

# NOVASTACK® 35-HDN

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

## Test Report

Product Specification no. PRS-2607

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2	T19165	December 11, 2019	R.Itokawa	T.Yayoshi	Y.Shimada
1	T19106	September 25, 2019	R.Shioya	A.Kagoshima	Y.Shimada
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Rev.	ECN	Date	Prepared by	Checked by	Approved by

# NOVASTACK 35-HDN Test Report

## 1. Purpose

NOVASTACK 35-HDN コネクタの性能を PRS-2607 に基づいて評価する。

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

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

Table2-1～2-3、Graph1～20 参照。試験条件の詳細は PRS-2607 参照。n 数は測定データ数を意味する。

See Table 2-1 to 2-3, Graph 1 to 20. 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

全ての資料が製品規格（PRS-2607）の必要条件を満足した。

All the specimens met the requirements of PRS-2607.

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
接触抵抗 Contact Resistance		2,6		1,3,5	1,5	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										
耐振動性 Vibration				2									
耐衝撃性 Shock				4									
熱衝撃 Thermal Shock					4								
高温寿命 High Temperature Life						2							
湿度 (定常状態) Humidity (Steady State)							4						
湿度 (サイクリング) Humidity (Cycling)								4					
塩水噴霧 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 pcs.	20 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 / 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	ΔT 30 MAX.	℃	5	-	ΔT	18.1	MAX.			Pass				
	30P Signal Contact 0.4A/Contact		℃	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.				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			
	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			
	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				

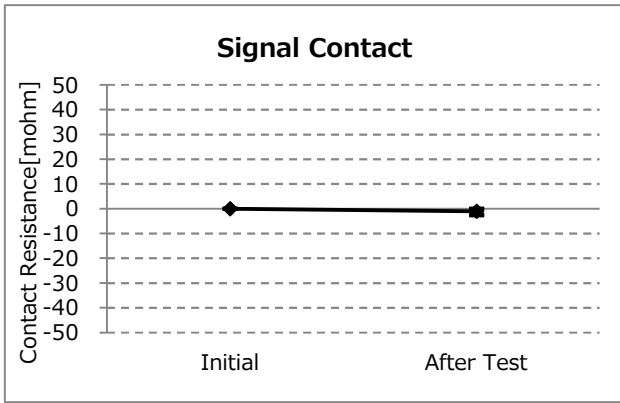
Table 2-2. 試験結果 / Table.2-2 Test Result

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	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 <sup>4</sup> MIN.					Pass
		After Test	500 MIN.				1.08 x 10 <sup>4</sup> 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 <sup>4</sup> MIN.					Pass
		After Test	500 MIN.				1.58 x 10 <sup>4</sup> MIN.					Pass
	Dielectric Withstanding Voltage											
		After Test	No Abnormality	-	5	-	No Abnormality					Pass
Appearance												
	After Test	No Abnormality	-	5	-	No Abnormality					Pass	

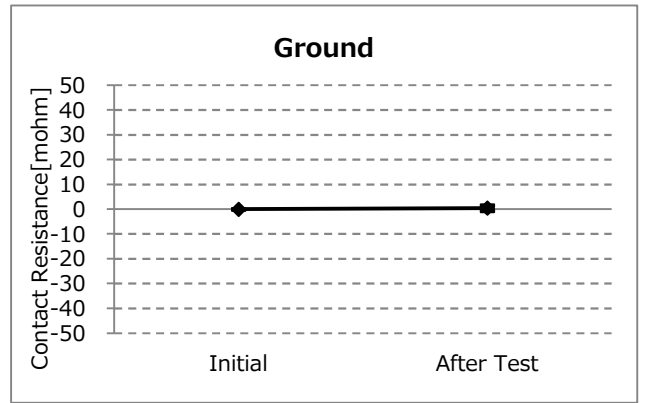
Table 2-3. 試験結果 / Table.2-3 Test Result

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 <sup>4</sup> MIN.					Pass
		After Test	500	MIN.				5.24 x 10 <sup>4</sup> 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 <sub>2</sub> 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

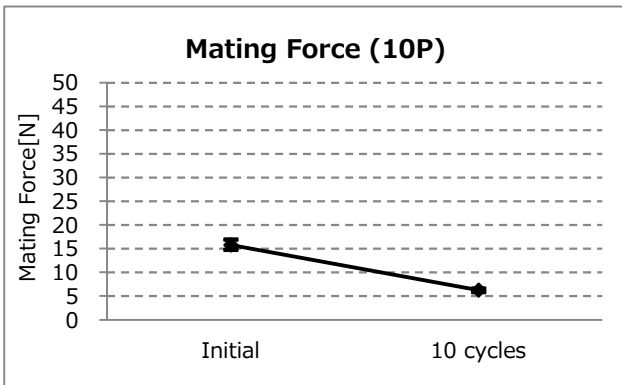


Graph-1. A Change of Signal Contact Resistance

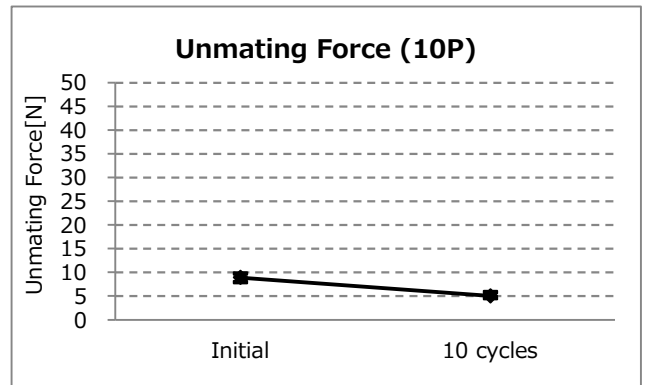


Graph-2. A Change of Ground Resistance

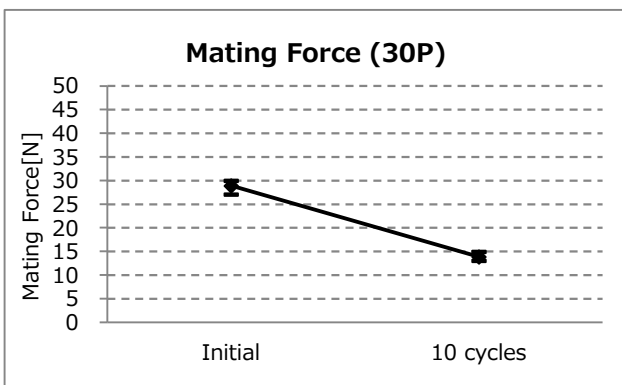
B Group / Durability



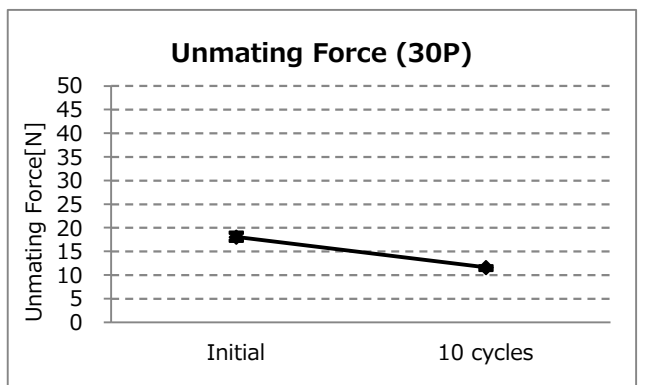
Graph-3. A Change of Mating Force (10P)



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

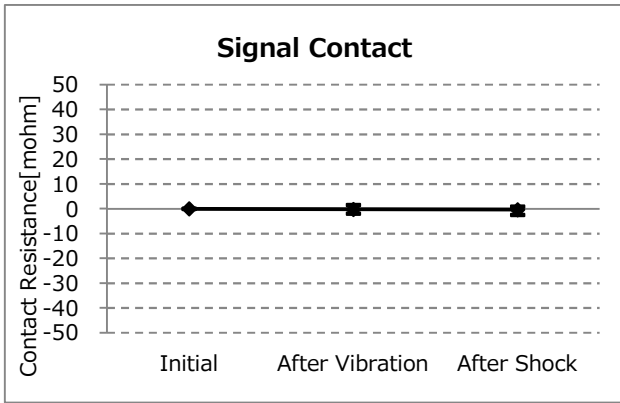


Graph-5. A Change of Mating Force (30P)

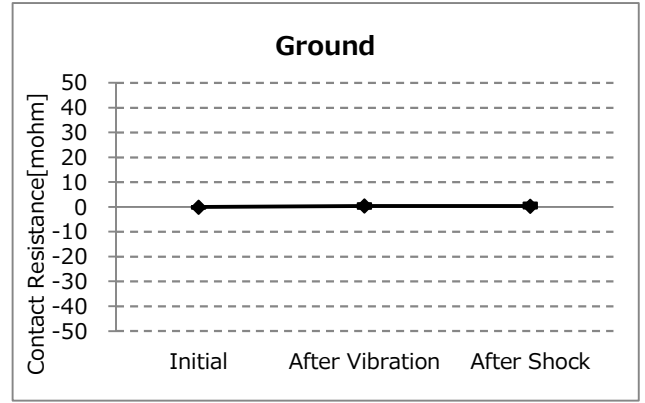


Graph-6. A Change of Unmating Force (30P)

D Group / Vibration → Shock

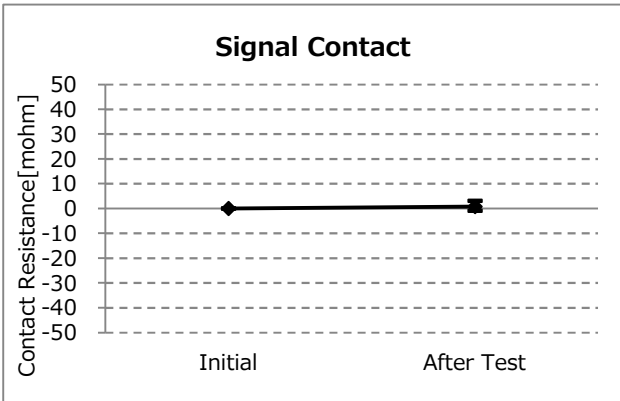


Graph-7. A Change of Signal Contact Resistance

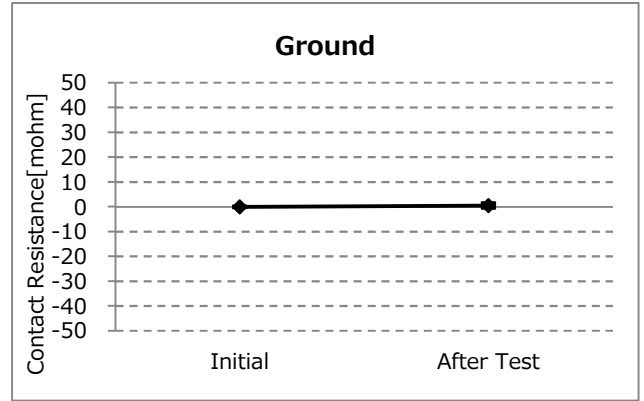


Graph-8. A Change of Ground Resistance

E Group / Thermal Shock

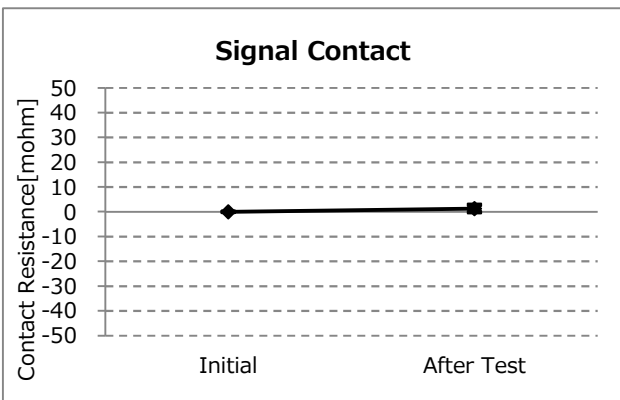


Graph-9. A Change of Signal Contact Resistance

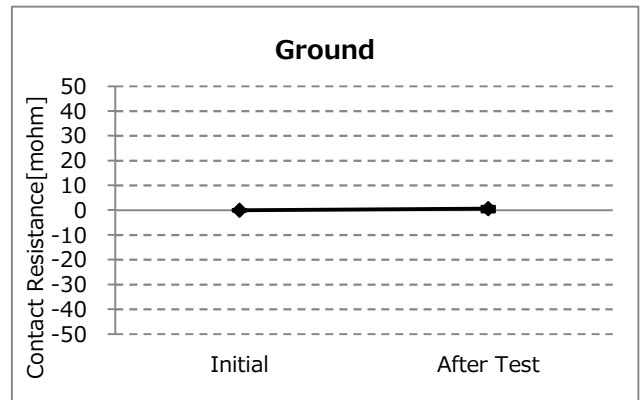


Graph-10. A Change of Ground Resistance

F Group / High Temperature Life



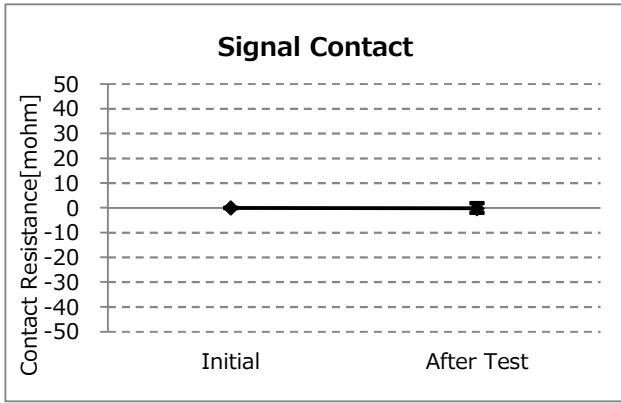
Graph-11. A Change of Signal Contact Resistance



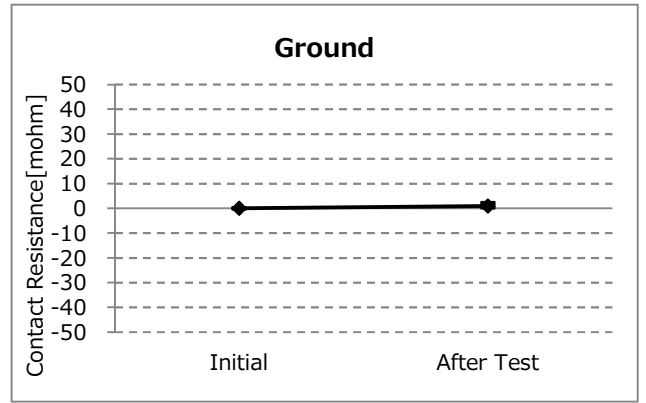
Graph-12. A Change of Ground Resistance



**G Group / Humidity (Steady State)**

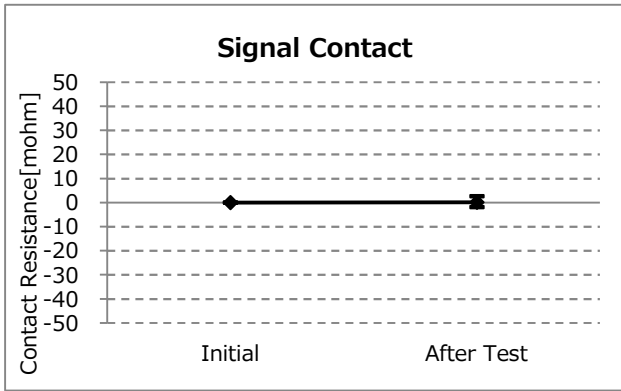


Graph-13. A Change of Signal Contact Resistance

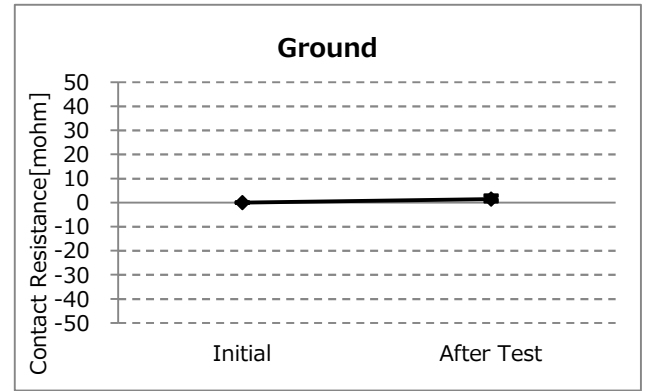


Graph-14. A Change of Ground Resistance

**H Group / Humidity (Cycling)**

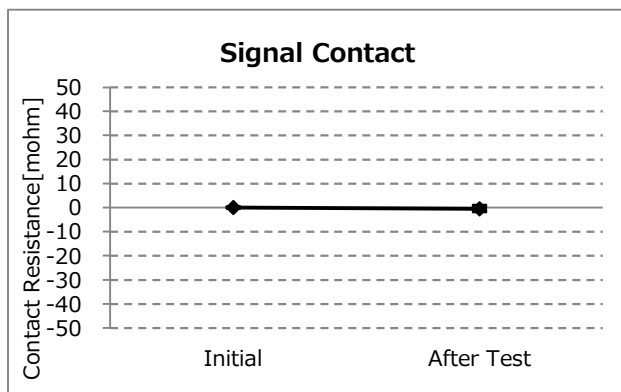


Graph-15. A Change of Signal Contact Resistance

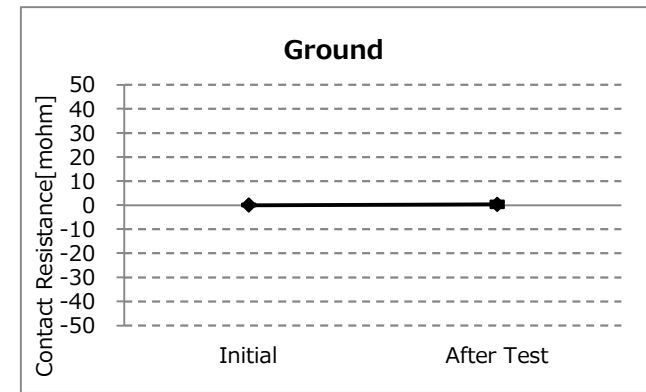


Graph-16. A Change of Ground Resistance

**J Group / Salt Water Spray**

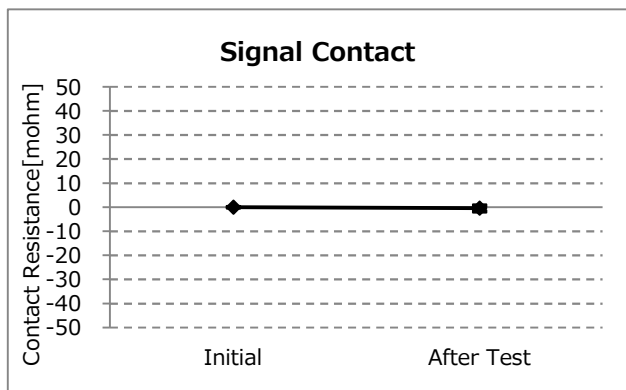


Graph-17. A Change of Signal Contact Resistance

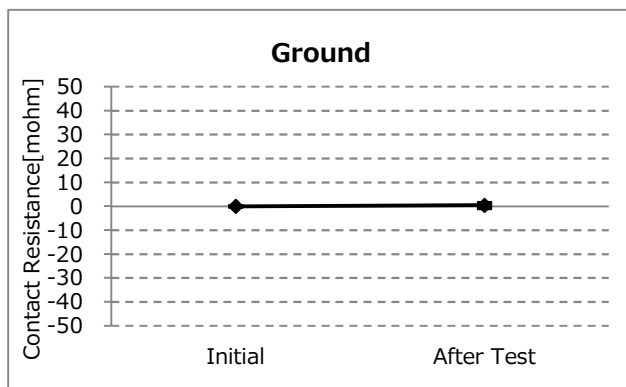


Graph-18. A Change of Ground Resistance

K Group / H<sub>2</sub>S Gas



Graph-19. A Change of Signal Contact Resistance



Graph-20. A Change of Ground Resistance