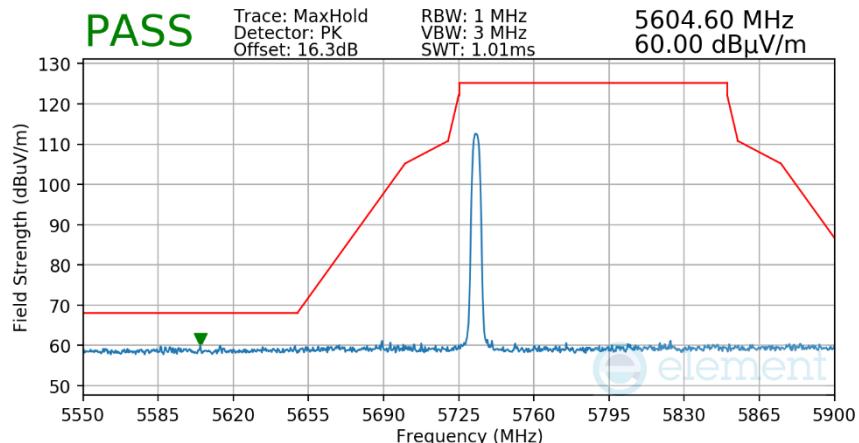


Mode:  
Power Scheme  
Measurement Distance:  
Operating Frequency:

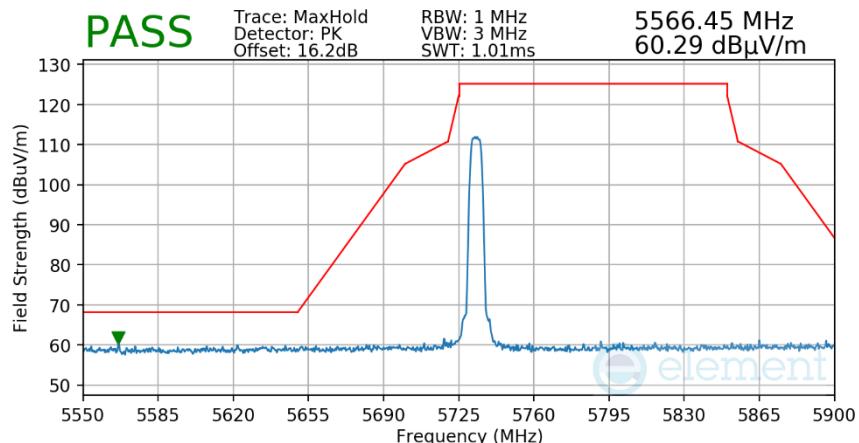
HDR4  
ePA  
3 Meters  
5733MHz



**Plot 7-145. Radiated Lower Band Edge Measurement**

Mode:  
Power Scheme  
Measurement Distance:  
Operating Frequency:

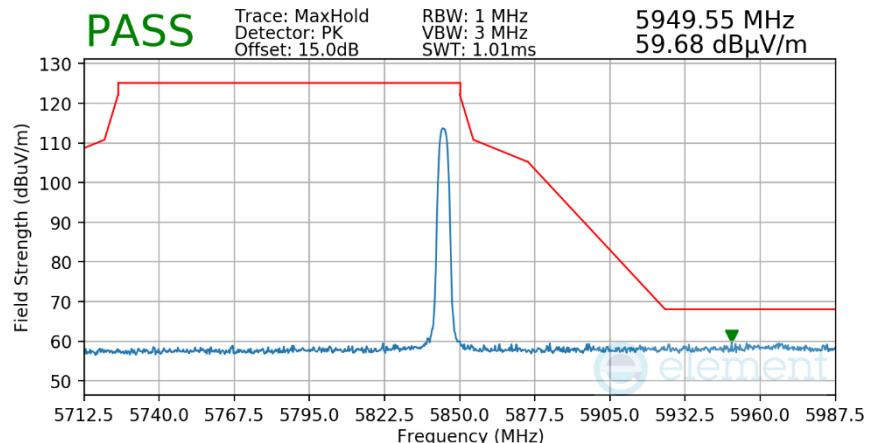
HDR8  
ePA  
3 Meters  
5733MHz



**Plot 7-146. Radiated Lower Band Edge Measurement**

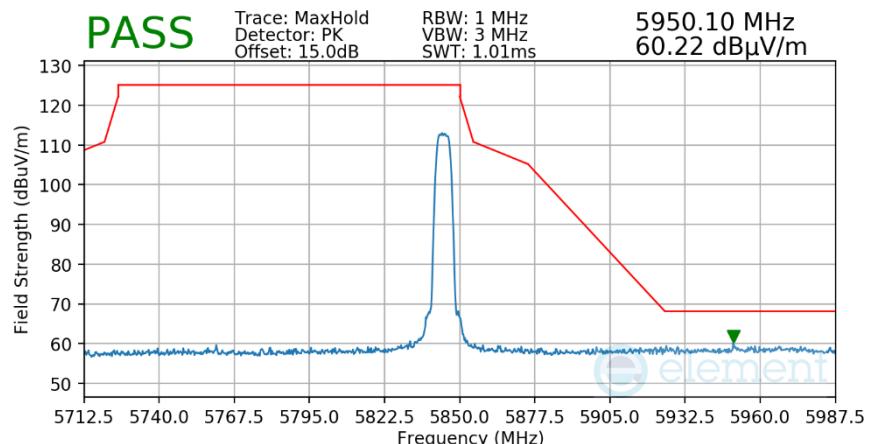
FCC ID: BCGA2436	 element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090027-07-R1.BCG	Test Dates: 7/1/2022-9/27/2022	EUT Type: Tablet Device	Page 118 of 137

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



**Plot 7-147. Radiated Upper Band Edge Measurement**

Mode: HDR8  
 Power Scheme ePA  
 Measurement Distance: 3 Meters  
 Operating Frequency: 5844MHz



**Plot 7-148. Radiated Upper Band Edge Measurement**

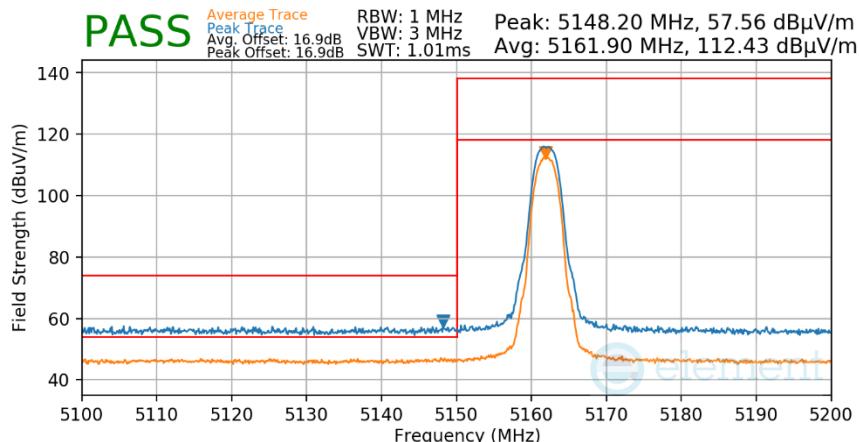
FCC ID: BCGA2436	 <b>element</b>	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1C2205090027-07-R1.BCG	Test Dates: 7/1/2022-9/27/2022	EUT Type: Tablet Device		Page 119 of 137

## Antenna WF5B

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

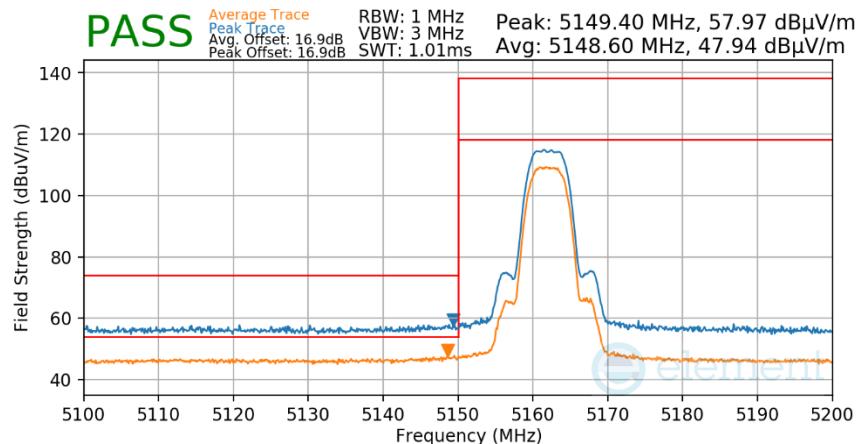
$$\text{Offset (dB)} = (\text{Antenna Factor} + \text{Cable Loss} + \text{Attenuator}) - \text{Preamplifier Gain}$$

Mode:	HDR4
Power Scheme	ePA
Measurement Distance:	3 Meters
Operating Frequency:	5162MHz



**Plot 7-149. Radiated Lower Band Edge Measurement**

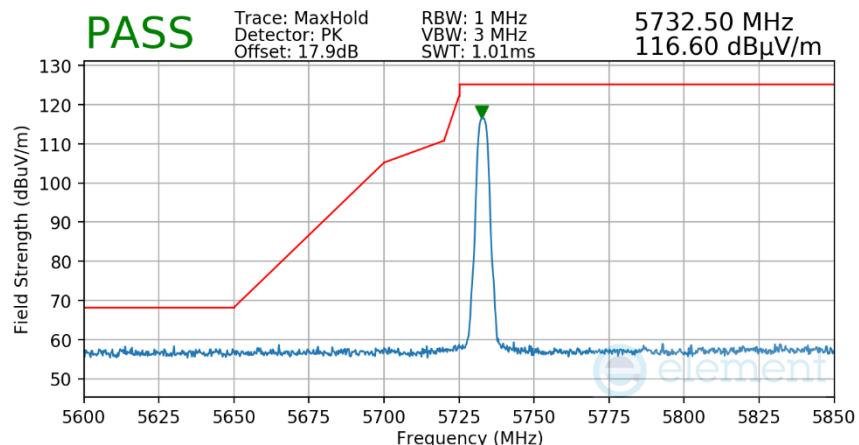
Mode:	HDR8
Power Scheme	ePA
Measurement Distance:	3 Meters
Operating Frequency:	5162MHz



**Plot 7-150. Radiated Lower Band Edge Measurement**

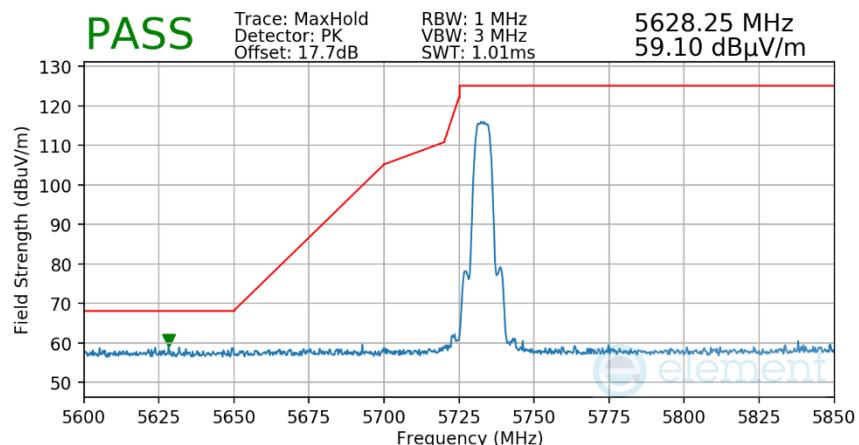
FCC ID: BCGA2436	 element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1C2205090027-07-R1.BCG	Test Dates: 7/1/2022-9/27/2022	EUT Type: Tablet Device		Page 120 of 137

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



**Plot 7-151. Radiated Lower Band Edge Measurement**

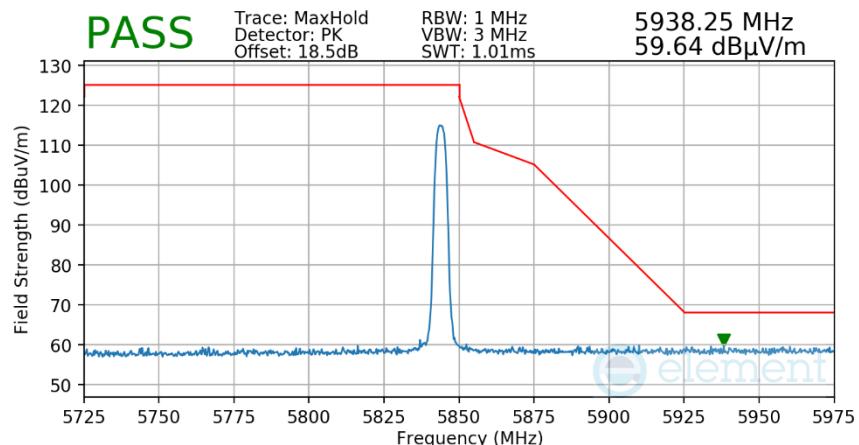
Mode: HDR8  
 Power Scheme ePA  
 Measurement Distance: 3 Meters  
 Operating Frequency: 5733MHz



**Plot 7-152. Radiated Lower Band Edge Measurement**

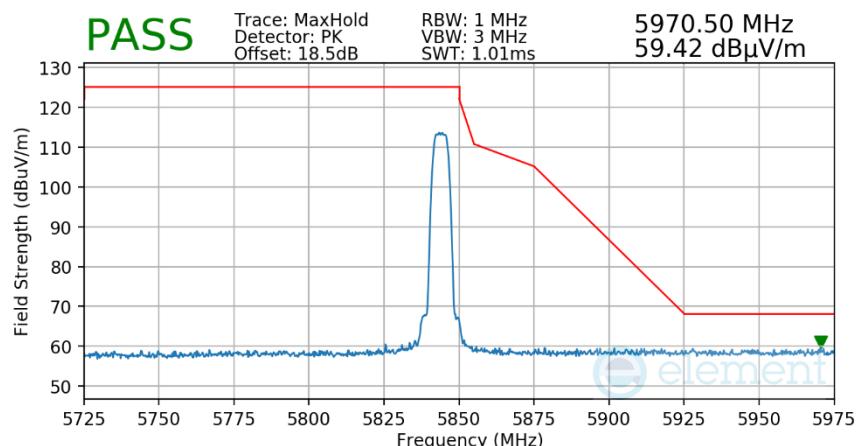
FCC ID: BCGA2436	 element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090027-07-R1.BCG	Test Dates: 7/1/2022-9/27/2022	EUT Type: Tablet Device	Page 121 of 137

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



**Plot 7-153. Radiated Upper Band Edge Measurement**

Mode: HDR8  
 Power Scheme ePA  
 Measurement Distance: 3 Meters  
 Operating Frequency: 5844MHz



**Plot 7-154. Radiated Upper Band Edge Measurement**

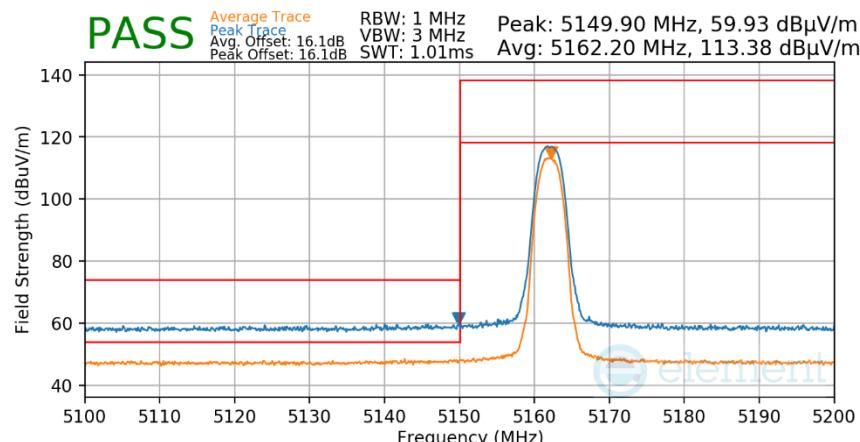
FCC ID: BCGA2436	 <b>element</b>		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090027-07-R1.BCG	Test Dates: 7/1/2022-9/27/2022	EUT Type: Tablet Device		Page 122 of 137

**TxBF**

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

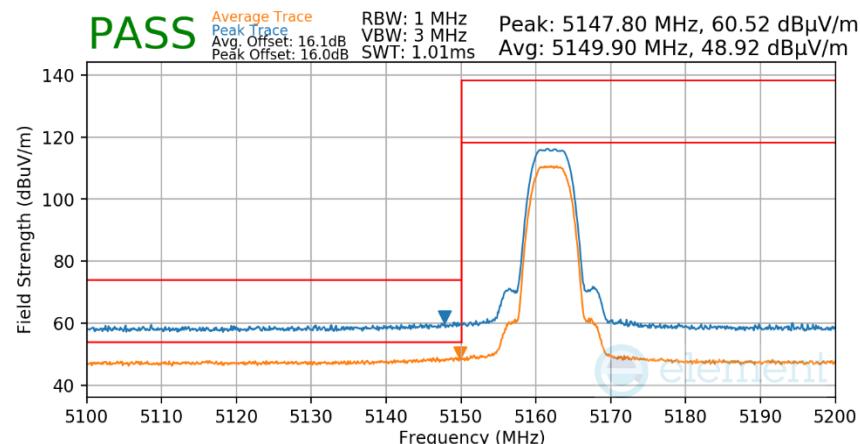
$$\text{Offset (dB)} = (\text{Antenna Factor} + \text{Cable Loss} + \text{Attenuator}) - \text{Preamplifier Gain}$$

Mode: HDR4  
 Power Scheme ePA  
 Measurement Distance: 3 Meters  
 Operating Frequency: 5162MHz



**Plot 7-155. Radiated Lower Band Edge Measurement**

Mode: HDR8  
 Power Scheme ePA  
 Measurement Distance: 3 Meters  
 Operating Frequency: 5162MHz

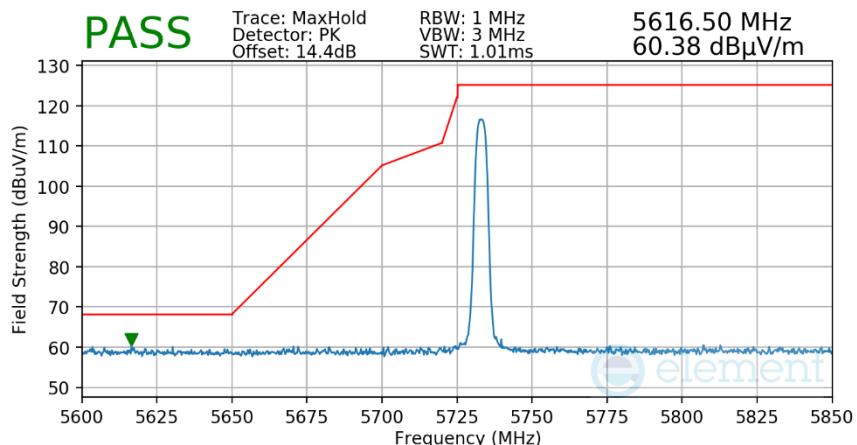


**Plot 7-156. Radiated Lower Band Edge Measurement**

FCC ID: BCGA2436	 <b>element</b>	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1C2205090027-07-R1.BCG	Test Dates: 7/1/2022-9/27/2022	EUT Type: Tablet Device		Page 123 of 137

Mode:  
Power Scheme  
Measurement Distance:  
Operating Frequency:

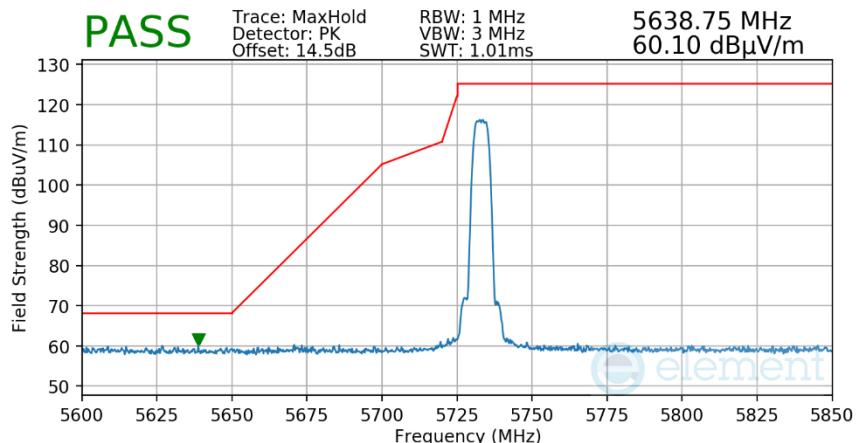
HDR4  
ePA  
3 Meters  
5733MHz



**Plot 7-157. Radiated Lower Band Edge Measurement**

Mode:  
Power Scheme  
Measurement Distance:  
Operating Frequency:

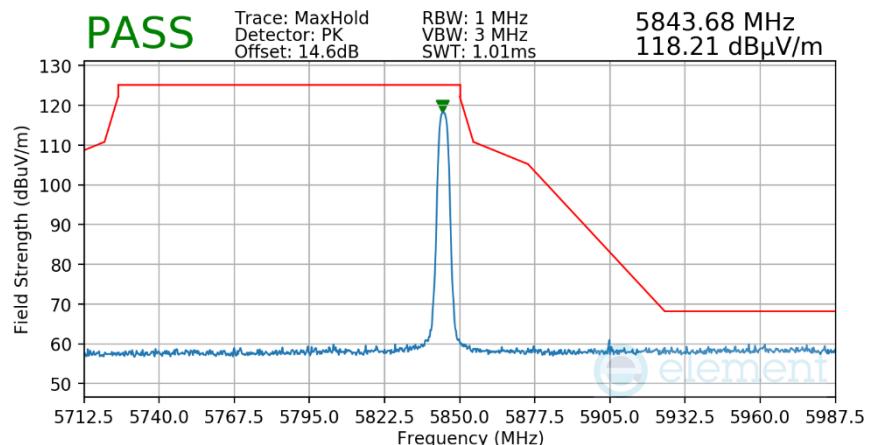
HDR8  
ePA  
3 Meters  
5733MHz



**Plot 7-158. Radiated Lower Band Edge Measurement**

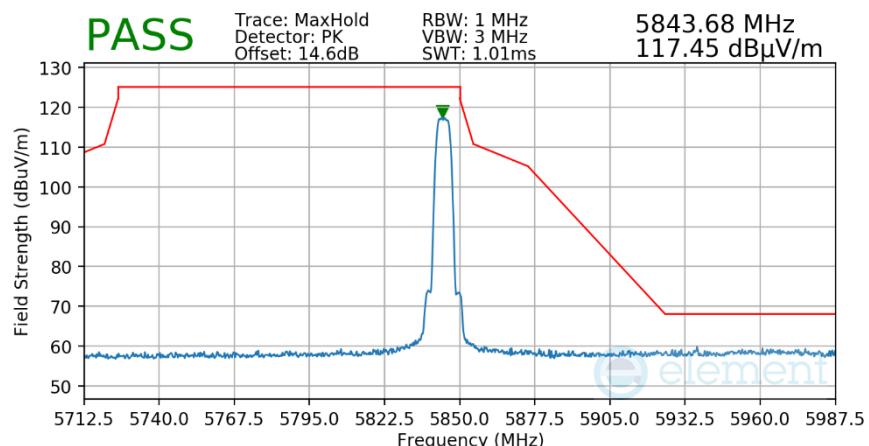
FCC ID: BCGA2436	 <b>element</b>	MEASUREMENT REPORT (CERTIFICATION)	
Test Report S/N: 1C2205090027-07-R1.BCG	Test Dates: 7/1/2022-9/27/2022	EUT Type: Tablet Device	Approved by: Technical Manager

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



**Plot 7-159. Radiated Upper Band Edge Measurement**

Mode: HDR8  
 Power Scheme ePA  
 Measurement Distance: 3 Meters  
 Operating Frequency: 5844MHz



**Plot 7-160. Radiated Upper Band Edge Measurement**

FCC ID: BCGA2436	 <b>element</b>		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090027-07-R1.BCG	Test Dates: 7/1/2022-9/27/2022	EUT Type: Tablet Device		Page 125 of 137

## 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 [ $\mu$ V/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
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

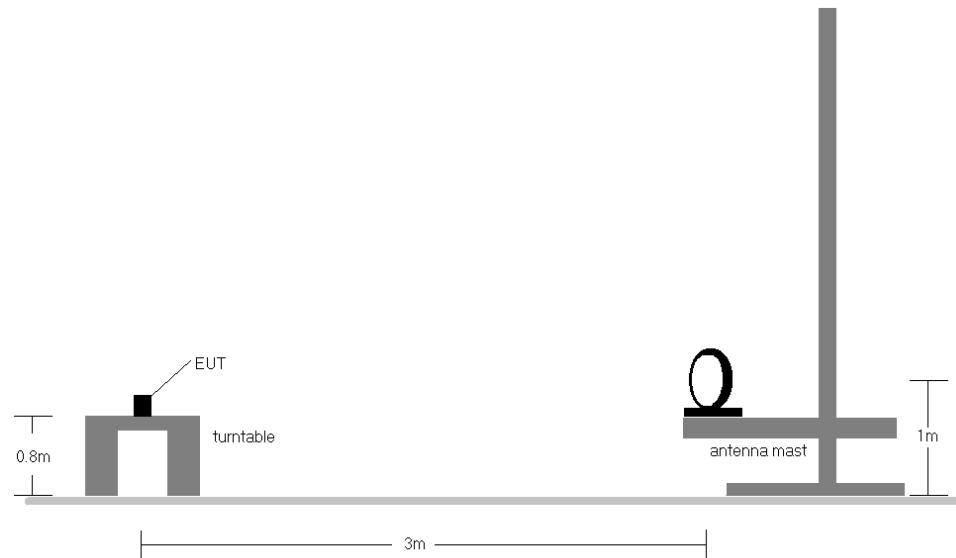
#### Peak Field Strength Measurements

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

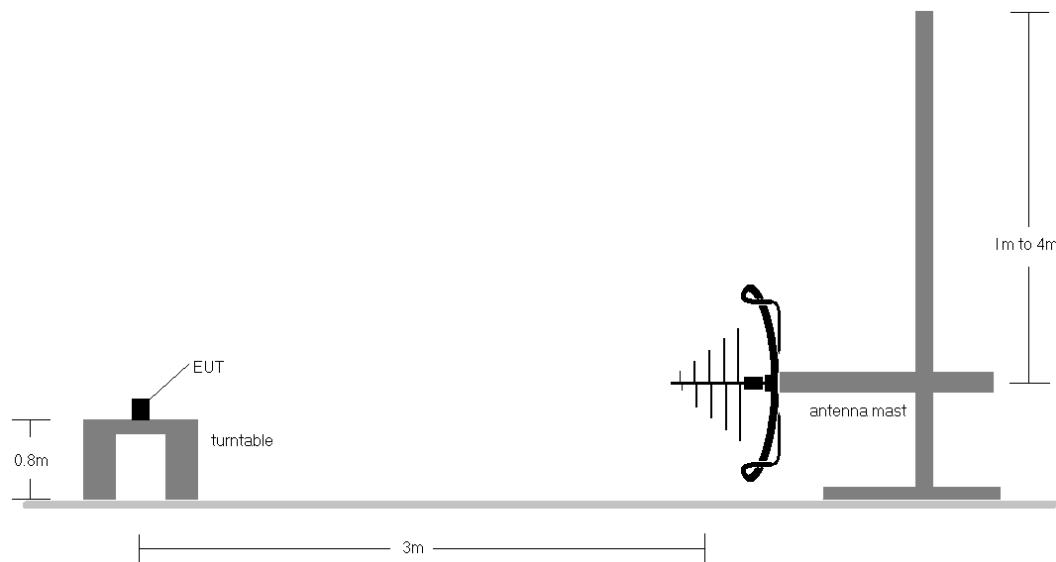
FCC ID: BCGA2436	 element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090027-07-R1.BCG	Test Dates: 7/1/2022-9/27/2022	EUT Type: Tablet Device	Page 126 of 137

### 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**

FCC ID: BCGA2436	 element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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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

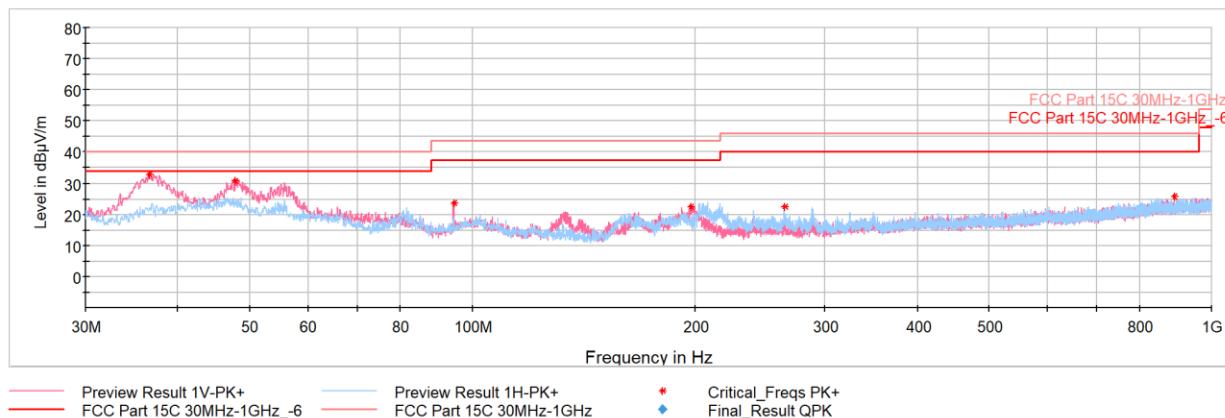
### Determining Spurious Emissions Levels

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

FCC ID: BCGA2436	 element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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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**

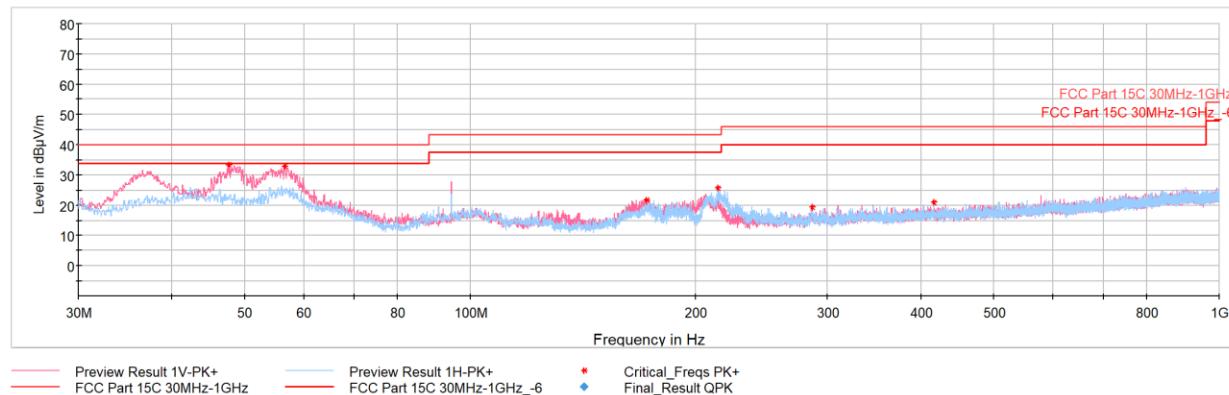
Frequency [MHz]	Detector	Ant. Pol. [H/V]	Antenna Height [cm]	Turntable Azimuth [degree]	Analyzer Level [dBm]	AFCL [dB/m]	Field Strength [dBμV/m]	Limit [dBμV/m]	Margin [dB]
36.60	Max-Peak	V	100	52	-56.03	-18.31	32.66	40.00	-7.34
47.85	Max-Peak	V	100	280	-60.86	-15.44	30.70	40.00	-9.30
94.51	Max-Peak	V	100	197	-64.15	-19.05	23.80	43.52	-19.72
197.42	Max-Peak	V	100	5	-66.94	-17.39	22.67	43.52	-20.85
264.55	Max-Peak	H	100	31	-68.61	-15.91	22.48	46.02	-23.54
890.05	Max-Peak	V	100	45	-76.85	-4.31	25.84	46.02	-20.18

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

FCC ID: BCGA2436	 element	MEASUREMENT REPORT (CERTIFICATION)			Approved by: Technical Manager
Test Report S/N: 1C2205090027-07-R1.BCG	Test Dates: 7/1/2022-9/27/2022	EUT Type: Tablet Device			

V 10.5 12/15/2021

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**Plot 7-162. RSE 30MHz - 1GHz TxBF (HDR4 – 5844MHz), 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]
47.65	Max-Peak	V	100	8	-58.04	-15.45	33.51	40.00	-6.49
56.58	Max-Peak	V	100	32	-57.84	-16.29	32.87	40.00	-7.13
172.06	Max-Peak	V	100	15	-65.14	-19.97	21.89	43.52	-21.63
214.15	Max-Peak	H	100	156	-63.29	-17.90	25.81	43.52	-17.71
285.79	Max-Peak	H	100	68	-71.73	-15.81	19.46	46.02	-26.56
415.67	Max-Peak	H	200	107	-73.89	-12.22	20.89	46.02	-25.13

**Table 7-36. RSE 30MHz - 1GHz TxBF (HDR4 – 5844MHz), with AC/DC Adapter**

FCC ID: BCGA2436	 element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1C2205090027-07-R1.BCG	Test Dates: 7/1/2022-9/27/2022	EUT Type: Tablet Device		Page 130 of 137

## 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)	Conducted Limit (dB $\mu$ V)	
	Quasi-peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50

**Table 7-37. 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

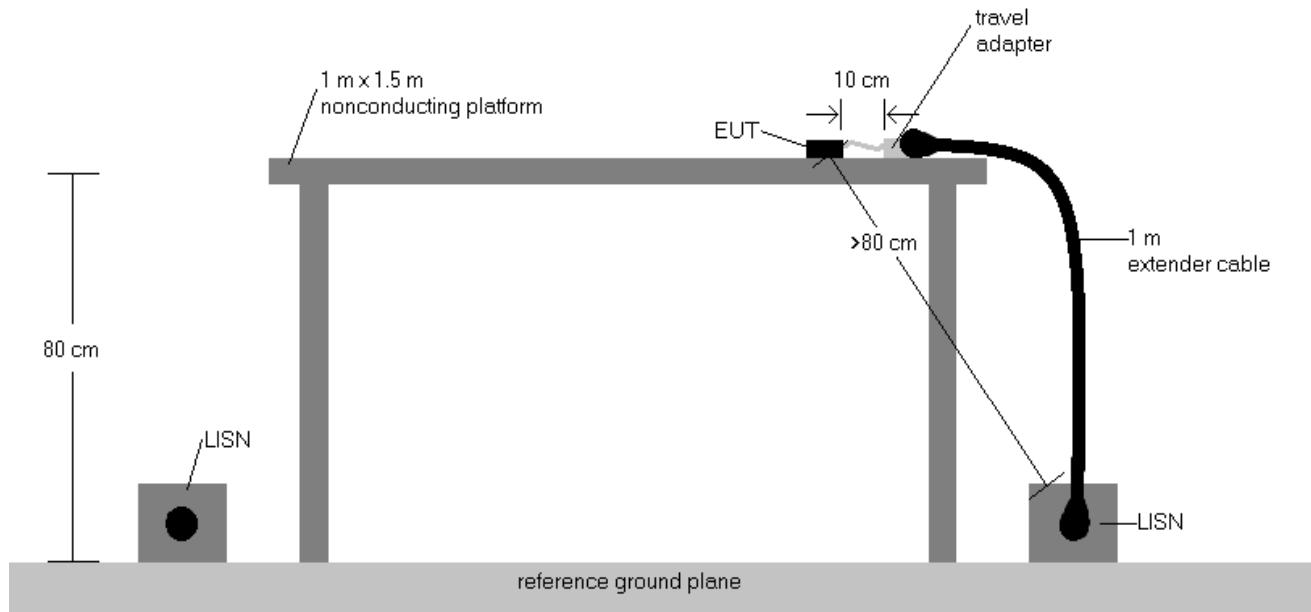
#### Average Measurements

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: BCGA2436	 element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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### Test Setup

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

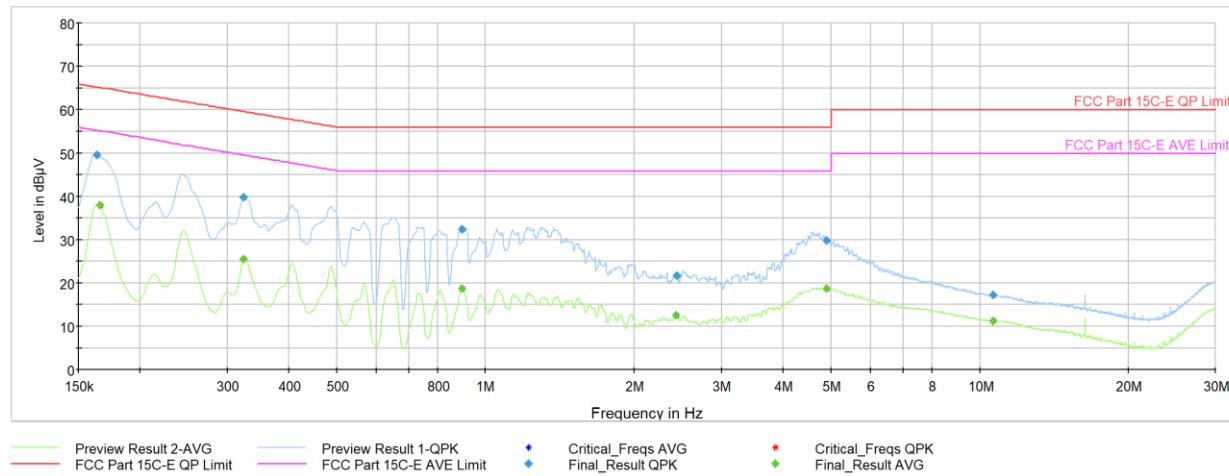


**Figure 7-8. Test Instrument & Measurement Setup**

### 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.

FCC ID: BCGA2436	 element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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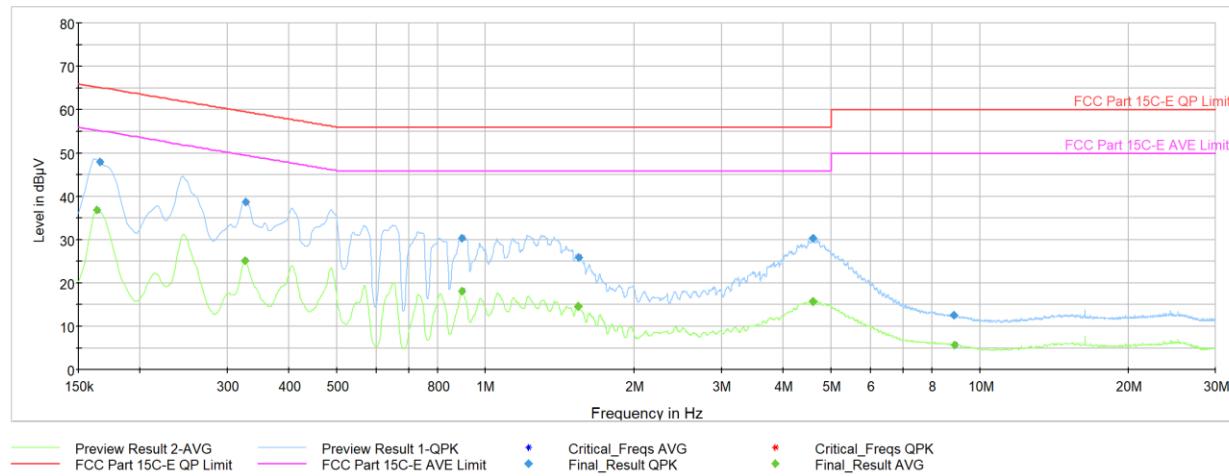


**Plot 7-163. AC Line Conducted Plot (HDR4 – 5245MHz) (L1) with AC/DC Adapter**

Frequency [MHz]	Process State	QuasiPeak [dBμV]	Average [dBμV]	Limit [dBμV]	Margin [dB]	Line	PE
0.164	FINAL	49.6	—	65.28	-15.69	L1	GND
0.166	FINAL	—	37.94	55.17	-17.23	L1	GND
0.323	FINAL	—	25.65	49.62	-23.98	L1	GND
0.323	FINAL	39.9	—	59.62	-19.77	L1	GND
0.897	FINAL	—	18.74	46.00	-27.26	L1	GND
0.897	FINAL	32.4	—	56.00	-23.62	L1	GND
2.427	FINAL	—	12.58	46.00	-33.42	L1	GND
2.432	FINAL	21.6	—	56.00	-34.36	L1	GND
4.886	FINAL	29.9	—	56.00	-26.15	L1	GND
4.902	FINAL	—	18.62	46.00	-27.38	L1	GND
10.622	FINAL	17.2	—	60.00	-42.81	L1	GND
10.646	FINAL	—	11.29	50.00	-38.71	L1	GND

**Table 7-38. AC Line Conducted (HDR4 – 5245MHz) (L1) with AC/DC Adapter**

FCC ID: BCGA2436	 element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1C2205090027-07-R1.BCG	Test Dates: 7/1/2022-9/27/2022	EUT Type: Tablet Device		Page 133 of 137

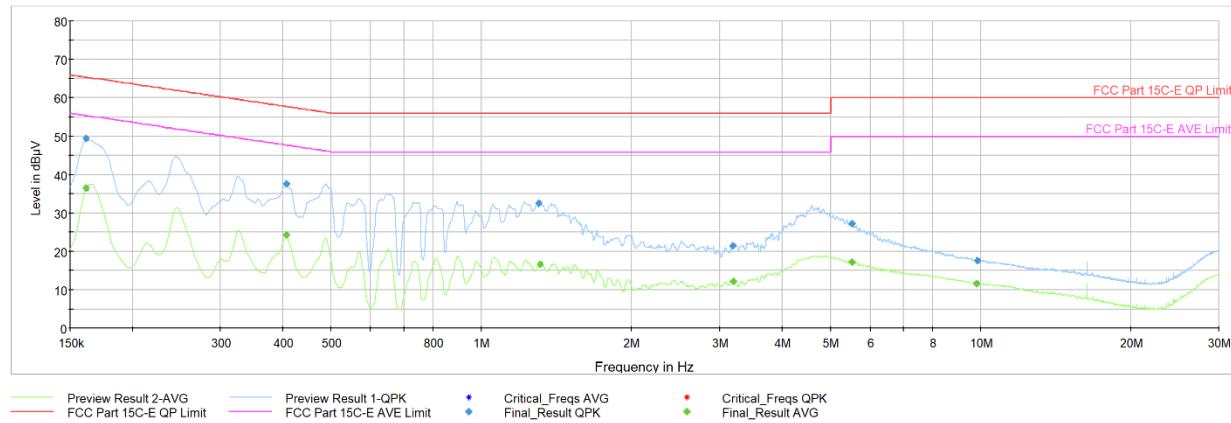


**Plot 7-164. AC Line Conducted Plot (HDR4 – 5245MHz) (N) with AC/DC Adapter**

Frequency [MHz]	Process State	QuasiPeak [dBμV]	Average [dBμV]	Limit [dBμV]	Margin [dB]	Line	PE
0.164	FINAL	—	36.77	55.28	-18.52	N	GND
0.166	FINAL	48.0	—	65.17	-17.13	N	GND
0.326	FINAL	—	25.27	49.57	-24.30	N	GND
0.328	FINAL	38.7	—	59.51	-20.77	N	GND
0.895	FINAL	—	18.12	46.00	-27.88	N	GND
0.897	FINAL	30.4	—	56.00	-25.60	N	GND
1.541	FINAL	—	14.70	46.00	-31.30	N	GND
1.545	FINAL	26.0	—	56.00	-30.01	N	GND
4.585	FINAL	30.4	—	56.00	-25.66	N	GND
4.587	FINAL	—	15.71	46.00	-30.29	N	GND
8.862	FINAL	12.6	—	60.00	-47.45	N	GND
8.878	FINAL	—	5.80	50.00	-44.20	N	GND

**Table 7-39. AC Line Conducted (HDR4 – 5245MHz) (N) with AC/DC Adapter**

FCC ID: BCGA2436	 element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1C2205090027-07-R1.BCG	Test Dates: 7/1/2022-9/27/2022	EUT Type: Tablet Device		Page 134 of 137

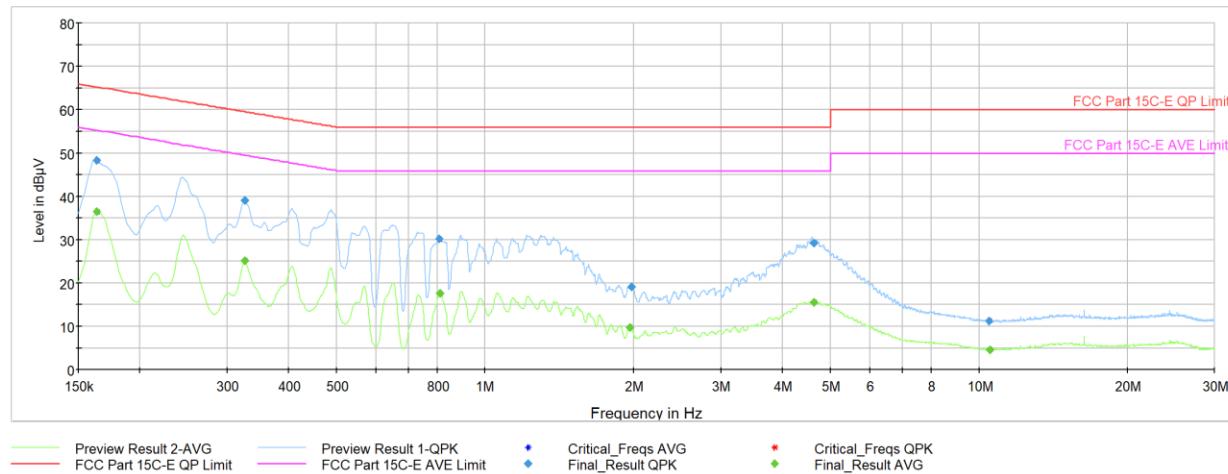


**Plot 7-165. AC Line Conducted Plot (HDR4 – 5844MHz) (L1) with AC/DC Adapter**

Frequency [MHz]	Process State	QuasiPeak [dB $\mu$ V]	Average [dB $\mu$ V]	Limit [dB $\mu$ V]	Margin [dB]	Line	PE
0.161	FINAL	—	36.50	55.40	-18.90	L1	GND
0.161	FINAL	49.4	—	65.40	-16.05	L1	GND
0.407	FINAL	—	24.21	47.72	-23.51	L1	GND
0.407	FINAL	37.6	—	57.72	-20.15	L1	GND
1.300	FINAL	32.6	—	56.00	-23.36	L1	GND
1.309	FINAL	—	16.68	46.00	-29.32	L1	GND
3.185	FINAL	21.5	—	56.00	-34.50	L1	GND
3.192	FINAL	—	12.27	46.00	-33.73	L1	GND
5.510	FINAL	—	17.21	50.00	-32.79	L1	GND
5.514	FINAL	27.2	—	60.00	-32.82	L1	GND
9.803	FINAL	—	11.65	50.00	-38.35	L1	GND
9.832	FINAL	17.6	—	60.00	-42.44	L1	GND

**Table 7-40. AC Line Conducted (HDR4 – 5844MHz) (L1) with AC/DC Adapter**

FCC ID: BCGA2436	 element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1C2205090027-07-R1.BCG	Test Dates: 7/1/2022-9/27/2022	EUT Type: Tablet Device		Page 135 of 137



**Plot 7-166. AC Line Conducted Plot (HDR4 – 5844MHz) (N) with AC/DC Adapter**

Frequency [MHz]	Process State	QuasiPeak [dB $\mu$ V]	Average [dB $\mu$ V]	Limit [dB $\mu$ V]	Margin [dB]	Line	PE
0.164	FINAL	—	36.55	55.28	-18.73	N	GND
0.164	FINAL	48.4	—	65.28	-16.92	N	GND
0.326	FINAL	—	25.11	49.57	-24.46	N	GND
0.326	FINAL	39.1	—	59.57	-20.45	N	GND
0.807	FINAL	30.2	—	56.00	-25.83	N	GND
0.809	FINAL	—	17.54	46.00	-28.46	N	GND
1.961	FINAL	—	9.85	46.00	-36.15	N	GND
1.977	FINAL	19.1	—	56.00	-36.86	N	GND
4.630	FINAL	—	15.62	46.00	-30.38	N	GND
4.632	FINAL	29.3	—	56.00	-26.68	N	GND
10.489	FINAL	11.3	—	60.00	-48.75	N	GND
10.502	FINAL	—	4.57	50.00	-45.43	N	GND

**Table 7-41. AC Line Conducted (HDR4 – 5844MHz) (N) with AC/DC Adapter**

FCC ID: BCGA2436	 element	MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1C2205090027-07-R1.BCG	Test Dates: 7/1/2022-9/27/2022	EUT Type: Tablet Device		Page 136 of 137

## 8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Apple Tablet Device** **FCC ID: BCGA2436** is in compliance with Part 15 Subpart E (15.407) of the FCC Rules.

FCC ID: BCGA2436	 element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2205090027-07-R1.BCG	Test Dates: 7/1/2022-9/27/2022	EUT Type: Tablet Device	Page 137 of 137