

# CABLINE®-CA II

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

## Test Report

Product Specification No. PRS-2163

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3	T18113	October 5, 2018	H.Aoki	T.Masunaga	H.Ikari
2	T17132	August 22, 2017	H.Aoki	T.Masunaga	H.Ikari
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Rev.	ECN	Date	Prepared by	Checked by	Approved by

## 1. 目的/Purpose

CABLINE-CA II コネクタの製品性能を PRS-2163 に基づいて評価する。

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

## 2. 試料/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. 試験順序/Test Sequence

全ての評価は表 1 の試験順序に従って行った。

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

## 4. 結果/Result

表 2-1～2-4、グラフ 1～18 参照。試験条件の詳細は PRS-2163 参照。

n 数は測定データを意味する。

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. 結論/Conclusion

全ての資料が製品規格 (PRS-2163) の必要条件を満足した。

All the specimens met the requirements of PRS-2163.

表(Table)1 試験順序と試料数/Test Sequence and Sample Quantity

試験項目 Test Item	グループ/Group												
	A	B	C	D	E	F	G	H	J	K	L	M	N
接触抵抗 Contact Resistance	2,6			1,3,5	1,3	1,3	1,5	1,5,7	1,3	1,3			
絶縁抵抗 Insulation Resistance							2,6	2,8					
耐電圧 D. W. Voltage							3,7	3,9					
温度上昇 Temperature Rising													1
挿入力 Mating Force	1,5												
抜去力 Unmating Force	3,7												
耐久性 Durability	4							4 (10cycles)					
端子保持力 Contact Retention Force		1,3											
コネクタロック強度 Conn. Lock			1										
ケーブル保持力 Cable Retention Force	8												
振動 Vibration				2									
衝撃 Shock				4									
熱衝撃 Thermal Shock					2								
高温寿命 High Temperature Life		2				2							
湿度 (定常状態) Humidity (SteadyState)							4						
湿度 (サイクリング) Humidity (Cycling)								6					
塩水噴霧 Salt Water Spray									2				
硫化水素ガス H <sub>2</sub> S Gas										2			
半田付け性 Solder ability											1		
半田耐熱性 Soldering Heat Resistance												1	
試料数 Sample QTY.	5pcs	20pcs	5pcs	5pcs	5pcs	5pcs	5pcs	5pcs	5pcs	5pcs	10pcs	10pcs	5pcs

※グループ表中の番号は、試験順序を示す。

The number of group is test sequence.

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表 2-1. 試験結果 (Table.2-1 Test result)

試験項目 Test Item	測定内容 Contents of Measurement		規格 Specifications	Set	n	データ/Data					判定 Judge
						AVE.	MAX.	MIN.	s	X±3s	
A Group 耐久性 Durability	接触抵抗 Contact Resistance (mΩ)	初期 Initial	AWG#40 600mΩMAX.	5	200	492.969	510.62	482.41	6.381	512.112	Pass
		30回挿抜後 After Testing	AWG#40 ΔR=40mΩ MAX.			-1.070	5.312	-7.122	2.343	5.959	Pass
	GND 抵抗 GND Resistance (mΩ)	初期 Initial	50mΩMAX.	5	5	10.082	11.05	9.17	0.486	11.540	Pass
		30回挿抜後 After Testing	ΔR=40mΩ MAX.			0.245	1.72	-1.07	0.694	2.327	Pass
	挿入力 Mating Force (N)	初期 Initial	9.70N MAX.	5	5	5.425	5.57	5.30	0.111	5.758	Pass
		30回挿抜後 After Testing	9.70N MAX.			3.292	3.39	3.12	0.109	3.619	Pass
	抜去力 Unmating Force (N)	初期 Initial	2.0N MIN.	5	5	4.018	4.14	3.74	0.160	3.538	Pass
		30回挿抜後 After Testing	2.0N MIN.			2.633	2.74	2.52	0.095	2.348	Pass
	ケーブル保持力(N) Cable Retention Force		9.80N MIN.	5	5	124.363	126.64	122.20	1.664	119.371	Pass
	挿入力 Mating Force (N)	初期 Initial	14.55N MAX.	5	5	7.928	8.42	7.38	0.462	9.314	Pass
		30回挿抜後 After Testing	14.55N MAX.			4.834	5.15	4.56	0.257	5.605	Pass
	抜去力 Unmating Force (N)	初期 Initial	3.0N MIN.	5	5	5.130	5.47	4.84	0.258	4.356	Pass
		30回挿抜後 After Testing	3.0N MIN.			4.108	4.39	3.81	0.235	3.403	Pass
	ケーブル保持力(N) Cable Retention Force		14.70N MIN.	5	5	128.816	133.11	125.68	3.052	119.660	Pass
	挿入力 Mating Force (N)	初期 Initial	19.40N MAX.	5	5	9.428	10.32	8.66	0.650	11.378	Pass
		30回挿抜後 After Testing	19.40N MAX.			6.111	6.84	5.48	0.559	7.788	Pass
	抜去力 Unmating Force (N)	初期 Initial	4.0N MIN.	5	5	5.731	6.09	5.38	0.308	4.807	Pass
		30回挿抜後 After Testing	4.0N MIN.			4.989	5.27	4.74	0.214	4.347	Pass
	ケーブル保持力(N) Cable Retention Force		19.60N MIN.	5	5	133.278	137.53	126.54	4.414	120.036	Pass
	挿入力 Mating Force (N)	初期 Initial	24.25N MAX.	5	5	12.842	13.52	12.09	0.557	14.513	Pass
30回挿抜後 After Testing		24.25N MAX.	7.918			8.40	6.93	0.605	9.733	Pass	
抜去力 Unmating Force (N)	初期 Initial	5.0N MIN.	5	5	7.672	7.94	7.51	0.175	7.147	Pass	
	30回挿抜後 After Testing	5.0N MIN.			6.222	6.42	5.97	0.176	5.694	Pass	
ケーブル保持力(N) Cable Retention Force		24.50N MIN.	5	5	138.166	142.11	136.34	2.335	131.161	Pass	
B Group 高温寿命 High Temperature Life	端子保持力 (PLUG) Contact Retention Force (N)	初期 Initial	0.6N MIN.	-	20	1.8N の力を加えても、端子の抜け無し It does not pull out, even if applies the power of 1.8N to a terminal.					Pass
		試験後 After Testing	0.6N MIN.	-	20	1.8N の力を加えても、端子の抜け無し It does not pull out, even if applies the power of 1.8N to a terminal.					Pass
	端子保持力 (RECE) Contact Retention Force (N)	初期 Initial	0.2N MIN.	-	20	1.545	1.69	1.43	0.056	1.377	Pass
		試験後 After Testing	0.2N MIN.	-	20	1.219	1.47	0.89	0.175	0.694	Pass

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表 2-2. 試験結果(Table.2-2 Test result)

試験項目 Test Item	測定内容 Contents of Measurement		規格 Specifications	Set	n	データ/Data					判定 Judge
						AVE.	MAX.	MIN.	s	X±3s	
C Group コネクタロック強度 Conn. Lock	初期 Initial		ロック機構が 破損、解除しない事 The lock does not damage and cancel.	5	5	異常無し No Abnormality					Pass
D Group 振動 Vibration ↓ 衝撃 Shock	接触抵抗 Contact Resistance (mΩ)	初期 Initial	AWG#40 600mΩMAX.	5	200	488.875	496.42	474.10	6.647	508.816	Pass
		振動後 After Vibration	AWG#40 ΔR=40mΩ MAX.			1.148	4.93	-2.57	1.316	5.096	Pass
		衝撃後 After Shock	AWG#40 ΔR=40mΩ MAX.			0.978	4.95	-2.15	1.401	5.181	Pass
	GND 抵抗 GND Resistance (mΩ)	初期 Initial	50mΩMAX.	5	5	10.930	11.95	9.20	0.618	12.784	Pass
		振動後 After Vibration	ΔR=40mΩ MAX.			-0.077	0.92	-1.48	0.603	1.732	Pass
		衝撃後 After Shock	ΔR=40mΩ MAX.			0.090	1.62	-1.49	0.503	1.599	Pass
	電氣的瞬断 Electrical discontinuity	振動試験中 During Vibration	1μsec. MAX.	5	5	瞬断無し No Electrical discontinuity					Pass
		衝撃試験中 During Shock				瞬断無し No Electrical discontinuity					Pass
	外観 Appearance	振動後 After Vibration	異常無き事 Abnormality shall not occur.	5	5	異常無し No Abnormality					Pass
		衝撃後 After Shock				異常無し No Abnormality					Pass
E Group 熱衝撃 Thermal Shock	接触抵抗 Contact Resistance (mΩ)	初期 Initial	AWG#40 600mΩMAX.	5	200	501.046	507.44	494.09	2.516	508.594	Pass
		試験後 After Testing	AWG#40 ΔR=40mΩ MAX.			-1.944	2.92	-8.62	2.465	5.451	Pass
	GND 抵抗 GND Resistance (mΩ)	初期 Initial	50mΩMAX.	5	5	10.112	11.32	9.07	0.633	12.011	Pass
		試験後 After Testing	ΔR=40mΩ MAX.			0.263	1.42	-0.74	0.571	1.976	Pass
F Group 高温寿命 High Temperature Life	接触抵抗 Contact Resistance (mΩ)	初期 Initial	AWG#40 600mΩMAX	5	200	494.616	510.11	482.45	8.789	520.983	Pass
		試験後 After Testing	AWG#40 ΔR=40mΩ MAX.			4.215	11.03	-2.17	2.182	10.761	Pass
	GND 抵抗 GND Resistance (mΩ)	初期 Initial	50mΩMAX.	5	5	10.234	11.51	9.20	0.845	12.769	Pass
		試験後 After Testing	ΔR=40mΩ MAX.			0.496	1.62	-0.63	0.699	2.593	Pass

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表 2-3. 試験結果 (Table.2-3 Test result)

試験項目 Test Item	測定内容 Contents of Measurement		規格 Specifications	Set	n	データ/Data					判定 Judge	
						AVE.	MAX.	MIN.	s	X±3s		
G Group 湿度 (定常状態) Humidity (Steady State)	接触抵抗 Contact Resistance (mΩ)	初期 Initial	AWG#40 600mΩMAX	5	200	502.370	511.04	492.52	3.383	512.519	Pass	
		試験後 After Testing	AWG#40 ΔR=40mΩ MAX.			0.107	6.03	-5.27	2.090	6.377	Pass	
	GND 抵抗 GND Resistance (mΩ)	初期 Initial	50mΩMAX.	5	5	10.672	12.18	9.47	0.827	13.153	Pass	
		試験後 After Testing	ΔR=40mΩ MAX.			0.514	1.22	-0.37	0.489	1.981	Pass	
	絶縁抵抗 Insulation Resistance (MΩ)	初期 Initial	1000MΩMIN.	5	100	8.5×10 <sup>3</sup> MΩMIN.					Pass	
		試験後 After Testing	500MΩMIN.			7.2×10 <sup>3</sup> MΩMIN.					Pass	
	耐電圧 D. W. Voltage	初期 Initial	異常無き事 Abnormality shall not occur.	5	100	異常無し No Abnormality					Pass	
		試験後 After Testing				異常無し No Abnormality					Pass	
	H Group 湿度 (サイクリング) Humidity (Cycling)	接触抵抗 Contact Resistance (mΩ)	初期 Initial	AWG#40 600mΩMAX.	5	200	494.232	505.53	479.98	5.420	510.492	Pass
			耐久性後 After Durability	AWG#40 ΔR=40mΩ MAX.			-0.341	3.23	-4.31	1.513	4.198	Pass
試験後 After Testing			AWG#40 ΔR=40mΩ MAX.	1.126			9.06	-6.75	2.995	10.111	Pass	
GND 抵抗 GND Resistance (mΩ)		初期	50mΩMAX.	5	5	10.129	11.50	9.08	0.816	12.577	Pass	
		耐久性後 After Durability	ΔR=40mΩ MAX.			-0.133	1.11	-1.59	0.649	1.814	Pass	
		試験後 After Testing	ΔR=40mΩ MAX.			1.214	3.16	0.44	0.799	3.611	Pass	
絶縁抵抗 Insulation Resistance (MΩ)		初期 Initial	1000MΩMIN.	5	100	1.2×10 <sup>3</sup> MΩMIN.					Pass	
		試験後 After Testing	500MΩMIN.			5.4×10 <sup>3</sup> MΩMIN.					Pass	
耐電圧 D. W. Voltage		初期 Initial	異常無き事 Abnormality shall not occur.	5	100	異常無し No Abnormality					Pass	
		試験後 After Testing				異常無し No Abnormality					Pass	

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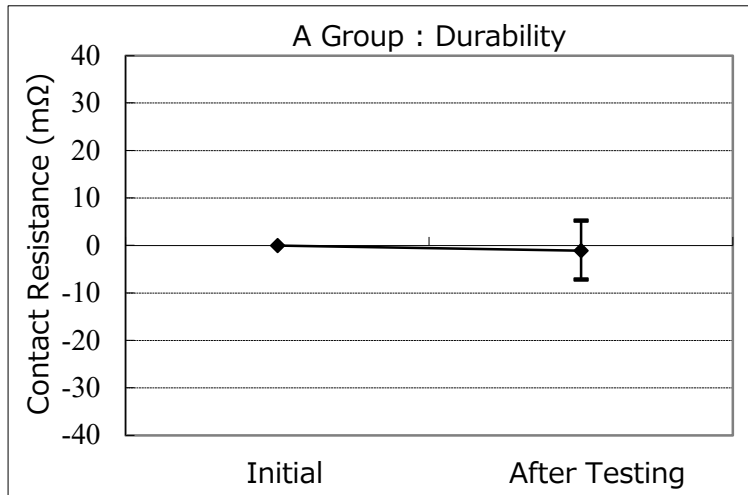
表 2-4. 試験結果(Table.2-4 Test result)

試験項目 Test Item	測定内容 Contents of Measurement		規格 Specifications	Set	n	データ/Data					判定 Judge
						AVE.	MAX.	MIN.	s	X±3s	
J Group 塩水噴霧 Salt Water Spray	接触抵抗 Contact Resistance (mΩ)	初期 Initial	AWG#40 600mΩMAX.	5	200	496.419	505.56	482.91	6.313	515.358	Pass
		試験後 After Testing	AWG#40 ΔR=40mΩ MAX.			-2.293	2.09	-7.23	1.702	2.813	Pass
	GND 抵抗 GND Resistance (mΩ)	初期 Initial	50mΩMAX.	5	5	10.583	13.35	8.80	1.288	14.447	Pass
		試験後 After Testing	ΔR=40mΩ MAX.			0.034	1.19	-1.80	0.841	2.557	Pass
K Group 硫化水素 ガス H <sub>2</sub> S Gas	接触抵抗 Contact Resistance (mΩ)	初期 Initial	AWG#40 600mΩMAX.	5	200	496.845	508.62	481.78	6.044	514.977	Pass
		試験後 After testing	AWG#40 ΔR=40mΩ MAX.			-1.008	3.53	-5.73	1.784	4.344	Pass
	GND 抵抗 GND Resistance (mΩ)	初期 Initial	50mΩMAX.	5	5	10.894	11.76	10.02	0.570	12.604	Pass
		試験後 After Testing	ΔR=40mΩ MAX.			0.418	1.42	-0.27	0.605	2.233	Pass
L Group 半田付け性 Solder ability	外観 Appearance		95%以上 濡れる事 More than 95% of the dipped surface shall be evenly wet.	10	10	95%以上濡れる Wet 95% MIN.					Pass
M Group 半田耐熱性 Soldering Heat Resistance	外観 Appearance		異常無き事 Abnormality shall not occur.	10	10	異常無し No Abnormality					Pass
N Group 温度上昇 Temperature Rising	AWG#40 0.3A/Contact 12.0A/Connector		ΔT=30℃MAX.	5	5	ΔT=28.3℃MAX.					Pass

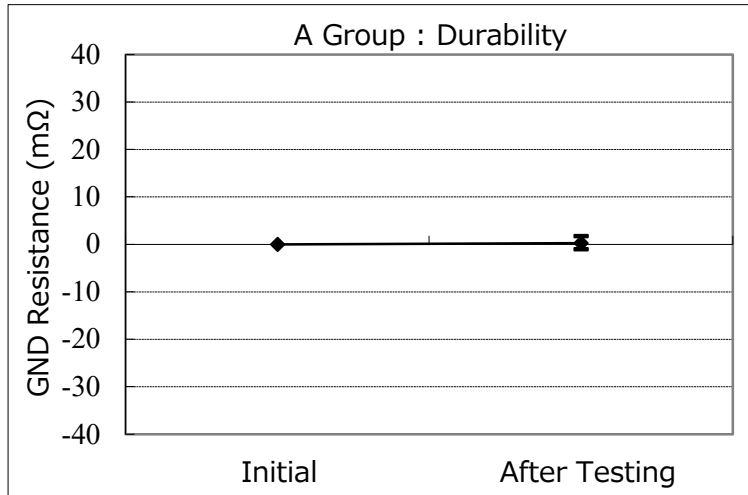
\*温度上昇試験については、定格電流の 0.3A/Contact を隣接する 40 芯分（コネクタ全体で 12.0A）流した時の結果です。

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.)

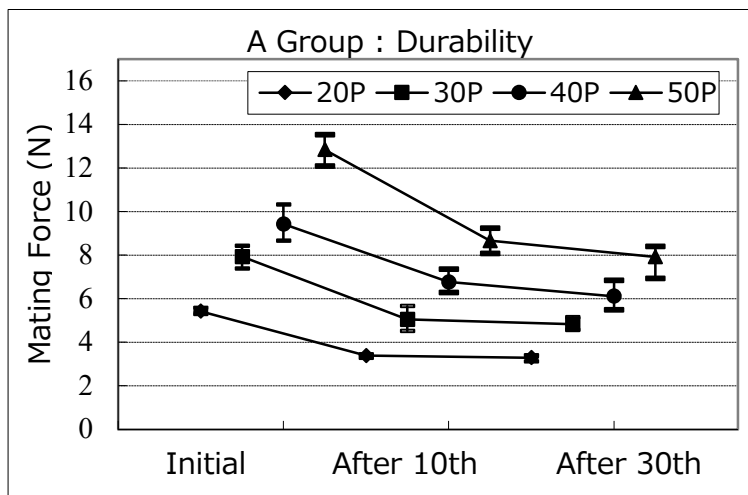
Graph.1



Graph.2

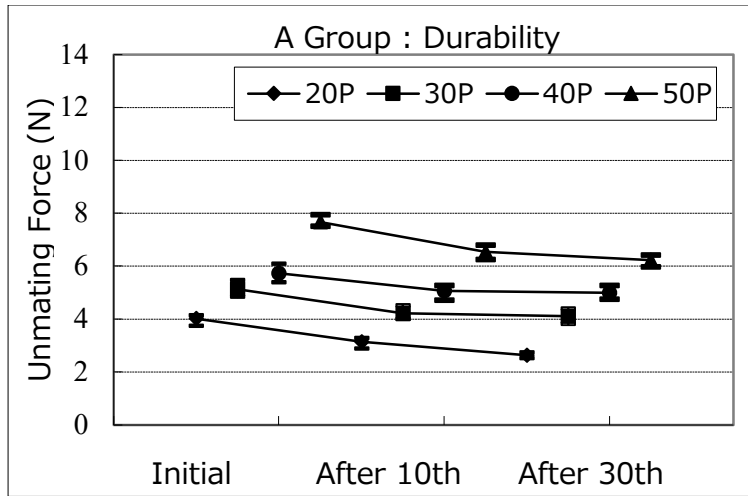


Graph.3

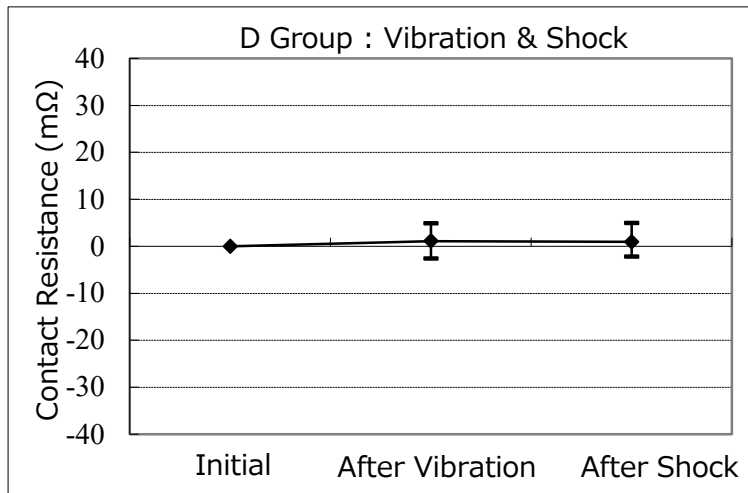




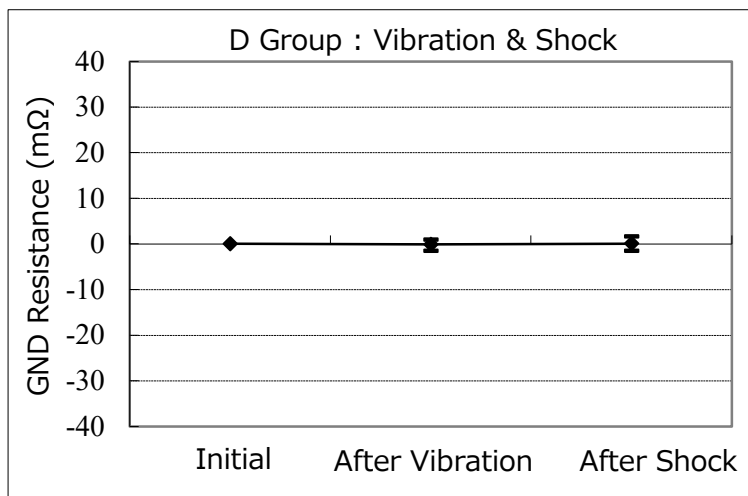
Graph.4



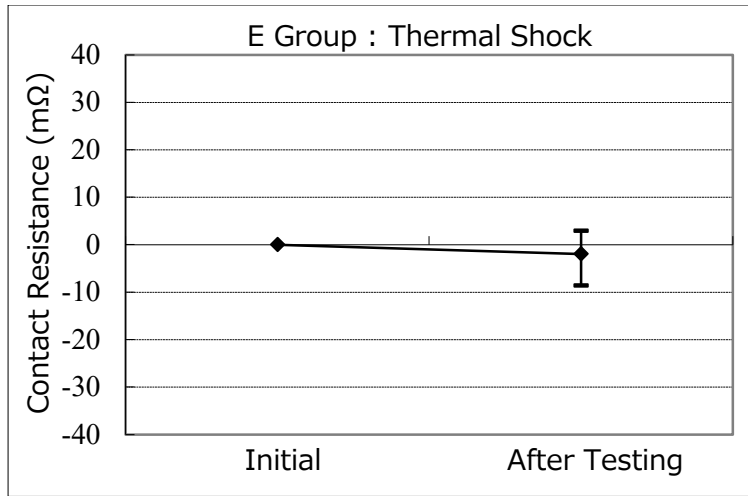
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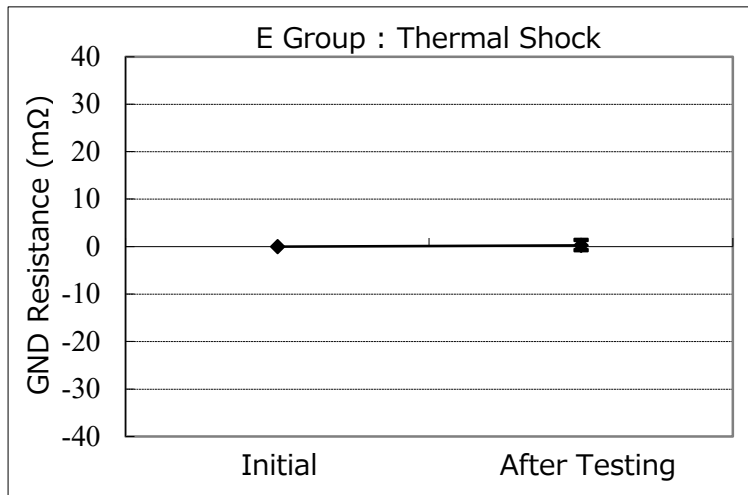
Graph.6



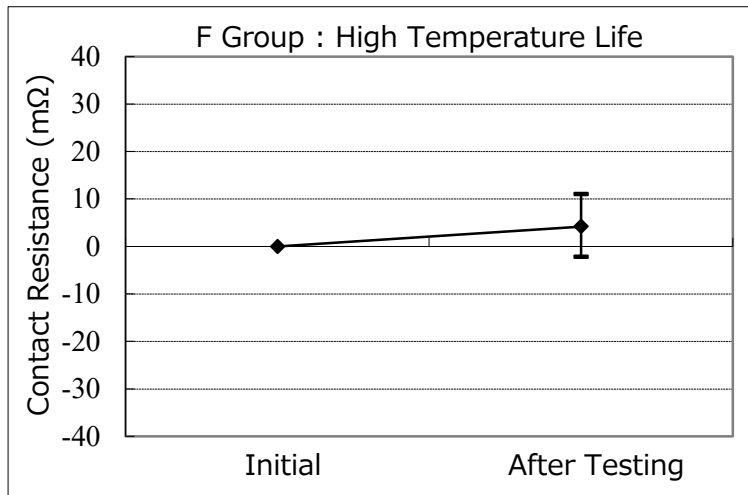
Graph.7



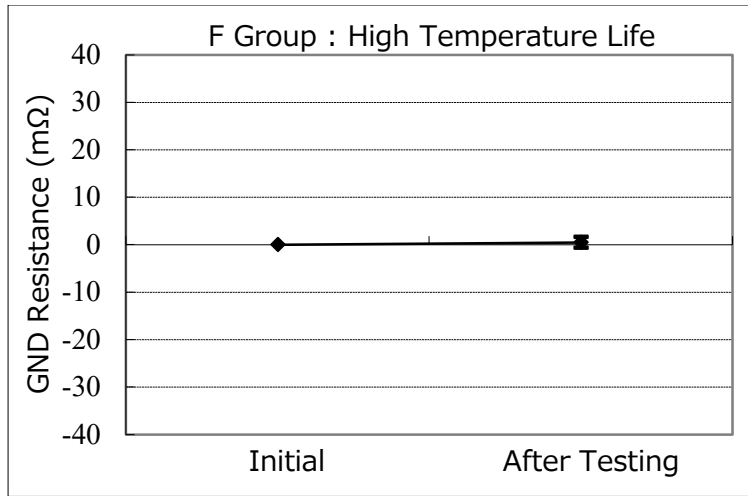
Graph.8



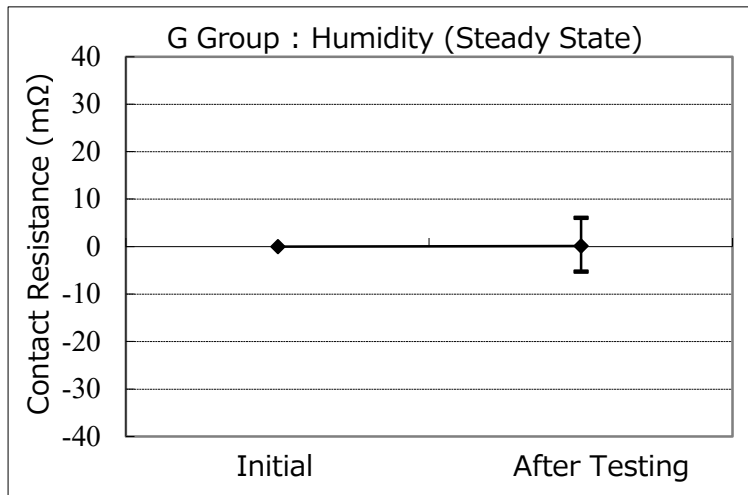
Graph.9



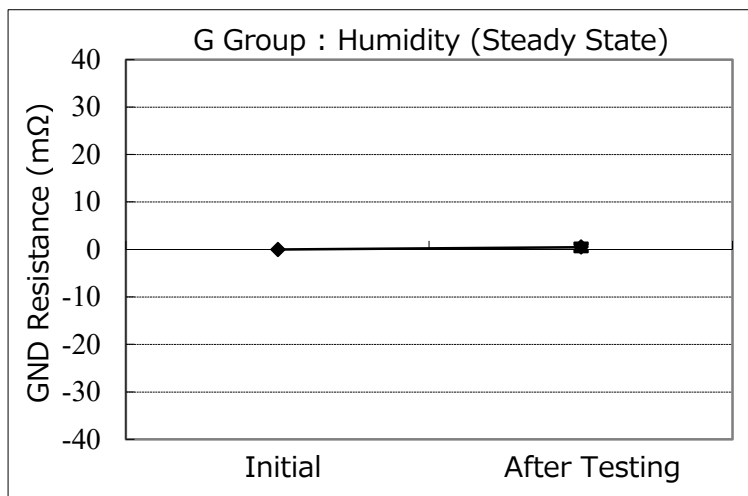
Graph.10



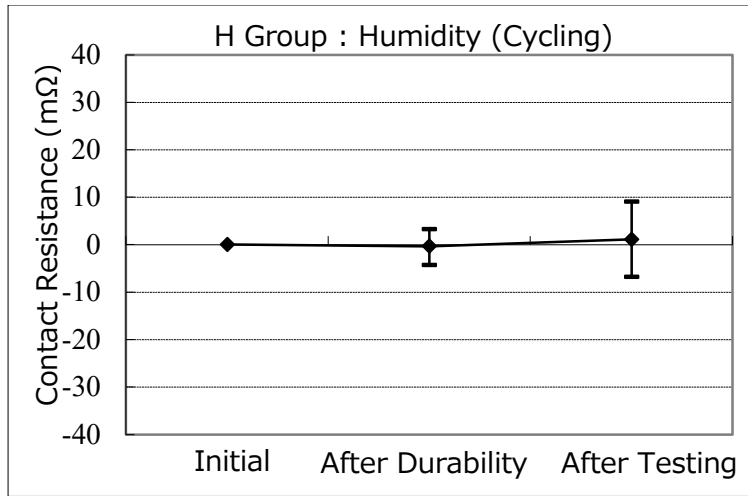
Graph.11



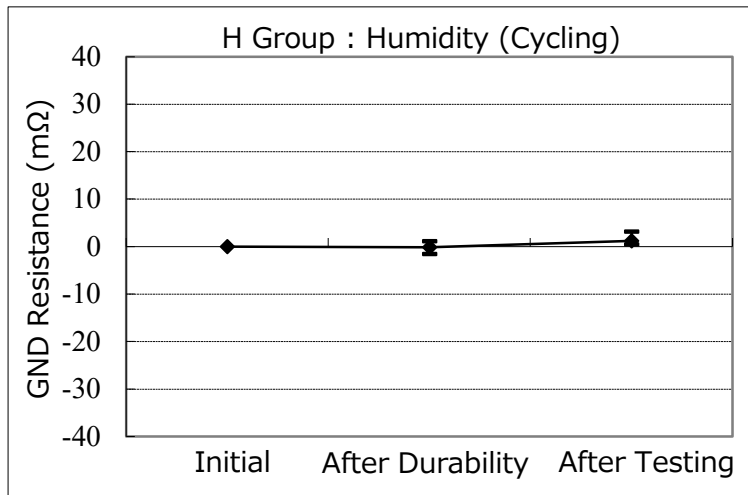
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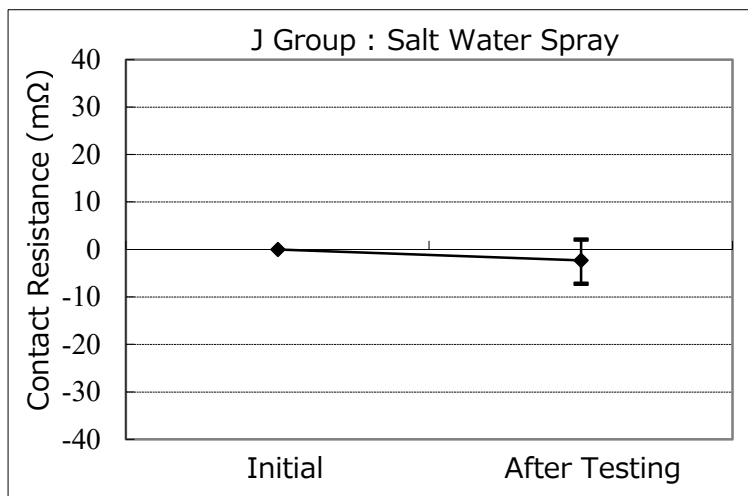
Graph.13



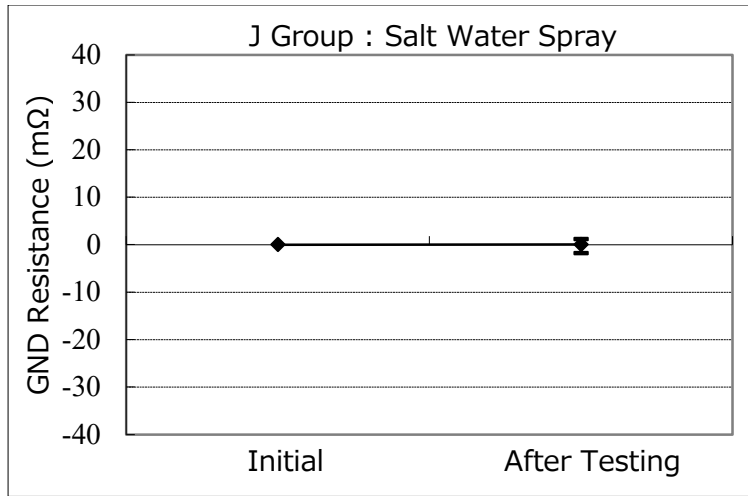
Graph.14



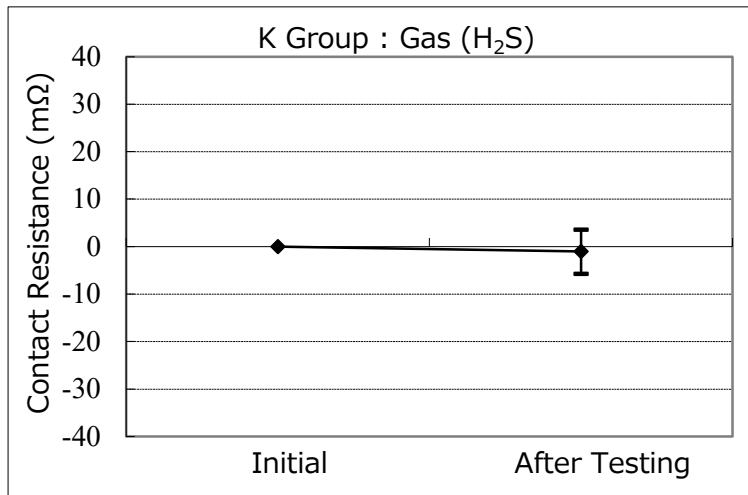
Graph.15



Graph.16



Graph.17



Graph.18

