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MEASUREMENT REPORT

FCC Part 15.407 UNII 802.11

Applicant Name:

LG Electronics MobileComm U.S.A
1000 Sylvan Avenue
Englewood Cliffs, NJ 07632
United States

Date of Testing:

Jan 19 - Feb 06, 2015

Test Site/Location:

PCTEST Lab, Columbia, MD, USA

Test Report Serial No.:

0Y1501210205.ZNF

FCC ID:

ZNFUS995

APPLICANT:

LG Electronics MobileComm U.S.A

Application Type:

Class II Permissive Change

Model(s):

LG-US995, US995, LGUS995, LG-AS995, LGAS995, AS995

EUT Type:

Portable Handset

FCC Classification:

Unlicensed National Information Infrastructure (UNII)

FCC Rule Part(s):

Part 15.407

Test Procedure(s):

KDB 789033 D02 v01

Class II Permissive Change:

Please see FCC change document

Original Grant Date:

January 08, 2015

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 KDB 789033 D02 v01. 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.


Randy Ortanez
President



FCC ID: ZNFUS995		FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
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MEASUREMENT REPORT

FCC Part 15.407



§ 2.1033 General Information

APPLICANT: LG Electronics MobileComm U.S.A

APPLICANT ADDRESS: 1000 Sylvan Avenue
Englewood Cliffs, NJ 07632, United States

TEST SITE: PCTEST ENGINEERING LABORATORY, INC.

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

FCC RULE PART(S): Part 15.407

BASE MODEL: LG-US995

FCC ID: ZNFUS995

FCC CLASSIFICATION: Unlicensed National Information Infrastructure (UNII)

Test Device Serial No.: 1LYFE ☐ Production ☒ Pre-Production ☐ Engineering

DATE(S) OF TEST: Jan 19 - Feb 06, 2015

TEST REPORT S/N: 0Y1501210205.ZNF

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'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 C63.4-2009 on February 15, 2012.

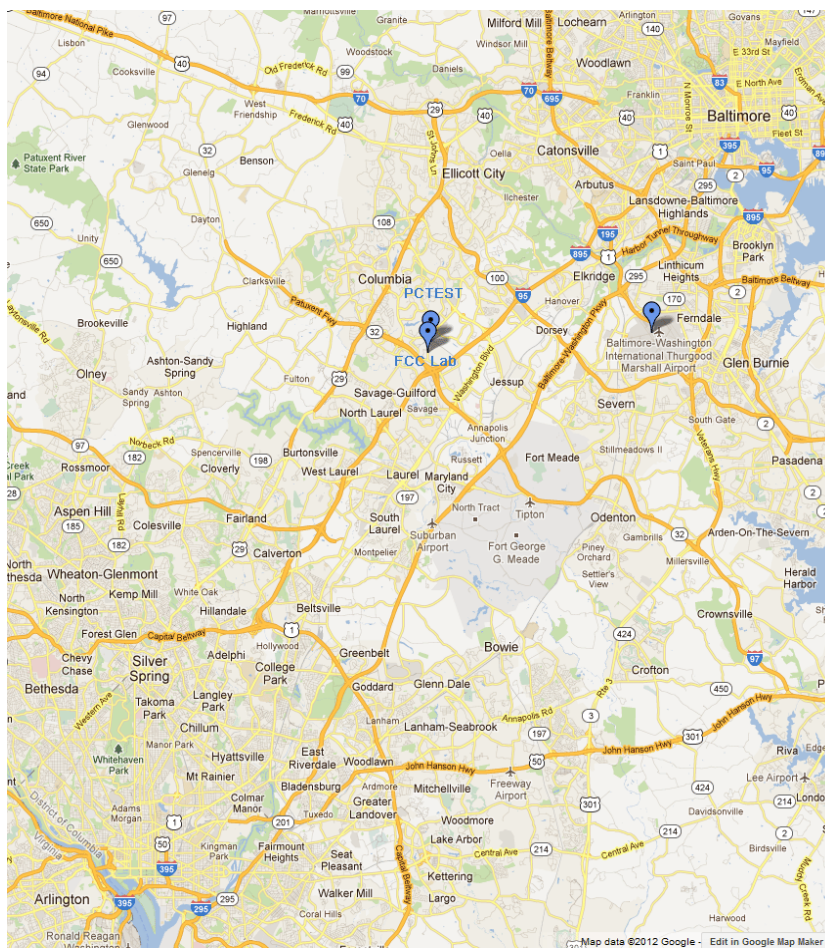


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **LG Portable Handset FCC ID: ZNFUS995**. The test data contained in this report pertains only to the emissions due to the EUT's UNII transmitter.

2.2 Device Capabilities

This device contains the following capabilities:

850/1900 CDMA/EvDO, Multi-band LTE, 802.11 b/g/n/ac WLAN, 802.11 a/n/ac UNII, Bluetooth (1x, EDR, LE), NFC

Note: 5GHz WLAN (DTS/NII) operation is possible in 20MHz, and 40MHz, and 80MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector = peak per the guidance of Section B)2)b) of KDB 789033 D02 v01. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

Maximum Achievable Duty Cycles		
802.11 Mode/Band		Duty Cycle [%]
		ANT1
5GHz	a	96.50
	n (HT20)	96.00
	n (HT40)	92.00
	ac (HT80)	82.00

Data Rate(s) Tested: 6, 9, 12, 18, 24, 36, 48, 54Mbps (802.11a)
 6.5/7.2, 13/14.4, 19.5/21.7, 26/28.9, 39/43.3, 52/57.8, 58.5/65, 65/72.2 (n – 20MHz)
 13.5/15, 27/30, 40.5/45, 54/60, 81/90, 108/120, 121.5/135, 135/150 (n – 40MHz BW)
 29.3/32.5, 58.5/65, 87.8/97.5, 117/130, 175.5/195, 234/260, 263.3/292.5, 292.5/325,
 351/390, 390/433.3 (ac – 80MHz BW)

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2.3 Test Configuration

The LG Portable Handset FCC ID: ZNFUS995 was tested per the guidance of KDB 789033 D02 v01. ANSI C63.10-2009 was used to reference the appropriate EUT setup for radiated spurious emissions testing. See Section 3.2 for radiated emissions test setup.

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(a)(5). 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 Testing Unlicensed Wireless Devices (ANSI C63.10-2009) and the guidance provided in KDB 789033 D02 v01 were used in the measurement of **LG Portable Handset FCC ID: ZNFUS995**.

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. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Clause 5, Figure 5.7 of ANSI C63.4-2009. 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 ¾" (~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 changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions.

3.3 Environmental Conditions

The temperature is controlled within range of 15°C to 35°C. The relative humidity is controlled within range of 10% to 75%. The atmospheric pressure is monitored within the range 86-106kPa (860-1060mbar).

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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 **LG Portable Handset FCC ID: ZNFUS995** unit complies with the requirement of §15.203.

Band 1		Band 2A		Band 2C		Band 3	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
36	5180	52	5260	100	5500	149	5745
:	:	:	:	:	:	:	:
42	5210	56	5280	116	5580	157	5785
:	:	:	:	:	:	:	:
48	5240	64	5320	140	5700	165	5825

Table 4-1. 802.11a (20MHz) Frequency / Channel Operations

Band 1		Band 2A		Band 2C		Band 3	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
38	5190	54	5270	102	5510	151	5755
:	:	:	:	:	:	:	:
46	5230	62	5310	110	5550		
				:	:		
				134	5670	159	5795

Table 4-2. 802.11n / 802.11ac (40MHz BW) Frequency / Channel Operations

Band 1		Band 2A		Band 2C		Band 3	
Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
42	5210	58	5290	106	5530	155	5775

Table 4-3. 802.11ac (80MHz 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
-	RE1	Radiated Emissions Cable Set (UHF/EHF)	10/24/2014	Annual	10/24/2015	N/A
Agilent	8447D	Broadband Amplifier	5/30/2014	Annual	5/30/2015	2443A01900
Agilent	N9030A	PXA Signal Analyzer (44GHz)	3/17/2014	Annual	3/17/2015	MY52350166
Com-Power	AL-130	9kHz - 30MHz Loop Antenna	6/26/2013	Biennial	6/26/2015	121034
Emco	3115	Horn Antenna (1-18GHz)	1/30/2014	Biennial	1/30/2016	9704-5182
Espec	ESX-2CA	Environmental Chamber	4/16/2014	Annual	4/16/2015	17620
ETS Lindgren	3117	1-18 GHz DRG Horn (Medium)	4/8/2014	Biennial	4/8/2016	125518
ETS Lindgren	3160-09	18-26.5 GHz Standard Gain Horn	6/17/2014	Biennial	6/17/2016	135427
ETS Lindgren	3160-10	26.5-40 GHz Standard Gain Horn	6/17/2014	Biennial	6/17/2016	130993
Huber+Suhner	Sucoflex 102A	40GHz Radiated Cable	10/15/2014	Annual	10/15/2015	251425001
K & L	11SH10-6000/T18000	High Pass Filter	12/1/2014	Annual	12/1/2015	1
Rohde & Schwarz	ESU26	EMI Test Receiver (26.5GHz)	3/27/2014	Annual	3/27/2015	100342
Rohde & Schwarz	ESU40	EMI Test Receiver (40GHz)	5/21/2014	Annual	5/21/2015	100348
Rohde & Schwarz	TS-PR18	1-18 GHz Pre-Amplifier	3/5/2014	Annual	3/5/2015	100071
Rohde & Schwarz	TS-PR26	18-26.5 GHz Pre-Amplifier	3/12/2014	Annual	3/12/2015	100040
Rohde & Schwarz	TS-PR40	26.5-40 GHz Pre-Amplifier	5/15/2014	Annual	5/15/2015	100037
Seekonk	NC-100	Torque Wrench 5/16", 8" lbs	3/18/2014	Biennial	3/18/2016	N/A
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	1/28/2014	Biennial	1/28/2016	A051107
VWR	62344-734	Thermometer with Clock	2/20/2014	Biennial	2/20/2016	140140420

Table 5-1. Annual Test Equipment Calibration Schedule

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6.0 TEST RESULTS

6.1 Summary

Company Name: LG Electronics MobileComm U.S.A
 FCC ID: ZNFUS995
 Method/System: Unlicensed National Information Infrastructure (UNII)

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
TRANSMITTER MODE (TX)					
15.407(b.1), (2),(3)	Undesirable Emissions	< -27 dBm/MHz EIRP (5150-5350MHz, 5470-5725MHz)	RADIATED	PASS	Section 6.2
15.205, 15.407(b.1), (5), (6)	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 6.2, 6.5

Table 6-1. Summary of Test Results

Notes:

- 1) All channels, modes, and modulations/data rates were investigated among all UNII bands. The test results shown in the following sections represent the worst case emissions.

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6.2 Radiated Spurious Emission Measurements

§15.407(b.1)(b.6) §15.205 §15.209

Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at its maximum duty cycle (>98%), at its maximum power control level, as defined in KDB 789033 D02 v01, and at the appropriate frequencies. All channels, modes (e.g. 802.11a, 802.11n (20MHz BW) and 802.11n (40MHz BW)), and modulations/data rates were investigated among all UNII bands. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

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 6-2 per Section 15.209.

Frequency	Field Strength [$\mu\text{V/m}$]	Measured Distance [Meters]
Above 960.0 MHz	500	3

Table 6-2. Radiated Limits

Test Procedures Used

KDB 789033 D02 v01 – Section G

Test Settings

Average Measurements above 1GHz (Method AD)

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = power average (RMS)
5. Number of measurement points = 1001 (Number of points must be $\geq 2 \times \text{span/RBW}$)
6. Averaging type = power (RMS)
7. Sweep time = auto couple
8. Trace was averaged over 100 sweeps

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Peak Measurements above 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Peak Measurements below 1GHz

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = 120kHz
4. Detector = CISPR quasi-peak
5. Sweep time = auto couple
6. Trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

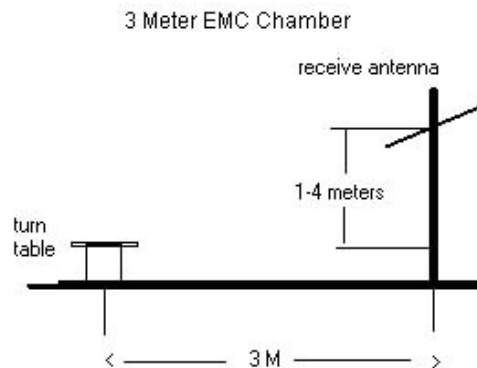


Figure 6-1. Test Instrument & Measurement Setup

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Test Notes

1. All radiated spurious emissions levels were measured in a radiated test setup per the guidance of KDB 789033 D02 v01 Section H.
2. 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 6-2.
3. All spurious emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 6-11. All spurious emissions 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.
4. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
5. This unit was tested with its standard battery.
6. The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. Above 1 GHz, average and peak measurements were taken using linearly polarized horn antennas. The worst-case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
7. Emissions below 18GHz were measured at a 3 meter test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
8. Radiated spurious emissions pre-scan plots are also reported at the beginning of the next section. The plots apply the appropriate system corrections, however, they do not show the fully maximized spectrum. The plots are only included for the purposes of identifying spurious emissions requiring further investigation. Rohde & Schwarz EMC32, Version 9.15.00 automated test software was used to perform the Radiated Spurious Emissions Pre-Scan testing.

Sample Calculations

Determining Spurious Emissions Levels

- o Field Strength Level $_{[dB\mu V/m]} = \text{Analyzer Level}_{[dBm]} + 107 + \text{AFCL}_{[dB/m]}$
- o $\text{AFCL}_{[dB/m]} = \text{Antenna Factor}_{[dB/m]} + \text{Cable Loss}_{[dB]}$
- o $\text{Margin}_{[dB]} = \text{Field Strength Level}_{[dB\mu V/m]} - \text{Limit}_{[dB\mu V/m]}$

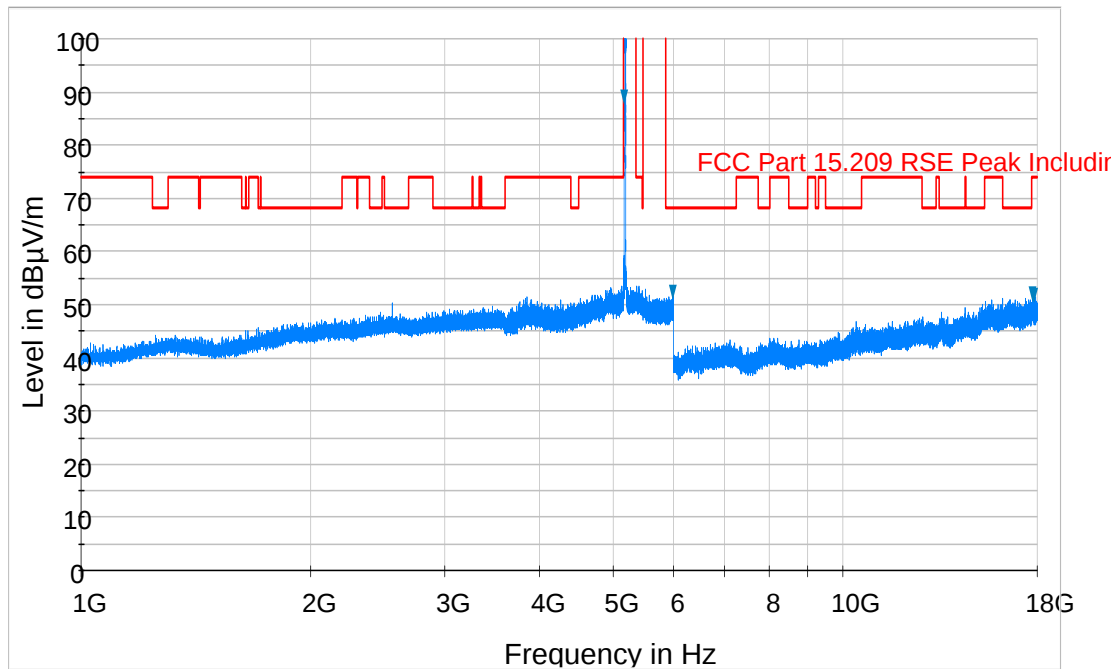
Radiated Band Edge Measurement Offset

- o The amplitude offset shown in the radiated restricted band edge plots in Section 6.8 was calculated using the formula:

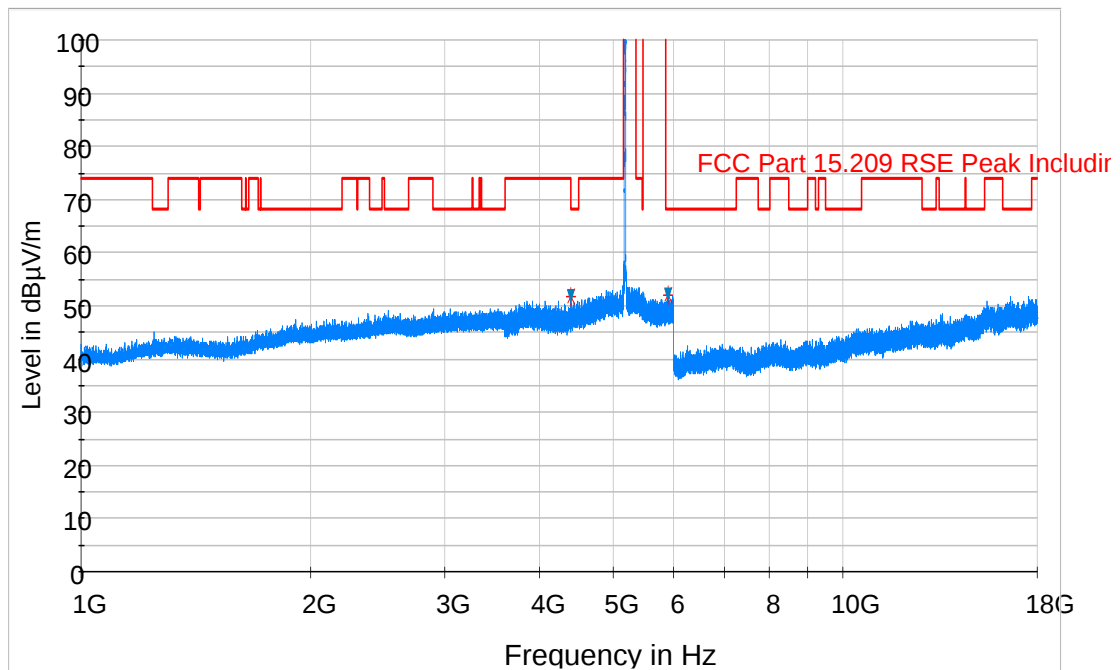
$$\text{Offset (dB)} = (\text{Antenna Factor} + \text{Cable Loss} + 10 \text{ dB Attenuator}) - \text{Preamplifier Gain}$$

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6.7.1 Radiated Spurious Emission Measurements

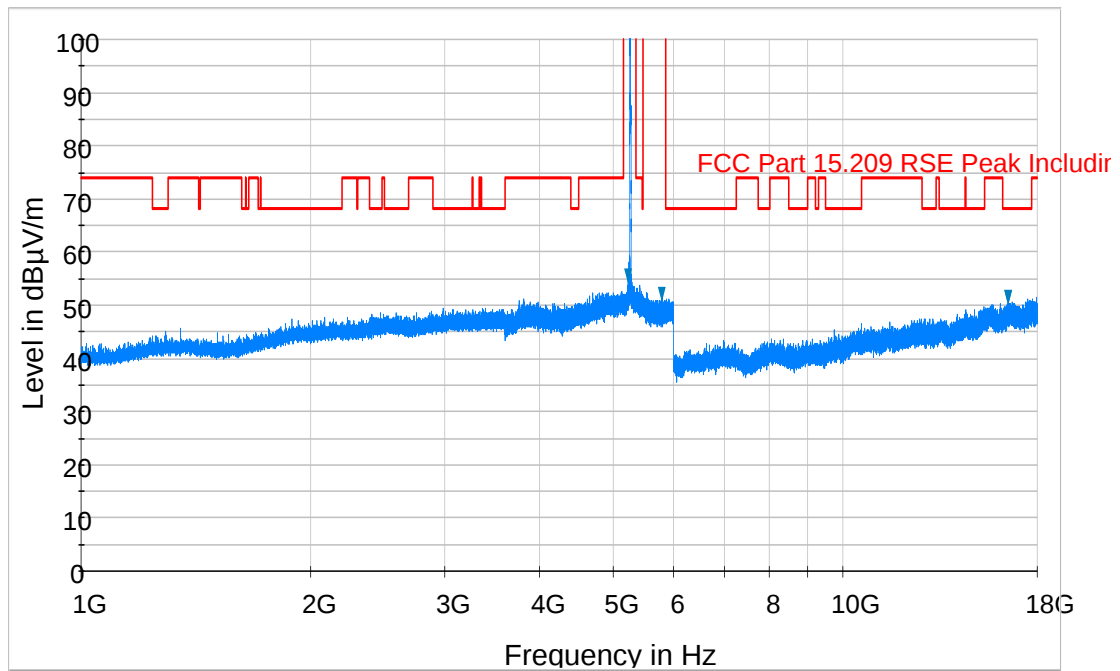


Plot 6-1. Radiated Spurious Plot above 1GHz (802.11a – U1, Ant. Pol. H)

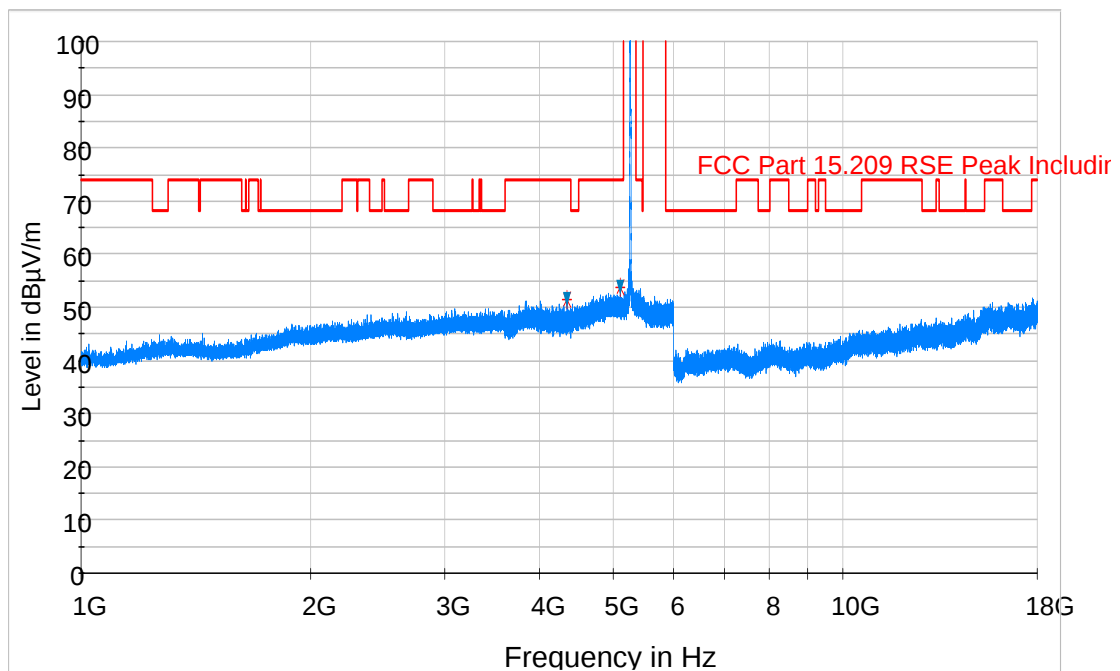


Plot 6-2. Radiated Spurious Plot above 1GHz (802.11a – U1, Ant. Pol. V)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset	Page 14 of 48

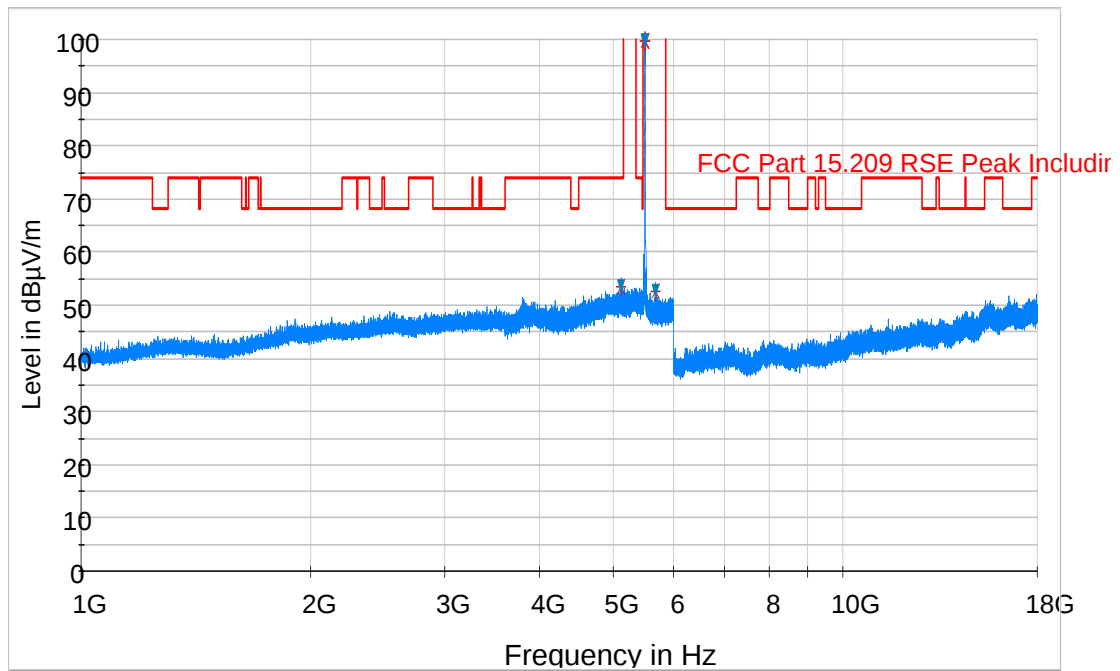


Plot 6-3. Radiated Spurious Plot above 1GHz (802.11a – U2A, Ant. Pol. H)

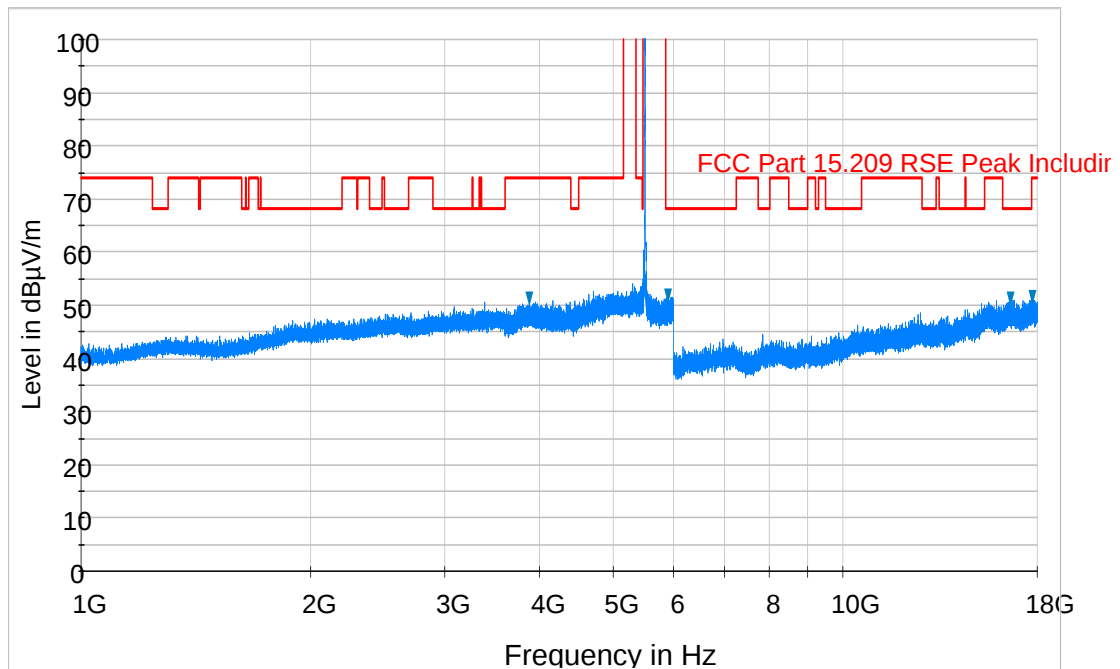


Plot 6-4. Radiated Spurious Plot above 1GHz (802.11a – U2A, Ant. Pol. V)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset	Page 15 of 48

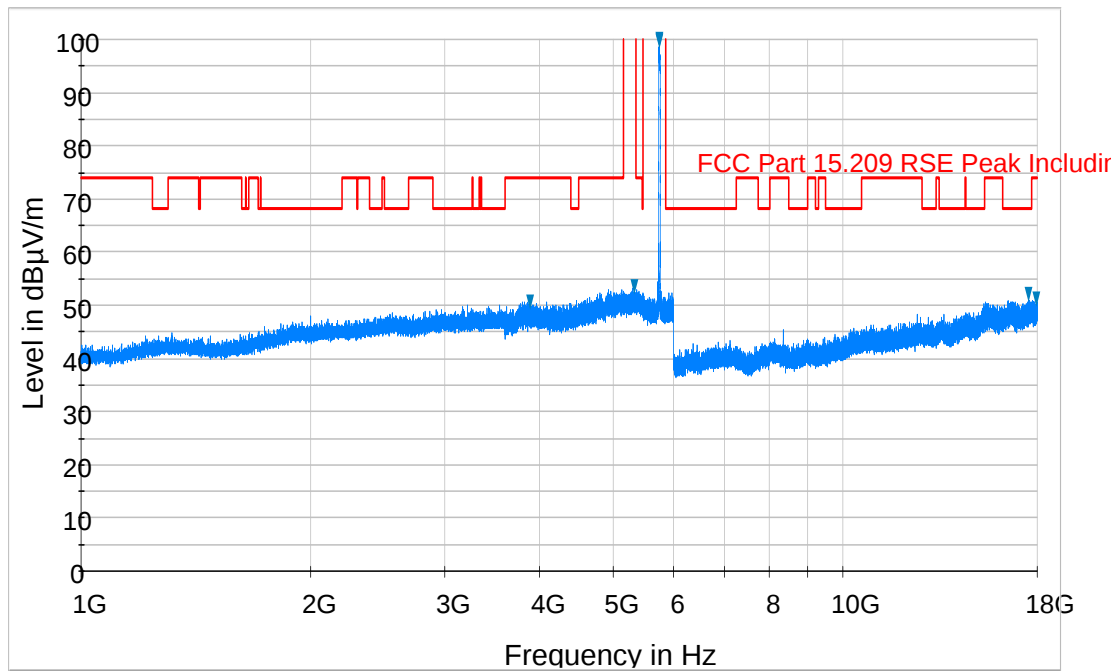


Plot 6-5. Radiated Spurious Plot above 1GHz (802.11a – U2C, Ant. Pol. H)

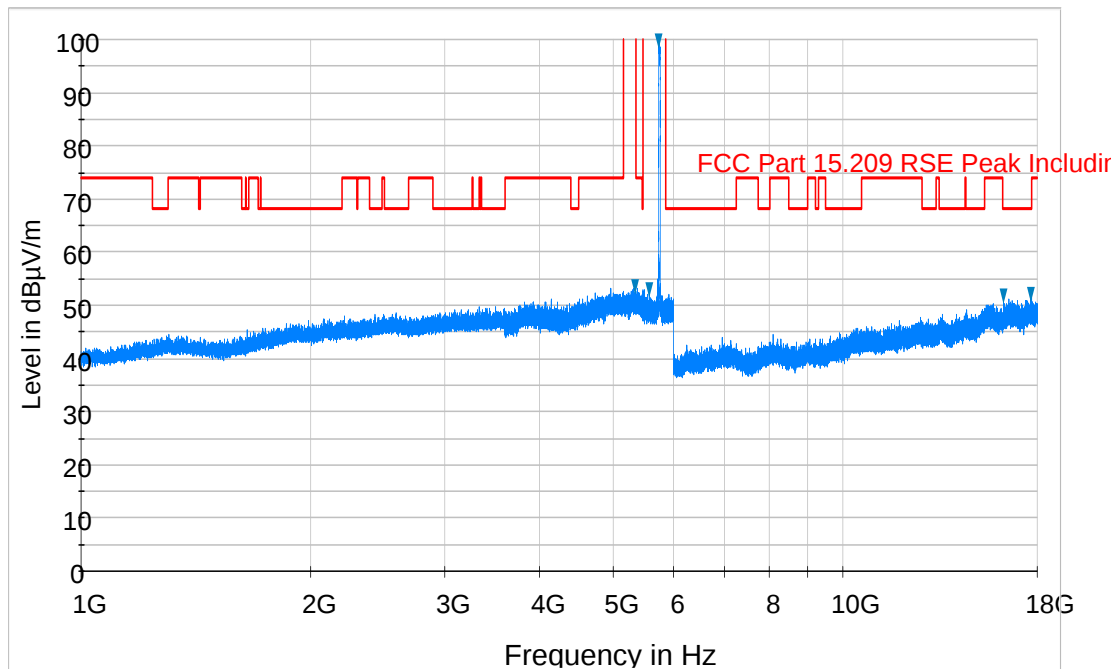


Plot 6-6. Radiated Spurious Plot above 1GHz (802.11a – U2C, Ant. Pol. V)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset	Page 16 of 48



Plot 6-7. Radiated Spurious Plot above 1GHz (802.11a – U3, Ant. Pol. H)



Plot 6-8. Radiated Spurious Plot above 1GHz (802.11a – U3, Ant. Pol. V)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 17 of 48

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6 Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5180MHz
Channel: 36

Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10360.00	-107.69	Peak	H	54.86	0.00	54.17	68.20	-14.03
* 15540.00	-118.38	Average	H	57.19	0.00	45.81	53.98	-8.17
* 15540.00	-106.39	Peak	H	57.19	0.00	57.80	73.98	-16.18
* 20720.00	-117.28	Average	H	48.73	-9.54	28.91	53.98	-25.07
* 20720.00	-106.85	Peak	H	48.73	-9.54	39.34	73.98	-34.64
25900.00	-117.54	Peak	H	51.07	-9.54	30.99	68.20	-37.21

Table 6-3. Radiated Measurements

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6 Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5200MHz
Channel: 40

Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10400.00	-107.52	Peak	H	55.07	0.00	54.55	68.20	-13.65
* 15600.00	-119.32	Average	H	57.00	0.00	44.68	53.98	-9.30
* 15600.00	-109.22	Peak	H	57.00	0.00	54.78	73.98	-19.20
* 20800.00	-118.16	Average	H	48.83	-9.54	28.12	53.98	-25.86
* 20800.00	-108.71	Peak	H	48.83	-9.54	37.57	73.98	-36.41
26000.00	-108.34	Peak	H	51.15	-9.54	40.27	68.20	-27.93

Table 6-4. Radiated Measurements

FCC ID: ZNFUS995		FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 18 of 48

Worst Case Mode: 802.11a
 Worst Case Transfer Rate: 6 Mbps
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5240MHz
 Channel: 48

Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10480.00	-107.96	Peak	H	55.49	0.00	54.53	68.20	-13.67
* 15720.00	-119.26	Average	H	56.93	0.00	44.68	53.98	-9.30
* 15720.00	-109.23	Peak	H	56.93	0.00	54.71	73.98	-19.27
* 20960.00	-117.69	Average	H	48.98	-9.54	28.75	53.98	-25.23
* 20960.00	-107.79	Peak	H	48.98	-9.54	38.65	73.98	-35.33
26200.00	-107.55	Peak	H	51.17	-9.54	41.07	68.20	-27.13

Table 6-5. Radiated Measurements

Worst Case Mode: 802.11a
 Worst Case Transfer Rate: 6 Mbps
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5260MHz
 Channel: 52

Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10520.00	-107.74	Peak	H	55.86	0.00	55.12	68.20	-13.08
* 15780.00	-119.07	Average	H	56.90	0.00	44.83	53.98	-9.15
* 15780.00	-109.65	Peak	H	56.90	0.00	54.25	73.98	-19.73
* 21040.00	-117.61	Average	H	49.04	-9.54	28.88	53.98	-25.10
* 21040.00	-108.32	Peak	H	49.04	-9.54	38.17	73.98	-35.81
26300.00	-107.66	Peak	H	51.24	-9.54	41.04	68.20	-27.16

Table 6-6. Radiated Measurements

FCC ID: ZNFUS995		FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 19 of 48

Worst Case Mode: 802.11a
 Worst Case Transfer Rate: 6 Mbps
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5280MHz
 Channel: 56

Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
10560.00	-107.13	Peak	H	56.40	0.00	56.27	68.20	-11.93
* 15840.00	-120.10	Average	H	56.87	0.00	43.76	53.98	-10.21
* 15840.00	-109.90	Peak	H	56.87	0.00	53.96	73.98	-20.01
* 21120.00	-118.09	Average	H	49.07	-9.54	28.44	53.98	-25.54
* 21120.00	-108.65	Peak	H	49.07	-9.54	37.88	73.98	-36.10
26400.00	-107.29	Peak	H	51.37	-9.54	41.53	68.20	-26.67

Table 6-7. Radiated Measurements

Worst Case Mode: 802.11a
 Worst Case Transfer Rate: 6 Mbps
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5320MHz
 Channel: 64

Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 10640.00	-119.80	Average	H	57.46	0.00	44.66	53.98	-9.32
* 10640.00	-108.78	Peak	H	57.46	0.00	55.68	73.98	-18.30
* 15960.00	-119.29	Average	H	56.77	0.00	44.48	53.98	-9.50
* 15960.00	-109.38	Peak	H	56.77	0.00	54.39	73.98	-19.59
* 21280.00	-118.50	Average	H	49.15	-9.54	28.11	53.98	-25.87
* 21280.00	-107.12	Peak	H	49.15	-9.54	39.49	73.98	-34.49
26600.00	-128.69	Peak	H	47.61	-9.54	16.38	68.20	-51.82

Table 6-8. Radiated Measurements

FCC ID: ZNFUS995		FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 20 of 48

Worst Case Mode: 802.11a
 Worst Case Transfer Rate: 6 Mbps
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5500MHz
 Channel: 100

Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11000.00	-126.84	Average	H	62.37	0.00	42.53	53.98	-11.45
* 11000.00	-110.17	Peak	H	62.37	0.00	59.20	73.98	-14.78
16500.00	-108.98	Peak	H	56.95	0.00	54.97	68.20	-13.23
22000.00	-108.28	Peak	H	49.46	-9.54	38.64	68.20	-29.56
27500.00	-130.69	Peak	H	47.92	-9.54	14.69	68.20	-53.51

Table 6-9. Radiated Measurements

Worst Case Mode: 802.11a
 Worst Case Transfer Rate: 6 Mbps
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5580MHz
 Channel: 116

Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11160.00	-126.98	Average	H	60.25	0.00	40.27	53.98	-13.71
* 11160.00	-107.42	Peak	H	60.25	0.00	59.83	73.98	-14.15
16740.00	-108.45	Peak	H	57.32	0.00	55.87	68.20	-12.33
* 22320.00	-119.31	Average	H	49.87	-9.54	28.02	53.98	-25.96
* 22320.00	-108.08	Peak	H	49.87	-9.54	39.25	73.98	-34.73
27900.00	-131.32	Peak	H	48.09	-9.54	14.23	68.20	-53.97

Table 6-10. Radiated Measurements

FCC ID: ZNFUS995		FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset	Page 21 of 48	

Worst Case Mode: 802.11a
 Worst Case Transfer Rate: 6 Mbps
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5700MHz
 Channel: 140

Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11400.00	-121.00	Average	H	57.00	0.00	43.00	53.98	-10.98
* 11400.00	-108.69	Peak	H	57.00	0.00	55.31	73.98	-18.67
17100.00	-108.87	Peak	H	60.07	0.00	58.19	68.20	-10.01
* 22800.00	-119.42	Average	H	49.98	-9.54	28.02	53.98	-25.96
* 22800.00	-109.10	Peak	H	49.98	-9.54	38.34	73.98	-35.64
28500.00	-131.38	Peak	H	48.35	-9.54	14.43	68.20	-53.77

Table 6-11. Radiated Measurements

Worst Case Mode: 802.11a
 Worst Case Transfer Rate: 6 Mbps
 Distance of Measurements: 1 & 3 Meters
 Operating Frequency: 5745MHz
 Channel: 149

Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11490.00	-120.57	Average	H	55.75	0.00	42.18	53.98	-11.80
* 11490.00	-108.68	Peak	H	55.75	0.00	54.07	73.98	-19.91
17235.00	-113.39	Peak	H	61.96	0.00	55.58	68.20	-12.62
* 22980.00	-118.49	Average	H	49.94	-9.54	28.91	53.98	-25.07
* 22980.00	-108.74	Peak	H	49.94	-9.54	38.66	68.20	-29.54
28725.00	-131.62	Peak	H	48.27	-9.54	14.11	69.20	-55.09

Table 6-12. Radiated Measurements

FCC ID: ZNFUS995		FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 22 of 48

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6 Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5785MHz
Channel: 157

Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11570.00	-123.01	Average	H	55.33	0.00	39.33	53.98	-14.65
* 11570.00	-108.82	Peak	H	55.33	0.00	53.52	73.98	-20.46
17355.00	-112.93	Peak	H	63.26	0.00	57.34	68.20	-10.86
23140.00	-108.21	Peak	H	50.04	-9.54	39.29	73.98	-34.69
28925.00	-131.81	Peak	H	48.27	-9.54	13.92	68.20	-54.28

Table 6-13. Radiated Measurements

Worst Case Mode: 802.11a
Worst Case Transfer Rate: 6 Mbps
Distance of Measurements: 1 & 3 Meters
Operating Frequency: 5825MHz
Channel: 165

Frequency [MHz]	Analyzer Level [dBm]	Detector	Ant. Pol. [H/V]	AFCL [dB/m]	Distance Correction Factor [dB]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
* 11650.00	-122.29	Average	H	55.20	0.00	39.92	53.98	-14.06
* 11650.00	-108.64	Peak	H	55.20	0.00	53.57	73.98	-20.41
17475.00	-112.23	Peak	H	63.99	0.00	58.76	68.20	-9.44
23300.00	-108.58	Peak	H	50.10	-9.54	38.98	73.98	-35.00
29125.00	-131.64	Peak	H	48.24	-9.54	14.06	68.20	-54.14

Table 6-14. Radiated Measurements

6.7.2 Radiated Band Edge Measurements (20MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209

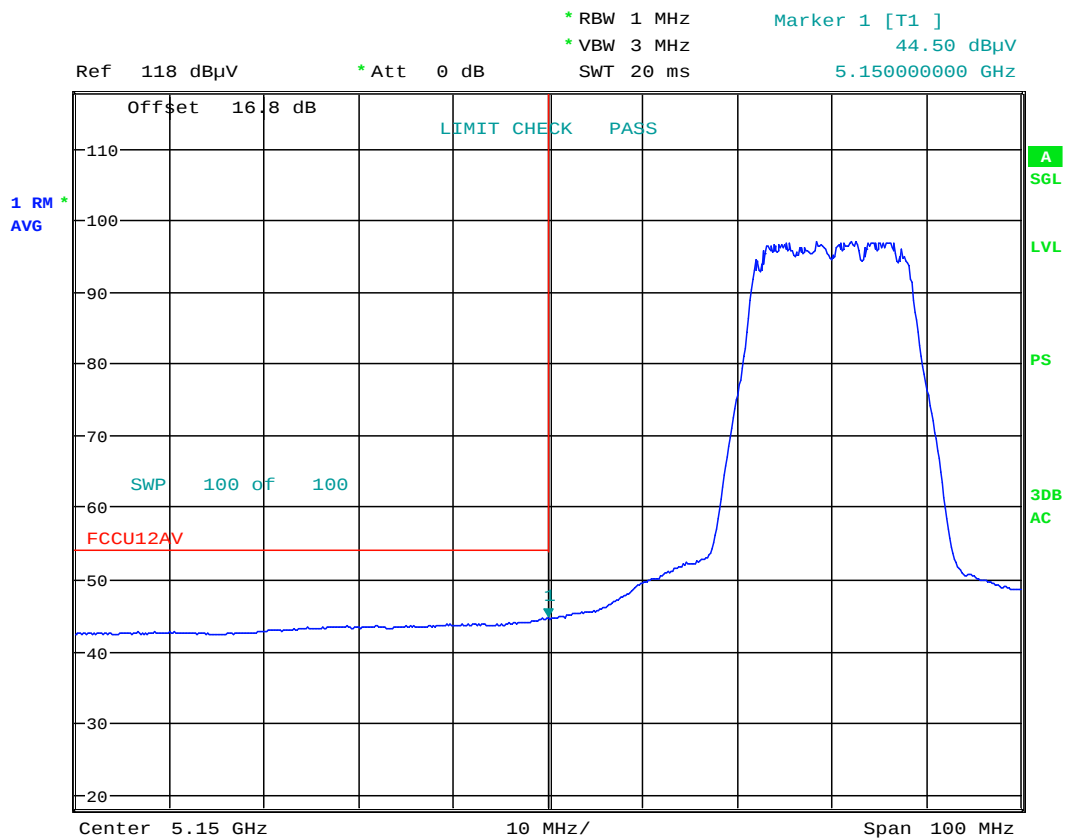
Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5180MHz

Channel: 36

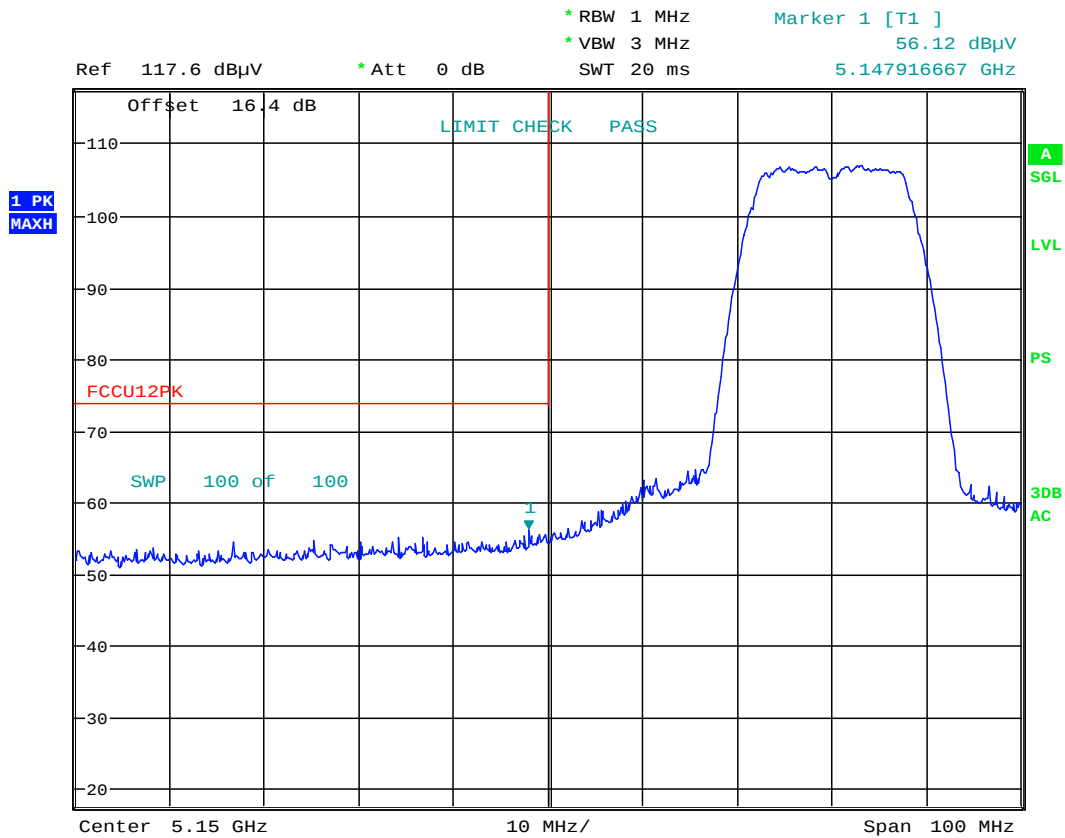


Date: 21.JAN.2015 15:01:37

Plot 6-9. Radiated Restricted Lower Band Edge Plot (Average - UNII Band 1)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 24 of 48

Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 21.JAN.2015 15:02:25

Plot 6-10. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 25 of 48

Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

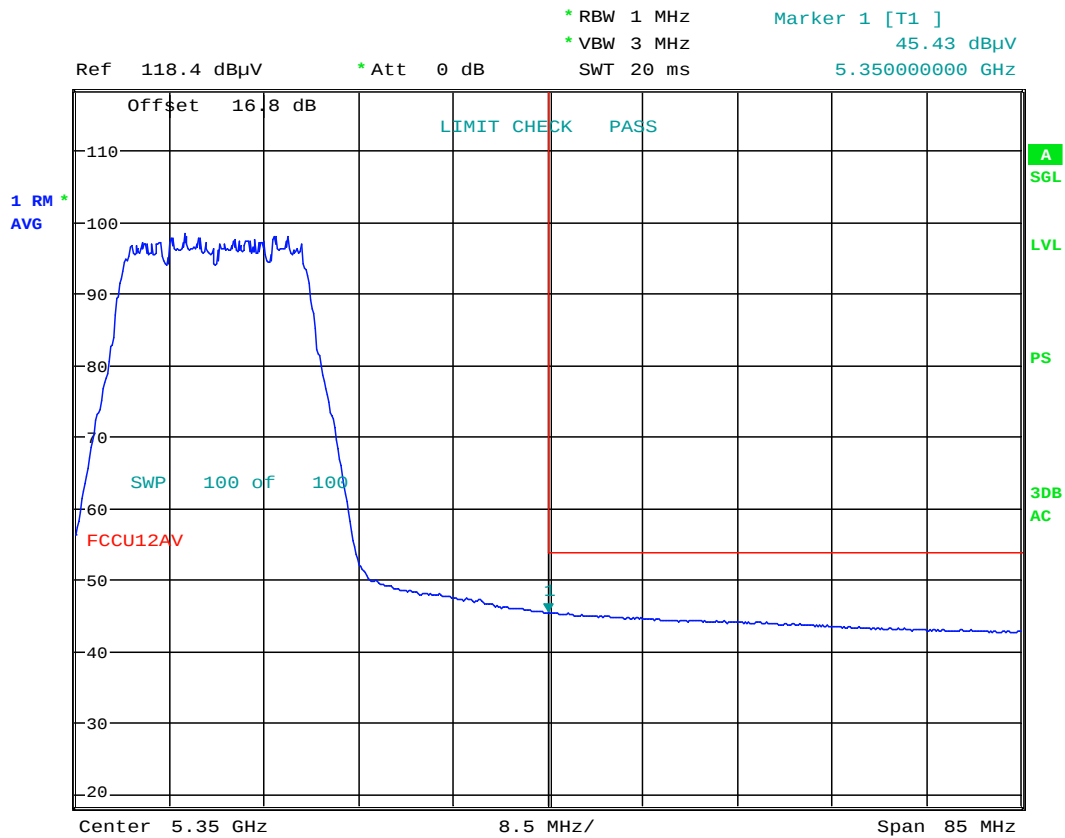
Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5320MHz

Channel: 64



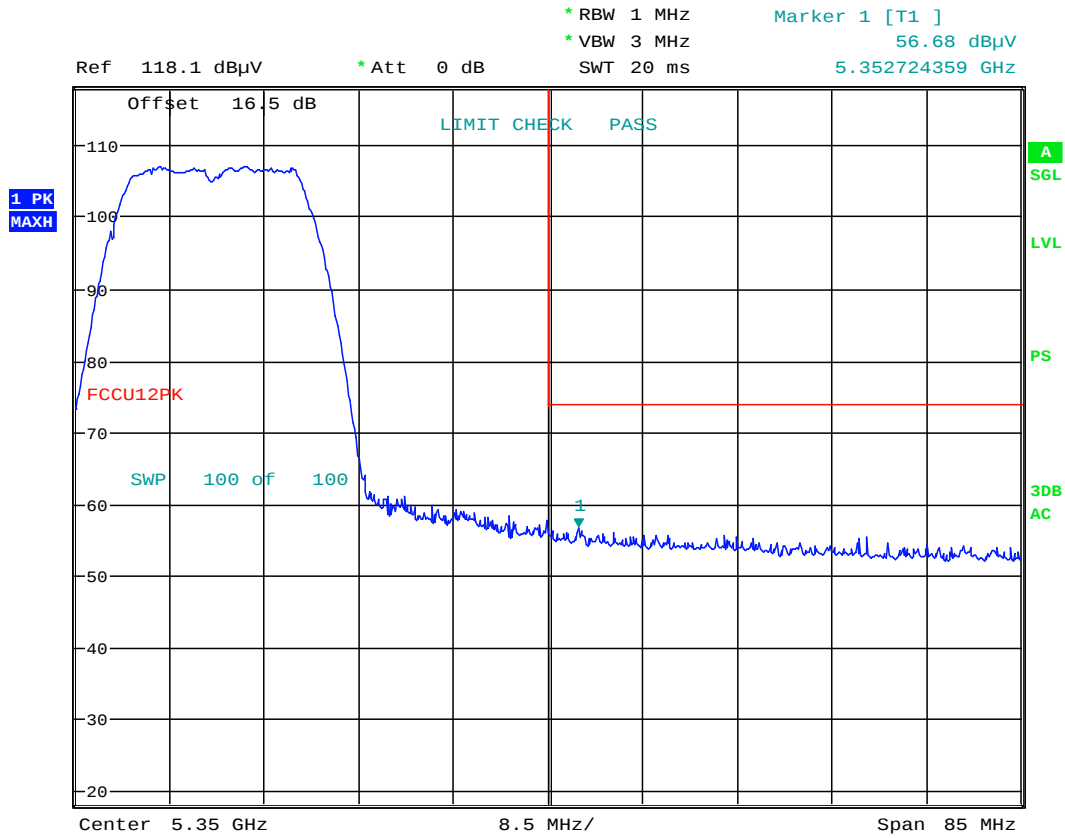
Date: 21.JAN.2015 15:22:09

Plot 6-11. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 26 of 48

Radiated Band Edge Measurements (20MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 21.JAN.2015 15:22:48

Plot 6-12. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 27 of 48

Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

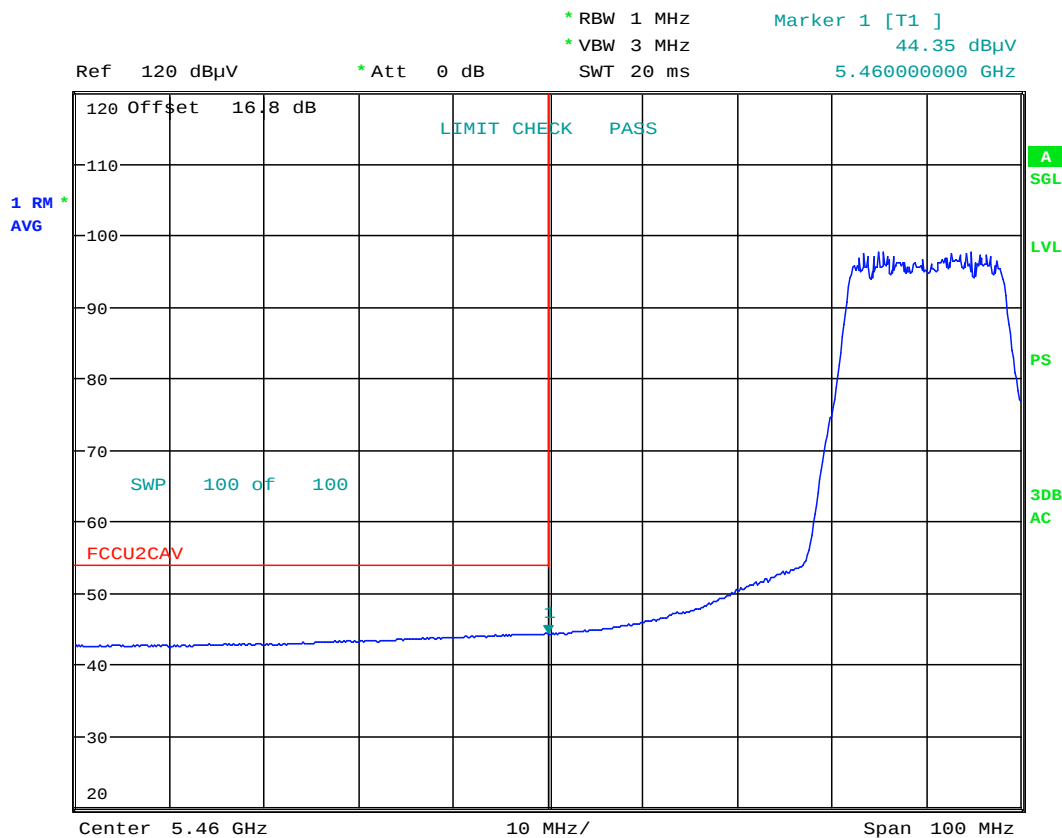
Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5500MHz

Channel: 100

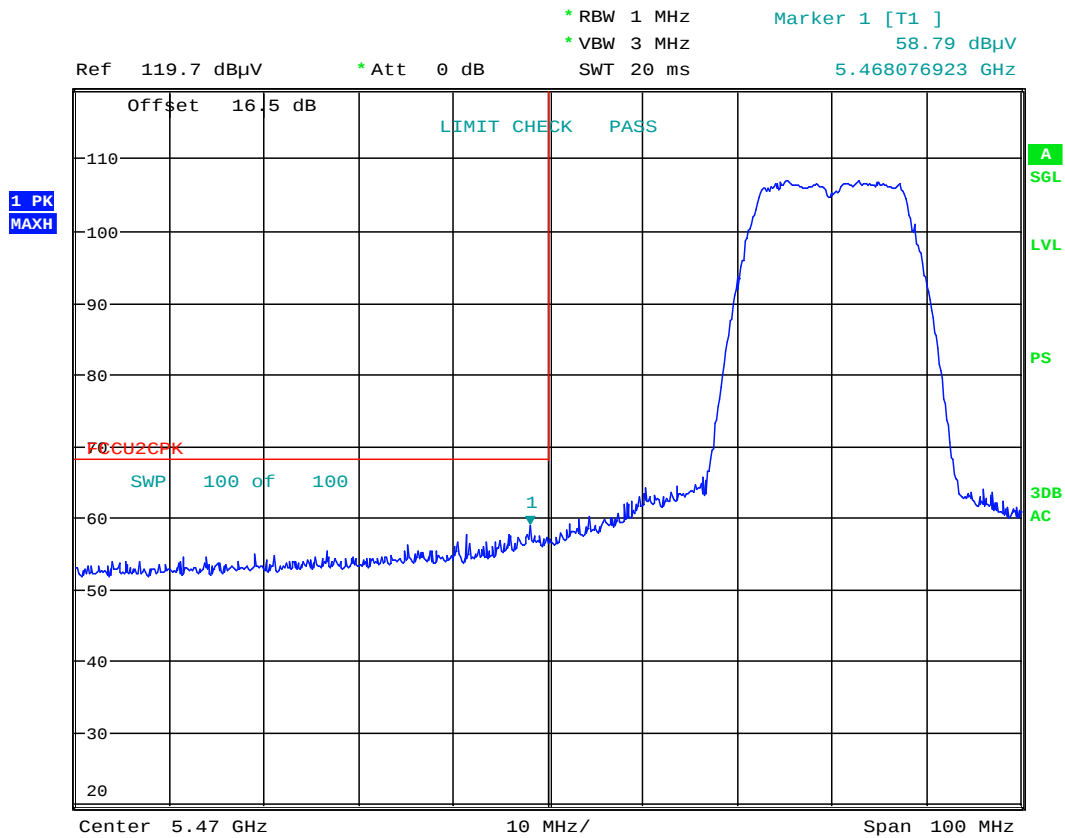


Date: 21.JAN.2015 15:40:38

Plot 6-13. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 28 of 48

Radiated Band Edge Measurements (20MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 21.JAN.2015 15:42:39

Plot 6-14. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 29 of 48

Radiated Band Edge Measurements (20MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209

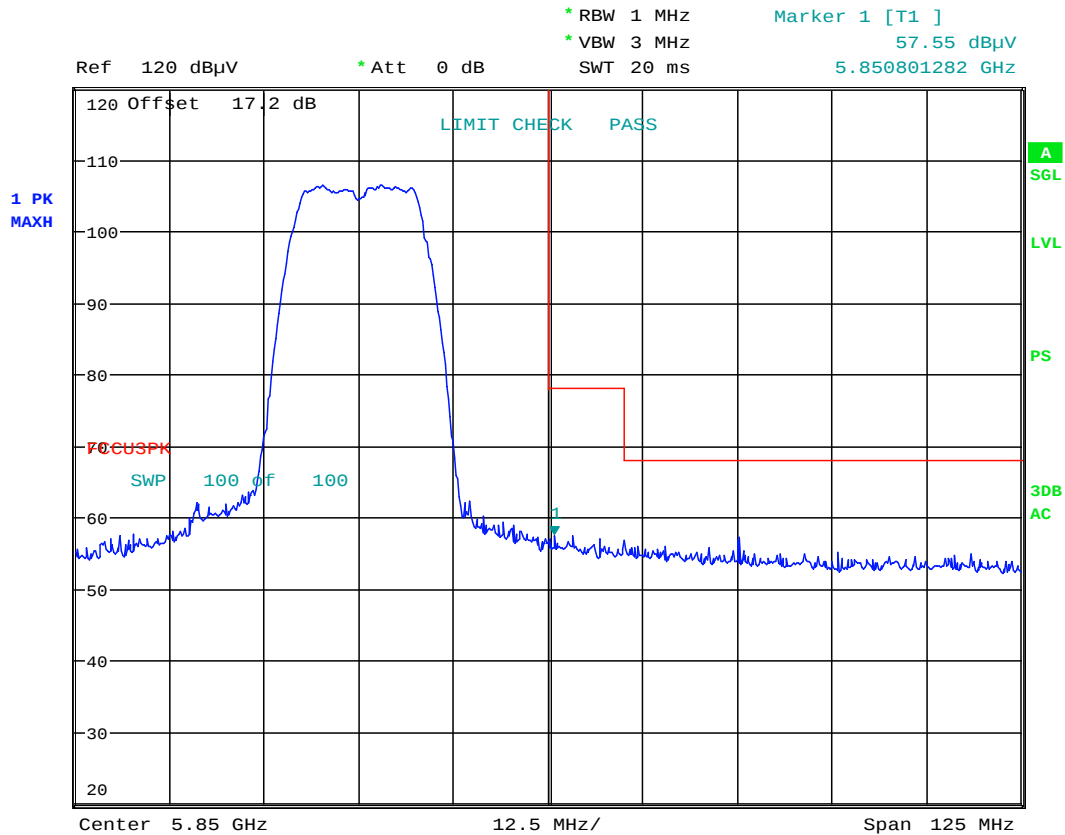
Worst Case Mode: 802.11a

Worst Case Transfer Rate: 6 Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5825MHz

Channel: 165



Date: 21.JAN.2015 16:04:46

Plot 6-15. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 30 of 48

6.3 Radiated Band Edge Measurements (40MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209

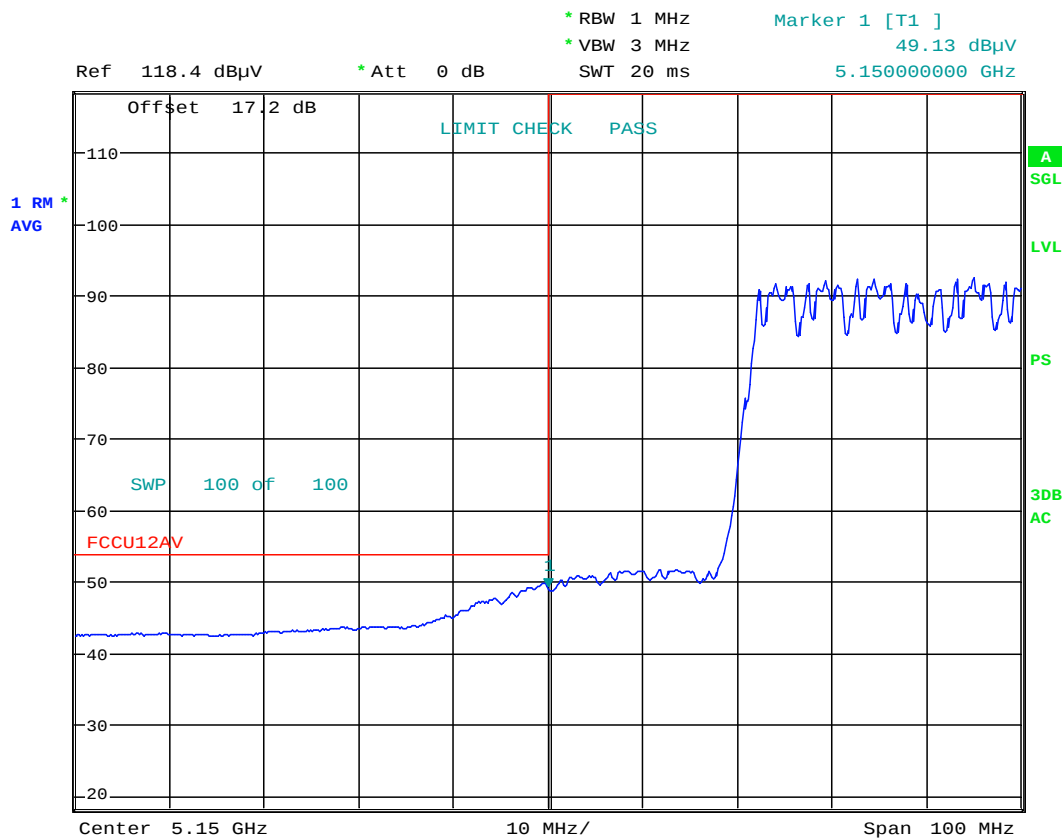
Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5190MHz

Channel: 38

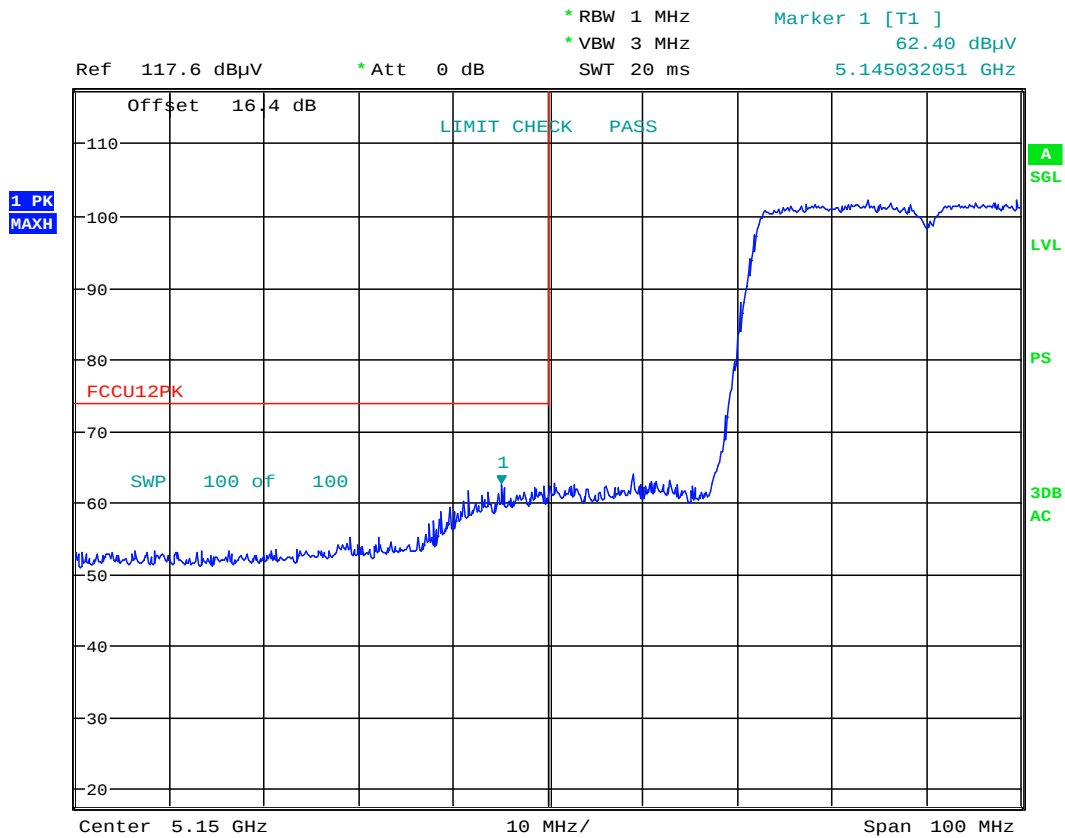


Date: 21.JAN.2015 15:06:44

Plot 6-16. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)		Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 31 of 48

Radiated Band Edge Measurements (40MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 21.JAN.2015 15:07:15

Plot 6-17. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 32 of 48

Radiated Band Edge Measurements (40MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

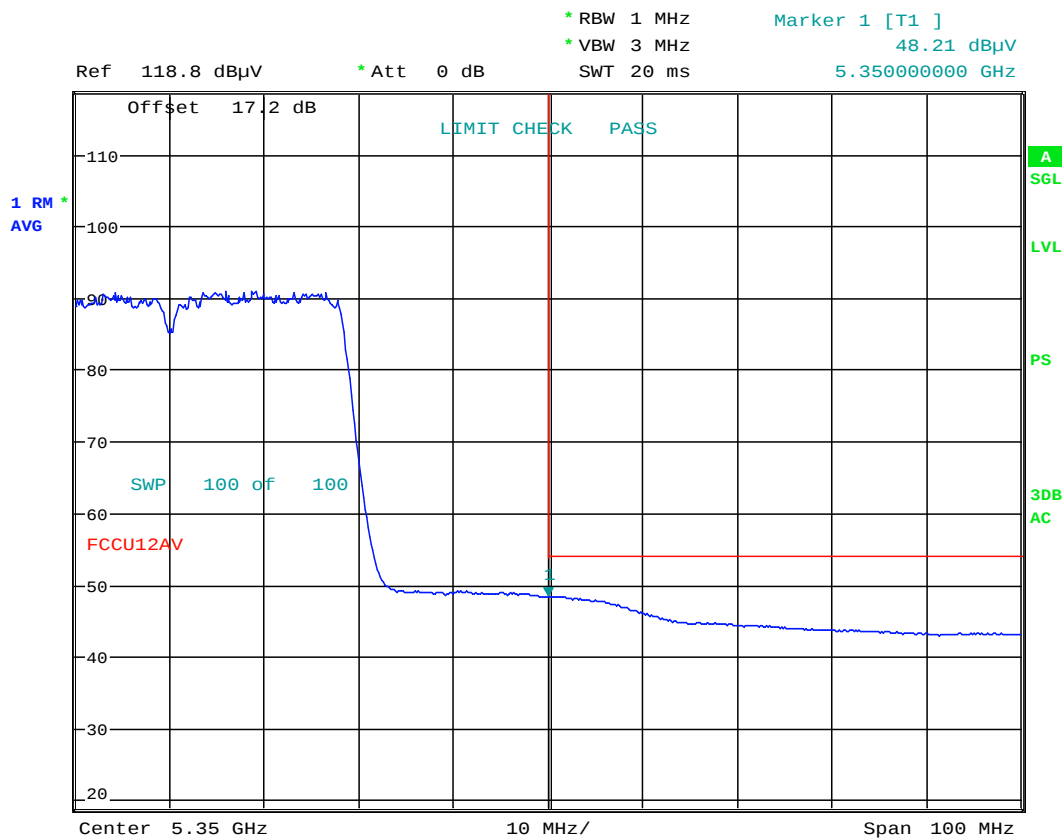
Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5310MHz

Channel: 62



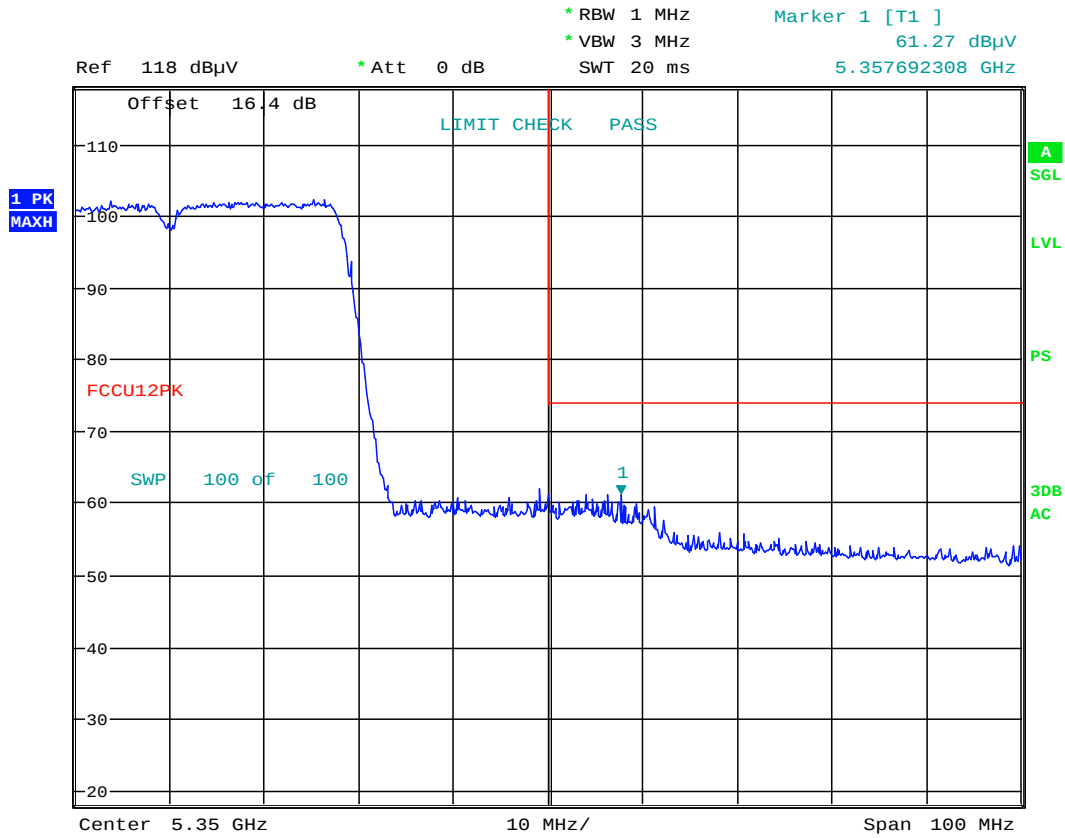
Date: 21.JAN.2015 15:26:02

Plot 6-18. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 33 of 48

Radiated Band Edge Measurements (40MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 21.JAN.2015 15:26:37

Plot 6-19. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 34 of 48

Radiated Band Edge Measurements (40MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209

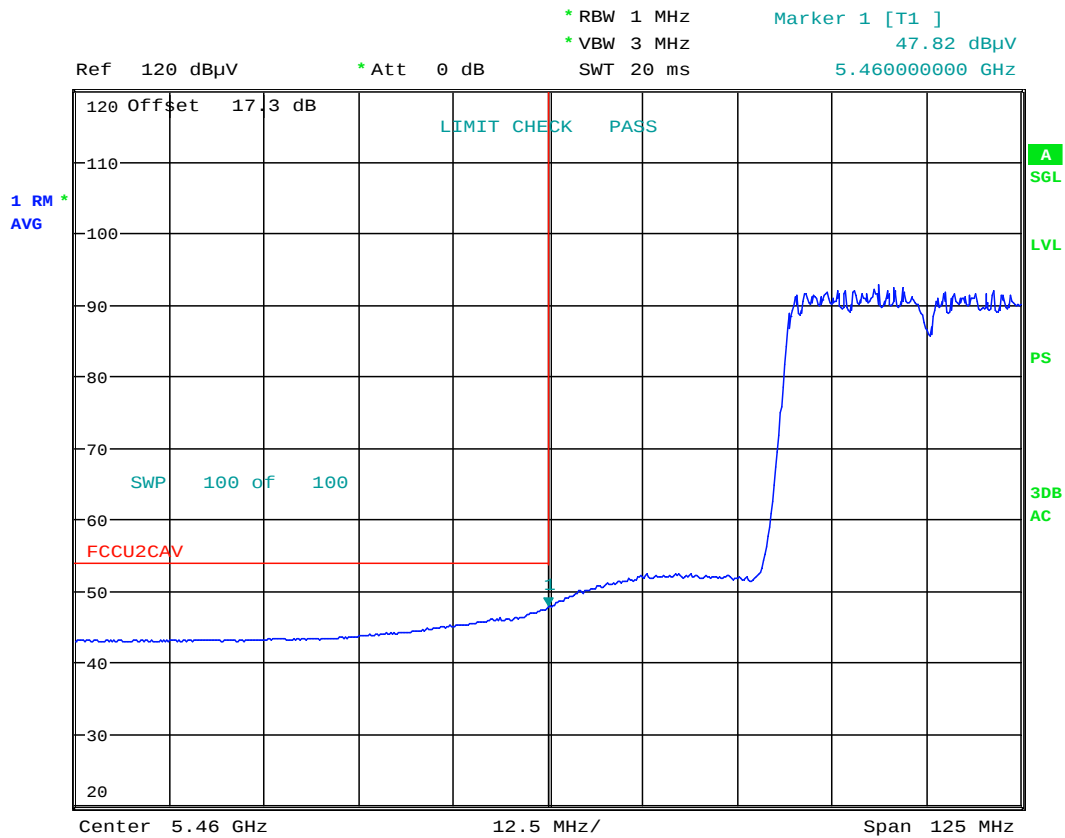
Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5510MHz

Channel: 102

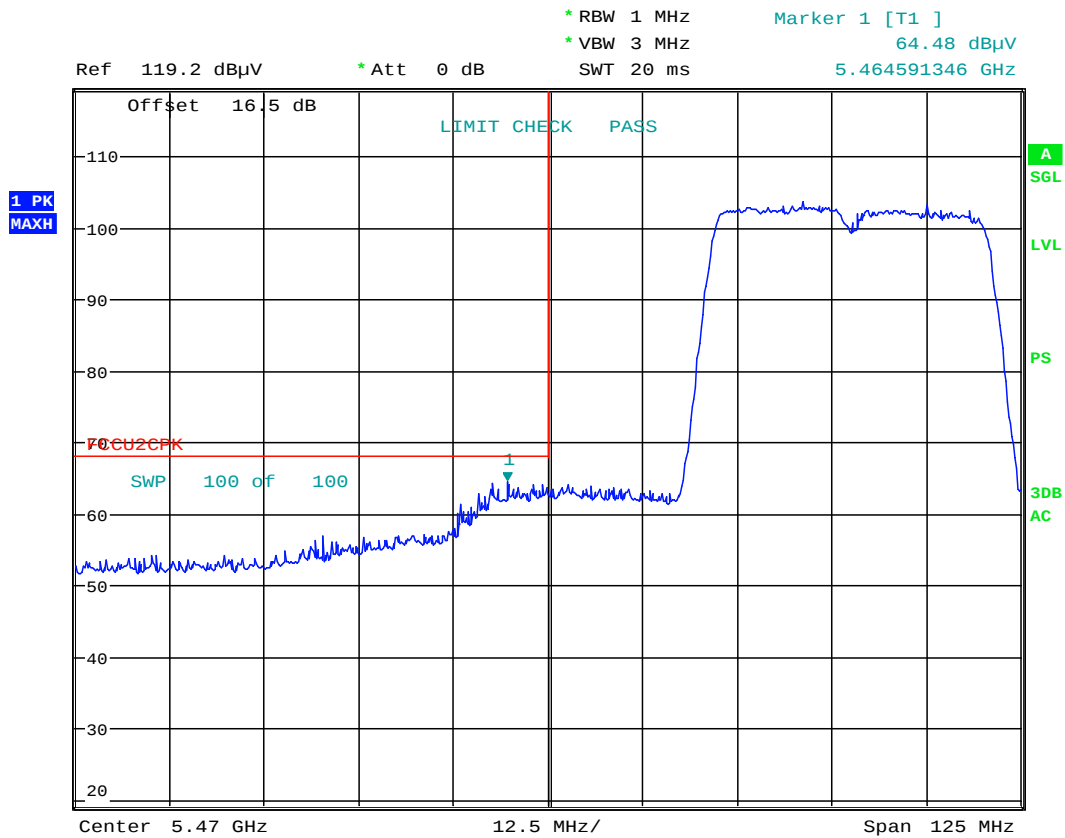


Date: 21.JAN.2015 15:47:30

Plot 6-20. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 35 of 48

Radiated Band Edge Measurements (40MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 21.JAN.2015 15:50:18

Plot 6-21. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 36 of 48

Radiated Band Edge Measurements (40MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209

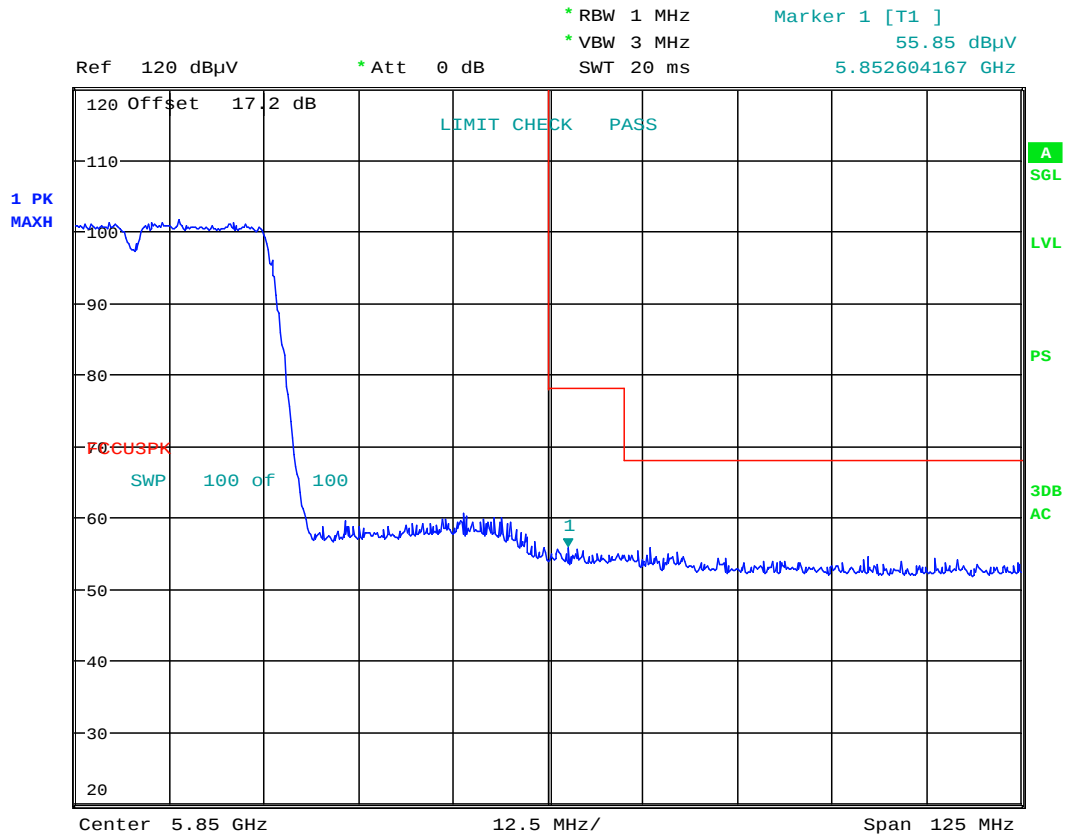
Worst Case Mode: 802.11n (40MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5815MHz

Channel: 163



Date: 21.JAN.2015 16:06:44

Plot 6-22. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 37 of 48

6.4 Radiated Band Edge Measurements (80MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209

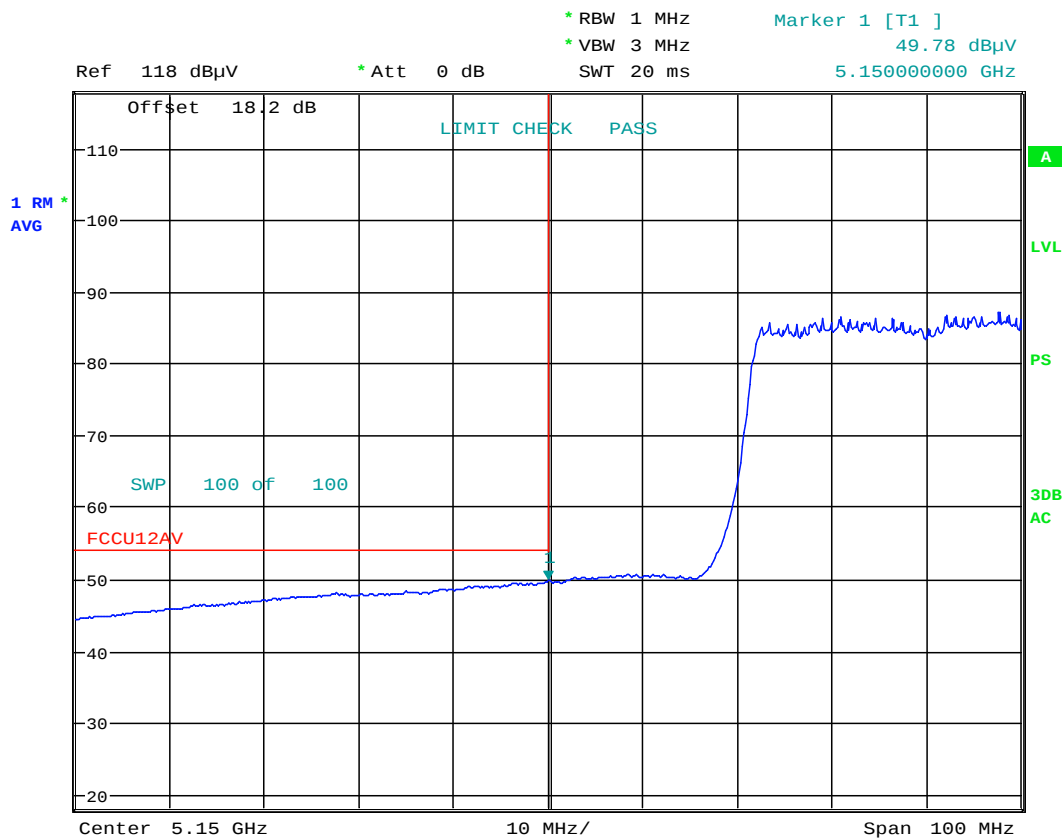
Worst Case Mode: 802.11n (80MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5210MHz

Channel: 42

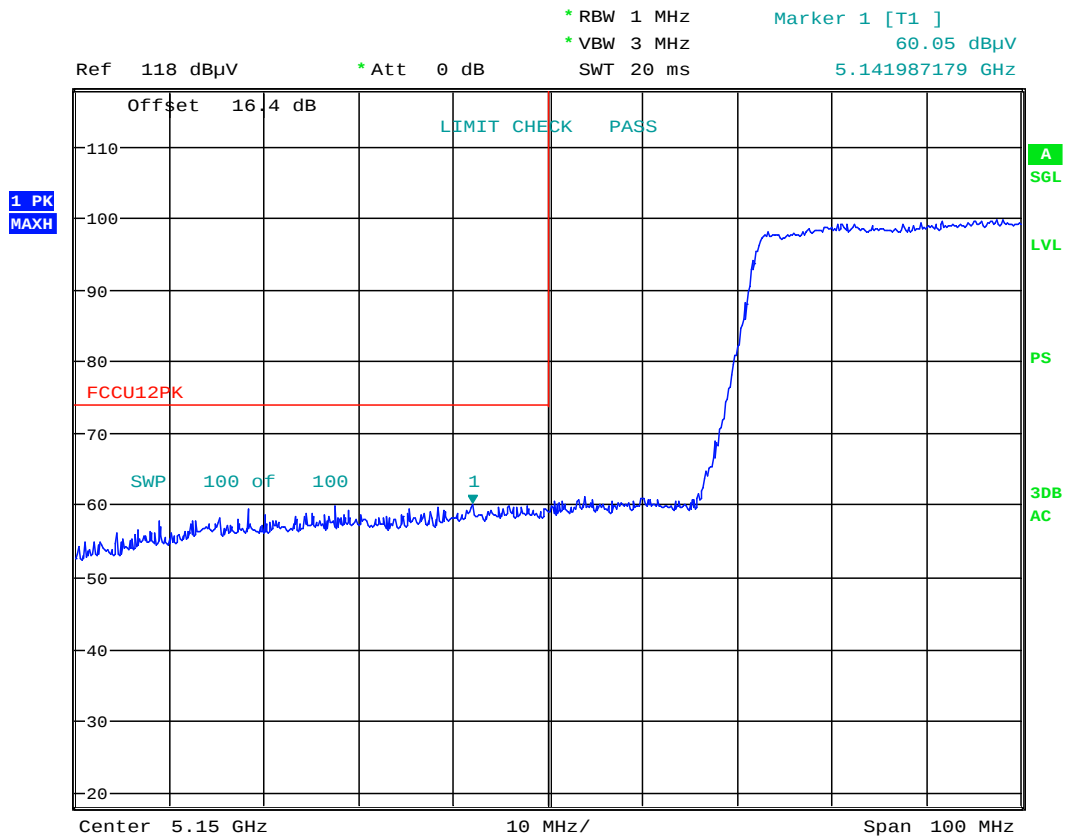


Date: 21.JAN.2015 15:10:36

Plot 6-23. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 1)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 38 of 48

Radiated Band Edge Measurements (80MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 21.JAN.2015 15:11:19

Plot 6-24. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 1)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 39 of 48

Radiated Band Edge Measurements (80MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

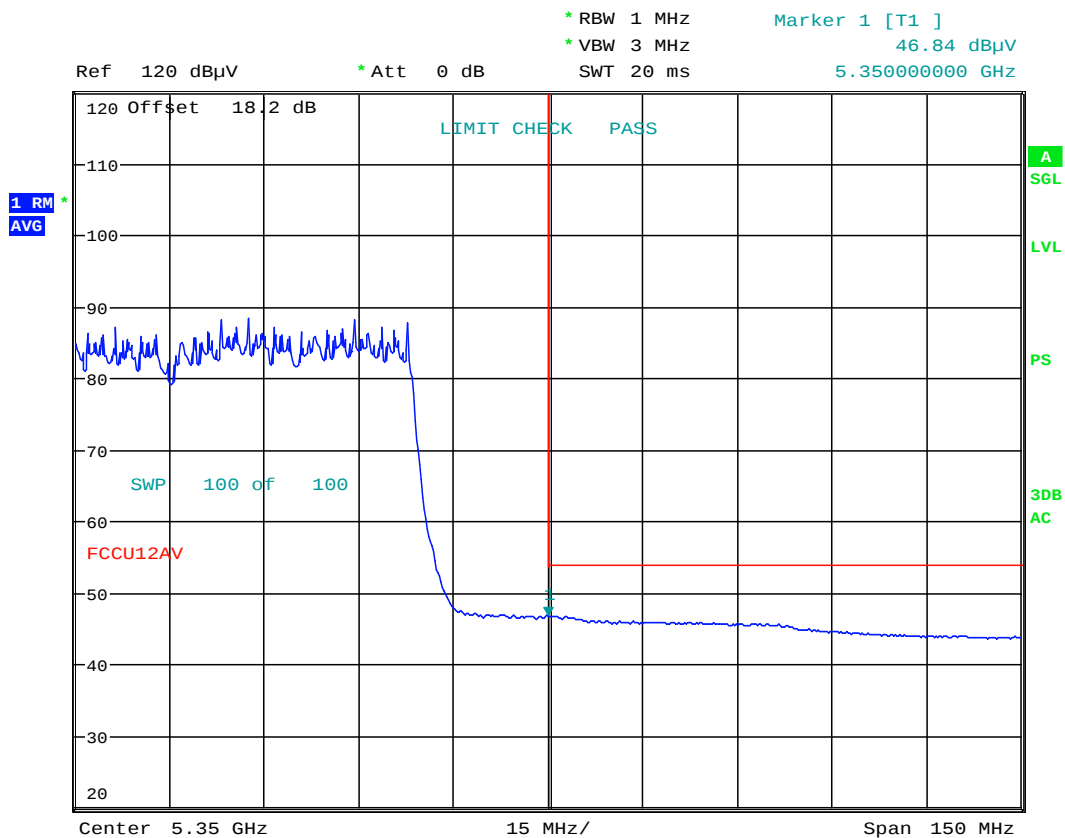
Worst Case Mode: 802.11ac (80MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5290MHz

Channel: 58

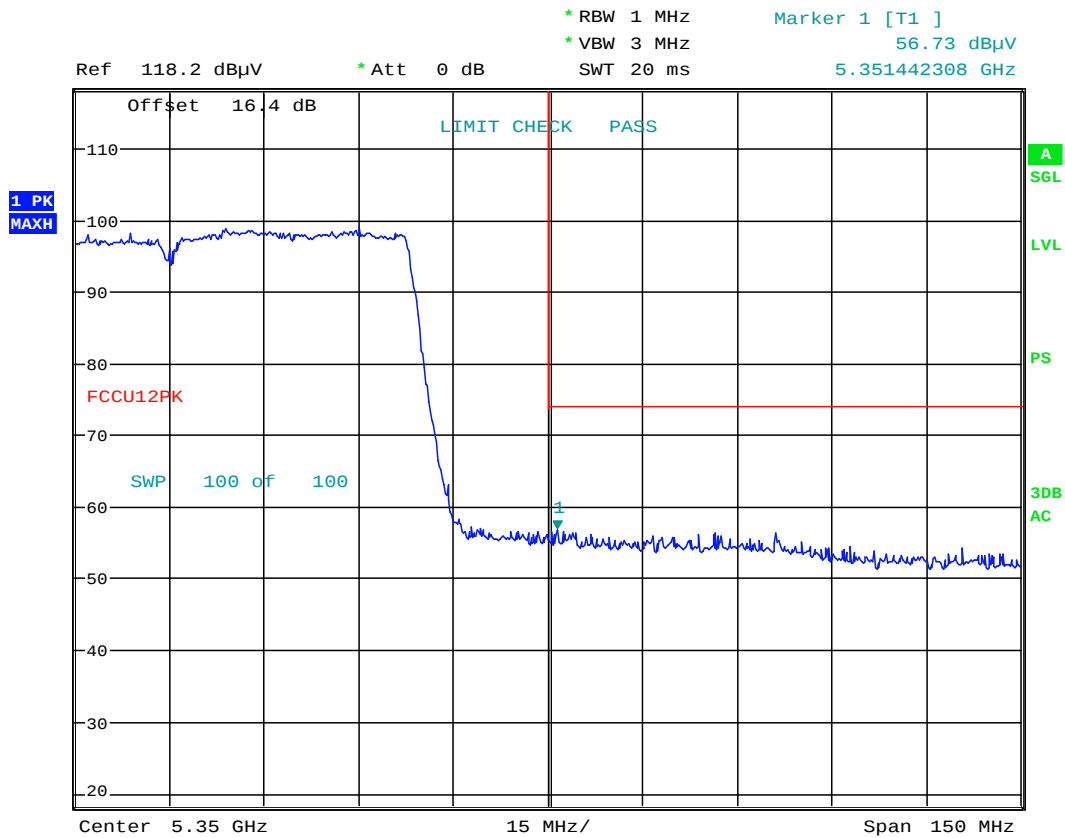


Date: 21.JAN.2015 15:29:37

Plot 6-25. Radiated Restricted Upper Band Edge Plot (Average – UNII Band 2A)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 40 of 48

Radiated Band Edge Measurements (80MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 21.JAN.2015 15:31:39

Plot 6-26. Radiated Restricted Upper Band Edge Plot (Peak – UNII Band 2A)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 41 of 48

Radiated Band Edge Measurements (80MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209

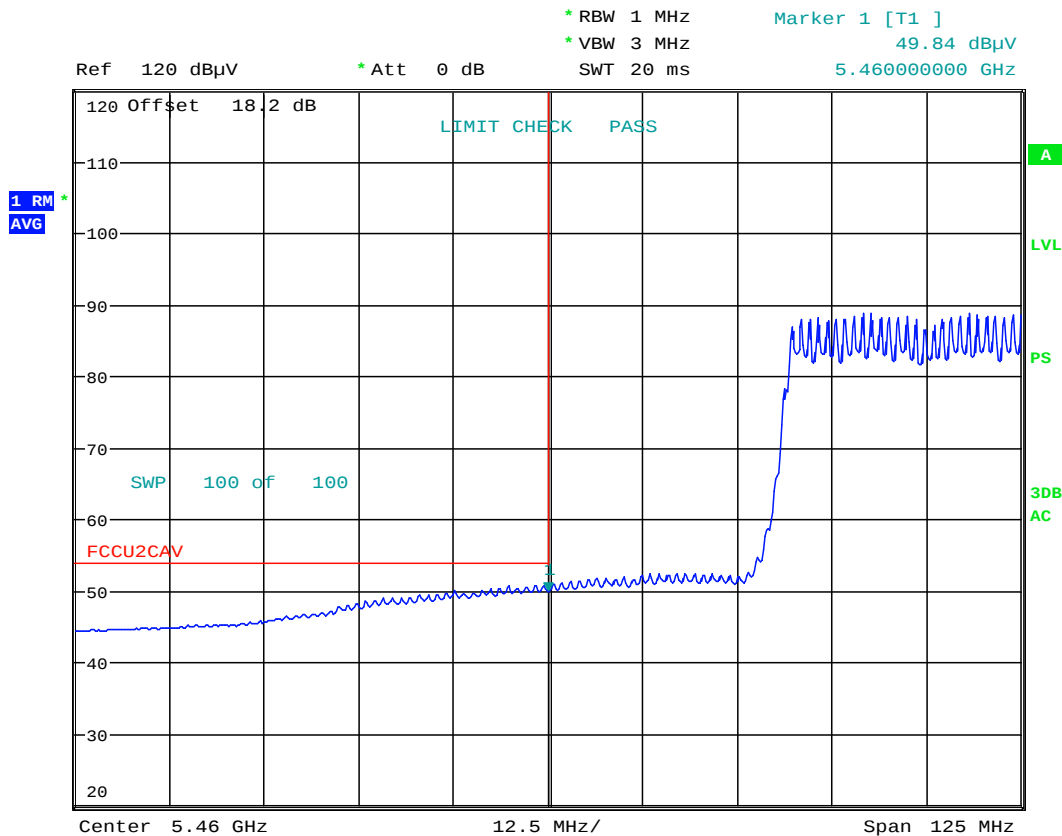
Worst Case Mode: 802.11ac (80MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5530MHz

Channel: 106

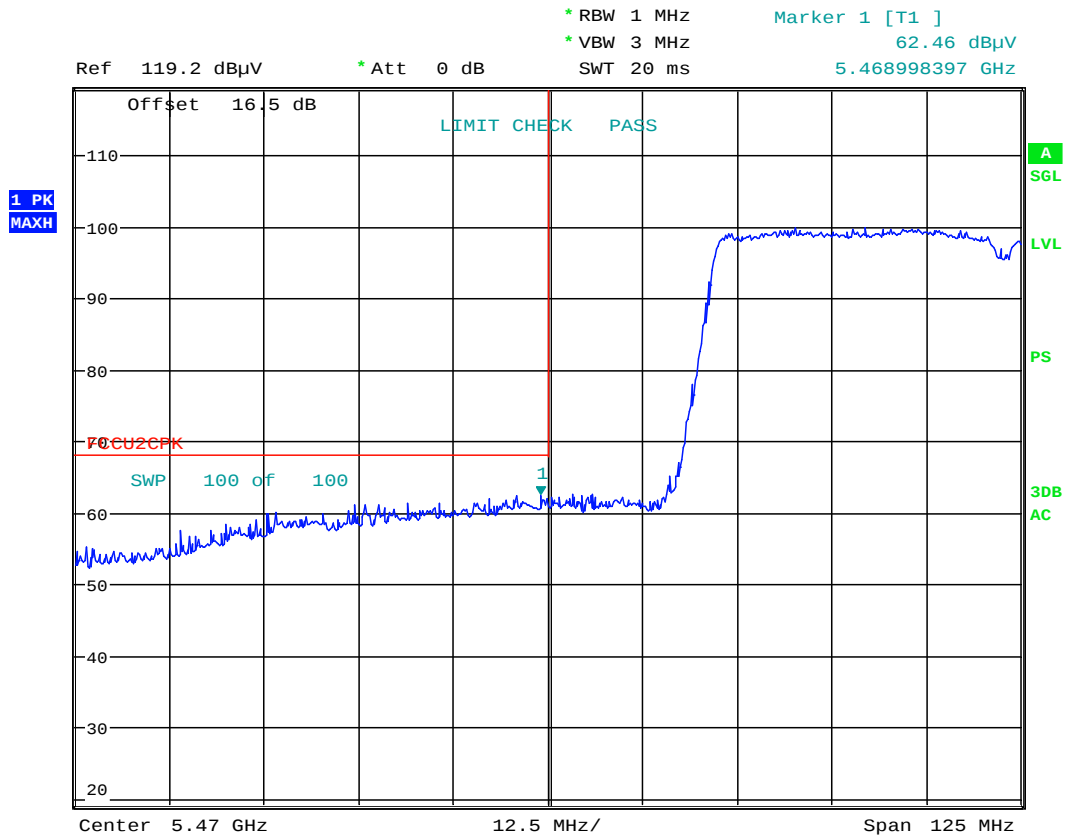


Date: 21.JAN.2015 15:53:46

Plot 6-27. Radiated Restricted Lower Band Edge Plot (Average – UNII Band 2C)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 42 of 48

Radiated Band Edge Measurements (80MHz BW) \$15.407(b.1)(b.2) \$15.205 \$15.209



Date: 21.JAN.2015 15:52:21

Plot 6-28. Radiated Restricted Lower Band Edge Plot (Peak – UNII Band 2C)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 43 of 48

Radiated Band Edge Measurements (80MHz BW)

\$15.407(b.1)(b.2) \$15.205 \$15.209

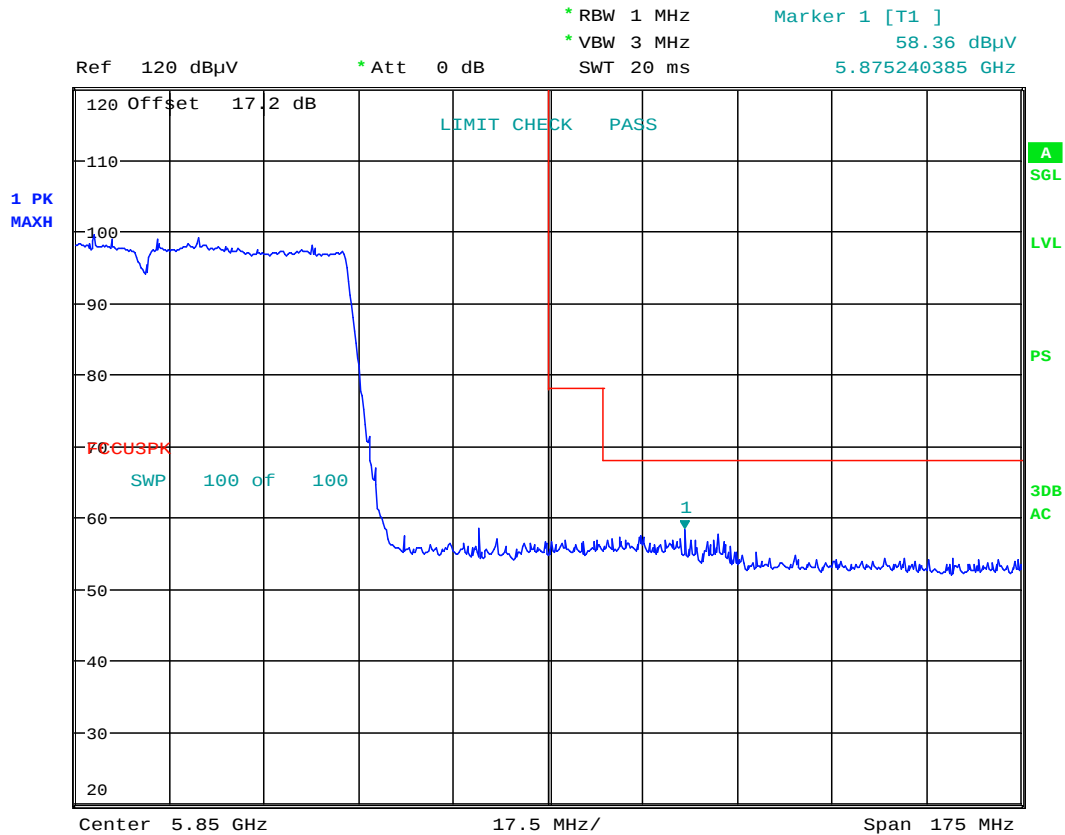
Worst Case Mode: 802.11ac (80MHz)

Worst Case Transfer Rate: MCS0

Distance of Measurements: 3 Meters

Operating Frequency: 5775MHz

Channel: 155



Date: 21.JAN.2015 16:11:09

Plot 6-29. Radiated Upper Band Edge Plot (Peak – UNII Band 3)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 44 of 48

6.5 Radiated Spurious Emissions Measurements – Below 1GHz & Above 18GHz §15.209

Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at its maximum duty cycle (>98%), at maximum power, and at the appropriate frequencies. All 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 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 6-2 per Section 15.209.

Frequency	Field Strength [μ V/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 6-15. Radiated Limits

Test Procedures Used

ANSI C63.4-2009

Test Settings

Quasi-Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 120kHz (for emissions from 30MHz – 1GHz)
3. Detector = quasi-peak
4. Sweep time = auto couple
5. Trace mode = max hold
6. Trace was allowed to stabilize

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Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

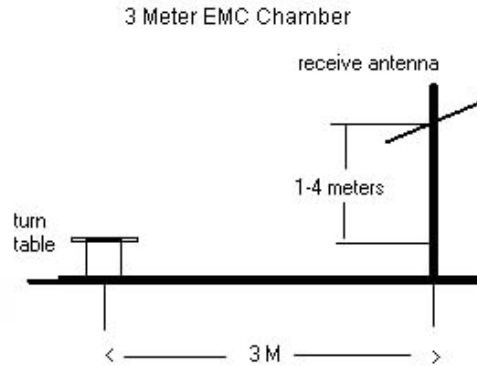


Figure 6-2. Test Instrument & Measurement Setup

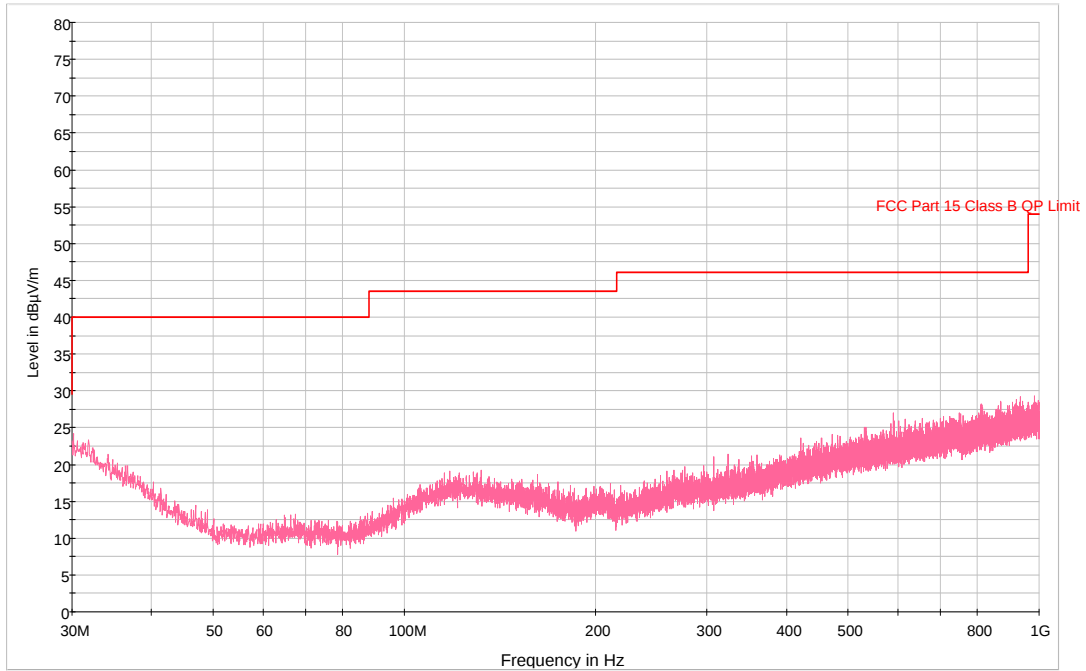
Test Notes

1. All emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 6-10.
2. The broadband receive antenna is manipulated through vertical and horizontal polarizations during the tests. The EUT is manipulated through three orthogonal planes.
3. This unit was tested with its standard battery.
4. The spectrum is investigated using a peak detector and final measurements are recorded using CISPR quasi peak detector. The worst-case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
5. Emissions were measured at a 3 meter test distance.
6. Emissions are investigated while operating on the center channel of the mode, band, and modulation that produced the worst case results during the transmitter spurious emissions testing.
7. No spurious emissions were detected within 20dB of the limit below 30MHz.
8. Since radiated spurious emissions levels in pre-scan plots above 18GHz were not within 20dB of the corresponding limit, additional measurements were not performed for these frequencies.
9. The results recorded using the broadband antenna is known to correlate with the results obtained by using a tuned dipole with an acceptable degree of accuracy. The VSWR for the measurement antenna was found to be less than 2:1.

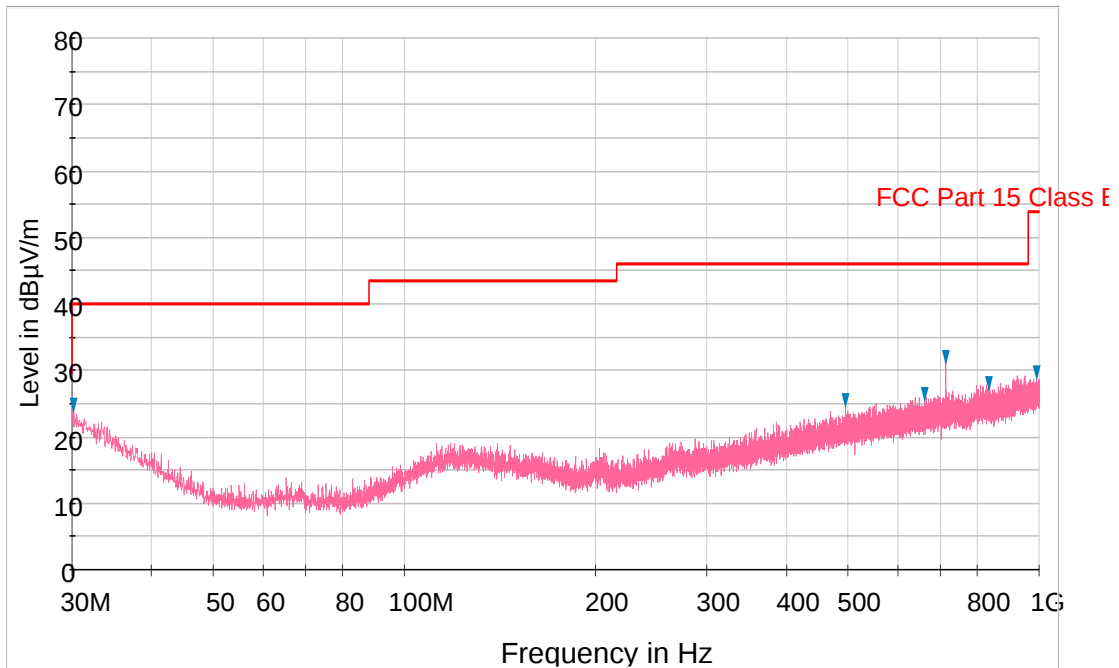
FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
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Radiated Spurious Emissions Measurements (Below 1GHz)

§15.209



Plot 6-30. Radiated Spurious Plot below 1GHz (802.11a – U3, Ant. Pol. H)



Plot 6-31. Radiated Spurious Plot below 1GHz (802.11a – U3, Ant. Pol. V)

FCC ID: ZNFUS995	PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.407 802.11 UNII MEASUREMENT REPORT (CLASS II PERMISSIVE CHANGE)	LG	Reviewed by: Quality Manager
Test Report S/N: 0Y1501210205.ZNF	Test Dates: Jan 19 - Feb 06, 2015	EUT Type: Portable Handset		Page 47 of 48

7.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **LG Portable Handset FCC ID: ZNFUS995** is in compliance with Part 15E of the FCC Rules.

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