

# CABLIN<sup>®</sup>-CX II

Part No. 20977-040T-01, 20978-040T-01, 20976-040E-01

## Test Report

Product Specification no. PRS-2403

Rev.	ECN	Date	Prepared by	Checked by	Approved by
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0	T17186	December 6, 2017	R.Hoshino	T.Yayoshi	M.Takemoto

## 1. Purpose

CABLINE-CX II コネクタの性能を PRS-2403 に基づいて評価する。

To evaluate the performance of CABLINE-CX II Connector in accordance with PRS-2403.

## 2. Specimen

(1) CABLINE-CX II WITH COVER CABLE ASS'Y (Part No.20977-040T-01, Cable AWG#44)

CABLINE-CX II WITHOUT COVER CABLE ASS'Y (Part No.20978-040T-01, Cable AWG#44)

(2) CABLINE-CX II RECEPTACLE ASS'Y (Part No. 20976-040E-01)

## 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 2-1~2-3、グラフ 1~18 参照。試験条件の詳細は PRS-2403 参照。n 数は測定データを意味する。

See Table 2-1 to 2-3, Graph 1 to 18. For the details of the testing conditions and requirements, see PRS-2403.

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

## 5. Conclusion

全ての資料が製品規格 (PRS-2403) の必要条件を満足した。

All the specimens met the requirements of PRS-2403.

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 Un-mating 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 Connector Lock			1										
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 (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 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.

Table 2-1 試験結果/Test result

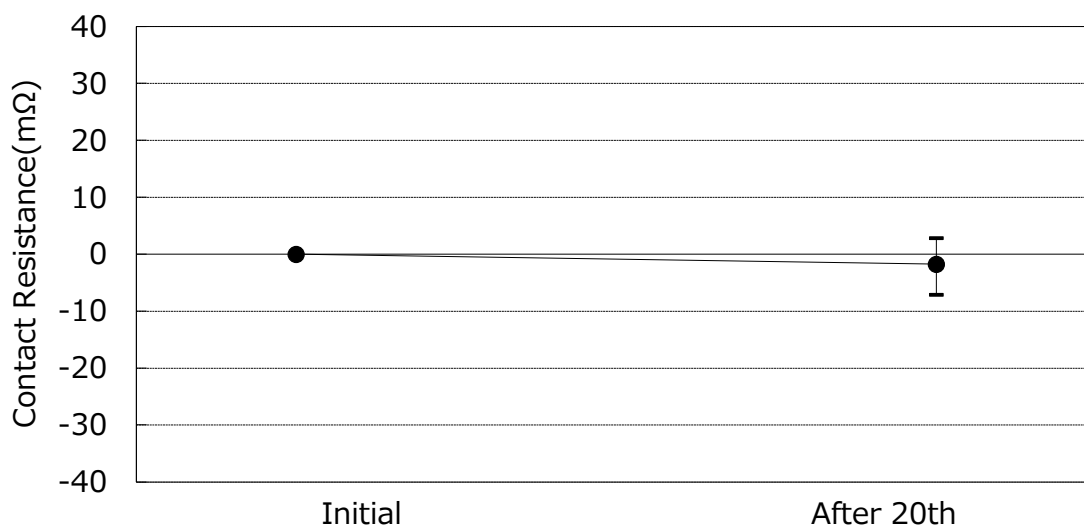
試験項目 Test Item	測定内容 Measurements		規格 Spec.	Set	n	データ/DATA					判定 Judge	
						AVE.	MAX.	MIN.	s	X±3s		
A Group 耐久性 Durability  ケーブル保持力 Cable retention force	接触抵抗 Contact Resistance (mΩ)	初期 Initial	AWG #44 1,080mΩ MAX.	5	200	928.258	975.79	872.72	28.635	1014.163	OK	
		20回挿抜後 After 20th Cycle	AWG #44 ΔR=40mΩMAX.			-1.744	2.86	-7.09	1.822	3.722	OK	
	GND抵抗 GND Resistance (mΩ)	初期 Initial	50mΩ MAX.	5	10	21.320	22.82	20.27	0.813	23.759	OK	
		20回挿抜後 After 20th Cycle	ΔR=40mΩMAX.			-0.198	1.00	-0.84	0.568	1.506	OK	
	40P	挿入力 Mating Force (N)	初期 Initial	30.0N MAX.	5	5	12.390	13.41	11.13	0.907	15.111	OK
			20回挿抜後 After 20th Cycle	30.0N MAX.			7.984	9.22	6.73	1.158	11.458	OK
		抜去力 Un-mating Force (N)	初期 Initial	4.0N MIN.	5	5	13.324	14.53	12.90	0.692	11.248	OK
			20回挿抜後 After 20th Cycle	4.0N MIN.			7.496	8.58	6.46	0.769	5.189	OK
	ケーブル保持力 (Cable retention force)		19.60N MIN.	5	5	32.750	35.06	31.35	1.563	28.061	OK	
	B Group 端子保持力 Contact Retention Force	PLUG	初期 Initial	0.50N MIN.	-	20	1.5 N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 1.5 N to a terminal.					OK
高温試験後 After high-temperature testing			0.50N MIN.	-	20	1.5 N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 1.5 N to a terminal.					OK	
RECE		初期 Initial	0.20N MIN.	-	20	0.528	0.60	0.46	0.038	0.414	OK	
		高温試験後 After high-temperature testing	0.20N MIN.	-	20	0.423	0.51	0.35	0.041	0.300	OK	
C Group コネクタロック強度 Connector 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					OK	
D Group 振動 衝撃 Vibration & Shock	接触抵抗 Contact Resistance (mΩ)	初期 Initial	AWG #44 1,080mΩ MAX.	5	200	925.731	975.81	872.11	25.687	1002.792	OK	
		振動後 After Vibration	AWG #44 ΔR=40mΩMAX.			-1.122	7.18	-11.88	3.950	10.728	OK	
		衝撃後 After Shock				3.740	12.10	-2.84	3.138	13.154	OK	
	GND抵抗 GND Resistance (mΩ)	初期 Initial	50mΩ MAX.	5	10	22.169	23.68	20.93	0.830	24.659	OK	
		振動後 After Vibration	ΔR=40mΩMAX.			-0.471	0.74	-3.12	1.088	2.793	OK	
		衝撃後 After Shock				0.339	2.88	-2.28	1.239	4.056	OK	
	電氣的瞬断 Electrical Discontinuity	振動試験中 During Vibration	1μsec. MAX.	5	5	瞬断無し No discontinuity					OK	
		衝撃試験中 During Shock				瞬断無し No discontinuity					OK	
	外観 Appearance	振動後 After Vibration	異常無き事 No abnormality	5	5	異常無し No abnormality					OK	
		衝撃後 After Shock				異常無し No abnormality					OK	

Table 2-2 試験結果/Test result

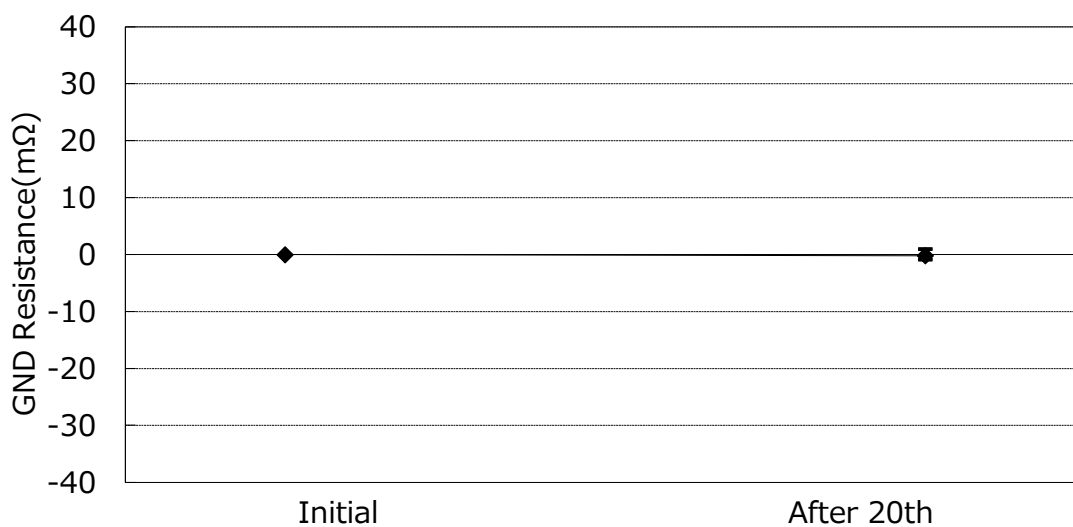
試験項目 Test Item	測定内容 Measurements		規格 Spec.	Set	n	データ/DATA					判定 Judge
						AVE.	MAX.	MIN.	s	X±3s	
E Group 熱衝撃 Thermal Shock	接触抵抗 Contact Resistance (mΩ)	初期 Initial	AWG #44 1,080mΩ MAX.	5	200	916.019	966.41	875.92	25.172	991.535	OK
		試験後 After Testing	AWG #44 ΔR=40mΩMAX.			2.829	7.03	-1.60	1.795	8.214	OK
	GND抵抗 GND Resistance (mΩ)	初期 Initial	50mΩ MAX.	5	10	21.764	23.31	20.42	0.946	24.602	OK
		試験後 After Testing	ΔR=40mΩMAX.			0.422	3.17	-1.98	1.624	5.294	OK
F Group 高温寿命 High Temp. Life	接触抵抗 Contact Resistance (mΩ)	初期 Initial	AWG #44 1,080mΩ MAX.	5	200	924.674	978.72	866.58	26.608	1004.498	OK
		試験後 After Testing	AWG #44 ΔR=40mΩMAX.			1.068	3.94	-2.21	1.338	5.082	OK
	GND抵抗 GND Resistance (mΩ)	初期 Initial	50mΩ MAX.	5	10	21.435	23.57	19.65	1.228	25.119	OK
		試験後 After Testing	ΔR=40mΩMAX.			-0.356	2.29	-2.15	1.516	4.192	OK
G Group 湿度(定常) High Humidity Life	接触抵抗 Contact Resistance (mΩ)	初期 Initial	AWG #44 1,080mΩ MAX.	5	200	934.674	988.72	876.58	26.608	1014.498	OK
		試験後 After Testing	AWG #44 ΔR=40mΩMAX.			-2.943	2.89	-9.66	2.276	3.885	OK
	GND抵抗 GND Resistance (mΩ)	初期 Initial	50mΩ MAX.	5	10	21.320	22.82	20.27	0.813	23.759	OK
		試験後 After Testing	ΔR=40mΩMAX.			-0.198	1.00	-0.84	0.568	1.506	OK
	絶縁抵抗 Insulation Resistance (MΩ)	初期 Initial	1000MΩ MIN.	5	100	2.31×10 <sup>4</sup> MΩ MIN.					OK
		試験後 After Testing	500MΩ MIN.			8.45×10 <sup>3</sup> MΩ MIN.					OK
耐電圧 D.W.Voltage	初期 Initial	異常無き事 No abnormality	5	100	異常無し No abnormality					OK	
	試験後 After Testing				異常無し No abnormality					OK	
H Group 湿度(サイクル) High Humidity Life	接触抵抗 Contact Resistance (mΩ)	初期 Initial	AWG #44 1,080mΩ MAX.	5	200	929.570	980.63	873.46	26.738	1009.784	OK
		耐久性後 After Durability	AWG #44 ΔR=40mΩMAX.			-2.059	-0.74	-3.39	0.483	-0.610	OK
		試験後 After Testing	AWG #44 ΔR=40mΩMAX.			-4.993	0.11	-10.26	1.952	0.863	OK
	GND抵抗 GND Resistance (mΩ)	初期 Initial	50mΩ MAX.	5	10	21.041	22.49	19.04	0.960	23.921	OK
		耐久性後 After Durability	AWG #44 ΔR=40mΩMAX.			0.535	2.59	-1.92	1.284	4.387	OK
		試験後 After Testing	ΔR=40mΩMAX.			0.102	1.76	-1.80	1.324	4.074	OK
	絶縁抵抗 Insulation Resistance (MΩ)	初期 Initial	1000MΩ MIN.	5	100	3.80×10 <sup>5</sup> MΩ MIN.					OK
		試験後 After Testing	500MΩ MIN.			1.01×10 <sup>4</sup> MΩ MIN.					OK
	耐電圧 D.W.Voltage	初期 Initial	異常無き事 No abnormality	5	100	異常無し No abnormality					OK
		試験後 After Testing				異常無し No abnormality					OK

### Table 2-3 試験結果 / Test result

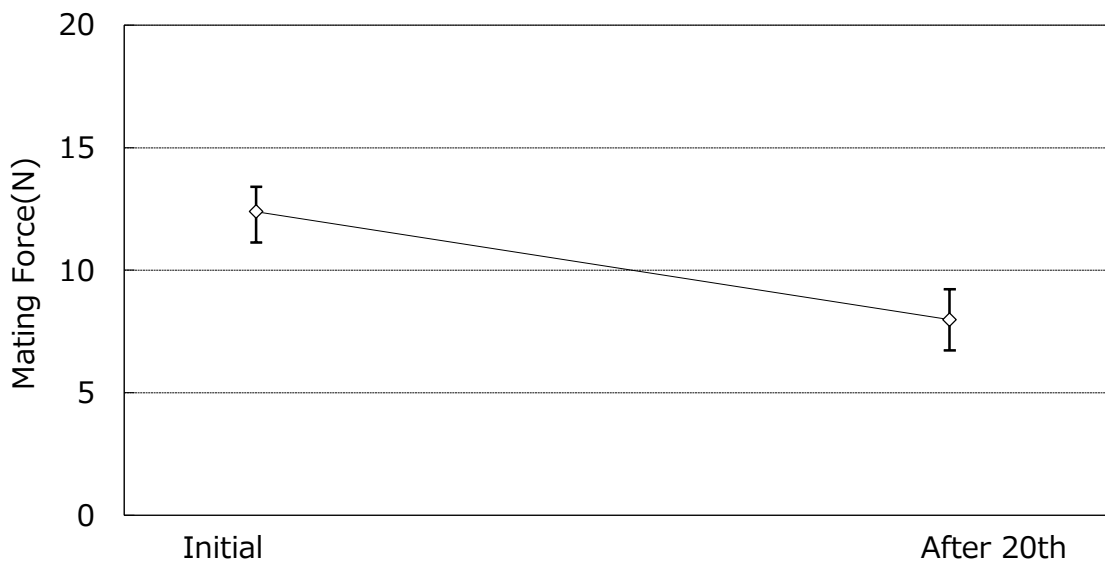
試験項目 Test Item	測定内容 Measurements		規格 Spec.	Set	n	データ/DATA					判定 Judge
						AVE.	MAX.	MIN.	s	X±3s	
J Group 塩水噴霧 Salt Water Spray	接触抵抗 Contact Resistance (mΩ)	初期 Initial	AWG #44 1,080mΩ MAX.	5	200	928.713	979.99	871.54	30.356	1019.781	OK
		試験後 After Testing	AWG #44 ΔR=40mΩMAX.			-0.091	7.53	-7.64	3.128	9.293	OK
	GND抵抗 GND Resistance (mΩ)	初期 Initial	50mΩ MAX.	5	10	22.846	24.74	21.29	1.043	25.975	OK
		試験後 After Testing	ΔR=40mΩMAX.			-0.341	1.09	-3.21	1.643	4.588	OK
K Group 硫化水素ガス (H2S) GAS (H2S)	接触抵抗 Contact Resistance (mΩ)	初期 Initial	AWG #44 1,080mΩ MAX.	5	200	935.289	979.76	874.65	26.289	1014.156	OK
		試験後 After Testing	AWG #44 ΔR=40mΩMAX.			-1.717	9.84	-10.59	4.945	13.118	OK
	GND抵抗 GND Resistance (mΩ)	初期 Initial	50mΩ MAX.	5	10	20.807	21.91	19.34	1.140	24.227	OK
		試験後 After Testing	ΔR=40mΩMAX.			0.080	2.06	-3.03	1.474	4.502	OK
L Group 半田付け性 Solderability	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
M Group 半田耐熱性 Soldering Heat Resistance	外観 Appearance		異常無き事 No abnormality	10	10	異常無し No abnormality					OK
N Group 温度上昇 Temperature Rise	AWG #44 0.15A/Pin (Total 6.0 A)		ΔT=30℃ MAX.	5	5	ΔT= 12.1℃ MAX.					OK



Graph1. 接触抵抗値の変化 (A Group : 耐久性)  
A change of contact resistance (A Group:Durability)

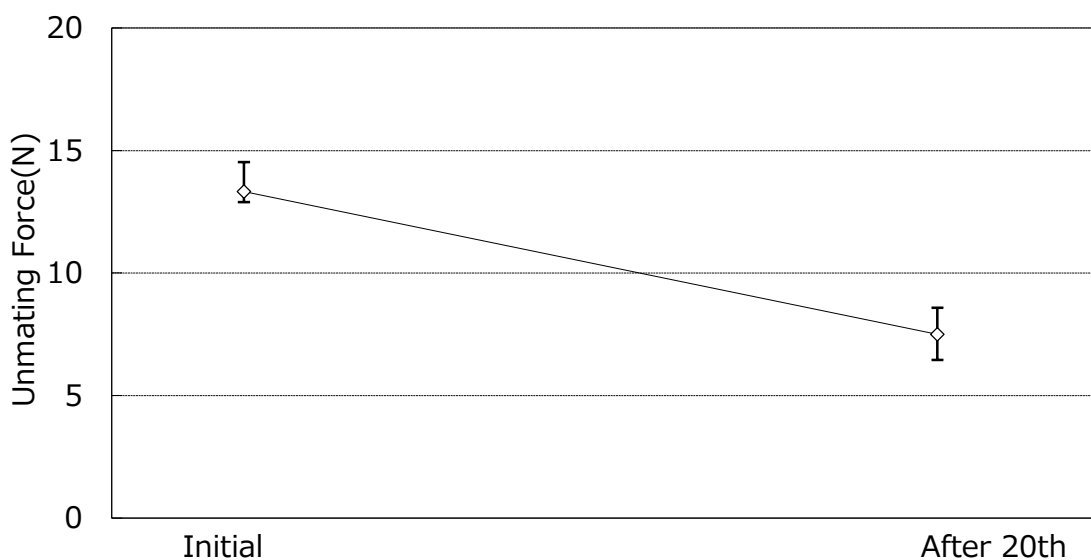


Graph2. GND抵抗値の変化 (A Group : 耐久性)  
A change of GND resistance (A Group:Durability)



Graph3. 挿入力の変化 (A Group : 耐久性)

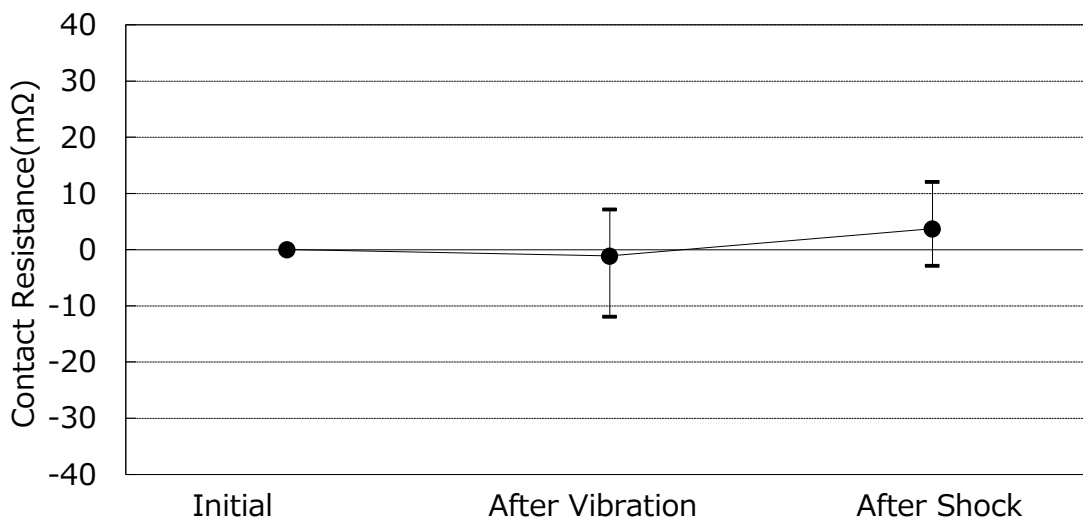
A change of mating force (A Group:Durability)



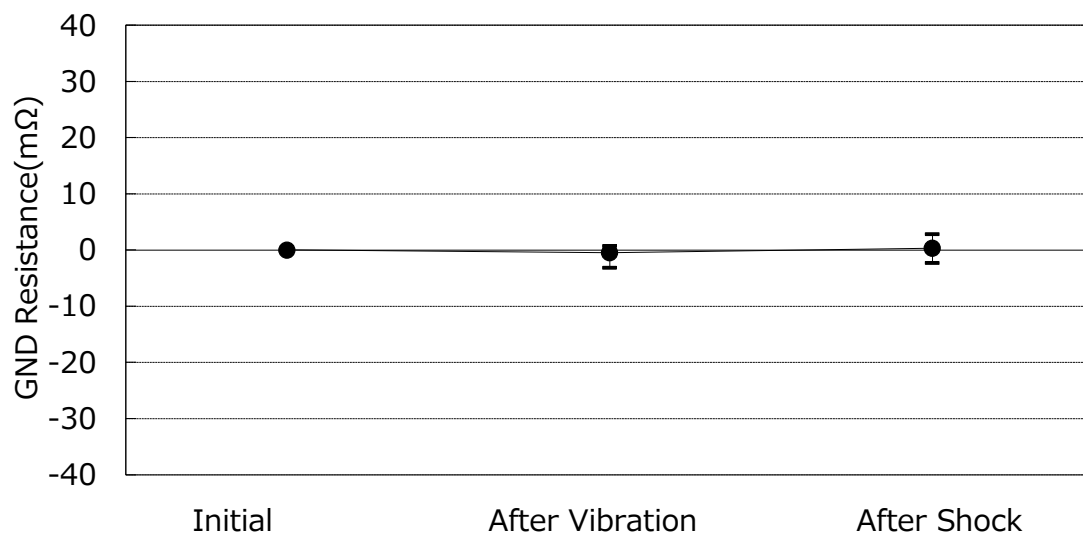
Graph4. 抜去力の変化 (A Group : 耐久性)

A change of unmating force (A Group:Durability)

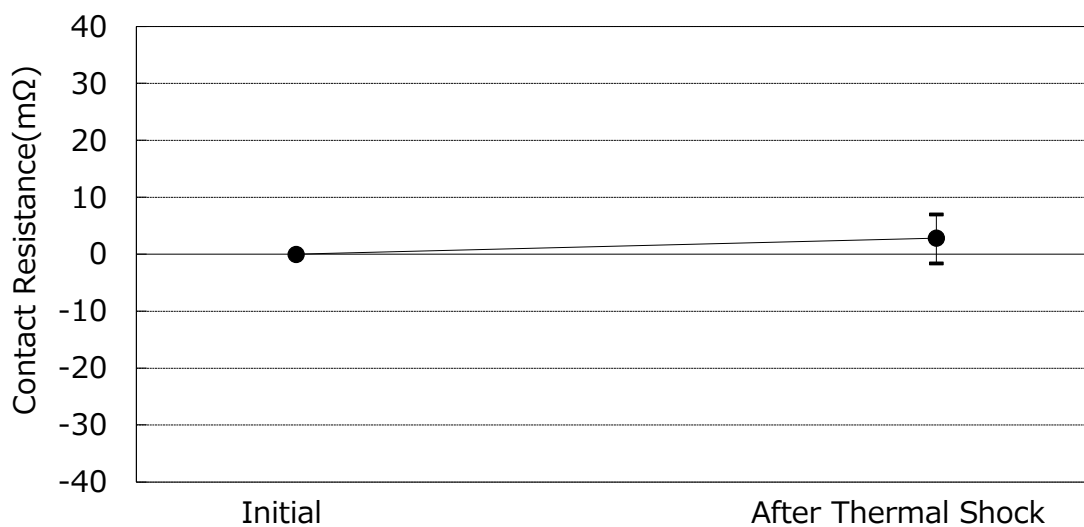




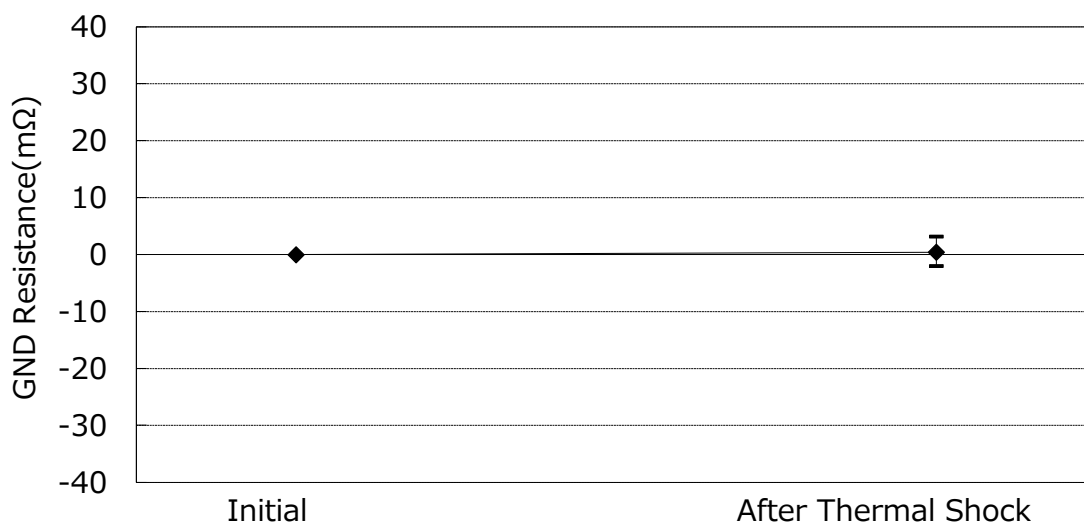
Graph5. 接触抵抗値の変化 (D Group : 振動衝撃)  
A change of contact resistance (D Group:Vibration & Shock)



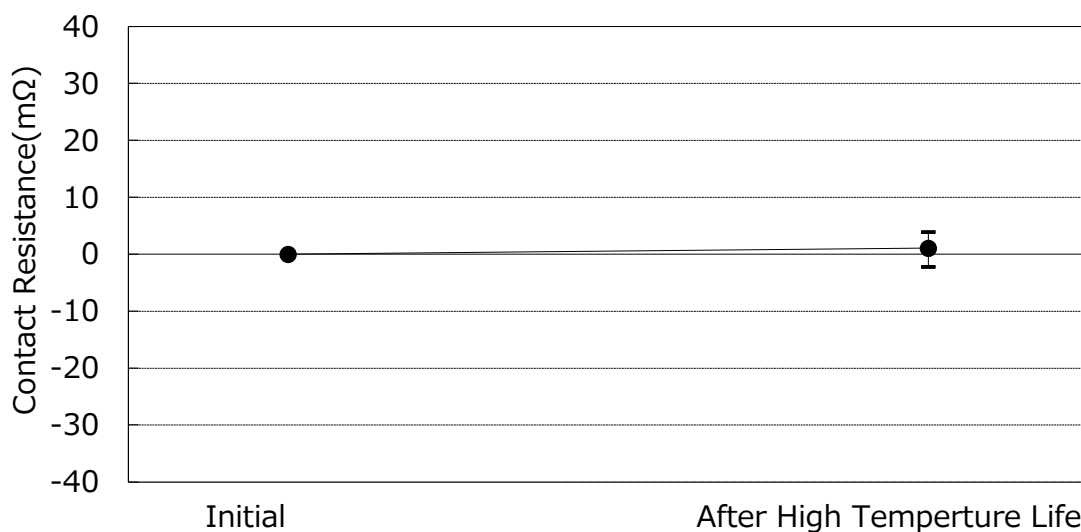
Graph6. GND抵抗値の変化 (D Group : 振動衝撃)  
A change of GND resistance (D Group:Vibration & Shock)



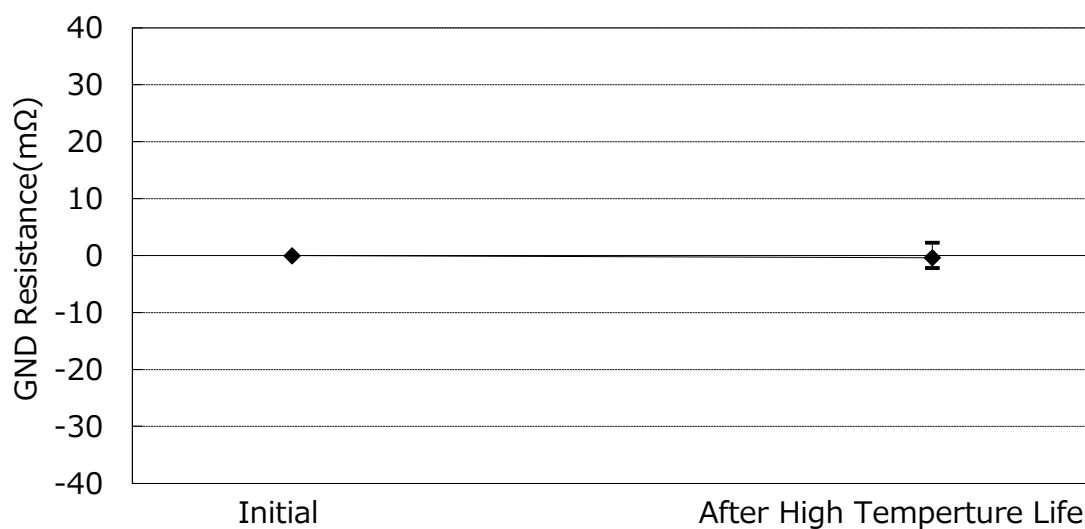
Graph7. 接触抵抗値の変化 (E Group : 熱衝撃)  
A change of contact resistance (E Group:Thermal Shock)



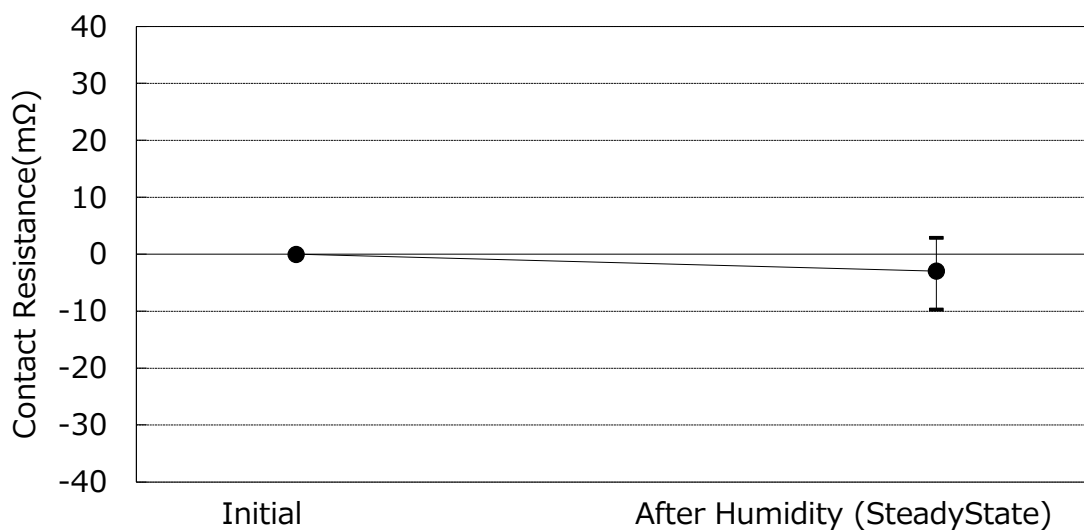
Graph8. GND抵抗値の変化 (E Group : 熱衝撃)  
A change of GND resistance (E Group:Thermal Shock)



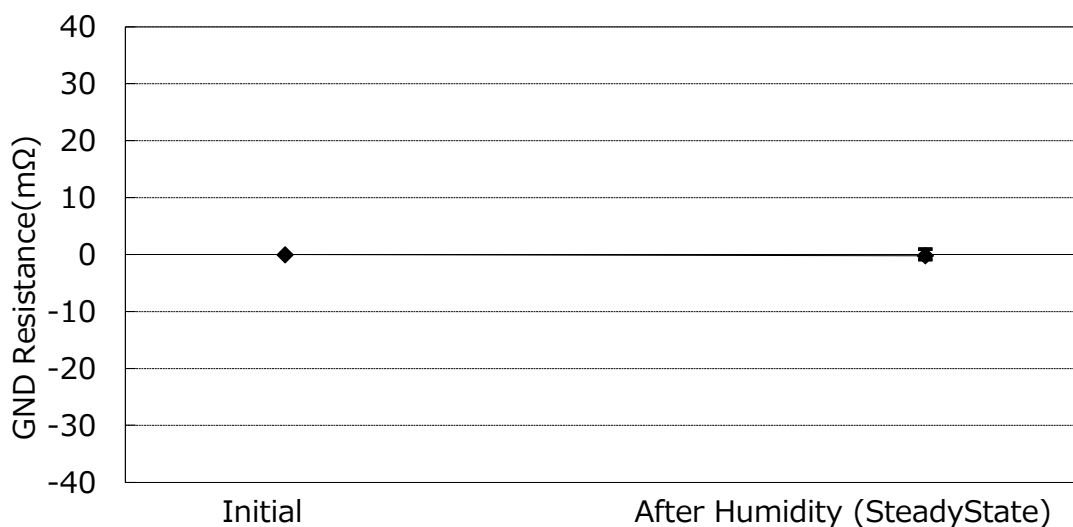
Graph9. 接触抵抗値の変化 (F Group : 高温寿命)  
A change of contact resistance (F Group:High Temperature Life)



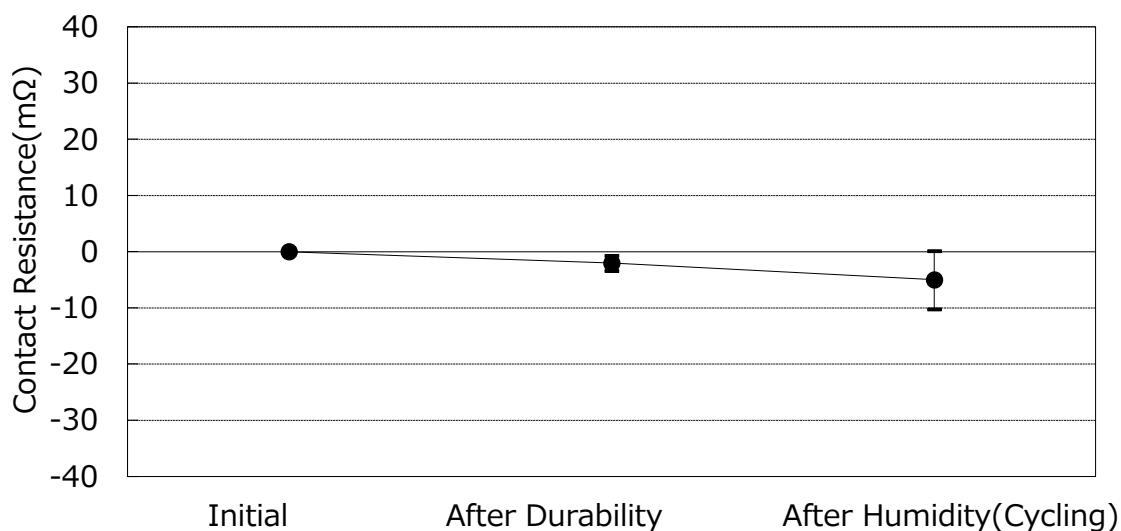
Graph10. GND抵抗値の変化 (F Group : 高温寿命)  
A change of GND resistance (F Group:High Temperature Life)



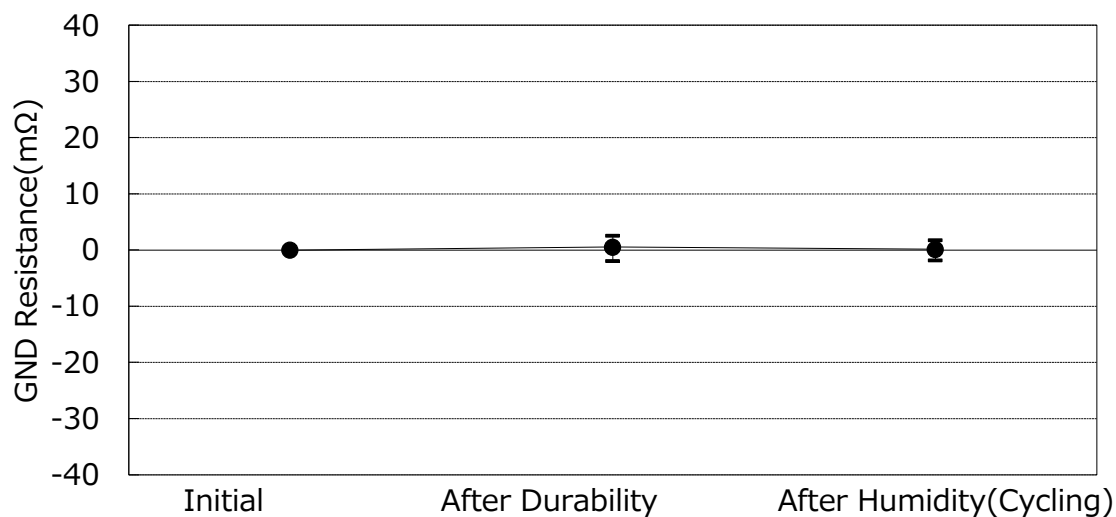
Graph11. 接触抵抗値の変化 (G Group : 湿度定常)  
A change of contact resistance (G Group:Humidity (SteadyState))



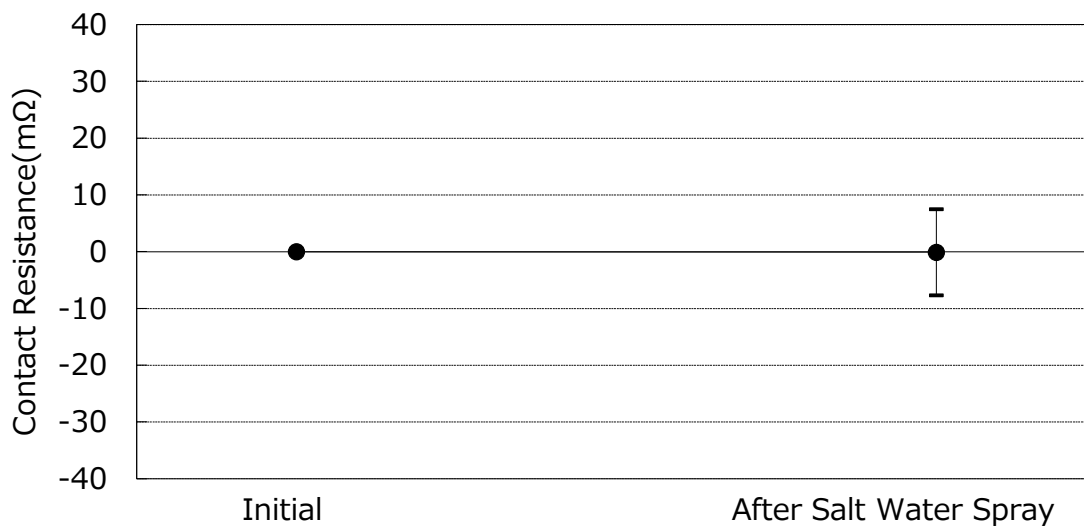
Graph12. GND抵抗値の変化 (G Group : 湿度定常)  
A change of GND resistance (G Group:Humidity (SteadyState))



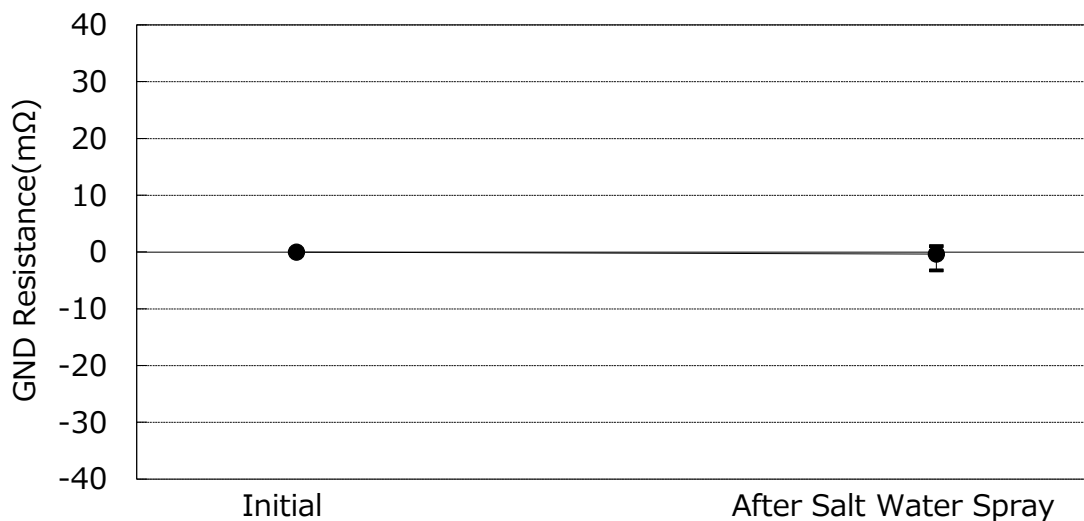
Graph13. 接触抵抗値の変化 (H Group : 湿度サイクル)  
A change of contact resistance (H Group:Humidity(Cycling))



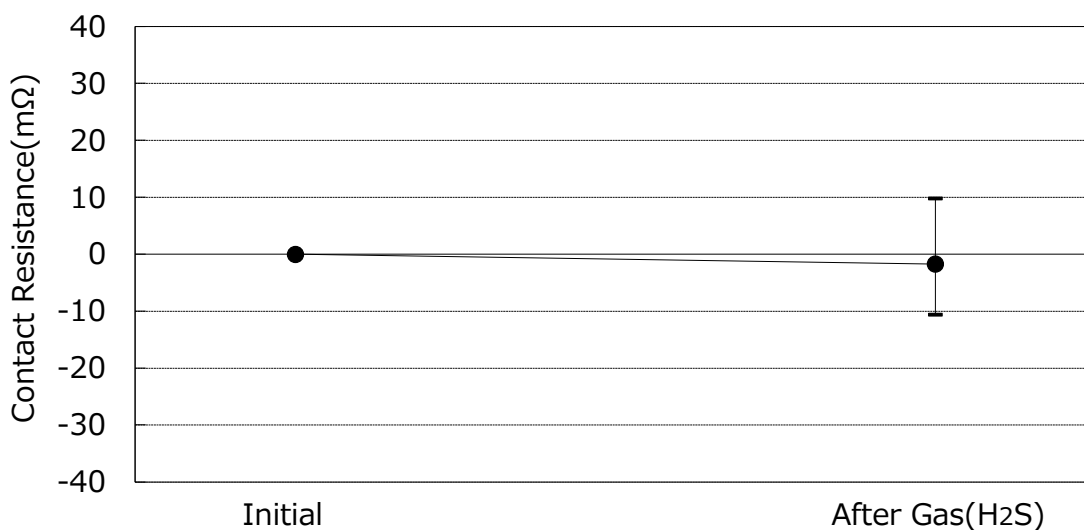
Graph14. GND抵抗値の変化 (H Group : 湿度サイクル)  
A change of GND resistance (H Group:Humidity(Cycling))



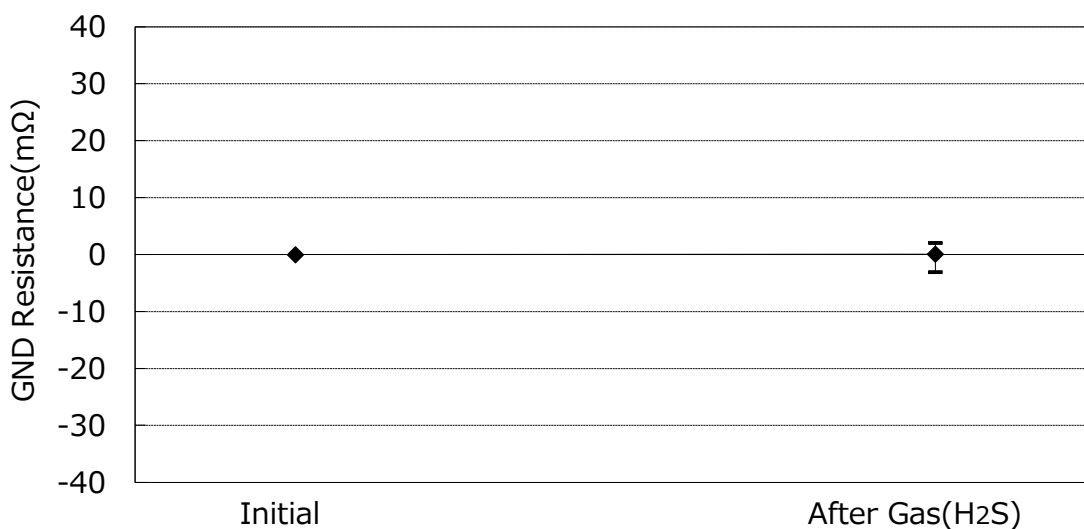
Graph15. 接触抵抗値の変化 (J Group : 塩水噴霧)  
A change of contact resistance (J Group:Salt Water Spray)



Graph16. GND抵抗値の変化 (J Group : 塩水噴霧)  
A change of GND resistance (J Group:Salt Water Spray)



Graph17. 接触抵抗値の変化 (K Group : 硫化水素ガス(H<sub>2</sub>S))  
A change of contact resistance (K Group:H<sub>2</sub>S Gas)



Graph18. GND抵抗値の変化 (K Group : 硫化水素ガス(H<sub>2</sub>S))  
A change of GND resistance (K Group:H<sub>2</sub>S Gas)