



FCC Test Report

For:
Aetheros Inc

Model:
AOS ESR-M Residential

Product Description:
AOS Edge Card for Residential Electricity Meters

FCC ID: 2AWD3ESR5G3

Applied Rules and Standards:
47 CFR Part 15.247 (DTS)

REPORT: EMC_AETHE_001_25001_15.247_WIFI_DTS_Rev1

DATE: 2025-09-15



A2LA Accredited

IC recognized #
3462B

CETECOM Inc.

411 Dixon Landing Road ♦ Milpitas, CA 95035 ♦ U.S.A.

Phone: + 1 (408) 586 6200 ♦ Fax: + 1 (408) 586 6299 ♦ E-mail: info@cetecom.com ♦ <http://www.cetecom.com>

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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 Regulation.

No deviations were ascertained.

Company	Description	Model #
Aetheros Inc	AOS Edge Card for Residential Electricity Meters	AOS ESR-M Residential

Report Reviewer:

2025-09-15	Compliance	Alvin, Ilarina (Director of EMC Services)	
Date	Section	Name	Signature

Responsible for the Report:

2025-09-15	Compliance	Art Thammanavarat (Lead Engineer)	
Date	Section	Name	Signature

The test results of this test report relate exclusively to the test item specified in Section 3.
CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM Inc. USA.

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:	Alvin, Ilarina
Responsible Project Leader:	Jayalakshmi, Sekar

2.2 Identification of the Client

Applicant's Name:	Aetheros Inc
Street Address:	80 Liberty Ship Way, Suite 6
City/Zip Code	Sausalito, CA 94965
Country	USA

2.3 Identification of the Manufacturer

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

3 Equipment Under Test (EUT)

3.1 EUT Specifications

Product Description:	AOS Edge Card for Residential Electricity Meters
Model Name:	AOS ESR-M Residential
HW Version:	v3.0
SW Version:	v7.2
FCC-ID:	2AWD3ESR5G3
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
Radio Information:	<u>Wi-Fi Modules</u> Company Name: Texas Instruments Model Number: CC33MOD FCC: Z64-CC33SBMOD <u>Wireless Technologies</u> • Wi-Fi 2.4GHz
Max. declared antenna gain	Name: INPAQ Type: PIFA 4G Cellular Location: Internal Peak Gain: Wi-Fi 2.4GHz: 3.85 dBi
Max. Conducted Output Power:	Average measurement: 16.08dBm
Power Supply/ Rated Operating Voltage Range:	4V DC, 8A
Operating Temperature Range	Low: -40 °C to High +65 °C
Other Radios included in the device:	Cellular; GPS
Sample Revision	☒ Production ☐ Pre-Production
EUT Dimensions	PCBA = 90mm x 49mm x 11mm
EUT Diameter	☒ < 60 cm ☐ Other _____
Note: The information of the EUT specifications in the table above is provided by the client.	

3.2 EUT Power setting

Channel Number	2400 – 2483.5 MHz			
	802.11b	802.11g	802.11n (HT20)	802.11n (HT40)
Low	30	30	30	N/A
Mid	30	30	30	N/A
High	30	30	30	N/A

Note: RF measurements were taken with EUT configured using Android Debug Bridge (adb) with the power setting set to the maximum achievable.

3.3 EUT Sample details

EUT #	Serial Number	HW Version	SW Version	Serial Number	Notes/Comments
1	AOS ESR-M	V3.0	V7.2	1ND023775505	Radiated Emission
2	AOS ESR-M	V3.0	V7.2	P2A5X2500000004	Conducted Emission

3.4 Accessory Equipment (AE) details

AE #	Type	Model	Manufacturer	Serial Number	Comments
1	Laptop	P135G	Dell	12243628947	Support laptop provided by Cetecom to exercise device.
2	Power Converter	SW-S12	SINGWAY	N/A	Power converter from 120Vac to 230Vac

3.5 Test Sample Configuration

EUT Set-up #	Combination of AE used for test set up	Comments
1	EUT#1 + AE#1 + AE#2	Wi-Fi 2.4GHz was tested on all Channel at the maximum power The client provides a USB cable to communicate with the device and send commands for configuring the Wi-Fi radios into a specific test mode. This test mode configuration, designed for worst-case scenarios, is not intended for end-user application and is outlined as follows: • Wi-Fi: continuous modulated transmission at the maximum power settings, highest duty cycle on all channels. • Power converters converts 120 to 230 Vac. • Radiated RF measurements were performed with EUT configured via Android Debug Bridge (adb) and instructions • The EUT connected to support laptop to exercise device.
2	EUT#2 + AE#1 + AE#2	Wi-Fi 2.4GHz was tested on all Channel at the maximum power The client provides a USB cable to communicate with the device and send commands for configuring the Wi-Fi radios into a specific test mode. This test mode configuration, designed for worst-case scenarios, is not intended for end-user application and is outlined as follows: • Wi-Fi: continuous modulated transmission at the maximum power settings, highest duty cycle on all channels. • Power by 120 Vac adaptor. • Radiated RF measurements were performed with EUT configured via Android Debug Bridge (adb) and instructions • The EUT connected to support laptop to exercise device. • The measurement equipment was connected to the 50 ohm RF port of the EUT.

3.6 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. For radiated measurements, all data in this report show the worst case between horizontal and vertical antenna polarizations and for all orientations of the EUT.

The channels and modulation schemes of the EUT were set with highest Duty Cycle possible using diagnostic software (not available to the end user).

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.

5 Summary of the worst-case results

Test Specification	Test Case	Measurement	Limited	Result
§15.247(a) RSS-247 5.2(a)	Emission Bandwidth 6dB Bandwidth (MHz)	802.11b: 8.1 MHz 802.11g: 15.3 MHz 802.11n: 15.7 MHz	>500kHz	PASS
	Emission Bandwidth 99% Occupied Bandwidth (MHz)	802.11b: 12.5 MHz 802.11g: 17.1 MHz 802.11n: 17.8 MHz	N/A	PASS
§15.247(e) RSS-247 5.2(b)	Power Spectral Density	802.11b: -1.16 dBm / 3kHz 802.11g: -5.01 dBm / 3kHz 802.11n: -4.68 dBm / 3kHz	8dBm / 3kHz	PASS
§15.247(b) RSS-247 5.4(d)	Maximum Conducted Output Power	Avg.: 16.08 dBm Avg.: 0.041 Watts	1 Watt (30 dBm)	PASS
	Maximum Conducted Output Power (EIRP)	EIRP: 19.93 dBm EIRP: 0.098 Watts	4 Watt (36 dBm)	PASS
§15.247(d) RSS-247 5.5	Band edge compliance Unrestricted Band Edges	2.40 dBm	Avg. <30dBc	PASS
§15.247; 15.209; 15.205 RSS-Gen 8.9; 8.10	Band edge compliance Restricted Band Edges	Peak: 71.72 dBµV/m AVG: 52.72 dBµV/m	*PEAK LIMIT= 74 dBµV/m @3m = -21.23 dBm *AVG. LIMIT= 54 dBµV/m @3m = -41.23 dBm	PASS
Test Specification	Test Case	Lowest Margin Emission		Result
§15.247(d); §15.209 RSS-Gen 6.13	TX Spurious Emissions- Radiated	48.162 dBµV/m		PASS
§15.207(a) RSS Gen 8.8	AC Conducted Emissions	42.43 dBµV/m		PASS

Note: Pass=Complies, NA=Not Applicable, NP=Not Performed

6 Measurement Uncertainty

6.1 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 $k=2$.

Measurement System		EMC Lab 1	EMC Lab 2
Conducted emissions (mains port)	150 kHz – 30 MHz	2.47 dB	N/A
Radiated emissions	9 kHz – 30 MHz	2.68 dB	2.53 dB
	30 – 100 MHz	4.39 dB	3.85 dB
	100 MHz – 1 GHz	5.65 dB	5.24 dB
	1 – 6 GHz	5.0 dB	4.88 dB
	6 – 18 GHz	4.76 dB	4.58 dB
	18 – 40 GHz	4.65 dB	4.61 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 3dB to the limit.

6.2 Environmental Conditions during Testing:

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

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

Deviating test conditions are indicated at individual test description where applicable.+

6.3 Date of Testing:

2025-08-09 – 2025-09-15

6.4 Decision Rule:

Cetecom Inc follows ILAC G8:09/2019 chapter 4.2.1 (Simple Acceptance Rule).

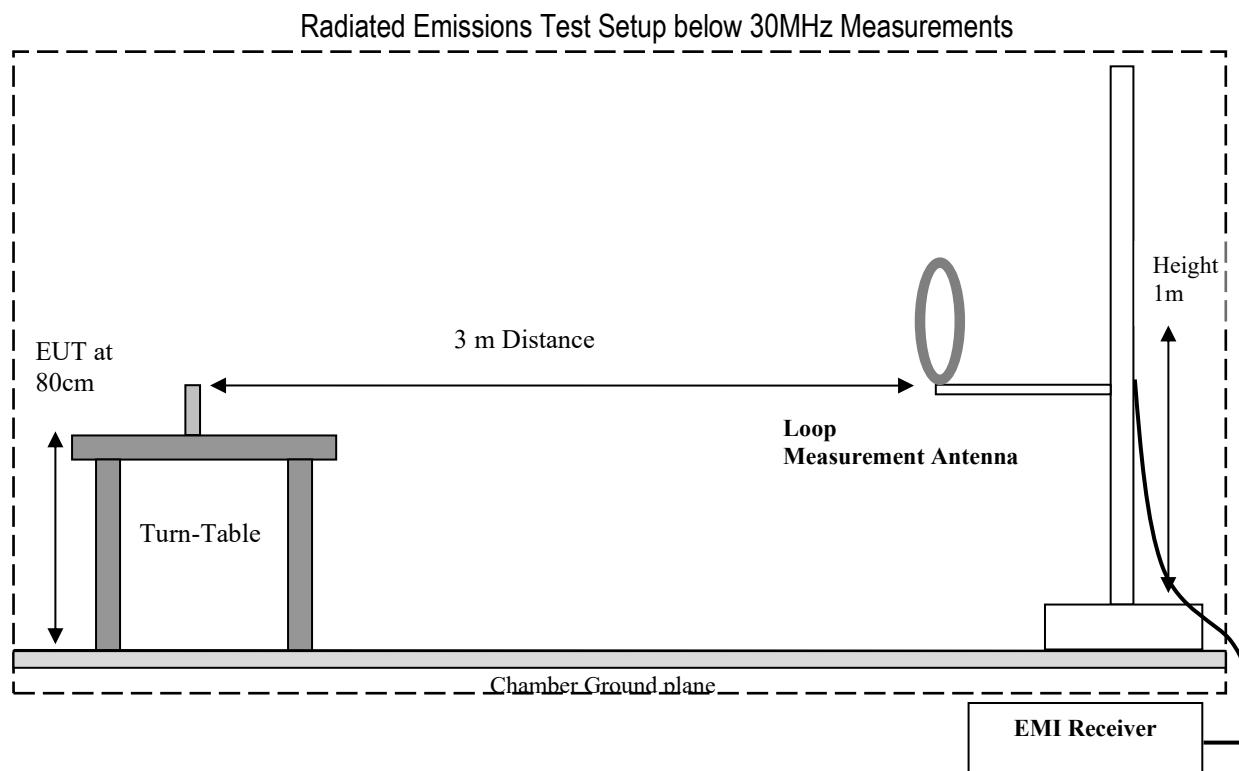
Only the measured values related to their corresponding limits will be used to decide whether the equipment under test meets the requirements of the test standards listed in chapter 3. The measurement uncertainty is mentioned in this test report, See chapter 9, but is not taken into account – neither to the limits nor to the measurement results. Measurement results with a smaller margin to the corresponding limits than the measurement uncertainty have a potential risk of more than 5% that the decision might be wrong.

7 Measurement Procedures

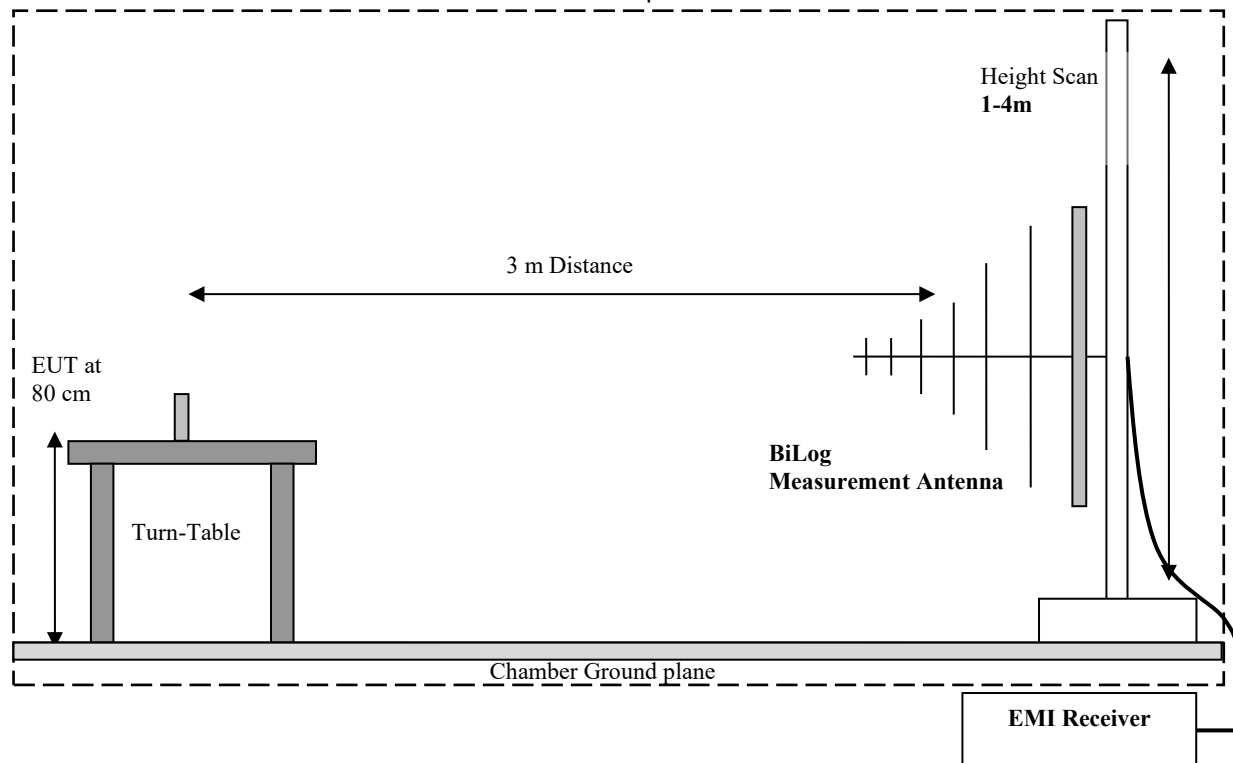
7.1 Radiated Measurement

The radiated measurement is performed according to ANSI C63.10 (2020)

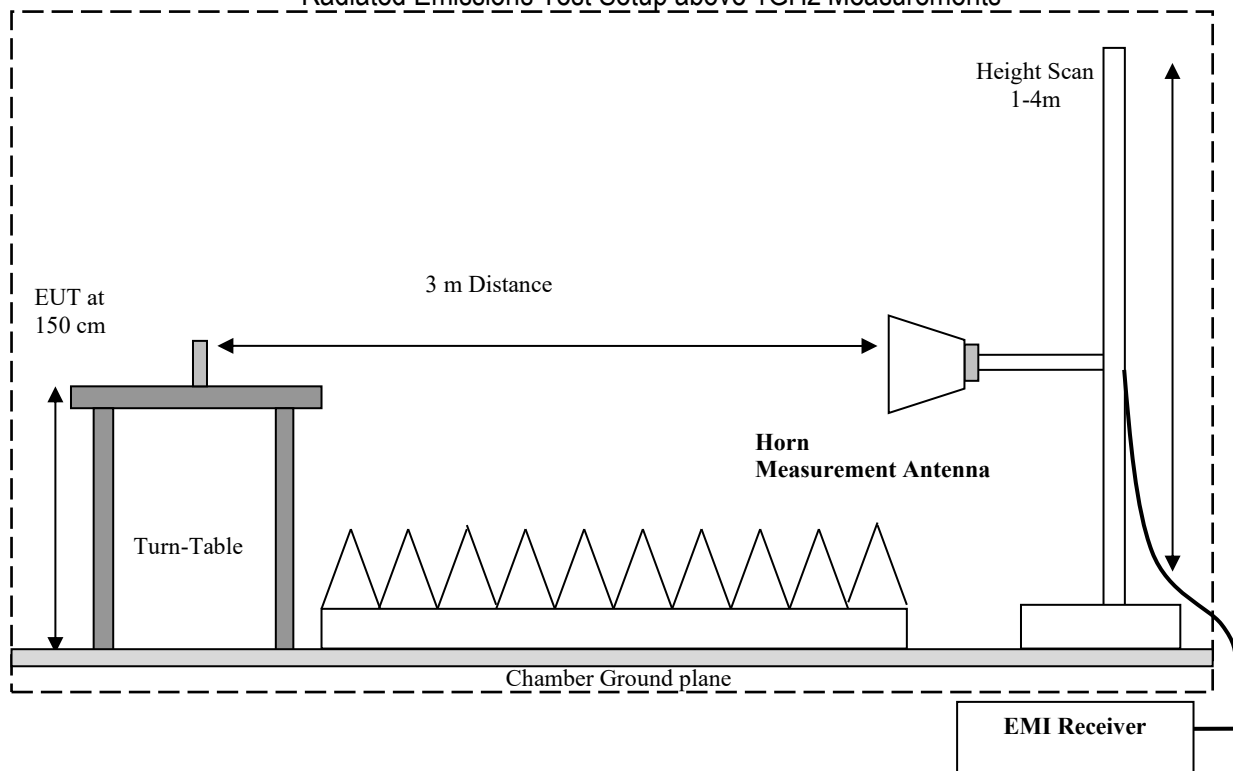
- The exploratory measurement is accomplished by running a matrix of 16 sweeps over the required frequency range with R&S Test-SW EMC32 for 4 positions of the turntable, two orthogonal positions of the EUT and both antenna polarizations. This procedure exceeds the requirement of the above standards to 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 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 dB μ V
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:

$$FS \text{ (dB}\mu\text{V/m)} = \text{Measured Value on SA (dB}\mu\text{V)} + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$$

Example:

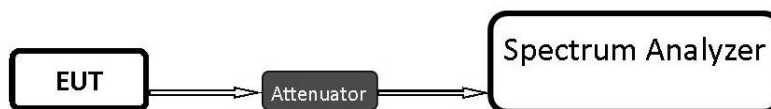
Frequency (MHz)	Measured SA (dB μ V)	Cable Loss (dB)	Antenna Factor Correction (dB)	Field Strength Result (dB μ V/m)
1000	80.5	3.5	14	98.0

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 15.247 Meas Guidance v05r02 – “GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES” - April 2, 2019, 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 Conducted (Average) Output Power

8.1.1 Measurement according to FCC 558074 D01 15.247 Meas Guidance v05r02

Spectrum Analyzer settings:

- RBW = 1% to 5% of the OBW, not to exceed 1 MHz
- VBW $\geq 3 \times$ RBW
- Span = at least 1.5 times the OBW
- Sweep = Auto couple
- Detector function = RMS
- Trace = Average (at least 100 traces in power averaging (rms) mode)
- Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function with band limits set equal to the OBW band edges
- Add $[10 \log (1 / D)]$, where D is the duty cycle, to the measured power to compute the average power during the actual transmission times

8.1.2 Limits:

Maximum Output Power:

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

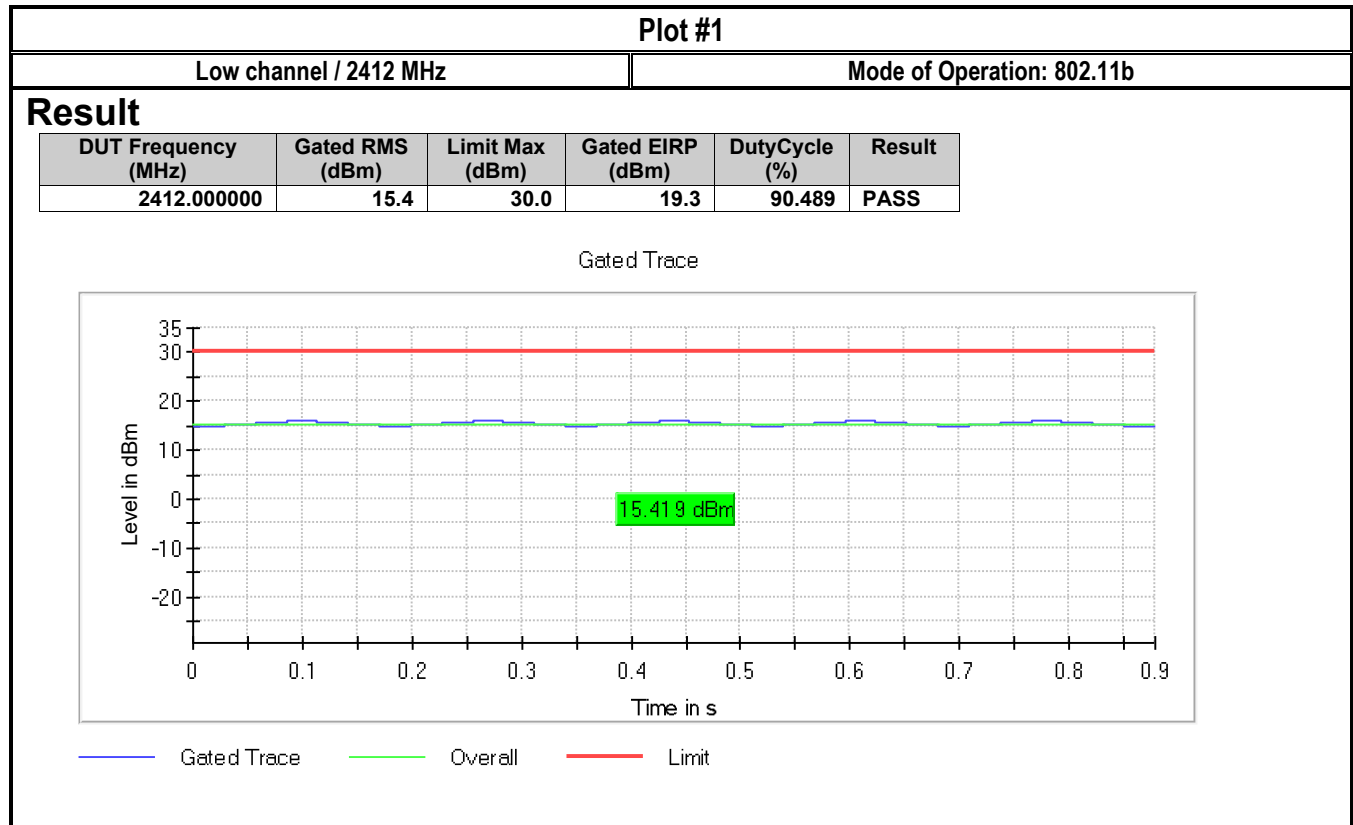
8.1.3 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input	Antenna Gain
22.0°C	2	802.11b,g,n	4 VDC	3.85 dBi

8.1.4 Measurement result:

Test #	WLAN Mode	Frequency (MHz)	Average Output Power (dBm)	EIRP (dBm)	Limit (dBm)	Result
1	802.11b	2412	15.42	19.27	30 (Pk) / 36 (EIRP)	Pass
2	802.11b	2437	15.62	19.47	30 (Pk) / 36 (EIRP)	Pass
3	802.11b	2462	16.08	19.93	30 (Pk) / 36 (EIRP)	Pass
4	802.11g	2412	15.76	19.61	30 (Pk) / 36 (EIRP)	Pass
5	802.11g	2437	15.68	19.53	30 (Pk) / 36 (EIRP)	Pass
6	802.11g	2462	15.89	19.74	30 (Pk) / 36 (EIRP)	Pass
7	802.11n	2412	15.26	19.11	30 (Pk) / 36 (EIRP)	Pass
8	802.11n	2437	15.26	19.11	30 (Pk) / 36 (EIRP)	Pass
9	802.11n	2462	15.83	19.68	30 (Pk) / 36 (EIRP)	Pass

8.1.5 Measurement Plots:



Plot #3

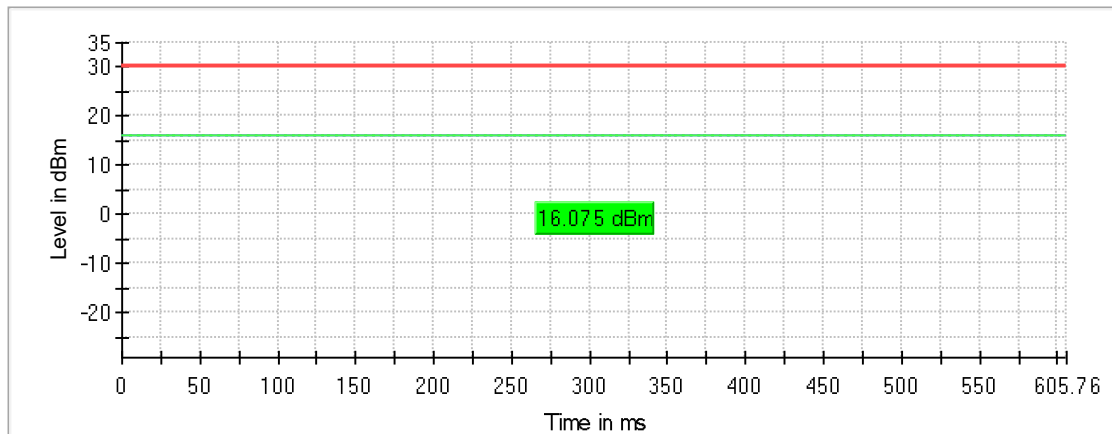
High channel / 2462 MHz

Mode of Operation: 802.11b

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2462.000000	16.1	30.0	19.9	90.489	PASS

Gated Trace



— Gated Trace — Overall — Limit

Plot #4

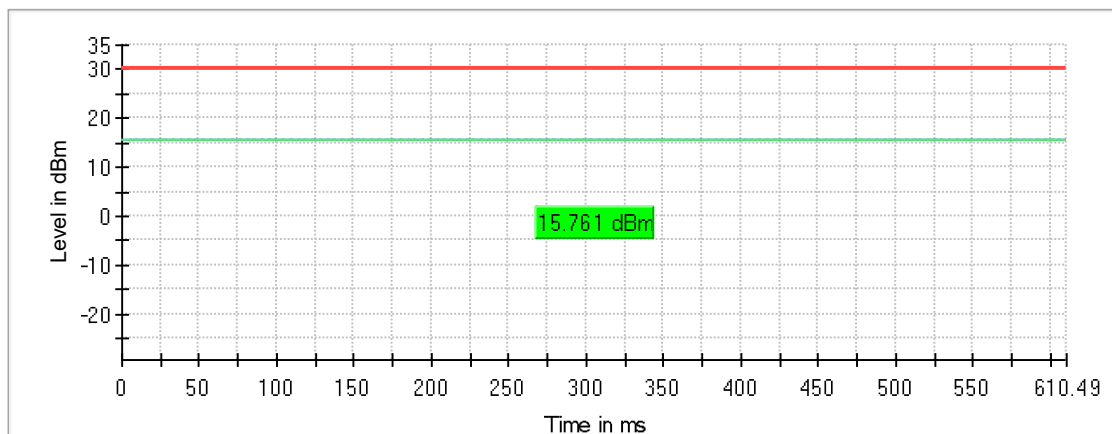
Low channel / 2412 MHz

Mode of Operation: 802.11g

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2412.000000	15.8	30.0	19.6	61.334	PASS

Gated Trace



— Gated Trace — Overall — Limit

Plot #5

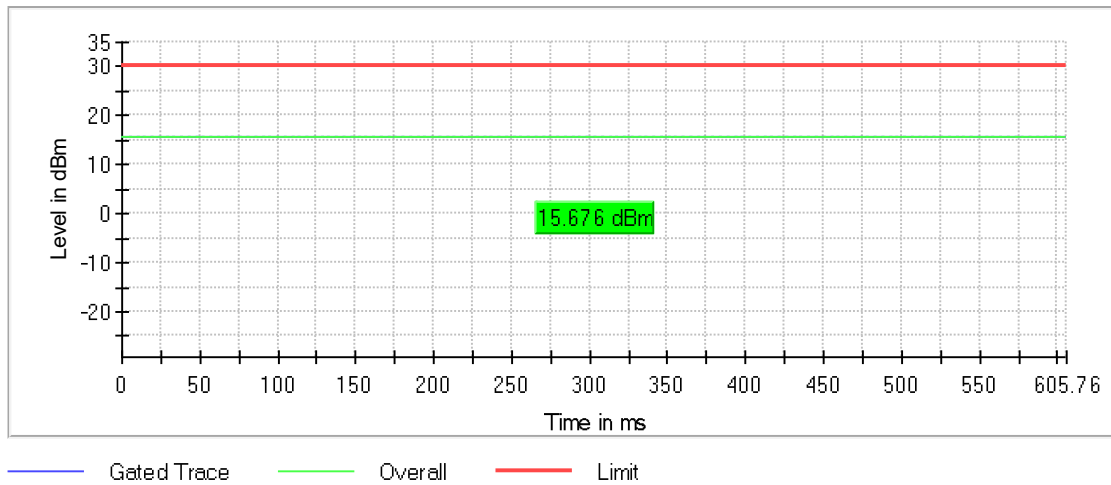
Mid channel / 2437 MHz

Mode of Operation: 802.11g

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2437.000000	15.7	30.0	19.5	61.334	PASS

Gated Trace



Plot #6

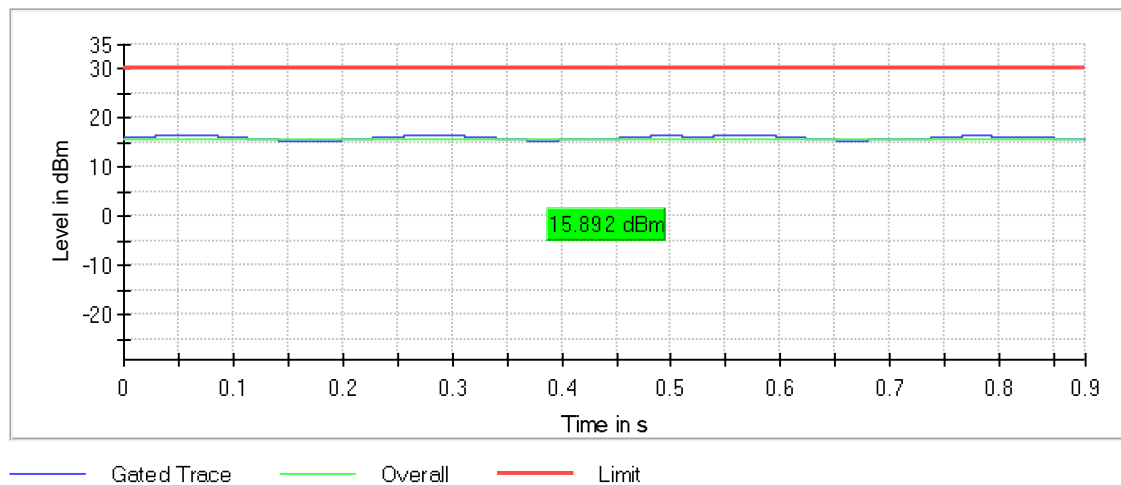
High channel / 2462 MHz

Mode of Operation: 802.11g

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2462.000000	15.9	30.0	19.7	61.334	PASS

Gated Trace



Plot #7

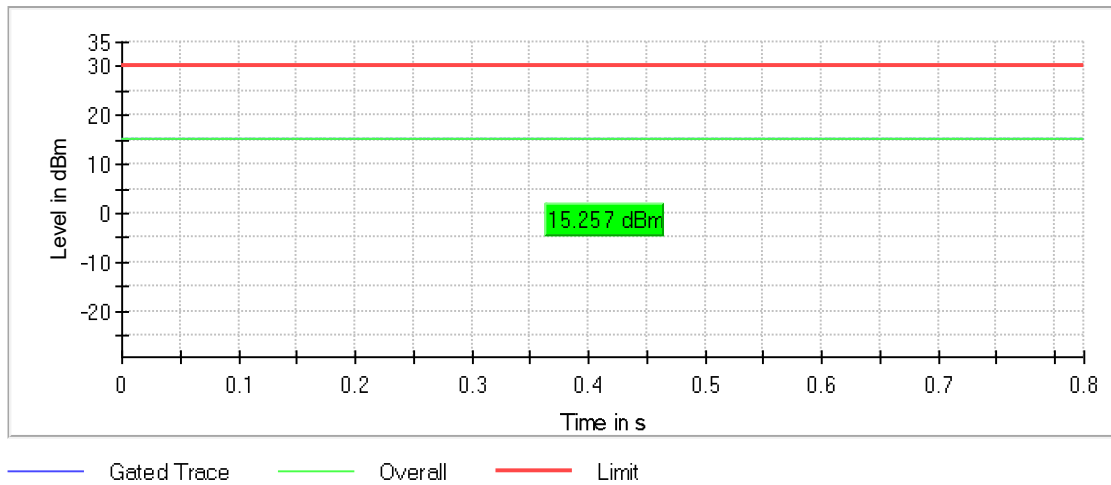
Low channel / 2412 MHz

Mode of Operation: 802.11n (HT20)

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2412.000000	15.3	30.0	19.1	83.022	PASS

Gated Trace



Plot #8

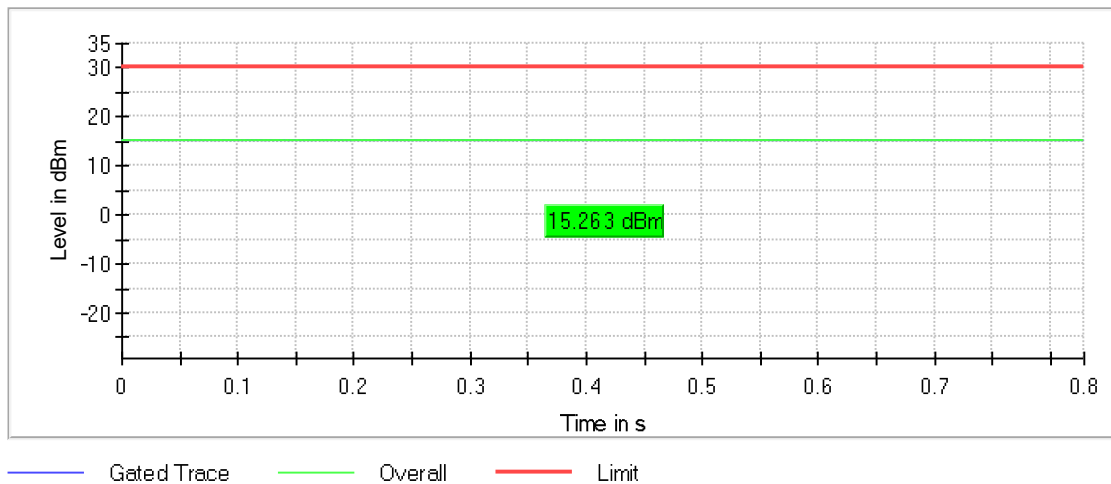
Mid channel / 2437 MHz

Mode of Operation: 802.11n (HT20)

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2437.000000	15.3	30.0	19.1	82.927	PASS

Gated Trace



Plot #9

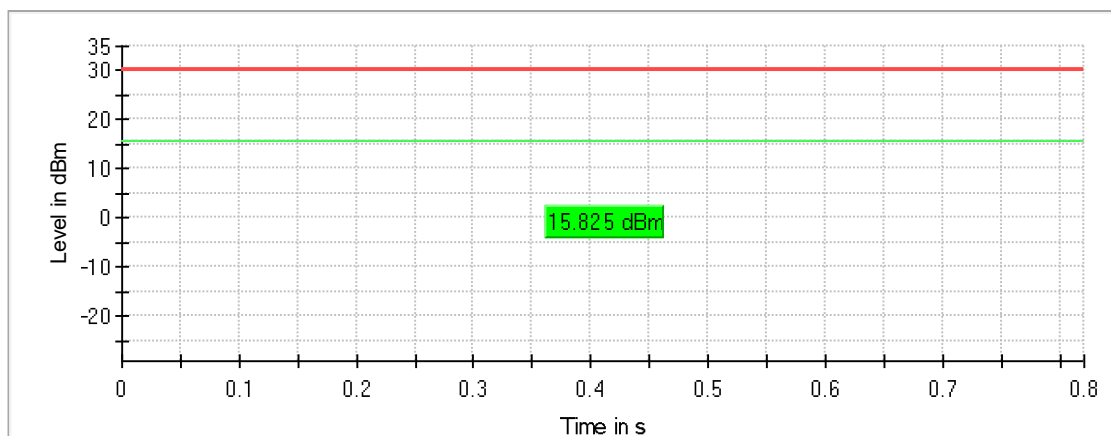
High channel / 2462 MHz

Mode of Operation: 802.11n (HT20)

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2462.000000	15.8	30.0	19.7	82.417	PASS

Gated Trace



— Gated Trace — Overall — Limit

8.2 Power Spectral Density

8.2.1 Measurement according to FCC 558074 D01 15.247 Meas Guidance v05r02

Spectrum Analyzer settings for AVGPST-1 PSD method:

- Set analyzer center frequency to DTS channel center frequency
- Set the span to $> 1.5 \times$ DTS bandwidth
- Set RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$
- Set the VBW $\geq (3 \times \text{RBW})$
- Detector = RMS
- Sweep time = Auto couple
- Trace mode = Employ trace averaging (RMS)
- 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(b):

- 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.

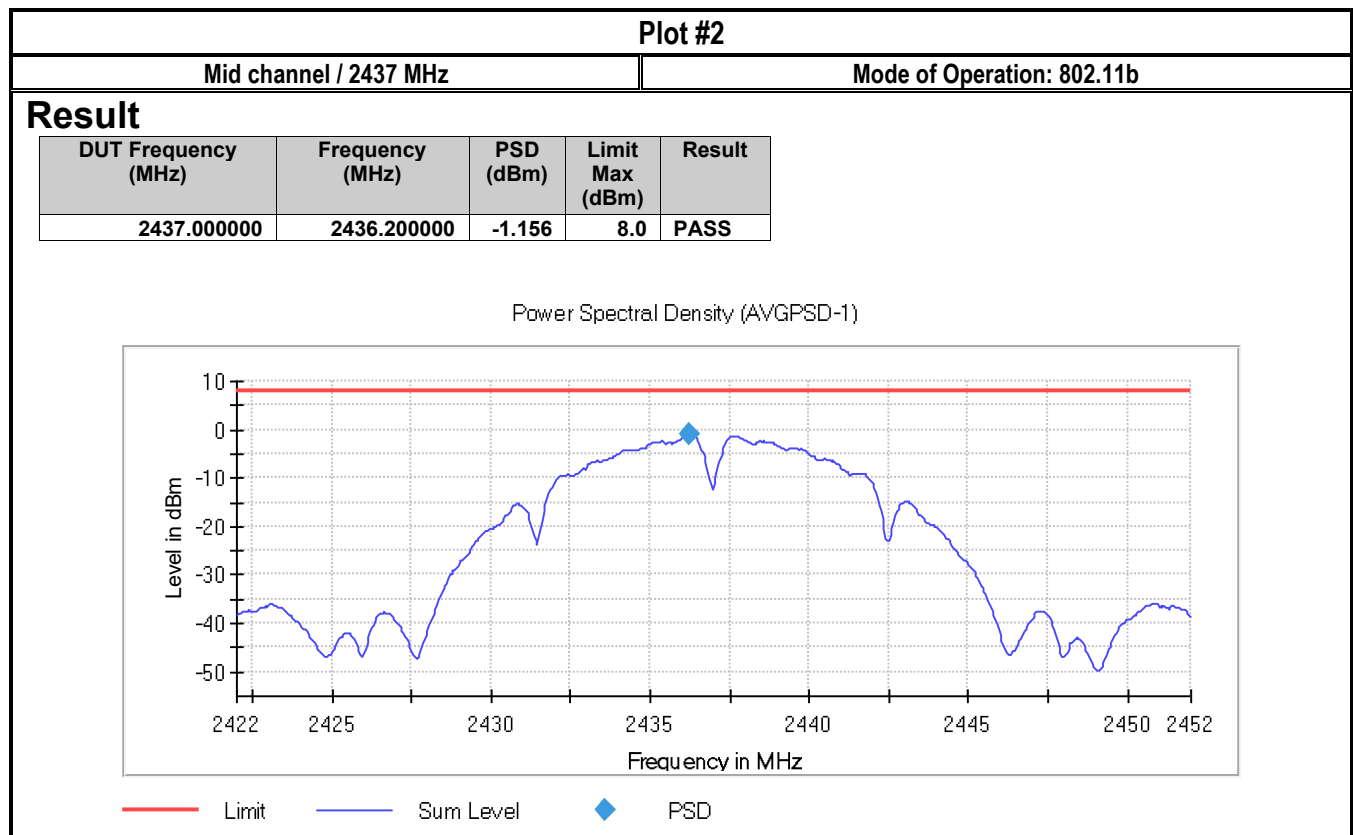
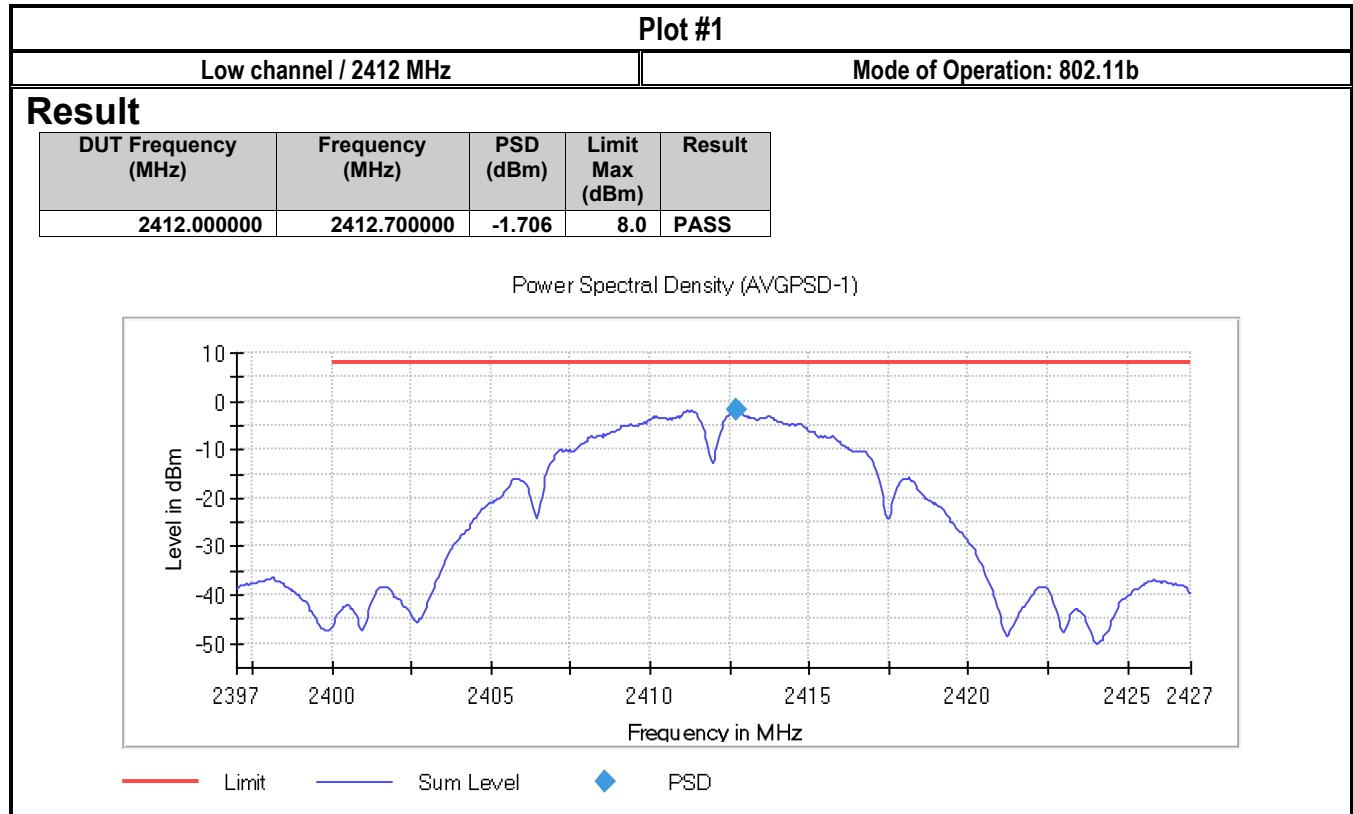
8.2.3 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input	Antenna Gain
22.0°C	2	802.11b,g,n	4 VDC	3.85 dBi

8.2.4 Measurement result:

Test #	WLAN Mode	Frequency (MHz)	Maximum Power Spectral Density (dBm/3 kHz)	Limit (dBm / 3 kHz)	Result
1	802.11b	2412	-1.71	8	Pass
2	802.11b	2437	-1.16	8	Pass
3	802.11b	2462	-1.27	8	Pass
4	802.11g	2412	-5.37	8	Pass
5	802.11g	2437	-5.54	8	Pass
6	802.11g	2462	-5.01	8	Pass
7	802.11n	2412	-5.34	8	Pass
8	802.11n	2437	-5.21	8	Pass
9	802.11n	2462	-4.68	8	Pass

8.2.5 Measurement Plots:



Plot #3

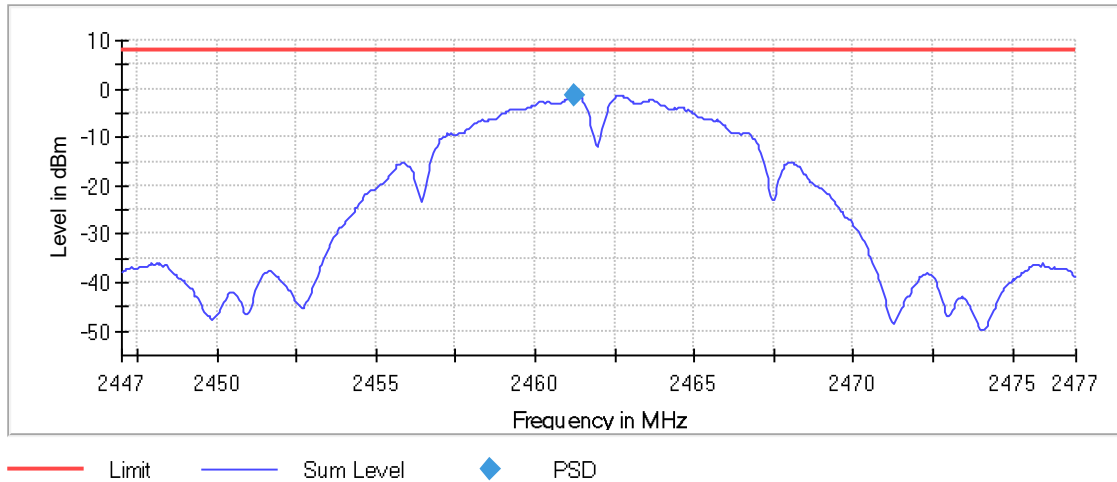
High channel / 2462 MHz

Mode of Operation: 802.11b

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2462.000000	2461.250000	-1.273	8.0	PASS

Power Spectral Density (AVGPSD-1)



Plot #4

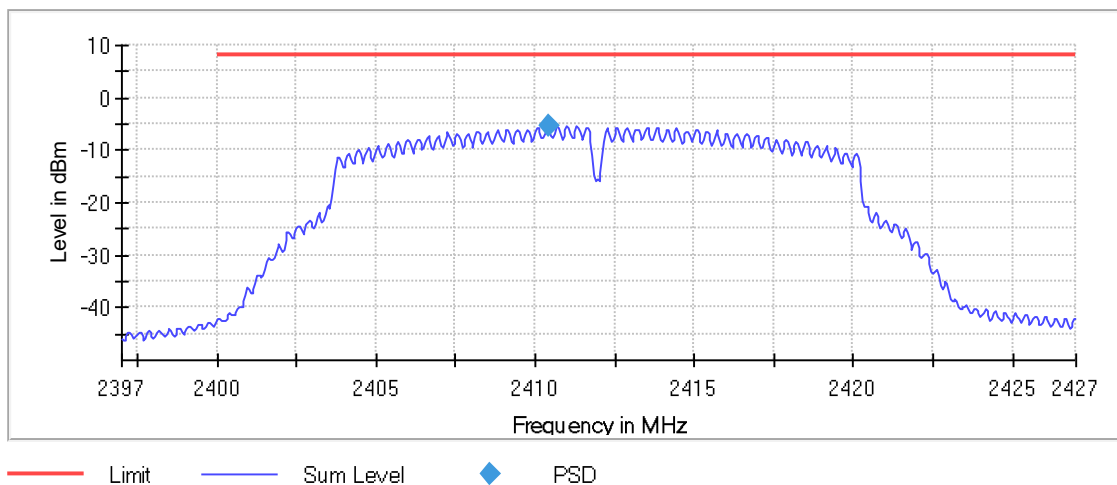
Low channel / 2412 MHz

Mode of Operation: 802.11g

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2412.000000	2410.400000	-5.369	8.0	PASS

Power Spectral Density (AVGPSD-1)



Plot #5

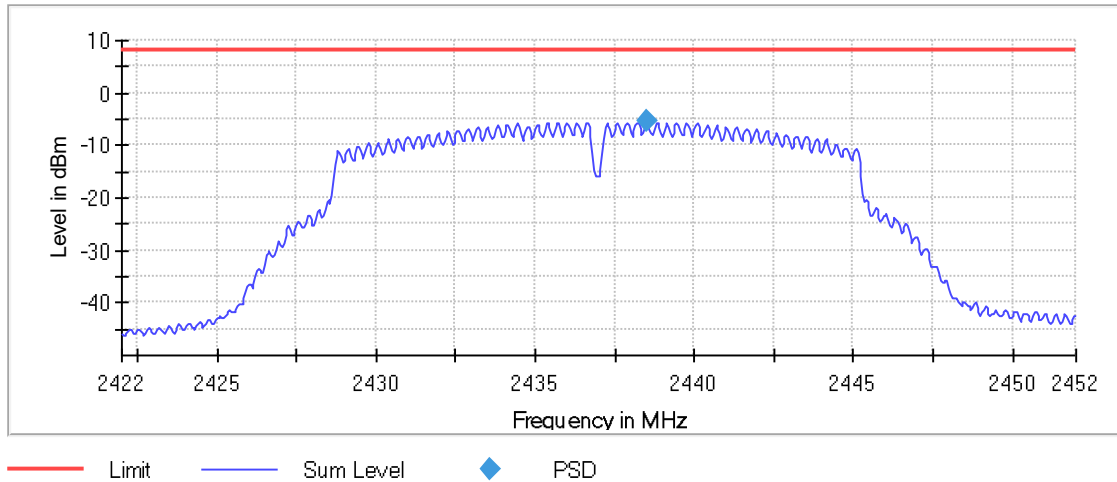
Mid channel / 2437 MHz

Mode of Operation: 802.11g

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2437.000000	2438.500000	-5.538	8.0	PASS

Power Spectral Density (AVGPSD-1)



Plot #6

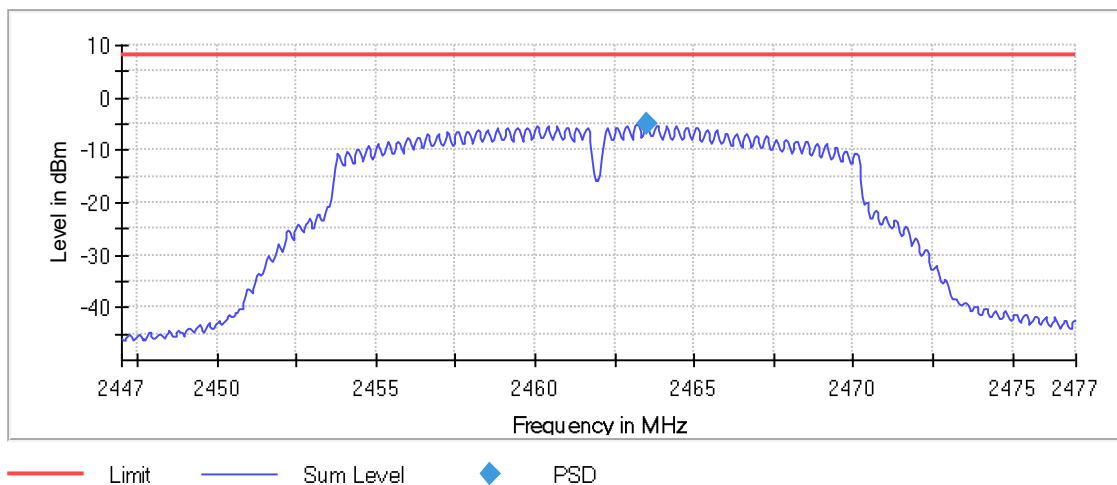
High channel / 2462 MHz

Mode of Operation: 802.11g

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2462.000000	2463.500000	-5.011	8.0	PASS

Power Spectral Density (AVGPSD-1)



Plot #7

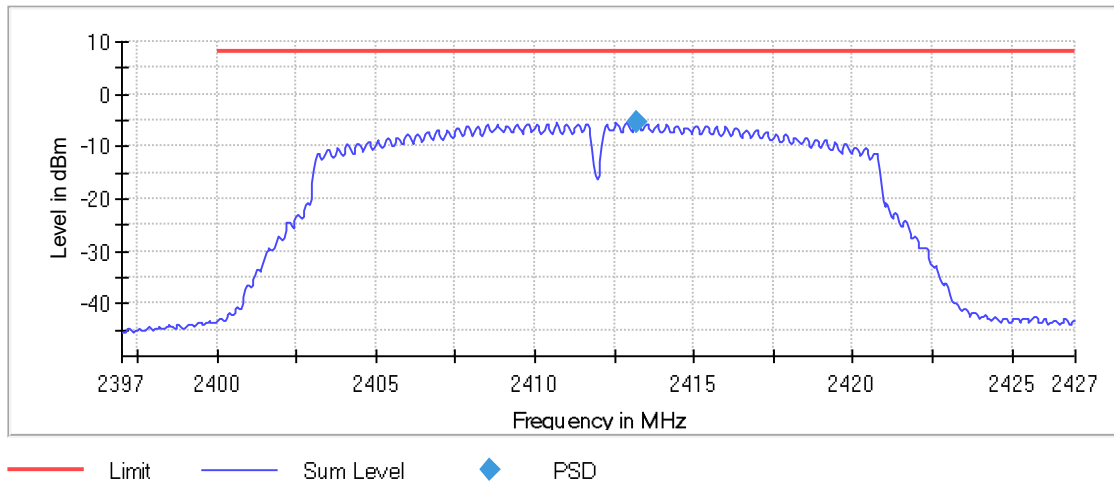
Low channel / 2412 MHz

Mode of Operation: 802.11n HT20

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2412.000000	2413.200000	-5.335	8.0	PASS

Power Spectral Density (AVGPSD-1)



Plot #8

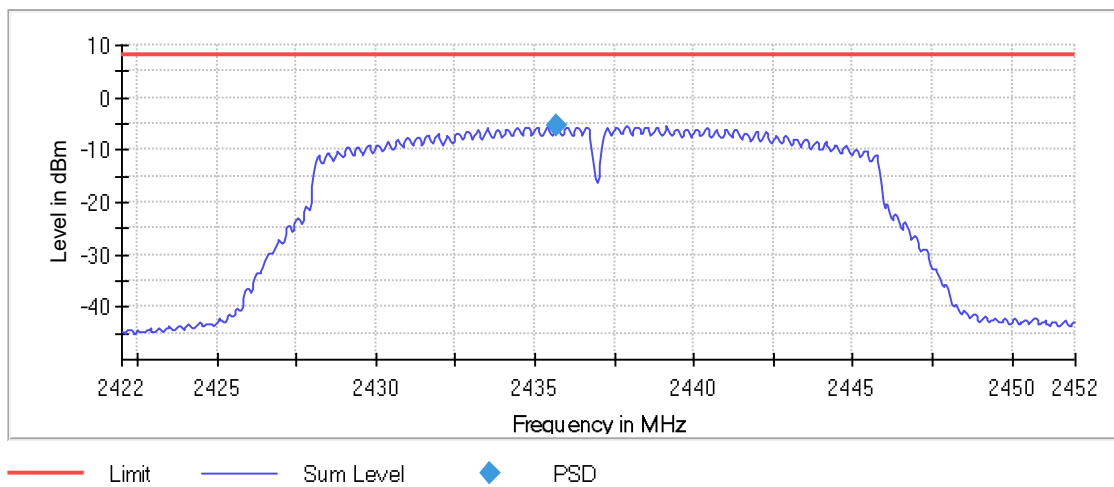
Mid channel / 2437 MHz

Mode of Operation: 802.11n HT20

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2437.000000	2435.700000	-5.213	8.0	PASS

Power Spectral Density (AVGPSD-1)



Plot #9

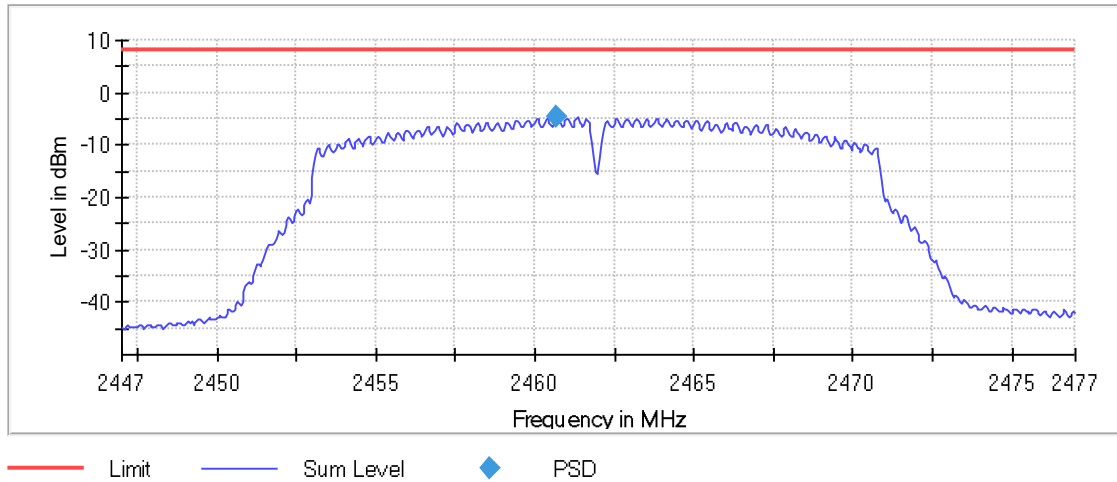
High channel / 2462 MHz

Mode of Operation: 802.11n HT20

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2462.000000	2460.700000	-4.682	8.0	PASS

Power Spectral Density (AVGPSD-1)



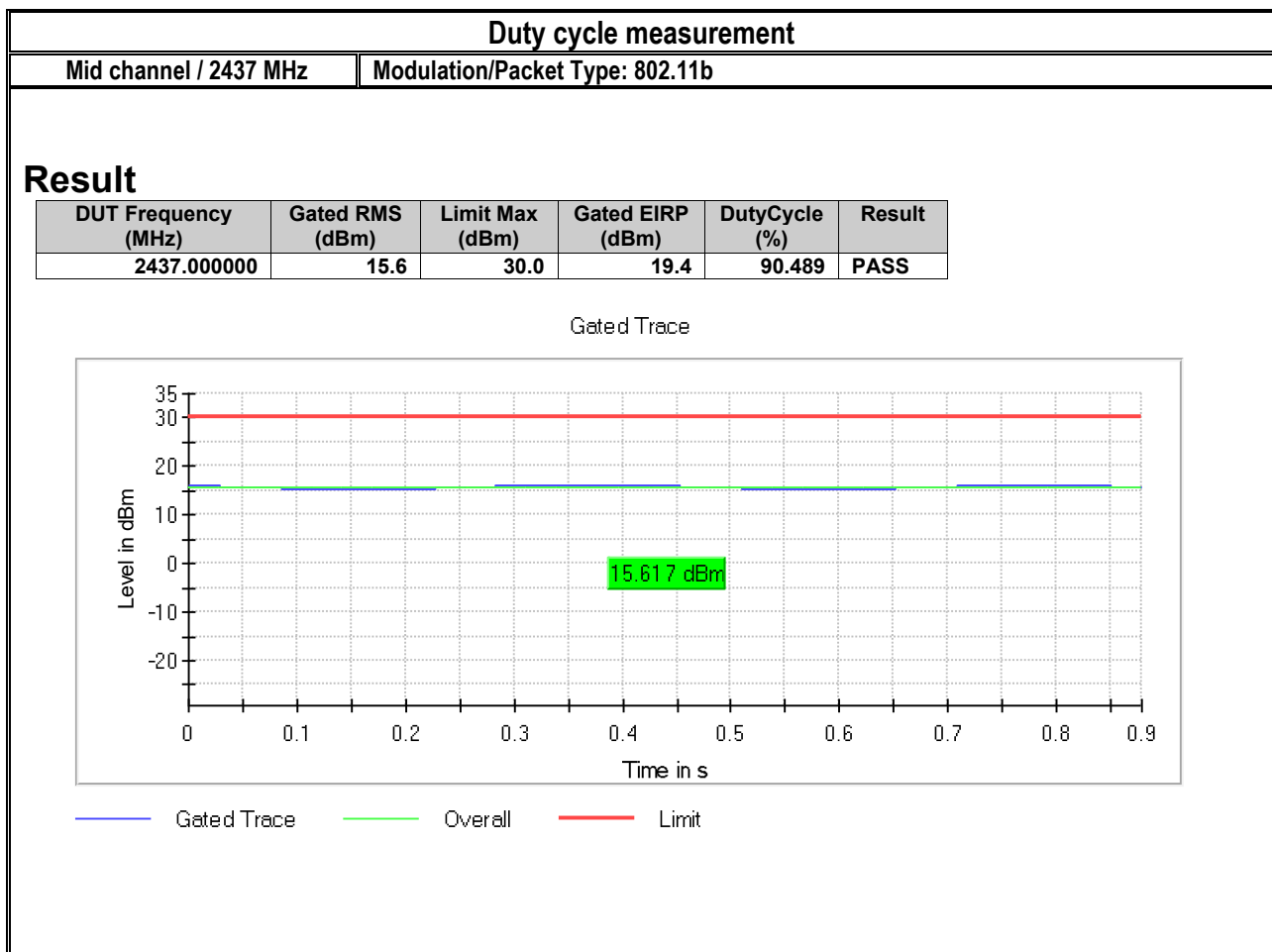
8.3 Duty cycle

8.3.1 Measurement according to FCC 558074 D01 15.247 Meas Guidance v05r02

Spectrum Analyzer settings:

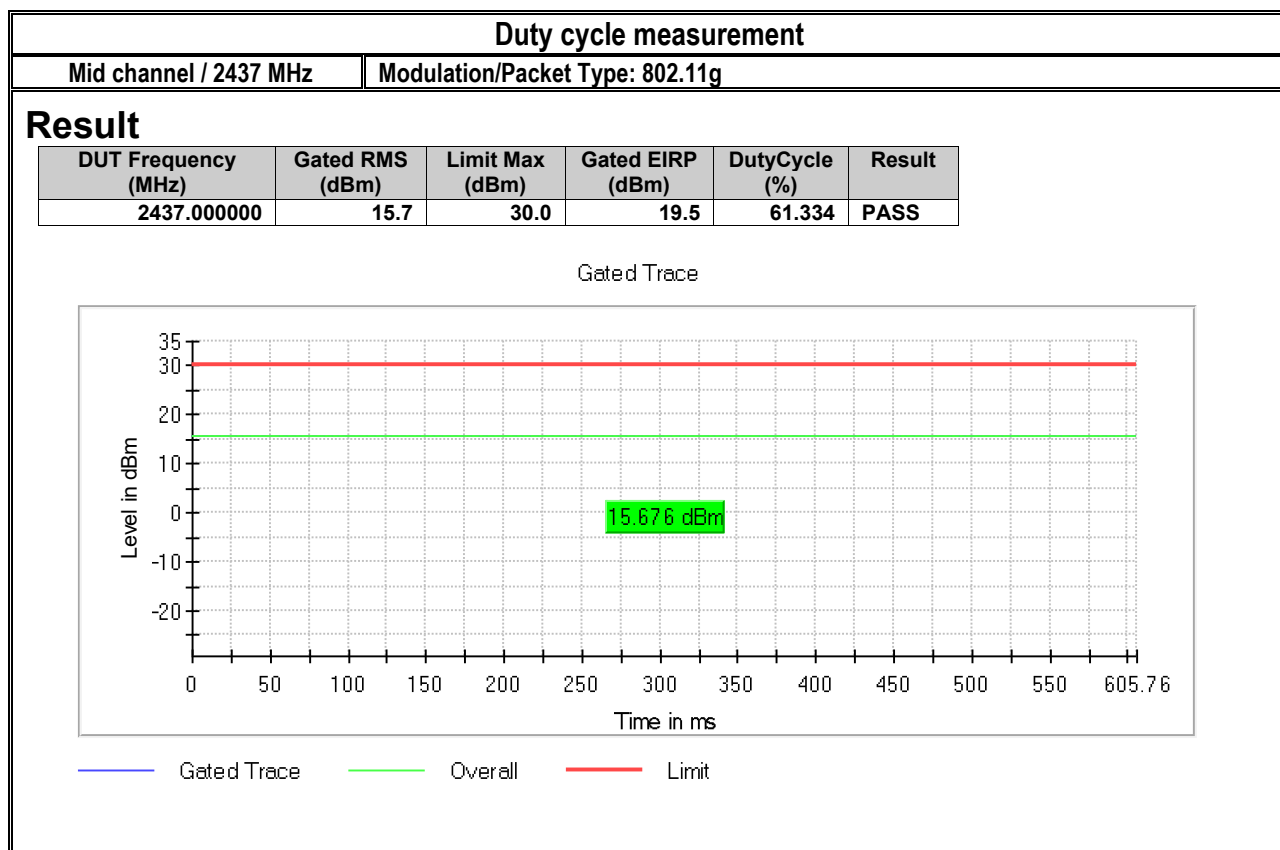
- Set the center frequency and of the instrument to the center frequency of the transmission
- Zero span
- Set RBW $\geq$ OBW if possible; otherwise, set RBW to the largest available value
- Detector = Peak or average

8.3.2 Measurement result



Duty cycle = 90.489%

Duty cycle correction factor = $10 \cdot \log(1/0.905) = 0.43$ dB



Duty cycle = 61.334%

Duty cycle correction factor = $10 \cdot \log(1/0.613) = 2.12$ dB

Duty cycle measurement

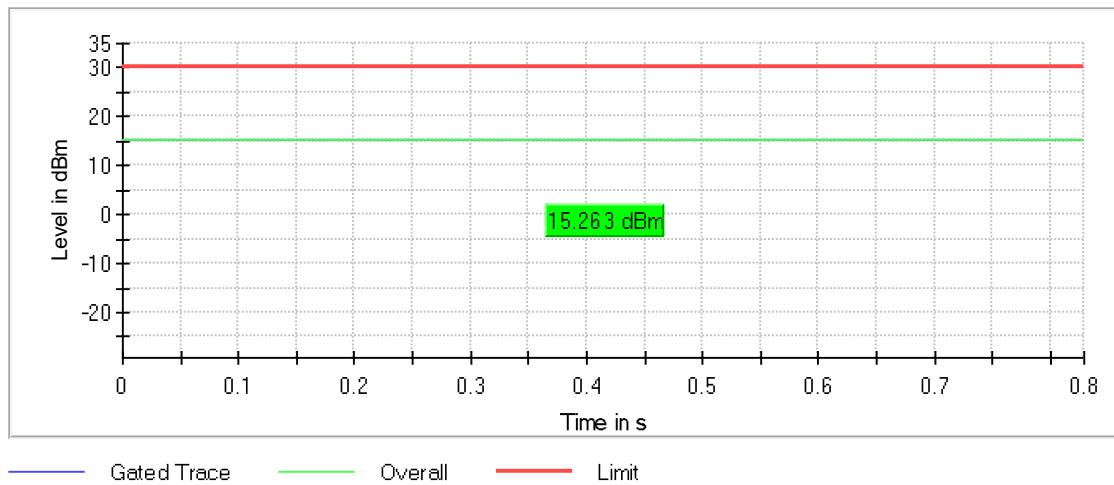
Mid channel / 2437 MHz

Modulation/Packet Type: 802.11n HT20

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2437.000000	15.3	30.0	19.1	82.927	PASS

Gated Trace



Duty cycle = 82.927%

Duty cycle correction factor = $10 \cdot \log(1/0.829) = 0.81$ dB

8.4 Band Edge Compliance

8.4.1 Measurement according to FCC 558074 D01 15.247 Meas Guidance v05r02

Spectrum Analyzer settings for band edge:

- Set the center frequency and span to encompass frequency range to be measured
- RBW = 100 kHz
- VBW $\geq 3 \times$ 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

8.4.2 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

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

- *PEAK LIMIT= 74 dB μ V/m @3m =-21.23 dBm
- *AVG. LIMIT= 54 dB μ V/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
10.495-0.505	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			

8.4.4 Test conditions and setup:

Non-Restricted Band:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input	Antenna Gain
22.0°C	2	802.11b,g,n	4 VDC	3.85 dBi

Restricted Band:

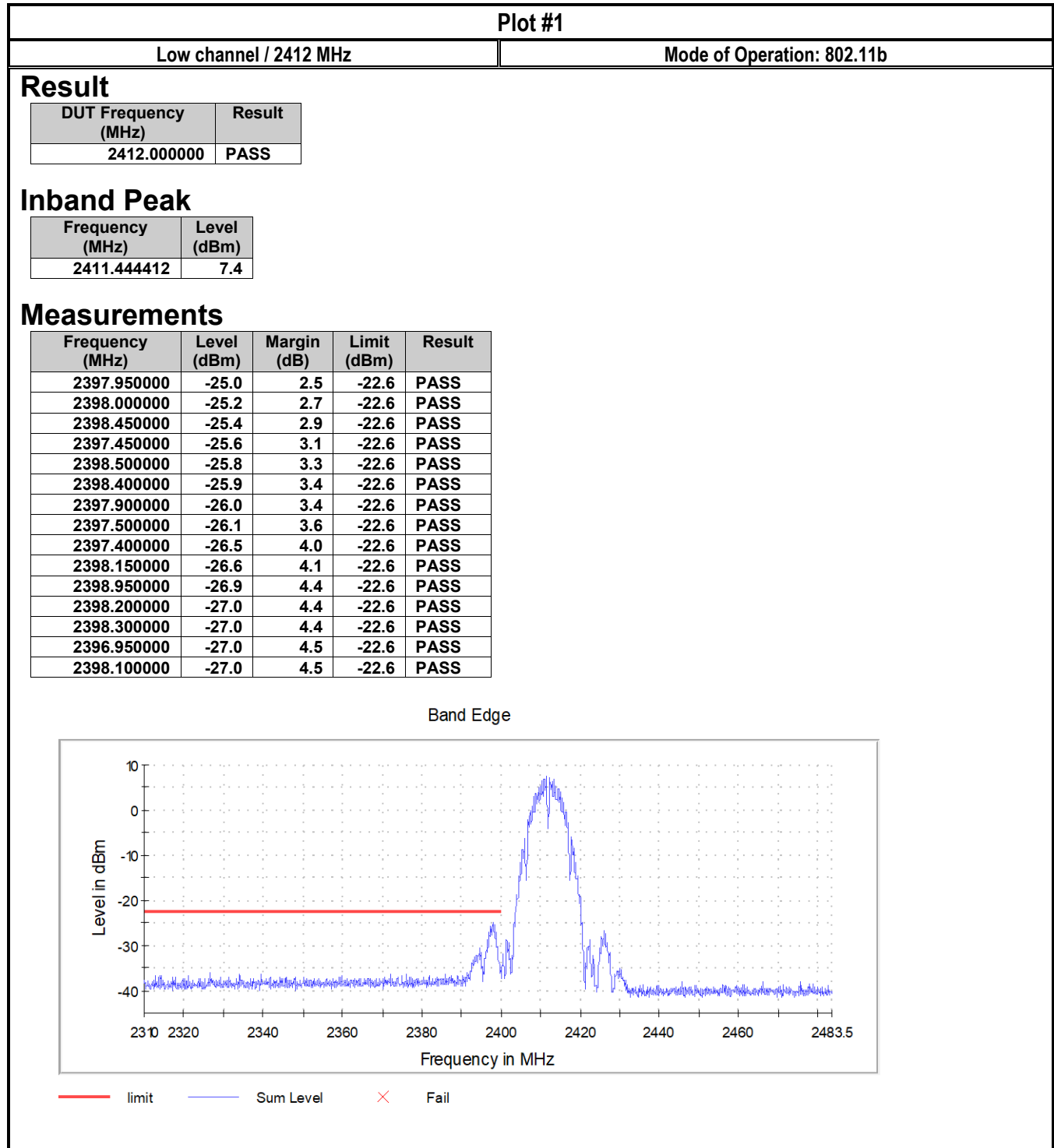
Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input	Antenna Gain
22.0°C	2	802.11b,g,n	4 VDC	3.85 dBi

8.4.5 Measurement result:

Emissions in Nonrestricted frequency bands						
Plot #	Data rate	Frequency	Inband Peak Level	Level	Margin	Limit
		MHz	dBm	dBm	dB	dBm
1	11.b 1Mb/s	2412	7.40	-25.00	12.50	-12.60
2	11g 6Mb/s	2412	4.90	-29.50	14.50	-15.10
3	11.n-HT20 MC0	2412	4.70	-30.90	15.60	-15.30
4	11.b 1Mb/s	2462	8.10	-35.70	23.80	-11.90
5	11g 6Mb/s	2462	5.80	-34.20	20.00	-14.20
6	11.n-HT20 MC0	2462	5.30	-33.70	19.00	-14.70

Plot #	EUT operating mode	Band Edge	Measured Peak Value (dBμV/m)	Measured Average Value (dBμV/m)	Limit (dBμV/m)	Result
7	802.11b	Lower Restricted Peak and Average	56.95	42.03	See section 8.4.3	Pass
8	802.11g	Lower Restricted Peak and Average	70.42	51.42	See section 8.4.3	Pass
9	802.11n HT20	Lower Restricted Peak and Average	71.72	52.72	See section 8.4.3	Pass
10	802.11b	Upper Restricted Peak and Average	56.44	41.09	See section 8.4.3	Pass
11	802.11g	Upper Restricted Peak and Average	71.47	49.93	See section 8.4.3	Pass
12	802.11n HT20	Upper Restricted Peak and Average	71.57	51.93	See section 8.4.3	Pass

8.4.6 Measurement Plots:



Plot #2

Low channel / 2412 MHz

Mode of Operation: 802.11g

Result

DUT Frequency (MHz)	Result
2412.000000	PASS

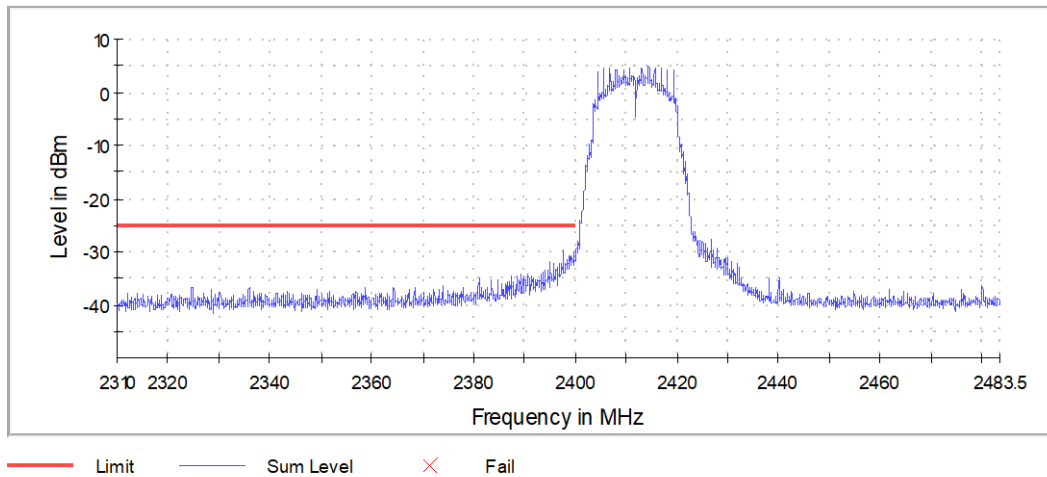
Inband Peak

Frequency (MHz)	Level (dBm)
2414.440588	4.9

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2397.850000	-29.5	4.5	-25.1	PASS
2399.800000	-30.1	5.1	-25.1	PASS
2397.800000	-30.3	5.3	-25.1	PASS
2399.100000	-30.6	5.6	-25.1	PASS
2399.450000	-30.7	5.7	-25.1	PASS
2399.500000	-31.1	6.0	-25.1	PASS
2399.900000	-31.4	6.4	-25.1	PASS
2398.900000	-31.4	6.4	-25.1	PASS
2399.750000	-31.5	6.4	-25.1	PASS
2398.650000	-31.5	6.5	-25.1	PASS
2398.950000	-31.5	6.5	-25.1	PASS
2399.250000	-31.5	6.5	-25.1	PASS
2399.400000	-31.5	6.5	-25.1	PASS
2399.700000	-31.6	6.5	-25.1	PASS
2398.800000	-31.6	6.5	-25.1	PASS

Band Edge



Plot #3

Low channel / 2412 MHz

Mode of Operation: 802.11n HT20

Result

DUT Frequency (MHz)	Result
2412.000000	PASS

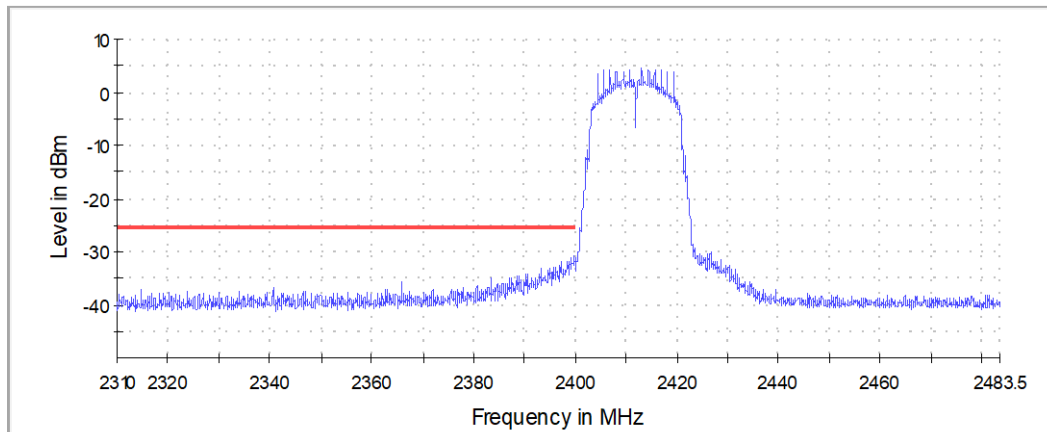
Inband Peak

Frequency (MHz)	Level (dBm)
2413.212647	4.7

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.800000	-30.9	5.6	-25.3	PASS
2399.200000	-31.3	6.0	-25.3	PASS
2397.200000	-31.7	6.5	-25.3	PASS
2399.050000	-31.7	6.5	-25.3	PASS
2398.500000	-31.8	6.5	-25.3	PASS
2399.850000	-31.8	6.6	-25.3	PASS
2398.550000	-31.9	6.6	-25.3	PASS
2398.400000	-32.0	6.7	-25.3	PASS
2398.750000	-32.0	6.7	-25.3	PASS
2399.900000	-32.1	6.8	-25.3	PASS
2399.650000	-32.1	6.8	-25.3	PASS
2399.750000	-32.1	6.9	-25.3	PASS
2399.450000	-32.2	6.9	-25.3	PASS
2398.450000	-32.2	6.9	-25.3	PASS
2398.600000	-32.2	6.9	-25.3	PASS

Band Edge



— Limit — Sum Level × Fail

Plot #4

High channel / 2462 MHz

Mode of Operation: 802.11b

Result

DUT Frequency (MHz)	Result
2462.000000	PASS

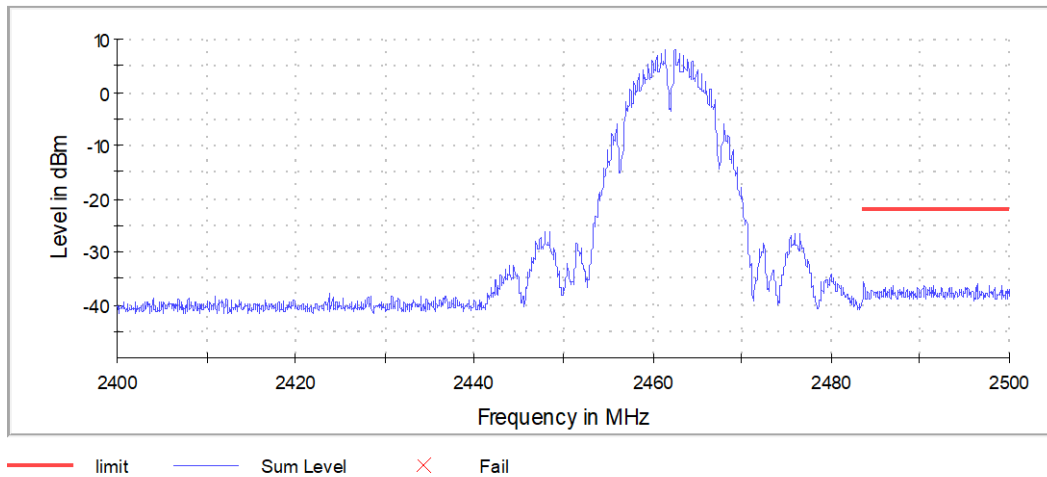
Inband Peak

Frequency (MHz)	Level (dBm)
2462.477647	8.1

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2483.658654	-35.7	13.8	-21.9	PASS
2483.711538	-35.8	13.9	-21.9	PASS
2496.350962	-36.0	14.1	-21.9	PASS
2486.884615	-36.4	14.5	-21.9	PASS
2499.206731	-36.4	14.5	-21.9	PASS
2491.538462	-36.4	14.5	-21.9	PASS
2490.427885	-36.5	14.6	-21.9	PASS
2497.778846	-36.6	14.7	-21.9	PASS
2496.192308	-36.7	14.8	-21.9	PASS
2495.399038	-36.7	14.8	-21.9	PASS
2493.548077	-36.7	14.8	-21.9	PASS
2491.009615	-36.7	14.8	-21.9	PASS
2490.480769	-36.8	14.9	-21.9	PASS
2491.326923	-36.8	14.9	-21.9	PASS
2488.100962	-36.8	14.9	-21.9	PASS

Band Edge



Plot #5

High channel / 2462 MHz

Mode of Operation: 802.11g

Result

DUT Frequency (MHz)	Result
2462.000000	PASS

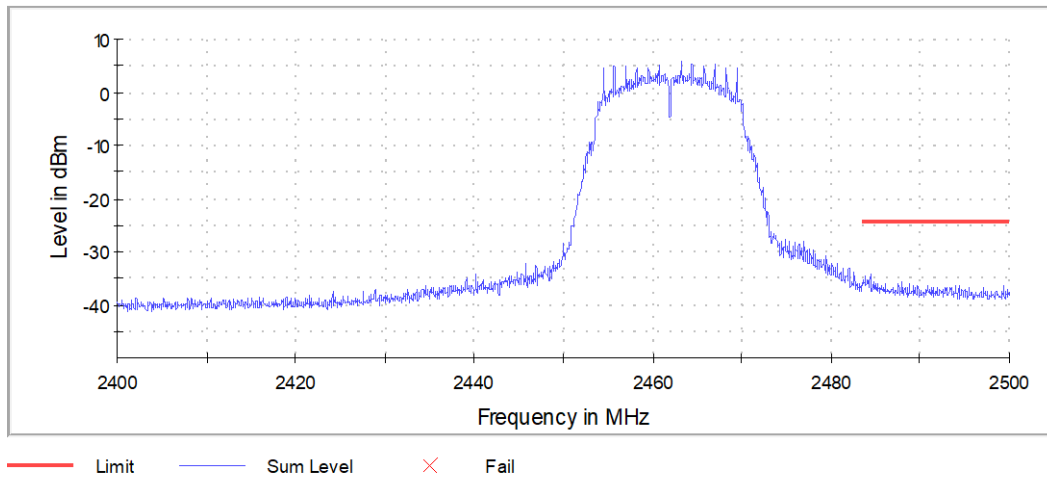
Inband Peak

Frequency (MHz)	Level (dBm)
2463.214412	5.8

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2484.451923	-34.2	10.0	-24.2	PASS
2483.817308	-34.4	10.2	-24.2	PASS
2484.187500	-35.1	10.9	-24.2	PASS
2484.557692	-35.3	11.1	-24.2	PASS
2484.028846	-35.3	11.1	-24.2	PASS
2483.552885	-35.4	11.2	-24.2	PASS
2484.399038	-35.4	11.2	-24.2	PASS
2484.822115	-35.7	11.4	-24.2	PASS
2487.995192	-35.7	11.5	-24.2	PASS
2483.870192	-35.7	11.5	-24.2	PASS
2483.764423	-35.8	11.5	-24.2	PASS
2484.346154	-35.9	11.7	-24.2	PASS
2484.663462	-35.9	11.7	-24.2	PASS
2483.658654	-35.9	11.7	-24.2	PASS
2487.519231	-35.9	11.7	-24.2	PASS

Band Edge



Plot #6

High channel / 2462 MHz

Mode of Operation: 802.11n HT20

Result

DUT Frequency (MHz)	Result
2462.000000	PASS

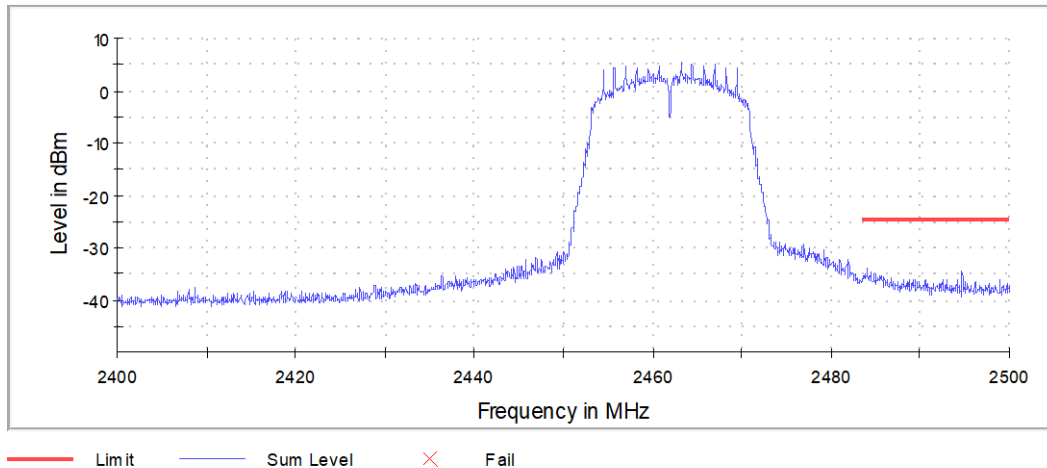
Inband Peak

Frequency (MHz)	Level (dBm)
2463.214412	5.3

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2484.134615	-33.7	9.0	-24.7	PASS
2484.557692	-34.6	9.9	-24.7	PASS
2494.711538	-34.6	9.9	-24.7	PASS
2484.451923	-34.7	10.0	-24.7	PASS
2484.980769	-34.8	10.1	-24.7	PASS
2484.716346	-34.9	10.2	-24.7	PASS
2484.028846	-35.0	10.3	-24.7	PASS
2483.764423	-35.1	10.4	-24.7	PASS
2484.504808	-35.2	10.5	-24.7	PASS
2483.552885	-35.2	10.5	-24.7	PASS
2483.817308	-35.2	10.5	-24.7	PASS
2484.769231	-35.3	10.6	-24.7	PASS
2485.562500	-35.4	10.7	-24.7	PASS
2485.403846	-35.5	10.7	-24.7	PASS
2484.346154	-35.5	10.8	-24.7	PASS

Band Edge



— Limit — Sum Level × Fail

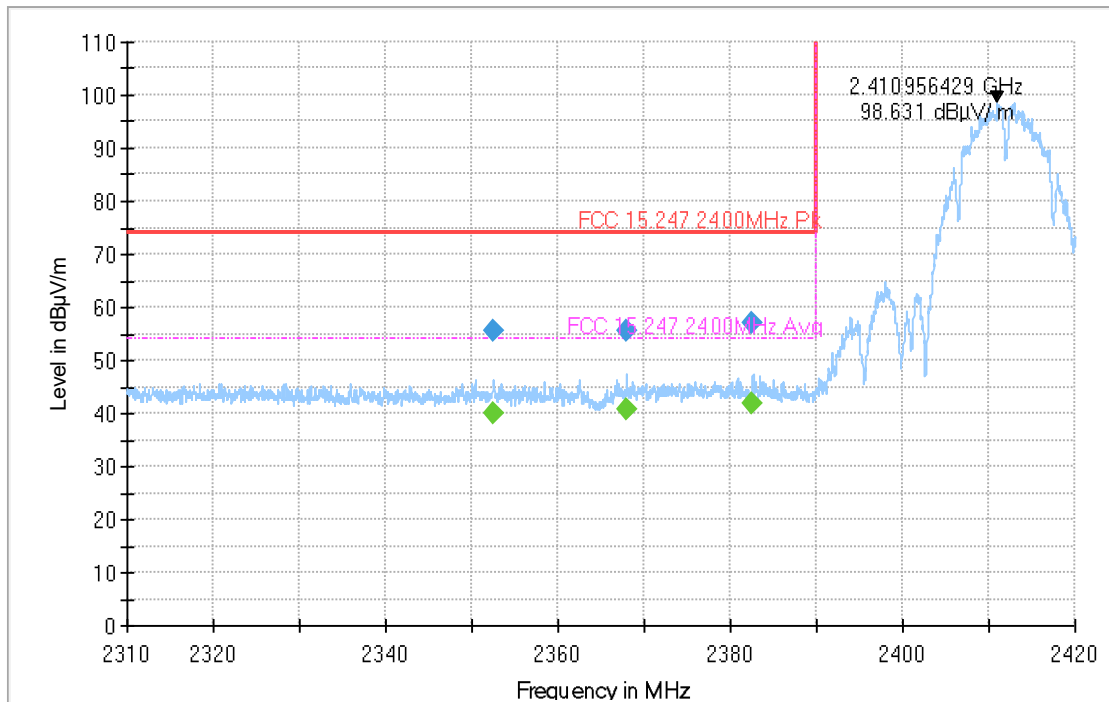
Plot #7

Low channel 2412 MHz

Mode of Operation: 802.11b

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBμV)
2352.523	---	39.876	54.00	14.12	500.0	1000.0	194.0	V	24.0	33.1	5.3	0.0	27.8	6.7
2352.523	55.487	---	74.00	18.51	500.0	1000.0	194.0	V	24.0	33.1	5.3	0.0	27.8	22.3
2367.962	55.456	---	74.00	18.54	500.0	1000.0	143.0	V	19.0	33.1	5.2	0.0	27.9	22.4
2367.962	---	40.711	54.00	13.29	500.0	1000.0	143.0	V	19.0	33.1	5.2	0.0	27.9	7.6
2382.608	56.953	---	74.00	17.05	500.0	1000.0	195.0	V	10.0	33.1	5.2	0.0	27.9	23.8
2382.608	---	42.025	54.00	11.98	500.0	1000.0	195.0	V	10.0	33.1	5.2	0.0	27.9	8.9



— AVG_MAXH ◆ PK+_MAXH Final_Result PK+ — FCC 15.247 2400MHz Pk
- - - FCC 15.247 2400MHz Avg ◆ Final_Result CAV

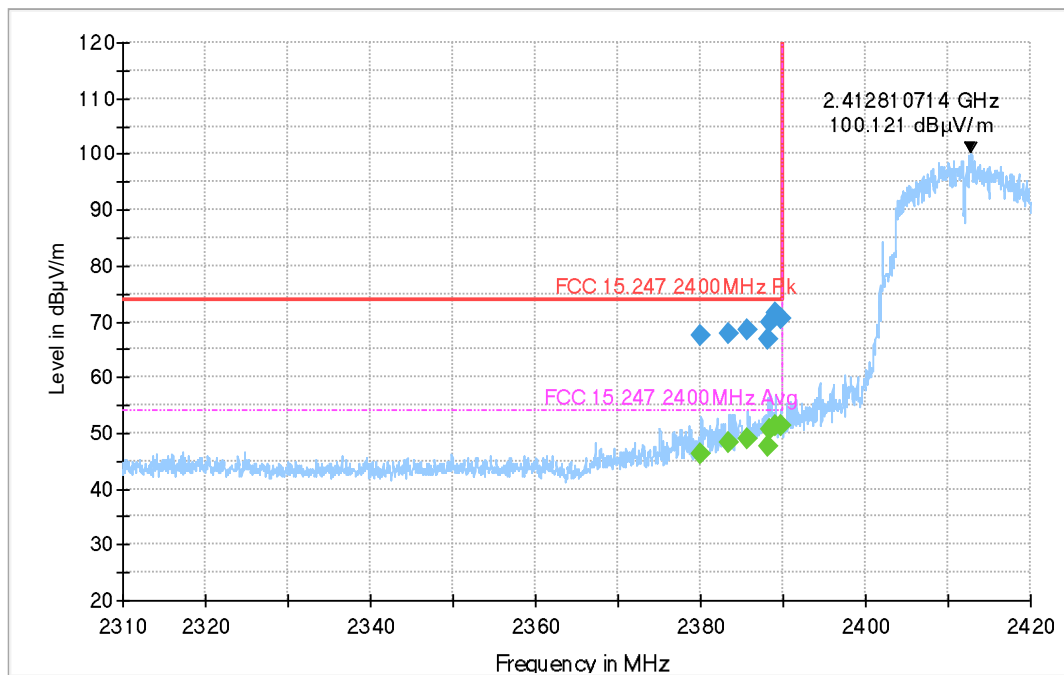
Plot #8

Low channel 2412 MHz

Mode of Operation: 802.11g

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBμV)
2380.070	---	46.227	54.00	7.77	500.0	1000.0	184.0	V	36.0	33.4	5.2	0.0	28.2	12.9
2380.070	67.468	---	74.00	6.53	500.0	1000.0	184.0	V	36.0	33.4	5.2	0.0	28.2	34.1
2383.519	---	48.207	54.00	5.79	500.0	1000.0	195.0	V	186.0	33.4	5.2	0.0	28.2	14.8
2383.519	67.820	---	74.00	6.18	500.0	1000.0	195.0	V	186.0	33.4	5.2	0.0	28.2	34.4
2385.696	---	49.094	54.00	4.91	500.0	1000.0	195.0	V	185.0	33.4	5.2	0.0	28.2	15.7
2385.696	68.432	---	74.00	5.57	500.0	1000.0	195.0	V	185.0	33.4	5.2	0.0	28.2	35.0
2388.210	66.932	---	74.00	7.07	500.0	1000.0	186.0	H	229.0	33.4	5.2	0.0	28.1	33.6
2388.210	---	47.565	54.00	6.44	500.0	1000.0	186.0	H	229.0	33.4	5.2	0.0	28.1	14.2
2388.485	69.976	---	74.00	4.02	500.0	1000.0	134.0	V	28.0	33.4	5.2	0.0	28.2	36.6
2388.485	---	50.752	54.00	3.25	500.0	1000.0	134.0	V	28.0	33.4	5.2	0.0	28.2	17.3
2389.090	---	51.263	54.00	2.74	500.0	1000.0	178.0	V	34.0	33.4	5.2	0.0	28.2	17.9
2389.090	71.503	---	74.00	2.50	500.0	1000.0	178.0	V	34.0	33.4	5.2	0.0	28.2	38.1
2389.821	---	51.423	54.00	2.58	500.0	1000.0	177.0	V	32.0	33.4	5.2	0.0	28.2	18.0
2389.821	70.417	---	74.00	3.58	500.0	1000.0	177.0	V	32.0	33.4	5.2	0.0	28.2	37.0



AVG_MAXH
FCC 15.247 2400MHz Avg

PK+_MAXH
Final_Result PK+

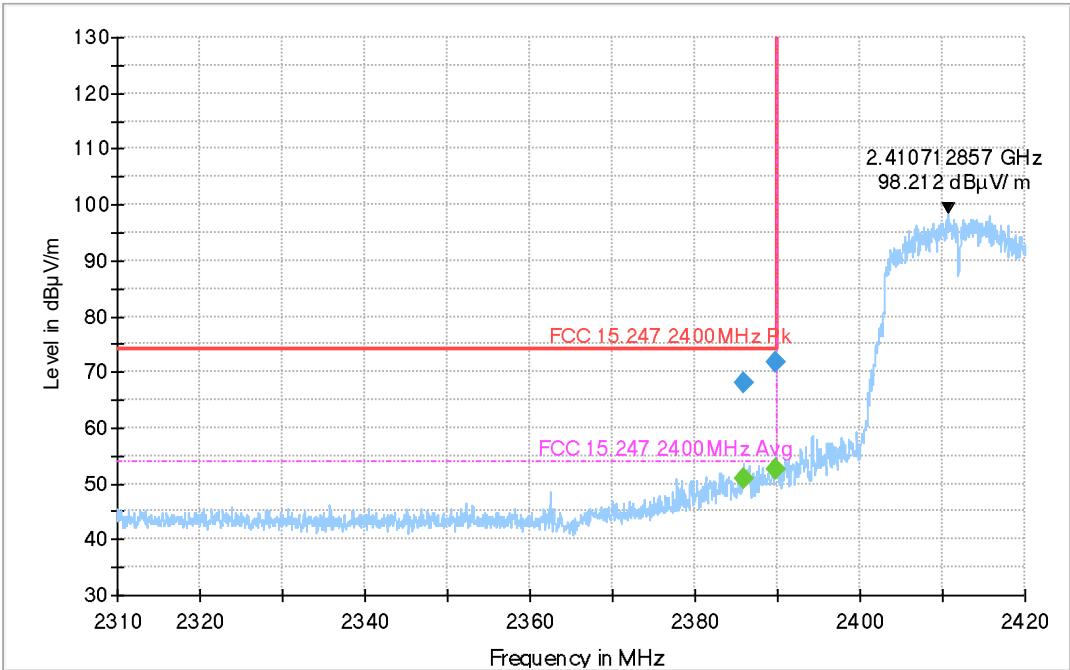
FCC 15.247 2400MHz Pk
Final_Result CAV

Plot #9

Low channel 2412 MHz Mode of Operation: 802.11n HT20

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBμV)
2385.979	---	51.040	54.00	2.96	500.0	1000.0	187.0	V	32.0	33.4	5.2	0.0	28.2	17.7
2385.979	68.009	---	74.00	5.99	500.0	1000.0	187.0	V	32.0	33.4	5.2	0.0	28.2	34.6
2389.726	---	52.722	54.00	1.28	500.0	1000.0	175.0	V	33.0	33.4	5.2	0.0	28.2	19.3
2389.726	71.722	---	74.00	2.28	500.0	1000.0	175.0	V	33.0	33.4	5.2	0.0	28.2	38.3



AVG_MAXH PK+_MAXH FCC 15.247 2400MHz Pk
FCC 15.247 2400MHz Avg Final_Result PK+ Final_Result CAV

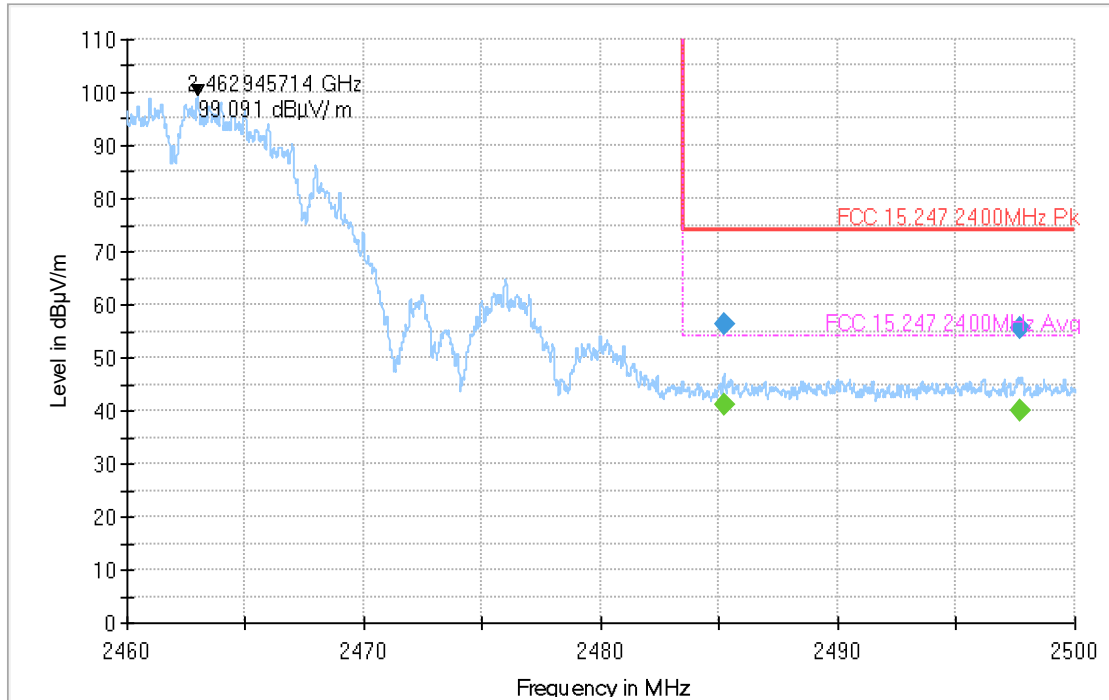
Plot #10

High channel 2462 MHz

Mode of Operation: 802.11b

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBμV)
2485.189	---	41.089	54.00	12.91	500.0	1000.0	202.0	H	305.0	33.7	5.4	0.0	28.4	7.4
2485.189	56.442	---	74.00	17.56	500.0	1000.0	202.0	H	305.0	33.7	5.4	0.0	28.4	22.7
2497.709	---	39.885	54.00	14.12	500.0	1000.0	264.0	H	131.0	33.7	5.3	0.0	28.4	6.2
2497.709	55.690	---	74.00	18.31	500.0	1000.0	264.0	H	131.0	33.7	5.3	0.0	28.4	22.0



AVG_MAXH
FCC 15.247 2400MHz Avg

PK+_MAXH
Final_Result PK+

FCC 15.247 2400MHz Pk
Final_Result CAV

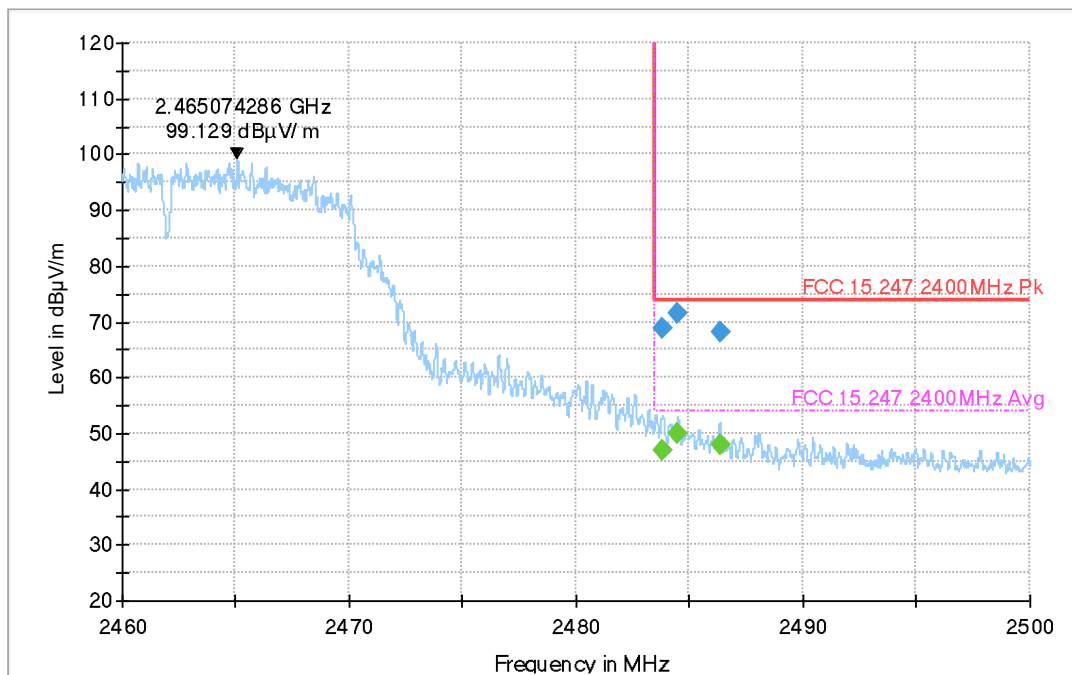
Plot #11

High channel 2462 MHz

Mode of Operation: 802.11g

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Sig Path (dB)	Preampl (dB)	Trd Corr. (dB/m)	Raw Rec (dBμV)
2483.811	---	46.812	54.00	7.19	500.0	1000.0	267.0	V	142.0	33.7	5.4	0.0	28.3	13.1
2483.811	68.804	---	74.00	5.20	500.0	1000.0	267.0	V	142.0	33.7	5.4	0.0	28.3	35.1
2484.486	71.472	---	74.00	2.53	500.0	1000.0	141.0	V	267.0	33.7	5.4	0.0	28.3	37.8
2484.486	---	49.929	54.00	4.07	500.0	1000.0	141.0	V	267.0	33.7	5.4	0.0	28.3	16.2
2486.331	68.128	---	74.00	5.87	500.0	1000.0	134.0	V	264.0	33.7	5.4	0.0	28.3	34.4
2486.331	---	48.019	54.00	5.98	500.0	1000.0	134.0	V	264.0	33.7	5.4	0.0	28.3	14.3



— AVG_MAXH
— FCC 15.247 2400MHz Avg
 ◆ PK+_MAXH
 Final_Result PK+
 — FCC 15.247 2400MHz Pk
◆ Final_Result CAV

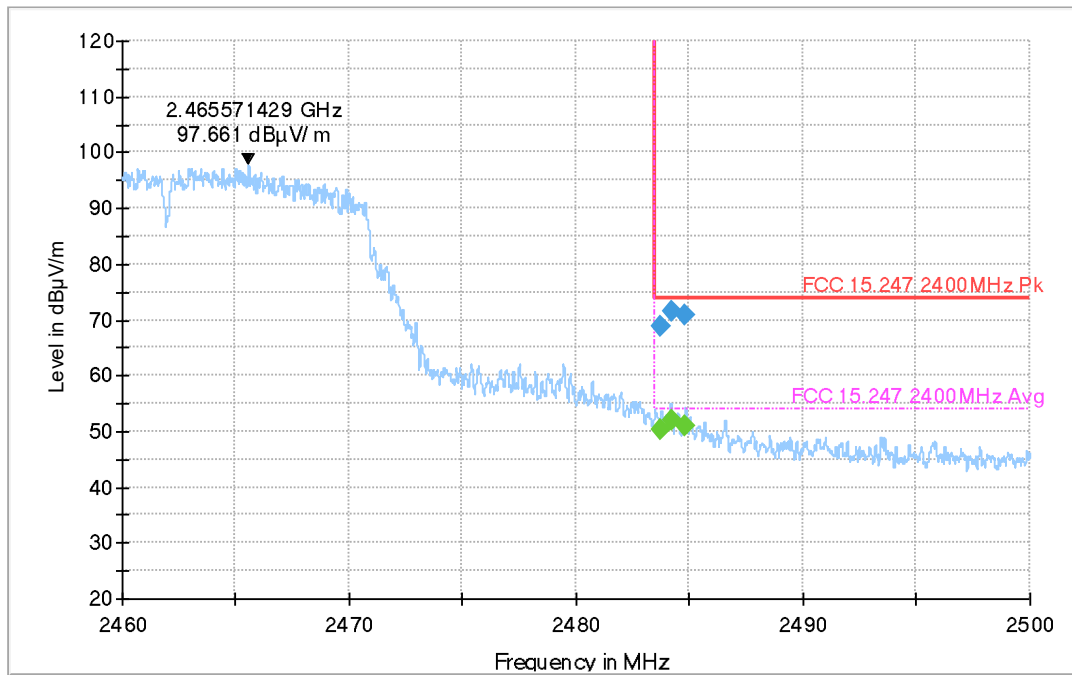
Plot #12

High channel 2462 MHz

Mode of Operation: 802.11n HT20

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBμV)
2483.760	---	50.237	54.00	3.76	500.0	1000.0	100.0	H	-1.0	33.7	5.4	0.0	28.4	16.5
2483.760	68.795	---	74.00	5.21	500.0	1000.0	100.0	H	-1.0	33.7	5.4	0.0	28.4	35.1
2484.174	---	51.931	54.00	2.07	500.0	1000.0	107.0	V	28.0	33.7	5.4	0.0	28.3	18.2
2484.174	71.567	---	74.00	2.43	500.0	1000.0	107.0	V	28.0	33.7	5.4	0.0	28.3	37.9
2484.814	---	51.063	54.00	2.94	500.0	1000.0	100.0	V	26.0	33.7	5.4	0.0	28.3	17.4
2484.814	70.755	---	74.00	3.24	500.0	1000.0	100.0	V	26.0	33.7	5.4	0.0	28.3	37.1



— AVG_MAXH — PK+_MAXH — FCC 15.247 2400MHz Pk
— FCC 15.247 2400MHz Avg ◆ Final_Result PK+ ◆ Final_Result CAV

8.5 Emission Bandwidth 6dB and 99% Occupied Bandwidth

8.5.1 Measurement according to FCC 558074 D01 15.247 Meas Guidance v05r02

Spectrum Analyzer settings:

6dB (DTS) Bandwidth:

- Set RBW = 100 kHz
- Set the video bandwidth (VBW) $\geq 3 \times$ 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.

99% Occupied Bandwidth:

- Set frequency = nominal EUT channel center frequency
- Set Span = 1.5 x to 5.0 x OBW
- Set RBW = 1% to 5% of OBW
- Set the video bandwidth (VBW) $\approx 3 \times$ RBW
- Detector = Peak
- Trace mode = Max hold
- Sweep = Auto couple
- Allow the trace to stabilize
- Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth
- If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.

8.5.2 Limits:

FCC §15.247(a)(2) and RSS-247 5.2(a)

- 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.

8.5.3 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input
22.0°C	2	802.11b,g,n	4 VDC

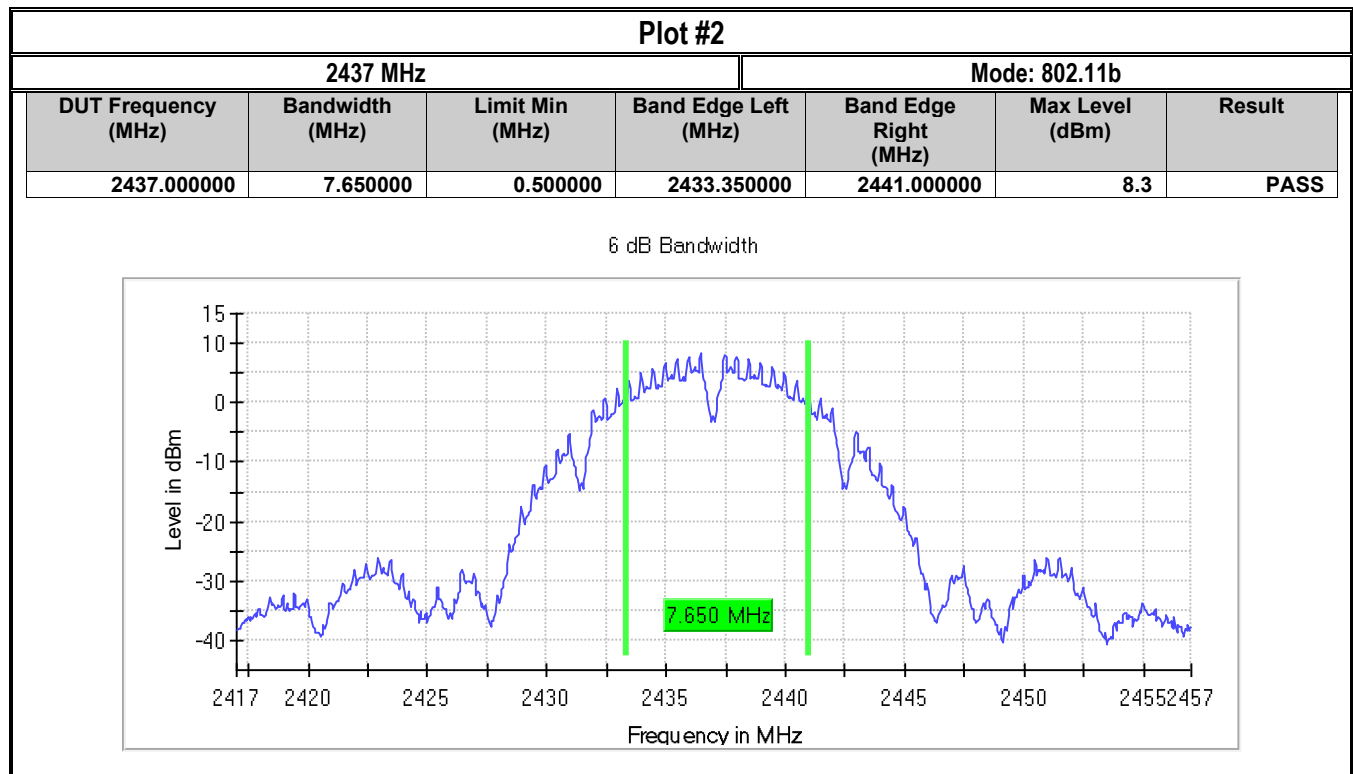
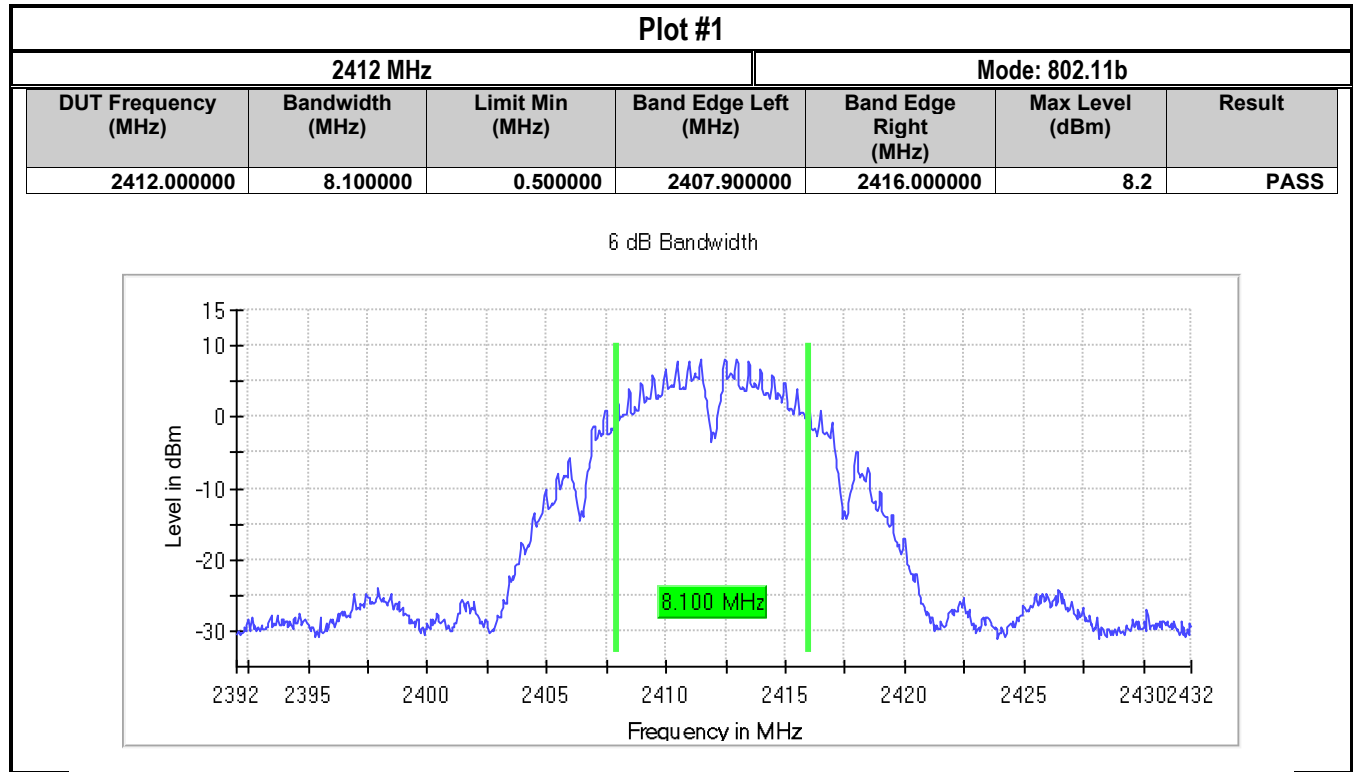
8.5.4 Measurement result:

Plot #	Frequency (MHz)	EUT Operating Mode	6dB Emission Bandwidth (MHz)	Limit (MHz)	Result
1	2412	802.11b	8.100	> 0.5	Pass
2	2437	802.11b	7.650	> 0.5	Pass
3	2462	802.11b	7.600	> 0.5	Pass
4	2412	802.11g	15.300	> 0.5	Pass
5	2437	802.11g	15.300	> 0.5	Pass
6	2462	802.11g	15.300	> 0.5	Pass
7	2412	802.11n HT20	15.300	> 0.5	Pass
8	2437	802.11n HT20	15.300	> 0.5	Pass
9	2462	802.11n HT20	15.650	> 0.5	Pass

Plot #	Frequency (MHz)	EUT Operating Mode	99% Occupied Bandwidth (MHz)	Limit (MHz)	Result
10	2412	802.11b	12.500	N/A	Pass
11	2437	802.11b	12.400	N/A	Pass
12	2462	802.11b	12.500	N/A	Pass
13	2412	802.11g	17.000	N/A	Pass
14	2437	802.11g	17.100	N/A	Pass
15	2462	802.11g	17.100	N/A	Pass
16	2412	802.11n HT20	17.700	N/A	Pass
17	2437	802.11n HT20	17.700	N/A	Pass
18	2462	802.11n HT20	17.800	N/A	Pass

8.5.5 Measurement Plots:

6 dB Emission Bandwidth



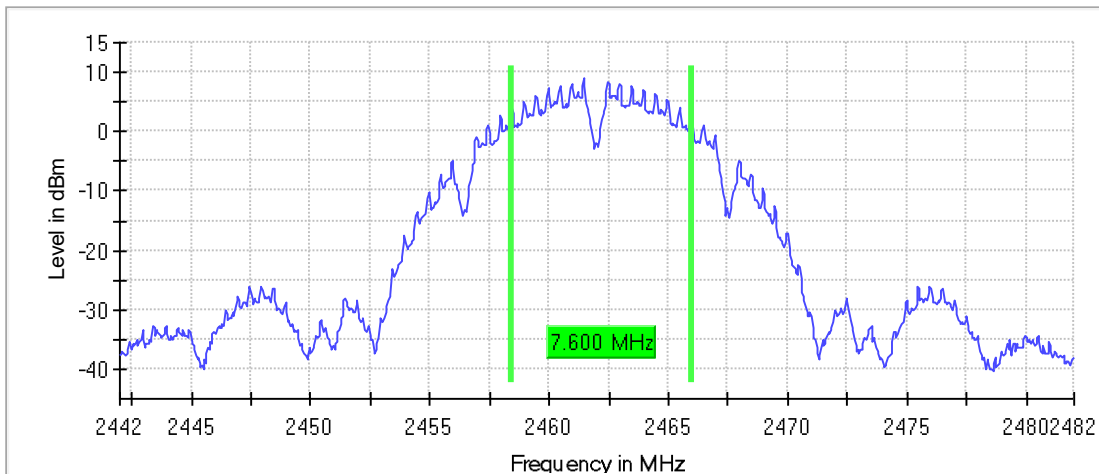
Plot #3

2462 MHz

Mode: 802.11b

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2462.000000	7.600000	0.500000	2458.400000	2466.000000	9.0	PASS

6 dB Bandwidth



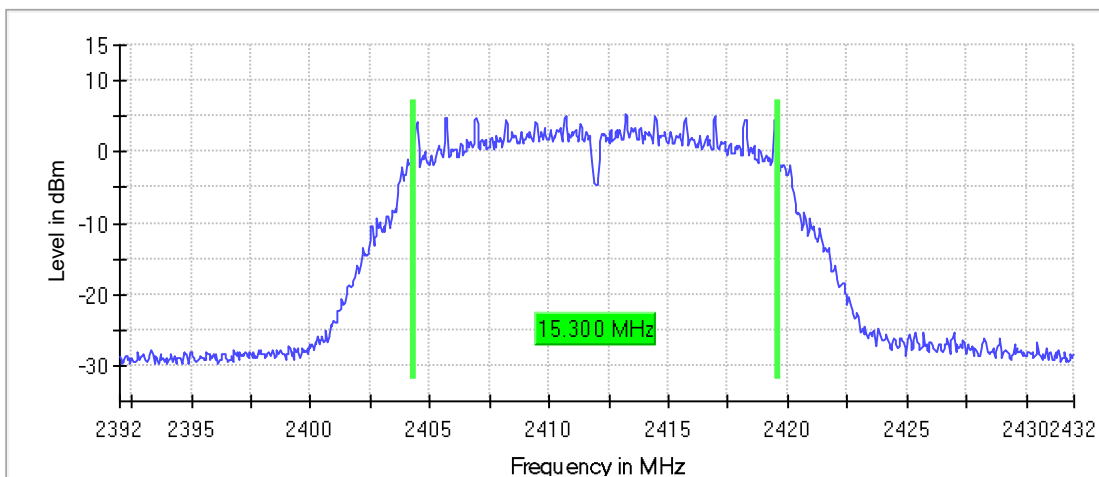
Plot #4

2412 MHz

Mode: 802.11g

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2412.000000	15.300000	0.500000	2404.300000	2419.600000	5.2	PASS

6 dB Bandwidth



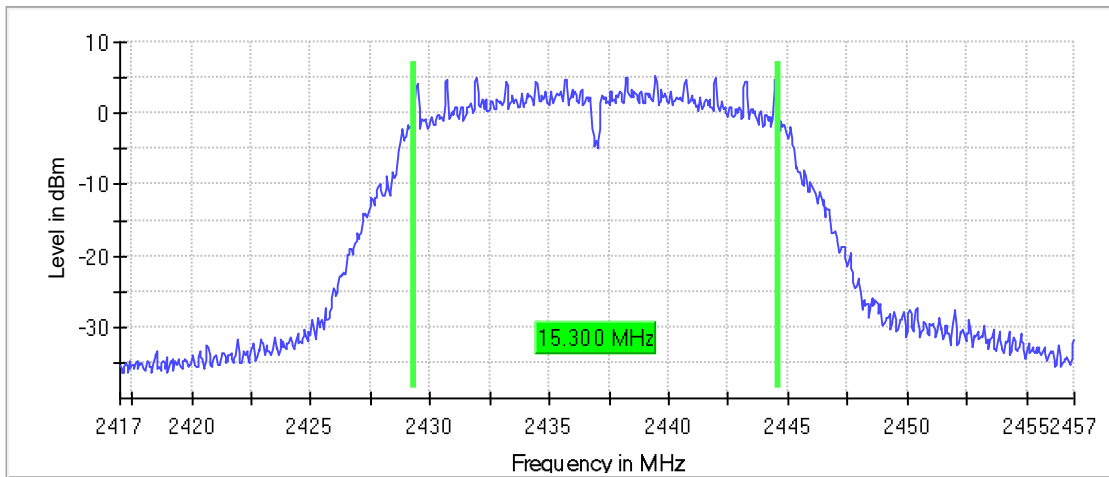
Plot #5

2437 MHz

Mode: 802.11g

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2437.000000	15.300000	0.500000	2429.300000	2444.600000	5.2	PASS

6 dB Bandwidth



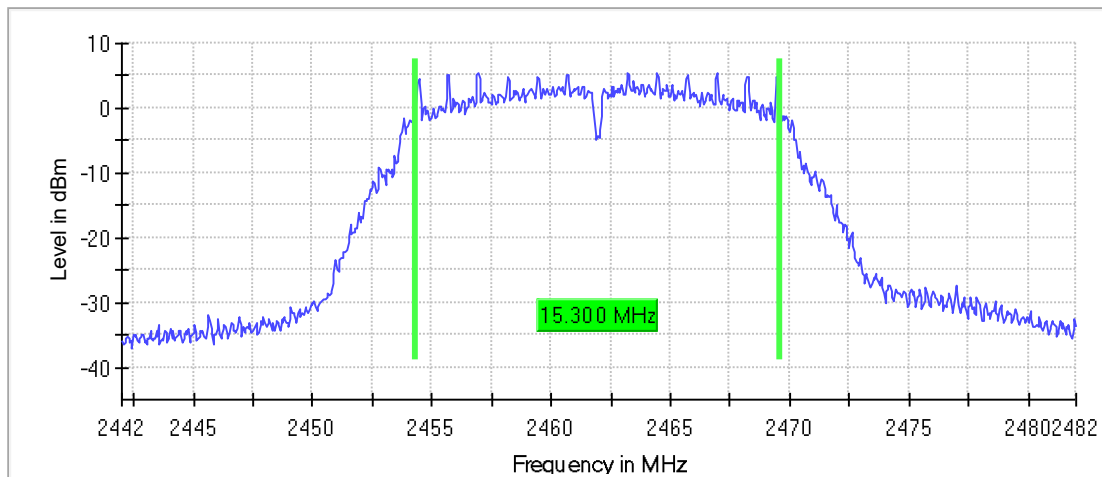
Plot #6

2462 MHz

Mode: 802.11g

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2462.000000	15.300000	0.500000	2454.300000	2469.600000	5.5	PASS

6 dB Bandwidth



Plot #7

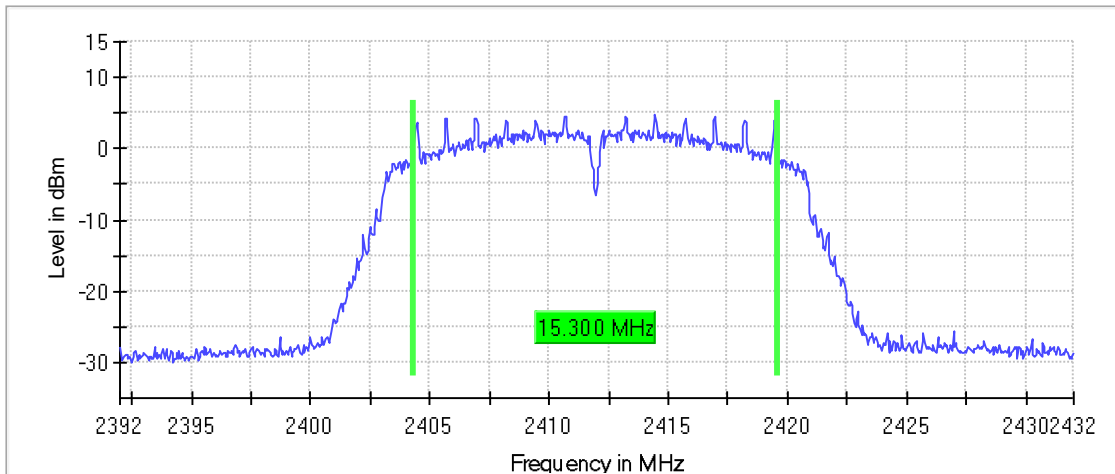
2412 MHz

Mode: 802.11n HT20

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2412.000000	15.300000	0.500000	2404.300000	2419.600000	4.7	PASS

6 dB Bandwidth



Plot #8

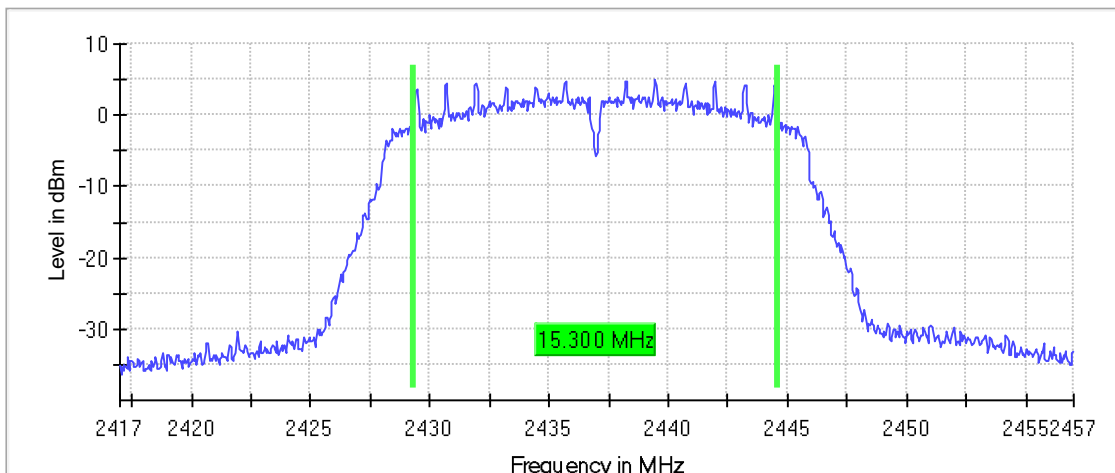
2437 MHz

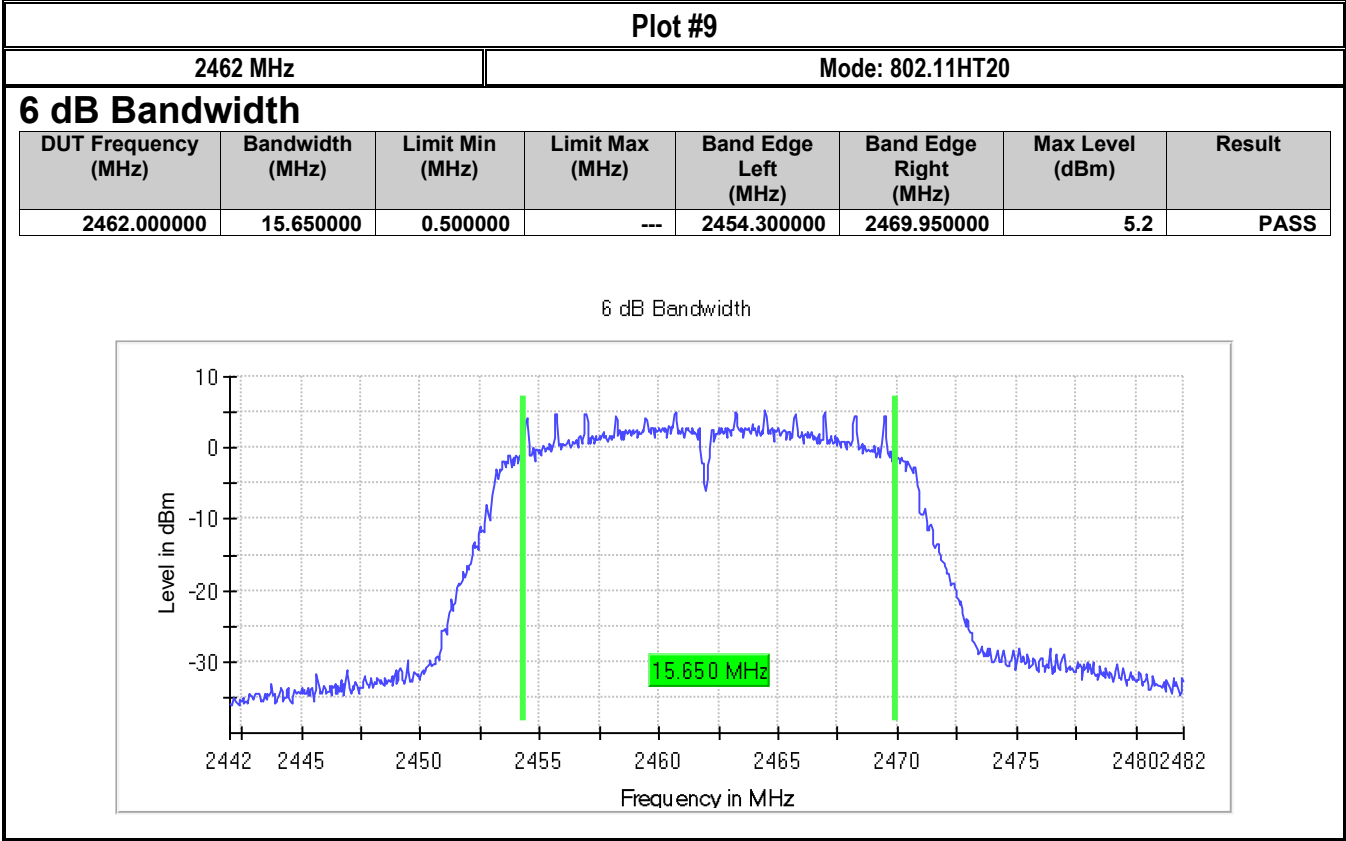
Mode: 802.11n HT20

6 dB Bandwidth

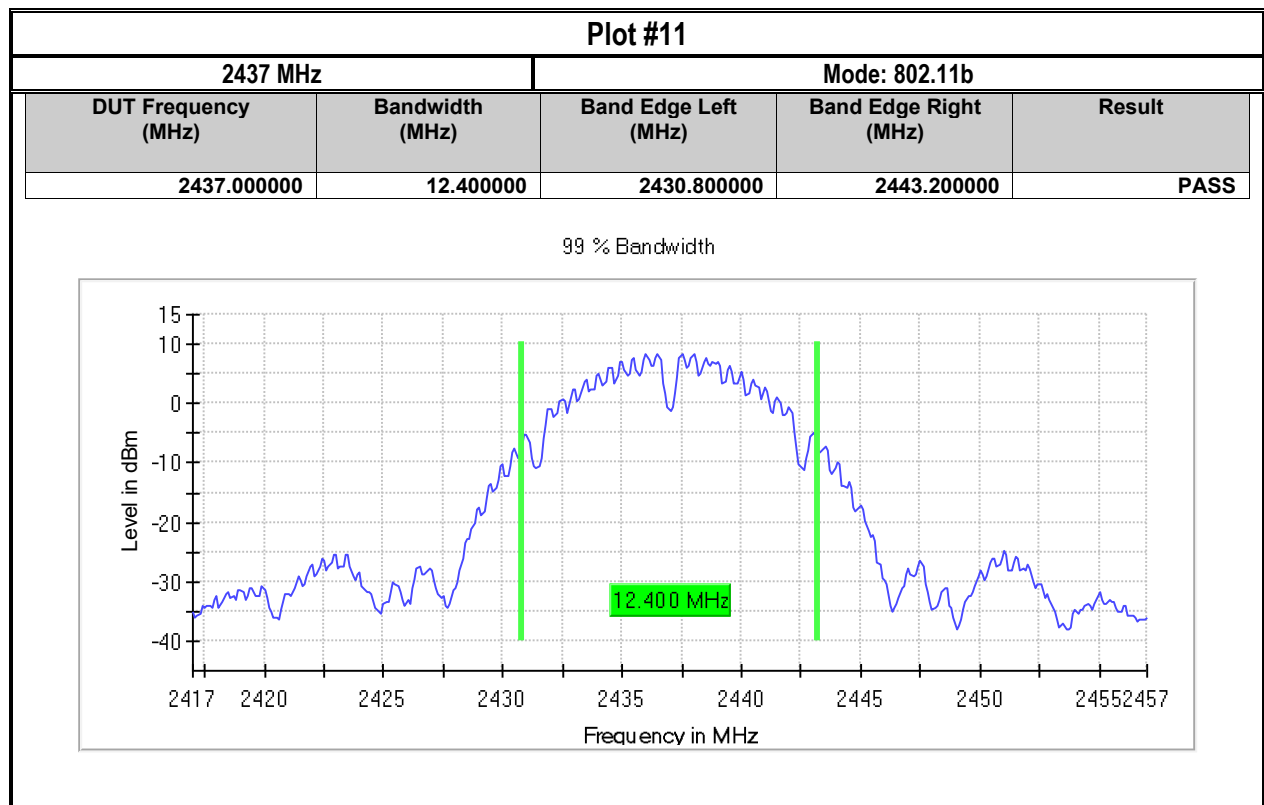
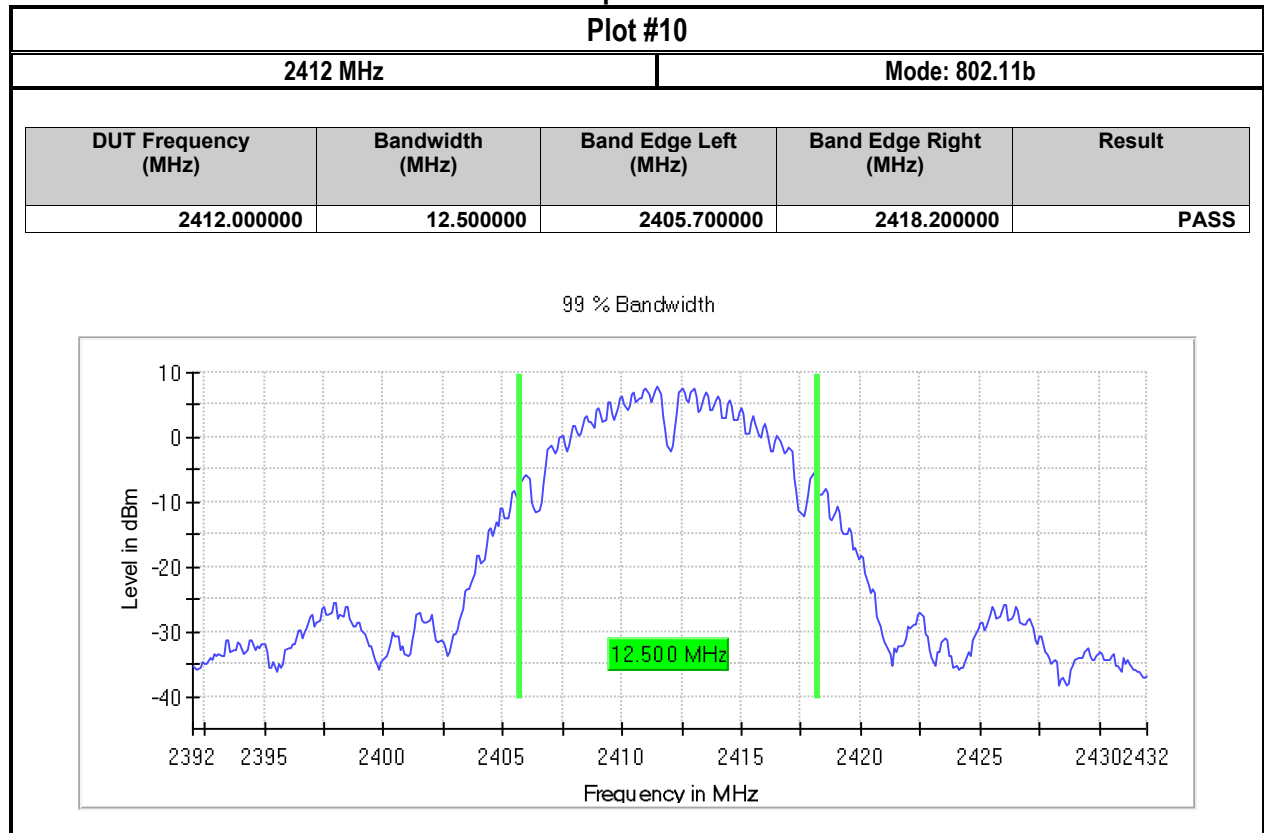
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)	Result
2437.000000	15.300000	0.500000	2429.300000	2444.600000	5.0	PASS

6 dB Bandwidth

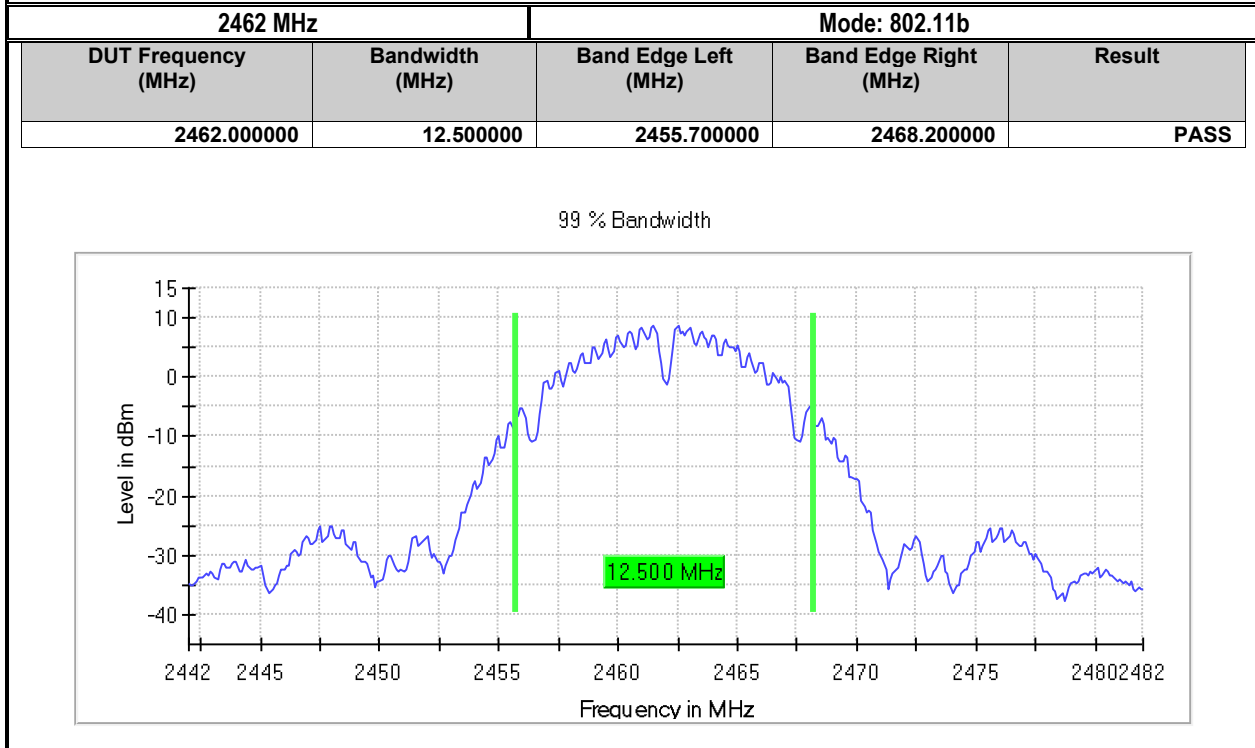




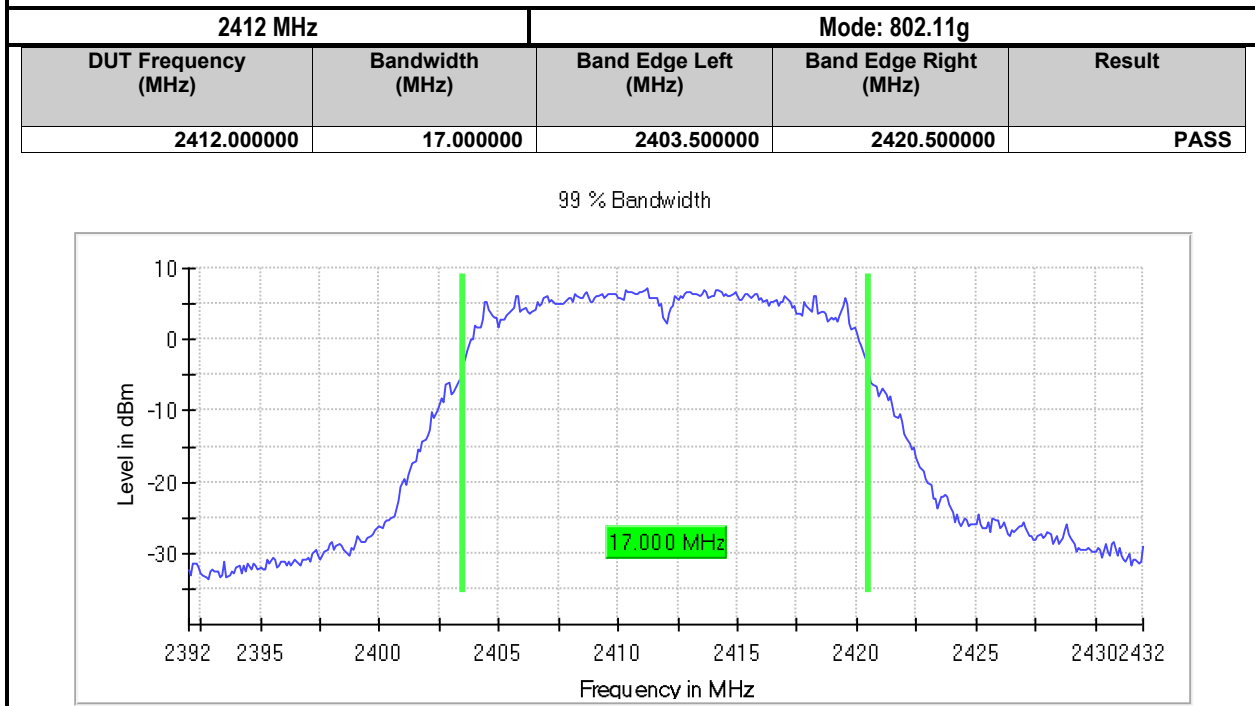
99% Occupied Bandwidth



Plot #12



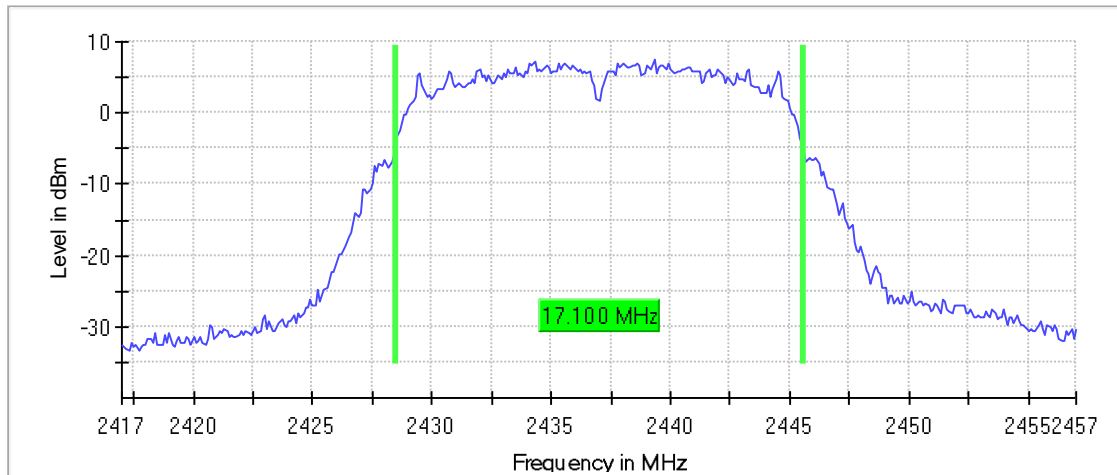
Plot #13



Plot #14

2437 MHz		Mode: 802.11g		
DUT Frequency (MHz)	Bandwidth (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Result
2437.000000	17.100000	2428.500000	2445.600000	PASS

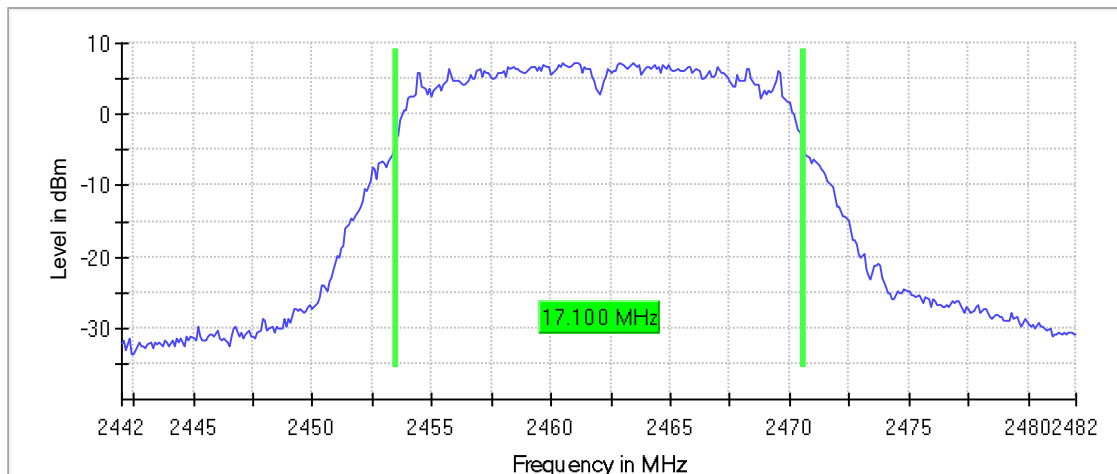
99 % Bandwidth



Plot #15

2462 MHz		Mode: 802.11g		
DUT Frequency (MHz)	Bandwidth (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Result
2462.000000	17.100000	2453.500000	2470.600000	PASS

99 % Bandwidth



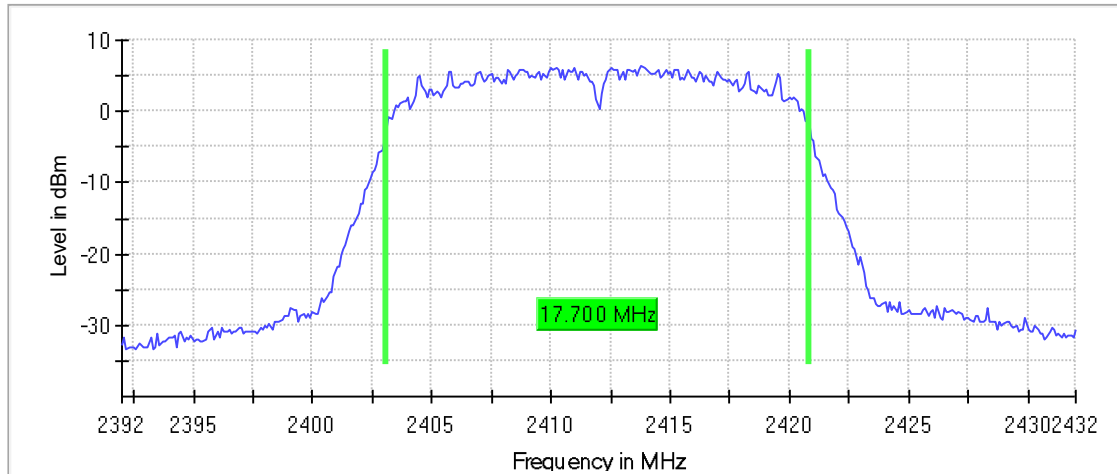
Plot #16

2412 MHz

Mode: 802.11n HT20

DUT Frequency (MHz)	Bandwidth (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Result
2412.000000	17.700000	2403.100000	2420.800000	PASS

99 % Bandwidth



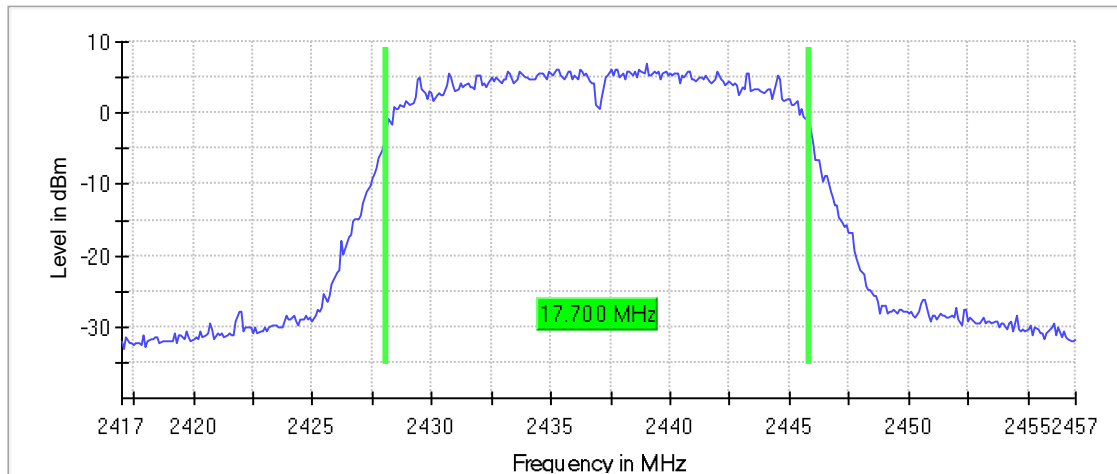
Plot #17

2437 MHz

Mode: 802.11n HT20

DUT Frequency (MHz)	Bandwidth (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Result
2437.000000	17.700000	2428.100000	2445.800000	PASS

99 % Bandwidth



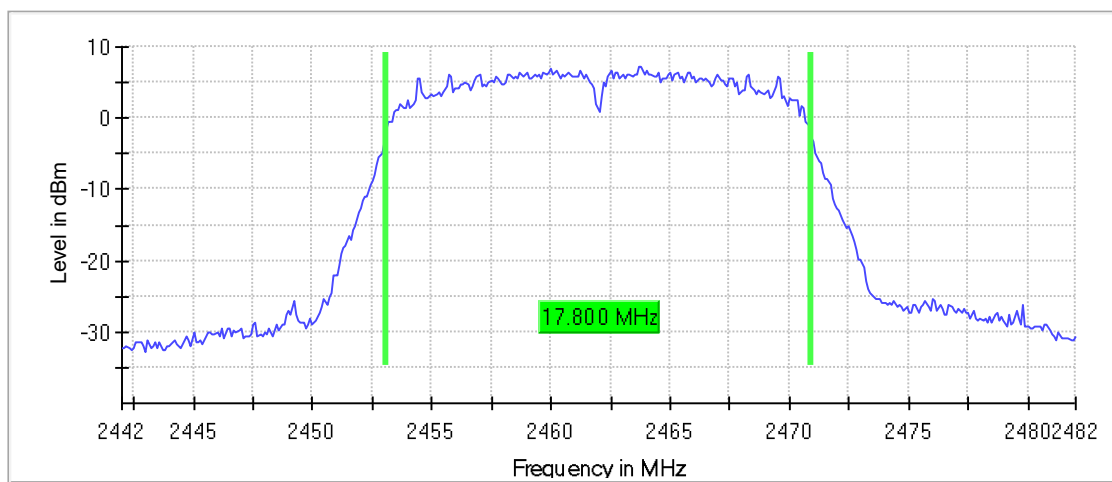
Plot #18

2462 MHz

Mode: 802.11HT20

DUT Frequency (MHz)	Bandwidth (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Result
2462.000000	17.800000	2453.100000	2470.900000	PASS

99 % Bandwidth



8.6 Radiated Transmitter Spurious Emissions and Restricted Bands

8.6.1 Measurement according to ANSI C63.10 (2020)

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 frequencies below 30 MHz at distance other than the specified in the standard, the limit conversion is calculated by using the FCC materials for the ANSI 63 committee issued on January, 27 1991.

8.6.2 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

- 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

- 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
10.495-0.505	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

8.6.3 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input
22.0° C	1	802.11b	120Vac

8.6.4 Measurement result:

Plot #	Channel #	Scan Frequency	Limit	Result
1-5	Low	9 kHz – 26 GHz	See section 8.6.2	Pass
6-10	Mid	9 kHz – 26 GHz	See section 8.6.2	Pass
11-15	High	9 kHz – 26 GHz	See section 8.6.2	Pass

8.6.5 Measurement Plots:

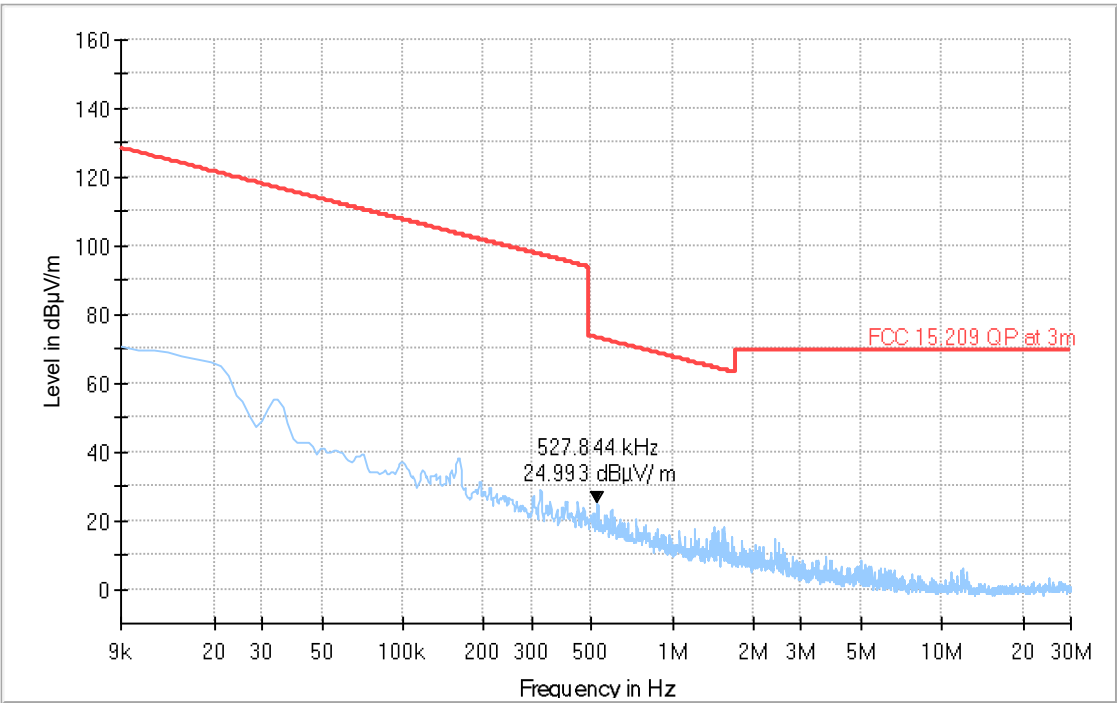
Plot # 1 Radiated Emissions: 9 KHz – 30 MHz

Tx Frequency: 2412 MHz

Modulation: 802.11b

Final_Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBμV)
---	---	---	---	---	---	---		---	---	---	---	---	---



AVG_MAXH
Critical_Freqs PK+
PK+_MAXH
FCC 15.209 QP at 3m
Critical_Freqs AVG
Final_Result QPK

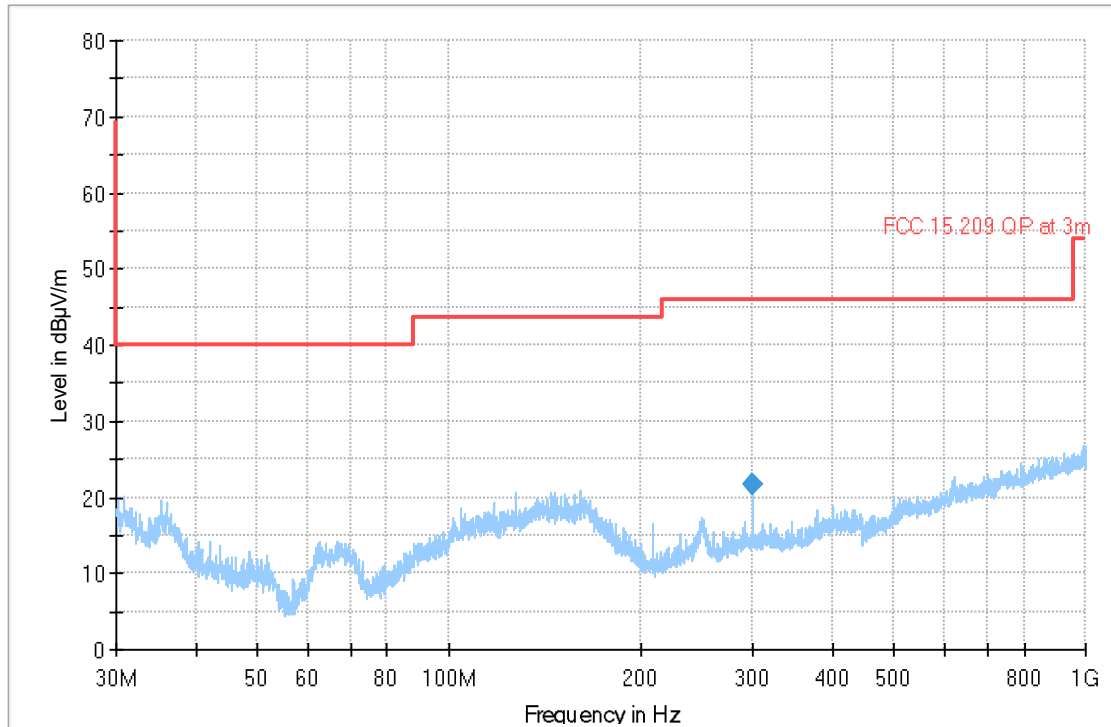
Plot # 2 Radiated Emissions: 30 – 1000MHz

Tx Frequency: 2412 MHz

Modulation: 802.11b

Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBμV)
299.998	21.587	46.02	24.43	500.0	120.0	302.0	V	186.0	-13.5	-33.8	0.0	20.3	35.1



— AVG_MAXH — PK+_MAXH — FCC 15.209 QP at 3m ◆ Final_Result QPK

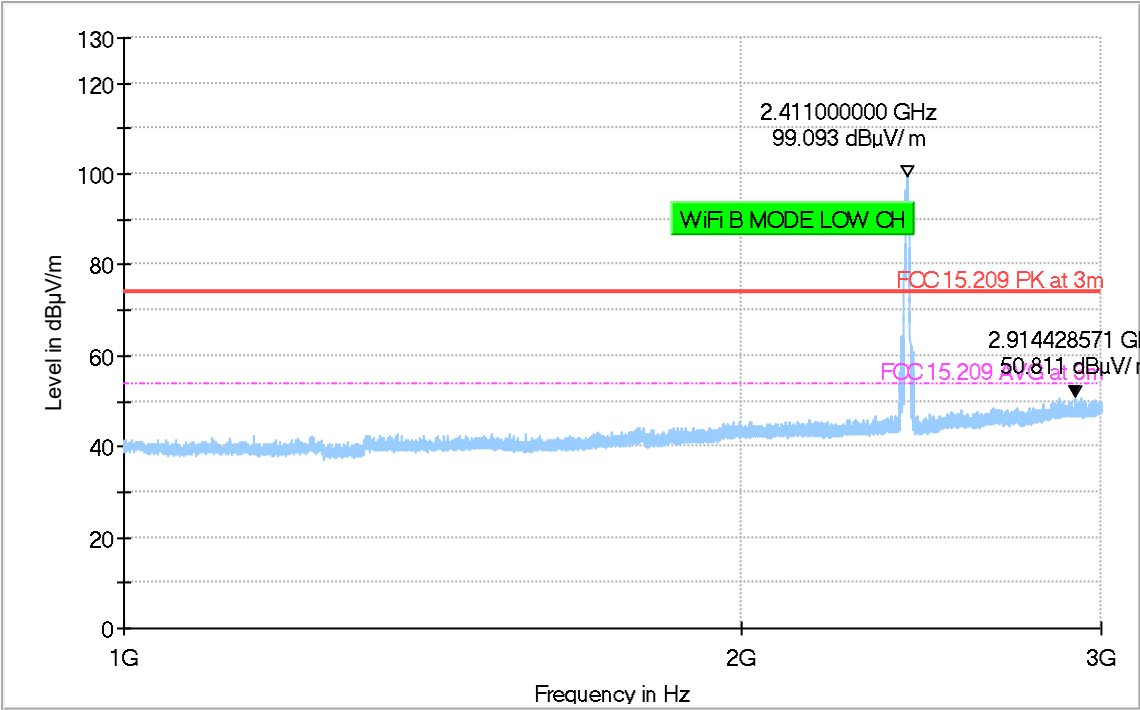
Plot # 3 Radiated Emissions: 1 – 3 GHz

Tx Frequency: 2412 MHz

Modulation: 802.11b

Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)



AVG_MAXH
FCC 15.209 AVG at 3m

PK+_MAXH
Final_Result PK+

FCC 15.209 PK at 3m
Final_Result CAV

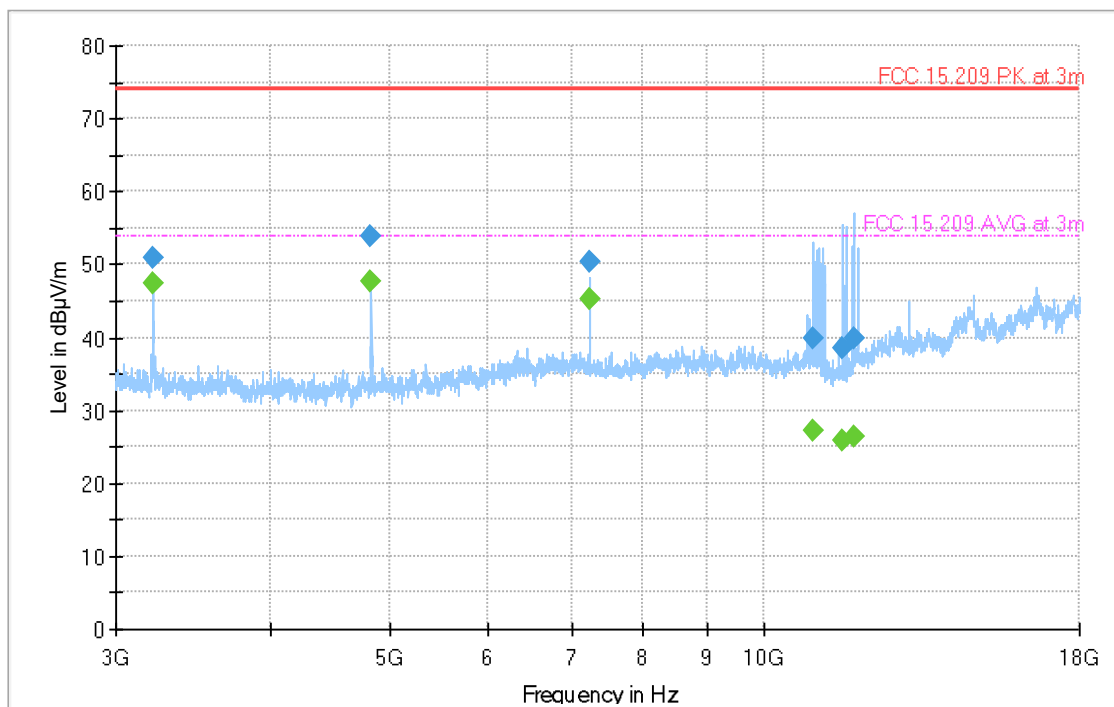
Plot # 4 Radiated Emissions: 3 - 18 GHz

Tx Frequency: 2412 MHz

Modulation: 802.11b

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBμV)
3215.951	50.874	---	73.98	23.11	500.0	1000.0	205.0	H	2.0	-7.7	5.5	-45.9	32.7	58.6
3215.951	---	47.304	53.98	6.67	500.0	1000.0	205.0	H	2.0	-7.7	5.5	-45.9	32.7	55.0
4823.895	---	47.784	53.98	6.20	500.0	1000.0	305.0	H	359.0	-4.8	6.8	-45.7	34.1	52.6
4823.895	53.889	---	73.98	20.09	500.0	1000.0	305.0	H	359.0	-4.8	6.8	-45.7	34.1	58.7
7234.500	---	45.209	53.98	8.77	500.0	1000.0	134.0	H	7.0	-2.1	8.9	-46.9	35.9	47.3
7234.500	50.415	---	73.98	23.56	500.0	1000.0	134.0	H	7.0	-2.1	8.9	-46.9	35.9	52.5
10966.870	---	27.255	53.98	26.72	500.0	1000.0	180.0	H	16.0	2.4	11.0	-46.7	38.1	24.9
10966.870	39.924	---	73.98	34.06	500.0	1000.0	180.0	H	16.0	2.4	11.0	-46.7	38.1	37.5
11595.739	---	25.811	53.98	28.17	500.0	1000.0	276.0	H	48.0	2.5	11.1	-46.7	38.0	23.3
11595.739	38.570	---	73.98	35.41	500.0	1000.0	276.0	H	48.0	2.5	11.1	-46.7	38.0	36.1
11819.750	39.781	---	73.98	34.20	500.0	1000.0	251.0	H	7.0	3.6	11.5	-46.2	38.4	36.1
11819.750	---	26.434	53.98	27.55	500.0	1000.0	251.0	H	7.0	3.6	11.5	-46.2	38.4	22.8



AVG_MAXH
FCC 15.209 AVG at 3m

PK+_MAXH
Final_Result PK+

FCC 15.209 PK at 3m
Final_Result CAV

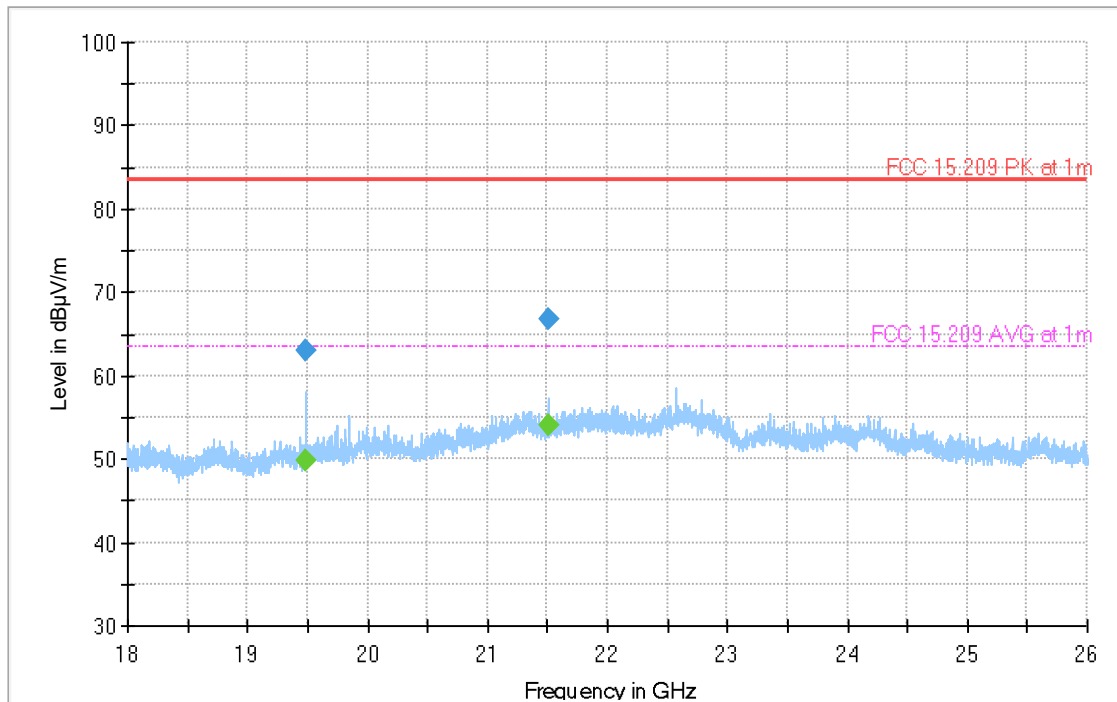
Plot # 5 Radiated Emissions: 18 - 26GHz

Tx Frequency: 2412 MHz

Modulation: 802.11b

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBμV)
19480.750	63.088	---	83.50	20.41	500.0	1000.0	250.0	V	282.0	14.9	9.2	0.0	5.7	48.1
19480.750	---	49.706	63.50	13.79	500.0	1000.0	250.0	V	282.0	14.9	9.2	0.0	5.7	34.8
21502.250	66.854	---	83.50	16.65	500.0	1000.0	100.0	V	297.0	18.5	9.2	0.0	9.2	48.4
21502.250	---	54.037	63.50	9.46	500.0	1000.0	100.0	V	297.0	18.5	9.2	0.0	9.2	35.6



— AVG_MAXH — PK+_MAXH — FCC 15.209 PK at 1m
- - - FCC 15.209 AVG at 1m ◆ Final_Result PK+ ◆ Final_Result CAV

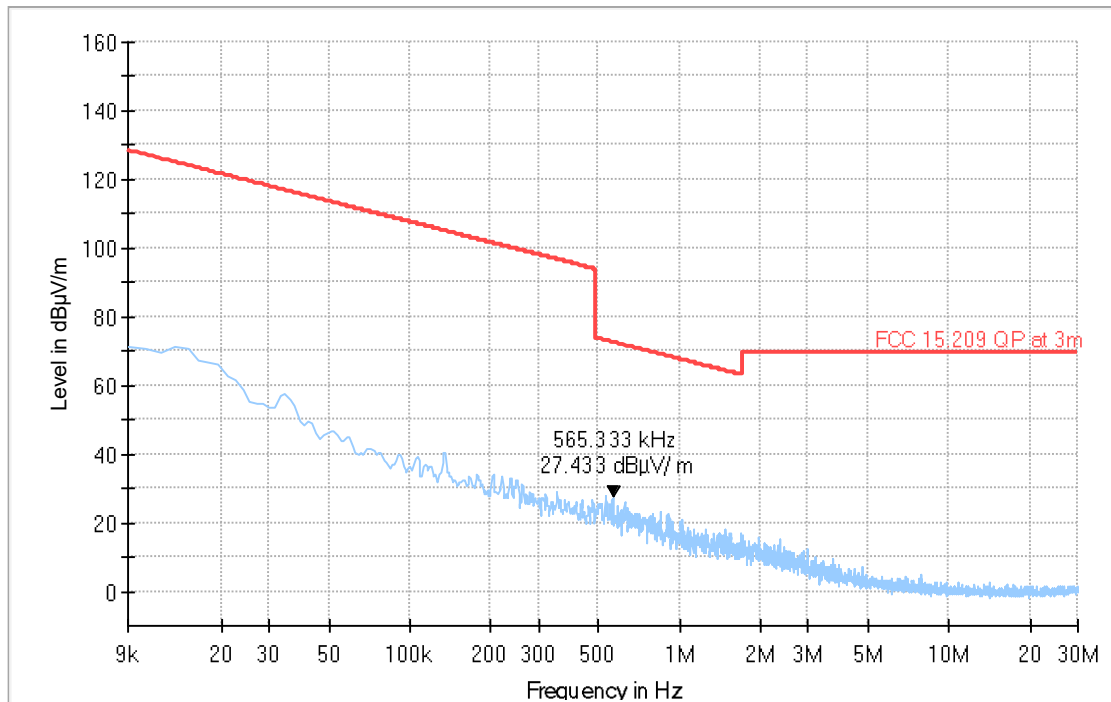
Plot # 6 Radiated Emissions: 9 KHz – 30 MHz

Tx Frequency: 2437 MHz

Modulation: 802.11b

Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBμV)
---	---	---	---	---	---	---	---	---	---	---	---	---	---



— AVG_MAXH
* Critical_Freqs PK+
— PK+ MAXH
— FCC 15.209 QP at 3m
* Critical_Freqs AVG
◆ Final_Result QPK

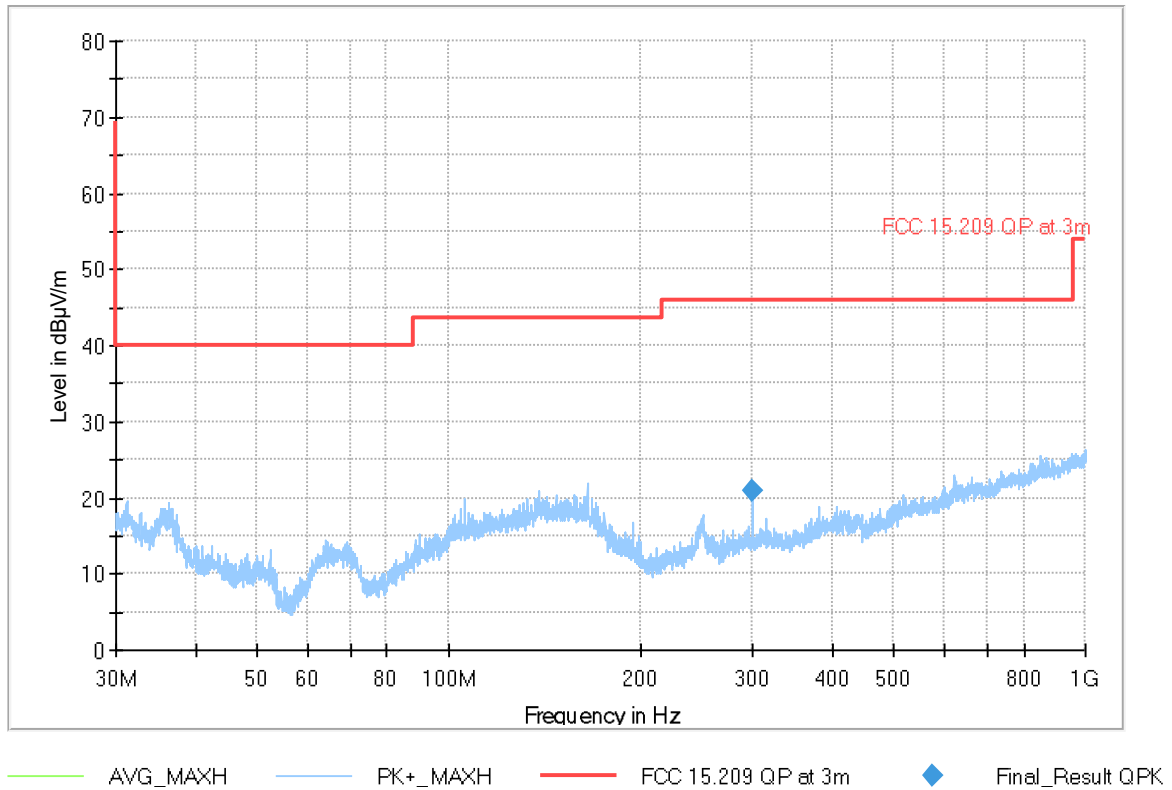
Plot # 7 Radiated Emissions: 30 – 1000MHz

Tx Frequency: 2437 MHz

Modulation: 802.11b

Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBμV)
300.000	20.971	46.02	25.05	500.0	120.0	100.0	V	41.0	-13.5	-33.8	0.0	20.3	34.5



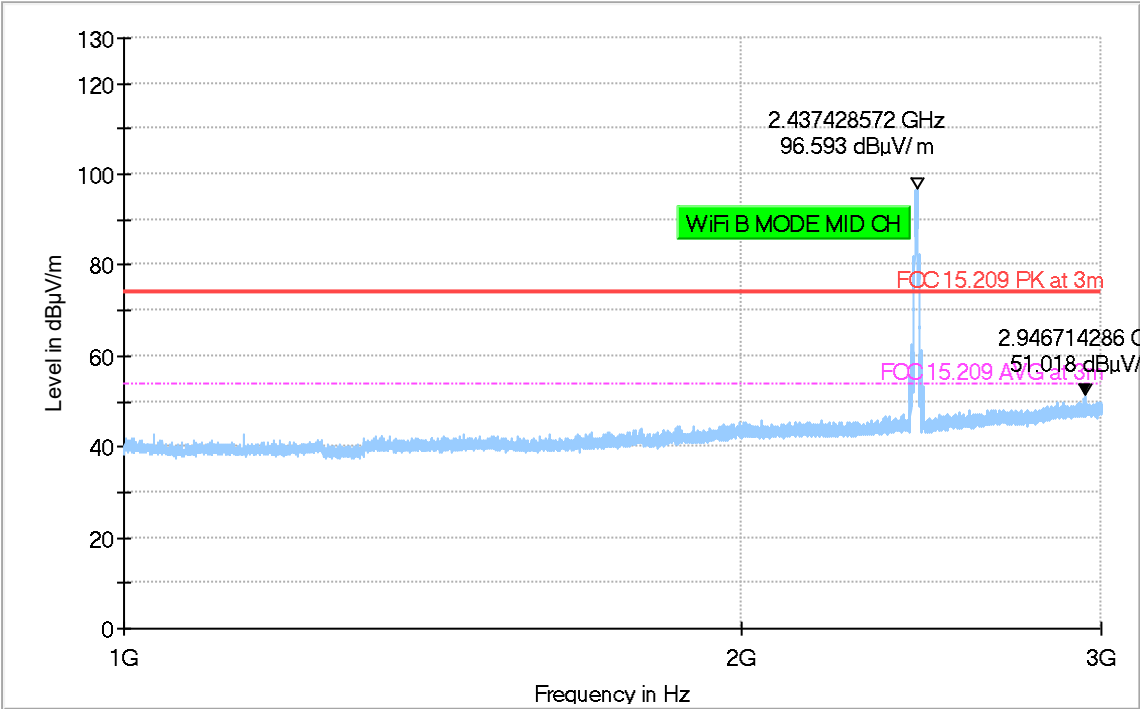
Plot # 8 Radiated Emissions: 1 – 3 GHz

Tx Frequency: 2437 MHz

Modulation: 802.11b

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBµV)
---	---	---	---	---	---	---	---	---	---	---	---	---	---



— AVG_MAXH
— FCC 15.209 AVG at 3m

— PK+_MAXH
◆ Final_Result PK+

— FCC 15.209 PK at 3m
◆ Final_Result CAV

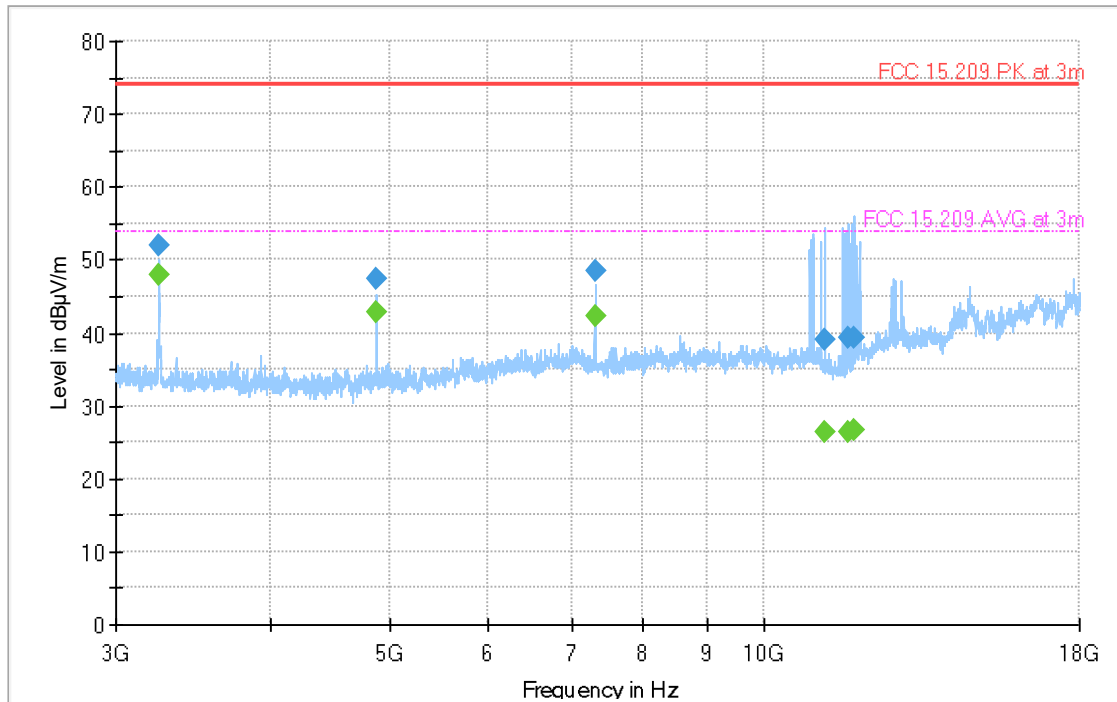
Plot # 9 Radiated Emissions: 3 - 18 GHz

Tx Frequency: 2437 MHz

Modulation: 802.11b

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBμV)
3249.250	---	47.880	53.98	6.10	500.0	1000.0	223.0	H	353.0	-7.7	5.6	-45.9	32.6	55.5
3249.250	51.859	---	73.98	22.12	500.0	1000.0	223.0	H	353.0	-7.7	5.6	-45.9	32.6	59.5
4873.880	47.291	---	73.98	26.69	500.0	1000.0	267.0	H	-11.0	-4.7	7.0	-45.9	34.1	52.0
4873.880	---	42.931	53.98	11.05	500.0	1000.0	267.0	H	-11.0	-4.7	7.0	-45.9	34.1	47.7
7311.864	---	42.179	53.98	11.80	500.0	1000.0	136.0	H	8.0	-1.7	9.0	-46.6	35.9	43.8
7311.864	48.544	---	73.98	25.44	500.0	1000.0	136.0	H	8.0	-1.7	9.0	-46.6	35.9	50.2
11227.500	---	26.349	53.98	27.63	500.0	1000.0	121.0	H	-40.0	2.4	10.7	-46.0	37.7	23.9
11227.500	38.943	---	73.98	35.04	500.0	1000.0	121.0	H	-40.0	2.4	10.7	-46.0	37.7	36.5
11705.750	39.404	---	73.98	34.58	500.0	1000.0	100.0	H	11.0	3.1	11.3	-46.4	38.2	36.3
11705.750	---	26.293	53.98	27.69	500.0	1000.0	100.0	H	11.0	3.1	11.3	-46.4	38.2	23.2
11835.250	---	26.682	53.98	27.30	500.0	1000.0	238.0	H	313.0	3.8	11.6	-46.1	38.4	22.9
11835.250	39.367	---	73.98	34.61	500.0	1000.0	238.0	H	313.0	3.8	11.6	-46.1	38.4	35.6



AVG_MAXH
FCC 15.209 AVG at 3m

PK+_MAXH
Final_Result PK+

FCC 15.209 PK at 3m
Final_Result CAV

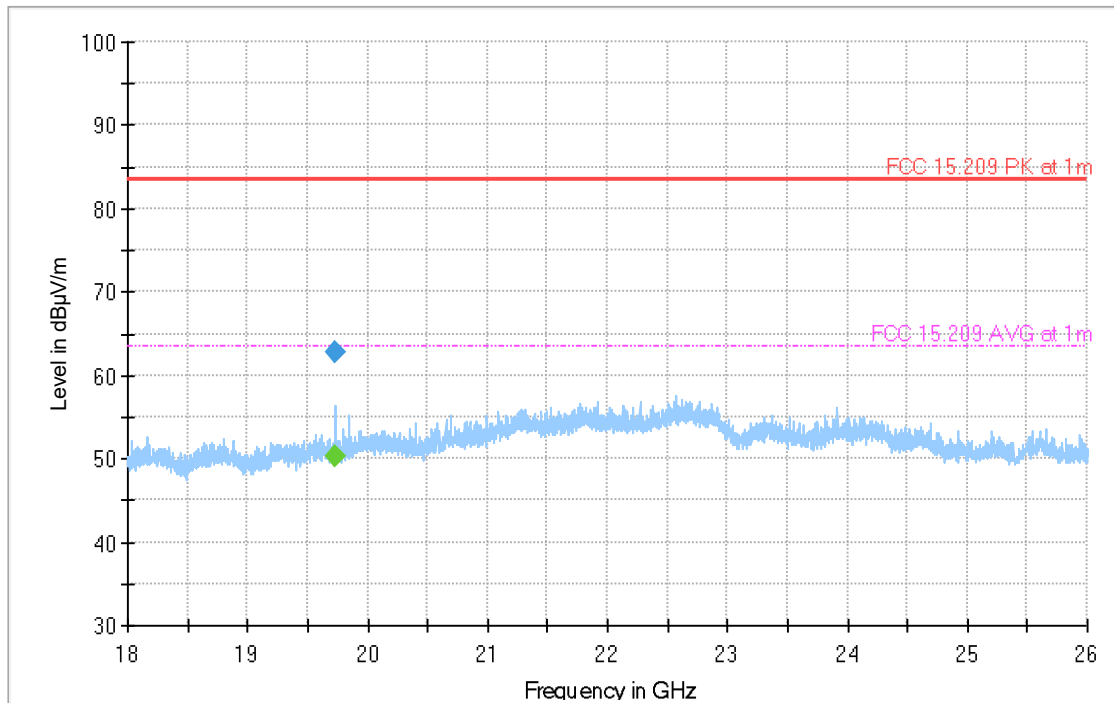
Plot # 10 Radiated Emissions: 18 - 26GHz

Tx Frequency: 2437 MHz

Modulation: 802.11b

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBμV)
19731.000	---	50.156	63.50	13.34	500.0	1000.0	175.0	V	-42.0	15.4	9.1	0.0	6.2	34.8
19731.000	62.769	---	83.50	20.73	500.0	1000.0	175.0	V	-42.0	15.4	9.1	0.0	6.2	47.4



— AVG_MAXH
--- FCC 15.209 AVG at 1m
— PK+_MAXH
◆ Final_Result PK+
— FCC 15.209 PK at 1m
◆ Final_Result CAV

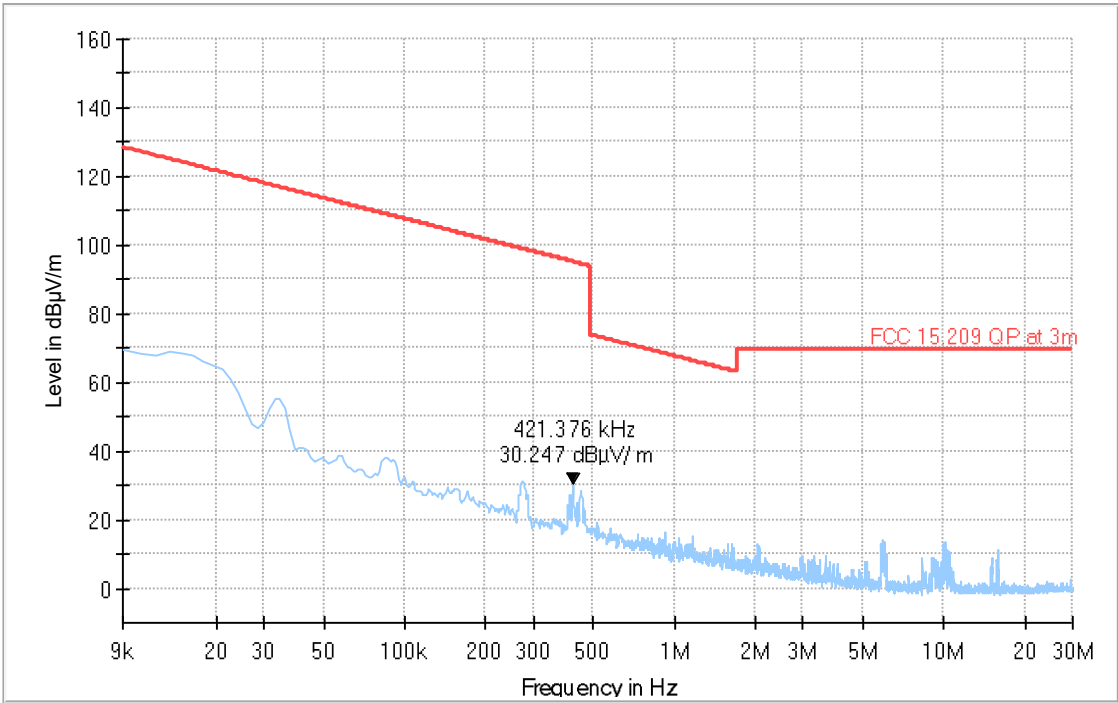
Plot # 11 Radiated Emissions: 9 KHz – 30 MHz

Tx Frequency: 2462 MHz

Modulation: 802.11b

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBµV)
---	---	---	---	---	---	---	---	---	---	---	---	---	---



AVG_MAXH
Critical_Freqs PK+
PK+_MAXH
FCC 15.209 QP at 3m
Critical_Freqs AVG
Final_Result QPK

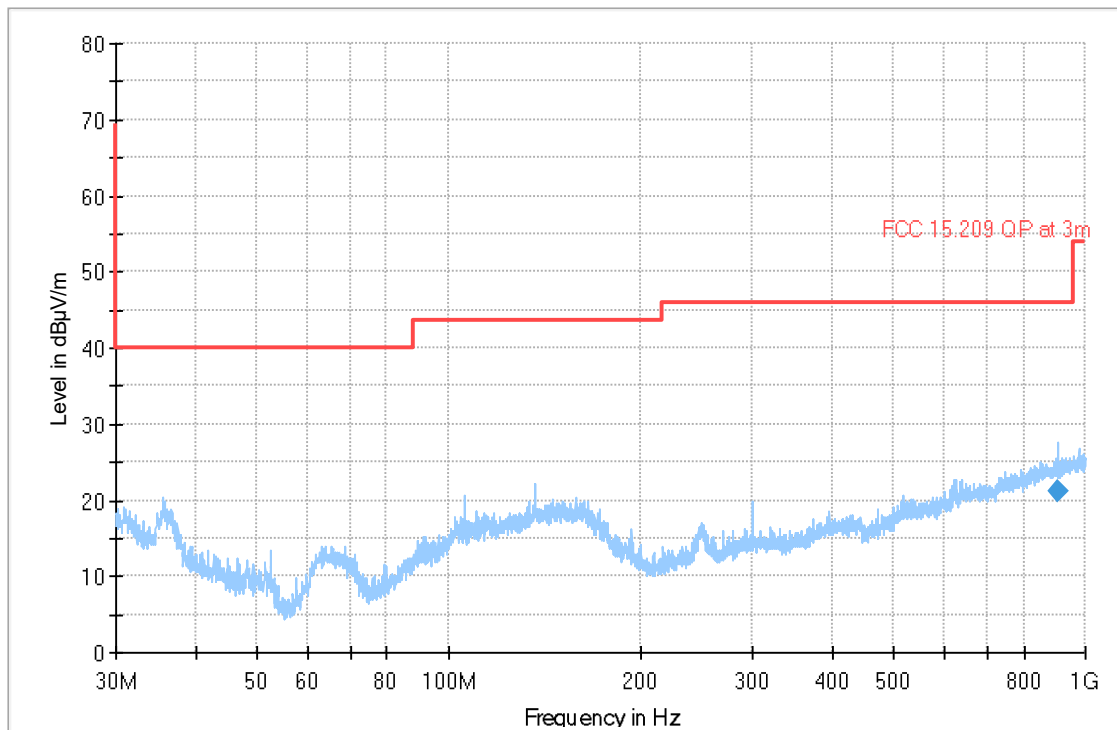
Plot # 12 Radiated Emissions: 30 – 1000MHz

Tx Frequency: 2462 MHz

Modulation: 802.11b

Final Result

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBμV)
906.451	21.228	46.02	24.79	500.0	120.0	134.0	V	350.0	-3.3	-32.0	0.0	28.7	24.5



— AVG_MAXH — PK+_MAXH — FCC 15.209 QP at 3m ◆ Final_Result QPK

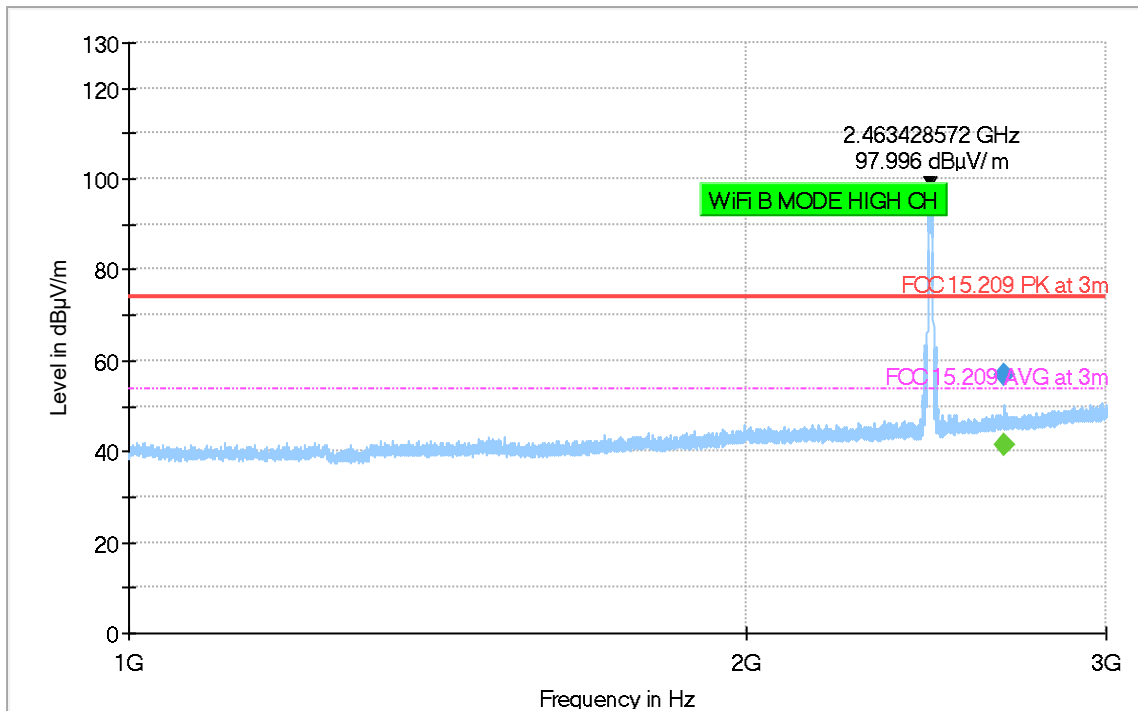
Plot # 13 Radiated Emissions: 1 – 3 GHz

Tx Frequency: 2462 MHz

Modulation: 802.11b

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBμV)
2677.585	56.790	---	73.98	17.19	500.0	1000.0	284.0	V	210.0	34.6	5.8	0.0	28.9	22.2
2677.585	---	41.582	53.98	12.40	500.0	1000.0	284.0	V	210.0	34.6	5.8	0.0	28.9	7.0



— AVG_MAXH
- - - FCC 15.209 AVG at 3m
 — PK+_MAXH
◆ Final_Result PK+
 — FCC 15.209 PK at 3m
◆ Final_Result CAV

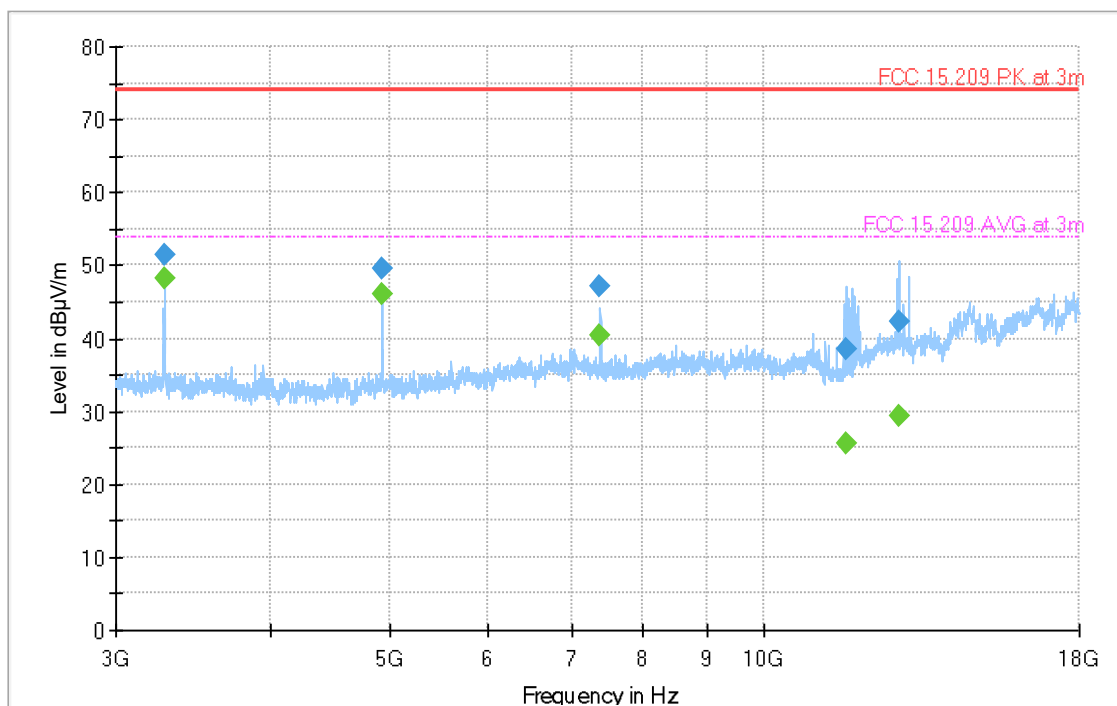
Plot # 14 Radiated Emissions: 3 - 18 GHz

Tx Frequency: 2462 MHz

Modulation: 802.11b

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	CAverage	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBμV)
3282.595	51.395	---	73.98	22.58	500.0	1000.0	167.0	H	353.0	-7.7	5.6	-45.9	32.6	59.1
3282.595	---	48.162	53.98	5.82	500.0	1000.0	167.0	H	353.0	-7.7	5.6	-45.9	32.6	55.9
4923.981	49.587	---	73.98	24.39	500.0	1000.0	129.0	H	347.0	-4.6	7.1	-45.8	34.1	54.2
4923.981	---	46.182	53.98	7.80	500.0	1000.0	129.0	H	347.0	-4.6	7.1	-45.8	34.1	50.8
7384.250	---	40.286	53.98	13.69	500.0	1000.0	100.0	H	4.0	-1.4	9.2	-46.4	35.9	41.6
7384.250	47.145	---	73.98	26.83	500.0	1000.0	100.0	H	4.0	-1.4	9.2	-46.4	35.9	48.5
11679.250	---	25.686	53.98	28.29	500.0	1000.0	121.0	V	45.0	3.0	11.2	-46.4	38.2	22.6
11679.250	38.442	---	73.98	35.54	500.0	1000.0	121.0	V	45.0	3.0	11.2	-46.4	38.2	35.4
12878.750	---	29.308	53.98	24.67	500.0	1000.0	226.0	H	359.0	7.6	12.5	-44.0	39.0	21.7
12878.750	42.342	---	73.98	31.64	500.0	1000.0	226.0	H	359.0	7.6	12.5	-44.0	39.0	34.7



AVG_MAXH
FCC 15.209 AVG at 3m

PK+_MAXH
Final_Result PK+

FCC 15.209 PK at 3m
Final_Result CAV

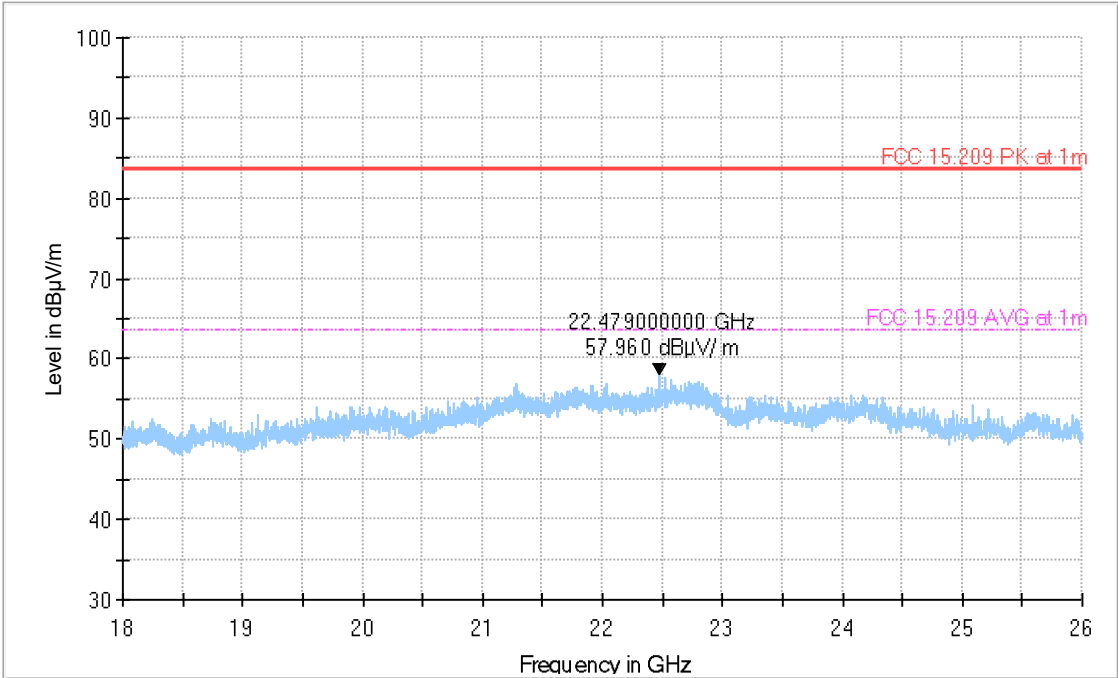
Plot # 15 Radiated Emissions: 18 - 26GHz

Tx Frequency: 2462 MHz

Modulation: 802.11b

Result

Frequency (MHz)	MaxPeak (dBµV/m)	CAverage	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)
---	---	---	---	---	---	---	---		---	---	---	---	---



- AVG_MAXH
- *

Critical_Freqs PK+
- ◆

Final_Result PK+
- PK+_MAXH
- FCC 15.209 PK at 1m
- ◆

Final_Result CAV
- *

Critical_Freqs AVG
- FCC 15.209 AVG at 1m

8.7 AC Power Line Conducted Emissions

8.7.1 Measurement according to ANSI C63.4 (2014)

Analyzer Settings:

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

8.7.2 Limits: §15.207

FCC §15.207(a)

- 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 μ H/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 (dB μ V)	
	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.

8.7.3 Test conditions and setup:

Ambient Temperature ©	EUT Set-Up #	EUT operating mode	Power line (L1, L2, L3, N)	Power Input
22° C	1	802.11b	Line & Neutral	120V / 60Hz

8.7.4 Measurement Result:

Plot #	Port	EUT Set-Up #:	EUT operating mode	Scan Frequency	Limit	Result
16	AC Mains	1	802.11b	150 kHz – 30 MHz	See section 8.3.2	Pass

8.7.5 Measurement Plots:

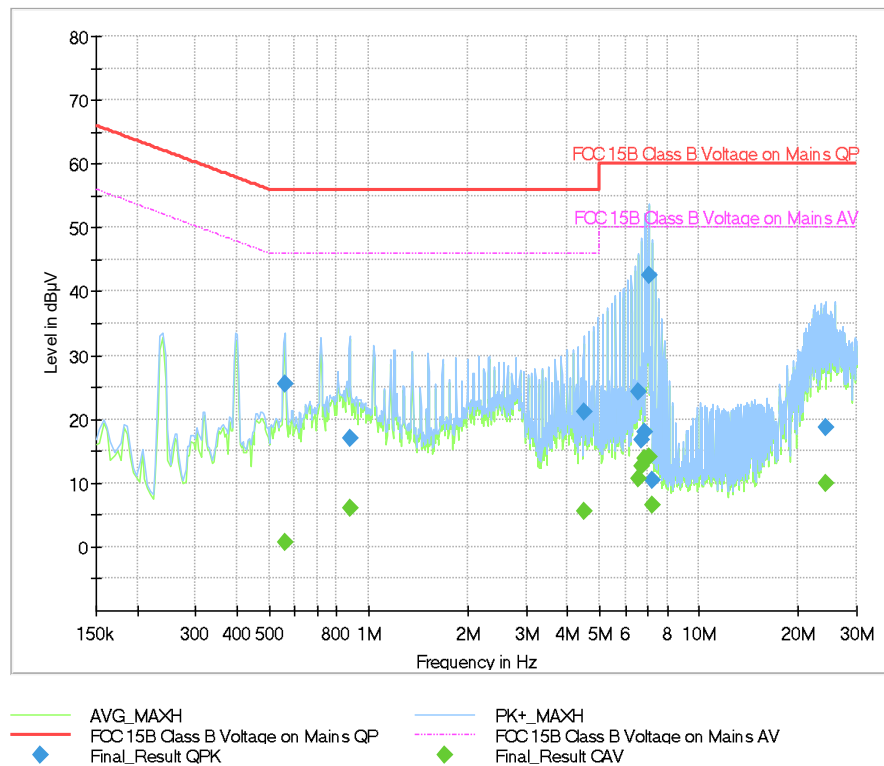
Plot # 16 AC/DC Conducted Emissions: 150kHz – 30MHz

Tx Frequency: 2437 MHz

Modulation: 802.11b

Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin	Meas. Time (ms)	Bandwidth (h)	Line	PE	Corr. (dB)
0.557	25.60	---	56.00	30.40	1000.0	9.0	N	GND	9.9
0.557	---	0.72	46.00	45.28	1000.0	9.0	N	GND	9.9
0.876	16.91	---	56.00	39.09	1000.0	9.0	N	GND	9.9
0.876	---	6.07	46.00	39.93	1000.0	9.0	N	GND	9.9
4.474	---	5.56	46.00	40.44	1000.0	9.0	L1	GND	9.9
4.478	21.22	---	56.00	34.78	1000.0	9.0	L1	GND	9.9
6.556	24.22	---	60.00	35.78	1000.0	9.0	L1	GND	9.9
6.556	---	10.75	50.00	39.25	1000.0	9.0	L1	GND	9.9
6.713	---	12.71	50.00	37.29	1000.0	9.0	L1	GND	9.9
6.713	16.65	---	60.00	43.35	1000.0	9.0	L1	GND	9.9
6.874	---	13.84	50.00	36.16	1000.0	9.0	L1	GND	9.9
6.874	18.06	---	60.00	41.94	1000.0	9.0	L1	GND	9.9
7.036	---	14.19	50.00	35.81	1000.0	9.0	L1	GND	9.9
7.036	42.43	---	60.00	17.57	1000.0	9.0	L1	GND	9.9
7.193	10.41	---	60.00	49.59	1000.0	9.0	L1	GND	9.9
7.193	---	6.62	50.00	43.38	1000.0	9.0	L1	GND	9.9
24.135	---	10.02	50.00	39.98	1000.0	9.0	N	GND	10.1
24.135	18.63	---	60.00	41.37	1000.0	9.0	N	GND	10.1



9 Test setup photos

Setup photos are included in supporting file name: "EMC_AETHE_001_25001_15.247_DTS_Setup_Photos.pdf"

10 Test Equipment And Ancillaries Used For Testing

Equipment Type	Manufacturer	Model	Serial #	Calibration Cycle	Last Calibration Date
Active Monopole	Com-Power Corp.	AM-741R	10200112	3 Years	11/09/2023
BILOG ANTENNA	A.H. SYSTEMS	BiLA2G	569	3 Years	10/30/2023
HORN ANTENNA	EMCO	3115	00035111	3 Years	10/26/2023
HORN ANTENNA	ETS LINDGREN	3117-PA	00167061	3 Years	9/25/2023
HORN ANTENNA	ETS LINDGREN	3116C-PA	00166821	3 Years	10/26/2023
ESW.EMI TEST RECEIVER	ROHDE & SCHWARZ	ESW44	101715	3 Years	10/24/2023
DIGITAL THERMOMETER	Control Company	4410,90080-03	230712972	3 Years	10/18/2023
Signal Analyzer	R&S	FSV40	101022	3 Years	09/25/2023
Multimeter	Fluke	115	56090717MV	3 Years	09/26/2023
Software	EMC32	Version 10.50.40	-	-	-

Note: 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	Prepared by
2025-09-08	EMC_AETHE_001_25001_FCC_15_247_WIFI_DTS	Initial Version	Art Thammanavarat
2025-09-15	EMC_AETHE_001_25001_FCC_15_247_WIFI_DTS_Rev1	<u>Report Revised</u> Sections: 3.2, 8.1, 8.2, 8.3, 8.4 and 8.5: Added New results. Sections 3.3 and 3.5: Updated table. Sections 5: Updated Table.	Art Thammanavarat

<<< The End >>>