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## CERTIFICATION TEST REPORT

**Report Number:** 2009 11137862 EMC

**Project Number:** 38936-1

**Nex Number:** 137862

**Applicant:** Fusion Wireless  
420 Stevens Ave., Ste. 320  
Solana Beach, CA 92075

**Equipment Under Test (EUT):** CDMA Fixed Wireless Phone with Extension

**Model:** FWP 1951

**FCC ID:** XU9-FWP1951  
**IC ID:** 8694A-FWP1951

**In Accordance With:** FCC Part 2/24 Subpart E  
RSS 133 Issue 5 and RSS GEN Issue 2

**Tested By:** Nemko USA Inc.  
11696 Sorrento Valley Road, Suite F  
San Diego, CA 92121

**Authorized By:** Chip Fleury, RF Engineer

**Date:** November 1, 2009

**Total Number of Pages:** 32



## 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 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:

**Apparatus Assessed:** CDMA Fixed Wireless Phone with Extension

**Model:** FWP 1951

**Serial:** None

**Specification:** FCC Part 2, Part 24 Subpart E  
RSS 133 Issue 5  
RSS-GEN Issue 2

**Date Received in Laboratory:** October 29, 2009

**Compliance Status:** Complies

**Exclusions:** None

**Non-compliances:** None

### 1.1 Report Release History

REVISION	DATE	COMMENTS
-	November 1, 2009	Prepared By: F. Fleury
-	November 1, 2009	Initial Release: Alan Laudani

FCC ID: XU9-FWP1951  
IC: 8649A-FWP1951

Report Number: 2009 11137862 EMC  
Specification: FCC Part 2/24 RSS 133/GEN

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.

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TESTED BY: \_\_\_\_\_  
F. Fleury, Frontline Manager

Date: November 1, 2009

## TABLE OF CONTENTS

<b>Section1: Summary of Test Results .....</b>	<b>2</b>
1.1 Report Release History .....	2
<b>Section 2: Equipment Under Test.....</b>	<b>5</b>
2.1 Product Identification .....	5
2.2 Samples Submitted for Assessment.....	5
2.3 Theory of Operation.....	6
2.4 Technical Specifications of the EUT .....	6
<b>Section 3: Test Conditions .....</b>	<b>7</b>
3.1 Specifications .....	7
3.3 Test Environment .....	7
3.4 Test Equipment .....	7
<b>Section 4: Observations .....</b>	<b>8</b>
4.1 Modifications Performed During Assessment.....	8
4.2 Record Of Technical Judgments .....	8
4.3 EUT Parameters Affecting Compliance .....	8
4.4 Test Deleted .....	8
4.5 Additional Observations.....	8
<b>Section 5: Results Summary .....</b>	<b>9</b>
5.1 Test Result summary table .....	9
<b>Appendix A: Test Results.....</b>	<b>10</b>
A1. RF Power Output.....	10
A2. Occupied Bandwidth.....	12
A3. Spurious Emissions At Antenna Terminals.....	15
A4. Field strength of Spurious Emissions .....	25
A5. Frequency Stability .....	28
A6. Receiver Spurious .....	30



## Section 2: Equipment Under Test

### 2.1 Product Identification

The Equipment Under Test was identified as follows:

*MODEL:* FWP 1951 *Serial #:* None



### 2.2 Samples Submitted for Assessment

The following sample of the apparatus has been submitted for type assessment:

Sample No.	Description	Serial No.
137862-1	CSMA Wireless Desk Phone- FWP 1951	None



## 2.3 Theory of Operation

FWP 1951 is a Fixed Wireless Phone which supports extension for a traditional telephone. The wireless communication part of the product is based on CDMA2000 1x technology, which was designed in full-compliance to the international standard including its RF standard of IS-98e. The extension circuit for interfacing to traditional telephone as extensions not connected to the telephone service. This circuit is in Audio band, which does not introduce any RF transmissions.

## 2.4 Technical Specifications of the EUT

<b>Manufacturer:</b>	Fusion Wireless
<b>Transmit Frequency:</b>	1851.25 to 1908.75 MHz
<b>Receive Frequency:</b>	1930 to 1990 MHz
<b>Rated Power:</b>	.344 W
<b>Modulation:</b>	CDMA
<b>Emission Designator:</b>	1M26F9W
<b>Antenna Connector:</b>	External, TNC
<b>Power Source:</b>	4.5VDC Battery & 120 VAC 60 Hz



## Section 3: Test Conditions

### 3.1 Specifications

The apparatus was assessed against the following specifications:

*FCC CFR 47 Part 2 – General rules and regulations*

*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*

### 3.3 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

### 3.4 Test Equipment

Nemko ID	Device	Manufacturer	Model	Serial Number	Cal Date	Cal Due Date
877	Antenna, DRG Horn, .7-18GHz	AH Systems	SAS-571	688	7/28/2008	7/28/2010
317	Preamplifier	HP	8449A	2749A00167	4/16/2009	4/16/2010
911*	Spectrum Analyzer	Agilent	E4440A	US41421266	11/6/2008	11/6/2009
897	Spectrum Analyzer	Rohde & Schwarz	FSP7	837620/009	10/14/2009	10/14/2010
815	Multimeter	Fluke	111	78130066	8/4/2009	8/4/2010
936	Variac				Verified by 815	

\*Calibration extended to completion of testing

Registration of the OATS are on file with the Federal Communications Commission, under Registration Number 90579, 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

This section contains the following Test Result:

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.

### 5.1 Test Result summary table

FCC Part 2/Part24	RSS Paragraph RSS-GEN/RSS-133	Test/Requirement Description	Required	Result
2.1046/24.232	4.8/6.4	RF Power Output	Y	COMPLIES
2.1049/24.238	4.6.1/6.5	Occupied Bandwidth	Y	COMPLIES
2.1051/24.238	4.9/6.5	Spurious Emissions at antenna Terminals	Y	COMPLIES
2.1053/24.238	4.9/6.5	Field Strength of Spurious Emissions	Y	COMPLIES
2.1055/24.235	4.7/6.3	Frequency Stability	Y	COMPLIES
	4.10/6.6	Receiver Spurious	Y	COMPLIES

## Appendix A: Test Results

### A1. RF Power Output

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

##### **§ 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 peak 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-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. Moreover, base station transmitters operating in the band 1930-1995 MHz shall not have output power exceeding 100 watts.

**NOTE: From SRSP-500:**

##### **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.

#### **Conditions:**

Model:	FWP 1951	Temperature:	20°C
Date:	10/29/2009	Humidity:	55%
Modification State:	None	Tester:	Chip Fleury
		Laboratory:	Nemko

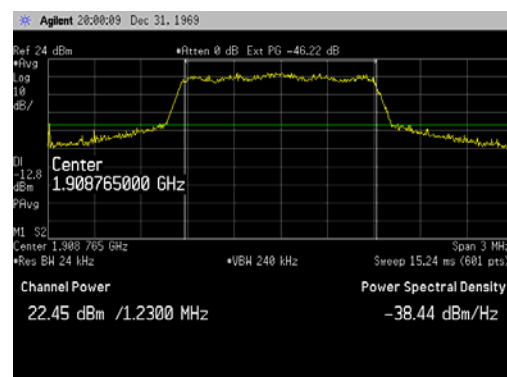
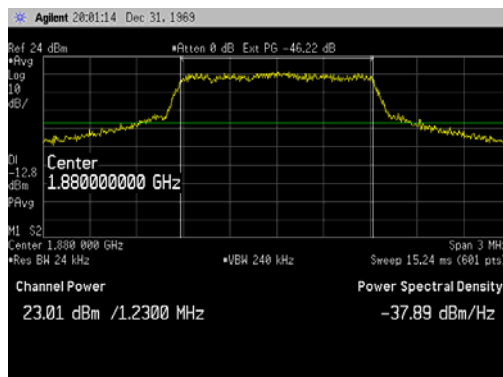
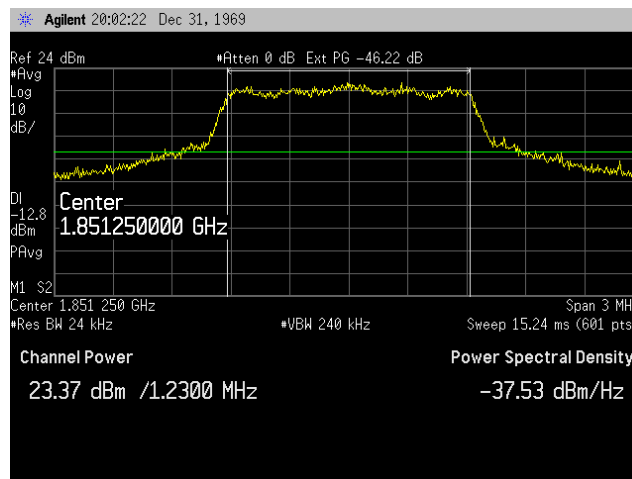
#### **Observations:**

- Output power did not vary over input voltage from 102 to 132Vac.
- Peak to Average Ratio < 13 dB per FSS 133 para. 6.4

## Test Results: Complies

Carrier Frequency (MHz)	Channel	Rated Power (W)	Output Power Average (dBm)	Antenna Gain (dBi)	Output Power (eirp, W)
1851.25	25	2	23.37	2	0.344
1880.00	600	2	23.01	2	0.317
1908.75	1175	2	22.45	2	0.279
Carrier Frequency (MHz)	Channel		Output Power Peak (dBm)	Peak to Average Ratio (dB)	
1851.25	25		24.98	1.61	
1880.00	600		24.66	1.65	
1908.75	1175		24.47	1.02	

## Plots of Power Output – Low (25)/Mid(600) /High (1175) Channels



## A2. Occupied Bandwidth

Para. No.: 2.1049 and RSS-GEN 4.6

### 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.*

#### 4.6.2 6 dB Bandwidth

*Where indicated, the 6 dB bandwidth is measured at the points when the spectral density of the signal is 6 dB down from the in-band spectral density of the modulated signal, with the transmitter modulated by a representative signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.*

### Conditions:

Model:	FWP 1951	Temperature:	20°C
Date:	10/29/2009	Humidity:	55 %
Modification State:	None	Tester:	Chip Fleury
		Laboratory:	Nemko

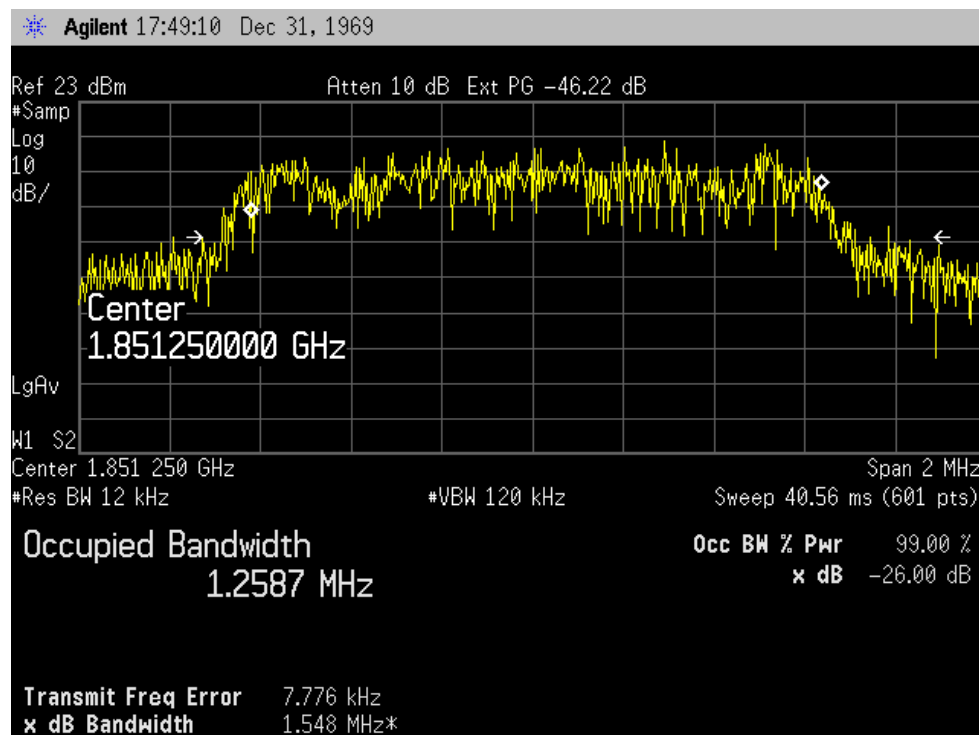
FCC ID: XU9-FWP1951  
IC: 8649A-FWP1951

Report Number: 2009 11137862 EMC  
Specification: FCC Part 2/24 RSS 133/GEN

**Observations: None**

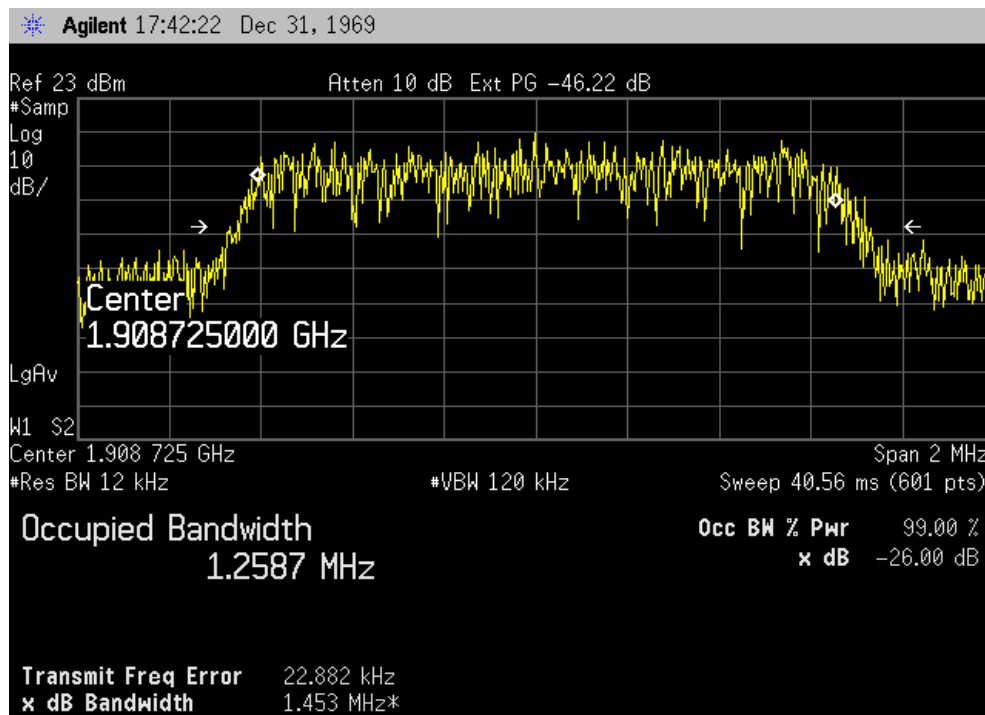
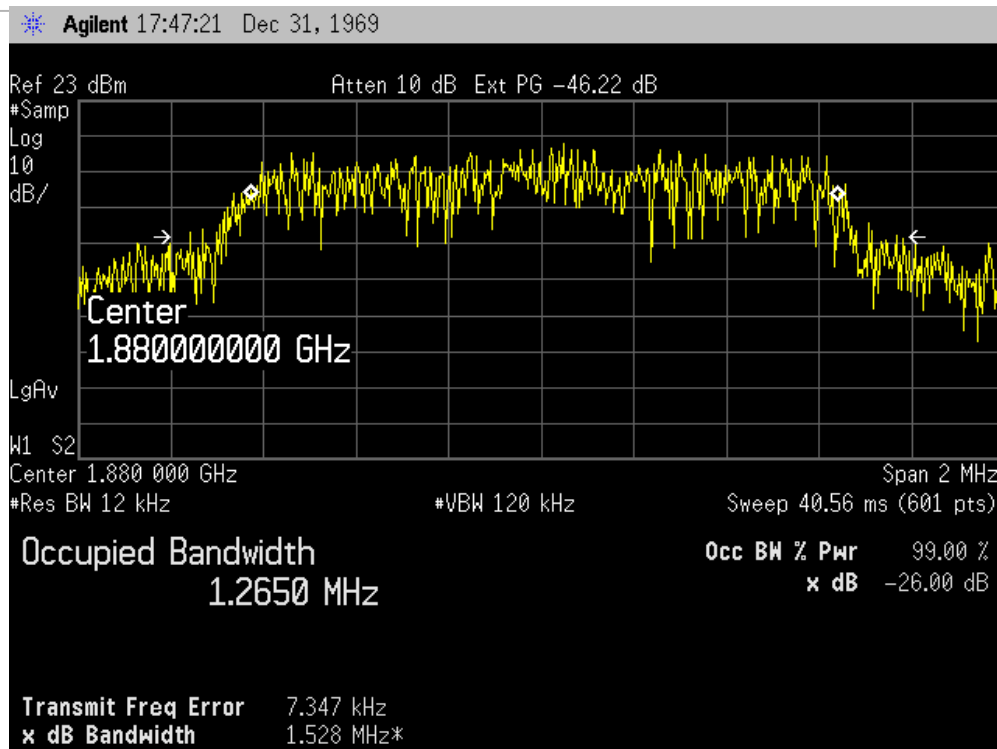
**Test Results: Complies**

**Test Data:** See attached plots.



FCC ID: XU9-FWP1951  
IC: 8649A-FWP1951

Report Number: 2009 11137862 EMC  
Specification: FCC Part 2/24 RSS 133/GEN



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

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

#### **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	FWP 1951	Temperature:	20°C
Date:	10/29/2009	Humidity:	55 %
Modification State:	None	Tester:	Chip Fleury
		Laboratory:	Nemko

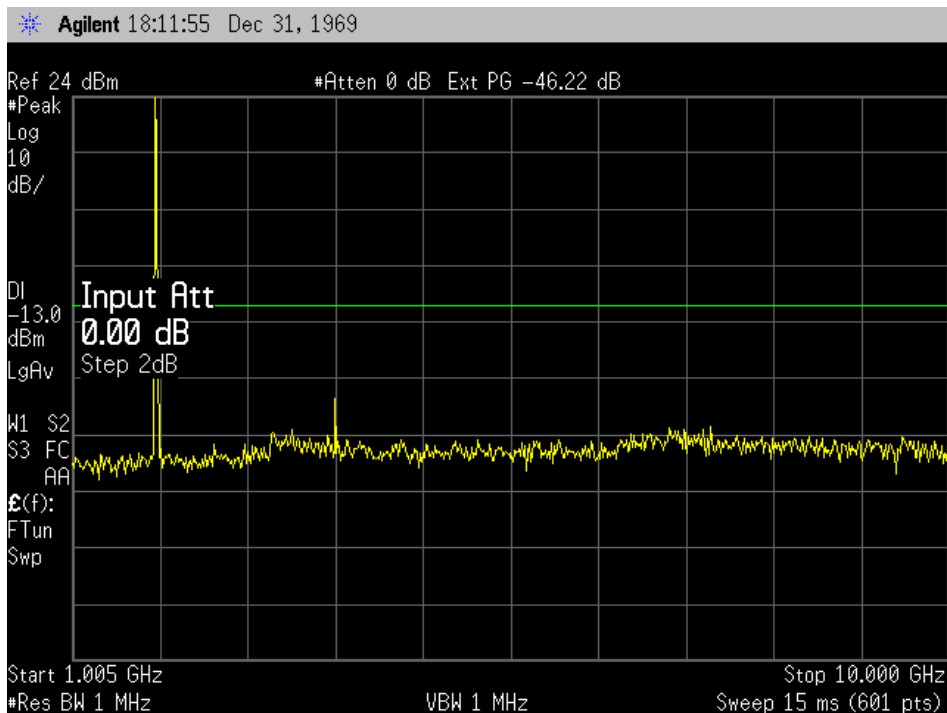
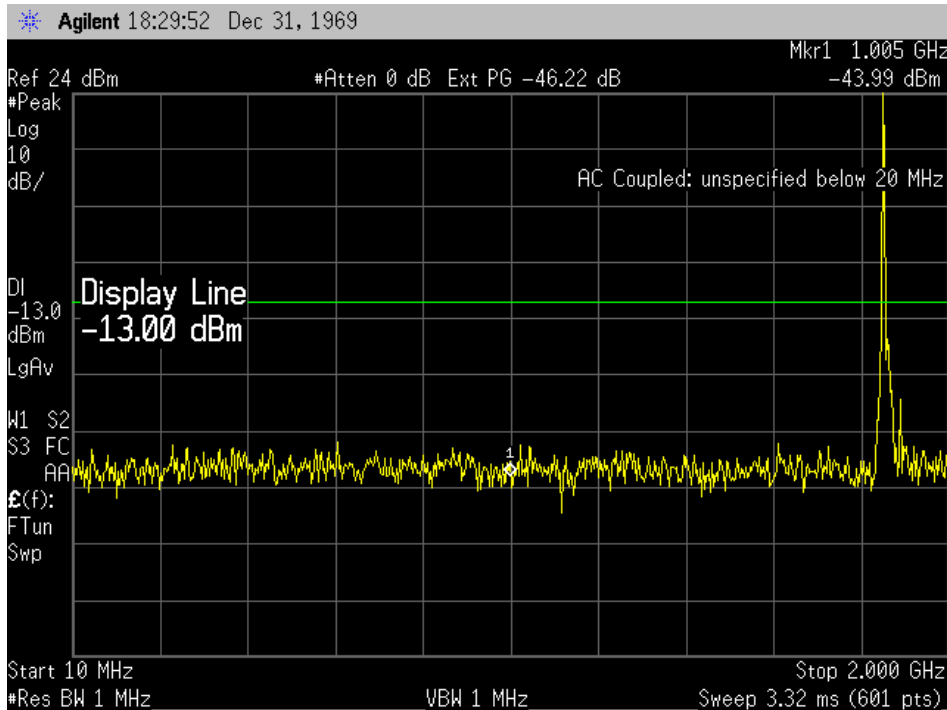
#### **Observations:**

1. For Channel 25 one noted spurious emission at 3.7GHz and measured at -24.44dBm which is 11.44dB below the -13dBm limit.
2. For Channel 600 Spurious emission at 3.76 GHz and is 15.67dB below the -13dBm limit.
3. For Channel 1175 Spurious Emission at 3.81765 GHz and is 10.28dB below the -13dBm limit.
4. The -46.22 offset is for the directional couple and cable loss

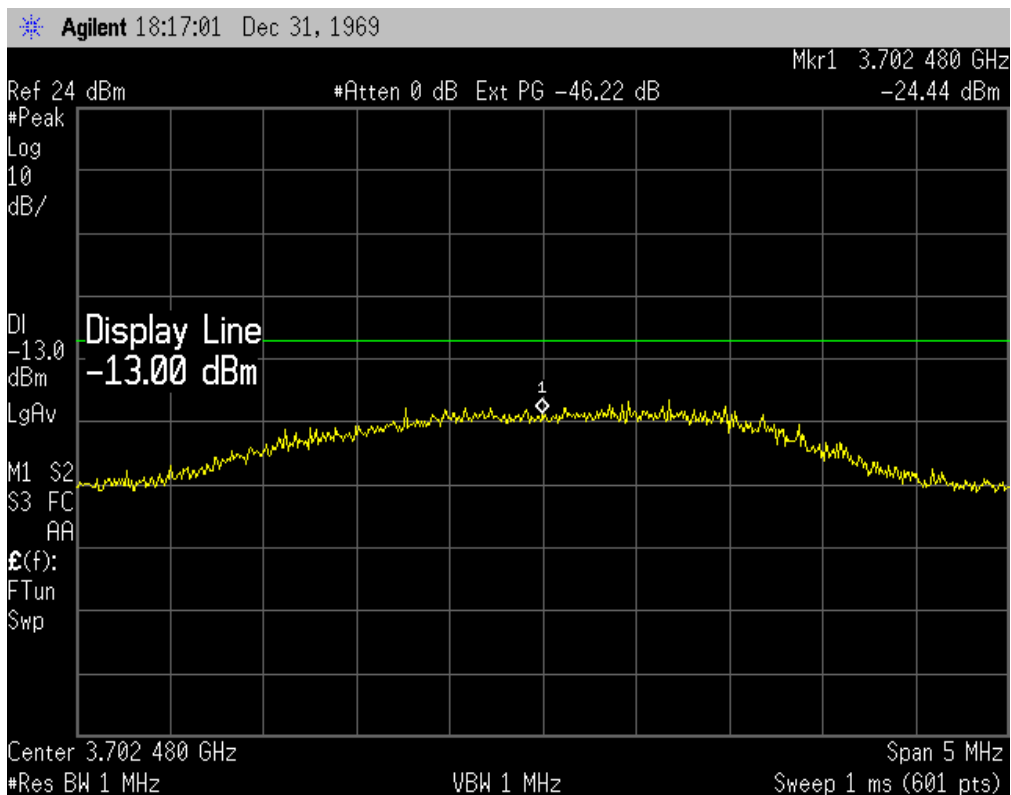
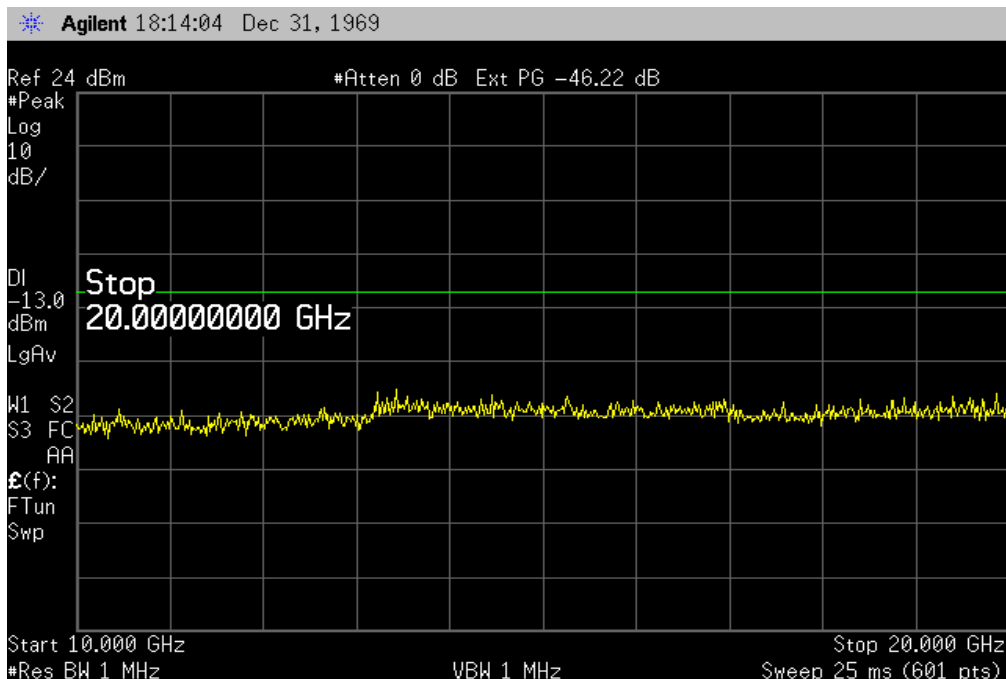
**Test Results: Complies**

**Test Data:** See attached graphs.

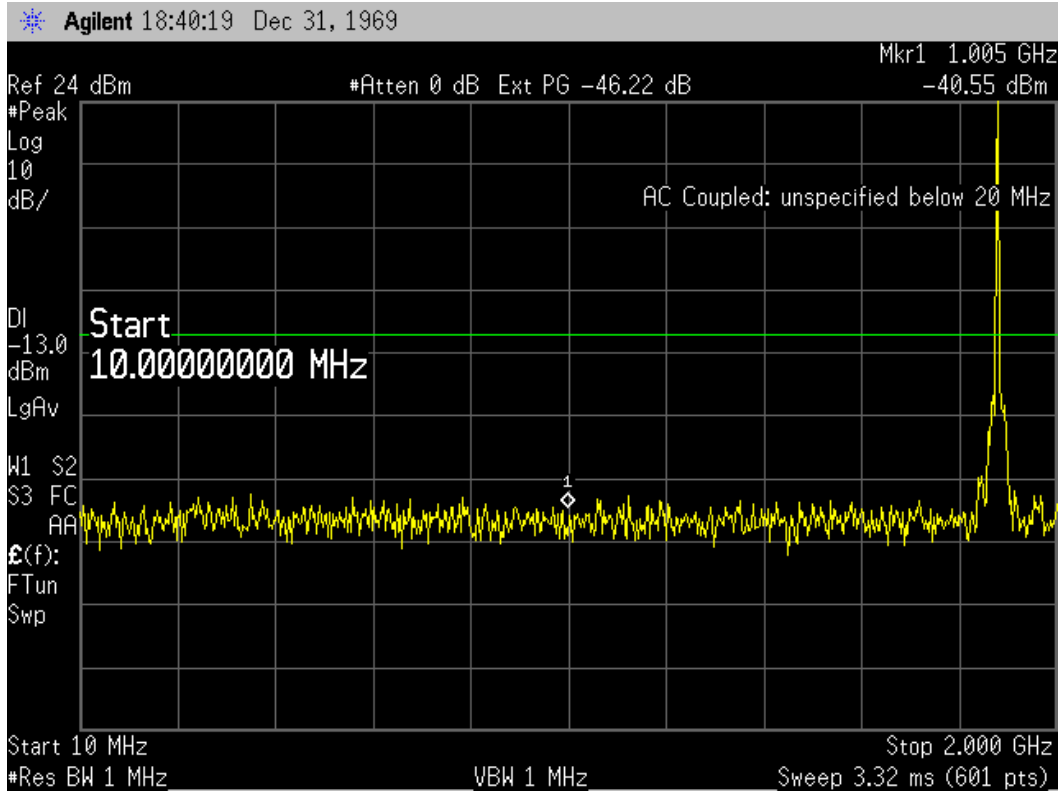
## Channel 25 Spurious Emissions – Low Channel

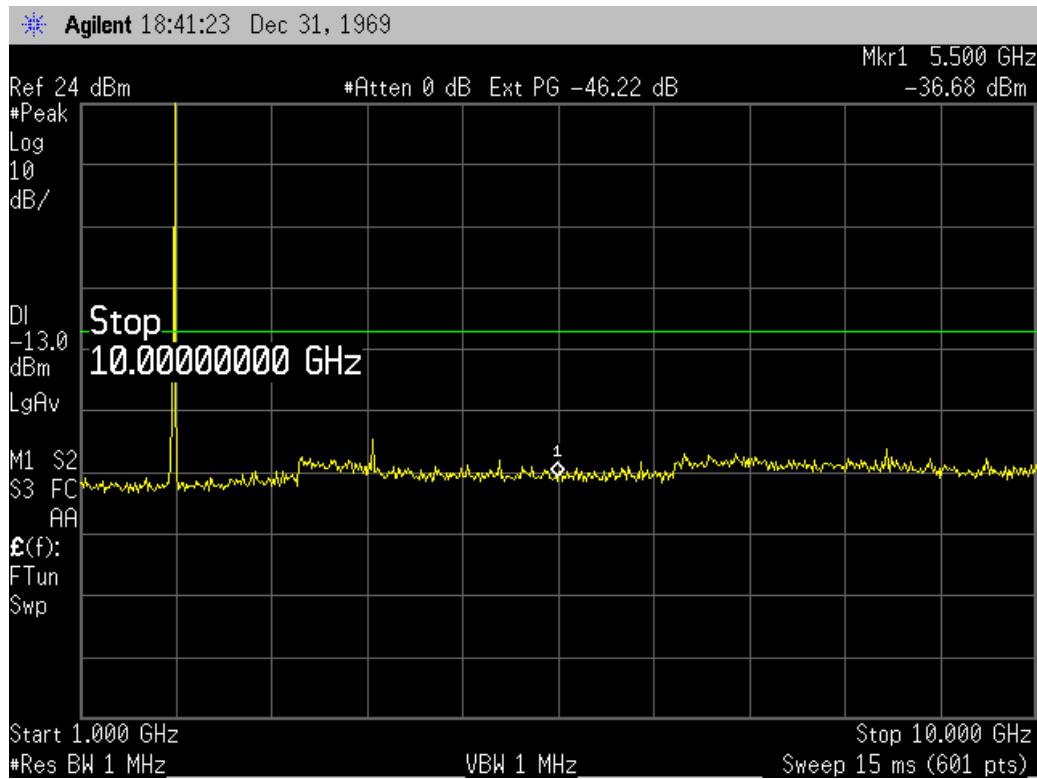






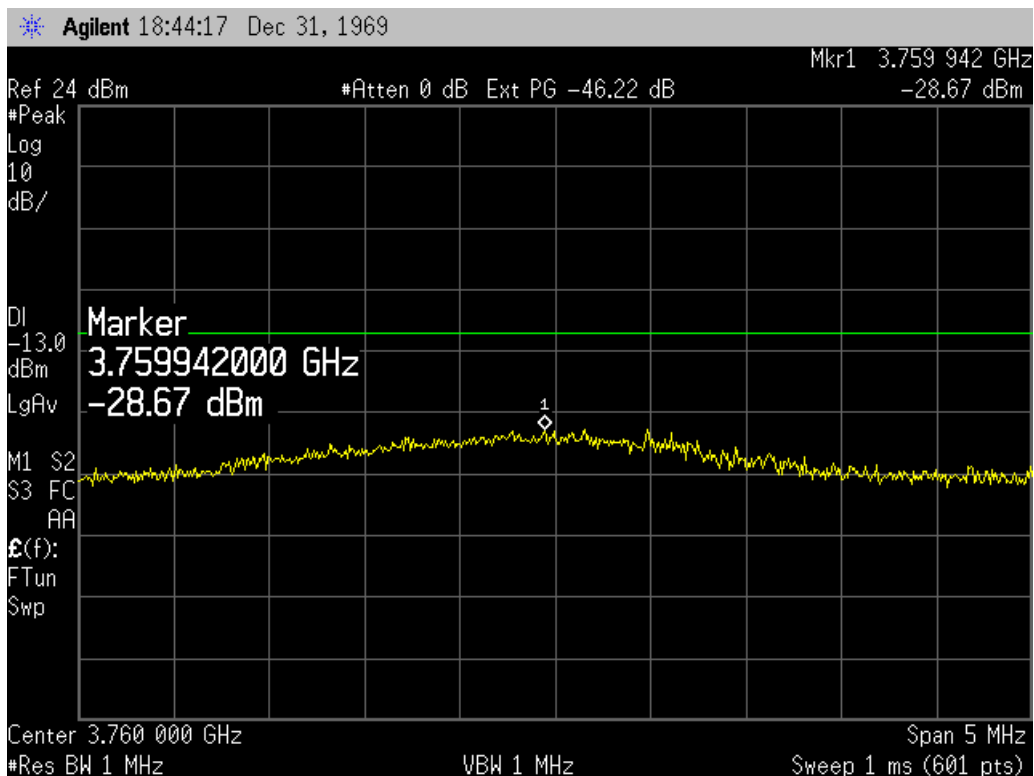
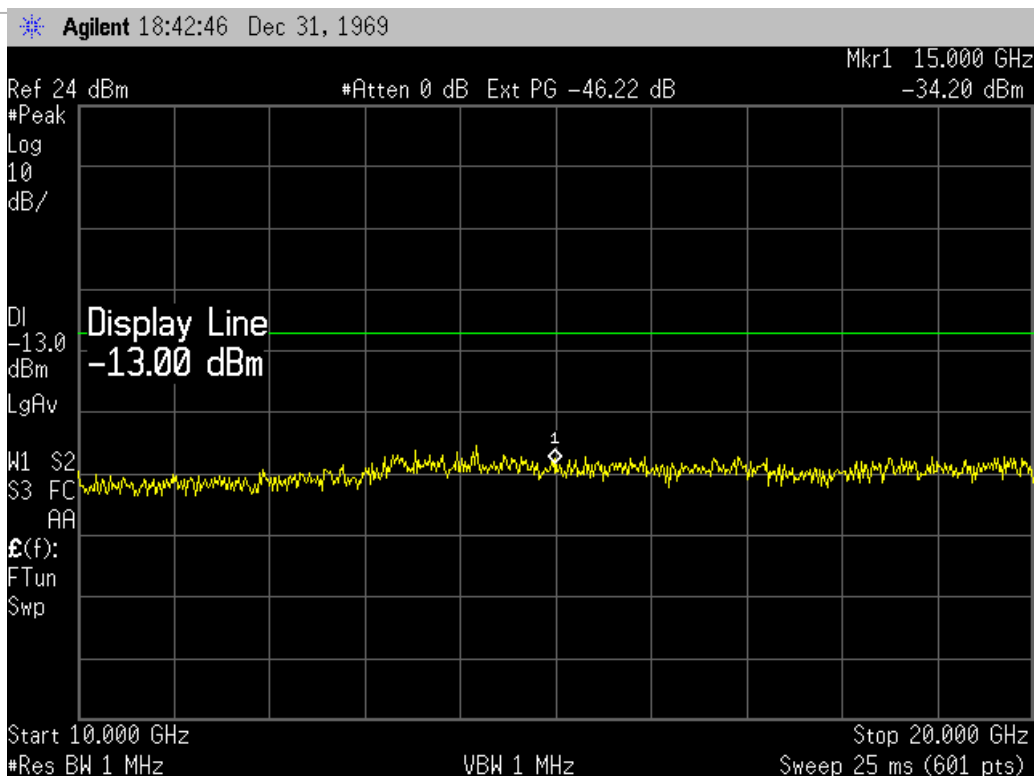
## Channel 600 Spurious Emissions - Mid Channel



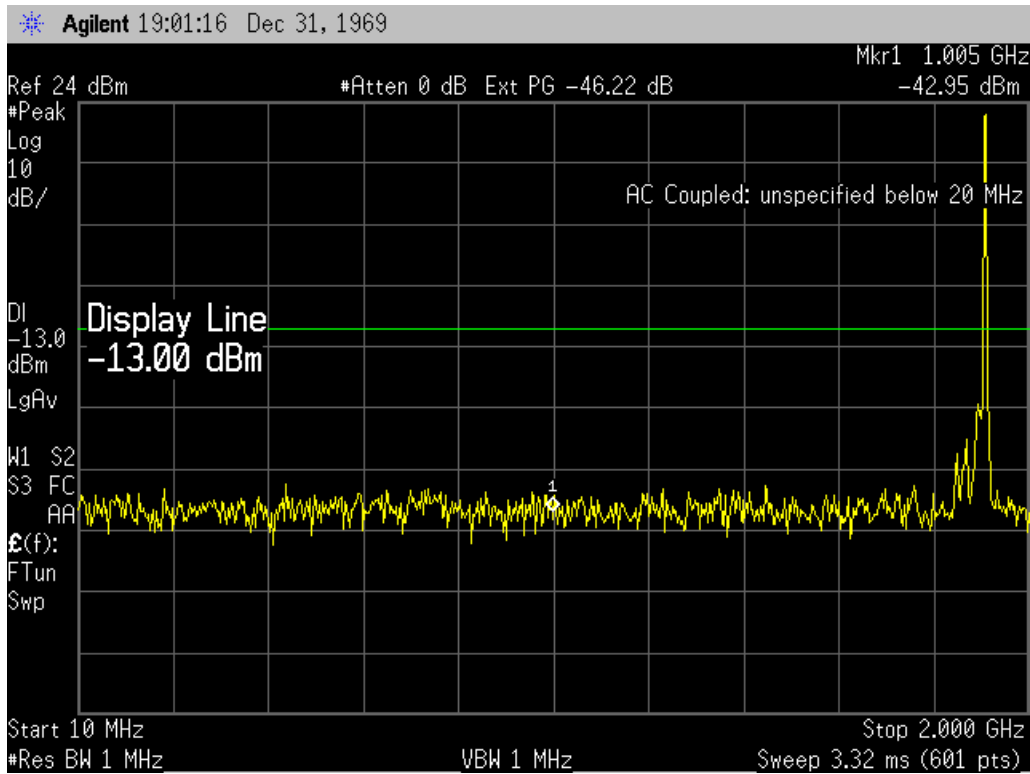


FCC ID: XU9-FWP1951  
IC: 8649A-FWP1951

Report Number: 2009 11137862 EMC  
Specification: FCC Part 2/24 RSS 133/GEN

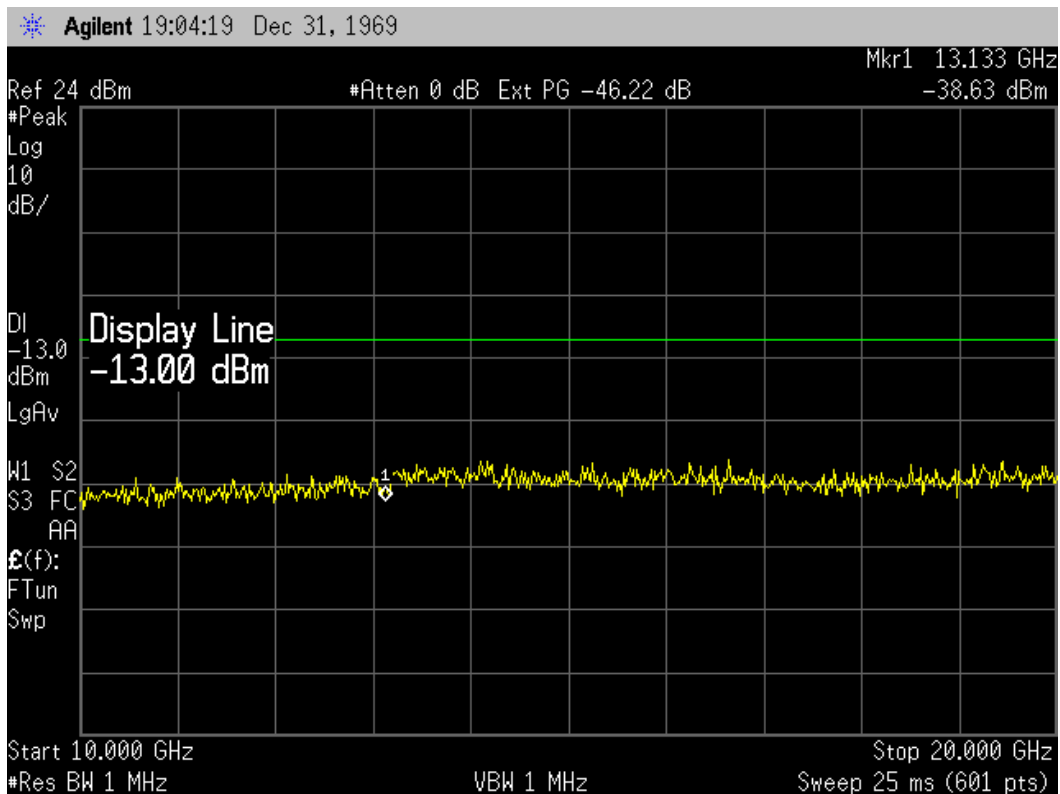
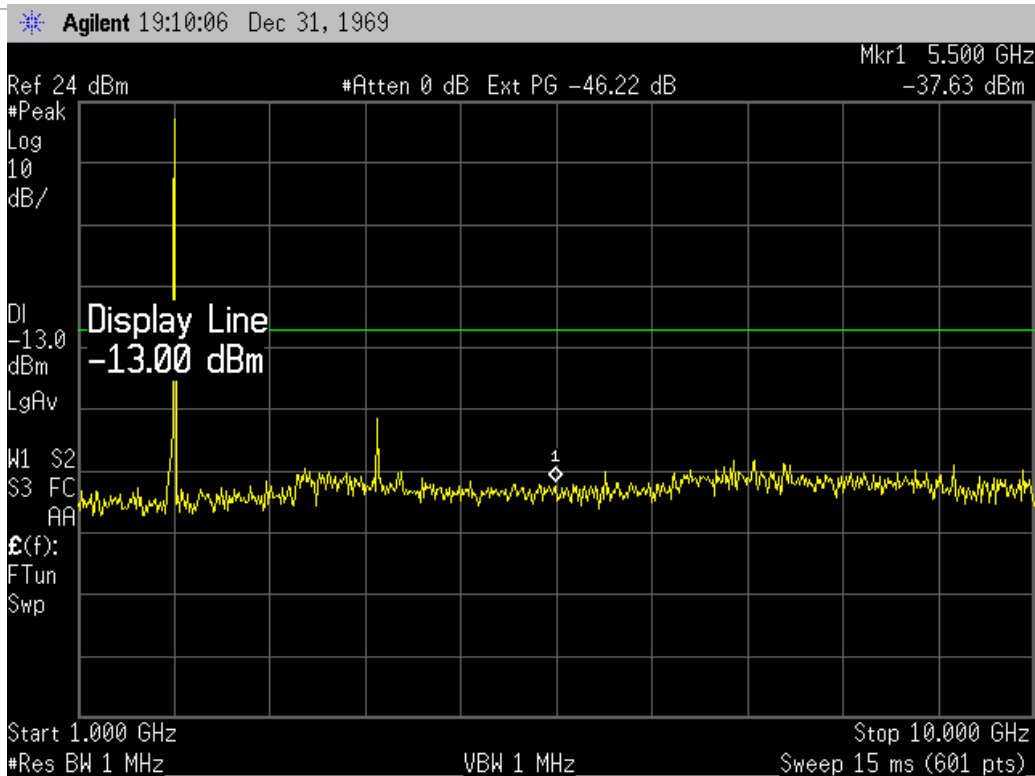


## Channel 1175 Spurious Emissions – High Channel



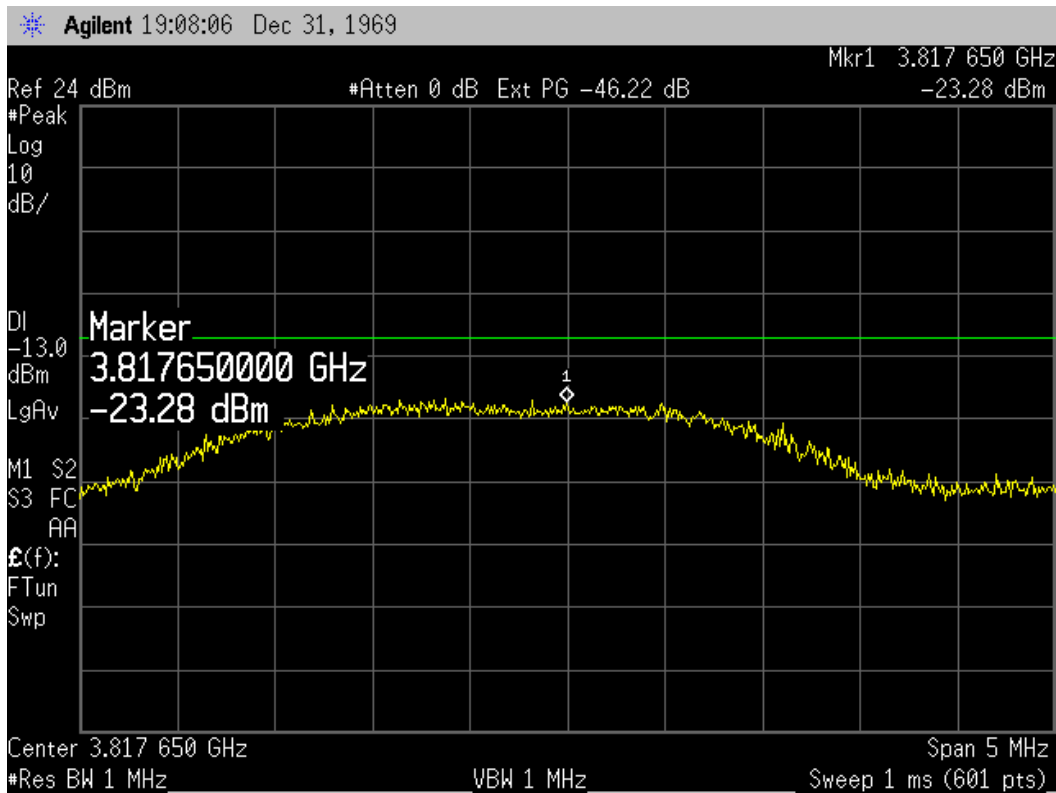
FCC ID: XU9-FWP1951  
IC: 8649A-FWP1951

Report Number: 2009 11137862 EMC  
Specification: FCC Part 2/24 RSS 133/GEN



FCC ID: XU9-FWP1951  
IC: 8649A-FWP1951

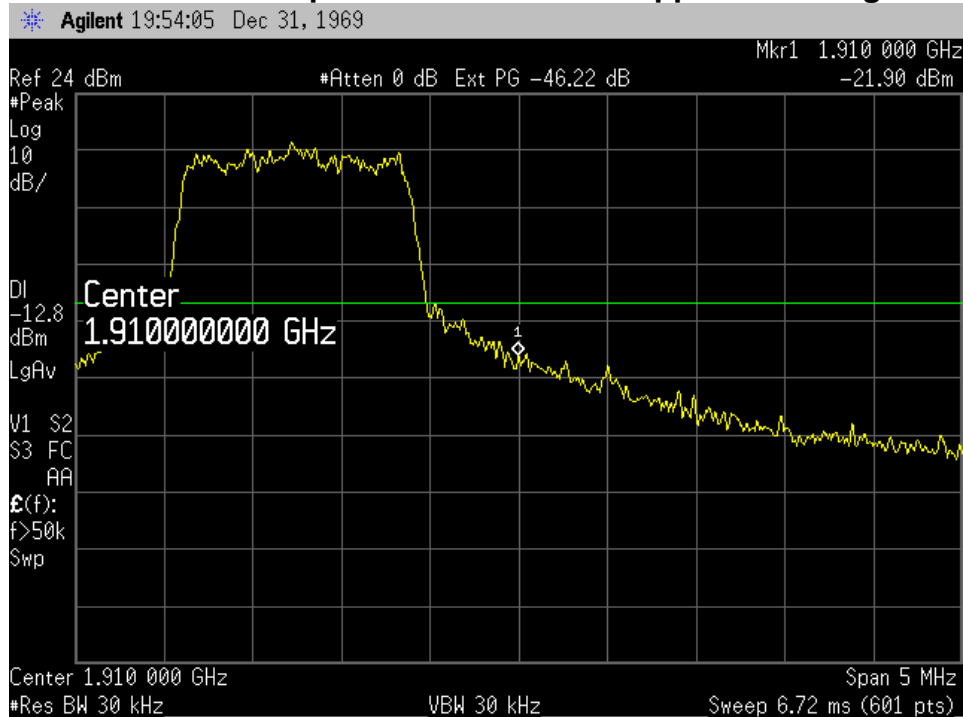
Report Number: 2009 11137862 EMC  
Specification: FCC Part 2/24 RSS 133/GEN



### Channel 25 Spurious Emissions – Lower Band Edge



### Channel 1175 Spurious Emissions – Upper Band Edge





## A4. Field strength of Spurious Emissions

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

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.

#### Conditions:

Sample Number:	FWP 1951	Temperature:	22°C
Date:	11/09/09	Humidity:	53%
Modification State:	None	Tester:	Chip Fleury
		Laboratory:	Nemko

#### Observations:

There were no radiated emissions within 20 dB of the limit so no substitution measurements were required.

Measurements were made in the worst case antenna position. Antenna positions were as follows: (#1 was worst case position and reflects data measured)

- 1) Antenna orthogonal to phone (or Vertical with phone laying flat on table)
- 2) Antenna orthogonal to phone (or Horizontal when phone simulated being attached to wall surface)
- 3) Antenna in same plane as the phone (or Horizontal and perpendicular to phone surface with phone laying flat on table)

No Emissions were noted or measured above 3<sup>rd</sup> harmonic of the transmitter frequency, however the 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.

FCC ID: XU9-FWP1951  
IC: 8649A-FWP1951

Report Number: 2009 11137862 EMC  
Specification: FCC Part 2/24 RSS 133/GEN

**Test Data:** See attached tables

Example: A=RR+CL+AF

A = Amplitude dBμV/m

RR = Receiver Reading dBμV

CL = cable loss dB

AF = antenna factor dB/m

Example Frequency = 3702 MHz

50.0 dBμV (spectrum analyzer reading)

+9.3 dB (cable loss @ frequency)

59.3 dBμV

+30.3 dB/m (antenna factor @ frequency)

89.6 dBμV/m

-32.1 dB amplifier gain

57.5 dBμV/m

-95.26 dbm/ dBμV/m

-37.8 dBm Final adjusted value

**Substitution Method For Radiated Emissions**

Job # : 38936-1

NEX #: 137862

Page 1 of 1

Client Name : Fusion

EUT Name : CDMA Fixed Wireless PCS phone

EUT Model # : FWP 1951

EUT Serial # : None

EUT Config. : Transmitting (hi/mid/low)

Specification : FCC CFR 47 Part 2/Part 24 & RSS GEN/RSS133

Bicon Ant.#: NA Temp. (deg. C) : 22

Dipole Ant.#: NA Humidity (%) : 53

DRG RX Ant. # 877 EUT Voltage : NA

DRG TX Ant. # 529 EUT Frequency : NA

RX Cable#: 40ft Phase: NA

TX Cable#: 60ft

Preamplifier: 317 Distance: 3m

Spec An.#: 835

Target		Horn Gain dBi	Cable loss dB	Signal Generator dBm	Total (EIRP) dBm	Spec dBm	Margin dBm
Frequency MHz	Level dBμV/m						
3702.50	50.0	9.84	13.814	-34.4	-38.4	-13	-25.4
3760.00	50.5	9.85	14.116	-34.2	-38.5	-13	-25.5
3817.50	54.0	9.86	14.207	-27.4	-31.7	-13	-18.7
5553.75	73.9	10.33	17.331	-33.5	-40.5	-13	-27.5
5640.00	77.3	10.38	17.465	-33.9	-41.0	-13	-28.0
5726.25	78.8	11.44	17.699	-35.1	-41.4	-13	-28.4

FCC ID: XU9-FWP1951  
IC: 8649A-FWP1951

Report Number: 2009 11137862 EMC  
Specification: FCC Part 2/24 RSS 133/GEN

## Range Data

Radiated Emissions Data																							
Job # :	38936-1		Date :	11/09/09		Page	1		of	1													
NEX #:	137862		Time :	1:00																			
			Staff :	FRF																			
Client Name :	Fusion					EUT Voltage :	120																
EUT Name :	CDMA Fixed Wireless PCS phone					EUT Frequency :	60																
EUT Model # :	FWP 1951					Phase:																	
EUT Serial # :	None					NOATS																	
EUT Config. :	Transmitting (hi/mid/low)					SOATS	x																
						Distance < 1000 MHz:	1m																
						Distance > 1000 MHz:	1m																
Specification :	FCC CFR 47 Part 2/Part 24 & RSS GEN/RSS133																						
Loop Ant. #:	NA		Temp. (°C) :	22		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Quasi-Peak</td> <td>RBW: 120 kHz</td> </tr> <tr> <td>Video Bandwidth</td> <td>300 kHz</td> </tr> <tr> <td>Peak</td> <td>RBW: 1 MHz</td> </tr> <tr> <td>Video Bandwidth</td> <td>3 MHz</td> </tr> <tr> <td>Average</td> <td>RBW: 1 MHz</td> </tr> <tr> <td>Video Bandwidth</td> <td>10 Hz</td> </tr> </table>						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
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																						
Bicon Ant. #:	114 3M		Humidity (%) :	53																			
Log Ant. #:	110 3M		Spec Analyzer #:	835																			
DRG Ant. #	877		Analyzer Display #:	835																			
Cable LF#:	SOATS		Quasi-Peak Detector #:	NA																			
Cable HF#:	40ft blue		Preselector #:	NA																			
Preamp LF#:	NA																						
Preamp HF#	317																						
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)	Pass Fail	Comment												
3702.3	50.0	42.0		R	1.0	50.0	-37.8	-13.0	-24.8	Pass													
5553.5	43.0	42.0		R	1.0	43.0	-38.9	-13.0	-25.9	Pass													
3760.0	50.5	42.0		F	1.4	50.5	-37.3	-13.0	-24.3	Pass													
5640.0	42.0	42.0		F	1.0	42.0	-39.8	-13.0	-26.8	Pass													
3817.4	54.0	48.0		F	1.4	54.0	-33.2	-13.0	-20.2	Pass													
5726.1	41.0	41.0		F	1.0	41.0	-40.4	-13.0	-27.4	Pass													

## A5. Frequency Stability

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

### 24.235 Frequency stability.

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

#### 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:

Sample Number:	FWP 1951	Temperature:	21°C
Date:	10/10/09	Humidity:	65%
Modification State:	None	Tester:	Chip Fleury
		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.

**Reasoning for not testing battery operation:** In normal operation, the FWP1951 is powered by an ac adaptor which generates 6.6V dc. This voltage is regulated by an LDO to 5V dc which is used to charge the back up batteries. The 5V supply, together with the battery output voltage (3.5V to 4.5V) is also used as the input to two further LDO's which, in turn create two further supplies of 3.0V and 1.8V; these are used by the radio transceiver and the VC-TCXO.

When the phone is powered by the ac adaptor, the batteries trickle charge and are maintained at the maximum battery voltage of 4.5V. If the ac power fails, the back-up batteries will power the transceiver and will maintain the 3.0V and 1.8V voltage supplies. The device will continue to operate until the battery terminal voltage decreases to 3.5V at which point the microprocessor will power the device down.

Taking into account the worst case - when the battery is almost exhausted - and the voltage dropped across the isolation diode, there will always be at least 3.1V available at the input to the 3V regulator. This device is an LDO which requires a minimum dropout voltage of 35mV at an output current of 100mA.

Bearing in mind the above, this device does not need to be tested while running on battery power as it will perform identically to when it is powered by the ac adaptor.

**Test Results: Passed****Measurement Data:**

Standard Test Frequency: 1908.7 MHz  
Standard Test Voltage: 102, 120 and 132 Vac

**Frequency Stability data:**

120 VAC		Frequency Low	Frequency High	Sum/2	Hz deviation
	-30	1.9079252	1.9095452	1.9087352	0
	-20	1.9079252	1.9095452	1.9087352	0
	-10	1.9079152	1.9095352	1.9087252	-10
	0	1.9079252	1.9095452	1.9087352	0
	10	1.9079252	1.9095252	1.9087252	-10
	20	1.9079052	1.9095652	1.9087352	0
	30	1.9079452	1.9095052	1.9087252	-10
	40	1.9079552	1.9095052	1.9087302	-5
	50	1.9079652	1.9095052	1.9087352	0
102 VAC		Frequency Low	Frequency High	difference/2	
	-30	1.9079352	1.9095352	1.9087352	0
	-20	1.9079252	1.9095452	1.9087352	0
	-10	1.9079152	1.9095652	1.9087402	5
	0	1.9079252	1.9095352	1.9087302	-5
	10	1.9079252	1.9095452	1.9087352	0
	20	1.9079452	1.9095352	1.9087402	5
	30	1.9079552	1.9095052	1.9087252	-10
	40	1.9079652	1.9095052	1.9087352	0
	50	1.9079652	1.9094952	1.9087302	-5
132 VAC		Frequency Low	Frequency High	difference/2	
	-30	1.9079452	1.9095352	1.9087402	5
	-20	1.9079352	1.9095352	1.9087352	0
	-10	1.9079152	1.9095452	1.9087302	-5
	0	1.9079052	1.9095552	1.9087302	-5
	10	1.9079452	1.9095352	1.9087402	5
	20	1.9079252	1.9095252	1.9087252	-10
	30	1.9079452	1.9095052	1.9087252	-10
	40	1.9079652	1.9095052	1.9087352	0
	50	1.9079652	1.9095152	1.9087402	5

Sum/2 = (Frequency High + Frequency Low)/2

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

Hz deviation = Sum/2 - Ref

## **A6. 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: None**

**Test Results: Complies**

**Test Data:** See attached plots.

