FCC 47 CFR PART 15 SUBPART E

CERTIFICATION TEST REPORT
CLASS II PERMISSIVE CHANGE

FOR

QUAD-BAND RADIO WITH WLAN AND BT RADIO

MODEL NUMBER: A1530

FCC ID: BCG-E2643A

REPORT NUMBER: 15U21850-E3V1

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Revision History

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: APPLE, INC.
1 INFINITE LOOP
CUPERTINO, CA 95014, U.S.A.

EUT DESCRIPTION: QUAD-BAND RADIO WITH WLAN AND BT RADIO

MODEL: A1530

SERIAL NUMBER: C39L30C2FP02 (Conducted), C39L30BMFP02 (Radiated)

DATE TESTED: SEPTEMBER 29, 2015 – OCTOBER 02, 2015

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart E	Pass

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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

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Tested By:

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UL VERIFICATION SERVICES INC.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, FCC 14-30, FCC KDB 789033 D02 v01, FCC, ANSI C63.10-2013.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street
☐ Chamber A	☒ Chamber D
☐ Chamber B	☒ Chamber E
☐ Chamber C	☒ Chamber F
	☒ Chamber G
	☒ Chamber H

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers A through H are covered under Industry Canada company address code 2324B with site numbers 2324B -1 through 2324B-8, respectively.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/2000650.htm.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.1. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	± 3.52 dB
Radiated Disturbance, 30 to 1000 MHz	± 4.94 dB
Radiated Disturbance, 1 to 6 GHz	± 3.86 dB
Radiated Disturbance, 6 to 18 GHz	± 4.23 dB
Radiated Disturbance, 18 to 26 GHz	± 5.30 dB
Radiated Disturbance, 26 to 40 GHz	± 5.23 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT, Model A1530 is a mobile phone with multimedia functions (music, application support, and video), cellular GSM/GPRS/EGPRS/WCDMA/HSPA+/DC-HSDPA/LTE radio, IEEE 802.11a/b/g/n, Bluetooth and GPS radio. The rechargeable battery is not user.

5.2. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

Upgrade EUT to 5.8GHz band new rule per FCC KDB 789033 D02 v01.

5.3. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

5.8GHz Band

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
5745 - 5825	802.11a SISO	16.00	39.81
5745 - 5825	802.11n HT20 SISO	15.95	39.36
5755 - 5795	802.11n HT40 SISO	16.00	39.81

5.4. DESCRIPTION OF AVAILABLE ANTENNAS

Frequency Band (MHz)	Antenna Gain (dBi)
5745 - 5850	-4.21

5.5. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was WL Tool FW 6.10.56.166

5.6. WORST-CASE CONFIGURATION AND MODE

The worst-case channel for RF radiated emissions below 1GHz tests is channel with highest RF output power.

For the fundamental investigation, the EUT is investigated for vertical and horizontal antenna orientations and the worst case was determined to be at X-position.

Worst-case data rates were used:

802.11a mode: 6 Mbps
802.11n HT20mode: MCS0
802.11n HT40mode: MCS0

Since EUT passed radiated with antenna, no conducted spurious was performed.

5.7. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Apple	MacBook Pro	73043BDQAGU	N/A
Laptop AC/DC adapter	Apple	A1172	MV7211FJAX4XA	N/A
Earphone	Apple	NA	NA	N/A
EUT AC/DC adapter	Apple	A1357	W010A051	N/A

I/O CABLES (CONDUCTED TEST)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Antenna	1	SMA	Un-Shielded	0.2	To spectrum Analyzer
2	USB	1	USB	Shielded	1	N/A
3	AC	1	AC	Un-shielded	3	N/A

I/O CABLES (RADIATED ABOVE 1 GHZ)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
None Used						

I/O CABLES (RADAITED BELOW 1 GHZ)

I/O Cable List						
Cable No	Port	# of identical	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Headphones Jack	1	3.5mm Audio	Shielded	0.9	N/A
2	AC	1	AC	Un-shielded	3	N/A

I/O CABLES (AC LINE CONDUCTED: AC/DC ADAPTER)

I/O Cable List						
Cable No	Port	# of identical	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Headphones Jack	1	3.5mm Audio	Shielded	0.9	N/A
2	AC	1	AC	Un-shielded	3	N/A

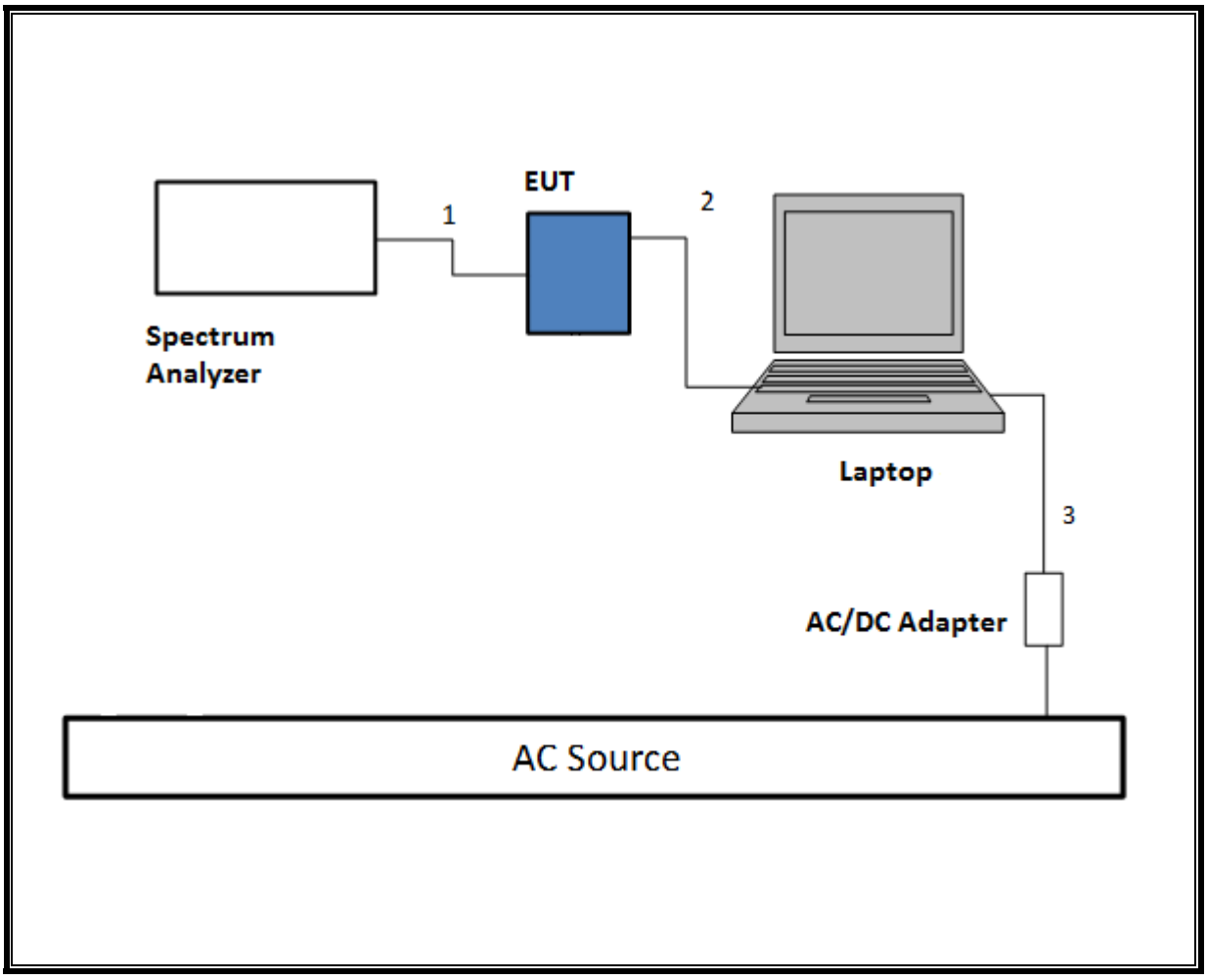
I/O CABLES (AC LINE CONDUCTED: LAPTOP CONFIGUARTION)

I/O Cable List						
Cable No	Port	# of identical	Connector Type	Cable Type	Cable Length (m)	Remarks
1	Headphones Jack	1	3.5mm Audio	Shielded	0.9	N/A
2	USB	1	USB	Shielded	1	N/A
3	AC	1	AC	Un-shielded	3	N/A

TEST SETUP - CONDUCTED TESTS

The EUT was tested connected to a host Laptop via USB cable adapter and spectrum analyzer to antenna port. Test software exercised the EUT.

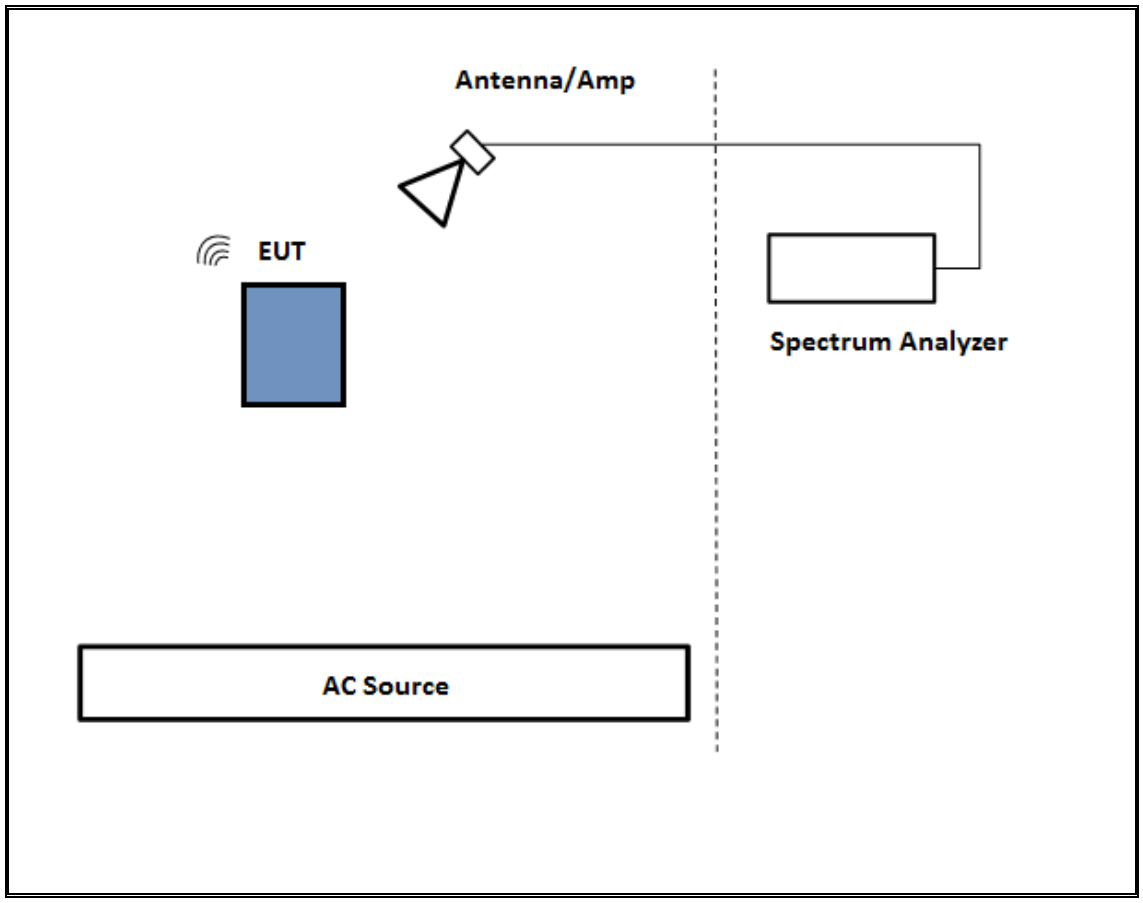
SETUP DIAGRAM



TEST SETUP- RADIATED-ABOVE 1 GHZ

The EUT was tested battery powered. Test software exercised the EUT.

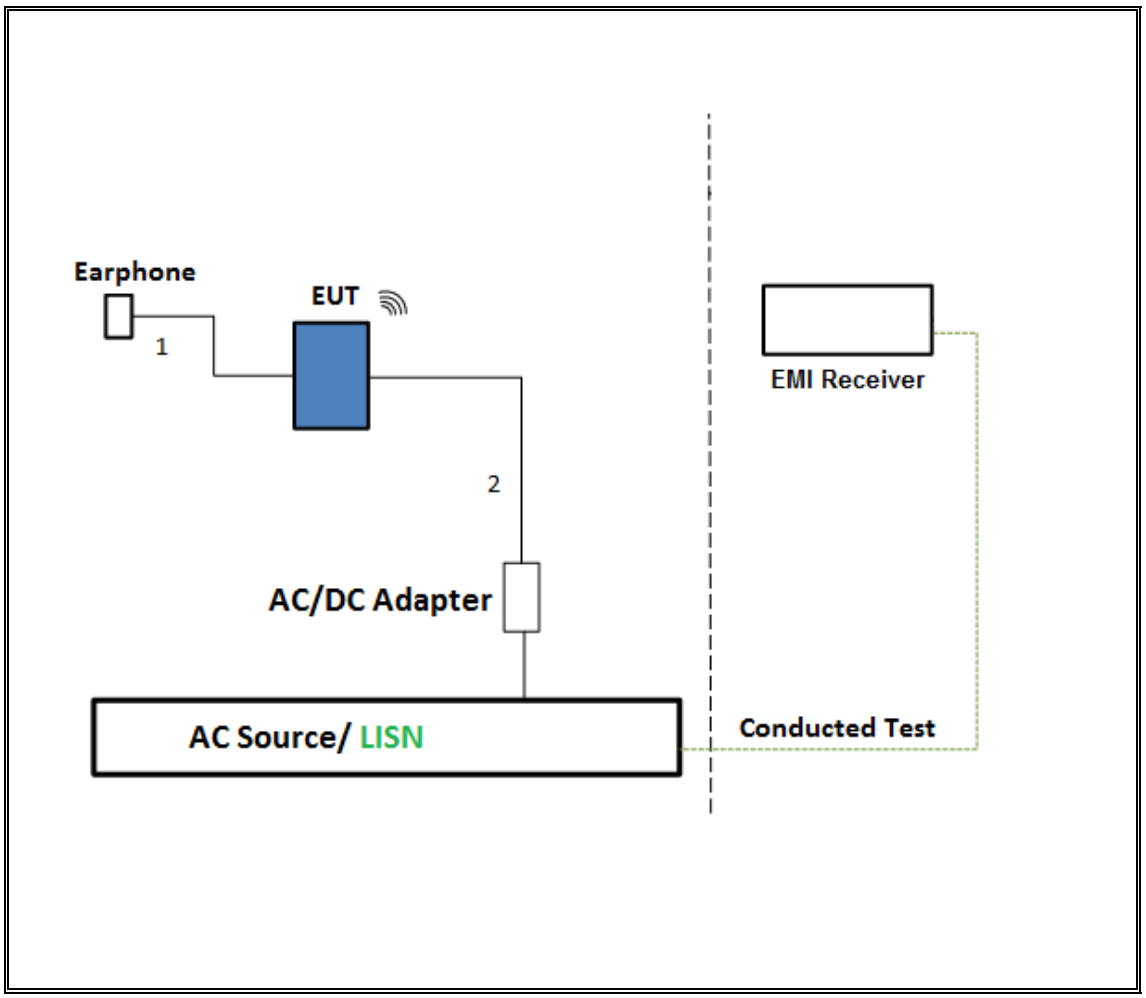
SETUP DIAGRAM



TEST SETUP- AC LINE CONDUCTED: AC/DC ADAPTER

The EUT was tested with earphone connected and powered by AC/DC adapter via USB cable. Test software exercised the EUT.

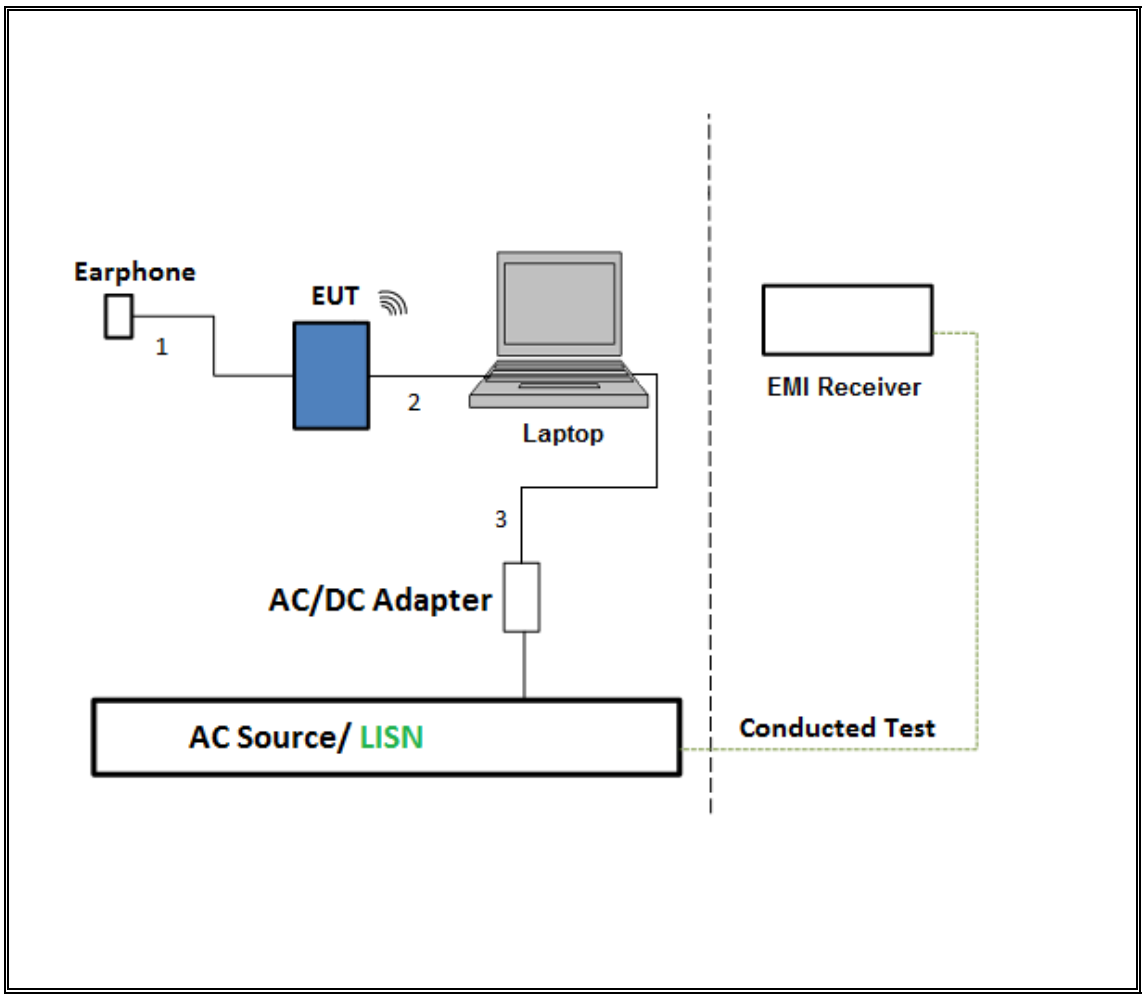
SETUP DIAGRAM



TEST SETUP- AC LINE CONDUCTED: LAPTOP CONFIGURATION

The EUT was tested with earphone connected and powered by host PC via USB cable. Test software exercised the EUT.

SETUP DIAGRAM



6. TEST AND MEASUREMENT EQUIPMENT

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

Test Equipment List				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
Antenna, Horn 1-18GHz	ETS Lindgren	3117	00143448	02/10/16
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences	JB3	A022813-1	01/14/16
Amplifier, 1 - 18GHz	Miteq	AFS42-00101800-25-S-42	1782158	01/26/16
Amplifier, 10KHz to 1GHz, 32dB	Sonoma	310N	323561	06/08/16
Spectrum Analyzer, PXA, 3Hz to 50GHz	Agilent	N9030A	MY52350427	08/04/16
Amplifier, 10KHz to 1GHz, 32dB	Sonoma	310N	325117	06/09/16
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent	N9030A-544	US51160264	12/23/15
Power Meter, P-series single channel	Agilent	N1911A	GB45100212	10/09/15
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Agilent	N1921A	MY53260010	07/12/16
Antenna, Horn 18 to 26.5GHz	ARA	MWH-1826	1049	12/17/15
Horn Antenna, 40GHz	ARA	MWH-2640/B	1029	07/15/16
Spectrum Analyzer, 40 GHz	Agilent	8564E	3943A01643	08/06/16
Amplifier, 1 to 26.5GHz, 23.5dB Gain minimum	Agilent	8449B	3008A04710	06/29/16
Amplifier, 26 to 40GHz	Miteq	NSP4000-SP2	88	04/07/16
AC Line Conducted				
EMI Test Receiver 9Khz-7GHz	Rohde & Schwarz	ESCI7	100773	08/07/16
N for Conducted Emissions CISP	FCC	50/250-25-2	114	01/16/16
ble, Line Conducted Emissions A	UL	PG1	N/A	07/28/16
UL SOFTWARE				
*Radiated Software	UL	UL EMC	Ver 9.5, July 22, 2014	
*Conducted Software	UL	UL EMC	Ver 2.2, March 31, 2015	
*AC Line Conducted Software	UL	UL EMC	Ver 9.5, April 3, 2015	

Note: * indicates automation software version used in the compliance certification testing

7. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

7.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

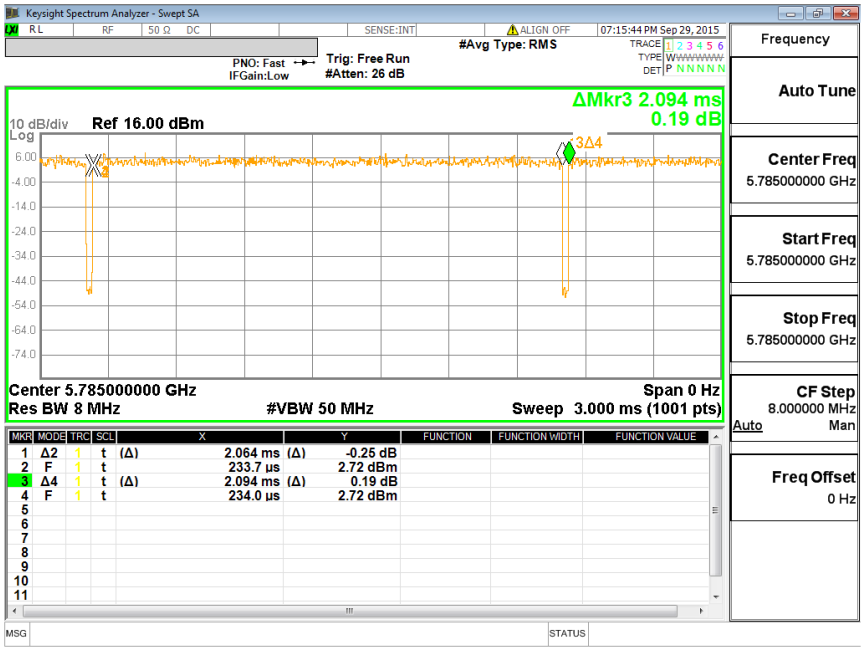
KDB 789033 Zero-Span Spectrum Analyzer Method.

RESULTS

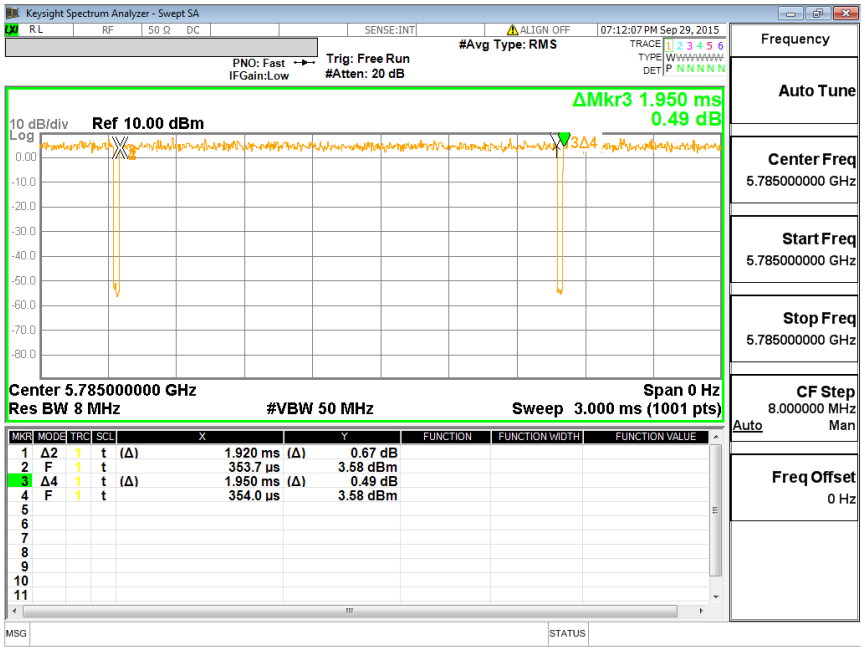
Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
802.11a 1TX	2.064	2.094	0.986	98.57%	0.00	0.010
802.11n HT20 1TX	1.920	1.950	0.985	98.46%	0.00	0.010
802.11n HT40 1TX	0.943	0.972	0.970	97.01%	0.13	1.060

DUTY CYCLE PLOTS

DUTY CYCLE 802.11a1TX MODE



DUTY CYCLE 802.11n HT20 1TX MODE



DUTY CYCLE 802.11n HT40 1TX MODE

7.2. MEASUREMENT METHODS

26 dB Emission BW & 6 dB Emission BW: KDB 789033 D02 v01, Section C.

99% Occupied BW: KDB 789033 D02 v01, Section D.

Conducted Output Power: KDB 789033 D02 v01, Section E.3.b (Method PM-G).

Power Spectral Density: KDB 789033 D02 v01, Section F.

Unwanted emissions in restricted bands: KDB 789033 D02 v01, Sections G.3, G.4, G.5, and G.6.

Unwanted emissions in non-restricted bands: KDB 789033 D02 v01, Sections G.3, G.4, and G.5.

8. ANTENNA PORT TEST RESULTS

8.1.802.11a MODE IN THE 5.8 GHz BAND

8.1.1. 6 dB BANDWIDTH

LIMITS

FCC §15.407 (e)

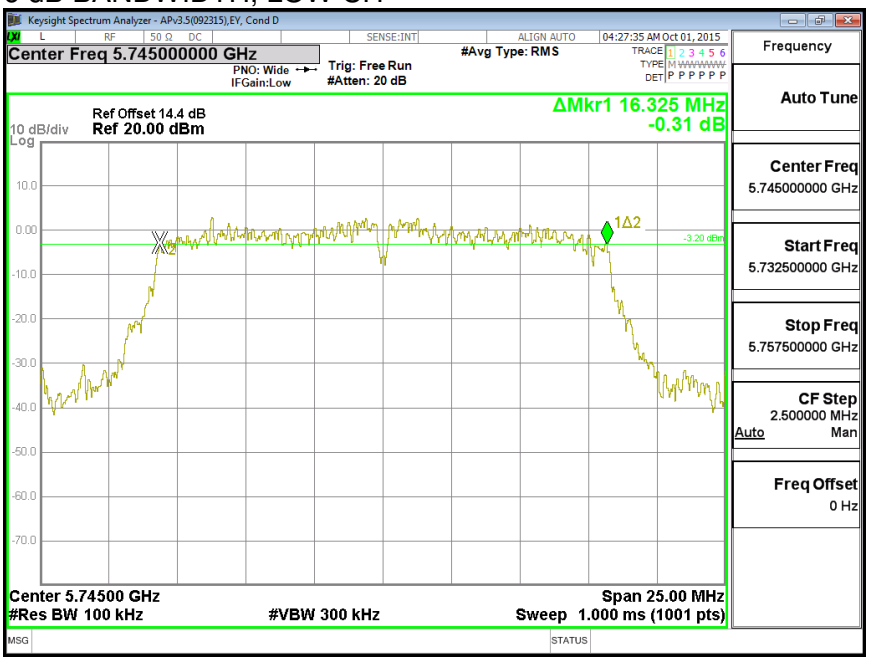
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

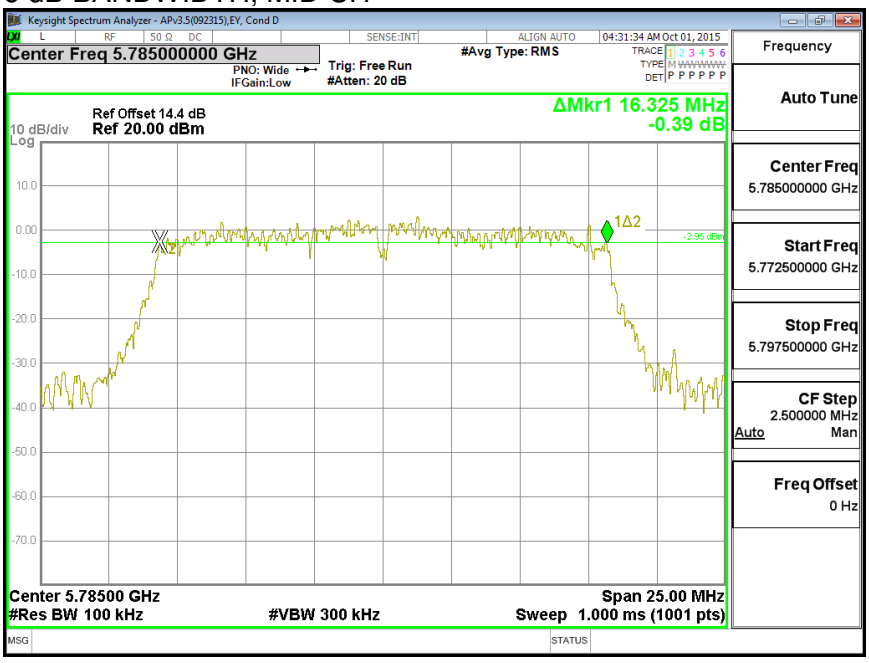
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	16.325	0.5
Mid	5785	16.325	0.5
High	5825	16.325	0.5

6 dB BANDWIDTH

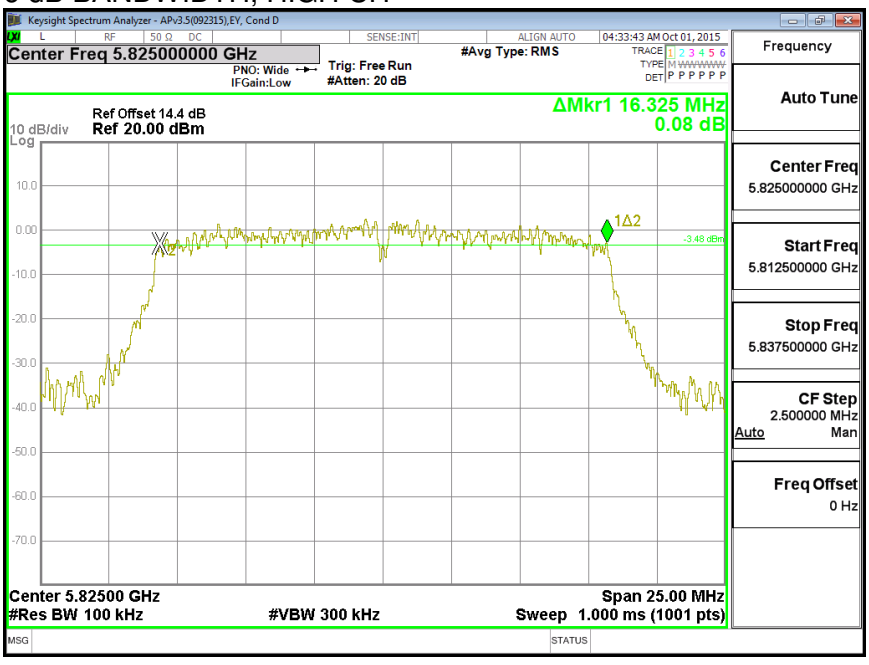
6 dB BANDWIDTH, LOW CH



6 dB BANDWIDTH, MID CH



6 dB BANDWIDTH, HIGH CH



8.1.2. 26 dB BANDWIDTH

LIMITS

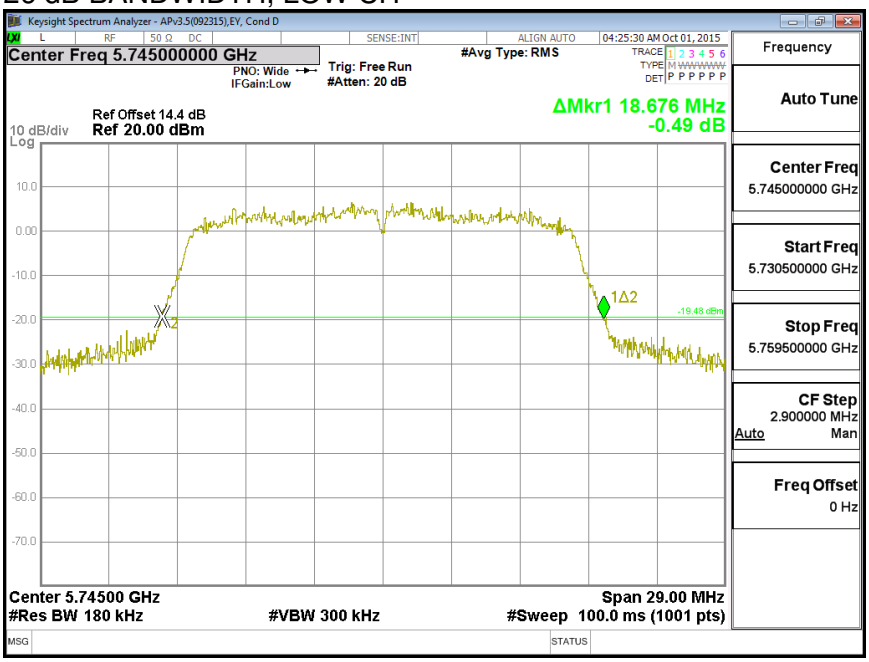
None, for reporting purposes only

RESULTS

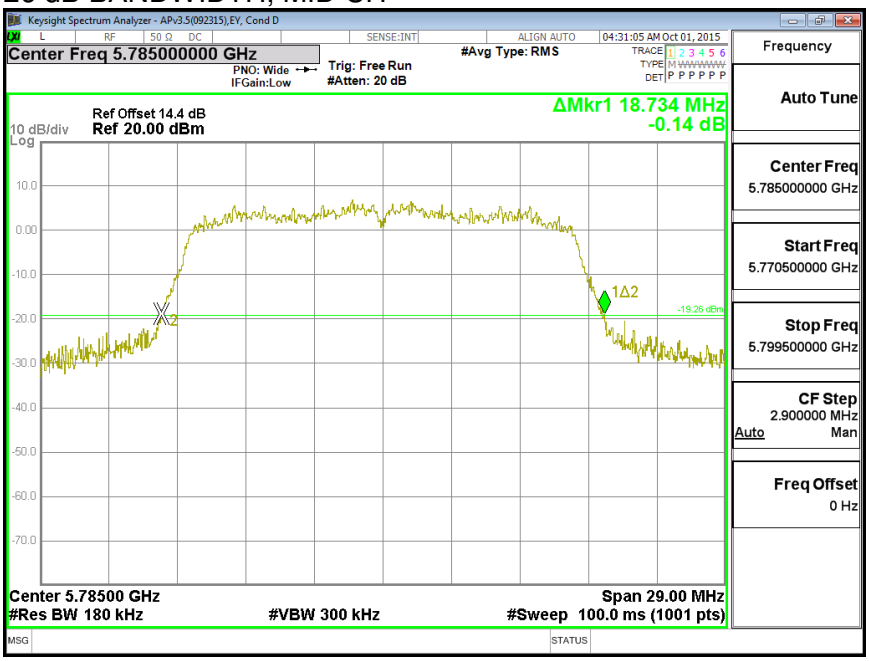
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5745	18.676
Mid	5785	18.734
High	5825	18.620

26 dB BANDWIDTH

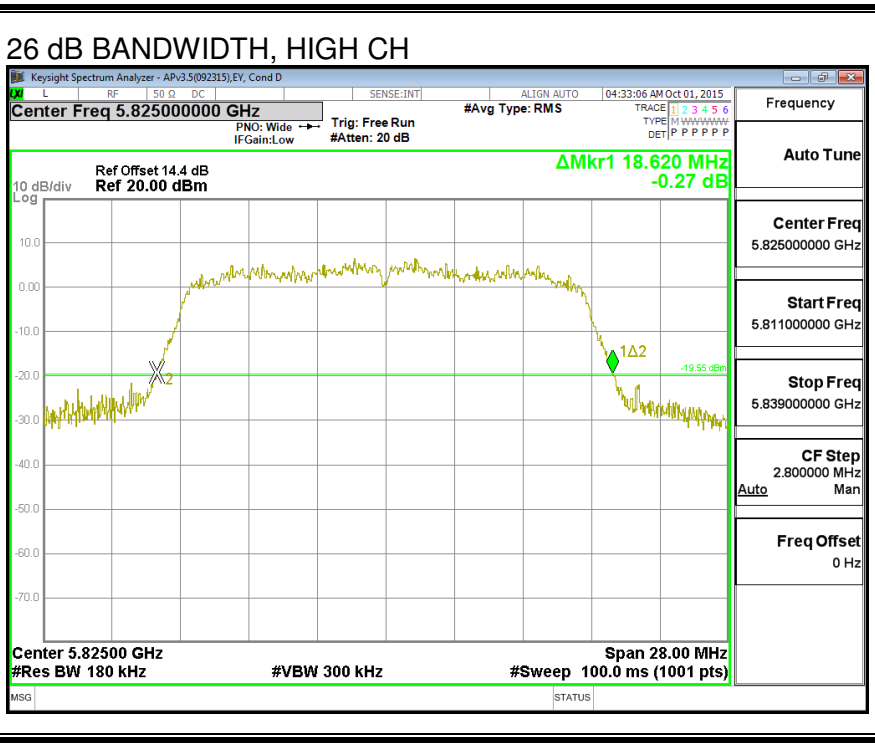
26 dB BANDWIDTH, LOW CH



26 dB BANDWIDTH, MID CH



26 dB BANDWIDTH, HIGH CH



8.1.3. 99% BANDWIDTH

LIMITS

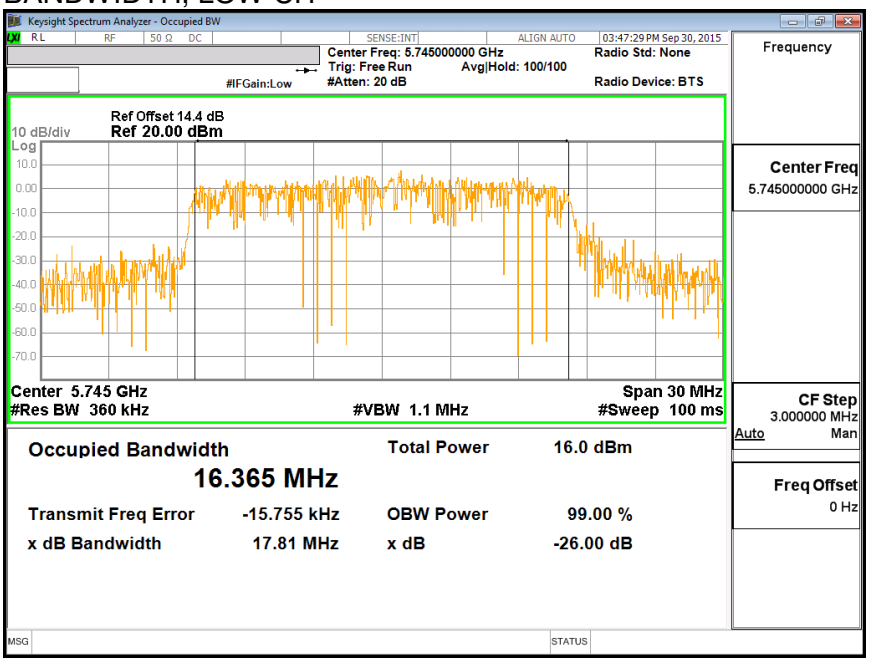
None; for reporting purposes only.

RESULTS

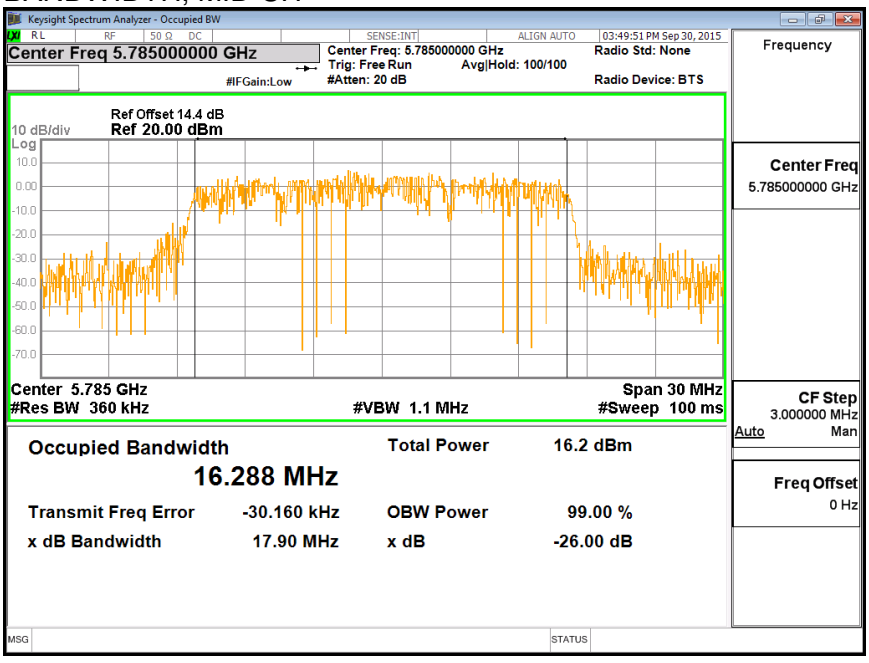
Frequency (MHz)	99% Bandwidth (MHz)
5745	16.365
5785	16.288
5825	16.441

99% BANDWIDTH

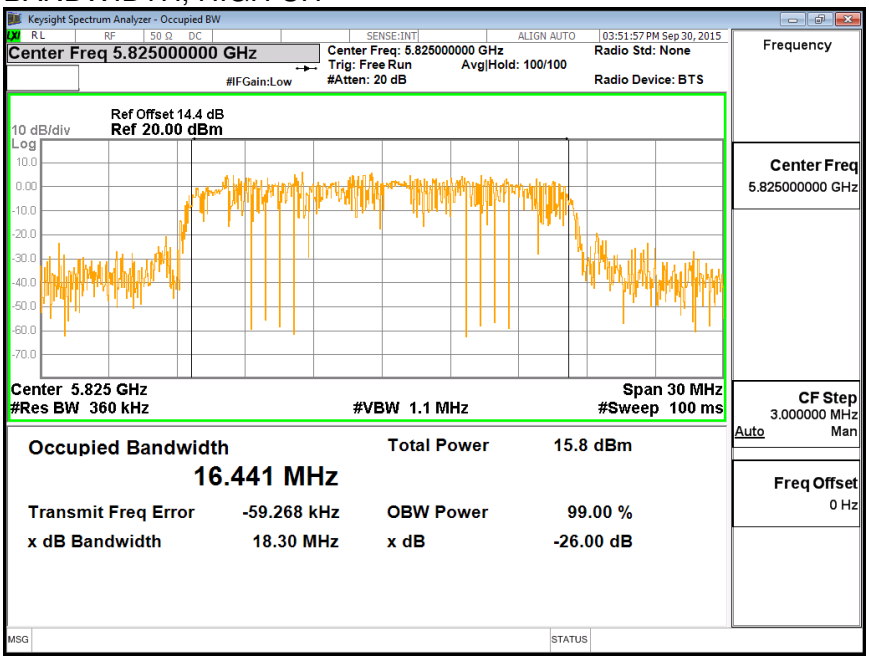
BANDWIDTH, LOW CH



BANDWIDTH, MID CH



BANDWIDTH, HIGH CH



8.1.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
Low	5745	15.95
Mid	5785	16.00
High	5825	15.94

8.1.5. OUTPUT POWER

LIMITS

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Power Limit (dBm)
Low	5745	-4.21	30.00
Mid	5785	-4.21	30.00
High	5825	-4.21	30.00

Output Power Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5745	15.95	15.95	30.00	-14.05
Mid	5785	16.00	16.00	30.00	-14.00
High	5825	15.94	15.94	30.00	-14.06

8.1.6. PSD

LIMITS

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	PSD Limit (dBm)
Low	5745	-4.21	30.00
Mid	5785	-4.21	30.00
High	5825	-4.21	30.00

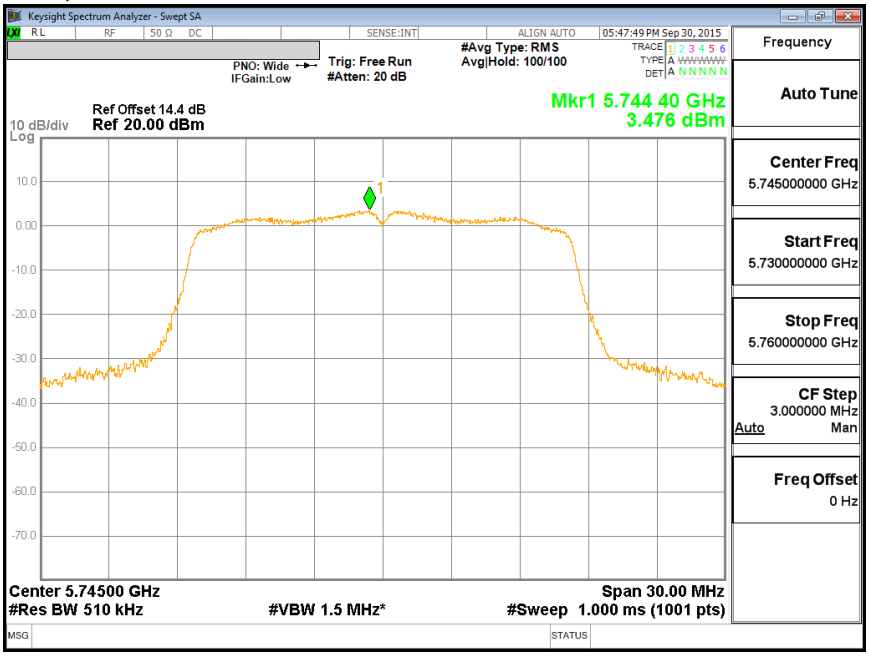
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

PSD Results

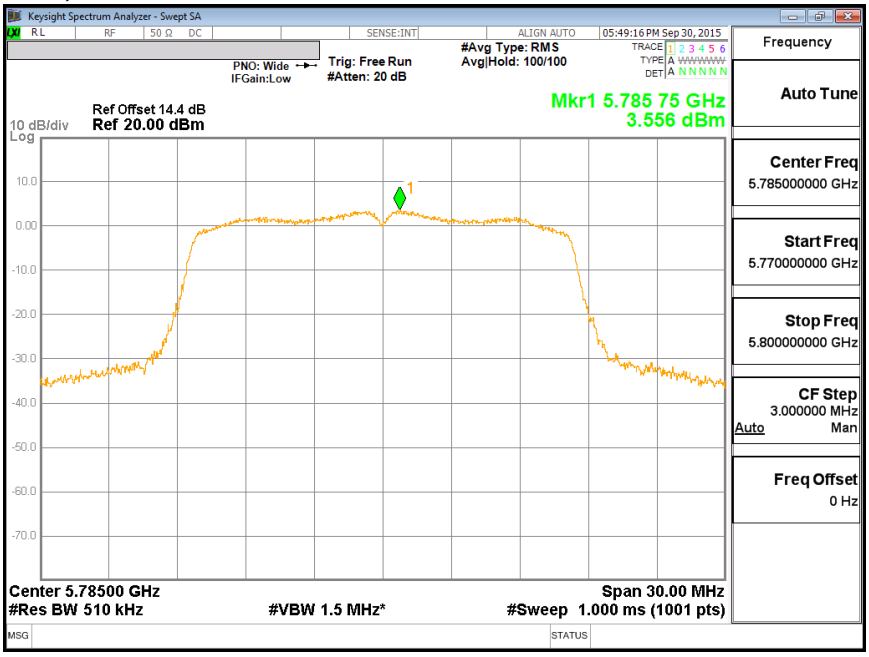
Channel	Frequency (MHz)	PSD Meas (dBm)	Total PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5745	3.48	3.48	30.00	-26.52
Mid	5785	3.56	3.56	30.00	-26.44
High	5825	3.55	3.55	30.00	-26.45

PSD,

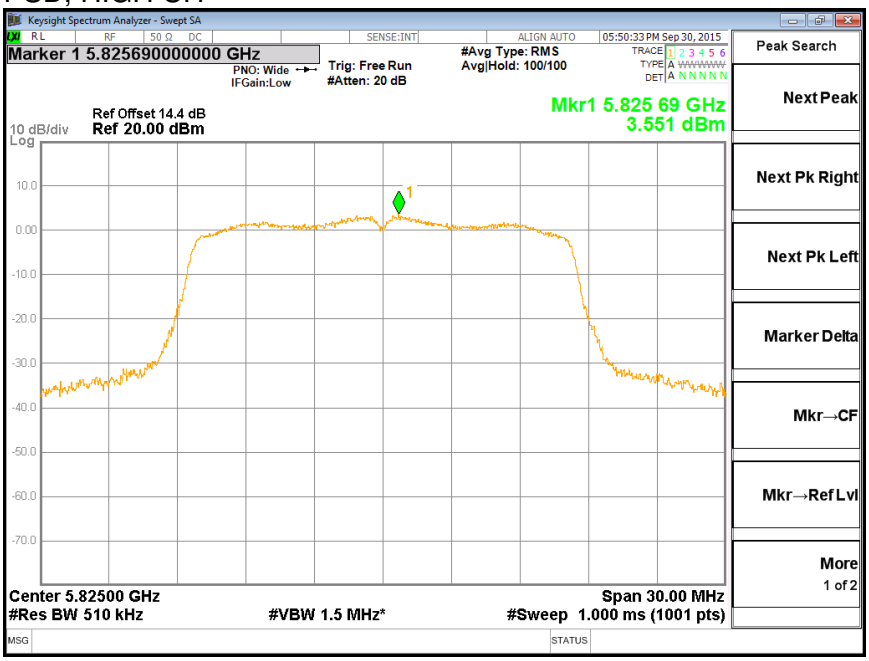
PSD, LOW CH



PSD, MID CH



PSD, HIGH CH



8.2.802.11n HT20 IN THE 5.8 GHz BAND

8.2.1. 6 dB BANDWIDTH

LIMITS

FCC §15.407 (e)

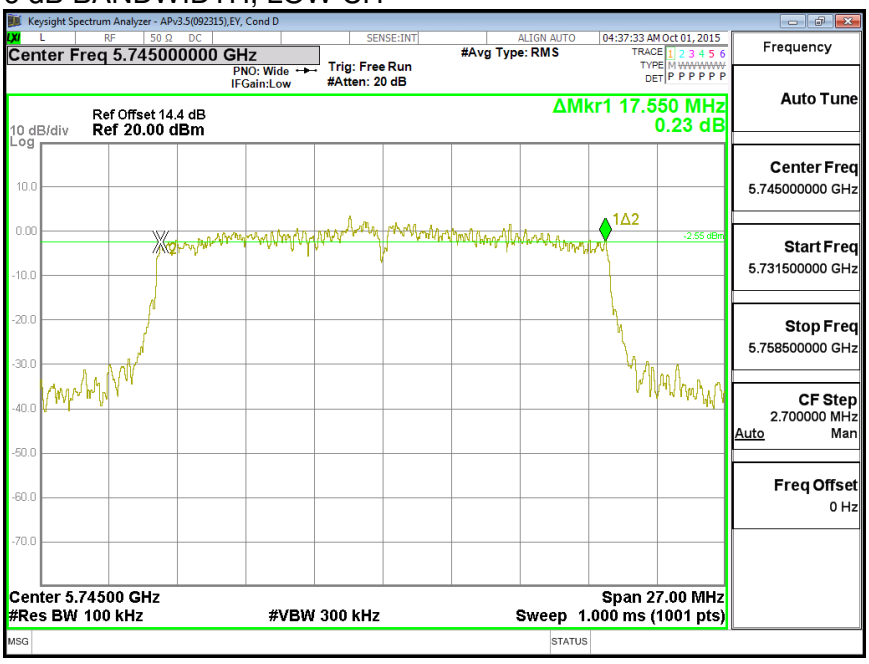
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

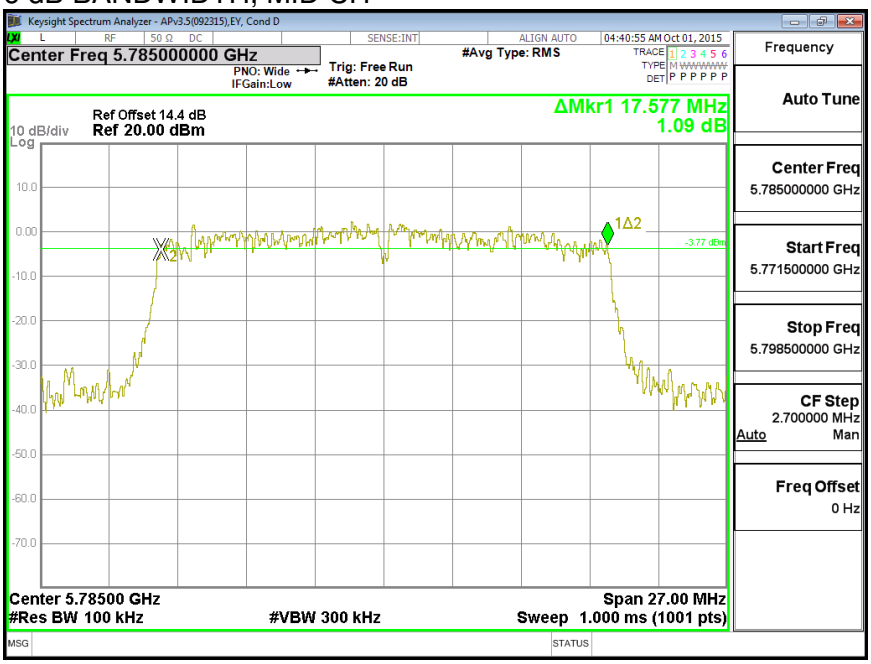
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	17.550	0.5
Mid	5785	17.577	0.5
High	5825	17.577	0.5

6 dB BANDWIDTH

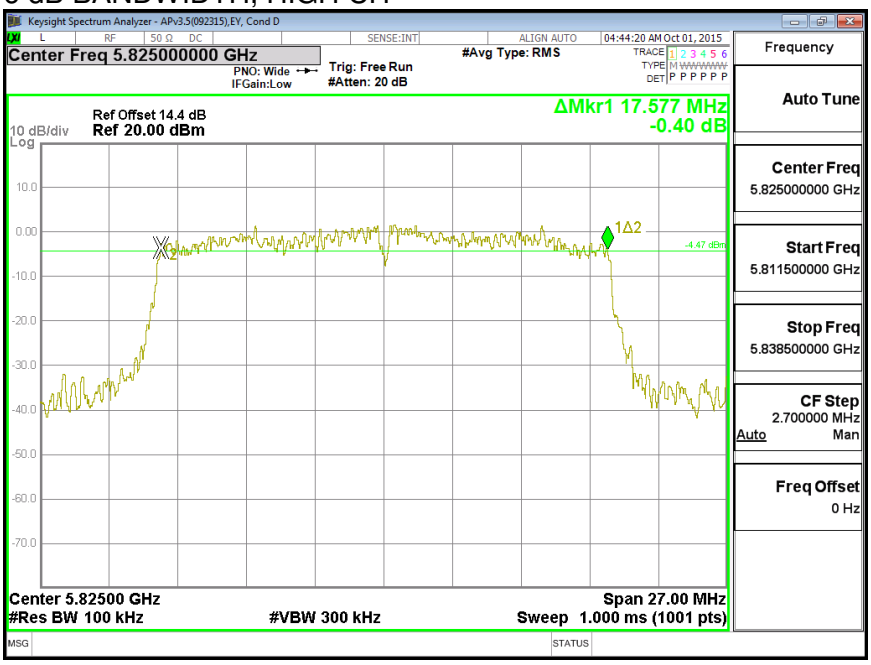
6 dB BANDWIDTH, LOW CH



6 dB BANDWIDTH, MID CH



6 dB BANDWIDTH, HIGH CH



8.2.2. 26 dB BANDWIDTH

LIMITS

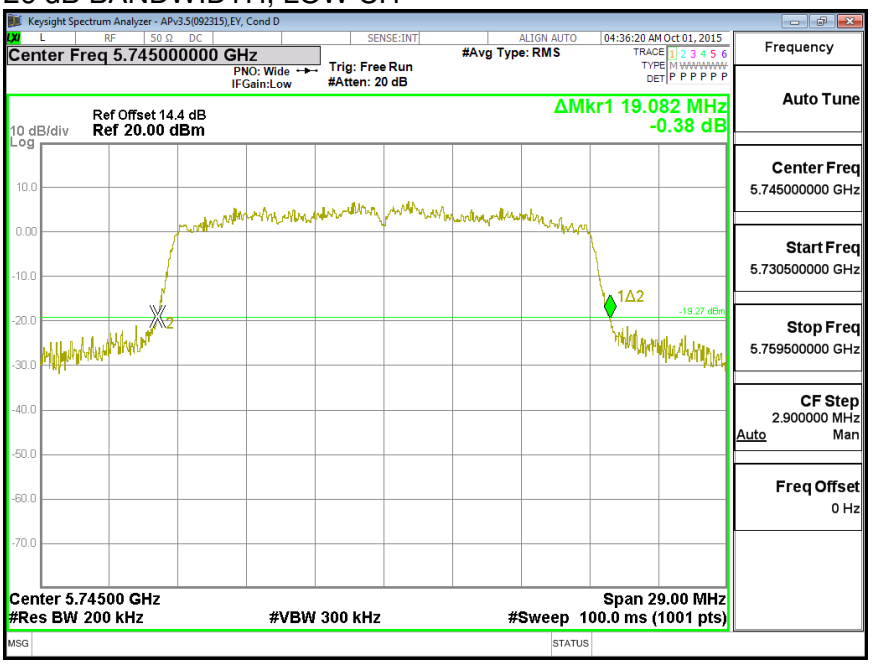
None, for reporting purposes only

RESULTS

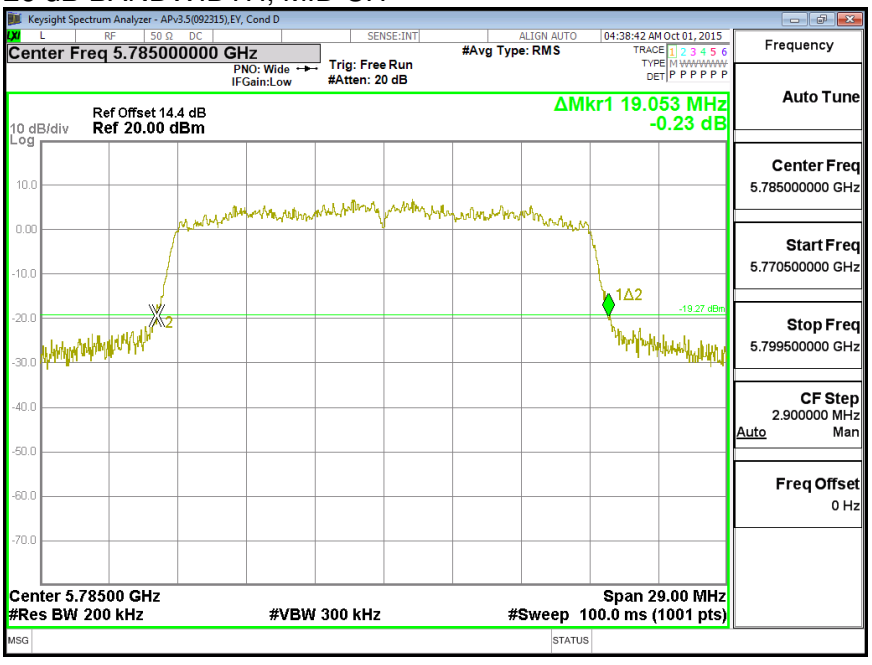
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5745	19.082
Mid	5785	19.053
High	5825	19.024

26 dB BANDWIDTH

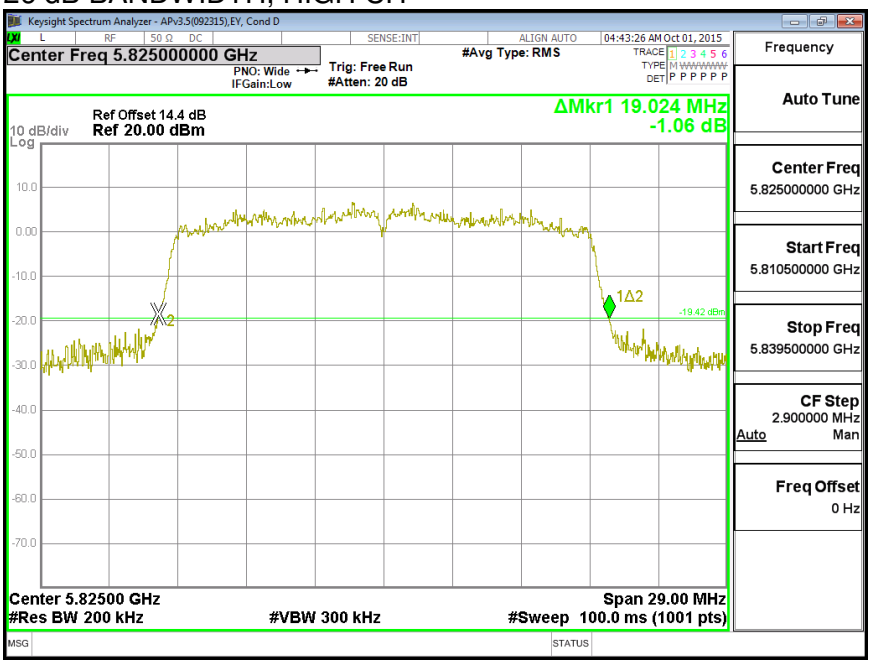
26 dB BANDWIDTH, LOW CH



26 dB BANDWIDTH, MID CH



26 dB BANDWIDTH, HIGH CH



8.2.3. 99% BANDWIDTH

LIMITS

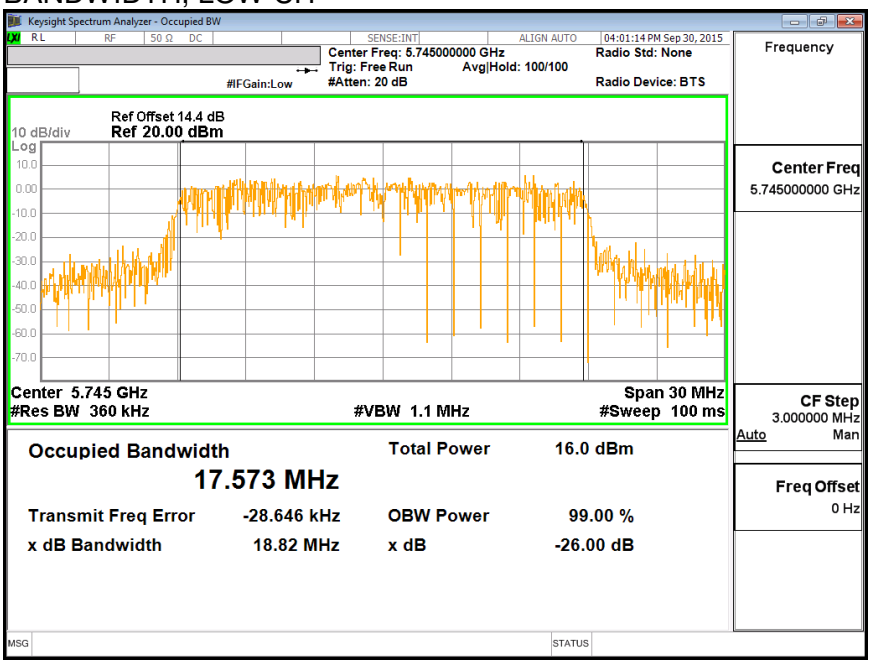
None; for reporting purposes only.

RESULTS

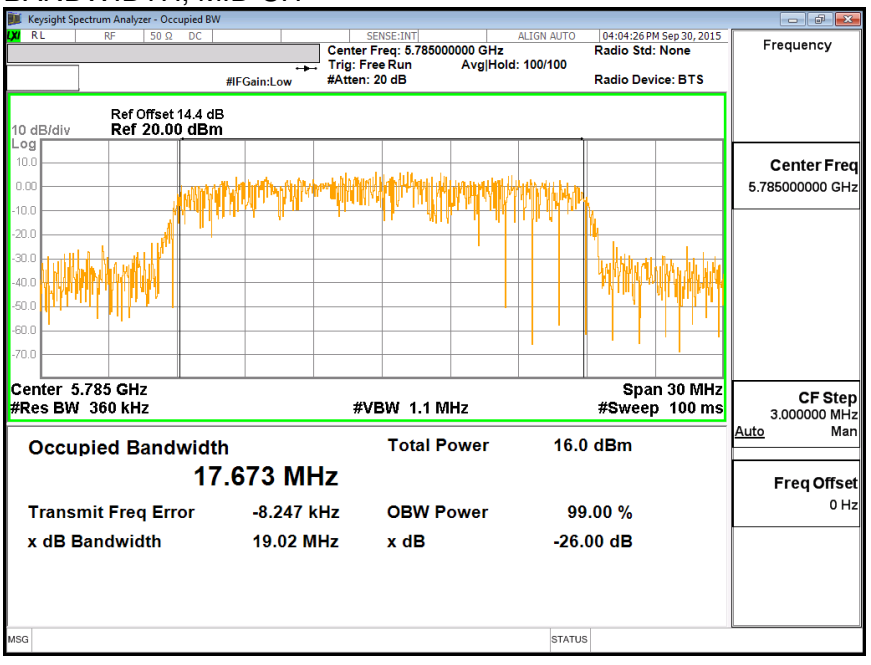
Frequency (MHz)	99% Bandwidth (MHz)
5745	17.573
5785	17.673
5825	17.539

99% BANDWIDTH

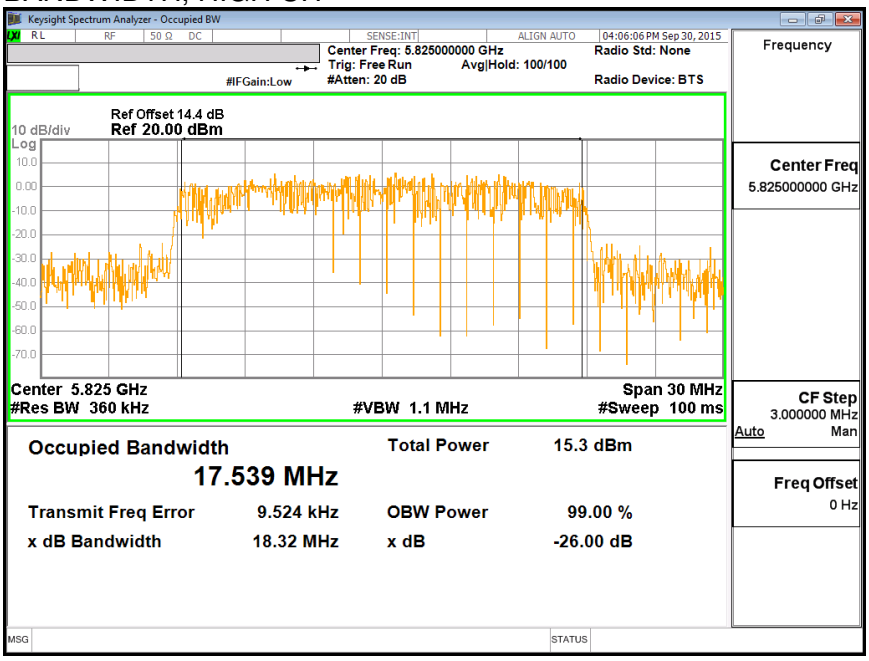
BANDWIDTH, LOW CH



BANDWIDTH, MID CH



BANDWIDTH, HIGH CH



8.2.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
Low	5745	15.95
Mid	5785	15.82
High	5825	15.74

8.2.5. OUTPUT POWER

LIMITS

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain for Power (dBi)	Power Limit (dBm)
Low	5745	-4.21	30.00
Mid	5785	-4.21	30.00
High	5825	-4.21	30.00

Output Power Results

Channel	Frequency (MHz)	Power Meas (dBm)	Total Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5745	15.95	15.95	30.00	-14.05
Mid	5785	15.82	15.82	30.00	-14.18
High	5825	15.74	15.74	30.00	-14.26

8.2.6. PSD

LIMITS

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	PSD Limit (dBm)
Low	5745	-4.21	30.00
Mid	5785	-4.21	30.00
High	5825	-4.21	30.00

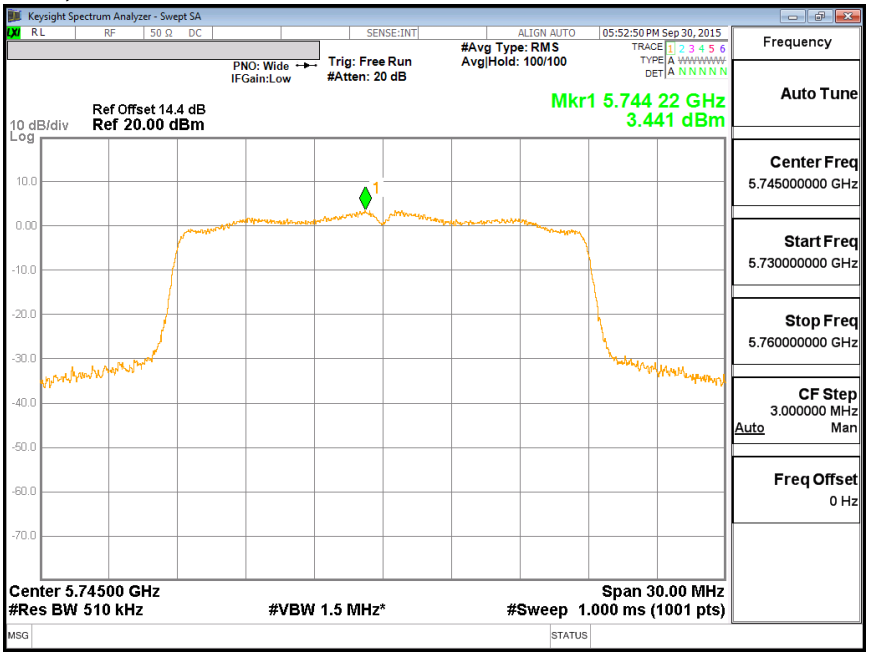
Duty Cycle CF (dB)	0.00	Included in Calculations of Corr'd PSD

PSD Results

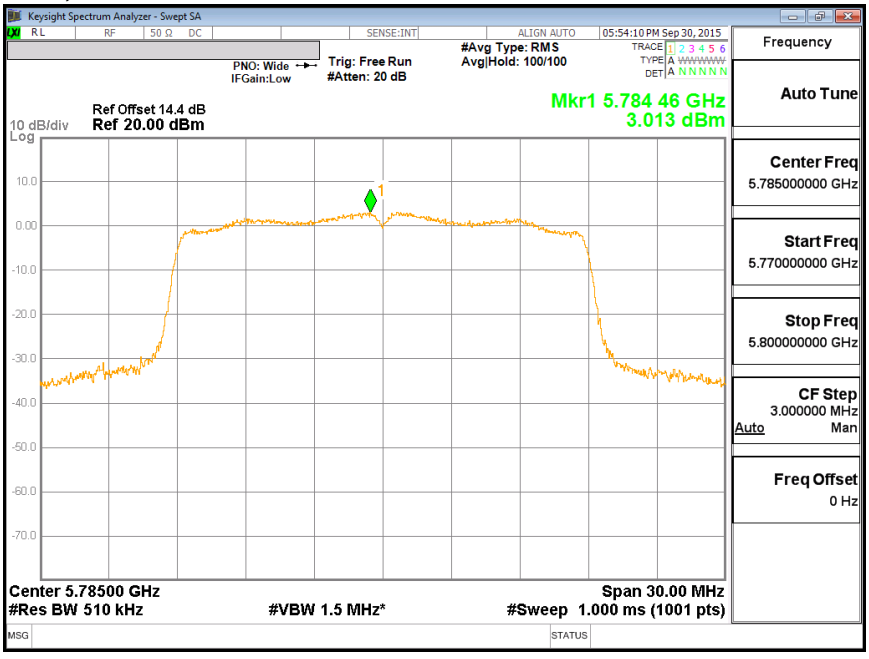
Channel	Frequency (MHz)	Meas PSD (dBm)	Total PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5745	3.44	3.44	30.00	-26.56
Mid	5785	3.01	3.01	30.00	-26.99
High	5825	2.96	2.96	30.00	-27.04

PSD,

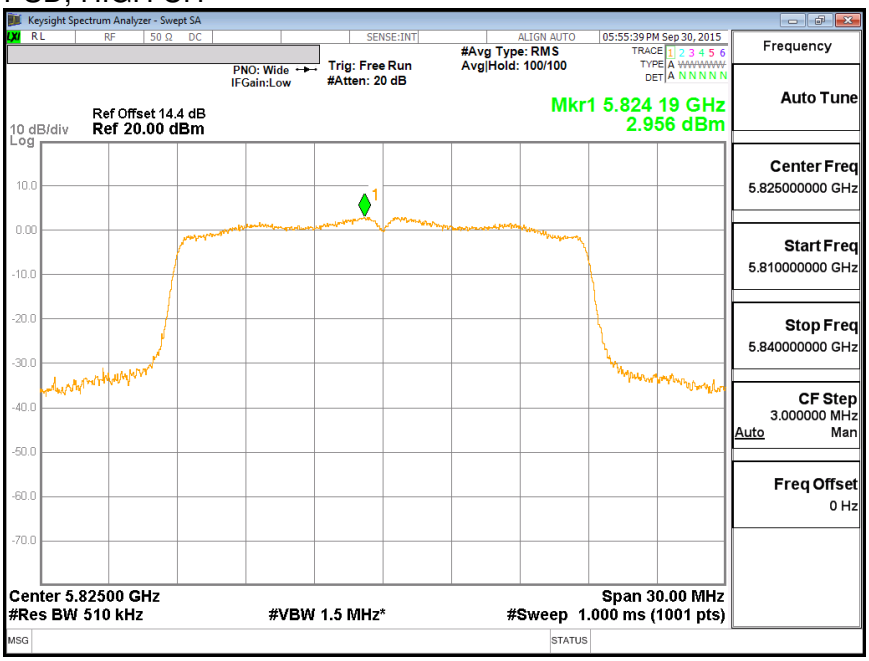
PSD, LOW CH



PSD, MID CH



PSD, HIGH CH



8.3.802.11n HT40 MODE IN THE 5.8 GHz BAND

8.3.1. 6 dB BANDWIDTH

LIMITS

FCC §15.407 (e)

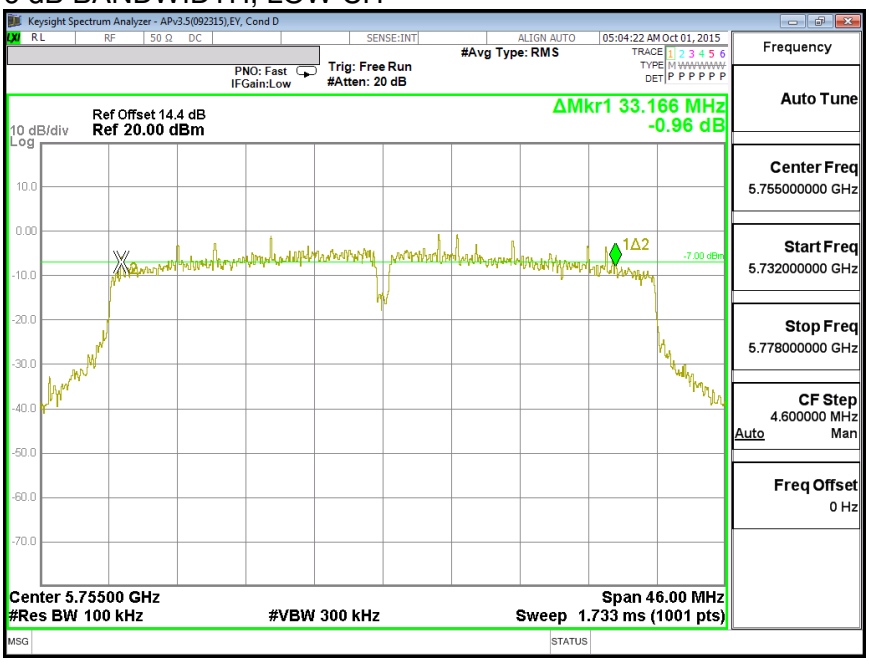
The minimum 6 dB bandwidth shall be at least 500 kHz.

RESULTS

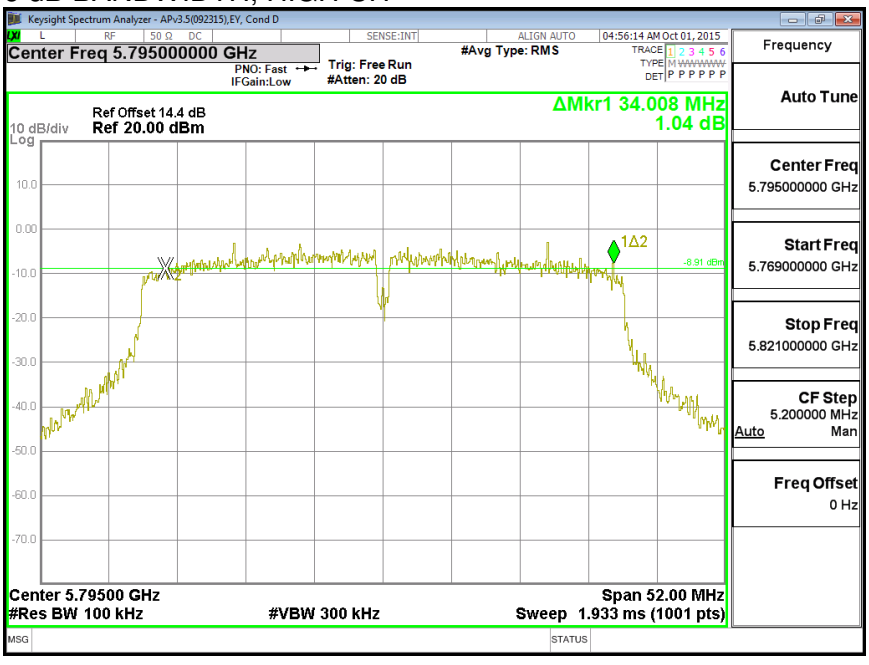
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5755	33.166	0.5
High	5795	34.008	0.5

6 dB BANDWIDTH

6 dB BANDWIDTH, LOW CH



6 dB BANDWIDTH, HIGH CH



8.3.2. 26 dB BANDWIDTH

LIMITS

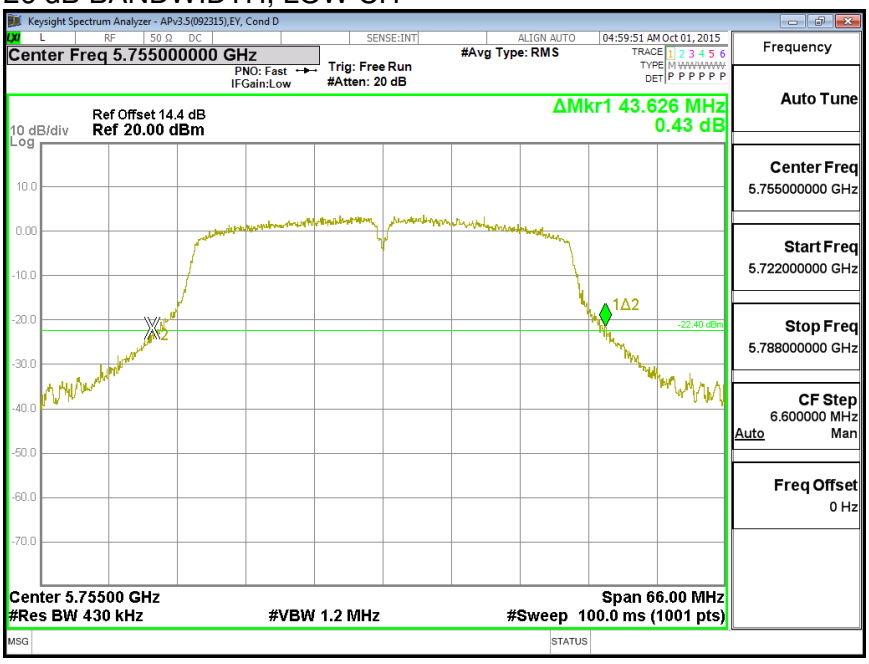
None, for reporting purposes only.

RESULTS

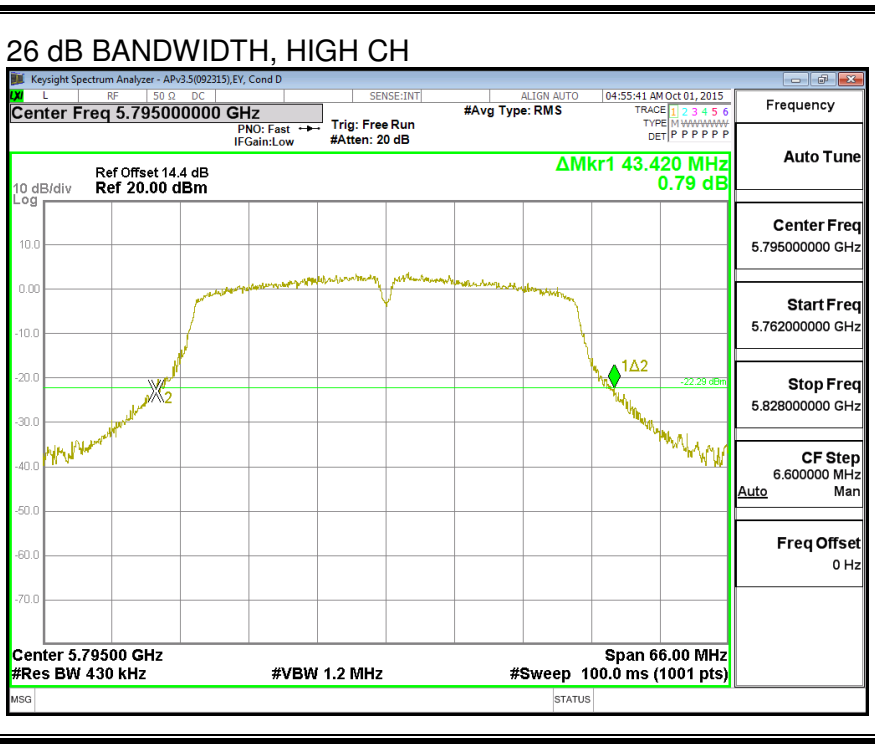
Channel	Frequency (MHz)	26 dB Bandwidth (MHz)
Low	5755	43.626
High	5795	43.420

26 dB BANDWIDTH

26 dB BANDWIDTH, LOW CH



26 dB BANDWIDTH, HIGH CH



8.3.3. 99% BANDWIDTH

LIMITS

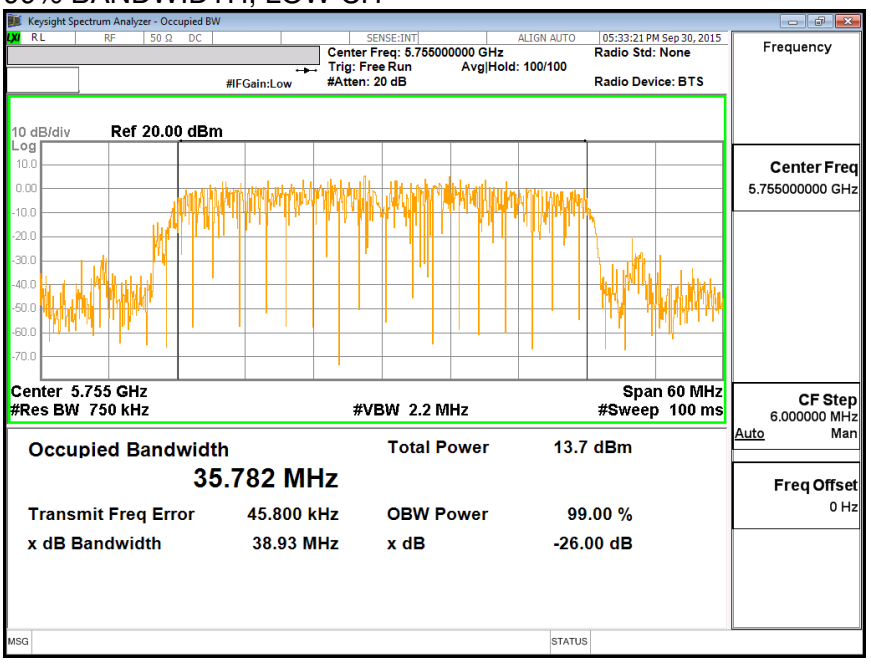
None; for reporting purposes only.

RESULTS

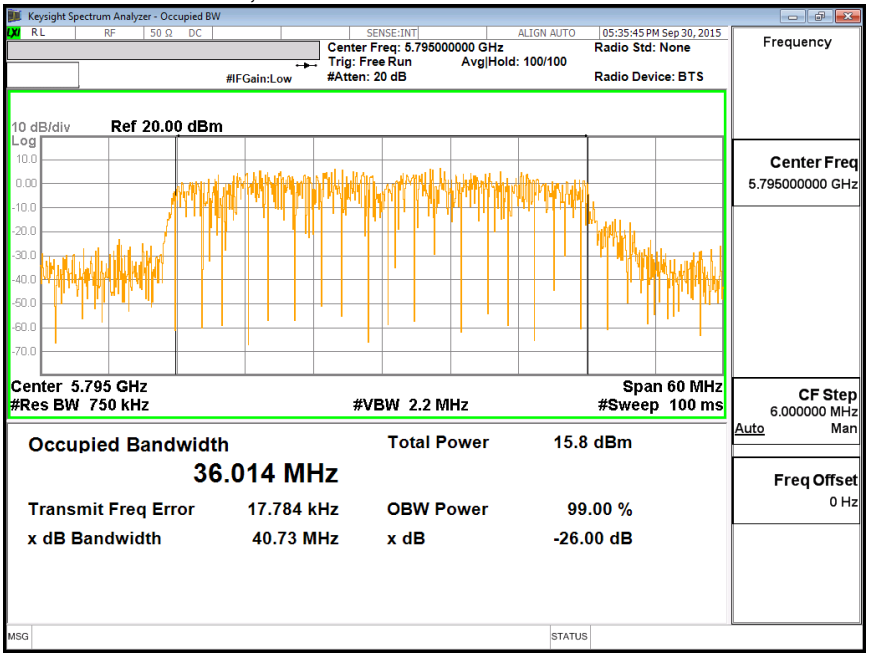
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5755	35.782
High	5795	36.014

99% BANDWIDTH

99% BANDWIDTH, LOW CH



99% BANDWIDTH, HIGH CH



8.3.4. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter.

RESULTS

Channel	Frequency (MHz)	Power (dBm)
Low	5755	16.00
High	5795	15.88

8.3.5. OUTPUT POWER

LIMITS

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

Measurements perform using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

Antenna Gain and Limit

Channel	Frequency (MHz)	Directional Gain (dBi)	Power Limit (dBm)
Low	5755	-4.21	30.00
High	5795	-4.21	30.00

Output Power Results

Channel	Frequency (MHz)	Meas Power (dBm)	Total Power (dBm)	Power Limit (dBm)	Power Margin (dB)
Low	5755	16.00	16.00	30.00	-14.00
High	5795	15.88	15.88	30.00	-14.12

8.3.6. PSD

LIMITS

FCC §15.407 (a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

Antenna Gain and Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	PSD Limit (dBm)
Low	5755	-4.21	30.00
High	5795	-4.21	30.00

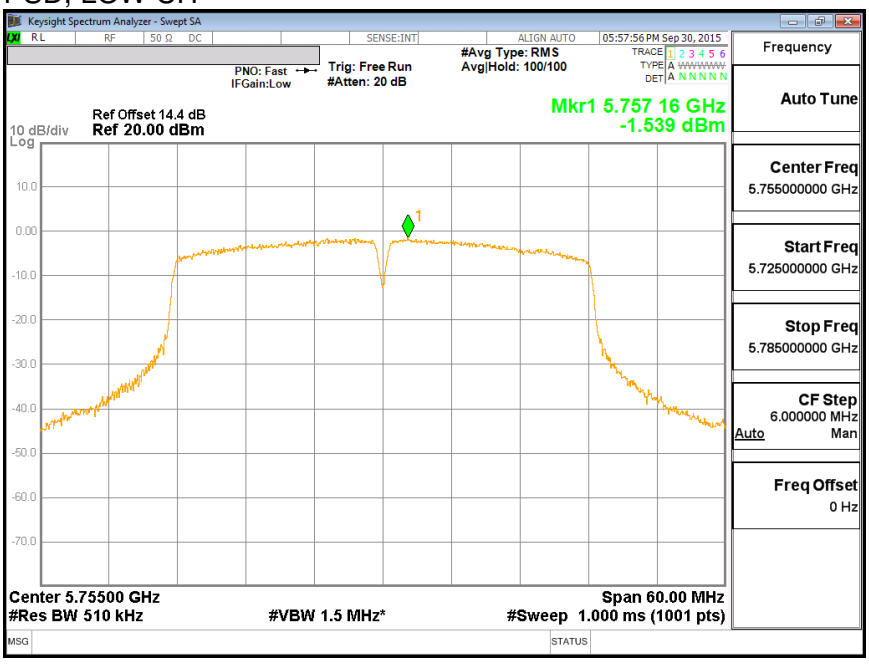
Duty Cycle CF (dB)	0.13	Included in Calculations of Corr'd PSD

PSD Results

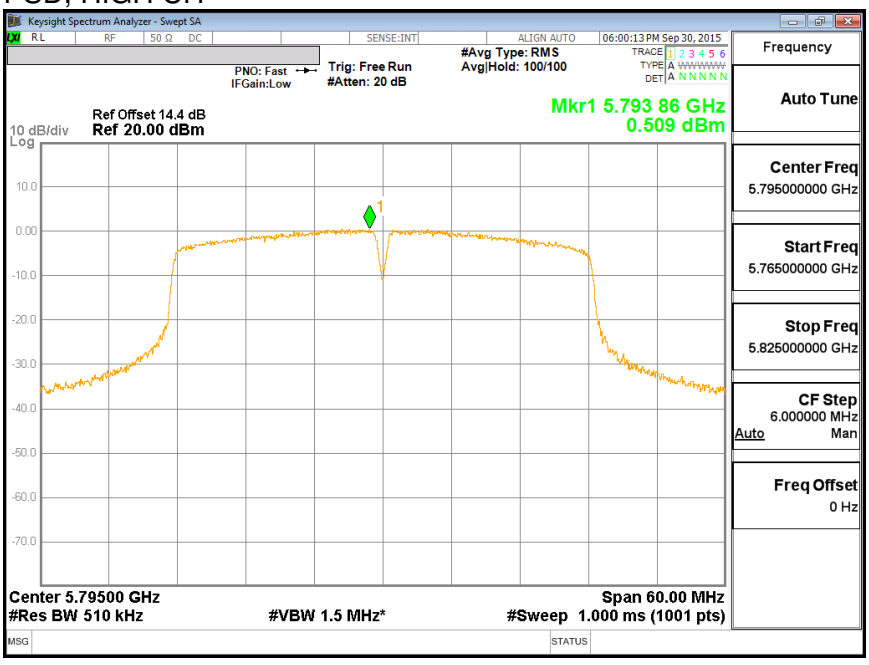
Channel	Frequency (MHz)	Meas PSD (dBm)	Total PSD (dBm)	PSD Limit (dBm)	PSD Margin (dB)
Low	5755	-1.54	-1.41	30.00	-31.41
High	5795	0.51	0.64	30.00	-29.36

PSD,

PSD, LOW CH



PSD, HIGH CH



9. RADIATED TEST RESULTS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

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

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

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

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

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

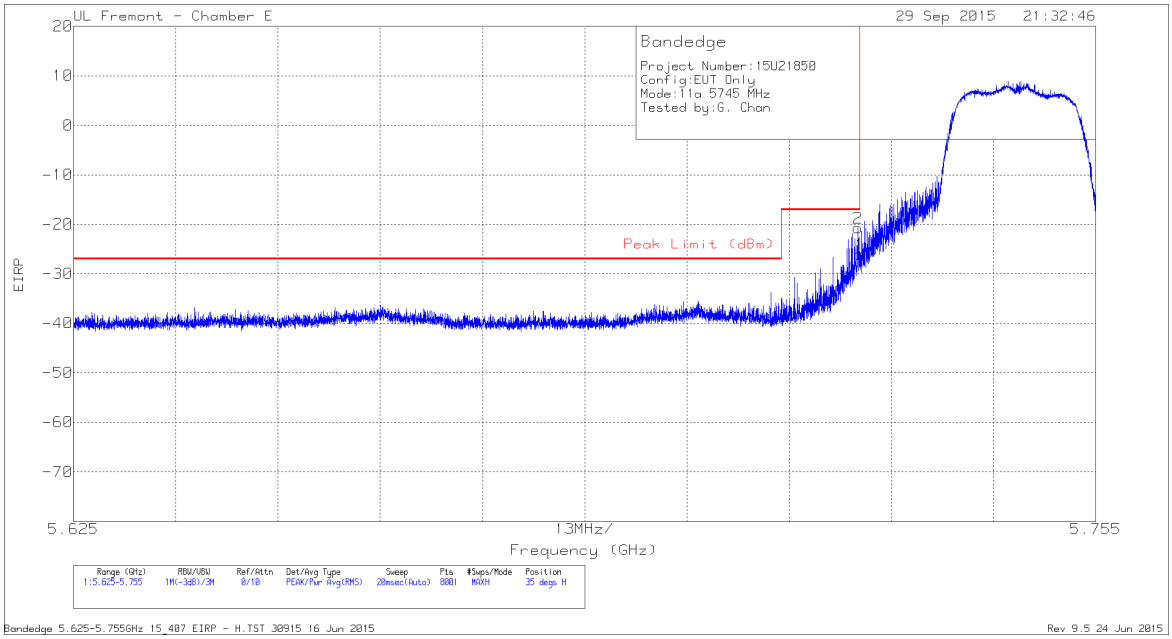
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

Radiated emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario..

9.2.802.11a MODE IN THE 5.8 GHz BAND

RESTRICTED BANDEDGE, (LOW CHANNEL)

LOW CHANNEL HORIZONTAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-52.48	Pk	34.7	-20.1	11.8	-26.08	-17	-9.08	35	118	H
2	5.725	-47.1	Pk	34.7	-20.1	11.8	-20.7	-17	-3.7	35	118	H

Pk - Peak detector

Bandedge 5.625-5.755GHz 15_407 EIRP - H.TST 30915 16 Jun 2015

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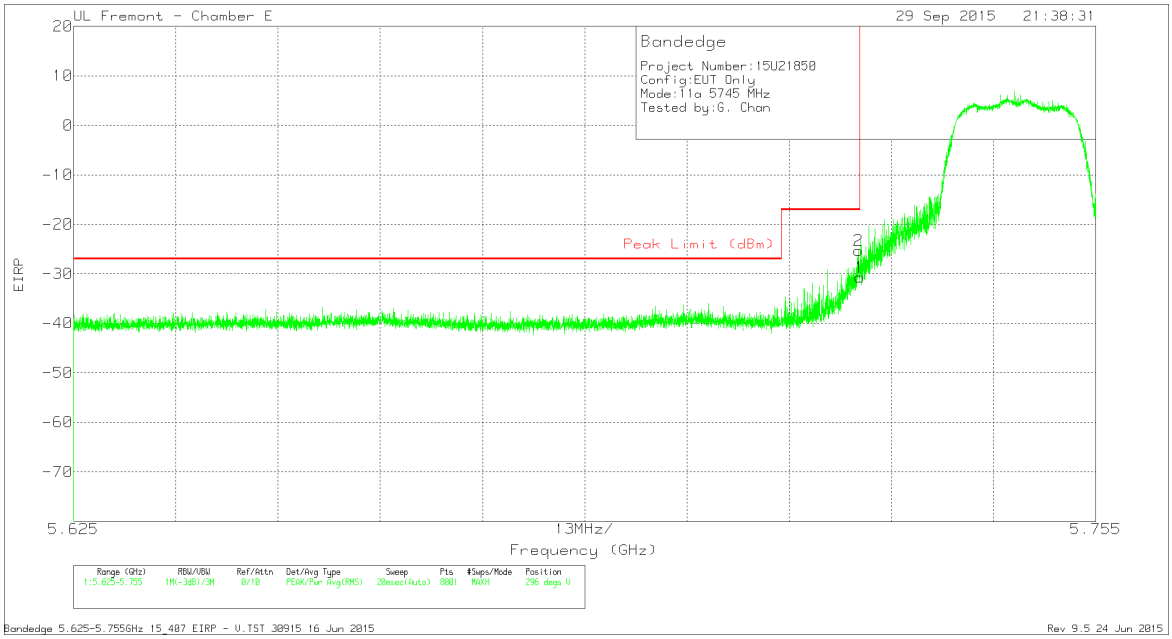
LOW CHANNEL VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-57.05	Pk	34.7	-20.1	11.8	-30.65	-17	-13.65	296	105	V
2	5.725	-51.68	Pk	34.7	-20.1	11.8	-25.28	-17	-8.28	296	105	V

Pk - Peak detector

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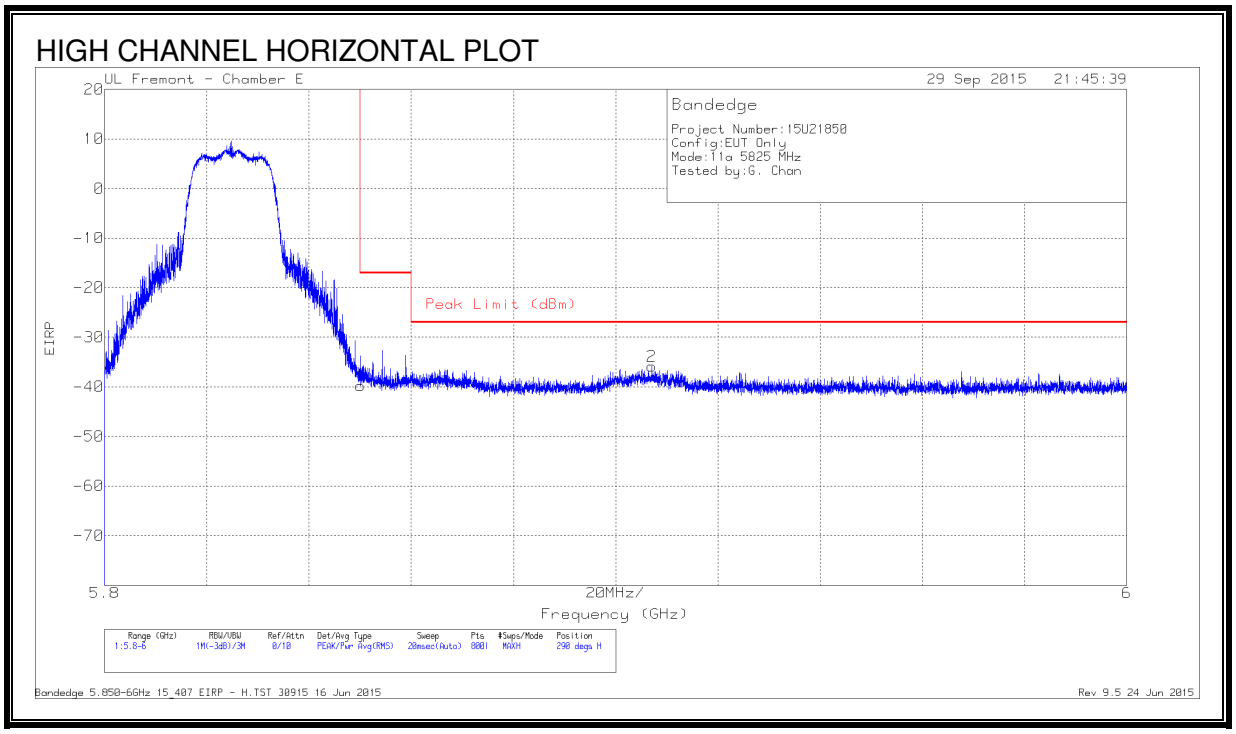
RESTRICTED BANDEDGE, (HIGH CHANNEL)



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-66.16	Pk	34.9	-20.3	11.8	-39.76	-17	-22.76	290	117	H
2	5.907	-62.24	Pk	34.9	-20.3	11.8	-35.84	-27	-8.84	290	117	H

Pk - Peak detector

Bandedge 5.850-6GHz 15_407 EIRP - H.TST 30915 16 Jun 2015

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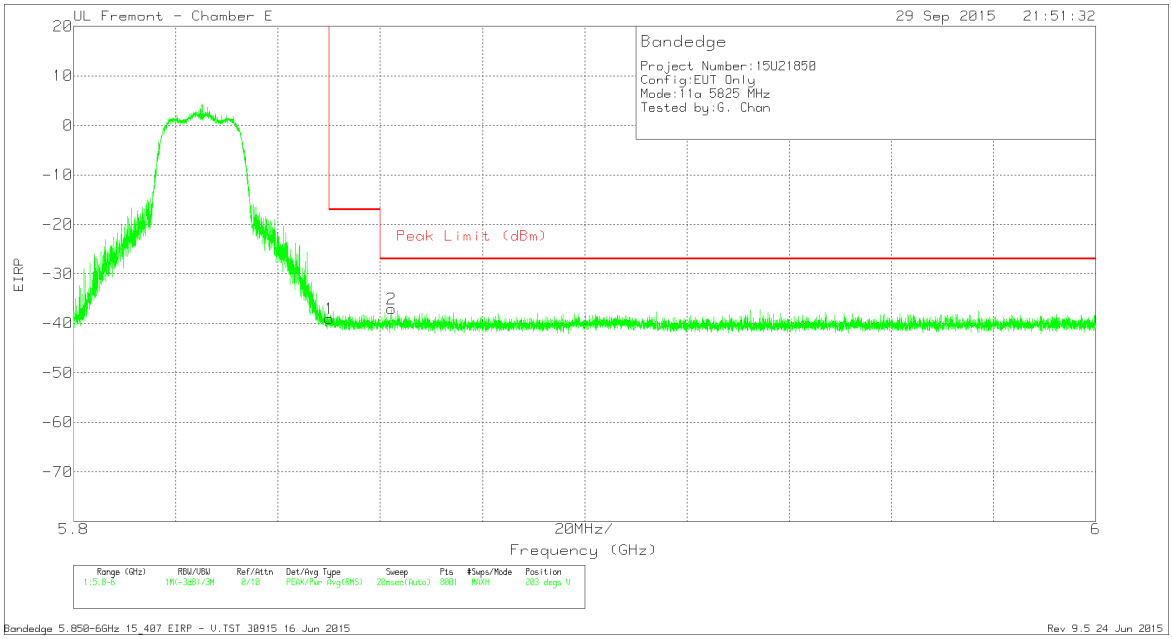
HIGH CHANNEL VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-65.4	Pk	34.9	-20.3	11.8	-39	-17	-22	203	144	V
2	5.862	-63.4	Pk	34.9	-20.4	11.8	-37.1	-27	-10.1	203	144	V

Pk - Peak detector

Bandedge 5.850-6GHz 15_407 EIRP - V.TST 30915 16 Jun 2015

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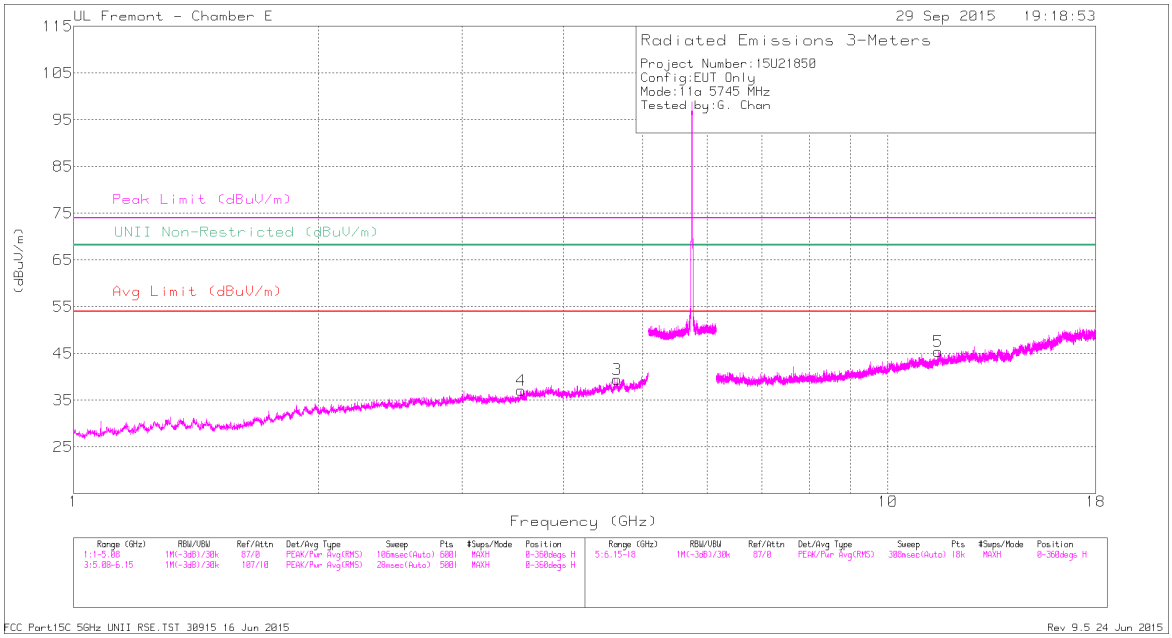
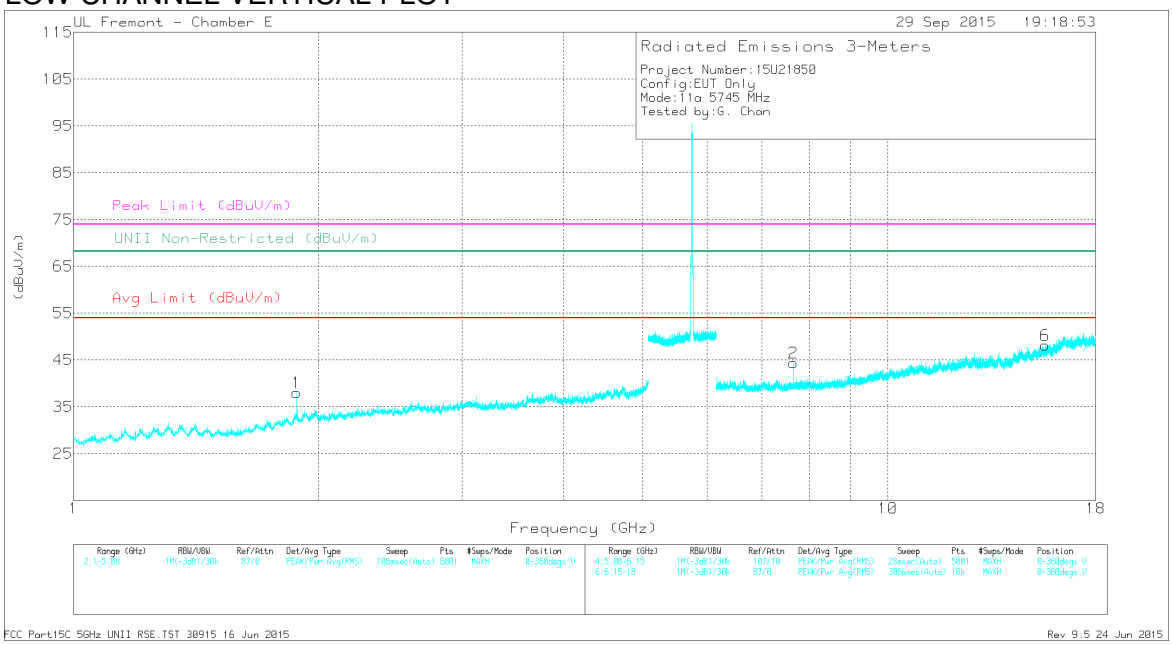
LOW CHANNEL HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL PLOT



LOW CHANNEL VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 4.654	42.08	PK-U	34.1	-30	46.18	-	-	74	-27.82	-	-	292	129	H
	* 4.655	30.54	ADR	34.1	-30.1	34.54	54	-19.46	-	-	-	-	292	129	H
4	* 3.543	41.64	PK-U	32.9	-30.6	43.94	-	-	74	-30.06	-	-	210	156	H
	* 3.543	29.84	ADR	32.9	-30.6	32.14	54	-21.86	-	-	-	-	210	156	H
5	* 11.519	37.25	PK-U	38.1	-23.7	51.65	-	-	74	-22.35	-	-	112	191	H
	* 11.519	25.48	ADR	38.1	-23.7	39.88	54	-14.12	-	-	-	-	112	191	H
2	* 7.66	41.84	PK-U	35.8	-27.4	50.24	-	-	74	-23.76	-	-	350	237	V
	* 7.66	34.59	ADR	35.8	-27.4	42.99	54	-11.01	-	-	-	-	350	237	V
6	* 15.602	36.28	PK-U	40.4	-22.2	54.48	-	-	74	-19.52	-	-	61	280	V
	* 15.602	25.48	ADR	40.4	-22.2	43.68	54	-10.32	-	-	-	-	61	280	V
1	1.88	46.72	PK-U	30.7	-33.6	43.82	-	-	-	-	68.2	-24.38	323	211	V
	1.88	34.45	ADR	30.7	-33.6	31.55	-	-	-	-	-	-	323	211	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK-U - U-NII: Maximum Peak

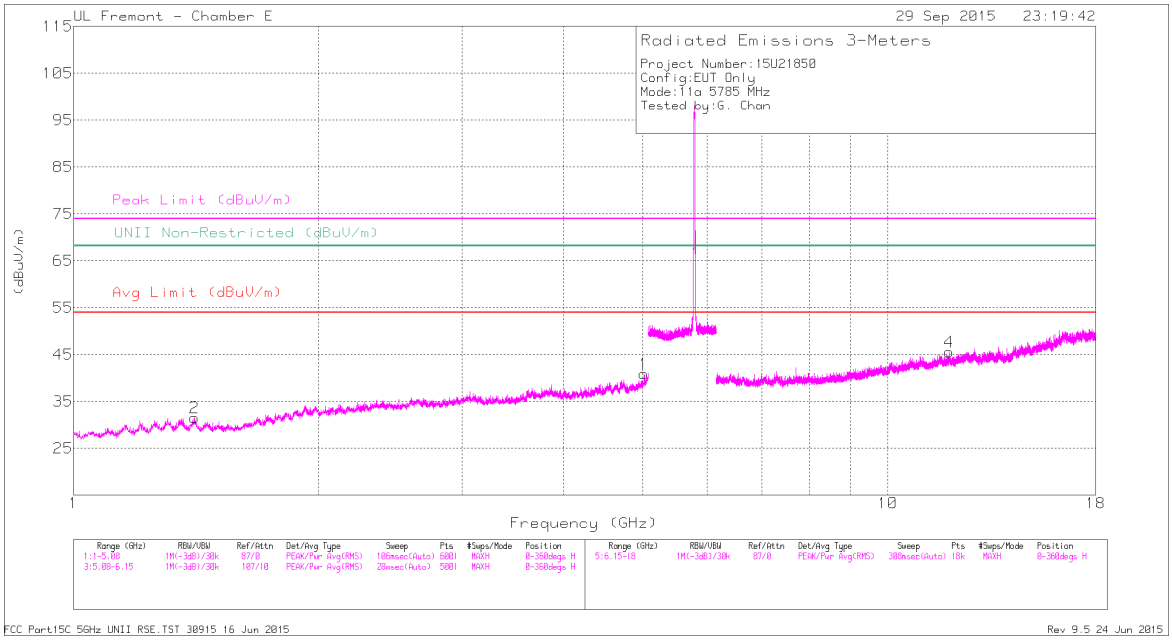
ADR - U-NII AD primary method, RMS average

FCC Part15C 5GHz UNII RSE.TST 30915 16 Jun 2015

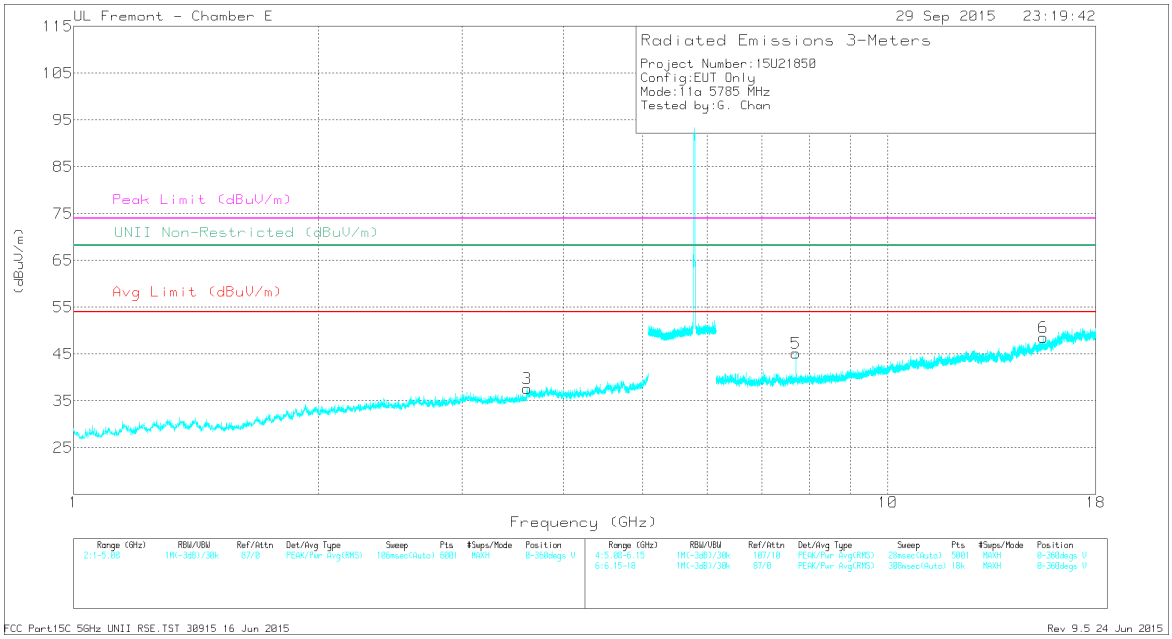
Rev 9.5 24 Jun 2015

MID CHANNEL HARMONICS AND SPURIOUS EMISSIONS

MID CHANNEL HORIZONTAL PLOT



MID CHANNEL VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 5.017	41.05	PK-U	34.2	-28.5	46.75	-	-	74	-27.25	-	-	194	215	H
	* 5.018	29.43	ADR	34.2	-28.5	35.13	54	-18.87	-	-	-	-	194	215	H
4	* 1.407	44.99	PK-U	28.5	-34.6	38.89	-	-	74	-35.11	-	-	330	241	H
	* 1.406	32.75	ADR	28.5	-34.6	26.65	54	-27.35	-	-	-	-	330	241	H
6	* 3.609	41.61	PK-U	33.1	-30.7	44.01	-	-	74	-29.99	-	-	74	185	V
	* 3.608	29.74	ADR	33.1	-30.7	32.14	54	-21.86	-	-	-	-	74	185	V
3	* 11.889	36.39	PK-U	38.4	-23.1	51.69	-	-	74	-22.31	-	-	153	276	H
	* 11.887	24.74	ADR	38.4	-23.1	40.04	54	-13.96	-	-	-	-	153	276	H
1	* 7.713	39.75	PK-U	35.8	-27	48.55	-	-	74	-25.45	-	-	246	332	V
	* 7.714	27.11	ADR	35.8	-27	35.91	54	-18.09	-	-	-	-	246	332	V
5	* 15.513	37.4	PK-U	40.2	-22.6	55	-	-	74	-19	-	-	4	113	V
	* 15.514	25.52	ADR	40.2	-22.6	43.12	54	-10.88	-	-	-	-	4	113	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK-U - U-NII: Maximum Peak

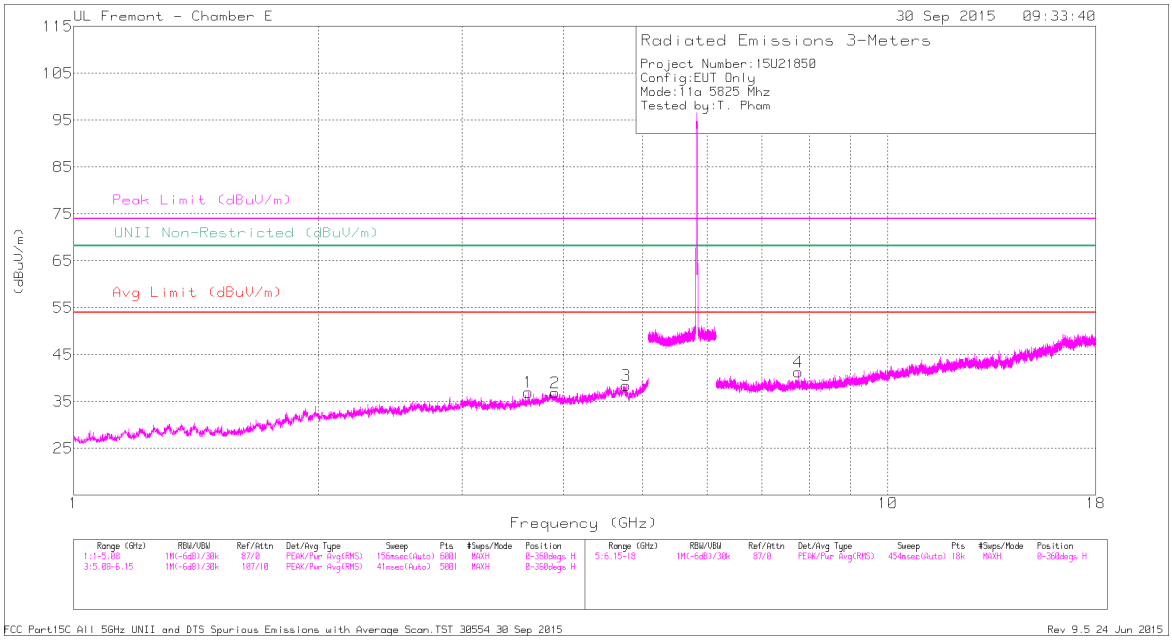
ADR - U-NII AD primary method, RMS average

FCC Part15C 5GHz UNII RSE.TST 30915 16 Jun 2015

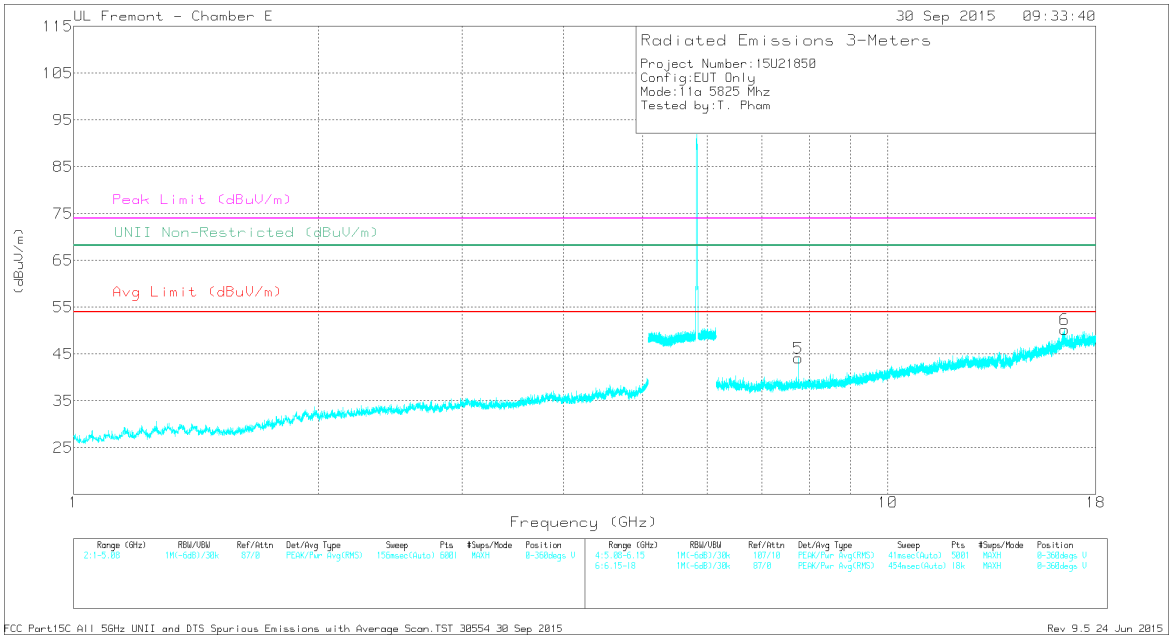
Rev 9.5 24 Jun 2015

HIGH CHANNEL HARMONICS AND SPURIOUS EMISSIONS

HIGH CHANNEL HORIZONTAL PLOT



HIGH CHANNEL VERTICAL PLOT



DATA

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.617	41.43	PK-U	33.1	-30.8	43.73	-	-	74	-30.27	-	-	26	121	H
* 3.617	30.08	ADR	33.1	-30.8	32.38	54	-21.62	-	-	-	-	26	121	H
* 3.903	41.79	PK-U	33.5	-30.7	44.59	-	-	74	-29.41	-	-	62	141	H
* 3.903	30.45	ADR	33.5	-30.6	33.35	54	-20.65	-	-	-	-	62	141	H
* 4.773	40.98	PK-U	34.1	-29.6	45.48	-	-	74	-28.52	-	-	41	209	H
* 4.772	29.75	ADR	34.1	-29.6	34.25	54	-19.75	-	-	-	-	41	209	H
7.767	41.96	PK-U	35.8	-27.5	50.26	-	-	-	-	68.2	-17.94	298	276	H
7.767	33.37	ADR	35.8	-27.5	41.67	-	-	-	-	-	-	298	276	H
7.767	43.22	PK-U	35.8	-27.5	51.52	-	-	-	-	68.2	-16.68	339	273	V
7.767	35.56	ADR	35.8	-27.5	43.86	-	-	-	-	-	-	339	273	V
16.496	36.53	PK-U	41.2	-20.9	56.83	-	-	-	-	68.2	-11.37	236	105	V
16.498	24.54	ADR	41.2	-20.9	44.84	-	-	-	-	-	-	236	105	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

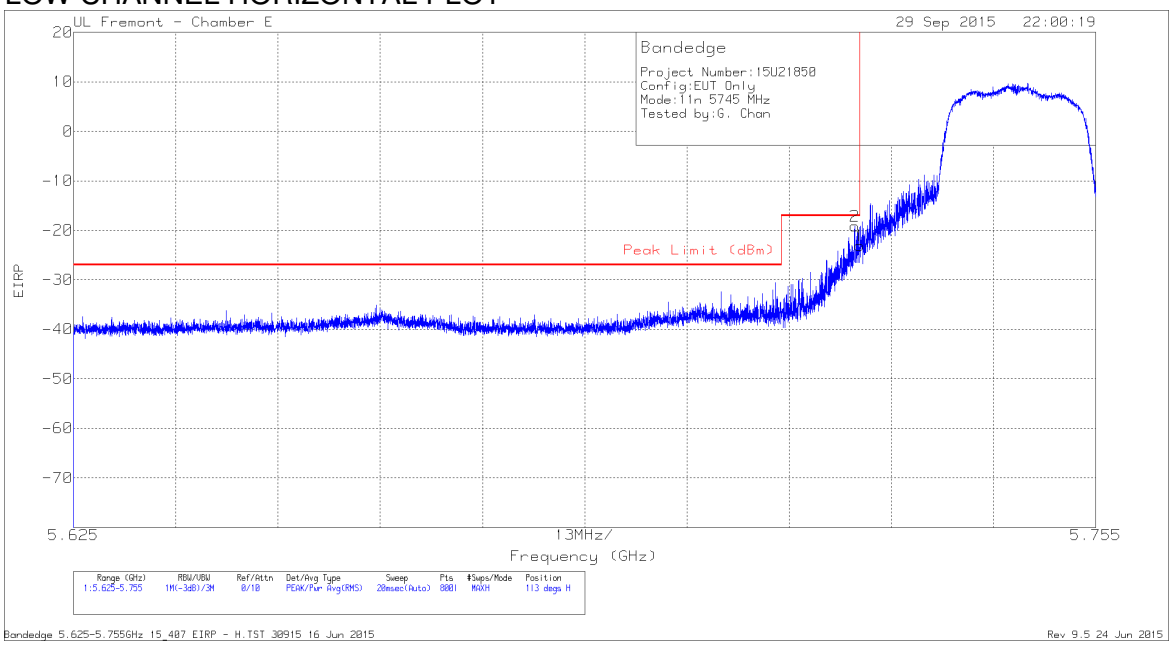
FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30554 30 Sep 2015

Rev 9.5 24 Jun 2015

9.3.802.11n HT20 MODE IN THE 5.8 GHz BAND

RESTRICTED BANDEDGE, (LOW CHANNEL)

LOW CHANNEL HORIZONTAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.724	-45.59	Pk	34.7	-20.1	11.8	-19.19	-17	-2.19	113	100	H
1	5.725	-49.52	Pk	34.7	-20.1	11.8	-23.12	-17	-6.12	113	100	H

Pk - Peak detector

Bandedge 5.625-5.755GHz 15_407 EIRP - H.TST 30915 16 Jun 2015

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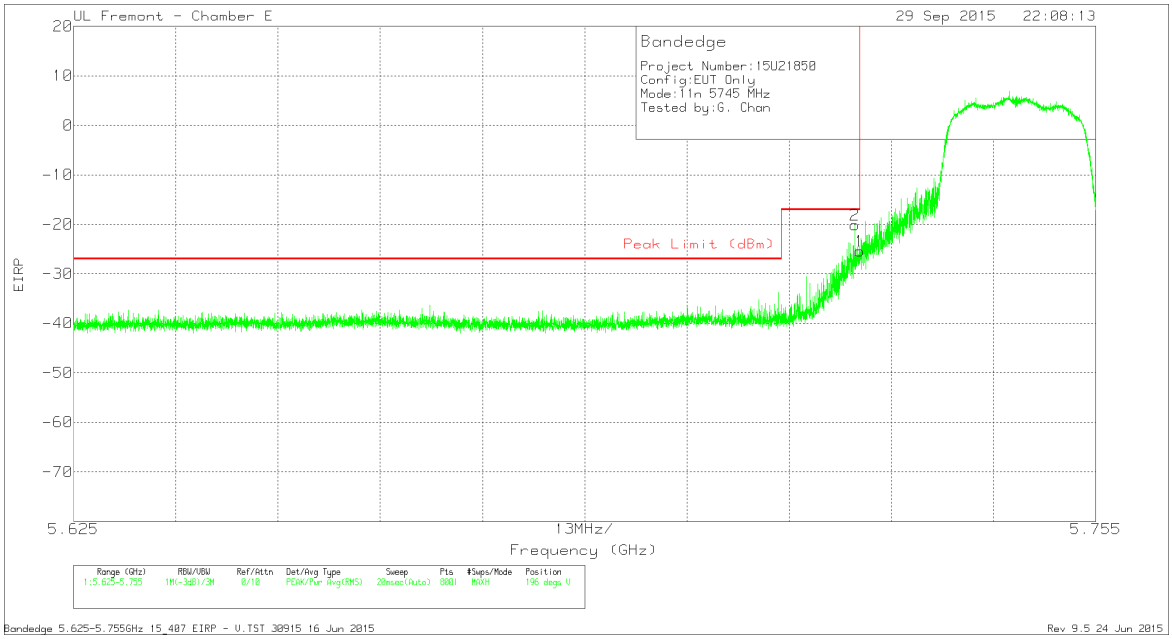
LOW CHANNEL VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.724	-46.5	Pk	34.7	-20.1	11.8	-20.1	-17	-3.1	196	261	V
1	5.725	-51.86	Pk	34.7	-20.1	11.8	-25.46	-17	-8.46	196	261	V

Pk - Peak detector

Bandedge 5.625-5.755GHz 15_407 EIRP - V.TST 30915 16 Jun 2015

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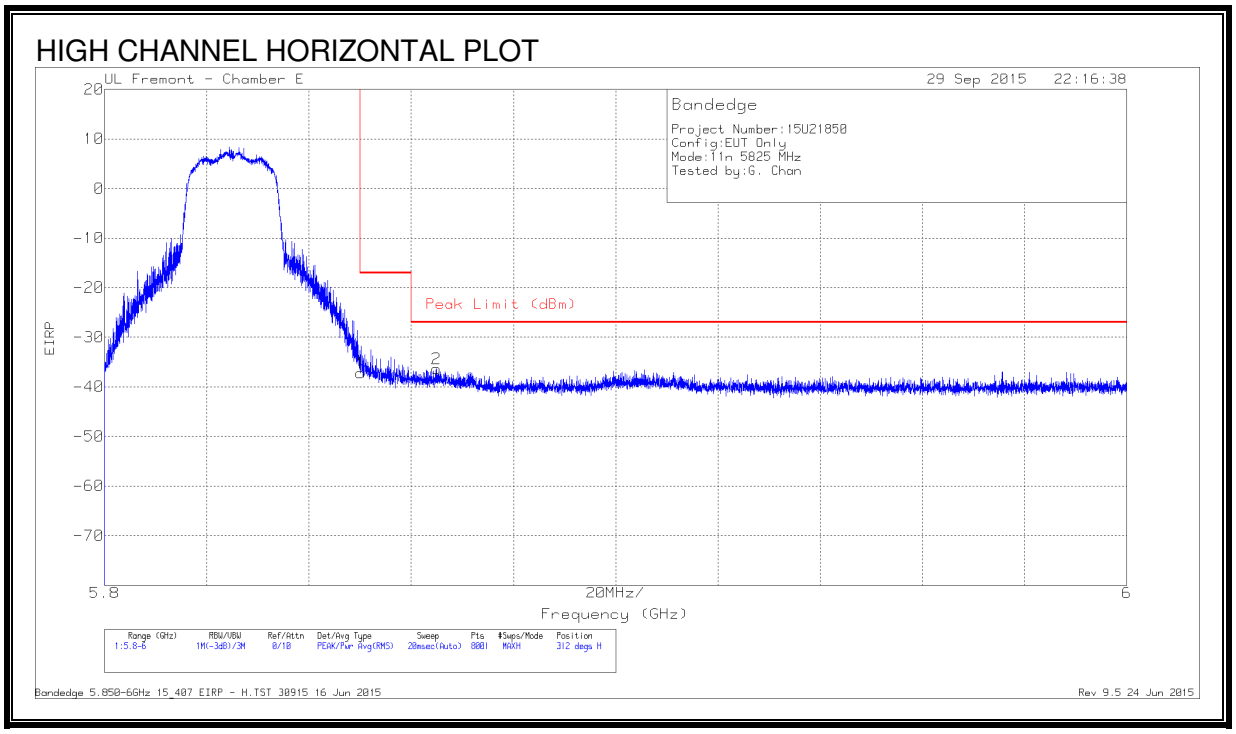
RESTRICTED BANDEDGE, (HIGH CHANNEL)



DATA

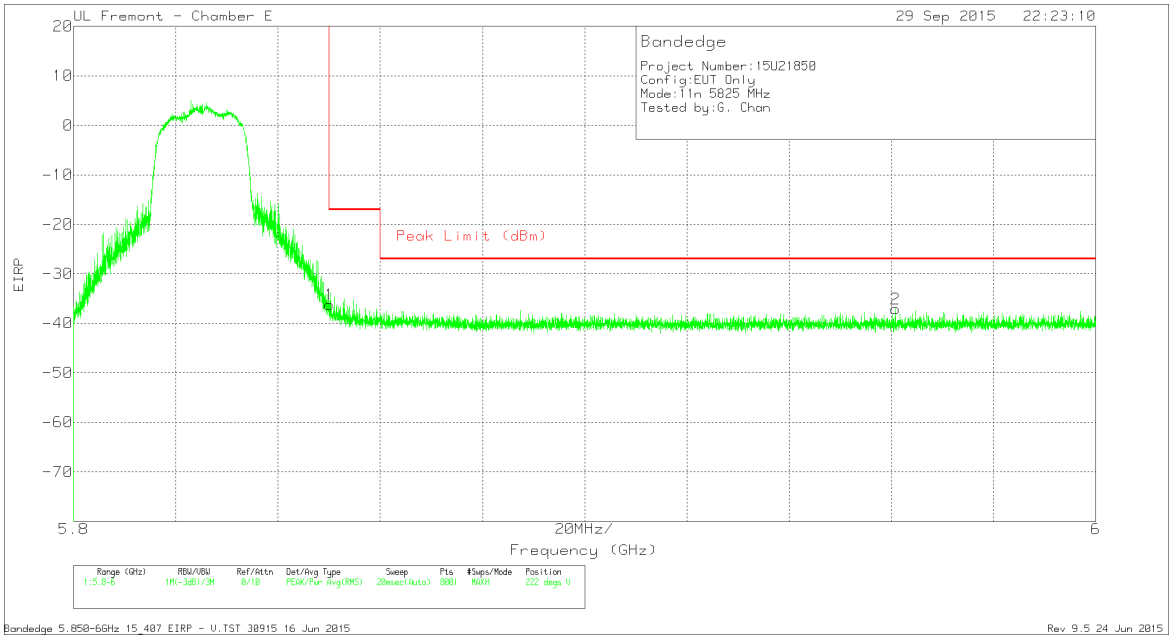
Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-63.58	Pk	34.9	-20.3	11.8	-37.18	-17	-20.18	312	315	H
2	5.865	-62.67	Pk	34.9	-20.4	11.8	-36.37	-27	-9.37	312	315	H

Pk - Peak detector

Bandedge 5.850-6GHz 15_407 EIRP - H.TST 30915 16 Jun 2015

Rev 9.5 24 Jun 2015

HIGH CHANNEL VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-62.59	Pk	34.9	-20.3	11.8	-36.19	-17	-19.19	222	398	V
2	5.961	-63.69	Pk	35	-20.2	11.8	-37.09	-27	-10.09	222	398	V

Pk - Peak detector

Bandedge 5.850-6GHz 15_407 EIRP - V.TST 30915 16 Jun 2015

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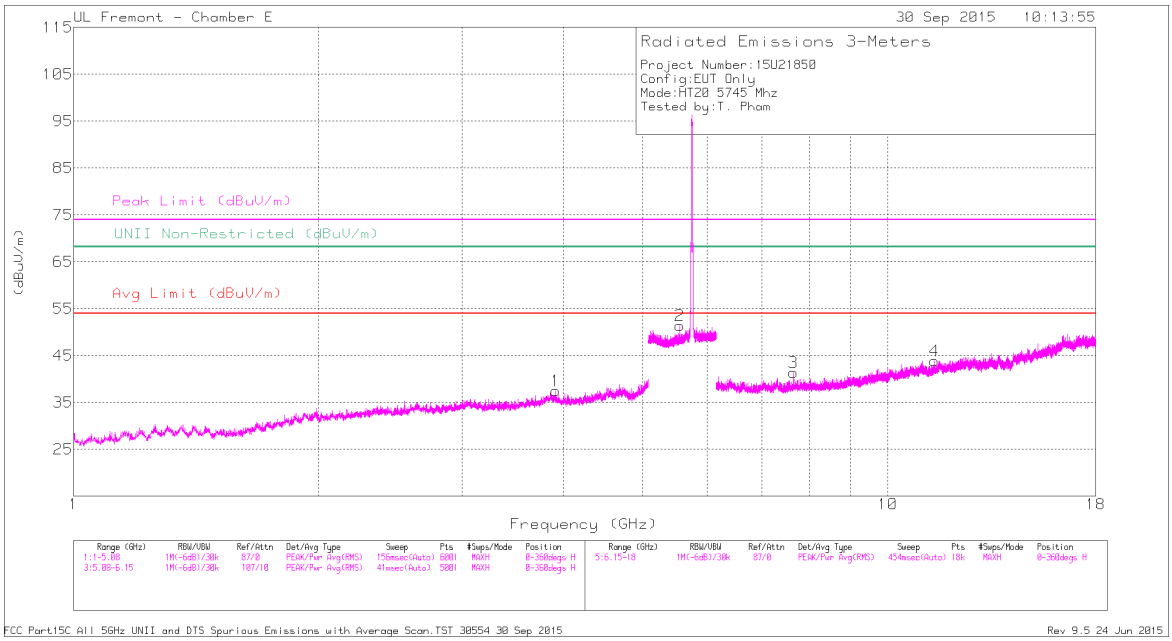
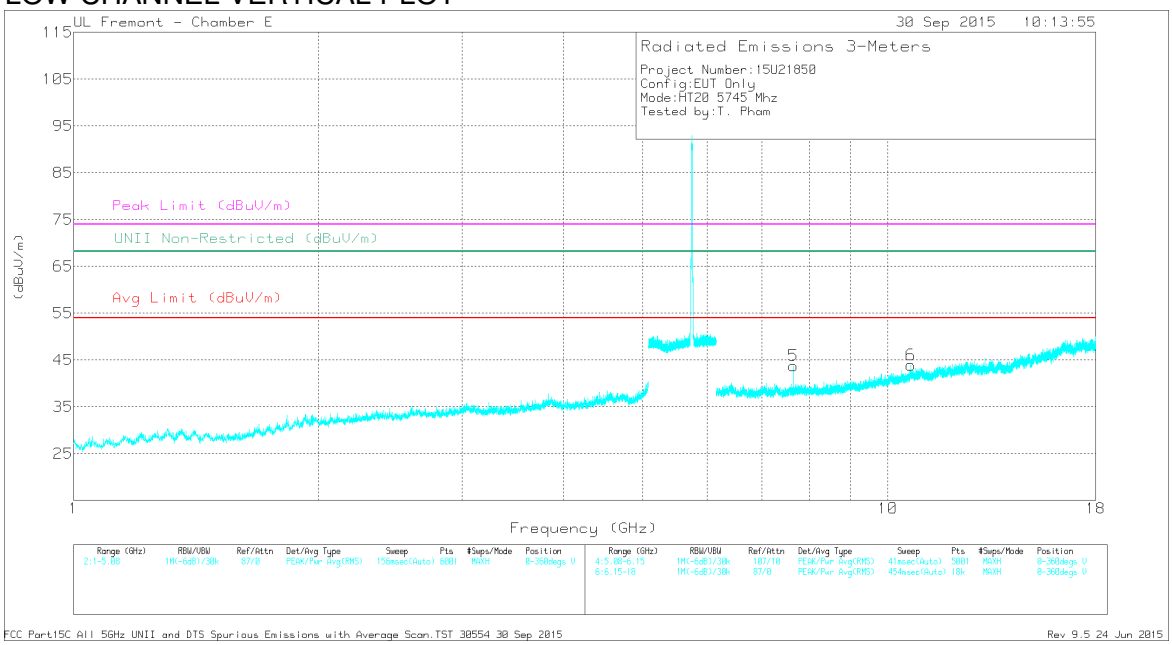
LOW CHANNEL HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL PLOT



LOW CHANNEL VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.907	42.12	PK-U	33.5	-30.7	44.92	-	-	74	-29.08	-	-	332	101	H
	* 3.908	30.66	ADR	33.5	-30.8	33.36	54	-20.64	-	-	-	-	332	101	H
3	* 7.66	41.89	PK-U	35.8	-27.4	50.29	-	-	74	-23.71	-	-	120	104	H
	* 7.66	31.94	ADR	35.8	-27.4	40.34	54	-13.66	-	-	-	-	120	104	H
4	* 11.407	35.96	PK-U	38	-23.3	50.66	-	-	74	-23.34	-	-	135	118	H
	* 11.409	25.25	ADR	38	-23.3	39.95	54	-14.05	-	-	-	-	135	118	H
5	* 7.66	42.83	PK-U	35.8	-27.4	51.23	-	-	74	-22.77	-	-	169	130	V
	* 7.66	34.91	ADR	35.8	-27.4	43.31	54	-10.69	-	-	-	-	169	130	V
2	5.553	31.99	ADR	34.6	-20.4	46.19	-	-	-	-	-	-	294	132	H
	5.554	43.14	PK-U	34.6	-20.4	57.34	-	-	-	-	68.2	-10.86	294	132	H
6	* 10.673	29.35	Pk	37.8	-23.2	43.95	-	-	74	-30.05	-	-	0-360	101	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30554 30 Sep 2015

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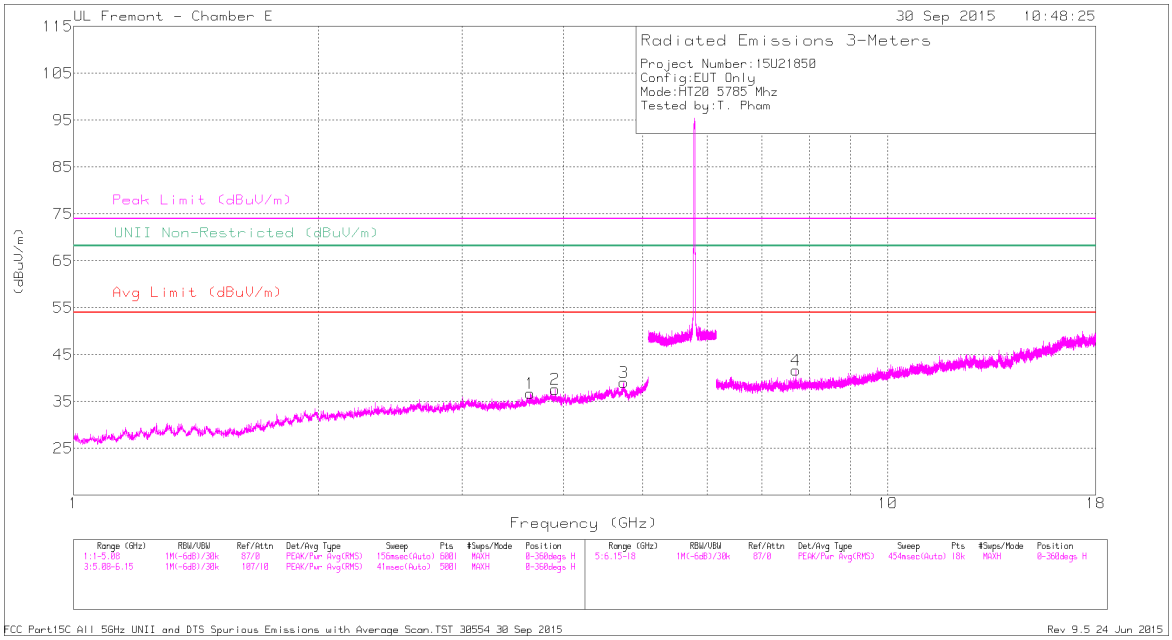
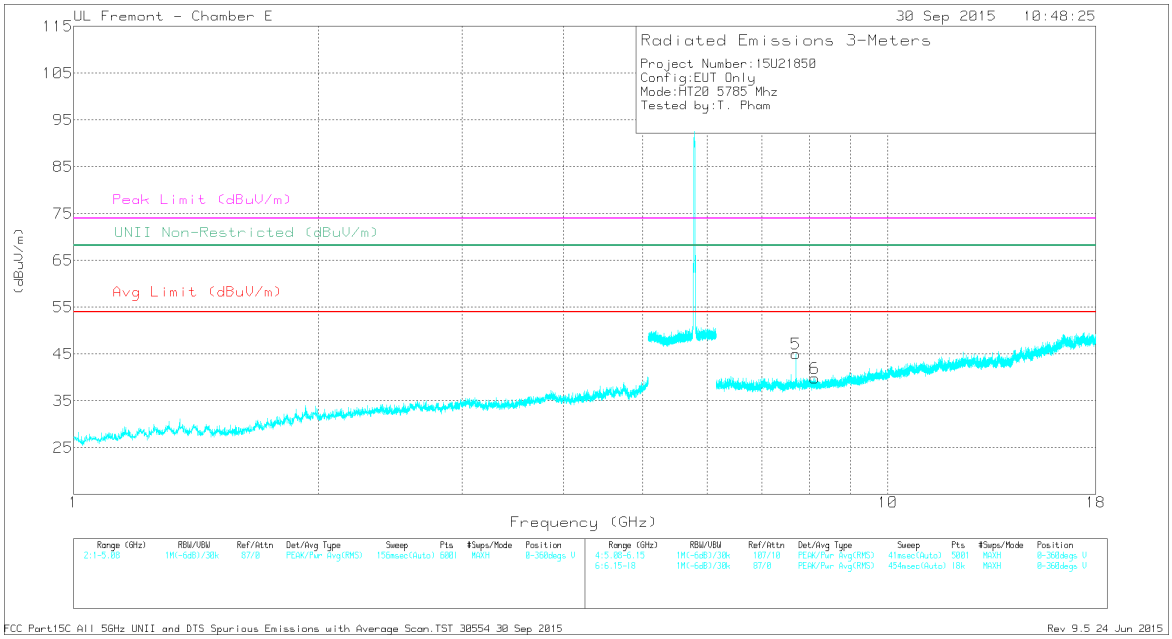
MID CHANNEL HARMONICS AND SPURIOUS EMISSIONS

MID CHANNEL HORIZONTAL PLOT



MID CHANNEL VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.64	41.88	PK-U	33.1	-30.8	44.18	-	-	74	-29.82	-	-	37	118	H
	* 3.638	29.99	ADR	33.1	-30.8	32.29	54	-21.71	-	-	-	-	37	118	H
2	* 3.901	42.24	PK-U	33.6	-30.6	45.24	-	-	74	-28.76	-	-	122	150	H
	* 3.901	30.46	ADR	33.6	-30.6	33.46	54	-20.54	-	-	-	-	122	150	H
3	* 4.736	41.05	PK-U	34.1	-28.9	46.25	-	-	74	-27.75	-	-	159	165	H
	* 4.738	29.8	ADR	34.1	-29	34.9	54	-19.1	-	-	-	-	159	165	H
4	* 7.713	41.62	PK-U	35.8	-27	50.42	-	-	74	-23.58	-	-	38	240	H
	* 7.713	32.59	ADR	35.8	-27	41.39	54	-12.61	-	-	-	-	38	240	H
5	* 7.713	42.7	PK-U	35.8	-27	51.5	-	-	74	-22.5	-	-	72	320	V
	* 7.713	35.62	ADR	35.8	-27	44.42	54	-9.58	-	-	-	-	72	320	V
6	* 8.131	37.92	PK-U	35.7	-26.6	47.02	-	-	74	-26.98	-	-	113	283	V
	* 8.129	27.35	ADR	35.7	-26.6	36.45	54	-17.55	-	-	-	-	113	283	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30554 30 Sep 2015

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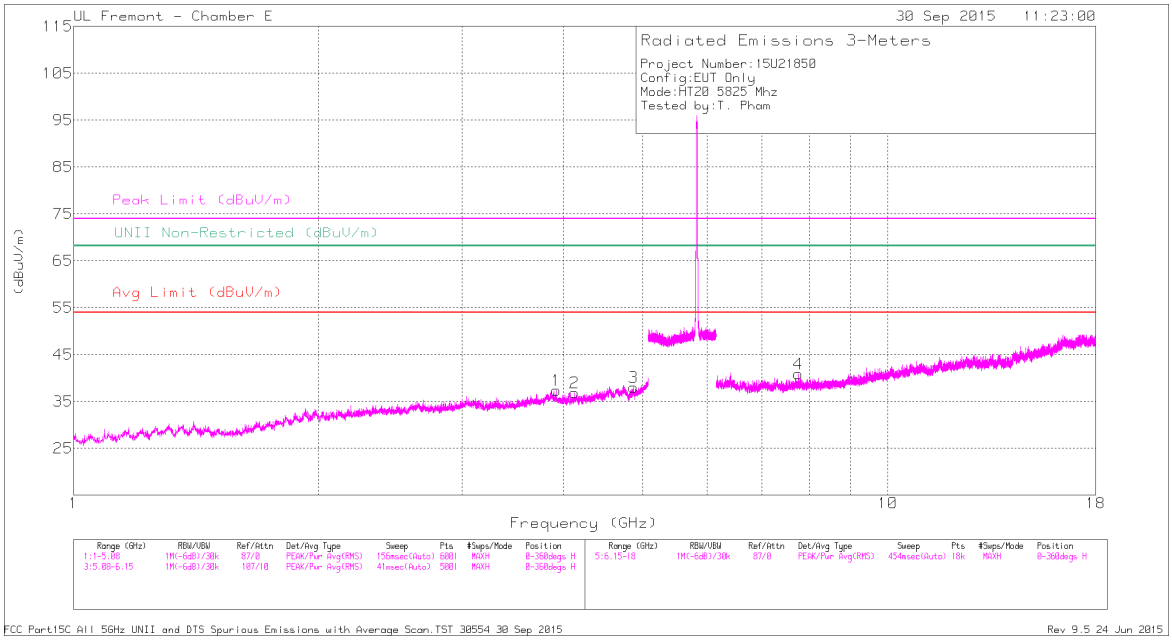
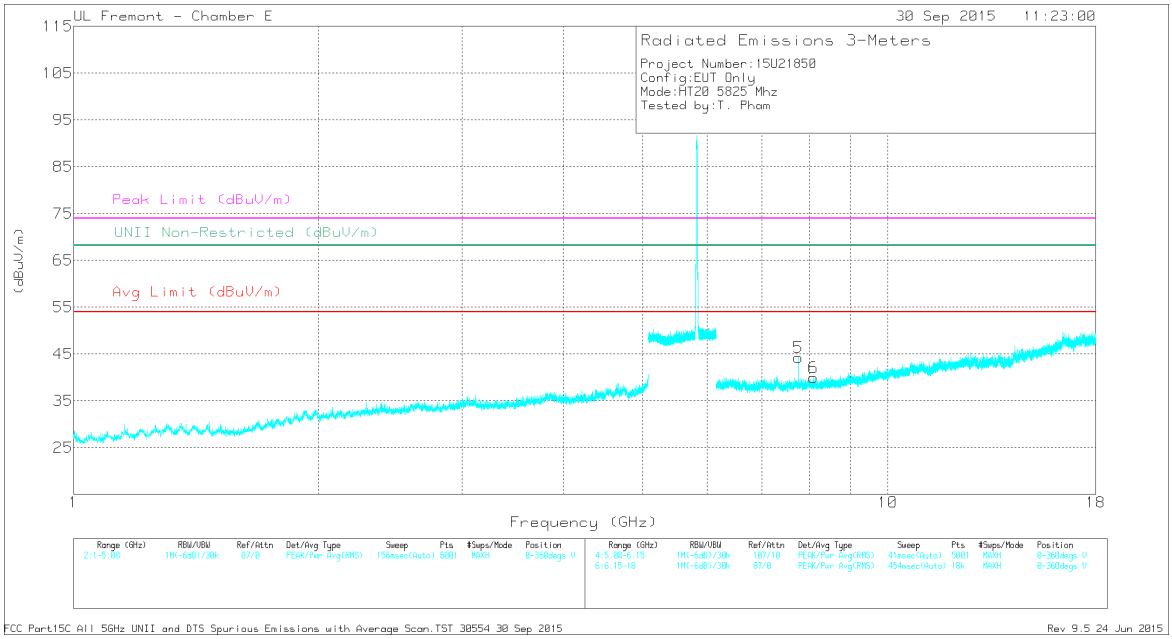
HIGH CHANNEL HARMONICS AND SPURIOUS EMISSIONS

HIGH CHANNEL HORIZONTAL PLOT



HIGH CHANNEL VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.918	41.95	PK-U	33.5	-30.9	44.55	-	-	74	-29.45	-	-	31	133	H
	* 3.916	30.79	ADR	33.5	-30.9	33.39	54	-20.61	-	-	-	-	31	133	H
2	* 4.121	41.15	PK-U	33.4	-30.7	43.85	-	-	74	-30.15	-	-	43	122	H
	* 4.119	29.97	ADR	33.4	-30.7	32.67	54	-21.33	-	-	-	-	43	122	H
3	* 4.869	41.15	PK-U	34.1	-29.5	45.75	-	-	74	-28.25	-	-	61	153	H
	* 4.872	29.49	ADR	34.1	-29.6	33.99	54	-20.01	-	-	-	-	61	153	H
6	* 8.101	38.67	PK-U	35.7	-26.9	47.47	-	-	74	-26.53	-	-	284	214	V
	* 8.103	27.17	ADR	35.7	-26.9	35.97	54	-18.03	-	-	-	-	284	214	V
4	7.766	41.32	PK-U	35.8	-27.5	49.62	-	-	-	-	68.2	-18.58	22	397	H
	7.766	42.21	PK-U	35.8	-27.5	50.51	-	-	-	-	68.2	-17.69	258	234	V
5	7.767	32.58	ADR	35.8	-27.5	40.88	-	-	-	-	-	-	22	397	H
	7.768	27.28	ADR	35.8	-27.5	35.58	-	-	-	-	-	-	258	234	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30554 30 Sep 2015

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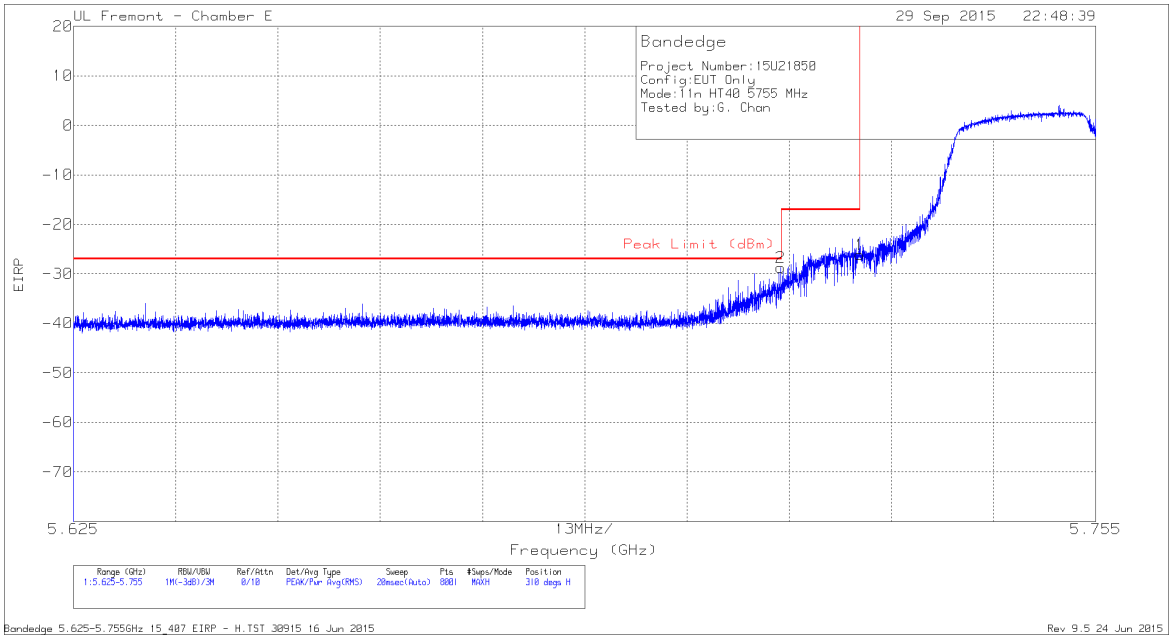
9.4.802.11n HT40 1Tx MODE IN THE 5.8 GHz BAND

RESTRICTED BANDEDGE, (LOW CHANNEL)

LOW CHANNEL HORIZONTAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.715	-55.09	Pk	34.7	-20.1	11.8	-28.69	-27	-1.69	310	314	H
1	5.725	-52.55	Pk	34.7	-20.1	11.8	-26.15	-17	-9.15	310	314	H

Pk - Peak detector

Bandedge 5.625-5.755GHz 15_407 EIRP - H.TST 30915 16 Jun 2015

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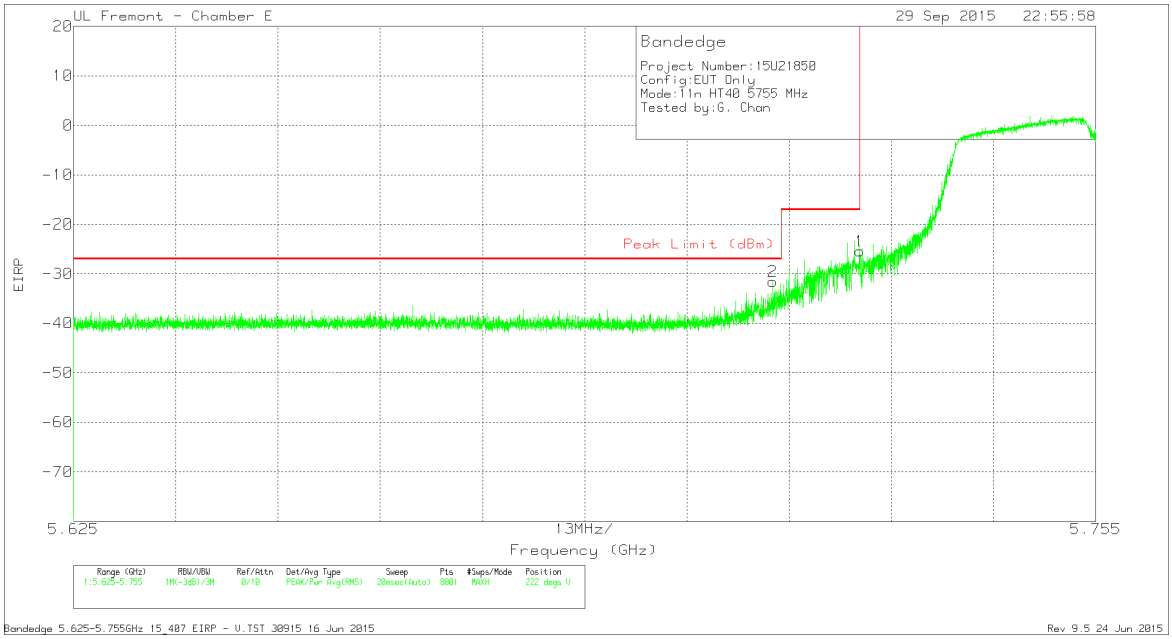
LOW CHANNEL VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	5.714	-57.91	Pk	34.7	-20.1	11.8	-31.51	-27	-4.51	222	370	V
1	5.725	-51.78	Pk	34.7	-20.1	11.8	-25.38	-17	-8.38	222	370	V

Pk - Peak detector

Bandedge 5.625-5.755GHz 15_407 EIRP - V.TST 30915 16 Jun 2015

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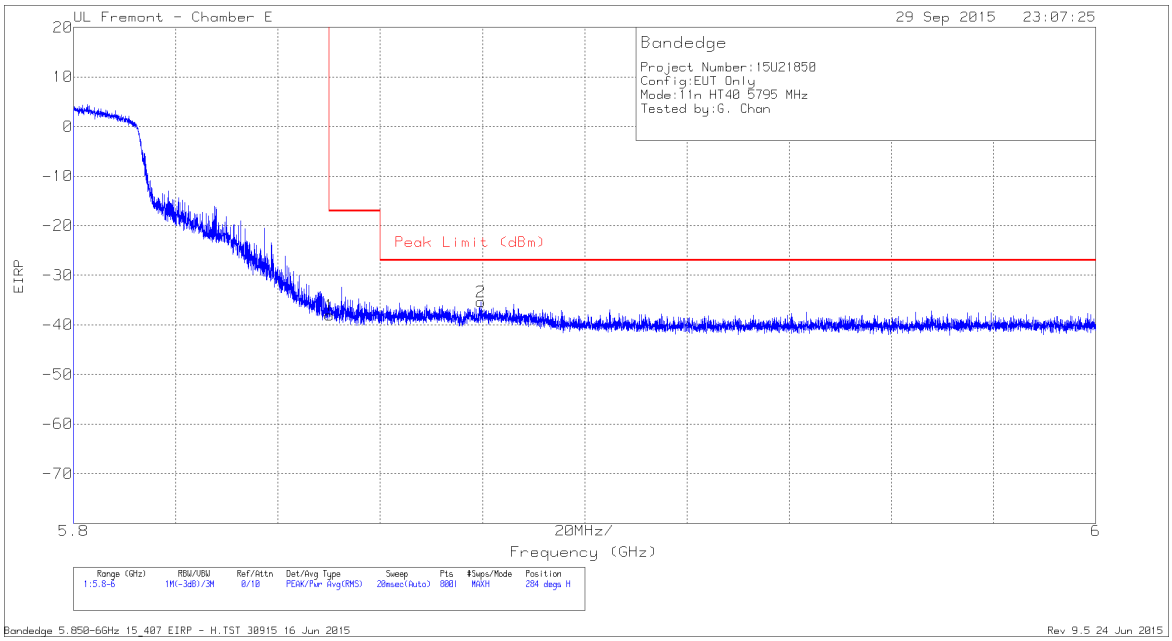
RESTRICTED BANDEDGE, (HIGH CHANNEL)

HIGH CHANNEL HORIZONTAL PLOT



DATA

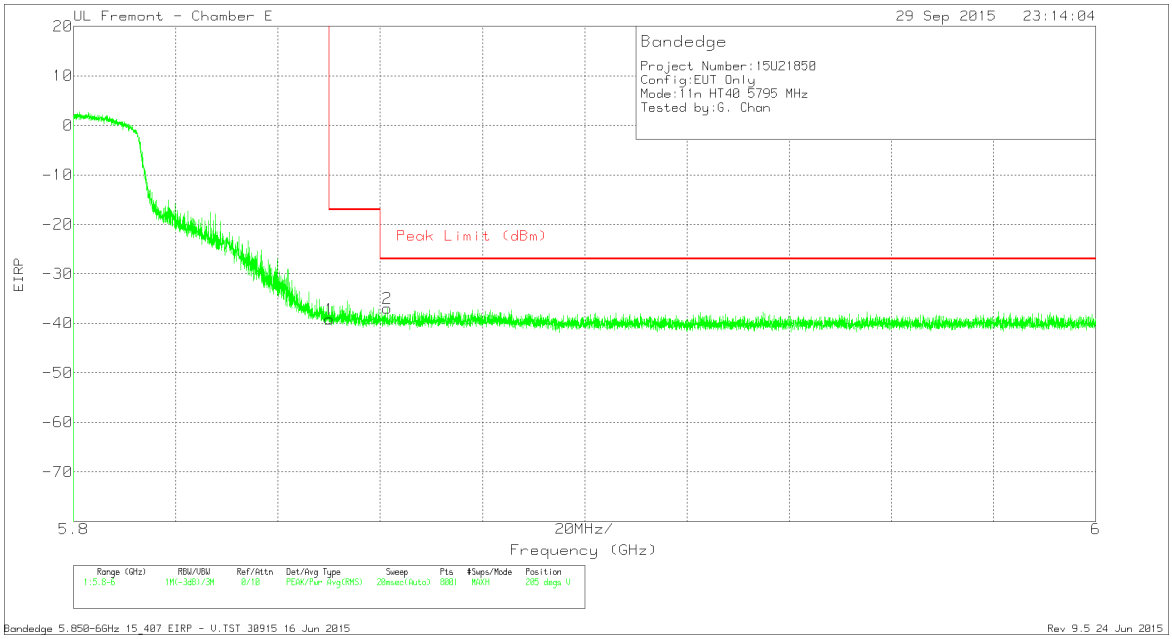
Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-64.44	Pk	34.9	-20.3	11.8	-38.04	-17	-21.04	284	156	H
2	5.88	-61.72	Pk	34.9	-20.3	11.8	-35.32	-27	-8.32	284	156	H

Pk - Peak detector

Bandedge 5.850-6GHz 15_407 EIRP - H.TST 30915 16 Jun 2015

Rev 9.5 24 Jun 2015

HIGH CHANNEL VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-65.6	Pk	34.9	-20.3	11.8	-39.2	-17	-22.2	205	282	V
2	5.861	-63.3	Pk	34.9	-20.4	11.8	-37	-27	-10	205	282	V

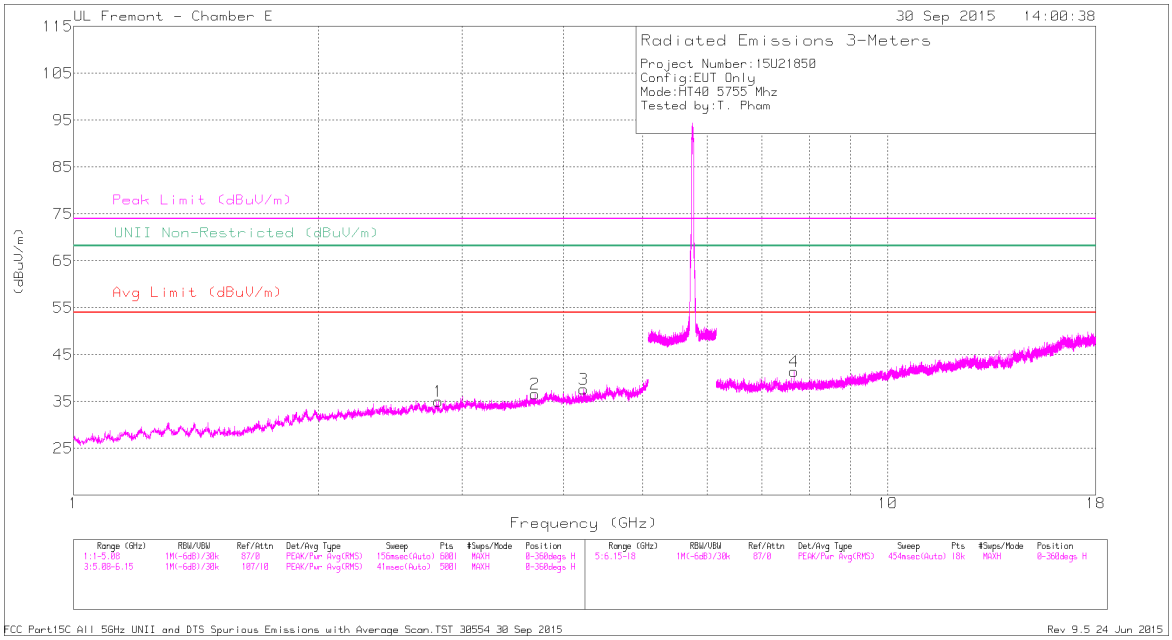
Pk - Peak detector

Bandedge 5.850-6GHz 15_407 EIRP - V.TST 30915 16 Jun 2015

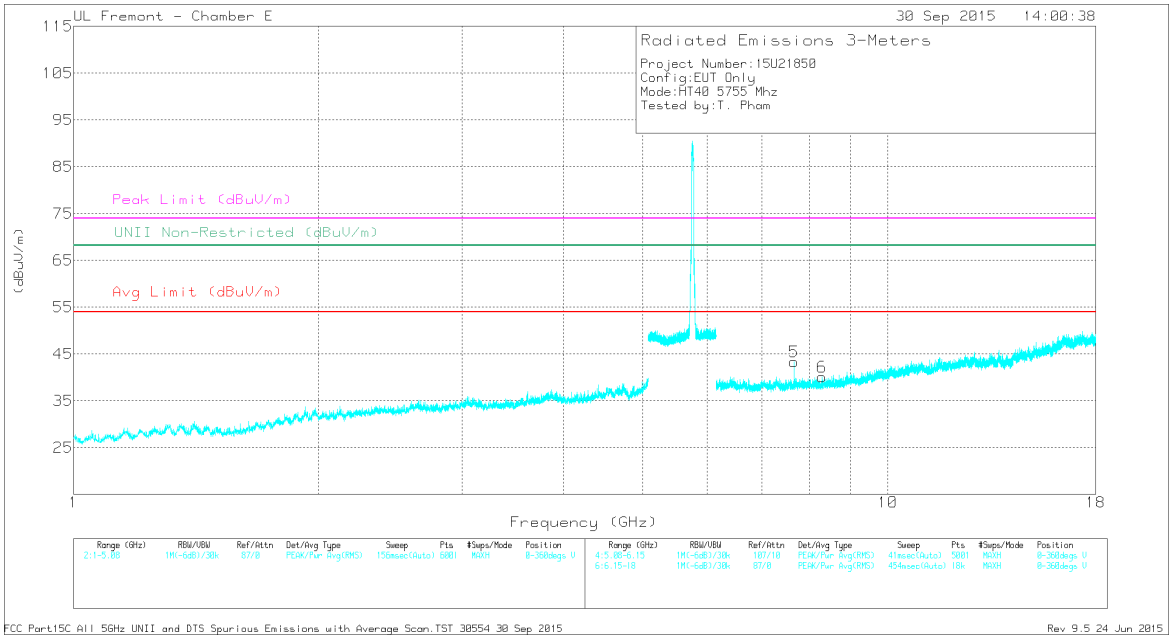
Rev 9.5 24 Jun 2015

LOW CHANNEL HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL PLOT



LOW CHANNEL VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.807	42.32	PK-U	32.4	-32.1	42.62	-	-	74	-31.38	-	-	293	209	H
	* 2.806	30.66	ADR	32.4	-32.1	30.96	54	-23.04	-	-	-	-	293	209	H
2	* 3.684	41.71	PK-U	33.2	-30.7	44.21	-	-	74	-29.79	-	-	263	224	H
	* 3.685	30.06	ADR	33.2	-30.7	32.56	54	-21.44	-	-	-	-	263	224	H
3	* 4.235	41.86	PK-U	33.5	-30	45.36	-	-	74	-28.64	-	-	296	207	H
	* 4.235	29.8	ADR	33.5	-30	33.3	54	-20.7	-	-	-	-	296	207	H
4	* 7.673	41.33	PK-U	35.8	-27.2	49.93	-	-	74	-24.07	-	-	188	390	H
	* 7.673	32.58	ADR	35.8	-27.2	41.18	54	-12.82	-	-	-	-	188	390	H
5	* 7.673	42.89	PK-U	35.8	-27.2	51.49	-	-	74	-22.51	-	-	241	278	V
	* 7.673	34.64	ADR	35.8	-27.2	43.24	54	-10.76	-	-	-	-	241	278	V
6	* 8.297	39.19	PK-U	35.7	-26.8	48.09	-	-	74	-25.91	-	-	256	248	V
	* 8.297	27.32	ADR	35.7	-26.8	36.22	54	-17.78	-	-	-	-	256	248	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK-U - U-NII: Maximum Peak

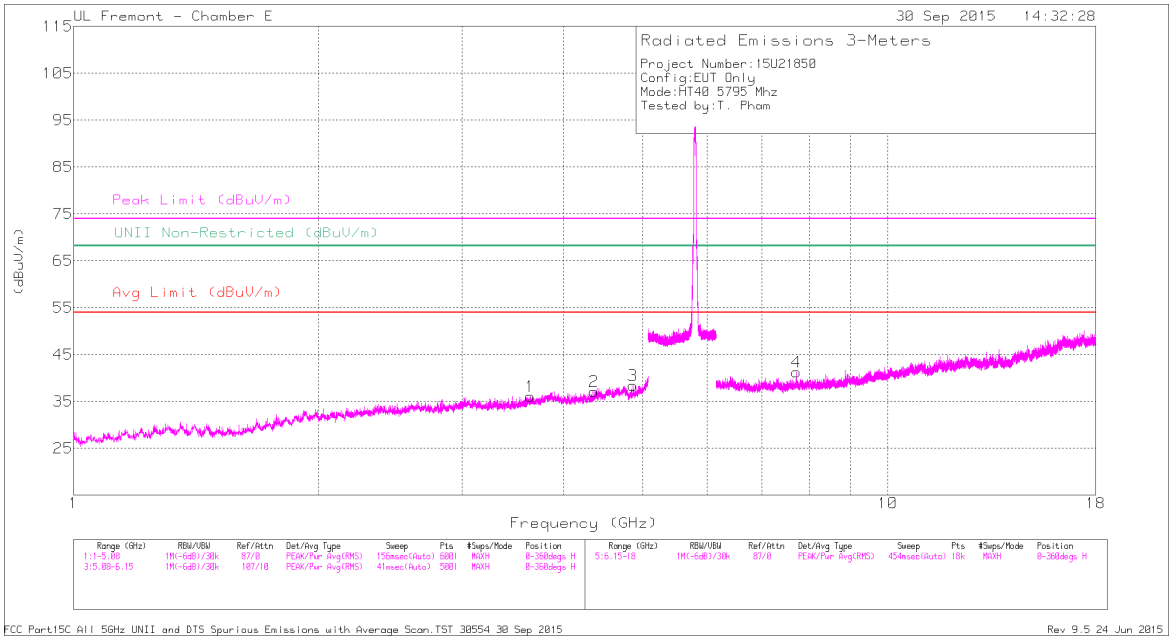
ADR - U-NII AD primary method, RMS average

FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30554 30 Sep 2015

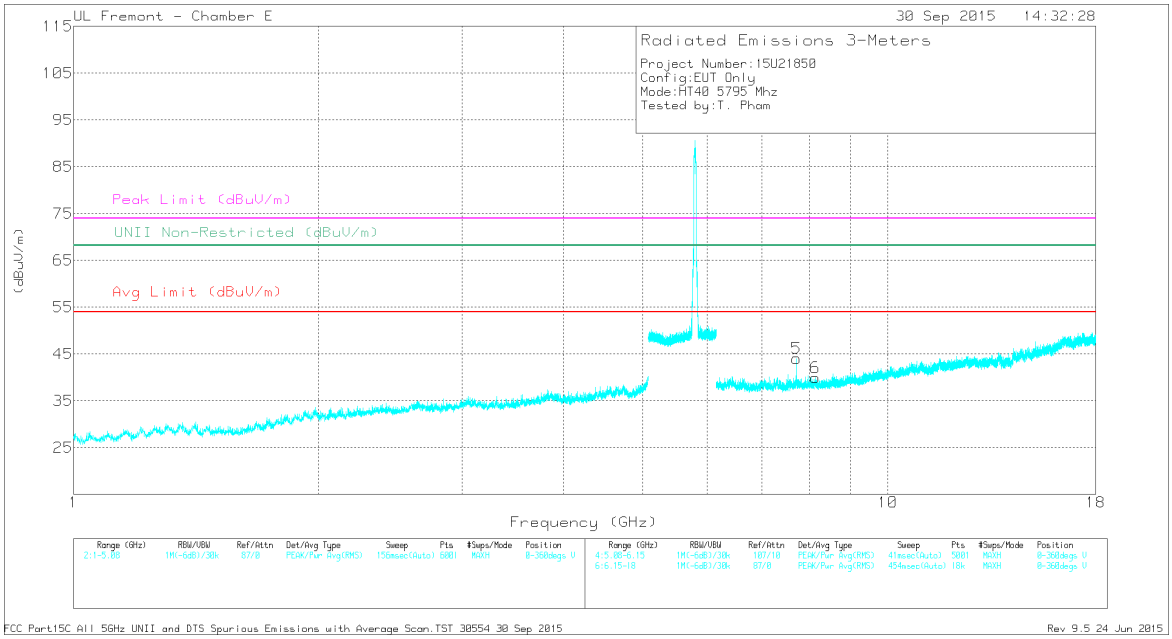
Rev 9.5 24 Jun 2015

HIGH CHANNEL HARMONICS AND SPURIOUS EMISSIONS

HIGH CHANNEL HORIZONTAL PLOT



HIGH CHANNEL VERTICAL PLOT



DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T346 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	UNII Non-Restricted (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.638	41.28	PK-U	33.1	-30.8	43.58	-	-	74	-30.42	-	-	207	100	H
	* 3.637	30.05	ADR	33.1	-30.8	32.35	54	-21.65	-	-	-	-	207	100	H
2	* 4.357	41.28	PK-U	33.6	-30.1	44.78	-	-	74	-29.22	-	-	216	138	H
	* 4.358	29.95	ADR	33.6	-30.1	33.45	54	-20.55	-	-	-	-	216	138	H
3	* 4.867	41.29	PK-U	34.1	-29.4	45.99	-	-	74	-28.01	-	-	258	163	H
	* 4.867	29.22	ADR	34.1	-29.4	33.92	54	-20.08	-	-	-	-	258	163	H
4	* 7.727	41.2	PK-U	35.8	-27	50	-	-	74	-24	-	-	21	396	H
	* 7.727	31.99	ADR	35.8	-27	40.79	54	-13.21	-	-	-	-	21	396	H
5	* 7.727	42.22	PK-U	35.8	-27	51.02	-	-	74	-22.98	-	-	255	230	V
	* 7.727	35.09	ADR	35.8	-27	43.89	54	-10.11	-	-	-	-	255	230	V
6	* 8.139	39.35	PK-U	35.7	-26.5	48.55	-	-	74	-25.45	-	-	283	247	V
	* 8.14	27.32	ADR	35.7	-26.5	36.52	54	-17.48	-	-	-	-	283	247	V

* - indicates frequency in CFR15.205/IC8.10 Restricted Band

PK-U - U-NII: Maximum Peak

ADR - U-NII AD primary method, RMS average

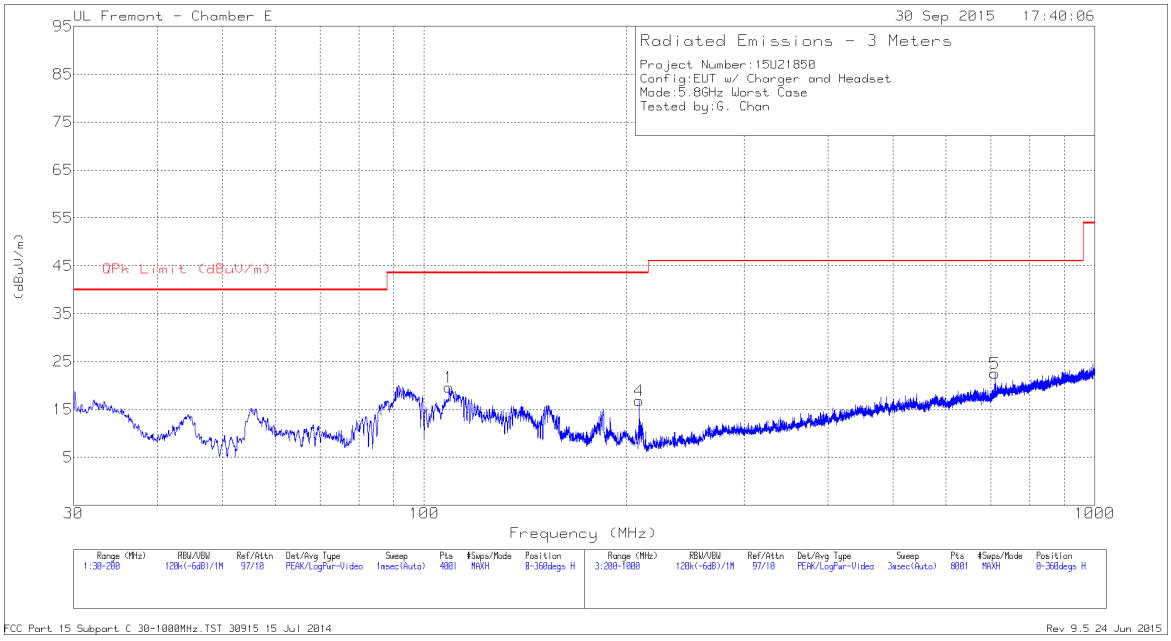
FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30554 30 Sep 2015

Rev 9.5 24 Jun 2015

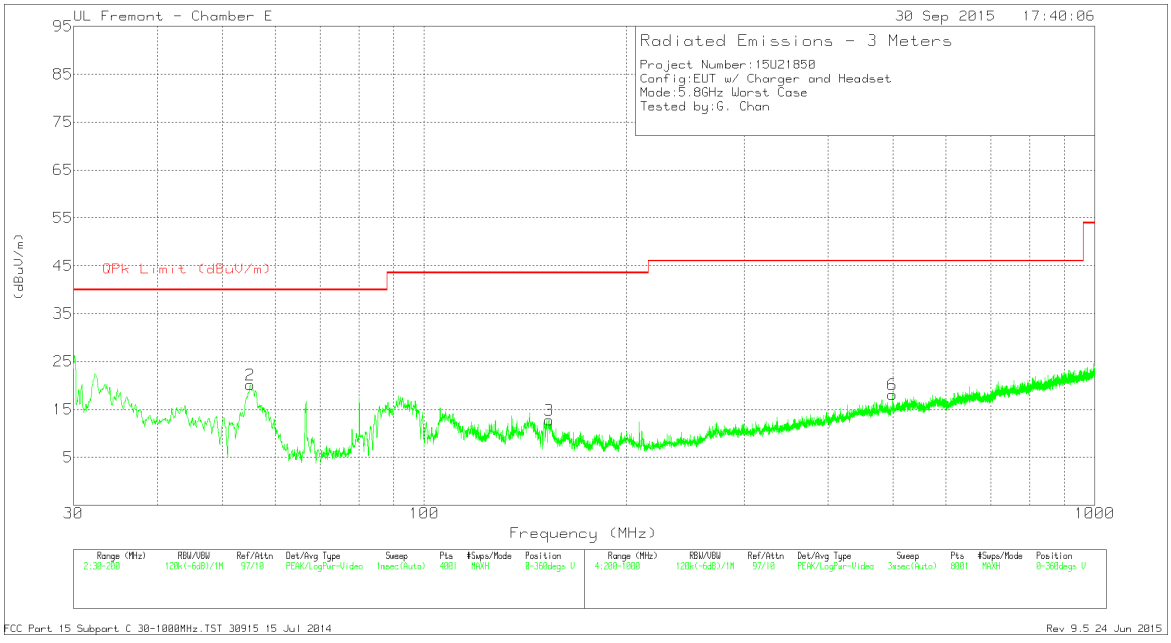
9.5. WORST-CASE BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL & VERTICAL)

HORIZONTAL PLOT



VERTICAL PLOT



HORIZONTAL AND VERTICAL DATA

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T408 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 108.965	38.88	Pk	12.1	-31.3	19.68	43.52	-23.84	0-360	301	H
2	55.075	44.36	Pk	7.3	-31.5	20.16	40	-19.84	0-360	100	V
3	153.4625	31.46	Pk	12.3	-31	12.76	43.52	-30.76	0-360	100	V
4	209.3	37.13	Pk	10.4	-30.7	16.83	43.52	-26.69	0-360	100	H
6	499.6	30.21	Pk	17.5	-29.6	18.11	46.02	-27.91	0-360	301	V
5	709.3	31.89	Pk	19.9	-29.2	22.59	46.02	-23.43	0-360	100	H

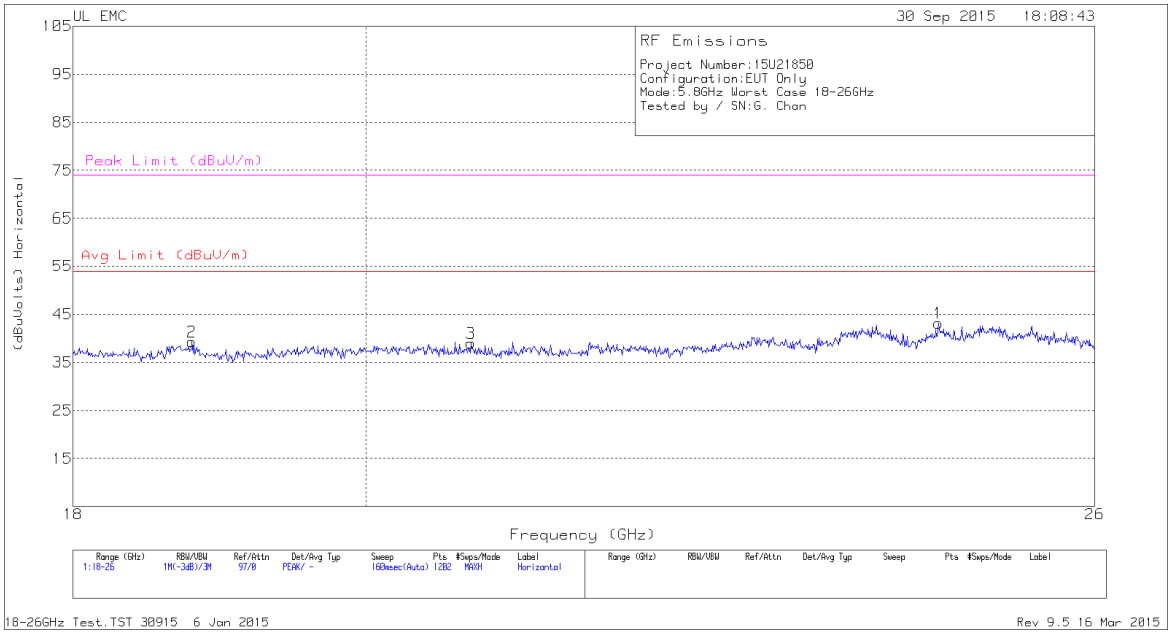
* - indicates frequency in CFR15.205/IC8.10 Restricted Band

Pk - Peak detector

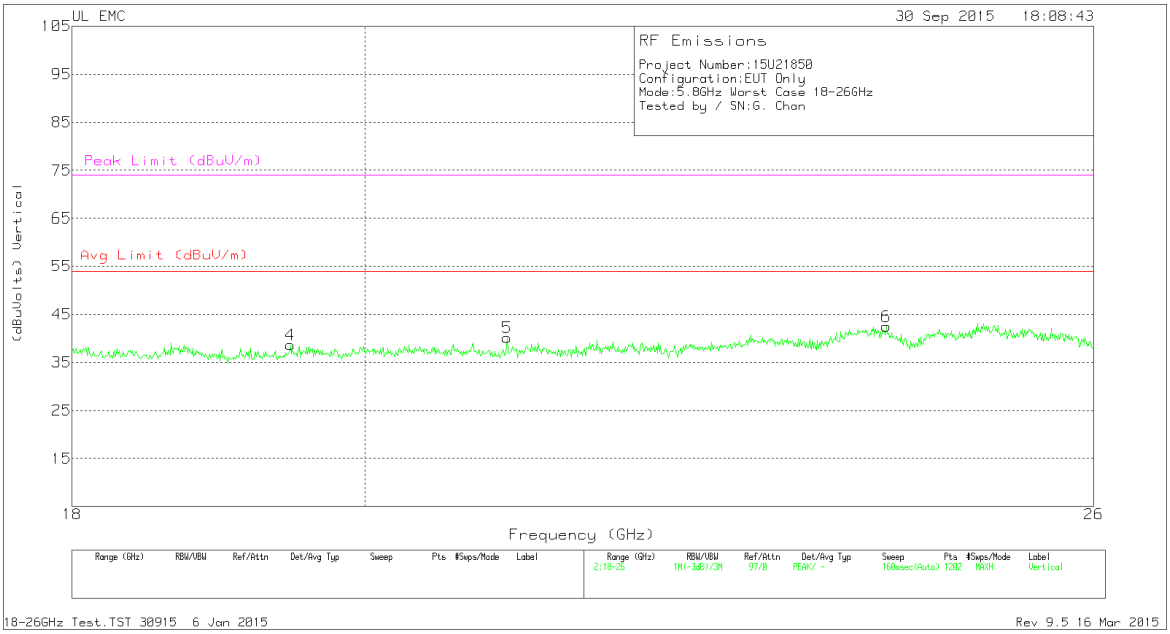
9.6. WORST-CASE ABOVE 18 GHz

SPURIOUS EMISSIONS 18000 TO 26000 MHz (WORST-CASE CONFIGURATION)

HORIZONTAL PLOT



VERTICAL PLOT



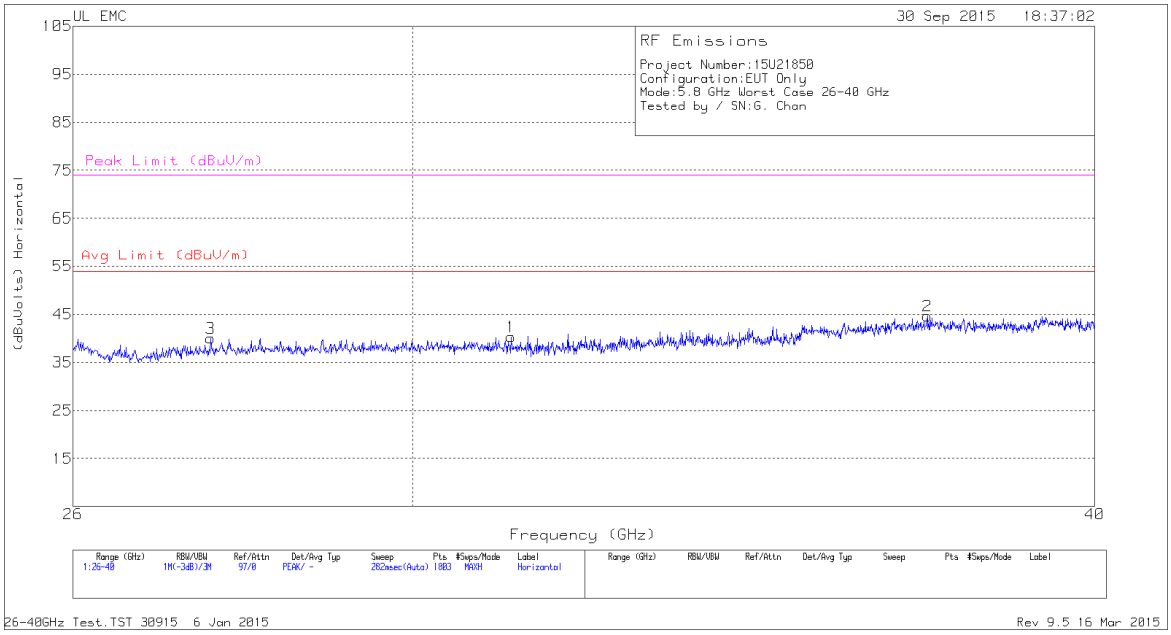
HORIZONTAL AND VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T89 AF (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	24.575	42.77	Pk	33.9	-24.0	-9.5	43.17	54	-10.83	74	-30.83
2	18.786	41.33	Pk	32.5	-25.0	-9.5	39.337	54	-14.67	74	-34.67
3	20.771	40.80	Pk	32.8	-25.1	-9.5	39.00	54	-15.00	74	-35.00
4	19.472	40.47	Pk	32.5	-24.8	-9.5	38.67	54	-15.33	74	-35.33
5	21.051	42.37	Pk	32.6	-25.3	-9.5	40.17	54	-13.83	74	-33.83
6	24.128	42.90	Pk	33.4	-24.3	-9.5	42.5	54	-11.5	74	-31.5

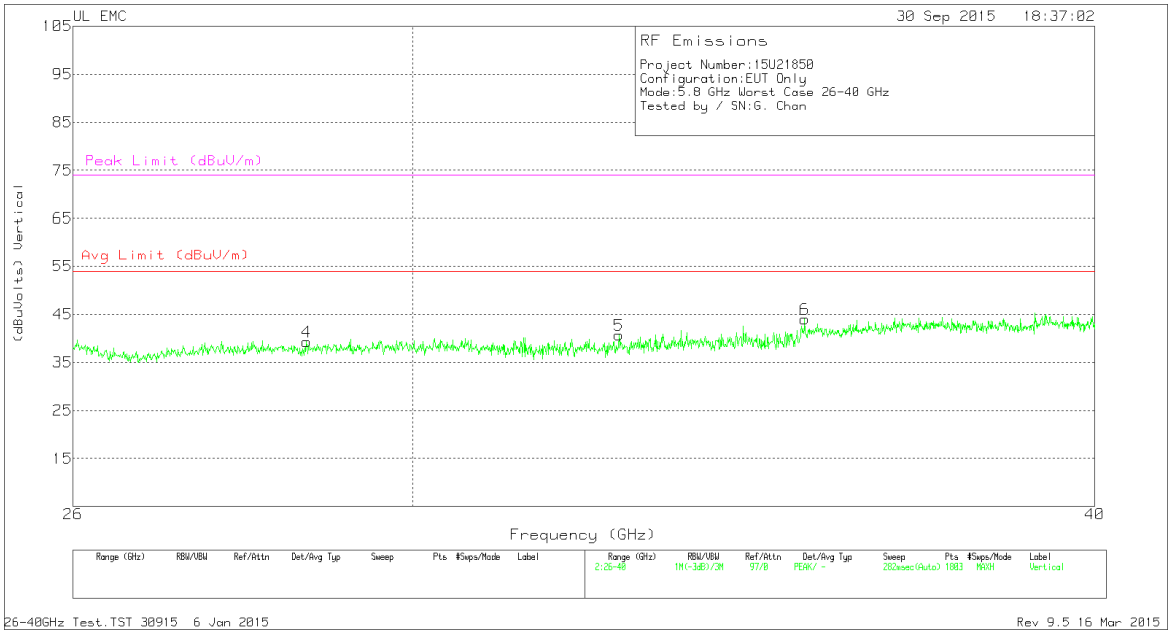
Pk - Peak detector

SPURIOUS EMISSIONS 26000 TO 40000 MHz (WORST-CASE CONFIGURATION)

HORIZONTAL PLOT



VERTICAL PLOT



HORIZONTAL AND VERTICAL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T90 AF (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	31.275	46.53	Pk	36	-32.7	-9.5	40.33	54	-13.67	74	-33.67
2	37.273	49.57	Pk	37.3	-32.7	-9.5	44.67	54	-9.33	74	-29.33
3	27.554	45.10	Pk	35.7	-31.3	-9.5	40.00	54	-14.00	74	-34.00
4	28.688	45.03	Pk	35.7	-31.9	-9.5	39.33	54	-14.67	74	-34.67
5	32.728	46.57	Pk	36.5	-32.9	-9.5	40.67	54	-13.33	74	-33.33
6	35.393	49.00	Pk	37.8	-33.3	-9.5	44.00	54	-10.00	74	-30.00

Pk - Peak detector

10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

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

*Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

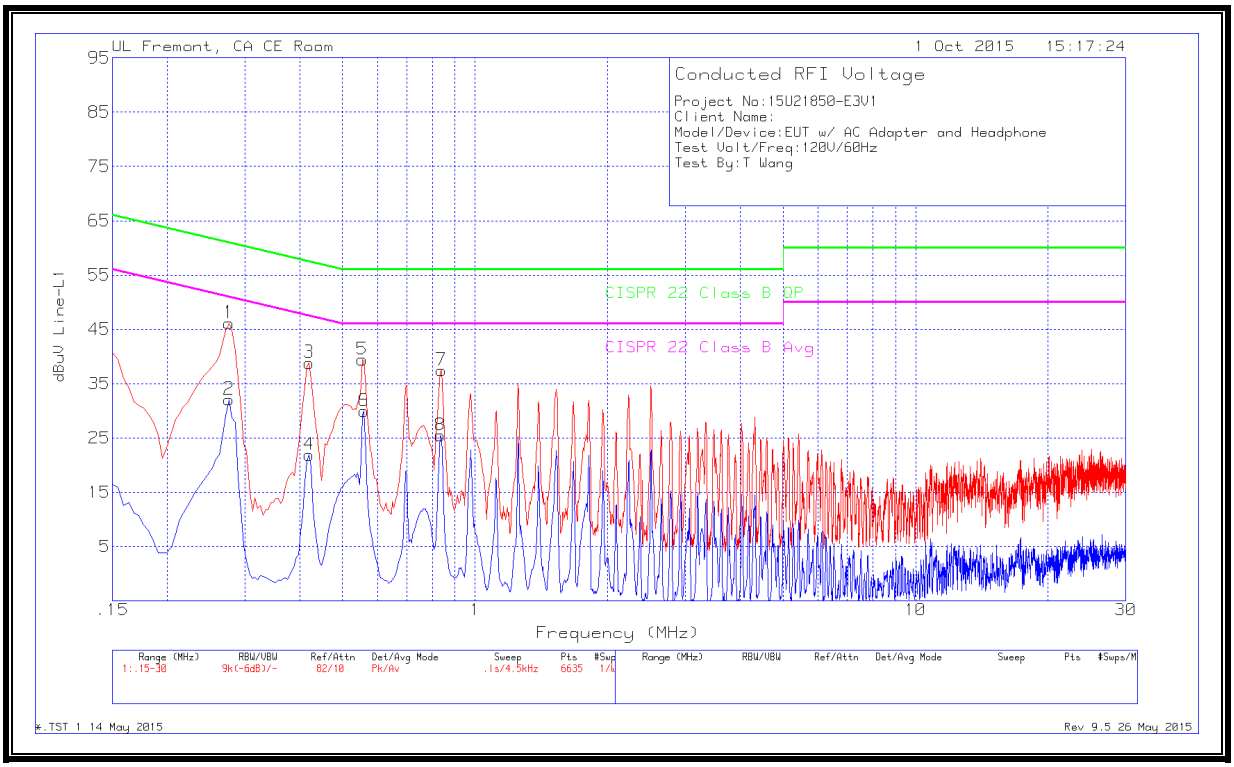
The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

10.1. EUT POWERED BY AC ADAPTER

LINE 1 RESULTS



WORST EMISSIONS

Trace Markers

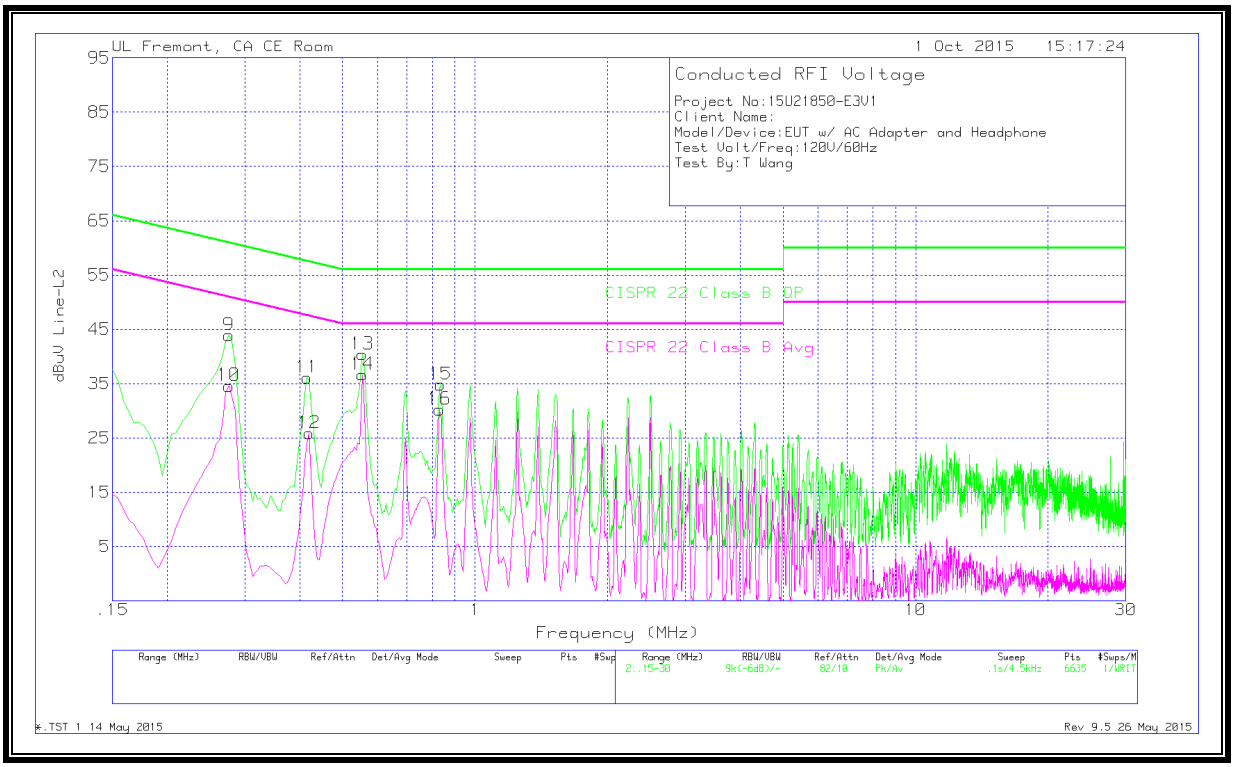
Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.276	45.55	Pk	.6	0	46.15	60.94	-14.79		
2	.276	31.48	Av	.6	0	32.08	-	-	50.94	-18.86
3	.42	38.45	Pk	.4	0	38.85	57.45	-18.6		
4	.42	21.5	Av	.4	0	21.9	-	-	47.45	-25.55
5	.555	39.14	Pk	.3	0	39.44	56	-16.56		
6	.5595	29.67	Av	.3	0	29.97	-	-	46	-16.03
7	.8385	37.16	Pk	.3	0	37.46	56	-18.54		
8	.834	25.17	Av	.3	0	25.47	-	-	46	-20.53

Pk - Peak detector

Av - Average detection

LINE 2 RESULTS



WORST EMISSIONS

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
9	.276	43.22	Pk	.7	0	43.92	60.94	-17.02		
10	.276	33.92	Av	.7	0	34.62	-	-	50.94	-16.32
11	.4155	35.74	Pk	.4	0	36.14	57.54	-21.4		
12	.42	25.46	Av	.4	0	25.86	-	-	47.45	-21.59
13	.555	40.1	Pk	.3	0	40.4	56	-15.6		
14	.555	36.38	Av	.3	0	36.68	-	-	46	-9.32
15	.834	34.56	Pk	.3	0	34.86	56	-21.14		
16	.8295	29.96	Av	.3	0	30.26	-	-	46	-15.74

Pk - Peak detector

Av - Average detection

*.TST 1 14 May 2015

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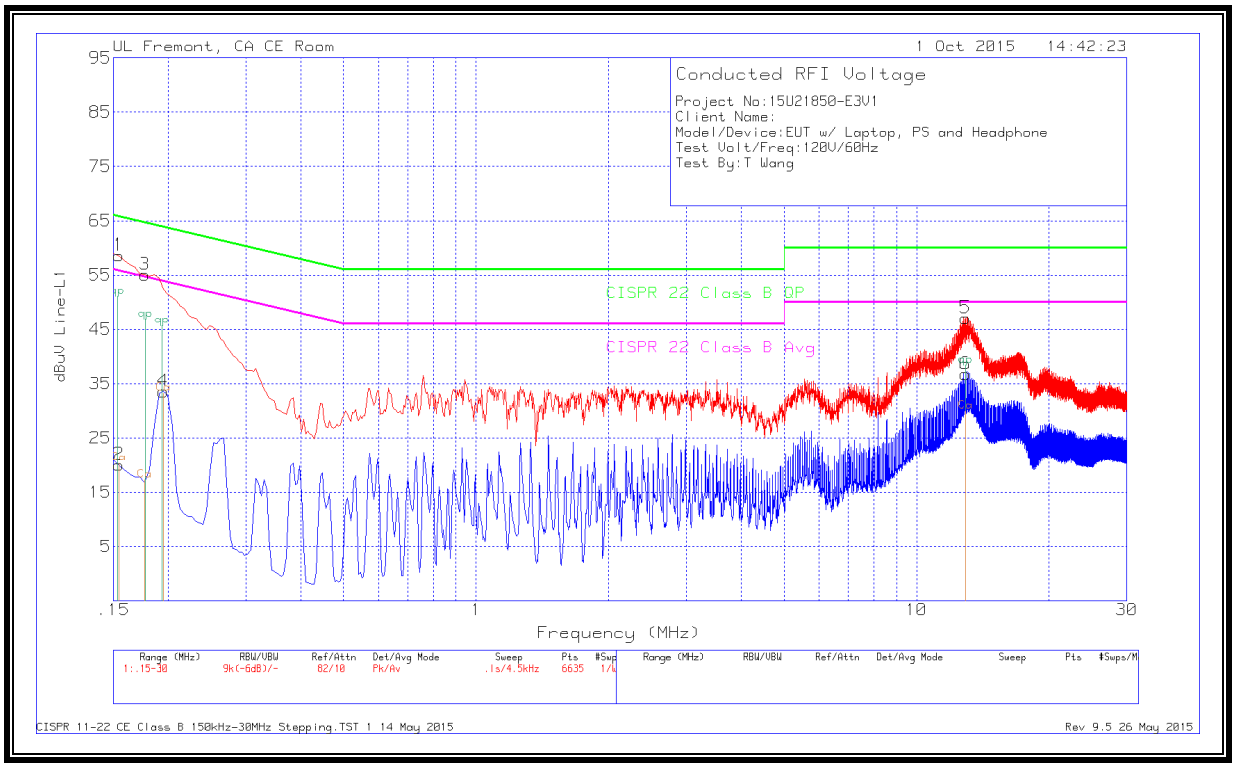
10.2. EUT POWERED BY HOST PC VIA USB CABLE

LINE 1 RESULTS



WORST EMISSIONS

Range 1: Line-L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1	LC Cables 1&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
1	.15338	49.66	Qp	1.4	0	51.06	65.81	-14.75	-	-
2	.15338	18.96	Ca	1.4	0	20.36	-	-	55.81	-35.45
3	.17768	45.73	Qp	1.1	0	46.83	64.59	-17.76	-	-
4	.19388	32.23	Ca	1	0	33.23	-	-	53.87	-20.64
5	12.9253	37.99	Qp	.2	.2	38.39	60	-21.61	-	-
6	12.9253	29.55	Ca	.2	.2	29.95	-	-	50	-20.05

Qp - Quasi-Peak detector

Ca - CISPR average detection

CISPR 11-22 CE Class B 150kHz-30MHz Stepping.TST 1 14 May 2015

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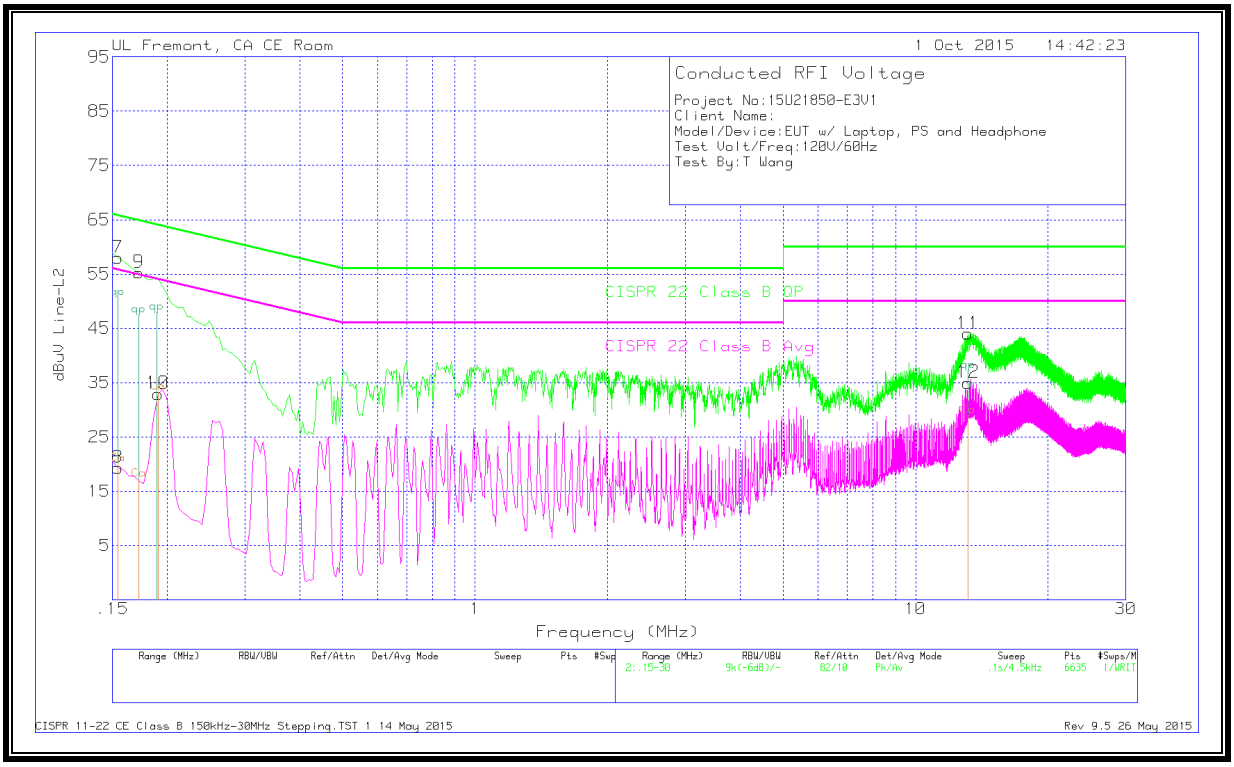
LINE 2 RESULTS



WORST EMISSIONS

Range 2: Line-L2 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2	LC Cables 2&3	Corrected Reading dBuV	CISPR 22 Class B QP	Margin (dB)	CISPR 22 Class B Avg	Margin (dB)
7	.15428	49.29	Qp	1.4	0	50.69	65.77	-15.08	-	-
8	.15428	18.63	Ca	1.4	0	20.03	-	-	55.77	-35.74
9	.17228	46.29	Qp	1.2	0	47.49	64.85	-17.36	-	-
10	.18938	32.08	Ca	1.1	0	33.18	-	-	54.06	-20.88
11	13.1629	36.83	Qp	.2	.2	37.23	60	-22.77	-	-
12	13.1629	28.49	Ca	.2	.2	28.89	-	-	50	-21.11

Qp - Quasi-Peak detector

Ca - CISPR average detection

CISPR 11-22 CE Class B 150kHz-30MHz Stepping.TST 1 14 May 2015

Rev 9.5 26 May 2015