CABLINE®-VS

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

Test Report

Product Specification no. PRS-1427

Rev.	ECN	Date	Prepared by	Checked by	Approved by
10	T21122	October 28, 2021	R.Morita	T.Masunaga	H.Ikari
9	T18072	July 2, 2018	A.Koyanagi	T.Masunaga	H.Ikari
8	T15081	Sept. 29 2015	H.Ikari	-	Y.Shimada
7	T14138	Oct. 22 2014	H.Ikari	-	E.Kawabe

1. Purpose

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

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

4. Result

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

All the specimens met the requirements of PRS-1427.

Table 1 Test Sequence and Sample Quantity

Test Item	Group											
	A	B	C	D	E	F	G	H	J	K	L	M
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					
Dielectric withstanding 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										
Cable retention force	8											
Vibration			2									
Shock			4									
Thermal shock				2								
High temperature life		2			2							
Humidity (Steady State)						4						
Humidity (Cycling)							6					
Saltwater spray								2				
H_2S gas									2			
Solder ability										1		
Soldering heat resistance											1	
Specimen quantity.	5 pcs.	20 pos.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	10 pcs.	10 pcs.	5 pcs.

※Numbers indicate test sequences

Table.2-1 Test result

Test Item	Contents of Measurement		Specifications	Set	N	Data					Judgment
						AVE.	MAX.	MIN.	s	X±3s	
A Group Durability ↓ Cable Retention Force	C/T Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	496.393	509.94	488.78	6.287	515.254	OK
		After Testing	AWG#40 ΔR=40mΩMAX.			-0.673	4.77	-7.03	2.118	5.681	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	9.852	10.55	9.40	0.435	11.157	OK
		After Testing	ΔR=40mΩ MAX.			-0.813	-0.43	-1.18	0.267	-0.012	OK
	20P Mating Force (N)	Initial	9.45N MAX.	5	5	6.560	7.09	5.86	0.570	8.270	OK
		After Testing	9.45N MAX.			4.600	4.78	4.49	0.130	4.990	OK
	20P Un mating Force (N)	Initial	2.0N MIN.	5	5	5.110	5.47	4.75	0.310	4.180	OK
		After Testing	2.0N MIN.			4.320	4.49	4.21	0.120	3.960	OK
	20P Cable Retention Force (N)		9.8N MIN.	5	5	86.280	91.80	79.10	5.020	71.220	OK
	30P Mating Force(N)	Initial	12.15N MAX.	5	5	9.174	9.86	8.20	0.663	11.163	OK
		After Testing	12.15N MAX.			5.372	6.08	4.75	0.520	6.932	OK
	30P Un mating Force (N)	Initial	3.0N MIN.	5	5	7.824	9.30	7.26	0.838	5.310	OK
		After Testing	3.0N MIN.			5.778	6.05	5.50	0.254	5.016	OK
	30P Cable Retention Force (N)		14.7N MIN.	5	5	84.227	92.28	76.40	7.942	60.401	OK
	40P Mating Force (N)	Initial	16.2N MAX.	5	5	9.983	10.47	9.61	0.441	11.306	OK
		After Testing	16.2N MAX.			6.833	6.89	6.76	0.067	7.034	OK
	40P Un mating Force (N)	Initial	4.0N MIN.	5	5	9.377	9.68	8.97	0.366	8.279	OK
		After Testing	4.0N MIN.			6.687	7.13	6.25	0.440	5.367	OK
	40P Cable Retention Force (N)		19.6N MIN.	5	5	79.254	83.69	75.73	3.867	67.653	OK
	50P Mating Force (N)	Initial	20.25N MAX.	5	5	15.051	15.88	14.55	0.618	16.905	OK
		After Testing	20.25N MAX.			9.285	9.73	8.77	0.463	10.674	OK
	50P Un mating Force (N)	Initial	5.0N MIN.	5	5	11.970	12.79	11.09	0.778	9.636	OK
		After Testing	5.0N MIN.			9.984	10.64	9.08	0.721	7.821	OK
	50P Cable Retention Force (N)		24.50N MIN.	5	5	109.948	117.40	106.11	4.592	96.172	OK

Table.2-2 Test result

Test Item	Contents of Measurement		Specifications	Set	N	Data AVE.	Data MAX.	Data MIN.	Data s	Data X±3s	Judgment
B Group High Temp. Life	PLUG C/T Retention Force (N)	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
	RECE C/T Retention Force (N)	Initial	0.2N MIN.	—	20	0.788	0.98	0.65	0.094	0.506	OK
		After Testing	0.2N MIN.	—	20	0.728	0.98	0.62	0.089	0.461	OK
C Group Vibration ↓ Shock	C/T Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	494.786	499.85	488.75	2.579	502.523	OK
		After Vibration	AWG#40 ΔR=40mΩMAX.			3.745	6.56	1.16	1.001	6.748	OK
		After Shock	AWG#40 ΔR=40mΩMAX.			-2.937	0.21	-6.27	1.348	1.107	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	12.757	13.11	12.28	0.429	14.044	OK
		After Vibration	ΔR=40mΩ MAX.			0.110	0.45	-0.07	0.295	0.995	OK
		After Shock	ΔR=40mΩMAX.			0.063	0.33	-0.12	0.236	0.771	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 occur.	5	5	No Abnormality					OK
		After Shock				No Abnormality					OK

Table.2-3 Test result

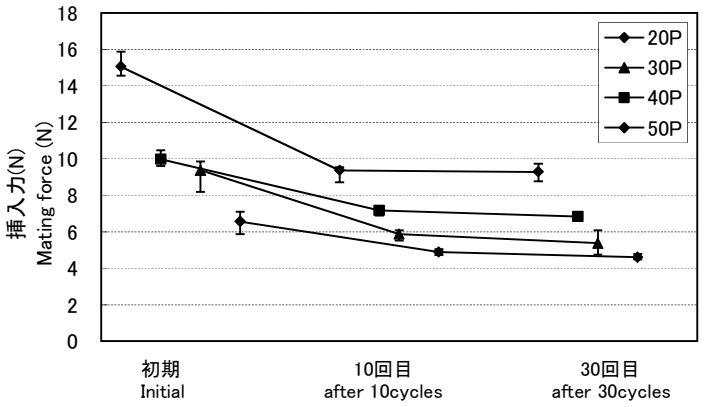
Test Item	Contents of Measurement		Specifications	Set	N	Data					Judgment
						AVE.	MAX.	MIN.	s	X±3s	
D Group Thermal Shock	C/T Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	496.053	500.19	493.26	1.553	500.712	OK
		After Testing	AWG#40 ΔR=40mΩMAX.			0.970	4.50	-2.53	1.724	6.142	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	12.730	13.05	12.23	0.439	14.047	OK
		After Testing	ΔR=40mΩMAX.			0.280	0.81	-0.20	0.507	1.801	OK
E Group High Temp. Life	C/T Resistance (mΩ)	Initial	AWG#40 600mΩMAX	5	200	493.399	505.29	487.84	4.960	508.279	OK
		After Testing	AWG#40 ΔR=40mΩMAX.			3.548	6.26	1.05	1.182	7.094	
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	12.460	12.79	12.01	0.404	13.672	OK
		After Testing	ΔR=40mΩMAX.			-0.030	0.11	-0.25	0.193	0.549	
F Group Humidity (Steady State)	C/T Resistance (mΩ)	Initial	AWG#40 600mΩMAX	5	200	496.057	500.77	490.69	2.073	502.276	OK
		After Testing	AWG#40 ΔR=40mΩMAX.			0.140	3.88	-3.20	1.354	4.202	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	11.809	12.16	11.40	0.385	12.964	OK
		After Testing	ΔR=40mΩMAX.			-0.149	0.17	-0.32	0.279	0.688	OK
	Insulation Resistance (MΩ)	Initial	1000MΩMIN.	5	100	2.0×10^5 MΩMIN.					OK
		After Testing	500MΩMIN.			1.1×10^4 MΩMIN.					OK
	D. W. Voltage	Initial	No abnormalities such as creeping discharge, flashover, insulator breakdown occur.	5	100	No Abnormality					OK
		After Testing				No Abnormality					OK

Table.2-4 Test result

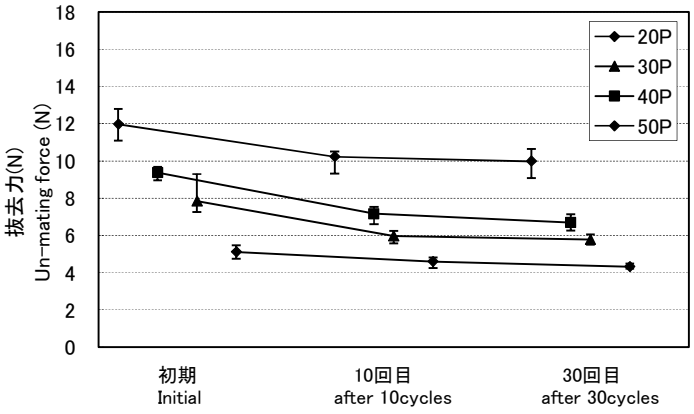
Test Item	Contents of Measurement		Specifications	Set	N	Data					Judgment
						AVE.	MAX.	MIN.	s	X±3s	
G Group Humidity (Cycling)	C/T Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	496.515	503.12	489.21	2.926	505.293	OK
		After Testing	AWG#40 ΔR=40mΩMAX.			1.095	3.96	-2.73	1.544	5.727	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	12.364	12.79	11.98	0.405	13.579	OK
		After Testing	ΔR=40mΩMAX.			0.139	0.61	-0.39	0.501	1.642	OK
	Insulation Resistance (MΩ)	Initial	1000MΩMIN.	5	100	2.1×10^5 MΩMIN.					OK
		After Testing	500MΩMIN.			1.2×10^4 MΩMIN.					OK
	D. W. Voltage	Initial	No abnormalities such as creeping discharge, flashover, insulator breakdown occur	5	100	No Abnormality					OK
		After Testing				No Abnormality					OK
H Group (Salt Spray)	C/T Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	495.713	499.64	490.03	1.924	501.485	OK
		After Testing	AWG#40 ΔR=40mΩMAX.			0.297	2.89	-2.11	1.035	3.402	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	12.367	12.64	11.98	0.325	13.342	OK
		After Testing	ΔR=40mΩMAX.			0.297	0.72	-0.34	0.415	1.542	OK
J Group Gas(H_2S)	C/T Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	500.358	503.13	497.99	1.226	504.036	OK
		After testing	AWG#40 ΔR=40mΩMAX.			0.572	3.11	-2.29	1.276	4.400	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	10.660	10.94	10.36	0.294	11.542	OK
		After Testing	ΔR=40mΩMAX.			0.342	0.97	-0.58	0.813	2.781	OK

Table.2-5 Test result

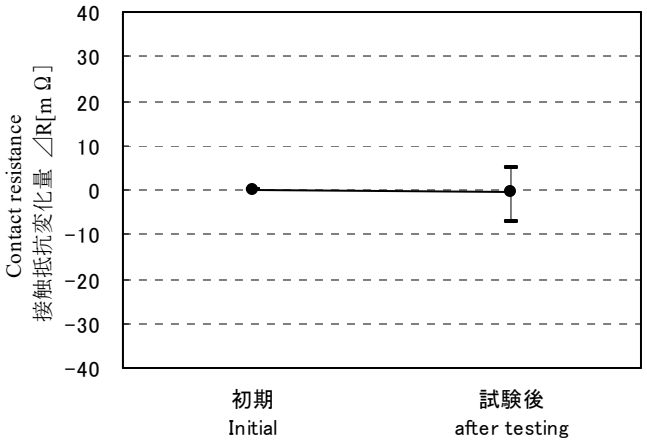
Test Item	Contents of Measurement	Specifications	Set	N	Data					Judgment
					AVE.	MAX.	MIN.	s	X±3s	
K Group Solder ability	Appearance	More than 95% of the dipped surface shall be evenly wet.	10	10	Wet 95% MIN.					OK
L Group Soldering Heat Resistance	Appearance	No abnormality adversely affecting the performance shall occur.	10	10	No Abnormality					OK
M Group Temp. Rising	AWG#40 0.3A(40P)	ΔT=30℃MAX.	5	5	ΔT=28℃MAX.					OK



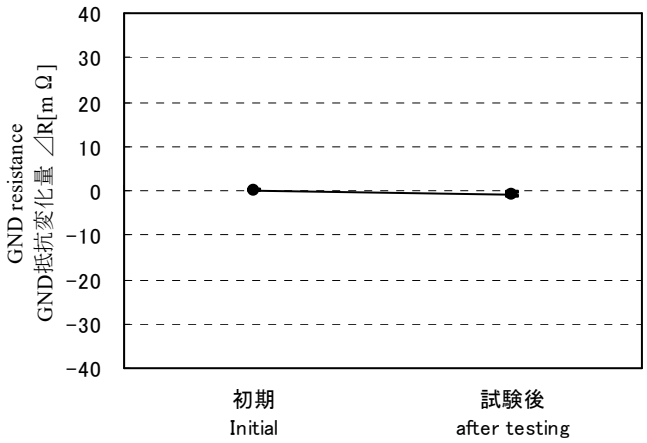
Graph1. A change of mating force (A Group:Durability)



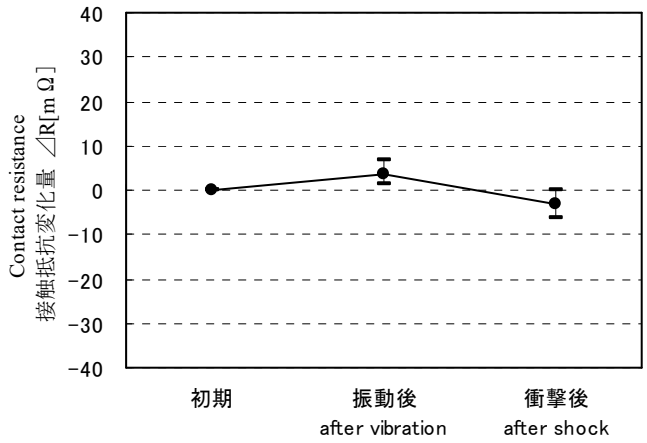
Graph 2. A change of un mating force (A Group:Durability)



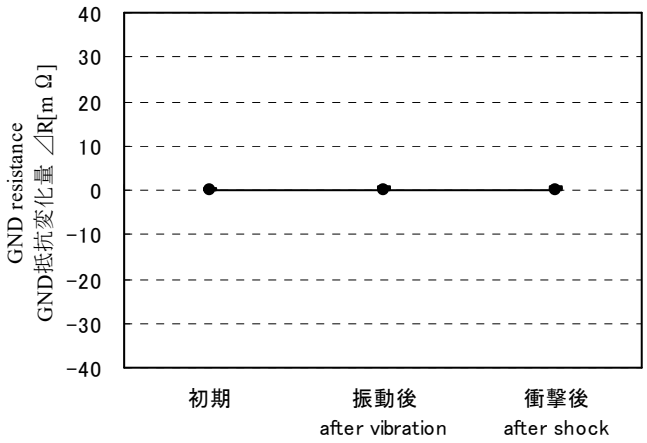
Graph3. A change of contact resistance (A Group:Durability)



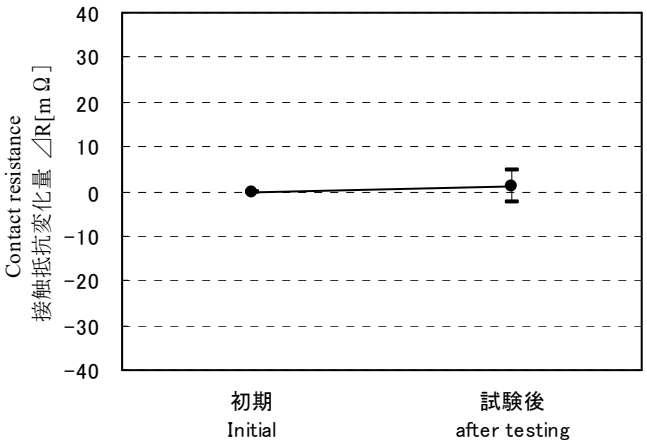
Graph4. A change of GND resistance (A Group:Durability)



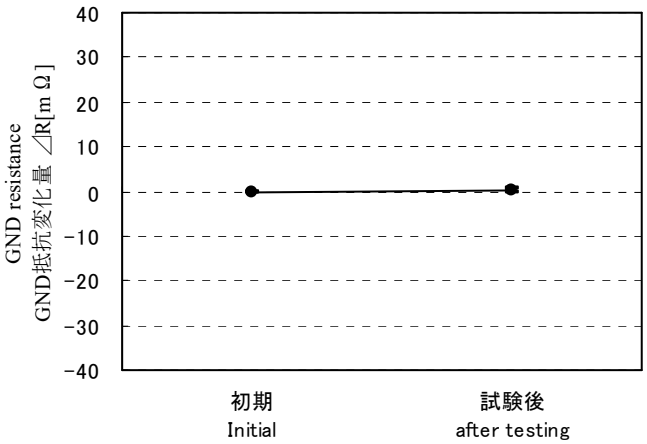
Graph5． A change of contact resistance(C Group:Vibration/Shock)



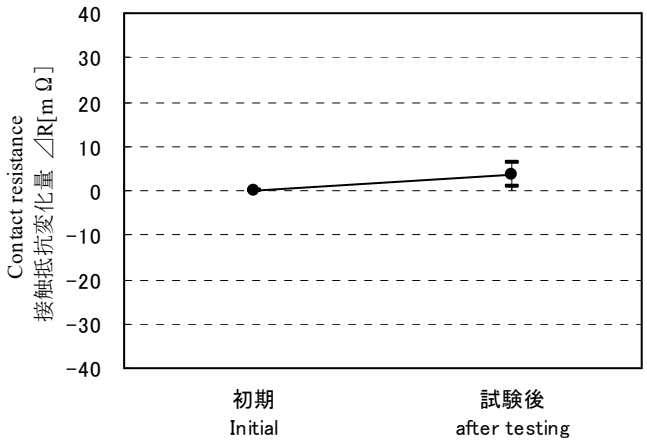
Graph6． A change of GND resistance(C Group:Vibration/Shock)



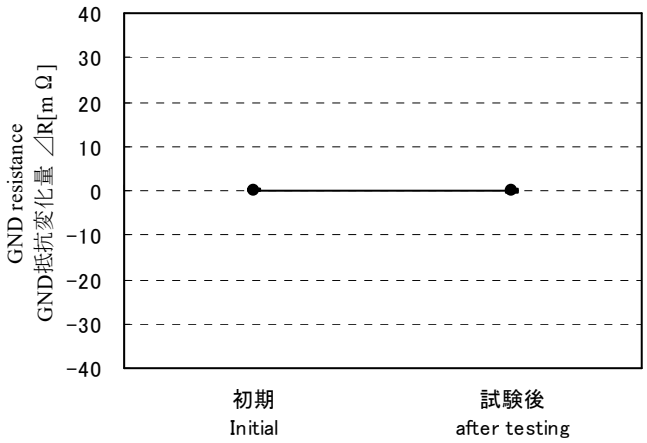
Graph7． A change of contact resistance (D Group:Thermal shock)



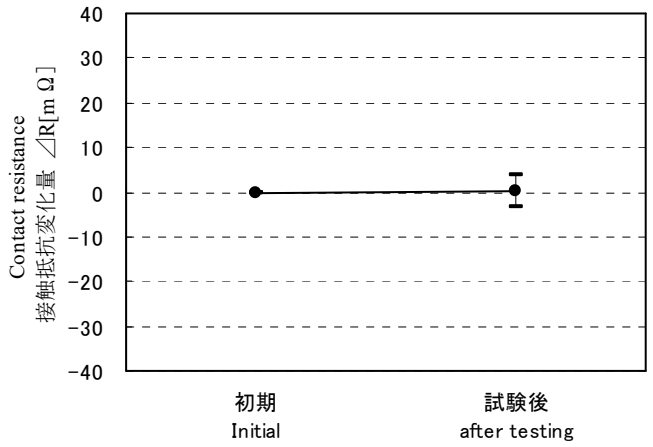
Graph8． A change of GND resistance (D Group:Thermal shock)



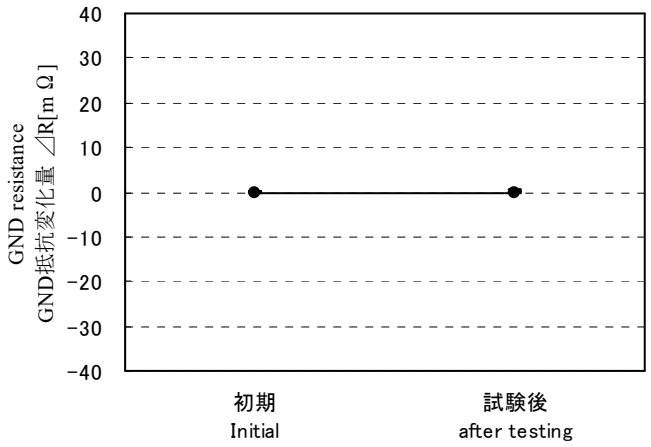
Graph9． A change of contact resistance (E Group:High temp.life)



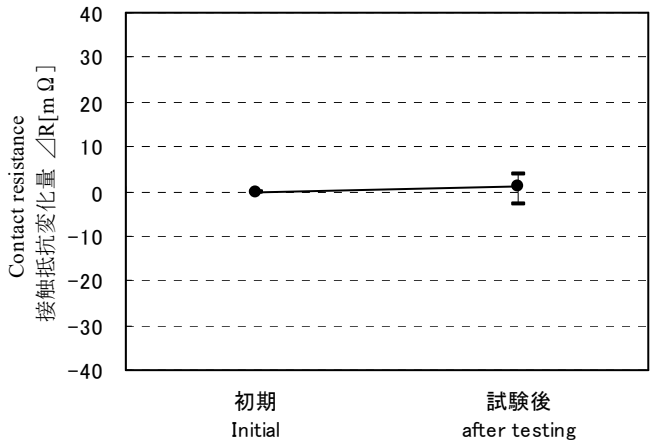
Graph10． A change of GND resistance (E Group:High temp.life)



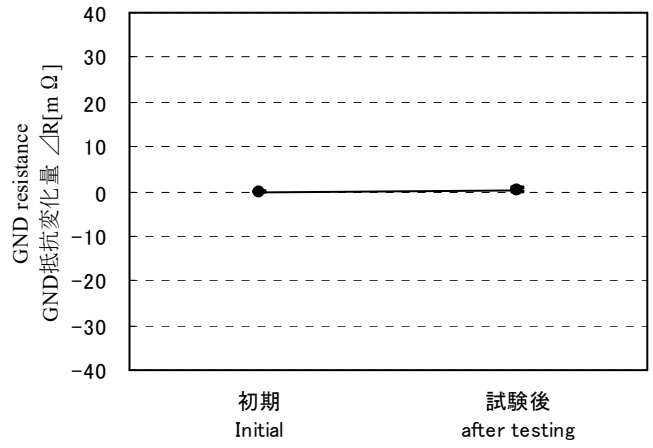
Graph11. A change of contact resistance (F Group: Humidity(Steady state))



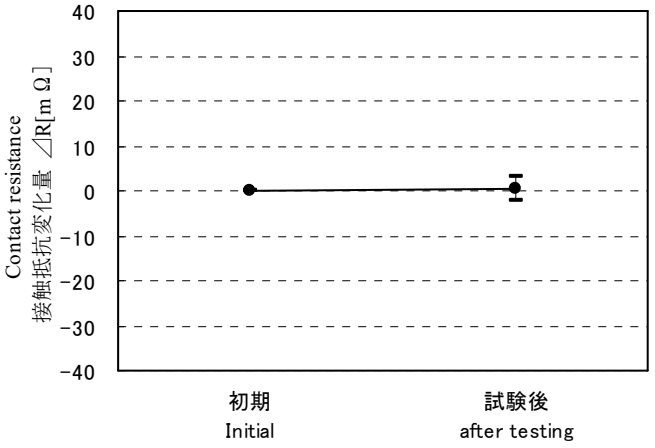
Graph12. A change of GND resistance (F Group: Humidity(Steady state))



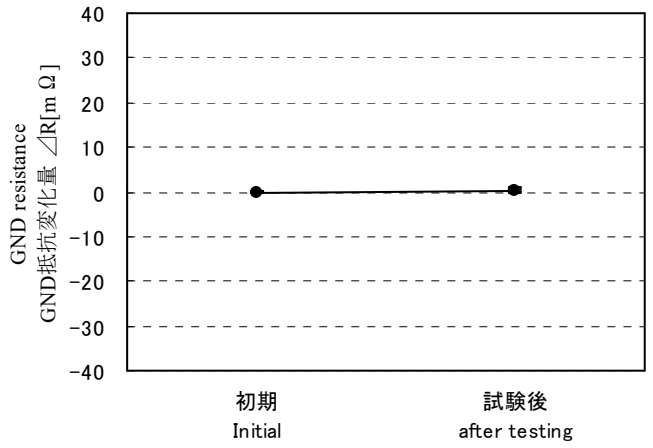
Graph 13. A change of contact resistance (G Group:Humidity(Cycling))



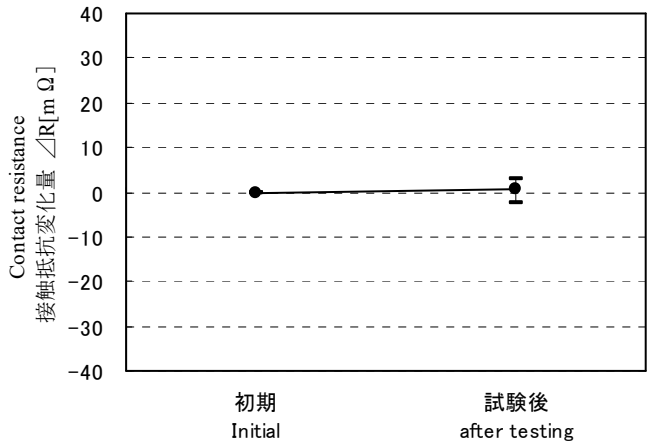
Graph14. A change of GND resistance (G Group:Humidity(Cycling))



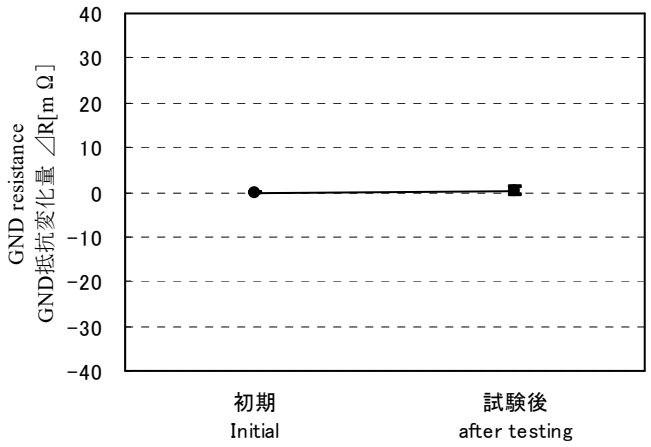
Graph15. A change of contact resistance (H Group:Salt spray)



Graph16. A change of GND resistance (H Group:Salt spray)



Graph17． A change of contact resistance (J Group:Gas(H_2S))



Graph18． A change of contact resistance (J Group:Gas(H_2S))