



**Nemko USA, Inc.**  
11696 Sorrento Valley Rd., Suite F  
San Diego, CA 92121-1024  
Phone (858) 755-5525 Fax (858) 452-1810

---

## **CERTIFICATION TEST REPORT**

**Report Number:** 2010 10158602 FCC

**Project Number:** 59085-1

**Nex Number:** 137862

**Applicant:** Fusion Wireless  
11555 Sorrento Valley Road, Suite 202  
San Diego, CA 92121

**Equipment Under Test (EUT):** WIRELESS CELL MODULE

**Model:** FW2763P

**FCC ID:** XU9-FW2763P  
**IC ID:** 8694A-FW2763P

**In Accordance With:** FCC Part 22, Subpart H  
Industry Canada RSS-132, Issue 2  
  
FCC Part 24 Subpart E  
RSS 133 Issue 5 and RSS GEN Issue 2

**Tested By:** Nemko USA Inc.  
  
San Diego, CA 92121

**Date:** January 14, 2011

**Total Number of Pages:** 36

## Section1: Summary of Test Results

### General

#### All measurements are traceable to national standards

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC rules parts CFR47 Part 2 and 24 subpart E for the United States and RSS132 Issue 2, RSS133 Issue 5, and RSS-Gen Issue 2 for Canada. Radiated tests were conducted in accordance with ANSI C63.4-2003. Radiated emissions are made on an open area test site. A description of the test facility is on file with the FCC and IC.

The assessment summary is as follows:

<b>Apparatus Assessed:</b>	<b>WIRELESS CELL MODULE</b>
<b>Model:</b>	<b>FW2763P</b>
<b>Serial:</b>	<b>100505</b>
<b>Specifications:</b>	FCC Part 22, Subpart H Industry Canada RSS-132, Issue 2, September 2005 FCC Part 2, Part 24 Subpart E RSS 133 Issue 5, February 2009 RSS-GEN Issue 2
<b>Date Received in Laboratory:</b>	October 29, 2009
<b>Compliance Status:</b>	Complies
<b>Exclusions:</b>	None
<b>Non-compliances:</b>	None

**1.1 Report Release History**

REVISION	DATE	COMMENTS
-	January 14, 2011	Prepared By: <b>Alan Laudani</b>
-	January 14, 2011	Initial Release: Alan Laudani

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025.

Nemko USA Inc. authorizes the applicant to reproduce this report provided it is reproduced in its entirety and for use by the company's employees only.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Nemko USA Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

TESTED BY:



Date: January 14, 2011

**Alan Laudani, RF/EMC Engineer**

## TABLE OF CONTENTS

<b>Section 1: Summary of Test Results</b>	<b>2</b>
1.1 Report Release History	3
<b>Section 2: Equipment Under Test</b>	<b>5</b>
2.1 Product Identification	5
2.2 Technical Specifications of the EUT	5
<b>Section 3: Test Conditions</b>	<b>6</b>
3.1 Test Environment	6
3.2 Test Equipment	6
<b>Section 4: Observations</b>	<b>7</b>
4.1 Modifications Performed During Assessment	7
4.2 Record Of Technical Judgments	7
4.3 EUT Parameters Affecting Compliance	7
4.4 Test Deleted	7
4.5 Additional Observations	7
<b>Section 5: Results Summary</b>	<b>8</b>
2.1 Test Result summary table	8
<b>Appendix A: Test Results</b>	<b>9</b>
A1. RF Power Output	9
A2. Occupied Bandwidth	16
A3. Spurious Emissions At Antenna Terminals	22
A4. Field strength of Spurious Emissions	29
2.2 RSS 129 10.0 and RSS 133 6.7 Field Receiver Spurious Emissions	29
A5. Receiver Spurious	37

## Section 2: Equipment Under Test

### 2.1 Product Identification

The Equipment Under Test was identified as follows:

Sample No.	Description	Serial No.
FW2763P	WIRELESS CELL MODULE, FW2763P	100505

### 2.2 Technical Specifications of the EUT

<b>Manufacturer:</b>	Fusion Wireless
<b>Transmit Frequency:</b>	Cellular Band: 824.70 to 848.31 MHz PCS Band: 1851.25 to 1908.75 MHz
<b>Rated Power:</b>	Cellular Band: 0.250 W PCS Band: 0.237 W
<b>Modulation:</b>	CDMA
<b>Emission Designator:</b>	Cellular Band: 1M38F9W PCS Band: 1M38F9W
<b>Antenna:</b>	taoglas Part No. TG.25.2113 2 dBi quad-band cellular dipole terminal antenna hinged SMA(M)
<b>Antenna Connector:</b>	External, TNC with TNC to SMA cable
<b>Power Source:</b>	3.3 VDC from host.



## Section 3: Test Conditions

### 3.1 Test Environment

All tests were performed under the following environmental conditions:

Temperature range	:	21-31 °C
Humidity range	:	18-70 %
Pressure range	:	101.2 kPa
Power supply range	:	102-132 Vac 60 Hz

### 3.2 Test Equipment

Nemko ID	Device	Manufacturer	Model	Serial Number	Cal Date	Cal Due Date
111	Antenna, LPA	EMCO	3146	1382	10/20/2008	10/20/2010
128	Antenna, Bicon	EMCO	3104	2882	2/9/2009	2/9/2011
317	Preamplifier	HP	8449A	2749A00167	5/7/2010	5/7/2011
752	Antenna, DRWG	EMCO	3115	4943	11/12/2008	11/12/2010
835	Spectrum Analyzer	Rohde & Schwarz	RHDFSEK	829058/005	7/12/2010	7/12/2011
836	Signal Generator	Agilent	E8254A	US41140229	2/5/2010	2/5/2011
815	Multimeter	Fluke	111	78130066	8/4/2010	8/4/2011
877	Antenna, DRG Horn, .7-18GHz	AH Systems	SAS-571	688	8/16/2010	8/16/2011
919	Preamplifier	Spacek Labs MM-Wave Technology	100MHz to 40GHz	3M12 (SLK-35-3) and 3M13 (SLKa-35-4)	11/30/2009	11/30/2010
E1013	DRG Horn (Small)	EMCO	3116	00119488	12/23/2009	12/23/2011
E1018	9kHz to 7GHz Spectrum Analyzer	Rohde & Schwarz	FSP7	835363/0003	1/22/2010	1/22/2011
911	Spectrum Analyzer	Agilent	E4440A	US41421266	10/26/2010	10/26/2011
client	DC Power Supply	Gwinstek	GPS-30300	NA	NCR	NCR
NA	20 dB Attenuator	Winschel	24-20-234	NA	Verified	Verified

NVLAP LAB CODE: 200116-0.

Registration of the OATS are on file with the Federal Communications Commission, under the VCCI under registration number R-3027, and are also registered with Industry Canada under Site Numbers 2040B-1 and 2040B-2.



## **Section 4: Observations**

### **4.1 Modifications Performed During Assessment**

None

### **4.2 Record Of Technical Judgments**

No technical judgments were made during the assessment.

### **4.3 EUT Parameters Affecting Compliance**

The user of the apparatus could not alter parameters that would affect compliance.

### **4.4 Test Deleted**

No Tests were deleted from this assessment.

### **4.5 Additional Observations**

There were no additional observations made during this assessment.

## Section 5: Results Summary

### 2.1 Test Result summary table

FCC Part 2 Subpart J: Frequency Allocations and Radio Treaty Matters; General Rules and Regulations. Equipment Authorization Procedures.

FCC CFR 47 Part 24 Subpart E – Personal Communications Services – Broadband PCS

RSS-GEN Issue 2 (June 2007) – General requirements and information for the Certification of Radiocommunication Equipment

RSS-133 Issue 5 (February 2009) – 2 GHz Personal Communications Services

The column headed “Required” indicates whether the associated clauses were invoked for the apparatus under test. The following abbreviations are used:

N No: not applicable / not relevant

Y Yes: Mandatory i.e. the apparatus shall conform to these test.

N/T Not Tested, mandatory but not assessed. (See section 4.4 Test deleted)

The results contained in this section are representative of the operation of the apparatus as originally submitted.

FCC Part 2/Part xx	RSS Paragraph RSS-GEN/RSS-133	Test/Requirement Description	Required	Result
2.1046/24.232	<i>RSS-133 6.4</i> 4.8/6.4	RF Power Output	Y	COMPLIES
22.913	<i>RSS-129 7.1/9.1</i>	RF Power Output	Y	COMPLIES
2.1049/24.238	4.6.1/6.5	Occupied Bandwidth	Y	COMPLIES
22.917(D)		Occupied Bandwidth	Y	COMPLIES
2.1051/24.238	<i>RSS-133 6.5.1</i> 4.9/6.5	Spurious Emissions at antenna Terminals	Y	COMPLIES
22.917(B)	<i>RSS-129 6.3/8.1</i>	Spurious Emissions at antenna Terminals	Y	COMPLIES
2.1053/24.238	4.9/6.5	Field Strength of Spurious Emissions	Y	COMPLIES
22.917(B)		Field Strength of Spurious Emissions	Y	COMPLIES
2.1055/24.235		Frequency Stability	Y	COMPLIES
22.355	<i>RSS-133 6.3</i> 4.7/6.3			
	<i>RSS-129 7.2/9.2</i>	Frequency Stability	Y	COMPLIES
	<i>RSS-129 10.0</i>	Receiver Spurious	Y	COMPLIES
	<i>RSS-133 6.7</i> 4.10/6.6			



## Appendix A: Test Results

### A1. RF Power Output

#### Para. No. : FCC 2.1046 & RSS-GEN 4.8

##### **§ 22.913**

The effective radiated power (ERP) of transmitters in the Cellular Radiotelephone Service must not exceed the limits in this section.

(a) Maximum ERP. In general, the effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts. However, for those systems operating in areas more than 72 km (45 miles) from international borders that:

(2) Extend coverage on a secondary basis into cellular unserved areas, as those areas are defined in §22.949, the ERP of base transmitters and cellular repeaters of such systems must not exceed 1000 Watts. The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

##### **§ 24.232 Power and antenna height limits.**

Para. No.: 24.232. (b) Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

(c) Mobile/portable stations are limited to 2 watts EIRP power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

(d) Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

##### **RSS-132**

###### 4.4 Transmitter Output Power

The transmitter output power shall not exceed the limits given in SRSP-503.

**NOTE: From SRSP-503 issue 7, Feb 2008:**

**5.1.3** The maximum EIRP shall be 11.5 watts for mobile stations.

###### RSS-133

###### 6.4 Transmitter Output Power

The average equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510.

NOTE: From SRSP-510 issue 5, Feb 2009:

###### 5.1.2 Mobile Stations

Mobile stations and hand-held portables are limited to 2 watts maximum e.i.r.p. The equipment shall employ means to limit the power to the minimum necessary for successful communication.

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

**Conditions:**

Model:	FW2763p	Temperature:	22°C
Date:	1/14/2011	Humidity:	35%
Modification State:	None	Tester:	Alan Laudani
		Laboratory:	Nemko

**Observations:**

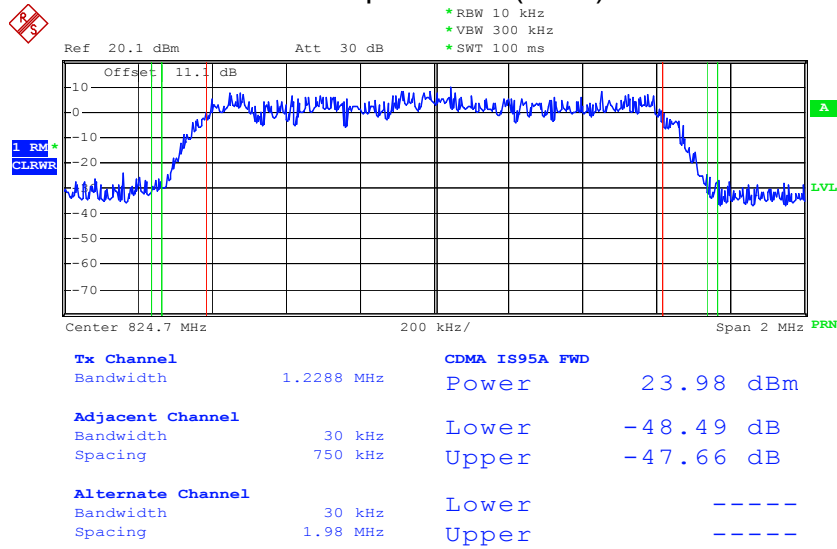
- Input voltage varied from 2.8 to 3.8 VDC
- Cellular macro of standard used in spectrum analyzer for conducted power measurement. 11.1 dB offset measured prior to test.
- PCS macro of standard used in spectrum analyzer for conducted power measurement. 11.1 dB offset measured prior to test.
- Peak, max hold used for Peak output power with RBW > EBW.

**Test Results: Complies**

Carrier Frequency (MHz)	Channel	Voltage Nom +/- 15% VDC	Output Power (dBm)	Output Power (W)
824.70	1013	2.8	23.88	
		3.3	<b>23.98</b>	<b>0.250</b>
		3.8	23.85	
836.52	384	2.8	23.10	
		3.3	23.22	0.205
		3.8	23.20	
848.31	777	2.8	22.91	
		3.3	22.92	0.195
		3.8	22.89	

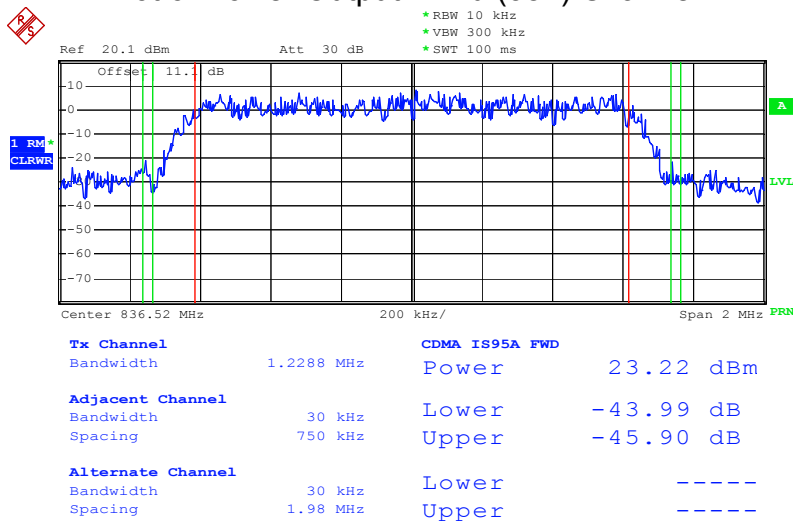
Carrier Frequency (MHz)	Channel	Voltage Nom +/- 15% VDC	Output Power (dBm)	Output Power (W)	Peak Output Power (dBm)	Peak to Average Ratio (dB)
1851.25	25	2.8	22.80			
		3.3	22.83	0.192	23.69	0.86
		3.8	22.81			
1880.00	600	2.8	22.44			
		3.3	22.47	0.177	22.87	0.40
		3.8	22.46			
1908.75	1175	2.8	23.74			
		3.3	23.75	<b>0.237</b>	24.33	0.58
		3.8	23.71			

### Plot of Power Output – Low (1013) Channel



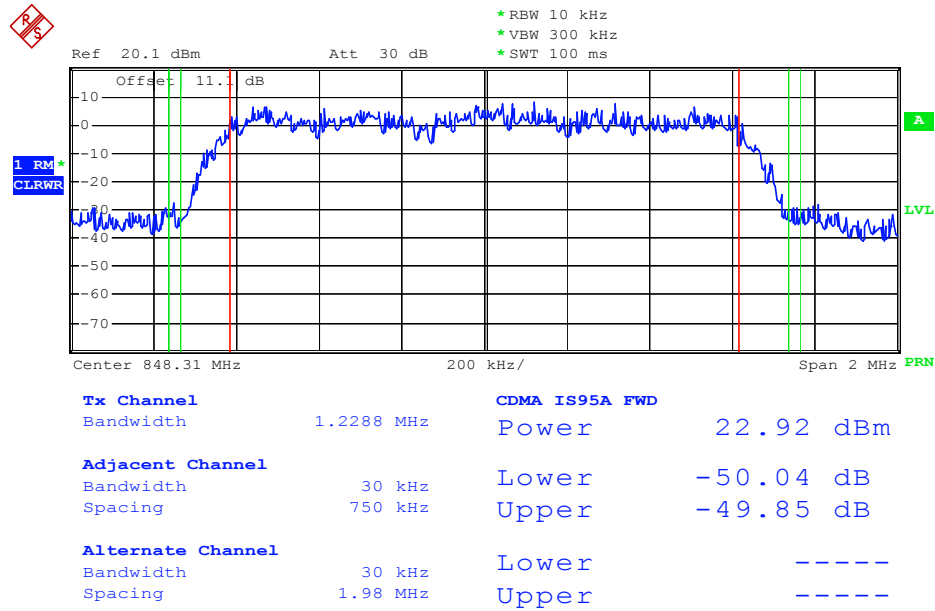
Date: 1.JAN.1997 01:07:20

### Plot of Power Output – Mid (384) Channel



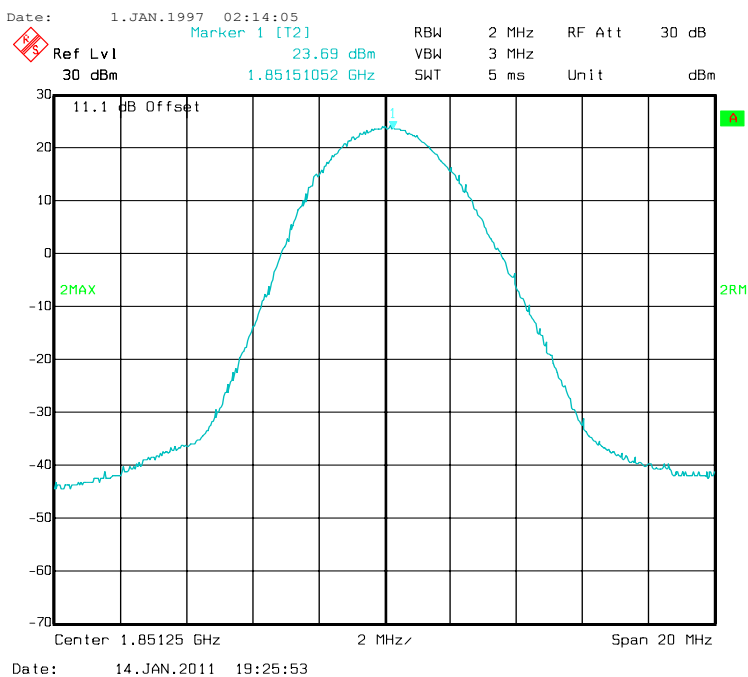
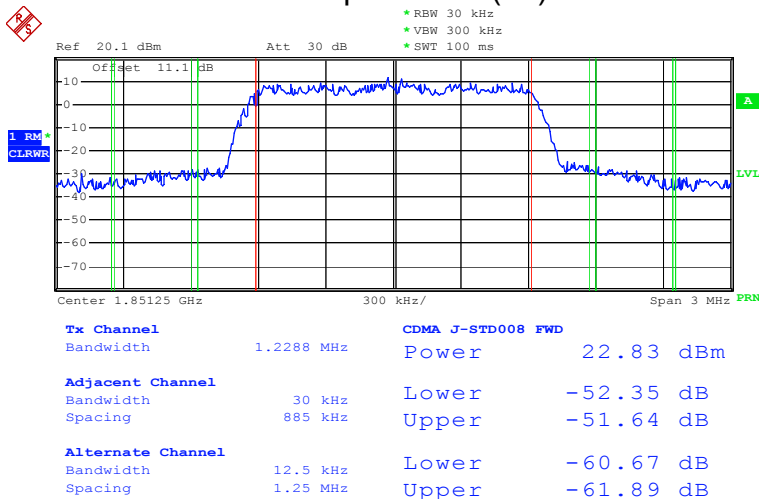
Date: 1.JAN.1997 00:50:00

## Plot of Power Output – High (777) Channel

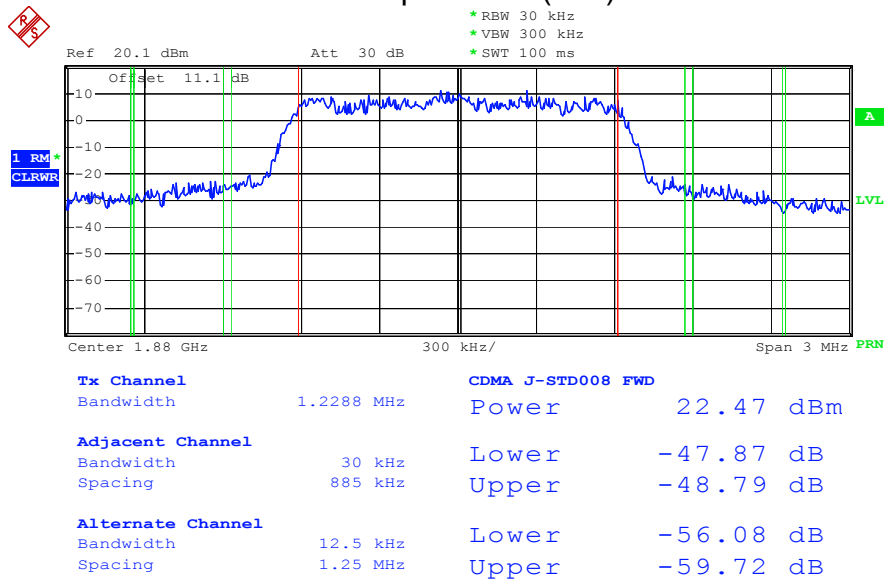


Date: 1.JAN.1997 00:47:31

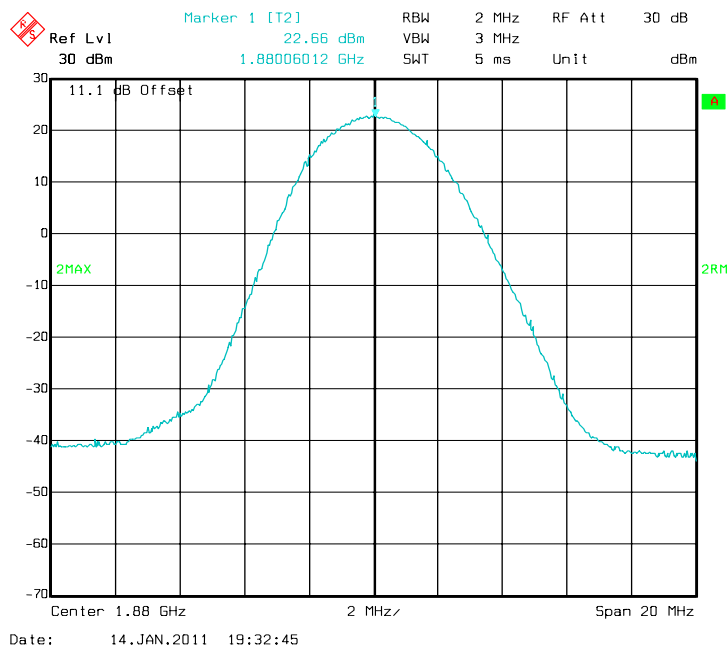
# Plot of Power Output – Low (25) Channel



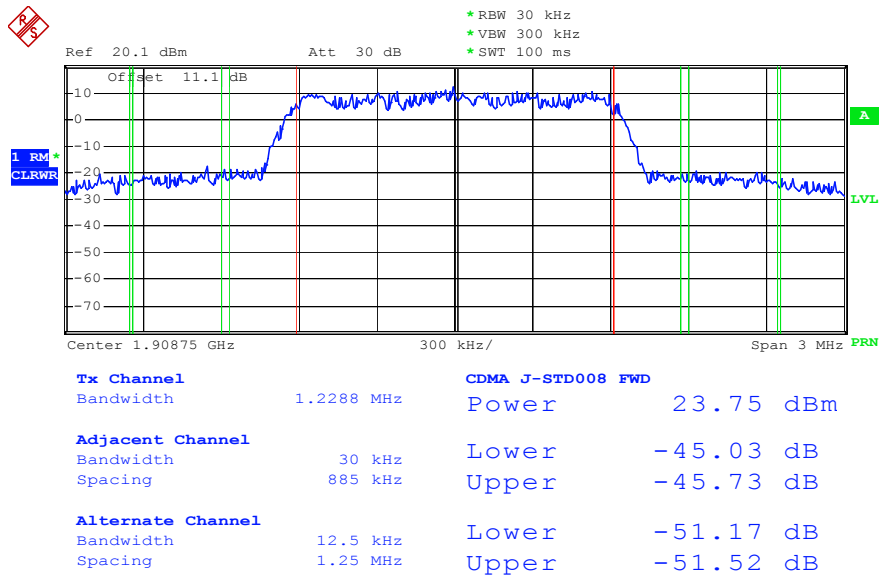
### Plot of Power Output – Mid (600) Channel



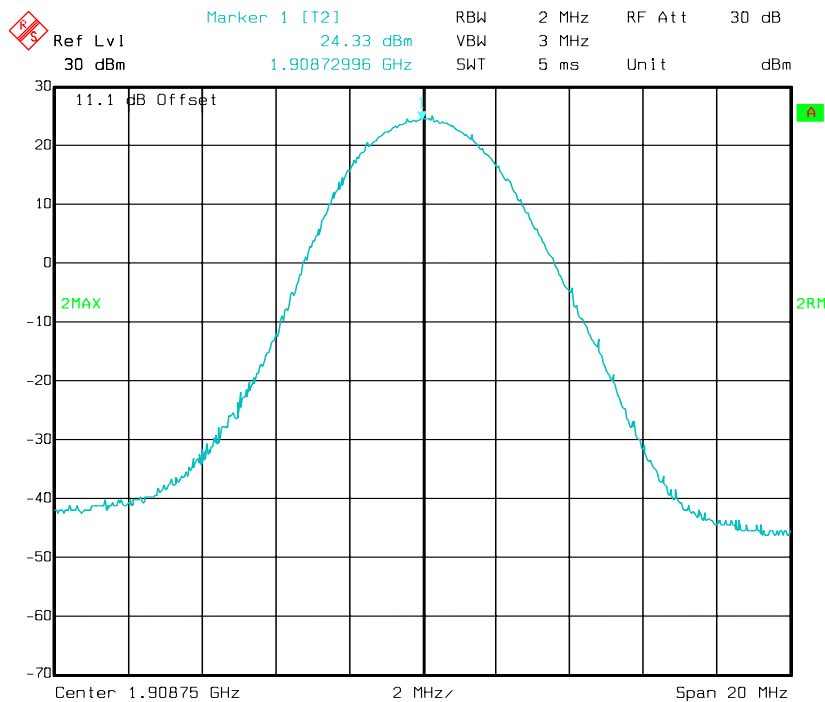
Date: 1.JAN.1997 02:02:34



## Plot of Power Output – High (1175) Channel



Date: 1.JAN.1997 01:23:04



Date: 14.JAN.2011 19:34:16

## A2. Occupied Bandwidth

Para. No.: 2.1049 and RSS-GEN 4.6

Part 22.917

### 24.238 Emission limitations for Broadband PCS equipment.

The rules in this section govern the spectral characteristics of emissions in the Broadband Personal Communications Service.

(a) *Out of band emissions.* The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

(b) *Measurement procedure.* Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth ( i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

### RSS-GEN

#### 4.6.1 Occupied Bandwidth

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured.

The transmitter shall be operated at its maximum carrier power measured under normal test conditions

The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold, may produce a wider bandwidth than actual.

The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded.

The span between the two recorded frequencies is the occupied bandwidth.

### Conditions:

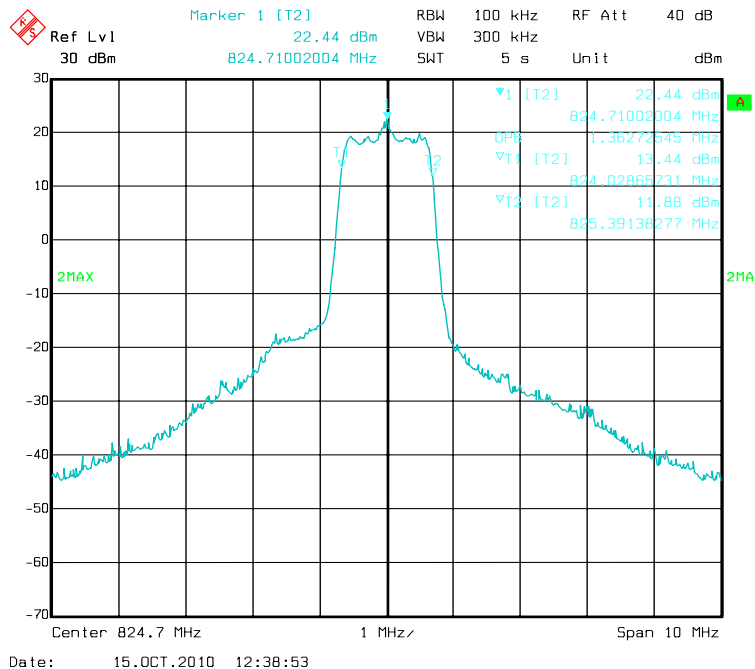
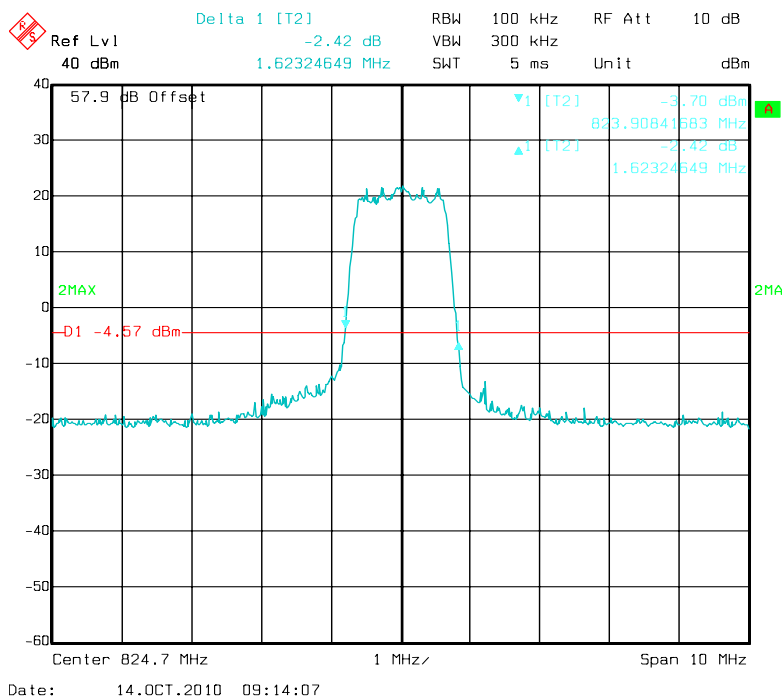
Model:	FW2763p	Temperature:	20°C
Date:	10/11/2010	Humidity:	55%
Modification State:	None	Tester:	Alan Laudani
		Laboratory:	Nemko

**Observations: None****Test Results: Complies****Test Data:** See attached plots.



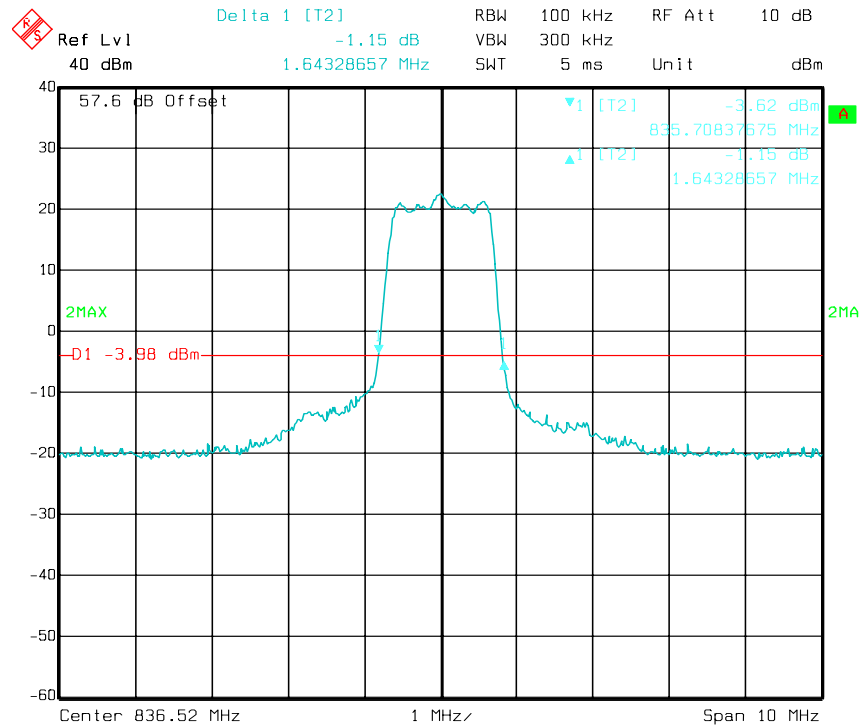
FCC ID: XU9-FW2763P  
IC: 8649A-FW2763P

Report Number: 2010 10158602 FCC

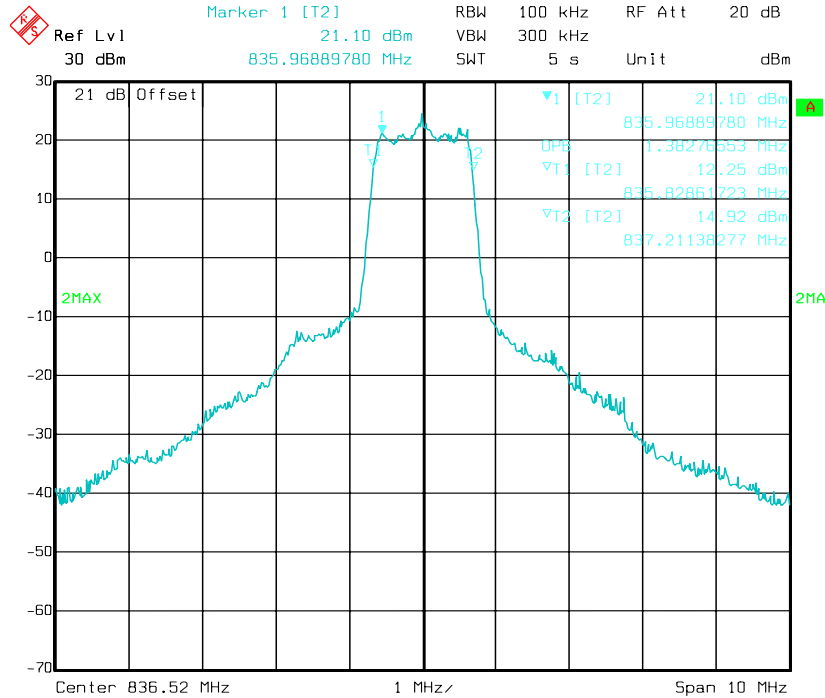


FCC ID: XU9-FW2763P  
IC: 8649A-FW2763P

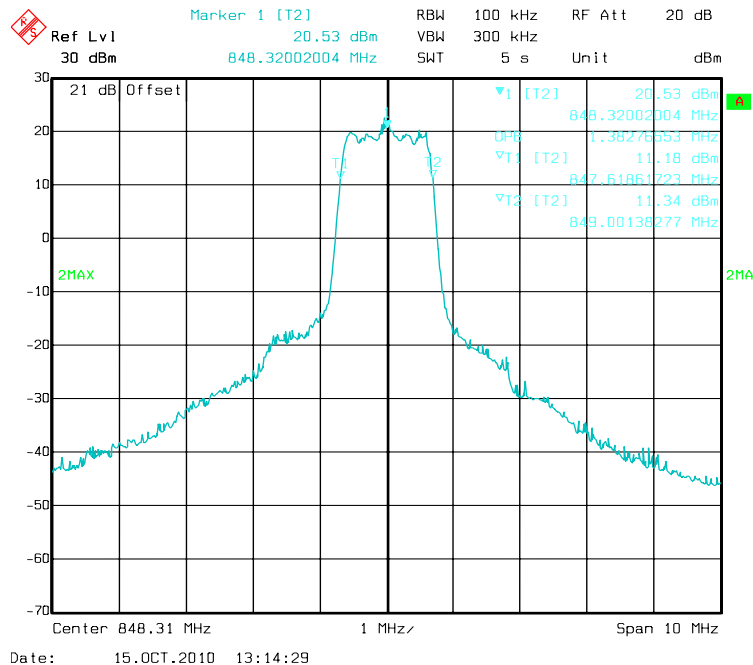
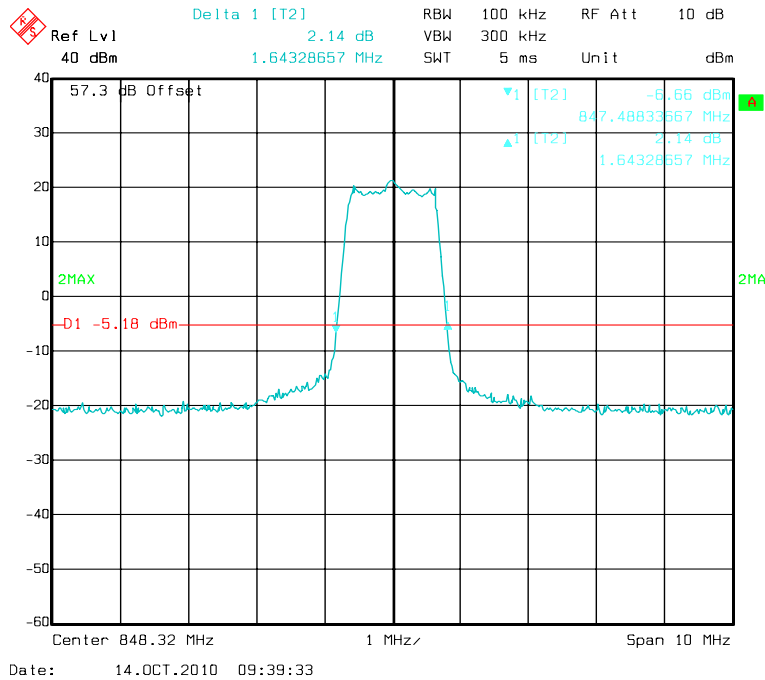
Report Number: 2010 10158602 FCC



Date: 14.OCT.2010 09:33:10

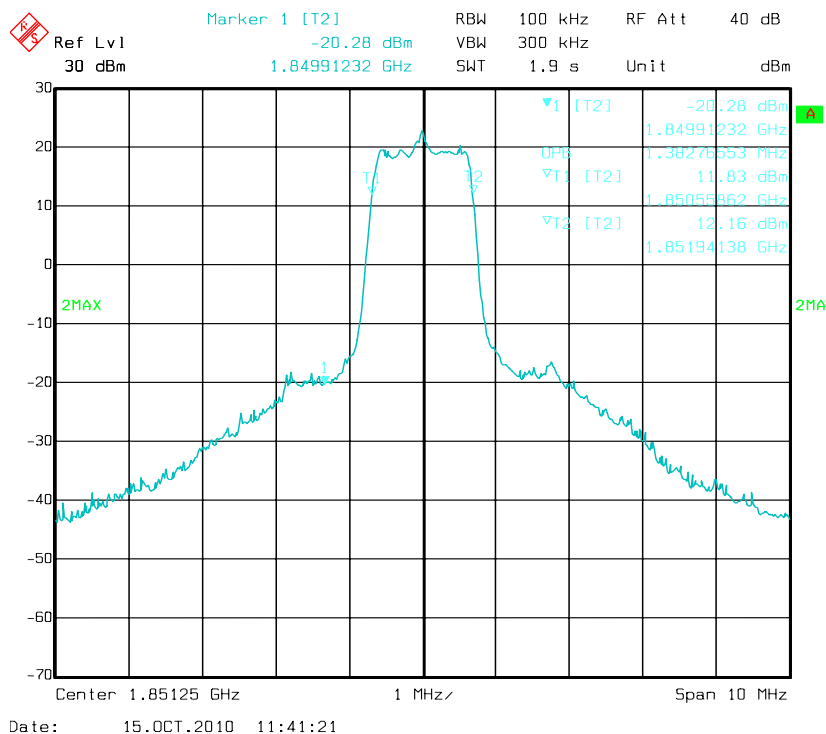
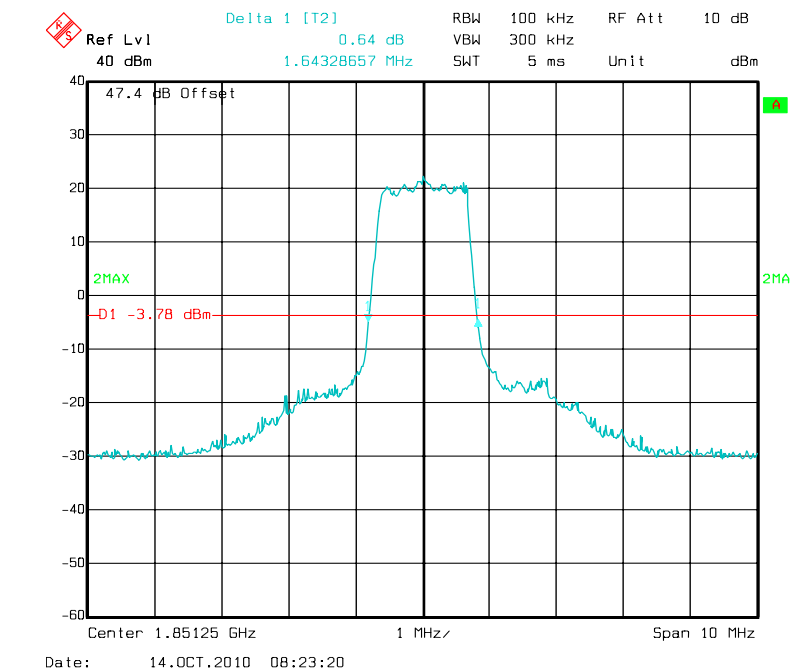


Date: 15.OCT.2010 12:59:23



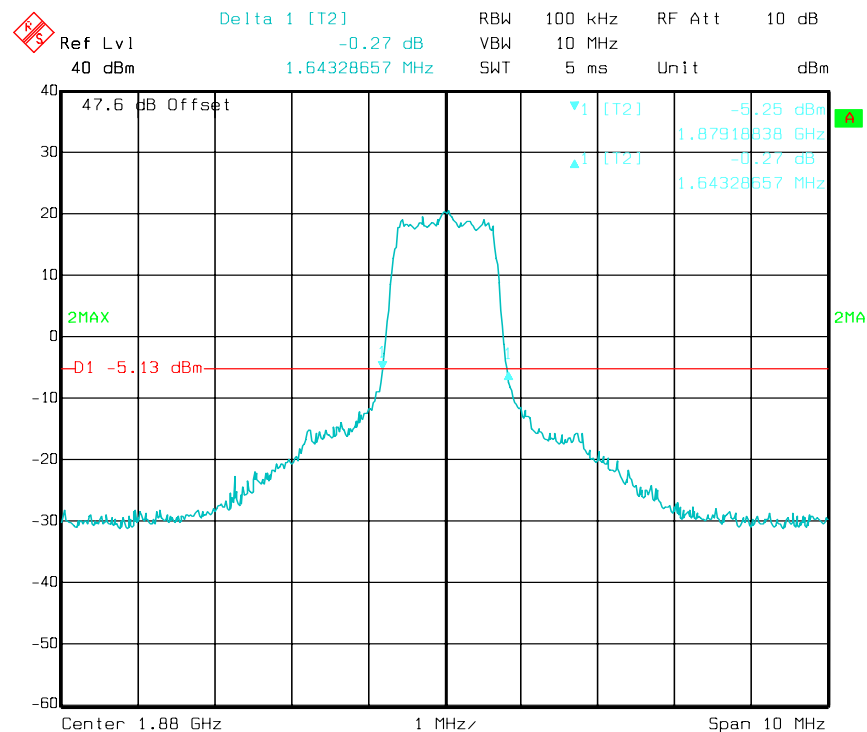
FCC ID: XU9-FW2763P  
IC: 8649A-FW2763P

Report Number: 2010 10158602 FCC

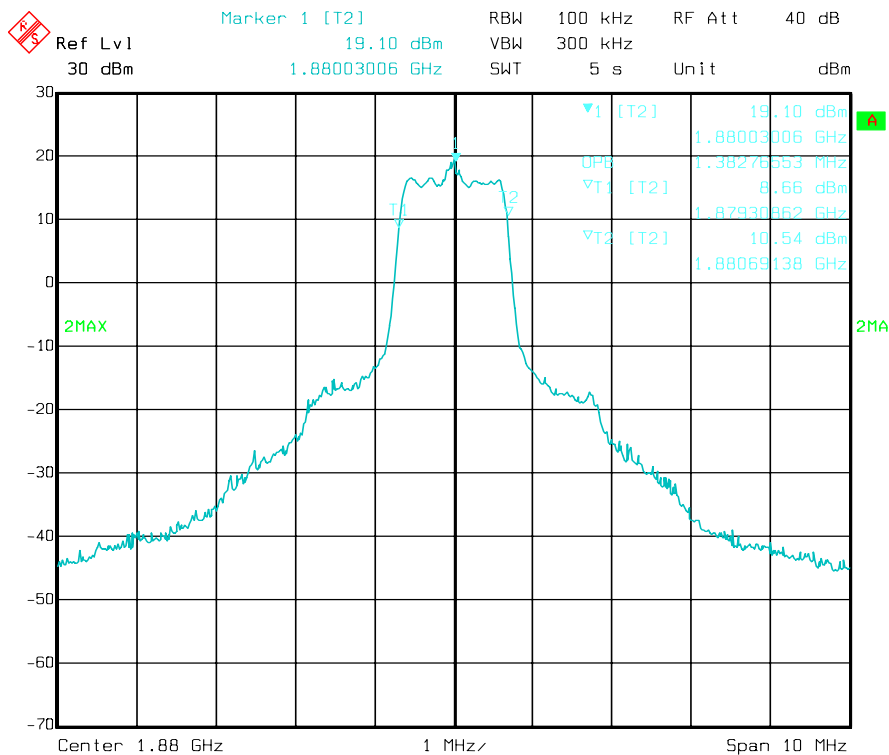


FCC ID: XU9-FW2763P  
IC: 8649A-FW2763P

Report Number: 2010 10158602 FCC



Date: 14.OCT.2010 08:51:24



Date: 15.OCT.2010 12:24:22

### **A3. Spurious Emissions At Antenna Terminals**

**Para. No.: FCC 2.1051 & RSS-GEN 4.9**

*Part 22.917*

#### **24.238 Emission limitations for Broadband PCS equipment.**

The rules in this section govern the spectral characteristics of emissions in the Broadband Personal Communications Service.

(a) *Out of band emissions.* The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

(b) *Measurement procedure.* Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth ( i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

#### **RSS 133 6.5 Transmitter Unwanted Emissions**

##### **6.5.1 Out-of-Block Emissions (Mobile and Base Stations)**

(a) Mobile stations shall comply with subsection (i) below. Base stations shall comply with either subsection (i) or subsection (ii).

(i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in watts) by at least  $43 + 10 \log_{10}(P)$ , dB.

#### **Conditions:**

Model:	<b>FW2763p</b>	Temperature:	21°C
Date:	1/14/2010	Humidity:	35%
Modification State:	None	Tester:	<b>Alan Laudani</b>
		Laboratory:	Nemko

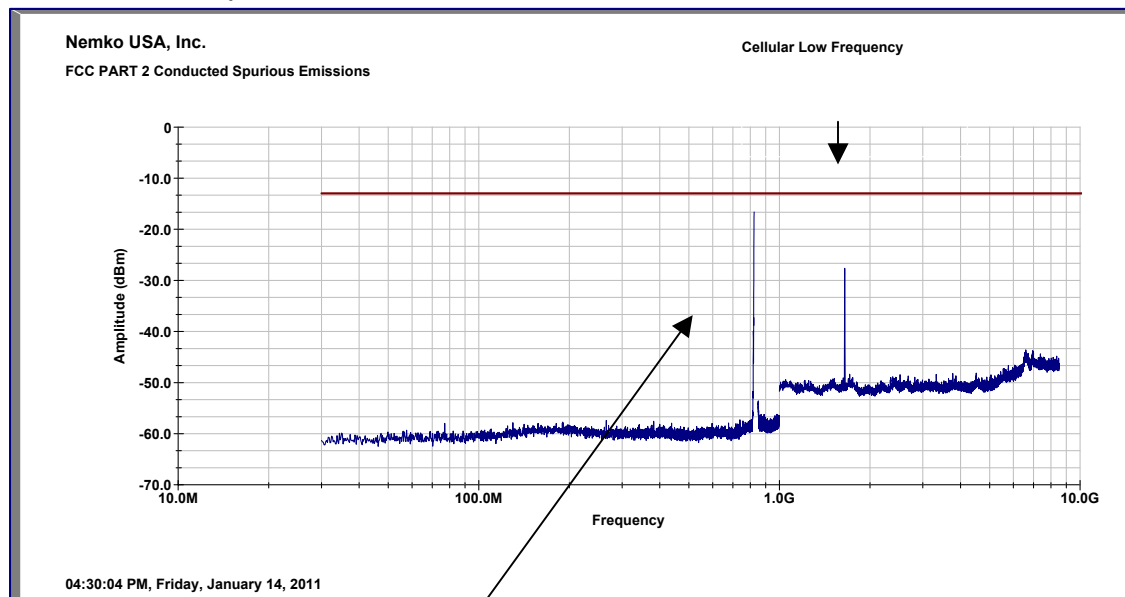
#### **Observations:**

1. RBW = 1 MHz, VBW = 3 MHz, Peak hold.
2. See plots comparing RBW at 100 kHz to sweeps RBW at 1 MHz.

**Test Results: Complies**

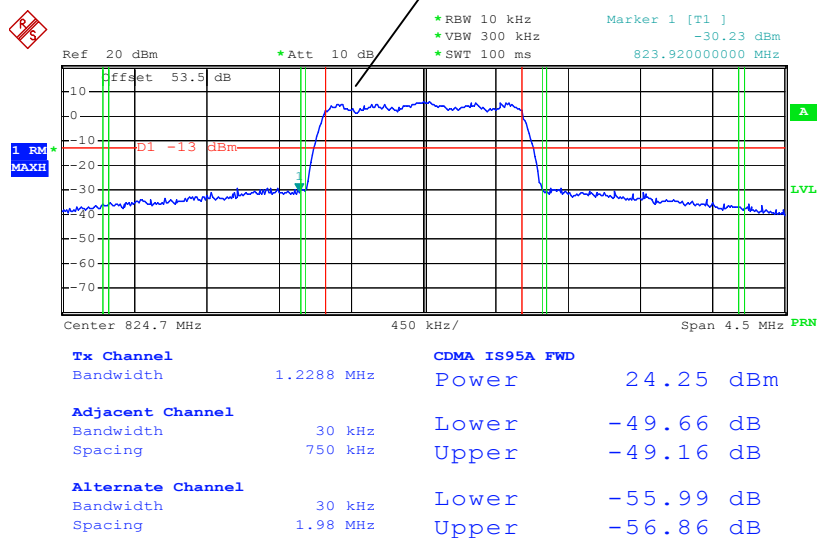
**Test Data:** See attached graphs.

## Channel 1013 Spurious Emissions – Low Channel

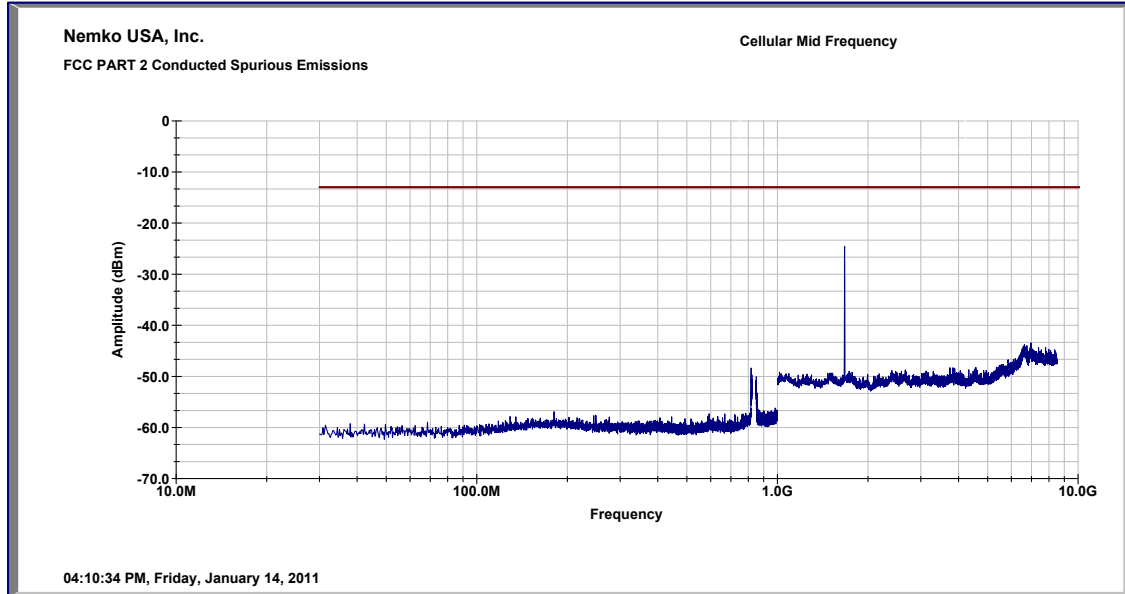


823.3 MHz: -16.6 dBm worst case emission.

1648.7 MHz: -27.6 dBm 2<sup>nd</sup> harmonic emission



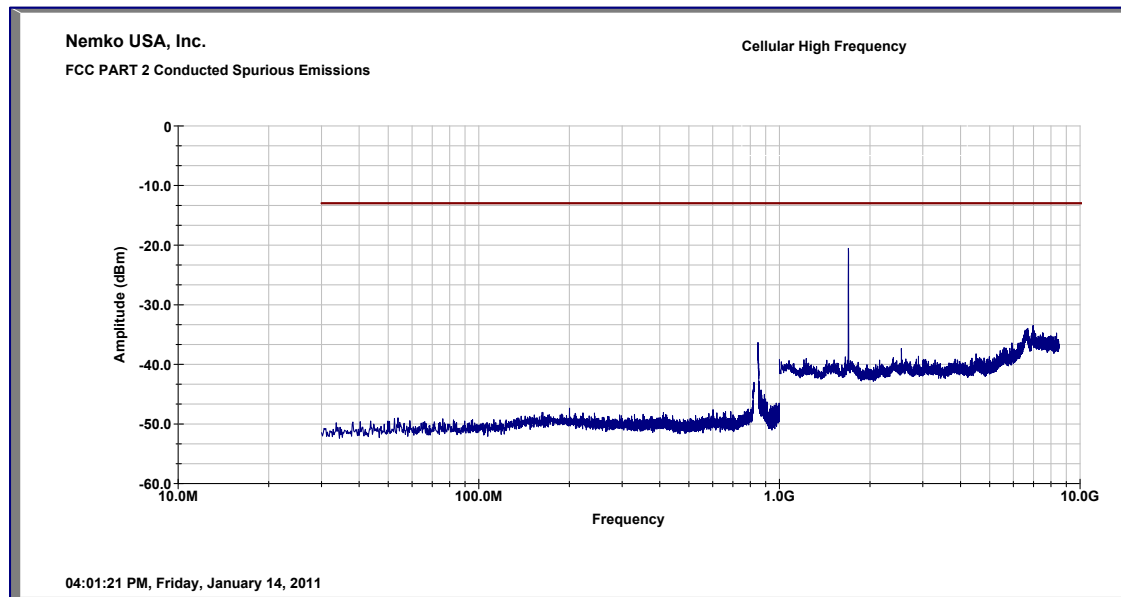
### Channel 384 Spurious Emissions – Mid Channel



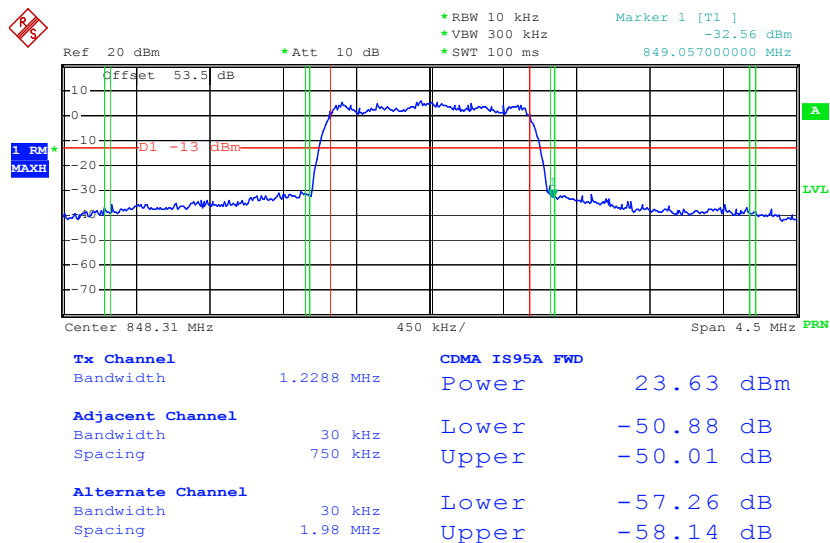
1637.5 MHz: -24.8 dBm worst case emission.



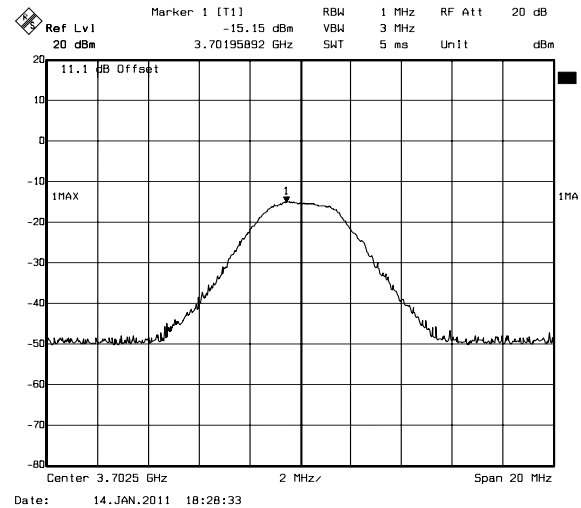
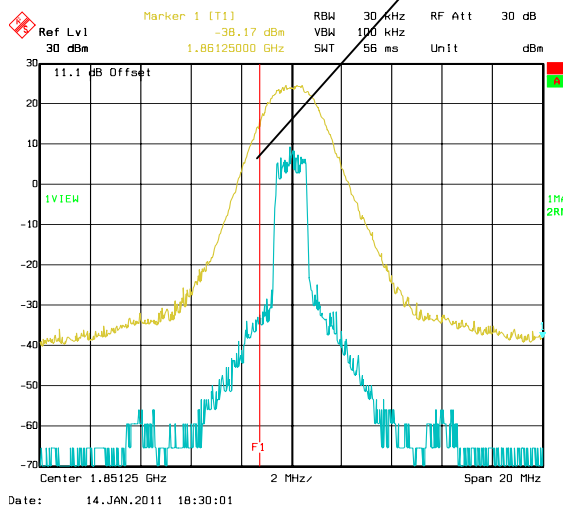
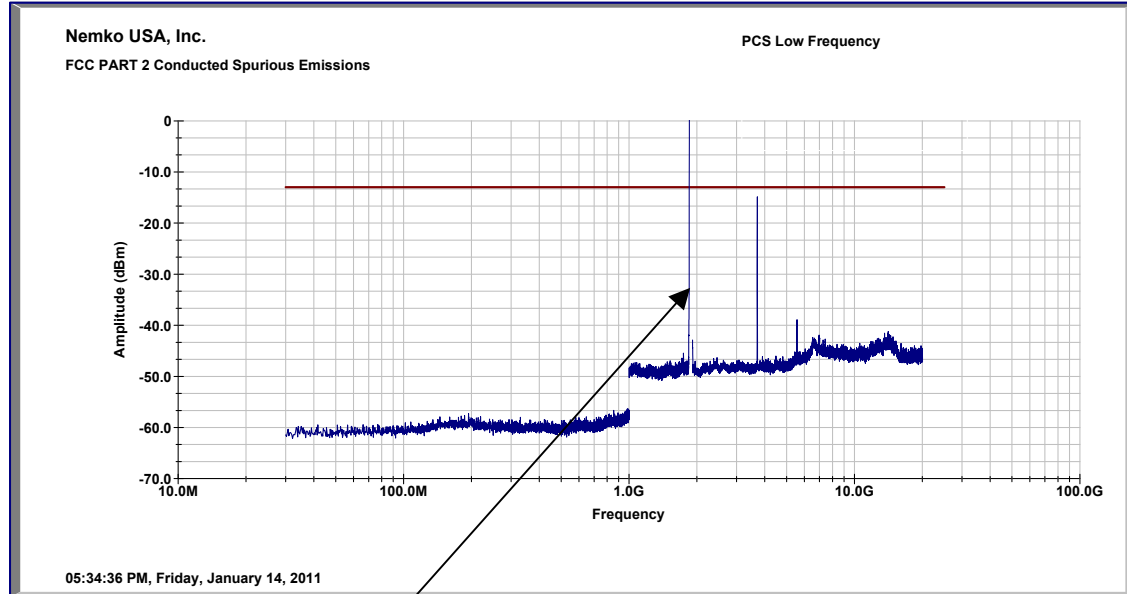
## Channel 777 Spurious Emissions – High Channel



1696.2: -20.5 dBm worst case emission.



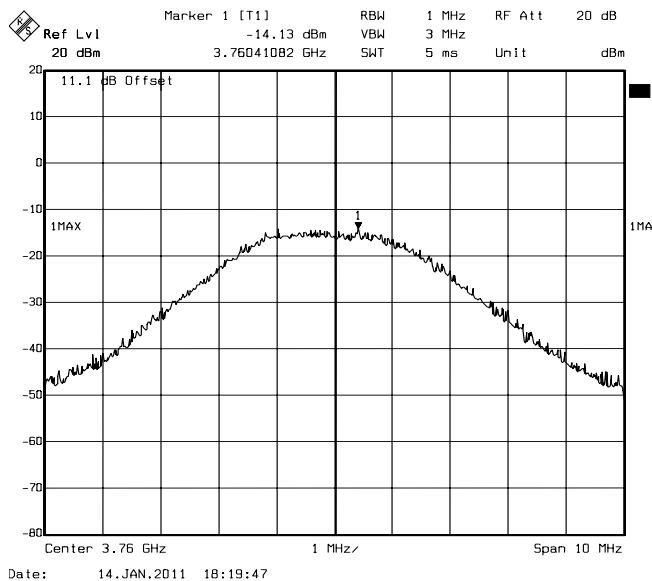
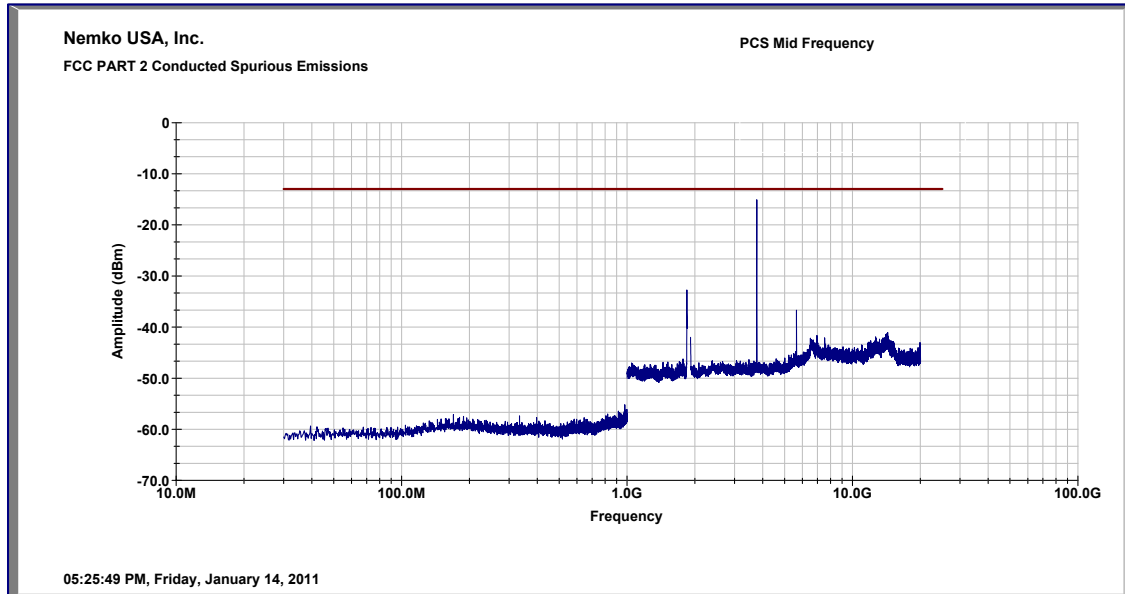
## Channel 25 Spurious Emissions - Low Channel



\* Sweep at 1 MHz captures emissions across band edge

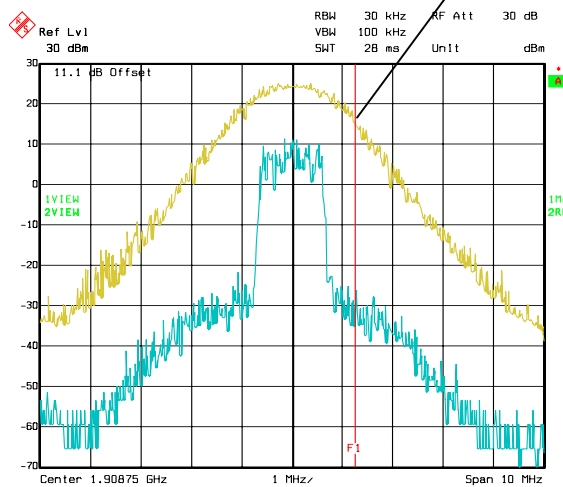
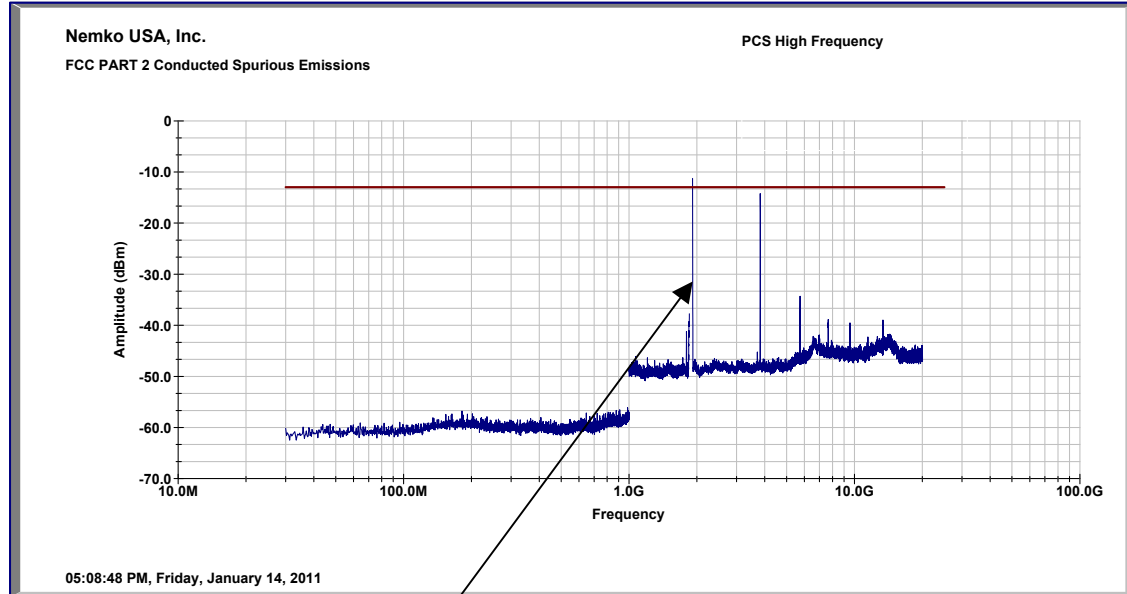
**3701.9 MHz; -15.15 dBm --Worst case emission.  
Max hold, peak**

## Channel 600 Spurious Emissions - Mid Channel

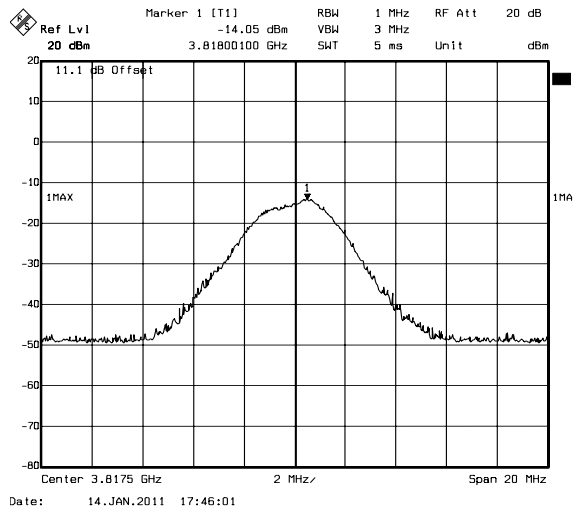


3760.70 MHz; -14.13 dBm --worst case emission. (max hold, peak)

## Channel 1175 Spurious Emissions – High Channel



\*Sweep at 1 MHz captures emissions across band edge



3618.8 MHz; -14.05 dBm Worst case emission max hold, peak

## **A4. Field strength of Spurious Emissions**

### **Para. No.: FCC 2.1053 & RSS-GEN 6.5.2**

Minimum Standard is part 22

Minimum Standard is part 24.236 and 24.238 for FCC see description of Spurious emission above

#### **RSS-133 4.9 Transmitter Unwanted Emissions**

The measurement method shall be described in the test report. The same parameter, peak power or average power, used for the transmitter output power measurement shall be used for unwanted emission measurements. The search for unwanted emissions shall be from the lowest frequency internally generated or used in the device (local oscillator, intermediate or carrier frequency), or from 30 MHz, whichever is the lower, to the 5th harmonic of the highest frequency generated without exceeding 40 GHz.

Unless otherwise specified, compliance with the emission limits shall be demonstrated using a CISPR quasi-peak detector and the related measurement bandwidth for emissions below 1000 MHz and, an average detector with a minimum resolution bandwidth of 1 MHz for emissions above 1 GHz.

### **2.2 RSS 129 10.0 and RSS 133 6.7 Field Receiver Spurious Emissions**

If a radiated measurement is made, all spurious emissions shall comply with the limits of the following table. The resolution bandwidth of the spectrum analyzer shall be 100 kHz for spurious emissions measurements below 1.0 GHz, and 1.0 MHz for measurements above 1.0 GHz.

Spurious Frequency (MHz)	Field Strength (microvolts/m at 3 metres)
30-88	100
88-216	150
216-960	200
Above 960	500

For CDMA and FM, 960 to 1610 is 500  $\mu\text{V/m}$  at 3 meters and above 1610 is 1000  $\mu\text{V/m}$ .

#### **Conditions:**

Model:	<b>FW2763p</b>	Temperature:	20°C
Date:	10/11/2010	Humidity:	55%
Modification State:	None	Tester:	<b>Alan Laudani</b>
		Laboratory:	Nemko

**Observations:**

No Emissions were noted or measured above 3<sup>rd</sup> harmonic of the transmitter frequency, however the emission's range was searched up to and including the 10<sup>th</sup> Harmonic.

**Test Results: Passed**

The maximum field strength is 54 dB $\mu$ V/m @ 3817.4 MHz @ 3m which is 20.2dB under the specified limit.

**Test Data:**

See attached tables

Example: A=RR+CL+AF

A = Amplitude dB $\mu$ V/m

RR = Receiver Reading dB $\mu$ V

CL = cable loss dB

AF = antenna factor dB/m

Example Frequency = 3702 MHz

50.0 dB $\mu$ V (spectrum analyzer reading)

+9.3 dB (cable loss @ frequency)

59.3 dB $\mu$ V

+30.3 dB/m (antenna factor @ frequency)

89.6 dB $\mu$ V/m

-32.1 dB amplifier gain

57.5 dB $\mu$ V/m

-95.26 dbm/ dB $\mu$ V/m

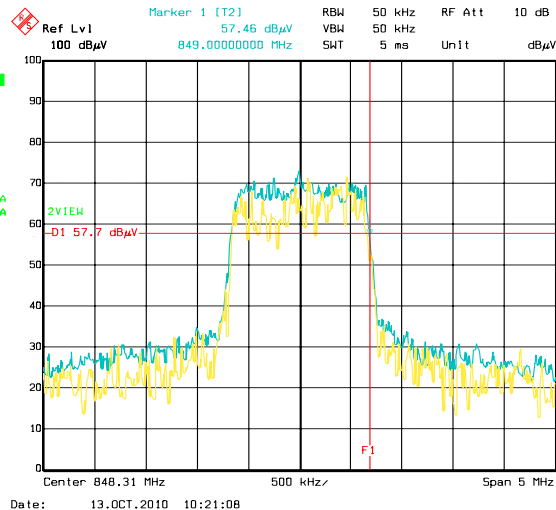
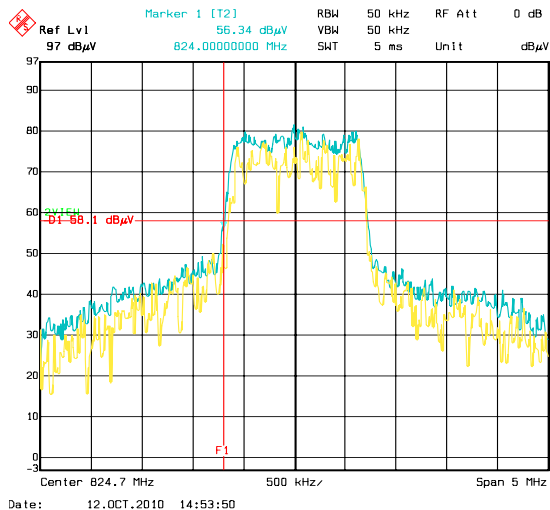
-37.8 dBm Final adjusted value

## Radiated Band Edge

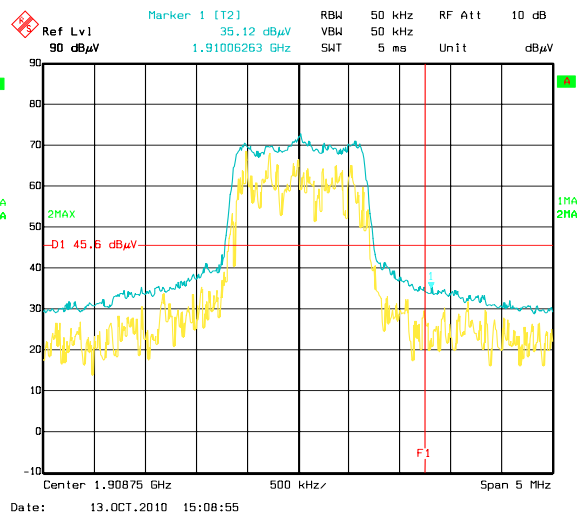
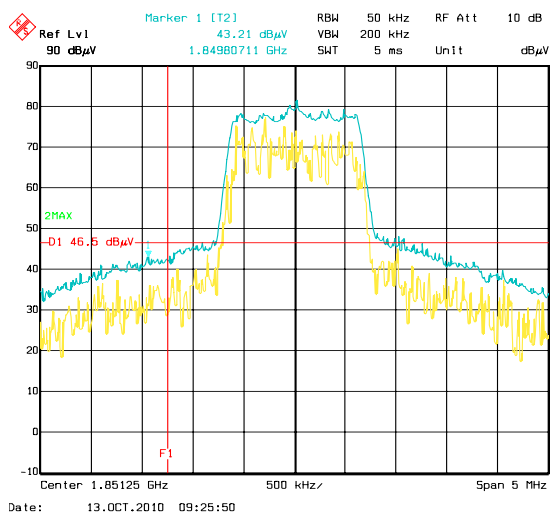
Limit line modified for field strength of Limit (-13 dBm), cable loss and antenna factor at three meters.

### Cellular:

-13 dBm + 97.36 dBuV/m/dBm-22.1 antenna factor-4.1 cable loss @824.7 MHz =58.1 dBuV/m



### PCS:



FCC ID: XU9-FW2763P  
IC: 8649A-FW2763P

Report Number: 2010 10158602 FCC

## Substitution Data

**NEMKO USA, Inc.**

### Substitution Method For Radiated Emissions

Client Name :	<u>Fusion Wireless</u>	Date :	<u>1/14/2011</u>
EUT Name :	<u>Wireless Cell Module</u>	Time :	<u>15:10</u>
EUT Model # :	<u>FW2763p</u>	Staff :	<u>A. Laudani</u>
EUT Serial # :	<u>100505</u>	Peak:	<u>RBW-1MHz, VBW-1MHz</u>
EUT Config. :	<u>Transmitting test mode</u>		
Specification :	<u>Part 22H, Part 24E</u>		
RX DRG Ant. #	<u>752</u>	Temp. (deg. C) :	<u>17</u>
TX DRG Ant. #	<u>877</u>	Humidity (%) :	<u>35</u>
TX Cable#:	<u>20ft</u>	EUT Voltage :	<u>3.3</u>
Preamp#:	<u>317</u>	EUT Frequency :	<u>dc</u>
Spec An. #:	<u>835</u>	Phase:	<u>-</u>
Location:	<u>SOATS</u>	Distance:	<u>3m</u>

TX Frequency mHz	target Frequency mHz	level dBuV/m	Horn Gain dBd	cable loss dB	Signal Generator dBm	Total (ERP) dBm	Spec dBm	Margin dBm
824.70	1649.40	75.1	6.32	2.35	-29.2	-25.2	-13.0	-12.2
836.52	1673.04	39.0	6.33	2.27	-30.2	-26.1	-13.0	-13.1
848.31	1696.62	63.8	6.34	2.35	-40.6	-36.6	-13.0	-23.6
TX Frequency mHz	target Frequency mHz	level dBuV/m	Horn Gain dBi	cable loss dB	Signal Generator dBm	Total (EIRP) dBm	Spec dBm	Margin dBm
1851.25	3702.50	65.6	9.13	3.70	-22.1	-16.7	-13.0	-3.7
1880.00	3760.00	64.5	8.91	3.70	-32.7	-27.5	-13.0	-14.5
1908.75	3817.50	66.1	8.70	3.91	-27.2	-22.4	-13.0	-9.4
1851.25	5553.75	50.3	10.89	4.94	-36.2	-30.3	-13.0	-17.3
1880.00	5640.00	49.8	11.02	5.21	-37.0	-31.2	-13.0	-18.2
1899.17	5697.50	51.8	11.12	5.09	-34.5	-28.5	-13.0	-15.5



FCC ID: XU9-FW2763P  
IC: 8649A-FW2763P

Report Number: 2010 10158602 FCC

Range data:

## Radiated Emissions Data

Job # : 59085-1 Date : 10-12-2010  
NEX #: 158602 Time : 1500  
Staff : aal

Page 1 of 1

Client Name :	Fusion Wireless
EUT Name :	Wireless Cell Module
EUT Model # :	FW2763p
EUT Serial # :	100505
EUT Config. :	Transmitting test mode

EUT Voltage :	<u>3.3</u>
EUT Frequency :	<u>DC</u>
Phase:	<u>-</u>
NOATS	
SOATS	<u>X</u>
Distance < 1000 MHz:	<u>3 m</u>
Distance > 1000 MHz:	<u>3 m</u>

Specification :	Part 22	
Loop Ant. #:	NA	
Bicon Ant. #:	128 3m	Temp. (°C) : 21.6
Log Ant. #:	111 3m	Humidity (%) : 38
DRG Ant. #	877	Spec Analyzer #: 835
Cable LF#:	soats	Analyzer Display #: 835
Cable HF#:	60FT_BLUE	Quasi-Peak Detector #: NA
Preamp LF#:	na	Preselector #: NA
Preamp HF#	317	Meas

Quasi-Peak	RBW: <u>120 kHz</u> Video Bandwidth <u>300 kHz</u>
Peak	RBW: <u>1 MHz</u> Video Bandwidth <u>3 MHz</u>
Average	RBW: <u>1 MHz</u> Video Bandwidth <u>10 Hz</u>

Measurements below 1 GHz are Quasi-Peak values, unless otherwise stated.

Measurements above 1 GHz are Average values, unless otherwise stated.

[illegible]

FCC ID: XU9-FW2763P  
IC: 8649A-FW2763P

Report Number: 2010 10158602 FCC

## Radiated Emissions Data

Job #: 59085-1  
NEX #: 158602  
Date: 1-14-2011  
Time: 1350  
Staff: aal

Page 1 of 1

Client Name: Fusion Wireless  
EUT Name: Wireless Cell Module  
EUT Model #: FW2763p  
EUT Serial #: 100505  
EUT Config.: Transmitting test modeEUT Voltage: 3.3  
EUT Frequency: DC  
Phase: -  
NOATS  
SOATS X  
Distance < 1000 MHz: 3 m  
Distance > 1000 MHz: 3 mSpecification: Part 24  
Loop Ant. #: NA  
Bicon Ant. #: 128 3m  
Log Ant. #: 111 3m  
DRG Ant. #: 877  
Cable LF#: soats  
Cable HF#: 60FT BLUE  
Preamp LF#: na  
Preamp HF#: 317  
Temp. (°C): 16.4  
Humidity (%): 65  
Spec Analyzer #: 835  
Analyzer Display #: 835  
Quasi-Peak Detector #: NA  
Preselector #: NA

Quasi-Peak	RBW: 120 kHz
	Video Bandwidth 300 kHz
Peak	RBW: 1 MHz
	Video Bandwidth 3 MHz
Average	RBW: 1 MHz
	Video Bandwidth 10 Hz

Measurements below 1 GHz are Quasi-Peak values, unless otherwise stated.

Measurements above 1 GHz are Average values, unless otherwise stated.

Meas. Freq. (MHz)	Meter Reading Vertical	Meter Reading Horizontal	Det.	EUT Side F/L/R/B	Ant. Height m	Max. Reading (dBμV)	Corrected Reading (dBm)	Spec. limit (dBm)	CR/SL Diff. (dB)	Comment
1851.25	81.0	81.4	P	-	1.5	81.4	21.9	33.0	-11.1	EIRP
3702.50	65.6	62.3	P	-	1.5	65.6	-17.5	-13.0	-4.5	see substitution for compliance
5553.75	50.3	45.4	P	-	1.5	50.3	-25.7	-13.0	-12.7	see substitution for compliance
1880.00	80.2	76.7	P	-	1.7	80.2	20.7	33.0	-12.3	
3760.00	64.5	61.9	P	-	1.6	64.5	-18.6	-13.0	-5.6	see substitution for compliance
5640.00	49.8	44.5	P	-	1.5	49.7	-26.1	-13.0	-13.1	noise floor
1908.75	84.2	78.3	P	-	1.7	84.2	25.6	33.0	-7.4	
3817.50	66.1	62.6	P	-	1.2	66.0	-15.6	-13.0	-2.6	see substitution for compliance
5697.5	51.8	44.0	P	-	1.0	49.8	-26.0	-13.0	-13.0	see substitution for compliance

## Frequency Stability

Para. No.: FCC 2.1055 &amp; RSS-GEN 4.7

**22.X****24.235 Frequency stability.**

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

**RSS 129****RSS 133****6.3 Frequency Stability**

The carrier frequency shall not depart from the reference frequency, in excess of  $\pm 2.5$  ppm for mobile stations and  $\pm 1.0$  ppm for base stations.

In lieu of meeting the above stability values, the test report may show that the frequency stability is sufficient to ensure that the emission bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

**Conditions:**

Model:	FW2763p	Temperature:	20°C
Date:	10/11/2010	Humidity:	55%
Modification State:	None	Tester:	Alan Laudani
		Laboratory:	Nemko

**Observations:** The CW mode not available for testing therefore worst case modulation was used for this evaluation. The method used was max hold to capture emission and a line drawn across the emission trace. Where line crossed emission low and high was noted and averaged to track frequency drift.

**Test Results: Passed**

## Frequency Stability data:

 $\text{Sum}/2 = (\text{Frequency High} + \text{Frequency Low})/2$ 

Ref = Nominal 120 VAC at 20 °C (Frequency High + Frequency Low)/2

Hz deviation = Sum/2 – Ref

Channel 384				
Frequency 836.42 MHz				
Voltage Volt	Temp. °C	Peak Power dBm	Frequency Error HZ	Frequency Error (PPM)
3.3	20	26.5	-7	-0.0084
2.805		27.2	-217	-0.2594
3.795		26.4	-5	-0.0060
3.3	30	26.6	-2	-0.0024
3.3	40	27.2	1	0.0012
3.3	50	26.7	-1	-0.0012
3.3	-20	26.9	0	0.0000
3.3	-10	27.5	0	0.0000
3.3	0	27.5	-1	-0.0012
3.3	10	27.6	2	0.0024

Channel 600				
Frequency 1880 MHz				
Voltage Volt	Temp. °C	Peak Power dBm	Frequency Error HZ	Frequency Error (PPM)
3.3	20	26.0	2	0.0011
2.805		26.0	31	0.0165
3.795		26.0	4	0.0021
3.3	30	26.7	-5	-0.0027
3.3	40	25.1	0	0.0000
3.3	50	24.4	0	0.0000
3.3	-20	24.9	2	0.0011
3.3	-10	26.3	0	0.0000
3.3	0	25.8	1	0.0005
3.3	10	26.3	3	0.0016
2.805		25.6	-4	-0.0021
3.795		26.4	-7	-0.0037

## **A5. Receiver Spurious**

### **Para. No.: RSS-GEN 4.10**

#### **RSS 133**

##### **6.6 Receiver Spurious Emissions**

Receiver spurious emissions shall comply with the limits specified in RSS-Gen.

##### **4.10 Receiver Spurious Emissions**

The receiver shall be operated in the normal receive mode near the mid-point of the band over which the receiver is designed to operate.

Unless otherwise specified in the applicable RSS, the radiated emission measurement is the standard measurement method (with the device's antenna in place) to measure receiver spurious emissions. Radiated emission measurements are to be performed using a calibrated open-area test site. As an alternative, the conducted measurement method may be used when the antenna is detachable. In such a case, the receiver spurious signal may be measured at the antenna port.

##### **6. Receiver Spurious Emission Standard**

The following receiver spurious emission limits shall be complied with: (b) If a conducted measurement is made, no spurious output signals appearing at the antenna terminals shall exceed 2 nanowatts per any 4 kHz spurious frequency in the band 30-1000 MHz, or 5 nanowatts above 1 GHz.

### **Observations:**

Selecting receive versus frequency (high, mid or low) did not result in any noticeable differences.

### **Test Results: Complies**

**Test Data:** See attached plots.

