

NOVASTACK® 35-P

Part No. Plug: 20708-0**E Receptacle: 20709-0**E

Test Report

Product Specification no. PRS-2101

4	T21160	November 15, 2021	Haji.Takahashi	S.Suzuki	Y.Hashimoto
3	T18013	February 8, 2018	M.Hirofani	T.Fukushima	T.Hirakawa
2	T17060	May 24, 2017	Y.Ota	Y.Baba	T.Hirakawa
1	T16199	December 28, 2016	Y.Ota	Y.Baba	T.Takano
Rev.	ECN	Date	Prepared by	Checked by	Approved by

1. 目的

NOVASTACK 35-P コネクタの性能を PRS-2101 に基づいて評価する。

2. 資料

- (1) NOVASTACK 35-P PLUG ASS'Y (Part No. 20708-0**E)
- (2) NOVASTACK 35-P RECEPTACLE ASS'Y (Part No. 20709-0**E)

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 1～26 参照。試験条件の詳細は PRS-2101 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-2101）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	P
接触抵抗		2,6		1,3 ,5	1,5	1,3	1,3	1,5	1,5	1,3	1,3			
絶縁抵抗					2,6			2,6	2,6					
耐電圧					3,7			3,7	3,7					
温度上昇	1													
挿入力		1,5												
抜去力		3,7												
耐久性		4												
端子保持力			1											
振動				2										
衝撃				4										
熱衝撃					4									
高温寿命						2								
低温寿命							2							
湿度（定常状態）								4						
湿度（サイクリング）									4					
塩水噴射										2				
硫化水素ガス											2			
半田付け性												1		
半田耐熱性													1	
手半田														1
試料数	5 pcs.	5 pcs.	20 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	5 pcs.	10 pcs.	10 pcs.	10 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	Q'ty	n	Data					Judge.					
						AVE.	MAX.	MIN.	S	X±3s						
A	Temperature rising															
	30P (0.3A per pin)	ΔT 30	℃	5	-	15.9 Max.					OK					
	34P (0.3A per pin)					17.1 Max.					OK					
	40P (0.3A per pin)					19.1 Max.					OK					
	50P (0.24A per pin)					17.1 Max.					OK					
B	Durability															
	Contact resistance															
	Signal contact	Initial	80 MAX.	mΩ	5	170	34.543	37.20	32.31	1.0599	37.723	OK				
		After 20 cycles	ΔR 20 MAX.				-2.062	-0.03	-4.92	1.0067	0.958	OK				
	Power contact	Initial	80 MAX.				20	10.196	11.15	9.54	0.4695	11.604	OK			
		After 20 cycles	ΔR 20 MAX.					0.341	1.25	-0.33	0.4785	1.777	OK			
	Mating force															
	30P	Initial	30 MAX.					N	5	-	15.501	16.45	14.76	-	-	OK
		After 20 cycles		10.274	11.01	9.91					-	-	OK			
	34P	Initial	34 MAX.	N	5	-		12.587	13.06	11.21	-	-	OK			
		After 20 cycles					10.755	11.66	9.67	-	-	OK				
	40P	Initial	40 MAX.	N	5	-	17.701	18.33	17.43	-	-	OK				
		After 20 cycles					14.817	15.98	13.61	-	-	OK				
	50P	Initial	50 MAX.	N	5	-	21.941	23.41	20.90	-	-	OK				
		After 20 cycles					16.916	17.66	16.19	-	-	OK				
	Unmating force															
	30P	Initial	4.5 MIN.	N	5	-	10.412	10.57	10.26	-	-	OK				
		After 20 cycles					9.470	9.90	9.14	-	-	OK				
	34P	Initial	5.1 MIN.	N	5	-	11.594	12.67	10.77	-	-	OK				
		After 20 cycles					9.739	10.20	8.79	-	-	OK				
	40P	Initial	6 MIN.	N	5	-	10.942	11.37	10.69	-	-	OK				
		After 20 cycles					10.421	10.95	9.65	-	-	OK				
	50P	Initial	7.5 MIN.	N	5	-	14.412	14.84	14.26	-	-	OK				
After 20 cycles		14.688					15.42	13.88	-	-	OK					
C	Contact retention force															
	Receptacle contact	0.1 MIN.	N	20	-	0.355	0.45	0.24	-	-	OK					
D	Vibration → Shock															
	Contact resistance															
	Signal contact	Initial	80 MAX.	mΩ	5	170	38.197	44.38	33.28	2.408	45.421	OK				
		After vibration	ΔR 20 MAX.				0.693	4.90	-6.83	2.298	7.585	OK				
		After shock					1.094	5.81	-5.91	2.227	7.775	OK				
	Power contact	Initial					80 MAX.	20	12.155	14.42	11.06	0.919	14.911	OK		
		After vibration	ΔR 20 MAX.				1.427		3.25	-1.60	1.402	5.633	OK			
		After shock					1.438		3.24	-0.47	0.989	4.405	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					

Table 2-2 Test result

Group	Contents of measurement	Spec.	Unit	Q'ty	n	Data					Judge.	
						AVE.	MAX.	MIN.	S	X±3s		
E	Thermal shock											
	Contact resistance											
	Signal contact	Initial	80 MAX.	mΩ	5	170	41.918	51.11	34.97	2.996	50.906	OK
		After test	ΔR 20 MAX.				-1.427	7.97	-11.67	3.795	9.958	OK
	Power contact	Initial	80 MAX.			20	15.031	18.02	12.92	1.359	19.108	OK
		After test	ΔR 20 MAX.				-0.406	1.24	-2.96	1.535	4.198	OK
	Insulation resistance											
		Initial	1000 MIN.	MΩ	5	-	8.19 × 10 ⁴ Min.					OK
		After test	500 MIN.				1.23 × 10 ⁵ 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	
F	High temperature life											
	Contact resistance											
	Signal contact	Initial	80 MAX.	mΩ	5	170	36.233	39.93	32.58	1.571	40.946	OK
		After test	ΔR 20 MAX.				0.599	4.40	-3.56	1.543	5.228	OK
	Power contact	Initial	80 MAX.			20	10.222	11.05	9.03	0.564	11.914	OK
		After test	ΔR 20 MAX.				0.196	1.19	-1.04	0.708	2.320	OK
	Appearance											
	After test	No abnormality adversely affecting the performance shall occur.	-	5	-	No abnormality					OK	
G	Low temperature life											
	Contact resistance											
	Signal contact	Initial	80 MAX.	mΩ	5	170	36.968	42.66	33.23	1.788	42.332	OK
		After test	ΔR 20 MAX.				2.138	8.81	-4.33	1.982	8.083	OK
	Power contact	Initial	80 MAX.			20	11.766	13.53	10.59	0.672	13.783	OK
		After test	ΔR 20 MAX.				1.944	3.47	0.26	0.742	4.169	OK
	Appearance											
	After test	No abnormality adversely affecting the performance shall occur.	-	5	-	No abnormality					OK	

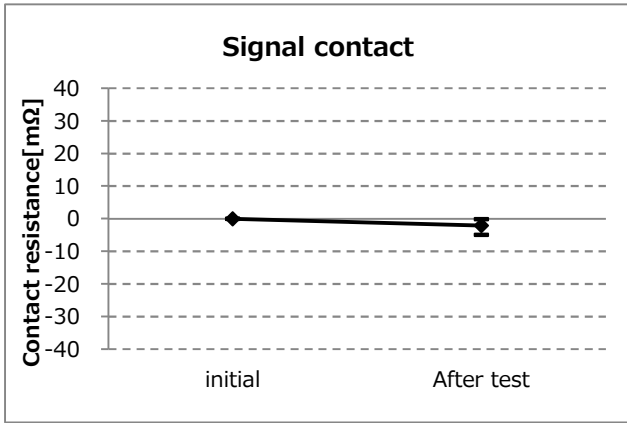
Table 2-3 Test result

Group	Contents of measurement	Spec.	Unit	Q'ty	n	Data					Judge.	
						AVE.	MAX.	MIN.	S	X±3s		
H	Humidity(steady state)											
	Contact resistance											
	Signal contact	Initial	80 μ MAX.	m Ω	5	170	38.302	45.73	32.28	2.891	46.975	OK
		After test	Δ R 20 μ MAX.				0.890	8.19	-7.90	3.355	10.957	OK
	Power contact	Initial	80 μ MAX.			20	12.172	15.91	9.50	1.737	17.384	OK
		After test	Δ R 20 μ MAX.				1.176	4.67	-3.58	2.180	7.717	OK
	Insulation resistance											
		Initial	1000 MIN.	M Ω	5	-	1.06 \times 10 ⁵ Min.					OK
		After test	500 MIN.				1.14 \times 10 ⁵ 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	
J	Humidity(cycling)											
	Contact resistance											
	Signal contact	Initial	80 μ MAX.	m Ω	5	170	39.162	43.78	34.23	2.102	45.466	OK
		After test	Δ R 20 μ MAX.				-0.777	4.20	-4.64	2.031	5.317	OK
	Power contact	Initial	80 μ MAX.			20	12.323	16.18	10.92	1.375	16.450	OK
		After test	Δ R 20 μ MAX.				0.381	2.22	-2.29	1.170	3.890	OK
	Insulation resistance											
		Initial	1000 MIN.	M Ω	5	-	1.18 \times 10 ⁴ Min.					OK
		After test	500 MIN.				1.08 \times 10 ⁴ 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	
K	Salt water spray											
	Contact resistance											
	Signal contact	Initial	80 μ MAX.	m Ω	5	170	40.136	45.00	32.91	2.591	47.910	OK
		After test	Δ R 20 μ MAX.				-0.315	10.65	-8.85	3.617	10.535	OK
	Power contact	Initial	80 μ MAX.			20	13.830	15.12	12.74	0.718	15.983	OK
		After test	Δ R 20 μ MAX.				1.522	4.74	-0.98	1.784	6.874	OK
	Appearance											
	After test	No abnormality adversely affecting the performance shall occur.	-	5	-	No abnormality					OK	

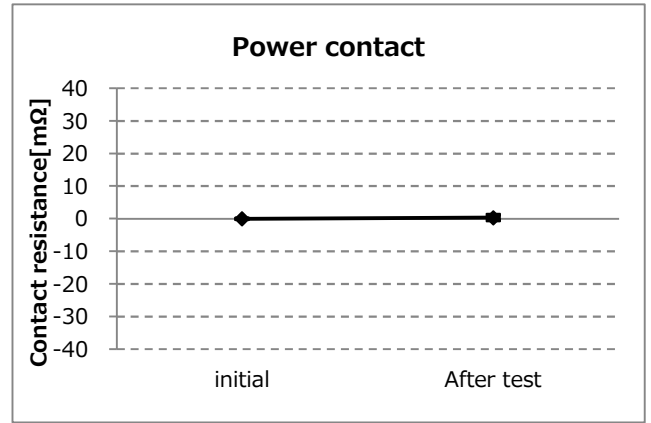
Table 2-4 Test result

Group	Contents of measurement	Spec.	Unit	Q'ty	n	Data					Judge.	
						AVE.	MAX.	MIN.	S	X±3s		
L	Gas											
	Contact resistance											
	Signal contact	Initial	80 MAX.	mΩ	5	170	39.918	45.57	33.59	2.540	47.539	OK
		After test	ΔR 20 MAX.				0.931	9.90	-7.55	3.475	11.356	OK
	Power contact	Initial	80 MAX.			20	14.057	16.17	12.86	0.822	16.522	OK
		After test	ΔR 20 MAX.				1.132	4.62	-0.62	1.494	5.615	OK
	Appearance											
	After test	No abnormality adverselyaffecting the performance shall occur.	-	5	-	No abnormality					OK	
M	Solder ability											
	Solder wetting area											
	After test	No abnormality adverselyaffecting the performance shall occur.	-	5	-	No abnormality					OK	
N	Resistance to reflow soldering heat											
	Appearance											
	After test	No abnormality adverselyaffecting the performance shall occur.	-	5	-	No abnormality					OK	
P	Soldering iron											
	Appearance											
	After test	No abnormality adverselyaffecting the performance shall occur.	-	5	-	No abnormality					OK	

B Group / Durability

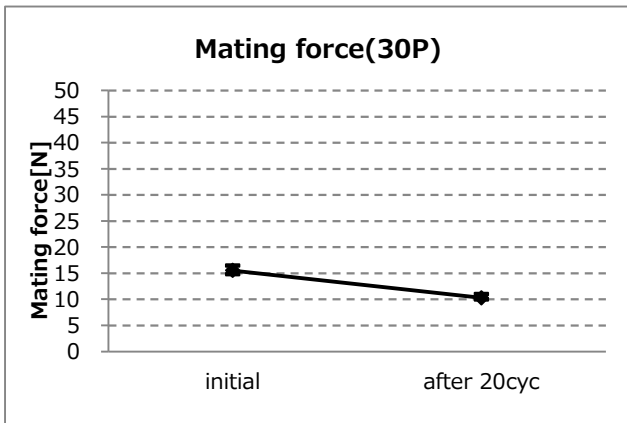


Graph-1. A change of signal contact resistance

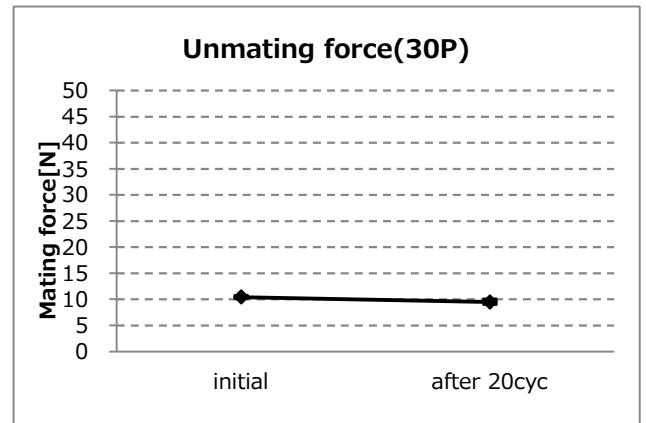


Graph-2. A change of power contact resistance

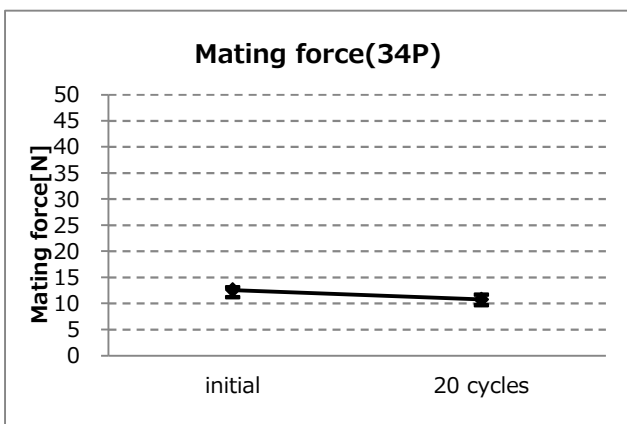
B Group / Durability



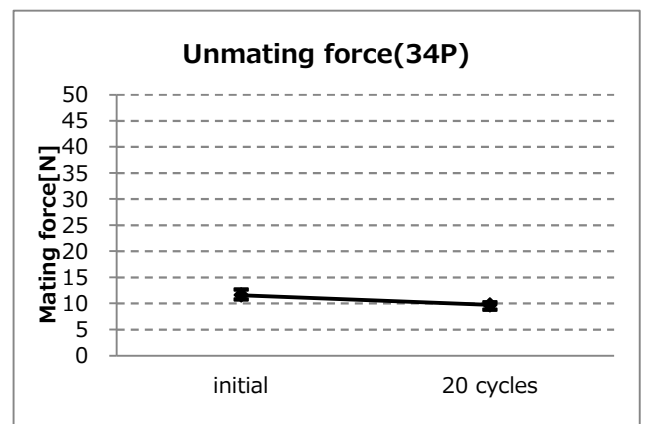
Graph-3. A change of mating force(30P)



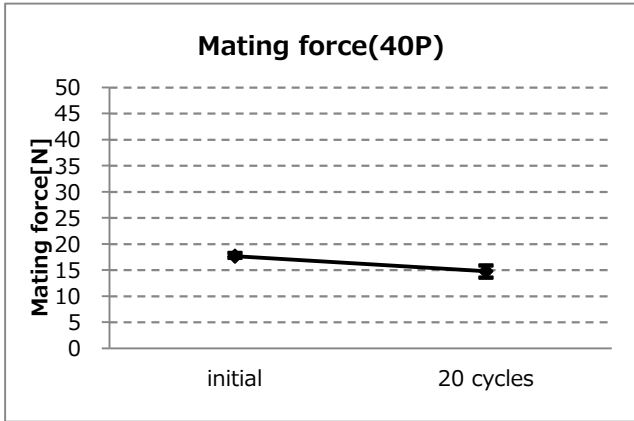
Graph-4. A change of unmatting force(30P)



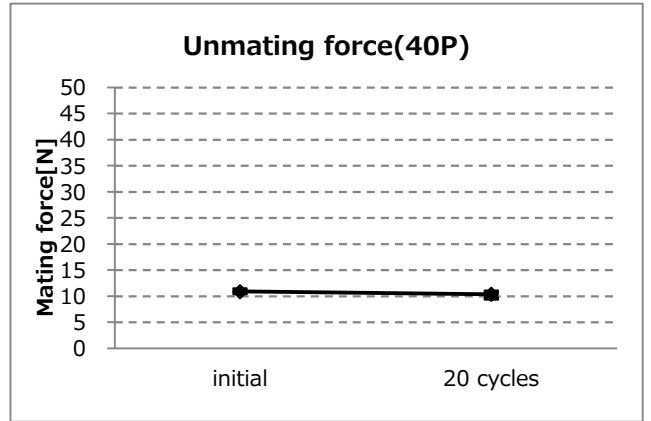
Graph-5. A change of mating force(34P)



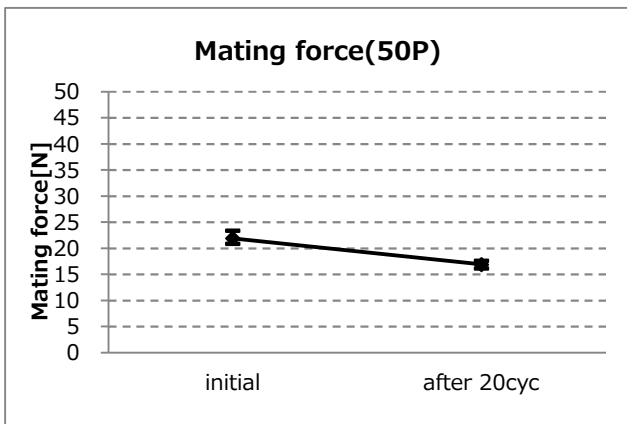
Graph-6. A change of unmatting force(34P)



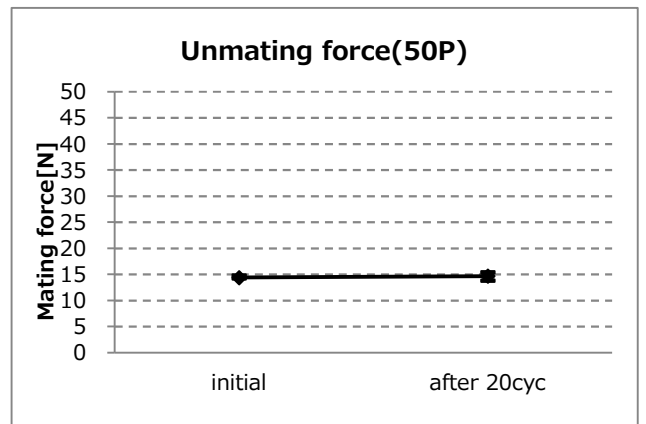
Graph-7. A change of mating force(40P)



Graph-8. A change of un mating force(40P)

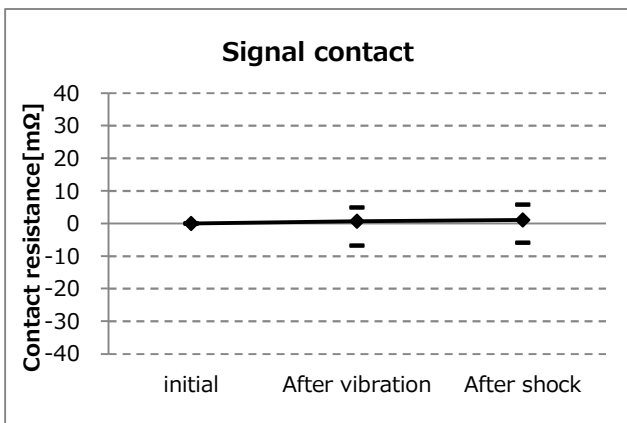


Graph-9. A change of mating force(50P)

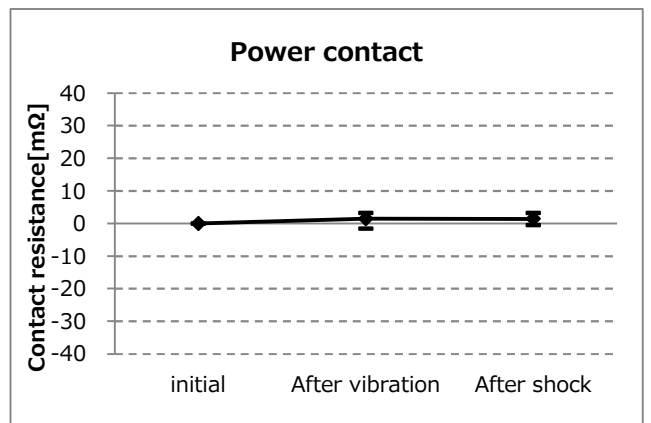


Graph-10. A change of un mating force(50P)

D Group / Vibration → Shock

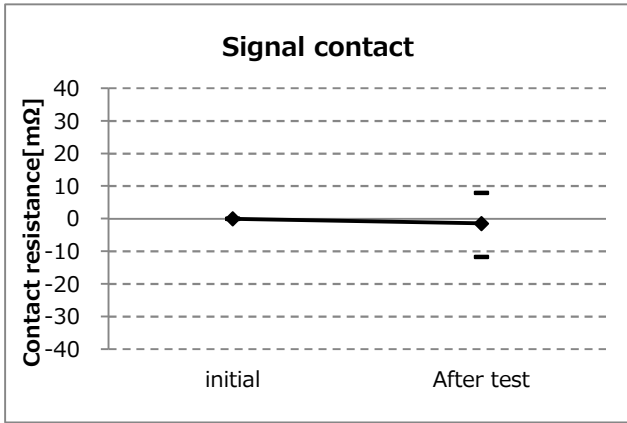


Graph-11. A change of signal contact resistance

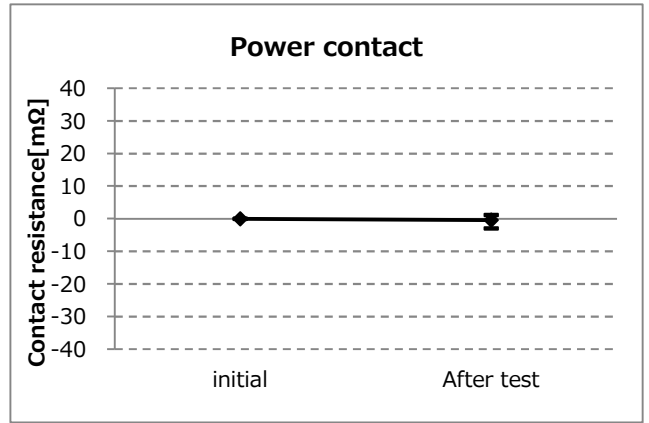


Graph-12. A change of power contact resistance

E Group / Thermal Shock

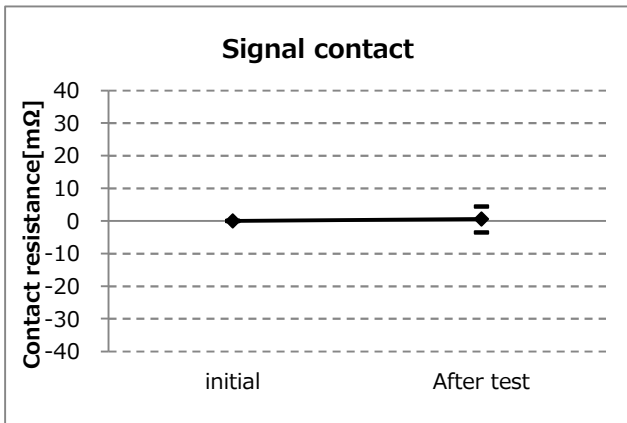


Graph-13. A change of signal contact resistance

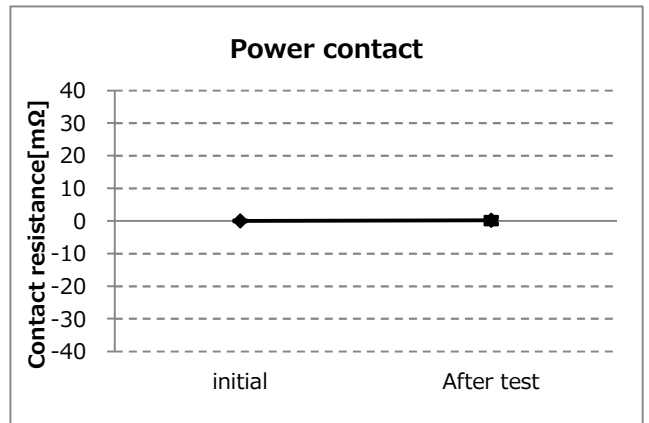


Graph-14. A change of power contact resistance

F Group / High Temperature Life

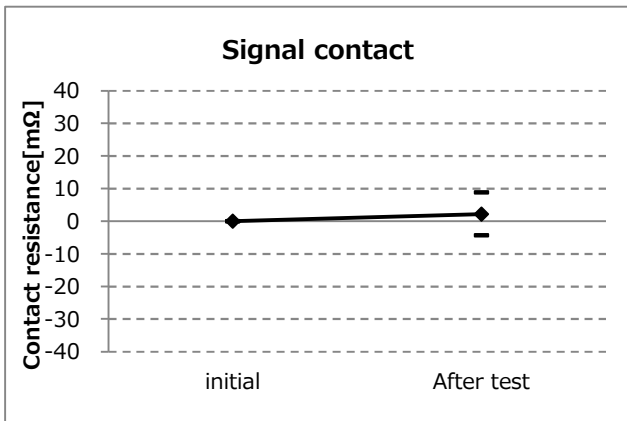


Graph-15. A change of signal contact resistance

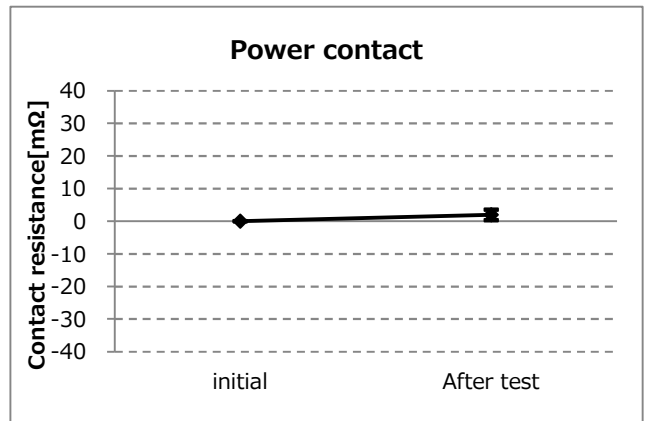


Graph-16. A change of power contact resistance

G Group / Low Temperature Life

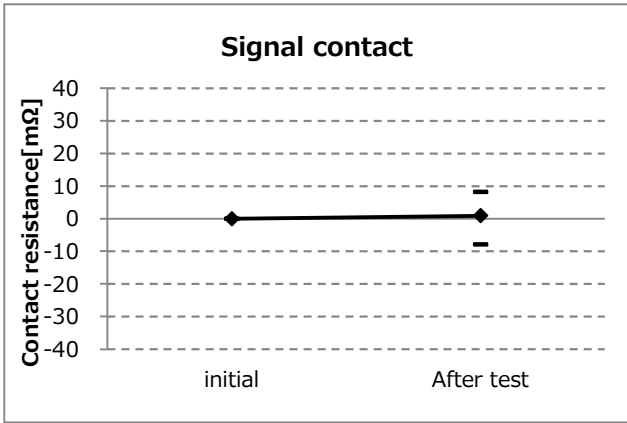


Graph-17. A change of signal contact resistance

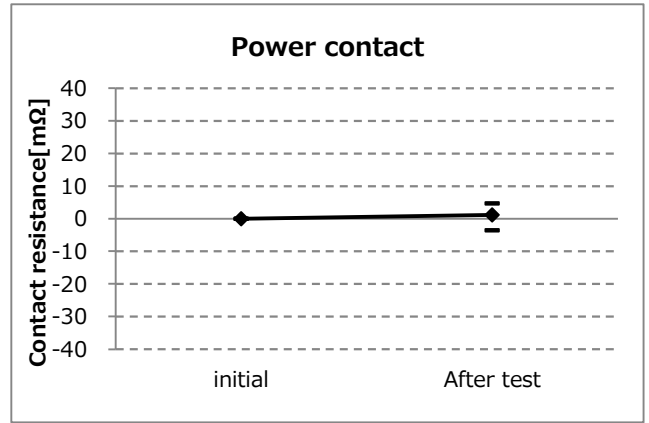


Graph-18. A change of power contact resistance

H Group / Humidity (Steady State)

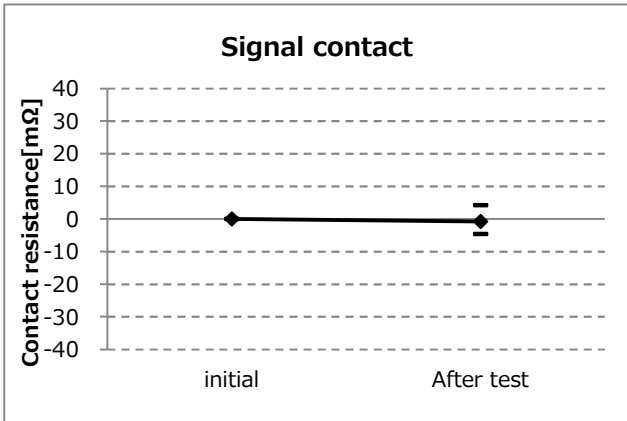


Graph-19. A change of signal contact resistance

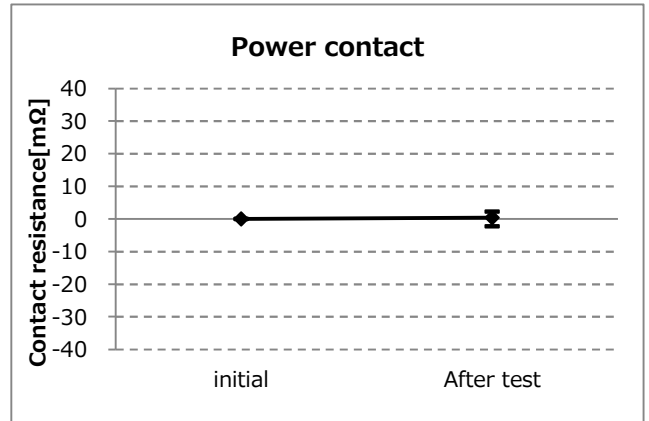


Graph-20. A change of power contact resistance

J Group / Humidity (Cycling)

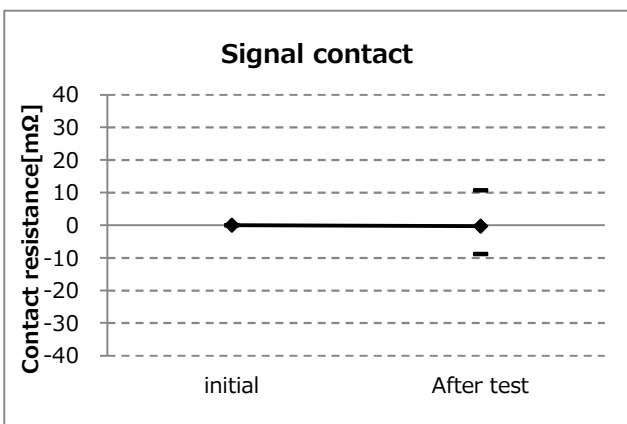


Graph-21. A change of signal contact resistance

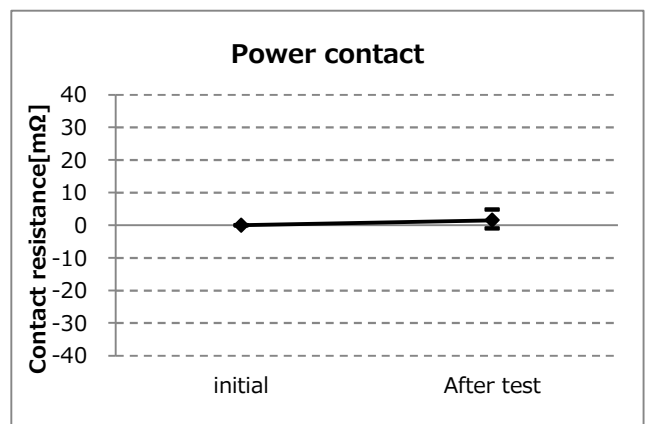


Graph-22. A change of power contact resistance

K Group / Salt Water Spray

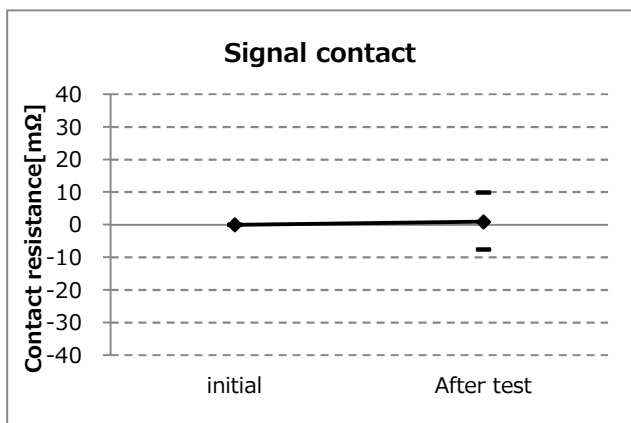


Graph-23. A change of signal contact resistance

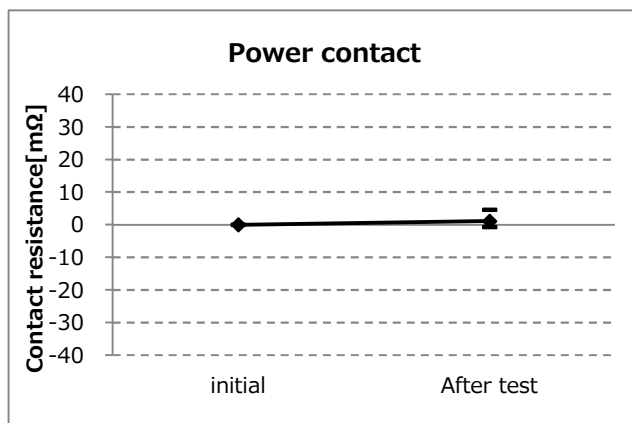


Graph-24. A change of power contact resistance

L Group / H2S Gas



Graph-25. A change of signal contact resistance



Graph-26. A change of power contact resistance