**FCC CFR47 PART 15 SUBPART C**

**CERTIFICATION TEST REPORT**

**FOR**

**DUAL BAND PHONE WITH BT & WLAN**

**MODEL NUMBER: LG-P769, LGP769, P769**

**FCC ID: ZNFP769**

**REPORT NUMBER: 12U14516**

**ISSUE DATE: 2012-08-07**

*Prepared for*
**LG ELECTRONICS USA**
**1000 SYLVAN AVENUE**
**ENGLEWOOD CLIFFS**
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*Prepared by*
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NVLAP LAB CODE 100255-0

Revision History

| Rev. | Issue Date | Revisions | Revised By |
|---|---|---|---|
| -- | 08/07/12 | Initial Issue | M. Antola |

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** LG ELECTRONICS USA
1000 SYLVAN AVENUE
ENGLEWOOD, NJ 07632, USA

**EUT DESCRIPTION:** DUAL BAND PHONE WITH BT & WLAN

**MODEL:** LG-P769, LGP769, P769

**SERIAL NUMBER:** 205KPYR203330 & 205KPCA203331

**DATE TESTED:** 2012-07-26 to 2012-08-07

| APPLICABLE STANDARDS | |
|---|---|
| **STANDARD** | **TEST RESULTS** |
| CFR 47 Part 15 Subpart C | Pass |

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards, using test results reported in the test report documents referenced below and/or documentation furnished by the applicant. All indications of Pass/Fail in this report are opinions expressed by Underwriters Laboratories Inc. based on interpretations of these calculations. The results show that the equipment is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation, as described by the referenced documents. This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For UL By:

Bob DeLisi
WiSE Principal Engineer
UL LLC

Tested By:

Mike Antola
WiSE Project Lead
UL LLC

# 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

# 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 1285 Walt Whitman Rd. Melville, NY 11747, USA.

UL Melville is accredited by NVLAP, Laboratory Code 100255-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/1002550.htm.

# 4. CALIBRATION AND UNCERTAINTY

## 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

## 4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

## 4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| PARAMETER | UNCERTAINTY |
|---|---|
| Conducted Disturbance, 0.15 to 30 MHz | ± 3.3 dB |
| Radiated Disturbance, 30 to 1000 MHz | ± 4.00 dB |

Uncertainty figures are valid to a confidence level of 95%.

# 5. EQUIPMENT UNDER TEST

## 5.1. DESCRIPTION OF EUT

The EUT is an 802.11b/g/n transceiver in the 2.4GHz band and is an 802.11 a/n transceiver in the 5GHz band.

The radio module is manufactured by Broadcom utilizing WLAN chipset: BCM4330X.

## 5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

| Frequency Range (MHz) | Mode | Output Power (dBm) | Output Power (mW) |
|---|---|---|---|
| 2412 - 2462 | 802.11b | 17.70 | 58.88 |
| 2412 - 2462 | 802.11g | 15.90 | 38.90 |
| 2412 - 2462 | 802.11n | 13.90 | 24.55 |
| 5745 - 5825 | 802.11a | 14.00 | 25.12 |
| 5745 - 5825 | 802.11n | 13.00 | 19.95 |

## 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna, with a maximum gain of -0.45 dBi.

## 5.4. SOFTWARE AND FIRMWARE

The Baseband version was LGP769AT-00-V08_RevC-310-260-JUN-16-2012+0. The Kernel version was 3.0.21. The HW version was Rev.C.

The firmware installed in the EUT during testing was Version 4.0.4.

The EUT software version installed during testing LGP769-V08e.

The test utility software used during testing was WLAN Test and Module Test.

## 5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power.

In the 2.4GHz band the worse-case data rates for 802.11b/g/n were 1Mpbs, 6Mbps and 6.5Mbps, respectively. In the 5GHz band the worse-case data rates for 802.11a/n were 6Mbps and 6.5Mbps, respectively.

It was determined that the x-axis yielded the worse-case orientation.

## 5.6. DESCRIPTION OF TEST SETUP

**SUPPORT EQUIPMENT**

| PERIPHERAL SUPPORT EQUIPMENT LIST | | | | |
|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Serial Number** | **FCC ID** |
| Travel Adapter | LG Electronics | MCS-02WR | RA250126368 | N/A |
| Headphones | LG Electronics | N/A | N/A | N/A |

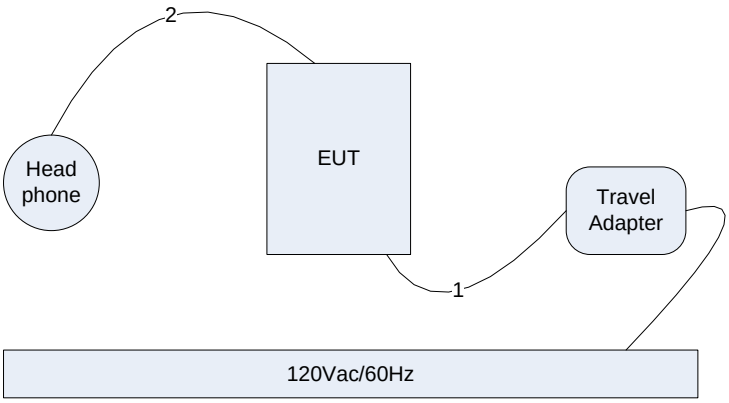
**I/O CABLES**

| I/O CABLE LIST | | | | | | |
|---|---|---|---|---|---|---|
| **Cable No.** | **Port** | **# of Identica Ports** | **Connector Type** | **Cable Type** | **Cable Length** | **Remarks** |
| 1 | USB | 1 | USB | Shielded | <3M | |
| 2 | Headphone | 1 | Audio | Unshielded | <3M | |

**TEST SETUP**

The EUT is a stand-alone device.

**SETUP DIAGRAM FOR TESTS**



# 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

| Radiated Emissions | | | | | |
|---|---|---|---|---|---|
| Description | Manufacturer | Model | Identifier | Cal Date | Cal Due Date |
| 30-1000MHz | | | | | |
| EMI Receiver | Rohde & Schwarz | ESIB26 | ME5B-081 | 2012-01-30 | 2013-01-30 |
| Bicon Antenna | Schaffner | VBA6106A | 54 | 2012-04-10 | 2013-04-10 |
| Log-P Antenna | Schaffner | UPA6109 | 44067 | 2012-05-16 | 2013-05-16 |
| Switch Driver | HP | 11713A | ME7A-627 | N/A | N/A |
| System Controller | Sunol Sciences | SC99V | 44396 | N/A | N/A |
| Camera Controller | Panasonic | WV-CU254 | 44395 | N/A | N/A |
| RF Switch Box | UL | 1 | 44398 | N/A | N/A |
| Measurement Software | UL | Version 9.5 | 44740 | N/A | N/A |
| Temp/Humidity/Pressure Meter | Cole Parmer | 99760-00 | 4268 | 2010-12-07 | 2012-12-07 |
| Multimeter | Fluke | 83III | ME5B-305 | 2012-02-01 | 2013-02-28 |
| Above 1GHz (Band Optimized System) | | | | | |
| EMI Receiver | Rohde & Schwarz | ESIB40 | 34968 | 2012-03-06 | 2013-03-06 |
| Horn Antenna (1-2 GHz) | ETS | 3161-01 | 51442 | 2008-03-28 | See * below |
| Horn Antenna (2-4 GHz) | ETS | 3161-02 | 48107 | 2007-09-27 | See * below |
| Horn Antenna (4-8 GHz) | ETS | 3161-03 | 48106 | 2007-09-27 | See * below |
| Horn Antenna (8-12 GHz) | ETS | 3160-07 | 8933 | 2008-11-24 | See * below |
| Horn Antenna (12-18 GHz) | ETS | 3160-08 | 8932 | 2007-09-27 | See * below |
| Horn Antenna (18-26.5 GHz) | ETS | 3160-09 | 8947 | 2007-09-26 | See * below |
| Horn Antenna (26.5-40 GHz) | ETS | 3160-10 | 73004 | 2007-09-26 | See * below |
| Signal Path Controller | HP | 11713A | 50250 | N/A | N/A |
| Gain Controller | HP | 11713A | 50251 | N/A | N/A |
| RF Switch / Preamp Fixture | UL | BOMS1 | 50249 | N/A | N/A |
| System Controller | UL | BOMS2 | 50252 | N/A | N/A |
| Measurement Software | UL | Version 9.5 | 44740 | N/A | N/A |
| Temp/Humidity/Pressure Meter | Cole Parmer | 99760-00 | 4268 | 2010-12-07 | 2012-12-07 |
| Multimeter | Fluke | 83III | ME5B-305 | 2012-02-01 | 2013-02-28 |

* - Note: As allowed by the calibration standard ANSI C63.4 Section 4.4.2, standard gain horns need only a one-time calibration. Only if physical damage occurs will the horn antenna require re-calibration.
* Gain standard horn antennas (sometimes called standard gain horn antennas) need not be calibrated beyond that which is provided by the manufacturer unless they are damaged or deterioration is suspected, or they are used at a distance closer than $2D^2/\lambda$. Gain standard horn antennas have gains that are fixed by their dimensions and dimensional tolerances.

| Conducted Antenna Port Tests | | | | | |
|---|---|---|---|---|---|
| Description | Manufacturer | Model | Identifier | Cal Date | Cal Due Date |
| Spectrum Analyzer | Agilent | E4446A | 72822 | 2012-01-31 | 2013-02-28 |
| Power Sensor | Rohde & Schwarz | NRP-Z81 | 73137 | 2011-09-27 | 2012-09-27 |
| Temp/Humidity/Pressure Meter | Cole Parmer | 99760-00 | 43733 | 2012-03-13 | 2014-03-13 |
| Multimeter | Fluke | 83III | ME5B-305 | 2012-02-01 | 2013-02-28 |

| Conducted Emissions - Mains | | | | | |
|---|---|---|---|---|---|
| Description | Manufacturer | Model | Identifier | Cal Date | Cal Due Date |
| Conducted Emissions – GP 1 | | | | | |
| EMI Receiver | Rohde & Schwarz | ESCI7 | 75141 | 2012-01-05 | 2013-01-05 |
| LISN | Solar | 9252-50-R-24-BNC | ME5A-636 | 2012-02-03 | 2013-02-28 |
| Switch Driver | HP | 11713A | 44397 | N/A | N/A |
| RF Switch Box | UL | 4 | 44404 | N/A | N/A |
| Measurement Software | UL | Version 9.5 | 44736 | N/A | N/A |
| Temp/Humidity/Pressure Meter | Cole Parmer | 99760-00 | 43734 | 2012-03-13 | 2014-03-13 |
| Multimeter | Fluke | 83III | ME5B-305 | 2012-02-01 | 2013-02-28 |

# 7. ANTENNA PORT TEST RESULTS

## 7.1. 802.11b MODE IN THE 2.4 GHz BAND

### 7.1.1. 6 dB BANDWIDTH

**LIMITS**

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

**TEST PROCEDURE**

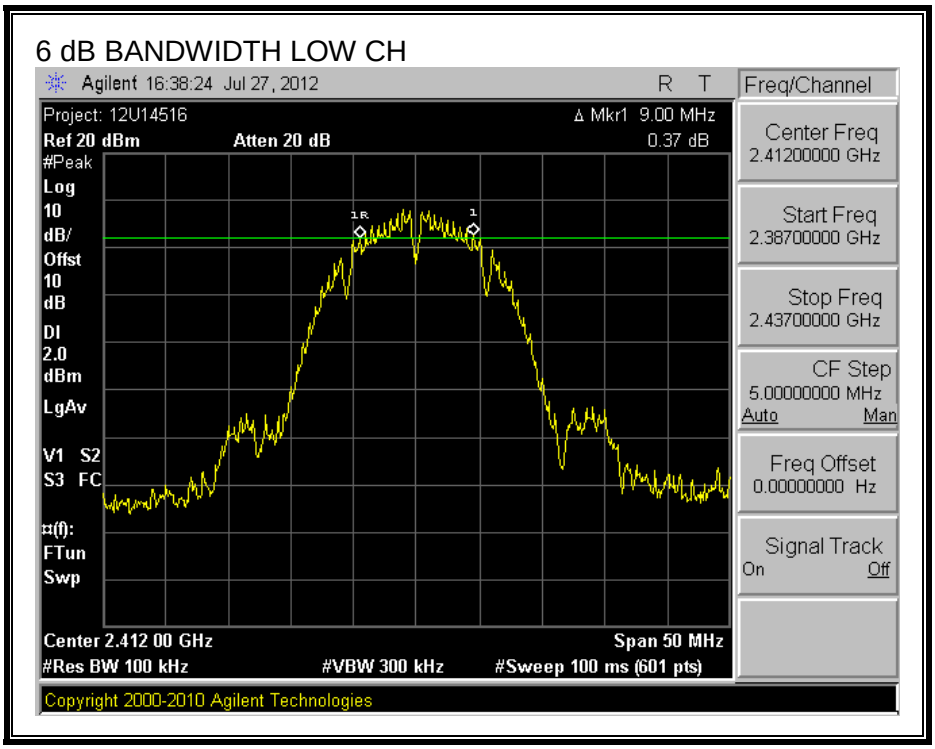
The transmitter output is connected to a spectrum analyzer. The RBW is set to 1-5% of the 6dB BW and the VBW is set to ≥ 3 times the RBW. The sweep time is coupled.

**RESULTS**

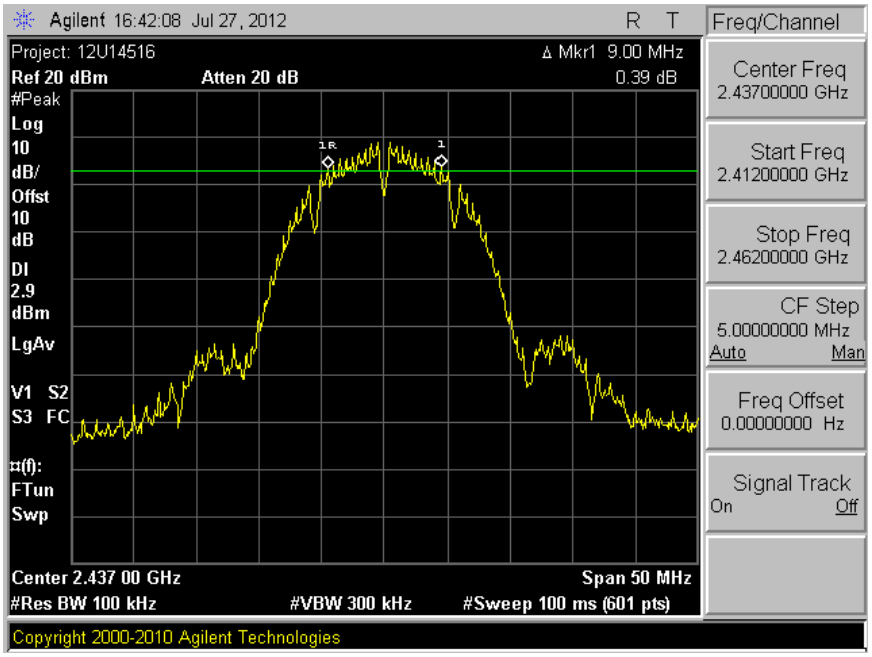
| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| Low | 2412 | 9.0000 | 0.5 |
| Middle | 2437 | 9.0000 | 0.5 |
| High | 2462 | 9.0000 | 0.5 |

**6 dB BANDWIDTH**

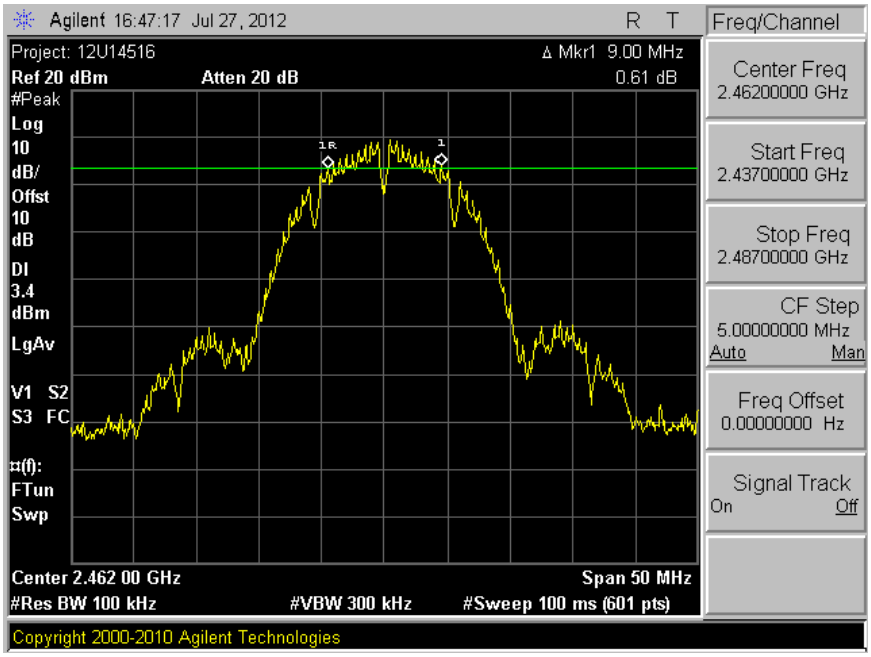
6 dB BANDWIDTH LOW CH



6 dB BANDWIDTH MID CH



6 dB BANDWIDTH HIGH CH



### 7.1.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

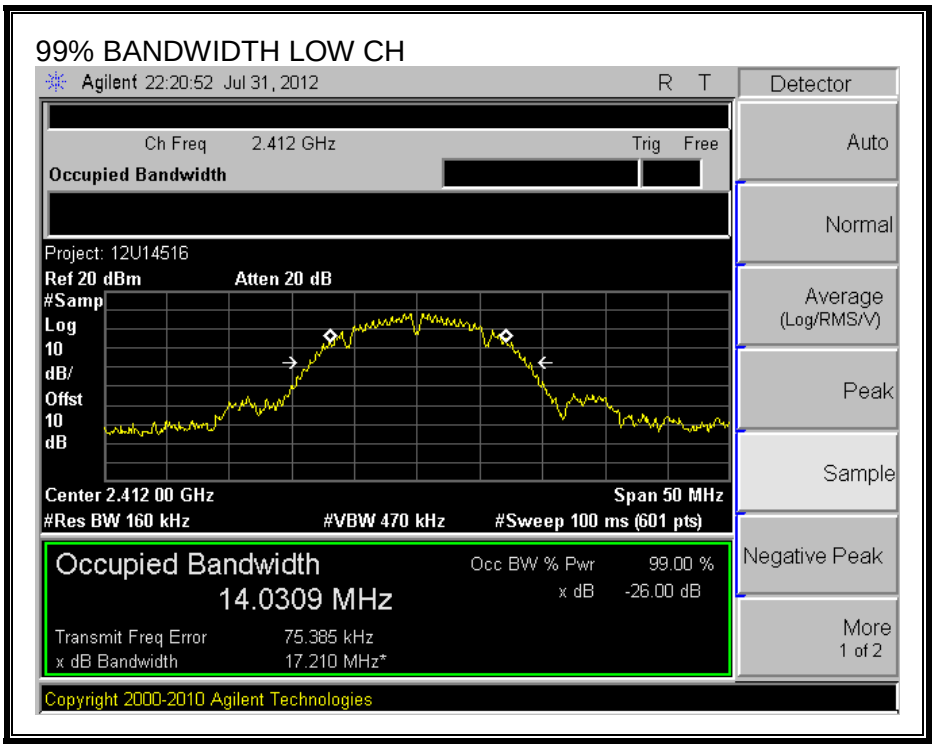
**TEST PROCEDURE**

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth and to 1% of the span. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

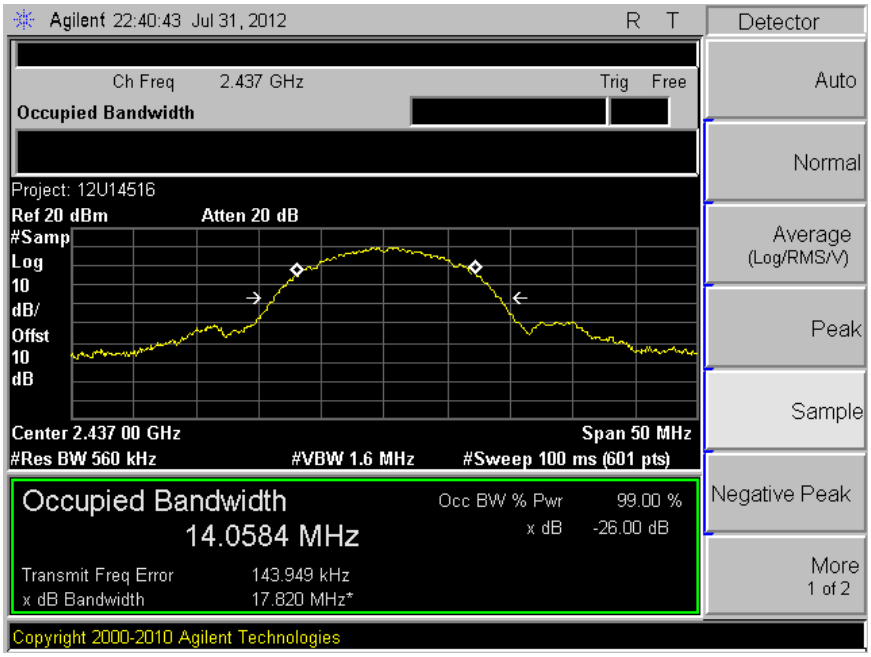
**RESULTS**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low | 2412 | 14.0309 |
| Middle | 2437 | 14.0584 |
| High | 2462 | 14.2575 |

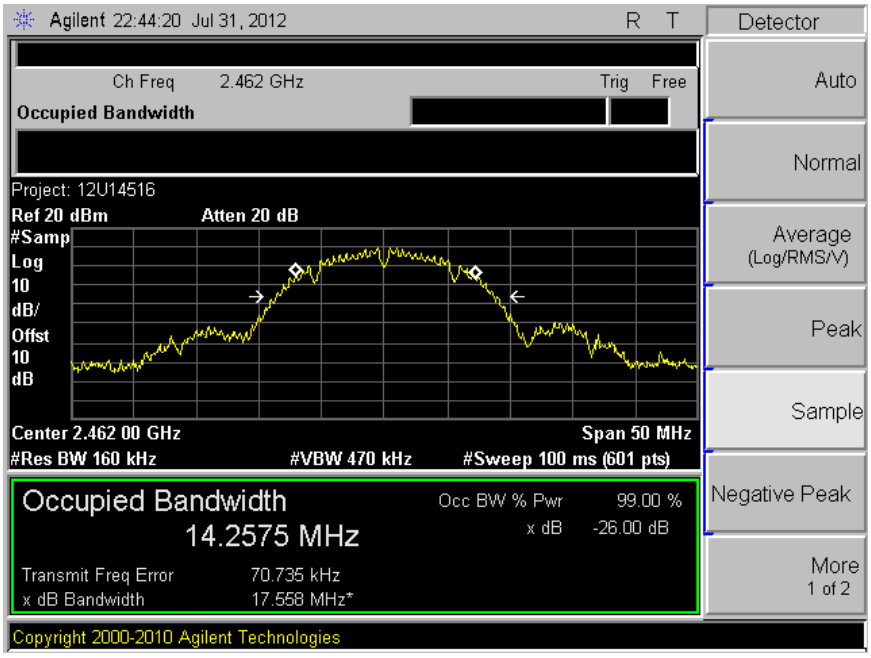
**99% BANDWIDTH**



99% BANDWIDTH MID CH



99% BANDWIDTH HIGH CH



### 7.1.3. OUTPUT POWER

**LIMITS**

FCC §15.247 (b)

IC RSS-210 A8.4

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

**TEST PROCEDURE**

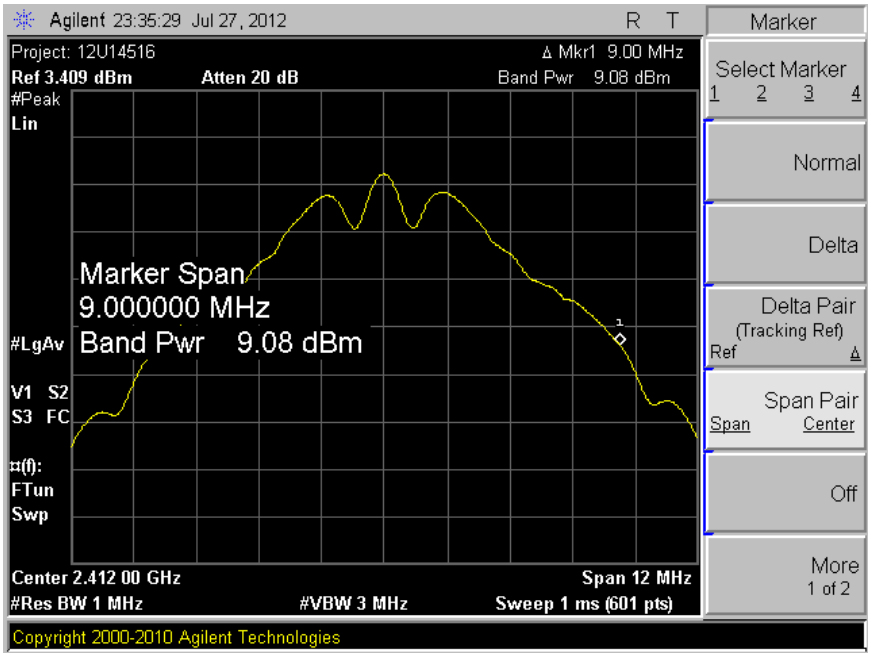
Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

**RESULTS**

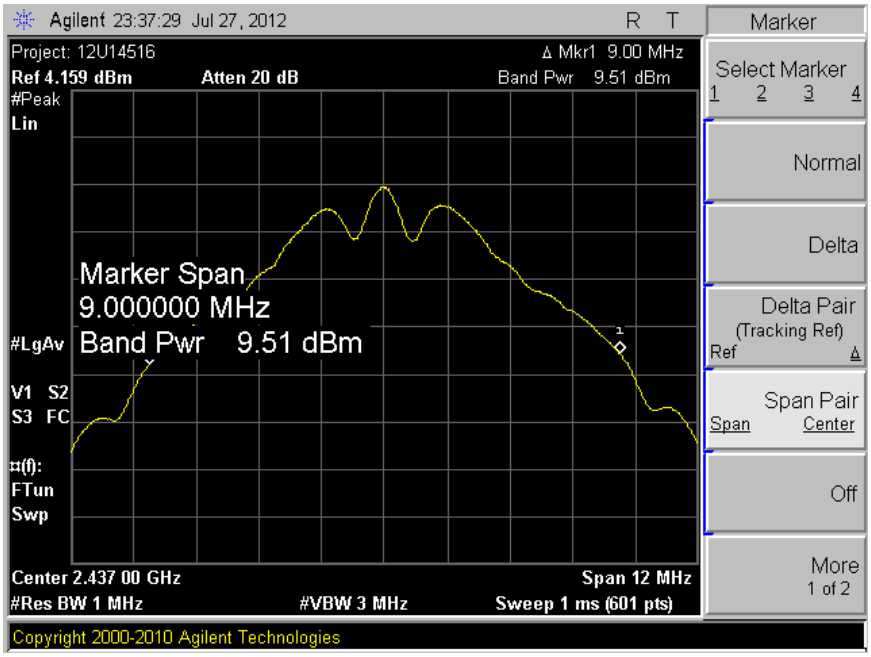
| Channel | Frequency (MHz) | Measured Reading (dBm) | Offset (dB) | Output Power (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 2412 | 9.08 | 10 | 19.08 | 30 | -10.92 |
| Middle | 2437 | 9.51 | 10 | 19.51 | 30 | -10.49 |
| High | 2462 | 10.22 | 10 | 20.22 | 30 | -9.78 |

**OUTPUT POWER**

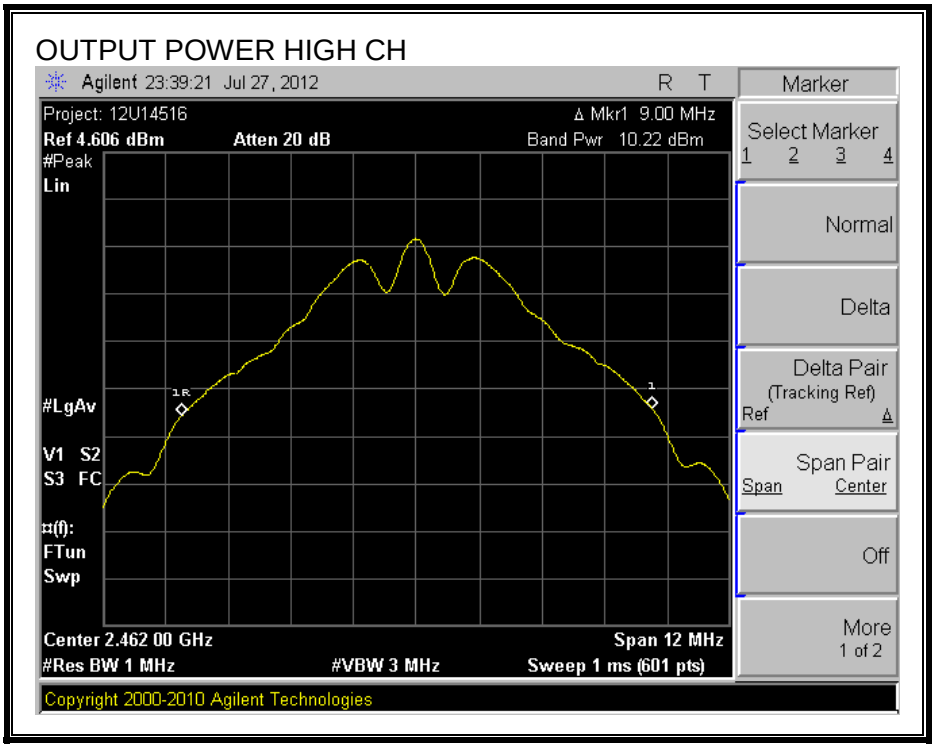
OUTPUT POWER LOW CH



OUTPUT POWER MID CH



OUTPUT POWER HIGH CH



### 7.1.4. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

**RESULTS**

The cable assembly insertion loss of 10 dB (including 10 dB pad and 0 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

| Channel | Frequency (MHz) | AV power (dBm) |
|---|---|---|
| Low | 2412 | 16.6 |
| Middle | 2437 | 17.2 |
| High | 2462 | 17.7 |

## 7.1.5. POWER SPECTRAL DENSITY

**LIMITS**

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

**TEST PROCEDURE**

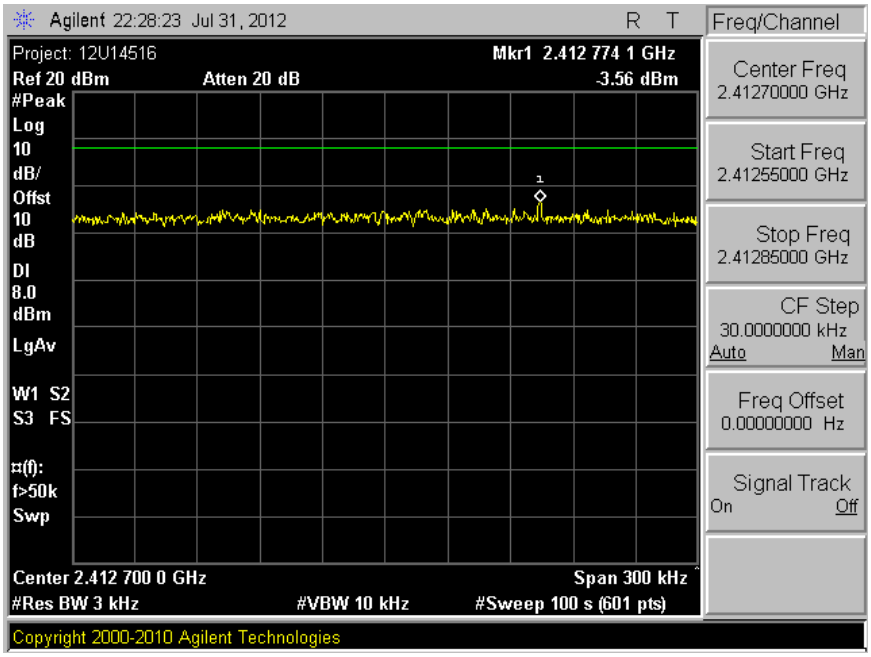
Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

**RESULTS**

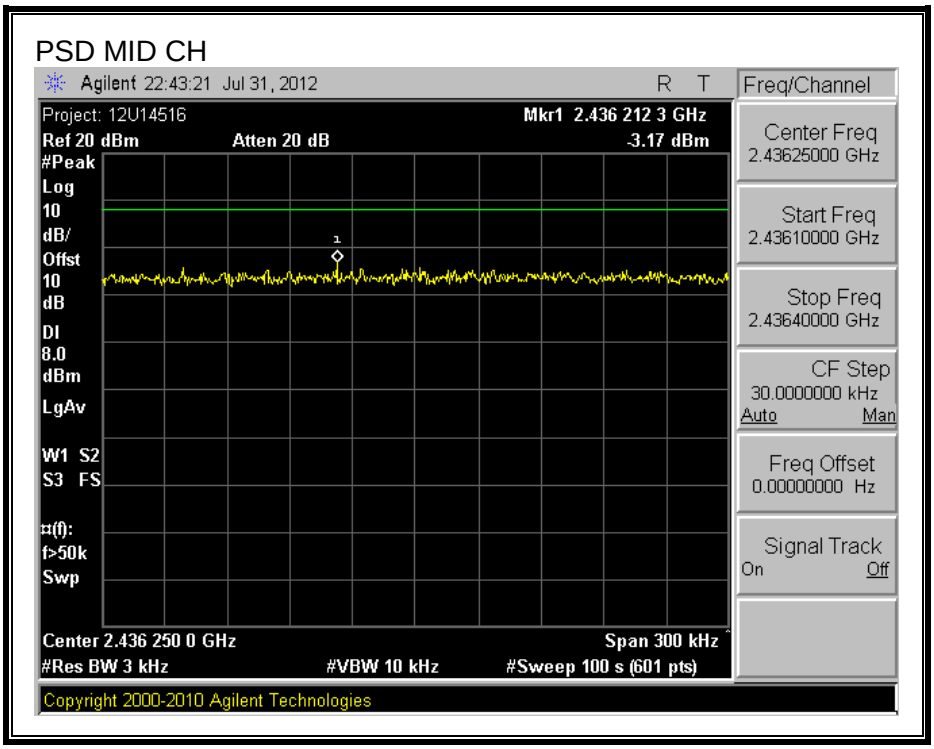
| Channel | Frequency (MHz) | PSD (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|
| Low | 2412 | -3.56 | 8 | -11.56 |
| Middle | 2437 | -3.17 | 8 | -11.17 |
| High | 2462 | -4.08 | 8 | -12.08 |

**POWER SPECTRAL DENSITY**

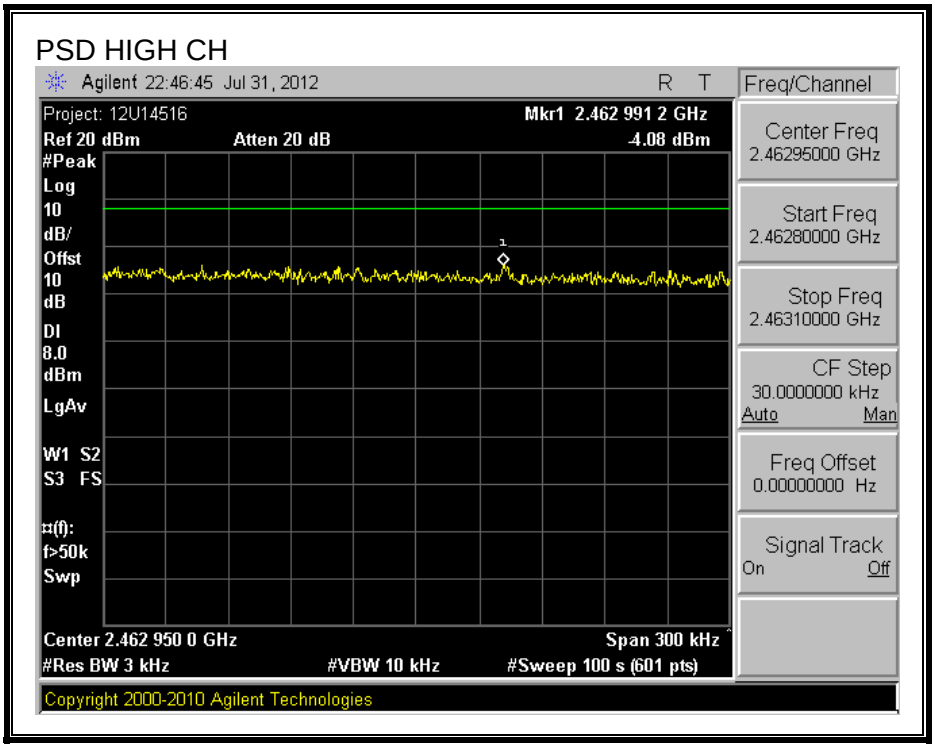
PSD LOW CH



PSD MID CH



PSD HIGH CH



## 7.1.6. CONDUCTED SPURIOUS EMISSIONS

**LIMITS**

FCC §15.247 (d)

IC RSS-210 A8.5

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

**TEST PROCEDURE**

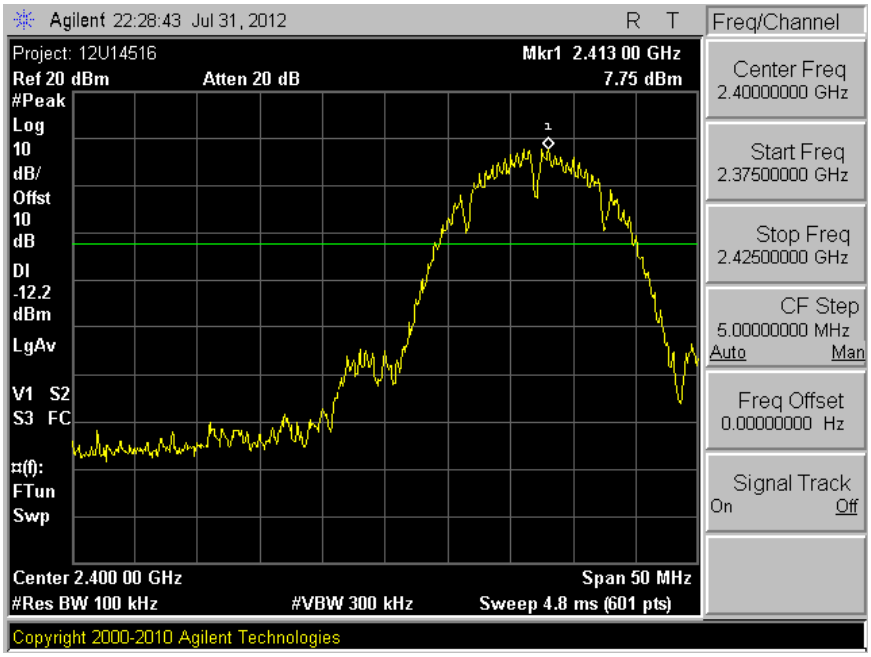
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

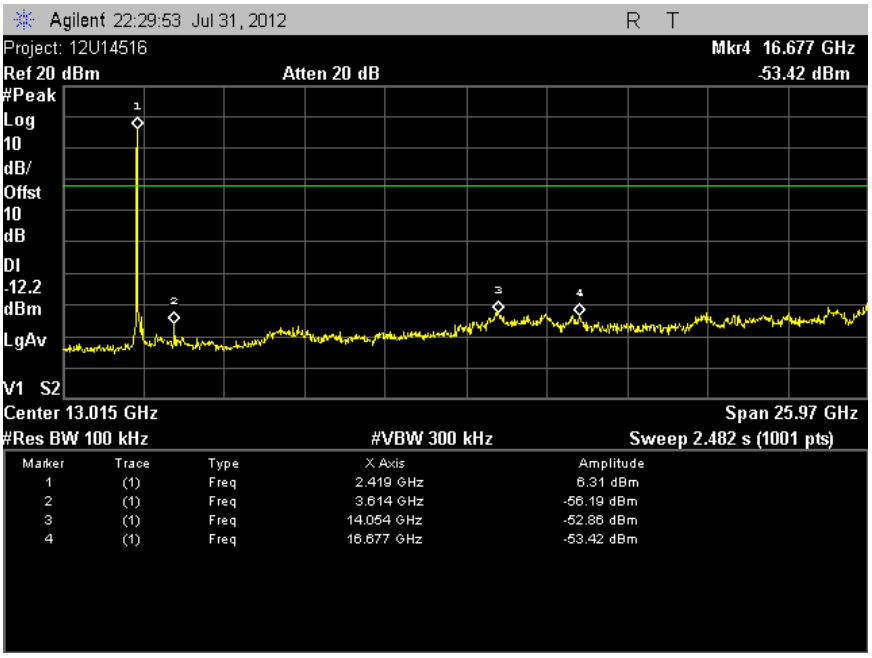
**RESULTS**

**SPURIOUS EMISSIONS, LOW CHANNEL**

LOW CH BANDEDGE

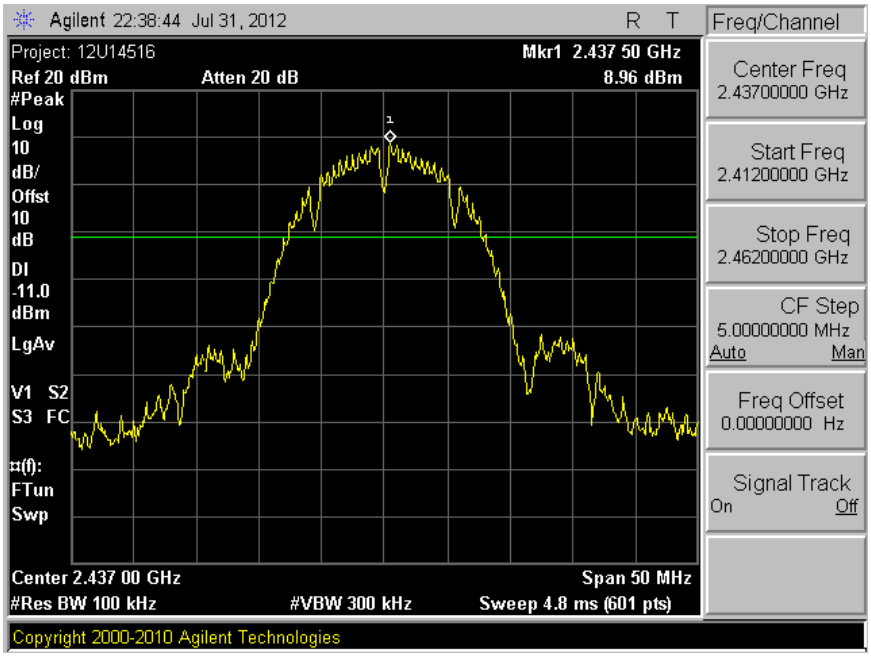


LOW CH SPURIOUS

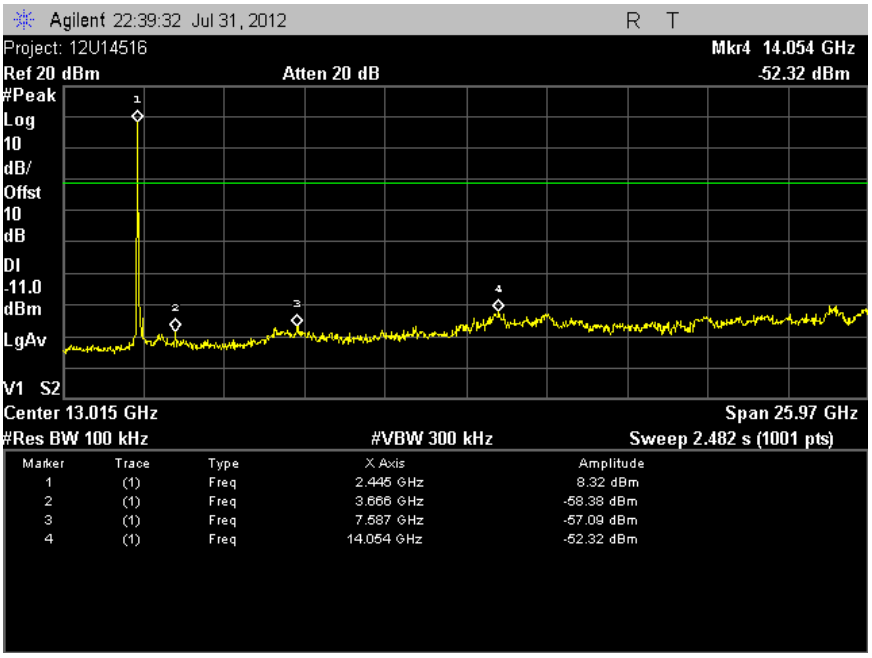


**SPURIOUS EMISSIONS, MID CHANNEL**

MID CH REFERENCE



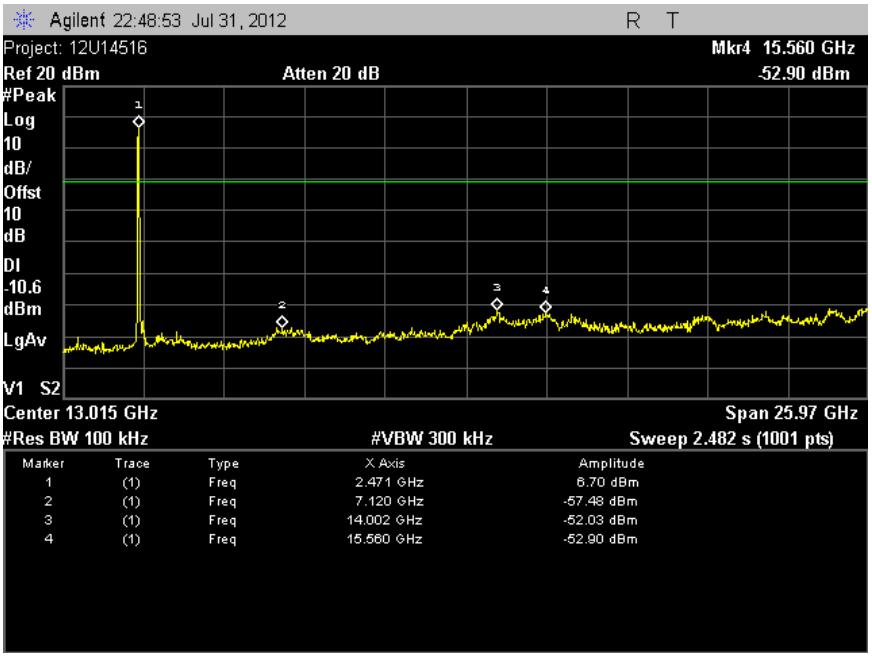
MID CH SPURIOUS



**SPURIOUS EMISSIONS, HIGH CHANNEL**

HIGH CH BANDEDGE

HIGH CH SPURIOUS



## 7.2. 802.11g MODE IN THE 2.4 GHz BAND

### 7.2.1. 6 dB BANDWIDTH

**LIMITS**

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

**TEST PROCEDURE**

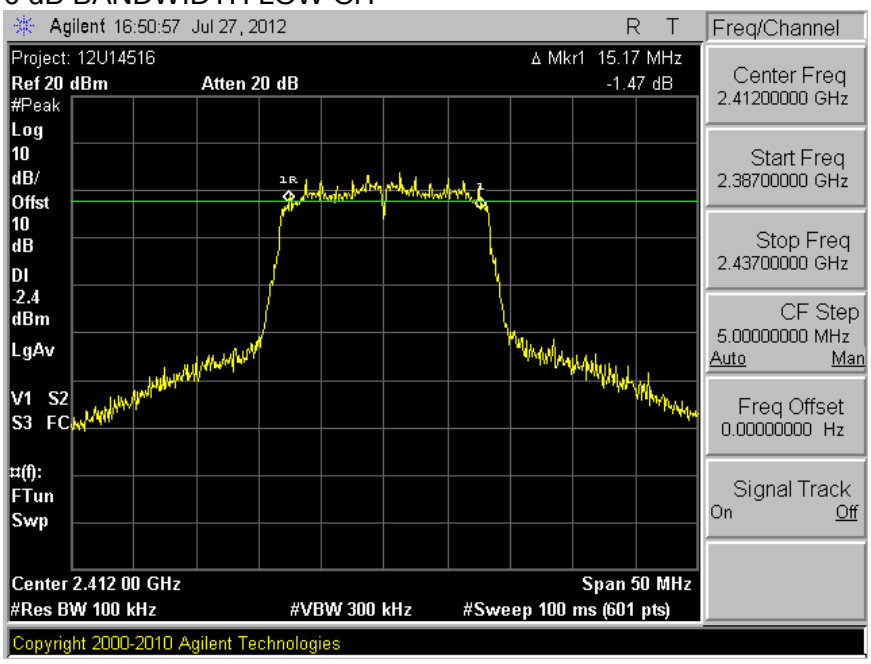
The transmitter output is connected to a spectrum analyzer. The RBW is set to 1-5% of the 6dB BW and the VBW is set to ≥ 3 times the RBW. The sweep time is coupled.

**RESULTS**

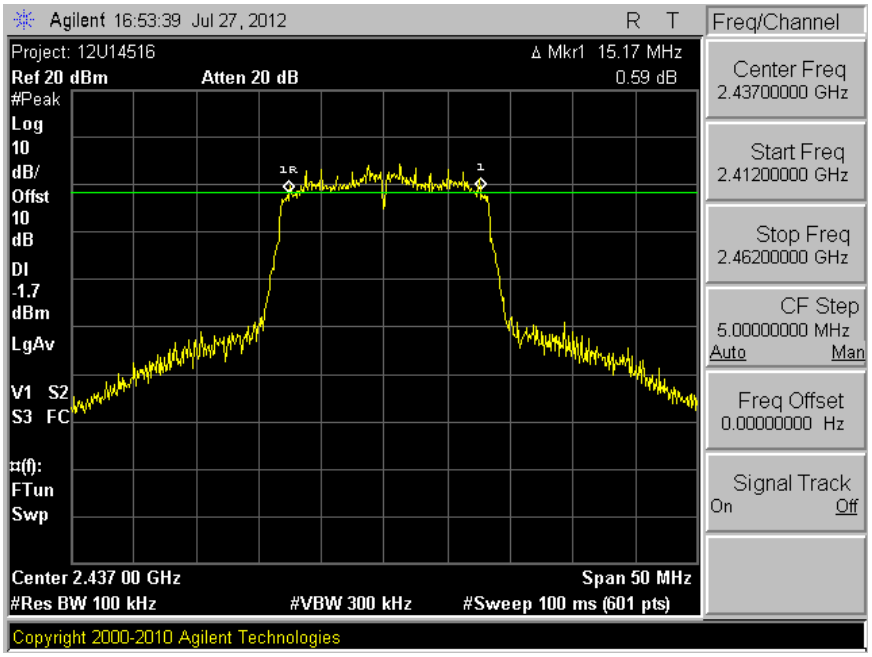
| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| Low | 2412 | 15.1700 | 0.5 |
| Middle | 2437 | 15.1700 | 0.5 |
| High | 2462 | 15.1700 | 0.5 |

**6 dB BANDWIDTH**

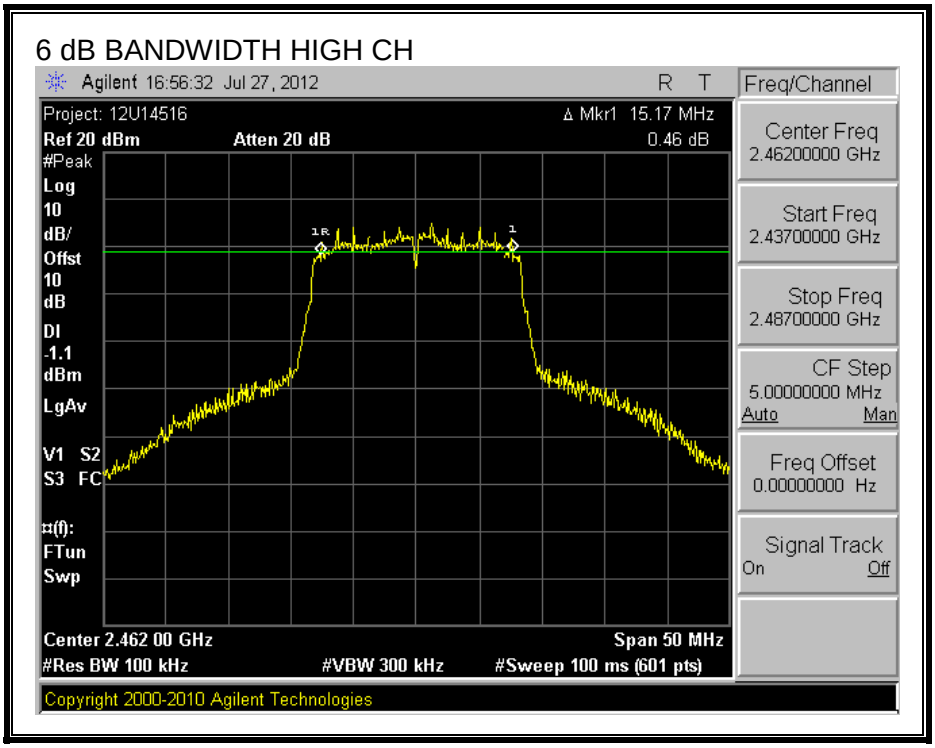
6 dB BANDWIDTH LOW CH



6 dB BANDWIDTH MID CH



6 dB BANDWIDTH HIGH CH



### 7.2.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

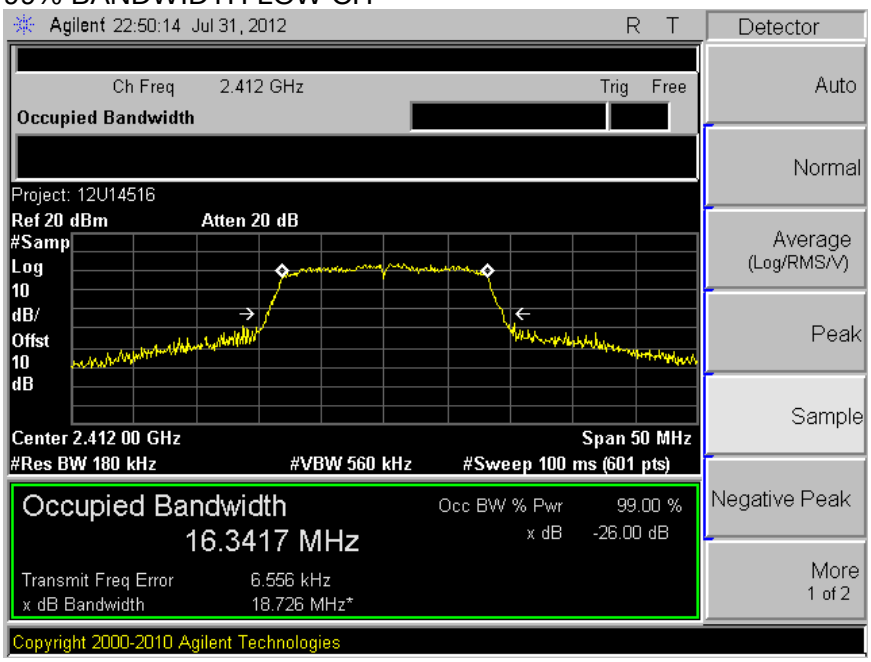
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

**RESULTS**

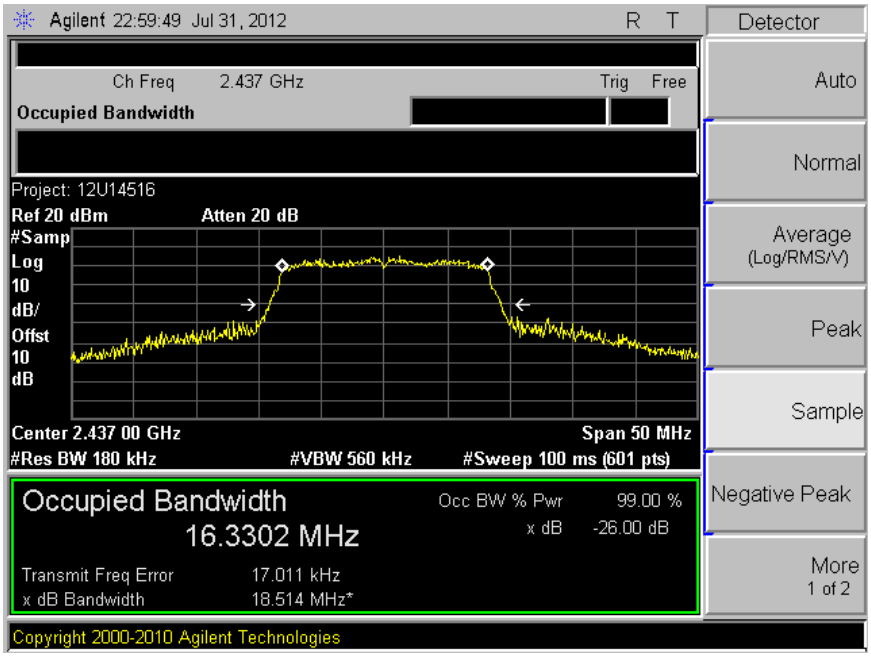
| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low | 2412 | 16.3417 |
| Middle | 2437 | 16.3302 |
| High | 2462 | 16.3887 |

**99% BANDWIDTH**

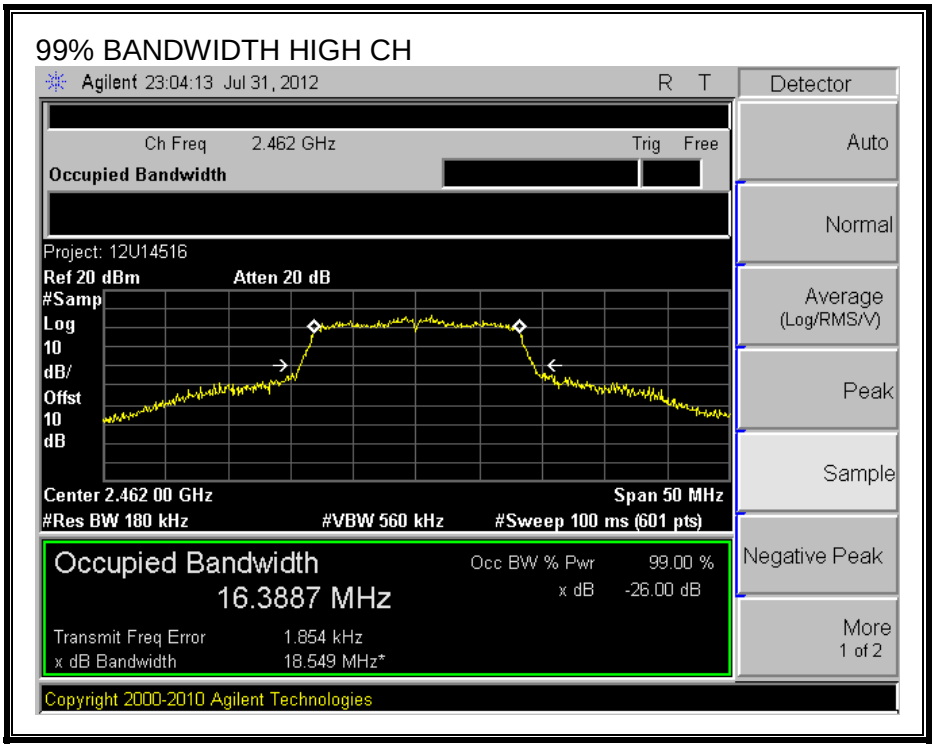
99% BANDWIDTH LOW CH



99% BANDWIDTH MID CH



99% BANDWIDTH HIGH CH



## 7.2.3. OUTPUT POWER

**LIMITS**

FCC §15.247 (b)

IC RSS-210 A8.4

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

**TEST PROCEDURE**

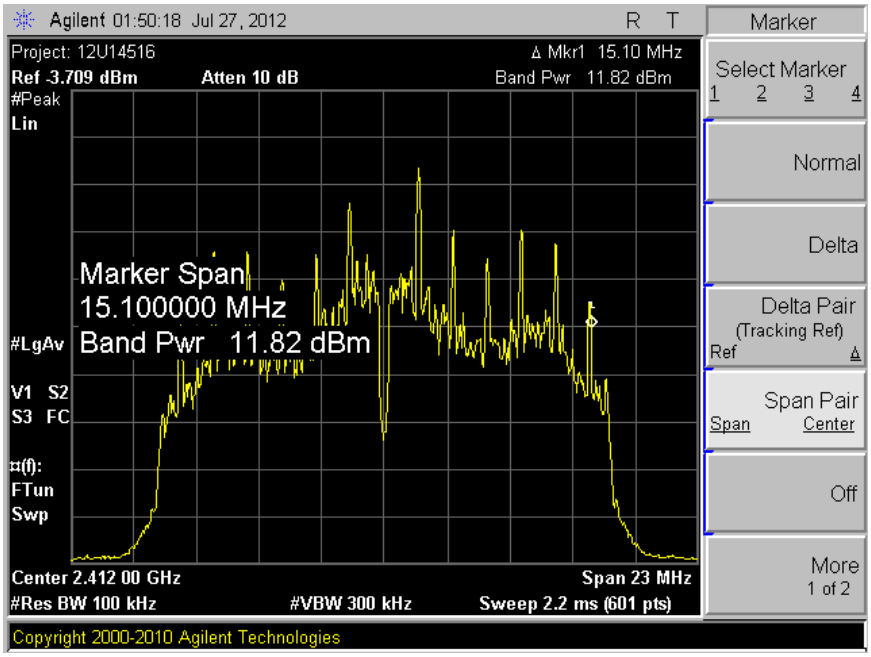
Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

**RESULTS**

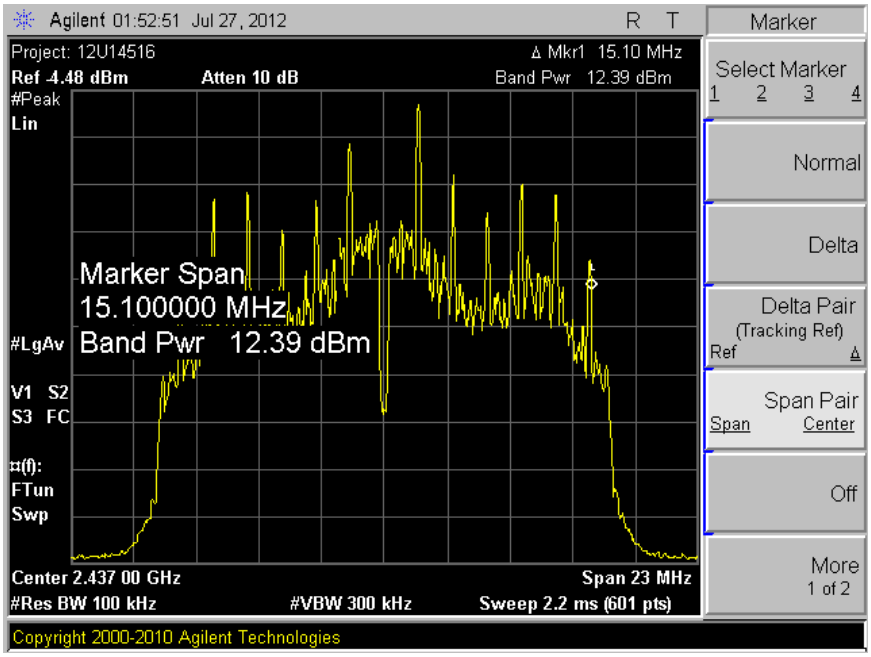
| Channel | Frequency (MHz) | Measured Reading (dBm) | Offset (dB) | Output Power (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 2412 | 11.82 | 10 | 21.82 | 30 | -8.18 |
| Middle | 2437 | 12.39 | 10 | 22.39 | 30 | -7.61 |
| High | 2462 | 12.90 | 10 | 22.90 | 30 | -7.10 |

**OUTPUT POWER**

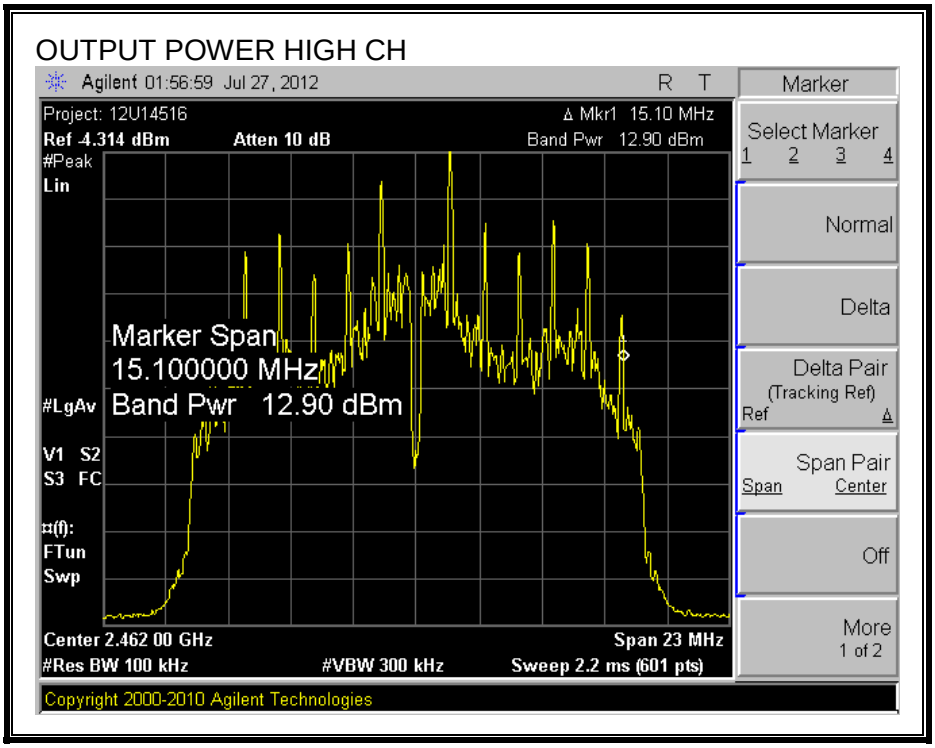
OUTPUT POWER LOW CH



OUTPUT POWER MID CH



OUTPUT POWER HIGH CH



## 7.2.4. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

**RESULTS**

The cable assembly insertion loss of 10 dB (including 10 dB pad and 0 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

| Channel | Frequency (MHz) | Power (dBm) |
|---|---|---|
| Low | 2412 | 14.50 |
| Middle | 2437 | 15.40 |
| High | 2462 | 15.90 |

## 7.2.5. POWER SPECTRAL DENSITY

**LIMITS**

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

**TEST PROCEDURE**

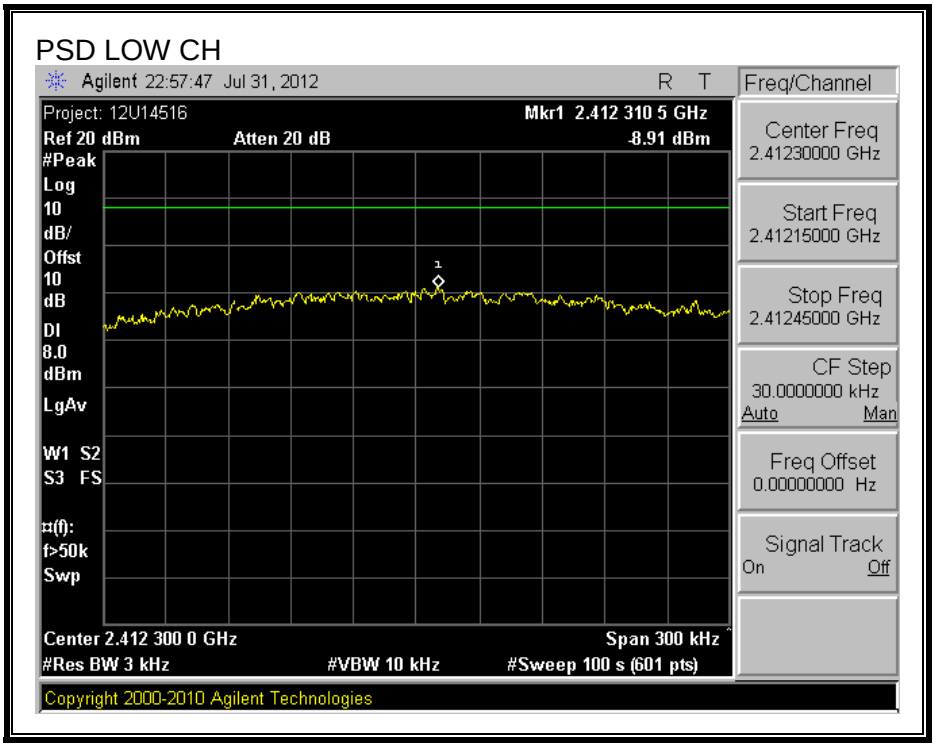
Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

**RESULTS**

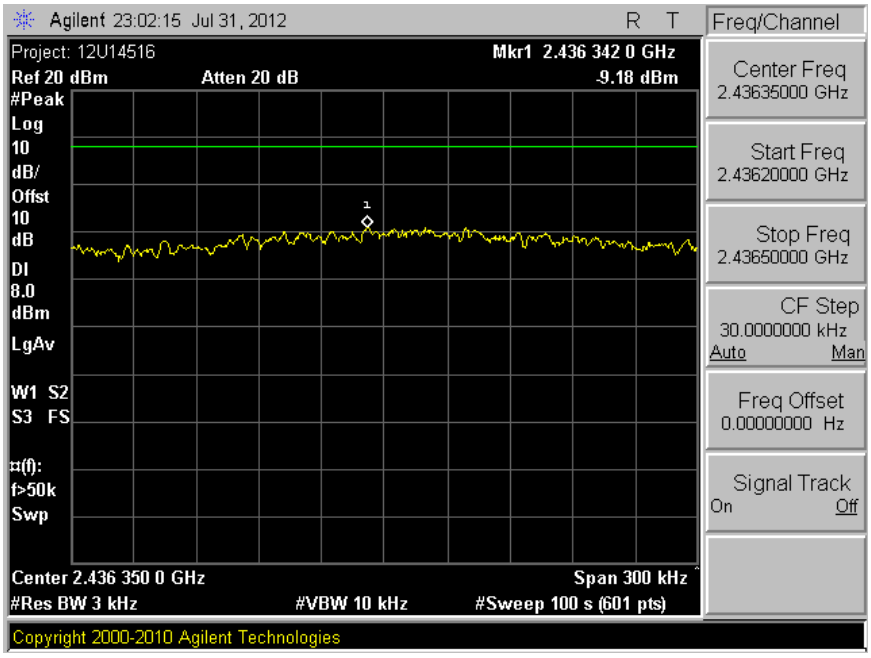
| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|
| Low | 2412 | -8.91 | 8 | -16.91 |
| Middle | 2437 | -9.18 | 8 | -17.18 |
| High | 2462 | -8.68 | 8 | -16.68 |

**POWER SPECTRAL DENSITY**

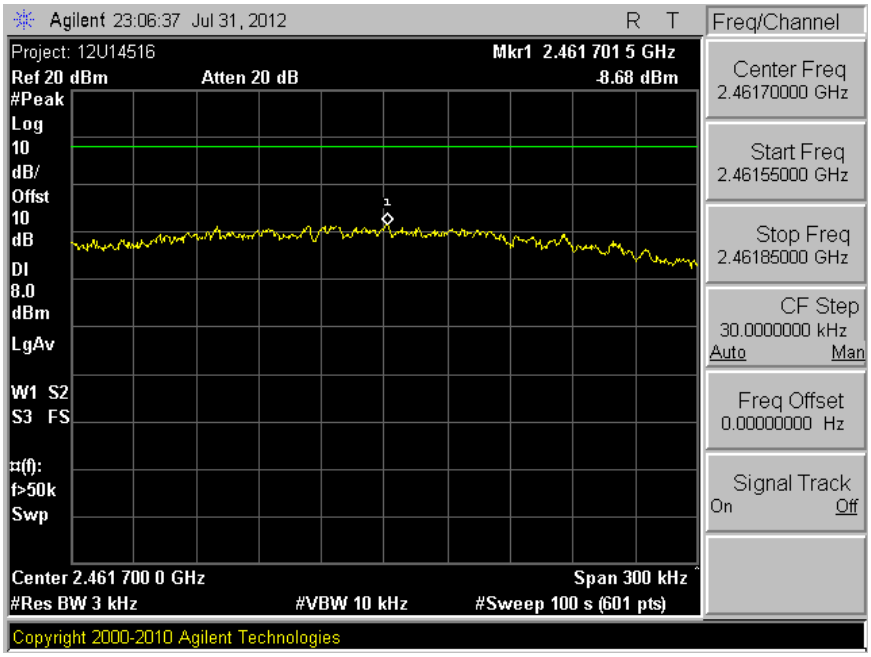
PSD LOW CH



PSD MID CH



PSD HIGH CH



## 7.2.6. CONDUCTED SPURIOUS EMISSIONS

**LIMITS**

FCC §15.247 (d)

IC RSS-210 A8.5

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

**TEST PROCEDURE**

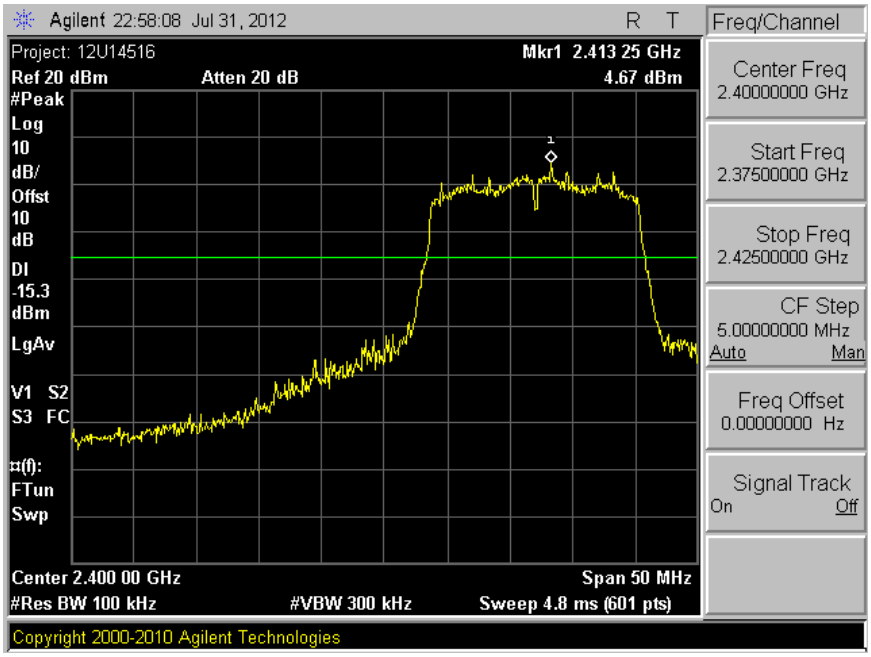
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

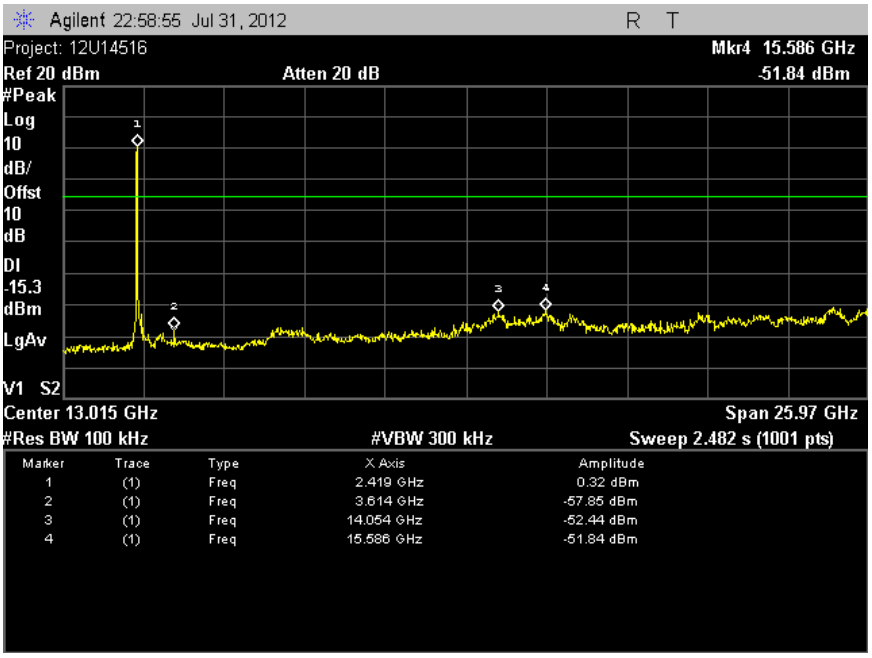
**RESULTS**

**SPURIOUS EMISSIONS, LOW CHANNEL**

LOW CH BANDEDGE

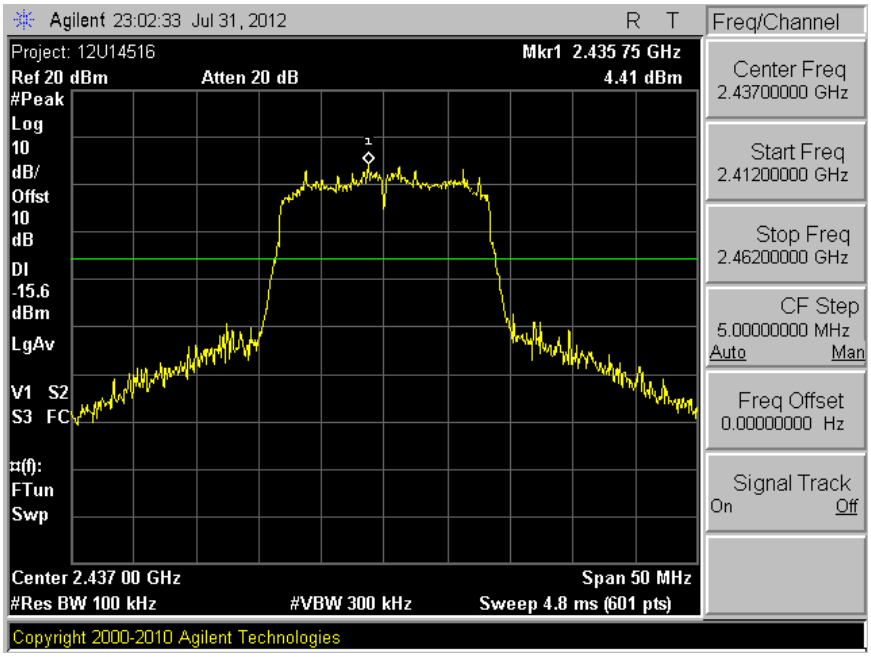


LOW CH SPURIOUS

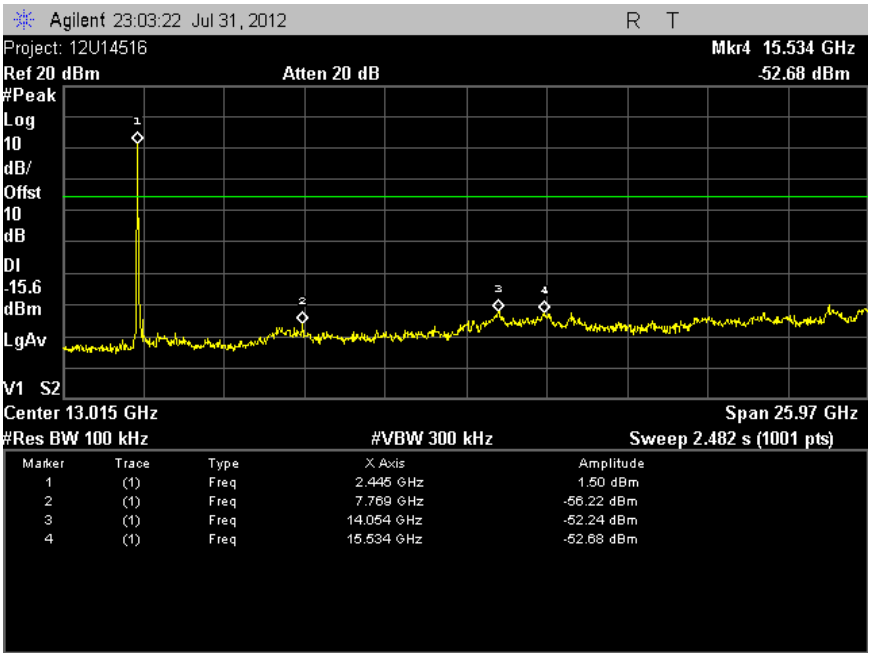


**SPURIOUS EMISSIONS, MID CHANNEL**

MID CH REFERENCE

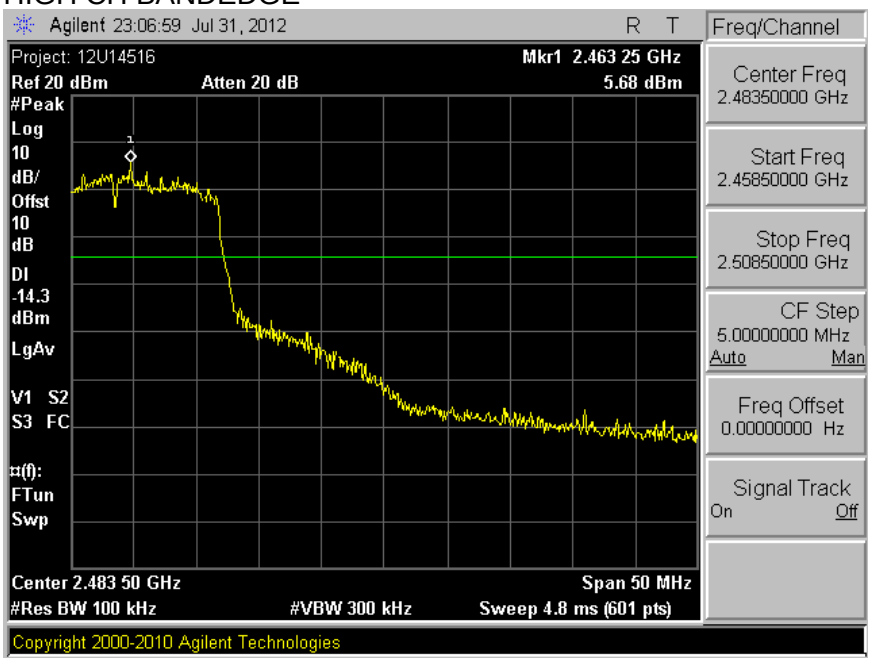


MID CH SPURIOUS

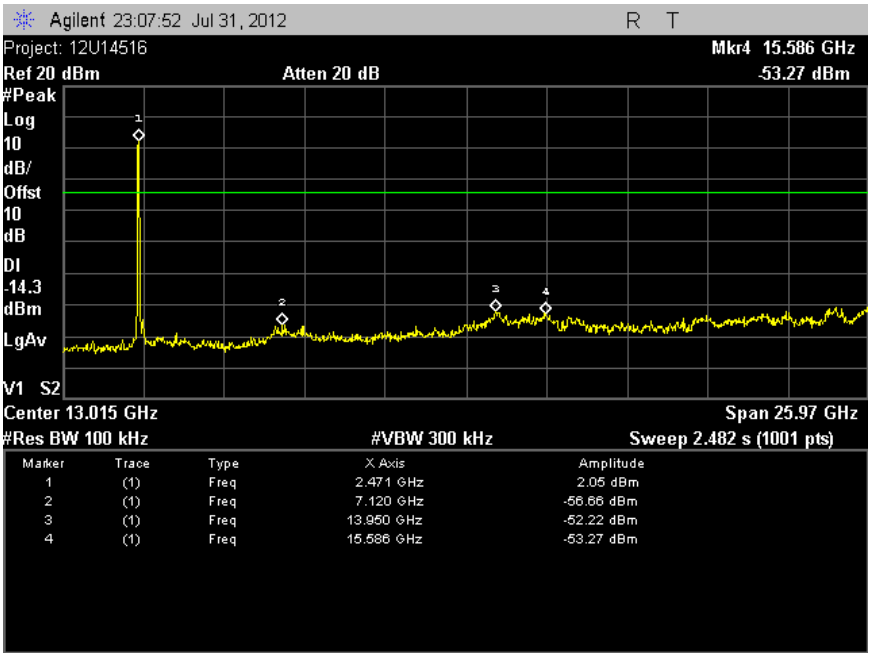


**SPURIOUS EMISSIONS, HIGH CHANNEL**

HIGH CH BANDEDGE



HIGH CH SPURIOUS



## 7.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

### 7.3.1. 6 dB BANDWIDTH

**LIMITS**

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

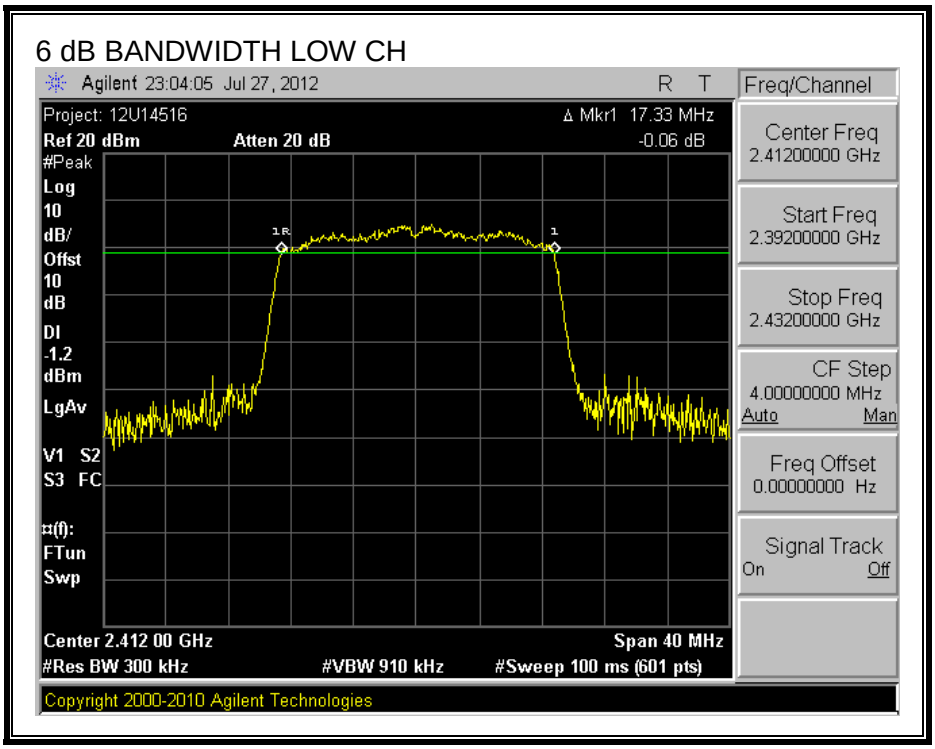
**TEST PROCEDURE**

The transmitter output is connected to a spectrum analyzer. The RBW is set to 1-5% of the 6dB BW and the VBW is set to ≥ 3 times the RBW. The sweep time is coupled.

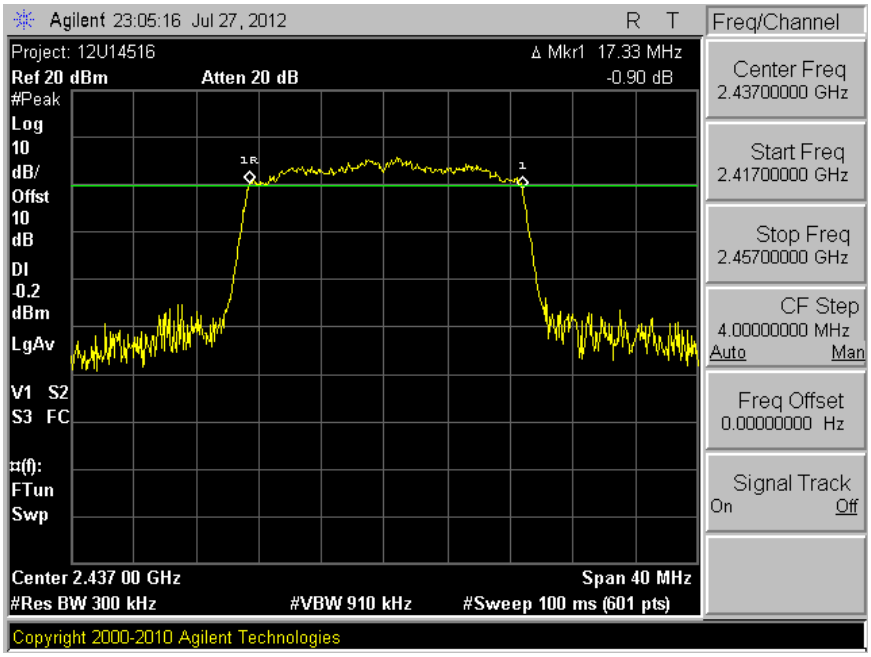
**RESULTS**

| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| Low | 2412 | 17.3300 | 0.5 |
| Middle | 2437 | 17.3300 | 0.5 |
| High | 2462 | 17.4000 | 0.5 |

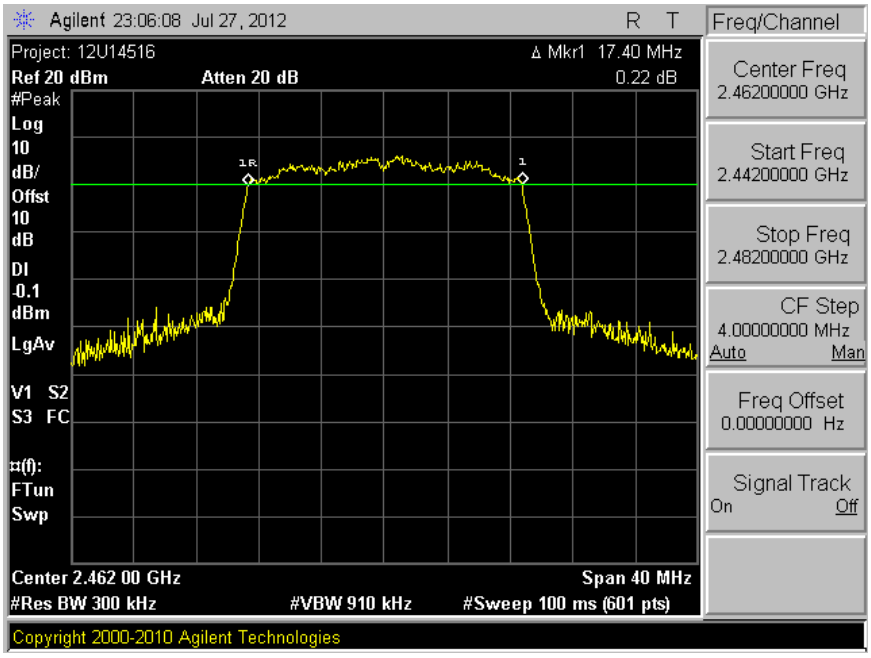
**6 dB BANDWIDTH**



6 dB BANDWIDTH MID CH



6 dB BANDWIDTH HIGH CH



### 7.3.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

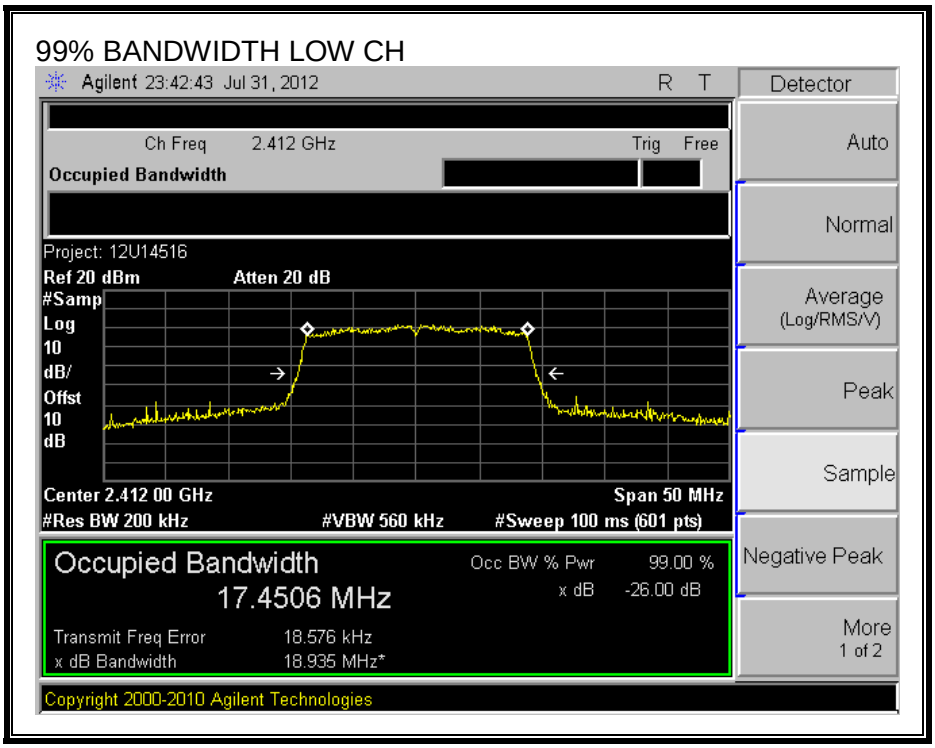
**TEST PROCEDURE**

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

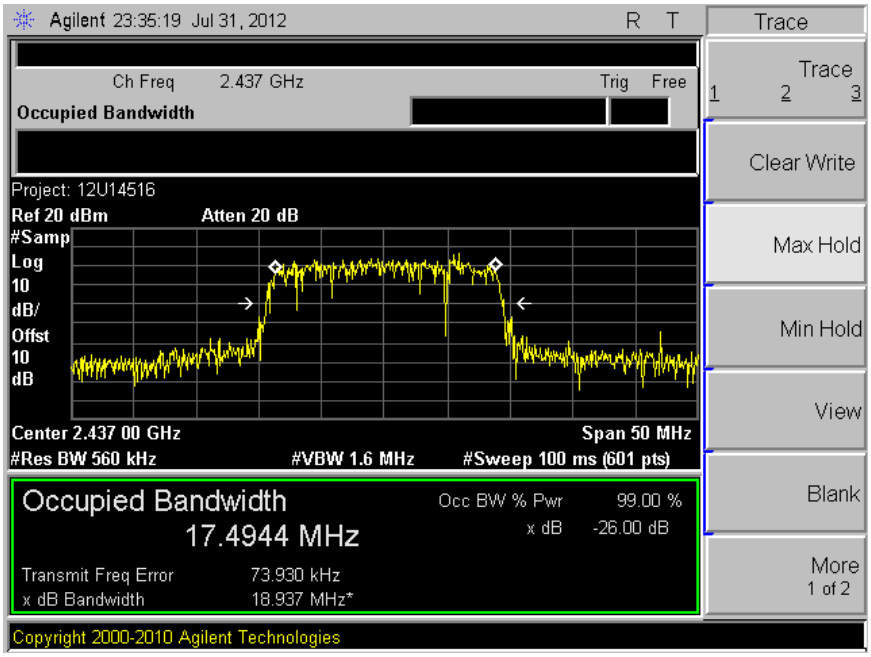
**RESULTS**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low | 2412 | 17.4506 |
| Middle | 2437 | 17.4944 |
| High | 2462 | 17.4531 |

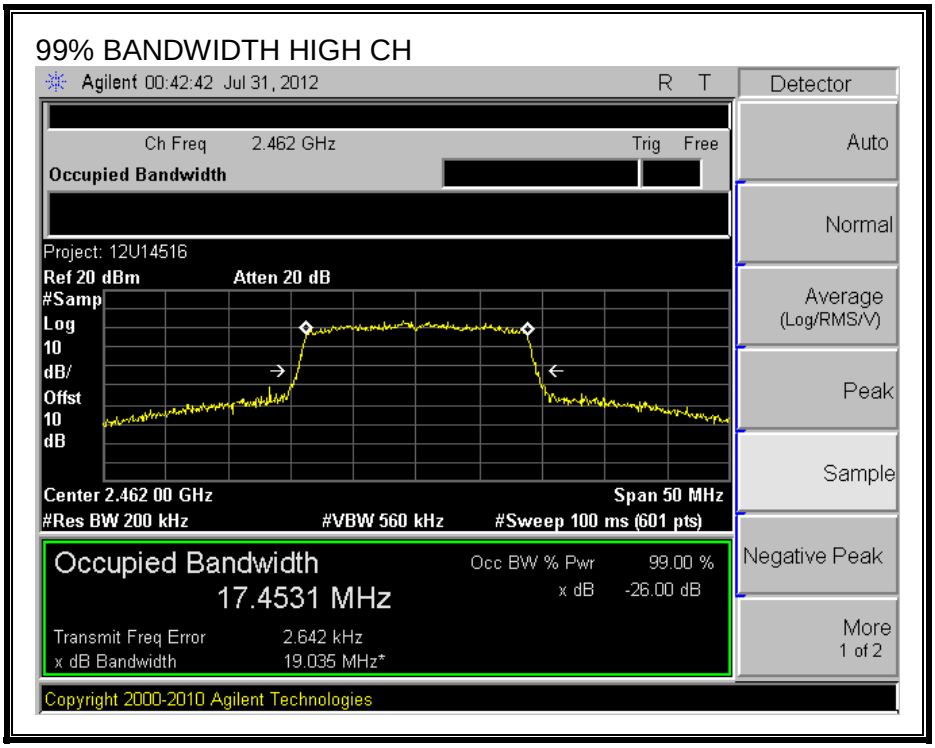
**99% BANDWIDTH**



99% BANDWIDTH MID CH



99% BANDWIDTH HIGH CH



## 7.3.3. OUTPUT POWER

**LIMITS**

FCC §15.247 (b)

IC RSS-210 A8.4

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

**TEST PROCEDURE**

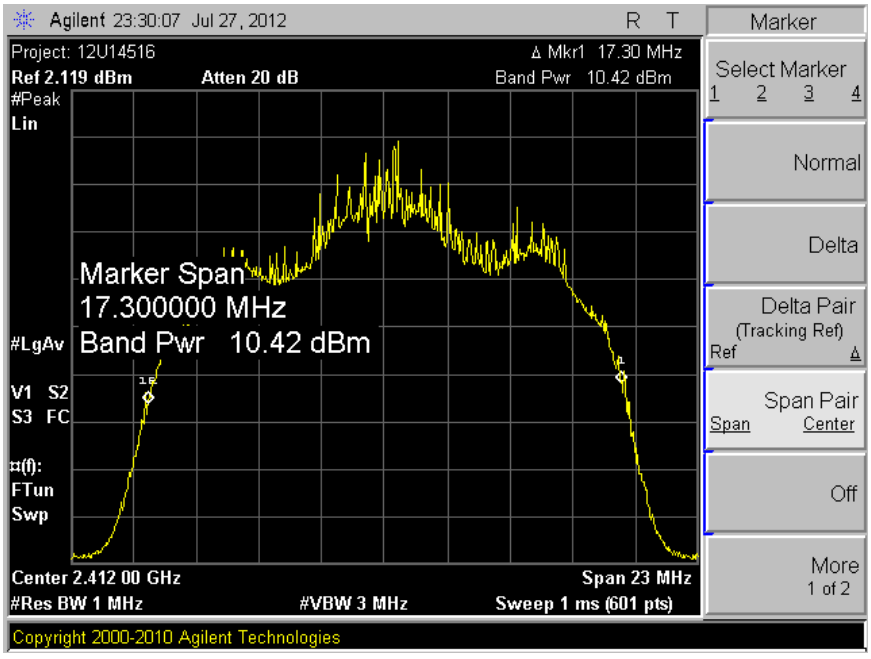
Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

**RESULTS**

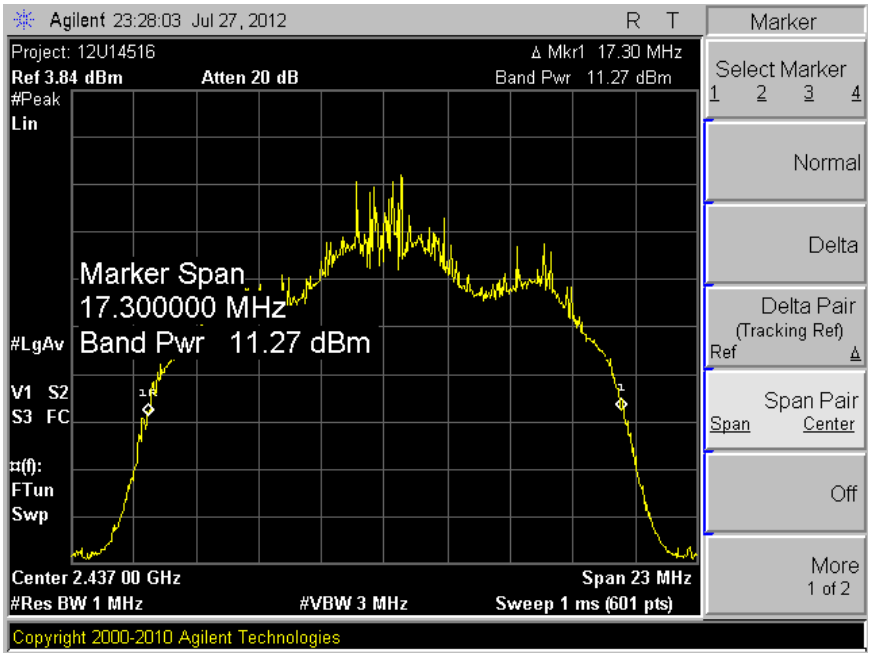
| Channel | Frequency (MHz) | Measured Reading (dBm) | Offset (dB) | Output Power (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 2412 | 10.42 | 10 | 20.42 | 30 | -9.58 |
| Middle | 2437 | 11.27 | 10 | 21.27 | 30 | -8.73 |
| High | 2462 | 11.51 | 10 | 21.51 | 30 | -8.49 |

**OUTPUT POWER**

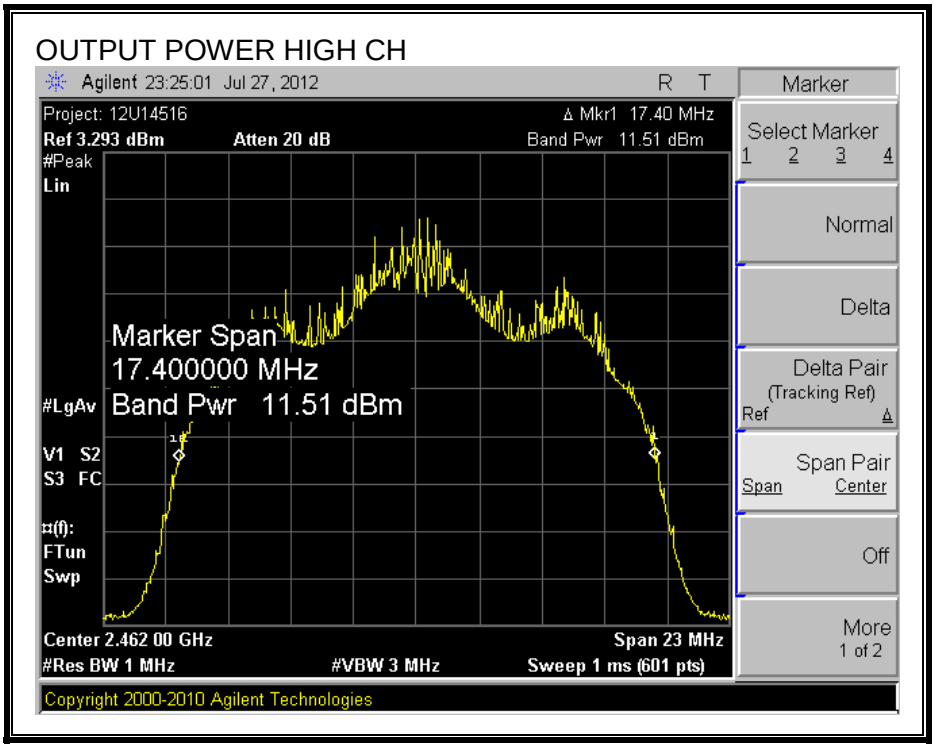
OUTPUT POWER LOW CH



OUTPUT POWER MID CH



OUTPUT POWER HIGH CH



## 7.3.4. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

**RESULTS**

The cable assembly insertion loss of 10 dB (including 10 dB pad and 0 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

| Channel | Frequency (MHz) | Power (dBm) |
|---|---|---|
| Low | 2412 | 12.70 |
| Middle | 2437 | 13.40 |
| High | 2462 | 13.90 |

## 7.3.5. POWER SPECTRAL DENSITY

**LIMITS**

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

**TEST PROCEDURE**

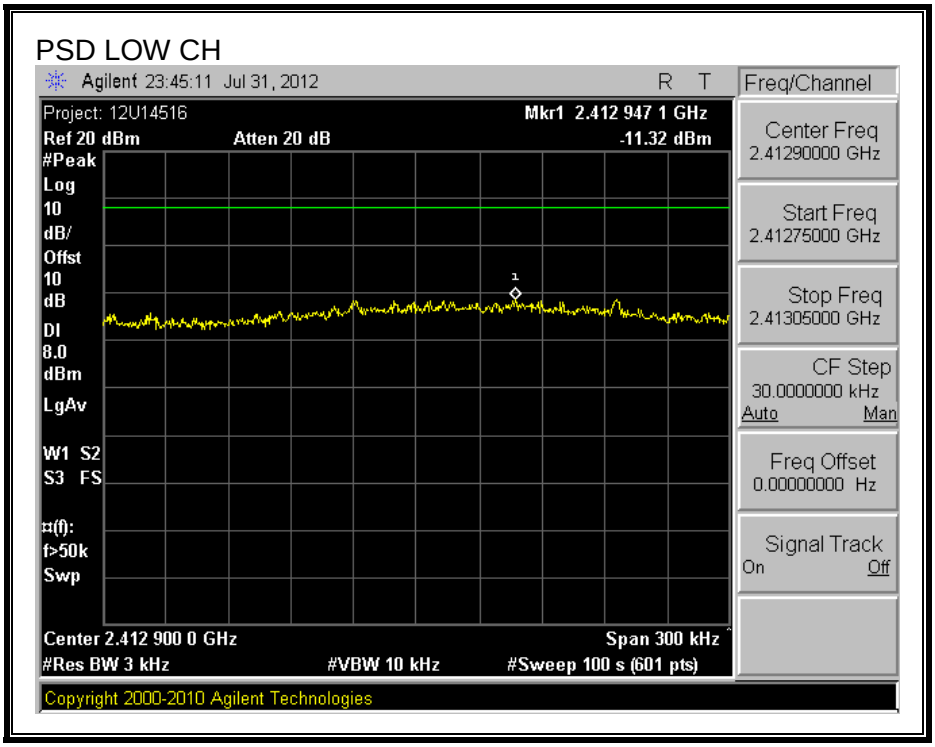
Output power was measured based on the use of a peak measurement, therefore the power spectral density was measured using PSD Option 1 in accordance with FCC document "Measurement of Digital Transmission Systems Operating under Section 15.247", March 23, 2005.

**RESULTS**

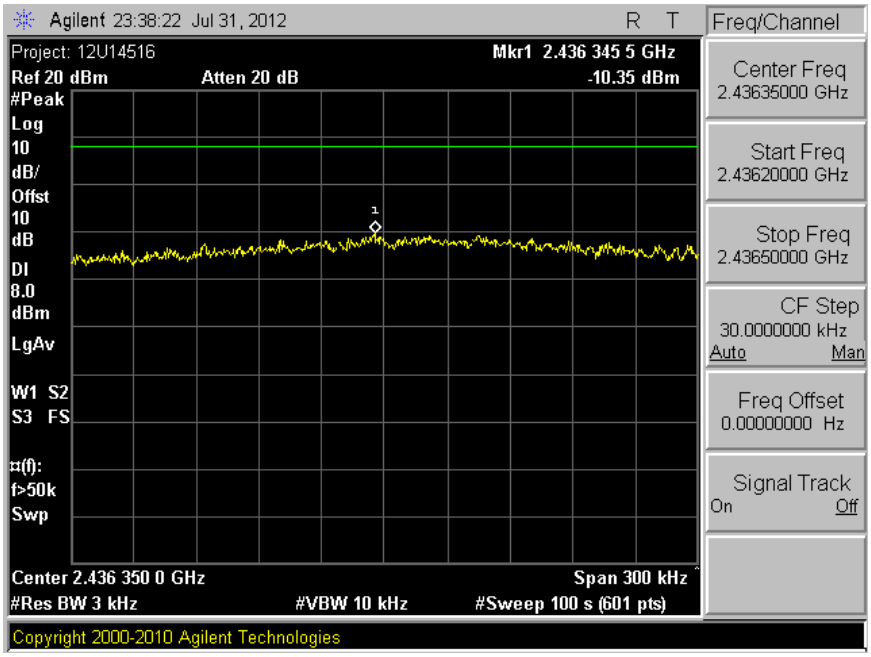
| Channel | Frequency (MHz) | PPSD (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|
| Low | 2412 | -11.32 | 8 | -19.32 |
| Middle | 2437 | -10.35 | 8 | -18.35 |
| High | 2462 | -10.08 | 8 | -18.08 |

**POWER SPECTRAL DENSITY**

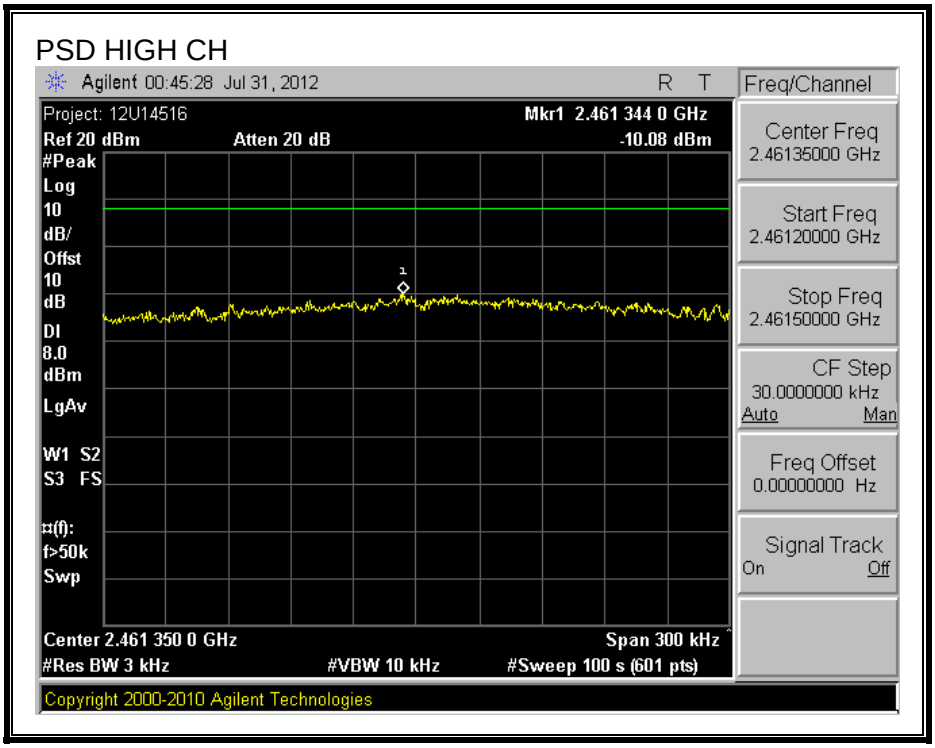
PSD LOW CH



PSD MID CH



PSD HIGH CH



## 7.3.6. CONDUCTED SPURIOUS EMISSIONS

**LIMITS**

FCC §15.247 (d)

IC RSS-210 A8.5

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

**TEST PROCEDURE**

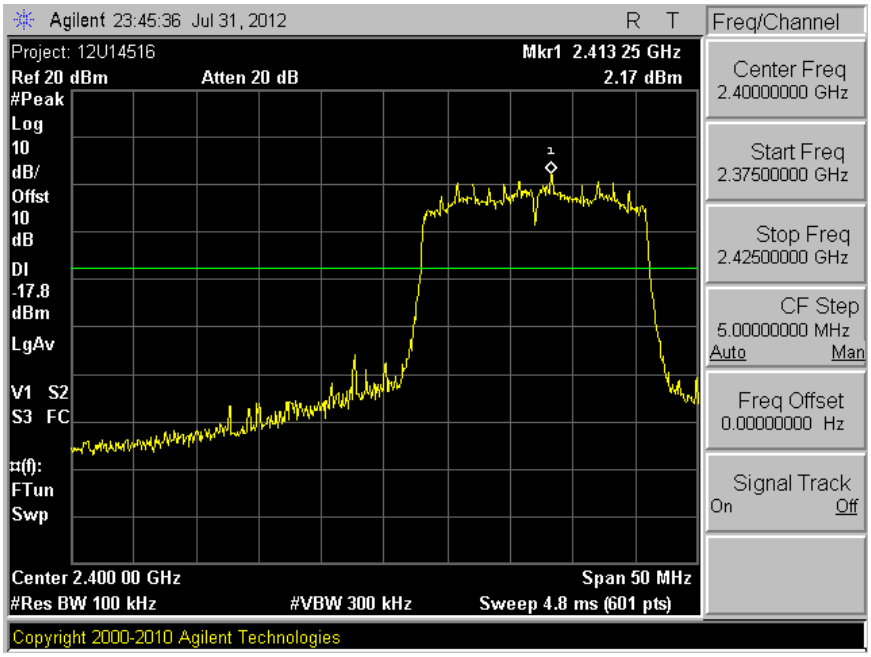
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

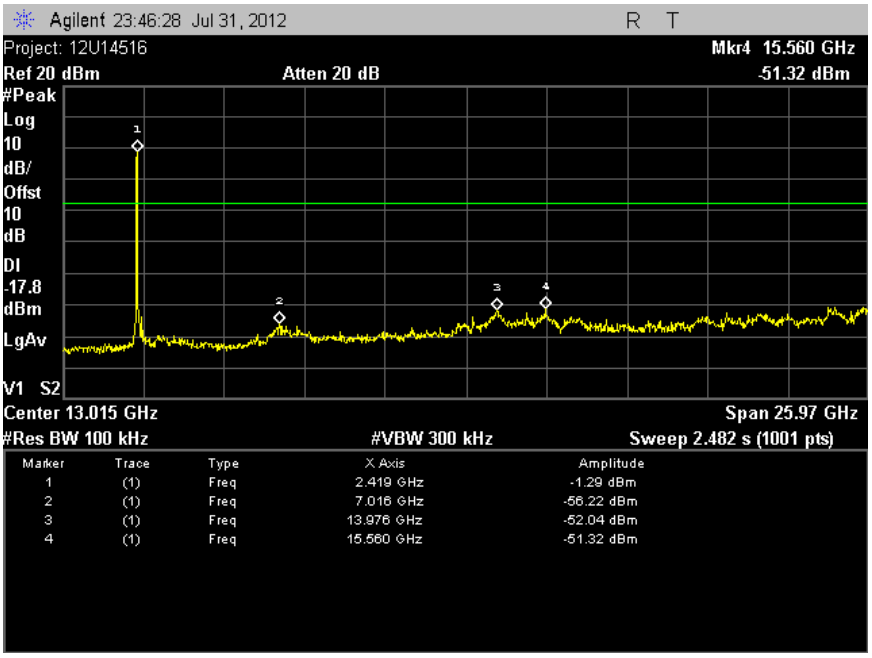
**RESULTS**

**SPURIOUS EMISSIONS, LOW CHANNEL**

LOW CH BANDEDGE

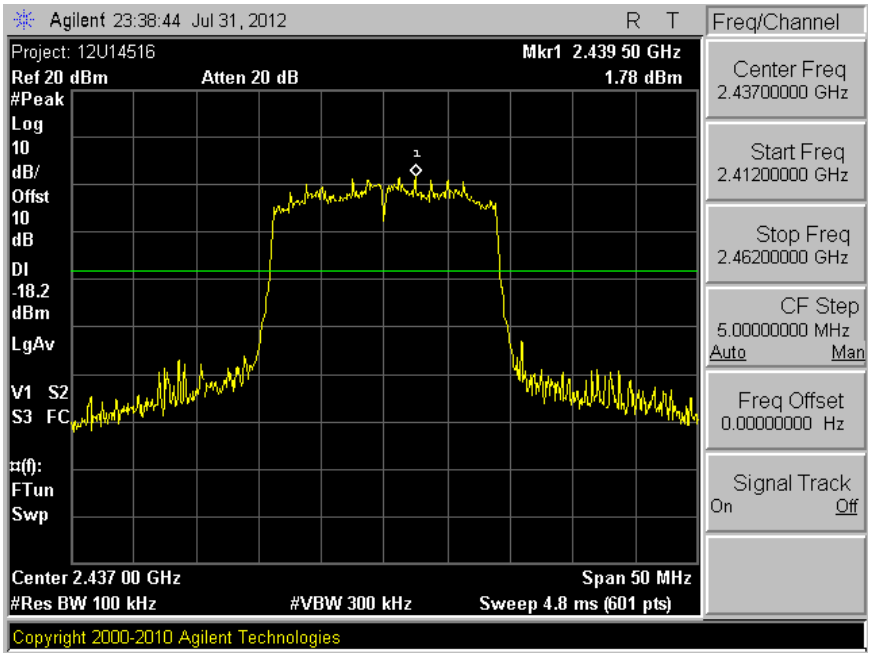


LOW CH SPURIOUS

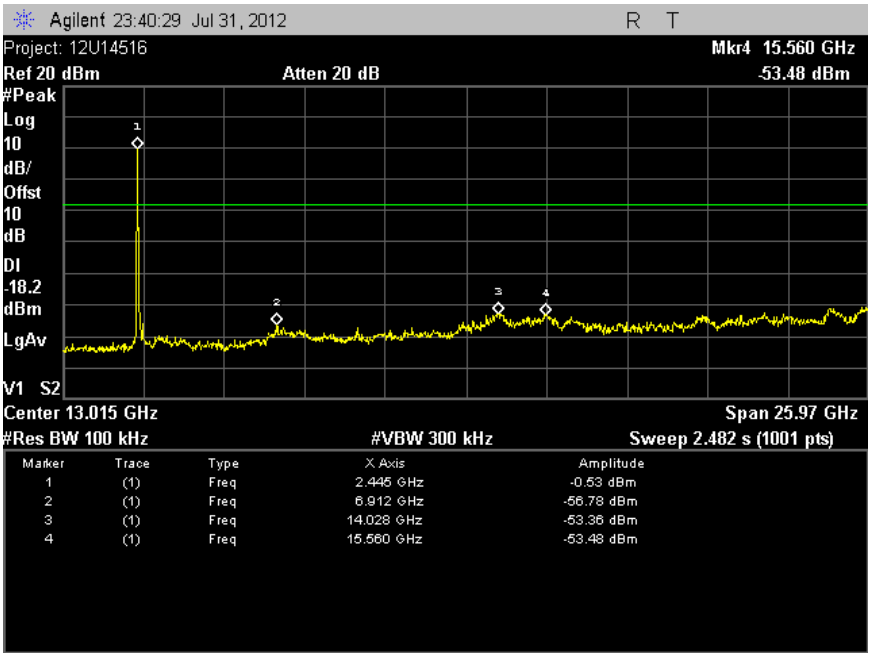


**SPURIOUS EMISSIONS, MID CHANNEL**

MID CH REFERENCE

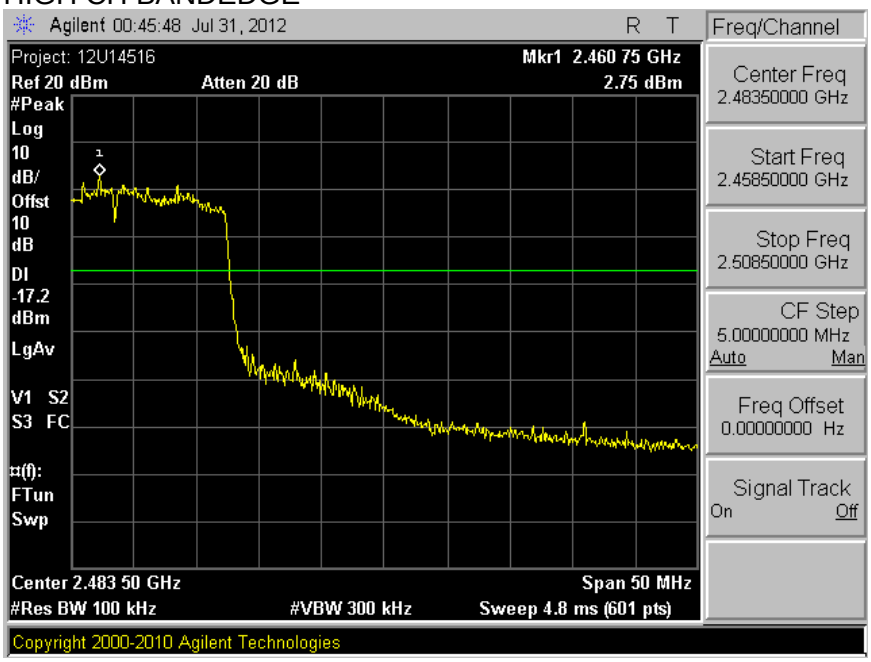


MID CH SPURIOUS

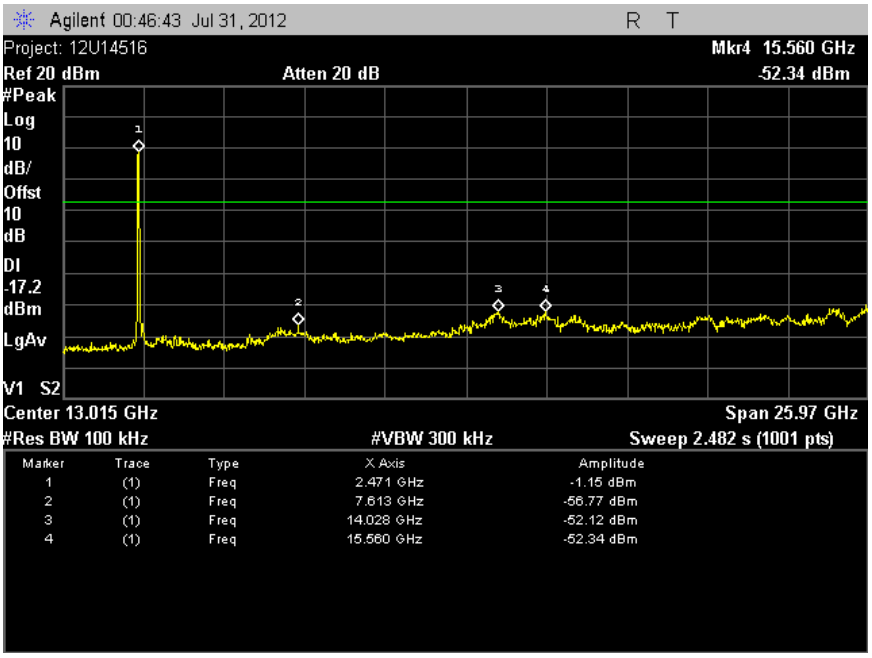


**SPURIOUS EMISSIONS, HIGH CHANNEL**

HIGH CH BANDEDGE



HIGH CH SPURIOUS



# 7.4. 802.11a MODE IN THE 5.8 GHz BAND

## 7.4.1. 6 dB BANDWIDTH

**LIMITS**

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

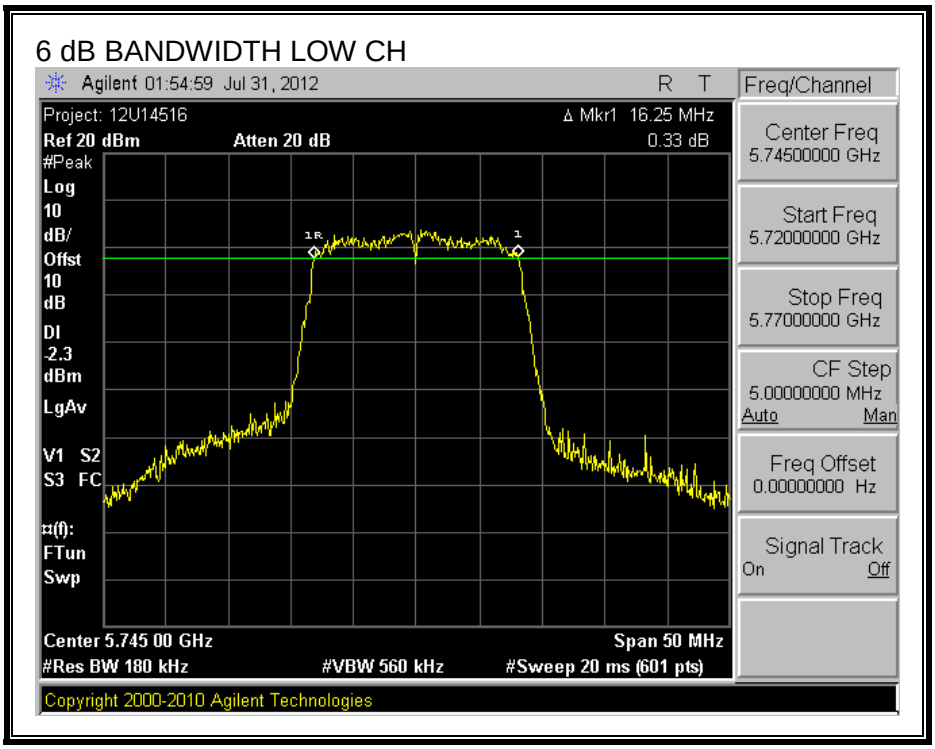
**TEST PROCEDURE**

The transmitter output is connected to a spectrum analyzer. The RBW is set to 1-5% of the 6dB BW and the VBW is set to ≥ 3 times the RBW. The sweep time is coupled.

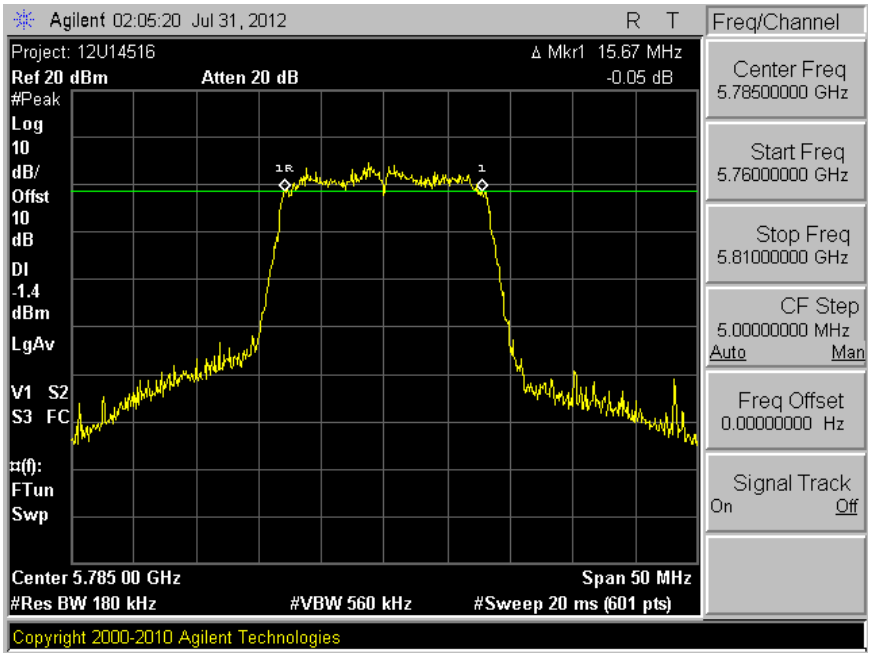
**RESULTS**

| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| Low | 5745 | 16.25 | 0.5 |
| Middle | 5785 | 15.67 | 0.5 |
| High | 5825 | 16.25 | 0.5 |

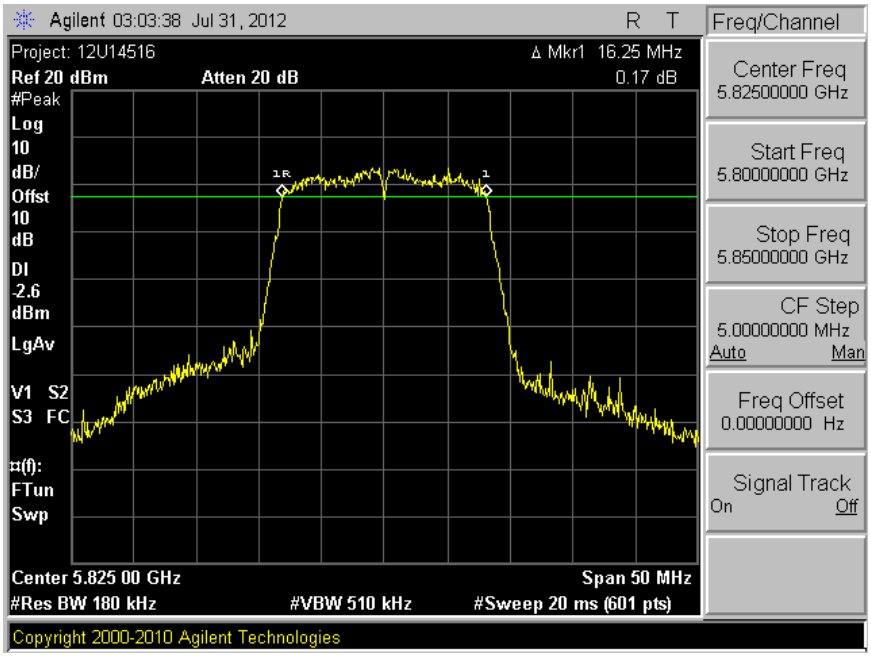
**6 dB BANDWIDTH**



6 dB BANDWIDTH MID CH



6 dB BANDWIDTH HIGH CH



### 7.4.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

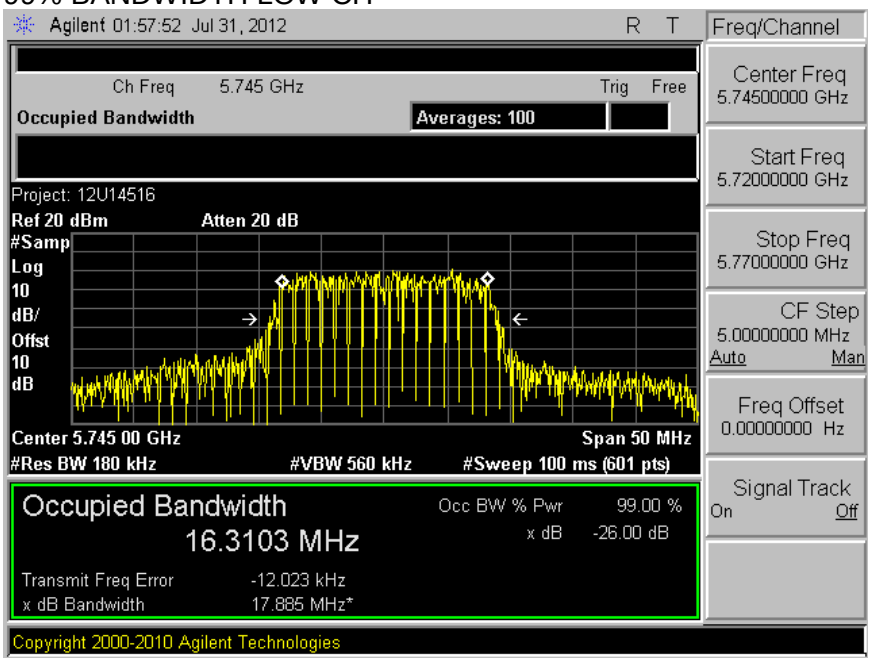
The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

**RESULTS**

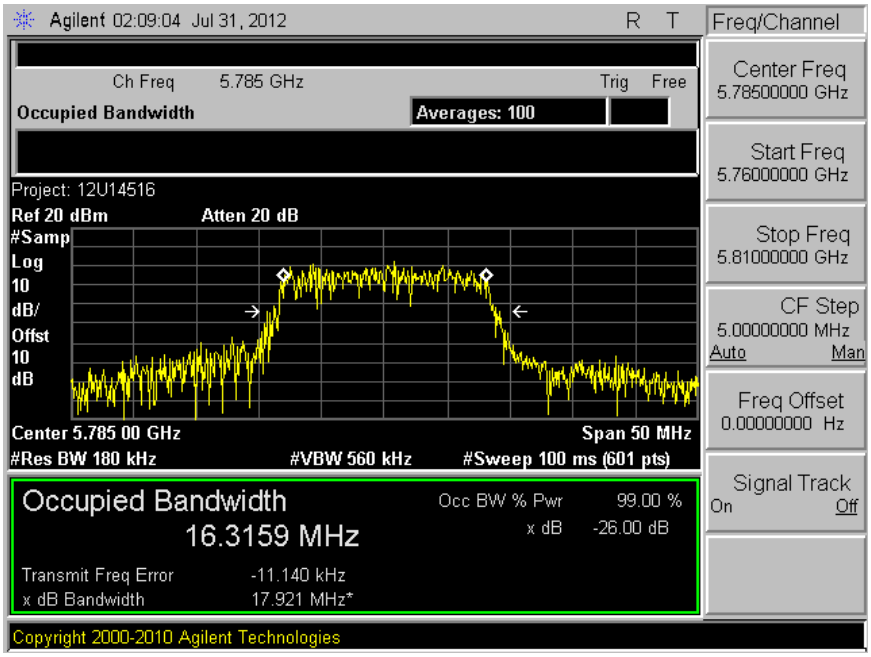
| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low | 5745 | 16.3103 |
| Middle | 5785 | 16.3159 |
| High | 5825 | 16.3034 |

**99% BANDWIDTH**

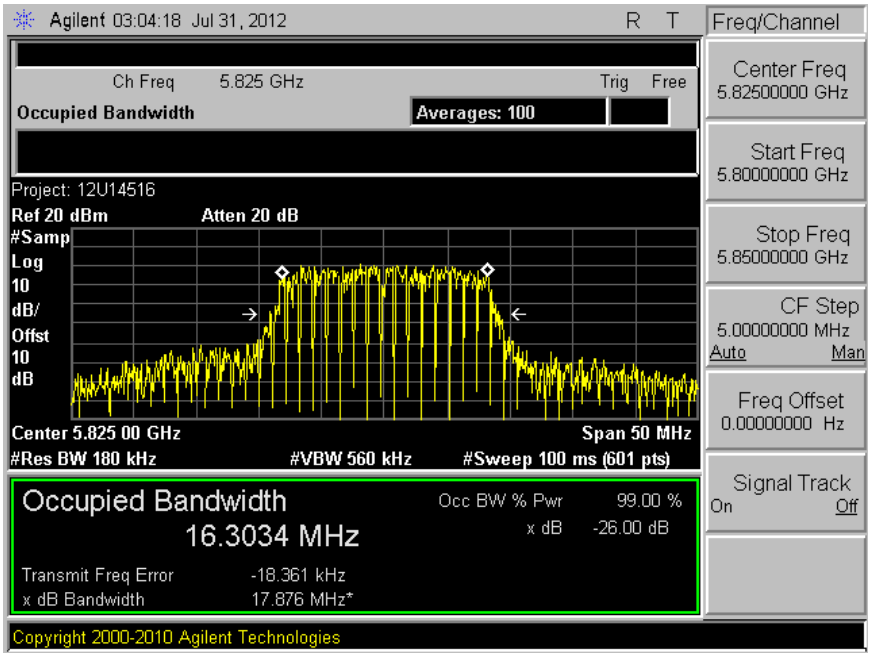
99% BANDWIDTH LOW CH



99% BANDWIDTH MID CH



99% BANDWIDTH HIGH CH



## 7.4.3. OUTPUT POWER

**LIMITS**

FCC §15.247 (b)

IC RSS-210 A8.4

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

**TEST PROCEDURE**

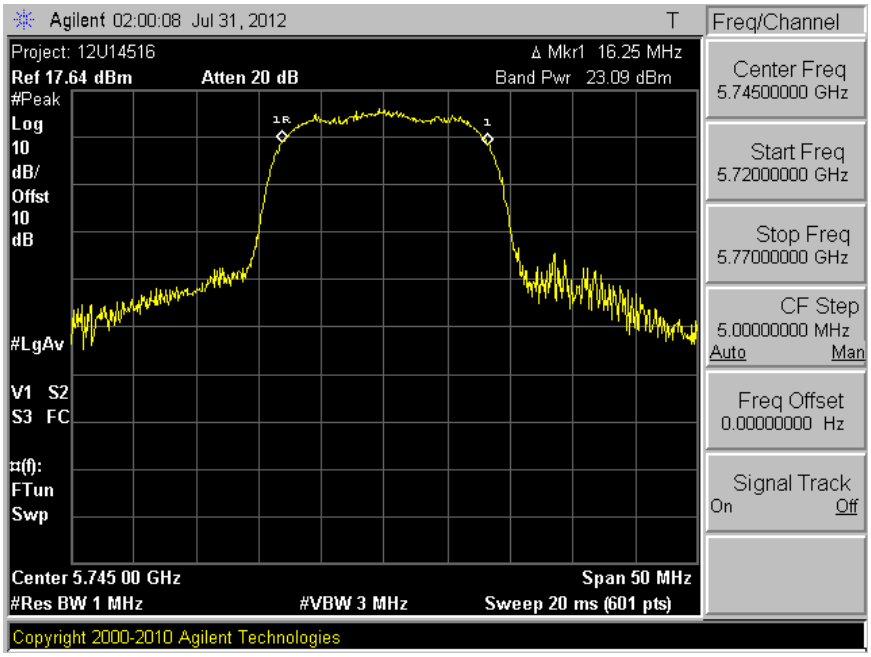
Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

**RESULTS**

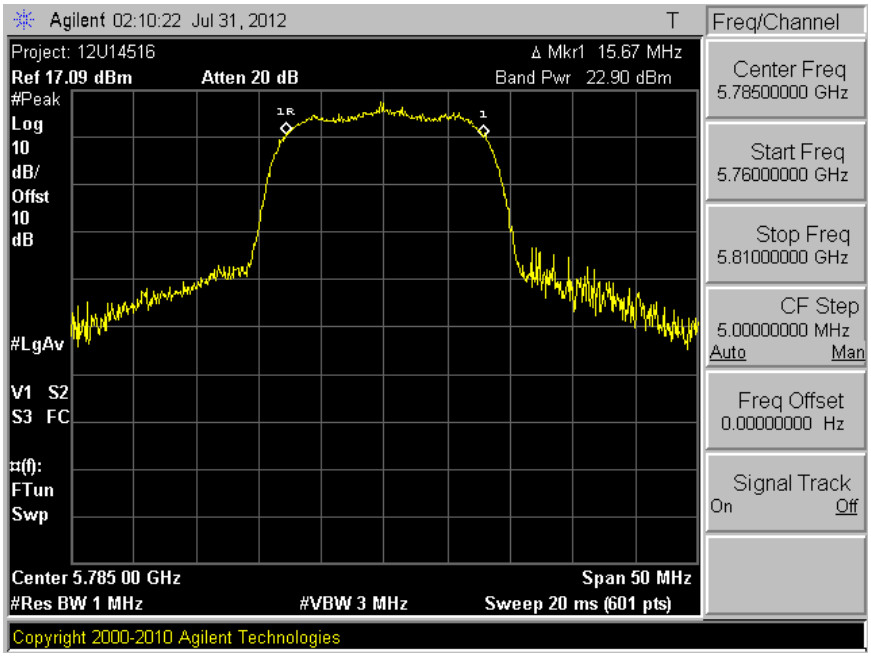
| Channel | Frequency (MHz) | Output Power (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|
| Low | 5745 | 23.09 | 30 | -6.91 |
| Middle | 5785 | 22.90 | 30 | -7.10 |
| High | 5825 | 22.93 | 30 | -7.07 |

**OUTPUT POWER**

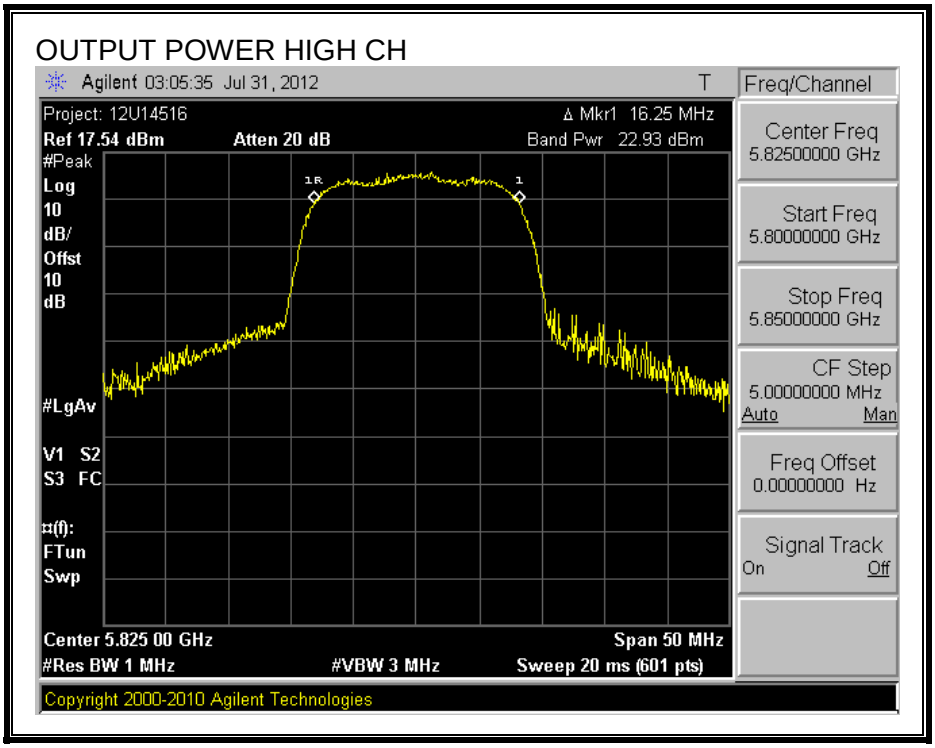
OUTPUT POWER LOW CH



OUTPUT POWER MID CH



OUTPUT POWER HIGH CH



## 7.4.4. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

**RESULTS**

The cable assembly insertion loss of 10 dB (including 10 dB pad and 0 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

| Channel | Frequency (MHz) | Power (dBm) |
|---|---|---|
| Low | 5745 | 14.00 |
| Middle | 5785 | 13.90 |
| High | 5825 | 13.80 |

## 7.4.5. POWER SPECTRAL DENSITY

**LIMITS**

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

**TEST PROCEDURE**

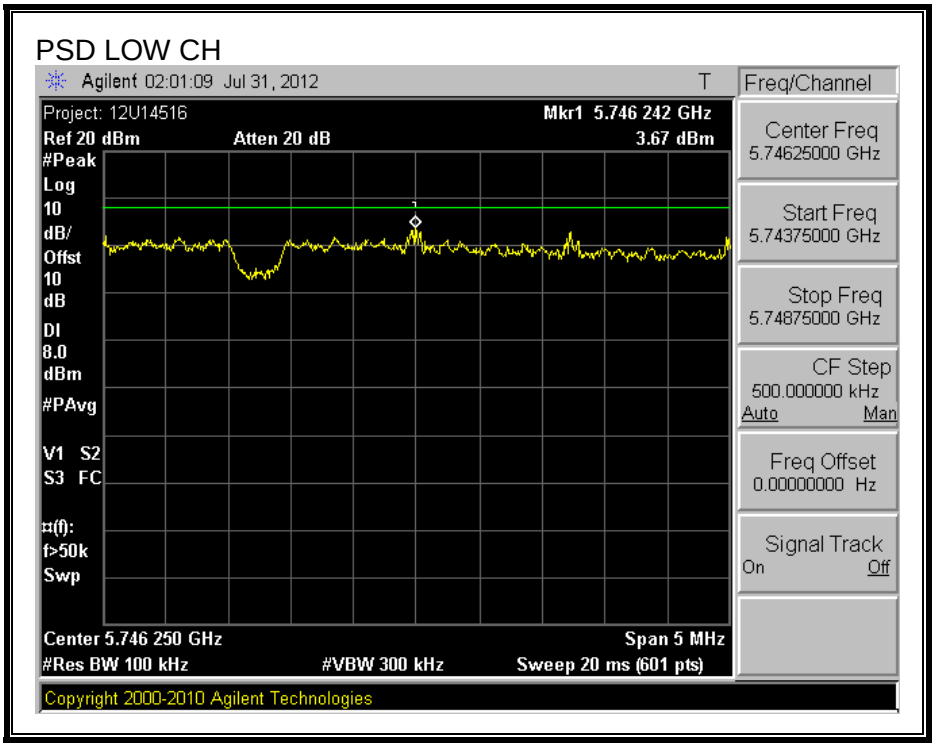
KDB 558074 dated 01/18/12.

**RESULTS**

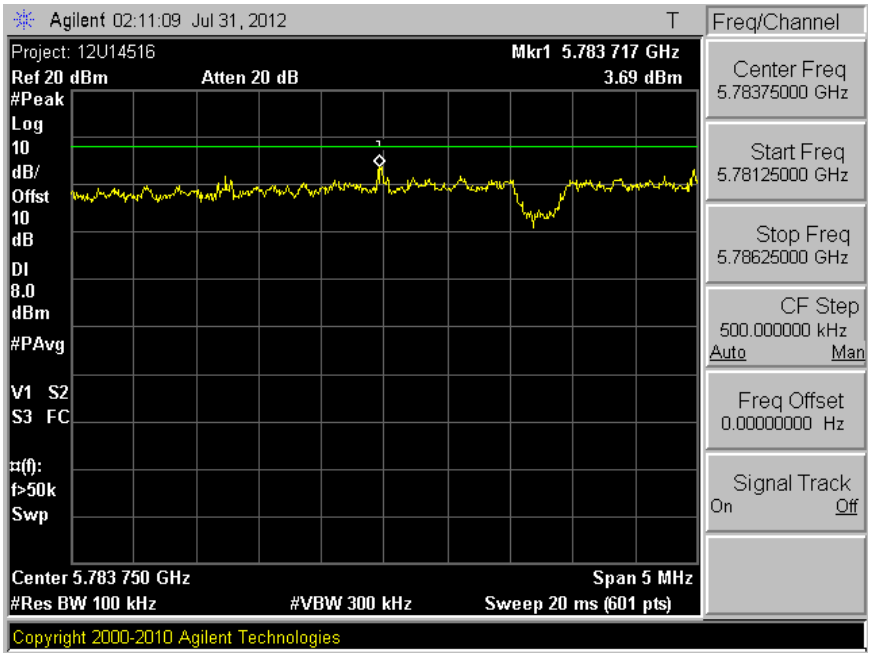
| Channel | Frequency (MHz) | Marker Reading | 10 log(3kHz/100kHz) | PPSD (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5745 | 3.67 | 15.2 | -11.53 | 8 | -19.53 |
| Middle | 5785 | 3.69 | 15.2 | -11.51 | 8 | -19.51 |
| High | 5825 | 2.54 | 15.2 | -12.66 | 8 | -20.66 |

**POWER SPECTRAL DENSITY**

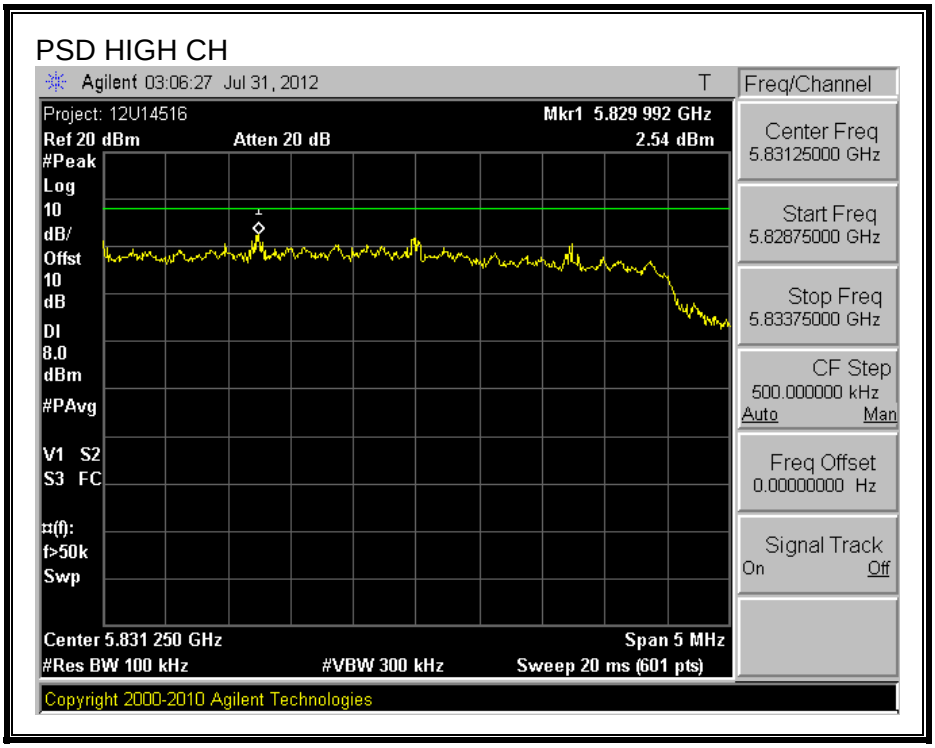
PSD LOW CH



PSD MID CH



PSD HIGH CH



## 7.4.6. CONDUCTED SPURIOUS EMISSIONS

**LIMITS**

FCC §15.247 (d)

IC RSS-210 A8.5

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

**TEST PROCEDURE**

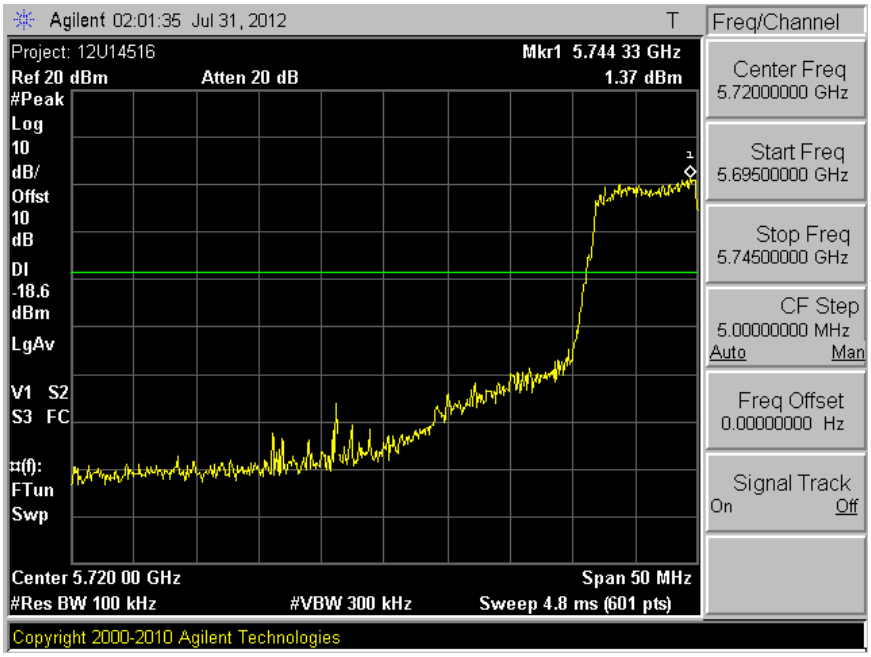
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

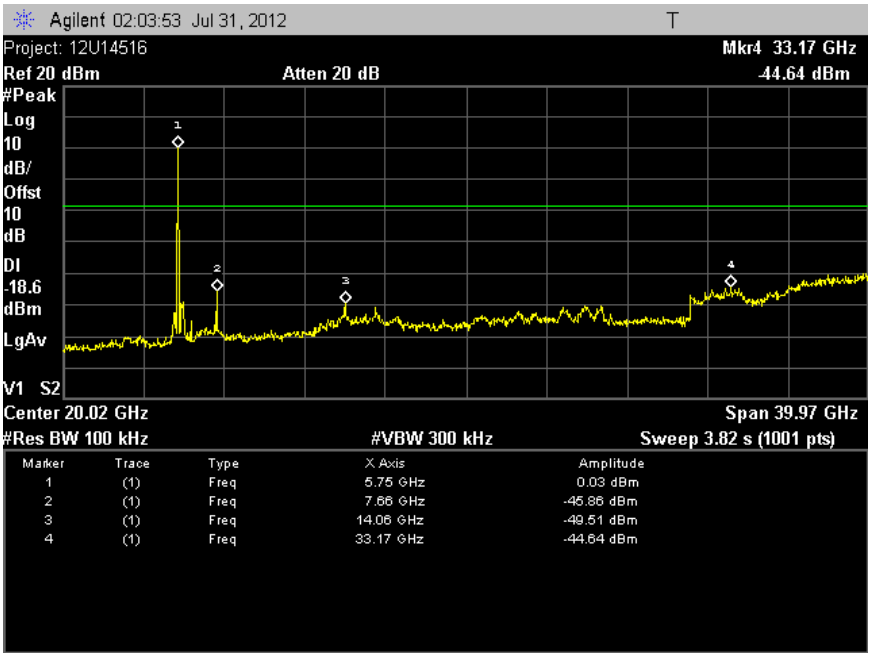
## RESULTS

## SPURIOUS EMISSIONS, LOW CHANNEL

LOW CH BANDEDGE

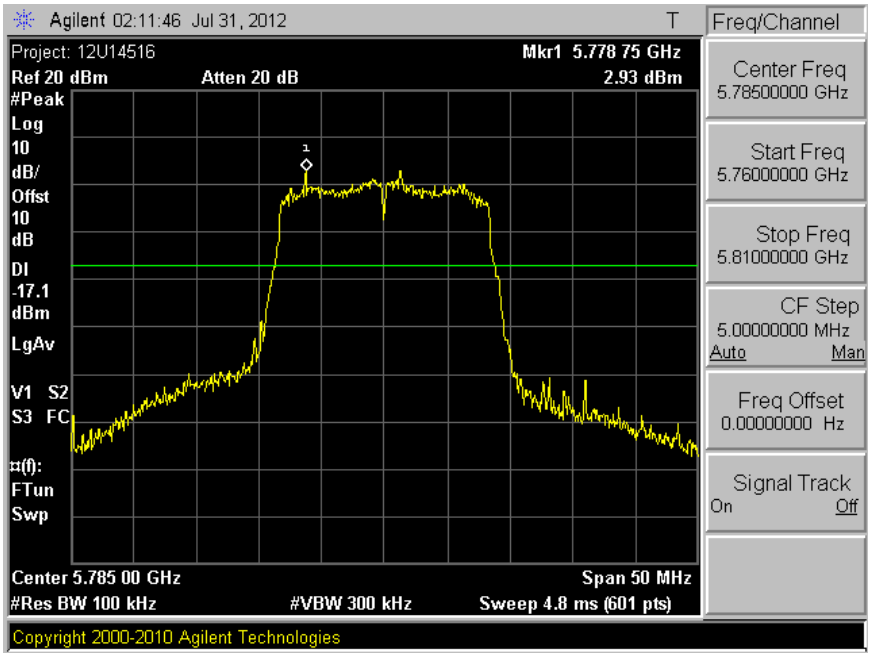


LOW CH SPURIOUS

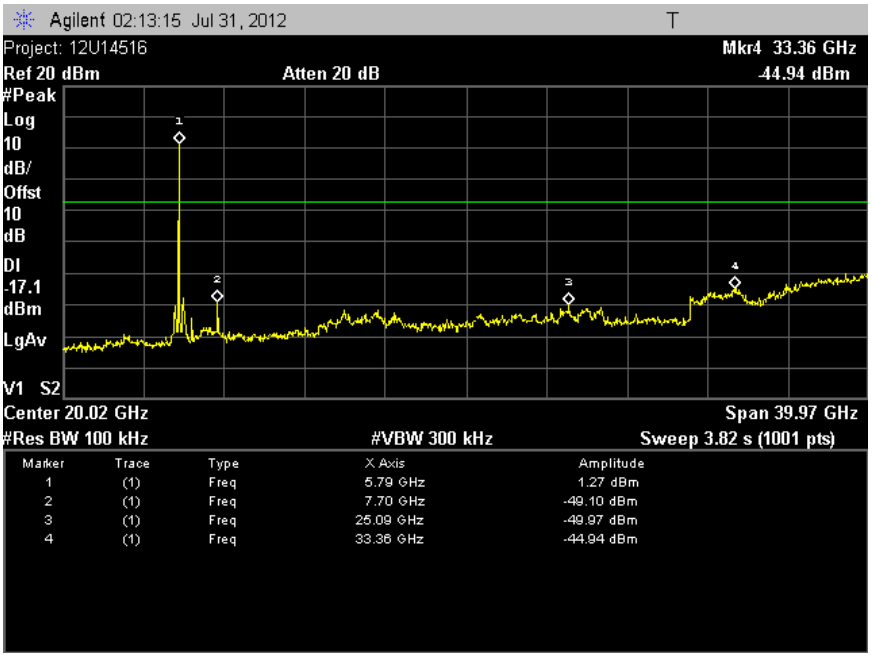


**SPURIOUS EMISSIONS, MID CHANNEL**

MID CH REFERENCE

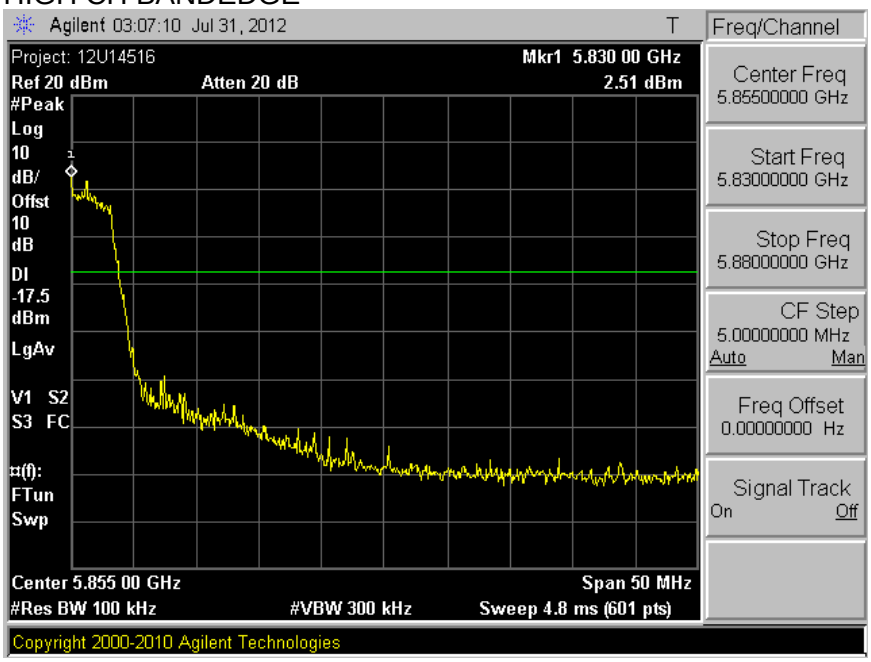


MID CH SPURIOUS

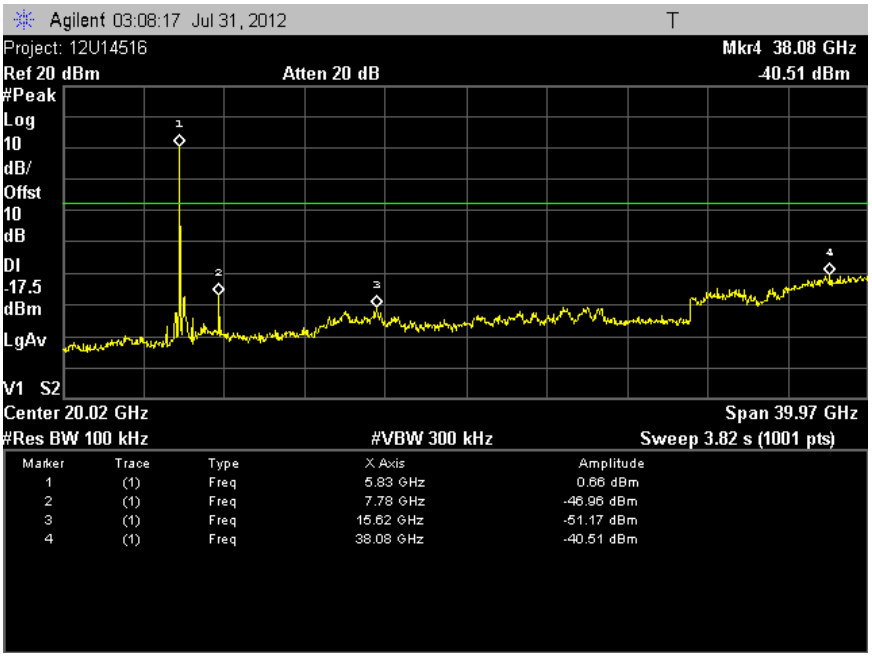


**SPURIOUS EMISSIONS, HIGH CHANNEL**

HIGH CH BANDEDGE



HIGH CH SPURIOUS



# 7.5. 802.11n HT20 MODE IN THE 5.8 GHz BAND

## 7.5.1. 6 dB BANDWIDTH

**LIMITS**

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

**TEST PROCEDURE**

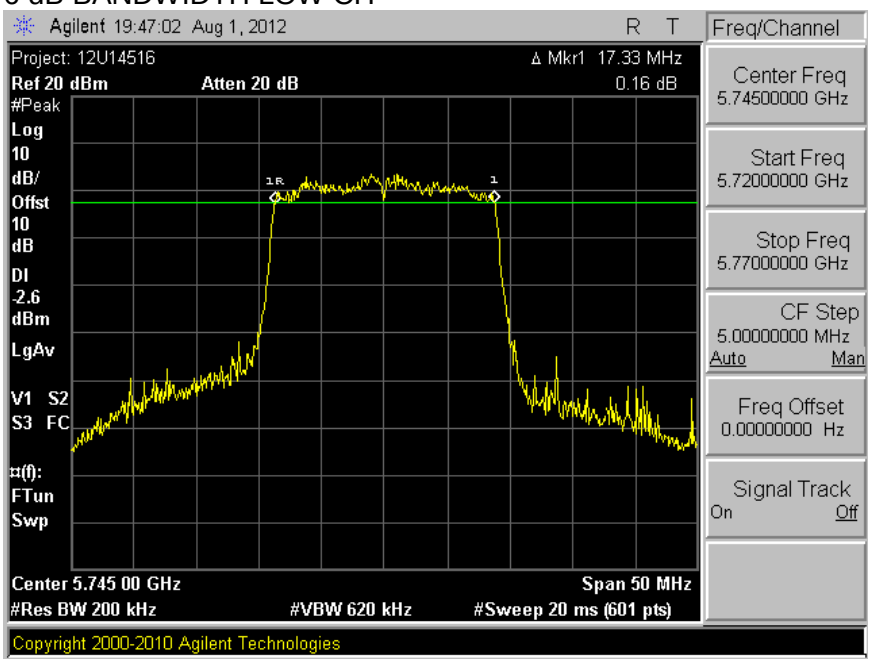
The transmitter output is connected to a spectrum analyzer. The RBW is set to 1-5% of the 6dB BW and the VBW is set to ≥ 3 times the RBW. The sweep time is coupled.

**RESULTS**

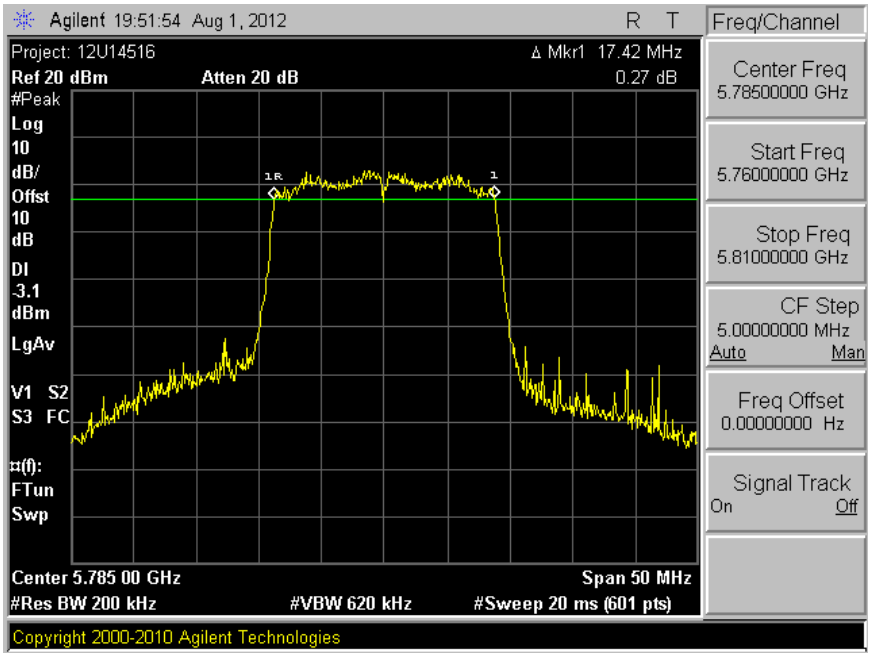
| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | Minimum Limit (MHz) |
|---|---|---|---|
| Low | 5745 | 17.33 | 0.5 |
| Middle | 5785 | 17.42 | 0.5 |
| High | 5825 | 17.33 | 0.5 |

**6 dB BANDWIDTH**

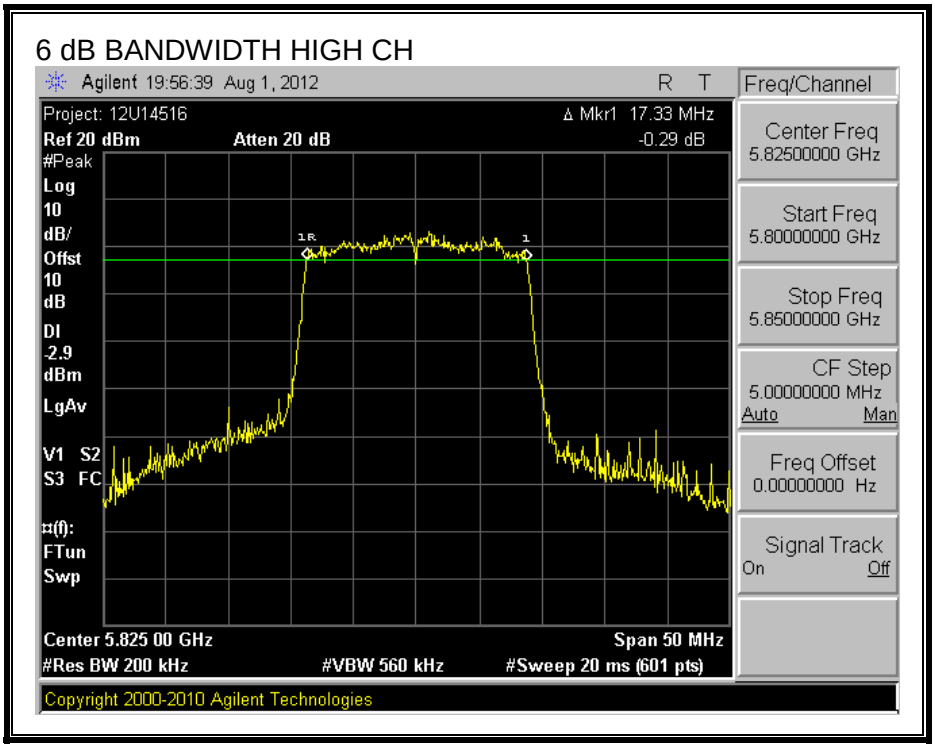
6 dB BANDWIDTH LOW CH



6 dB BANDWIDTH MID CH



6 dB BANDWIDTH HIGH CH



### 7.5.2. 99% BANDWIDTH

**LIMITS**

None; for reporting purposes only.

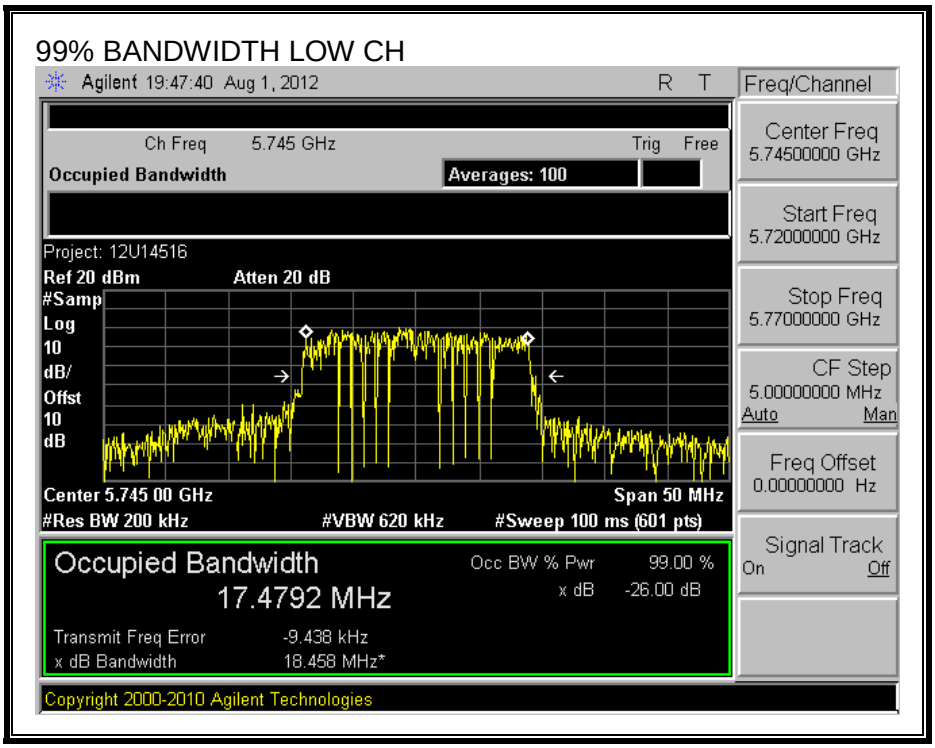
**TEST PROCEDURE**

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

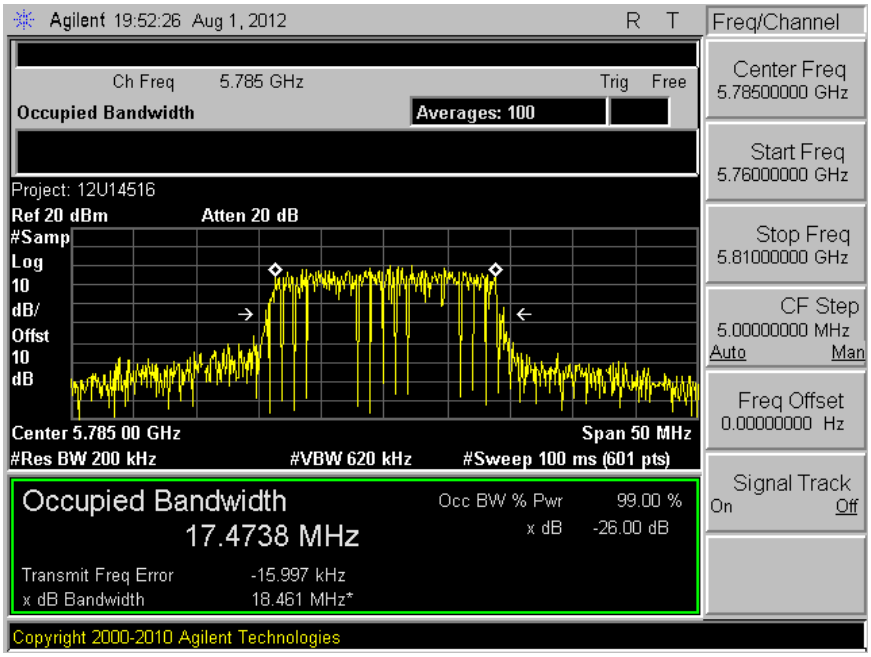
**RESULTS**

| Channel | Frequency (MHz) | 99% Bandwidth (MHz) |
|---|---|---|
| Low | 5745 | 17.4792 |
| Middle | 5785 | 17.4738 |
| High | 5825 | 17.47 |

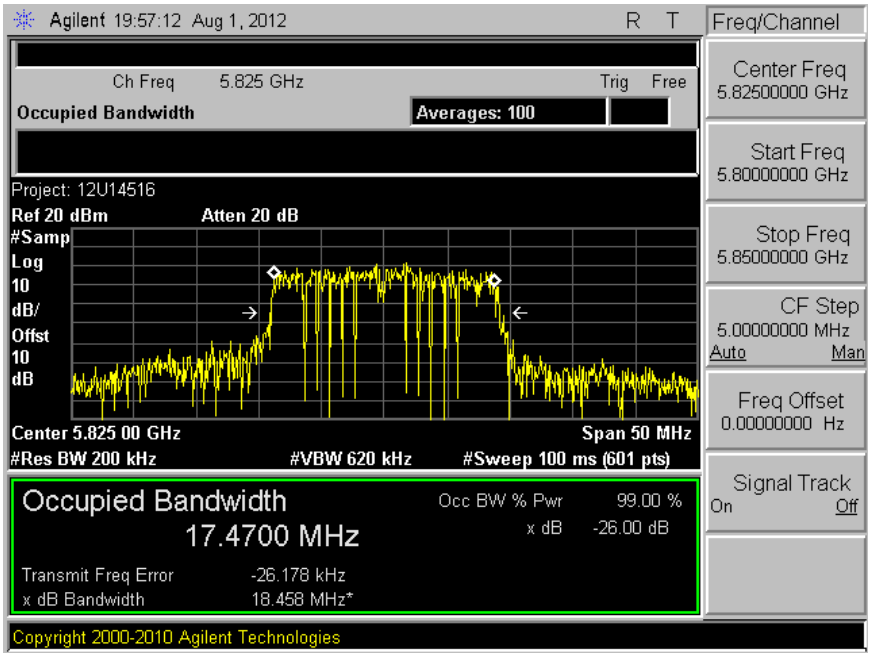
**99% BANDWIDTH**



99% BANDWIDTH MID CH



99% BANDWIDTH HIGH CH



## 7.5.3. OUTPUT POWER

**LIMITS**

FCC §15.247 (b)

IC RSS-210 A8.4

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

**TEST PROCEDURE**

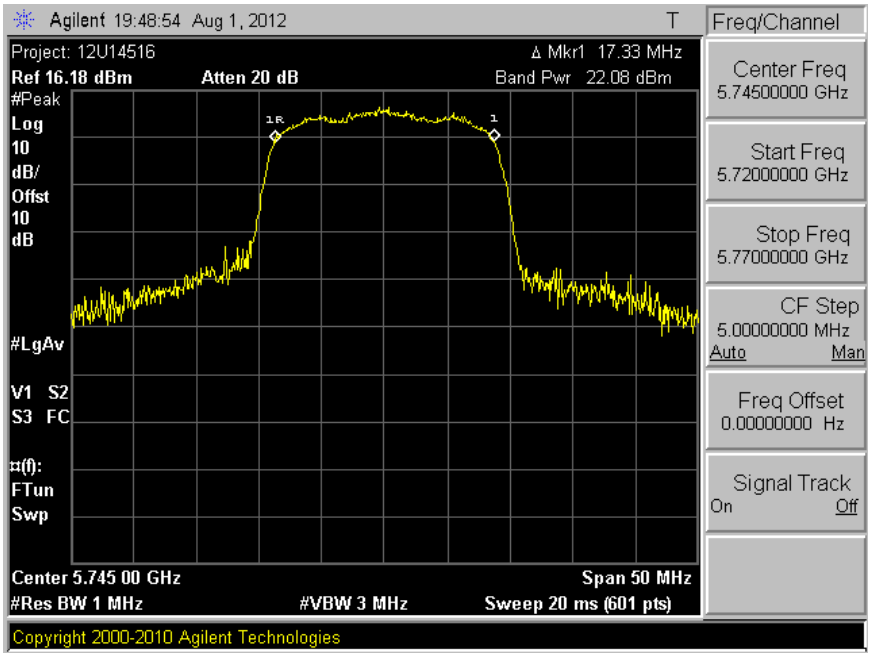
Peak power is measured using the Channel bandwidth Alternative peak output power procedure specified in "TCB Training for Devices covered under Scopes A1 - A4" by Joe Dichoso, May 2003.

**RESULTS**

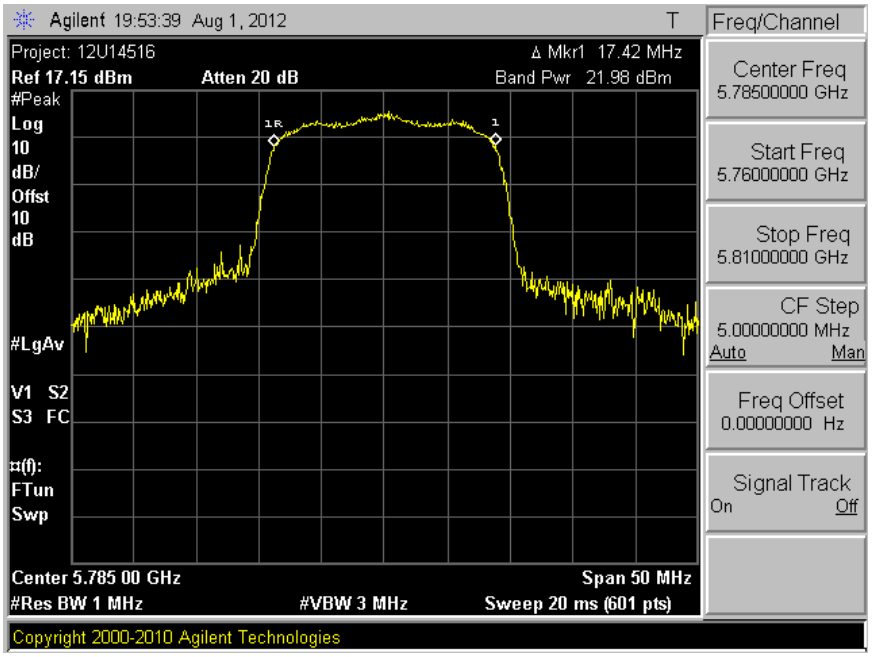
| Channel | Frequency (MHz) | Output Power (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|
| Low | 5745 | 22.08 | 30 | -7.92 |
| Middle | 5785 | 21.98 | 30 | -8.02 |
| High | 5825 | 21.89 | 30 | -8.11 |

**OUTPUT POWER**

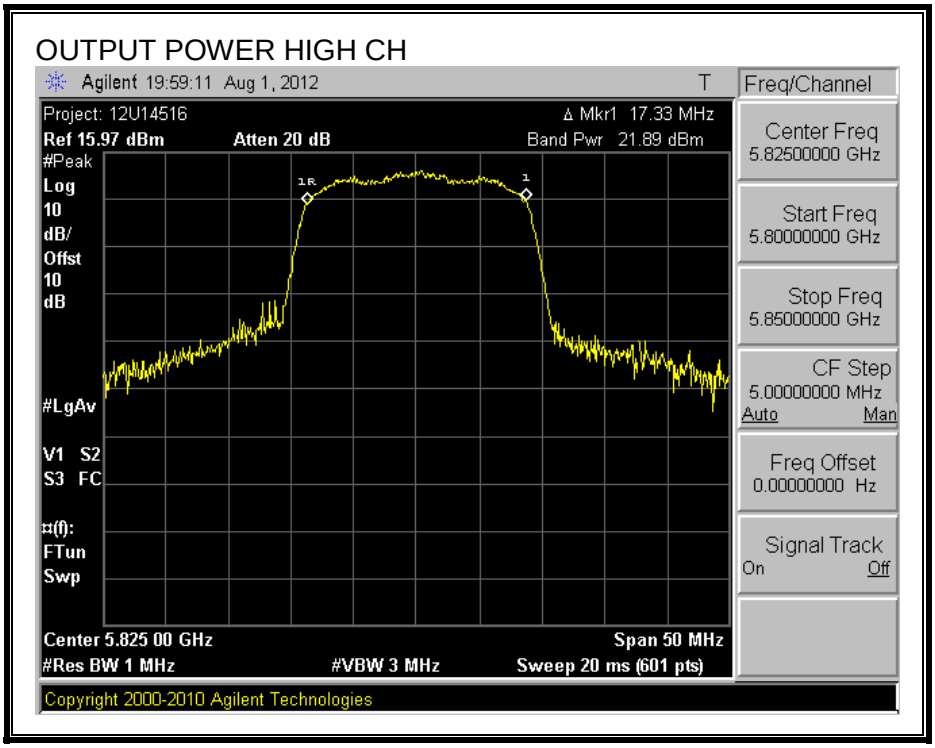
OUTPUT POWER LOW CH



OUTPUT POWER MID CH



OUTPUT POWER HIGH CH



## 7.5.4. AVERAGE POWER

**LIMITS**

None; for reporting purposes only.

**TEST PROCEDURE**

The transmitter output is connected to a power meter.

**RESULTS**

The cable assembly insertion loss of 10 dB (including 10 dB pad and 0 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

| Channel | Frequency (MHz) | Power (dBm) |
|---|---|---|
| Low | 5745 | 13.00 |
| Middle | 5785 | 12.90 |
| High | 5825 | 12.80 |

## 7.5.5. POWER SPECTRAL DENSITY

**LIMITS**

FCC §15.247 (e)

IC RSS-210 A8.2 (b)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

**TEST PROCEDURE**

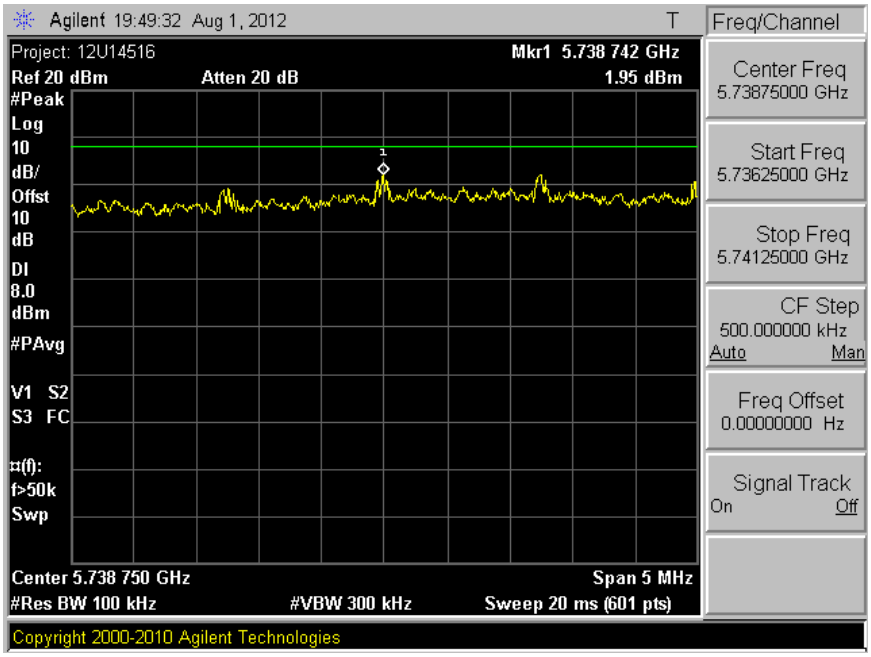
KDB 558074 dated 01/18/12.

**RESULTS**

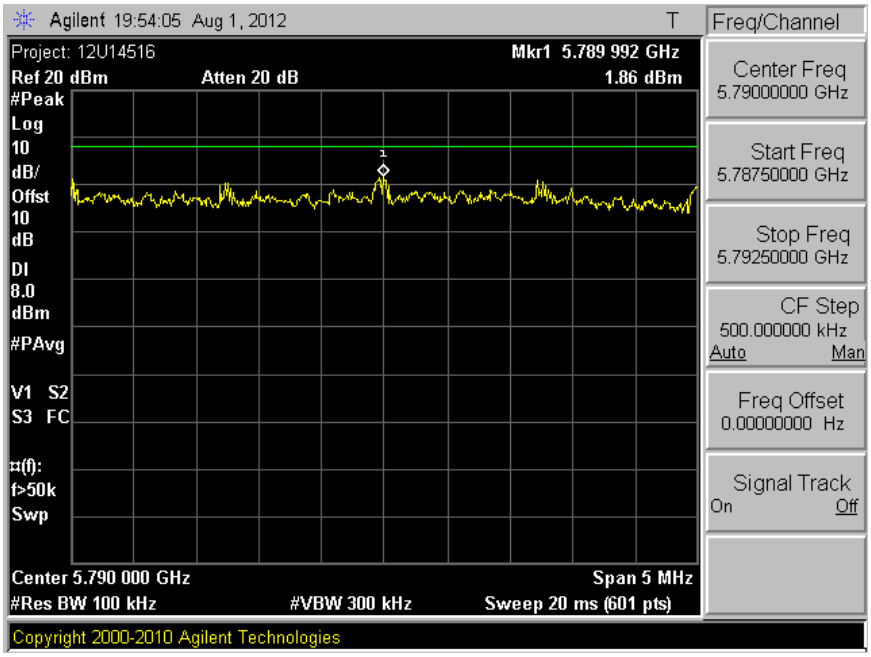
| Channel | Frequency (MHz) | Marker Reading | 10 log(3kHz/100kHz) | PPSD (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|
| Low | 5745 | 1.95 | 15.2 | -13.25 | 8 | -21.25 |
| Middle | 5785 | 1.86 | 15.2 | -13.34 | 8 | -21.34 |
| High | 5825 | 2.63 | 15.2 | -12.57 | 8 | -20.57 |

**POWER SPECTRAL DENSITY**

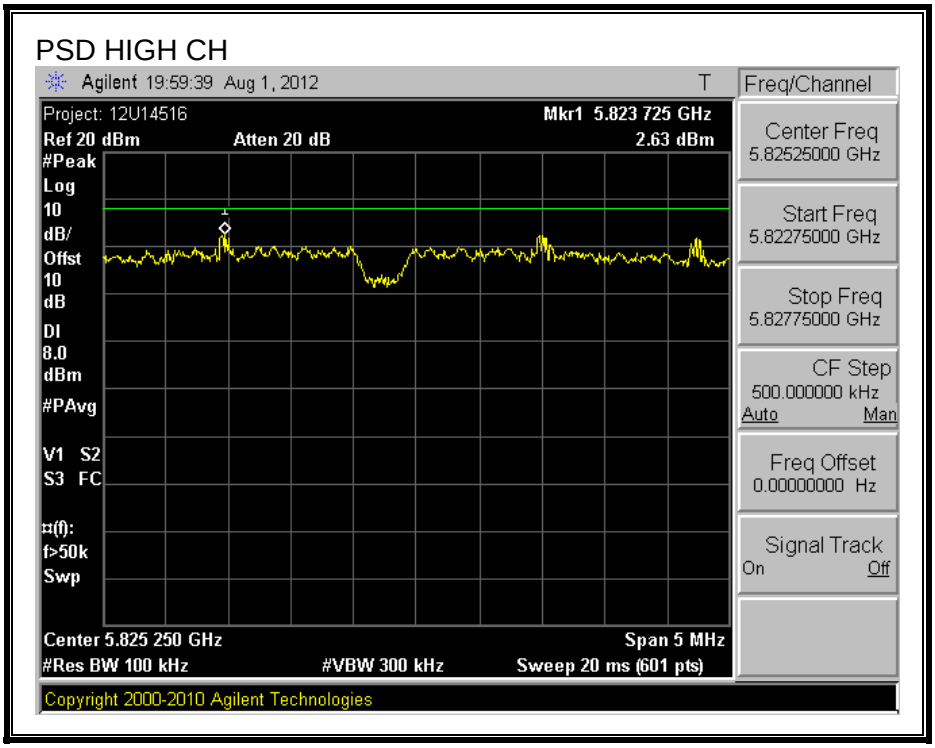
PSD LOW CH



PSD MID CH



PSD HIGH CH



## 7.5.6. CONDUCTED SPURIOUS EMISSIONS

**LIMITS**

FCC §15.247 (d)

IC RSS-210 A8.5

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

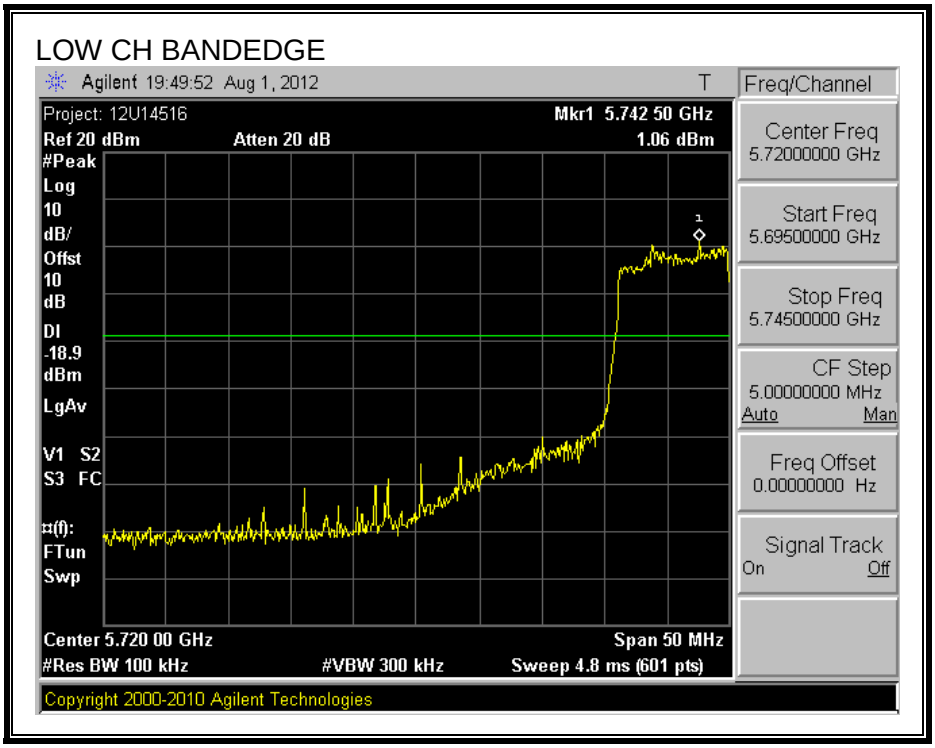
**TEST PROCEDURE**

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

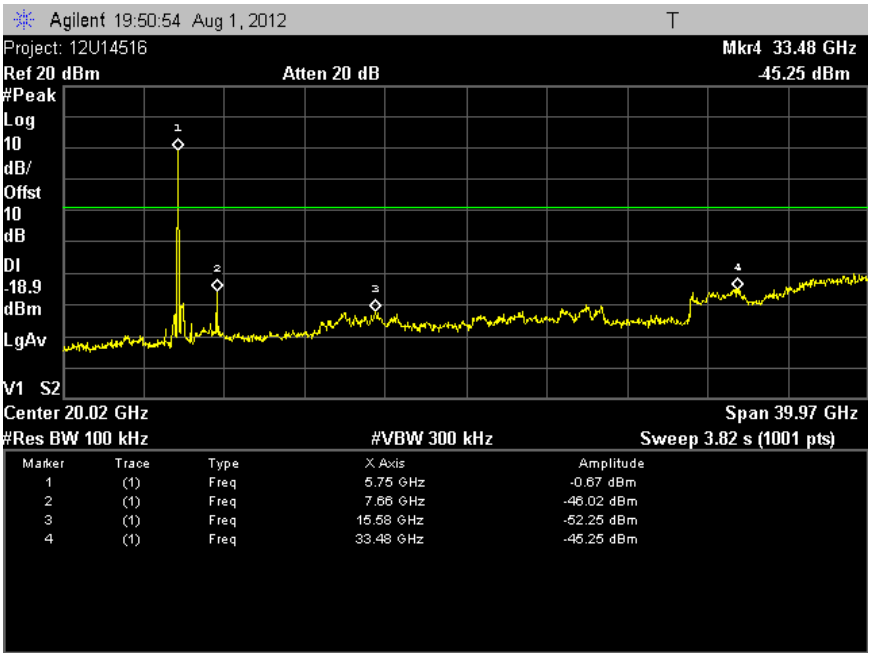
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

**RESULTS**

**SPURIOUS EMISSIONS, LOW CHANNEL**

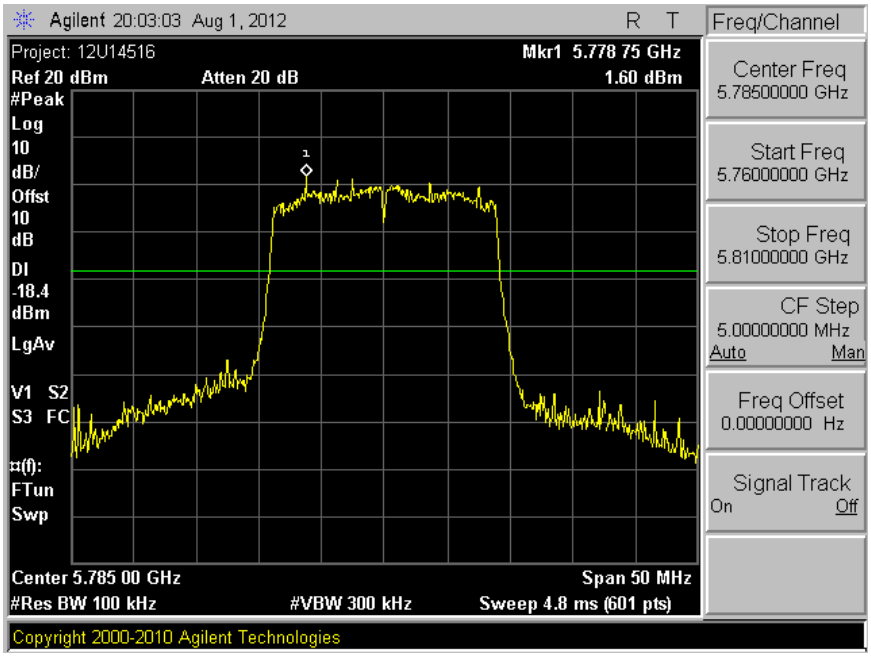


LOW CH SPURIOUS

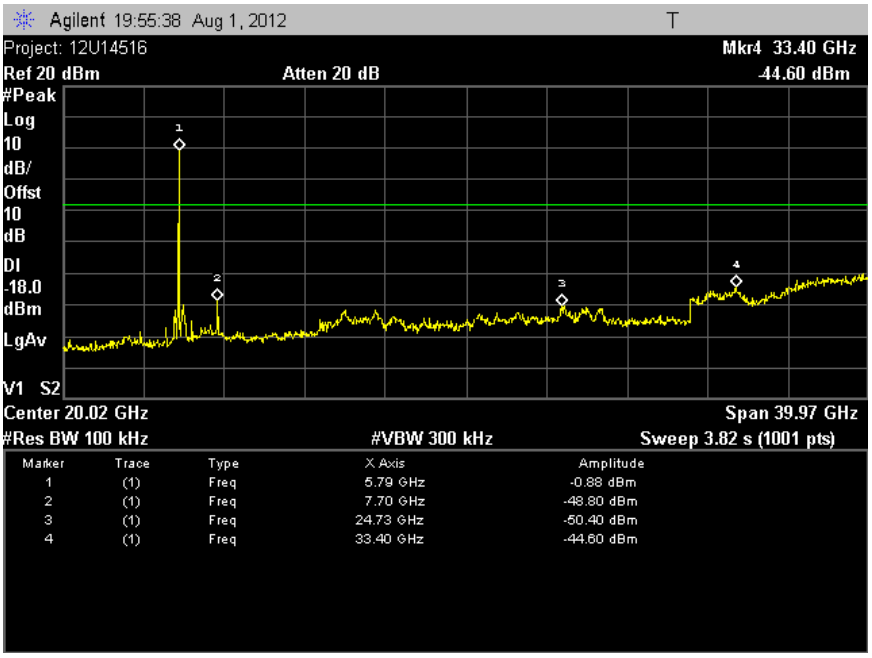


**SPURIOUS EMISSIONS, MID CHANNEL**

MID CH REFERENCE

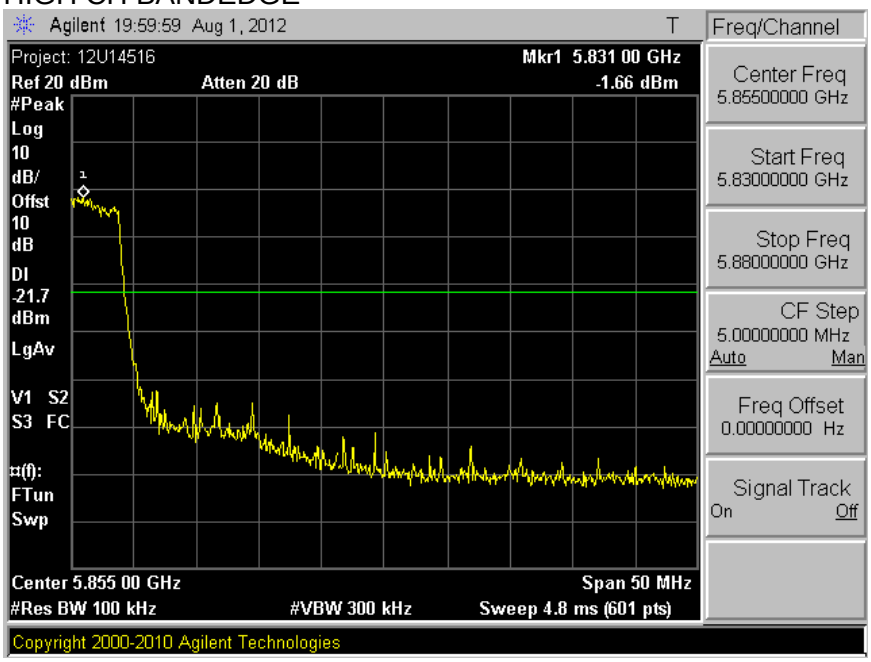


MID CH SPURIOUS

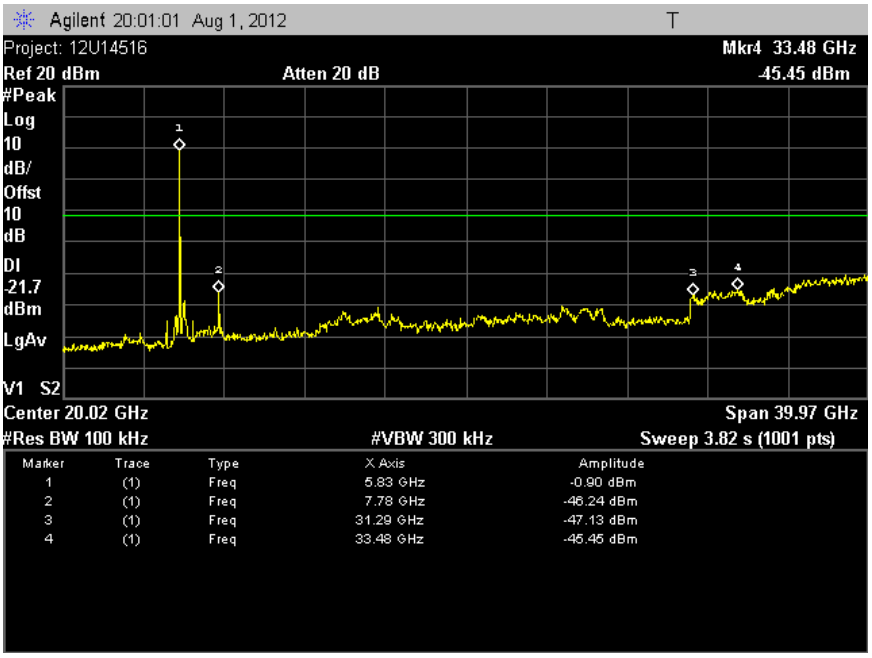


**SPURIOUS EMISSIONS, HIGH CHANNEL**

HIGH CH BANDEDGE



HIGH CH SPURIOUS



# 8. RADIATED TEST RESULTS

## 8.1. LIMITS AND PROCEDURE

**LIMITS**

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

| Frequency Range (MHz) | Field Strength Limit (uV/m) at 3 m | Field Strength Limit (dBuV/m) at 3 m |
|---|---|---|
| 30 - 88 | 100 | 40 |
| 88 - 216 | 150 | 43.5 |
| 216 - 960 | 200 | 46 |
| Above 960 | 500 | 54 |

**TEST PROCEDURE**

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

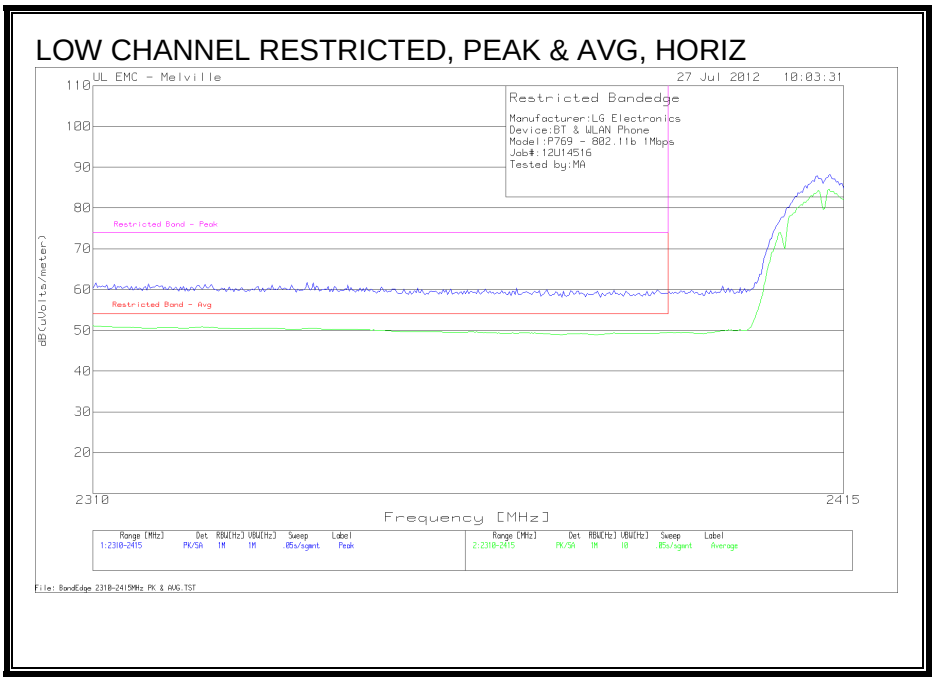
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each appplicable band.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

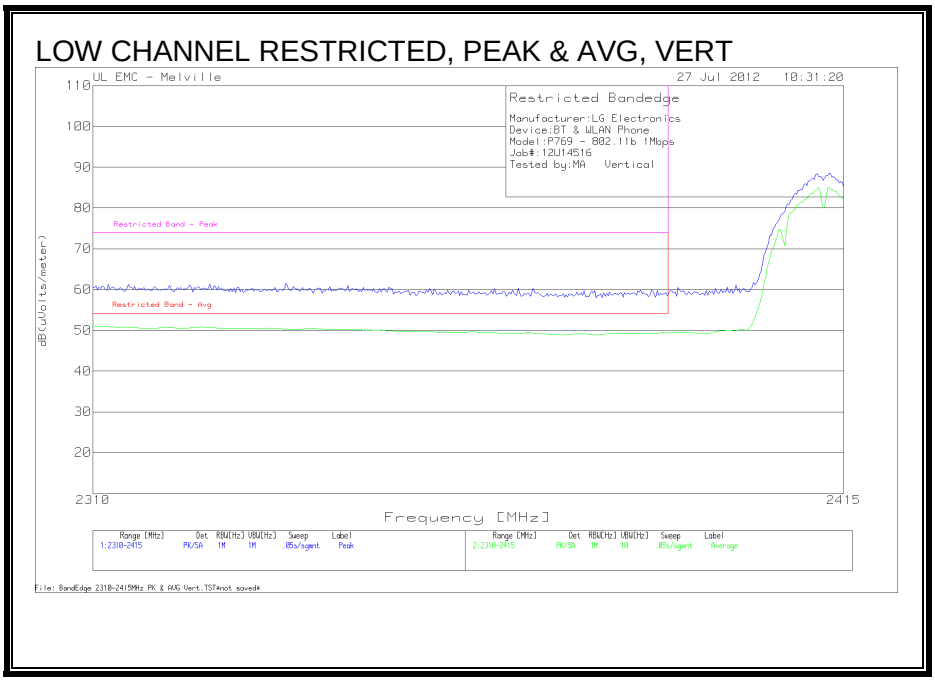
# 8.2. TRANSMITTER ABOVE 1 GHz

## 8.2.1. TX ABOVE 1 GHz FOR 802.11b 1TX MODE IN THE 2.4 GHz BAND

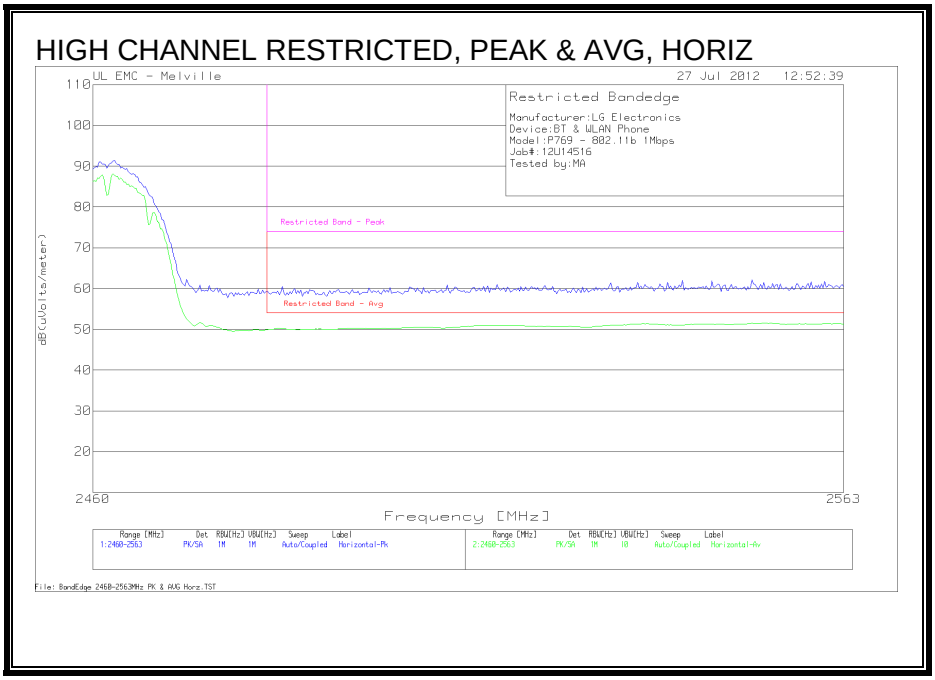
**RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)**



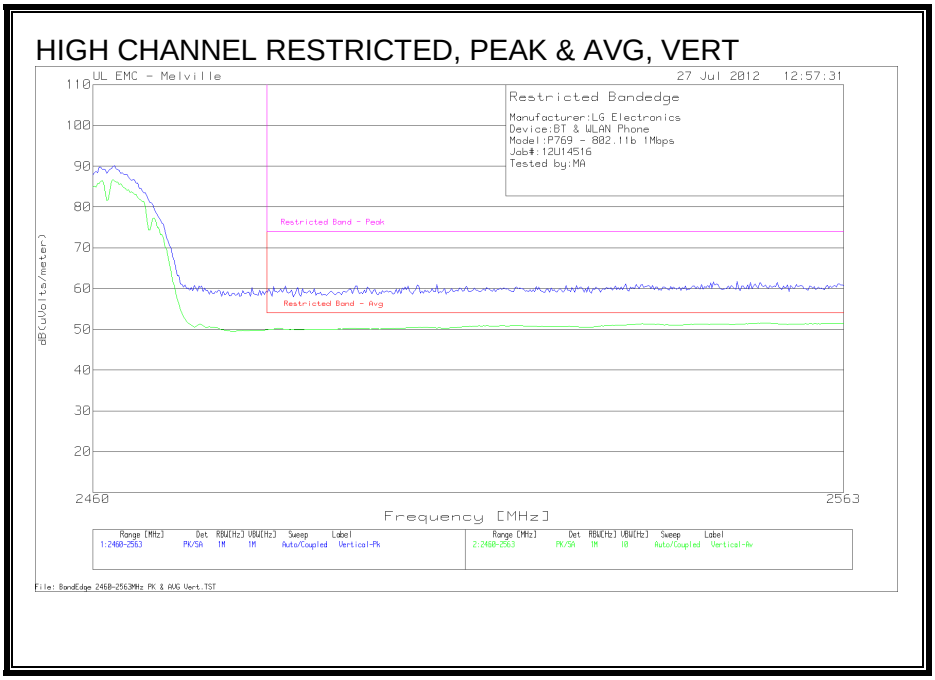
**RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**



**RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)**



**RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)**



**HARMONICS AND SPURIOUS EMISSIONS**

Manufacturer:LG Electronics
Device:BT & WLAN Phone
Model:P769 - 802.11b 1Mbps
Job#:12U14516
Tested by:DC

**Low Channel - 2412MHz**

| Test Frequency | Meter Reading | Detector | AF-48106 [dB] | BOMS Factor [dB] | dB(uVolts/meter) | FCC Part 15 Subpart C 15.209 | Margin | FCC Part 15 Subpart C Peak | Margin | Azimuth [Degs] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4823.9422 | 69.78 | PK | 27.1 | -52.45 | 44.43 | 54 | -9.57 | 74 | -29.57 | 28 | 174 | Horz |
| 4823.9422 | 65.08 | Av | 27.1 | -52.45 | 39.73 | 54 | -14.27 | 74 | -34.27 | 28 | 174 | Horz |
| 4823.9583 | 72.31 | PK | 27.1 | -52.45 | 46.96 | 54 | -7.04 | 74 | -27.04 | 138 | 291 | Vert |
| 4823.9583 | 68.38 | Av | 27.1 | -52.45 | 43.03 | 54 | -10.97 | 74 | -30.97 | 138 | 291 | Vert |

**Mid Channel - 2437MHz**

| Test Frequency | Meter Reading | Detector | AF-48106 [dB] | BOMS Factor [dB] | dB(uVolts/meter) | FCC Part 15 Subpart C 15.209 | Margin | FCC Part 15 Subpart C Peak | Margin | Azimuth [Degs] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4873.978 | 68.28 | PK | 27.2 | -52.61 | 42.87 | 54 | -11.13 | 74 | -31.13 | 39 | 136 | Horz |
| 4873.978 | 62.15 | Av | 27.2 | -52.61 | 36.74 | 54 | -17.26 | 74 | -37.26 | 39 | 136 | Horz |
| 4873.978 | 70.17 | PK | 27.2 | -52.61 | 44.76 | 54 | -9.24 | 74 | -29.24 | 131 | 289 | Vert |
| 4873.978 | 65.06 | Av | 27.2 | -52.61 | 39.65 | 54 | -14.35 | 74 | -34.35 | 131 | 289 | Vert |

**High Channel - 2462MHz**

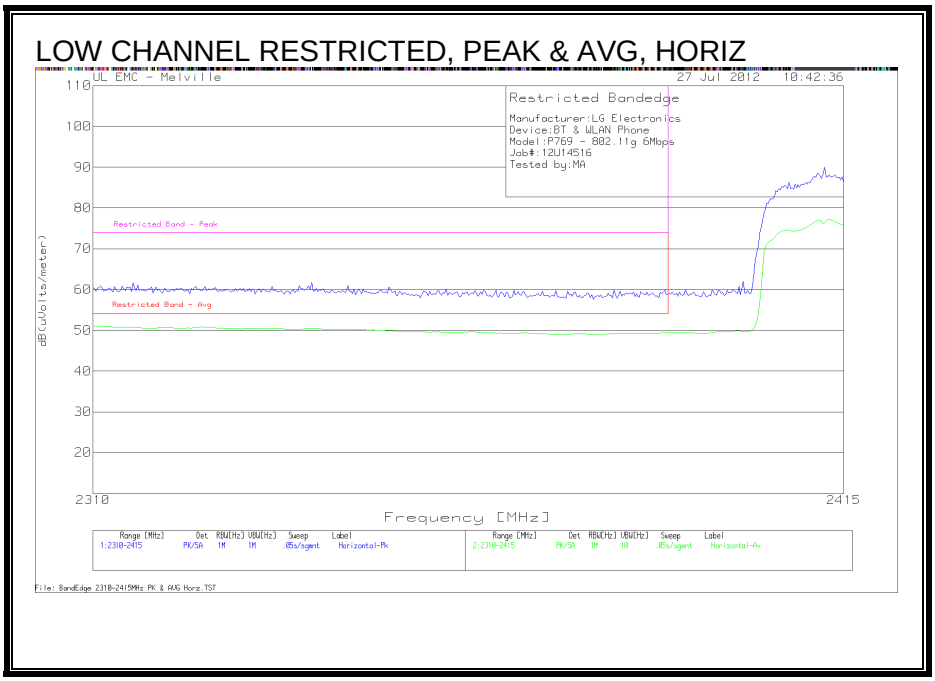
| Test Frequency | Meter Reading | Detector | AF-48106 [dB] | BOMS Factor [dB] | dB(uVolts/meter) | FCC Part 15 Subpart C 15.209 | Margin | FCC Part 15 Subpart C Peak | Margin | Azimuth [Degs] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4923.9689 | 68.95 | PK | 27.2 | -52.52 | 43.63 | 54 | -10.37 | 74 | -30.37 | 9 | 196 | Horz |
| 4923.9689 | 63.39 | Av | 27.2 | -52.52 | 38.07 | 54 | -15.93 | 74 | -35.93 | 9 | 196 | Horz |
| 4923.9689 | 70.26 | PK | 27.2 | -52.52 | 44.94 | 54 | -9.06 | 74 | -29.06 | 134 | 241 | Vert |
| 4923.9689 | 65.5 | Av | 27.2 | -52.52 | 40.18 | 54 | -13.82 | 74 | -33.82 | 134 | 241 | Vert |

PK - Peak detector
Av - Average detector

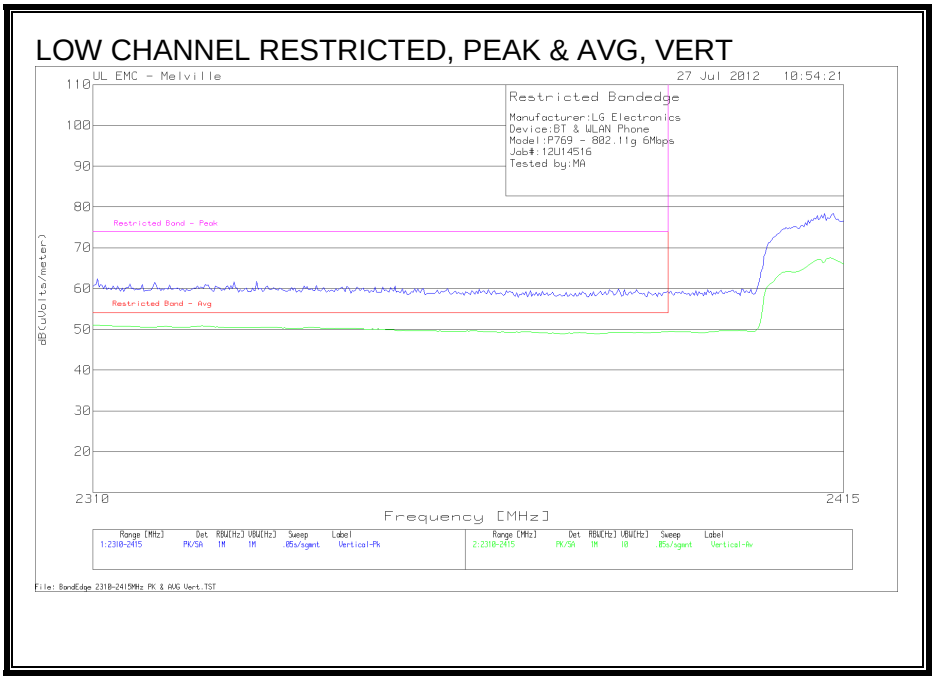
Note: No other emissions were detected above the system noise floor.

## 8.2.2. TX ABOVE 1 GHz FOR 802.11g 1TX MODE IN THE 2.4 GHz BAND

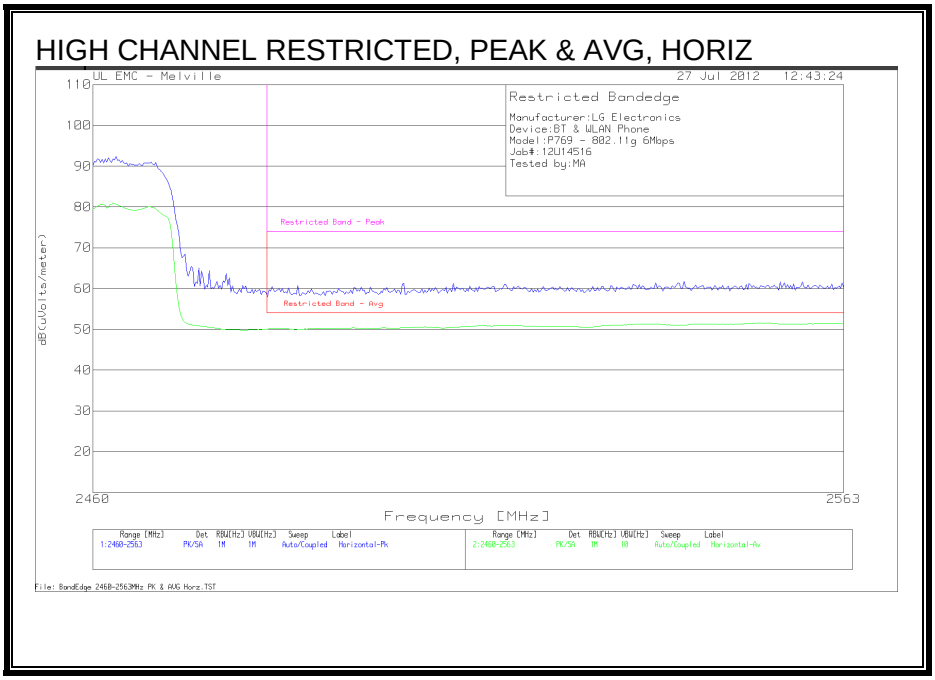
**RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)**



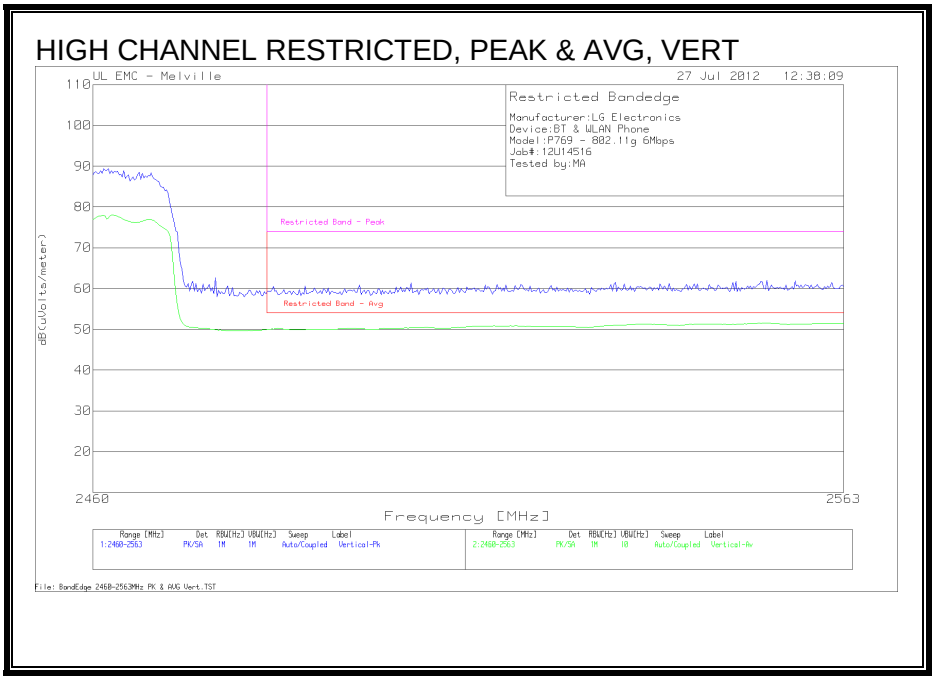
**RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**



**RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)**



**RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)**



**HARMONICS AND SPURIOUS EMISSIONS**

Manufacturer:LG Electronics
Device:BT & WLAN Phone
Model:P769 - 802.11g 6Mbps
Job#:12U14516
Tested by:MA

**Low Channel - 2412MHz**

| Test Frequency | Meter Reading | Detector | AF-48106 [dB] | BOMS Factor [dB] | dB(uVolts/meter) | FCC Part 15 Subpart C 15.209 | Margin | FCC Part 15 Subpart C Peak | Margin | Azimuth [Degs] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4823.2926 | 53.51 | Av | 27.1 | -52.53 | 28.08 | 54 | -25.92 | 74 | -45.92 | 106 | 375 | Horz |
| 4823.2926 | 66.48 | PK | 27.1 | -52.53 | 41.05 | 54 | -12.95 | 74 | -32.95 | 106 | 375 | Horz |
| 4823.2926 | 68.93 | PK | 27.1 | -52.53 | 43.5 | 54 | -10.5 | 74 | -30.5 | 106 | 375 | Horz |
| 4823.2926 | 69.44 | PK | 27.1 | -52.53 | 44.01 | 54 | -9.99 | 74 | -29.99 | 34 | 305 | Vert |
| 4823.2926 | 53.34 | Av | 27.1 | -52.53 | 27.91 | 54 | -26.09 | 74 | -46.09 | 34 | 305 | Vert |

**Mid Channel - 2437MHz**

| Test Frequency | Meter Reading | Detector | AF-48106 [dB] | BOMS Factor [dB] | dB(uVolts/meter) | FCC Part 15 Subpart C 15.209 | Margin | FCC Part 15 Subpart C Peak | Margin | Azimuth [Degs] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4875.1924 | 68.72 | PK | 27.2 | -52.65 | 43.27 | 54 | -10.73 | 74 | -30.73 | 39 | 140 | Horz |
| 4875.1924 | 53 | Av | 27.2 | -52.65 | 27.55 | 54 | -26.45 | 74 | -46.45 | 39 | 140 | Horz |
| 4875.1924 | 70.27 | PK | 27.2 | -52.65 | 44.82 | 54 | -9.18 | 74 | -29.18 | 129 | 290 | Vert |
| 4875.1924 | 54.61 | Av | 27.2 | -52.65 | 29.16 | 54 | -24.84 | 74 | -44.84 | 129 | 290 | Vert |

**High Channel - 2462MHz**

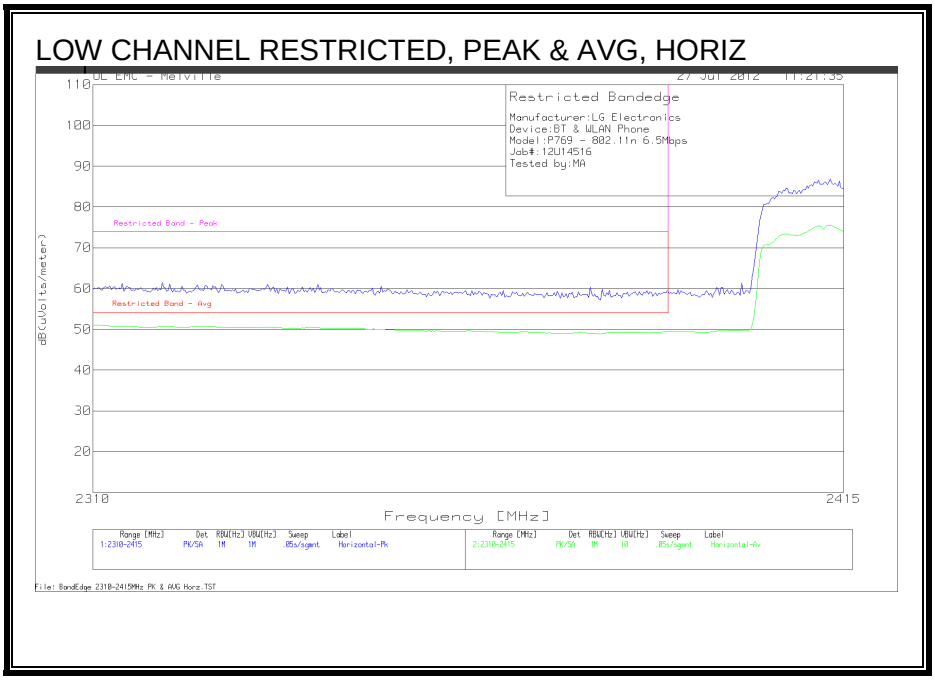
| Test Frequency | Meter Reading | Detector | AF-48106 [dB] | BOMS Factor [dB] | dB(uVolts/meter) | FCC Part 15 Subpart C 15.209 | Margin | FCC Part 15 Subpart C Peak | Margin | Azimuth [Degs] | Height [cm] | Polarity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4925.002 | 67.9 | PK | 27.3 | -52.57 | 42.63 | 54 | -11.37 | 74 | -31.37 | 41 | 139 | Horz |
| 4925.002 | 52.35 | Av | 27.3 | -52.57 | 27.08 | 54 | -26.92 | 74 | -46.92 | 41 | 139 | Horz |
| 4925.002 | 70.4 | PK | 27.3 | -52.57 | 45.13 | 54 | -8.87 | 74 | -28.87 | 130 | 282 | Vert |
| 4925.002 | 54.49 | Av | 27.3 | -52.57 | 29.22 | 54 | -24.78 | 74 | -44.78 | 130 | 282 | Vert |

PK - Peak detector
Av - Average detector

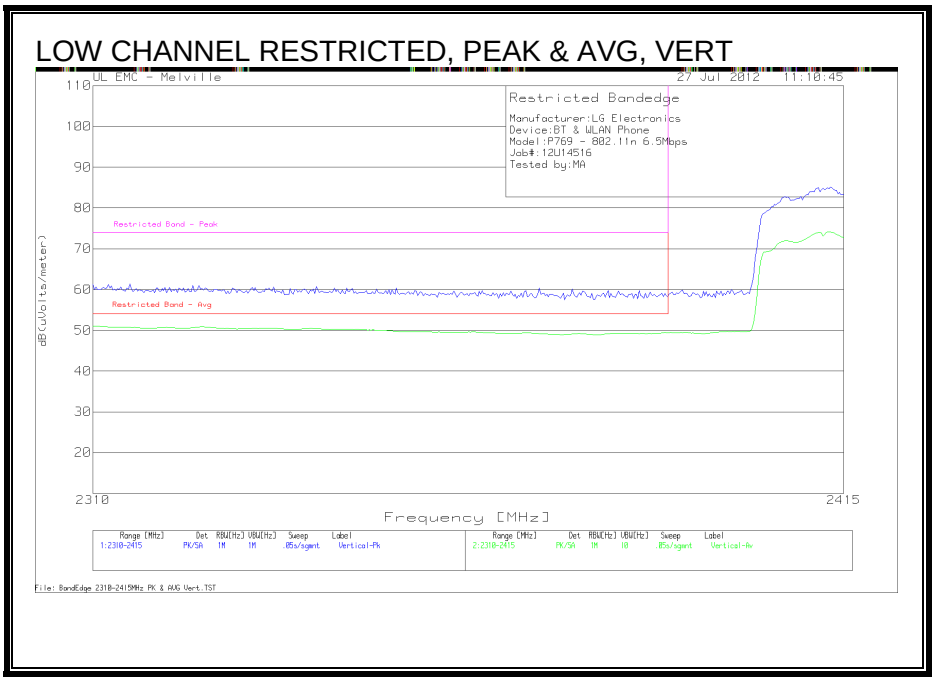
Note: Not other emissions were detected above the system noise floor.

## 8.2.3. TX ABOVE 1 GHz FOR 802.11n HT20 1TX MODE IN THE 2.4 GHz BAND

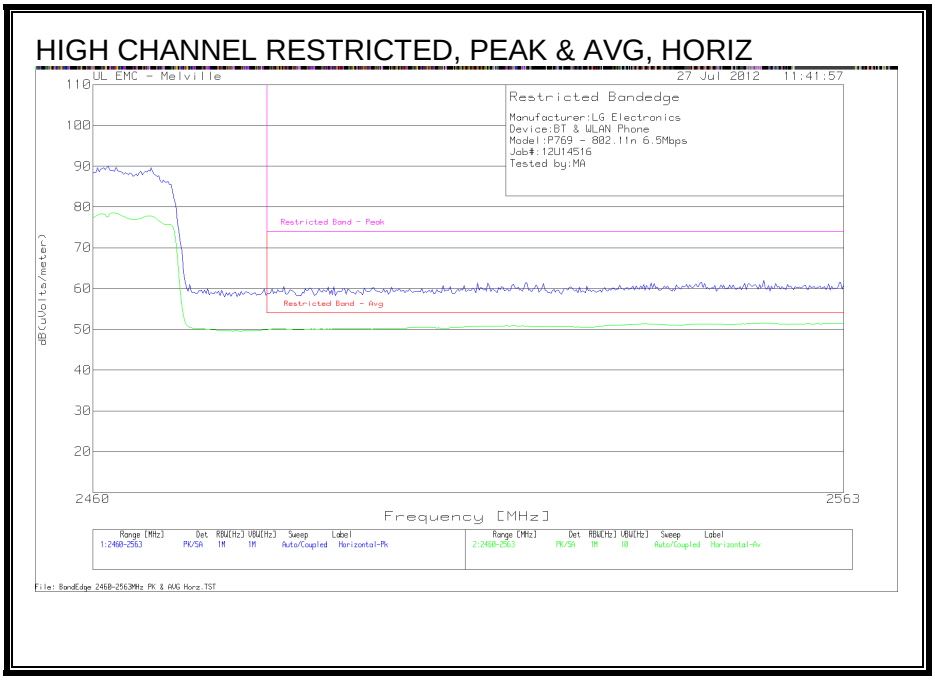
**RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)**



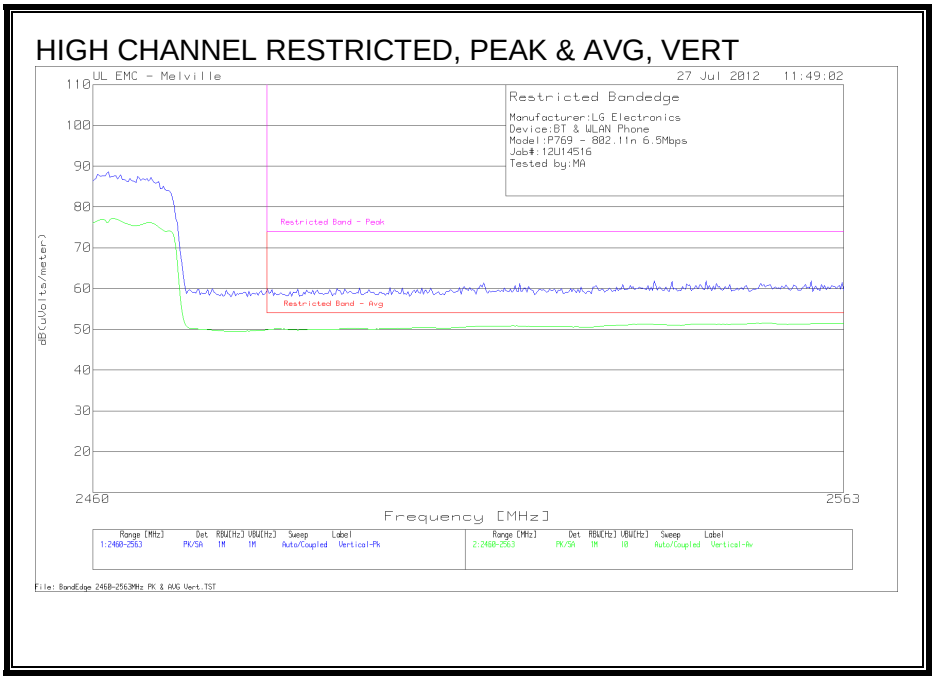
**RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**



**RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)**



**RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)**



**HARMONICS AND SPURIOUS EMISSIONS**

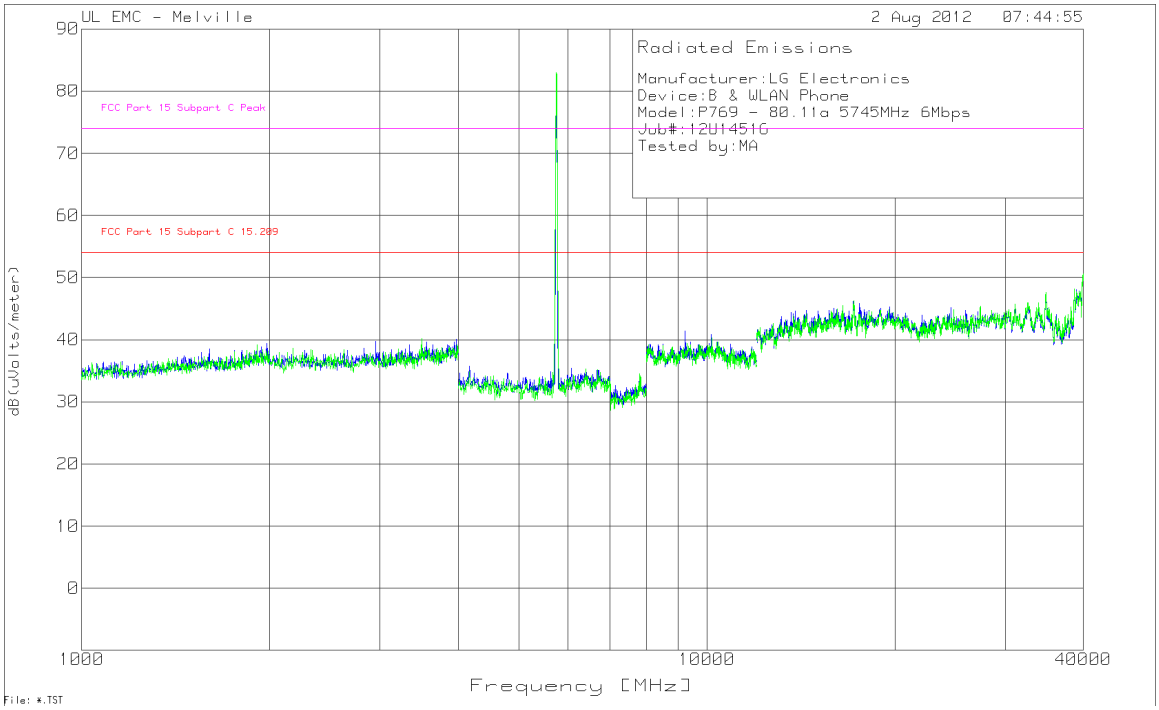
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Manufacturer:LG Electronics | | | | | | | | | | | | |
| Device:BT & WLAN Phone | | | | | | | | | | | | |
| Model:P769 - 802.11n 6.5Mbps | | | | | | | | | | | | |
| Job#:12U14516 | | | | | | | | | | | | |
| Tested by:DC | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| **Low Channel - 2412MHz** | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Test Frequency | Meter Reading | Detector | AF-8932 [dB] | BOMS Factor [dB] | dB(uVolts/meter) | FCC Part 15 Subpart C 15.209 | Margin | FCC Part 15 Subpart C Peak | Margin | Azimuth [Degs] | Height [cm] | Polarity |
| 14476.527 | 58.85 | PK | 37.3 | -49.16 | 46.99 | 54 | -7.01 | 74 | -27.01 | 284 | 241 | Horz |
| 14476.527 | 44.54 | Av | 37.3 | -49.16 | 32.68 | 54 | -21.32 | 74 | -41.32 | 284 | 241 | Horz |
| 14477.451 | 59.37 | PK | 37.3 | -49.19 | 47.48 | 54 | -6.52 | 74 | -26.52 | 282 | 312 | Vert |
| 14477.451 | 44.54 | Av | 37.3 | -49.19 | 32.65 | 54 | -21.35 | 74 | -41.35 | 282 | 312 | Vert |
| | | | | | | | | | | | | |
| **Mid Channel - 2437MHz** | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Test Frequency | Meter Reading | Detector | AF-48106 [dB] | BOMS Factor [dB] | dB(uVolts/meter) | FCC Part 15 Subpart C 15.209 | Margin | FCC Part 15 Subpart C Peak | Margin | Azimuth [Degs] | Height [cm] | Polarity |
| 4874.2605 | 67.23 | PK | 27.2 | -52.62 | 41.81 | 54 | -12.19 | 74 | -32.19 | 37 | 246 | Horz |
| 4874.2605 | 51.43 | Av | 27.2 | -52.62 | 26.01 | 54 | -27.99 | 74 | -47.99 | 37 | 246 | Horz |
| 4874.2605 | 67.53 | PK | 27.2 | -52.62 | 42.11 | 54 | -11.89 | 74 | -31.89 | 132 | 329 | Vert |
| 4874.2605 | 52.16 | Av | 27.2 | -52.62 | 26.74 | 54 | -27.26 | 74 | -47.26 | 132 | 329 | Vert |
| | | | | | | | | | | | | |
| **High Channel - 2462MHz** | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Test Frequency | Meter Reading | Detector | AF-48106 [dB] | BOMS Factor [dB] | dB(uVolts/meter) | FCC Part 15 Subpart C 15.209 | Margin | FCC Part 15 Subpart C Peak | Margin | Azimuth [Degs] | Height [cm] | Polarity |
| 4926.1944 | 65.77 | PK | 27.3 | -52.54 | 40.53 | 54 | -13.47 | 74 | -33.47 | 38 | 211 | Horz |
| 4926.1944 | 50.84 | Av | 27.3 | -52.54 | 25.6 | 54 | -28.4 | 74 | -48.4 | 38 | 211 | Horz |
| 4926.1944 | 68.18 | PK | 27.3 | -52.54 | 42.94 | 54 | -11.06 | 74 | -31.06 | 136 | 246 | Vert |
| 4926.1944 | 51.92 | Av | 27.3 | -52.54 | 26.68 | 54 | -27.32 | 74 | -47.32 | 136 | 246 | Vert |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| PK - Peak detector | | | | | | | | | | | | |
| Av - Average detector | | | | | | | | | | | | |

Note: No other emissions were detected above the system noise floor.

## 8.2.4. TRANSMITTER ABOVE 1 GHz FOR 802.11a MODE IN THE 5.8 GHz BAND

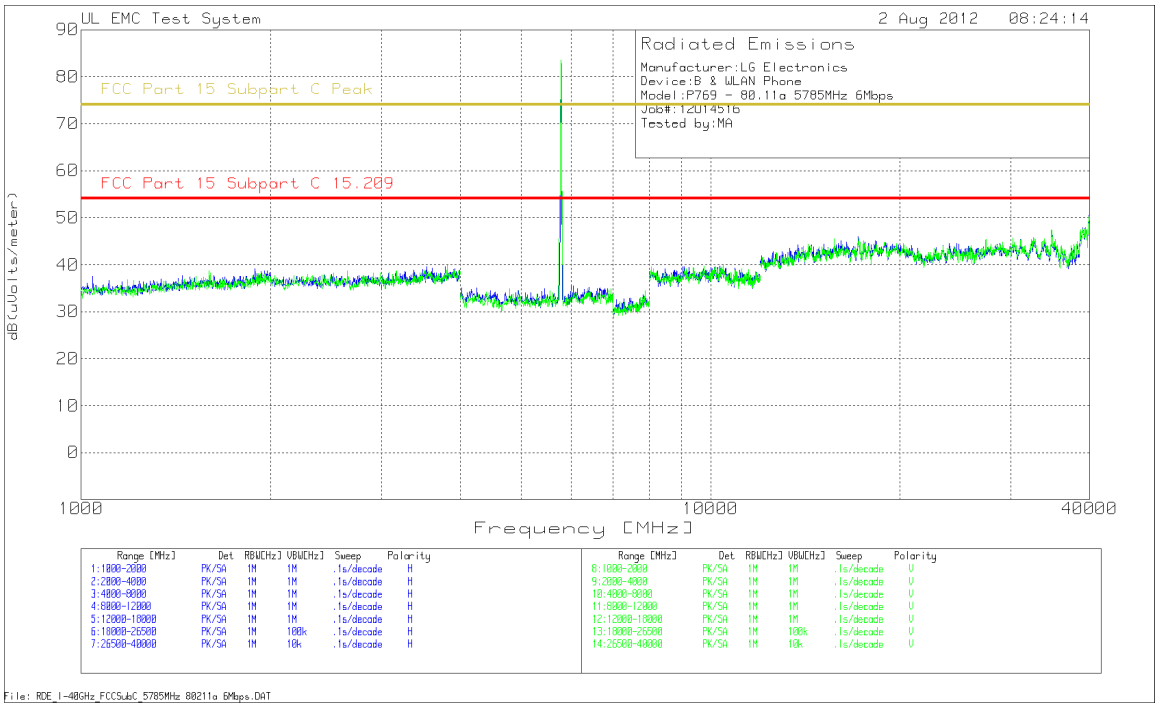
**HARMONICS AND SPURIOUS EMISSIONS**

**Low Channel – 5745MHz**



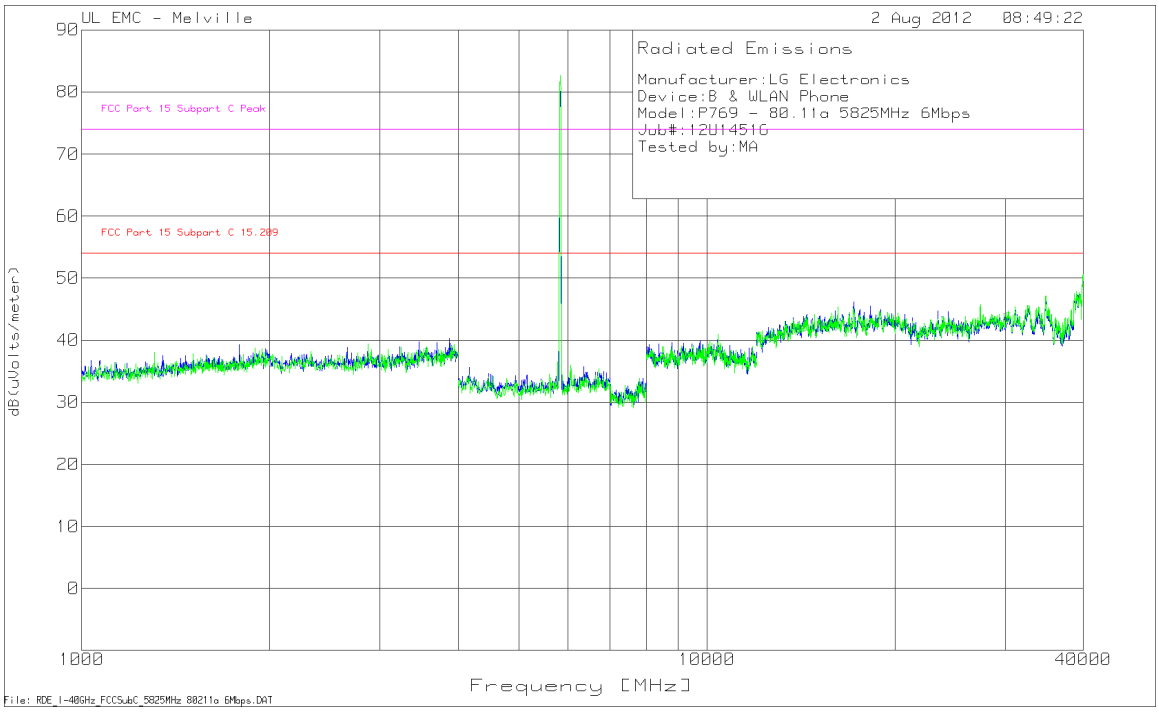

Note: No emissions were detected above the system noise floor.

**Mid Channel – 5785MHz**




Note: No emissions were detected above the system noise floor.

**High Channel – 5825MHz**

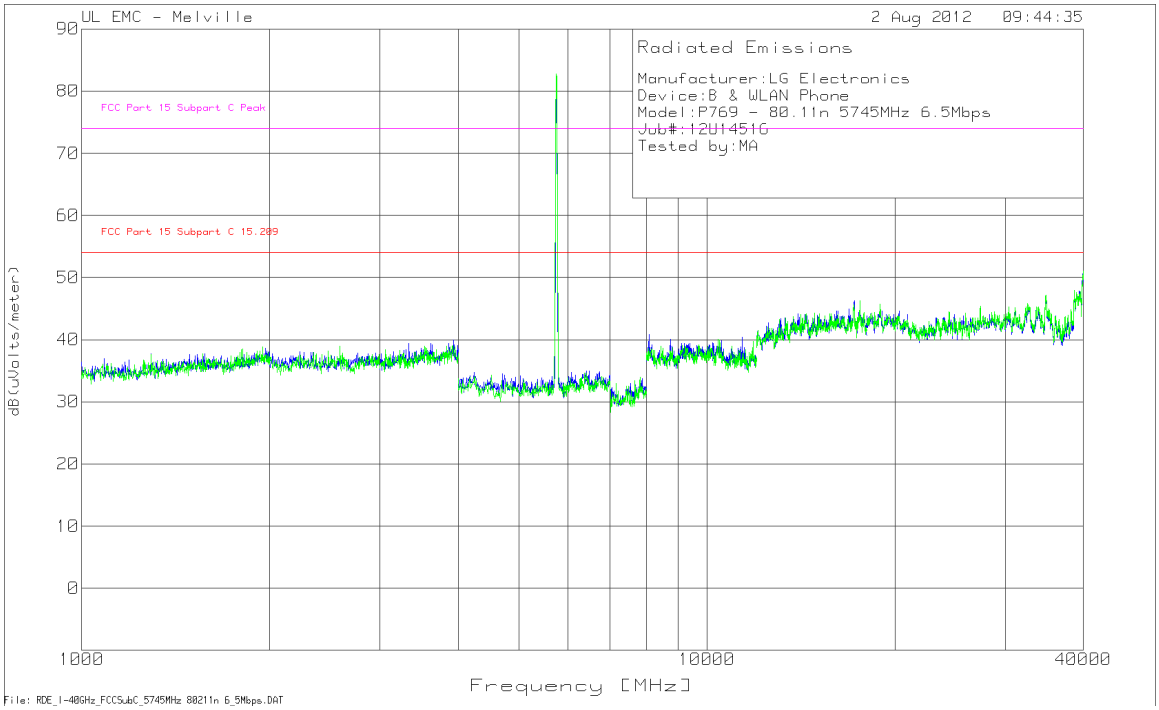



Note: No emissions were detected above the system noise floor.

## 8.2.5. TRANSMITTER ABOVE 1 GHz FOR 802.11n MODE IN THE 5.8 GHz BAND

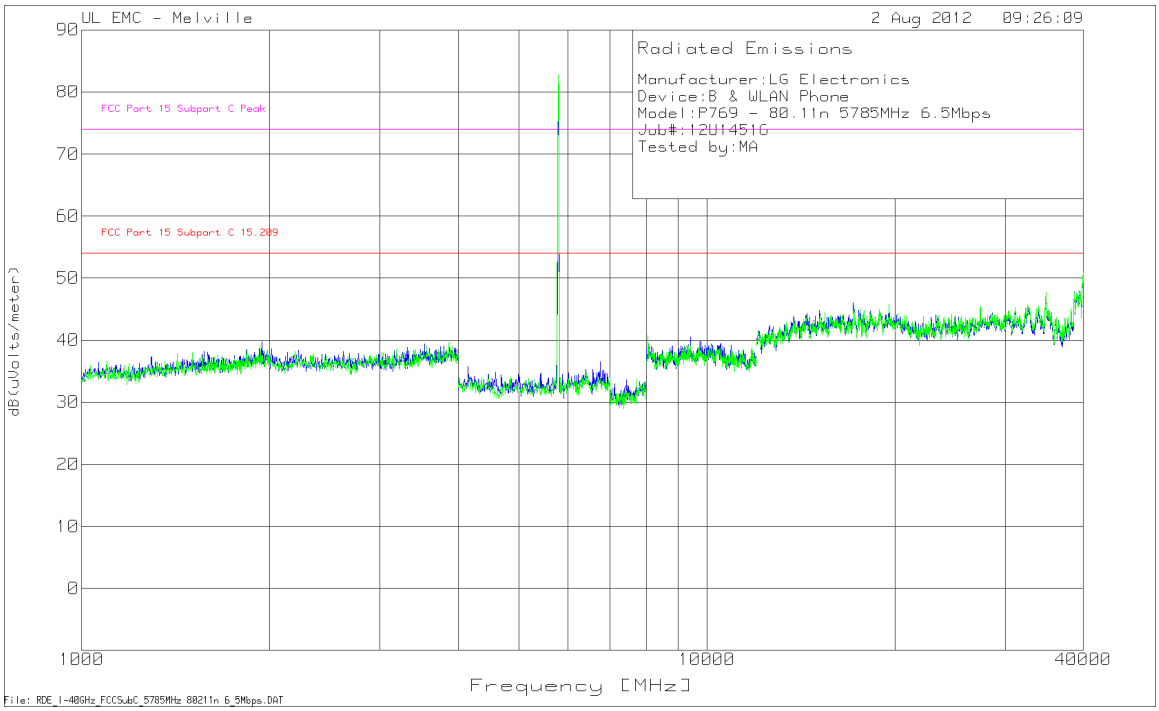
**HARMONICS AND SPURIOUS EMISSIONS**

**Low Channel – 5745MHz**



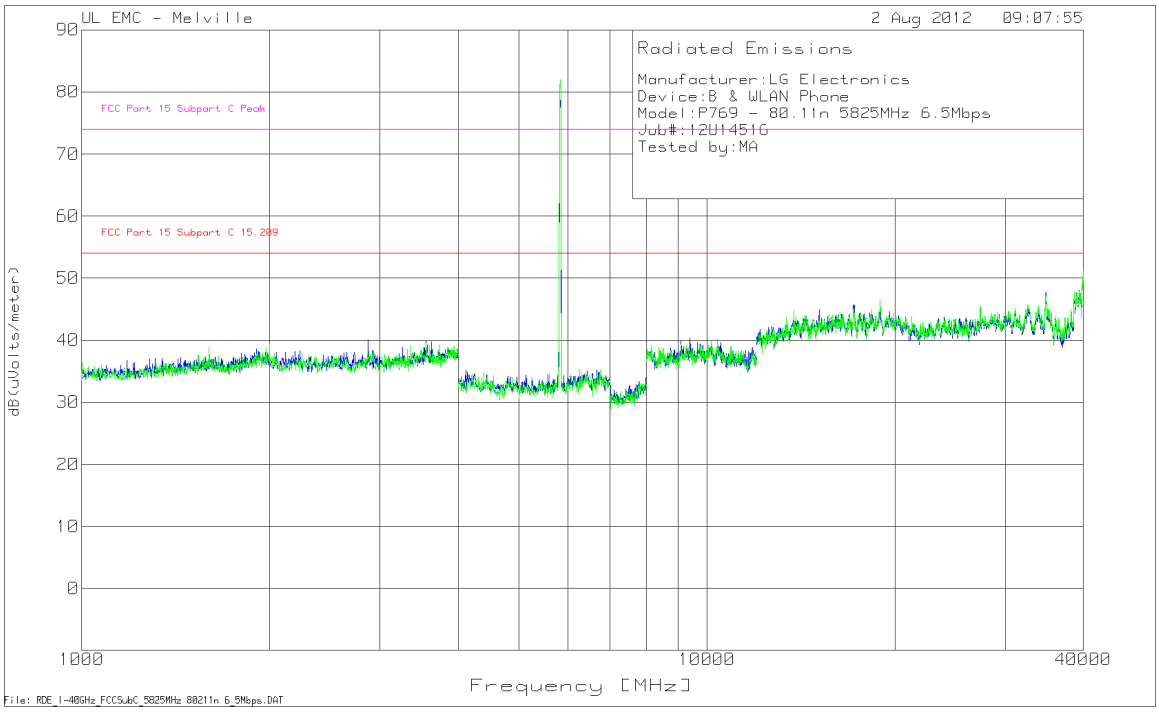

Note: No emissions were detected above the system noise floor.

**Mid Channel – 5785MHz**




Note: No emissions were detected above the system noise floor.

**High Channel – 5825MHz**

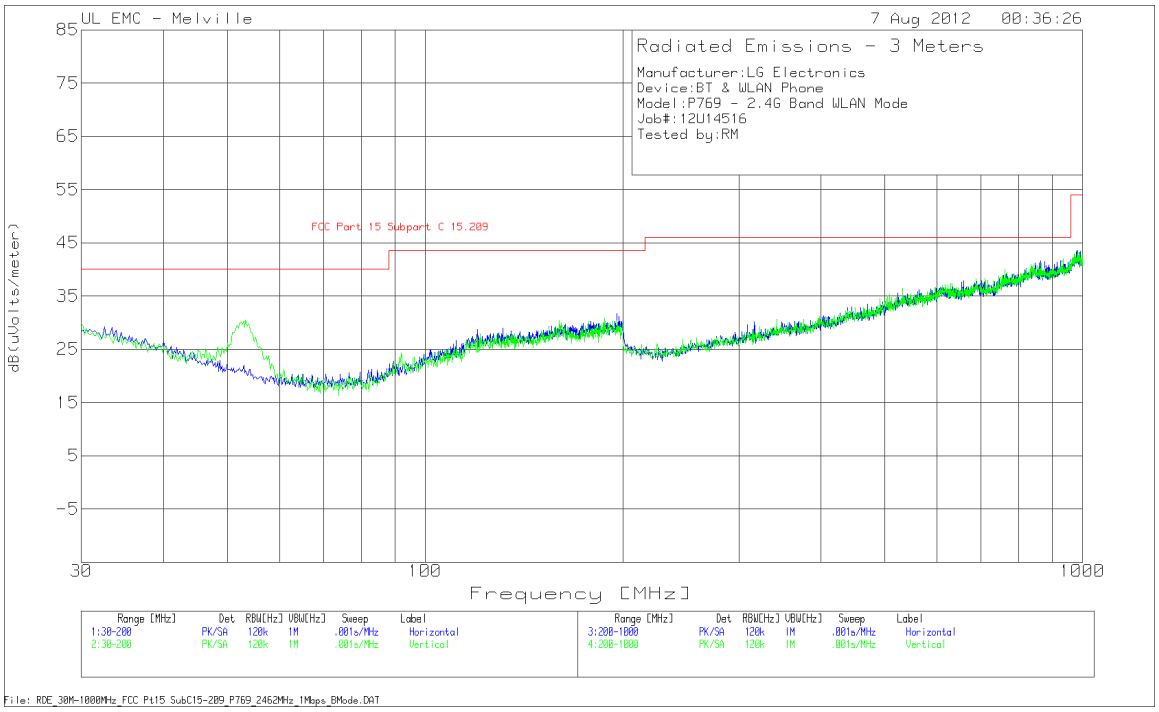



Note: No emissions were detected above the system noise floor.

## 8.3. WORST-CASE BELOW 1 GHz

**SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE – 2.4GHz BAND, HORZ & VERT)**

HORZ & VERT PLOT

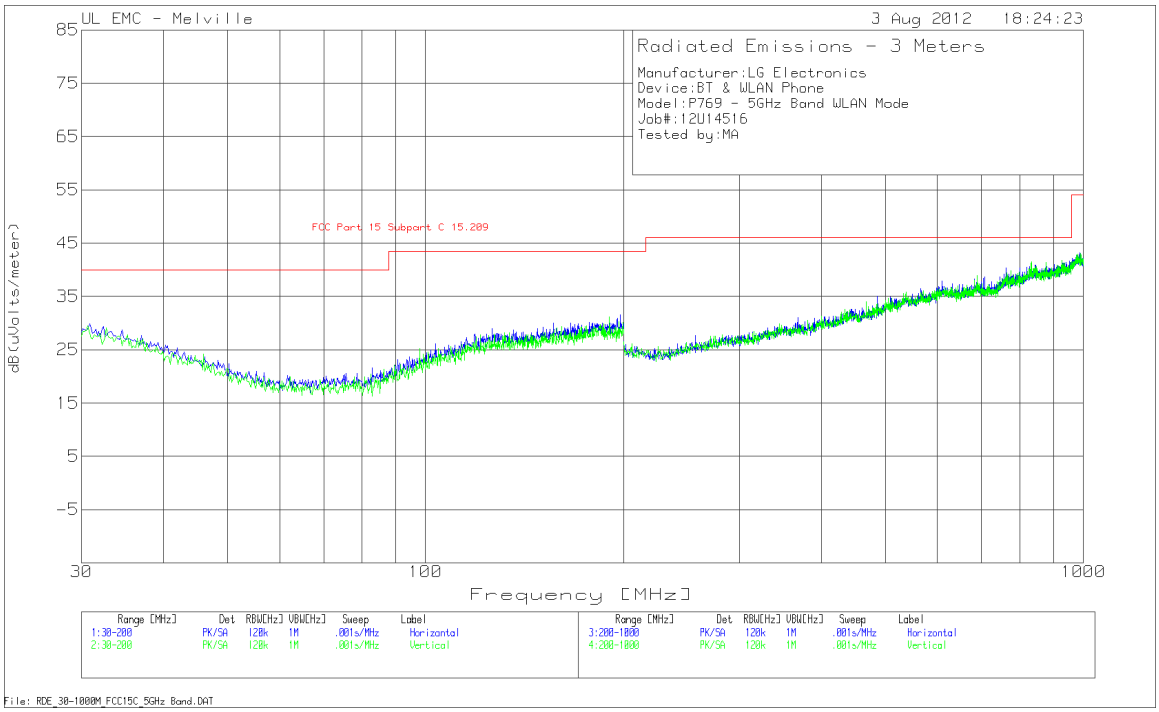


## HORZ & VERT DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Manufacturer:LG Electronics | | | | | | | | | | | |
| Device:BT & WLAN Phone | | | | | | | | | | | |
| Model:P769 - 2.4G Band WLAN Mode | | | | | | | | | | | |
| Job#:12U14516 | | | | | | | | | | | |
| Tested by:RM | | | | | | | | | | | |
| | | | | | | | | | | | |
| Horizontal 30 - 200MHz | | | | | | | | | | | |
| Marker No. | Test Frequency | Meter Reading | Detector | AF-54 (dB) | GL-3M (dB) | dB(uVolts/meter) | FCC Part 15 Subpart C 15.209 | Margin | Azimuth [Degs] | Height [cm] | Polarity |
| 1 | 33.4034 | 12.14 | PK | 16.4 | 0.6 | 29.14 | 40 | -10.86 | 254 | 200 | Horz |
| 2 | 120.02 | 14.27 | PK | 13.4 | 1.1 | 28.77 | 43.5 | -14.73 | 70 | 100 | Horz |
| 3 | 195.7457 | 14.69 | PK | 15.5 | 1.5 | 31.69 | 43.5 | -11.81 | 307 | 399 | Horz |
| | | | | | | | | | | | |
| Vertical 30 - 200MHz | | | | | | | | | | | |
| Marker No. | Test Frequency | Meter Reading | Detector | AF-54 (dB) | GL-3M (dB) | dB(uVolts/meter) | FCC Part 15 Subpart C 15.209 | Margin | Azimuth [Degs] | Height [cm] | Polarity |
| 4 | 53.3133 | 21.47 | PK | 8.4 | 0.7 | 30.57 | 40 | -9.43 | 100 | 100 | Vert |
| | | | | | | | | | | | |
| Horizontal 200 - 1000MHz | | | | | | | | | | | |
| Marker No. | Test Frequency | Meter Reading | Detector | AF-44067 (dB) | GL-3M (dB) | dB(uVolts/meter) | FCC Part 15 Subpart C 15.209 | Margin | Azimuth [Degs] | Height [cm] | Polarity |
| 5 | 564.1821 | 14.35 | PK | 19.2 | 2.7 | 36.25 | 46 | -9.75 | 358 | 200 | Horz |
| 6 | 659.0295 | 14.93 | PK | 20 | 2.9 | 37.83 | 46 | -8.17 | 170 | 100 | Horz |
| | | | | | | | | | | | |
| Vertical 200 - 1000MHz | | | | | | | | | | | |
| Marker No. | Test Frequency | Meter Reading | Detector | AF-44067 (dB) | GL-3M (dB) | dB(uVolts/meter) | FCC Part 15 Subpart C 15.209 | Margin | Azimuth [Degs] | Height [cm] | Polarity |
| 7 | 532.5663 | 15.03 | PK | 18.8 | 2.6 | 36.43 | 46 | -9.57 | 92 | 100 | Vert |
| 8 | 987.5938 | 14.86 | PK | 24.4 | 3.7 | 42.96 | 54 | -11.04 | 207 | 400 | Vert |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| PK - Peak detector | | | | | | | | | | | |

**SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE – 5GHz BAND, HORZ & VERT)**

HORZ & VERT PLOT



## HORZ & VERT DATA

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Manufacturer:LG Electronics | | | | | | | | | | | |
| Device:BT & WLAN Phone | | | | | | | | | | | |
| Model:P769 - 5GHz Band WLAN Mode | | | | | | | | | | | |
| Job#:12U14516 | | | | | | | | | | | |
| Tested by:MA | | | | | | | | | | | |
| | | | | | | | | | | | |
| Horizontal 30 - 200MHz | | | | | | | | | | | |
| Marker No. | Test Frequency | Meter Reading | Detector | AF-54 (dB) | GL-3M (dB) | dB(uVolts/meter) | FCC Part 15 Subpart C 15.209 | Margin | Azimuth [Degs] | Height [cm] | Polarity |
| 1 | 126.3163 | 14.03 | PK | 13.8 | 1.2 | 29.03 | 43.5 | -14.47 | 2 | 400 | Horz |
| 2 | 195.2352 | 13.66 | PK | 15.5 | 1.5 | 30.66 | 43.5 | -12.84 | 8 | 200 | Horz |
| | | | | | | | | | | | |
| Horizontal 200 - 1000MHz | | | | | | | | | | | |
| Marker No. | Test Frequency | Meter Reading | Detector | AF-44067 (dB) | GL-3M (dB) | dB(uVolts/meter) | FCC Part 15 Subpart C 15.209 | Margin | Azimuth [Degs] | Height [cm] | Polarity |
| 3 | 486.1431 | 15.3 | PK | 17.4 | 2.4 | 35.1 | 46 | -10.9 | 335 | 300 | Horz |
| 4 | 612.2061 | 13.21 | PK | 20.2 | 2.8 | 36.21 | 46 | -9.79 | 357 | 200 | Horz |
| 5 | 707.8539 | 15.5 | PK | 20.2 | 3 | 38.7 | 46 | -7.3 | 301 | 100 | Horz |
| | | | | | | | | | | | |
| Vertical 200 - 1000MHz | | | | | | | | | | | |
| Marker No. | Test Frequency | Meter Reading | Detector | AF-44067 (dB) | GL-3M (dB) | dB(uVolts/meter) | FCC Part 15 Subpart C 15.209 | Margin | Azimuth [Degs] | Height [cm] | Polarity |
| 6 | 980.7904 | 14.37 | PK | 24.8 | 3.7 | 42.87 | 54 | -11.13 | 272 | 400 | Vert |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| PK - Peak detector | | | | | | | | | | | |

# 9. AC POWER LINE CONDUCTED EMISSIONS

**LIMITS**

FCC §15.207 (a)

RSS-Gen 7.2.2

| Frequency of Emission (MHz) | Conducted Limit (dBuV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56 * | 56 to 46 * |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

* Decreases with the logarithm of the frequency.

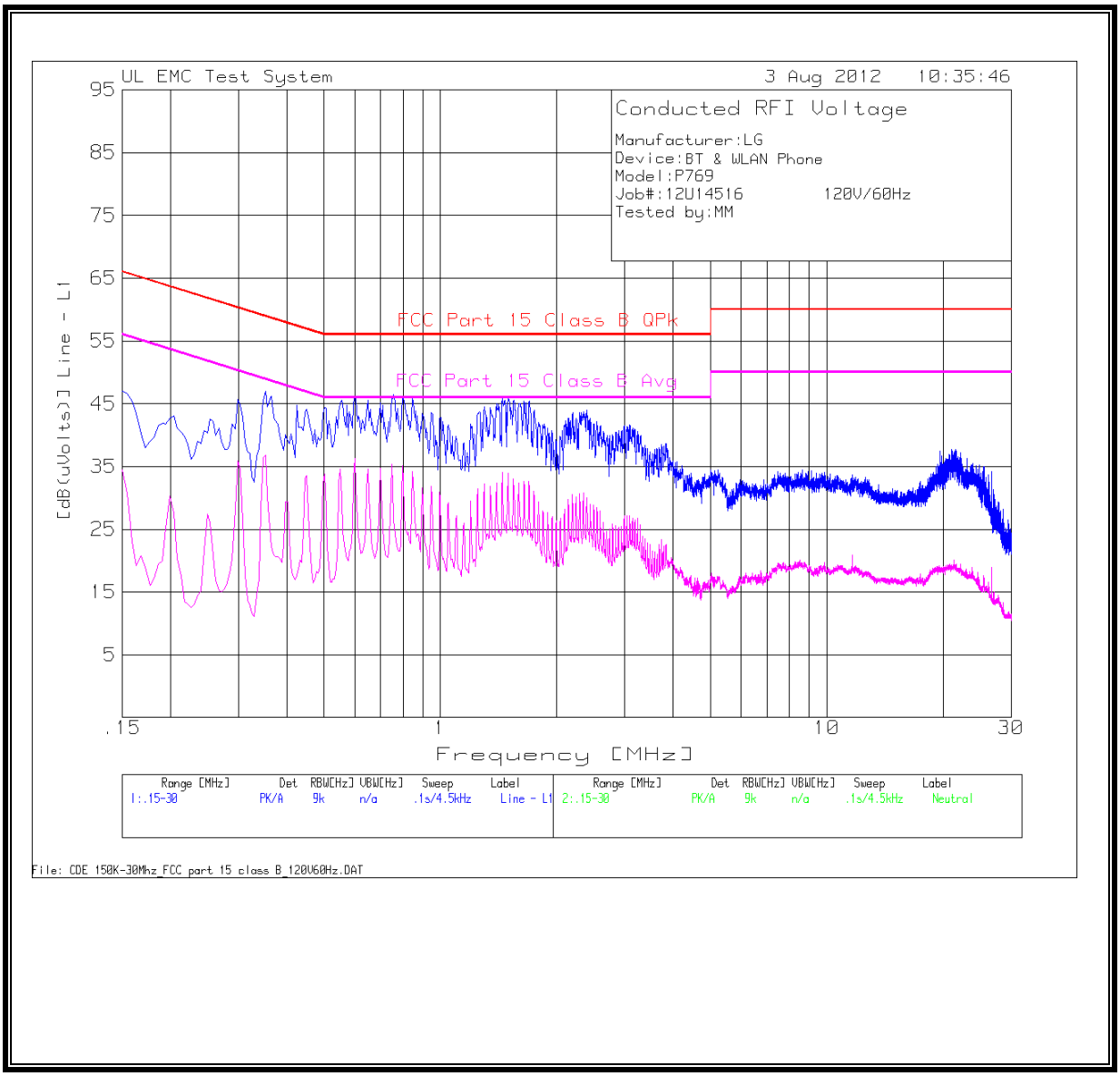
**TEST PROCEDURE**

ANSI C63.4

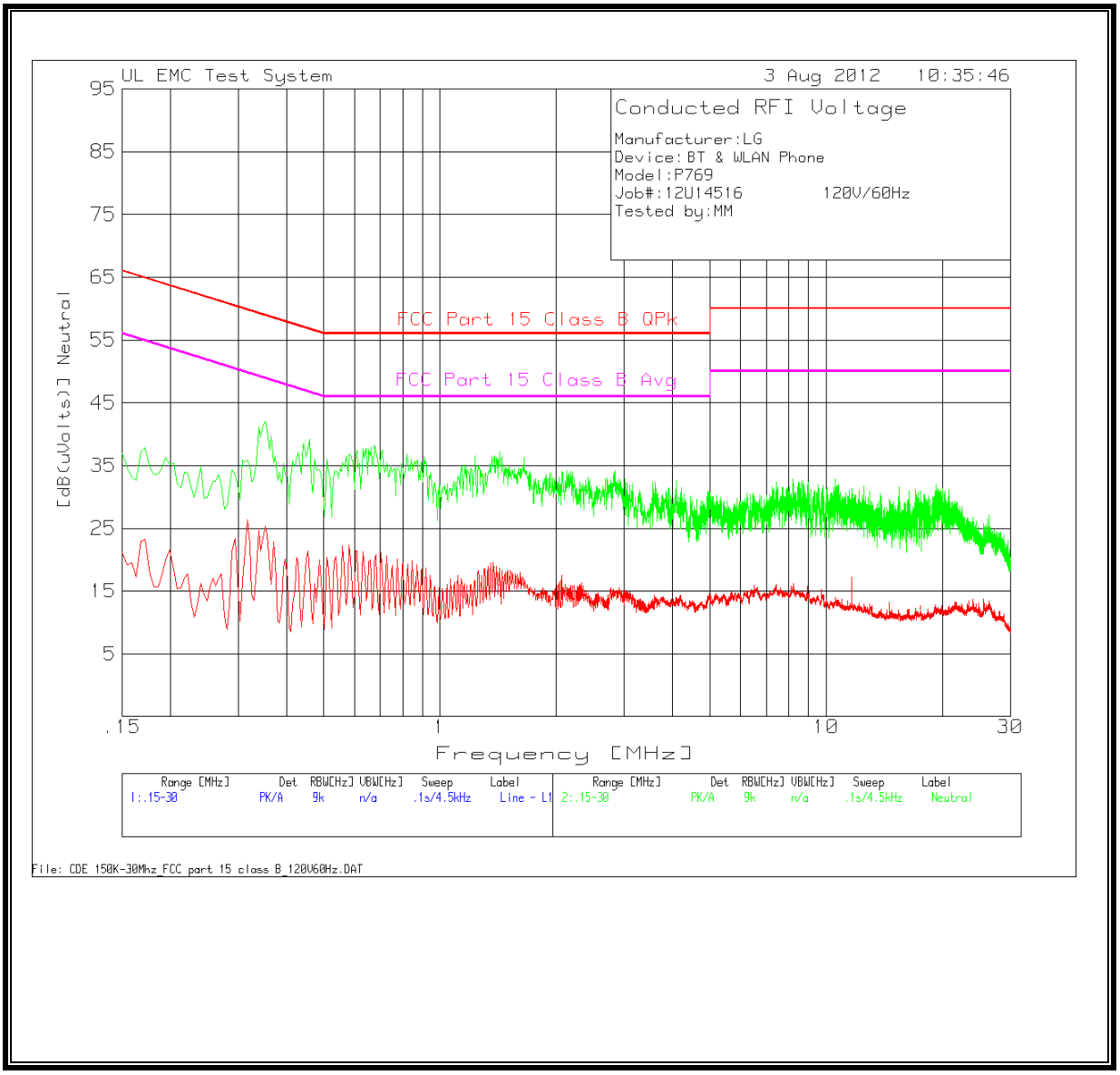
**RESULTS**

## 6 WORST EMISSIONS

## LINE 1 RESULTS



**LINE 2 RESULTS**



**NUMERICAL RESULTS**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Manufacturer:LG | | | | | | | | |
| Device: Phone with BT & WLAN | | | | | | | | |
| Model:P769 | | | | | | | | |
| Job#:12U14516 120V/60Hz | | | | | | | | |
| Tested by:MM | | | | | | | | |
| | | | | | | | | |
| Line - L1 .15 - 30MHz | | | | | | | | |
| Test Frequency | Meter Reading | Detector | LISN 5A636 L1 [dB] | [dB(uVolts)] | FCC Part 15 Class B QPk | Margin | FCC Part 15 Class B Avg | Margin |
| 0.2985 | 35.65 | PK | 10 | 45.65 | 60.3 | -14.65 | 50.3 | -4.65 |
| 0.2985 | 25.88 | Av | 10 | 35.88 | 60.3 | -24.42 | 50.3 | -14.42 |
| 0.3525 | 36.95 | PK | 10 | 46.95 | 58.9 | -11.95 | 48.9 | -1.95 |
| 0.3525 | 26.81 | Av | 10 | 36.81 | 58.9 | -22.09 | 48.9 | -12.09 |
| 0.555 | 35.5 | PK | 10.1 | 45.6 | 56 | -10.4 | 46 | -0.4 |
| 0.555 | 19.87 | Av | 10.1 | 29.97 | 56 | -26.03 | 46 | -16.03 |
| 0.6495 | 35.51 | PK | 10.1 | 45.61 | 56 | -10.39 | 46 | -0.39 |
| 0.6495 | 24.51 | Av | 10.1 | 34.61 | 56 | -21.39 | 46 | -11.39 |
| 0.7575 | 36.3 | PK | 10.1 | 46.4 | 56 | -9.6 | 46 | 0.4 |
| 0.7575 | 16.4 | Av | 10.1 | 26.5 | 56 | -29.5 | 46 | -19.5 |
| 0.8475 | 35.78 | PK | 10.1 | 45.88 | 56 | -10.12 | 46 | -0.12 |
| 0.8475 | 24.14 | Av | 10.1 | 34.24 | 56 | -21.76 | 46 | -11.76 |
| 1.446 | 35.8 | PK | 10.1 | 45.9 | 56 | -10.1 | 46 | -0.1 |
| 1.446 | 23.97 | Av | 10.1 | 34.07 | 56 | -21.93 | 46 | -11.93 |
| 1.698 | 35.35 | PK | 10.1 | 45.45 | 56 | -10.55 | 46 | -0.55 |
| 1.698 | 21.3 | Av | 10.1 | 31.4 | 56 | -24.6 | 46 | -14.6 |
| | | | | | | | | |
| Neutral .15 - 30MHz | | | | | | | | |
| Test Frequency | Meter Reading | Detector | LISN 5A636 L2 [dB] | [dB(uVolts)] | FCC Part 15 Class B QPk | Margin | FCC Part 15 Class B Avg | Margin |
| 0.3525 | 32.07 | PK | 10 | 42.07 | 58.9 | -16.83 | 48.9 | -6.83 |
| 0.3525 | 15.32 | Av | 10 | 25.32 | 58.9 | -33.58 | 48.9 | -23.58 |
| 0.4605 | 29.06 | PK | 10.1 | 39.16 | 56.7 | -17.54 | 46.7 | -7.54 |
| 0.4605 | 7.54 | Av | 10.1 | 17.64 | 56.7 | -39.06 | 46.7 | -29.06 |
| 0.6765 | 28.2 | PK | 10.1 | 38.3 | 56 | -17.7 | 46 | -7.7 |
| 0.6765 | 9.72 | Av | 10.1 | 19.82 | 56 | -36.18 | 46 | -26.18 |
| 0.8205 | 26.7 | PK | 10.1 | 36.8 | 56 | -19.2 | 46 | -9.2 |
| 0.8205 | 7.85 | Av | 10.1 | 17.95 | 56 | -38.05 | 46 | -28.05 |
| 1.167 | 24.77 | PK | 10.1 | 34.87 | 56 | -21.13 | 46 | -11.13 |
| 1.167 | 2.8 | Av | 10.1 | 12.9 | 56 | -43.1 | 46 | -33.1 |
| 1.4235 | 27.06 | PK | 10.1 | 37.16 | 56 | -18.84 | 46 | -8.84 |
| 1.4235 | 8.55 | Av | 10.1 | 18.65 | 56 | -37.35 | 46 | -27.35 |
| | | | | | | | | |
| PK - Peak detector | | | | | | | | |
| Av - Average detector | | | | | | | | |