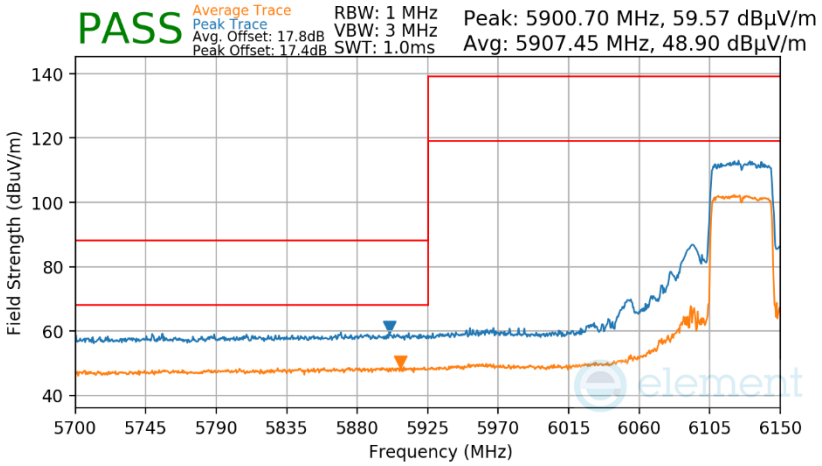
RU484

Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	65
Distance of Measurements:	3 Meters
Operating Frequency:	6125MHz
Channel:	35



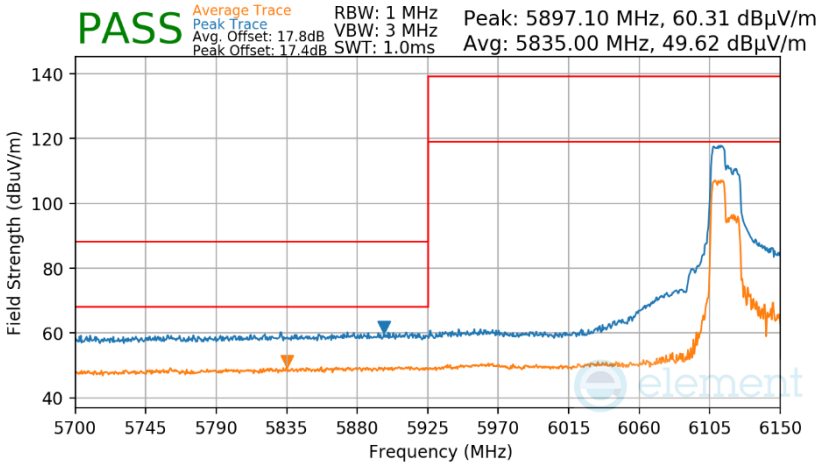
Plot 7-316 Antenna 3c Radiated Lower Band Edge (Peak & Average – UNII Band 5)

7.7.5 Antenna 3c Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

RU106

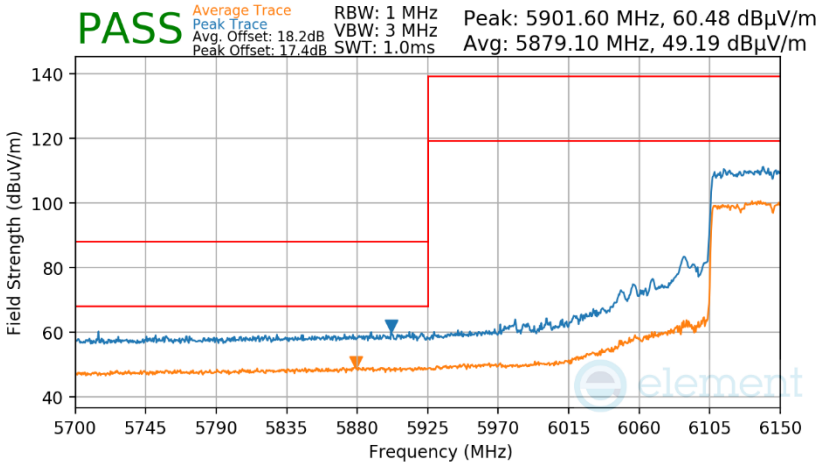
Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	53
Distance of Measurements:	3 Meters
Operating Frequency:	6145MHz
Channel:	39



Plot 7-317 Antenna 3c Radiated Lower Band Edge (Peak & Average – UNII Band 5)

RU996

Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	67
Distance of Measurements:	3 Meters
Operating Frequency:	6145MHz
Channel:	39



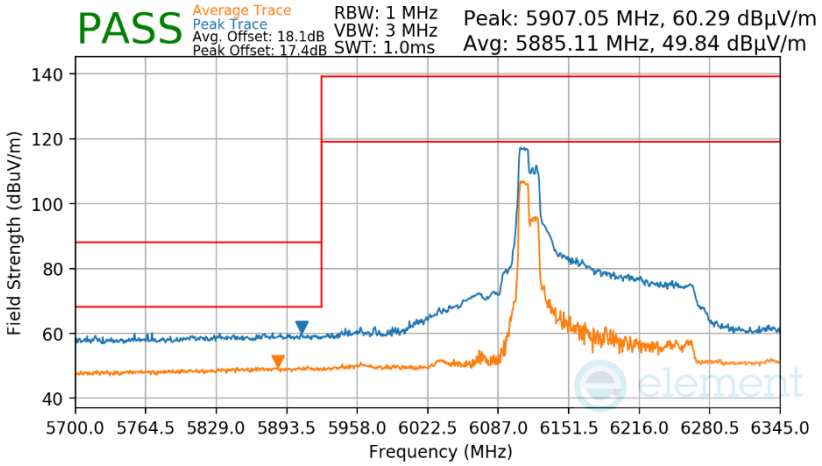
Plot 7-318 Antenna 3c Radiated Lower Band Edge (Peak & Average – UNII Band 5)

7.7.6 Antenna 3c Radiated Band Edge Measurements (160MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

RU106

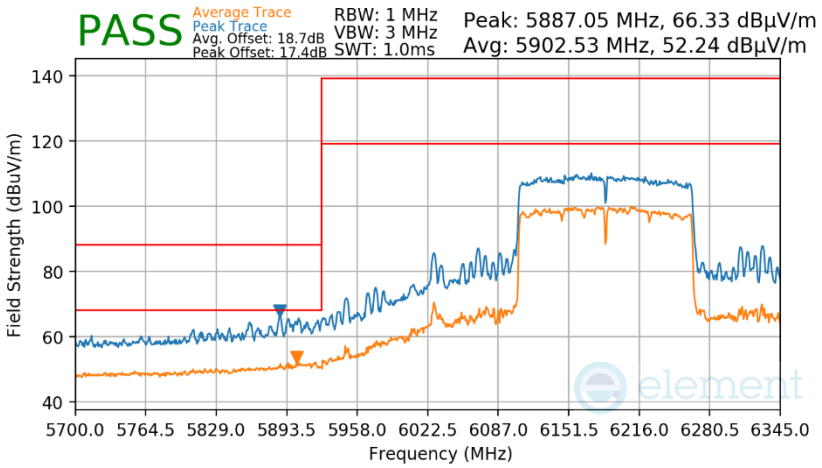
Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	53
Distance of Measurements:	3 Meters
Operating Frequency:	6145MHz
Channel:	47



Plot 7-319 Antenna 3c Radiated Lower Band Edge (Peak & Average – UNII Band 5)

RU996x2

Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	68
Distance of Measurements:	3 Meters
Operating Frequency:	6145MHz
Channel:	47



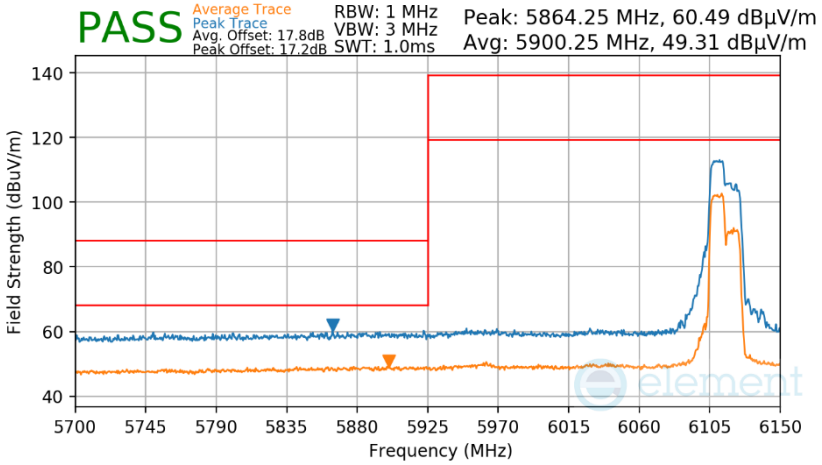
Plot 7-320 Antenna 3c Radiated Lower Band Edge (Peak & Average – UNII Band 5)

7.7.7 Antenna 3a Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

RU106

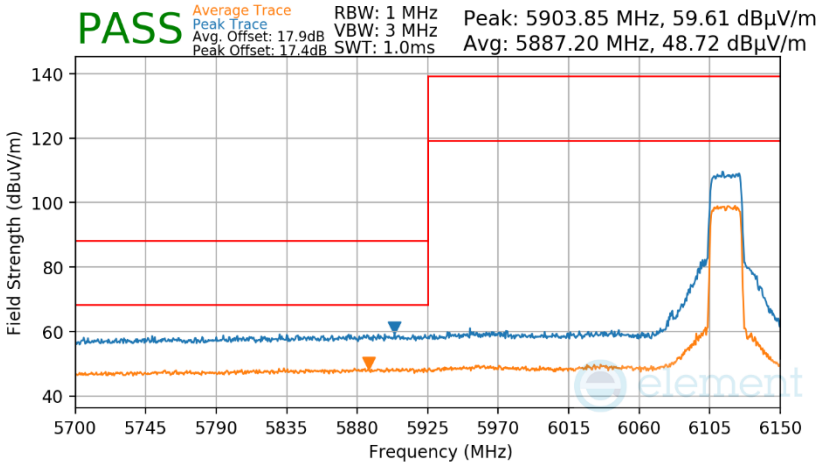
Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	53
Distance of Measurements:	3 Meters
Operating Frequency:	6115MHz
Channel:	33



Plot 7-321 Antenna 3a Radiated Lower Band Edge (Peak & Average – UNII Band 5)

RU242

Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	61
Distance of Measurements:	3 Meters
Operating Frequency:	6115MHz
Channel:	33



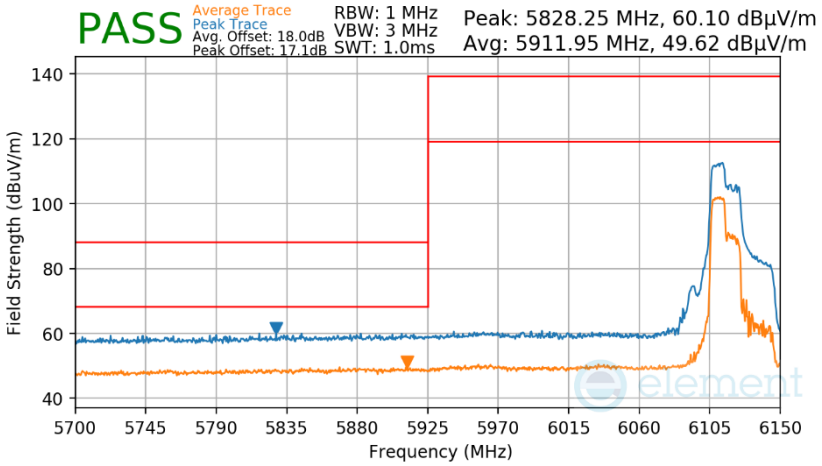
Plot 7-322 Antenna 3a Radiated Lower Band Edge (Peak & Average – UNII Band 5)

7.7.8 Antenna 3a Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

RU106

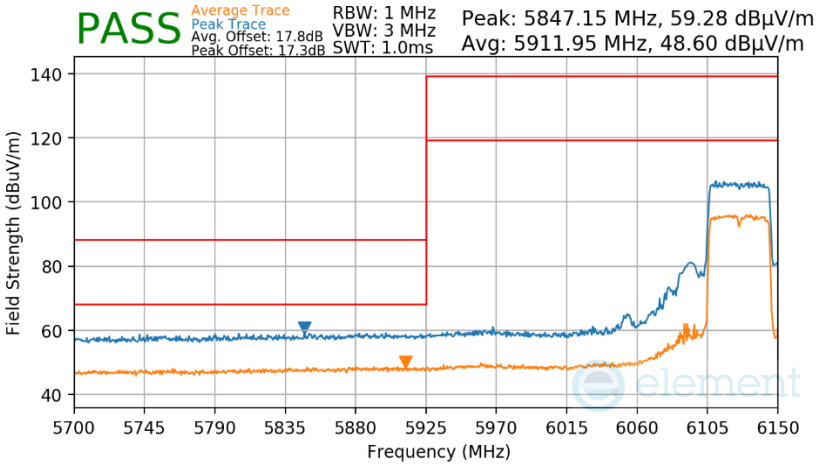
Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	53
Distance of Measurements:	3 Meters
Operating Frequency:	6125MHz
Channel:	35



Plot 7-323 Antenna 3a Radiated Lower Band Edge (Peak & Average – UNII Band 5)

RU484

Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	65
Distance of Measurements:	3 Meters
Operating Frequency:	6125MHz
Channel:	35



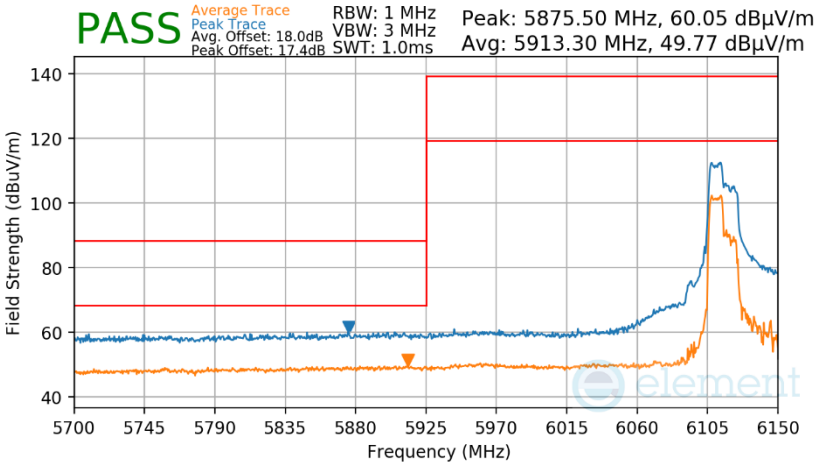
Plot 7-324 Antenna 3a Radiated Lower Band Edge (Peak & Average – UNII Band 5)

7.7.9 Antenna 3a Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

RU106

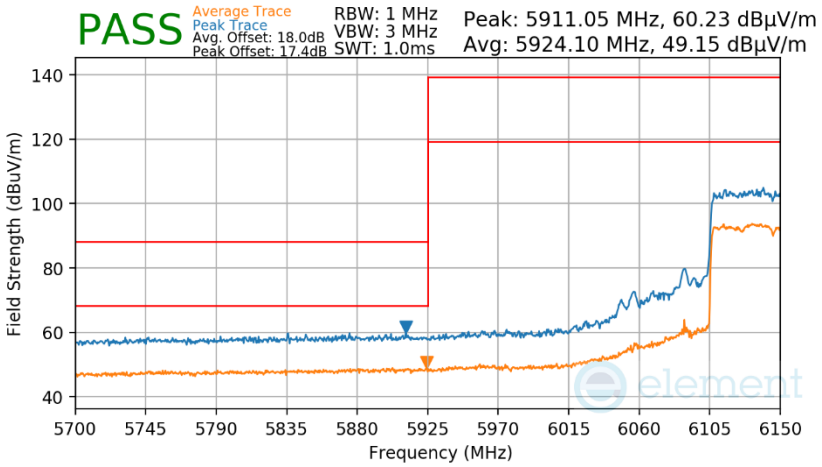
Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	53
Distance of Measurements:	3 Meters
Operating Frequency:	6145MHz
Channel:	39



Plot 7-325 Antenna 3a Radiated Lower Band Edge (Peak & Average – UNII Band 5)

RU996

Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	67
Distance of Measurements:	3 Meters
Operating Frequency:	6145MHz
Channel:	39



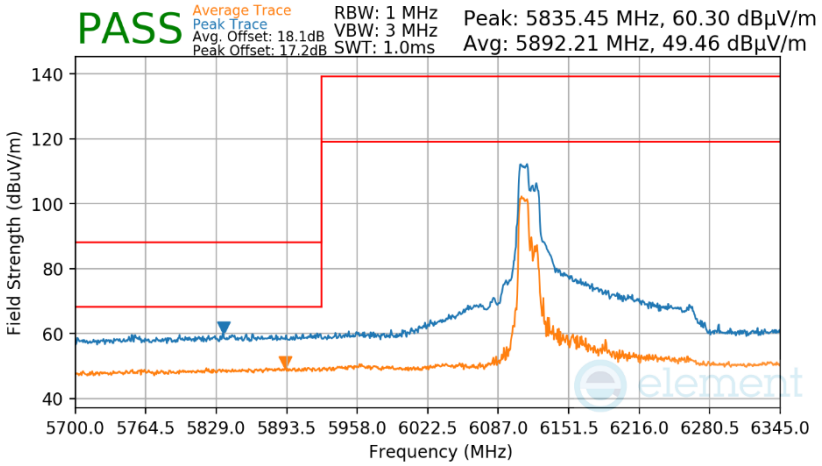
Plot 7-326 Antenna 3a Radiated Lower Band Edge (Peak & Average – UNII Band 5)

7.7.10 Antenna 3a Radiated Band Edge Measurements (160MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

RU106

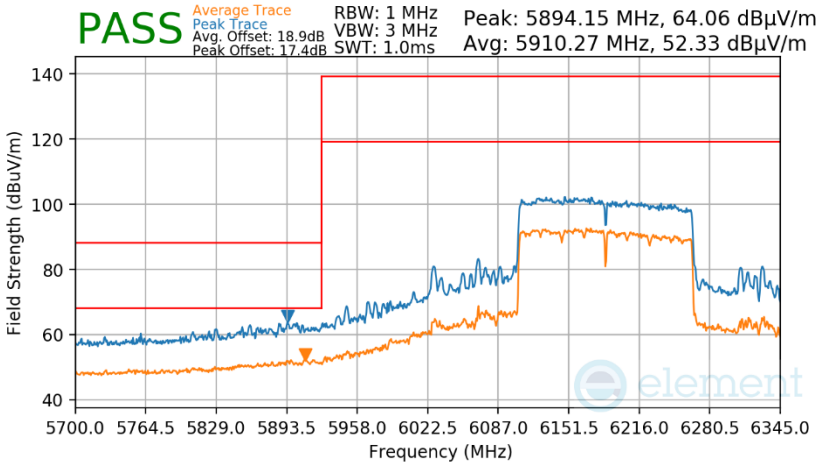
Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	53
Distance of Measurements:	3 Meters
Operating Frequency:	6145MHz
Channel:	47



Plot 7-327 Antenna 3a Radiated Lower Band Edge (Peak & Average – UNII Band 5)

RU996x2

Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	68
Distance of Measurements:	3 Meters
Operating Frequency:	6145MHz
Channel:	47



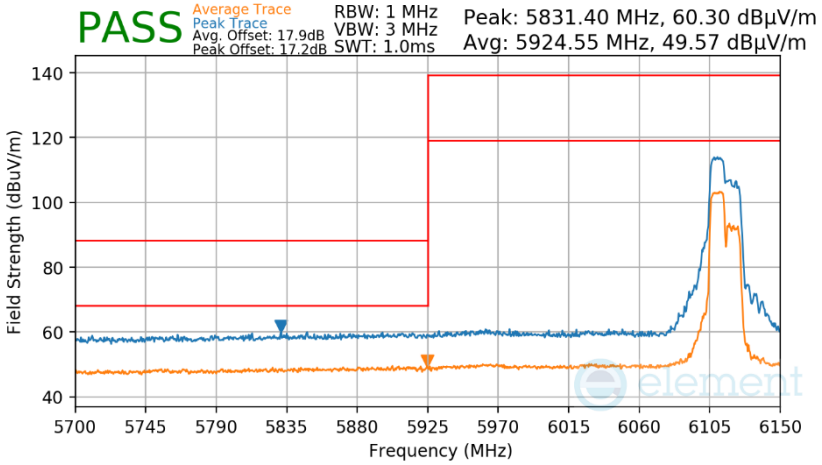
Plot 7-328 Antenna 3a Radiated Lower Band Edge (Peak & Average – UNII Band 5)

7.7.11 Antenna 1b Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

RU106

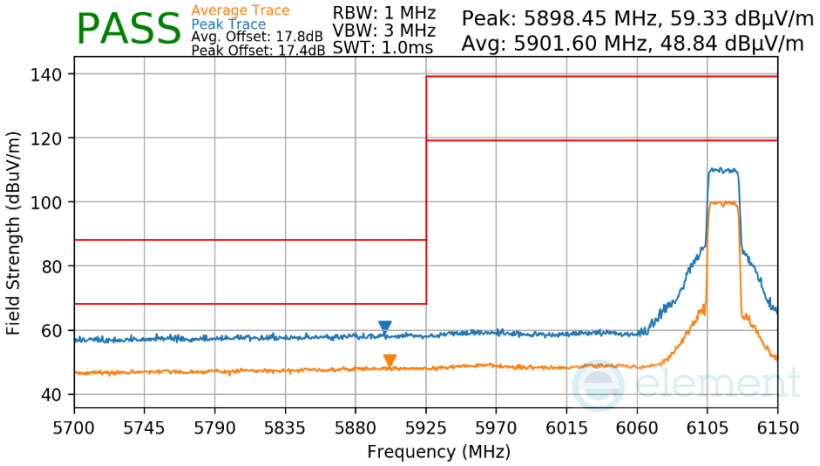
Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	53
Distance of Measurements:	3 Meters
Operating Frequency:	6115MHz
Channel:	33



Plot 7-329 Antenna 1b Radiated Lower Band Edge (Peak & Average – UNII Band 5)

RU242

Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	61
Distance of Measurements:	3 Meters
Operating Frequency:	6115MHz
Channel:	33



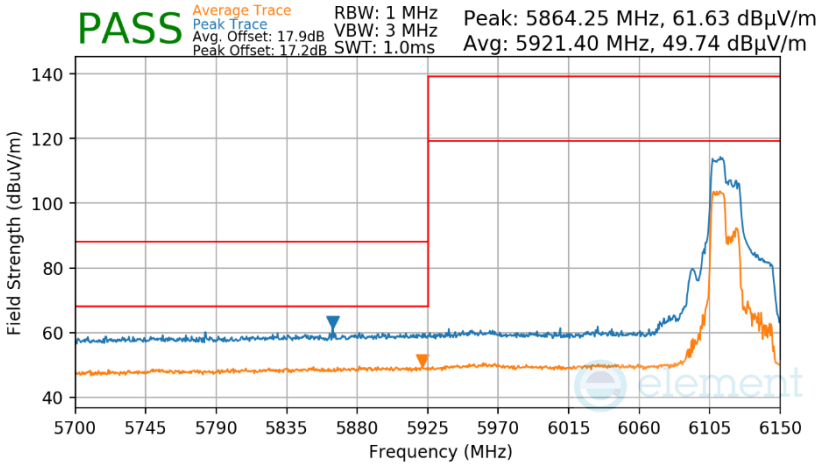
Plot 7-330 Antenna 1b Radiated Lower Band Edge (Peak & Average – UNII Band 5)

7.7.12 Antenna 1b Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

RU106

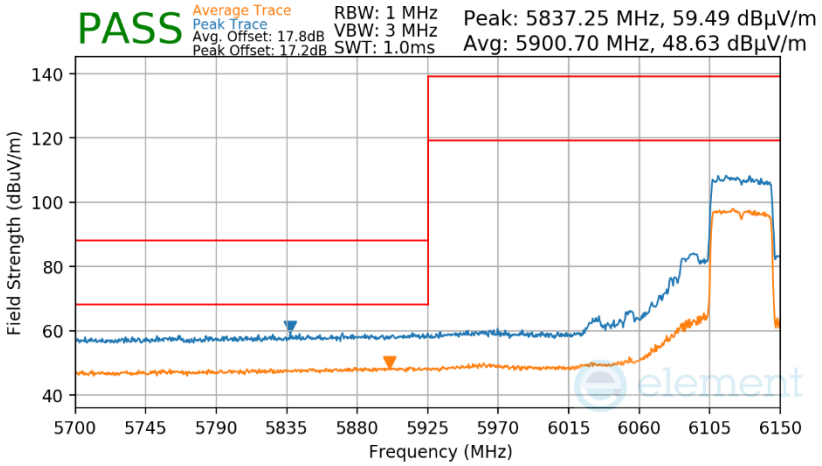
Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	53
Distance of Measurements:	3 Meters
Operating Frequency:	6125MHz
Channel:	35



Plot 7-331 Antenna 1b Radiated Lower Band Edge (Peak & Average – UNII Band 5)

RU484

Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	65
Distance of Measurements:	3 Meters
Operating Frequency:	6125MHz
Channel:	35



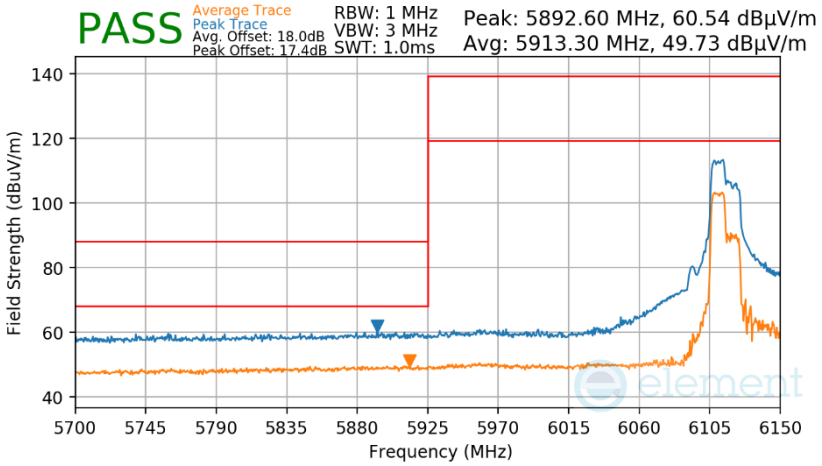
Plot 7-332 Antenna 1b Radiated Lower Band Edge (Peak & Average – UNII Band 5)

7.7.13 Antenna 1b Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

RU106

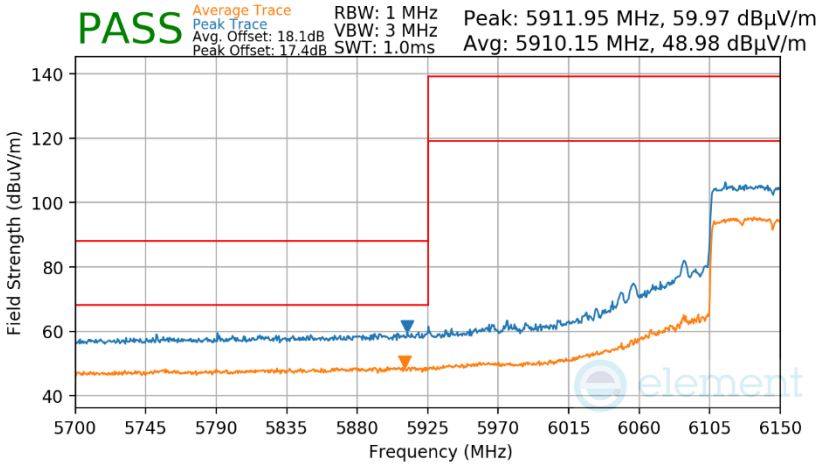
Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	53
Distance of Measurements:	3 Meters
Operating Frequency:	6145MHz
Channel:	39



Plot 7-333 Antenna 1b Radiated Lower Band Edge (Peak & Average – UNII Band 5)

RU996

Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	67
Distance of Measurements:	3 Meters
Operating Frequency:	6145MHz
Channel:	39



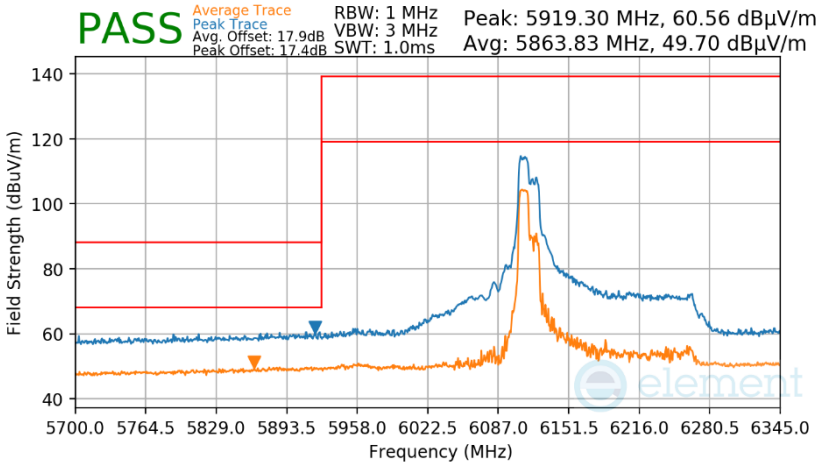
Plot 7-334 Antenna 1b Radiated Lower Band Edge (Peak & Average – UNII Band 5)

7.7.14 Antenna 1b Radiated Band Edge Measurements (160MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

RU106

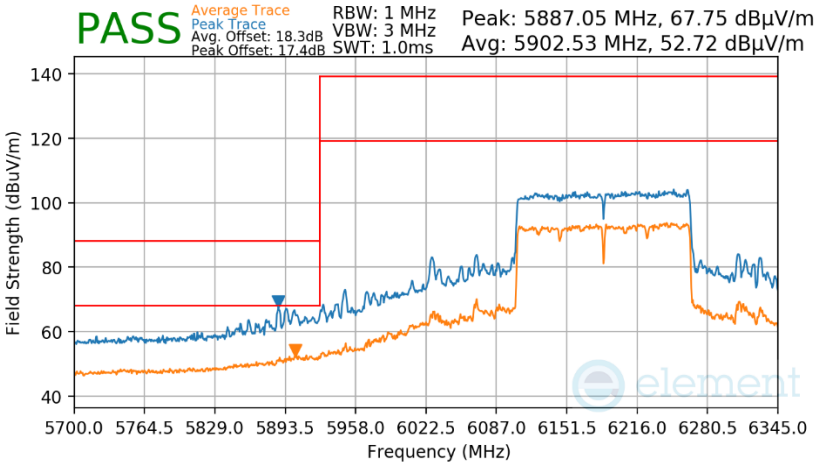
Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	53
Distance of Measurements:	3 Meters
Operating Frequency:	6145MHz
Channel:	47



Plot 7-335 Antenna 1b Radiated Lower Band Edge (Peak & Average – UNII Band 5)

RU996x2

Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	68
Distance of Measurements:	3 Meters
Operating Frequency:	6145MHz
Channel:	47



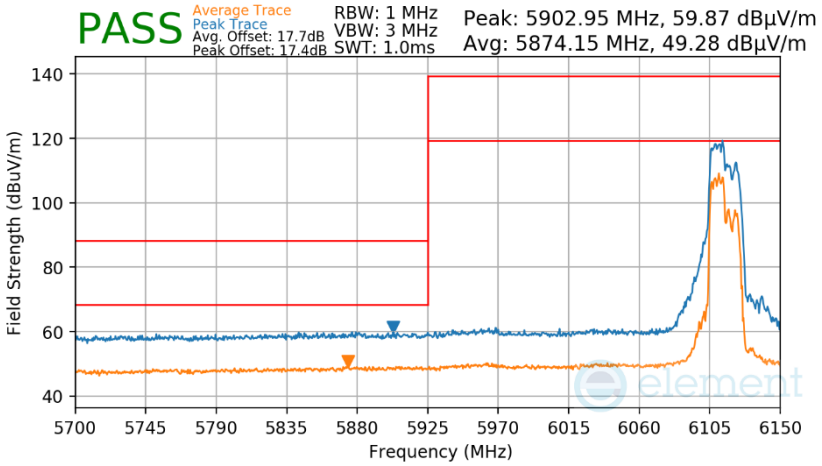
Plot 7-336 Antenna 1b Radiated Lower Band Edge (Peak & Average – UNII Band 5)

7.7.15 SDM Primary Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

RU106

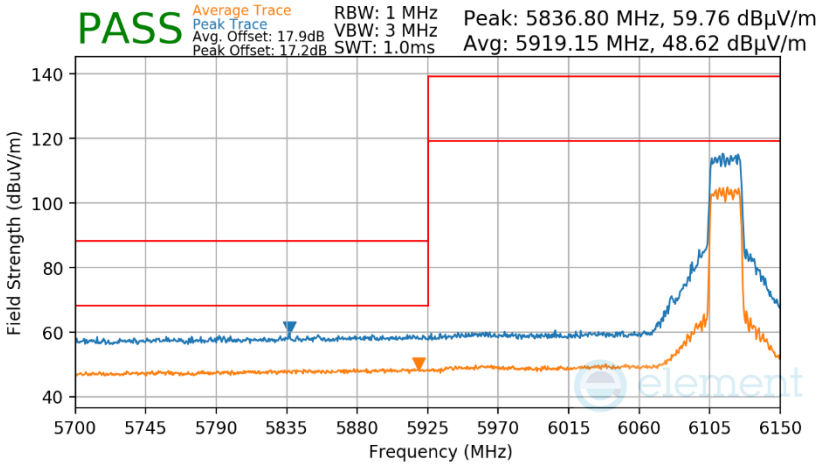
Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	53
Distance of Measurements:	3 Meters
Operating Frequency:	6115MHz
Channel:	33



Plot 7-337 SDM Primary Radiated Lower Band Edge (Peak & Average – UNII Band 5)

RU242

Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	61
Distance of Measurements:	3 Meters
Operating Frequency:	6115MHz
Channel:	33



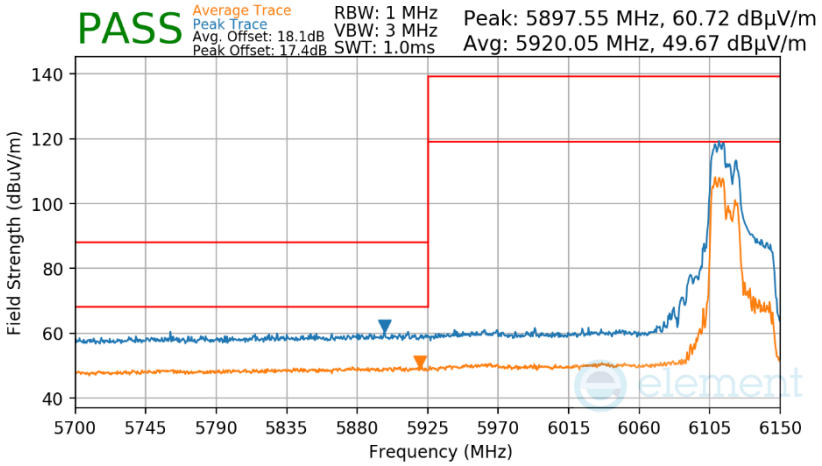
Plot 7-338 SDM Primary Radiated Lower Band Edge (Peak & Average – UNII Band 5)

7.7.16 SDM Primary Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

RU106

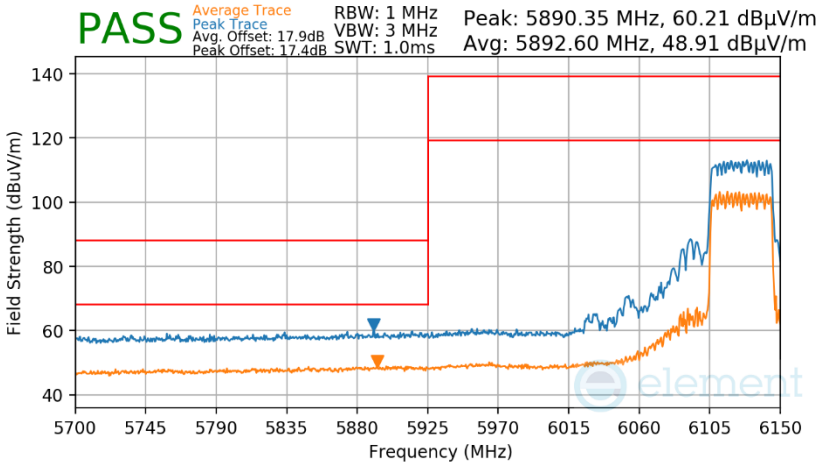
Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	53
Distance of Measurements:	3 Meters
Operating Frequency:	6125MHz
Channel:	35



Plot 7-339 SDM Primary Radiated Lower Band Edge (Peak & Average – UNII Band 5)

RU484

Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	65
Distance of Measurements:	3 Meters
Operating Frequency:	6125MHz
Channel:	35



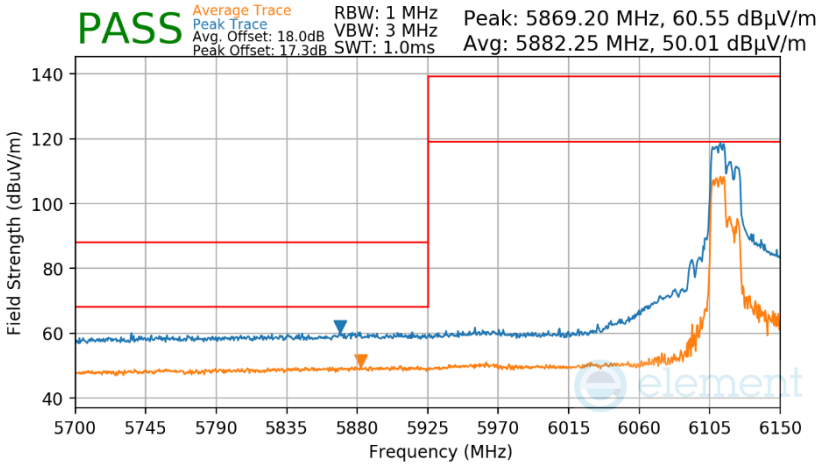
Plot 7-340 SDM Primary Radiated Lower Band Edge (Peak & Average – UNII Band 5)

7.7.17 SDM Primary Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

RU106

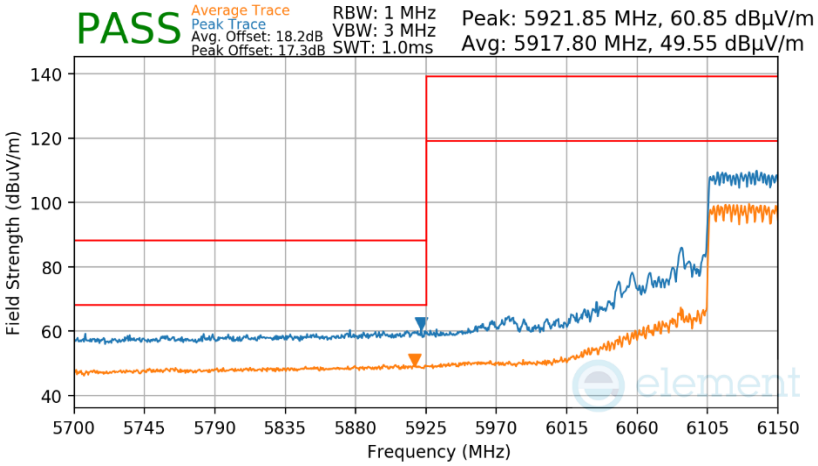
Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	53
Distance of Measurements:	3 Meters
Operating Frequency:	6145MHz
Channel:	39



Plot 7-341 SDM Primary Radiated Lower Band Edge (Peak & Average – UNII Band 5)

RU996

Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	67
Distance of Measurements:	3 Meters
Operating Frequency:	6145MHz
Channel:	39



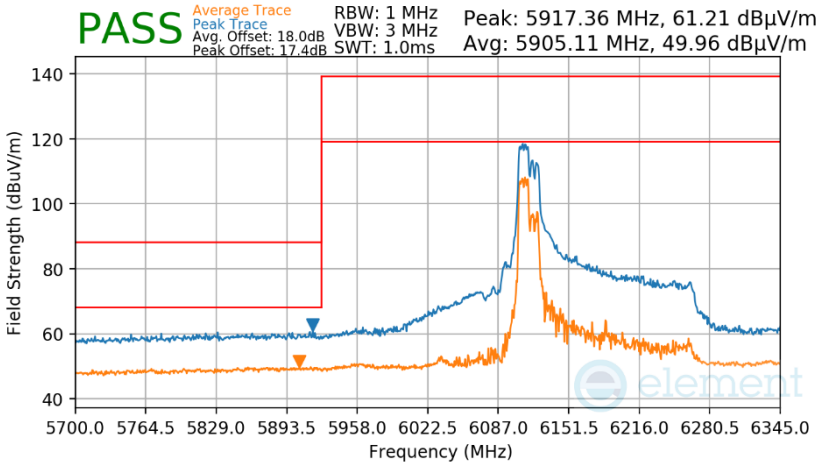
Plot 7-342 SDM Primary Radiated Lower Band Edge (Peak & Average – UNII Band 5)

7.7.18 SDM Primary Radiated Band Edge Measurements (160MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

RU106

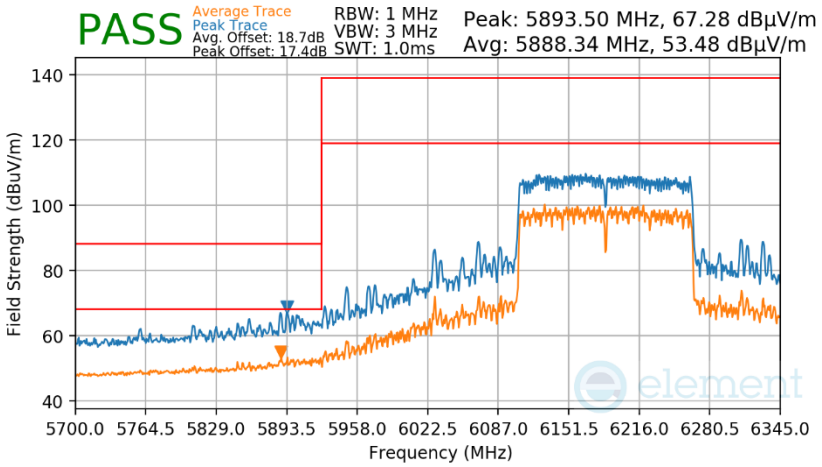
Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	53
Distance of Measurements:	3 Meters
Operating Frequency:	6185MHz
Channel:	47



Plot 7-343 SDM Primary Radiated Lower Band Edge (Peak & Average – UNII Band 5)

RU996x2

Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	68
Distance of Measurements:	3 Meters
Operating Frequency:	6185MHz
Channel:	47



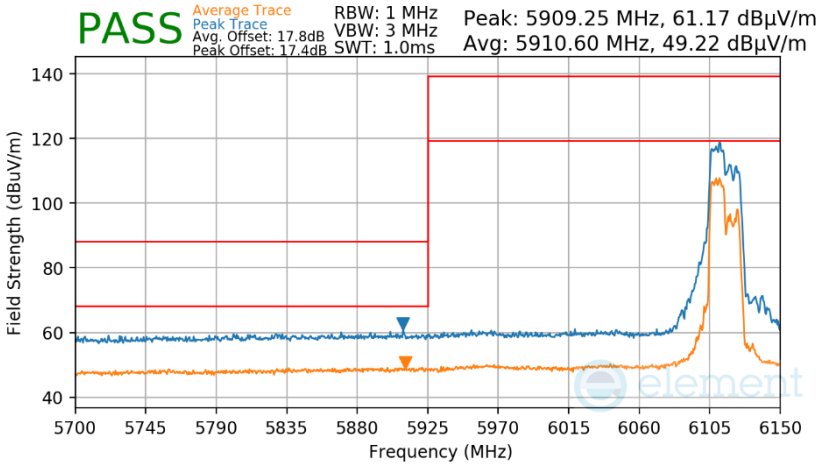
Plot 7-344 SDM Primary Radiated Lower Band Edge (Peak & Average – UNII Band 5)

7.7.19 SDM Diversity Radiated Band Edge Measurements (20MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

RU106

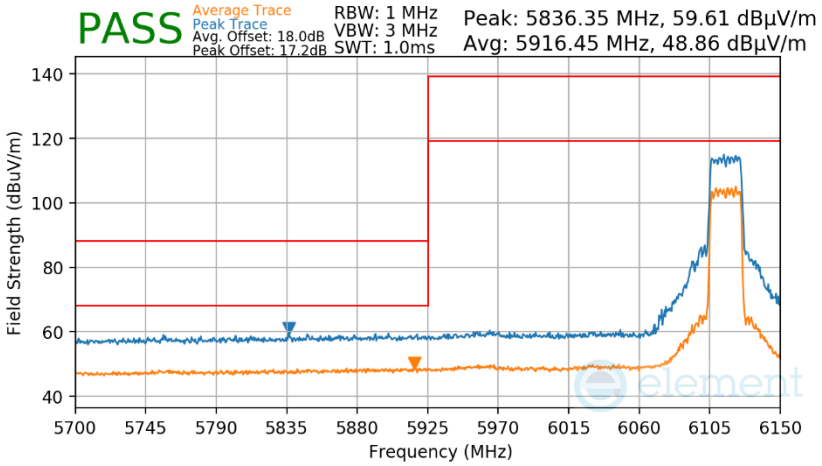
Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	53
Distance of Measurements:	3 Meters
Operating Frequency:	6115MHz
Channel:	33



Plot 7-345 SDM Diversity Radiated Lower Band Edge (Peak & Average – UNII Band 5)

RU242

Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	61
Distance of Measurements:	3 Meters
Operating Frequency:	6115MHz
Channel:	33



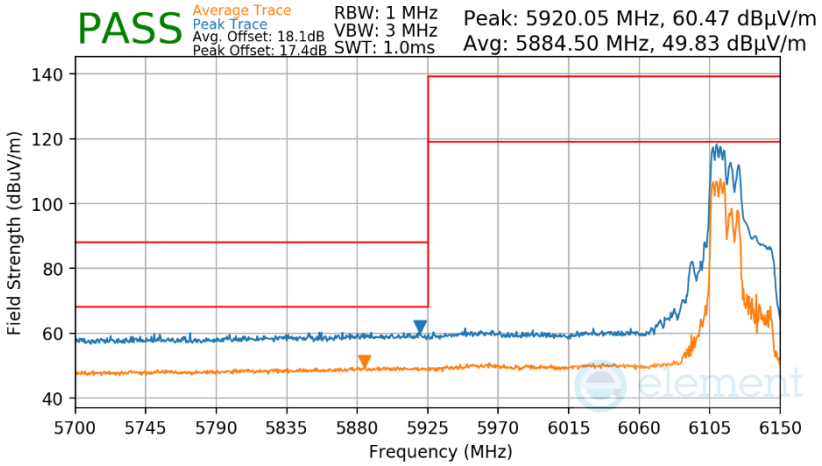
Plot 7-346 SDM Diversity Radiated Lower Band Edge (Peak & Average – UNII Band 5)

7.7.20 SDM Diversity Radiated Band Edge Measurements (40MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

RU106

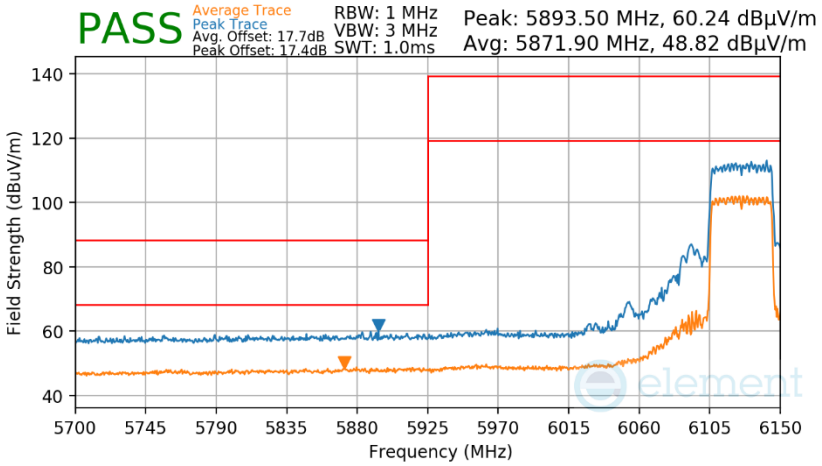
Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	53
Distance of Measurements:	3 Meters
Operating Frequency:	6125MHz
Channel:	35



Plot 7-347 SDM Diversity Radiated Lower Band Edge (Peak & Average – UNII Band 5)

RU484

Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	65
Distance of Measurements:	3 Meters
Operating Frequency:	6125MHz
Channel:	35



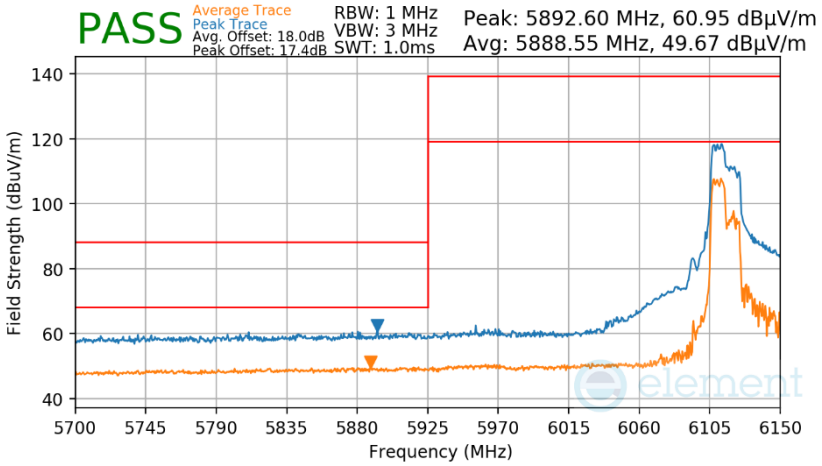
Plot 7-348 SDM Diversity Radiated Lower Band Edge (Peak & Average – UNII Band 5)

7.7.21 SDM Diversity Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

RU106

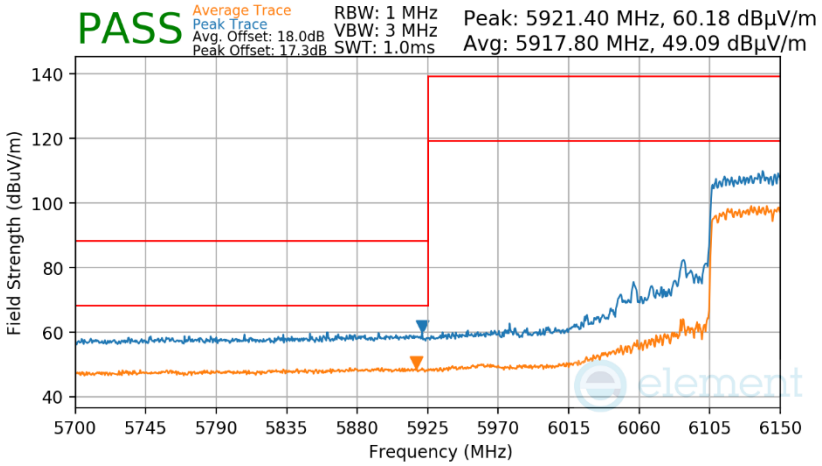
Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	53
Distance of Measurements:	3 Meters
Operating Frequency:	6145MHz
Channel:	39



Plot 7-349 SDM Diversity Radiated Lower Band Edge (Peak & Average – UNII Band 5)

RU996

Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	67
Distance of Measurements:	3 Meters
Operating Frequency:	6145MHz
Channel:	39



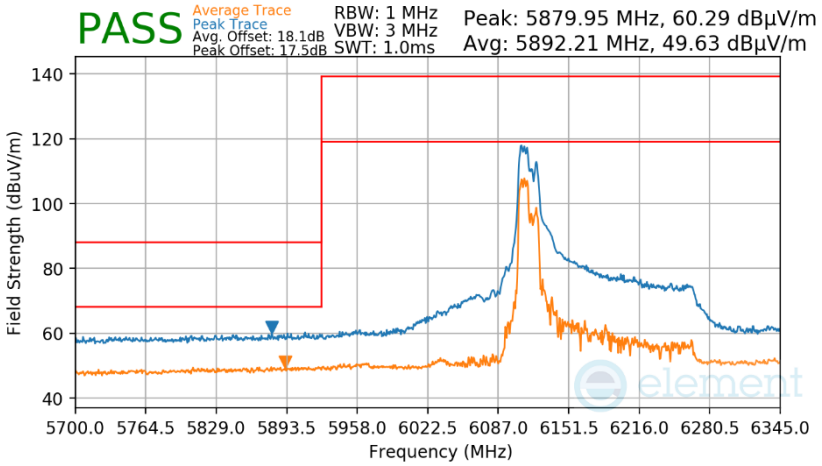
Plot 7-350 SDM Diversity Radiated Lower Band Edge (Peak & Average – UNII Band 5)

7.7.22 SDM Diversity Radiated Band Edge Measurements (160MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

RU106

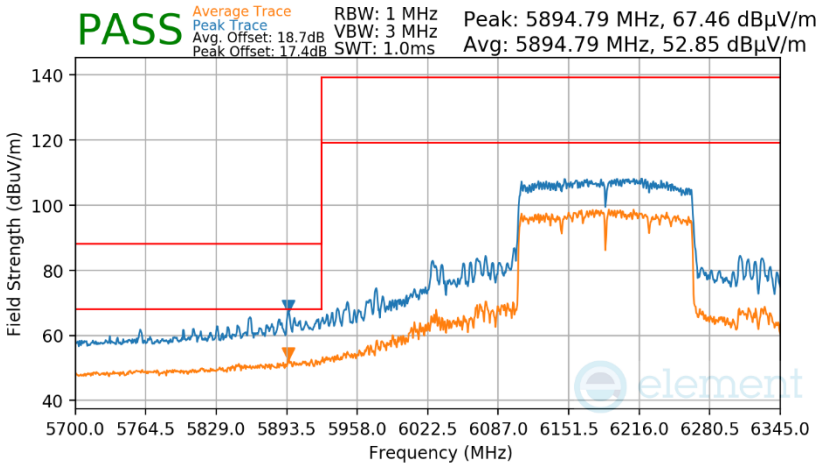
Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	53
Distance of Measurements:	3 Meters
Operating Frequency:	6185MHz
Channel:	47



Plot 7-351 SDM Diversity Radiated Lower Band Edge (Peak & Average – UNII Band 5)

RU996x2

Mode:	802.11ax OFDMA
Transfer Rate:	MCS11
RU Index:	68
Distance of Measurements:	3 Meters
Operating Frequency:	6185MHz
Channel:	47



Plot 7-352 SDM Diversity Radiated Lower Band Edge (Peak & Average – UNII Band 5)

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 must not exceed the limits shown in Table 7-105 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 7-105. Radiated Limits

Test Procedures Used

ANSI C63.10-2020

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 = quasi-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.

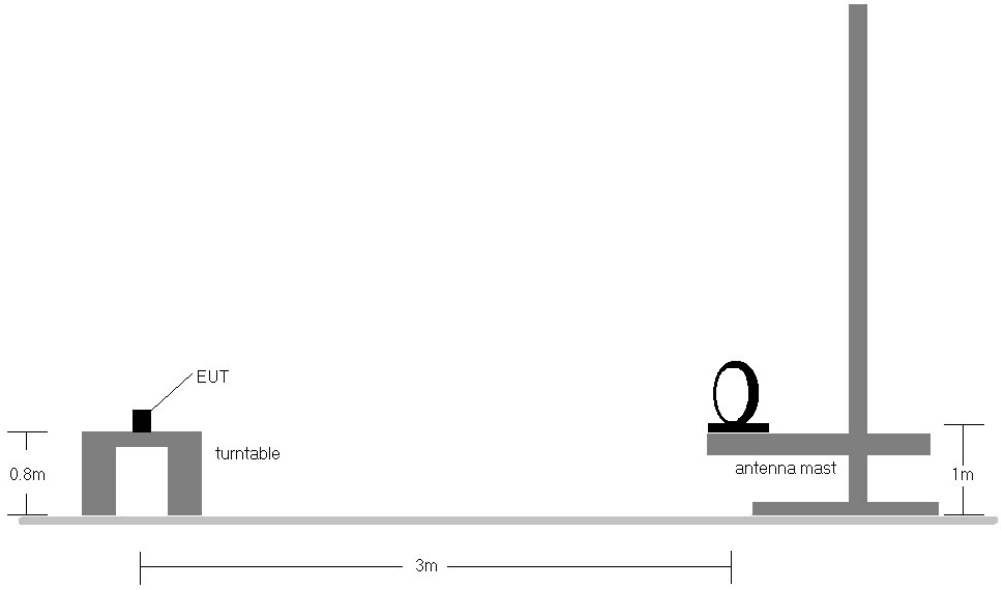


Figure 7-7. Radiated Test Setup < 30MHz

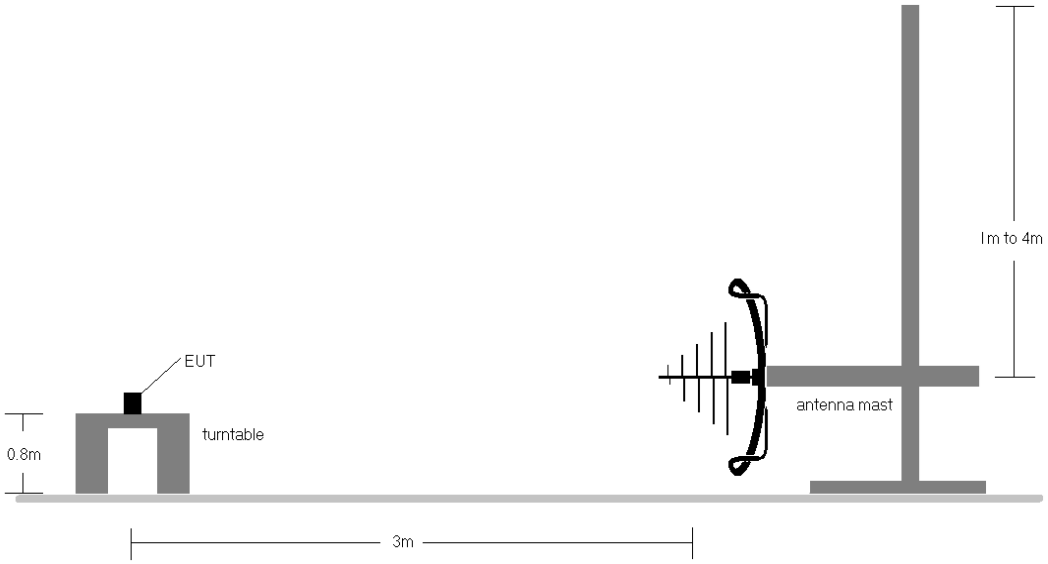


Figure 7-8. Radiated Test Setup < 1GHz

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 7-105.
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 on emissions that were 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. 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
10. All antenna configurations were investigated and only the worst case is reported.
11. The unit was tested with all possible modes and only the highest emission is reported.

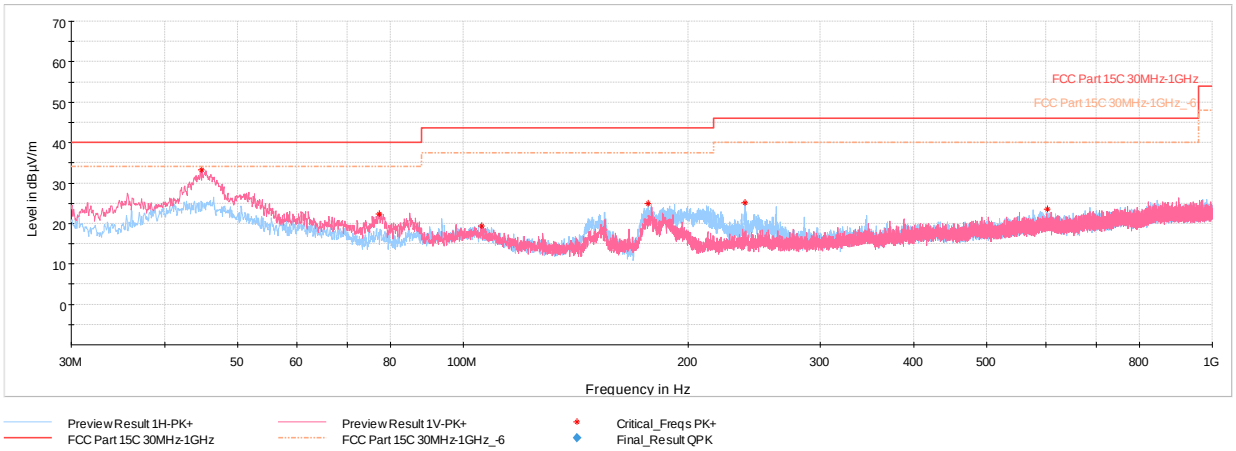
Sample Calculations

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 $_{[dB]}$ - Preamp Gain $_{[dB]}$
- Margin $_{[dB]}$ = Field Strength Level $_{[dB\mu V/m]}$ – Limit $_{[dB\mu V/m]}$

7.8.1 SDM Primary Radiated Spurious Emissions Measurements (Below 1GHz)

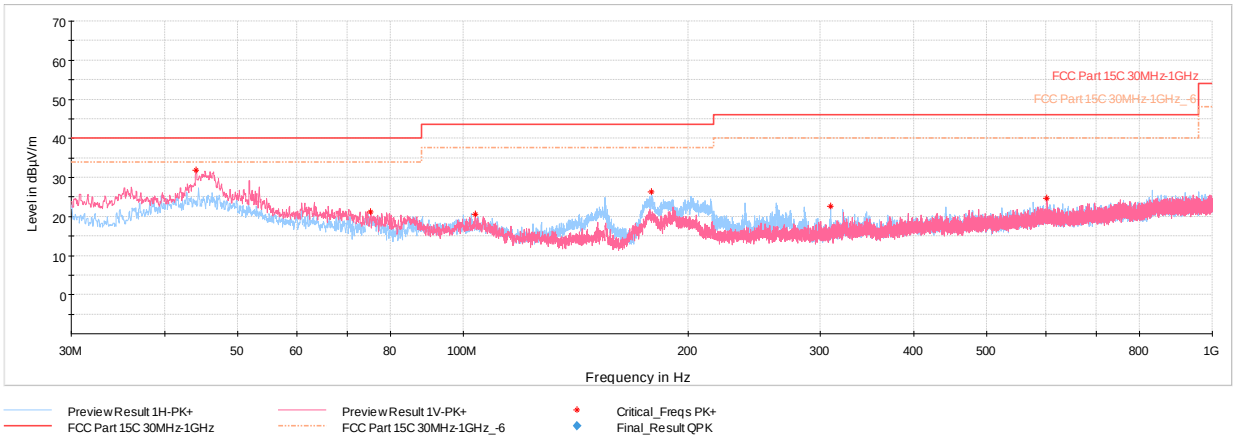
§15.209; RSS-Gen [8.9]



Plot 7-353. Radiated Spurious Emissions below 1GHz SDM Primary (802.11ax – Ch.61 – RU106) with AC/DC adaptor via USB-C cable with wire charger

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]
44.84	Max Peak	V	100	1	-59.04	-14.69	33.27	40.00	-6.73
77.34	Max Peak	V	100	72	-62.52	-22.12	22.36	40.00	-17.64
106.00	Max Peak	H	300	182	-70.12	-17.43	19.45	43.52	-24.07
176.62	Max Peak	H	100	0	-62.83	-19.32	24.85	43.52	-18.67
237.73	Max Peak	H	100	167	-65.45	-16.34	25.21	46.02	-20.81
602.74	Max Peak	H	100	95	-74.14	-9.32	23.54	46.02	-22.48

Table 7-106. Radiated Spurious Emissions below 1GHz SDM Primary (802.11ax – Ch.61 – RU106) with AC/DC adaptor via USB-C cable with wire charger



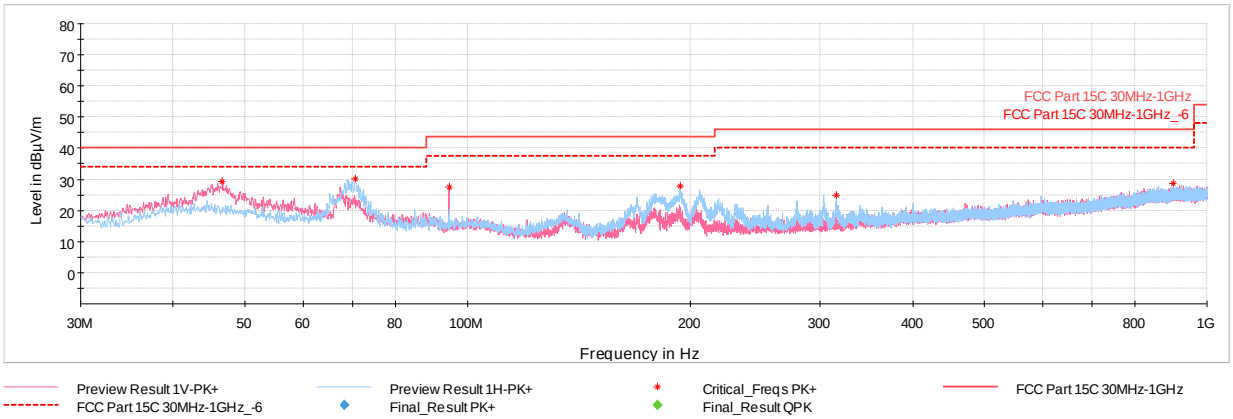
Plot 7-354. Radiated Spurious Emissions below 1GHz SDM Primary (802.11ax – Ch.61 – RU242) with AC/DC adaptor via USB-C cable with wire charger

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]
44.07	Max-Peak	V	100	71	-60.29	-14.82	31.89	40.00	-8.11
75.30	Max-Peak	V	200	342	-64.08	-21.66	21.26	40.00	-18.74
103.91	Max-Peak	V	100	324	-69.25	-17.23	20.52	43.52	-23.00
178.27	Max-Peak	H	100	232	-61.43	-19.27	26.30	43.52	-17.22
309.46	Max-Peak	H	100	155	-69.31	-15.08	22.61	46.02	-23.41
601.82	Max-Peak	V	100	11	-72.95	-9.32	24.73	46.02	-21.29

Table 7-107. Radiated Spurious Emissions below 1GHz SDM Primary (802.11ax – Ch.61 – RU242) with AC/DC adaptor via USB-C cable with wire charger

7.8.2 SDM Diversity Radiated Spurious Emissions Measurements (Below 1GHz)

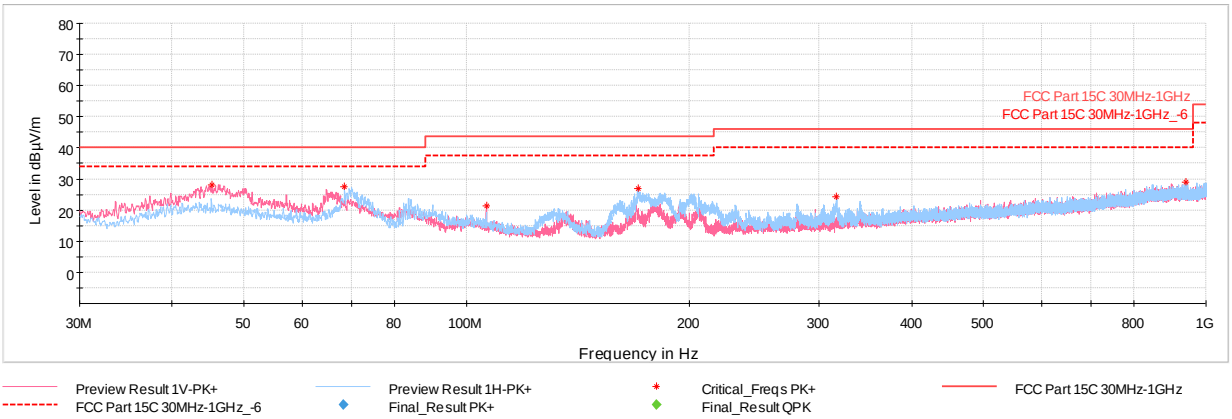
§15.209; RSS-Gen [8.9]



Plot 7-355. Radiated Spurious Emissions below 1GHz SDM Diversity (802.11ax – Ch.61 – RU106) with AC/DC adaptor via USB-C cable with wire charger

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]
46.64	Max-Peak	V	100	32	-63.43	-14.40	29.17	40.00	-10.83
70.60	Max-Peak	H	300	288	-57.59	-19.27	30.14	40.00	-9.86
94.46	Max-Peak	V	100	184	-62.14	-17.48	27.38	43.52	-16.14
193.88	Max-Peak	H	100	5	-63.20	-16.07	27.73	43.52	-15.79
315.13	Max-Peak	H	100	15	-69.19	-12.85	24.96	46.02	-21.06
901.21	Max-Peak	H	100	162	-76.73	-1.58	28.69	46.02	-17.33

Table 7-108. Radiated Spurious Emissions below 1GHz SDM Diversity (802.11ax – Ch.61 – RU106) with AC/DC adaptor via USB-C cable with wire charger



Plot 7-356. Radiated Spurious Emissions below 1GHz SDM Diversity (802.11ax – Ch.61 – RU242) with AC/DC adaptor via USB-C cable with wire charger

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]
45.28	Max-Peak	V	100	16	-64.24	-14.53	28.23	40.00	-11.77
68.41	Max-Peak	H	100	272	-60.99	-18.57	27.44	40.00	-12.56
106.49	Max-Peak	V	100	111	-68.94	-16.61	21.45	43.52	-22.07
170.80	Max-Peak	H	200	142	-61.73	-18.45	26.82	43.52	-16.70
316.73	Max-Peak	H	100	180	-69.97	-12.74	24.29	46.02	-21.73
938.99	Max-Peak	H	100	10	-76.59	-1.55	28.86	46.02	-17.16

Table 7-109. Radiated Spurious Emissions below 1GHz SDM Diversity (802.11ax – Ch.61 – RU242) with AC/DC adaptor via USB-C cable with wire charger

7.9 AC Line-Conducted Emissions Measurement

§15.407; 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 7-110. Conducted Limits

*Decreases with the logarithm of the frequency.

Test Procedures Used

ANSI C63.10-2020, Section 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.

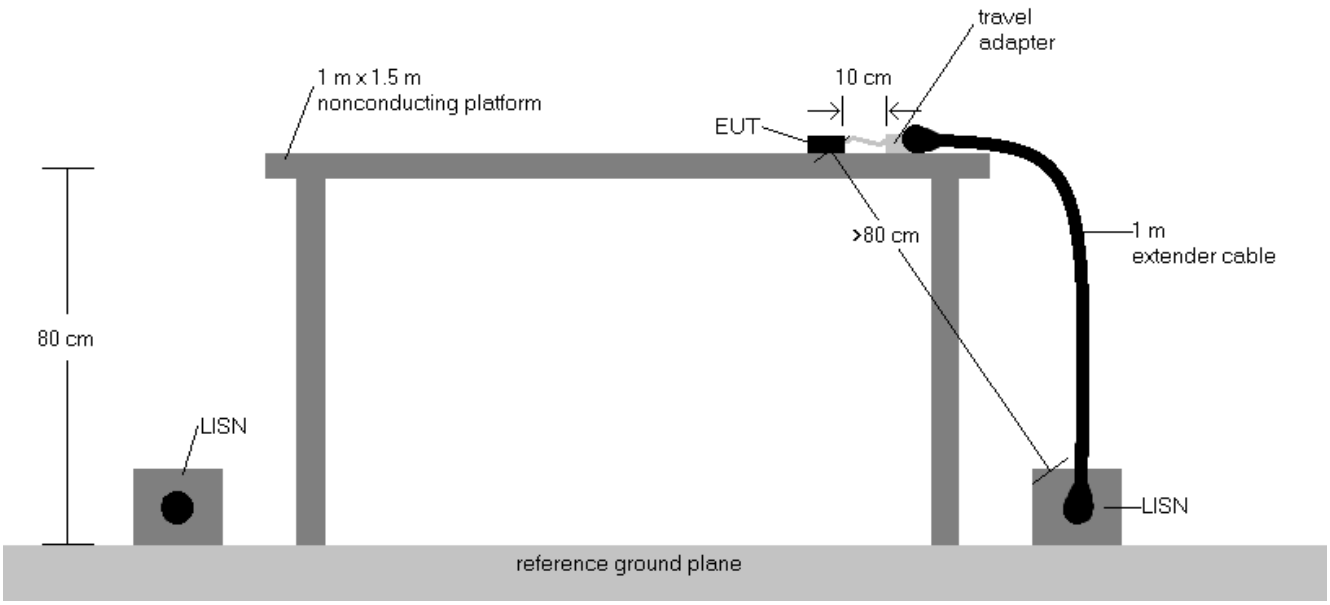
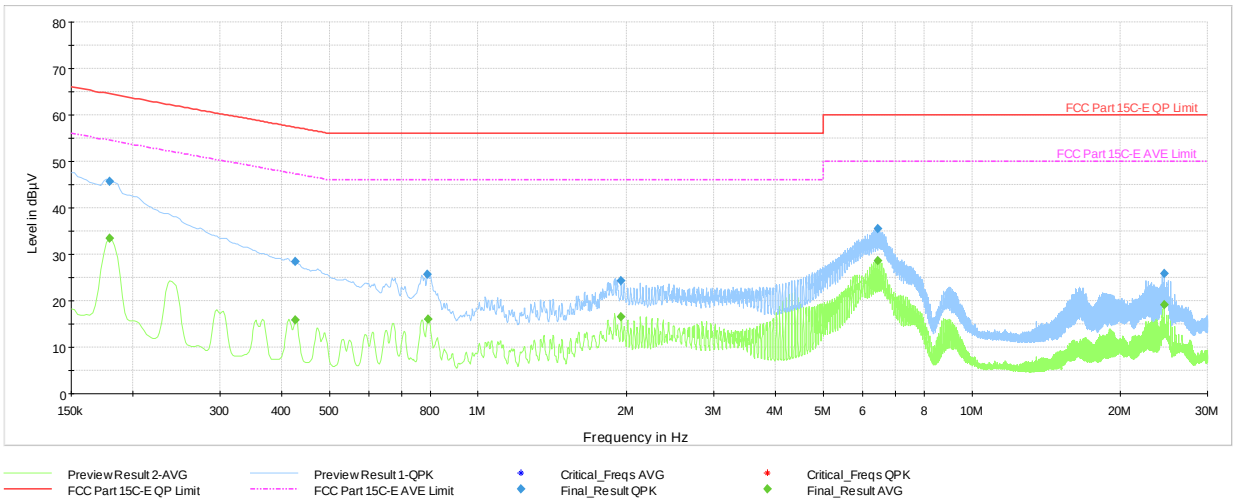


Figure 7-9. Test Instrument & Measurement Setup

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 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 Factor (dB)
6. Margin (dB) = QP/AV Level (dBμV) - QP/AV Limit (dBμV)
7. Traces shown in plots are made using quasi-peak and average detectors.
8. Deviations to the Specifications: None.
9. The unit was tested with all possible modes and only the highest emission is reported.

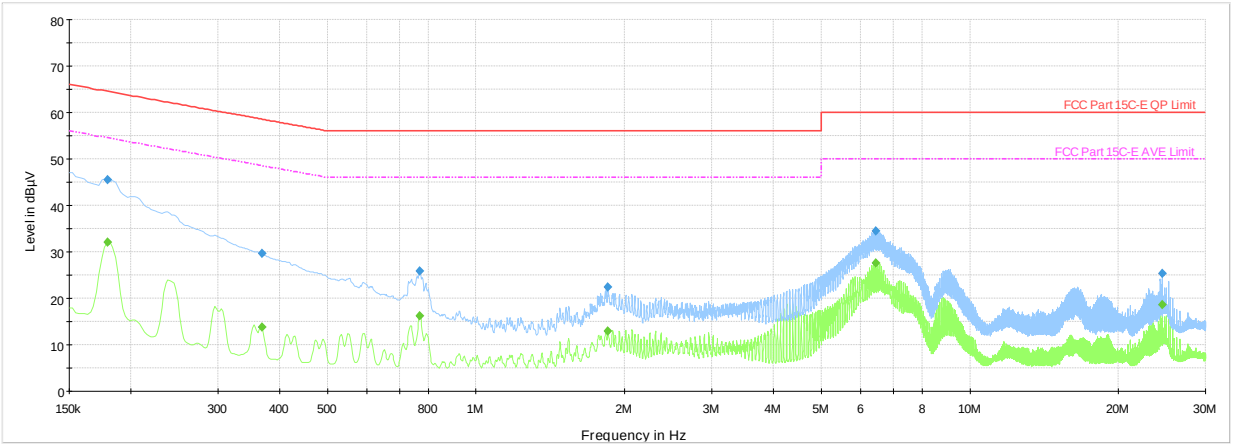
7.9.1 SDM Primary Line-Conducted Emissions Measurements



Plot 7-357. AC Line Conducted Plot with SDM Primary 11ax UNII Band 5 – RU106 – Ch.61 (L1) with AC/DC adaptor via USB-C cable with wire charger

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.18	FINAL	---	33.40	54.52	-21.12	L1	GND
0.18	FINAL	45.68	---	64.52	-18.84	L1	GND
0.43	FINAL	---	15.78	47.32	-31.54	L1	GND
0.43	FINAL	28.36	---	57.32	-28.96	L1	GND
0.79	FINAL	25.64	---	56.00	-30.36	L1	GND
0.79	FINAL	---	16.06	46.00	-29.94	L1	GND
1.95	FINAL	24.23	---	56.00	-31.77	L1	GND
1.95	FINAL	---	16.61	46.00	-29.39	L1	GND
6.45	FINAL	35.56	---	60.00	-24.44	L1	GND
6.45	FINAL	---	28.69	50.00	-21.31	L1	GND
24.54	FINAL	---	19.07	50.00	-30.93	L1	GND
24.54	FINAL	25.88	---	60.00	-34.12	L1	GND

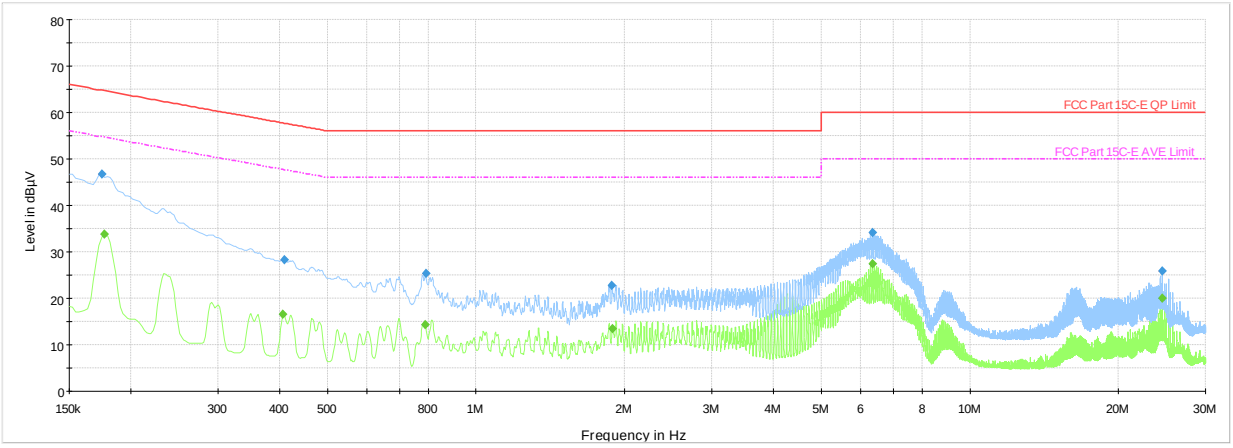
Table 7-111. AC Line Conducted Data with SDM Primary 11ax UNII Band 5 – RU106 – Ch.61 (L1) with AC/DC adaptor via USB-C cable with wire charger



Plot 7-358. AC Line Conducted Plot with SDM Primary 11ax UNII Band 5 – RU106 – Ch.61 (N) with AC/DC adaptor via USB-C cable with wire charger

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.18	FINAL	---	32.10	54.52	-22.42	N	GND
0.18	FINAL	45.54	---	64.52	-18.98	N	GND
0.37	FINAL	---	13.87	48.54	-34.67	N	GND
0.37	FINAL	29.66	---	58.54	-28.88	N	GND
0.77	FINAL	---	16.29	46.00	-29.71	N	GND
0.77	FINAL	25.85	---	56.00	-30.15	N	GND
1.85	FINAL	22.36	---	56.00	-33.64	N	GND
1.85	FINAL	---	12.91	46.00	-33.09	N	GND
6.45	FINAL	34.56	---	60.00	-25.44	N	GND
6.45	FINAL	---	27.54	50.00	-22.46	N	GND
24.54	FINAL	---	18.64	50.00	-31.36	N	GND
24.54	FINAL	25.39	---	60.00	-34.61	N	GND

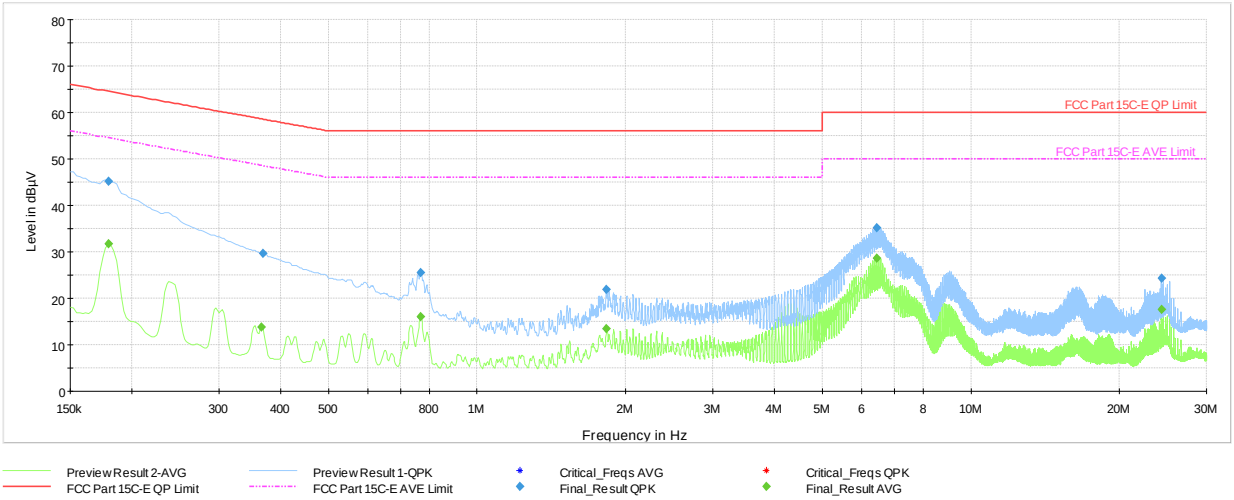
Table 7-112. AC Line Conducted Data with SDM Primary 11ax UNII Band 5 – RU106 – Ch.61 (N) with AC/DC adaptor via USB-C cable with wire charger



Plot 7-359. AC Line Conducted Plot with 11ax SDM Primary UNII Band 5 – RU242 – Ch.61 (L1) with AC/DC adaptor via USB-C cable with wire charger

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.18	FINAL	46.65	---	64.73	-18.08	L1	GND
0.18	FINAL	---	33.80	54.63	-20.83	L1	GND
0.41	FINAL	---	16.63	47.72	-31.09	L1	GND
0.41	FINAL	28.34	---	57.67	-29.33	L1	GND
0.79	FINAL	---	14.33	46.00	-31.67	L1	GND
0.79	FINAL	25.30	---	56.00	-30.70	L1	GND
1.89	FINAL	22.84	---	56.00	-33.16	L1	GND
1.89	FINAL	---	13.39	46.00	-32.61	L1	GND
6.35	FINAL	34.08	---	60.00	-25.92	L1	GND
6.35	FINAL	---	27.42	50.00	-22.58	L1	GND
24.54	FINAL	---	20.02	50.00	-29.98	L1	GND
24.54	FINAL	25.88	---	60.00	-34.12	L1	GND

Table 7-113. AC Line Conducted Data with 11ax SDM Primary UNII Band 5 – RU242 – Ch.61 (L1) with AC/DC adaptor via USB-C cable with wire charger

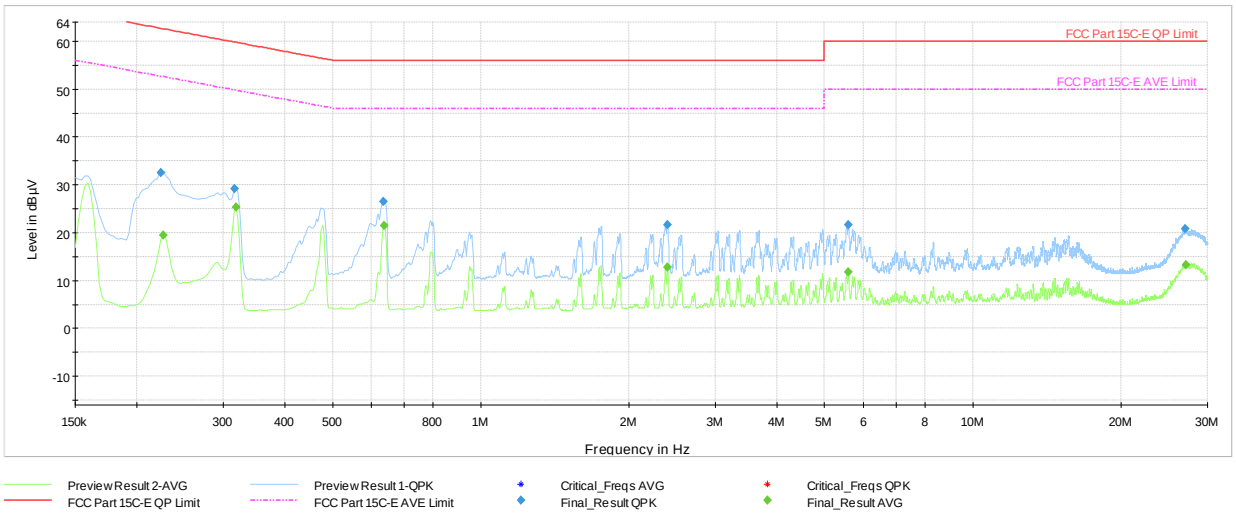


Plot 7-360. AC Line Conducted Plot with 11ax SDM Primary UNII Band 5 – RU242 – Ch.61 (N) with AC/DC adaptor via USB-C cable with wire charger

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.18	FINAL	---	31.64	54.52	-22.88	N	GND
0.18	FINAL	45.16	---	64.52	-19.36	N	GND
0.37	FINAL	---	13.87	48.59	-34.72	N	GND
0.37	FINAL	29.73	---	58.54	-28.81	N	GND
0.77	FINAL	---	16.07	46.00	-29.93	N	GND
0.77	FINAL	25.52	---	56.00	-30.48	N	GND
1.83	FINAL	21.95	---	56.00	-34.05	N	GND
1.83	FINAL	---	13.43	46.00	-32.57	N	GND
6.45	FINAL	35.09	---	60.00	-24.91	N	GND
6.45	FINAL	---	28.63	50.00	-21.37	N	GND
24.30	FINAL	---	17.53	50.00	-32.47	N	GND
24.30	FINAL	24.29	---	60.00	-35.71	N	GND

Table 7-114. AC Line Conducted Data with 11ax SDM Primary UNII Band 5 – RU242 – Ch.61 (N) with AC/DC adaptor via USB-C cable with wire charger

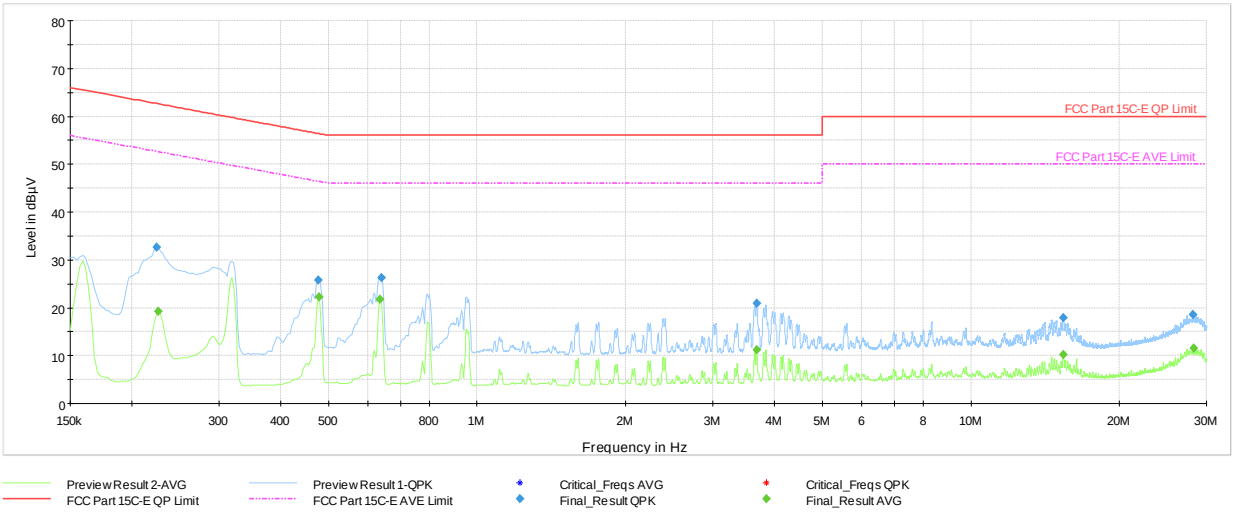
7.9.2 SDM Diversity Line-Conducted Emissions Measurements



Plot 7-361. AC Line Conducted Plot with SDM Diversity 11ax UNII Band 5 – RU106 – Ch.61 (L1) with AC/DC adaptor via USB-C cable with wire charger

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.22	FINAL	32.49	---	62.66	-30.17	L1	GND
0.23	FINAL	---	19.42	52.58	-33.16	L1	GND
0.32	FINAL	29.24	---	59.80	-30.56	L1	GND
0.32	FINAL	---	25.31	49.74	-24.43	L1	GND
0.63	FINAL	26.46	---	56.00	-29.54	L1	GND
0.64	FINAL	---	21.56	46.00	-24.44	L1	GND
2.40	FINAL	---	12.86	46.00	-33.14	L1	GND
2.40	FINAL	21.74	---	56.00	-34.26	L1	GND
5.59	FINAL	21.67	---	60.00	-38.33	L1	GND
5.59	FINAL	---	11.77	50.00	-38.23	L1	GND
26.99	FINAL	20.86	---	60.00	-39.14	L1	GND
27.14	FINAL	---	13.22	50.00	-36.78	L1	GND

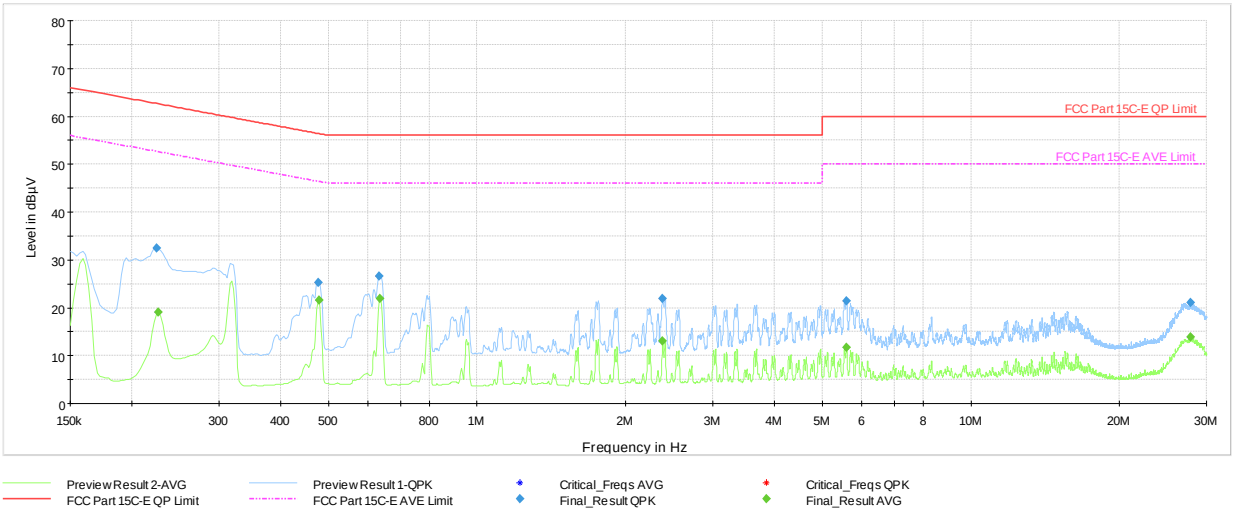
Table 7-115. AC Line Conducted Data with SDM Diversity 11ax UNII Band 5 – RU106 – Ch.61 (L1) with AC/DC adaptor via USB-C cable with wire charger



Plot 7-362. AC Line Conducted Plot with SDM Diversity 11ax UNII Band 5 – RU106 – Ch.61 (N) with AC/DC adaptor via USB-C cable with wire charger

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.22	FINAL	32.62	---	62.66	-30.04	N	GND
0.23	FINAL	---	19.27	52.58	-33.31	N	GND
0.48	FINAL	25.78	---	56.40	-30.62	N	GND
0.48	FINAL	---	22.19	46.37	-24.18	N	GND
0.64	FINAL	---	21.77	46.00	-24.23	N	GND
0.64	FINAL	26.21	---	56.00	-29.79	N	GND
3.69	FINAL	20.91	---	56.00	-35.09	N	GND
3.69	FINAL	---	11.22	46.00	-34.78	N	GND
15.37	FINAL	---	10.19	50.00	-39.81	N	GND
15.37	FINAL	17.95	---	60.00	-42.05	N	GND
28.20	FINAL	18.57	---	60.00	-41.43	N	GND
28.21	FINAL	---	11.57	50.00	-38.43	N	GND

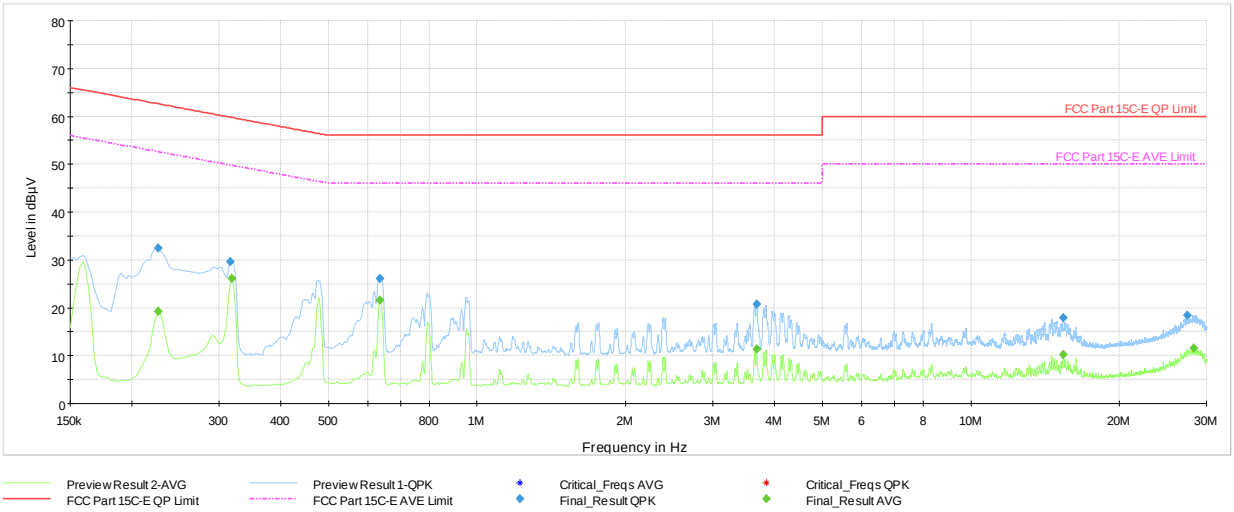
Table 7-116. AC Line Conducted Data with SDM Diversity 11ax UNII Band 5 – RU106 – Ch.61 (N) with AC/DC adaptor via USB-C cable with wire charger



Plot 7-363. AC Line Conducted Plot with 11ax SDM Diversity UNII Band 5 – RU242 – Ch.61 (L1) with AC/DC adaptor via USB-C cable with wire charger

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.22	FINAL	32.55	---	62.66	-30.11	L1	GND
0.23	FINAL	---	19.15	52.58	-33.43	L1	GND
0.48	FINAL	25.32	---	56.40	-31.08	L1	GND
0.48	FINAL	---	21.64	46.37	-24.73	L1	GND
0.63	FINAL	26.57	---	56.00	-29.43	L1	GND
0.64	FINAL	---	21.89	46.00	-24.11	L1	GND
2.38	FINAL	21.89	---	56.00	-34.11	L1	GND
2.38	FINAL	---	13.01	46.00	-32.99	L1	GND
5.60	FINAL	21.38	---	60.00	-38.62	L1	GND
5.60	FINAL	---	11.78	50.00	-38.22	L1	GND
27.85	FINAL	21.01	---	60.00	-38.99	L1	GND
27.87	FINAL	---	13.85	50.00	-36.15	L1	GND

Table 7-117. AC Line Conducted Data with 11ax SDM Diversity UNII Band 5 – RU242 – Ch.61 (L1) with AC/DC adaptor via USB-C cable with wire charger



Plot 7-364. AC Line Conducted Plot with 11ax SDM Diversity UNII Band 5 – RU242 – Ch.61 (N) with AC/DC adaptor via USB-C cable with wire charger

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.23	FINAL	---	19.24	52.58	-33.34	N	GND
0.23	FINAL	32.49	---	62.58	-30.09	N	GND
0.32	FINAL	29.65	---	59.80	-30.15	N	GND
0.32	FINAL	---	26.14	49.74	-23.60	N	GND
0.64	FINAL	26.18	---	56.00	-29.82	N	GND
0.64	FINAL	---	21.67	46.00	-24.33	N	GND
3.68	FINAL	---	11.40	46.00	-34.60	N	GND
3.69	FINAL	20.80	---	56.00	-35.20	N	GND
15.38	FINAL	---	10.27	50.00	-39.73	N	GND
15.38	FINAL	17.97	---	60.00	-42.03	N	GND
27.39	FINAL	18.49	---	60.00	-41.51	N	GND
28.21	FINAL	---	11.50	50.00	-38.50	N	GND

Table 7-118. AC Line Conducted Data with 11ax SDM Diversity UNII Band 5 – RU242 – Ch.61 (N) with AC/DC adaptor via USB-C cable with wire charger

8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Apple Tablet Device FCC ID: BCGA3267** and **IC: 579C-A3267** is in compliance with Part 15 Subpart E (15.407) of the FCC Rules and RSS-248 of the Innovation, Science and Economic Development Canada Rules.