

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 Emissionss 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 Emissionss. 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 7-15 per Section 15.209 and RSS-Gen (8.9).

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

Table 7-15. Radiated Limits

Test Procedures Used

ANSI C63.10-2013 – Section 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 Emissions of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = power average (RMS)
5. Number of measurement points = 1001 (Number of points must be $\geq 2 \times \text{span/RBW}$)
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 Emissions 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

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Test Setup

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

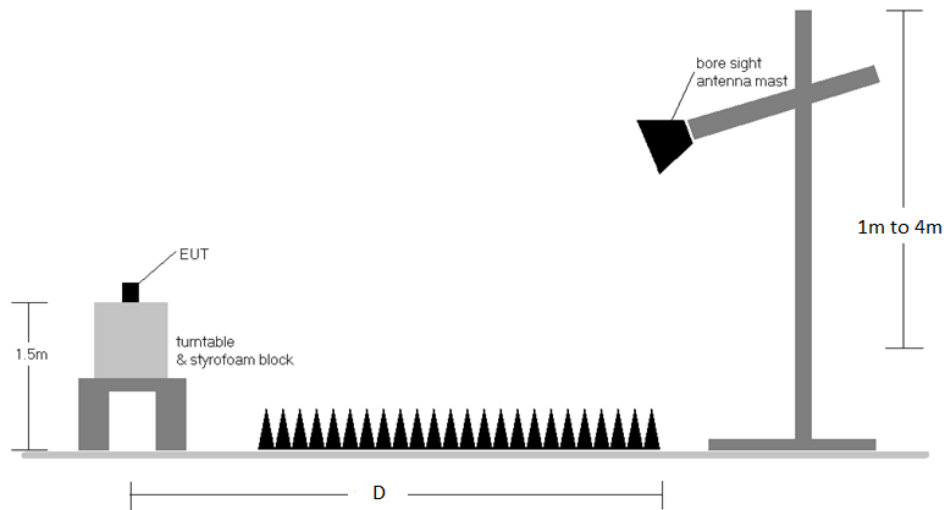


Figure 7-6. Radiated Measurement Setup

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 Emissionss 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 7-15.
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. The worst-case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
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 antenna configs were investigated and only the worst case is reported.

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Sample Calculations

Determining Spurious Emissions Levels

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

Radiated Band Edge Measurement Offset

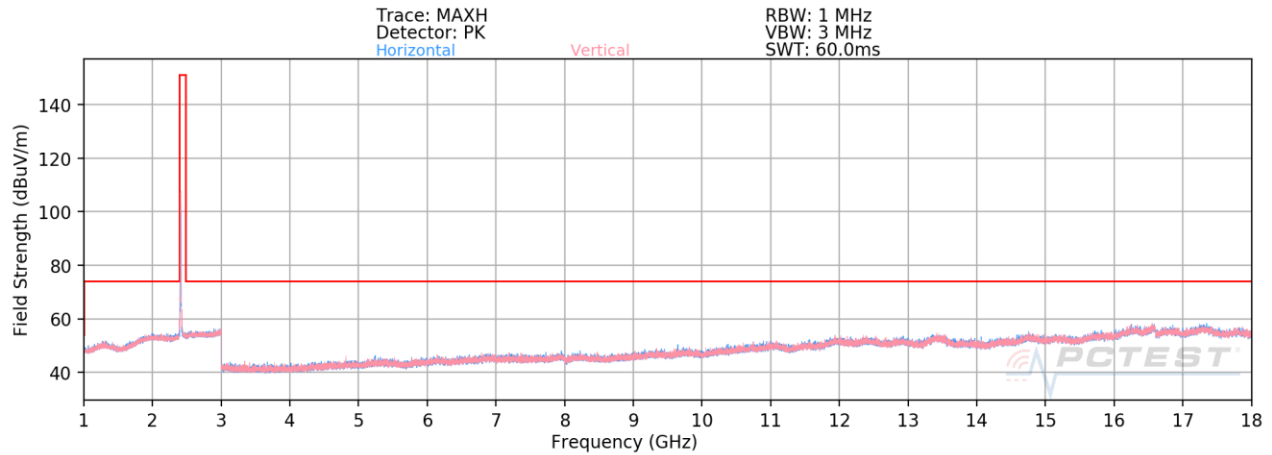
- The amplitude offset shown in the radiated restricted band edge plots in Section 7.7 was calculated using the formula:

$$\text{Offset (dB)} = (\text{Antenna Factor} + \text{Cable Loss} + \text{Attenuator}) - \text{Preamplifier Gain}$$

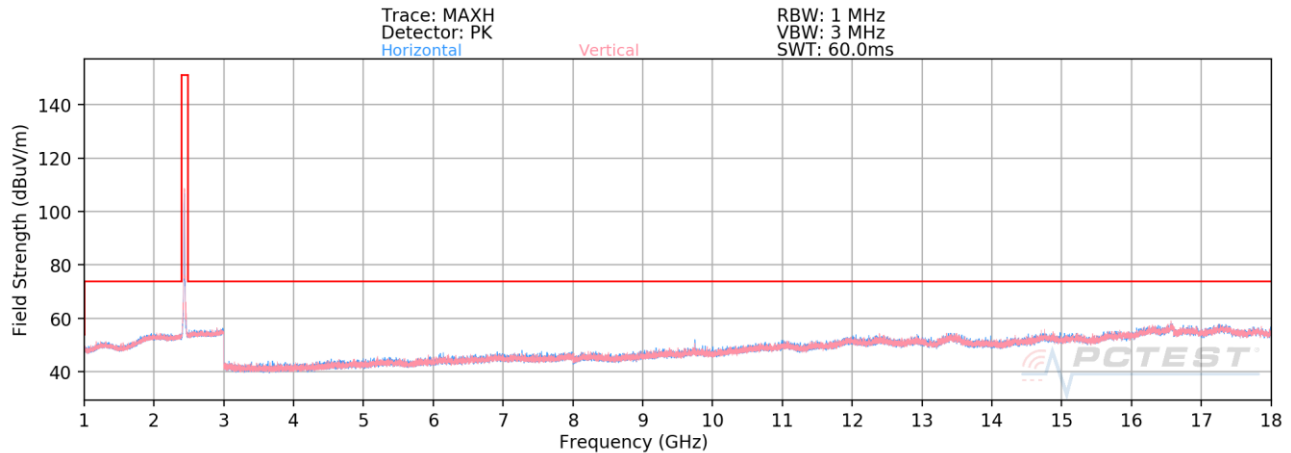
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7.7.1 SISO Core 0 - Radiated Spurious Emissions

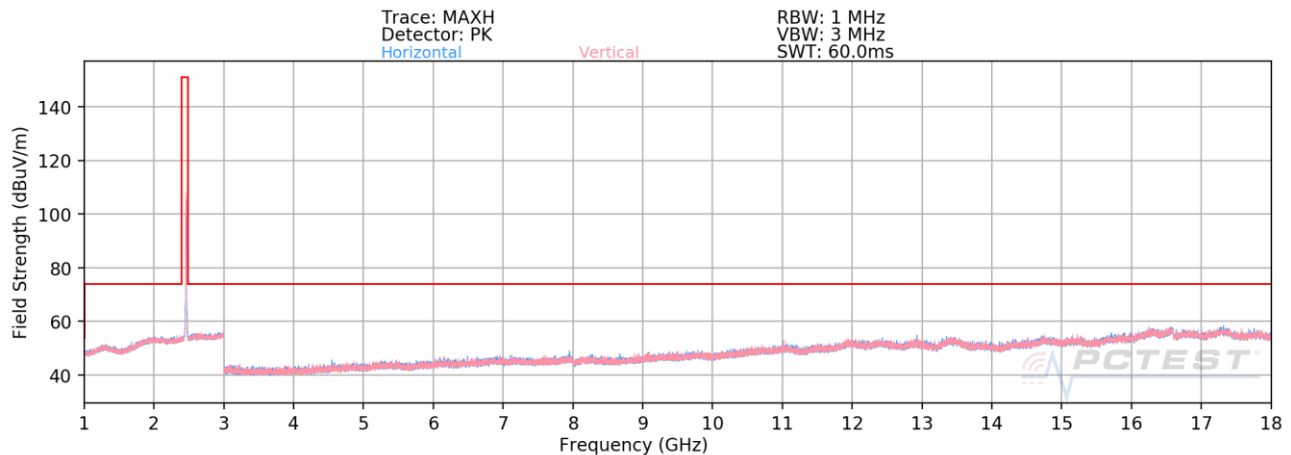
§15.247(d) §15.205 & §15.209; RSS-Gen [8.9]



Plot 7-93. Radiated Spurious Emissions above 1GHz SISO CORE 0 (802.11b – Ch. 1)



Plot 7-94. Radiated Spurious Emissions above 1GHz SISO CORE 0 (802.11b – Ch. 6)



Plot 7-95. Radiated Spurious Emissions above 1GHz SISO CORE 0 (802.11b – Ch. 11)

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SISO Core 0 Radiated Spurious Emission Measurements

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

Worst Case Mode: 802.11b
Worst Case Transfer Rate: 1 Mbps
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	Avg	V	116	172	-75.32	4.27	35.95	53.98	-18.03
4824.00	Peak	V	116	172	-65.76	4.27	45.51	73.98	-28.47
12060.00	Avg	V	-	-	-83.28	17.69	41.41	53.98	-12.57
12060.00	Peak	V	-	-	-72.11	17.69	52.58	73.98	-21.40

Table 7-16. Radiated Measurements SISO CORE 0

Worst Case Mode: 802.11b
Worst Case Transfer Rate: 1 Mbps
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	Avg	V	108	166	-74.58	4.82	37.24	53.98	-16.74
4874.00	Peak	V	108	166	-65.64	4.82	46.18	73.98	-27.80
7311.00	Avg	V	-	-	-80.27	8.67	35.40	53.98	-18.58
7311.00	Peak	V	-	-	-68.60	8.67	47.07	73.98	-26.91
12185.00	Avg	V	-	-	-83.62	17.52	40.90	53.98	-13.08
12185.00	Peak	V	-	-	-72.20	17.52	52.32	73.98	-21.66

Table 7-17. Radiated Measurements SISO CORE 0

FCC ID: BCGA2428	 MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Worst Case Mode: 802.11b
Worst Case Transfer Rate: 1 Mbps
Distance of Measurements: 3 Meters
Operating Frequency: 2462MHz
Channel: 11

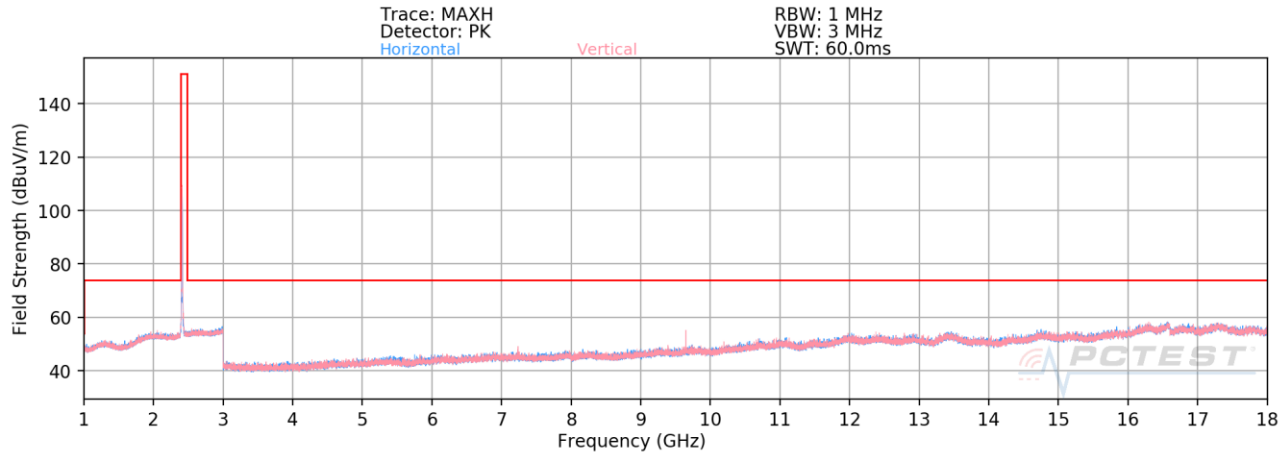
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
4924.00	Avg	V	109	171	-74.94	4.62	36.68	53.98	-17.30
4924.00	Peak	V	109	171	-65.57	4.62	46.05	73.98	-27.93
7386.00	Avg	V	-	-	-80.10	8.57	35.47	53.98	-18.51
7386.00	Peak	V	-	-	-68.19	8.57	47.38	73.98	-26.60
12310.00	Avg	V	-	-	-84.32	17.96	40.64	53.98	-13.34
12310.00	Peak	V	-	-	-73.38	17.96	51.58	73.98	-22.40

Table 7-18. Radiated Measurements SISO CORE 0

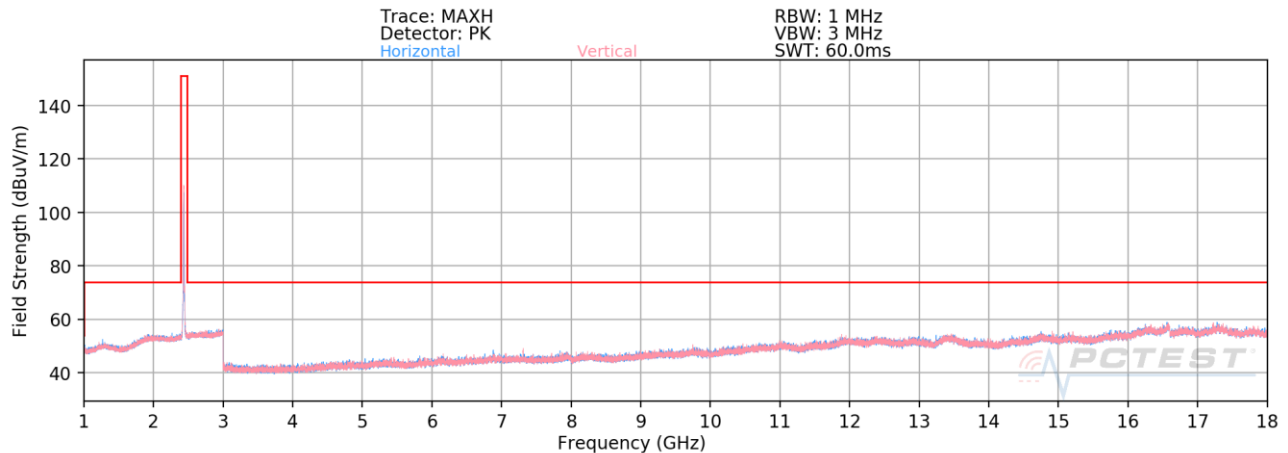
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7.7.2 SISO Core 1 - Radiated Spurious Emissions

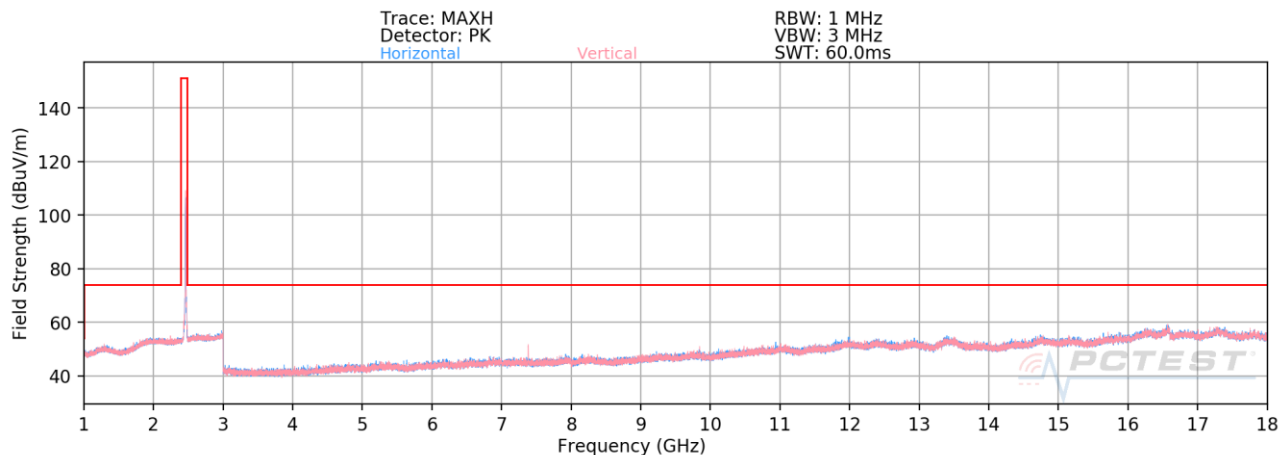
§15.247(d) §15.205 & §15.209; RSS-Gen [8.9]



Plot 7-96. Radiated Spurious Emissions above 1GHz SISO CORE 1 (802.11b – Ch. 1)



Plot 7-97. Radiated Spurious Emissions above 1GHz SISO CORE 1 (802.11b – Ch. 6)



Plot 7-98. Radiated Spurious Emissions above 1GHz SISO CORE 1 (802.11b – Ch. 11)

FCC ID: BCGA2428	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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SISO Core 1 Radiated Spurious Emission Measurements

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

Worst Case Mode: 802.11b
Worst Case Transfer Rate: 1 Mbps
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	Avg	V	-	-	-77.81	4.27	33.46	53.98	-20.52
4824.00	Peak	V	-	-	-66.80	4.27	44.47	73.98	-29.51
12060.00	Avg	V	-	-	-83.05	17.69	41.64	53.98	-12.34
12060.00	Peak	V	-	-	-71.31	17.69	53.38	73.98	-20.60

Table 7-19. Radiated Measurements SISO CORE 1

Worst Case Mode: 802.11b
Worst Case Transfer Rate: 1 Mbps
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	Avg	V	390	158	-76.94	4.82	34.88	53.98	-19.10
4874.00	Peak	V	390	158	-66.64	4.82	45.18	73.98	-28.80
7311.00	Avg	V	267	61	-71.93	8.67	43.74	53.98	-10.24
7311.00	Peak	V	267	61	-64.63	8.67	51.04	73.98	-22.94
12185.00	Avg	V	-	-	-82.99	17.52	41.53	53.98	-12.45
12185.00	Peak	V	-	-	-71.21	17.52	53.31	73.98	-20.67

Table 7-20. Radiated Measurements SISO CORE 1

FCC ID: BCGA2428	 MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Worst Case Mode: 802.11b
Worst Case Transfer Rate: 1 Mbps
Distance of Measurements: 3 Meters
Operating Frequency: 2462MHz
Channel: 11

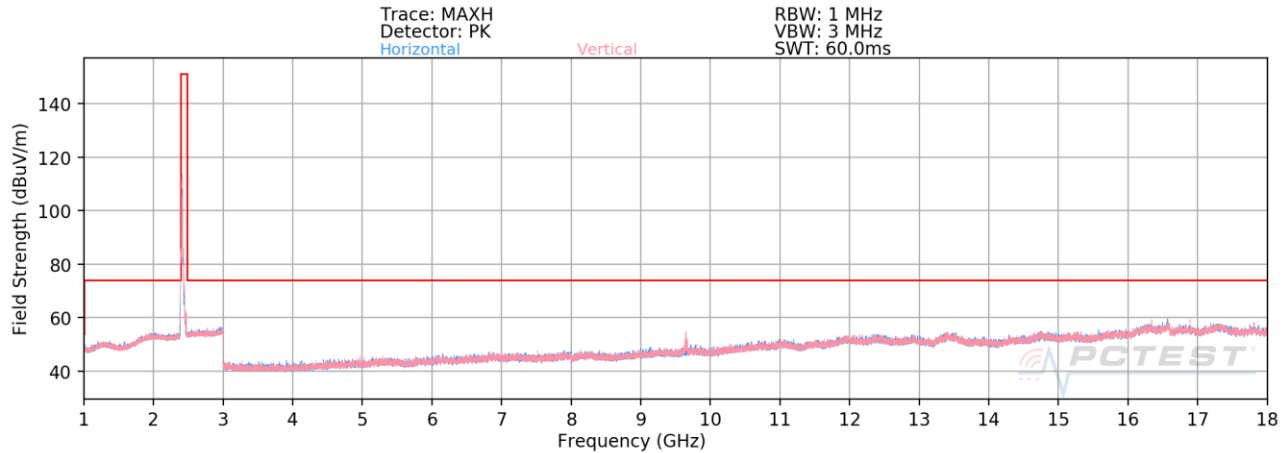
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
4924.00	Avg	V	261	7	-73.38	4.62	38.24	53.98	-15.74
4924.00	Peak	V	261	7	-63.92	4.62	47.70	73.98	-26.28
7386.00	Avg	V	269	61	-68.68	8.57	46.89	53.98	-7.09
7386.00	Peak	V	269	61	-61.37	8.57	54.20	73.98	-19.78
12310.00	Avg	V	-	-	-82.92	17.96	42.04	53.98	-11.94
12310.00	Peak	V	-	-	-70.45	17.96	54.51	73.98	-19.47

Table 7-21. Radiated Measurements SISO CORE 1

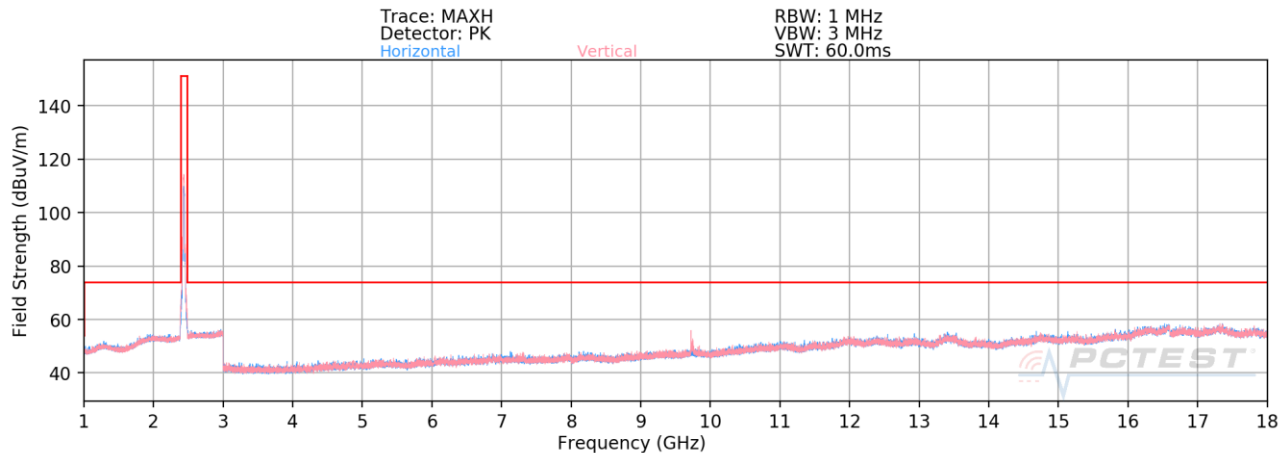
FCC ID: BCGA2428	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2004270033-05.BCG	Test Dates: 05/01/2020-07/22/2020	EUT Type: Tablet Device	Page 81 of 107

7.7.3 CDD - Radiated Spurious Emissions

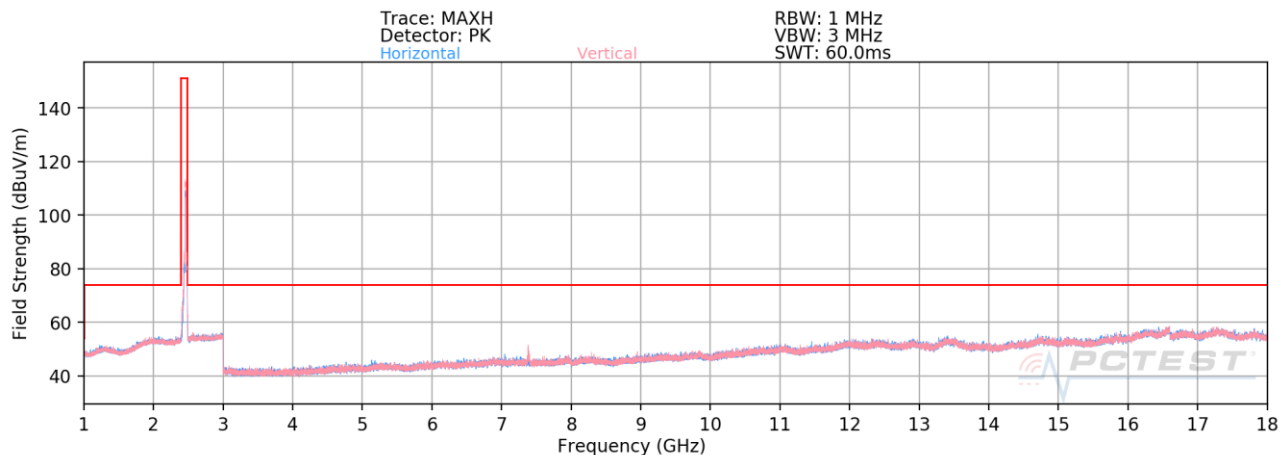
§15.247(d) §15.205 & §15.209; RSS-Gen [8.9]



Plot 7-99. Radiated Spurious Emissions above 1GHz CDD (802.11n – Ch. 1)



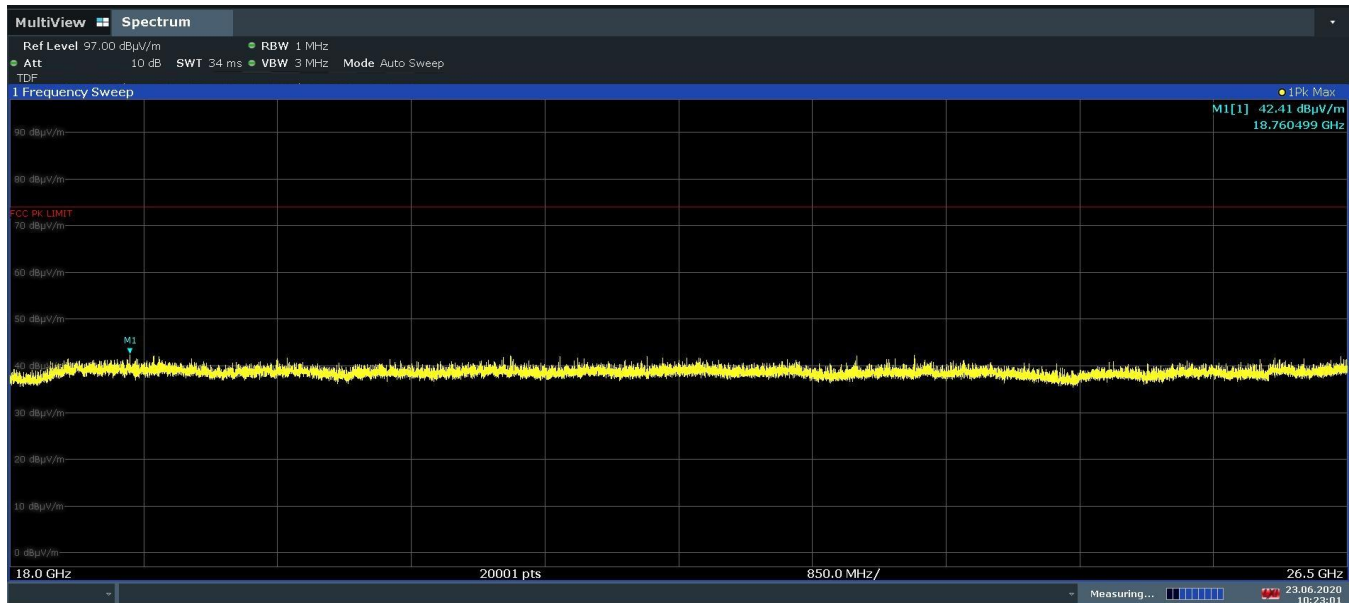
Plot 7-100. Radiated Spurious Emissions above 1GHz CDD (802.11n – Ch. 6)



Plot 7-101. Radiated Spurious Emissions above 1GHz CDD (802.11n – Ch. 11)

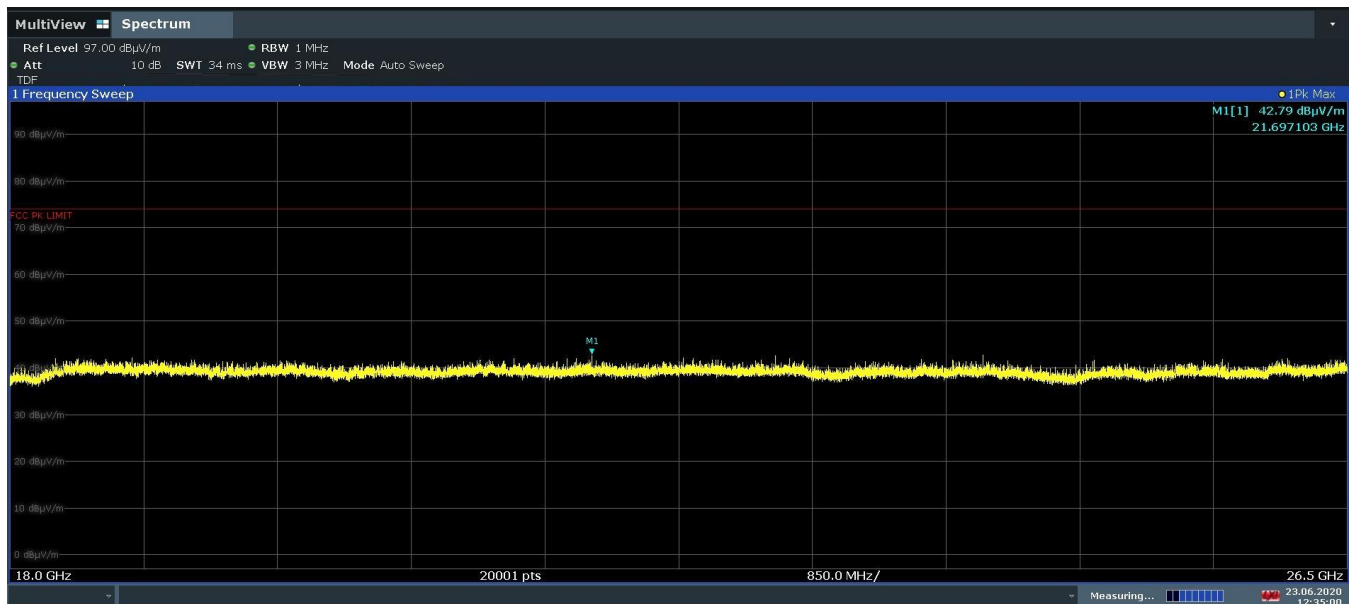
FCC ID: BCGA2428	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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CDD Radiated Spurious Emission (Above 18GHz) §15.209; RSS-Gen [8.9]



10:23:02 23.06.2020

Plot 7-102. Radiated Spurious Emissions above 18GHz CDD (802.11n – Ch.11, Pol H)



12:35:00 23.06.2020

Plot 7-103. Radiated Spurious Emissions above 18GHz CDD (802.11n – Ch.11, Pol V)

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CDD Radiated Spurious Emission Measurements

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

Worst Case Mode: 802.11n
 Worst Case Transfer Rate: MCS8
 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	Avg	V	-	-	-78.19	4.27	33.08	53.98	-20.90
4824.00	Peak	V	-	-	-65.98	4.27	45.29	73.98	-28.69
12060.00	Avg	V	-	-	-83.19	17.69	41.50	53.98	-12.48
12060.00	Peak	V	-	-	-71.18	17.69	53.51	73.98	-20.47

Table 7-22. Radiated Measurements CDD

Worst Case Mode: 802.11n
 Worst Case Transfer Rate: MCS8
 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	Avg	V	-	-	-78.24	4.82	33.58	53.98	-20.40
4874.00	Peak	V	-	-	-66.73	4.82	45.09	73.98	-28.89
7311.00	Avg	V	262	63	-75.43	8.67	40.24	53.98	-13.74
7311.00	Peak	V	262	63	-63.23	8.67	52.44	73.98	-21.54
12185.00	Avg	V	-	-	-83.30	17.52	41.22	53.98	-12.76
12185.00	Peak	V	-	-	-71.88	17.52	52.64	73.98	-21.34

Table 7-23. Radiated Measurements CDD

FCC ID: BCGA2428	 MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Worst Case Mode: 802.11n
 Worst Case Transfer Rate: MCS8
 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	Avg	V	-	-	-78.03	4.62	33.59	53.98	-20.39
4924.00	Peak	V	-	-	-66.40	4.62	45.22	73.98	-28.76
7386.00	Avg	V	274	60	-74.19	8.57	41.38	53.98	-12.60
7386.00	Peak	V	274	60	-61.86	8.57	53.71	73.98	-20.27
12310.00	Avg	V	-	-	-84.04	17.96	40.92	53.98	-13.06
12310.00	Peak	V	-	-	-72.50	17.96	52.46	73.98	-21.52

Table 7-24. Radiated Measurements CDD

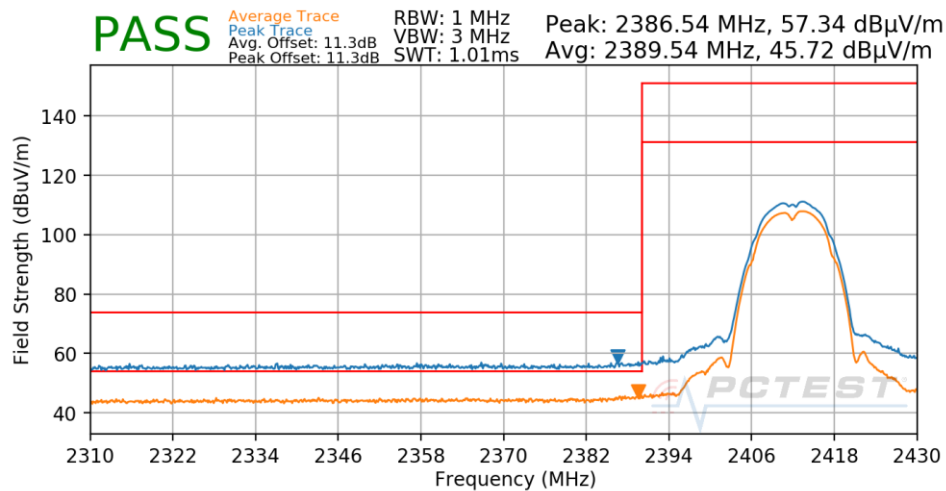
FCC ID: BCGA2428	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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7.7.4 SISO Core 0 - Radiated Restricted Band Edge Measurements

§15.205 §15.209; RSS-Gen [8.9]

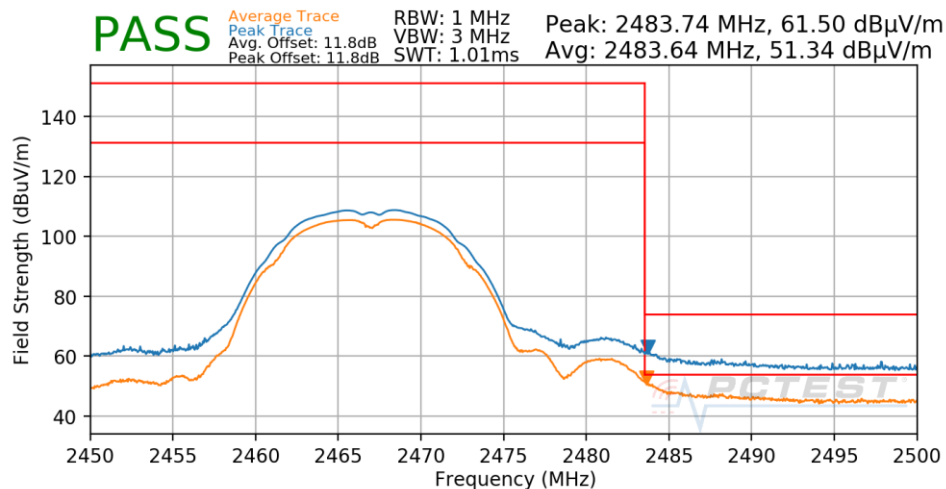
The radiated restricted band edge measurements are measured with an EMI test receiver connected to the receive antenna while the EUT is transmitting.

Worst Case Mode:	802.11b
Worst Case Transfer Rate:	1Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	2412MHz
Channel:	1



Plot 7-104. Radiated Restricted Lower Band Edge Measurement SISO CORE 0

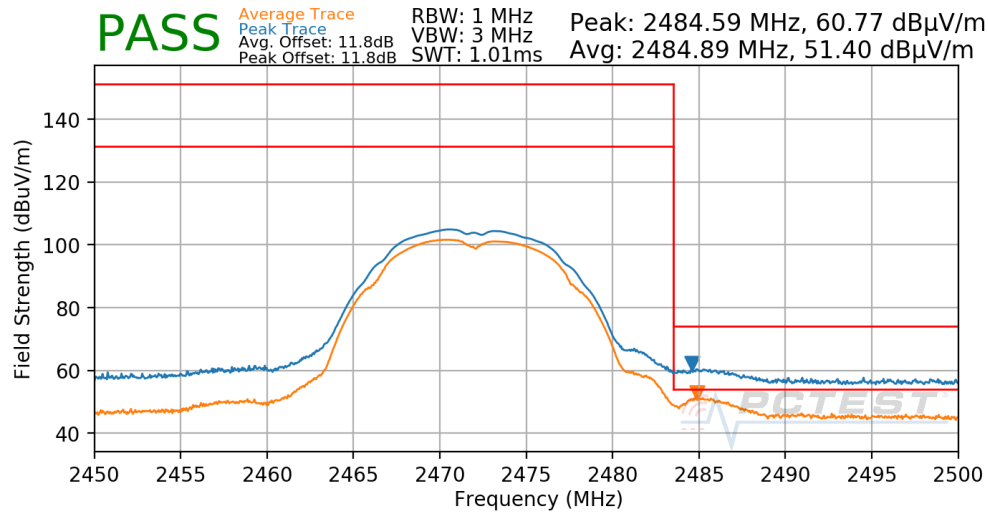
Worst Case Mode:	802.11b
Worst Case Transfer Rate:	1Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	2467MHz
Channel:	12



Plot 7-105. Radiated Restricted Upper Band Edge Measurement SISO CORE 0

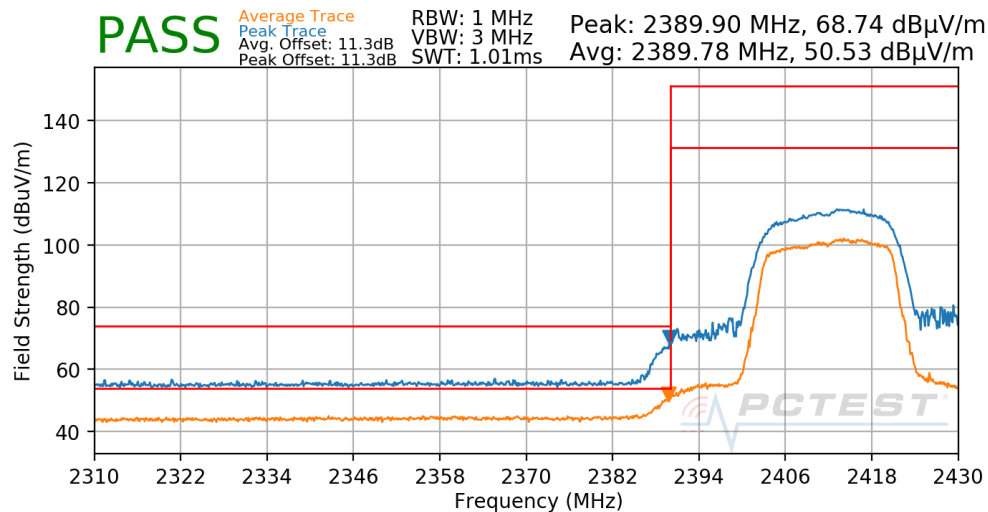
FCC ID: BCGA2428	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Worst Case Mode: 802.11b
Worst Case Transfer Rate: 1Mbps
Distance of Measurements: 3 Meters
Operating Frequency: 2472MHz
Channel: 13



Plot 7-106. Radiated Restricted Upper Band Edge Measurement SISO CORE 0

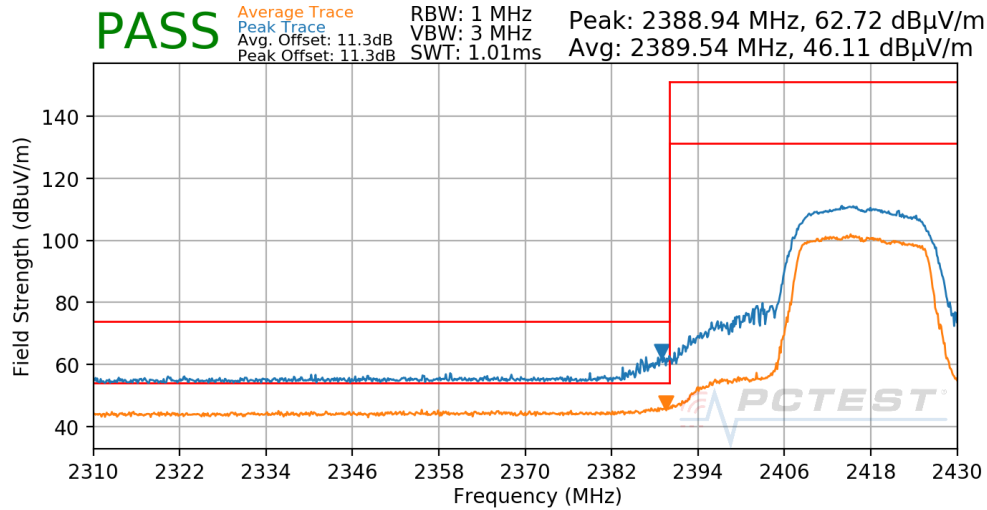
Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 2412MHz
Channel: 1



Plot 7-107. Radiated Restricted Lower Band Edge Measurement SISO CORE 0

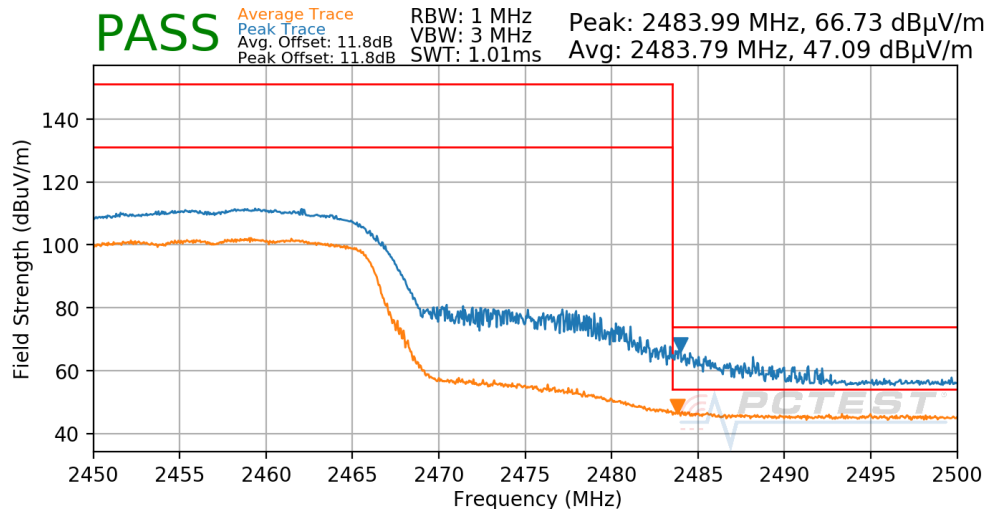
FCC ID: BCGA2428	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 2417MHz
Channel: 2



Plot 7-108. Radiated Restricted Lower Band Edge Measurement SISO CORE 0

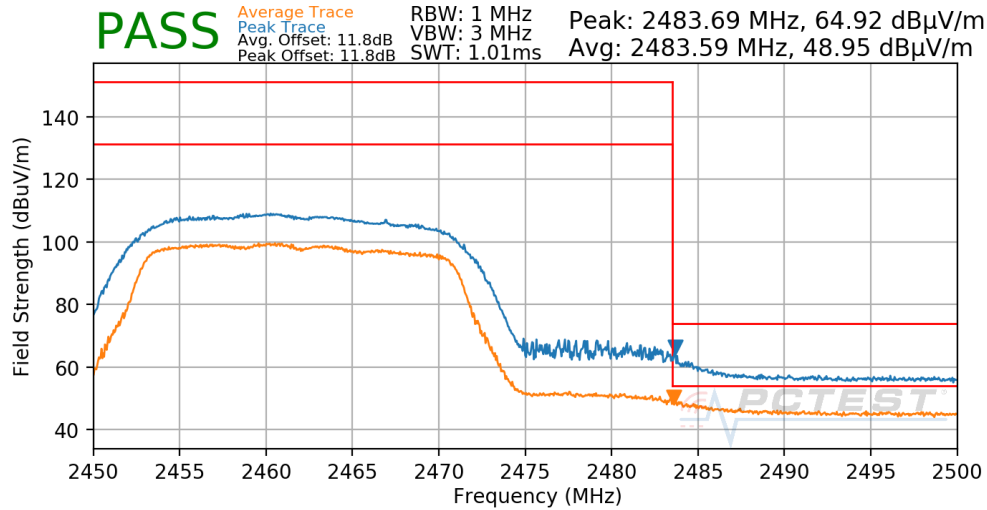
Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 2457MHz
Channel: 10



Plot 7-109. Radiated Restricted Upper Band Edge Measurement SISO CORE 0

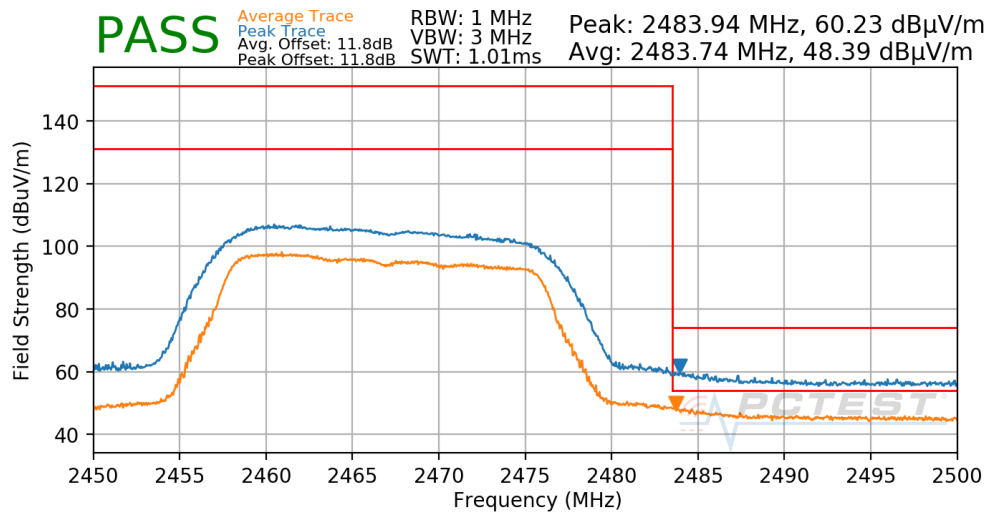
FCC ID: BCGA2428	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2004270033-05.BCG	Test Dates: 05/01/2020-07/22/2020	EUT Type: Tablet Device	Page 88 of 107

Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 2462MHz
Channel: 11



Plot 7-110. Radiated Restricted Upper Band Edge Measurement SISO CORE 0

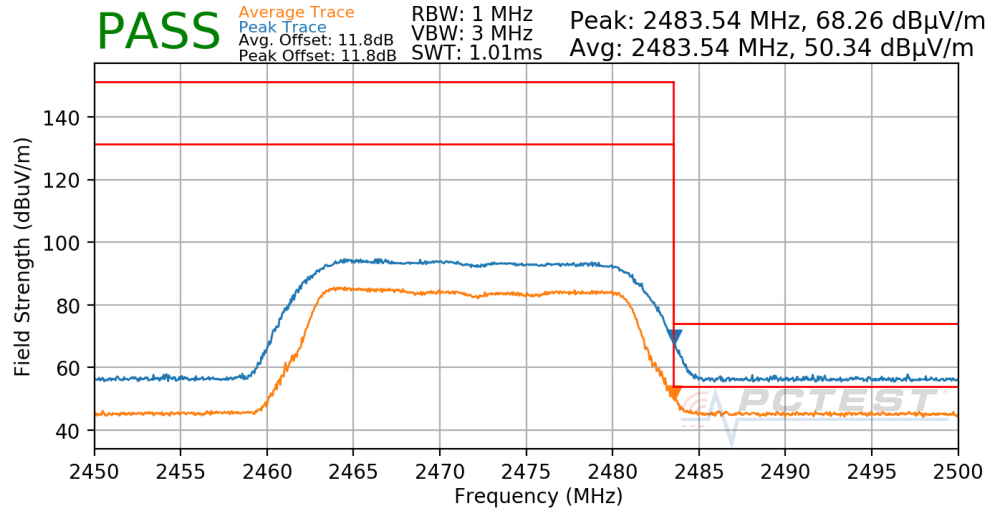
Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 2467MHz
Channel: 12



Plot 7-111. Radiated Restricted Upper Band Edge Measurement SISO CORE 0

FCC ID: BCGA2428	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2004270033-05.BCG	Test Dates: 05/01/2020-07/22/2020	EUT Type: Tablet Device	Page 89 of 107

Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 2472MHz
Channel: 13



Plot 7-112. Radiated Restricted Upper Band Edge Measurement SISO CORE 0

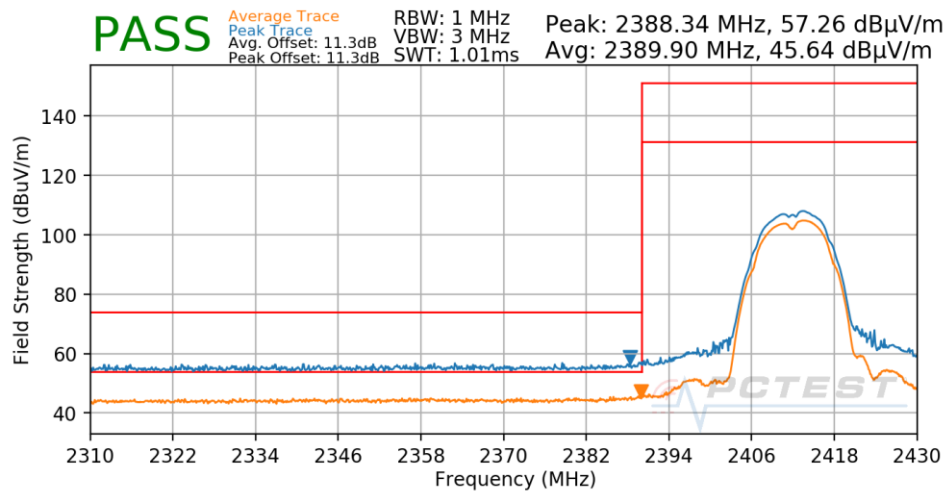
FCC ID: BCGA2428	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2004270033-05.BCG	Test Dates: 05/01/2020-07/22/2020	EUT Type: Tablet Device	Page 90 of 107

7.7.5 SISO Core 1 - Radiated Restricted Band Edge Measurements

§15.205 §15.209; RSS-Gen [8.9]

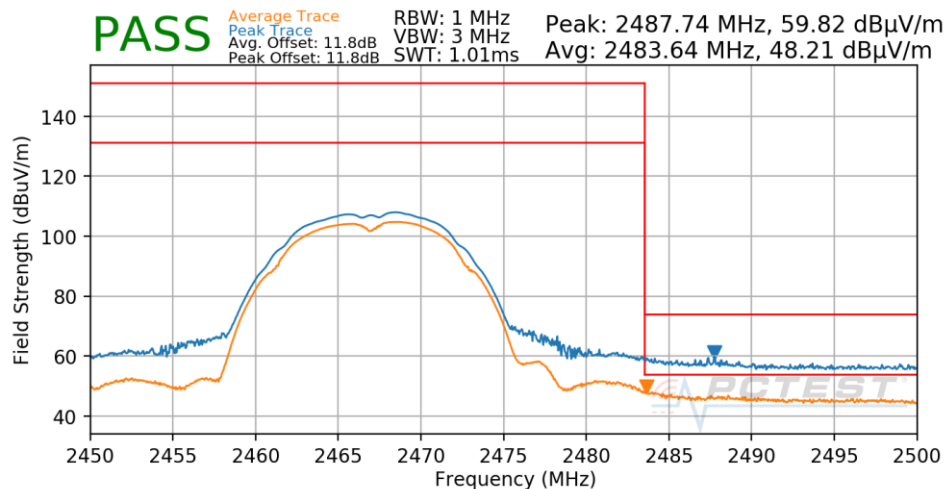
The radiated restricted band edge measurements are measured with an EMI test receiver connected to the receive antenna while the EUT is transmitting.

Worst Case Mode:	802.11b
Worst Case Transfer Rate:	1Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	2412MHz
Channel:	1



Plot 7-113. Radiated Restricted Lower Band Edge Measurement SISO CORE 1

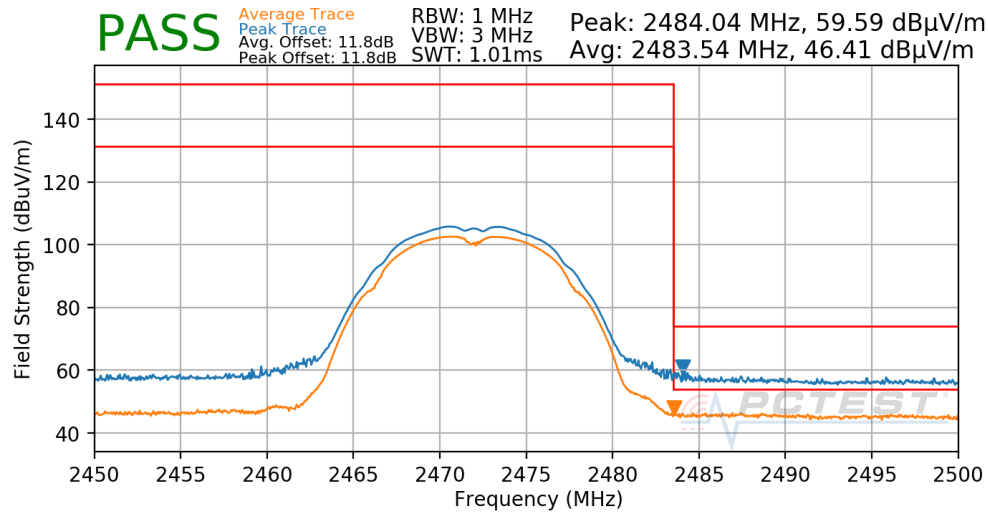
Worst Case Mode:	802.11b
Worst Case Transfer Rate:	1Mbps
Distance of Measurements:	3 Meters
Operating Frequency:	2467MHz
Channel:	12



Plot 7-114. Radiated Restricted Upper Band Edge Measurement SISO CORE 1

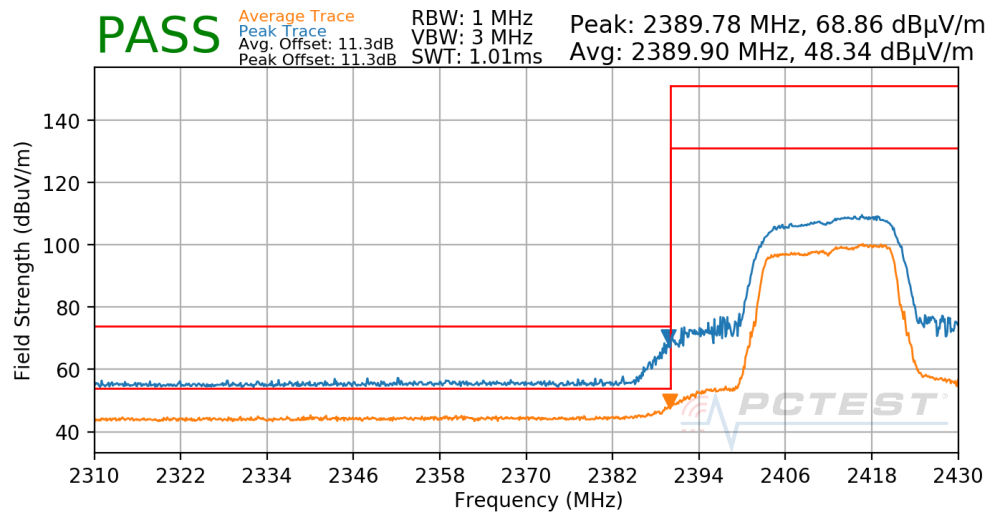
FCC ID: BCGA2428	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2004270033-05.BCG	Test Dates: 05/01/2020-07/22/2020	EUT Type: Tablet Device	Page 91 of 107

Worst Case Mode: 802.11b
Worst Case Transfer Rate: 1Mbps
Distance of Measurements: 3 Meters
Operating Frequency: 2472MHz
Channel: 13



Plot 7-115. Radiated Restricted Upper Band Edge Measurement SISO CORE 1

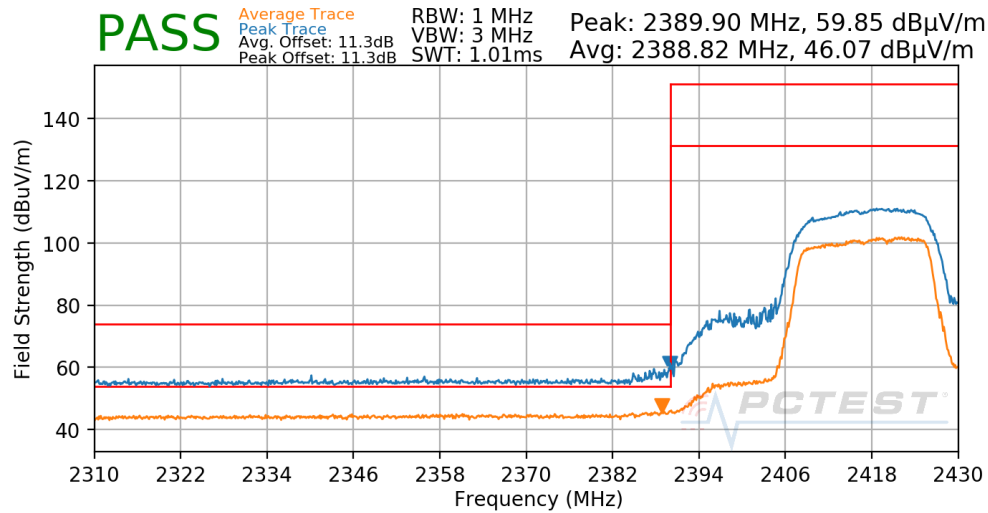
Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 2412MHz
Channel: 1



Plot 7-116. Radiated Restricted Lower Band Edge Measurement SISO CORE 1

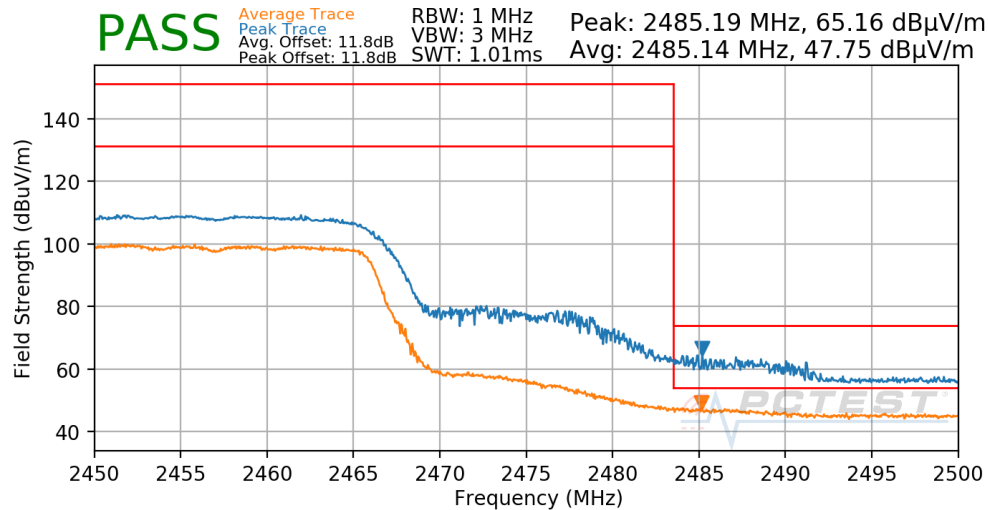
FCC ID: BCGA2428	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2004270033-05.BCG	Test Dates: 05/01/2020-07/22/2020	EUT Type: Tablet Device	Page 92 of 107

Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 2417MHz
Channel: 2



Plot 7-117. Radiated Restricted Lower Band Edge Measurement SISO CORE 1

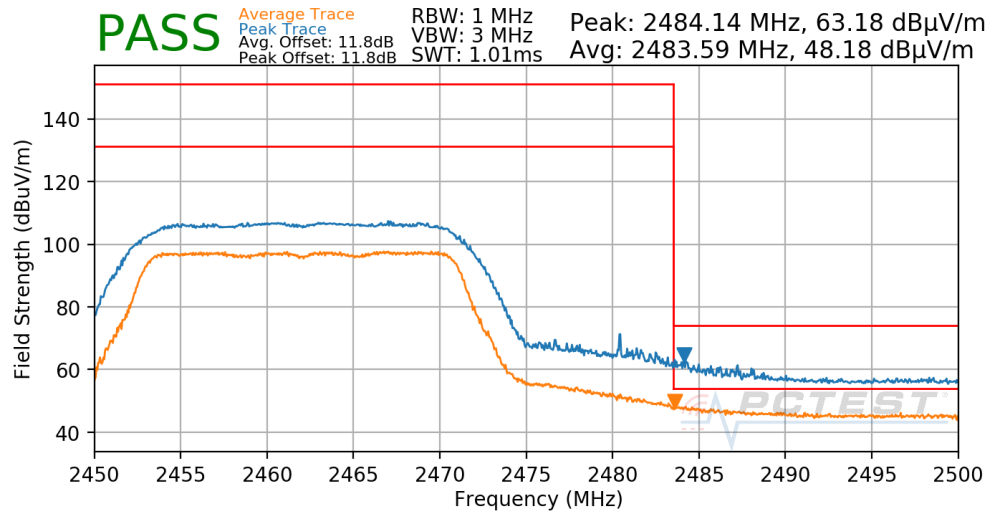
Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 2457MHz
Channel: 10



Plot 7-118. Radiated Restricted Upper Band Edge Measurement SISO CORE 1

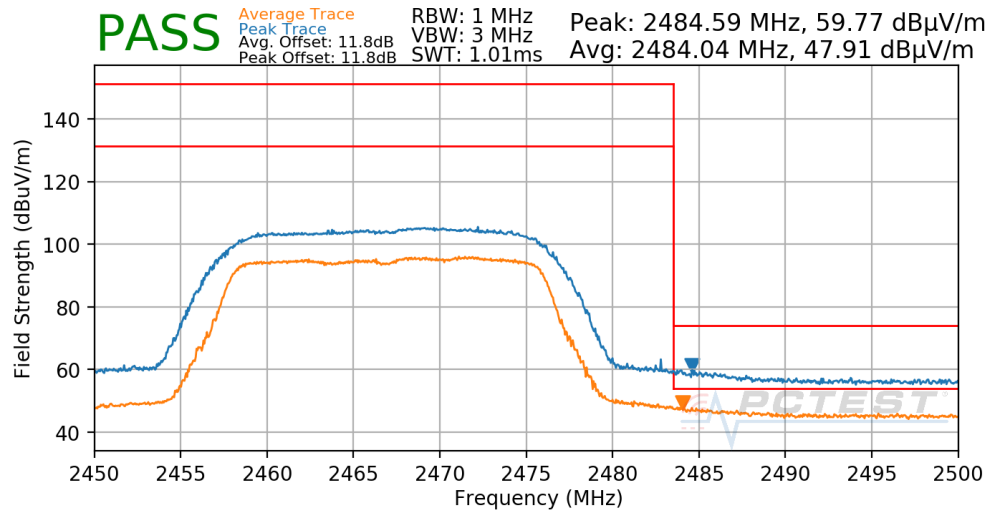
FCC ID: BCGA2428	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2004270033-05.BCG	Test Dates: 05/01/2020-07/22/2020	EUT Type: Tablet Device	Page 93 of 107

Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 2462MHz
Channel: 11



Plot 7-119. Radiated Restricted Upper Band Edge Measurement SISO CORE 1

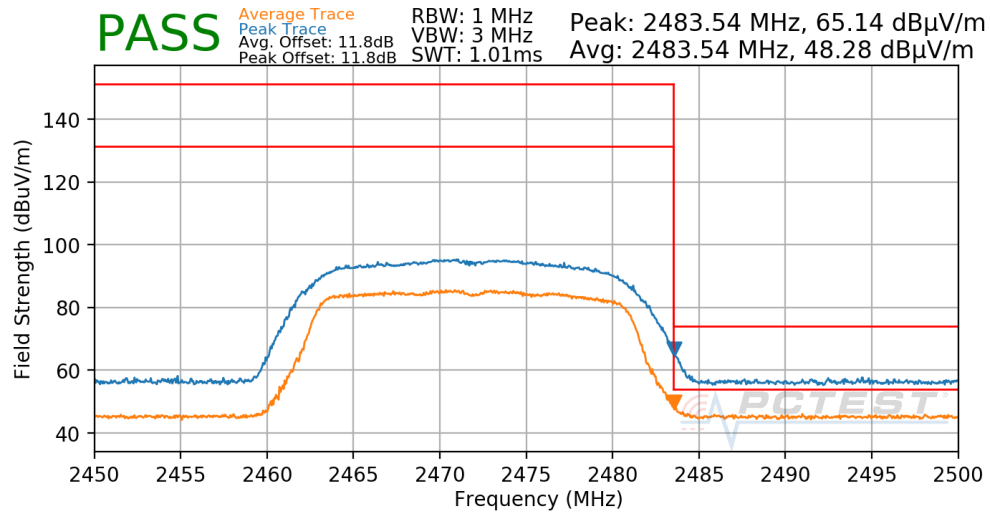
Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 2467MHz
Channel: 12



Plot 7-120. Radiated Restricted Upper Band Edge Measurement SISO CORE 1

FCC ID: BCGA2428	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2004270033-05.BCG	Test Dates: 05/01/2020-07/22/2020	EUT Type: Tablet Device	Page 94 of 107

Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS0
Distance of Measurements: 3 Meters
Operating Frequency: 2472MHz
Channel: 13



Plot 7-121. Radiated Restricted Upper Band Edge Measurement SISO CORE 1

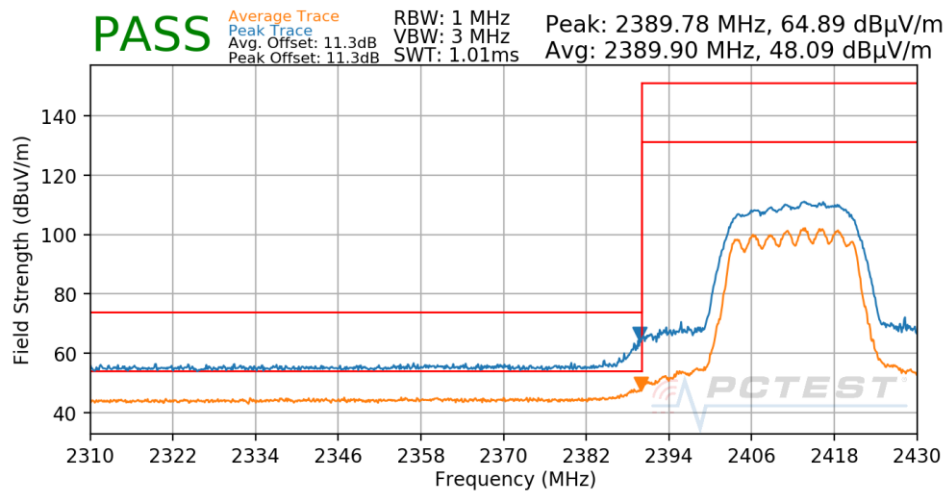
FCC ID: BCGA2428	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2004270033-05.BCG	Test Dates: 05/01/2020-07/22/2020	EUT Type: Tablet Device	Page 95 of 107

7.7.6 CDD - Radiated Restricted Band Edge Measurements

§15.205 §15.209; RSS-Gen [8.9]

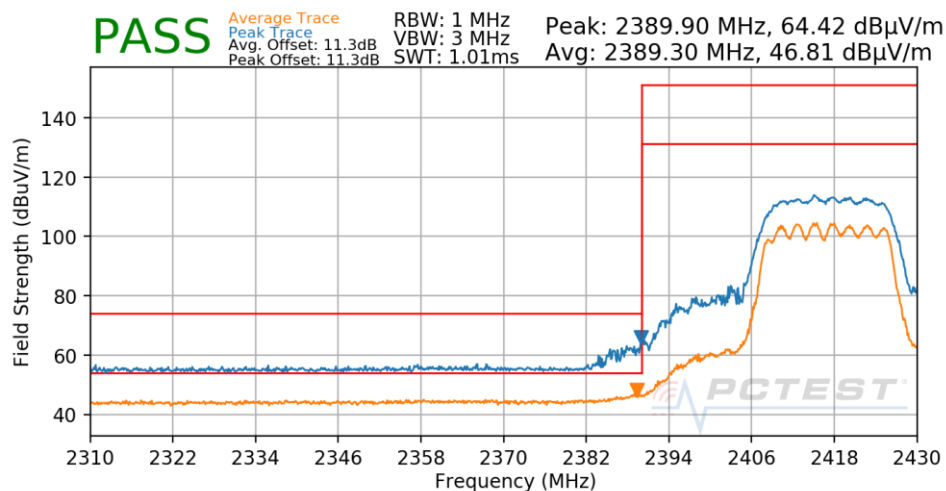
The radiated restricted band edge measurements are measured with an EMI test receiver connected to the receive antenna while the EUT is transmitting.

Worst Case Mode:	802.11n
Worst Case Transfer Rate:	MCS8
Distance of Measurements:	3 Meters
Operating Frequency:	2412MHz
Channel:	1



Plot 7-122. Radiated Restricted Lower Band Edge Measurement CDD

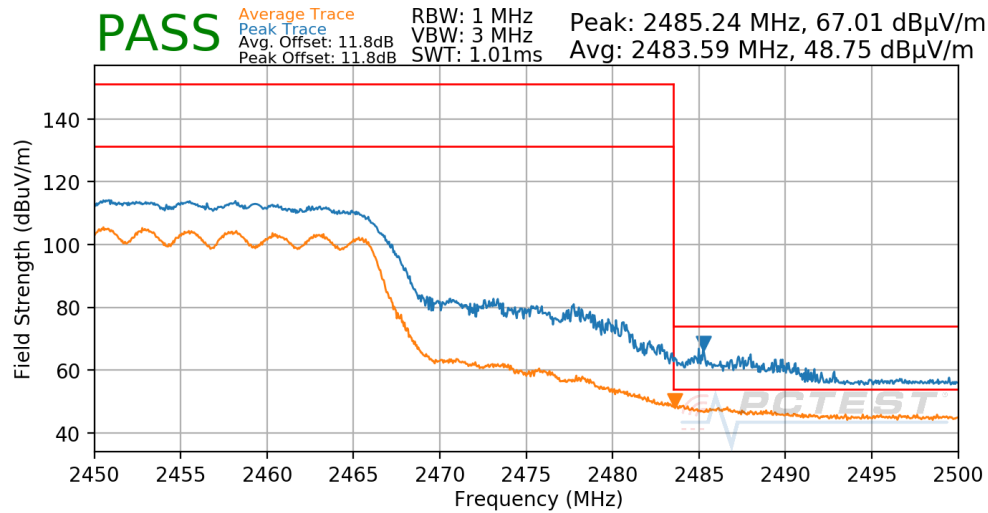
Worst Case Mode:	802.11n
Worst Case Transfer Rate:	MCS8
Distance of Measurements:	3 Meters
Operating Frequency:	2417MHz
Channel:	2



Plot 7-123. Radiated Restricted Lower Band Edge Measurement CDD

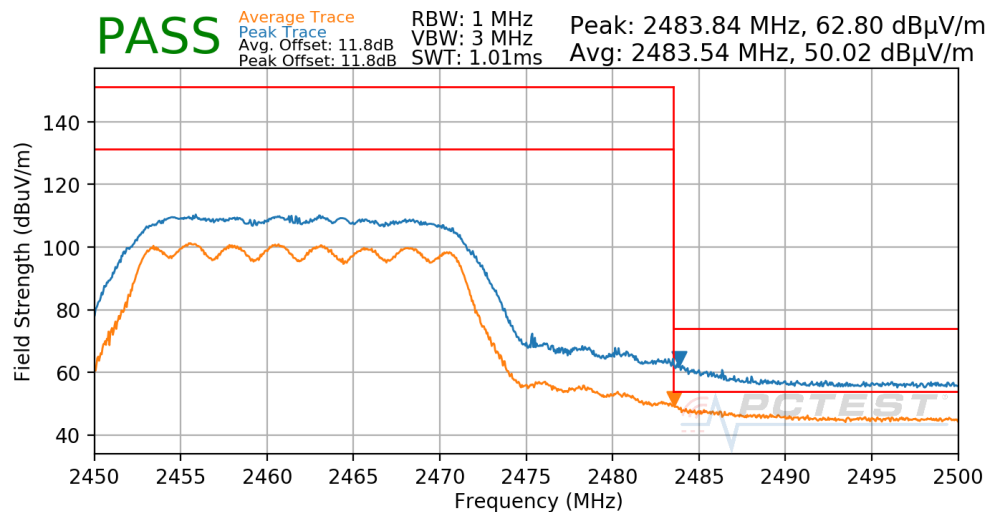
FCC ID: BCGA2428	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2004270033-05.BCG	Test Dates: 05/01/2020-07/22/2020	EUT Type: Tablet Device	Page 96 of 107

Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS8
Distance of Measurements: 3 Meters
Operating Frequency: 2457MHz
Channel: 10



Plot 7-124. Radiated Restricted Upper Band Edge Measurement CDD

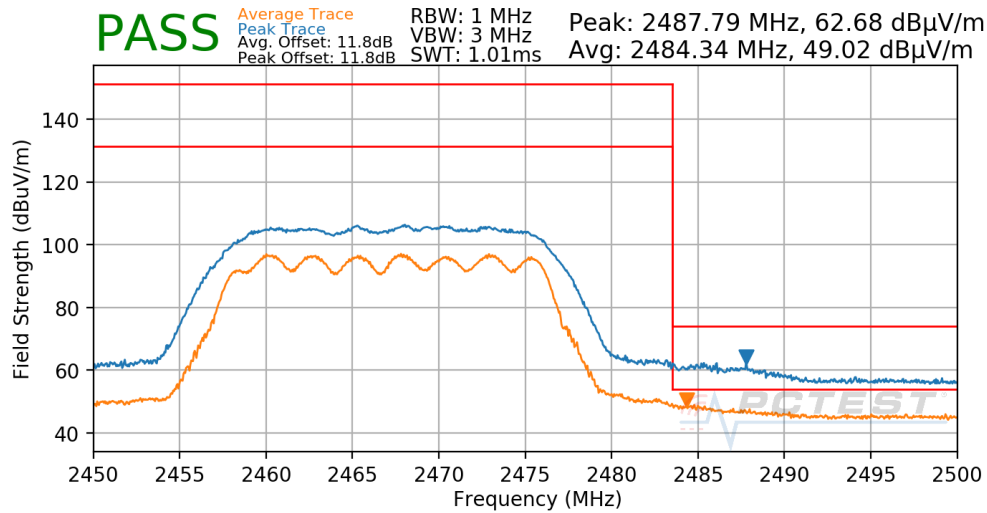
Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS8
Distance of Measurements: 3 Meters
Operating Frequency: 2462MHz
Channel: 11



Plot 7-125. Radiated Restricted Upper Band Edge Measurement CDD

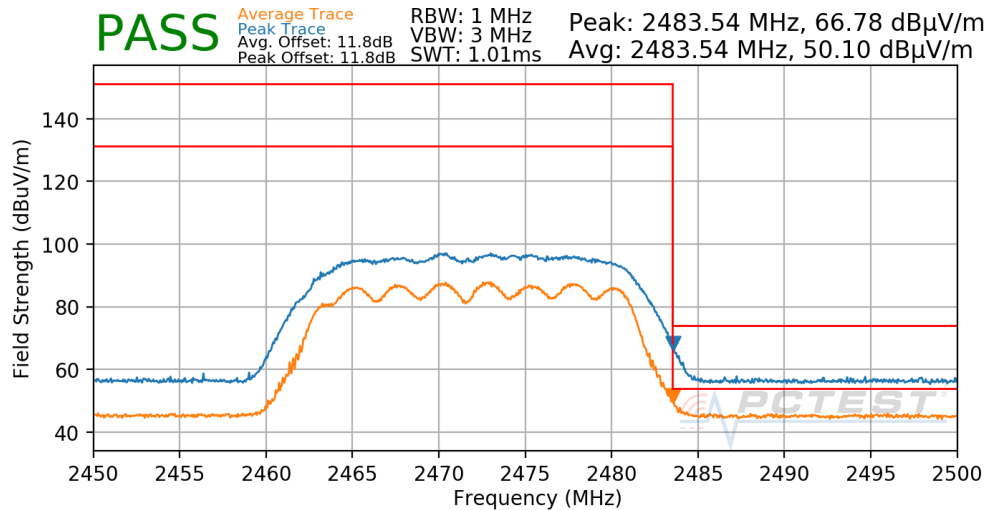
FCC ID: BCGA2428	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS8
Distance of Measurements: 3 Meters
Operating Frequency: 2467MHz
Channel: 12



Plot 7-126. Radiated Restricted Upper Band Edge Measurement CDD

Worst Case Mode: 802.11n
Worst Case Transfer Rate: MCS8
Distance of Measurements: 3 Meters
Operating Frequency: 2472MHz
Channel: 13



Plot 7-127. Radiated Restricted Upper Band Edge Measurement CDD

FCC ID: BCGA2428	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2004270033-05.BCG	Test Dates: 05/01/2020-07/22/2020	EUT Type: Tablet Device	Page 98 of 107

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 7-25 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 7-25. 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

FCC ID: BCGA2428		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Test Setup

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

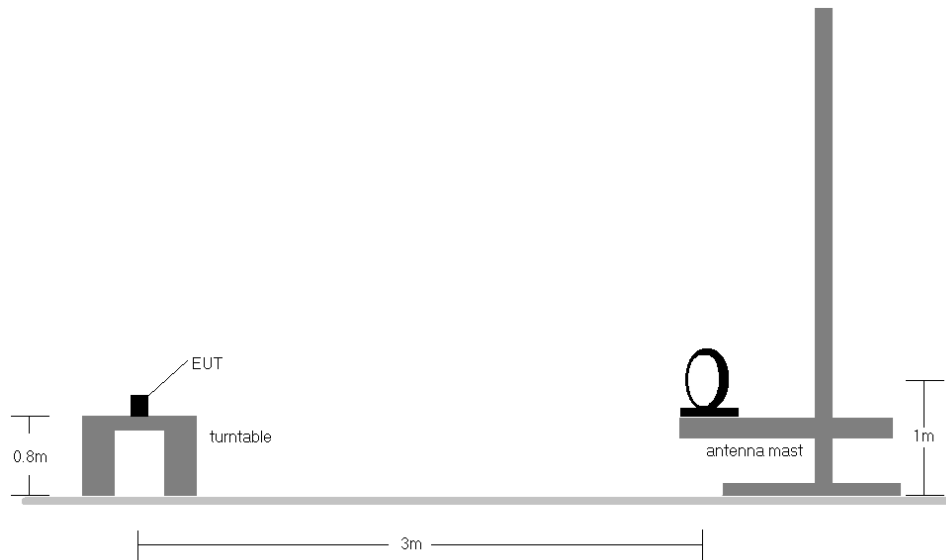


Figure 7-7. Radiated Test Setup < 30Mhz

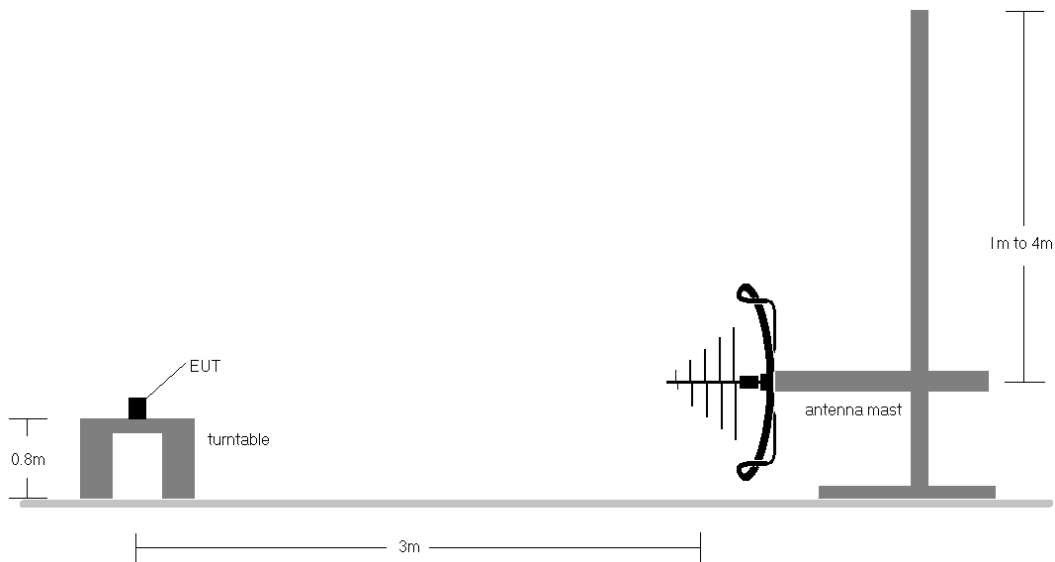


Figure 7-8. Radiated Test Setup < 1GHz

FCC ID: BCGA2428	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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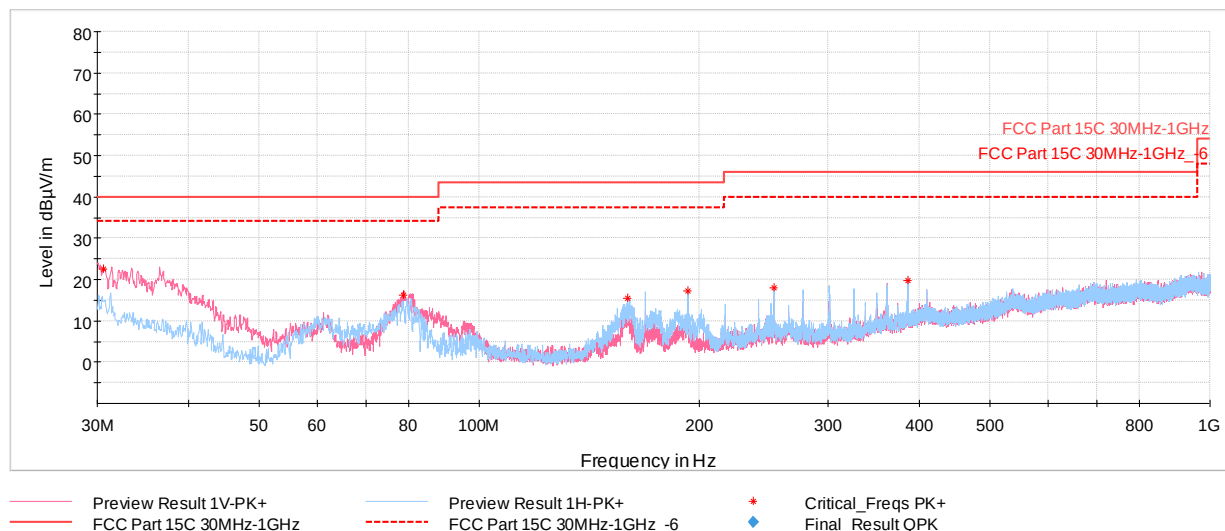
Test Notes

1. All emissions lying in restricted bands specified in §15.205 and RSS-Gen(8.10) are below the limit shown in Table 7-25.
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. The worst-case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
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. 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
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. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. There were no emissions detected in the 30MHz – 1GHz frequency range, as shown in the subsequent plots.
10. All antenna configs were investigated and only the worst case is reported.

FCC ID: BCGA2428	 PCTEST Proud to be part of  element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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CDD Radiated Spurious Emissions Measurements (Below 1GHz)

§15.209; RSS-Gen [8.9]



Plot 7-128. Radiated Spurious Emissions below 1GHz CDD Ch.6, 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]
30.58	Max Peak	V	100	34	-66.88	-17.71	22.41	40.00	-17.59
78.69	Max Peak	V	100	245	-64.05	-26.76	16.19	40.00	-23.81
159.69	Max Peak	H	100	220	-69.38	-22.21	15.41	43.52	-28.11
192.86	Max Peak	H	100	344	-66.92	-22.87	17.21	43.52	-26.31
253.20	Max Peak	H	100	275	-69.29	-19.80	17.91	46.02	-28.11
385.75	Max Peak	H	100	239	-72.17	-15.06	19.77	46.02	-26.25

Table 7-26. Radiated Spurious Emissions below 1GHz CDD Ch.6, with AC/DC Adapter

FCC ID: BCGA2428	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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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 7-27. Conducted Limits

*Decreases with the logarithm of the frequency.

Test Procedures Used

ANSI C63.10-2013, 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

FCC ID: BCGA2428		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Test Setup

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

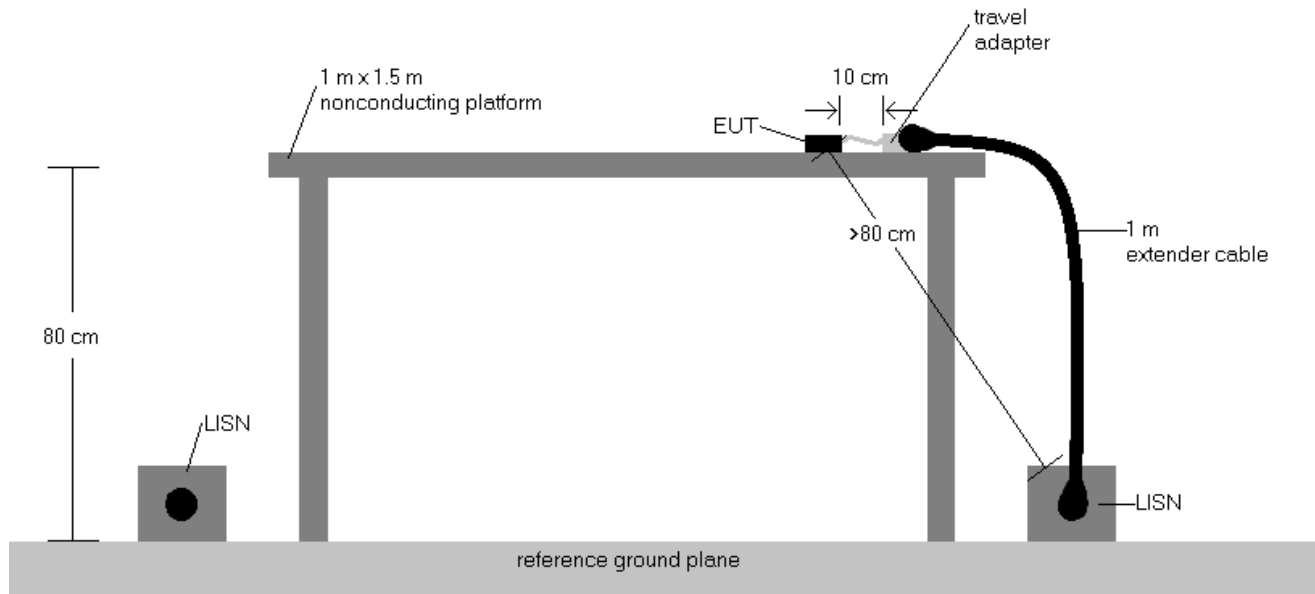
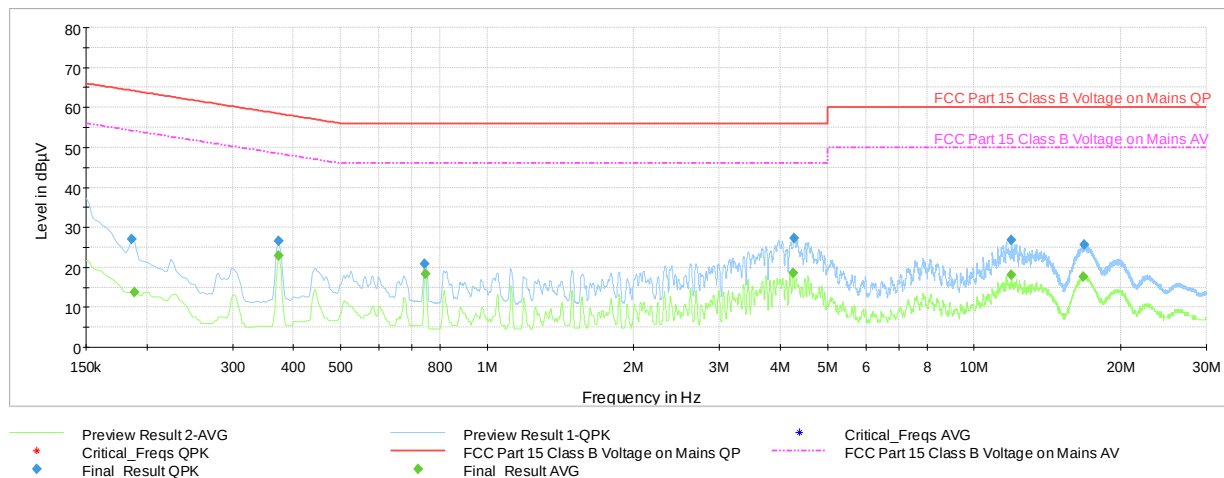


Figure 7-9. Radiated Measurement Setup

Test Notes

- 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.
- Both configurations below were investigated, and the worst case has been reported.
 - EUT powered by AC/DC adaptor via USB-C cable with wire charger
 - EUT powered by host PC via USB-C cable with wire charger
- The limit for an intentional radiator from 150kHz to 30MHz are specified in Part 15.207 and RSS-Gen(8.8).
- Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
- QP/AV Level (dBμV) = QP/AV Analyzer/Receiver Level (dBμV) + Corr. (dB)
- Margin (dB) = QP/AV Level (dBμV) - QP/AV Limit (dBμV)
- Traces shown in plot are made using quasi peak and average detectors.
- Deviations to the Specifications: None.

FCC ID: BCGA2428	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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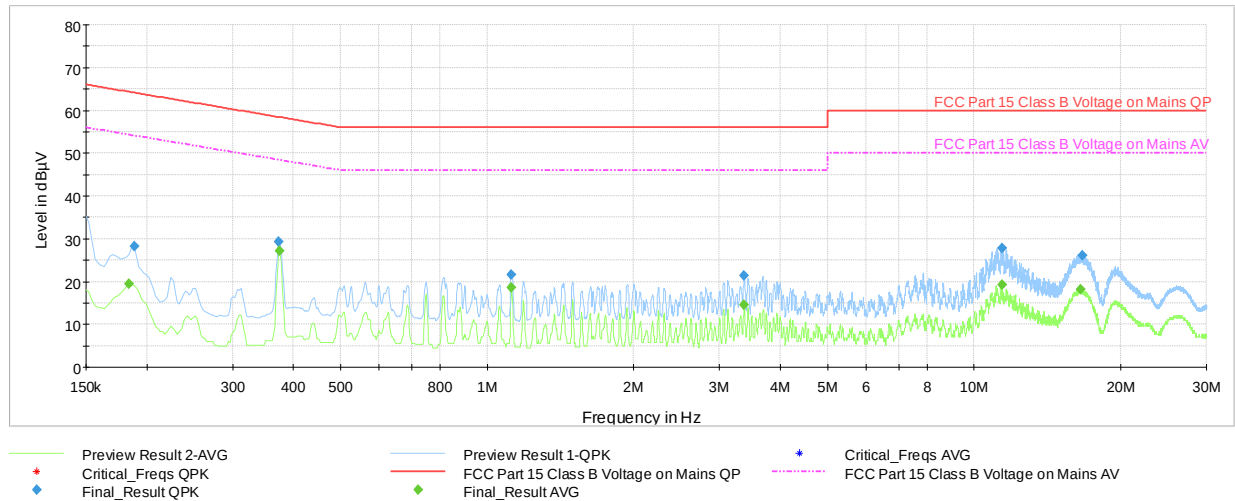


Plot 7-129. Line Conducted Plot with 802.11n Ch.6 (L1, with Laptop)

Frequency [MHz]	Process State	QuasiPeak [dBμV]	Average [dBμV]	Limit [dBμV]	Margin [dB]	Line	PE
0.186	FINAL	27.0	—	64.21	-37.23	L1	GND
0.188	FINAL	—	13.67	54.11	-40.44	L1	GND
0.373	FINAL	26.7	—	58.44	-31.79	L1	GND
0.373	FINAL	—	22.94	48.44	-25.50	L1	GND
0.744	FINAL	20.9	—	56.00	-35.08	L1	GND
0.746	FINAL	—	18.25	46.00	-27.75	L1	GND
4.250	FINAL	—	18.61	46.00	-27.39	L1	GND
4.263	FINAL	27.2	—	56.00	-28.84	L1	GND
11.936	FINAL	—	18.21	50.00	-31.79	L1	GND
11.940	FINAL	26.9	—	60.00	-33.11	L1	GND
16.782	FINAL	—	17.61	50.00	-32.39	L1	GND
16.811	FINAL	25.6	—	60.00	-34.37	L1	GND

Table 7-28. Line Conducted Data with 802.11n Ch.6 (L1, with Laptop)

FCC ID: BCGA2428	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Plot 7-130. Line Conducted Plot with 802.11n Ch.6 (N, with Laptop)

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.184	FINAL	—	19.37	54.31	-34.94	N	GND
0.188	FINAL	28.3	—	64.11	-35.85	N	GND
0.373	FINAL	29.2	—	58.44	-29.24	N	GND
0.375	FINAL	—	27.13	48.39	-21.26	N	GND
1.122	FINAL	21.7	—	56.00	-34.31	N	GND
1.122	FINAL	—	18.67	46.00	-27.33	N	GND
3.370	FINAL	21.3	—	56.00	-34.71	N	GND
3.372	FINAL	—	14.49	46.00	-31.51	N	GND
11.400	FINAL	—	19.20	50.00	-30.80	N	GND
11.414	FINAL	27.9	—	60.00	-32.10	N	GND
16.571	FINAL	—	18.27	50.00	-31.73	N	GND
16.652	FINAL	26.2	—	60.00	-33.82	N	GND

Table 7-29. Line Conducted Data with 802.11n Ch.6 (N, with Laptop)

FCC ID: BCGA2428	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Apple Tablet Device FCC ID: BCGA2428** 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.

FCC ID: BCGA2428	 PCTEST Proud to be part of  element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2004270033-05.BCG	Test Dates: 05/01/2020-07/22/2020	EUT Type: Tablet Device	Page 107 of 107