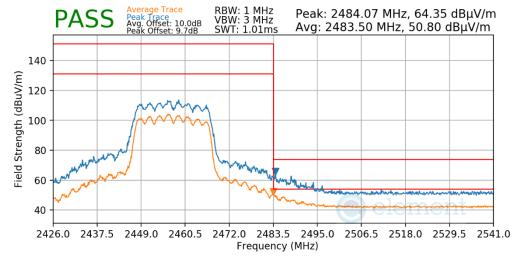
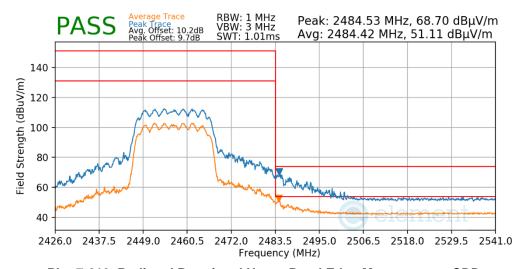


Mode:802.11ax - SUData Rate:MCS4Distance of Measurements:3 MetersOperating Frequency:2457MHzChannel:10



Plot 7-618. Radiated Restricted Upper Band Edge Measurement CDD

Mode:802.11ax - SUData Rate:MCS9Distance of Measurements:3 MetersOperating Frequency:2457MHzChannel:10

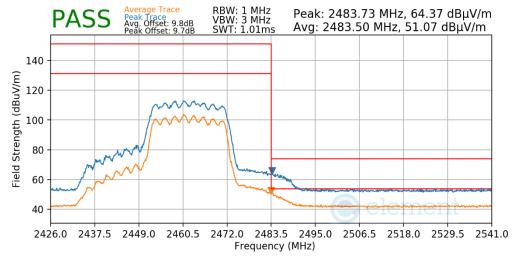


Plot 7-619. Radiated Restricted Upper Band Edge Measurement CDD

FCC ID: BCGA2117 IC: 579C-A2117	element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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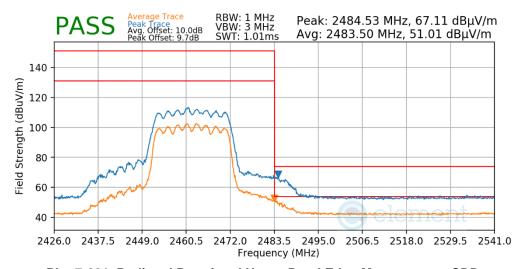


Mode:802.11ax - SUData Rate:MCS2Distance of Measurements:3 MetersOperating Frequency:2462MHzChannel:11



Plot 7-620. Radiated Restricted Upper Band Edge Measurement CDD

Mode:802.11ax - SUData Rate:MCS4Distance of Measurements:3 MetersOperating Frequency:2462MHzChannel:11



Plot 7-621. Radiated Restricted Upper Band Edge Measurement CDD

FCC ID: BCGA2117 IC: 579C-A2117	element)	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
Test Report S/N:	Test Dates:	EUT Type:	Dogo 274 of 200
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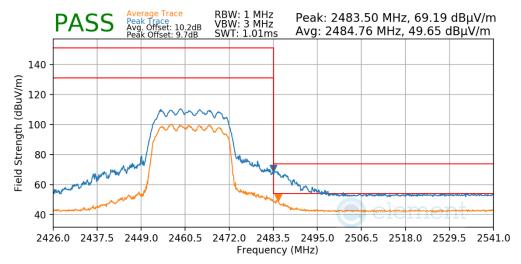
 Mode:
 802.11ax - SU

 Data Rate:
 MCS9

 Distance of Measurements:
 3 Meters

 Operating Frequency:
 2462MHz

 Channel:
 11



Plot 7-622. Radiated Restricted Upper Band Edge Measurement CDD

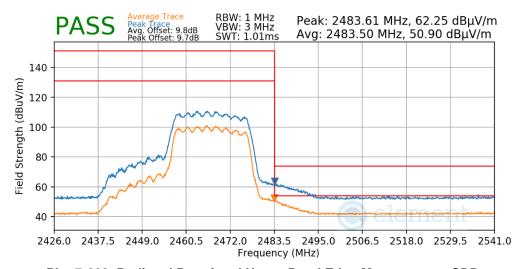
 Mode:
 802.11ax - SU

 Data Rate:
 MCS2

 Distance of Measurements:
 3 Meters

 Operating Frequency:
 2467MHz

 Channel:
 12



Plot 7-623. Radiated Restricted Upper Band Edge Measurement CDD

FCC ID: BCGA2117 IC: 579C-A2117	element	lement MEASUREMENT REPORT (CERTIFICATION)	
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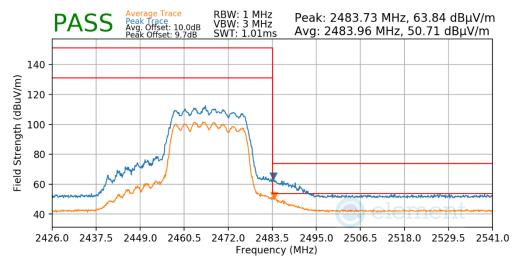
 Mode:
 802.11ax - SU

 Data Rate:
 MCS4

 Distance of Measurements:
 3 Meters

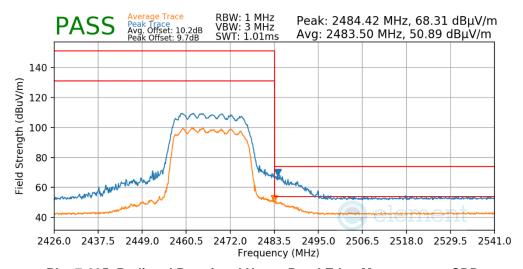
 Operating Frequency:
 2467MHz

 Channel:
 12



Plot 7-624. Radiated Restricted Upper Band Edge Measurement CDD

Mode:802.11ax - SUData Rate:MCS9Distance of Measurements:3 MetersOperating Frequency:2467MHzChannel:12



Plot 7-625. Radiated Restricted Upper Band Edge Measurement CDD

FCC ID: BCGA2117 IC: 579C-A2117	element)	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Technical Manager
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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 7-68 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 7-68. 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

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Test Setup

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

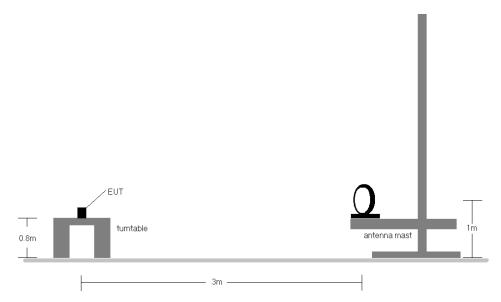


Figure 7-7. Radiated Test Setup < 30Mhz

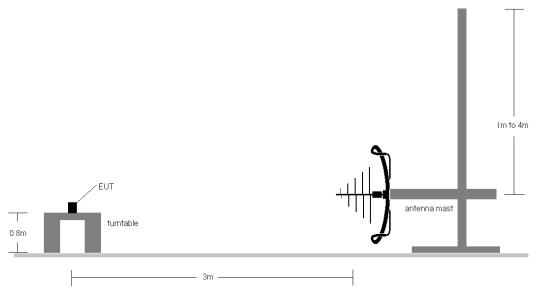


Figure 7-8. Radiated Test Setup < 1GHz

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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 7-68.
- 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. Both configurations below were investigated, and the worst case has been reported.
 - a. EUT powered by AC/DC adaptor to USB-C Power Pack to Magnetic Charging Cable
 - b. EUT powered by host PC via USB-C Power Pack to Magnetic Charging Cable
- 9. 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.
- 10. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification.
- 11. The unit was tested with all possible modes and only the highest emission is reported.
- 12. All antenna configurations were investigated and only the worst case is reported.

Sample Calculations

Determining Spurious Emissions Levels

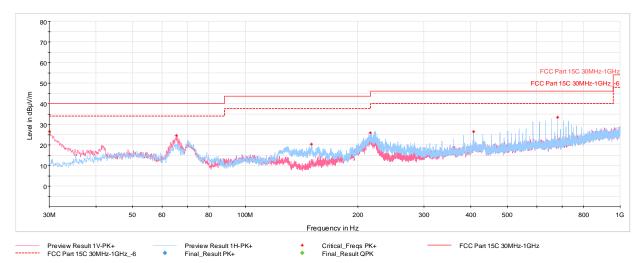
- Field Strength Level [dBμV/m] = Analyzer Level [dBm] + 107 + AFCL [dB/m]
- O AFCL [dB/m] = Antenna Factor [dB/m] + Cable Loss [dB] Preamplifier Gain [dB]
- Margin [dB] = Field Strength Level [dBμV/m] Limit [dBμV/m]

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CDD Radiated Spurious Emissions Measurements (Below 1GHz)

§15.209; RSS-Gen [8.9]



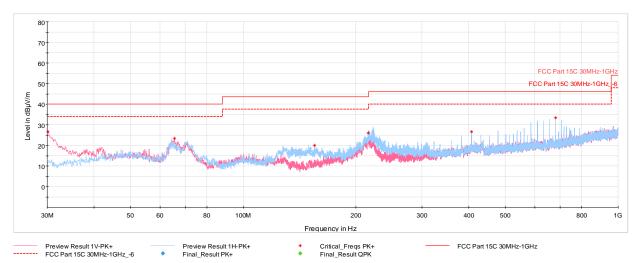
Plot 7-626. Radiated Spurious Emissions below 1GHz CDD 11n Ch.1, with AC/DC Adapter

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]
30.10	Max Peak	٧	100	36	-64.68	-15.84	26.48	40.00	-13.52
65.65	Max Peak	V	100	349	-68.07	-14.42	24.51	40.00	-15.49
150.13	Max Peak	Н	200	243	-70.45	-16.24	20.31	43.52	-23.21
215.46	Max Peak	Н	100	258	-68.36	-12.82	25.82	43.52	-17.70
406.12	Max Peak	Н	100	68	-73.45	-7.16	26.39	46.02	-19.63
680.87	Max Peak	Н	100	27	-70.88	-2.77	33.35	46.02	-12.67

Table 7-69. Radiated Spurious Emissions below 1GHz CDD 11n Ch.1, with AC/DC Adapter

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Plot 7-627. Radiated Spurious Emissions below 1GHz CDD 11ax - SU Ch.6, 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]
30.15	Max Peak	V	100	40	-64.49	-15.85	26.66	40.00	-13.34
65.55	Max Peak	V	100	330	-69.17	-14.38	23.45	40.00	-16.55
155.23	Max Peak	Н	200	266	-71.02	-15.98	20.00	43.52	-23.52
215.61	Max Peak	Н	100	281	-68.20	-12.82	25.98	43.52	-17.54
406.17	Max Peak	Н	100	184	-73.16	-7.16	26.68	46.02	-19.34
680.87	Max Peak	Н	100	0	-70.80	-2.77	33.43	46.02	-12.59

Table 7-70. Radiated Spurious Emissions below 1GHz CDD 11ax - SU Ch.6, with AC/DC Adapter

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

Table 7-71. 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
- 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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^{*}Decreases with the logarithm of the frequency.



Test Setup

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

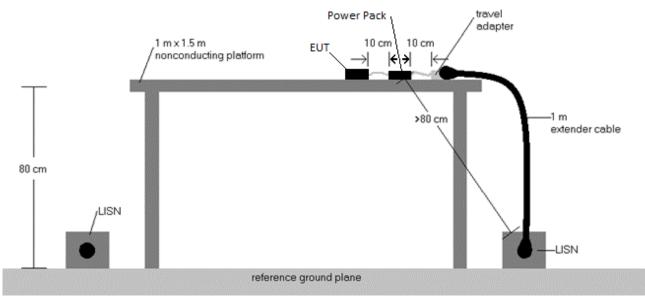


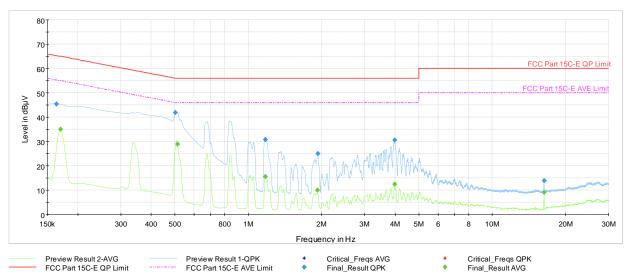
Figure 7-9. Test Instrument & Measurement Setup

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 to USB-C Power Pack to Magnetic Charging Cable
 - b. EUT powered by host PC via USB-C Power Pack to Magnetic Charging Cable
- 3. The limit for an intentional radiator from 150kHz to 30MHz are specified in Part 15.207 and RSS-Gen(8.8).
- 4. Corr. (dB) = Cable loss (dB) + LISN insertion factor (dB)
- 5. QP/AV Level (dB μ V) = QP/AV Analyzer/Receiver Level (dB μ V) + Corr. (dB)
- 6. Margin (dB) = QP/AV Level (dB μ V) QP/AV Limit (dB μ V)
- 7. Traces shown in plot are made using quasi peak and average detectors.
- 8. Deviations to the Specifications: None.
- 9. The unit was tested with all possible modes and only the highest emission is reported.

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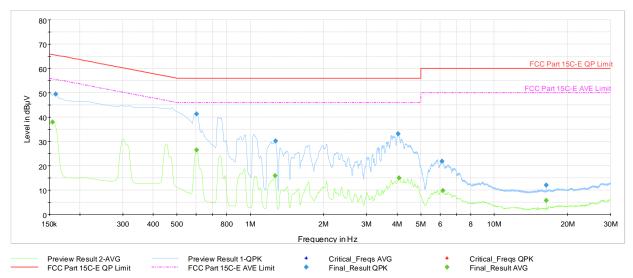
Plot 7-628. AC Line Conducted Plot with CDD 11n Ch.1 (L1, with AC/DC Adapter)

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.164	FINAL	45.33		65.28	-19.95	L1	GND
0.170	FINAL		35.08	54.95	-19.87	L1	GND
0.501	FINAL	41.82	1	56.00	-14.18	L1	GND
0.512	FINAL		28.85	46.00	-17.15	L1	GND
1.176	FINAL	30.78		56.00	-25.22	L1	GND
1.176	FINAL		15.60	46.00	-30.40	L1	GND
1.923	FINAL		9.96	46.00	-36.04	L1	GND
1.925	FINAL	24.93		56.00	-31.07	L1	GND
3.984	FINAL	30.50		56.00	-25.50	L1	GND
3.986	FINAL		12.33	46.00	-33.67	L1	GND
16.296	FINAL		9.02	50.00	-40.98	L1	GND
16.298	FINAL	13.88		60.00	-46.12	L1	GND

Table 7-72. AC Line Conducted Data with CDD 11n Ch.1 (L1, with AC/DC Adapter)

FCC ID: BCGA2117 IC: 579C-A2117	element)	element MEASUREMENT REPORT (CERTIFICATION)	
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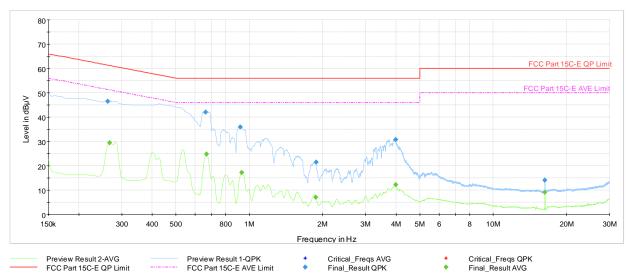
Plot 7-629. AC Line Conducted Plot with CDD 11n Ch.1 (N, with AC/DC Adapter)

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.155	FINAL		37.98	55.75	-17.78	N	GND
0.159	FINAL	49.40	-	65.52	-16.11	N	GND
0.602	FINAL		26.50	46.00	-19.50	N	GND
0.602	FINAL	41.31	-	56.00	-14.69	N	GND
1.262	FINAL		15.93	46.00	-30.07	N	GND
1.268	FINAL	30.11		56.00	-25.89	N	GND
4.043	FINAL	33.11		56.00	-22.89	N	GND
4.065	FINAL		14.91	46.00	-31.09	N	GND
6.110	FINAL	21.83		60.00	-38.17	N	GND
6.146	FINAL		9.79	50.00	-40.21	N	GND
16.303	FINAL		5.79	50.00	-44.21	N	GND
16.303	FINAL	12.09		60.00	-47.91	N	GND

Table 7-73. AC Line Conducted Data with CDD 11n Ch.1 (N, with AC/DC Adapter)

FCC ID: BCGA2117 IC: 579C-A2117	element)	element MEASUREMENT REPORT (CERTIFICATION)	
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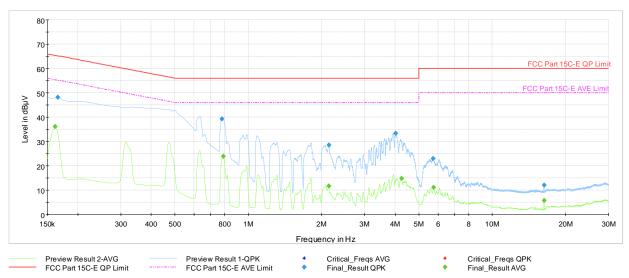
Plot 7-630. AC Line Conducted Plot with CDD 11ax - SU Ch.6 (L1, with AC/DC Adapter)

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.263	FINAL	46.45		61.35	-14.90	L1	GND
0.267	FINAL		29.41	51.21	-21.80	L1	GND
0.661	FINAL	42.01		56.00	-13.99	L1	GND
0.668	FINAL		24.78	46.00	-21.22	L1	GND
0.920	FINAL	35.96		56.00	-20.04	L1	GND
0.929	FINAL		17.25	46.00	-28.75	L1	GND
1.871	FINAL		7.06	46.00	-38.94	L1	GND
1.878	FINAL	21.52		56.00	-34.48	L1	GND
3.975	FINAL	30.80		56.00	-25.20	L1	GND
3.977	FINAL		12.21	46.00	-33.79	L1	GND
16.292	FINAL		9.00	50.00	-41.00	L1	GND
16.292	FINAL	14.04		60.00	-45.96	L1	GND

Table 7-74. AC Line Conducted Data with CDD 11ax - SU Ch.6 (L1, with AC/DC Adapter)

FCC ID: BCGA2117 IC: 579C-A2117	element	ment MEASUREMENT REPORT (CERTIFICATION)	
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Plot 7-631. AC Line Conducted Plot with CDD 11ax - SU Ch.6 (N, with AC/DC Adapter)

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.161	FINAL		36.17	55.40	-19.23	N	GND
0.166	FINAL	48.06		65.17	-17.11	Ν	GND
0.780	FINAL	39.21		56.00	-16.79	N	GND
0.791	FINAL		23.89	46.00	-22.11	N	GND
2.139	FINAL	28.47		56.00	-27.53	N	GND
2.141	FINAL		11.65	46.00	-34.35	N	GND
4.022	FINAL	33.24		56.00	-22.76	N	GND
4.254	FINAL		14.77	46.00	-31.23	N	GND
5.721	FINAL	23.00		60.00	-37.00	N	GND
5.755	FINAL		11.02	50.00	-38.98	N	GND
16.294	FINAL		5.77	50.00	-44.23	N	GND
16.294	FINAL	12.04		60.00	-47.96	N	GND

Table 7-75. AC Line Conducted Data with CDD 11ax - SU Ch.6 (N, with AC/DC Adapter)

FCC ID: BCGA2117 IC: 579C-A2117	element	ement MEASUREMENT REPORT (CERTIFICATION)	
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8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Apple Head Mounted Device FCC ID: BCGA2117, IC: 579C-A2117** 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: BCGA2117 IC: 579C-A2117	element	ment MEASUREMENT REPORT (CERTIFICATION)	
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