

NOVASTACK® 35-HDN

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

Test Report

Product Specification no. PRS-2607

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	T19106	September 25, 2019	R.Shioya	A.Kagoshima	Y.Shimada
Rev.	ECN	Date	Prepared by	Checked by	Approved by

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					Judge.
						AVE.	MAX.	MIN.	S	X±3s	
A	Temperature Rising										
	10P Signal Contact 1.0A/Contact (Total:10.0A)	ΔT 30 MAX.	℃	5	-	ΔT	18.1	MAX.			Pass
	20P Signal Contact 0.6A/Contact (Total:12.0A)		℃	5	-	ΔT	21.8	MAX.			
30P Signal Contact 0.4A/Contact (Total:12.0A)	℃		5	-	ΔT	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	ΔR 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	ΔR 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	ΔR 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	ΔR 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	No Abnormality		-	5	-	No Abnormality					Pass	

Table.2-2 Test Result

Group	Contents of Measurement	Spec.	Unit	Qty	n	Data					Judge.			
						AVE.	MAX.	MIN.	S	X±3s				
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	ΔR 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	ΔR 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	No Abnormality	-	5	-	No Abnormality					Pass			
Appearance														
	After Test	No Abnormality	-	5	-	No Abnormality					Pass			

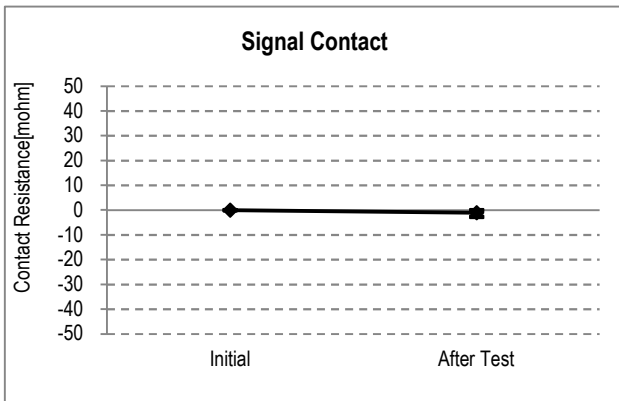
F	High Temperature Life												
	Contact Resistance												
	Signal Contact	Initial	40	MAX.	mohm	5	50	8.862	10.73	7.35	0.951	11.714	Pass
		After Test	ΔR 40	MAX.				1.301	2.88	-0.08	0.665	3.297	Pass
	Ground	Initial	20	MAX.			10	1.465	1.93	1.05	0.274	2.287	Pass
		After Test	ΔR 20	MAX.				0.651	1.39	-0.40	0.600	2.451	Pass
Appearance													
	After Test	No Abnormality	-	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	ΔR 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	ΔR 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	No Abnormality	-	5	-	No Abnormality					Pass			
Appearance														
	After Test	No Abnormality	-	5	-	No Abnormality					Pass			

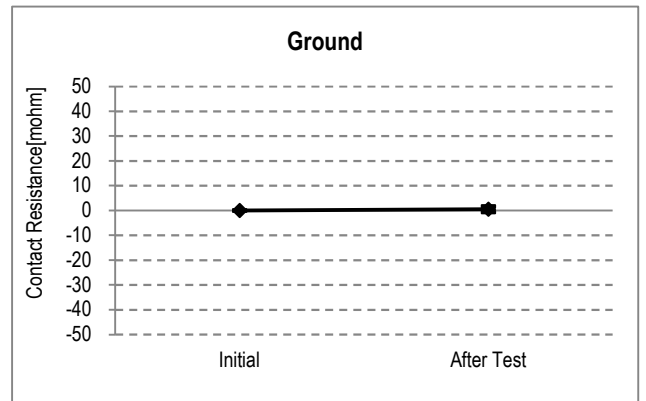
Table.2-3 Test Result

Group	Contents of Measurement		Spec.	Unit	Q'ty	n	Data					Judge.			
							AVE.	MAX.	MIN.	S	X±3s				
H	Humidity (Cycling)														
	Signal Contact	Initial	40 MAX.	mohm	5	50	8.897	11.93	6.76	1.105	12.212	Pass			
		After Test	ΔR 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	ΔR 20 MAX.					1.472	2.88	0.45	0.914	4.215	Pass		
	Insulation Resistance														
		Initial	1000 MIN.			Mohm	5	-	1.98 x 10 ⁴ MIN.					Pass	
		After Test	500 MIN.						5.24 x 10 ⁴ MIN.					Pass	
	Dielectric Withstanding Voltage														
		After Test	No Abnormality	-	5	-	No Abnormality					Pass			
Appearance															
	After Test	No Abnormality	-	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	ΔR 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	ΔR 20 MAX.					0.305	1.33	-0.83	0.664	2.298	Pass		
	Appearance														
	After Test	No Abnormality	-			5	-	No Abnormality					Pass		
K	H ₂ S Gas														
	Contact Resistance														
	Signal Contact	Initial	40 MAX.	mohm	5	50	8.697	11.67	6.78	1.092	11.973	Pass			
		After Test	ΔR 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	ΔR 20 MAX.					0.473	1.40	-0.69	0.653	2.431	Pass		
	Appearance														
	After Test	No Abnormality	-			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	No Abnormality	-	10	-	No Abnormality					Pass				
N	Soldering Iron														
	Appearance														
	After Test	No Abnormality	-	10	-	No Abnormality					Pass				

B Group / Durability

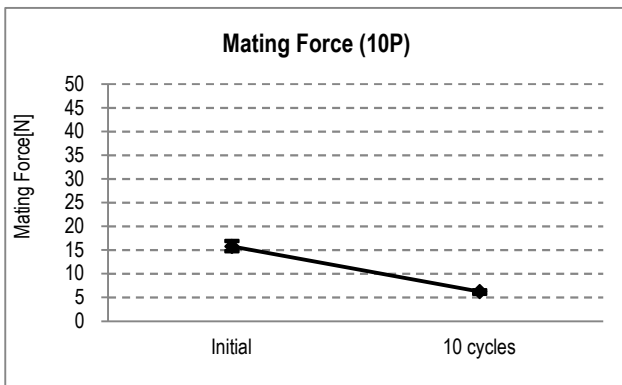


Graph-1. A Change of Ground Resistance

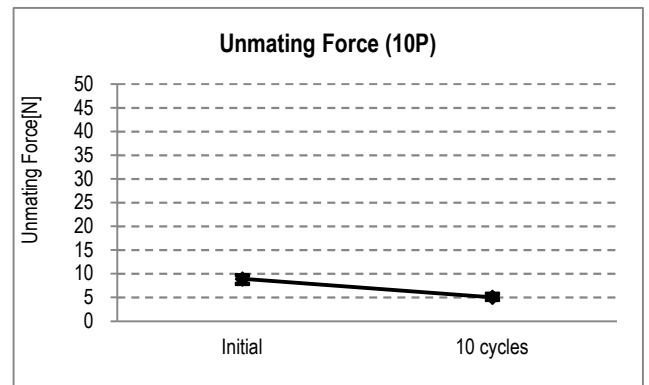


Graph-2. A Change of Ground Resistance

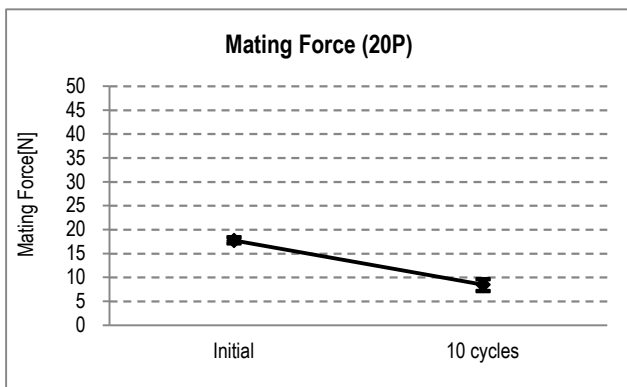
B Group / Durability



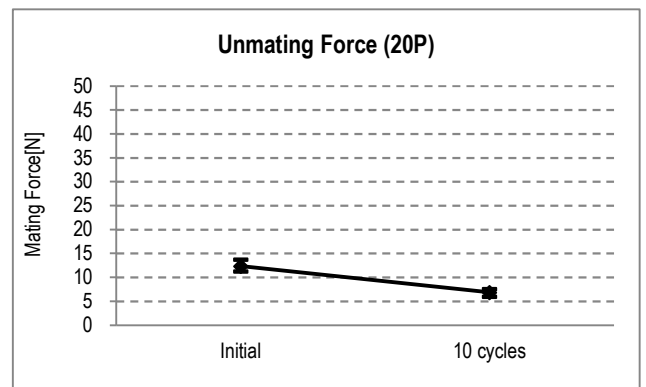
Graph-3. A Change of Mating Force (10P)



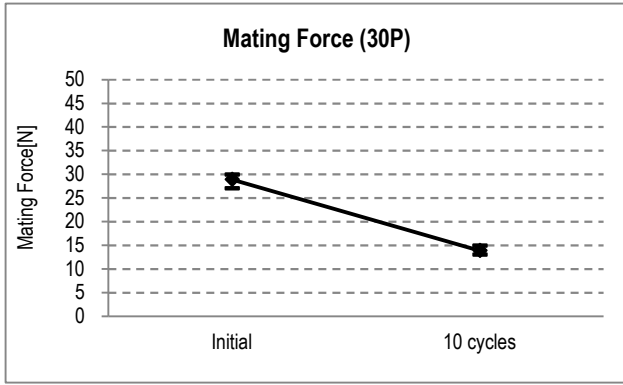
Graph-4. A Change of Unmating Force (10P)



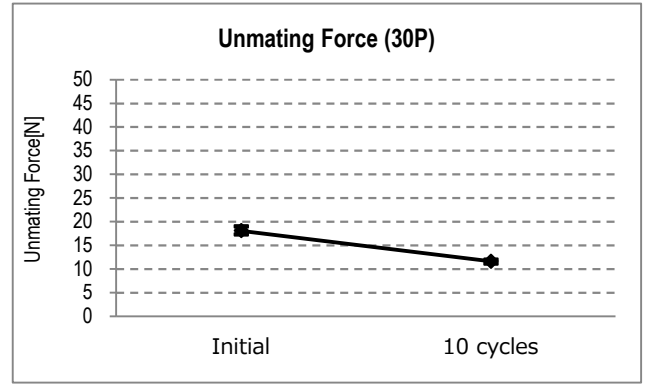
Graph-5. A Change of Mating Force (20P)



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

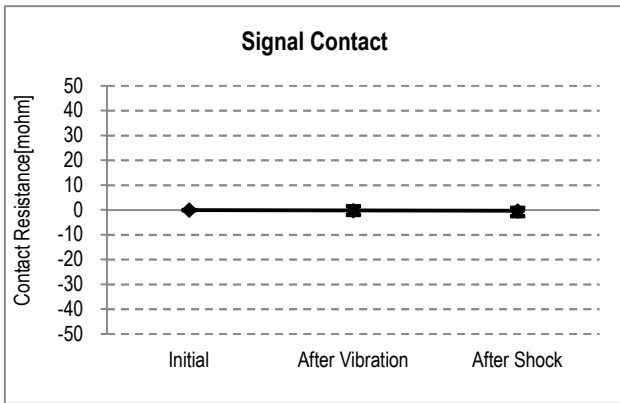


Graph-7. A Change of Mating Force (30P)

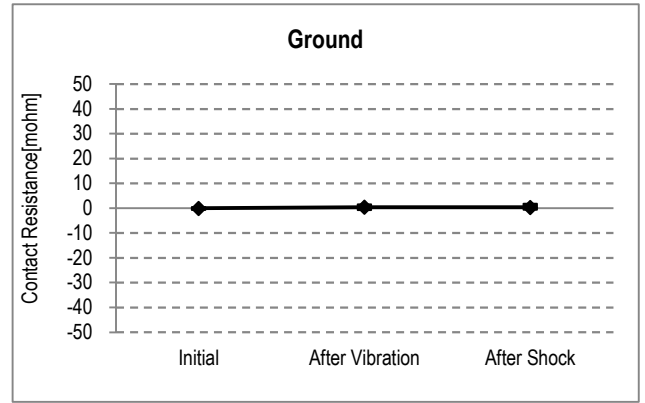


Graph-8. A Change of Unmating Force (30P)

D Group / Vibration → Shock

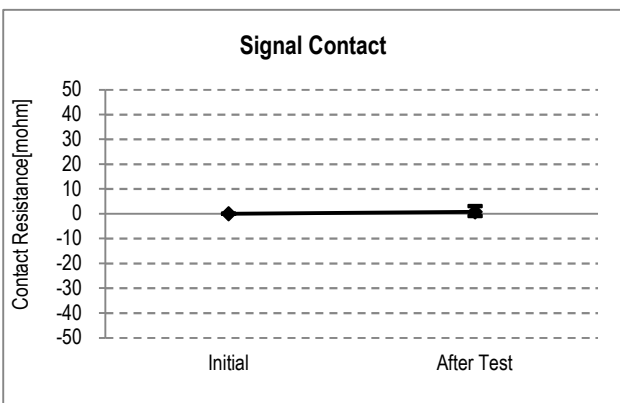


Graph-9. A Change of Signal Contact Resistance

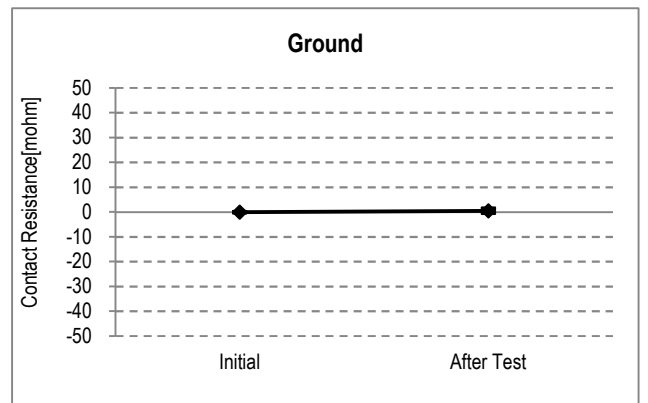


Graph-10. A Change of Ground Resistance

E Group / Thermal Shock

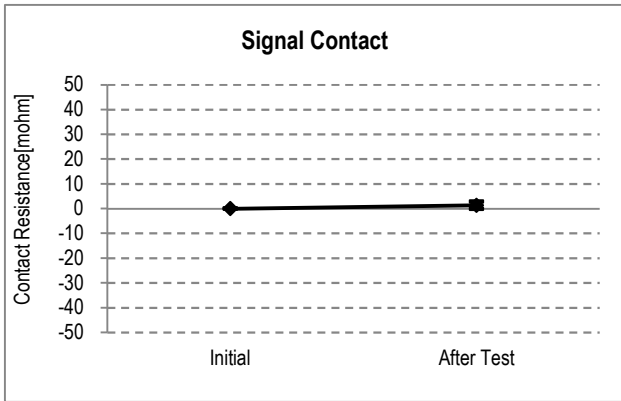


Graph-11. A Change of Signal Contact Resistance

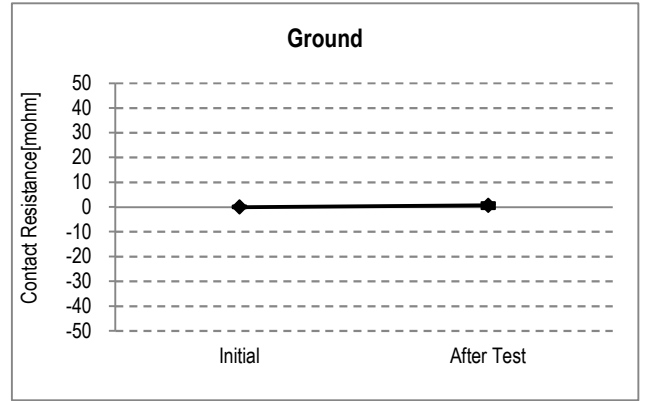


Graph-12. A Change of Ground Resistance

F Group / High Temperature Life

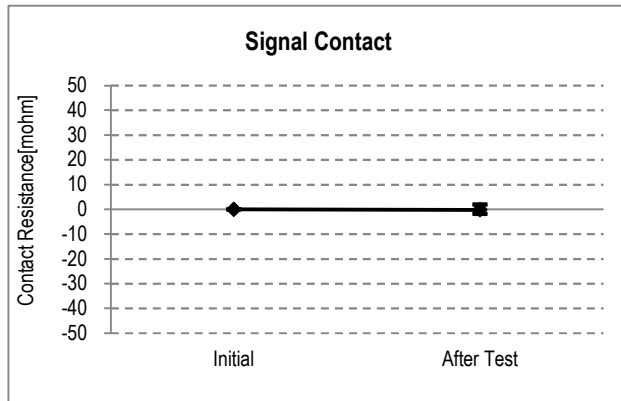


Graph-13. A Change of Signal Contact Resistance

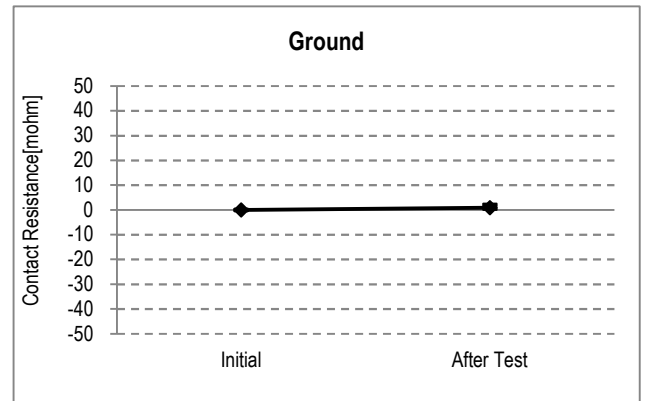


Graph-14. A Change of Ground Resistance

G Group / Humidity (Steady State)

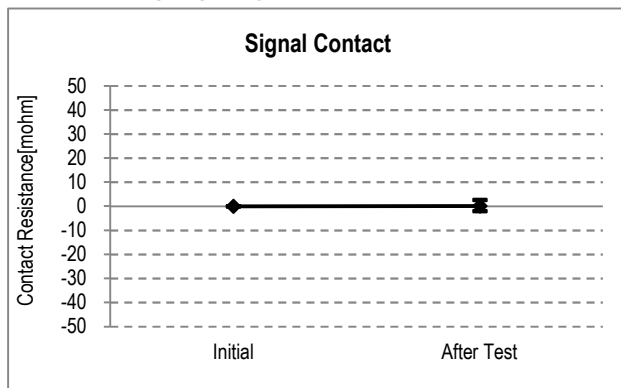


Graph-15 A Change of Signal Contact Resistance

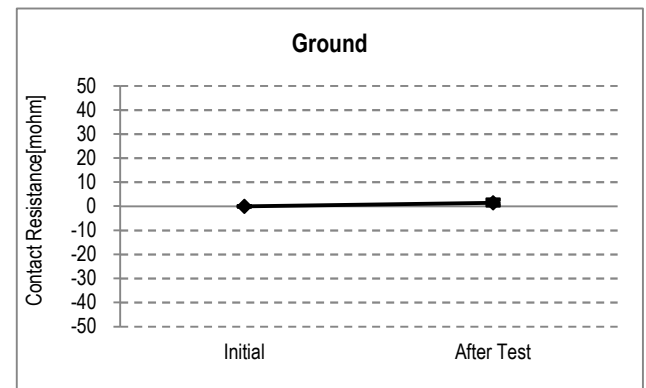


Graph-16. A Change of Ground Resistance

H Group / Humidity (Cycling)

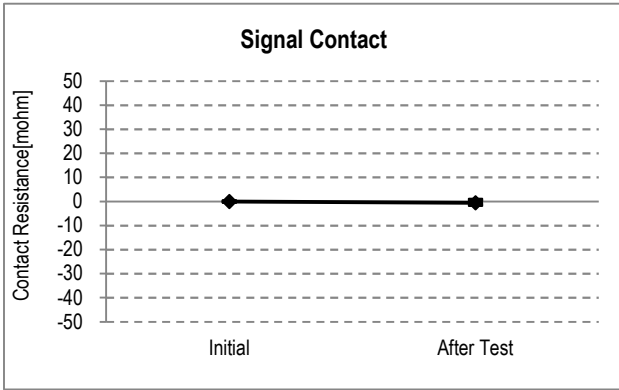


Graph-17. A Change of Signal Contact Resistance

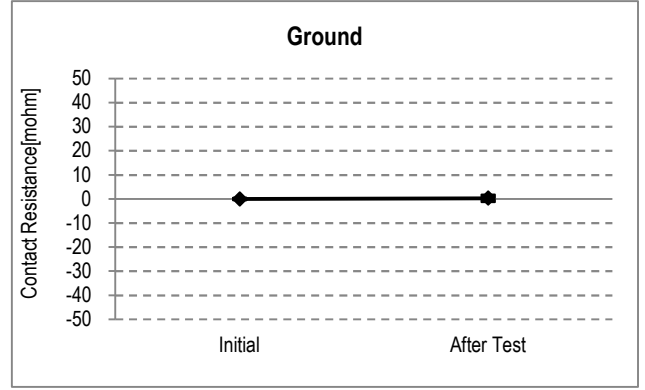


Graph-18. A Change of Ground Resistance

J Group / Salt Water Spray

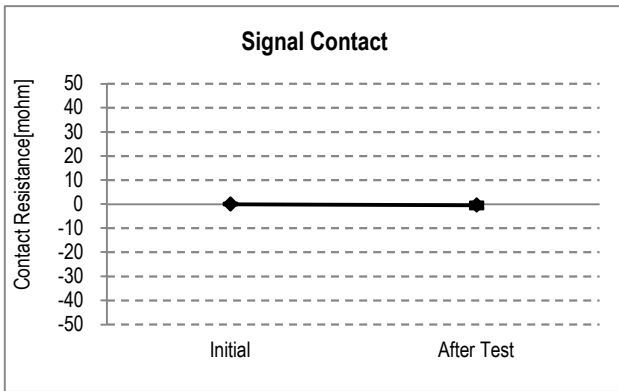


Graph-19. A Change of Signal Contact Resistance

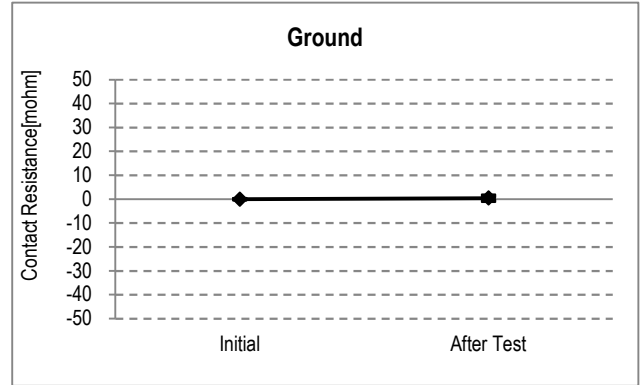


Graph-20. A Change of Ground Resistance

K Group / H₂S Gas



Graph-21. A Change of Signal Contact Resistance



Graph-22. A Change of Ground Resistance