

# NOVASTACK®-B Connector

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

## Test Report

Product Specification no. PRS-2284

Rev.	ECN	Date	Prepared by	Checked by	Approved by
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

## 1. 目的

NOVASTACK B コネクタの性能を PRS-2284 に基づいて評価する。

## 2. 試料

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

## 3. 試験順序

全ての評価は表 1 の試験順序に従って行った。

## 4. 結果

表 2-1~2-3、グラフ 1~20 参照。試験条件の詳細は PRS-2284 参照。  
n 数は測定データを意味する。

## 5. 結論

全ての資料が製品規格（PRS-2284）の必要条件を満足した。

Table 1 試験順序と試料数

試験項目	グループ												
	A	B	C	D	E	F	G	H	J	K	L	M	N
接触抵抗	2,6		1,3,5	1,3	1,3	1,5	1,5,7	1,3	1,3	1,3			
絶縁抵抗						2,6	2,8						
耐電圧						3,7	3,9						
温度上昇													1
挿入力	1,5												
抜去力	3,7												
耐久性	4						4 (10cycles)						
端子保持力		1,3											
振動			2										
衝撃			4										
熱衝撃				2									
高温寿命		2			2								
湿度(定常状態)						4							
湿度(サイクル)							6						
低温放置								2					
塩水噴霧									2				
ガス (H <sub>2</sub> S)										2			
半田付け性											1		
半田耐熱性												1	
試料数	5 pcs.	20 pcs.	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。

Table 2-1. 試験結果

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		

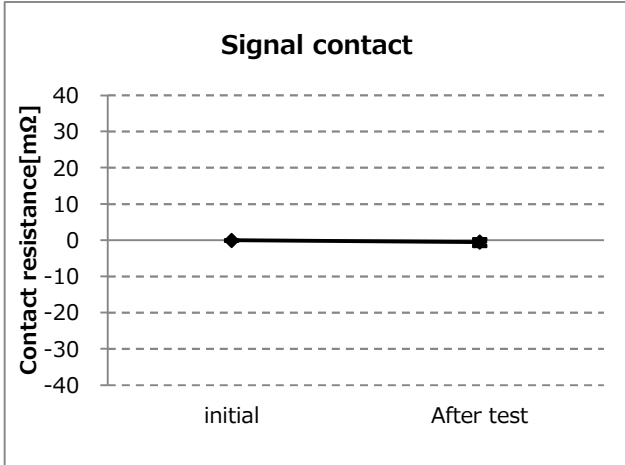
Table 2-2. 試験結果

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 <sup>4</sup> Min.				
		After test	100	MIN.	2.54 x 10 <sup>3</sup> 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 <sup>4</sup> Min.					OK	
	After test	100	MIN.	4.36 x 10 <sup>3</sup> 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	

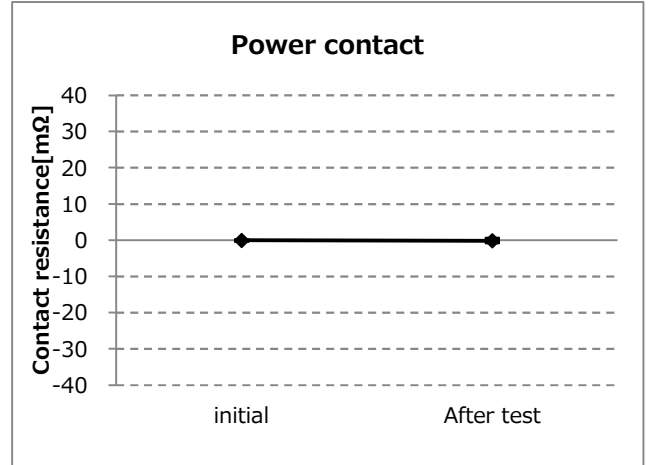
Table 2-3. 試験結果

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.				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.			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					OK
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

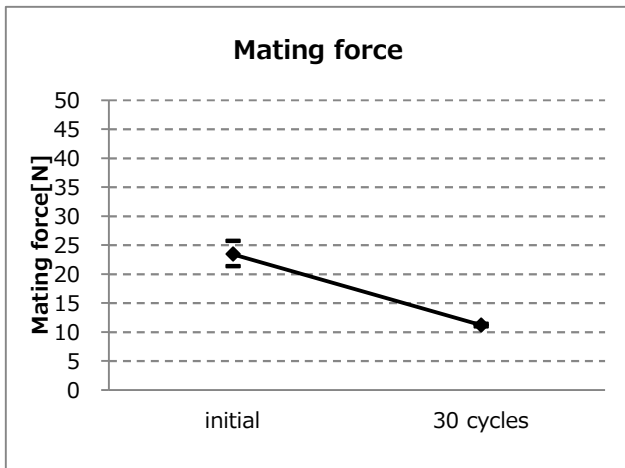


Graph-1. A change of signal contact resistance

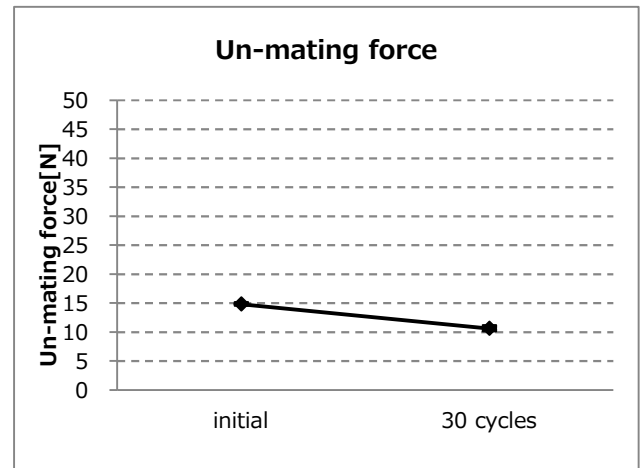


Graph-2. A change of power contact resistance

## A Group / Durability

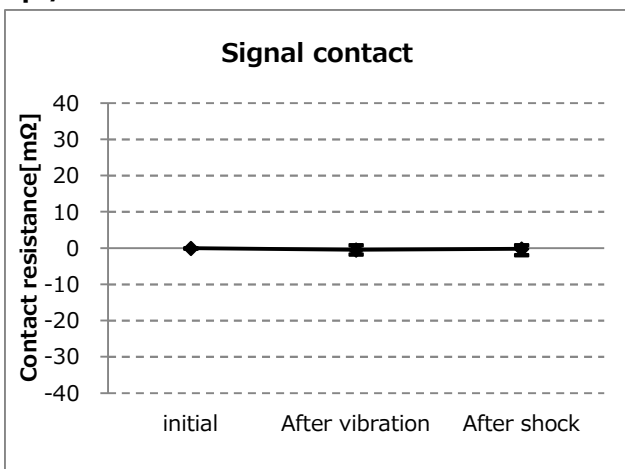


Graph-3. A change of mating force

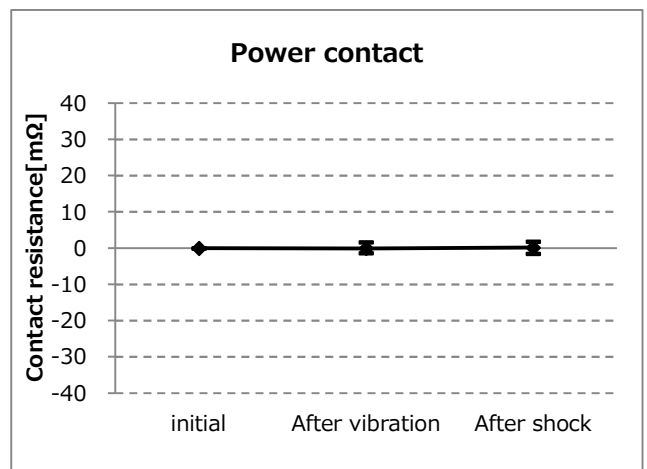


Graph-4. A change of unmating force

## C Group / Vibration → Shock

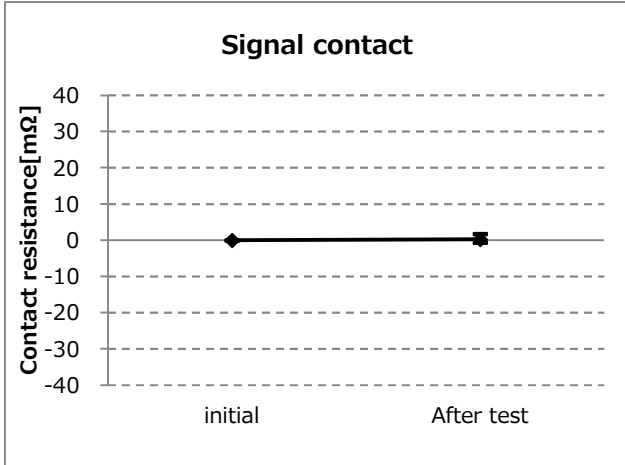


Graph-5. A change of signal contact resistance

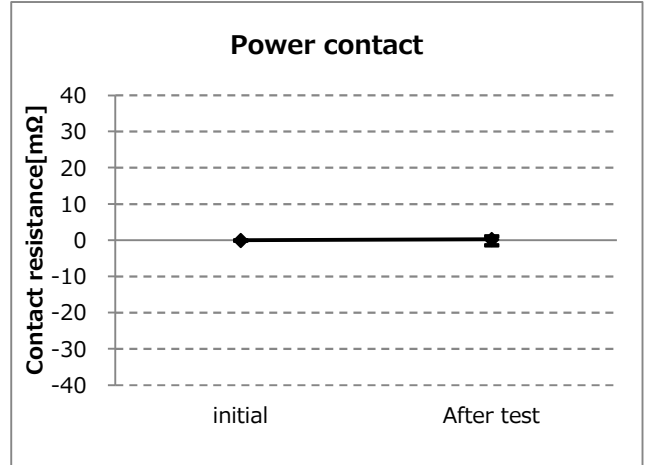


Graph-6. A change of power contact resistance

## D Group / Thermal Shock

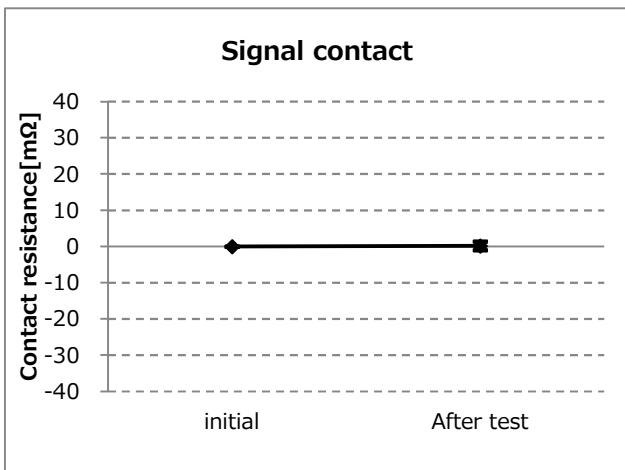


Graph-7. A change of signal contact resistance

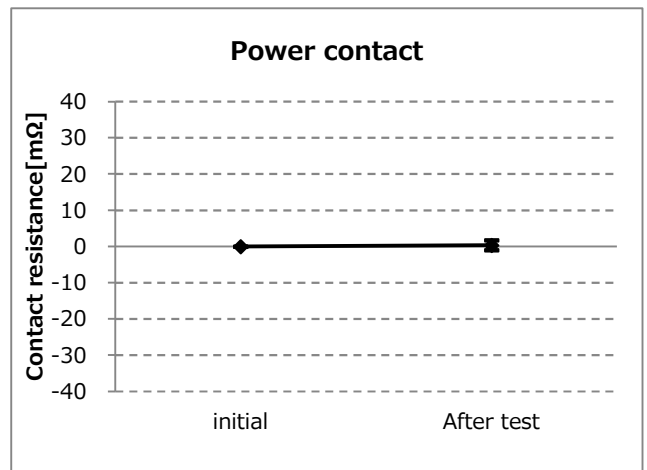


Graph-8. A change of power contact resistance

## E Group / High Temperature Life

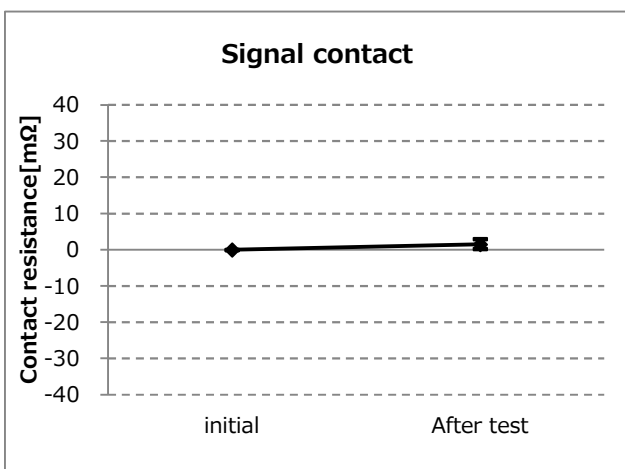


Graph-9. A change of signal contact resistance

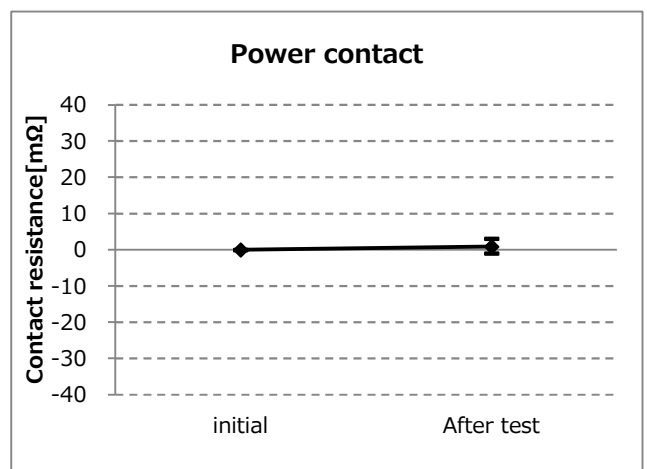


Graph-10. A change of power contact resistance

## F Group / Humidity (Steady State)



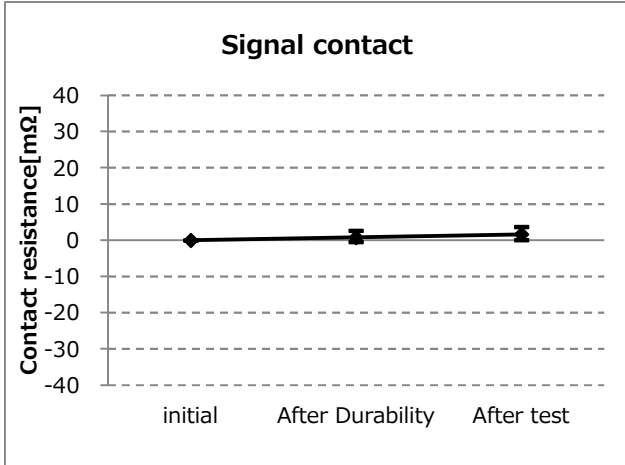
Graph-11. A change of signal contact resistance



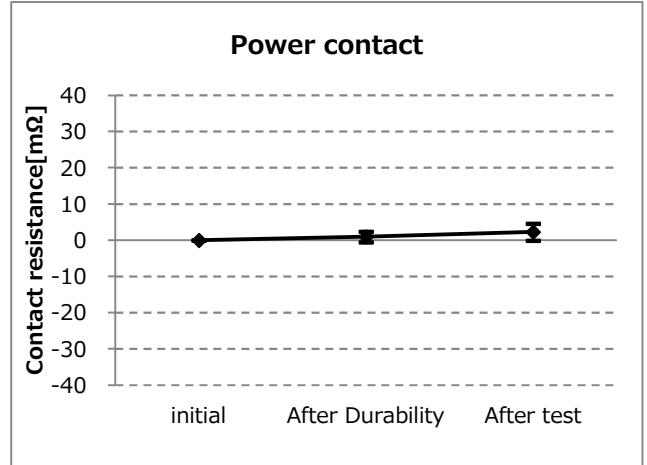
Graph-12. A change of power contact resistance



## G Group / Humidity (Cycling)

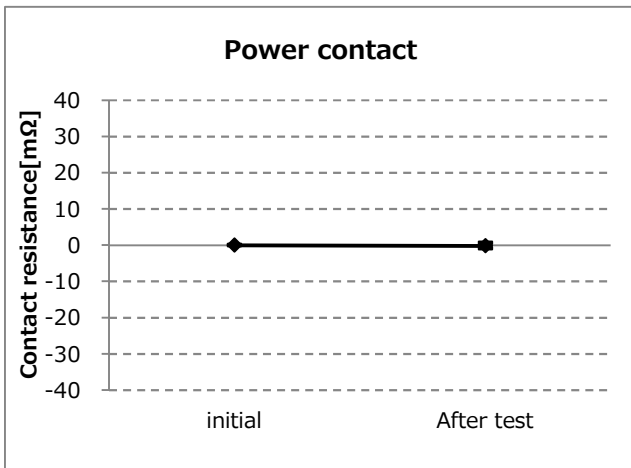


Graph-13. A change of signal contact resistance

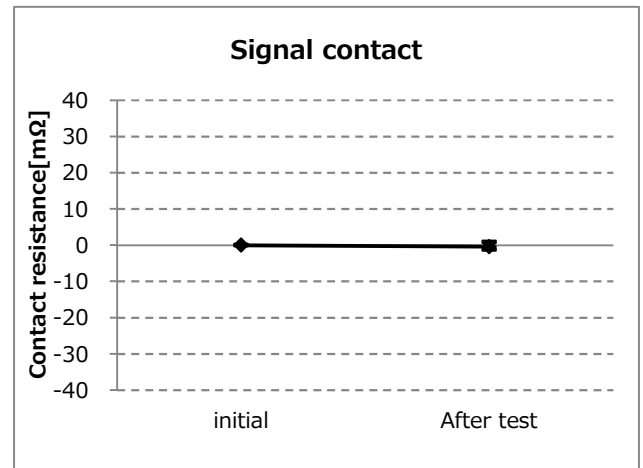


Graph-14. A change of power contact resistance

## H Group / Low Temperature Life

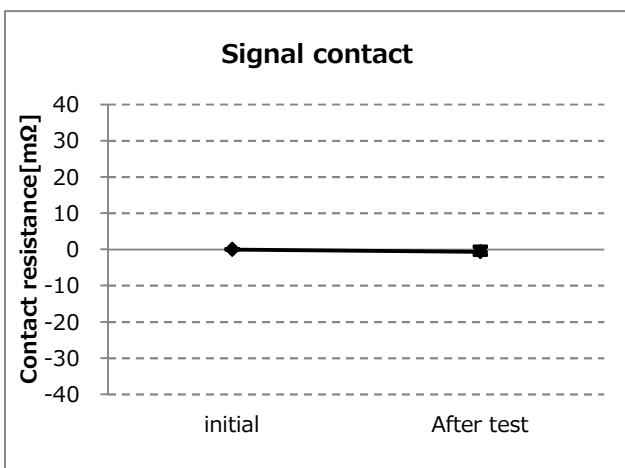


Graph-15. A change of signal contact resistance

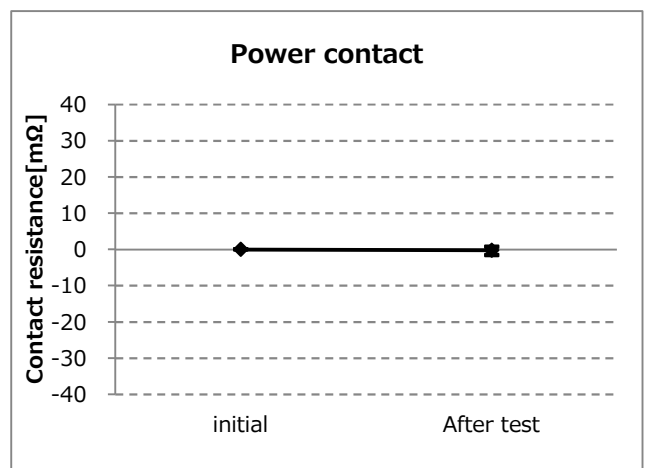


Graph-16. A change of power contact resistance

## J Group / Salt Water Spray

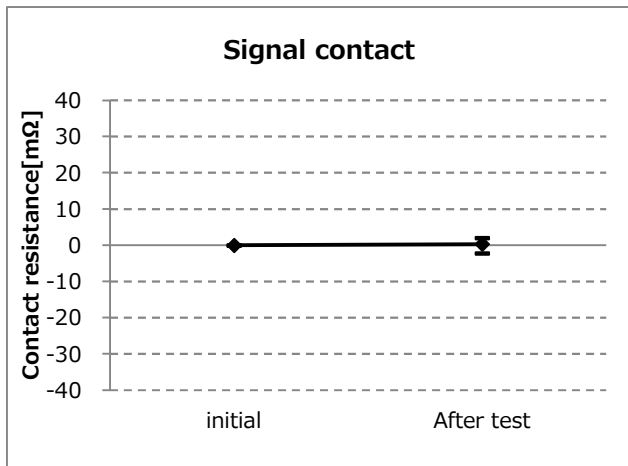


Graph-17. A change of signal contact resistance

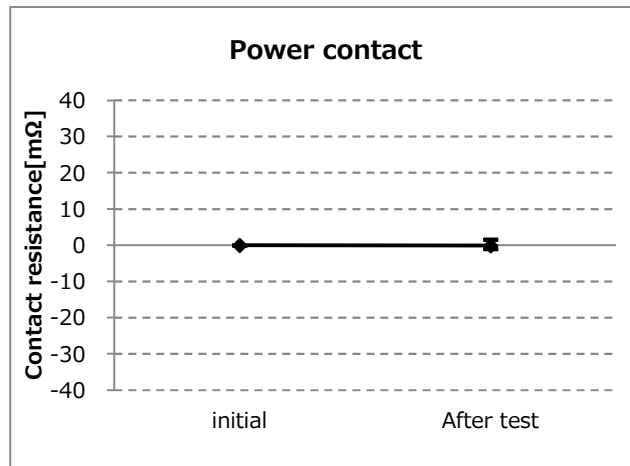


Graph-18. A change of power contact resistance

## K Group / H2S Gas



Graph-19. A change of signal contact resistance



Graph-20. A change of power contact resistance