

# CABLINE®-VS

Part No. Plug: 20453-2\*\*T-### Receptacle: 20455-\*\*\*E-#6#

## Test Report

Product Specification no. PRS-1427

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Rev.	ECN	Date	Prepared by	Checked by	Approved by

# CABLINE-VS Test Report

## 1. Purpose

CABLINE-VS コネクタの性能を PRS-1427 に基づいて評価する。

To evaluate the performance of CABLINE-VS Connector in accordance with PRS-1427.

## 2. Specimen

(1) CABLINE-VS PLUG ASS'Y (Part No. 20453-2\*\*T-###)

(2) CABLINE-VS RECEPTACLE ASS'Y (Part No. 20455-\*\*\*E-#6#)

## 3. 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. Result

表 2-1～2-5、グラフ 1～18 参照。試験条件の詳細は PRS-1427 参照。n 数は測定データを意味する。

See Table 2-1 to 2-5, Graph 1 to 18. For the details of the testing conditions and requirements, see PRS-1427.

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

## 5. Conclusion

全ての資料が製品規格（PRS-1427）の必要条件を満足した。

All the specimens met the requirements of PRS-1427.

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	
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 Un-mating Force	3,7												
耐久性 Durability	4						4						
端子保持力 Contact Retention Force		1,3											
ケーブル保持力 Cable Retention Force	8												
耐振動性 Vibration			2										
耐衝撃性 Shock			4										
熱衝撃 Thermal Shock				2									
高温寿命 High Temperature Life		2			2								
湿度 (定常状態) Humidity (Steady State)						4							
湿度 (サイクリング) Humidity (Cycling)							6						
塩水噴射 Salt Water Spray								2					
硫化水素ガス H2S Gas									2				
半田付け性 Solder ability										1			
半田耐熱性 Soldering Heat Resistance											1		
試料数 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.

※グループ表中の番号は、試験順序を示す。 / Numbers indicate sequence in which tests are performed.

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表 2-1. 試験結果(Table.2-1 Test result)

試項目 Test Item	測定内容 Contents of Measurement		規格 Specifications	Set	N	データ Data					判定 Judgment
						AVE.	MAX.	MIN.	s	X±3s	
A Group 耐久性 Durability ケーブル保持力 Cable Retention Force	接触抵抗 C/T Resistance (mΩ)	初期 Initial	AWG#40 600mΩMAX.	5	200	532.847	543.26	523.81	4.811	547.280	OK
		30 回挿抜後 After Testing	AWG#40 ΔR=40mΩMAX.			-2.640	0.53	-4.89	1.405	1.575	OK
	GND 抵抗 GND Resistance (mΩ)	初期 Initial	50mΩMAX.	5	5	13.102	13.51	12.70	0.318	14.056	OK
		30 回挿抜後 After Testing	ΔR=40mΩ MAX.			-0.227	0.32	-0.79	0.368	0.877	OK
	20P 挿入力 Mating Force (N)	初期 Initial	9.45N MAX.	5	5	6.614	7.19	5.91	0.534	8.216	OK
		30 回挿抜後 After Testing	9.45N MAX.			4.626	4.96	4.31	0.265	5.421	OK
	20P 抜去力 Un mating Force(N)	初期 Initial	2.0N MIN.	5	5	5.262	5.54	4.97	0.209	4.635	OK
		30 回挿抜後 After Testing	2.0N MIN.			4.472	4.76	4.18	0.235	3.767	OK
	20P ケーブル保持力 (N) Cable Retention Force		9.8N MIN.	5	5	84.910	92.40	78.00	5.449	68.563	OK
	30P 挿入力 Mating Force (N)	初期 Initial	12.15N MAX.	5	5	8.280	8.40	8.12	0.140	8.700	OK
		30 回挿抜後 After Testing	12.15N MAX.			5.781	5.99	5.56	0.219	6.438	OK
	30P 抜去力 Un mating Force (N)	初期 Initial	3.0N MIN.	5	5	6.540	6.82	6.40	0.241	5.817	OK
		30 回挿抜後 After Testing	3.0N MIN.			5.332	5.48	5.21	0.135	4.927	OK
	30P ケーブル保持力 (N) Cable Retention Force		14.7N MIN.	5	5	84.227	92.28	76.40	7.942	60.401	OK
	40P 挿入力 Mating Force (N)	初期 Initial	16.2N MAX.	5	5	10.917	11.82	10.11	0.859	13.494	OK
		30 回挿抜後 After Testing	16.2N MAX.			7.928	8.45	7.53	0.470	9.338	OK
	40P 抜去力 Un mating Force (N)	初期 Initial	4.0N MIN.	5	5	9.126	9.93	8.39	0.770	6.816	OK
		30 回挿抜後 After Testing	4.0N MIN.			8.005	8.39	7.43	0.505	6.490	OK
40P ケーブル保持力 (N) Cable Retention Force		19.6N MIN.	5	5	86.280	91.82	79.12	5.020	71.220	OK	
50P 挿入力 Mating Force (N)	初期 Initial	20.25N MAX.	5	5	13.418	14.22	12.55	0.741	15.641	OK	
	30 回挿抜後 After Testing	20.25N MAX.			9.820	10.43	9.21	0.461	11.203	OK	
50P 抜去力 Un mating Force (N)	初期 Initial	5.0N MIN.	5	5	11.928	12.68	11.18	0.622	10.062	OK	
	30 回挿抜後 After Testing	5.0N MIN.			9.886	10.56	9.23	0.491	8.413	OK	
50P ケーブル保持力 (N) Cable Retention Force		24.50N MIN.	5	5	107.700	115.2	100.34	5.630	90.810	OK	

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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 Judgment
						AVE.	MAX.	MIN.	s	X±3s	
B Group 高温寿命 High Temp. Life	端子保持力 (PLUG) C/T 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.					OK
		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.					OK
	端子保持力 (RECE) C/T Retention Force (N)	初期 Initial	0.2N MIN.	—	20	0.775	0.99	0.62	0.087	0.514	OK
		試験後 After Testing	0.2N MIN.	—	20	0.748	0.95	0.61	0.089	0.481	OK
C Group 振動 Vibration ↓ 衝撃 Shock	接触抵抗 C/T Resistance (mΩ)	初期 Initial	AWG#40 600mΩMAX.	5	200	532.522	536.16	528.75	1.676	537.550	OK
		振動後 After Vibration	AWG#40 ΔR=40mΩMAX.			-0.334	2.40	-3.20	1.164	3.158	OK
		衝撃後 After Shock	AWG#40 ΔR=40mΩMAX.			-1.295	1.28	-3.56	1.058	1.879	OK
	GND 抵抗 GND Resistance (mΩ)	初期 Initial	50mΩMAX.	5	5	13.707	14.22	12.98	0.456	15.075	OK
		振動後 After Vibration	ΔR=40mΩMAX.			0.228	1.09	-0.38	0.605	2.043	OK
		衝撃後 After Shock	ΔR=40mΩMAX.			0.127	0.39	-0.14	0.188	0.691	OK
	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					OK
		衝撃試験中 During Shock				瞬断無し No Electrical discontinuity					OK
	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					OK
		衝撃後 After Shock				異常無し No Abnormality					OK

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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 Judgment
						AVE.	MAX.	MIN.	s	X±3s	
D Group 熱衝撃 Thermal Shock	接触抵抗 C/T Resistance (mΩ)	初期 Initial	AWG#40 600mΩMAX.	5	200	531.509	535.33	528.57	1.441	535.832	OK
		試験後 After Testing	AWG#40 ΔR=40mΩMAX.			0.735	3.20	-1.95	1.185	4.290	OK
	GND 抵抗 GND Resistance (mΩ)	初期 Initial	50mΩMAX.	5	5	14.145	14.49	13.77	0.256	14.913	OK
		試験後 After Testing	ΔR=40mΩMAX.			0.295	1.21	-0.28	0.574	2.017	OK
E Group 高温寿命 High Temp. Life	接触抵抗 C/T Resistance (mΩ)	初期 Initial	AWG#40 600mΩMAX	5	200	530.851	535.34	526.32	2.238	537.565	OK
		試験後 After Testing	AWG#40 ΔR=40mΩMAX.			1.644	4.42	-1.26	1.387	5.805	
	GND 抵抗 GND Resistance (mΩ)	初期 Initial	50mΩMAX.	5	5	13.778	14.55	13.35	0.443	15.107	OK
		試験後 After Testing	ΔR=40mΩMAX.			0.245	0.77	-0.29	0.429	1.532	
F Group 湿度 (定常状態) Humidity (Steady State)	接触抵抗 C/T Resistance (mΩ)	初期 Initial	AWG#40 600mΩMAX	5	200	529.701	534.02	523.83	2.264	536.493	OK
		試験後 After Testing	AWG#40 ΔR=40mΩMAX.			0.044	3.51	-2.89	1.259	3.821	OK
	GND 抵抗 GND Resistance (mΩ)	初期 Initial	50mΩMAX.	5	5	14.545	15.51	13.82	0.598	16.339	OK
		試験後 After Testing	ΔR=40mΩMAX.			-0.113	1.71	-1.29	1.034	2.989	OK
	絶縁抵抗 Insulation Resistance (MΩ)	初期 Initial	1000MΩMIN.	5	100	2.4×10 <sup>5</sup> MΩMIN.					OK
		試験後 After Testing	500MΩMIN.			1.6×10 <sup>5</sup> MΩMIN.					OK
	耐電圧 D. W. Voltage	初期 Initial	異常なきこと Abnormality shall not occur.	5	100	異常無し No Abnormality					OK
		試験後 After Testing				異常無し No Abnormality					OK

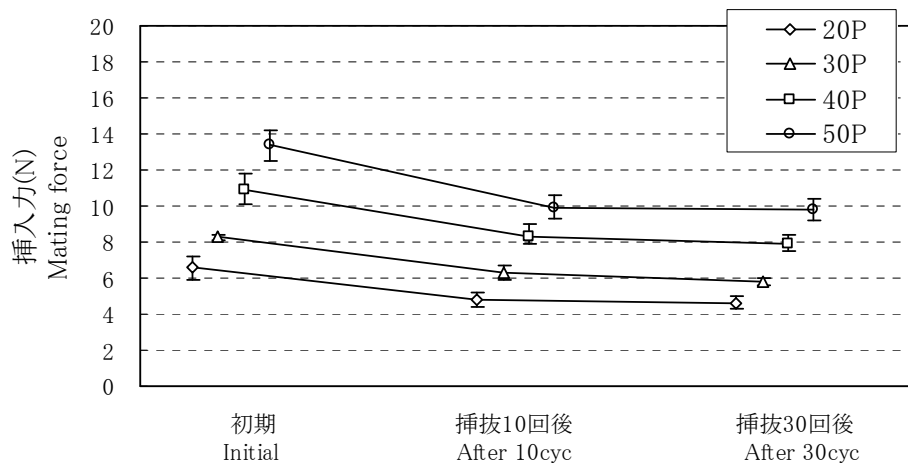
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表 2-4. 試験結果(Table.2-4 Test result)

試験項目 Test Item	測定内容 Contents of Measurement		規格 Specifications	Set	N	データ Data					判定 Judgment
						AVE.	MAX.	MIN.	s	X±3s	
G Group 湿度 (サイクリング) Humidity (Cycling)	接触抵抗 C/T Resistance (mΩ)	初期 Initial	AWG#40 600mΩMAX.	5	200	532.626	535.91	529.20	1.548	537.270	OK
		試験後 After Testing	AWG#40 ΔR=40mΩMAX.			-2.158	1.69	-4.78	1.467	2.243	OK
	GND 抵抗 GND Resistance (mΩ)	初期	50mΩMAX.	5	5	14.935	15.39	14.46	0.387	16.096	OK
		試験後 After Testing	ΔR=40mΩMAX.			0.893	2.20	-0.18	0.842	3.419	OK
	絶縁抵抗 Insulation Resistance (MΩ)	初期 Initial	1000MΩMIN.	5	100	2.2×10 <sup>5</sup> MΩMIN.					OK
		試験後 After Testing	500MΩMIN.			1.4×10 <sup>5</sup> MΩMIN.					OK
耐電圧 D. W. Voltage	初期 Initial	異常なきこと	5	100	異常無し No Abnormality					OK	
	試験後 After Testing	Abnormality shall not occur.			異常無し No Abnormality					OK	
H Group 塩水噴霧 (Salt Spray)	接触抵抗 C/T Resistance (mΩ)	初期 Initial	AWG#40 600mΩMAX.	5	200	533.226	538.57	528.67	2.156	539.694	OK
		試験後 After Testing	AWG#40 ΔR=40mΩMAX.			0.138	4.78	-3.82	2.128	6.522	OK
	GND 抵抗 GND Resistance (mΩ)	初期 Initial	50mΩMAX.	5	5	15.012	16.21	14.11	0.891	17.685	OK
		試験後 After Testing	ΔR=40mΩMAX.			0.358	1.63	-0.25	0.691	2.431	OK
J Group ガス(H <sub>2</sub> S) Gas(H <sub>2</sub> S)	接触抵抗 C/T Resistance (mΩ)	初期 Initial	AWG#40 600mΩMAX.	5	200	531.289	537.52	525.97	2.593	539.068	OK
		試験後 After testing	AWG#40 ΔR=40mΩMAX.			-1.168	2.26	-4.48	1.608	3.656	OK
	GND 抵抗 GND Resistance (mΩ)	初期 Initial	50mΩMAX.	5	5	14.948	15.88	14.28	0.590	16.718	OK
		試験後 After Testing	ΔR=40mΩMAX.			-0.057	0.50	-0.98	0.583	1.692	OK

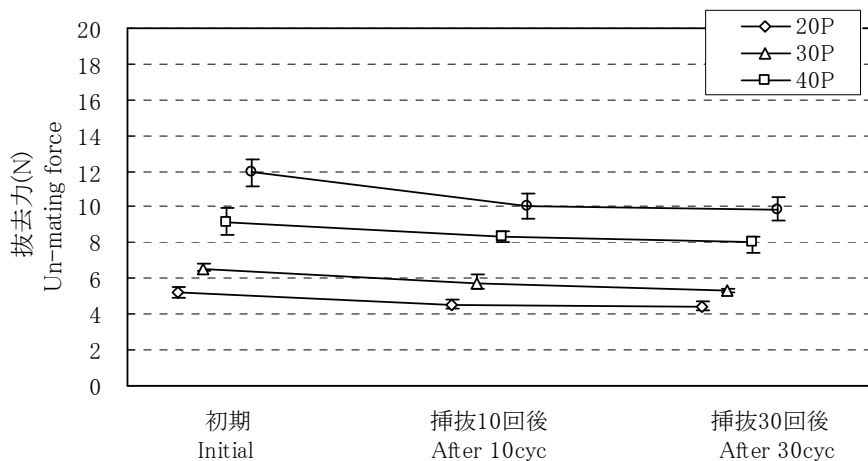
表 2-5. 試験結果(Table.2-5 Test result)

試験項目 Test Item	測定内容 Contents of Measurement	規格 Specifications	Set	N	データ Data					判定 Judgment
					AVE.	MAX.	MIN.	s	X±3s	
K 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.					OK
L Group 半田耐熱性 Soldering Heat Resistance	外観 Appearance	異常なきこと Abnormality shall not occur.	10	10	異常無し No Abnormality					OK
M Group 温度上昇 Temp. Rising	AWG#40 0.3A(40P)	$\Delta T=30^{\circ}\text{C}\text{MAX.}$	5	5	$\Delta T=28.1^{\circ}\text{C}\text{MAX.}$					OK



Graph1. 挿入力の変化 (A Group : 耐久性)

A change of mating force (A Group:Durability)

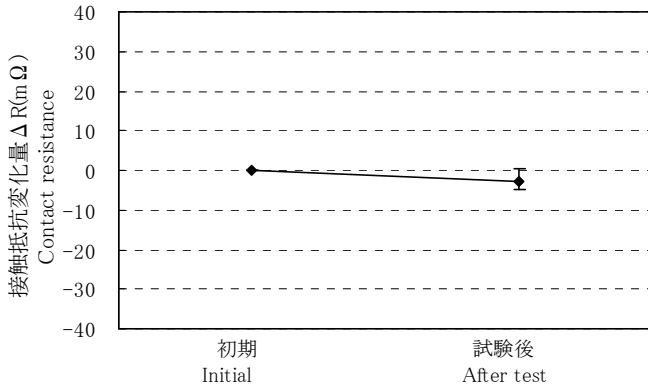


Graph 2. 抜去力の変化 (A Group : 耐久性)

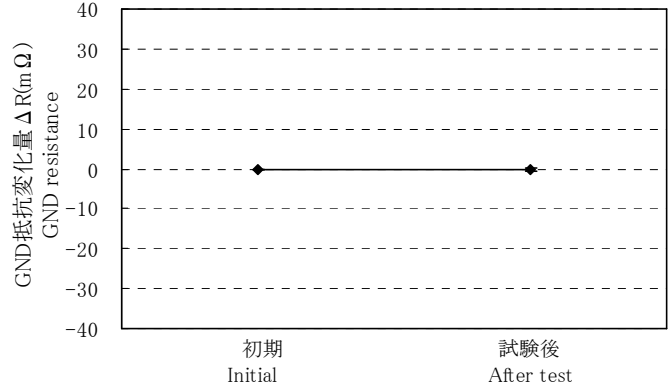
A change of un mating force (A Group:Durability)



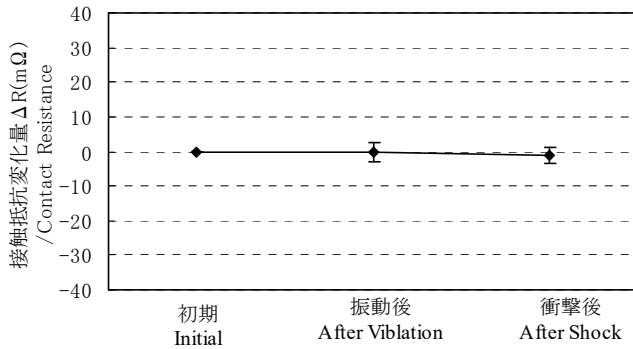
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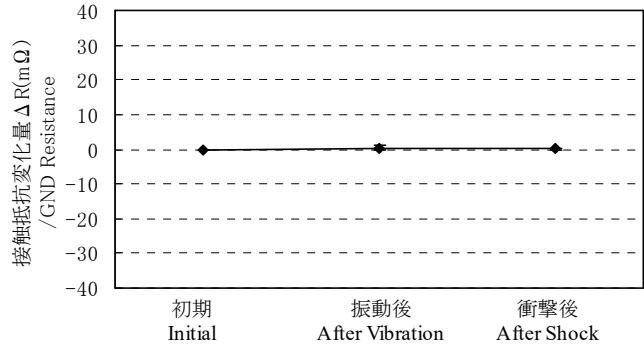
Graph3. 接触抵抗値の変化 (A Group : 耐久性)  
A change of contact resistance (A Group:Durability)



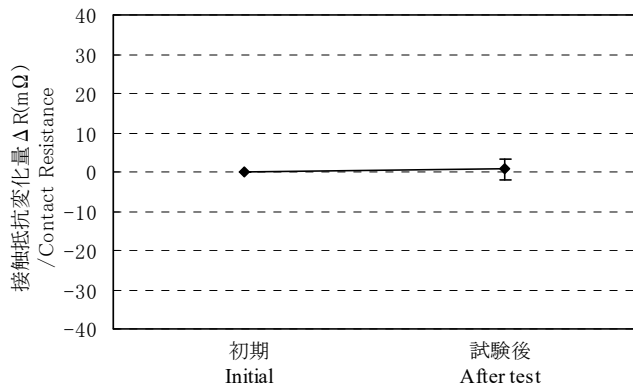
Graph4. GND 抵抗値の変化 (A Group : 耐久性)  
A change of GND resistance (A Group:Durability)



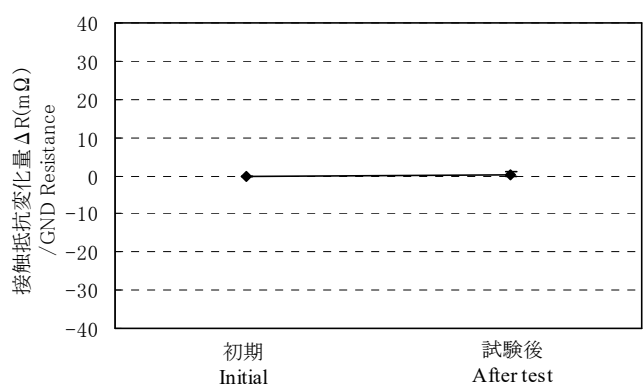
Graph5. 接触抵抗値の変化 (C Group : 振動・衝撃)  
A change of contact resistance(C Group:Vibration/Shock)



Graph6. GND 抵抗値の変化 (C Group : 振動・衝撃)  
A change of GND resistance(C Group:Vibration/Shock)

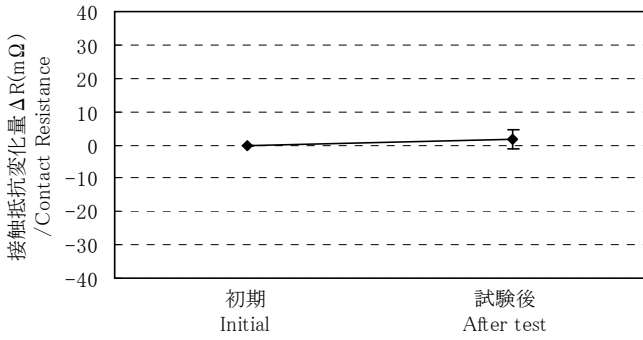


Graph7. 接触抵抗値の変化 (D Group : 熱衝撃)  
A change of contact resistance (D Group:Thermal shock)



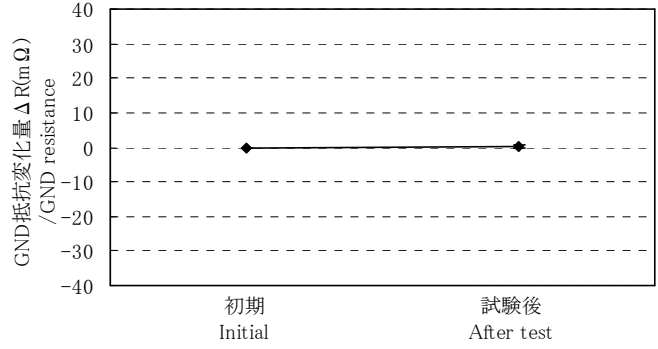
Graph8. GND 抵抗値の変化 (D Group : 熱衝撃)  
A change of GND resistance (D Group:Thermal shock)

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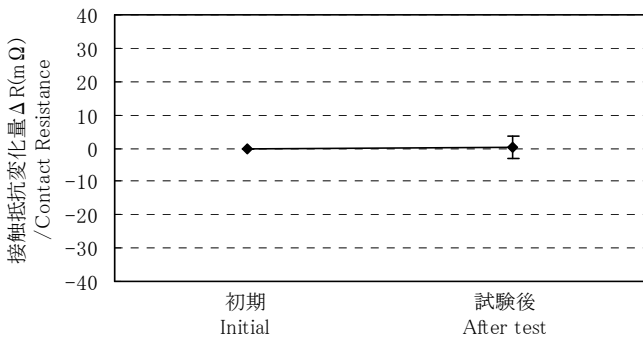
Graph9. 接触抵抗値の変化 (E Group : 高温寿命)

A change of contact resistance (E Group:High temp.life)



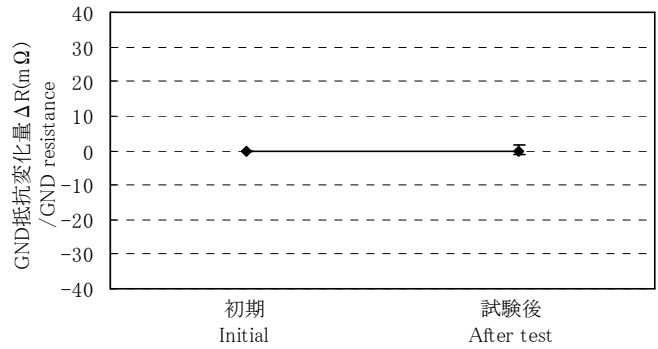
Graph10. GND 抵抗値の変化 (E Group : 高温寿命)

A change of GND resistance (E Group:High temp.life)



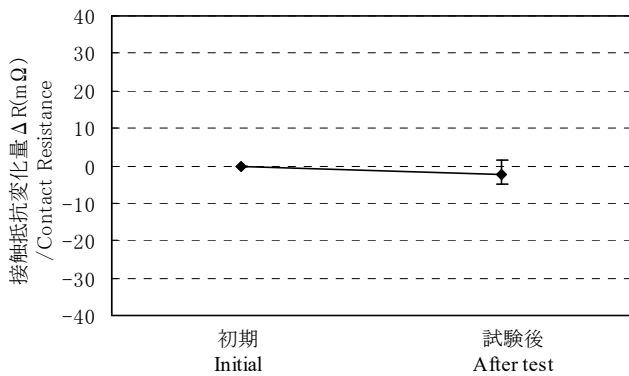
Graph11. 抵抗値の変化 (F Group : 湿度(定常状態))

A change of contact resistance (F Group: Humidity(Steady state))



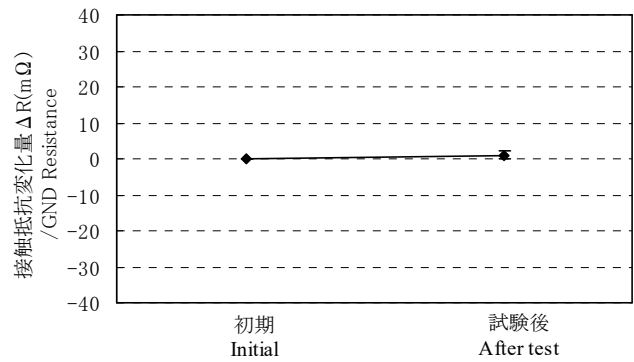
Graph12. GND 抵抗値の変化 (F Group : 湿度(定常状態))

A change of GND resistance (F Group: Humidity(Steady state))



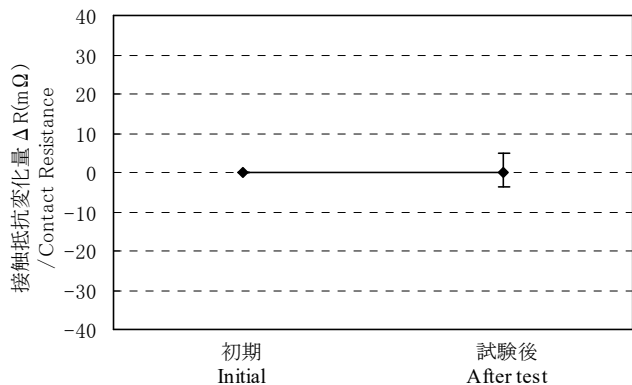
Graph 13. 接触抵抗値の変化 (G Group : 湿度(サイクリング))

A change of contact resistance (G Group:Humidity(Cycling))



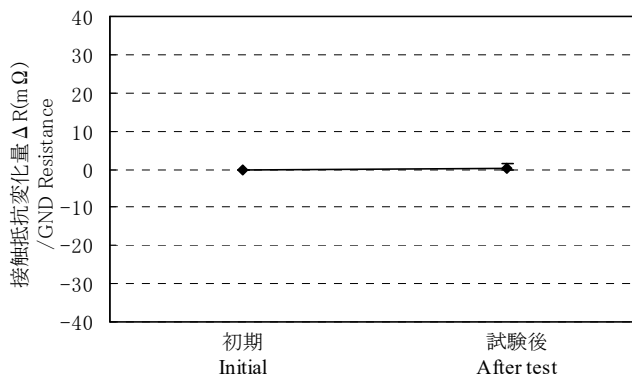
Graph14. GND 抵抗値の変化 (G Group : サイクリング)

A change of GND resistance (G Group:Humidity(Cycling))



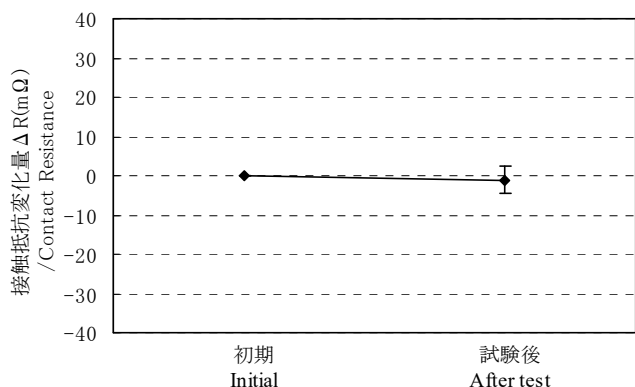
Graph15. 接触抵抗値の変化 (H Group : 塩水噴霧)

A change of contact resistance (H Group:Salt spray)



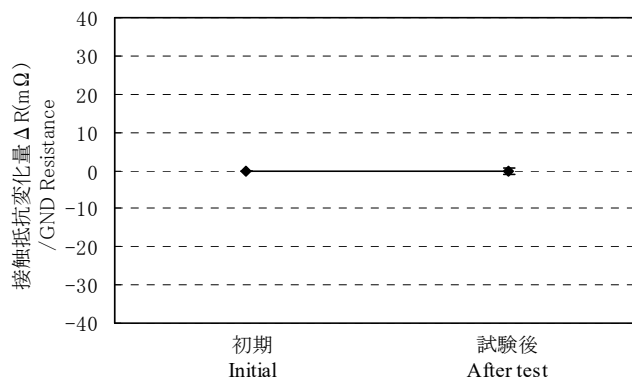
Graph16. GND 抵抗値の変化 (H Group : 塩水噴霧)

A change of GND resistance (H Group:Salt spray)



Graph17. 接触抵抗値の変化 (J Group : ガス(H<sub>2</sub>S))

A change of contact resistance (J Group:Gas(H<sub>2</sub>S))



Graph18. GND 抵抗値の変化 (J Group : ガス(H<sub>2</sub>S))

A change of contact resistance (J Group:Gas(H<sub>2</sub>S))