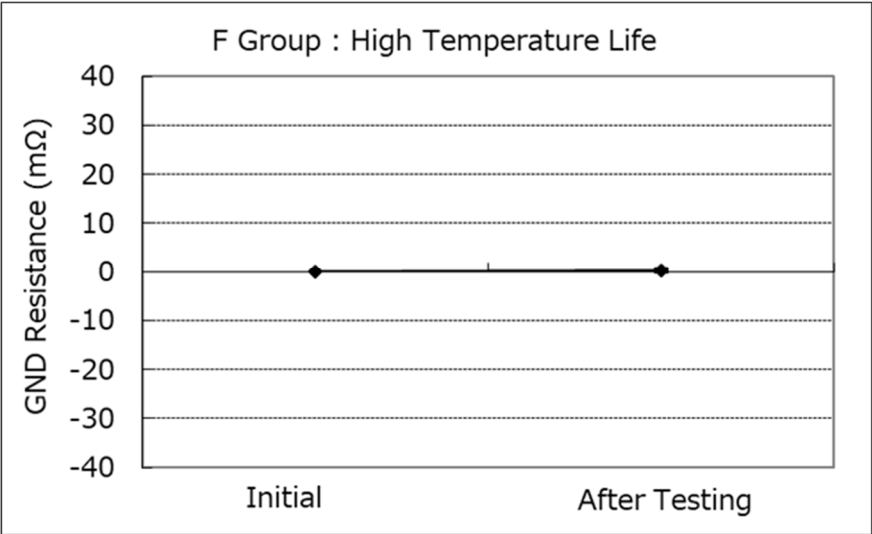
Graph.8



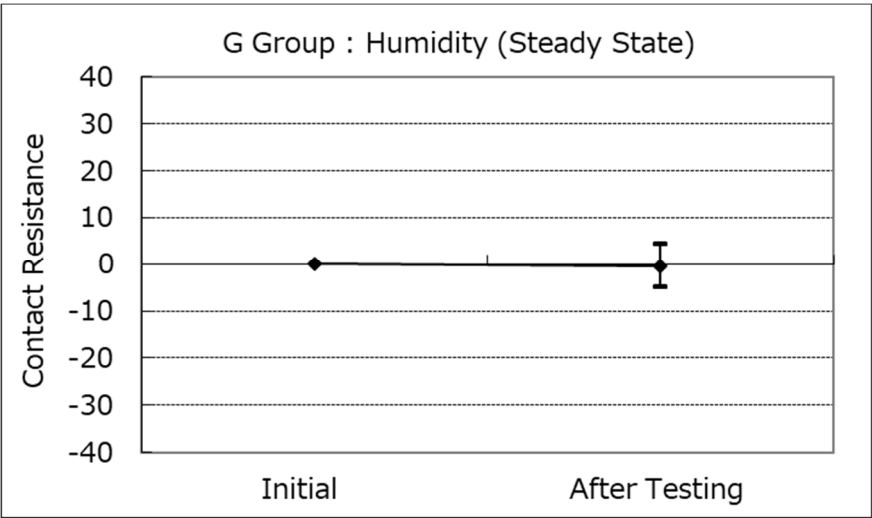
Graph.9



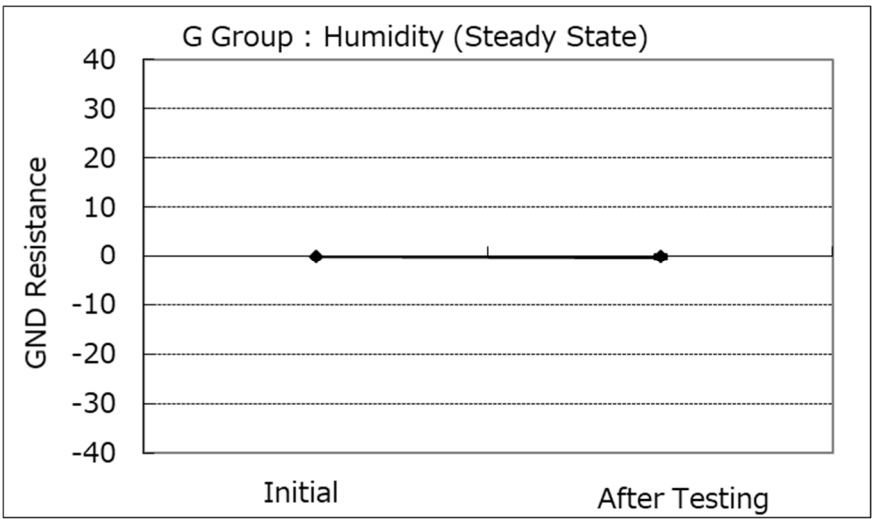
Graph.10



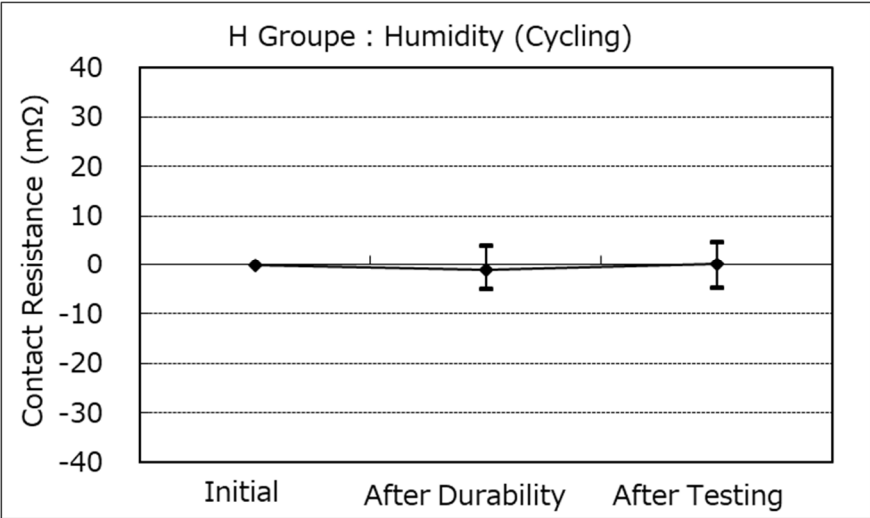
Graph.11



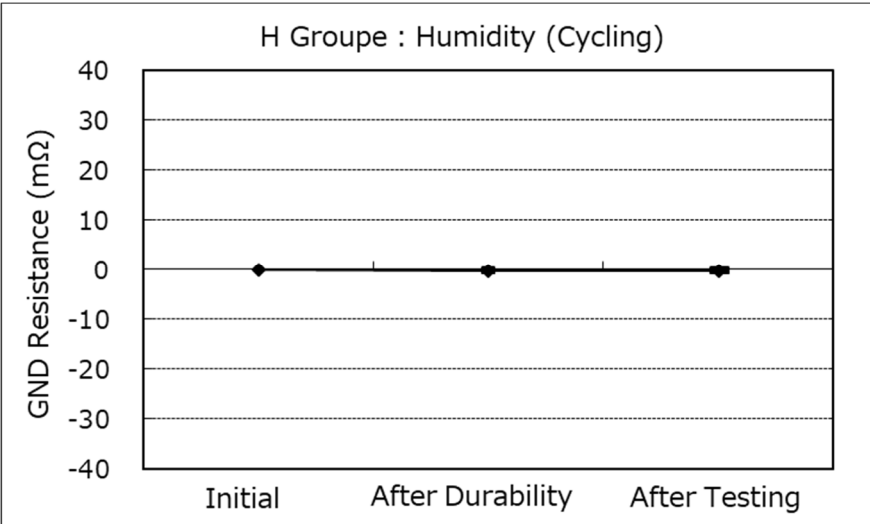
Graph.12



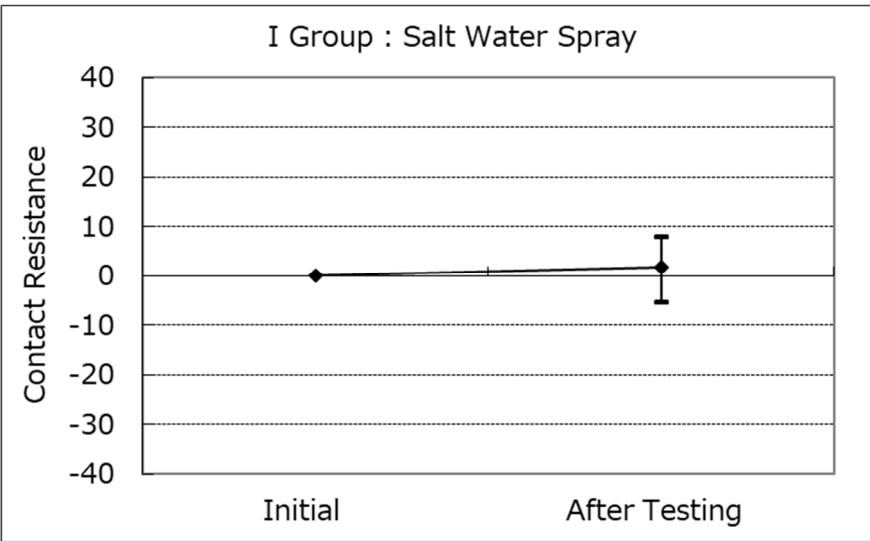
Graph.13



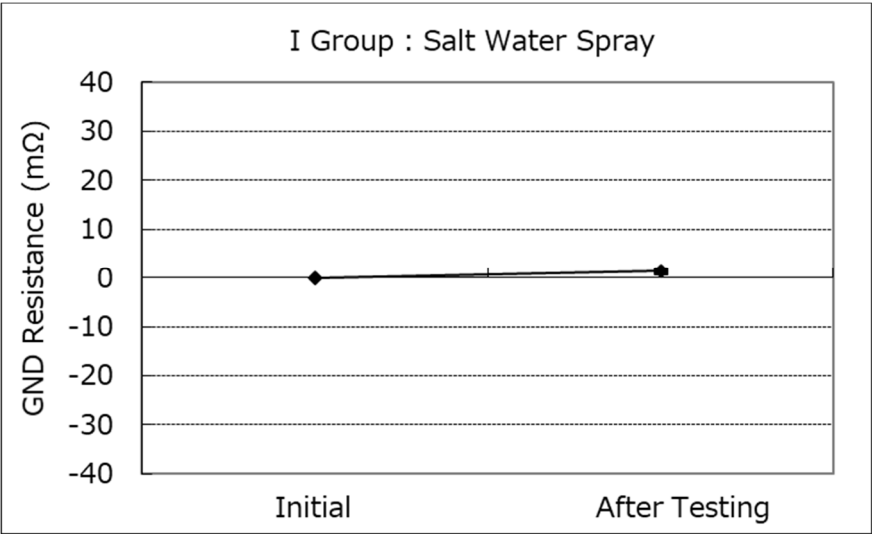
Graph.14



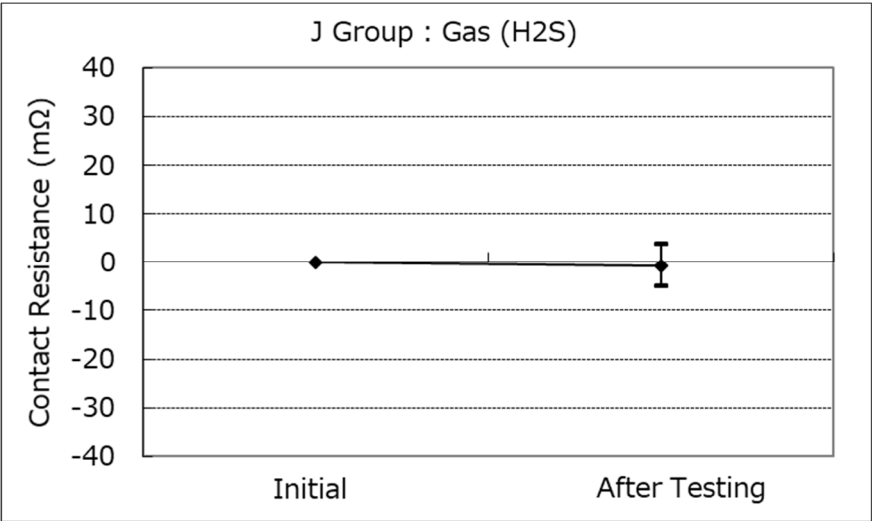
Graph.15



Graph.16



Graph.17



Graph.18

