

# CABLINE®-VS

Part No. Plug: 20453-0\*\*T-### Receptacle: 20455-\*\*\*E-#2#

## Test Report

Product Specification no. PRS-1427

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8	T15081	Sept. 29 2015	H.Ikari	-	Y.Shimada
7	T14138	Oct. 22 2014	H.Ikari	-	E.Kawabe
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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. 20453-0\*\*T-###)

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

## 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	496.393	509.94	488.78	6.287	515.254	OK
		30 回挿抜後 After Testing	AWG#40 ΔR=40mΩMAX.			-0.673	4.77	-7.03	2.118	5.681	OK
	GND 抵抗 GND Resistance (mΩ)	初期 Initial	50mΩMAX.	5	5	9.852	10.55	9.40	0.435	11.157	OK
		30 回挿抜後 After Testing	ΔR=40mΩ MAX.			-0.813	-0.43	-1.18	0.267	-0.012	OK
	20P 挿入力 Mating Force (N)	初期 Initial	9.45N MAX.	5	5	6.560	7.09	5.86	0.570	8.270	OK
		30 回挿抜後 After Testing	9.45N MAX.			4.600	4.78	4.49	0.130	4.990	OK
	20P 抜去力 Un mating Force (N)	初期 Initial	2.0N MIN.	5	5	5.110	5.47	4.75	0.310	4.180	OK
		30 回挿抜後 After Testing	2.0N MIN.			4.320	4.49	4.21	0.120	3.960	OK
	20P ケーブル保持力 (N) Cable Retention Force		9.8N MIN.	5	5	86.280	91.80	79.10	5.020	71.220	OK
	30P 挿入力 Mating Force(N)	初期 Initial	12.15N MAX.	5	5	9.174	9.86	8.20	0.663	11.163	OK
		30 回挿抜後 After Testing	12.15N MAX.			5.372	6.08	4.75	0.520	6.932	OK
	30P 抜去力 Un mating Force (N)	初期 Initial	3.0N MIN.	5	5	7.824	9.30	7.26	0.838	5.310	OK
		30 回挿抜後 After Testing	3.0N MIN.			5.778	6.05	5.50	0.254	5.016	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	9.983	10.47	9.61	0.441	11.306	OK
		30 回挿抜後 After Testing	16.2N MAX.			6.833	6.89	6.76	0.067	7.034	OK
	40P 抜去力 Un mating Force (N)	初期 Initial	4.0N MIN.	5	5	9.377	9.68	8.97	0.366	8.279	OK
		30 回挿抜後 After Testing	4.0N MIN.			6.687	7.13	6.25	0.440	5.367	OK
	40P ケーブル保持力 (N) Cable Retention Force		19.6N MIN.	5	5	79.254	83.69	75.73	3.867	67.653	OK
	50P 挿入力 Mating Force (N)	初期 Initial	20.25N MAX.	5	5	15.051	15.88	14.55	0.618	16.905	OK
30 回挿抜後 After Testing		20.25N MAX.	9.285			9.73	8.77	0.463	10.674	OK	
50P 抜去力 Un mating Force (N)	初期 Initial	5.0N MIN.	5	5	11.970	12.79	11.09	0.778	9.636	OK	
	30 回挿抜後 After Testing	5.0N MIN.			9.984	10.64	9.08	0.721	7.821	OK	
50P ケーブル保持力 (N) Cable Retention Force		24.50N MIN.	5	5	109.948	117.40	106.11	4.592	96.172	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	0.788	0.98	0.65	0.094	0.506	OK
		試験後 After Testing	0.2N MIN.	—	20	0.728	0.98	0.62	0.089	0.461	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	494.786	499.85	488.75	2.579	502.523	OK
		振動後 After Vibration	AWG#40 ΔR=40mΩMAX.			3.745	6.56	1.16	1.001	6.748	OK
		衝撃後 After Shock	AWG#40 ΔR=40mΩMAX.			-2.937	0.21	-6.27	1.348	1.107	OK
	GND 抵抗 GND Resistance (mΩ)	初期 Initial	50mΩMAX.	5	5	12.757	13.11	12.28	0.429	14.044	OK
		振動後 After Vibration	ΔR=40mΩ MAX.			0.110	0.45	-0.07	0.295	0.995	OK
		衝撃後 After Shock	ΔR=40mΩMAX.			0.063	0.33	-0.12	0.236	0.771	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	496.053	500.19	493.26	1.553	500.712	OK
		試験後 After Testing	AWG#40 ΔR=40mΩMAX.			0.970	4.50	-2.53	1.724	6.142	OK
	GND 抵抗 GND Resistance (mΩ)	初期 Initial	50mΩMAX.	5	5	12.730	13.05	12.23	0.439	14.047	OK
		試験後 After Testing	ΔR=40mΩMAX.			0.280	0.81	-0.20	0.507	1.801	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	493.399	505.29	487.84	4.960	508.279	OK
		試験後 After Testing	AWG#40 ΔR=40mΩMAX.			3.548	6.26	1.05	1.182	7.094	
	GND 抵抗 GND Resistance (mΩ)	初期 Initial	50mΩMAX.	5	5	12.460	12.79	12.01	0.404	13.672	OK
		試験後 After Testing	ΔR=40mΩMAX.			-0.030	0.11	-0.25	0.193	0.549	
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	496.057	500.77	490.69	2.073	502.276	OK
		試験後 After Testing	AWG#40 ΔR=40mΩMAX.			0.140	3.88	-3.20	1.354	4.202	OK
	GND 抵抗 GND Resistance (mΩ)	初期 Initial	50mΩMAX.	5	5	11.809	12.16	11.40	0.385	12.964	OK
		試験後 After Testing	ΔR=40mΩMAX.			-0.149	0.17	-0.32	0.279	0.688	OK
	絶縁抵抗 Insulation Resistance (MΩ)	初期 Initial	1000MΩMIN.	5	100	2.0×10 <sup>5</sup> MΩMIN.					OK
		試験後 After Testing	500MΩMIN.			1.1×10 <sup>4</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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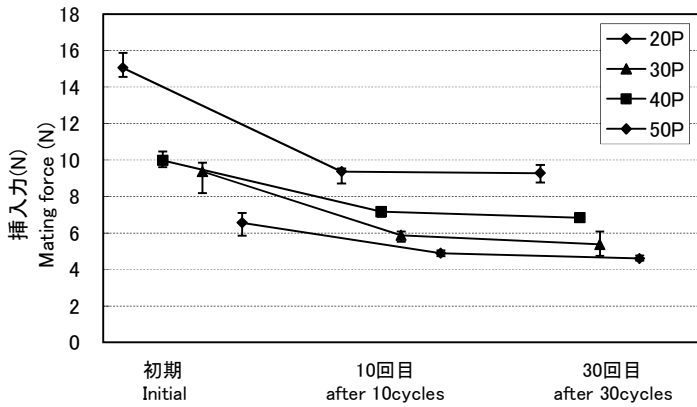
表 2-4. 試験結果(Table.2-4 Test result)

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	496.515	503.12	489.21	2.926	505.293	OK
		試験後 After Testing	AWG#40 ΔR=40mΩMAX.			1.095	3.96	-2.73	1.544	5.727	OK
	GND 抵抗 GND Resistance (mΩ)	初期	50mΩMAX.	5	5	12.364	12.79	11.98	0.405	13.579	OK
		試験後 After Testing	ΔR=40mΩMAX.			0.139	0.61	-0.39	0.501	1.642	OK
	絶縁抵抗 Insulation Resistance (MΩ)	初期 Initial	1000MΩMIN.	5	100	2.1×10 <sup>5</sup> MΩMIN.					OK
		試験後 After Testing	500MΩMIN.			1.2×10 <sup>4</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	
H Group 塩水噴霧 (Salt Spray)	接触抵抗 C/T Resistance (mΩ)	初期 Initial	AWG#40 600mΩMAX.	5	200	495.713	499.64	490.03	1.924	501.485	OK
		試験後 After Testing	AWG#40 ΔR=40mΩMAX.			0.297	2.89	-2.11	1.035	3.402	OK
	GND 抵抗 GND Resistance (mΩ)	初期 Initial	50mΩMAX.	5	5	12.367	12.64	11.98	0.325	13.342	OK
		試験後 After Testing	ΔR=40mΩMAX.			0.297	0.72	-0.34	0.415	1.542	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	500.358	503.13	497.99	1.226	504.036	OK
		試験後 After testing	AWG#40 ΔR=40mΩMAX.			0.572	3.11	-2.29	1.276	4.400	OK
	GND 抵抗 GND Resistance (mΩ)	初期 Initial	50mΩMAX.	5	5	10.660	10.94	10.36	0.294	11.542	OK
		試験後 After Testing	ΔR=40mΩMAX.			0.342	0.97	-0.58	0.813	2.781	OK

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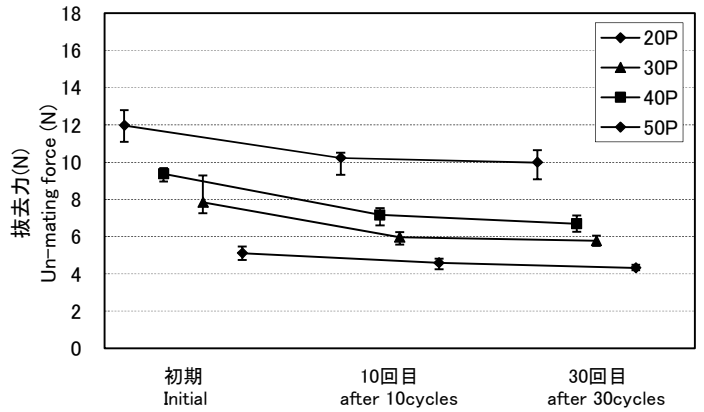
表 2-5. 試験結果 (Table.2-5 Test result)

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)	$\Delta T = 30^{\circ}\text{C MAX.}$	5	5	$\Delta T = 28^{\circ}\text{C MAX.}$					OK



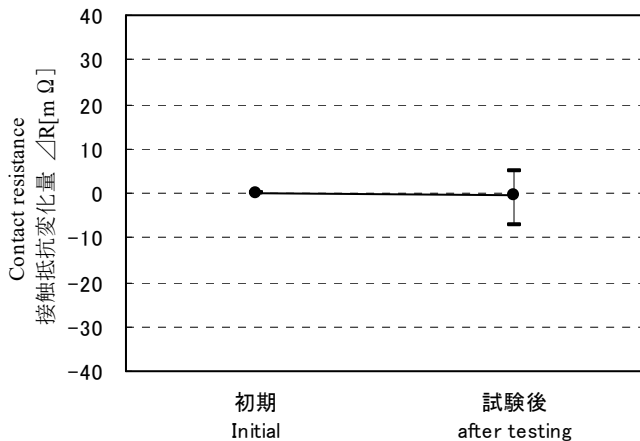
Graph1. 挿入力の変化 (A Group : 耐久性)

A change of mating force (A Group:Durability)



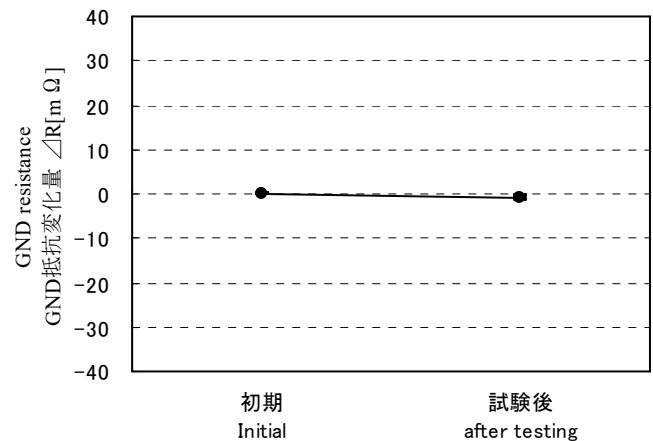
Graph 2. 抜去力の変化 (A Group : 耐久性)

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



Graph3. 接触抵抗値の変化 (A Group : 耐久性)

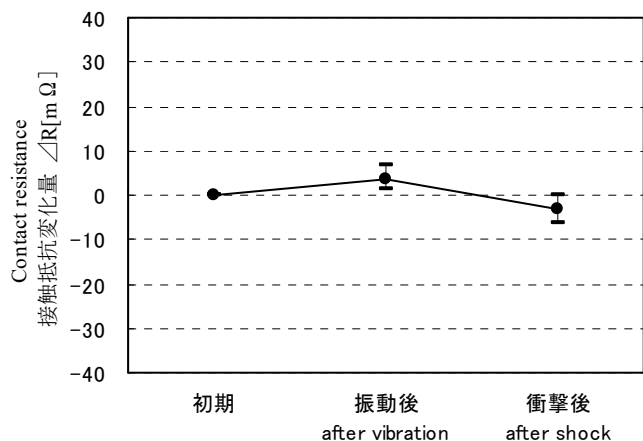
A change of contact resistance (A Group:Durability)



Graph4. GND 抵抗値の変化 (A Group : 耐久性)

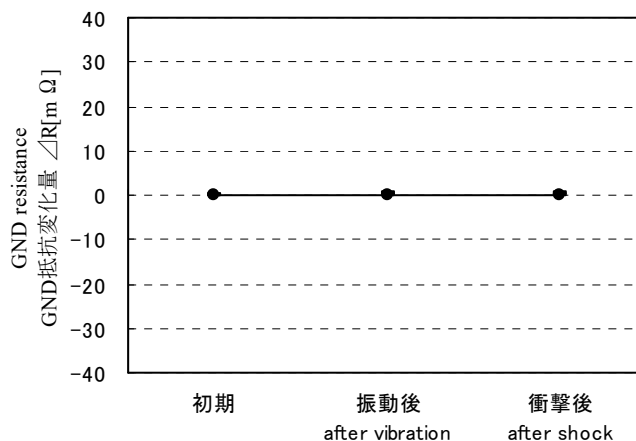
A change of GND resistance (A Group:Durability)





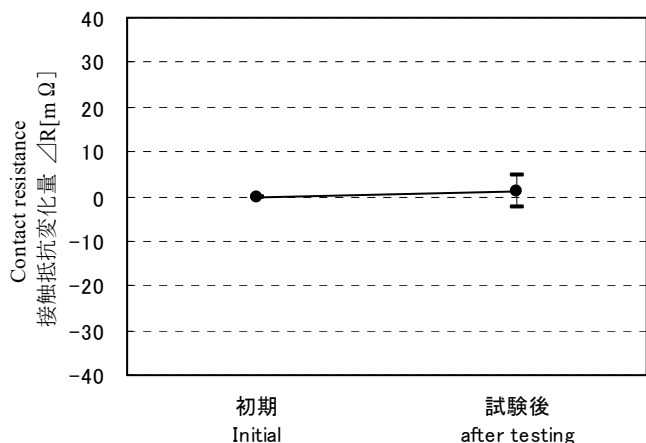
Graph5. 接触抵抗値の変化 (C Group : 振動・衝撃)

A change of contact resistance(C Group:Vibration/Shock)



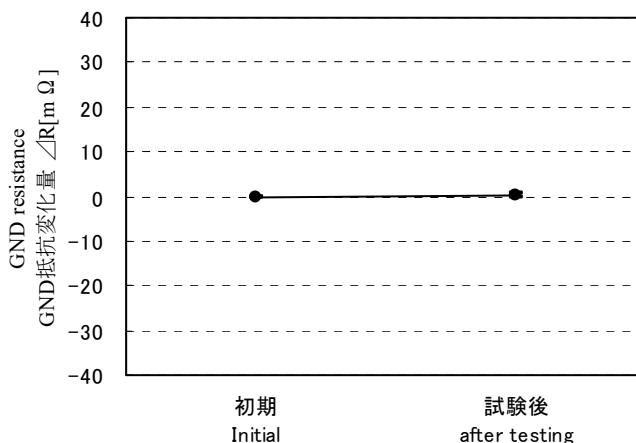
Graph6. GND 抵抗値の変化 (C Group : 振動・衝撃)

A change of GND resistance(C Group:Vibration/Shock)



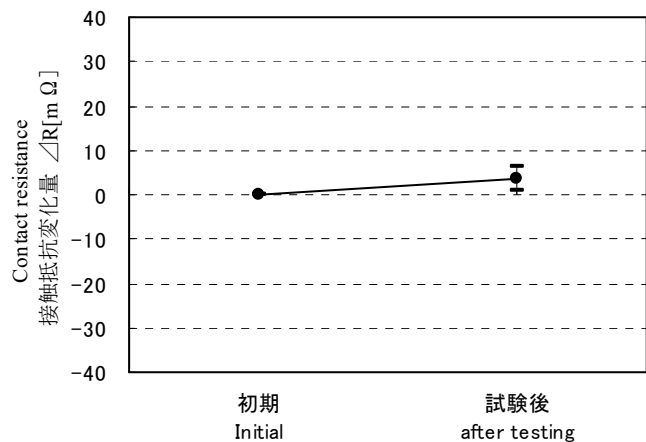
Graph7. 接触抵抗値の変化 (D Group : 熱衝撃)

A change of contact resistance (D Group:Thermal shock)



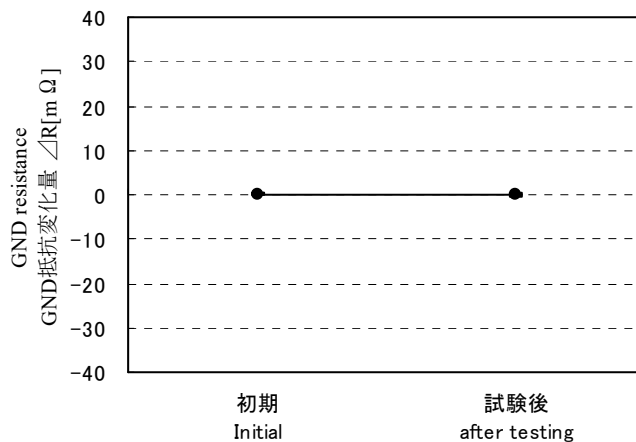
Graph8. GND 抵抗値の変化 (D Group : 熱衝撃)

A change of GND resistance (D Group:Thermal shock)



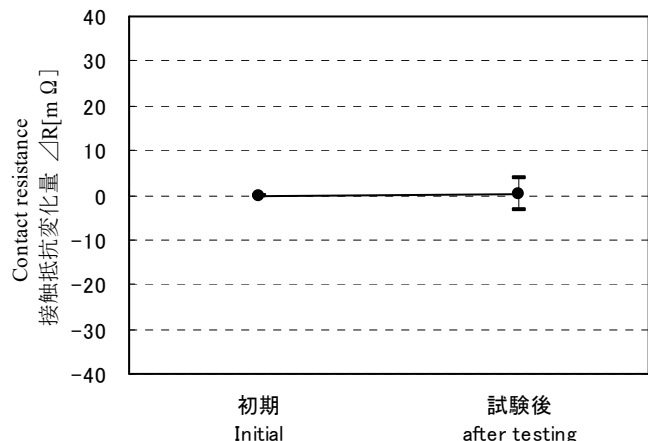
Graph9. 接触抵抗値の変化 (E Group : 高温寿命)

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



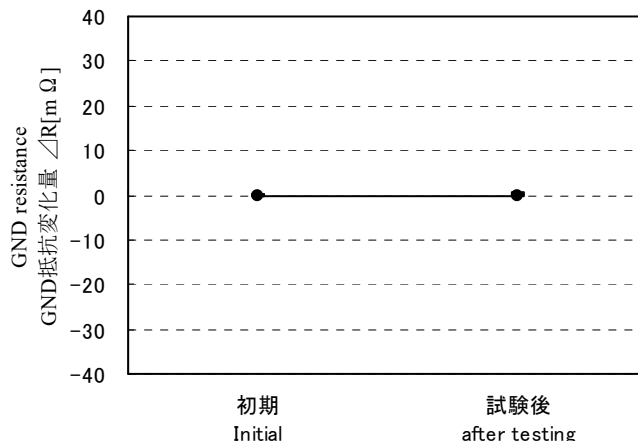
Graph10. GND 抵抗値の変化 (E Group : 高温寿命)

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



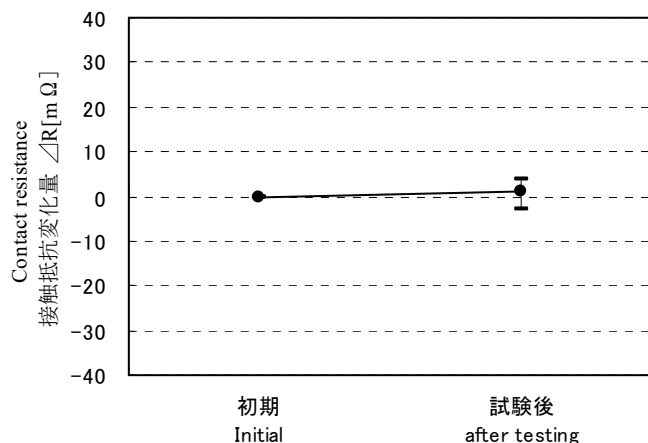
Graph11. 抵抗値の変化 (F Group : 湿度(定常状態))

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



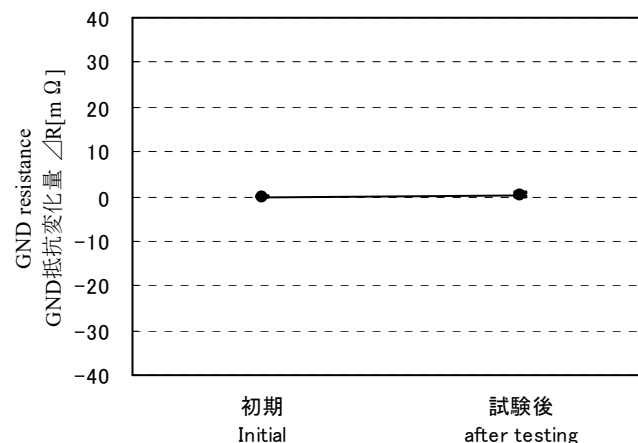
Graph12. GND 抵抗値の変化 (F Group : 湿度(定常状態))

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



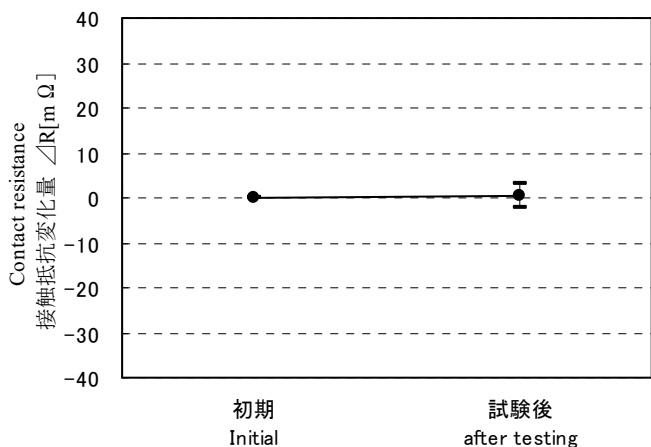
Graph 13. 接触抵抗値の変化 (G Group : 湿度(サイクリング))

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



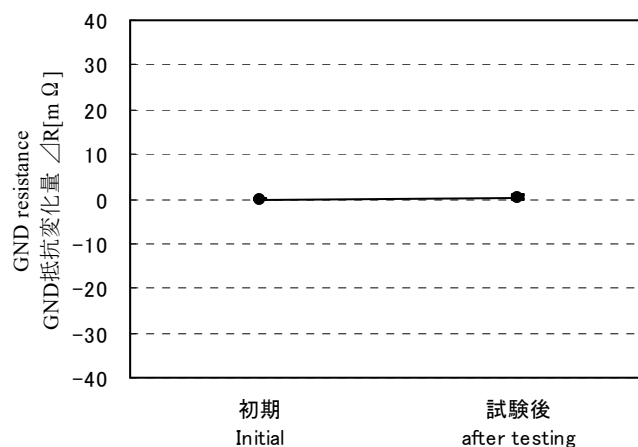
Graph14. GND 抵抗値の変化 (G Group : サイクリング)

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



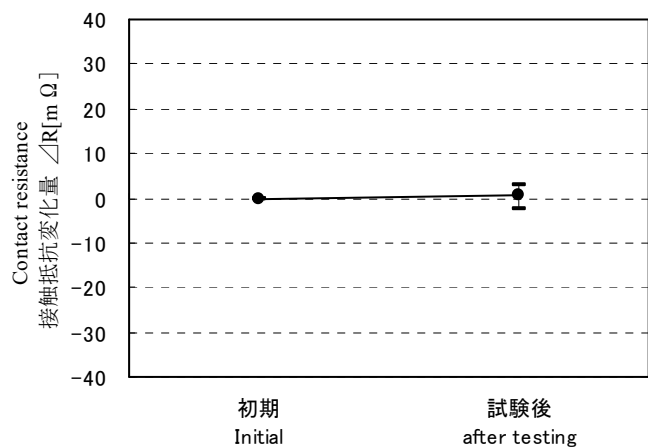
Graph15. 接触抵抗値の変化 (H Group : 塩水噴霧)

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



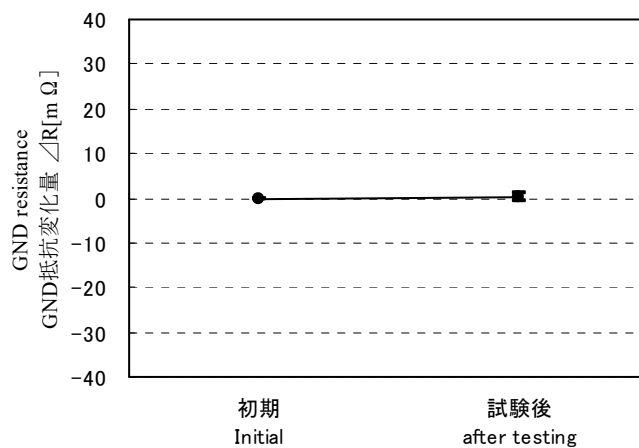
Graph16. GND 抵抗値の変化 (H Group : 塩水噴霧)

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 (JGroup : ガス(H<sub>2</sub>S))

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