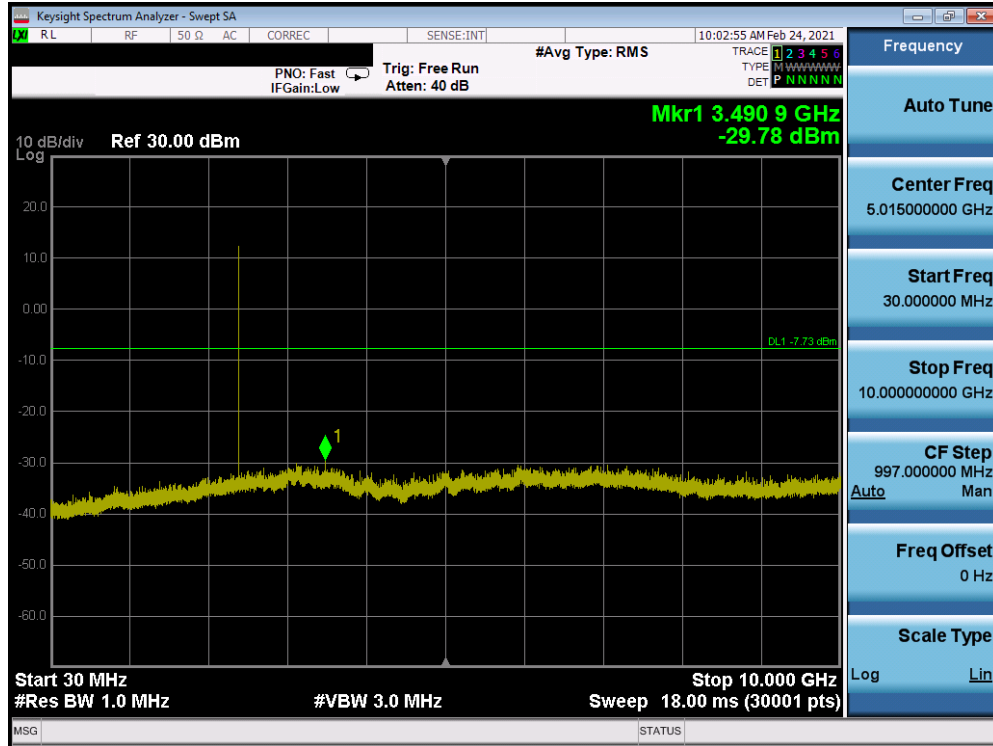
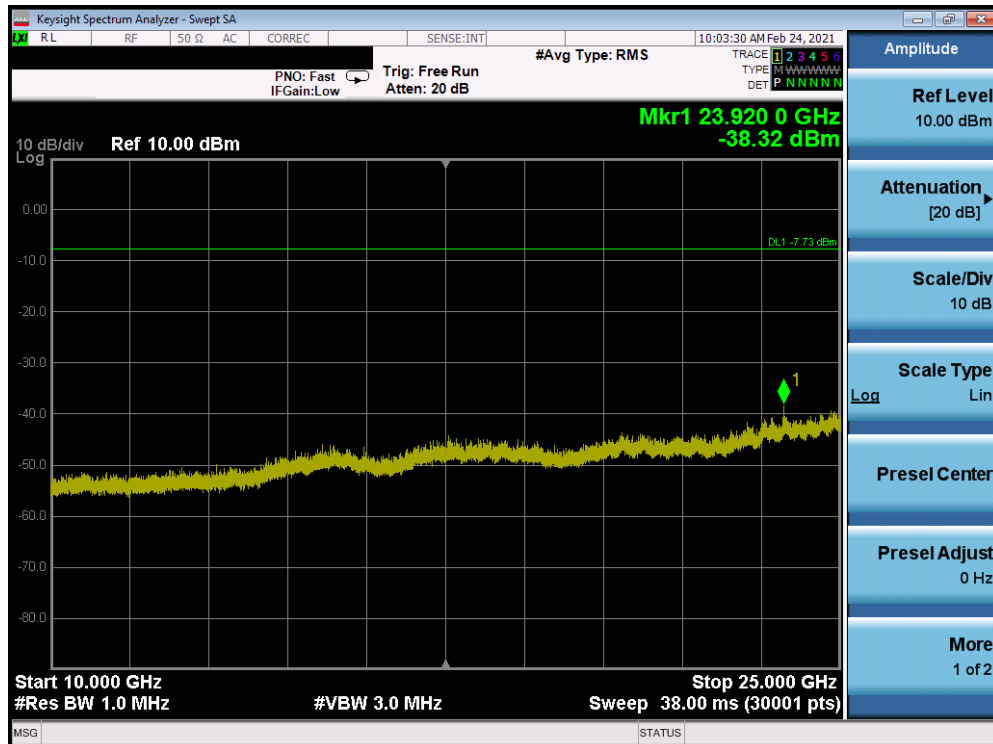


## Antenna WF8

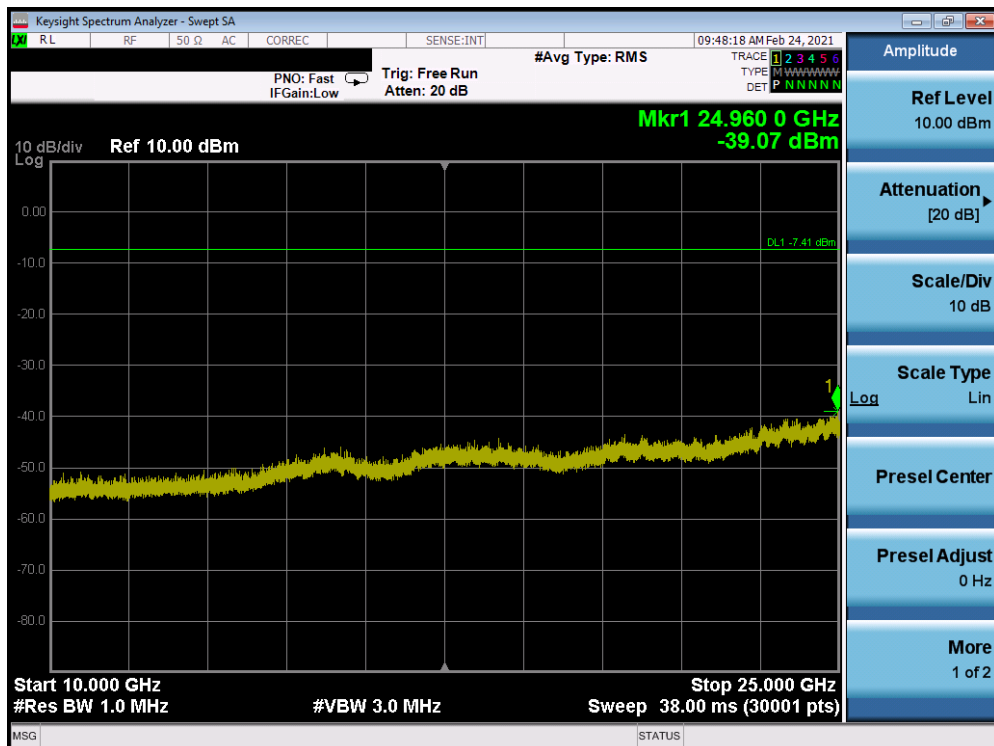
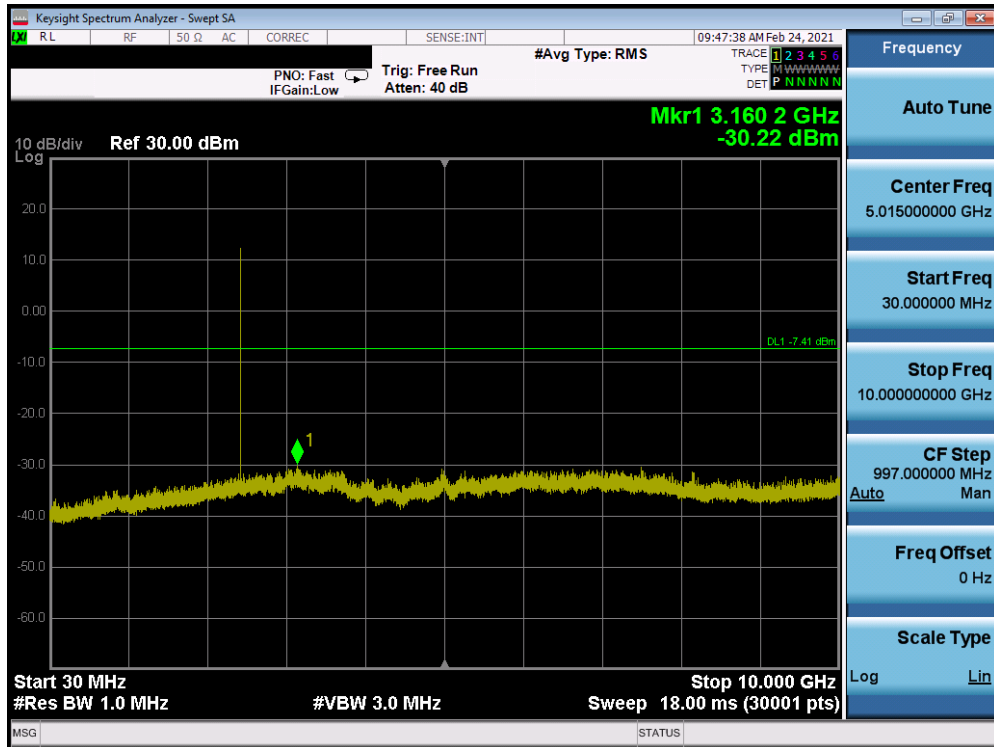


Plot 7-69. Conducted Spurious Plot Antenna WF8 (Bluetooth (LE), 1Mbps, ePA – Ch. 0)



Plot 7-70. Conducted Spurious Plot Antenna WF8 (Bluetooth (LE), 1Mbps, ePA – Ch. 0)

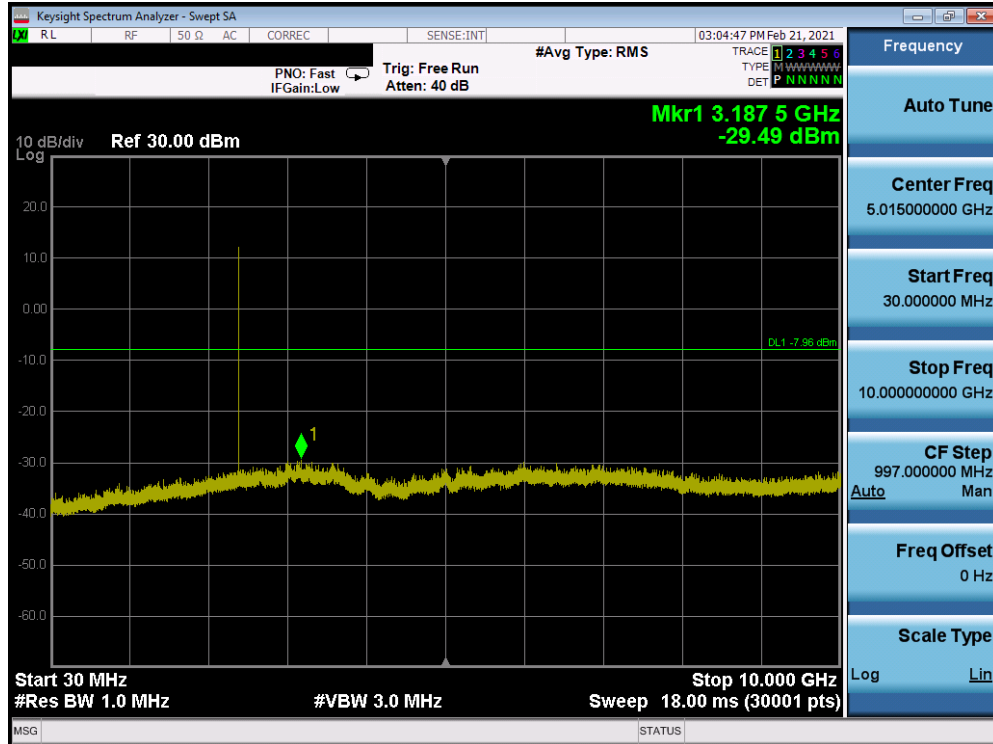
FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 62 of 101



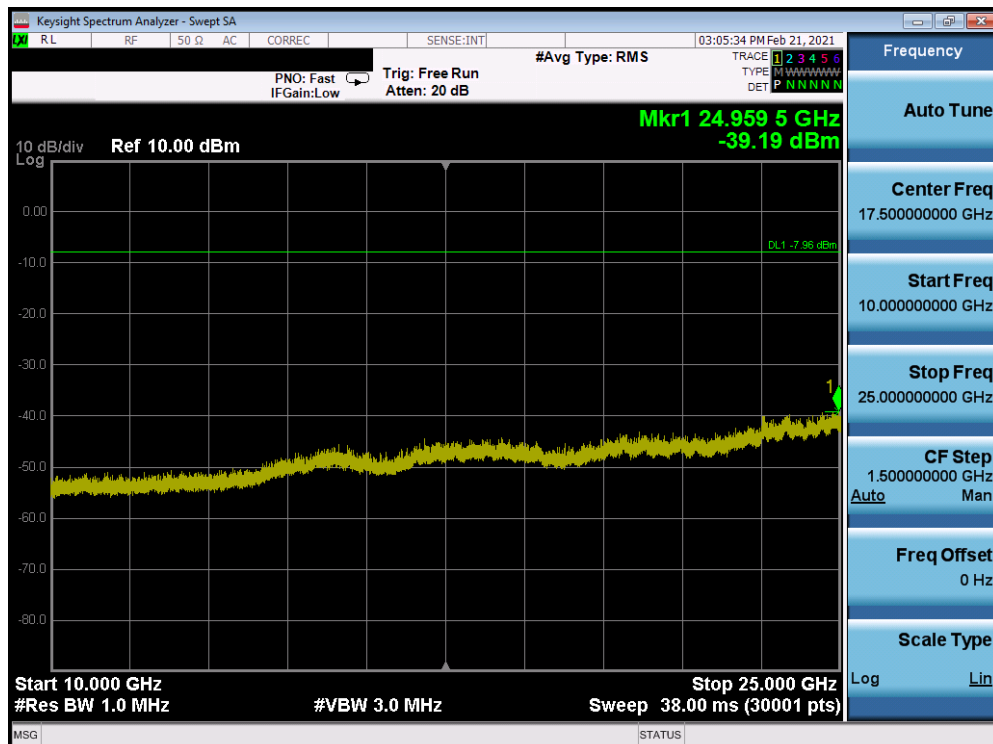
<b>FCC ID:</b> BCGA2377 <b>IC:</b> 579C-A2377	 <b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1C2101020001-05.BCG	<b>Test Dates:</b> 12/15/2020-3/12/2021	<b>EUT Type:</b> Tablet Device	Page 63 of 101



## Antenna WF7

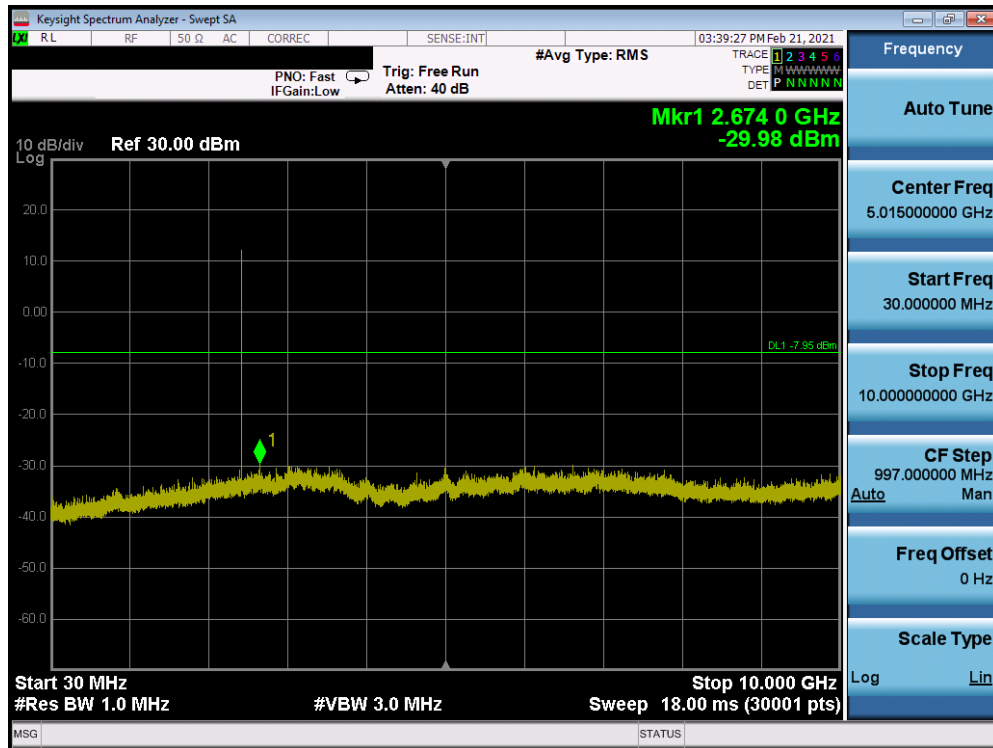


Plot 7-75. Conducted Spurious Plot Antenna WF7 (Bluetooth (LE), 1Mbps, ePA – Ch. 0)

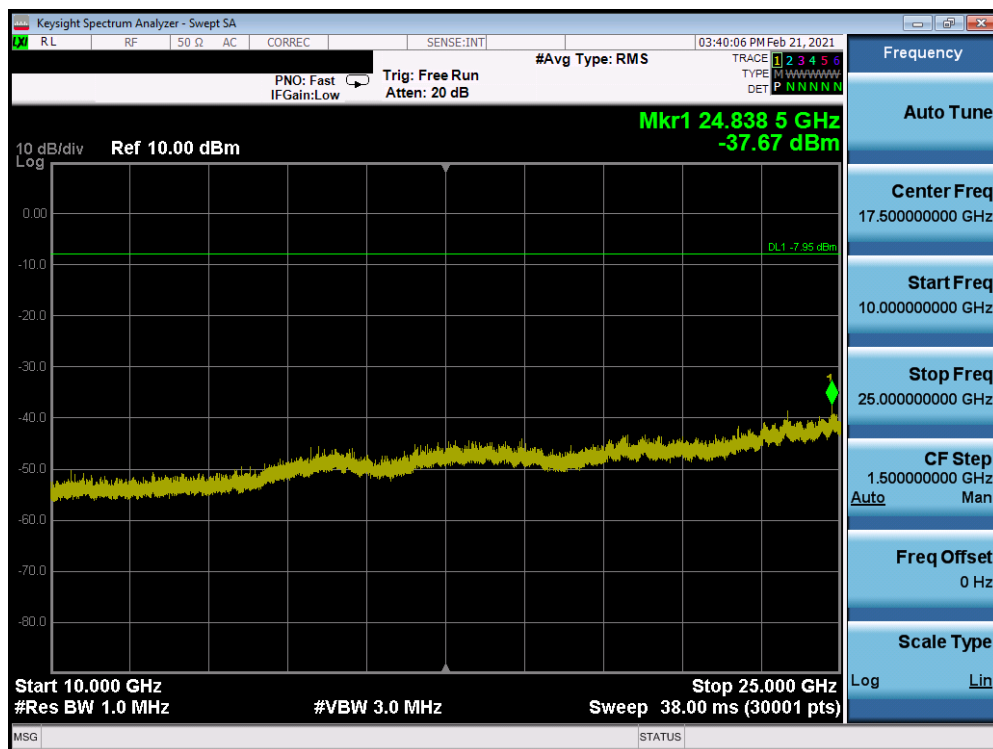


Plot 7-76. Conducted Spurious Plot Antenna WF7 (Bluetooth (LE), 1Mbps, ePA – Ch. 0)

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Plot 7-77. Conducted Spurious Plot Antenna WF7 (Bluetooth (LE), 1Mbps, ePA – Ch. 19)



Plot 7-78. Conducted Spurious Plot Antenna WF7 (Bluetooth (LE), 1Mbps, ePA – Ch. 19)

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 66 of 101



## 7.7 Radiated Spurious Emissions – Above 1GHz

§15.205 §15.209 §15.247(d); 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 maximum power and at the appropriate frequencies. 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 7-13 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 7-13. Radiated Limits**

### Test Procedures Used

ANSI C63.10-2013 – Section 6.6.4.3

KDB 558074 D01 v05r02 – Section 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

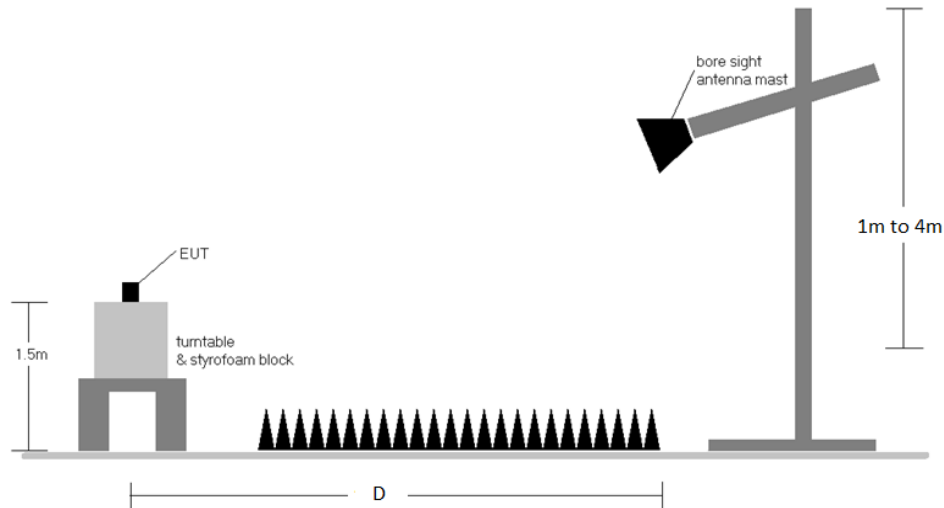
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = Peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

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## Test Setup

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



**Figure 7-6. Radiated Test Setup >1GHz**

## 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 §15.205 and Section 8.10 of RSS-Gen are below the limit shown in Table 7-13.
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. This unit was tested with its standard battery.
5. The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. Above 1 GHz, average and peak measurements were taken using linearly polarized horn antennas.
6. D is the measurement test distance and emissions 1-18GHz were measured at a 3 meters test distance while emissions above 18GHz were measured at a 1 meter test distance with the application of a distance correction factor.
7. The "-" shown in the following RSE tables are used to denote a noise floor measurement.
8. All supported modulation, antenna (including TxBF mode) and power schemes have been tested on the unit and only worst case configuration is reported.

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## Sample Calculations

### Determining Spurious Emissions Levels

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

### Radiated Band Edge Measurement Offset

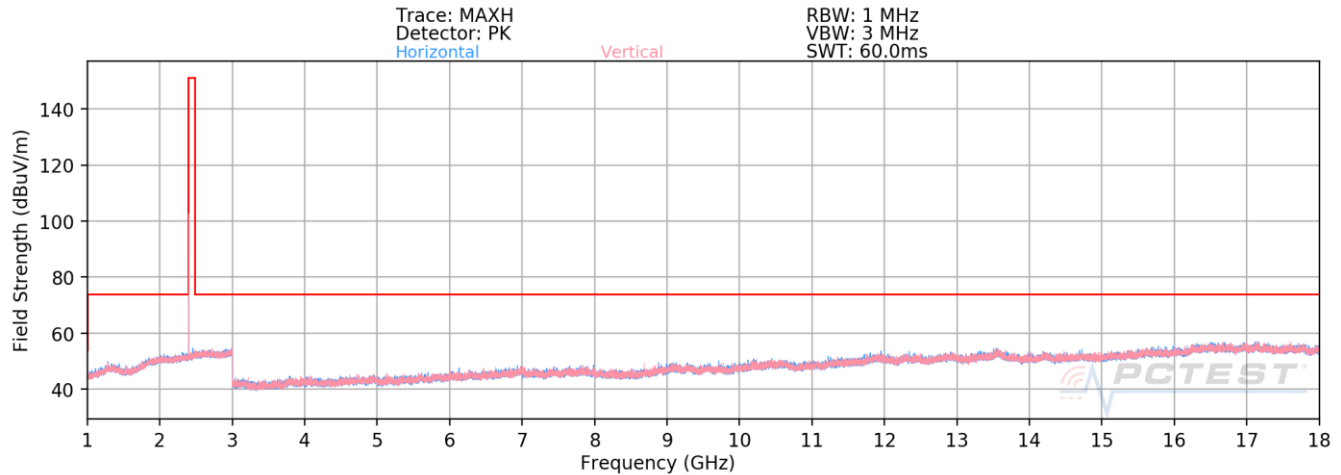
- The amplitude offset shown in the radiated restricted band edge plots in Section 7.8 was calculated using the formula:  
 $\text{Offset (dB)} = (\text{Antenna Factor} + \text{Cable Loss} + \text{Attenuator}) - \text{Preamplifier Gain}$

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<b>Test Report S/N:</b> 1C2101020001-05.BCG	<b>Test Dates:</b> 12/15/2020-3/12/2021	<b>EUT Type:</b> Tablet Device	Page 70 of 101

## Radiated Spurious Emission Measurements (1 – 18GHz)

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

### Antenna WF8



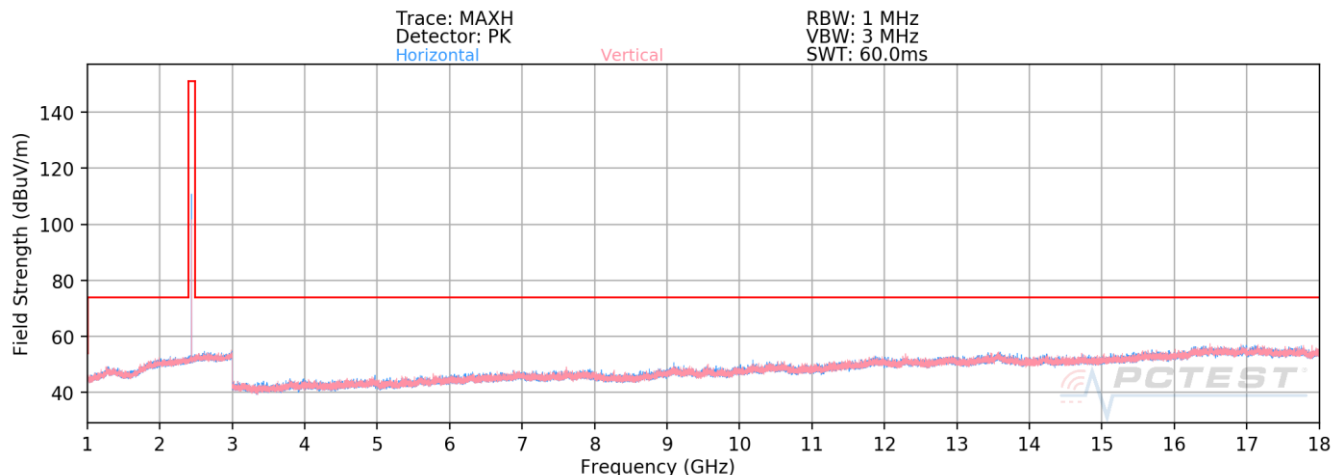
**Plot 7-81. Radiated Spurious Emissions Above 1GHz Antenna WF8 (1Mbps, ePA – Ch. 0)**

Bluetooth Mode: LE  
Data Rate: 1Mbps  
Distance of Measurements: 3 Meters  
Operating Frequency: 2402MHz  
Channel: 0

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBuV/m]	Limit [dBuV/m]	Margin [dB]
4804.00	Avg	H	-	-	-80.88	7.86	33.98	53.98	-20.00
4804.00	Peak	H	-	-	-70.06	7.86	44.80	73.98	-29.18
12010.00	Avg	H	-	-	-83.53	16.81	40.28	53.98	-13.70
12010.00	Peak	H	-	-	-71.97	16.81	51.84	73.98	-22.14

**Table 7-14. Radiated Measurements Antenna WF8**

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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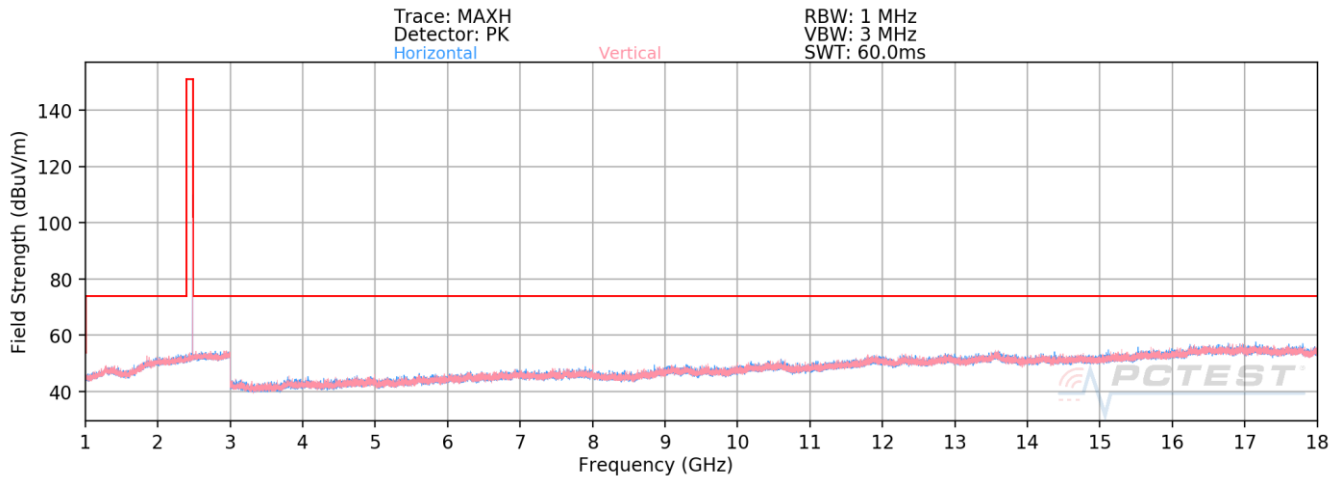
**Plot 7-82. Radiated Spurious Emissions Above 1GHz Antenna WF8 (1Mbps, ePA – Ch. 19)**

Bluetooth Mode: LE  
Data Rate: 1Mbps  
Distance of Measurements: 3 Meters  
Operating Frequency: 2440MHz  
Channel: 19

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBuV/m]	Limit [dBuV/m]	Margin [dB]
4880.00	Avg	H	-	-	-80.74	7.83	34.09	53.98	-19.89
4880.00	Peak	H	-	-	-69.42	7.83	45.41	73.98	-28.57
7320.00	Avg	H	-	-	-82.44	10.75	35.31	53.98	-18.67
7320.00	Peak	H	-	-	-69.80	10.75	47.95	73.98	-26.03
12200.00	Avg	H	-	-	-84.20	16.97	39.77	53.98	-14.21
12200.00	Peak	H	-	-	-72.18	16.97	51.79	73.98	-22.19

**Table 7-15. Radiated Measurements Antenna WF8**

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 72 of 101



**Plot 7-83. Radiated Spurious Emissions Above 1GHz Antenna WF8 (1Mbps ePA – Ch. 39)**

Bluetooth Mode: LE  
Data Rate: 1Mbps  
Distance of Measurements: 3 Meters  
Operating Frequency: 2480MHz  
Channel: 39

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBuV/m]	Limit [dBuV/m]	Margin [dB]
4960.00	Avg	H	-	-	-81.84	8.74	33.90	53.98	-20.08
4960.00	Peak	H	-	-	-70.41	8.74	45.33	73.98	-28.65
7440.00	Avg	H	-	-	-82.85	12.09	36.24	53.98	-17.74
7440.00	Peak	H	-	-	-71.68	12.09	47.41	73.98	-26.57
12400.00	Avg	H	-	-	-83.59	17.21	40.62	53.98	-13.36
12400.00	Peak	H	-	-	-71.97	17.21	52.24	73.98	-21.74

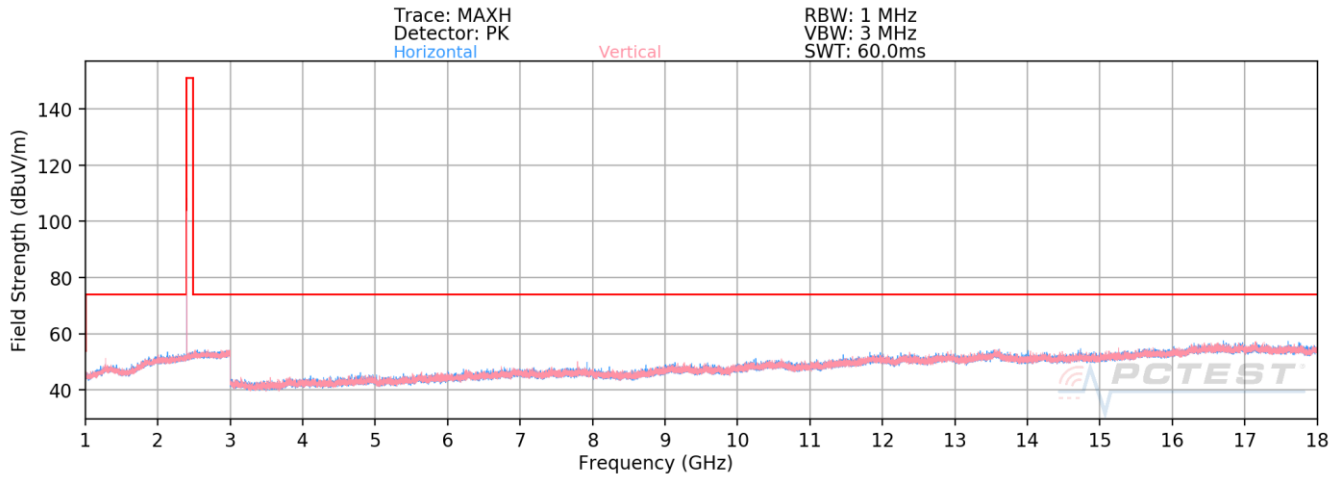
**Table 7-16. Radiated Measurements Antenna WF8**

FCC ID: BCGA2377 IC: 579C-A2377		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 73 of 101

## Radiated Spurious Emission Measurements (1 – 18GHz)

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

### Antenna WF7



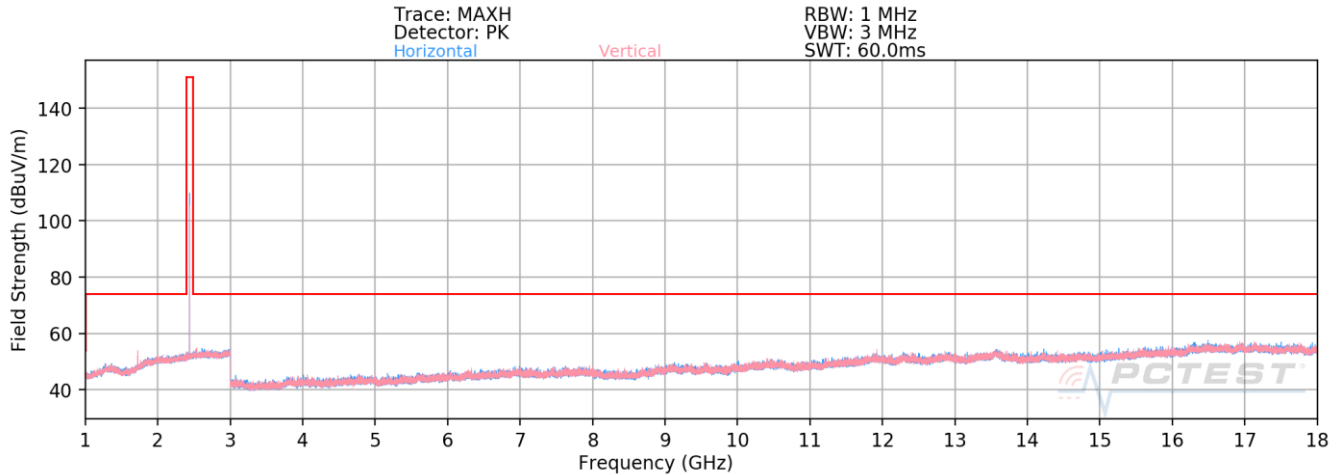
**Plot 7-84. Radiated Spurious Emissions Above 1GHz Antenna WF7 (1Mbps, ePA – Ch. 0)**

Bluetooth Mode: LE  
Data Rate: 1Mbps  
Distance of Measurements: 3 Meters  
Operating Frequency: 2402MHz  
Channel: 0

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBuV/m]	Limit [dBuV/m]	Margin [dB]
4804.00	Avg	H	-	-	-80.76	7.86	34.10	53.98	-19.88
4804.00	Peak	H	-	-	-69.65	7.86	45.21	73.98	-28.77
12010.00	Avg	H	-	-	-83.40	16.81	40.41	53.98	-13.57
12010.00	Peak	H	-	-	-71.78	16.81	52.03	73.98	-21.95

**Table 7-17. Radiated Measurements Antenna WF7**

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 74 of 101



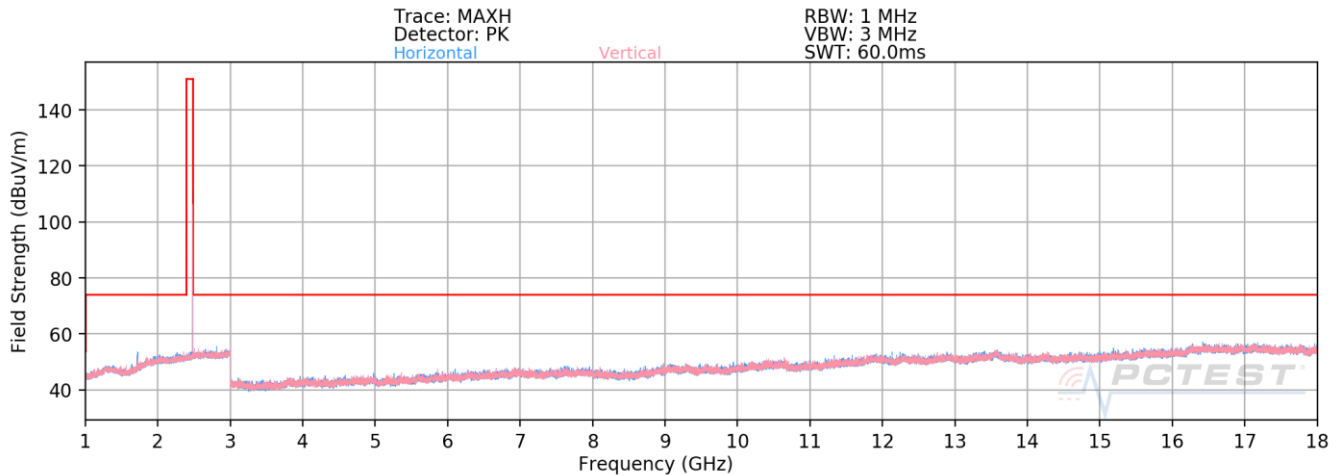
**Plot 7-85. Radiated Spurious Emissions Above 1GHz Antenna WF7 (1Mbps, ePA – Ch. 19)**

Bluetooth Mode: LE  
Data Rate: 1Mbps  
Distance of Measurements: 3 Meters  
Operating Frequency: 2440MHz  
Channel: 19

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBuV/m]	Limit [dBuV/m]	Margin [dB]
4880.00	Avg	H	-	-	-81.13	7.83	33.70	53.98	-20.28
4880.00	Peak	H	-	-	-69.89	7.83	44.94	73.98	-29.04
7320.00	Avg	H	-	-	-82.38	10.75	35.37	53.98	-18.61
7320.00	Peak	H	-	-	-70.73	10.75	47.02	73.98	-26.96
12200.00	Avg	H	-	-	-84.18	16.97	39.79	53.98	-14.19
12200.00	Peak	H	-	-	-72.46	16.97	51.51	73.98	-22.47

**Table 7-18. Radiated Measurements Antenna WF7**

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 75 of 101



**Plot 7-86. Radiated Spurious Emissions Above 1GHz Antenna WF7 (1Mbps, ePA – Ch. 39)**

Bluetooth Mode: LE  
Data Rate: 1Mbps  
Distance of Measurements: 3 Meters  
Operating Frequency: 2480MHz  
Channel: 39

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBuV/m]	Limit [dBuV/m]	Margin [dB]
4960.00	Avg	H	-	-	-81.80	8.74	33.94	53.98	-20.04
4960.00	Peak	H	-	-	-69.61	8.74	46.13	73.98	-27.85
7440.00	Avg	H	-	-	-82.58	12.09	36.51	53.98	-17.47
7440.00	Peak	H	-	-	-71.60	12.09	47.49	73.98	-26.49
12400.00	Avg	H	-	-	-83.47	17.21	40.74	53.98	-13.24
12400.00	Peak	H	-	-	-72.26	17.21	51.95	73.98	-22.03

**Table 7-19. Radiated Measurements Antenna WF7**

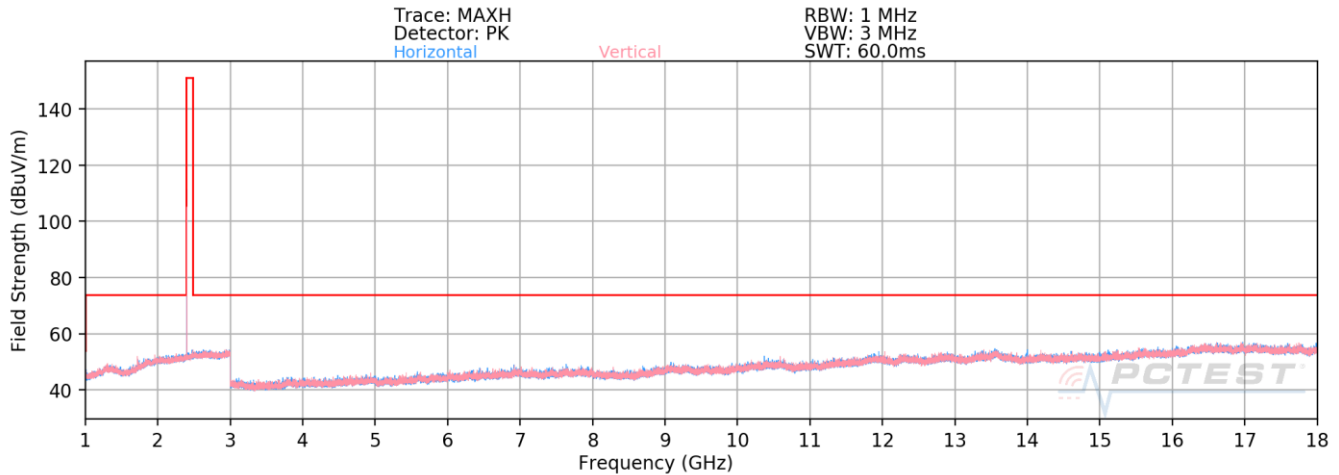
FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 76 of 101



## Radiated Spurious Emission Measurements (Above 1GHz)

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

### TxBF



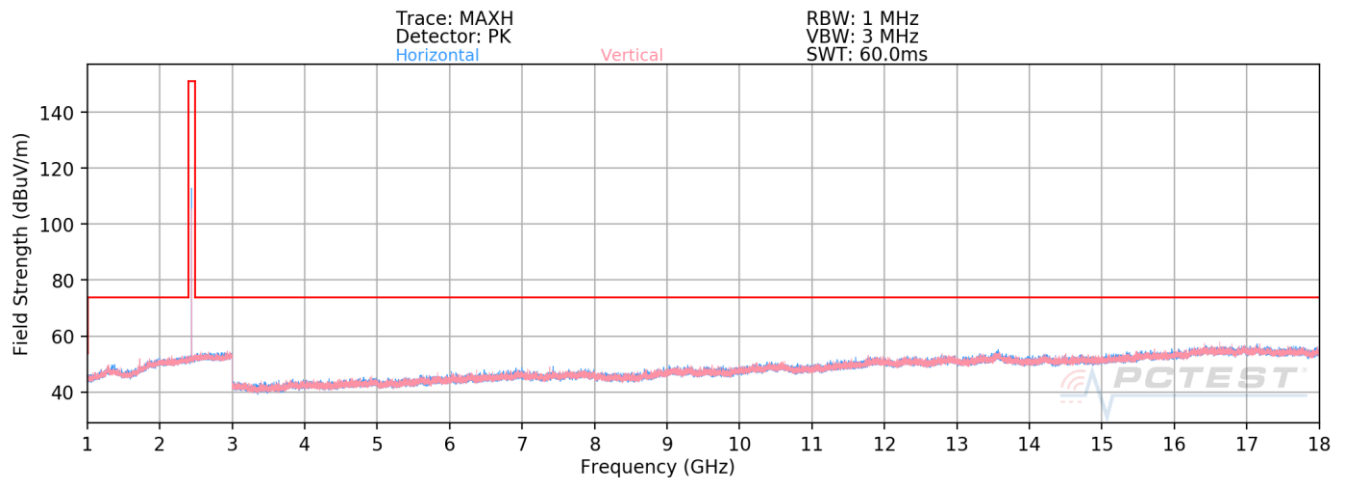
Plot 7-87. Radiated Spurious Emissions Above 1GHz TxBF (1Mbps, ePA - Ch. 0)

Bluetooth Mode: LE  
Data Rate: 1Mbps  
Distance of Measurements: 3 Meters  
Operating Frequency: 2402MHz  
Channel: 0

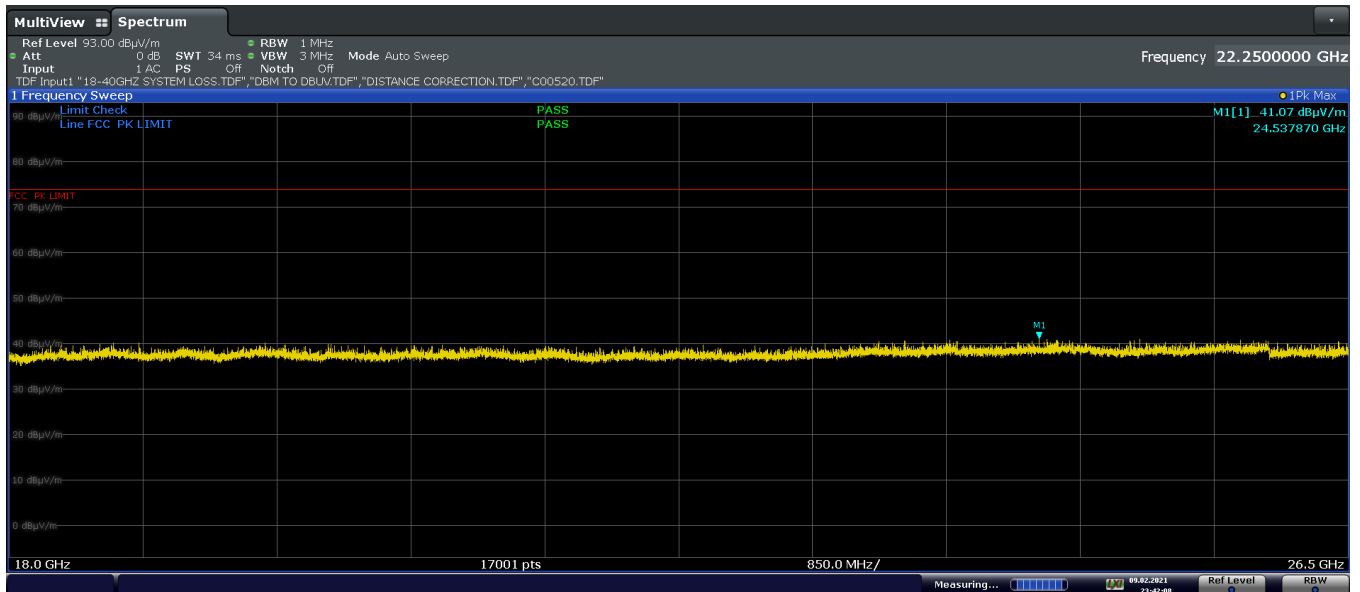
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBuV/m]	Limit [dBuV/m]	Margin [dB]
4804.00	Avg	H	-	-	-80.82	7.86	34.04	53.98	-19.94
4804.00	Peak	H	-	-	-68.96	7.86	45.90	73.98	-28.08
12010.00	Avg	H	-	-	-83.41	16.81	40.40	53.98	-13.58
12010.00	Peak	H	-	-	-71.72	16.81	52.09	73.98	-21.89

Table 7-20. Radiated Measurements TxBF

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 77 of 101

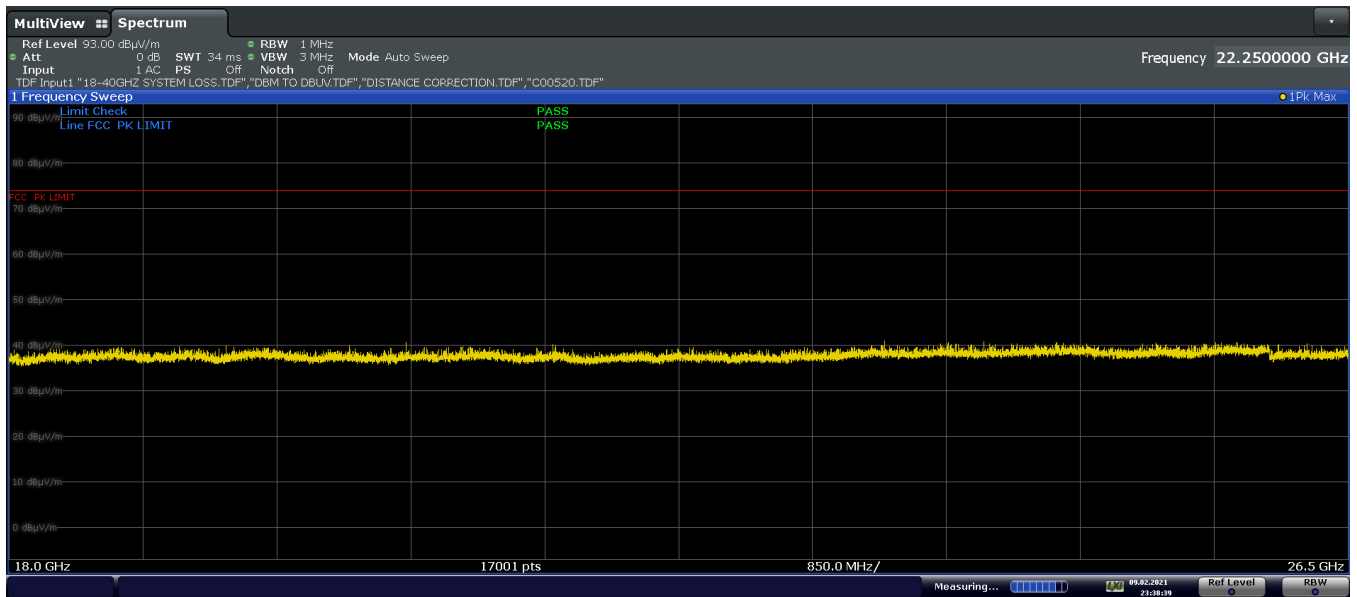


Plot 7-88. Radiated Spurious Emissions Above 1GHz TxBF (1Mbps, ePA – Ch. 19)



Plot 7-89. Radiated Spurious Emissions Above 18GHz TxBF (1Mbps, ePA – Ch.19, Pol. H)

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 78 of 101



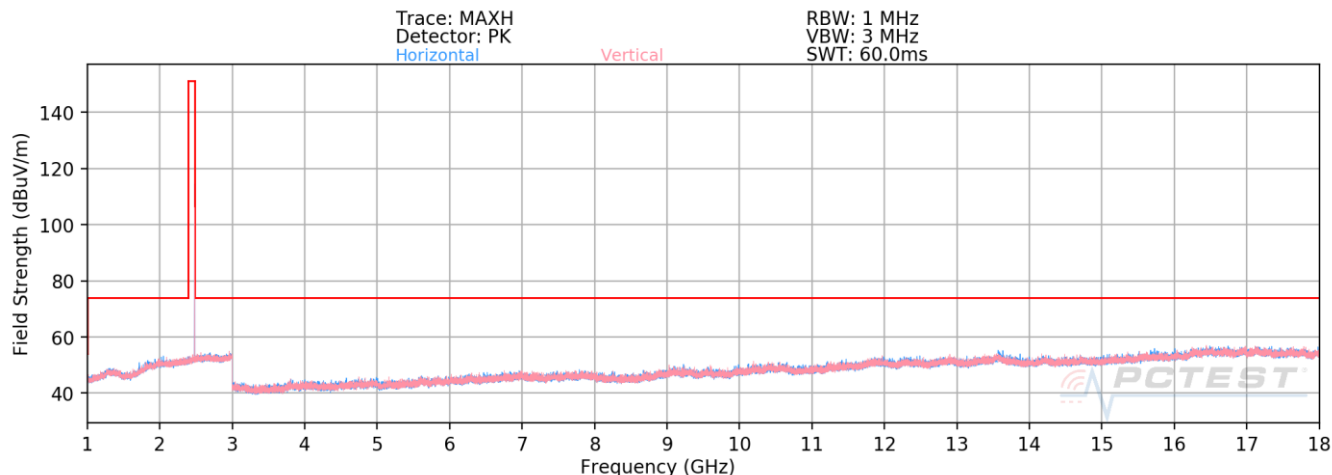
**Plot 7-90. Radiated Spurious Emissions Above 18GHz TxBF (1Mbps, ePA – Ch.19, Pol. V)**

Bluetooth Mode: LE  
 Data Rate: 1Mbps  
 Distance of Measurements: 3 Meters  
 Operating Frequency: 2440MHz  
 Channel: 19

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]
4880.00	Avg	H	-	-	-81.13	7.83	33.70	53.98	-20.28
4880.00	Peak	H	-	-	-69.78	7.83	45.05	73.98	-28.93
7320.00	Avg	H	-	-	-82.37	10.75	35.38	53.98	-18.60
7320.00	Peak	H	-	-	-71.12	10.75	46.63	73.98	-27.35
12200.00	Avg	H	-	-	-84.14	16.97	39.83	53.98	-14.15
12200.00	Peak	H	-	-	-72.88	16.97	51.09	73.98	-22.89

**Table 7-21. Radiated Measurements TxBF**

FCC ID: BCGA2377 IC: 579C-A2377	<b>MEASUREMENT REPORT (CERTIFICATION)</b>		Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 79 of 101



**Plot 7-91. Radiated Spurious Emissions Above 1GHz TxBF (1Mbps, ePA – Ch. 39)**

Bluetooth Mode: LE  
Data Rate: 1Mbps  
Distance of Measurements: 3 Meters  
Operating Frequency: 2480MHz  
Channel: 39

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBuV/m]	Limit [dBuV/m]	Margin [dB]
4960.00	Avg	H	-	-	-81.60	8.74	34.14	53.98	-19.84
4960.00	Peak	H	-	-	-70.10	8.74	45.64	73.98	-28.34
7440.00	Avg	H	-	-	-82.77	12.09	36.32	53.98	-17.66
7440.00	Peak	H	-	-	-70.89	12.09	48.20	73.98	-25.78
12400.00	Avg	H	-	-	-83.74	17.21	40.47	53.98	-13.51
12400.00	Peak	H	-	-	-72.43	17.21	51.78	73.98	-22.20

**Table 7-22. Radiated Measurements TxBF**

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 80 of 101

## 7.7.1 Radiated Restricted Band Edge Measurements

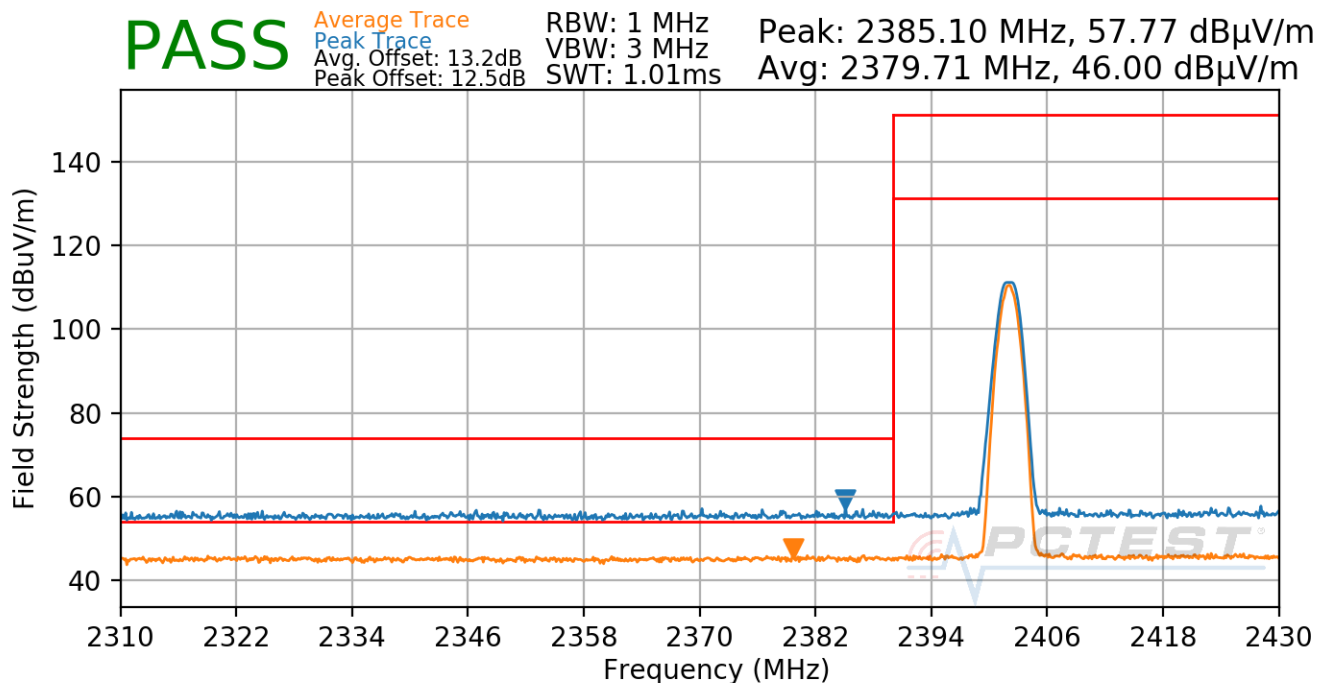
§15.205 §15.209; RSS-Gen [8.9]

The amplitude offset shown in the following plots for average measurements was calculated using the formula:

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

### Antenna WF8

Bluetooth Mode:	LE
Data Rate:	1Mbps
Power Scheme:	ePA
Measurement Distance:	3 Meters
Operating Frequency:	2402MHz
Channel:	0



Plot 7-92. Radiated Restricted Lower Band Edge Measurement Antenna WF8 (Average & Peak)

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 81 of 101

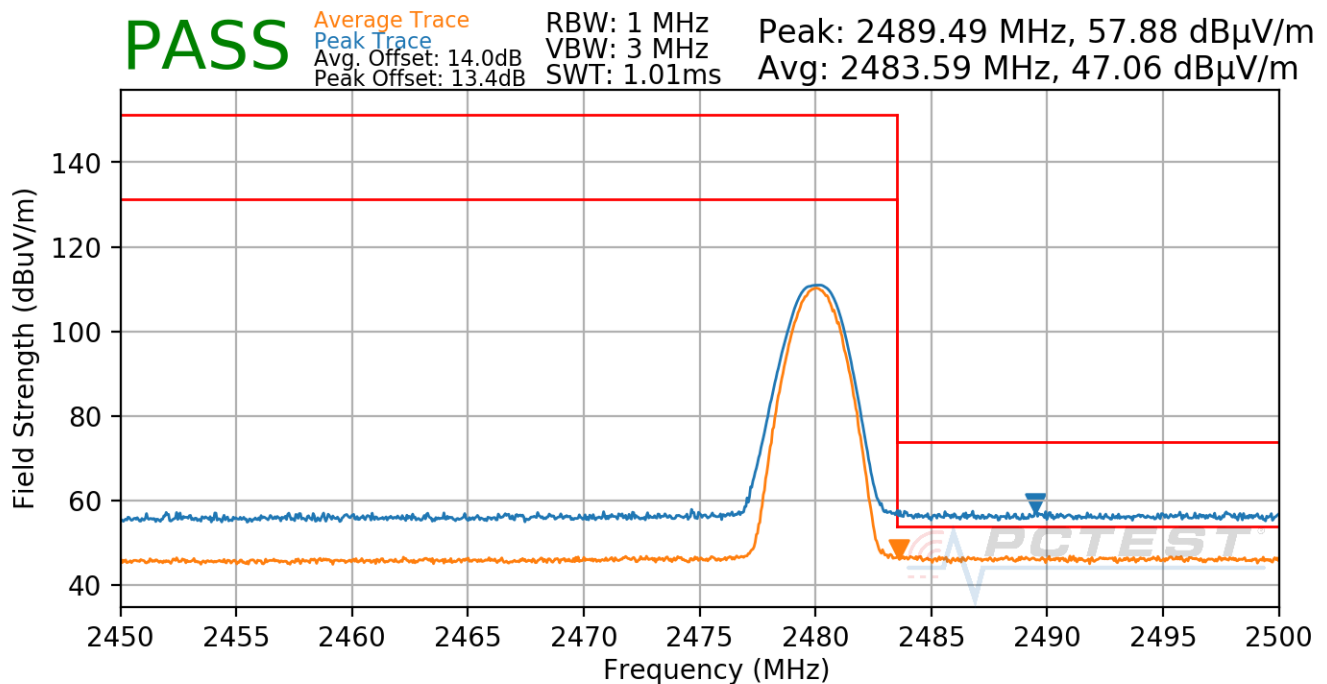
## Radiated Restricted Band Edge Measurements

§15.205 §15.209; RSS-Gen [8.9]

The amplitude offset shown in the following plots for average measurements was calculated using the formula:

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

Bluetooth Mode:	LE
Data Rate:	1Mbps
Power Scheme:	ePA
Measurement Distance:	3 Meters
Operating Frequency:	2480MHz
Channel:	39



**Plot 7-93. Radiated Restricted Upper Band Edge Measurement Antenna WF8 (Average & Peak)**

FCC ID: BCGA2377 IC: 579C-A2377		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 82 of 101

## Radiated Restricted Band Edge Measurements

§15.205 §15.209; RSS-Gen [8.9]

The amplitude offset shown in the following plots for average measurements was calculated using the formula:

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

Bluetooth Mode: LE

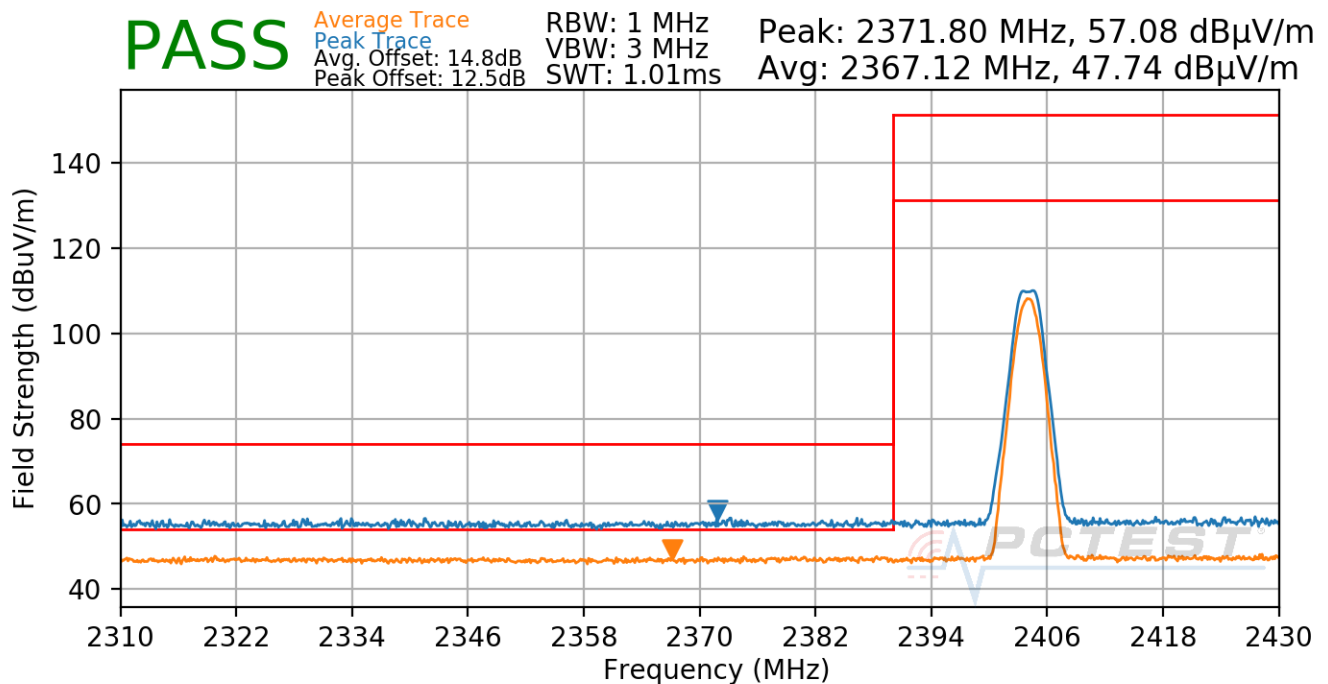
Data Rate: 2Mbps

Power Scheme: ePA

Measurement Distance: 3 Meters

Operating Frequency: 2404MHz

Channel: 1



**Plot 7-94. Radiated Restricted Lower Band Edge Measurement Antenna WF8 (Average & Peak)**

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 83 of 101



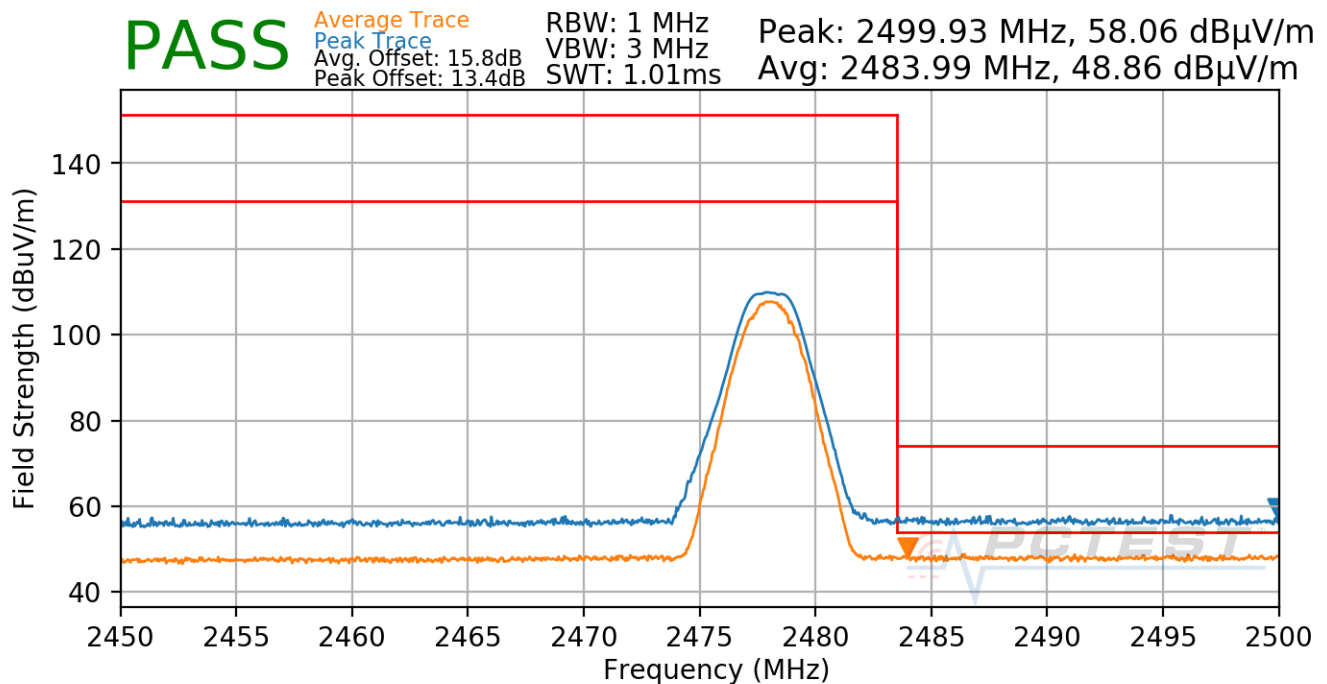
## Radiated Restricted Band Edge Measurements

§15.205 §15.209; RSS-Gen [8.9]

The amplitude offset shown in the following plots for average measurements was calculated using the formula:

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

Bluetooth Mode:	LE
Data Rate:	2Mbps
Power Scheme:	ePA
Measurement Distance:	3 Meters
Operating Frequency:	2478MHz
Channel:	38



**Plot 7-95. Radiated Restricted Upper Band Edge Measurement Antenna WF8 (Average & Peak)**

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 84 of 101

## Radiated Restricted Band Edge Measurements

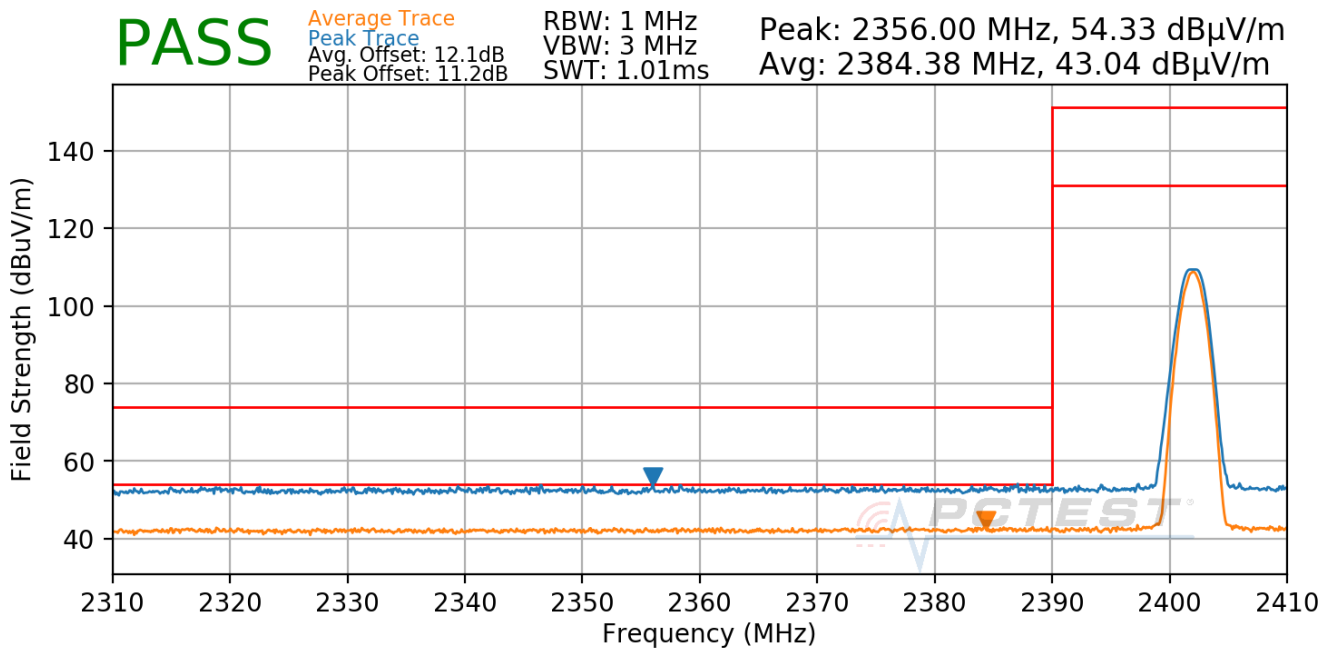
§15.205 §15.209; RSS-Gen [8.9]

The amplitude offset shown in the following plots for average measurements was calculated using the formula:

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

### Antenna WF7

Bluetooth Mode:	LE
Data Rate:	1Mbps
Power Scheme:	ePA
Measurement Distance:	3 Meters
Operating Frequency:	2402MHz
Channel:	0



**Plot 7-96. Radiated Restricted Lower Band Edge Measurement Antenna WF7 (Average & Peak)**

FCC ID: BCGA2377 IC: 579C-A2377		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 85 of 101

## Radiated Restricted Band Edge Measurements

§15.205 §15.209; RSS-Gen [8.9]

The amplitude offset shown in the following plots for average measurements was calculated using the formula:

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

Bluetooth Mode: LE

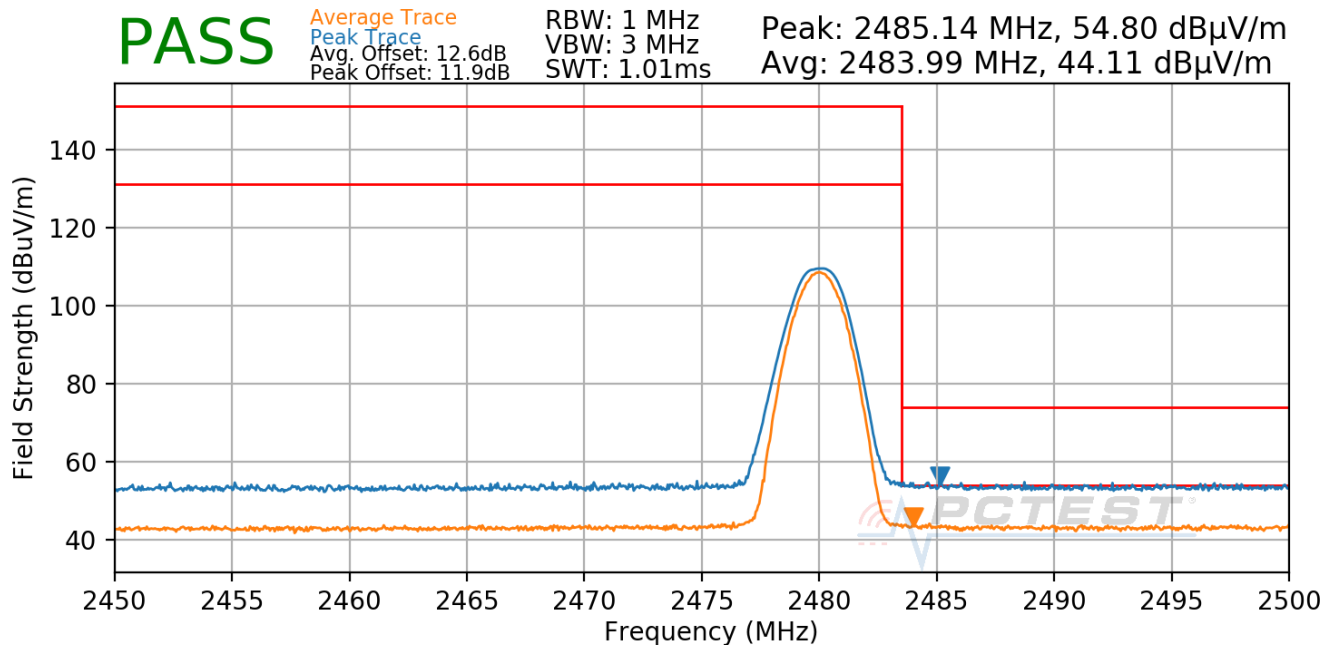
Data Rate: 1Mbps

Power Scheme: ePA

Measurement Distance: 3 Meters

Operating Frequency: 2480MHz

Channel: 39



**Plot 7-97. Radiated Restricted Upper Band Edge Measurement Antenna WF7 (Average & Peak)**

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 86 of 101

## Radiated Restricted Band Edge Measurements

§15.205 §15.209; RSS-Gen [8.9]

The amplitude offset shown in the following plots for average measurements was calculated using the formula:

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

Bluetooth Mode: LE

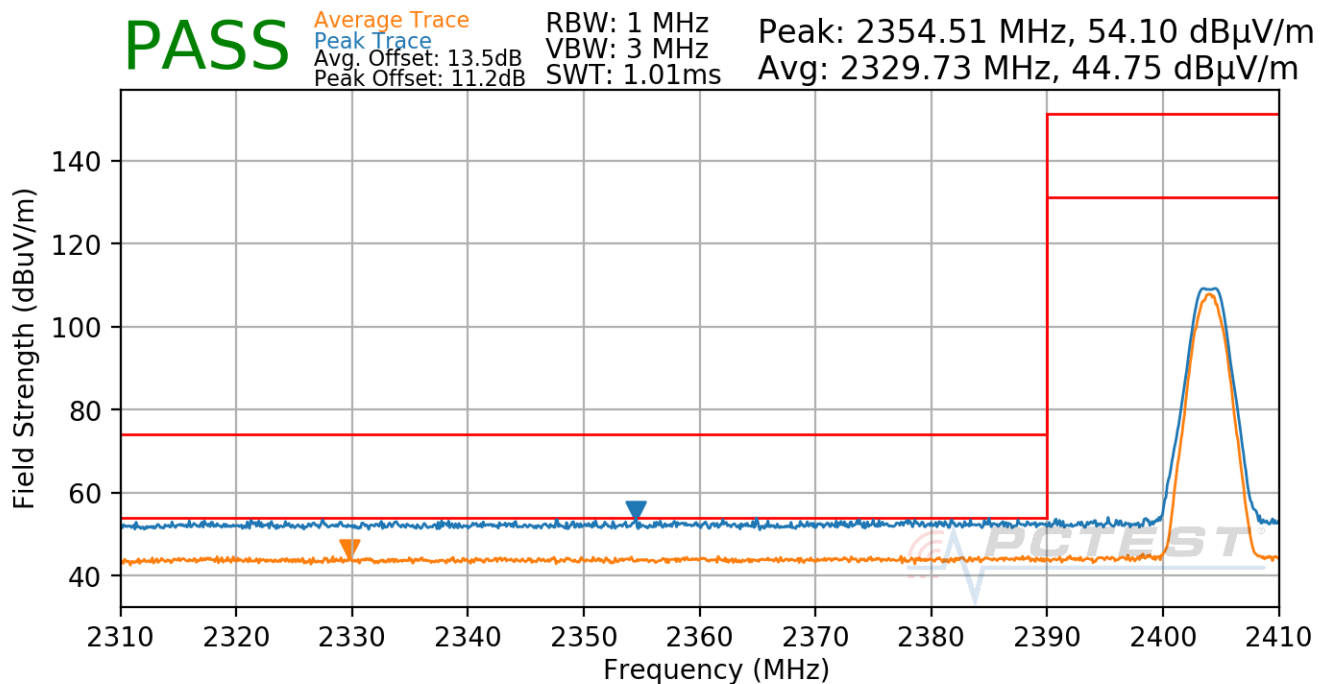
Data Rate: 2Mbps

Power Scheme: ePA

Measurement Distance: 3 Meters

Operating Frequency: 2404MHz

Channel: 1



**Plot 7-98. Radiated Restricted Lower Band Edge Measurement Antenna WF7 (Average & Peak)**

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 87 of 101

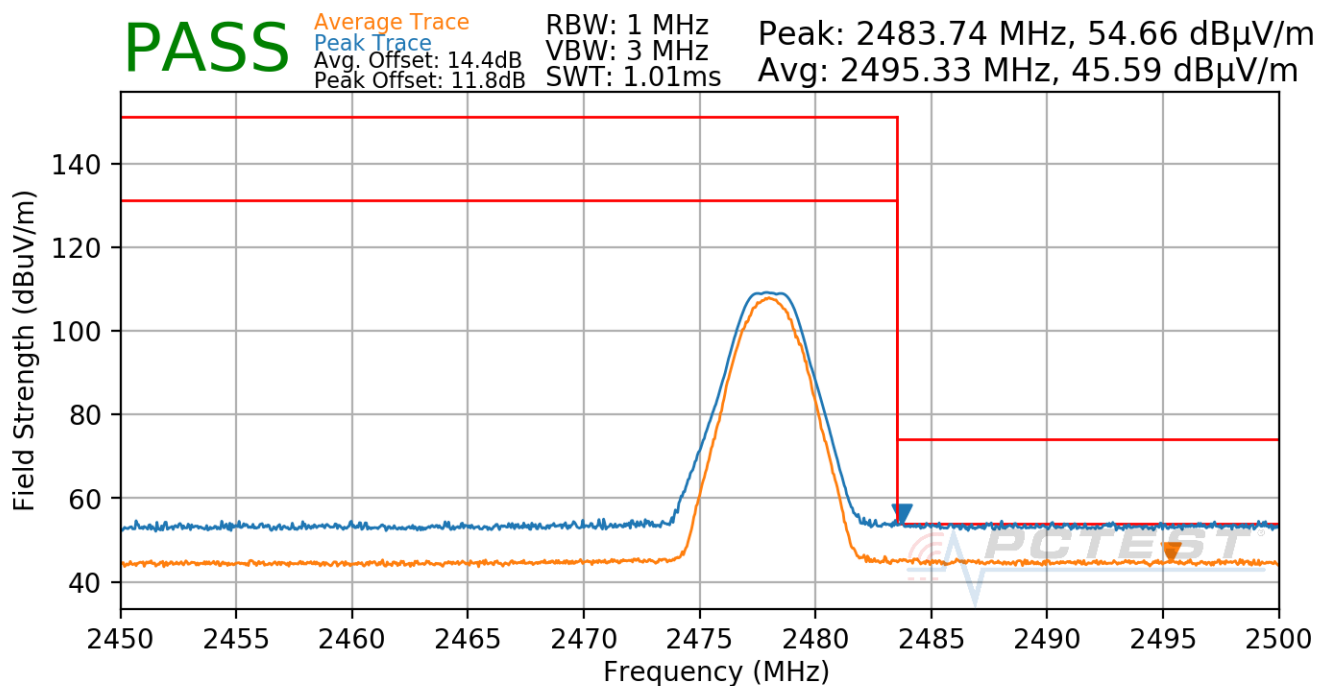
## Radiated Restricted Band Edge Measurements

§15.205 §15.209; RSS-Gen [8.9]

The amplitude offset shown in the following plots for average measurements was calculated using the formula:

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

Bluetooth Mode:	LE
Data Rate:	2Mbps
Power Scheme:	ePA
Measurement Distance:	3 Meters
Operating Frequency:	2478MHz
Channel:	38



**Plot 7-99. Radiated Restricted Upper Band Edge Measurement Antenna WF7 (Average & Peak)**

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 88 of 101

## Radiated Restricted Band Edge Measurements

§15.205 §15.209; RSS-Gen [8.9]

The amplitude offset shown in the following plots for average measurements was calculated using the formula:

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

### TxBF

Bluetooth Mode: LE

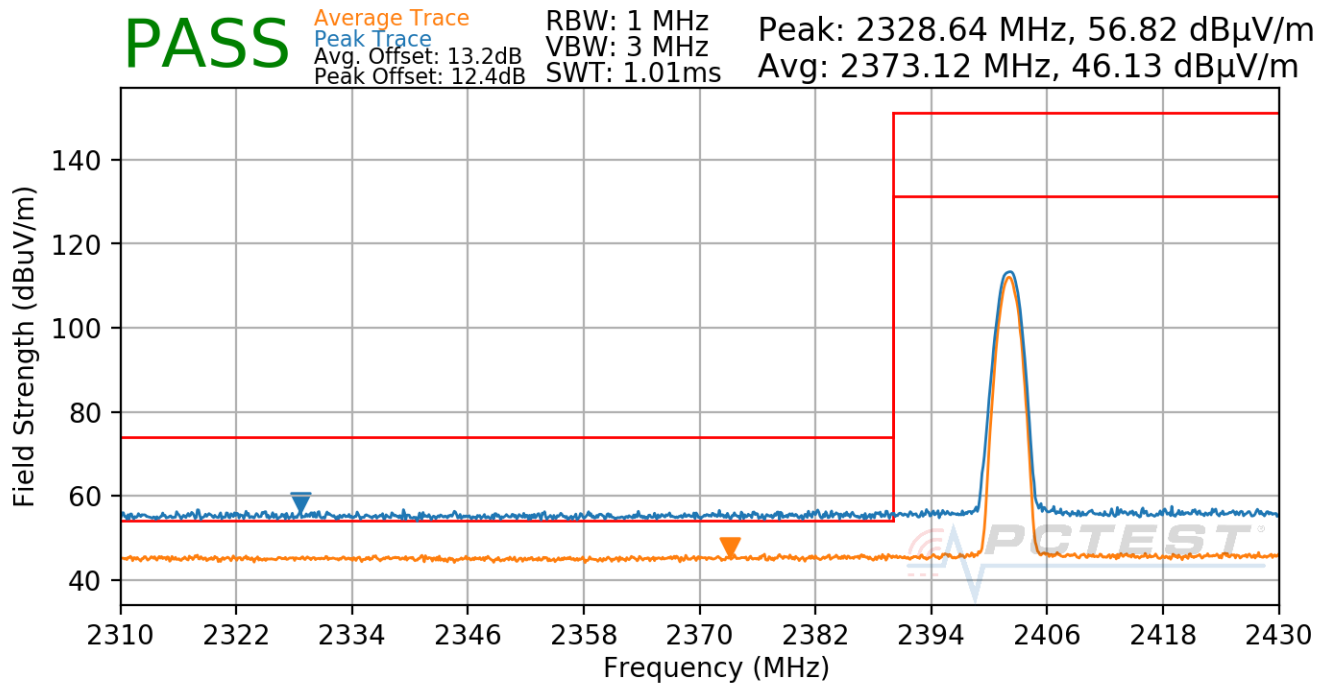
Data Rate: 1Mbps

Power Scheme: ePA

Measurement Distance: 3 Meters

Operating Frequency: 2402MHz

Channel: 0



Plot 7-100. Radiated Restricted Lower Band Edge Measurement TxBF (Average & Peak)

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 89 of 101

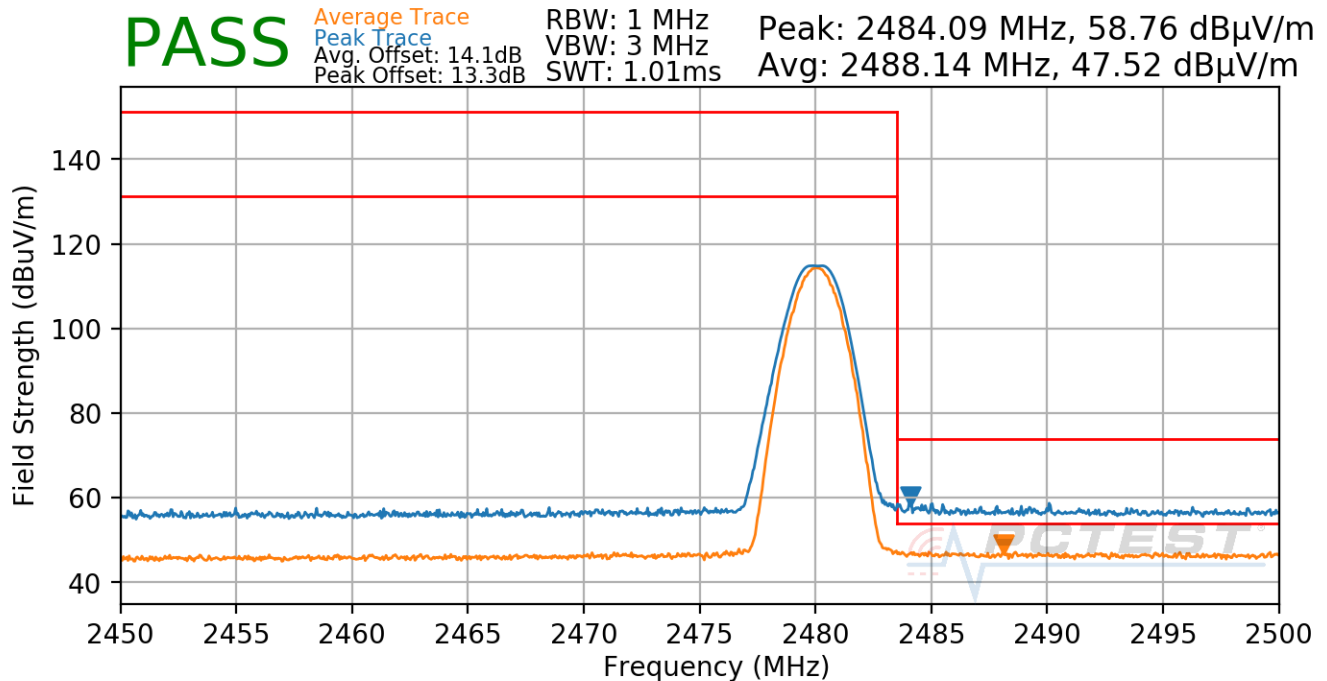
## Radiated Restricted Band Edge Measurements

§15.205 §15.209; RSS-Gen [8.9]

The amplitude offset shown in the following plots for average measurements was calculated using the formula:

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

Bluetooth Mode:	LE
Data Rate:	1Mbps
Power Scheme:	ePA
Measurement Distance:	3 Meters
Operating Frequency:	2480MHz
Channel:	39



**Plot 7-101. Radiated Restricted Upper Band Edge Measurement TxBF (Average & Peak)**

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 90 of 101



## Radiated Restricted Band Edge Measurements

§15.205 §15.209; RSS-Gen [8.9]

The amplitude offset shown in the following plots for average measurements was calculated using the formula:

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

Bluetooth Mode: LE

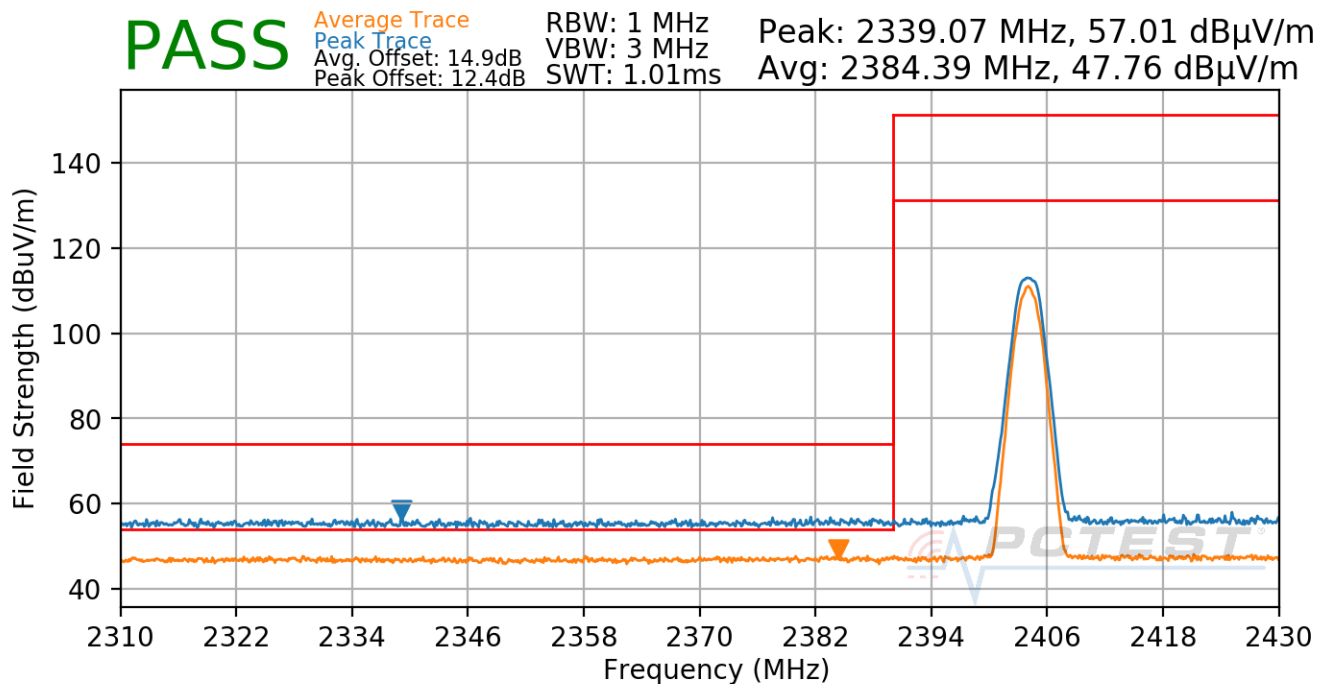
Data Rate: 2Mbps

Power Scheme: ePA

Measurement Distance: 3 Meters

Operating Frequency: 2404MHz

Channel: 1



**Plot 7-102. Radiated Restricted Lower Band Edge Measurement TxBF (Average & Peak)**

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 91 of 101

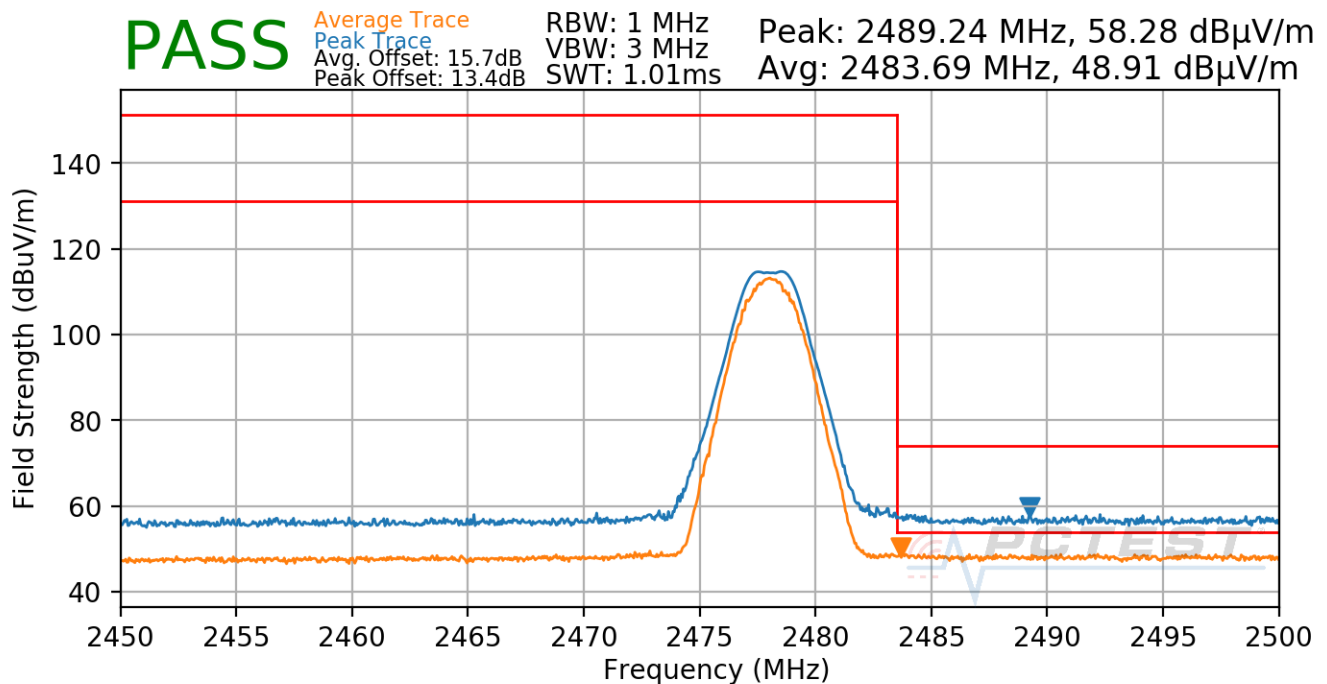
## Radiated Restricted Band Edge Measurements

§15.205 §15.209; RSS-Gen [8.9]

The amplitude offset shown in the following plots for average measurements was calculated using the formula:

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

Bluetooth Mode:	LE
Data Rate:	2Mbps
Power Scheme:	ePA
Measurement Distance:	3 Meters
Operating Frequency:	2478MHz
Channel:	38



**Plot 7-103. Radiated Restricted Upper Band Edge Measurement TxBF (Average & Peak)**

FCC ID: BCGA2377 IC: 579C-A2377		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 92 of 101

## 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 7-23 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 7-23. Radiated Limits**

#### Test Procedures Used

ANSI C63.10-2013

#### Test Settings

##### Quasi-Peak Field Strength Measurements

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

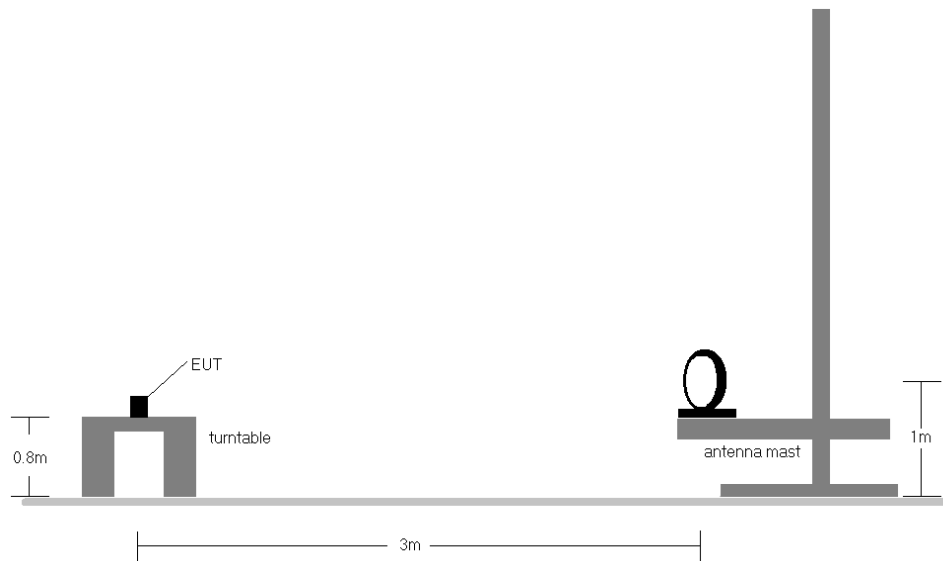
##### Peak Field Strength Measurements

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

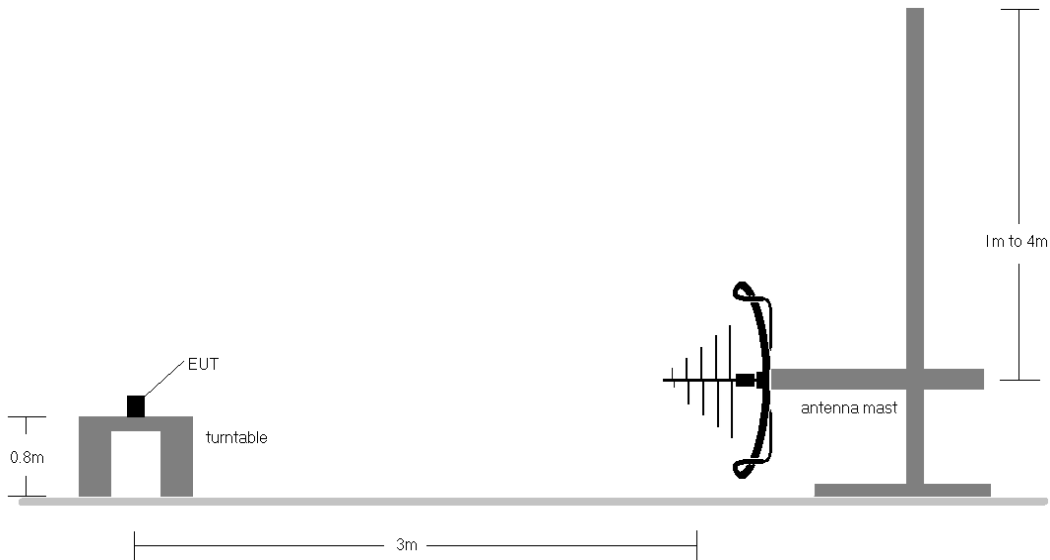
FCC ID: BCGA2377 IC: 579C-A2377	 <b>PCTEST</b> Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 93 of 101

## 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: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> 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 7-23.
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. All supported modulation, antenna (including TxBF mode) and power schemes have been tested on the unit and only worst case configuration is reported.
10. Both configurations below were investigated, and the worst case has been reported.
  - a. EUT powered by AC/DC adaptor via USB-C cable with wire charger
  - b. EUT powered by host PC via USB-C cable with wire charger

## Sample Calculations

### Determining Spurious Emissions Levels

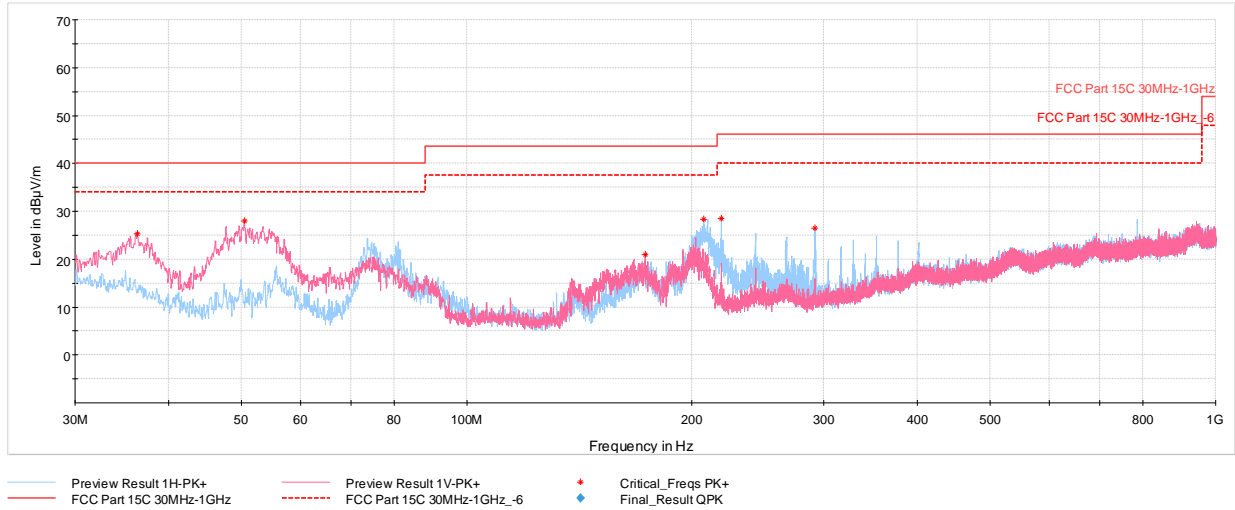
- Field Strength Level  $_{[dB\mu V/m]} = \text{Analyzer Level }_{[dBm]} + 107 + \text{AFCL }_{[dB/m]}$
- $\text{AFCL }_{[dB/m]} = \text{Antenna Factor }_{[dB/m]} + \text{Cable Loss }_{[dB]} - \text{Preamplifier Gain }_{[dB]}$
- $\text{Margin }_{[dB]} = \text{Field Strength Level }_{[dB\mu V/m]} - \text{Limit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

<b>FCC ID:</b> BCGA2377 <b>IC:</b> 579C-A2377	 <b>MEASUREMENT REPORT (CERTIFICATION)</b>		<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1C2101020001-05.BCG	<b>Test Dates:</b> 12/15/2020-3/12/2021	<b>EUT Type:</b> Tablet Device	Page 95 of 101

## Radiated Spurious Emissions Measurements (Below 1GHz)

**§15.209; RSS-Gen [8.9]**

### TxBF



**Plot 7-104. Radiated Spurious Emissions Below 1GHz TxBF (1Mbps, ePA – Ch.19, Pol. H & V, 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]
36.35	Peak	V	100	337	-66.66	-15.01	25.33	40.00	-14.67
50.47	Peak	V	100	300	-57.89	-21.07	28.04	40.00	-11.96
173.03	Peak	V	100	0	-68.92	-17.16	20.92	43.52	-22.60
207.17	Peak	H	100	199	-62.23	-16.48	28.29	43.52	-15.23
218.71	Peak	H	100	202	-61.95	-16.56	28.49	46.02	-17.53
291.61	Peak	H	100	145	-65.74	-14.83	26.43	46.02	-19.59

**Table 7-24. Radiated Spurious Emissions Below 1GHz TxBF (1Mbps, ePA – Ch.19, Pol. H & V, with AC/DC Adapter)**

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> 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 7-25. 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

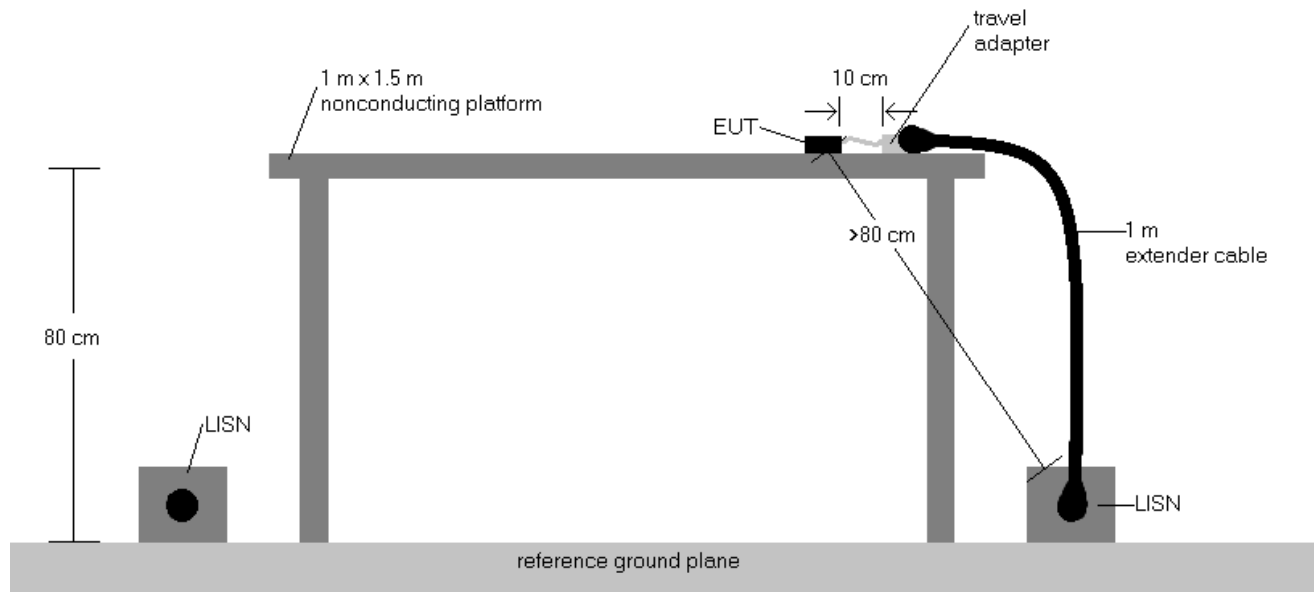
1. Analyzer center frequency was set to the frequency of the spurious emission of interest
2. RBW = 9kHz (for emissions from 150kHz – 30MHz)
3. Detector = RMS
4. Sweep time = auto couple
5. Trace mode = max hold
6. Trace was allowed to stabilize

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## Test Setup

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

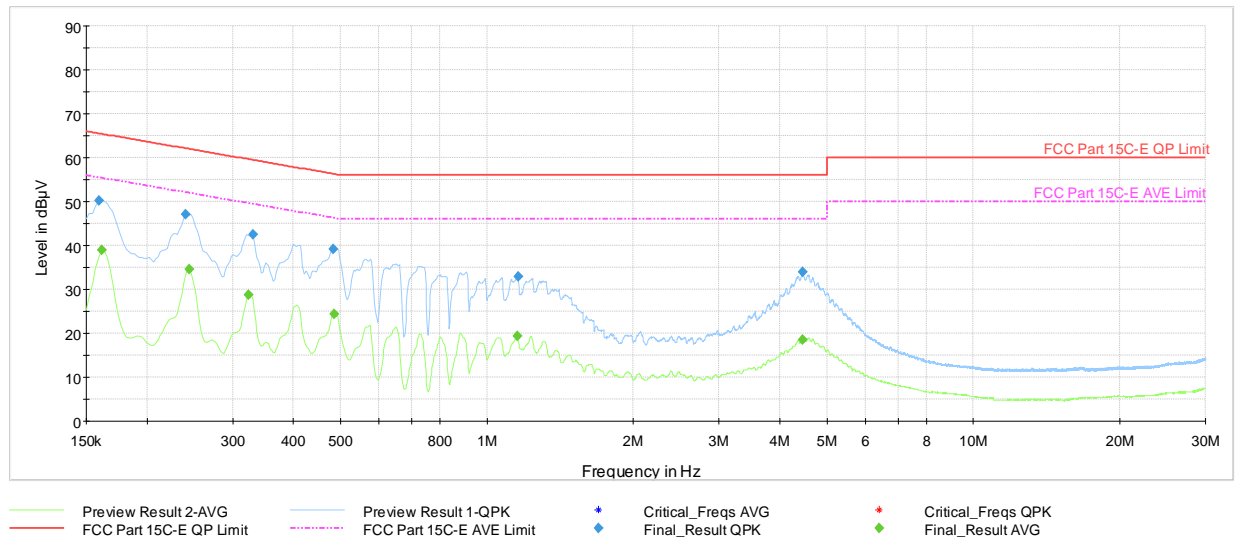


**Figure 7-9. Test Instrument & Measurement Setup**

## Test Notes

- 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.
- The limit for an intentional radiator from 150kHz to 30MHz are specified in Part 15.207 and RSS-Gen (8.8).
- $\text{Corr. (dB)} = \text{Cable loss (dB)} + \text{LISN insertion factor (dB)}$
- $\text{QP/AV Level (dB}\mu\text{V)} = \text{QP/AV Analyzer/Receiver Level (dB}\mu\text{V)} + \text{Correction Factor (dB)}$
- $\text{Margin (dB)} = \text{QP/AV Level (dB}\mu\text{V)} - \text{QP/AV Limit (dB}\mu\text{V)}$
- Traces shown in plot are made using a quasi peak and average detectors.
- Deviations to the Specifications: None.
- All supported modulation, antenna (including TxBF mode) and power schemes have been tested on the unit and only worst case configuration is reported.
- 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

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 98 of 101

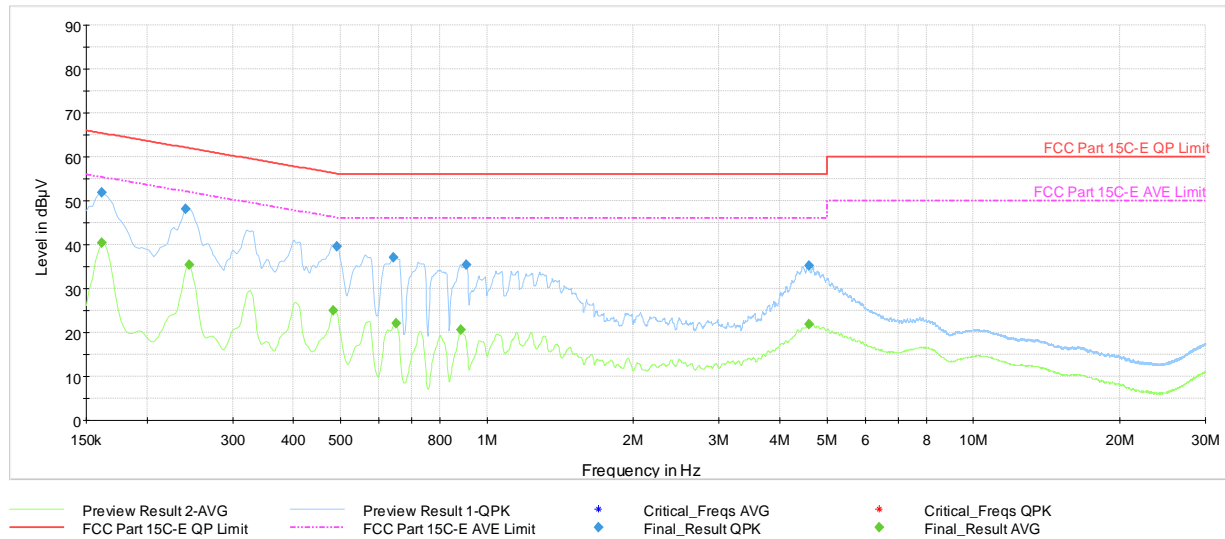


**Plot 7-105. AC Line Conducted Plot with Bluetooth LE Tx BF (1Mbps, ePA – Ch.19, L1, with AC/DC Adapter)**

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.159	FINAL	50.2	—	65.52	-15.34	L1	GND
0.161	FINAL	—	38.94	55.40	-16.46	L1	GND
0.240	FINAL	47.2	—	62.10	-14.94	L1	GND
0.245	FINAL	—	34.54	51.94	-17.40	L1	GND
0.323	FINAL	—	28.70	49.62	-20.92	L1	GND
0.330	FINAL	42.5	—	59.45	-16.97	L1	GND
0.483	FINAL	39.1	—	56.29	-17.15	L1	GND
0.485	FINAL	—	24.31	46.25	-21.94	L1	GND
1.154	FINAL	—	19.40	46.00	-26.60	L1	GND
1.158	FINAL	32.9	—	56.00	-23.14	L1	GND
4.454	FINAL	33.9	—	56.00	-22.11	L1	GND
4.463	FINAL	—	18.51	46.00	-27.49	L1	GND

**Table 7-26. AC Line Conducted Data with Bluetooth LE Tx BF (1Mbps, ePA – Ch.19, L1, with AC/DC Adapter)**

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 99 of 101



**Plot 7-106. AC Line Conducted Plot with Bluetooth LE Tx BF (1Mbps, ePA – Ch.19, N, with AC/DC Adapter)**

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.161	FINAL	52.0	—	65.40	-13.43	N	GND
0.161	FINAL	—	40.43	55.40	-14.96	N	GND
0.240	FINAL	48.2	—	62.10	-13.89	N	GND
0.245	FINAL	—	35.33	51.94	-16.61	N	GND
0.483	FINAL	—	24.93	46.29	-21.35	N	GND
0.492	FINAL	39.7	—	56.13	-16.47	N	GND
0.643	FINAL	37.0	—	56.00	-19.00	N	GND
0.650	FINAL	—	22.09	46.00	-23.91	N	GND
0.884	FINAL	—	20.62	46.00	-25.38	N	GND
0.908	FINAL	35.4	—	56.00	-20.63	N	GND
4.589	FINAL	35.2	—	56.00	-20.79	N	GND
4.594	FINAL	—	21.80	46.00	-24.20	N	GND

**Table 7-27. AC Line Conducted Data with Bluetooth LE Tx BF (1Mbps, ePA – Ch.19, N, with AC/DC Adapter)**

FCC ID: BCGA2377 IC: 579C-A2377		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020001-05.BCG	Test Dates: 12/15/2020-3/12/2021	EUT Type: Tablet Device	Page 100 of 101

## 8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Apple Tablet Device FCC ID: BCGA2377 and IC: 579C-A2377** 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.

<b>FCC ID:</b> BCGA2377 <b>IC:</b> 579C-A2377	 <b>PCTEST</b> Proud to be part of  element	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1C2101020001-05.BCG	<b>Test Dates:</b> 12/15/2020-3/12/2021	<b>EUT Type:</b> Tablet Device	Page 101 of 101