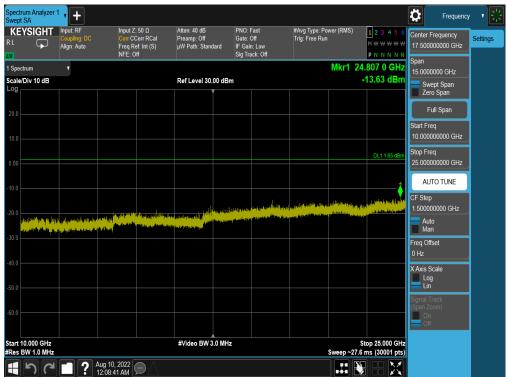


#### Antenna 3a



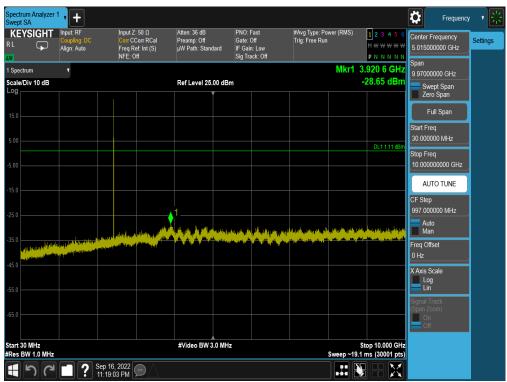
Plot 7-45. Conducted Spurious Plot (Bluetooth, GFSK, ePA - Ch. 0)



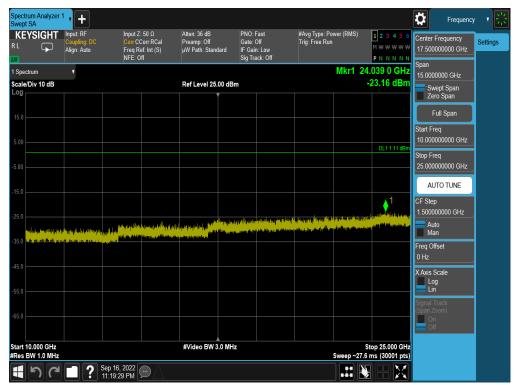
Plot 7-46. Conducted Spurious Plot (Bluetooth, GFSK, ePA - Ch. 0)

FCC ID: BCGA2757 IC: 579C-A2757	element	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogg 50 of 04
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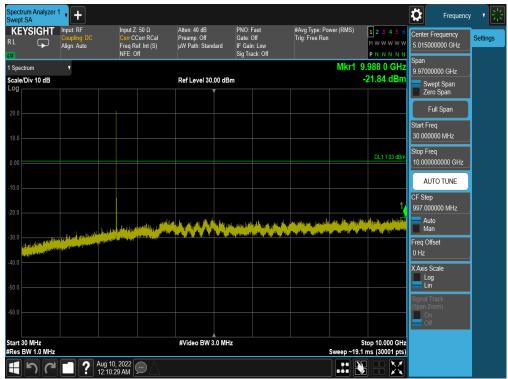
Plot 7-47. Conducted Spurious Plot (Bluetooth, GFSK, ePA - Ch. 39)



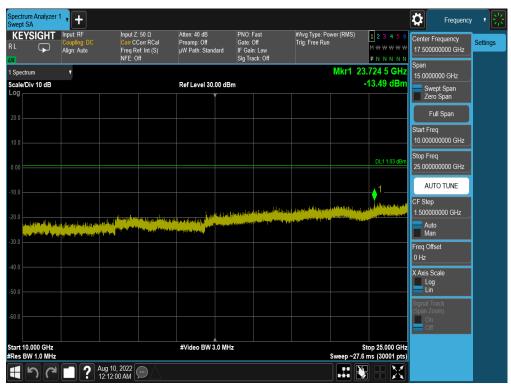
Plot 7-48. Conducted Spurious Plot (Bluetooth, GFSK, ePA Ch. 39)

FCC ID: BCGA2757 IC: 579C-A2757	element	element Measurement Report (CERTIFICATION)		
Test Report S/N:	Test Dates:	EUT Type:	Page 53 of 91	
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Plot 7-49. Conducted Spurious Plot (Bluetooth, GFSK, ePA - Ch. 78)

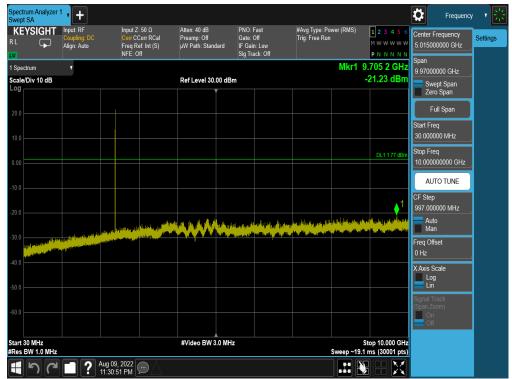


Plot 7-50. Conducted Spurious Plot (Bluetooth, GFSK, ePA - Ch. 78)

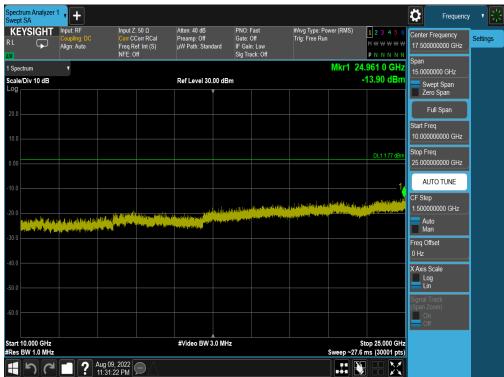
FCC ID: BCGA2757 IC: 579C-A2757	element	element Measurement report (CERTIFICATION)	
Test Report S/N:	Test Dates:	EUT Type:	Page 54 of 91
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#### Antenna 1a



Plot 7-51. Conducted Spurious Plot (Bluetooth, GFSK, ePA - Ch. 0)



Plot 7-52. Conducted Spurious Plot (Bluetooth, GFSK, ePA - Ch. 0)

FCC ID: BCGA2757 IC: 579C-A2757	element	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo FF of 04
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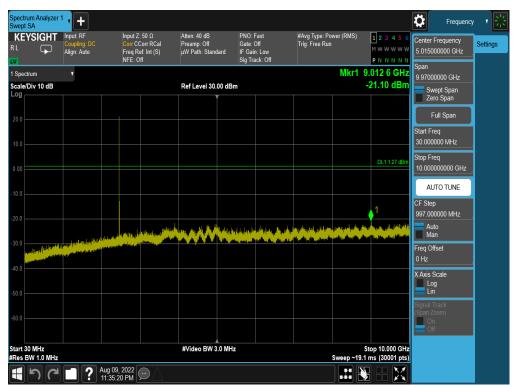
Plot 7-53. Conducted Spurious Plot (Bluetooth, GFSK, ePA - Ch. 39)



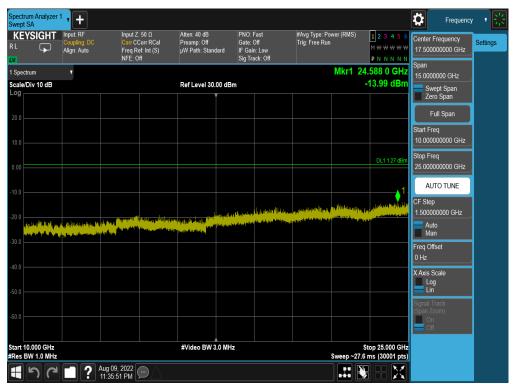
Plot 7-54. Conducted Spurious Plot (Bluetooth, GFSK, ePA Ch. 39)

FCC ID: BCGA2757 IC: 579C-A2757	element MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo EC of 04
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Plot 7-55. Conducted Spurious Plot (Bluetooth, GFSK, ePA - Ch. 78)



Plot 7-56. Conducted Spurious Plot (Bluetooth, GFSK, ePA - Ch. 78)

FCC ID: BCGA2757 IC: 579C-A2757	element MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Daga 57 of 04
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### 7.9 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 7-12 per Section 15.209 and RSS-Gen (8.9).

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

Table 7-12. Radiated Limits

#### **Test Procedure Used**

ANSI C63.10-2013 - Section 6.6.4.3

#### **Test Settings**

#### **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: BCGA2757 IC: 579C-A2757	element MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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#### **Test Setup**

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

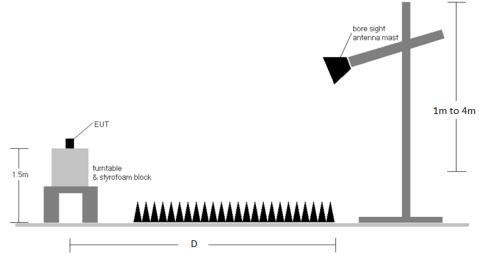


Figure 7-8. Radiated Test Setup >1GHz

#### **Test Notes**

- 1. All emissions lying in restricted bands specified in §15.205 and Section 8.10 of RSS-Gen are below the limit shown in Table 7-12.
- 2. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
- 3. This unit was tested with its standard battery.
- 4. The spectrum is measured from 9kHz to the 10<sup>th</sup> harmonic and the worst-case emissions are reported.
- 5. 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.
- 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 and power schemes have been tested on the unit and only worst case configuration is reported.
- 9. Average emissions were not reported since the duty cycle correction factor was greater than 20dB.

FCC ID: BCGA2757 IC: 579C-A2757	element	element MEASUREMENT REPORT (CERTIFICATION)		
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#### **Sample Calculation**

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

#### **Duty Cycle Correction Factor Calculation**

- Channel hop rate = 800 hops/second (AFH Mode)
- Adjusted channel hop rate for DH5 mode = 133.33 hops/second
- Time per channel hop = 1 / 133.33 hops/second = 7.50 ms
- o Time to cycle through all channels = 7.50 x 20 channels = 150 ms
- Number of times transmitter hits on one channel = 100 ms / 150 ms = 1 time(s)
- Worst case dwell time = 7.5 ms
- Duty cycle correction factor = 20log<sub>10</sub>(7.5ms/100ms) = -22.5 dB

#### **Average Emission Calculation**

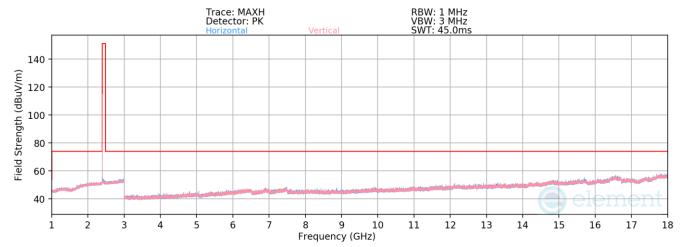
Average Emission = Measured Peak Emissions [dBμV/m] - Duty Cycle Correction Factor [dB]

FCC ID: BCGA2757 IC: 579C-A2757	element	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dags 60 of 04
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## Radiated Spurious Emission Measurements - Above 1GHz §15.205 §15.209 §15.247 (d); RSS-Gen [8.9]

#### Antenna 3a



Plot 7-57. Radiated Spurious Emissions above 1GHz Antenna 3a (BT GFSK ePA - Ch. 0)

Bluetooth Mode: GFSK

Data Rate: 1Mbps

Power Scheme ePA

Distance of Measurements: 3 Meters

Operating Frequency: 2402MHz

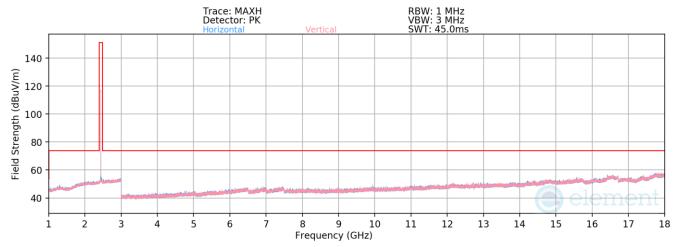
Channel: 0

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	Peak	Н	102	206	-64.45	3.90	46.45	73.98	-27.53
12010.00	Peak	V	-	-	-70.83	11.85	48.02	73.98	-25.96

Table 7-13. Radiated Spurious Emissions Measurements Antenna 3a

FCC ID: BCGA2757 IC: 579C-A2757	element)	element MEASUREMENT REPORT (CERTIFICATION)			
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Plot 7-58. Radiated Spurious Emissions above 1GHz Antenna 3a (BT GFSK ePA - Ch. 39)

Bluetooth Mode: GFSK

Data Rate: 1Mbps

Power Scheme ePA

Distance of Measurements: 3 Meters

Operating Frequency: 2441MHz

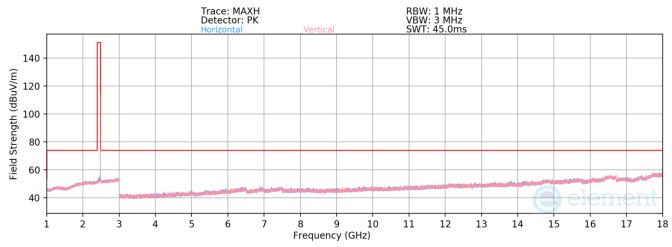
Channel: 39

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]
4882.00	Peak	V	-	-	-67.06	4.03	43.97	73.98	-30.01
7323.00	Peak	V	-	•	-68.91	8.63	46.72	73.98	-27.26
12205.00	Peak	V	-	-	-70.50	12.15	48.65	73.98	-25.33

Table 7-14. Radiated Spurious Emissions Measurements Antenna 3a

FCC ID: BCGA2757 IC: 579C-A2757	element)	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Plot 7-59. Radiated Spurious Emissions above 1GHz Antenna 3a (BT GFSK ePA - Ch. 78)

Bluetooth Mode: GFSK

Data Rate: 1Mbps

Power Scheme ePA

Distance of Measurements: 3 Meters

Operating Frequency: 2480MHz

Channel: 78

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	Peak	V	-	-	-67.52	4.38	43.86	73.98	-30.12
7440.00	Peak	V	-	-	-68.99	8.72	46.73	73.98	-27.25
12400.00	Peak	V	-	-	-70.78	12.36	48.58	73.98	-25.40

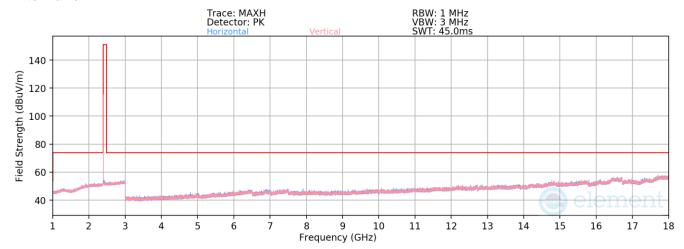
Table 7-15. Radiated Spurious Emissions Measurements Antenna 3a

FCC ID: BCGA2757 IC: 579C-A2757	element)	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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# Radiated Spurious Emission Measurements (1 – 18GHz) §15.205 §15.209 §15.247 (d); RSS-Gen [8.9]

#### Antenna 1a



Plot 7-60. Radiated Spurious Emissions above 1GHz Antenna 1a (BT GFSK ePA - Ch. 0)

Bluetooth Mode: GFSK

Data Rate: 1Mbps

Power Scheme ePA

Distance of Measurements: 3 Meters

Operating Frequency: 2402MHz

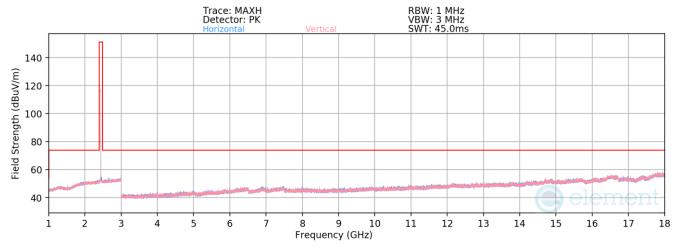
Channel: 0

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	Peak	Н	102	209	-63.46	3.90	47.44	73.98	-26.54
12010.00	Peak	Н	-	-	-68.99	11.85	49.86	73.98	-24.12

Table 7-16. Radiated Spurious Emissions Measurements Antenna 1a

FCC ID: BCGA2757 IC: 579C-A2757	element	element MEASUREMENT REPORT (CERTIFICATION)			
Test Report S/N:	Test Dates:	EUT Type:	Page 64 of 91		
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Plot 7-61. Radiated Spurious Emissions above 1GHz Antenna 1a (BT GFSK ePA - Ch. 39)

Bluetooth Mode: GFSK

Data Rate: 1Mbps

Power Scheme ePA

Distance of Measurements: 3 Meters

Operating Frequency: 2441MHz

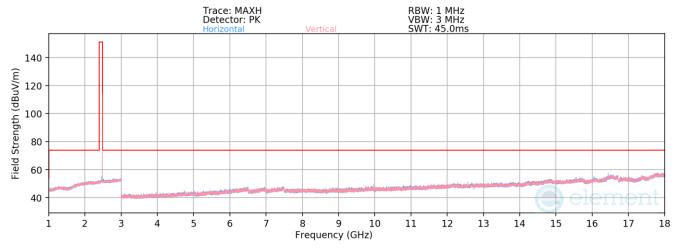
Channel: 39

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]
4882.00	Peak	Н	-	ı	-66.85	4.03	44.18	73.98	-29.80
7323.00	Peak	Н	-	•	-68.20	8.63	47.43	73.98	-26.55
12205.00	Peak	Н	-	-	-69.12	12.15	50.03	73.98	-23.95

Table 7-17. Radiated Spurious Emissions Measurements Antenna 1a

FCC ID: BCGA2757 IC: 579C-A2757	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 65 of 91
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Plot 7-62. Radiated Spurious Emissions above 1GHz Antenna 1a (BT GFSK ePA - Ch. 78)

Bluetooth Mode: GFSK

Data Rate: 1Mbps

Power Scheme ePA

Distance of Measurements: 3 Meters

Operating Frequency: 2480MHz

Channel: 78

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	Peak	Н	-	-	-66.38	4.38	45.00	73.98	-28.98
7440.00	Peak	Н	-	•	-67.89	8.72	47.83	73.98	-26.15
12400.00	Peak	Н	-	-	-69.86	12.36	49.50	73.98	-24.48

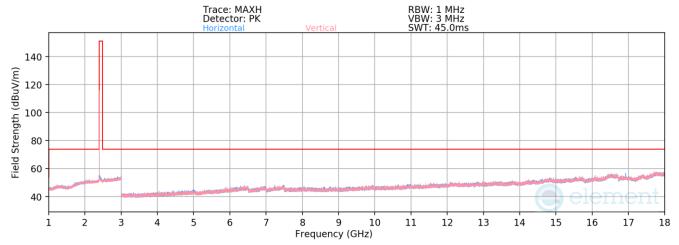
Table 7-18. Radiated Spurious Emissions Measurements Antenna 1a

FCC ID: BCGA2757 IC: 579C-A2757	element)	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 66 of 01
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## Radiated Spurious Emission Measurements (1 – 18GHz) §15.205 §15.209 §15.247 (d); RSS-Gen [8.9]

#### **TxBF**



Plot 7-63. Radiated Spurious Emissions above 1GHz TxBF (BT GFSK ePA - Ch. 0)

Bluetooth Mode: GFSK

Data Rate: 1Mbps

Power Scheme ePA

Distance of Measurements: 3 Meters

Operating Frequency: 2402MHz

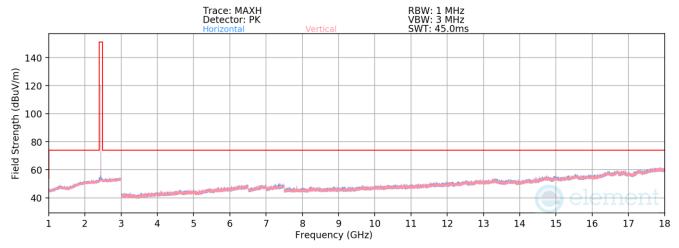
Channel: 0

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	Peak	Н	102	206	-62.95	3.90	47.95	73.98	-26.03
12010.00	Peak	V	-	-	-69.11	11.85	49.74	73.98	-24.24

Table 7-19. Radiated Spurious Emissions Measurements TxBF

FCC ID: BCGA2757 IC: 579C-A2757	element	element MEASUREMENT REPORT (CERTIFICATION)			
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Plot 7-64. Radiated Spurious Emissions above 1GHz TxBF (BT GFSK ePA - Ch. 39)

Bluetooth Mode: GFSK

Data Rate: 1Mbps

Power Scheme ePA

Distance of Measurements: 3 Meters

Operating Frequency: 2441MHz

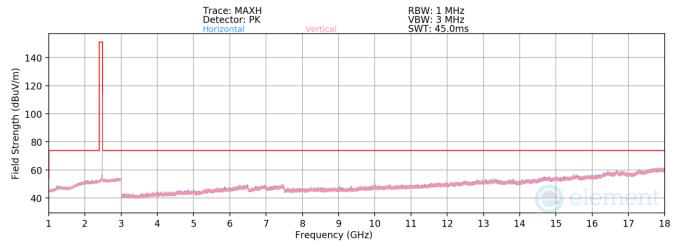
Channel: 39

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]
4882.00	Peak	V	-	-	-68.11	6.23	45.12	73.98	-28.86
7323.00	Peak	V	-	•	-69.13	9.95	47.82	73.98	-26.16
12205.00	Peak	V	-	-	-73.68	14.84	48.16	73.98	-25.82

Table 7-20. Radiated Spurious Emissions Measurements TxBF

FCC ID: BCGA2757 IC: 579C-A2757	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 68 of 91
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Plot 7-65. Radiated Spurious Emissions above 1GHz TxBF (BT GFSK ePA - Ch. 78)

Bluetooth Mode: GFSK

Data Rate: 1Mbps

Power Scheme ePA

Distance of Measurements: 3 Meters

Operating Frequency: 2480MHz

Channel: 78

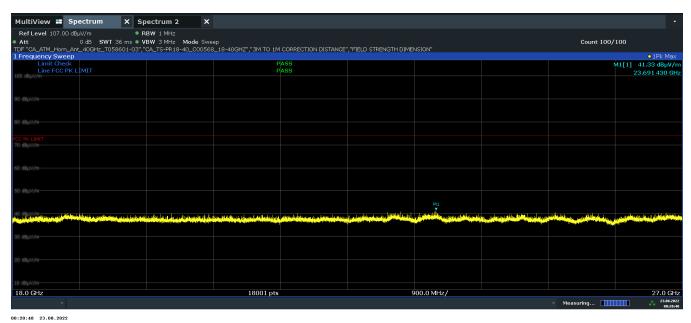
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
4960.00	Peak	V	-	-	-68.97	6.45	44.48	73.98	-29.50
7440.00	Peak	V	-	-	-69.26	9.93	47.67	73.98	-26.31
12400.00	Peak	V	-	-	-73.87	15.14	48.27	73.98	-25.71

Table 7-21. Radiated Spurious Emissions Measurements TxBF

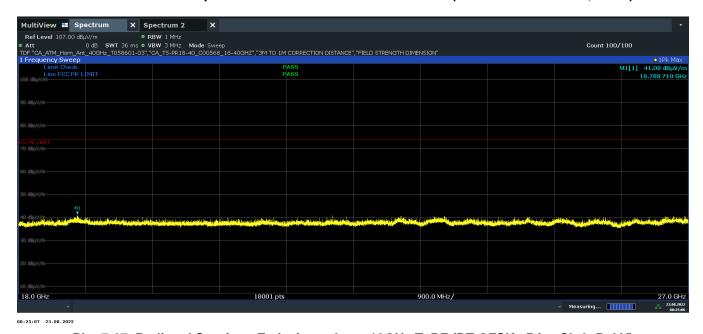
FCC ID: BCGA2757 IC: 579C-A2757	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 69 of 91
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## Radiated Spurious Emission Measurements (Above 18GHz) §15.209; RSS-Gen [8.9]



Plot 7-66. Radiated Spurious Emissions above 18GHz TxBF (BT GFSK ePA - Ch.0, Pol.H)



Plot 7-67. Radiated Spurious Emissions above 18GHz TxBF (BT GFSK ePA - Ch.0, Pol V)

FCC ID: BCGA2757 IC: 579C-A2757	element MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 70 of 91
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#### Antenna 3a

Bluetooth Mode:

GFSK

Power Scheme:

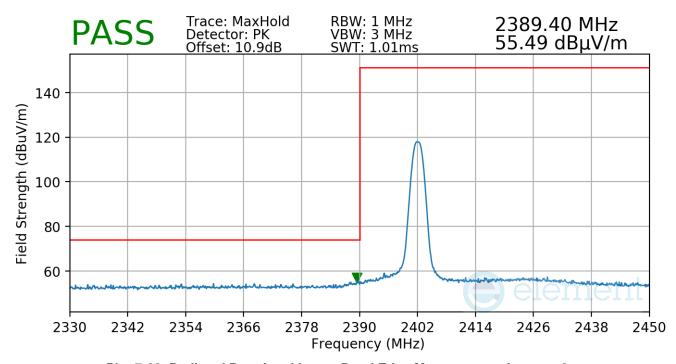
ePA

Measurement Distance:

Operating Frequency:

Channel:

0



Plot 7-68. Radiated Restricted Lower Band Edge Measurement Antenna 3a

FCC ID: BCGA2757 IC: 579C-A2757	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 71 of 01
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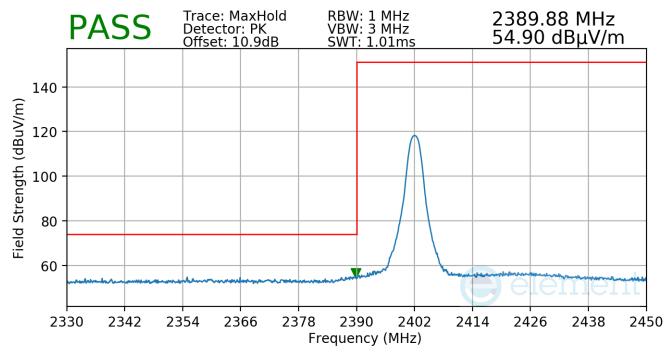
Bluetooth Mode: 8DPSK

Power Scheme: ePA

Measurement Distance: 3 Meters

Operating Frequency: 2402MHz

Channel: 0



Plot 7-69. Radiated Restricted Lower Band Edge Measurement Antenna 3a

FCC ID: BCGA2757 IC: 579C-A2757	element	element MEASUREMENT REPORT (CERTIFICATION)		
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Bluetooth Mode:

GFSK

Power Scheme:

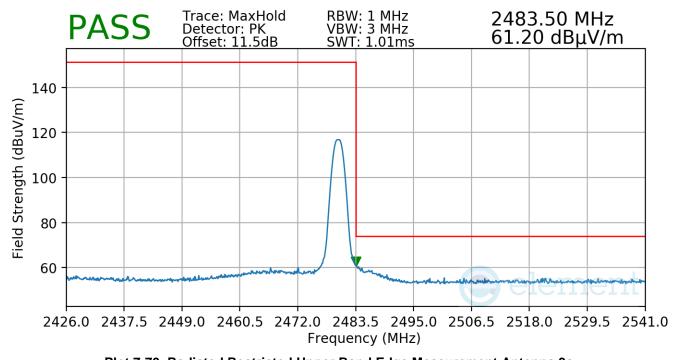
ePA

Measurement Distance:

Operating Frequency:

Channel:

78



Plot 7-70. Radiated Restricted Upper Band Edge Measurement Antenna 3a

FCC ID: BCGA2757 IC: 579C-A2757	element	element MEASUREMENT REPORT (CERTIFICATION)		
Test Report S/N:	Test Dates:	EUT Type:	Page 73 of 91	
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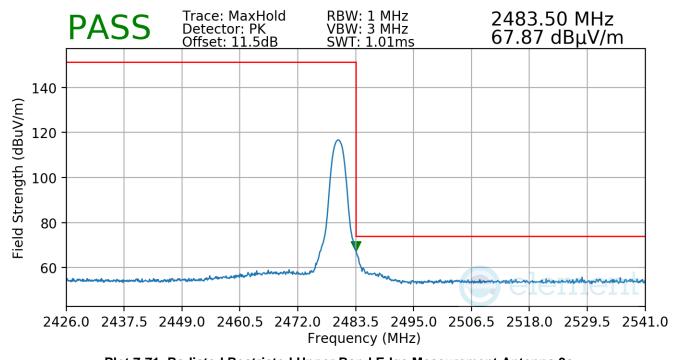
Bluetooth Mode: 8DPSK

Power Scheme: ePA

Measurement Distance: 3 Meters

Operating Frequency: 2480MHz

Channel: 78



Plot 7-71. Radiated Restricted Upper Band Edge Measurement Antenna 3a

FCC ID: BCGA2757 IC: 579C-A2757	element	element Measurement Report (CERTIFICATION)	
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#### Antenna 1a

Bluetooth Mode:

GFSK

Power Scheme:

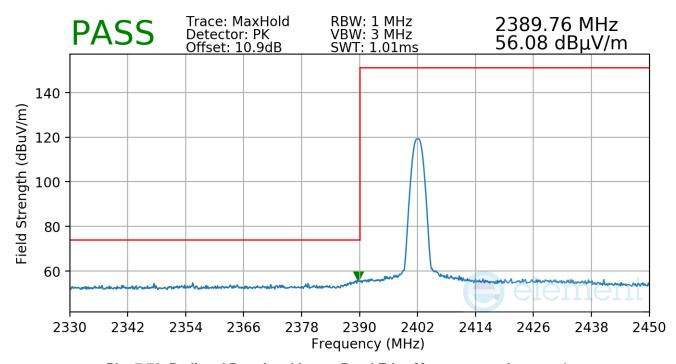
ePA

Measurement Distance:

Operating Frequency:

Channel:

0



Plot 7-72. Radiated Restricted Lower Band Edge Measurement Antenna 1a

FCC ID: BCGA2757 IC: 579C-A2757	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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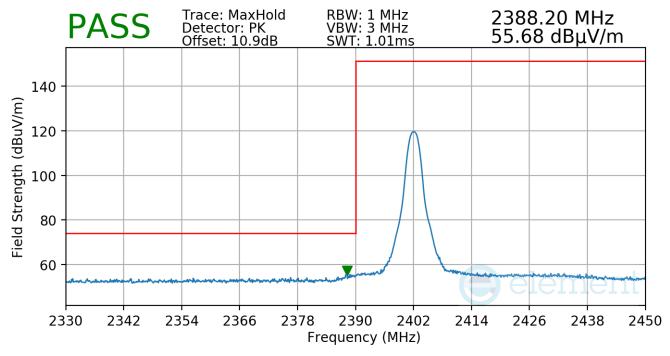
Bluetooth Mode: 8DPSK

Power Scheme: ePA

Measurement Distance: 3 Meters

Operating Frequency: 2402MHz

Channel: 0



Plot 7-73. Radiated Restricted Lower Band Edge Measurement Antenna 1a

FCC ID: BCGA2757 IC: 579C-A2757	element	element MEASUREMENT REPORT (CERTIFICATION)		
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Bluetooth Mode:

GFSK

Power Scheme:

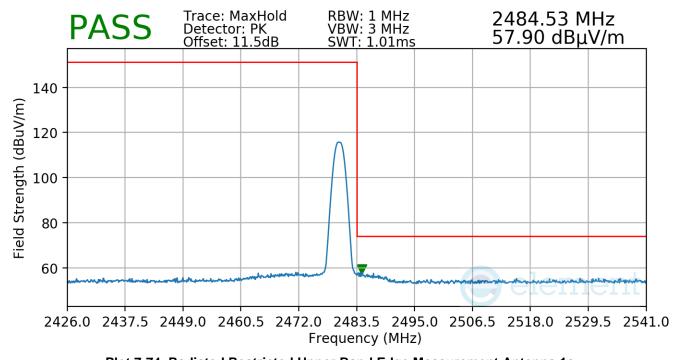
ePA

Measurement Distance:

Operating Frequency:

Channel:

78



Plot 7-74. Radiated Restricted Upper Band Edge Measurement Antenna 1a

FCC ID: BCGA2757 IC: 579C-A2757	element	element MEASUREMENT REPORT (CERTIFICATION)	
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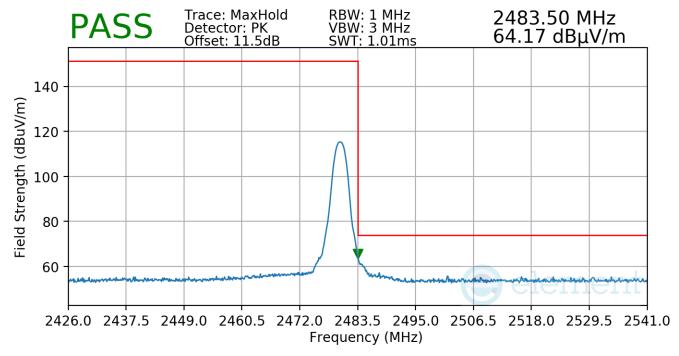
Bluetooth Mode: 8DPSK

Power Scheme: ePA

Measurement Distance: 3 Meters

Operating Frequency: 2480MHz

Channel: 78



Plot 7-75. Radiated Restricted Upper Band Edge Measurement Antenna 1a

FCC ID: BCGA2757 IC: 579C-A2757	element MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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#### **TxBF**

Bluetooth Mode:

GFSK

Power Scheme:

Measurement Distance:

Operating Frequency:

Channel:

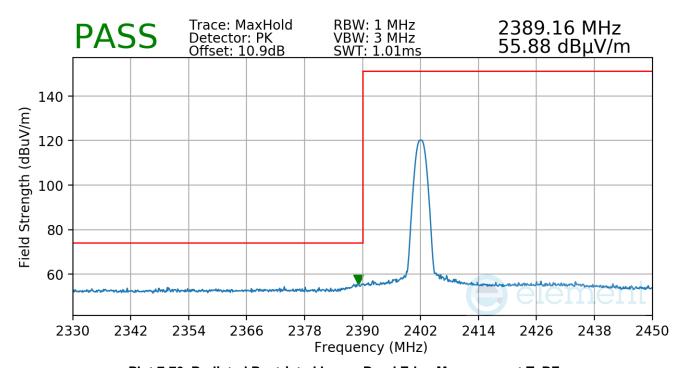
GFSK

ePA

3 Meters

2402MHz

0



Plot 7-76. Radiated Restricted Lower Band Edge Measurement TxBF

FCC ID: BCGA2757 IC: 579C-A2757	element MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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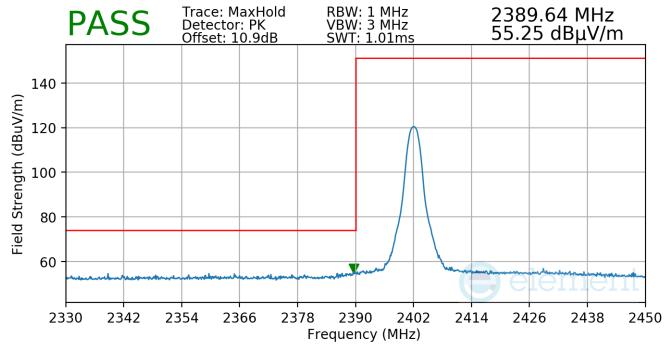
Bluetooth Mode: 8DPSK

Power Scheme: ePA

Measurement Distance: 3 Meters

Operating Frequency: 2402MHz

Channel: 0



Plot 7-77. Radiated Restricted Lower Band Edge Measurement Antenna TxBF

FCC ID: BCGA2757 IC: 579C-A2757	element MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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Bluetooth Mode:

GFSK

Power Scheme:

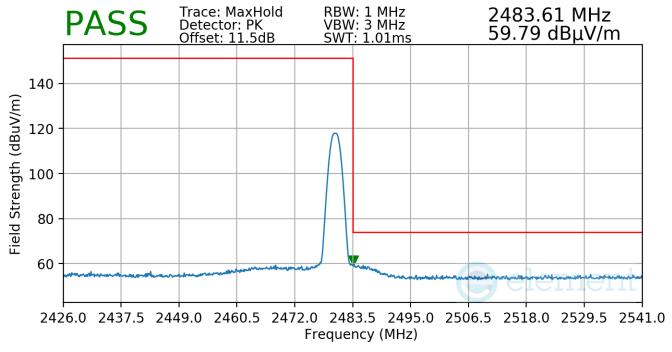
ePA

Measurement Distance:

Operating Frequency:

Channel:

78



Plot 7-78. Radiated Restricted Upper Band Edge Measurement Antenna TxBF

FCC ID: BCGA2757 IC: 579C-A2757	element MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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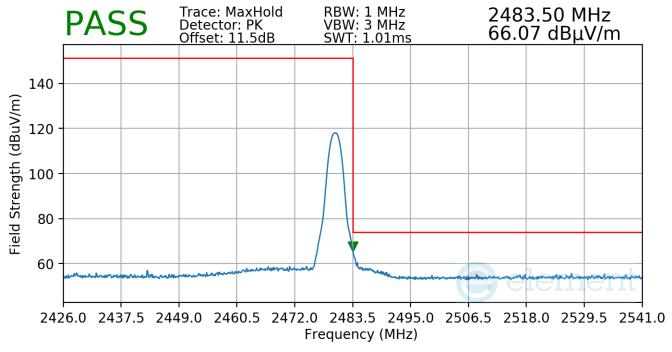
Bluetooth Mode: 8DPSK

Power Scheme: ePA

Measurement Distance: 3 Meters

Operating Frequency: 2480MHz

Channel: 78



Plot 7-79. Radiated Restricted Upper Band Edge Measurement Antenna TxBF

FCC ID: BCGA2757 IC: 579C-A2757	element MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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## 7.10 Radiated Spurious Emissions – Below 1GHz §15.209; RSS-Gen [8.9]

#### **Test Overview and Limit**

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for radiated spurious emissions. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR and Table 7 of RSS-Gen (8.10) must not exceed the limits shown in Table 7-25 per Section 15.209 and RSS-Gen (8.9).

Frequency	Field Strength [μV/m]	Measured Distance [Meters]
0.009 - 0.490 MHz	2400/F (kHz)	300
0.490 – 1.705 MHz	24000/F (kHz)	30
1.705 – 30.00 MHz	30	30
30.00 – 88.00 MHz	100	3
88.00 – 216.0 MHz	150	3
216.0 – 960.0 MHz	200	3
Above 960.0 MHz	500	3

Table 7-22. 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
- RBW = 120kHz (for emissions from 30MHz 1GHz)
- 3. VBW = 300kHz
- 4. Detector = peak
- 5. Sweep time = auto couple
- 6. Trace mode = max hold
- 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.

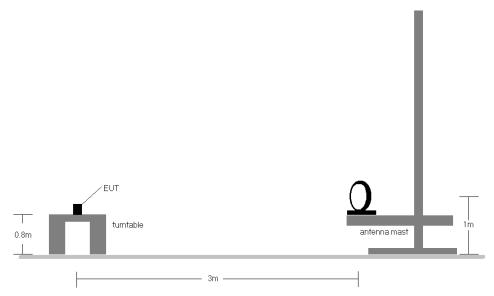


Figure 7-9. Radiated Test Setup < 30MHz

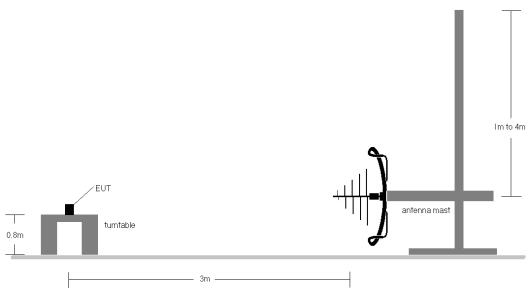


Figure 7-10. Radiated Test Setup < 1GHz

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#### **Test Notes**

- 1. All emissions lying in restricted bands specified in §15.205 and RSS-Gen (8.10) are below the limit shown in Table 7-25.
- 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.
- 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 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**

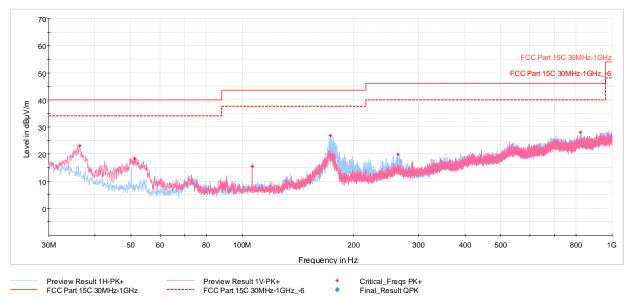
- Field Strength Level [dBμV/m] = Analyzer Level [dBm] + 107 + AFCL [dB/m]
- AFCL [dB/m] = Antenna Factor [dB/m] + Cable Loss [dB] Preamplifier Gain [dB]
- Margin [dB] = Field Strength Level [dBμV/m] Limit [dBμV/m]

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## Radiated Spurious Emissions Measurements (Below 1GHz) §15.209; RSS-Gen [8.9]

#### **TxBF**



Plot 7-80. Radiated Spurious Emissions Below 1GHz TxBF (GFSK ePA - Ch.0, 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	Max Peak	V	100	62	-71.39	-12.51	23.10	40.00	-16.90
51.15	Max Peak	V	200	26	-70.36	-18.21	18.43	40.00	-21.57
106.44	Max Peak	V	100	14	-75.15	-16.43	15.42	43.52	-28.10
173.22	Max Peak	Н	100	261	-66.98	-13.26	26.76	43.52	-16.76
263.62	Max Peak	Н	100	316	-77.77	-9.33	19.90	46.02	-26.12
823.07	Max Peak	Н	100	110	-82.50	3.52	28.02	46.02	-18.00

Table 7-23. Radiated Spurious Emissions Below 1GHz TxBF (GFSK ePA - Ch.0 with AC/DC Adapter)

FCC ID: BCGA2757 IC: 579C-A2757	element MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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### 7.11 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 7-24. 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

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<sup>\*</sup>Decreases with the logarithm of the frequency.



#### **Test Setup**

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

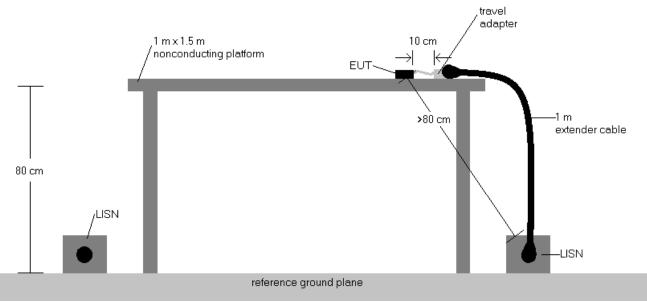


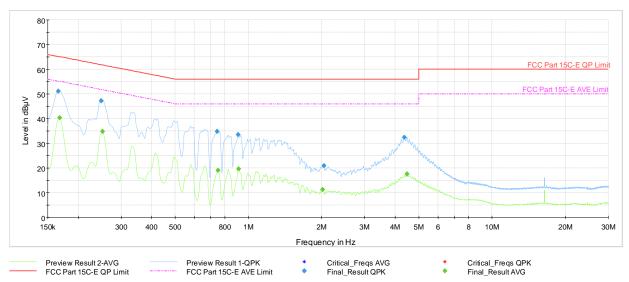
Figure 7-11. Test Instrument & Measurement Setup

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

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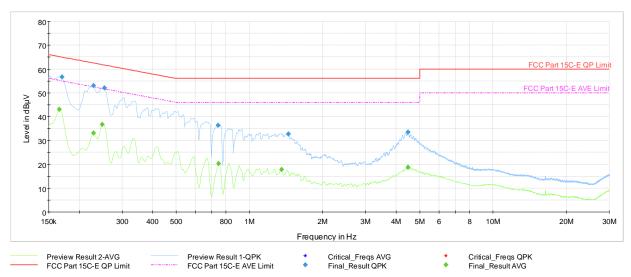
Plot 7-81. AC Line-Conducted Test Plot (L1, GFSK ePA - Ch.0, with AC/DC Adapter)

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Averaqe [dBµV]	Limit [dBµV]	Marqin [dB]	Line	PE
0.166	FINAL	51.1	_	65.17	-14.05	L1	GND
0.168	FINAL	_	40.35	55.06	-14.71	L1	GND
0.249	FINAL	47.1		61.79	-14.65	L1	GND
0.251	FINAL	_	34.77	51.72	-16.95	L1	GND
0.744	FINAL	34.7	_	56.00	-21.28	L1	GND
0.749	FINAL	_	19.01	46.00	-26.99	L1	GND
0.908	FINAL	33.5		56.00	-22.49	L1	GND
0.911	FINAL	_	19.65	46.00	-26.35	L1	GND
2.013	FINAL	_	11.22	46.00	-34.78	L1	GND
2.042	FINAL	20.8		56.00	-35.17	L1	GND
4.355	FINAL	32.4	_	56.00	-23.63	L1	GND
4.466	FINAL	_	17.55	46.00	-28.45	L1	GND

Table 7-25. AC Line-Conducted Test Data (L1, GFSK ePA - Ch.0, with AC/DC Adapter)

FCC ID: BCGA2757 IC: 579C-A2757	element)	element Measurement Report (Certification)		
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Plot 7-82. AC Line-Conducted Test Plot (N, GFSK ePA - Ch.0, with AC/DC Adapter)

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Averaqe [dBµV]	Limit [dBµV]	Marqin [dB]	Line	PE
0.166	FINAL	_	43.08	55.17	-12.10	N	GND
0.170	FINAL	56.7	_	64.95	-8.26	N	GND
0.229	FINAL	_	33.09	52.50	-19.41	Ν	GND
0.229	FINAL	53.0	_	62.50	-9.50	N	GND
0.249	FINAL	_	36.72	51.79	-15.07	N	GND
0.254	FINAL	52.0	_	61.64	-9.66	N	GND
0.744	FINAL	36.4	_	56.00	-19.56	N	GND
0.746	FINAL	_	20.27	46.00	-25.73	N	GND
1.352	FINAL	_	17.79	46.00	-28.21	N	GND
1.446	FINAL	32.8	_	56.00	-23.25	N	GND
4.479	FINAL	33.4		56.00	-22.60	N	GND
4.481	FINAL	_	18.83	46.00	-27.17	N	GND

Table 7-26. AC Line-Conducted Test Data (N, GFSK ePA - Ch.0, with AC/DC Adapter)

FCC ID: BCGA2757 IC: 579C-A2757	element	element MEASUREMENT REPORT (CERTIFICATION)	
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### 8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Apple Tablet Device FCC ID: BCGA2757 and IC: 579C-A2757** 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.

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