CABLINE®-CA

Part No. Plug: 20633-3**T-0#S Receptacle: 20525-2**E-0##

Test Report

Product Specification no. PRS-1968

Rev.	ECN	Date	Prepared by	Checked by	Approved by
4	T21128	October 29, 2021	T.Ono	T.Masunaga	H.Ikari
3	T21075	September 22, 2021	M.Nakamura	T.Masunaga	H.Ikari
2	T18076	June 29, 2018	M.Nakamura	-	Y.Shimada
1	T17086	May 29, 2017	M.Kawasaki	T.Kurachi	Y.Shimada

1. Purpose

To evaluate the performance of CABLINE-CA Connector in accordance PRS-1968.

2. Specimen

(1) CABLINE-CA PLUG for CABLE ASS'Y (P/N ： 20633-3**T-0#S)

(2) CABLINE-CA RECE. ASS'Y (P/N ： 20525-2**E-0##)

3. Test Sequence

All the evaluations were performed in accordance with Table 1 test sequence.

4. Result

See Table.2-1～2-4 and Graph.1～18.For the details of the testing conditions and requirements, see PRS-1968.

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

5. Conclusion

All the specimen met the requirements of PRS-1968.

Table.1 Test Sequence

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 (Steady State)							4						
Humidity (Cycling)								6					
Salt Water Spray									2				
Gas (H_2S)										2			
Solderability											1		
Soldering Heat Resistance												1	
Sample QTY.	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.

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	250	513.192	516.24	510.27	1.942	519.018	OK
			After Testing	AWG#40 ΔR=40mΩ MAX.			-0.108	4.90	-4.87	2.473	7.311	OK
	GND Resistance (mΩ)		Initial	50mΩMAX.	5	5	21.794	23.22	20.93	0.643	23.723	OK
			After Testing	ΔR=40mΩ MAX.			0.463	0.89	-0.04	0.342	1.489	OK
	10P	Mating Force (N)	Initial	7.80N MAX.	5	5	3.776	4.12	3.49	0.267	4.577	OK
			After Testing	7.80N MAX.			2.826	3.04	2.69	0.143	3.255	OK
		Unmating Force (N)	Initial	1.0N MIN.	5	5	3.070	3.31	2.82	0.198	2.476	OK
			After Testing	1.0N MIN.			2.692	2.94	2.53	0.161	2.209	OK
		Cable Retention Force (N)		4.90N MIN.	5	5	122.714	125.64	118.43	2.779	114.377	OK
	12P	Mating Force (N)	Initial	8.20N MAX.	5	5	4.268	4.41	3.93	0.200	4.868	OK
			After Testing	8.20N MAX.			3.544	3.81	3.30	0.183	4.093	OK
		Unmating Force (N)	Initial	1.2N MIN.	5	5	3.290	3.42	3.09	0.157	2.819	OK
			After Testing	1.2N MIN.			2.856	3.04	2.57	0.203	2.247	OK
		Cable Retention Force (N)		5.88N MIN.	5	5	124.598	129.06	119.99	4.326	111.620	OK
	20P	Mating Force (N)	Initial	9.70N MAX.	5	5	6.100	6.48	5.71	0.333	7.099	OK
			After Testing	9.70N MAX.			4.406	4.86	3.96	0.351	5.459	OK
		Unmating Force (N)	Initial	2.0N MIN.	5	5	4.192	4.65	3.33	0.532	2.596	OK
			After Testing	2.0N MIN.			3.802	4.07	3.35	0.281	2.959	OK
		Cable Retention Force (N)		9.80N MIN.	5	5	130.600	135.41	122.82	4.963	115.711	OK
	30P	Mating Force (N)	Initial	14.55N MAX.	5	5	8.266	8.80	7.42	0.602	10.072	OK
			After Testing	14.55N MAX.			5.838	6.24	5.36	0.436	7.146	OK
		Unmating Force (N)	Initial	3.0N MIN.	5	5	6.682	6.98	6.22	0.332	5.686	OK
			After Testing	3.0N MIN.			5.922	6.17	5.58	0.257	5.151	OK
		Cable Retention Force (N)		14.70N MIN.	5	5	135.892	141.57	132.06	3.922	124.126	OK

Table.2-2 Test result

Test Item	Contents of Measurement			Specifications	Set	n	Data					Judge
							AVE.	MAX.	MIN.	S	X±3s	
A Group Durability Cable Retention Force	40P	Mating Force (N)	Initial	19.40N MAX.	5	5	10.786	11.47	10.22	0.491	12.259	OK
			After Testing	19.40N MAX.			8.006	8.45	7.55	0.423	9.275	OK
		Unmating Force (N)	Initial	4.0N MIN.	5	5	8.106	8.85	7.53	0.540	6.486	OK
			After Testing	4.0N MIN.			7.252	7.68	6.82	0.336	6.244	OK
		Cable Retention Force (N)		19.60N MIN.	5	5	141.112	145.05	132.76	4.861	126.529	OK
	50P	Mating Force (N)	Initial	24.25N MAX.	5	5	13.614	14.09	12.82	0.505	15.129	OK
			After Testing	24.25N MAX.			9.266	10.08	8.67	0.565	10.961	OK
		Unmating Force (N)	Initial	5.0N MIN.	5	5	9.800	10.32	9.20	0.486	8.342	OK
			After Testing	5.0N MIN.			9.104	9.27	8.86	0.189	8.537	OK
		Cable Retention Force (N)		24.50N MIN.	5	5	158.690	162.44	151.54	4.197	146.099	OK
	60P	Mating Force (N)	Initial	29.10N MAX.	5	5	15.418	15.68	14.96	0.28	16.258	OK
			After Testing	29.10N MAX.			11.382	12.12	10.87	0.474	12.804	OK
		Unmating Force (N)	Initial	6.0N MIN.	5	5	11.356	11.59	11.08	0.227	10.675	OK
			After Testing	6.0N MIN.			9.736	10.34	9.38	0.358	8.662	OK
		Cable Retention Force (N)		29.40N MIN.	5	5	176.808	186.84	170.25	6.260	158.028	OK
B Group High Temperature Life	Contact Retention Force (N) (PLUG)		Initial	0.6N MIN.	–	20	It does not pull out, even if applies the power of 1.8N to a terminal.					OK
			After Testing	0.6N MIN.	–	20	It does not pull out, even if applies the power of 1.8N to a terminal.					OK
	Contact Retention Force (N) (RECE)		Initial	0.2N MIN.	–	20	1.135	1.34	0.85	0.155	0.670	OK
			After Testing	0.2N MIN.	–	20	1.021	1.26	0.83	0.152	0.565	OK
C Group Conn. Lock	Initial			The lock does not damage and cancel.	5	5	No Abnormality					OK
D Group Vibration ↓ Shock	Contact Resistance (mΩ)		Initial	AWG#40 600mΩMAX.	5	250	513.268	516.18	509.90	1.819	518.725	OK
			After Vibration	AWG#40 ΔR=40mΩ MAX.			1.043	5.20	-4.52	2.585	8.798	OK
			After Shock	AWG#40 ΔR=40mΩ MAX.			0.898	8.00	-5.23	3.874	12.520	OK
	GND Resistance (mΩ)		Initial	50mΩMAX.	5	5	22.085	23.17	20.95	0.788	24.449	OK
			After Vibration	ΔR=40mΩ MAX.			0.146	1.00	-0.37	0.442	1.472	OK
			After Shock	ΔR=40mΩ MAX.			0.911	1.55	0.04	0.514	2.453	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 not occur.	5	5	No Abnormality					OK
			After Shock				No Abnormality					OK

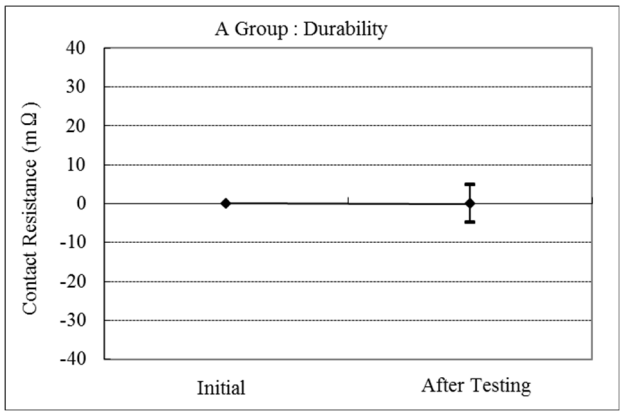
Table.2-3 Test result

Test Item	Contents of Measurement		Specifications	Set	N	Data					Judge
						AVE.	MAX.	MIN.	s	X±3s	
E Group Thermal Shock	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	250	513.789	516.97	510.03	1.907	519.510	OK
		After Testing	AWG#40 ΔR=40mΩ MAX.			0.704	4.67	-3.14	2.509	8.231	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	21.928	23.12	20.91	0.688	23.992	OK
		After Testing	ΔR=40mΩ MAX.			0.623	1.29	-0.53	0.625	2.498	OK
F Group High Temperature Life	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX	5	250	513.563	517.23	509.87	2.157	520.034	OK
		After Testing	AWG#40 ΔR=40mΩ MAX.			0.730	5.43	-5.66	2.994	9.712	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	22.085	23.19	21.03	0.755	24.350	OK
		After Testing	ΔR=40mΩ MAX.			0.508	1.25	-0.38	0.528	2.092	OK
G Group Humidity (Steady State)	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX	5	250	514.336	517.26	509.94	2.013	520.375	OK
		After Testing	AWG#40 ΔR=40mΩ MAX.			0.237	5.39	-4.58	2.923	9.006	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	21.898	23.15	20.91	0.730	24.088	OK
		After Testing	ΔR=40mΩ MAX.			1.018	1.62	0.30	0.508	2.542	OK
	Insulation Resistance (MΩ)	Initial	1000MΩMIN.	5	100	4.0×10^5 MΩMIN.					OK
		After Testing	500MΩMIN.			2.0×10^4 MΩMIN.					OK
	D. W. Voltage	Initial	No abnormality adversely affecting the performance shall not occur.	5	100	No Abnormality					OK
		After Testing				No Abnormality					OK
H Group Humidity (Cycling)	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	250	514.304	517.09	510.02	2.225	520.979	OK
		After Durability	AWG#40 ΔR=40mΩ MAX.			1.171	5.45	-4.66	3.125	10.546	OK
		After Testing	AWG#40 ΔR=40mΩ MAX.			1.227	5.63	-5.06	3.180	10.767	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	21.987	23.08	20.95	0.788	24.351	OK
		After Durability	ΔR=40mΩ MAX.			0.755	1.35	-0.09	0.504	2.267	OK
		After Testing	ΔR=40mΩ MAX.			0.197	1.38	-0.96	0.885	2.852	OK
	Insulation Resistance (MΩ)	Initial	1000MΩMIN.	5	100	2.0×10^5 MΩMIN.					OK
		After Testing	500MΩMIN.			1.0×10^5 MΩMIN.					OK
	D. W. Voltage	Initial	No abnormality adversely affecting the performance shall not occur.	5	100	No Abnormality					OK
		After Testing				No Abnormality					OK

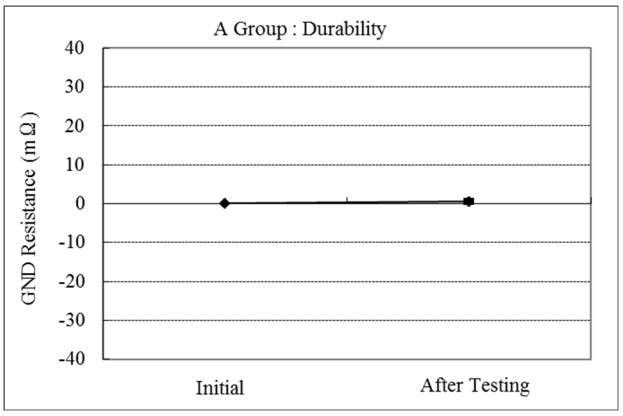
Table.2-4 Test result

Test Item	Contents of Measurement		Specifications	Set	N	Data					Judge
						AVE.	MAX.	MIN.	s	X±3s	
J Group Salt Water Spray	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	250	512.803	517.29	509.93	2.036	518.911	OK
		After Testing	AWG#40 ΔR=40mΩ MAX.			0.981	5.94	-4.48	3.282	10.827	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	22.007	22.96	20.92	0.698	24.101	OK
		After Testing	ΔR=40mΩ MAX.			0.976	2.07	-0.34	0.797	3.367	OK
K Group Gas(H_2S)	Contact Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	250	514.047	517.24	509.90	2.301	520.950	OK
		After testing	AWG#40 ΔR=40mΩ MAX.			0.794	5.36	-3.99	2.900	9.494	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	22.319	23.10	21.12	0.743	24.548	OK
		After Testing	ΔR=40mΩ MAX.			0.772	1.54	0.11	0.524	2.344	OK
L Group Solderability	Appearance		More than 95% of the dipped surface shall be evenly wet.	10	10	Wet 95% MIN.					OK
M Group Soldering Heat Resistance	Appearance		No abnormality adversely affecting the performance shall not occur.	10	10	No Abnormality					OK
N Group Temperature Rising	AWG#40 0.3A/Contact 9.0A/Connector		ΔT=30℃MAX.	5	5	ΔT=28.8℃MAX.					OK

*The Temperature Rising Test is a result when applied ratings current (0.3A/contact) between the neighboring contacts for 30pos. (With the whole connector 9.0A.)



Graph.1



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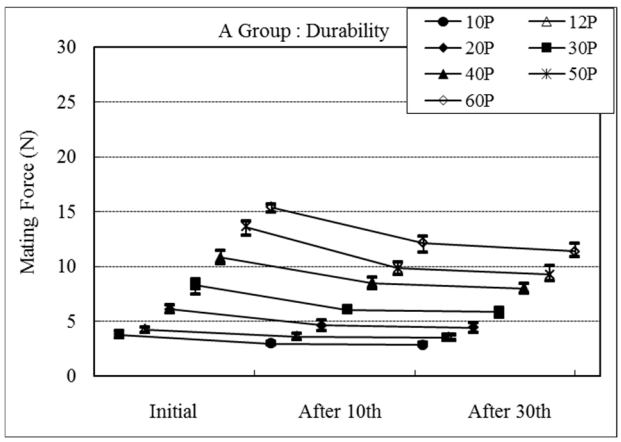

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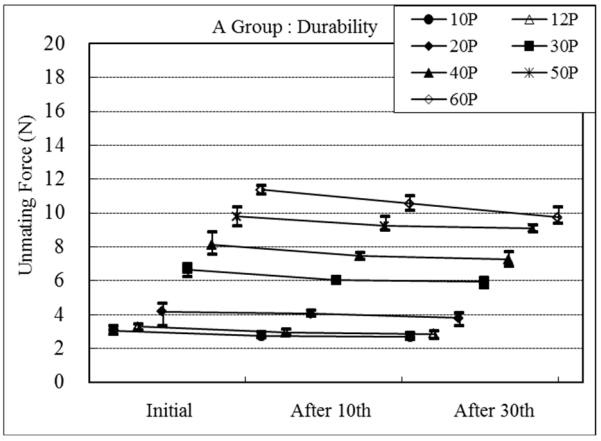

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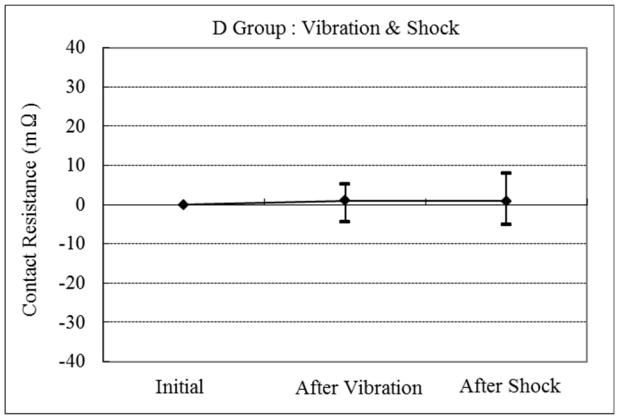

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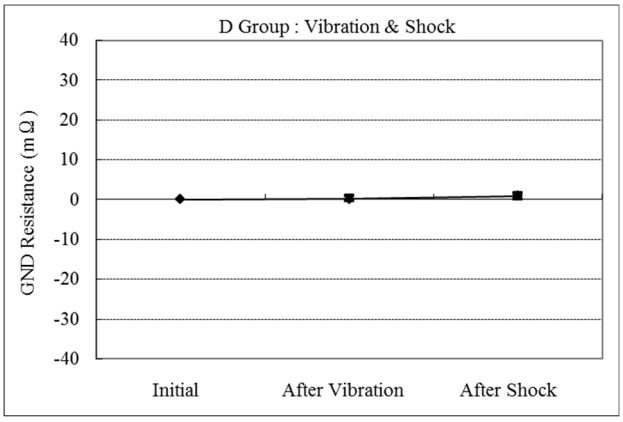

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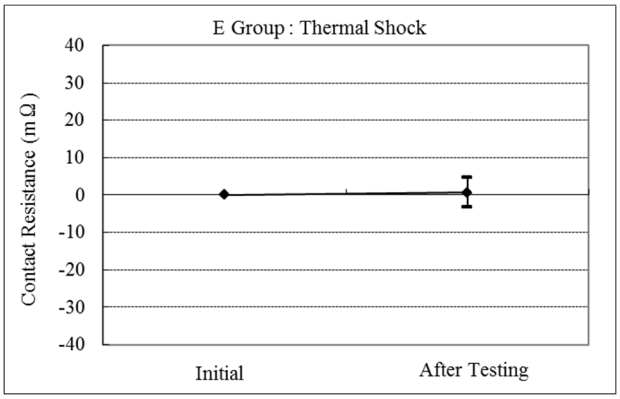

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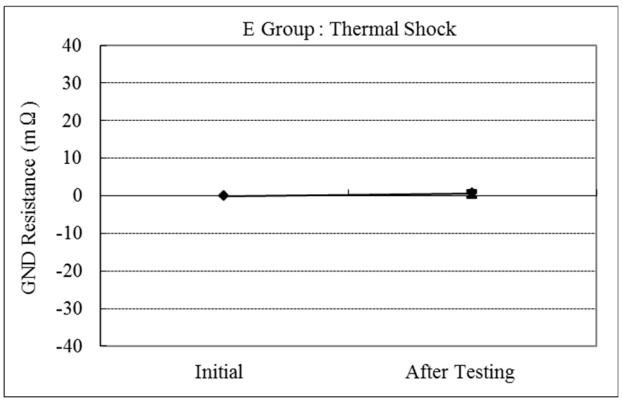

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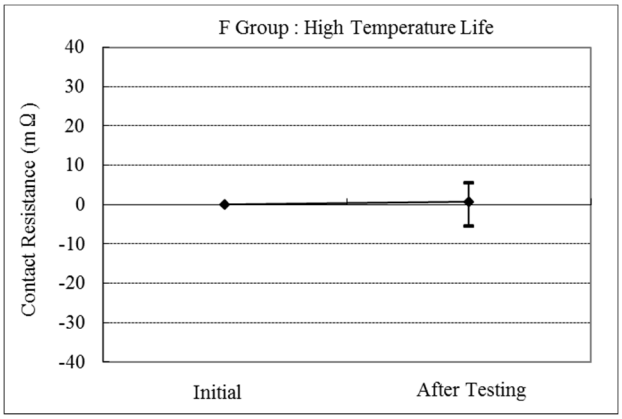

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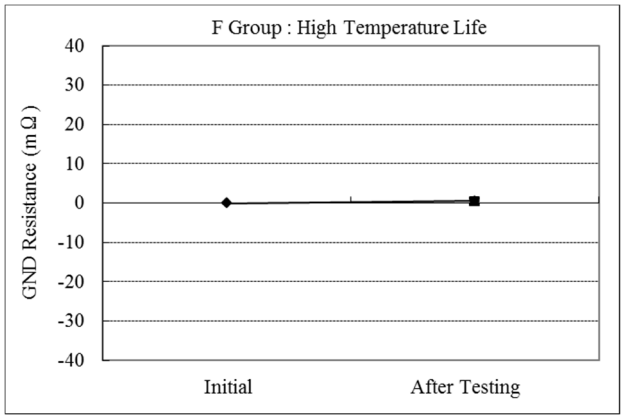

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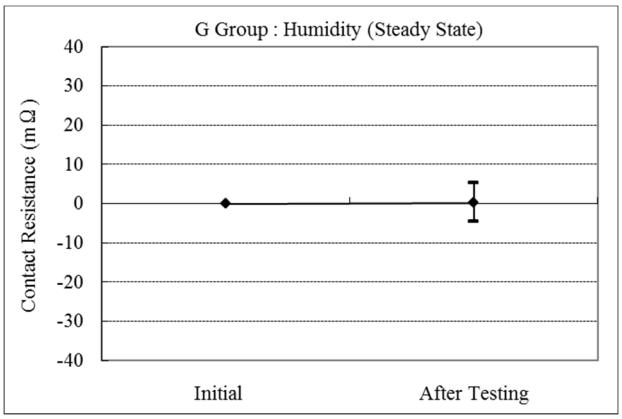

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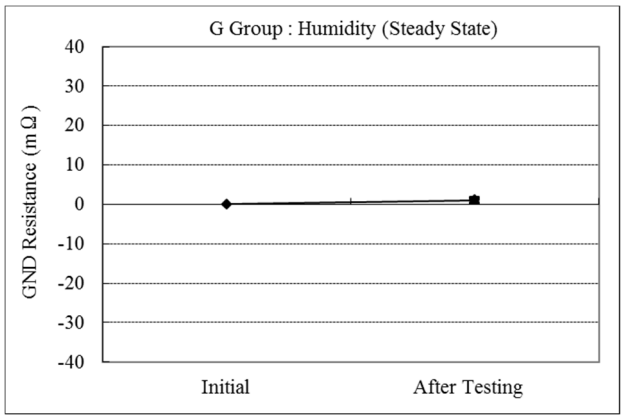

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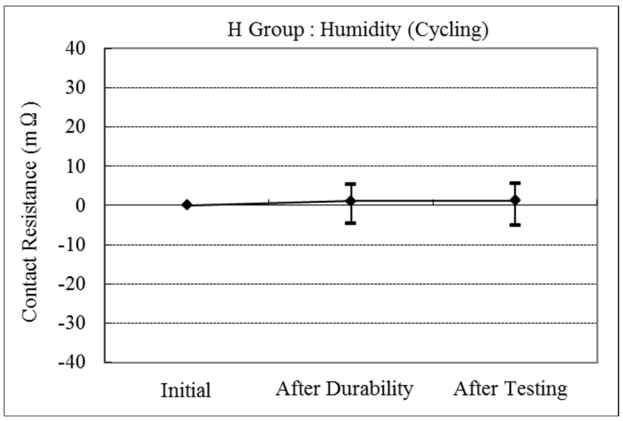

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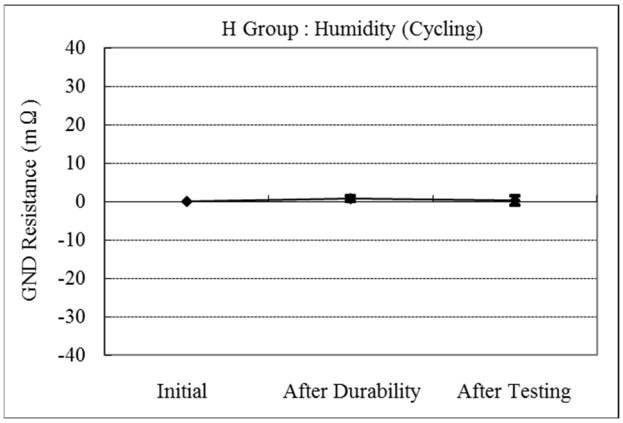

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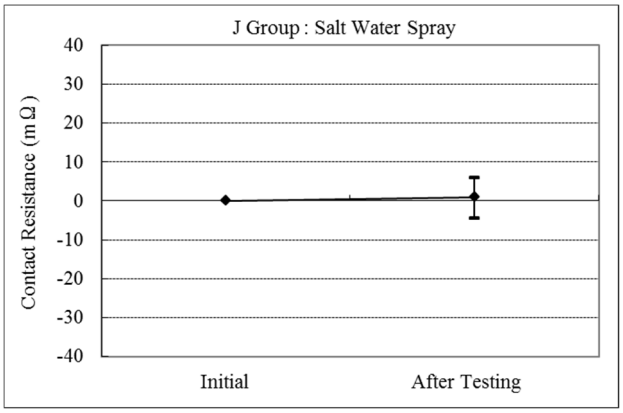

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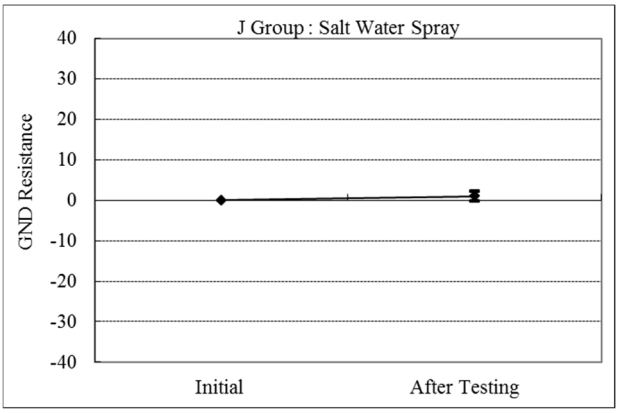

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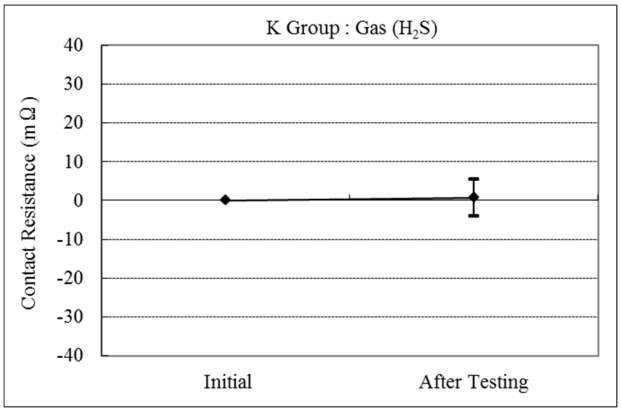

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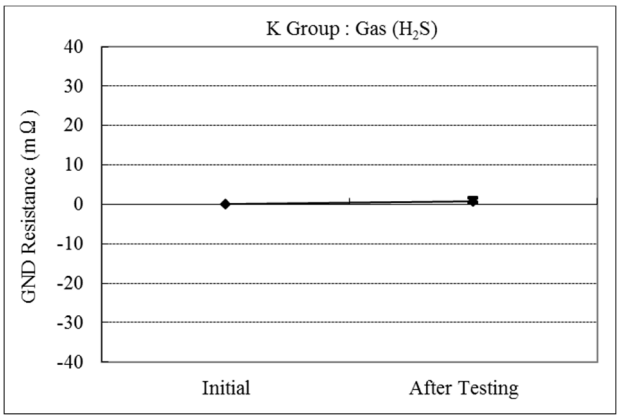

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