NOVASTACK® 35-HDN

Part No. Plug: 20864-0**E-0# Receptacle: 20865-0**E-0#

Test Report

Product Specification no. PRS-2607

Rev.	ECN	Date	Prepared by	Checked by	Approved by
5	T21131	November 1, 2021	H. Higuchi	S. Suzuki	Y. Hashimoto
4	T21009	January 29, 2021	M. Hidaka	S. Suzuki	Y. Hashimoto
3	T20017	January 31, 2020	A. Kagoshima	T. Yayoshi	Y. Shimada
2	T19165	December 11, 2019	R. Itokawa	T. Yayoshi	Y. Shimada

1. Purpose

To evaluate the performance of NOVASTACK 35-HDN Connector in accordance with PRS-2607.

2. Specimen

(1) NOVASTACK 35-HDN Plug Ass'y (Part No. 20864-0**E-0#)
(2) NOVASTACK 35-HDN Receptacle Ass'y (Part No. 20865-0**E-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 22. For the details of the testing conditions and requirements, see PRS-2607.
The “n” in the tables show the number of measurement points.

5. Conclusion

All the specimens met the requirements of PRS-2607.

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	1,5	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											
Unmating Force		3,7											
Durability		4											
Contact Retention Force			1										
Vibration				2									
Shock				4									
Thermal Shock					4								
High 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.	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											
	10P Signal Contact 1.0A/Contact (Total:10.0A)		⊿T 30 MAX.	℃	5	-	⊿T		18.1	MAX.		Pass
	20P Signal Contact 0.6A/Contact (Total:12.0A)			℃	5	-	⊿T		21.8	MAX.		
	30P Signal Contact 0.4A/Contact (Total:12.0A)			℃	5	-	⊿T		14.0	MAX.		
B	Durability											
	Contact Resistance											
	Signal Contact	Initial	40 MAX.	mohm	5	50	8.225	10.11	6.66	0.755	10.491	Pass
		After 10 cycles	⊿R 40 MAX.				-1.018	0.02	-2.66	0.626	-2.896	Pass
	Ground	Initial	20 MAX.			10	1.157	1.30	1.00	0.104	1.468	Pass
		After 10 cycles	⊿R 20 MAX.				0.487	1.58	-0.70	0.722	2.655	Pass
	Mating Force											
	10P	Initial	20.0 MAX.	N	5	-	15.788	16.94	14.78	-	-	Pass
		After 10 cycles					6.258	6.59	5.83	-	-	Pass
	20P	Initial	40.0 MAX.	N	5	-	17.771	18.475	17.177	-	-	Pass
		After 10 cycles					8.544	9.682	7.188	-	-	Pass
	30P	Initial	60.0 MAX.	N	5	-	28.912	29.96	27.06	-	-	Pass
		After 10 cycles					13.902	14.92	13.04	-	-	Pass
	Unmating Force											
	10P	Initial	1.5 MIN.	N	5	-	8.920	9.75	7.93	-	-	Pass
		After 10 cycles					5.054	5.81	4.54	-	-	Pass
	20P	Initial	3.0 MIN.	N	5	-	12.371	13.733	11.255	-	-	Pass
		After 10 cycles					6.853	7.616	5.949	-	-	Pass
	30P	Initial	4.5 MIN.	N	5	-	18.084	19.02	17.32	-	-	Pass
		After 10 cycles					11.642	11.92	11.13	-	-	Pass
C	Contact Retention Force											
	Receptacle											
	Signal Contact	Initial	0.1 MIN.	N	-	20	0.66 N MIN.					Pass
		After Test					0.59 N MIN.					Pass
	Ground	Initial					1.13 N MIN.					Pass
		After Test					1.04 N MIN.					Pass
D	Vibration → Shock											
	Contact Resistance											
	Signal Contact	Initial	40 MAX.	mohm	5	50	8.260	10.99	6.37	0.866	10.858	Pass
		After Vibration	⊿R 40 MAX.				-0.228	1.56	-1.90	0.754	-2.490	Pass
		After Shock					-0.332	0.95	-2.37	0.693	-2.411	Pass
	Ground	Initial	20 MAX.			10	1.405	2.39	1.03	0.483	2.854	Pass
		After Vibration	⊿R 20 MAX.				0.412	1.12	-0.22	0.413	1.652	Pass
		After Shock					0.369	1.33	-0.10	0.450	1.718	Pass
	Electrical Discontinuity											
		During Test	1 MAX.	μs	5	-	No Discontinuity					Pass
	Appearance											
		After Test	*	-	5	-	No Abnormality					Pass

*Appearance Spec.: No abnormality adversely affecting the performance shall occur.

Table.2-2 Test Result

Group	Contents of Measurement		Spec.	Unit	Q'ty	n	Data AVE.	Data MAX.	Data MIN.	Data S	Data X±3s	Judge.
E	Thermal Shock											
	Contact Resistance											
	Signal Contact	Initial	40 MAX.	mohm	5	50	8.280	9.51	7.00	0.706	10.398	Pass
		After Test	⊿R 40 MAX.				0.749	3.09	-0.92	0.863	3.337	Pass
	Ground	Initial	20 MAX.			10	1.413	2.11	1.05	0.309	2.341	Pass
		After Test	⊿R 20 MAX.				0.539	1.48	-0.24	0.606	2.358	Pass
	Insulation Resistance											
		Initial	1000 MIN.	Mohm	5	-	2.18 x 10^4 MIN.					Pass
		After Test	500 MIN.				1.08 x 10^4 MIN.					Pass
	Dielectric Withstanding Voltage											
		After Test	**	-	5	-	No Abnormality					Pass
	Appearance											
		After Test	*	-	5	-	No Abnormality					Pass
F	High Temperature Life											
	Contact Resistance											
	Signal Contact	Initial	40 MAX.	mohm	5	50	8.862	10.73	7.35	0.951	11.714	Pass
		After Test	⊿R 40 MAX.				1.301	2.88	-0.08	0.665	3.297	Pass
	Ground	Initial	20 MAX.			10	1.465	1.93	1.05	0.274	2.287	Pass
		After Test	⊿R 20 MAX.				0.651	1.39	-0.40	0.600	2.451	Pass
	Appearance											
		After Test	*	-	5	-	No Abnormality					Pass
G	Humidity (Steady State)											
	Contact Resistance											
	Signal Contact	Initial	40 MAX.	mohm	5	50	8.769	11.01	6.83	0.880	11.410	Pass
		After Test	⊿R 40 MAX.				-0.180	1.94	-1.87	0.737	-2.392	Pass
	Ground	Initial	20 MAX.			10	1.647	2.14	1.21	0.281	2.490	Pass
		After Test	⊿R 20 MAX.				0.918	2.04	0.43	0.514	2.460	Pass
	Insulation Resistance											
		Initial	1000 MIN.	Mohm	5	-	1.15 x 10^4 MIN.					Pass
		After Test	500 MIN.				1.58 x 10^4 MIN.					Pass
	Dielectric Withstanding Voltage											
		After Test	**	-	5	-	No Abnormality					Pass
	Appearance											
		After Test	*	-	5	-	No Abnormality					Pass

*Appearance Spec.: No abnormality adversely affecting the performance shall occur.

** Dielectric Withstanding Voltage Spec.: No abnormalities such as creeping discharge, flashover, insulator breakdown occur.

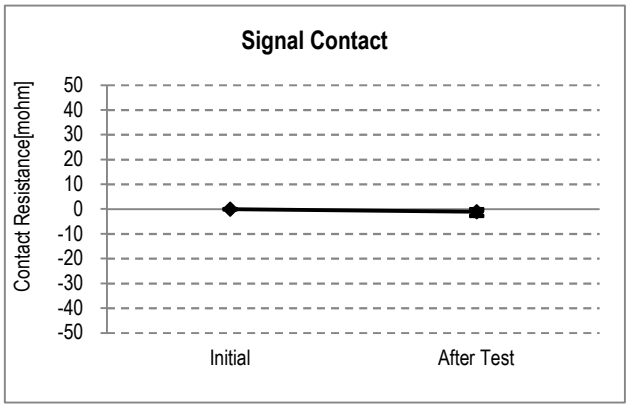
Table.2-3 Test Result

Group	Contents of Measurement		Spec.	Unit	Q'ty	n	Data AVE.	Data MAX.	Data MIN.	Data S	Data X±3s	Judge.
H	Humidity (Cycling)											
	Signal Contact	Initial	40 MAX.	mohm	5	50	8.897	11.93	6.76	1.105	12.212	Pass
		After Test	⊿R 40 MAX.				0.160	2.67	-1.87	0.907	2.882	Pass
	Ground	Initial	20 MAX.			10	1.607	2.09	1.08	0.286	2.466	Pass
		After Test	⊿R 20 MAX.				1.472	2.88	0.45	0.914	4.215	Pass
	Insulation Resistance											
		Initial	1000 MIN.	Mohm	5	-	1.98×10^4 MIN.					Pass
		After Test	500 MIN.				5.24×10^4 MIN.					Pass
	Dielectric Withstanding Voltage											
		After Test	**	-	5	-	No Abnormality					Pass
	Appearance											
		After Test	*	-	5	-	No Abnormality					Pass
J	Salt Water Spray											
	Contact Resistance											
	Signal Contact	Initial	40 MAX.	mohm	5	50	7.831	9.08	6.75	0.608	9.654	Pass
		After Test	⊿R 40 MAX.				-0.507	0.60	-1.42	0.443	-1.837	Pass
	Ground	Initial	20 MAX.			10	1.340	1.90	1.09	0.286	2.197	Pass
		After Test	⊿R 20 MAX.				0.305	1.33	-0.83	0.664	2.298	Pass
	Appearance											
		After Test	*	-	5	-	No Abnormality					Pass
K	H_2S Gas											
	Contact Resistance											
	Signal Contact	Initial	40 MAX.	mohm	5	50	8.697	11.67	6.78	1.092	11.973	Pass
		After Test	⊿R 40 MAX.				-0.400	0.57	-1.73	0.564	-2.093	Pass
	Ground	Initial	20 MAX.			10	1.685	2.11	1.30	0.267	2.486	Pass
		After Test	⊿R 20 MAX.				0.473	1.40	-0.69	0.653	2.431	Pass
	Appearance											
		After Test	*	-	5	-	No Abnormality					Pass
L	Solder Ability											
	Solder Wetting Area											
		After Test	95 MIN.	%	10	-	95 MIN.					Pass
M	Resistance to Reflow Soldering Heat											
	Appearance											
		After Test	*	-	10	-	No Abnormality					Pass
N	Soldering Iron											
	Appearance											
		After Test	*	-	10	-	No Abnormality					Pass

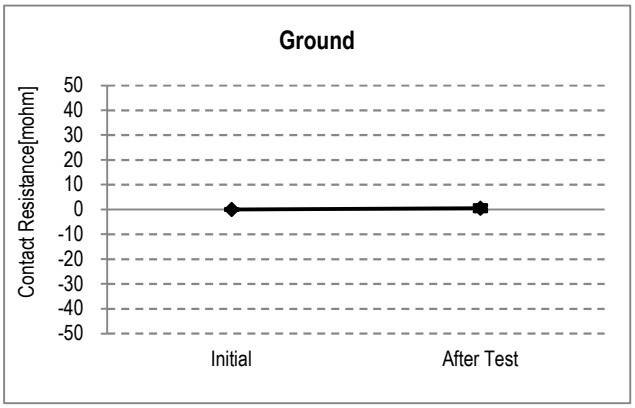
*Appearance Spec.: No abnormality adversely affecting the performance shall occur.

** Dielectric Withstanding Voltage Spec.: No abnormalities such as creeping discharge, flashover, insulator breakdown occur.

B Group / Durability

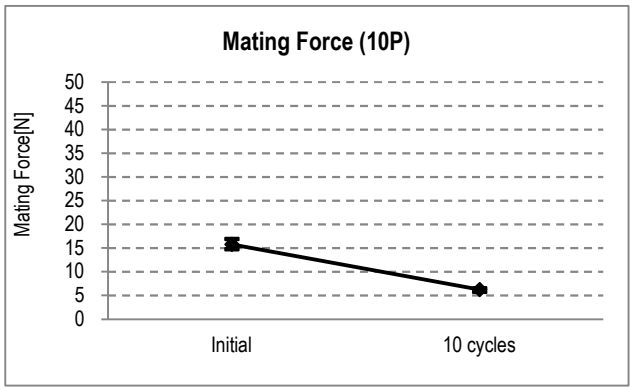


Graph-1. A Change of Ground Resistance

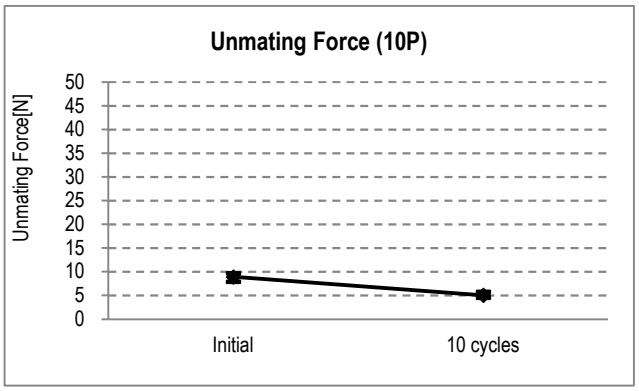


Graph-2. A Change of Ground Resistance

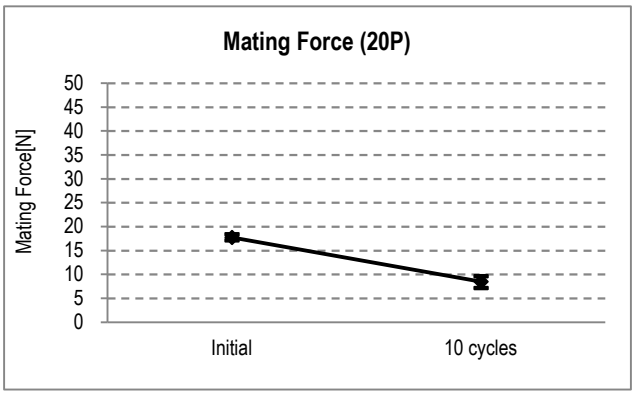
B Group / Durability



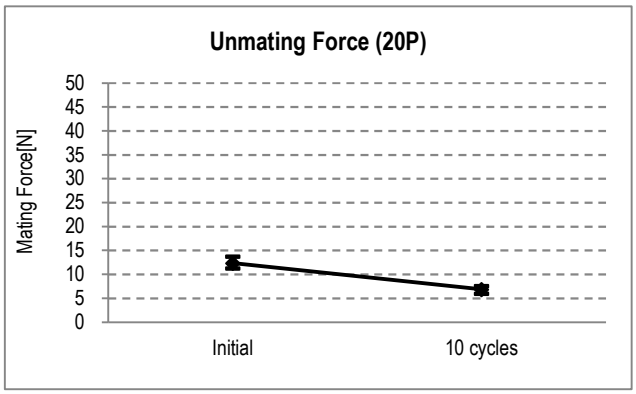
Graph-3. A Change of Mating Force (10P)



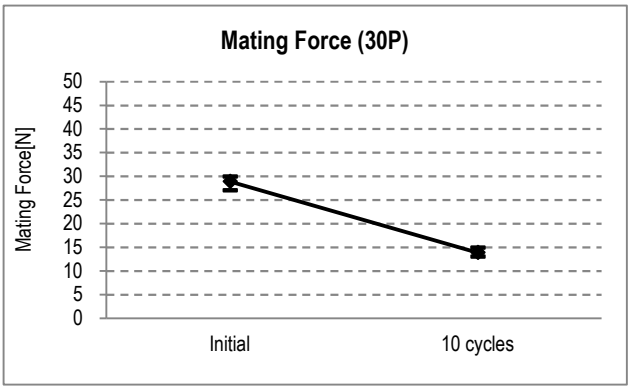
Graph-4. A Change of Unmating Force (10P)



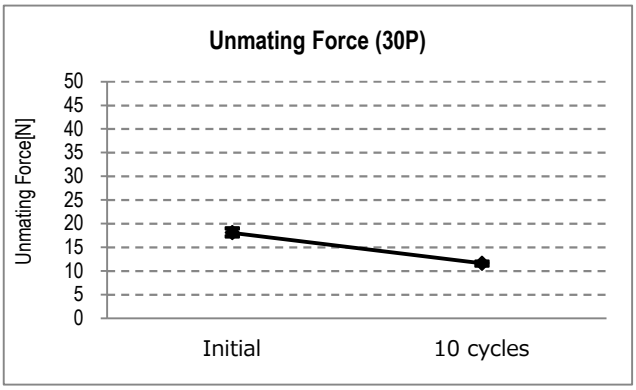
Graph-5. A Change of Mating Force (20P)



Graph-6. A Change of Unmating Force (20P)

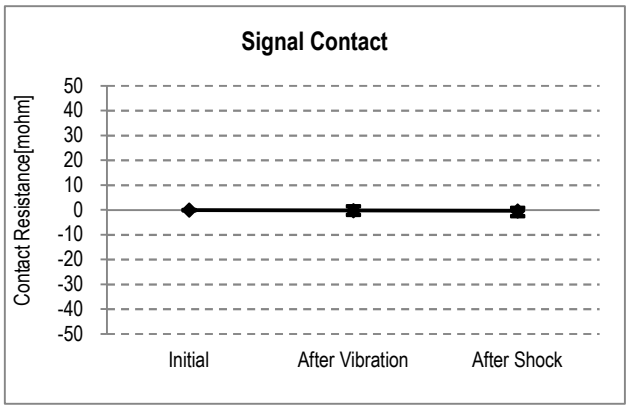


Graph-7. A Change of Mating Force (30P)

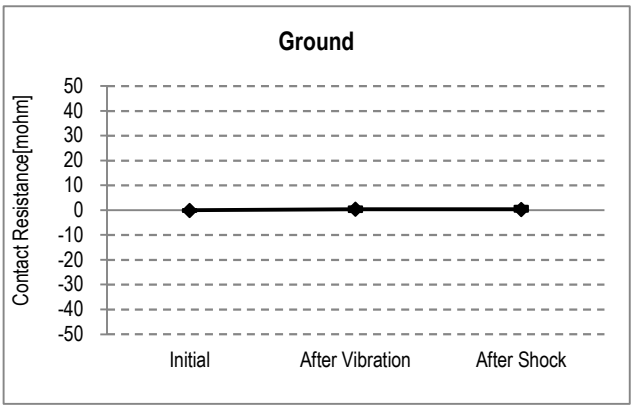


Graph-8. A Change of Unmating Force (30P)

D Group / Vibration → Shock

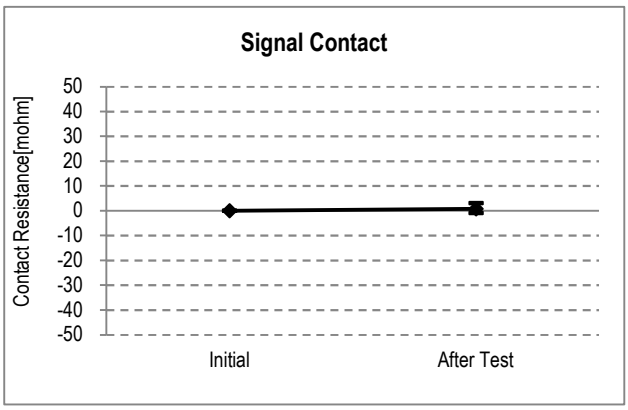


Graph-9. A Change of Signal Contact Resistance

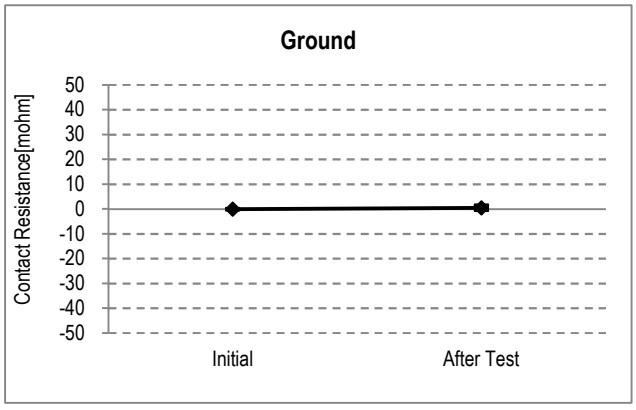


Graph-10. A Change of Ground Resistance

E Group / Thermal Shock

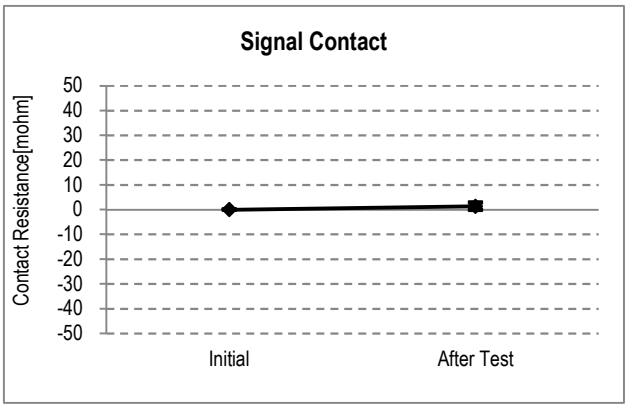


Graph-11. A Change of Signal Contact Resistance

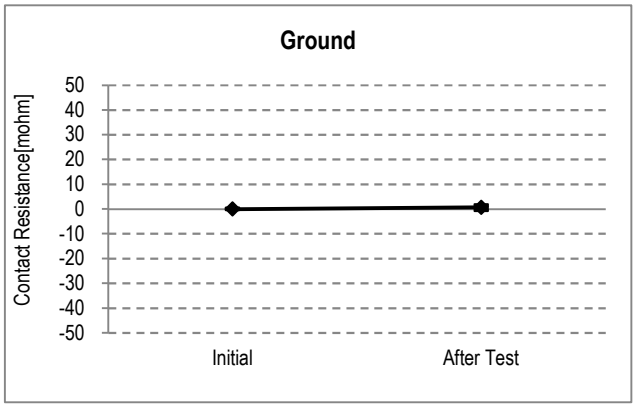


Graph-12. A Change of Ground Resistance

F Group / High Temperature Life

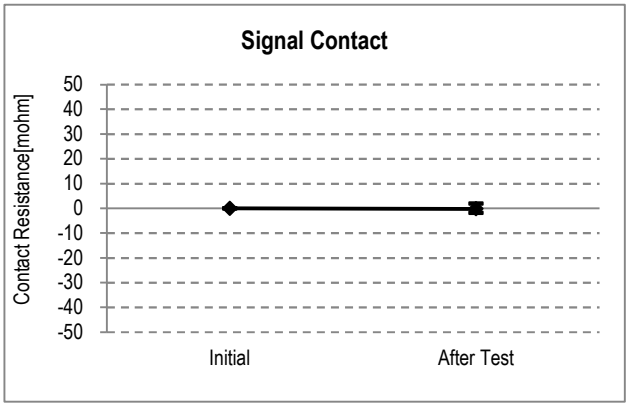


Graph-13. A Change of Signal Contact Resistance

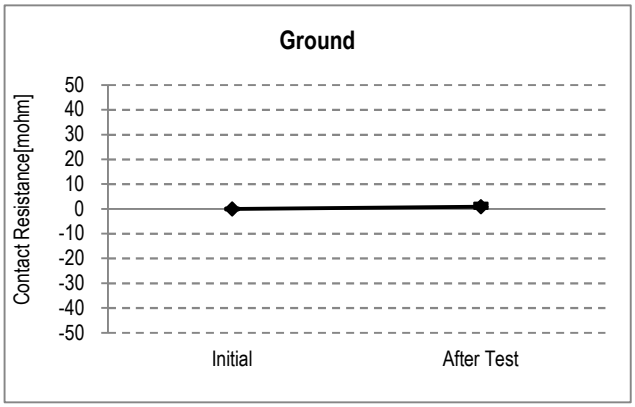


Graph-14. A Change of Ground Resistance

G Group / Humidity (Steady State)

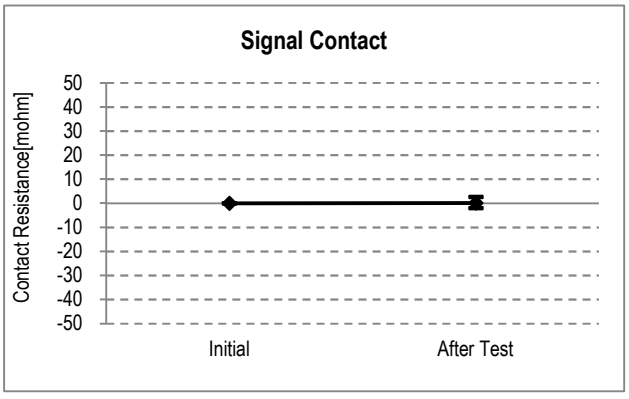


Graph-15 A Change of Signal Contact Resistance

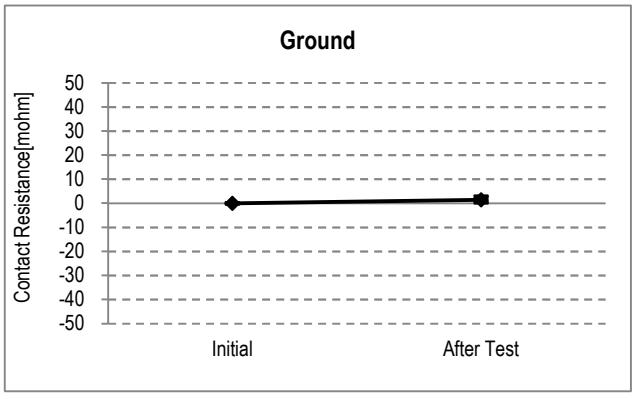


Graph-16. A Change of Ground Resistance

H Group / Humidity (Cycling)

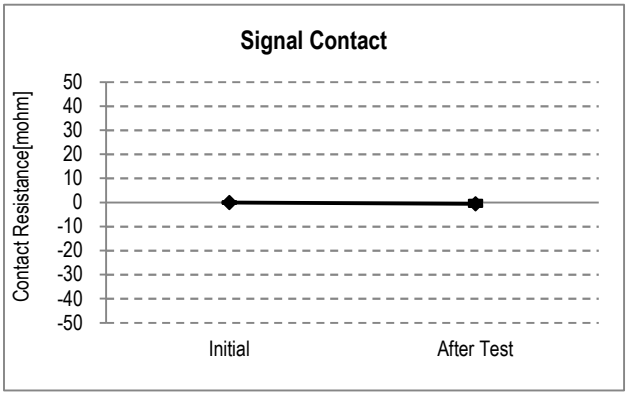


Graph-17. A Change of Signal Contact Resistance

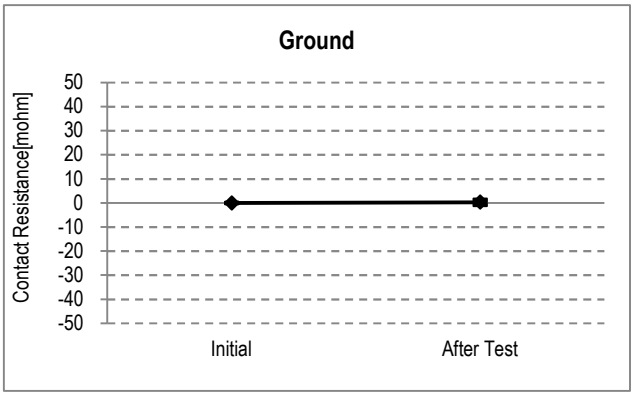


Graph-18. A Change of Ground Resistance

J Group / Salt Water Spray

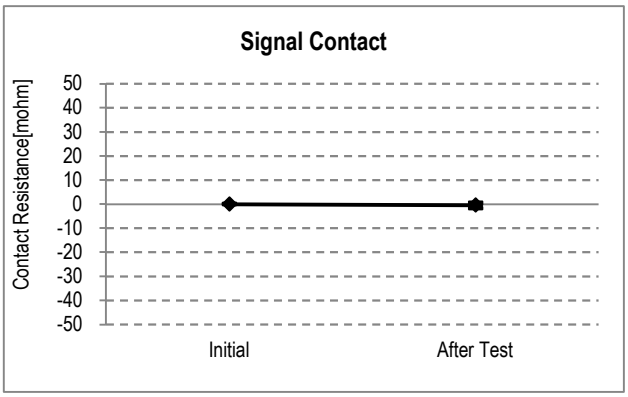


Graph-19. A Change of Signal Contact Resistance

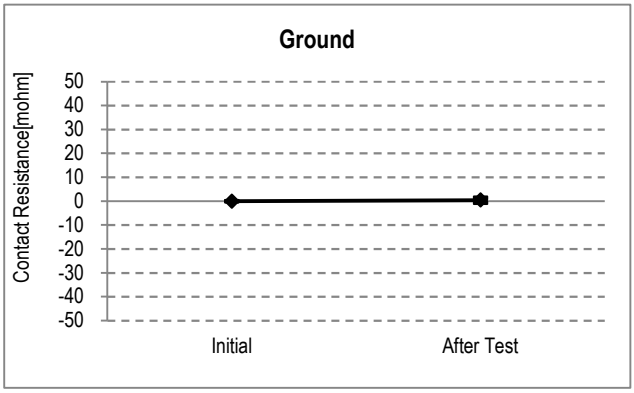


Graph-20. A Change of Ground Resistance

K Group / H_2S Gas



Graph-21. A Change of Signal Contact Resistance



Graph-22. A Change of Ground Resistance