CABLINE®-VS

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

Test Report

Product Specification no. PRS-1427

Rev.	ECN	Date	Prepared by	Checked by	Approved by
6	T21124	October 29, 2021	R.Morita	T.Masunaga	H.Ikari
5	T18073	July 2, 2018	A.Koyanagi	T.Masunaga	H.Ikari
4	T15081	Sept. 29 2015	H.Ikari	-	Y.Shimada
3	T15004	Jan. 8 2015	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. 20453-2**T-###）
(2) CABLINE-VS RECEPTACLE ASS'Y （Part No. 20455-#**E-#6#）

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	532.847	543.26	523.81	4.811	547.280	OK
		After Testing	AWG#40 ΔR=40mΩMAX.			-2.640	0.53	-4.89	1.405	1.575	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	13.102	13.51	12.70	0.318	14.056	OK
		After Testing	ΔR=40mΩ MAX.			-0.227	0.32	-0.79	0.368	0.877	OK
	20P Mating Force (N)	Initial	9.45N MAX.	5	5	6.614	7.19	5.91	0.534	8.216	OK
		After Testing	9.45N MAX.			4.626	4.96	4.31	0.265	5.421	OK
	20P Un mating Force (N)	Initial	2.0N MIN.	5	5	5.262	5.54	4.97	0.209	4.635	OK
		After Testing	2.0N MIN.			4.472	4.76	4.18	0.235	3.767	OK
	20P Cable Retention Force (N)		9.8N MIN.	5	5	84.910	92.40	78.00	5.449	68.563	OK
	30P Mating Force(N)	Initial	12.15N MAX.	5	5	8.280	8.40	8.12	0.140	8.700	OK
		After Testing	12.15N MAX.			5.781	5.99	5.56	0.219	6.438	OK
	30P Un mating Force (N)	Initial	3.0N MIN.	5	5	6.540	6.82	6.40	0.241	5.817	OK
		After Testing	3.0N MIN.			5.332	5.48	5.21	0.135	4.927	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	10.917	11.82	10.11	0.859	13.494	OK
		After Testing	16.2N MAX.			7.928	8.45	7.53	0.470	9.338	OK
	40P Un mating Force (N)	Initial	4.0N MIN.	5	5	9.126	9.93	8.39	0.770	6.816	OK
		After Testing	4.0N MIN.			8.005	8.39	7.43	0.505	6.490	OK
	40P Cable Retention Force (N)		19.6N MIN.	5	5	86.280	91.82	79.12	5.020	71.220	OK
	50P Mating Force (N)	Initial	20.25N MAX.	5	5	13.418	14.22	12.55	0.741	15.641	OK
		After Testing	20.25N MAX.			9.820	10.43	9.21	0.461	11.203	OK
	50P Un mating Force (N)	Initial	5.0N MIN.	5	5	11.928	12.68	11.18	0.622	10.062	OK
		After Testing	5.0N MIN.			9.886	10.56	9.23	0.491	8.413	OK
	50P Cable Retention Force (N)		24.50N MIN.	5	5	107.700	115.2	100.34	5.630	90.810	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	0.775	0.99	0.62	0.087	0.514	OK
		After Testing	0.2N MIN.	—	20	0.748	0.95	0.61	0.089	0.481	OK
C Group Vibration ↓ Shock	C/T Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	532.522	536.16	528.75	1.676	537.550	OK
		After Vibration	AWG#40 ΔR=40mΩMAX.			-0.334	2.40	-3.20	1.164	3.158	OK
		After Shock	AWG#40 ΔR=40mΩMAX.			-1.295	1.28	-3.56	1.058	1.879	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	13.707	14.22	12.98	0.456	15.075	OK
		After Vibration	ΔR=40mΩ MAX.			0.228	1.09	-0.38	0.605	2.043	OK
		After Shock	ΔR=40mΩMAX.			0.127	0.39	-0.14	0.188	0.691	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

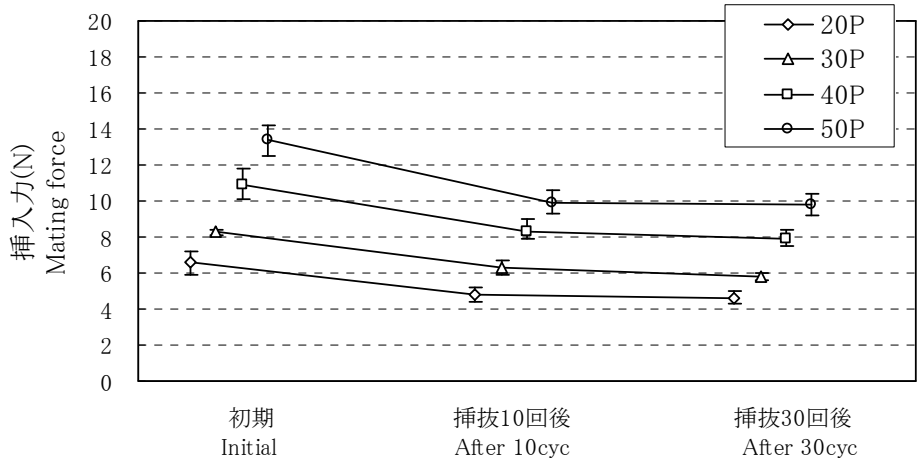
Test Item	Contents of Measurement		Specifications	Set	N	Data					Judgment
						AVE.	MAX.	MIN.	s	X±3s	
D Group Thermal Shock	C/T Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	531.509	535.33	528.57	1.441	535.832	OK
		After Testing	AWG#40 ΔR=40mΩMAX.			0.735	3.20	-1.95	1.185	4.290	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	14.145	14.49	13.77	0.256	14.913	OK
		After Testing	ΔR=40mΩMAX.			0.295	1.21	-0.28	0.574	2.017	OK
E Group High Temp. Life	C/T Resistance (mΩ)	Initial	AWG#40 600mΩMAX	5	200	530.851	535.34	526.32	2.238	537.565	OK
		After Testing	AWG#40 ΔR=40mΩMAX.			1.644	4.42	-1.26	1.387	5.805	
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	13.778	14.55	13.35	0.443	15.107	OK
		After Testing	ΔR=40mΩMAX.			0.245	0.77	-0.29	0.429	1.532	
F Group Humidity (Steady State)	C/T Resistance (mΩ)	Initial	AWG#40 600mΩMAX	5	200	529.701	534.02	523.83	2.264	536.493	OK
		After Testing	AWG#40 ΔR=40mΩMAX.			0.044	3.51	-2.89	1.259	3.821	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	14.545	15.51	13.82	0.598	16.339	OK
		After Testing	ΔR=40mΩMAX.			-0.113	1.71	-1.29	1.034	2.989	OK
	Insulation Resistance (MΩ)	Initial	1000MΩMIN.	5	100	2.4×10^5 MΩMIN.					OK
		After Testing	500MΩMIN.			1.6×10^5 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

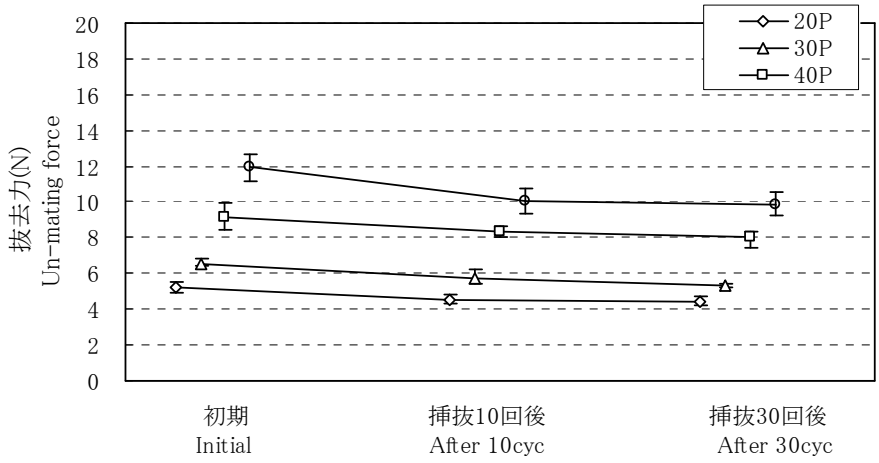
Test Item	Contents of Measurement		Specifications	Set	N	Data AVE.	Data MAX.	Data MIN.	Data s	Data X±3s	Judgment
G Group Humidity (Cycling)	C/T Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	532.626	535.91	529.20	1.548	537.270	OK
		After Testing	AWG#40 ΔR=40mΩMAX.			-2.158	1.69	-4.78	1.467	2.243	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	14.935	15.39	14.46	0.387	16.096	OK
		After Testing	ΔR=40mΩMAX.			0.893	2.20	-0.18	0.842	3.419	OK
	Insulation Resistance (MΩ)	Initial	1000MΩMIN.	5	100	2.2×10^5 MΩMIN.					OK
		After Testing	500MΩMIN.			1.4×10^5 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	533.226	538.57	528.67	2.156	539.694	OK
		After Testing	AWG#40 ΔR=40mΩMAX.			0.138	4.78	-3.82	2.128	6.522	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	15.012	16.21	14.11	0.891	17.685	OK
		After Testing	ΔR=40mΩMAX.			0.358	1.63	-0.25	0.691	2.431	OK
J Group Gas(H_2S)	C/T Resistance (mΩ)	Initial	AWG#40 600mΩMAX.	5	200	531.289	537.52	525.97	2.593	539.068	OK
		After testing	AWG#40 ΔR=40mΩMAX.			-1.168	2.26	-4.48	1.608	3.656	OK
	GND Resistance (mΩ)	Initial	50mΩMAX.	5	5	14.948	15.88	14.28	0.590	16.718	OK
		After Testing	ΔR=40mΩMAX.			-0.057	0.50	-0.98	0.583	1.692	OK

Table.2-5 Test result

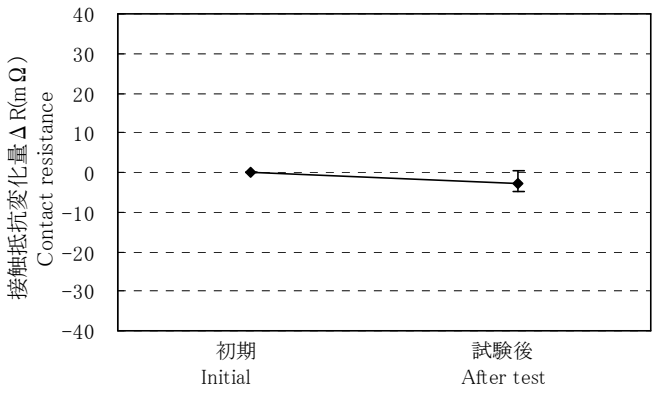
Test Item	Contents of Measurement	Specifications	Set	N	Data					Judgment
					AVE.	MAX.	MIN.	s	X±3s	
K Group Solder ability	Appearance	More than 95% of the dipped surface shall be evenly wet.	10	10	Wet 95% MIN.					OK
L Group Soldering Heat Resistance	Appearance	No abnormality adversely affecting the performance shall occur.	10	10	No Abnormality					OK
M Group Temp. Rising	AWG#40 0.3A(40P)	ΔT=30℃MAX.	5	5	ΔT=28.1℃MAX.					OK



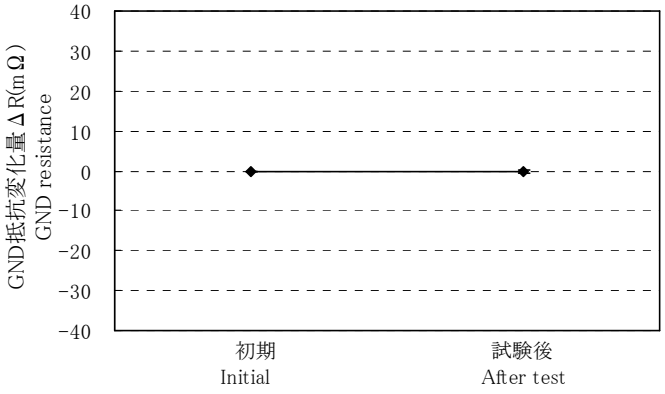
Graph1. A change of mating force (A Group:Durability)



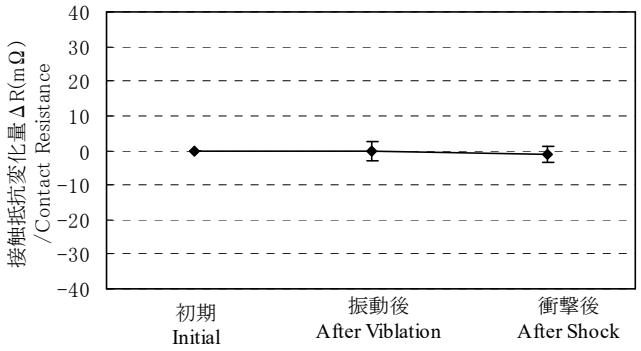
Graph 2. A change of mating force (A Group:Durability)



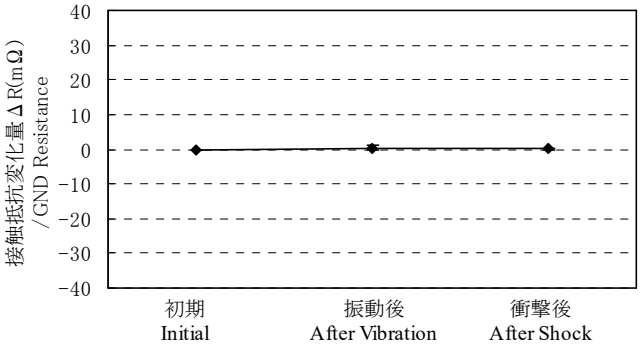
Graph3． A change of contact resistance (A Group:Durability)



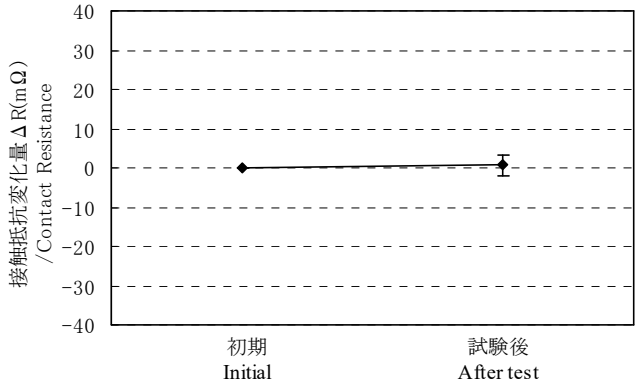
Graph4． A change of GND resistance (A Group:Durability)



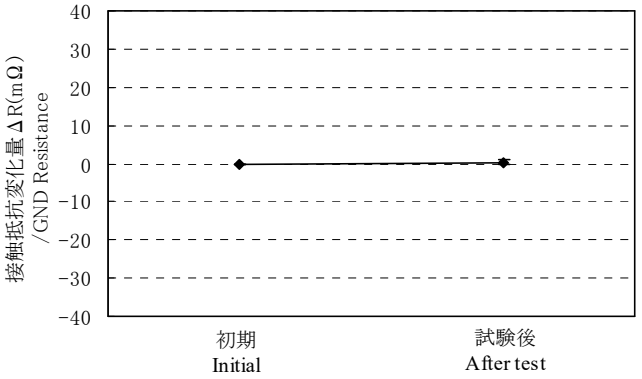
Graph5． A change of contact resistance(C Group:Vibration/Shock)



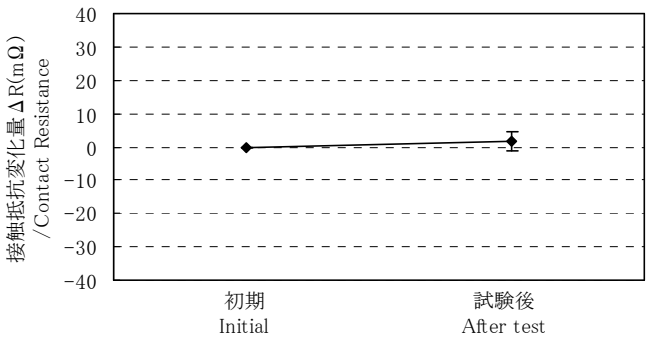
Graph6． A change of GND resistance(C Group:Vibration/Shock)



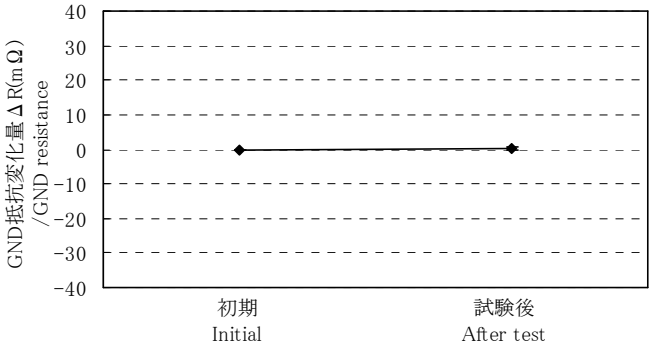
Graph7． A change of contact resistance (D Group:Thermal shock)



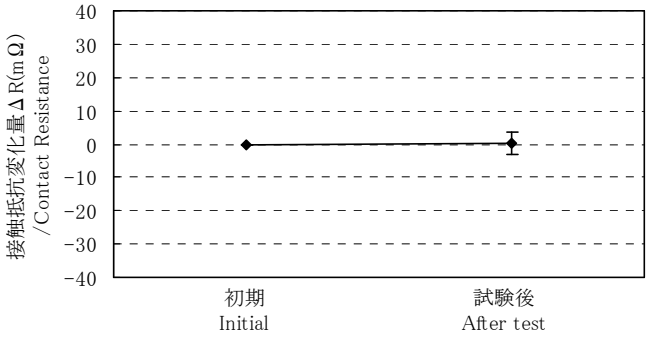
Graph8． A change of GND resistance (D Group:Thermal shock)



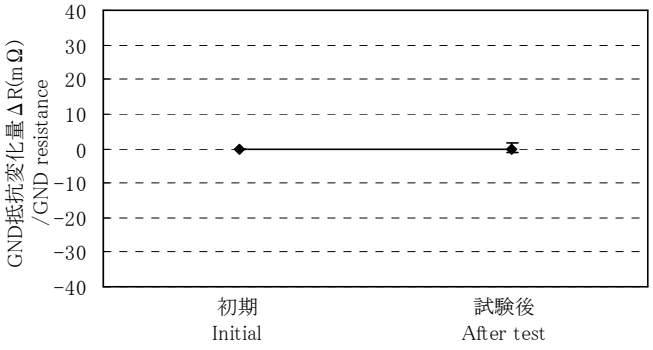
Graph9． A change of contact resistance (E Group:High temp.life)



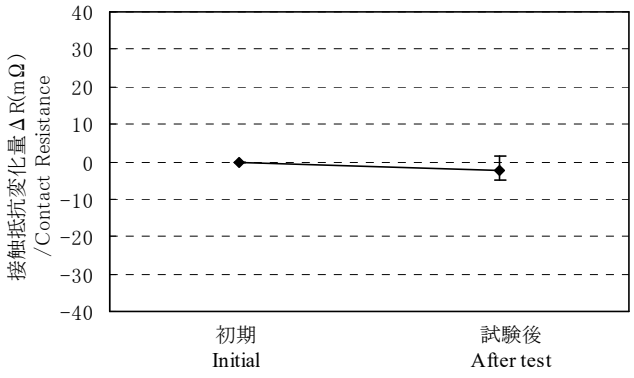
Graph10． A change of GND resistance (E Group:High temp.life)



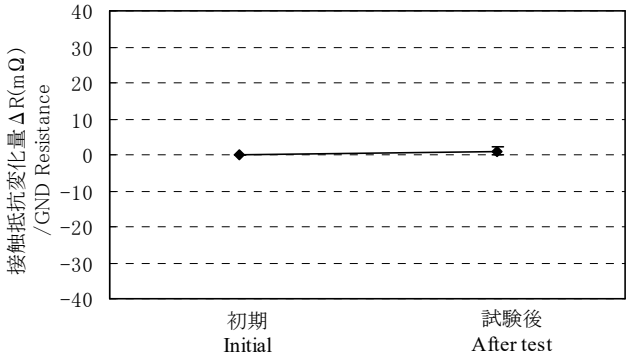
Graph11． A change of contact resistance (F Group: Humidity(Steady state))



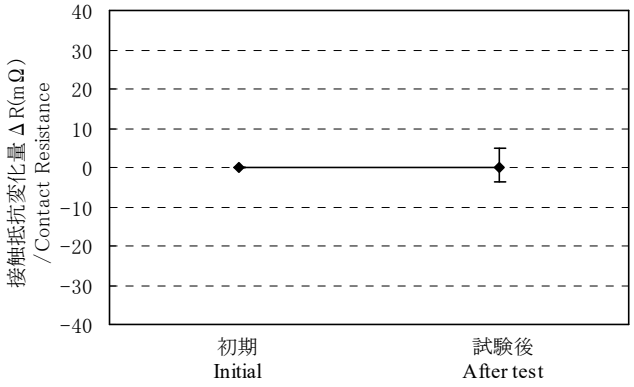
Graph12． A change of GND resistance (F Group: Humidity(Steady state))



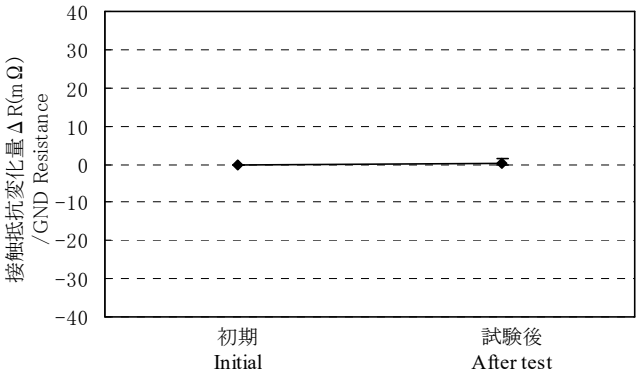
Graph 13． A change of contact resistance (G Group:Humidity(Cycling))



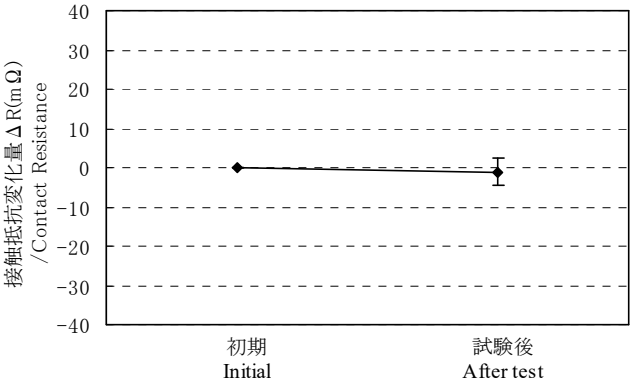
Graph14． A change of GND resistance (G Group:Humidity(Cycling))



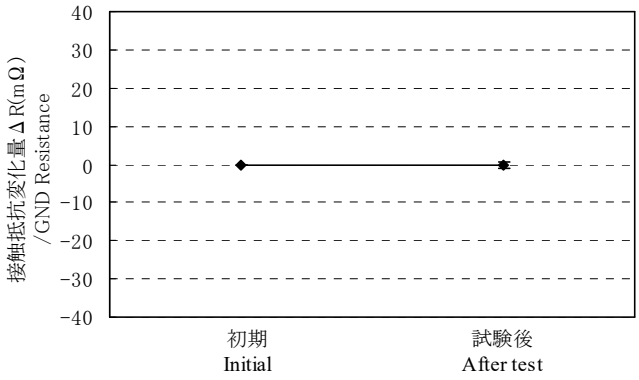
Graph15. A change of contact resistance (H Group:Salt spray)



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))