

NOVASTACK®-B Connector

Part No. PLUG: 20712-004E-0* RECEPTACLE: 20713-004E-0*

Test Report

Product Specification no. PRS-2284

2	T21169	November 22, 2021	Haji.Takahashi	S.Suzuki	Y.Hashimoto
1	T16154	September 30, 2016	H.I	/	Y.S
0	T16136	September 2, 2016	H.Ikari		Y.Shimada
Rev.	ECN	Date	Prepared by	Checked by	Approved by

1. Purpose

To evaluate the performance of NOVASTACK BConnector in accordance with PRS-2284.

2. Specimen

- (1) NOVASTACK-B PLUG ASS'Y (P/N: 20712-004E-0*)
- (2) NOVASTACK-B RECEPTACLE ASS'Y (P/N: 20713-004E-0*)

3. Test Sequence

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

4. Result

See Table 2-1 to 2-3, Graph 1 to 20. For the details of the testing conditions and requirements, see PRS-2284.
The "n" in the tables show the number of measurement points.

5. Conclusion

All the specimens met the requirements of PRS-2284.

Table 1 Test Sequence and Sample Quantity

Test Item	Group													
	A	B	C	D	E	F	G	H	J	K	L	M	N	
Contact Resistance	2,6		1,3,5	1,3	1,3	1,5	1,5,7	1,3	1,3	1,3				
Insulation Resistance						2,6	2,8							
D. W. 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												
Vibration			2											
Shock			4											
Thermal Shock				2										
High Temperature Life		2			2									
Humidity (Steady State)						4								
Humidity (Cycling)							6							
Cold Temperature Life								2						
Salt Water Spray									2					
Gas (H ₂ S)										2				
Solder ability											1			
Soldering Heat Resistance												1		
Sample QTY.	5 pcs.	20 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	10 pcs.	10 pcs.	5 pcs.

※Numbers indicate sequence in which tests are performed.

Table 2-1. Table.2-1 Test result

Group	Contents of measurement		Spec.	Unit	set	n	Data					Judge.		
							AVE.	MAX.	MIN.	S	X±3s			
A	Durability													
	Contact resistance													
	Signal contact	Initial	40	MAX.	mΩ	5	20	5.924	6.68	5.39	0.390	7.094	OK	
		After 30 cycles	ΔR 20	MAX.				-0.494	0.35	-1.56	0.455	0.871	OK	
	Power contact	Initial	20	MAX.			20	2.522	3.07	2.06	0.247	3.263	OK	
		After 30 cycles	ΔR 20	MAX.				-0.114	0.41	-0.43	0.234	0.588	OK	
	Mating force													
		Initial	40	MAX.			N	5	5	23.450	25.73	21.37	1.583	28.199
		After 30 cycles						11.213	11.41	11.01	0.170	11.723	OK	
	Unmating force													
	Initial	10	MIN.	N	5	5	14.843	14.96	14.73	0.087	14.582	OK		
	After 30 cycles	7	MIN.				10.647	10.98	10.30	0.276	9.819	OK		
B	Contact retention force (Receptacle)													
	Signal contact	Initial	0.1	MIN.	N	-	20	0.385	0.48	0.28	0.064	0.193	OK	
		After test						0.380	0.53	0.27	0.084	0.128	OK	
	Power contact	Initial	0.1	MIN.			20	0.341	0.45	0.24	0.067	0.140	OK	
After test		0.333						0.44	0.23	0.067	0.132	OK		
C	Vibration → Shock													
	Contact resistance													
	Signal contact	Initial	40	MAX.	mΩ	5	20	5.761	7.31	4.51	0.794	8.143	OK	
		After vibration	ΔR 20	MAX.				-0.464	0.83	-1.68	0.765	1.831	OK	
		After shock						-0.212	0.80	-1.86	0.859	2.365	OK	
	Power contact	Initial	40	MAX.			20	3.009	3.97	2.15	0.529	4.596	OK	
		After vibration	ΔR 20	MAX.				-0.085	1.60	-1.36	0.729	2.102	OK	
		After shock						0.133	1.85	-1.53	0.794	2.515	OK	
	Electrical discontinuity													
		During test	1	MAX.	μs	5	-	No discontinuity					OK	
Appearance														
	After test	No abnormality adversely affecting the performance shall occur.			-	5	-	No abnormality					OK	
D	Thermal Shock													
	Contact resistance													
	Signal contact	Initial	40	MAX.	mΩ	5	20	5.597	6.54	4.83	0.532	7.193	OK	
		After test	ΔR 20	MAX.				0.249	1.78	-0.67	0.676	2.277	OK	
	Power contact	Initial	20	MAX.			20	2.650	3.95	1.98	0.601	4.453	OK	
		After test	ΔR 20	MAX.				0.267	1.14	-1.33	0.642	2.193	OK	
E	High Temperature Life													
	Contact resistance													
	Signal contact	Initial	40	MAX.	mΩ	5	20	5.688	6.75	4.36	0.520	7.248	OK	
		After test	ΔR 20	MAX.				0.187	1.39	-0.99	0.776	2.515	OK	
	Power contact	Initial	20	MAX.			20	2.789	4.46	1.98	0.590	4.559	OK	
		After test	ΔR 20	MAX.				0.360	1.78	-1.02	0.752	2.616	OK	

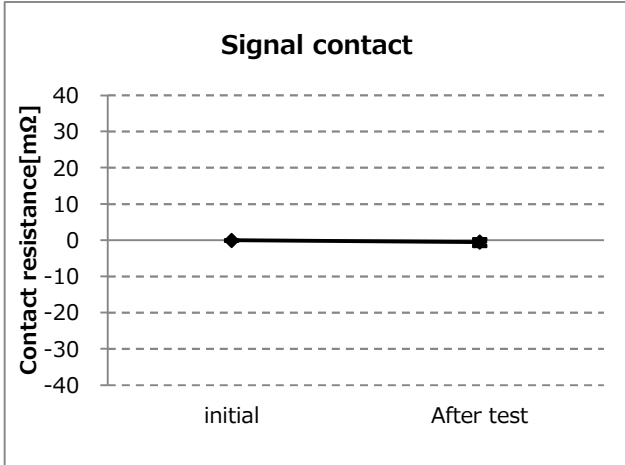
Table 2-2. Table.2-2 Test result

Group	Contents of measurement	Spec.	Unit	Q'ty	n	Data					Judge.			
						AVE.	MAX.	MIN.	S	X±3s				
F	Humidity(steady state)													
	Contact resistance													
	Signal contact	Initial	40	MAX.	mΩ	5	20	5.664	7.10	4.01	0.820	8.124		
		After test	ΔR	20				MAX.	1.499	2.95	0.23	0.800	3.899	
	Power contact	Initial	20	MAX.				20	2.697	3.35	2.26	0.242	3.423	
		After test	ΔR	20			MAX.		0.906	3.04	-0.96	0.845	3.441	
	Insulation resistance													
		Initial	1000	MIN.			MΩ	5	-	2.39 x 10 ⁴ Min.				
		After test	100	MIN.	2.54 x 10 ³ Min.					OK				
	Dielectric Withstanding Voltage													
		After test	No abnormalities such as creeping discharge, flashover, insulator breakdown occur.			-	5	-	No abnormality					OK
Appearance														
	After test	No abnormality adversely affecting the performance shall occur.			-	5	-	No abnormality					OK	
G	Humidity(cycling)													
	Contact resistance													
	Signal contact	Initial	40	MAX.	mΩ	5	20	5.661	6.93	4.47	0.764	7.953	OK	
		After Durability	ΔR	20				MAX.	0.813	2.60	-0.44	0.949	3.660	OK
		After test	ΔR	20				MAX.	1.641	3.74	0.05	0.901	4.344	OK
	Power contact	Initial	20	MAX.			20	2.632	4.64	1.86	0.735	4.837	OK	
		After Durability	ΔR	20				MAX.	0.940	2.34	-0.51	0.720	3.100	OK
		After test	ΔR	20				MAX.	2.283	4.60	-0.13	1.452	6.639	OK
	Insulation resistance													
		Initial	1000	MIN.	MΩ	5	-	2.84 x 10 ⁴ Min.					OK	
		After test	100	MIN.				4.36 x 10 ³ Min.					OK	
Dielectric Withstanding Voltage														
	After test	No abnormalities such as creeping discharge, flashover, insulator breakdown occur.			-	5	-	No abnormality					OK	
Appearance														
	After test	No abnormality adversely affecting the performance shall occur.			-	5	-	No abnormality					OK	
H	Low Temperature Life													
	Contact resistance													
	Signal contact	Initial	40	MAX.	mΩ	5	20	5.977	6.78	5.23	0.466	7.375	OK	
		After test	ΔR	20				MAX.	-0.426	0.90	-1.18	0.556	1.242	OK
	Power contact	Initial	20	MAX.			20	2.732	3.85	2.08	0.515	4.277	OK	
		After test	ΔR	20				MAX.	-0.181	0.64	-0.87	0.389	0.986	OK
Appearance														
	After test	No abnormality adversely affecting the performance shall occur.			-	5	-	No abnormality					OK	

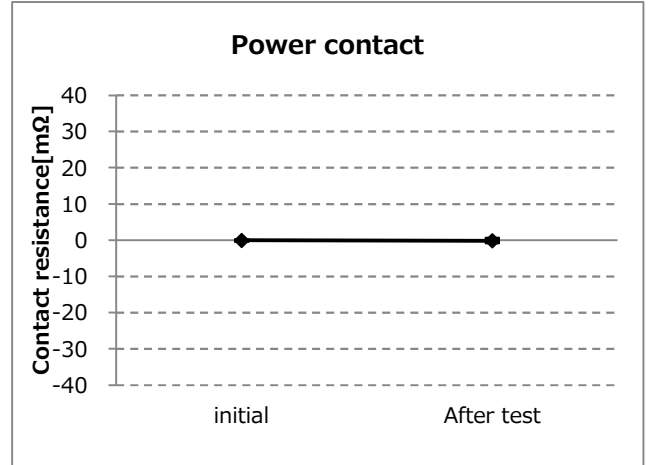
Table 2-3. Table.2-3 Test result

Group	Contents of measurement	Spec.	Unit	Q'ty	n	Data					Judge.	
						AVE.	MAX.	MIN.	S	X±3s		
J	Salt Water Spray											
	Contact resistance											
	Signal contact	Initial	40 MAX.	mΩ	5	20	5.786	6.91	4.60	0.546	7.424	OK
		After test	ΔR 20 MAX.				-0.613	0.72	-1.53	0.741	1.610	OK
	Power contact	Initial	20 MAX.			20	2.749	3.85	2.14	0.492	4.225	OK
		After test	ΔR 20 MAX.				-0.216	0.70	-1.54	0.511	1.317	OK
Appearance												
	After test	No abnormality adversely affecting the performance shall occur.	-			5	-	No abnormality				
K	Gas(H2S)											
	Contact resistance											
	Signal contact	Initial	40 MAX.	mΩ	5	20	5.884	7.01	4.56	0.729	8.071	OK
		After test	ΔR 20 MAX.				0.305	2.01	-2.21	0.913	3.044	OK
	Power contact	Initial	20 MAX.			20	2.913	4.62	2.07	0.651	4.866	OK
		After test	ΔR 20 MAX.				-0.066	1.57	-1.03	0.680	1.974	OK
Appearance												
	After test	No abnormality adversely affecting the performance shall occur.	-			5	-	No abnormality				
L	Solder ability											
	Solder wetting area											
	After test	More than 95% of the dipped surface shall be evenly wet.	-	5	-	No abnormality					OK	
M	Soldering heat resistance											
		After test	No abnormality adversely affecting the performance shall occur.	-	5	-	No abnormality					OK
N	Temperature rising											
	[Signal] 1.0A/Contact [Power] 6.0A/Contact	ΔT 30	℃	5	-	27.1 Max.					OK	

A Group / Durability

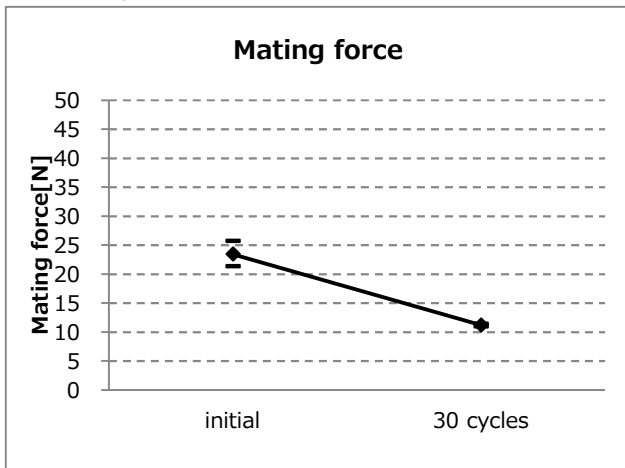


Graph-1. A change of signal contact resistance

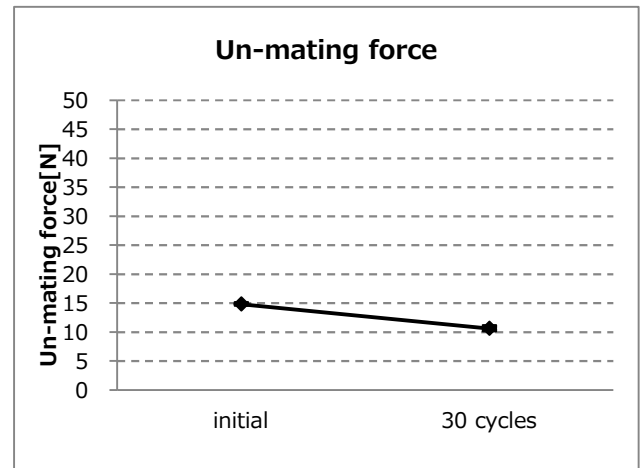


Graph-2. A change of power contact resistance

A Group / Durability

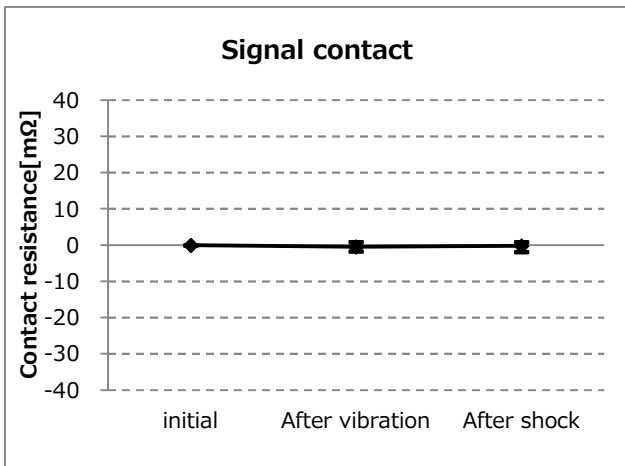


Graph-3. A change of mating force

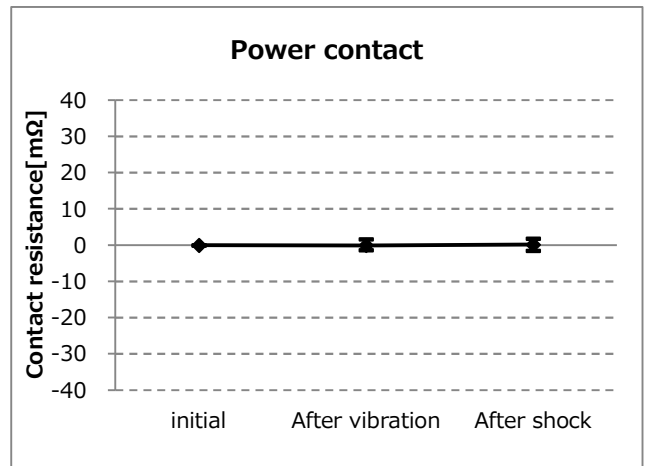


Graph-4. A change of unmating force

C Group / Vibration → Shock

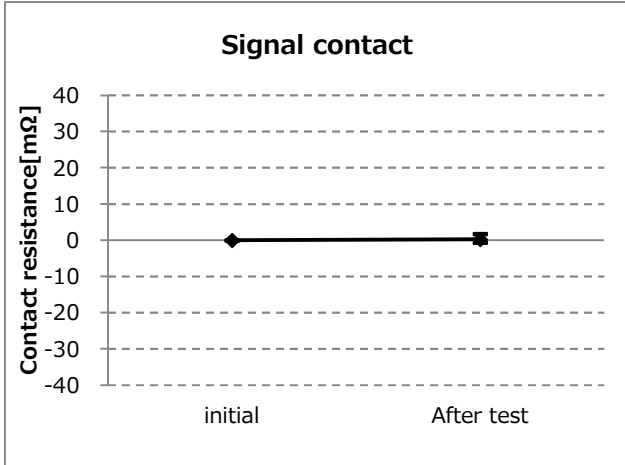


Graph-5. A change of signal contact resistance

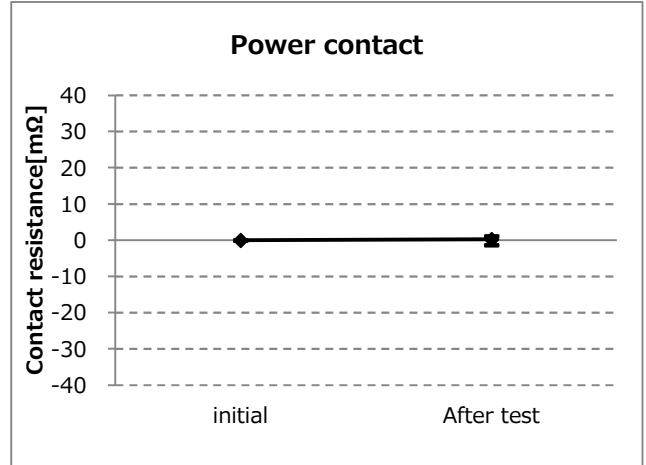


Graph-6. A change of power contact resistance

D Group / Thermal Shock

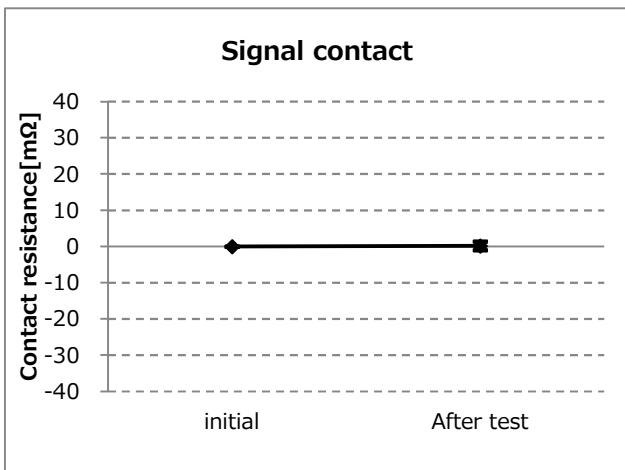


Graph-7. A change of signal contact resistance

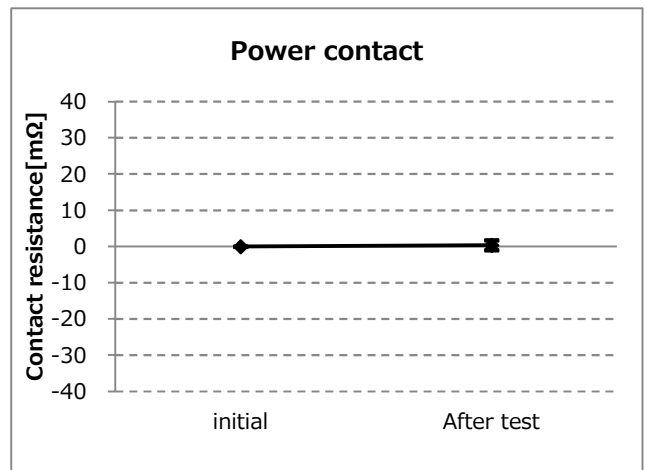


Graph-8. A change of power contact resistance

E Group / High Temperature Life

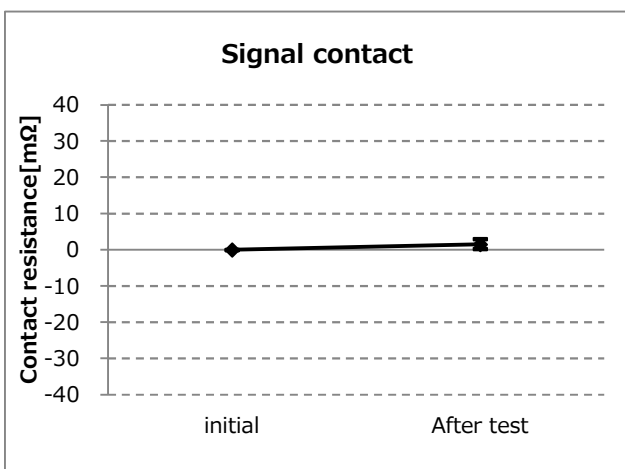


Graph-9. A change of signal contact resistance

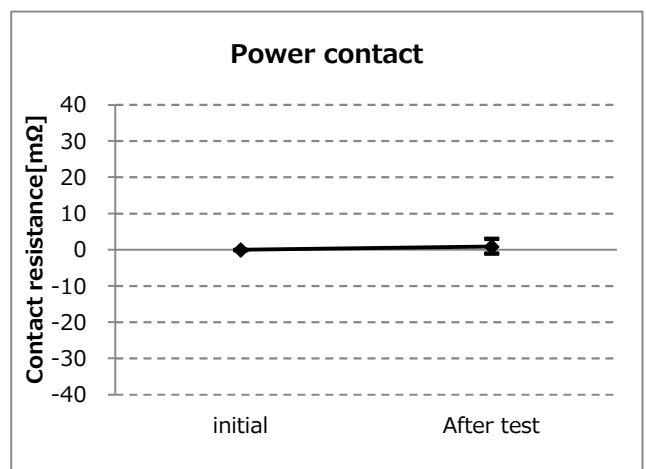


Graph-10. A change of power contact resistance

F Group / Humidity (Steady State)

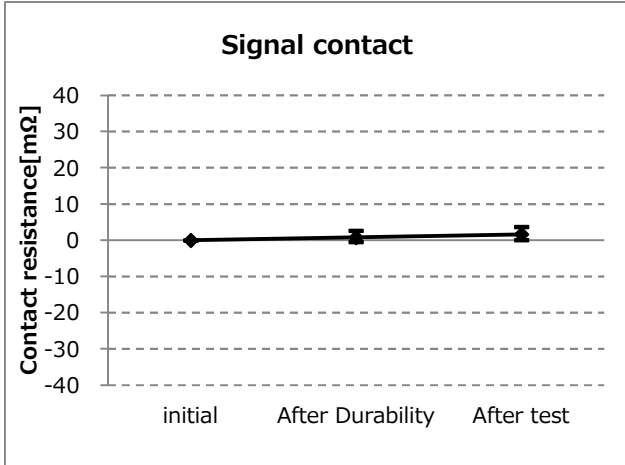


Graph-11. A change of signal contact resistance

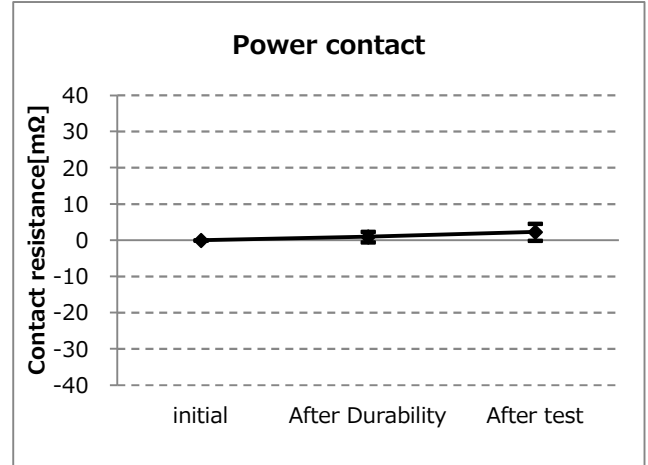


Graph-12. A change of power contact resistance

G Group / Humidity (Cycling)

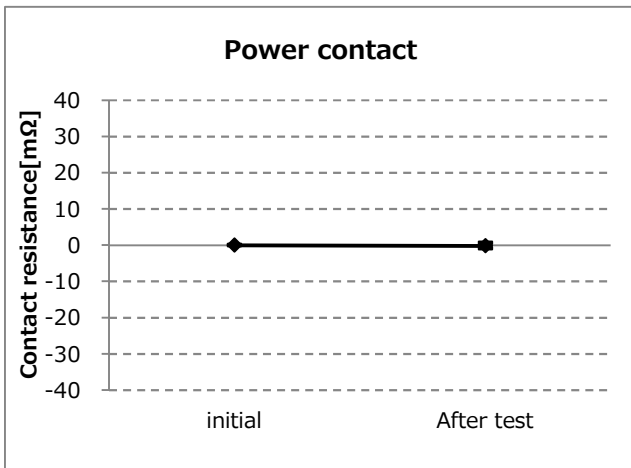


Graph-13. A change of signal contact resistance

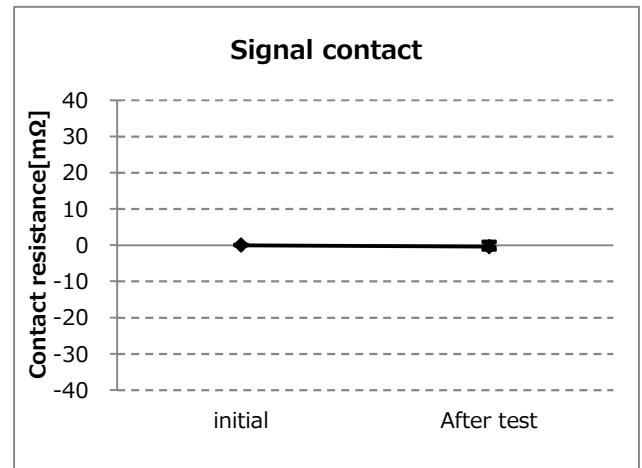


Graph-14. A change of power contact resistance

H Group / Low Temperature Life

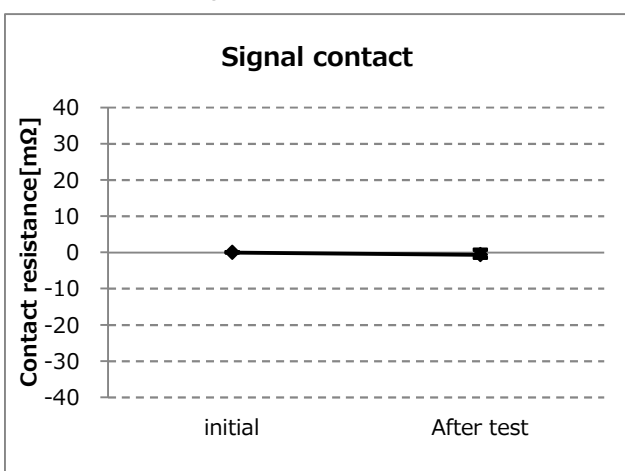


Graph-15. A change of signal contact resistance

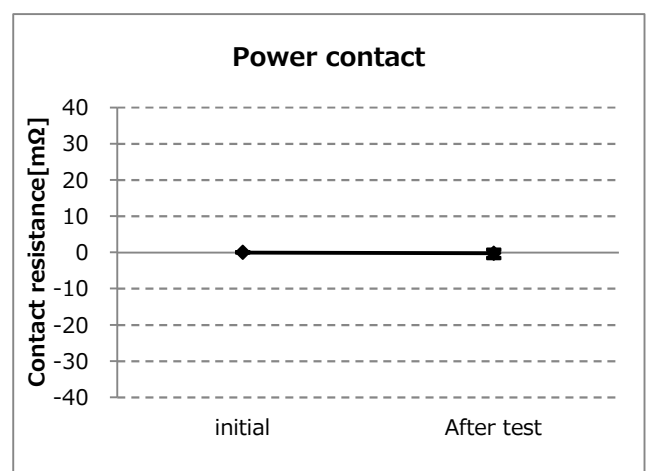


Graph-16. A change of power contact resistance

J Group / Salt Water Spray

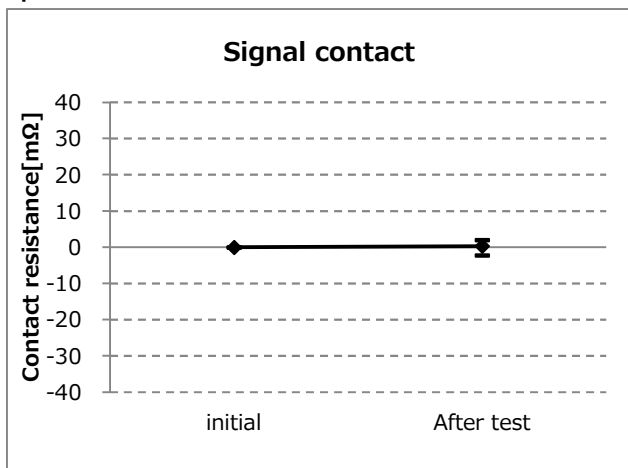


Graph-17. A change of signal contact resistance

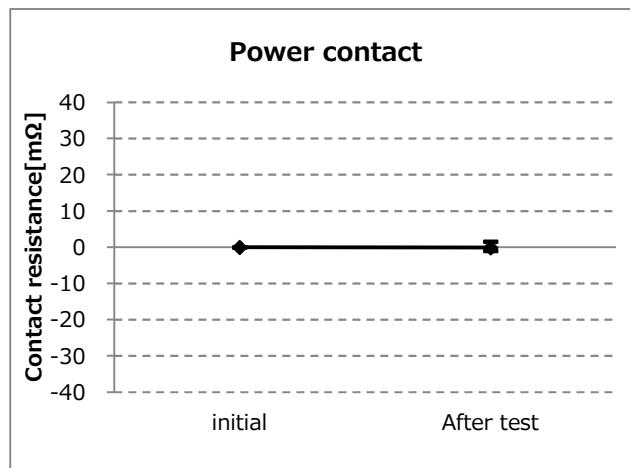


Graph-18. A change of power contact resistance

K Group / H2S Gas



Graph-19. A change of signal contact resistance



Graph-20. A change of power contact resistance