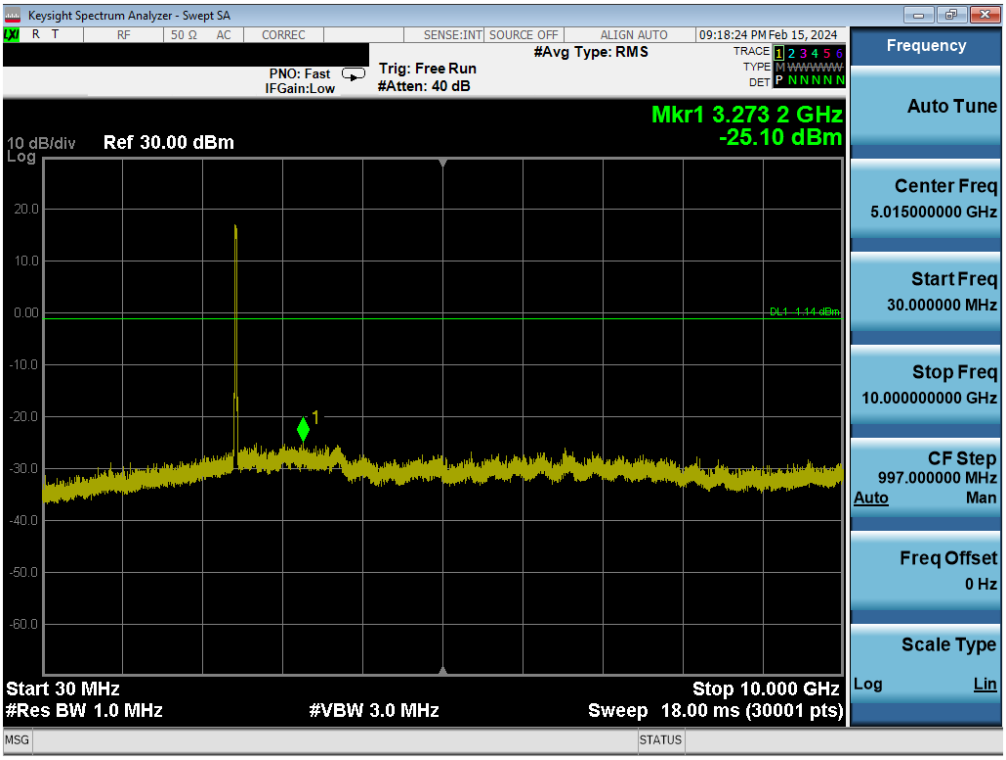
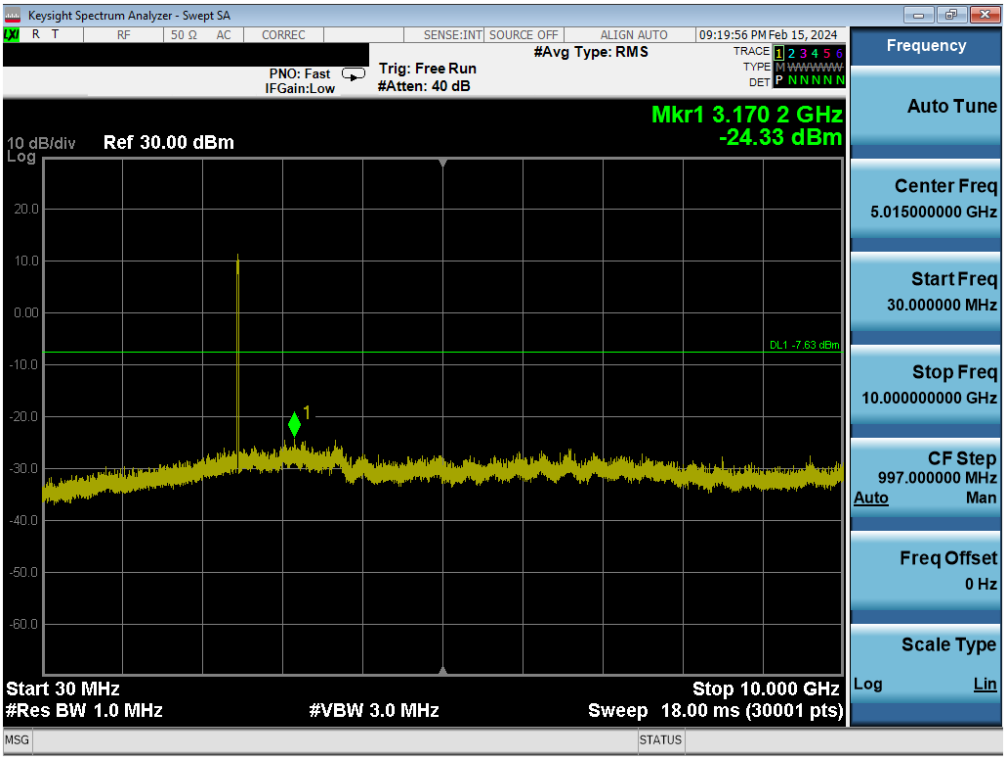
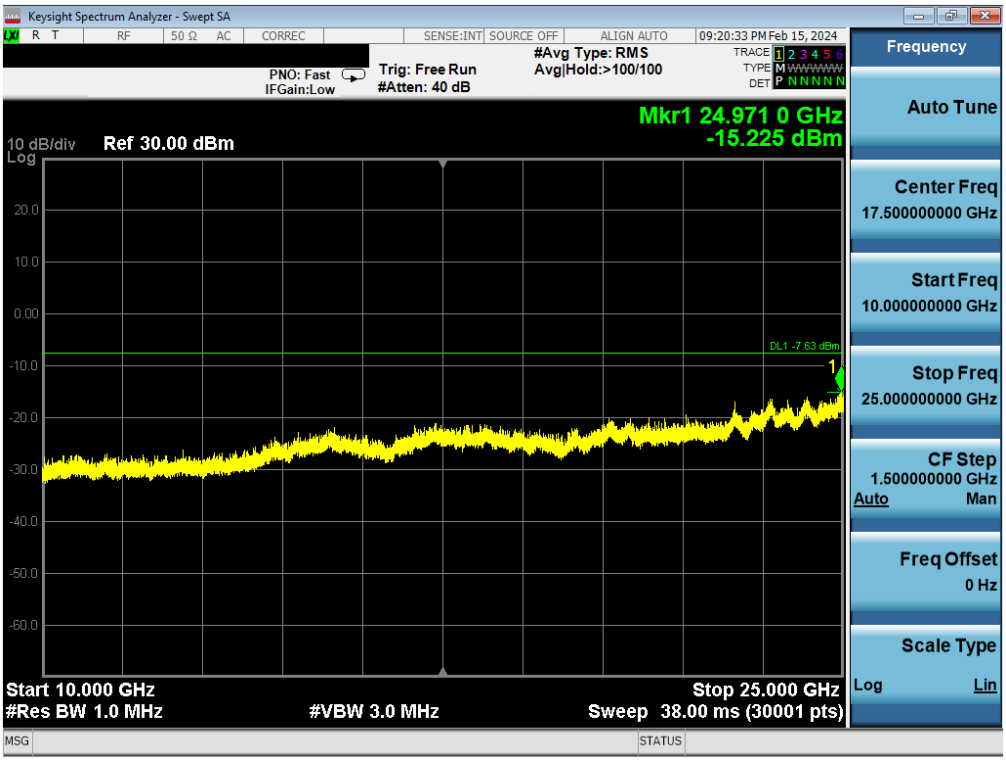


Plot 7-121. Conducted Spurious Plot Antenna 2a (802.11ax OFDMA – RU242 – Ch. 6)

Plot 7-122. Conducted Spurious Plot Antenna 2a (802.11ax OFDMA – RU242 – Ch. 6)



Plot 7-123. Conducted Spurious Plot Antenna 2a (802.11ax OFDMA – RU242 – Ch. 11)



Plot 7-124. Conducted Spurious Plot Antenna 2a (802.11ax OFDMA – RU242 – Ch. 11)

7.7 Radiated Spurious Emissions – Above 1 GHz

§15.247(d) §15.205 & §15.209; RSS-Gen [8.9]

Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for radiated spurious emissions. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR and Table 7 of RSS-Gen (8.10) must not exceed the limits shown in Table 7-19 per Section 15.209 and RSS-Gen (8.9).

Frequency	Field Strength [µV/m]	Measured Distance [Meters]
Above 960.0 MHz	500	3

Table 7-19. Radiated Limits

Test Procedures Used

ANSI C63.10-2013 – Subclause 6.6.4.3
KDB 558074 D01 v05r02 – Sections 8.6, 8.7

Test Settings

Average Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = power average (RMS)
5. Number of measurement points = 1001 (Number of points must be ≥ 2 x span/RBW)
6. Sweep time = auto
7. Trace (RMS) averaging was performed over at least 100 traces

Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

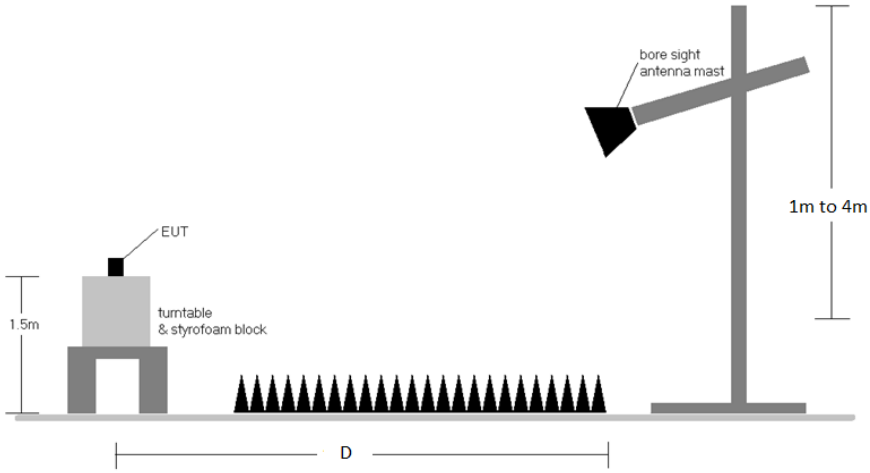


Figure 7-6. Radiated Measurement Setup

Test Notes

1. The optional test procedures for antenna port conducted measurements of unwanted emissions per the guidance of KDB 558074 D01 v05r02 were not used to evaluate this device for compliance to radiated limits. All Radiated Spurious Emissions levels were measured in a radiated test setup.
2. All emissions lying in restricted bands specified in Section 15.205 and Section 8.10 of RSS-Gen are below the limit shown in Table 7-19.
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. This unit was tested with its standard battery.
5. The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. Above 1 GHz, average and peak measurements were taken using linearly polarized horn antennas.
6. D is the measurement test distance and emissions 1-18GHz were measured at a 3 meters test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
7. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. Any emissions found to be within 20dB of the limit are fully investigated and the results are shown in this section.
8. The "-" shown in the following RSE tables are used to denote a noise floor measurement.
9. All data rates were investigated and only the worst case is reported.
10. For radiated measurements, emissions were investigated for the fully-loaded RU configuration and for all the partially-loaded RU configurations. Among all of the available partially-loaded RU configurations, only the configuration with the worst case emissions is reported.

Sample Calculations

Determining Spurious Emissions Levels

- Field Strength Level [dBµV/m] = Analyzer Level [dBm] + 107 + AFCL [dB/m]
- AFCL [dB/m] = Antenna Factor [dB/m] + Cable Loss [dB] – Preamplifier Gain [dB]
- Margin [dB] = Field Strength Level [dBµV/m] – Limit [dBµV/m]

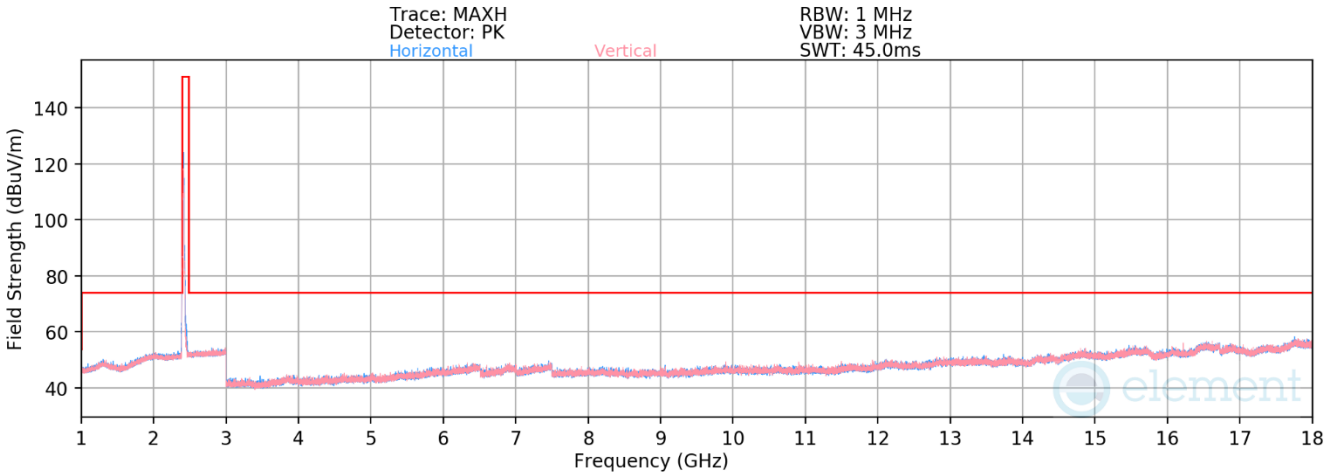
Radiated Band Edge Measurement Offset

- The amplitude offset shown in the radiated restricted band edge plots in Sections 7.7.4, 7.7.5, and 7.7.6 was calculated using the formula:

  Offset (dB) = (Antenna Factor + Cable Loss + Attenuator) – Preamplifier Gain

7.7.1 Antenna 4a Radiated Spurious Emission Measurements

§15.247(d) §15.205 & §15.209; RSS-Gen [8.9]

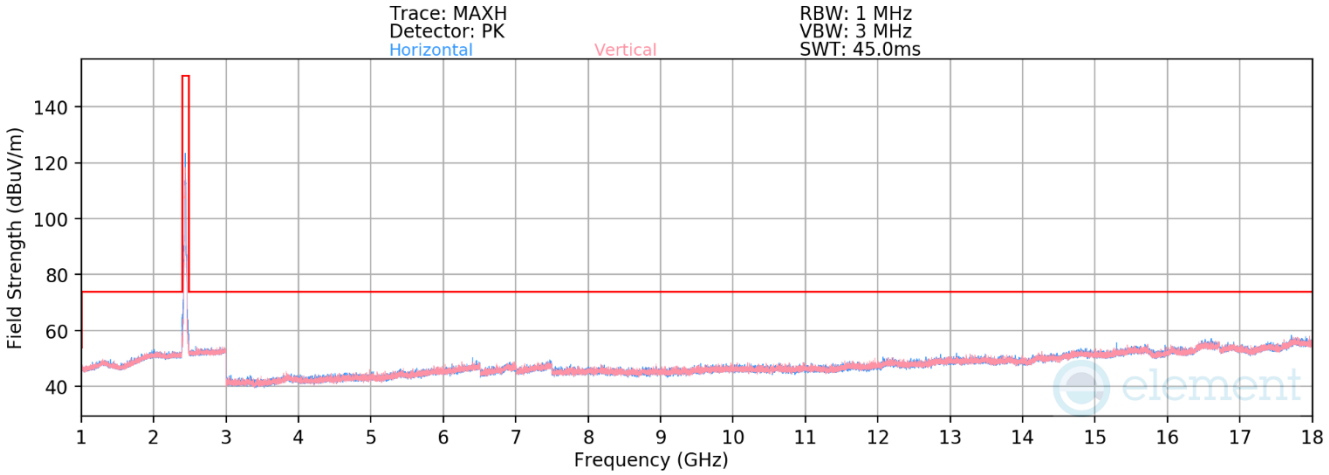


Plot 7-125. Radiated Spurious Emissions above 1GHz Antenna 4a (802.11ax OFDMA – RU26 – Ch. 1)

Worst Case Mode:	802.11ax OFDMA
Worst Case Transfer Rate:	MCS9
RU Index:	4
Distance of Measurements:	3 Meters
Operating Frequency:	2412MHz
Channel:	01

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4824.00	Average	H	-	-	-77.40	4.22	33.82	53.98	-20.16
4824.00	Peak	H	-	-	-65.48	4.22	45.73	73.98	-28.25
12060.00	Average	H	-	-	-80.33	12.13	38.81	53.98	-15.17
12060.00	Peak	H	-	-	-67.73	11.95	51.22	73.98	-22.76

Table 7-20. Radiated Measurements Antenna 4a (RU26)

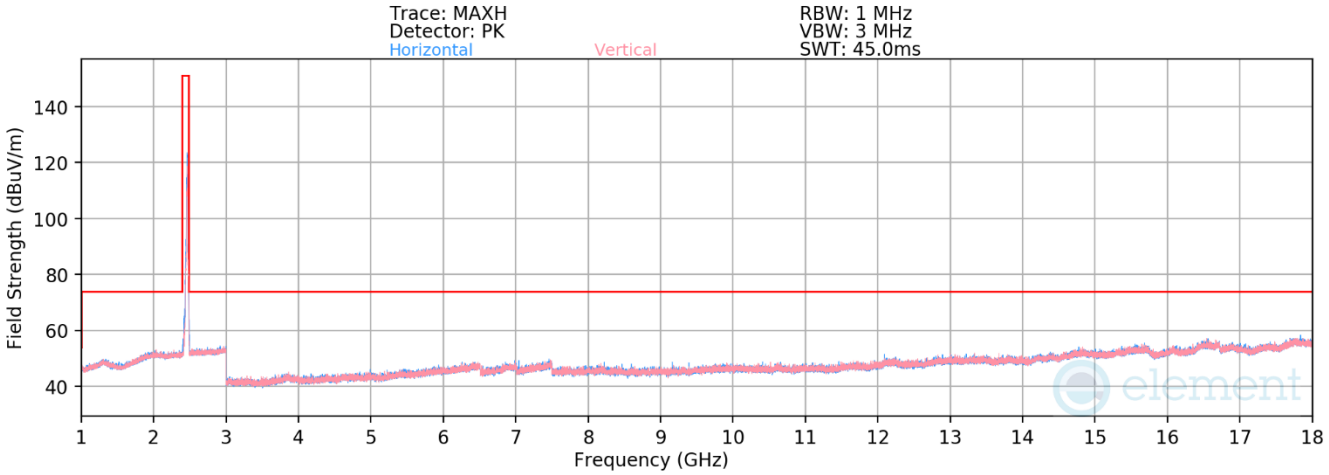


Plot 7-126. Radiated Spurious Emissions above 1GHz Antenna 4a (802.11ax OFDMA – RU26 – Ch. 6)

Worst Case Mode:	802.11ax OFDMA
Worst Case Transfer Rate:	MCS9
RU Index:	4
Distance of Measurements:	3 Meters
Operating Frequency:	2437MHz
Channel:	06

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4874.00	Average	H	-	-	-77.58	4.32	33.74	53.98	-20.24
4874.00	Peak	H	-	-	-65.87	4.32	45.45	73.98	-28.53
7311.00	Average	H	-	-	-78.57	8.92	37.35	53.98	-16.63
7311.00	Peak	H	-	-	-66.96	8.92	48.96	73.98	-25.02
12185.00	Average	H	-	-	-80.41	12.42	39.01	53.98	-14.97
12185.00	Peak	H	-	-	-68.96	12.46	50.50	73.98	-23.48

Table 7-21. Radiated Measurements Antenna 4a (RU26)

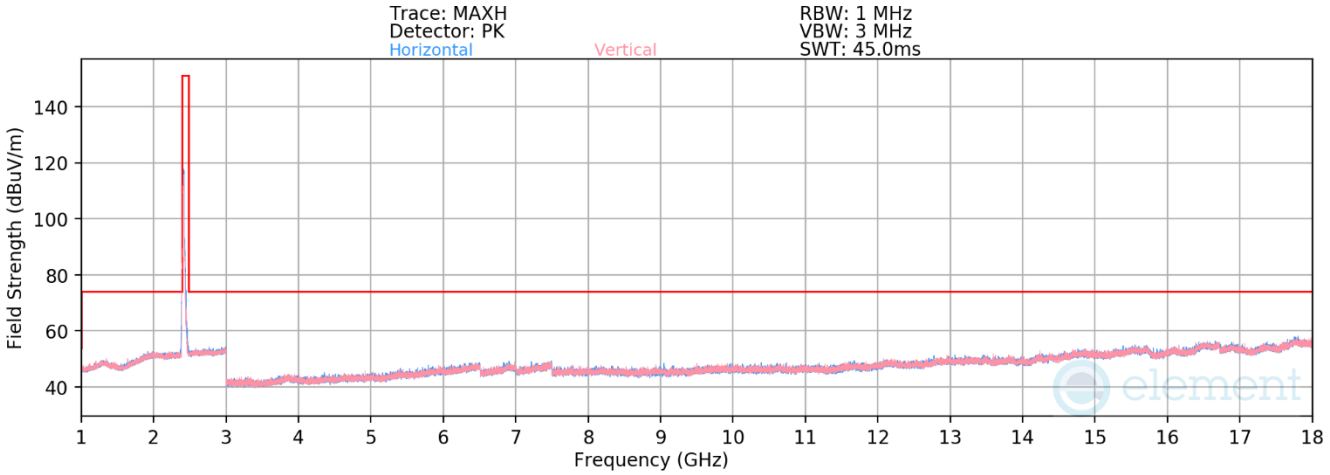


Plot 7-127. Radiated Spurious Emissions above 1GHz Antenna 4a (802.11ax OFDMA – RU26 – Ch. 11)

Worst Case Mode:	802.11ax OFDMA
Worst Case Transfer Rate:	MCS9
RU Index:	4
Distance of Measurements:	3 Meters
Operating Frequency:	2462MHz
Channel:	11

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4924.00	Average	H	-	-	-77.45	4.19	33.74	53.98	-20.24
4924.00	Peak	H	-	-	-65.80	4.19	45.39	73.98	-28.59
7386.00	Average	H	-	-	-78.23	8.52	37.29	53.98	-16.69
7386.00	Peak	H	-	-	-66.30	8.52	49.21	73.98	-24.77
12310.00	Average	H	-	-	-80.51	12.43	38.92	53.98	-15.06
12310.00	Peak	H	-	-	-68.99	12.43	50.44	73.98	-23.54

Table 7-22. Radiated Measurements Antenna 4a (RU26)

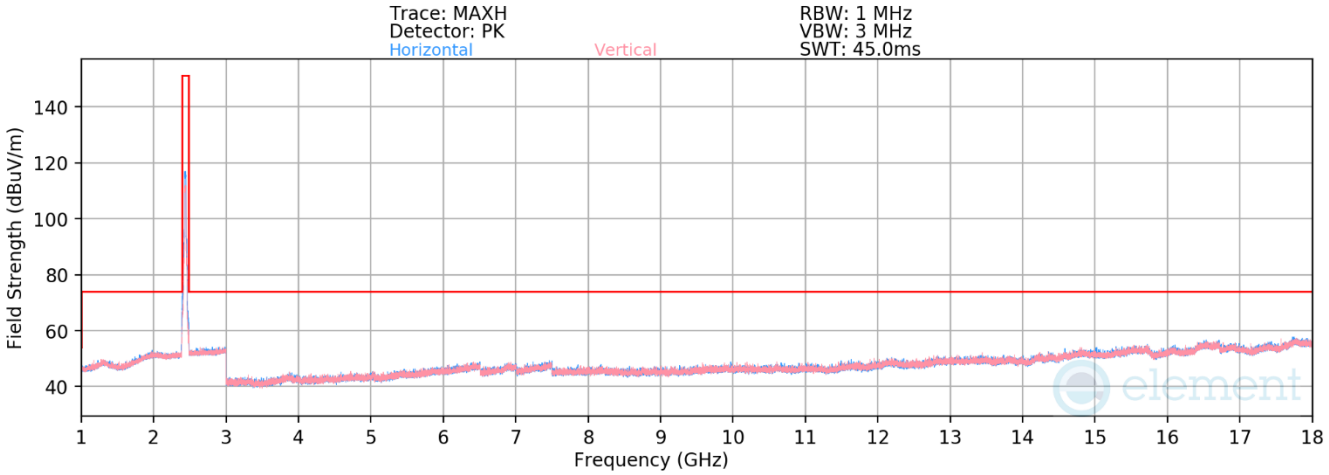


Plot 7-128. Radiated Spurious Emissions above 1GHz Antenna 4a (802.11ax OFDMA – RU242 – Ch. 1)

Worst Case Mode:	802.11ax OFDMA
Worst Case Transfer Rate:	MCS9
RU Index:	61
Distance of Measurements:	3 Meters
Operating Frequency:	2412MHz
Channel:	01

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4824.00	Average	H	-	-	-77.48	4.22	33.73	53.98	-20.25
4824.00	Peak	H	-	-	-65.85	4.29	45.45	73.98	-28.53
12060.00	Average	H	-	-	-80.55	12.27	38.72	53.98	-15.26
12060.00	Peak	H	-	-	-68.87	12.13	50.26	73.98	-23.72

Table 7-23. Radiated Measurements Antenna 4a (RU242)

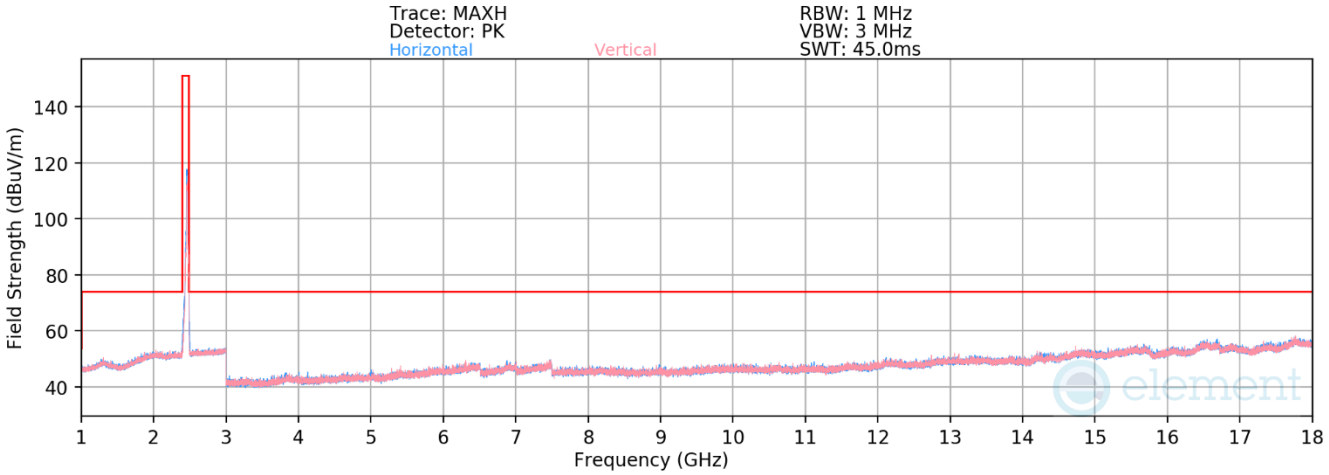


Plot 7-129. Radiated Spurious Emissions above 1GHz Antenna 4a (802.11ax OFDMA – RU242 – Ch. 6)

Worst Case Mode:	802.11ax OFDMA
Worst Case Transfer Rate:	MCS9
RU Index:	61
Distance of Measurements:	3 Meters
Operating Frequency:	2437MHz
Channel:	06

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4874.00	Average	H	-	-	-77.17	4.32	34.16	53.98	-19.82
4874.00	Peak	H	-	-	-65.01	4.32	46.31	73.98	-27.67
7311.00	Average	H	-	-	-78.75	8.92	37.18	53.98	-16.80
7311.00	Peak	H	-	-	-66.79	8.92	49.13	73.98	-24.85
12185.00	Average	H	-	-	-80.43	12.46	39.03	53.98	-14.95
12185.00	Peak	H	-	-	-68.61	12.46	50.85	73.98	-23.13

Table 7-24. Radiated Measurements Antenna 4a (RU242)



Plot 7-130. Radiated Spurious Emissions above 1GHz Antenna 4a (802.11ax OFDMA – RU242 – Ch. 11)

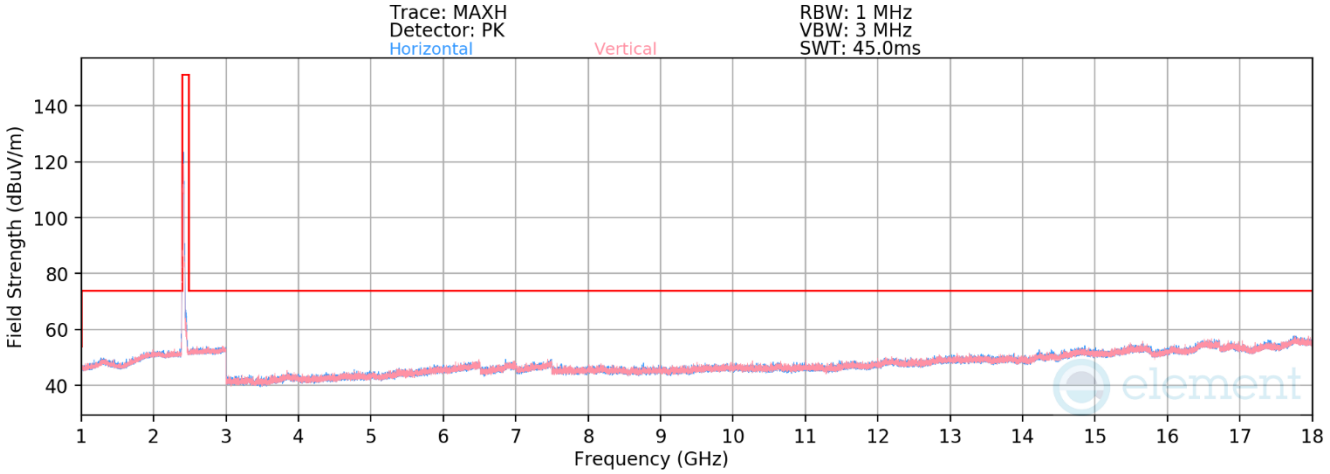
Worst Case Mode:	802.11ax OFDMA
Worst Case Transfer Rate:	MCS9
RU Index:	61
Distance of Measurements:	3 Meters
Operating Frequency:	2462MHz
Channel:	11

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4924.00	Average	H	-	-	-77.60	4.39	33.79	53.98	-20.19
4924.00	Peak	H	-	-	-65.80	4.39	45.60	73.98	-28.38
7386.00	Average	H	-	-	-78.51	8.61	37.10	53.98	-16.88
7386.00	Peak	H	-	-	-66.93	8.61	48.68	73.98	-25.30
12310.00	Average	H	-	-	-80.78	12.41	38.63	53.98	-15.35
12310.00	Peak	H	-	-	-68.95	12.41	50.46	73.98	-23.52

Table 7-25. Radiated Measurements Antenna 4a (RU242)

7.7.2 Antenna 2a Radiated Spurious Emission Measurements

§15.247(d) §15.205 & §15.209; RSS-Gen [8.9]

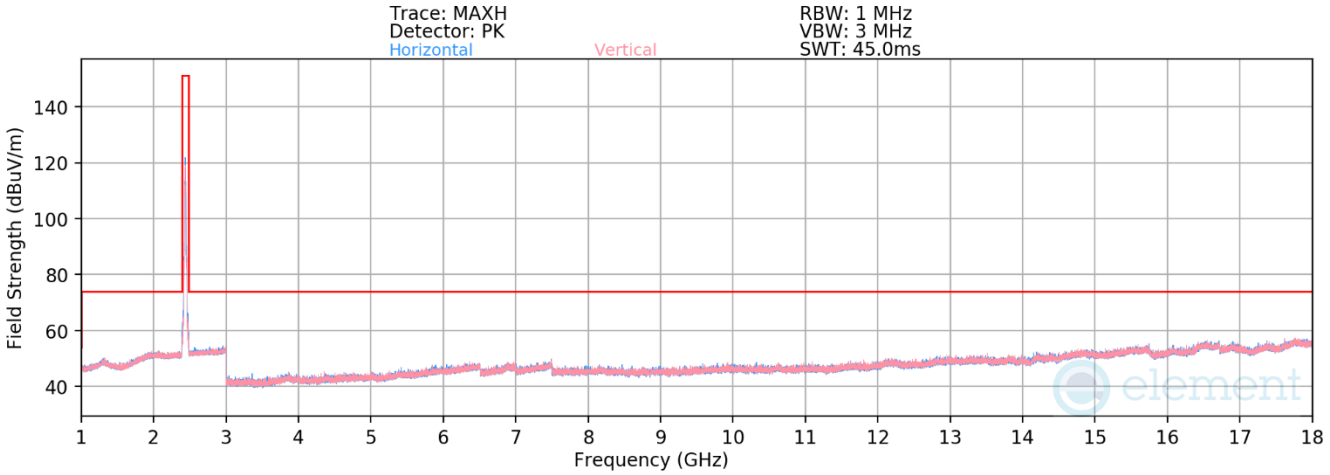


Plot 7-131. Radiated Spurious Emissions above 1GHz Antenna 2a (802.11ax OFDMA – RU26 – Ch. 1)

Worst Case Mode:	802.11ax OFDMA
Worst Case Transfer Rate:	MCS9
RU Index:	4
Distance of Measurements:	3 Meters
Operating Frequency:	2412MHz
Channel:	01

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4824.00	Average	H	-	-	-77.52	4.22	33.70	53.98	-20.28
4824.00	Peak	H	-	-	-65.46	4.22	45.75	73.98	-28.23
12060.00	Average	H	-	-	-80.14	12.13	38.99	53.98	-14.99
12060.00	Peak	H	-	-	-68.35	11.95	50.60	73.98	-23.38

Table 7-26. Radiated Measurements Antenna 2a (RU26)

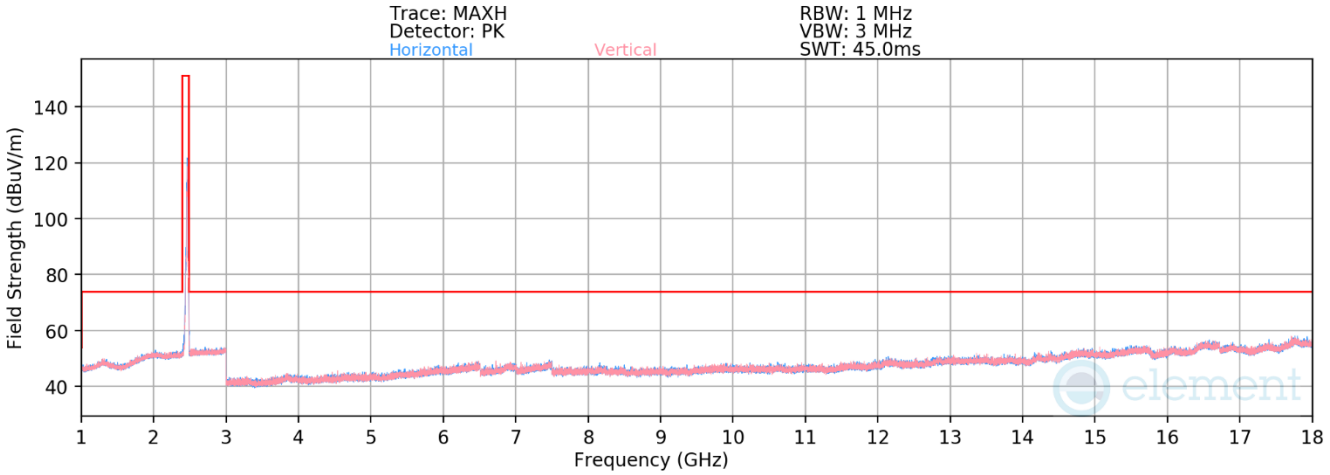


Plot 7-132. Radiated Spurious Emissions above 1GHz Antenna 2a (802.11ax OFDMA – RU26 – Ch. 6)

Worst Case Mode:	802.11ax OFDMA
Worst Case Transfer Rate:	MCS9
RU Index:	4
Distance of Measurements:	3 Meters
Operating Frequency:	2437MHz
Channel:	06

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4874.00	Average	H	-	-	-77.42	4.32	33.91	53.98	-20.07
4874.00	Peak	H	-	-	-65.49	4.32	45.84	73.98	-28.14
7311.00	Average	H	-	-	-78.52	8.84	37.32	53.98	-16.66
7311.00	Peak	H	-	-	-66.44	8.84	49.39	73.98	-24.59
12185.00	Average	H	-	-	-80.53	12.46	38.93	53.98	-15.05
12185.00	Peak	H	-	-	-69.43	12.42	49.99	73.98	-23.99

Table 7-27. Radiated Measurements Antenna 2a (RU26)

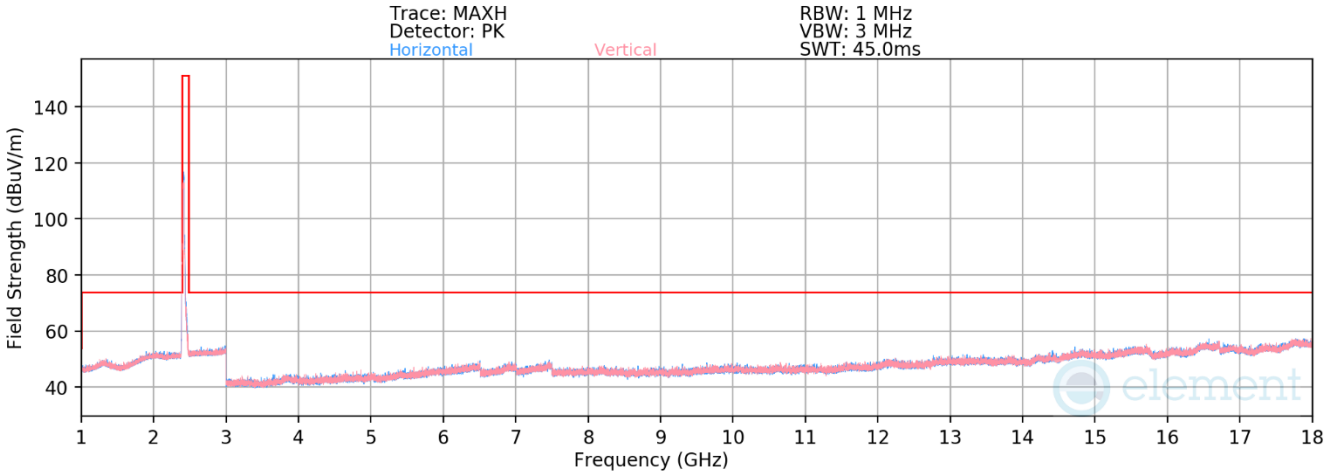


Plot 7-133. Radiated Spurious Emissions above 1GHz Antenna 2a (802.11ax OFDMA – RU26 – Ch. 11)

Worst Case Mode:	802.11ax OFDMA
Worst Case Transfer Rate:	MCS9
RU Index:	4
Distance of Measurements:	3 Meters
Operating Frequency:	2462MHz
Channel:	11

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4924.00	Average	H	-	-	-77.60	4.31	33.71	53.98	-20.27
4924.00	Peak	H	-	-	-65.83	4.31	45.48	73.98	-28.50
7386.00	Average	H	-	-	-78.22	8.52	37.30	53.98	-16.68
7386.00	Peak	H	-	-	-66.35	8.52	49.17	73.98	-24.81
12310.00	Average	H	-	-	-80.71	12.48	38.77	53.98	-15.21
12310.00	Peak	H	-	-	-68.63	12.34	50.71	73.98	-23.27

Table 7-28. Radiated Measurements Antenna 2a (RU26)

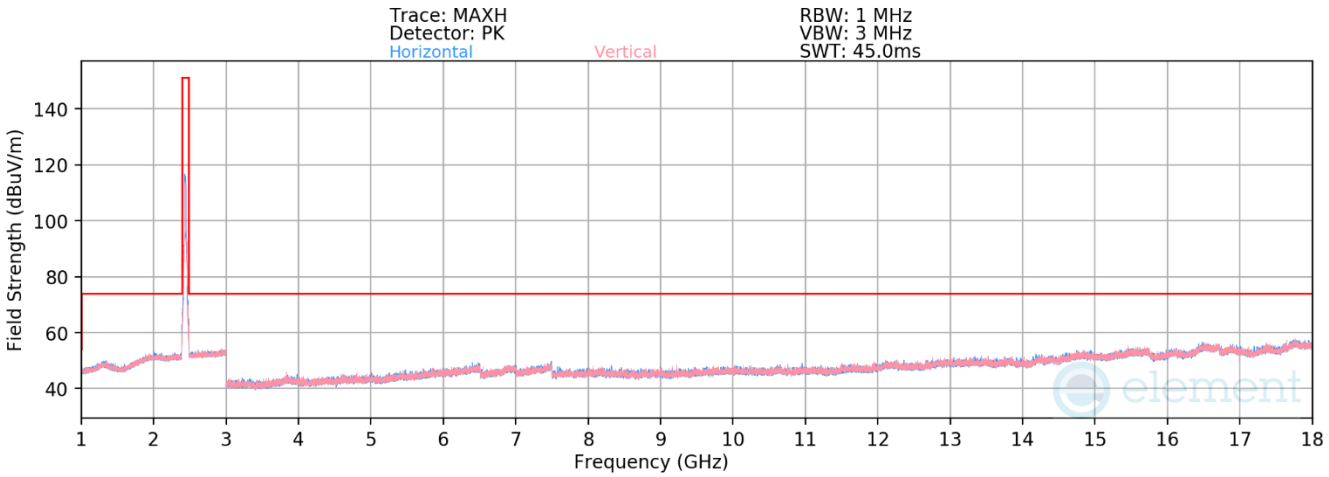


Plot 7-134. Radiated Spurious Emissions above 1GHz Antenna 2a (802.11ax OFDMA – RU242 – Ch. 1)

Worst Case Mode:	802.11ax OFDMA
Worst Case Transfer Rate:	MCS9
RU Index:	61
Distance of Measurements:	3 Meters
Operating Frequency:	2412MHz
Channel:	01

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4824.00	Average	H	-	-	-77.59	4.22	33.64	53.98	-20.34
4824.00	Peak	H	-	-	-65.79	4.22	45.43	73.98	-28.55
12060.00	Average	H	-	-	-80.14	11.75	38.60	53.98	-15.38
12060.00	Peak	H	-	-	-68.93	11.97	50.04	73.98	-23.94

Table 7-29. Radiated Measurements Antenna 2a (RU242)

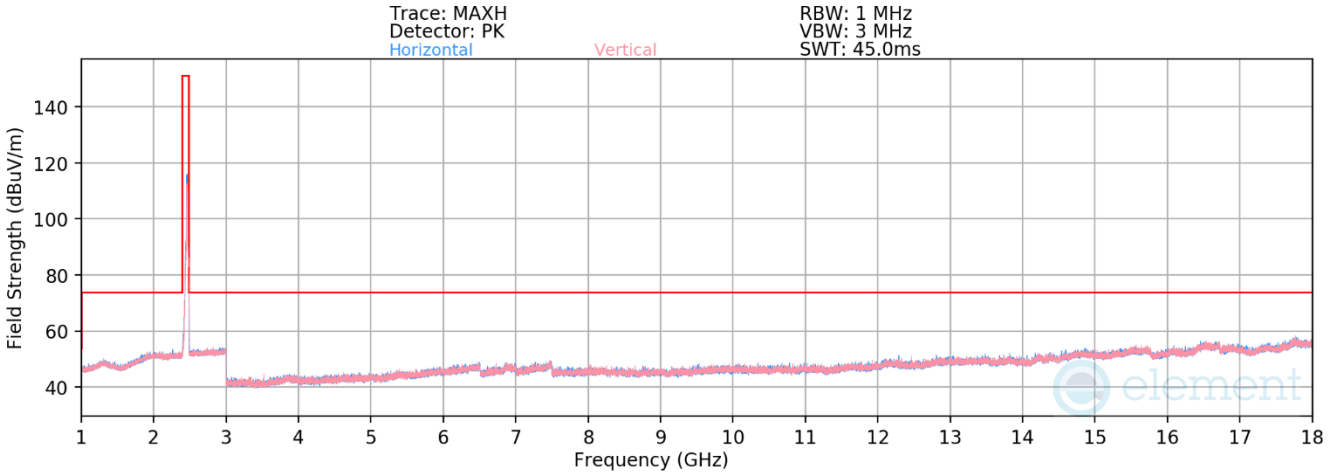


Plot 7-135. Radiated Spurious Emissions above 1GHz Antenna 2a (802.11ax OFDMA – RU242 – Ch. 6)

Worst Case Mode:	802.11ax OFDMA
Worst Case Transfer Rate:	MCS9
RU Index:	61
Distance of Measurements:	3 Meters
Operating Frequency:	2437MHz
Channel:	06

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4874.00	Average	H	-	-	-77.79	4.32	33.54	53.98	-20.44
4874.00	Peak	H	-	-	-66.16	4.32	45.17	73.98	-28.81
7311.00	Average	H	-	-	-78.47	8.84	37.37	53.98	-16.61
7311.00	Peak	H	-	-	-66.91	8.84	48.93	73.98	-25.05
12185.00	Average	H	-	-	-80.32	12.46	39.14	53.98	-14.84
12185.00	Peak	H	-	-	-68.63	12.46	50.83	73.98	-23.15

Table 7-30. Radiated Measurements Antenna 2a (RU242)



Plot 7-136. Radiated Spurious Emissions above 1GHz Antenna 2a (802.11ax OFDMA – RU242 – Ch. 11)

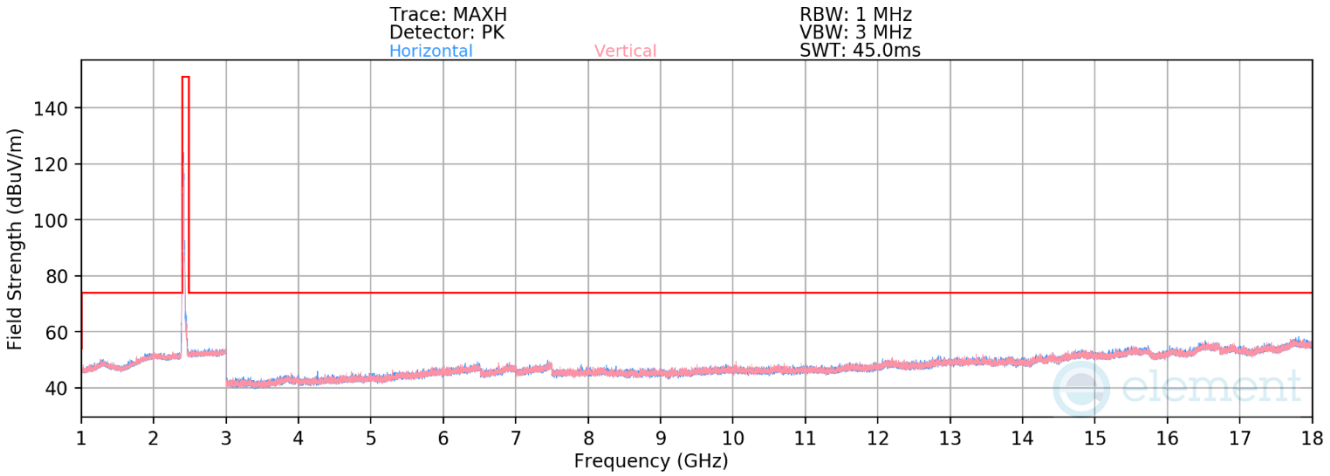
Worst Case Mode:	802.11ax OFDMA
Worst Case Transfer Rate:	MCS9
RU Index:	61
Distance of Measurements:	3 Meters
Operating Frequency:	2462MHz
Channel:	11

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4924.00	Average	H	-	-	-77.53	4.31	33.78	53.98	-20.20
4924.00	Peak	H	-	-	-65.51	4.31	45.80	73.98	-28.18
7386.00	Average	H	-	-	-78.38	8.69	37.30	53.98	-16.68
7386.00	Peak	H	-	-	-66.45	8.69	49.24	73.98	-24.74
12310.00	Average	H	-	-	-80.43	12.48	39.05	53.98	-14.93
12310.00	Peak	H	-	-	-68.88	12.43	50.55	73.98	-23.43

Table 7-31. Radiated Measurements Antenna 2a (RU242)

7.7.3 CDD Radiated Spurious Emission Measurements

§15.247(d) §15.205 & §15.209; RSS-Gen [8.9]

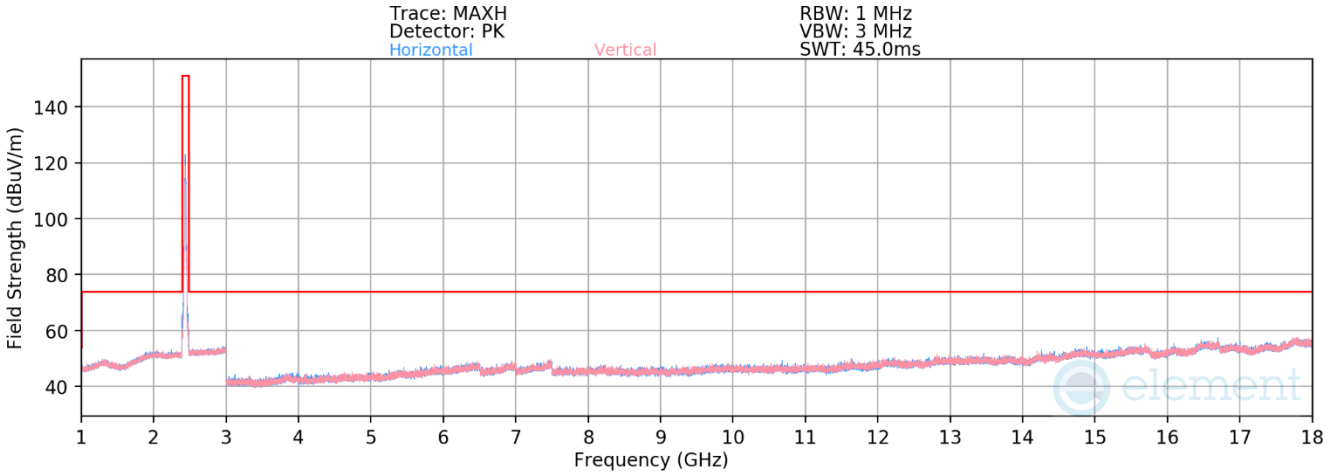


Plot 7-137. Radiated Spurious Emissions above 1GHz CDD (802.11ax OFDMA – RU26 – Ch. 1)

Worst Case Mode:	802.11ax OFDMA
Worst Case Transfer Rate:	MCS9
RU Index:	4
Distance of Measurements:	3 Meters
Operating Frequency:	2412MHz
Channel:	01

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4824.00	Average	H	-	-	-77.38	4.22	33.84	53.98	-20.14
4824.00	Peak	H	-	-	-65.48	4.22	45.73	73.98	-28.25
12060.00	Average	H	-	-	-80.01	12.13	39.12	53.98	-14.86
12060.00	Peak	H	-	-	-68.80	12.13	50.33	73.98	-23.65

Table 7-32. Radiated Measurements CDD (RU26)

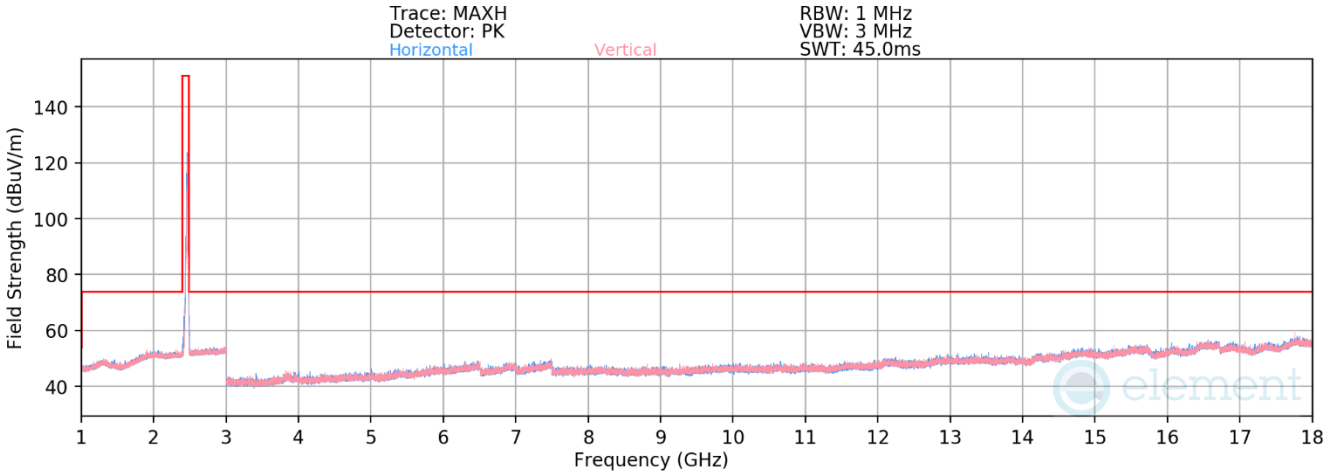


Plot 7-138. Radiated Spurious Emissions above 1GHz CDD (802.11ax OFDMA – RU26 – Ch. 6)

Worst Case Mode:	802.11ax OFDMA
Worst Case Transfer Rate:	MCS9
RU Index:	4
Distance of Measurements:	3 Meters
Operating Frequency:	2437MHz
Channel:	06

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4874.00	Average	H	-	-	-77.49	4.32	33.83	53.98	-20.15
4874.00	Peak	H	-	-	-66.02	4.32	45.30	73.98	-28.68
7311.00	Average	H	-	-	-78.59	8.92	37.33	53.98	-16.65
7311.00	Peak	H	-	-	-66.50	8.92	49.42	73.98	-24.56
12185.00	Average	H	-	-	-80.41	12.46	39.05	53.98	-14.93
12185.00	Peak	H	-	-	-68.79	12.46	50.67	73.98	-23.31

Table 7-33. Radiated Measurements CDD (RU26)

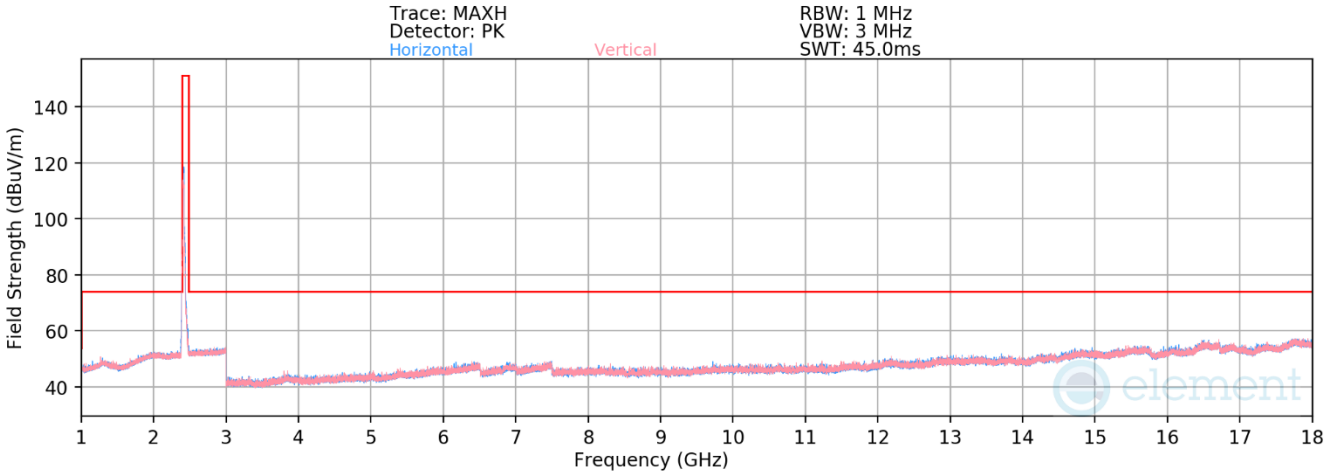


Plot 7-139. Radiated Spurious Emissions above 1GHz CDD (802.11ax OFDMA – RU26 – Ch. 11)

Worst Case Mode:	802.11ax OFDMA
Worst Case Transfer Rate:	MCS9
RU Index:	4
Distance of Measurements:	3 Meters
Operating Frequency:	2462MHz
Channel:	11

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4924.00	Average	H	-	-	-77.20	4.19	33.99	53.98	-19.99
4924.00	Peak	H	-	-	-65.73	4.31	45.58	73.98	-28.40
7386.00	Average	H	-	-	-78.42	8.69	37.27	53.98	-16.71
7386.00	Peak	H	-	-	-66.52	8.69	49.17	73.98	-24.81
12310.00	Average	H	-	-	-80.46	12.43	38.97	53.98	-15.01
12310.00	Peak	H	-	-	-68.87	12.43	50.56	73.98	-23.42

Table 7-34. Radiated Measurements CDD (RU26)

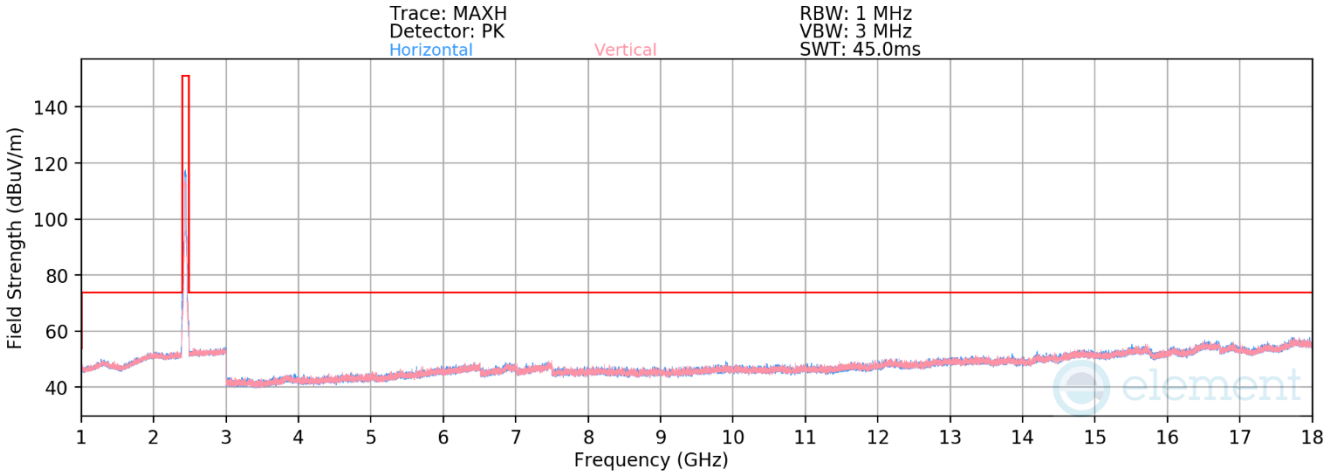


Plot 7-140. Radiated Spurious Emissions above 1GHz CDD (802.11ax OFDMA – RU242 – Ch. 1)

Worst Case Mode:	802.11ax OFDMA
Worst Case Transfer Rate:	MCS9
RU Index:	61
Distance of Measurements:	3 Meters
Operating Frequency:	2412MHz
Channel:	01

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4824.00	Average	H	-	-	-77.31	4.22	33.91	53.98	-20.07
4824.00	Peak	H	-	-	-65.34	4.22	45.88	73.98	-28.10
12060.00	Average	H	-	-	-80.11	12.13	39.02	53.98	-14.96
12060.00	Peak	H	-	-	-68.20	11.95	50.75	73.98	-23.23

Table 7-35. Radiated Measurements CDD (RU242)

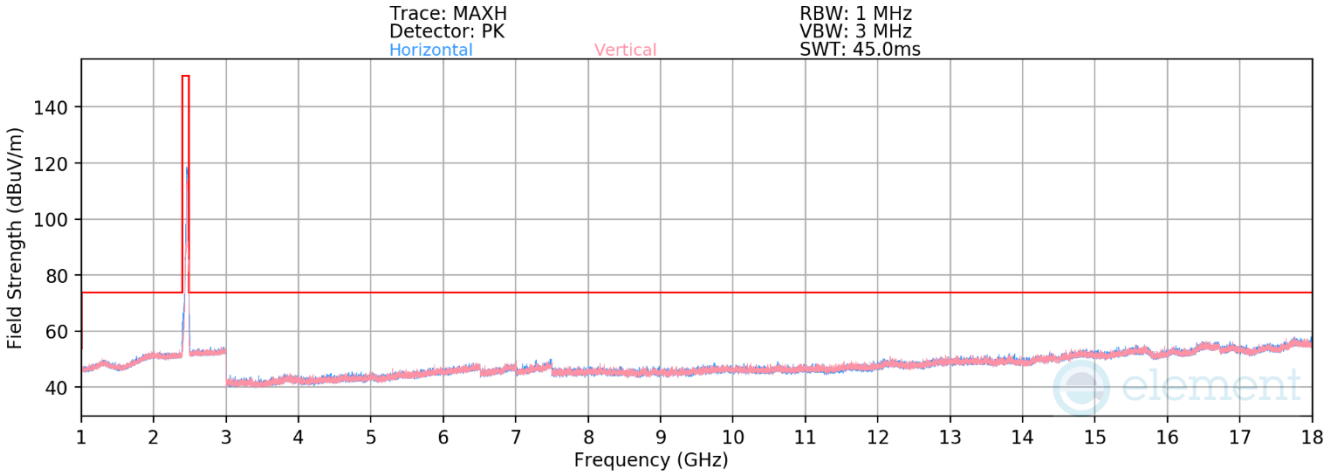


Plot 7-141. Radiated Spurious Emissions above 1GHz CDD (802.11ax OFDMA – RU242 – Ch. 6)

Worst Case Mode:	802.11ax OFDMA
Worst Case Transfer Rate:	MCS9
RU Index:	61
Distance of Measurements:	3 Meters
Operating Frequency:	2437MHz
Channel:	06

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4874.00	Average	H	-	-	-77.50	4.32	33.83	53.98	-20.15
4874.00	Peak	H	-	-	-65.57	4.32	45.76	73.98	-28.22
7311.00	Average	H	-	-	-78.39	8.84	37.45	53.98	-16.53
7311.00	Peak	H	-	-	-66.84	8.84	49.00	73.98	-24.98
12185.00	Average	H	-	-	-79.99	12.28	39.30	53.98	-14.68
12185.00	Peak	H	-	-	-68.84	12.46	50.62	73.98	-23.36

Table 7-36. Radiated Measurements CDD (RU242)



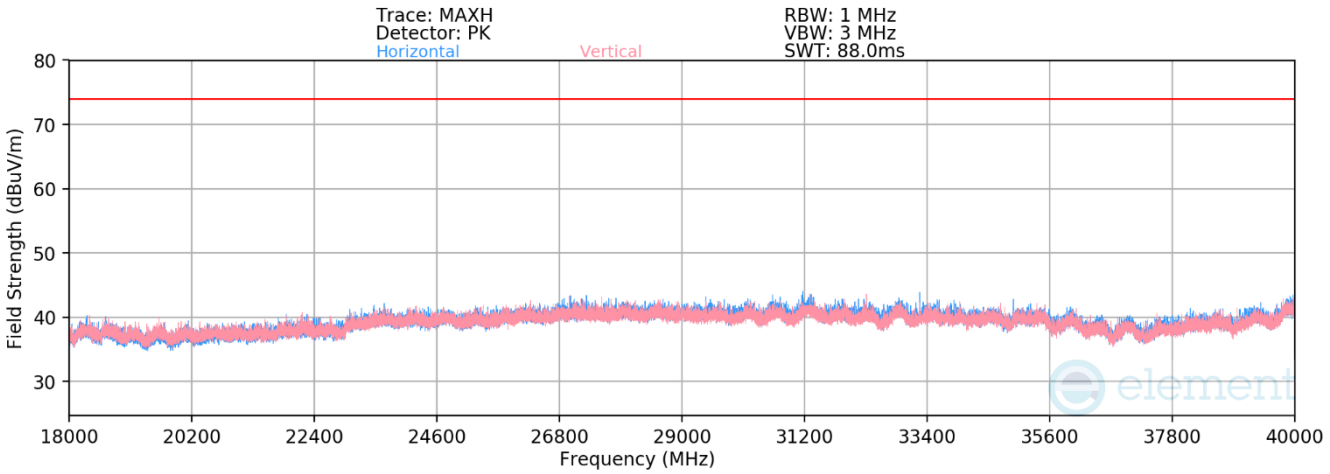
Plot 7-142. Radiated Spurious Emissions above 1GHz CDD (802.11ax OFDMA – RU242 – Ch. 11)

Worst Case Mode:	802.11ax OFDMA
Worst Case Transfer Rate:	MCS9
RU Index:	61
Distance of Measurements:	3 Meters
Operating Frequency:	2462MHz
Channel:	11

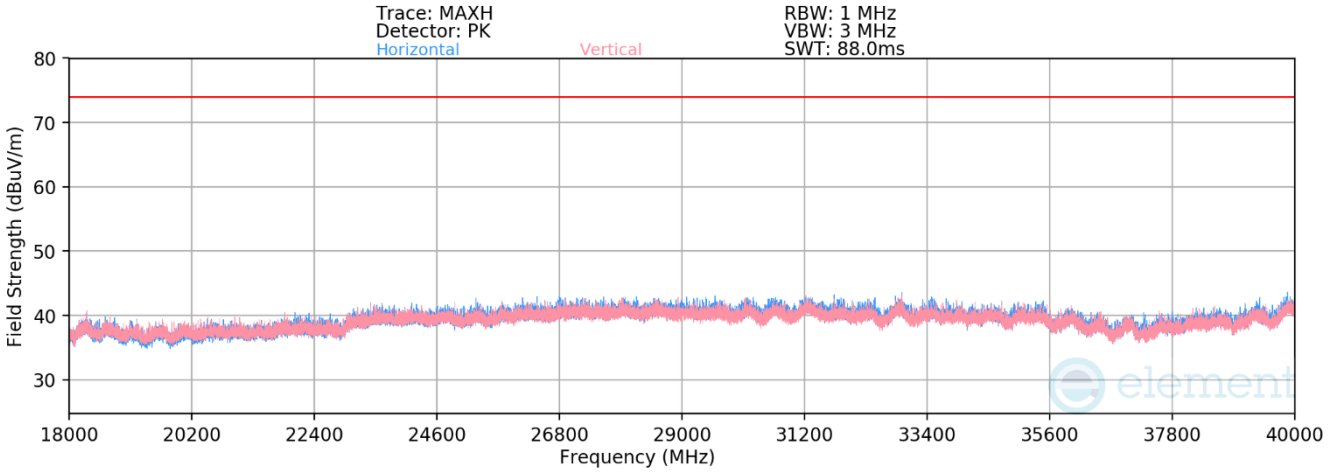
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4924.00	Average	H	-	-	-77.30	4.31	34.01	53.98	-19.97
4924.00	Peak	H	-	-	-65.38	4.31	45.93	73.98	-28.05
7386.00	Average	H	-	-	-78.35	8.69	37.33	53.98	-16.65
7386.00	Peak	H	-	-	-66.41	8.65	49.23	73.98	-24.75
12310.00	Average	H	-	-	-80.79	12.48	38.69	53.98	-15.29
12310.00	Peak	H	-	-	-69.43	12.48	50.04	73.98	-23.94

Table 7-37. Radiated Measurements CDD (RU242)

Radiated Spurious Emissions Above 18GHz CDD



Plot 7-143. Radiated Spurious Emissions above 18GHz CDD (802.11ax OFDMA – RU26 – Ch. 6)



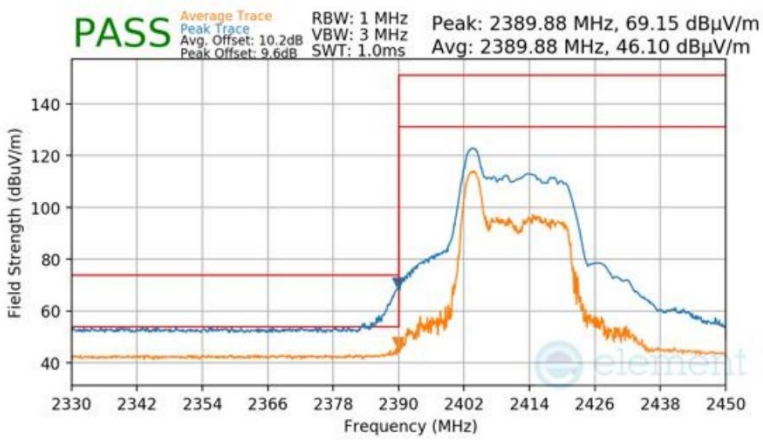
Plot 7-144. Radiated Spurious Emissions above 18GHz CDD (802.11ax OFDMA – RU242 – Ch. 6)

7.7.4 Antenna 4a Radiated Restricted Band Edge Measurements

§15.205 §15.209; RSS-Gen [8.9]

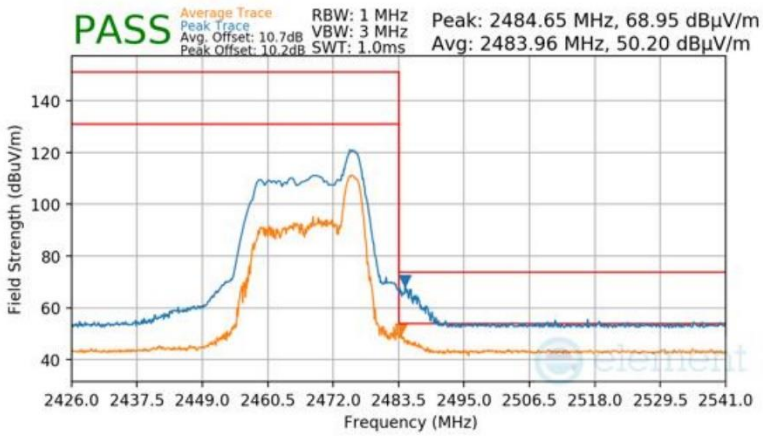
RU26

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**0**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2412MHz**
Channel:	**1**



Plot 7-145 Radiated Restricted Lower Band Edge Measurement Antenna 4a (Peak & Average – RU26)

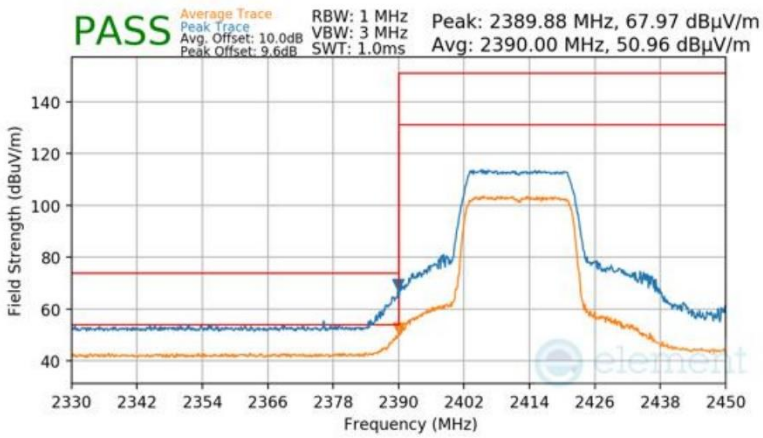
Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**8**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2467MHz**
Channel:	**12**



Plot 7-146 Radiated Restricted Upper Band Edge Measurement Antenna 4a (Peak & Average – RU26)

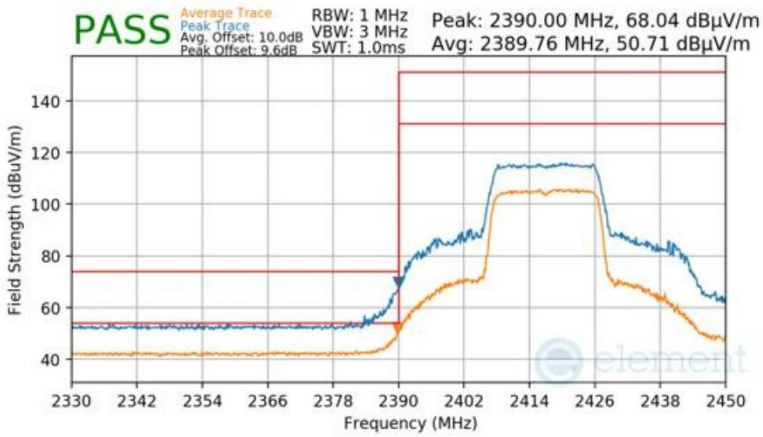
RU242

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2412MHz**
Channel:	**1**



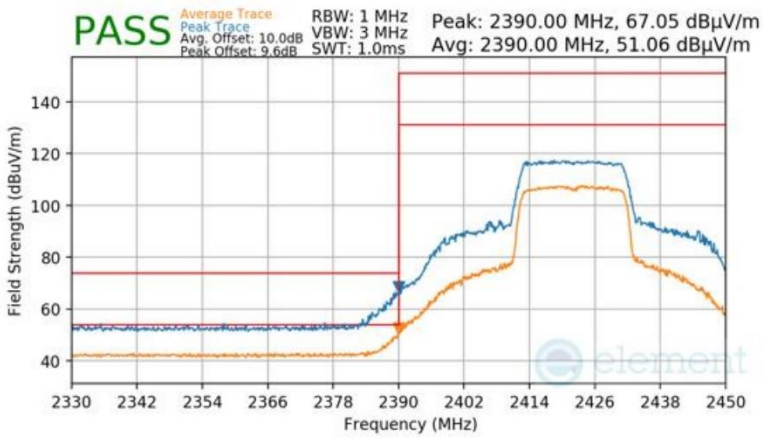
Plot 7-147 Radiated Restricted Lower Band Edge Measurement Antenna 4a (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2417MHz**
Channel:	**2**



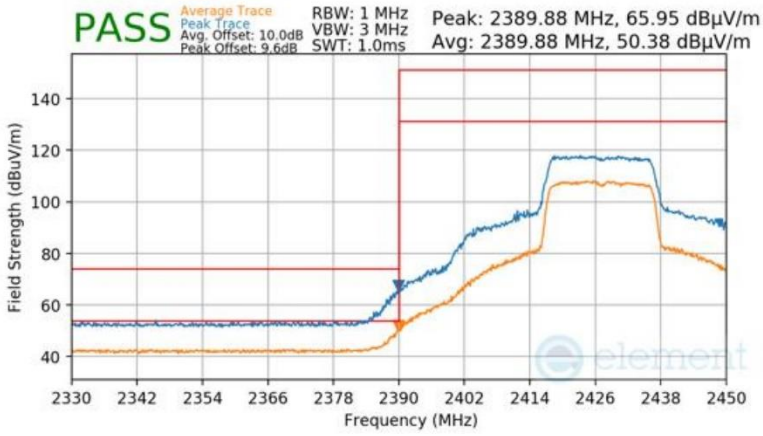
Plot 7-148 Radiated Restricted Lower Band Edge Measurement Antenna 4a (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2422MHz**
Channel:	**3**



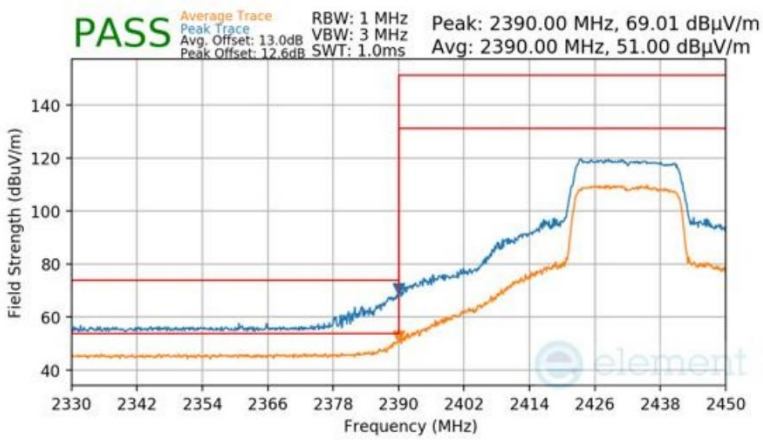
Plot 7-149 Radiated Restricted Lower Band Edge Measurement Antenna 4a (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2427MHz**
Channel:	**4**



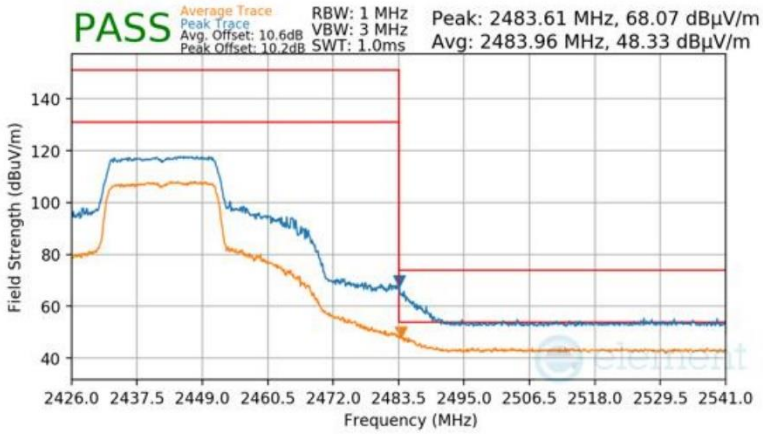
Plot 7-150 Radiated Restricted Lower Band Edge Measurement Antenna 4a (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2432MHz**
Channel:	**5**



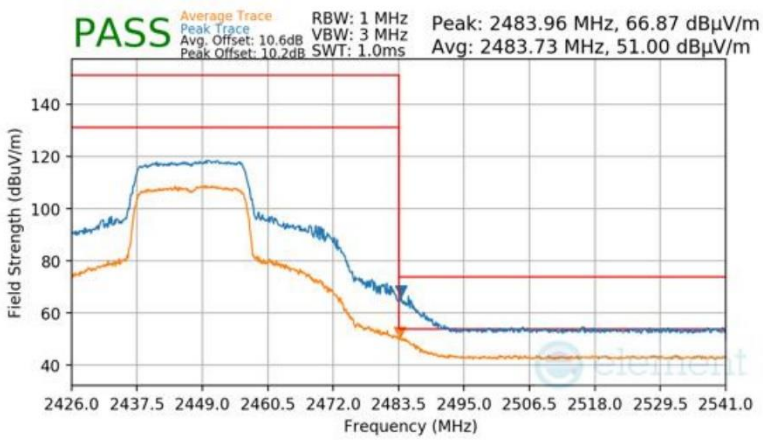
Plot 7-151 Radiated Restricted Lower Band Edge Measurement Antenna 4a (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2442MHz**
Channel:	**7**



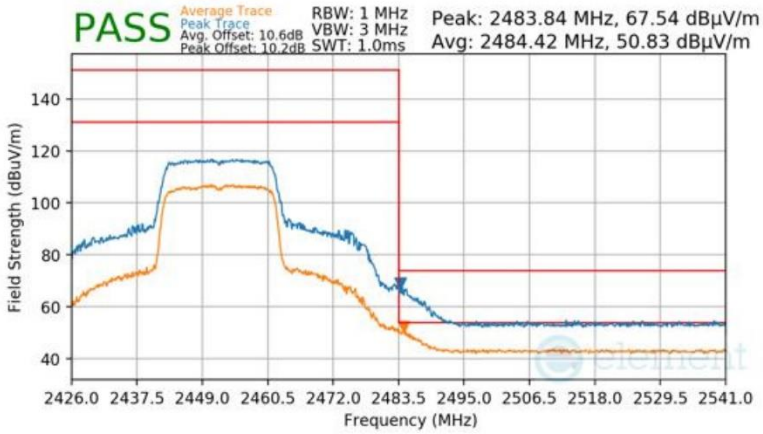
Plot 7-152 Radiated Restricted Upper Band Edge Measurement Antenna 4a (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2447MHz**
Channel:	**8**



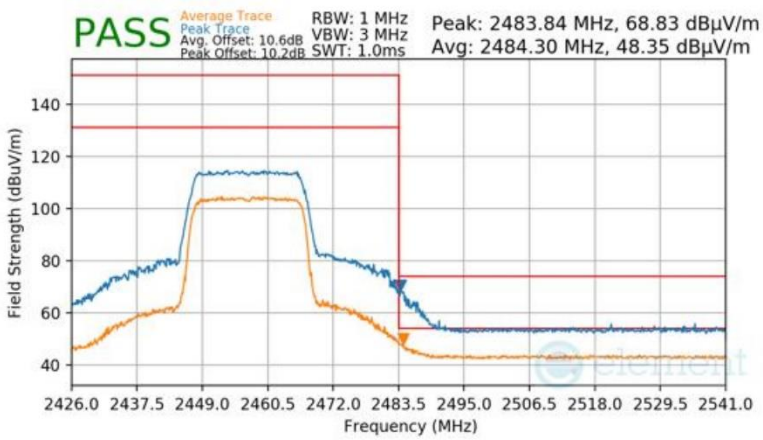
Plot 7-153 Radiated Restricted Upper Band Edge Measurement Antenna 4a (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2452MHz**
Channel:	**9**



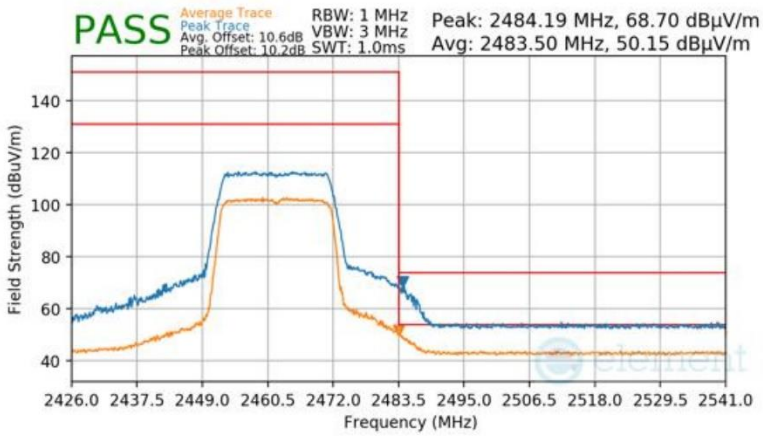
Plot 7-154 Radiated Restricted Upper Band Edge Measurement Antenna 4a (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2457MHz**
Channel:	**10**



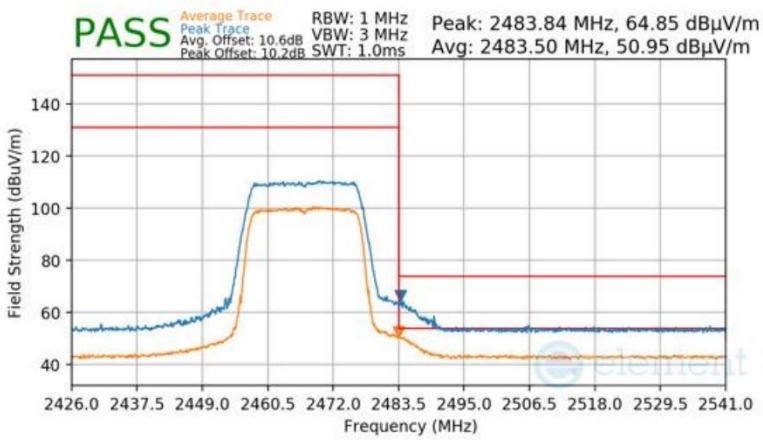
Plot 7-155 Radiated Restricted Upper Band Edge Measurement Antenna 4a (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2462MHz**
Channel:	**11**



Plot 7-156 Radiated Restricted Upper Band Edge Measurement Antenna 4a (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2467MHz**
Channel:	**12**



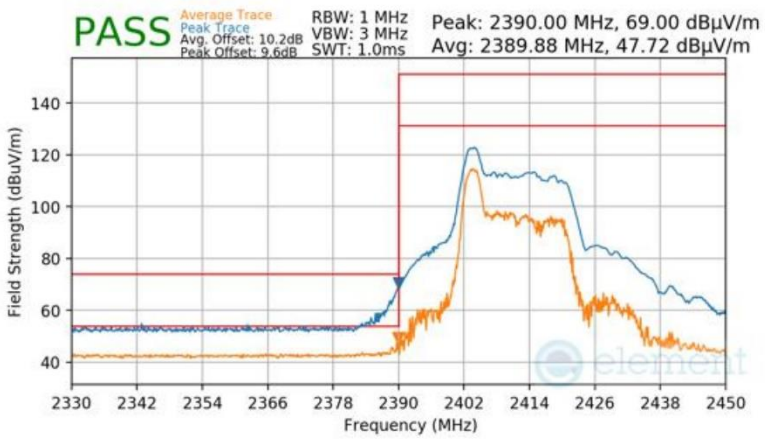
Plot 7-157 Radiated Restricted Upper Band Edge Measurement Antenna 4a (Peak & Average – RU242)

7.7.5 Antenna 2a Radiated Restricted Band Edge Measurements

§15.205 §15.209; RSS-Gen [8.9]

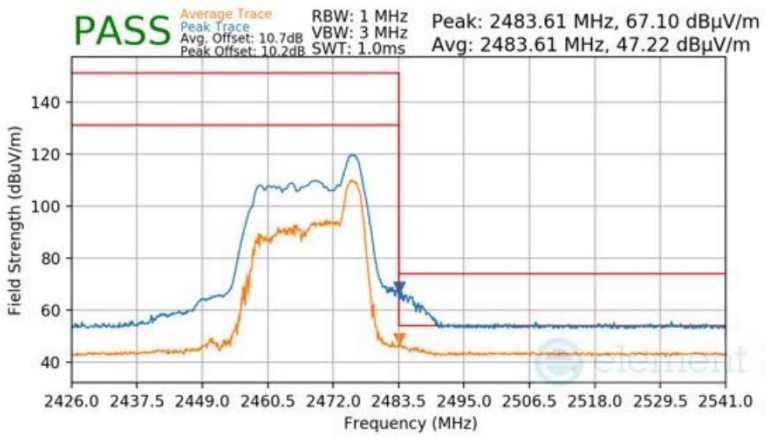
RU26

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**0**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2412MHz**
Channel:	**1**



Plot 7-158 Radiated Restricted Lower Band Edge Measurement Antenna 2a (Peak & Average – RU26)

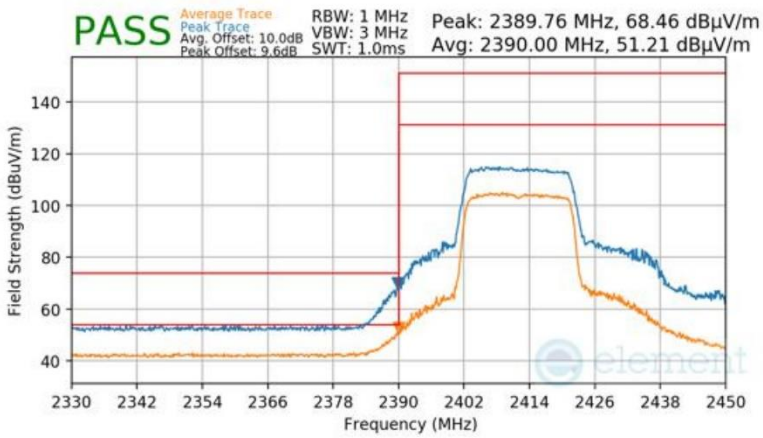
Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**8**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2467MHz**
Channel:	**12**



Plot 7-159 Radiated Restricted Upper Band Edge Measurement Antenna 2a (Peak & Average – RU26)

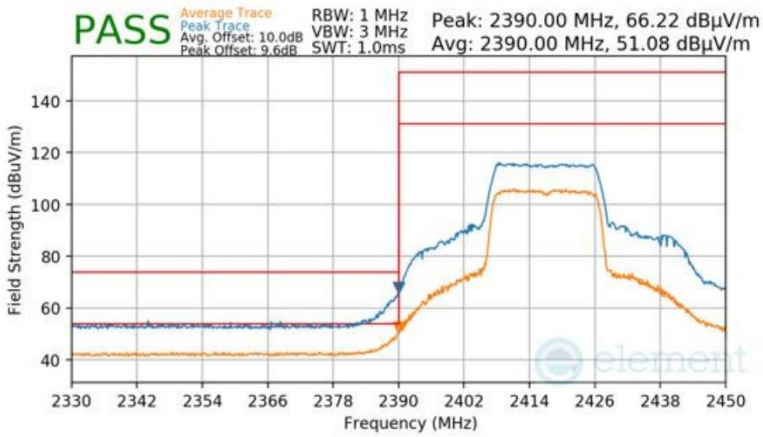
RU242

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2412MHz**
Channel:	**1**



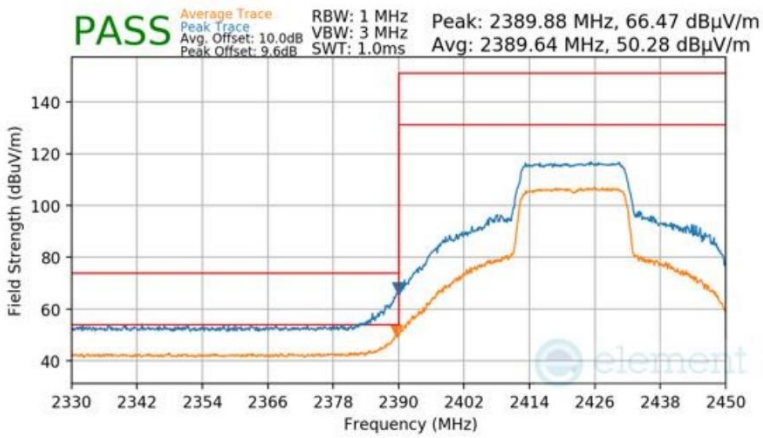
Plot 7-160 Radiated Restricted Lower Band Edge Measurement Antenna 2a (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2417MHz**
Channel:	**2**



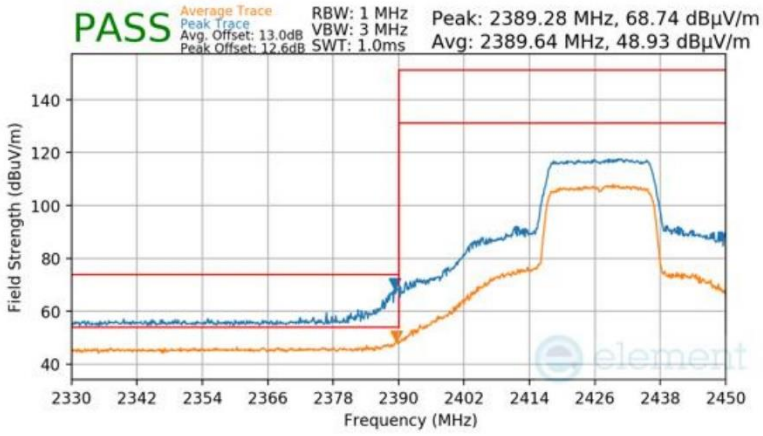
Plot 7-161 Radiated Restricted Lower Band Edge Measurement Antenna 2a (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2422MHz**
Channel:	**3**



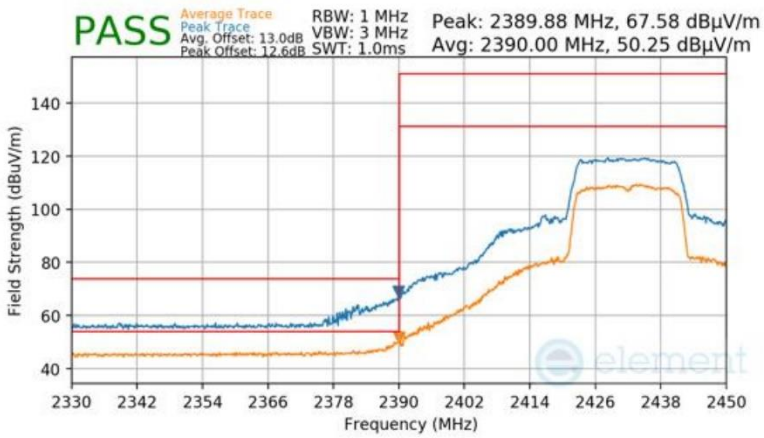
Plot 7-162 Radiated Restricted Lower Band Edge Measurement Antenna 2a (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2427MHz**
Channel:	**4**



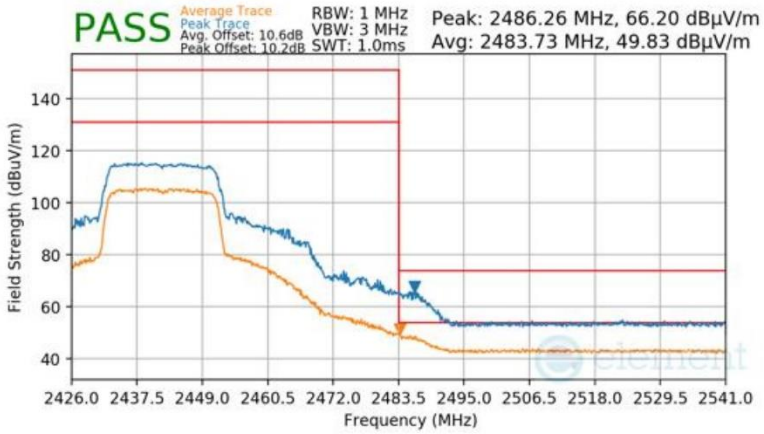
Plot 7-163 Radiated Restricted Lower Band Edge Measurement Antenna 2a (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2432MHz**
Channel:	**5**



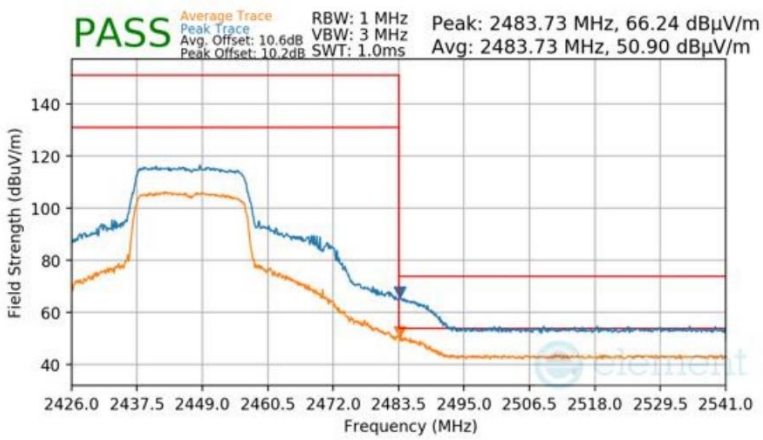
Plot 7-164 Radiated Restricted Lower Band Edge Measurement Antenna 2a (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2442MHz**
Channel:	**7**



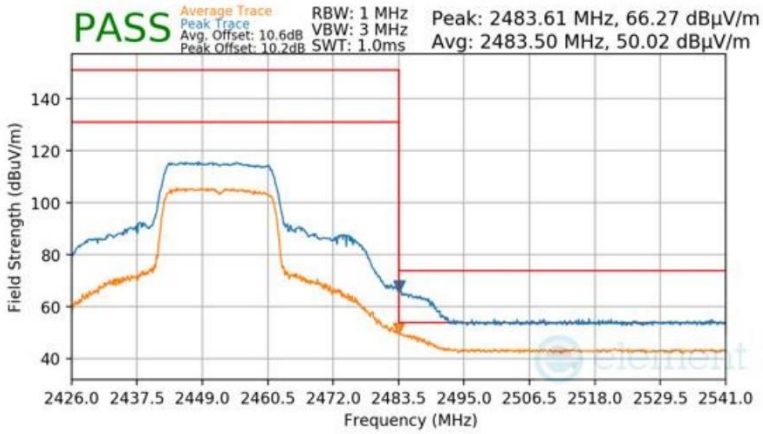
Plot 7-165 Radiated Restricted Upper Band Edge Measurement Antenna 2a (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2447MHz**
Channel:	**8**



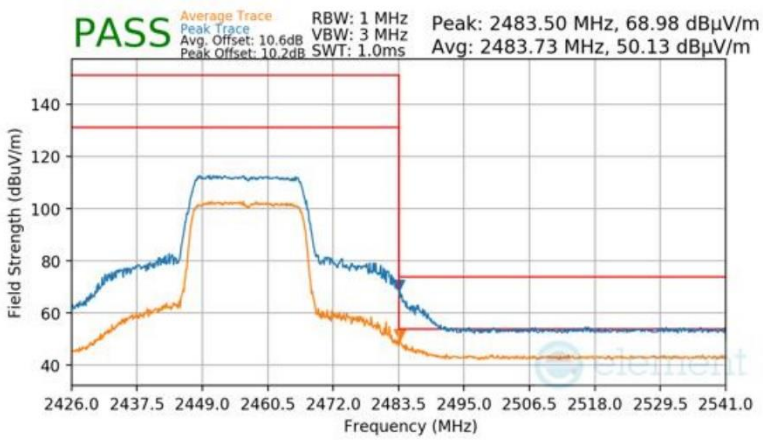
Plot 7-166 Radiated Restricted Upper Band Edge Measurement Antenna 2a (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2452MHz**
Channel:	**9**



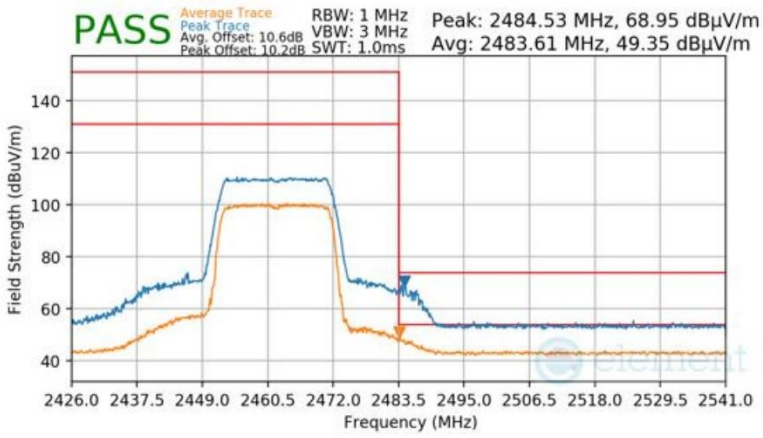
Plot 7-167 Radiated Restricted Upper Band Edge Measurement Antenna 2a (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2457MHz**
Channel:	**10**



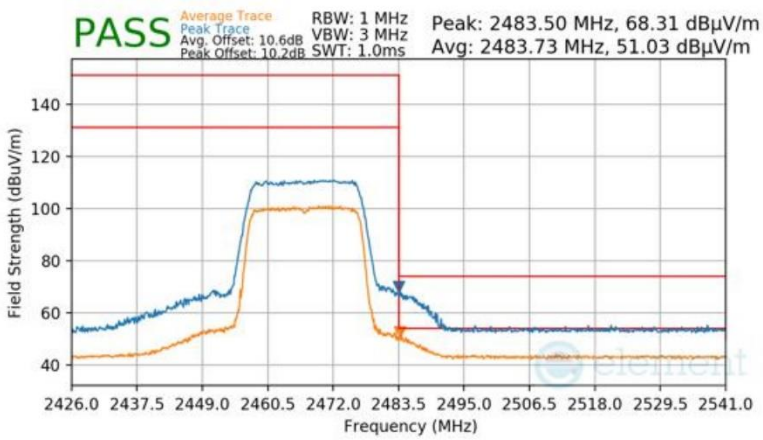
Plot 7-168 Radiated Restricted Upper Band Edge Measurement Antenna 2a (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2462MHz**
Channel:	**11**



Plot 7-169 Radiated Restricted Upper Band Edge Measurement Antenna 2a (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2467MHz**
Channel:	**12**



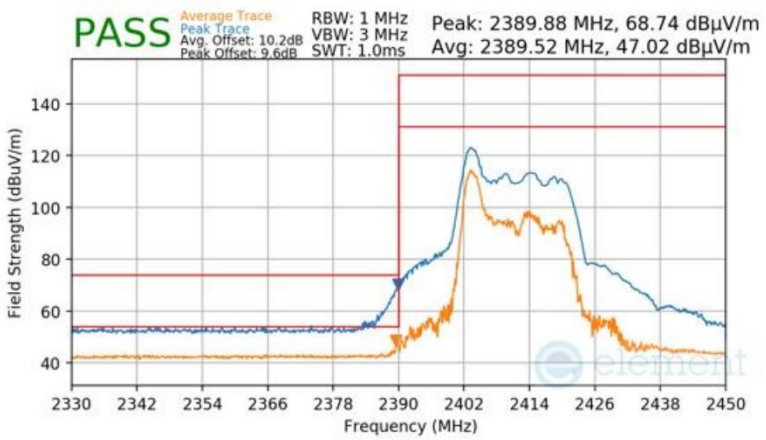
Plot 7-170 Radiated Restricted Upper Band Edge Measurement Antenna 2a (Peak & Average – RU242)

7.7.6 CDD Primary Radiated Restricted Band Edge Measurements

§15.205 §15.209; RSS-Gen [8.9]

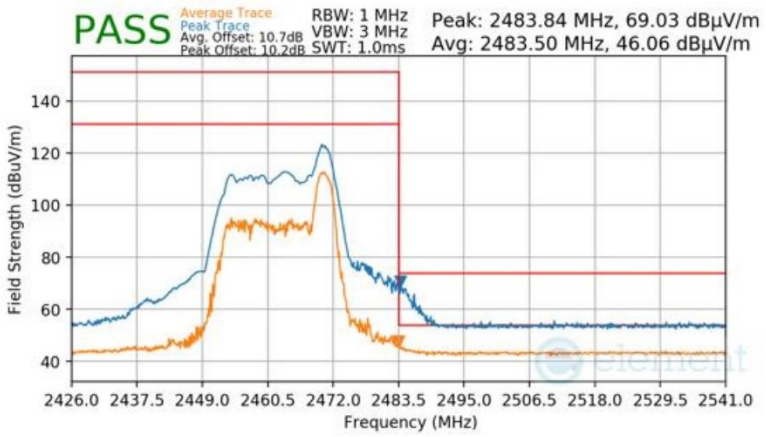
RU26

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**0**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2412MHz**
Channel:	**1**



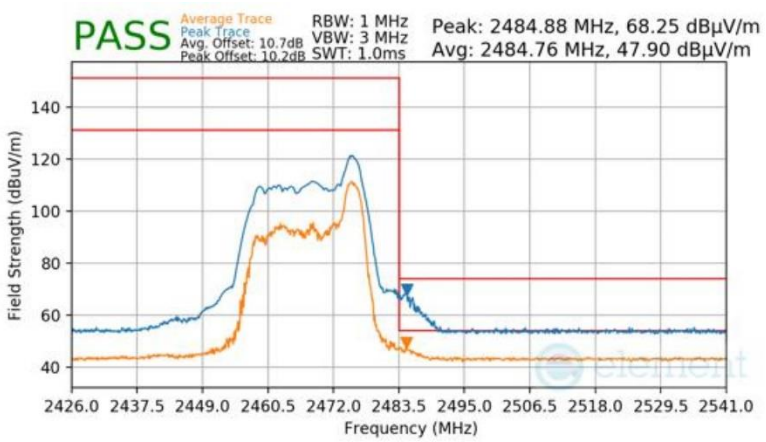
Plot 7-171 Radiated Restricted Lower Band Edge Measurement CDD (Peak & Average – RU26)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**8**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2462MHz**
Channel:	**11**



Plot 7-172 Radiated Restricted Upper Band Edge Measurement CDD (Peak & Average – RU26)

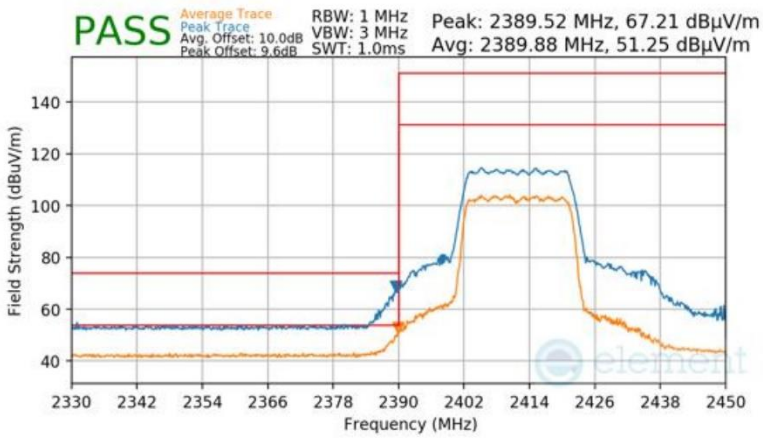
Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**8**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2467MHz**
Channel:	**12**



Plot 7-173 Radiated Restricted Upper Band Edge Measurement CDD (Peak & Average – RU26)

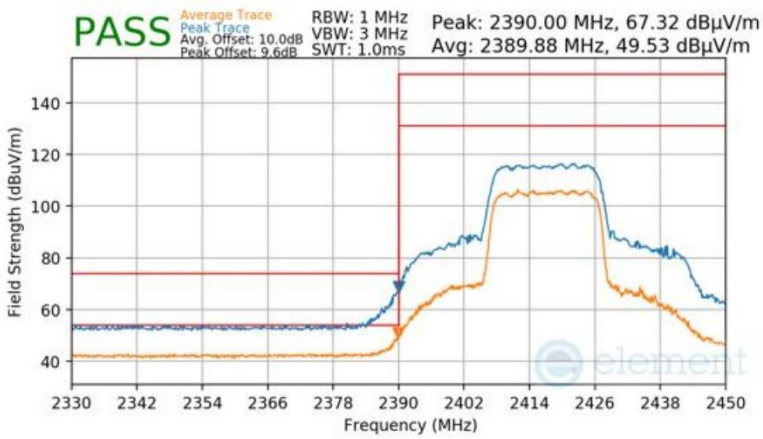
RU242

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2412MHz**
Channel:	**1**



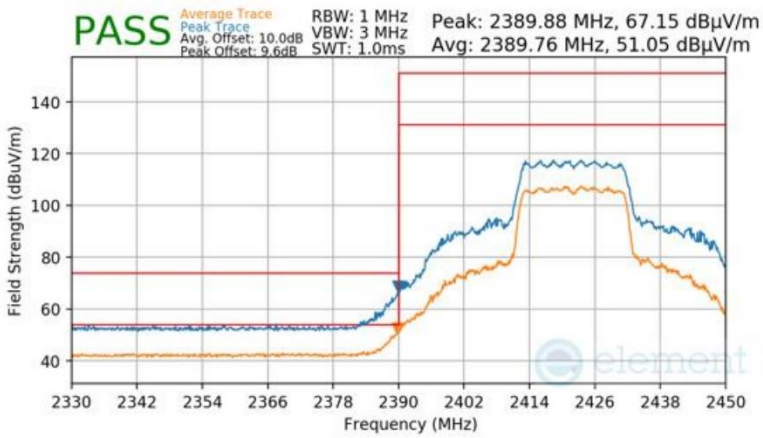
Plot 7-174 Radiated Restricted Lower Band Edge Measurement CDD (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2417MHz**
Channel:	**2**



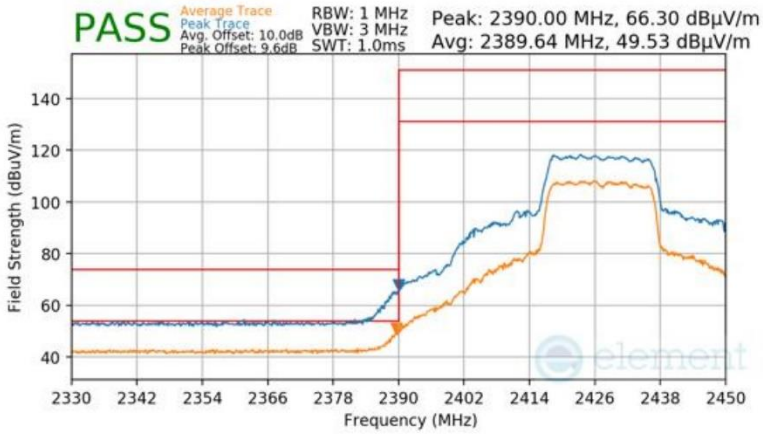
Plot 7-175 Radiated Restricted Lower Band Edge Measurement CDD (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2422MHz**
Channel:	**3**



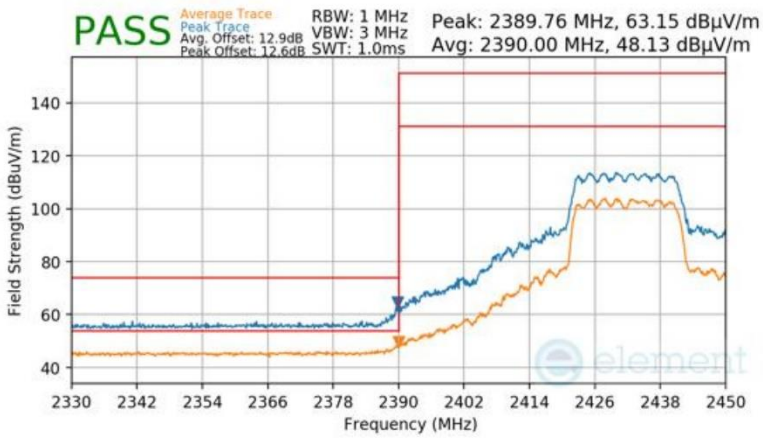
Plot 7-176 Radiated Restricted Lower Band Edge Measurement CDD (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2427MHz**
Channel:	**4**



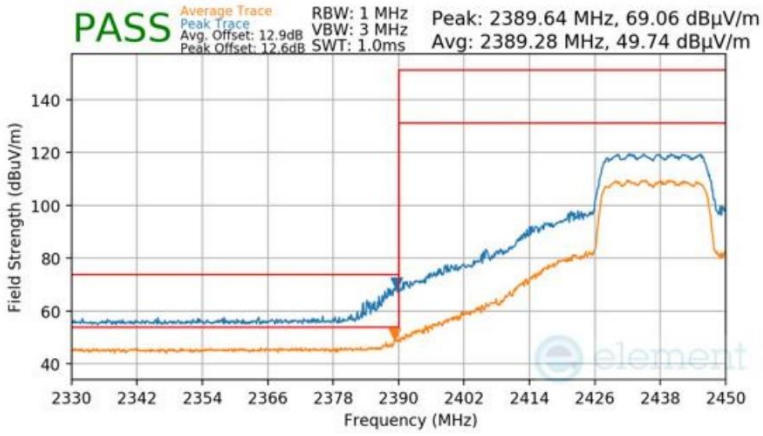
Plot 7-177 Radiated Restricted Lower Band Edge Measurement CDD (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2432MHz**
Channel:	**5**



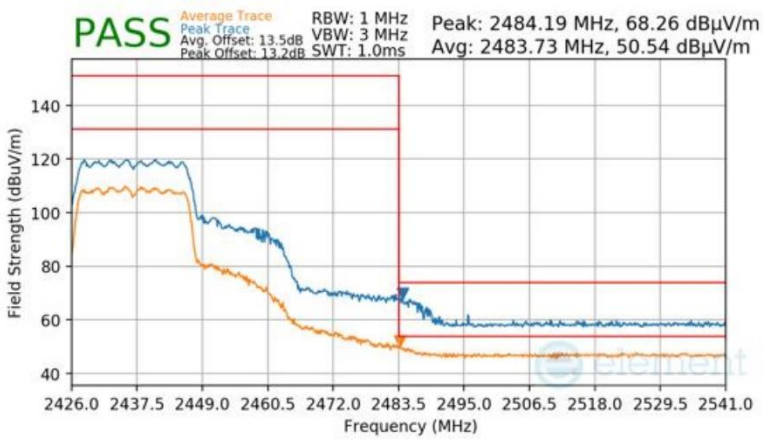
Plot 7-178 Radiated Restricted Lower Band Edge Measurement CDD (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2437MHz**
Channel:	**6**



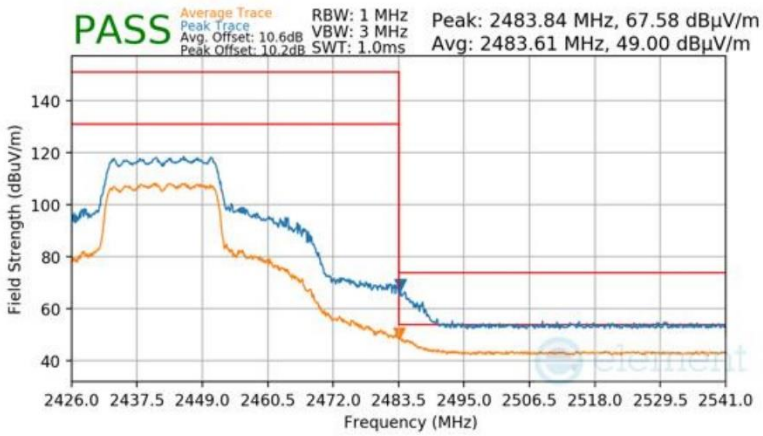
Plot 7-179 Radiated Restricted Lower Band Edge Measurement CDD (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2437MHz**
Channel:	**6**



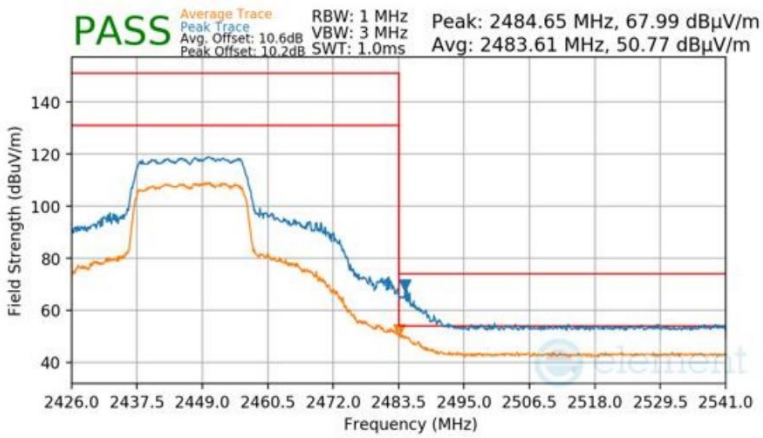
Plot 7-180 Radiated Restricted Upper Band Edge Measurement CDD (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2442MHz**
Channel:	**7**



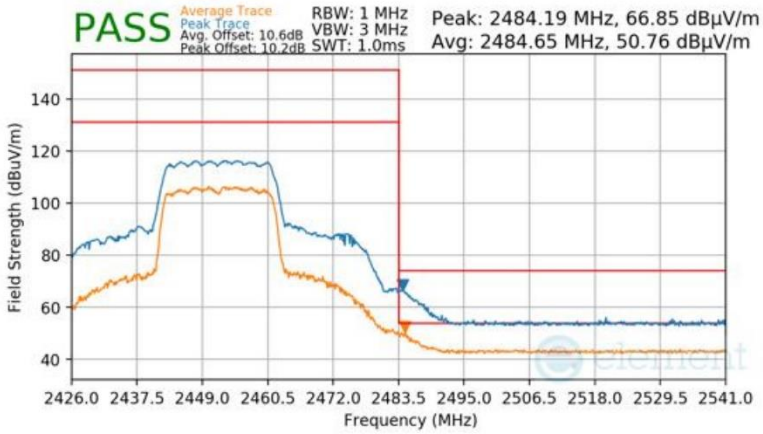
Plot 7-181 Radiated Restricted Upper Band Edge Measurement CDD (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2447MHz**
Channel:	**8**



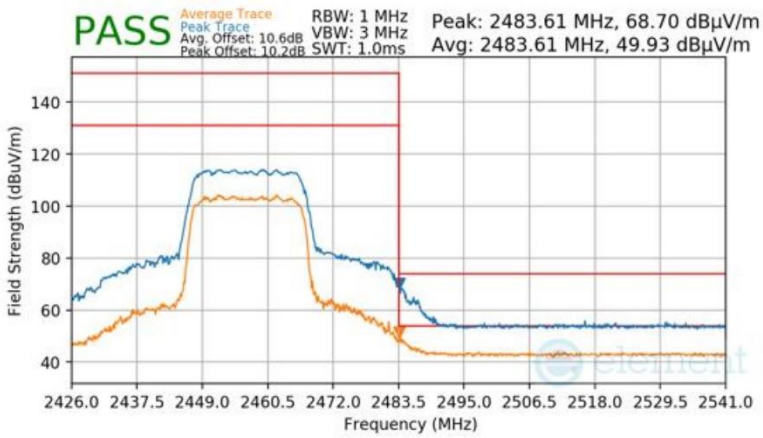
Plot 7-182 Radiated Restricted Upper Band Edge Measurement CDD (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2452MHz**
Channel:	**9**



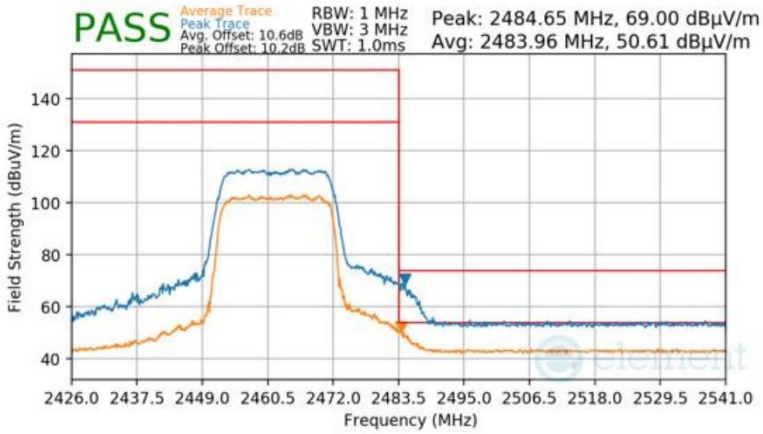
Plot 7-183 Radiated Restricted Upper Band Edge Measurement CDD (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2457MHz**
Channel:	**10**



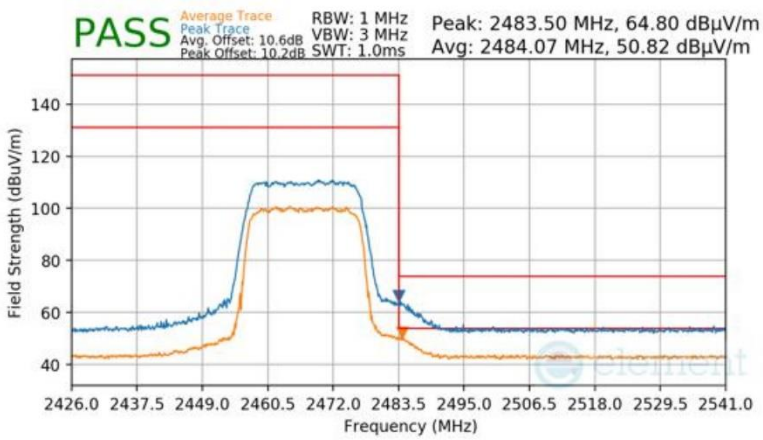
Plot 7-184 Radiated Restricted Upper Band Edge Measurement CDD (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2462MHz**
Channel:	**11**



Plot 7-185 Radiated Restricted Upper Band Edge Measurement CDD (Peak & Average – RU242)

Mode:	**802.11ax OFDMA**
Transfer Rate:	**MCS9**
RU Index:	**61**
Distance of Measurements:	**3 Meters**
Operating Frequency:	**2467MHz**
Channel:	**12**



Plot 7-186 Radiated Restricted Upper Band Edge Measurement CDD (Peak & Average – RU242)

7.8 Radiated Spurious Emissions – Below 1GHz

§15.209; RSS-Gen [8.9]

Test Overview and Limit

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for radiated spurious emissions. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR and Table 7 of RSS-Gen (8.10) must not exceed the limits shown in Table 7-38 per Section 15.209 and RSS-Gen (8.9).

Frequency	Field Strength [µV/m]	Measured Distance [Meters]
0.009 – 0.490 MHz	2400/F (kHz)	300
0.490 – 1.705 MHz	24000/F (kHz)	30
1.705 – 30.00 MHz	30	30
30.00 – 88.00 MHz	100	3
88.00 – 216.0 MHz	150	3
216.0 – 960.0 MHz	200	3
Above 960.0 MHz	500	3

Table 7-38. Radiated Limits

Test Procedures Used

ANSI C63.10-2013

Test Settings

Quasi-Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 120kHz (for emissions from 30MHz – 1GHz)
3. Detector = quasi-peak
4. Sweep time = auto couple
5. Trace mode = max hold
6. Trace was allowed to stabilize

Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 120kHz (for emissions from 30MHz – 1GHz)
3. VBW = 300kHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagrams below.

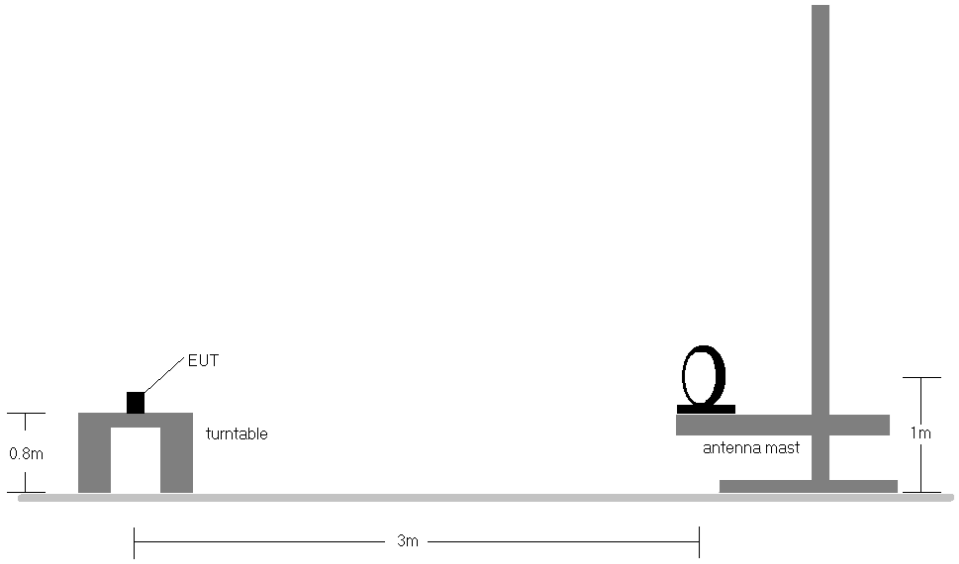


Figure 7-7. Radiated Test Setup < 30MHz

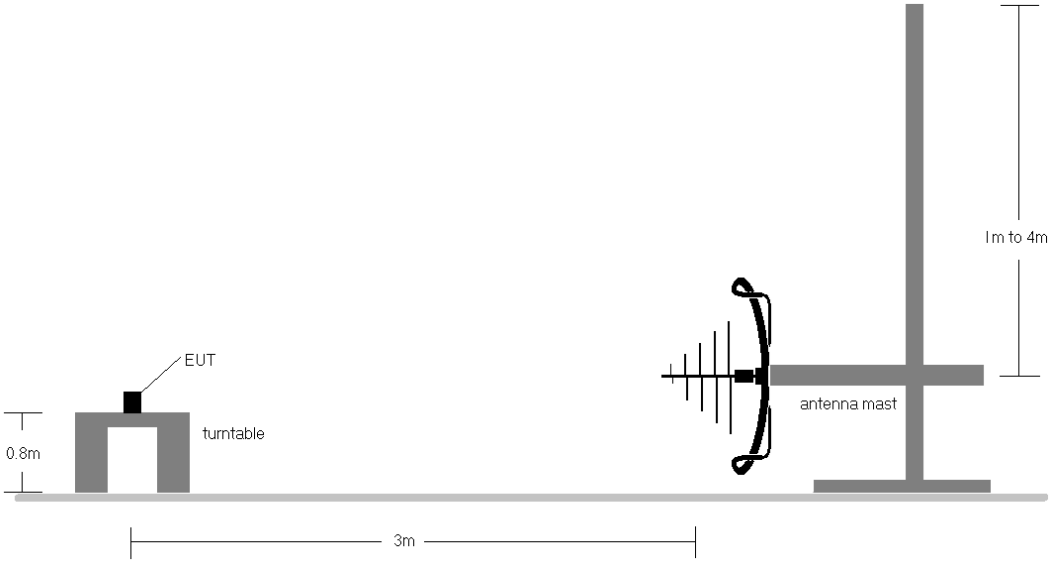


Figure 7-8. Radiated Test Setup < 1GHz

Test Notes

1. All emissions lying in restricted bands specified in §15.205 and RSS-Gen(8.10) are below the limit shown in Table 7-38.
2. The broadband receive antenna is manipulated through vertical and horizontal polarizations during the tests. The EUT is manipulated through three orthogonal planes. For below 30MHz the loop antenna was positioned in 3 orthogonal planes (X front, Y side, Z top) to determine the orientation resulting in the worst case emissions.
3. This unit was tested with its standard battery.
4. The spectrum is investigated using a peak detector and final measurements are recorded using CISPR quasi peak detector for emissions within 6dB of the limit.
5. Emissions were measured at a 3 meter test distance.
6. Emissions are investigated while operating on the center channel of the mode, band, and modulation that produced the worst case results during the transmitter spurious emissions testing.
7. No spurious emissions were detected within 20dB of the limit below 30MHz.
8. The results recorded using the broadband antenna is known to correlate with the results obtained by using a tuned dipole with an acceptable degree of accuracy. The VSWR for the measurement antenna was found to be less than 2:1.
9. All antenna configurations and data rates were investigated and only the worst case are reported.
10. For radiated measurements, emissions were investigated for the fully-loaded RU configuration and for all the partially-loaded RU configurations. Among all of the available partially-loaded RU configurations, only the configuration with the worst case emissions is reported.
11. Both configurations below were investigated, and the worst case has been reported.
    a. EUT powered by AC/DC adaptor via USB-C cable with wire charger
    b. EUT powered by host PC via USB-C cable with wire charger

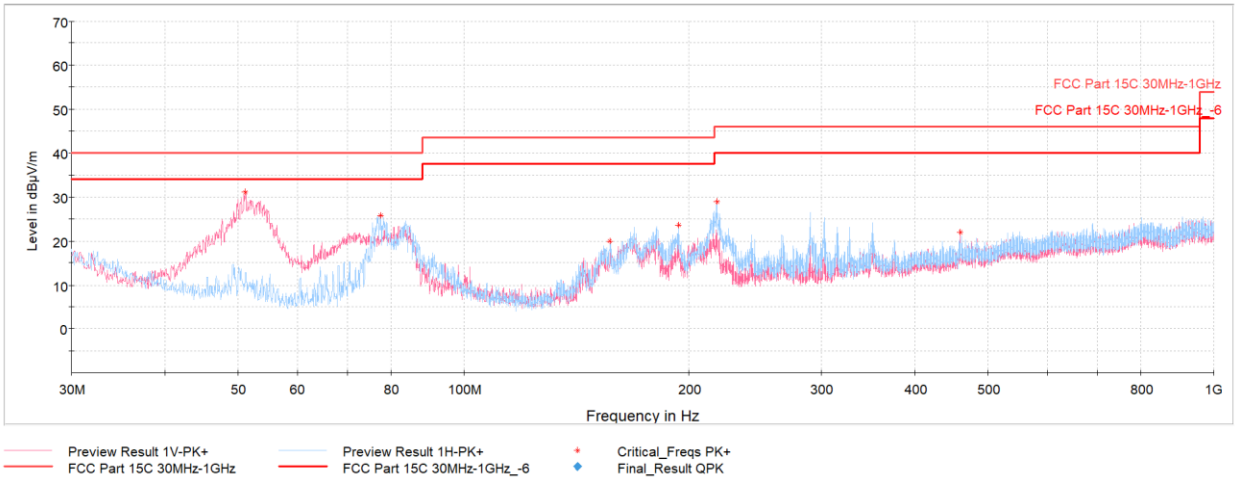
Sample Calculations

Determining Spurious Emissions Levels

- Field Strength Level $_{[dB\mu V/m]}$ = Analyzer Level $_{[dBm]}$ + 107 + AFCL $_{[dB/m]}$
- AFCL $_{[dB/m]}$ = Antenna Factor $_{[dB/m]}$ + Cable Loss $_{[dB]}$ – Preamplifier Gain $_{[dB]}$
- Margin $_{[dB]}$ = Field Strength Level $_{[dB\mu V/m]}$ – Limit $_{[dB\mu V/m]}$

CDD Radiated Spurious Emissions Measurements (Below 1GHz)

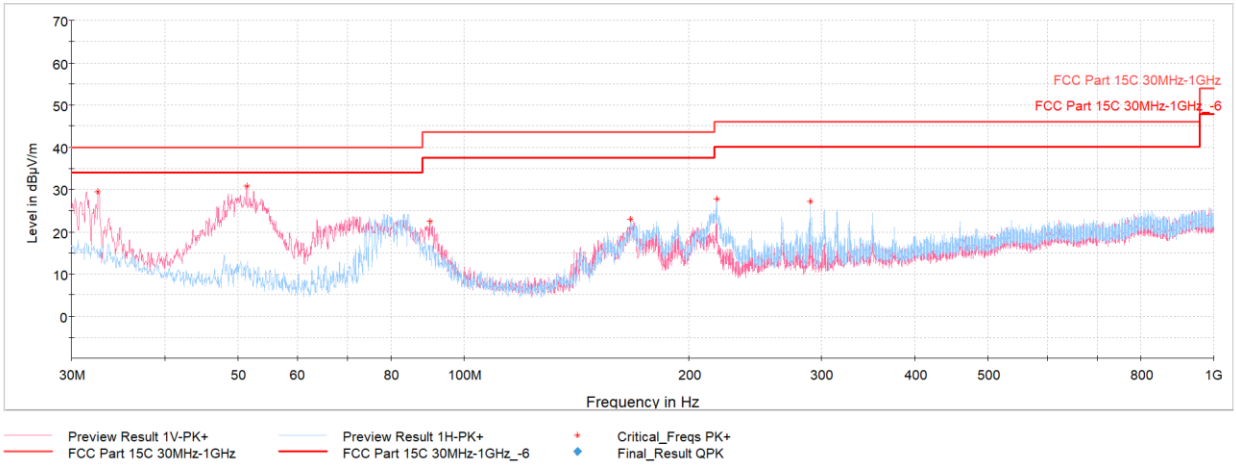
§15.209; RSS-Gen [8.9]



Plot 7-187. Radiated Spurious Emissions below 1GHz CDD Ch.6 (RU26), with AC/DC Adapter

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
51.20	Max-Peak	V	100	121	-52.74	-23.15	31.11	40.00	-8.89
77.43	Max-Peak	H	200	89	-58.49	-22.77	25.74	40.00	-14.26
156.59	Max-Peak	H	200	153	-68.14	-18.84	20.02	43.52	-23.50
193.49	Max-Peak	H	100	332	-64.46	-18.85	23.69	43.52	-19.83
217.60	Max-Peak	H	100	182	-59.95	-18.07	28.98	46.02	-17.04
459.52	Max-Peak	V	100	228	-73.46	-11.57	21.97	46.02	-24.05

Table 7-39. Radiated Spurious Emissions below 1GHz CDD Ch.6 (RU26), with AC/DC Adapter



Plot 7-188. Radiated Spurious Emissions below 1GHz CDD Ch.6 (RU242), with AC/DC Adapter

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
32.57	Max-Peak	V	100	188	-60.63	-16.90	29.47	40.00	-10.53
51.39	Max-Peak	V	100	334	-53.12	-23.14	30.74	40.00	-9.26
90.19	Max-Peak	V	100	199	-62.10	-22.57	22.33	43.52	-21.19
167.11	Max-Peak	H	200	136	-64.10	-19.99	22.91	43.52	-20.61
217.79	Max-Peak	H	100	167	-61.15	-18.06	27.79	46.02	-18.23
290.30	Max-Peak	H	100	103	-64.69	-15.15	27.16	46.02	-18.86

Table 7-40. Radiated Spurious Emissions below 1GHz CDD Ch.6 (RU242), with AC/DC Adapter

7.9 AC Line-Conducted Emissions Measurement

§15.207; RSS-Gen [8.8]

Test Overview and Limit

All AC line conducted spurious emissions are measured with a receiver connected to a grounded LISN while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for AC Line conducted spurious emissions. Only the conducted emissions of the configuration that produced the worst case emissions are reported in this section.

All conducted emissions must not exceed the limits shown in the table below, per Section 15.207 and RSS-Gen (8.8).

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

Table 7-41. Conducted Limits

*Decreases with the logarithm of the frequency.

Test Procedures Used

ANSI C63.10-2013, Subclause 6.2

Test Settings

Quasi-Peak Measurements

1. Analyzer center frequency was set to the frequency of the spurious emission of interest
2. RBW = 9kHz (for emissions from 150kHz – 30MHz)
3. Detector = quasi-peak
4. Sweep time = auto couple
5. Trace mode = max hold
6. Trace was allowed to stabilize

Average Measurements

1. Analyzer center frequency was set to the frequency of the spurious emission of interest
2. RBW = 9kHz (for emissions from 150kHz – 30MHz)
3. Detector = RMS
4. Sweep time = auto couple
5. Trace mode = max hold
6. Trace was allowed to stabilize

Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

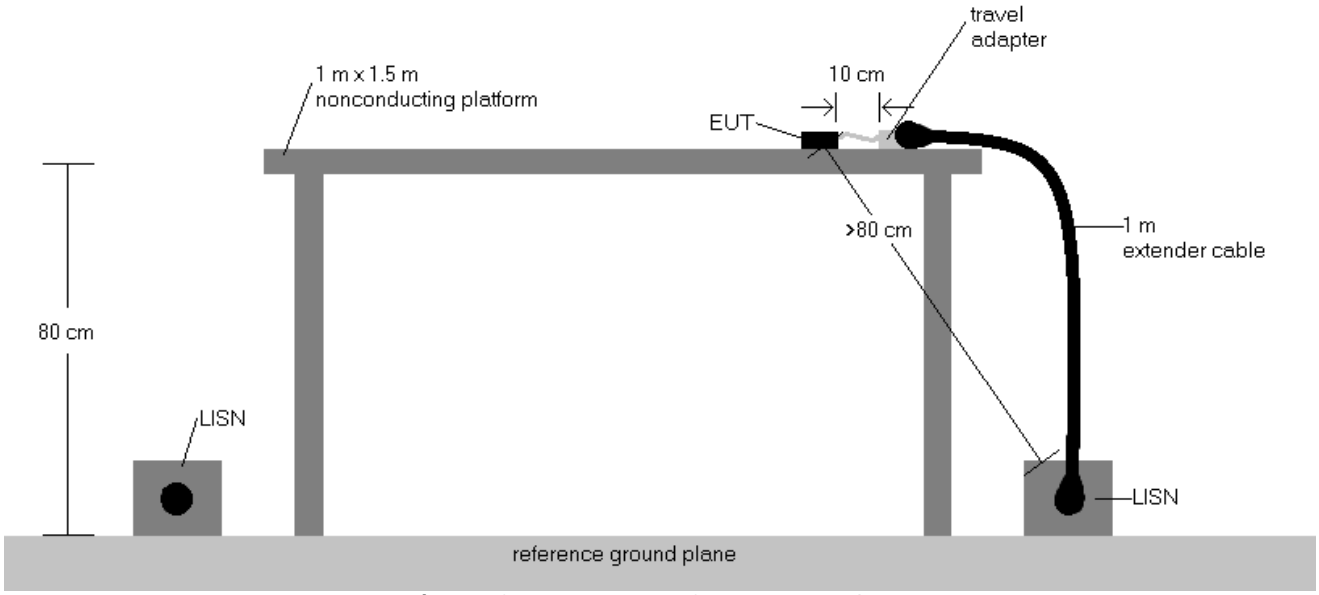
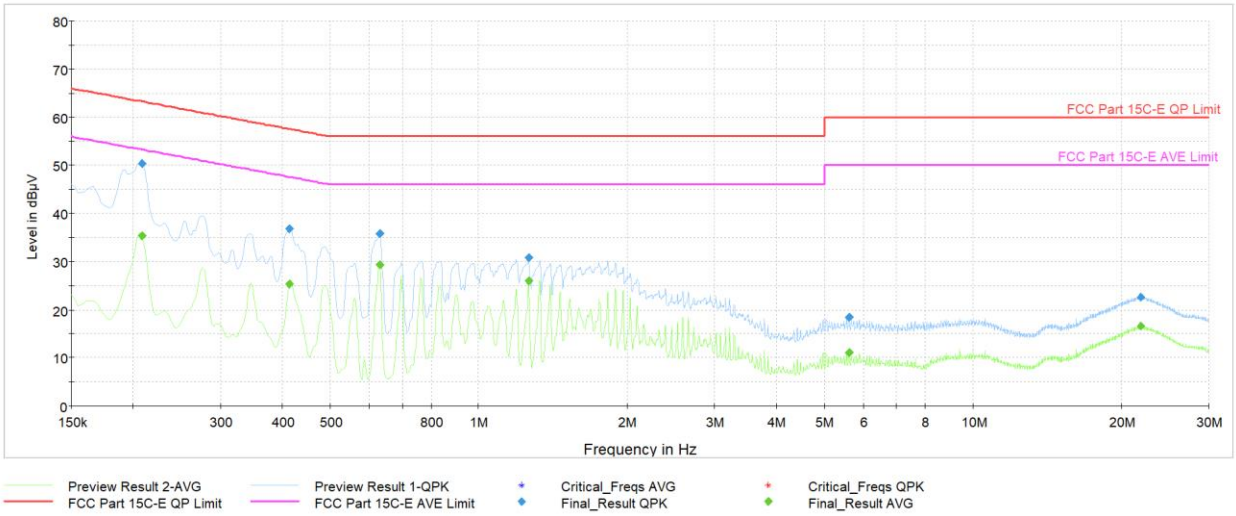


Figure 7-9. Test Instrument & Measurement Setup

Test Notes

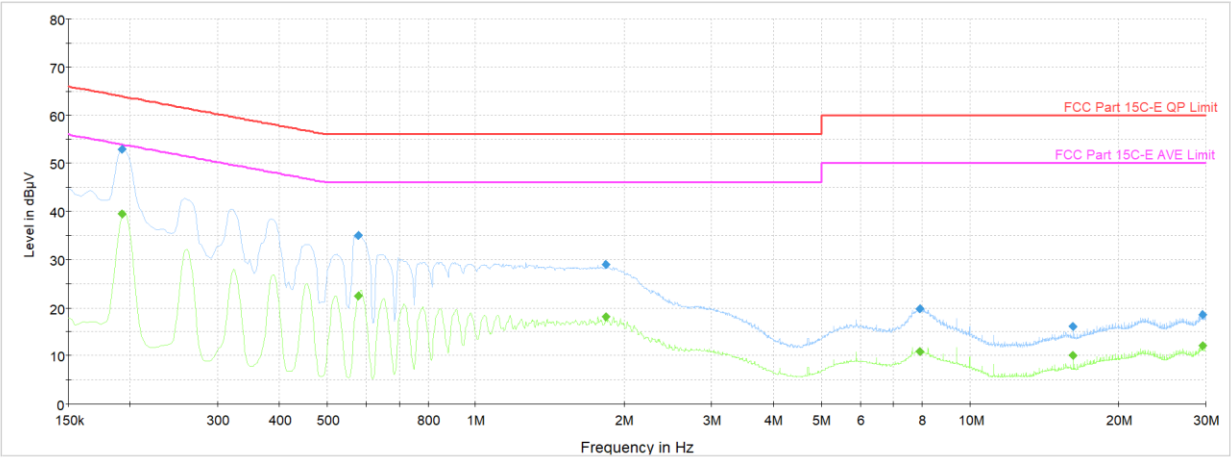
1. All modes of operation were investigated and the worst-case emissions are reported. The emissions found were not affected by the choice of channel used during testing.
2. Both configurations below were investigated, and the worst case has been reported.
   a. EUT powered by AC/DC adaptor via USB-C cable with wire charger
   b. EUT powered by host PC via USB-C cable with wire charger
3. The limit for an intentional radiator from 150kHz to 30MHz are specified in Part 15.207 and RSS-Gen(8.8).
4. Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
5. QP/AV Level (dBµV) = QP/AV Analyzer/Receiver Level (dBµV) + Correction Factore (dB)
6. Margin (dB) = QP/AV Level (dBµV) - QP/AV Limit (dBµV)
7. Traces shown in plot are made using quasi peak and average detectors.
8. Deviations to the Specifications: None.
9. All RU's were investigated and only worst case partially-loaded and fully-loaded RU's are reported.



Plot 7-189. AC Line Conducted Emissions with 802.11ax (RU26) Ch.6 (L1, with Laptop)

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.209	FINAL	—	35.39	53.27	-17.88	L1	GND
0.209	FINAL	50.5	—	63.27	-12.82	L1	GND
0.413	FINAL	—	25.34	47.58	-22.24	L1	GND
0.413	FINAL	36.8	—	57.58	-20.82	L1	GND
0.632	FINAL	—	29.22	46.00	-16.78	L1	GND
0.632	FINAL	35.9	—	56.00	-20.14	L1	GND
1.262	FINAL	30.8	—	56.00	-25.18	L1	GND
1.262	FINAL	—	25.95	46.00	-20.05	L1	GND
5.613	FINAL	18.3	—	60.00	-41.67	L1	GND
5.613	FINAL	—	10.98	50.00	-39.02	L1	GND
21.883	FINAL	—	16.50	50.00	-33.50	L1	GND
21.883	FINAL	22.7	—	60.00	-37.34	L1	GND

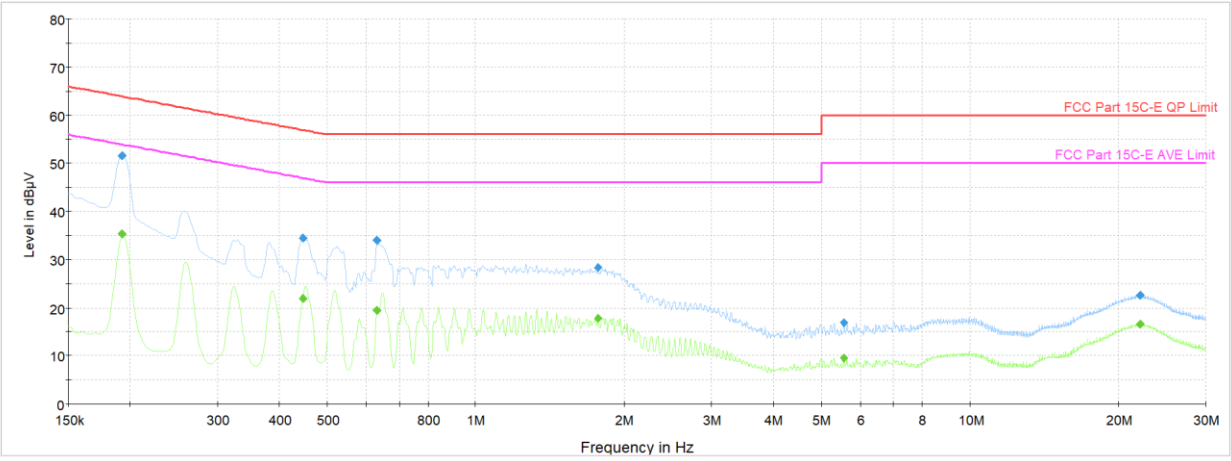
Table 7-42. AC Line Conducted Data with 802.11ax (RU26) Ch.6 (L1, with Laptop)



Plot 7-190. AC Line Conducted Emissions with 802.11ax (RU26) Ch.6 (N, with Laptop)

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.193	FINAL	—	39.49	53.92	-14.42	N	GND
0.193	FINAL	52.9	—	63.92	-11.03	N	GND
0.580	FINAL	—	22.36	46.00	-23.64	N	GND
0.580	FINAL	35.0	—	56.00	-21.03	N	GND
1.831	FINAL	—	18.11	46.00	-27.89	N	GND
1.831	FINAL	28.9	—	56.00	-27.08	N	GND
7.928	FINAL	19.8	—	60.00	-40.23	N	GND
7.928	FINAL	—	10.84	50.00	-39.16	N	GND
16.145	FINAL	16.0	—	60.00	-43.96	N	GND
16.145	FINAL	—	10.07	50.00	-39.93	N	GND
29.542	FINAL	—	12.06	50.00	-37.94	N	GND
29.542	FINAL	18.6	—	60.00	-41.38	N	GND

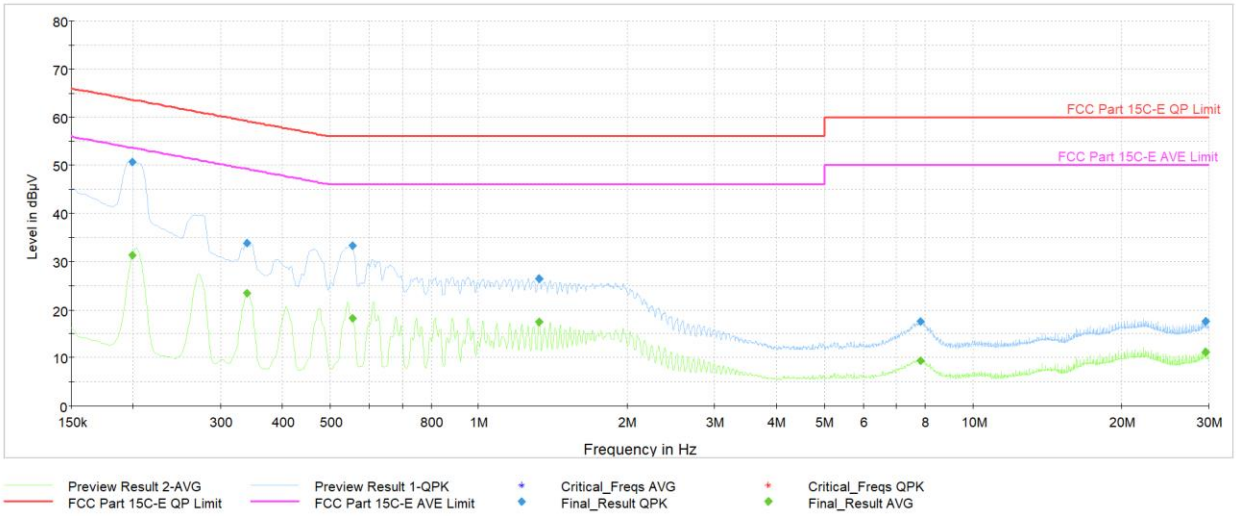
Table 7-43. AC Line Conducted Data with 802.11ax (RU26) Ch.6 (N, with Laptop)



Plot 7-191. AC Line Conducted Emissions with 802.11ax (RU242) Ch.6 (L1, with Laptop)

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.193	FINAL	—	35.35	53.92	-18.57	L1	GND
0.193	FINAL	51.5	—	63.92	-12.45	L1	GND
0.447	FINAL	—	21.96	46.93	-24.97	L1	GND
0.447	FINAL	34.5	—	56.93	-22.41	L1	GND
0.632	FINAL	—	19.44	46.00	-26.56	L1	GND
0.632	FINAL	34.0	—	56.00	-22.03	L1	GND
1.768	FINAL	28.3	—	56.00	-27.72	L1	GND
1.768	FINAL	—	17.69	46.00	-28.31	L1	GND
5.552	FINAL	16.9	—	60.00	-43.12	L1	GND
5.552	FINAL	—	9.59	50.00	-40.41	L1	GND
22.103	FINAL	—	16.62	50.00	-33.38	L1	GND
22.103	FINAL	22.6	—	60.00	-37.40	L1	GND

Table 7-44. AC Line Conducted Data with 802.11ax (RU242) Ch.6 (L1, with Laptop)



Plot 7-192. AC Line Conducted Emissions with 802.11ax (RU242) Ch.6 (N, with Laptop)

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.200	FINAL	—	31.34	53.63	-22.30	N	GND
0.200	FINAL	50.8	—	63.63	-12.84	N	GND
0.339	FINAL	—	23.49	49.23	-25.74	N	GND
0.339	FINAL	33.9	—	59.23	-25.35	N	GND
0.555	FINAL	—	18.24	46.00	-27.76	N	GND
0.555	FINAL	33.4	—	56.00	-22.62	N	GND
1.327	FINAL	26.4	—	56.00	-29.62	N	GND
1.327	FINAL	—	17.35	46.00	-28.65	N	GND
7.816	FINAL	17.6	—	60.00	-42.38	N	GND
7.816	FINAL	—	9.44	50.00	-40.56	N	GND
29.546	FINAL	—	11.20	50.00	-38.80	N	GND
29.546	FINAL	17.6	—	60.00	-42.43	N	GND

Table 7-45. AC Line Conducted Data with 802.11ax (RU242) Ch.6 (N, with Laptop)

8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Apple Tablet Device FCC ID: BCGA2837, IC: 579C-A2837** is in compliance with Part 15 Subpart C (15.247) of the FCC Rules and RSS-247 of the Innovation, Science and Economic Development Canada Rules.