



FCC / ISED Test Report

FOR:

Lennox Industries Inc.

Model Name:

30L26

Product Description:

Smart thermostat to control residential HVAC system

FCC ID: 2A6F9-E4025A

IC: 28687-E4025A

Applied Rules and Standards:

47 CFR Part 15.407 (NII) & 5 GHz (UNII)
RSS-247 Issue 4 (DTSS) & (LE-LAN), and RSS-Gen Issue 5

REPORT: EMC_LENXX_032_26001_15_407_UNII_1_Rev1

DATE: 2026-03-12



IC recognized #
3462B

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1 Assessment

The following device was evaluated against the applicable criteria specified in FCC rules Parts 15.407 of Title 47 of the Code of Federal Regulations and the relevant ISED Canada standard RSS-247.

There were no additions, deviations, or exclusions made from the test method.

Company Name	Product Description	Model No.
Lennox Industries Inc.	Smart thermostat to control residential HVAC system	30L26

Report Authorized by:

Responsible for testing Laboratory:

2026-03-12	Compliance	Alvin, Ilarina (Director of EMC Services)	Alvin ILARINA Digitally signed by Alvin ILARINA Date: 2026.03.12 16:44:11 -07'00'
Date	Section	Name	Signature

Responsible for the Report:

2026-03-12	Compliance	Cheng Song (EMC Engineer)	Cheng Song CN = Cheng Song email = cheng.song@cetecom.com C = US O = CETECOM INC. 2026.03.12 16:16:53 -07'00'
Date	Section	Name	Signature

The test results of this test report relate exclusively to the test item specified in Section3.

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:	Ruby, Hall

2.2 Identification of the Client

Client Firm/Name:	Lennox Industries Inc.
Street Address:	1600 Metrocrest Dr
City/Zip Code	Carrollton, TX 75006
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

Model No:	30L26	
HW Version:	108878	
SW Version:	04.60.0156	
FCC-ID:	2A6F9-E4025A	
IC:	28687-E4025A	
FWIN:	04.60.0156	
HVIN:	108878-01	
PMN:	Lennox E40 Smart Thermostat	
Product Description:	Smart thermostat to control residential HVAC system	
Frequency Range / number of channels:	Frequency Range (MHz)	Channel Number
	5150-5250	36-48 [4]
Modes of Operation / Channel Bandwidths:	IEEE Std. 802.11	Data Rate / MCS
	a	6-54 Mbps
	n: HT20	MCS 0-7
Radio Information:	Wi-Fi Module Model Name: Murata Model Number: LBEE59B1LV Wireless Technologies Wi-Fi 2.4GHz: 802.11 b, g, n Wi-Fi 5GHz: 802.11 a, n	
Antenna Information as declared:	Brand Name: Runshun Part No: B34X.W3.1 Type: WIFI FPC Antenna Location: Internal Peak Gain 2.4GHz: 3.9 dBi Peak Gain 5.0GHz: 2.7 dBi	
Other Radios included in the device	BTLE and Wi-Fi 2.4GHz	
Power Supply/ Rated Operating Voltage Range	Vmin: 18 Vac / Vnom: 24 Vac / Vmax: 30 Vac	
Operating Temperature Range	Low: 0 °C / High 40 °C	
Sample Revision	☐ Production Unit; ☒ Pre-Production	
EUT Dimensions	136mm x 86mm x 25mm	

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	5150 – 5850 MHz		
	802.11a	802.11n (HT20)	802.11ac
Low	16	15	N/A
Mid	16	15	N/A
High	16	15	N/A

Note: The device configures its power settings through Python and shell scripts

3.3 EUT Sample details

EUT #	Model Number	HW Version	SW Version	Notes/Comments
1	30L26	108878	04.60.0156	Radiated & 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	USB				The debug adapter (USB-UART)
3	Transformer	MGT2450	MG Electronics	69NOE197643	120Vac to 24Vac

3.5 Test Sample Configuration

EUT Set-up #	Combination of AE used for test set up	Comments
1	EUT#2+AE1,2,3	The radio of the EUT was configured to a fixed channel transmission with highest possible duty cycle using software that is not available to the end user. The external antenna was connected. 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. • EUT power by 24VAC • Radiated RF measurements were performed with EUT configured via customer provided Python script and instructions • The EUT connected to support laptop to exercise device

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 15.407 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: 2A6F9-E4025A IC ID: 28687-E4025A

5 Measurement Results Summary

[illegible]

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=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

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 3dB 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%

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

6.2 Date of Testing:

2025-10-25 – 2026-03-02

6.3 Decision Rule:

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

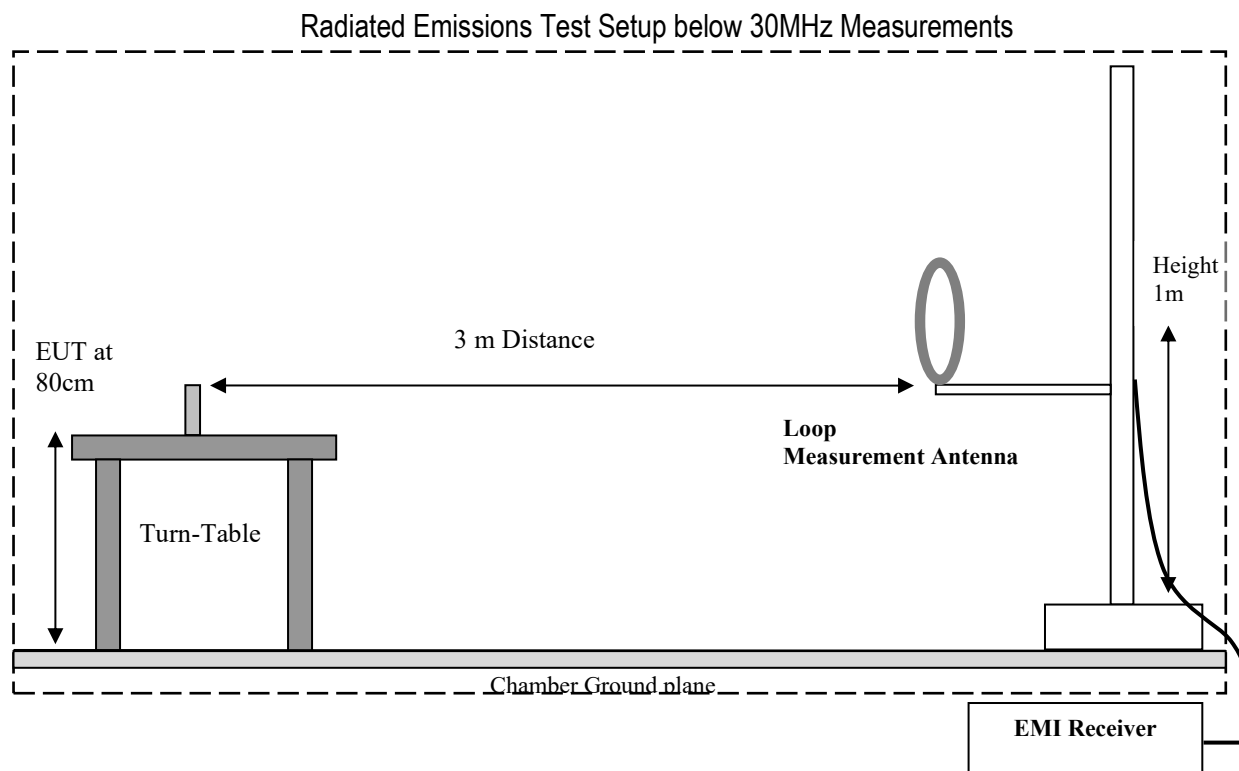
Only the measured values related to their corresponding limits will be used to decide whether the equipment under test meets the requirements of the test standards listed in chapter 3. The measurement uncertainty is mentioned in this test report, See chapter 9, but is not taken into account – neither 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

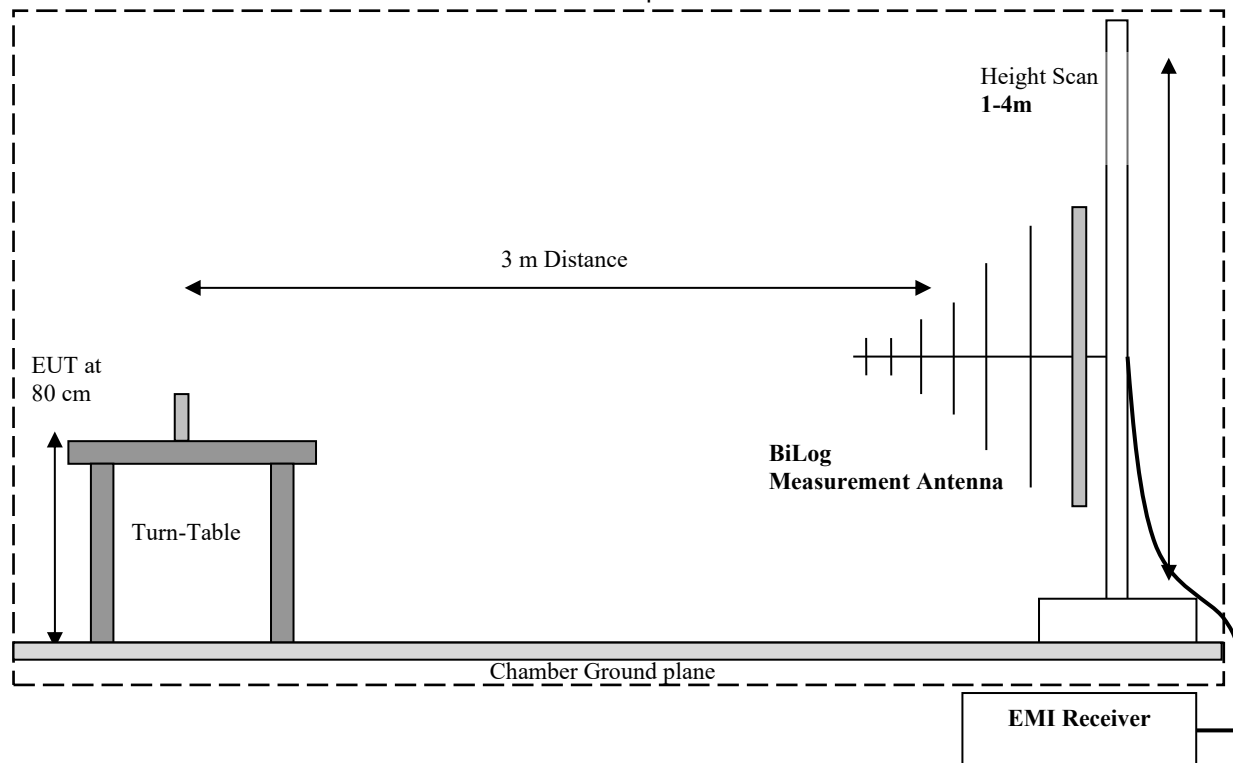
7.1 Radiated Measurement

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

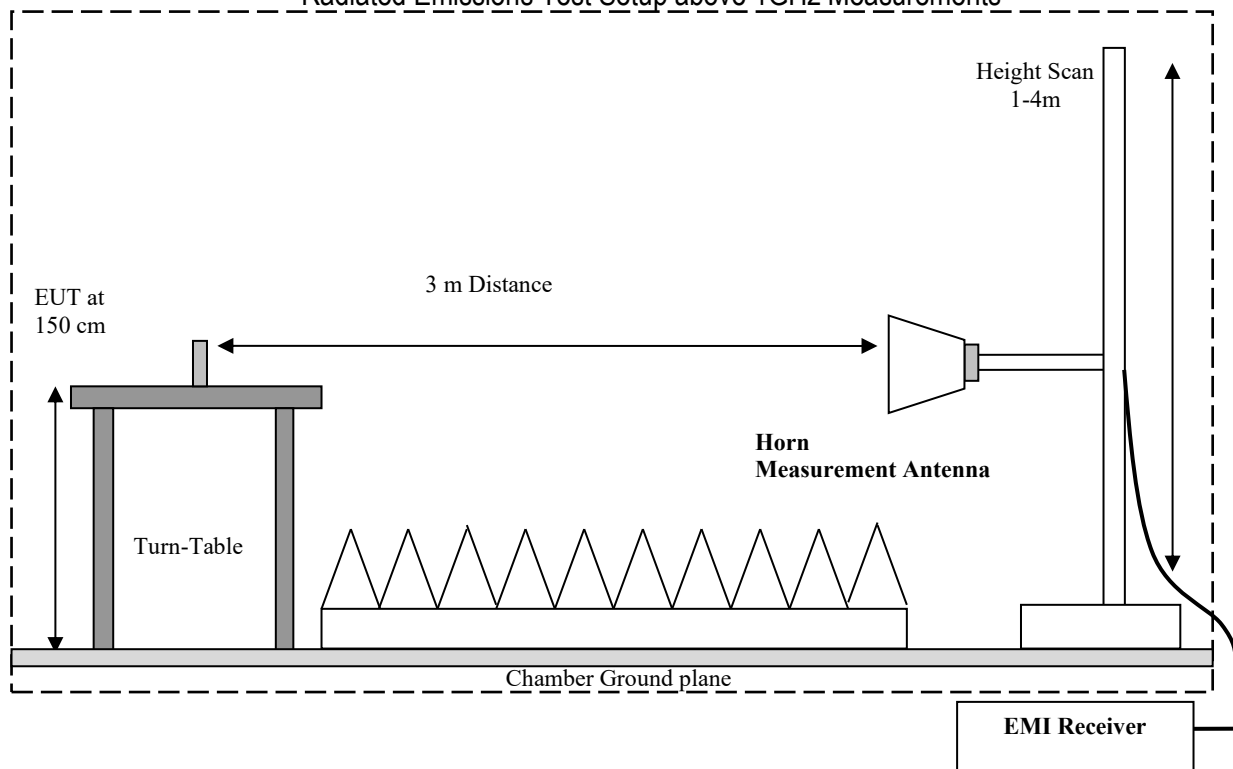
- The exploratory measurement is accomplished by running a matrix of 16 sweeps over the required frequency range with R&S Test-SW EMC32 for 4 positions of the turntable, two orthogonal positions of the EUT and both antenna polarizations. This procedure exceeds the requirement of the above standards to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

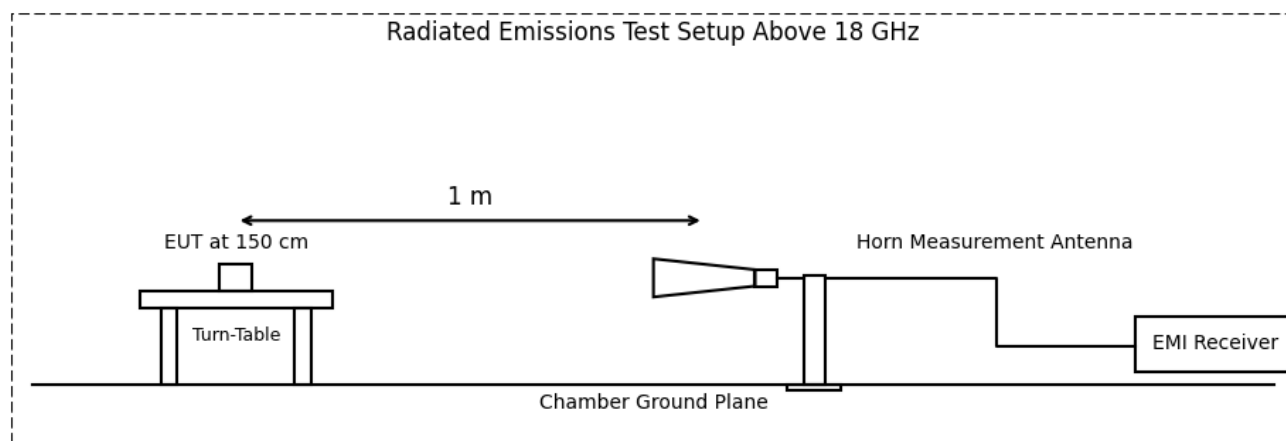


Radiated Emissions Test Setup 30MHz-1GHz Measurements



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

For measurements performed above 18 GHz, the radiated spurious emissions were investigated at a measurement distance of 1 m. Since the applicable FCC limit is referenced to 3 m, the measured result is extrapolated to an equivalent 3 m field strength using the inverse distance relationship:

$$\text{Distance Correction} = 20 \log (d_{\text{meas}} / d_{\text{ref}})$$

To convert a measurement at 1 m to an equivalent 3 m field strength

$$FS_{3m} = FS_{1m} - 9.54 \text{ dB}$$

Alternatively, the regulatory limit may be adjusted to the measurement distance

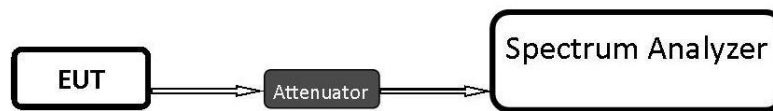
$$\text{Limit}_{1m} = \text{Limit}_{3m} + 9.54 \text{ dB}$$

7.2 Power Line Conducted Measurement Procedure

AC Power Line conducted emissions measurements performed according to: ANSI C63.10 (2020)

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 Output Power

8.1.1 Measurement according to FCC 789033 D02 General UNII Test Procedures New Rules v02r01

Spectrum Analyzer settings for method SA-1:

- Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal.
- Set RBW = 1 MHz
- Set the VBW $\geq$ 3 MHz
- Detector = RMS
- Number of points in sweep $\geq$ 2 Span / RBW. (This ensures that bin-to-bin spacing is $\leq$ RBW/2, so that narrowband signals are not lost between frequency bins.)
- Sweep time = Auto Couple
- Trace mode = Trace average at least 100 traces in power averaging (i.e., RMS mode).
- If transmit duty cycle $<$ 98%, use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle $\geq$ 98%, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to "free run."
- Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

8.1.2 Limits:

FCC§15.407

Sub-band 5150-5250 MHz

- For AP the maximum conducted output power over the frequency band of operation shall not exceed 1 W
- For Client Devices the maximum conducted output power over the frequency band of operation shall not exceed 250 mW

Sub-band 5250-5350 MHz and 5470-5725 MHz and

- The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz

Sub-band 5725-5850 MHz

- The maximum conducted output power over the frequency band of operation shall not exceed 1 W

RSS-247

Sub-band 5150-5250 MHz

- For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or $1.76 + 10 \log_{10} B$, dBm, whichever is less. Devices shall implement transmitter power control (TPC) in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.
- For other devices, the maximum e.i.r.p. shall not exceed 200 mW or $10 + 10 \log_{10} B$, dBm, whichever power is less. B is the 99% emission bandwidth in megahertz.

Sub-band 5250-5350 MHz

- For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or $1.76 + 10 \log_{10} B$, dBm, whichever is less. Devices shall implement TPC in order to have the capability to operate at least 3 dB below the maximum permitted e.i.r.p. of 30 mW.
- Devices, other than devices installed in vehicles, shall comply with the following:
 - a) The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$, dBm, whichever is less.
 - b) The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.
- Additional requirements

In addition to the above requirements, devices shall comply with the following, where applicable:

- a) Outdoor fixed devices with a maximum e.i.r.p. greater than 200 mW shall comply with the following e.i.r.p. at different elevations, where θ is the angle above the local horizontal plane (of the Earth) as shown below:

i. -13 dBW/MHz	for $0^\circ \leq \theta < 8^\circ$
ii. $-13 - 0.716 (\theta - 8)$ dBW/MHz	for $8^\circ \leq \theta < 40^\circ$
iii. $-35.9 - 1.22 (\theta - 40)$ dBW/MHz	for $40^\circ \leq \theta \leq 45^\circ$
iv. -42 dBW/MHz	for $\theta > 45^\circ$

The measurement procedure defined in Annex A of this document shall be used to verify the compliance to the e.i.r.p. at different elevations.

- b) Devices, other than outdoor fixed devices, having an e.i.r.p. greater than 200 mW shall comply with either i. or ii. below:

- i. devices shall comply with the e.i.r.p. elevation mask in 6.2.2.3(a); or

- ii. devices shall implement a method to permanently reduce their e.i.r.p. via a firmware feature in the event that the Department requires it. The test report must demonstrate how the device's power table can be updated to meet this firmware requirement. The manufacturer shall provide this firmware to update all systems automatically in compliance with the directions received from the Department.

Sub-band 5470-5600 MHz and 5650-5725 MHz

- The maximum conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$, dBm, whichever is less.
- The maximum e.i.r.p. shall not exceed 1.0 W or $17 + 10 \log_{10} B$, dBm, whichever is less. B is the 99% emission bandwidth in megahertz. Note that devices with a maximum e.i.r.p. greater than 500 mW shall implement TPC in order to have the capability to operate at least 6 dB below the maximum permitted e.i.r.p. of 1 W.

Sub-band 5725-5850 MHz

- The maximum conducted output power shall not exceed 1 W.

Note: All limits are conducted. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.1.3 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input	Antenna Gain
22° C	1	802.11a 802.11n	120VAC to 24VAC	2.7 dBi

8.1.4 Measurement result:

Mode	Channel	Frequency (MHz)	Maximum Output Power (dBm)	EIRP (dBm)	Limit (dBm)	Result
802.11a	36	5180	14.9	17.6	22.3	Pass
802.11a	44	5220	14.9	17.6	22.3	Pass
802.11a	48	5240	14.5	17.2	22.3	Pass

Mode	Channel	Frequency (MHz)	Maximum Output Power (dBm)	EIRP (dBm)	Limit (dBm)	Result
802.11n	36	5180	13.6	16.3	22.3	Pass
802.11n	44	5220	13.8	16.5	22.3	Pass
802.11n	48	5240	13.4	16.1	22.3	Pass

Note 1: The EUT operates as a client device. For operation in the U-NII-1 band (5.15–5.25 GHz), the applicable FCC conducted output power limit is ≤ 250 mW (24 dBm) assuming an antenna gain ≤ 6 dBi, in accordance with FCC §15.407(a).

Under ISSED RSS-247, the maximum permitted output power is ≤ 200 mW (23 dBm) EIRP, or $\leq 10 + 10 \cdot \log_{10}(B)$ dBm, whichever is lower, where B is the 99 % emission bandwidth in MHz.

The narrowest measured 99 % bandwidth of the EUT is 16.9 MHz, resulting in a calculated limit of:

$$10 + 10 \cdot \log_{10}(16.9) = 22.3 \text{ dBm}$$

Therefore, 22.3 dBm is applied as the most stringent power limit, which ensures compliance with both FCC §15.407 and ISSED RSS-247 requirements.

Note 2: For certain test cases where the measurement plots were determined to be similar, only the plot corresponding to the worst-case configuration is presented in the following section.

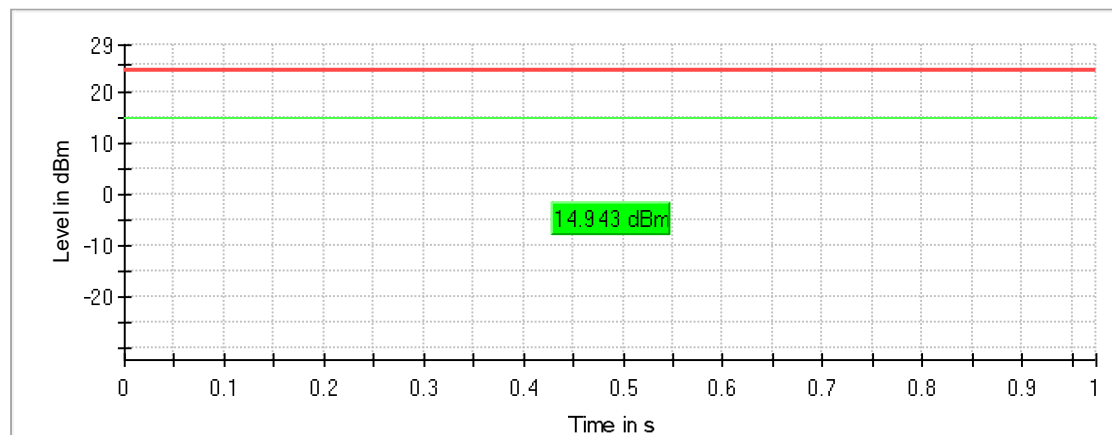
8.1.5 Highest Power Measurement Plot:

RF output power (5220 MHz; 30.000 dBm; 20 MHz)

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
5220.000000	14.9	24.0	14.9	97.604	PASS

Gated Trace



— Gated Trace — Overall — Limit

OSP PowerMeter settings

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000 μ s	1.000 μ s

8.2 Power Spectral Density

8.2.1 Measurement according to FCC 789033 D02 General UNII Test Procedures New Rules v02r01

Spectrum Analyzer Settings for Peak PSD in 1 MHz Band with Method SA-1:

- Use the settings in section 8.1.1
- Use the peak marker function to determine the maximum amplitude level within the RBW. The result is the Maximum PSD over 1 MHz reference bandwidth

Spectrum Analyzer Settings for Peak PSD in 500 kHz Band with Method SA-1:

- Set RBW 500 kHz
- Set VBW ≥ 3 RBW.
- Measure the Maximum PSD in 500 kHz reference bandwidth for sub-band 5725-5850 MHz

8.2.2 Limits:

FCC§15.407

Sub-band 5150-5250 MHz

- For AP the maximum power spectral density shall not exceed 17 dBm in any 1 MHz band
- For Client Devices the maximum power spectral density shall not exceed 11 dBm in any 1 MHz band

Sub-band 5250-5350 MHz and 5470-5725 MHz and

- The maximum power spectral density shall not exceed 11 dBm in any 1 MHz band

Sub-band 5725-5850 MHz

- The maximum power spectral density shall not exceed 30 dBm in any 500 kHz band

RSS-247

Sub-band 5150-5250 MHz

- PSD shall be less than 10 dBm in any 1 MHz band- EIRP

Sub-band 5250-5350 MHz

- PSD shall be less than 11 dBm in any 1 MHz band

Sub-band 5470-5600 MHz and 5650-5725 MHz

- PSD shall be less than 11 dBm in any 1 MHz band

Sub-band 5725-5850 MHz

- PSD shall be less than 30 dBm in any 500 kHz band

Note: All limits are conducted. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.2.3 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input	Antenna Gain
22° C	1	802.11a 802.11n	120VAC to 24VAC	2.7 dBi

8.2.4 Measurement result:

Mode	Channel	Frequency (MHz)	Maximum Power Spectral Density (dBm)	Limit (dBm/1 MHz)	Result
802.11a	36	5180	4.898	11	Pass
802.11a	44	5220	4.994	11	Pass
802.11a	48	5240	4.823	11	Pass

Mode	Channel	Frequency (MHz)	Maximum Power Spectral Density (dBm)	Limit (dBm/1 MHz)	Result
802.11n	36	5180	3.464	11	Pass
802.11n	44	5220	3.599	11	Pass
802.11n	48	5240	3.398	11	Pass

Note 1: EUT is a client device. For U-NII-1 operation, the applicable conducted PSD limit is 11 dBm in any 1 MHz per FCC §15.407.

Note 2: For certain test cases where the measurement plots were determined to be similar, only the plot corresponding to the worst-case configuration is presented in the following section.

8.2.5 Highest PSD Measurement Plots:

Power Spectral Density (SA-1) (5220 MHz; 30.000 dBm; 20 MHz)

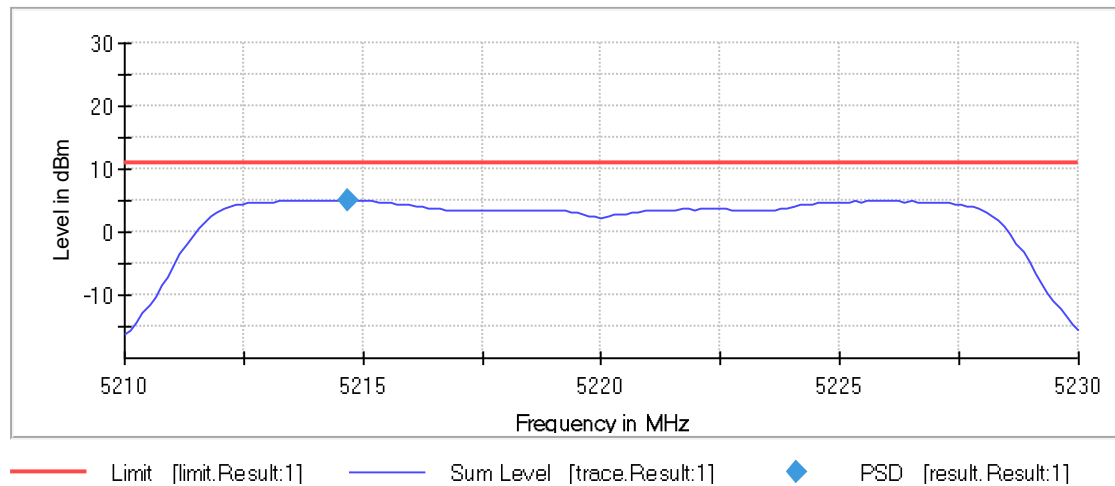
Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
5220.000000	5214.675325	4.994	11.0	PASS

Ports

Port	State
1	used

Power Spectral Density (SA-1)



PSD Connector 1

Measurement

Setting	Instrument Value	Target Value
Start Frequency	5.21000 GHz	5.21000 GHz
Stop Frequency	5.23000 GHz	5.23000 GHz
Span	20.000 MHz	20.000 MHz
RBW	1.000 MHz	<= 1.000 MHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	155	~ 40
SweepTime	20.000 ms	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	35.000 dB	AUTO
Detector	RMS	RMS
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Average Power	Average Power
SweepType	Sweep	Sweep
Preamp	off	off

8.3 Band Edge Compliance

8.3.1 Measurement according to FCC 789033 D02 General UNII Test Procedures New Rules v02r01 and ANSI C63.10 (2020)

Non Restricted Band Edge and Restricted Band Edge Peak Measurement Spectrum Analyzer Settings:

- 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

Restricted Band Edge Average Measurement Spectrum Analyzer Settings:

- 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 = RMS (Power Averaging)
- Perform a trace average of at least 100 traces if the transmission is continuous. If the transmission is not continuous, then the number of traces shall be increased by a factor of $1 / D$, where D is the duty cycle. For example, with 50% duty cycle, at least 200 traces shall be averaged. (If a specific emission is demonstrated to be continuous—i.e., 100% duty cycle—then rather than turning ON and OFF with the transmit cycle, at least 100 traces shall be averaged.)
- Perform band-power integration across the 1 MHz bandwidth in which the band-edge emission level is to be measured

Restricted Band Edge – Radiated measurement method - ANSI C63.10; 6.10.6.2 Marker-delta procedure:

1. Perform Peak and Average in-band field strength measurements with the following SA settings
 - RBW = 100 kHz
 - VBW $\geq 3 \times$ RBW
2. Perform relative measurements of the fundamental and the band-edge levels using the following SA settings
 - RBW = 1% of the total span (but never less than 30 kHz),
 - VBW $\geq 3 \times$ RBW
 - Record the delta of the peak levels of the fundamental emission and the relevant band-edge emission
3. Subtract the delta measured in step b) from the field strengths measured in step a). The resulting field strengths (CISPR QP, average, or peak, as appropriate) are then used to determine band-edge emissions compliance, where required.

8.3.2 Limits non restricted band:

FCC§15.407 (b); RSS-247 6

- For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

8.3.3 Limits for restricted band §15.407/15.209/15.205 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

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			

8.3.4 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input	Antenna Gain
22° C	1	802.11a 802.11n	120VAC to 24VAC	2.7 dBi

8.3.5 Measurement result:

EUT operating mode	Band Edge	Level (dBm)	Margin (dB)	Limit (dBm)	Result
802.11a	Lower, non-restricted	-28.3	1.3	-27	Pass
802.11a	Upper, non-restricted	-51.7	24.7	-27	Pass
802.11n	Lower, non-restricted	-28.8	1.8	-27	Pass
802.11n	Upper, non-restricted	-52.1	25.1	-27	Pass

Note 1: An antenna gain correction of 2.5 dBi was applied by the measurement system to the measured power values. The corrected results are reflected in the "Measurement Plots" section below.

Note 2: The measurement system was configured with an antenna gain of 2.5 dBi. Since the actual antenna gain is 2.7 dBi, a correction factor of +0.2 dB was applied to the recorded measurement results.

Note 3: For certain test cases where the measurement plots were determined to be similar, only the plot corresponding to the worst-case configuration is presented in the following section.

8.3.6 Measurement Plots:

Band Edge low (5180 MHz; 30.000 dBm; 20 MHz)

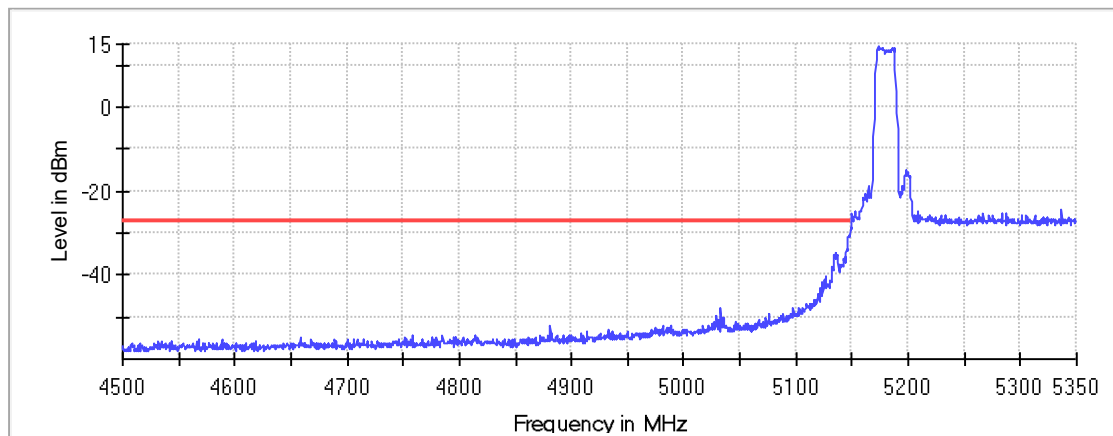
Result

DUT Frequency (MHz)	Result
5180.000000	PASS

Measurements

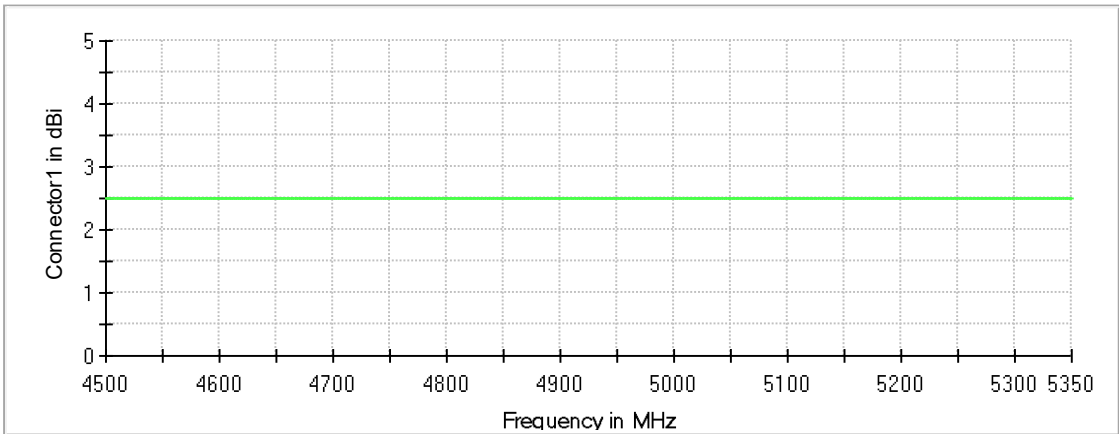
Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
5148.500000	-28.5	1.5	-27.0	PASS
5149.500000	-29.1	2.1	-27.0	PASS
5149.000000	-29.3	2.3	-27.0	PASS
5147.500000	-30.5	3.5	-27.0	PASS
5147.000000	-30.9	3.9	-27.0	PASS
5146.500000	-30.9	3.9	-27.0	PASS
5148.000000	-31.2	4.2	-27.0	PASS
5146.000000	-33.6	6.6	-27.0	PASS
5145.000000	-33.9	6.9	-27.0	PASS
5145.500000	-34.1	7.1	-27.0	PASS
5135.000000	-34.6	7.6	-27.0	PASS
5144.500000	-34.9	7.9	-27.0	PASS
5134.000000	-35.0	8.0	-27.0	PASS
5136.500000	-35.2	8.2	-27.0	PASS
5143.500000	-35.6	8.6	-27.0	PASS

Band Edge



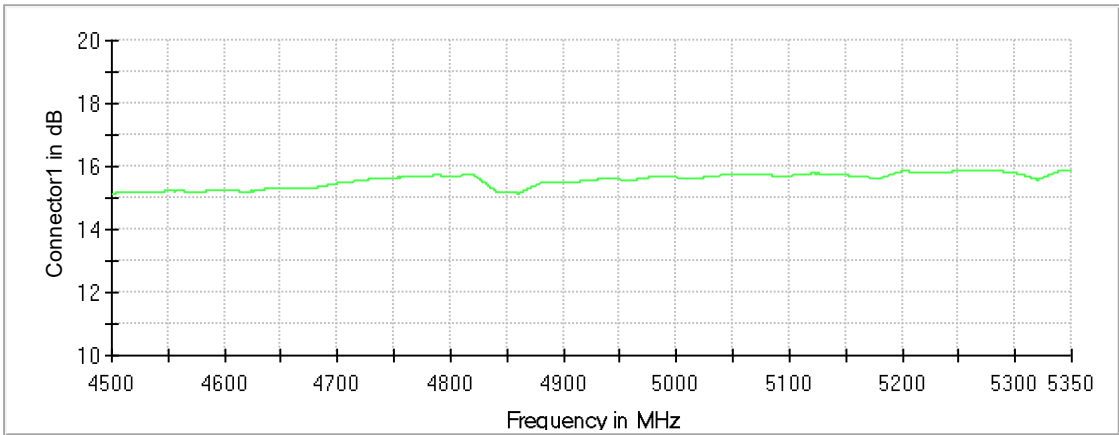
— Limit [limit.Result:1] — Sum Level [trace.Result:1] × Fail [Over Limit.Result:1]

Gain



Connector1

Attenuation



Connector1

Measurement 1

Setting	Instrument Value	Target Value
Start Frequency	5.15000 GHz	5.15000 GHz
Stop Frequency	5.35000 GHz	5.35000 GHz
Span	200.000 MHz	200.000 MHz
RBW	1.000 MHz	<= 1.000 MHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	401	~ 400
SweepTime	40.000 ms	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	35.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	Channel	Channel
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off

Measurement 2

Setting	Instrument Value	Target Value
Start Frequency	4.50000 GHz	4.50000 GHz
Stop Frequency	5.15000 GHz	5.15000 GHz
Span	650.000 MHz	650.000 MHz
RBW	1.000 MHz	<= 1.000 MHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	1301	~ 1300
SweepTime	130.000 ms	AUTO
Reference Level	-20.000 dBm	-20.000 dBm
Attenuation	5.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	Channel	Channel
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamplifier	off	off

8.4 Emission Bandwidth 6 dB, 26 dB, and 99%

8.4.1 Measurement according to FCC 789033 D02 General UNII Test Procedures New Rules v02r01

- For the band 5.150-5.250 GHz the 99% EBW is measured
- For the bands 5.250-5.350 GHz and 5.470-5.725 GHz the 26 dB and 99% EBW is measured
- For the band 5.725-5.850 GHz the 6 dB EBW is measured

Spectrum Analyzer Settings for 26 dB EBW:

- Set RBW = approximately 1% of the emission bandwidth
- Set the VBW > RBW
- Detector = Peak
- Trace mode = Max Hold
- Sweep = Auto Couple
- Allow the trace to stabilize
- Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%

Spectrum Analyzer Settings for 6 dB EBW in band 5.725 – 5.850 GHz:

- 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

Spectrum Analyzer Settings for 99% Occupied Bandwidth

- Set center frequency to the nominal EUT channel center frequency
- Set span = 1.5 times to 5.0 times the OBW
- Set RBW = 1% to 5% of the OBW
- Set VBW $\geq 3 \times$ RBW
- Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used
- Use the 99% power bandwidth function of the instrument (if available)
- If the instrument does not have a 99% power bandwidth function, the trace data points are recovered and directly summed in power units. 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% occupied bandwidth is the difference between these two frequencies

8.4.2 Limits:

FCC §15.247(e) and RSS-407 6.2.4.1

- For equipment operating in the band 5725-5850 MHz, 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	802.11a 802.11n	120VAC to 24VAC

8.4.4 Measurement result:

Mode	Channel	Frequency (MHz)	99% Emissions Bandwidth (MHz)	Limit
802.11a	36	5180	17	N/A
802.11a	44	5220	17	N/A
802.11a	48	5240	16.9	N/A

Mode	Channel	Frequency (MHz)	99% Emissions Bandwidth (MHz)	Limit
802.11n	36	5180	18	N/A
802.11n	44	5220	18.2	N/A
802.11n	48	5240	18.1	N/A

Mode	Channel	Frequency (MHz)	26dB Emissions Bandwidth (MHz)	Limit
802.11a	36	5180	22	N/A
802.11a	44	5220	21.6	N/A
802.11a	48	5240	21.5	N/A

Mode	Channel	Frequency (MHz)	26dB Emissions Bandwidth (MHz)	Limit
802.11n	36	5180	22.2	N/A
802.11n	44	5220	22.1	N/A
802.11n	48	5240	21.9	N/A

Note: For certain test cases where the measurement plots were determined to be similar, only the plot corresponding to the worst-case configuration is presented in the following section.

8.4.5 Measurement Plots:

Occupied Channel Bandwidth 99% (5240 MHz; 30.000 dBm; 20 MHz)

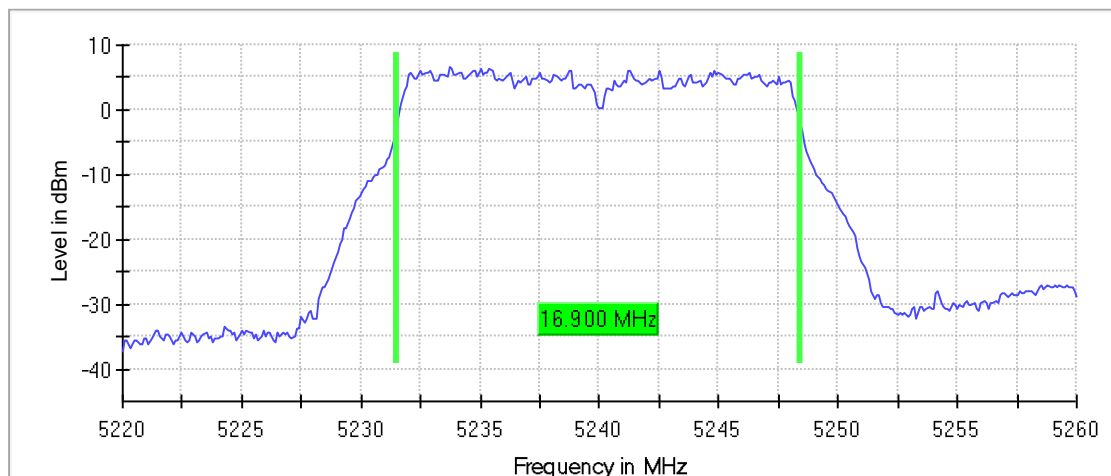
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5240.000000	16.900000	---	---	5231.500000	5248.400000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
5240.000000	PASS

99 % Bandwidth



Bandwidth

Measurement

Setting	Instrument Value	Target Value
Start Frequency	5.22000 GHz	5.22000 GHz
Stop Frequency	5.26000 GHz	5.26000 GHz
Span	40.000 MHz	40.000 MHz
RBW	200.000 kHz	>= 200.000 kHz
VBW	1.000 MHz	>= 600.000 kHz
SweepPoints	401	~ 400
SweepTime	20.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	25.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamplifier	off	off

Emission Bandwidth 26 dB (5240 MHz; 30.000 dBm; 20 MHz)

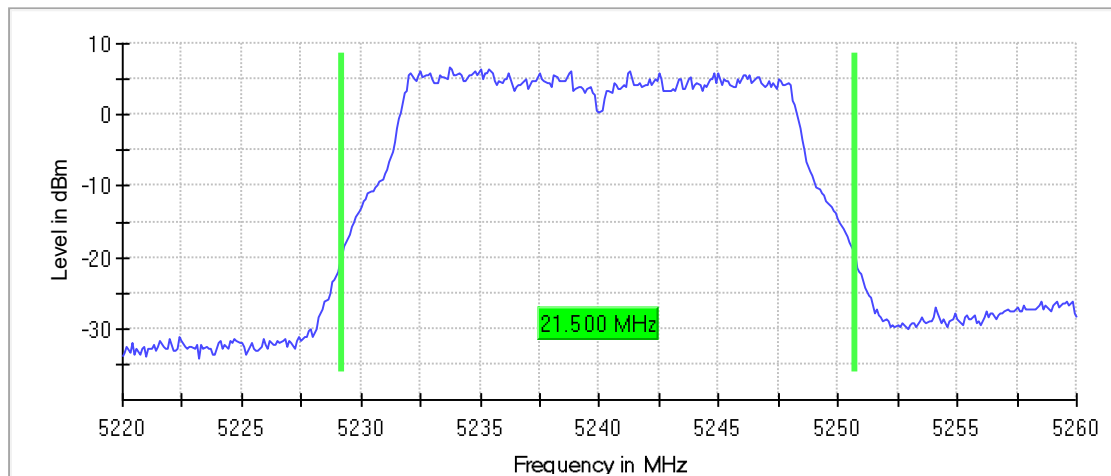
26 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
5240.000000	21.500000	---	---	5229.200000	5250.700000

(continuation of the "26 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
5240.000000	6.6	PASS

26 dB Bandwidth



Bandwidth

Measurement

Setting	Instrument Value	Target Value
Start Frequency	5.22000 GHz	5.22000 GHz
Stop Frequency	5.26000 GHz	5.26000 GHz
Span	40.000 MHz	40.000 MHz
RBW	200.000 kHz	~ 200.000 kHz
VBW	1.000 MHz	>= 600.000 kHz
SweepPoints	401	~ 400
Sweptime	20.000 ms	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	35.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	200	200
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamp	off	off

8.5 Radiated Transmitter Spurious Emissions

8.5.1 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.

8.5.2 Limits:

FCC §15.407

- Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.
- The provisions of §15.205 apply to intentional radiators operating under this section.

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
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

8.5.3 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input
22° C	1	802.11a	120VAC to 24VAC

8.5.4 Measurement result:

Plot #	Channel #	Scan Frequency	Limit	Result
1-5	Low (36)	9 kHz – 40 GHz	See section 8.5.2	Pass
6-10	Mid (44)	9 kHz – 40 GHz	See section 8.5.2	Pass
11-15	High (48)	9 kHz – 40 GHz	See section 8.5.2	Pass
16-21	Low (36) + BLE Low CH	9 kHz – 40 GHz	See section 8.5.2	Pass

Note: 802.11a shows the highest RF output level (maximum conducted output power/EIRP) and highest power spectral density compared with the other supported modes. Therefore, 802.11a was selected as the worst-case operating mode for Radiated Transmitter Spurious Emissions testing per FCC Part 15.407.

8.5.5 Measurement Plots:

802.11a

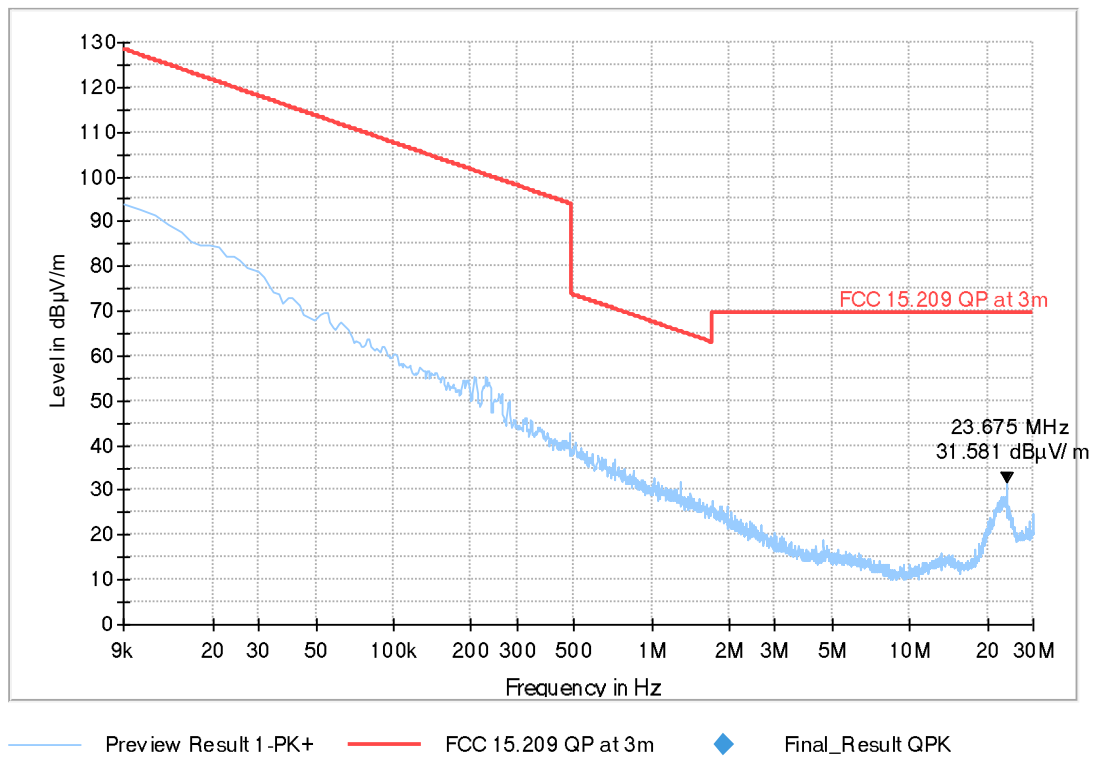
Plot # 1 Radiated Emissions: 9 KHz – 30 MHz

Tx Frequency: 5180MHz

Modulation: 802.11a

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)
---	---	---	---	---	---	---		---	---	---	---	---	---



Plot # 2 Radiated Emissions: 30 – 1000MHz

Tx Frequency: 5180MHz

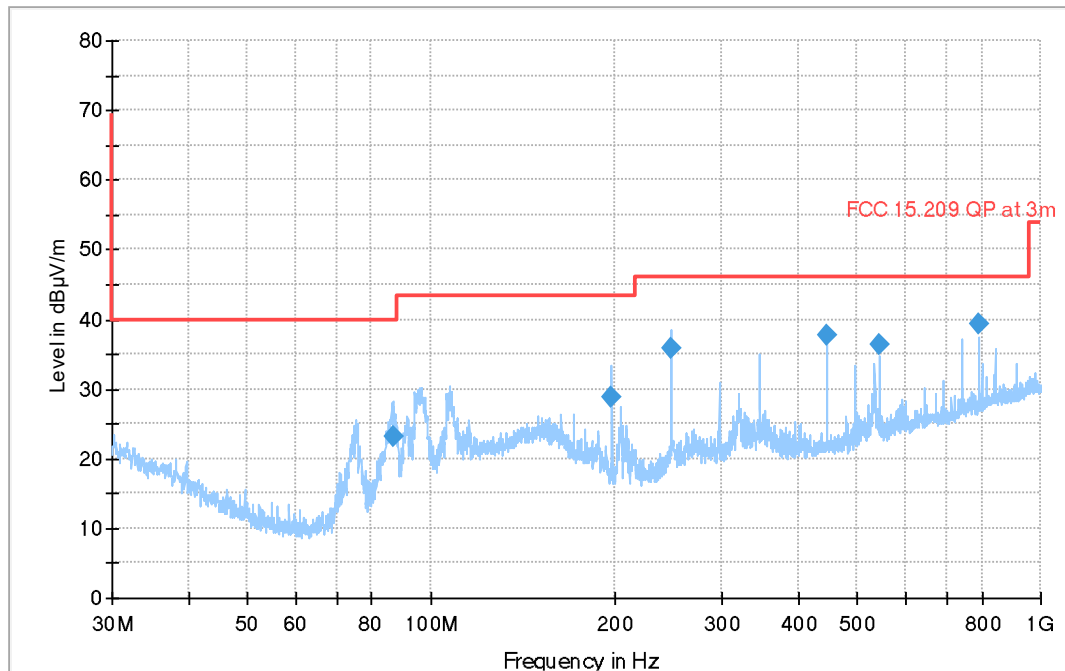
Modulation: 802.11a

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (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)
86.566	23.284	---	40.00	16.72	500.0	120.0	200.0	V	121.0	-17.3	-34.6	0.0	17.3
197.982	28.877	---	43.50	14.62	500.0	120.0	252.0	H	320.0	-16.2	-34.2	0.0	18.0
247.492	35.923	---	46.02	10.10	500.0	120.0	140.0	H	70.0	-11.3	-34.0	0.0	22.7
445.500	37.627	---	46.02	8.39	500.0	120.0	317.0	H	340.0	-10.2	-33.3	0.0	23.1
544.493	36.434	---	46.02	9.59	500.0	120.0	193.0	H	127.0	-8.6	-32.9	0.0	24.3
791.993	39.258	---	46.02	6.76	500.0	120.0	107.0	H	136.0	-4.3	-32.4	0.0	28.1

(continuation of the "Final_Result" table from column 19 ...)

Frequency (MHz)	Raw Rec (dBµV)
86.566	40.6
197.982	45.0
247.492	47.2
445.500	47.8
544.493	45.0
791.993	43.5



Preview Result 1-PK+ Final_Result QPK

FCC 15.209 QP at 3m Final_Result PK+

Plot # 3 Radiated Emissions: 1 – 7 GHz

Tx Frequency: 5180MHz

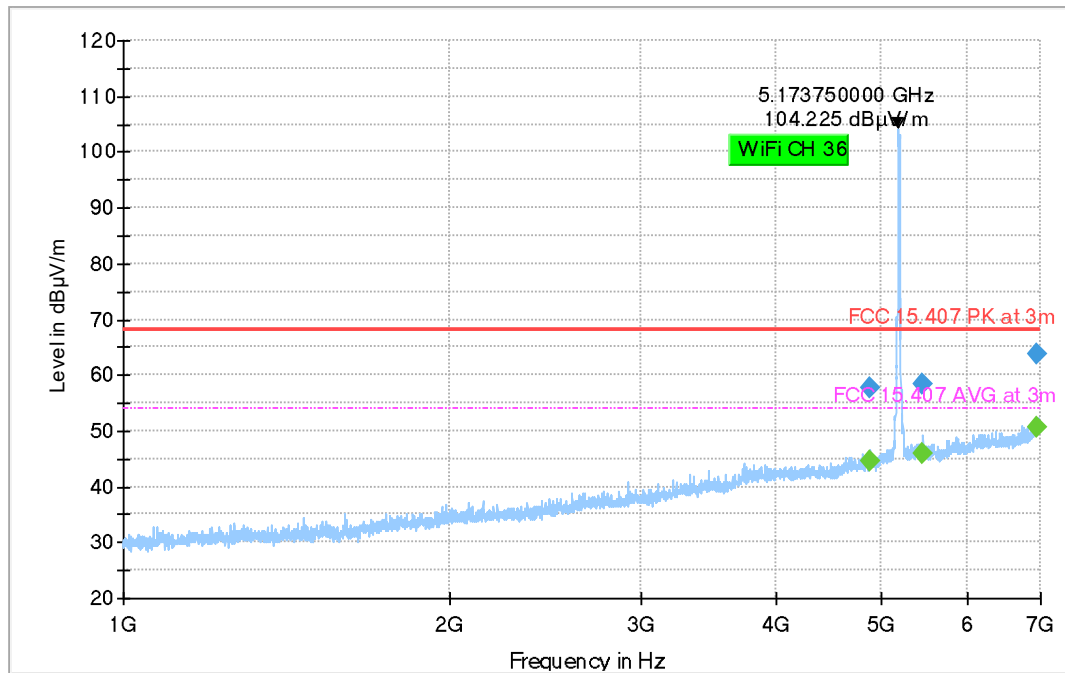
Modulation: 802.11a

Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (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)
4870.116	---	44.429	53.98	9.55	500.0	1000.0	211.0	H	209.0	12.9	-20.2	0.0	33.1
4870.116	57.679	---	68.00	10.32	500.0	1000.0	211.0	H	209.0	12.9	-20.2	0.0	33.1
5457.645	58.333	---	68.00	9.67	500.0	1000.0	109.0	V	110.0	14.1	-19.9	0.0	34.0
5457.645	---	45.788	53.98	8.19	500.0	1000.0	109.0	V	110.0	14.1	-19.9	0.0	34.0
6949.459	63.847	---	68.00	4.15	500.0	1000.0	109.0	H	83.0	17.0	-18.2	0.0	35.2
6949.459	---	50.694	53.98	3.28	500.0	1000.0	109.0	H	83.0	17.0	-18.2	0.0	35.2

(continuation of the "Final_Result" table from column 19 ...)

Frequency (MHz)	Raw Rec (dBμV)
4870.116	31.6
4870.116	44.8
5457.645	44.2
5457.645	31.7
6949.459	46.8
6949.459	33.7



◆ Preview Result 1-PK+ Final_Result PK+ ◆ FCC 15.407 PK at 3m Final_Result AVG --- FCC 15.407 AVG at 3m

Plot # 4 Radiated Emissions: 7- 18 GHz

Tx Frequency: 5180MHz

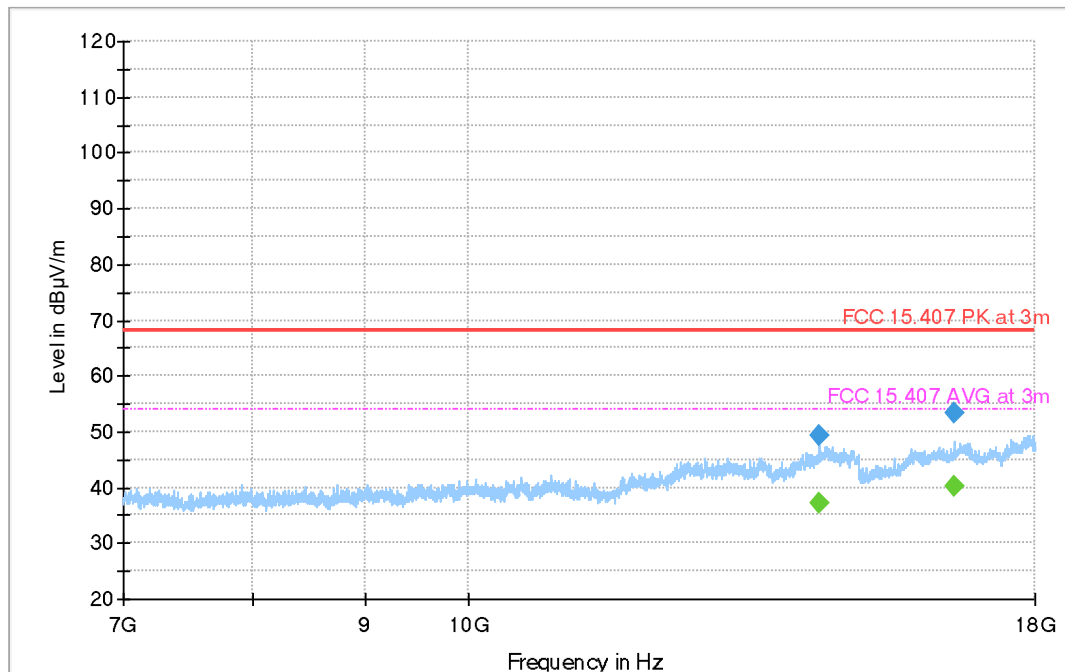
Modulation: 802.11a

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (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)
14398.307	49.243	---	68.00	18.76	500.0	1000.0	334.0	V	276.0	9.0	13.7	-45.2	40.5
14398.307	---	37.283	53.98	16.70	500.0	1000.0	334.0	V	276.0	9.0	13.7	-45.2	40.5
16570.314	53.409	---	68.00	14.59	500.0	1000.0	212.0	V	113.0	12.8	15.2	-43.4	41.1
16570.314	---	40.221	53.98	13.76	500.0	1000.0	212.0	V	113.0	12.8	15.2	-43.4	41.1

(continuation of the "Final_Result" table from column 19 ...)

Frequency (MHz)	Raw Rec (dBμV)
14398.307	40.3
14398.307	28.3
16570.314	40.6
16570.314	27.4



Preview Result 1 -PK+ Final_Result PK+ FCC 15.407 PK at 3m Final_Result PK+ FCC 15.407 AVG at 3m Final_Result AVG

Plot # 5 Radiated Emissions: 18 - 40GHz

Tx Frequency: 5180MHz

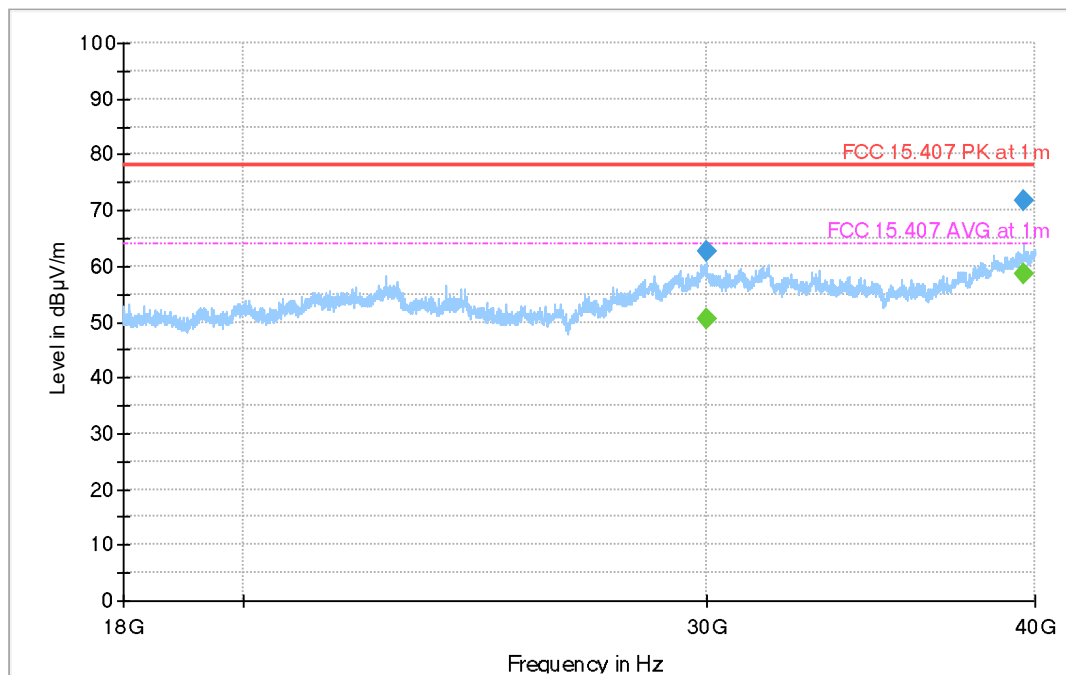
Modulation: 802.11a

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (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)
29985.391	---	50.383	63.98	13.60	500.0	1000.0	150.0	V	238.0	25.3	10.4	0.0	14.8
29985.391	62.633	---	78.00	15.37	500.0	1000.0	150.0	V	238.0	25.3	10.4	0.0	14.8
39617.956	---	58.640	63.98	5.34	500.0	1000.0	150.0	V	283.0	24.2	12.6	0.0	11.5
39617.956	71.604	---	78.00	6.40	500.0	1000.0	150.0	V	283.0	24.2	12.6	0.0	11.5

(continuation of the "Final_Result" table from column 19 ...)

Frequency (MHz)	Raw Rec (dBμV)
29985.391	25.1
29985.391	37.4
39617.956	34.5
39617.956	47.5



Preview Result 1-PK+ Final_Result PK+ FCC 15.407 PK at 1m Final_Result AVG FCC 15.407 AVG at 1m

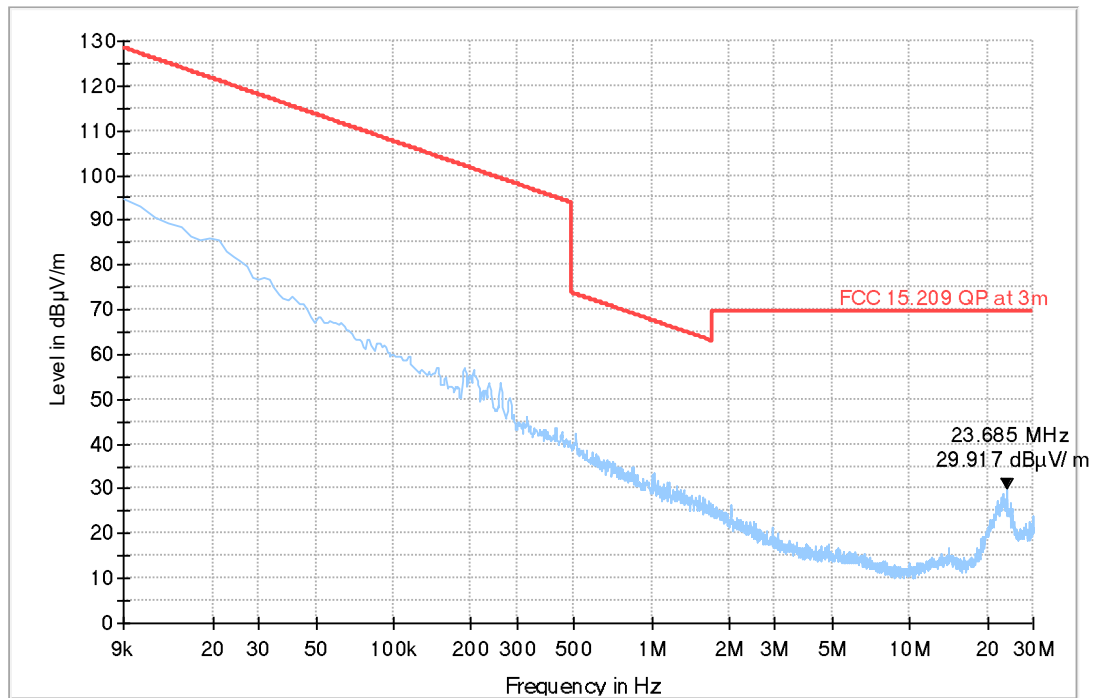
Plot # 6 Radiated Emissions: 9 KHz – 30 MHz

Tx Frequency: 5220 MHz

Modulation: 802.11a

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)
---	---	---	---	---	---	---	---	---	---	---	---	---	---



— Preview Result 1-PK+ — FCC 15.209 QP at 3m ◆ Final_Result QPK

Plot # 7 Radiated Emissions: 30 – 1000MHz

Tx Frequency: 5220 MHz

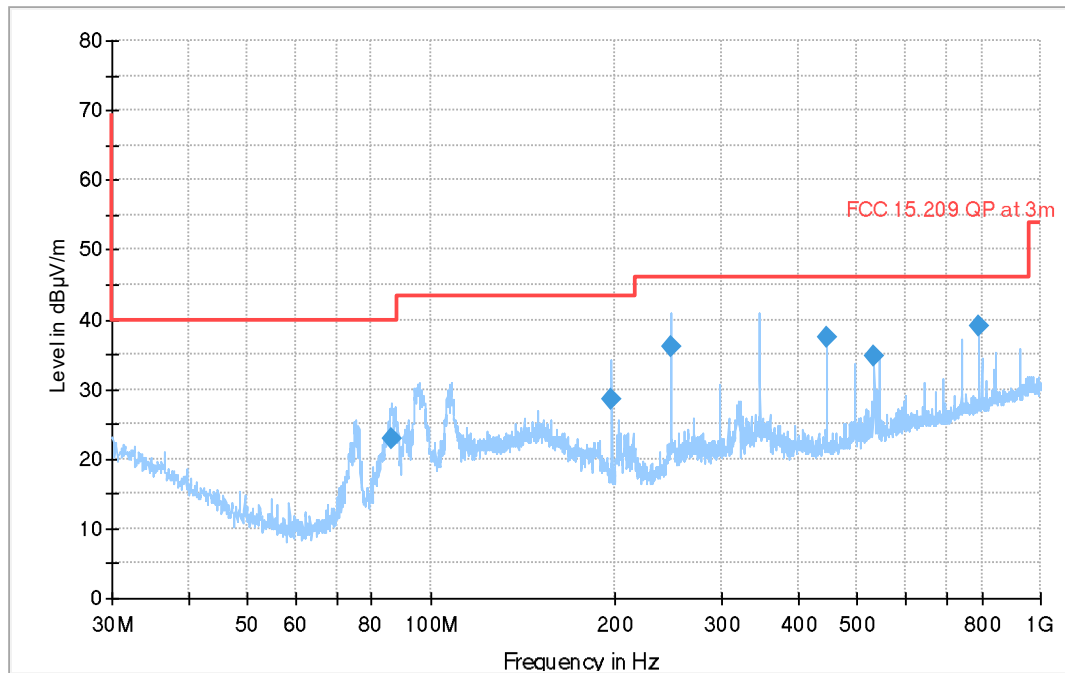
Modulation: 802.11a

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (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)
86.293	23.013	---	40.00	16.99	500.0	120.0	125.0	V	196.0	-17.3	-34.6	0.0	17.3
197.990	28.446	---	43.50	15.05	500.0	120.0	219.0	H	312.0	-16.2	-34.2	0.0	18.0
247.512	36.108	---	46.02	9.91	500.0	120.0	188.0	H	323.0	-11.3	-34.0	0.0	22.7
445.507	37.380	---	46.02	8.64	500.0	120.0	311.0	H	334.0	-10.2	-33.3	0.0	23.1
532.962	34.651	---	46.02	11.37	500.0	120.0	184.0	H	112.0	-8.7	-33.0	0.0	24.3
791.989	39.081	---	46.02	6.94	500.0	120.0	100.0	H	136.0	-4.3	-32.4	0.0	28.1

(continuation of the "Final_Result" table from column 19 ...)

Frequency (MHz)	Raw Rec (dBµV)
86.293	40.4
197.990	44.6
247.512	47.4
445.507	47.6
532.962	43.4
791.989	43.4



Preview Result 1-PK+ Final_Result QPK
FCC 15.209 QP at 3m Final_Result PK+

Plot # 8 Radiated Emissions: 1 – 7 GHz

Tx Frequency: 5220 MHz

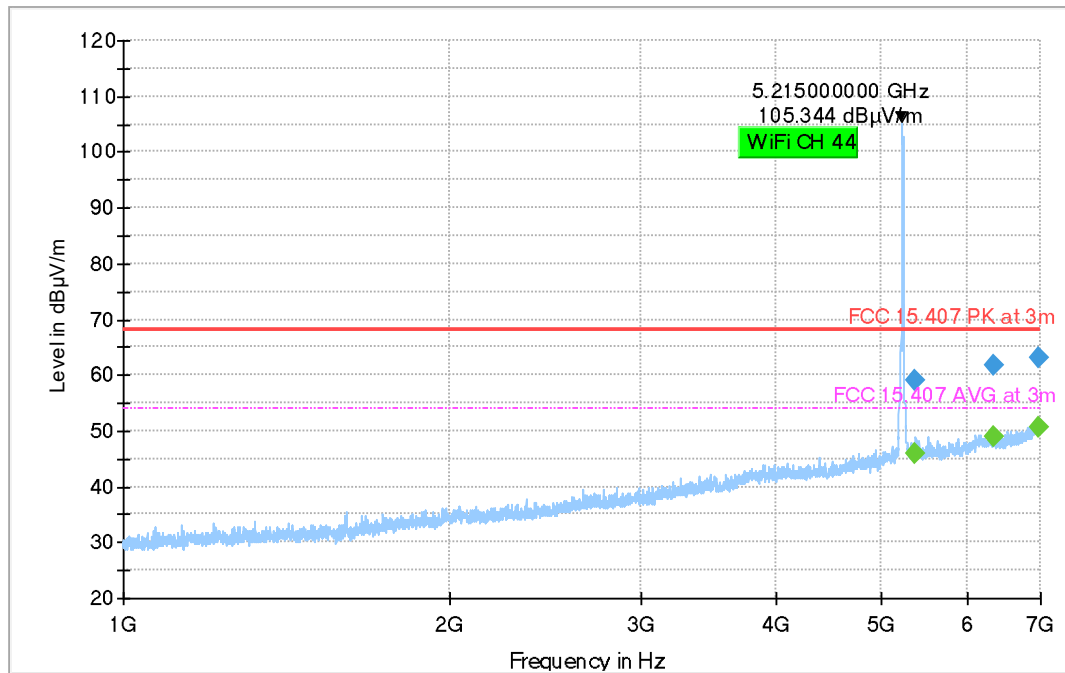
Modulation: 802.11a

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (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)
5372.373	58.959	---	68.00	9.04	500.0	1000.0	314.0	V	52.0	14.4	-19.5	0.0	33.9
5372.373	---	45.870	53.98	8.11	500.0	1000.0	314.0	V	52.0	14.4	-19.5	0.0	33.9
6337.588	---	48.954	53.98	5.03	500.0	1000.0	374.0	V	55.0	15.6	-18.7	0.0	34.3
6337.588	61.793	---	68.00	6.21	500.0	1000.0	374.0	V	55.0	15.6	-18.7	0.0	34.3
6960.372	63.235	---	68.00	4.76	500.0	1000.0	298.0	H	342.0	17.0	-18.2	0.0	35.2
6960.372	---	50.671	53.98	3.31	500.0	1000.0	298.0	H	342.0	17.0	-18.2	0.0	35.2

(continuation of the "Final_Result" table from column 19 ...)

Frequency (MHz)	Raw Rec (dBμV)
5372.373	44.6
5372.373	31.5
6337.588	33.3
6337.588	46.2
6960.372	46.2
6960.372	33.6



◆ Preview Result 1-PK+ Final_Result PK+ ◆ FCC 15.407 PK at 3m Final_Result AVG ◆ FCC 15.407 AVG at 3m

Plot # 9 Radiated Emissions: 7 - 18 GHz

Tx Frequency: 5220 MHz

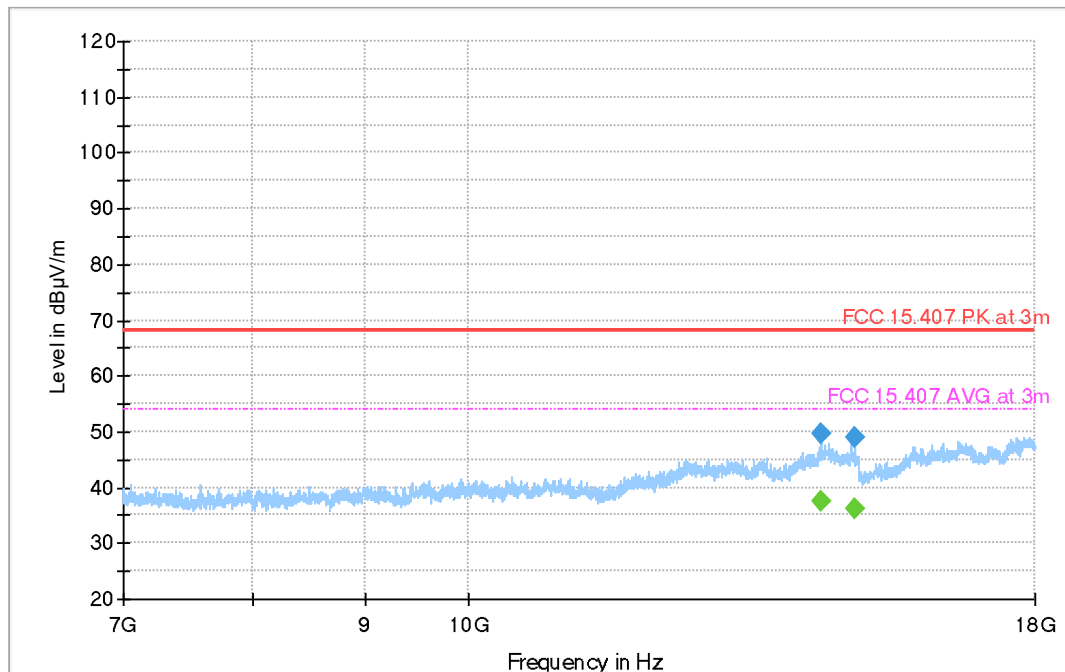
Modulation: 802.11a

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (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)
14427.059	---	37.373	53.98	16.61	500.0	1000.0	321.0	V	81.0	8.8	13.6	-45.3	40.5
14427.059	49.786	---	68.00	18.21	500.0	1000.0	321.0	V	81.0	8.8	13.6	-45.3	40.5
14940.100	---	36.195	53.98	17.78	500.0	1000.0	341.0	V	200.0	7.6	13.1	-46.7	41.1
14940.100	48.902	---	68.00	19.10	500.0	1000.0	341.0	V	200.0	7.6	13.1	-46.7	41.1

(continuation of the "Final_Result" table from column 19 ...)

Frequency (MHz)	Raw Rec (dBμV)
14427.059	28.5
14427.059	40.9
14940.100	28.6
14940.100	41.3



◆ Preview Result 1 -PK+ Final_Result PK+ ◆ FCC 15.407 PK at 3m Final_Result AVG ◆ FCC 15.407 AVG at 3m

Plot # 10 Radiated Emissions: 18 - 40GHz

Tx Frequency: 5220 MHz

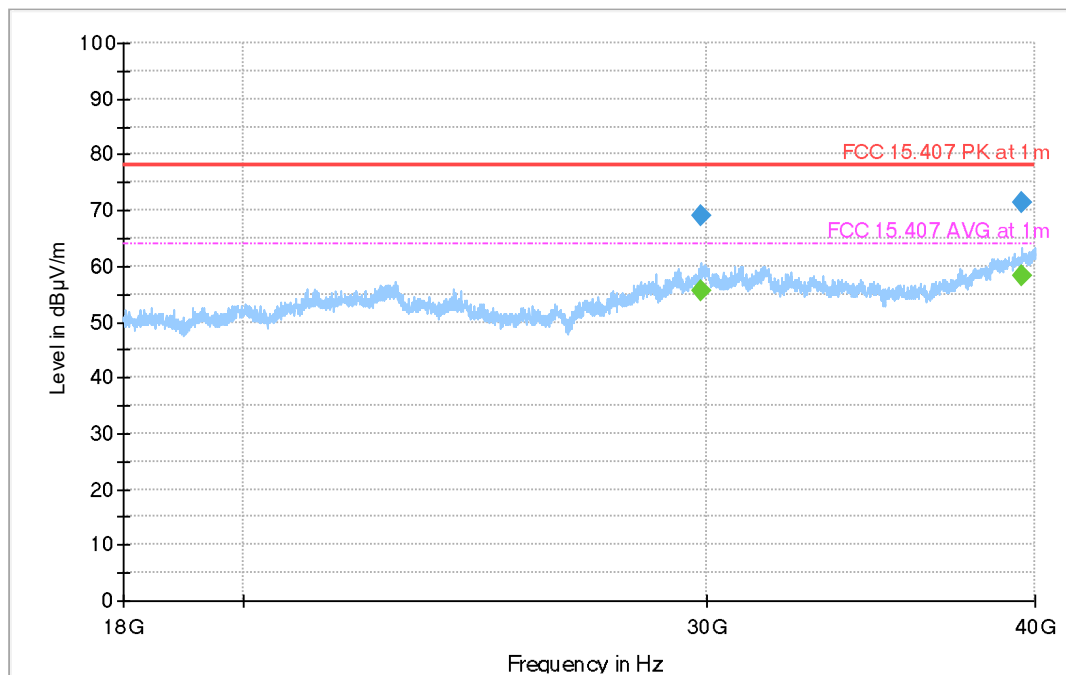
Modulation: 802.11a

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (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)
29845.802	69.012	---	78.00	8.99	500.0	1000.0	150.0	V	267.0	24.6	10.4	0.0	14.2
29845.802	---	55.654	63.98	8.33	500.0	1000.0	150.0	V	267.0	24.6	10.4	0.0	14.2
39546.654	71.450	---	78.00	6.55	500.0	1000.0	150.0	H	123.0	24.3	12.6	0.0	11.7
39546.654	---	58.347	63.98	5.63	500.0	1000.0	150.0	H	123.0	24.3	12.6	0.0	11.7

(continuation of the "Final_Result" table from column 19 ...)

Frequency (MHz)	Raw Rec (dBμV)
29845.802	44.4
29845.802	31.0
39546.654	47.2
39546.654	34.1



Preview Result 1-PK+ Final_Result PK+ FCC 15.407 PK at 1m Final_Result AVG FCC 15.407 AVG at 1m

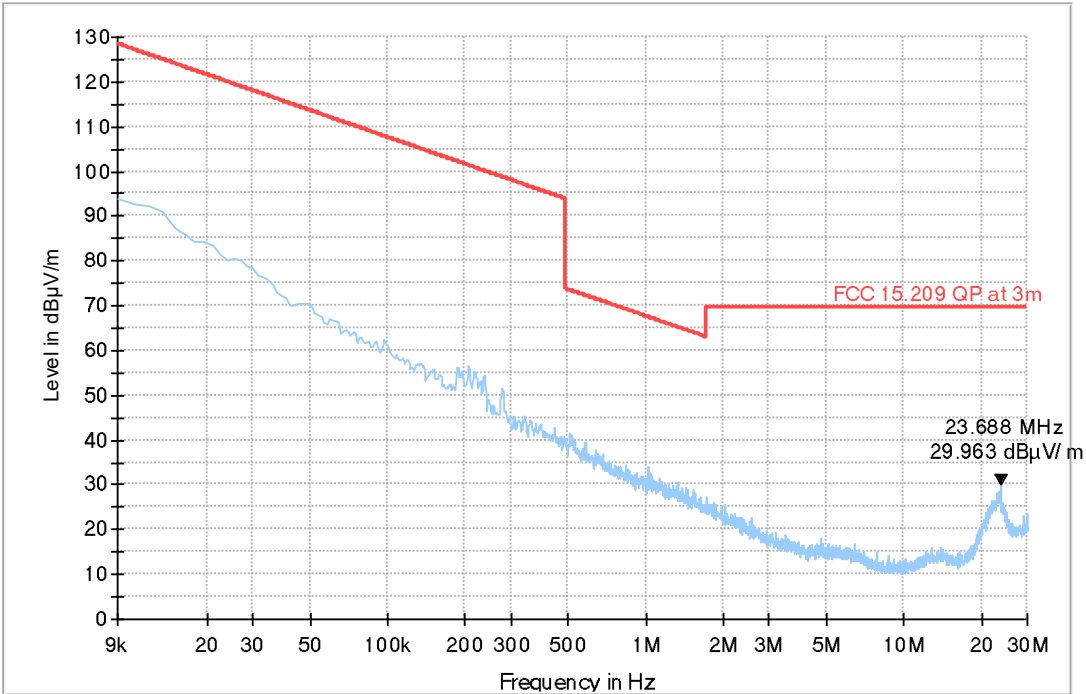
Plot # 11 Radiated Emissions: 9 KHz – 30 MHz

Tx Frequency: 5240 MHz

Modulation: 802.11a

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)
---	---	---	---	---	---	---		---	---	---	---	---	---



Preview Result 1-PK+ FCC 15.209 QP at 3m Final_Result QPK

Plot # 12 Radiated Emissions: 30 – 1000MHz

Tx Frequency: 5240 MHz

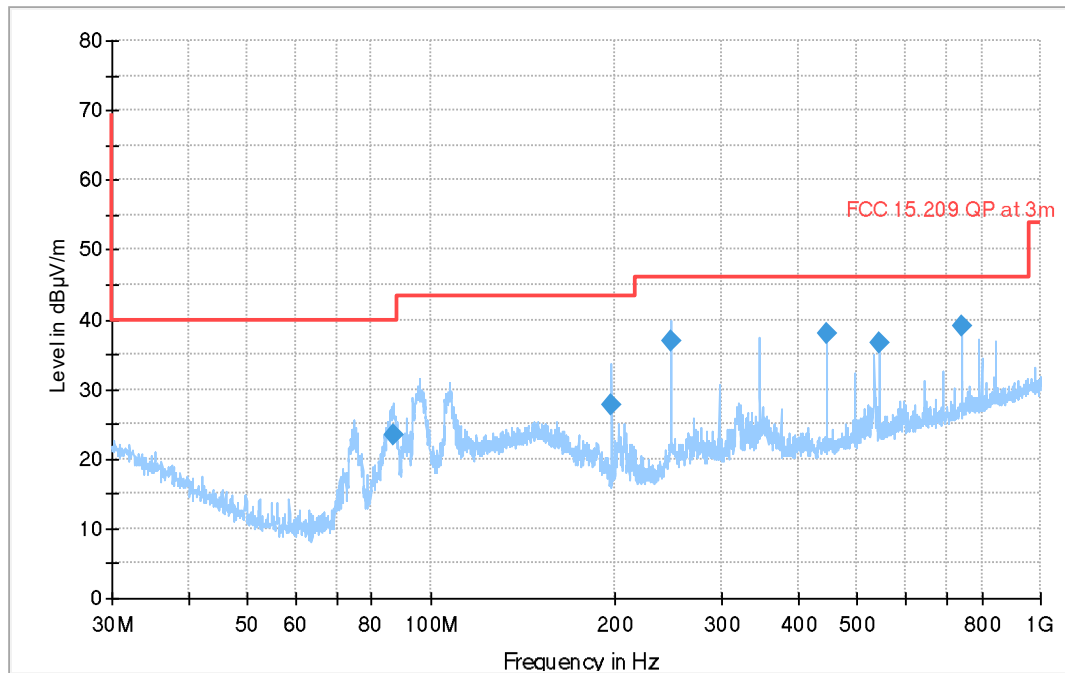
Modulation: 802.11a

Final_Result

Frequency (MHz)	QuasiPeak (dBμV/m)	MaxPeak (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)
86.758	23.568	---	40.00	16.43	500.0	120.0	134.0	V	122.0	-17.3	-34.6	0.0	17.3
197.979	27.733	---	43.50	15.77	500.0	120.0	217.0	H	313.0	-16.2	-34.2	0.0	18.0
247.523	36.799	---	46.02	9.22	500.0	120.0	142.0	H	352.0	-11.3	-34.0	0.0	22.7
445.507	38.037	---	46.02	7.98	500.0	120.0	320.0	H	338.0	-10.2	-33.3	0.0	23.1
544.498	36.521	---	46.02	9.50	500.0	120.0	191.0	H	125.0	-8.6	-32.9	0.0	24.3
742.500	39.167	---	46.02	6.85	500.0	120.0	116.0	H	147.0	-4.8	-32.3	0.0	27.6

(continuation of the "Final_Result" table from column 19 ...)

Frequency (MHz)	Raw Rec (dBμV)
86.758	40.9
197.979	43.9
247.523	48.1
445.507	48.2
544.498	45.1
742.500	43.9



Preview Result 1-PK+ Final_Result QPK

FCC 15.209 QP at 3m Final_Result PK+

Plot # 13 Radiated Emissions: 1 – 7 GHz

Tx Frequency: 5240 MHz

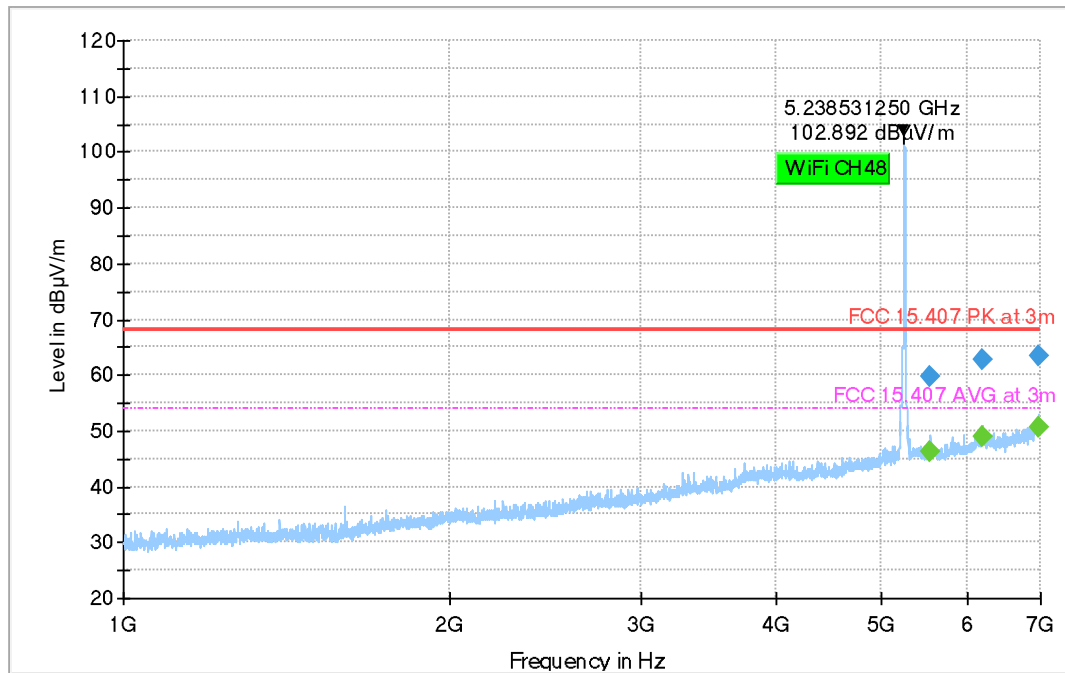
Modulation: 802.11a

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (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)
5546.037	59.572	---	68.00	8.43	500.0	1000.0	215.0	V	201.0	14.6	-19.4	0.0	34.0
5546.037	---	46.238	53.98	7.74	500.0	1000.0	215.0	V	201.0	14.6	-19.4	0.0	34.0
6187.675	---	48.789	53.98	5.19	500.0	1000.0	196.0	H	22.0	15.4	-19.1	0.0	34.5
6187.675	62.728	---	68.00	5.27	500.0	1000.0	196.0	H	22.0	15.4	-19.1	0.0	34.5
6966.727	63.545	---	68.00	4.46	500.0	1000.0	212.0	H	-26.0	17.1	-18.1	0.0	35.2
6966.727	---	50.746	53.98	3.23	500.0	1000.0	212.0	H	-26.0	17.1	-18.1	0.0	35.2

(continuation of the "Final_Result" table from column 19 ...)

Frequency (MHz)	Raw Rec (dBμV)
5546.037	44.9
5546.037	31.6
6187.675	33.4
6187.675	47.3
6966.727	46.5
6966.727	33.7



◆ Preview Result 1-PK+ Final_Result PK+ ◆ FCC 15.407 PK at 3m Final_Result AVG ◆ FCC 15.407 AVG at 3m

Plot # 14 Radiated Emissions: 7 - 18 GHz

Tx Frequency: 5240 MHz

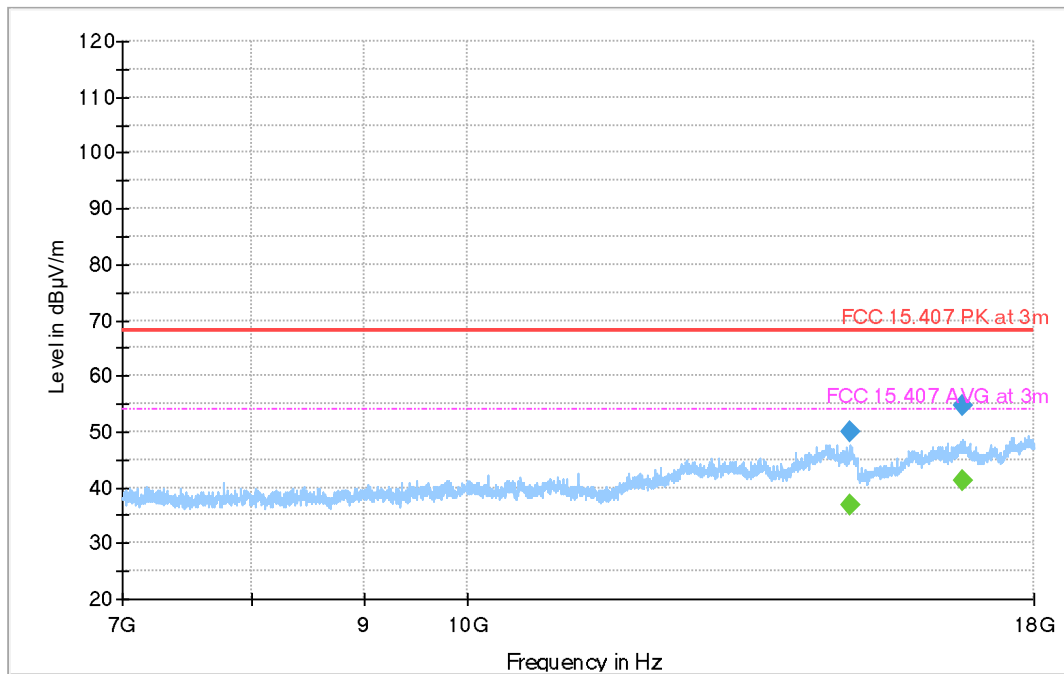
Modulation: 802.11a

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (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)
14871.224	49.910	---	68.00	18.09	500.0	1000.0	109.0	H	199.0	7.9	13.3	-46.5	41.2
14871.224	---	36.715	53.98	17.26	500.0	1000.0	109.0	H	199.0	7.9	13.3	-46.5	41.2
16725.345	54.520	---	68.00	13.48	500.0	1000.0	391.0	V	211.0	13.8	15.1	-42.5	41.3
16725.345	---	41.051	53.98	12.93	500.0	1000.0	391.0	V	211.0	13.8	15.1	-42.5	41.3

(continuation of the "Final_Result" table from column 19 ...)

Frequency (MHz)	Raw Rec (dBμV)
14871.224	42.0
14871.224	28.8
16725.345	40.7
16725.345	27.3



Preview Result 1 -PK+ Final_Result PK+ FCC 15.407 PK at 3m Final_Result PK+ FCC 15.407 AVG at 3m Final_Result AVG

Plot # 15 Radiated Emissions: 18 - 40GHz

Tx Frequency: 5240 MHz

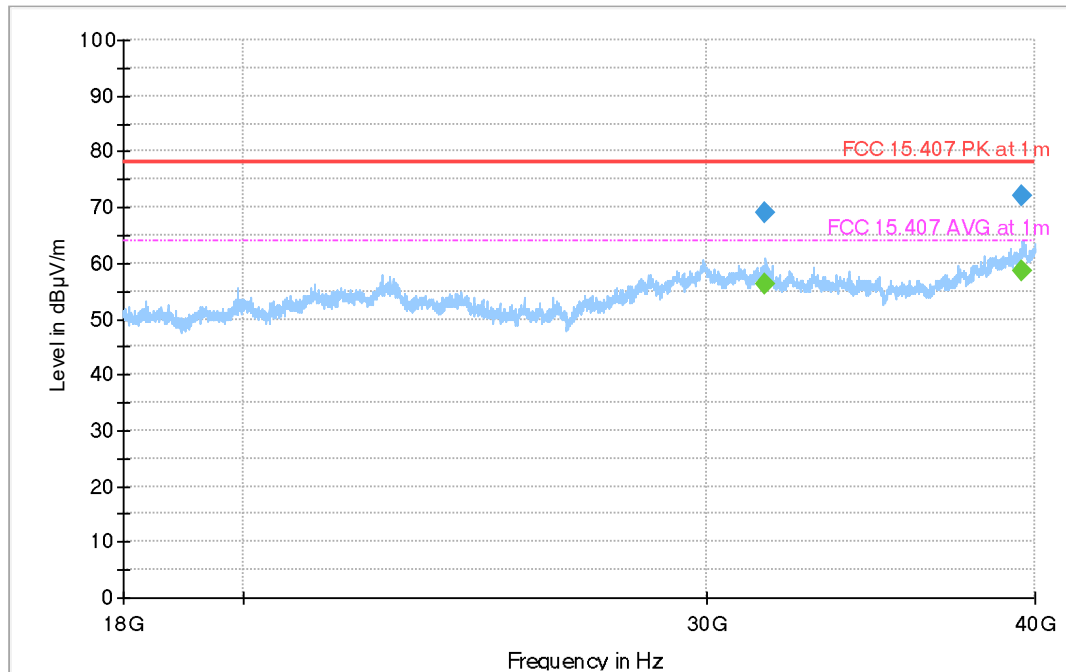
Modulation: 802.11a

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (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)
31596.131	---	56.311	63.98	7.67	500.0	1000.0	150.0	H	-13.0	24.5	11.0	0.0	13.5
31596.131	69.120	---	78.00	8.88	500.0	1000.0	150.0	H	-13.0	24.5	11.0	0.0	13.5
39573.212	---	58.487	63.98	5.49	500.0	1000.0	150.0	H	92.0	24.2	12.6	0.0	11.6
39573.212	71.987	---	78.00	6.01	500.0	1000.0	150.0	H	92.0	24.2	12.6	0.0	11.6

(continuation of the "Final_Result" table from column 19 ...)

Frequency (MHz)	Raw Rec (dBμV)
31596.131	31.8
31596.131	44.6
39573.212	34.2
39573.212	47.7



Preview Result 1-PK+ Final_Result PK+ FCC 15.407 PK at 1m Final_Result AVG FCC 15.407 AVG at 1m

Plot # 16 Radiated Emissions: 9 KHz – 30 MHz

Tx Frequency: 5180 MHz

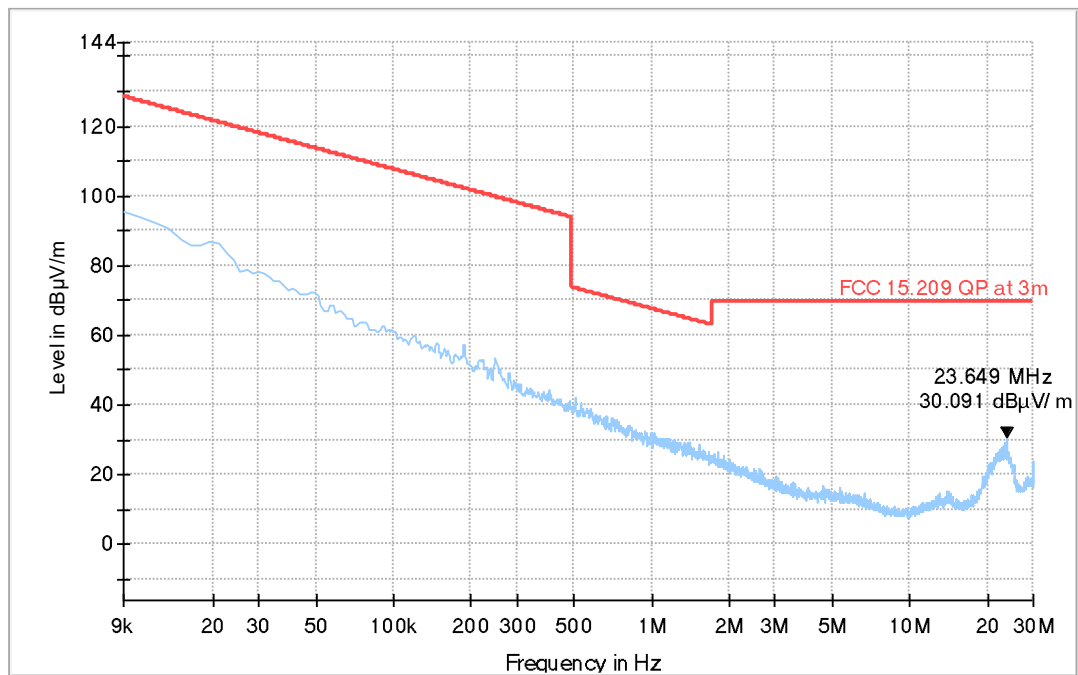
Modulation: 802.11a with BLE Low CH

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	MaxPeak (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)
---	---	---	---	---	---	---	---	---	---	---	---	---	---

(continuation of the "Final_Result" table from column 19 ...)

Frequency (MHz)	Raw Rec (dBµV)
---	---



Preview Result 1 -PK+ Final_Result QPK FCC 15.209 QP at 3m Final_Result PK+

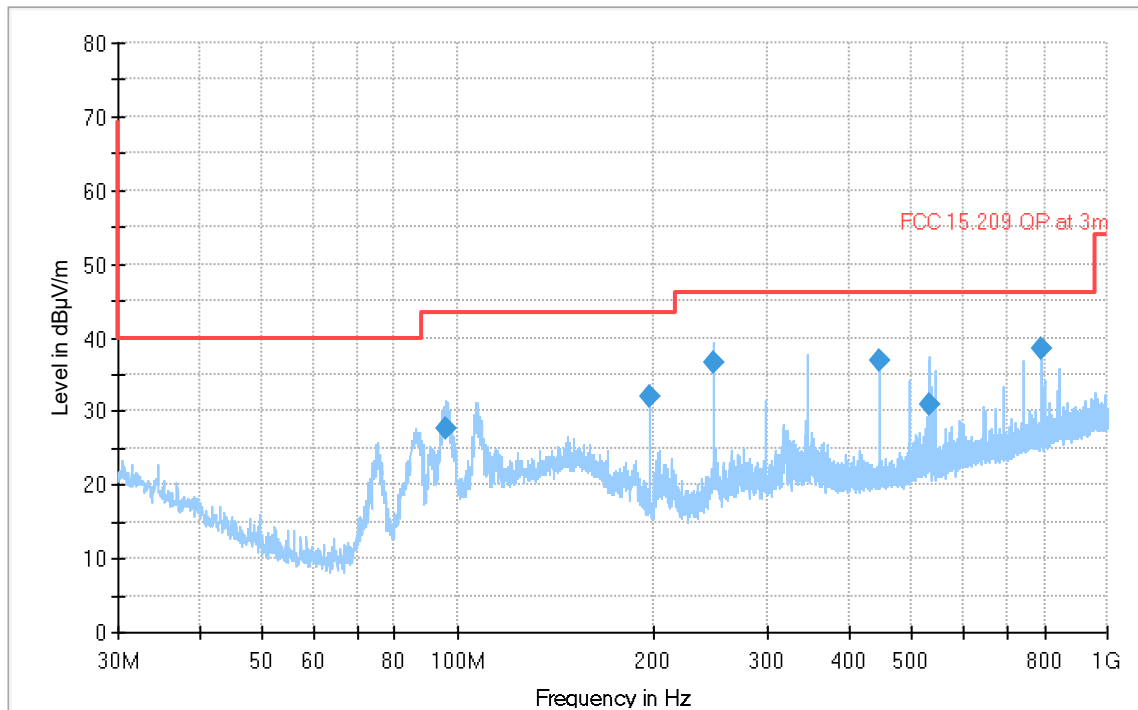
Plot # 17 Radiated Emissions: 30 – 1000MHz

Tx Frequency: 5180 MHz

Modulation: 802.11a with BLE Low CH

Final_Result

Frequency (MHz)	QuasiPeak (dBμV/m)	MaxPeak (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)
96.202	27.757	---	43.50	15.74	500.0	120.0	225.0	H	15.0	-15.3	-34.6	0.0	19.4	43.0
198.003	31.929	---	43.50	11.57	500.0	120.0	226.0	H	298.0	-16.2	-34.2	0.0	18.0	48.1
247.509	36.681	---	46.02	9.34	500.0	120.0	197.0	H	350.0	-11.3	-34.0	0.0	22.7	48.0
445.501	36.819	---	46.02	9.20	500.0	120.0	118.0	V	20.0	-10.6	-33.3	0.0	22.7	47.4
533.610	30.941	---	46.02	15.08	500.0	120.0	209.0	H	114.0	-8.7	-33.0	0.0	24.3	39.6
791.994	38.380	---	46.02	7.64	500.0	120.0	125.0	H	171.0	-4.3	-32.4	0.0	28.1	42.7



PK+_MAXH
Final_Result QPK

FCC 15.209 QP at 3m
Final_Result PK+

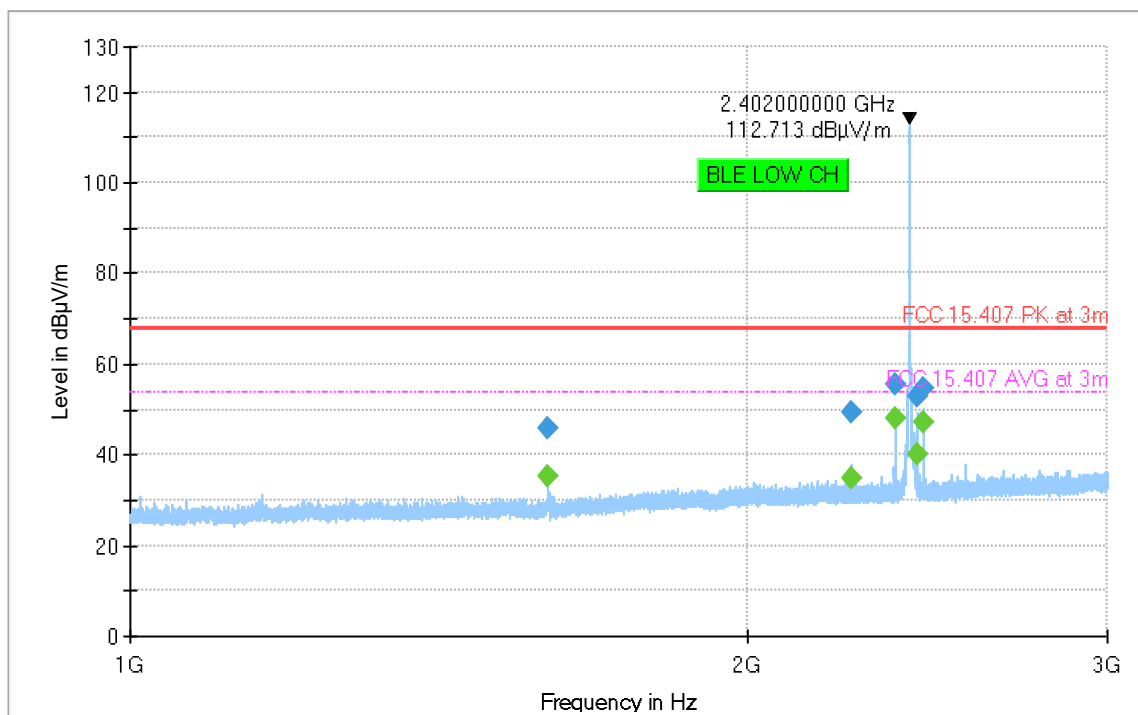
Plot # 18 Radiated Emissions: 1 – 3 GHz

Tx Frequency: 5180 MHz

Modulation: 802.11a with BLE Low CH

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (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)
1598.950	---	35.200	53.98	18.78	500.0	1000.0	145.0	V	66.0	2.5	-22.9	0.0	25.4	32.7
1598.950	45.795	---	68.00	22.21	500.0	1000.0	145.0	V	66.0	2.5	-22.9	0.0	25.4	43.3
2248.362	49.146	---	68.00	18.85	500.0	1000.0	144.0	V	161.0	5.4	-22.3	0.0	27.7	43.8
2248.362	---	35.007	53.98	18.97	500.0	1000.0	144.0	V	161.0	5.4	-22.3	0.0	27.7	29.7
2363.587	---	48.056	53.98	5.92	500.0	1000.0	100.0	V	157.0	6.0	-22.2	0.0	28.2	42.1
2363.587	55.310	---	68.00	12.69	500.0	1000.0	100.0	V	157.0	6.0	-22.2	0.0	28.2	49.3
2420.805	---	40.160	53.98	13.82	500.0	1000.0	160.0	V	146.0	6.0	-22.2	0.0	28.2	34.2
2420.805	53.041	---	68.00	14.96	500.0	1000.0	160.0	V	146.0	6.0	-22.2	0.0	28.2	47.1
2440.358	---	47.027	53.98	6.95	500.0	1000.0	144.0	V	154.0	6.0	-22.2	0.0	28.2	41.0
2440.358	54.514	---	68.00	13.49	500.0	1000.0	144.0	V	154.0	6.0	-22.2	0.0	28.2	48.5



PK+_MAXH
Final_Result PK+

FCC 15.407 PK at 3m
Final_Result AVG

FCC 15.407 AVG at 3m

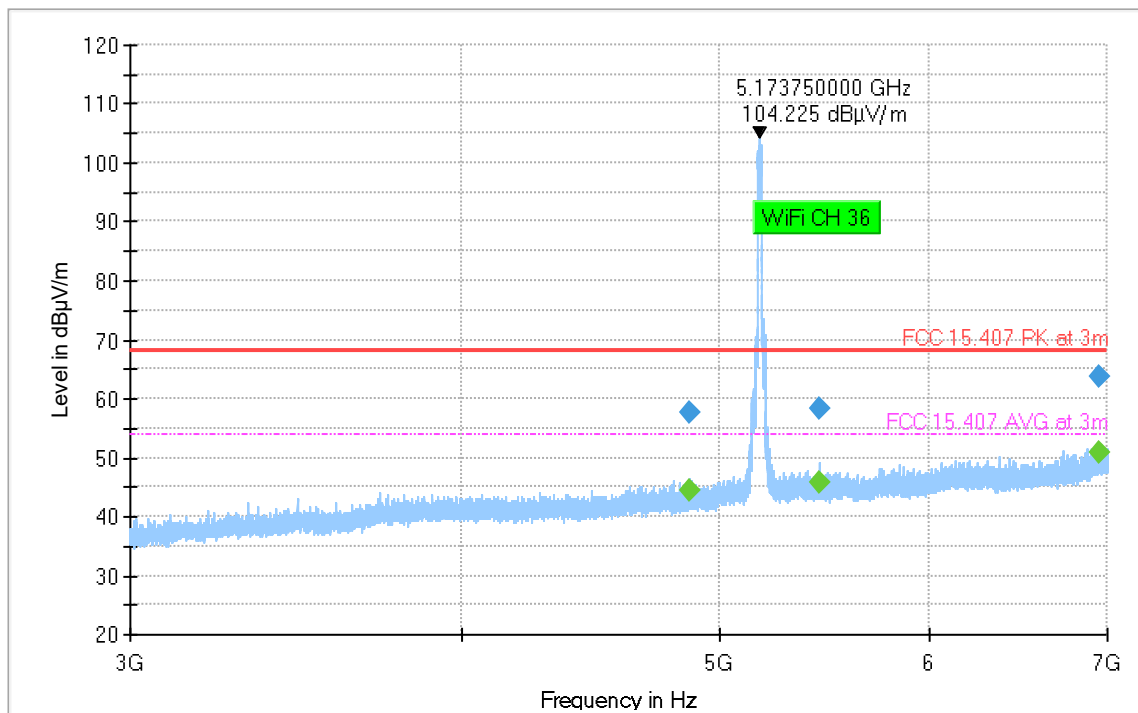
Plot # 19 Radiated Emissions: 3 – 7 GHz

Tx Frequency: 5180 MHz

Modulation: 802.11a with BLE Low CH

Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (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)
4870.116	57.679	---	68.00	10.32	500.0	1000.0	211.0	H	209.0	12.9	-20.2	0.0	33.1	44.8
4870.116	---	44.429	53.98	9.55	500.0	1000.0	211.0	H	209.0	12.9	-20.2	0.0	33.1	31.6
5457.645	---	45.788	53.98	8.19	500.0	1000.0	109.0	V	110.0	14.1	-19.9	0.0	34.0	31.7
5457.645	58.333	---	68.00	9.67	500.0	1000.0	109.0	V	110.0	14.1	-19.9	0.0	34.0	44.2
6949.459	---	50.694	53.98	3.28	500.0	1000.0	109.0	H	83.0	17.0	-18.2	0.0	35.2	33.7
6949.459	63.847	---	68.00	4.15	500.0	1000.0	109.0	H	83.0	17.0	-18.2	0.0	35.2	46.8



PK+_MAXH
Final_Result PK+

FCC 15.407 PK at 3m
Final_Result AVG

FCC 15.407 AVG at 3m

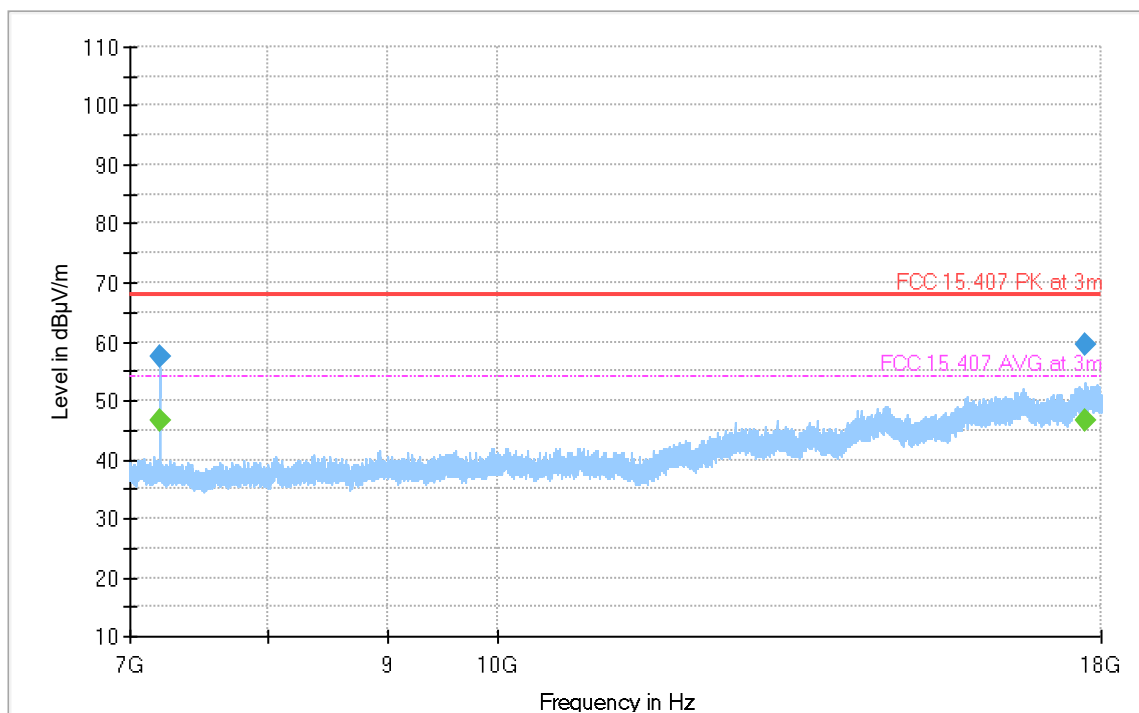
Plot # 20 Radiated Emissions: 7 - 18 GHz

Tx Frequency: 5180 MHz

Modulation: 802.11a with BLE Low CH

Final_Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (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)
7205.169	57.352	---	68.00	10.65	500.0	1000.0	100.0	H	73.0	-1.9	9.0	-46.8	35.9	59.3
7205.169	---	46.730	53.98	7.25	500.0	1000.0	100.0	H	73.0	-1.9	9.0	-46.8	35.9	48.7
17713.049	59.327	---	68.00	8.67	500.0	1000.0	144.0	H	197.0	14.3	15.5	-42.7	41.6	45.0
17713.049	---	46.498	53.98	7.48	500.0	1000.0	144.0	H	197.0	14.3	15.5	-42.7	41.6	32.2



PK+_MAXH
Final_Result PK+

FCC 15.407 PK at 3m
Final_Result AVG

FCC 15.407 AVG at 3m

Plot # 21 Radiated Emissions: 18 - 40GHz

Tx Frequency: 5180 MHz

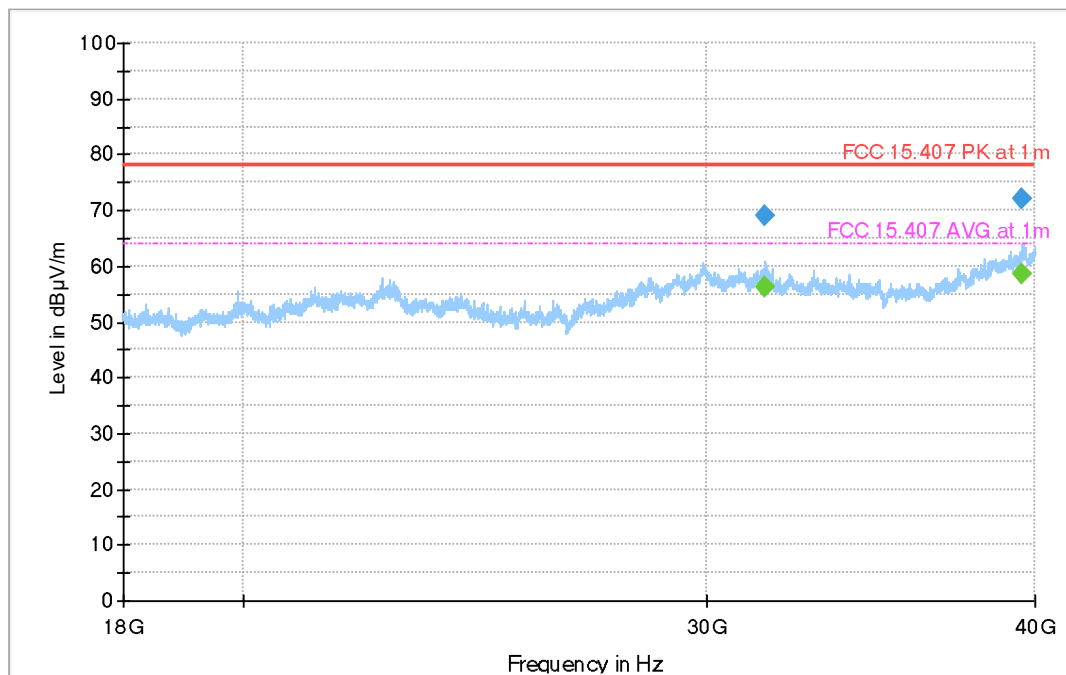
Modulation: 802.11a with BLE Low CH

Final Result

Frequency (MHz)	MaxPeak (dBμV/m)	Average (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)
31596.131	---	56.311	63.98	7.67	500.0	1000.0	150.0	H	-13.0	24.5	11.0	0.0	13.5
31596.131	69.120	---	78.00	8.88	500.0	1000.0	150.0	H	-13.0	24.5	11.0	0.0	13.5
39573.212	---	58.487	63.98	5.49	500.0	1000.0	150.0	H	92.0	24.2	12.6	0.0	11.6
39573.212	71.987	---	78.00	6.01	500.0	1000.0	150.0	H	92.0	24.2	12.6	0.0	11.6

(continuation of the "Final_Result" table from column 19 ...)

Frequency (MHz)	Raw Rec (dBμV)
31596.131	31.8
31596.131	44.6
39573.212	34.2
39573.212	47.7



8.6 AC Power Line Conducted Emissions

8.6.1 Measurement according to ANSI C63.10

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 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.

8.6.3 Test conditions and setup:

Ambient Temperature ©	EUT Set-Up #	EUT operating mode	Power line (L1, L2, L3, N)	Power Input
22° C	1	802.11a	Line & Neutral	120VAC to 24VAC

8.6.4 Measurement Result:

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

8.6.5 Measurement Plots:

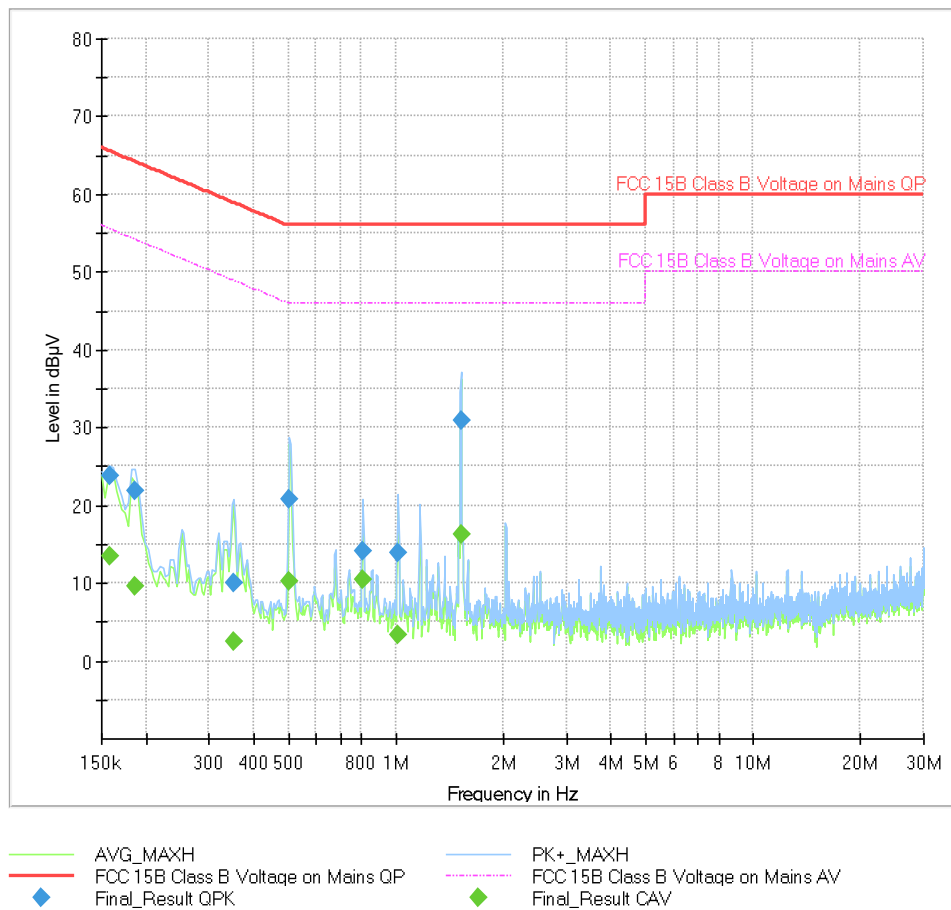
Plot # 1 Conducted Emissions: 150kHz – 30MHz

Tx Frequency: 5180 MHz

Modulation: 802.11a with BLE Low CH

Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin	Meas. Time (ms)	Bandwidth (Hz)	Line	PE	Corr. (dB)
0.16	---	13.44960944	55.57	42.12	1000.0	9.0	L1	GND	10.1
0.16	23.73626105	---	65.57	41.83	1000.0	9.0	L1	GND	10.1
0.19	---	9.53067318	54.20	44.67	1000.0	9.0	N	GND	10.1
0.19	21.94500270	---	64.20	42.25	1000.0	9.0	N	GND	10.1
0.35	---	2.42636869	48.92	46.50	1000.0	9.0	N	GND	10.0
0.35	9.93647001	---	58.92	48.99	1000.0	9.0	N	GND	10.0
0.50	---	10.19501112	46.00	35.80	1000.0	9.0	N	GND	9.9
0.50	20.80935285	---	56.00	35.19	1000.0	9.0	N	GND	9.9
0.81	14.20313695	---	56.00	41.80	1000.0	9.0	N	GND	9.9
0.81	---	10.36197332	46.00	35.64	1000.0	9.0	N	GND	9.9
1.01	13.88568526	---	56.00	42.11	1000.0	9.0	N	GND	9.9
1.01	---	3.39930373	46.00	42.60	1000.0	9.0	N	GND	9.9
1.52	---	16.20212189	46.00	29.80	1000.0	9.0	N	GND	9.9
1.52	30.91772858	---	56.00	25.08	1000.0	9.0	N	GND	9.9



9 Test setup photos

Setup photos are included in supporting file name: "EMC_LENXX_032_26001_FCC_Setup_Photos.pdf"

10 Test Equipment and Ancillaries Used for Testing

Equipment Type	Manufacturer	Model	Serial #	Calibration Cycle	Last Calibration Date
PASSIVE LOOP ANTENNA	ETS LINDGREN	6512	000164698	3 Years	09/05/2025
BILOG ANTENNA	A.H. SYSTEMS	BiLA2G	569	3 Years	09/08/2025
HORN ANTENNA	EMCO	3115	00035111	3 Years	09/04/2025
HORN ANTENNA	ETS LINDGREN	3117-PA	00167061	3 Years	09/04/2025
HORN ANTENNA	ETS LINDGREN	3116C-PA	00166821	3 Years	09/04/2025
ESW.EMI TEST RECEIVER	ROHDE & SCHWARZ	ESW44	101715	3 Years	12/09/2025
DIGITAL THERMOMETER	Control Company	4410,90080-03	230712972	3 Years	10/18/2023
Signal Analyzer	R&S	FSV40	101022	3 Years	09/30/2025
Multimeter	Fluke	115	56090717MV	3 Years	09/25/2025
Software	EMC32	Version 10.50.40	-	-	-
TEST RECEIVER	R&S	ESW44	103143	2 Years	09/12/2024
PULSE LIMITER	R&S	ESH3-Z2	102473	3 Years	09/08/2025
LISN	FCC	FCC-LISN-50-25-2-08	08014	2 Years	09/08/2025
Multimeter	Fluke	115	56090717MV	3 Years	09/25/2025
Software	EMC32	Version 11.40.00	-	-	-

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
2026-03-11	EMC_LENNX_032_26001_15_407_UNII_1	Initial Version	Cheng Song
2026-03-12	EMC_LENNX_032_26001_15_407_UNII_1_Rev1	Updated HVIN	Cheng Song

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