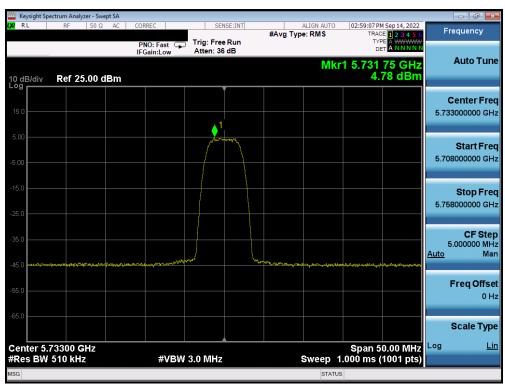


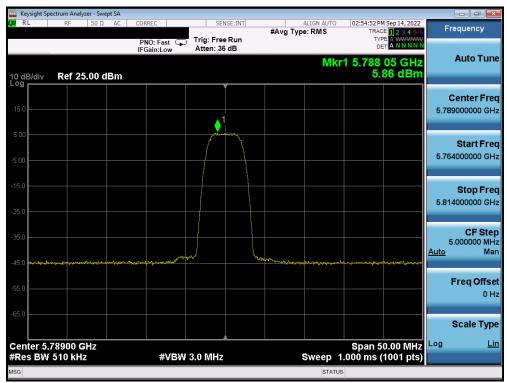
Plot 7-103. PSD TxBF Antenna WF5T (HDR8, ePA, 5733MHz)



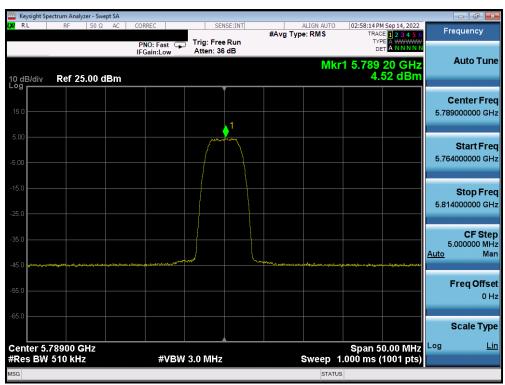
Plot 7-104. PSD TxBF Antenna WF5B (HDR8, ePA, 5733MHz)

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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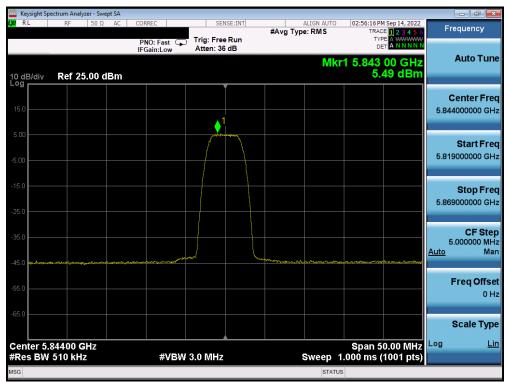
Plot 7-105. PSD TxBF Antenna WF5T (HDR8, ePA, 5789MHz)



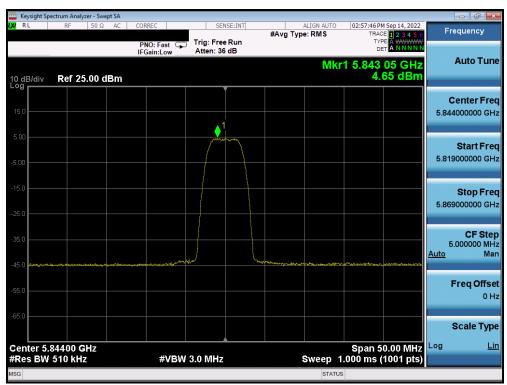
Plot 7-106. PSD TxBF Antenna WF5B (HDR8, ePA, 5789MHz)

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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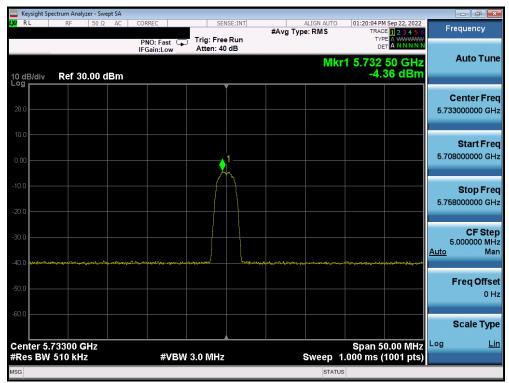
Plot 7-107. PSD TxBF Antenna WF5T (HDR8, ePA, 5844MHz)



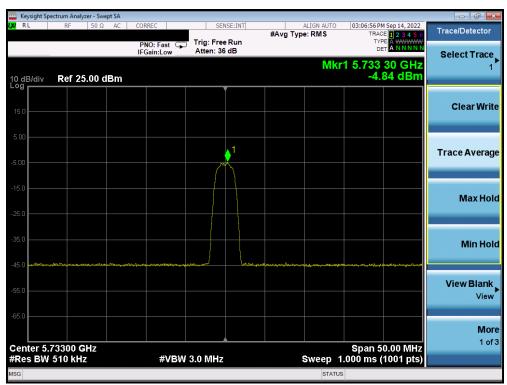
Plot 7-108. PSD TxBF Antenna WF5B (HDR8, ePA, 5844MHz)

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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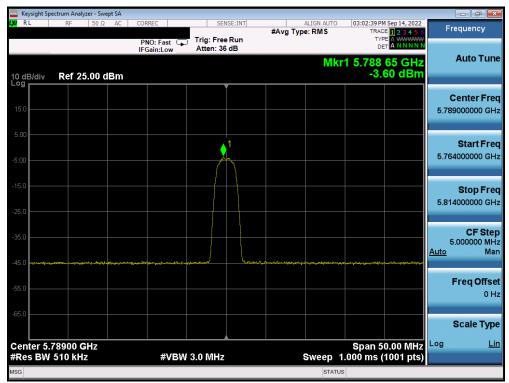
Plot 7-109. PSD TxBF Antenna WF5T (HDR4, iPA, 5733MHz)



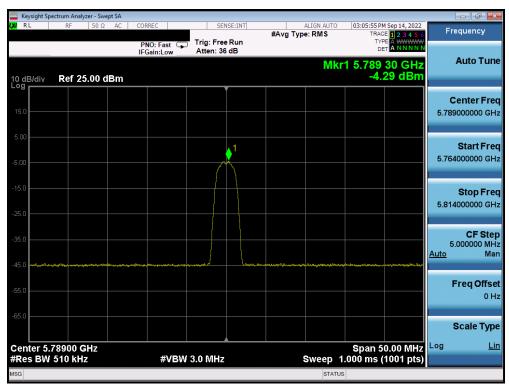
Plot 7-110. PSD TxBF Antenna WF5B (HDR4, iPA, 5733MHz)

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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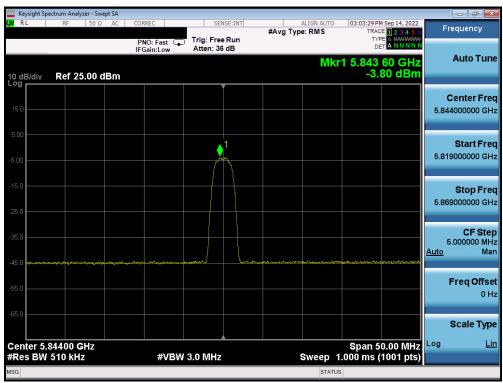
Plot 7-111. PSD TxBF Antenna WF5T (HDR4, iPA, 5789MHz)



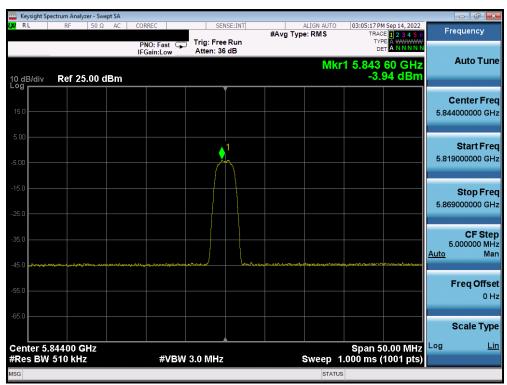
Plot 7-112. PSD TxBF Antenna WF5B (HDR4, iPA, 5789MHz)

FCC ID: BCGA2759	element MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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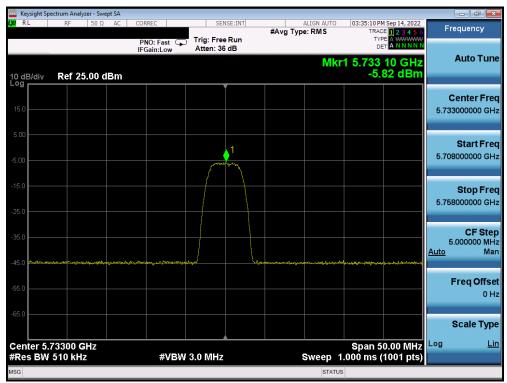
Plot 7-113. PSD TxBF Antenna WF5T (HDR4, iPA, 5844MHz)



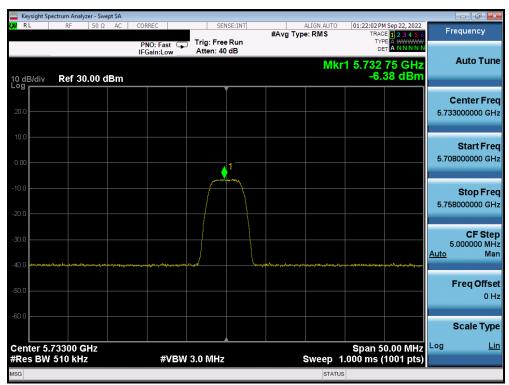
Plot 7-114. PSD TxBF Antenna WF5B (HDR4, iPA, 5844MHz)

FCC ID: BCGA2759	element MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
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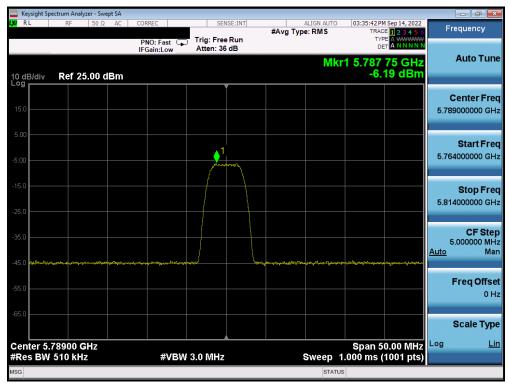
Plot 7-115. PSD TxBF Antenna WF5T (HDR8, iPA, 5733MHz)



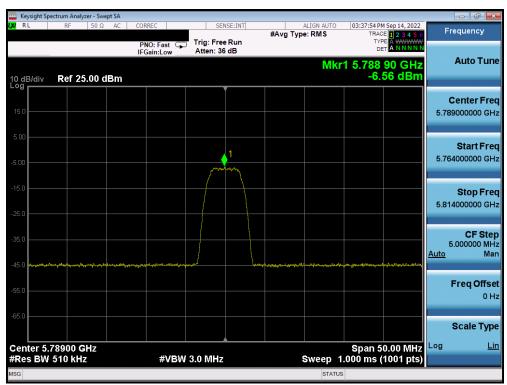
Plot 7-116. PSD TxBF Antenna WF5B (HDR8, iPA, 5733MHz)

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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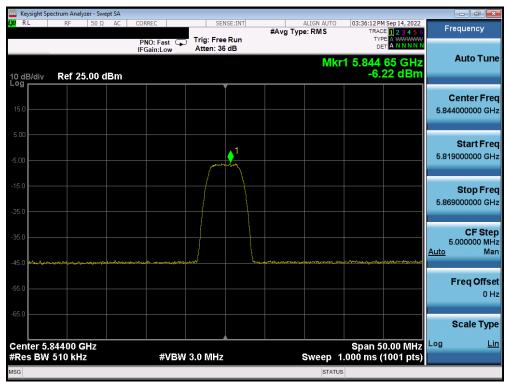
Plot 7-117. PSD TxBF Antenna WF5T (HDR8, iPA, 5789MHz)



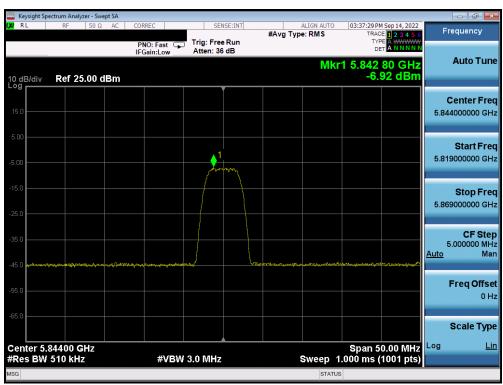
Plot 7-118. PSD TxBF Antenna WF5B (HDR8, iPA, 5789MHz)

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Plot 7-119. PSD TxBF Antenna WF5T (HDR8, iPA, 5844MHz)



Plot 7-120. PSD TxBF Antenna WF5B (HDR8, iPA, 5844MHz)

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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#### Note:

Per ANSI C63.10-2013 Subclause 14.3.2.2 and KDB 662911 v02r01 Section E)2), the power spectral density at Antenna WF5T and Antenna WF5B were first measured separately during TxBF transmission as shown in the section above. The measured values were then summed in linear power units then converted back to dBm.

## Sample TxBF Calculation:

Assuming the average conducted power spectral density was measured to be 8.97 dBm for Antenna WF5T and 7.74 dBm for Antenna WF5B.

Antenna WF5T + Antenna WF5B = TXBF

(8.97 dBm + 7.74 dBm) = (7.889 mW + 5.943 mW) = 13.832 mW = 11.41 dBm

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## 7.6 Radiated Spurious Emission – Above 1GHz §15.407(b) §15.205 §15.209

### **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 its maximum power control level, as defined in ANSI C63.10-2013 and KDB 789033 D02 v02r01, and at the appropriate frequencies. All channels and data rates were investigated among all UNII bands. Only the radiated emissions of the configuration that produced the worst case emissions are reported in this section.

For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.25 GHz band shall not exceed an EIRP of −27 dBm/MHz.

For transmitters operating in the 5.725 – 5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table 7-15 per Section 15.209.

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

Table 7-15. Radiated Limits

#### **Test Procedures Used**

ANSI C63.10-2013 – Subclauses 12.7.7.2, 12.7.6, 12.7.5 KDB 789033 D02 v02r01 – Section G

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## **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. Averaging type = power (RMS)
- 7. Sweep time = auto couple
- 8. Trace was averaged over 100 sweeps

## 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

## **Test Setup**

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

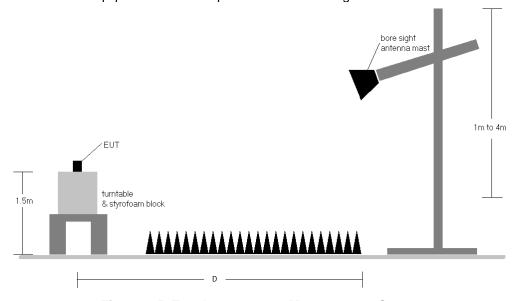


Figure 7-5. Test Instrument & Measurement Setup

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#### **Test Notes**

- 1. All emissions that lie in the restricted bands (denoted by a \* next to the frequency) specified in §15.205 are below the limit shown in Table 7-15.
- 2. All spurious emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 7-15. All spurious emissions that do not lie in a restricted band are subject to a peak limit of -27dBm/MHz. At a distance of 3 meters, the field strength limit in dBμV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dBμV/m.
- 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 have been tested on the unit and only worst case configuration is reported.

## **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]

### Radiated Band Edge Measurement Offset

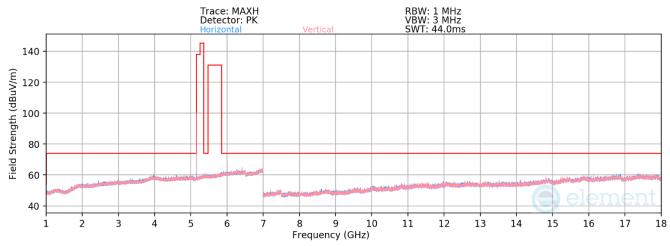
 The amplitude offset shown in the radiated restricted band edge plots in Section 7.6.4 was calculated using the formula:

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

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## **7.6.1** Antenna WF5T Radiated Spurious Emissions §15.407(b) §15.205 §15.209



Plot 7-121. Radiated Spurious Emissions 1-18GHz Antenna WF5T (HDR4, ePA - 5162MHz)

Mode: HDR4

Data Rate: 4Mbps

Distance of Measurements: 3 Meters

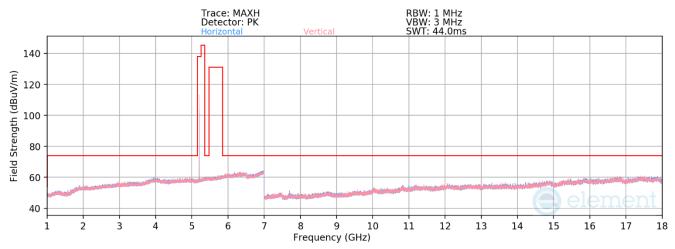
Operating Frequency: 5162MHz

	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]
	10324.00	Peak	Н	-	-	-70.94	14.08	50.14	68.20	-18.06
*	15486.00	Average	Н	-	-	-83.97	20.83	43.86	53.98	-10.12
*	15486.00	Peak	Н	-	-	-72.71	20.83	55.12	73.98	-18.86

Table 7-16. Radiated Spurious Emissions Measurements Antenna WF5T

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
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Plot 7-122. Radiated Spurious Emissions 1-18GHz Antenna WF5T (HDR4- 5204MHz)

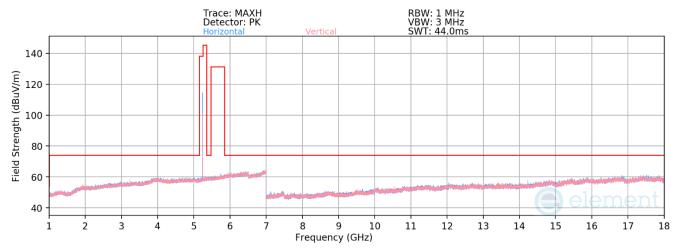
Mode: HDR4
Data Rate: 4Mbps
Distance of Measurements: 3 Meters
Operating Frequency: 5204MHz

	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dΒμV/m]	Margin [dB]
	10408.00	Peak	Н	1	-	-70.83	14.52	50.69	68.20	-17.51
*	15612.00	Average	Н	1	1	-84.20	21.45	44.25	53.98	-9.73
*	15612.00	Peak	Н	-	-	-73.41	21.45	55.04	73.98	-18.94

Table 7-17. Radiated Spurious Emissions Measurements Antenna WF5T

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
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Plot 7-123. Radiated Spurious Emissions 1-18GHz Antenna WF5T (HDR4 - 5245MHz)

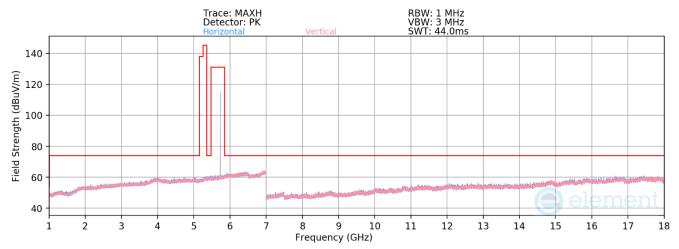
Mode: HDR4
Data Rate: 4Mbps
Distance of Measurements: 3 Meters
Operating Frequency: 5245MHz

	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]
	10490.00	Peak	Н	1	-	-71.43	14.21	49.78	68.20	-18.42
*	15735.00	Average	Н	-	-	-84.31	21.34	44.03	53.98	-9.95
*	15735.00	Peak	Н	-	-	-70.31	21.34	58.03	73.98	-15.95

Table 7-18. Radiated Spurious Emissions Measurements Antenna WF5T

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
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Plot 7-124. Radiated Spurious Emissions 1-18GHz Antenna WF5T (HDR4 - 5733MHz)

Mode: HDR4

Data Rate: 4Mbps

Distance of Measurements: 3 Meters

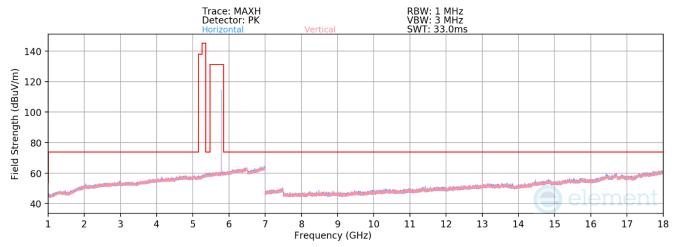
Operating Frequency: 5733MHz

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]
11466.00	Peak	Н	-	-	-71.00	16.46	52.46	68.20	-15.74
17199.00	Peak	Н	-	-	-73.47	22.82	56.35	68.20	-11.85

Table 7-19. Radiated Spurious Emissions Measurements Antenna WF5T

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
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Plot 7-125. Radiated Spurious Emissions 1-18GHz Antenna WF5T (HDR4 - 5789MHz)

Mode: HDR4

Data Rate: 4Mbps

Distance of Measurements: 3 Meters

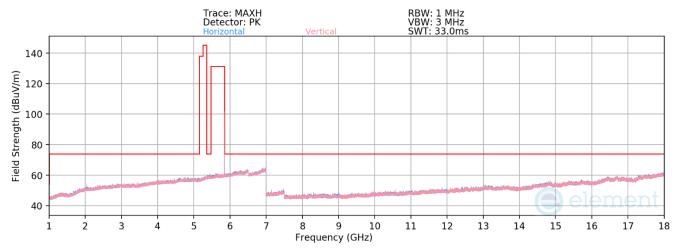
Operating Frequency: 5789MHz

	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]
*	11578.00	Average	Н	-	-	-79.22	13.45	41.23	53.98	-12.75
*	11578.00	Peak	Н	-	-	-68.02	13.45	52.43	73.98	-21.55
	17367.00	Peak	Н	-	-	-73.13	22.80	56.67	68.20	-11.53

Table 7-20. Radiated Spurious Emissions Measurements Antenna WF5T

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Plot 7-126. Radiated Spurious Emissions 1-18GHz Antenna WF5T (HDR4 - 5844MHz)

Mode: HDR4
Data Rate: 4Mbps
Distance of Measurements: 3 Meters
Operating Frequency: 5844MHz

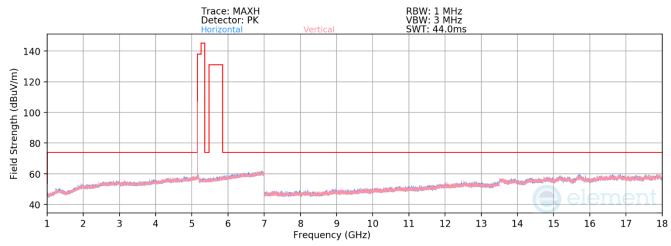
	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11688.00	Average	Н	-	-	-79.12	13.74	41.62	53.98	-12.36
*	11688.00	Peak	Н	-	•	-67.81	13.74	52.93	73.98	-21.05
	17532.00	Peak	Н	-	-	-73.80	23.75	56.95	68.20	-11.25

Table 7-21. Radiated Spurious Emissions Measurements Antenna WF5T

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
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## **7.6.2** Antenna WF5B Radiated Spurious Emissions §15.407(b) §15.205 §15.209



Plot 7-127. Radiated Spurious Emissions 1-18GHz Antenna WF5B (HDR4, ePA - 5162MHz)

Mode: HDR4

Data Rate: 4Mbps

Distance of Measurements: 3 Meters

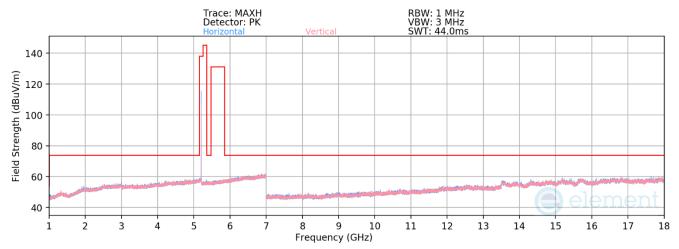
Operating Frequency: 5162MHz

	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]
	10324.00	Peak	Н	1	-	-71.06	14.44	50.38	68.20	-17.82
*	15486.00	Average	Н	•	-	-84.47	22.25	44.78	53.98	-9.20
*	15486.00	Peak	Н	-	-	-73.36	22.25	55.89	73.98	-18.09

Table 7-22. Radiated Spurious Emissions Measurements Antenna WF5B

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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Plot 7-128. Radiated Spurious Emissions 1-18GHz Antenna WF5B (HDR4- 5204MHz)

Mode: HDR4

Data Rate: 4Mbps

Distance of Measurements: 3 Meters

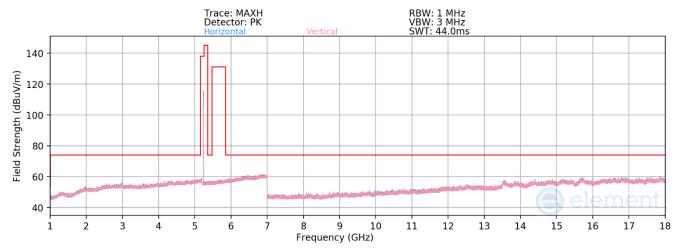
Operating Frequency: 5204MHz

	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]
	10408.00	Peak	Η	•	-	-72.33	15.41	50.08	68.20	-18.12
*	15612.00	Average	Н	•	-	-83.90	22.69	45.79	53.98	-8.19
*	15612.00	Peak	Н	-	-	-73.05	22.69	56.64	73.98	-17.34

Table 7-23. Radiated Spurious Emissions Measurements Antenna WF5B

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 102 of 122	
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Plot 7-129. Radiated Spurious Emissions 1-18GHz Antenna WF5B (HDR4 – 5245MHz)

Mode: HDR4

Data Rate: 4Mbps

Distance of Measurements: 3 Meters

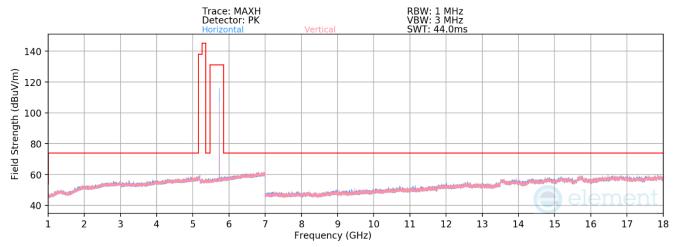
Operating Frequency: 5245MHz

	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]
	10490.00	Peak	Η	•	ı	-71.58	14.21	49.63	68.20	-18.57
*	15735.00	Average	Η	•	ı	-83.12	21.34	45.22	53.98	-8.76
*	15735.00	Peak	Н	-	-	-73.24	21.34	55.10	73.98	-18.88

Table 7-24. Radiated Spurious Emissions Measurements Antenna WF5B

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 104 of 122
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Plot 7-130. Radiated Spurious Emissions 1-18GHz Antenna WF5B (HDR4 – 5733MHz)

Mode: HDR4

Data Rate: 4Mbps

Distance of Measurements: 3 Meters

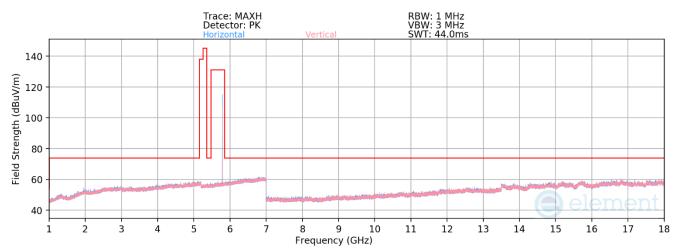
Operating Frequency: 5733MHz

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]
11466.00	Peak	Н	-	-	-72.99	16.46	50.47	68.20	-17.73
17199.00	Peak	Н	-	-	-74.89	22.82	54.93	68.20	-13.27

Table 7-25. Radiated Spurious Emissions Measurements Antenna WF5B

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 105 of 122
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Plot 7-131. Radiated Spurious Emissions 1-18GHz Antenna WF5B (HDR4 – 5789MHz)

Mode: HDR4

Data Rate: 4Mbps

Distance of Measurements: 3 Meters

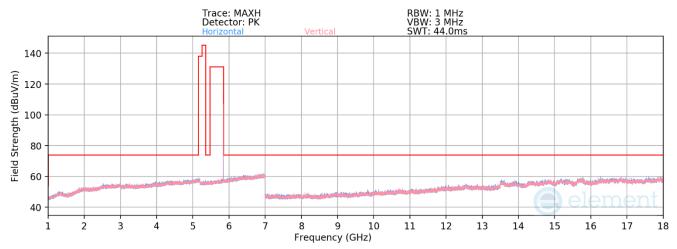
Operating Frequency: 5789MHz

	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]
*	11578.00	Average	Н	•	-	-83.27	13.45	37.18	53.98	-16.80
*	11578.00	Peak	Н	•	-	-72.28	13.45	48.17	73.98	-25.81
	17367.00	Peak	Н	-	-	-73.10	22.80	56.70	68.20	-11.50

Table 7-26. Radiated Spurious Emissions Measurements Antenna WF5B

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Page 106 of 133	
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Plot 7-132. Radiated Spurious Emissions 1-18GHz Antenna WF5B (HDR4 – 5844MHz)

Mode: HDR4

Data Rate: 4Mbps

Distance of Measurements: 3 Meters

Operating Frequency: 5844MHz

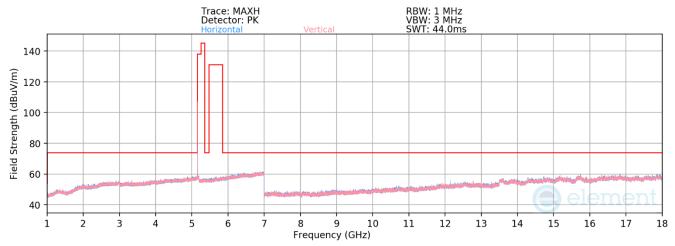
	Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBµV/m]	Limit [dBµV/m]	Margin [dB]
*	11688.00	Average	Н	•	-	-82.93	16.53	40.60	53.98	-13.38
*	11688.00	Peak	Н	•	-	-72.10	16.53	51.43	73.98	-22.55
	17532.00	Peak	Н	-	-	-73.92	24.85	57.93	68.20	-10.27

Table 7-27. Radiated Spurious Emissions Measurements Antenna WF5B

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 107 of 122	
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# **7.6.3** TxBF Radiated Spurious Emissions §15.407(b) §15.205 §15.209



Plot 7-133. Radiated Spurious Emissions 1-18GHz TxBF (HDR4, ePA - 5162MHz)

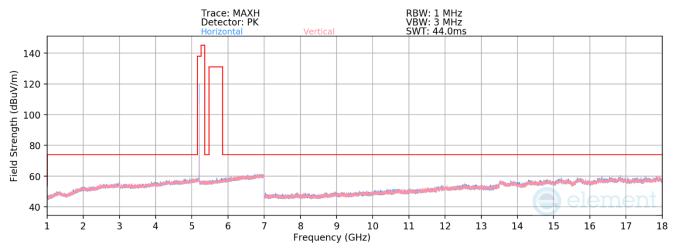
Mode:HDR4Data Rate:4MbpsDistance of Measurements:3 MetersOperating Frequency:5162MHz

	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]
	10324.00	Peak	Н	-	-	-71.45	14.44	49.99	68.20	-18.21
*	15486.00	Average	Н	-	-	-84.21	22.25	45.04	53.98	-8.94
*	15486.00	Peak	Н	-	-	-73.14	22.25	56.11	73.98	-17.87

Table 7-28. Radiated Spurious Emissions Measurements TxBF

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 100 of 122	
1C2205090024-07-R1.BCG	6/7/2022-9/22/2022	Tablet Device	Page 108 of 133	





Plot 7-134. Radiated Spurious Emissions 1-18GHz TxBF (HDR4- 5204MHz)

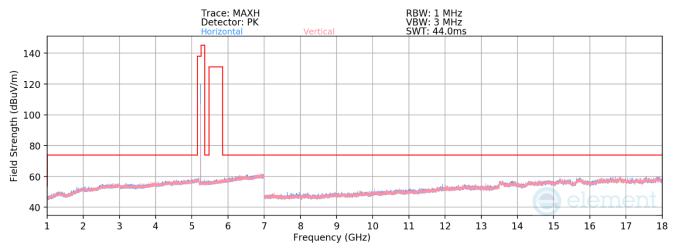
Mode: HDR4
Data Rate: 4Mbps
Distance of Measurements: 3 Meters
Operating Frequency: 5204MHz

	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]
	10408.00	Peak	Η	•	-	-72.97	15.41	49.44	68.20	-18.76
*	15612.00	Average	Η	1	-	-83.95	22.69	45.74	53.98	-8.24
*	15612.00	Peak	Н	-	-	-72.51	22.69	57.18	73.98	-16.80

Table 7-29. Radiated Spurious Emissions Measurements TxBF

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 100 of 122	
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Plot 7-135. Radiated Spurious Emissions 1-18GHz TxBF (HDR4 – 5245MHz)

Mode: HDR4

Data Rate: 4Mbps

Distance of Measurements: 3 Meters

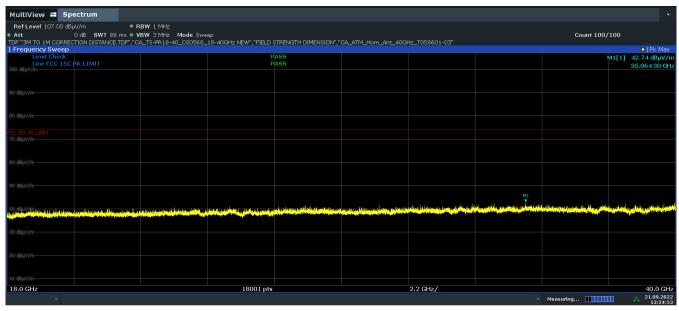
Operating Frequency: 5245MHz

	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]
	10490.00	Peak	Н	-	-	-70.05	14.21	51.16	68.20	-17.04
*	15735.00	Average	Н	•	-	-83.56	21.34	44.78	53.98	-9.20
*	15735.00	Peak	Н	-	-	-73.78	21.34	54.56	73.98	-19.42

Table 7-30. Radiated Spurious Emissions Measurements TxBF

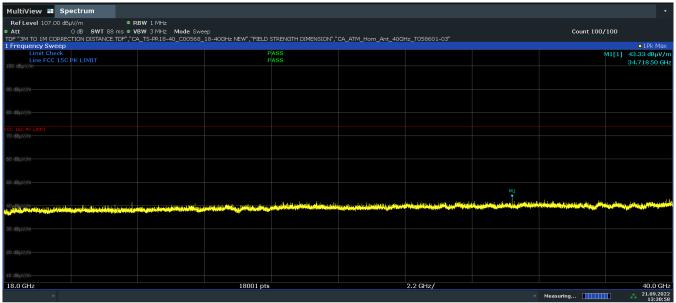
FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Dogo 110 of 122	
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Plot 7-136. Radiated Spurious Emissions Above 18GHz TxBF (HDR4 – 5245MHz Pol. H)

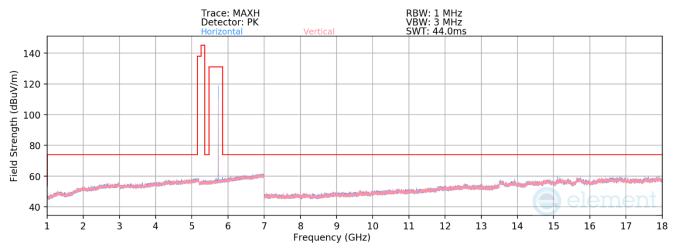


13:30:59 21.09.2022

Plot 7-137. Radiated Spurious Emissions Above 18GHz TxBF (HDR4 - 5245MHz Pol. V)

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 111 of 133
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Plot 7-138. Radiated Spurious Emissions 1-18GHz TxBF (HDR4 – 5733MHz)

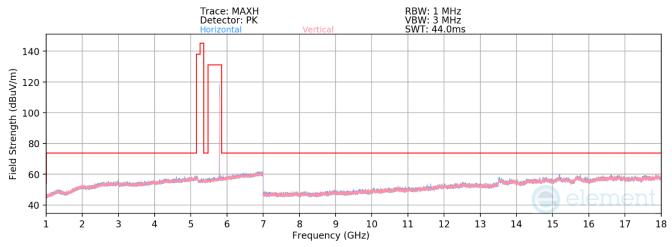
Mode: HDR4
Data Rate: 4Mbps
Distance of Measurements: 3 Meters
Operating Frequency: 5733MHz

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]
11466.00	Peak	Н	-	-	-72.77	16.30	50.53	68.20	-17.67
17199.00	Peak	Н	-	-	-73.15	23.45	57.30	68.20	-10.90

Table 7-31. Radiated Spurious Emissions Measurements TxBF

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager	
Test Report S/N:	Test Dates:	EUT Type:	Page 112 of 133	
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Plot 7-139. Radiated Spurious Emissions 1-18GHz TxBF (HDR4 – 5789MHz)

Mode: HDR4

Data Rate: 4Mbps

Distance of Measurements: 3 Meters

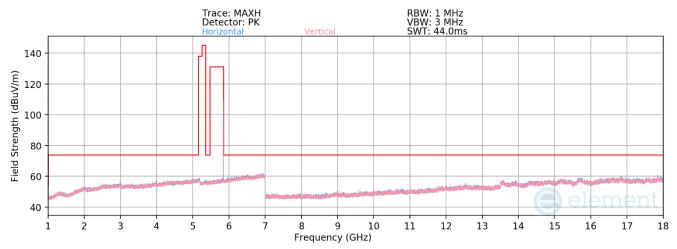
Operating Frequency: 5789MHz

	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]
*	5374.00	Average	Н	108.00	169.00	-73.65	17.23	50.58	53.98	-3.40
*	5374.00	Peak	Н	108.00	169.00	-65.07	17.23	59.16	73.98	-14.82
*	11578.00	Average	Η	-	-	-83.22	13.45	37.23	53.98	-16.75
*	11578.00	Peak	Н	-	-	-71.93	13.45	48.52	73.98	-25.46
	17367.00	Peak	Н	-	-	-72.61	22.80	57.19	68.20	-11.01

Table 7-32. Radiated Spurious Emissions Measurements TxBF

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 112 of 122
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Plot 7-140. Radiated Spurious Emissions 1-18GHz TxBF (HDR4 – 5844MHz)

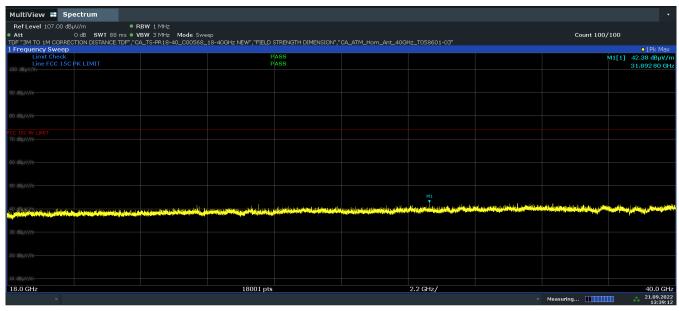
Mode:HDR4Data Rate:4MbpsDistance of Measurements:3 MetersOperating Frequency:5844MHz

	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]
*	5426.00	Average	Н	218.00	175.00	-74.09	17.25	50.16	53.98	-3.82
*	5426.00	Peak	Н	218.00	175.00	-65.36	17.25	58.89	73.98	-15.09
*	5008.00	Average	Н	211.00	184.00	-75.62	16.67	48.05	53.98	-5.93
*	5008.00	Peak	Н	211.00	184.00	-65.12	16.67	58.55	73.98	-15.43
*	11688.00	Average	Н	1	-	-82.98	16.53	40.55	53.98	-13.43
*	11688.00	Peak	Η	ı	-	-72.02	16.53	51.51	73.98	-22.47
	17532.00	Peak	Н	-	-	-73.56	24.85	58.29	68.20	-9.91

Table 7-33. Radiated Spurious Emissions Measurements TxBF

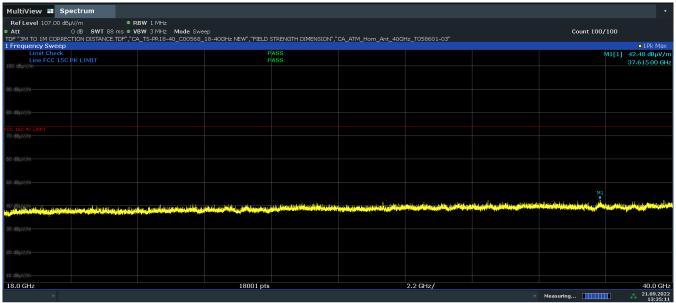
FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 114 of 122
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13:39:13 21.09.2022

Plot 7-141. Radiated Spurious Emissions Above 18GHz Tx BF (HDR4 - 5844MHz Pol. H)



13:35:11 21.09.2022

Plot 7-142. Radiated Spurious Emissions Above 18GHz TxBF (HDR4 - 5844MHz Pol. V)

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 115 of 133
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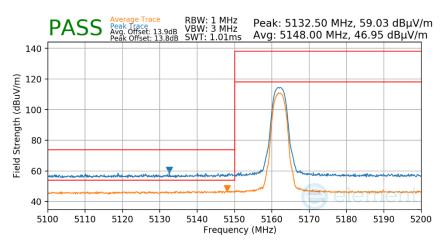
## **7.6.4** Radiated Band Edge Measurements §15.407(b.1) §15.205 §15.209

## **Antenna WF5T**

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

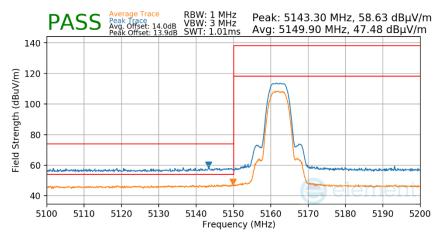
Offset (dB) = (Antenna Factor + Cable Loss + Attenuator) - Preamplifier Gain

Mode:HDR4Power SchemeePAMeasurement Distance:3 MetersOperating Frequency:5162MHz



Plot 7-143. Radiated Lower Band Edge Measurement

Mode:HDR8Power SchemeePAMeasurement Distance:3 MetersOperating Frequency:5162MHz

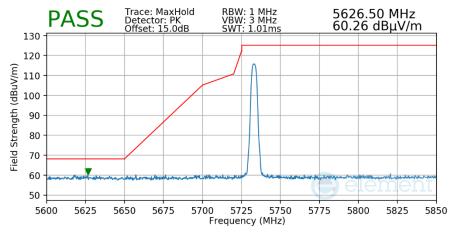


Plot 7-144. Radiated Lower Band Edge Measurement

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 116 of 122
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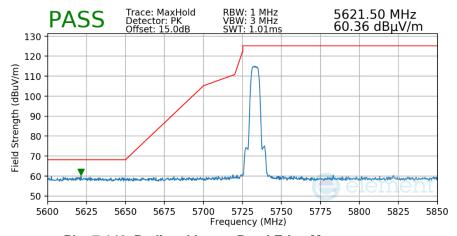


Mode:HDR4Power SchemeePAMeasurement Distance:3 MetersOperating Frequency:5733MHz



Plot 7-145. Radiated Lower Band Edge Measurement

Mode:HDR8Power SchemeePAMeasurement Distance:3 MetersOperating Frequency:5733MHz

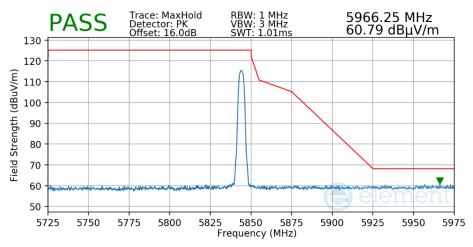


Plot 7-146. Radiated Lower Band Edge Measurement

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 117 of 133
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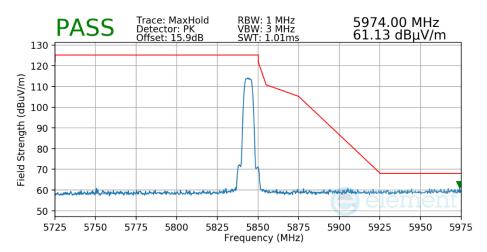


Mode:HDR4Power SchemeePAMeasurement Distance:3 MetersOperating Frequency:5844MHz



Plot 7-147. Radiated Upper Band Edge Measurement

Mode:HDR8Power SchemeePAMeasurement Distance:3 MetersOperating Frequency:5844MHz



Plot 7-148. Radiated Upper Band Edge Measurement

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 118 of 133
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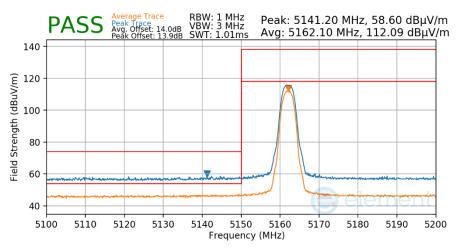


### **Antenna WF5B**

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

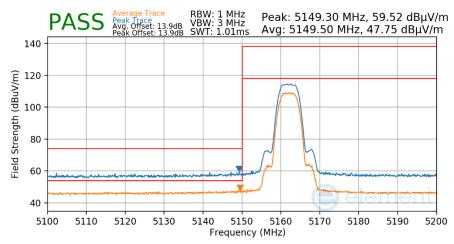
Offset (dB) = (Antenna Factor + Cable Loss + Attenuator) - Preamplifier Gain

Mode:HDR4Power SchemeePAMeasurement Distance:3 MetersOperating Frequency:5162MHz



Plot 7-149. Radiated Lower Band Edge Measurement

Mode:HDR8Power SchemeePAMeasurement Distance:3 MetersOperating Frequency:5162MHz

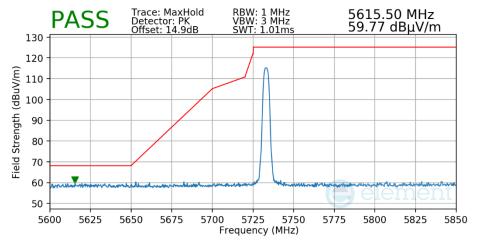


Plot 7-150. Radiated Lower Band Edge Measurement

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 110 of 122
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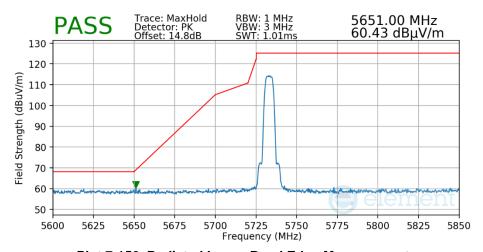


Mode: HDR4
Power Scheme ePA
Measurement Distance: 3 Meters
Operating Frequency: 5733MHz



Plot 7-151. Radiated Lower Band Edge Measurement

Mode:HDR8Power SchemeePAMeasurement Distance:3 MetersOperating Frequency:5733MHz

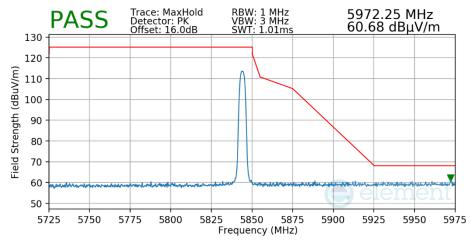


Plot 7-152. Radiated Lower Band Edge Measurement

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Page 120 of 133
1C2205090024-07-R1.BCG	6/7/2022-9/22/2022	Tablet Device	raye 120 01 133

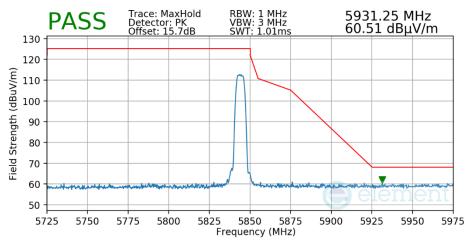


Mode: HDR4
Power Scheme ePA
Measurement Distance: 3 Meters
Operating Frequency: 5844MHz



Plot 7-153. Radiated Upper Band Edge Measurement

Mode:HDR8Power SchemeePAMeasurement Distance:3 MetersOperating Frequency:5844MHz



Plot 7-154. Radiated Upper Band Edge Measurement

FCC ID: BCGA2759	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 121 of 122
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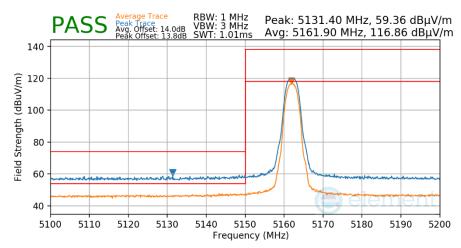


#### **TxRF**

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

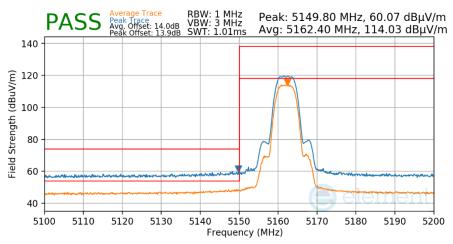
Offset (dB) = (Antenna Factor + Cable Loss + Attenuator) - Preamplifier Gain

Mode:HDR4Power SchemeePAMeasurement Distance:3 MetersOperating Frequency:5162MHz



Plot 7-155. Radiated Lower Band Edge Measurement

Mode:HDR8Power SchemeePAMeasurement Distance:3 MetersOperating Frequency:5162MHz

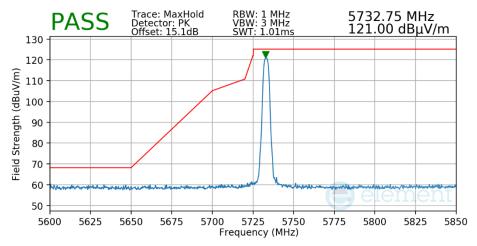


Plot 7-156. Radiated Lower Band Edge Measurement

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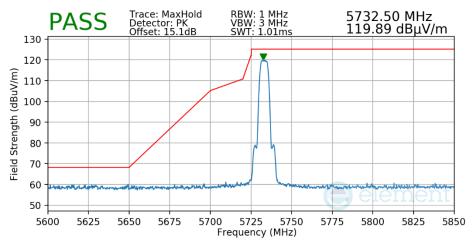


Mode:HDR4Power SchemeePAMeasurement Distance:3 MetersOperating Frequency:5733MHz



Plot 7-157. Radiated Lower Band Edge Measurement

Mode:HDR8Power SchemeePAMeasurement Distance:3 MetersOperating Frequency:5733MHz

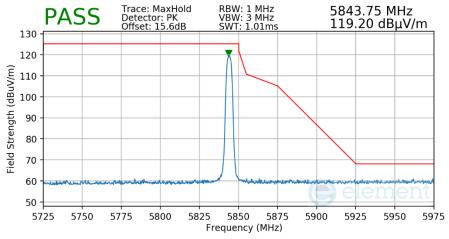


Plot 7-158. Radiated Lower Band Edge Measurement

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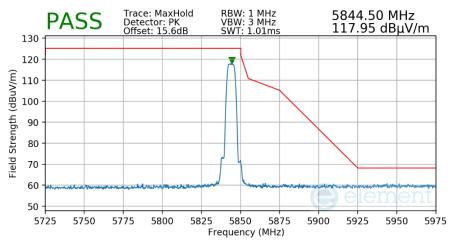


Mode:HDR4Power SchemeePAMeasurement Distance:3 MetersOperating Frequency:5844MHz



Plot 7-159. Radiated Upper Band Edge Measurement

Mode:HDR8Power SchemeePAMeasurement Distance:3 MetersOperating Frequency:5844MHz



Plot 7-160. Radiated Upper Band Edge Measurement

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# 7.7 Radiated Spurious Emissions – Below 1GHz §15.209

### **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 must not exceed the limits shown in Table 7-34 per Section 15.209.

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 7-34. 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.

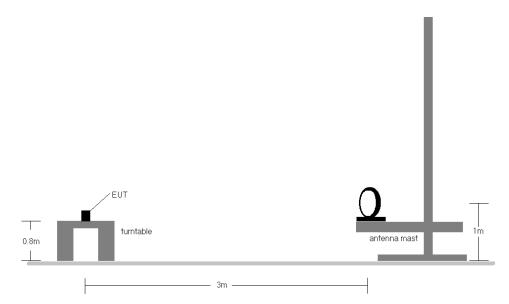


Figure 7-6. Radiated Test Setup < 30MHz

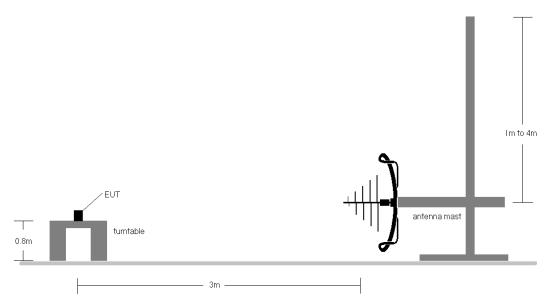


Figure 7-7. Radiated Test Setup < 1GHz

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### **Test Notes**

- 1. All emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 7-34.
- 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 for emissions 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 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

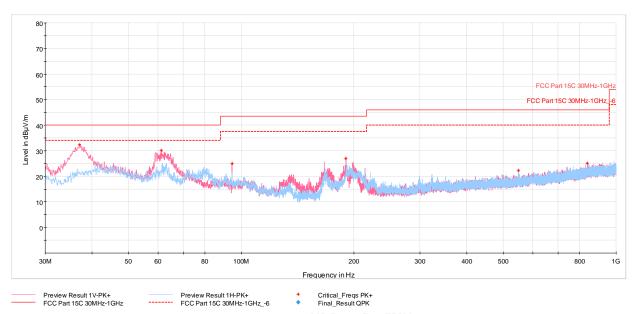
### **Determining Spurious Emissions Levels**

- 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]
- o Margin [dB] = Field Strength Level  $[dB\mu V/m]$  Limit  $[dB\mu V/m]$

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# TxBF Radiated Spurious Emissions (Below 1GHz) §15.209



Plot 7-161. RSE 30MHz - 1GHz TxBF (HDR4 - 5245MHz), 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]
37.08	Max-Peak	V	100	42	-56.43	-18.20	32.37	40.00	-7.63
61.28	Max-Peak	V	100	85	-59.52	-17.38	30.10	40.00	-9.90
94.51	Max-Peak	V	100	262	-63.03	-19.05	24.92	43.52	-18.60
190.34	Max-Peak	V	100	3	-61.60	-18.41	26.99	43.52	-16.53
548.27	Max-Peak	Н	100	189	-74.95	-9.82	22.23	46.02	-23.79
838.25	Max-Peak	V	300	310	-76.55	-5.29	25.16	46.02	-20.86

Table 7-35. RSE 30MHz - 1GHz TxBF (HDR4 - 5245MHz), with AC/DC Adapter

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# 7.8 AC Line Conducted Emissions Measurement §15.207

### **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. All data rates and modes were investigated for AC Line conducted spurious emissions.

All conducted emissions must not exceed the limits shown in the table below, per Section 15.207.

Frequency of emission (MHz)		
(IVITIZ)	Quasi-peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50

Table 7-36. Conducted Limits

### **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
- 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.

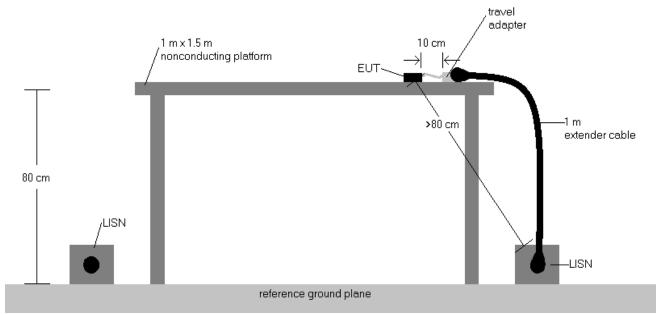


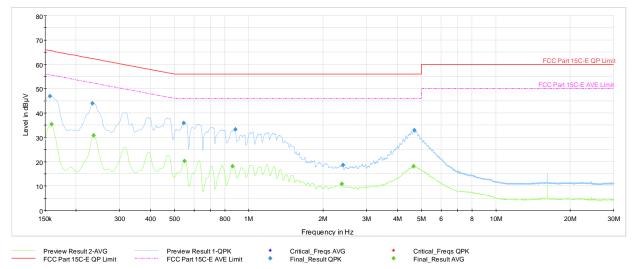
Figure 7-8. Test Instrument & Measurement Setup

### **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 15.207.
- 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 plots are made using quasi-peak and average detectors.
- 8. Deviations to the Specifications: None.

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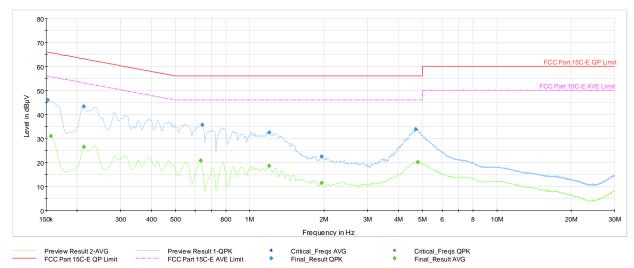
Plot 7-162. AC Line Conducted Plot (HDR4 - 5245MHz) (L1) with AC/DC Adapter

Frequency [MHz]	Process State	QuasiPeak [dB <b>µ</b> V]	Averaqe [dBµV]	Limit [dBµV]	Marqin [dB]	Line	PE
0.157	FINAL	46.9		65.63	-18.70	L1	GND
0.159	FINAL		35.31	55.52	-20.21	L1	GND
0.233	FINAL	43.9		62.33	-18.45	L1	GND
0.236	FINAL		30.73	52.25	-21.52	L1	GND
0.546	FINAL	35.8		56.00	-20.16	L1	GND
0.551	FINAL		20.25	46.00	-25.75	L1	GND
0.861	FINAL		18.05	46.00	-27.95	L1	GND
0.884	FINAL	33.3		56.00	-22.72	L1	GND
2.380	FINAL		10.83	46.00	-35.17	L1	GND
2.411	FINAL	18.6		56.00	-37.44	L1	GND
4.643	FINAL		18.10	46.00	-27.90	L1	GND
4.670	FINAL	32.9		56.00	-23.06	L1	GND

Table 7-37. AC Line Conducted (HDR4 - 5245MHz) (L1) with AC/DC Adapter

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Plot 7-163. AC Line Conducted Plot (HDR4 - 5245MHz) (N) with AC/DC Adapter

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Averaqe [dΒμV]	Limit [dBµV]	Marqin [dB]	Line	PE
0.152	FINAL	46.0		65.88	-19.93	N	GND
0.157	FINAL		31.04	55.63	-24.59	N	GND
0.213	FINAL		26.44	53.09	-26.64	N	GND
0.213	FINAL	43.4		63.09	-19.68	N	GND
0.634	FINAL		20.90	46.00	-25.10	N	GND
0.643	FINAL	35.7		56.00	-20.30	N	GND
1.199	FINAL		18.68	46.00	-27.32	N	GND
1.201	FINAL	32.5		56.00	-23.53	N	GND
1.952	FINAL		11.57	46.00	-34.43	N	GND
1.957	FINAL	22.5		56.00	-33.47	N	GND
4.704	FINAL	33.9		56.00	-22.15	N	GND
4.776	FINAL	_	20.17	46.00	-25.83	N	GND

Table 7-38. AC Line Conducted (HDR4 - 5245MHz) (N) with AC/DC Adapter

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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: BCGA2759** is in compliance with is in compliance with Part 15 Subpart E (15.407) of the FCC Rules.

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