

CABLINE®-CA II

Part No. Plug: 20679-0**T-01, Receptacle: 20682-0**E-02#

Test Report

Product Specification no. PRS-2163

7	T22155	May 26, 2023	W. Lau	Y. Shimizu	M. Takemoto
6	T22040	February 9, 2022	K. Hara	T. Tanigawa	H. Ikari
5	T22015	January 19, 2022	K. Hara	T. Tanigawa	H. Ikari
4	T20010	January 23, 2020	A. Koyanagi	T. Kurachi	H. Ikari
Rev.	ECN	Date	Prepared by	Checked by	Approved by

1. Purpose

To evaluate the performance of CABLINE-CA II connector in accordance with PRS-2163.

2. Specimen

- (1) CABLINE-CA II PLUG CABLE ASS'Y (Part No. 20679-0**T-01)
- (2) CABLINE-CA II RECE. ASS'Y (Part No. 20682-0**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-2163.
The "n" in the tables show the number of measurement points.

5. Conclusion

All the specimens met the requirements of PRS-2163.

Table1 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					
D. W. Voltage							3,7	3,9					
Temperature Rising													1
Mating Force	1,5												
Unmating 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					2								
High Temperature Life		2				2							
Humidity (SteadyState)							4						
Humidity (Cycling)								6					
Salt Water Spray									2				
H ₂ S Gas										2			
Solder ability											1		
Soldering Heat Resistance												1	
Sample QTY.	5pcs	20pcs	5pcs	5pcs	5pcs	5pcs	5pcs	5pcs	5pcs	5pcs	10pcs	10pcs	5pcs

※The number of group is test sequence.

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	492.969	510.62	482.41	6.381	512.112	Pass
		After Testing	AWG#40 ΔR=40mΩ MAX.			-1.070	5.312	-7.122	2.343	5.959	Pass
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	10.082	11.05	9.17	0.486	11.540	Pass
		After Testing	ΔR=40mΩ MAX.			0.245	1.72	-1.07	0.694	2.327	Pass
	20P Mating Force (N)	Initial	9.70N MAX.	5	5	5.425	5.57	5.30	0.111	5.758	Pass
		After Testing	9.70N MAX.			3.292	3.39	3.12	0.109	3.619	Pass
		Initial	2.0N MIN.	5	5	4.018	4.14	3.74	0.160	3.538	Pass
		After Testing	2.0N MIN.			2.633	2.74	2.52	0.095	2.348	Pass
	Cable Retention Force		9.80N MIN.	5	5	124.363	126.64	122.20	1.664	119.371	Pass
	30P Mating Force (N)	Initial	14.55N MAX.	5	5	7.928	8.42	7.38	0.462	9.314	Pass
		After Testing	14.55N MAX.			4.834	5.15	4.56	0.257	5.605	Pass
		Initial	3.0N MIN.	5	5	5.130	5.47	4.84	0.258	4.356	Pass
		After Testing	3.0N MIN.			4.108	4.39	3.81	0.235	3.403	Pass
	Cable Retention Force		14.70N MIN.	5	5	128.816	133.11	125.68	3.052	119.660	Pass
	40P Mating Force (N)	Initial	19.40N MAX.	5	5	9.428	10.32	8.66	0.650	11.378	Pass
		After Testing	19.40N MAX.			6.111	6.84	5.48	0.559	7.788	Pass
		Initial	4.0N MIN.	5	5	5.731	6.09	5.38	0.308	4.807	Pass
		After Testing	4.0N MIN.			4.989	5.27	4.74	0.214	4.347	Pass
	Cable Retention Force		19.60N MIN.	5	5	133.278	137.53	126.54	4.414	120.036	Pass
	50P Mating Force (N)	Initial	24.25N MAX.	5	5	12.842	13.52	12.09	0.557	14.513	Pass
		After Testing	24.25N MAX.			7.918	8.40	6.93	0.605	9.733	Pass
		Initial	5.0N MIN.	5	5	7.672	7.94	7.51	0.175	7.147	Pass
		After Testing	5.0N MIN.			6.222	6.42	5.97	0.176	5.694	Pass
	Cable Retention Force		24.50N MIN.	5	5	138.166	142.11	136.34	2.335	131.161	Pass
B Group High Temperature Life	PLUG Contact Retention Force (N)	Initial	0.6N MIN.	—	20	It does not pull out, even if applies the power of 1.8N to a terminal.					Pass
		After Testing	0.6N MIN.	—	20	It does not pull out, even if applies the power of 1.8N to a terminal.					Pass
	RECE Contact Retention Force (N)	Initial	0.2N MIN.	—	20	1.545	1.69	1.43	0.056	1.377	Pass
		After Testing	0.2N MIN.	—	20	1.223	1.49	0.96	0.176	0.695	Pass

Table.2-2 Test result

Test Item	Contents of Measurement		Specifications	Set	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#40 600mΩMAX.	5	200	488.875	496.42	474.10	6.647	508.816	Pass
		After Vibration	AWG#40 ΔR=40mΩ MAX.			1.148	4.93	-2.57	1.316	5.096	Pass
		After Shock	AWG#40 ΔR=40mΩ MAX.			0.978	4.95	-2.15	1.401	5.181	Pass
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	10.930	11.95	9.20	0.618	12.784	Pass
		After Vibration	ΔR=40mΩ MAX.			-0.077	0.92	-1.48	0.603	1.732	Pass
		After Shock	ΔR=40mΩ MAX.			0.090	1.62	-1.49	0.503	1.599	Pass
	Electrical discontinuity	During Vibration	1μsec. 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#40 600mΩMAX.	5	200	500.191	511.53	489.26	4.206	512.269	Pass
		After Testing	AWG#40 ΔR=40mΩ MAX.			0.768	5.94	-4.52	2.002	6.774	Pass
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	9.265	9.32	9.27	0.035	9.400	Pass
		After Testing	ΔR=40mΩ MAX.			0.740	0.78	0.70	0.057	0.911	Pass
F Group High Temperature Life	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	495.561	511.89	480.97	5.754	512.823	Pass
		After Testing	AWG#40 ΔR=40mΩ MAX.			0.241	5.47	-3.81	1.982	6.187	Pass
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	9.860	9.94	9.78	0.113	10.199	Pass
		After Testing	ΔR=40mΩ MAX.			0.060	0.23	-0.11	0.240	0.780	Pass

Table.2-3 Test result

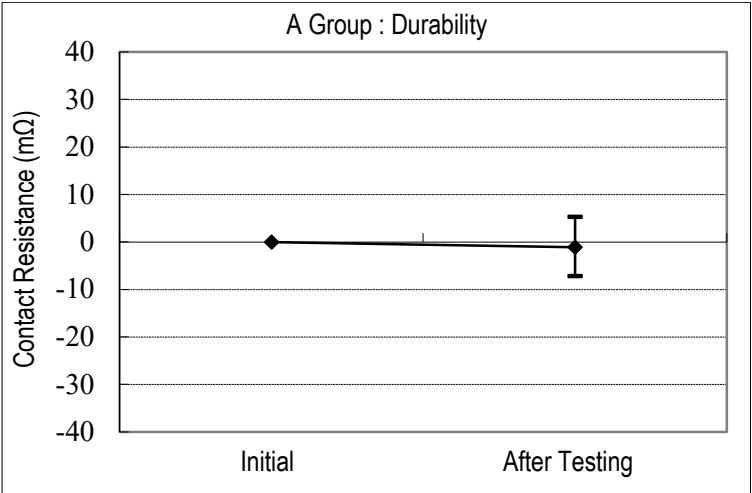
Test Item	Contents of Measurement		Specifications	Set	n	Data					Judge
						AVE.	MAX.	MIN.	s	$X \pm 3s$	
G Group Humidity (Steady State)	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX	5	200	502.370	511.04	492.52	3.383	512.519	Pass
		After Testing	AWG#40 ΔR=40mΩ MAX.			0.107	6.03	-5.27	2.090	6.377	Pass
	Resistance (mΩ)	Initial	50mΩMAX.	5	5	10.672	12.18	9.47	0.827	13.153	Pass
		After Testing	ΔR=40mΩ MAX.			0.514	1.22	-0.37	0.489	1.981	Pass
	Insulation Resistance (MΩ)	Initial	1000MΩMIN.	5	100	8.5×10 ³ MΩMIN.					Pass
		After Testing	500MΩMIN.			7.2×10 ³ MΩMIN.					Pass
	D. W. Voltage	Initial	No creeping discharge, flashover, or insulator breakdown shall occur.	5	100	No Abnormality					Pass
		After Testing				No Abnormality					Pass
H Group Humidity (Cycling)	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	494.232	505.53	479.98	5.420	510.492	Pass
		After Durability	AWG#40 ΔR=40mΩ MAX.			-0.341	3.23	-4.31	1.513	4.198	Pass
		After Testing	AWG#40 ΔR=40mΩ MAX.			1.126	9.06	-6.75	2.995	10.111	Pass
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	10.129	11.50	9.08	0.816	12.577	Pass
		After Durability	ΔR=40mΩ MAX.			-0.133	1.11	-1.59	0.649	1.814	Pass
		After Testing	ΔR=40mΩ MAX.			1.214	3.16	0.44	0.799	3.611	Pass
	Insulation Resistance (MΩ)	Initial	1000MΩMIN.	5	100	1.2×10 ³ MΩMIN.					Pass
		After Testing	500MΩMIN.			5.4×10 ³ MΩMIN.					Pass
	D. W. Voltage	Initial	No creeping discharge, flashover, or insulator breakdown shall occur.	5	100	No Abnormality					Pass
		After Testing				No Abnormality					Pass

Table.2-4 Test result

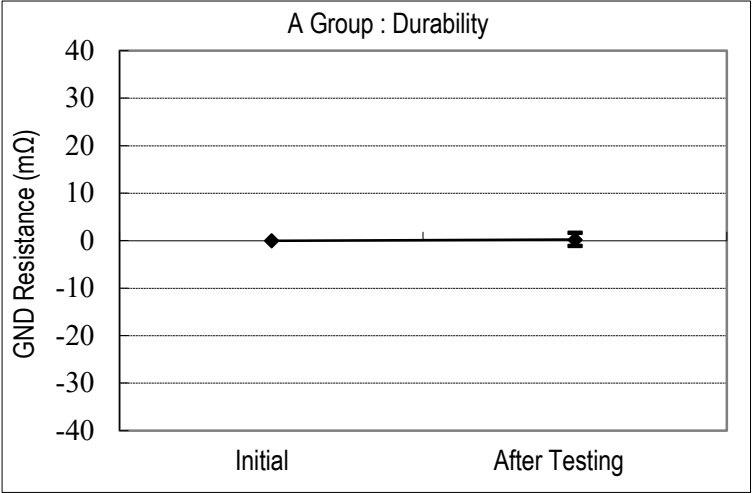
Test Item	Contents of Measurement		Specifications	Set	n	Data					Judge
						AVE.	MAX.	MIN.	s	X±3s	
J Group Salt Water Spray	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	496.419	505.56	482.91	6.313	515.358	Pass
		After Testing	AWG#40 ΔR=40mΩ MAX.			-2.293	2.09	-7.23	1.702	2.813	Pass
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	10.583	13.35	8.80	1.288	14.447	Pass
		After Testing	ΔR=40mΩ MAX.			0.034	1.19	-1.80	0.841	2.557	Pass
K Group H ₂ S Gas	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	496.845	508.62	481.78	6.044	514.977	Pass
		After testing	AWG#40 ΔR=40mΩ MAX.			-1.008	3.53	-5.73	1.784	4.344	Pass
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	10.894	11.76	10.02	0.570	12.604	Pass
		After Testing	ΔR=40mΩ MAX.			0.418	1.42	-0.27	0.605	2.233	Pass
L Group Solder ability	Appearance		More than 95% of the dipped surface shall be evenly wet.	10	10	Wet 95% MIN.					Pass
M Group Soldering Heat Resistance	Appearance		No deformation nor defect adversely affecting the performance occur.	10	10	No Abnormality					Pass
N Group Temperature Rising	AWG#40 0.3A/Contact 12.0A/Connector		ΔT=30℃MAX.	5	5	ΔT=28.3℃MAX.					Pass

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.)

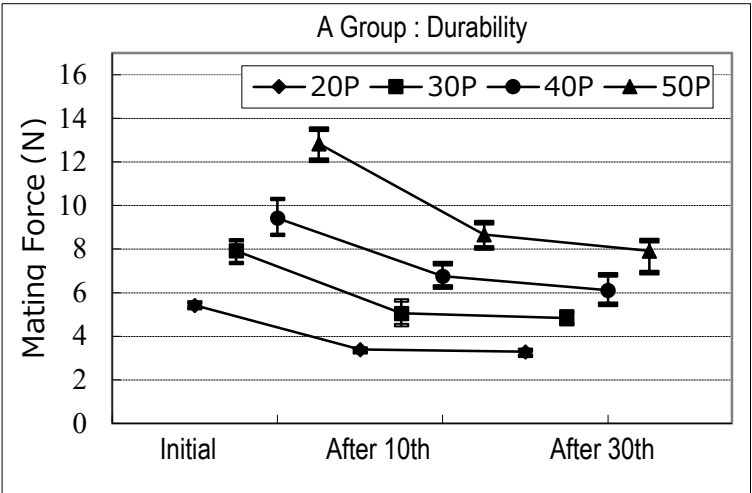
Graph.1



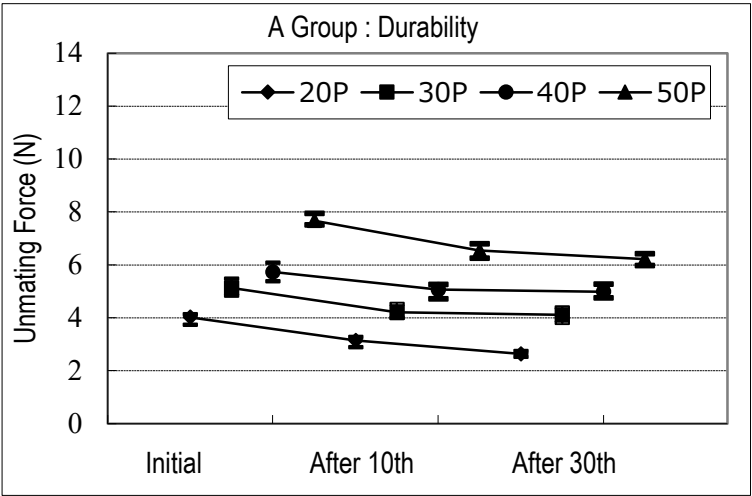
Graph.2



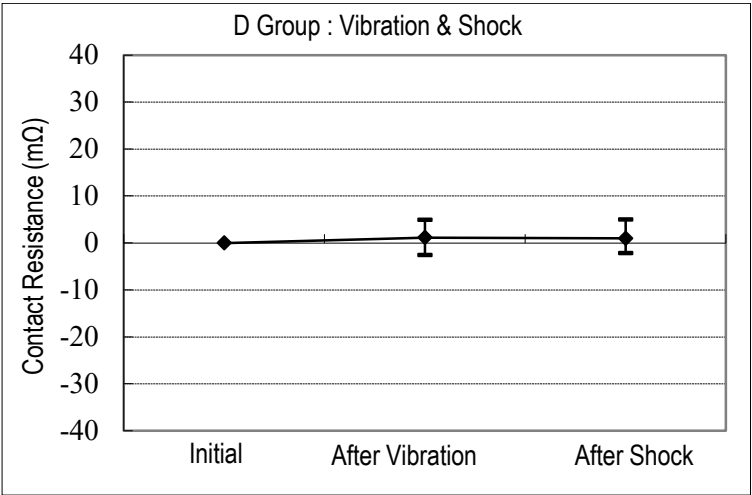
Graph.3



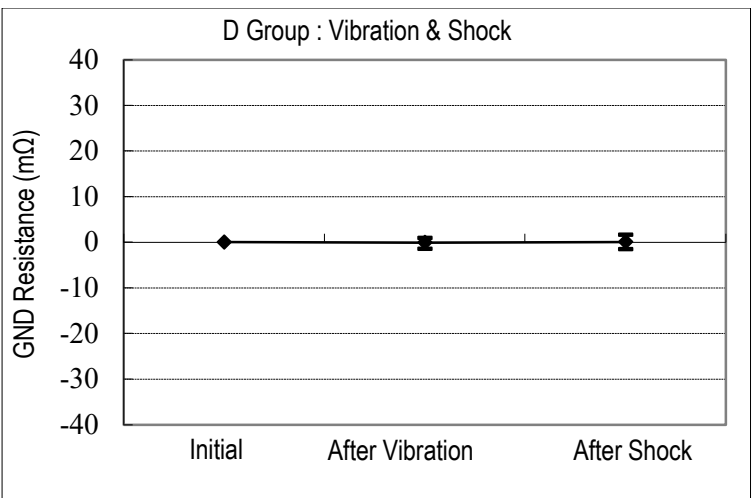
Graph.4



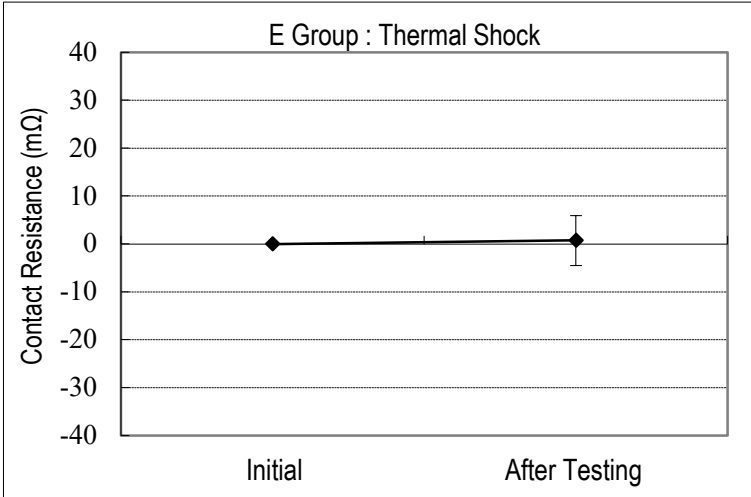
Graph.5



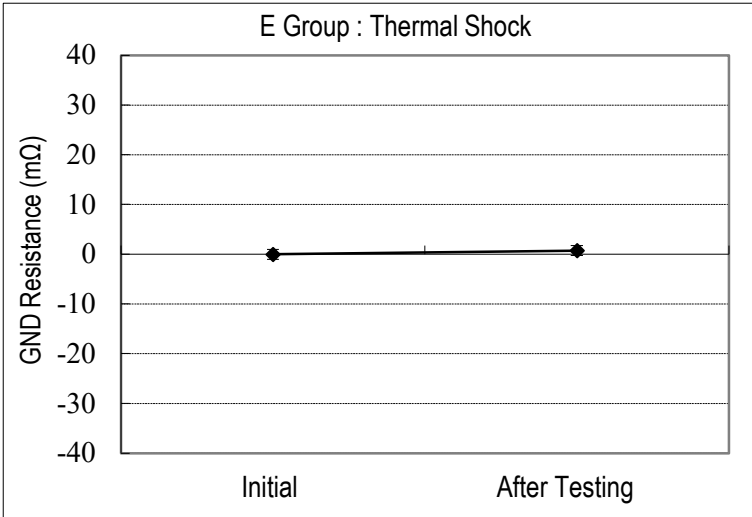
Graph.6



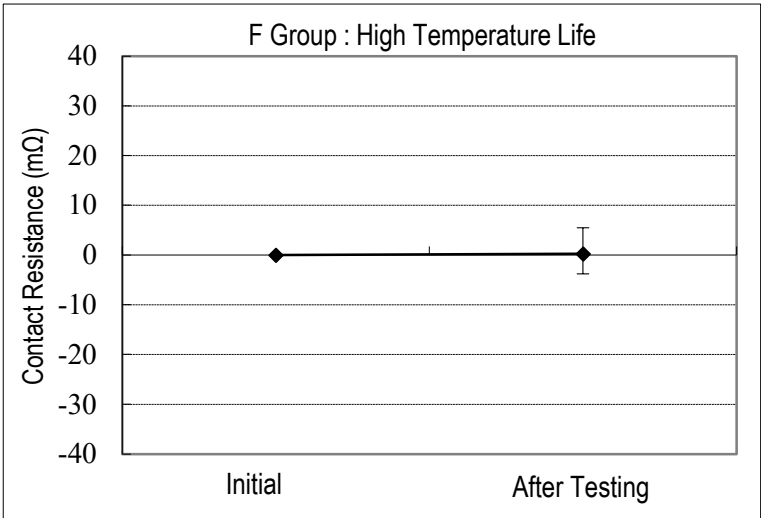
Graph.7



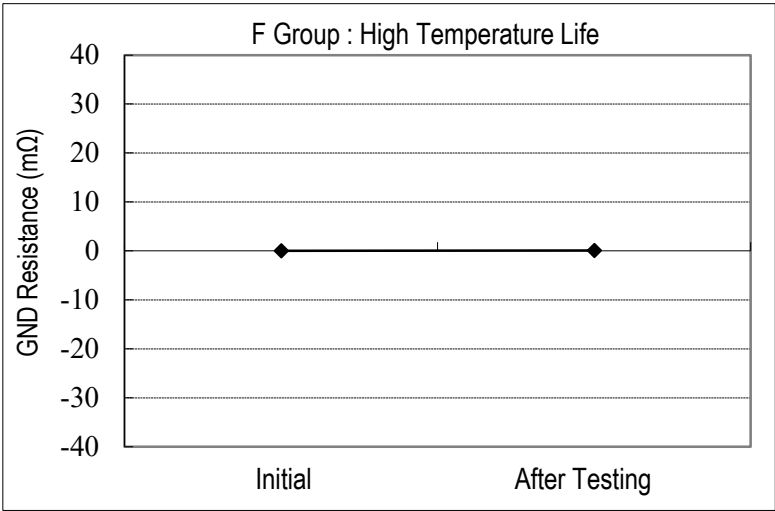
Graph.8



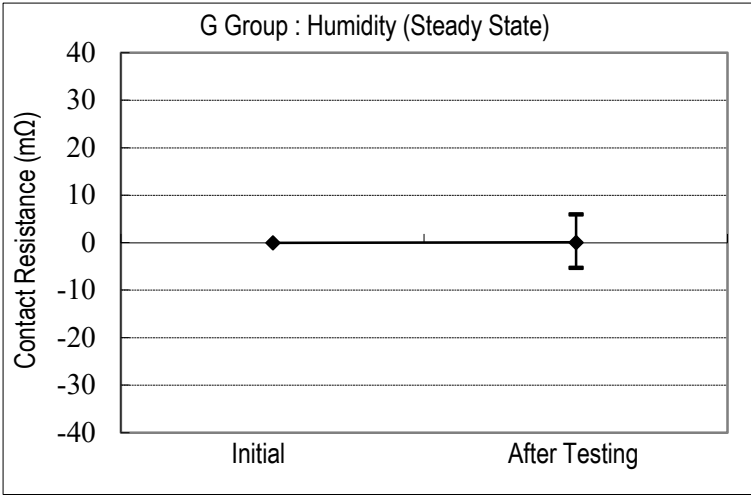
Graph.9



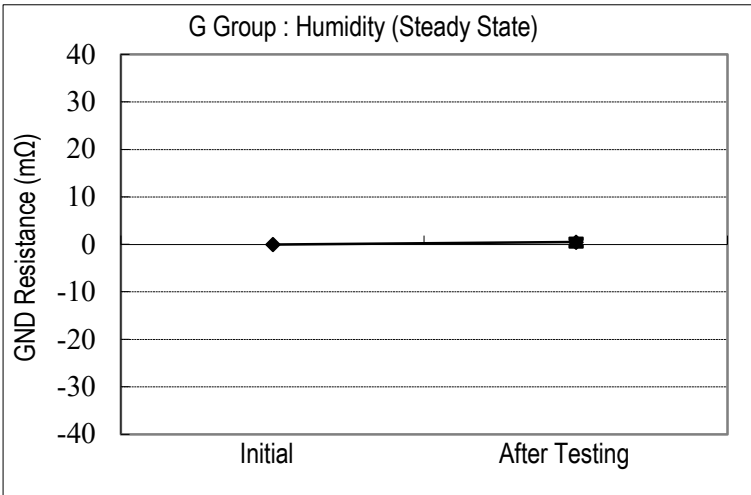
Graph.10



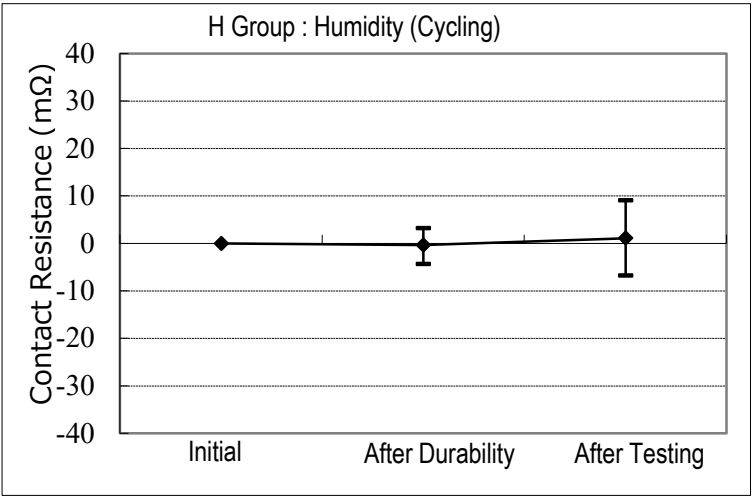
Graph.11



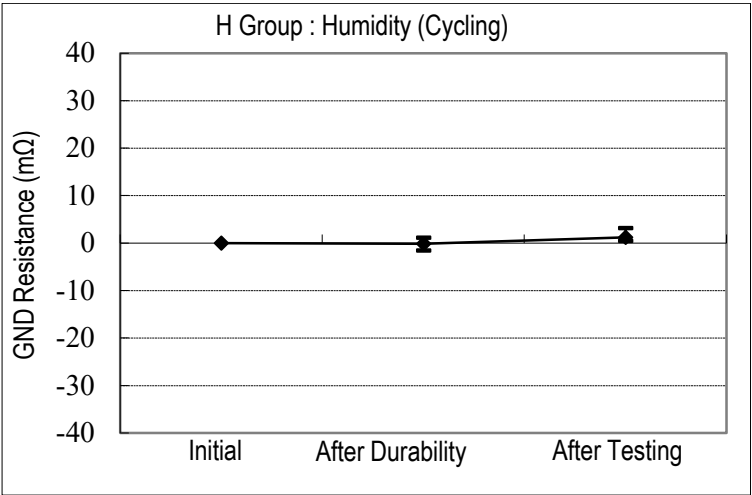
Graph.12



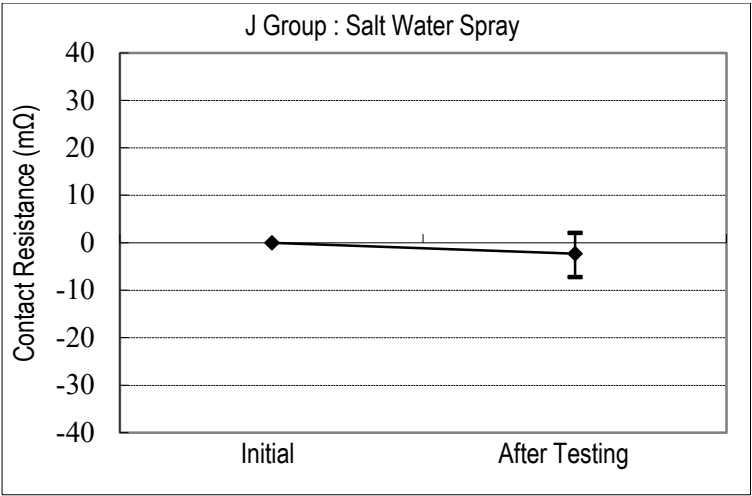
Graph.13



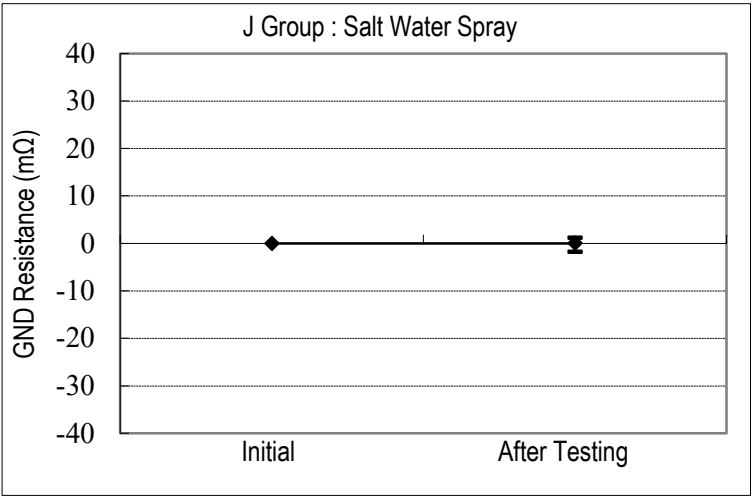
Graph.14



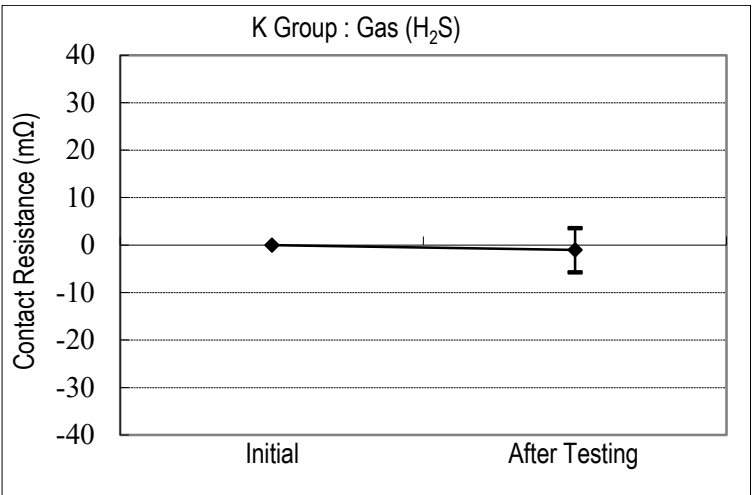
Graph.15



Graph.16



Graph.17



Graph.18

