FCC / ISED Test Report

For:
NexRev LLC

Model Number:
COMMS

Market Name:
Nexus Comms

Product Description:
Intelligent IoT Connectivity Device

Applied Rules and Standards:
47 CFR Part 15.247 (DTS)
RSS-247 Issue 3 (DTS) & RSS-Gen Issue 5

FCC ID: 2BOOE-NEXUSCOMMS
IC: 33828-NEXUSCOMMS

REPORT #: EMC_NEXRE_002_25001_FCC_15_247_Rev1

DATE: 2025-07-24

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: contact@cetecom.com ◆ http://www.cetecom.com
CETECOM Inc. is a Delaware Corporation with Corporation number: 2905571

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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 Regulations and the relevant ISED Canada standard RSS-247.

No deviations were ascertained.

Company Name	Product Description	Model No.
NexRev LLC	Intelligent IoT Connectivity Device	COMMS

Report Reviewer:

Date	Section	Name	Signature
2025-07-24	Compliance	Alvin, Ilarina (Senior Manager Regulatory Services)	Alvin ILARINA Digitally signed by Alvin ILARINA Date: 2025.07.24 15:28:03 -07'00'

Responsible for the Report:

Date	Section	Name	Signature
2025-07-24	Compliance	Cheng Song (EMC Engineer)	Cheng Song CN = Cheng Song email = cheng.song@cetecom.com C = US O = CETECOM INC. 2025.07.24 15:14:41 -07'00'

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

Company Name:	CETECOM Inc.
Department:	Compliance
Street Address:	411 Dixon Landing Road
City/Zip Code	Milpitas, CA 95035
Country	USA
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
Senior Manager Regulatory Services:	Alvin, Ilarina
Responsible Project Leader:	Shane Hao

2.2 Identification of the Client

Applicant's Name:	NexRev LLC
Street Address:	601 Development Drive
City/Zip Code	Plano TX 75074
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	COMMS
Marketing Name	Nexus Comms
HW Version	4
SW Version	V1.1.0
FCC ID	2BOOE-NEXUSCOMMS
IC	33828-NEXUSCOMMS
Product Description	Intelligent IoT Connectivity Device
Radio Information as declared	**Cellular Modules** • Model: Nordic Semiconductor nRF9160 • Contains FCC ID: 2ANPO00NRF9160 • Contains IC: 24529-NRF9160 **Bluetooth Modules** • Model: Nordic Semiconductor nRF 52840 • Wireless Technology: Bluetooth LE v5.2
Antenna Information as declared	Pulse W1010 Antenna Quectel YE0021AA Antenna (Primary cellular antenna) JoyMax ZWX-721XSA2B Antenna
Power Supply/ Rated Operating Voltage Range	Nominal 24 VAC/DC Range 18 - 30 VAC/DC
Operating Temperature Range	-40 ºC to +70 ºC
Sample Revision	☐Prototype ☐Production ■Pre-Production
EUT Dimensions	12.1cm X 11.8cm X 3.2cm
Weight	<1.0 lb
Note: Details about the Equipment Under Test (EUT) are provided by the client or applicant.	

3.2 EUT Sample details

EUT #	Serial Number	HW Version	SW Version	Notes/Comments
1	231214000541	4	V1.1.0	Radiated and AC Conducted Emissions
2	231214000541	4	V1.1.0	Conducted RF

3.3 Accessory Equipment (AE) details

AE #	Type	Model	Manufacturer	Notes/Comments
1	AC Adapter	L6R12-240	TRI-MAG, LLC	-

3.4 Test Sample Configuration

EUT Set-up #	Combination of AE used for test set up	Comments
1	EUT#1 + AE#1	External antennas were connected to the EUT during testing.
2	EUT#2 + AE#1	The measurement equipment was connected to the 50-ohm RF port of the EUT for conducted measurements.

3.5 Mode of Operation details

Mode of Operation	Description of Operating modes	Additional Information
Op. 1	BLE (Power Setting: 25)	The EUT was configured to operate in Bluetooth Low Energy (BLE) continuous transmission mode utilizing test software that is not accessible to the end user. During the testing process, measurements were conducted using the BLE physical layer configured at data rates of 1 Mbps and 2 Mbps.

3.6 Justification for 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 shows the worst case between horizontal and vertical antenna polarizations and for all orientations of the EUT.

4 Subject of Investigation

The objective of the measurements done by CETECOM Inc. was to evaluate the compliance of the EUT against the relevant requirements specified in section 1.

5 Measurement Results Summary

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

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

6 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus, with 95% confidence interval (in dB delta to result), based on a coverage factor k=2.

Radiated measurement

Measurement System		EMC 1	EMC 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%

6.2 Dates of Testing:

2025-03-27 – 2025-04-04

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

Testing is performed according to the guidelines provided in ANSI C63.4-2014 American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz. The results are split up into up to 3 frequency ranges due to antenna bandwidth restrictions and according to ANSI C63.4 chap. 4.5. A loop antenna is used for 9 kHz – 30 MHz, a Biconilog antenna is used from 30 MHz to 1 GHz, and Horn antennas are used to cover frequencies above 1 GHz.

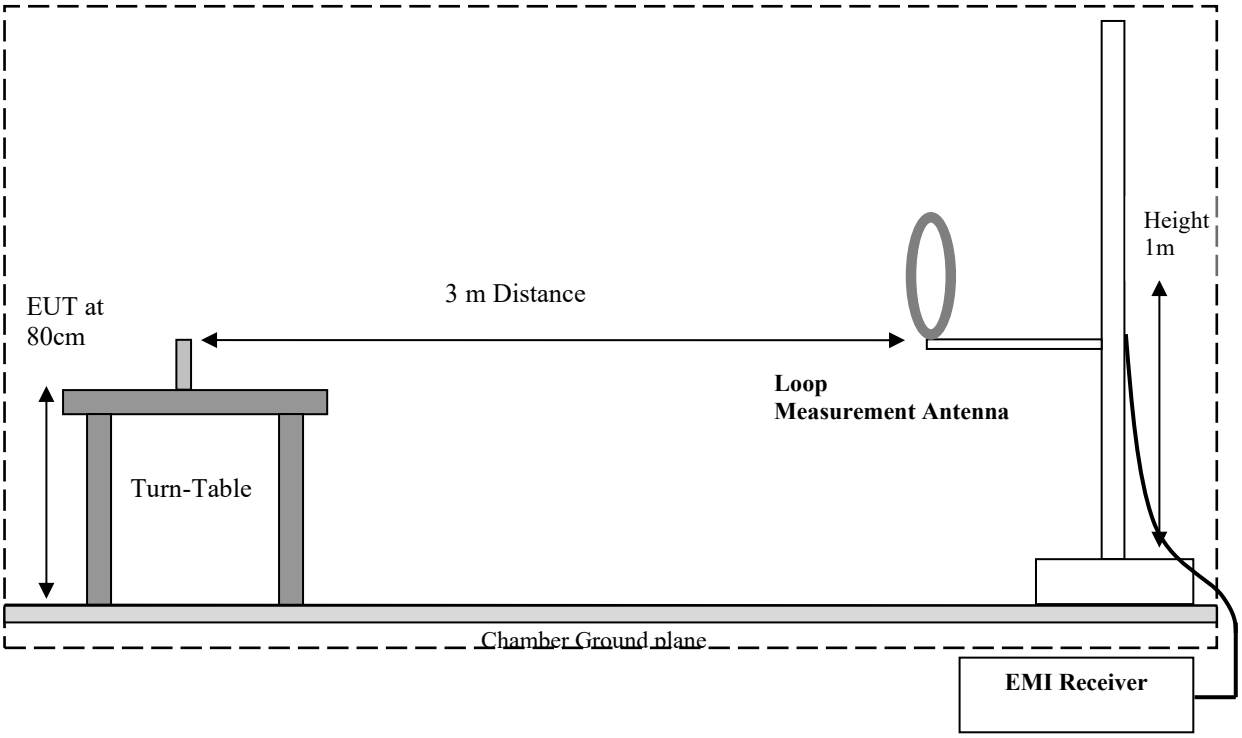
Step 1:

- The exploratory measurement is accomplished by running a matrix of sweeps over the required frequency range with R&S Test-SW EMC32 and continuous turntable movements during Preview (360°), two orthogonal positions of the EUT, and both antenna polarizations (Horizontal/Vertical) at three antenna heights (1, 1.5, 2 meters). This procedure exceeds the requirement of the above standards to cover the 3 orthogonal axes of the EUT. A max peak detector is utilized during the exploratory measurement. Test-SW creates an overall maximum trace for all sweeps and saves the settings for each point of this trace. The maximum trace is part of the test report.
- In case there are no emissions above noise floor level only the maximum trace is reported as described above and step 2 is not being performed.

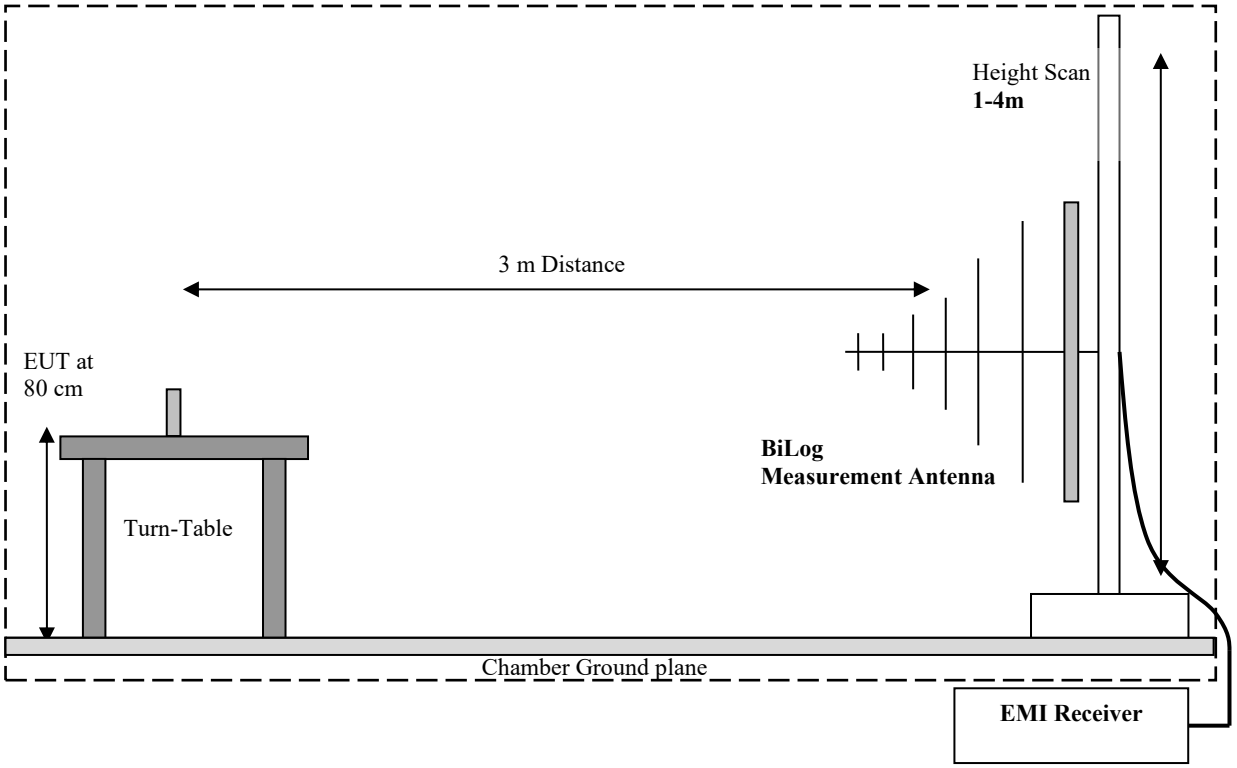
Step 2:

- The 6 highest emissions (emission level 6 dB higher than the noise floor and margin to the limit < 20 dB) 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.
- Add a marker to the highest emissions that does not exceed the margin threshold for final measurement.
- The maxima are then put through the final measurement and again maximized in a 90-degree range of the turntable, fine search in the frequency domain, and height scan between 1m and 4m
- In case there are no emissions above noise floor level only the maximum trace is reported as described above.

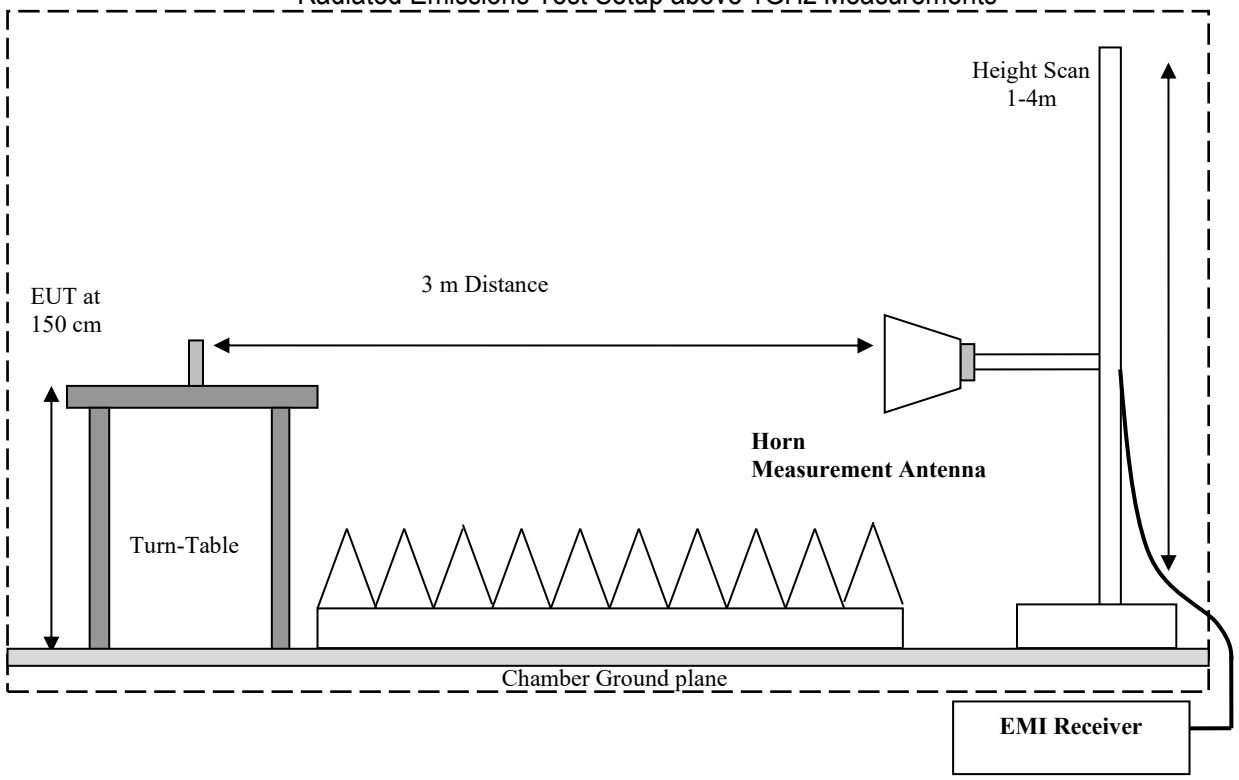
Radiated Emissions Test Setup below 30MHz Measurements



Radiated Emissions Test Setup 30MHz-1GHz Measurements



Radiated Emissions Test Setup above 1GHz Measurements



7.1.1 Sample Calculations for Field Strength Measurements

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

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

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

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

Example:

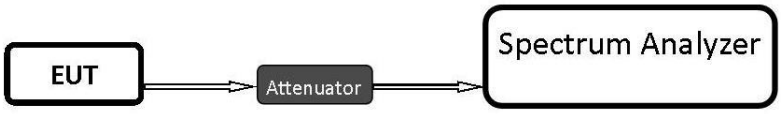
Frequency (MHz)	Measured SA (dBµV)	Cable Loss (dB)	Antenna Factor Correction (dB)	Field Strength Result (dBµV/m)
1000	80.5	3.5	14	98.0

7.2 Power Line Conducted Measurement Procedure

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

7.3 RF Conducted Measurement Procedure

Testing procedures are based on 558074 D01 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 Peak Conducted Output Power

8.1.1 Measurement according to FCC 558074 D01 15.247 Meas Guidance v05r02, and ANSI C63.10 Clause 11.

Spectrum Analyzer settings:

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

8.1.2 Limits:

Maximum Peak Output Power:

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

8.1.3 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input	Antenna Gain
22° C	2	Op. 1	120 VAC	2 dBi

8.1.4 Measurement result:

Test #	PHY	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)	EIRP (dBm)	Limit (dBm)	Result
1	LE 1M	2402	18.1	20.1	30 (Pk) / 36 (EIRP)	Pass
2	LE 1M	2440	18.8	20.8	30 (Pk) / 36 (EIRP)	Pass
3	LE 1M	2480	17.3	19.3	30 (Pk) / 36 (EIRP)	Pass
4	LE 2M	2402	18.1	20.1	30 (Pk) / 36 (EIRP)	Pass
5	LE 2M	2440	18.8	20.8	30 (Pk) / 36 (EIRP)	Pass
6	LE 2M	2480	17.3	19.3	30 (Pk) / 36 (EIRP)	Pass

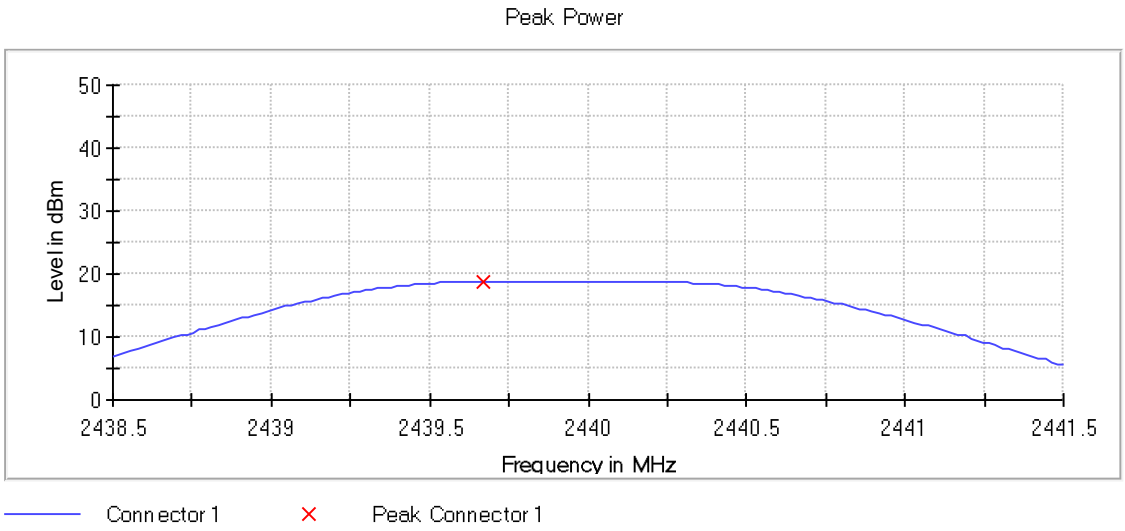
Note: For certain test cases where the measurement plots were determined to be similar, only the plot corresponding to the worst-case configuration is presented in the following section

8.1.5 Measurement Plots:

Peak output power (Sweep) (2440 MHz; 10.000 dBm; 1 MHz)

Result

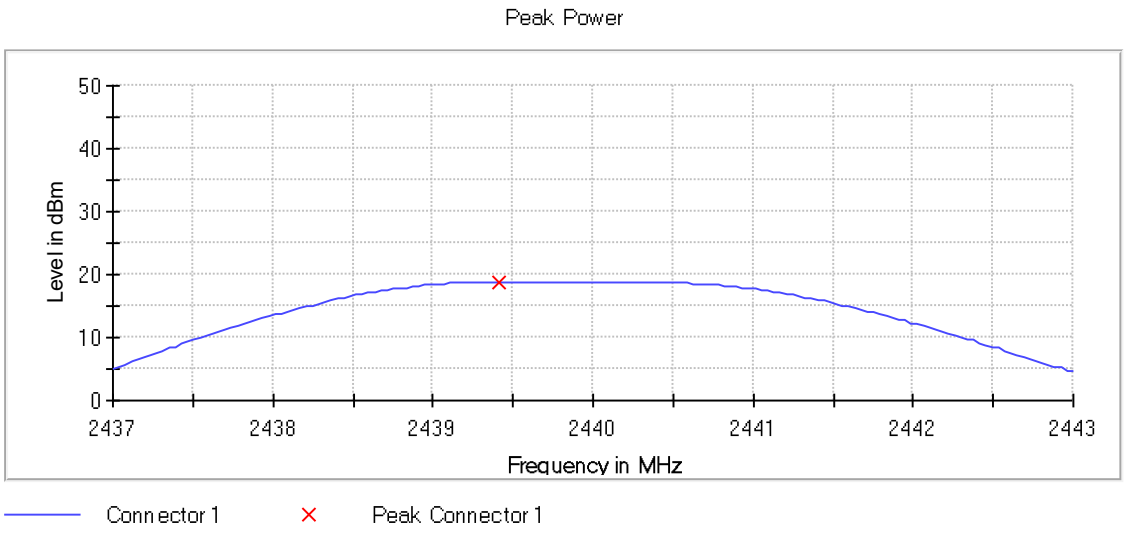
DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
2440.000000	18.8	30.0	PASS



Peak output power (Sweep) (2440 MHz; 10.000 dBm; 2 MHz)

Result

DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
2440.000000	18.8	30.0	PASS



8.2 Power Spectral Density

8.2.1 Measurement according to FCC 558074 D01 15.247 Meas Guidance v05r02, and ANSI C63.10 Clause 11.

Spectrum Analyzer settings for Peak PSD method:

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

8.2.2 Limits:

FCC§15.247(e) & RSS-247 5.2(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° C	2	Op. 1	120 VAC	2 dBi

8.2.4 Measurement result:

Test #	PHY	Frequency (MHz)	Maximum Power Spectral Density (dBm/3 kHz)	Limit (dBm / 3 kHz)	Result
1	LE 1M	2402	2.869	8	Pass
2	LE 1M	2440	3.561	8	Pass
3	LE 1M	2480	1.964	8	Pass
4	LE 2M	2402	1.142	8	Pass
5	LE 2M	2440	1.666	8	Pass
6	LE 2M	2480	0.205	8	Pass

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.

8.2.5 Measurement Plots:

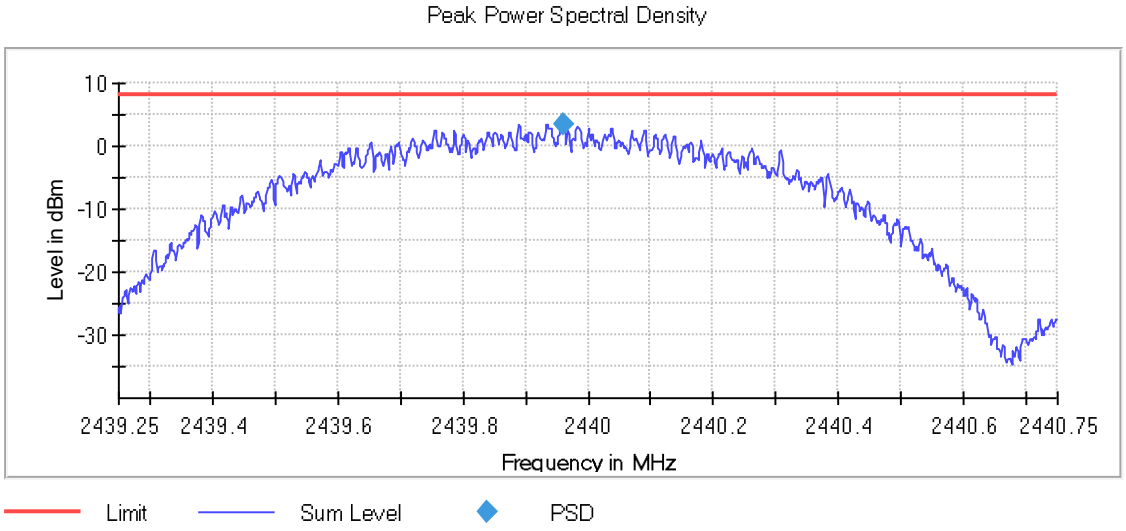
Peak Power Spectral Density (2440 MHz; 10.000 dBm; 1 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2440.000000	2439.959500	3.561	8.0	PASS

Ports

Port	State
1	used



8.3 Band Edge Compliance

8.3.1 Measurement according to FCC 558074 D01 15.247 Meas Guidance v05r02, and ANSI C63.10 Clause 11.

Spectrum Analyzer settings for band edge:

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

8.3.2 Limits non restricted band:

FCC§15.247 (d)

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

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- In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30dB instead of 20dB.

Spectrum Analyzer settings for restricted band:

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

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

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

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

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

8.3.4 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input	Antenna Gain
22° C	2	Op. 1	120 VAC	2 dBi

8.3.5 Measurement result:

Test #	EUT operating mode	PHY	Band Edge	Level (dBm)	Margin (dB)	Limit (dBm)	Result
1	Op. 1	LE 1M	Lower, Non-restricted (conducted)	-26.1	23.7	-2.4	Pass
2	Op. 1	LE 2M	Lower, Non-restricted (conducted)	-12.8	9.3	-3.5	Pass

8.3.6 Measurement Plots:

Band Edge low (2402 MHz; 10.000 dBm; 1 MHz)

Result

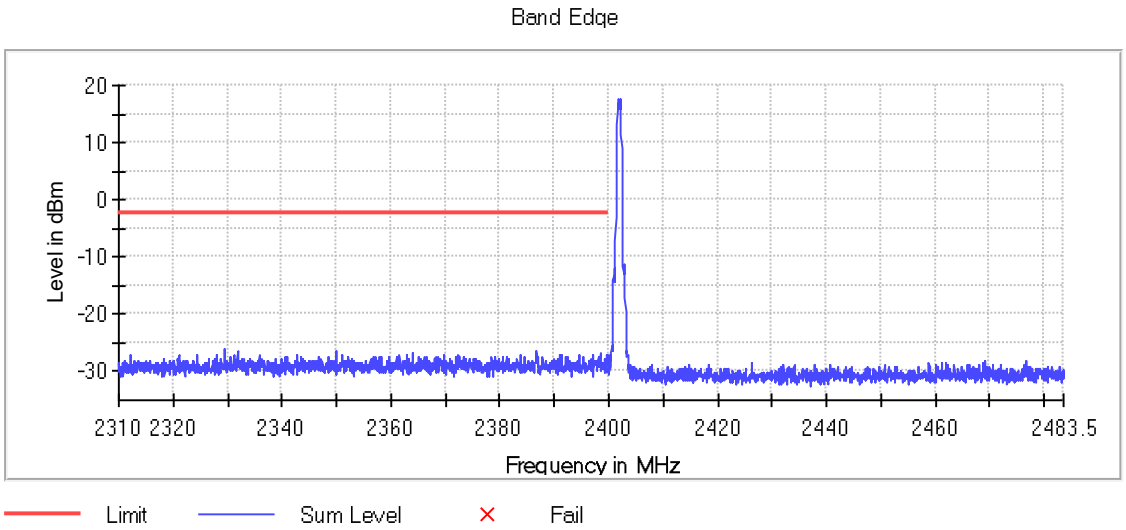
DUT Frequency (MHz)	Result
2402.000000	PASS

Inband Peak

Frequency (MHz)	Level (dBm)
2402.161176	17.6

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2329.500000	-26.1	23.7	-2.4	PASS
2349.850000	-26.3	23.8	-2.4	PASS
2386.800000	-26.3	23.9	-2.4	PASS
2331.800000	-26.5	24.1	-2.4	PASS
2386.600000	-26.6	24.2	-2.4	PASS
2363.950000	-26.8	24.3	-2.4	PASS
2363.900000	-26.8	24.4	-2.4	PASS
2398.400000	-26.9	24.5	-2.4	PASS
2342.700000	-26.9	24.5	-2.4	PASS
2351.050000	-26.9	24.5	-2.4	PASS
2383.800000	-26.9	24.5	-2.4	PASS
2324.350000	-27.0	24.5	-2.4	PASS
2394.500000	-27.0	24.5	-2.4	PASS
2329.450000	-27.0	24.5	-2.4	PASS
2324.400000	-27.0	24.5	-2.4	PASS



Band Edge low (2402 MHz; 10.000 dBm; 2 MHz)

Result

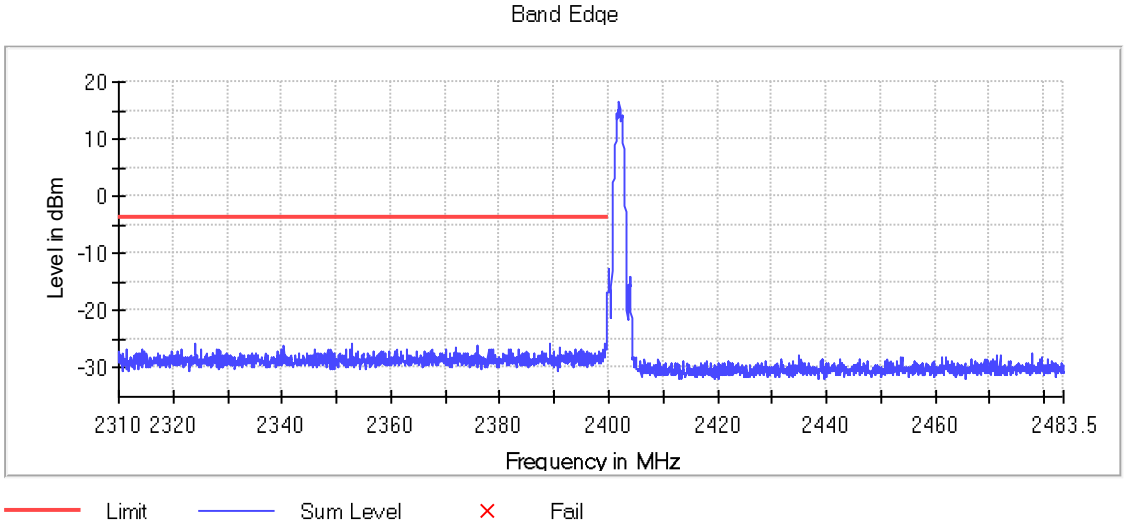
DUT Frequency (MHz)	Result
2402.000000	PASS

Inband Peak

Frequency (MHz)	Level (dBm)
2401.915588	16.5

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2399.950000	-12.8	9.3	-3.5	PASS
2399.900000	-14.2	10.7	-3.5	PASS
2399.850000	-16.9	13.3	-3.5	PASS
2399.800000	-16.9	13.4	-3.5	PASS
2399.750000	-18.8	15.3	-3.5	PASS
2399.700000	-20.3	16.8	-3.5	PASS
2399.650000	-21.5	17.9	-3.5	PASS
2399.600000	-23.5	20.0	-3.5	PASS
2399.550000	-25.4	21.8	-3.5	PASS
2324.100000	-25.6	22.1	-3.5	PASS
2399.200000	-25.7	22.1	-3.5	PASS
2352.750000	-25.8	22.2	-3.5	PASS
2389.200000	-25.8	22.2	-3.5	PASS
2399.150000	-26.0	22.4	-3.5	PASS
2375.750000	-26.0	22.4	-3.5	PASS



8.4 Emission Bandwidth 6dB and 99% Occupied Bandwidth

8.4.1 Measurement according to FCC 558074 D01 15.247 Meas Guidance v05r02, and ANSI C63.10 Clause 11.

Spectrum Analyzer settings:

6dB (DTS) Bandwidth:

- Set RBW = 100 kHz
- Set the video bandwidth (VBW) ≥ 3 x RBW
- Detector = Peak
- Trace mode = Max hold
- Sweep = Auto couple
- Allow the trace to stabilize
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

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) ≈ 3 x 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.

8.4.2 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.

8.4.3 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input
22° C	2	Op. 1	120 VAC

8.4.4 Measurement result:

Test #	Frequency (MHz)	PHY	6dB Emissions Bandwidth (MHz)	Limit (MHz)	Result
1	2402	LE 1M	0.740259	> 0.5	Pass
2	2440	LE 1M	0.740259	> 0.5	Pass
3	2480	LE 1M	0.740259	> 0.5	Pass
4	2402	LE 2M	1.272728	> 0.5	Pass
5	2440	LE 2M	1.272728	> 0.5	Pass
6	2480	LE 2M	1.272728	> 0.5	Pass

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.

Test #	Frequency (MHz)	PHY	99% Occupied Bandwidth (MHz)	Limit (MHz)	Result
7	2402	LE 1M	1.065000	N/A	Pass
8	2440	LE 1M	1.065000	N/A	Pass
9	2480	LE 1M	1.065000	N/A	Pass
10	2402	LE 2M	2.080000	N/A	Pass
11	2440	LE 2M	2.070000	N/A	Pass
12	2480	LE 2M	2.080000	N/A	Pass

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:

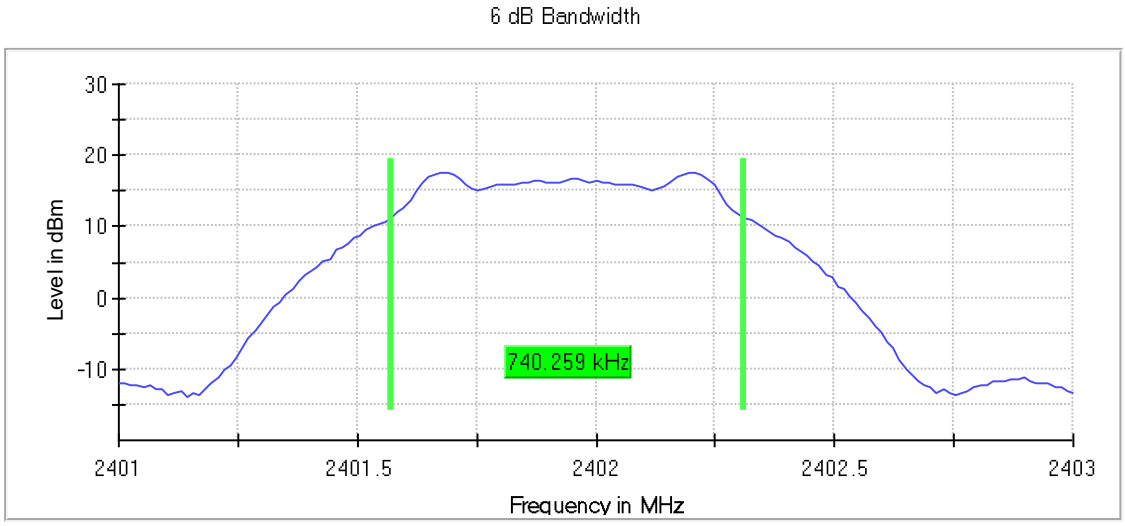
Minimum Emission Bandwidth 6 dB (2402 MHz; 10.000 dBm; 1 MHz)

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	0.740259	0.500000	---	2401.571429	2402.311688

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

DUT Frequency (MHz)	Max Level (dBm)	Result
2402.000000	17.5	PASS



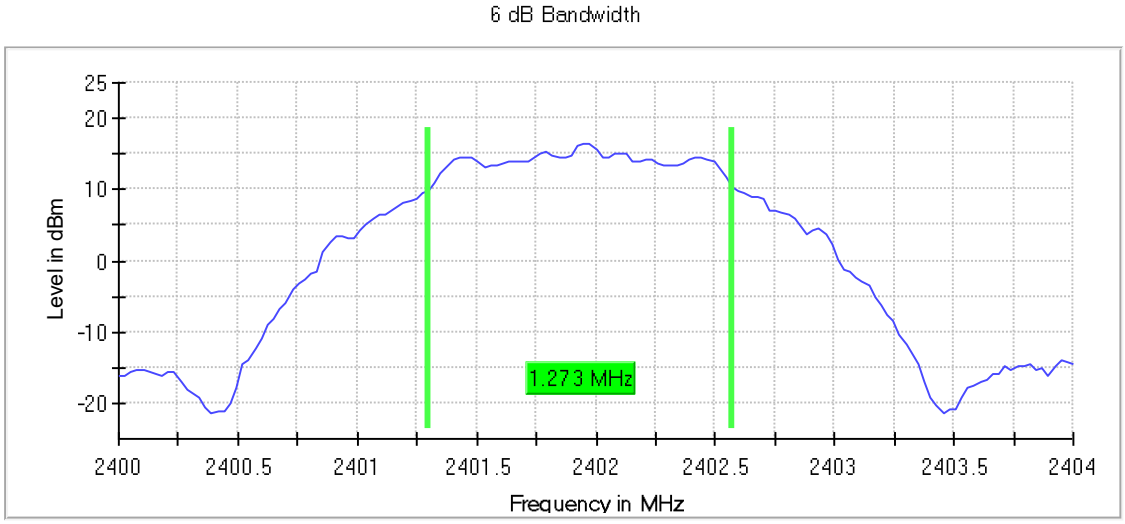
Minimum Emission Bandwidth 6 dB (2402 MHz; 10.000 dBm; 2 MHz)

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	1.272728	0.500000	---	2401.298701	2402.571429

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

DUT Frequency (MHz)	Max Level (dBm)	Result
2402.000000	16.5	PASS



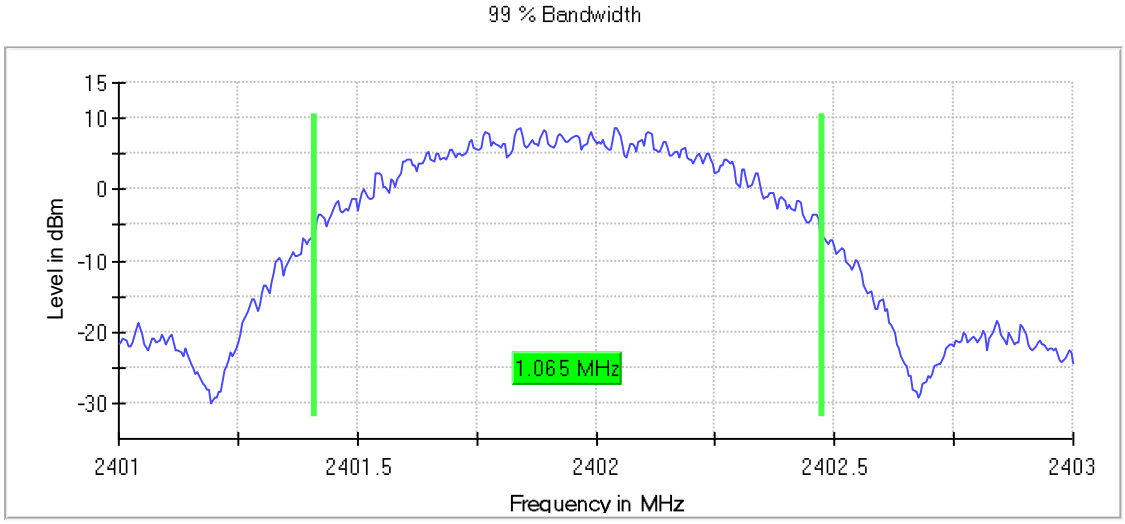
Occupied Channel Bandwidth 99% (2402 MHz; 10.000 dBm; 1 MHz)

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	1.065000	---	---	2401.410000	2402.475000

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

DUT Frequency (MHz)	Result
2402.000000	PASS



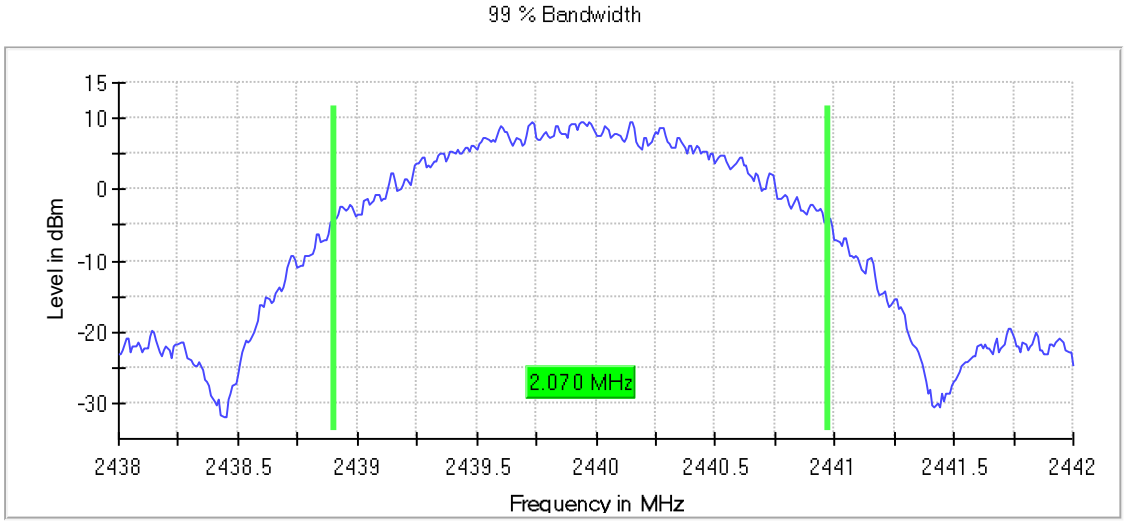
Occupied Channel Bandwidth 99% (2440 MHz; 10.000 dBm; 2 MHz)

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2440.000000	2.070000	---	---	2438.900000	2440.970000

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

DUT Frequency (MHz)	Result
2440.000000	PASS



8.5 Radiated Transmitter Spurious Emissions and Restricted Bands

8.5.1 Measurement according to ANSI C63.10 (2013)

Spectrum Analyzer Settings:

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

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

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

- Radiated spurious emissions shall be measured for the transmit frequencies, transmit power, and data rate for the lowest, middle and highest channel in each frequency band of operation and for the highest gain antenna for each antenna type, and using the appropriate parameters and test requirements.
- The highest (or worst-case) data rate shall be recorded for each measurement.
- For testing 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 §15.247

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

FCC §15.209 & RSS-Gen 8.9

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

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

FCC §15.205 & RSS-Gen 8.10

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

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

- Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
  *PEAK LIMIT= 74 dBµV/m
  *AVG. LIMIT= 54 dBµV/m

8.5.3 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input
22° C	1	Op. 1	120 VAC

8.5.4 Measurement result:

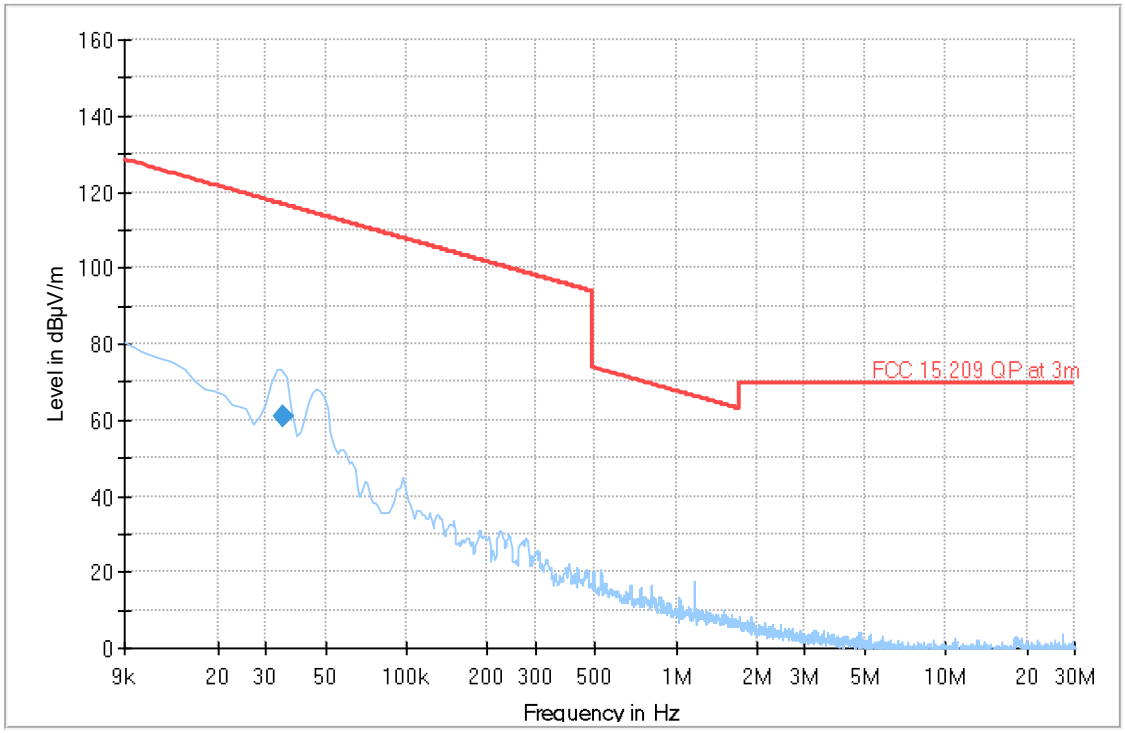
Plot #	Channel #	PHY	Scan Frequency	Transmitter Spurious (dBµV/m @ 3m)	Result
1-5	Low	LE 2M	9 kHz – 26 GHz	50.613	Pass
6-10	Mid	LE 2M	9 kHz – 26 GHz	52.343	Pass
11-15	High	LE 2M	9 kHz – 26 GHz	49.918	Pass
16	High	LE 2M	Upper Restricted Band Edge	N/A	Pass

Note 1: Radiated Spurious Emissions and Upper Restricted Band Edge testing were performed with the EUT configured in the BLE 2 Mbps physical layer mode only, as this mode represents the worst-case configuration in terms of output power and occupied bandwidth, and is therefore most likely to result in non-compliance with band edge emission limits.

8.5.5 Measurement Plots:

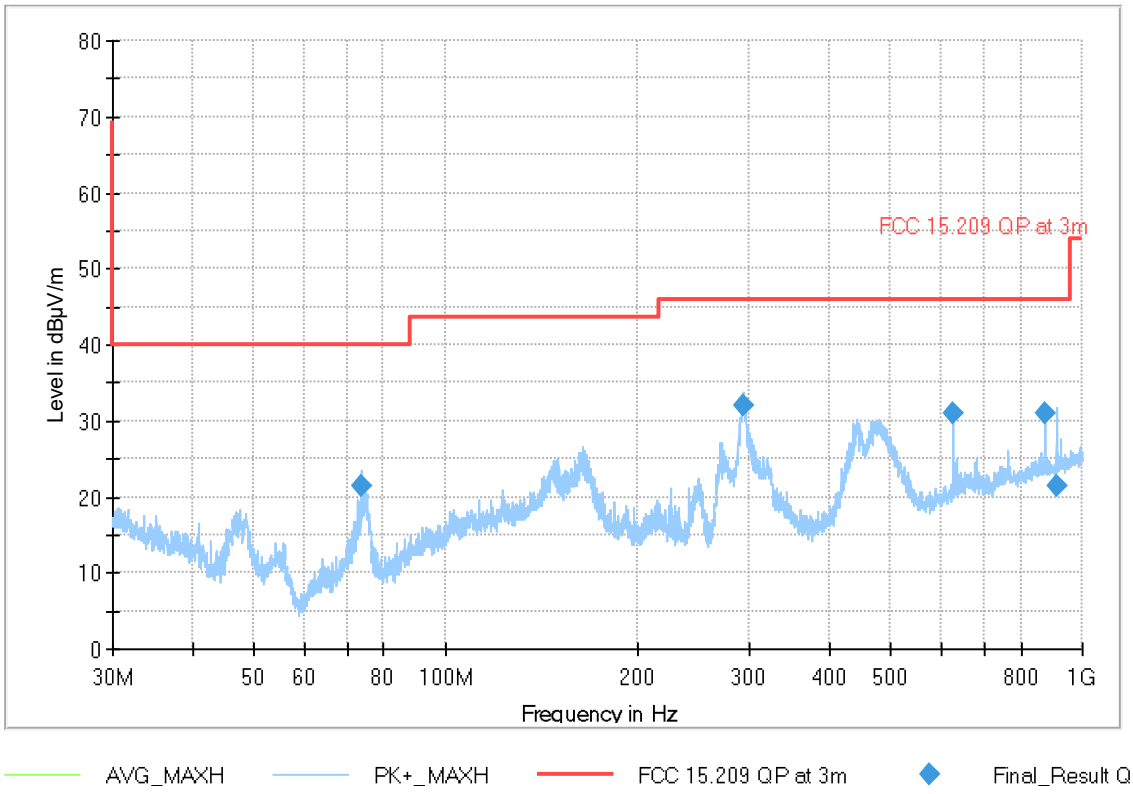
Plot # 1

Frequency (MHz)	QuasiPeak (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)
0.035	60.902	116.69	55.78	500.0	0.2	100.0	H	353.0	47.8	0.1	-28.5	76.2	13.1



Plot # 2

Frequency (MHz)	QuasiPeak (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)
73.819	21.503	40.00	18.50	500.0	120.0	400.0	H	-29.0	-20.8	-34.7	0.0	13.9	42.3
292.677	31.999	46.02	14.02	500.0	120.0	117.0	H	-29.0	-13.9	-33.8	0.0	19.9	45.9
625.010	30.984	46.02	15.04	500.0	120.0	135.0	H	228.0	-7.1	-32.7	0.0	25.6	38.0
875.015	30.843	46.02	15.18	500.0	120.0	100.0	H	192.0	-3.4	-32.1	0.0	28.7	34.2
911.949	21.512	46.02	24.51	500.0	120.0	301.0	V	237.0	-3.1	-32.0	0.0	28.8	24.6

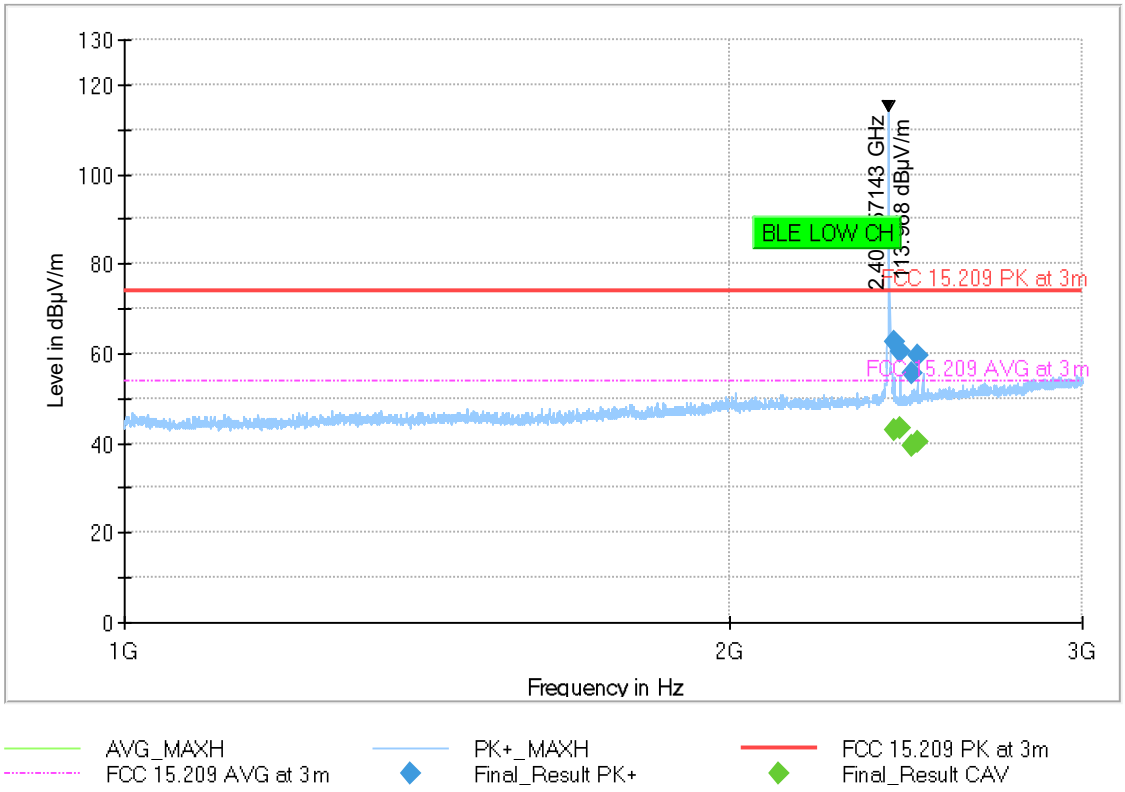


Plot # 3

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)
2418.150	62.494	---	73.98	11.49	500.0	1000.0	119.0	V	18.0	33.4	5.4	0.0	28.1
2418.150	---	42.918	53.98	11.06	500.0	1000.0	119.0	V	18.0	33.4	5.4	0.0	28.1
2433.932	---	43.125	53.98	10.85	500.0	1000.0	100.0	V	42.0	33.5	5.4	0.0	28.1
2433.932	60.443	---	73.98	13.54	500.0	1000.0	100.0	V	42.0	33.5	5.4	0.0	28.1
2470.136	55.679	---	73.98	18.30	500.0	1000.0	309.0	H	275.0	33.7	5.4	0.0	28.3
2470.136	---	39.367	53.98	14.61	500.0	1000.0	309.0	H	275.0	33.7	5.4	0.0	28.3
2481.715	---	40.054	53.98	13.93	500.0	1000.0	100.0	V	23.0	33.7	5.4	0.0	28.3
2481.715	59.365	---	73.98	14.61	500.0	1000.0	100.0	V	23.0	33.7	5.4	0.0	28.3

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

Frequency (MHz)	Raw Rec (dBµV)
2418.150	29.1
2418.150	9.5
2433.932	9.6
2433.932	26.9
2470.136	22.0
2470.136	5.7
2481.715	6.4
2481.715	25.7

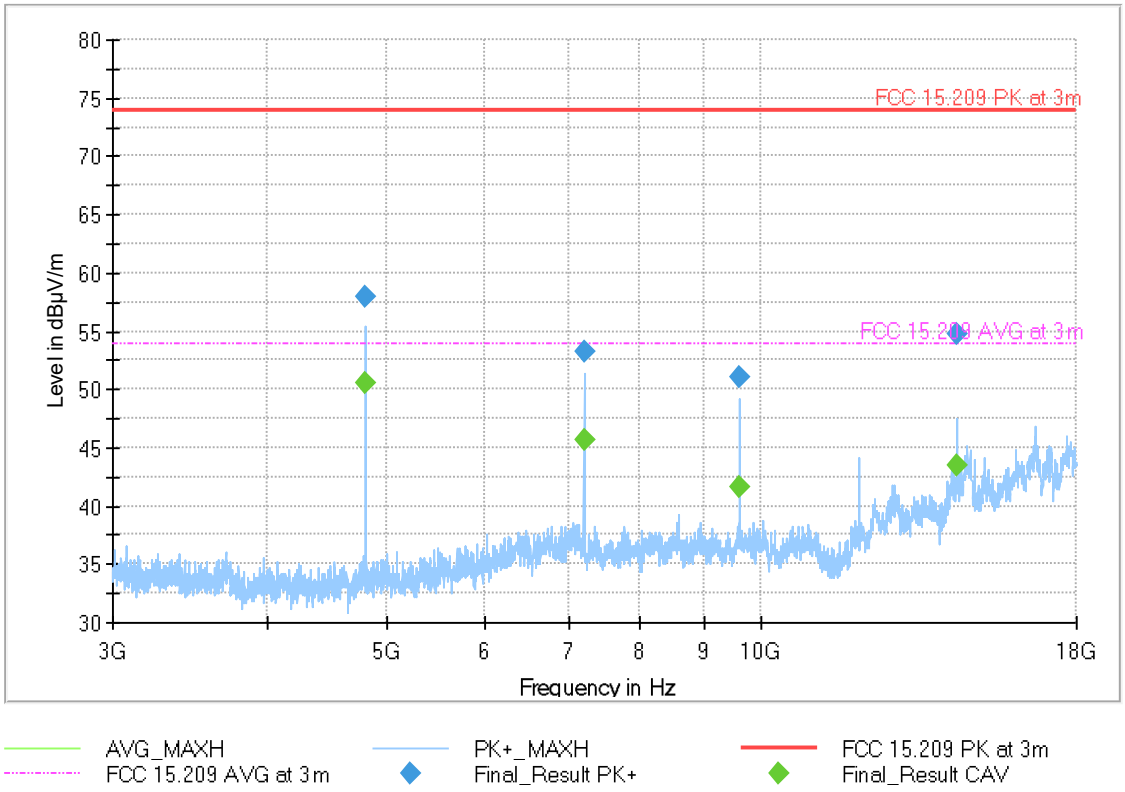


Plot # 4

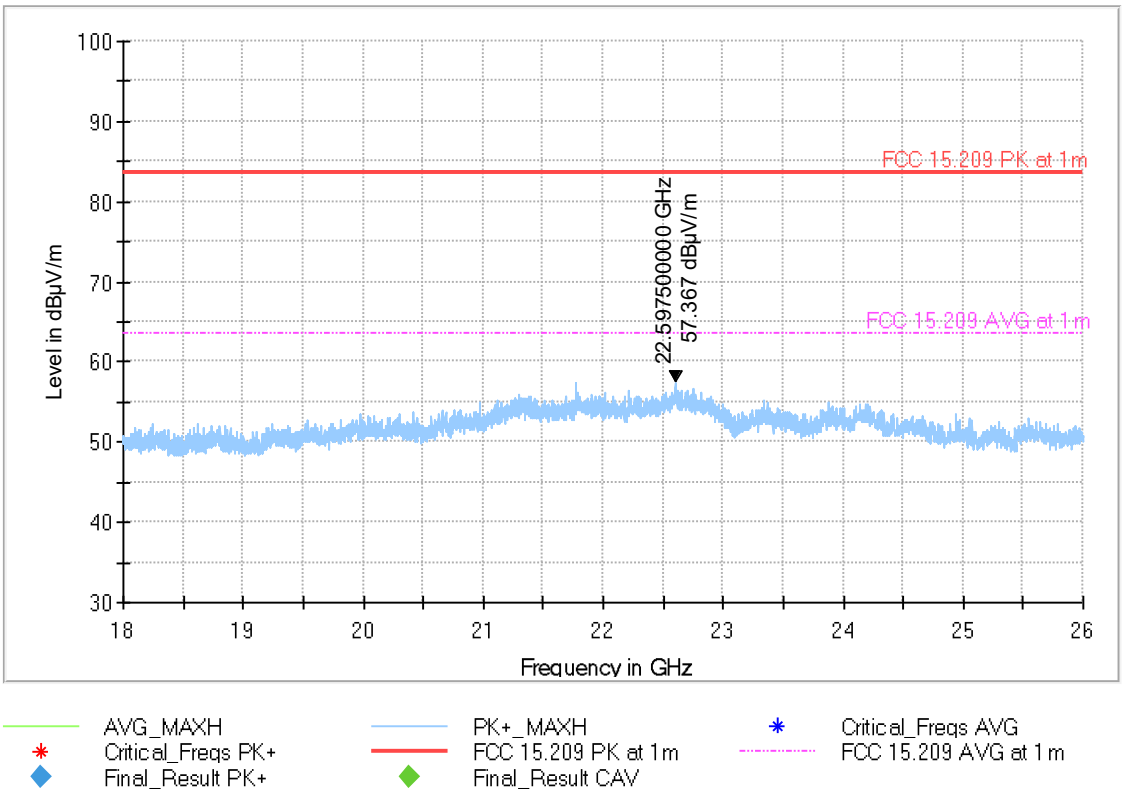
Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)
4802.870	58.001	---	73.98	15.98	500.0	1000.0	143.0	V	302.0	-4.7	6.8	-45.6	34.1
4802.870	---	50.613	53.98	3.37	500.0	1000.0	143.0	V	302.0	-4.7	6.8	-45.6	34.1
7204.500	53.279	---	73.98	20.70	500.0	1000.0	215.0	V	110.0	-1.8	9.0	-46.8	36.0
7204.500	---	45.631	53.98	8.35	500.0	1000.0	215.0	V	110.0	-1.8	9.0	-46.8	36.0
9609.725	---	41.629	53.98	12.35	500.0	1000.0	116.0	V	116.0	1.2	10.7	-46.5	37.0
9609.725	51.123	---	73.98	22.86	500.0	1000.0	116.0	V	116.0	1.2	10.7	-46.5	37.0
14414.750	---	43.539	53.98	10.44	500.0	1000.0	312.0	V	202.0	9.1	13.6	-44.9	40.3
14414.750	54.697	---	73.98	19.28	500.0	1000.0	312.0	V	202.0	9.1	13.6	-44.9	40.3

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

Frequency (MHz)	Raw Rec (dBµV)
4802.870	62.7
4802.870	55.3
7204.500	55.1
7204.500	47.5
9609.725	40.5
9609.725	50.0
14414.750	34.5
14414.750	45.6

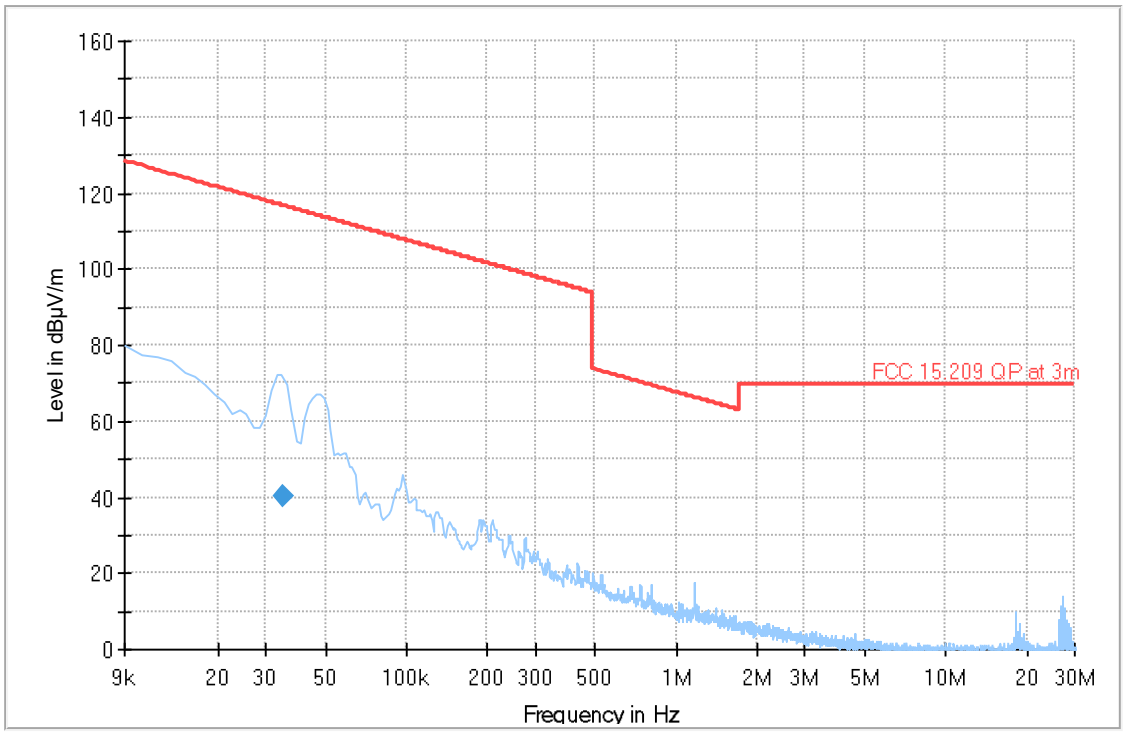


Plot # 5


100
90
80
70
60
50
40
30
18
19
20
21
22
23
24
25
26
Level in dBµV/m
Frequency in GHz
FCC 15.209 PK at 1m
FCC 15.209 AVG at 1m
22.597500000 GHz
57.367 dBµV/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

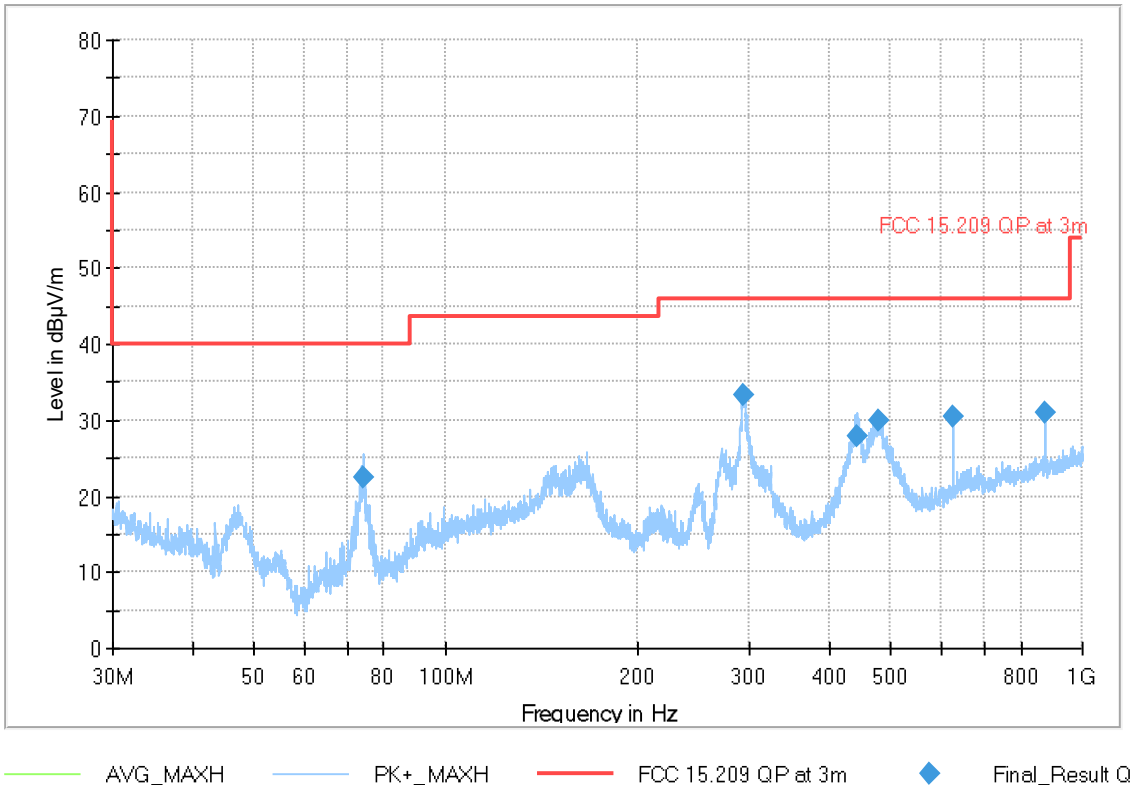
Plot # 6

Frequency (MHz)	QuasiPeak (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)
0.035	40.284	116.71	76.43	500.0	0.2	100.0	H	241.0	47.9	0.1	-28.5	76.2	-7.6
18.198	-4.426	69.50	73.93	500.0	9.0	100.0	H	238.0	5.8	0.5	-29.0	34.3	-10.2
27.280	-4.350	69.50	73.85	500.0	9.0	100.0	H	28.0	5.4	0.5	-28.8	33.6	-9.7



Plot # 7

Frequency (MHz)	QuasiPeak (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)
74.134	22.544	40.00	17.46	500.0	120.0	372.0	H	-20.0	-20.7	-34.7	0.0	14.0	43.3
293.441	33.395	46.02	12.63	500.0	120.0	107.0	H	330.0	-13.9	-33.8	0.0	19.9	47.3
443.050	27.958	46.02	18.06	500.0	120.0	240.0	H	-3.0	-10.2	-33.3	0.0	23.1	38.1
477.292	30.055	46.02	15.97	500.0	120.0	191.0	H	177.0	-9.9	-33.2	0.0	23.3	40.0
625.012	30.468	46.02	15.55	500.0	120.0	143.0	H	347.0	-7.1	-32.7	0.0	25.6	37.5
875.010	31.049	46.02	14.97	500.0	120.0	100.0	H	195.0	-3.4	-32.1	0.0	28.7	34.4

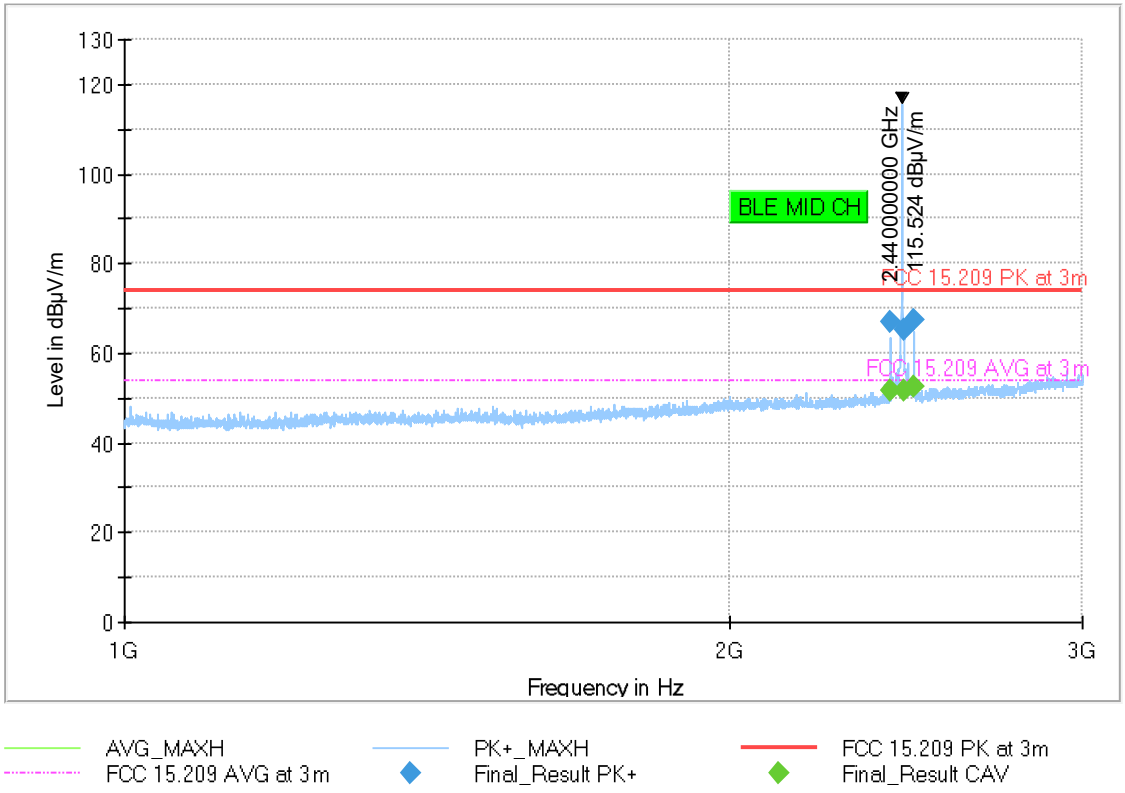


Plot # 8

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)
2407.850	66.860	---	73.98	7.12	500.0	1000.0	161.0	V	58.0	33.4	5.3	0.0	28.0
2407.850	---	51.545	53.98	2.43	500.0	1000.0	161.0	V	58.0	33.4	5.3	0.0	28.0
2446.456	---	51.655	53.98	2.32	500.0	1000.0	177.0	V	-19.0	33.6	5.5	0.0	28.2
2446.456	65.436	---	73.98	8.54	500.0	1000.0	177.0	V	-19.0	33.6	5.5	0.0	28.2
2472.007	67.595	---	73.98	6.38	500.0	1000.0	151.0	V	30.0	33.7	5.4	0.0	28.3
2472.007	---	52.343	53.98	1.64	500.0	1000.0	151.0	V	30.0	33.7	5.4	0.0	28.3

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

Frequency (MHz)	Raw Rec (dBµV)
2407.850	33.5
2407.850	18.2
2446.456	18.0
2446.456	31.8
2472.007	33.9
2472.007	18.7

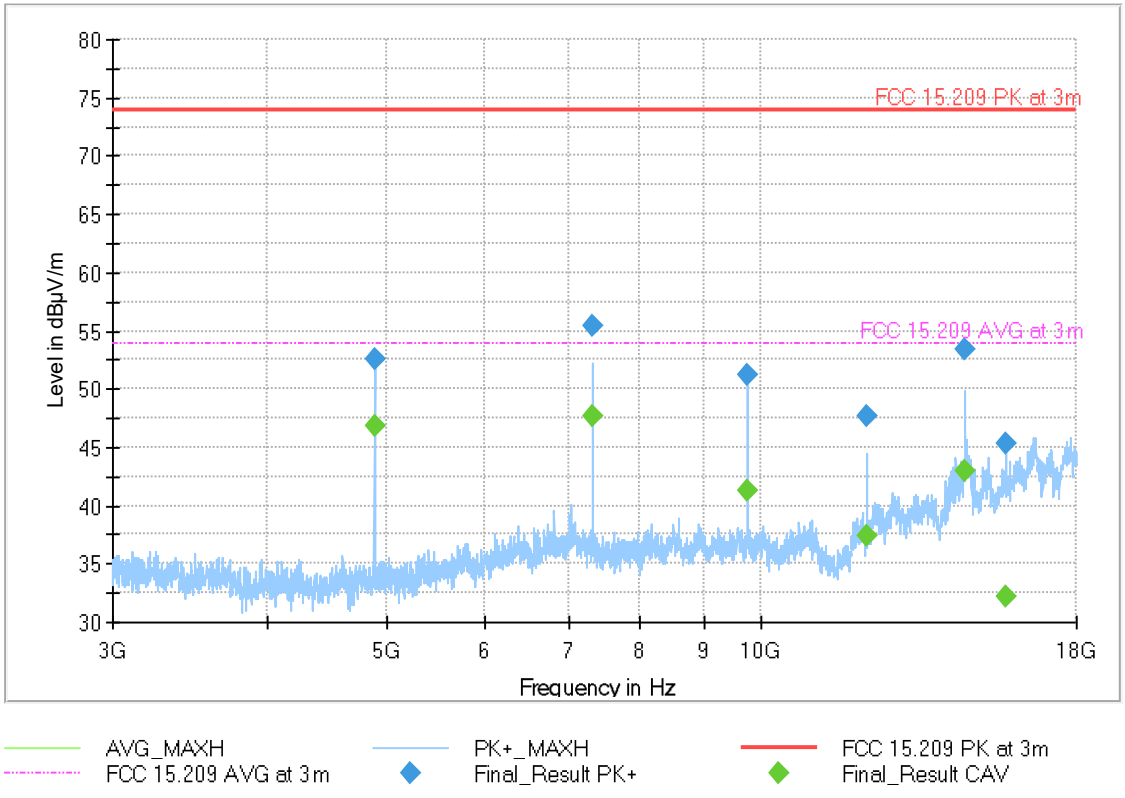


Plot # 9

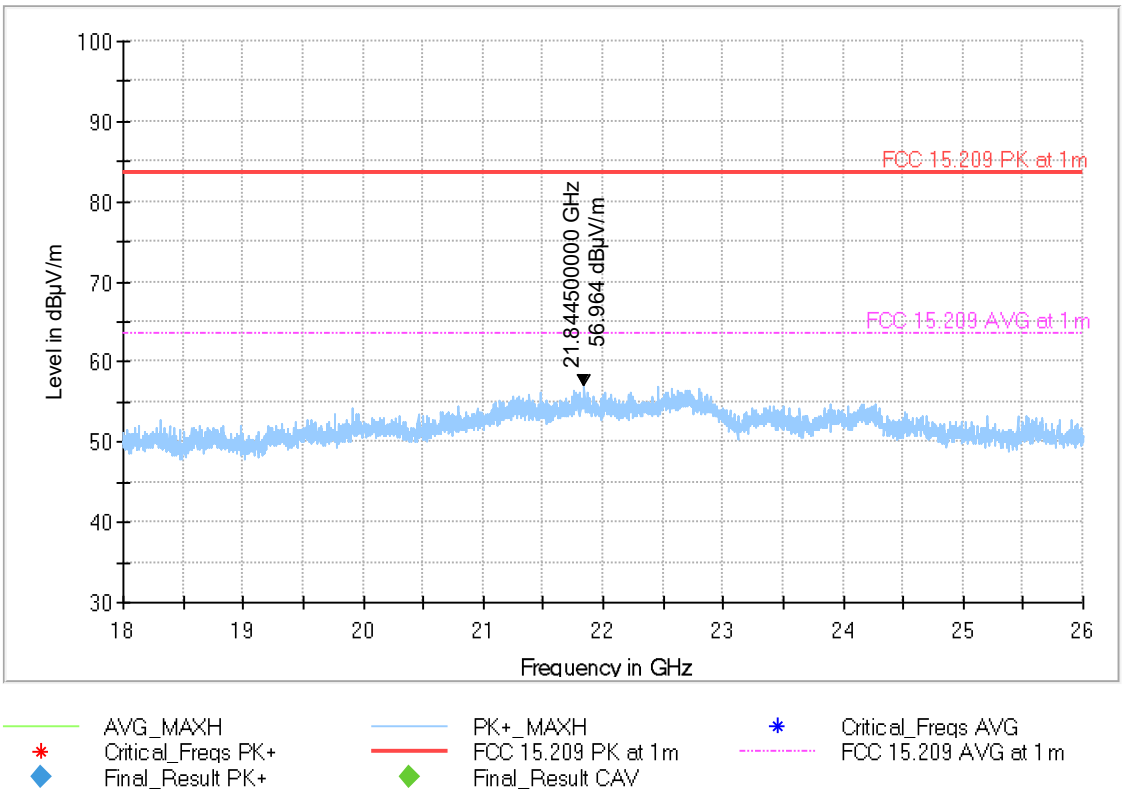
Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)
4880.250	52.507	---	73.98	21.47	500.0	1000.0	152.0	V	307.0	-4.7	7.0	-45.9	34.1
4880.250	---	46.905	53.98	7.07	500.0	1000.0	152.0	V	307.0	-4.7	7.0	-45.9	34.1
7321.175	---	47.599	53.98	6.38	500.0	1000.0	269.0	V	200.0	-1.6	9.0	-46.5	35.9
7321.175	55.442	---	73.98	18.54	500.0	1000.0	269.0	V	200.0	-1.6	9.0	-46.5	35.9
9757.787	51.181	---	73.98	22.80	500.0	1000.0	190.0	V	132.0	0.9	10.6	-46.8	37.1
9757.787	---	41.315	53.98	12.66	500.0	1000.0	190.0	V	132.0	0.9	10.6	-46.8	37.1
12197.342	---	37.434	53.98	16.55	500.0	1000.0	285.0	V	173.0	4.6	11.7	-45.8	38.6
12197.342	47.676	---	73.98	26.30	500.0	1000.0	285.0	V	173.0	4.6	11.7	-45.8	38.6
14642.250	53.328	---	73.98	20.65	500.0	1000.0	282.0	V	205.0	9.7	13.5	-45.0	41.1
14642.250	---	42.887	53.98	11.09	500.0	1000.0	282.0	V	205.0	9.7	13.5	-45.0	41.1
15767.250	45.328	---	73.98	28.65	500.0	1000.0	239.0	V	177.0	10.6	13.3	-43.6	40.9
15767.250	---	32.237	53.98	21.74	500.0	1000.0	239.0	V	177.0	10.6	13.3	-43.6	40.9

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

Frequency (MHz)	Raw Rec (dBµV)
4880.250	57.2
4880.250	51.6
7321.175	49.2
7321.175	57.0
9757.787	50.2
9757.787	40.4
12197.342	32.9
12197.342	43.1
14642.250	43.6
14642.250	33.2
15767.250	34.7
15767.250	21.7



Plot # 10


100
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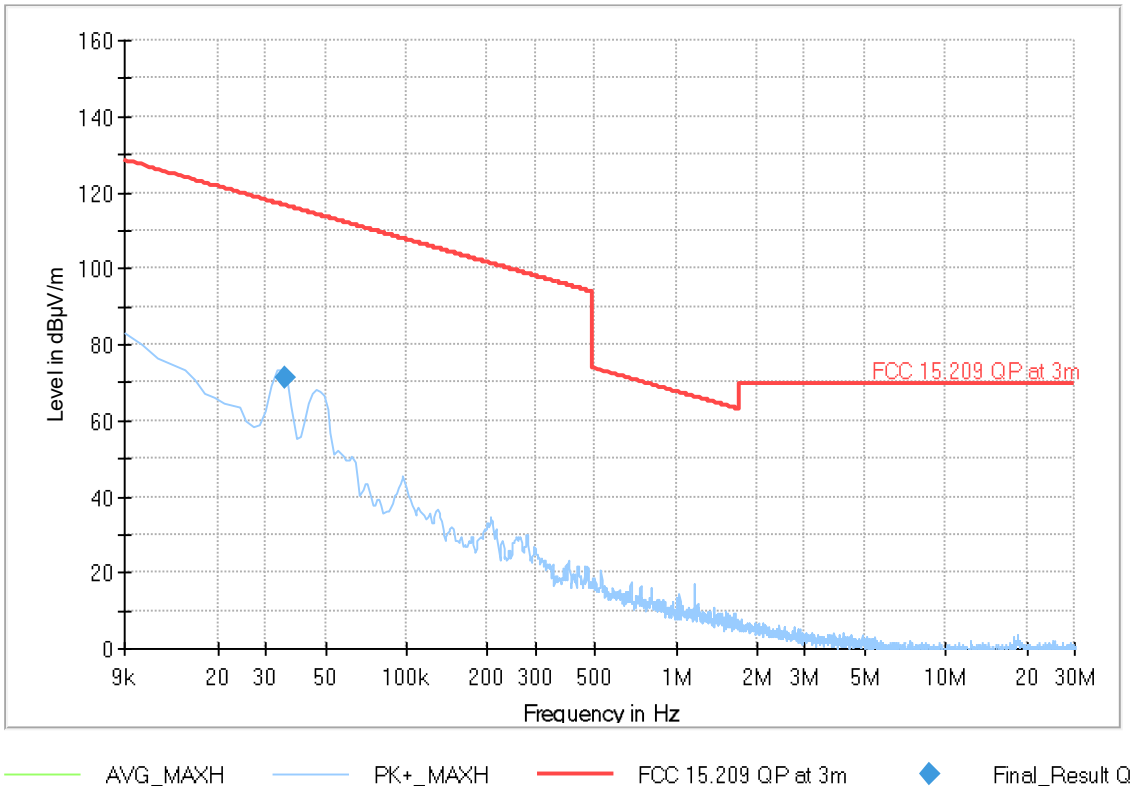
19
20
21
22
23
24
25
26
Level in dBµV/m
Frequency in GHz
FCC 15.209 PK at 1m
FCC 15.209 AVG at 1m
21.844500000 GHz
56.964 dBµV/m
AVG_MAXH
Critical_Freqs PK+
Final_Result PK+
PK+_MAXH
FCC 15.209 PK at 1m
Final_Result CAV
Critical_Freqs AVG
FCC 15.209 AVG at 1m

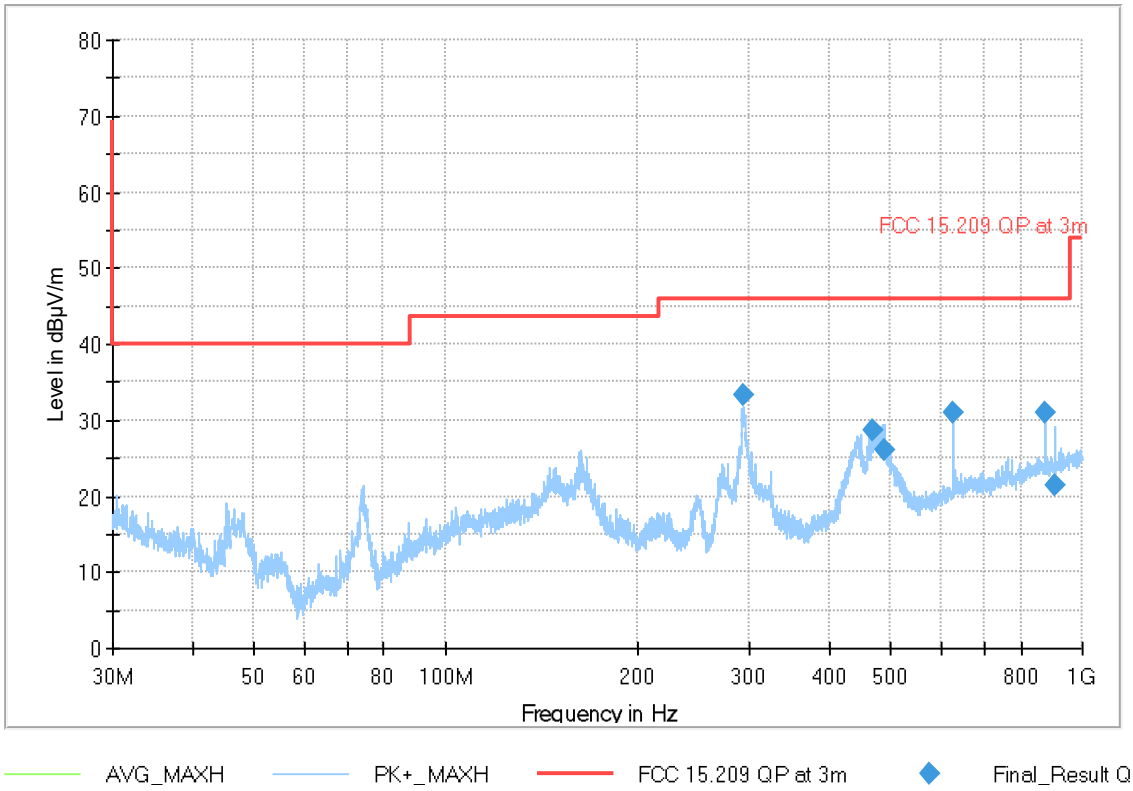
Plot # 11

Frequency (MHz)	QuasiPeak (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)
0.035	71.481	116.66	45.18	500.0	0.2	100.0	H	182.0	47.8	0.1	-28.5	76.1	23.7



Plot # 12

Frequency (MHz)	QuasiPeak (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)
292.889	33.168	46.02	12.85	500.0	120.0	125.0	H	330.0	-13.9	-33.8	0.0	19.9	47.1
468.857	28.727	46.02	17.29	500.0	120.0	100.0	H	175.0	-10.1	-33.2	0.0	23.2	38.8
487.529	25.962	46.02	20.06	500.0	120.0	198.0	H	184.0	-9.5	-33.2	0.0	23.7	35.5
625.014	30.963	46.02	15.06	500.0	120.0	135.0	H	230.0	-7.1	-32.7	0.0	25.6	38.0
875.016	31.028	46.02	14.99	500.0	120.0	100.0	H	261.0	-3.4	-32.1	0.0	28.7	34.4
903.630	21.398	46.02	24.62	500.0	120.0	376.0	V	256.0	-3.3	-32.0	0.0	28.7	24.7

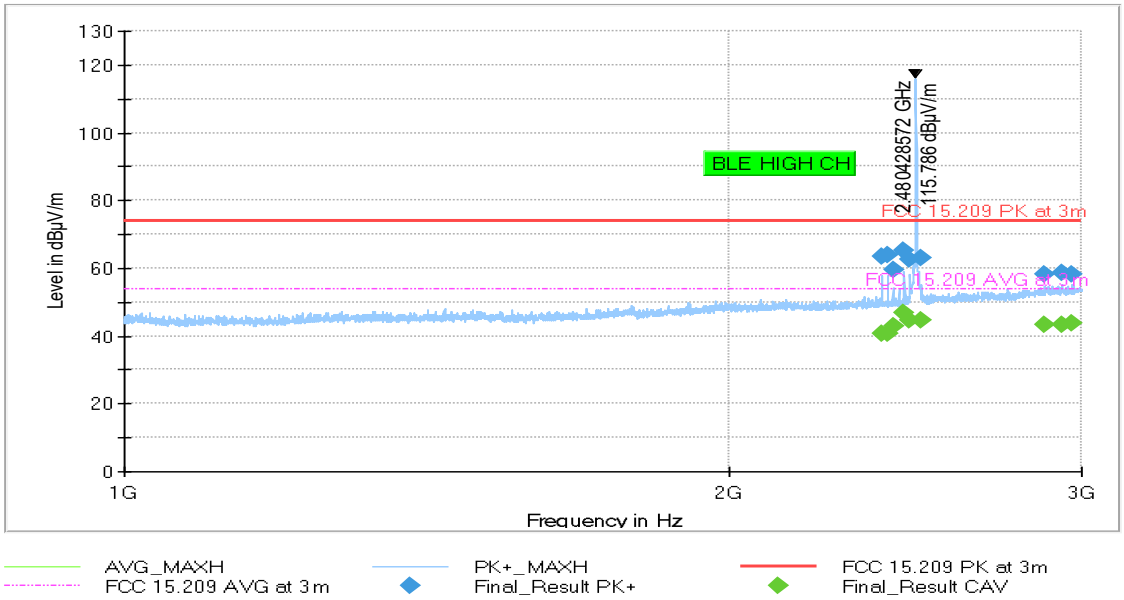


Plot # 13

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)
2384.150	63.626	---	73.98	10.35	500.0	1000.0	107.0	V	39.0	33.2	5.2	0.0	27.9
2384.150	---	40.838	53.98	13.14	500.0	1000.0	107.0	V	39.0	33.2	5.2	0.0	27.9
2400.063	63.872	---	73.98	10.11	500.0	1000.0	100.0	V	42.0	33.3	5.3	0.0	28.0
2400.063	---	40.601	53.98	13.38	500.0	1000.0	100.0	V	42.0	33.3	5.3	0.0	28.0
2416.288	59.443	---	73.98	14.54	500.0	1000.0	203.0	V	58.0	33.4	5.4	0.0	28.1
2416.288	---	42.829	53.98	11.15	500.0	1000.0	203.0	V	58.0	33.4	5.4	0.0	28.1
2447.850	---	47.023	53.98	6.96	500.0	1000.0	100.0	V	46.0	33.6	5.5	0.0	28.2
2447.850	65.350	---	73.98	8.63	500.0	1000.0	100.0	V	46.0	33.6	5.5	0.0	28.2
2463.707	62.773	---	73.98	11.21	500.0	1000.0	117.0	V	28.0	33.7	5.4	0.0	28.2
2463.707	---	44.700	53.98	9.28	500.0	1000.0	117.0	V	28.0	33.7	5.4	0.0	28.2
2496.140	62.812	---	73.98	11.17	500.0	1000.0	162.0	V	32.0	33.7	5.3	0.0	28.4
2496.140	---	44.808	53.98	9.17	500.0	1000.0	162.0	V	32.0	33.7	5.3	0.0	28.4
2875.993	58.041	---	73.98	15.94	500.0	1000.0	136.0	V	228.0	35.2	5.9	0.0	29.2
2875.993	---	43.282	53.98	10.70	500.0	1000.0	136.0	V	228.0	35.2	5.9	0.0	29.2
2933.826	---	43.472	53.98	10.51	500.0	1000.0	317.0	V	198.0	35.5	5.9	0.0	29.5
2933.826	58.535	---	73.98	15.44	500.0	1000.0	317.0	V	198.0	35.5	5.9	0.0	29.5
2965.993	---	43.574	53.98	10.41	500.0	1000.0	142.0	H	231.0	35.7	5.9	0.0	29.8
2965.993	58.196	---	73.98	15.78	500.0	1000.0	142.0	H	231.0	35.7	5.9	0.0	29.8

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

Frequency (MHz)	Raw Rec (dBµV)
2384.150	30.5
2384.150	7.7
2400.063	30.6
2400.063	7.3
2416.288	26.0
2416.288	9.4
2447.850	13.4
2447.850	31.7
2463.707	29.1
2463.707	11.0
2496.140	29.1
2496.140	11.1
2875.993	22.9
2875.993	8.1
2933.826	8.0
2933.826	23.1
2965.993	7.9
2965.993	22.5

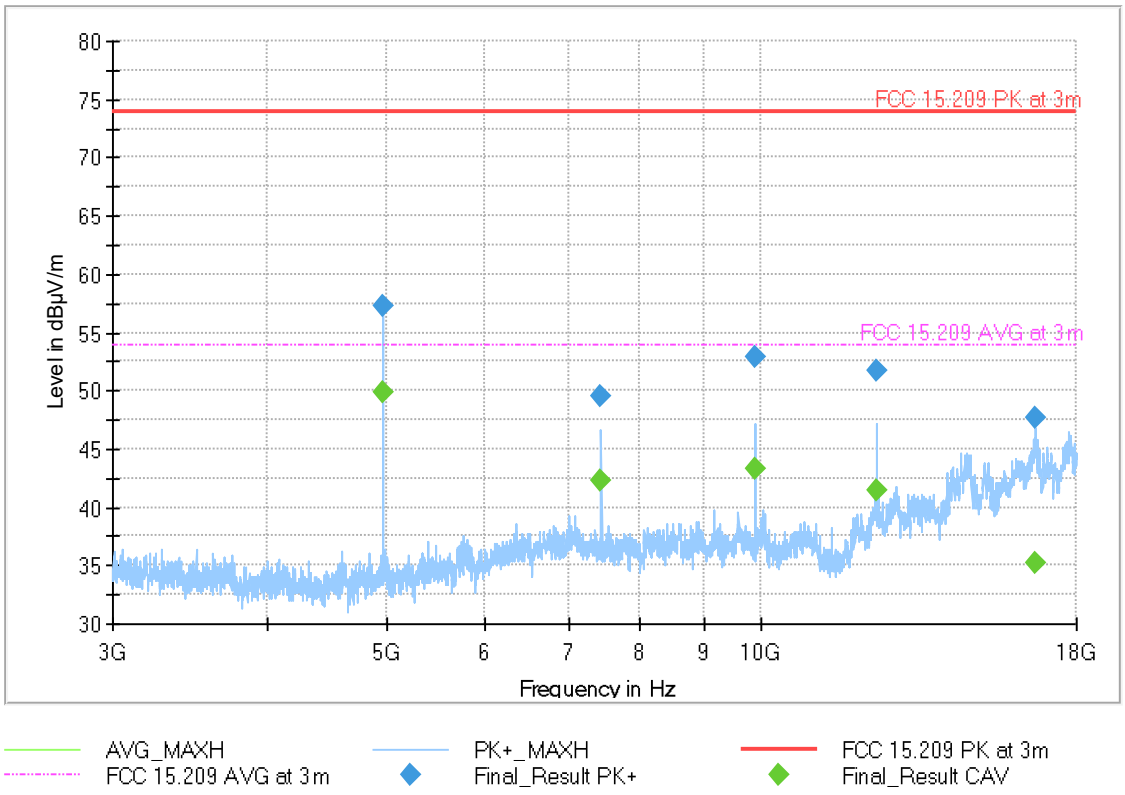


Plot # 14

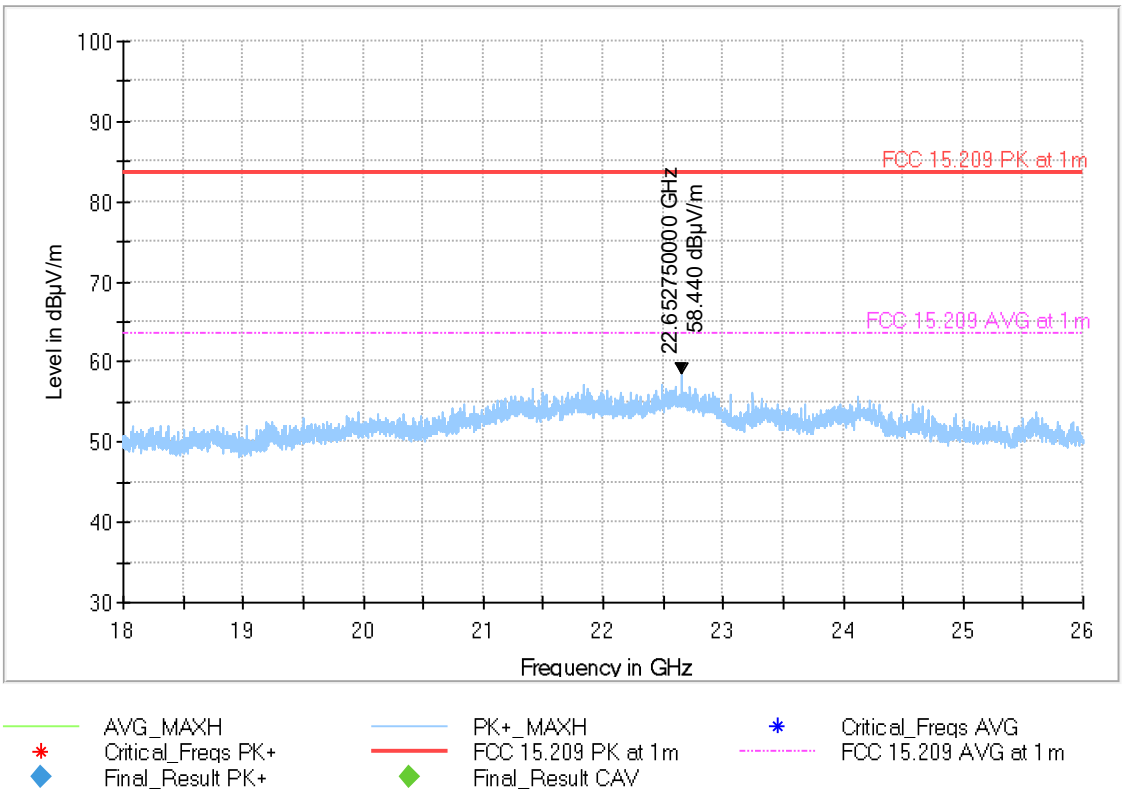
Frequency (MHz)	MaxPeak (dBµV/m)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)
4958.898	---	49.918	53.98	4.06	500.0	1000.0	156.0	V	300.0	-4.8	6.7	-45.7	34.1
4958.898	57.325	---	73.98	16.65	500.0	1000.0	156.0	V	300.0	-4.8	6.7	-45.7	34.1
7440.772	---	42.292	53.98	11.69	500.0	1000.0	291.0	V	233.0	-1.6	9.2	-46.7	35.9
7440.772	49.487	---	73.98	24.49	500.0	1000.0	291.0	V	233.0	-1.6	9.2	-46.7	35.9
9917.706	---	43.378	53.98	10.60	500.0	1000.0	331.0	V	49.0	1.5	10.5	-46.3	37.4
9917.706	52.860	---	73.98	21.12	500.0	1000.0	331.0	V	49.0	1.5	10.5	-46.3	37.4
12397.250	51.740	---	73.98	22.24	500.0	1000.0	360.0	V	199.0	6.8	12.2	-44.1	38.7
12397.250	---	41.445	53.98	12.53	500.0	1000.0	360.0	V	199.0	6.8	12.2	-44.1	38.7
16683.475	47.669	---	73.98	26.31	500.0	1000.0	180.0	V	101.0	14.2	15.1	-42.2	41.3
16683.475	---	35.239	53.98	18.74	500.0	1000.0	180.0	V	101.0	14.2	15.1	-42.2	41.3

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

Frequency (MHz)	Raw Rec (dBµV)
4958.898	54.7
4958.898	62.2
7440.772	43.9
7440.772	51.1
9917.706	41.8
9917.706	51.3
12397.250	45.0
12397.250	34.7
16683.475	33.5
16683.475	21.1



Plot # 15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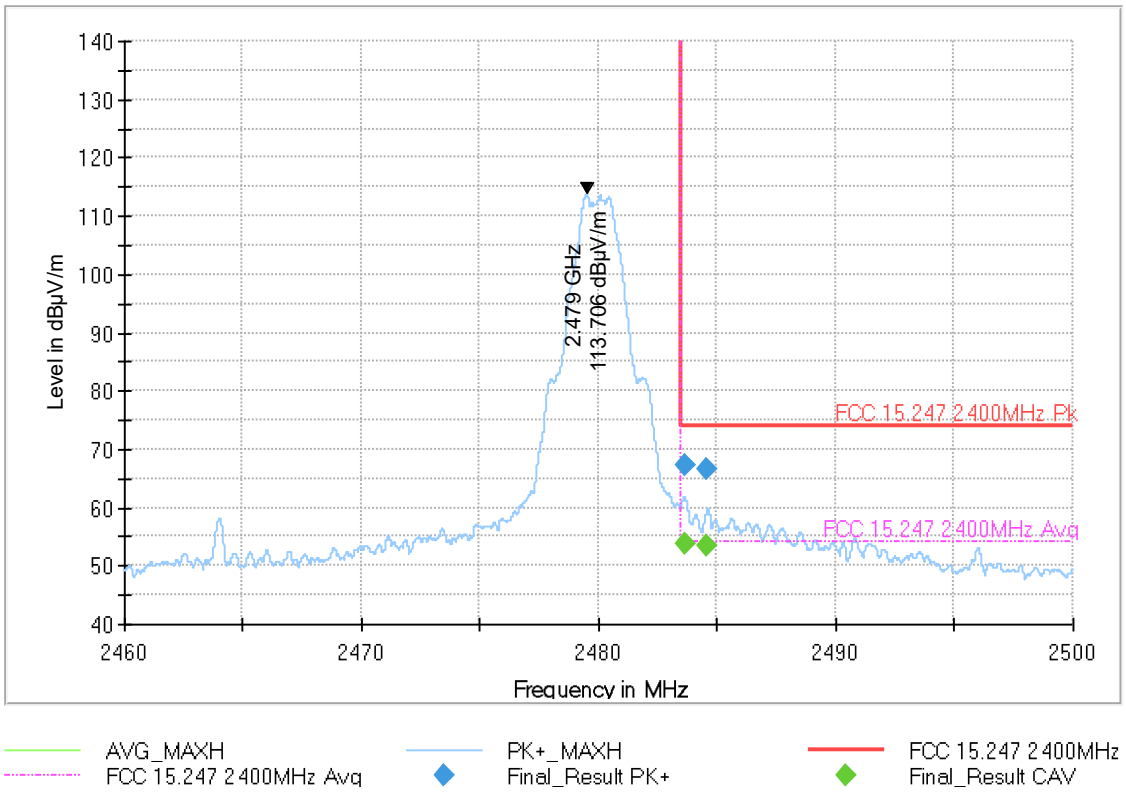
22
23
24
25
26
Level in dBµV/m
Frequency in GHz
FCC 15.209 PK at 1m
FCC 15.209 AVG at 1m
22.652750000 GHz
58.440 dBµV/m
AVG_MAXH
Critical_Freqs PK+
Final_Result PK+
PK+_MAXH
FCC 15.209 PK at 1m
Final_Result CAV
Critical_Freqs AVG
FCC 15.209 AVG at 1m

Plot # 16

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)
2483.597	67.428	---	74.00	6.57	500.0	1000.0	142.0	V	234.0	33.7	5.4	0.0	28.3
2483.597	---	53.679	54.00	0.32	500.0	1000.0	142.0	V	234.0	33.7	5.4	0.0	28.3
2484.580	66.537	---	74.00	7.46	500.0	1000.0	202.0	V	57.0	33.7	5.4	0.0	28.3
2484.580	---	53.327	54.00	0.67	500.0	1000.0	202.0	V	57.0	33.7	5.4	0.0	28.3

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

Frequency (MHz)	Raw Rec (dBµV)
2483.597	33.7
2483.597	20.0
2484.580	32.9
2484.580	19.6



8.6 AC Power Line Conducted Emissions

8.6.1 Measurement according to ANSI C63.4

Analyzer Settings:

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

8.6.2 Limits: §15.207 & RSS-Gen 8.8

FCC §15.207(a) & RSS-Gen 8.8

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

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

*Decreases with the logarithm of the frequency.

8.6.3 Test conditions and setup:

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

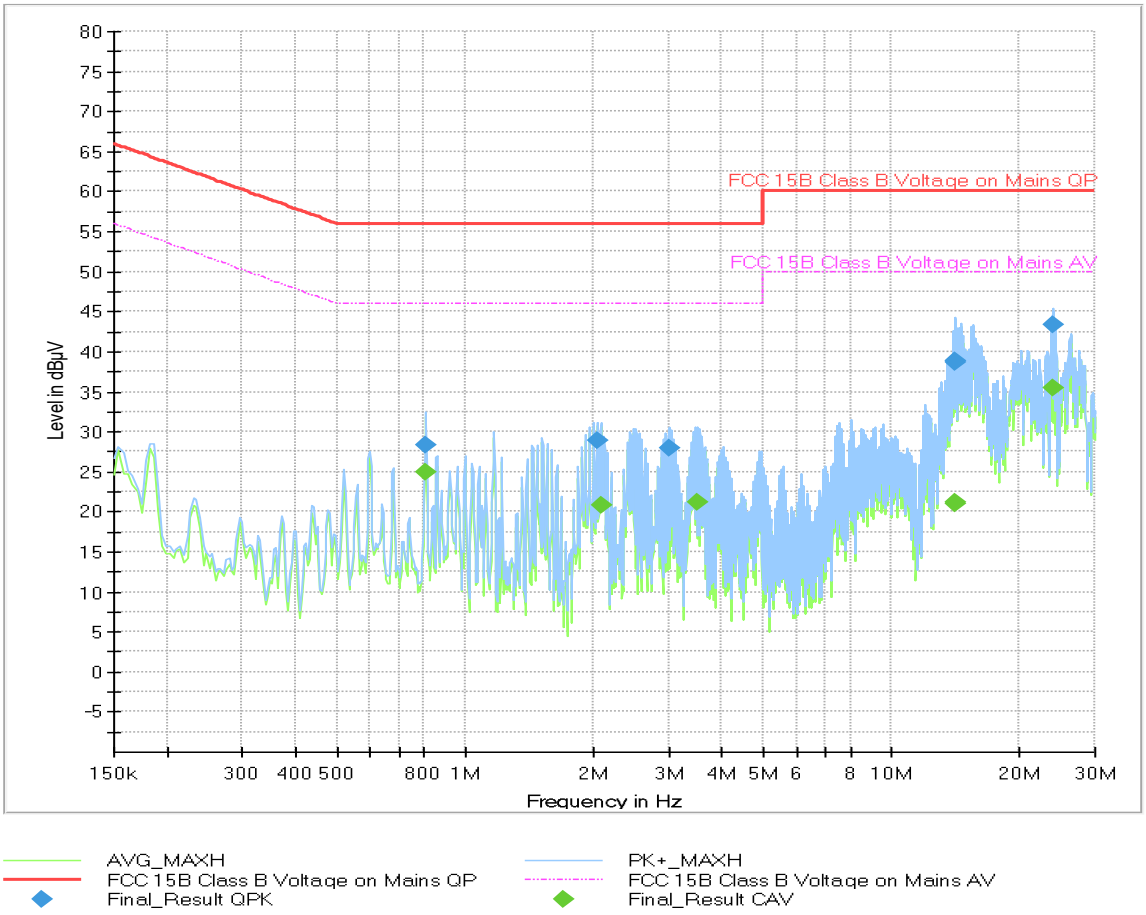
8.6.4 Measurement Result:

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

8.6.5 Measurement Plots:

Plot # 1

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	PE	Corr. (dB)
0.808	28.33	---	56.00	27.67	1000.0	9.0	N	GND	9.9
0.808	---	24.96	46.00	21.04	1000.0	9.0	N	GND	9.9
2.038	28.97	---	56.00	27.03	1000.0	9.0	L1	GND	9.9
2.078	---	20.87	46.00	25.13	1000.0	9.0	L1	GND	9.9
2.998	28.04	---	56.00	27.96	1000.0	9.0	L1	GND	9.9
3.518	---	21.17	46.00	24.83	1000.0	9.0	L1	GND	9.9
14.042	38.94	---	60.00	21.06	1000.0	9.0	N	GND	10.0
14.042	---	21.18	50.00	28.82	1000.0	9.0	N	GND	10.0
14.083	38.69	---	60.00	21.31	1000.0	9.0	N	GND	10.0
14.083	---	20.97	50.00	29.03	1000.0	9.0	N	GND	10.0
23.881	---	35.41	50.00	14.59	1000.0	9.0	N	GND	10.1
23.881	43.45	---	60.00	16.55	1000.0	9.0	N	GND	10.1



9 Test setup photos

Setup photos are included in supporting file name: "EMC_NEXRE_002_25001_FCC_15_247_Setup_Photos"

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	09/06/2023
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.

Equipment Type	Manufacturer	Model	Serial #	Calibration Cycle	Last Calibration Date
Vector Signal Generator	ROHDE & SCHWARZ	SMW 200A	14120000K02-111326-gW	3 Years	NONE
Signal Generator	ROHDE & SCHWARZ	SMF 100A	1167.0000K02-101833-NX	3 Years	09/27/2025
Spectrum Analyzer	ROHDE & SCHWARZ	FSU	200302	3 Years	01/30/2026
Switch	ROHDE & SCHWARZ	OSP 120	100083	3 Years	12/31/2024
RF Vector Network Analyzer (6GHz)	Agilent Technologies	N9923A	MY51491621	3 Years	08/15/2025
Vector Signal Generator	ROHDE & SCHWARZ	SMU 200A	101264	3 Years	10/05/2017
Bluetooth Tester	ROHDE & SCHWARZ	CBT	100212	3 Years	03/12/2021
Vector Signal Generator	ROHDE & SCHWARZ	SMJ 100A	101173	-	NONE
Spectrum Analyzer	ROHDE & SCHWARZ	FSU	100189	3 Years	10/21/2026
RF Step Attenuator	ROHDE & SCHWARZ	RSP	100062	-	NONE
Temperature Chamber	TESTEQUITY	123H	230159	-	N/A
Software	WMS32	12.00.01			

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
2025-04-21	EMC_NEXRE_002_25001_FCC_15_247	Initial Version	Cheng Song
2025-07-24	EMC_NEXRE_002_25001_FCC_15_247_Rev1	Revised Section 3.1: EUT Specifications.	Cheng Song

<<< The End >>>