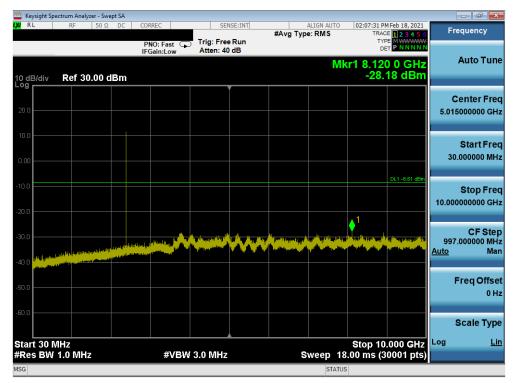
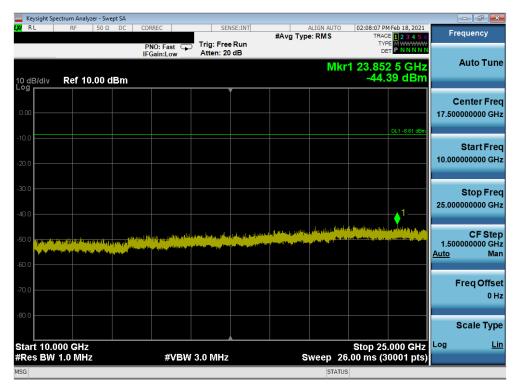


Antenna 8



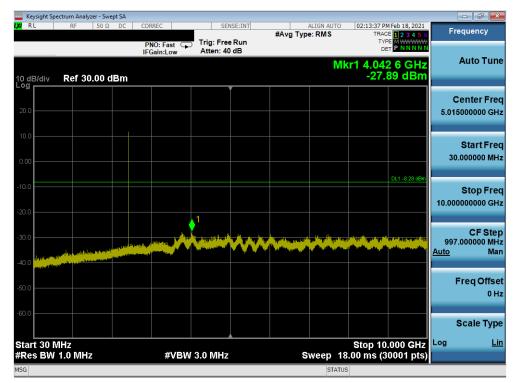
Plot 7-69. Conducted Spurious Plot Antenna 8 (Bluetooth (LE), 1Mbps, ePA - Ch. 0)



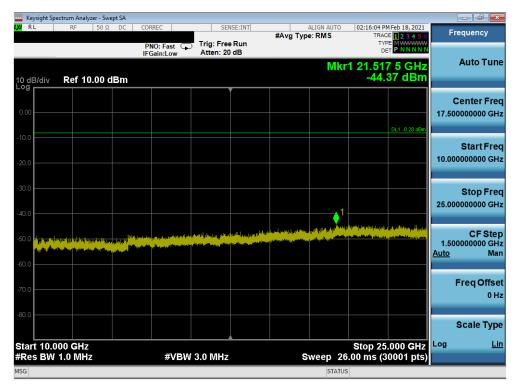
Plot 7-70. Conducted Spurious Plot Antenna 8 (Bluetooth (LE), 1Mbps, ePA - Ch. 0)

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 62 of 101	
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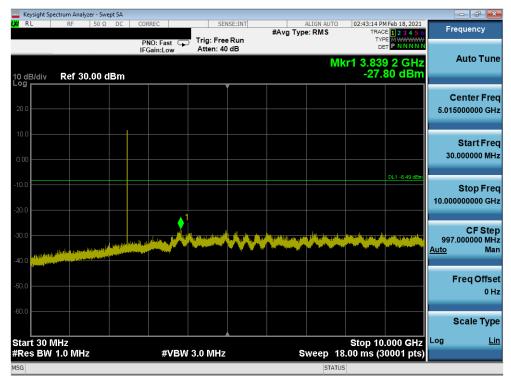
Plot 7-71. Conducted Spurious Plot Antenna 8 (Bluetooth (LE), 1Mbps, ePA - Ch. 19)



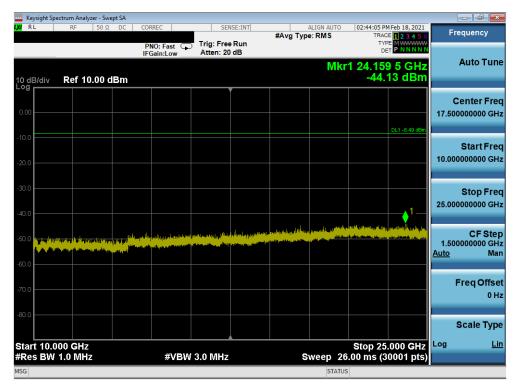
Plot 7-72. Conducted Spurious Plot Antenna 8 (Bluetooth (LE), 1Mbps, ePA – Ch. 19)

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
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Plot 7-73. Conducted Spurious Plot Antenna 8 (Bluetooth (LE), 1Mbps, ePA - Ch. 39)

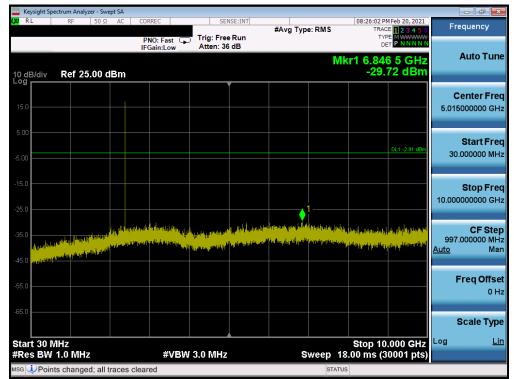


Plot 7-74. Conducted Spurious Plot Antenna 8 (Bluetooth (LE), 1Mbps, ePA – Ch. 39)

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 64 of 101
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Antenna 7



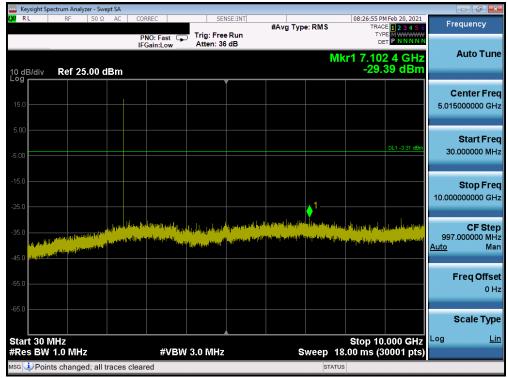
Plot 7-75. Conducted Spurious Plot Antenna 7 (Bluetooth (LE), 1Mbps, ePA - Ch. 0)



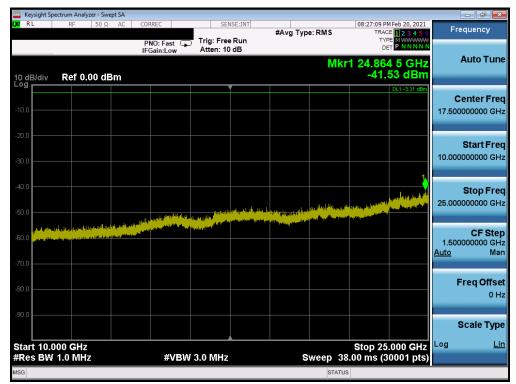
Plot 7-76. Conducted Spurious Plot Antenna 7 (Bluetooth (LE), 1Mbps, ePA - Ch. 0)

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 65 of 101	
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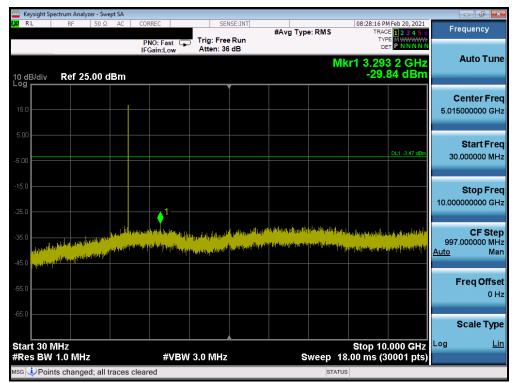
Plot 7-77. Conducted Spurious Plot Antenna 7 (Bluetooth (LE), 1Mbps, ePA - Ch. 19)



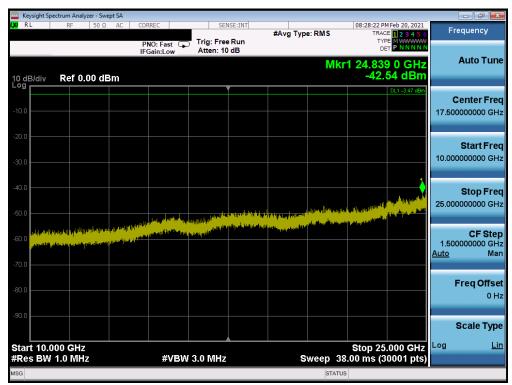
Plot 7-78. Conducted Spurious Plot Antenna 7 (Bluetooth (LE), 1Mbps, ePA - Ch. 19)

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 66 of 101	
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Plot 7-79. Conducted Spurious Plot Antenna 7 (Bluetooth (LE), 1Mbps, ePA - Ch. 39)



Plot 7-80. Conducted Spurious Plot Antenna 7 (Bluetooth (LE), 1Mbps, ePA - Ch. 39)

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 67 of 101
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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 [µV/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 > 2 x span/RBW)
- 6. Sweep time = auto
- 7. Trace (RMS) averaging was performed over at least 100 traces

Peak Field Strength Measurements

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

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Test Setup

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

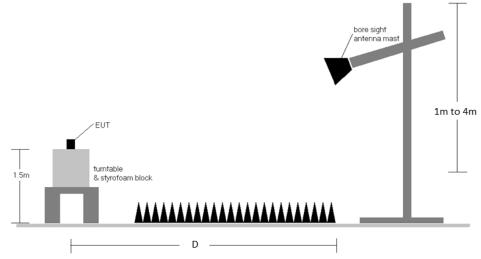


Figure 7-6. Radiated Test Setup >1GHz

Test Notes

- 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.

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Sample Calculations

Determining Spurious Emissions Levels

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

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:

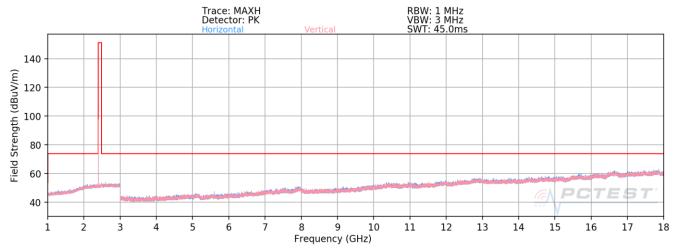
Offset (dB) = (Antenna Factor + Cable Loss + Attenuator) – Preamplifier Gain

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 70 of 101	
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Radiated Spurious Emission Measurements (1 – 18GHz) §15.205 §15.209 §15.247(d); RSS-Gen [8.9]

Antenna 8



Plot 7-81. Radiated Spurious Emissions Above 1GHz Antenna 8 (1Mbps, ePA - Ch. 0)

Bluetooth Mode:

Data Rate:

Distance of Measurements:

Operating Frequency:

Channel:

LE

1Mbps

3 Meters

2402MHz

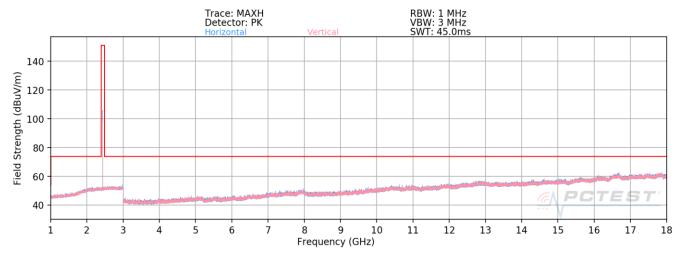
0

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]
4804.00	Avg	Н	-	-	-81.55	9.09	34.54	53.98	-19.44
4804.00	Peak	Н	-	-	-69.95	9.09	46.14	73.98	-27.84
12010.00	Avg	Н	-	-	-84.82	21.24	43.42	53.98	-10.55
12010.00	Peak	Н	-	-	-73.44	21.24	54.80	73.98	-19.17

Table 7-14. Radiated Measurements Antenna 8

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 71 of 101	
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Plot 7-82. Radiated Spurious Emissions Above 1GHz Antenna 8 (1Mbps, ePA - Ch. 19)

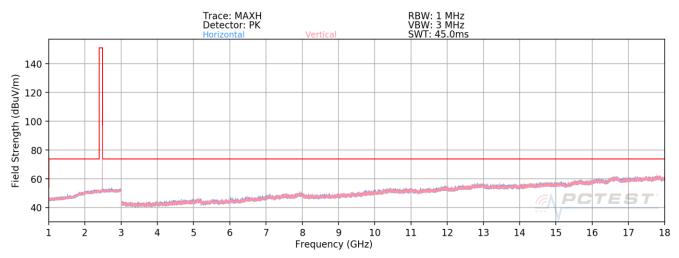
Bluetooth Mode: LE Data Rate: 1Mbps Distance of Measurements: 3 Meters Operating Frequency: 2440MHz Channel: 19

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4880.00	Avg	Н	-	-	-81.80	9.46	34.66	53.98	-19.32
4880.00	Peak	Н	-	-	-69.82	9.46	46.64	73.98	-27.34
7320.00	Avg	Н	-	-	-83.08	13.93	37.85	53.98	-16.13
7320.00	Peak	Н	-	-	-71.64	13.93	49.29	73.98	-24.69
12200.00	Avg	Н	-	-	-85.26	21.35	43.09	53.98	-10.89
12200.00	Peak	Н	-	-	-73.76	21.35	54.59	73.98	-19.39

Table 7-15. Radiated Measurements Antenna 8

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N: Test Dates:		EUT Type:	Dogo 72 of 101	
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Plot 7-83. Radiated Spurious Emissions Above 1GHz Antenna 8 (1Mbps ePA - Ch. 39)

LE Bluetooth Mode: 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 [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4960.00	Avg	Н	-	-	-81.83	9.41	34.58	53.98	-19.40
4960.00	Peak	Н	-	-	-69.46	9.41	46.95	73.98	-27.03
7440.00	Avg	Н	-	-	-83.74	14.77	38.03	53.98	-15.95
7440.00	Peak	Н	-	-	-72.00	14.77	49.77	73.98	-24.21
12400.00	Avg	Н	-	-	-84.89	21.89	44.00	53.98	-9.98
12400.00	Peak	Н	-	-	-73.61	21.89	55.28	73.98	-18.70

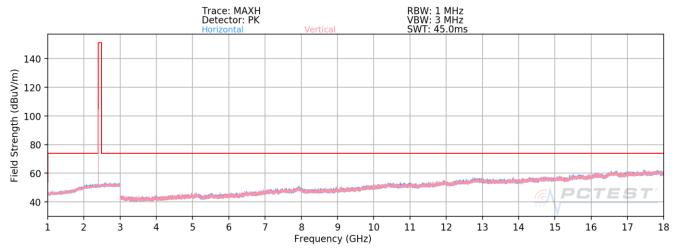
Table 7-16. Radiated Measurements Antenna 8

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 72 of 101
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Radiated Spurious Emission Measurements (1 – 18GHz) §15.205 §15.209 §15.247(d); RSS-Gen [8.9]

Antenna 7



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

Bluetooth Mode:

Data Rate:

Distance of Measurements:

Operating Frequency:

Channel:

LE

1Mbps

3 Meters

2402MHz

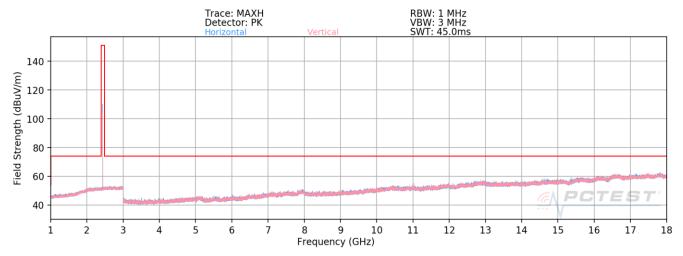
0

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]
4804.00	Avg	Н	-	-	-81.53	9.09	34.56	53.98	-19.42
4804.00	Peak	Н	-	-	-70.22	9.09	45.87	73.98	-28.11
12010.00	Avg	Н	-	-	-84.78	21.24	43.46	53.98	-10.51
12010.00	Peak	Н	-	-	-73.65	21.24	54.59	73.98	-19.38

Table 7-17. Radiated Measurements Antenna 7

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 74 of 101
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Plot 7-85. Radiated Spurious Emissions Above 1GHz Antenna 7 (1Mbps, ePA - Ch. 19)

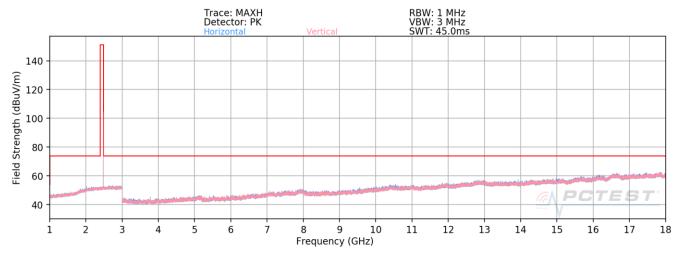
Bluetooth Mode: LE Data Rate: 1Mbps Distance of Measurements: 3 Meters Operating Frequency: 2440MHz Channel: 19

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4880.00	Avg	Н	-	-	-81.81	9.46	34.65	53.98	-19.33
4880.00	Peak	Н	-	-	-69.94	9.46	46.52	73.98	-27.46
7320.00	Avg	Н	-	-	-83.09	13.93	37.84	53.98	-16.14
7320.00	Peak	Н	-	-	-71.10	13.93	49.83	73.98	-24.15
12200.00	Avg	Н	-	-	-85.12	21.35	43.23	53.98	-10.75
12200.00	Peak	Н	-	-	-73.65	21.35	54.70	73.98	-19.28

Table 7-18. Radiated Measurements Antenna 7

FCC ID: BCGA2378 IC: 579C-A2378	PCTEST* Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 75 of 101
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Plot 7-86. Radiated Spurious Emissions Above 1GHz Antenna 7 (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 [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4960.00	Avg	Н	-	-	-81.74	9.41	34.67	53.98	-19.31
4960.00	Peak	Н	-	-	-70.48	9.41	45.93	73.98	-28.05
7440.00	Avg	Н	-	-	-83.60	14.77	38.17	53.98	-15.81
7440.00	Peak	Н	-	-	-71.74	14.77	50.03	73.98	-23.95
12400.00	Avg	Н	-	-	-84.67	21.89	44.22	53.98	-9.76
12400.00	Peak	Н	-	-	-72.96	21.89	55.93	73.98	-18.05

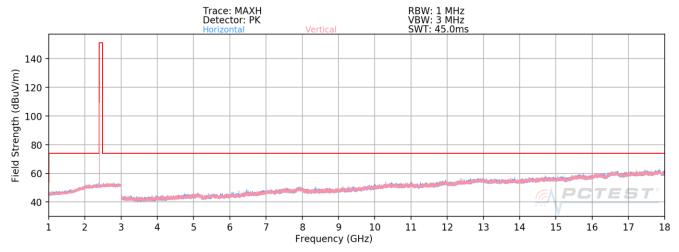
Table 7-19. Radiated Measurements Antenna 7

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 76 of 101
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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

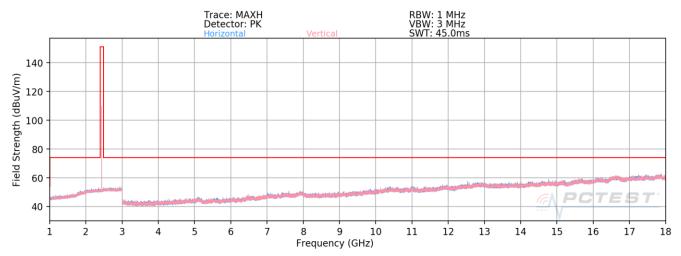
Channel: 0

Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4804.00	Avg	V	-	-	-81.62	9.09	34.47	53.98	-19.51
4804.00	Peak	V	ı	-	-70.01	9.09	46.08	73.98	-27.90
12010.00	Avg	V	ı	-	-84.80	21.24	43.44	53.98	-10.53
12010.00	Peak	V	-	-	-73.90	21.24	54.34	73.98	-19.63

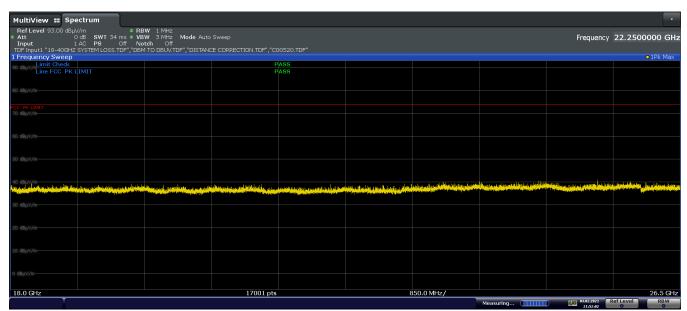
Table 7-20. Radiated Measurements TxBF

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
Test Report S/N: Test Dates:		EUT Type:	Dogo 77 of 101	
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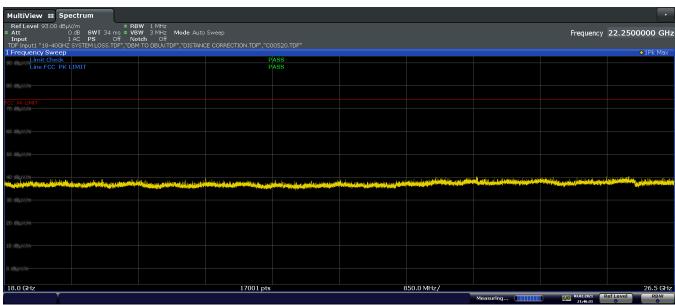
Plot 7-88. Radiated Spurious Emissions Above 1GHz TxBF (1Mbps, ePA - Ch. 19)



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

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Plot 7-90. Radiated Spurious Emissions Above 18GHz TxBF (1Mbps, ePA - Ch.19, Pol. V)

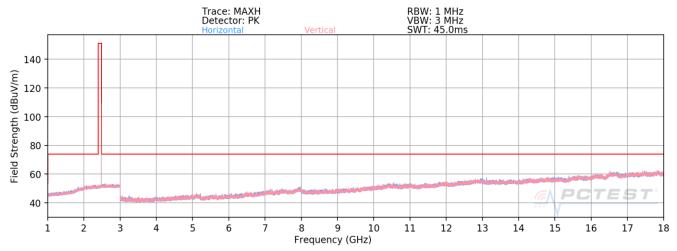
Bluetooth Mode: LE Data Rate: 1Mbps Distance of Measurements: 3 Meters Operating Frequency: 2440MHz Channel: 19

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	V	-	-	-81.75	9.46	34.71	53.98	-19.27
4880.00	Peak	٧	-	-	-70.72	9.46	45.74	73.98	-28.24
7320.00	Avg	V	1	-	-82.94	13.93	37.99	53.98	-15.99
7320.00	Peak	V	•	-	-71.27	13.93	49.66	73.98	-24.32
12200.00	Avg	>	•	-	-85.13	21.35	43.22	53.98	-10.76
12200.00	Peak	V	-	-	-73.83	21.35	54.52	73.98	-19.46

Table 7-21. Radiated Measurements TxBF

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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Plot 7-91. Radiated Spurious Emissions Above 1GHz TxBF (1Mbps, ePA - Ch. 39)

LE Bluetooth Mode: 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 [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4960.00	Avg	V	-	-	-81.58	9.41	34.83	53.98	-19.15
4960.00	Peak	V	-	-	-69.77	9.41	46.64	73.98	-27.34
7440.00	Avg	V	-	-	-83.79	14.77	37.98	53.98	-16.00
7440.00	Peak	V	-	-	-72.26	14.77	49.51	73.98	-24.47
12400.00	Avg	V	-	-	-84.63	21.89	44.26	53.98	-9.72
12400.00	Peak	V	-	-	-73.10	21.89	55.79	73.98	-18.19

Table 7-22. Radiated Measurements TxBF

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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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

Antenna 8

Bluetooth Mode:

LE

Data Rate:

1Mbps

Power Scheme:

ePA

Measurement Distance:

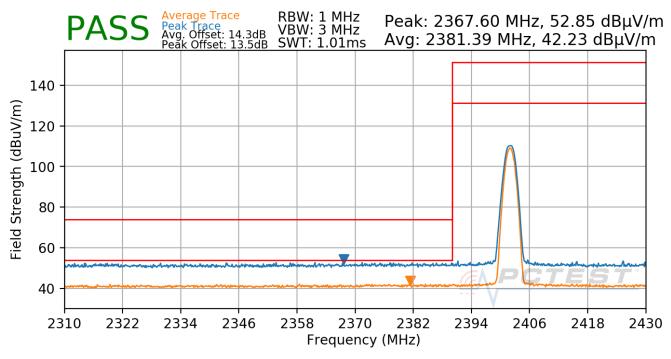
3 Meters

Operating Frequency:

2402MHz

Channel:

0



Plot 7-92. Radiated Restricted Lower Band Edge Measurement Antenna 8 (Average & Peak)

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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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:

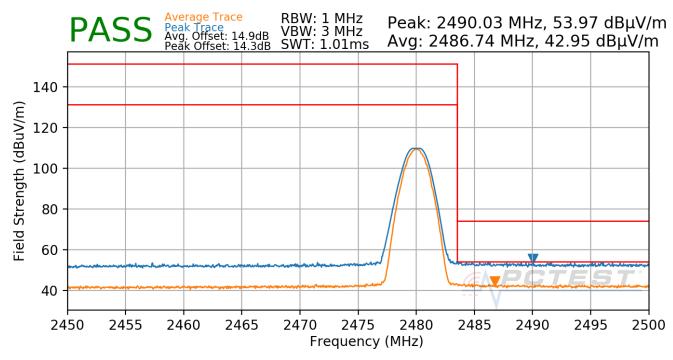
3 Meters

Operating Frequency:

2480MHz

Channel:

39



Plot 7-93. Radiated Restricted Upper Band Edge Measurement Antenna 8 (Average & Peak)

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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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:

2Mbps

Power Scheme:

ePA

Measurement Distance:

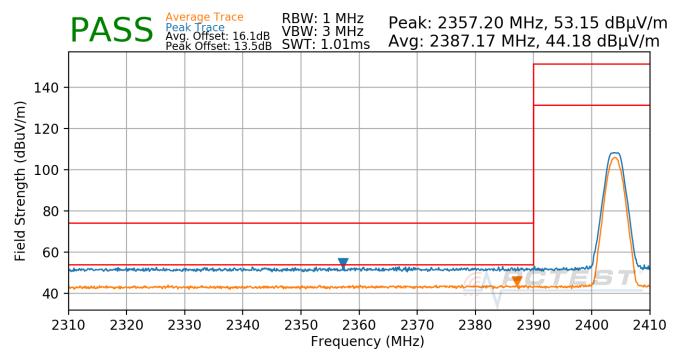
3 Meters

Operating Frequency:

2404MHz

Channel:

1



Plot 7-94. Radiated Restricted Lower Band Edge Measurement Antenna 8 (Average & Peak)

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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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:

2Mbps

Power Scheme:

ePA

Measurement Distance:

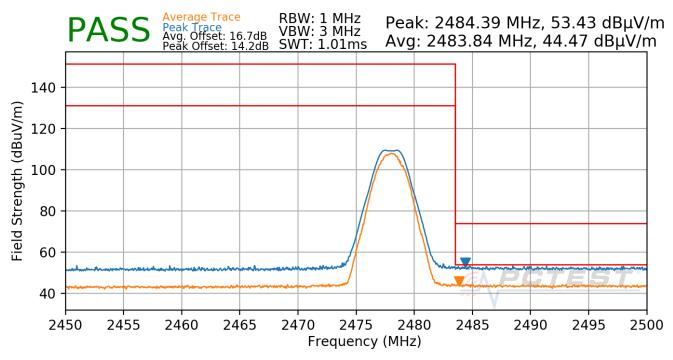
3 Meters

Operating Frequency:

2478MHz

Channel:

38



Plot 7-95. Radiated Restricted Upper Band Edge Measurement Antenna 8 (Average & Peak)

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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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

Antenna 7

Bluetooth Mode:

LE

Data Rate:

1Mbps

Power Scheme:

ePA

Measurement Distance:

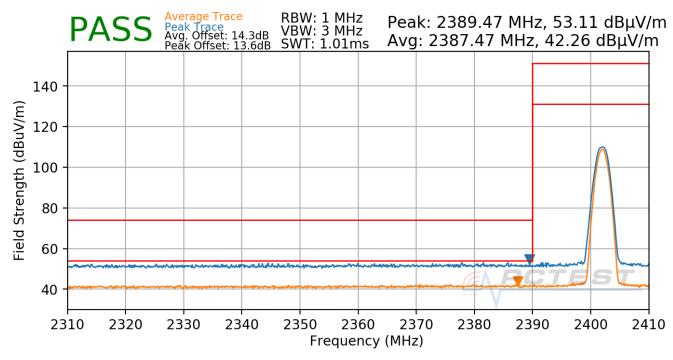
3 Meters

Operating Frequency:

2402MHz

Channel:

0



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

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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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:

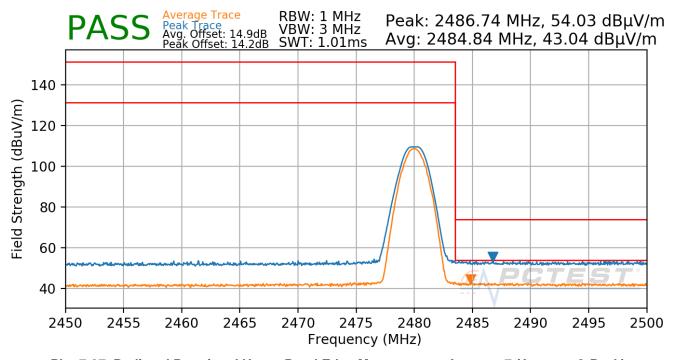
3 Meters

Operating Frequency:

2480MHz

Channel:

39



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

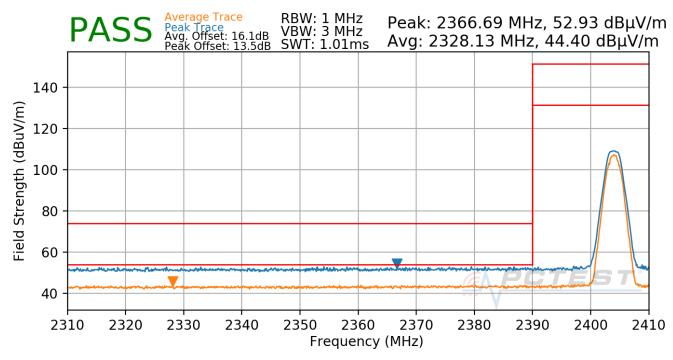
FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 96 of 101
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The amplitude offset shown in the following plots for average measurements was calculated using the formula:

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

Bluetooth Mode: LE 2Mbps Data Rate: Power Scheme: ePA Measurement Distance: 3 Meters Operating Frequency: 2404MHz Channel:



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

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 87 of 101
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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:

2Mbps

Power Scheme:

ePA

Measurement Distance:

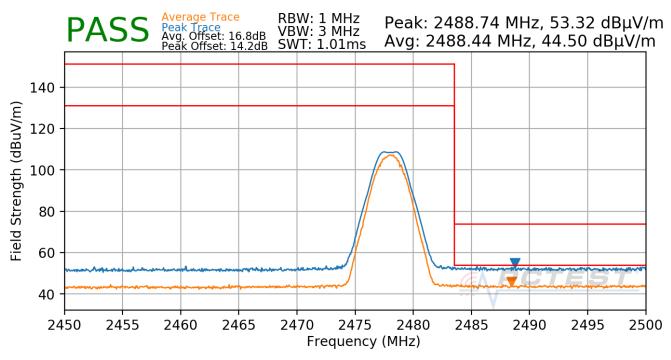
3 Meters

Operating Frequency:

2478MHz

Channel:

38



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

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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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

TxBF

 Bluetooth Mode:
 LE

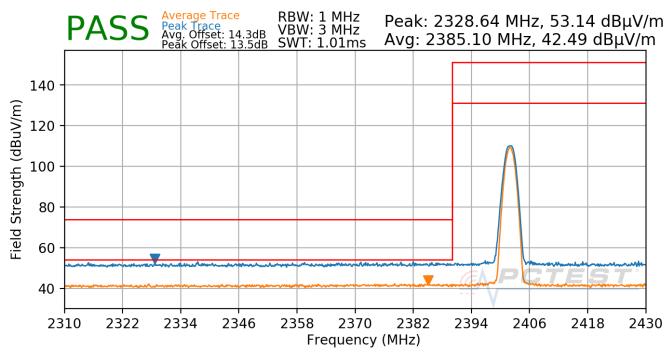
 Data Rate:
 1Mbps

 Power Scheme:
 ePA

 Measurement Distance:
 3 Meters

 Operating Frequency:
 2402MHz

 Channel:
 0



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

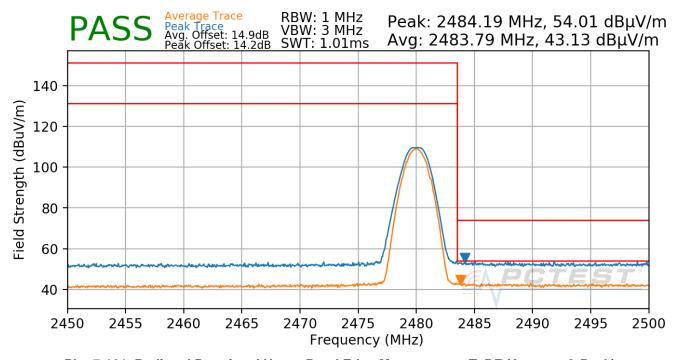
FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: Test Dates:		EUT Type:	Dogg 90 of 404
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The amplitude offset shown in the following plots for average measurements 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: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager	
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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:

2Mbps

Power Scheme:

ePA

Measurement Distance:

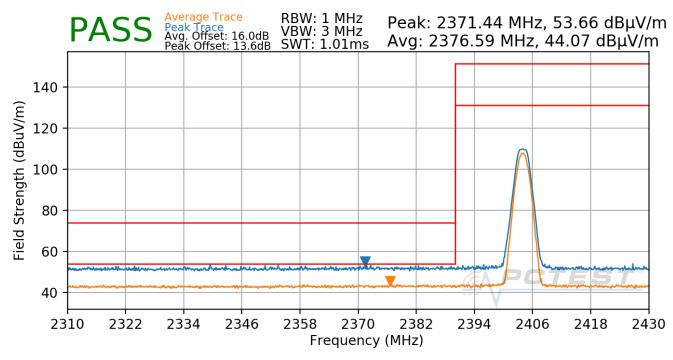
3 Meters

Operating Frequency:

2404MHz

Channel:

1



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

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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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:

2Mbps

Power Scheme:

ePA

Measurement Distance:

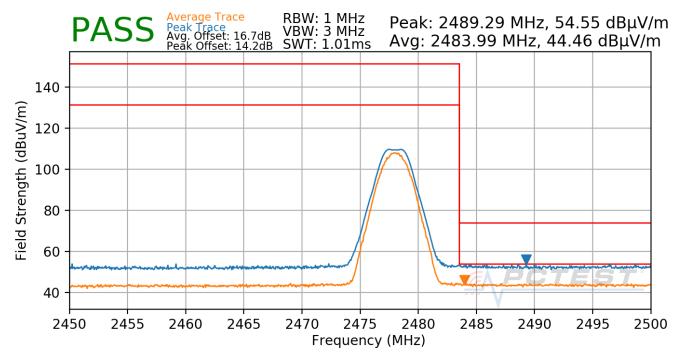
3 Meters

Operating Frequency:

2478MHz

Channel:

38



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

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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7.9 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
- 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

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Test Setup

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

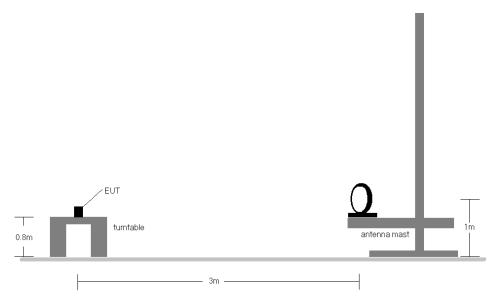


Figure 7-7. Radiated Test Setup < 30Mhz

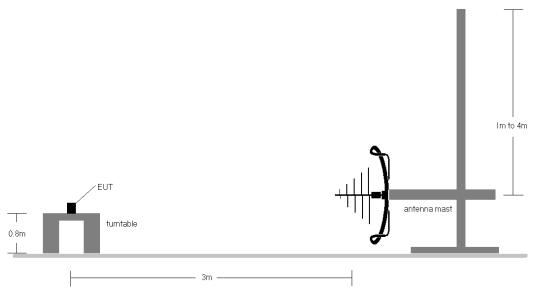


Figure 7-8. Radiated Test Setup < 1GHz

FCC ID: BCGA2378 IC: 579C-A2378	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. 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 supported modulation, antenna (including TxBF mode) and power schemes have been tested on the unit and only worst case configuration is reported.
- 11. Both configurations below were investigated, and the worst case has been reported.
 - a. EUT powered by AC/DC adaptor via USB-C cable with wire charger
 - b. EUT powered by host PC via USB-C cable with wire charger

Sample Calculations

Determining Spurious Emissions Levels

assembly of contents thereof, please contact INFO@PCTEST.COM

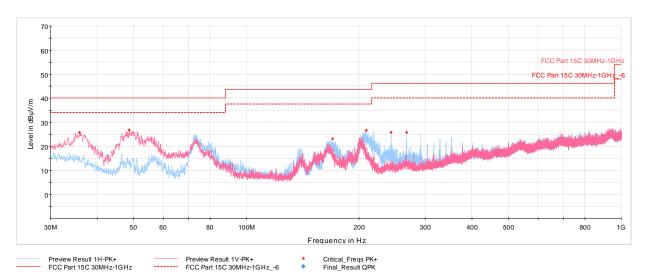
- \circ Field Strength Level [dB μ V/m] = Analyzer Level [dBm] + 107 + AFCL [dB/m]
- O AFCL [dB/m] = Antenna Factor [dB/m] + Cable Loss [dB] Preamplifier Gain [dB]
- Margin [dB] = Field Strength Level [dBμV/m] Limit [dBμV/m]

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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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]
35.87	Peak	V	100	356	-66.43	-14.73	25.84	40.00	-14.16
48.72	Peak	V	100	356	-59.41	-20.81	26.78	40.00	-13.22
169.92	Peak	Н	100	266	-66.39	-17.48	23.13	43.52	-20.39
208.87	Peak	Н	100	131	-63.92	-16.48	26.60	43.52	-16.92
243.16	Peak	Н	100	284	-66.10	-15.03	25.87	46.02	-20.15
267.50	Peak	Н	100	298	-67.48	-13.68	25.84	46.02	-20.18

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

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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7.10 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)		
(IVITIZ)	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

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: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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^{*}Decreases with the logarithm of the frequency.



Test Setup

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

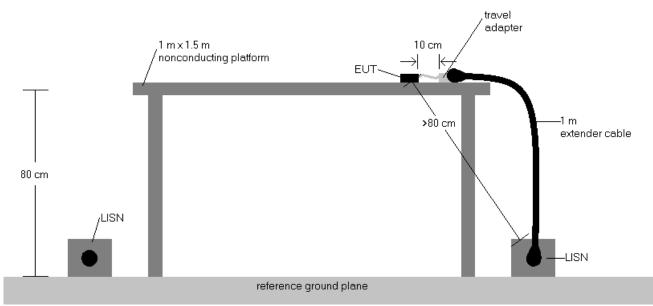


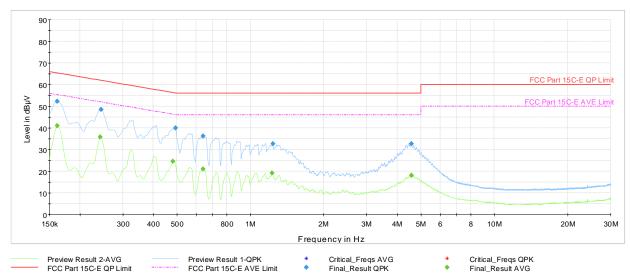
Figure 7-9. Test Instrument & Measurement Setup

Test Notes

- 1. All modes of operation were investigated and the worst-case emissions are reported. The emissions found were not affected by the choice of channel used during testing.
- 2. The limit for an intentional radiator from 150kHz to 30MHz are specified in Part 15.207 and RSS-Gen (8.8).
- 3. Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
- QP/AV Level (dBμV) = QP/AV Analyzer/Receiver Level (dBμV) + Correction Factor (dB)
- 5. Margin (dB) = QP/AV Level (dB μ V) QP/AV Limit (dB μ V)
- 6. Traces shown in plot are made using a guasi peak and average detectors.
- 7. Deviations to the Specifications: None.
- 8. All supported modulation, antenna (including TxBF mode) and power schemes have been tested on the unit and only worst case configuration is reported.
- 9. Both configurations below were investigated, and the worst case has been reported.
 - a. EUT powered by AC/DC adaptor via USB-C cable with wire charger
 - b. EUT powered by host PC via USB-C cable with wire charger

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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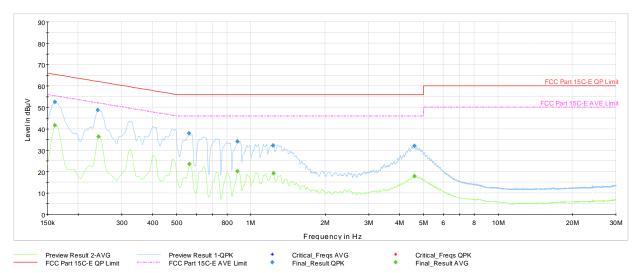
Plot 7-105. AC Line Conducted Plot with Bluetooth LE TxBF (1Mbps, ePA - Ch.19, L1, with AC/DC Adapter)

Frequency [MHz]	Process State	QuasiPeak [dB µ V]	Averaqe [dBµV]	Limit [dB µ V]	Marqin [dB]	Line	PE
0.161	FINAL	52.4	_	65.40	-13.01	L1	GND
0.161	FINAL	_	41.13	55.40	-14.26	L1	GND
0.242	FINAL	_	35.84	52.02	-16.18	L1	GND
0.245	FINAL	48.5	_	61.94	-13.47	L1	GND
0.481	FINAL	_	24.60	46.33	-21.72	L1	GND
0.494	FINAL	39.9	_	56.10	-16.17	L1	GND
0.638	FINAL	_	21.04	46.00	-24.96	L1	GND
0.638	FINAL	36.3	_	56.00	-19.75	L1	GND
1.228	FINAL	_	19.08	46.00	-26.92	L1	GND
1.237	FINAL	32.6	_	56.00	-23.38	L1	GND
4.574	FINAL	32.8	_	56.00	-23.19	L1	GND
4.578	FINAL	_	18.07	46.00	-27.93	L1	GND

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

FCC ID: BCGA2378 IC: 579C-A2378	Proud to be part of @ element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 99 of 101
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Plot 7-106. AC Line Conducted Plot with Bluetooth LE TxBF (1Mbps, ePA - Ch.19, N, with AC/DC Adapter)

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Averaqe [dBµV]	Limit [dBµV]	Marqin [dB]	Line	PE
0.161	FINAL	52.6	_	65.40	-12.85	N	GND
0.161	FINAL	_	41.64	55.40	-13.76	Ν	GND
0.240	FINAL	48.7	_	62.10	-13.42	Ν	GND
0.242	FINAL	_	36.40	52.02	-15.62	Ν	GND
0.562	FINAL	37.8		56.00	-18.21	Ν	GND
0.564	FINAL	_	23.49	46.00	-22.51	Ν	GND
0.881	FINAL	_	20.07	46.00	-25.93	N	GND
0.881	FINAL	34.1		56.00	-21.94	Ν	GND
1.232	FINAL	32.2		56.00	-23.78	N	GND
1.235	FINAL	_	19.21	46.00	-26.79	N	GND
4.587	FINAL	_	17.88	46.00	-28.12	N	GND
4.592	FINAL	31.9	_	56.00	-24.07	N	GND

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

FCC ID: BCGA2378 IC: 579C-A2378	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: BCGA2378 and IC: 579C-A2378** 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: BCGA2378 IC: 579C-A2378	Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: Test Dates:		EUT Type:	Dogo 101 of 101
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