FCC / ISED Test Report

FOR:
Axon Enterprise, Inc.

Model Name:
Axon Body 3

Product Description:
Body Worn Camera

FCC ID: X4GS01200
IC: 8803A-S01200

Applied Rules and Standards:
47 CFR Part 15.247 (DTS)
RSS-247 Issue 2 (DTSs) & RSS-Gen Issue 5

REPORT #: EMC_AXONN-004-19001_15.247_WiFi

DATE: 2019-07-17

A2LA Accredited

IC recognized #
3462B-1

***CETECOM* Inc.**
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CETECOM Inc. is a Delaware Corporation with Corporation number: 2905571

TABLE OF CONTENTS

1 Assessment

The following device was evaluated against the applicable criteria specified in FCC rules Parts 15.247 of Title 47 of the Code of Federal Regulations and the relevant ISED Canada standard RSS-247.

No deviations were ascertained.

Company	Description	Marketing Name	Model #
Axon Enterprise, Inc.	Body Worn Camera	Axon Body 3	AX1023

Responsible for Testing Laboratory:

Date	Section	Name	Signature
2019-07-17	Compliance	Cindy Li (EMC Lab Manager)	Cindy Li Digitally signed by Cindy Li DN: cn=Cindy Li, o=Cetecom Inc., ou=EMC, email=cindy.li@cetecom.com ,c=US Date: 2019.07.17 14:48:29 -07'00'

Responsible for the Report:

Date	Section	Name	Signature
2019-07-17	Compliance	Kevin Wang (Senior EMC Engineer)	Kevin Wang Digitally signed by: Kevin Wang DN: CN = Kevin Wang email = kevin.wang@cetecom.com C = US O = Cetecom Inc. Date: 2019.07.17 13:13:31 -07'00'

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

Company Name:	CETECOM Inc.
Department:	Compliance
Street Address:	411 Dixon Landing Road
City/Zip Code	Milpitas, CA 95035
Country	USA
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
EMC Lab Manager:	Cindy Li
Responsible Project Leader:	Kevin Wang

2.2 Identification of the Client

Applicant's Name:	Axon Enterprise, Inc.
Street Address:	17800 N 85th St.
City/Zip Code	Scottsdale, AZ / 85255
Country	USA

2.3 Identification of the Manufacturer

Manufacturer's Name:	Same as Applicant
Manufacturers Address:	----------
City/Zip Code	----------
Country	----------

3 Equipment Under Test (EUT)

3.1 EUT Specifications

Marketing Name:	Axon Body 3
Model No:	AX1023
HW Version :	PVT
SW Version :	1.0.151
FCC-ID :	X4G01200
IC :	8803A-S01200
FWIN:	N/A
HVIN:	AX1023
PMN:	Axon Body 3
Product Description:	Body Worn Camera, with Wi-Fi 802.11a/b/g/n40/ac80, Bluetooth Classis + BLE, Passive NFC TAG, LTE, 3G Fallback support, GPS/GLONASS Receiver Model AX1023 has Sierra Wireless WP7610
Frequency Range / number of channels:	Nominal band: 2400 MHz – 2483.5 MHz; Center to center: 2412 MHz (ch 1) – 2462 MHz (ch 11), 11 channels
Type(s) of Modulation:	DSSS, OFDM
Modes of Operation:	802.11 b/g/n, 20MHz, 40MHz
Antenna Information as declared:	max gain 3.4 dBi for 2.4GHz, refer to section 3.6 for more information
Max. Peak Output Power:	Conducted Power 21.61 dBm
Power Supply/ Rated Operating Voltage Range:	Rechargeable Battery Vmin: 3.4 VDC/ Vnom: 3.8 VDC / Vmax: 4.3 VDC
Operating Temperature Range	-20º to 50º C
Other Radios included in the device:	Bluetooth Basic / EDR: GFSK, π /4 DQPSK, 8DPSK Bluetooth 4.0 Low Energy (BT LE) GPS, Qualcomm WGR7640 UMTS/LTE, Sierra Wireless WP7610
Sample Revision	☐Prototype Unit; ☐Production Unit; ■Pre-Production

3.2 EUT Sample details

EUT #	Serial Number	HW Version	SW Version	Notes/Comments
1	X60000190	DVT3	1.0.48	Conducted Sample
2	X60495001	PVT1	1.0.68	Radiated Sample

3.3 Accessory Equipment (AE) details

AE #	Type	Model	Manufacturer	Serial Number
1	Laptop	HSTNN-I33C-4	HP	-
2	USB Cable	-	AXON	-
3	AC Adaptor	KSA01A5210100D5	Ktec	-

3.4 Test Sample Configuration

EUT Set-up #	Combination of AE used for test set up	Comments
1	EUT#1 + AE#1 + AE#2	The radio of the EUT was configured to a fixed channel transmission with 100% duty cycle using Putty tool and Qualcomm software QRCT to configure the EUT. The measurement equipment was connected to the 50 ohm RF port of the EUT.
2	EUT#2 + AE#1 + AE#2	The radio of the EUT was configured to a fixed channel transmission with 100% duty cycle using Putty tool and Qualcomm software QRCT to configure the EUT. The internal antenna was connected.
3	EUT#2 + AE#2 + AE#3	The radio of the EUT was configured to a fixed channel transmission with 100% duty cycle using Putty tool and Qualcomm software QRCT to configure the EUT. The internal antenna was connected.

3.5 Justification for Worst Case Mode of Operation

During the testing process, the EUT was tested with transmitter sets on low, mid and high channels, and highest possible duty cycle of 100%. For radiated measurements, all data in this report shows the worst case between horizontal and vertical antenna polarizations and for all orientations of the EUT.

3.6 Antenna Gain provided by the Customer

Frequency (MHz)	2400	2420	2440	2460	2480
Antenna Gain (dBi)	2.01	2.9	2.81	3.4	3.22

Frequency (MHz)	5150	5200	5250	5300	5350	5400	5450	5500	5550	5600	5650	5700	5750	5800	5850
Antenna Gain (dBi)	2.93	2.63	3.02	3.25	3.58	3.94	3.85	4.11	3.96	4.14	4.1	4.13	3.57	3.29	3.58

3.7 Power Setting Table

	CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	CH 7	CH 8	CH 9	CH 10	CH 11
b	20	20	20	20	20	20	20	20	20	16.5	16.5
g	14	18	20	20	20	20	20	20	18	16	11.5
n20	13	18	19	19	19	19	19	19	17.5	15.5	10.5
n40			12	13	14	14	12	10.5	9.5		

4 Subject of Investigation

The objective of the measurements done by CETECOM Inc. was to assess the performance of the EUT according to the relevant requirements specified in FCC rules Part 15.247 of Title 47 of the Code of Federal Regulations and Radio Standard Specification RSS-247 of ISED Canada.

This test report is to support a request for new equipment authorization under the:

- FCC ID: X4GS01200
- IC: 8803A-S01200

Testing procedures are based on 558074 D01 DTS Meas Guidance v04 – "GUIDANCE FOR PERFORMING COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEMS (DTS) OPERATING UNDER SECTION 15.247" - April 5, 2017, by the Federal Communications Commission, Office of Engineering and Technology, Laboratory Division.

5 Measurement Results Summary

Test Specification	Test Case	Temperature and Voltage Conditions	Mode	Pass	NA	NP	Result
§15.247(a)(1) RSS-247 5.2(a)	Emission Bandwidth	Nominal	802.11 b/g/n	■	☐	☐	Complies
§15.247(e) RSS-247 5.2(b)	Power Spectral Density	Nominal	802.11 b/g/n	■	☐	☐	Complies
§15.247(b)(1) RSS-247 5.4(d)	Maximum Conducted Output Power and EIRP	Nominal	802.11 b/g/n	■	☐	☐	Complies
§15.247(d) RSS-247 5.5	Band edge compliance Unrestricted Band Edges	Nominal	802.11 b/g/n	■	☐	☐	Complies
§15.247; 15.209; 15.205 RSS-Gen 8.9; 8.10	Band edge compliance Restricted Band Edges	Nominal	802.11 b/g/n	■	☐	☐	Complies
§15.247(d); §15.209 RSS-Gen 6.13	TX Spurious emissions-Radiated	Nominal	802.11 b/n40	■	☐	☐	Complies
§15.207(a) RSS Gen 8.8	AC Conducted Emissions	Nominal	802.11 b	■	☐	☐	Complies

Note: NA= Not Applicable; NP= Not Performed.

6 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus, with 95% confidence interval (in dB delta to result), based on a coverage factor k=1.

Radiated measurement

9 kHz to 30 MHz	±2.5 dB (Magnetic Loop Antenna)
30 MHz to 1000 MHz	±2.0 dB (Biconilog Antenna)
1 GHz to 40 GHz	±2.3 dB (Horn Antenna)

Conducted measurement

150 kHz to 30 MHz	±0.7 dB (LISN)
RF conducted measurement	±0.5 dB

According to TR 102 273 a multiplicative propagation of error is assumed for RF measurement systems. For this reason the RMS method is applied to dB values and not to linear values as appropriate for additive propagation of error. Also used: http://physics.nist.gov/cuu/Uncertainty/typeb.html. The above calculated uncertainties apply to direct application of the Substitution method. The Substitution method is always used when the EUT comes closer than 3 dB to the limit.

6.1 Environmental Conditions During Testing:

The following environmental conditions were maintained during the course of testing:

- Ambient Temperature: 20-25° C
- Relative humidity: 40-60%

6.2 Dates of Testing:

05/07/2019 - 06/26/2019

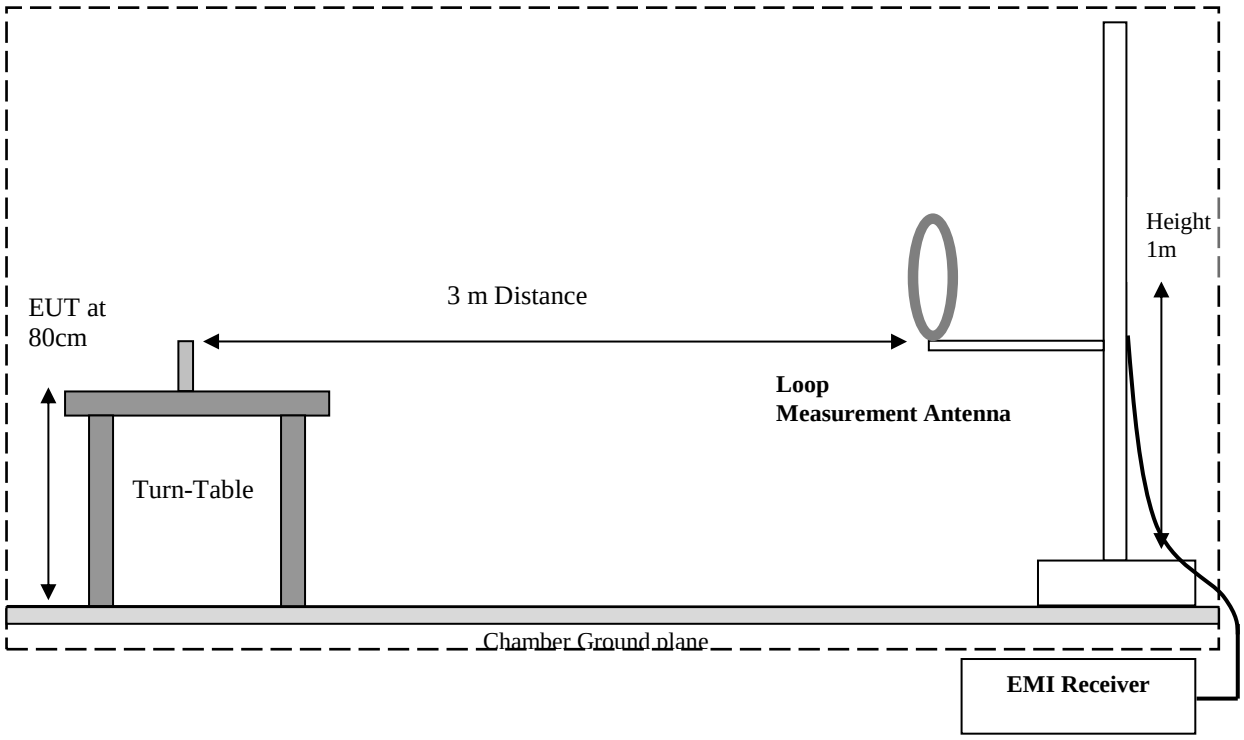
7 Measurement Procedures

7.1 Radiated Measurement

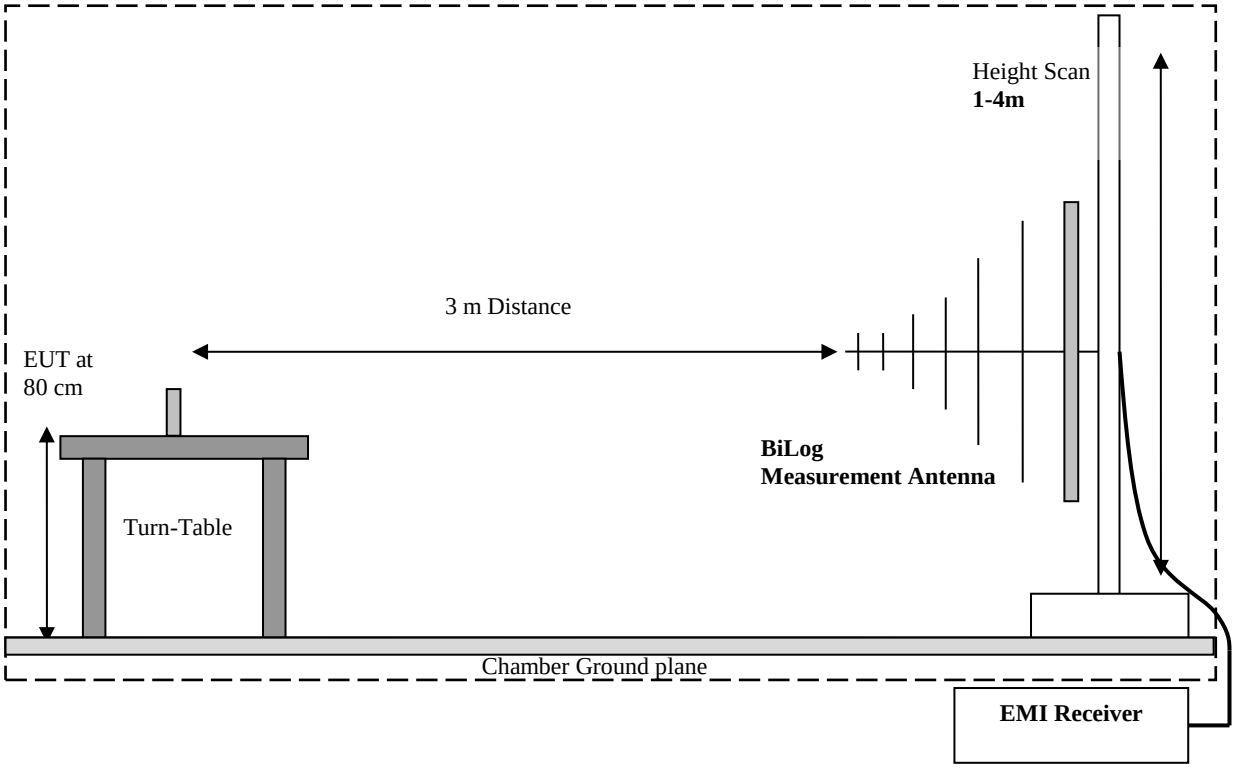
The radiated measurement is performed according to ANSI C63.10 (2013)

- The exploratory measurement is accomplished by running a matrix of 16 sweeps over the required frequency range with R&S Test-SW EMC32 for 4 positions of the turntable, two orthogonal positions of the EUT and both antenna polarizations. This procedure exceeds the requirement of the above standards to cover the 3 orthogonal axis of the EUT. A max peak detector is utilized during the exploratory measurement. The Test-SW creates an overall maximum trace for all 12 sweeps and saves the settings for each point of this trace. The maximum trace is part of the test report.
- The 10 highest emissions are selected with an automatic algorithm of EMC32 searching for peaks in the noise floor and ensuring that broadband signals are not selected multiple times.
- The maxima are then put through the final measurement and again maximized in a 90deg range of the turntable, fine search in frequency domain and height scan between 1m and 4m.
- The above procedure is repeated for all possible ways of power supply to EUT and for all supported modulations.
- In case there are no emissions above noise floor level only the maximum trace is reported as described above.
- The results are split up into up to 4 frequency ranges due to antenna bandwidth restrictions. A magnetic loop is used from 9 kHz to 30 MHz, a Biconilog antenna is used from 30 MHz to 1 GHz, and two different horn antennas are used to cover frequencies up to 40 GHz.

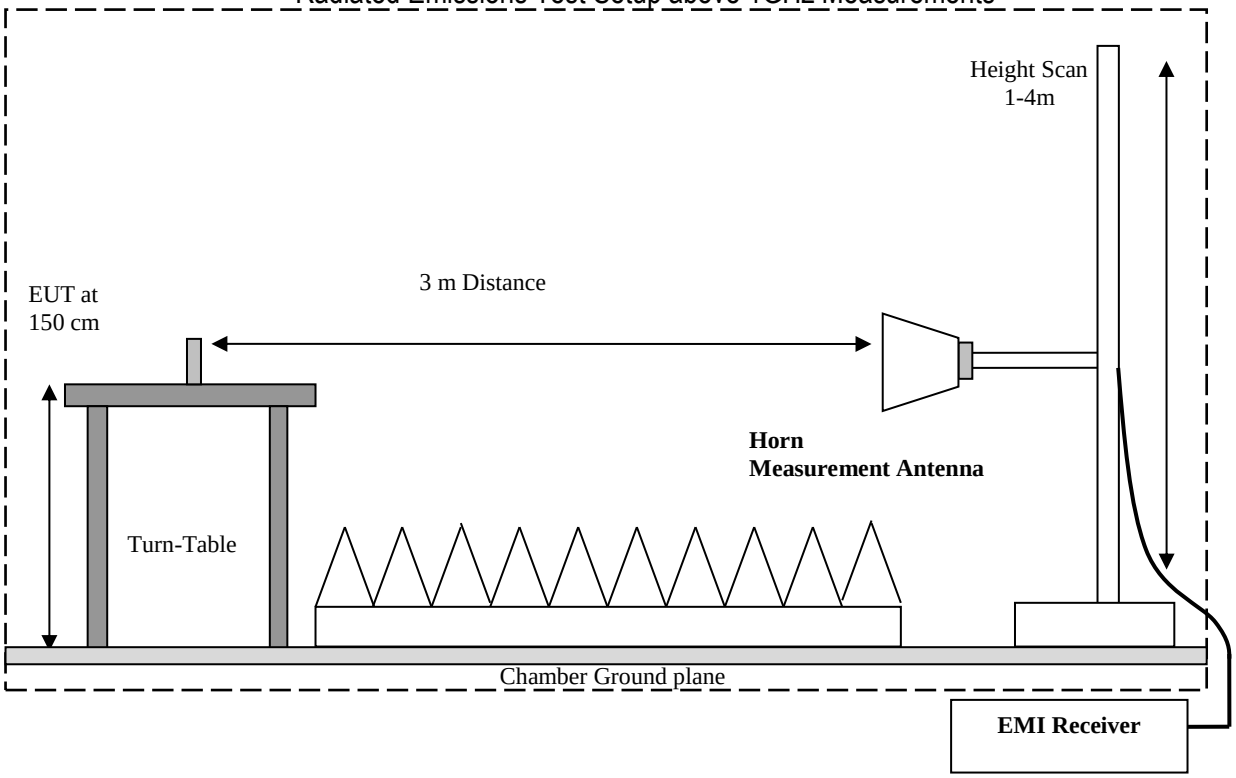
Radiated Emissions Test Setup below 30MHz Measurements



Radiated Emissions Test Setup 30MHz-1GHz Measurements



Radiated Emissions Test Setup above 1GHz Measurements



7.1.1 Sample Calculations for Field Strength Measurements

Field Strength is calculated from the Spectrum Analyzer/ Receiver readings, taking into account the following parameters:

1. Measured reading in dBµV
2. Cable Loss between the receiving antenna and SA in dB and
3. Antenna Factor in dB/m

All radiated measurement plots in this report are taken from a test SW that calculates the Field Strength based on the following equation:

FS (dBµV/m) = Measured Value on SA (dBµV)- Cable Loss (dB)+ Antenna Factor (dB/m)

Example:

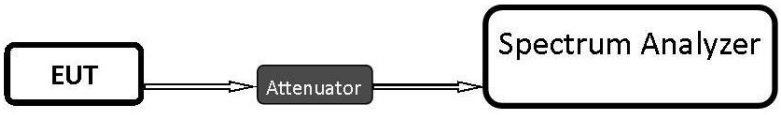
Frequency (MHz)	Measured SA (dBµV)	Cable Loss (dB)	Antenna Factor Correction (dB)	Field Strength Result (dBµV/m)
1000	80.5	3.5	14	98.0

7.2 Power Line Conducted Measurement Procedure

AC Power Line conducted emissions measurements performed according to: ANSI C63.4 (2014)

7.3 RF Conducted Measurement Procedure

Testing procedures are based on 558074 D01 DTS Meas Guidance v04 – "GUIDANCE FOR PERFORMING COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEMS (DTS) OPERATING UNDER SECTION 15.247" - April 5, 2017, by the Federal Communications Commission, Office of Engineering and Technology, Laboratory Division.



- Connect the equipment as shown in the above diagram.
- Adjust the settings of the SA (Rohde-Schwarz Spectrum Analyzer) to connect the EUT at the required mode of test.
- Measurements are to be performed with the EUT set to the low, middle and high channels and for worst case modulation schemes.

8 Test Result Data

8.1 Maximum Peak Conducted Output Power

8.1.1 Measurement according to FCC 558074 D01 DTS Meas Guidance v04

Spectrum Analyzer settings:

- RBW ≥ DTS bandwidth
- VBW ≥ 3 x RBW
- Span ≥ 3 x RBW
- Sweep = Auto couple
- Detector function = Peak
- Trace = Max hold
- Use peak marker function to determine the peak amplitude level

8.1.2 Limits:

Maximum Peak Output Power:

- FCC §15.247 (b)(1): 1 W
- IC RSS-247: 1 W

8.1.3 Test conditions and setup:

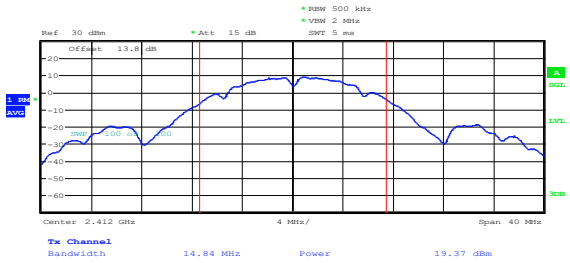
Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input	Antenna Gain
22° C	1	b/g/n20/n40	120VAC	3.4 dBi

8.1.4 Measurement result:

Plot #	Mode	Data Rate	Channel/Frequency (MHz)			Maximum Peak Conducted Output Power (dBm)	EIRP (dBm)	Limit (dBm)	Result
1	802.11b	1Mbps	Low	1	2412	19.37	22.77	30 (Pk) / 36 (EIRP)	Pass
2			Mid	6	2437	21.61	25.01	30 (Pk) / 36 (EIRP)	Pass
3			High	11	2462	20.02	23.42	30 (Pk) / 36 (EIRP)	Pass
4	802.11g	6Mbps	Low	1	2412	13.4	16.8	30 (Pk) / 36 (EIRP)	Pass
5			Mid	6	2437	20.16	23.56	30 (Pk) / 36 (EIRP)	Pass
6			High	11	2462	13.1	16.5	30 (Pk) / 36 (EIRP)	Pass
7	802.11n20	MCS0	Low	1	2412	12.6	16	30 (Pk) / 36 (EIRP)	Pass
8			Mid	6	2437	19.52	22.92	30 (Pk) / 36 (EIRP)	Pass
9			High	11	2462	12.15	15.55	30 (Pk) / 36 (EIRP)	Pass
10	802.11n40	MCS0	Low	1	2422	12.8	16.2	30 (Pk) / 36 (EIRP)	Pass
11			Mid	6	2437	15.15	18.55	30 (Pk) / 36 (EIRP)	Pass
12			High	11	2452	11.22	14.62	30 (Pk) / 36 (EIRP)	Pass

8.1.5 Measurement Plots:

Plot # 1: Maximum Peak Conducted Output Power	
802.11b	2412MHz



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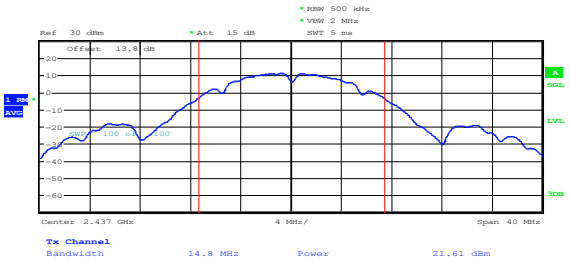
Plot # 2: Maximum Peak Conducted Output Power	
802.11b	2437MHz



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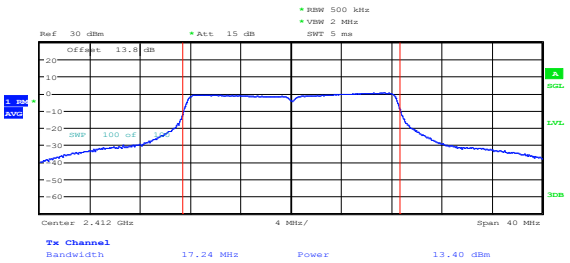
Plot # 3: Maximum Peak Conducted Output Power	
802.11b	2462MHz

Date: 2.JUL.2019 18:41:02

Plot # 4: Maximum Peak Conducted Output Power	
802.11g	2412MHz



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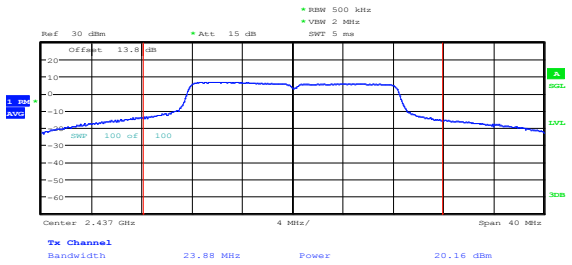
Plot # 5: Maximum Peak Conducted Output Power	
802.11g	2437MHz



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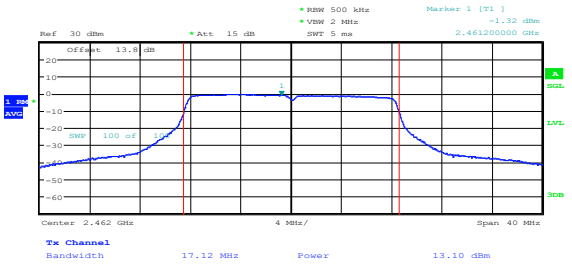
Plot # 6: Maximum Peak Conducted Output Power	
802.11g	2462MHz



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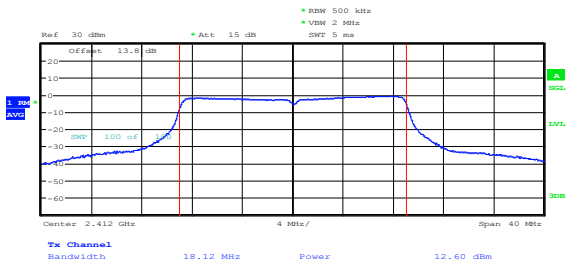
Plot # 7: Maximum Peak Conducted Output Power	
802.11n20	2412MHz



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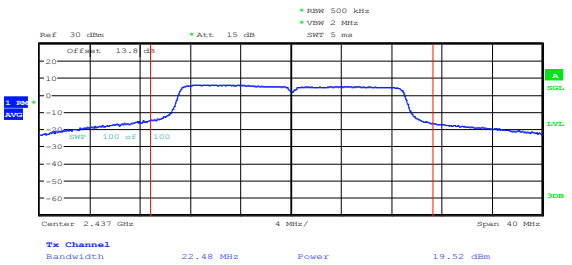
Plot # 8: Maximum Peak Conducted Output Power	
802.11n20	2437MHz



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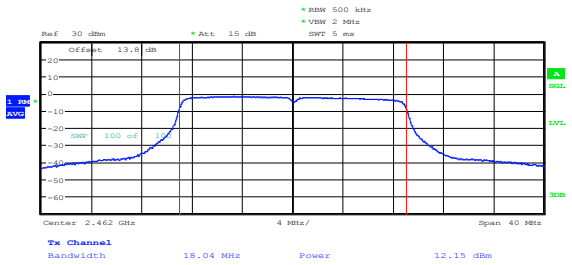
Plot # 9: Maximum Peak Conducted Output Power	
802.11n20	2462MHz



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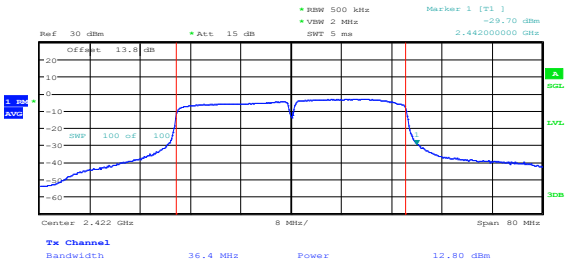
Plot # 10: Maximum Peak Conducted Output Power	
802.11n40	2422MHz



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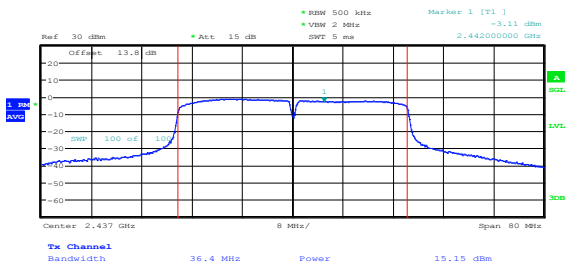
Plot # 11: Maximum Peak Conducted Output Power	
802.11n40	2437MHz



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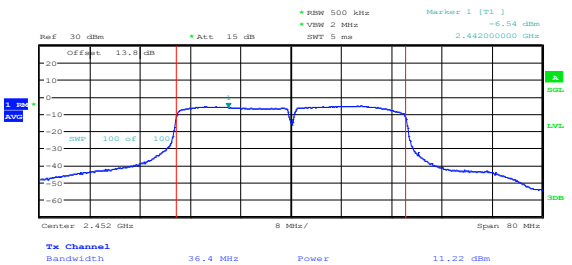
Plot # 12: Maximum Peak Conducted Output Power	
802.11n40	2452MHz



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8.2 Power Spectral Density

8.2.1 Measurement according to FCC 558074 D01 DTS Meas Guidance v04

Spectrum Analyzer settings for Peak PSD method:

- Set analyzer center frequency to DTS channel center frequency
- Set the span to 1.5 x DTS bandwidth
- Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz
- Set the VBW ≥ 3 x RBW
- Detector = Peak
- Sweep time = Auto couple
- Trace mode = Max hold
- Allow trace to fully stabilize
- Use the peak marker function to determine the maximum amplitude level within the RBW
- If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat

8.2.2 Limits:

FCC§15.247(e) & RSS-247 5.2(2)

- For digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

8.2.3 Test conditions and setup:

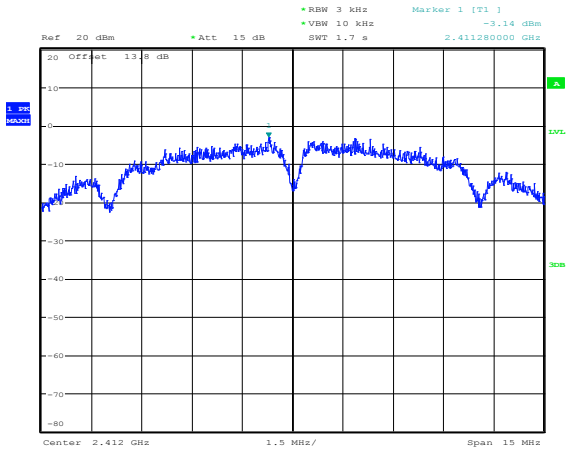
Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input	Antenna Gain
22° C	1	b/g/n20/n40	110VAC	3.4 dBi

8.2.4 Measurement result:

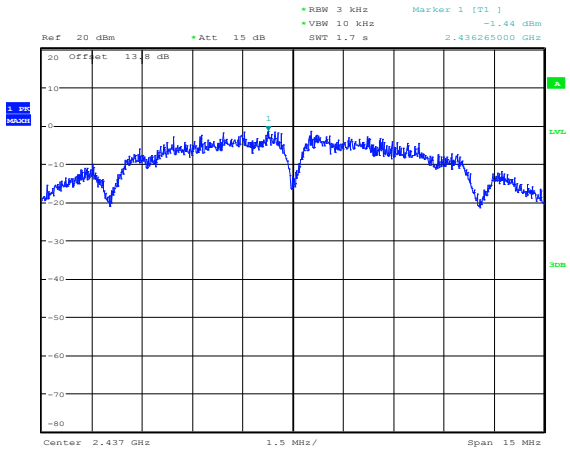
Plot #	Mode	Data Rate	Channel/Frequency (MHz)			Maximum Power Spectral Density (dBm/3 kHz)	Limit (dBm / 3 kHz)	Result
1	802.11b	1Mbps	Low	1	2412	-3.14	8	Pass
2			Mid	6	2437	-1.44	8	Pass
3			High	11	2462	-3.63	8	Pass
4	802.11g	6Mbps	Low	1	2412	-11.88	8	Pass
5			Mid	6	2437	-5.18	8	Pass
6			High	11	2462	-12.56	8	Pass
7	802.11n20	MCS0	Low	1	2412	-12.39	8	Pass
8			Mid	6	2437	-5.49	8	Pass
9			High	11	2462	-13.27	8	Pass
10	802.11n40	MCS0	Low	1	2422	-14.36	8	Pass
11			Mid	6	2437	-12.8	8	Pass
12			High	11	2452	-17.77	8	Pass

8.2.5 Measurement Plots:

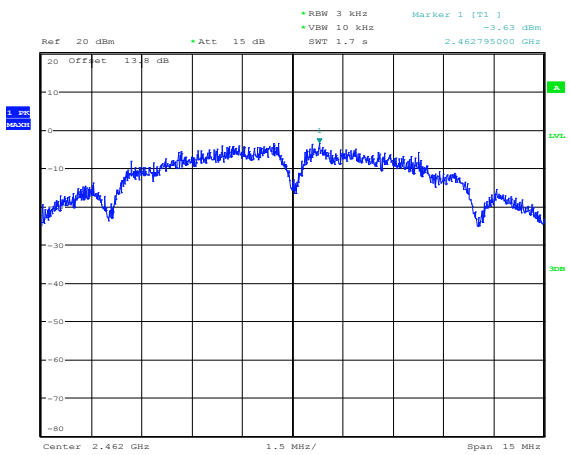
Plot # 1: Maximum Power Spectral Density	
802.11b	2412MHz



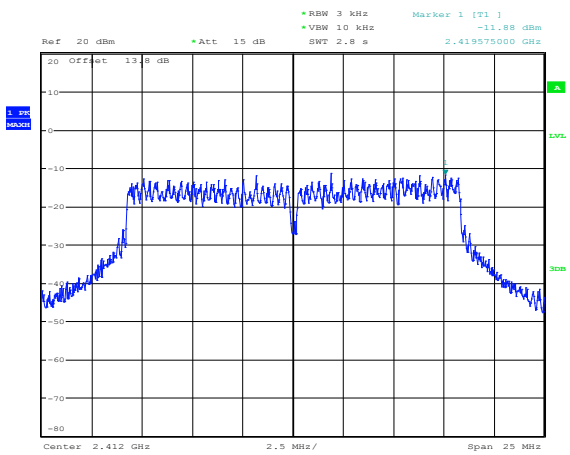
Plot # 2: Maximum Power Spectral Density	
802.11b	2437MHz



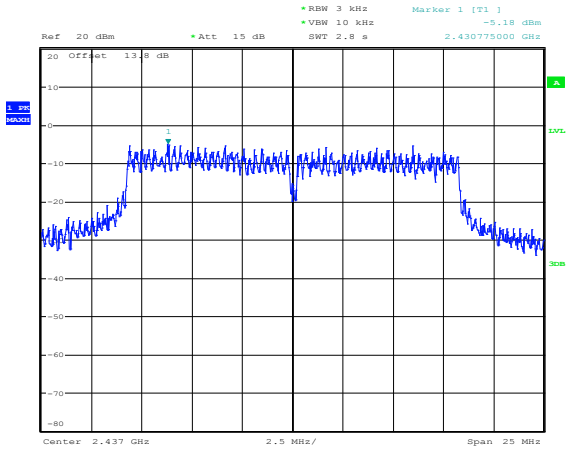
Plot # 3: Maximum Power Spectral Density	
802.11b	2462MHz



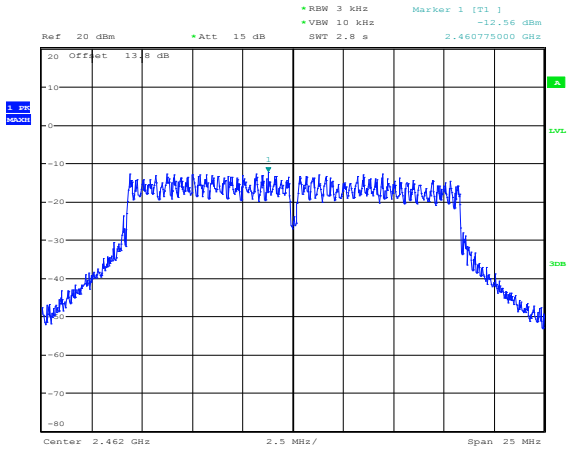
Plot # 4: Maximum Power Spectral Density	
802.11g	2412MHz



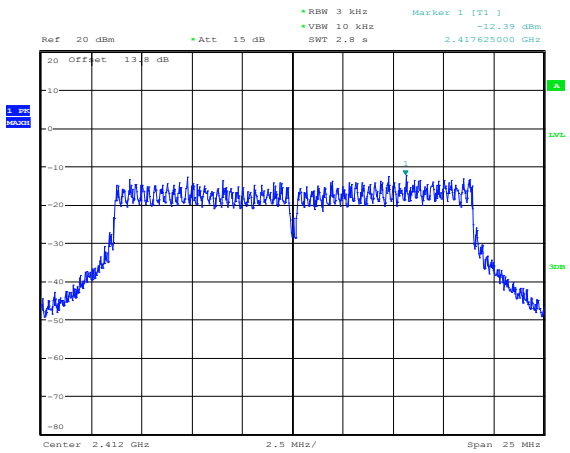
Plot # 5: Maximum Power Spectral Density	
802.11g	2437MHz



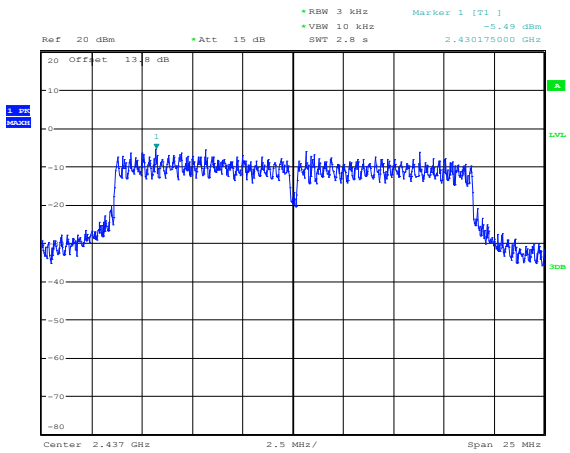
Plot # 6: Maximum Power Spectral Density	
802.11g	2462MHz



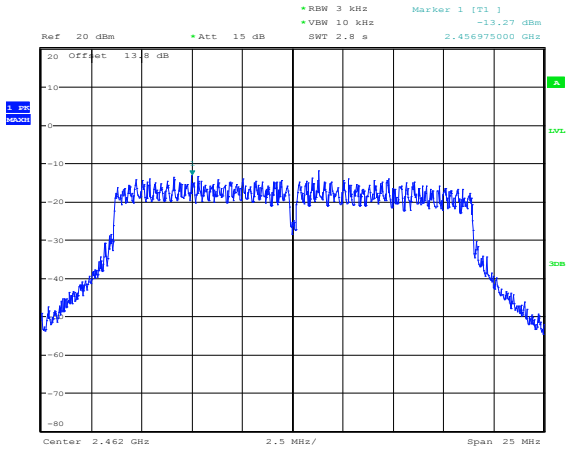
Plot # 7: Maximum Power Spectral Density	
802.11n20	2412MHz



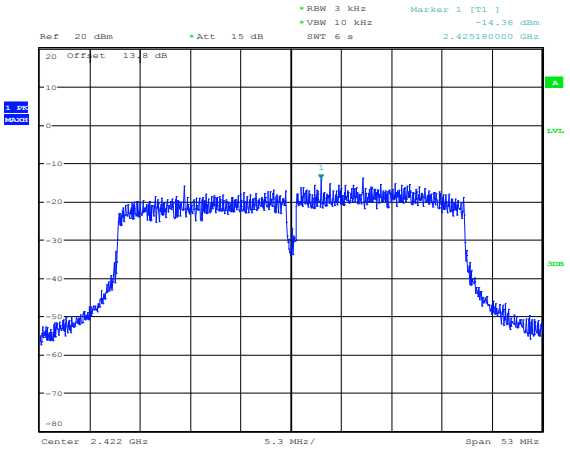
Plot # 8: Maximum Power Spectral Density	
802.11n20	2437MHz



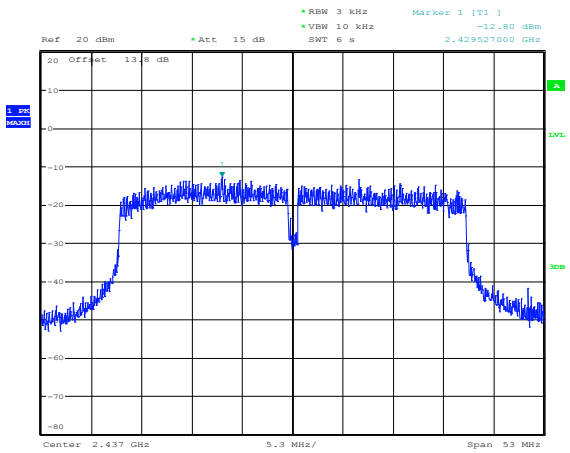
Plot # 9: Maximum Power Spectral Density	
802.11n20	2462MHz



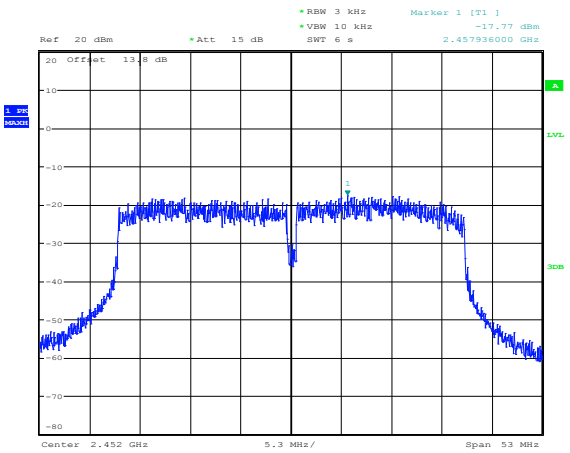
Plot # 10: Maximum Power Spectral Density	
802.11n40	2422MHz



Plot # 11: Maximum Power Spectral Density	
802.11n40	2437MHz



Plot # 12: Maximum Power Spectral Density	
802.11n40	2452MHz



8.3 Band Edge Compliance

8.3.1 Measurement according to FCC 558074 D01 DTS Meas Guidance v04

Spectrum Analyzer settings for band edge:

- Set the center frequency and span to encompass frequency range to be measured
- RBW = 100 kHz
- VBW ≥ 3 x RBW
- Sweep Time: Auto couple
- Detector = Peak
- Trace = Max hold
- Allow trace to fully stabilize
- Use the peak marker function to determine the maximum amplitude level
- Set the marker on the emission at the band edge, or on the highest modulation product outside of the band, if this level is greater than that at the band edge

8.3.2 Limits non restricted band:

FCC§15.247 (d)

- 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) (see §15.205(c)).

RSS-247 5/5

- 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 30dB instead of 20dB.

Spectrum Analyzer settings for restricted band:

- Peak measurements are made using a peak detector and RBW=1 MHz

8.3.3 Limits restricted band §15.247/15.209/15.205 and RSS-Gen 8.9/8.10

- *PEAK LIMIT= 74 dBµV/m @3m =-21.23 dBm
- *AVG. LIMIT= 54 dBµV/m @3m =-41.23 dBm
- Start frequency & stop frequency according to frequency range specified in the restricted band table in FCC section 15.205 & RSS-Gen 8.10
- Measurements with a peak detector were used to show compliance to average limits, thus showing compliance to both peak and average limits.

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

8.3.4 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input	Antenna Gain
22° C	1	802.11b/g/n20/n40	110VAC	3.4 dBi

8.3.5 Measurement result:

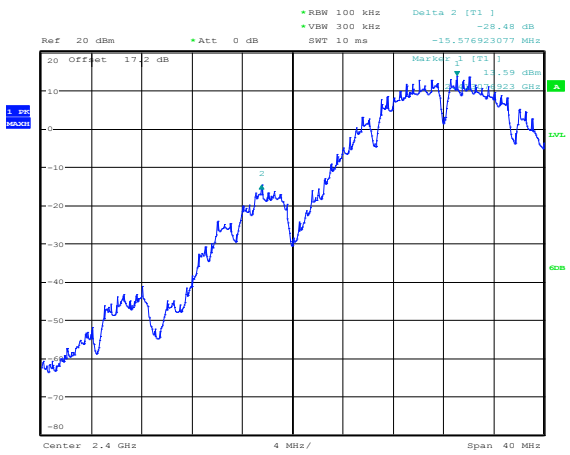
Plot #	EUT operating mode	Band Edge	Band Edge Delta (dBc)	Limit (dBc)	Result
1	b	Lower, Non-restricted	-28.48	20	Pass
2	g	Lower, Non-restricted	-28.05	20	Pass
3	n20	Lower, Non-restricted	-27.69	20	Pass
4	n40	Lower, Non-restricted	-27.85	20	Pass

Plot #	EUT operating mode	Band Edge	Measured Value (dBm)	Limit (dBm)	Result
5	b	Lower Restricted Peak	-37.27	-21.23 Peak	Pass
6		Lower Restricted AVG	-42.22	-41.23 AVG	Pass
7		Upper Restricted Peak	-36.23	-21.23 Peak	Pass
8		Upper Restricted AVG	-41.7	-41.23 AVG	Pass
9	g	Lower Restricted Peak	-22.83	-21.23 Peak	Pass
10		Lower Restricted AVG	-42.21	-41.23 AVG	Pass
11		Upper Restricted Peak	-24.67	-21.23 Peak	Pass
12		Upper Restricted AVG	-41.7	-41.23 AVG	Pass
13	n20	Lower Restricted Peak	-23.4	-21.23 Peak	Pass
14		Lower Restricted AVG	-41.47	-41.23 AVG	Pass
15		Upper Restricted Peak	-24.05	-21.23 Peak	Pass
16		Upper Restricted AVG	-41.73	-41.23 AVG	Pass
17	n40	Lower Restricted Peak	-25	-21.23 Peak	Pass
18		Lower Restricted AVG	-41.45	-41.23 AVG	Pass
19		Upper Restricted Peak	-26.1	-21.23 Peak	Pass
20		Upper Restricted AVG	-41.24	-41.23 AVG	Pass

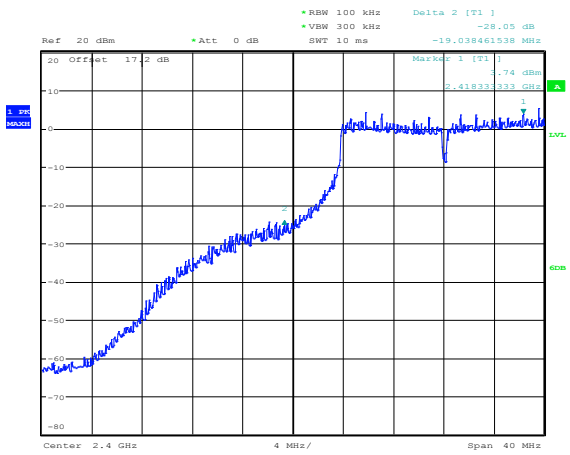
Note: the Measured Value is corrected by the cable loss 13.8dB and antenna gain 3.4dB. Since the duty cycle is about 100%, no correction factor applies.

8.3.6 Measurement Plots:

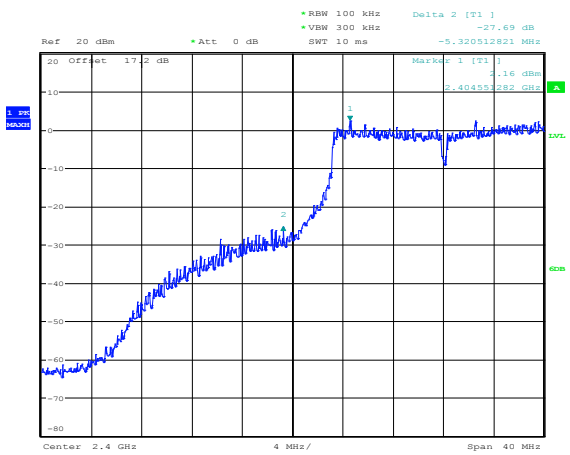
Plot # 1: Lower Band Edge - Non-restricted	
802.11b	CH#1



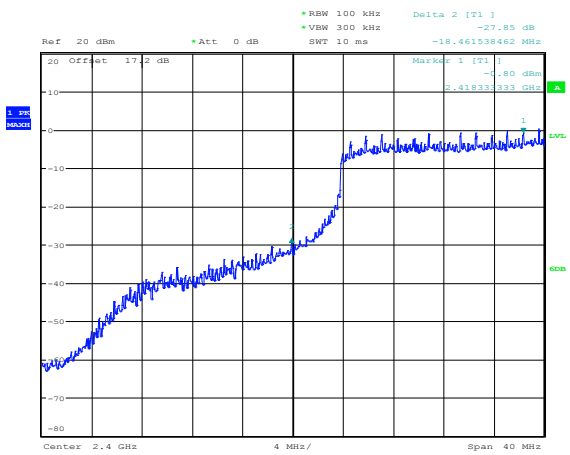
Plot # 2: Lower Band Edge - Non-restricted	
802.11g	CH#1



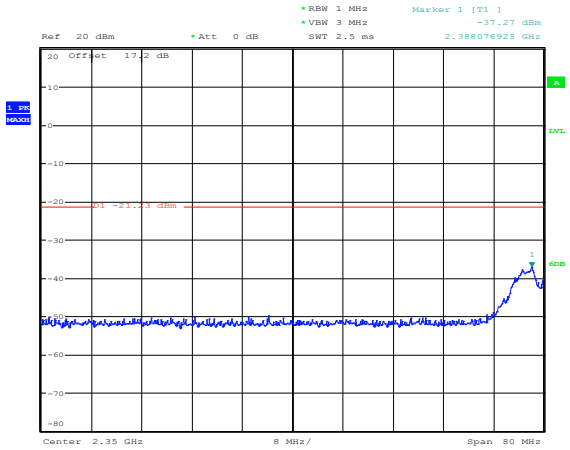
Plot # 3: Lower Band Edge - Non-restricted	
802.11n20	CH#1



Plot # 4: Lower Band Edge - Non-restricted	
802.11n40	CH#3

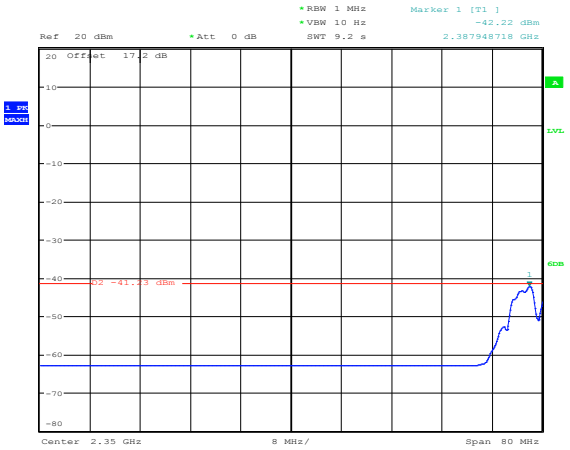


Plot # 5: Lower Band Edge – Restricted - Peak	
802.11b	CH#1



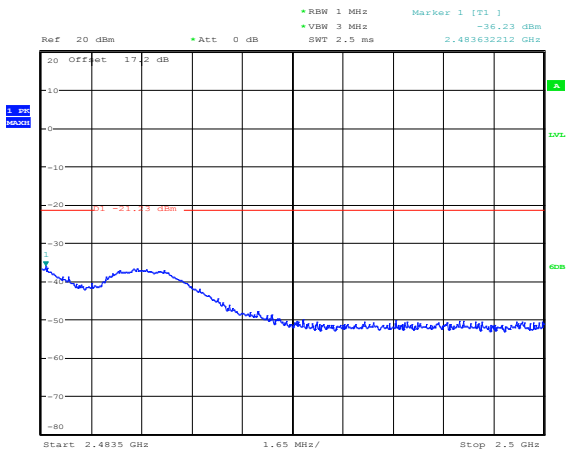
Date: 7.MAY.2019 12:26:15

Plot # 6: Lower Band Edge – Restricted – Average	
802.11b	CH#1



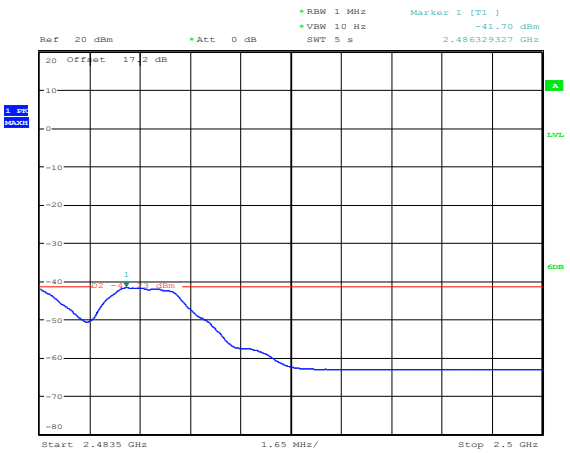
Date: 7.MAY.2019 12:23:23

Plot # 7: Upper Band Edge – Restricted - Peak	
802.11b	CH#11



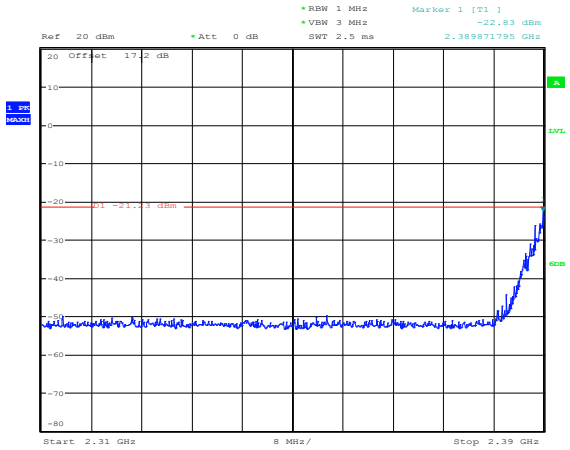
Date: 7.MAY.2019 13:07:46

Plot # 8: Upper Band Edge – Restricted – Average	
802.11b	CH#11



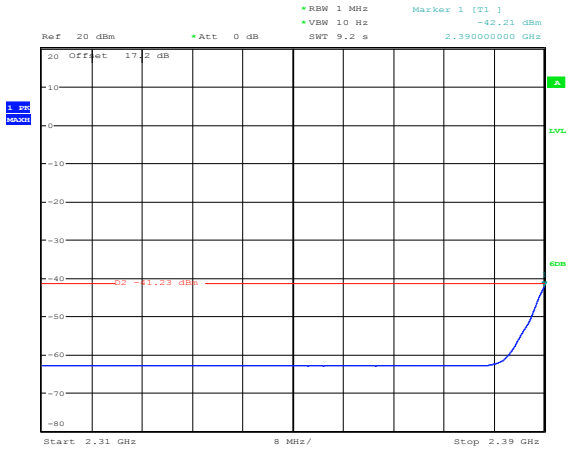
Date: 7.MAY.2019 13:06:58

Plot # 9: Lower Band Edge – Restricted - Peak	
802.11g	CH#1



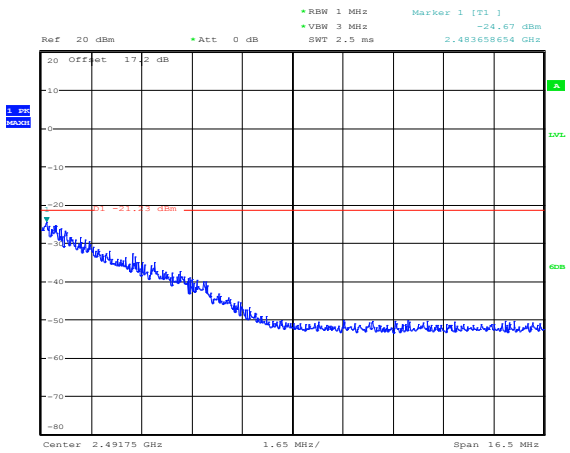
Date: 7.MAY.2019 12:30:00

Plot # 10: Lower Band Edge – Restricted – Average	
802.11g	CH#1



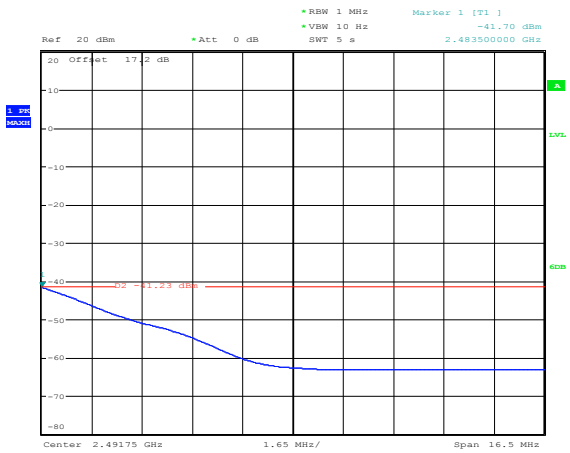
Date: 7.MAY.2019 12:28:44

Plot # 11: Upper Band Edge – Restricted - Peak	
802.11g	CH#11



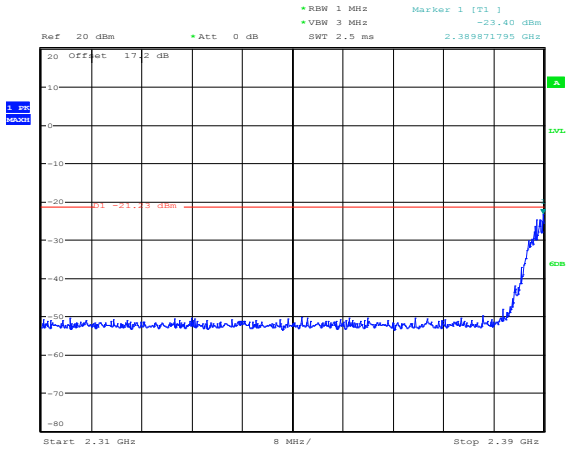
Date: 7.MAY.2019 13:13:49

Plot # 12: Upper Band Edge – Restricted – Average	
802.11g	CH#11



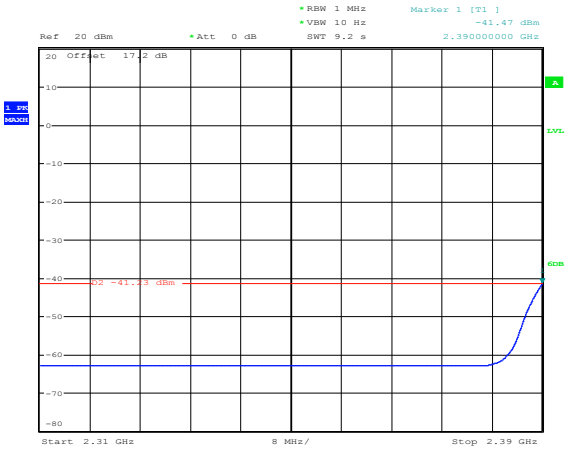
Date: 7.MAY.2019 13:13:13

Plot # 13: Lower Band Edge – Restricted - Peak	
802.11n20	CH#1



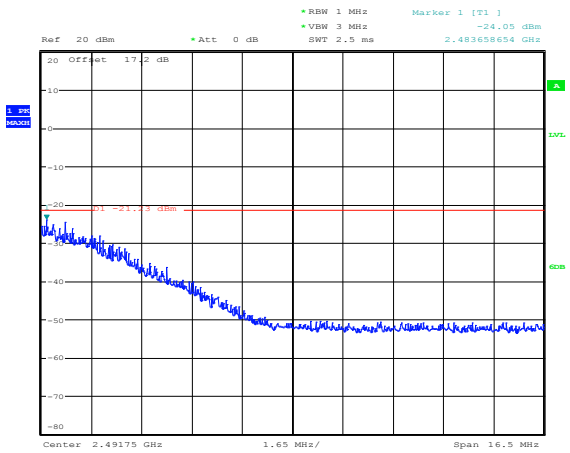
Date: 7.MAY.2019 12:52:49

Plot # 14: Lower Band Edge – Restricted – Average	
802.11 n20	CH#1



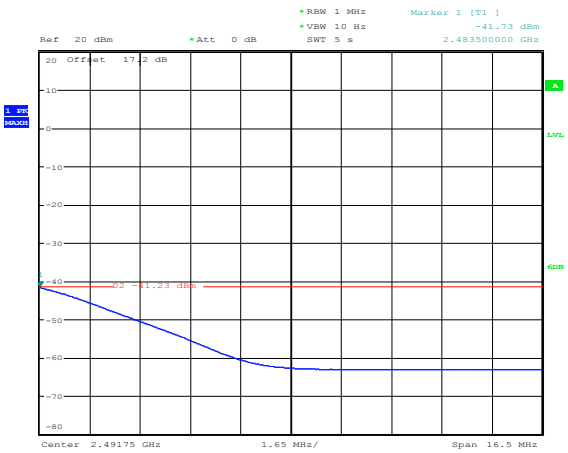
Date: 7.MAY.2019 12:52:19

Plot # 16: Upper Band Edge – Restricted - Peak	
802.11 n20	CH#11



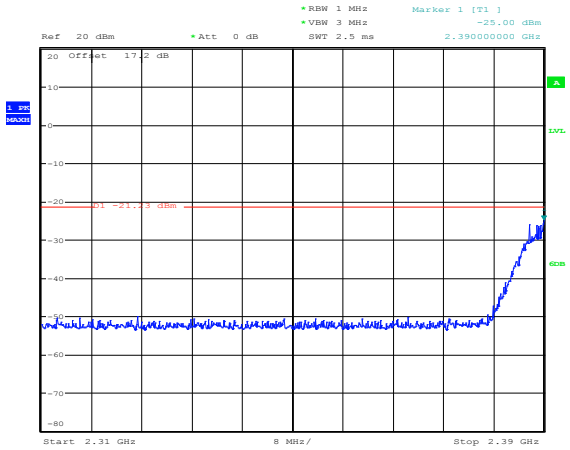
Date: 7.MAY.2019 13:22:58

Plot # 16: Upper Band Edge – Restricted – Average	
802.11 n20	CH#11

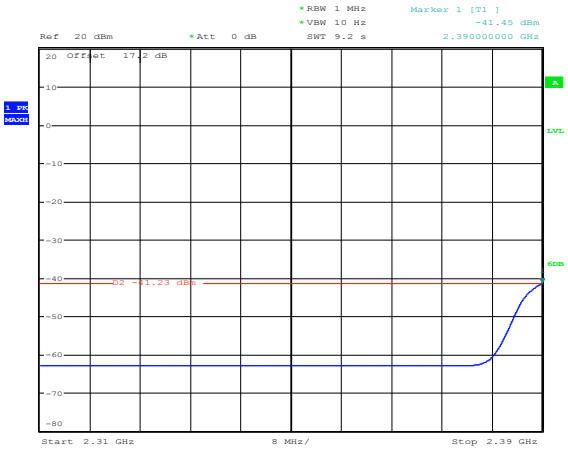


Date: 7.MAY.2019 13:22:30

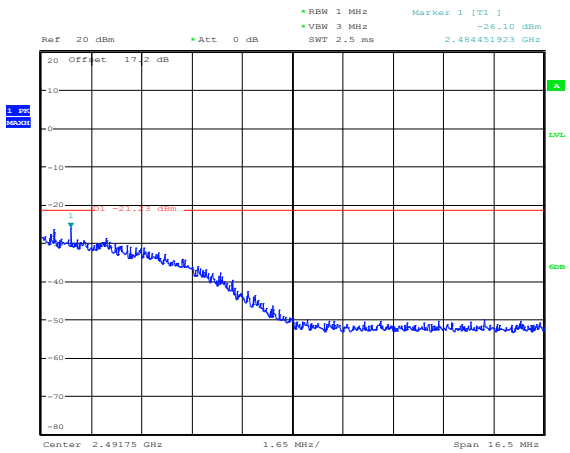
Plot # 17: Lower Band Edge – Restricted - Peak	
802.11 n40	CH#3



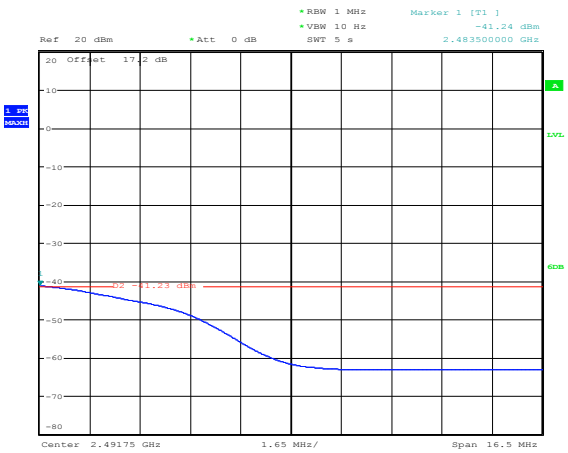
Plot # 18: Lower Band Edge – Restricted – Average	
802.11 n40	CH#3



Plot # 19: Upper Band Edge – Restricted - Peak	
802.11 n40	CH#9



Plot # 20: Upper Band Edge – Restricted – Average	
802.11 n40	CH#9



8.4 Emission Bandwidth 6dB and 99% Occupied Bandwidth

8.4.1 Measurement according to FCC 558074 D01 DTS Meas Guidance v04

Spectrum Analyzer settings:

- Set RBW = 100 kHz
- Set the video bandwidth (VBW) ≥ 3 x RBW
- Detector = Peak
- Trace mode = Max hold
- Sweep = Auto couple
- Allow the trace to stabilize
- 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.

8.4.2 Limits:

FCC §15.247(a)(1) and RSS-247 5.2(1)

- Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

8.4.3 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input
22° C	1	b/g/n20/n40	110VAC

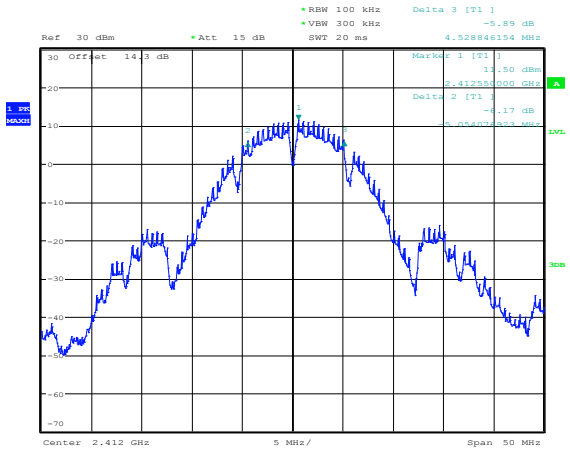
8.4.4 Measurement result:

Plot #	Mode	Data Rate	Channel/Frequency (MHz)			6dB Emissions Bandwidth (MHz)	Limit (MHz)	Result
1	802.11b	1Mbps	Low	1	2412	9.58	> 0.5	Pass
2			Mid	6	2437	10.10	> 0.5	Pass
3			High	11	2462	9.51	> 0.5	Pass
4	802.11g	6Mbps	Low	1	2412	16.43	> 0.5	Pass
5			Mid	6	2437	16.40	> 0.5	Pass
6			High	11	2462	16.32	> 0.5	Pass
7	802.11n20	MCS0	Low	1	2412	17.73	> 0.5	Pass
8			Mid	6	2437	17.21	> 0.5	Pass
9			High	11	2462	35.21	> 0.5	Pass
10	802.11n40	MCS0	Low	1	2422	35.18	> 0.5	Pass
11			Mid	6	2437	35.22	> 0.5	Pass
12			High	11	2452	9.58	> 0.5	Pass

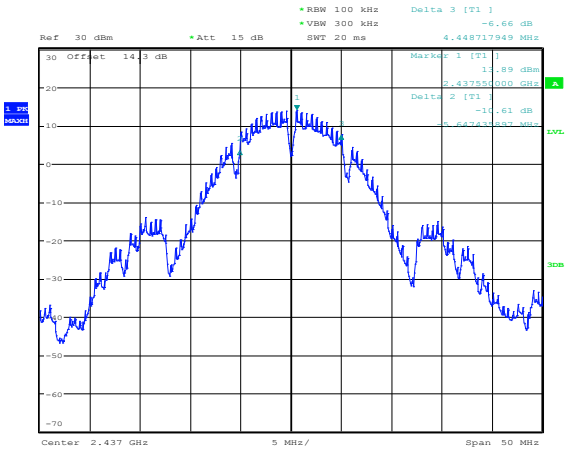
Plot #	Mode	Data Rate	Channel/Frequency (MHz)			99% Occupied Bandwidth (MHz)	Limit (MHz)	Result
13	802.11b	1Mbps	Low	1	2412	14.84	> 0.5	Pass
14			Mid	6	2437	14.80	> 0.5	Pass
15			High	11	2462	13.56	> 0.5	Pass
16	802.11g	6Mbps	Low	1	2412	17.24	> 0.5	Pass
17			Mid	6	2437	23.88	> 0.5	Pass
18			High	11	2462	17.12	> 0.5	Pass
19	802.11n20	MCS0	Low	1	2412	18.12	> 0.5	Pass
20			Mid	6	2437	22.48	> 0.5	Pass
21			High	11	2462	18.04	> 0.5	Pass
22	802.11n40	MCS0	Low	1	2422	36.40	> 0.5	Pass
23			Mid	6	2437	36.40	> 0.5	Pass
24			High	11	2452	36.40	> 0.5	Pass

8.4.5 Measurement Plots:

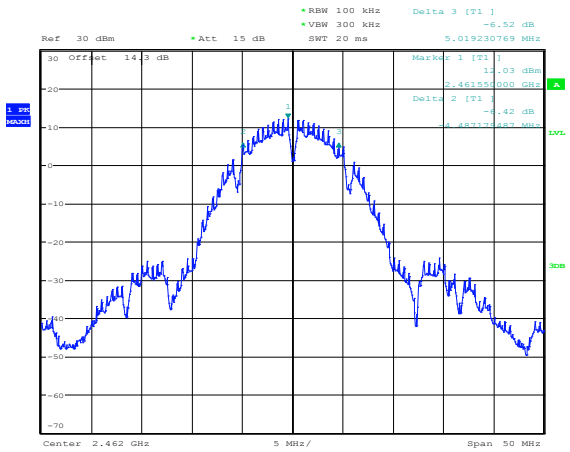
Plot # 1: 6dB Emissions Bandwidth	
802.11b	2412MHz



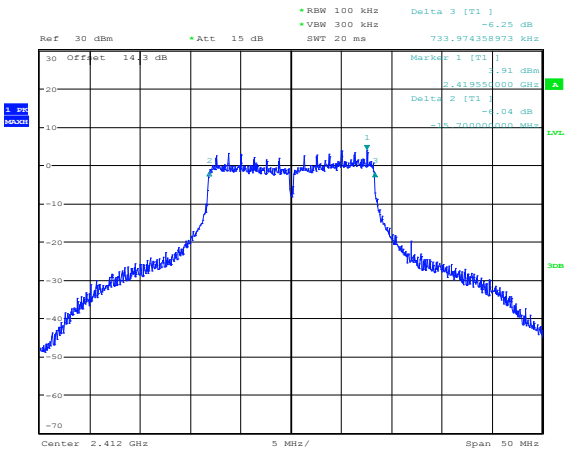
Plot # 2: 6dB Emissions Bandwidth	
802.11b	2437MHz



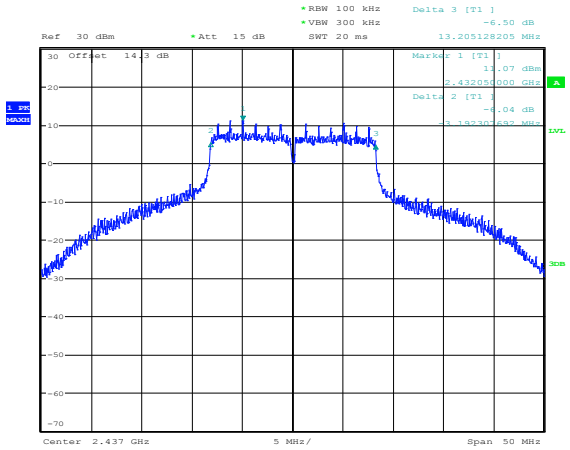
Plot # 3: 6dB Emissions Bandwidth	
802.11b	2462MHz



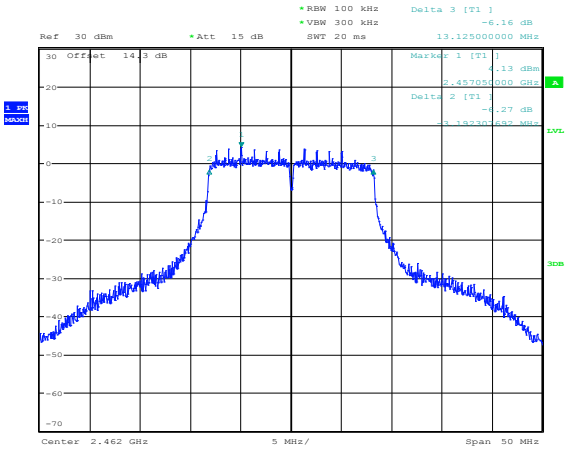
Plot # 4: 6dB Emissions Bandwidth	
802.11g	2412MHz



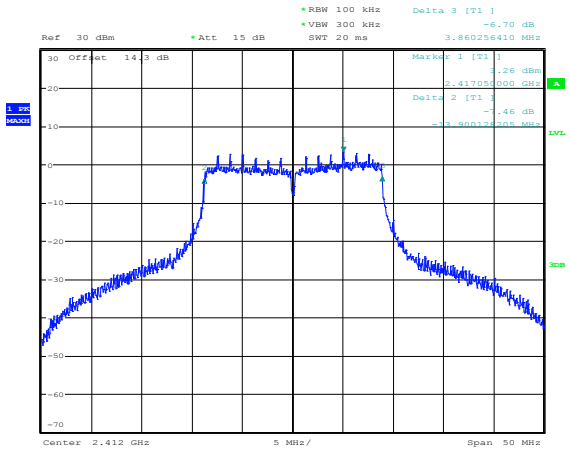
Plot # 5: 6dB Emissions Bandwidth	
802.11g	2437MHz



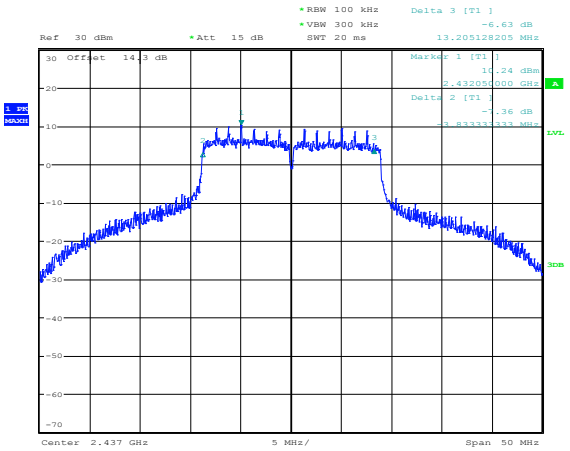
Plot # 6: 6dB Emissions Bandwidth	
802.11g	2462MHz



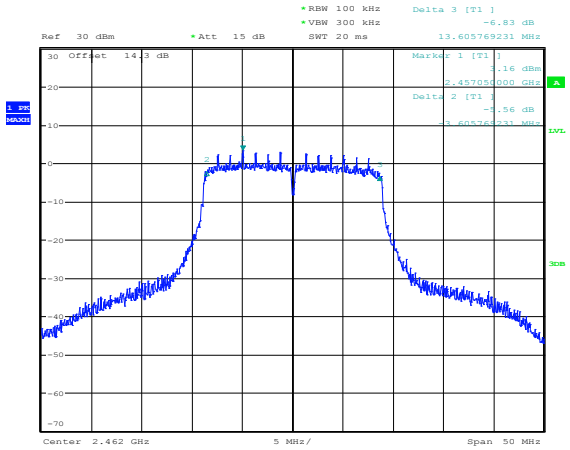
Plot # 7: 6dB Emissions Bandwidth	
802.11n20	2412MHz



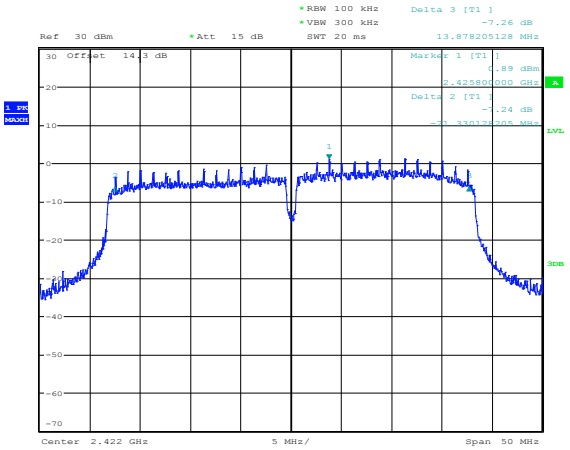
Plot # 8: 6dB Emissions Bandwidth	
802.11n20	2437MHz



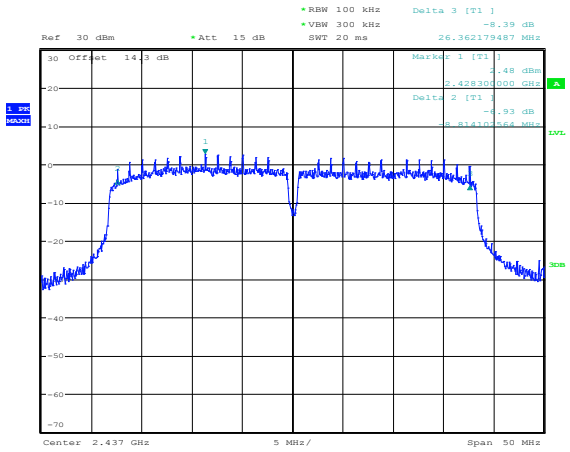
Plot # 9: 6dB Emissions Bandwidth	
802.11n20	2462MHz



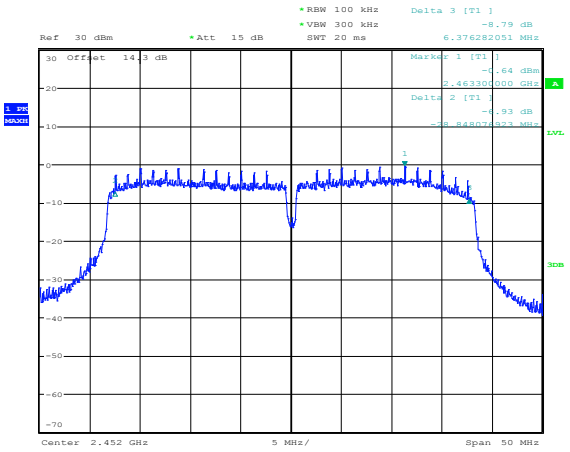
Plot # 10: 6dB Emissions Bandwidth	
802.11n40	2422MHz



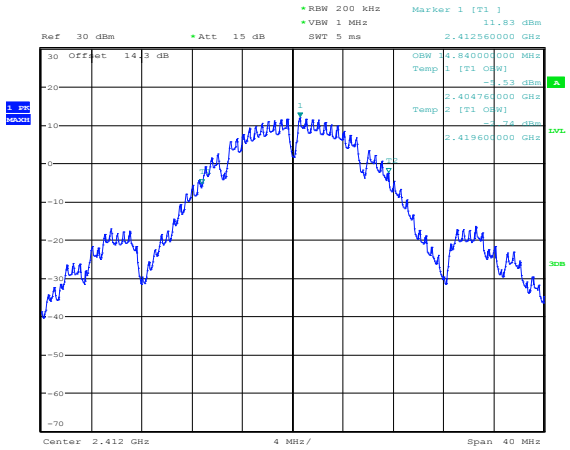
Plot # 11: 6dB Emissions Bandwidth	
802.11n40	2437MHz



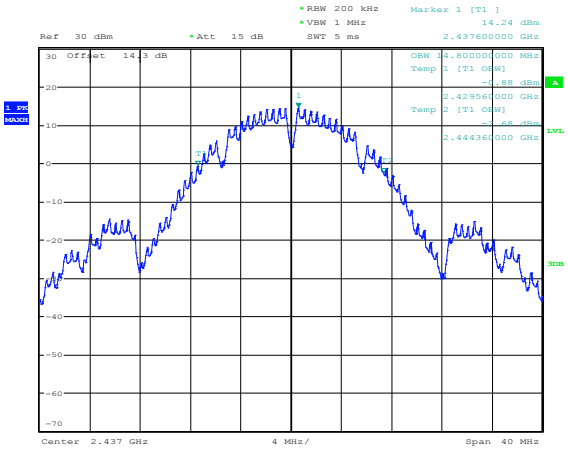
Plot # 12: 6dB Emissions Bandwidth	
802.11n40	2452MHz



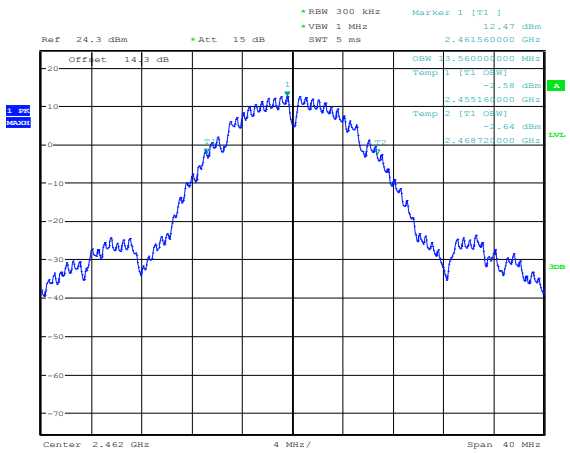
Plot # 13: 99% Occupied Bandwidth	
802.11b	2412MHz



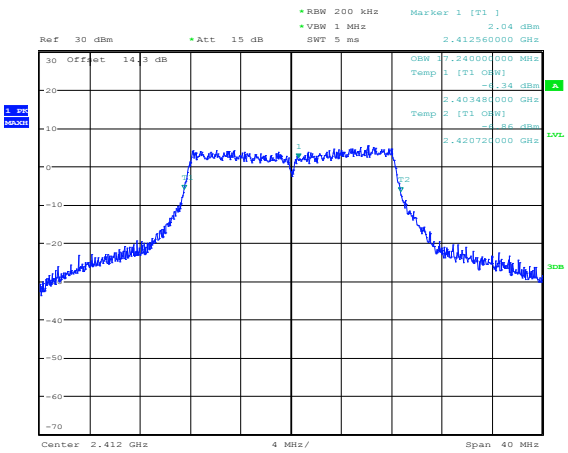
Plot # 14: 99% Occupied Bandwidth	
802.11b	2437MHz



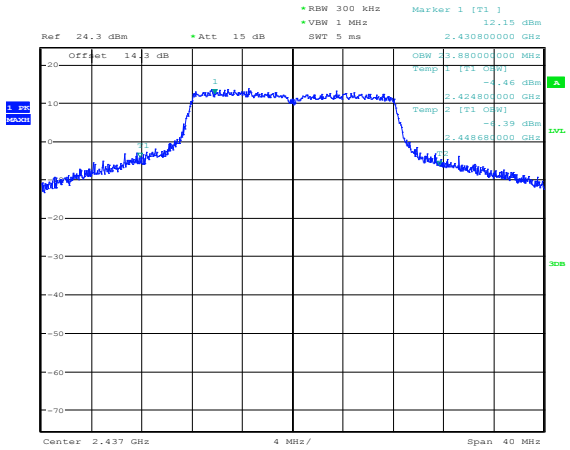
Plot # 15: 99% Occupied Bandwidth	
802.11b	2462MHz



Plot # 16: 99% Occupied Bandwidth	
802.11g	2412MHz

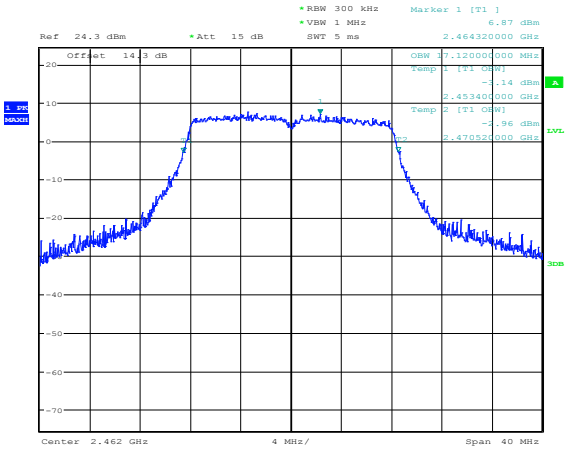


Plot # 17: 99% Occupied Bandwidth	
802.11g	2437MHz



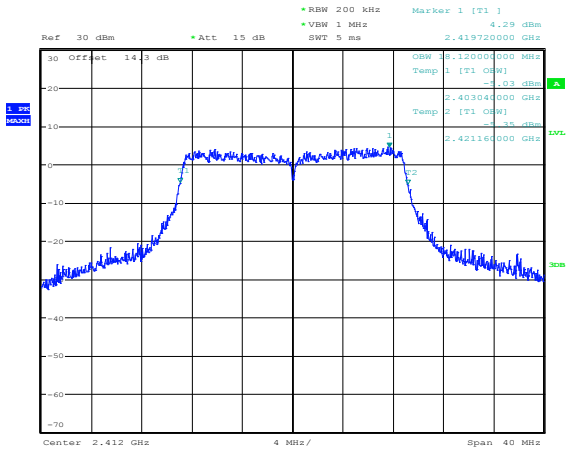
Date: 7.MAY.2019 09:14:23

Plot # 18: 99% Occupied Bandwidth	
802.11g	2462MHz



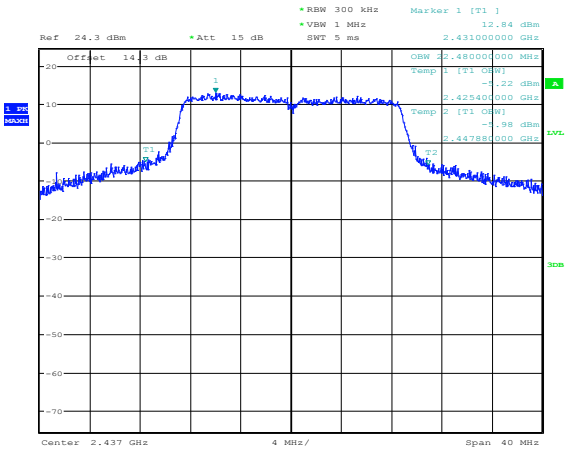
Date: 7.MAY.2019 09:18:34

Plot # 19: 99% Occupied Bandwidth	
802.11n20	2412MHz



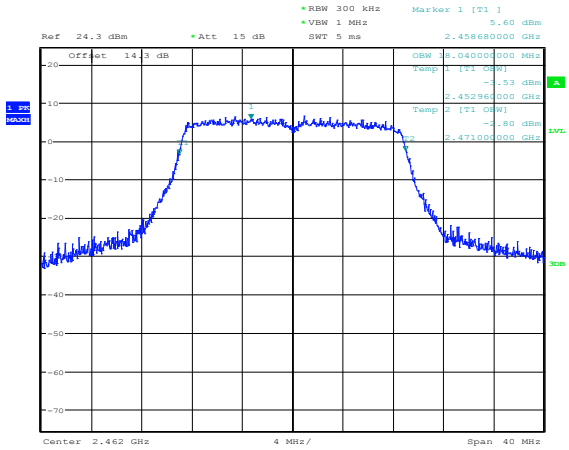
Date: 7.MAY.2019 09:10:28

Plot # 20: 99% Occupied Bandwidth	
802.11n20	2437MHz



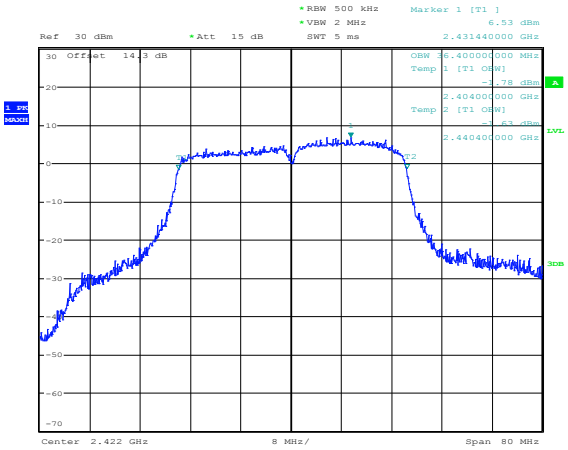
Date: 7.MAY.2019 09:15:35

Plot # 21: 99% Occupied Bandwidth	
802.11n20	2462MHz



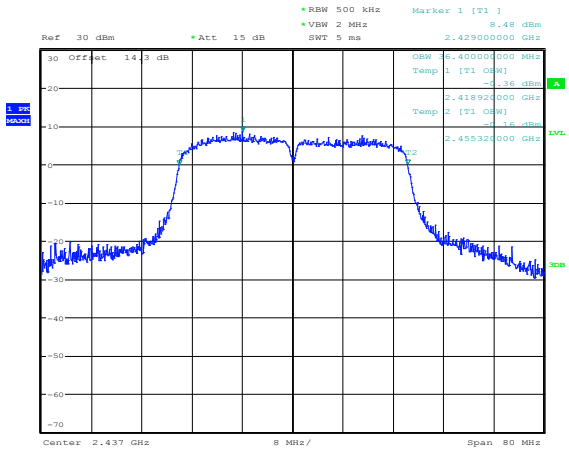
Date: 7.MAY.2019 09:19:32

Plot # 22: 99% Occupied Bandwidth	
802.11n40	2422MHz



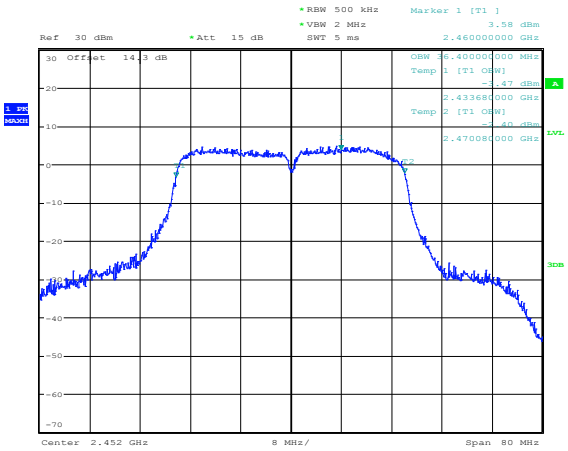
Date: 7.MAY.2019 09:06:21

Plot # 23: 99% Occupied Bandwidth	
802.11n40	2437MHz



Date: 7.MAY.2019 09:05:19

Plot # 24: 99% Occupied Bandwidth	
802.11n40	2452MHz



Date: 7.MAY.2019 09:03:53

8.5 Radiated Transmitter Spurious Emissions and Restricted Bands

8.5.1 Measurement according to ANSI C63.10 (2013)

Spectrum Analyzer Settings:

- Frequency = 9 KHz – 30 MHz
- RBW = 9 KHz
- Detector: Peak

- Frequency = 30 MHz – 1 GHz
- Detector = Peak / Quasi-Peak
- RBW= 120 KHz (<1GHz)

- Frequency > 1 GHz
- Detector = Peak / Average
- RBW = 1 MHz

- Radiated spurious emissions shall be measured for the transmit frequencies, transmit power, and data rate for the lowest, middle and highest channel in each frequency band of operation and for the highest gain antenna for each antenna type, and using the appropriate parameters and test requirements.
- The highest (or worst-case) data rate shall be recorded for each measurement.
- For testing at distance other than the specified in the standard, the limit conversion is calculated by using 40 dB/decade extrapolation factor as follow: Conversion factor (CF) = 40 log (D/d) = 40 log (300m / 3m) = 80dB

8.5.2 Limits:

FCC §15.247

- 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) (see §15.205(c)).

FCC §15.209 & RSS-Gen 8.9

- Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency of emission (MHz)	Field strength (µV/m)	Measurement Distance (m)	Field strength @ 3m (dBµV/m)
0.009–0.490	2400/F(kHz) / ---------	300	-
0.490–1.705	24000/F(kHz) / --------	30	-
1.705–30.0	30 / (29.5)	30	-
30–88	100	3	40 dBµV/m
88–216	150	3	43.5 dBµV/m
216–960	200	3	46 dBµV/m
Above 960	500	3	54 dBµV/m

FCC §15.205 & RSS-Gen 8.10

- Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

- 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) (see §15.205(c)).
  *PEAK LIMIT= 74 dBµV/m
  *AVG. LIMIT= 54 dBµV/m

8.5.3 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input
22° C	2	802.11b/n40	110VAC

8.5.4 Measurement result:

Plot #	Mode	Data Rate	Channel/Frequency			Scan Frequency	Limit	Result
1-3	b	1Mbps	Low	1	2412 MHz	30 MHz – 18 GHz	See section 8.5.2	Pass
4-8			Mid	6	2437 MHz	9 kHz – 26 GHz	See section 8.5.2	Pass
9-11			High	11	2462 MHz	30 MHz – 18 GHz	See section 8.5.2	Pass
12-14	n40	MCS0	Low	3	2422 MHz	30 MHz – 18 GHz	See section 8.5.2	Pass
15-19			Mid	6	2437 MHz	9 kHz – 26 GHz	See section 8.5.2	Pass
20-22			High	9	2452 MHz	30 MHz – 18 GHz	See section 8.5.2	Pass

8.5.5 Measurement Plots:

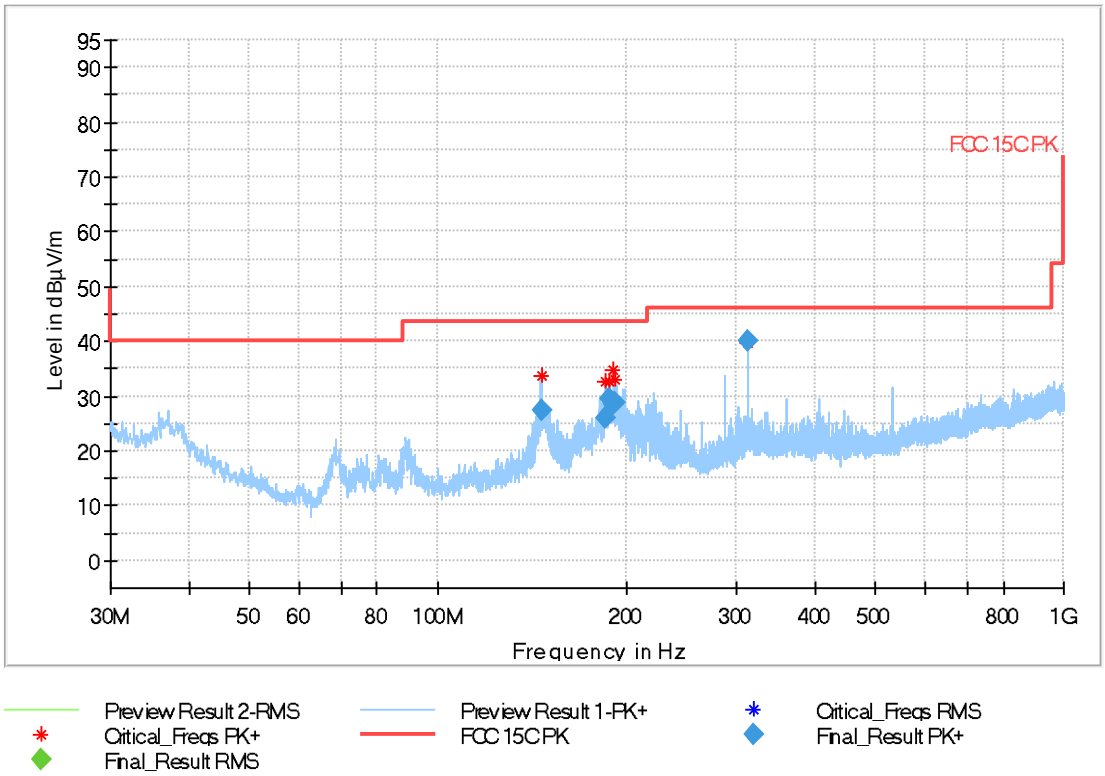
Plot #1 Radiated Emissions: 30 MHz – 1GHz

Modulation: 802.11b | **Channel: Low**

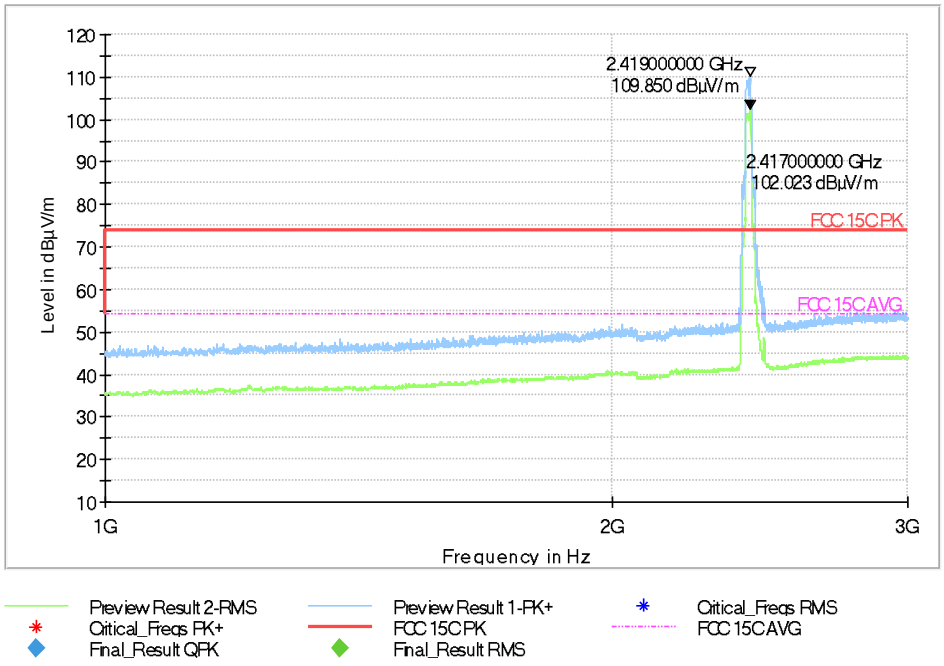
Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol
146.771	27.53	---	43.50	15.97	100.0	100.0	100.0	V
185.870	25.90	---	43.50	17.60	100.0	100.0	178.0	V
188.498	29.48	---	43.50	14.02	100.0	100.0	117.0	V
190.933	28.59	---	43.50	14.91	100.0	100.0	116.0	V
191.897	28.70	---	43.50	14.80	100.0	100.0	124.0	V
312.009	40.21	---	46.00	5.79	100.0	100.0	117.0	H

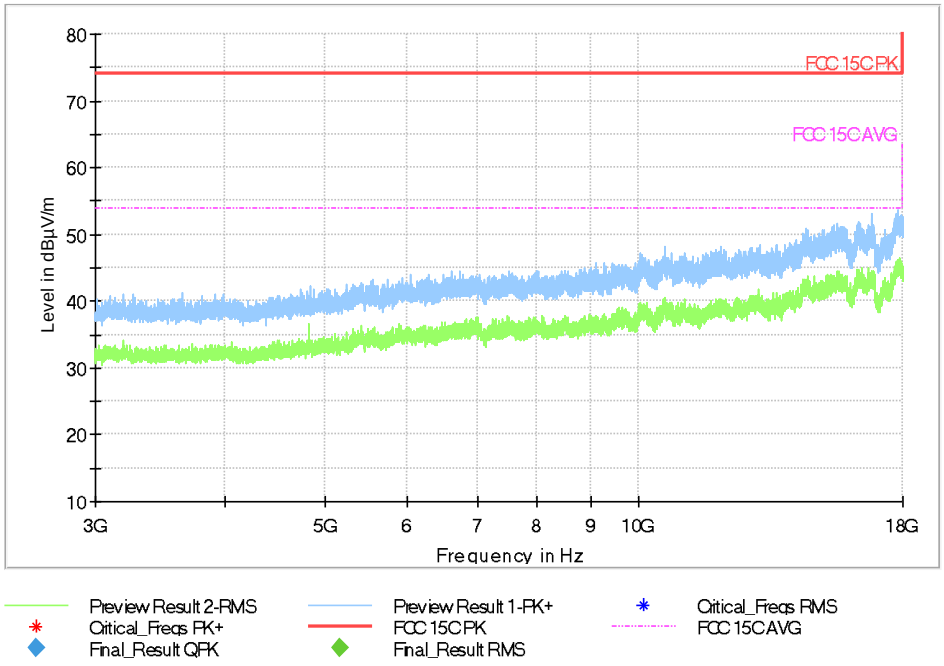
Disclaimer: Any measurement data within 2dB from the limit line is conditional PASS/FAIL due to measurement uncertainty considerations.



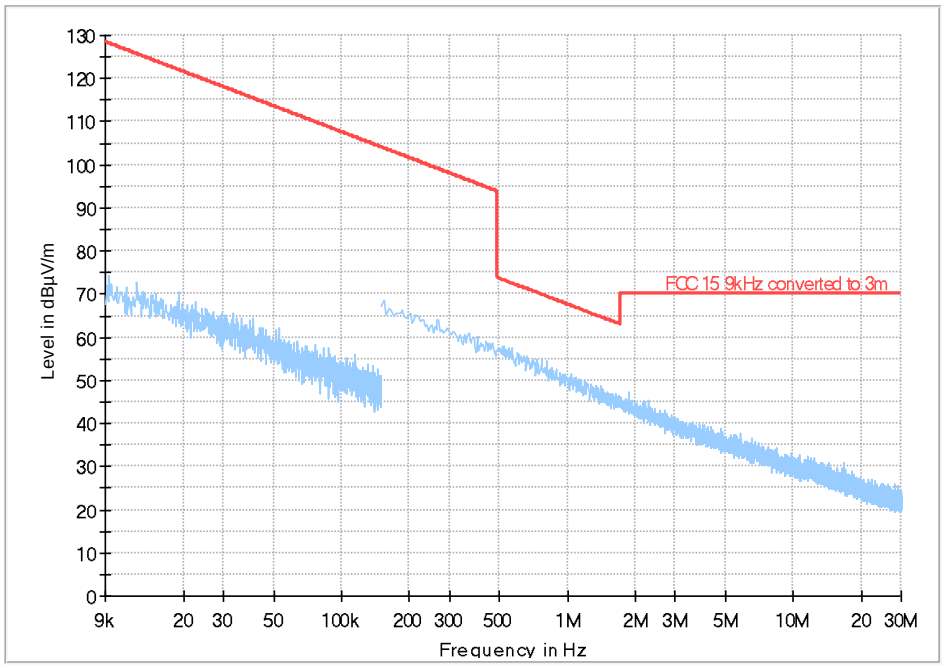
Plot # 2 Radiated Emissions: 1-3 GHz		
Modulation: 802.11b	**Channel: Low**	



Plot # 3 Radiated Emissions: 3-18 GHz		
Modulation: 802.11b	**Channel: Low**	



Plot # 4 Radiated Emissions: 9 KHz - 30 MHz		
Modulation: 802.11b	**Channel: Mid**	



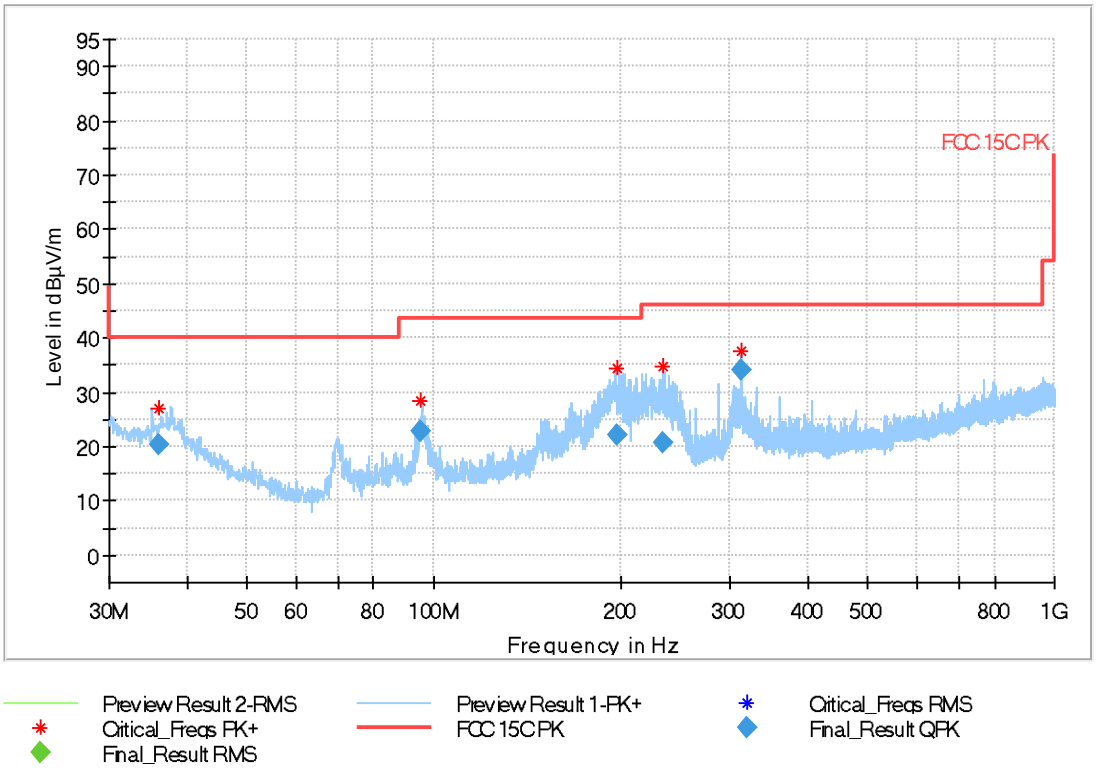
Plot #5 Radiated Emissions: 30 MHz – 1GHz

Modulation: 802.11b | **Channel: Mid**

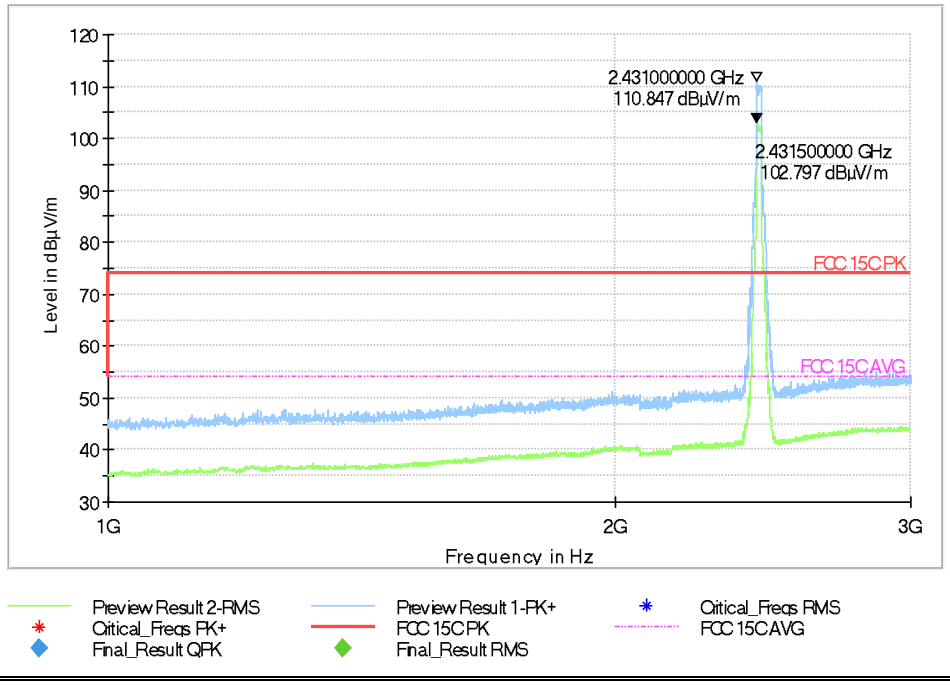
Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol
36.019	20.32	---	40.00	19.68	100.0	100.0	100.0	V
95.222	22.99	---	43.50	20.51	100.0	100.0	138.0	V
197.987	21.94	---	43.50	21.56	100.0	100.0	124.0	V
234.080	20.62	---	46.00	25.38	100.0	100.0	100.0	V
312.001	34.06	---	46.00	11.94	100.0	100.0	100.0	V

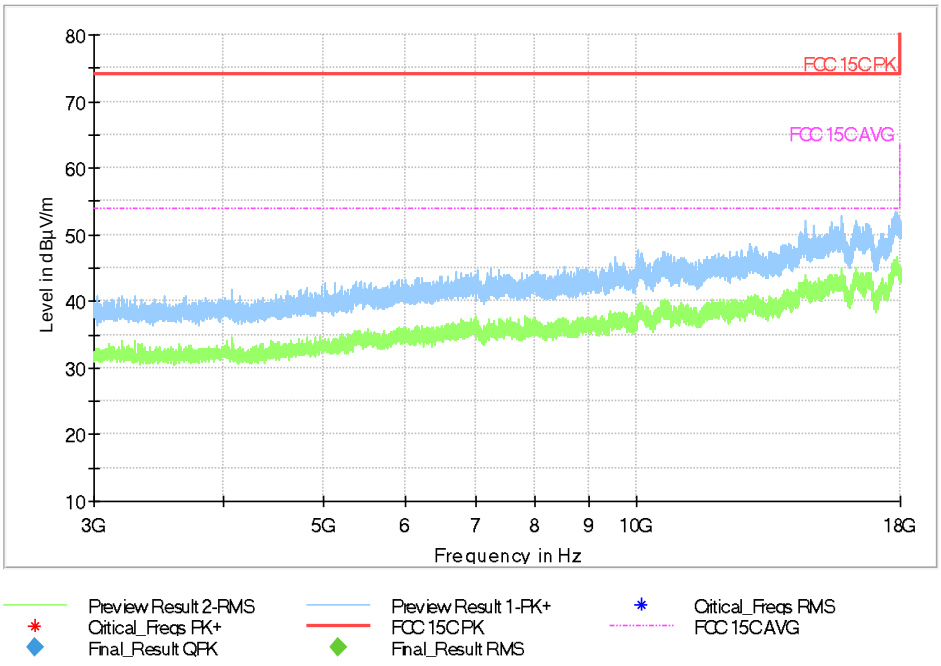
Disclaimer: Any measurement data within 2dB from the limit line is conditional PASS/FAIL due to measurement uncertainty considerations.



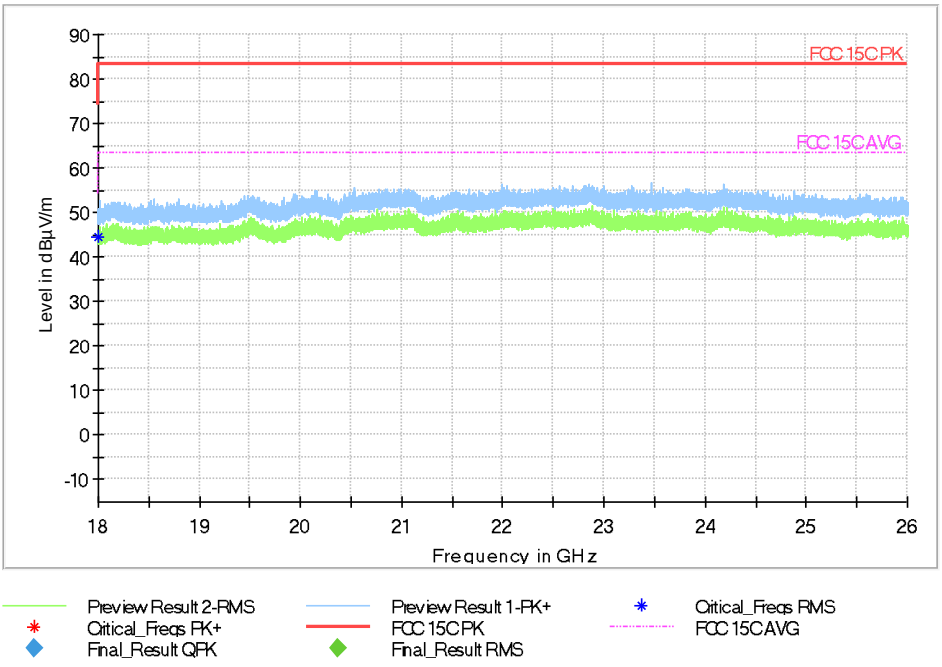
Plot #6 Radiated Emissions: 1-3 GHz		
Modulation: 802.11b	**Channel: Mid**	



Plot #7 Radiated Emissions: 3-18 GHz		
Modulation: 802.11b	**Channel: Mid**	



Plot #8 Radiated Emissions: 18-26 GHz		
Modulation: 802.11b	**Channel: Mid**	



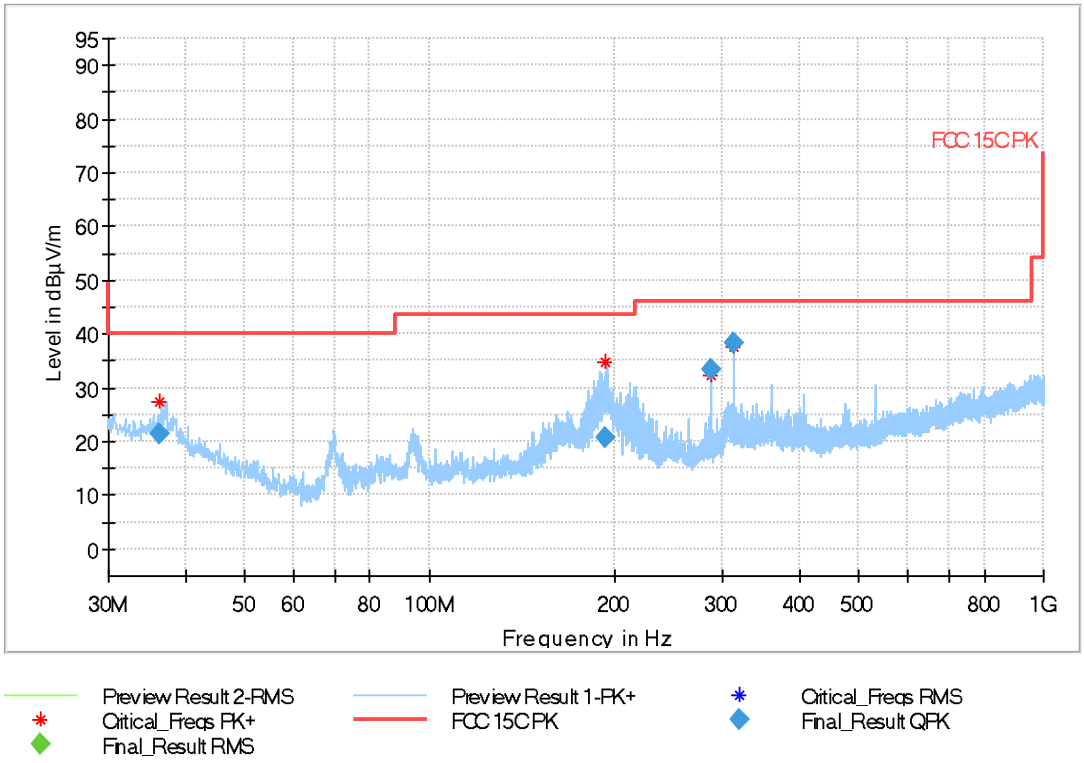
Plot #9 Radiated Emissions: 30 MHz – 1GHz

Modulation: 802.11b | **Channel: High**

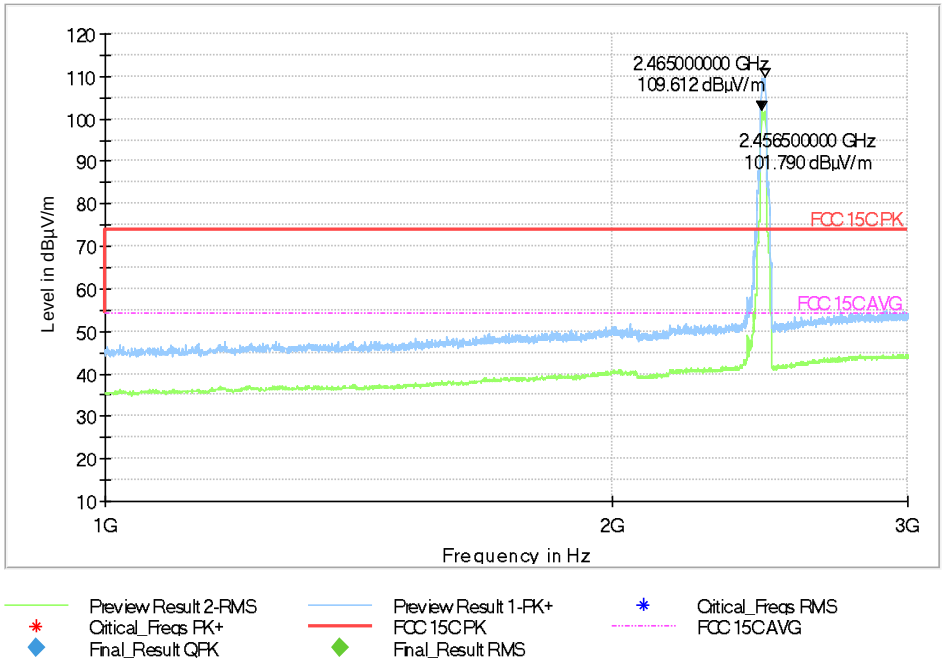
Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol
36.445	21.42	---	40.00	18.58	100.0	100.0	108.0	V
193.795	20.70	---	43.50	22.80	100.0	100.0	181.0	V
287.995	33.27	---	46.00	12.73	100.0	100.0	117.0	H
312.002	38.35	---	46.00	7.65	100.0	100.0	138.0	H

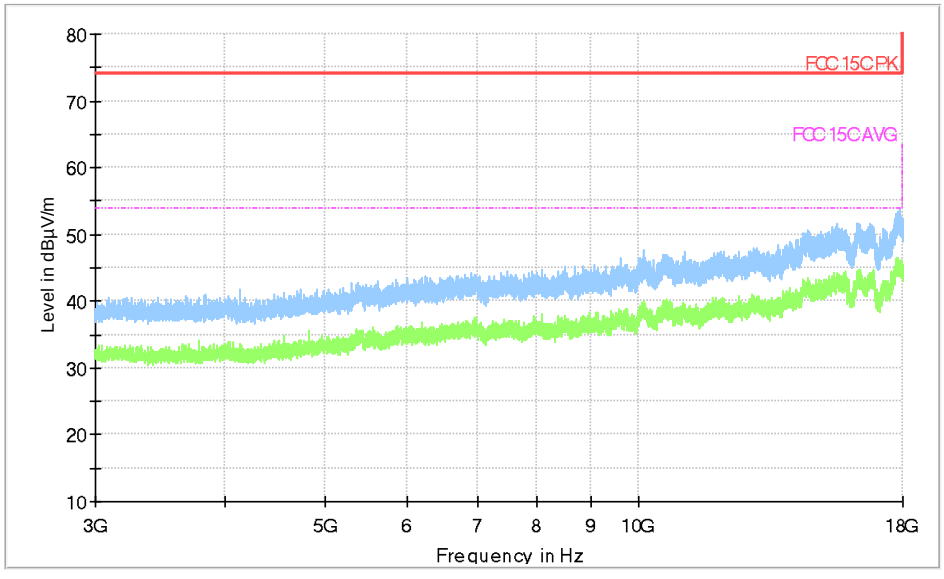
Disclaimer: Any measurement data within 2dB from the limit line is conditional PASS/FAIL due to measurement uncertainty considerations.



Plot # 10 Radiated Emissions: 1-3 GHz		
Modulation: 802.11b	**Channel: High**	



Plot #11 Radiated Emissions: 3-18 GHz		
Modulation: 802.11b	**Channel: High**	



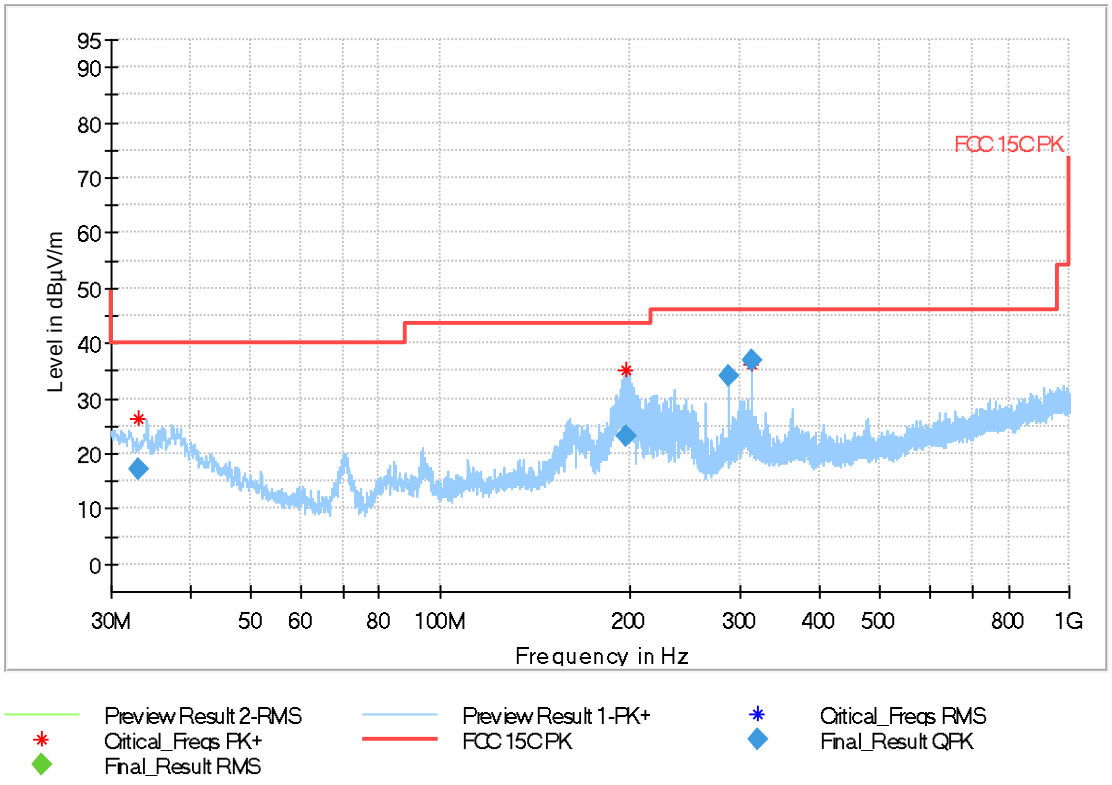
Plot #12 Radiated Emissions: 30 MHz – 1GHz

Modulation: 802.11n40 | **Channel: Low**

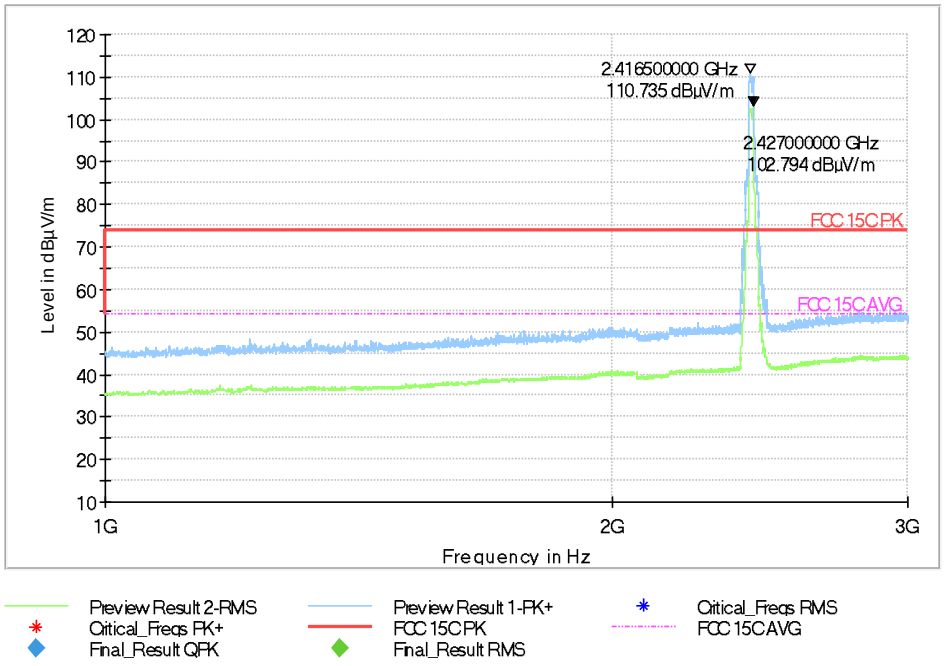
Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol
33.215	17.26	---	40.00	22.74	100.0	100.0	276.0	H
197.979	23.01	---	43.50	20.49	100.0	100.0	100.0	V
287.995	34.25	---	46.00	11.75	100.0	100.0	100.0	V
311.998	36.74	---	46.00	9.26	100.0	100.0	100.0	V

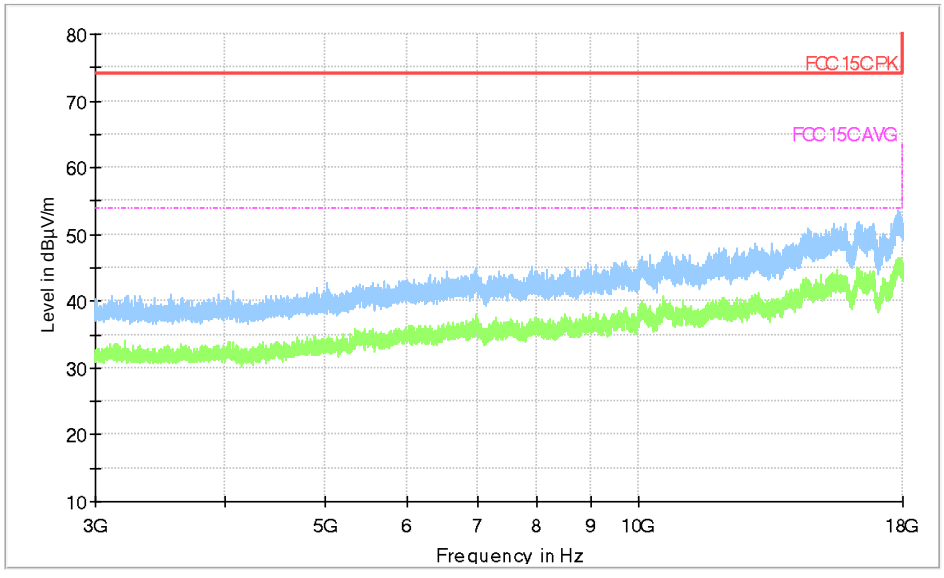
Disclaimer: Any measurement data within 2dB from the limit line is conditional PASS/FAIL due to measurement uncertainty considerations.



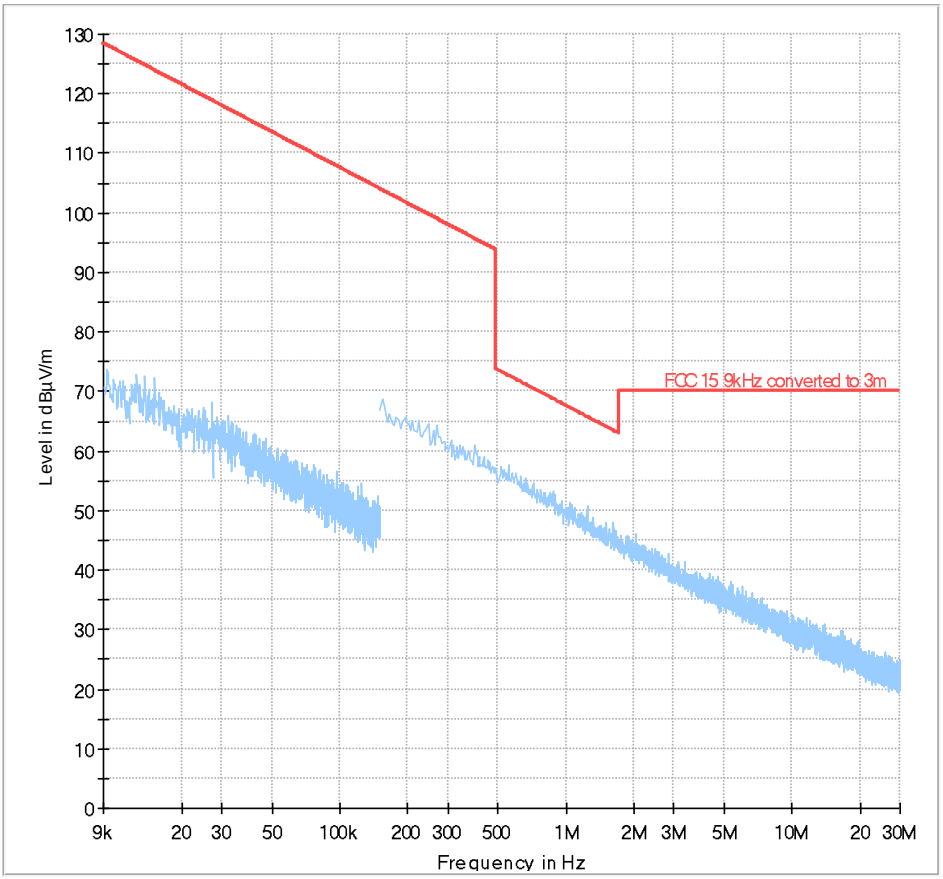
Plot # 13 Radiated Emissions: 1-3 GHz		
Modulation: 802.11n40	**Channel: Low**	



Plot # 14 Radiated Emissions: 3-18 GHz		
Modulation: 802.11n40	**Channel: Low**	



Plot # 15 Radiated Emissions: 9 KHz - 30 MHz		
Modulation: 802.11n40	**Channel: Mid**	



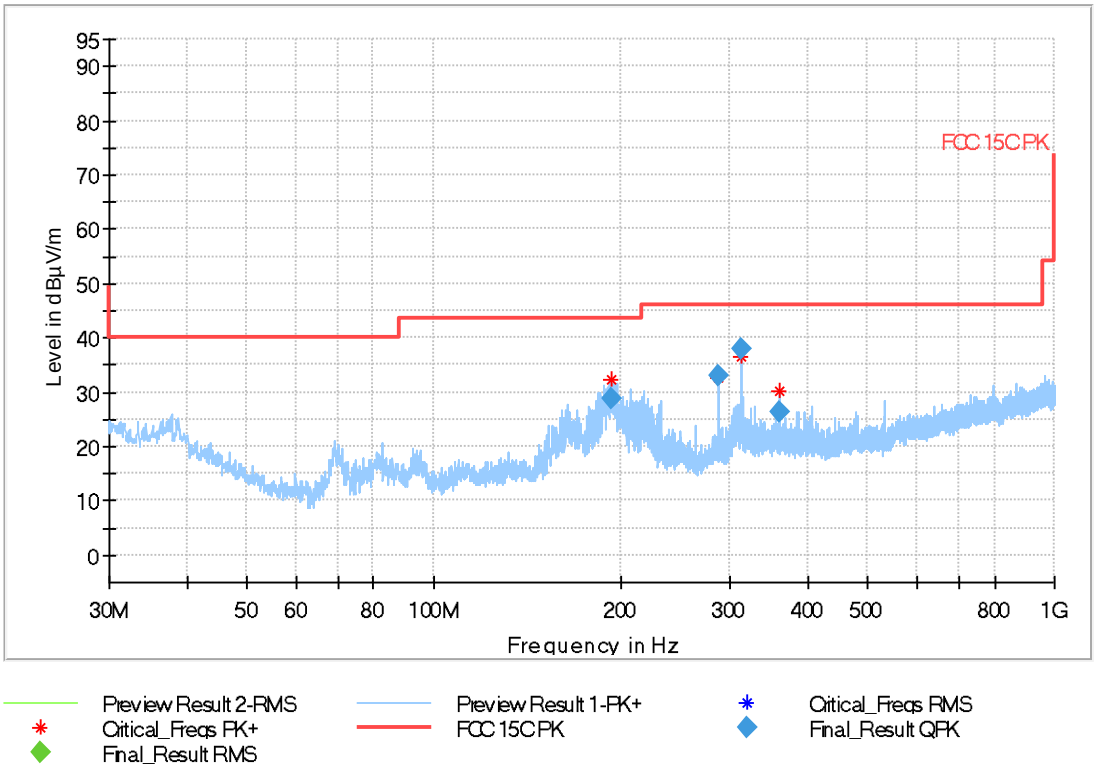
Plot # 16 Radiated Emissions: 30 MHz – 1GHz

Modulation: 802.11n40 | **Channel: Mid**

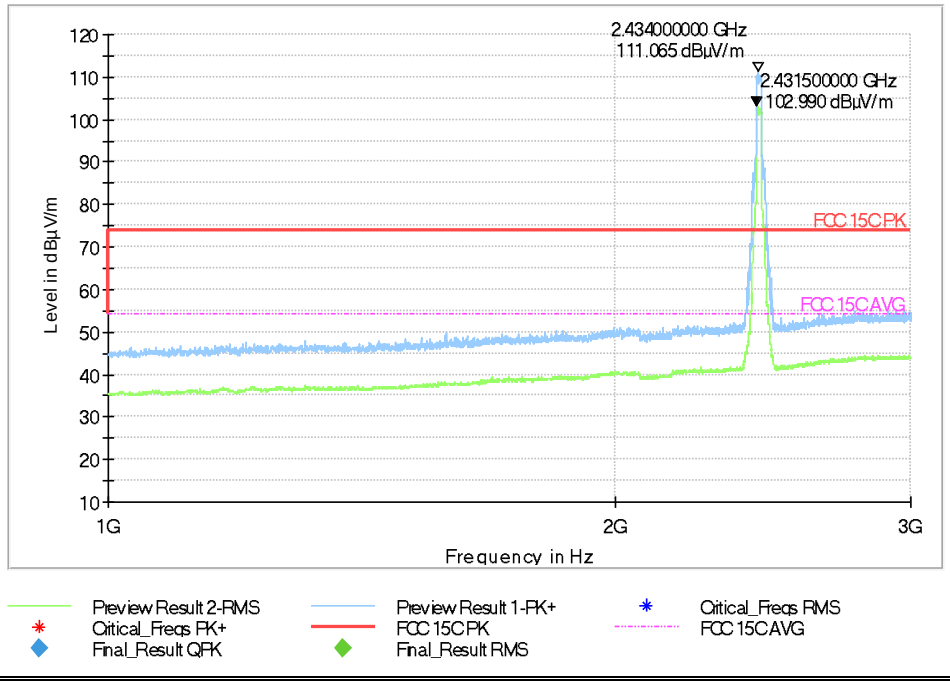
Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol
193.301	28.79	---	43.50	14.71	100.0	100.0	138.0	V
287.997	33.16	---	46.00	12.84	100.0	100.0	124.0	H
311.998	37.94	---	46.00	8.06	100.0	100.0	100.0	V
360.058	26.34	---	46.00	19.66	100.0	100.0	124.0	H

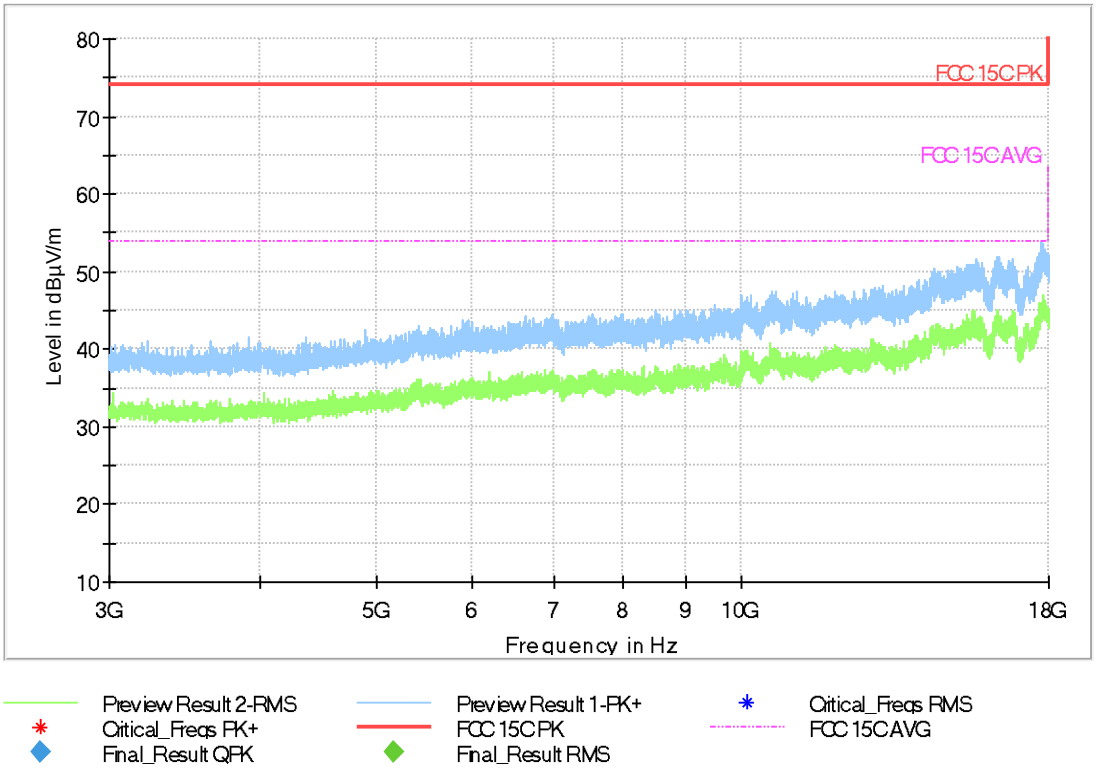
Disclaimer: Any measurement data within 2dB from the limit line is conditional PASS/FAIL due to measurement uncertainty considerations.



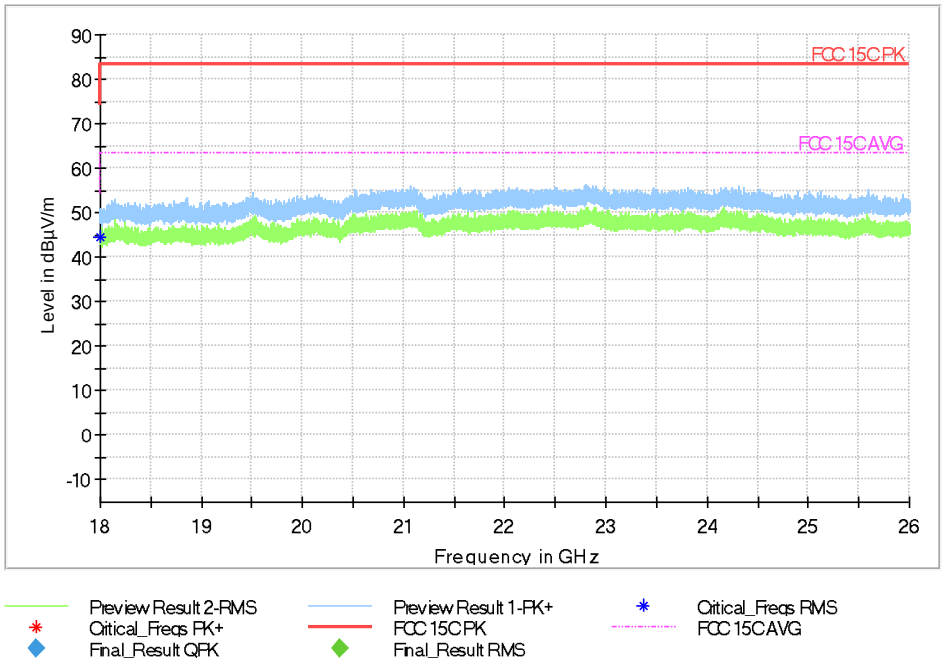
Plot # 17 Radiated Emissions: 1-3 GHz		
Modulation: 802.11n40	**Channel: Mid**	



Plot #18 Radiated Emissions: 3-18 GHz		
Modulation: 802.11n40	**Channel: Mid**	



Plot # 19 Radiated Emissions: 18-26 GHz		
Modulation: 802.11n40	**Channel: Mid**	



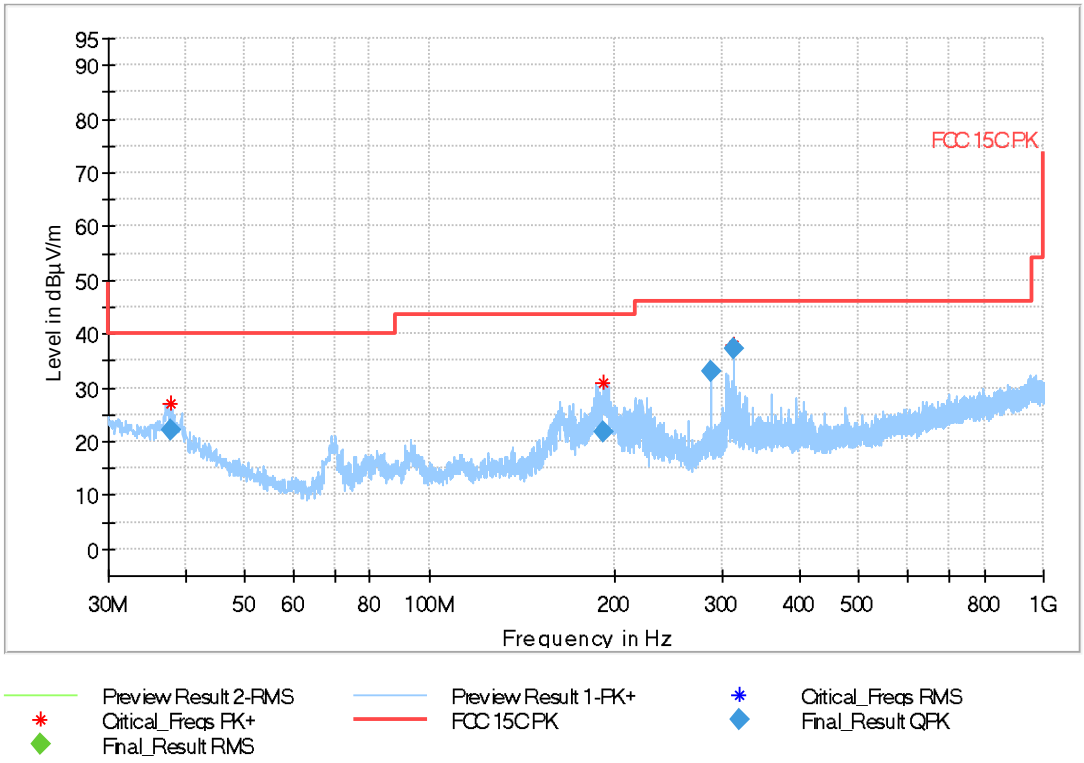
Plot # 20 Radiated Emissions: 30 MHz – 1GHz

Modulation: 802.11n40 | **Channel: High**

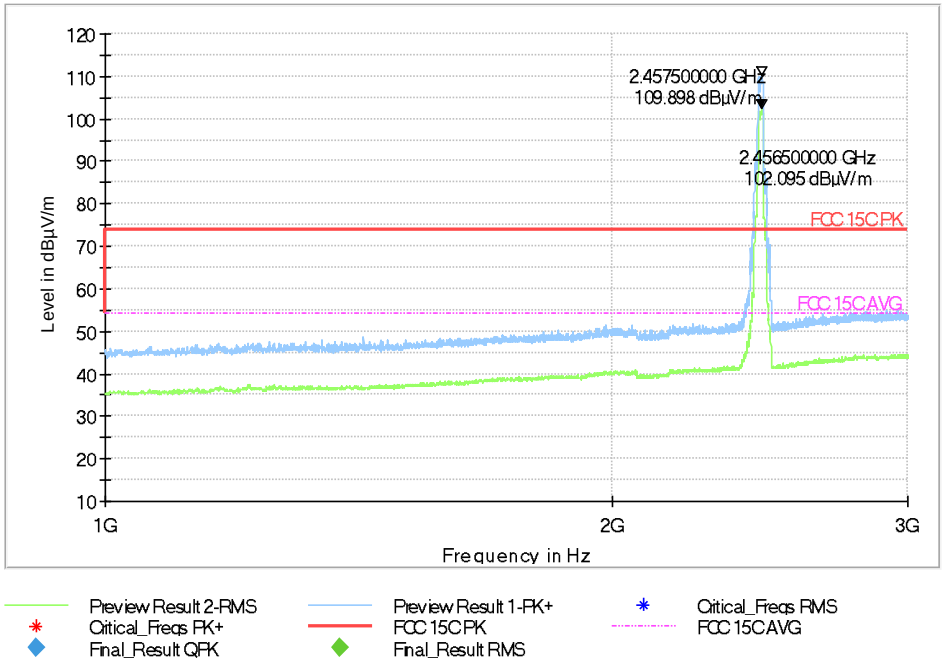
Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol
37.828	22.05	---	40.00	17.95	100.0	100.0	108.0	V
192.161	21.62	---	43.50	21.88	100.0	100.0	161.0	V
287.999	33.20	---	46.00	12.80	100.0	100.0	123.0	H
312.003	37.26	---	46.00	8.74	100.0	100.0	108.0	V

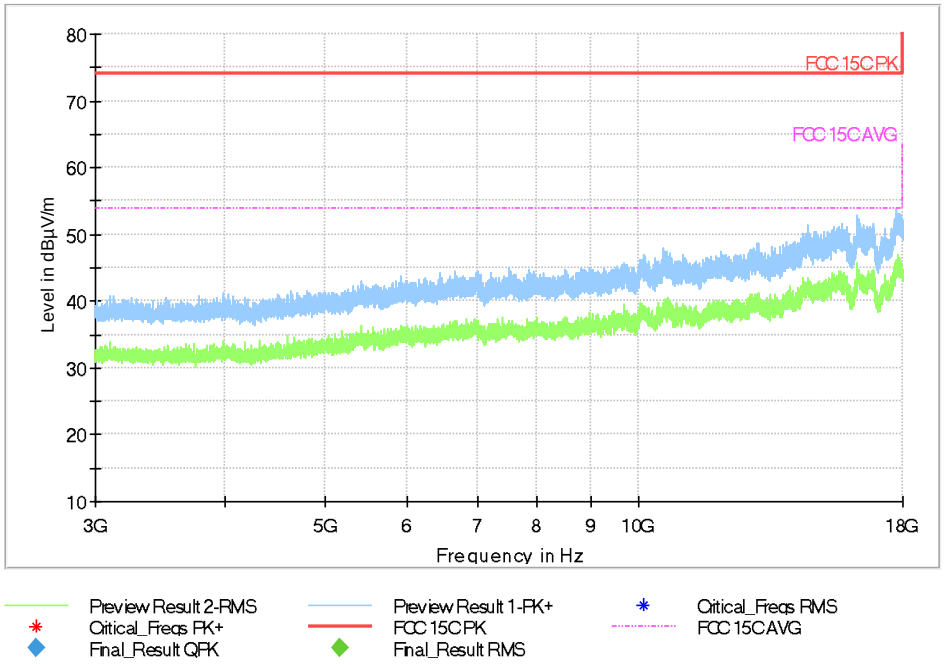
Disclaimer: Any measurement data within 2dB from the limit line is conditional PASS/FAIL due to measurement uncertainty considerations.



Plot # 21 Radiated Emissions: 1-3 GHz		
Modulation: 802.11n40	**Channel: High**	



Plot # 22 Radiated Emissions: 3-18 GHz		
Modulation: 802.11n40	**Channel: High**	



8.6 AC Power Line Conducted Emissions

8.6.1 Measurement according to ANSI C63.4

Analyzer Settings:

- RBW = 9 KHz (CISPR Bandwidth)
- Detector: Peak / Average for Pre-scan
- Quasi-Peak/Average for Final Measurements

8.6.2 Limits: §15.207 & RSS-Gen 8.8

FCC §15.207(a) & RSS-Gen 8.8

- Except as shown in paragraphs (b) and (c) of this section of the CFR, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table (1), as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between frequency ranges.

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

*Decreases with the logarithm of the frequency.

8.6.3 Test conditions and setup:

Ambient Temperature ©	EUT Set-Up #	EUT operating mode	Power line (L1, L2, L3, N)	Power Input
22° C	3	802.11b	Line & Neutral	120V / 60Hz

8.6.4 Measurement Result:

Plot #	Port	EUT Set-Up #:	EUT operating mode	Scan Frequency	Limit	Result
1	AC Mains	3	802.11b	150 kHz – 30 MHz	See section 8.6.2	Pass

8.6.5 Measurement Plots:

Plot # 1

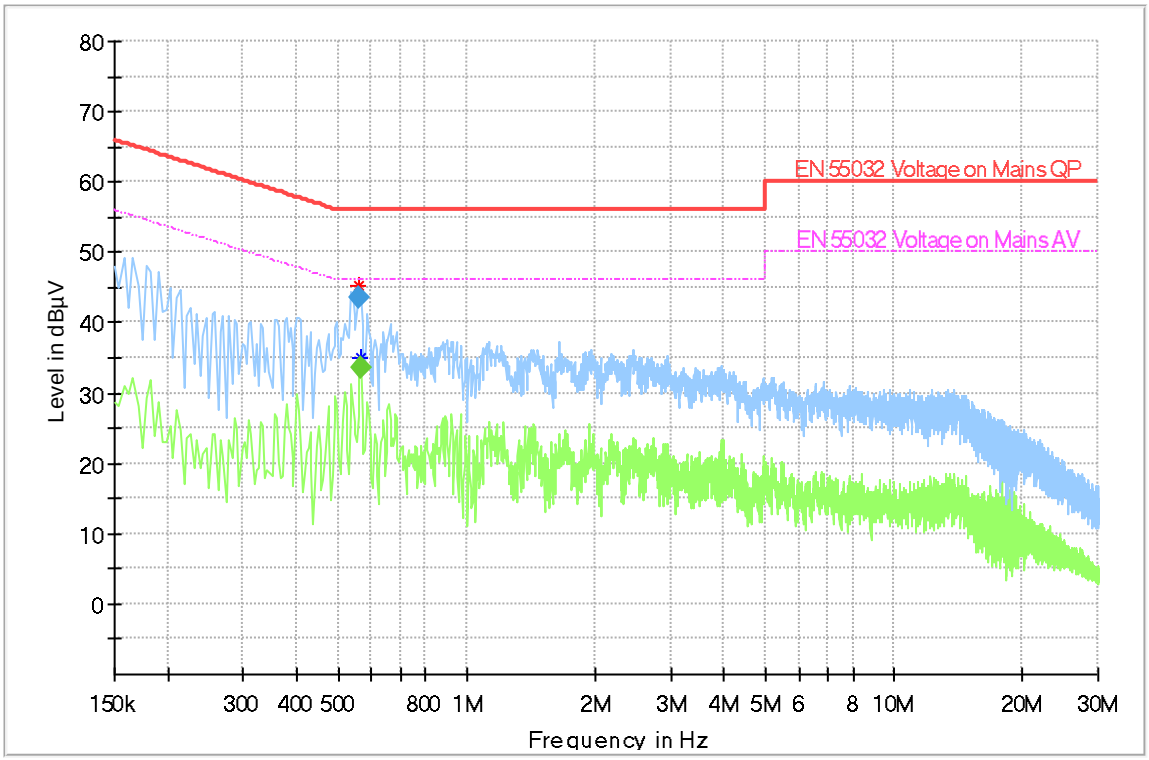
EUT Information

EUT Serial Number: X60495001
Manufacturer: AXON
Comment: L

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	PE	Corr. (dB)
0.562000	43.61	---	56.00	12.39	500.0	9.000	L1	GND	10.3
0.566000	---	33.62	46.00	12.38	500.0	9.000	L1	GND	10.2

Disclaimer: Any measurement data within 2dB from the limit line is conditional PASS/FAIL due to measurement uncertainty considerations.



Plot # 2

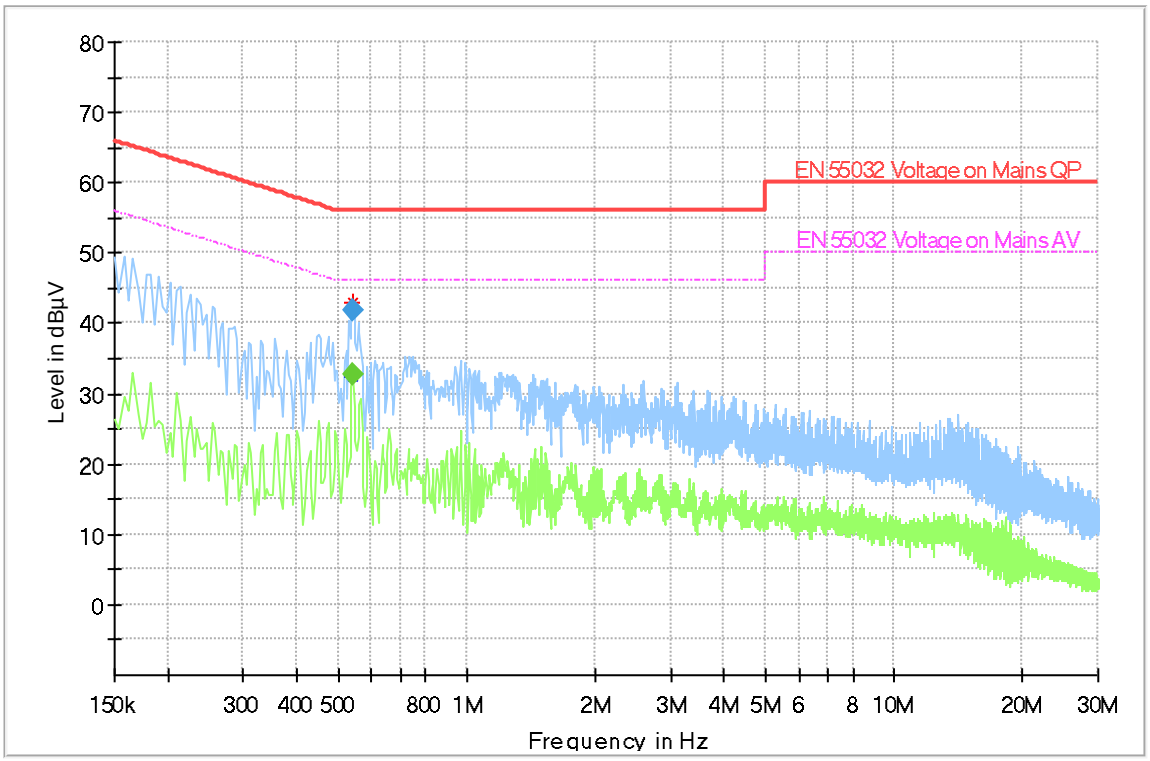
EUT Information

EUT Serial Number: X60495001
Manufacturer: AXON
Comment: N

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	PE	Corr. (dB)
0.542000	---	32.76	46.00	13.24	500.0	9.000	N	GND	10.2
0.542000	41.92	---	56.00	14.08	500.0	9.000	N	GND	10.2

Disclaimer: Any measurement data within 2dB from the limit line is conditional PASS/FAIL due to measurement uncertainty considerations.



9 Test setup photos

Setup photos are included in supporting file name: "EMC_AXONN-004-19001_FCC_Setup_Photos.pdf"

10 Test Equipment And Ancillaries Used For Testing

Item Name	Equipment Type	Manufacturer	Model	Serial #	Calibration Cycle	Last Calibration Date
Antenna Biconilog 3142E	Biconlog Antenna	EMCO	3142E	166067	3 years	6/28/2017
Antenna Horn 3115 SN 35114	Horn Antenna	EMCO	3115	35114	3 years	7/31/2017
Antenna Horn 3117	Horn Antenna	ETS Lindgren	3117PA	169547	3 years	8/8/2017
Antenna Horn 3116	Horn Antenna	ETS Lindgren	3116C-PA	169535	3 years	9/24/2017
Active Loop Antenna	Active Loop Antenna	ETS Lindgren	6507	161344	3 years	10/26/2017
FSV40	Spectrum Analyzer	R&S	FSV40	101022	3 years	7/5/2017
Thermometer Humidity	Thermometer Humidity	Dickson	TM320	5280063	3 years	11/02/2017
FSU	Spectrum Analyzer	R&S	FSU26	200302	2 Years	7/5/2017
LISN	LISN	FCC	FCC-LISN-50-25-2-08	8014	3 years	11/10/2016

Note:

1. Equipment used meets the measurement uncertainty requirements as required per applicable standards for 95% confidence levels.

Calibration due dates, unless defined specifically, falls on the last day of the month. Items indicated "N/A" for cal status either do not specifically require calibration or is internally characterized before use.

11 History

Date	Report Name	Changes to report	Report prepared by
2019-07-11	EMC_AXONN-004-19001_15.247_WiFi	Initial Version	Kevin Wang