

#### **TEST REPORT**

Report Number: 100789990MIN-001 Project Number: G100789990

Testing performed on the Spectrum 700p1/700p2 MIMO SRAU

to 47 CFR, Part 27:2010, Enclosure Spurious Radiated Emissions

For ADC Telecommunications Inc. - a TE Connectivity Company

Test Performed by: Intertek Testing Services NA, Inc. 7250 Hudson Blvd., Suite 100 Oakdale, MN 55128 USA Test Authorized by:
ADC Telecommunications Inc.- a TE Connectivity
Company
541 E Trimble Road
San Jose, CA 95131 USA

Prepared by:	Richard Haza	Date:	July 20, 2012
	Richard Blonigen		
Reviewed by:	War Sfikh	Date:	July 20, 2012
	Norman Shpilsher		

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## **TABLE OF CONTENTS**

1.0	DESCRIPTION OF THE SAMPLE (EUT)	. ć
2.0	TEST SUMMARY	
2.1	Statement of the Measurement Uncertainty	
3.0	EQUIPMENT UNDER TEST	
3.1	Power Configuration	
	EUT Configuration	
	Environmental conditions	
4.0	TEST CONDITIONS AND RESULTS	. 7
4.1	Enclosure Spurious Radiated Emissions	. 7
	TEST EQUIPMENT	



# 1.0 DESCRIPTION OF THE SAMPLE (EUT)

Model:	Spectrum 700p1/700p2 MIMO SRAU: SPT-S1-7070-1-MIMO				
Type of EUT:	Repeater / Booster				
Operating Frequency Range:	728 – 757MHz				
Company:	ADC Telecommunications Inc a TE Connectivity Company				
Customer:	Sue Cyr				
Address:	541 E. Trimble Road San Jose, CA 95131 USA				
Phone:	408-952-2445				
Fax:	408-952-2645				
e-mail:	sue.cyr@te.com				
Test Standards:	□ EN 55022:2006 +A1:2007, Class □ EN 55011:2007 +A2:2007, Group , Class □ 47 CFR, Part 27:2010, Enclosure Spurious Radiated				
Date Sample Submitted:	July 16, 2012				
Test Work Started:	July 16, 2012				
Test Work Completed:	July 20, 2012				
Test Sample Conditions:	<ul><li>□ Damaged □Poor (Usable) □ Good</li><li>□ Prototype □Production □ Used</li></ul>				

EMC Report No: 100790005MIN-001 Page 3 of 17



#### 2.0 TEST SUMMARY

Referring to the performance criteria and the operating mode during the tests specified in this report, the equipment complies with the requirements according to the following standards.

TEST STANDARD	TEST	RESULT
Part 27	Enclosure Spurious Radiated Emissions	Pass

#### 2.1 Statement of the Measurement Uncertainty

**Note:** The measured result in this report is within the specification limits by more than the measurement uncertainty; the measured result indicates that the product tested complies with the specification limit.

The expanded uncertainty (k = 2) for radiated emissions from 30 to 1000 MHz has been determined to be:  $\pm 4$  dB at 10m and  $\pm 5.4$  dB at 3m

The expanded uncertainty (k = 2) for conducted emissions from 150 kHz to 30 MHz has been determined to be:

±2.6 dB

EMC Report No: 100790005MIN-001 Page 4 of 17



### 3.0 EQUIPMENT UNDER TEST

### 3.1 Power Configuration

General notes: None

Rated voltage:								
Rated frequency:			☐ 120VAC	☐ 230VAC	☐ 400VAC		ort Power	
Rated frequency: □ 50Hz □ 60Hz Number of phases: □ 1 Phase □ 3 Phases  3.2 EUT Configuration  The equipment under test was operated during the measurement under the following conditions: □ - Standby □ - Test program (H - Pattern) □ - Continuous Operation (see details below) □ - Specific test program □ -  Operating modes of the EUT:  No. Description 1 Continuous transmitting at 729MHz, 742MHz, and 756MHz at 20dBm output power 1 Transmitting power was set to 20dB at EUT  Cables:  No. Type Length Designation Note 1 Two RF coax 10m each RF signal cables to the Support Equipment  Support equipment/Services:  No. Item Description 1 Aeroflex IRF 3413 Signal Generator 2 Prism Host Unit p/n 1449226 Host Unit 3 IFEU p/n MR2216G7 54 V Power Supply 4 Prism DRU unit DRU 5 Spectrum IFEU Unit IFEU	Rate	d current:	Amp.					
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Support equipment/Services:  No. Item Description  1 Aeroflex IRF 3413 Signal Generator  2 Prism Host Unit p/n 1449226 Host Unit  3 IFEU p/n MR2216G7 54 V Power Supply  4 Prism DRU unit DRU  5 Spectrum IFEU Unit IFEU	1	Two RF coax		10m each	RF signal ca	ables to the Support Equipment		
No.ItemDescription1Aeroflex IRF 3413Signal Generator2Prism Host Unit p/n 1449226Host Unit3IFEU p/n MR2216G754 V Power Supply4Prism DRU unitDRU5Spectrum IFEU UnitIFEU	<u> </u>	THO THE GOUX		Tom caon	i i oigilai ot			
No.ItemDescription1Aeroflex IRF 3413Signal Generator2Prism Host Unit p/n 1449226Host Unit3IFEU p/n MR2216G754 V Power Supply4Prism DRU unitDRU5Spectrum IFEU UnitIFEU								
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1 Aeroflex IRF 3413 Signal Generator 2 Prism Host Unit p/n 1449226 Host Unit 3 IFEU p/n MR2216G7 54 V Power Supply 4 Prism DRU unit DRU 5 Spectrum IFEU Unit IFEU				Description				
2 Prism Host Unit p/n 1449226 Host Unit 3 IFEU p/n MR2216G7 54 V Power Supply 4 Prism DRU unit DRU 5 Spectrum IFEU Unit IFEU		'						
3 IFEU p/n MR2216G7 54 V Power Supply 4 Prism DRU unit DRU 5 Spectrum IFEU Unit IFEU								
4 Prism DRU unit DRU 5 Spectrum IFEU Unit IFEU								
5 Spectrum IFEU Unit IFEU								
6   Spectrum Main RAU   Remote Antenna	5							
	6	6 Spectrum Main RAU Remote Antenna						

EMC Report No: 100790005MIN-001 Page 5 of 17



#### 3.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature: 15-35 ° C

**Humidity:** 30-60 %

**Atmospheric pressure:** 86-106 kPa

EMC Report No: 100790005MIN-001 Page 6 of 17



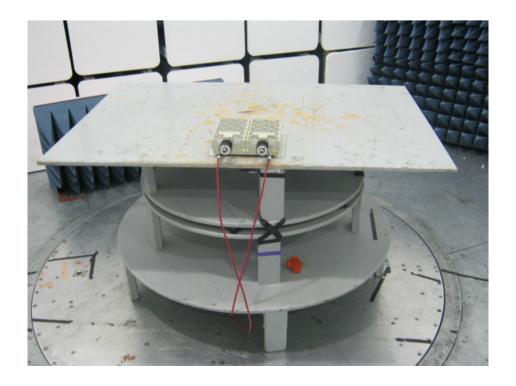
### 4.0 TEST CONDITIONS AND RESULTS

### 4.1 Enclosure Spurious Radiated Emissions

Description of the test location						
Test location:	: [	OATS				
Test distance	: [	10 meters				
Test result:	F	ass				
Frequency range:			30MHz-10GHz			
Max. Emissions margin:		:	31.9 dB below the Reference Limits			
Notes: 1			ns testing was performed in the Anechoic chamber at 3m measurement			
•		rious Radiated	d Power limits of -13dBm was correlated with field strength Reference			
3. No spurious or harmonic			uring field strength measurements at 3m measurement distance nic emissions with margin less than 20dB below the Reference Limits			
			re, no emissions were measured with substitution method g frequencies were excluded from the Table			

EMC Report No: 100790005MIN-001 Page 7 of 17







**Test Setup Photos** 

EMC Report No: 100790005MIN-001





**Test Setup Photo** 

EMC Report No: 100790005MIN-001 Page 9 of 17



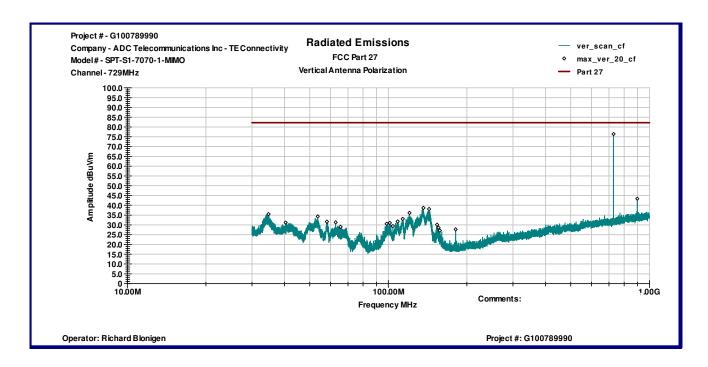
Date:	July 16-20, 2012	Result:	Pass
Tested by:	Richard Blonigen		
Standard:	FCC Part 27		
Test Point:	Enclosure		
Operation mode:	See page 5		
Note:	Channels 728-756MHz		
NOIG.	Frequency Range 30MHz-10GHz		

#### Table 1

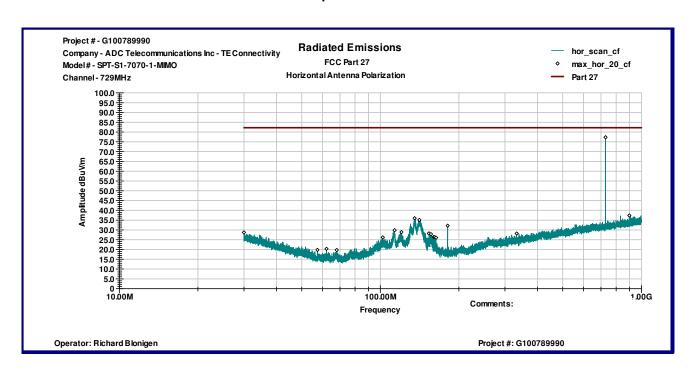
Frequency	Antenna	Peak Reading	Total C.F.	Pre-Amp.	Total at 3m	Limit	Margin
MHz	Polarity	dΒμV	dB1/m	Gain (dB)	dBμV/m	dBμV/m	dB
Channel 729MHz							
136.27 MHz	V	25.0	13.6	0.0	38.6	82.2	-43.6
143.26 MHz	V	24.9	13.2	0.0	38.1	82.2	-44.1
899.11 MHz	V	18.0	25.4	0.0	43.4	82.2	-38.8
1.459 GHz	V	61.8	27.5	43.0	46.3	82.2	-35.9
1.675 GHz	V	53.2	28.5	43.2	38.4	82.2	-43.8
135.28 MHz	Н	22.3	13.7	0.0	36.0	82.2	-46.2
141.05 MHz	Н	21.8	13.3	0.0	35.1	82.2	-47.1
899.25 MHz	Н	12.0	25.4	0.0	37.4	82.2	-44.8
1.459 GHz	Н	61.4	27.4	43.0	45.8	82.2	-36.4
1.72 GHz	Н	53.4	28.6	43.3	38.8	82.2	-43.4
			Channel 74	2MHz			
135.91 MHz	V	24.2	13.7	0.0	37.9	82.2	-44.3
142.08 MHz	V	22.4	13.2	0.0	35.7	82.2	-46.6
886.15 MHz	V	17.9	25.3	0.0	43.2	82.2	-39.0
1.483 GHz	V	65.7	27.6	43.0	50.3	82.2	-31.9
1.675 GHz	V	53.6	28.5	43.2	38.9	82.2	-43.3
135.15 MHz	Н	20.9	13.7	0.0	34.6	82.2	-47.6
142.23 MHz	Н	22.7	13.2	0.0	35.9	82.2	-46.3
984.13 MHz	Н	10.4	26.2	0.0	36.6	82.2	-45.6
1.483 GHz	Н	62.4	27.5	43.0	46.9	82.2	-35.3
1.879 GHz	Н	53.2	29.3	43.4	39.2	82.2	-43.1
			Channel 75	6MHz			
118.51 MHz	V	23.2	13.9	0.0	37.1	82.2	-45.1
129.05 MHz	V	22.9	13.8	0.0	36.7	82.2	-45.5
872.17 MHz	V	17.2	25.1	0.0	42.2	82.2	-40.0
1.513 GHz	V	65.5	27.7	43.0	50.2	82.2	-32.0
1.675 GHz	V	52.9	28.5	43.2	38.2	82.2	-44.0
100 00 MH I-	11	10.0	10.7	0.0	20.0	00.0	40.0
133.88 MHz 139.42 MHz	H	19.6 20.8	13.7 13.4	0.0	33.3	82.2 82.2	-48.9 -48.1
999.13 MHz	Н	20.8 10.8	26.4	0.0	34.2 37.2	82.2 82.2	-48.1 -45.0
1.513 GHz	H	62.6	27.6	43.0	47.2	82.2	-35.0
1.72 GHz	H	52.1	28.6	43.3	37.5	82.2	-33.0 -44.7
1.72 0112		<i>U</i> 1	20.0	10.0	57.5	02.2	1 7.7
<u></u>	•						

EMC Report No: 100790005MIN-001 Page 10 of 17



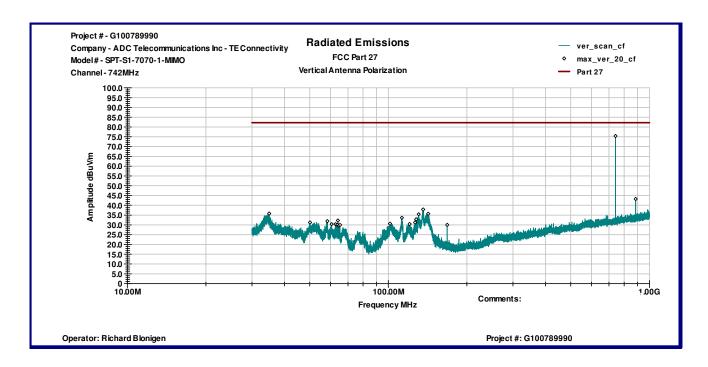


Graph 1

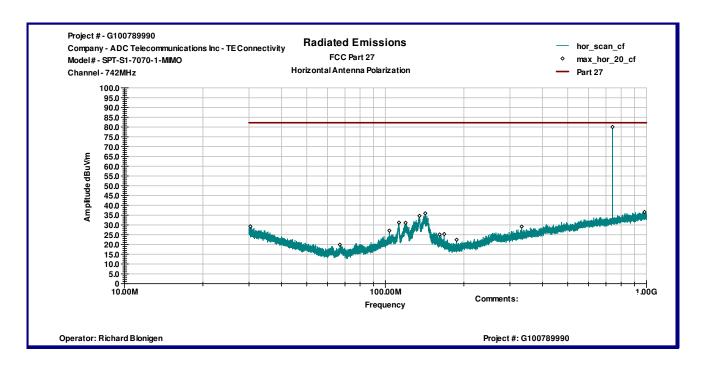


Graph 2



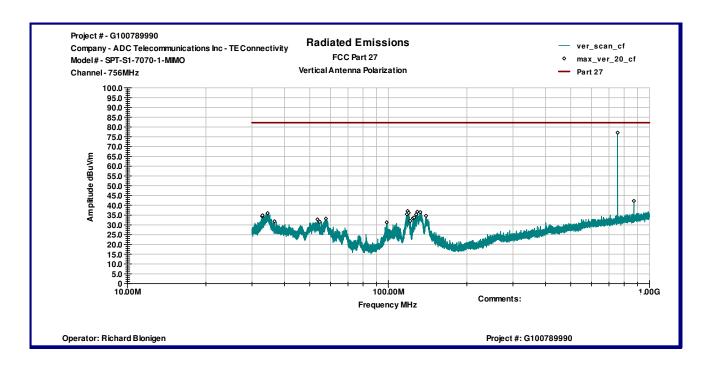


Graph 3

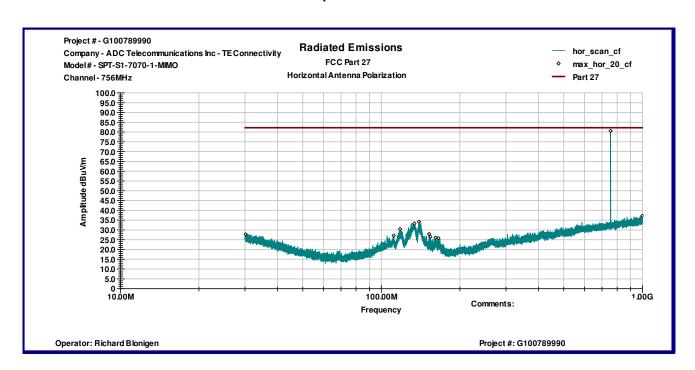


Graph 4





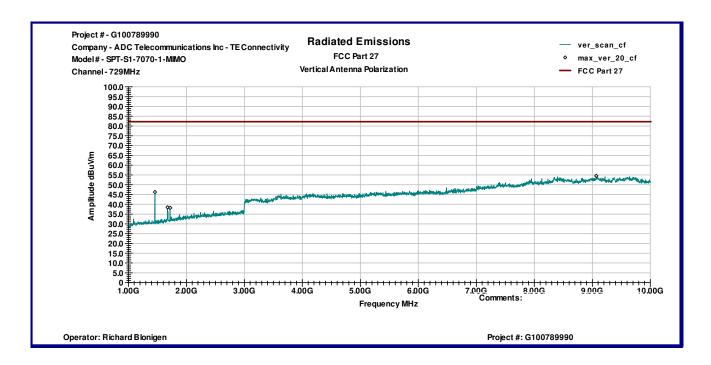
Graph 5



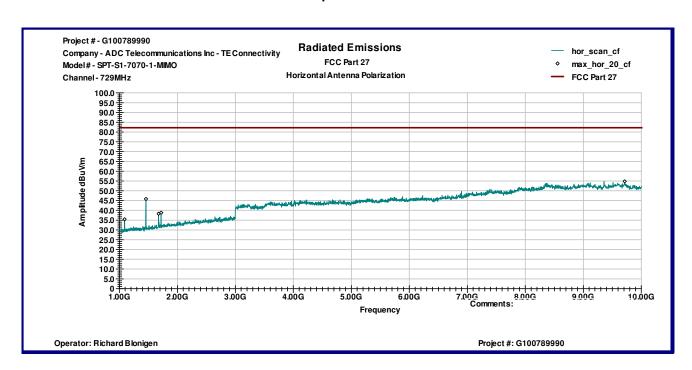
Graph 6

EMC Report No: 100790005MIN-001 Page 13 of 17



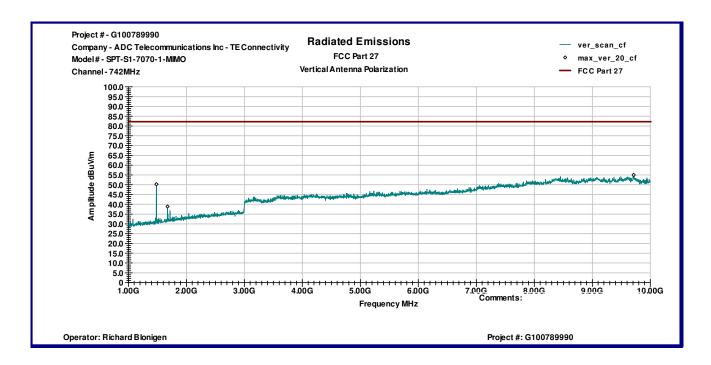


Graph 7

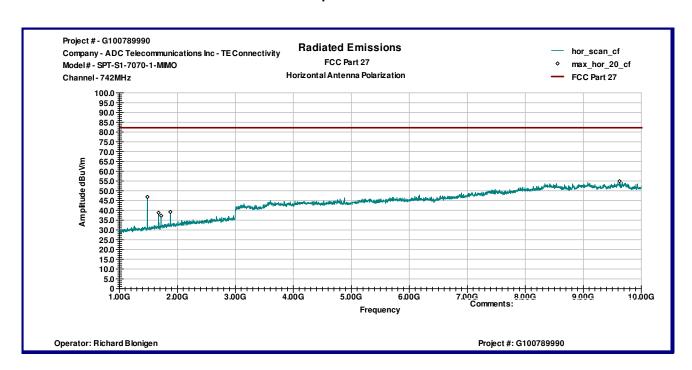


Graph 8



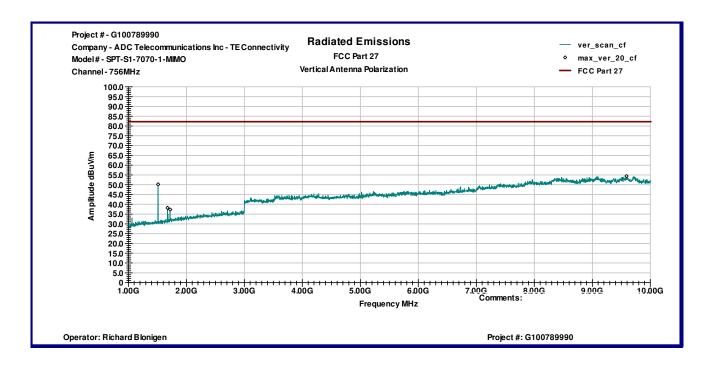


Graph 9

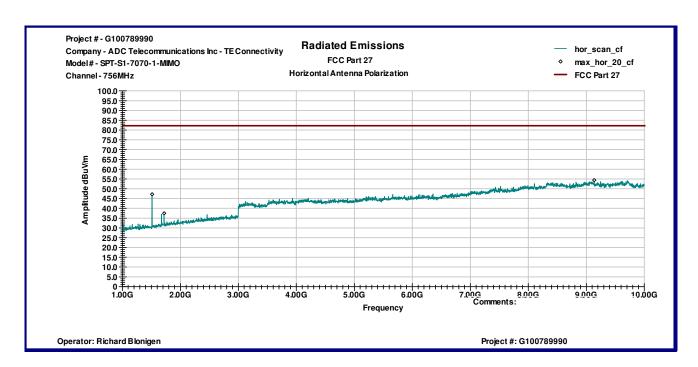


Graph 10





Graph 11



Graph 12



### 5.0 TEST EQUIPMENT

DESCRIPTION	MANUFACTURER	MODEL	SERIAL NO.	INTERTEK ID	CAL DUE	USED
Spectrum Analyzer	R&S	FSP 40	100024	12559	11/17/2012	$\boxtimes$
Spectrum Analyzer	R&S	ESU	100398	25283	12/09/2012	
Bicono-Log Antenna	Schaffner-Chase	CBL 6112 B	2468	9734	11/08/2012	
Horn Antenna	EMCO	3115	9507-4513	9936	05/16/2013	$\boxtimes$
Waveguide Horn Antenna	EMCO	3116	9904-2423	9705	10/31/2012	$\boxtimes$
Pre-Amplifier	MITEQ	AMF-5D-00501800-28- 13P	1402232	172081	10/31/2012	$\boxtimes$
System	Quantum Change	TILE! Instrument Control	Ver. 3.4.K.29	15259	VBU	$\boxtimes$

EMC Report No: 100790005MIN-001 Page 17 of 17