

CABLINE®-CAL IIF

Part No. Plug: 21088-050T-01

Receptacle: 21089-050E-01

Test Report

Product Specification no. PRS-2917

1	T25044	May 28, 2025	R. Hatano	T. Tanigawa	H. Ikari
0	T25022	March 21, 2025	R. Hatano	T. Tanigawa	H. Ikari
Rev.	ECN	Date	Prepared by	Checked by	Approved by

1. Purpose

To evaluate the performance of CABLINE-CAL IIF connector in accordance with PRS-2917.

2. Specimen

Connector

(1) CABLINE-CAL IIF SHELL ASS'Y (Part No. 21088-050T-01)

(2) CABLINE-CAL IIF RECE. ASS'Y (Part No. 21089-050E-01)

FPC

Made by TAIYO TECHNOLEX CO.,LTD.

Thickness Lead : $t=0.25+0.02/-0.03$ ※Actual measurement: 0.250~0.256mm

3. Test Sequence

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

4. Result

Results are indicated in Tables 2-1 to 2-2 and Graphs 1 to 18.

For the details of the testing conditions and requirements, refer to product specification no. PRS-2917.

The "n" in the tables show the number of measurement point

5. Conclusion

All the specimens met the requirements of PRS-2917.

Table1. Test Sequence and Sample Quantity

No.		Test Item	Testing Groups												
			A	B	C	D	E	F	G	H	J	K	L	M	N
4.1 Electrical Performance	1	Contact resistance		2,6			1,3,5	1,3	1,3	1,5	1,5	1,3	1,3		
	2	Insulation resistance								2,6	2,6				
	3	Dielectric withstanding voltage								3,7	3,7				
	4	Temperature rising	1												
4.2 Mechanical Performance	1	Mating force		1,5											
		Unmating force		3,7											
	2	Durability		4											
	3	Connector retention force			1										
	4	Connector lock				1									
	5	Vibration					2								
	6	Shock					4								
4.3 Environmental Performance	1	Thermal shock						2							
	2	High temperature life							2						
	3	Humidity (Steady State)								4					
	4	Humidity (Cycling)									4				
	5	Saltwater spray										2			
	6	H ₂ S gas											2		
4.4 Others	1	Solder ability												1	
	2	Soldering heat resistance													1
Specimen quantity			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

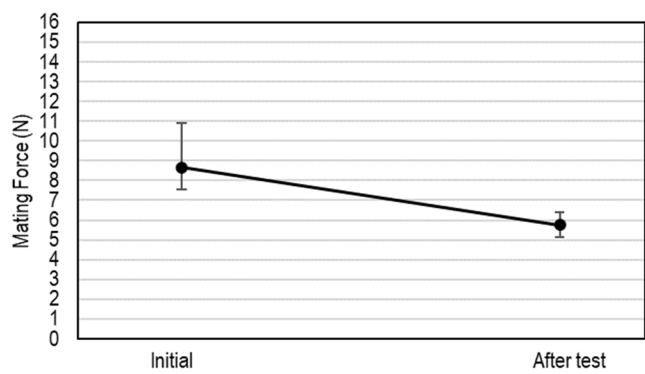
※Numbers indicate sequence in which tests are performed.

Table.2-1 Test result

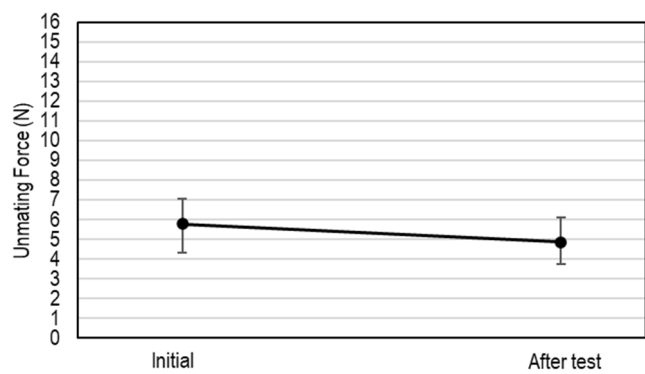
Test Item	Contents of Measurement		Specifications	Set	n	Data					Judge
						AVG.	MAX.	MIN.	S	X±3s	
A Group Temperature Rising	0.26A DC (per contact)		$\Delta T=30^{\circ}\text{C MAX.}$	5	5	$\Delta T=25.8^{\circ}\text{C MAX}$					OK
Durability	Contact Resistance (mΩ)	Initial	100mΩ MAX.	5	250	41.526	45.28	38.06	1.353	45.585	OK
		After 30th Testing	$\Delta R=40\text{m}\Omega \text{ MAX.}$			1.652	5.68	-1.57	1.438	5.966	OK
	GND Resistance (mΩ)	Initial	50mΩ MAX.	5	5	13.242	13.60	12.59	0.452	14.598	OK
		After 30th Testing	$\Delta R=40\text{m}\Omega \text{ MAX.}$			0.107	0.32	-0.32	0.250	0.857	OK
	Mating Force (N)	Initial	15.00N MAX.	5	5	8.666	10.91	7.57	1.390	12.836	OK
		After 30th Testing	15.00N MAX.			5.760	6.40	5.12	0.561	7.443	OK
	Unmating Force (N)	Initial	1.00N MIN.	5	5	5.771	7.06	4.32	1.100	2.471	OK
		After 30th Testing	1.00N MIN.			4.869	6.11	3.73	0.898	2.175	OK
C Group Connector retention force	Contact Retention Force (N)		0.20N MIN.	-	20	0.520	0.58	0.50	0.022	0.454	OK
D Group Connector lock	Appearance	After Testing (Pull FPC 10N)	It shall not occur the damage and unlock.	5	5	No damage and unlock					OK
E Group Vibration ↓ Shock	Contact Resistance (mΩ)	Initial	60mΩ MAX.	5	250	41.004	45.21	36.26	1.704	46.116	OK
		After Vibration	$\Delta R=40\text{m}\Omega \text{ MAX.}$			-0.950	2.74	-3.81	1.348	3.094	OK
		After Shock	$\Delta R=40\text{m}\Omega \text{ MAX.}$			-0.653	3.80	-4.24	1.495	3.832	OK
	GND Resistance (mΩ)	Initial	60mΩ MAX.	5	5	13.179	13.72	12.66	0.425	14.454	OK
		After Vibration	$\Delta R=40\text{m}\Omega \text{ MAX.}$			0.258	0.94	-0.69	0.625	2.133	OK
		After Shock	$\Delta R=40\text{m}\Omega \text{ MAX.}$			0.073	0.46	-0.37	0.317	1.024	OK
	Electrical Discontinuity	During Vibration	1μsec. MAX.	5	5	No electrical discontinuity					OK
		During Shock				No electrical discontinuity					OK
	Appearance	After Vibration	No abnormality adversely affecting the performance shall occur.	5	5	No abnormality					OK
		After Shock				No abnormality					OK
F Group Thermal shock	Contact Resistance (mΩ)	Initial	60mΩ MAX.	5	250	40.680	43.70	36.64	1.388	44.844	OK
		After Testing	$\Delta R=40\text{m}\Omega \text{ MAX.}$			0.434	3.69	-2.33	1.214	4.076	OK
	GND Resistance (mΩ)	Initial	60mΩ MAX.	5	5	13.351	13.96	12.70	0.494	14.833	OK
		After Testing	$\Delta R=40\text{m}\Omega \text{ MAX.}$			-0.182	0.45	-0.75	0.461	1.201	OK
G Group High temperature life	Contact Resistance (mΩ)	Initial	60mΩ MAX.	5	250	40.792	44.37	37.13	1.517	45.343	OK
		After Testing	$\Delta R=40\text{m}\Omega \text{ MAX.}$			-1.626	1.91	-5.17	1.317	2.325	OK
	GND Resistance (mΩ)	Initial	60mΩ MAX.	5	5	13.498	14.18	12.70	0.546	15.136	OK
		After Testing	$\Delta R=40\text{m}\Omega \text{ MAX.}$			0.182	0.60	-0.15	0.363	1.271	OK

Table.2-2 Test result

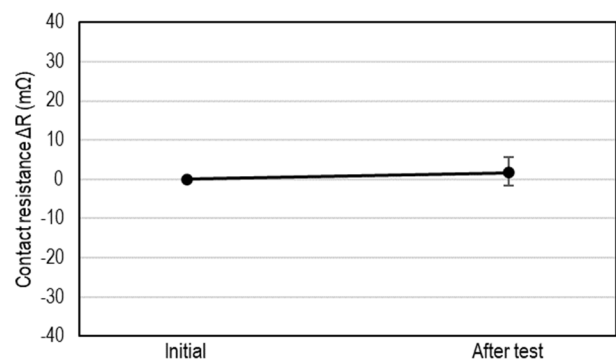
Test Item	Contents of Measurement	Specifications		Set	n	Data					Judge
						AVG.	MAX.	MIN.	S	X±3s	
H Group Humidity (Steady State)	Contact Resistance (mΩ)	Initial	60mΩ MAX.	5	250	41.802	45.82	37.54	1.728	46.986	OK
		After Testing	ΔR=40mΩ MAX.			-0.129	3.23	-4.95	1.630	4.761	OK
	GND Resistance (mΩ)	Initial	60mΩ MAX.	5	5	13.130	13.82	12.39	0.507	14.651	OK
		After Testing	ΔR=40mΩ MAX.			0.366	0.98	-0.41	0.520	1.926	OK
	Insulation Resistance (MΩ)	Initial	1000MΩ MIN.	5	125	2.12×10 ⁴ MΩ					OK
		After Testing	500MΩ MIN.			1.26×10 ⁴ MΩ					OK
	Dielectric Withstanding Voltage	Initial	No creeping discharge, flashover, or insulator breakdown shall occur.	5	125	No abnormality					OK
		After Testing				No abnormality					OK
J Group Humidity (Cycling)	Contact Resistance (mΩ)	Initial	60mΩ MAX.	5	250	41.532	45.53	38.23	1.452	45.888	OK
		After Testing	ΔR=40mΩ MAX.			-1.647	3.70	-6.11	1.928	4.137	OK
	GND Resistance (mΩ)	Initial	60mΩ MAX.	5	5	13.012	13.42	12.64	0.340	14.032	OK
		After Testing	ΔR=40mΩ MAX.			0.227	0.60	-0.02	0.257	0.998	OK
	Insulation Resistance (MΩ)	Initial	1000MΩ MIN.	5	125	1.61×10 ⁴ MΩ					OK
		After Testing	500MΩ MIN.			2.29×10 ⁴ MΩ					OK
	Dielectric Withstanding Voltage	Initial	No creeping discharge, flashover, or insulator breakdown shall occur.	5	125	No abnormality					OK
		After Testing				No abnormality					OK
K Group Salt Water Spray	Contact Resistance (mΩ)	Initial	60mΩ MAX.	5	250	41.848	46.06	38.37	1.603	46.657	OK
		After Testing	ΔR=40mΩ MAX.			0.813	6.30	-3.77	1.889	6.480	OK
	GND Resistance (mΩ)	Initial	60mΩ MAX.	5	5	13.173	13.93	13.13	0.703	15.282	OK
		After Testing	ΔR=40mΩ MAX.			0.413	0.81	0.03	0.323	1.382	OK
	Appearance	After Testing	No abnormality adversely affecting the performance shall occur.	5	5	No abnormality					OK
L Group H ₂ S Gas	Contact Resistance (mΩ)	Initial	60mΩ MAX.	5	250	40.177	42.96	36.76	1.162	43.663	OK
		After Testing	ΔR=40mΩ MAX.			1.237	4.91	-2.02	1.315	5.182	OK
	GND Resistance (mΩ)	Initial	60mΩ MAX.	5	5	13.239	13.76	12.80	0.357	14.310	OK
		After Testing	ΔR=40mΩ MAX.			-0.095	0.12	-0.58	0.296	0.793	OK
	Appearance	After Testing	No abnormality adversely affecting the performance shall occur.	5	5	No abnormality					OK
M Group Solder ability	Appearance	More than 95% wet		10	10	No abnormality					OK
N Group Soldering heat resistance	Appearance	No deformation nor defect adversely affecting the performance occur.		10	10	No abnormality					OK



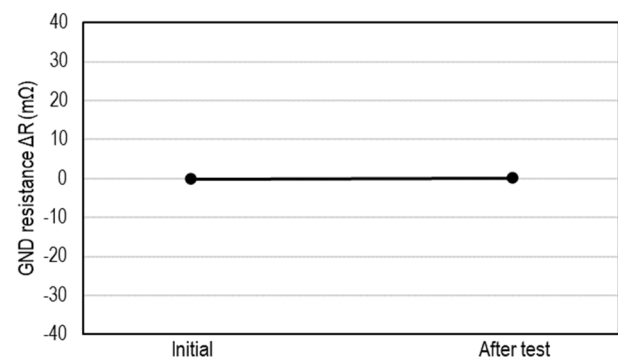
Graph 1. A change of mating force (B Group: Durability)



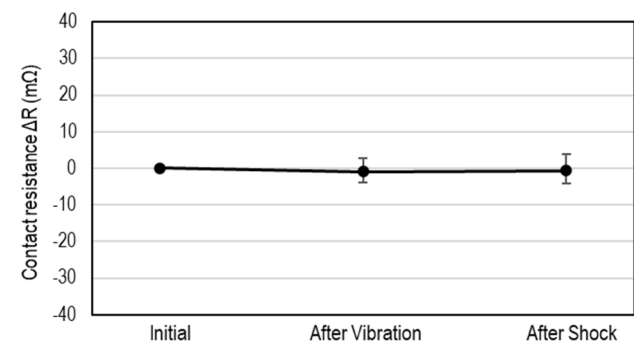
Graph 2. A change of un-mating force (B Group: Durability)



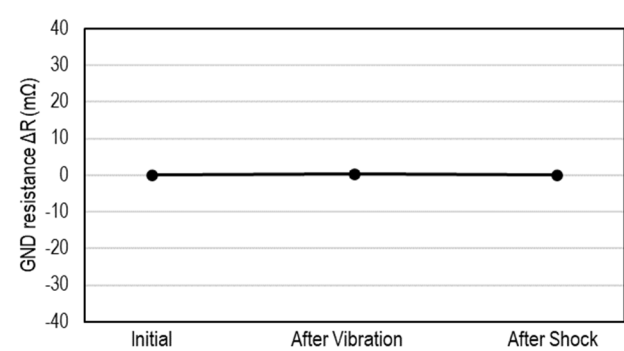
Graph 3. A change of contact resistance (B Group: Durability)



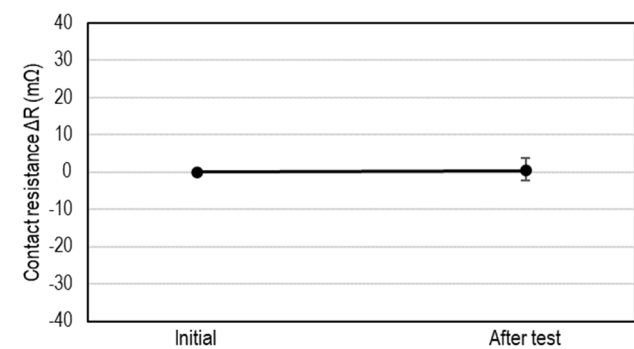
Graph 4. A change of GND resistance (B Group: Durability)



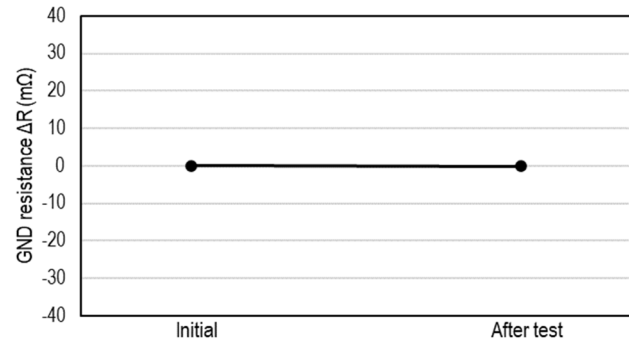
Graph 5. A change of contact resistance (E Group: Vibration/Shock)



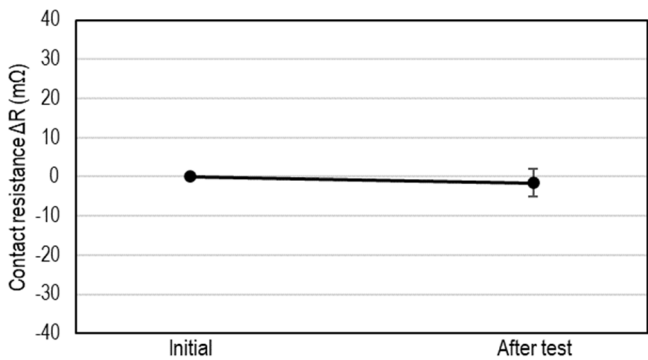
Graph 6. A change of GND resistance (E Group: Vibration/Shock)



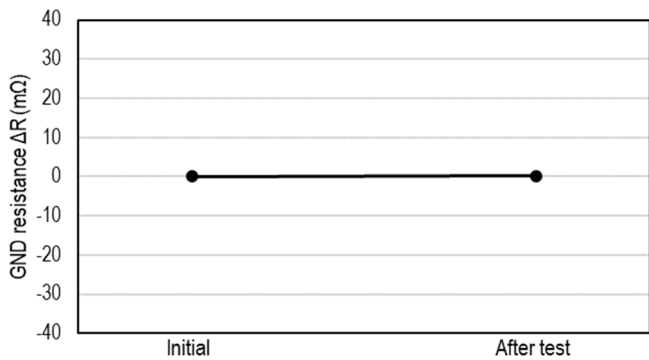
Graph 7. A change of contact resistance (F Group: Thermal shock)



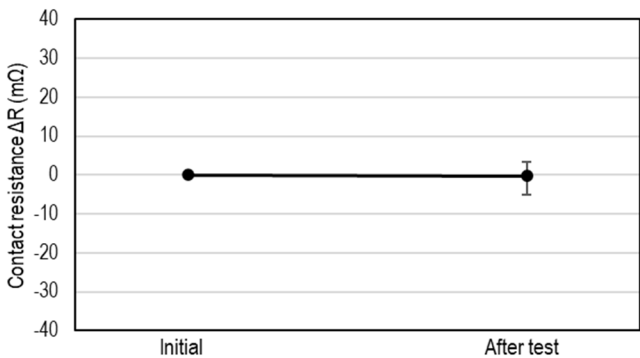
Graph 8. A change of GND resistance (F Group: Thermal shock)



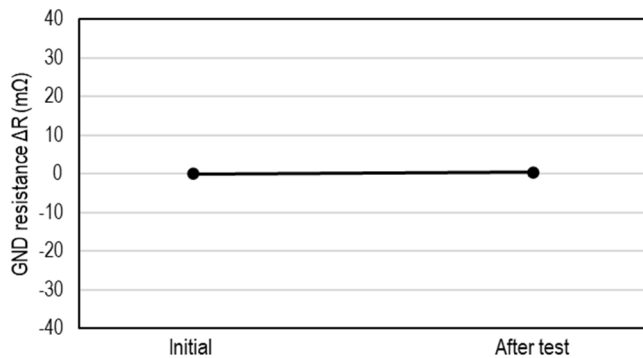
Graph 9. A change of contact resistance (G Group: High temp.life)



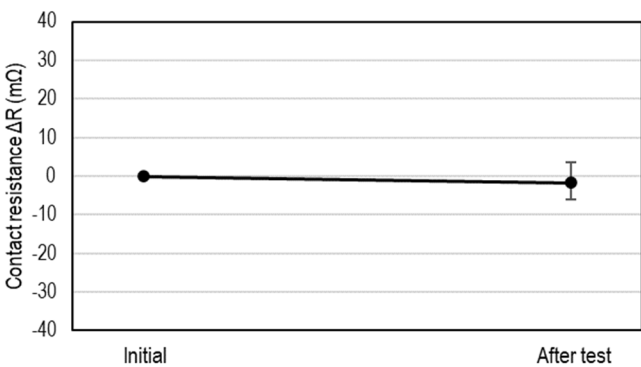
Graph 10. A change of GND resistance (G Group: High temp.life)



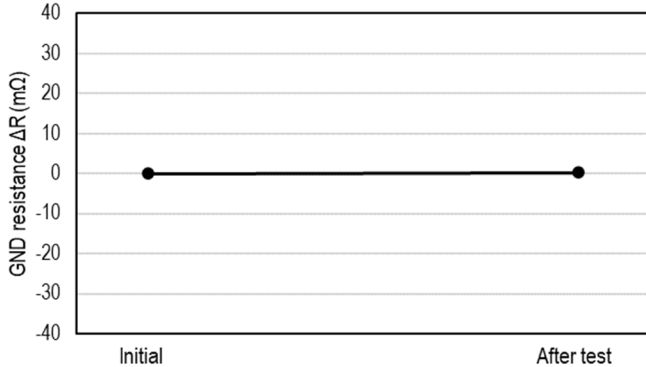
Graph 11. A change of contact resistance
(H Group: Humidity(Steady state))



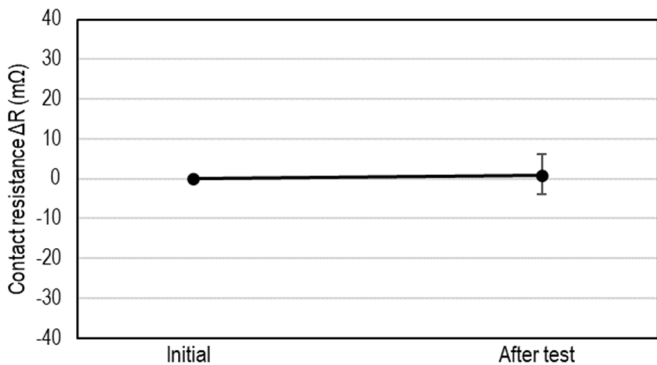
Graph12. A change of GND resistance
(H Group: Humidity(Steady state))



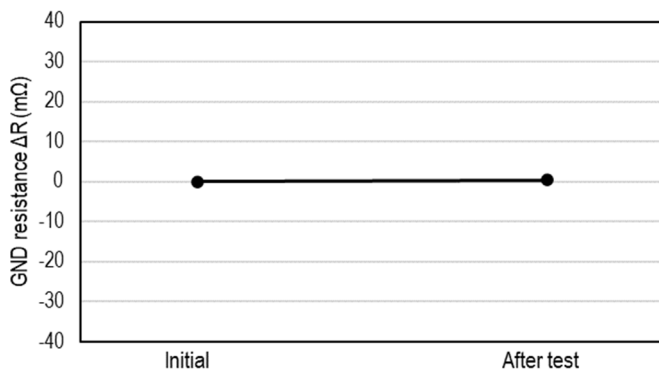
Graph 13. A change of contact resistance
(J Group: Humidity(Cycling))



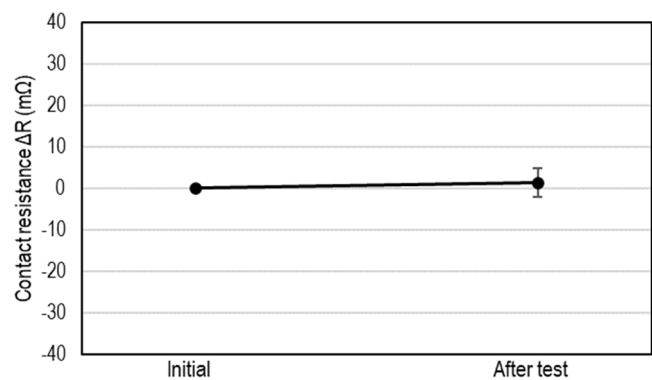
Graph 14. A change of GND resistance
(J Group: Humidity(Cycling))



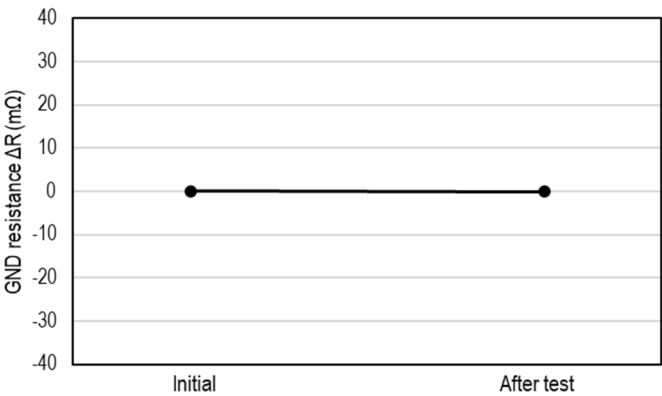
Graph 15. A change of contact resistance (K Group: Salt spray)



Graph 16. A change of GND resistance (K Group: Salt spray)



Graph 17. A change of contact resistance (L Group: H₂S Gas)



Graph 18. A change of GND resistance (L Group: H₂S Gas)