NOVASTACK® 35-P

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

Test Report

Product Specification no. PRS-2101

Rev.	ECN	Date	Prepared by	Checked by	Approved by
4	T21160	November 15, 2021	Haji.Takahahshi	S.Suzuki	Y.Hashimoto
3	T18013	February 8, 2018	M.Hirotani	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

1. Purpose

To evaluate the performance of NOVASTACK 35-PConnector 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

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

4. Result

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

All the specimens met the requirements of PRS-2101.

Table 1 Test Sequence and Sample Quantity

Test Item	Group													
	A	B	C	D	E	F	G	H	J	K	L	M	N	P
Contact Resistance		2,6		1,3,5	1,5	1,3	1,3	1,5	1,5	1,3	1,3			
Insulation Resistance					2,6			2,6	2,6					
D. W. Voltage					3,7			3,7	3,7					
Temperature rising	1													
Mating Force		1,5												
Un-mating Force		3,7												
Durability		4												
Contact Retention Force			1											
Vibration				2										
Shock				4										
Thermal Shock					4									
High Temperature Life						2								
Low Temperature Life							2							
Humidity (Steady State)								4						
Humidity (Cycling)									4					
Salt Water Spray										2				
H2S Gas											2			
Solder ability												1		
Soldering Heat Resistance													1	
Soldering iron														1
Sample QTY.	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.

※Numbers indicate sequence in which tests are performed.

Table 2-1 Test result

Group	Contents of measurement		Spec.	Unit	Q'ty	n	Data AVE.	Data MAX.	Data MIN.	Data S	Data X±3s	Judge.
A	Temperature rising											
	30P (0.3A per pin)		⊿T 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	⊿R 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	⊿R 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	⊿R 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	⊿R 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 adverselyaffecting 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 adverselyaffecting 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 adverselyaffecting 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 adverselyaffecting the performance shall occur.	-	5	-	No abnormality					OK

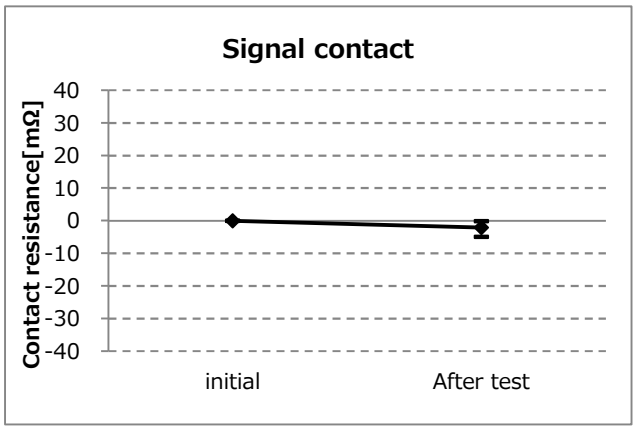
Table 2-3 Test result

Group	Contents of measurement		Spec.	Unit	Q'ty	n	Data AVE.	Data MAX.	Data MIN.	Data S	Data X±3s	Judge.
H	Humidity(steady state)											
	Contact resistance											
	Signal contact	Initial	80 ㏁AX.	mΩ	5	170	38.302	45.73	32.28	2.891	46.975	OK
		After test	⊿R 20 ㏁AX.				0.890	8.19	-7.90	3.355	10.957	OK
	Power contact	Initial	80 ㏁AX.			20	12.172	15.91	9.50	1.737	17.384	OK
		After test	⊿R 20 ㏁AX.				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 abnormalities such as creeping discharge, flashover, insulator breakdown occur.	-	5	-	No abnormality					OK
	Appearance											
		After test	No abnormality adverselyaffecting the performance shall occur.	-	5	-	No abnormality					OK
J	Humidity(cycling)											
	Contact resistance											
	Signal contact	Initial	80 ㏁AX.	mΩ	5	170	39.162	43.78	34.23	2.102	45.466	OK
		After test	⊿R 20 ㏁AX.				-0.777	4.20	-4.64	2.031	5.317	OK
	Power contact	Initial	80 ㏁AX.			20	12.323	16.18	10.92	1.375	16.450	OK
		After test	⊿R 20 ㏁AX.				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 abnormalities such as creeping discharge, flashover, insulator breakdown occur.	-	5	-	No abnormality					OK
	Appearance											
		After test	No abnormality adverselyaffecting the performance shall occur.	-	5	-	No abnormality					OK
K	Salt water spray											
	Contact resistance											
	Signal contact	Initial	80 ㏁AX.	mΩ	5	170	40.136	45.00	32.91	2.591	47.910	OK
		After test	⊿R 20 ㏁AX.				-0.315	10.65	-8.85	3.617	10.535	OK
	Power contact	Initial	80 ㏁AX.			20	13.830	15.12	12.74	0.718	15.983	OK
		After test	⊿R 20 ㏁AX.				1.522	4.74	-0.98	1.784	6.874	OK
	Appearance											
		After test	No abnormality adverselyaffecting the performance shall occur.	-	5	-	No abnormality					OK

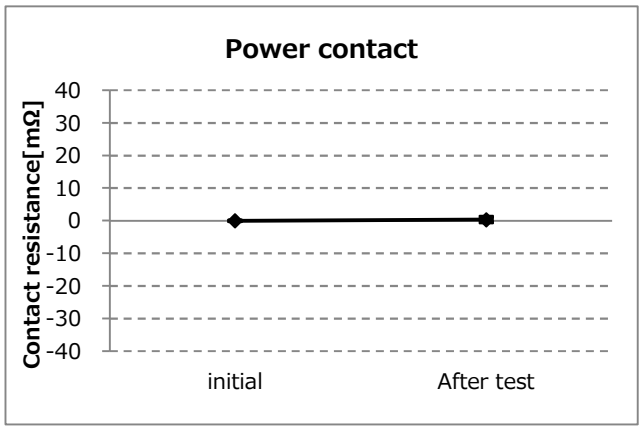
Table 2-4 Test result

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	⊿R 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	⊿R 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

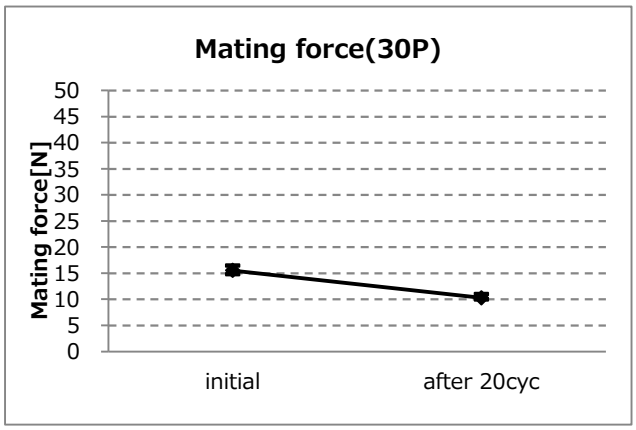


Graph-1. A change of signal contact resistance

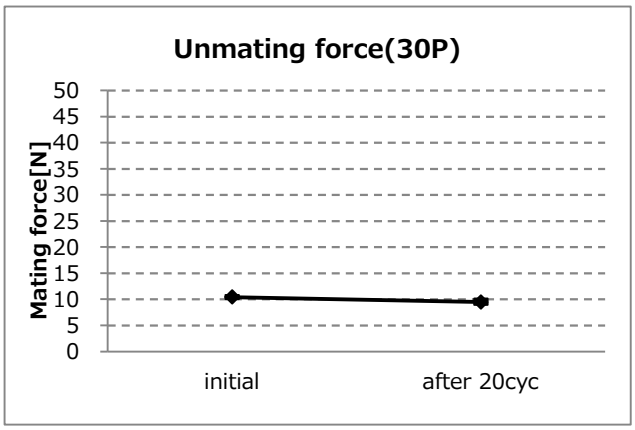


Graph-2. A change of power contact resistance

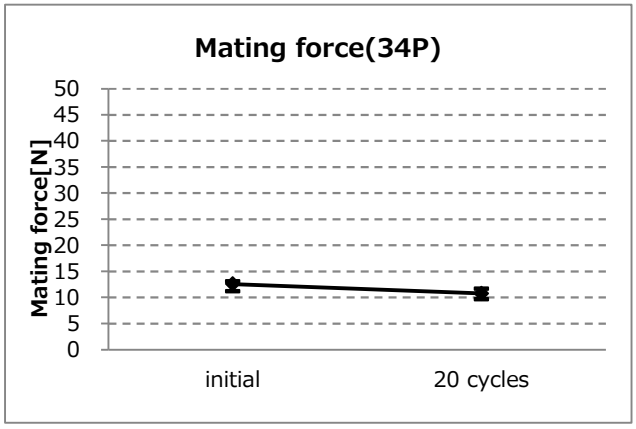
B Group / Durability



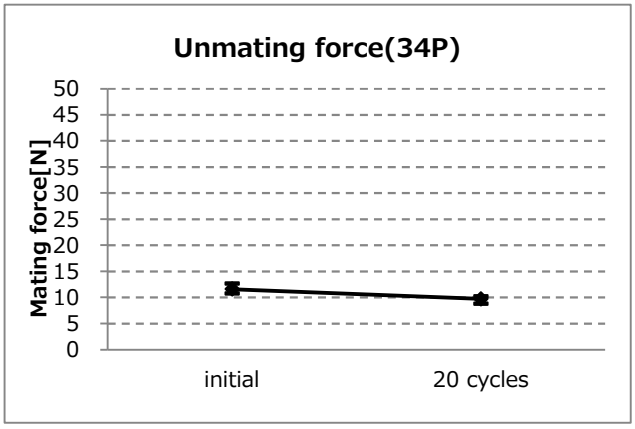
Graph-3. A change of mating force(30P)



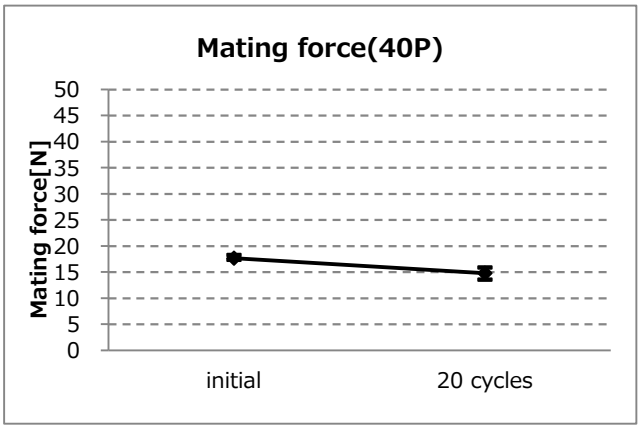
Graph-4. A change of unmating force(30P)



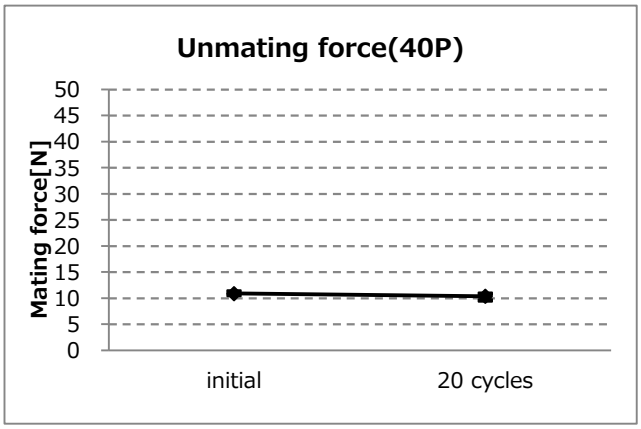
Graph-5. A change of mating force(34P)



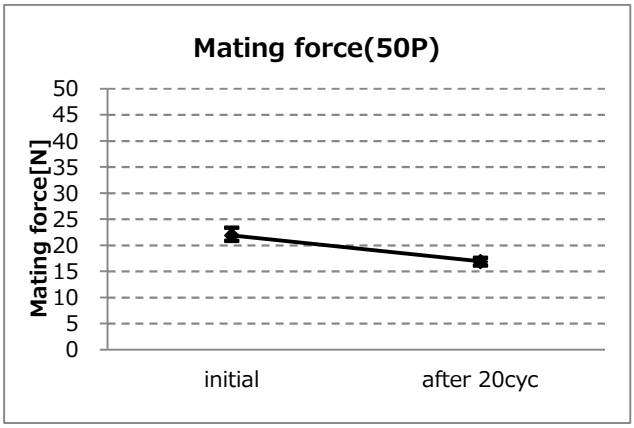
Graph-6. A change of unmating force(34P)



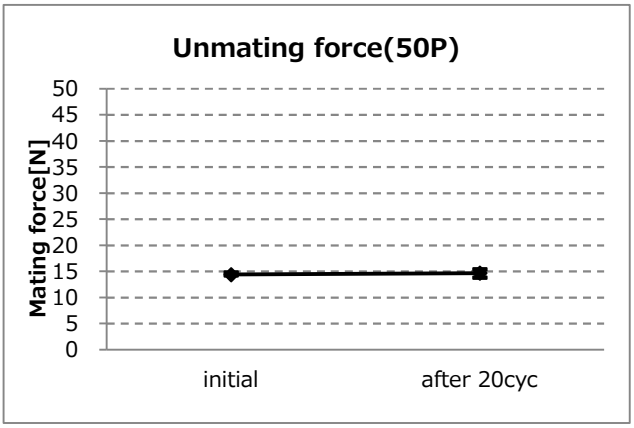
Graph-7. A change of mating force(40P)



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

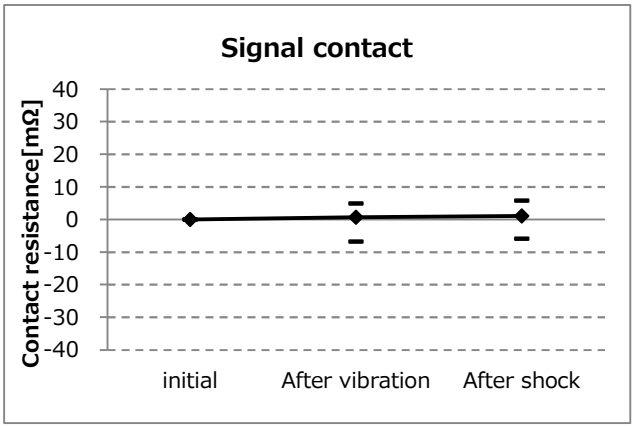


Graph-9. A change of mating force(50P)

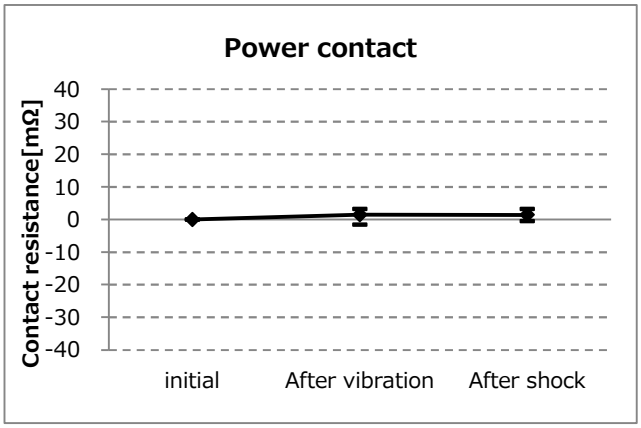


Graph-10. A change of unmating force(50P)

D Group / Vibration → Shock

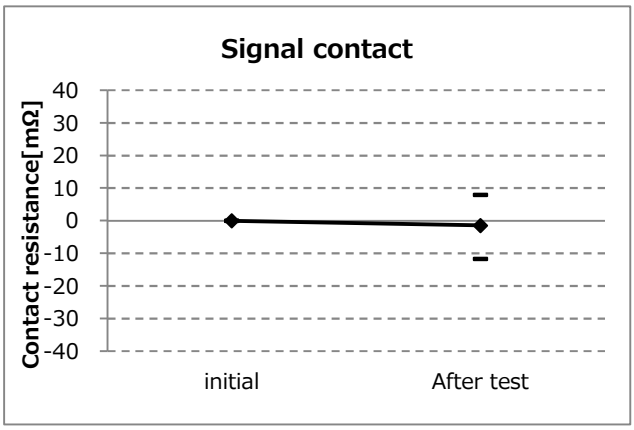


Graph-11. A change of signal contact resistance

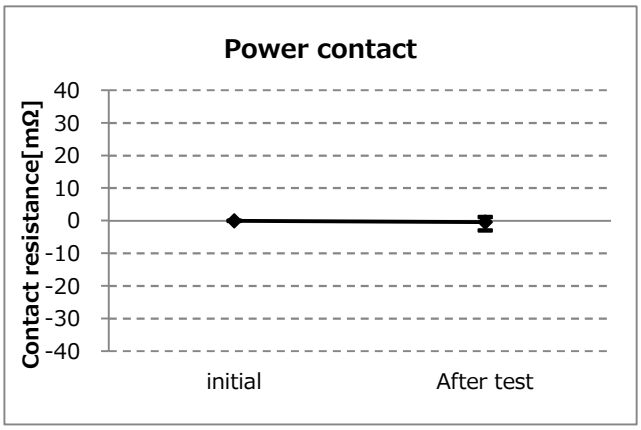


Graph-12. A change of power contact resistance

E Group / Thermal Shock

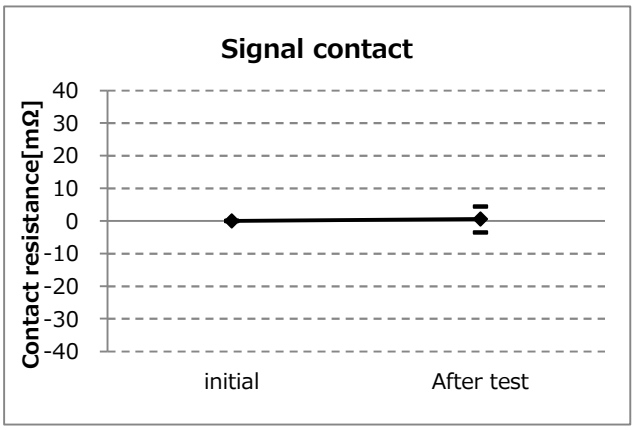


Graph-13. A change of signal contact resistance

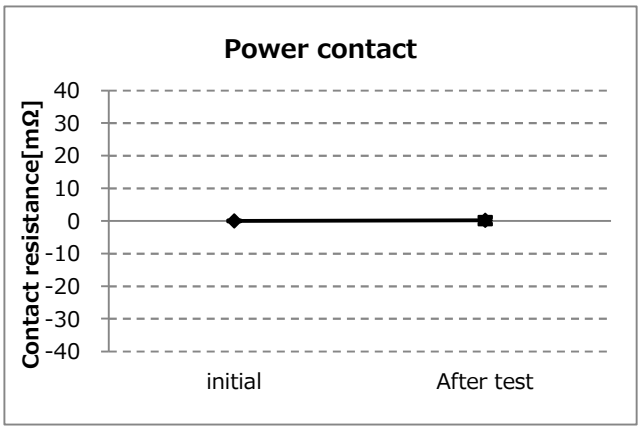


Graph-14. A change of power contact resistance

F Group / High Temperature Life

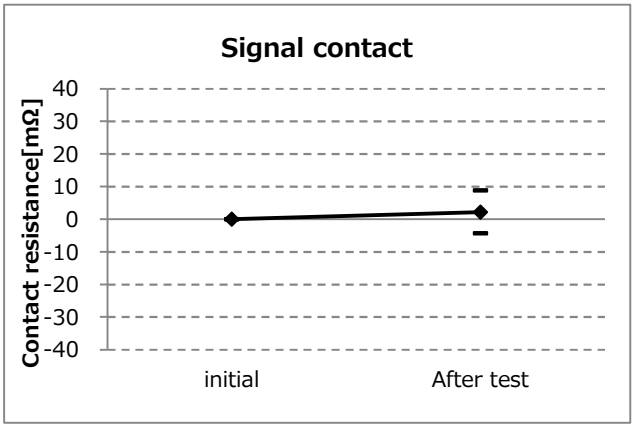


Graph-15. A change of signal contact resistance

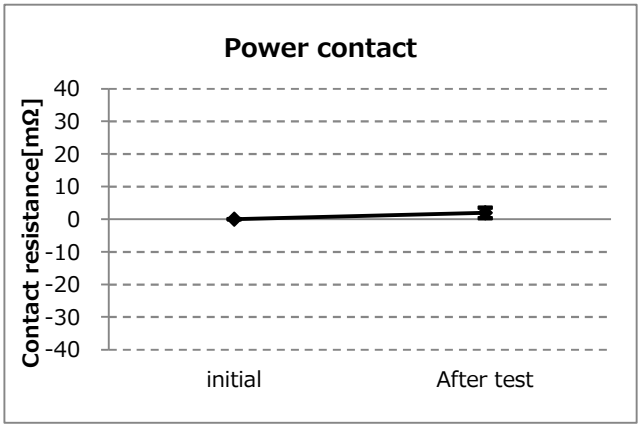


Graph-16. A change of power contact resistance

G Group / Low Temperature Life

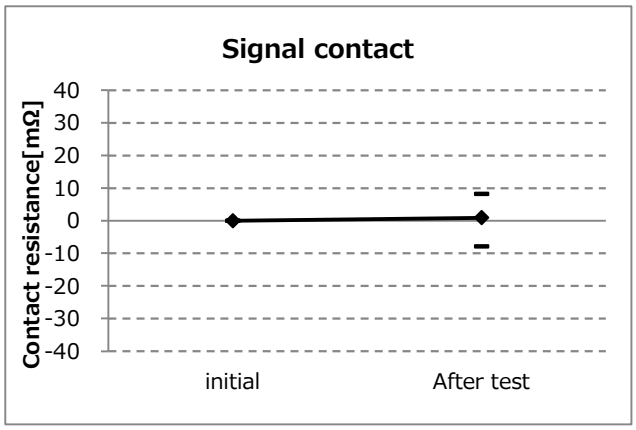


Graph-17. A change of signal contact resistance

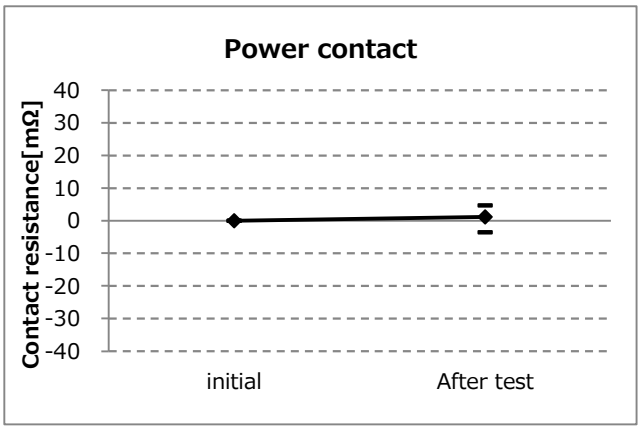


Graph-18. A change of power contact resistance

H Group / Humidity (Steady State)

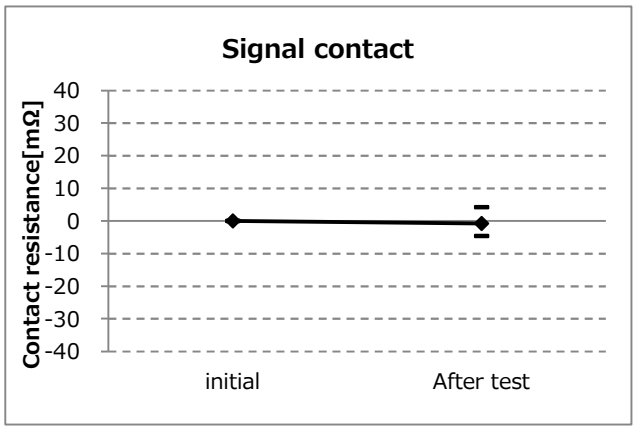


Graph-19. A change of signal contact resistance

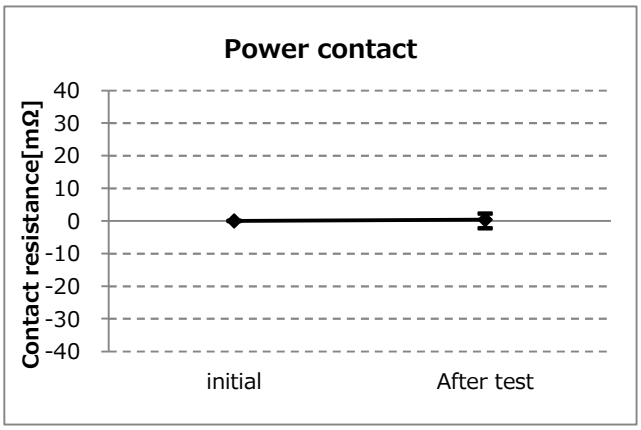


Graph-20. A change of power contact resistance

J Group / Humidity (Cycling)

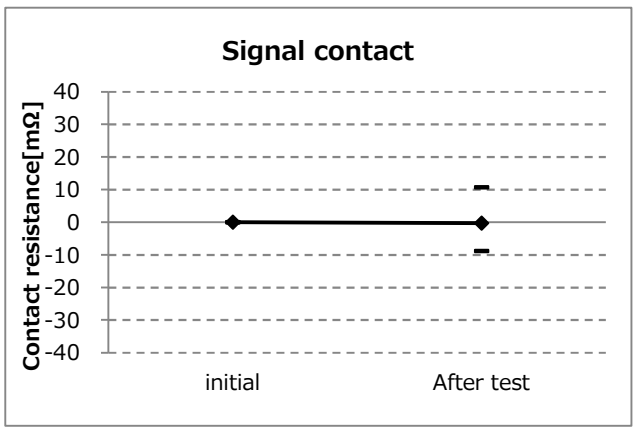


Graph-21. A change of signal contact resistance

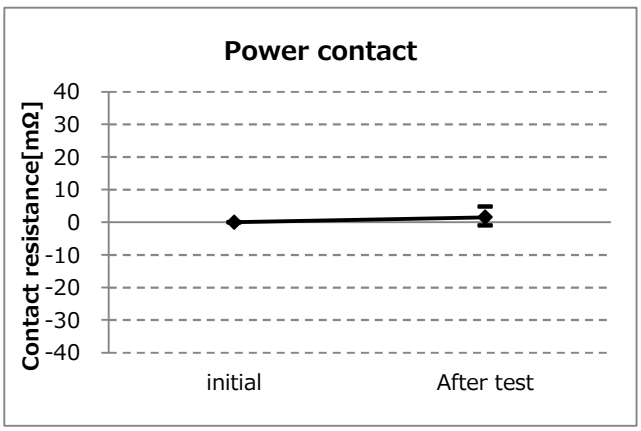


Graph-22. A change of power contact resistance

K Group / Salt Water Spray

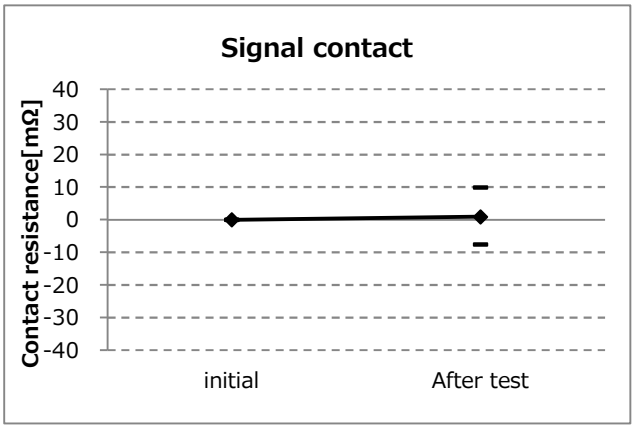


Graph-23. A change of signal contact resistance

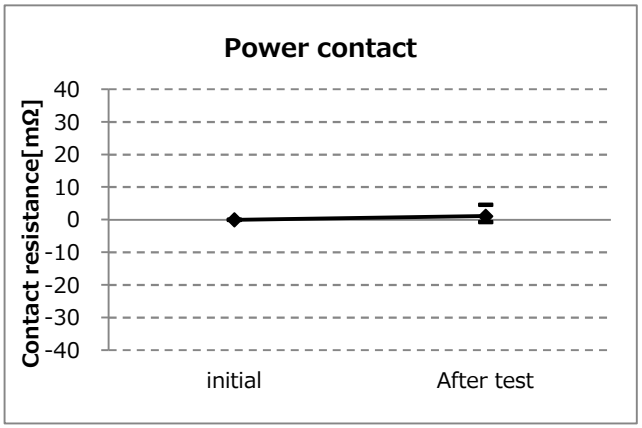


Graph-24. A change of power contact resistance

L Group / H2S Gas



Graph-25. A change of signal contact resistance



Graph-26. A change of power contact resistance