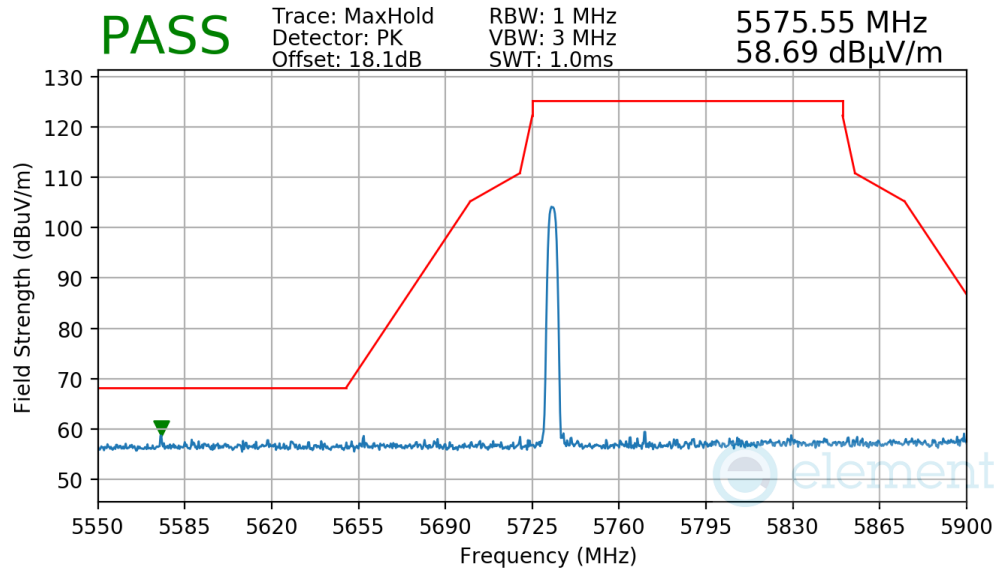
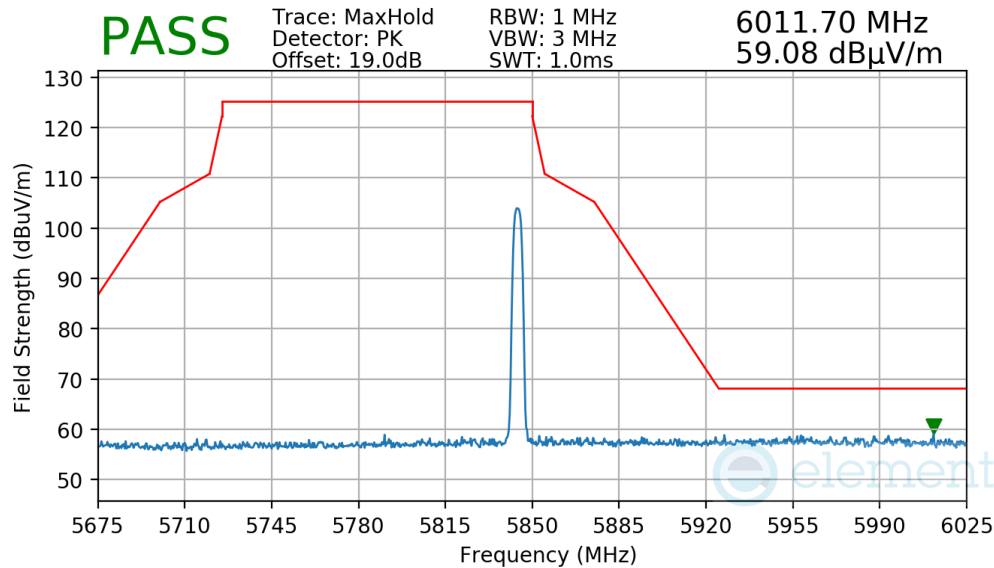


Mode: HDR4
Power Scheme: ePA
Measurement Distance: 3 Meters
Operating Frequency: 5733MHz



Plot 7-208. Radiated Lower Band Edge Measurement Antenna 1b

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



Plot 7-209. Radiated Upper Band Edge Measurement Antenna 1b

FCC ID: BCGA2903 IC: 579C-A2903		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2311270064-22.BCG	Test Dates: 11/28/2023 - 03/05/2024	EUT Type: Tablet Device	Page 164 of 176

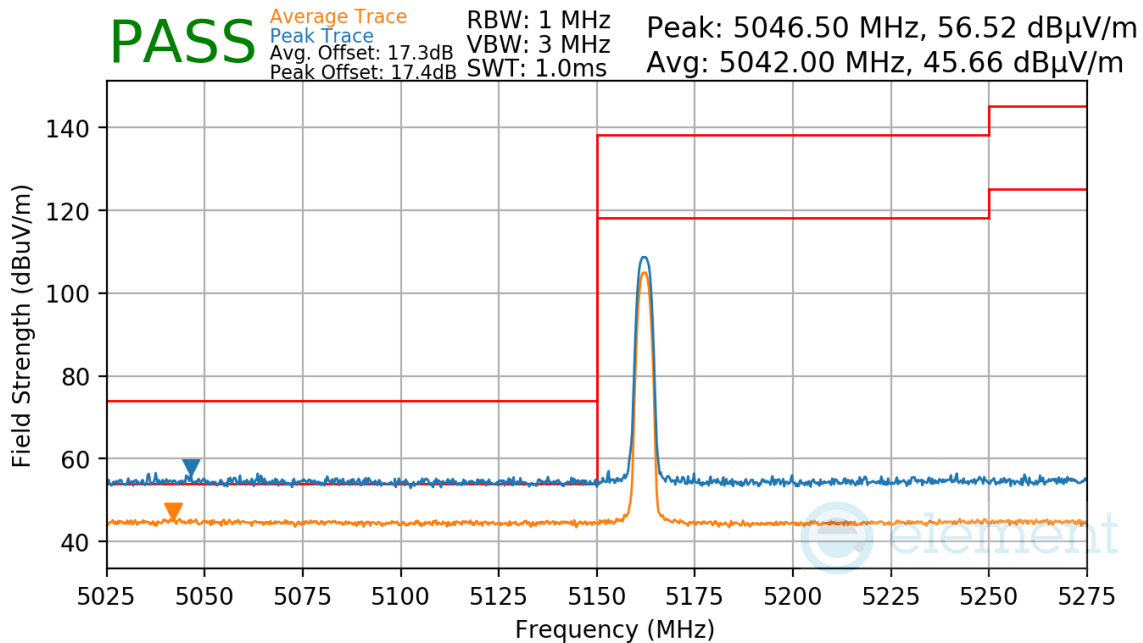
V 10.6 9/14/2023

Radiated Band Edge Measurements

§15.407(b.1) §15.205 §15.209; RSS-Gen [8.9]

Antenna TxBF

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

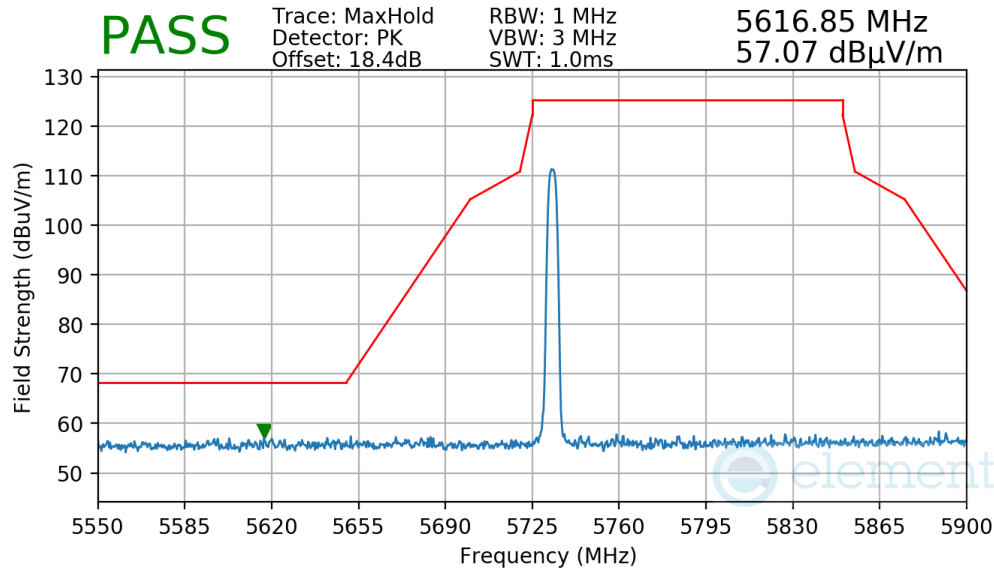


Plot 7-210. Radiated Lower Band Edge Measurement TxBF

FCC ID: BCGA2903 IC: 579C-A2903		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2311270064-22.BCG	Test Dates: 11/28/2023 - 03/05/2024	EUT Type: Tablet Device	Page 165 of 176

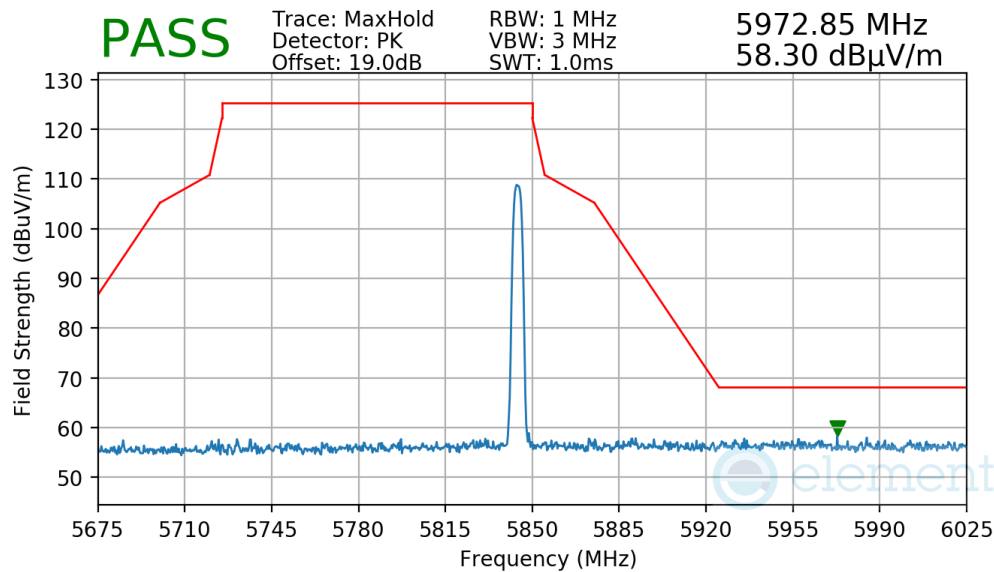
V 10.6 9/14/2023

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



Plot 7-211. Radiated Lower Band Edge Measurement TxBF

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



Plot 7-212. Radiated Upper Band Edge Measurement TxBF

FCC ID: BCGA2903 IC: 579C-A2903		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2311270064-22.BCG	Test Dates: 11/28/2023 - 03/05/2024	EUT Type: Tablet Device	Page 166 of 176

V 10.6 9/14/2023

7.7 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 must not exceed the limits shown in Table 7-53 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 7-53. 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: BCGA2903 IC: 579C-A2903		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2311270064-22.BCG	Test Dates: 11/28/2023 - 03/05/2024	EUT Type: Tablet Device	Page 167 of 176

V 10.6 9/14/2023

Test Setup

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

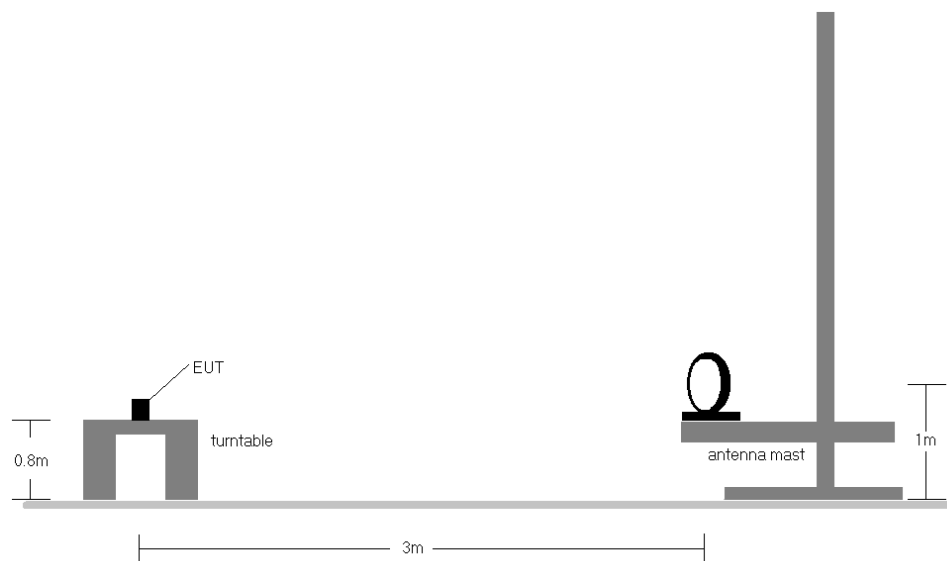


Figure 7-6. Radiated Test Setup < 30MHz

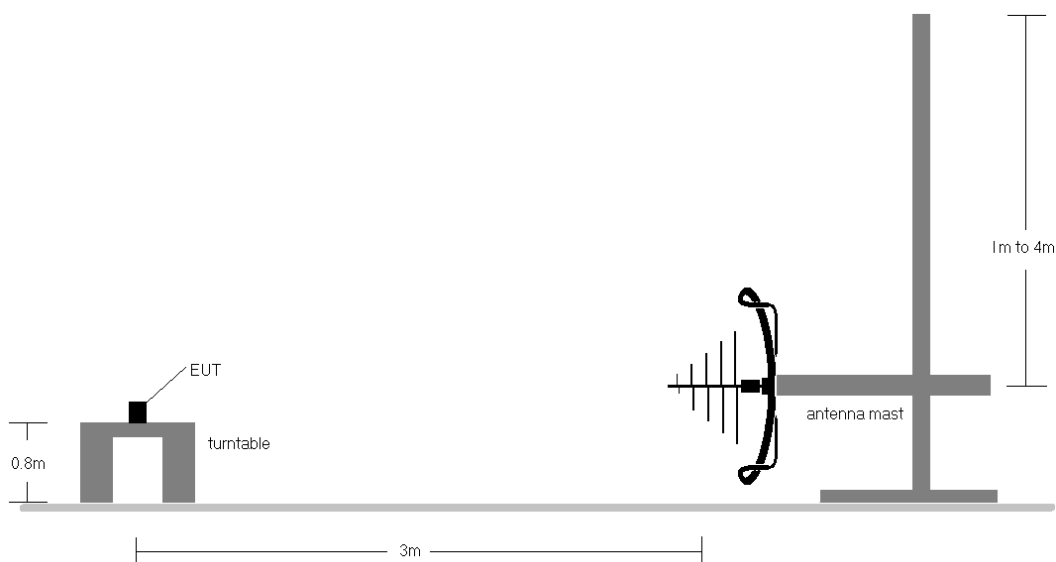


Figure 7-7. Radiated Test Setup < 1GHz

FCC ID: BCGA2903 IC: 579C-A2903			MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2311270064-22.BCG	Test Dates: 11/28/2023 - 03/05/2024	EUT Type: Tablet Device	Page 168 of 176	

V 10.6 9/14/2023

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Test Notes

1. All emissions lying in restricted bands specified in §15.205 are below the limit shown in Table 7-53.
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 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 to 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

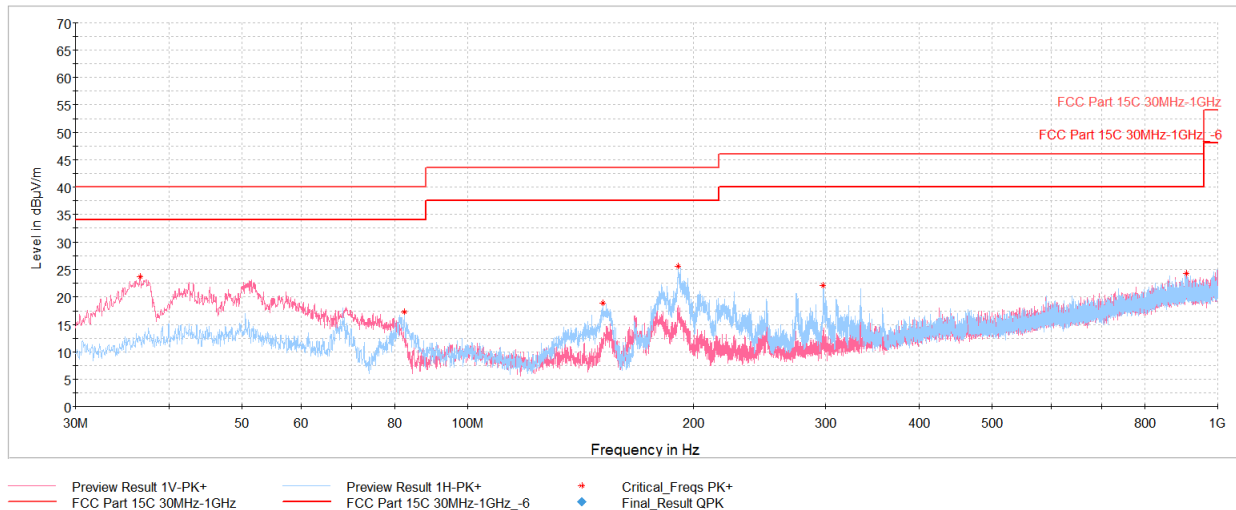
- Field Strength Level $_{[dB\mu V/m]} = \text{Analyzer Level}_{[dBm]} + 107 + \text{AFCL}_{[dB/m]}$
- $\text{AFCL}_{[dB/m]} = \text{Antenna Factor}_{[dB/m]} + \text{Cable Loss}_{[dB]} - \text{Preamplifier Gain}_{[dB]}$
- $\text{Margin}_{[dB]} = \text{Field Strength Level}_{[dB\mu V/m]} - \text{Limit}_{[dB\mu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

FCC ID: BCGA2903 IC: 579C-A2903	 MEASUREMENT REPORT (CERTIFICATION)		Approved by: Technical Manager
Test Report S/N: 1C2311270064-22.BCG	Test Dates: 11/28/2023 - 03/05/2024	EUT Type: Tablet Device	Page 169 of 176

V 10.6 9/14/2023

TxBF Radiated Spurious Emissions (Below 1GHz)

§15.209; RSS-Gen [8.9]



Plot 7-213. Radiated Spurious Emissions Below 1GHz TxBF (HDR4, ePA – 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	293	-67.90	-15.34	23.76	40.00	-16.24
82.38	Max Peak	H	200	297	-69.10	-20.67	17.23	40.00	-22.77
151.35	Max Peak	H	200	233	-67.91	-20.15	18.94	43.52	-24.58
190.63	Max Peak	H	100	215	-64.01	-17.43	25.56	43.52	-17.96
297.82	Max Peak	H	100	358	-70.26	-14.56	22.18	46.02	-23.84
908.72	Max Peak	V	100	194	-80.59	-2.09	24.32	46.02	-21.70

Table 7-54. Radiated Spurious Emissions Below 1GHz TxBF (HDR4, ePA – 5245MHz), with AC/DC Adapter

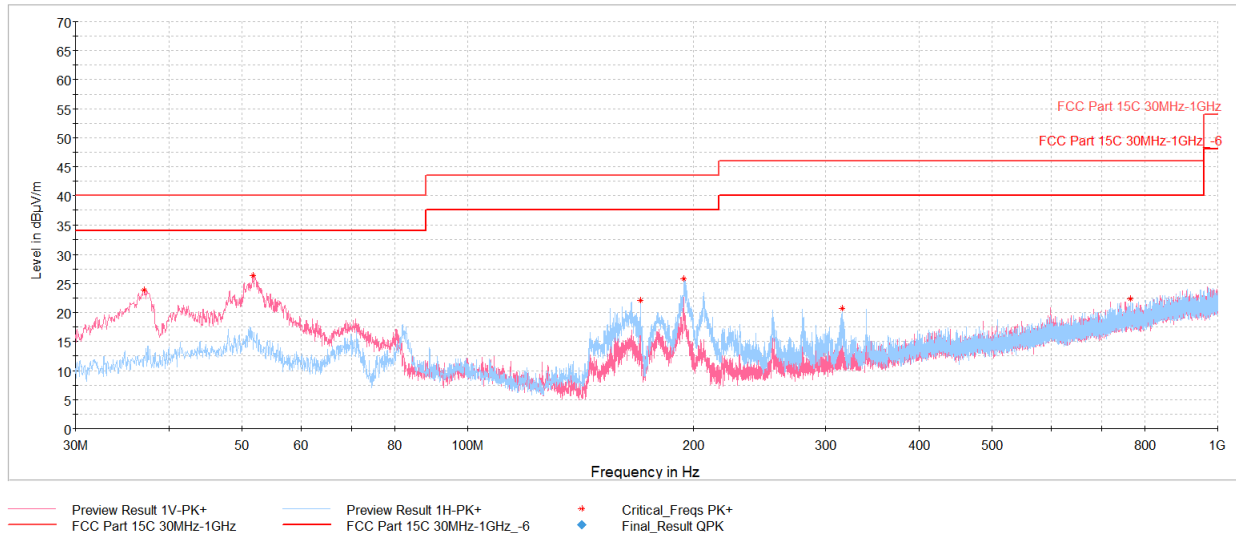
FCC ID: BCGA2903 IC: 579C-A2903		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2311270064-22.BCG	Test Dates: 11/28/2023 - 03/05/2024	EUT Type: Tablet Device	Page 170 of 176

V 10.6 9/14/2023

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TxBF Radiated Spurious Emissions (Below 1GHz)

§15.209; RSS-Gen [8.9]



Plot 7-214. Radiated Spurious Emissions Below 1GHz TxBF (HDR4, ePA – 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 [dBuV/m]	Limit [dBuV/m]	Margin [dB]
37.03	Max Peak	V	100	70	-67.89	-15.22	23.89	40.00	-16.11
51.73	Max Peak	V	100	281	-67.51	-13.13	26.36	40.00	-13.64
169.68	Max Peak	H	200	156	-65.75	-19.19	22.06	43.52	-21.46
193.98	Max Peak	H	200	203	-64.27	-16.94	25.79	43.52	-17.73
315.76	Max Peak	H	100	34	-72.29	-13.96	20.75	46.02	-25.27
763.95	Max Peak	H	200	198	-79.44	-5.23	22.33	46.02	-23.69

Table 7-55. . Radiated Spurious Emissions Below 1GHz TxBF (HDR4, ePA – 5844MHz), with AC/DC Adapter

FCC ID: BCGA2903 IC: 579C-A2903		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2311270064-22.BCG	Test Dates: 11/28/2023 - 03/05/2024	EUT Type: Tablet Device	Page 171 of 176

V 10.6 9/14/2023

7.8 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. 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 (dBμV)	
	Quasi-peak	Average
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30	60	50

Table 7-56. 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: BCGA2903 IC: 579C-A2903		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2311270064-22.BCG	Test Dates: 11/28/2023 - 03/05/2024	EUT Type: Tablet Device	Page 172 of 176

V 10.6 9/14/2023

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Test Setup

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

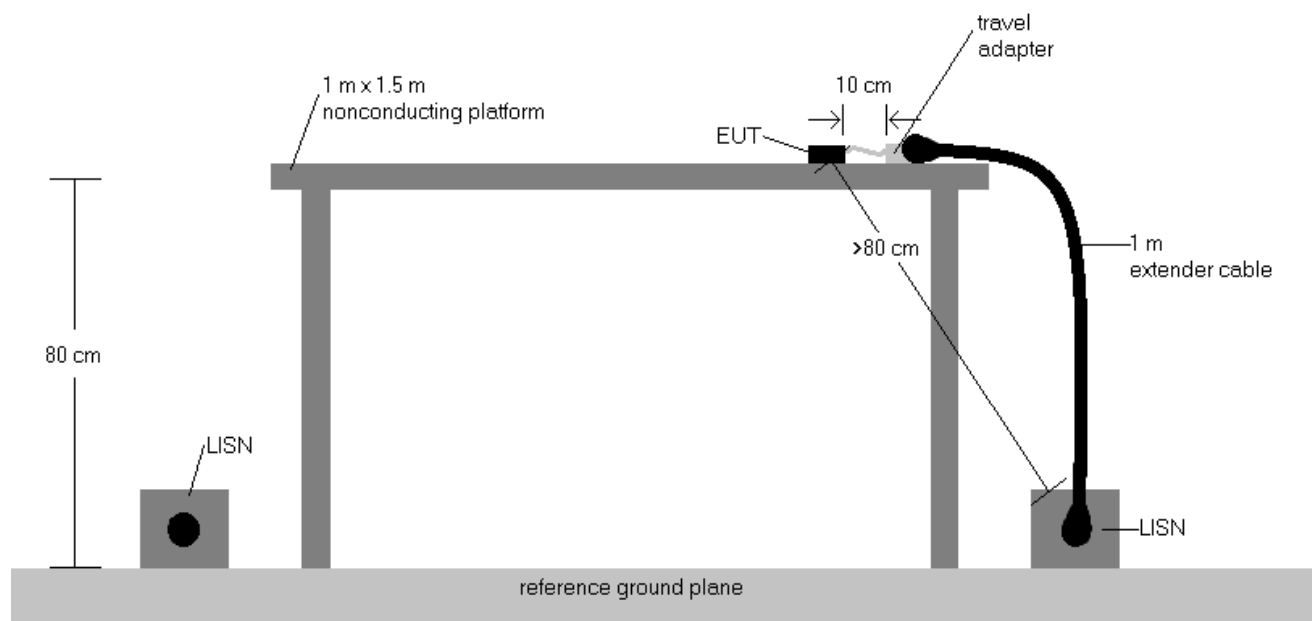


Figure 7-8. Test Instrument & Measurement Setup

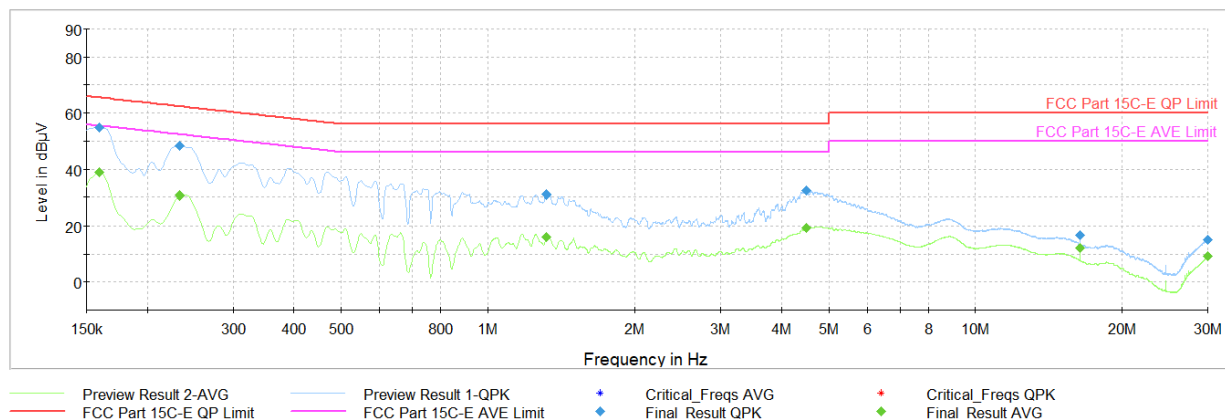
Test Notes

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 to 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. $\text{Corr. (dB)} = \text{Cable loss (dB)} + \text{LISN insertion factor (dB)}$
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 plots are made using quasi-peak and average detectors.
8. Deviations to the Specifications: None.

FCC ID: BCGA2903 IC: 579C-A2903		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2311270064-22.BCG	Test Dates: 11/28/2023 - 03/05/2024	EUT Type: Tablet Device	Page 173 of 176

V 10.6 9/14/2023

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Plot 7-215. AC Line Conducted Plot TxBF (HDR4, ePA – 5245MHz) (L1) with AC/DC Adapter

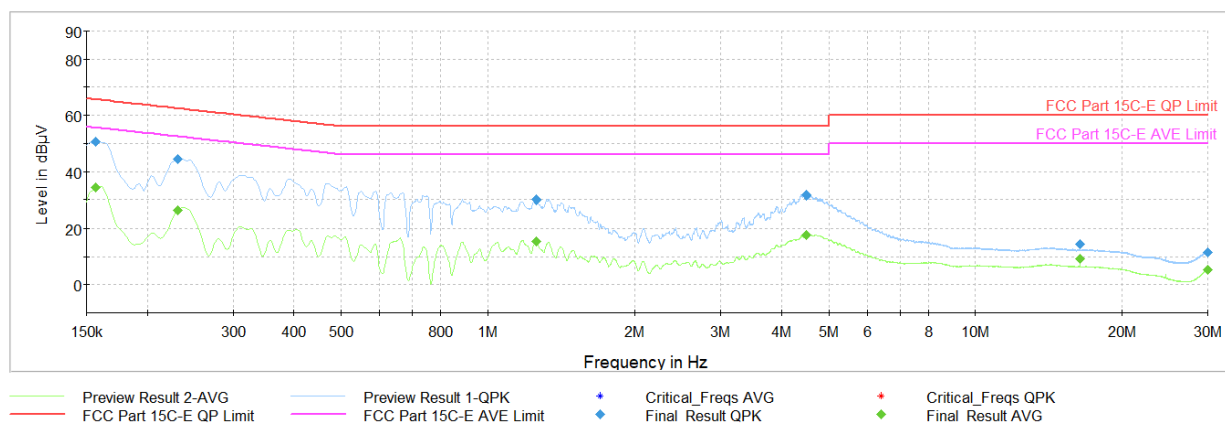
Frequency [MHz]	Process State	QuasiPeak [dBμV]	Average [dBμV]	Limit [dBμV]	Margin [dB]	Line	PE
0.159	FINAL	—	38.84	55.52	-16.68	L1	GND
0.159	FINAL	54.9	—	65.52	-10.58	L1	GND
0.233	FINAL	—	30.83	52.33	-21.51	L1	GND
0.233	FINAL	48.3	—	62.33	-14.05	L1	GND
1.320	FINAL	—	16.03	46.00	-29.97	L1	GND
1.320	FINAL	31.0	—	56.00	-25.03	L1	GND
4.488	FINAL	32.4	—	56.00	-23.56	L1	GND
4.488	FINAL	—	19.38	46.00	-26.62	L1	GND
16.409	FINAL	16.8	—	60.00	-43.17	L1	GND
16.409	FINAL	—	12.11	50.00	-37.89	L1	GND
29.967	FINAL	—	9.12	50.00	-40.88	L1	GND
29.967	FINAL	15.2	—	60.00	-44.78	L1	GND

Table 7-57. AC Line Conducted TxBF (HDR4, ePA – 5245MHz) (L1) with AC/DC Adapter

FCC ID: BCGA2903 IC: 579C-A2903		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2311270064-22.BCG	Test Dates: 11/28/2023 - 03/05/2024	EUT Type: Tablet Device	Page 174 of 176

V 10.6 9/14/2023

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Plot 7-216. AC Line Conducted Plot TxBF (HDR4, ePA – 5245MHz) (N) with AC/DC Adapter

Frequency [MHz]	Process State	QuasiPeak [dBμV]	Average [dBμV]	Limit [dBμV]	Margin [dB]	Line	PE
0.157	FINAL	—	34.24	55.63	-21.40	N	GND
0.157	FINAL	50.7	—	65.63	-14.90	N	GND
0.231	FINAL	—	26.64	52.41	-25.78	N	GND
0.231	FINAL	44.3	—	62.41	-18.14	N	GND
1.257	FINAL	—	15.49	46.00	-30.51	N	GND
1.257	FINAL	30.1	—	56.00	-25.91	N	GND
4.490	FINAL	31.7	—	56.00	-24.33	N	GND
4.493	FINAL	—	17.80	46.00	-28.20	N	GND
16.413	FINAL	14.5	—	60.00	-45.46	N	GND
16.413	FINAL	—	9.12	50.00	-40.88	N	GND
29.965	FINAL	—	5.18	50.00	-44.82	N	GND
29.965	FINAL	11.5	—	60.00	-48.53	N	GND

Table 7-58. AC Line Conducted TxBF (HDR4, ePA – 5245MHz) (N) with AC/DC Adapter

FCC ID: BCGA2903 IC: 579C-A2903			MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2311270064-22.BCG	Test Dates: 11/28/2023 - 03/05/2024	EUT Type: Tablet Device	Page 175 of 176	

V 10.6 9/14/2023

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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: BCGA2903, IC: 579C-A2903** is in compliance with Part 15 Subpart E (15.407) of the FCC Rules and RSS-247 of the Innovation, Science, and Economic Development Canada Rules.

FCC ID: BCGA2903 IC: 579C-A2903		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N: 1C2311270064-22.BCG	Test Dates: 11/28/2023 - 03/05/2024	EUT Type: Tablet Device	Page 176 of 176

V 10.6 9/14/2023

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