



UMCC MIERO-COAX RECEPTACLE, GENERATION 4

1. Introduction

1.1 Testing was performed on the Receptacle for Micro Coaxial RF Receptacle Connector to determine if it meets the requirements of Product Specification, 108-140213 Rev. A.

1.2 Scope

This report covers the electrical, mechanical and environmental performance requirements of the Receptacle for UMCC MIERO-COAX RECEPTACLE, GENERATION 4.

The qualification testing was performed between - 15 MAR, 2016 and 24 MAR, 2016.

1.3 Conclusion

The Receptacle for Micro Coaxial RF Receptacle Connector meets the electrical, mechanical and environmental performance requirements of Product Specification, 108-140213 Rev. A.

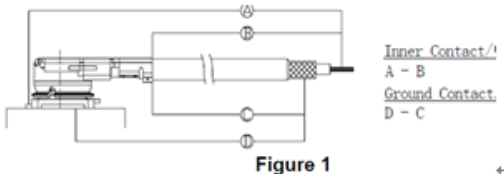
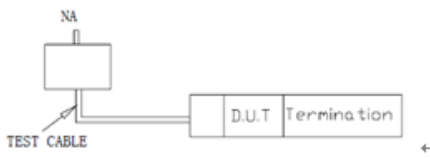
1.4 Test Samples

The test samples were randomly selected from normal current production lots, and the following

Part numbers were used for test:

Description	Part Number
UMCC MIERO-COAX RECEPTACLE, GENERATION 4	2334884-1

2. Test Contents

Para.↵	Test Items↵	Requirements↵	Procedures↵
2.5.1↵	Examination of Product↵	Meets applicable requirements specified, customer drawing, and application specification.↵	Visual inspection ↵ No physical damage.↵
Electric Performance↵			
2.5.2↵	Contact Resistance↵	(IEC512-2-1(2a))↵ Solder the receptacle connector to the test board and mate the plug connector together, ↵ then measure the contact resistance as↵ Shown in figure 1 by the four terminal method.↵ ↵ Open circuit voltage : 20mV MAX↵ Circuit current : 10mA MAX↵ ↵  <p style="text-align: center;">Figure 1</p>	Inner Contact↵ Initial: 20 m Ω MAX.↵ After: 20 m Ω MAX.↵ Ground Contact↵ Initial: 20 m Ω MAX.↵ After: 20 m Ω MAX.↵
2.5.3↵	Insulation Resistance↵	Mate the plug and receptacle connector↵ together, and then apply DC 200 V Voltage.↵ ↵ between the inner contact and the ground↵ contact in accordance with IEC 512-4-1(3a)↵ ↵	Initial: 500 MΩ Min.↵ After test : 100 MΩ Min.↵
2.5.4↵	Dielectric withstanding voltage ↵	Mate the plug and receptacle connector↵ Together, and then apply AC 200 V between↵ the inner contact and the ground contact in↵ accordance with IEC 512-4-1(4a) ↵ ↵	No flashover,↵ No spark over,↵ No excess leakage,↵ No breakdown↵
2.5.5↵	V.S.W.R↵	Measure the V.S.W.R as shown in figure 2↵ by the network analyzer↵ ↵ Frequency : DC~11GHz↵ <p style="text-align: center;">Figure 2</p> 	1.3 Max. (DC~3GHz)↵ 1.4Max. (3~6GHz)↵


Mechanical Performance			
2.5.6	Un-mating Force	IEC 512-15-4(15d) Solder the receptacle connector to the test board and mate the plug connector, then measure the un-mating force at speed of 25±3mm/minutes along by the push-push machine	1.Initial : 4N (0.4Kgf) Min. 2.After 30 Cycles : 2N(0.2Kgf) Min.
2.5.7	Durability	Mate and un-mate the receptacle connector(soldered to the test board) and plug connector 100 cycles at the speed of 25±3mm/minutes along the mating direction by the push-push machine	Appearance: No abnormality Contact Resistance: Shall meet 3.5.2
2.5.8	Vibration	IEC 512-6-4(6d) Apply the following vibration to the mating Connector. During the testing, run 100mA DC to check electrical discontinuity. Frequency: 10Hz→ 100Hz→ 10Hz/approx. 20minutes. Half amplitude, Peak value of acceleration: 1.5mm or 59m/s ² (6G) Directions, cycle: 3 mutually perpendicular direction, 2cycles about each direction	Appearance: No abnormality Contact Resistance: Shall meet 3.5.2 No discontinuities of 1µs or longer duration
2.5.9	Shock	IEC 512-6-3(6c) The object of this test procedure is to detail a standard method to assess the ability of a connector to withstand specified severity of Mechanical shock. Peak value of acceleration: 735m/s ² (75G) Duration : 11ms Wave form : half sinusoidal Directions, cycle : 6 mutually perpendicular direction, 3cycles about each direction	Appearance: No abnormality Contact Resistance: Shall meet : 3.5.2 No discontinuities of 1µs or longer duration
Environment Performance			
2.5.10	Humidity	Apply the following environment to the mating connector in accordance with IEC 512-11-3(11c) Temperature: 25~65°C Humidity : 90~95%R.H Duration: 96 hours	Appearance: No abnormality Contact Resistance: Shall meet 3.5.2 Insulation Resistance: Shall meet 3.5.3 Dielectric withstanding voltage: Shall meet 3.5.4

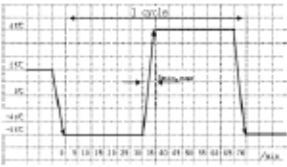
2.5.11	Thermal Shock	<p>Apply the following environment to the mating connector in accordance with IEC 512-11-4(11d)</p> <p>Temperature: -55~85°C</p> <p>Transition time: : 5min. MAX</p> <p>Cycles: 5 Cycles</p>	<p>Appearance: No abnormality</p> <p>Contact Resistance: Shall meet 3.5.2</p> <p>Insulation Resistance: Shall meet 3.5.3</p> <p>Dielectric withstanding voltage: Shall meet 3.5.4</p>
2.5.12	Resistance to soldering heat	<p>According to 8.8.1, Apply reflow soldering Condition.</p> <p>Measurement after 24h+/-2h.</p>	<p>Appearance: No abnormality</p> <p>Contact Resistance: Shall meet 3.5.2</p> <p>Insulation Resistance: Shall meet 3.5.3</p> <p>Dielectric withstanding voltage: Shall meet 3.5.4</p>
2.5.13	Salt Spray	<p>IEC 512-11-6(11f)</p> <p>Apply the following environment to the mating connector</p> <p>Temperature: 35 ± 2°C</p> <p>Relative Humidity : 90~98%R.H</p> <p>Salt water density: 5±1%</p> <p>Duration : 48 hours</p>	<p>Appearance: No abnormality</p> <p>Contact Resistance: Shall meet 3.5.2</p>
2.5.14	<u>Solderability</u>	<p>Apply the following environment to the mating connector</p> <p>Temperature: 245 ± 2°C</p> <p>Duration : 3~5 second</p> <p>Test sample should be observed by the Magnification of 10times after the test.</p>	<p>At least 95% covered by a continuous new solder coating.</p>

3.0 Test Sequence and Sample Quantity

Test Item	Test Group								
	A	B	C	D	E	F	G	H	I
	(a)								
Examination of product	1,	1,6	1,5	1,6	1,6	1,6	1,6	1,4	1,3
Contact Resistance		2,7	2,4	2,4	2,7	2,7	2,7	2,5	
Insulation resistance					3,8	3,8	3,8		
Dielectric Withstanding Voltage					4,9	4,9	4,9		
V.S.W.R	2,								
Un-mating Force		3,5							
Durability		4,							
Vibration			3,						
Shock				3,					
Humidity					5,				
Thermal Shock						5,			
High Temperature Life							5,		
Salt Spray								3,	
Solderability									2,
Sample QTY(PCS)	5	5	5	5	5	5	5	5	5

4.0 Test Results

Group	Test Item	N	Condition	Test Result				Requirement	Conclusion
				Max	Min	Ave	Unit		
1	Examination of Product	5	Initial	No physical damage occurred			/	No abnormalities	Meet spec
	Inner contact Resistance	5	Initial	13.6	13.24	13.47	mΩ	15mΩ Max	Meet spec
	Outer contact Resistance			8.57	8.13	8.33			
	Vibration	5	Final	Frequency: 10-100-10Hz; amplitude: 3mm (P-P); Peak value of acceleration: 6g (g=9.8m/s ²); Direction & durability :3 times at each of X、Y、Z axis, 10-100- 10Hz/20min 1us. No discontinuities more than 1μ s,1 times at the testing process			/	No abnormalities	Meet spec
	Examination of Product	5	Final	No physical damage occurred			mΩ	Δ5m Max	Meet spec
	Inner contact Resistance			0.35	-0.2	0.03			
Outer contact Resistance	0.56			-0.14	0.24				
2	Examination of Product	5	Initial	No physical damage occurred			/	No abnormalities	Meet spec
	Inner contact Resistance	5	Initial	13.56	13.25	13.41	mΩ	15mΩ Max	Meet spec
	Outer contact Resistance			8.49	8.13	8.3			
	Salt spray	5	Final	Apply the following condition to the mated connectors: chamber temperature: 35+/-2℃ Salt water density: 5+/-1% Spray speed: 1~2ml/h/8cm ² Duration: 48 hours			/	No abnormalities	Meet spec
	Inner contact Resistance	5	Final	0.32	-0.04	0.10	mΩ	Δ5mΩ Max	Meet spec
	Outer contact Resistance			0.21	-0.20	0.02			
Examination of Product	No physical damage occurred			/	No abnormalities	Meet spec			
3	Examination of Product	5	Initial	No physical damage occurred			/	No abnormalities	Meet spec
	Inner contact Resistance	5	Initial	13.69	13.11	13.41	mΩ	15mΩ Max	Meet spec
	Outer contact Resistance			8.74	8.24	8.49			
	Unmating force			1.13	0.84	0.97			
	Mechanical Durability	5	Final	Fixate the samples on the test board, then mating & Un-mating 30 times at speed 25mm/s; 			/	No abnormalities	Meet spec
	Examination of Product	5	Final	No physical damage occurred			mΩ	Δ5mΩ Max	Meet spec
	Inner contact Resistance			0.34	0.05	0.13			
Outer contact Resistance	0.2			-0.15	0.04				
Unmating force	-0.01			-0.17	-0.09	kgf			
4	Examination of Product	5	Initial	No physical damage occurred			/	No abnormalities	Meet spec
	Inner contact Resistance	5	Initial	13.45	13.12	13.26	mΩ	15mΩ Max	Meet spec
	Outer contact Resistance			8.56	8.16	8.36			
	Mechanical Shock	5	Final	Peak acceleration: 735m/s ² , Duration: 11ms Wave type: Half-sine wave Shock direction & times :Each 3 times at six surfaces of X、Y、Z axis, total 18 times, No discontinuities more than 1μ s,1times at the testing.			/	No abnormalities	Meet spec
	Inner contact Resistance	5	Final	0.45	-0.04	0.22	mΩ	Δ5mΩ Max	Meet spec
	Outer contact Resistance			0.41	-0.37	0.04			
	Examination of Product	5	Final	No physical damage occurred			/	No abnormalities	Meet spec
Examination of Product	5	Initial	No physical damage occurred			/	No abnormalities	Meet spec	
Inner contact Resistance	5	Initial	13.5	13.15	13.37	mΩ	15mΩ Max	Meet spec	
Outer contact Resistance			8.56	8.16	8.36				

5	Humidity test	5	Final	Apply the following environment to the mating connector in accordance with IEC 512-11-3(11c) Temperature :25~65℃ Humidity : 90~95%R.H Duration:96 hours	/	No abnormalities	Meet spec		
	Inner contact Resistance	5	Final	0.27	-0.21	0.09	mΩ	Δ5mΩ Max	Meet spec
	Outer contact Resistance			0.25	-0.28	0.01			
	Examination of Product	5	Final	No physical damage occurred	/	No abnormalities	Meet spec		
6	Examination of Product	5	Initial	No physical damage occurred	/	No abnormalities	Meet spec		
	Inner contact Resistance	5	Initial	13.65	13.23	13.37	mΩ	15mΩ Max	Meet spec
	Outer contact Resistance			8.56	8.16	8.36			
	Thermal Shock	5	Final	Apply the following environment condition 5 times to the mated samples. 	/	No abnormalities	Meet spec		
	Inner contact Resistance	5	Final	0.38	-0.08	0.10	mΩ	Δ5mΩ Max	Meet spec
	Outer contact Resistance			0.41	-0.37	0.04			
Examination of Product	5	Final	No physical damage occurred	/	No abnormalities	Meet spec			
7	Examination of Product	5	Initial	No physical damage occurred	/	No abnormalities	Meet spec		
	Solderability	5	Final	1,Adjust the tin stove temperature to 245 +/- 2 °C; 2, immersing the test samples in scaling powder at a speed of 25 mm/s , keep 2 ~ 3 s; 3, take out the samples to the natural state of vertical at room temperature keep 60 s (that flux drops dry); 4, immersing test samples at a speed of about 25 mm/s in tin stove about 1 ~ 2 cm, and maintain 3 +/- 0.5 s; 5,take out the test sample at a speed of 25 mm/s ,natural cooling at room temperature; 6, observed with 10 x microscope on the test area which the surface dipping tin;	/	No abnormalities	Meet spec		
	Examination of Product	5	Final	>95% Soldering Coverage	/	No abnormalities	Meet spec		