FCC / ISED Test Report

For

ADTZWM

Report #: 50346-M1

FCC ID: CFS8DLWFZW
IC ID: 573F-WFZW

Report Completion Date: 2018-07-09

Prepared by and for:
Honeywell International Inc.
2 Corporate Center Dr.
Suite 100 PO Box 9040
Melville, NY 11747

Testing
NVLAP Lab Code: 600110

Document Introduction

Honeywell tested the above equipment in accordance with the requirements set forth in the listed standards. All indications of Pass/Fail in the report are opinions expressed by Honeywell 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.

This document is a record of the FCC/ISED Test Report for Honeywell products. It demonstrates the data required to be analyzed to certify a product according to the requirements of the FCC & ISED.

The results in the report reflect only the model of the items under test unless noted otherwise. This document may not be altered or revised in any way unless done so my Honeywell and all revisions are duly noted in the revisions section. Any alterations of this document not carried out by Honeywell 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.

Test Report Revision History

Revision	Prepared By	Reviewed By	Revision Detail	Release Date
---	M. Antola	A. Roussin	Original Release	2018-06-29
A	M. Antola	A. Roussin	Updated equipment lists	2018-07-09

Report Authorization

Report Prepared By:

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Reviewed & Approved By:

Andrew Roussin
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HBT RF & EMC Design
Honeywell International Inc.

Contents

Applicable Test Standards/Limits

Test Standards/Limits	Result	Dates Tested
ANSI C63.10: 2013	Compliant	04/25/18 – 06/26/18
RSS-247, Issue 2, Section 5	Compliant	04/25/18 – 06/26/18
RSS-GEN, Issue 4	Compliant	04/25/18 – 06/26/18
CFR 47 Pt 15 Subpart C, Section 15.207/209	Compliant	04/25/18 – 06/26/18
CFR 47 Pt 15 Subpart C, Section 15.247	Compliant	04/25/18 – 06/26/18

Deviations from Test Methods

#	Deviation Description
0	None

Facilities and Accreditation

The test site and measurement facility used to collect data are located at 2 Corporate Center Dr., Melville, NY 11747, USA. Honeywell International is accredited by NVLAP, Laboratory Code 600110-0. The full scope of accreditation can be viewed at the NVLAP website.

Test Item Description

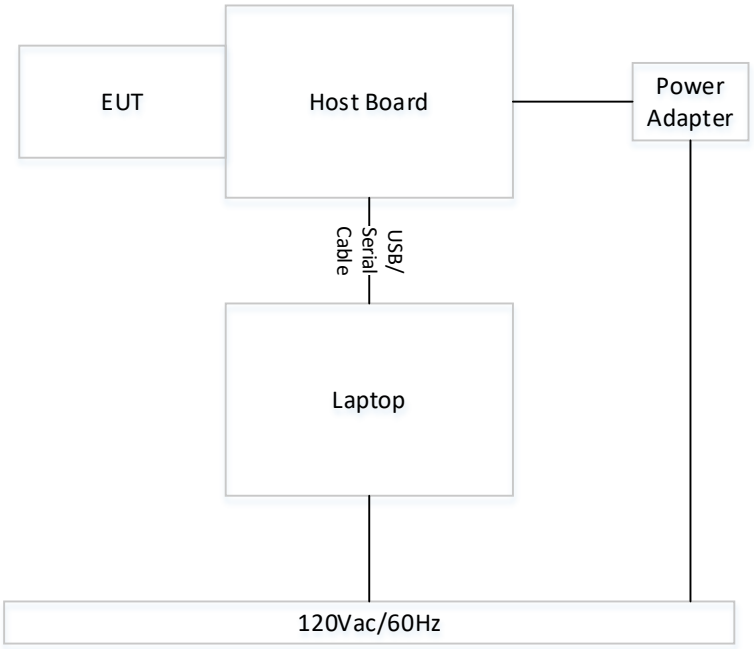
The ADTZWM communication module is intended to provide compatible control panels with a Wi-Fi connection as well as connection with the and the ability to control Z-Wave device. The module connects directly to the control panel and is powered via the control panel's connection. Thus, this module will be certified for full modular approval.

The module utilizes discrete off-the-shelf Wi-Fi and Z-Wave chips incorporated onto the host board. The Wi-Fi contains two (2) integral trace antennas – antenna 1 has a gain of 1.86dBi and antenna 2 has a gain of 1.05dBi. Wi-Fi will be able to transmit on both antenna simultaneously only on 802.11n Mode. In the other two modes, the two antennas are used for diversity only. This report covers the testing required for Wi-Fi only, Z-Wave testing will be cover as part of a separate report.

Worse-Case Configuration / Mode & Block Diagram

Radiated emissions was performed with the EUT set to transmit at the low/mid/high channels with the highest output power as worst-case scenario and at 100% duty cycle. The EUT was tested in all three orthogonal planes to determine the worst-case emissions. It was determined that the Y axis orientation (lying flat) was the worst-case orientation. Therefore, all final radiated test was performed with the EUT in the Y axis orientation. See setup photos for details. The worse-case data rates were found to be as follows and all testing was performed at these rates:

802.11b – 11Mbps
802.11g – 54Mbps
802.11n (HT20) – 6.5Mbps



Test Sample Identification

Sample ID Number	Sample Serial Number	Date Received
MEL-462	Non-serialized production unit	04/02/18
MEL-461	Non-serialized production unit	04/02/18
MEL-469	Non-serialized production unit	04/02/18

Calibration & Measurement Uncertainty

- Measuring Instrument Calibration – The measuring equipment utilized to perform the tests documented in this report have been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

- 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)

  [i.e.] 37 dBuV/m = 30 dBuV + 18.5 dB/m + 0.5 dB – 12 dB

- Uncertainty - Figures are valid to a confidence level of 95%.

Test	Standard Uncertainty
Radiated Emissions (30-200MHz Horizontal)	+/- 5.05 dB
Radiated Emissions (30-200MHz Vertical)	+/- 5.28 dB
Radiated Emissions (200-1000MHz Horizontal)	+/- 10.21 dB
Radiated Emissions (200-1000MHz Vertical)	+/- 10.36 dB
Radiated Emissions (Above 1GHz)	+/- 9.70 dB
Conducted Emissions (150KHz-30MHz)	+/- 4.36 dB

Opinions / Interpretations

None

Test Summary

All tests described below are required, unless otherwise noted. Notes should be described in detail in the "Additional notes" section.

#	Test Description	Status
1	99% Occupied Bandwidth	PASS
2	6 dB Emission Bandwidth	PASS
3	Maximum Conducted Output Power	PASS
4	Maximum Power Spectral Density	PASS
5	Out-of-Band Emissions	PASS
6	Radiated Emissions (Intentional)	PASS
7	Conducted Emissions – Mains	PASS

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6dB Emission Bandwidth (DTS Bandwidth)

Test Description

Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission. Refer to KDB 558074 D01 DTS Meas Guidance v04.

Test Criteria

Reference	Limit
CFR 47 Subpart C 15.247 (a)(2) RSS-247 Section 5.2 (a)	≥ 500kHz

Test Information

Tester	Test Location	Date	Temperature (ºC)	Humidity (%RH)	Pressure (mbar)	Results (P/F)
AG	RF Lab	04/26/18	24.4	20.5	1014	P

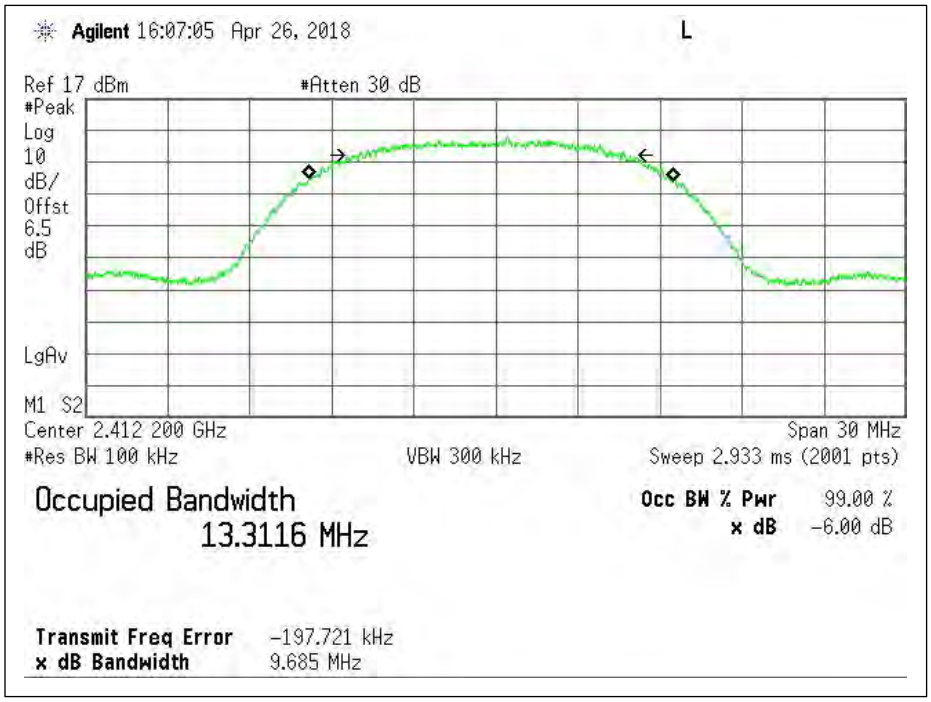
Equipment List

Instrument Type	ID #	Serial #	Manufacturer	Model	Cal Date	Cal Due Date
Spectrum Analyzer	11549	MY46187211	Agilent	E4440A	06/06/17	06/06/19
Attenuator	-	1624	Pasternack	PE7087-6	NA	NA
Environmental Meter	11533	A070144	Extech Instruments	SD700	08/21/17	08/21/20

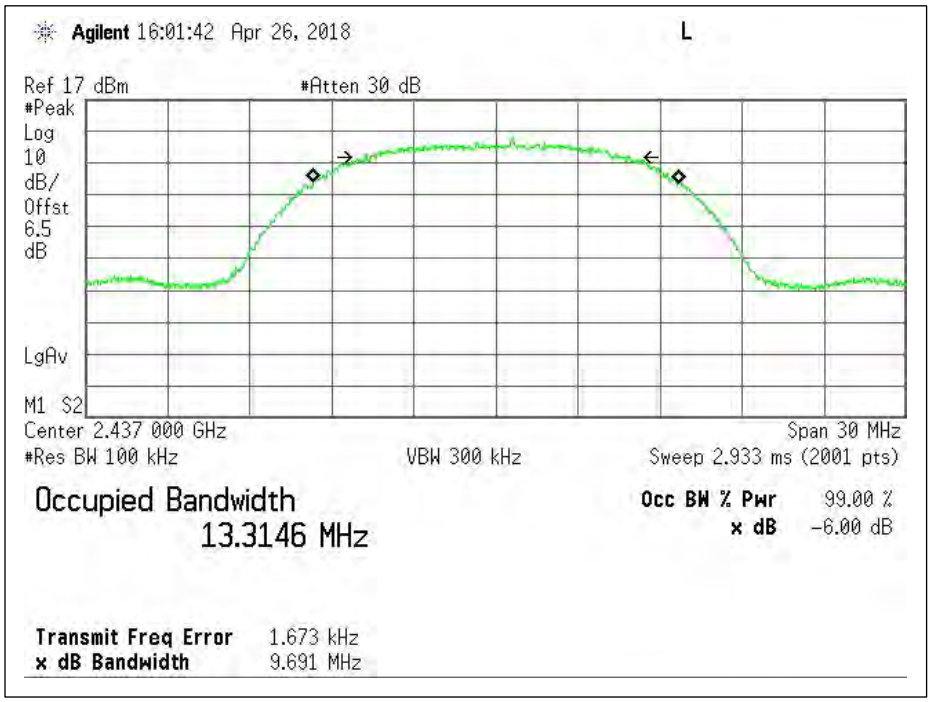
Test Results

Mode	Channel	Frequency (GHz)	6dB Bandwidth (in MHz)	
			Antenna 1	Antenna 2
802.11b	**Low**	2.412	9.685	9.671
	Mid	2.437	9.691	9.687
	High	2.462	9.686	9.449
802.11g	**Low**	2.412	16.415	16.548
	Mid	2.437	16.426	16.560
	High	2.462	16.424	16.590
802.11n	**Low**	2.412	16.431	17.842
	Mid	2.437	16.429	17.833
	High	2.462	16.431	17.841

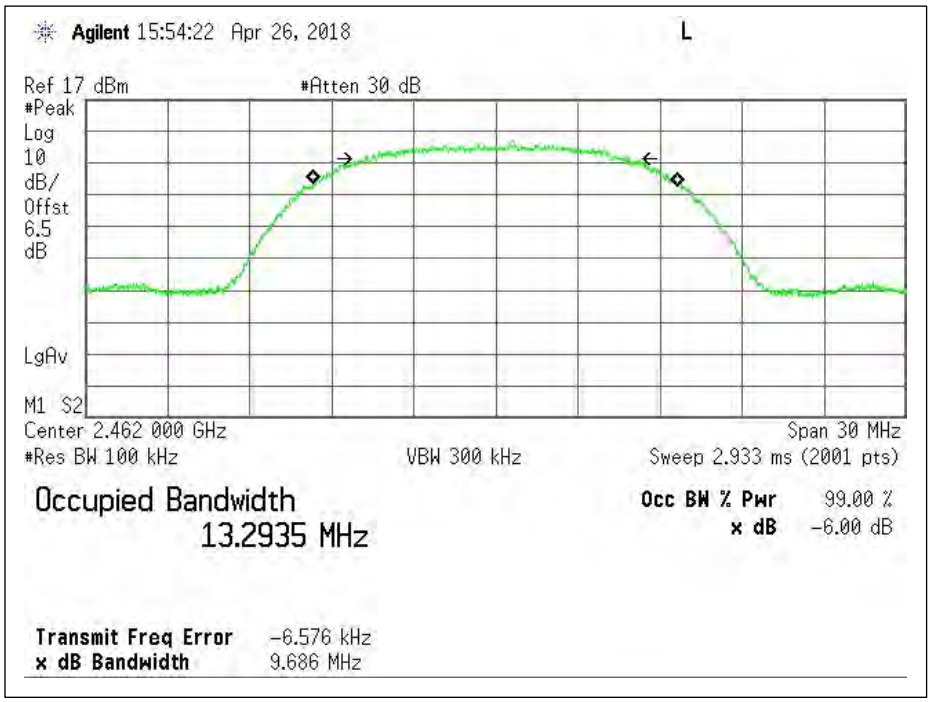
6dB Bandwidth Plots – 802.11b Mode



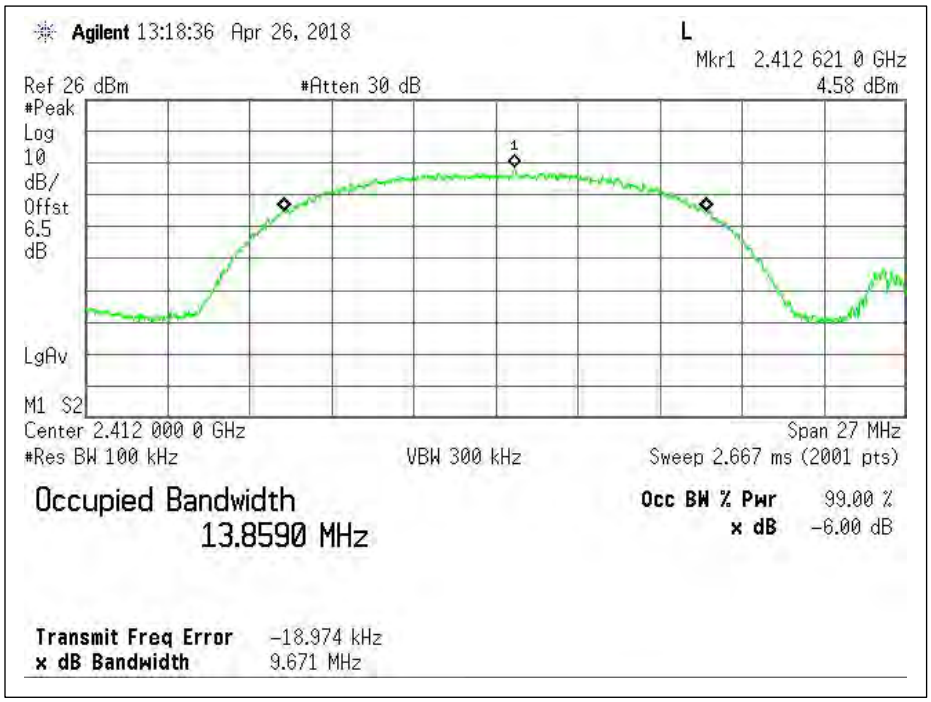
Antenna 1: Low Channel - Plot



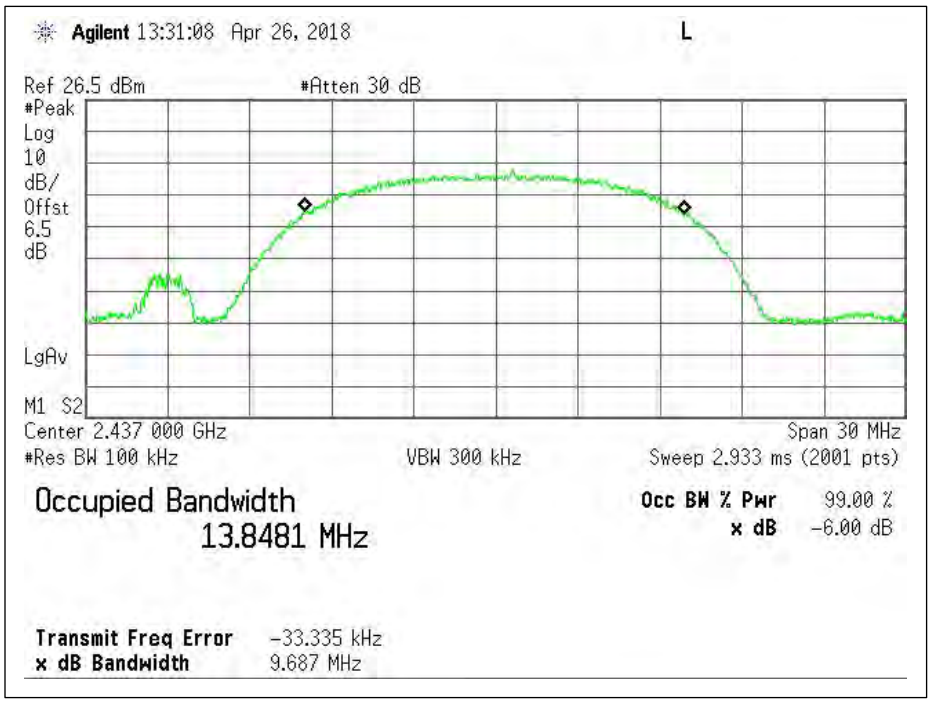
Antenna 1: Mid Channel - Plot



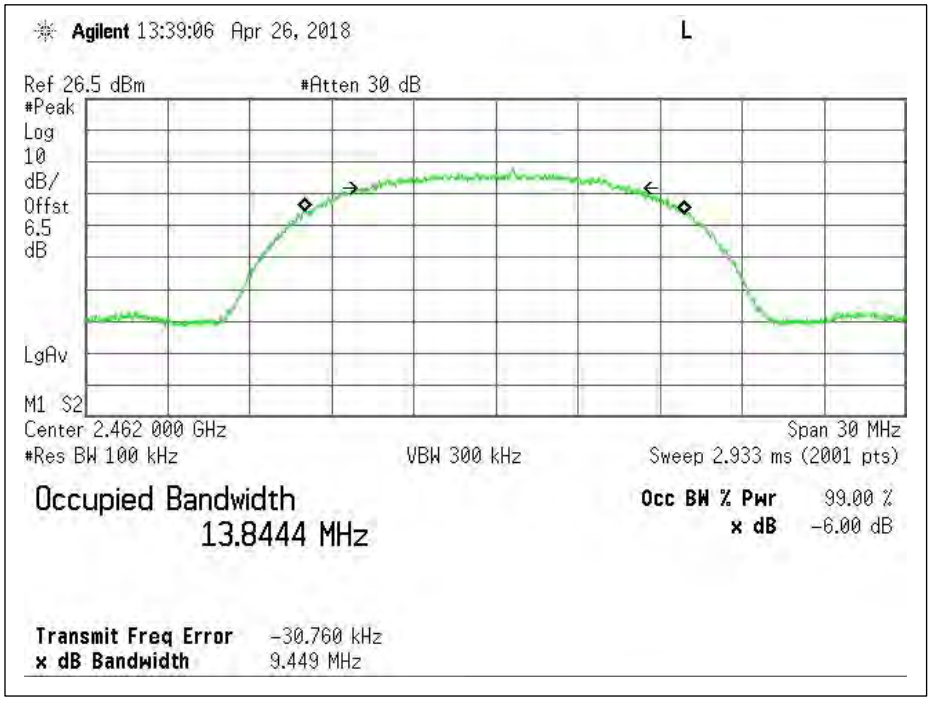
Antenna 1: High Channel – Plot



Antenna 2: Low Channel - Plot

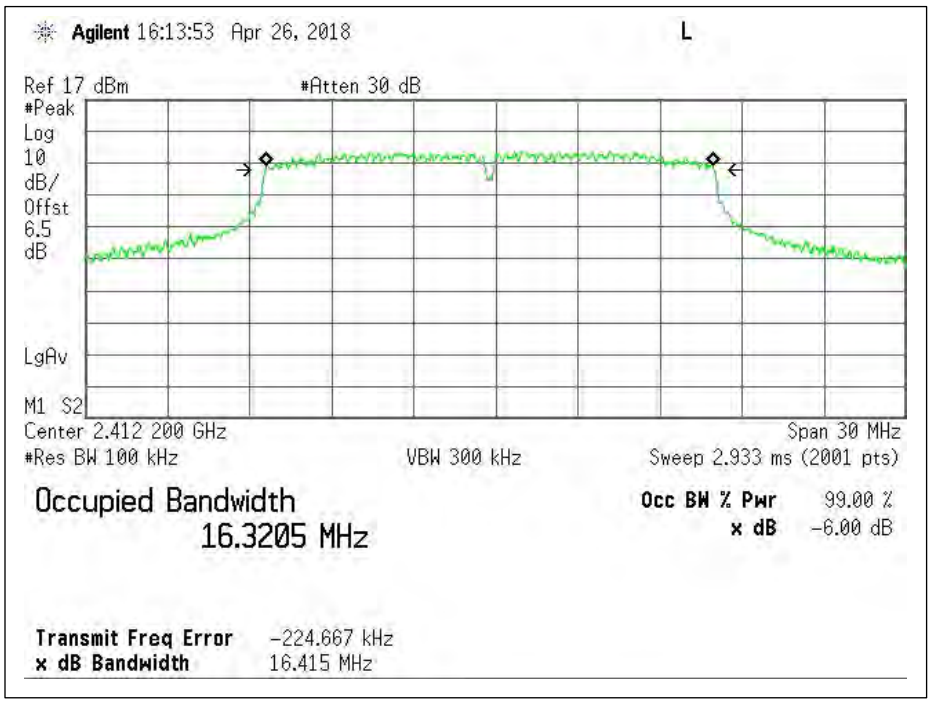


Antenna 2: Mid Channel - Plot

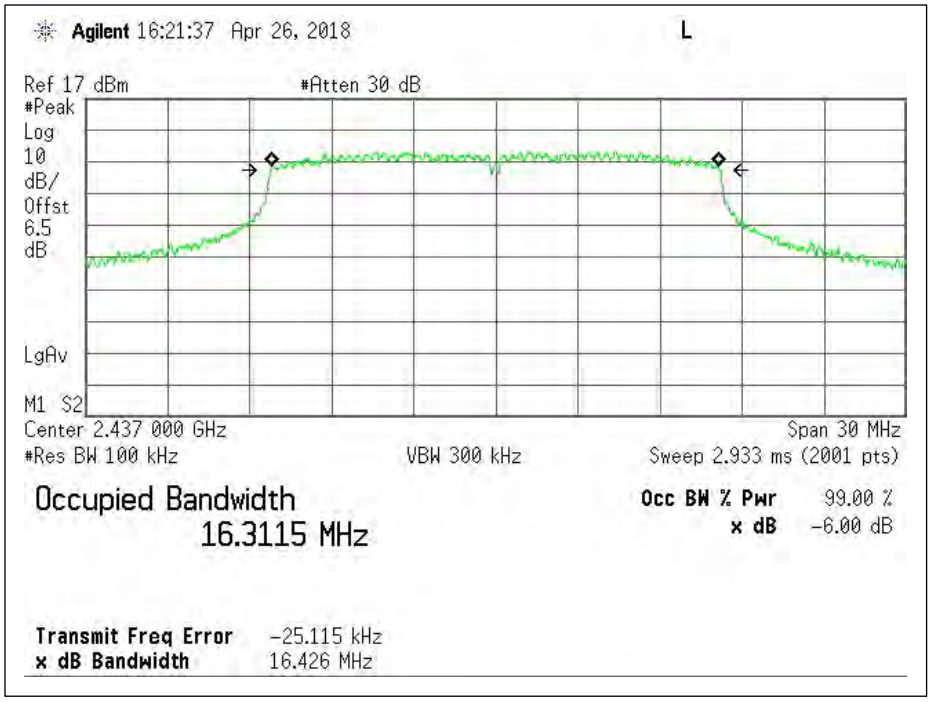


Antenna 2: High Channel – Plot

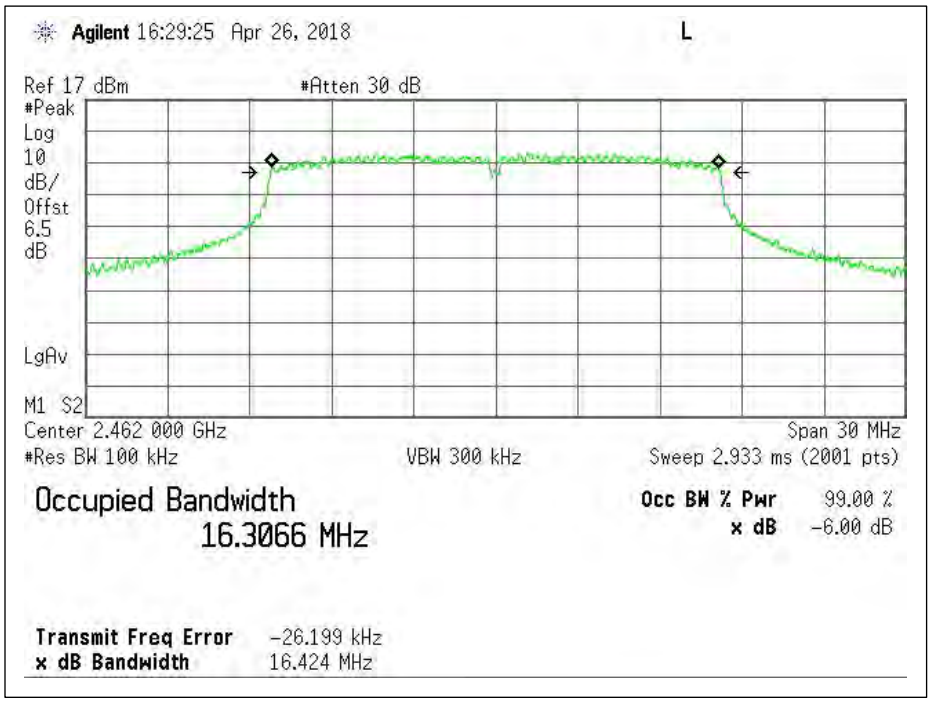
6dB Bandwidth Plots – 802.11g Mode



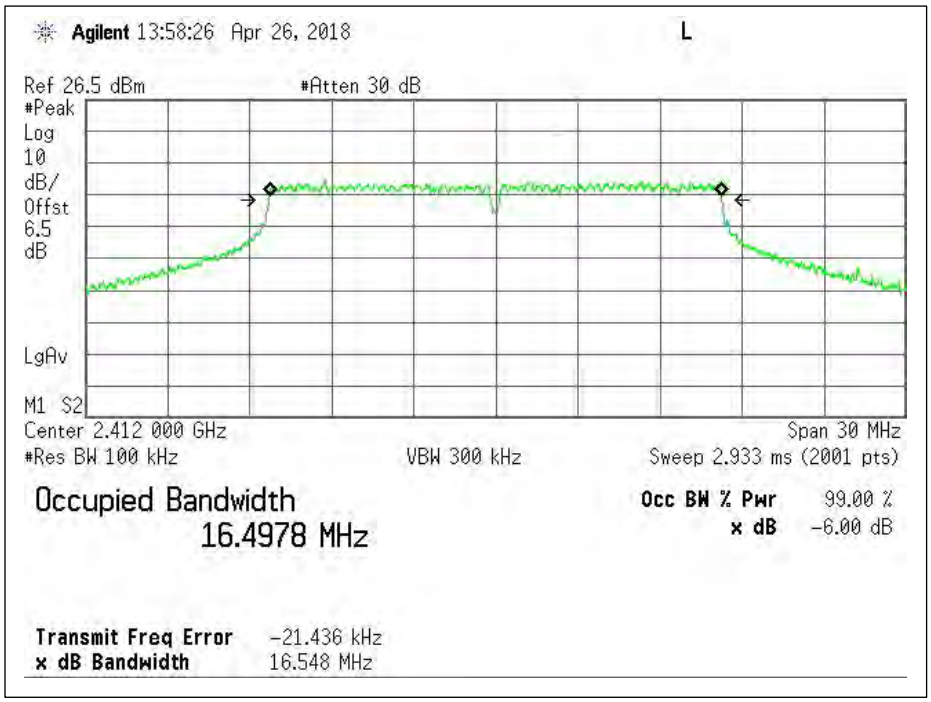
Antenna 1: Low Channel - Plot



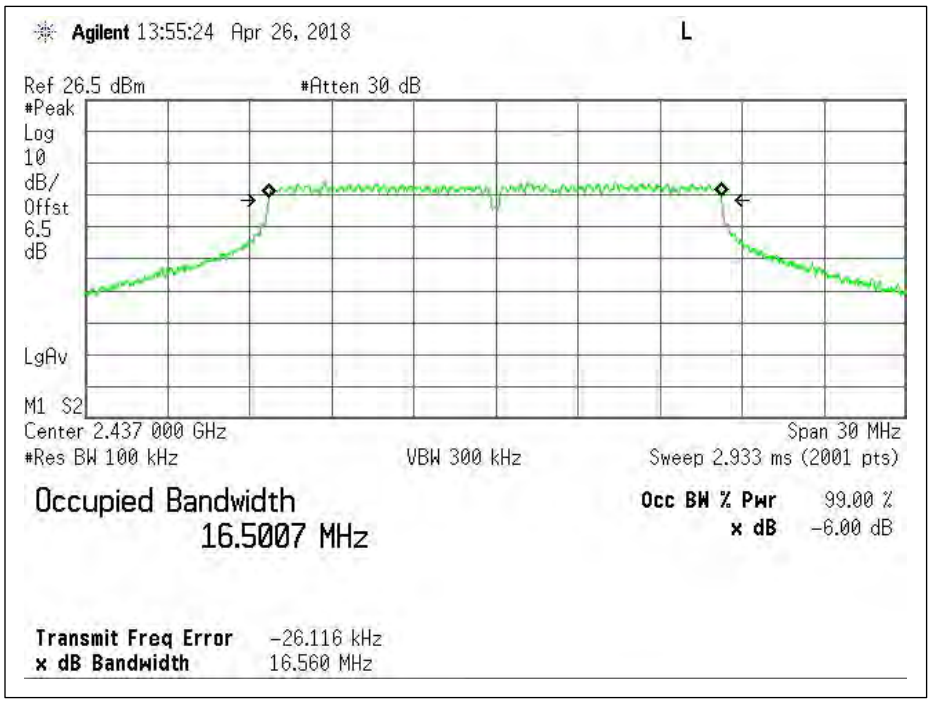
Antenna 1: Mid Channel - Plot



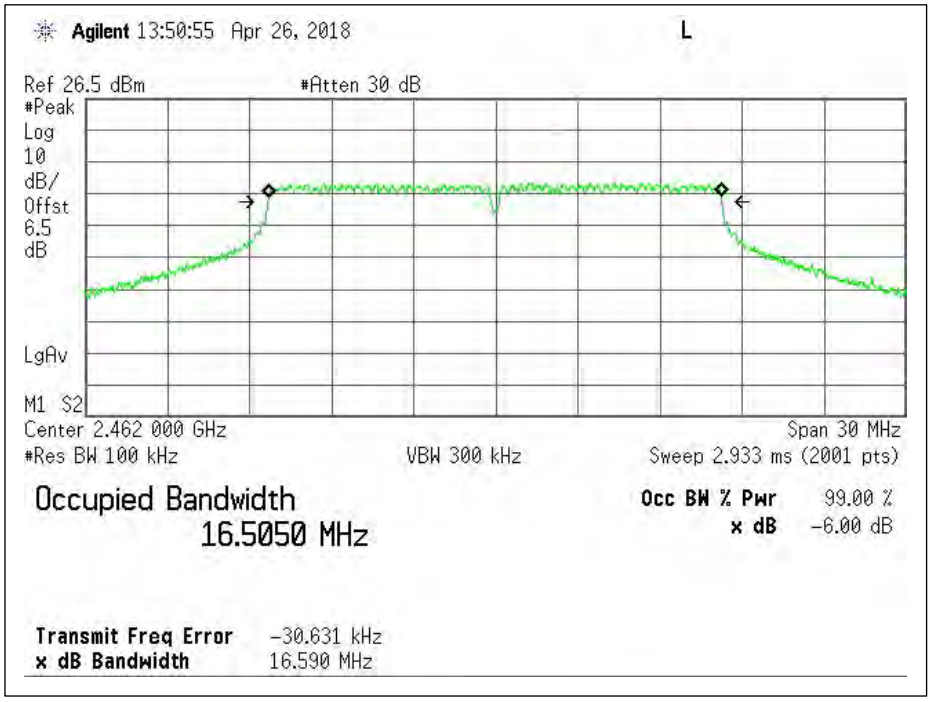
Antenna 1: High Channel – Plot



Antenna 2: Low Channel - Plot

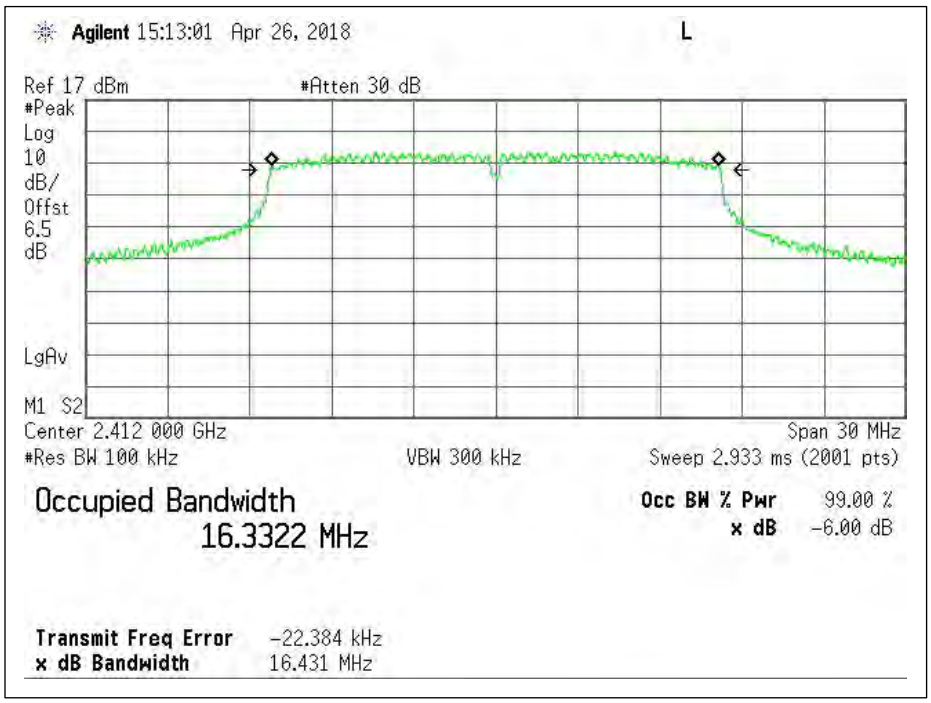


Antenna 2: Mid Channel - Plot

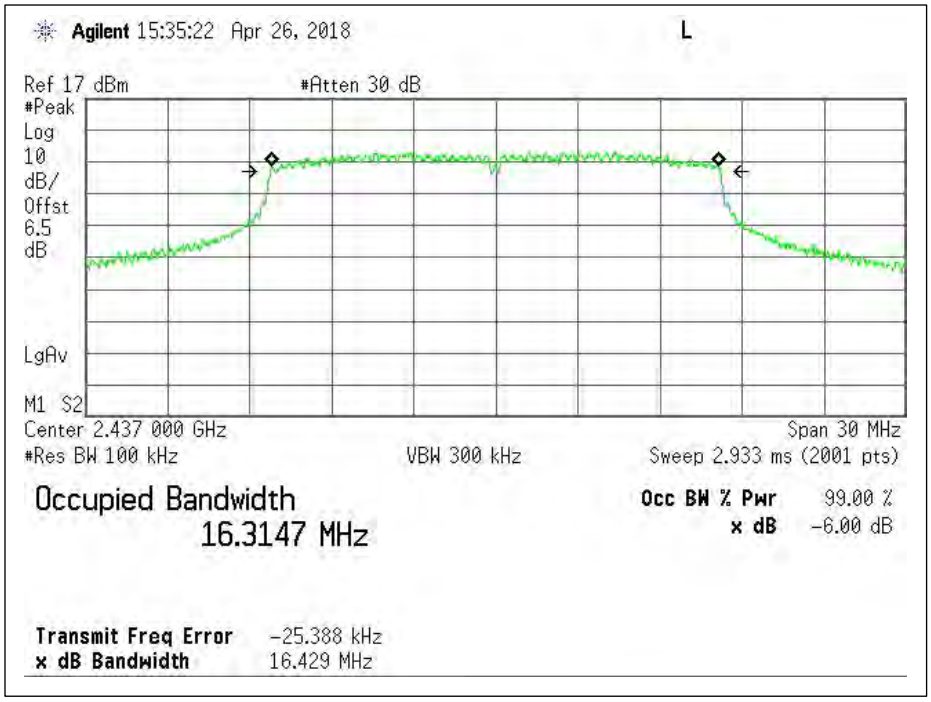


Antenna 2: High Channel – Plot

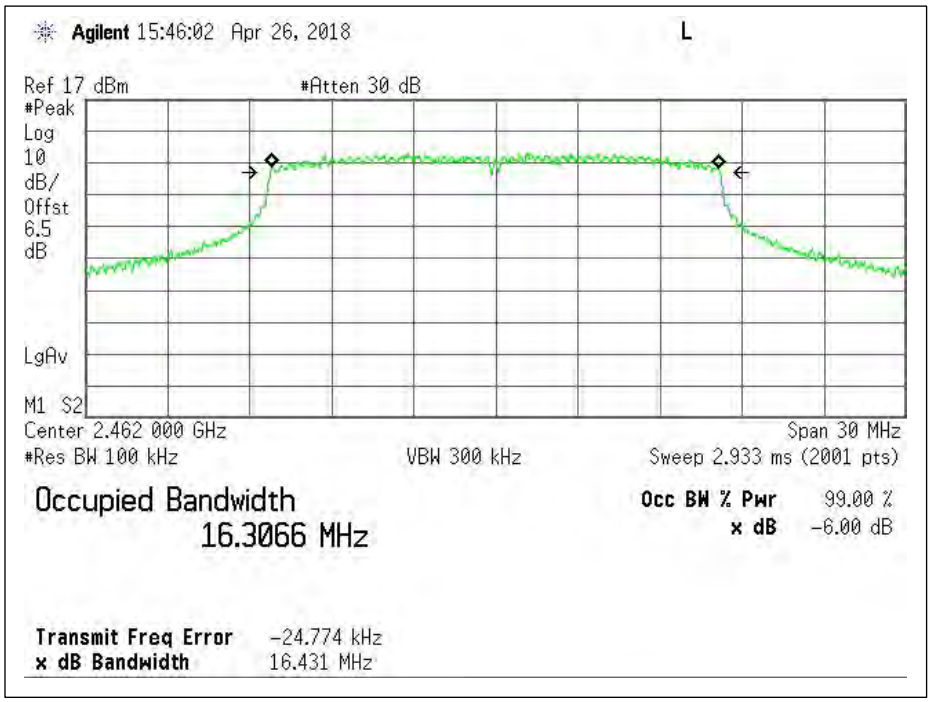
6dB Bandwidth Plots – 802.11n Mode



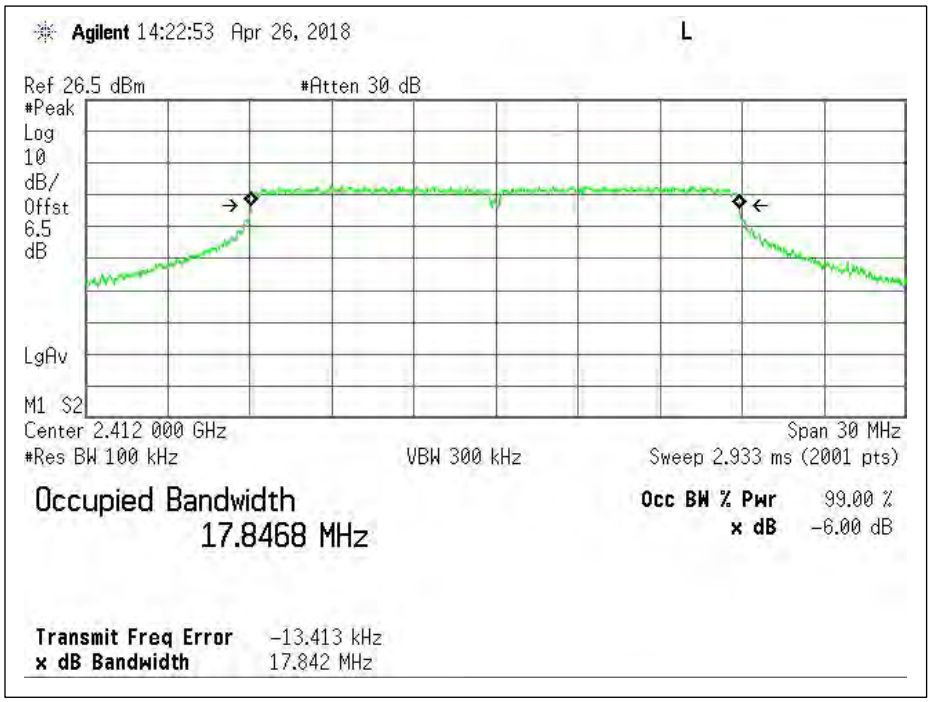
Antenna 1: Low Channel - Plot



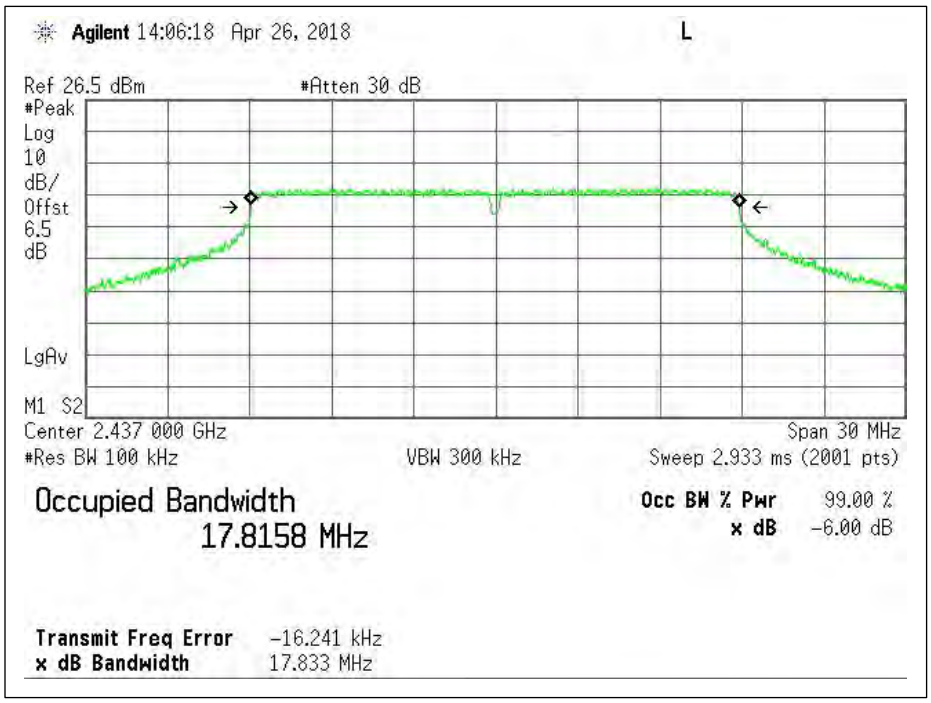
Antenna 1: Mid Channel - Plot



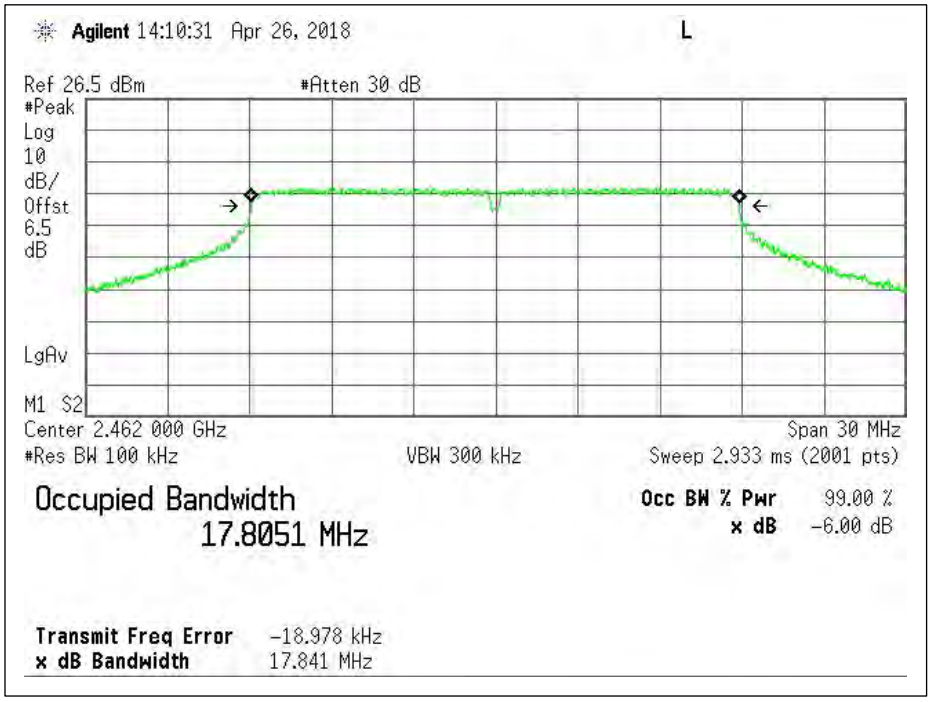
Antenna 1: High Channel – Plot



Antenna 2: Low Channel - Plot



Antenna 2: Mid Channel - Plot



Antenna 2: High Channel - Plot

99% Occupied Bandwidth

Test Description

The emission bandwidth (x dB) is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated x dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth.
When the occupied bandwidth limit is not stated in the applicable RSS or reference measurement method, the transmitted signal bandwidth shall be reported as the 99% emission bandwidth, as calculated or measured.

Test Criteria

Reference	Limit
RSS-GEN, Section 6.6	N/A

Test Information

Tester	Test Location	Date	Temperature (ºC)	Humidity (%RH)	Pressure (mbar)	Results (P/F)
AG	RF Lab	04/26/18	24.4	20.5	1014	P

Equipment List

Instrument Type	ID #	Serial #	Manufacturer	Model	Cal Date	Cal Due Date
Spectrum Analyzer	11549	MY46187211	Agilent	E4440A	06/06/17	06/06/19
Attenuator	-	1624	Pasternack	PE7087-6	NA	NA
Environmental Meter	11533	A070144	Extech Instruments	SD700	08/21/17	08/21/20

Test Results

Mode	Channel	Frequency (GHz)	99% Bandwidth (in MHz)	
			Antenna 1	Antenna 2
802.11b	Low	2.412	13.5532	14.0727
	Mid	2.437	13.5374	13.9679
	High	2.462	13.5314	14.0484
802.11g	Low	2.412	16.5536	16.8011
	Mid	2.437	16.5880	16.7526
	High	2.462	16.5017	16.7638
802.11n	Low	2.412	17.7183	17.8741
	Mid	2.437	17.5354	17.9886
	High	2.462	17.4601	17.9984

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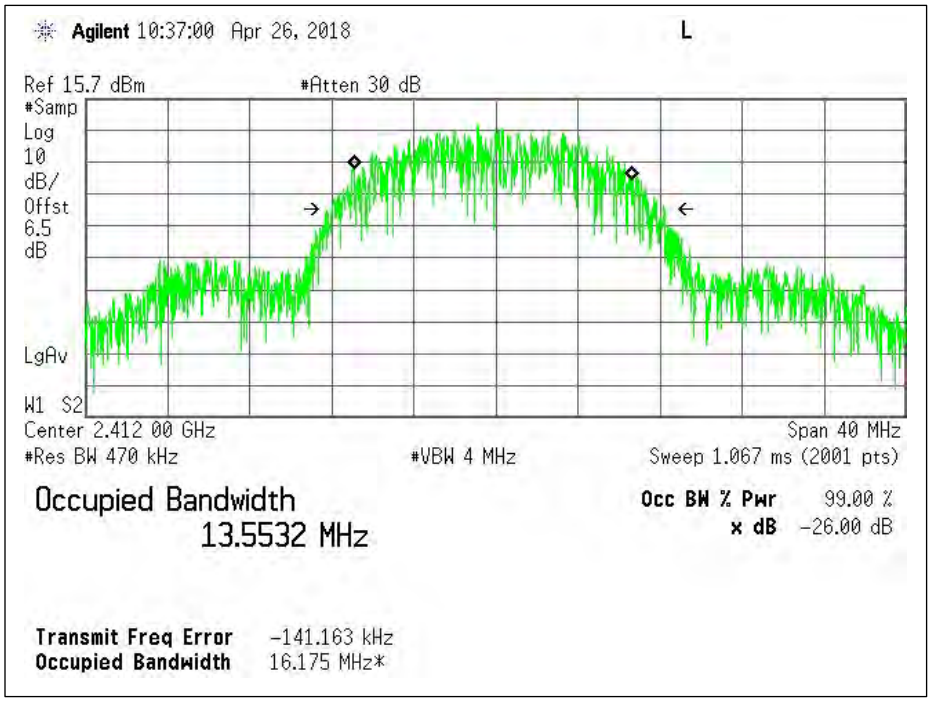
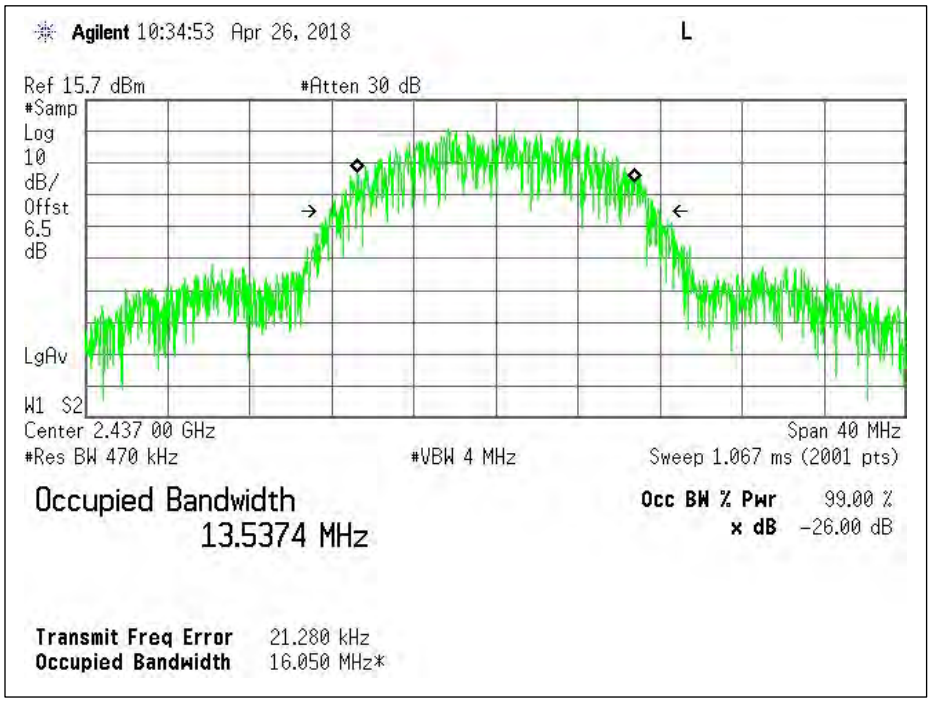
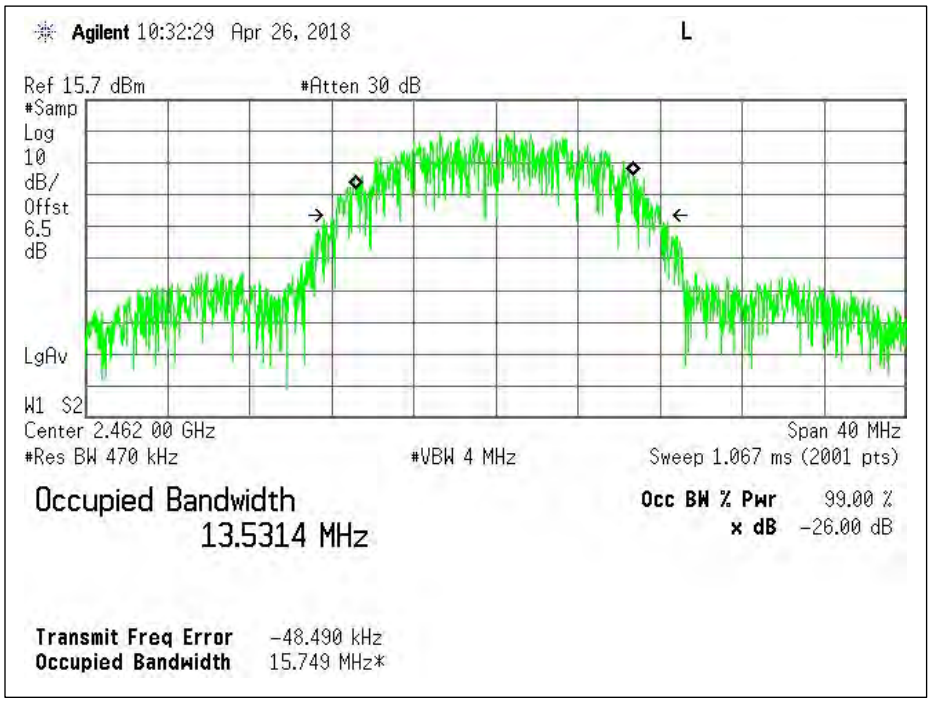
99% Occupied Bandwidth – 802.11b Mode



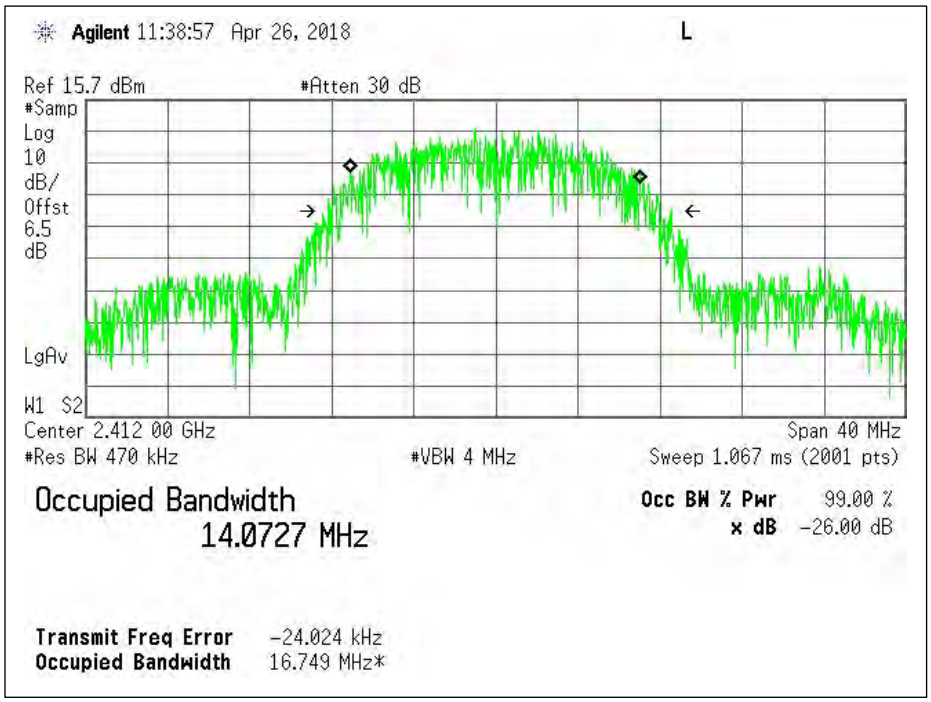
Antenna 1: Low Channel - Plot



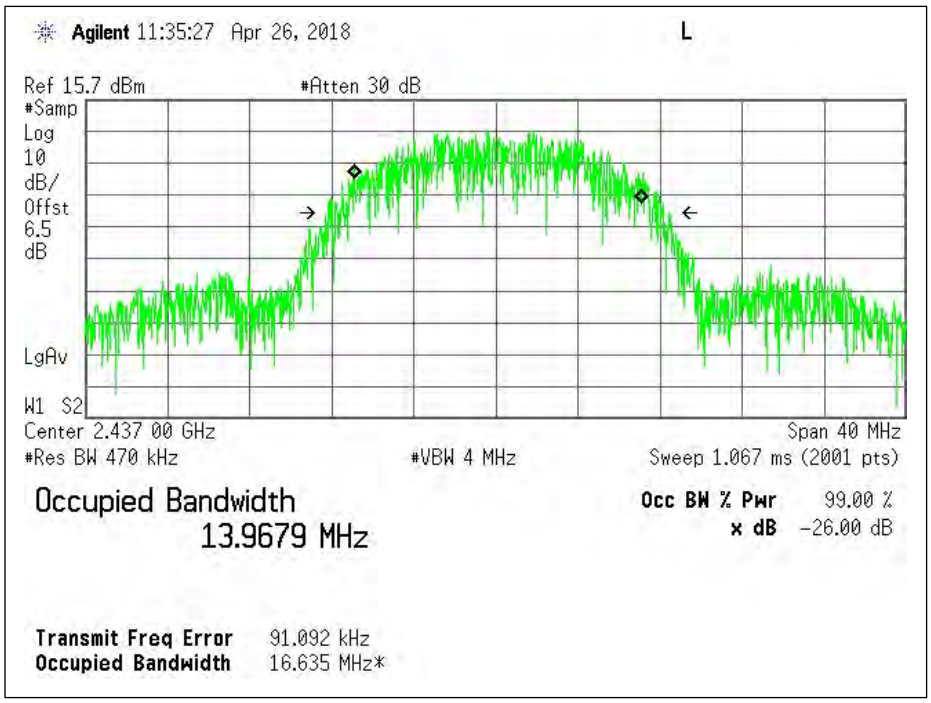
Antenna 1: Mid Channel - Plot



Antenna 1: High Channel – Plot



Antenna 2: Low Channel - Plot



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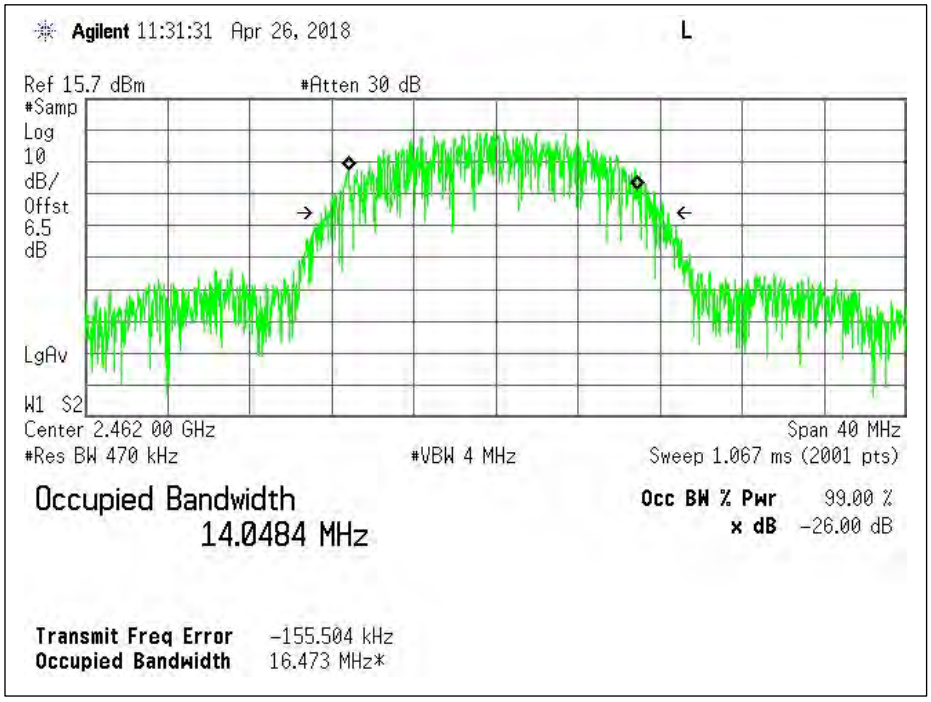
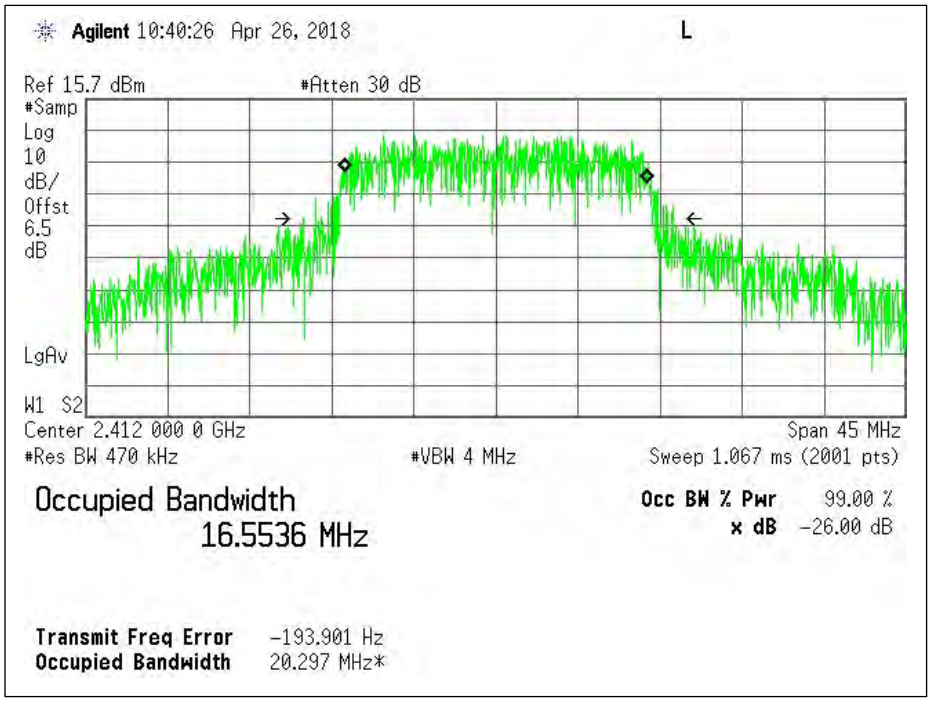
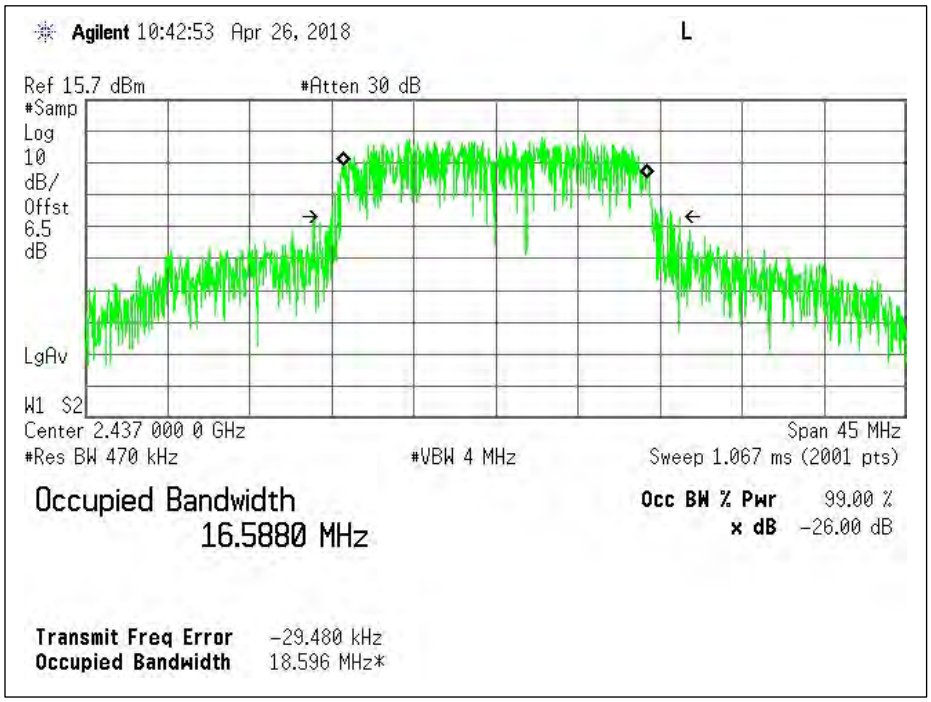


Antenna 2: High Channel – Plot

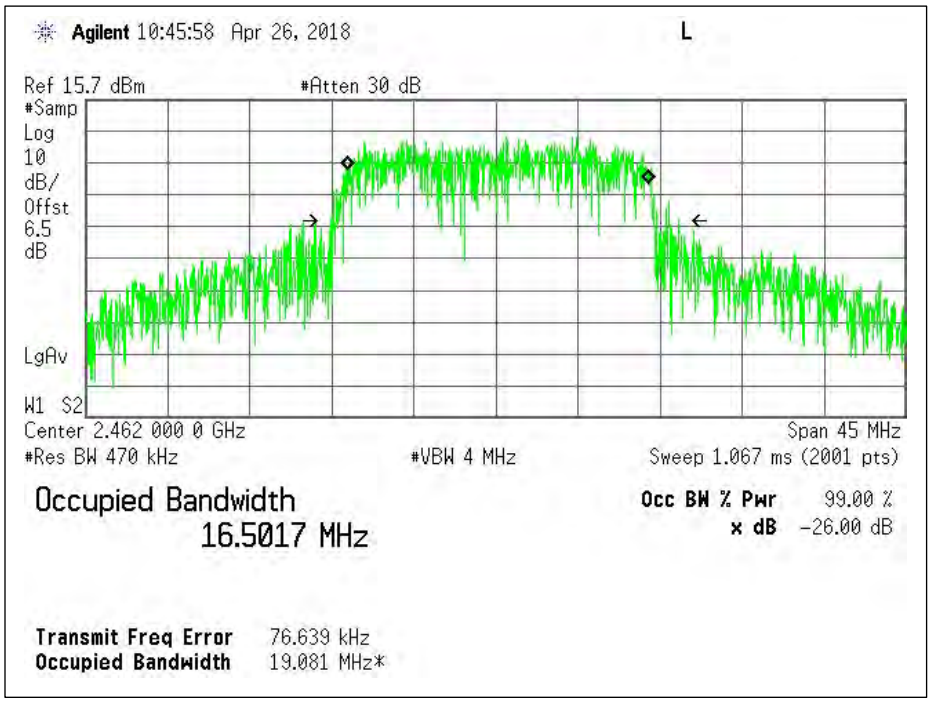
99% Occupied Bandwidth – 802.11g Mode



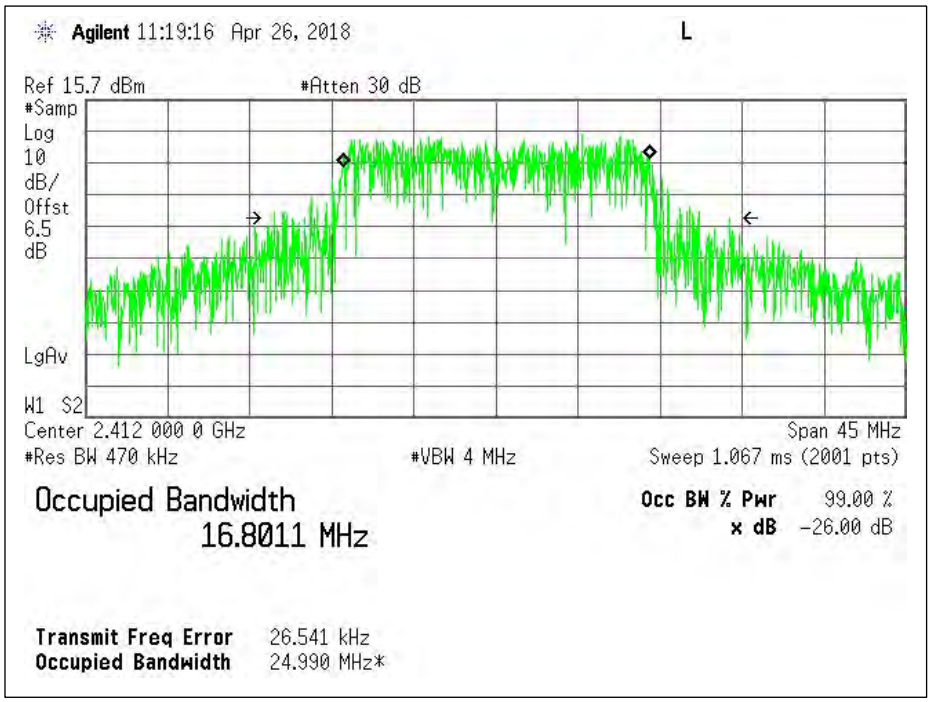
Antenna 1: Low Channel - Plot



Antenna 1: Mid Channel - Plot



Antenna 1: High Channel – Plot



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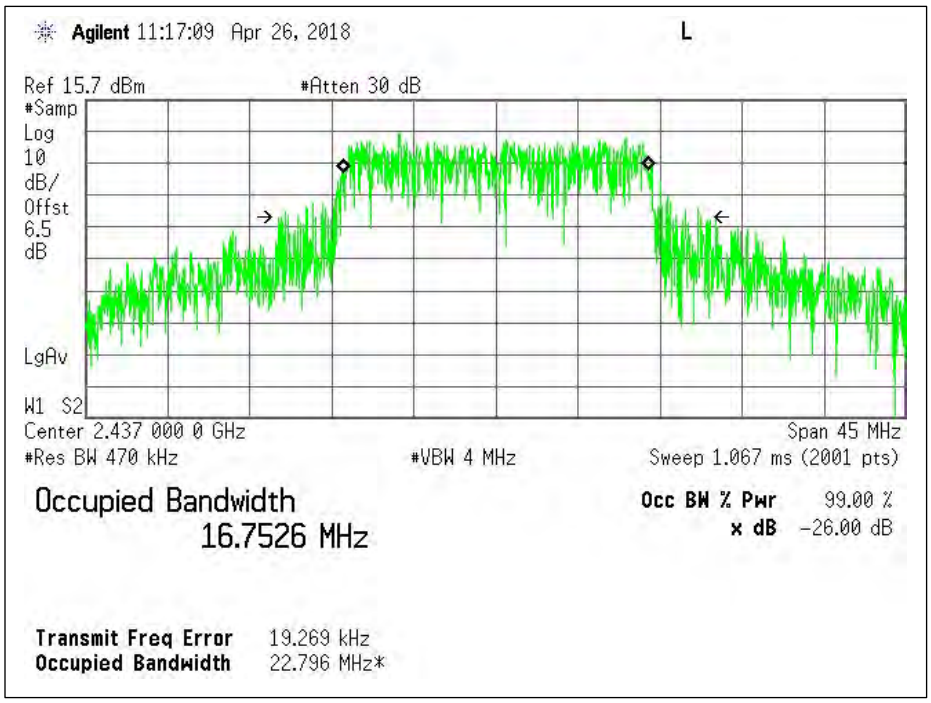
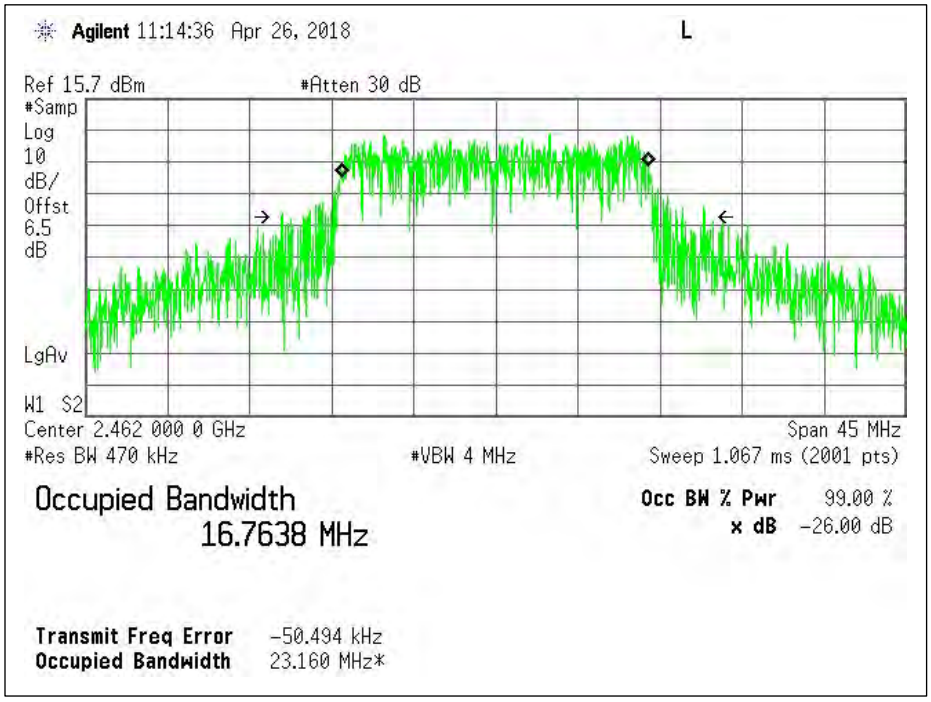
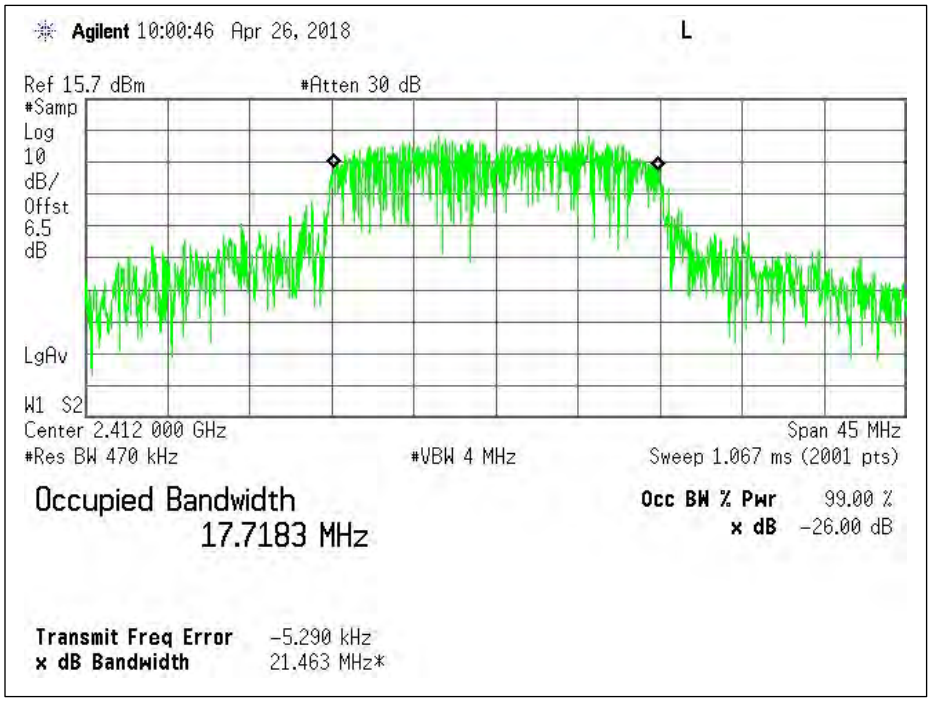


Antenna 2: Mid Channel - Plot

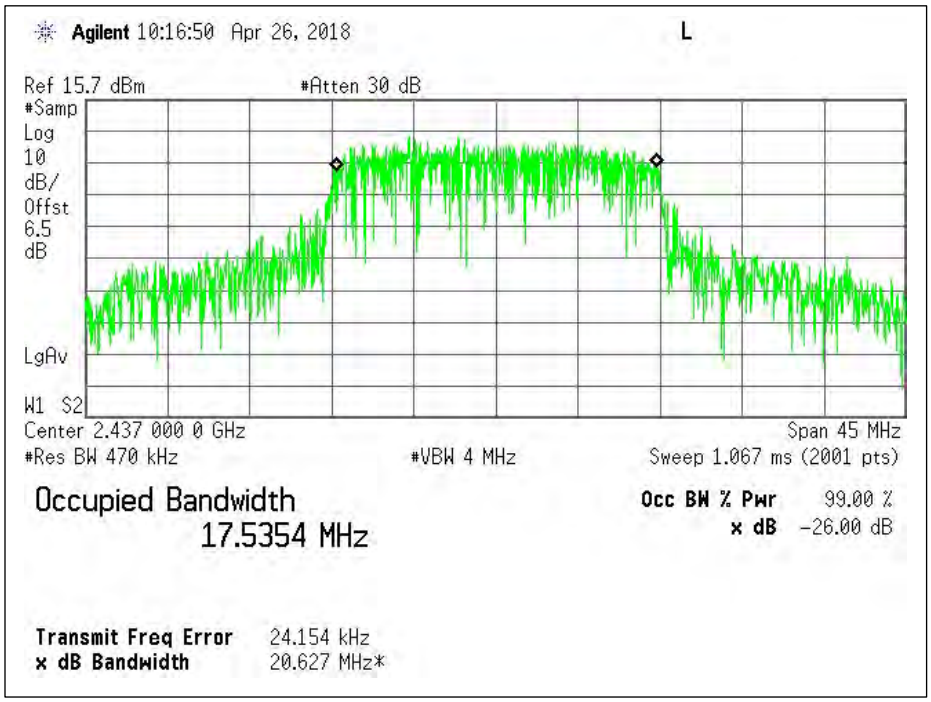


Antenna 2: High Channel – Plot

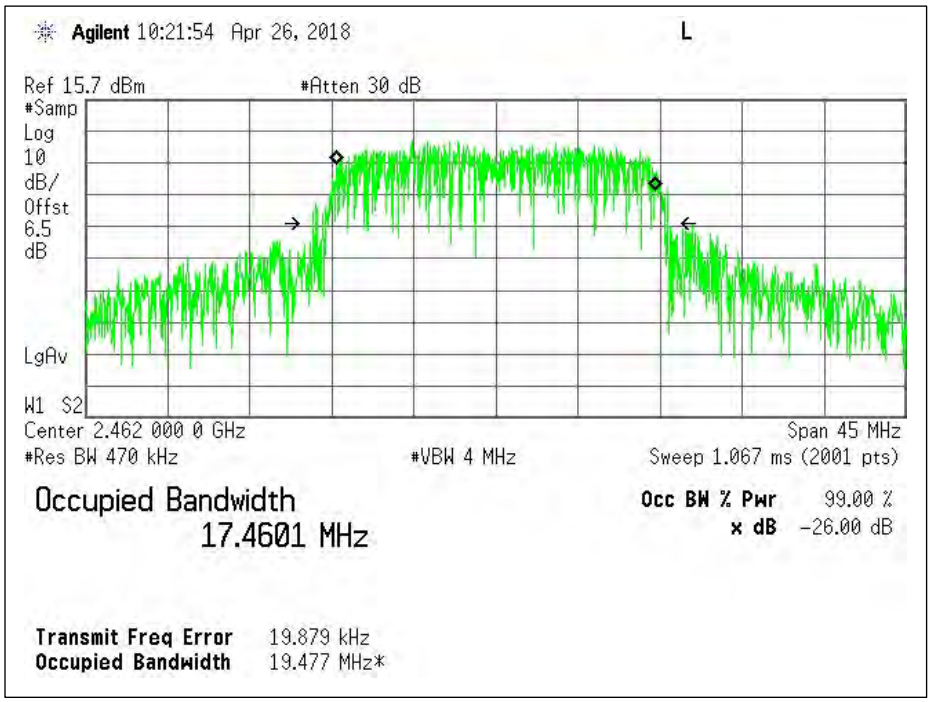
99% Occupied Bandwidth – 802.11n Mode



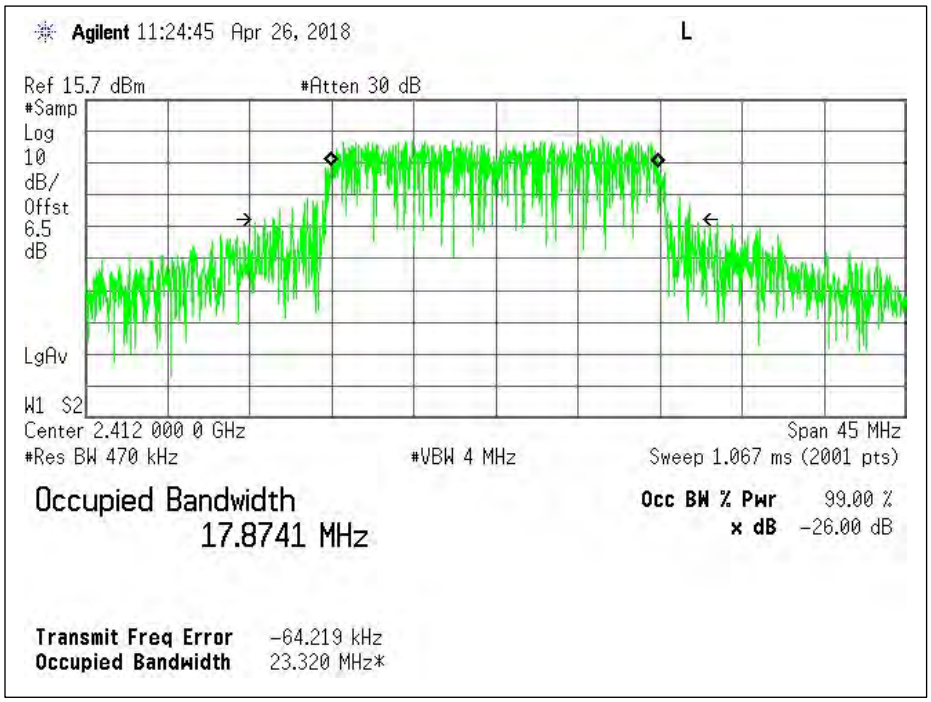
Antenna 1: Low Channel - Plot



Antenna 1: Mid Channel - Plot



Antenna 1: High Channel – Plot



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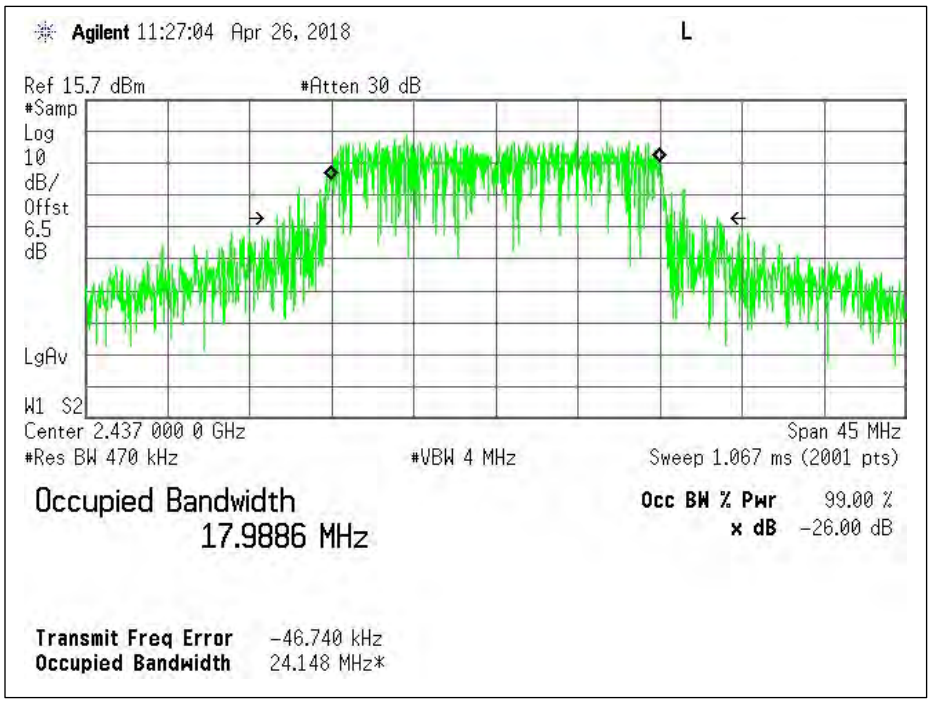
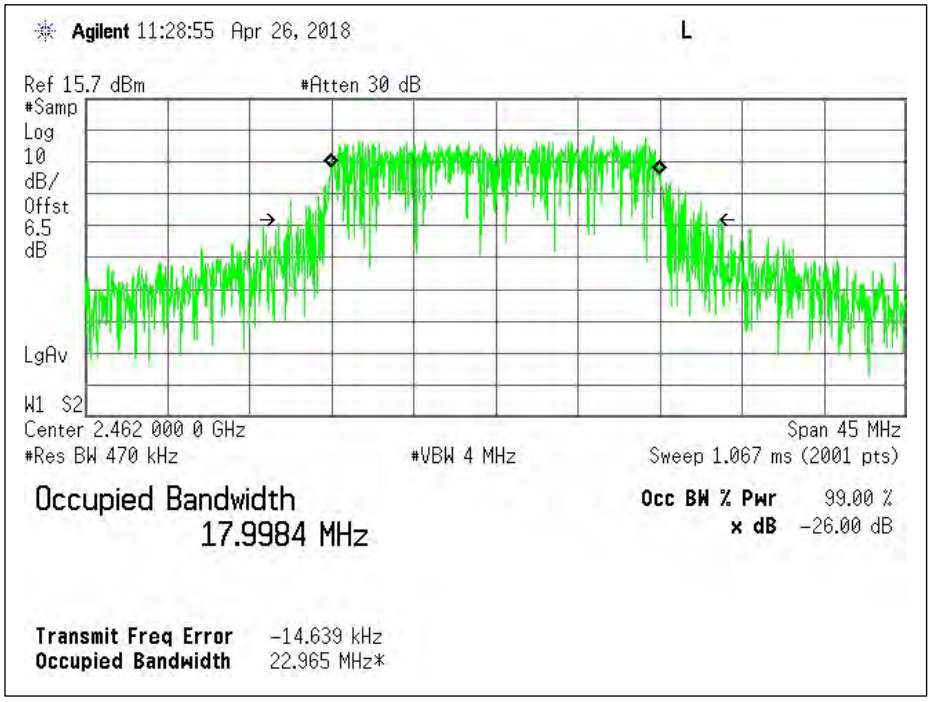


Antenna 2: Mid Channel - Plot



Antenna 2: High Channel - Plot

Maximum Conducted Output Power

Test Description

For systems using digital modulation in the 902-928MHz, 2400-2483,5MHz and 5725-5850MHz bands, the conducted output power limit (specified below) is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Maximum peak conducted output power was the method employed to determine fundamental emission output power. Method PKPM1 per C63.10 and KDB 558074 was utilized for this test program. Average power is also report as informative data.

The EUT operates as MIMO only in n-mode, thus in this mode power is reported accordingly.

Test Criteria

Reference	Limit
CFR 47 Subpart C 15.247 (b)(3) RSS-247 Section 5.4 (d)	1W (30dBm)

Test Information

Tester	Test Location	Date	Temperature (ºC)	Humidity (%RH)	Pressure (mbar)	Results (P/F)
CL	RF Lab	06/19/18	20.7	54.3	1005	P

Equipment List

Instrument Type	ID #	Serial #	Manufacturer	Model	Cal Date	Cal Due Date
Power Sensor	-	104732	Rohde & Schwarz	NRP-Z81	06/06/18	06/06/19
Attenuator	-	1624	Pasternack	PE7087-6	NA	NA
Environmental Meter	11533	A070144	Extech Instruments	SD700	08/21/17	08/21/20

Test Results

Peak Power

Mode	Channel	Frequency (GHz)	Peak Power (in dBm)		
			Antenna 1	Antenna 2	Total Power
802.11b	Low	2.412	18.86	19.91	-
	Mid	2.437	19.52	20.14	-
	High	2.462	19.86	20.24	-
802.11g	Low	2.412	16.91	18.96	-
	Mid	2.437	16.97	19.72	-
	High	2.462	18.03	19.59	-
802.11n	Low	2.412	17.25	19.72	21.67
	Mid	2.437	18.41	19.43	21.96
	High	2.462	18.64	19.83	22.29

Average Power

Mode	Channel	Frequency (GHz)	Average Power (in dBm)	
			Antenna 1	Antenna 2
802.11b	Low	2.412	16.07	17.73
	Mid	2.437	16.77	17.99
	High	2.462	17.25	18.12
802.11g	Low	2.412	9.59	11.82
	Mid	2.437	10.09	12.15
	High	2.462	10.53	12.19
802.11n	Low	2.412	9.28	11.75
	Mid	2.437	9.98	11.89
	High	2.462	10.56	12.08

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Maximum Power Spectral Density

Test Description

The DTS rules specify a conducted PSD limit within the *DTS bandwidth* during any time interval of continuous transmission. Such specifications require that the same method as used to determine the conducted output power shall also be used to determine the power spectral density. Therefore, if maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used.

Since maximum peak conducted output power was the method employed to determine fundamental emission output power, then the peak power spectral density method was utilized.

Method PKPSD per C63.10 and KDB 558074 was utilized for this test program.

The EUT operates as MIMO only in n-mode, thus in this mode power is reported accordingly.

Test Criteria

Reference	Limit
CFR 47 Subpart C 15.247 (e) RSS-247 Section 5.2 (b)	< 8 dBm in any 3 kHz Band

Test Information

Tester	Test Location	Date	Temperature (ºC)	Humidity (%RH)	Pressure (mbar)	Results (P/F)
CL	RF Lab	06/20/2018	20.7	54.3	1005	P

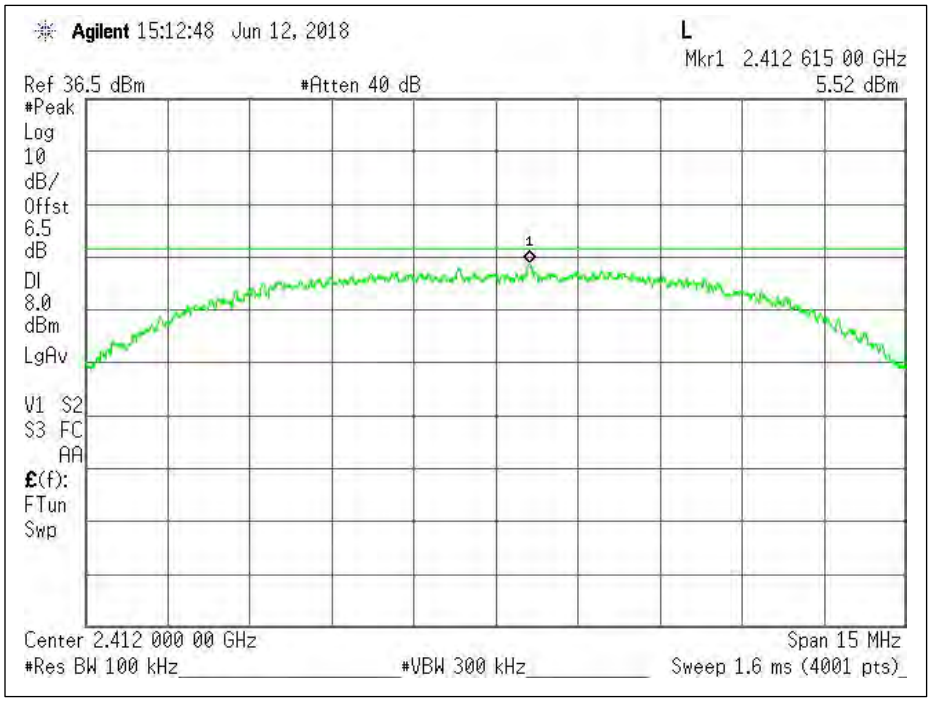
Equipment List

Instrument Type	ID #	Serial #	Manufacturer	Model	Cal Date	Cal Due Date
Spectrum Analyzer	11549	MY46187211	Agilent	E4440A	06/06/17	06/06/19
Attenuator	-	1624	Pasternack	PE7087-6	NA	NA
Environmental Meter	11533	A070144	Extech Instruments	SD700	08/21/17	08/21/20

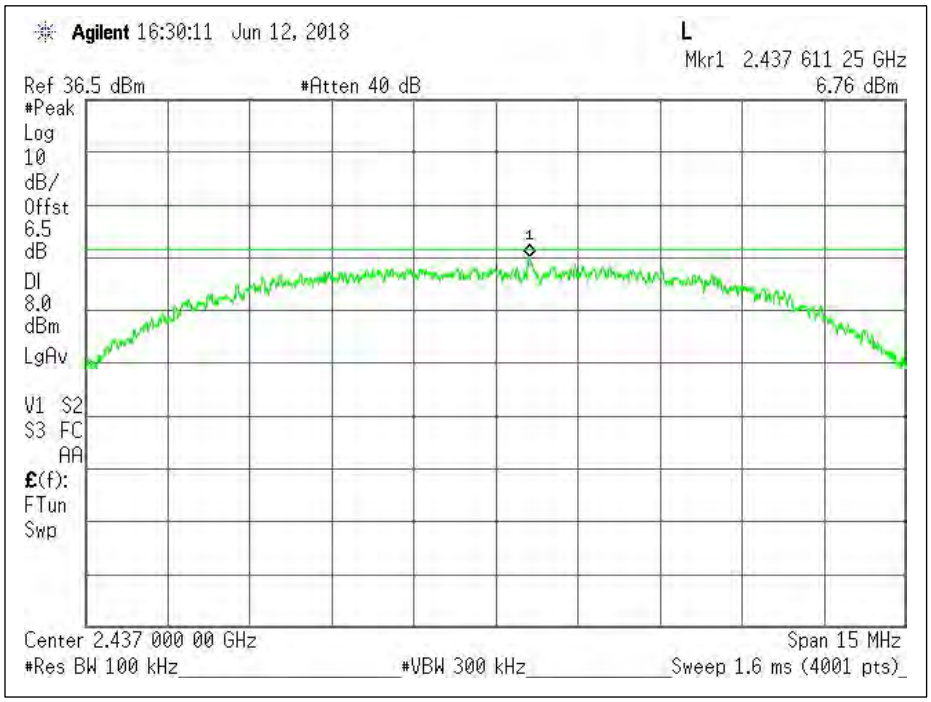
Test Results

Mode	Channel	Frequency (GHz)	Peak Power Spectral Density (in dBm)		
			Antenna 1	Antenna 2	Total Power
802.11b	**Low**	2.412	5.52	6.51	-
	Mid	2.437	6.76	6.7	-
	High	2.462	6	6.83	-
802.11g	**Low**	2.412	1.92	-2.03	-
	Mid	2.437	-1.56	-2.12	-
	High	2.462	2.3	-1.98	-
802.11n	**Low**	2.412	2.54	2.09	5.33
	Mid	2.437	0.7	2.48	4.69
	High	2.462	2.62	1.3	5.02

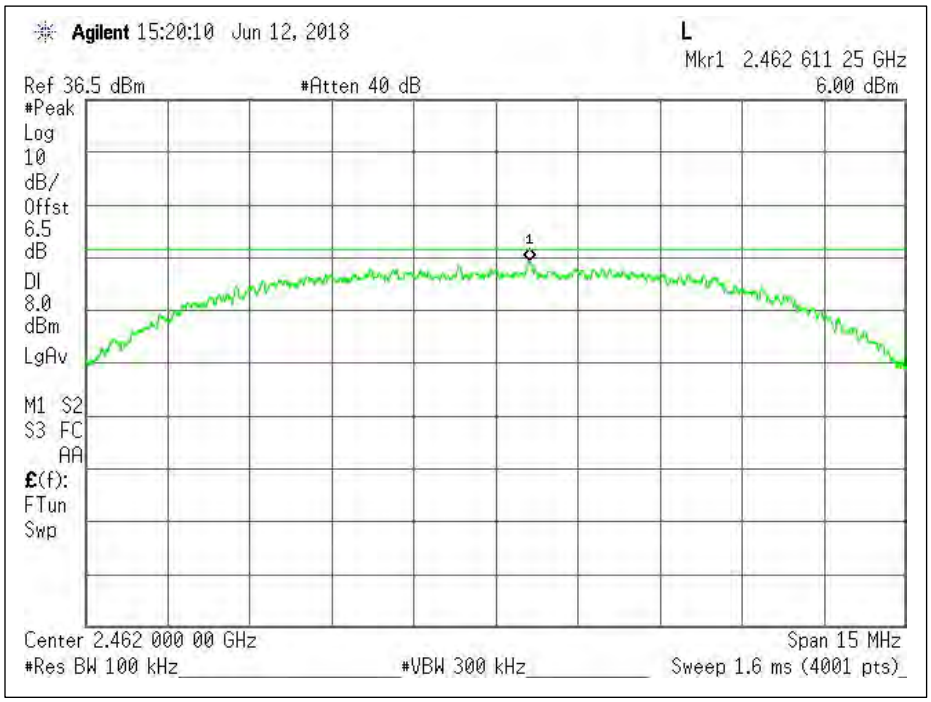
PSD – 802.11b Mode



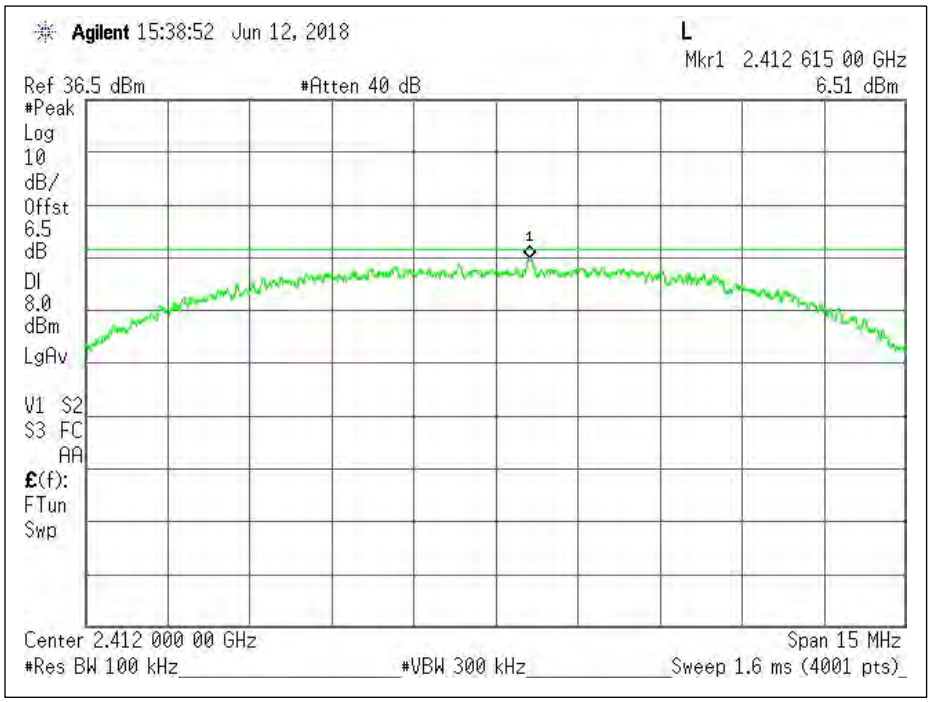
Antenna 1: Low Channel - Plot



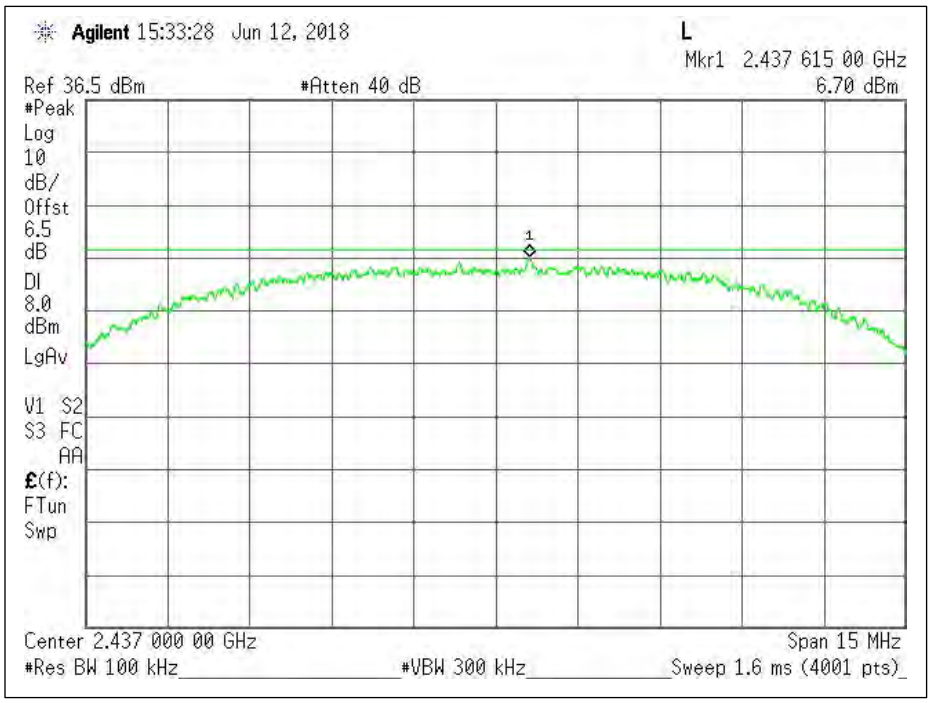
Antenna 1: Mid Channel - Plot



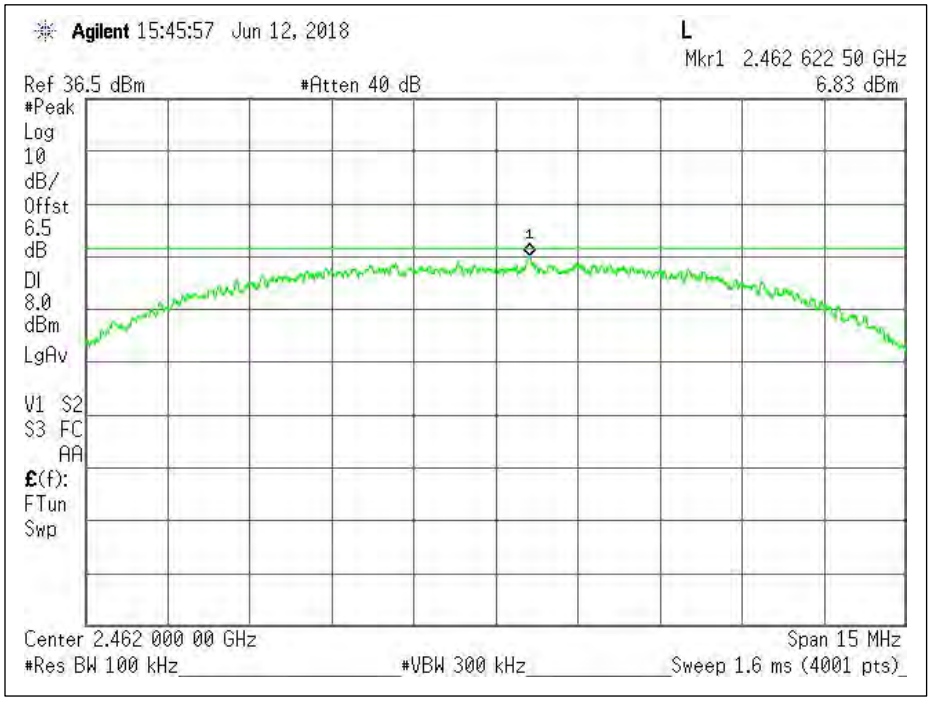
Antenna 1: High Channel – Plot



Antenna 2: Low Channel - Plot

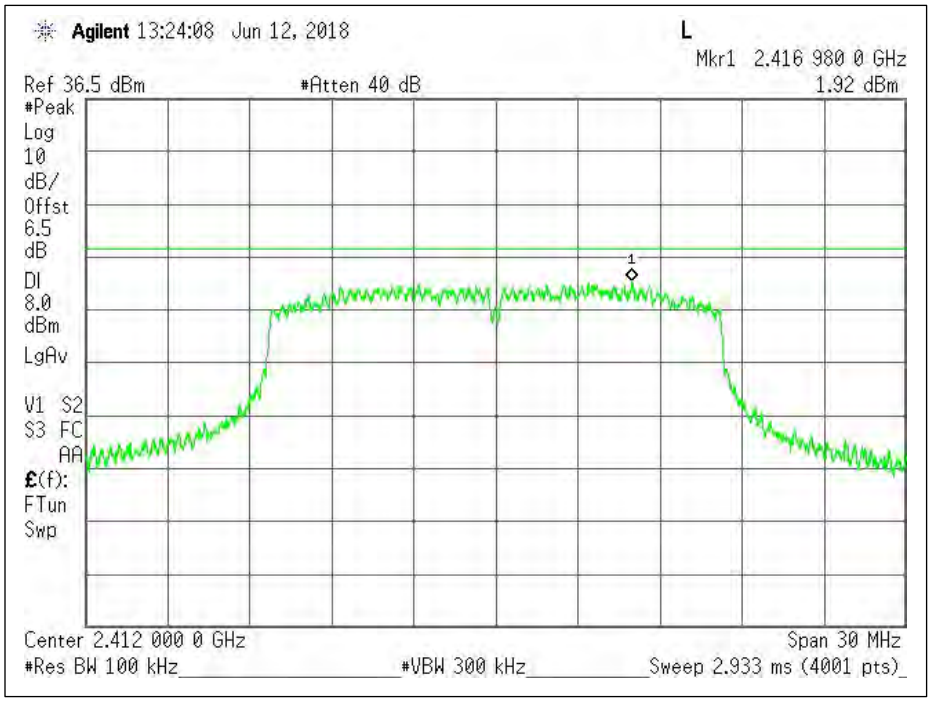


Antenna 2: Mid Channel - Plot

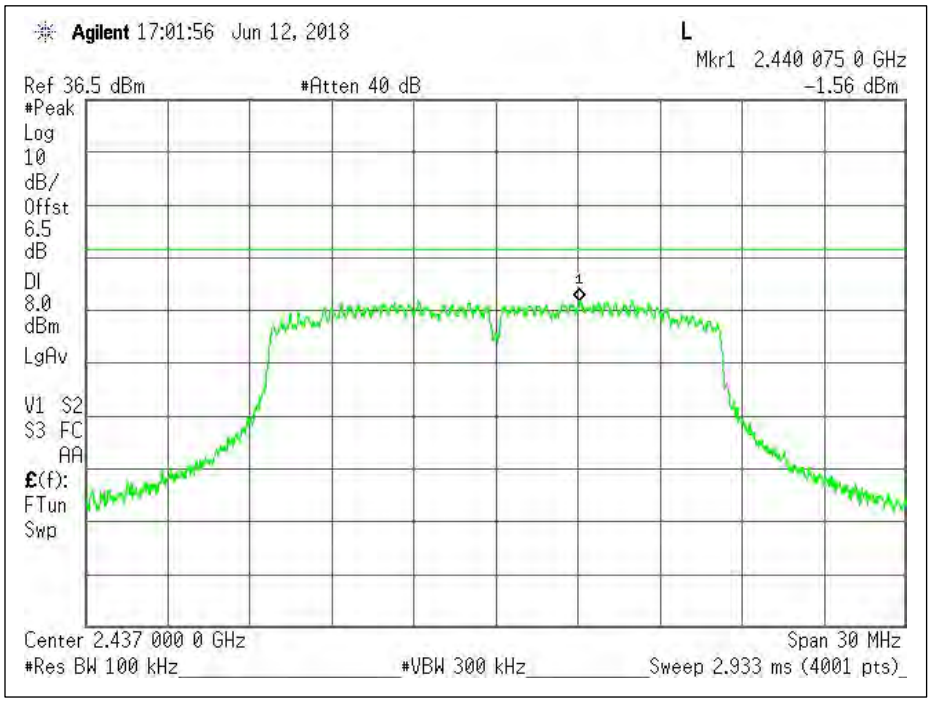


Antenna 2: High Channel – Plot

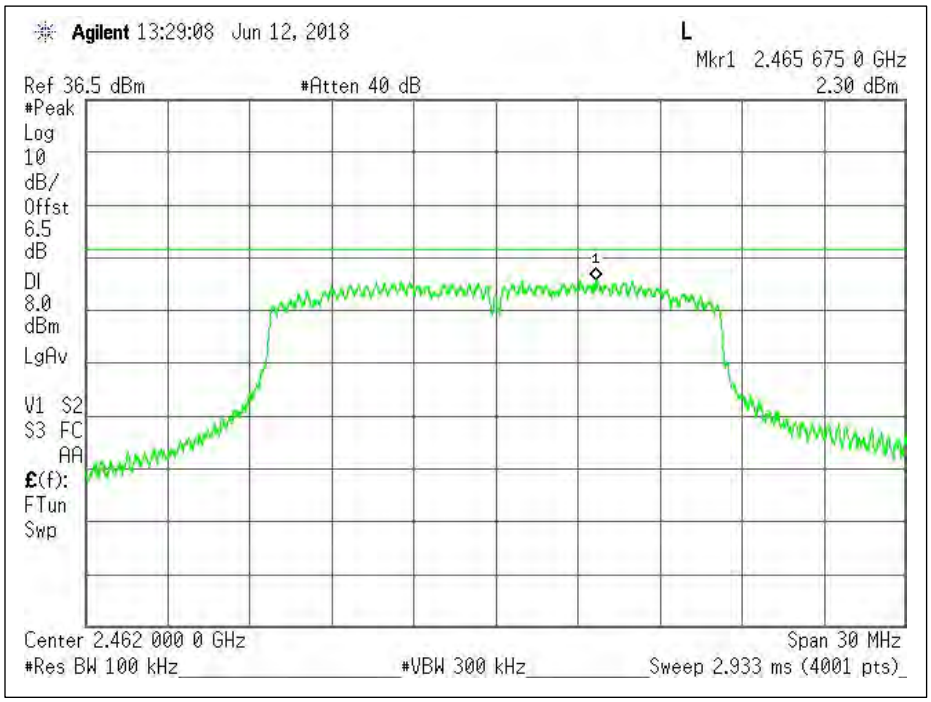
PSD – 802.11g Mode



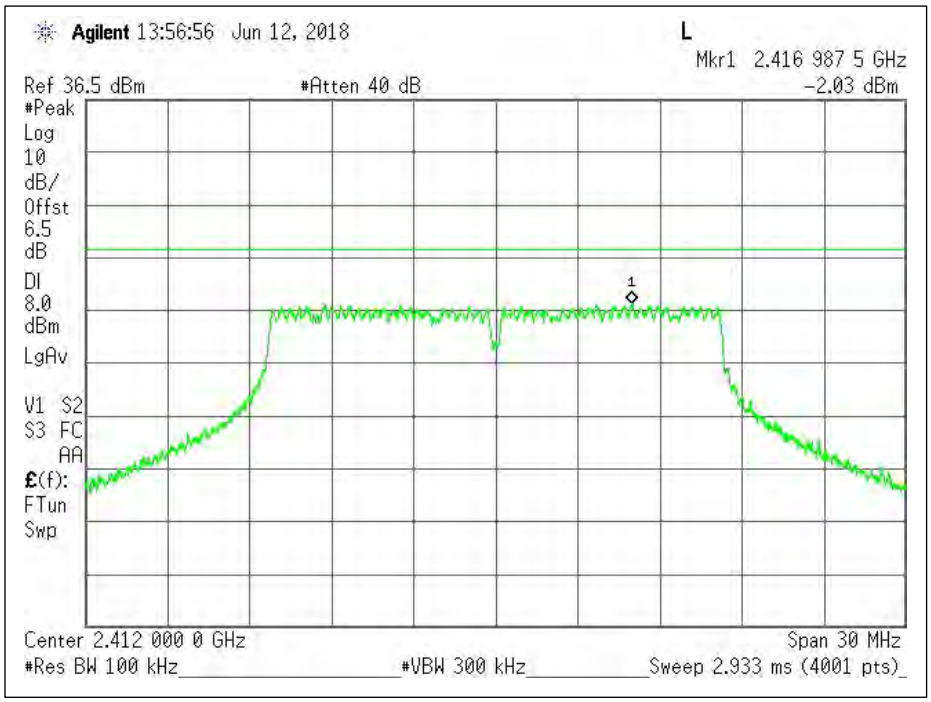
Antenna 1: Low Channel - Plot



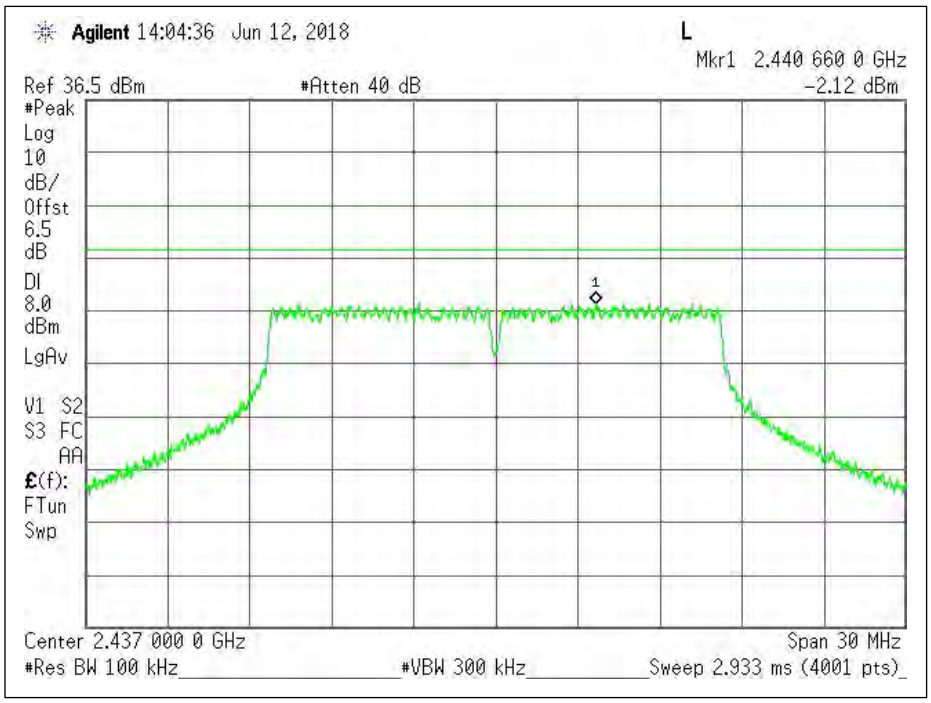
Antenna 1: Mid Channel - Plot



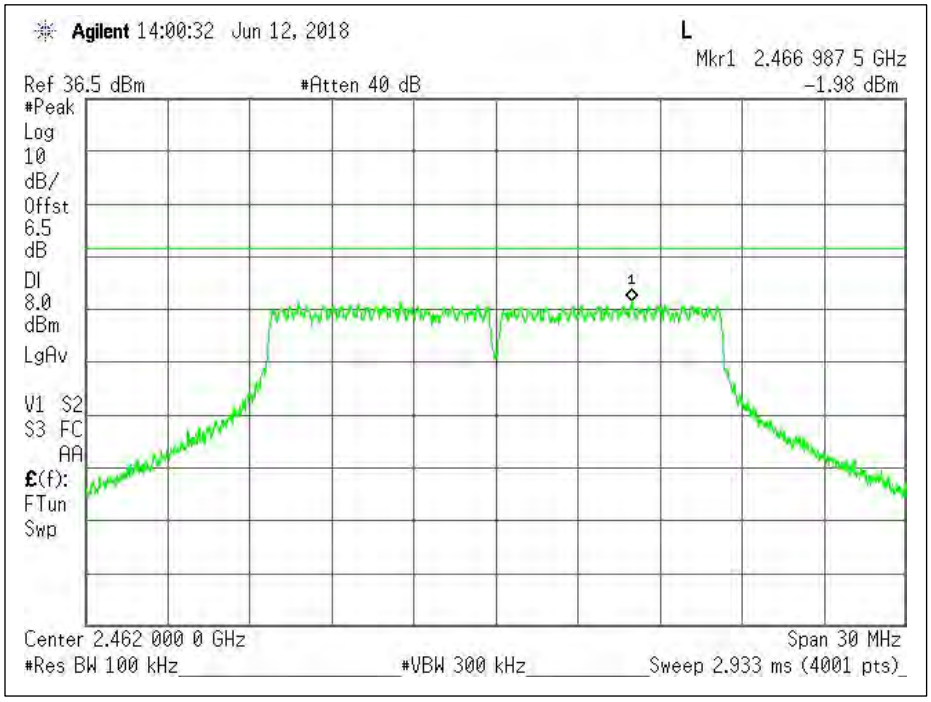
Antenna 1: High Channel – Plot



Antenna 2: Low Channel - Plot

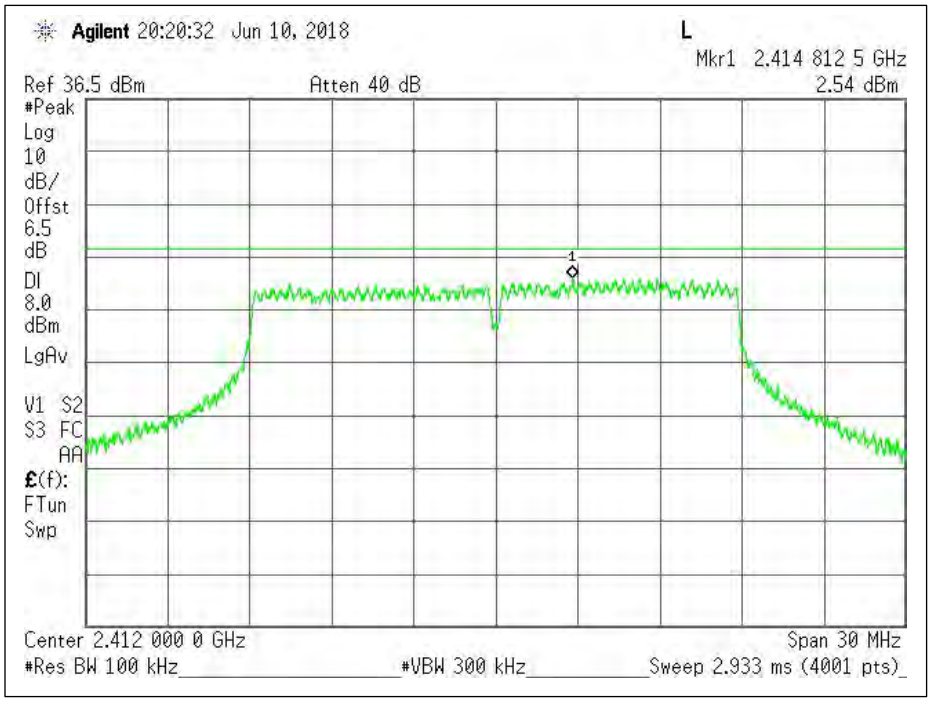


Antenna 2: Mid Channel - Plot

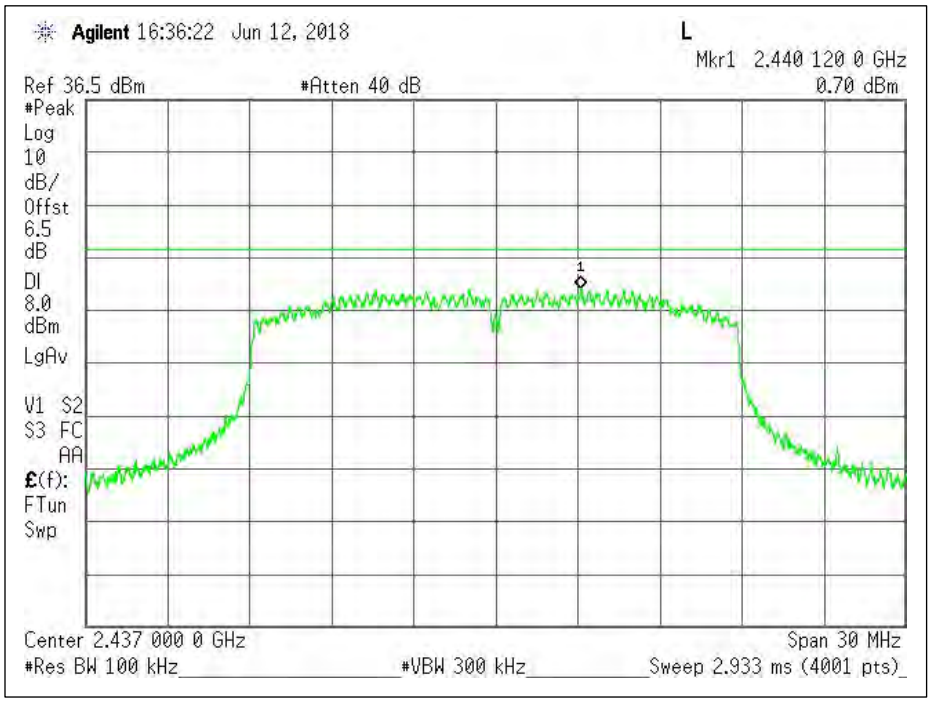


Antenna 2: High Channel - Plot

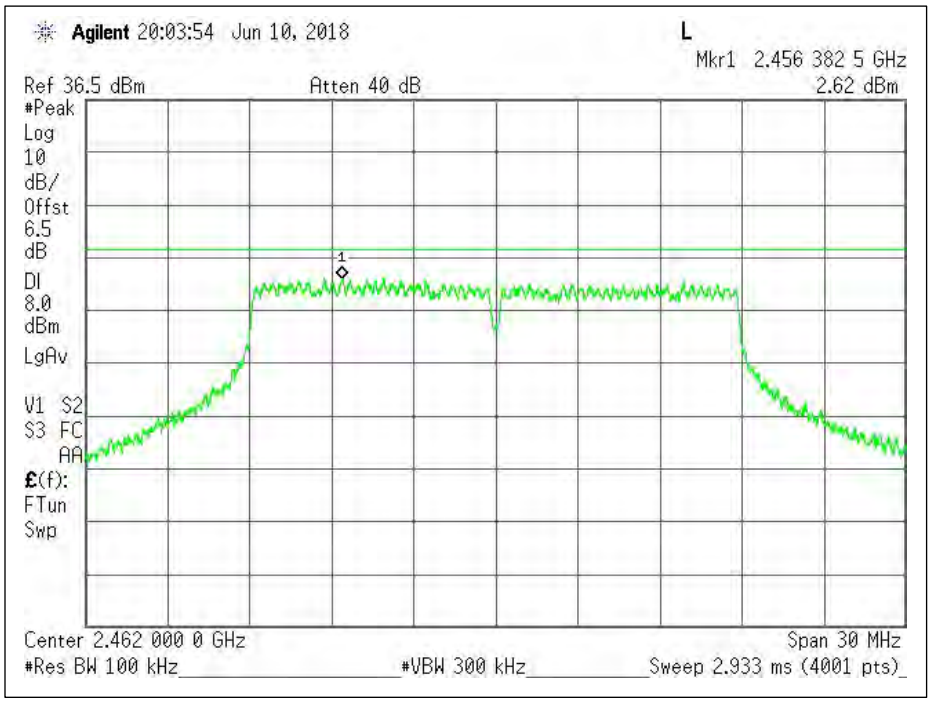
PSD – 802.11n Mode



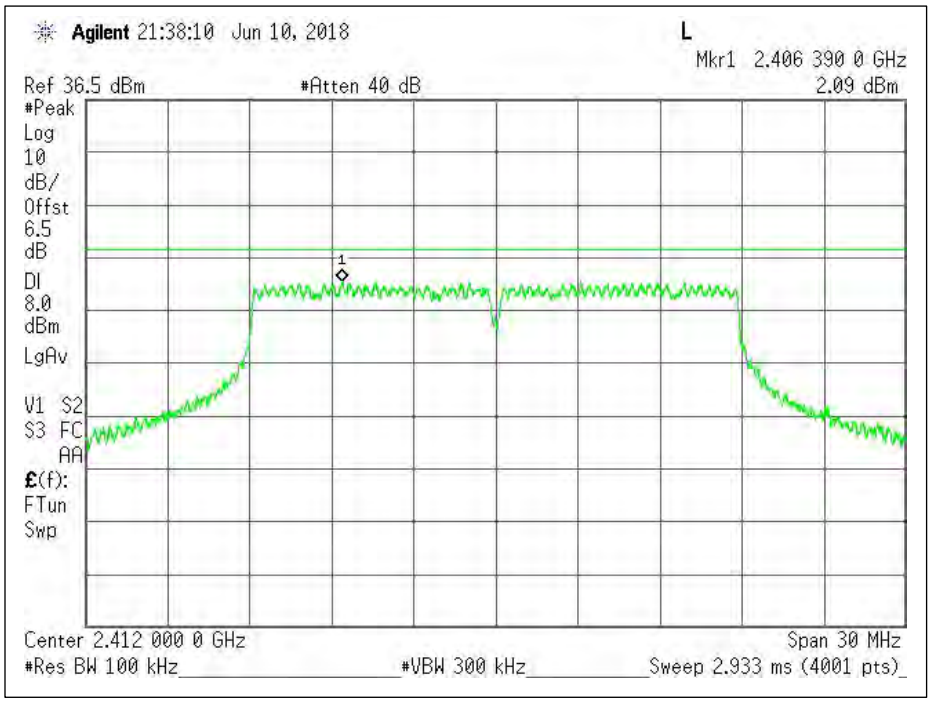
Antenna 1: Low Channel - Plot



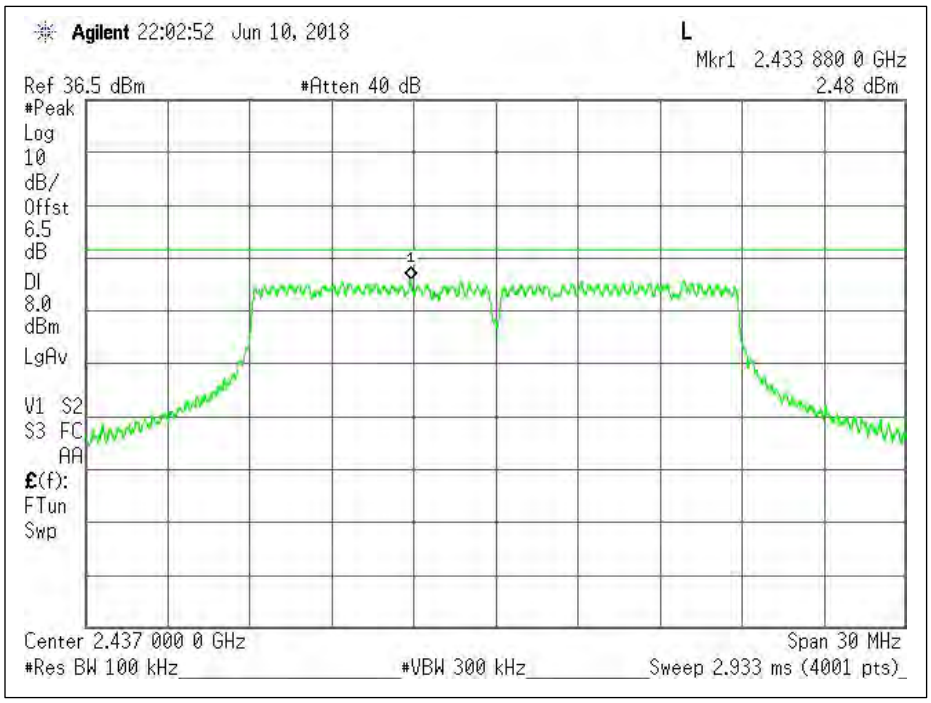
Antenna 1: Mid Channel - Plot



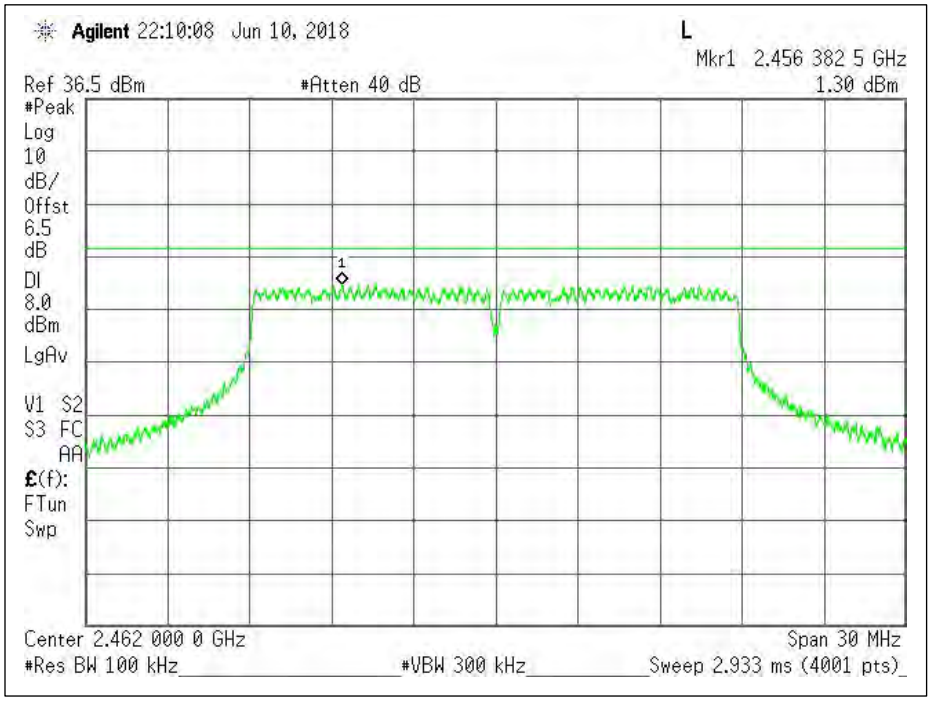
Antenna 1: High Channel – Plot



Antenna 2: Low Channel - Plot



Antenna 2: Mid Channel - Plot



Antenna 2: High Channel - Plot

Out-of-Band Emissions

Test Description

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a)

Since one of the Wi-Fi antennas is shared with the Z-Wave radio and transmission can be simultaneous, conducted spurious data is provided with both radios on.

Test Criteria

Reference	Limit
CFR 47 Subpart C 15.247 (d) RSS-247, Section 5.5	20 Below the Fundamental

Test Information

Instrument Type	ID #	Serial #	Manufacturer	Model	Cal Date	Cal Due Date
Spectrum Analyzer	11549	MY46187211	Agilent	E4440A	06/06/17	06/06/19
Attenuator	-	1624	Pasternack	PE7087-6	NA	NA
Environmental Meter	11533	A070144	Extech Instruments	SD700	08/21/17	08/21/20

Equipment List

Instrument Type	ID #	Serial #	Manufacturer	Model	Cal Date	Cal Due Date
Spectrum Analyzer	11549	MY46187211	Agilent	E4440A	06/06/17	06/06/19
Environmental Meter	11533	A070144	Extech Instruments	SD700	08/21/17	08/21/20

Test Results

Authorized Band Edge				
Mode	**Channel**	**Frequency (GHz)**	**Amplitude Delta from the -20dB down Limit (dB)**	
			Antenna 1	**Antenna 2**
802.11b	**Low**	2.412	-24.99	-23.85
	High	2.462	-33.5	-32.63
802.11g	**Low**	2.412	-11.82	-8.24
	High	2.462	-23.5	-22.4
802.11n	**Low**	2.412	-5.48	-5.09
	High	2.462	-20.25	-15.05

Conducted Spurious				
Mode	**Channel**	**Frequency (GHz)**	**Highest Spurious Emission Delta from the -20dB down Limit (dB)**	
			Antenna 1	**Antenna 2**
802.11b	**Low**	2.412	-24.91	-26.51
	Mid	2.437	-25.62	-27.11
	High	2.462	-25.2	-24.31
802.11g	**Low**	2.412	-41.1	-37.96
	Mid	2.437	-40.58	-35.1
	High	2.462	-40.8	-36.43
802.11n	**Low**	2.412	-36.84	-37.38
	Mid	2.437	-39.85	-38.38
	High	2.462	-39.59	-39.47

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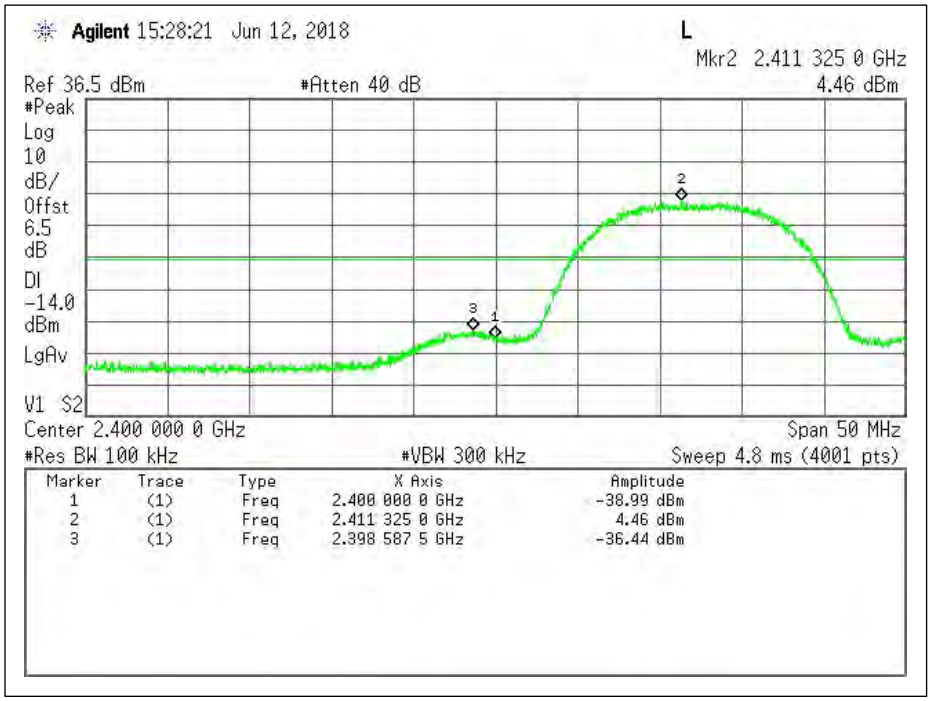
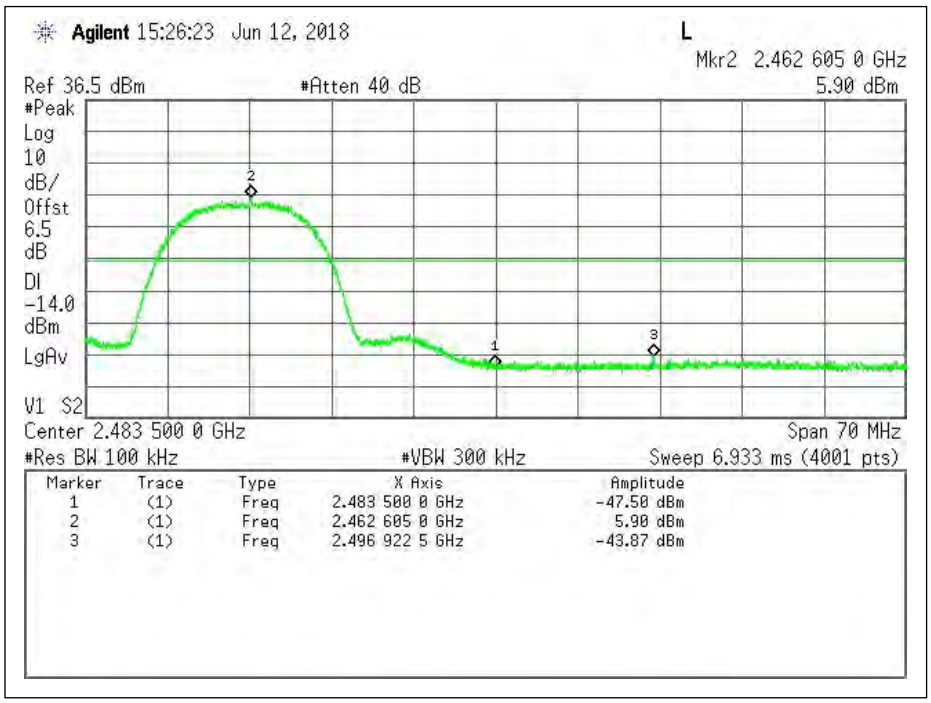
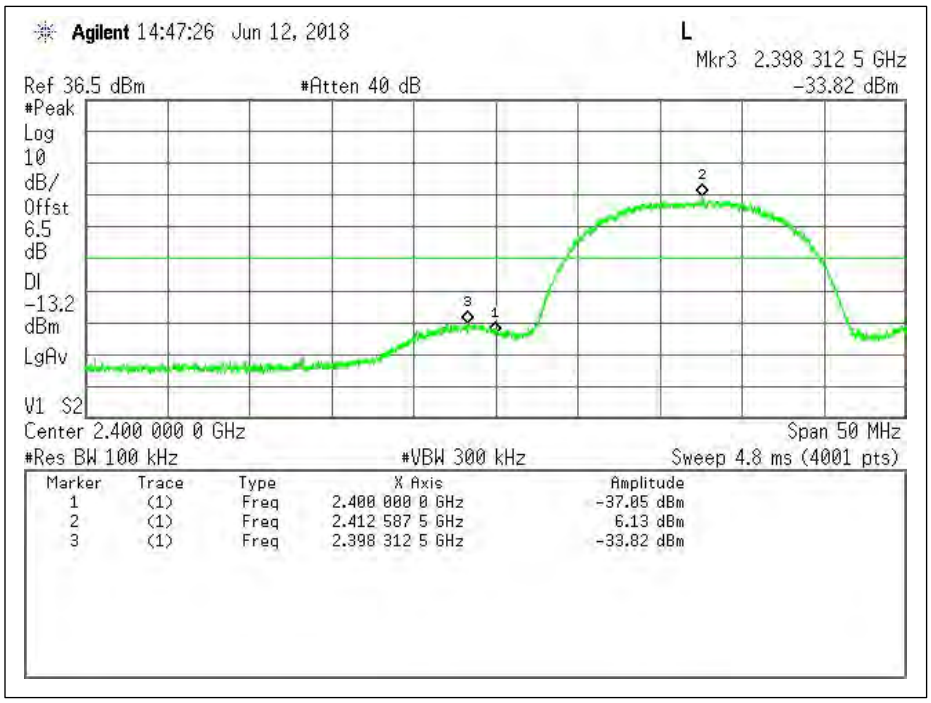
Band Edge – 802.11b Mode



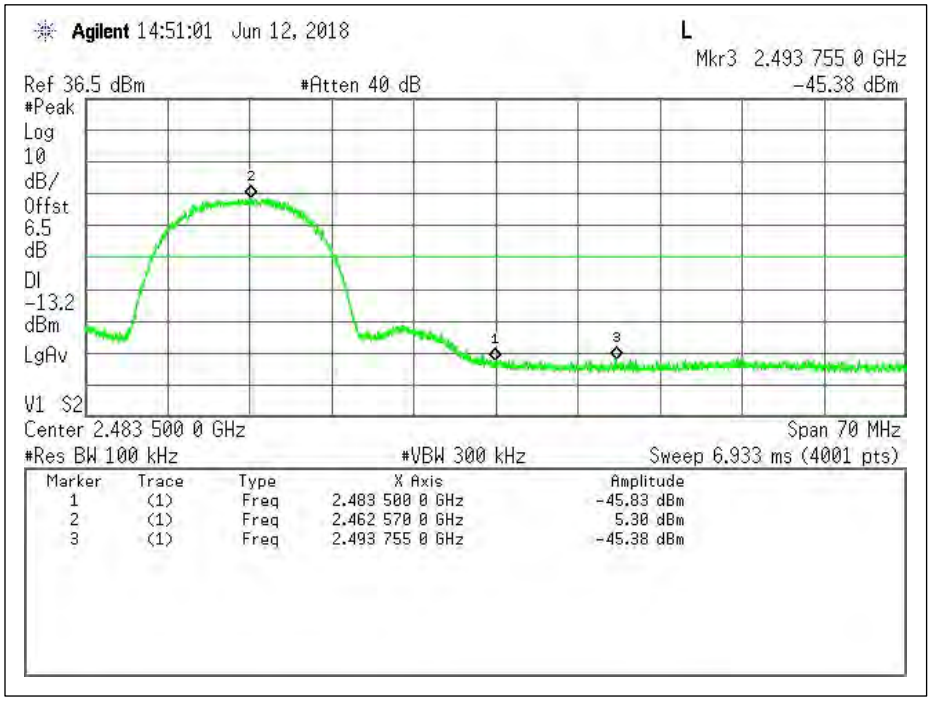
Antenna 1: Low Channel - Plot



Antenna 1: High Channel – Plot

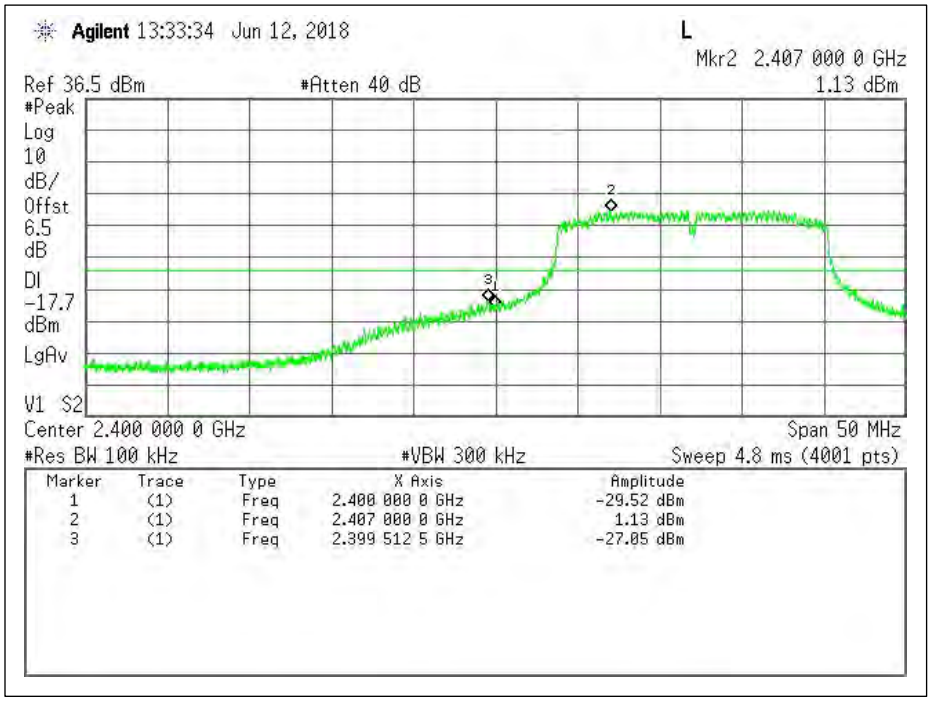


Antenna 2: Low Channel - Plot

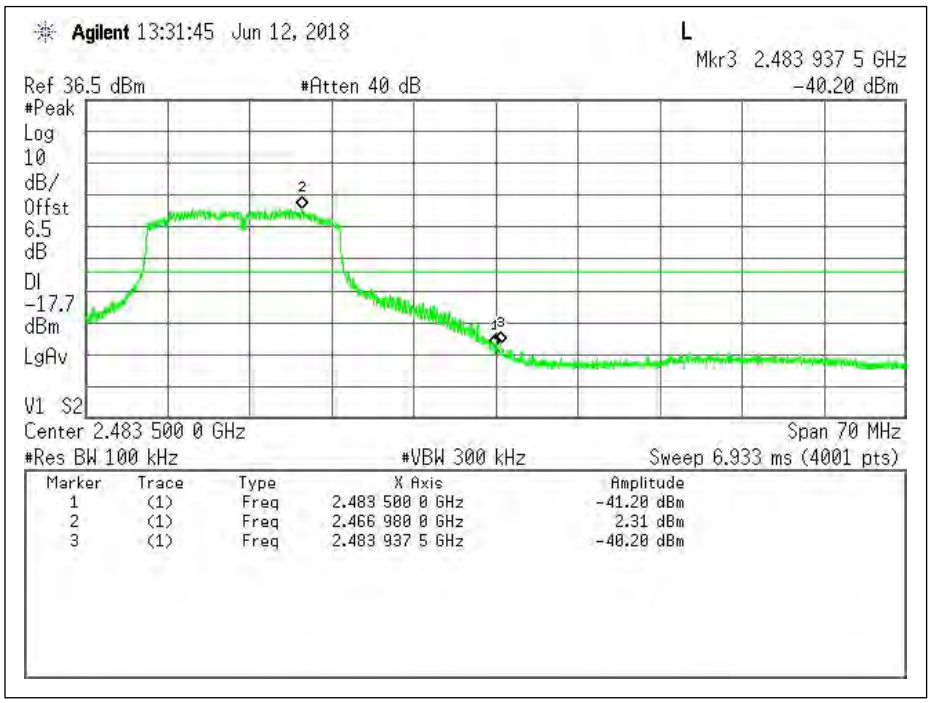


Antenna 2: High Channel – Plot

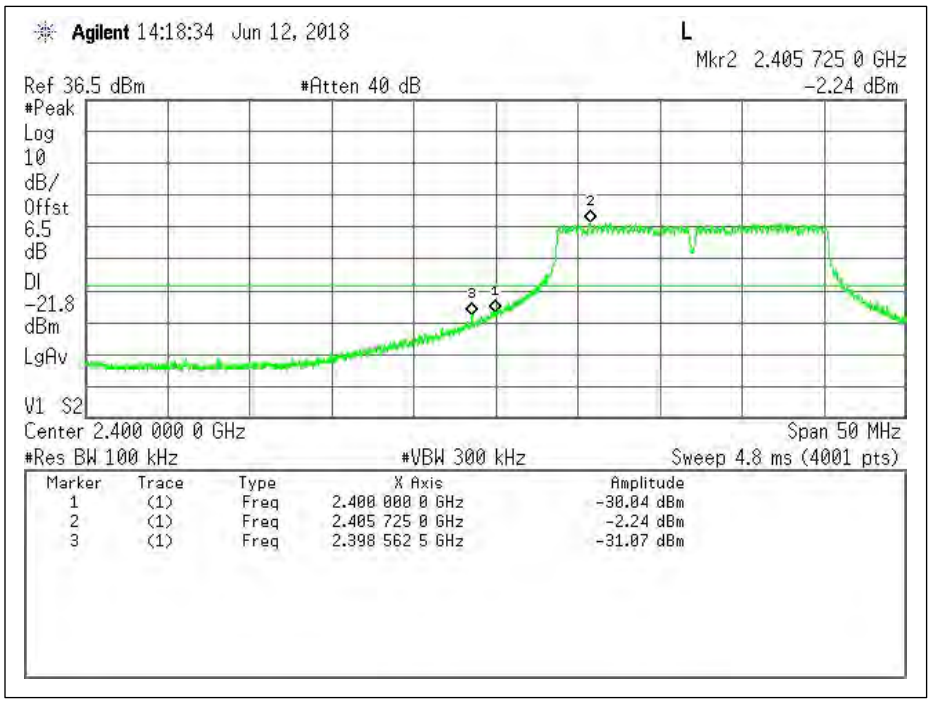
Band Edge – 802.11g Mode



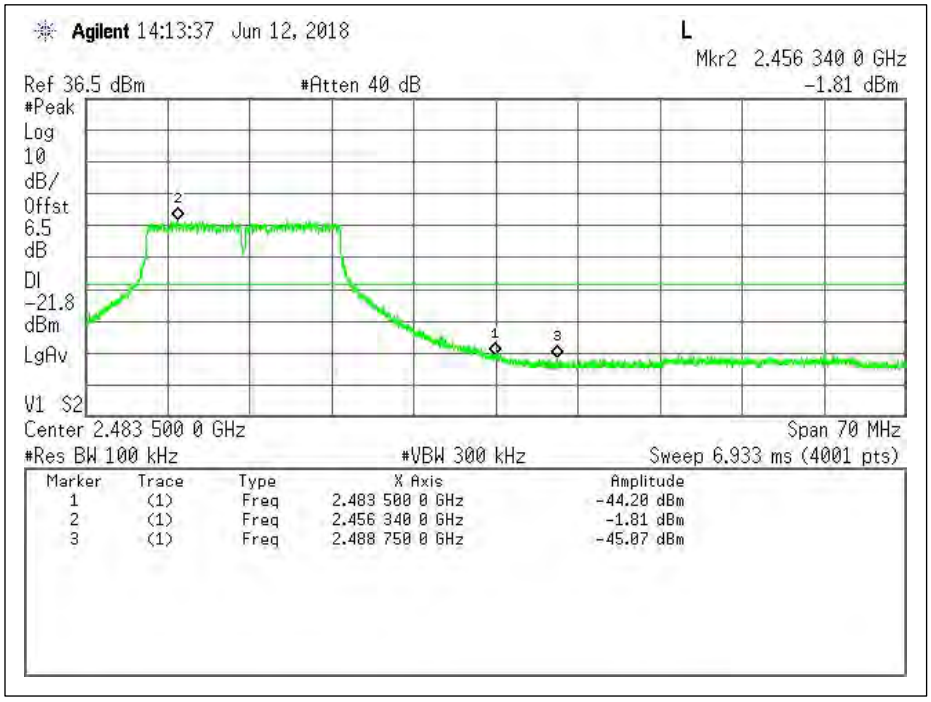
Antenna 1: Low Channel - Plot



Antenna 1: High Channel – Plot

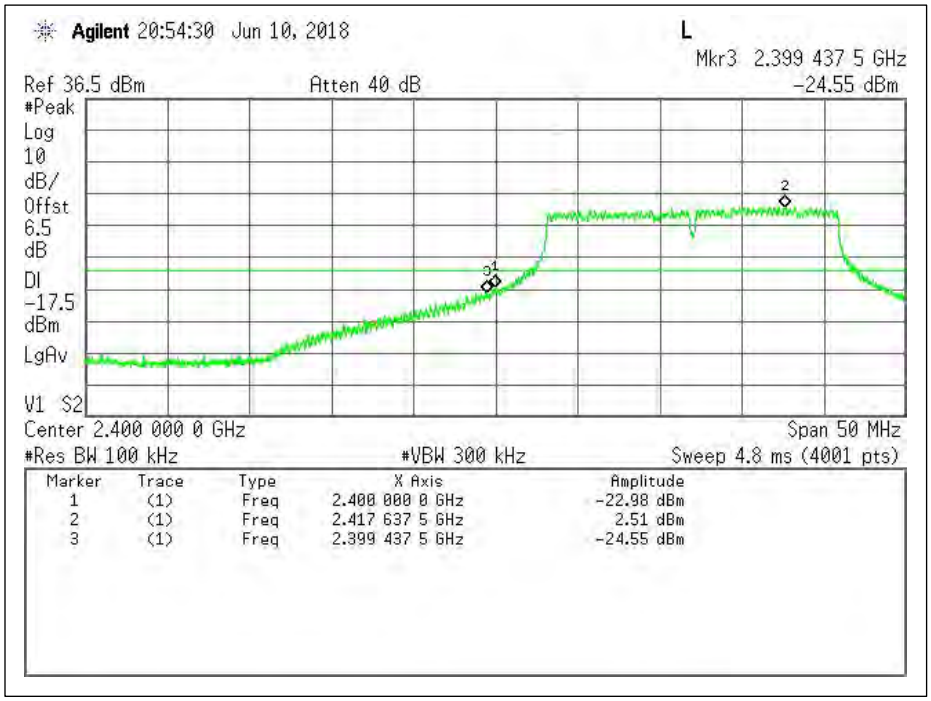


Antenna 2: Low Channel - Plot

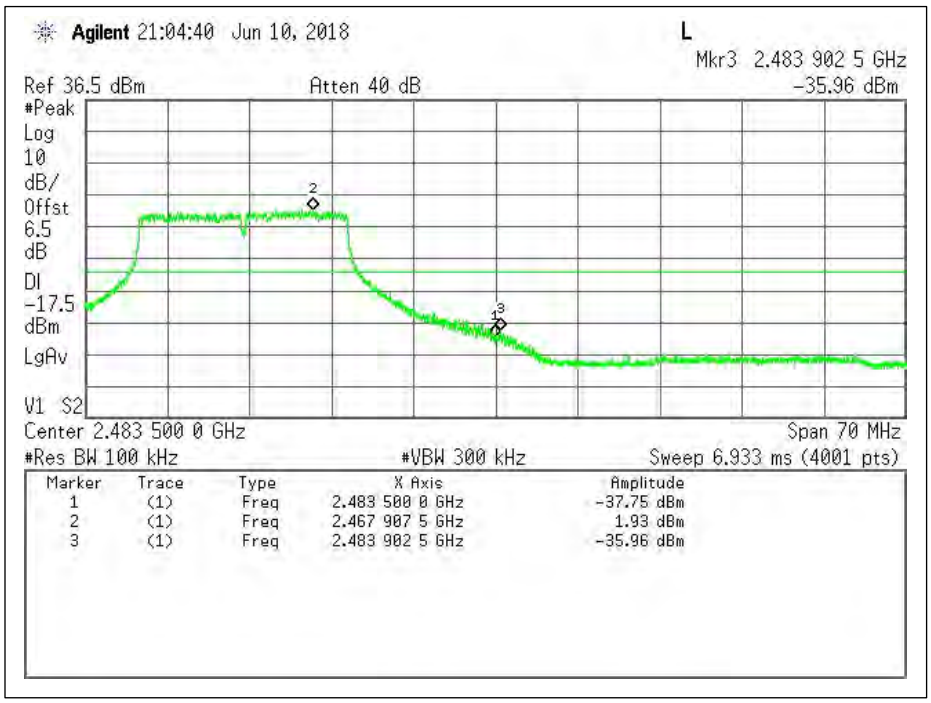


Antenna 2: High Channel - Plot

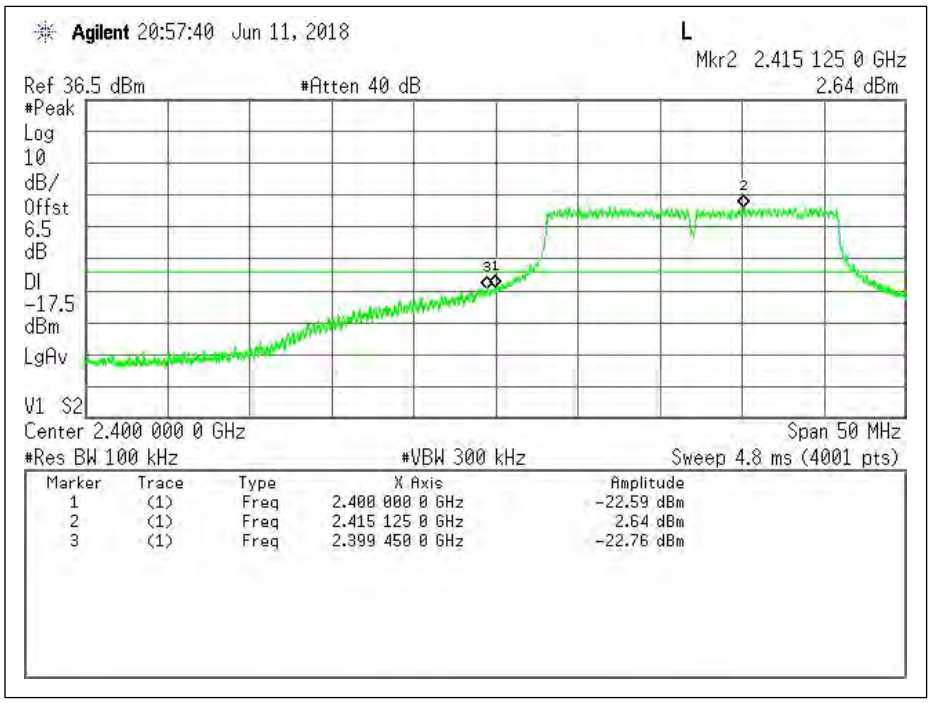
Band Edge – 802.11n Mode



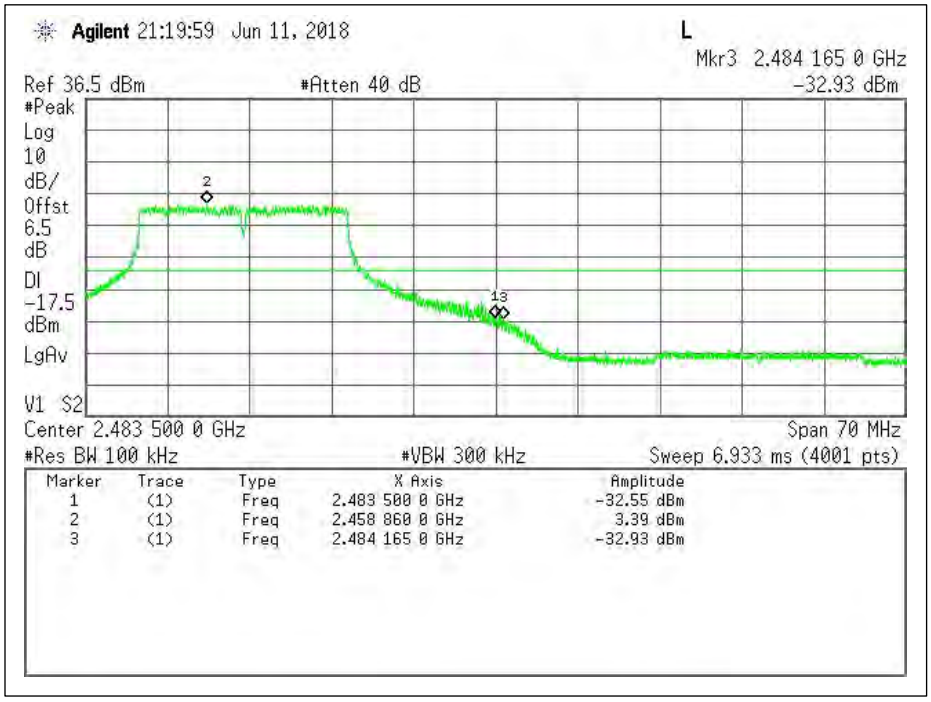
Antenna 1: Low Channel - Plot



Antenna 1: High Channel – Plot

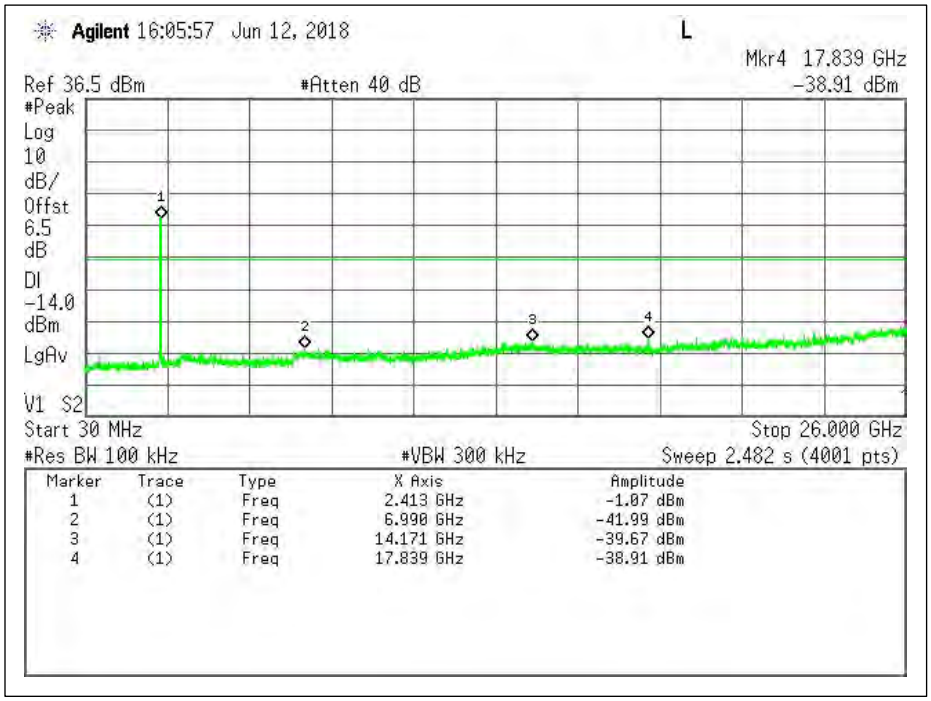


Antenna 2: Low Channel - Plot

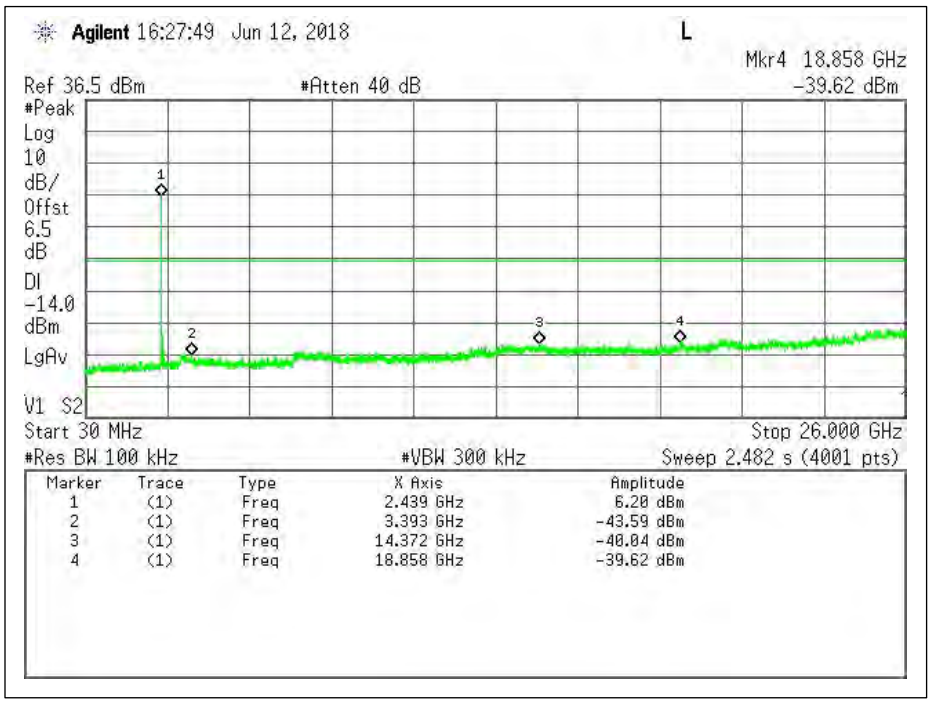


Antenna 2: High Channel - Plot

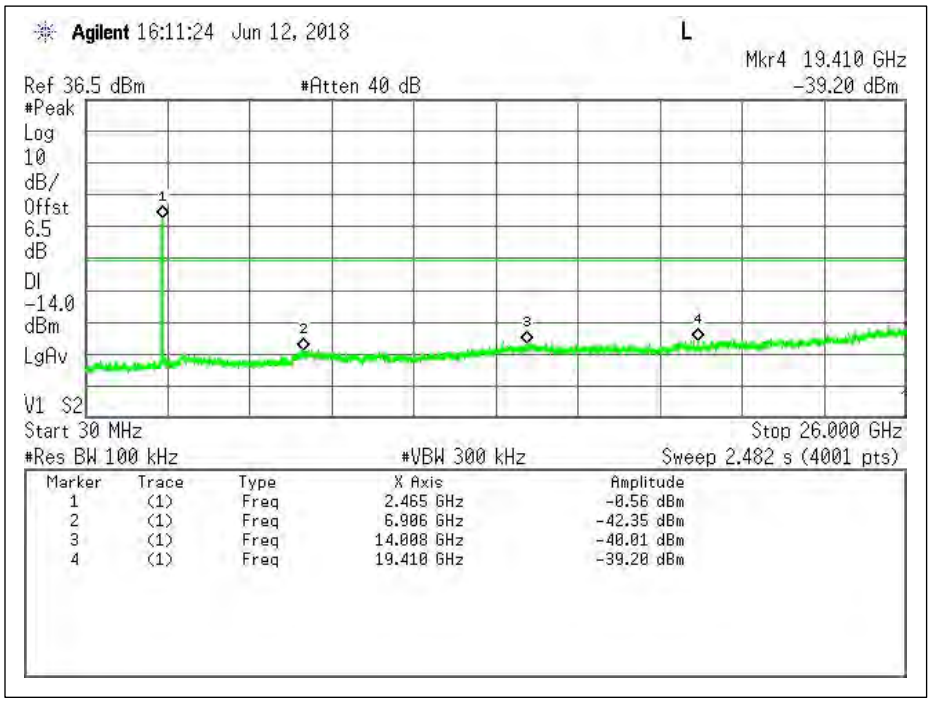
Conducted Spurious – 802.11b Mode



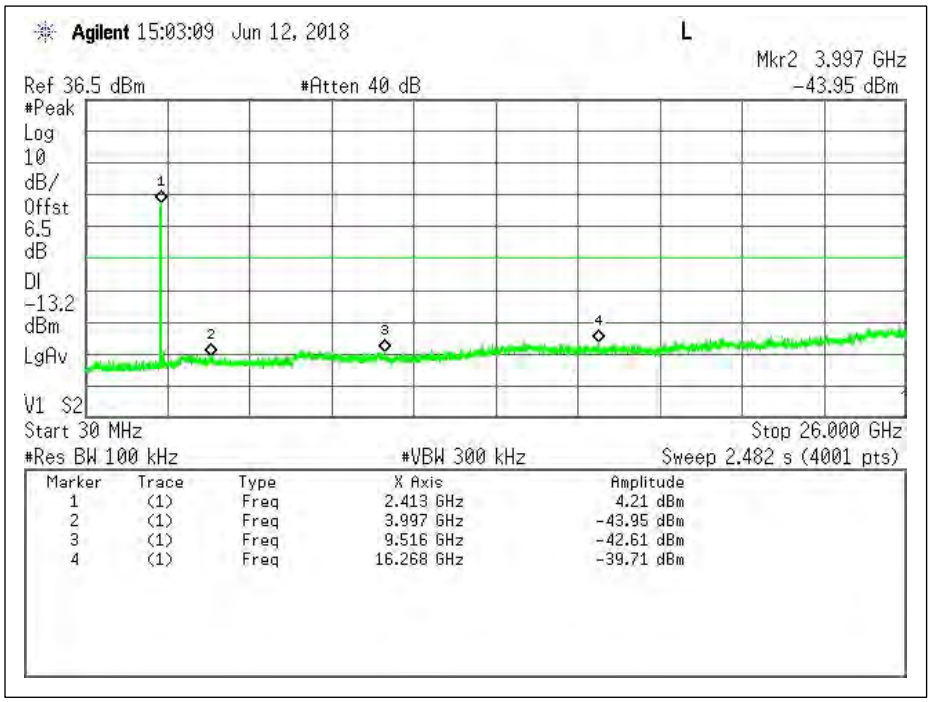
Antenna 1: Low Channel - Plot



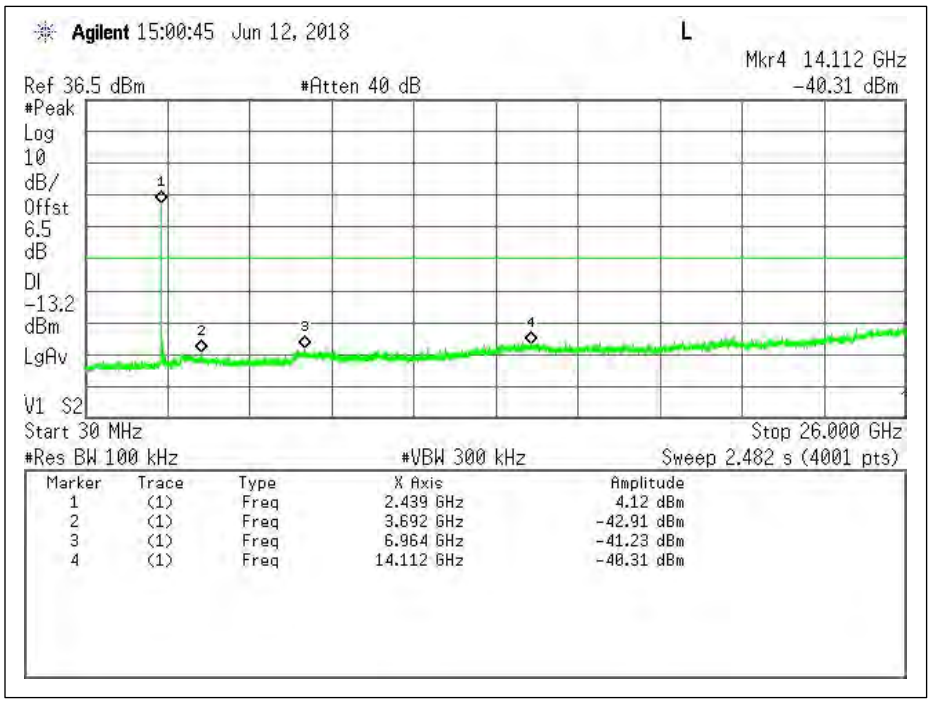
Antenna 1: Mid Channel - Plot



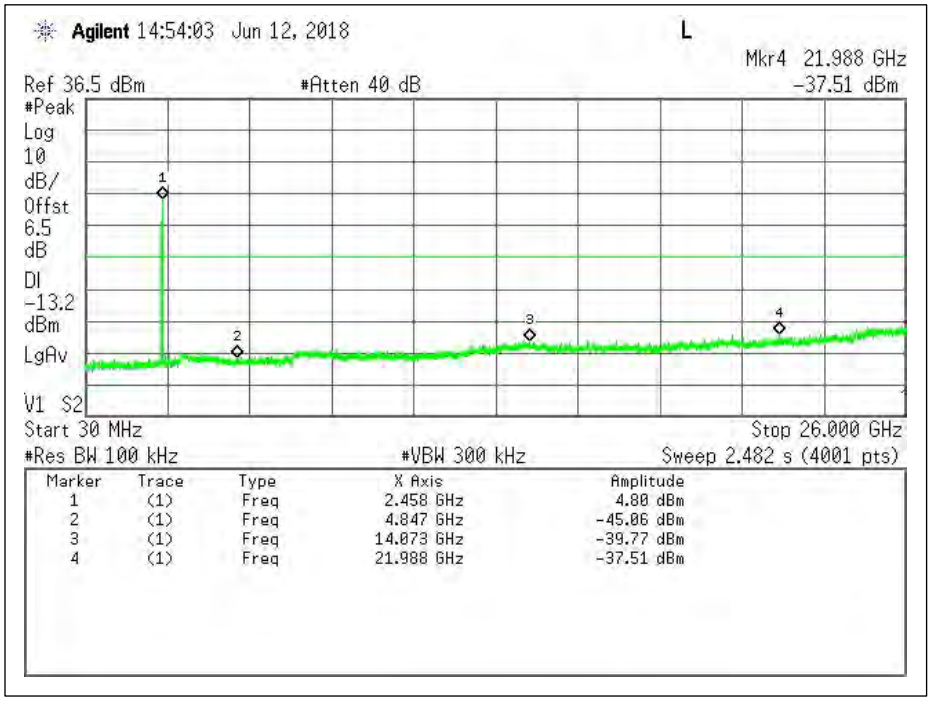
Antenna 1: High Channel – Plot



Antenna 2: Low Channel - Plot

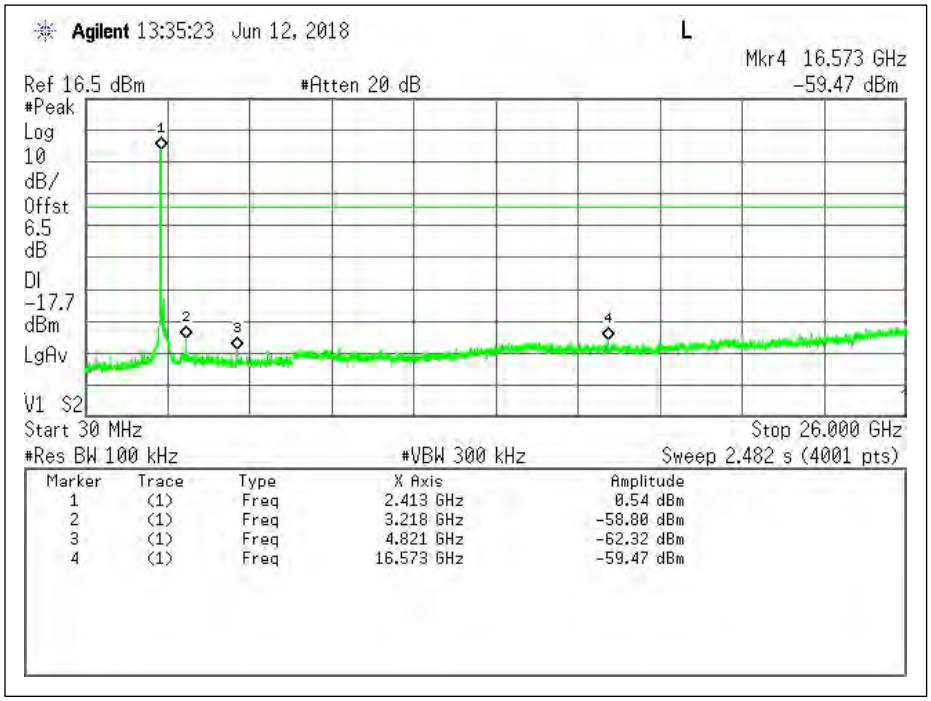


Antenna 2: Mid Channel - Plot

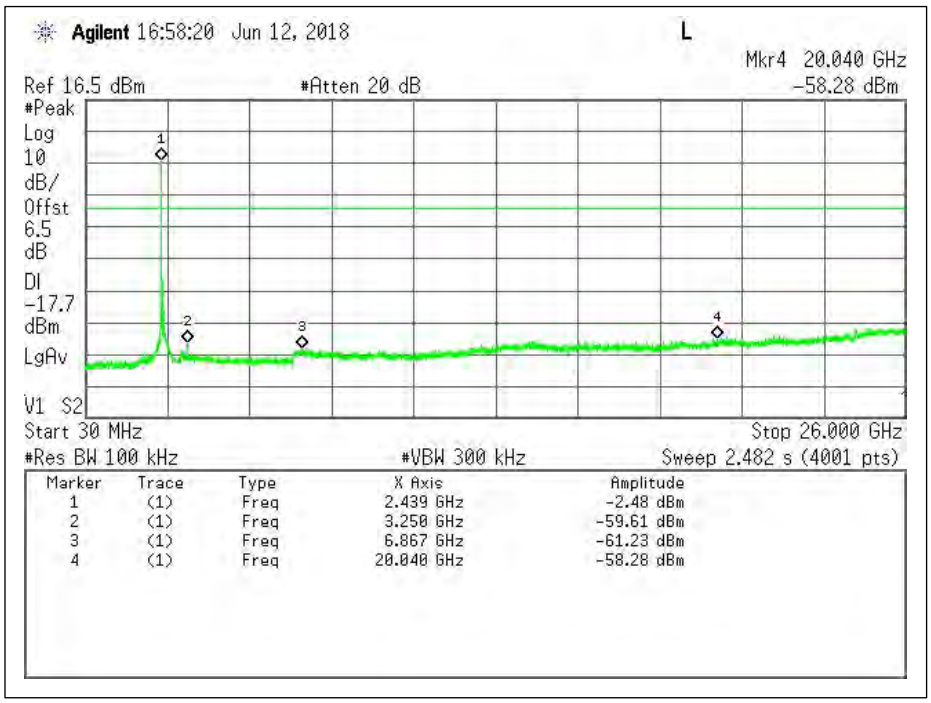


Antenna 2: High Channel – Plot

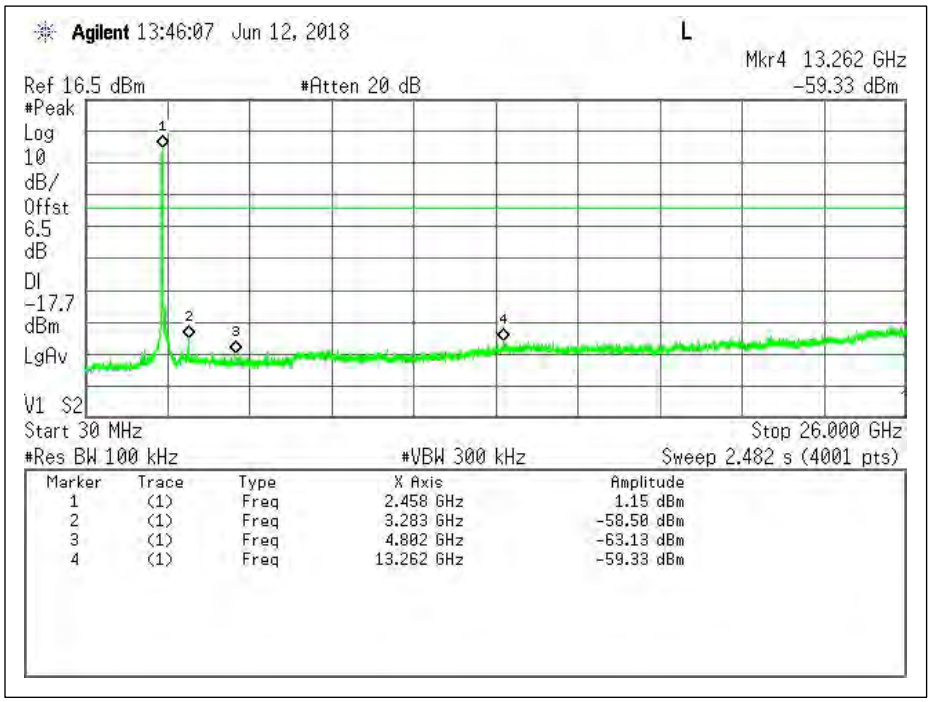
Conducted Spurious – 802.11g Mode



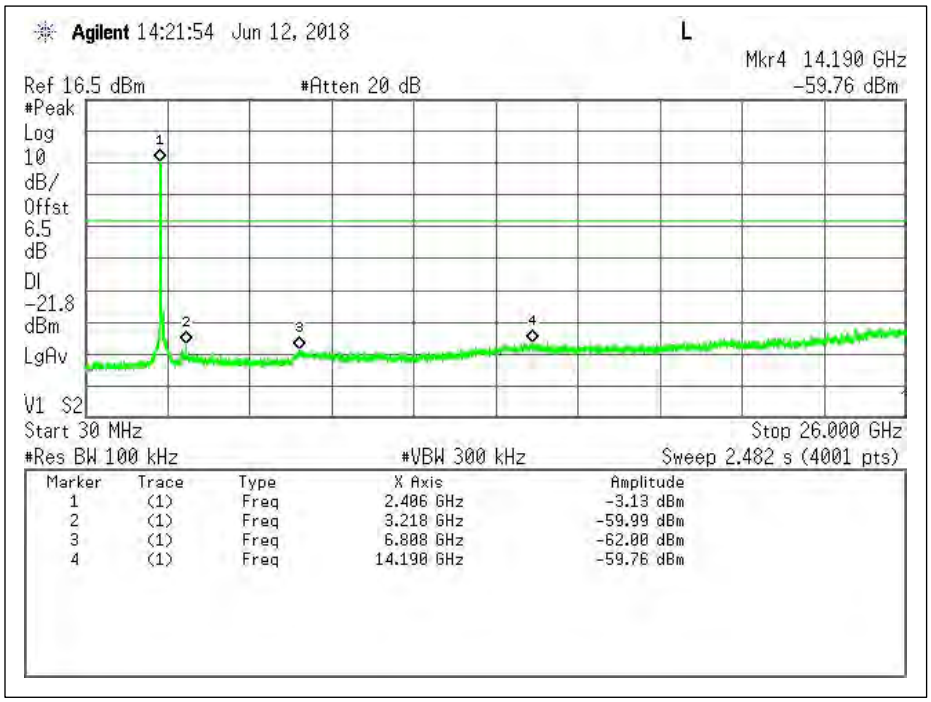
Antenna 1: Low Channel - Plot



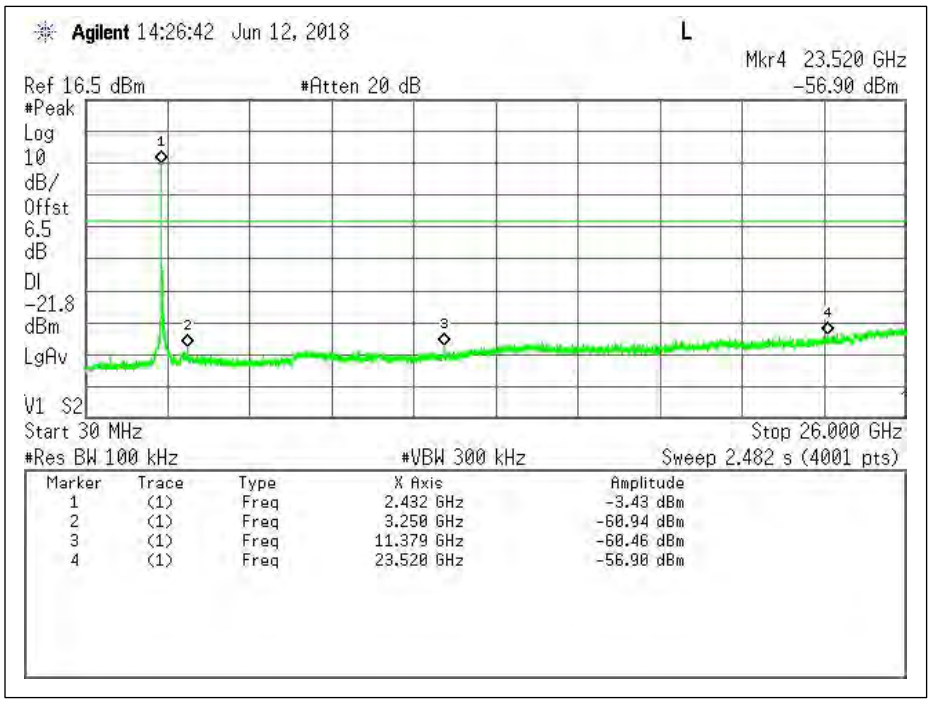
Antenna 1: Mid Channel - Plot



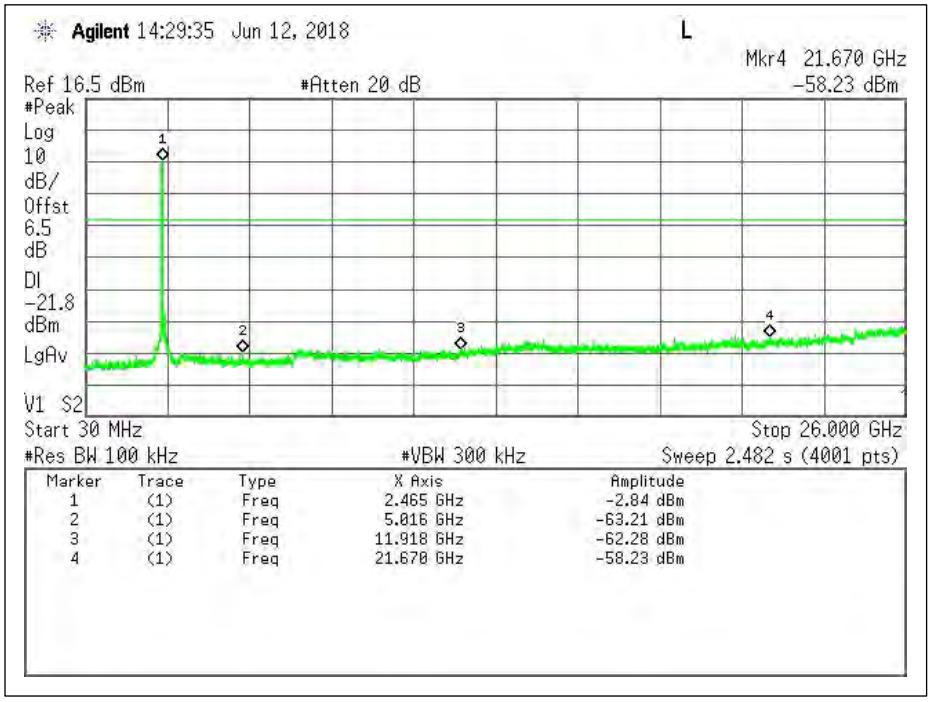
Antenna 1: High Channel – Plot



Antenna 2: Low Channel - Plot

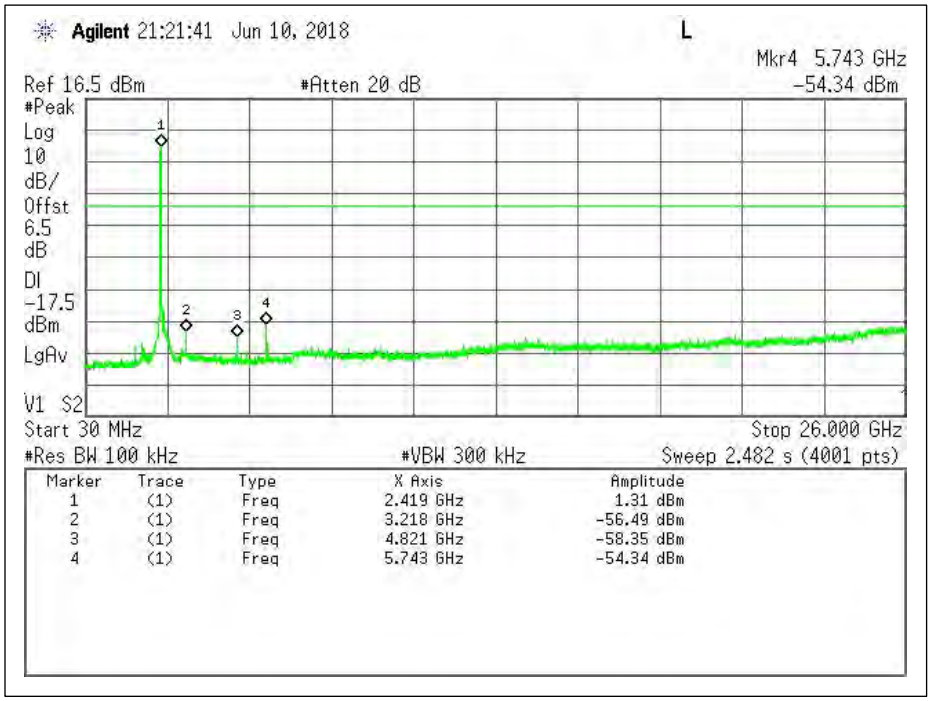


Antenna 2: Mid Channel - Plot

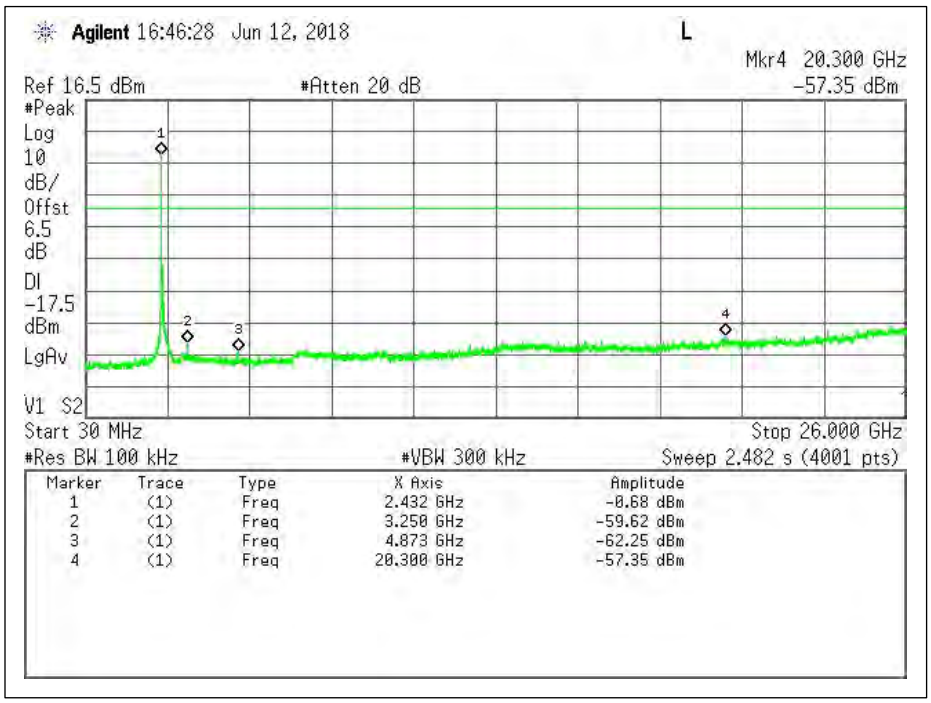


Antenna 2: High Channel - Plot

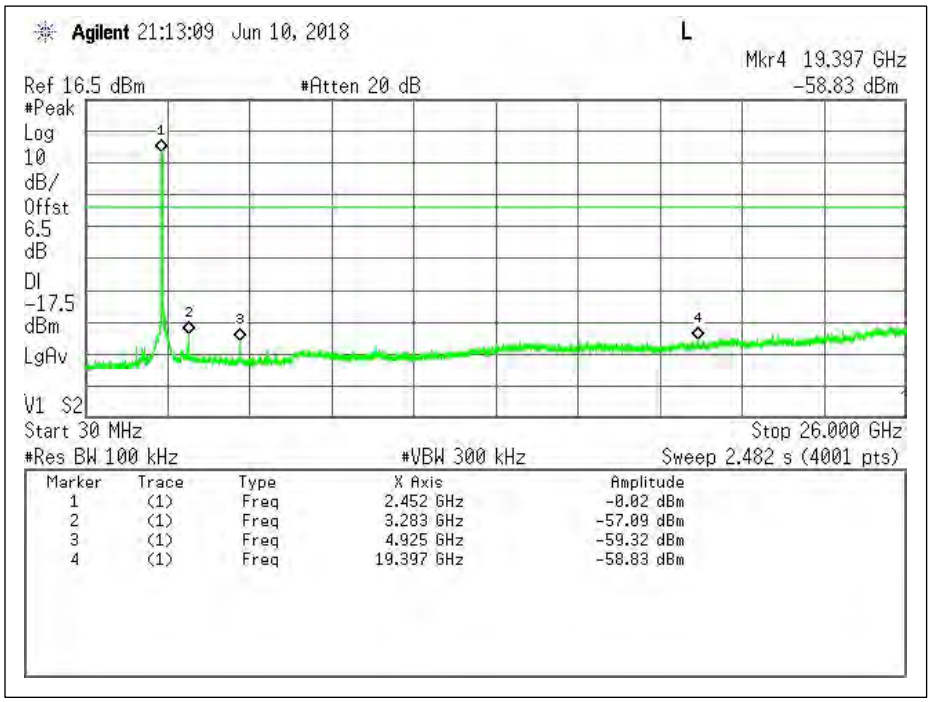
Conducted Spurious – 802.11n Mode



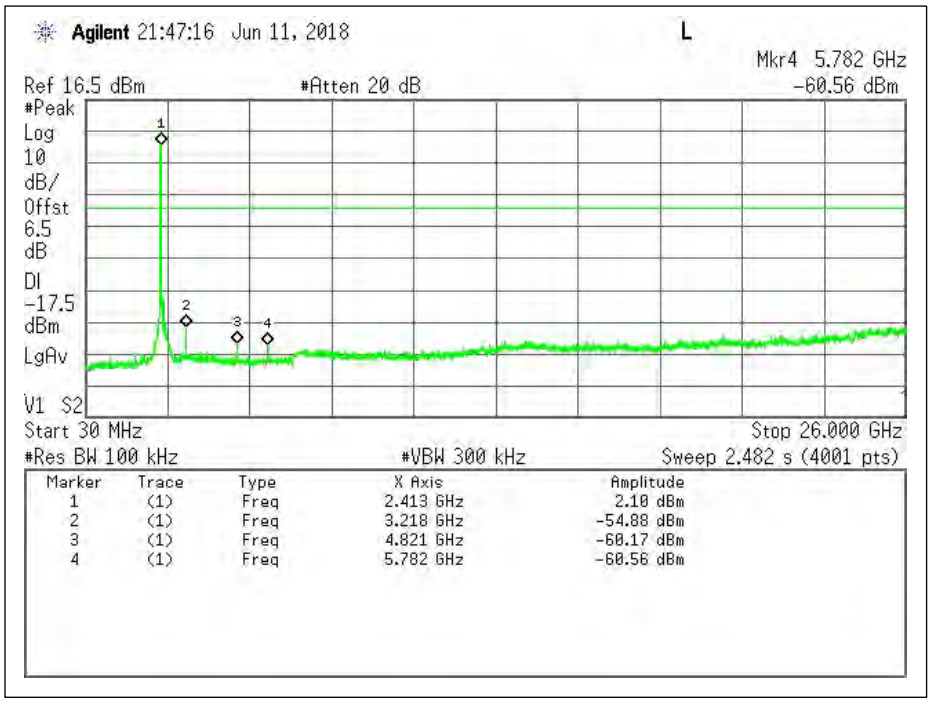
Antenna 1: Low Channel - Plot



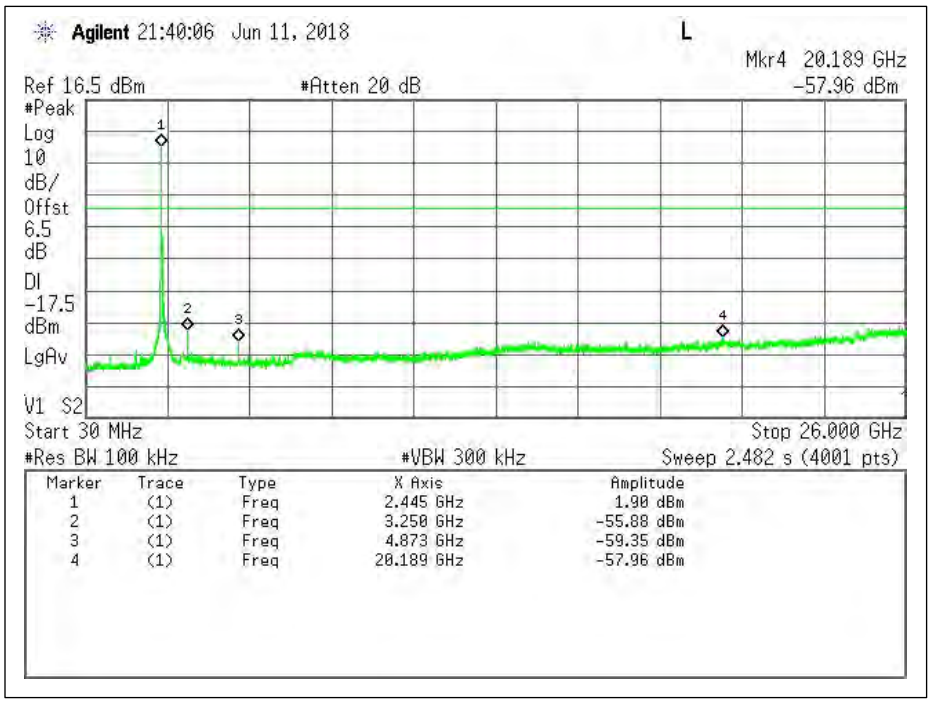
Antenna 1: Mid Channel - Plot



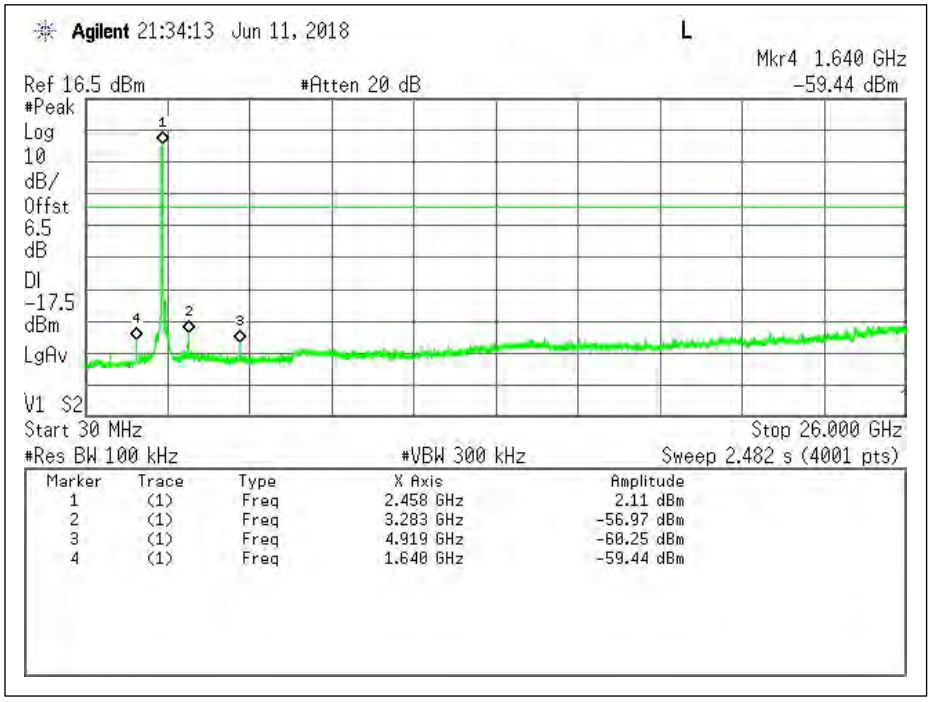
Antenna 1: High Channel – Plot



Antenna 2: Low Channel - Plot



Antenna 2: Mid Channel - Plot

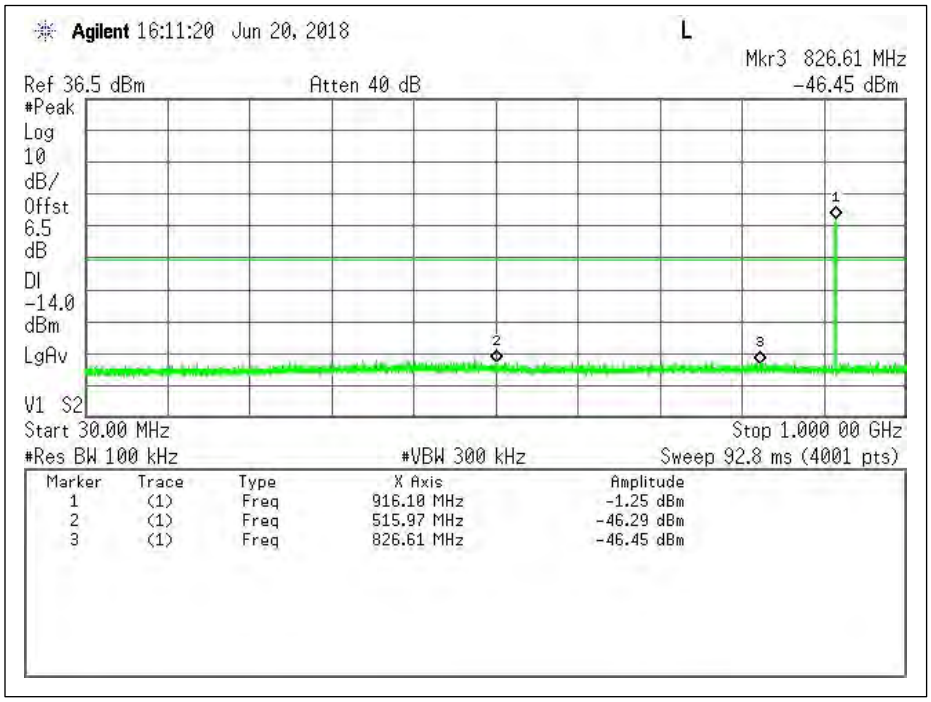


Antenna 2: High Channel – Plot

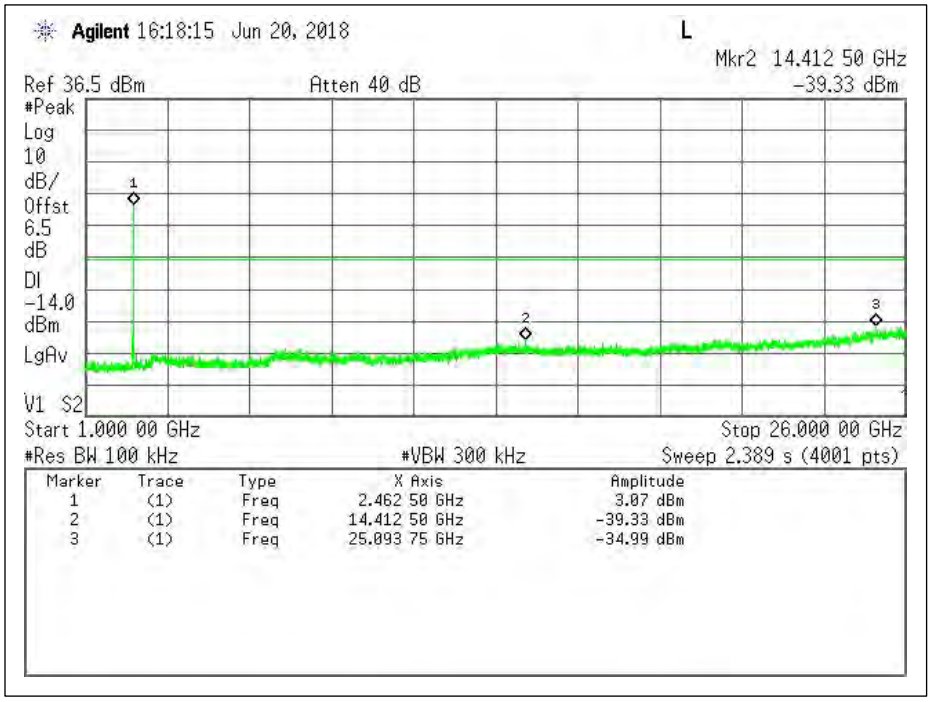
Conducted Spurious – Simultaneous Transmission, Shared Antenna, with Z-Wave Radio

Configuration (Worse-case):

Wi-Fi – 802.11b Mode, High Channel
Z-Wave – High Channel



30-1000MHz



1-26GHz

Radiated Emissions (Intentional)

Test Description

The EUT is placed on a non-conducting table 80 cm above the ground plane for below 1 GHz measurements and 1.5 m above the ground plane for above 1 GHz measurements. The antenna to EUT distance is 3 meters for final detection measurements.
For measurements below 1 GHz the resolution bandwidth is set to 120 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 1 MHz for peak measurements and as applicable for average measurements.
The spectrum from 9 kHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.
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.
Measurements methods are referenced in C63.10 Section 11.12 and KDB 558074 Section 12.0, based on trace averaging with continuous EUT transmission at full power (i.e. 100% duty cycle).

Test Criteria

Reference	Limit		
CFR 47 Subpart C, 15.205 CFR 47 Subpart C, 15.209 RSS-GEN	Frequency Range (MHz)	Field Strength Limit (uV/m)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
	0.490-1.705	24000/F(kHz)	30
	1.705-30.0	30	30
	30-88	100**	3
	88-216	150**	3
	216-960	200**	3
	Above 960	500	3

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

Test Information

Tester	Test Location	Date	Temperature (ºC)	Humidity (%RH)	Pressure (mbar)	Results (P/F)
JB/CL	RF Chamber/OATS	04/19/18-06/28/18	26.7	60	1009	P

NOTE: Below 30MHz, pretesting showed that no emissions as a product of the EUT were detected within 20dB of the regulatory limit. Worse-case plot/data reported from 30MHz - 1GHz & above 18GHz, per antenna. All plots/data reported from 1GHz - 18GHz, per antenna. Prescans performed in an anechoic chamber, final measurements performed on an OATS.

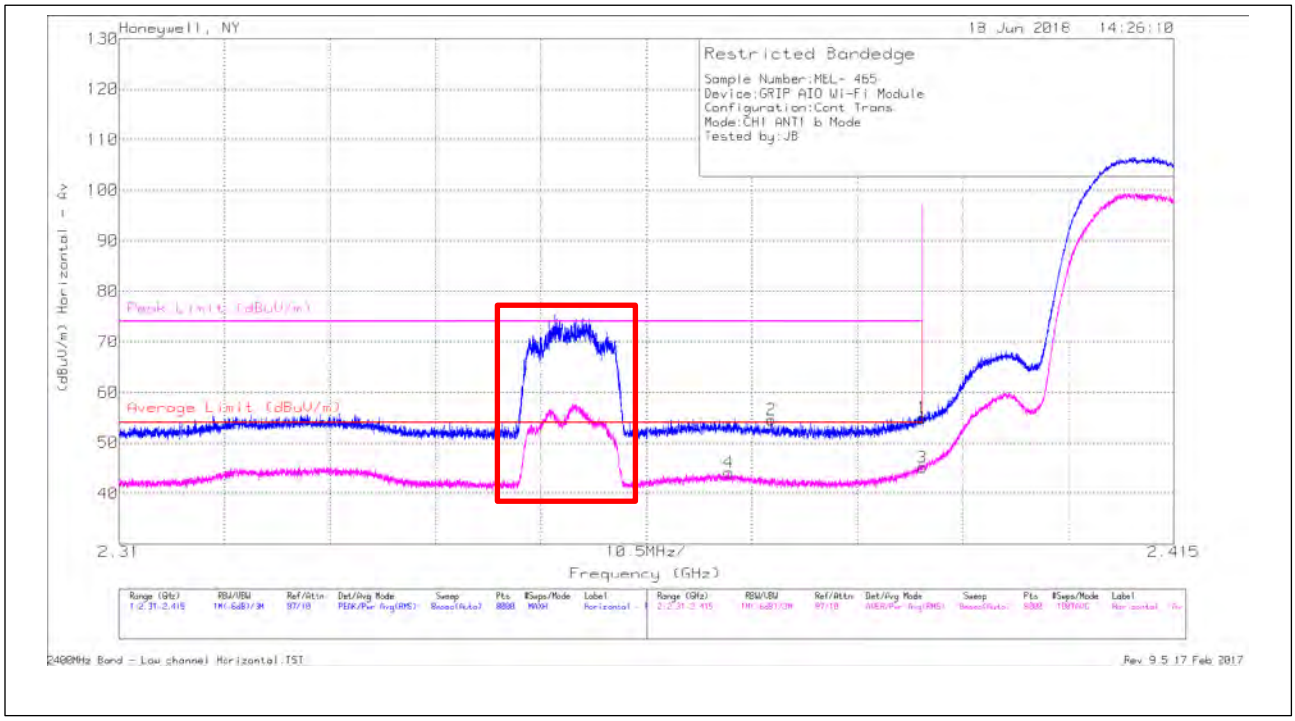
Since both Wi-Fi and Z-Wave radio can transmit simultaneously, additional spurious scans are provided with both radios on and transmitting in their worse-case state.

Equipment List

Instrument Type	ID #	Serial #	Manufacturer	Model	Cal Date	Cal Due Date
RF Chamber						
Spectrum Analyzer	11496	100303	Rohde & Schwarz	FSU26	04/11/18	04/11/19
Loop Antenna (9kHz-30MHz)	11535	121080	Com-Power	AL-130R	10/17/18	10/17/19
Bilog Antenna (30MHz-5GHz)	11311	A022406	Sunol	JB5	02/01/18	02/01/19
Horn Antenna (1-18GHz)	2319	2317	EMCO	3115	01/10/18	01/10/19
Horn Antenna (18-40GHz)	11472	151	EMCO	EM-6963	02/14/18	02/14/19
Preamp (10-4200MHz)	11537	1603006	Mini Circuits	TVA-11-422	N/A	N/A
Preamp (1-18GHz)	11557	18040034	Com-Power	PAM-118A	N/A	N/A
Preamp (18-40GHz)	11541	160911	Amplical	AMP18G40-35	N/A	N/A
Band Reject Filter	11553	G041	Micro-tronics	BRM50702-01	N/A	N/A
Measurement Software	11543	Version 9.5	UL	UL EMC	N/A	N/A
RF Cable	-	-	Mini-Circuits	RDE#2	N/A	N/A
RF Cable	-	-	Insulated Wire	SMA#8	N/A	N/A
Environmental Meter	11533	A070144	Extech Instruments	SD700	08/21/17	08/21/20
OATS						
Spectrum Analyzer	11545	103125	Rohde & Schwarz	FSW26	02/21/18	02/21/19
Bilog Antenna (30MHz-6GHz)	11534	A012816	Sunol	JB6	03/27/18	03/27/19
Horn Antenna (1-18GHz)	2973	3127	EMCO	RGA-60	01/22/18	01/22/19
Horn Antenna (18-40GHz)	11472	151	EMCO	EM-6963	02/14/18	02/14/19
Preamp (1-18GHz)	11539	160362	Amplical	AMP1G18-35	N/A	N/A
Preamp (18-40GHz)	11541	160911	Amplical	AMP18G40-35	N/A	N/A
High Pass Filter	11552	G018	Micro-tronics	HPM50111-01	N/A	N/A
Measurement Software	11543	Version 9.5	UL	UL EMC	N/A	N/A
RF Cable	-	-	Pasternack	RDE#1	N/A	N/A
RF Cable	-	-	MegaPhase	EMC2-S1S1-360	N/A	N/A
Environmental Meter	11533	A070144	Extech Instruments	SD700	08/21/17	08/21/20

Test Results

Restricted Band Edge – 802.11b Mode



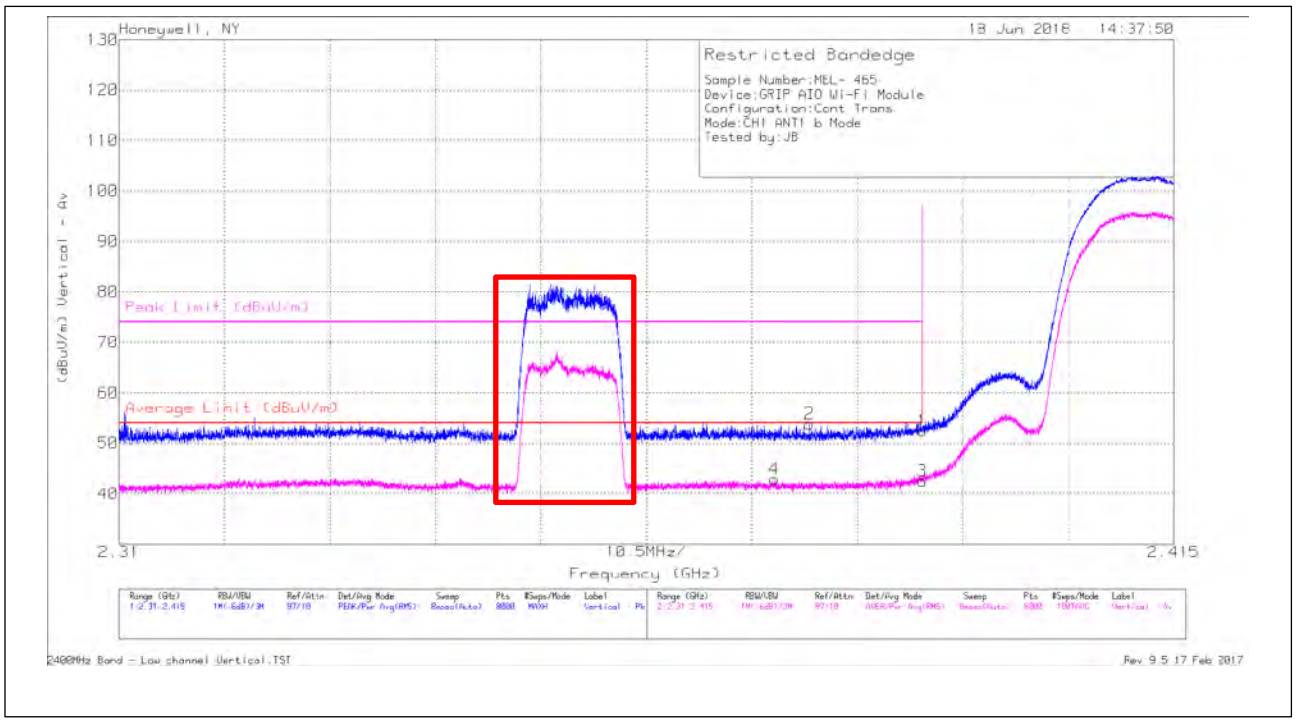
Antenna 1: Low Channel Horizontal – Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.39	20.63	Pk	28.5	.7	2.6	2.5	54.93	-	-	74	-19.07	351	119	H
* 2.375	20.34	Pk	28.4	.7	2.6	2.5	54.54	-	-	74	-19.46	351	119	H
* 2.39	10.8	RMS	28.5	.7	2.6	2.5	45.1	54	-8.9	-	-	351	119	H
* 2.371	10.06	RMS	28.3	.7	2.6	2.5	44.16	54	-9.84	-	-	351	119	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data

NOTE: Emissions highlighted in the plot above is OATS ambient and not a product of the transmitter



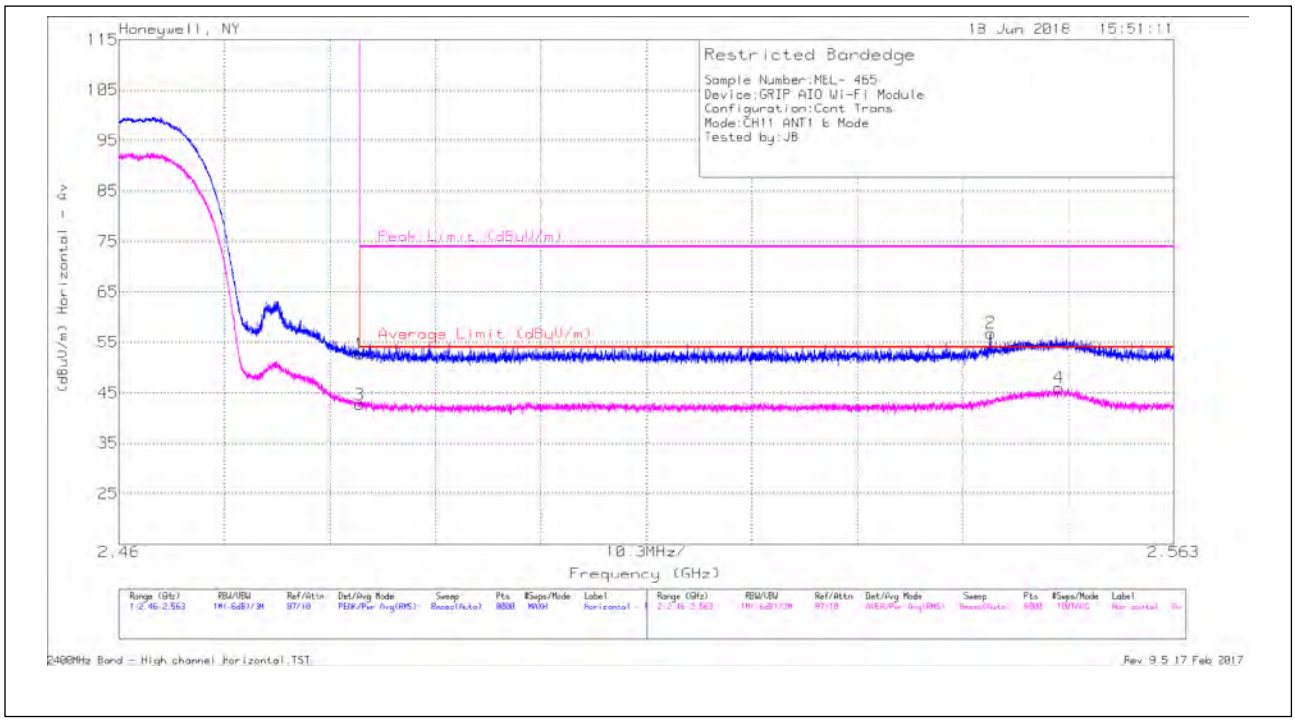
Antenna 1: Low Channel Vertical – Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.39	18.17	Pk	28.5	.7	2.6	2.5	52.47	-	-	74	-21.53	189	379	V
* 2.379	19.66	Pk	28.4	.7	2.6	2.5	53.86	-	-	74	-20.14	189	379	V
* 2.39	8.16	RMS	28.5	.7	2.6	2.5	42.46	54	-11.54	-	-	189	379	V
* 2.375	8.68	RMS	28.4	.7	2.6	2.5	42.88	54	-11.12	-	-	189	379	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data

NOTE: Emissions highlighted in the plot above is OATS ambient and not a product of the transmitter

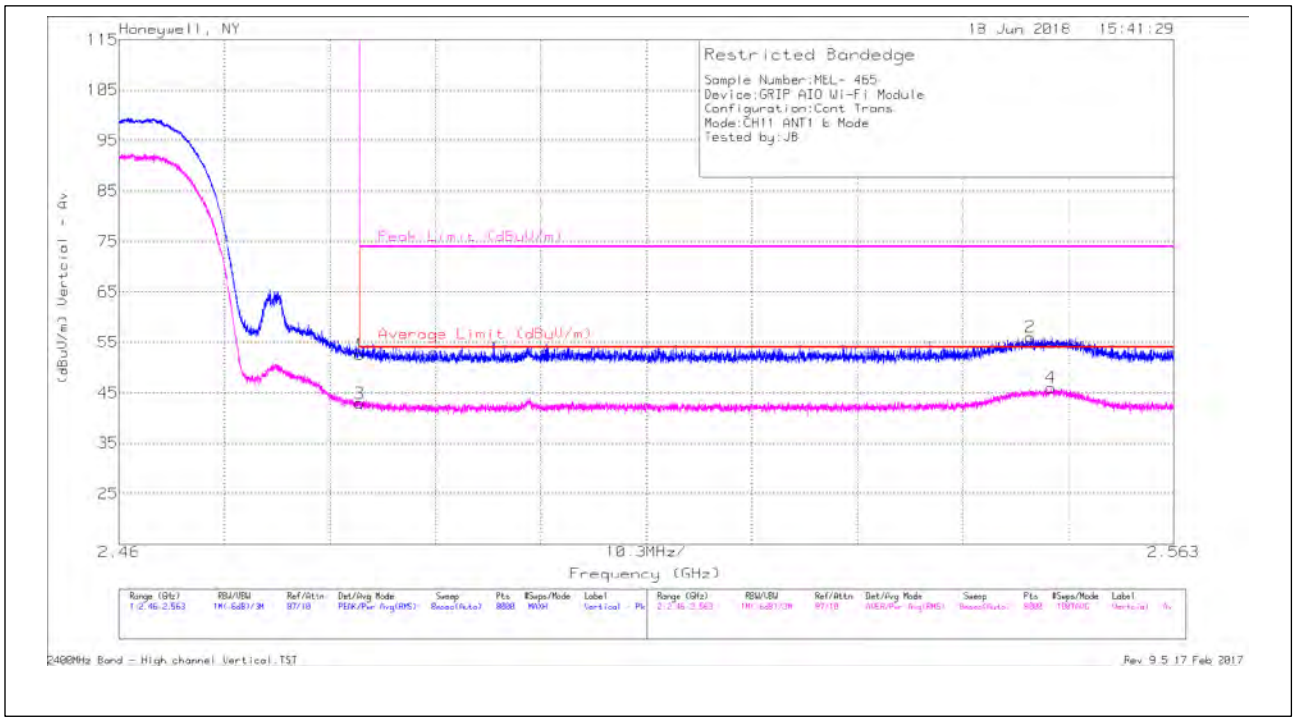


Antenna 1: High Channel Horizontal - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.484	18.16	Pk	28.7	.7	2.6	2.6	52.76	-	-	74	-21.24	161	364	H
2.545	21.79	Pk	29	.7	2.7	2.6	56.79	-	-	74	-17.21	161	364	H
* 2.484	8.07	RMS	28.7	.7	2.6	2.6	42.67	54	-11.33	-	-	161	364	H
2.552	11.02	RMS	29	.7	2.7	2.6	46.02	54	-7.98	-	-	161	364	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data

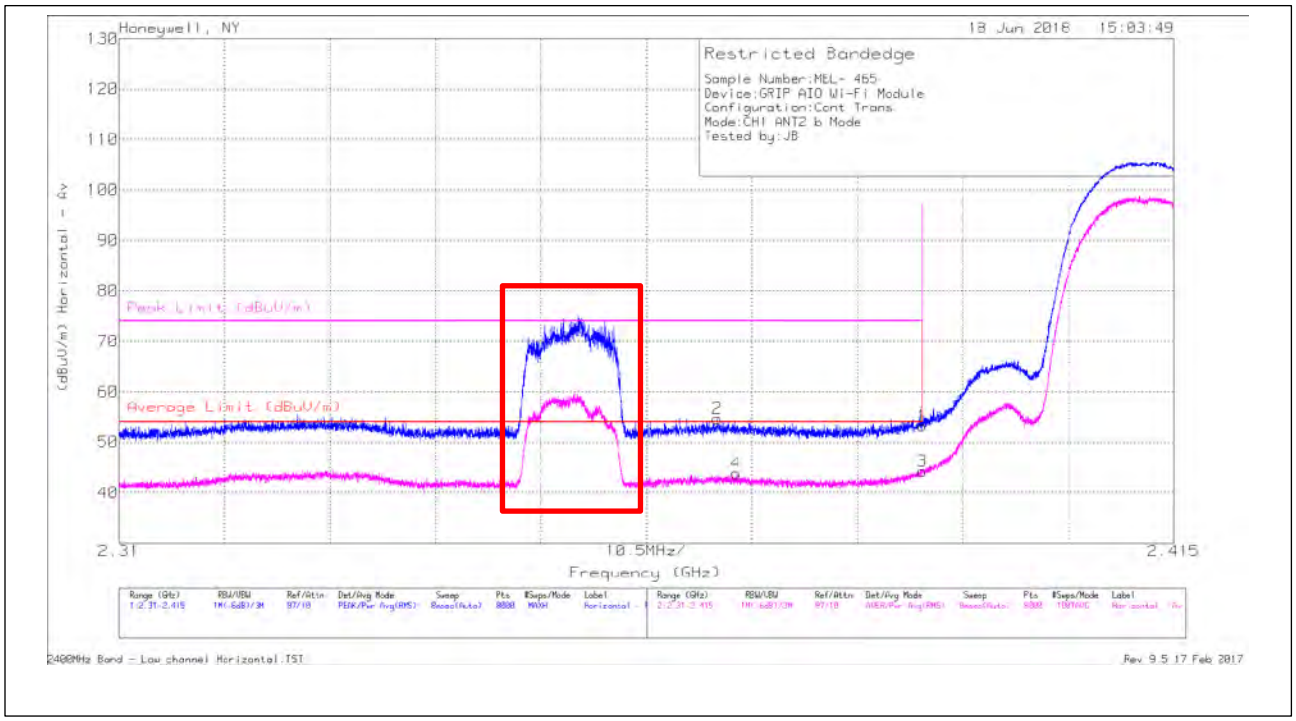


Antenna 1: High Channel Vertical – Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.484	18	Pk	28.7	.7	2.6	2.6	52.6	-	-	74	-21.4	179	363	V
2.549	21.04	Pk	29	.7	2.7	2.6	56.04	-	-	74	-17.96	179	363	V
* 2.484	8.29	RMS	28.7	.7	2.6	2.6	42.89	54	-11.11	-	-	179	363	V
2.551	11	RMS	29	.7	2.7	2.6	46	54	-8	-	-	179	363	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data



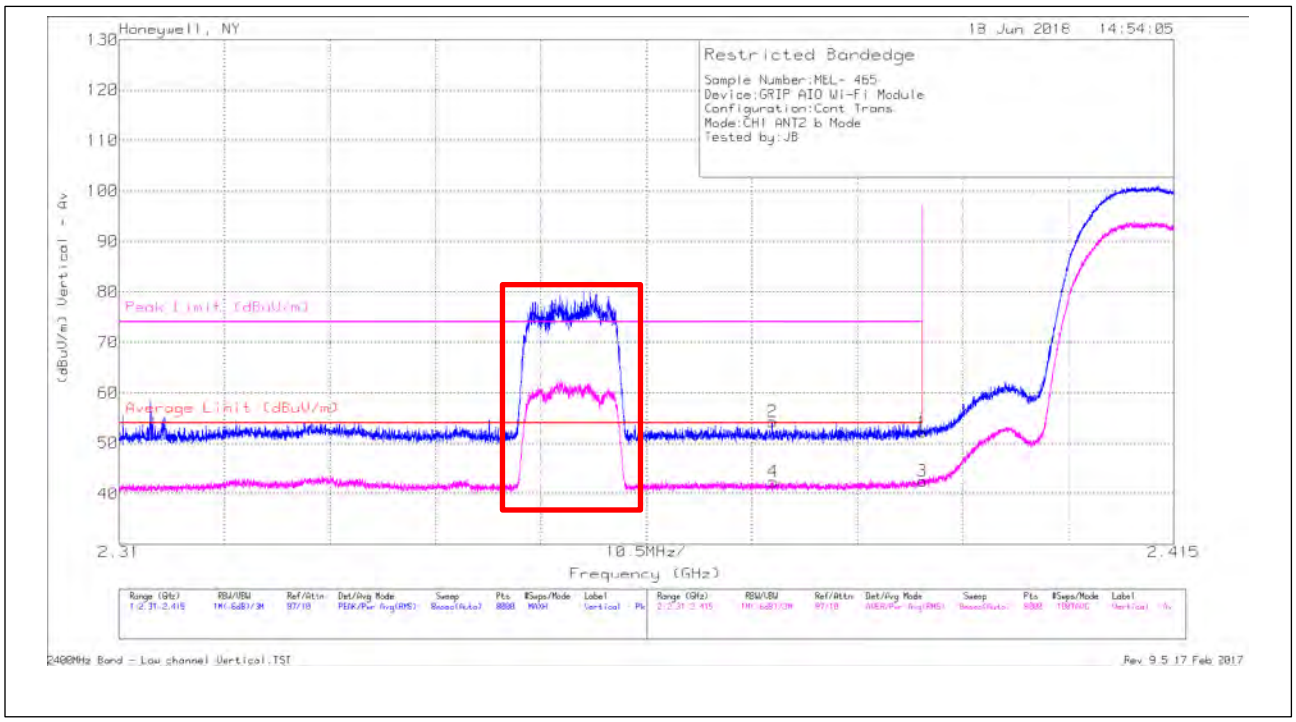
Antenna 2: Low Channel Horizontal - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.39	18.88	Pk	28.5	.7	2.6	2.5	53.18	-	-	74	-20.82	350	116	H
* 2.37	20.54	Pk	28.3	.7	2.6	2.5	54.64	-	-	74	-19.36	350	116	H
* 2.39	9.91	RMS	28.5	.7	2.6	2.5	44.21	54	-9.79	-	-	350	116	H
* 2.371	9.77	RMS	28.3	.7	2.6	2.5	43.87	54	-10.13	-	-	350	116	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data

NOTE: Emissions highlighted in the plot above is OATS ambient and not a product of the transmitter



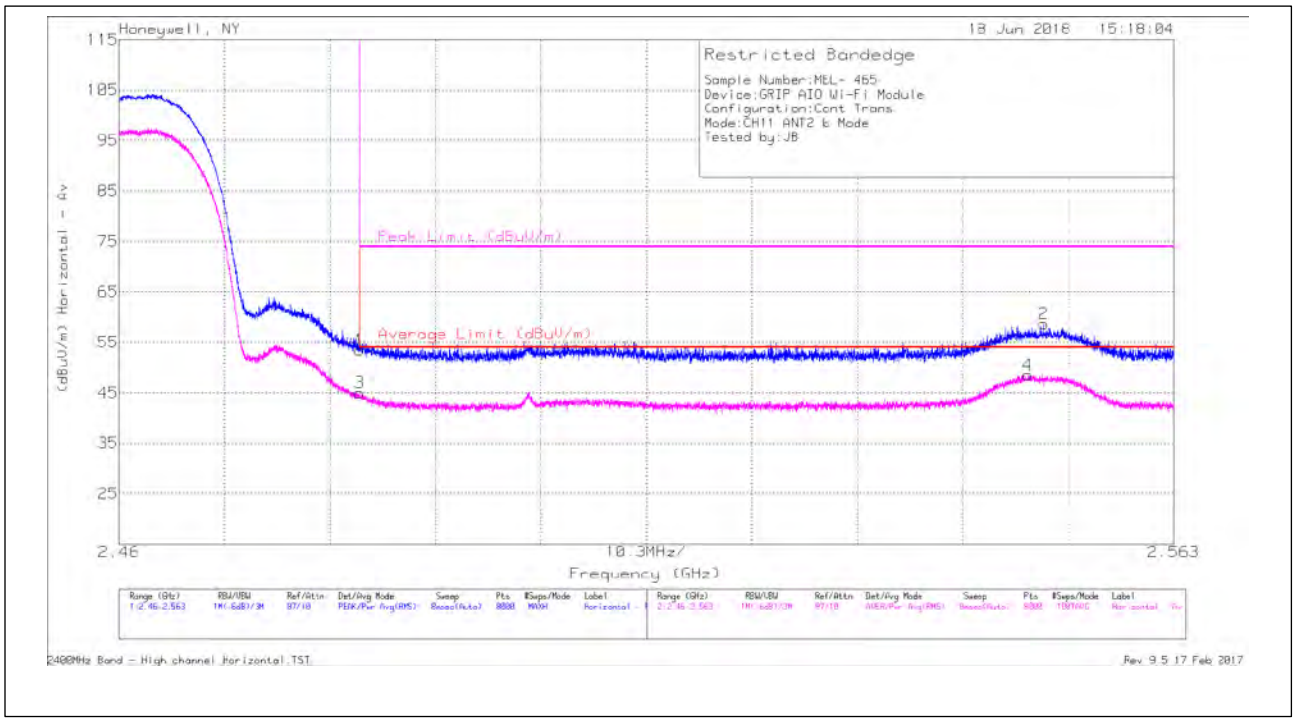
Antenna 2: Low Channel Vertical - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.39	17.84	Pk	28.5	.7	2.6	2.5	52.14	-	-	74	-21.86	188	372	V
* 2.375	20.13	Pk	28.4	.7	2.6	2.5	54.33	-	-	74	-19.67	188	372	V
* 2.39	8.24	RMS	28.5	.7	2.6	2.5	42.54	54	-11.46	-	-	188	372	V
* 2.375	8.21	RMS	28.4	.7	2.6	2.5	42.41	54	-11.59	-	-	188	372	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data

NOTE: Emissions highlighted in the plot above is OATS ambient and not a product of the transmitter

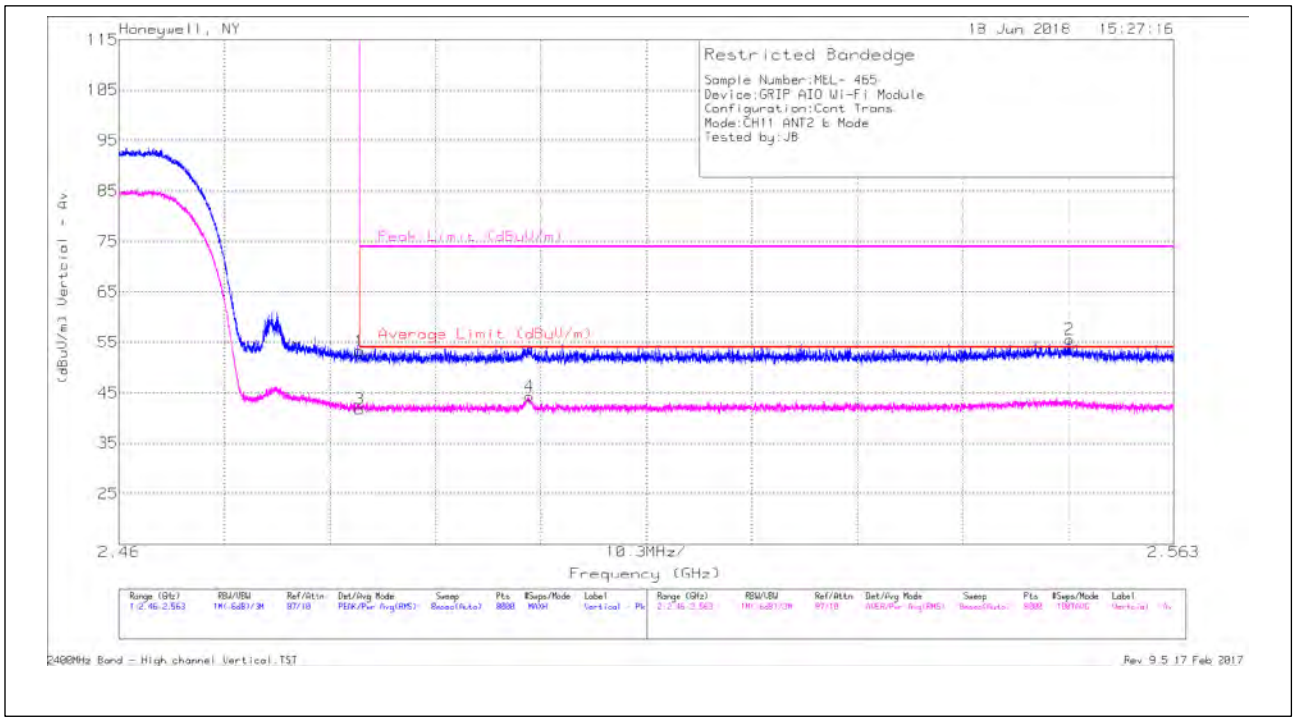


Antenna 2: High Channel Horizontal - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.484	18.83	Pk	28.7	.7	2.6	2.6	53.43	-	-	74	-20.57	101	119	H
2.55	23.68	Pk	29	.7	2.7	2.6	58.68	-	-	74	-15.32	101	119	H
* 2.484	10.37	RMS	28.7	.7	2.6	2.6	44.97	54	-9.03	-	-	101	119	H
2.549	13.53	RMS	29	.7	2.7	2.6	48.53	54	-5.47	-	-	101	119	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data



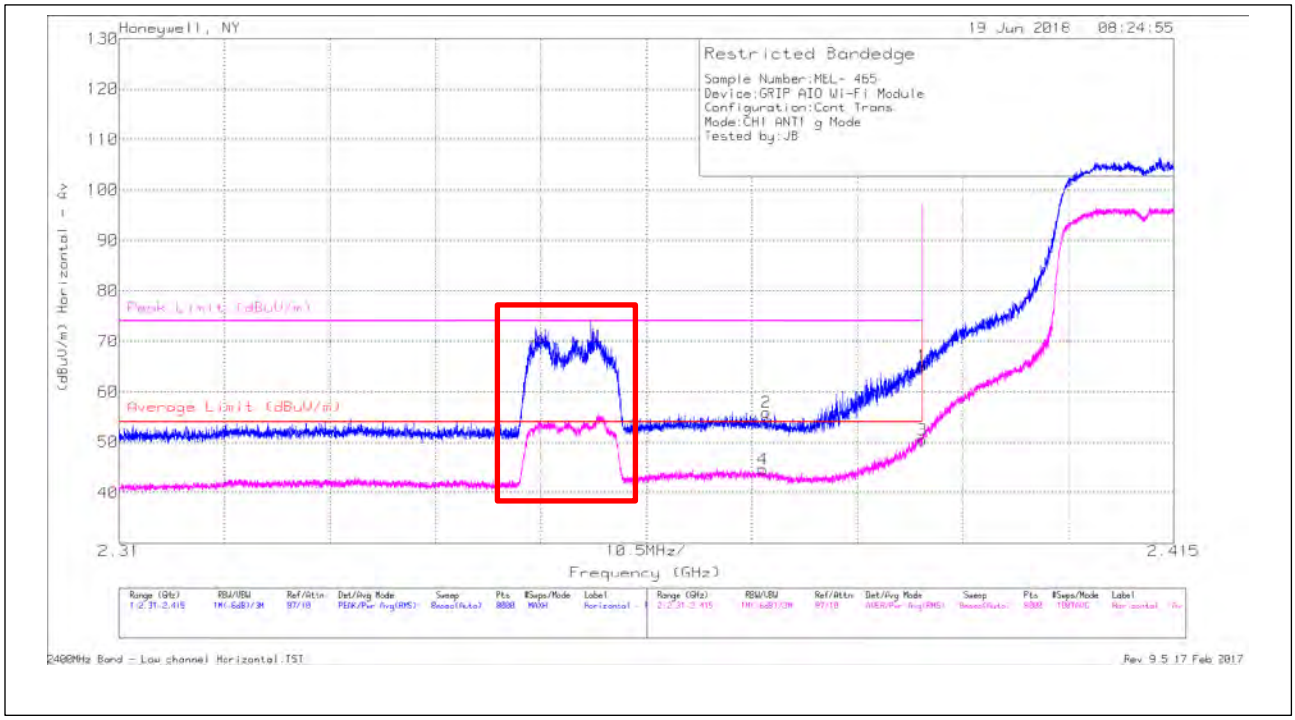
Antenna 2: High Channel Vertical - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.484	18.68	Pk	28.7	.7	2.6	2.6	53.28	-	-	74	-20.72	354	139	V
2.553	20.54	Pk	29	.7	2.7	2.6	55.54	-	-	74	-18.46	354	139	V
* 2.484	7.15	RMS	28.7	.7	2.6	2.6	41.75	54	-12.25	-	-	354	139	V
2.5	9.6	RMS	28.7	.7	2.7	2.6	44.3	54	-9.7	-	-	354	139	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data

Restricted Band Edge – 802.11g Mode



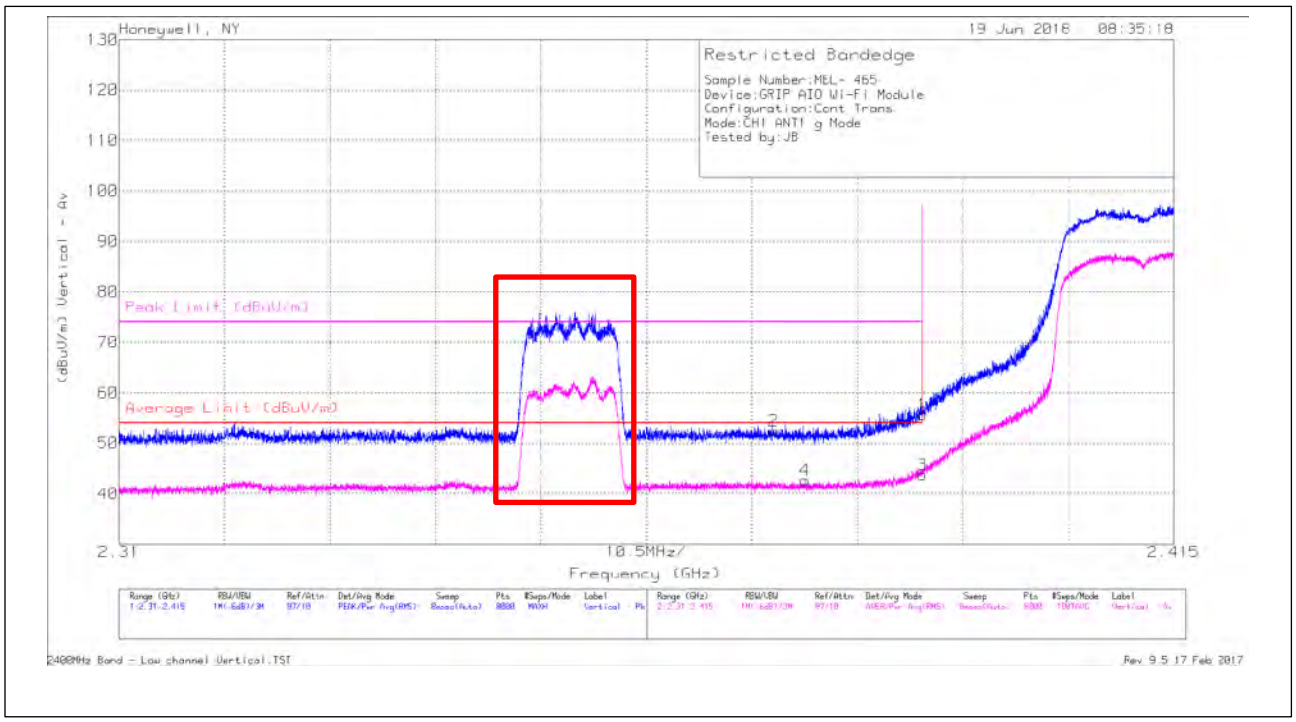
Antenna 1: Low Channel Horizontal – Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.39	30.82	Pk	28.5	.7	2.6	2.5	65.12	-	-	74	-8.88	276	185	H
* 2.374	21.68	Pk	28.4	.7	2.6	2.5	55.88	-	-	74	-18.12	276	185	H
* 2.39	16.2	RMS	28.5	.7	2.6	2.5	50.5	54	-3.5	-	-	276	185	H
* 2.374	10.43	RMS	28.4	.7	2.6	2.5	44.63	54	-9.37	-	-	276	185	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data

NOTE: Emissions highlighted in the plot above is OATS ambient and not a product of the transmitter



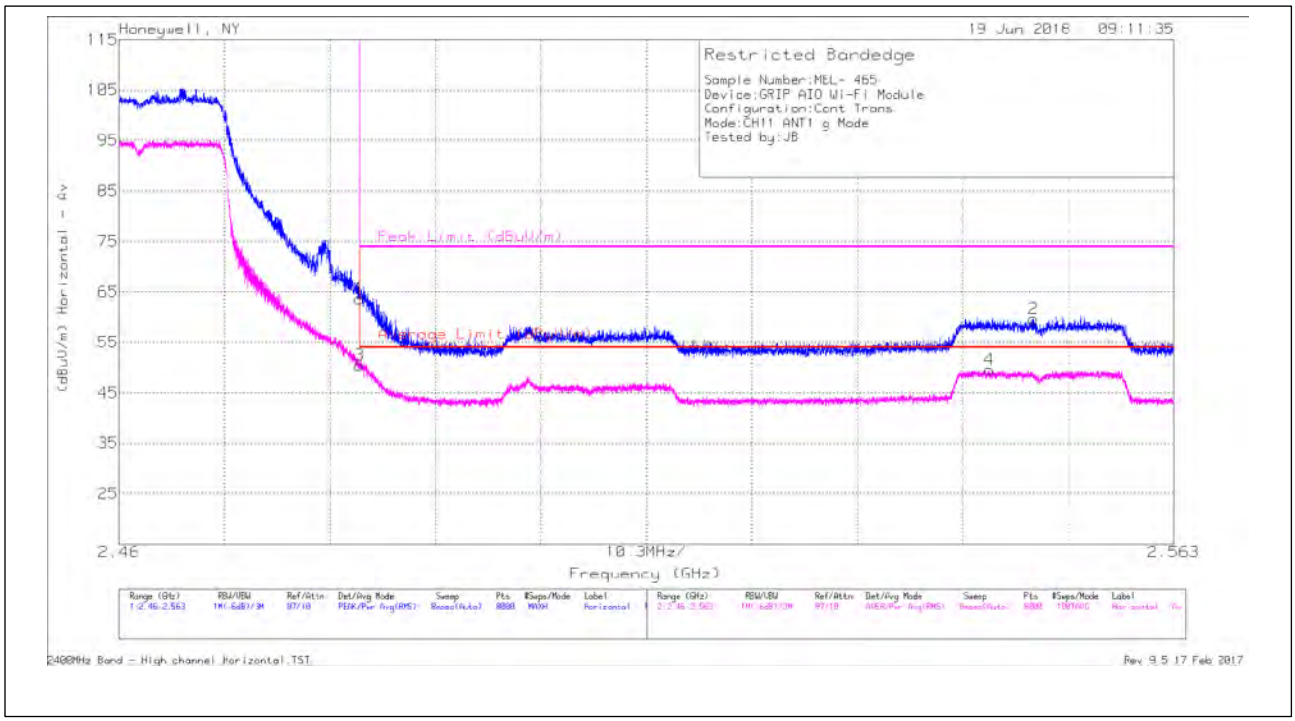
Antenna 1: Low Channel Vertical – Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.39	21.34	Pk	28.5	.7	2.6	2.5	55.64	-	-	74	-18.36	38	310	V
* 2.375	18.26	Pk	28.4	.7	2.6	2.5	52.46	-	-	74	-21.54	38	310	V
* 2.39	9.41	RMS	28.5	.7	2.6	2.5	43.71	54	-10.29	-	-	38	310	V
* 2.378	8.41	RMS	28.4	.7	2.6	2.5	42.61	54	-11.39	-	-	38	310	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data

NOTE: Emissions highlighted in the plot above is OATS ambient and not a product of the transmitter

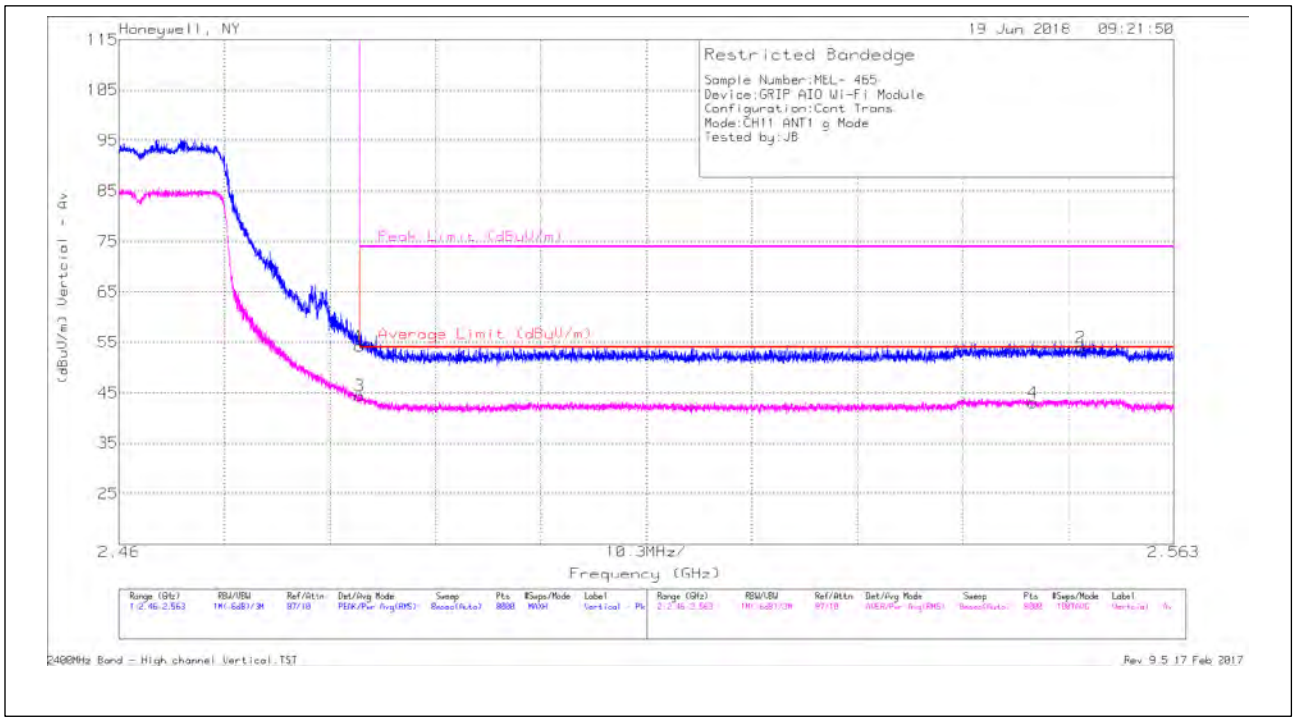


Antenna 1: High Channel Horizontal - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.484	29.05	Pk	28.7	.7	2.6	2.6	63.65	-	-	74	-10.35	342	133	H
2.549	24.6	Pk	29	.7	2.7	2.6	59.6	-	-	74	-14.4	342	133	H
* 2.484	15.87	RMS	28.7	.7	2.6	2.6	50.47	54	-3.53	-	-	342	133	H
2.545	14.56	RMS	29	.7	2.7	2.6	49.56	54	-4.44	-	-	342	133	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data

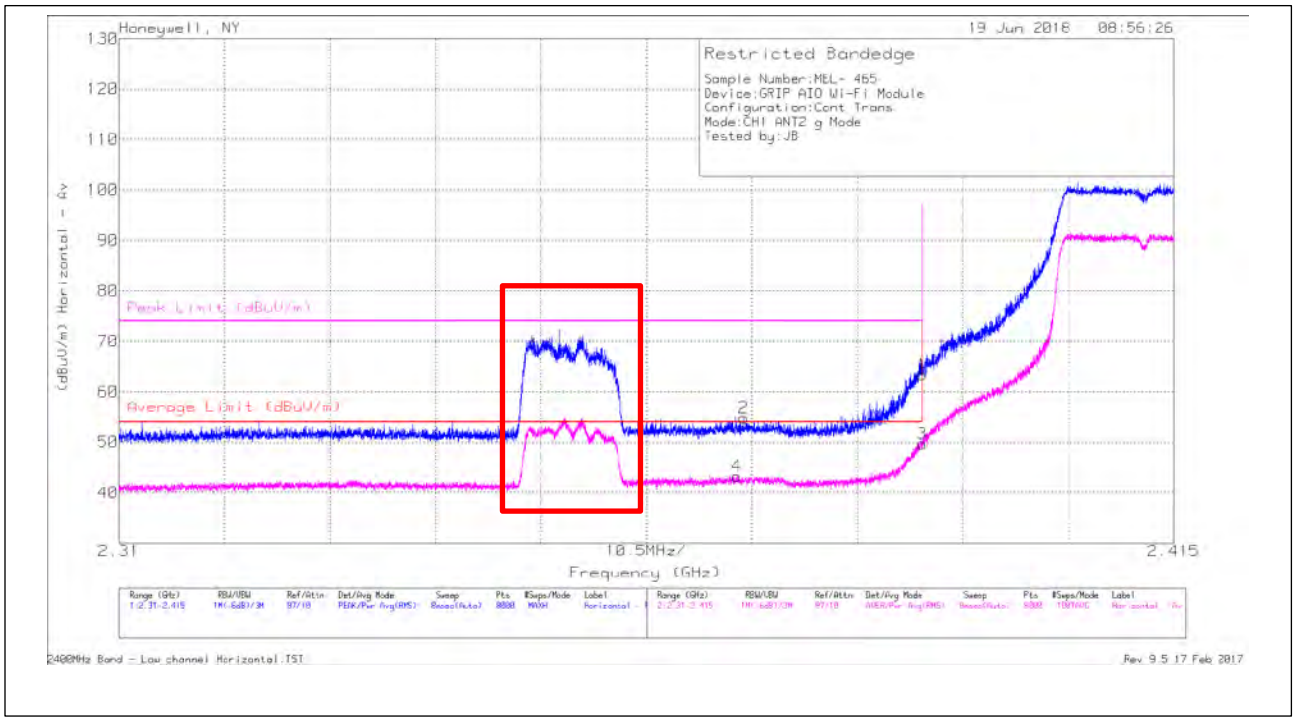


Antenna 1: High Channel Vertical – Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.484	19.6	Pk	28.7	.7	2.6	2.6	54.2	-	-	74	-19.8	332	381	V
2.554	18.98	Pk	29	.7	2.7	2.6	53.98	-	-	74	-20.02	332	381	V
* 2.484	9.78	RMS	28.7	.7	2.6	2.6	44.38	54	-9.62	-	-	332	381	V
2.549	8.04	RMS	29	.7	2.7	2.6	43.04	54	-10.96	-	-	332	381	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data



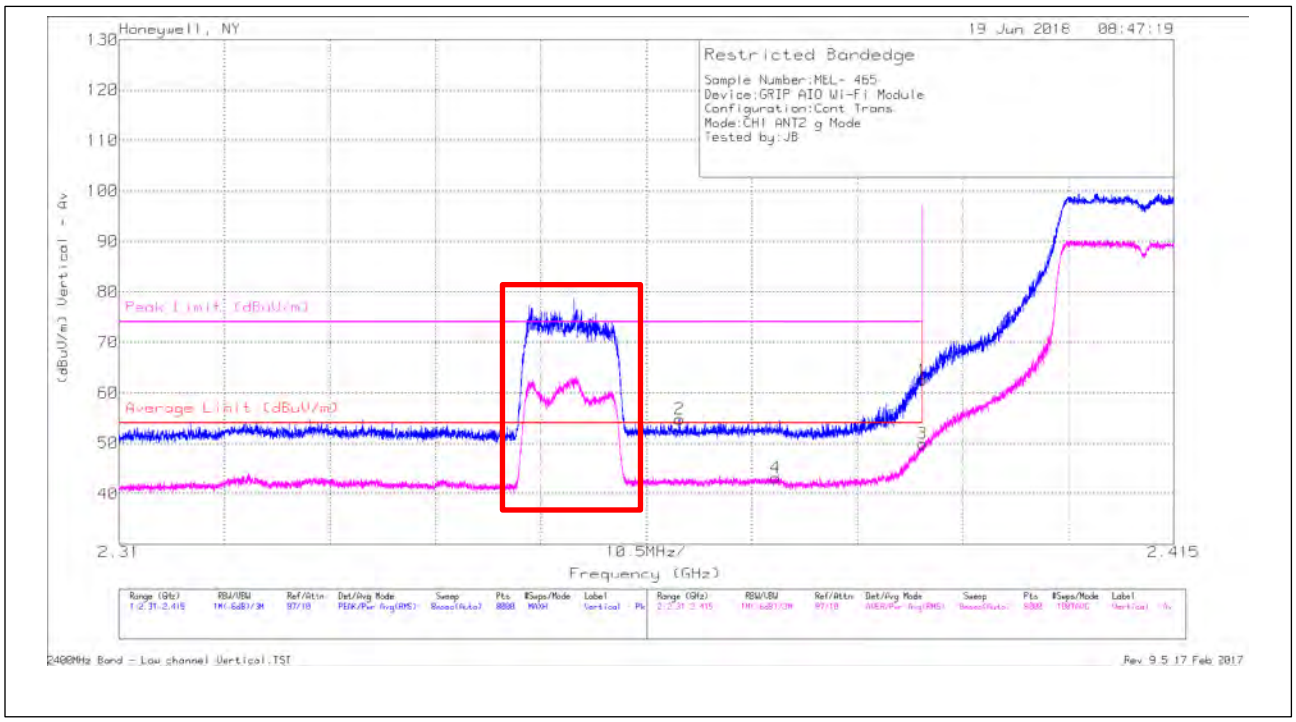
Antenna 2: Low Channel Horizontal - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.39	29.07	Pk	28.5	.7	2.6	2.5	63.37	-	-	74	-10.63	153	204	H
* 2.372	20.73	Pk	28.3	.7	2.6	2.5	54.83	-	-	74	-19.17	153	204	H
* 2.39	15.42	RMS	28.5	.7	2.6	2.5	49.72	54	-4.28	-	-	153	204	H
* 2.372	9.1	RMS	28.3	.7	2.6	2.5	43.2	54	-10.8	-	-	153	204	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data

NOTE: Emissions highlighted in the plot above is OATS ambient and not a product of the transmitter



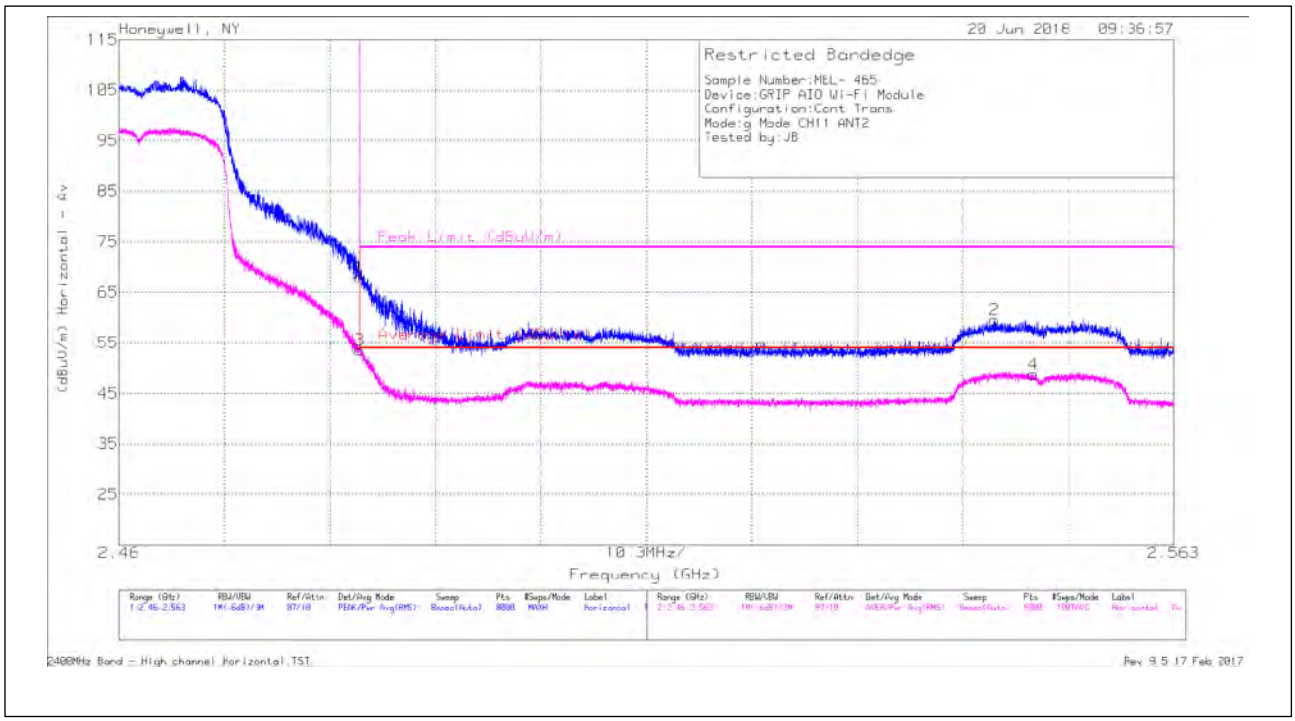
Antenna 2: Low Channel Vertical - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.39	28.14	Pk	28.5	.7	2.6	2.5	62.44	-	-	74	-11.56	132	321	V
* 2.366	20.73	Pk	28.3	.7	2.6	2.5	54.83	-	-	74	-19.17	132	321	V
* 2.39	15.61	RMS	28.5	.7	2.6	2.5	49.91	54	-4.09	-	-	132	321	V
* 2.375	8.95	RMS	28.4	.7	2.6	2.5	43.15	54	-10.85	-	-	132	321	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data

NOTE: Emissions highlighted in the plot above is OATS ambient and not a product of the transmitter

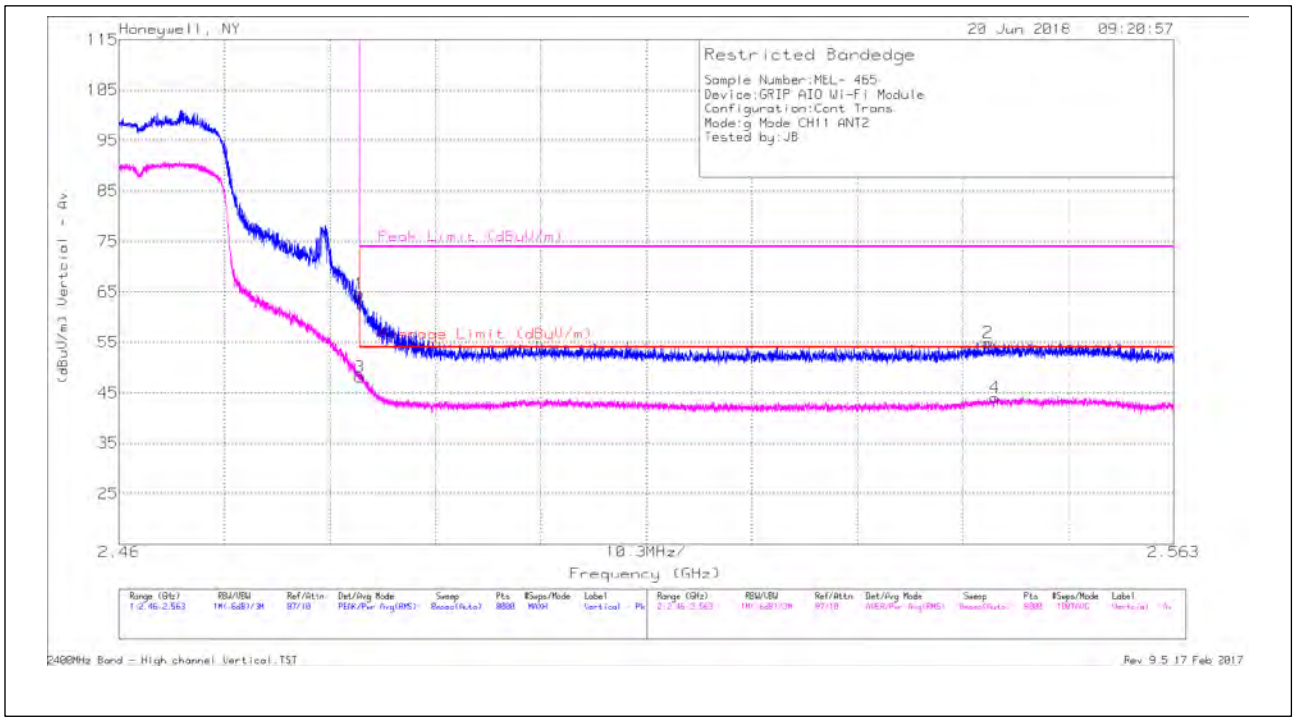


Antenna 2: High Channel Horizontal - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.484	33.37	Pk	28.7	.7	2.6	2.6	67.97	-	-	74	-6.03	12	121	H
2.545	24.59	Pk	29	.7	2.7	2.6	59.59	-	-	74	-14.41	12	121	H
* 2.484	19	RMS	28.7	.7	2.6	2.6	53.6	54	-.4	-	-	12	121	H
2.549	13.77	RMS	29	.7	2.7	2.6	48.77	54	-5.23	-	-	12	121	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data



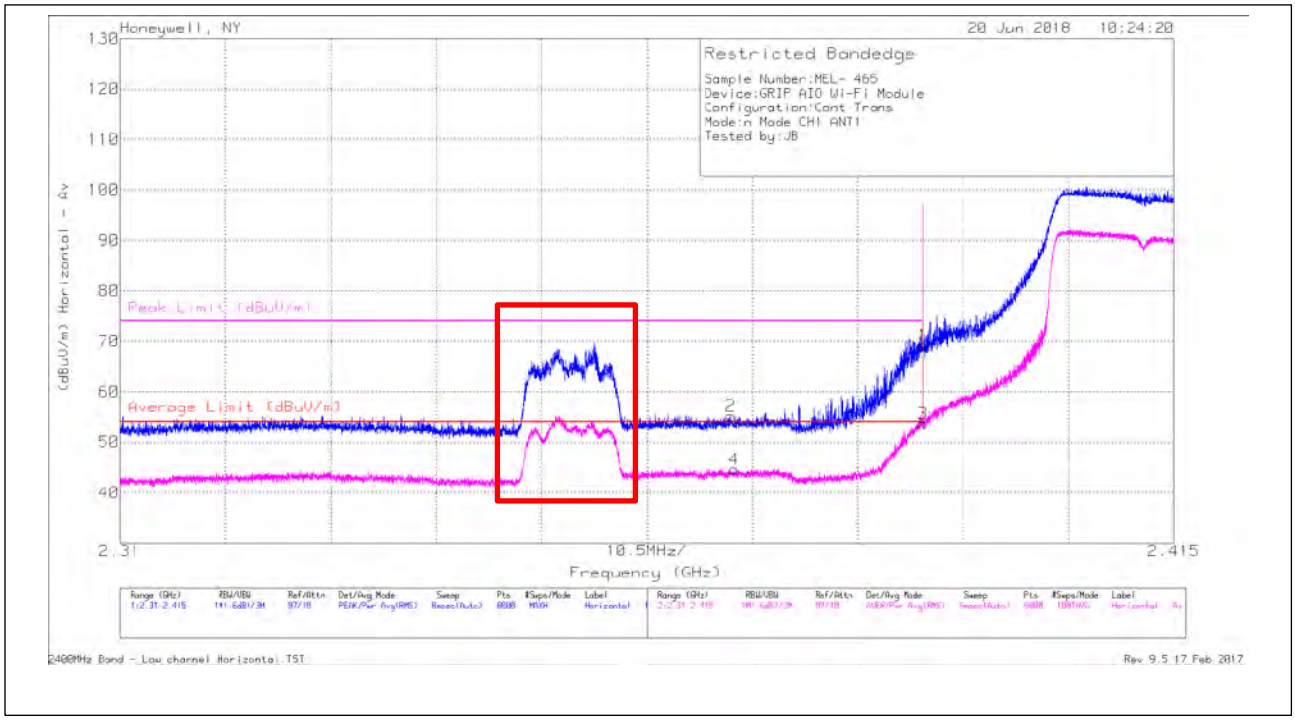
Antenna 2: High Channel Vertical - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.484	30.01	Pk	28.7	.7	2.6	2.6	64.61	-	-	74	-9.39	319	372	V
2.545	19.96	Pk	29	.7	2.7	2.6	54.96	-	-	74	-19.04	319	372	V
* 2.484	13.57	RMS	28.7	.7	2.6	2.6	48.17	54	-5.83	-	-	319	372	V
2.546	8.98	RMS	29	.7	2.7	2.6	43.98	54	-10.02	-	-	319	372	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data

Restricted Band Edge – 802.11n Mode



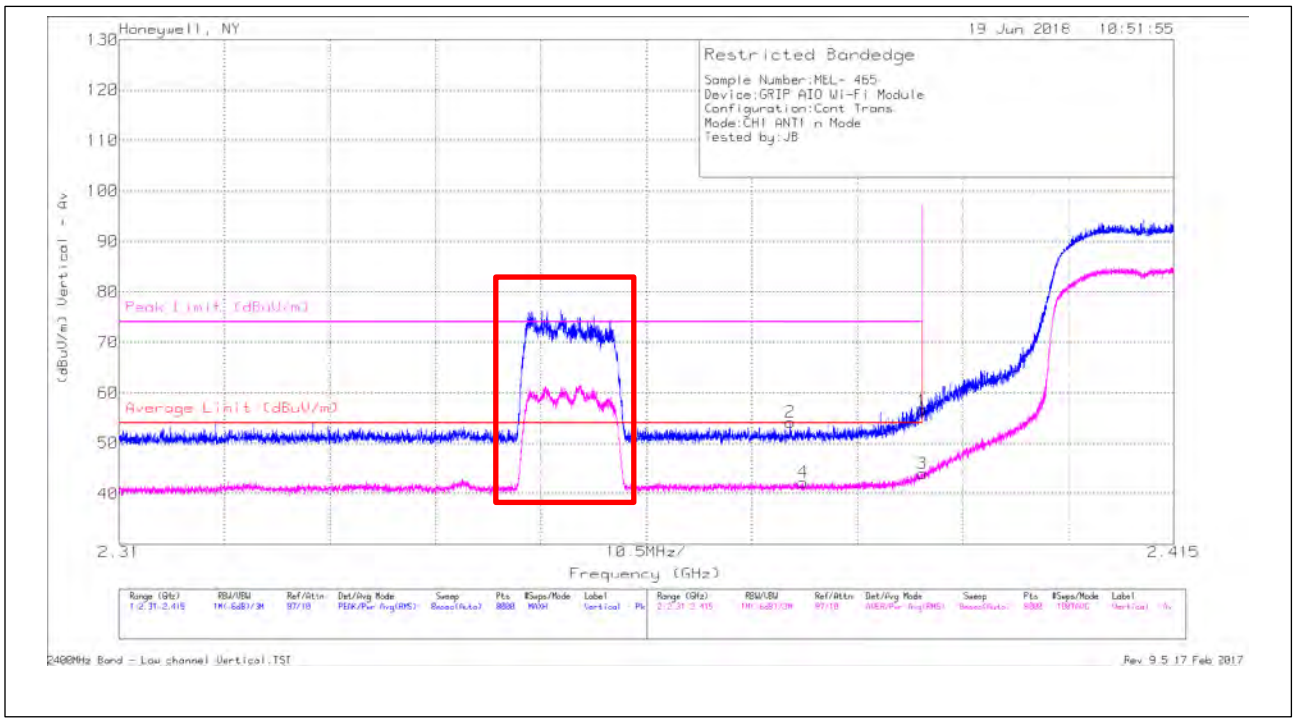
Antenna 1: Low Channel Horizontal – Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.39	34.94	Pk	28.5	.7	2.6	2.5	69.24	-	-	74	-4.76	10	149	H
* 2.371	21.02	Pk	28.3	.7	2.6	2.5	55.12	-	-	74	-18.88	10	149	H
* 2.39	19.36	RMS	28.5	.7	2.6	2.5	53.66	54	-.34	-	-	10	149	H
* 2.371	10.48	RMS	28.3	.7	2.6	2.5	44.58	54	-9.42	-	-	10	149	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data

NOTE: Emissions highlighted in the plot above is OATS ambient and not a product of the transmitter



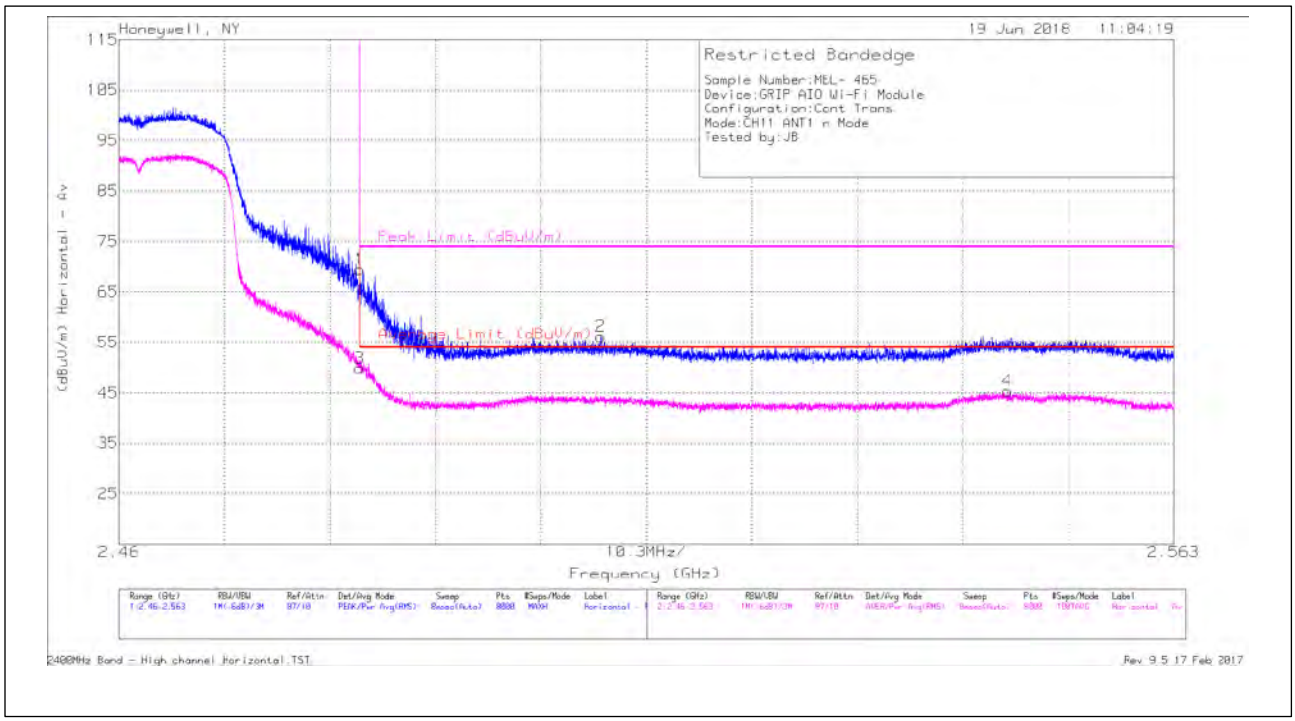
Antenna 1: Low Channel Vertical – Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.39	22.25	Pk	28.5	.7	2.6	2.5	56.55	-	-	74	-17.45	73	312	V
* 2.377	19.96	Pk	28.4	.7	2.6	2.5	54.16	-	-	74	-19.84	73	312	V
* 2.39	9.75	RMS	28.5	.7	2.6	2.5	44.05	54	-9.95	-	-	73	312	V
* 2.378	8.07	RMS	28.4	.7	2.6	2.5	42.27	54	-11.73	-	-	73	312	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data

NOTE: Emissions highlighted in the plot above is OATS ambient and not a product of the transmitter

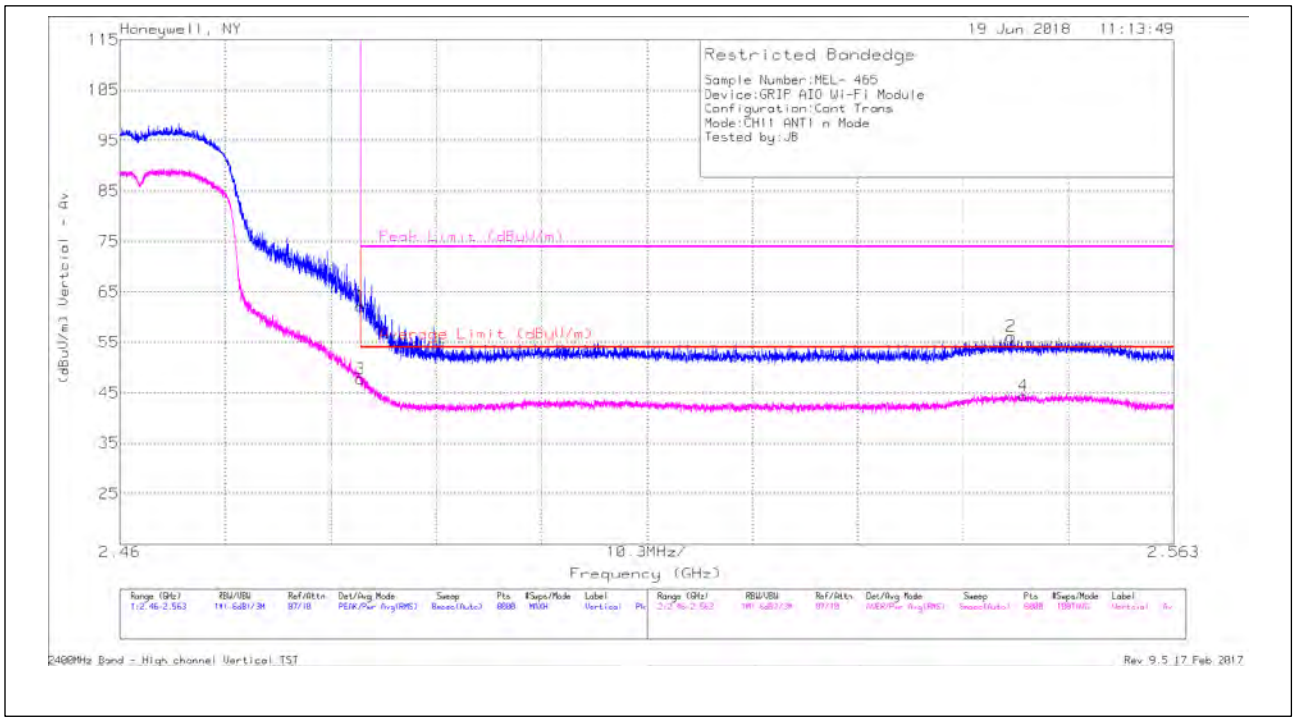


Antenna 1: High Channel Horizontal - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.484	34.87	Pk	28.7	.7	2.6	2.6	69.47	-	-	74	-4.53	208	104	H
2.507	21.43	Pk	28.8	.7	2.7	2.6	56.23	-	-	74	-17.77	208	104	H
* 2.484	15.24	RMS	28.7	.7	2.6	2.6	49.84	54	-4.16	-	-	208	104	H
2.547	10.43	RMS	29	.7	2.7	2.6	45.43	54	-8.57	-	-	208	104	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data

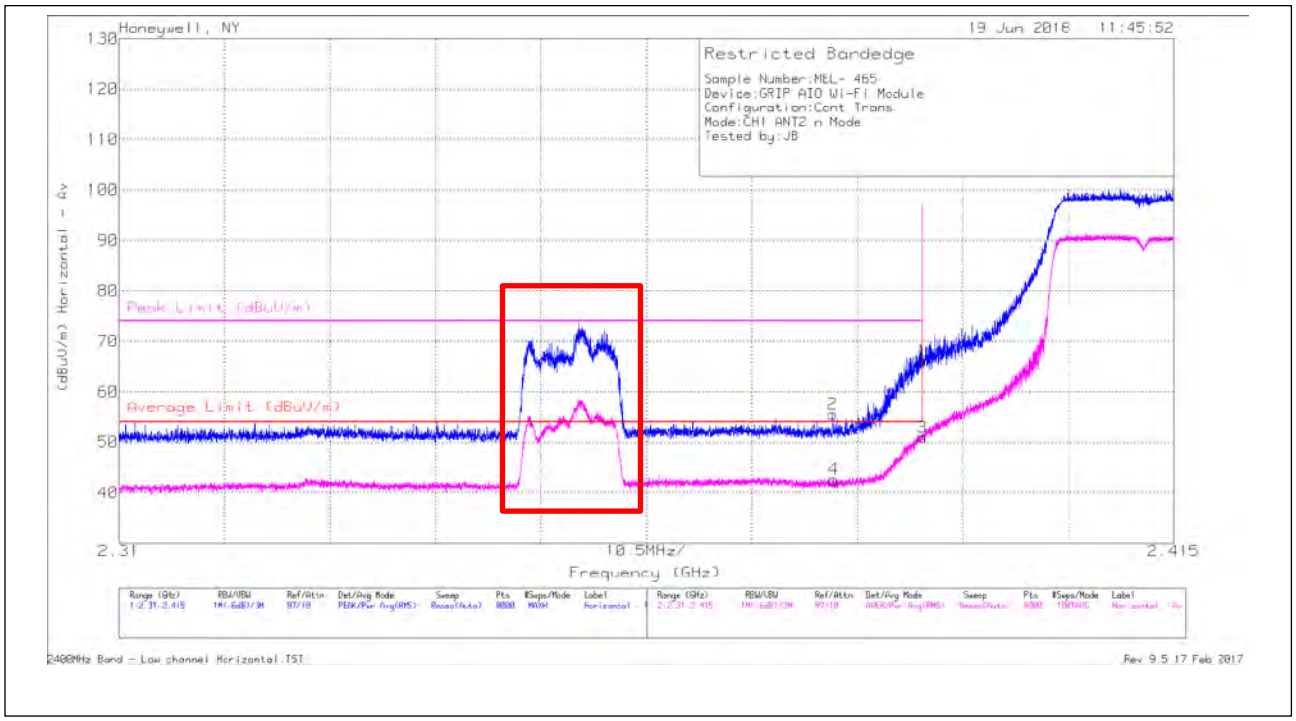


Antenna 1: High Channel Vertical – Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.484	27.52	Pk	28.7	.7	2.6	2.6	62.12	-	-	74	-11.88	41	302	V
2.547	21.15	Pk	29	.7	2.7	2.6	56.15	-	-	74	-17.85	41	302	V
* 2.484	13.1	RMS	28.7	.7	2.6	2.6	47.7	54	-6.3	-	-	41	302	V
2.548	9.36	RMS	29	.7	2.7	2.6	44.36	54	-9.64	-	-	41	302	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data



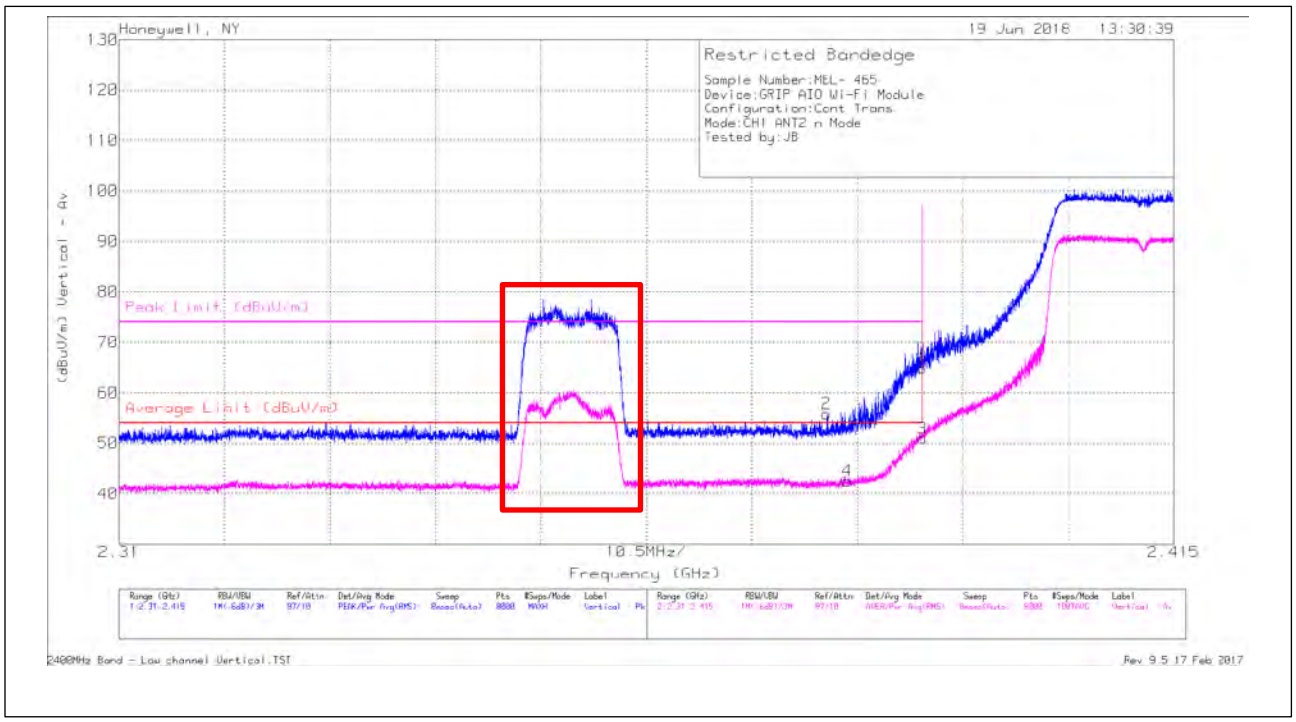
Antenna 2: Low Channel Horizontal - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.39	31.77	Pk	28.5	.7	2.6	2.5	66.07	-	-	74	-7.93	154	229	H
* 2.381	21.35	Pk	28.4	.7	2.6	2.5	55.55	-	-	74	-18.45	154	229	H
* 2.39	16.64	RMS	28.5	.7	2.6	2.5	50.94	54	-3.06	-	-	154	229	H
* 2.381	8.48	RMS	28.4	.7	2.6	2.5	42.68	54	-11.32	-	-	154	229	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data

NOTE: Emissions highlighted in the plot above is OATS ambient and not a product of the transmitter



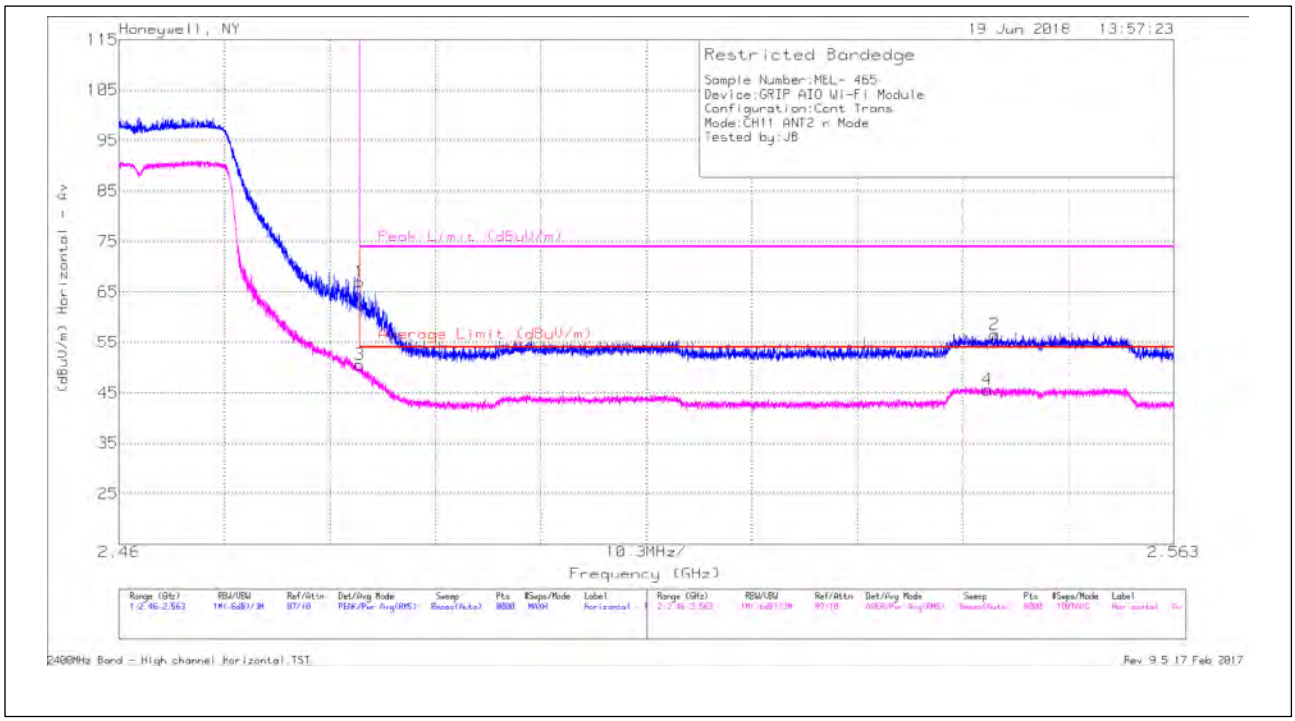
Antenna 2: Low Channel Vertical - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.39	30.51	Pk	28.5	.7	2.6	2.5	64.81	-	-	74	-9.19	210	345	V
* 2.38	21.65	Pk	28.4	.7	2.6	2.5	55.85	-	-	74	-18.15	210	345	V
* 2.39	16.66	RMS	28.5	.7	2.6	2.5	50.96	54	-3.04	-	-	210	345	V
* 2.382	8.3	RMS	28.4	.7	2.6	2.5	42.5	54	-11.5	-	-	210	345	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data

NOTE: Emissions highlighted in the plot above is OATS ambient and not a product of the transmitter

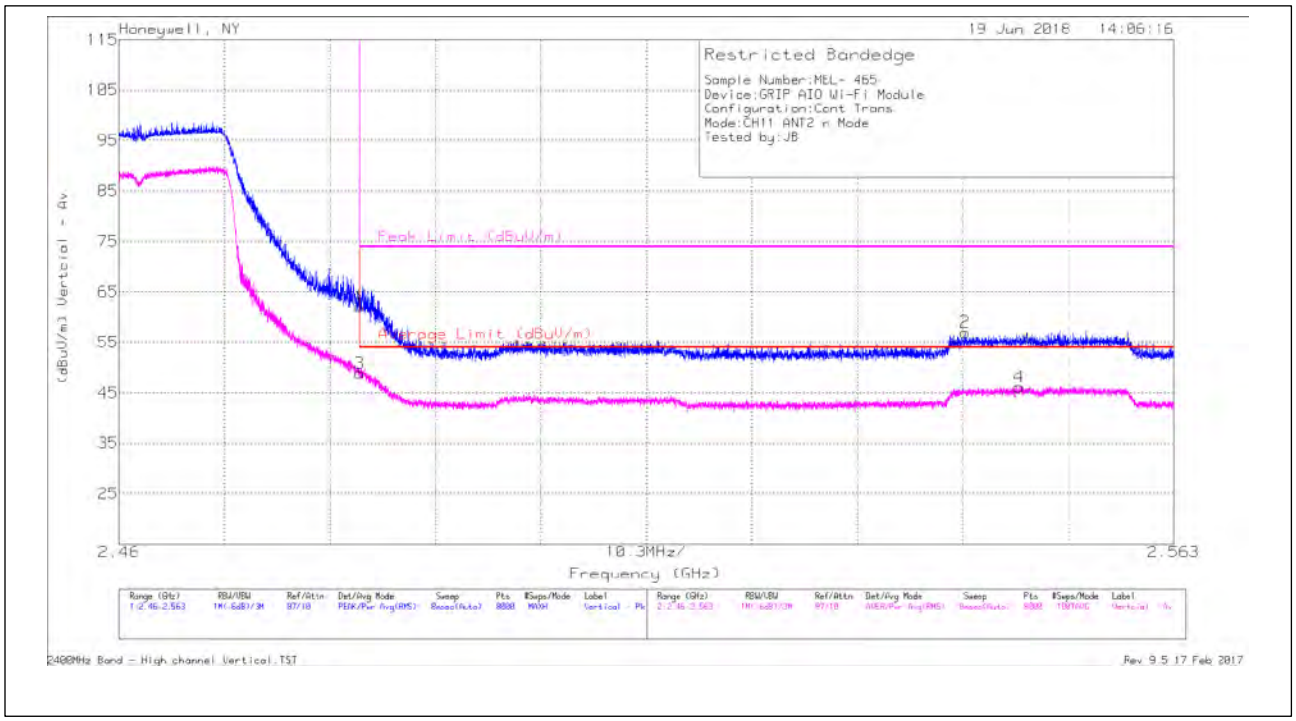


Antenna 2: High Channel Horizontal - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.484	32.43	Pk	28.7	.7	2.6	2.6	67.03	-	-	74	-6.97	138	160	H
2.545	21.58	Pk	29	.7	2.7	2.6	56.58	-	-	74	-17.42	138	160	H
* 2.484	15.97	RMS	28.7	.7	2.6	2.6	50.57	54	-3.43	-	-	138	160	H
2.545	10.59	RMS	29	.7	2.7	2.6	45.59	54	-8.41	-	-	138	160	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data



Antenna 2: High Channel Vertical - Plot

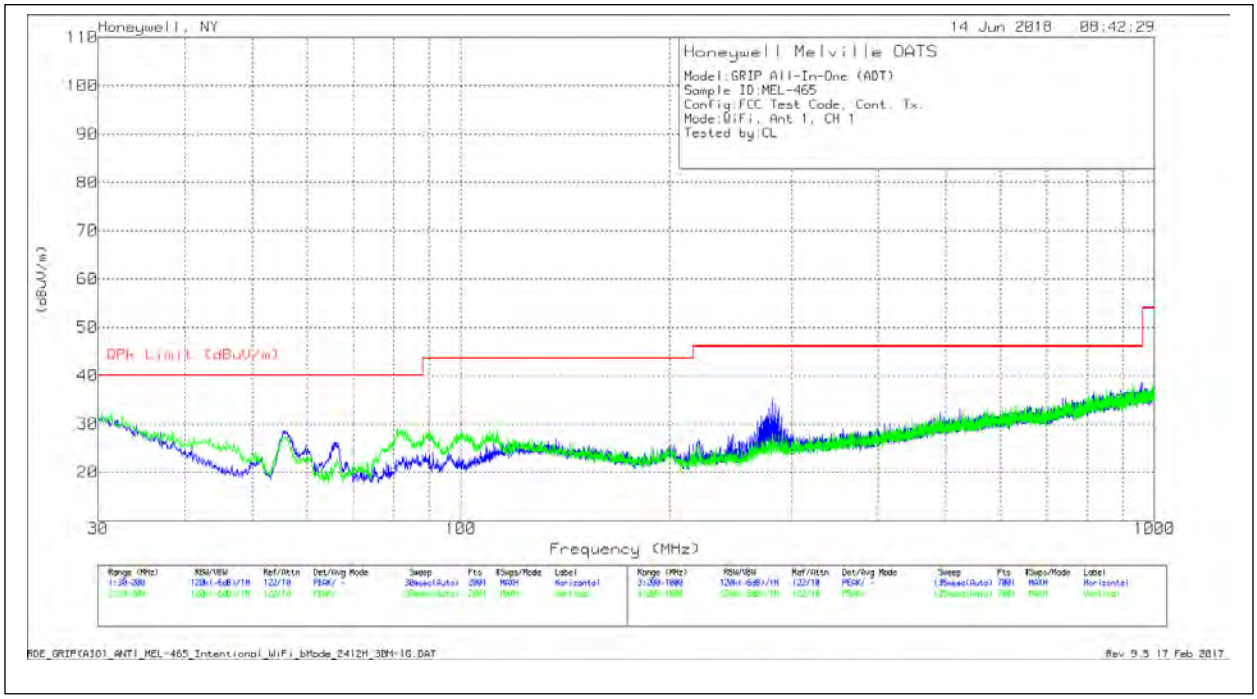
Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX3 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 2.484	27.43	Pk	28.7	.7	2.6	2.6	62.03	-	-	74	-11.97	171	396	V
2.543	22.09	Pk	28.9	.7	2.7	2.6	56.99	-	-	74	-17.01	171	396	V
* 2.484	14.26	RMS	28.7	.7	2.6	2.6	48.86	54	-5.14	-	-	171	396	V
2.548	11.13	RMS	29	.7	2.7	2.6	46.13	54	-7.87	-	-	171	396	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

Data

Spurious Emissions

Below 1GHz (Worse-case, 802.11b Mode)

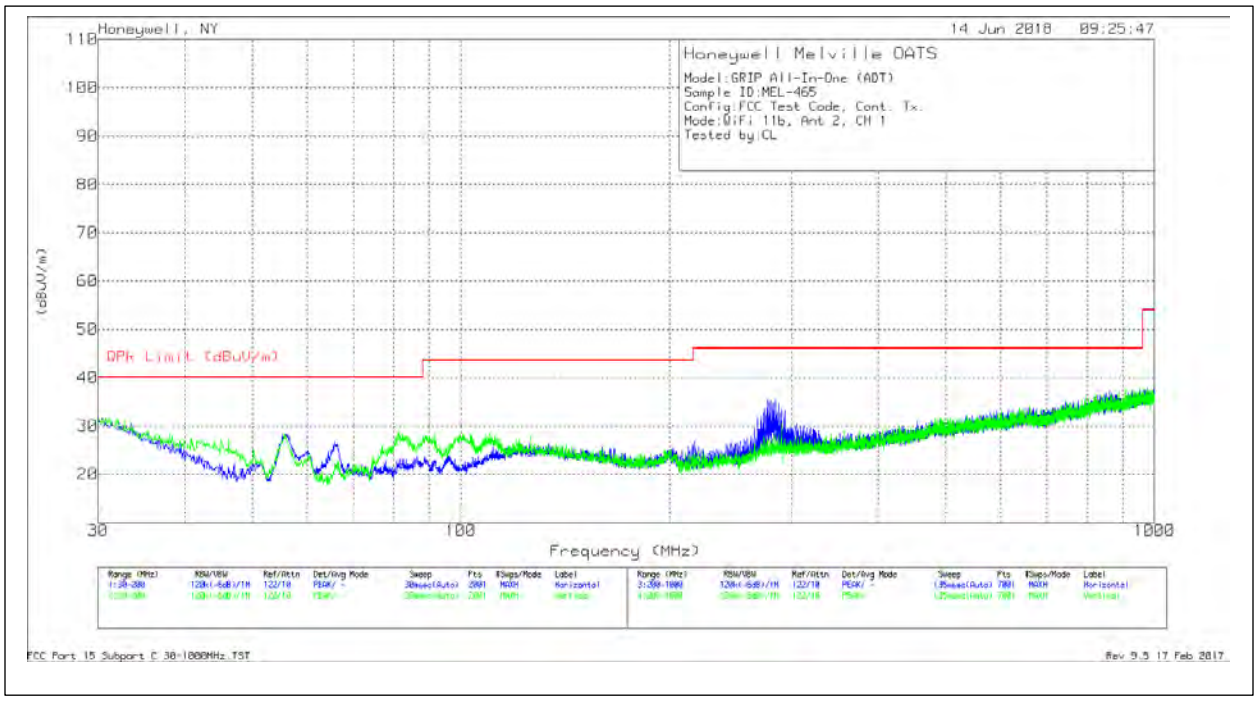


Antenna 1: Plot

Frequency (MHz)	Meter Reading (dBuV)	Det	AF_JB6 [dB/m]	Cable 1 [dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
30.9059	10.57	Qp	24.2	.9	35.67	40	-4.33	112	103	H
55.7824	7.96	Qp	12	1.1	21.06	40	-18.94	66	253	H
54.9705	7.96	Qp	12.1	1.1	21.16	40	-18.84	150	279	V
31.5783	10.43	Qp	23.7	.9	35.03	40	-4.97	18	160	V
* 281.6242	4.09	Qp	17.6	3	24.69	46.02	-21.33	244	202	H
926.7845	4.06	Qp	27.6	8.5	40.16	46.02	-5.86	261	228	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Qp - Quasi-Peak detector

Antenna 1: Data



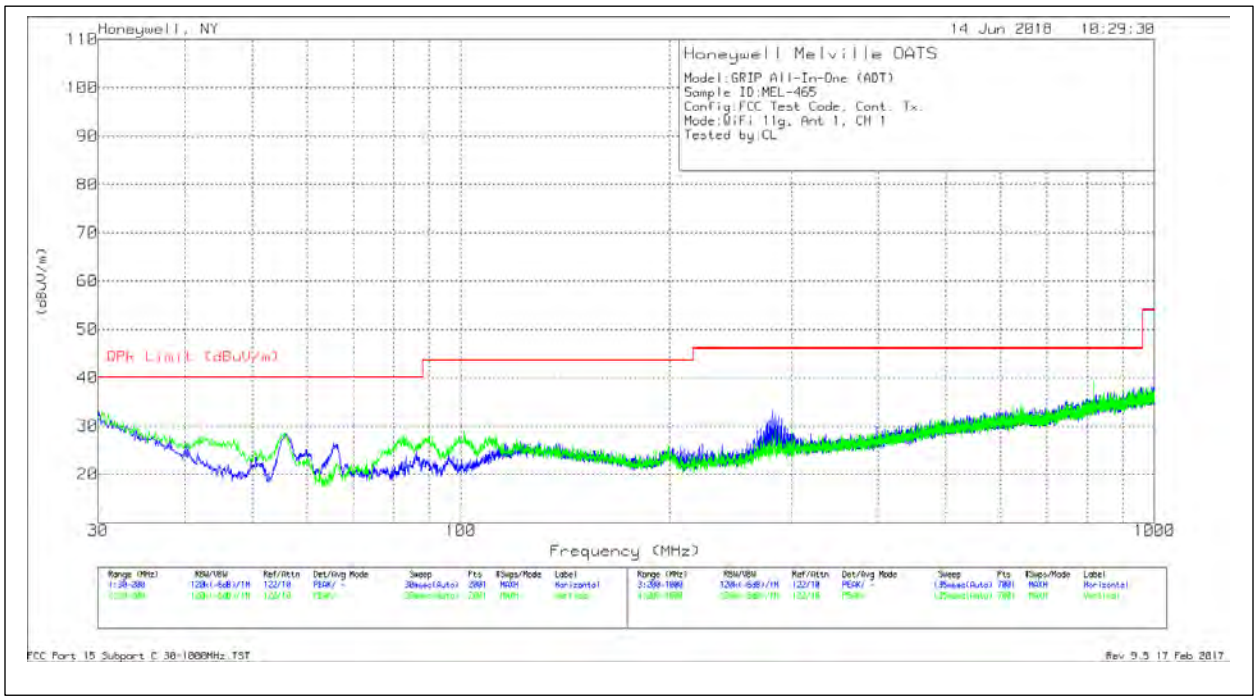
Antenna 2: Plot

Frequency (MHz)	Meter Reading (dBuV)	Det	AF_JB6 [dB/m]	Cable 1 [dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
30.5759	10.68	Qp	24.4	.9	35.98	40	-4.02	2	355	H
56.5483	8	Qp	12	1.1	21.1	40	-18.9	273	291	H
30.7479	10.62	Qp	24.3	.9	35.82	40	-4.18	185	119	V
56.2344	8.03	Qp	12	1.1	21.13	40	-18.87	289	111	V
* 284.0237	4.4	Qp	17.7	3.1	25.2	46.02	-20.82	331	345	H
907.8508	3.97	Qp	27.3	8.3	39.57	46.02	-6.45	30	394	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Qp - Quasi-Peak detector

Antenna 2: Data

Below 1GHz (Worse-case, 802.11g Mode)

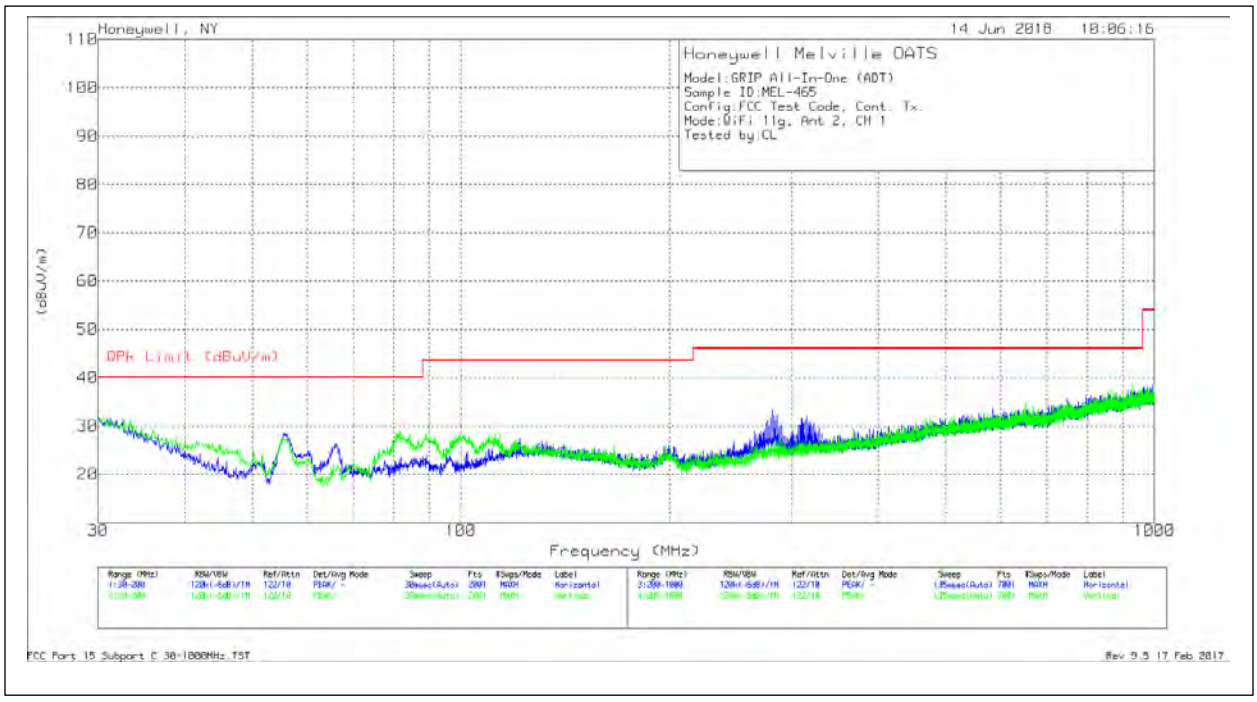


Antenna 1: Plot

Frequency (MHz)	Meter Reading (dBuV)	Det	AF_JB6 [dB/m]	Cable 1 [dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
30.2694	10.74	Qp	24.6	.9	36.24	40	-3.76	4	334	H
55.3161	7.89	Qp	12	1.1	20.99	40	-19.01	117	236	H
30.2878	10.75	Qp	24.6	.9	36.25	40	-3.75	20	281	V
55.7431	8.01	Qp	12	1.1	21.11	40	-18.89	343	139	V
* 281.374	4.04	Qp	17.6	3	24.64	46.02	-21.38	65	326	H
818.1066	4.17	Qp	26.1	8.3	38.57	46.02	-7.45	102	304	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Qp - Quasi-Peak detector

Antenna 1: Data



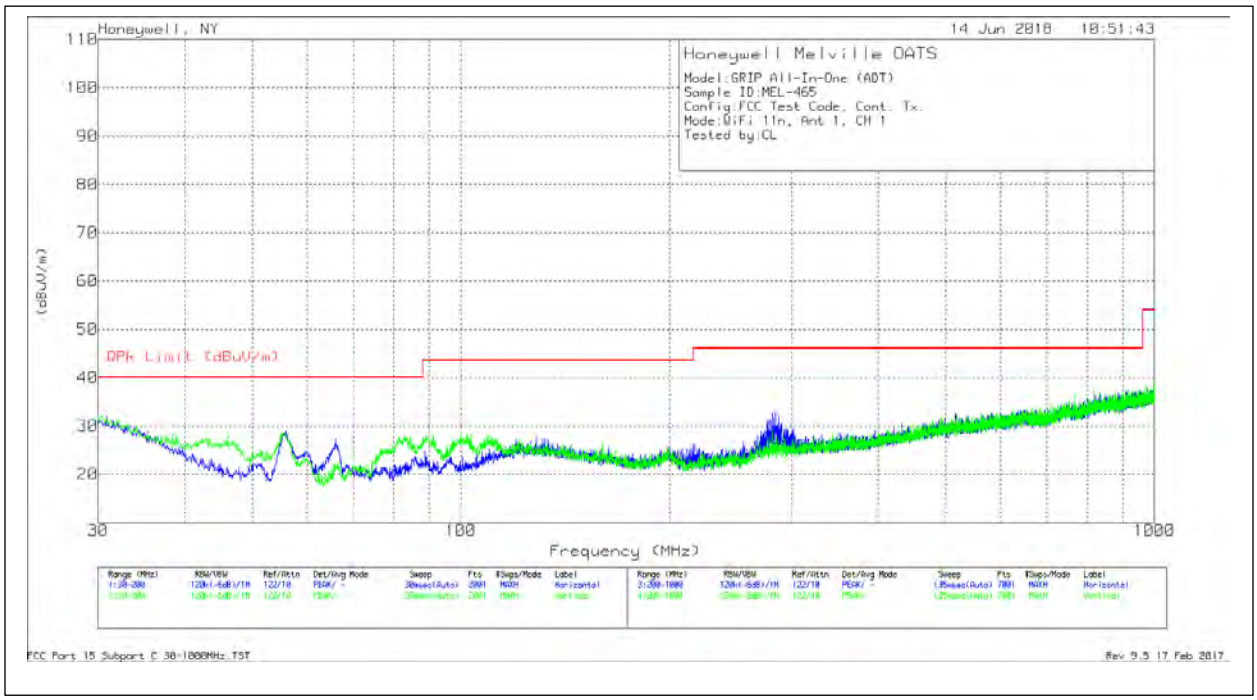
Antenna 2: Plot

Frequency (MHz)	Meter Reading (dBuV)	Det	AF_JB6 [dB/m]	Cable 1 [dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
30.2596	10.86	Qp	24.7	.9	36.46	40	-3.54	276	198	H
55.9521	14.1	Qp	12	1.1	27.2	40	-12.8	278	386	H
31.0394	10.86	Qp	24.1	.9	35.86	40	-4.14	37	146	V
54.7237	20.07	Qp	12.1	1.1	33.27	40	-6.73	169	313	V
* 281.2828	9.11	Qp	17.6	3	29.71	46.02	-16.31	340	217	H
925.9962	4.13	Qp	27.6	8.5	40.23	46.02	-5.79	163	214	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Qp - Quasi-Peak detector

Antenna 2: Data

Below 1GHz (Worse-case, 802.11n Mode)

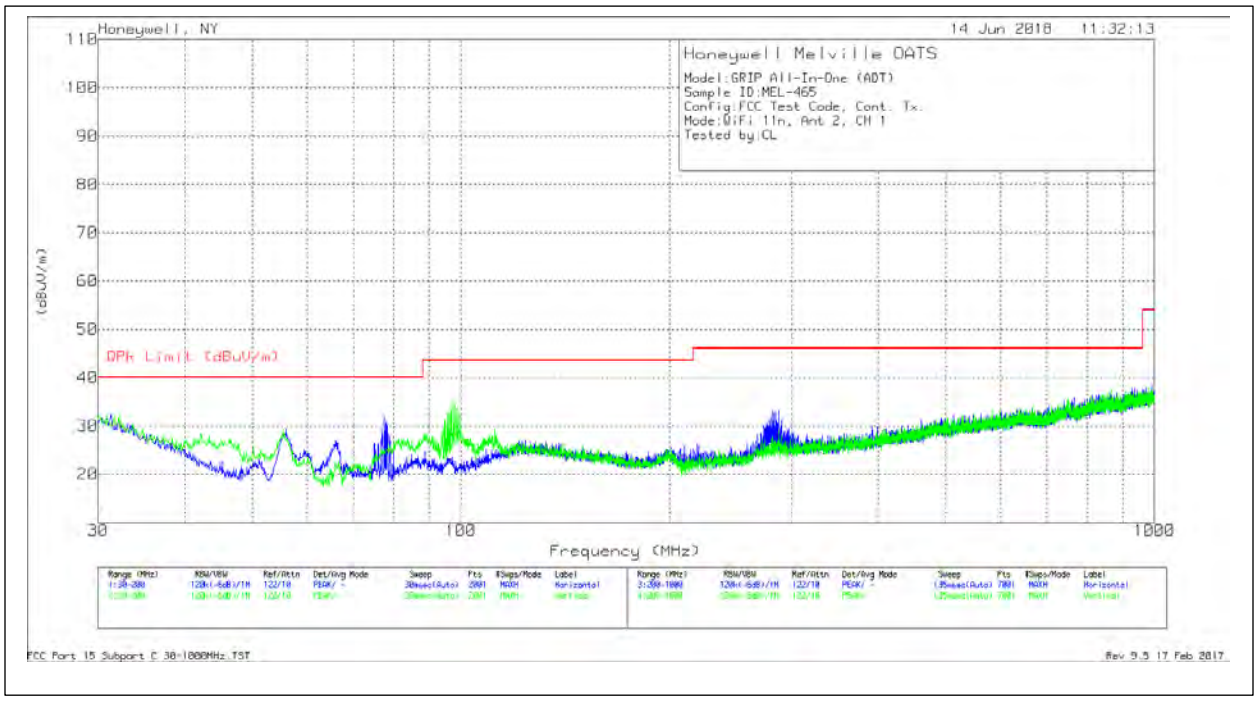


Antenna 1: Plot

Frequency (MHz)	Meter Reading (dBuV)	Det	AF_JB6 [dB/m]	Cable 1 [dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
31.456	10.87	Qp	23.8	.9	35.57	40	-4.43	277	204	H
55.5564	14.51	Qp	12	1.1	27.61	40	-12.39	187	400	H
30.3046	11.06	Qp	24.6	.9	36.56	40	-3.44	229	400	V
55.9308	19.15	Qp	12	1.1	32.25	40	-7.75	298	225	V
* 284.2097	8.4	Qp	17.7	3.1	29.2	46.02	-16.82	165	268	H
818.3766	.74	Qp	26.1	8.3	35.14	46.02	-10.88	39	276	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Qp - Quasi-Peak detector

Antenna 1: Data



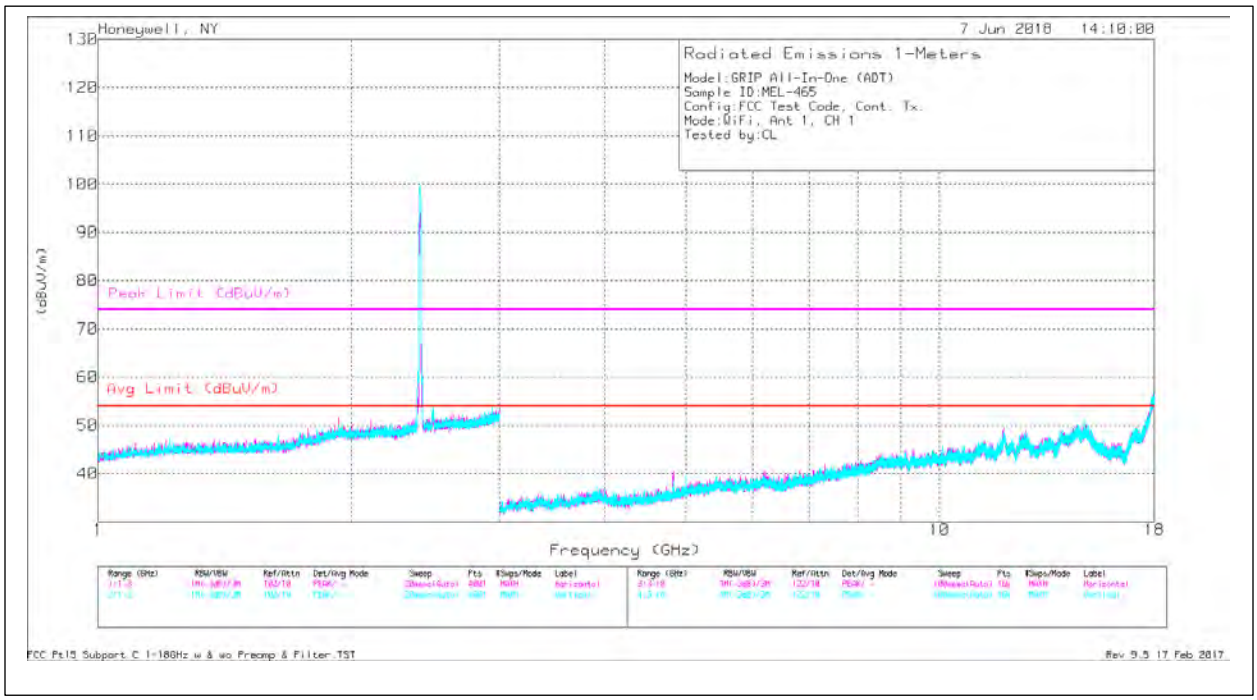
Antenna 2: Plot

Frequency (MHz)	Meter Reading (dBuV)	Det	AF_JB6 [dB/m]	Cable 1 [dB]	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
31.1552	11.29	Qp	24	.9	36.19	40	-3.81	145	194	H
56.1533	14.46	Qp	12	1.1	27.56	40	-12.44	213	398	H
77.8928	8.25	Qp	11.7	1.4	21.35	40	-18.65	357	379	H
32.3078	11.02	Qp	23.2	.9	35.12	40	-4.88	149	244	V
55.9535	19.07	Qp	12	1.1	32.17	40	-7.83	295	263	V
865.7612	1.94	Qp	26.4	8.7	37.04	46.02	-8.98	205	320	V

Qp - Quasi-Peak detector

Antenna 2: Data

1 - 18GHz 802.11b Mode

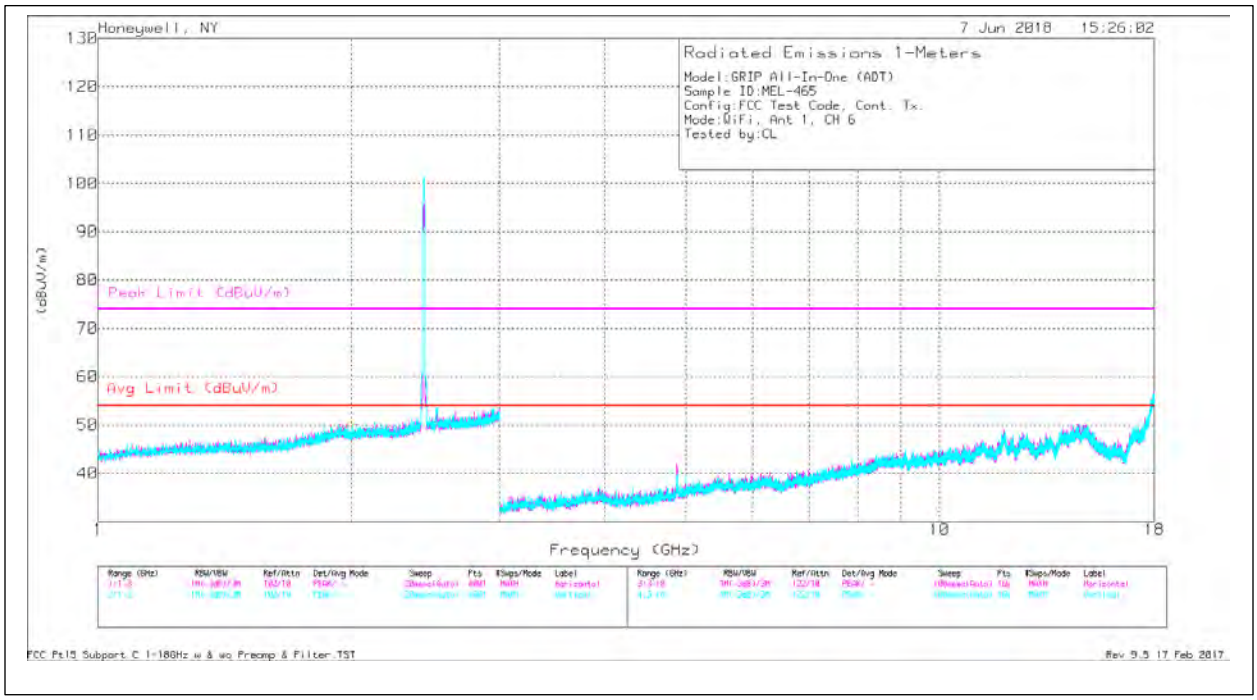


Antenna 1: Low Channel – Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX2 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.824	55.76	PK2	33.1	-41.2	3.7	3.7	55.06	-	-	74	-18.94	270	110	H
* 4.824	45.52	MAv1	33.1	-41.2	3.7	3.7	44.82	54	-9.18	-	-	270	110	H
* 4.824	50.32	PK2	33.1	-41.2	3.7	3.7	49.62	-	-	74	-24.38	357	108	V
* 4.824	39.51	MAv1	33.1	-41.2	3.7	3.7	38.81	54	-15.19	-	-	357	108	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

Antenna 1: Low Channel - Data

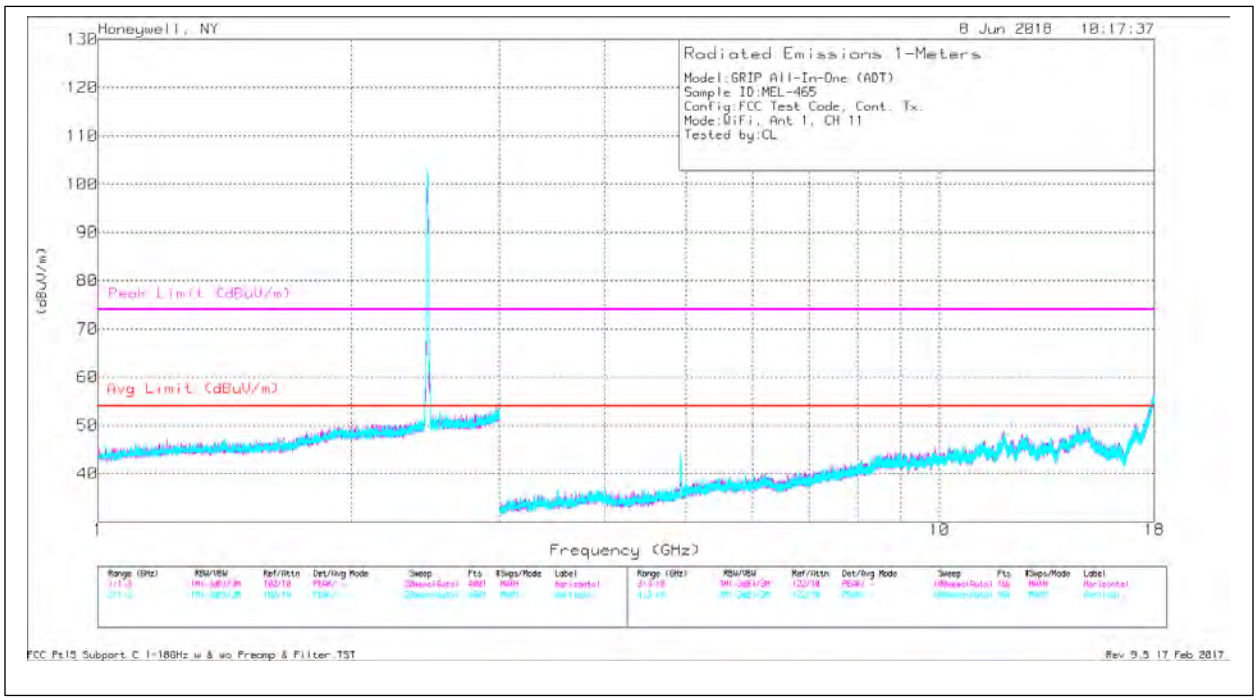


Antenna 1: Mid Channel – Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX2 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.874	53.67	PK2	33.2	-41.3	3.7	3.6	52.87	-	-	74	-21.13	269	137	H
* 4.875	43.31	MAv1	33.2	-41.3	3.7	3.6	42.51	54	-11.49	-	-	269	137	H
* 4.874	49.53	PK2	33.2	-41.3	3.7	3.6	48.73	-	-	74	-25.27	359	107	V
* 4.876	42.36	MAv1	33.2	-41.3	3.7	3.6	41.56	54	-12.44	-	-	359	107	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

Antenna 1: Mid Channel - Data

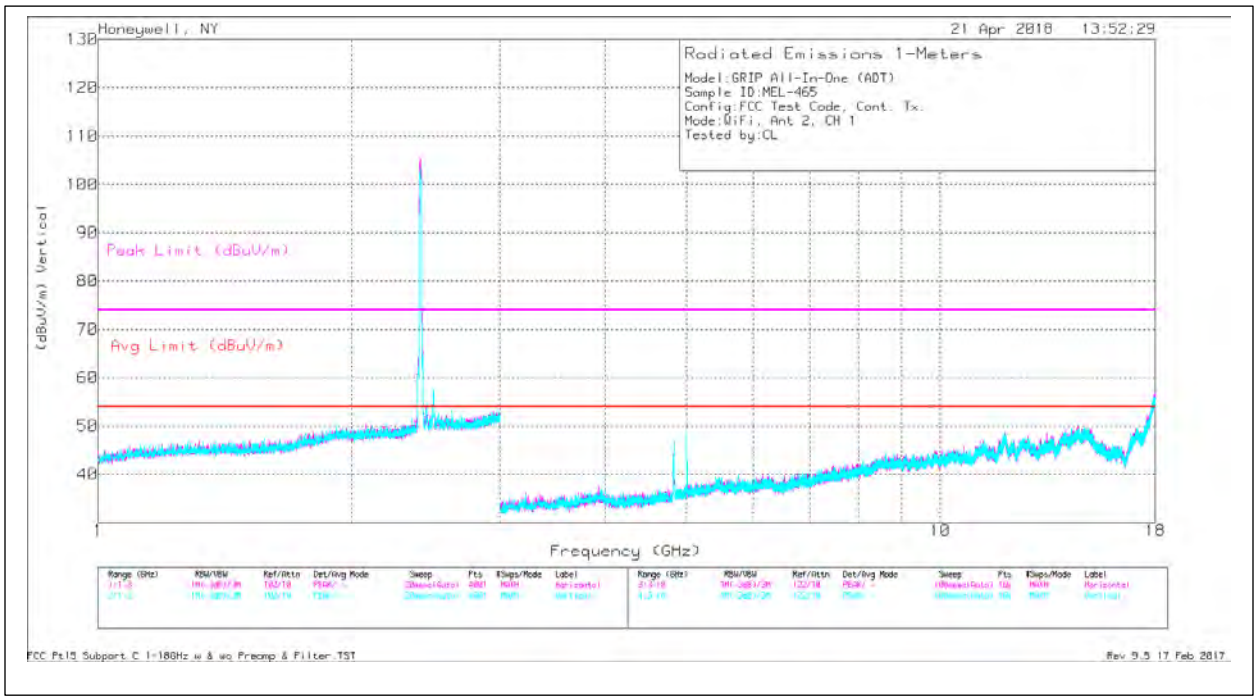


Antenna 1: High Channel – Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX2 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.921	55.56	PK2	33.2	-41.5	3.8	3.6	54.66	-	-	74	-19.34	270	139	H
* 4.924	43.49	MAv1	33.2	-41.5	3.8	3.7	42.69	54	-11.31	-	-	270	139	H
* 4.924	55.27	PK2	33.2	-41.5	3.8	3.7	54.47	-	-	74	-19.53	345	128	V
* 4.924	45.27	MAv1	33.2	-41.5	3.8	3.7	44.47	54	-9.53	-	-	345	128	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

Antenna 1: High Channel – Data

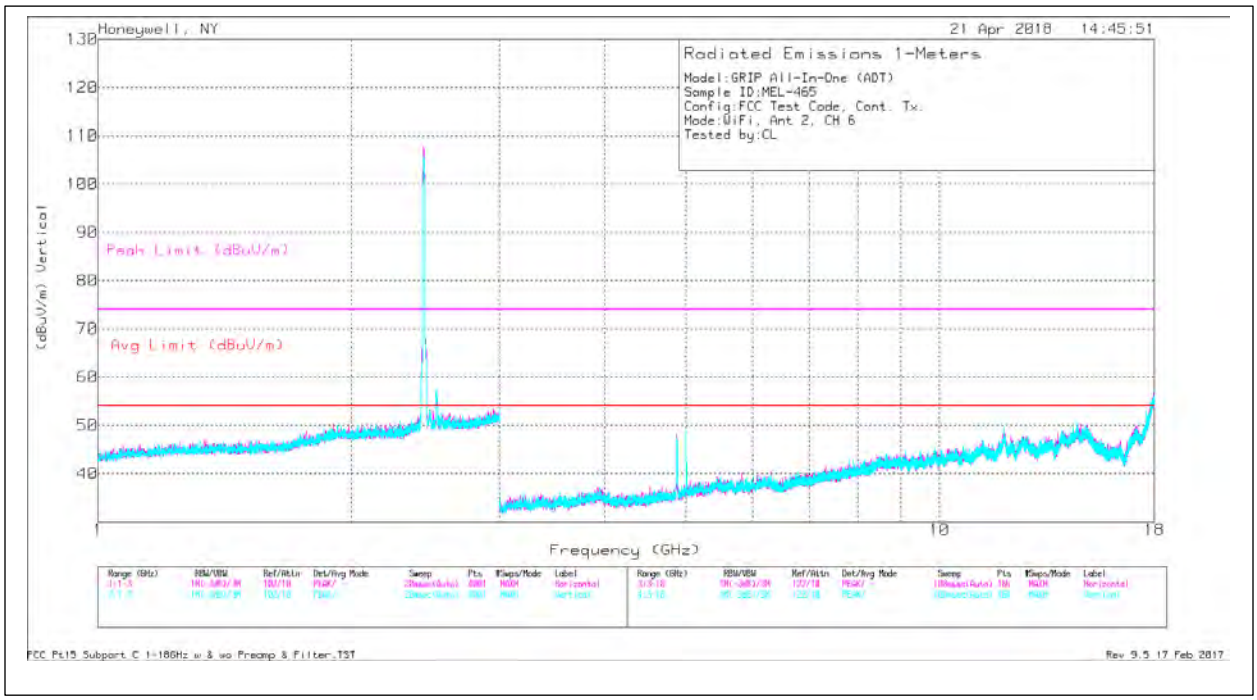


Antenna 2: Low Channel – Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX2 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.824	48.03	PK2	33.1	-41.2	3.7	3.7	47.33	-	-	74	-26.67	8	144	H
* 4.824	36.32	MAv1	33.1	-41.2	3.7	3.7	35.62	54	-18.38	-	-	8	144	H
* 4.824	43.58	PK2	33.1	-41.2	3.7	3.7	42.88	-	-	74	-31.12	42	106	V
* 4.823	31.97	MAv1	33.1	-41.2	3.7	3.7	31.27	54	-22.73	-	-	42	106	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

Antenna 2: Low Channel - Data

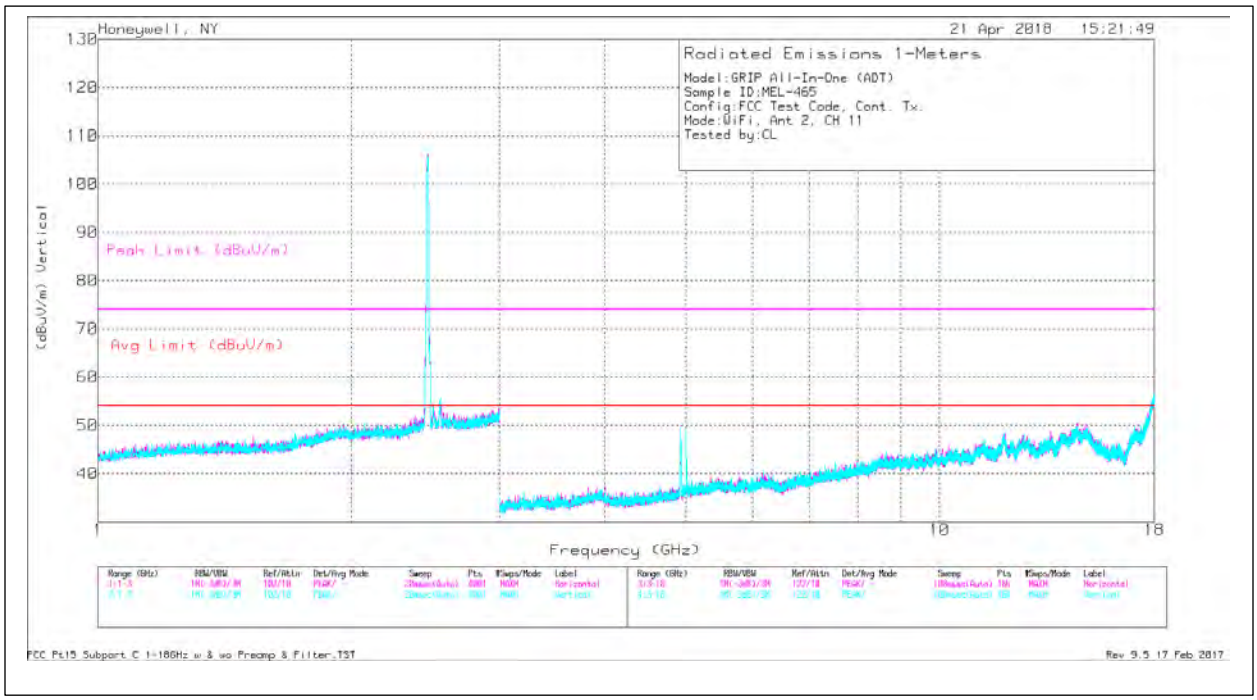


Antenna 2: Mid Channel – Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX2 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.874	46.93	PK2	33.2	-41.3	3.7	3.6	46.13	-	-	74	-27.87	1	112	H
* 4.874	35.29	MAv1	33.2	-41.3	3.7	3.6	34.49	54	-19.51	-	-	1	112	H
* 4.867	42.68	PK2	33.2	-41.3	3.7	3.6	41.88	-	-	74	-32.12	101	341	V
* 4.874	31.43	MAv1	33.2	-41.3	3.7	3.6	30.63	54	-23.37	-	-	101	341	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

Antenna 2: Mid Channel - Data



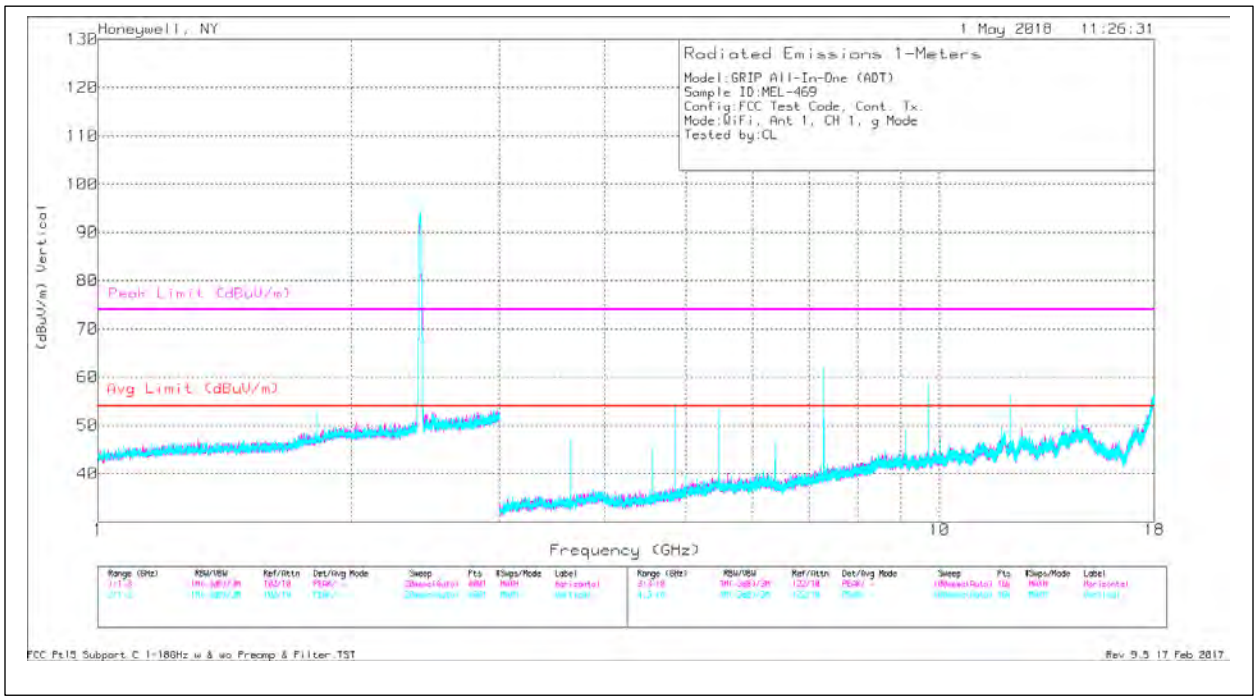
Antenna 2: High Channel – Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX2 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.922	52.83	PK2	33.2	-41.5	3.8	3.6	51.93	-	-	74	-22.07	85	222	H
* 4.922	32.55	MAv1	33.2	-41.5	3.8	3.6	31.65	54	-22.35	-	-	85	222	H
* 4.922	46	PK2	33.2	-41.5	3.8	3.6	45.1	-	-	74	-28.9	324	248	V
* 4.92	32.11	MAv1	33.2	-41.5	3.8	3.6	31.21	54	-22.79	-	-	324	248	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

Antenna 2: High Channel – Data

1 - 18GHz, 802.11g Mode

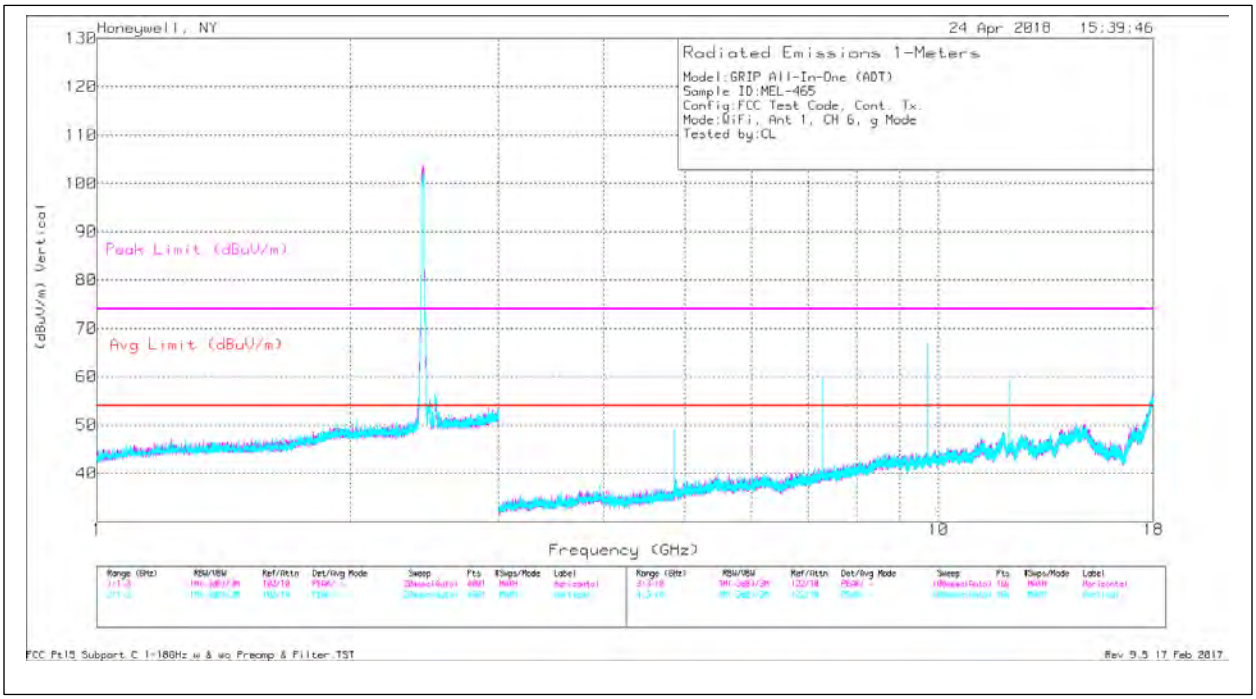


Antenna 1: Low Channel – Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX2 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.825	52.26	PK2	33.1	-41.2	3.7	3.7	51.56	-	-	74	-22.44	271	141	H
* 4.825	41.5	MAv1	33.1	-41.2	3.7	3.7	40.8	54	-13.2	-	-	271	141	H
7.233	40.03	PK2	36.3	-39.5	4.7	4.5	46.03	-	-	74	-27.97	168	144	H
7.241	28.4	MAv1	36.3	-39.6	4.7	4.5	34.3	54	-19.7	-	-	168	144	H
9.639	38.1	PK2	38	-39	5.6	5.2	47.9	-	-	74	-26.1	83	386	H
9.647	26.97	MAv1	38	-39	5.6	5.2	36.77	54	-17.23	-	-	83	386	H
16.879	38.93	PK2	39.8	-38.1	7.5	7	55.13	-	-	74	-18.87	142	322	H
16.88	27.64	MAv1	39.8	-38.1	7.5	7	43.84	54	-10.16	-	-	142	322	H
* 4.825	50.11	PK2	33.1	-41.2	3.7	3.7	49.41	-	-	74	-24.59	357	115	V
* 4.826	37.8	MAv1	33.1	-41.2	3.7	3.7	37.1	54	-16.9	-	-	357	115	V
7.227	40.05	PK2	36.3	-39.5	4.7	4.5	46.05	-	-	74	-27.95	174	361	V
7.237	28.45	MAv1	36.3	-39.6	4.7	4.5	34.35	54	-19.65	-	-	174	361	V
9.639	37.92	PK2	38	-39	5.6	5.2	47.72	-	-	74	-26.28	226	328	V
9.649	26.98	MAv1	38	-39	5.6	5.2	36.78	54	-17.22	-	-	226	328	V
* 14.498	39.16	PK2	42.3	-36.9	7	6.4	57.96	-	-	74	-16.04	213	129	V
* 14.481	28.17	MAv1	42.2	-36.9	6.9	6.4	46.77	54	-7.23	-	-	213	129	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

Antenna 1: Low Channel - Data

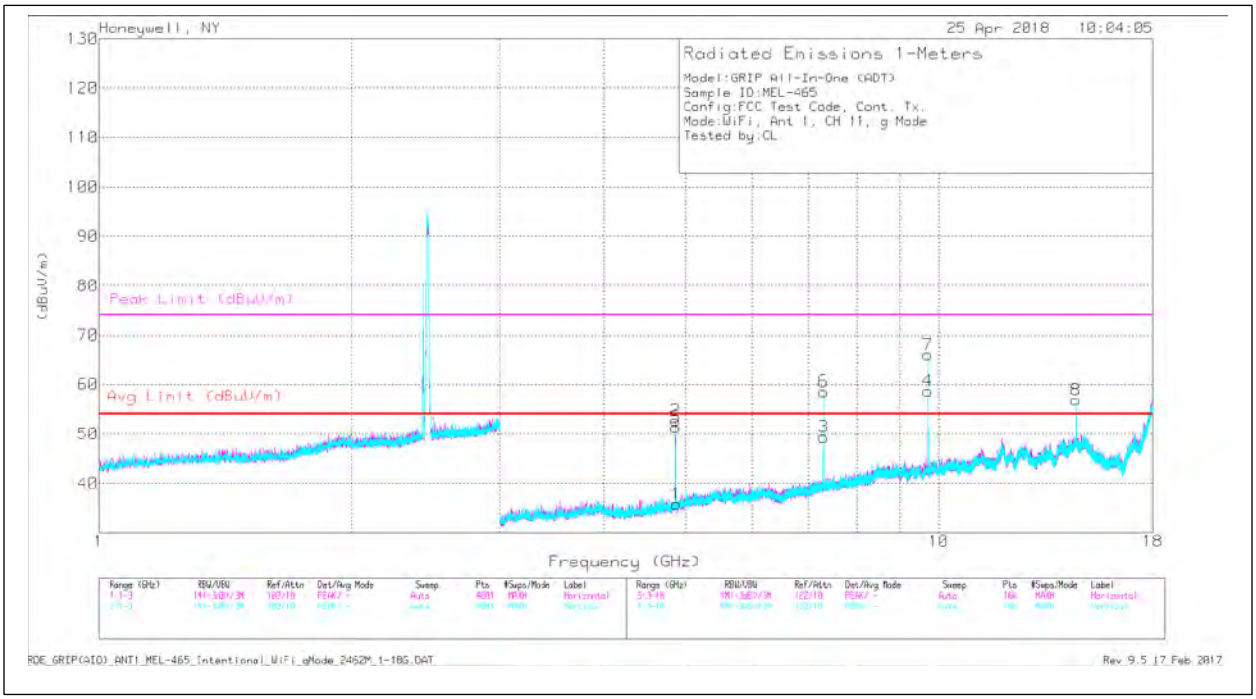


Antenna 1: Mid Channel - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX2 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.876	52.15	PK2	33.2	-41.3	3.7	3.6	51.35	-	-	74	-22.65	271	135	H
* 4.875	42.03	MAv1	33.2	-41.3	3.7	3.6	41.23	54	-12.77	-	-	271	135	H
* 7.318	40.52	PK2	36.6	-39.6	4.6	4.5	46.62	-	-	74	-27.38	231	203	H
* 7.313	28.52	MAv1	36.6	-39.6	4.6	4.5	34.62	54	-19.38	-	-	231	203	H
9.743	38.58	PK2	38	-39.1	5.5	5.3	48.28	-	-	74	-25.72	79	335	H
9.744	26.7	MAv1	38	-39.1	5.5	5.3	36.4	54	-17.6	-	-	79	335	H
* 4.875	51.4	PK2	33.2	-41.3	3.7	3.6	50.6	-	-	74	-23.4	47	122	V
* 4.875	39.34	MAv1	33.2	-41.3	3.7	3.6	38.54	54	-15.46	-	-	47	122	V
* 7.318	40.32	PK2	36.6	-39.7	4.6	4.5	46.32	-	-	74	-27.68	353	201	V
* 7.311	28.76	MAv1	36.6	-39.6	4.6	4.5	34.86	54	-19.14	-	-	353	201	V
9.755	38.27	PK2	38	-39.1	5.5	5.3	47.97	-	-	74	-26.03	138	309	V
9.749	27	MAv1	38	-39.1	5.5	5.3	36.7	54	-17.3	-	-	138	309	V
* 12.194	38.11	PK2	39.2	-37.2	6.4	6	52.51	-	-	74	-21.49	242	292	V
* 12.176	26.93	MAv1	39.2	-37.2	6.4	6	41.33	54	-12.67	-	-	242	292	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

Antenna 1: Mid Channel - Data

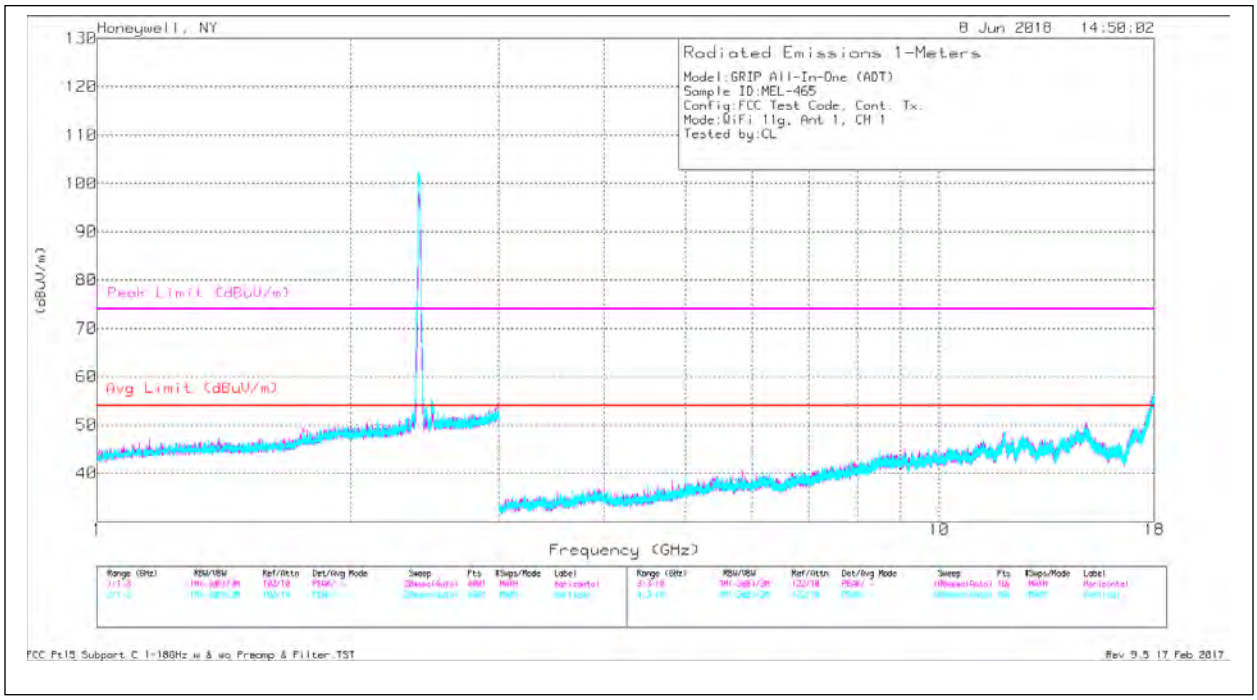


Antenna 1: High Channel - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX2 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.873	42.73	PK2	33.2	-41.3	3.7	3.6	41.93	-	-	74	-32.07	169	203	H
* 4.865	31.13	MAv1	33.2	-41.3	3.7	3.6	30.33	54	-23.67	-	-	169	203	H
* 4.865	42.85	PK2	33.2	-41.3	3.7	3.6	42.05	-	-	74	-31.95	339	378	H
* 4.866	31.38	MAv1	33.2	-41.3	3.7	3.6	30.58	54	-23.42	-	-	339	378	H
* 7.284	40.13	PK2	36.5	-39.6	4.6	4.5	46.13	-	-	74	-27.87	217	378	H
* 7.292	28.48	MAv1	36.6	-39.6	4.6	4.5	34.58	54	-19.42	-	-	217	378	H
9.721	38.45	PK2	38	-39.1	5.6	5.3	48.25	-	-	74	-25.75	36	264	H
9.721	26.66	MAv1	38	-39.1	5.6	5.3	36.46	54	-17.54	-	-	36	264	H
* 4.857	43.12	PK2	33.2	-41.3	3.7	3.6	42.32	-	-	74	-31.68	205	106	V
* 4.864	31.38	MAv1	33.2	-41.3	3.7	3.6	30.58	54	-23.42	-	-	205	106	V
9.723	37.91	PK2	38	-39.1	5.6	5.3	47.71	-	-	74	-26.29	292	173	V
9.719	26.67	MAv1	38	-39.1	5.6	5.3	36.47	54	-17.53	-	-	292	173	V
14.585	39.53	PK2	42.5	-36.9	6.9	6.4	58.43	-	-	74	-15.57	108	331	V
14.587	28.17	MAv1	42.5	-36.9	6.9	6.4	47.07	54	-6.93	-	-	108	331	V
* 7.292	39.97	PK2	36.6	-39.6	4.6	4.5	46.07	-	-	74	-27.93	196	245	V
* 7.287	28.85	MAv1	36.5	-39.6	4.6	4.5	34.85	54	-19.15	-	-	196	245	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

Antenna 1: High Channel – Data

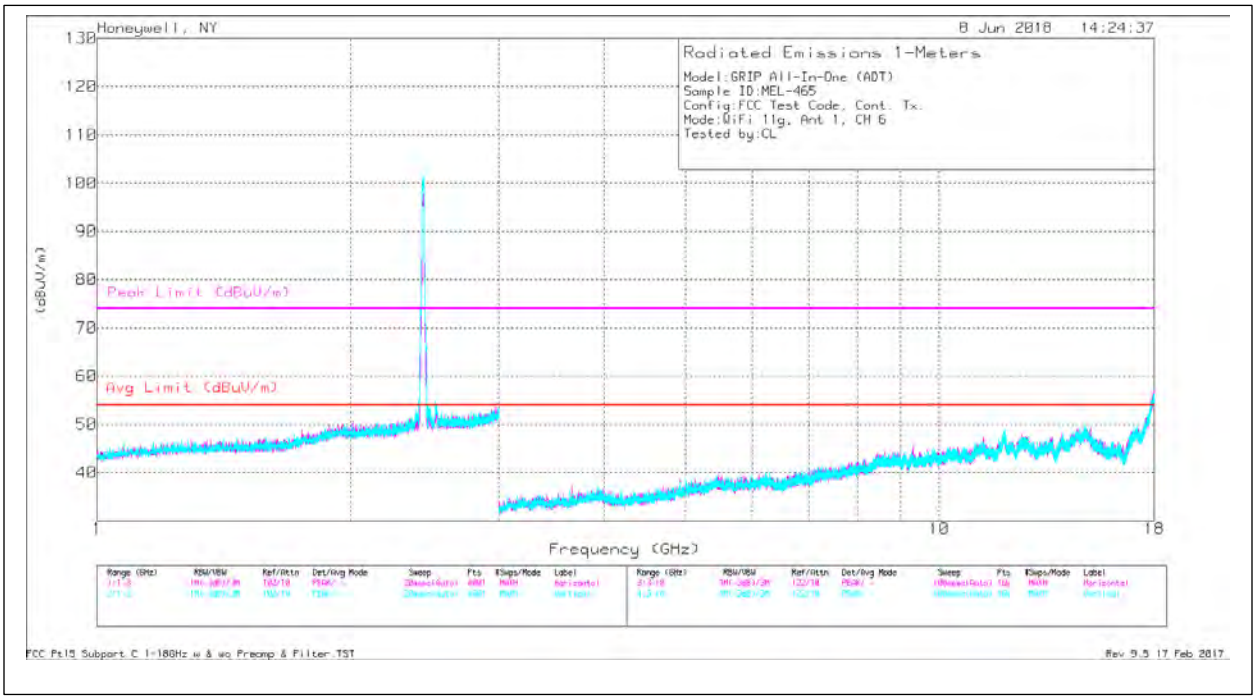


Antenna 2: Low Channel - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX2 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.029	41.81	PK2	32.7	-40.7	3.4	3.3	40.51	-	-	74	-33.49	227	287	H
* 4.021	30.54	MAv1	32.7	-40.7	3.4	3.3	29.24	54	-24.76	-	-	227	287	H
9.208	38.49	PK2	37.6	-38.9	5.4	5.1	47.69	-	-	74	-26.31	59	238	H
9.215	27.05	MAv1	37.7	-38.9	5.4	5.1	36.35	54	-17.65	-	-	59	238	H
14.966	39.84	PK2	41.5	-36.9	7	6.5	57.94	-	-	74	-16.06	324	276	H
14.96	28.62	MAv1	41.6	-36.9	7	6.5	46.82	54	-7.18	-	-	324	276	H
* 5.045	44.02	PK2	33.6	-41.5	3.8	3.7	43.62	-	-	74	-30.38	249	228	V
* 5.046	31.83	MAv1	33.6	-41.5	3.8	3.7	31.43	54	-22.57	-	-	249	228	V
9.703	38.45	PK2	38	-39.1	5.6	5.2	48.15	-	-	74	-25.85	67	193	V
9.703	26.78	MAv1	38	-39.1	5.6	5.2	36.48	54	-17.52	-	-	67	193	V
* 11.968	37.87	PK2	39.5	-37.4	6.7	5.7	52.37	-	-	74	-21.63	349	305	V
* 11.966	26.4	MAv1	39.5	-37.4	6.7	5.7	40.9	54	-13.1	-	-	349	305	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

Antenna 2: Low Channel - Data

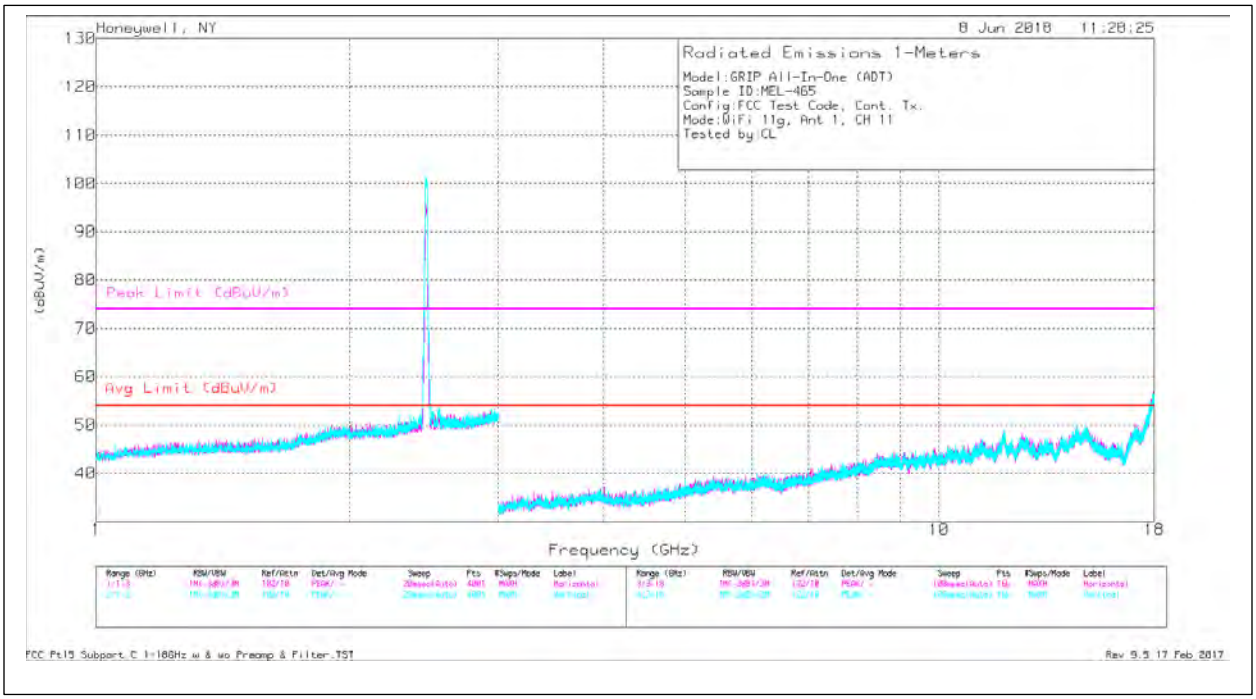


Antenna 2: Mid Channel - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX2 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.665	43.29	PK2	32	-41.4	3.2	3.1	40.19	-	-	74	-33.81	228	390	H
* 3.668	31.79	MAv1	32	-41.4	3.3	3.1	28.79	54	-25.21	-	-	228	390	H
9.298	36.38	PK2	37.8	-38.9	5.4	5.1	45.78	-	-	74	-28.22	67	214	H
9.298	25.65	MAv1	37.8	-38.9	5.4	5.1	35.05	54	-18.95	-	-	67	214	H
* 11.934	37.87	PK2	39.5	-37.4	6.9	5.8	52.67	-	-	74	-21.33	221	311	H
* 11.936	26.47	MAv1	39.5	-37.4	6.8	5.8	41.17	54	-12.83	-	-	221	311	H
* 3.931	43.02	PK2	32.9	-40.8	3.4	3.3	41.82	-	-	74	-32.18	107	263	V
* 3.935	31.2	MAv1	32.9	-40.8	3.4	3.3	30	54	-24	-	-	107	263	V
9.85	48.85	PK2	38.2	-39.1	5.6	5.1	58.65	-	-	74	-15.35	8	254	V
9.854	26.87	MAv1	38.2	-39.1	5.6	5.1	36.67	54	-17.33	-	-	8	254	V
* 11.959	37.92	PK2	39.5	-37.4	6.8	5.8	52.62	-	-	74	-21.38	25	233	V
* 11.957	26.54	MAv1	39.5	-37.4	6.8	5.8	41.24	54	-12.76	-	-	25	233	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

Antenna 2: Mid Channel – Data



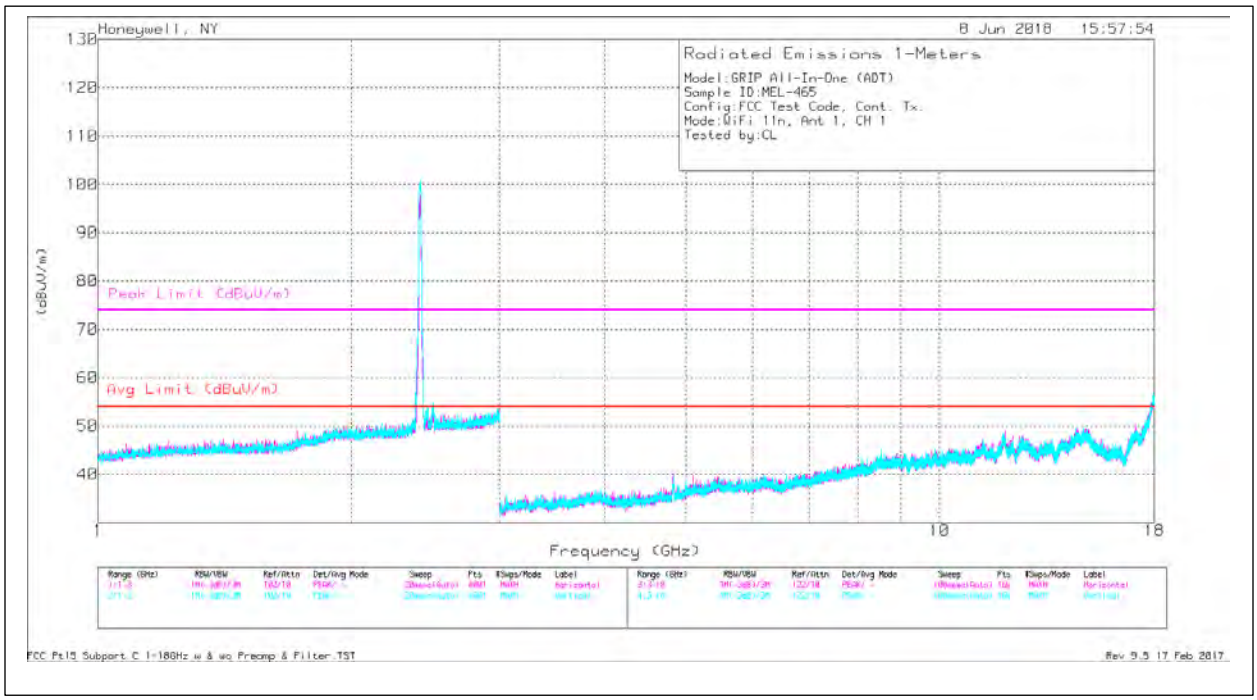
Antenna 2: High Channel - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX2 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.002	42.52	PK2	32.8	-40.8	3.4	3.3	41.22	-	-	74	-32.78	119	242	H
* 4.004	30.84	MAv1	32.8	-40.8	3.4	3.3	29.54	54	-24.46	-	-	119	242	H
* 8.491	39.42	PK2	37.4	-39.2	5.1	4.9	47.62	-	-	74	-26.38	283	266	H
* 8.493	27.4	MAv1	37.4	-39.2	5.1	4.9	35.6	54	-18.4	-	-	283	266	H
* 11.932	37.7	PK2	39.5	-37.4	6.9	5.8	52.5	-	-	74	-21.5	126	381	H
* 11.931	26.44	MAv1	39.5	-37.4	6.9	5.8	41.24	54	-12.76	-	-	126	381	H
* 3.961	42.65	PK2	32.8	-40.8	3.4	3.3	41.35	-	-	74	-32.65	28	165	V
* 3.961	31.11	MAv1	32.8	-40.8	3.4	3.3	29.81	54	-24.19	-	-	28	165	V
* 11.982	38.09	PK2	39.5	-37.4	6.7	5.7	52.59	-	-	74	-21.41	113	227	V
* 11.981	26.45	MAv1	39.5	-37.4	6.7	5.7	40.95	54	-13.05	-	-	113	227	V
* 9.37	57.73	PK2	37.9	-38.9	5.4	5.2	67.33	-	-	74	-6.67	201	227	V
* 9.372	26.48	MAv1	37.9	-38.9	5.4	5.2	36.08	54	-17.92	-	-	201	227	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

Antenna 2: High Channel - Data

1 - 18GHz, 802.11n Mode

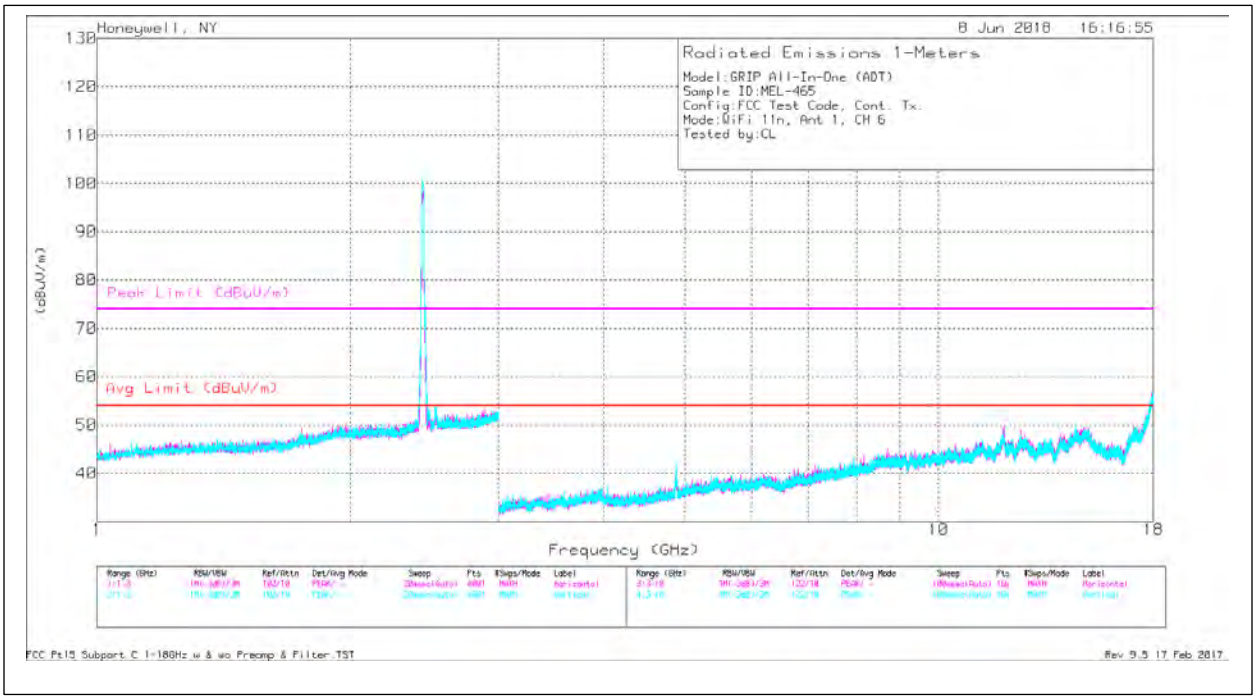


Antenna 1: Low Channel – Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX2 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.829	43.32	PK2	33.2	-41.2	3.7	3.7	42.72	-	-	74	-31.28	183	312	H
* 4.835	31.77	MAv1	33.2	-41.2	3.7	3.6	31.07	54	-22.93	-	-	183	312	H
8.527	38.74	PK2	37.5	-39.2	5.2	4.9	47.14	-	-	74	-26.86	176	288	H
8.529	27.58	MAv1	37.5	-39.2	5.2	4.9	35.98	54	-18.02	-	-	176	288	H
* 11.977	37.83	PK2	39.5	-37.4	6.7	5.7	52.33	-	-	74	-21.67	245	290	H
* 11.97	26.41	MAv1	39.5	-37.4	6.7	5.7	40.91	54	-13.09	-	-	245	290	H
* 4.834	43.21	PK2	33.2	-41.2	3.7	3.6	42.51	-	-	74	-31.49	19	264	V
* 4.833	31.75	MAv1	33.2	-41.2	3.7	3.7	31.15	54	-22.85	-	-	19	264	V
8.555	39.7	PK2	37.5	-39.2	5.2	4.9	48.1	-	-	74	-25.9	216	132	V
8.557	27.83	MAv1	37.5	-39.2	5.2	4.9	36.23	54	-17.77	-	-	216	132	V
* 11.912	38.26	PK2	39.5	-37.4	6.9	5.9	53.16	-	-	74	-20.84	344	190	V
* 11.912	26.57	MAv1	39.5	-37.4	6.9	5.9	41.47	54	-12.53	-	-	344	190	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

Antenna 1: Low Channel - Data

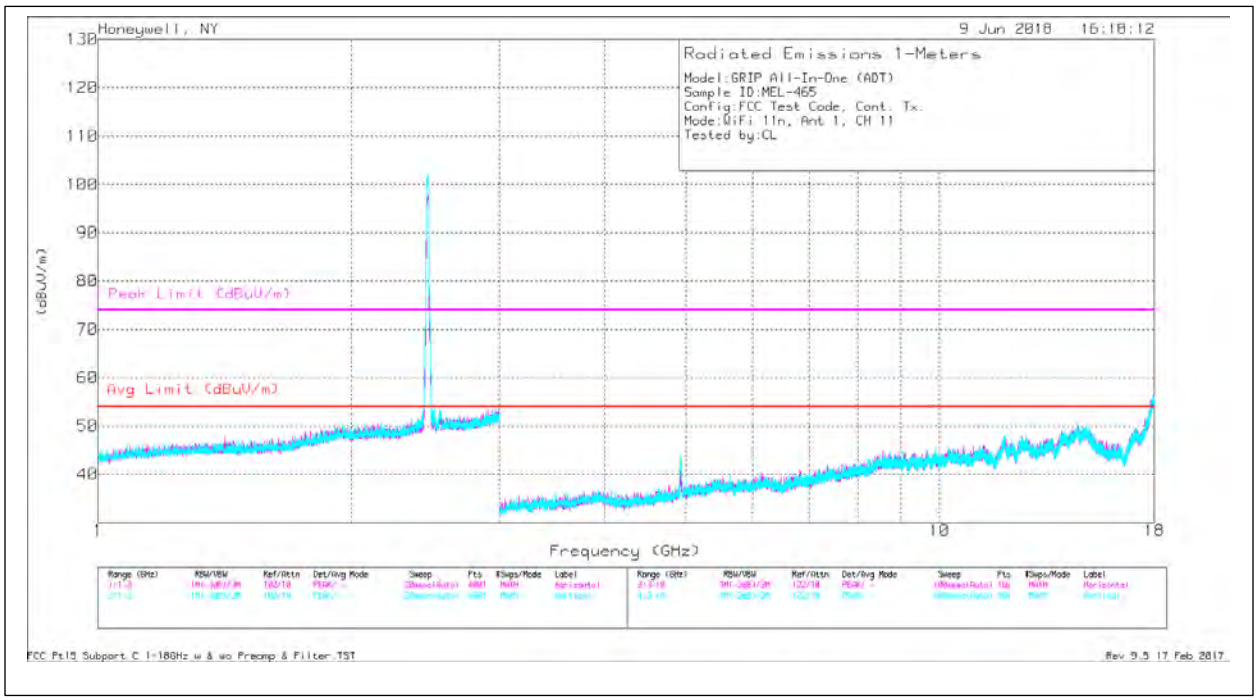


Antenna 1: Mid Channel - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX2 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.887	40.98	PK2	33.2	-41.4	3.7	3.6	40.08	-	-	74	-33.92	166	148	H
* 4.884	30.63	MAv1	33.2	-41.4	3.7	3.6	29.73	54	-24.27	-	-	166	148	H
8.687	38.8	PK2	37.6	-39.1	5.2	4.9	47.4	-	-	74	-26.6	338	386	H
8.691	27.52	MAv1	37.6	-39.1	5.2	4.9	36.12	54	-17.88	-	-	338	386	H
* 11.905	38.12	PK2	39.5	-37.4	7	5.9	53.12	-	-	74	-20.88	333	383	H
* 11.91	26.59	MAv1	39.5	-37.4	6.9	5.9	41.49	54	-12.51	-	-	333	383	H
* 4.881	42.78	PK2	33.2	-41.3	3.7	3.6	41.98	-	-	74	-32.02	208	309	V
* 4.882	31.28	MAv1	33.2	-41.4	3.7	3.6	30.38	54	-23.62	-	-	208	309	V
8.538	38.71	PK2	37.5	-39.2	5.2	4.9	47.11	-	-	74	-26.89	319	237	V
8.54	27.56	MAv1	37.5	-39.2	5.2	4.9	35.96	54	-18.04	-	-	319	237	V
* 12.002	37.37	PK2	39.4	-37.3	6.6	5.7	51.77	-	-	74	-22.23	75	294	V
* 12.003	26.4	MAv1	39.4	-37.3	6.6	5.7	40.8	54	-13.2	-	-	75	294	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

Antenna 1: Mid Channel - Data

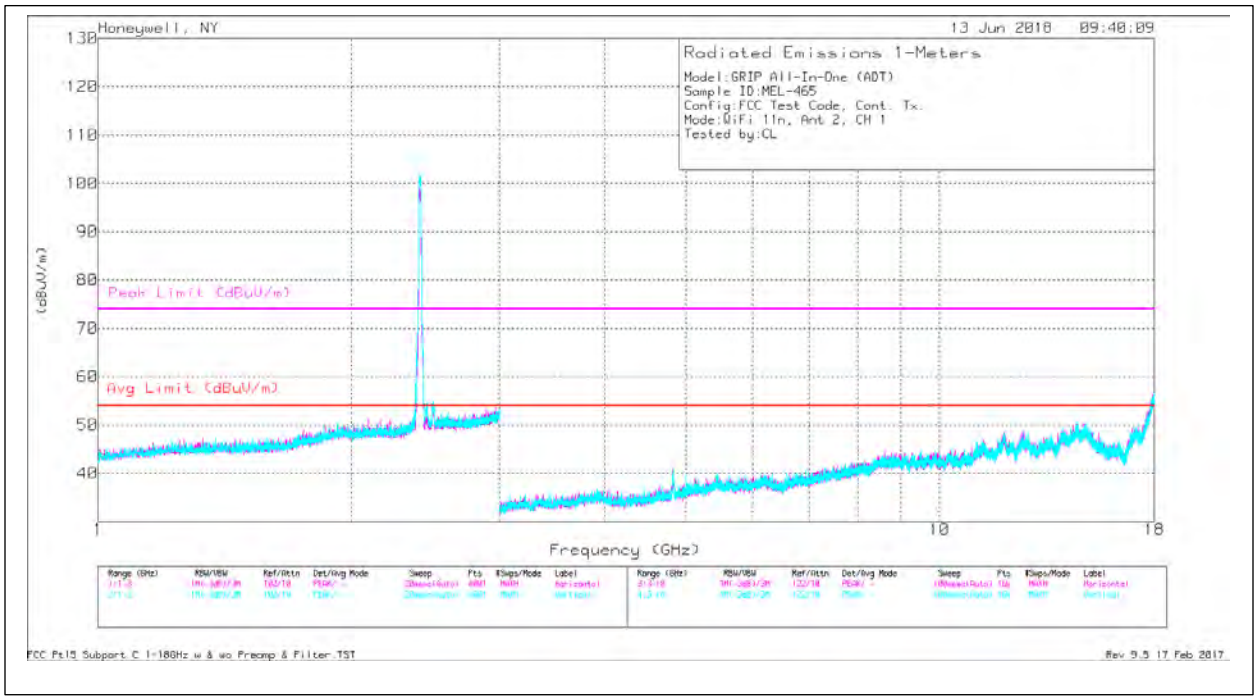


Antenna 1: High Channel - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX2 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.921	54.45	PK2	33.2	-41.5	3.8	3.6	53.55	-	-	74	-20.45	113	330	H
* 4.921	35.73	MAv1	33.2	-41.5	3.8	3.6	34.83	54	-19.17	-	-	113	330	H
* 12.014	38.2	PK2	39.4	-37.3	6.5	5.6	52.4	-	-	74	-21.6	93	104	H
* 12.018	26.65	MAv1	39.4	-37.3	6.5	5.6	40.85	54	-13.15	-	-	93	104	H
14.641	38.99	PK2	42.6	-36.9	6.7	6.4	57.79	-	-	74	-16.21	194	334	H
14.645	27.31	MAv1	42.6	-36.9	6.7	6.4	46.11	54	-7.89	-	-	194	334	H
* 4.928	43.81	PK2	33.2	-41.5	3.8	3.7	43.01	-	-	74	-30.99	185	221	V
* 4.926	32.27	MAv1	33.2	-41.5	3.8	3.7	31.47	54	-22.53	-	-	185	221	V
* 11.96	38.16	PK2	39.5	-37.4	6.8	5.7	52.76	-	-	74	-21.24	174	357	V
* 11.961	26.56	MAv1	39.5	-37.4	6.8	5.7	41.16	54	-12.84	-	-	174	357	V
14.647	39.37	PK2	42.6	-36.9	6.7	6.4	58.17	-	-	74	-15.83	301	150	V
14.646	27.47	MAv1	42.6	-36.9	6.7	6.4	46.27	54	-7.73	-	-	301	150	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

Antenna 1: High Channel – Data

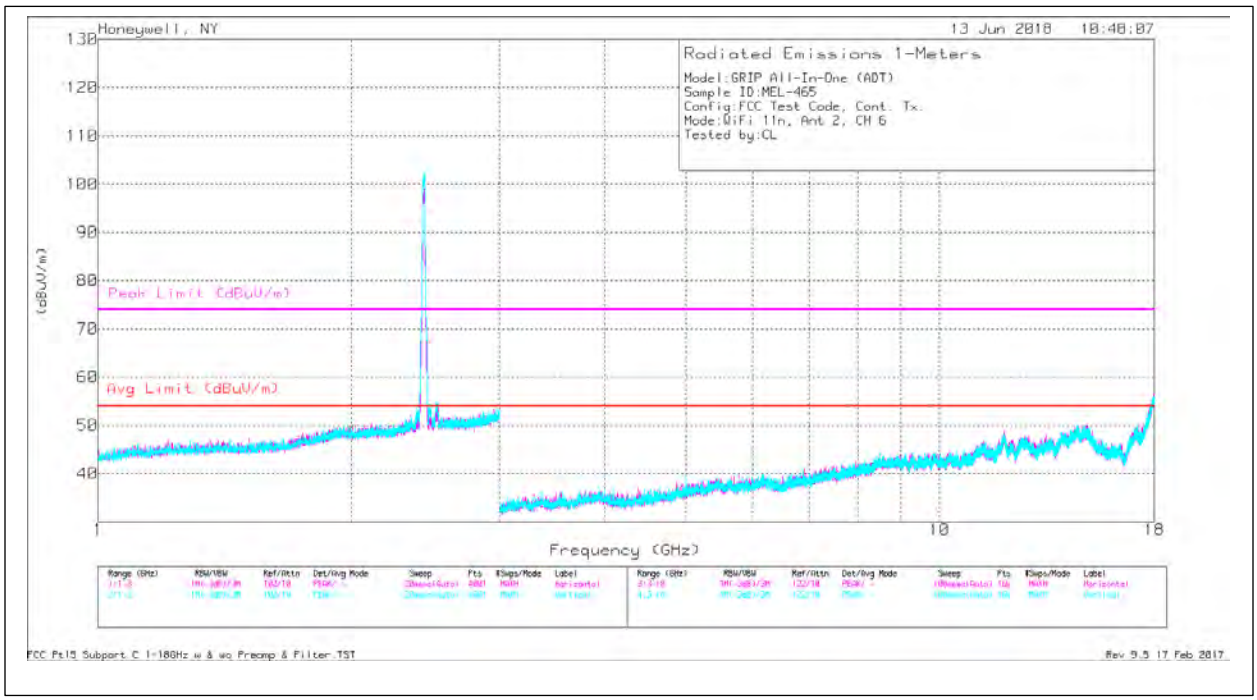


Antenna 2: Low Channel - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX2 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.824	49.9	PK2	33.1	-41.2	3.7	3.7	49.2	-	-	74	-24.8	329	166	H
* 4.824	36.5	MAv1	33.1	-41.2	3.7	3.7	35.8	54	-18.2	-	-	329	166	H
* 11.927	37.71	PK2	39.5	-37.4	6.9	5.8	52.51	-	-	74	-21.49	354	358	H
* 11.935	26.45	MAv1	39.5	-37.4	6.9	5.8	41.25	54	-12.75	-	-	354	358	H
14.526	39.36	PK2	42.4	-36.9	7	6.4	58.26	-	-	74	-15.74	148	266	H
14.518	28.18	MAv1	42.3	-36.9	7	6.4	46.98	54	-7.02	-	-	148	266	H
* 4.827	43.16	PK2	33.2	-41.2	3.7	3.7	42.56	-	-	74	-31.44	155	328	V
* 4.831	31.8	MAv1	33.2	-41.2	3.7	3.7	31.2	54	-22.8	-	-	155	328	V
* 11.928	37.91	PK2	39.5	-37.4	6.9	5.8	52.71	-	-	74	-21.29	97	108	V
* 11.931	26.45	MAv1	39.5	-37.4	6.9	5.8	41.25	54	-12.75	-	-	97	108	V
14.625	38.9	PK2	42.6	-36.9	6.8	6.4	57.8	-	-	74	-16.2	270	194	V
14.624	27.66	MAv1	42.6	-36.9	6.8	6.4	46.56	54	-7.44	-	-	270	194	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

Antenna 2: Low Channel - Data

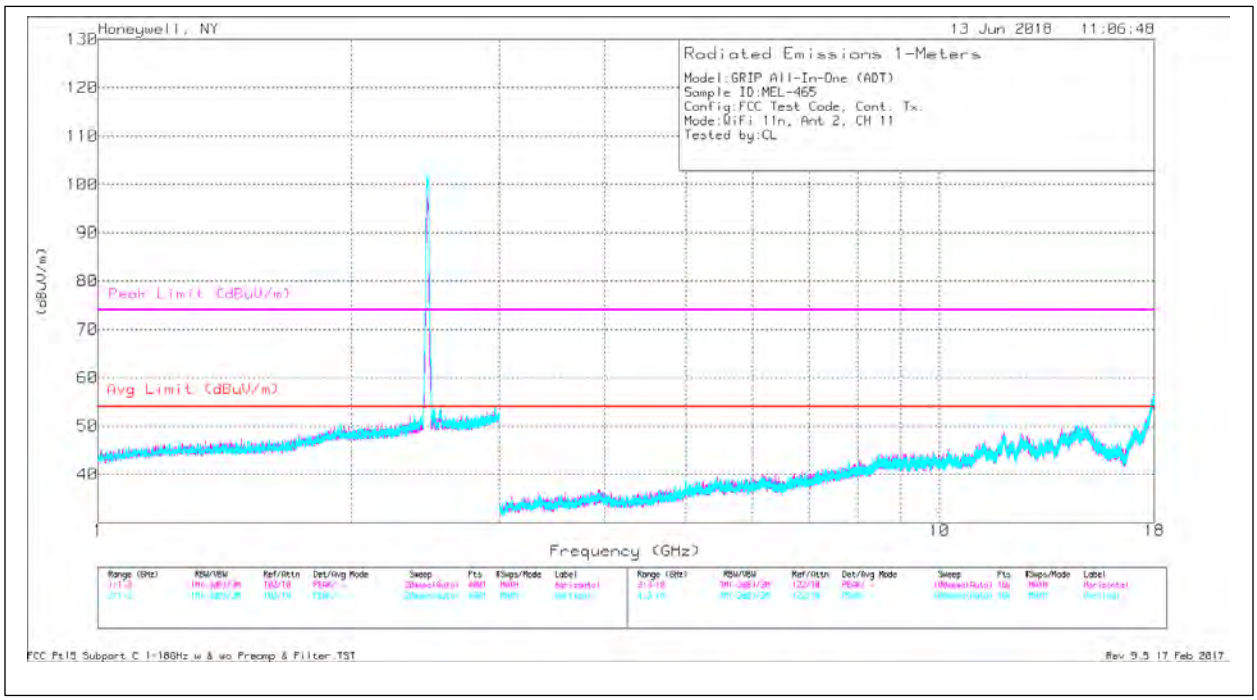


Antenna 2: Mid Channel - Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX2 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.861	42.6	PK2	33.2	-41.3	3.7	3.6	41.8	-	-	74	-32.2	18	125	H
* 4.87	30.93	MAv1	33.2	-41.3	3.7	3.6	30.13	54	-23.87	-	-	18	125	H
8.549	38.81	PK2	37.5	-39.2	5.2	4.9	47.21	-	-	74	-26.79	350	185	H
8.554	27.71	MAv1	37.5	-39.2	5.2	4.9	36.11	54	-17.89	-	-	350	185	H
14.529	39.51	PK2	42.4	-36.9	7	6.4	58.41	-	-	74	-15.59	89	271	H
14.528	28.03	MAv1	42.4	-36.9	7	6.4	46.93	54	-7.07	-	-	89	271	H
* 4.878	42.58	PK2	33.2	-41.3	3.7	3.6	41.78	-	-	74	-32.22	220	328	V
* 4.88	30.99	MAv1	33.2	-41.3	3.7	3.6	30.19	54	-23.81	-	-	220	328	V
8.501	36.55	PK2	37.4	-39.2	5.1	4.9	44.75	-	-	74	-29.25	331	174	V
8.501	26.66	MAv1	37.4	-39.2	5.1	4.9	34.86	54	-19.14	-	-	331	174	V
14.666	38.87	PK2	42.6	-36.9	6.7	6.4	57.67	-	-	74	-16.33	26	351	V
14.67	27.45	MAv1	42.6	-36.9	6.7	6.4	46.25	54	-7.75	-	-	26	351	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

Antenna 2: Mid Channel - Data



Antenna 2: High Channel - Plot

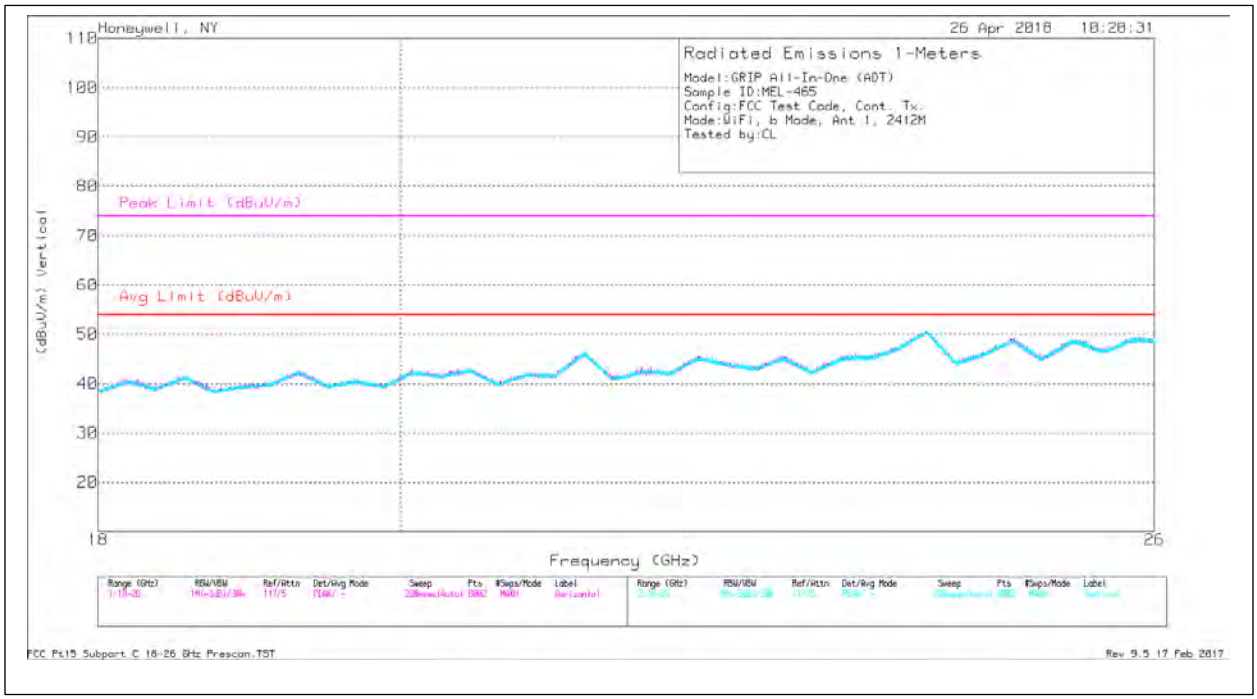
Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m]	SWBOX2 [dB]	SMA7 [dB]	SMA5 [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 3.938	42.62	PK2	32.9	-40.8	3.4	3.3	41.42	-	-	74	-32.58	134	323	H
* 3.94	31.14	MAv1	32.9	-40.9	3.4	3.3	29.84	54	-24.16	-	-	134	323	H
8.529	38.52	PK2	37.5	-39.2	5.2	4.9	46.92	-	-	74	-27.08	213	352	H
8.531	27.77	MAv1	37.5	-39.2	5.2	4.9	36.17	54	-17.83	-	-	213	352	H
* 11.908	38.15	PK2	39.5	-37.4	7	5.9	53.15	-	-	74	-20.85	246	156	H
* 11.914	26.53	MAv1	39.5	-37.4	6.9	5.8	41.33	54	-12.67	-	-	246	156	H
* 5.004	44.76	PK2	33.4	-41.6	3.8	3.7	44.06	-	-	74	-29.94	219	386	V
* 5	33.5	MAv1	33.3	-41.6	3.8	3.7	32.7	54	-21.3	-	-	219	386	V
7.8	40.81	PK2	36.6	-39.6	4.8	4.8	47.41	-	-	74	-26.59	283	346	V
7.793	28.53	MAv1	36.6	-39.6	4.8	4.8	35.13	54	-18.87	-	-	283	346	V
* 12.469	39.16	PK2	38.9	-37.1	6.3	6.1	53.36	-	-	74	-20.64	184	122	V
* 12.471	27.56	MAv1	38.9	-37.1	6.3	6.1	41.76	54	-12.24	-	-	184	122	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

Antenna 2: High Channel – Data

18GHz – 26GHz (Worse-case, 802.11b Mode)

No emissions detected above the system noise floor

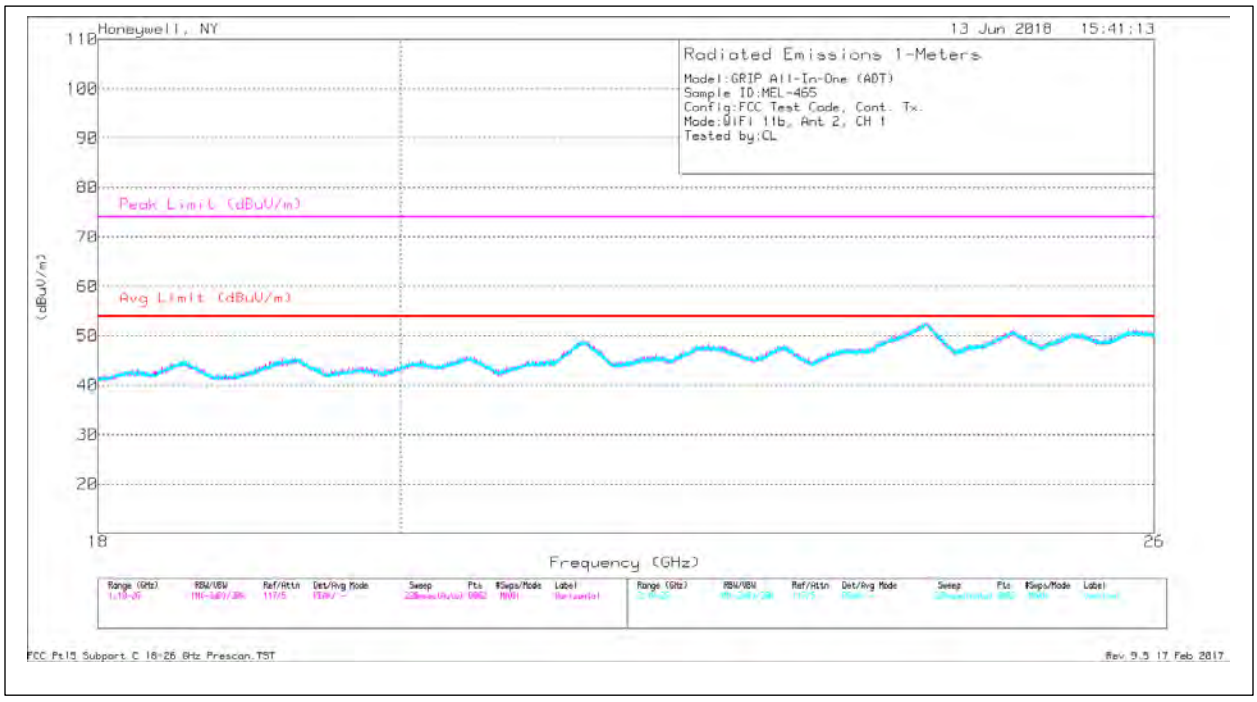


Antenna 1: Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	Horn ACF [dB/m]	SMA 8 [dB]	18-26G Preamp [dB]	Distance Corr Factor [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Polarity
* 19.305	34.65	Pk	44.3	7.2	-34.3	-9.5	42.35	54	-11.65	74	-31.65	0-360	H
* 21.326	35.14	Pk	44.9	7.7	-32.1	-9.5	46.14	54	-7.86	74	-27.86	0-360	H
24.025	35.89	Pk	46.3	8.2	-30.4	-9.5	50.49	54	-3.51	74	-23.51	0-360	H
* 19.313	34.66	Pk	44.3	7.2	-34.4	-9.5	42.26	54	-11.74	74	-31.74	0-360	V
* 21.321	35.35	Pk	44.9	7.7	-32	-9.5	46.45	54	-7.55	74	-27.55	0-360	V
24.019	35.98	Pk	46.3	8.2	-30.3	-9.5	50.68	54	-3.32	74	-23.32	0-360	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector

Antenna 1: Data



Antenna 2: Plot

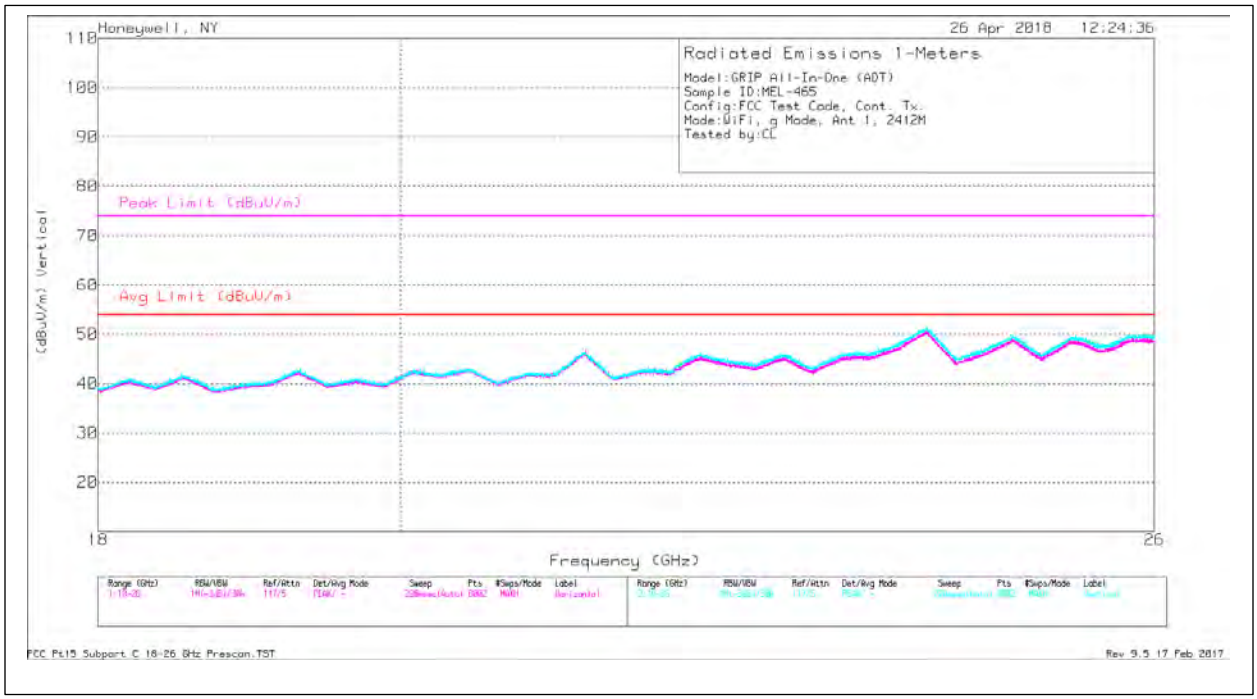
Frequency (GHz)	Meter Reading (dBuV)	Det	Horn ACF [dB/m]	SMA 8 [dB]	18-26G Preamp [dB]	Distance Corr Factor [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 19.297	37.63	Pk	44.3	7.2	-34.2	-9.5	45.43	54	-8.57	74	-28.57	0-360	100	H
* 21.349	38.39	Pk	44.9	7.7	-32.6	-9.5	48.89	54	-5.11	74	-25.11	0-360	100	H
24.025	37.93	Pk	46.3	8.2	-30.4	-9.5	52.53	54	-1.47	74	-21.47	0-360	100	H
* 19.261	38.13	Pk	44.3	7.2	-34.6	-9.5	45.53	54	-8.47	74	-28.47	0-360	100	V
* 21.313	38.44	Pk	44.9	7.7	-32	-9.5	49.54	54	-4.46	74	-24.46	0-360	100	V
24.001	38.1	Pk	46.4	8.2	-30.5	-9.5	52.7	54	-1.3	74	-21.3	0-360	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector

Antenna 2: Data

18GHz – 26GHz (Worse-case, 802.11g Mode)

No emissions detected above the system noise floor

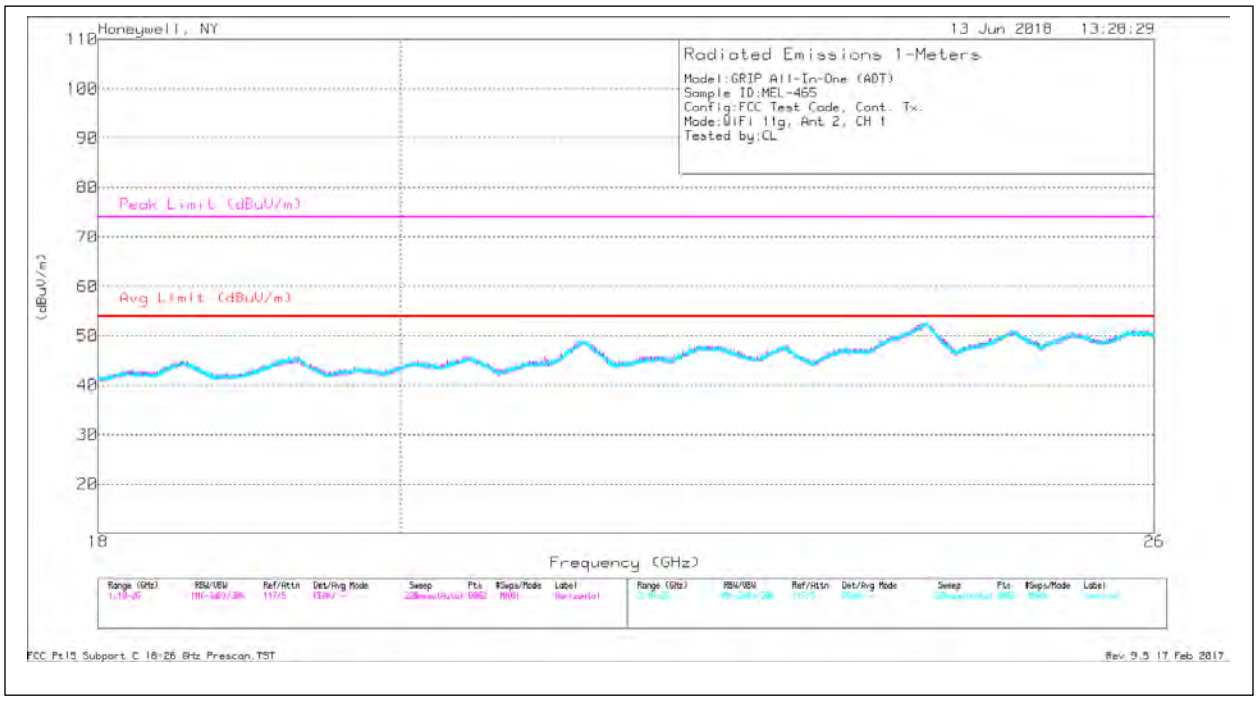


Antenna 1: Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	Horn ACF [dB/m]	SMA 8 [dB]	18-26G Preamp [dB]	Distance Corr Factor [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Polarity
* 19.301	34.63	Pk	44.3	7.2	-34.2	-9.5	42.43	54	-11.57	74	-31.57	0-360	H
* 21.343	35.09	Pk	44.9	7.7	-32.5	-9.5	45.69	54	-8.31	74	-28.31	0-360	H
24.001	36.32	Pk	46.4	8.2	-30.5	-9.5	50.92	54	-3.08	74	-23.08	0-360	H
* 19.286	35.12	Pk	44.3	7.2	-34.3	-9.5	42.82	54	-11.18	74	-31.18	0-360	V
* 21.323	35.09	Pk	44.9	7.7	-32	-9.5	46.19	54	-7.81	74	-27.81	0-360	V
24.021	36.86	Pk	46.3	8.2	-30.3	-9.5	51.56	54	-2.44	74	-22.44	0-360	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector

Antenna 1: Data



Antenna 2: Plot

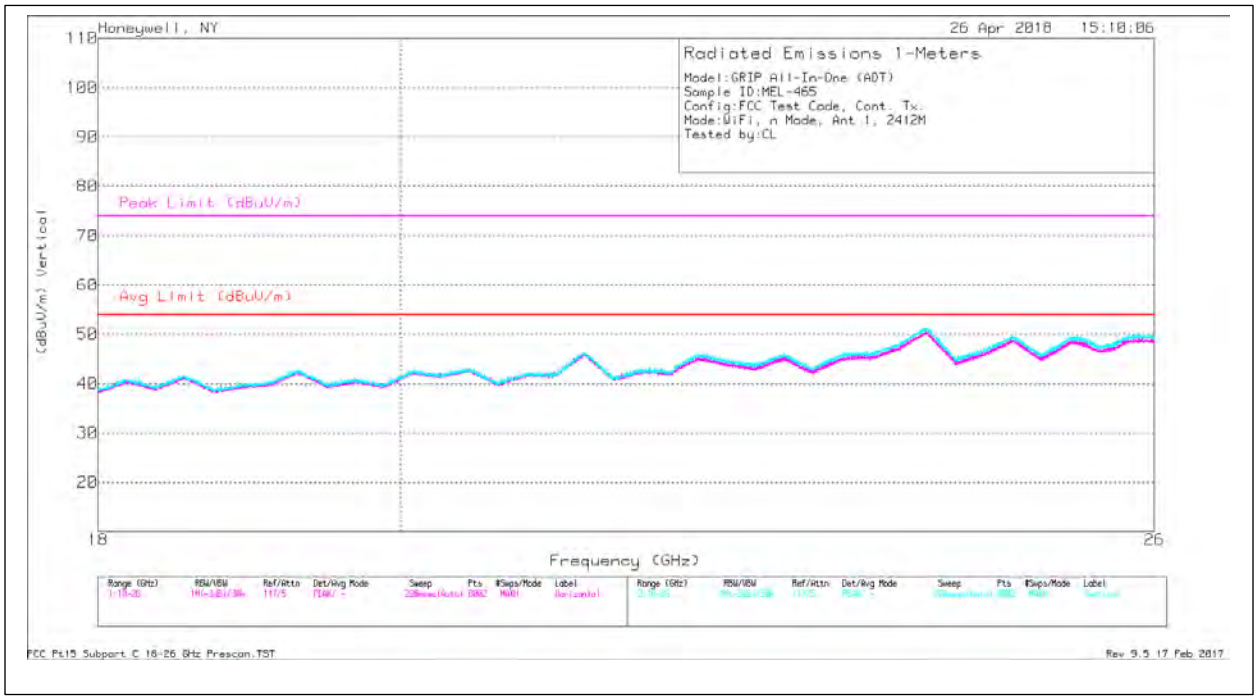
Frequency (GHz)	Meter Reading (dBuV)	Det	Horn ACF [dB/m]	SMA 8 [dB]	18-26G Preamp [dB]	Distance Corr Factor [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 19.302	38.1	Pk	44.3	7.2	-34.3	-9.5	45.8	54	-8.2	74	-28.2	0-360	100	H
* 21.319	38.05	Pk	44.9	7.7	-31.9	-9.5	49.25	54	-4.75	74	-24.75	0-360	100	H
24.022	37.85	Pk	46.3	8.2	-30.3	-9.5	52.55	54	-1.45	74	-21.45	0-360	100	H
* 19.236	38.84	Pk	44.2	7.2	-34.9	-9.5	45.84	54	-8.16	74	-28.16	0-360	100	V
* 21.316	37.97	Pk	44.9	7.7	-31.9	-9.5	49.17	54	-4.83	74	-24.83	0-360	100	V
24.026	38.51	Pk	46.3	8.2	-30.4	-9.5	53.11	54	-.89	74	-20.89	0-360	100	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector

Antenna 2: Data

18GHz – 26GHz (Worse-case, 802.11n Mode)

No emissions detected above the system noise floor

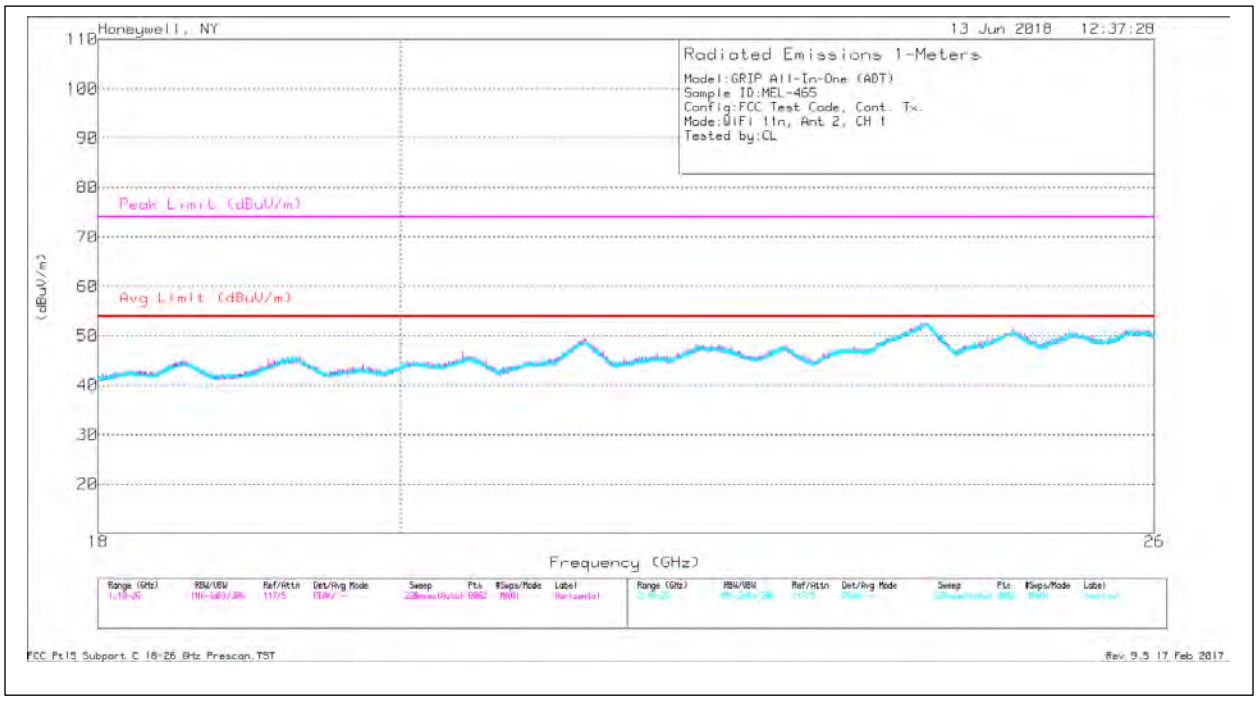


Antenna 1: Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	Horn ACF [dB/m]	SMA 8 [dB]	18-26G Preamp [dB]	Distance Corr Factor [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Polarity
* 19.298	34.8	Pk	44.3	7.2	-34.2	-9.5	42.6	54	-11.4	74	-31.4	0-360	H
* 21.329	35.04	Pk	44.9	7.7	-32.1	-9.5	46.04	54	-7.96	74	-27.96	0-360	H
24.029	36.16	Pk	46.3	8.2	-30.5	-9.5	50.66	54	-3.34	74	-23.34	0-360	H
* 19.298	35.11	Pk	44.3	7.2	-34.2	-9.5	42.91	54	-11.09	74	-31.09	0-360	V
* 21.322	35.23	Pk	44.9	7.7	-32	-9.5	46.33	54	-7.67	74	-27.67	0-360	V
24.024	36.72	Pk	46.3	8.2	-30.4	-9.5	51.32	54	-2.68	74	-22.68	0-360	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector

Antenna 1: Data



Antenna 2: Plot

Frequency (GHz)	Meter Reading (dBuV)	Det	Horn ACF [dB/m]	SMA 8 [dB]	18-26G Preamp [dB]	Distance Corr Factor [dB]	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 19.304	38.37	Pk	44.3	7.2	-34.3	-9.5	46.07	54	-7.93	74	-27.93	0-360	100	H
* 21.325	38.46	Pk	44.9	7.7	-32.1	-9.5	49.46	54	-4.54	74	-24.54	0-360	100	H
24.027	38.01	Pk	46.3	8.2	-30.4	-9.5	52.61	54	-1.39	74	-21.39	0-360	100	H
* 19.281	38.5	Pk	44.3	7.2	-34.4	-9.5	46.1	54	-7.9	74	-27.9	0-360	100	V
* 21.308	38.14	Pk	44.9	7.7	-32.1	-9.5	49.14	54	-4.86	74	-24.86	0-360	100	V
24.044	38.34	Pk	46.3	8.2	-30.9	-9.5	52.44	54	-1.56	74	-21.56	0-360	100	V

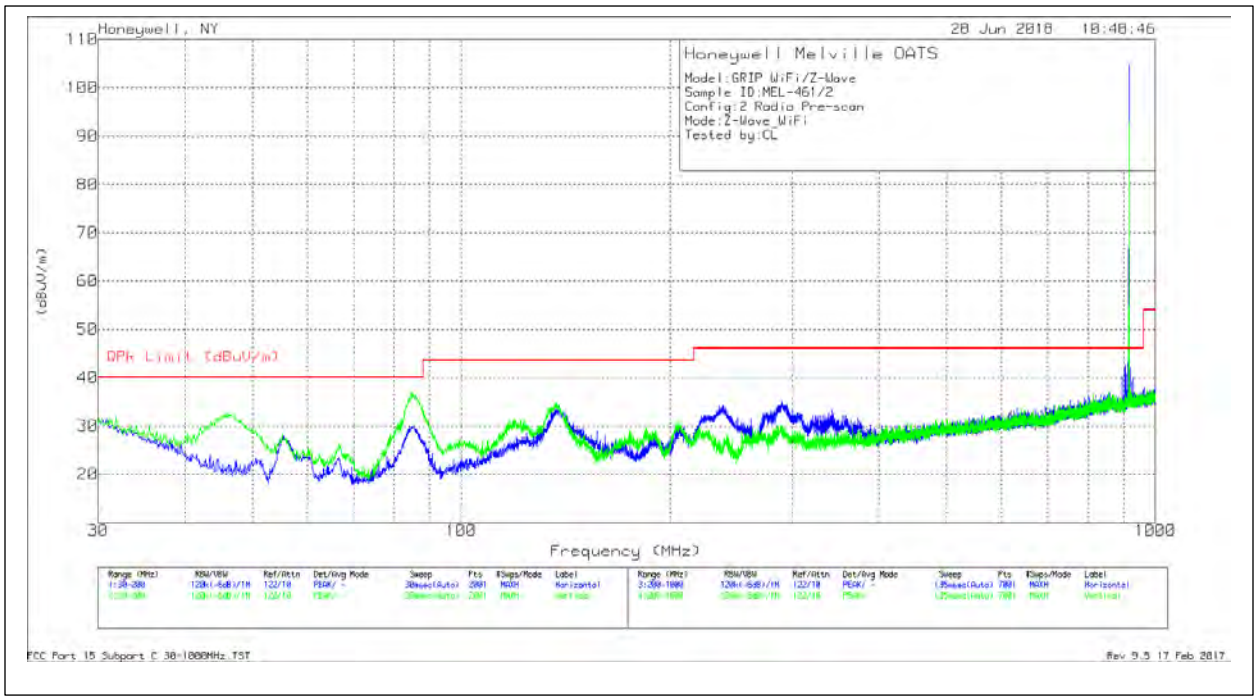
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector

Antenna 2: Data

Simultaneous Transmission

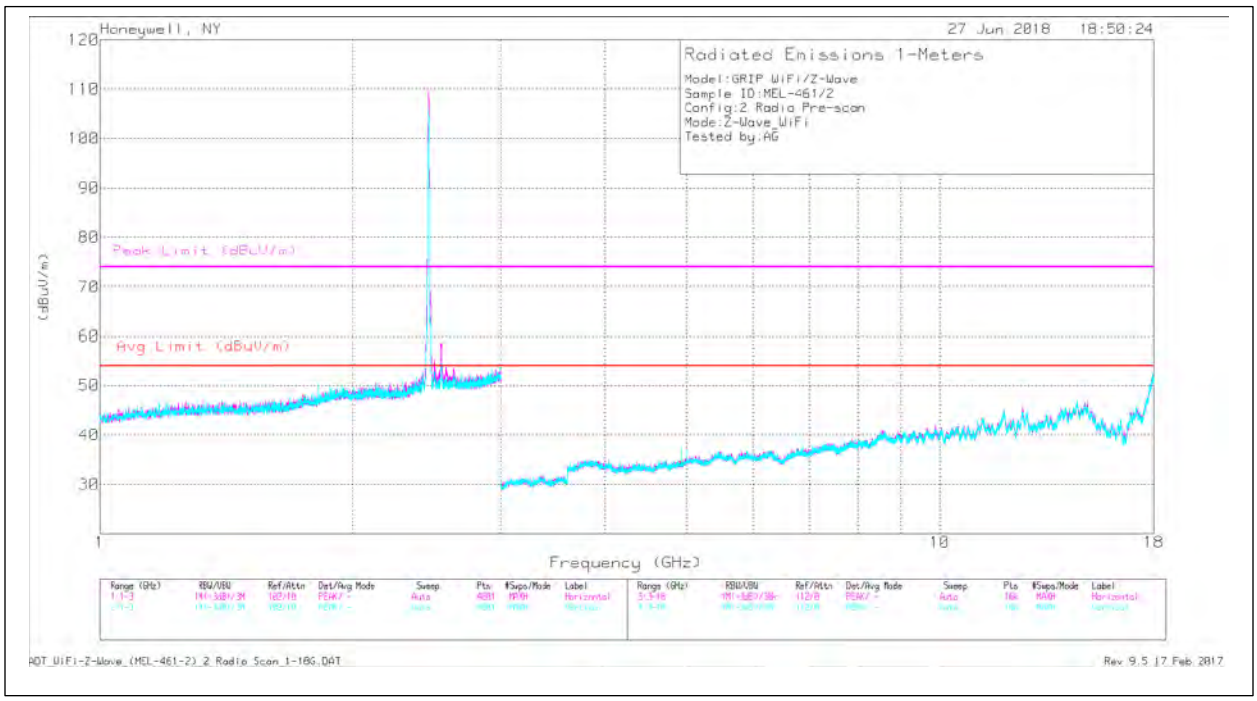
Configuration (Worse-case):

Wi-Fi – Antenna 2, 802.11b Mode, High Channel
Z-Wave – High Channel



30-1000MHz – Plot

Note: No additional emissions generated by simultaneous transmission



1-18GHz – Plot

Note: No additional emissions generated by simultaneous transmission

Conducted Emissions (Mains)

Test Description

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 / C63.4.

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 recorder for both NEUTRAL and HOT lines.

Test Criteria

Reference	Limit (dBuV)		
	Frequency Range (MHz)	Quasi-Peak	Average
CFR 47 Subpart C, 15.207 RSS-GEN CFR 47 Subpart B, 15.107 ICES-003	0.15-0.5	66 to 56	56 to 46
	0.5-5	56	46
	5-30	60	50

Test Information

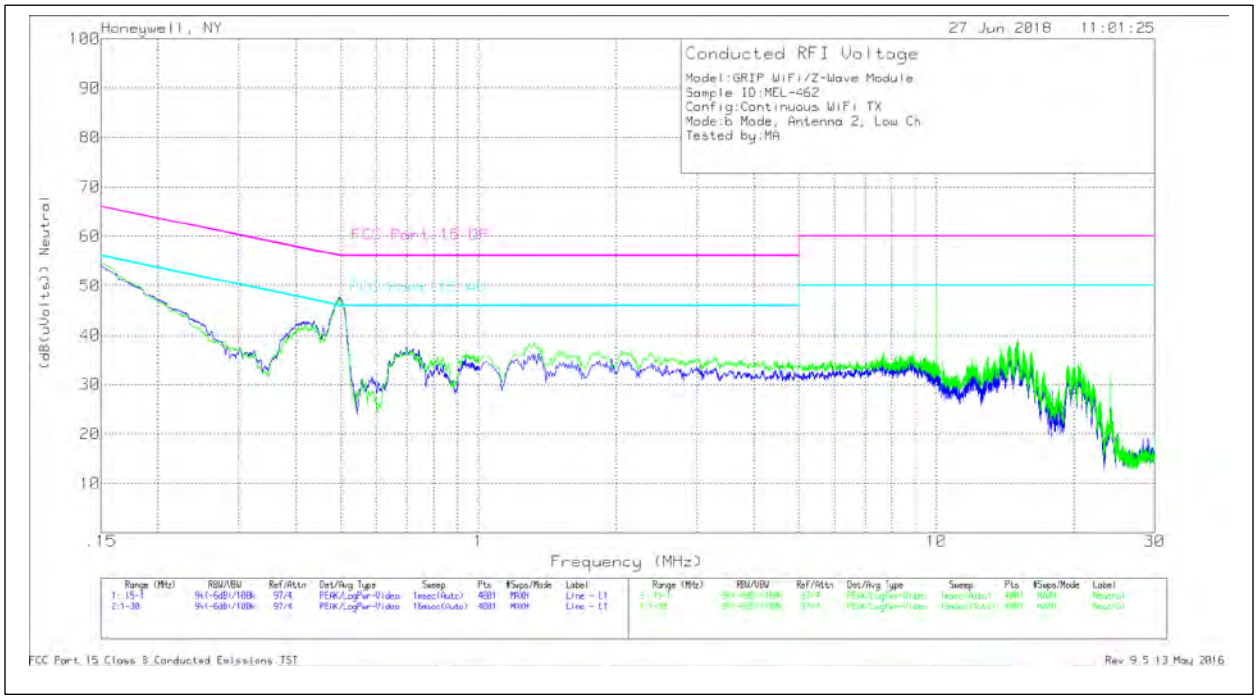
Tester	Test Location	Date	Temperature (ºC)	Humidity (%RH)	Pressure (mbar)	Results (P/F)
MA	Shield Room	06/27/2018	20.7	54.3	1005	P

Equipment List

Instrument Type	ID #	Serial #	Manufacturer	Model	Cal Date	Cal Due Date
Spectrum Analyzer	11556	MY49430802	Keysight	N9030A (PXA)	12/19/17	12/19/18
LISN	11527	241259	Com-Power	LIN-120A	01/10/18	01/10/19
Measurement Software	11543	Version 9.5	UL	UL EMC	N/A	N/A
RF Cable	-	-	Pasternack	CDE#1	N/A	N/A
Environmental Meter	11533	A070144	Extech Instruments	SD700	08/21/17	08/21/20

Test Results

Worse case, 802.11b Mode



Line: L1

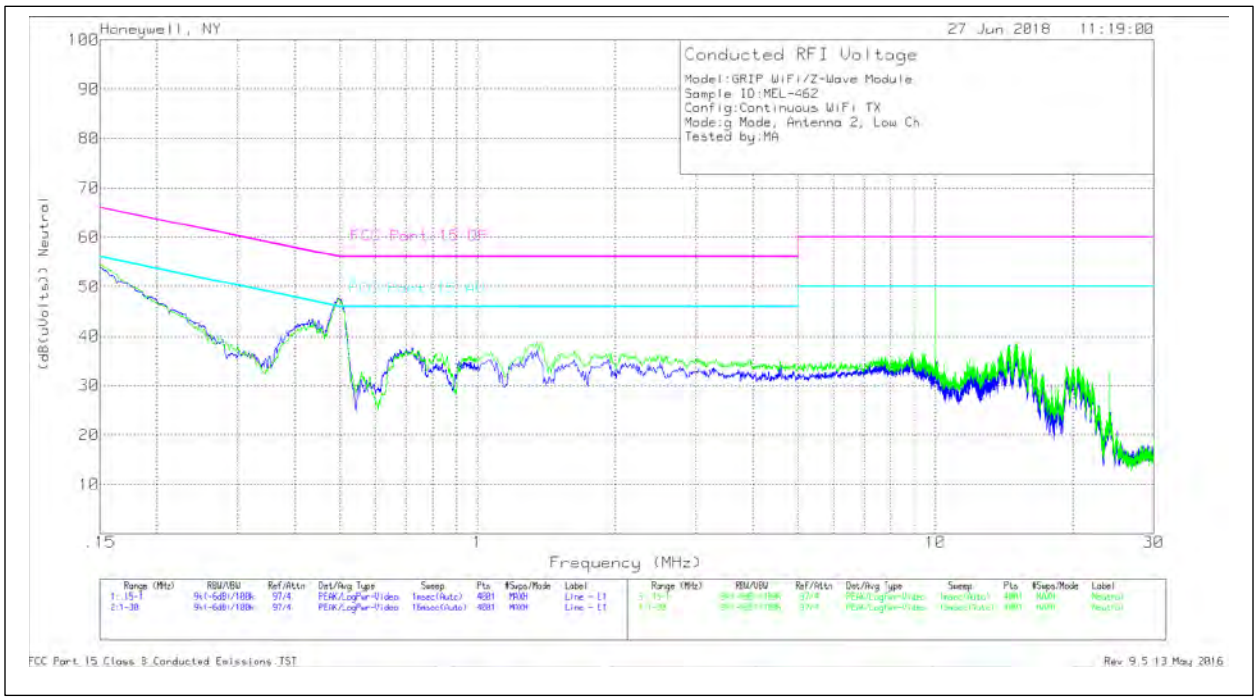
Frequency (MHz)	Meter Reading (dBuV)	Det	LISN1 L1 [dB]	CDE Cable [dB]	Corrected Reading (dB(uVolts))	FCC Part 15 QP	Margin (dB)	FCC Part 15 AV	Margin (dB)
.15224	43.1	Pk	10.6	0	53.7	65.88	-12.18	55.88	-2.18
.42488	32.67	Pk	10	0	42.67	57.35	-14.68	47.35	-4.68
.49719	37.71	Pk	10	0	47.71	56.05	-8.34	46.05	1.66
.49468	29.76	Av	10	0	39.76	56.09	-16.33	46.09	-6.33
.70913	26.9	Pk	9.9	0	36.8	56	-19.2	46	-9.2
1.32625	26.34	Pk	9.9	0	36.24	56	-19.76	46	-9.76
1.0435	24.9	Pk	9.9	0	34.8	56	-21.2	46	-11.2

Line: Neutral

Frequency (MHz)	Meter Reading (dBuV)	Det	LISN1 L2 [dB]	CDE Cable [dB]	Corrected Reading (dB(uVolts))	FCC Part 15 QP	Margin (dB)	FCC Part 15 AV	Margin (dB)
.15117	43.88	Pk	10.7	0	54.58	65.94	-11.36	55.94	-1.36
.42765	31.29	Pk	10	0	41.29	57.3	-16.01	47.3	-6.01
.49549	37.25	Pk	10	0	47.25	56.08	-8.83	46.08	1.17
.49513	30.62	Av	10	0	40.62	56.08	-15.46	46.08	-5.46
.72009	26.65	Pk	10	0	36.65	56	-19.35	46	-9.35
1.32625	28.84	Pk	9.9	0	38.74	56	-17.26	46	-7.26
9.99725	39.1	Pk	10	.2	49.3	60	-10.7	50	-.7

Pk - Peak detector
Av - Average detector

Worse case, 802.11g Mode



Line: L1

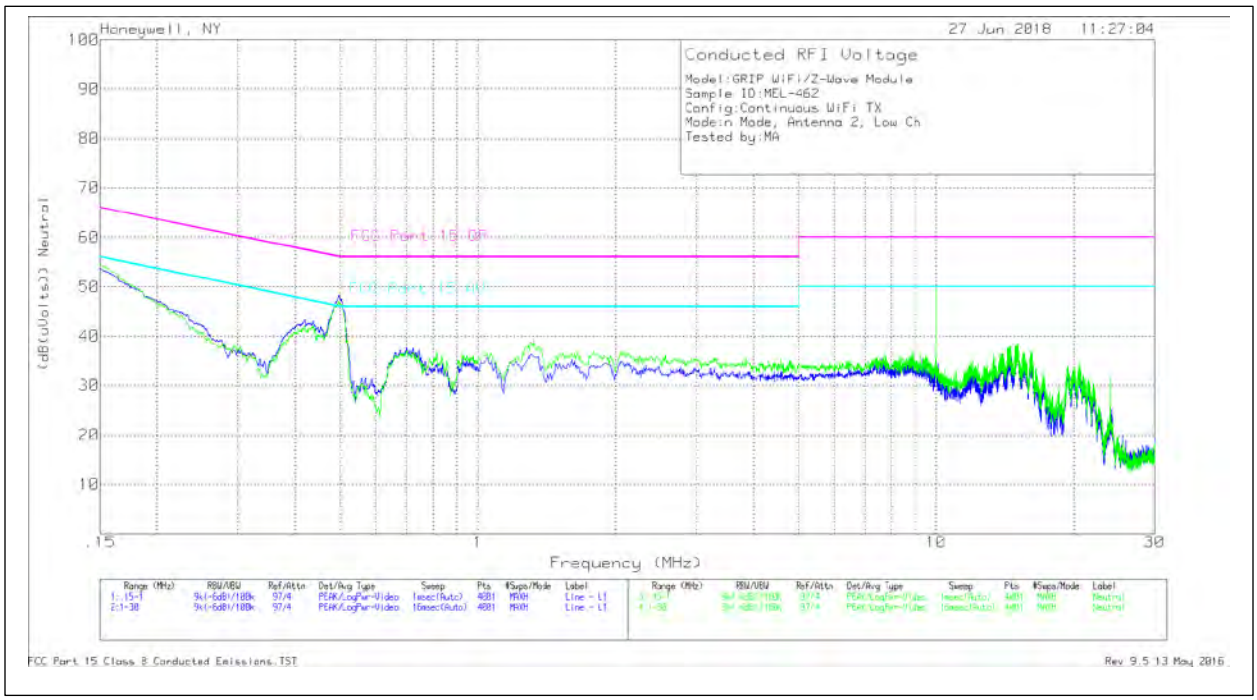
Frequency (MHz)	Meter Reading (dBuV)	Det	LISN1 L1 [dB]	CDE Cable [dB]	Corrected Reading (dB(uVolts))	FCC Part 15 QP	Margin (dB)	FCC Part 15 AV	Margin (dB)
.15724	41.79	Pk	10.5	0	52.29	65.61	-13.32	55.61	-3.32
.42754	33.14	Pk	10	0	43.14	57.3	-14.16	47.3	-4.16
.49655	37.66	Pk	10	0	47.66	56.06	-8.4	46.06	1.6
.49695	30.83	Av	10	0	40.83	56.05	-15.22	46.05	-5.22
.72031	27.63	Pk	9.9	0	37.53	56	-18.47	46	-8.47
1.348	27.35	Pk	9.9	0	37.25	56	-18.75	46	-8.75
1.058	25.38	Pk	9.9	0	35.28	56	-20.72	46	-10.72

Line: Neutral

Frequency (MHz)	Meter Reading (dBuV)	Det	LISN1 L2 [dB]	CDE Cable [dB]	Corrected Reading (dB(uVolts))	FCC Part 15 QP	Margin (dB)	FCC Part 15 AV	Margin (dB)
.1532	43.35	Pk	10.6	0	53.95	65.82	-11.87	55.82	-1.87
.44256	32.9	Pk	10	0	42.9	57.01	-14.11	47.01	-4.11
.49975	37.35	Pk	10	0	47.35	56	-8.65	46	1.35
.50093	30.06	Av	10	0	40.06	56	-15.94	46	-5.94
1.0725	26.76	Pk	10	0	36.76	56	-19.24	46	-9.24
1.377	28.89	Pk	9.9	0	38.79	56	-17.21	46	-7.21
9.99725	39.06	Pk	10	.2	49.26	60	-10.74	50	-.74

Pk - Peak detector
Av - Average detector

Worse case, 802.11n Mode



Line: L1

Frequency (MHz)	Meter Reading (dBuV)	Det	LISN1 L1 [dB]	CDE Cable [dB]	Corrected Reading (dB(uVolts))	FCC Part 15 QP	Margin (dB)	FCC Part 15 AV	Margin (dB)
.1517	42.87	Pk	10.6	0	53.47	65.91	-12.44	55.91	-2.44
.42317	32.29	Pk	10	0	42.29	57.39	-15.1	47.39	-5.1
.49676	38.28	Pk	10	0	48.28	56.05	-7.77	46.05	2.23
.49535	30.67	Av	10	0	40.67	56.08	-15.41	46.08	-5.41
.70039	27.71	Pk	9.9	0	37.61	56	-18.39	46	-8.39
1.3045	26.46	Pk	9.9	0	36.36	56	-19.64	46	-9.64
9.99725	38.75	Pk	10	.2	48.95	60	-11.05	50	-1.05

Line: Neutral

Frequency (MHz)	Meter Reading (dBuV)	Det	LISN1 L2 [dB]	CDE Cable [dB]	Corrected Reading (dB(uVolts))	FCC Part 15 QP	Margin (dB)	FCC Part 15 AV	Margin (dB)
.15575	43.04	Pk	10.6	0	53.64	65.69	-12.05	55.69	-2.05
.42765	31.56	Pk	10	0	41.56	57.3	-15.74	47.3	-5.74
.49772	36.94	Pk	10	0	46.94	56.04	-9.1	46.04	.9
.49605	29.89	Av	10	0	39.89	56.07	-16.18	46.07	-6.18
1.0435	26.76	Pk	10	0	36.76	56	-19.24	46	-9.24
1.32625	29.61	Pk	9.9	0	39.51	56	-16.49	46	-6.49
9.99725	39.28	Pk	10	.2	49.48	60	-10.52	50	-.52

Pk - Peak detector
Av - Average detector

END OF REPORT