





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

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2. Test Contents

⊃ara.₽	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.	Inner Contact Initial: 20 m Ω MAX. Initial: 20 m Ω
		Open circuit voltage : 20mV MAX Circuit current : 10mA MAX Inner Contact A - B Ground Contact D - C	
		4	
2.5.3₽	Insulation Resistance	Mate the plug and receptacle connectored together, and then apply DC 200 V Voltage. Potential 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+/ Figure 2	1.3 Max. (DC~3GHz)- 1.4Max. (3~6GHz)-

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		Meannical 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
2.5.7₽	Durability₽	Mate and un-mate the receptacled connector(soldered to the test board) and plugd connector 100 cycles at the speed of 25±d 3mm/minutes along the mating direction by the push-push machined	Appearance: Novabnormality 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/s²(6G) Directions,cycle:3 mutually perpendicular direction, 2cycles about each direction.	Appearance: Novabnormality 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 average standard method to assess the ability of average connector to withstand specified severity of the Mechanical shock Peak value of acceleration:735m/s²(75G)- Duration:11ms- Wave form: half sinusoidal- Directions, cycle: 6 mutually perpendicular- direction, 3cycles about each direction- Environment Performance-	Appearance: Novabnormality Contact Resistance: Shall meet: 3.5.2 No discontinuities of 1µs or longer duration
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: Nov abnormality Contact Resistance: Shall meet 3.5.2 Insulation Resistance: Shall meet 3.5.3 Dielectric withstanding voltage Shall meet 3.5.4 Shall meet 3.5.4

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2.5.11₽	Thermal⊬ Shock₽	Apply the following environment to the mating connector in accordance with IEC 512-11-4(11d) Temperature: -55~85°C Transition time: : 5min. MAX Cycles: 5 Cycles Cycles	Appearance: Novabnormality Contact Resistance: Shall meet 3.5.2 Insulation Resistance: Shall meet 3.5.3 Dielectric withstanding voltage Shall meet 3.5.4 Shall meet 3.5.4
2.5.12₽	Resistance to soldering√ heat√	According to 8.8.1,Apply reflow soldering Condition. Measurement after 24h+/-2h.	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-
2.5.13	Salt Spray <i>₀</i>	IEC 512-11-6(11f) Apply the following environment to the mating connector Temperature: 35 ± 2 ℃ Relative Humidity: 90~98%R.H Salt water density: 5±1% Duration: 48 hours	Appearance: No- abnormality- Contact Resistance:- Shall meet 3.5.2-
2.5.14	<u>Solderability</u> ₽	Apply the following environment to the mating connector. Temperature: 245 ± 2°C. Duration: 3~5 second. Test sample should be observed by the Magnification of 10times after the test.	At least 95% covered by a continuous new solder coating.₽

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3.0 Test Sequence and Sample Quantity

	Test Group								
Test Item	Α	В	С	D	Е	F	G	Н	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

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4.0 Test Results

	Test Item	N	Condition	Test Result			Requirement	Conclusion	
Group	restitem		Condition	Max	Min	Ave	Unit	Requirement	Conclusion
	Examination of Product	5	Initial	No physic	cal damage	occurred	1	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	11122	TOTAL MAX	
1	Vabration	5	Final	amplitu Peak valu (Direction 8 each of X	Frequency: 10-100-10Hz; amplitude: 3mm (P-P); Peak value of acceleration: 6g (g=9.8m/s2); Direction & durability: 3 times at each of X. Y. Z axis, 10-100-10Hz/20min 1us, No discontinuities more than 1µs,1 times at the testing process			No abnormalities	Meet spec
l	Examination of Product			No physical damage occurred					
	Inner contact Resistance	5	Final	0.35	-0.2	0.03	mΩ	∆5m Max	Meet spec
l	Outer contact Resistance	1		0.56	-0.14	0.24			
	Examination of Product	5	Initial	No physic	cal damage	occurred	1	No abnormalities	Meet spec
l	Inner contact Resistance	_		13.56	13.25	13.41			
l	Outer contact Resistance	- 5	Initial	8.49	8.13	8.3	mΩ	15mΩ Max	Meet spec
2	Salt spray	5	Final	the m chamber to Salt wat Spray sp	the following condition to e mated connectors: er temperature: 35+/-2°C water density: 5+/-1% y speed: 1~2ml/h/8cm2 Ouration: 48 hours		,	No abnormalities	Meet spec
l	Inner contact Resistance	5	Final	0.32	-0.04	0.10		Δ5mΩ Max	Mastana
l	Outer contact Resistance	5	Final	0.21	-0.20	0.02	mΩ	ΔοmΩ Max	Meet spec
i	Examination of Product	5	Final	No physic	cal damage	occurred	/	No abnormalities	Meet spec
	Examination of Product	5	Initial	No physic	cal damage	occurred	1	No abnormalities	Meet spec
l	Inner contact Resistance			13.69	13.11	13.41	mΩ	15mΩ Max	
l	Outer contact Resistance	5	Initial	8.74	8.24	8.49		15m\Q Max	Meet spec
i	Unmating force			1.13	0.84	0.97	kgf	0.4kgf min	
3	Mechanical Durability	5	Final	board, then 30 times	Fixate the samples on the test board, then mating & Un-mating 30 times at speed 25mm/s; Extraction Jig ECT Cable Assembly ECT-R-SMT		1	No abnormalities	Meet spec
					Ass				
	Examination of Product			No physic	ECT-R-S	MT occurred			
	Inner contact Resistance	. 5	Final	No physic	ECT-R-S	MT occurred 0.13	mΩ	Δ5mΩ Max	Meet spec
	Inner contact Resistance Outer contact Resistance	5	Final	No physic 0.34 0.2	ECT-R-S cal damage 0.05 -0.15	MT occurred 0.13 0.04			Meet spec
	Inner contact Resistance Outer contact Resistance Unmating force			No physic 0.34 0.2 -0.01	ECT-R-S cal damage 0.05 -0.15 -0.17	occurred 0.13 0.04 -0.09	kgf	Δ0.8kgf max	
	Inner contact Resistance Outer contact Resistance Unmating force Examination of Product	5	Final	No physic 0.34 0.2 -0.01 No physic	ECT-R-S cal damage 0.05 -0.15 -0.17 cal damage	0.13 0.04 -0.09 occurred			Meet spec
	Inner contact Resistance Outer contact Resistance Unmating force			No physic 0.34 0.2 -0.01	ECT-R-S cal damage 0.05 -0.15 -0.17	occurred 0.13 0.04 -0.09	kgf	Δ0.8kgf max	
4	Inner contact Resistance Outer contact Resistance Unmating force Examination of Product Inner contact Resistance	5	Initial	No physic 0.34 0.2 -0.01 No physic 13.45 8.56 Peak acc Wave ty Shock directimes at six No discontinuous	ECT-R-S cal damage 0.05 -0.15 -0.17 cal damage 13.12	occurred 0.13 0.04 -0.09 occurred 13.26 8.36 735m/s2, ns ne wave ss :Each 3 f X Y X Z les, ne than 1µ	kgf /	Δ0.8kgf max No abnormalities	Meet spec
4	Inner contact Resistance Outer contact Resistance Unmating force Examination of Product Inner contact Resistance Outer contact Resistance Mechanical Shock Inner contact Resistance Outer contact Resistance	5 5	Initial Initial Final	No physic 0.34 0.2 -0.01 No physic 13.45 8.58 Peak acc Du Wave ty Shock dire times at sis axis No discont s,1tim 0.45 0.41	eal damage 0.05 -0.15 -0.17 cal damage 13.12 8.16 seleration: 11 pe: Half-sir ex surfaces o , total 18 tim tinuities mores at the te	0.13 0.04 -0.09 00ccurred 13.26 8.36 735m/s2, ns ne wave ss :Each 3 fX, Y, Z nes, re than 1µ sting.	kgf / mΩ	Δ0.8kgf max No abnormalities 15mΩ Max No abnormalities	Meet spec Meet spec Meet spec Meet spec
4	Inner contact Resistance Outer contact Resistance Unmating force Examination of Product Inner contact Resistance Outer contact Resistance Mechanical Shock Inner contact Resistance Outer contact Resistance Examination of Product	5 5	Initial Initial Final Final	No physic 0.34 0.2 -0.01 No physic 13.45 8.56 Peak acc Wave ty Shock directimes at six six No discont s,1tim 0.45 0.41 No physic	cal damage 0.05 -0.15 -0.17 cal damage 13.12 8.18 seleration: 11r pe: Half-sir cotion & time cotion & time tinuities more at the te -0.04 -0.37 cal damage	occurred 0.13 0.04 -0.09 occurred 13.26 8.36 735m/s2, ns ne wave ss:Each 3 f X, Y, Z nes, ne than 1µ sting. 0.22 0.04 occurred	kgf / mΩ /	Δ0.8kgf max No abnormalities 15mΩ Max No abnormalities Δ5mΩ Max No abnormalities	Meet spec Meet spec Meet spec Meet spec Meet spec Meet spec
4	Inner contact Resistance Outer contact Resistance Unmating force Examination of Product Inner contact Resistance Outer contact Resistance Mechanical Shock Inner contact Resistance Outer contact Resistance	5 5	Initial Initial Final	No physic 0.34 0.2 -0.01 No physic 13.45 8.56 Peak acc Wave ty Shock directimes at six six No discont s,1tim 0.45 0.41 No physic	eal damage 0.05 -0.15 -0.17 cal damage 13.12 8.16 seleration: 11 pe: Half-sir ex surfaces o , total 18 tim tinuities mores at the te	occurred 0.13 0.04 -0.09 occurred 13.26 8.36 735m/s2, ns ne wave ss:Each 3 f X, Y, Z nes, ne than 1µ sting. 0.22 0.04 occurred	kgf / mΩ	Δ0.8kgf max No abnormalities 15mΩ Max No abnormalities	Meet spec Meet spec Meet spec Meet spec

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5	Humidity test	5	Final	the maccordar 3(11c) Te Humi	ollowing env ating conne- nce with IEC emperature dity: 90~95 ration:98 ho	ctor in 512-11- :25~85°C %R.H	1	No abnormalities	Meet spec
	Inner contact Resistance Outer contact Resistance	5	Final	0.27 0.25	-0.21 -0.28	0.09	mΩ	Δ5mΩ Max	Meet spec
	Examination of Product	5	Final		cal damage		1	No abnormalities	Montone
\vdash		5			cal damage				Meet spec
	Examination of Product Inner contact Resistance		Initial	13.65	13.23	13.37		No abnormalities	Meet spec
	Outer contact Resistance	5	Initial	8.56	8.16	8.36	mΩ	15mΩ Max	Meet spec
6	Thermal Shock	5	Final	eondition	following en 5 times to ti samples.	water N Jay.	,	No abnormalities	Meet spec
	Inner contact Resistance Outer contact Resistance	5	Final	0.38	-0.08 -0.37	0.10 0.04	mΩ	Δ5mΩ Max	Meet spec
	Examination of Product	5	Final		cal damage		,	No abnormalities	Meet spec
	Examination of Product	5	Initial		cal damage		1	No abnormalities	Meet spec
7	Solderability	5	Final	1,Adj temperat 2, immersi scaling por mm/ 3, take or natural st. temperatu 4, immers speed of stove a main 5,take ou speed of 25 at ro 6, observer on the test	ust the tin : ure to 245 · ing the test s wider at a sp s's , keep 2 ~ ut the sampl ate of vertica re keep 60 · drops dry); sing test san about 25 m about 1 ~ 2 · t the test sa 5 mm/s , nati om tempera d with 10 x r area which is dipping tin;	stove + / - 2 °C; samples in leed of 25 3 s; les to the al at room s (that flux inples at a m/s in tin cm, and 0.5 s; inple at a ural cooling ture; inicroscope	,	No abnormalities	Meet spec
	Examination of Product	5	Final	>95% 9	Soldering Co	verage	1	No abnormalities	Meet spec
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