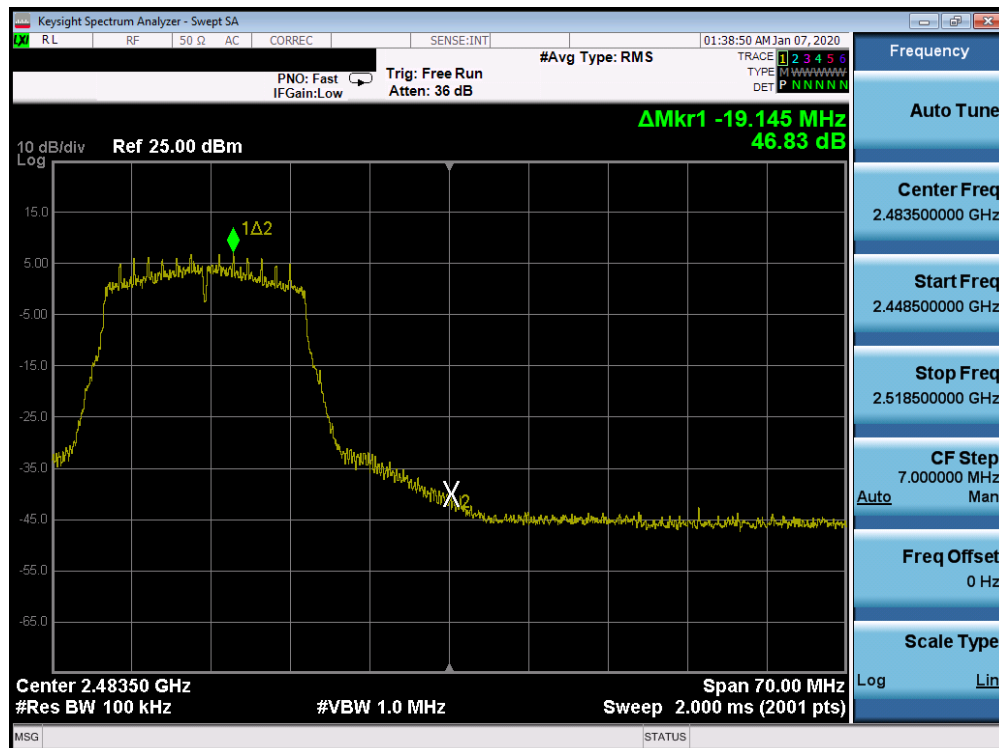
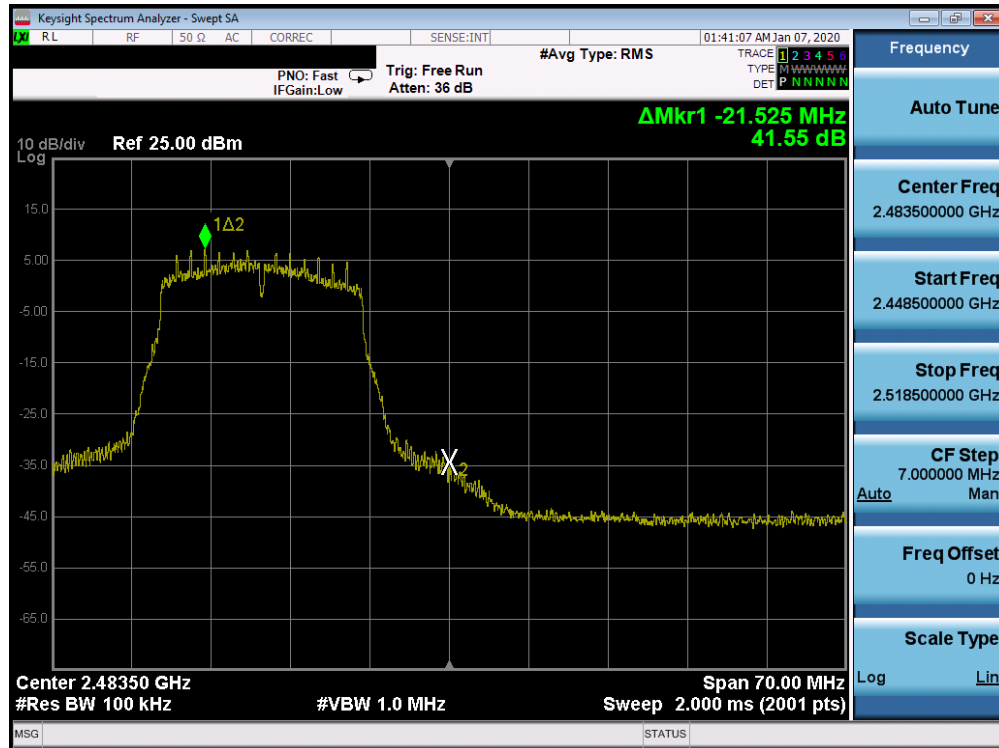


Plot 7-69. Band Edge Plot SISO CORE 1 (802.11n (2.4GHz) – Ch. 1)

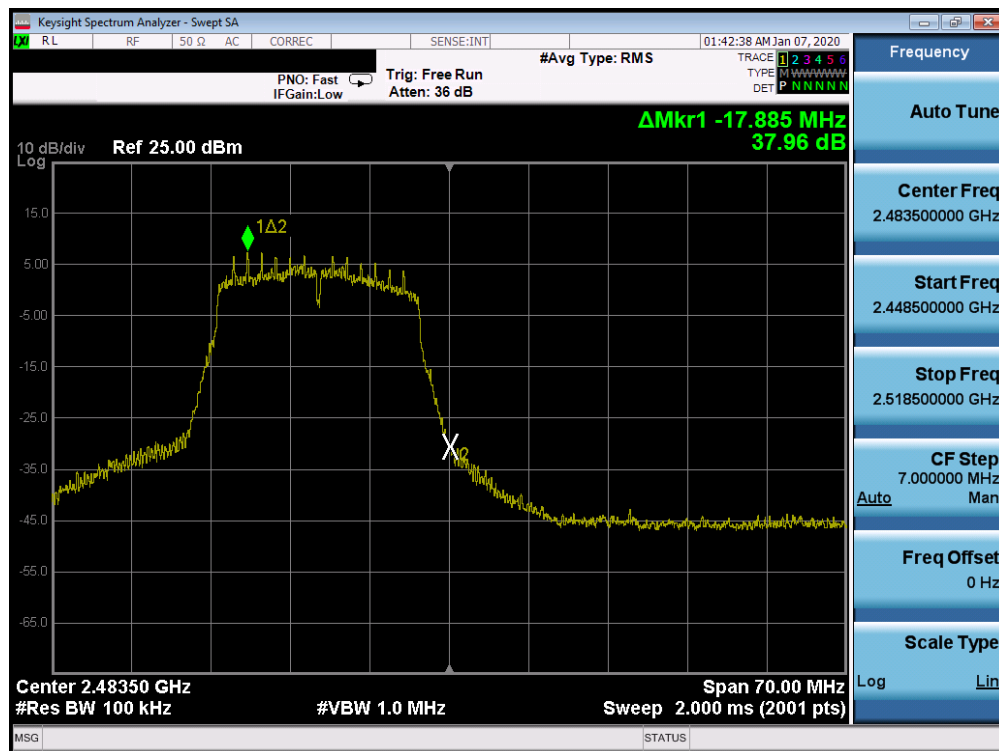


Plot 7-70. Band Edge Plot SISO CORE 1 (802.11n (2.4GHz) – Ch. 11)

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 59 of 98



Plot 7-71. Band Edge Plot SISO CORE 1 (802.11n – Ch. 12)



Plot 7-72. Band Edge Plot SISO CORE 1 (802.11n – Ch. 13)

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 60 of 98

## 7.6 Conducted Spurious Emissions

§15.247(d); RSS-247 [5.5]

### Test Overview and Limit

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. For the following out of band conducted spurious emissions plots, the EUT was investigated in all available data rates for “b”, “g”, and “n” modes. The worst case spurious emissions for the 2.4GHz band were found while transmitting in “b” mode at 1 Mbps and are shown in the plots below.

***The limit for out-of-band spurious emissions at the band edge is 20dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100kHz bandwidth per the procedure in Section 11.1 of ANSI C63.10-2013 and KDB 558074 D01 v05r02.***

### Test Procedure Used

ANSI C63.10-2013 – Section 11.11.3  
 KDB 558074 D01 v05r02 – Section 8.5  
 ANSI C63.10-2013 – Section 14.3.3  
 KDB 662911 D01 v02r01 – Section E)3)b)

### Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to 25GHz (separated into two plots per channel)
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = Peak
5. Trace mode = max hold
6. Sweep time = auto couple
7. The trace was allowed to stabilize

### Test Setup

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



**Figure 7-5. Test Instrument & Measurement Setup**

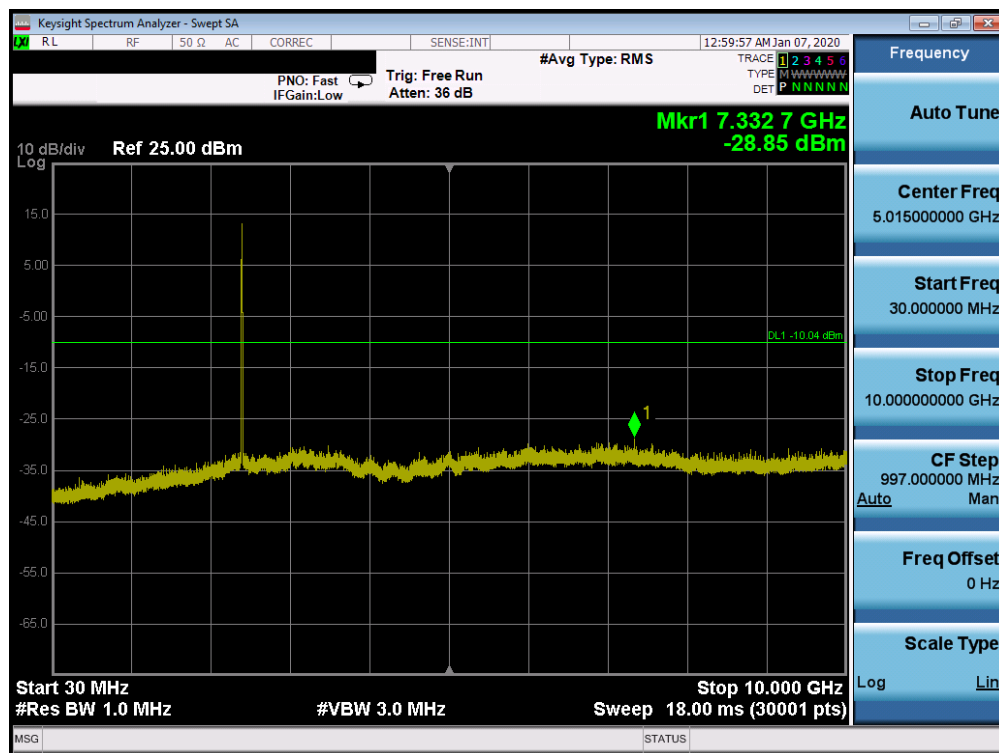
FCC ID: BCGA2068	 <b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 61 of 98

## Test Notes

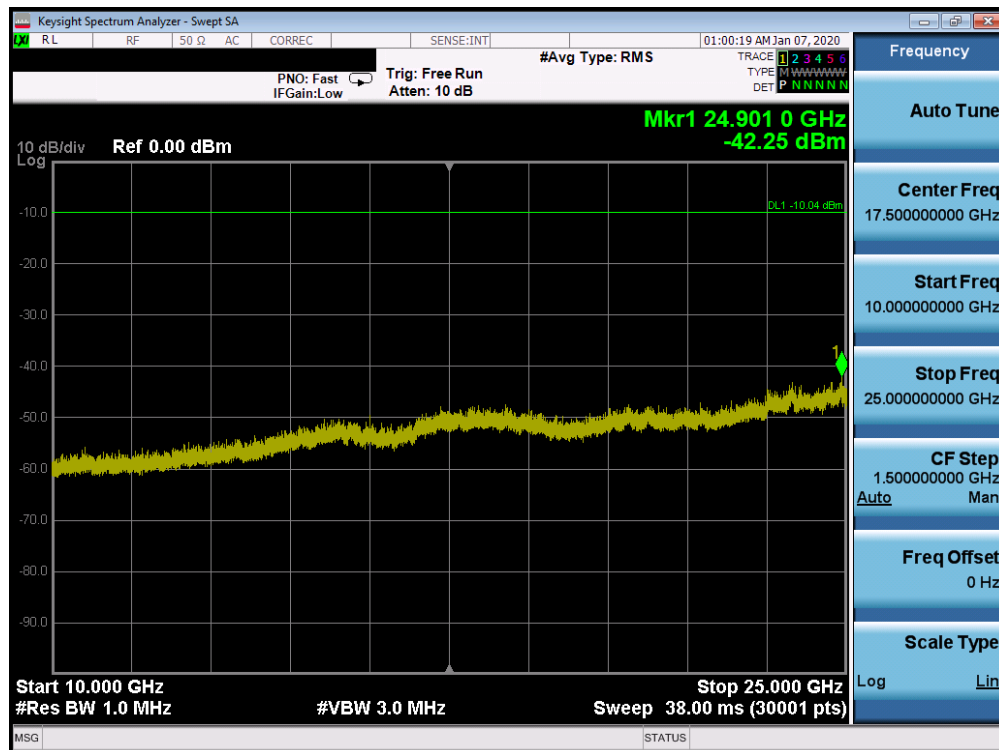
1. RBW was set to 1MHz rather than 100kHz in order to increase the measurement speed.
2. The display line shown in the following plots denotes the limit at 20dB below the fundamental emission level measured in a 100kHz bandwidth. However, since the traces in the following plots are measured with a 1MHz RBW, the display line may not necessarily appear to be 20dB below the level of the fundamental in a 1MHz bandwidth.
3. For plots showing conducted spurious emissions near the limit, the frequencies were investigated with a reduced RBW to ensure that no emissions were present.
4. The conducted spurious emissions were measured to relative limits. Therefore, in accordance with ANSI C63.10-2013 and KDB 662911 D01 v02r01 Section E)3)b), it was unnecessary to show compliance through the summation of test results of the individual outputs.
5. All antenna configurations were investigated and only the worst case is reported.

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 62 of 98

## SISO Core 0 Conducted Spurious Emission

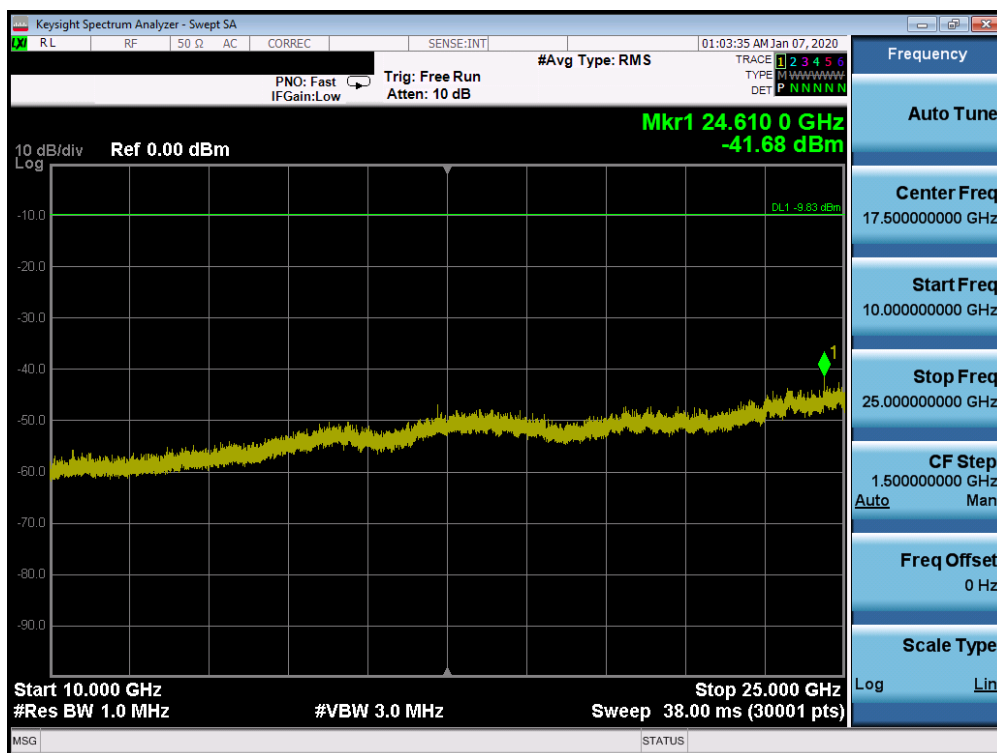
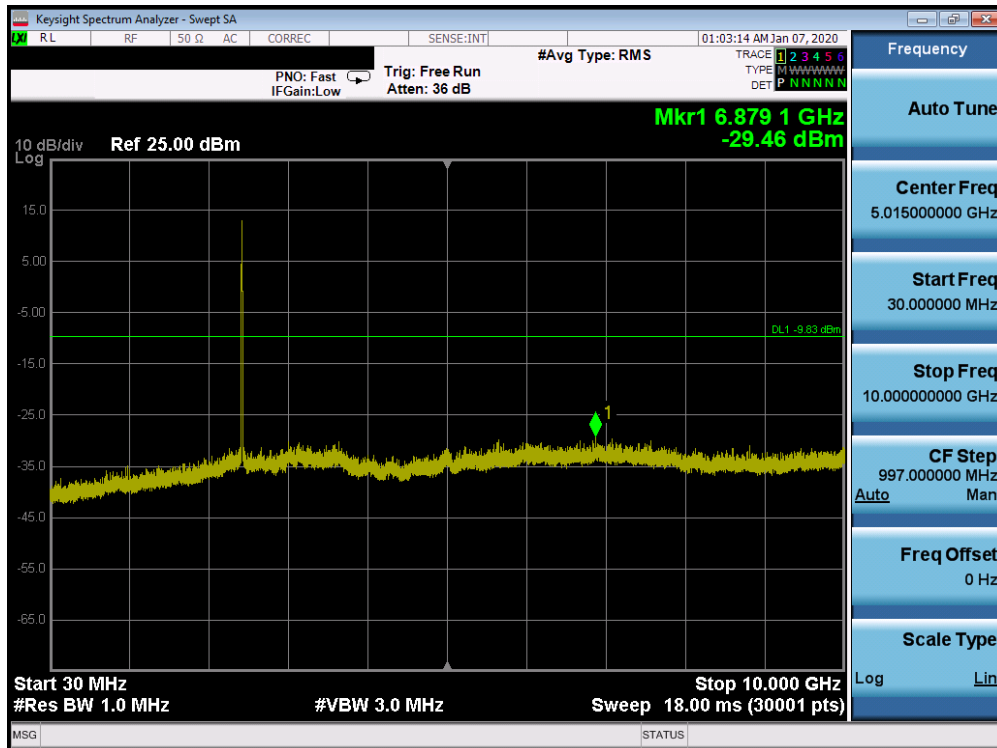


Plot 7-73. Conducted Spurious Plot SISO CORE0 (802.11b – Ch. 1)

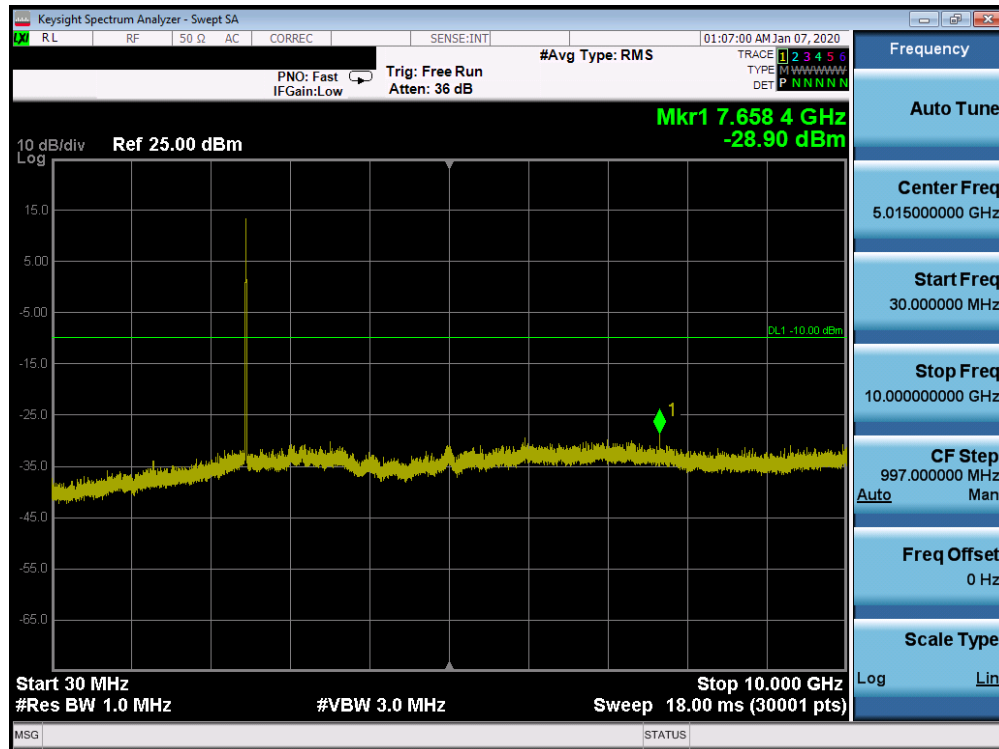


Plot 7-74. Conducted Spurious Plot SISO CORE0 (802.11b – Ch. 1)

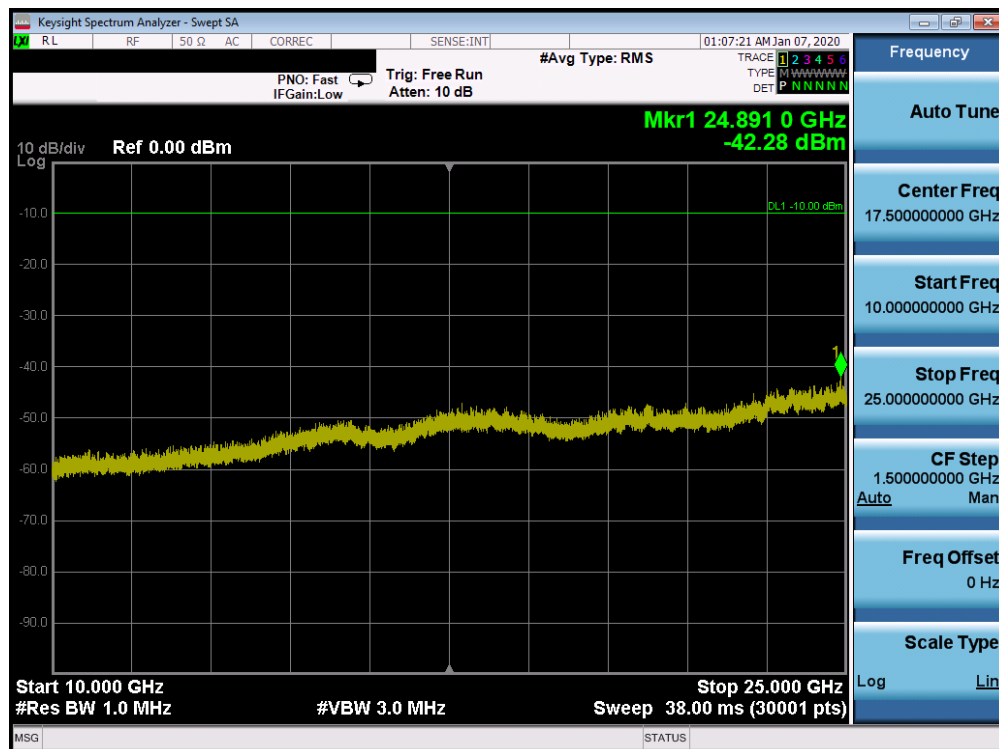
FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 63 of 98



FCC ID: BCGA2068	 <b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1C1912170051-06.BCG	<b>Test Dates:</b> 12/10/2019 - 02/11/2020	<b>EUT Type:</b> Tablet Device	Page 64 of 98



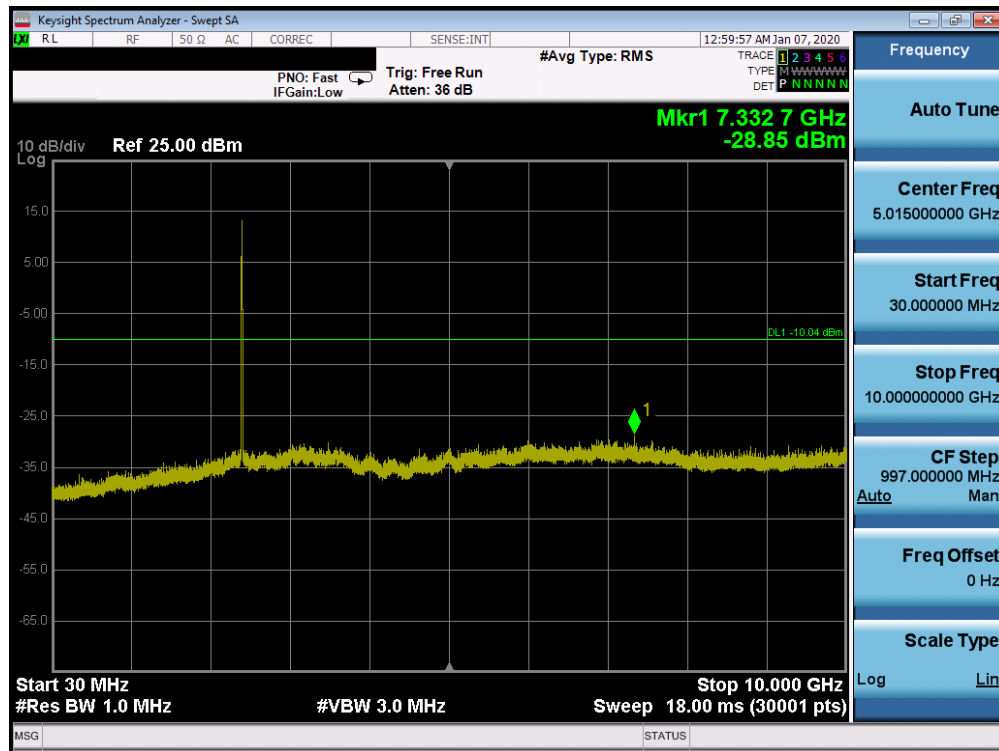
Plot 7-77. Conducted Spurious Plot SISO CORE0 (802.11b – Ch. 11)



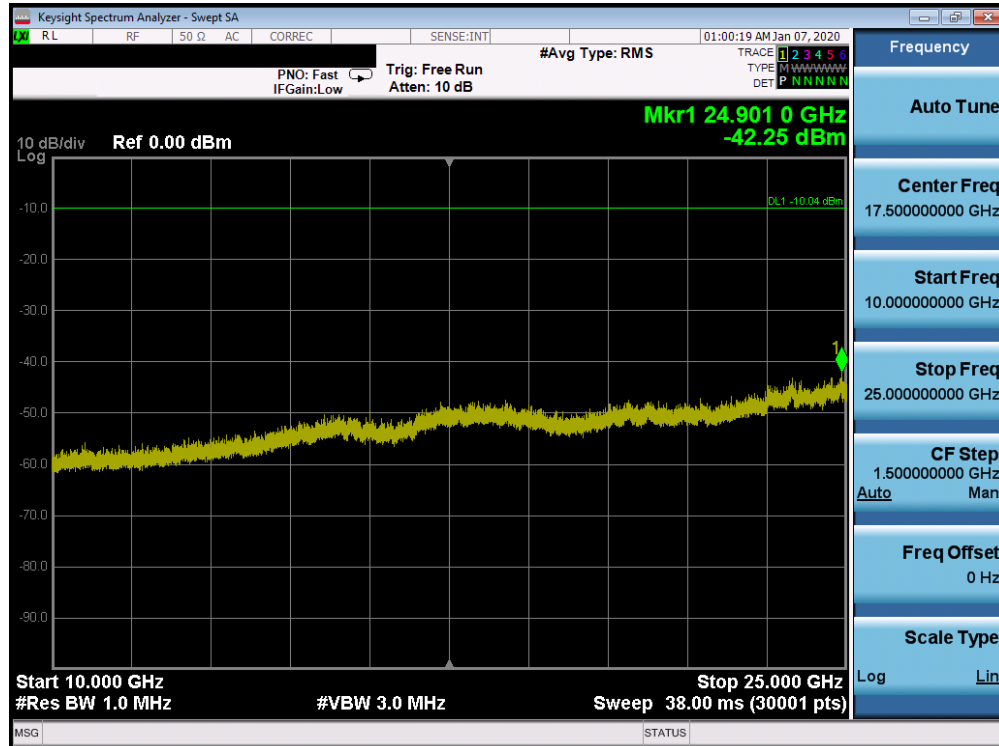
Plot 7-78. Conducted Spurious Plot SISO CORE0 (802.11b – Ch. 11)

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 65 of 98

## SISO Core 1 Conducted Spurious Emissions



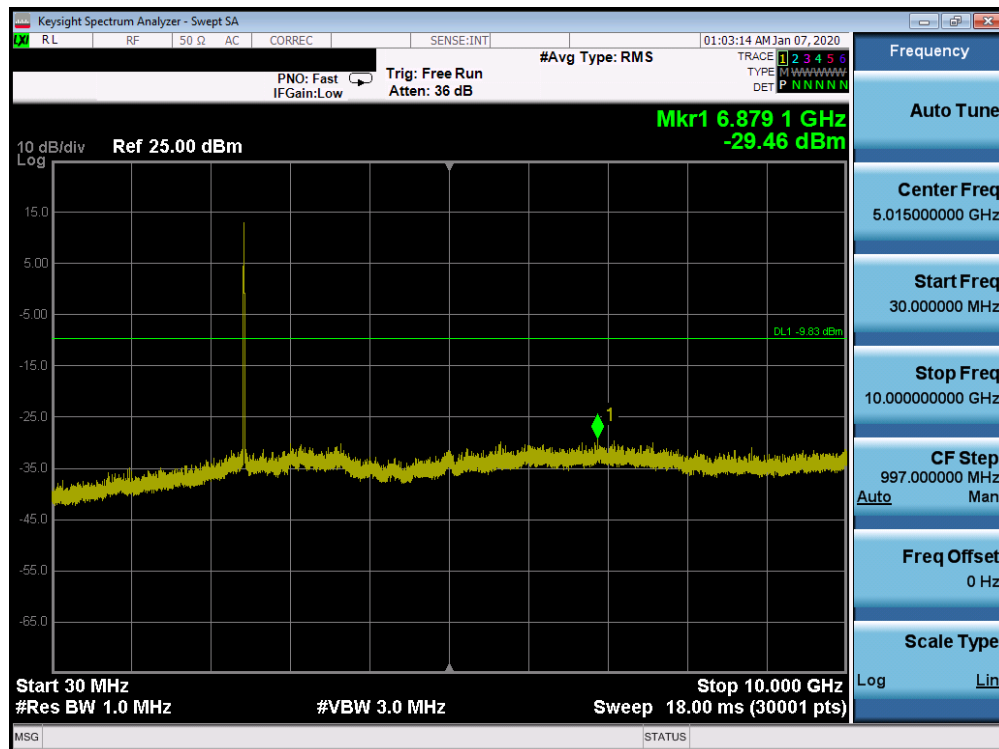
Plot 7-79. Conducted Spurious Plot SISO CORE1 (802.11b – Ch. 1)



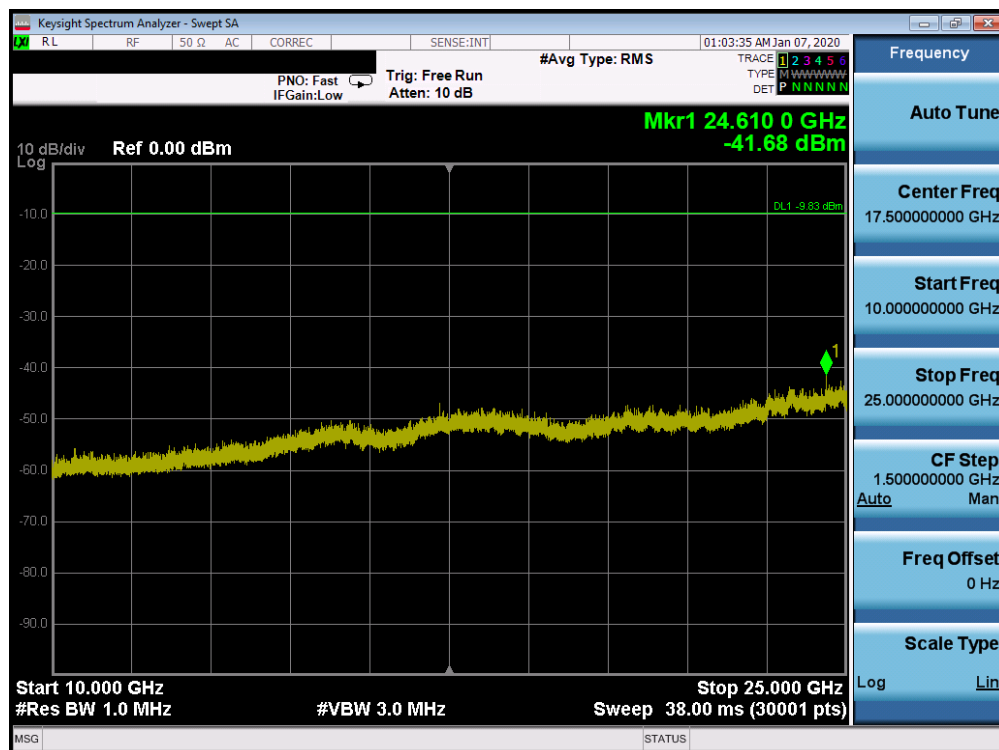
Plot 7-80. Conducted Spurious Plot SISO CORE1 (802.11b – Ch. 1)

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 66 of 98



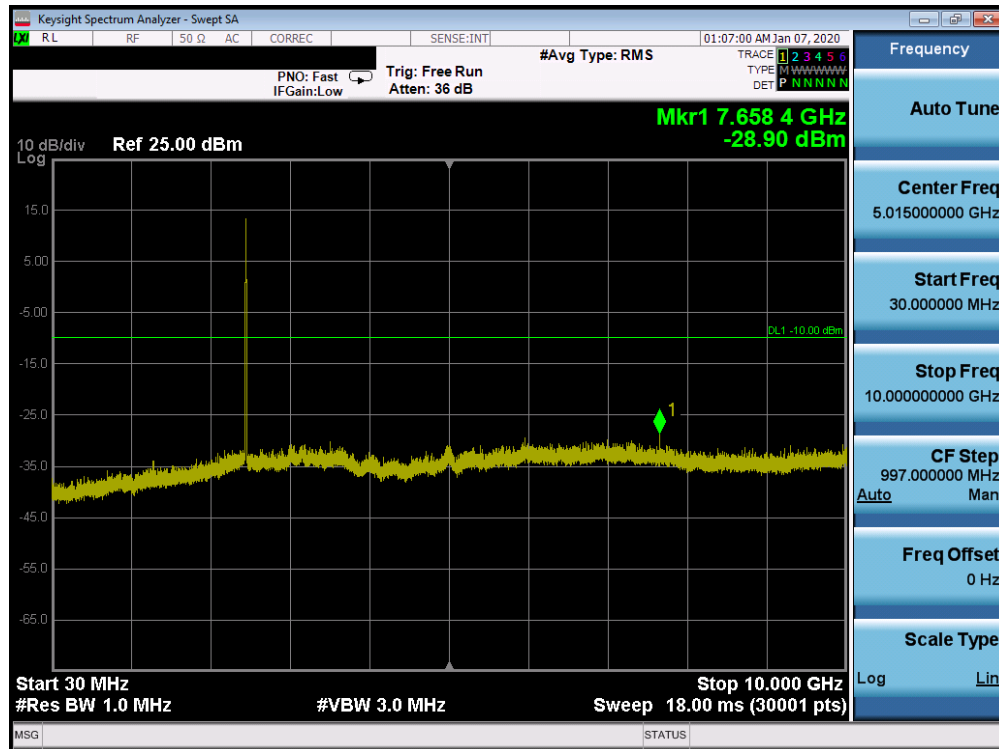


Plot 7-81. Conducted Spurious Plot SISO CORE1 (802.11b – Ch. 6)

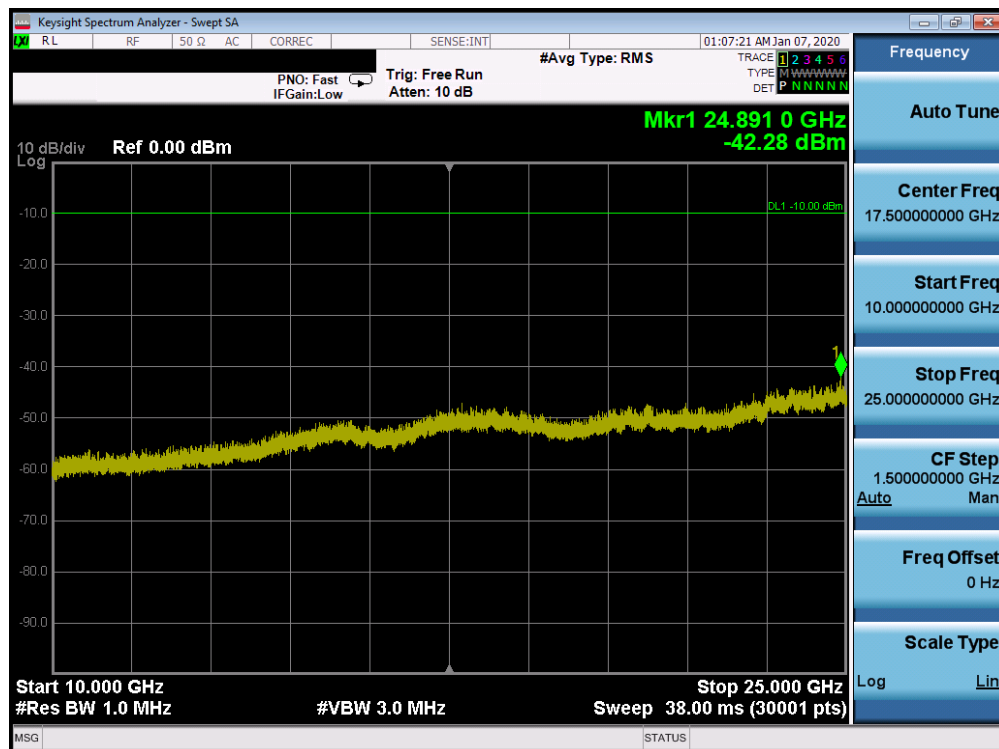


Plot 7-82. Conducted Spurious Plot SISO CORE1 (802.11b – Ch. 6)

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 67 of 98



Plot 7-83. Conducted Spurious Plot SISO CORE1 (802.11b – Ch. 11)



Plot 7-84. Conducted Spurious Plot SISO CORE1 (802.11b – Ch. 11)

FCC ID: BCGA2068	<b>PCTEST</b>	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 68 of 98

## 7.7 Radiated Spurious Emission Measurements – 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 7-15 per Section 15.209 and RSS-Gen (8.9).***

Frequency	Field Strength [ $\mu\text{V/m}$ ]	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 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  $\geq 2 \times \text{span/RBW}$ )
6. Sweep time = auto
7. Trace (RMS) averaging was performed over at least 100 traces

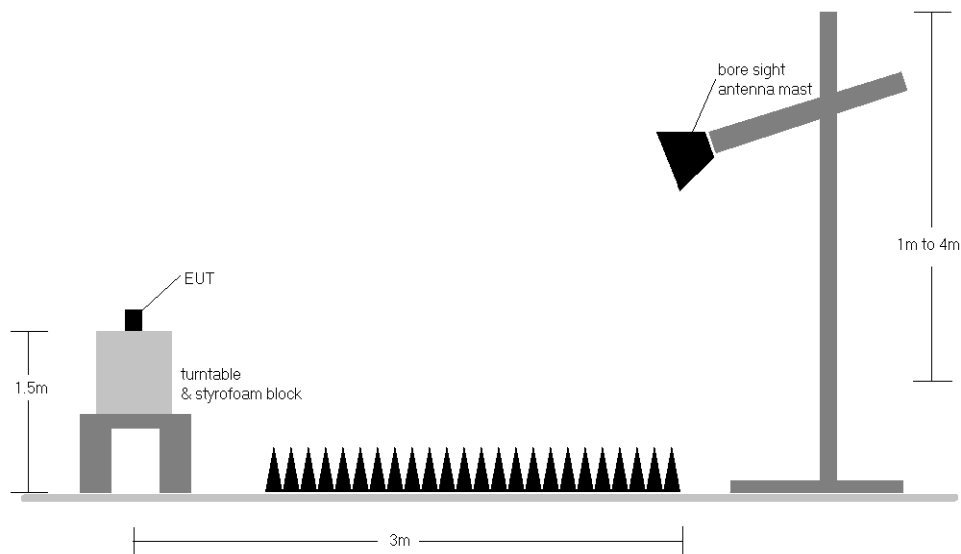
#### Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious 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

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 69 of 98

## Test Setup

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



**Figure 7-6. Test Instrument & 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 7-15.
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. Emissions below 18GHz were measured at a 3 meter 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 configurations were investigated and only the worst case is reported.

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 70 of 98

## Sample Calculations

### Determining Spurious Emissions Levels

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

### Radiated Band Edge Measurement Offset

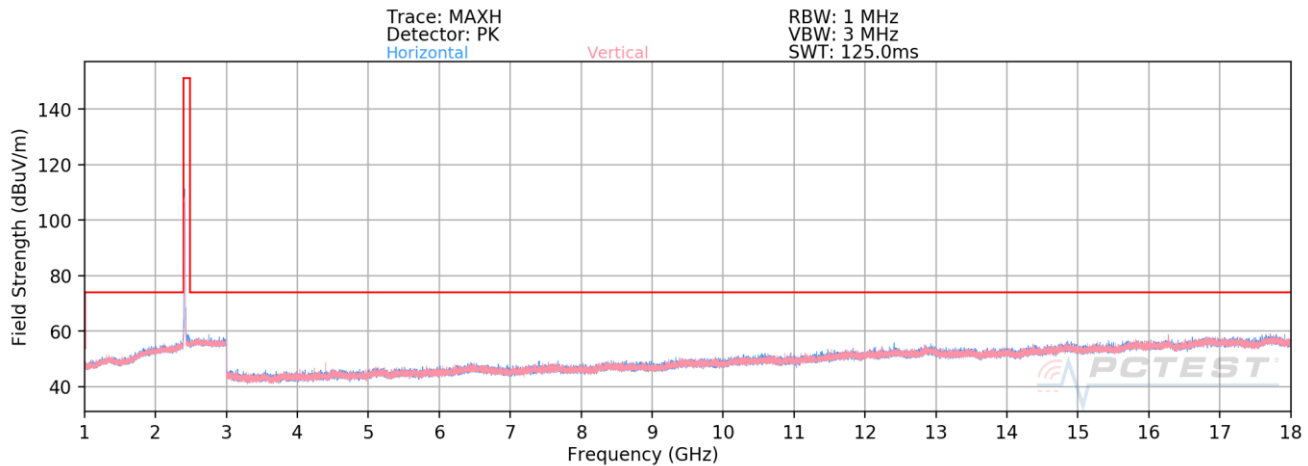
- The amplitude offset shown in the radiated restricted band edge plots in Section 7.7 was calculated using the formula:

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

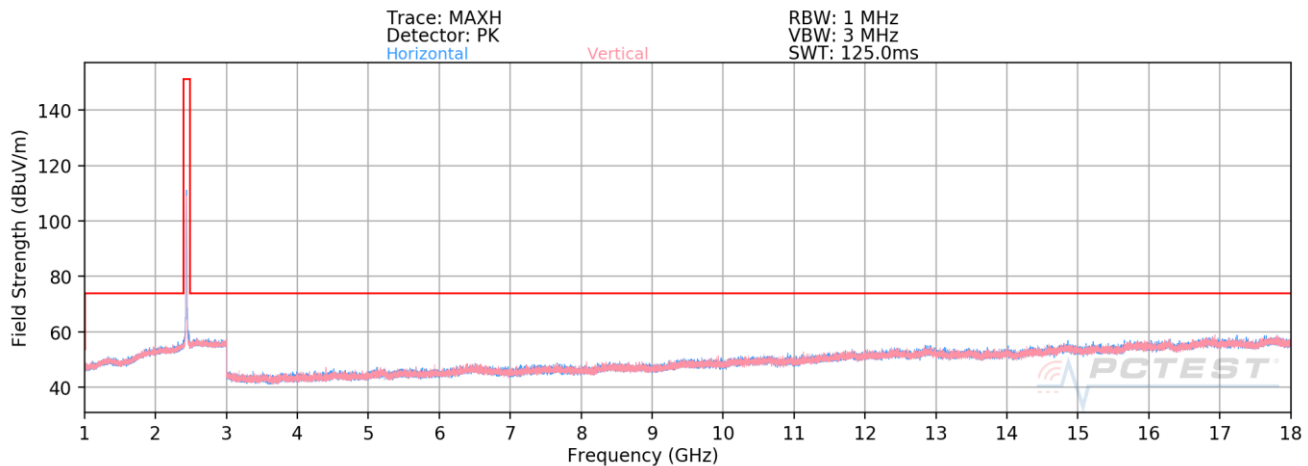
FCC ID: BCGA2068	 <b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1C1912170051-06.BCG	<b>Test Dates:</b> 12/10/2019 - 02/11/2020	<b>EUT Type:</b> Tablet Device	Page 71 of 98

## 7.7.1 SISO Core 0 Radiated Spurious Emission Measurements

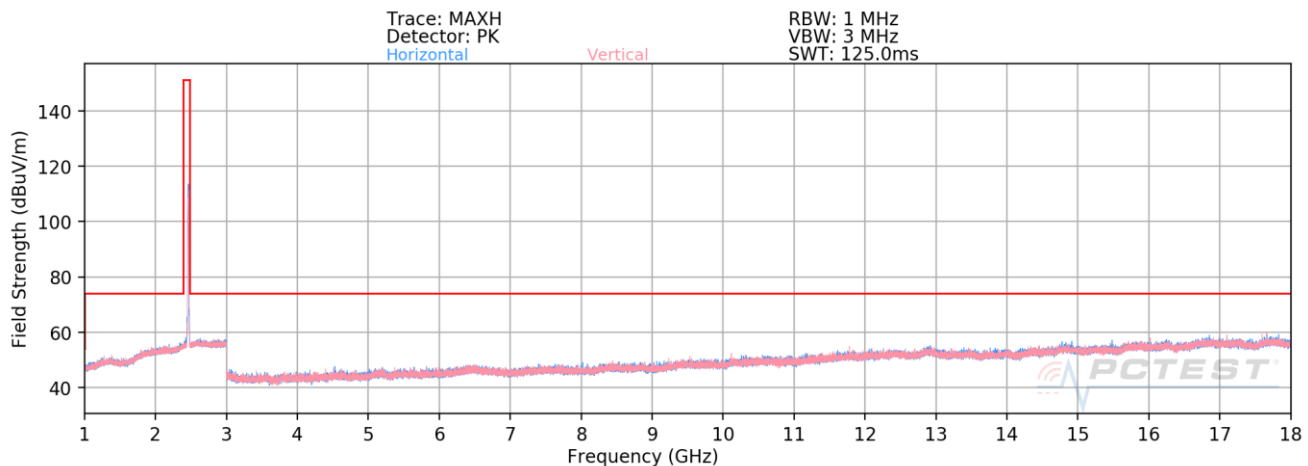
§15.247(d) §15.205 & §15.209; RSS-Gen [8.9]



Plot 7-85. Radiated Spurious Plot above 1GHz SISO CORE 0 (802.11b – Ch. 1)



Plot 7-86. Radiated Spurious Plot above 1GHz SISO CORE 0 (802.11b – Ch. 6)



Plot 7-87. Radiated Spurious Plot above 1GHz SISO CORE 0 (802.11b – Ch. 11)

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 72 of 98

# 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	H	-	-	-78.45	4.95	33.50	53.98	-20.48
4824.00	Peak	H	-	-	-66.95	4.95	45.00	73.98	-28.98
12060.00	Avg	H	-	-	-84.43	17.98	40.55	53.98	-13.43
12060.00	Peak	H	-	-	-72.98	17.98	52.00	73.98	-21.98

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	H	-	-	-78.42	5.08	33.66	53.98	-20.32
4874.00	Peak	H	-	-	-66.78	5.08	45.30	73.98	-28.68
7311.00	Avg	H	-	-	-80.29	9.18	35.89	53.98	-18.09
7311.00	Peak	H	-	-	-69.47	9.18	46.71	73.98	-27.27
12185.00	Avg	H	-	-	-84.61	17.89	40.28	53.98	-13.70
12185.00	Peak	H	-	-	-73.80	17.89	51.09	73.98	-22.89

Table 7-17. Radiated Measurements SISO CORE 0

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 73 of 98

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	H	-	-	-77.97	4.82	33.85	53.98	-20.13
4924.00	Peak	H	-	-	-66.58	4.82	45.24	73.98	-28.74
7386.00	Avg	H	-	-	-80.06	9.02	35.96	53.98	-18.02
7386.00	Peak	H	-	-	-68.88	9.02	47.14	73.98	-26.84
12310.00	Avg	H	-	-	-84.84	18.43	40.59	53.98	-13.39
12310.00	Peak	H	-	-	-73.31	18.43	52.12	73.98	-21.86

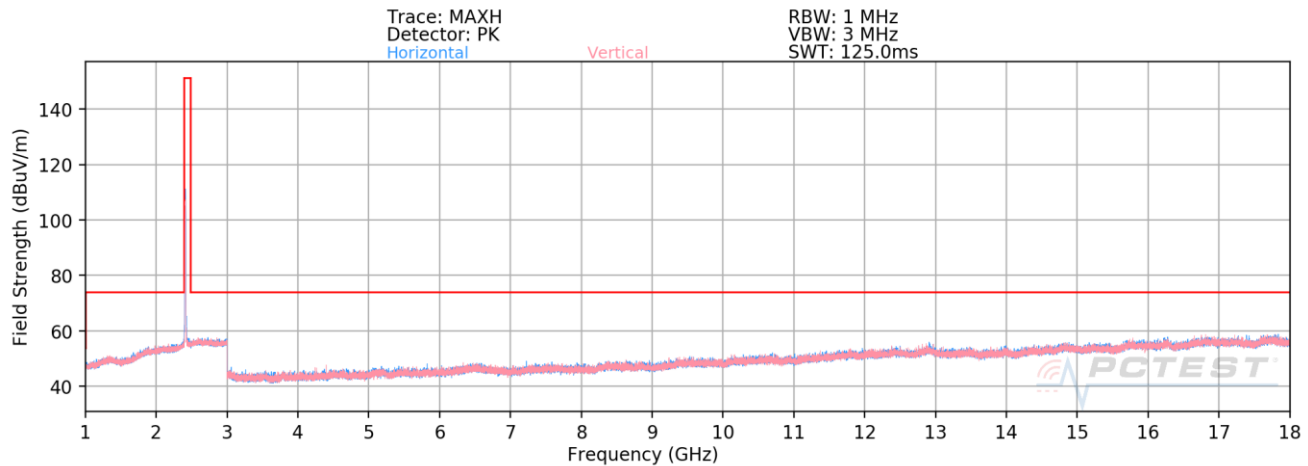
**Table 7-18. Radiated Measurements SISO CORE 0**

FCC ID: BCGA2068	 <b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 74 of 98

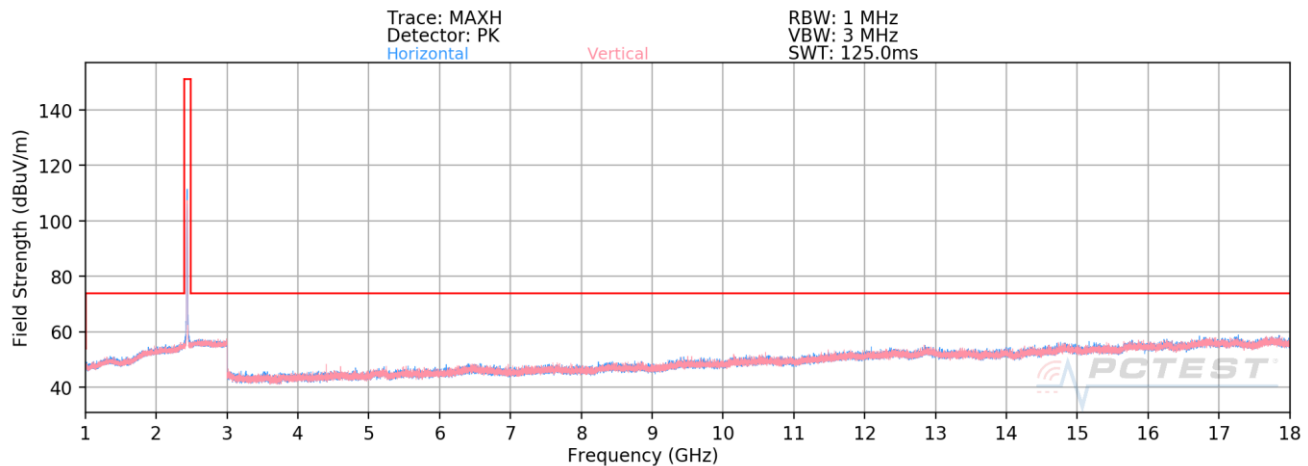


## 7.7.2 SISO Core 1 Radiated Spurious Emission Measurements

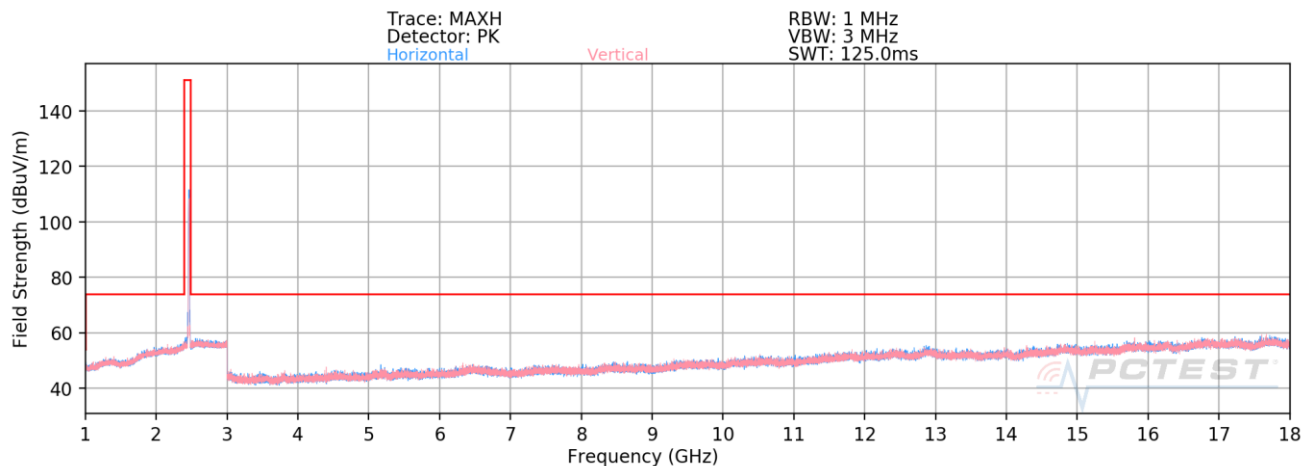
§15.247(d) §15.205 & §15.209; RSS-Gen [8.9]



Plot 7-88. Radiated Spurious Plot above 1GHz SISO CORE 1 (802.11b – Ch. 1)



Plot 7-89. Radiated Spurious Plot above 1GHz SISO CORE 1 (802.11b – Ch. 6)



Plot 7-90. Radiated Spurious Plot above 1GHz SISO CORE 1 (802.11b – Ch. 11)

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 75 of 98

# 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	H	121	332	-76.00	4.95	35.95	53.98	-18.03
4824.00	Peak	H	121	332	-66.07	4.95	45.88	73.98	-28.10
12060.00	Avg	H	-	-	-84.44	17.98	40.54	53.98	-13.44
12060.00	Peak	H	-	-	-72.46	17.98	52.52	73.98	-21.46

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	H	-	-	-78.51	5.08	33.57	53.98	-20.41
4874.00	Peak	H	-	-	-66.71	5.08	45.37	73.98	-28.61
7311.00	Avg	H	-	-	-82.89	9.18	33.29	53.98	-20.69
7311.00	Peak	H	-	-	-72.00	9.18	44.18	73.98	-29.80
12185.00	Avg	H	-	-	-84.30	17.89	40.59	53.98	-13.39
12185.00	Peak	H	-	-	-73.32	17.89	51.57	73.98	-22.41

Table 7-20. Radiated Measurements SISO CORE 1

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 76 of 98

Worst Case Mode: 802.11b  
 Worst Case Transfer Rate: 1 Mbps  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 2462MHz  
 Channel: 11

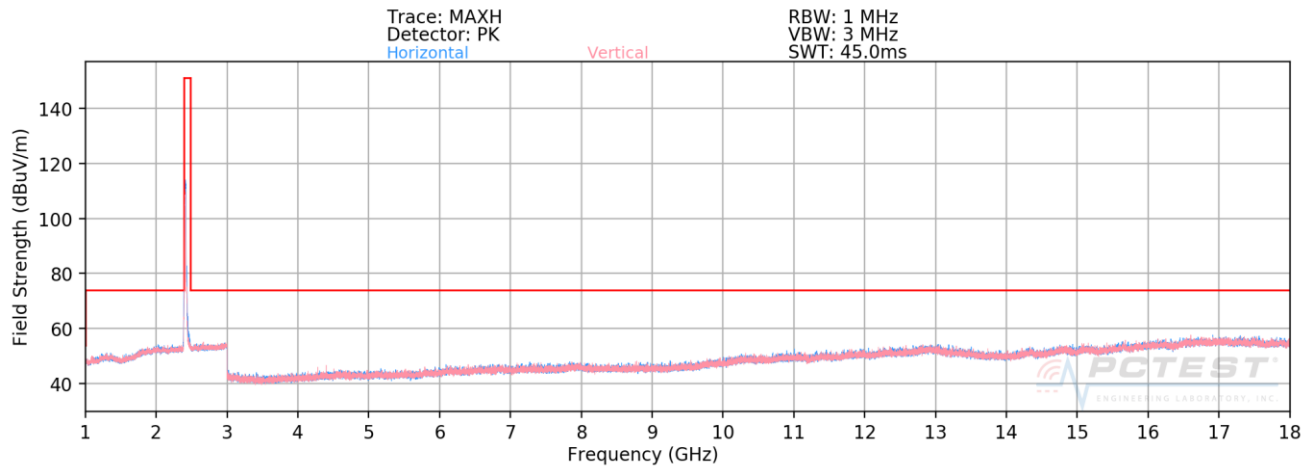
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
4924.00	Avg	H	-	-	-78.23	4.82	33.59	53.98	-20.39
4924.00	Peak	H	-	-	-66.75	4.82	45.07	73.98	-28.91
7386.00	Avg	H	-	-	-80.24	9.02	35.78	53.98	-18.20
7386.00	Peak	H	-	-	-68.09	9.02	47.93	73.98	-26.05
12310.00	Avg	H	-	-	-84.64	18.43	40.79	53.98	-13.19
12310.00	Peak	H	-	-	-73.49	18.43	51.94	73.98	-22.04

**Table 7-21. Radiated Measurements SISO CORE 1**

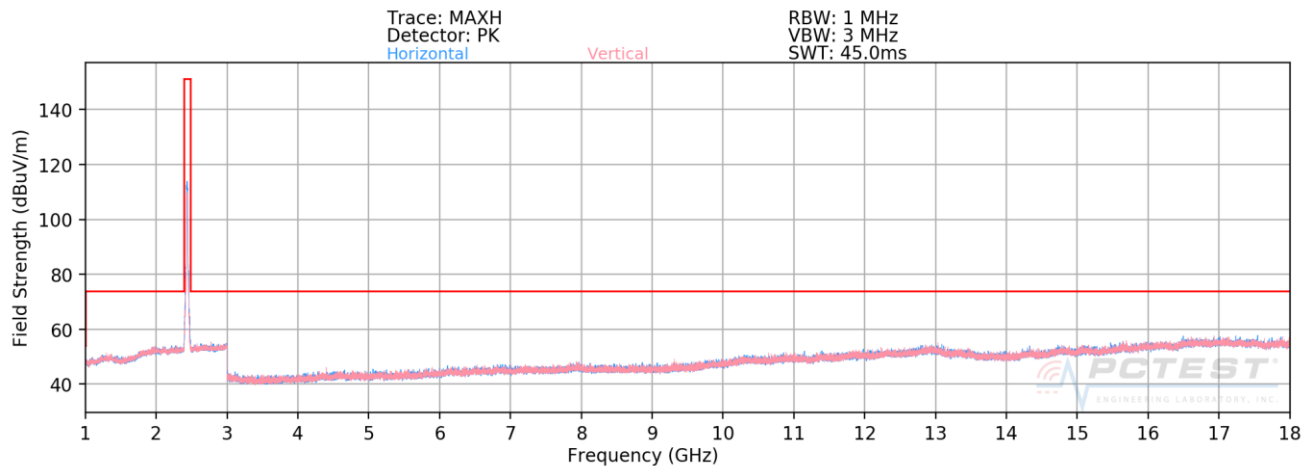
FCC ID: BCGA2068	 <b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 77 of 98

### 7.7.3 CDD Radiated Spurious Emission Measurements

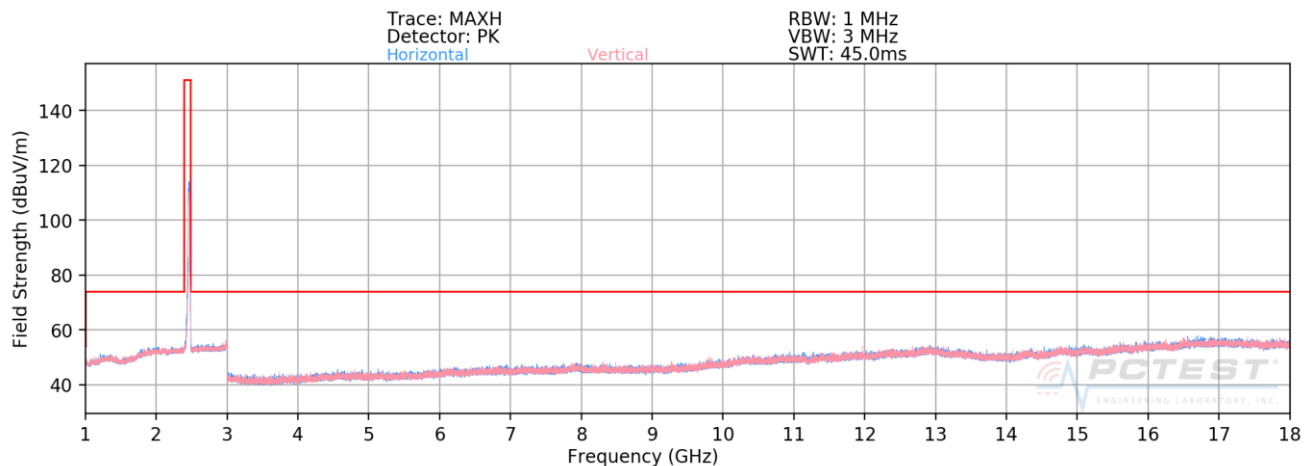
§15.247(d) §15.205 & §15.209; RSS-Gen [8.9]



Plot 7-91. Radiated Spurious Plot above 1GHz CDD (802.11n – Ch. 1)



Plot 7-92. Radiated Spurious Plot above 1GHz CDD (802.11n – Ch. 6)



Plot 7-93. Radiated Spurious Plot above 1GHz CDD (802.11n – Ch. 11)

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 78 of 98

## 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: MCS0  
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	H	-	-	-78.13	4.95	33.82	53.98	-20.16
4824.00	Peak	H	-	-	-66.27	4.95	45.68	73.98	-28.30
12060.00	Avg	H	-	-	-84.43	17.98	40.55	53.98	-13.43
12060.00	Peak	H	-	-	-73.24	17.98	51.74	73.98	-22.24

Table 7-22. Radiated Measurements CDD

Worst Case Mode: 802.11n  
Worst Case Transfer Rate: MCS0  
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	H	-	-	-78.47	5.08	33.61	53.98	-20.37
4874.00	Peak	H	-	-	-67.12	5.08	44.96	73.98	-29.02
7311.00	Avg	H	-	-	-80.49	9.18	35.69	53.98	-18.29
7311.00	Peak	H	-	-	-68.96	9.18	47.22	73.98	-26.76
12185.00	Avg	H	-	-	-84.77	17.89	40.12	53.98	-13.86
12185.00	Peak	H	-	-	-73.57	17.89	51.32	73.98	-22.66

Table 7-23. Radiated Measurements CDD

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 79 of 98

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

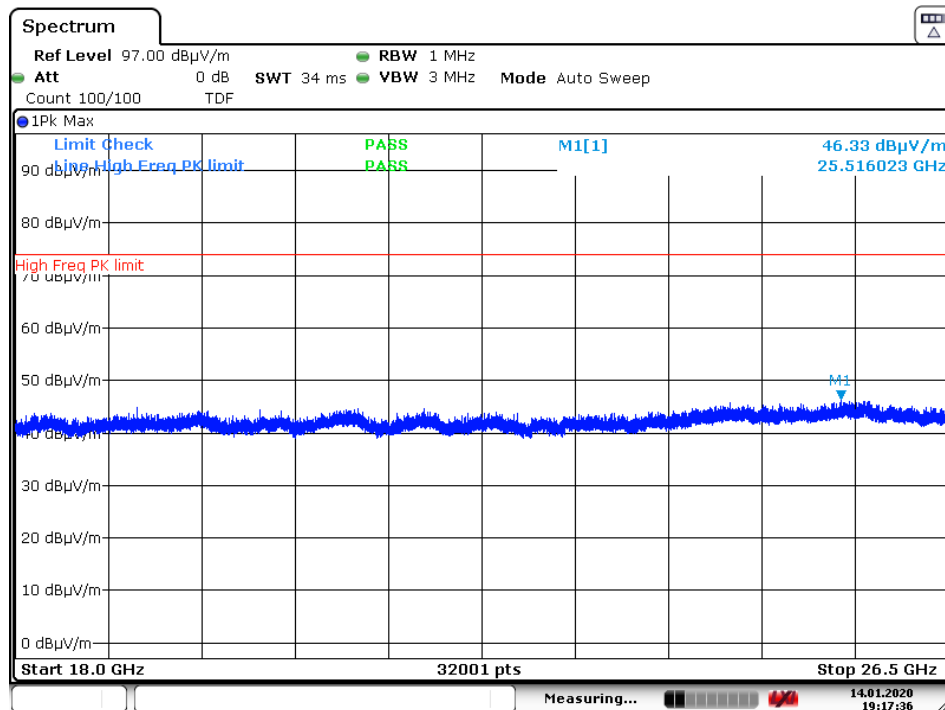
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
4924.00	Avg	H	-	-	-78.27	4.82	33.55	53.98	-20.43
4924.00	Peak	H	-	-	-66.94	4.82	44.88	73.98	-29.10
7386.00	Avg	H	-	-	-80.17	9.02	35.85	53.98	-18.13
7386.00	Peak	H	-	-	-68.53	9.02	47.49	73.98	-26.49
12310.00	Avg	H	-	-	-84.63	18.43	40.80	53.98	-13.18
12310.00	Peak	H	-	-	-73.68	18.43	51.75	73.98	-22.23

Table 7-24. Radiated Measurements CDD

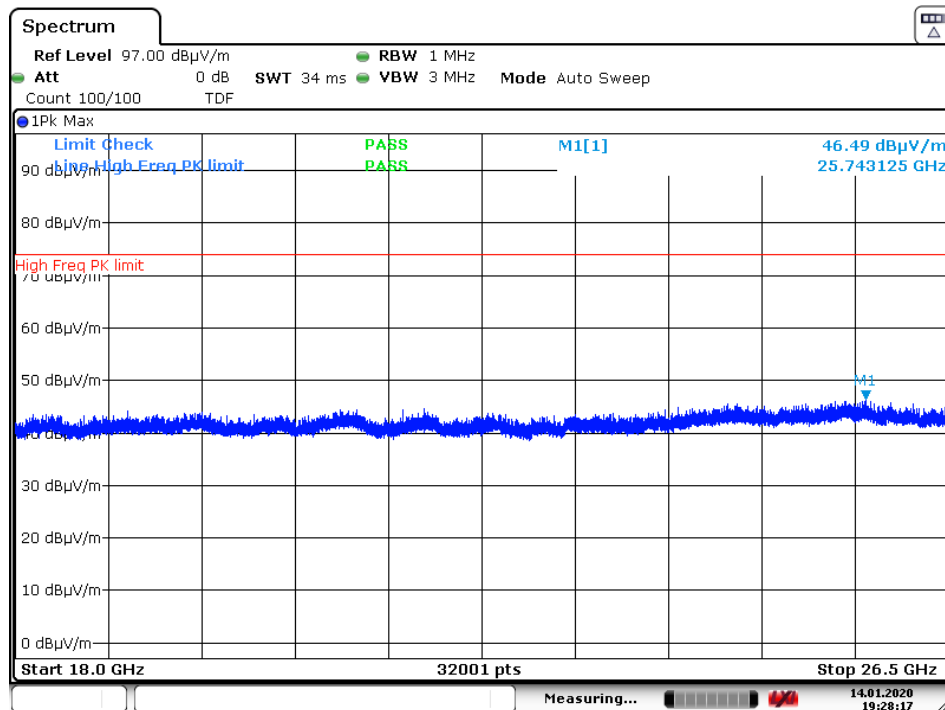
FCC ID: BCGA2068	 <b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 80 of 98

## CDD Radiated Spurious Emissions Measurements (Above 18GHz)

§15.209; RSS-Gen [8.9]



Plot 7-94. Radiated Spurious Plot above 18GHz CDD (802.11n, Pol. H)



Plot 7-95. Radiated Spurious Plot above 18GHz CDD (802.11n, Pol. V)

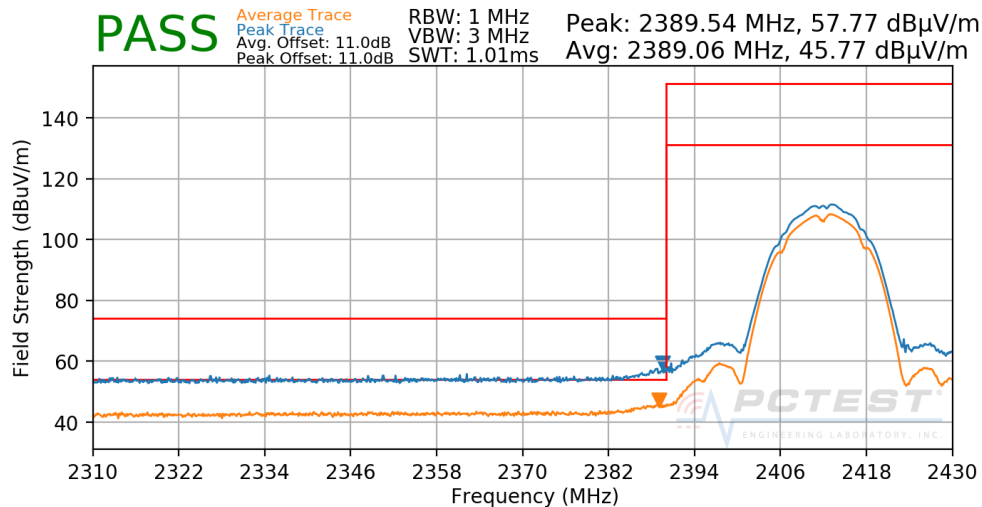
FCC ID: BCGA2068	 <b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 81 of 98

## 7.7.4 SISO Core 0 Radiated Restricted Band Edge Measurements

§15.205 §15.209; RSS-Gen [8.9]

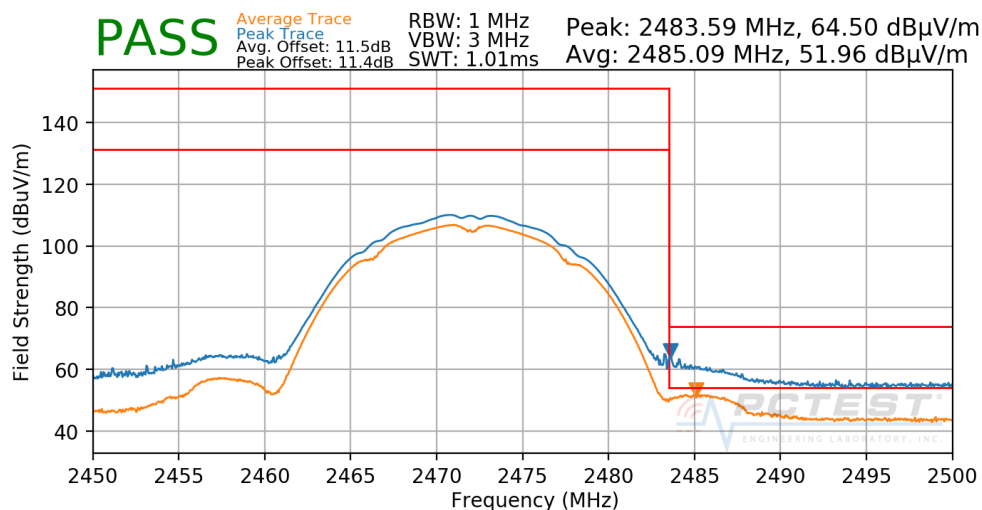
The radiated restricted band edge measurements are measured with an EMI test receiver connected to the receive antenna while the EUT is transmitting.

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



Plot 7-96. Radiated Restricted Lower Band Edge Measurement SISO CORE0

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



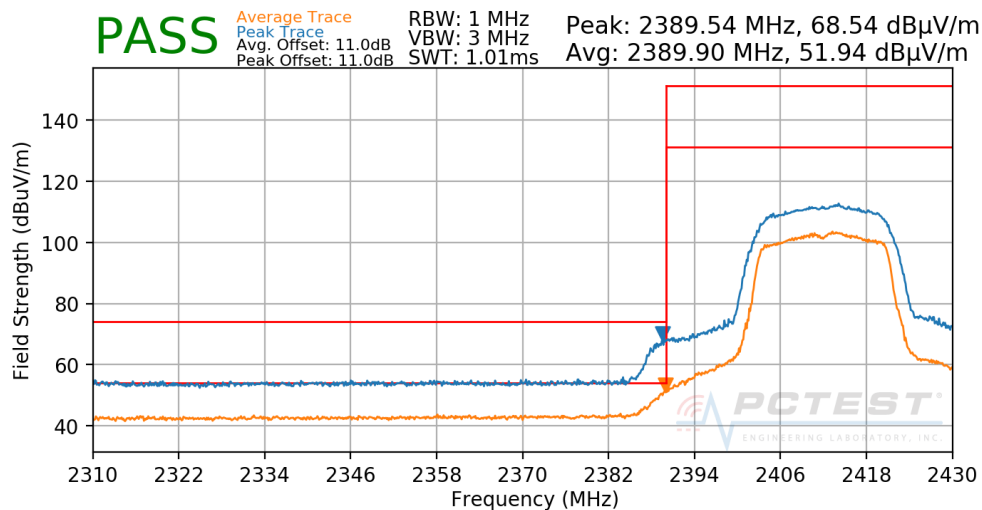
Plot 7-97. Radiated Restricted Upper Band Edge Measurement SISO CORE0

FCC ID: BCGA2068	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 82 of 98



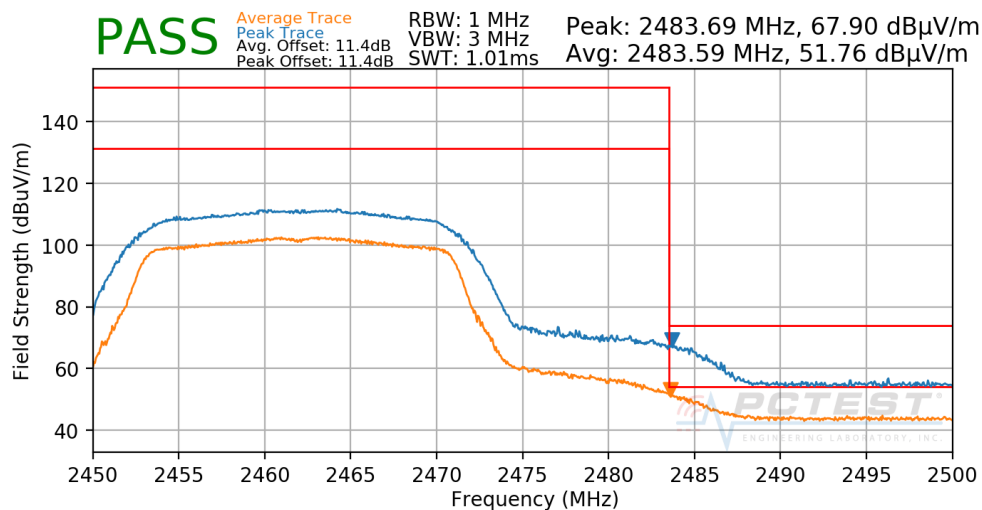


Worst Case Mode: 802.11n  
Worst Case Transfer Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2412MHz  
Channel: 1



**Plot 7-98. Radiated Restricted Lower Band Edge Measurement SISO CORE0**

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



**Plot 7-99. Radiated Restricted Upper Band Edge Measurement SISO CORE0**

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 83 of 98

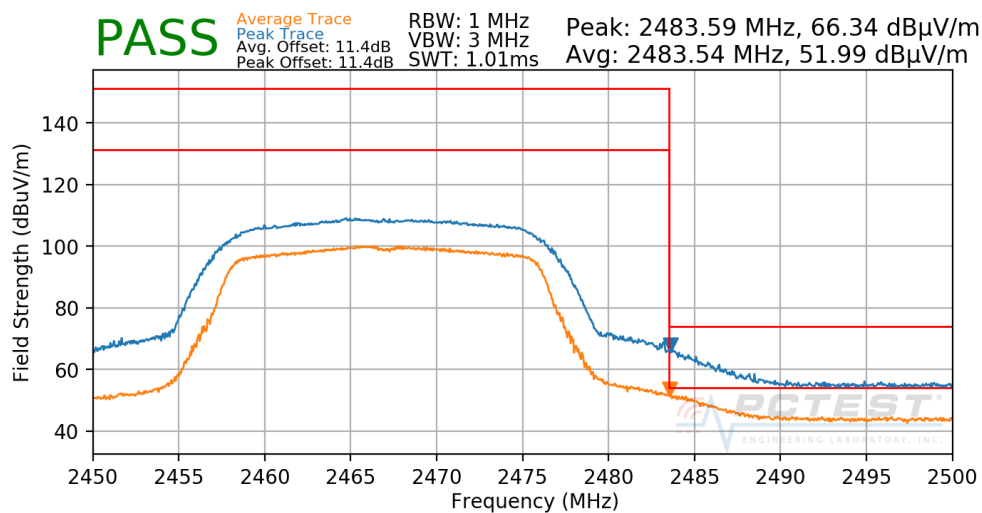
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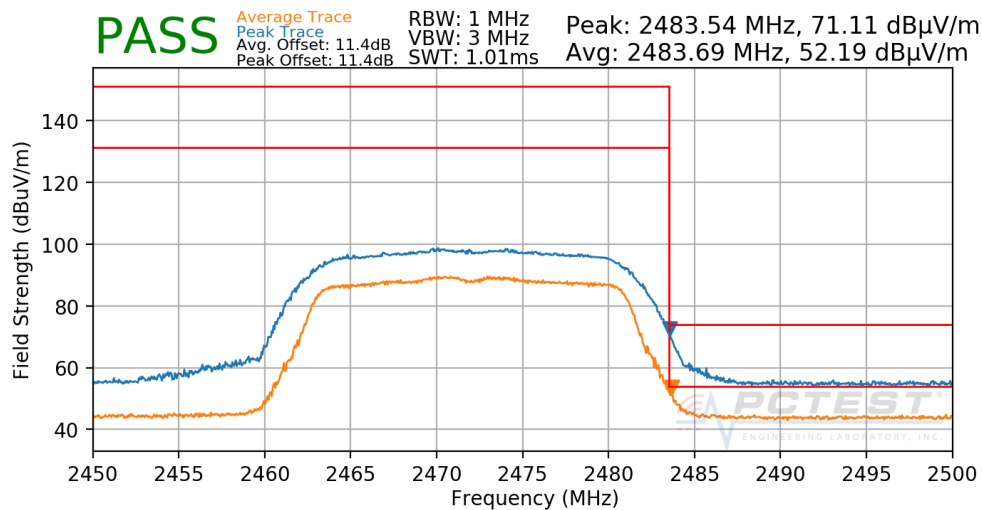


Worst Case Mode: 802.11n  
Worst Case Transfer Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2467MHz  
Channel: 12



Plot 7-100. Radiated Restricted Upper Band Edge Measurement SISO CORE0

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



Plot 7-101. Radiated Restricted Upper Band Edge Measurement SISO CORE0

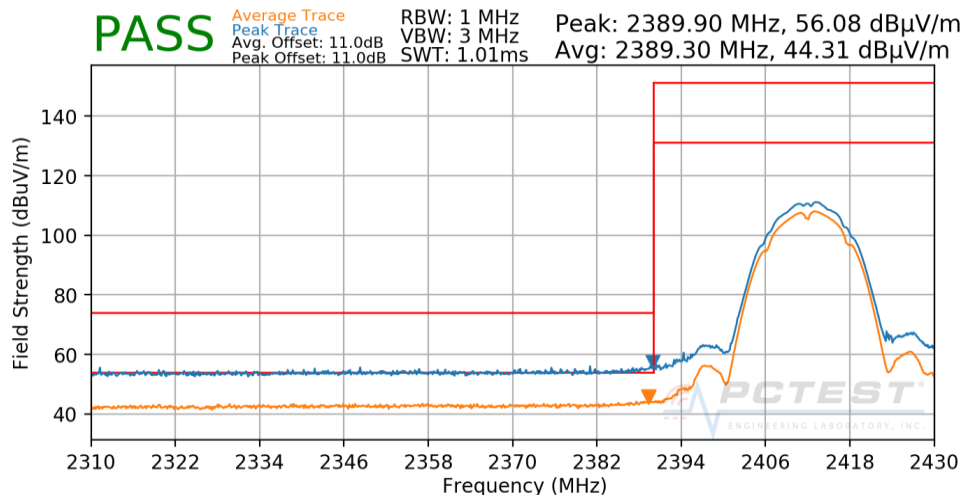
FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 84 of 98

## 7.7.5 SISO Core 1 Radiated Restricted Band Edge Measurements

§15.205 §15.209; RSS-Gen [8.9]

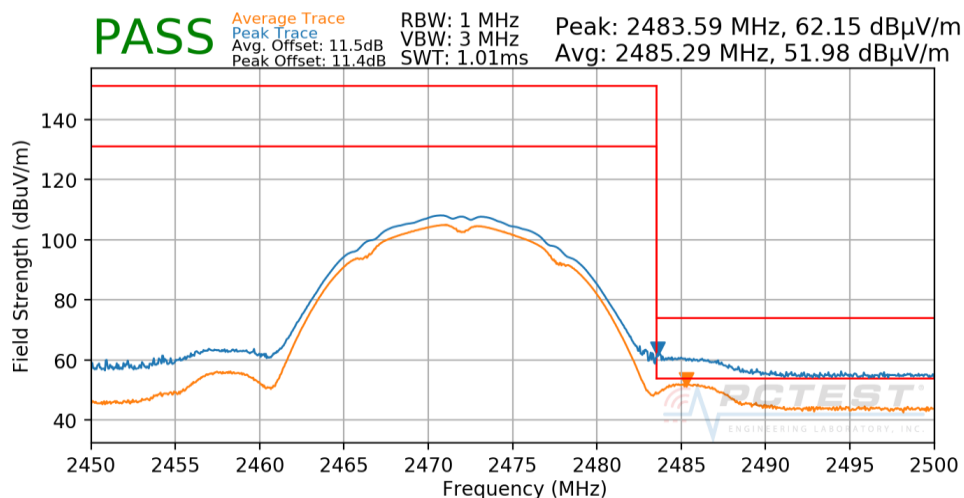
The radiated restricted band edge measurements are measured with an EMI test receiver connected to the receive antenna while the EUT is transmitting.

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



Plot 7-102. 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:	2472MHz
Channel:	13

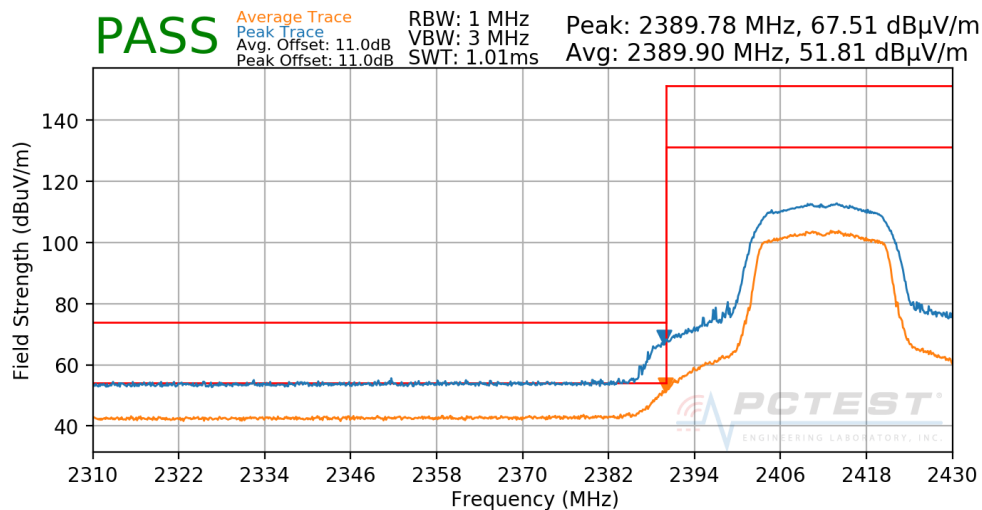


Plot 7-103. Radiated Restricted Upper Band Edge Measurement SISO CORE 1

FCC ID: BCGA2068	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 85 of 98

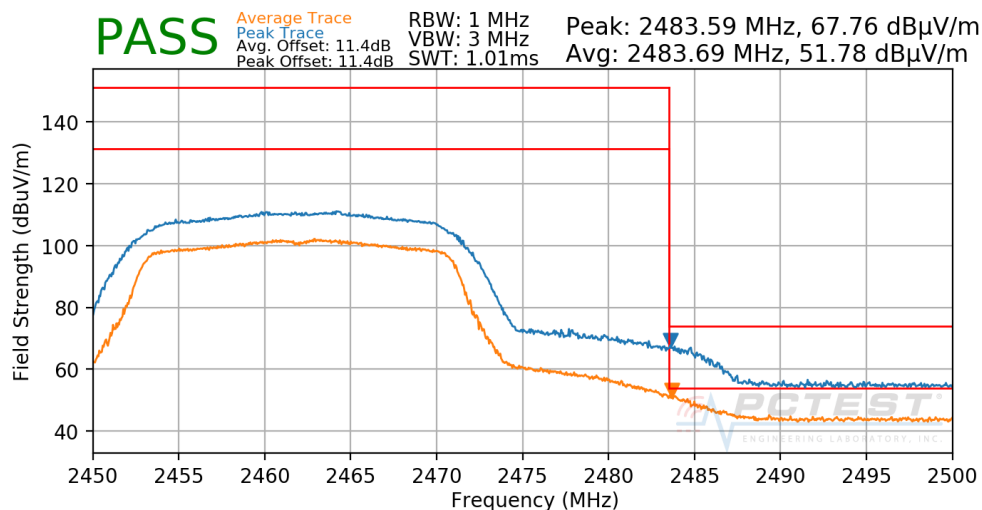


Worst Case Mode: 802.11n  
Worst Case Transfer Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2412MHz  
Channel: 1



Plot 7-104. 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: 2462MHz  
Channel: 11

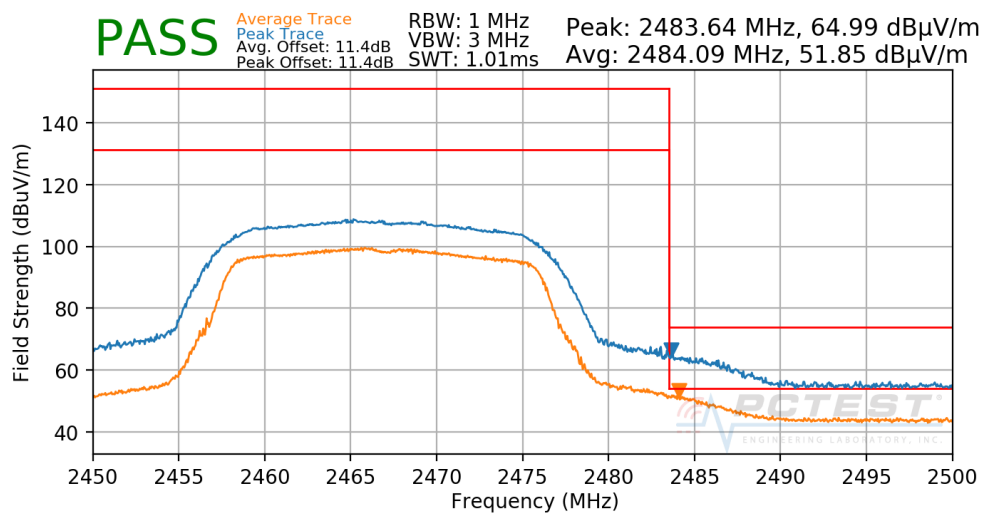


Plot 7-105. Radiated Restricted Upper Band Edge Measurement SISO CORE 1

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 86 of 98

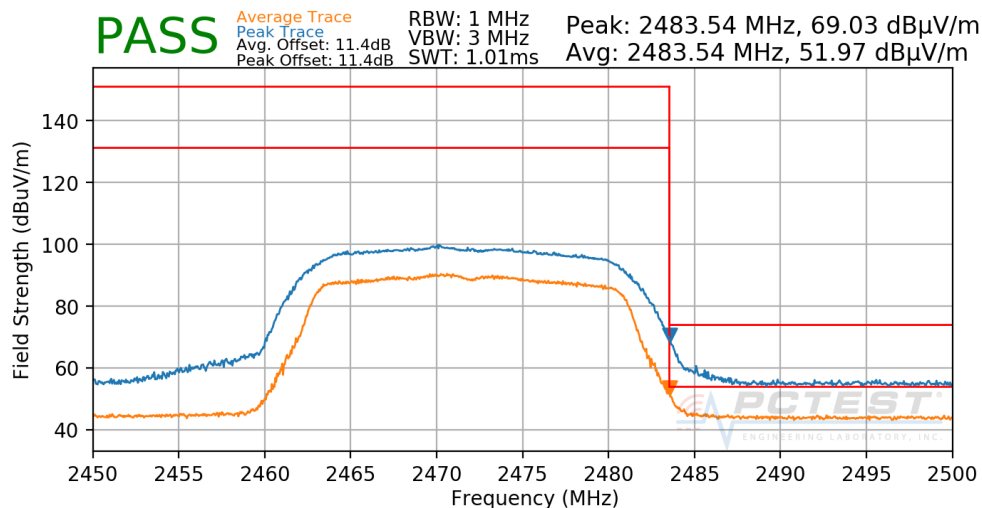


Worst Case Mode: 802.11n  
Worst Case Transfer Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2467MHz  
Channel: 12



Plot 7-106. 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: 2472MHz  
Channel: 13



Plot 7-107. Radiated Restricted Upper Band Edge Measurement SISO CORE 1

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 87 of 98

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V 9.5 12/16/2019

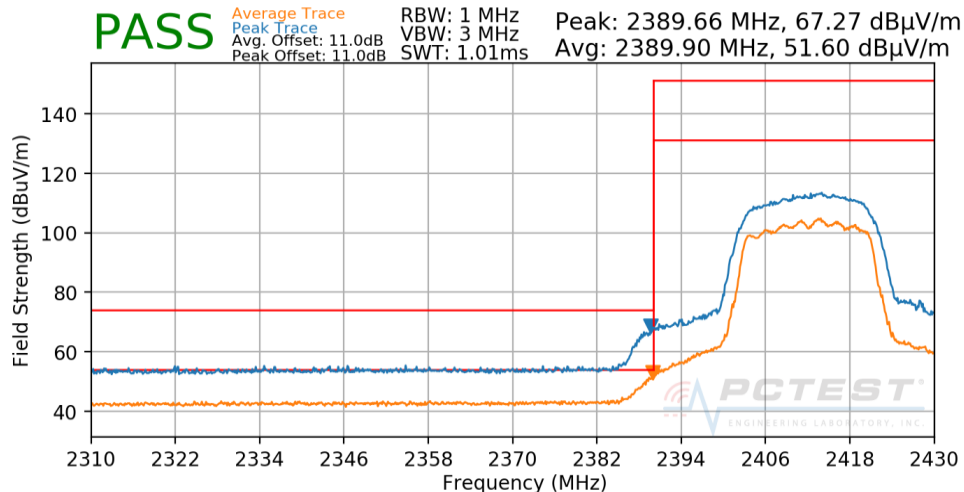
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## 7.7.6 CDD Radiated Restricted Band Edge Measurements

§15.205 §15.209; RSS-Gen [8.9]

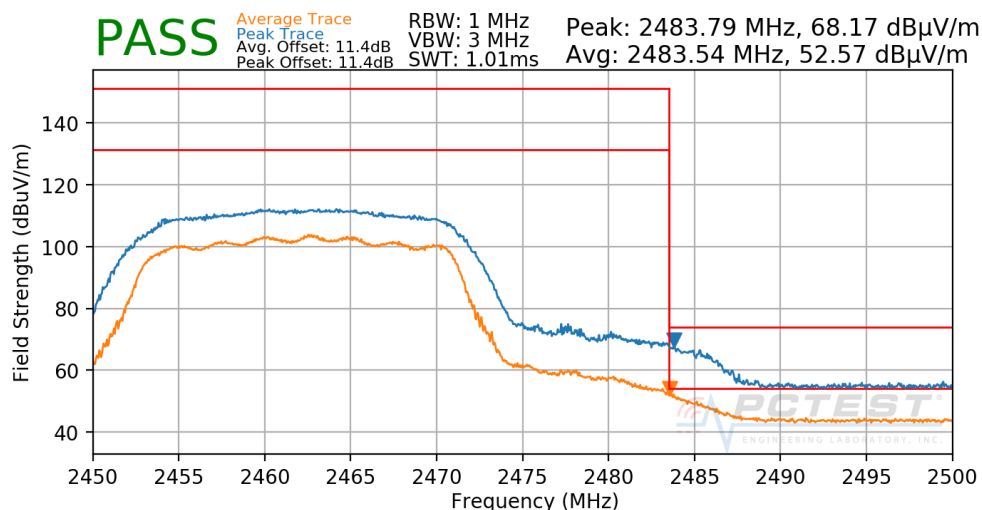
The radiated restricted band edge measurements are measured with an EMI test receiver connected to the receive antenna while the EUT is transmitting.

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



Plot 7-108. Radiated Restricted Lower Band Edge Measurement CDD

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

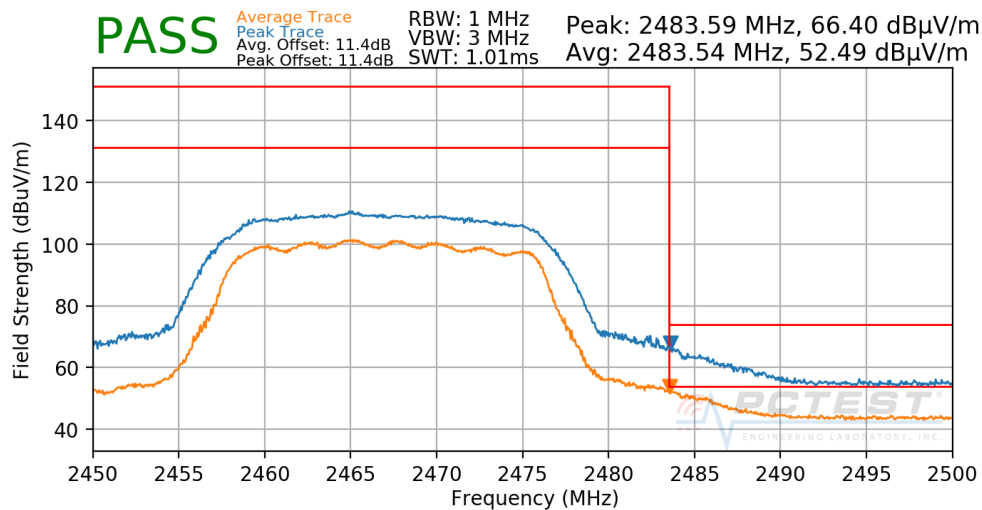


Plot 7-109. Radiated Restricted Upper Band Edge Measurement CDD

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 88 of 98

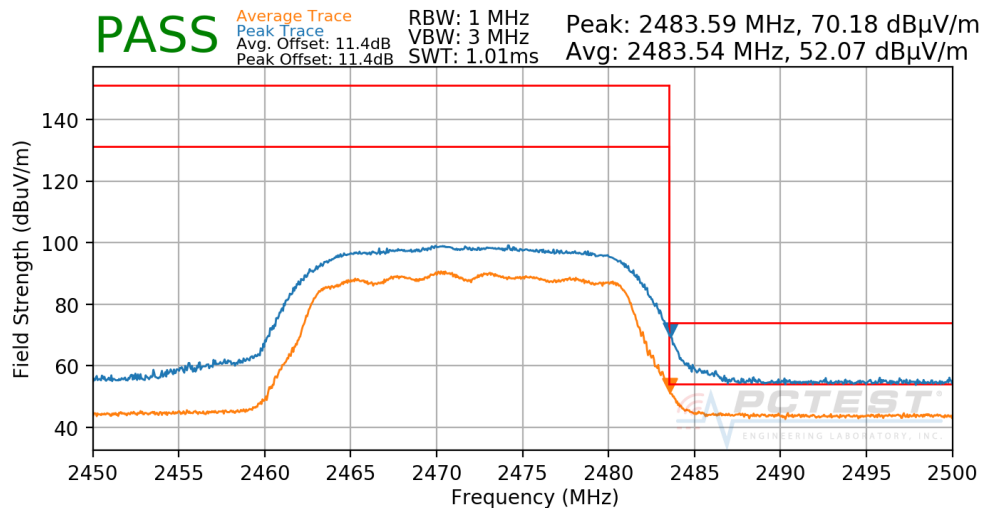


Worst Case Mode: 802.11n  
Worst Case Transfer Rate: MCS0  
Distance of Measurements: 3 Meters  
Operating Frequency: 2467MHz  
Channel: 12



**Plot 7-110. Radiated Restricted Upper Band Edge Measurement CDD**

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



**Plot 7-111. Radiated Restricted Upper Band Edge Measurement CDD**

FCC ID: BCGA2068	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 89 of 98

## 7.8 Radiated Spurious Emissions Measurements – 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
- 7.

#### Peak Field Strength Measurements

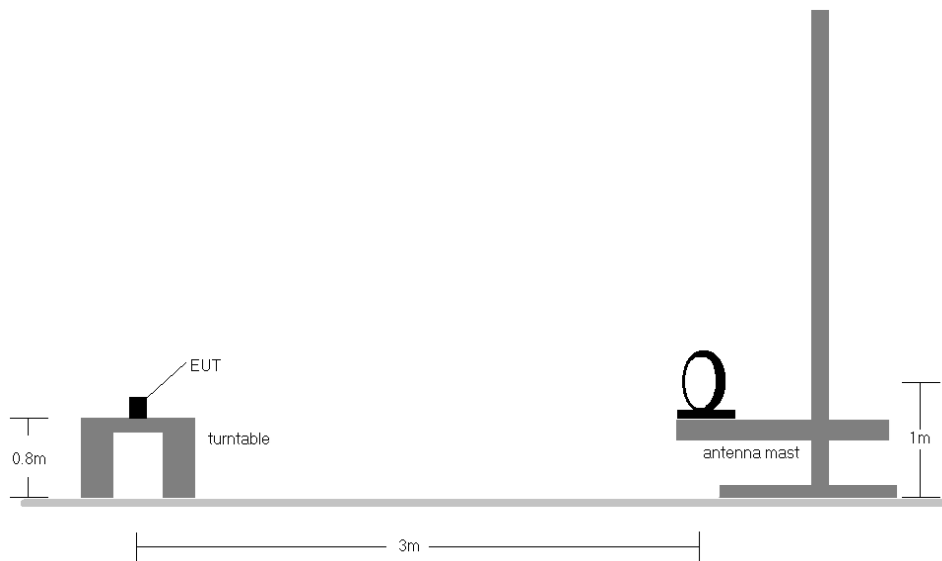
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 120kHz (for emissions from 30MHz – 1GHz)
3. VBW = 300kHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 90 of 98

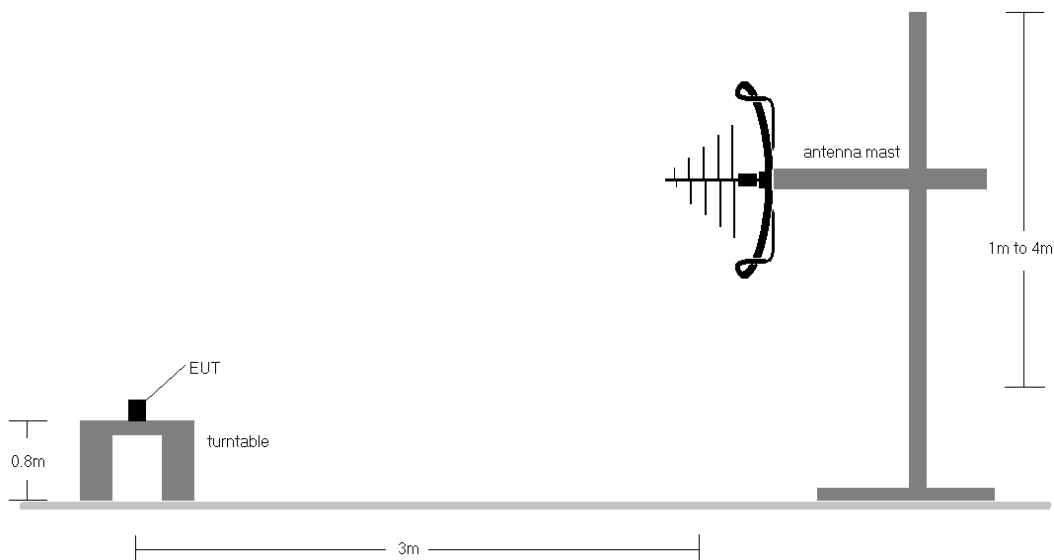


## Test Setup

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: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 91 of 98



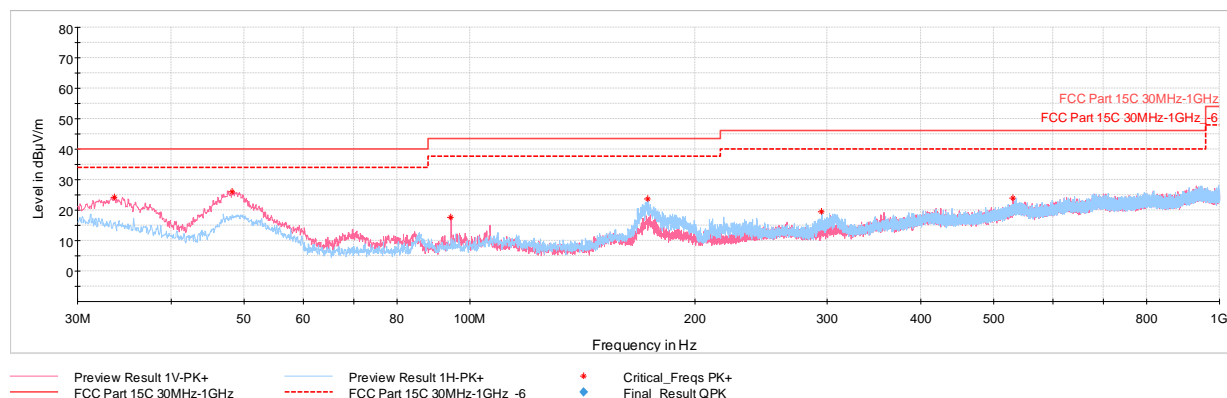
## Test Notes

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.
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. 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. 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. 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 configurations were investigated and only the worst case is reported.

<b>FCC ID:</b> BCGA2068		<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1C1912170051-06.BCG	<b>Test Dates:</b> 12/10/2019 - 02/11/2020	<b>EUT Type:</b> Tablet Device	Page 92 of 98

# CDD Radiated Spurious Emissions Measurements (Below 1GHz)

§15.209; RSS-Gen [8.9]



**Plot 7-112. Radiated Spurious Plot 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]
33.59	Max Peak	V	100	240	-69.03	-13.79	24.18	40.00	-15.82
48.24	Max Peak	V	100	284	-59.94	-21.12	25.94	40.00	-14.06
94.41	Max Peak	V	100	136	-68.90	-20.41	17.69	43.52	-25.83
172.88	Max Peak	H	100	77	-65.98	-17.22	23.80	43.52	-19.72
294.96	Max Peak	H	100	41	-73.78	-13.86	19.36	46.02	-26.66
530.76	Max Peak	V	250	9	-77.88	-5.22	23.90	46.02	-22.12

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

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 93 of 98

## 7.9 AC Line-Conducted Test Data

§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 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 Field Strength 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

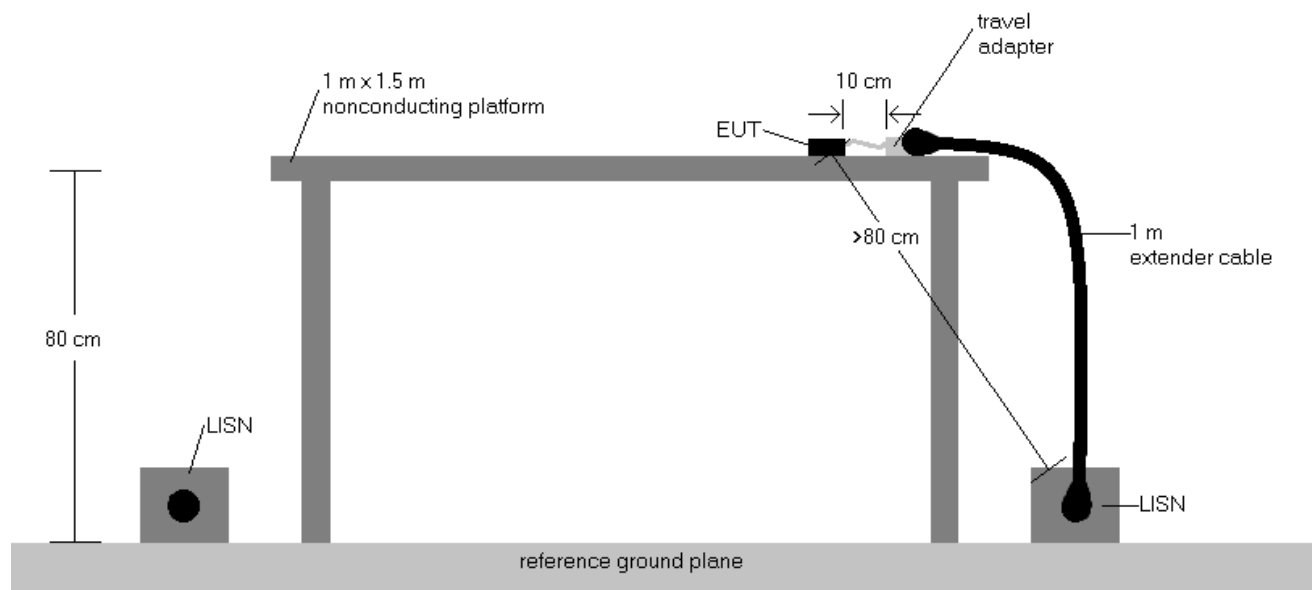
#### Average Field Strength Measurements

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: BCGA2068	 <b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 94 of 98

## Test Setup

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

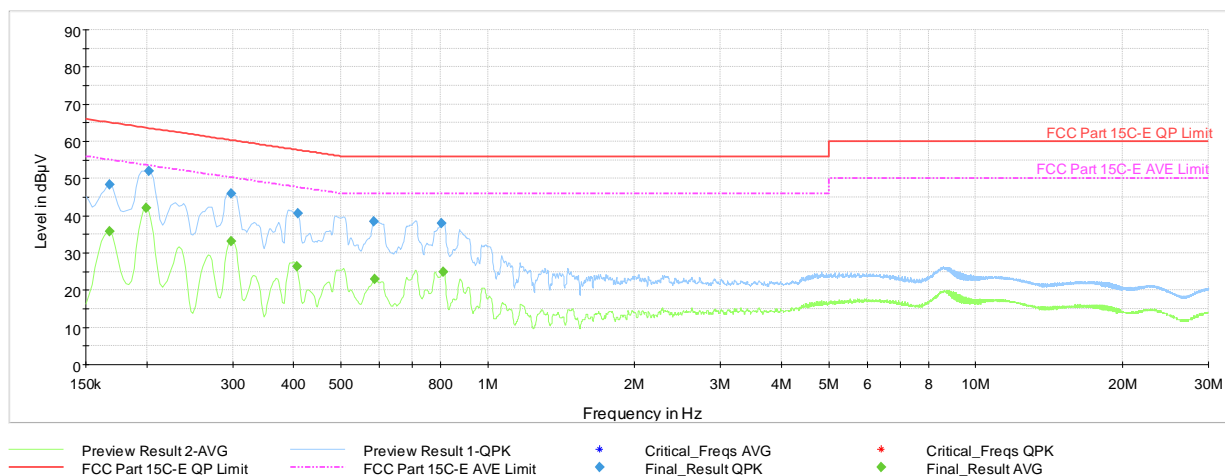


**Figure 7-9. Test Instrument & Measurement Setup**

## Test Notes

1. All modes of operation were investigated and the worst-case emissions are reported using mid channel. The emissions found were not affected by the choice of channel used during testing.
2. The limit for an intentional radiator from 150kHz to 30MHz are specified in Part 15.207 and RSS-Gen(8.8).
3.  $\text{Corr. (dB)} = \text{Cable loss (dB)} + \text{LISN insertion factor (dB)}$
4.  $\text{QP/AV Level (dB}\mu\text{V)} = \text{QP/AV Analyzer/Receiver Level (dB}\mu\text{V)} + \text{Corr. (dB)}$
5.  $\text{Margin (dB)} = \text{QP/AV Limit (dB}\mu\text{V)} - \text{QP/AV Level (dB}\mu\text{V)}$
6. Traces shown in plot are made using quasi-peak and average detectors.
7. Deviations to the Specifications: None.

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 95 of 98

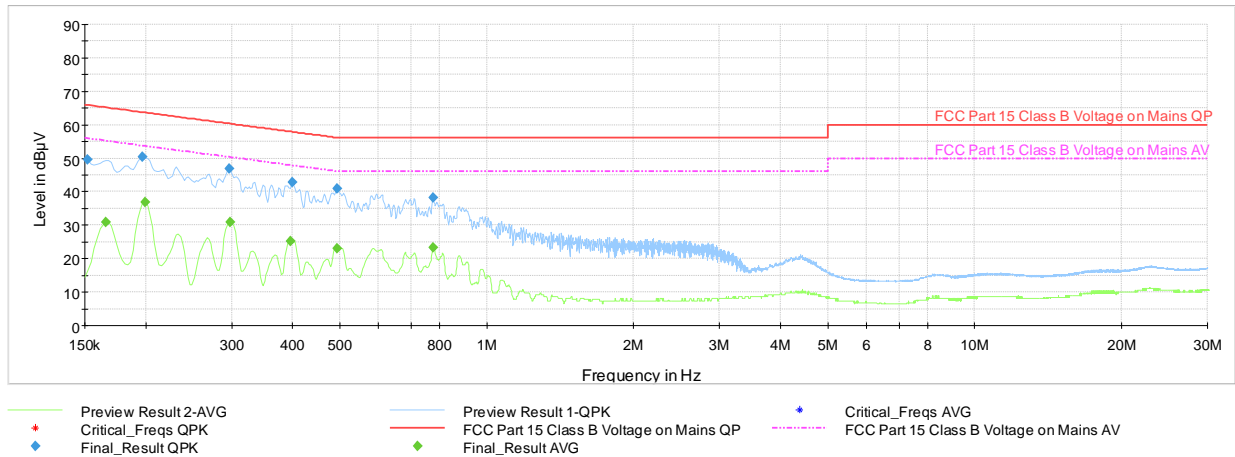


**Plot 7-113. Line Conducted Plot with 802.11n CDD Ch.6 (L1, with AC/DC Adapter)**

Frequency [MHz]	Process State	QuasiPeak [dBμV]	Average [dBμV]	Limit [dBμV]	Margin [dB]	Line	PE
0.168	FINAL	48.38	—	65.06	-16.68	L1	GND
0.168	FINAL	—	35.87	55.06	-19.19	L1	GND
0.200	FINAL	—	42.14	53.63	-11.49	L1	GND
0.202	FINAL	51.93	—	63.54	-11.61	L1	GND
0.299	FINAL	45.90	—	60.28	-14.38	L1	GND
0.299	FINAL	—	33.20	50.28	-17.08	L1	GND
0.407	FINAL	—	26.28	47.72	-21.44	L1	GND
0.409	FINAL	40.56	—	57.67	-17.11	L1	GND
0.584	FINAL	38.47	—	56.00	-17.53	L1	GND
0.587	FINAL	—	23.05	46.00	-22.95	L1	GND
0.805	FINAL	37.98	—	56.00	-18.02	L1	GND
0.812	FINAL	—	24.99	46.00	-21.01	L1	GND

**Table 7-28. Line Conducted Measurements with 802.11n CDD Ch.6 (L1, with AC/DC Adapter)**

FCC ID: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 96 of 98



**Plot 7-114. Line Conducted Plot with 802.11n CDD Ch.6 (N, with AC/DC Adapter)**

Frequency [MHz]	Process State	QuasiPeak [dBμV]	Average [dBμV]	Limit [dBμV]	Margin [dB]	Line	PE
0.152	FINAL	49.65	—	65.88	-16.23	N	GND
0.166	FINAL	—	30.77	55.17	-24.40	N	GND
0.197	FINAL	50.53	—	63.73	-13.20	N	GND
0.200	FINAL	—	36.97	53.63	-16.66	N	GND
0.296	FINAL	46.97	—	60.35	-13.38	N	GND
0.299	FINAL	—	30.80	50.28	-19.48	N	GND
0.395	FINAL	—	25.13	47.95	-22.82	N	GND
0.400	FINAL	42.83	—	57.86	-15.03	N	GND
0.494	FINAL	—	22.95	46.10	-23.15	N	GND
0.494	FINAL	40.86	—	56.10	-15.24	N	GND
0.776	FINAL	38.15	—	56.00	-17.85	N	GND
0.778	FINAL	—	23.19	46.00	-22.81	N	GND

**Table 7-29. Line Conducted Measurements with 802.11n CDD Ch.6 (N, with AC/DC Adapter)**

FCC ID: BCGA2068	 <b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 97 of 98

## 8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Apple Tablet Device FCC ID: BCGA2068** 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: BCGA2068		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C1912170051-06.BCG	Test Dates: 12/10/2019 - 02/11/2020	EUT Type: Tablet Device	Page 98 of 98