



PCTEST ENGINEERING LABORATORY, INC.

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MEASUREMENT REPORT

FCC PART 15.407 / IC RSS-210 802.11n 40MHz BW (UNII)

Applicant Name:

Pantech Co Ltd
Pantech Building, I-2, DMC
Sangam-dong, Mapo-gu,
Seoul, KOREA 121-792

Date of Testing:

July 16 - August 21, 2012

Test Site/Location:

PCTEST Lab, Columbia, MD, USA

Test Report Serial No.:

0Y1207120929.JYC

FCC ID:

JYCP8010

APPLICANT:

Pantech Co Ltd

Application Type:

Class II Permissive Change

Model(s):

P8010

EUT Type:

Portable Handset

FCC Classification:

Unlicensed National Information Infrastructure (UNII)

FCC Rule Part(s):

Part 15.407

IC Specification(s):

RSS-210 Issue 8

Test Procedure(s):

ANSI C63.4-2003/2009, ANSI C63.10-2009, KDB 789033

Class II Perm. Change:

Please see Change Document

Original Grant Date:

May 15, 2012

Mode	UNII Band	Channel Bandwidth (MHz)	Tx Frequency (MHz)	Conducted Power	
				Max. Power (mW)	Max. Power (dBm)
802.11n	1	40	5190 - 5230	6.209	7.93
	2	40	5270 - 5310	6.792	8.32
	3	40	5510 - 5670	5.260	7.21

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.4-2003/2009 and ANSI C63.10-2009. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

PCTEST certifies that no party to this application has been subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 862.



Randy Ortanez
President



FCC ID: JYCP8010		FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
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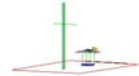
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MEASUREMENT REPORT

FCC Part 15.407



§ 2.1033 General Information

APPLICANT: Pantech Co Ltd

APPLICANT ADDRESS: Pantech Building, I-2, DMC
Sangam-dong, Mapo-gu., Seoul, KOREA 121-792

TEST SITE: PCTEST ENGINEERING LABORATORY, INC.

TEST SITE ADDRESS: 7185 Oakland Mills Road, Columbia, MD 21046 USA

FCC RULE PART(S): Part 15.407

IC SPECIFICATION(S): RSS-210 Issue 8

MODEL NAME: P8010

FCC ID: JYCP8010

Test Device Serial No.: 7MAY-1, 7MAY-2 Production Pre-Production Engineering

FCC CLASSIFICATION: Unlicensed National Information Infrastructure (UNII)

DATE(S) OF TEST: July 16 - August 21, 2012



TEST REPORT S/N: 0Y1207120929.JYC

Test Facility / Accreditations

Measurements were performed at PCTEST Engineering Lab located in Columbia, MD 21046, U.S.A.

- PCTEST facility is an FCC registered (PCTEST Reg. No. 159966) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules and Industry Canada (2451B-1).
- PCTEST Lab is accredited to ISO 17025 by U.S. National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP Lab code: 100431-0) in EMC, FCC and Telecommunications.
- PCTEST Lab is accredited to ISO 17025-2005 by the American Association for Laboratory Accreditation (A2LA) in Specific Absorption Rate (SAR) testing, Hearing Aid Compatibility (HAC) testing, CTIA Test Plans, and wireless testing for FCC and Industry Canada Rules.
- PCTEST Lab is a recognized U.S. Conformity Assessment Body (CAB) in EMC and R&TTE (n.b. 0982) under the U.S.-EU Mutual Recognition Agreement (MRA).
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC Guide 65 by the American National Standards Institute (ANSI) in all scopes of FCC Rules and Industry Canada Standards (RSS).
- PCTEST facility is an IC registered (2451B-1) test laboratory with the site description on file at Industry Canada.
- PCTEST is a CTIA Authorized Test Laboratory (CATL) for AMPS, CDMA, and EvDO wireless devices and for Over-the-Air (OTA) Antenna Performance testing for AMPS, CDMA, GSM, GPRS, EGPRS, UMTS (W-CDMA), CDMA 1xEVDO, and CDMA 1xRTT.



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1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

1.2 PCTEST Test Location

The map below shows the location of the PCTEST LABORATORY, its proximity to the FCC Laboratory, the Columbia vicinity, the Baltimore-Washington Intern't'l (BWI) airport, the city of Baltimore and the Washington, DC area. (See Figure 1-1).

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility located at 7185 Oakland Mills Road, Columbia, MD 21046. The site coordinates are 39° 10'23" N latitude and 76° 49'50" W longitude. The facility is 0.4 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2003/2009 on February 15, 2012.

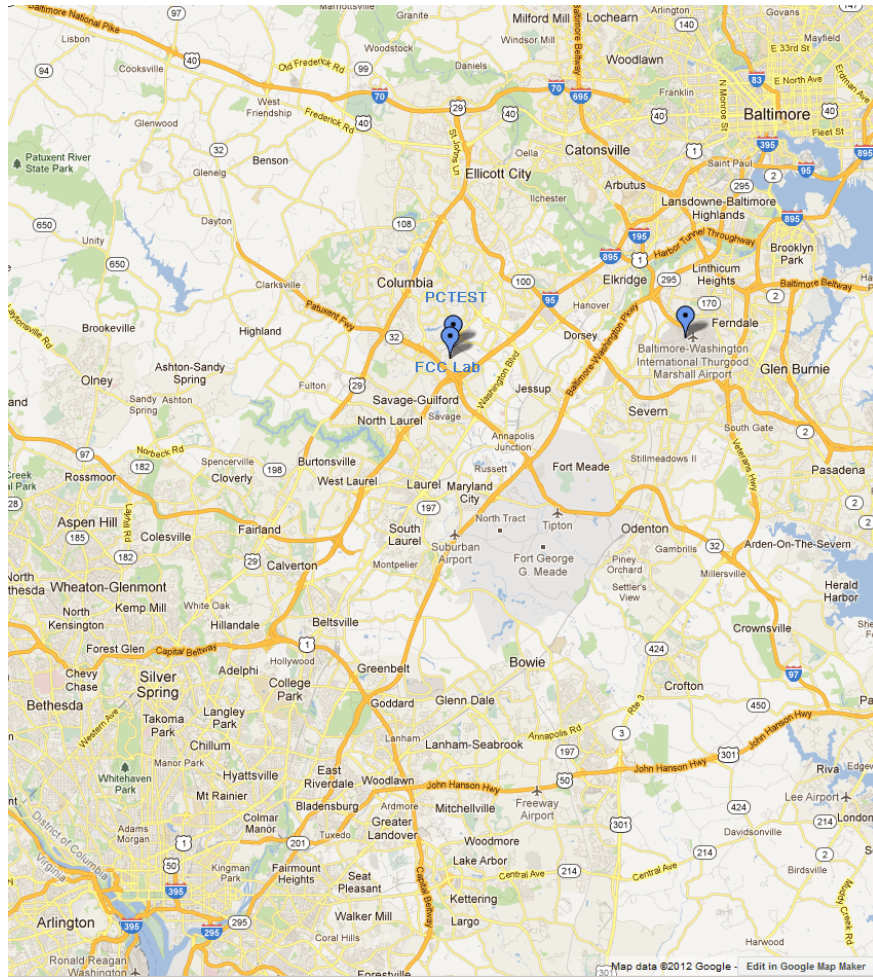




Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **Pantech Portable Handset FCC ID: JYCP8010**. The test data contained in this report pertains only to the emissions due to the EUT's NII transmitter.

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 GSM/GPRS/EDGE, 850/1900 WCDMA/HSPA, Band 2, 4, 5, 17 LTE with 5 and 10MHz BW, 802.11a/b/g/n WIFI (DTS/NII), Bluetooth (EDR)

*Note: 5GHz WIFI supported 40MHz Bandwidth

2.3 Test Configuration

The Pantech Portable Handset FCC ID: JYCP8010 was tested per the guidance of ANSI C63.10-2009 and KDB 789033. See Sections 3.2, and 6.1 of this test report for a description of the AC line conducted emissions, radiated emissions, and antenna port conducted emissions test setups, respectively.

Note: 5GHz 802.11n transmission in this device supports 20MHz and 40MHz channel bandwidths.

2.4 EMI Suppression Device(s)/Modifications



No EMI suppression device(s) were added and/or no modifications were made during testing.

2.5 Labeling Requirements

Per 2.1074 & 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the trade name and FCC ID must be displayed on the device per Section 15.19(b)(2).

Please see attachment for FCC ID label and label location.

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3.0 DESCRIPTION OF TEST

3.1 Evaluation Procedure

The measurement procedures described in the American National Standard for Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz (ANSI C63.4-2003/2009), the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2009), and the guidance provided in KDB 789033 were used in the measurement of **Pantech Portable Handset FCC ID: JYCP8010**.



Deviation from measurement procedure.....None

3.2 Radiated Emissions

The radiated test facilities consisted of an indoor 3 meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. For measurements above 1GHz absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1GHz, the absorbers are removed. An ETS Lindgren Model 2188 raised turntable is used for radiated measurement. It is a continuously rotatable, remote-controlled, metallic turntable and 2 meters (6.56 ft.) in diameter. The turn table is flush with the raised floor of the chamber in order to maintain its function as a ground plane. A 78cm high PVC support structure is placed on top of the turntable. A 3/4" (~1.9cm) sheet of high density polyethylene is used as the table top and is placed on top of the PVC supports to bring the total height of the table to 80cm.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33(b)(1) depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The test set-up was placed on top of the 0.8 meter high, 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precaution was taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, if applicable, turntable azimuth, and receive antenna height was noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by varying: the mode of operation or resolution, clock or data rate, scrolling H pattern to the EUT and/or support equipment, and changing the polarity of the receive antenna, whichever produced the worst-case emissions. To record the final measurements, the analyzer detector function was set to CISPR quasi-peak mode and the bandwidth of the spectrum analyzer was set to 120kHz for frequencies below 1GHz or 1MHz for frequencies above 1GHz.

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4.0 ANTENNA REQUIREMENTS

Excerpt from §15.203 of the FCC Rules/Regulations:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

- The antennas of the Portable Handset are **permanently attached**.
- There are no provisions for connection to an external antenna.

Conclusion:

The Pantech Portable Handset FCC ID: JYCP8010 unit complies with the requirement of §15.203.

Band 1		Band 2		Band 3	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
36	5180	52	5260	100	5500
:	:	:	:	:	:
42	5210	56	5280	116	5580
:	:	:	:	:	:
48	5240	64	5320	140	5700



Table 4-1. 802.11a Frequency / Channel Operations

Band 1		Band 2		Band 3	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
36	5180	52	5260	100	5500
:	:	:	:	:	:
42	5210	56	5280	116	5580
:	:	:	:	:	:
48	5240	64	5320	140	5700

Table 4-2. 802.11n (20MHz BW) Frequency / Channel Operations

Band 1		Band 2		Band 3	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
38	5190	54	5270	102	5510
:	:	:	:	:	:
46	5230	62	5310	110	5550
:	:	:	:	:	:
				134	5670

Table 4-3. 802.11n (40MHz BW) Frequency / Channel Operations

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5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST).

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	WL25-1	Conducted WLAN Cable Set (25GHz)	2/13/2012	Annual	2/13/2013	N/A
-	RE2	Radiated Emissions Cable Set (VHF/UHF)	2/13/2012	Annual	2/13/2013	N/A
-	BT2	Bluetooth Cable Set	2/17/2012	Annual	2/17/2013	N/A
Agilent	8447D	Broadband Amplifier	5/8/2012	Annual	5/8/2013	2443A01900
Agilent	N9020A	MXA Signal Analyzer	10/10/2011	Annual	10/10/2012	US46470561
Anritsu	MA2411B	Power Sensor	3/5/2012	Annual	3/5/2013	846215
Anritsu	ML2495A	Power Meter	10/13/2011	Annual	10/13/2012	1039008
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	7/22/2011	Annual	7/22/2012	125518
ETS Lindgren	3160-09	18-26.5 GHz Standard Gain Horn	5/30/2012	3-years	5/30/2015	135427
Mini-Circuits	VHF-8400+	3.4GHz - 9.9GHz High Pass Filter	2/28/2012	Annual	2/28/2013	31048
Rohde & Schwarz	RS-PR18	1-18 GHz Pre-Amplifier	6/9/2012	Annual	6/9/2013	100071
Rohde & Schwarz	RS-PR26	18-26.5 GHz Pre-Amplifier	6/9/2012	Annual	6/9/2013	100040
Rohde & Schwarz	ESU26	EMI Test Receiver	12/15/2011	Annual	12/15/2012	100342
Espec	BTZ-133	Temperature Chamber	3/30/2011	Biennial	3/30/2013	80602
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	1/26/2012	Biennial	1/26/2014	A051107

Table 5-1. Annual Test Equipment Calibration Schedule

Note: For equipment above with calibration due date that falls within the test date range, care was taken to ensure that the equipment was utilized prior to the calibration due date.

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6.0 TEST RESULTS

6.1 Summary



Company Name: Pantech Co Ltd
 FCC ID: JYCP8010
 Method/System: Unlicensed National Information Infrastructure (UNII)
 Data Rate(s) Tested: 13.5/15, 27/30, 40.5/45, 54/60, 81/90, 108/120, 121.5/135, 135/150 (n – 40MHz BW)

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
TRANSMITTER MODE (TX)						
N/A	RSS-210 [A9.2]	26dB Bandwidth [FCC] Occupied Bandwidth [IC]	N/A	CONDUCTED	PASS	Section 6.2
15.407 (a)(1)	RSS-210 [A9.2]	Maximum Conducted Output Power	< 4 + 10log ₁₀ (BW) dBm (5150-5250MHz) [FCC] < 10 + 10log ₁₀ (BW) dBm (5150-5250MHz) [IC] < 11 + 10log ₁₀ (B) dBm (5250-5350MHz) < 11 + 10log ₁₀ (B) dBm (5470 – 5725MHz)		PASS	Section 6.3
15.407 (a)(1), (5)	RSS-210 [A9.2]	Peak Power Spectral Density	< 4 dBm/MHz (5150-5250) [FCC] < 10dBm/MHz (5150-5250) [IC] < 11dBm/MHz (5250-5350) < 11dBm/MHz (5470-5725)		PASS	Section 6.4
15.407(a)(6)	N/A	Peak Excursion	< 13 dB/MHz maximum difference		PASS	Section 6.5
15.407(b)(1), (2),(3)	RSS-210 [A9.2]	Undesirable Emissions	< -27 dBm/MHz EIRP (5150-5350MHz, 5470-5725MHz)	RADIATED	PASS	Section 6.6
15.205, 15.407(b)(1), (5), (6)	RSS-Gen [7.2.3.2]	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209 (RSS-210 table 3 limits)		PASS	Section 6.7

Table 6-1. Summary of Test Results

Notes:

- 1) For this Class II Permissive Change Test Report, testing was only performed for the 40MHz Bandwidth 802.11n signal. All 802.11n 40MHz Bandwidth modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
- 3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables and attenuators.

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6.2 26dB Bandwidth Measurement – 802.11n 40MHz BW

The bandwidth at 26dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum power control level, as defined in KDB 789033, at the appropriate frequencies. The spectrum analyzer’s bandwidth measurement function is configured to measure the 26dB bandwidth. **The 26dB bandwidth is used to determine the conducted power limits.**

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured 26dB Bandwidth [MHz]
Band I	5190	38	n (40MHz)	13.5/15 (MCS0)	43.29
	5230	46	n (40MHz)	13.5/15 (MCS0)	43.99
Band II	5270	54	n (40MHz)	13.5/15 (MCS0)	45.70
	5310	62	n (40MHz)	13.5/15 (MCS0)	48.66
Band III	5510	102	n (40MHz)	13.5/15 (MCS0)	76.73
	5550	110	n (40MHz)	13.5/15 (MCS0)	78.56
	5670	134	n (40MHz)	13.5/15 (MCS0)	79.05

Table 6-2. Conducted Bandwidth Measurements

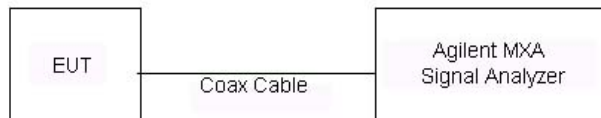


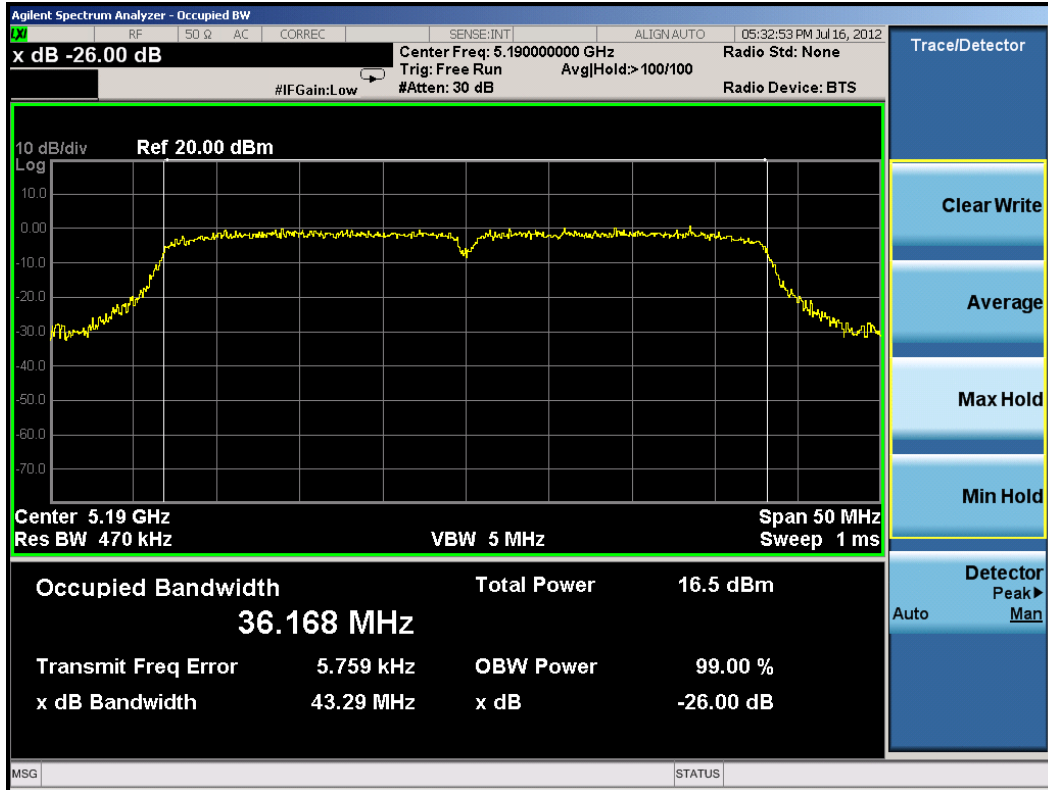
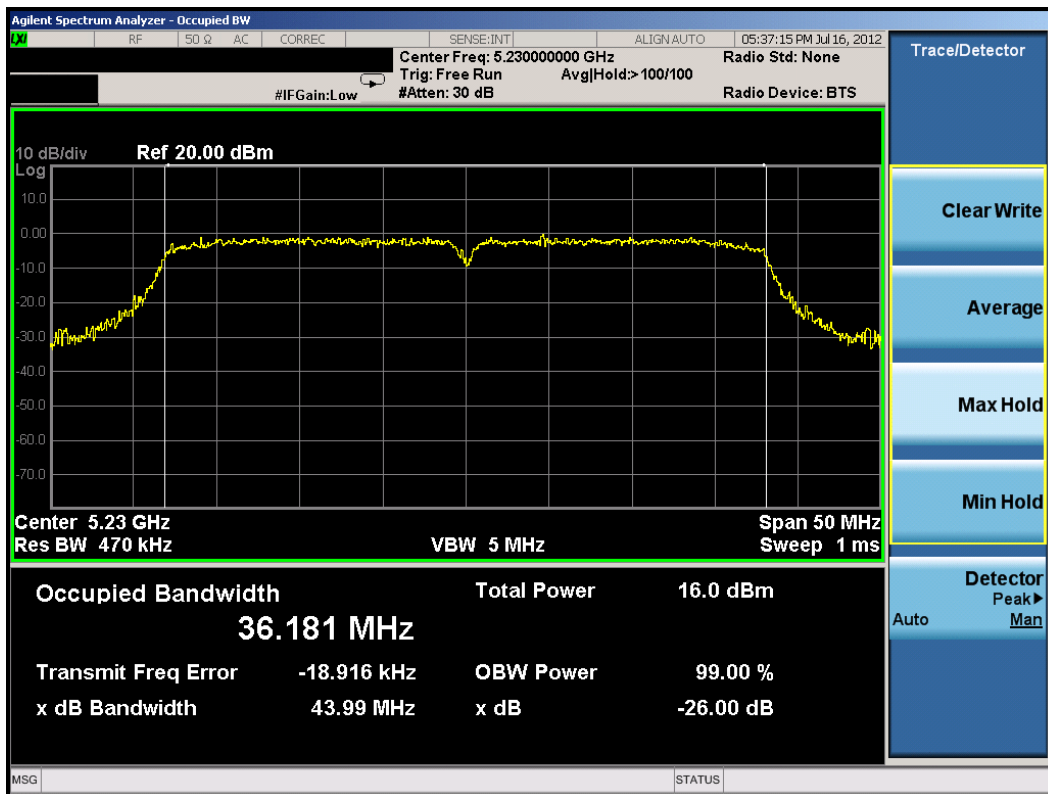


Figure 6-1. Test Instrument & Measurement Setup

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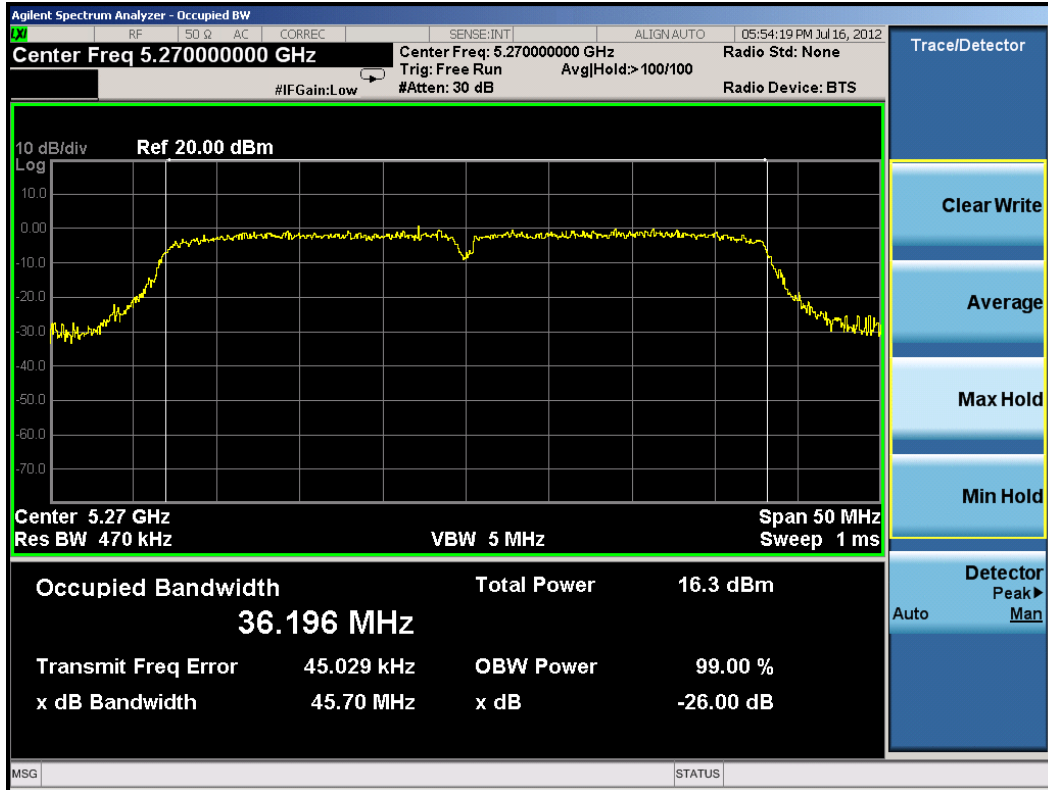


Plot 6-1. 26dB Bandwidth Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 38)

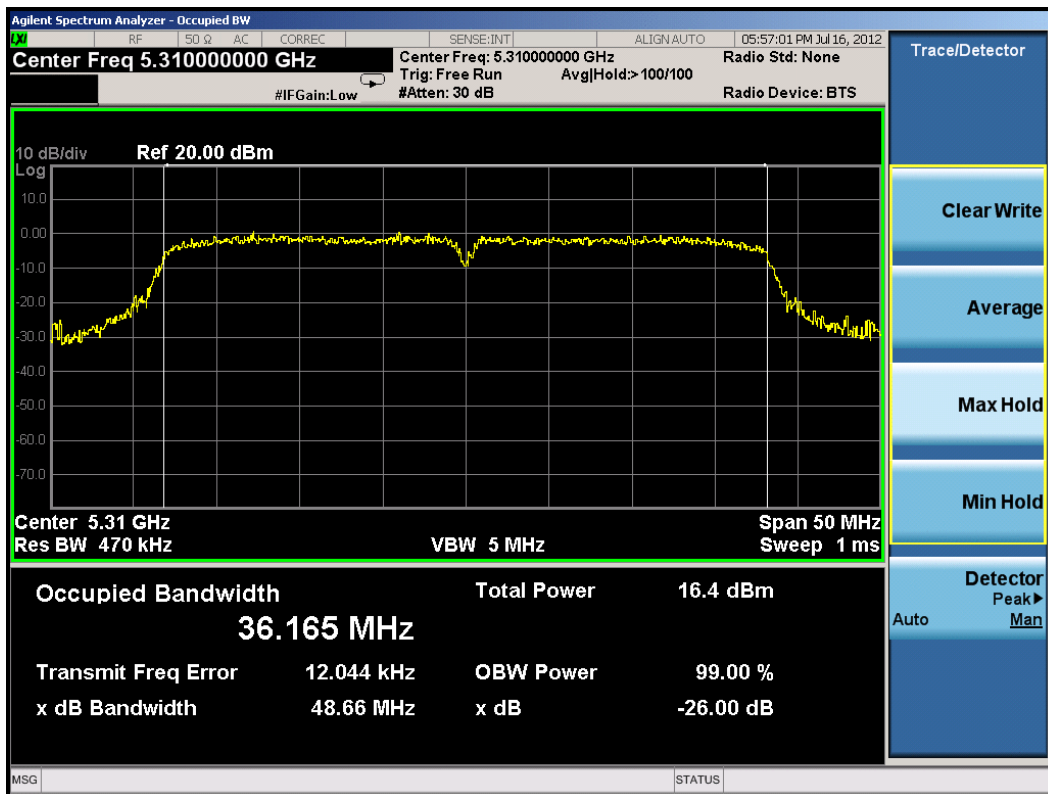


Plot 6-2. 26dB Bandwidth Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 46)

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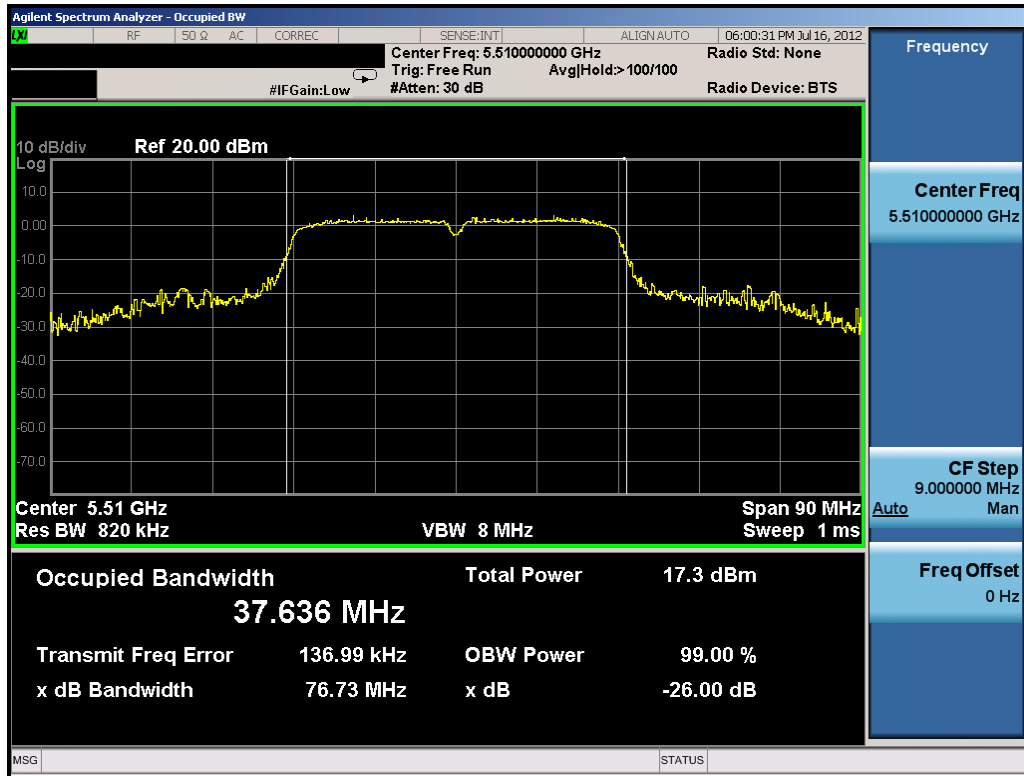


Plot 6-3. 26dB Bandwidth Plot (40MHz BW 802.11n (UNII Band 2) – Ch. 54)

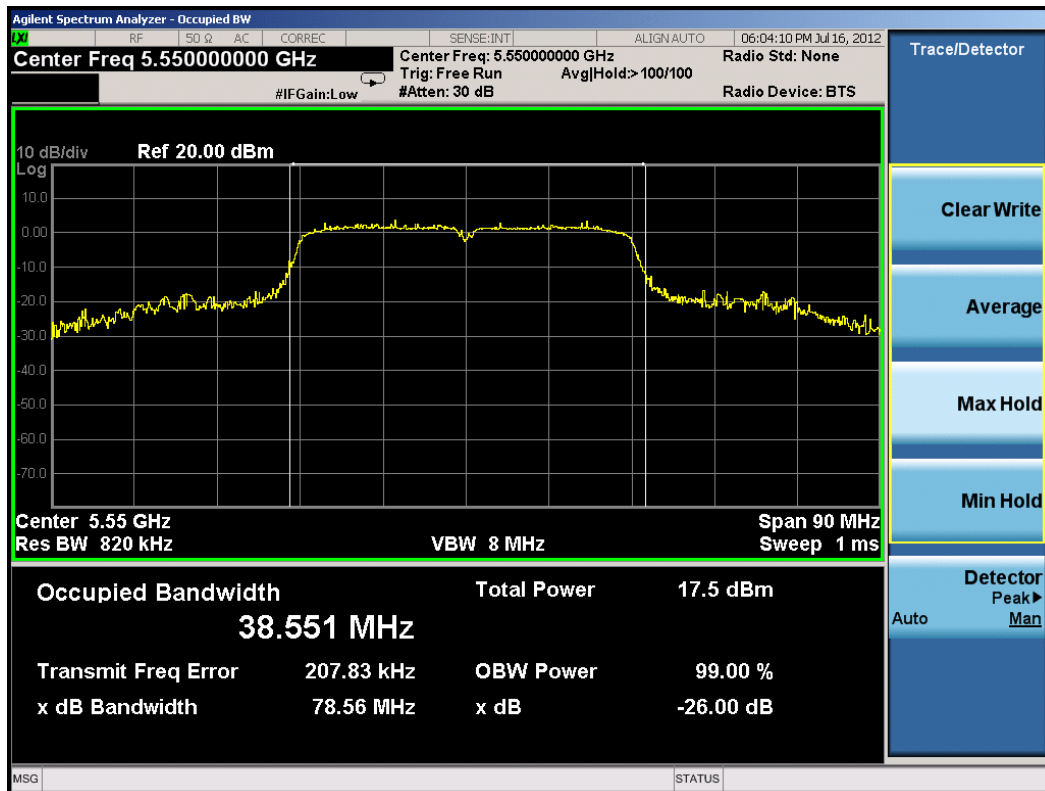


Plot 6-4. 26dB Bandwidth Plot (40MHz BW 802.11n (UNII Band 2) – Ch. 62)

FCC ID: JYCP8010		FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
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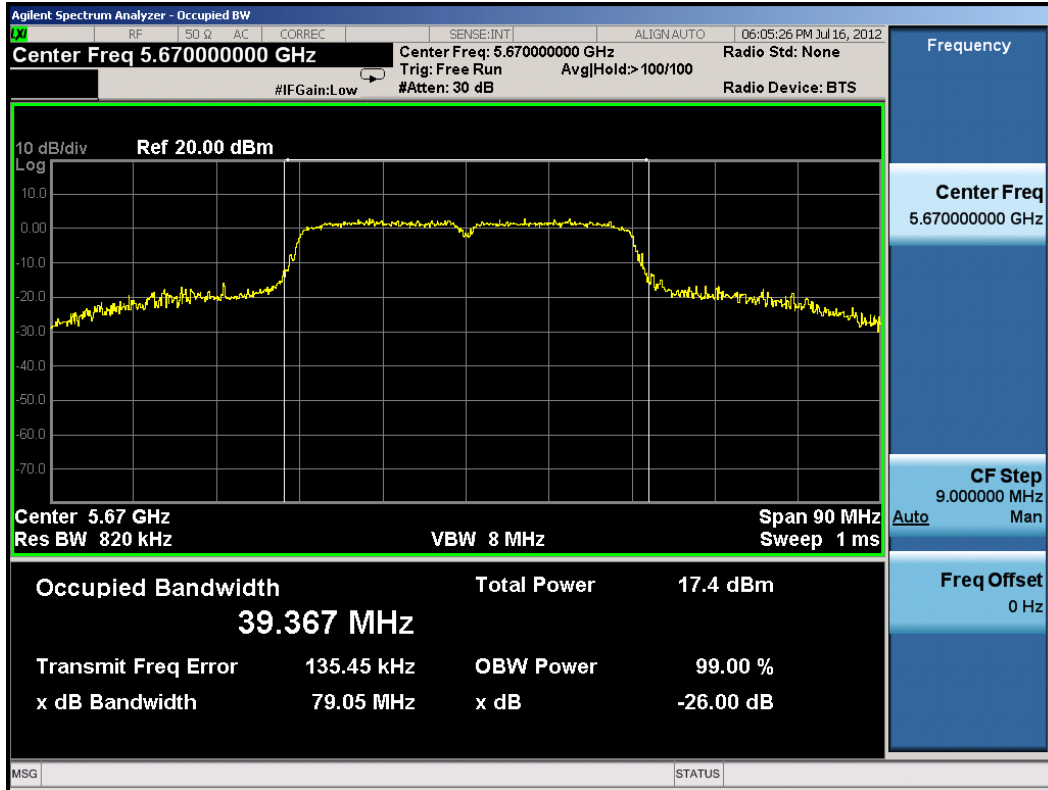


Plot 6-5. 26dB Bandwidth Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 102)



Plot 6-6. 26dB Bandwidth Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 110)

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Plot 6-7. 26dB Bandwidth Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 134)

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6.3 UNII Output Power Measurement – 802.11n 40MHz BW §15.407 (a)(1); RSS-210 [A9.2]

A transmitter antenna terminal of EUT is connected to the input of a RF power sensor. Measurement is made using a broadband average power meter while the EUT is operating continuously at its maximum power control level, as defined in KDB 789033, at the appropriate frequencies.

In the 5.15 – 5.25GHz band, the maximum permissible conducted output power is the lesser of 50mW (16.99dBm) and $4 \text{ dBm} + 10\log_{10}(26\text{dB BW}) = 4 \text{ dBm} + 10\log_{10}(43.29) = 20.36\text{dBm}$.

In the 5.25 – 5.35GHz band, the maximum permissible conducted output power is the lesser of 250mW (23.98dBm) and $11 \text{ dBm} + 10\log_{10}(26\text{dB BW}) = 11 \text{ dBm} + 10\log_{10}(45.7) = 20.6\text{dBm}$.

In the 5.47 – 5.725GHz band, the maximum permissible conducted output power is the lesser of 250mW (23.98dBm) and $11 \text{ dBm} + 10\log_{10}(26\text{dB BW}) = 11 \text{ dBm} + 10\log_{10}(76.73) = 22.85\text{dBm}$.

Mode	Freq [MHz]	Channel	Detector	40MHz BW 802.11n (5GHz) Conducted Power [dBm]							
				Data Rate [Mbps]							
				13.5/15	27/30	40.5/45	54/60	81/90	108/120	121.5/135	135/150
802.11n	5190	38	AVG	7.93	7.88	7.84	7.86	7.85	7.88	7.79	7.85
802.11n	5230	46	AVG	7.70	7.61	7.79	7.78	7.67	7.71	7.79	7.71
802.11n	5270	54	AVG	8.32	8.18	8.19	8.19	8.16	8.20	8.13	8.22
802.11n	5310	62	AVG	8.29	8.25	8.23	8.23	8.23	8.18	8.13	8.07
802.11n	5510	102	AVG	6.97	7.05	7.07	7.08	7.16	7.04	7.07	7.10
802.11n	5550	110	AVG	7.15	7.16	7.18	7.14	7.05	7.14	7.14	7.20
802.11n	5670	134	AVG	7.16	7.13	7.17	7.09	7.21	7.13	7.13	7.18

Table 6-3. 40MHz BW 802.11n (UNII) Maximum Conducted Output Power

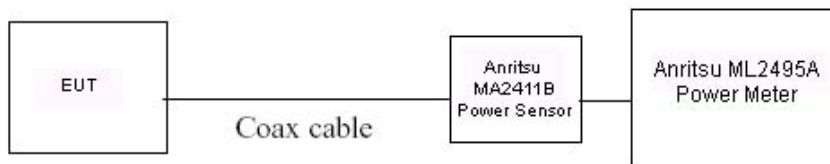




Figure 6-2. Test Instrument & Measurement Setup

FCC ID: JYCP8010		FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
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6.4 Peak Power Spectral Density – 802.11n 40MHz BW

§15.407 (a)(1),(5) / RSS-210 [A9.2]

The spectrum analyzer was connected to the antenna terminal while the EUT was operating in a continuous transmission mode at the appropriate center frequencies. Method SA-1, as defined in KDB 789033, was used to measure the power spectral density.

The maximum achievable duty cycle was found to be 86.8%. A video trigger was used to ensure that average measurements were made only at times during which the transmitter was at its maximum power level. The minimum number of sweep points required to ensure that the bin-to-bin spacing is such that narrowband emissions are not lost is equal to $2 \times \text{Span} / \text{RBW} = 2 \times 40\text{MHz} / 1\text{MHz} = 80$ sweep points. Note that instead of using video trigger, utilizing the spectrum analyzer's gating function was investigated to ensure measurement was made only during the "ON" times. The resulting peak power spectral density utilizing the spectrum analyzer's gate is the same as the result using video triggering.

The maximum permissible peak power spectral density is 4dBm/MHz in the 5.15GHz – 5.25GHz band and 11dBm/MHz in the 5.25GHz – 5.35 GHz and 5.47 – 5.725GHz bands.

	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured Power Density [dBm]	Max Permissible Power Density [dBm/MHz]	Margin [dB]
Band I	5190	38	n (40MHz)	13.5/15 (MCS0)	-4.59	4.0	-8.59
	5230	46	n (40MHz)	13.5/15 (MCS0)	-4.70	4.0	-8.70
Band II	5270	54	n (40MHz)	13.5/15 (MCS0)	-4.46	11.0	-15.46
	5310	62	n (40MHz)	13.5/15 (MCS0)	-4.30	11.0	-15.30
Band III	5510	102	n (40MHz)	13.5/15 (MCS0)	-4.62	11.0	-15.62
	5550	110	n (40MHz)	13.5/15 (MCS0)	-4.15	11.0	-15.15
	5670	134	n (40MHz)	13.5/15 (MCS0)	-4.51	11.0	-15.51

Table 6-4. Conducted Power Spectral Density Measurements

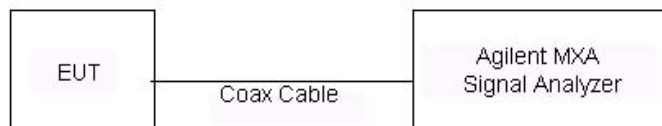


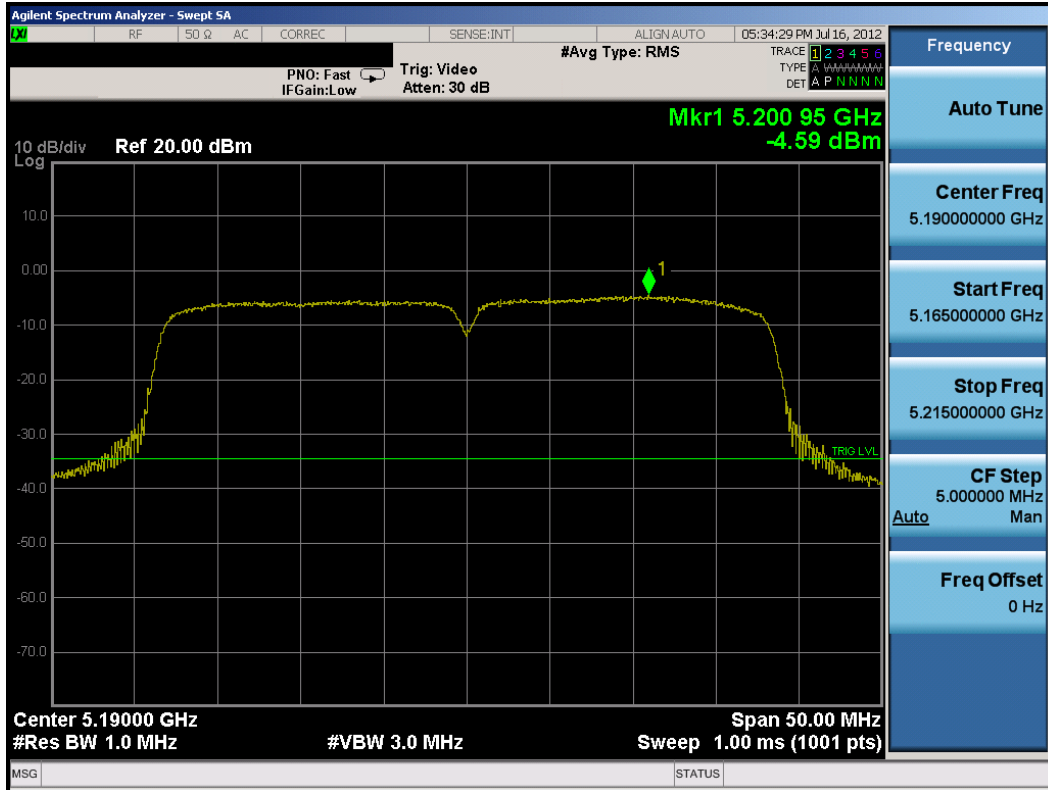
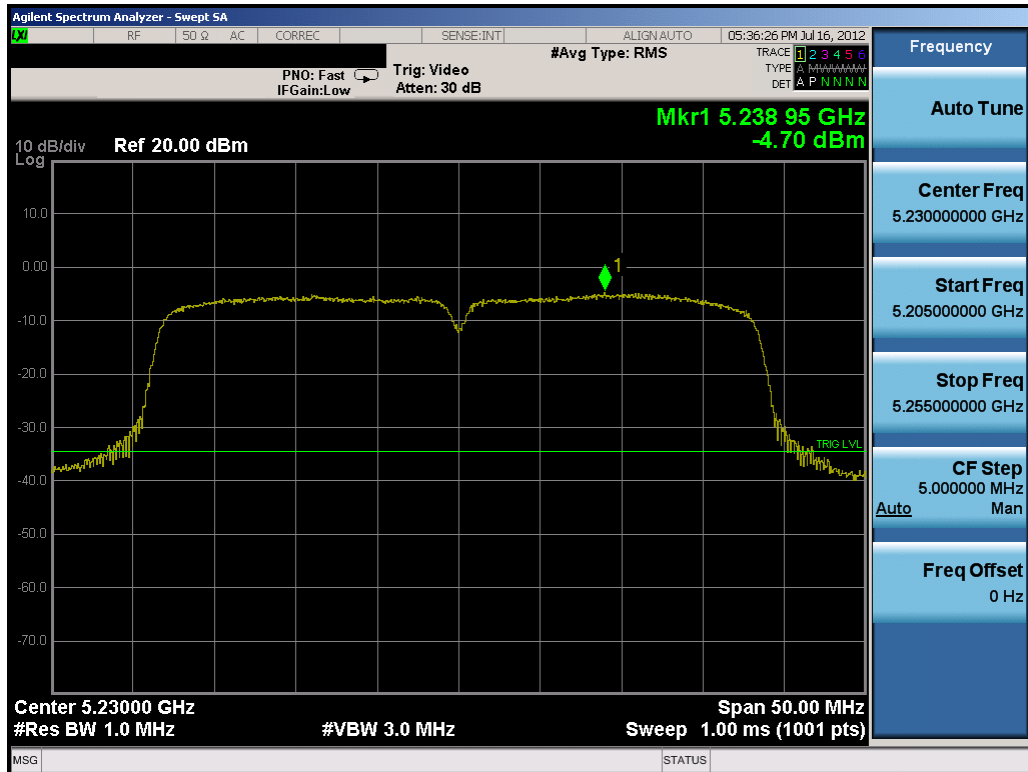


Figure 6-3. Test Instrument & Measurement Setup

FCC ID: JYCP8010		FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1207120929.JYC	Test Dates: July 16 - August 21, 2012	EUT Type: Portable Handset		Page 16 of 38

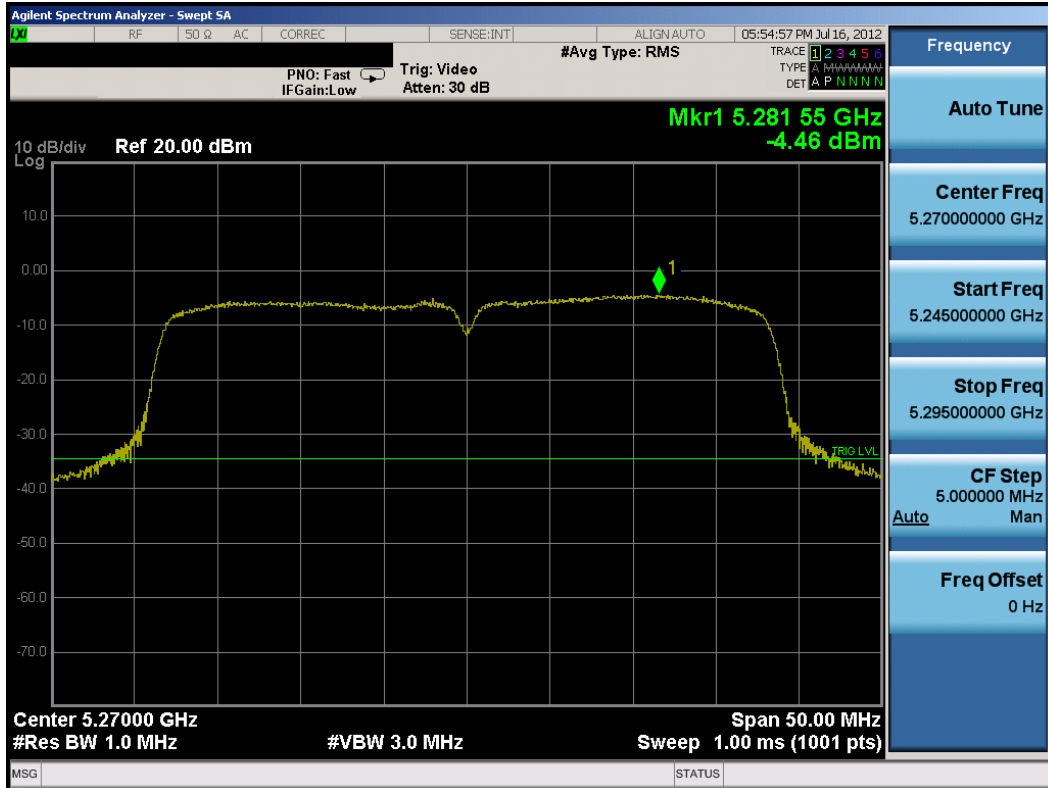


Plot 6-8. Peak Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 38)

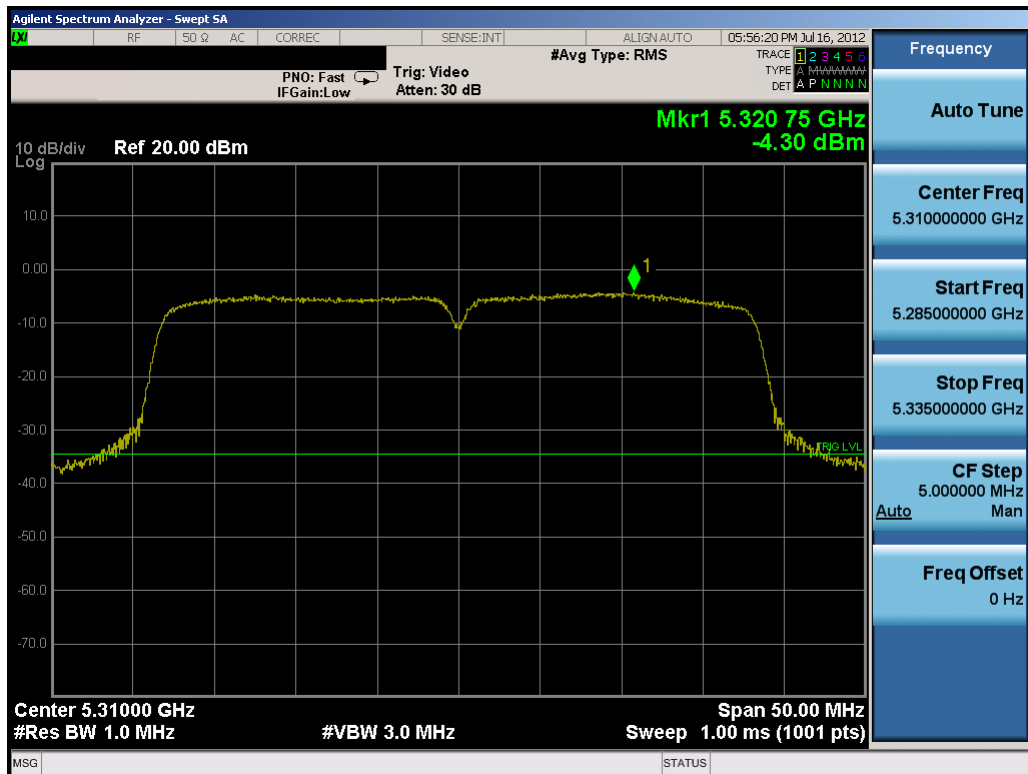


Plot 6-9. Peak Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 46)

FCC ID: JYCP8010	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	PANTECH	Reviewed by: Quality Manager
Test Report S/N: 0Y1207120929.JYC	Test Dates: July 16 - August 21, 2012	EUT Type: Portable Handset		Page 17 of 38

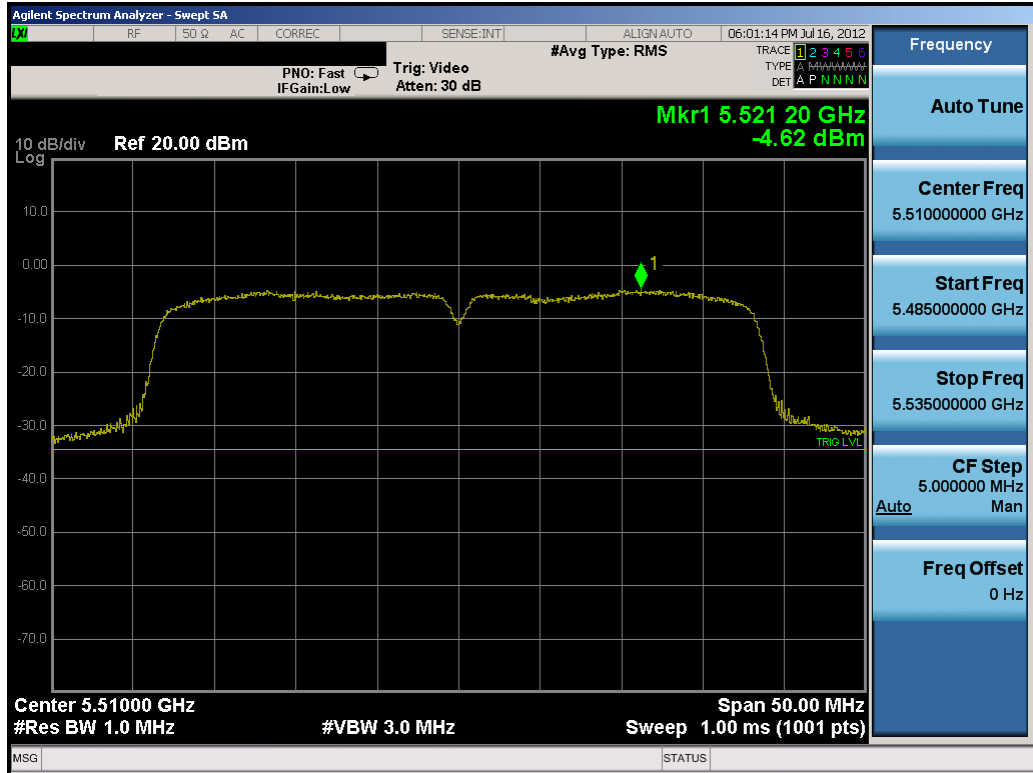


Plot 6-10. Peak Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2) – Ch. 54)

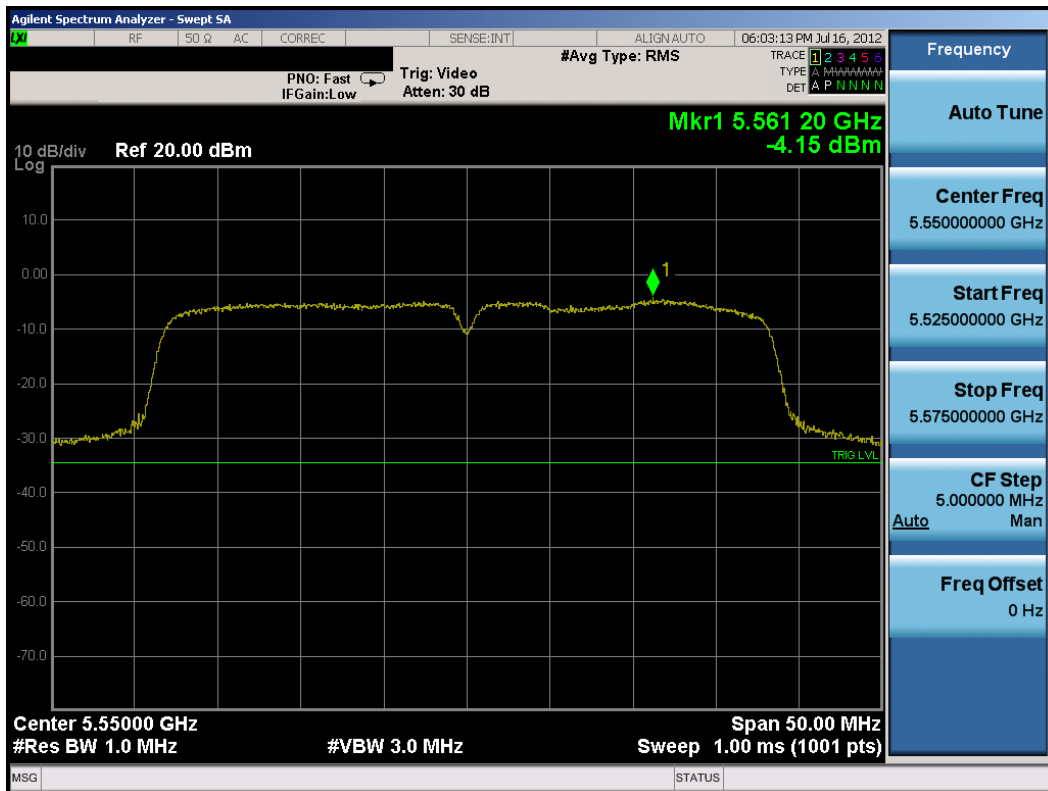


Plot 6-11. Peak Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 2) – Ch. 62)

FCC ID: JYCP8010		FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
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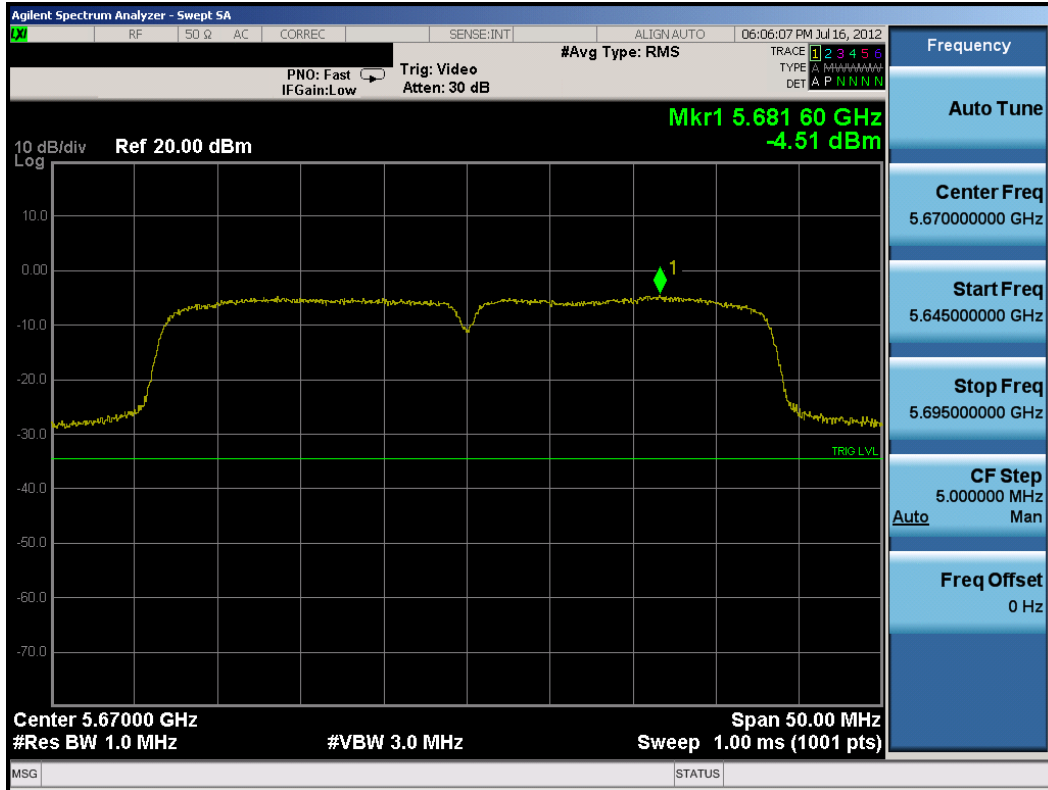


Plot 6-12. Peak Power Spectral Density Plot (20MHz BW 802.11n (UNII Band 3) – Ch. 102)



Plot 6-13. Peak Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 110)

FCC ID: JYCP8010		FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
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Plot 6-14. Peak Power Spectral Density Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 134)

FCC ID: JYCP8010	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	PANTECH	Reviewed by: Quality Manager
Test Report S/N: 0Y1207120929.JYC	Test Dates: July 16 - August 21, 2012	EUT Type: Portable Handset		Page 20 of 38

6.5 Peak Excursion Ratio – 802.11n 40MHz BW §15.407(a)(6)

The spectrum analyzer was connected to the antenna terminal while the EUT was operating in the continuous transmission mode at the appropriate center frequencies.

Method SA-1, as defined in KDB 789033 and with the settings described in Section 6.4 of this test report, was used to generate the average signal trace and the procedure outlined in section F) of KDB 789033 was used to generate the peak signal trace. A minimum of 100 trace averages were used for the average signal. The peak and average traces are then used to determine the peak excursion.

The largest permissible difference between the modulation envelope (measured using a peak hold function) and the maximum conducted output power is 13 dBm/MHz.

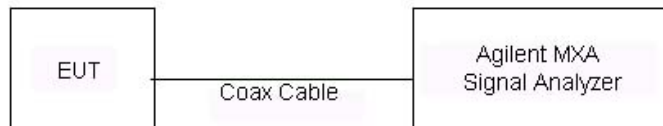


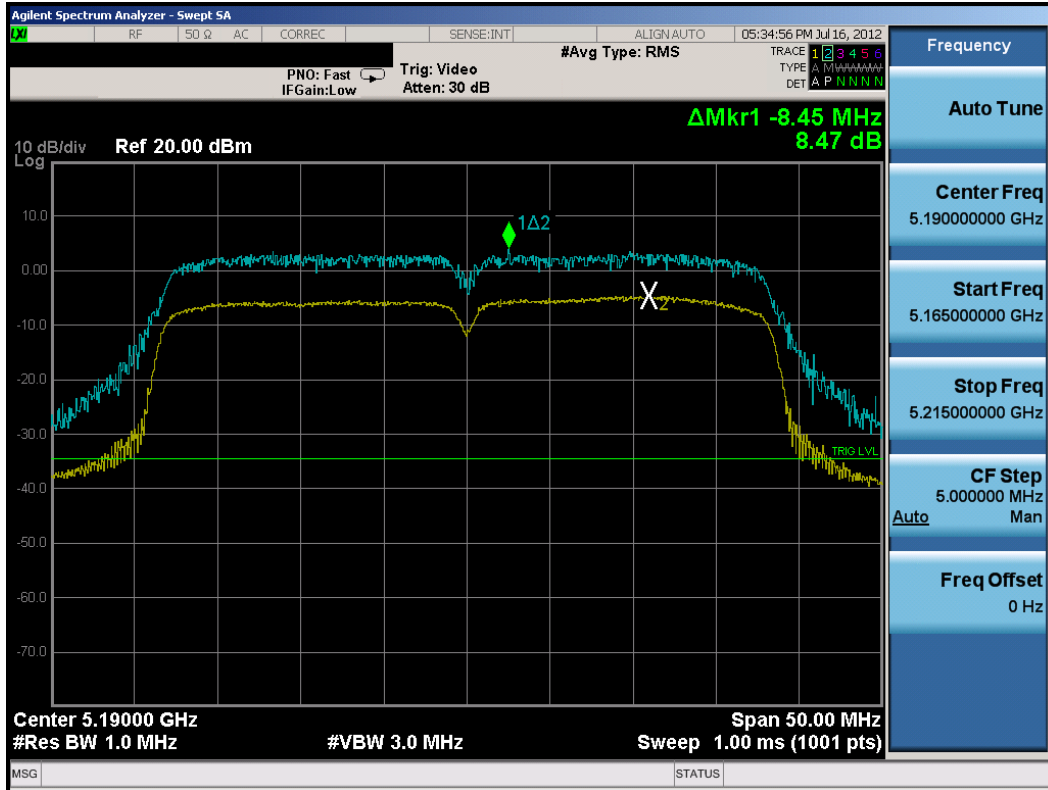


Figure 6-4. Test Instrument & Measurement Setup

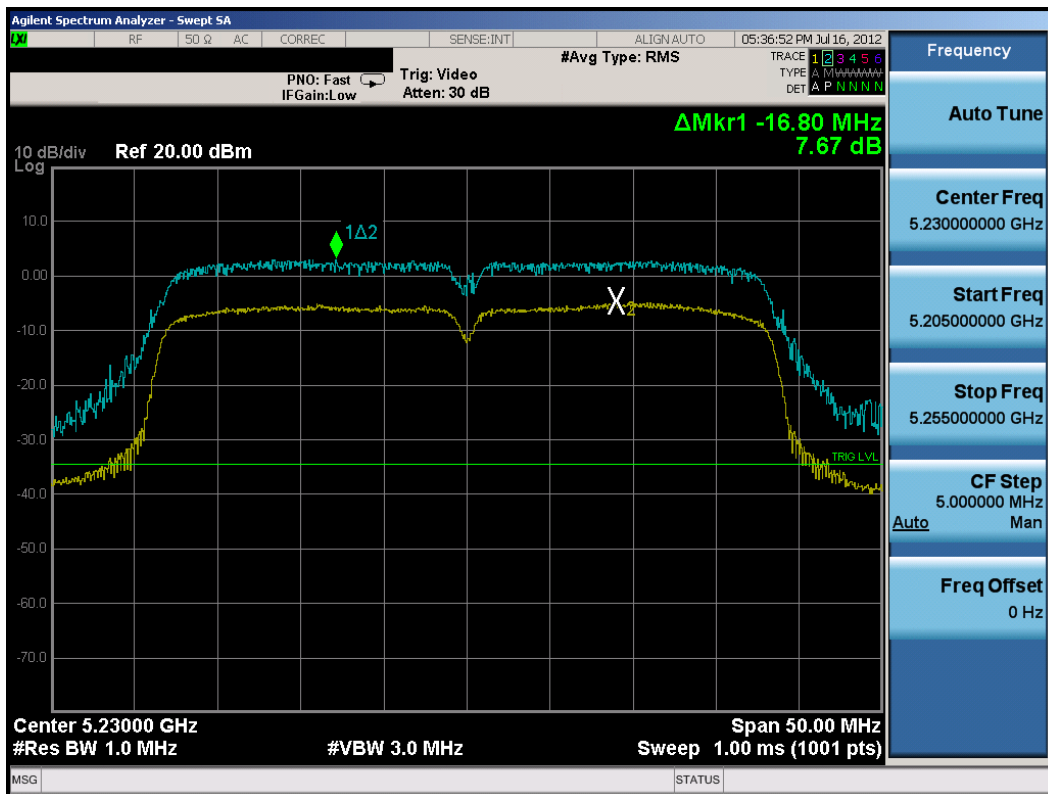
	Frequency [MHz]	Channel No.	802.11 Mode	Data Rate [Mbps]	Measured Peak Excursion Ratio [dBm]	Max Permissible Peak Excursion Ratio [dBm/MHz]	Margin [dB]
Band I	5190	38	n (40MHz)	13.5/15 (MCS0)	8.47	13.0	-4.53
	5230	46	n (40MHz)	13.5/15 (MCS0)	7.67	13.0	-5.33
Band II	5270	54	n (40MHz)	13.5/15 (MCS0)	8.45	13.0	-4.55
	5310	62	n (40MHz)	13.5/15 (MCS0)	8.28	13.0	-4.72
Band III	5510	102	n (40MHz)	13.5/15 (MCS0)	9.52	13.0	-3.48
	5550	110	n (40MHz)	13.5/15 (MCS0)	8.05	13.0	-4.95
	5670	134	n (40MHz)	13.5/15 (MCS0)	9.02	13.0	-3.98

Table 6-5. Conducted Peak Excursion Ratio Measurements

FCC ID: JYCP8010		FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
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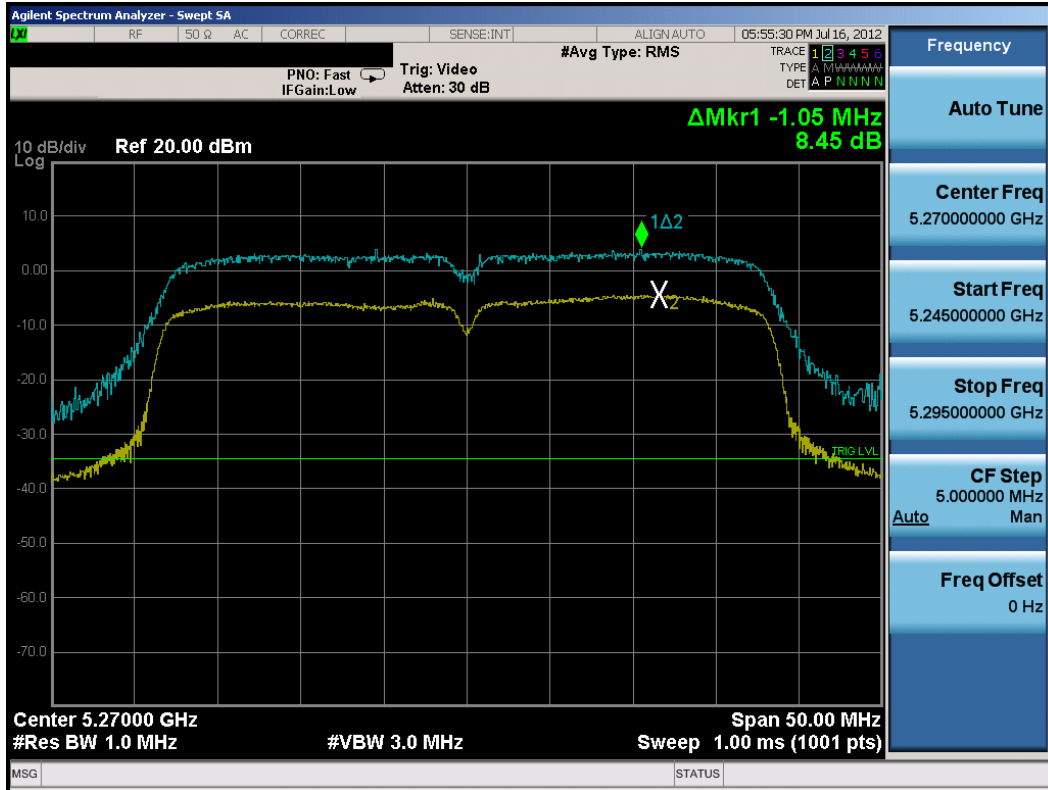


Plot 6-15. Peak Excursion Ratio Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 38)

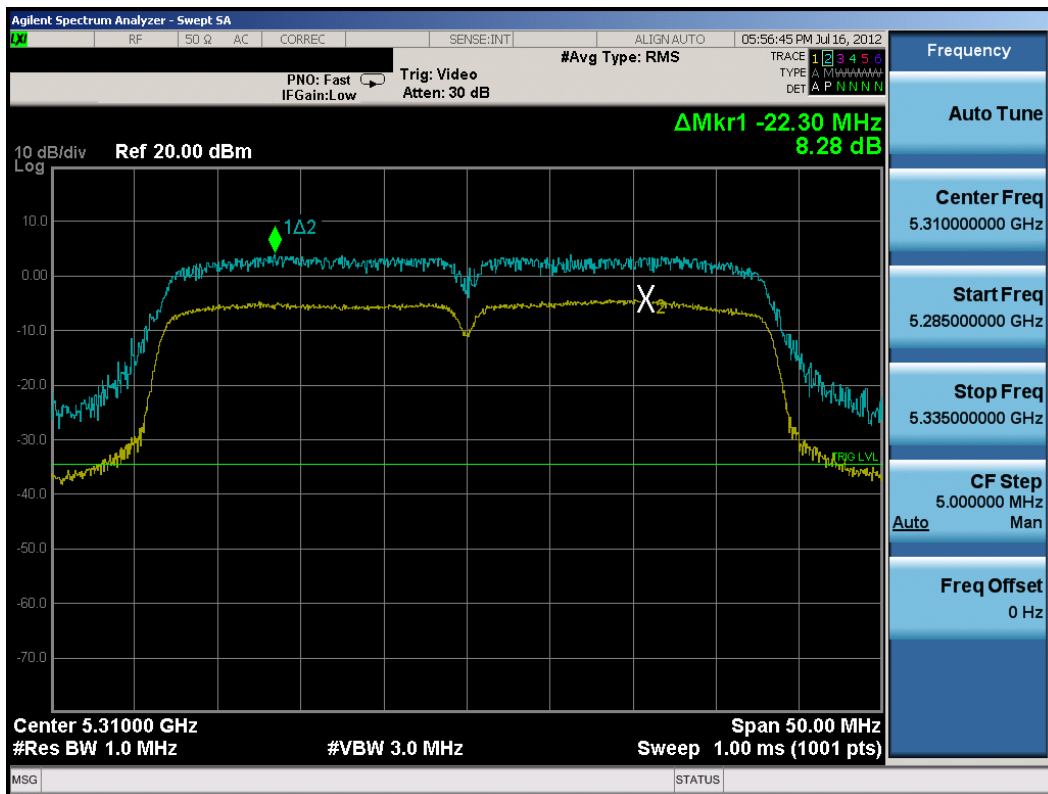


Plot 6-16. Peak Excursion Ratio Plot (40MHz BW 802.11n (UNII Band 1) – Ch. 46)

FCC ID: JYCP8010	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	PANTECH	Reviewed by: Quality Manager
Test Report S/N: 0Y1207120929.JYC	Test Dates: July 16 - August 21, 2012	EUT Type: Portable Handset		Page 22 of 38

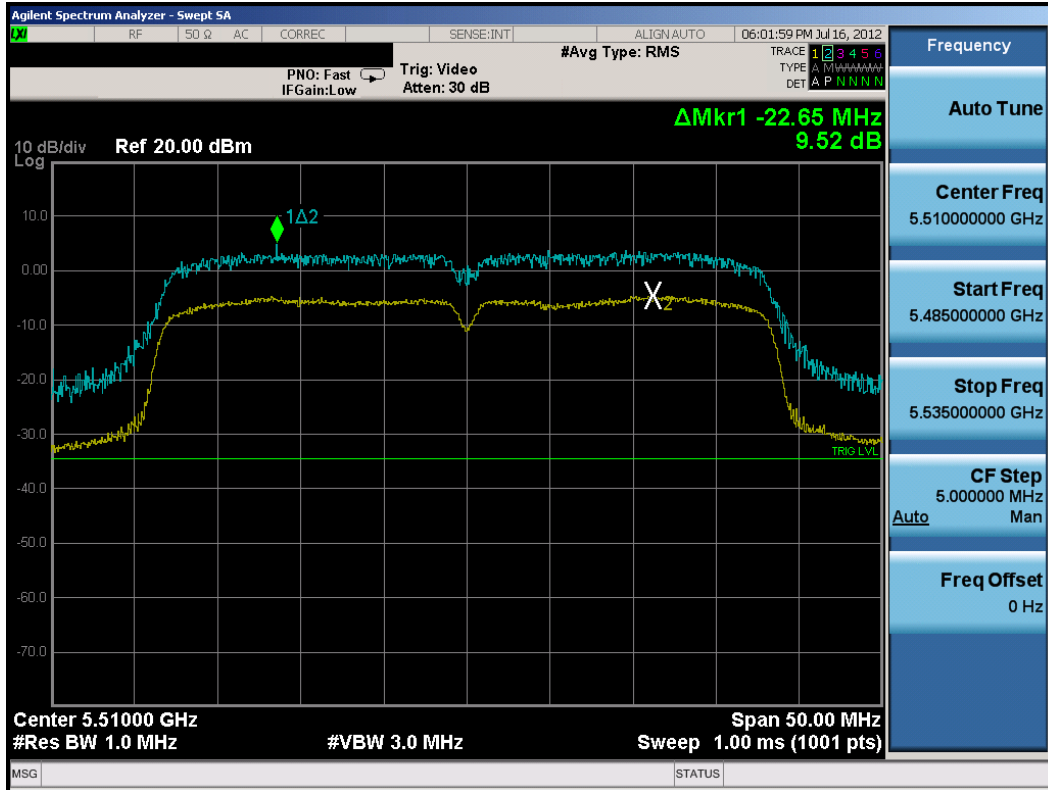


Plot 6-17. Peak Excursion Ratio Plot (40MHz BW 802.11n (UNII Band 2) – Ch. 54)

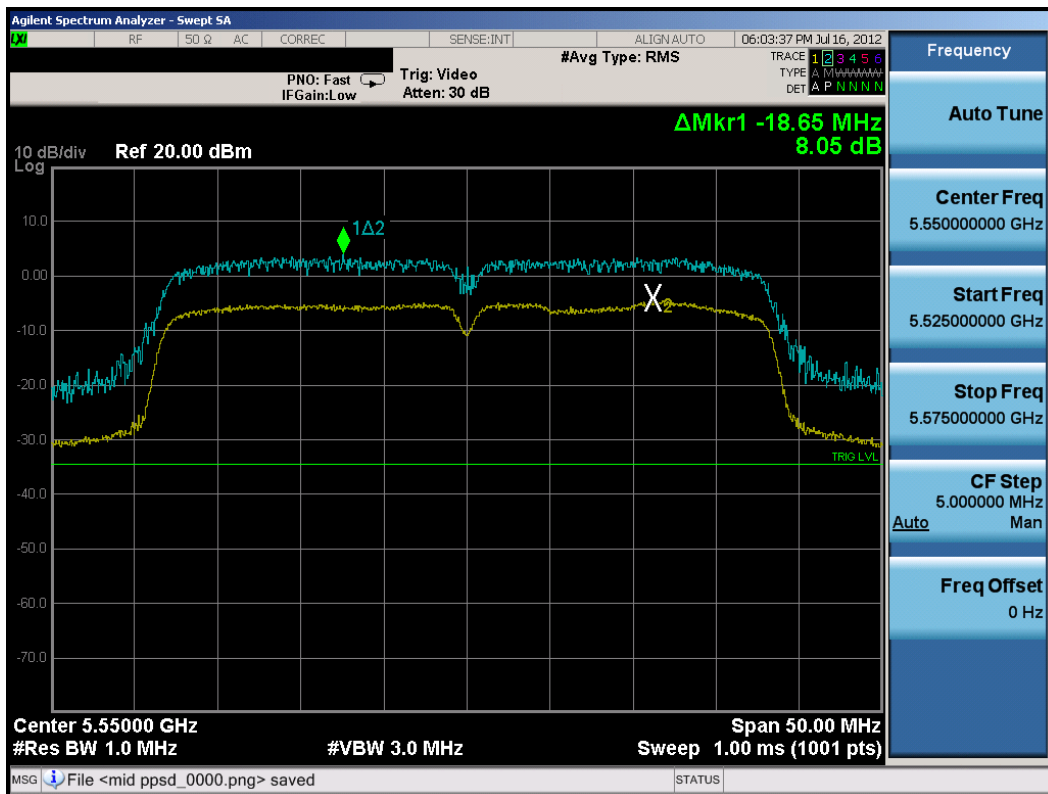


Plot 6-18. Peak Excursion Ratio Plot (40MHz BW 802.11n (UNII Band 2) – Ch. 62)

FCC ID: JYCP8010		FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
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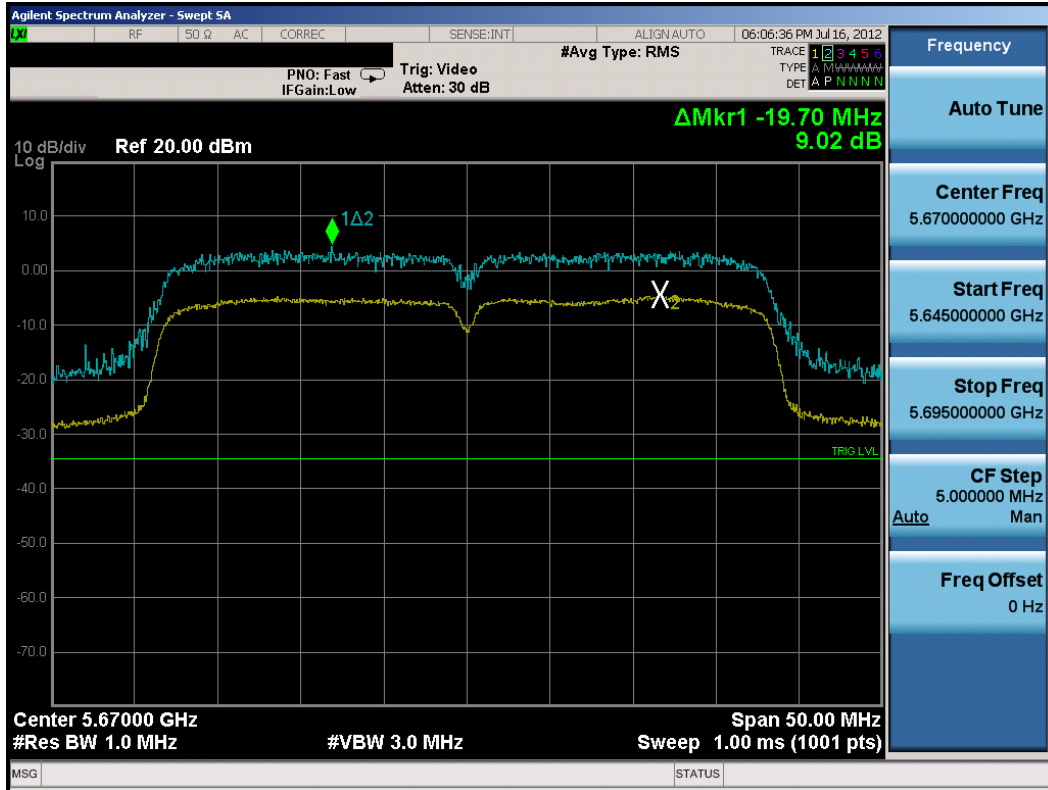


Plot 6-19. Peak Excursion Ratio Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 102)



Plot 6-20. Peak Excursion Ratio Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 110)

FCC ID: JYCP8010	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	PANTECH	Reviewed by: Quality Manager
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Plot 6-21. Peak Excursion Ratio Plot (40MHz BW 802.11n (UNII Band 3) – Ch. 134)

FCC ID: JYCP8010	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	PANTECH	Reviewed by: Quality Manager
Test Report S/N: 0Y1207120929.JYC	Test Dates: July 16 - August 21, 2012	EUT Type: Portable Handset		Page 25 of 38

6.6 Radiated Spurious Emission Measurements - 802.11n 40MHz BW

§15.407(b)(1), (6), §15.205, §15.209; RSS-210 [A9.2]

The EUT was tested from 9kHz and up to the 10th harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. Above 1 GHz, peak measurements were taken using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation (“Method AD”) per KDB 789033 and linearly polarized horn antennas. All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table 6-6 per Section 15.209.



All 40MHz BW data rates and modes were investigated for radiated spurious emissions. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section. All measurements shown in this section were obtained using traditional radiated test methods as defined in C63.10-2009. The optional test procedures for antenna port conducted measurements of unwanted emissions per the guidance of KDB 789033 were not used to evaluate this device.

Frequency	Field Strength [μV/m]	Measured Distance [Meters]
0.009 – 0.490 MHz	2400/F (kHz)	300
0.490 – 1.705 MHz	24000/F (kHz)	30
1.705 – 30.00 MHz	30	30
30.00 – 88.00 MHz	100	3
88.00 – 216.0 MHz	150	3
216.0 – 960.0 MHz	200	3
Above 960.0 MHz	500	3

Table 6-6. Radiated Limits

Sample Calculation

- Field Strength Level [dBμV/m] = Analyzer Level [dBm] + 107 + AFCL [dB/m]
- AFCL [dB/m] = Antenna Factor [dB/m] + Cable Loss [dB]
- Margin [dB] = Field Strength Level [dBμV/m] – Limit [dBμV/m]

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Radiated Spurious Emission Measurements (Cont'd)
§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]



Worst Case Transfer Rate: MCS0
 Distance of Measurements: 1 and 3 Meter
 Operating Frequency: 5190MHz
 Channel: 38

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10380.00	-97.72	Peak	H	45.98	0.00	55.26	68.20	-12.94
* 15570.00	-135.00	Average	H	58.64	0.00	30.64	53.98	-23.34
* 15570.00	-125.00	Peak	H	58.64	0.00	40.64	73.98	-33.34
* 20760.00	-135.00	Average	H	44.00	0.00	16.00	53.98	-37.98
* 20760.00	-125.00	Peak	H	44.00	0.00	26.00	73.98	-47.98
25950.00	-125.00	Peak	H	44.88	0.00	26.88	68.20	-41.32

Table 6-7. Radiated Measurements

NOTES:

- All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dBμV/m.
- All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-6.
- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
- Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μV/m (54dBμ/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

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Radiated Spurious Emission Measurements (Cont'd)
§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Transfer Rate: MCS0

Distance of Measurements: 1 and 3 Meter

Operating Frequency: 5230MHz



Channel: 46

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10460.00	-98.17	Peak	H	46.14	0.00	54.97	68.20	-13.23
* 15690.00	-135.00	Average	H	59.21	0.00	31.21	53.98	-22.77
* 15690.00	-125.00	Peak	H	59.21	0.00	41.21	73.98	-32.77
* 20920.00	-135.00	Average	H	43.99	0.00	15.99	53.98	-37.99
* 20920.00	-125.00	Peak	H	43.99	0.00	25.99	73.98	-47.99
26150.00	-125.00	Peak	H	44.82	0.00	26.82	68.20	-41.38

Table 6-8. Radiated Measurements

NOTES:

- All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dBμV/m). At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dBμV/m.
- All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-6.
- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
- Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μV/m (54dBμ/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

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Radiated Spurious Emission Measurements (Cont'd)
§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]



Worst Case Transfer Rate: MCS0
 Distance of Measurements: 1 and 3 Meter
 Operating Frequency: 5270MHz
 Channel: 54

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10540.00	-98.72	Peak	H	46.32	0.00	54.61	68.20	-13.59
* 15810.00	-135.00	Average	H	59.88	0.00	31.88	53.98	-22.09
* 15810.00	-125.00	Peak	H	59.88	0.00	41.88	73.98	-32.09
* 21080.00	-135.00	Average	H	44.00	0.00	16.00	53.98	-37.98
* 21080.00	-125.00	Peak	H	44.00	0.00	26.00	73.98	-47.98
26350.00	-125.00	Peak	H	44.81	0.00	26.81	68.20	-41.39

Table 6-9. Radiated Measurements

NOTES:

- All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dBμV/m). At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dBμV/m.
- All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-6.
- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
- Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μV/m (54dBμ/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

FCC ID: JYCP8010		FCC Pt. 15.407 802.11a/n UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
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Radiated Spurious Emission Measurements (Cont'd)

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Transfer Rate: MCS0

Distance of Measurements: 1 and 3 Meter

Operating Frequency: 5310MHz



Channel: 62

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor	Field Strength [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]
* 10620.00	-109.45	Average	H	46.52	0.00	44.06	53.98	-9.91
* 10620.00	-99.05	Peak	H	46.52	0.00	54.46	73.98	-19.51
* 15930.00	-135.00	Average	H	62.27	0.00	34.27	53.98	-19.71
* 15930.00	-125.00	Peak	H	62.27	0.00	44.27	73.98	-29.71
* 21240.00	-135.00	Average	H	44.02	0.00	16.02	53.98	-37.96
* 21240.00	-125.00	Peak	H	44.02	0.00	26.02	73.98	-47.96
26550.00	-125.00	Peak	H	44.70	0.00	26.70	68.20	-41.50

Table 6-10. Radiated Measurements

NOTES:

- All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dB μ V/m). At a distance of 3 meters, the field strength limit in dB μ V/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dB μ V/m.
- All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-6.
- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
- Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μ V/m (54dB μ /m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

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Radiated Spurious Emission Measurements (Cont'd)

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Transfer Rate: MCS0

Distance of Measurements: 1 and 3 Meter

Operating Frequency: 5510MHz



Channel: 102

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]
* 11020.00	-109.26	Average	H	46.98	0.00	44.72	53.98	-9.26
* 11020.00	-99.36	Peak	H	46.98	0.00	54.62	73.98	-19.36
16530.00	-125.00	Peak	H	60.10	0.00	42.10	68.20	-26.10
* 22040.00	-125.00	Peak	H	44.01	0.00	26.01	68.20	-42.19
27550.00	-125.00	Peak	H	44.87	0.00	26.87	68.20	-41.33

Table 6-11. Radiated Measurements

NOTES:

- All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dB μ V/m). At a distance of 3 meters, the field strength limit in dB μ V/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dB μ V/m.
- All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-6.
- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
- Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μ V/m (54dB μ /m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

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Radiated Spurious Emission Measurements (Cont'd)

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Transfer Rate: MCS0

Distance of Measurements: 1 and 3 Meter

Operating Frequency: 5550MHz



Channel: 110

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor	Field Strength [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]
* 11100.00	-108.33	Average	H	49.42	0.00	48.10	53.98	-5.88
* 11100.00	-98.23	Peak	H	49.42	0.00	58.20	73.98	-15.78
16650.00	-125.00	Peak	H	58.53	0.00	40.53	68.20	-27.67
* 22200.00	-135.00	Average	H	44.00	0.00	16.00	53.98	-37.98
* 22200.00	-125.00	Peak	H	44.00	0.00	26.00	73.98	-47.98
27750.00	-125.00	Peak	H	44.81	0.00	26.81	68.20	-41.39

Table 6-12. Radiated Measurements

NOTES:

- All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dB μ V/m). At a distance of 3 meters, the field strength limit in dB μ V/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dB μ V/m.
- All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-6.
- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
- Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μ V/m (54dB μ m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

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Radiated Spurious Emission Measurements (Cont'd)

§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]

Worst Case Transfer Rate: MCS0

Distance of Measurements: 1 and 3 Meter

Operating Frequency: 5670MHz



Channel: 134

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor	Field Strength [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]
* 11340.00	-109.58	Average	H	47.61	0.00	45.03	53.98	-8.95
* 11340.00	-99.18	Peak	H	47.61	0.00	55.43	73.98	-18.55
17010.00	-125.00	Peak	H	56.08	0.00	38.08	68.20	-30.12
* 22680.00	-135.00	Average	H	44.02	0.00	16.02	53.98	-37.96
* 22680.00	-125.00	Peak	H	44.02	0.00	26.02	73.98	-47.96
28350.00	-125.00	Peak	H	44.70	0.00	26.70	68.20	-41.50

Table 6-13. Radiated Measurements

NOTES:

- All harmonics that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz (68.2dB μ V/m). At a distance of 3 meters, the field strength limit in dB μ V/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dB μ V/m.
- All emissions that lie in the restricted bands (denoted by a * next to the frequency) specified in §15.205 are below the limit shown in Table 6-6.
- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
- Levels at -135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μ V/m (54dB μ /m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

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6.7 Radiated Band Edge Measurements – 802.11n 40MHz BW §15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]



Worst Case Transfer Rate: MCS0
 Distance of Measurements: 3 Meter
 Operating Frequency: 5190MHz
 Channel: 38

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Field Strength [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]
5114.50	-104.16	Average	H	39.22	42.07	53.98	-11.91
5114.50	-92.46	Peak	H	39.22	53.77	73.98	-20.21
5140.60	-101.81	Average	H	39.26	44.44	53.98	-9.54
5140.60	-90.41	Peak	H	39.26	55.84	73.98	-18.14
5150.00	-99.70	Average	H	39.27	46.57	53.98	-7.41
5150.00	-88.10	Peak	H	39.27	58.17	73.98	-15.81

Table 6-14. Radiated Restricted Band Measurements at (4.5 – 5.15GHz)

NOTES:

- For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
- The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
- The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
- Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
- Above 960MHz the limit is 500 μ V/m (54dB μ /m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

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Radiated Band Edge Measurements (Cont'd)
§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]



Worst Case Transfer Rate: MCS0
 Distance of Measurements: 3 Meter
 Operating Frequency: 5310MHz
 Channel: 62

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
5350.00	-94.27	Average	H	39.53	52.26	53.98	-1.72
5350.00	-79.77	Peak	H	39.53	66.76	73.98	-7.22
5352.10	-94.47	Average	H	39.53	52.06	53.98	-1.92
5352.10	-79.57	Peak	H	39.53	66.96	73.98	-7.02
5357.10	-99.56	Average	H	39.54	46.98	53.98	-7.00
5357.10	-82.96	Peak	H	39.54	63.58	73.98	-10.40

Table 6-15. Radiated Restricted Band Measurements at (5.35 – 5.46GHz, 5.46 – 5.47GHz)

NOTES:

1. Emissions within 5.35 – 5.46GHz lie in a restricted band and are subject to the radiated emissions limits specified in §15.209. Emission within 5.46 – 5.47GHz are at the lower band edge of UNII Band 3 transmission and are subject to the -27dBm/MHz (68.2dBμV/m) EIRP limit specified in §15.407.
2. For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation (“Method AD”) per KDB 789033.
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
5. The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
6. Levels at -135 dBm represent the analyzer noise floor and signify that no emission was detected.
7. Above 960MHz the limit is 500 μV/m (54dBμV/m) at 3 meters radiated for emissions that lie in restricteds band specified in §15.205.

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Radiated Band Edge Measurements (Cont'd)
§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]



Worst Case Transfer Rate: MCS0
 Distance of Measurements: 3 Meter
 Operating Frequency: 5510MHz
 Channel: 102

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
5458.00	-100.55	Average	H	39.67	46.12	53.98	-7.86
5458.00	-84.95	Peak	H	39.67	61.72	73.98	-12.26
5459.80	-97.95	Average	H	39.67	48.72	53.98	-5.26
5459.80	-86.65	Peak	H	39.67	60.02	73.98	-13.96
5469.60	-79.05	Peak	H	39.68	67.63	68.20	-0.57

Table 6-16. Radiated Restricted Band Measurements at (5.35 – 5.46GHz, 5.46 – 5.47GHz)

NOTES:

1. Emissions within 5.35 – 5.46GHz lie in a restricted band and are subject to the radiated emissions limits specified in §15.209. Emission within 5.46 – 5.47GHz are at the lower band edge of UNII Band 3 transmission and are subject to the -27dBm/MHz (68.2dBμV/m) EIRP limit specified in §15.407.
2. For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation (“Method AD”) per KDB 789033.
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
5. The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
6. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
7. Above 960MHz the limit is 500 μV/m (54dBμ/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

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Radiated Band Edge Measurements (Cont'd)
§15.407(b)(1) and (2), §15.205 & §15.209; RSS-210 [A9.2]



Worst Case Transfer Rate: MCS0
 Distance of Measurements: 3 Meter
 Operating Frequency: 5670MHz
 Channel: 134

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol. [H/V]	AFCL [dB/m]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
5725.00	-87.06	Peak	H	40.18	60.12	68.20	-8.08
5727.60	-85.46	Peak	H	40.18	61.72	68.20	-6.48
5728.20	-87.06	Peak	H	40.18	60.12	68.20	-8.08

Table 6-17. Radiated Restricted Band Measurements



NOTES:

1. For frequencies above 1GHz, peak emissions are measured using RBW = 1MHz and VBW = 3MHz. Average emissions are measured using RBW = 1MHz, VBW = 3MHz, RMS detector, and 100 trace averages under continuous operation ("Method AD") per KDB 789033.
2. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
3. The EUT is supplied with nominal AC voltage and/or a new/fully-recharged battery.
4. The spectrum is measured from 9kHz to 40GHz and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
5. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
6. Above 960MHz the limit is 500 μV/m (54dBμ/m) at 3 meters radiated for emissions that lie in restricted bands specified in §15.205.

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7.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Pantech Portable Handset FCC ID: JYCP8010** is in compliance with Part 15E of the FCC Rules and RSS-210 of the Industry Canada Rules.

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