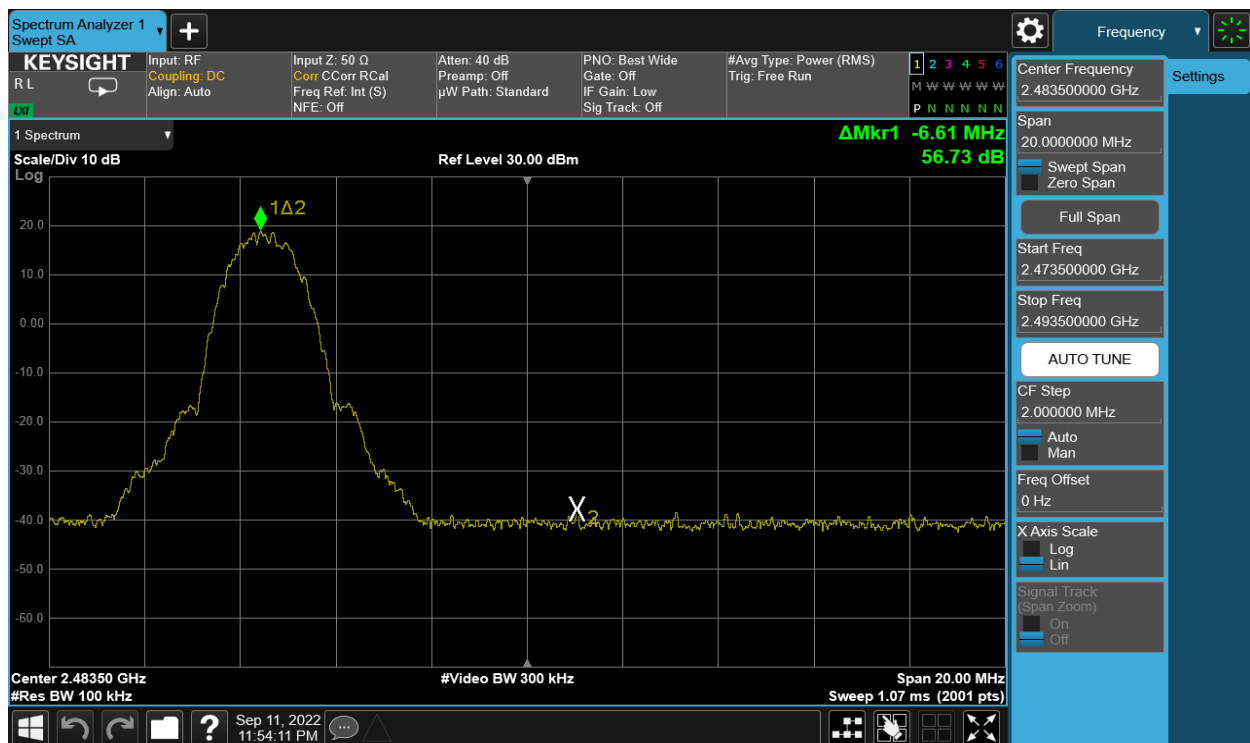


Plot 7-67. Band Edge Plot Antenna 1a (Bluetooth (LE), 2Mbps, ePA – Ch. 1)



Plot 7-68. Band Edge Plot Antenna 1a (Bluetooth (LE), 2Mbps, ePA – Ch. 38)

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 63 of 105

7.6 Conducted Spurious Emissions

§15.247(d); RSS-247 [5.5]

Test Overview and Limit

For the following out of band conducted spurious emissions plots, the EUT was set to transmit at maximum power with the largest packet size available. The worst case spurious emissions were found in this configuration.

The limit for out-of-band spurious emissions at the band edge is 20dB below the fundamental emission level, as determined from the in-band power measurement of the DTS channel performed in a 100kHz bandwidth per the procedure in Section 8.5 of KDB 558074 D01 v05r02 and Section 11.11 of ANSI C63.10-2013.

Test Procedure Used

ANSI C63.10-2013 – Subclause 11.11.3
KDB 558074 D01 v05r02 – Section 8.5

Test Settings

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

Test Setup

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



Figure 7-5. Test Instrument & Measurement Setup

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 64 of 105

V 10.5 12/15/2021

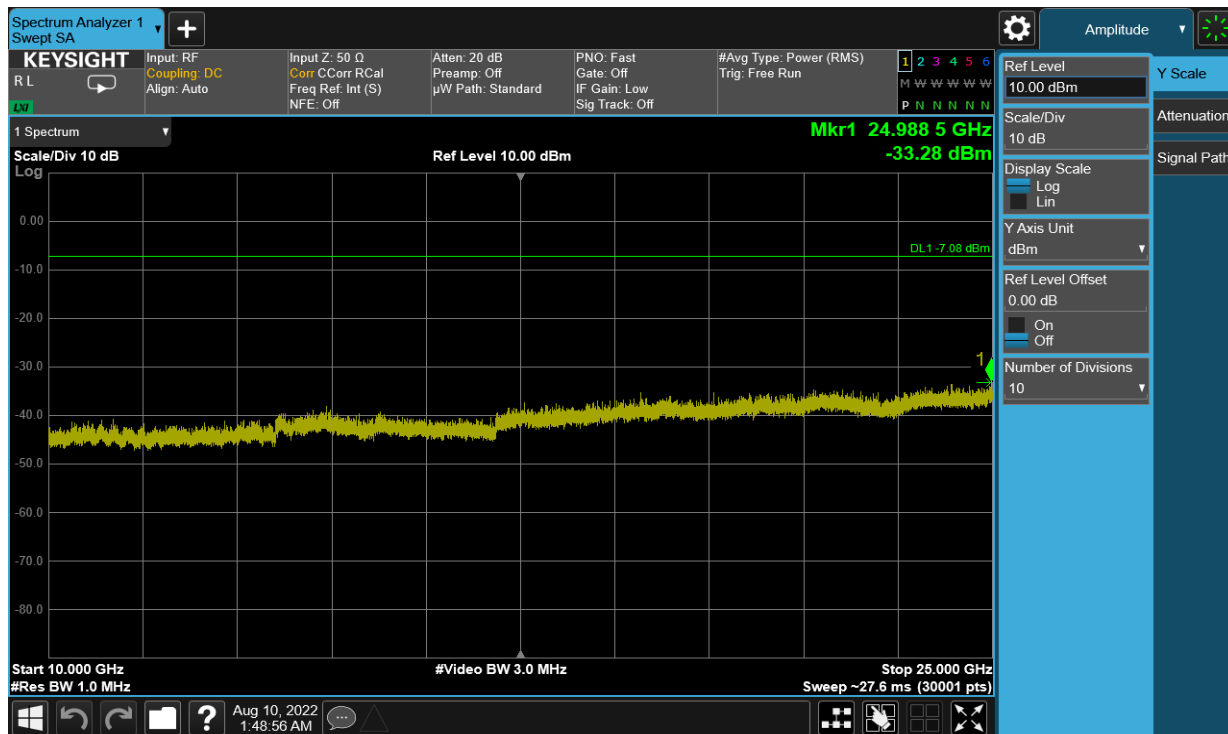
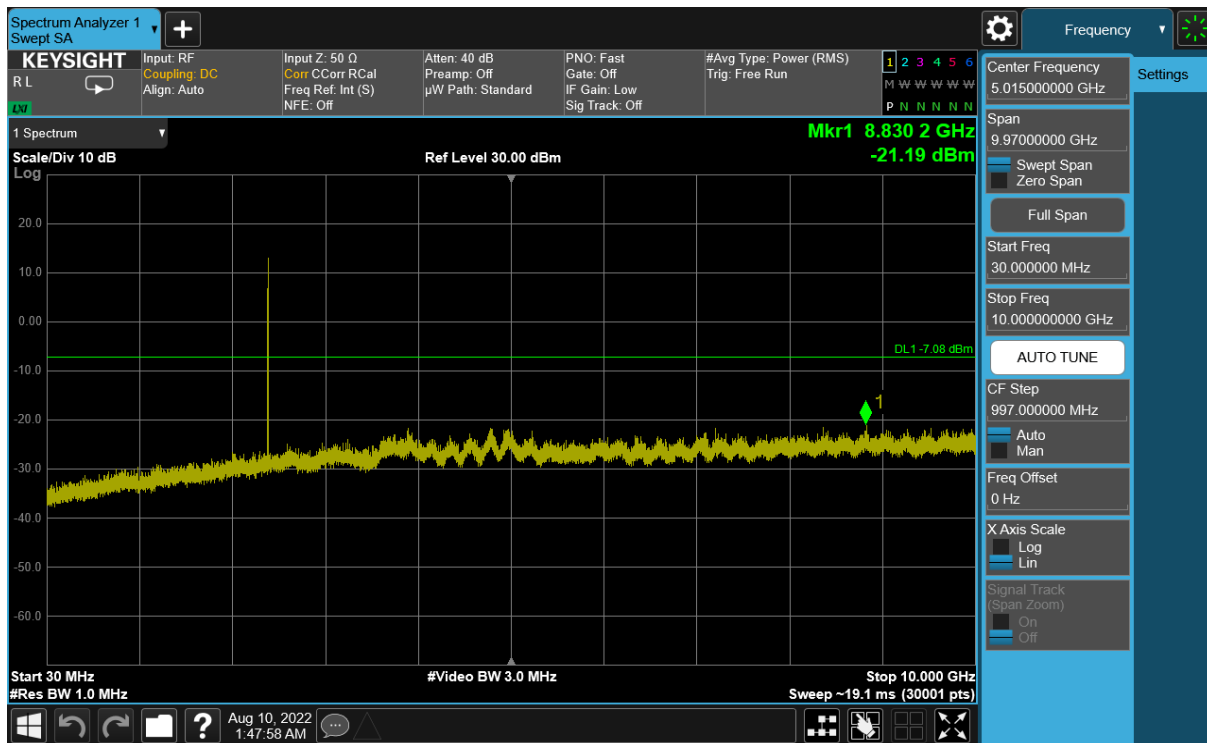
Test Notes

1. RBW was set to 1MHz rather than 100kHz in order to increase the measurement speed.
2. The display line shown in the following plots denotes the limit at 20dB below the fundamental emission level measured in a 100kHz bandwidth. However, since the traces in the following plots are measured with a 1MHz RBW, the display line may not necessarily appear to be 20dB below the level of the fundamental in a 1MHz bandwidth.
3. For plots showing conducted spurious emissions near the limit, the frequencies were investigated with a reduced RBW to ensure that no emissions were present.
4. 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: BCGA2757 IC: 579C-A2757	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 65 of 105

V 10.5 12/15/2021

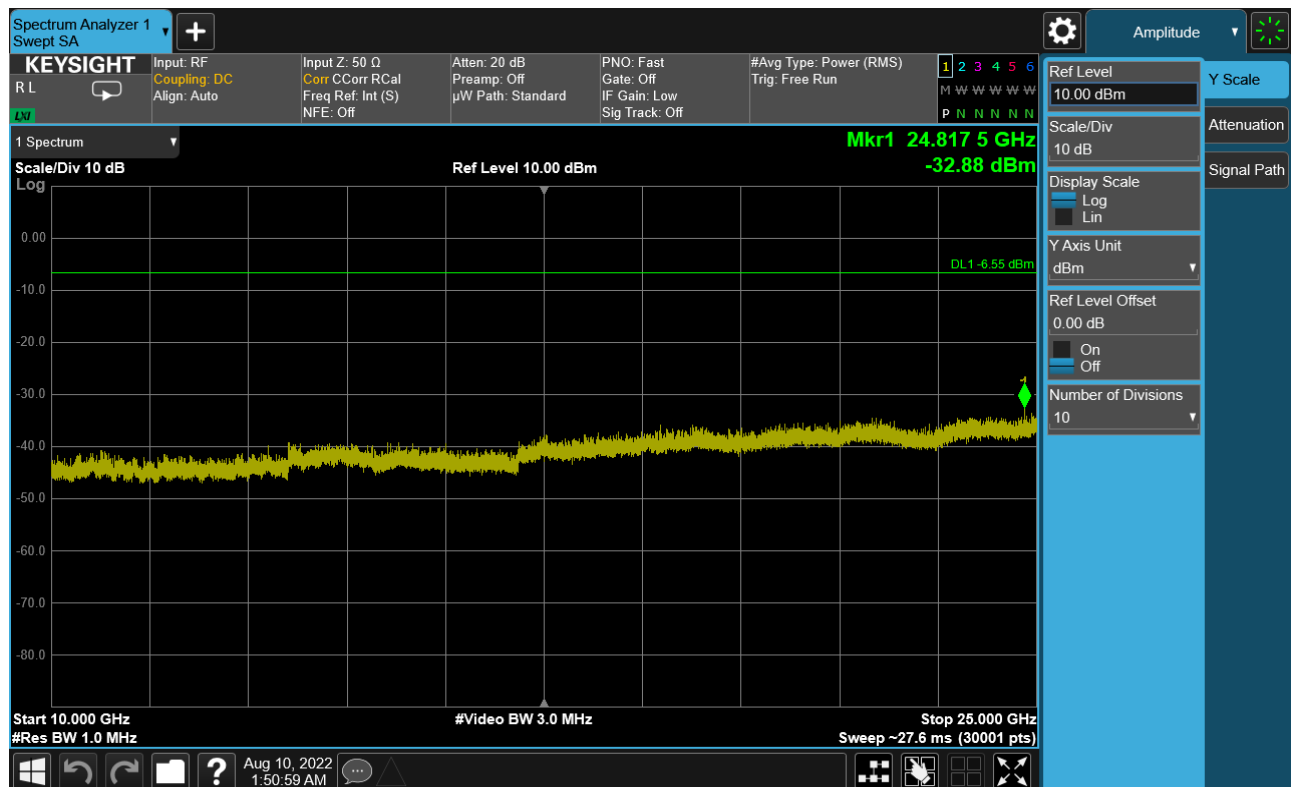
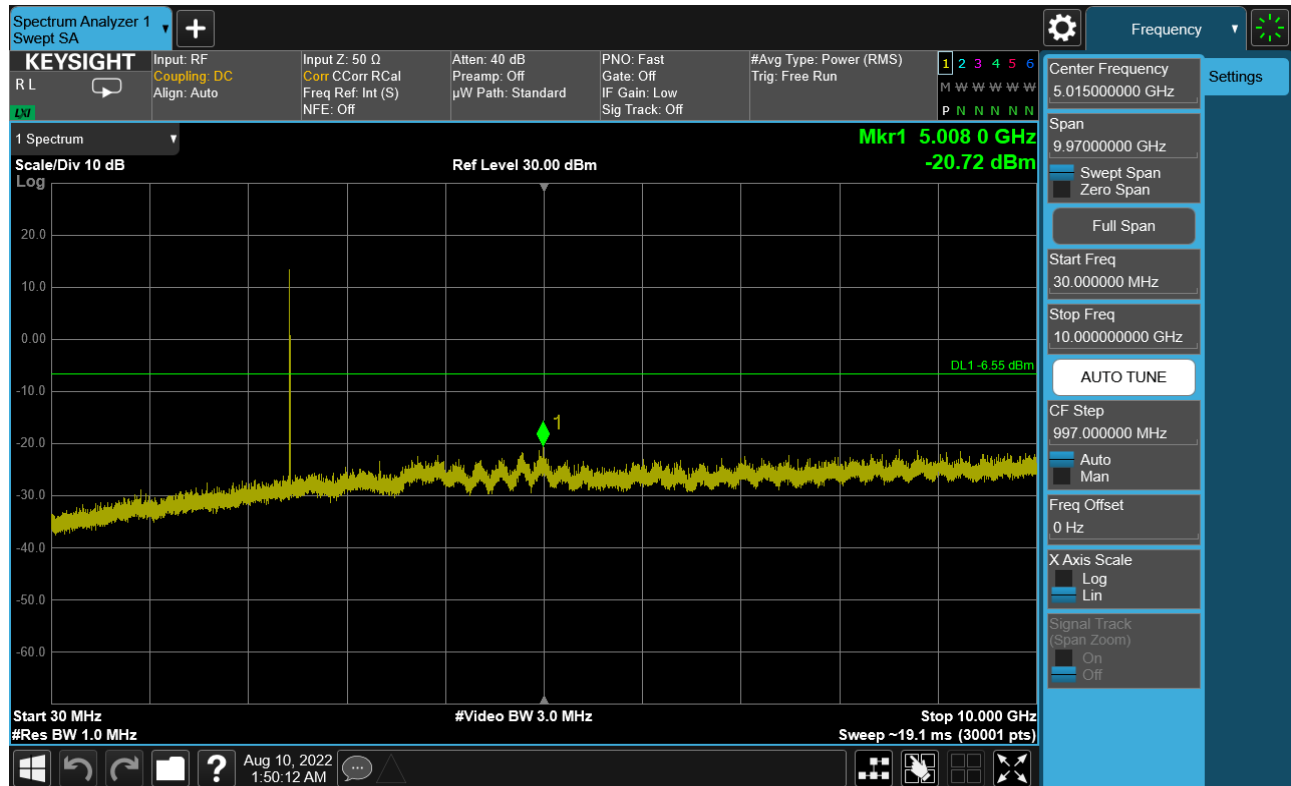
Antenna 3a




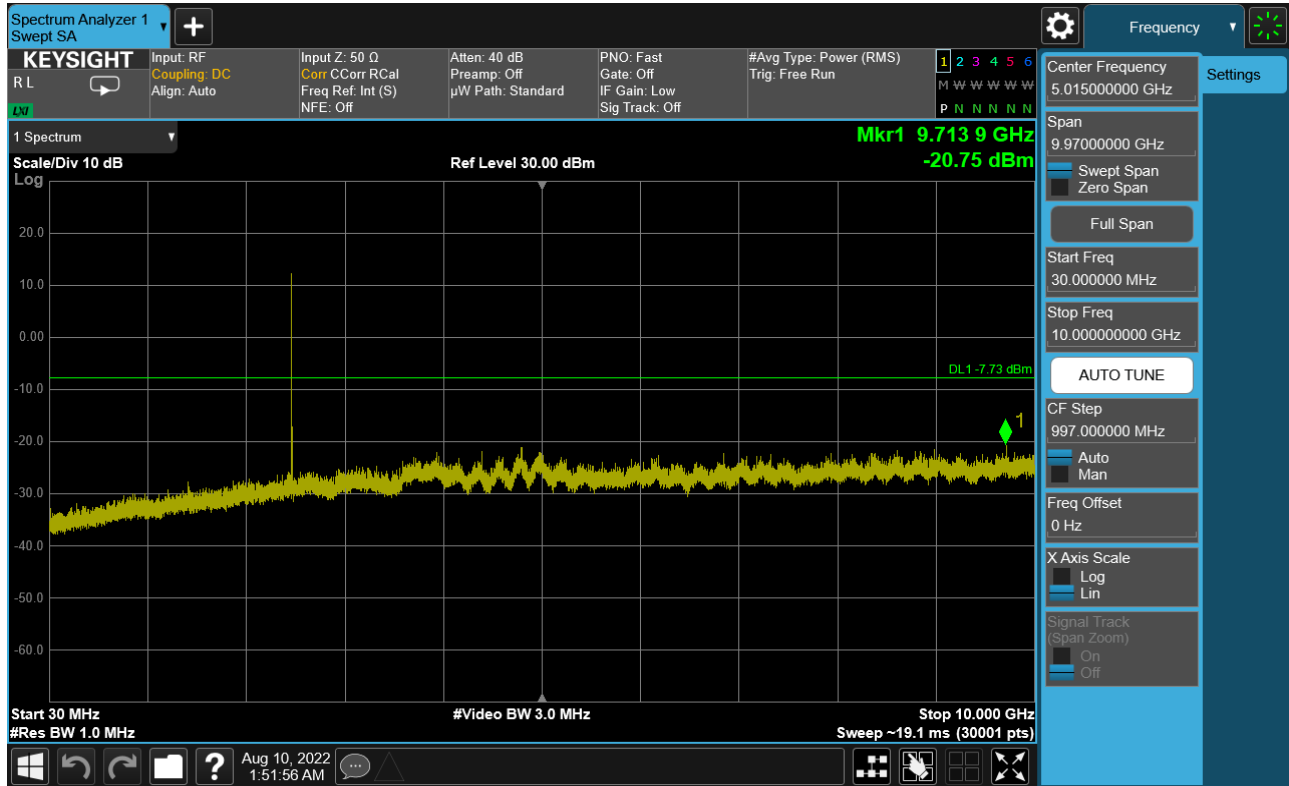
FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 66 of 105

V 10.5 12/15/2021

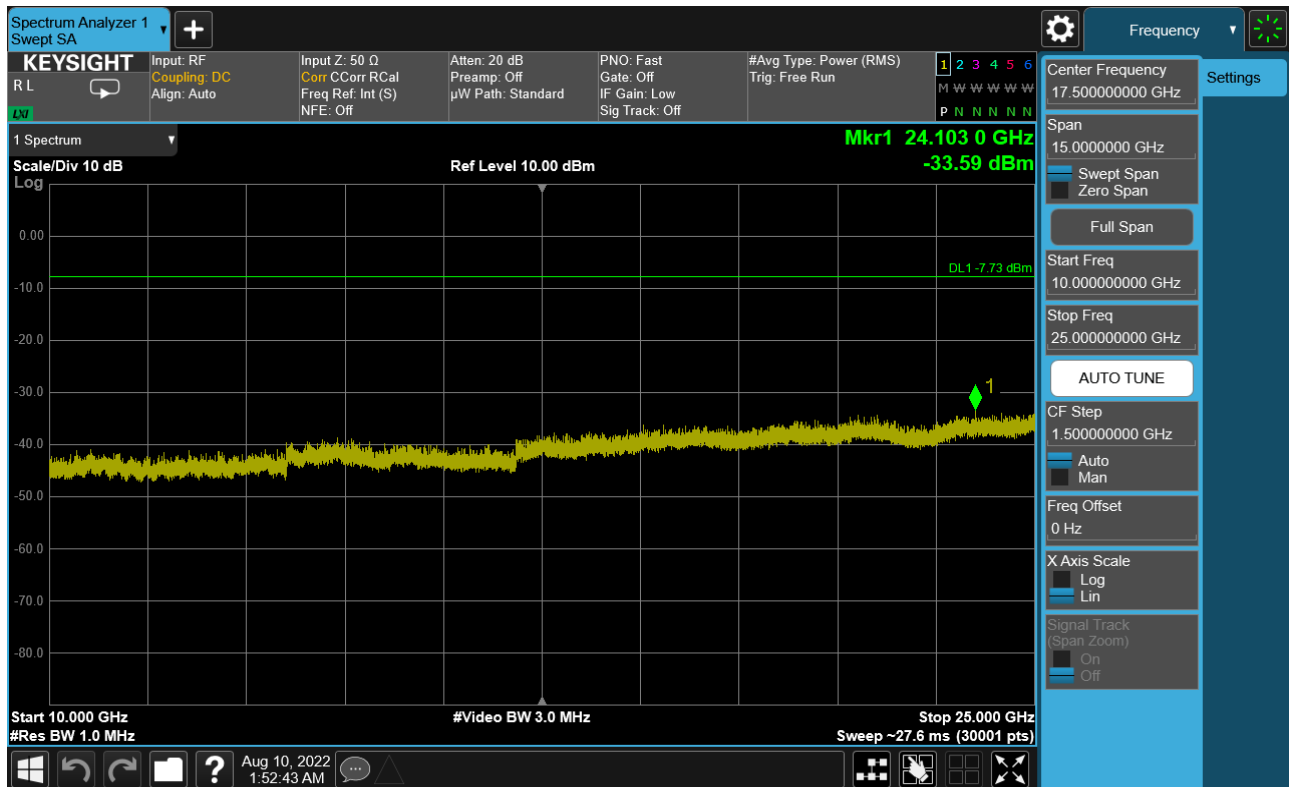
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Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 67 of 105



Plot 7-73. Conducted Spurious Plot Antenna 3a (Bluetooth (LE), 1Mbps, ePA – Ch. 39)



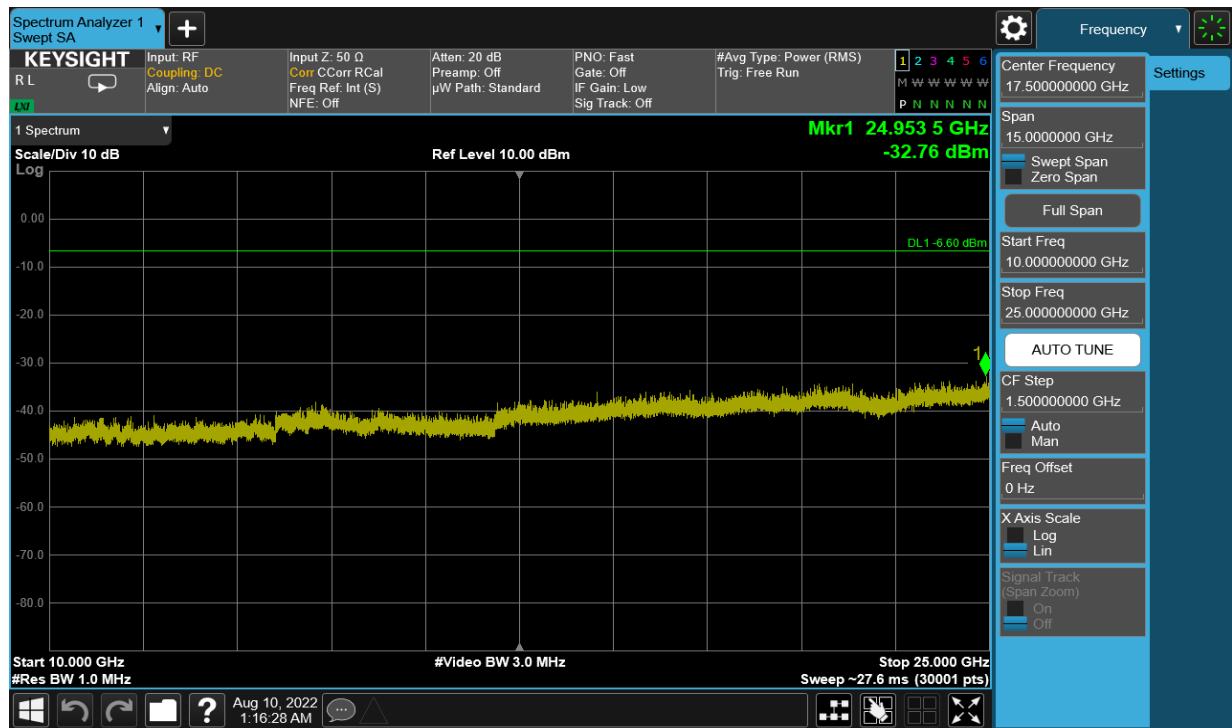
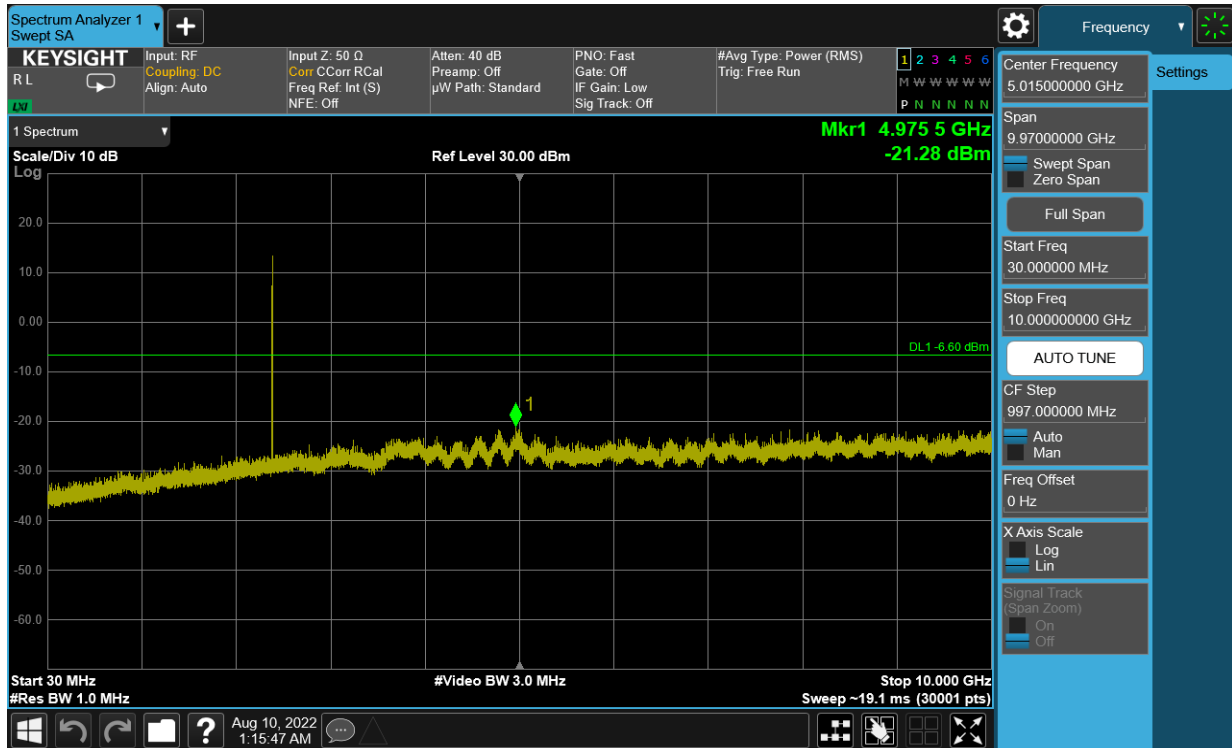
Plot 7-74. Conducted Spurious Plot Antenna 3a (Bluetooth (LE), 1Mbps, ePA – Ch. 39)

FCC ID: BCGA2757 IC: 579C-A2757	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 68 of 105

V 10.5 12/15/2021

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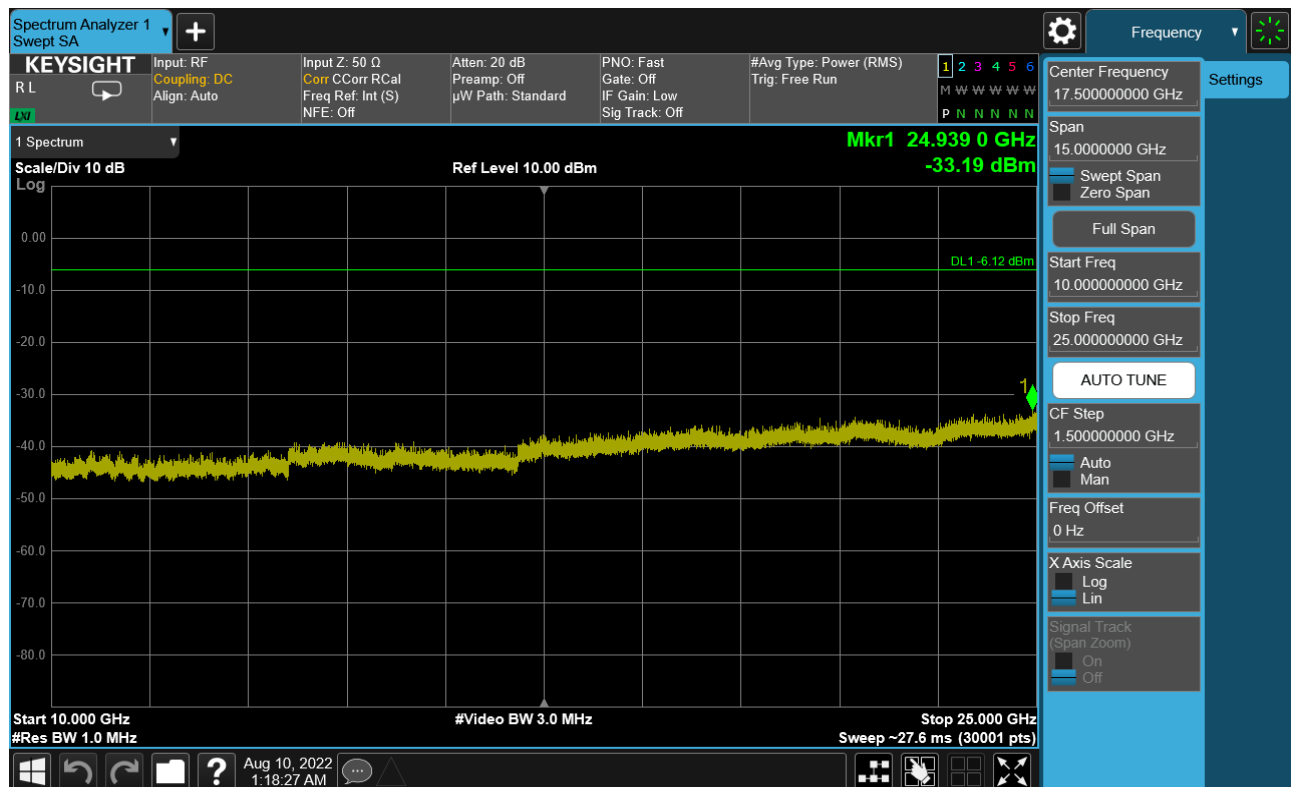
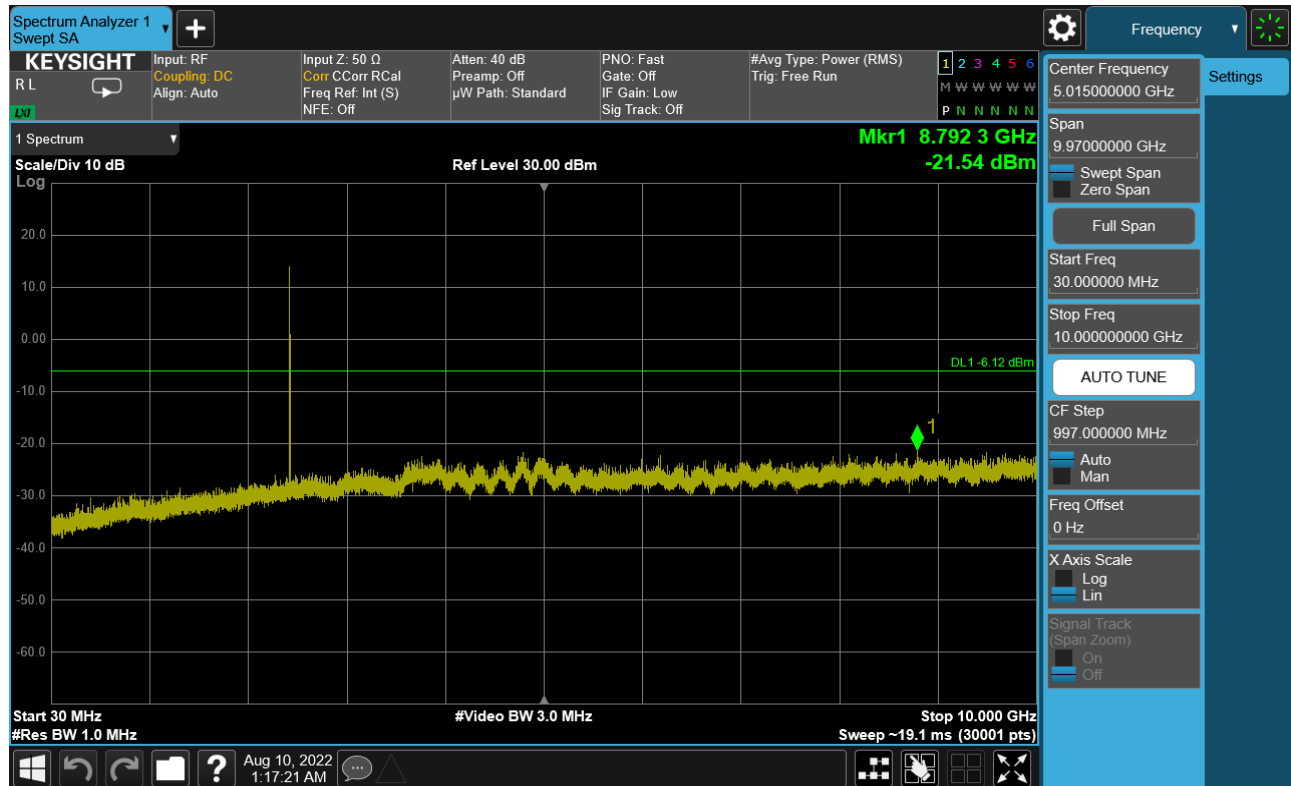
Antenna 1a




FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 69 of 105

V 10.5 12/15/2021

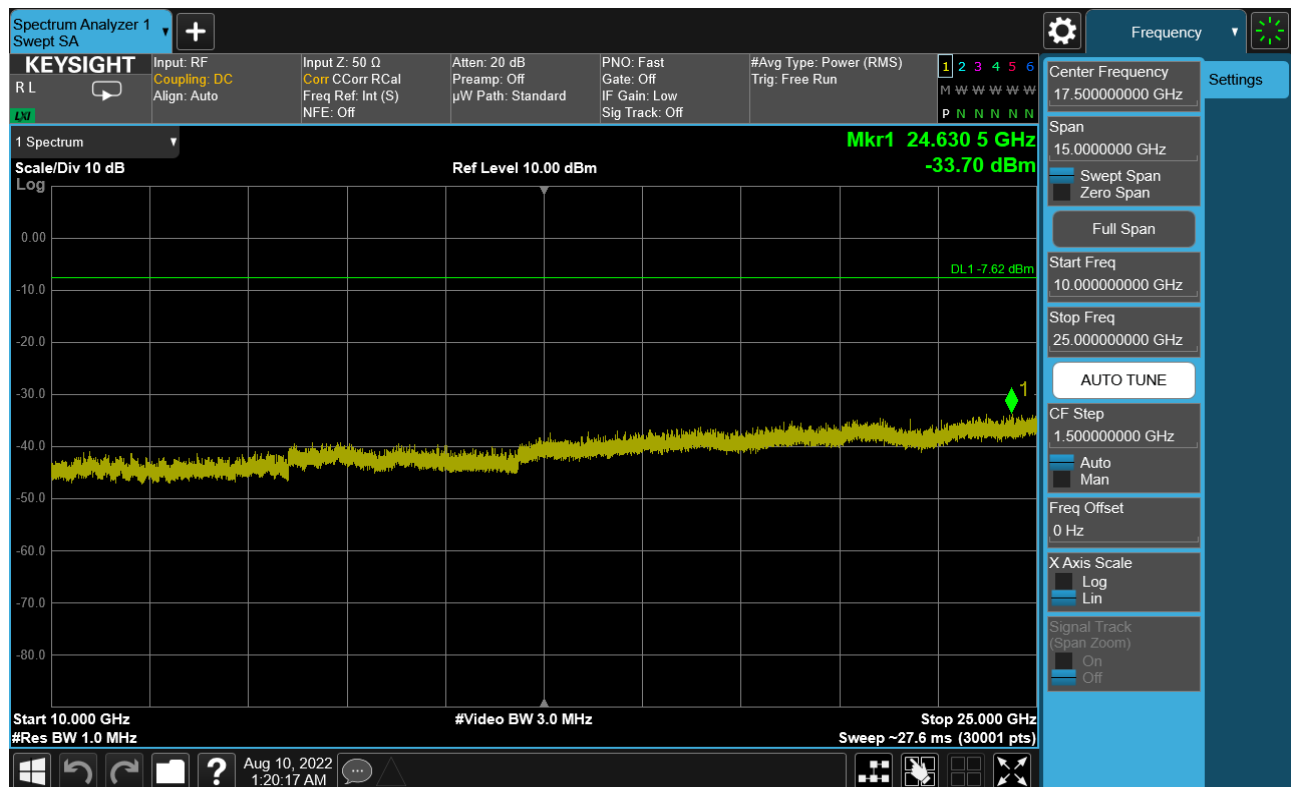
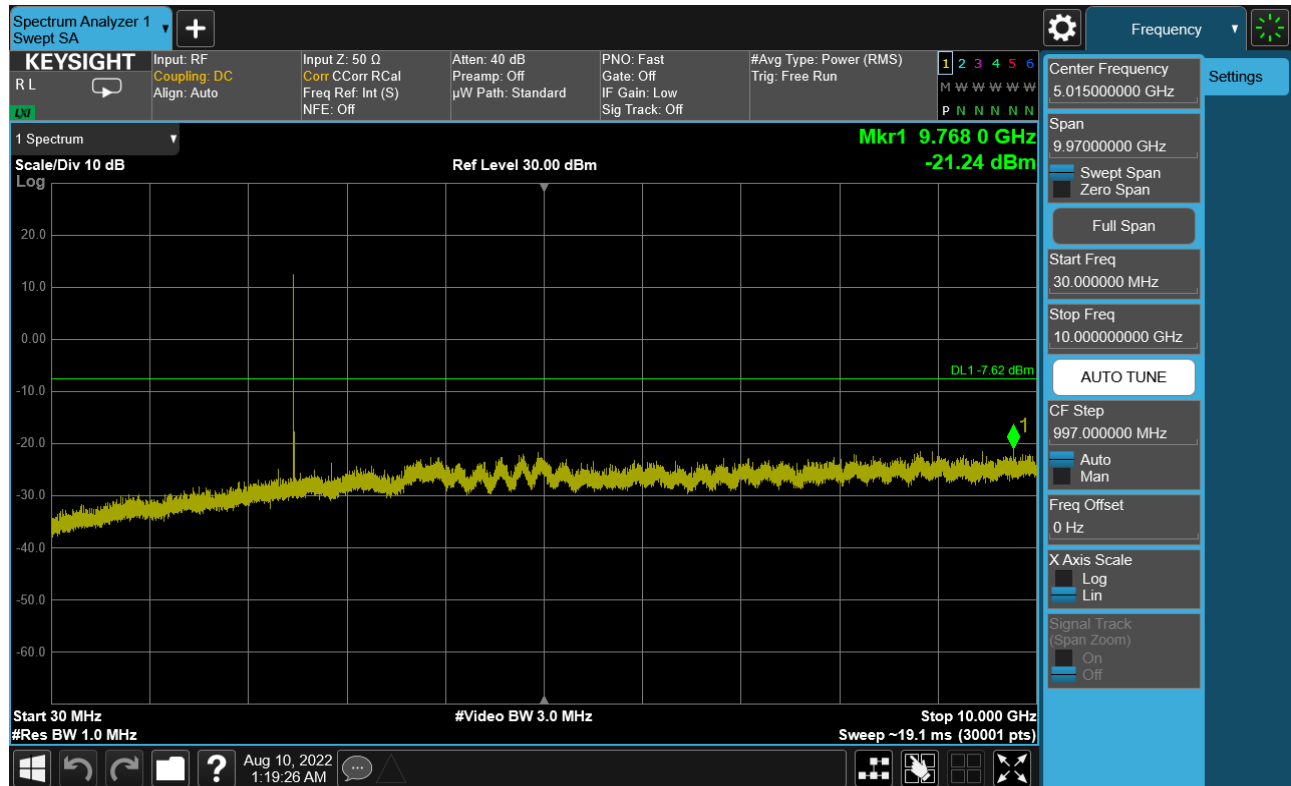
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Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 70 of 105

V 10.5 12/15/2021

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Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 71 of 105

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 – Subclause 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

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 72 of 105

V 10.5 12/15/2021

Test Setup

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

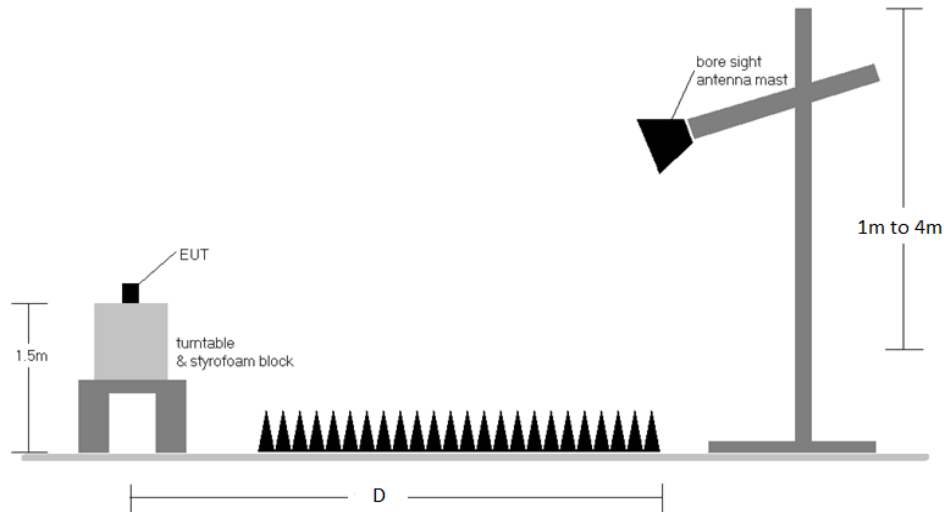


Figure 7-6. Radiated Test Setup >1GHz

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.

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 73 of 105

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 7.7.1 was calculated using the formula:

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

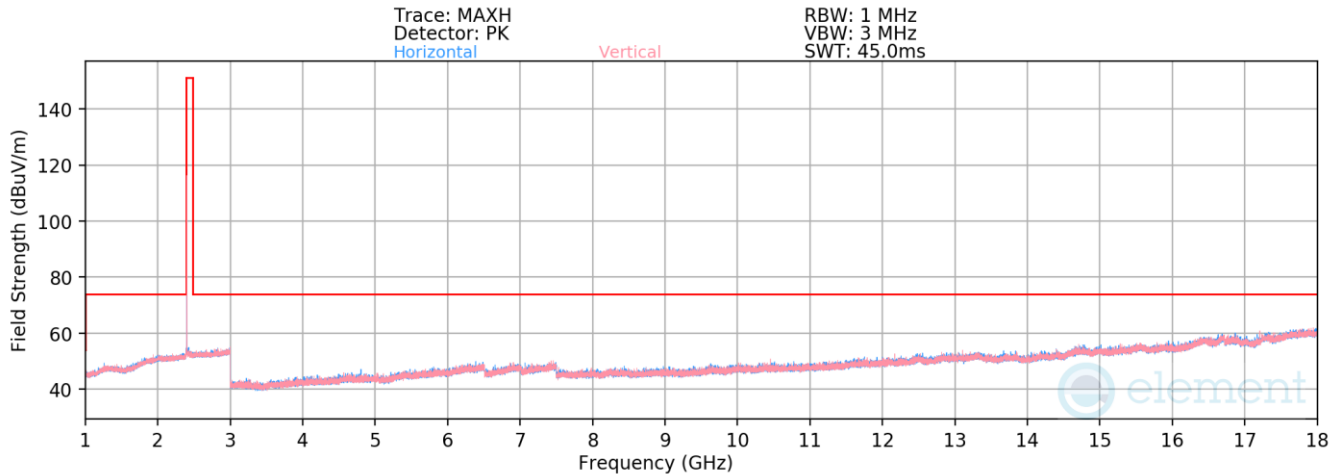
FCC ID: BCGA2757 IC: 579C-A2757			MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 74 of 105	

V 10.5 12/15/2021

Radiated Spurious Emission Measurements (1 – 18GHz)

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

Antenna 3a



Plot 7-81. Radiated Spurious Emissions 1-18GHz Antenna 3a (1Mbps, ePA – Ch. 0)

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

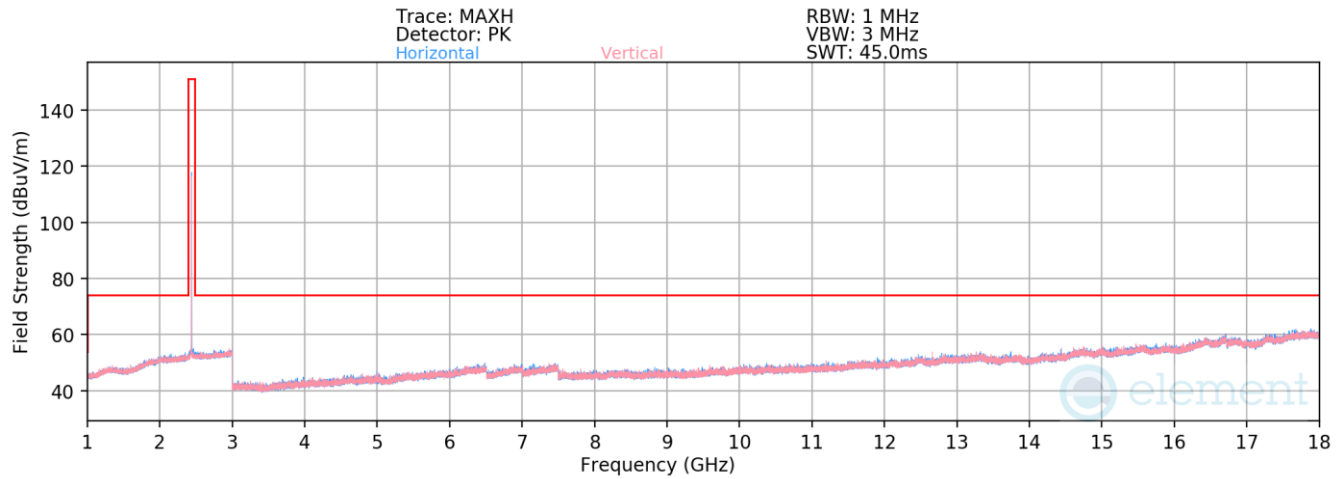
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBuV/m]	Limit [dBuV/m]	Margin [dB]
4804.00	Avg	H	109	203	-71.00	5.88	41.88	53.98	-12.10
4804.00	Peak	H	109	203	-64.37	5.88	48.51	73.98	-25.47
12010.00	Avg	H	-	-	-84.14	14.68	37.54	53.98	-16.43
12010.00	Peak	H	-	-	-72.91	14.68	48.77	73.98	-25.20

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

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 75 of 105

V 10.5 12/15/2021

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Plot 7-82. Radiated Spurious Emissions 1-18GHz Antenna 3a (1Mbps, ePA – Ch. 19)

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

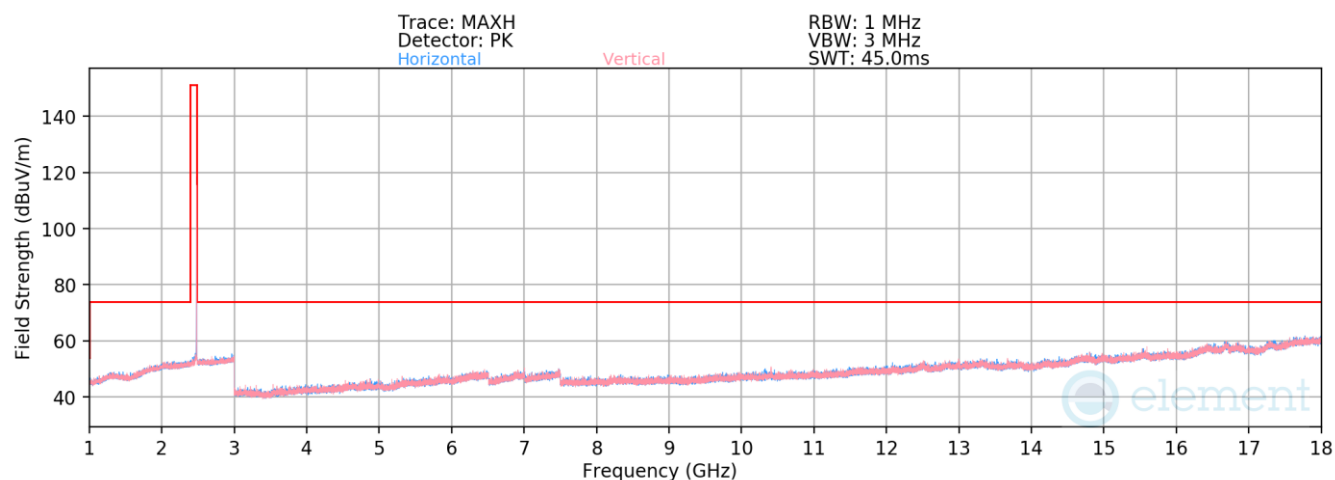
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBuV/m]	Limit [dBuV/m]	Margin [dB]
4880.00	Avg	H	-	-	-80.14	6.24	33.10	53.98	-20.88
4880.00	Peak	H	-	-	-68.17	6.24	45.07	73.98	-28.91
7320.00	Avg	H	-	-	-80.61	9.97	36.36	53.98	-17.62
7320.00	Peak	H	-	-	-68.68	9.97	48.29	73.98	-25.69
12200.00	Avg	H	-	-	-84.68	14.86	37.18	53.98	-16.80
12200.00	Peak	H	-	-	-73.99	14.86	47.87	73.98	-26.11

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

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 76 of 105

V 10.5 12/15/2021

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Plot 7-83. Radiated Spurious Emissions 1-18GHz Antenna 3a (1Mbps ePA – Ch. 39)

Bluetooth Mode: LE
Data Rate: 1Mbps
Power Scheme: ePA
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	-	-	-80.55	6.45	32.90	53.98	-21.08
4960.00	Peak	H	-	-	-69.15	6.45	44.30	73.98	-29.68
7440.00	Avg	H	-	-	-80.08	9.93	36.85	53.98	-17.13
7440.00	Peak	H	-	-	-69.17	9.93	47.76	73.98	-26.22
12400.00	Avg	H	-	-	-84.79	15.14	37.35	53.98	-16.63
12400.00	Peak	H	-	-	-73.30	15.14	48.84	73.98	-25.14

Table 7-16. Radiated Spurious Emission Measurements Antenna 3a

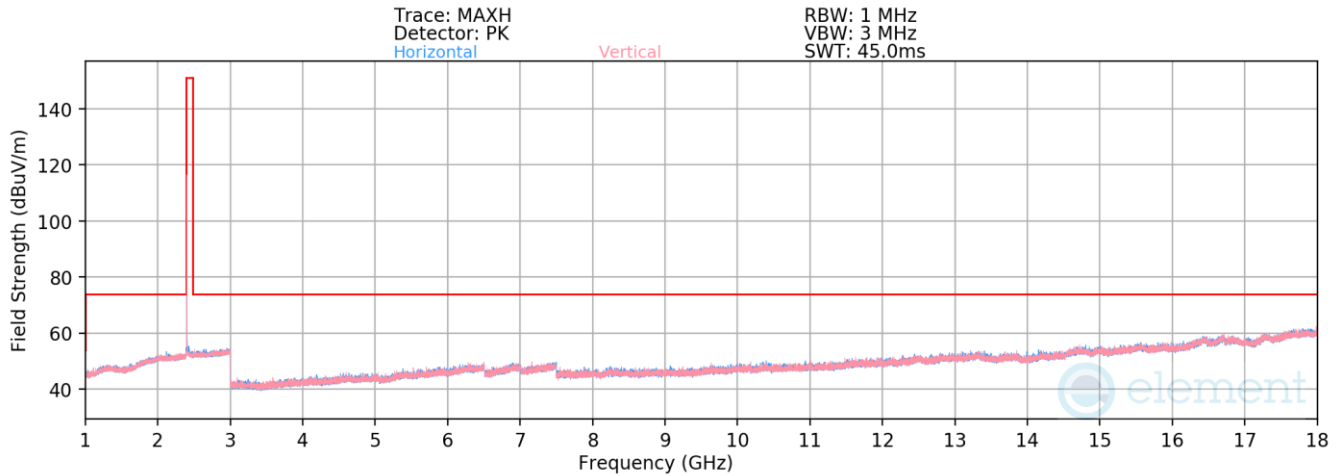
FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 77 of 105

V 10.5 12/15/2021

Radiated Spurious Emission Measurements (1 – 18GHz)

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

Antenna 1a



Plot 7-84. Radiated Spurious Emissions 1-18GHz Antenna 1a (1Mbps, ePA – Ch. 0)

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

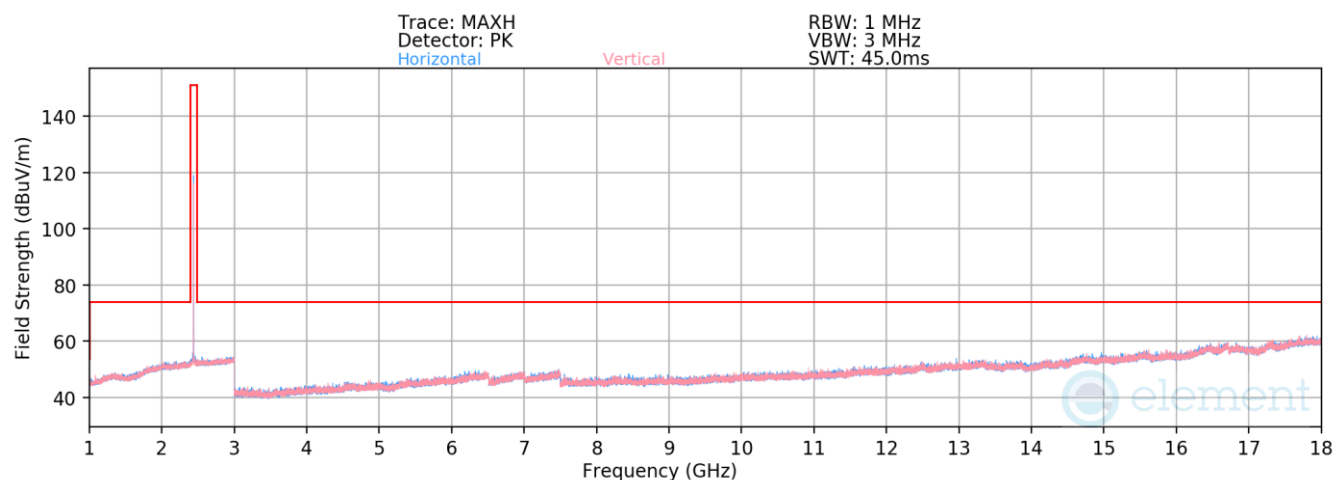
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
4804.00	Avg	H	-	-	-79.85	5.88	33.03	53.98	-20.95
4804.00	Peak	H	-	-	-67.76	5.88	45.12	73.98	-28.86
12010.00	Avg	H	-	-	-84.35	14.68	37.33	53.98	-16.64
12010.00	Peak	H	-	-	-73.90	14.68	47.78	73.98	-26.19

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

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 78 of 105

V 10.5 12/15/2021

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Plot 7-85. Radiated Spurious Emissions 1-18GHz Antenna 1a (1Mbps, ePA – Ch. 19)

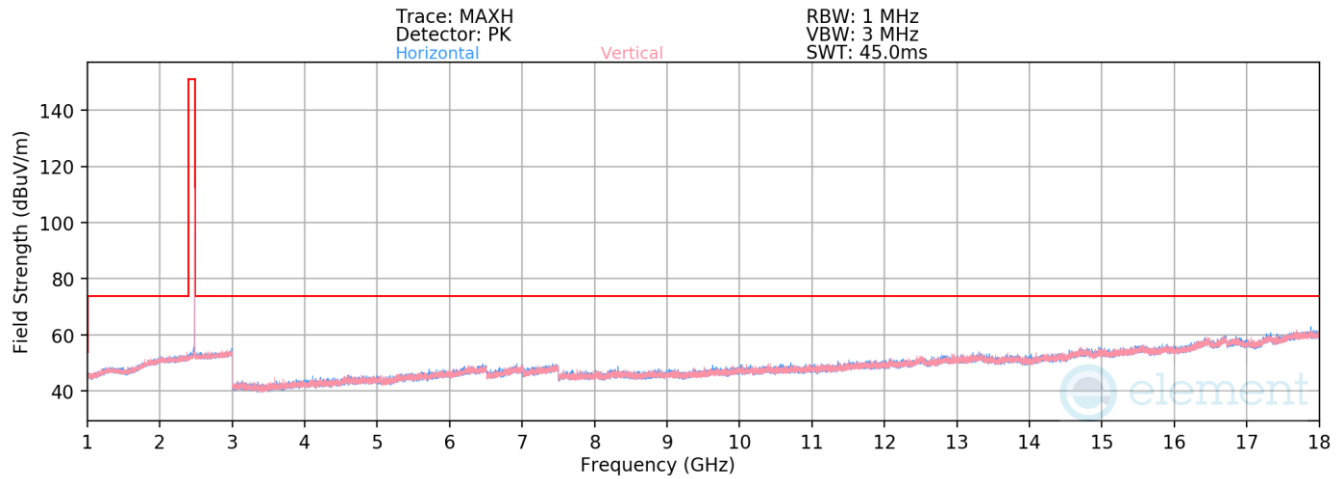
Bluetooth Mode: LE
Data Rate: 1Mbps
Power Scheme: ePA
Distance of Measurements: 3 Meters
Operating Frequency: 2440MHz
Channel: 19

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	-	-	-80.18	6.24	33.06	53.98	-20.92
4880.00	Peak	H	-	-	-68.92	6.24	44.32	73.98	-29.66
7320.00	Avg	H	-	-	-80.49	9.97	36.48	53.98	-17.50
7320.00	Peak	H	-	-	-69.38	9.97	47.59	73.98	-26.39
12200.00	Avg	H	-	-	-84.58	14.86	37.28	53.98	-16.70
12200.00	Peak	H	-	-	-73.76	14.86	48.10	73.98	-25.88

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

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 79 of 105

V 10.5 12/15/2021



Plot 7-86. Radiated Spurious Emissions 1-18GHz Antenna 1a (1Mbps ePA – Ch. 39)

Bluetooth Mode: LE
Data Rate: 1Mbps
Power Scheme: ePA
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	-	-	-80.50	6.45	32.95	53.98	-21.03
4960.00	Peak	H	-	-	-68.71	6.45	44.74	73.98	-29.24
7440.00	Avg	H	-	-	-80.08	9.93	36.85	53.98	-17.13
7440.00	Peak	H	-	-	-68.28	9.93	48.65	73.98	-25.33
12400.00	Avg	H	-	-	-84.49	15.14	37.65	53.98	-16.33
12400.00	Peak	H	-	-	-73.18	15.14	48.96	73.98	-25.02

Table 7-19. Radiated Spurious Emission Measurements Antenna 1a

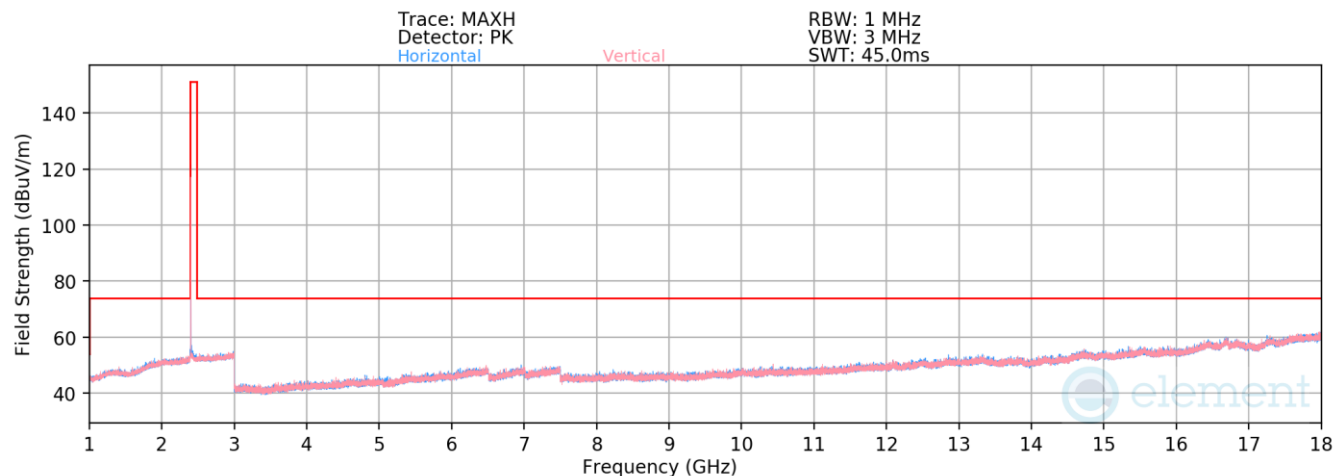
FCC ID: BCGA2757 IC: 579C-A2757	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 80 of 105

V 10.5 12/15/2021

Radiated Spurious Emission Measurements (1-18GHz)

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

TxBF



Plot 7-87. Radiated Spurious Emissions 1-18GHz TxBF (1Mbps, ePA – Ch. 0)

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

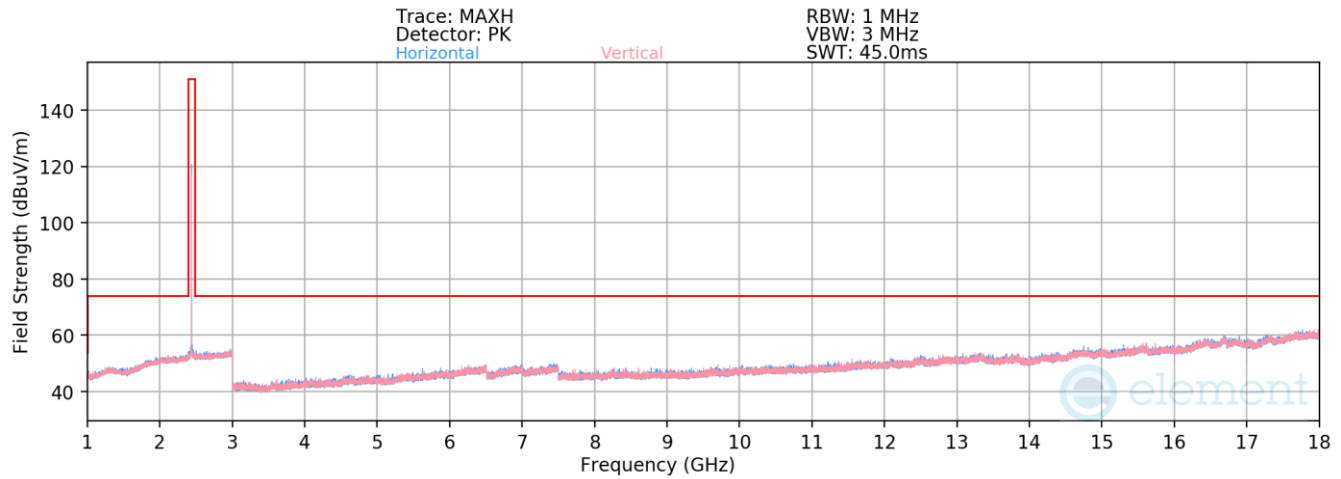
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBuV/m]	Limit [dBuV/m]	Margin [dB]
4804.00	Avg	H	102	205	-70.56	5.88	42.32	53.98	-11.66
4804.00	Peak	H	102	205	-63.71	5.88	49.17	73.98	-24.81
12010.00	Avg	V	-	-	-84.24	14.68	37.44	53.98	-16.53
12010.00	Peak	V	-	-	-73.31	14.68	48.37	73.98	-25.60

Table 7-20. Radiated Spurious Emission Measurements TxBF

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 81 of 105

V 10.5 12/15/2021

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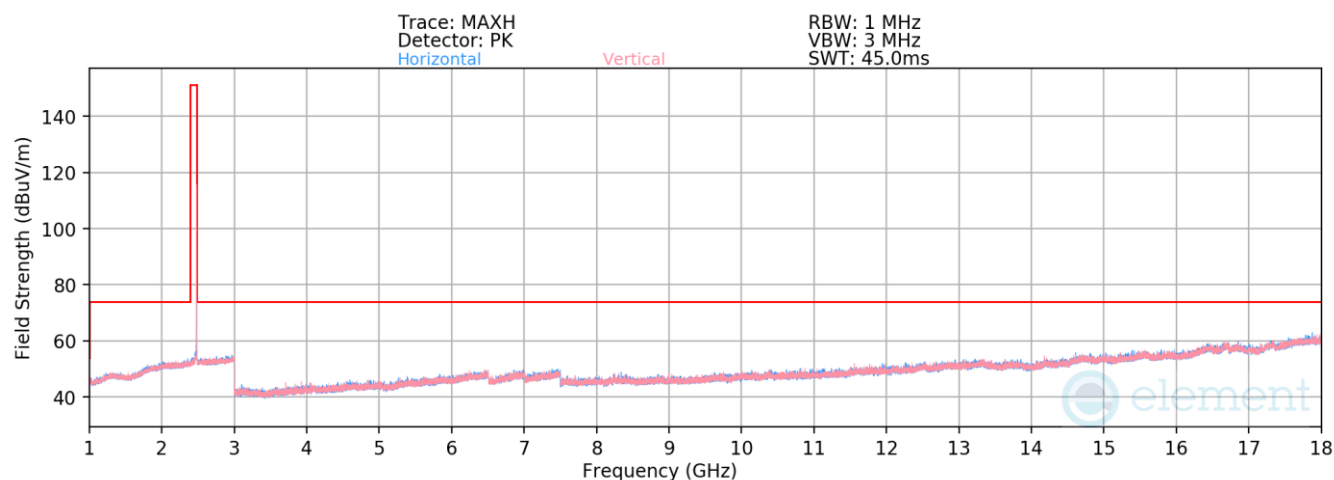
Plot 7-88. Radiated Spurious Emissions 1-18GHz TxBF (1Mbps, ePA - Ch. 19)

Bluetooth Mode: LE
Data Rate: 1Mbps
Power Scheme: ePA
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	V	-	-	-80.04	6.24	33.20	53.98	-20.78
4880.00	Peak	V	-	-	-68.46	6.24	44.78	73.98	-29.20
7320.00	Avg	V	-	-	-80.49	9.97	36.48	53.98	-17.50
7320.00	Peak	V	-	-	-69.41	9.97	47.56	73.98	-26.42
12200.00	Avg	V	-	-	-84.77	14.86	37.09	53.98	-16.89
12200.00	Peak	V	-	-	-73.87	14.86	47.99	73.98	-25.99

Table 7-21. Radiated Spurious Emission Measurements TxBF

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 82 of 105



Plot 7-89. Radiated Spurious Emissions 1-18GHz TxBF (1Mbps ePA – Ch. 39)

Bluetooth Mode: LE
Data Rate: 1Mbps
Power Scheme: ePA
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	V	-	-	-80.40	6.45	33.05	53.98	-20.93
4960.00	Peak	V	-	-	-68.88	6.45	44.57	73.98	-29.41
7440.00	Avg	V	-	-	-80.06	9.93	36.87	53.98	-17.11
7440.00	Peak	V	-	-	-68.60	9.93	48.33	73.98	-25.65
12400.00	Avg	V	-	-	-84.54	15.14	37.60	53.98	-16.38
12400.00	Peak	V	-	-	-73.36	15.14	48.78	73.98	-25.20

Table 7-22. Radiated Spurious Emission Measurements TxBF

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 83 of 105

V 10.5 12/15/2021

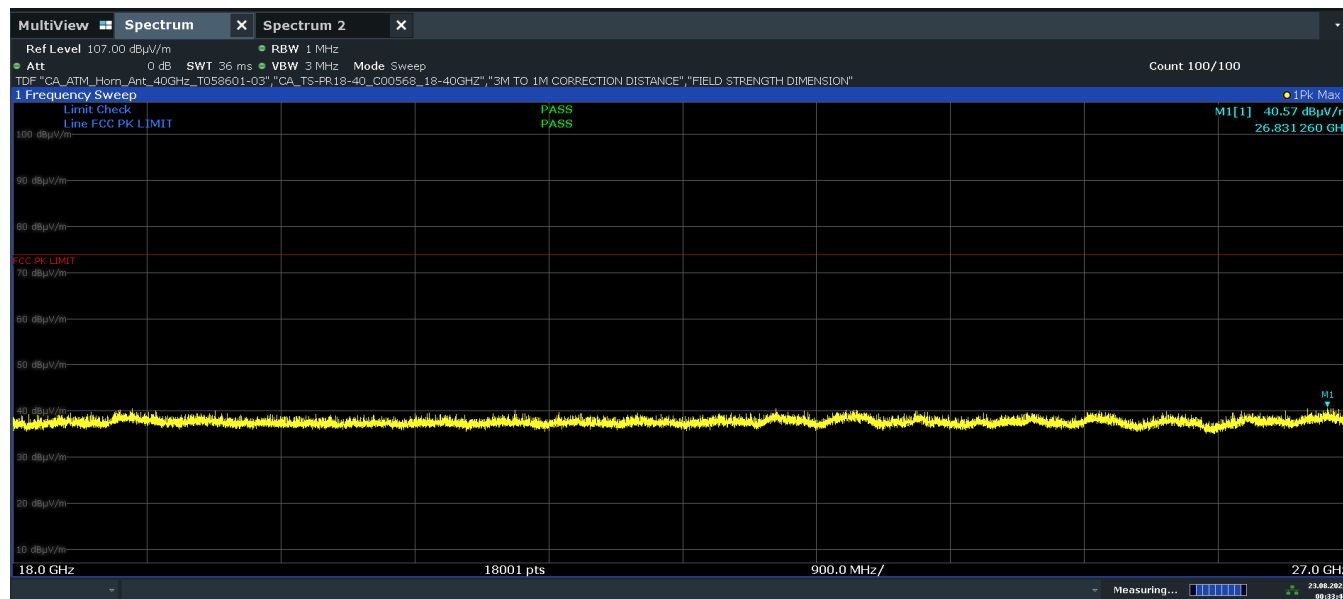
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Radiated Spurious Emission Measurements (Above 18GHz)

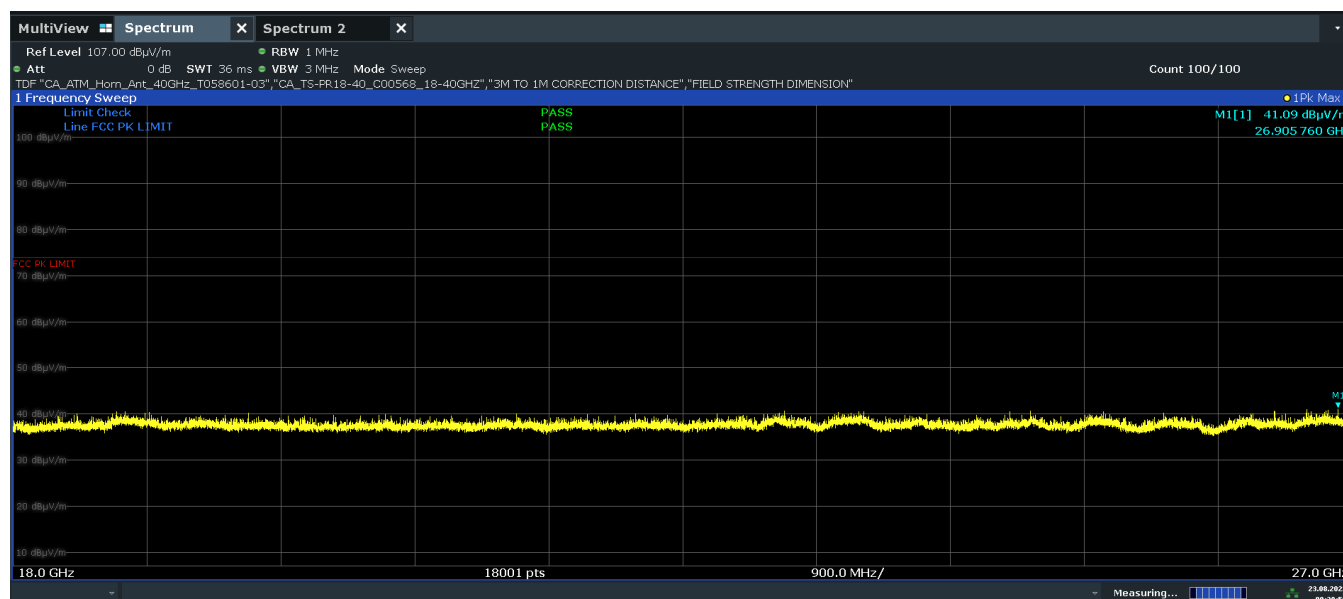
\$15.209; RSS-Gen [8.9]

TxBF



00:33:40 23.08.2022

Plot 7-90. Radiated Spurious Emissions Above 18GHz TxBF (1Mbps, ePA – Ch. 0, Pol. H)



00:30:59 23.08.2022

Plot 7-91. Radiated Spurious Emissions Above 18GHz TxBF (1Mbps, ePA – Ch. 0, Pol. V)

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 84 of 105

V 10.5 12/15/2021

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7.7.1 Radiated Restricted Band Edge Measurements

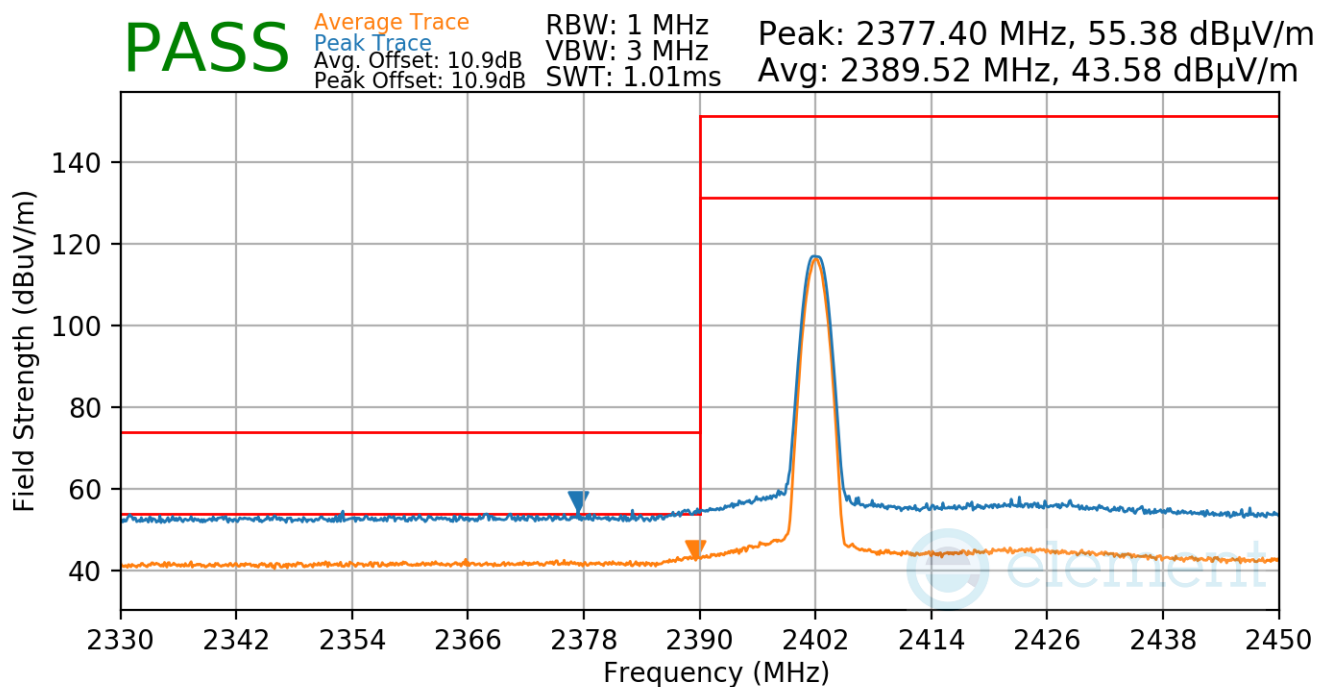
§15.205 §15.209; RSS-Gen [8.9]

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 3a

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 3a (Average & Peak)

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 85 of 105

V 10.5 12/15/2021

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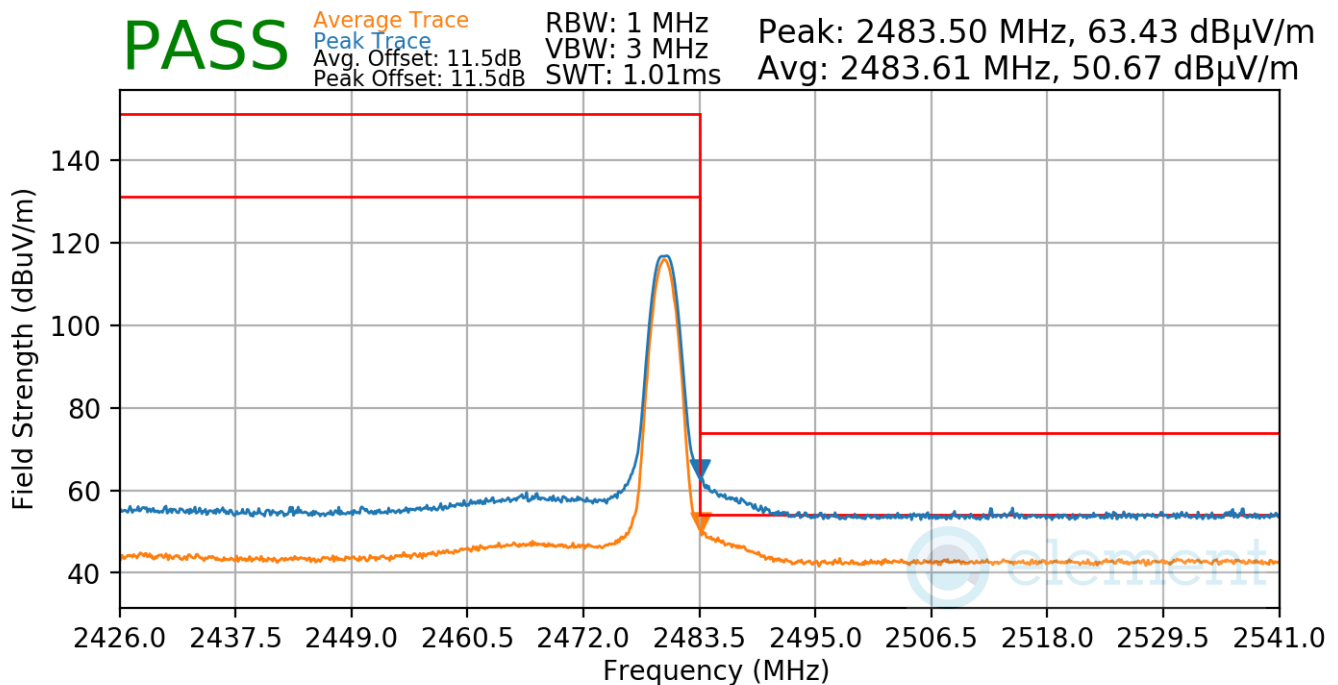
Radiated Restricted Band Edge Measurements

§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 7-93. Radiated Restricted Upper Band Edge Measurement Antenna 3a (Average & Peak)

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 86 of 105

V 10.5 12/15/2021

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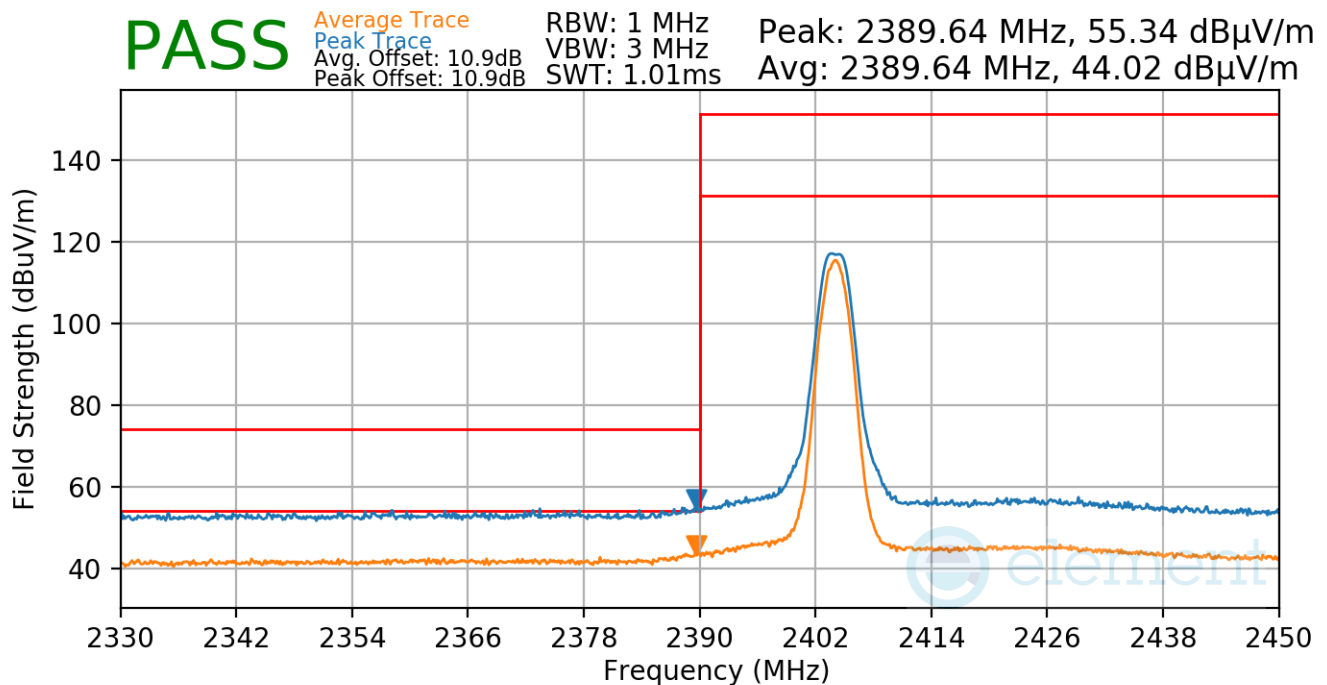
Radiated Restricted Band Edge Measurements

§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:	2Mbps
Power Scheme:	ePA
Measurement Distance:	3 Meters
Operating Frequency:	2404MHz
Channel:	1



Plot 7-94. Radiated Restricted Lower Band Edge Measurement Antenna 3a (Average & Peak)

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 87 of 105

V 10.5 12/15/2021

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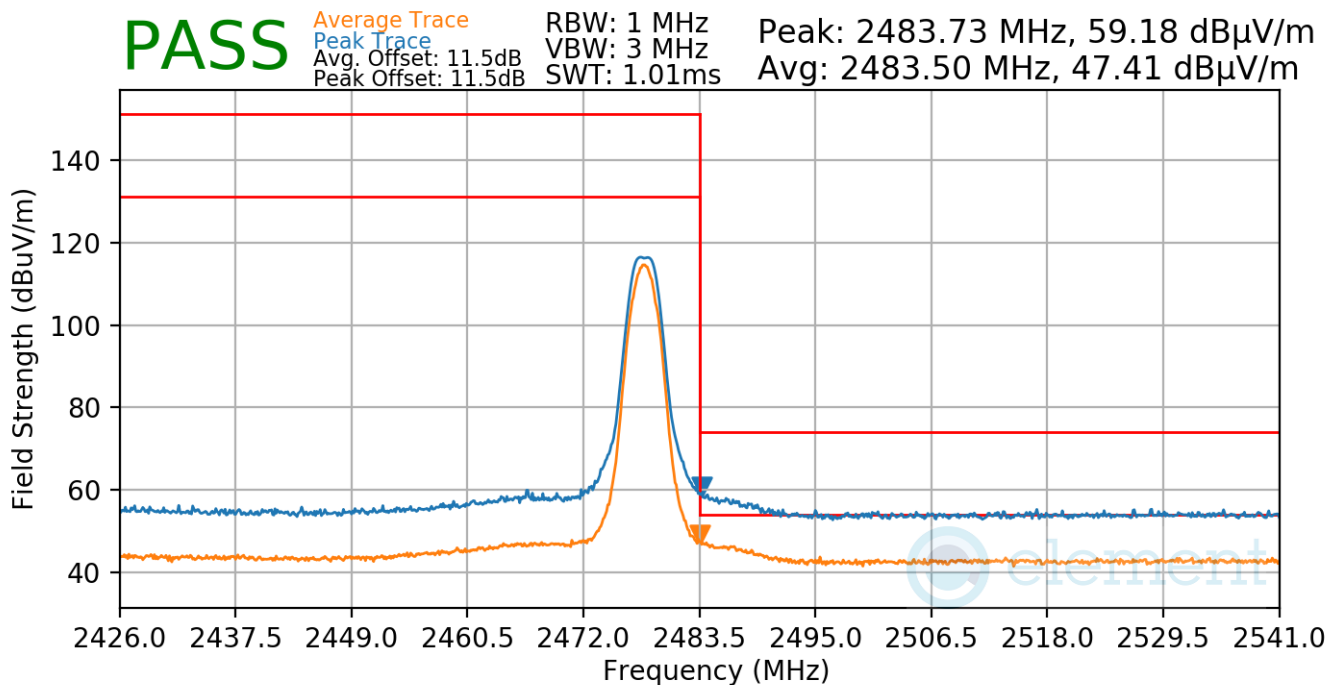
Radiated Restricted Band Edge Measurements

§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:	2Mbps
Power Scheme:	ePA
Measurement Distance:	3 Meters
Operating Frequency:	2478MHz
Channel:	38



Plot 7-95. Radiated Restricted Upper Band Edge Measurement Antenna 3a (Average & Peak)

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 88 of 105

V 10.5 12/15/2021

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Radiated Restricted Band Edge Measurements

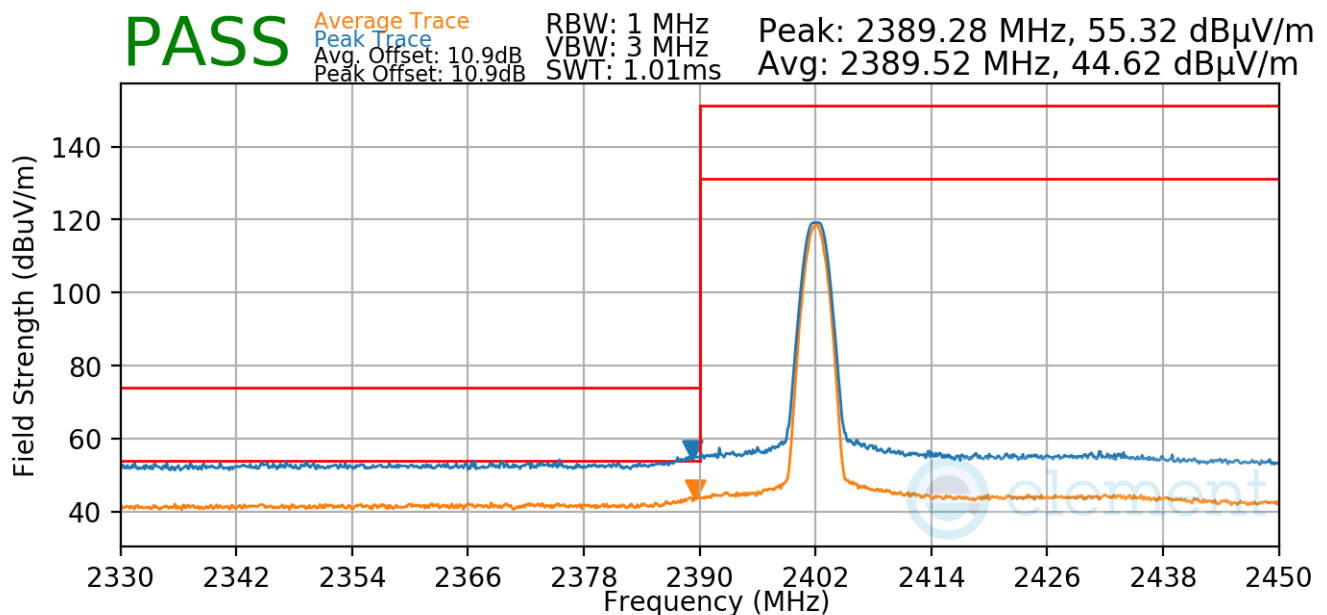
\$15.205 §15.209; RSS-Gen [8.9]

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 1a

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 1a (Average & Peak)

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 89 of 105

V 10.5 12/15/2021

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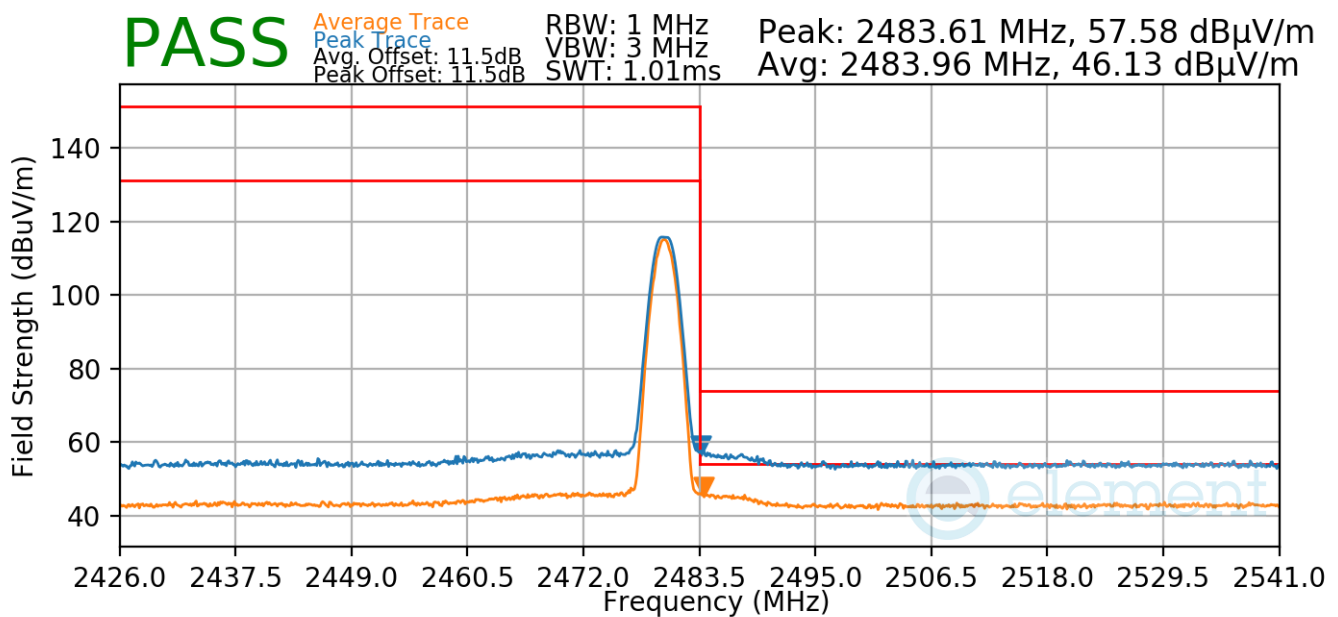
Radiated Restricted Band Edge Measurements

§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 7-97. Radiated Restricted Upper Band Edge Measurement Antenna 1a (Average & Peak)

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 90 of 105

V 10.5 12/15/2021

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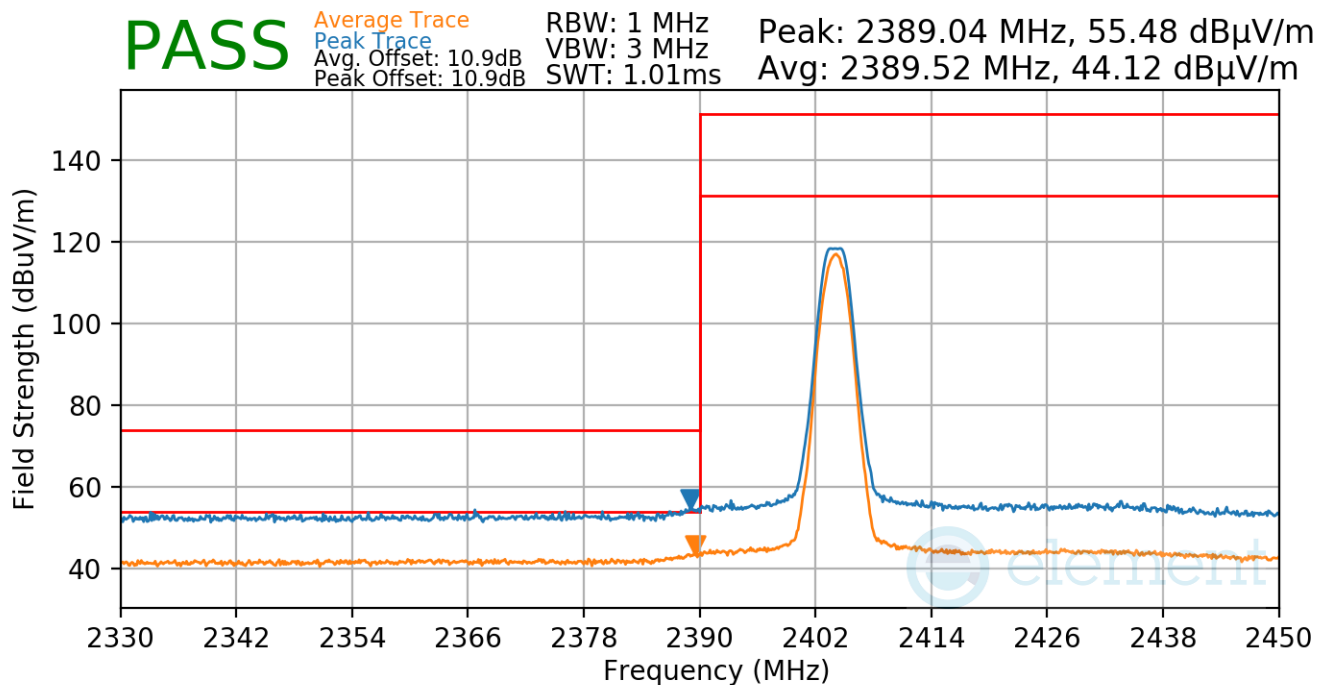
Radiated Restricted Band Edge Measurements

§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:	2Mbps
Power Scheme:	ePA
Measurement Distance:	3 Meters
Operating Frequency:	2404MHz
Channel:	1



Plot 7-98. Radiated Restricted Lower Band Edge Measurement Antenna 1a (Average & Peak)

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 91 of 105

V 10.5 12/15/2021

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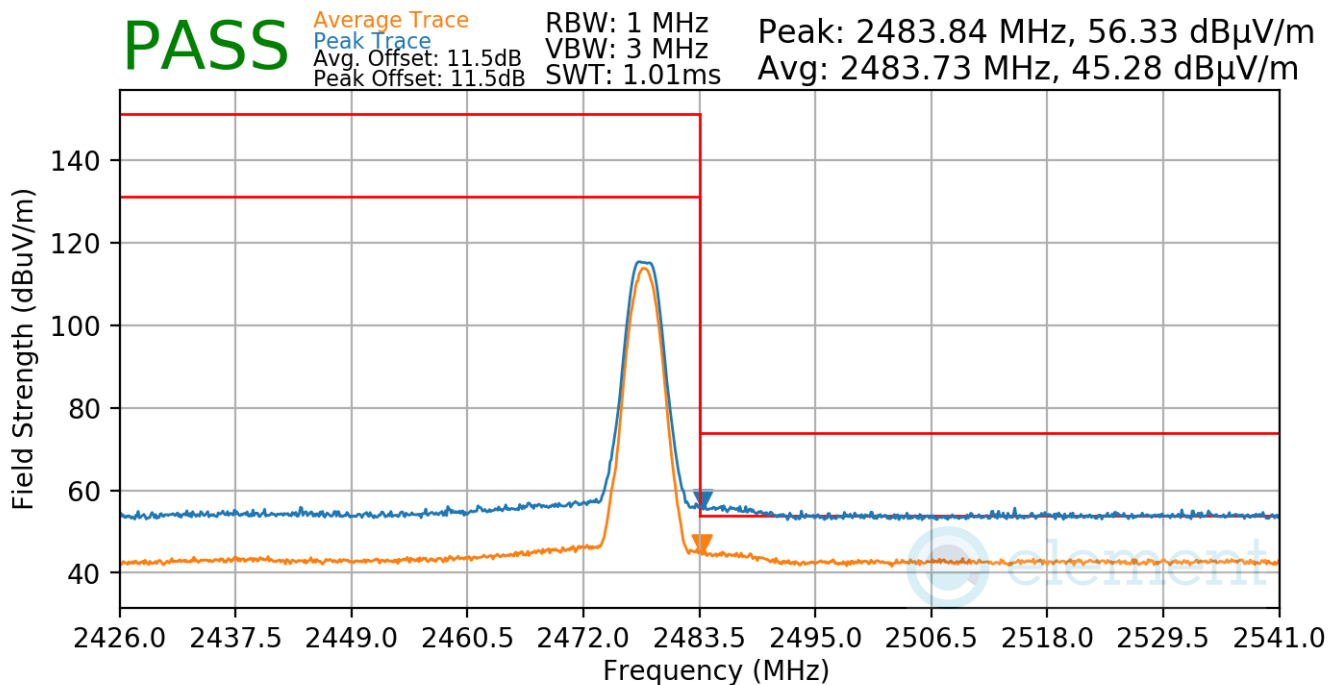
Radiated Restricted Band Edge Measurements

§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:	2Mbps
Power Scheme:	ePA
Measurement Distance:	3 Meters
Operating Frequency:	2478MHz
Channel:	38



Plot 7-99. Radiated Restricted Upper Band Edge Measurement Antenna 1a (Average & Peak)

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 92 of 105

V 10.5 12/15/2021

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Radiated Restricted Band Edge Measurements

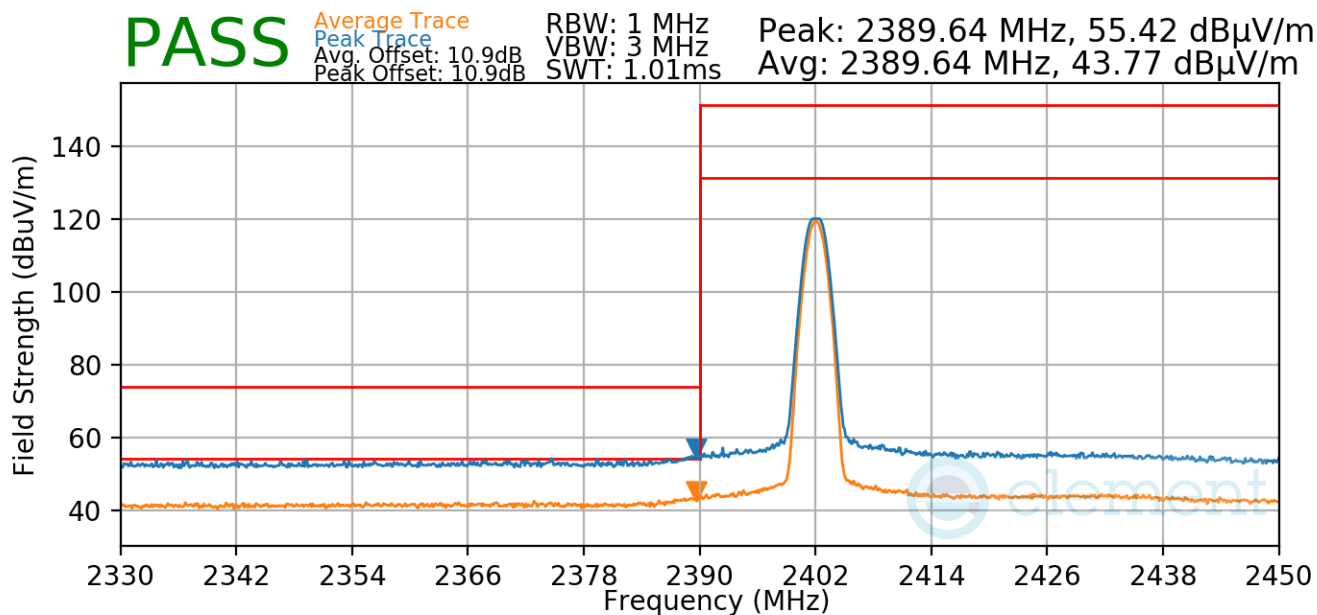
§15.205 §15.209; RSS-Gen [8.9]

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: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 93 of 105

V 10.5 12/15/2021



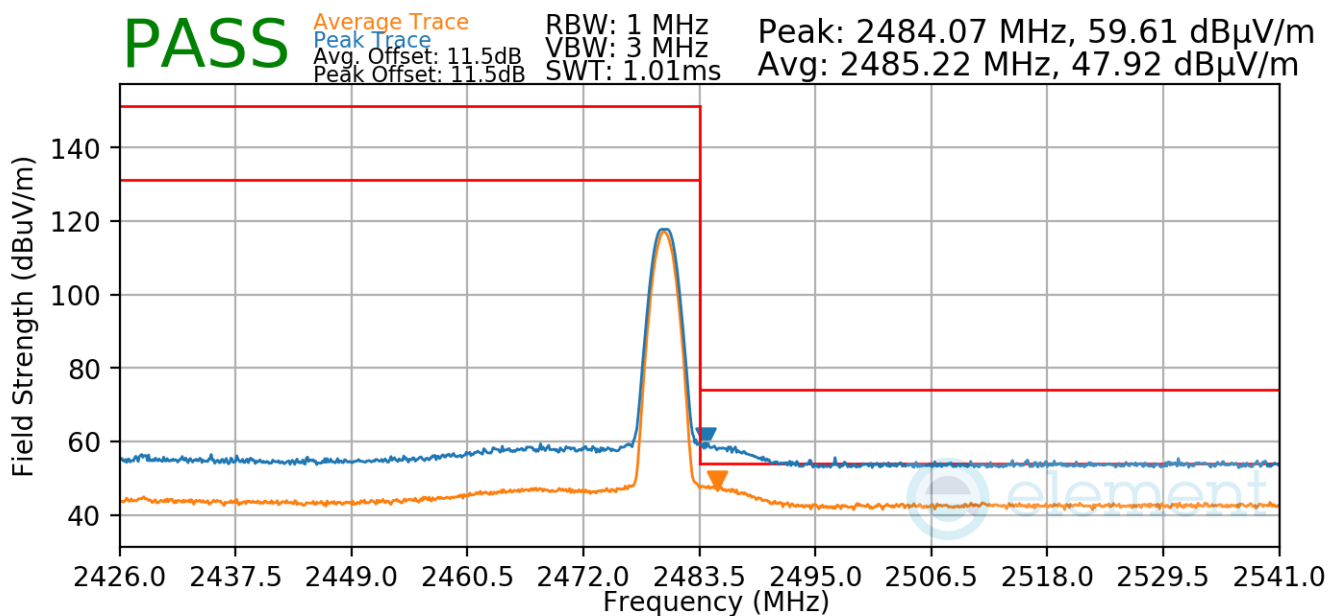
Radiated Restricted Band Edge Measurements

§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: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 94 of 105

V 10.5 12/15/2021

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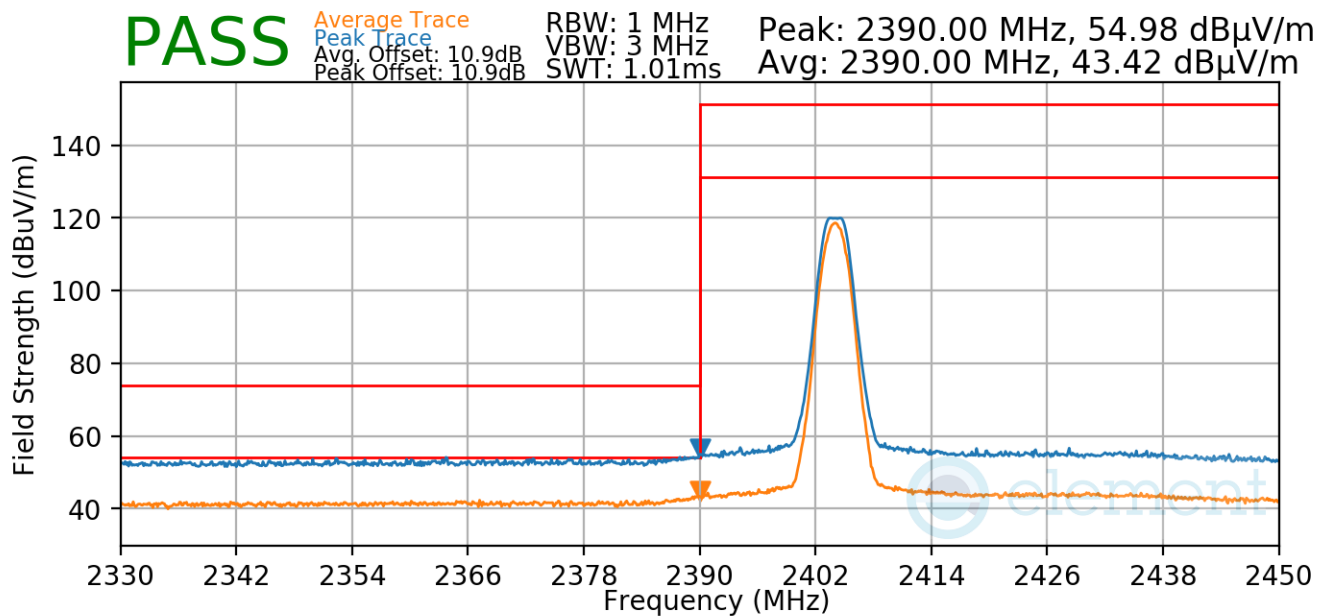
Radiated Restricted Band Edge Measurements

§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:	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: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 95 of 105

V 10.5 12/15/2021

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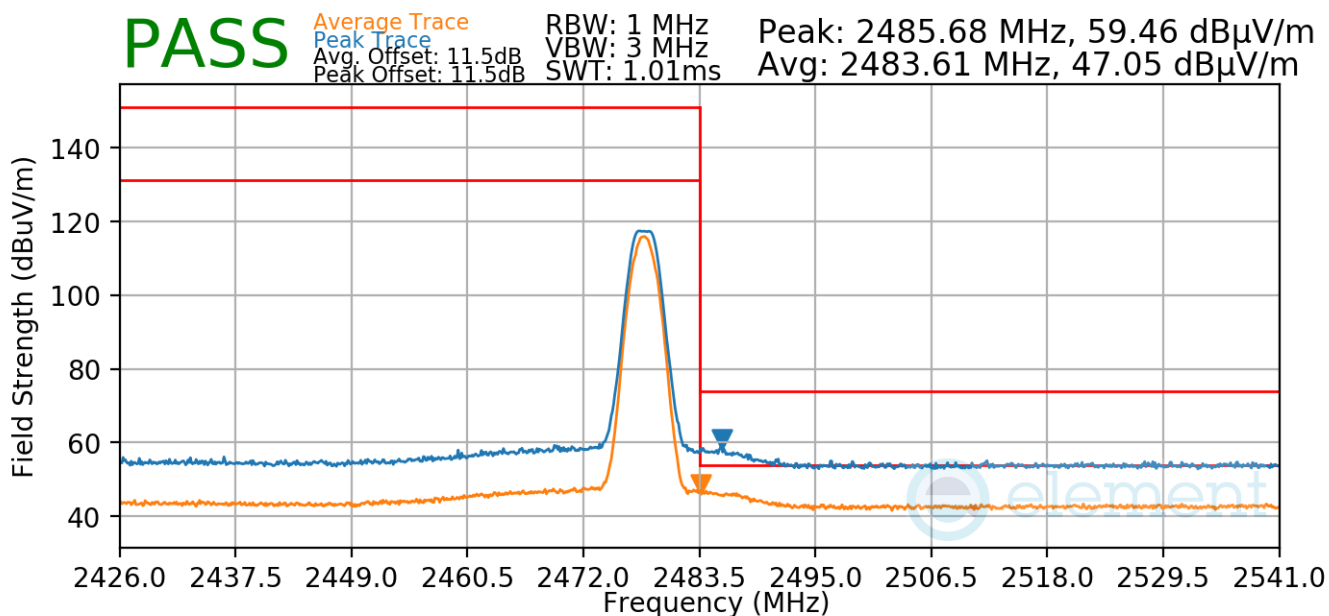
Radiated Restricted Band Edge Measurements

§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:	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: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 96 of 105

V 10.5 12/15/2021

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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: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 97 of 105

V 10.5 12/15/2021

Test Setup

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

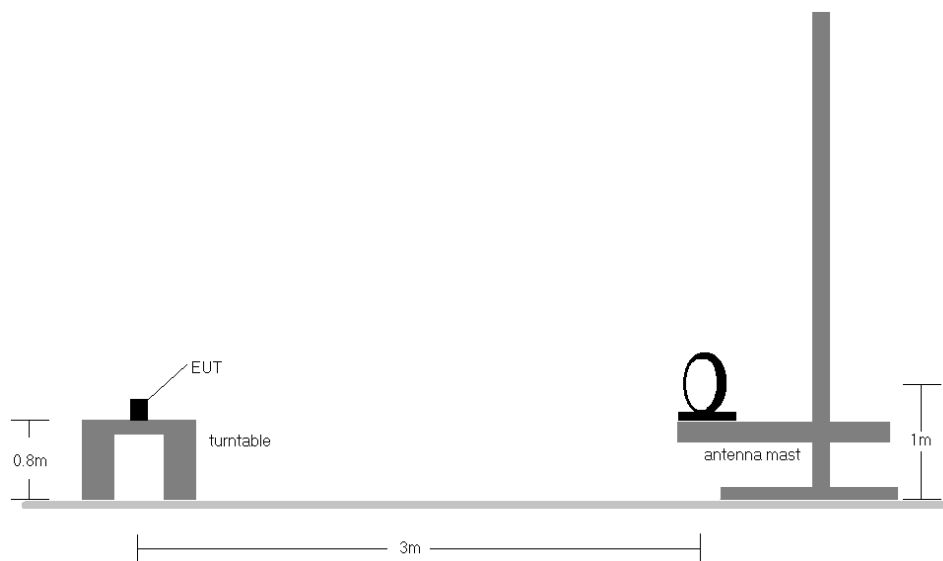


Figure 7-7. Radiated Test Setup < 30MHz

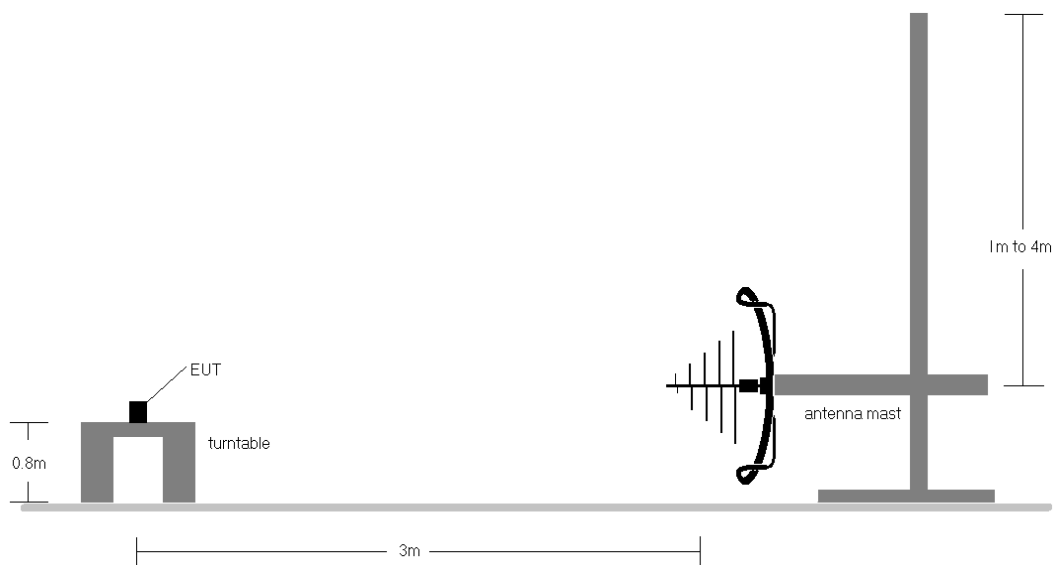


Figure 7-8. Radiated Test Setup < 1GHz

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 98 of 105

V 10.5 12/15/2021

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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 [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]

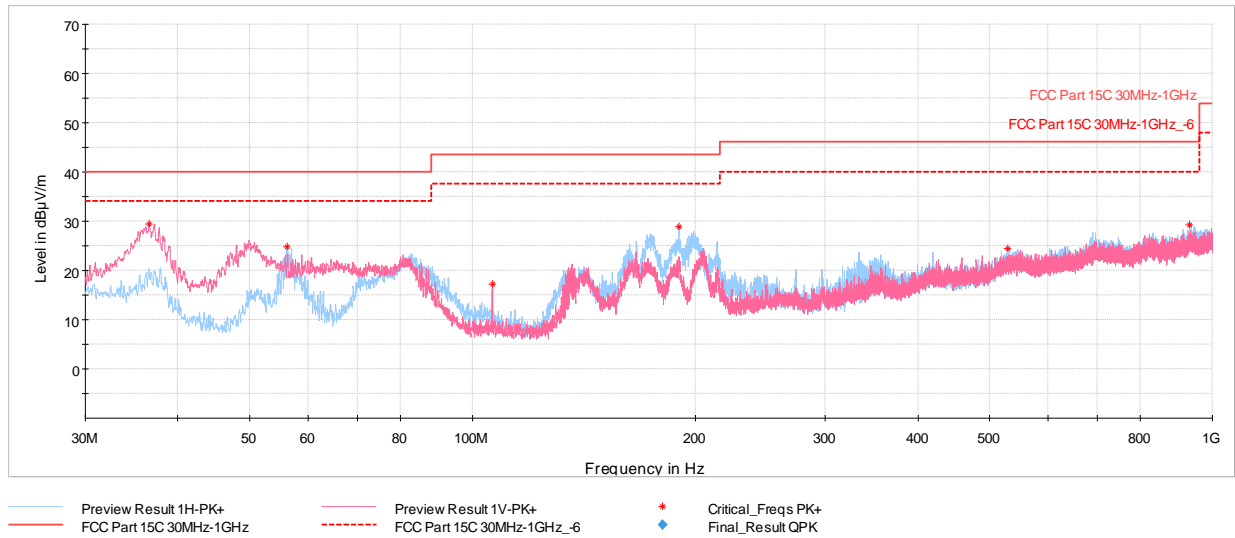
FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 99 of 105

V 10.5 12/15/2021

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.0, 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]
36.596	Max-Peak	V	100	296	-64.85	-12.62	29.53	40.00	-10.47
56.142	Max-Peak	H	300	166	-63.97	-18.16	24.87	40.00	-15.13
106.485	Max-Peak	V	100	10	-73.37	-16.43	17.20	43.52	-26.32
190.147	Max-Peak	H	200	254	-64.71	-13.43	28.86	43.52	-14.66
528.920	Max-Peak	H	200	90	-81.40	-1.16	24.44	46.02	-21.58
931.082	Max-Peak	H	100	261	-82.24	4.55	29.31	46.02	-16.71

Table 7-24. Radiated Spurious Emissions Below 1GHz TxBF (1Mbps, ePA – Ch.0, Pol. H & V, with AC/DC Adapter)

FCC ID: BCGA2757 IC: 579C-A2757	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 100 of 105

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, Subclause 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: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 101 of 105

V 10.5 12/15/2021

Test Setup

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

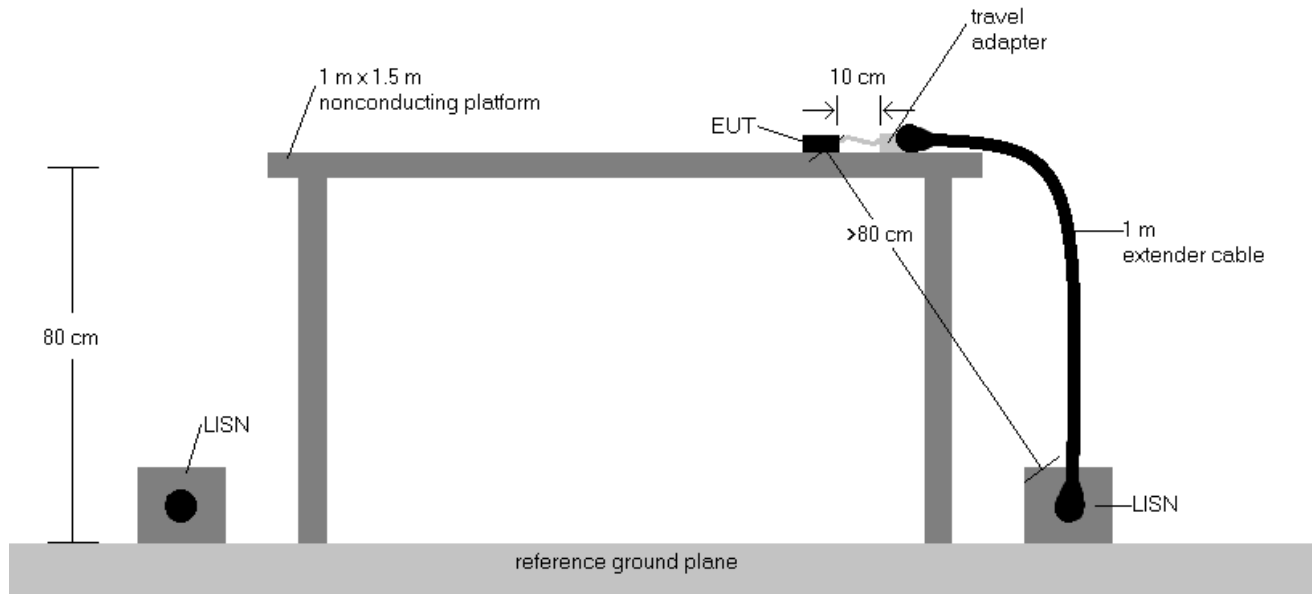


Figure 7-9. Test Instrument & Measurement Setup

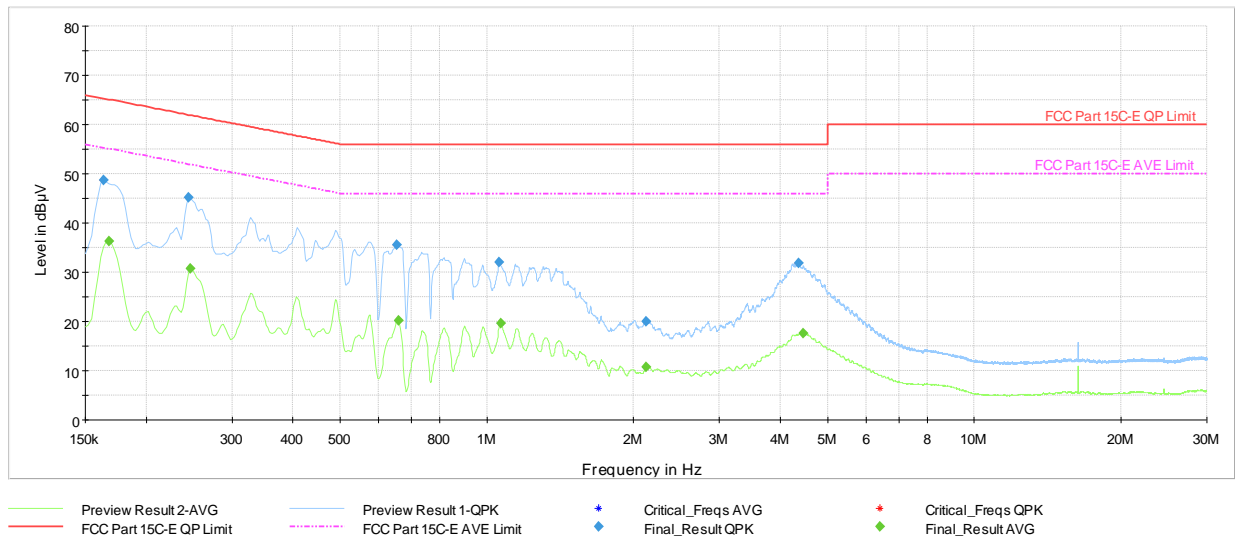
Test Notes

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. 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
3. The limit for an intentional radiator from 150kHz to 30MHz are specified in Part 15.207 and RSS-Gen (8.8).
4. $\text{Corr. (dB)} = \text{Cable loss (dB)} + \text{LISN insertion factor (dB)}$
5. $\text{QP/AV Level (dB}\mu\text{V)} = \text{QP/AV Analyzer/Receiver Level (dB}\mu\text{V)} + \text{Correction Factor (dB)}$
6. $\text{Margin (dB)} = \text{QP/AV Level (dB}\mu\text{V)} - \text{QP/AV Limit (dB}\mu\text{V)}$
7. Traces shown in plot are made using a quasi peak and average detectors.
8. Deviations to the Specifications: None.

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 102 of 105

V 10.5 12/15/2021

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Plot 7-105. AC Line Conducted Plot with Bluetooth LE Tx BF (L1, 1Mbps ePA – Ch.0 with AC/DC Adapter)

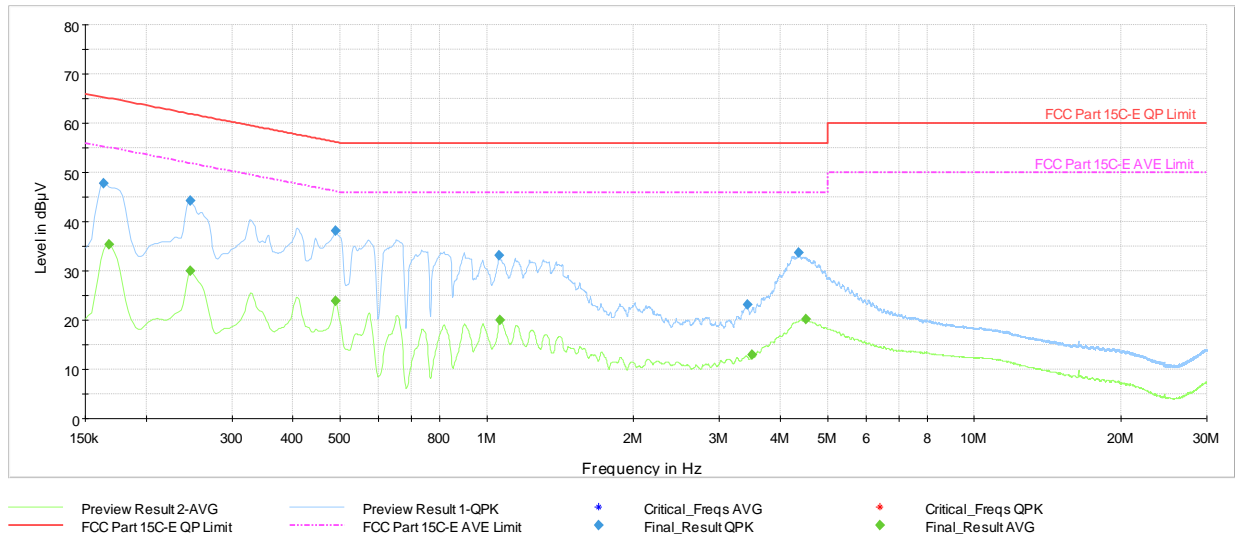
Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.164	FINAL	48.69	---	65.28	-16.59	L1	GND
0.168	FINAL	---	36.26	55.06	-18.80	L1	GND
0.245	FINAL	45.20	---	61.94	-16.74	L1	GND
0.247	FINAL	---	30.66	51.87	-21.21	L1	GND
0.654	FINAL	35.48	---	56.00	-20.52	L1	GND
0.659	FINAL	---	20.27	46.00	-25.73	L1	GND
1.061	FINAL	32.09	---	56.00	-23.91	L1	GND
1.068	FINAL	---	19.61	46.00	-26.39	L1	GND
2.121	FINAL	20.00	---	56.00	-36.00	L1	GND
2.121	FINAL	---	10.71	46.00	-35.29	L1	GND
4.362	FINAL	31.79	---	56.00	-24.21	L1	GND
4.463	FINAL	---	17.50	46.00	-28.50	L1	GND

Table 7-26. AC Line Conducted Data with Bluetooth LE Tx BF (L1, 1Mbps ePA – Ch.0 with AC/DC Adapter)

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 103 of 105

V 10.5 12/15/2021

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Plot 7-106. AC Line Conducted Plot with Bluetooth LE Tx BF (N, 1Mbps ePA – Ch.0, with AC/DC Adapter)

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.164	FINAL	47.86	---	65.28	-17.42	N	GND
0.168	FINAL	---	35.31	55.06	-19.75	N	GND
0.247	FINAL	---	29.91	51.87	-21.96	N	GND
0.247	FINAL	44.19	---	61.87	-17.67	N	GND
0.490	FINAL	---	23.81	46.17	-22.36	N	GND
0.490	FINAL	38.09	---	56.17	-18.08	N	GND
1.061	FINAL	33.13	---	56.00	-22.87	N	GND
1.064	FINAL	---	19.95	46.00	-26.05	N	GND
3.422	FINAL	23.10	---	56.00	-32.90	N	GND
3.494	FINAL	---	12.89	46.00	-33.11	N	GND
4.362	FINAL	33.63	---	56.00	-22.37	N	GND
4.506	FINAL	---	20.19	46.00	-25.81	N	GND

Table 7-27. AC Line Conducted Data with Bluetooth LE Tx BF (N, 1Mbps ePA – Ch.0 with AC/DC Adapter)

FCC ID: BCGA2757 IC: 579C-A2757	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 104 of 105

V 10.5 12/15/2021

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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.

FCC ID: BCGA2757 IC: 579C-A2757		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090023-13.BCG	Test Dates: 08/02/2022 – 09/14/2022	EUT Type: Table Device	Page 105 of 105

V 10.5 12/15/2021

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