

NOVASTACK® 35-P

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

Test Report

Product Specification no. PRS-2101

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2	T17060	May 24, 2017	Y.Ota	Y.Baba	T.Hirakawa
1	T16199	December 28, 2016	Y.Ota	Y.Baba	T.Takano
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Rev.	ECN	Date	Prepared by	Checked by	Approved by

NOVASTACK 35-P Test Report

1. Purpose

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

To evaluate the performance of NOVASTACK 35-P Connector in accordance with PRS-2101.

2. Specimen

(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. Test Sequence

全ての評価は表 1 の試験順序に従って行った。

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

4. Result

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。

See Table 2-1 to 2-3, Graph 1 to 26. For the details of the testing conditions and requirements, see PRS-2101.

The "n" in the tables show the number of measurement points.

5. Conclusion

全ての資料が製品規格（PRS-2101）の必要条件を満足した。

All the specimens met the requirements of PRS-2101.

Table 1 試験順序と試料数 / Test Sequence and Sample Quantity

試験項目 Test Item	グループ / Group													
	A	B	C	D	E	F	G	H	J	K	L	M	N	P
接触抵抗 Contact Resistance		2,6		1,3,5	1,5	1,3	1,3	1,5	1,5	1,3	1,3			
絶縁抵抗 Insulation Resistance					2,6			2,6	2,6					
耐電圧 D. W. Voltage					3,7			3,7	3,7					
温度上昇 Temperature rising	1													
挿入力 Mating Force		1,5												
抜去力 Unmating Force		3,7												
耐久性 Durability		4												
端子保持力 Contact Retention Force			1											
振動 Vibration				2										
衝撃 Shock				4										
熱衝撃 Thermal Shock					4									
高温寿命 High Temperature Life						2								
低温寿命 Low Temperature Life							2							
湿度 (定常状態) Humidity (Steady State)								4						
湿度 (サイクリング) Humidity (Cycling)									4					
塩水噴射 Salt Water Spray										2				
硫化水素ガス H2S Gas											2			
半田付け性 Solder ability												1		
半田耐熱性 Soldering Heat Resistance													1	
手半田 Soldering iron														1
試料数 Sample QTY.	5 pcs.	5 pos.	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。 / Numbers indicate sequence in which tests are performed.

Table 2-1 試験結果/Test result

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.	mΩ	5	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.	mΩ	5	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	-	5	-	No abnormality					OK	

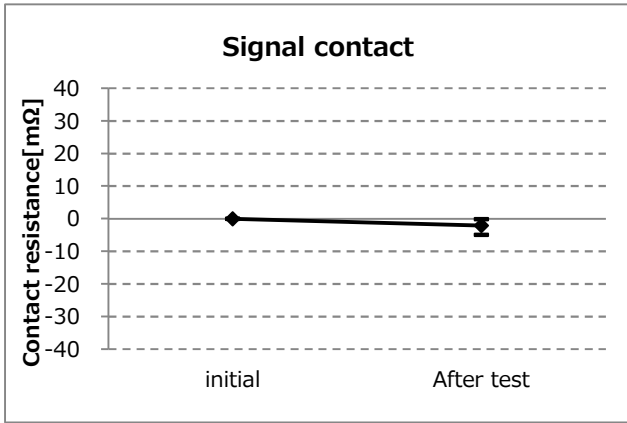
Table 2-2 試験結果/Test result

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 abnormality	-	5	-	No abnormality					OK	
Appearance													
	After test	No abnormality	-	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	-	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	-	5	-	No abnormality					OK		
H	Humidity(steady state)												
	Contact resistance												
	Signal contact	Initial	80 MAX.	mΩ	5	170	38.302	45.73	32.28	2.891	46.975	OK	
		After test	ΔR 20 MAX.				0.890	8.19	-7.90	3.355	10.957	OK	
	Power contact	Initial	80 MAX.			20	12.172	15.91	9.50	1.737	17.384	OK	
		After test	ΔR 20 MAX.				1.176	4.67	-3.58	2.180	7.717	OK	
	Insulation resistance												
		Initial	1000 MIN.	MΩ	5	-	1.06 × 10 ⁵ Min.					OK	
		After test	500 MIN.				1.14 × 10 ⁵ Min.					OK	
	Dielectric Withstanding Voltage												
		After test	No abnormality	-	5	-	No abnormality					OK	
Appearance													
	After test	No abnormality	-	5	-	No abnormality					OK		

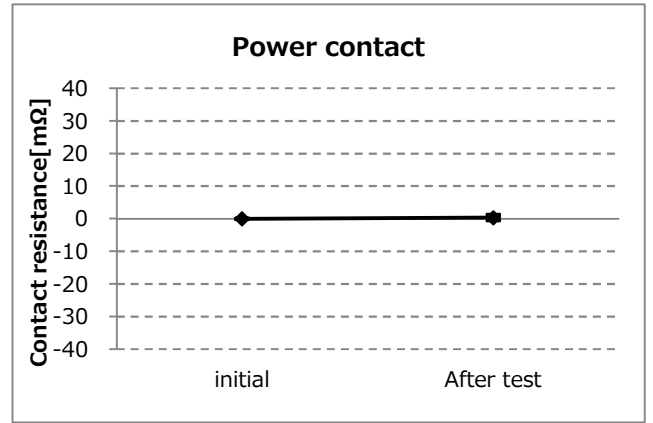
Table 2-3 試験結果/Test result

Group	Contents of measurement	Spec.	Unit	Q'ty	n	Data					Judge.	
						AVE.	MAX.	MIN.	S	X±3s		
J	Humidity(cycling)											
	Contact resistance											
	Signal contact	Initial	80 MAX.	mΩ	5	170	39.162	43.78	34.23	2.102	45.466	OK
		After test	ΔR 20 MAX.				-0.777	4.20	-4.64	2.031	5.317	OK
	Power contact	Initial	80 MAX.	mΩ	5	20	12.323	16.18	10.92	1.375	16.450	OK
		After test	ΔR 20 MAX.				0.381	2.22	-2.29	1.170	3.890	OK
	Insulation resistance											
		Initial	1000 MIN.	MΩ	5	-	1.18 × 10 ⁴ Min.					OK
		After test	500 MIN.				1.08 × 10 ⁴ Min.					OK
	Dielectric Withstanding Voltage											
	After test	No abnormality	-	5	-	No abnormality					OK	
Appearance												
	After test	No abnormality	-	5	-	No abnormality					OK	
K	Salt water spray											
	Contact resistance											
	Signal contact	Initial	80 MAX.	mΩ	5	170	40.136	45.00	32.91	2.591	47.910	OK
		After test	ΔR 20 MAX.				-0.315	10.65	-8.85	3.617	10.535	OK
	Power contact	Initial	80 MAX.	mΩ	5	20	13.830	15.12	12.74	0.718	15.983	OK
		After test	ΔR 20 MAX.				1.522	4.74	-0.98	1.784	6.874	OK
Appearance												
	After test	No abnormality	-	5	-	No abnormality					OK	
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.	mΩ	5	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	-	5	-	No abnormality					OK	
M	Solder ability											
	Solder wetting area											
	After test	95 MIN.	%	10	-	95 MIN.					OK	
N	Resistance to reflow soldering heat											
	Appearance											
	After test	No abnormality	-	10	-	No abnormality					OK	
P	Soldering iron											
	Appearance											
	After test	No abnormality	-	10	-	No abnormality					OK	

B Group / Durability

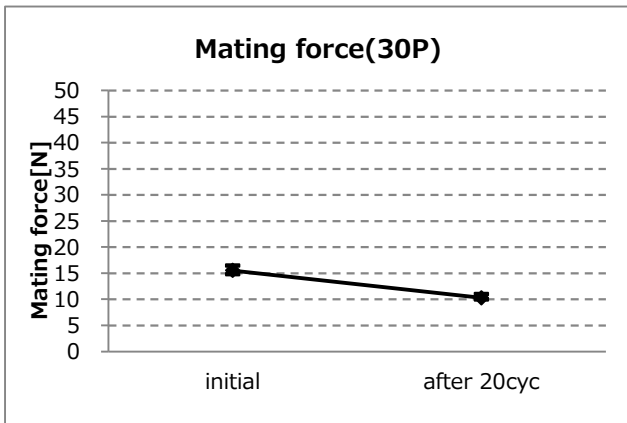


Graph-1. A change of signal contact resistance

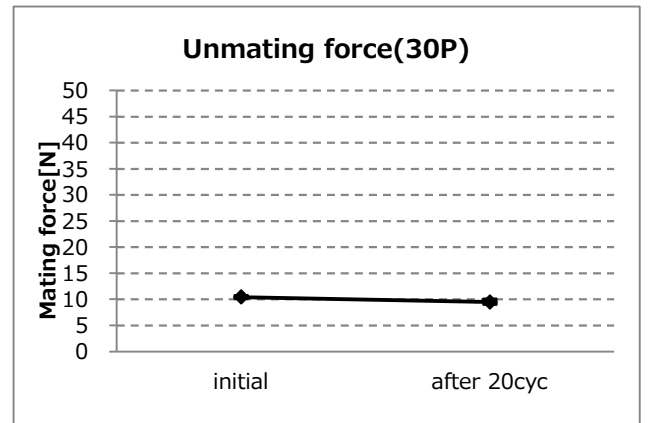


Graph-2. A change of power contact resistance

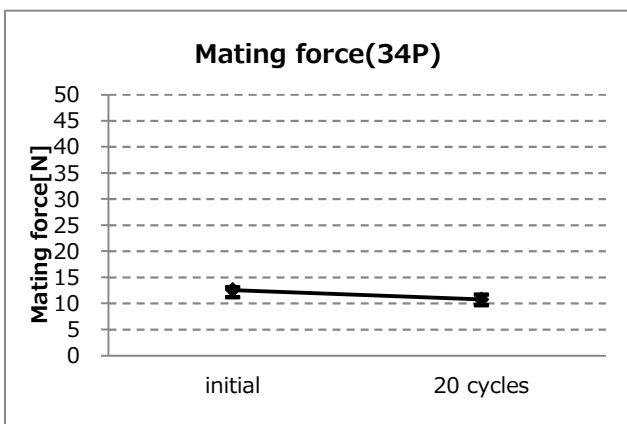
B Group / Durability



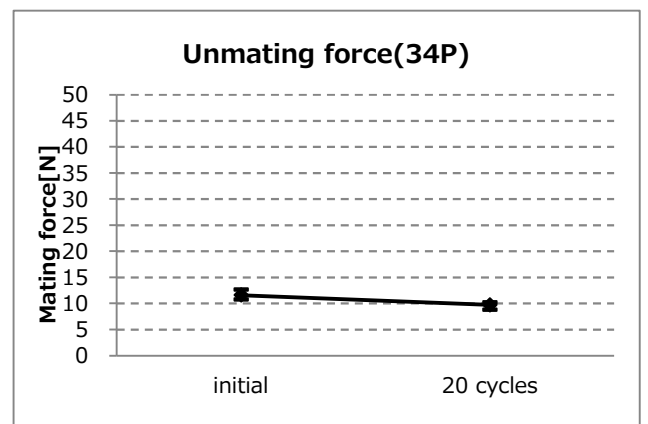
Graph-3. A change of mating force(30P)



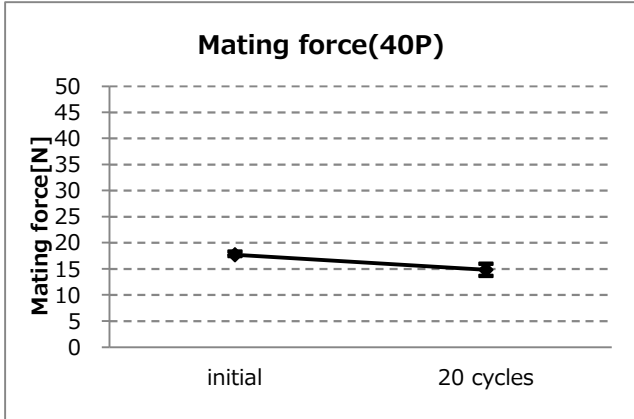
Graph-4. A change of unmating force(30P)



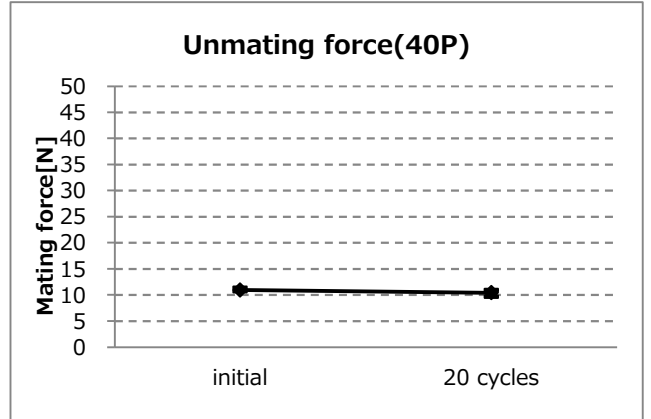
Graph-5. A change of mating force(34P)



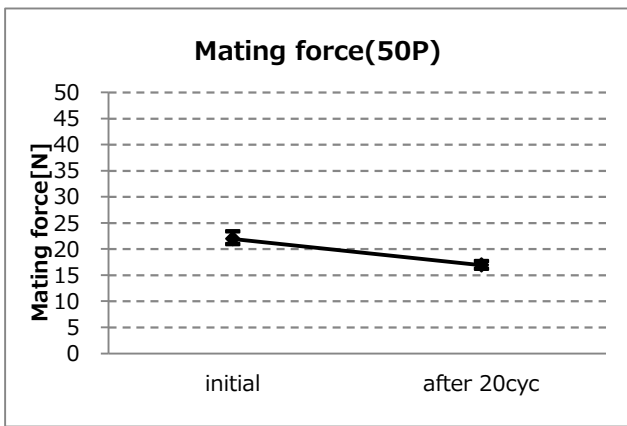
Graph-6. A change of unmating force(34P)



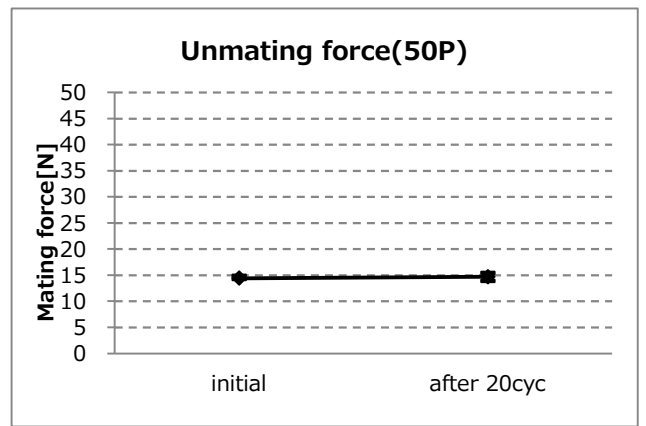
Graph-7. A change of mating force(40P)



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

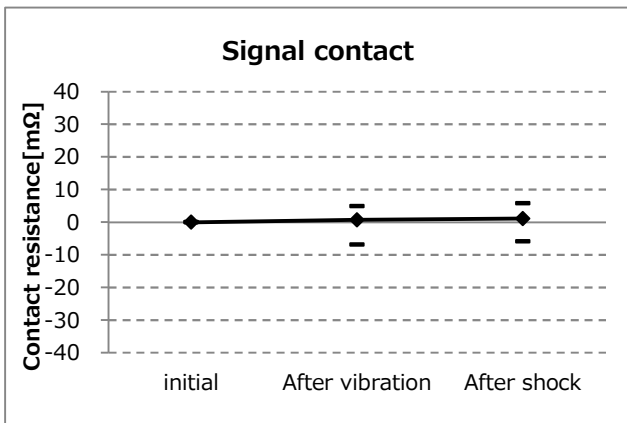


Graph-9. A change of mating force(50P)

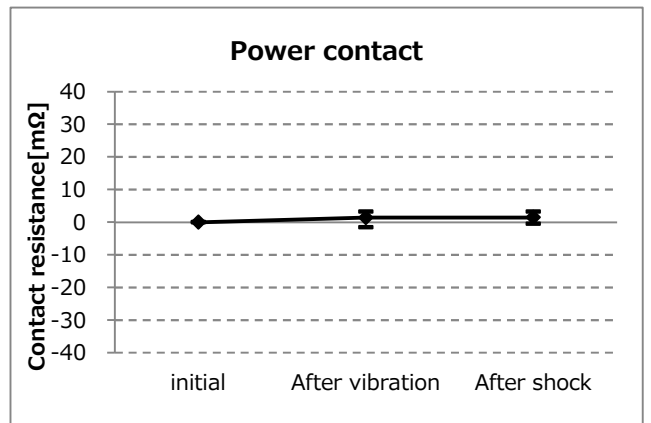


Graph-10. A change of unmatting force(50P)

D Group / Vibration → Shock

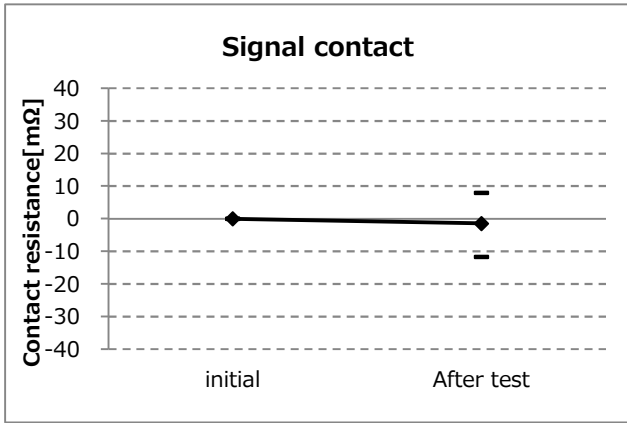


Graph-11. A change of signal contact resistance

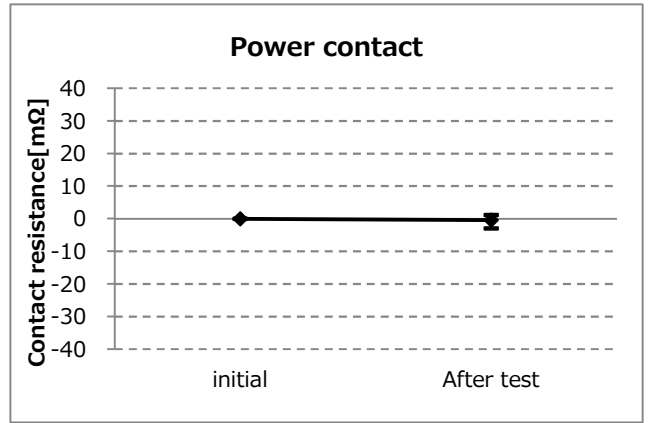


Graph-12. A change of power contact resistance

E Group / Thermal Shock

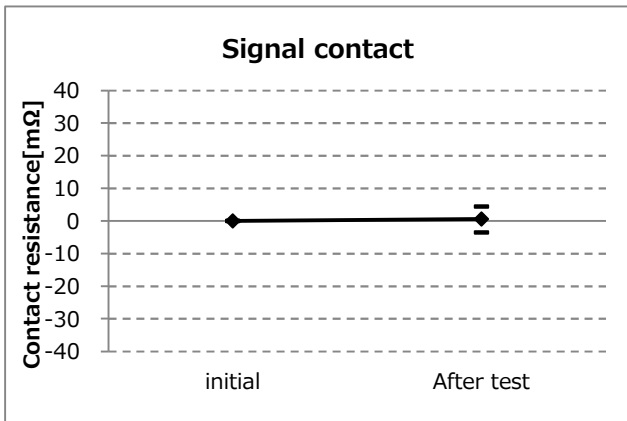


Graph-13. A change of signal contact resistance

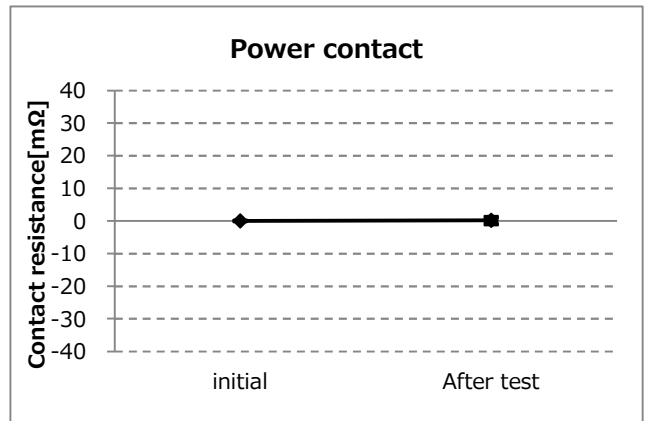


Graph-14. A change of power contact resistance

F Group / High Temperature Life

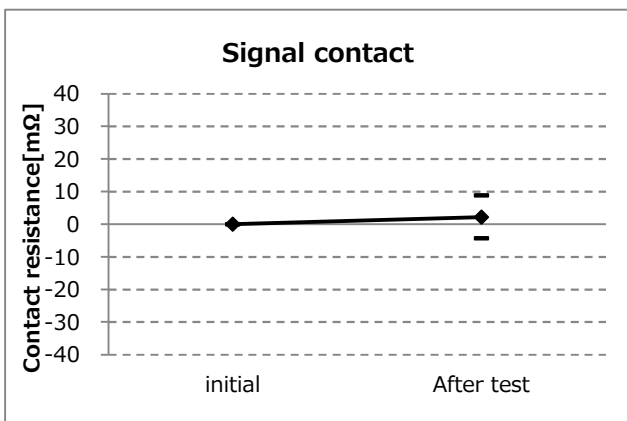


Graph-15. A change of signal contact resistance

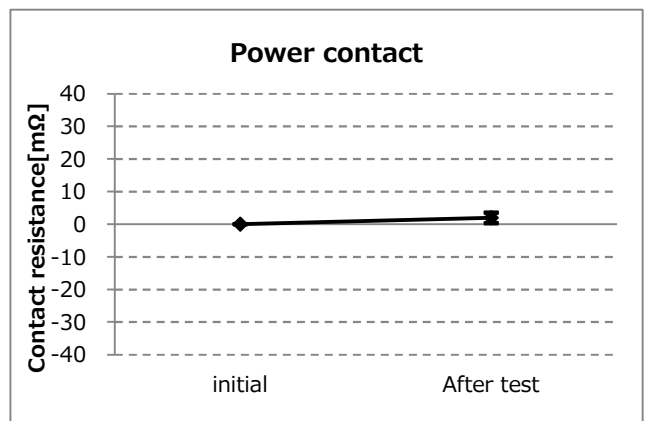


Graph-16. A change of power contact resistance

G Group / Low Temperature Life

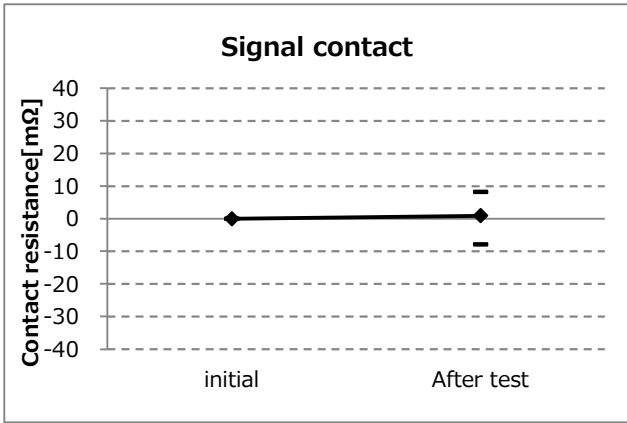


Graph-17. A change of signal contact resistance

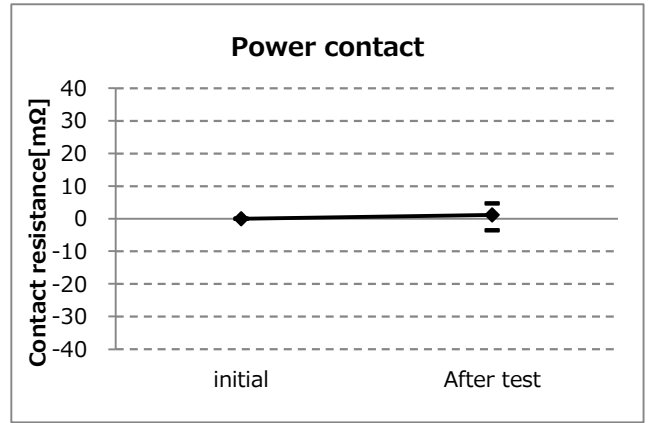


Graph-18. A change of power contact resistance

H Group / Humidity (Steady State)

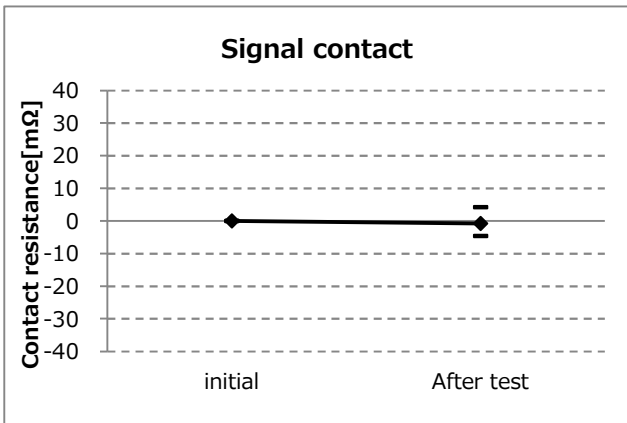


Graph-19. A change of signal contact resistance

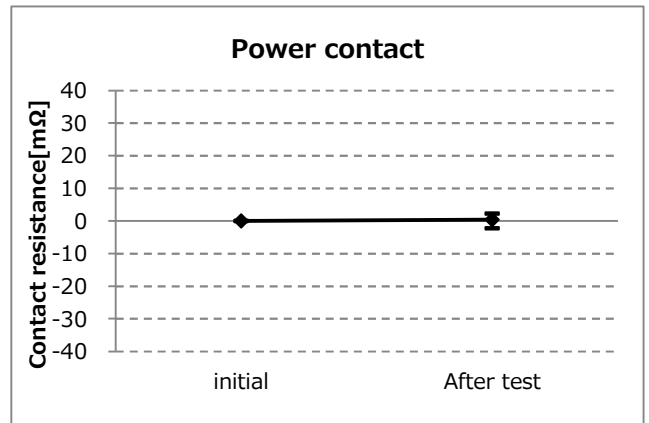


Graph-20. A change of power contact resistance

J Group / Humidity (Cycling)

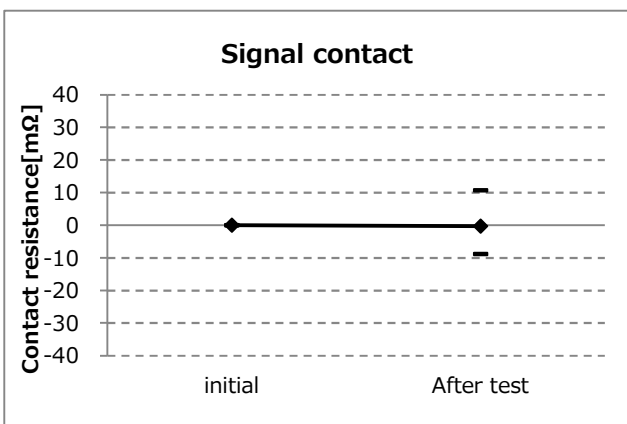


Graph-21. A change of signal contact resistance

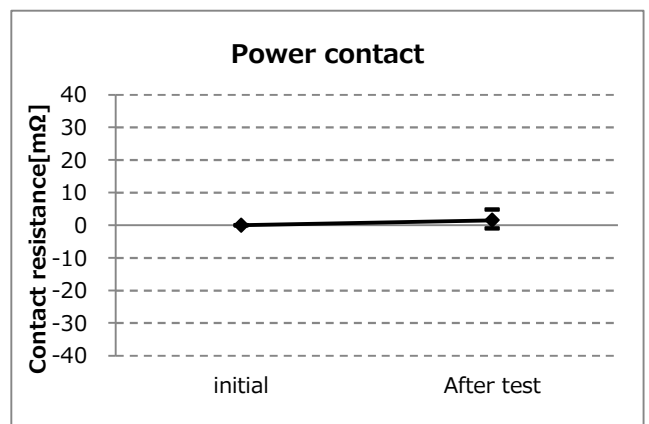


Graph-22. A change of power contact resistance

K Group / Salt Water Spray

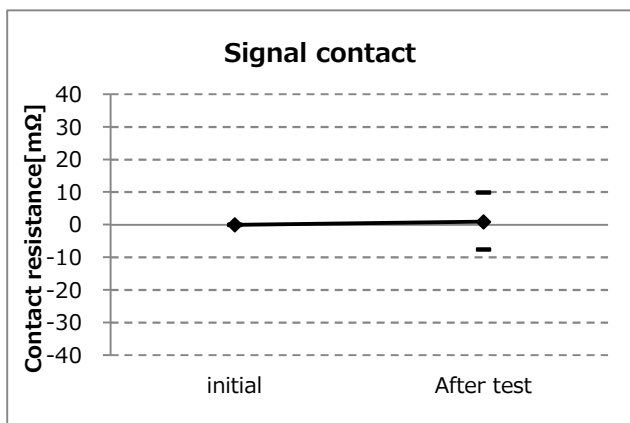


Graph-23. A change of signal contact resistance

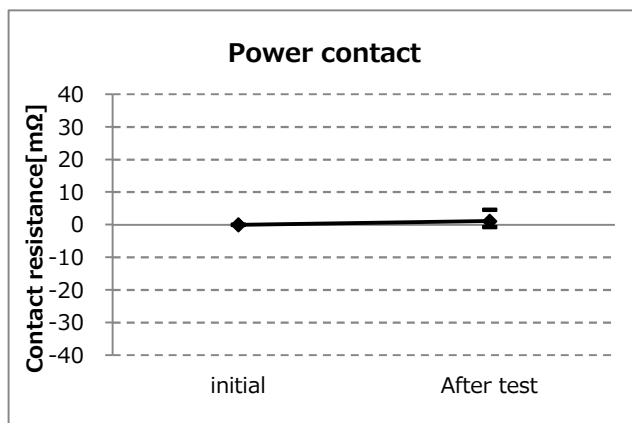


Graph-24. A change of power contact resistance

L Group / H2S Gas



Graph-25. A change of signal contact resistance



Graph-26. A change of power contact resistance