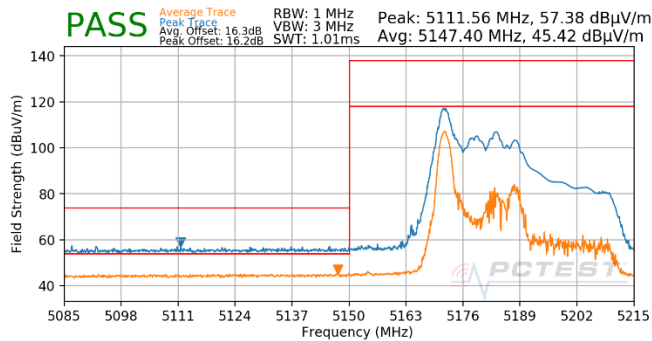
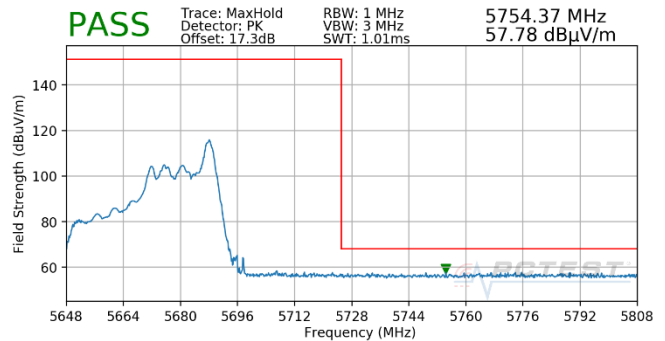


7.6.13 CDD/SDM Radiated Band Edge Measurements (40MHz BW) §15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

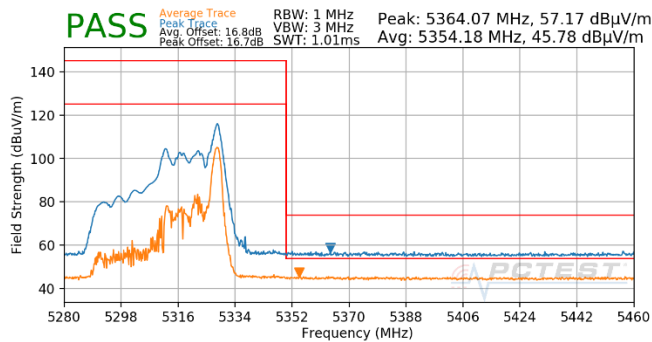
RU26



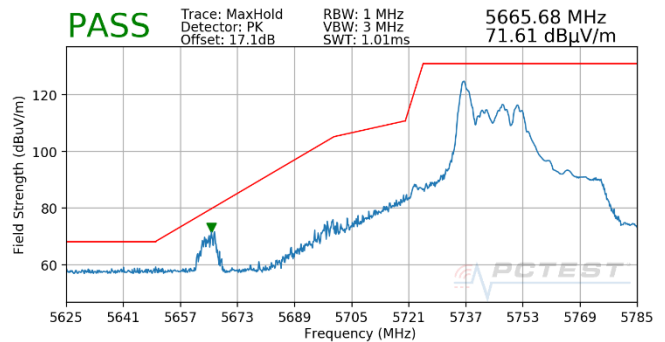
Plot 7-551. SDM (Pk & Avg, RU26, Index 0, Ch.38, MCS11)



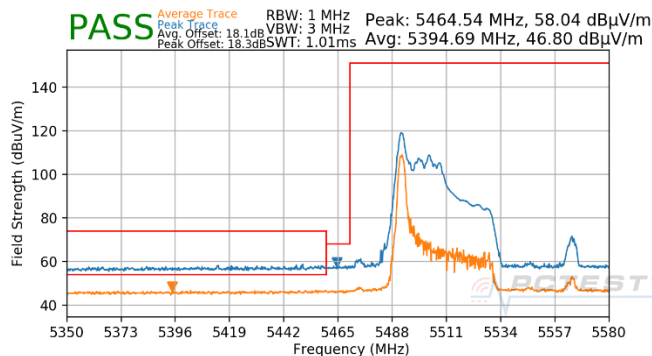
Plot 7-554. SDM (Pk, RU26, Index 17, Ch.134, MCS11)



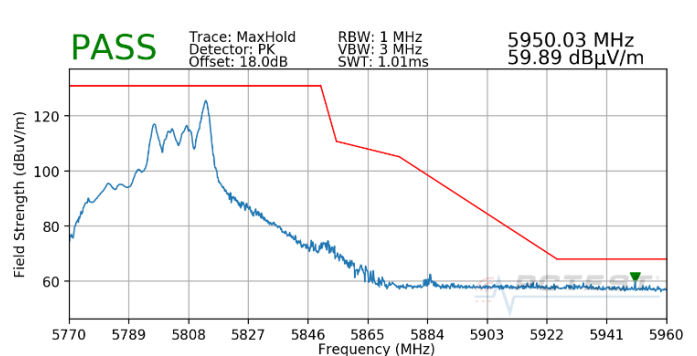
Plot 7-552. SDM (Pk & Avg, RU26, Index 17, Ch.62, MCS11)



Plot 7-555. CDD (Pk, RU26, Index 0, Ch.151, MCS11)



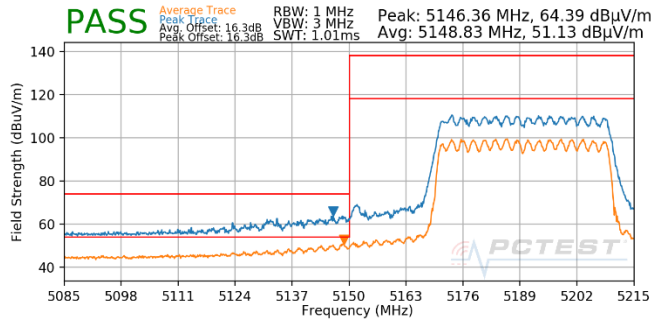
Plot 7-553. SDM (Pk & Avg, RU26, Index 0, Ch.102, MCS11)



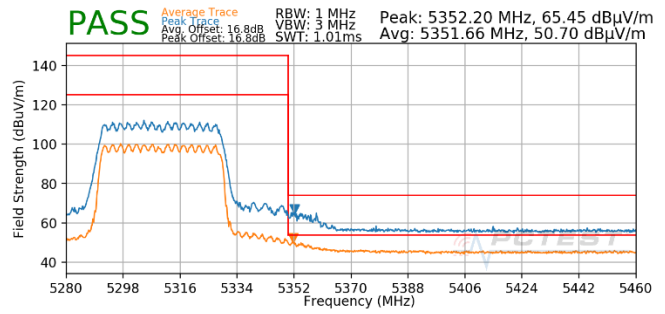
Plot 7-556. CDD (Pk, RU26, Index 17, Ch.159, MCS11)

FCC ID: BCGA2301 IC: 579C-A2301	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020002-16-R1.BCG	Test Dates: 12/12/2020 - 3/10/2021	EUT Type: Tablet Device	Page 240 of 257

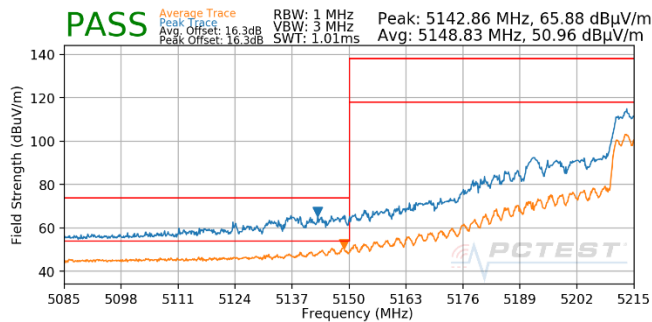
RU484



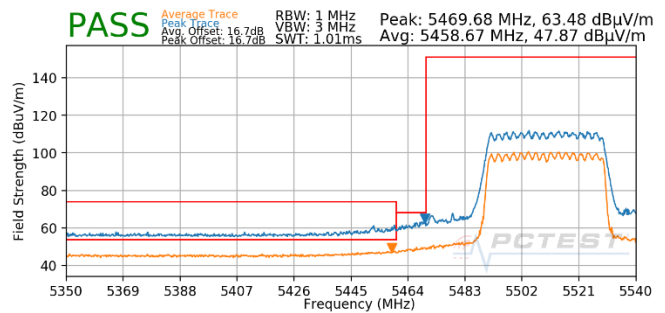
Plot 7-557. CDD (Pk & Avg, RU484, Index 65, Ch.38, MCS11)



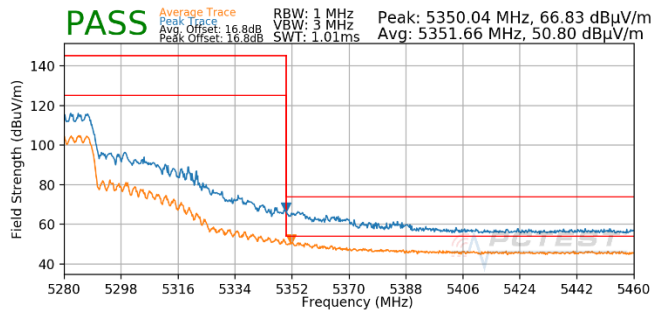
Plot 7-560. CDD (Pk & Avg, RU484, Index 65, Ch.62, MCS11)



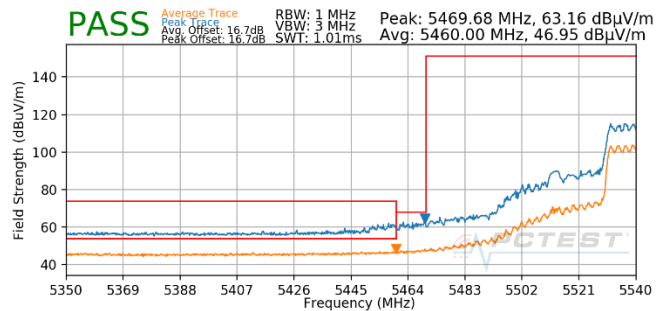
Plot 7-558. CDD (Pk & Avg, RU484, Index 65, Ch.46, MCS11)



Plot 7-561. CDD (Pk & Avg, RU484, Index 65, Ch.102, MCS11)

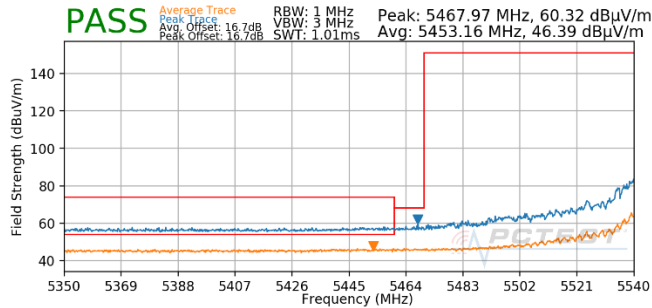


Plot 7-559. CDD (Pk & Avg, RU484, Index 65, Ch.54, MCS11)

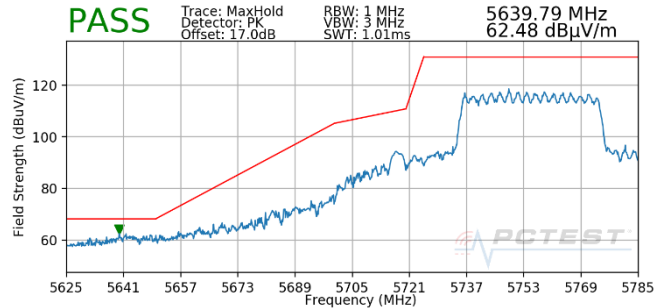


Plot 7-562. CDD (Pk & Avg, RU484, Index 65, Ch.110, MCS11)

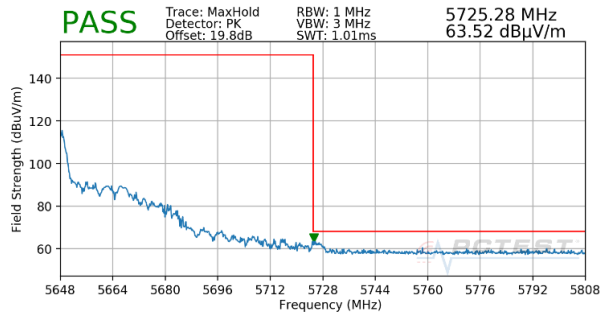
FCC ID: BCGA2301 IC: 579C-A2301	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020002-16-R1.BCG	Test Dates: 12/12/2020 - 3/10/2021	EUT Type: Tablet Device	Page 241 of 257



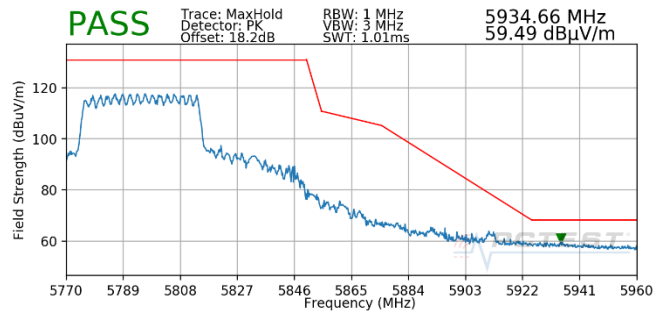
Plot 7-563. (FCC Only) CDD (Pk & Avg, RU484, Index 65, Ch.118, MCS11)



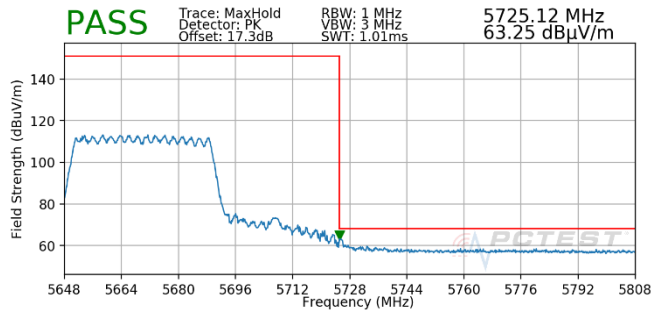
Plot 7-566. CDD (Pk, RU484, Index 65, Ch.151, MCS11)



Plot 7-564. (FCC Only) CDD (Pk, RU484, Index 65, Ch.126, MCS11)



Plot 7-567. CDD (Pk, RU484, Index 65, Ch.159, MCS11)



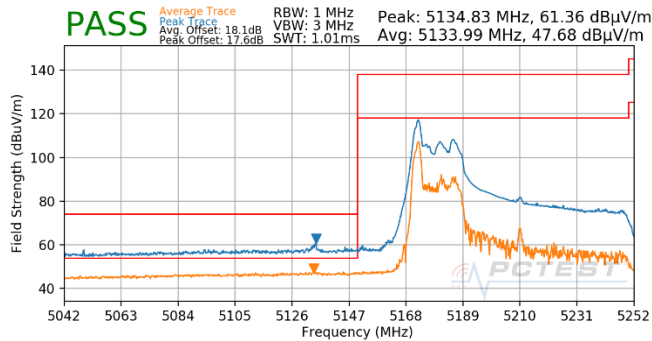
Plot 7-565. CDD (Pk, RU484, Index 65, Ch.134, MCS11)

FCC ID: BCGA2301 IC: 579C-A2301	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020002-16-R1.BCG	Test Dates: 12/12/2020 - 3/10/2021	EUT Type: Tablet Device	Page 242 of 257

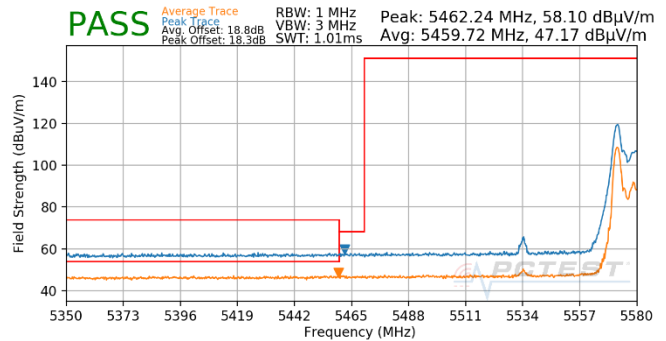
7.6.14 CDD/SDM Radiated Band Edge Measurements (80MHz BW)

§15.407(b.1)(b.2) §15.205 §15.209; RSS-Gen [8.9]

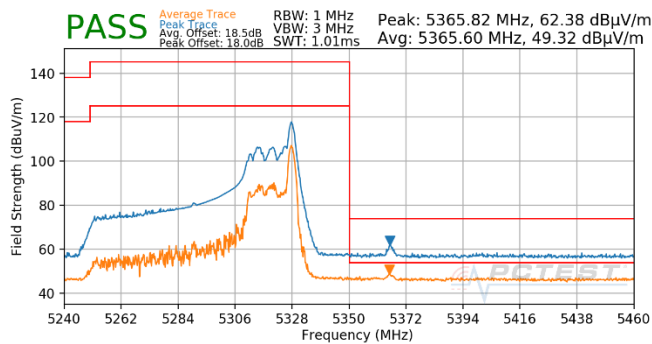
RU26



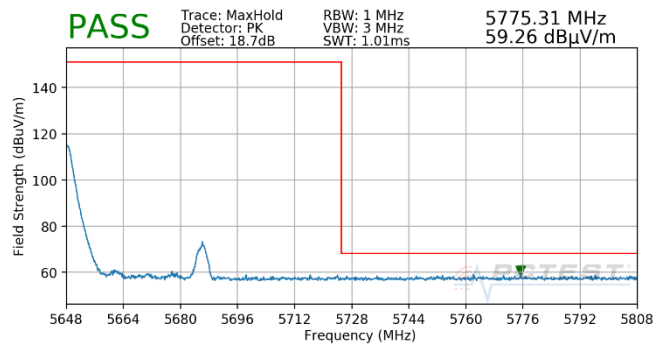
Plot 7-568. SDM (Pk & Avg, RU26, Index 0, Ch.42, MCS11)



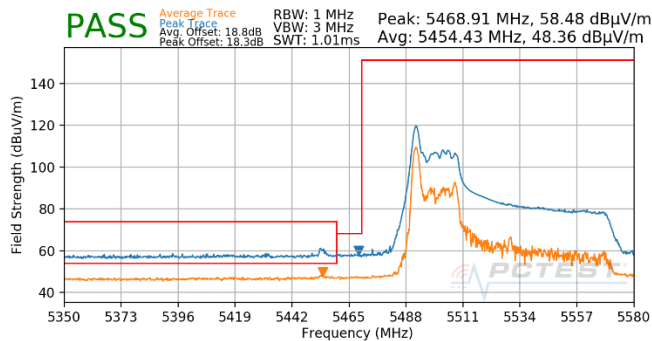
Plot 7-571. (FCC Only) SDM (Pk & Avg, RU26, Index 0, Ch.122, MCS11)



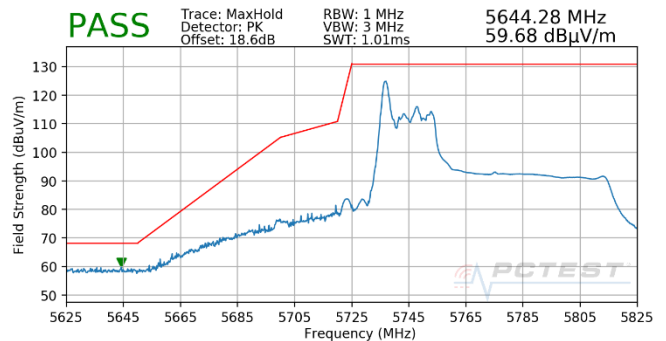
Plot 7-569. SDM (Pk & Avg, RU26, Index 36, Ch.58, MCS11)



Plot 7-572. (FCC Only) SDM (Pk, RU26, Index 36, Ch.122, MCS11)

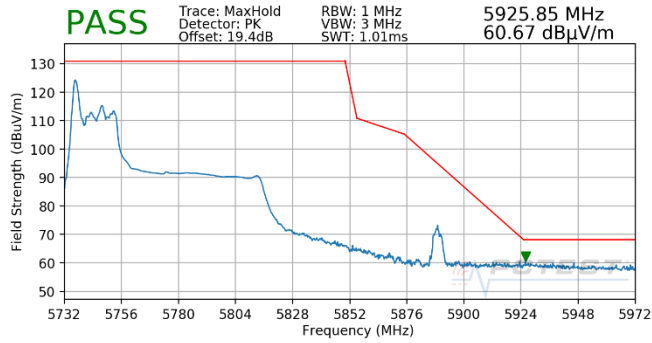


Plot 7-570. SDM (Pk & Avg, RU26, Index 0, Ch.106, MCS11)



Plot 7-573. CDD (Pk, RU26, Index 0, Ch.155, MCS11)

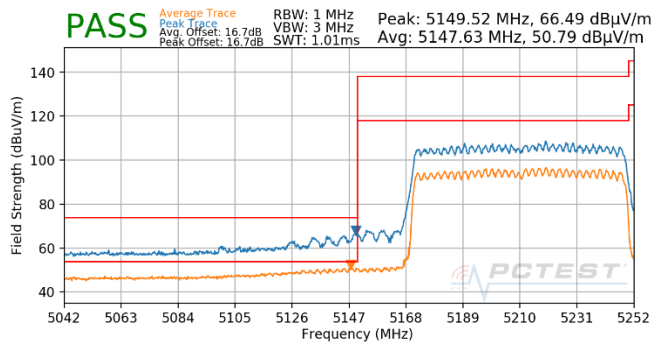
FCC ID: BCGA2301 IC: 579C-A2301	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020002-16-R1.BCG	Test Dates: 12/12/2020 - 3/10/2021	EUT Type: Tablet Device	Page 243 of 257



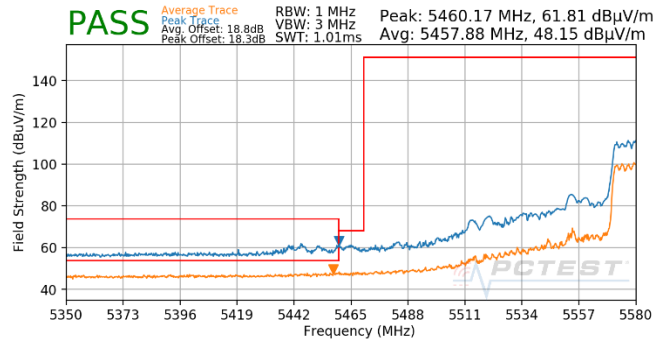
Plot 7-574. CDD (Pk, RU26, Index 36, Ch.155, MCS11)

FCC ID: BCGA2301 IC: 579C-A2301	 Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020002-16-R1.BCG	Test Dates: 12/12/2020 - 3/10/2021	EUT Type: Tablet Device	Page 244 of 257

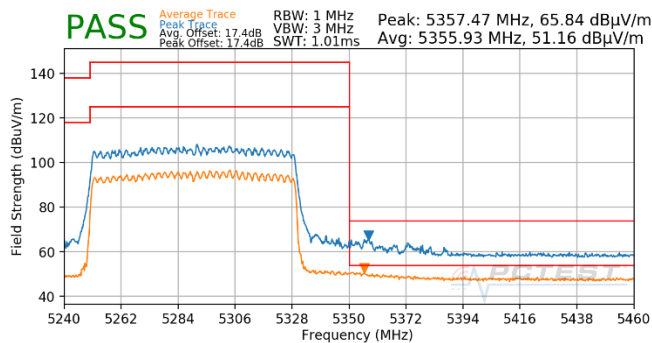
RU996



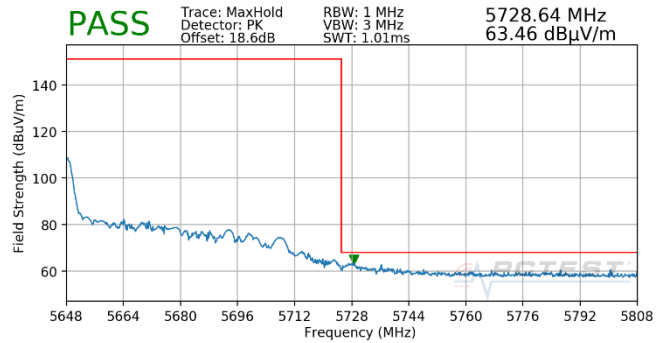
Plot 7-575. CDD (Pk & Avg, RU996, Index 67, Ch.42, MCS11)



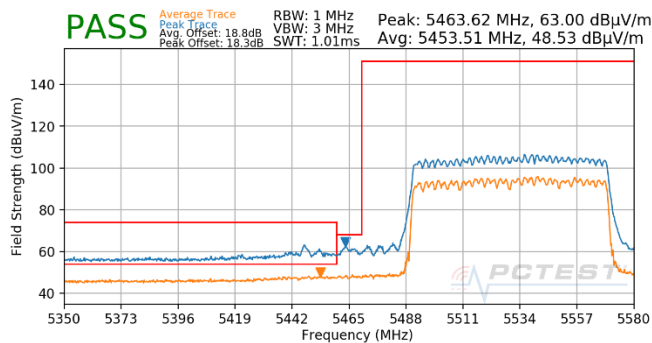
Plot 7-578. (FCC Only) CDD (Pk & Avg, RU996, Index 67, Ch.122, MCS11)



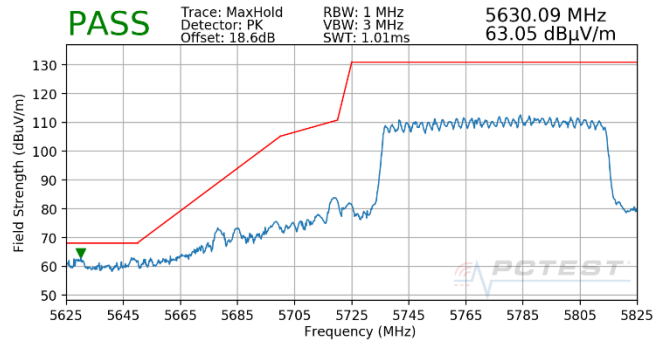
Plot 7-576. CDD (Pk & Avg, RU996, Index 67, Ch.58, MCS11)



Plot 7-579. (FCC Only) CDD (Pk, RU996, Index 67, Ch.122, MCS11)

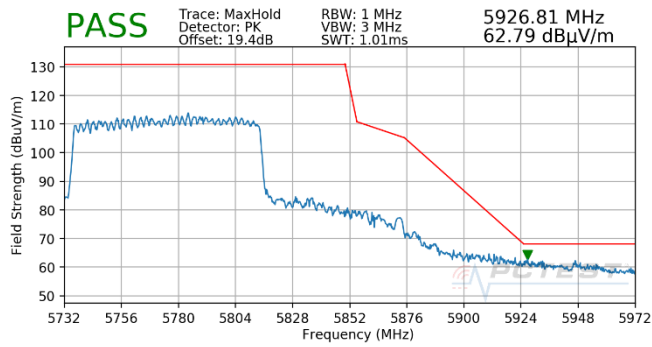


Plot 7-577. CDD (Pk & Avg, RU996, Index 67, Ch.106, MCS11)



Plot 7-580. CDD (Pk, RU996, Index 67, Ch.155, MCS11)

FCC ID: BCGA2301 IC: 579C-A2301	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020002-16-R1.BCG	Test Dates: 12/12/2020 - 3/10/2021	EUT Type: Tablet Device	Page 245 of 257



Plot 7-581. CDD (Pk, RU996, Index 67, Ch.155, MCS11)

FCC ID: BCGA2301 IC: 579C-A2301	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020002-16-R1.BCG	Test Dates: 12/12/2020 - 3/10/2021	EUT Type: Tablet Device	Page 246 of 257

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 and Table 7 of RSS-Gen (8.10) must not exceed the limits shown in Table 7-158 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 7-158. 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

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: BCGA2301 IC: 579C-A2301		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020002-16-R1.BCG	Test Dates: 12/12/2020 - 3/10/2021	EUT Type: Tablet Device	Page 247 of 257

Test Setup

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

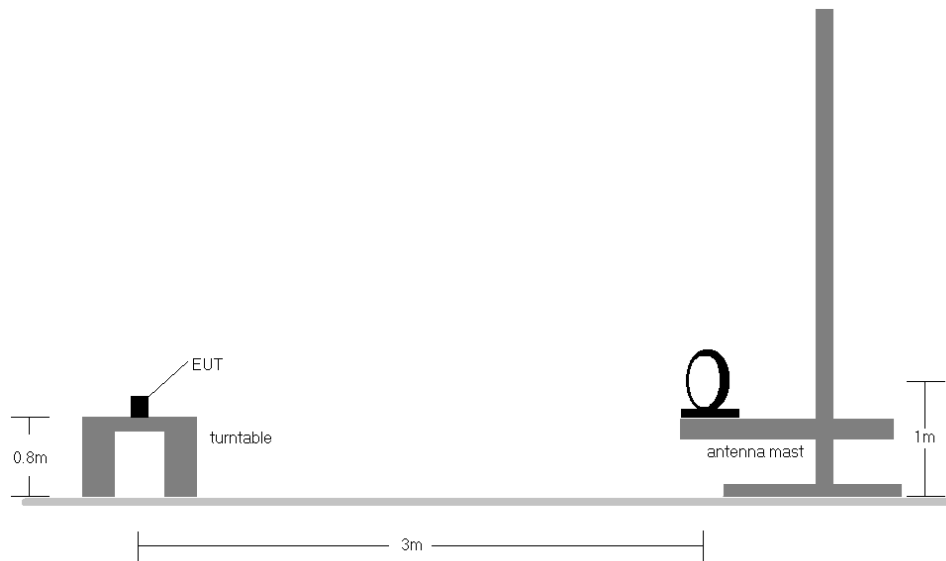


Figure 7-6. Radiated Test Setup < 30MHz

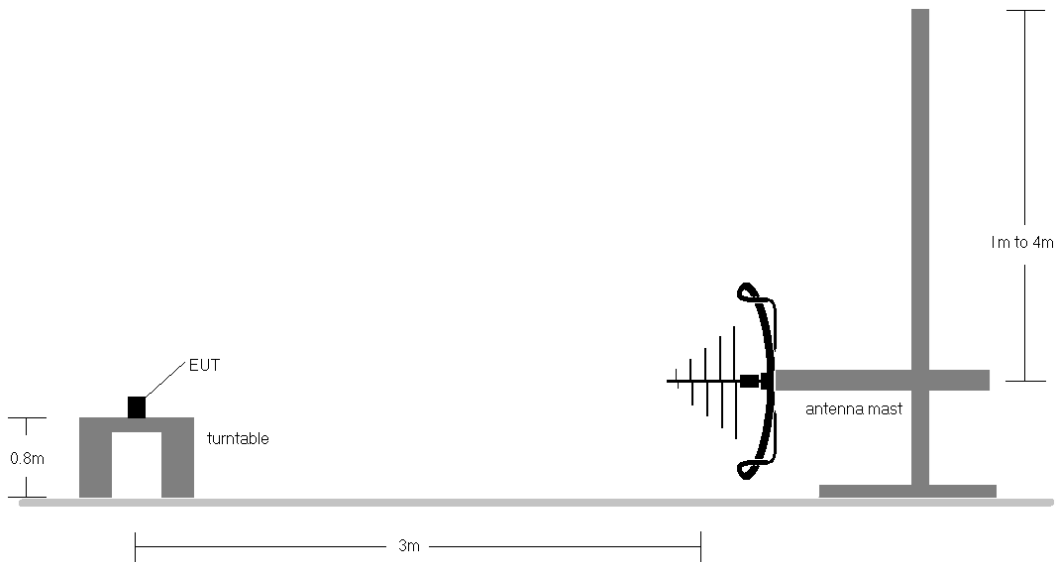


Figure 7-7. Radiated Test Setup < 1GHz

FCC ID: BCGA2301 IC: 579C-A2301	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020002-16-R1.BCG	Test Dates: 12/12/2020 - 3/10/2021	EUT Type: Tablet Device	Page 248 of 257

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 7-158.
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. 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
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. All antenna configurations and data rates were investigated and only the worst case are reported.

Sample Calculations

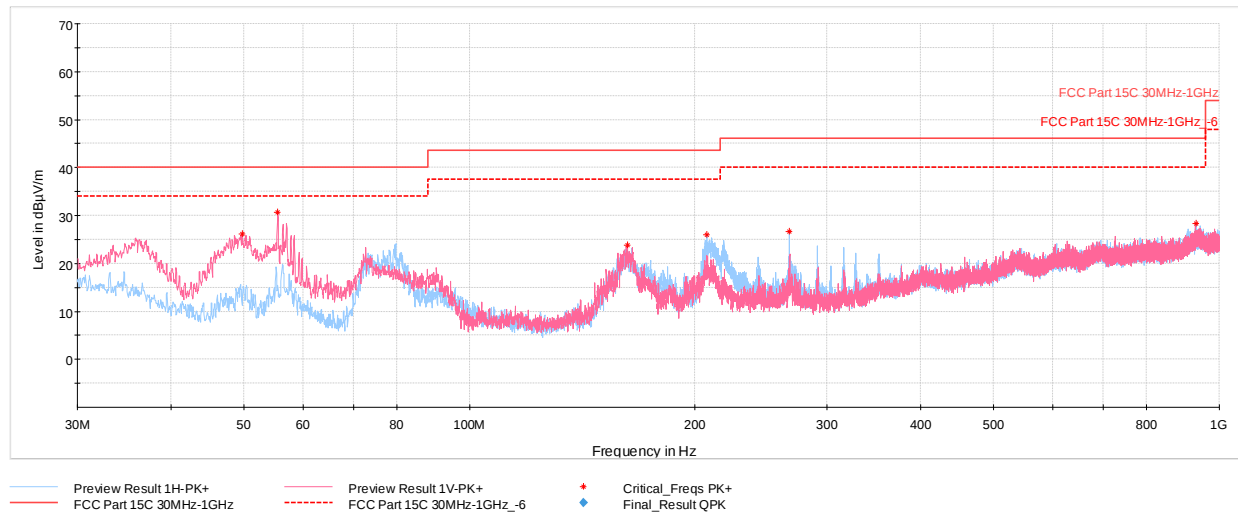
Determining Spurious Emissions Levels

- 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: BCGA2301 IC: 579C-A2301	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020002-16-R1.BCG	Test Dates: 12/12/2020 - 3/10/2021	EUT Type: Tablet Device	Page 249 of 257

CDD/SDM Radiated Spurious Emissions (Below 1GHz)

§15.209; RSS-Gen [8.9]

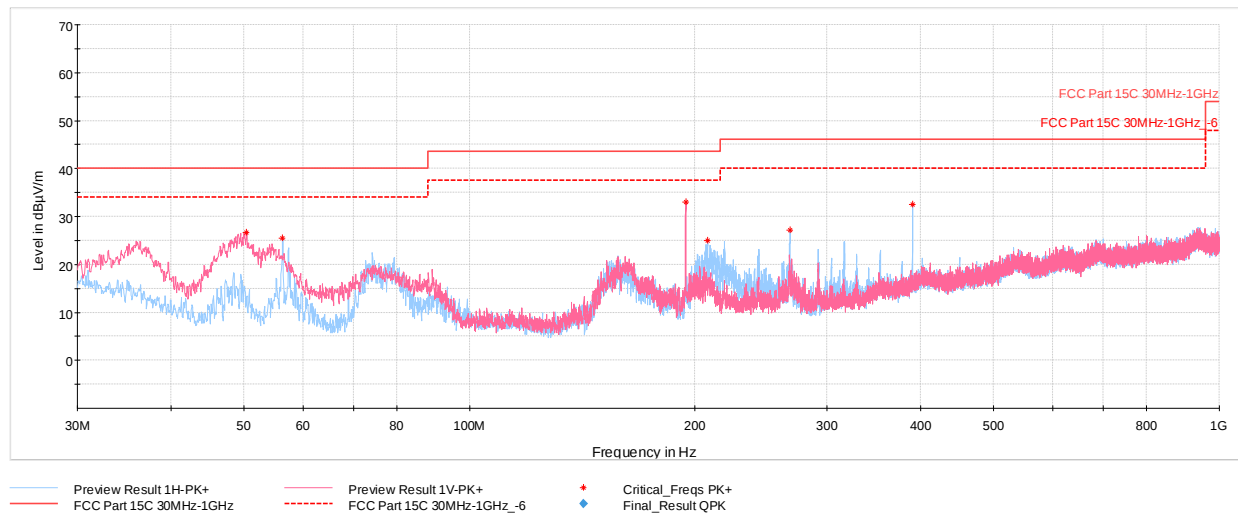


Plot 7-582. RSE below 1GHz CDD/SDM (RU26 – Ch.40), with AC/DC Adapter

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]
49.74	Max Peak	V	100	13	-59.77	-21.00	26.23	40.00	-13.77
55.46	Max Peak	V	250	9	-55.33	-21.00	30.67	40.00	-9.33
162.41	Max Peak	V	100	317	-66.27	-17.00	23.73	43.52	-19.79
207.17	Max Peak	H	100	323	-64.99	-16.00	26.01	43.52	-17.51
267.07	Max Peak	H	100	266	-66.42	-14.00	26.58	46.02	-19.44
932.15	Max Peak	H	250	312	-78.72	0.00	28.28	46.02	-17.74

Table 7-159. RSE below 1GHz CDD/SDM (RU26 – Ch.40), with AC/DC Adapter

FCC ID: BCGA2301 IC: 579C-A2301		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020002-16-R1.BCG	Test Dates: 12/12/2020 - 3/10/2021	EUT Type: Tablet Device	Page 250 of 257



Plot 7-583. RSE below 1GHz CDD/SDM (RU242 – Ch.40), 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]
50.42	Max Peak	V	100	5	-59.34	-21.07	26.59	40.00	-13.41
56.34	Max Peak	H	100	50	-60.50	-21.08	25.42	40.00	-14.58
194.27	Max Peak	V	250	297	-56.35	-17.58	33.07	43.52	-10.45
207.75	Max Peak	H	100	345	-65.59	-16.48	24.93	43.52	-18.59
267.46	Max Peak	H	100	103	-66.21	-13.68	27.11	46.02	-18.91
389.72	Max Peak	H	100	315	-64.85	-9.69	32.46	46.02	-13.56

Table 7-160. RSE below 1GHz CDD/SDM (RU242– Ch.40), with AC/DC Adapter

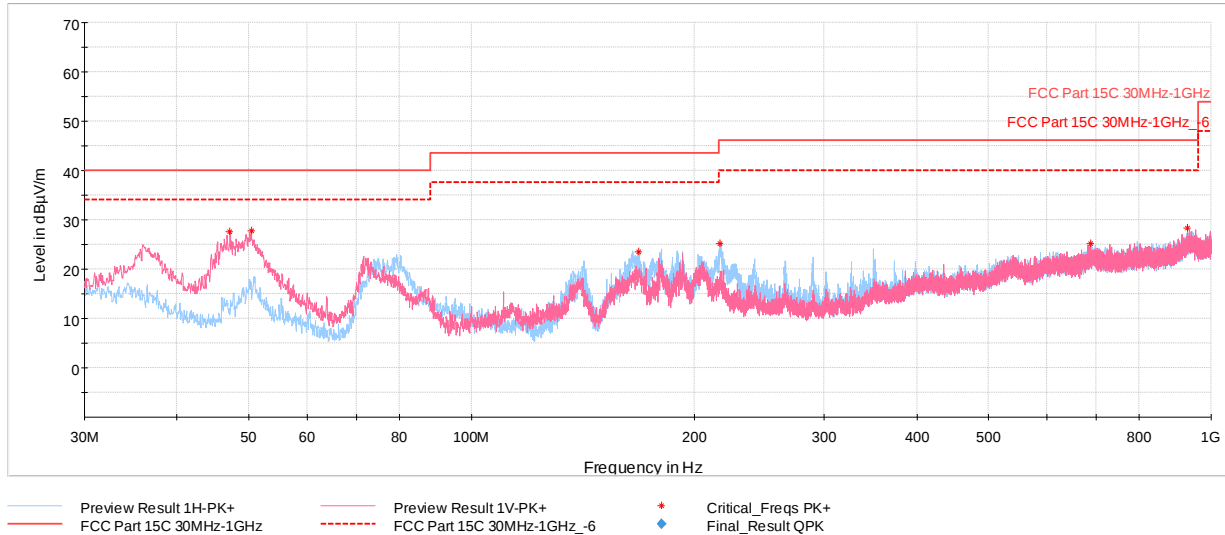
FCC ID: BCGA2301 IC: 579C-A2301	 PCTEST Proud to be part of 	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020002-16-R1.BCG	Test Dates: 12/12/2020 - 3/10/2021	EUT Type: Tablet Device	Page 251 of 257

Simultaneous TX Radiated Spurious Emissions Measurements (Below 1GHz)

§15.209; RSS-Gen [8.9]

Description	LTE (Band 66)	802.11a/n/ac/ax 5GHz
Antenna	Antenna 4b	Antenna 4b
Channel	132572	36
Operating Frequency (MHz)	1770	5180
Mode/Modulation	QPSK/1RB/20MHz	802.11ax/RU26/MCS11

Table 7-161. Worst Case Simultaneous Transmission Configuration



Plot 7-584. Radiated Spurious Emissions – Simultaneous Transmission 30MHz – 1GHz, 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]
47.17	Max Peak	V	100	357	-59.03	-20.42	27.55	40.00	-12.45
50.42	Max Peak	V	100	25	-58.18	-21.07	27.75	40.00	-12.25
168.42	Max Peak	H	100	260	-66.01	-17.55	23.44	43.52	-20.08
216.58	Max Peak	H	100	247	-65.16	-16.56	25.28	46.02	-20.74
686.88	Max Peak	V	250	15	-79.09	-2.79	25.12	46.02	-20.90
928.37	Max Peak	H	100	131	-78.55	-0.20	28.25	46.02	-17.77

Table 7-162. Radiated Spurious Emissions – Simultaneous Transmission 30MHz – 1GHz, with AC/DC Adapter)

FCC ID: BCGA2301 IC: 579C-A2301	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020002-16-R1.BCG	Test Dates: 12/12/2020 - 3/10/2021	EUT Type: Tablet Device	Page 252 of 257

7.8 AC Line Conducted Emission 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 and RSS-Gen (8.8).

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

Table 7-163. Conducted Limits

*Decreases with the logarithm of the frequency.

Test Procedures Used

ANSI C63.10-2013, Section 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

7. Analyzer center frequency was set to the frequency of the spurious emission of interest
8. RBW = 9kHz (for emissions from 150kHz – 30MHz)
9. Detector = RMS
10. Sweep time = auto couple
11. Trace mode = max hold
12. Trace was allowed to stabilize

FCC ID: BCGA2301 IC: 579C-A2301		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020002-16-R1.BCG	Test Dates: 12/12/2020 - 3/10/2021	EUT Type: Tablet Device	Page 253 of 257

Test Setup

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

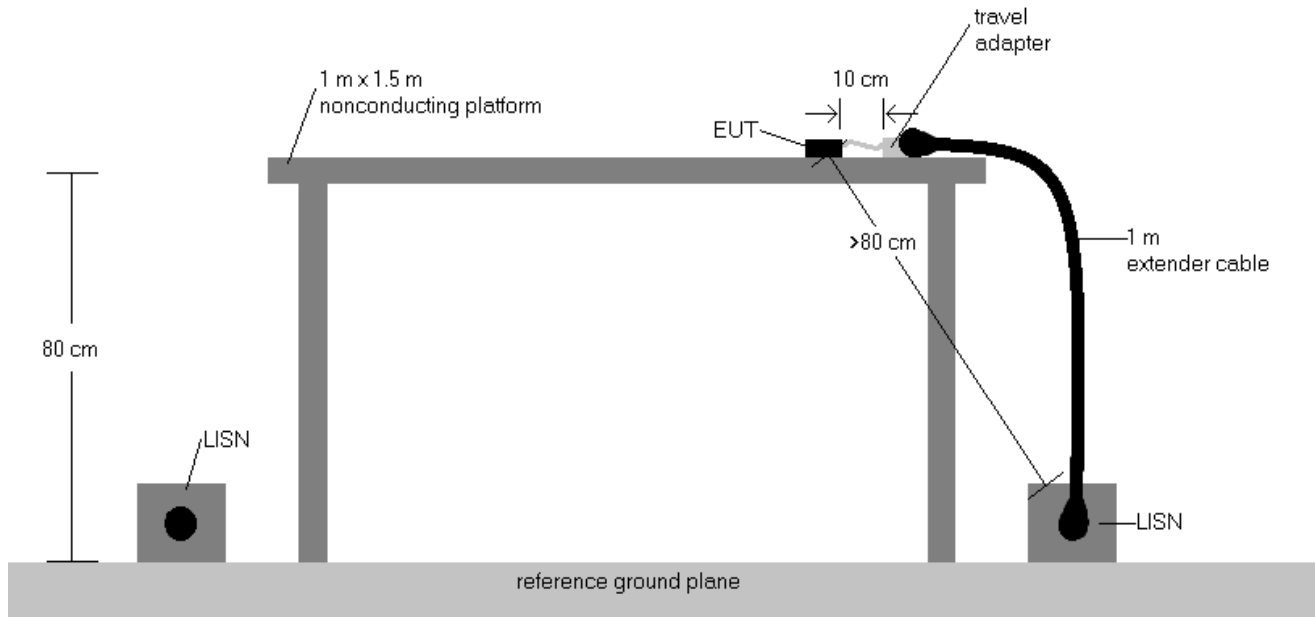
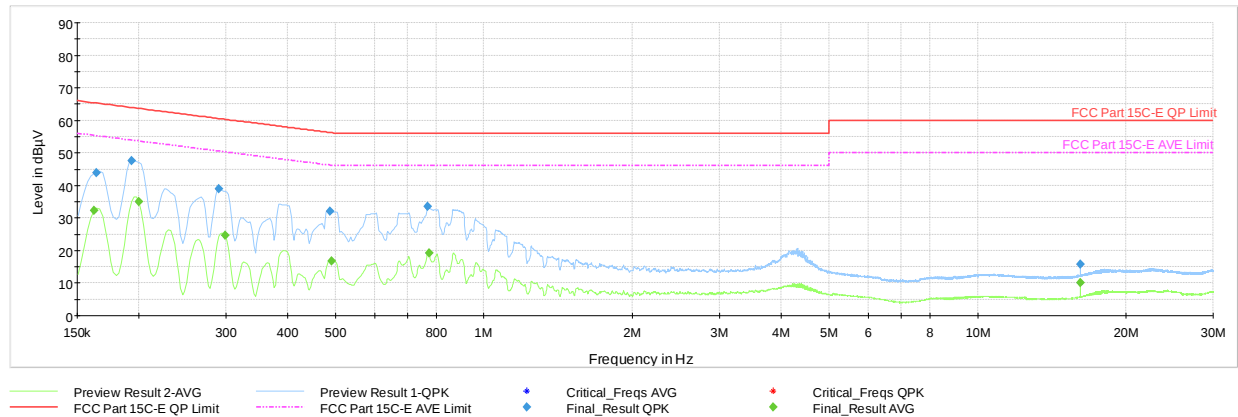


Figure 7-8. Test Instrument & Measurement Setup

Test Notes

- 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.
- Both configurations below were investigated, and the worst case has been reported.
 - EUT powered by AC/DC adaptor via USB-C cable with wire charger
 - EUT powered by host PC via USB-C cable with wire charger
- The limit for an intentional radiator from 150kHz to 30MHz are specified in 15.207 and RSS-Gen (8.8).
- $\text{Corr. (dB)} = \text{Cable loss (dB)} + \text{LISN insertion factor (dB)}$
- $\text{QP/AV Level (dB}\mu\text{V)} = \text{QP/AV Analyzer/Receiver Level (dB}\mu\text{V)} + \text{Correction Factor (dB)}$
- $\text{Margin (dB)} = \text{QP/AV Level (dB}\mu\text{V)} - \text{QP/AV Limit (dB}\mu\text{V)}$
- Traces shown in plots are made using quasi-peak and average detectors.
- Deviations to the Specifications: None.

FCC ID: BCGA2301 IC: 579C-A2301	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020002-16-R1.BCG	Test Dates: 12/12/2020 - 3/10/2021	EUT Type: Tablet Device	Page 254 of 257

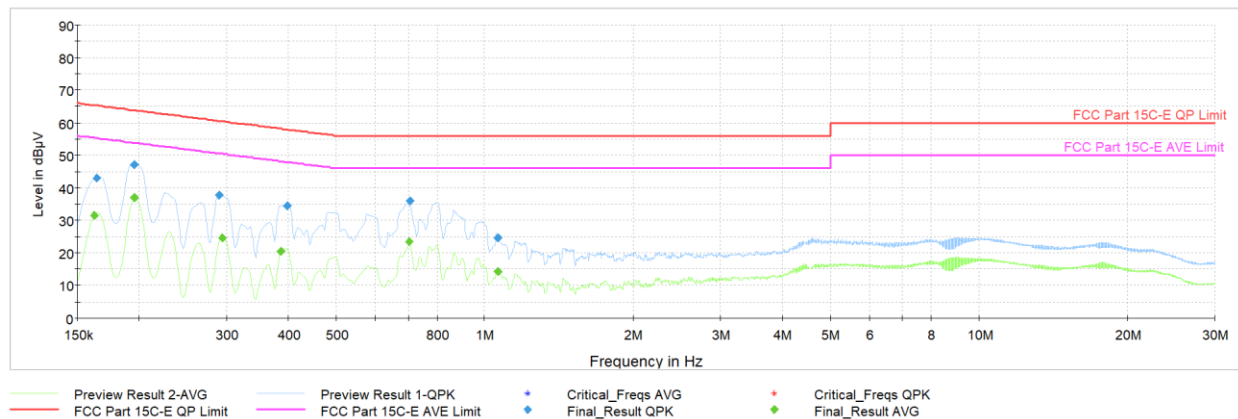


Plot 7-585. AC Line Conducted Plot with 11ax UNII Band 1 – RU26 – Ch.40 (L1) with AC/DC Adapter

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.162	FINAL	—	32.39	55.36	-22.98	L1	GND
0.164	FINAL	44.0	—	65.25	-21.24	L1	GND
0.194	FINAL	47.6	—	63.89	-16.24	L1	GND
0.200	FINAL	—	34.97	53.60	-18.63	L1	GND
0.290	FINAL	38.9	—	60.52	-21.59	L1	GND
0.299	FINAL	—	24.70	50.26	-25.57	L1	GND
0.488	FINAL	32.1	—	56.20	-24.13	L1	GND
0.491	FINAL	—	16.73	46.16	-29.43	L1	GND
0.770	FINAL	33.6	—	56.00	-22.43	L1	GND
0.774	FINAL	—	19.12	46.00	-26.88	L1	GND
16.144	FINAL	—	10.21	50.00	-39.79	L1	GND
16.144	FINAL	15.7	—	60.00	-44.31	L1	GND

Table 7-164. AC Line Conducted with 11ax UNII Band 1 – RU26 – Ch.40 (L1) with AC/DC Adapter

FCC ID: BCGA2301 IC: 579C-A2301	PCTEST Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020002-16-R1.BCG	Test Dates: 12/12/2020 - 3/10/2021	EUT Type: Tablet Device	Page 255 of 257



Plot 7-586. AC Line Conducted Plot with 11ax UNII Band 1 – RU26 – Ch.40 (N) with AC/DC Adapter

Frequency [MHz]	Process State	QuasiPeak [dBµV]	Average [dBµV]	Limit [dBµV]	Margin [dB]	Line	PE
0.162	FINAL	—	31.67	55.36	-23.69	N	GND
0.164	FINAL	42.9	—	65.25	-22.37	N	GND
0.196	FINAL	—	36.87	53.79	-16.92	N	GND
0.196	FINAL	47.1	—	63.79	-16.65	N	GND
0.290	FINAL	37.8	—	60.52	-22.70	N	GND
0.295	FINAL	—	24.70	50.39	-25.69	N	GND
0.387	FINAL	—	20.56	48.13	-27.57	N	GND
0.398	FINAL	34.5	—	57.89	-23.42	N	GND
0.704	FINAL	—	23.39	46.00	-22.61	N	GND
0.707	FINAL	35.9	—	56.00	-20.12	N	GND
1.062	FINAL	—	14.23	46.00	-31.77	N	GND
1.064	FINAL	24.6	—	56.00	-31.41	N	GND

Table 7-165. AC Line Conducted with 11ax UNII Band 1 – RU26 – Ch.40 (N) with AC/DC Adapter

FCC ID: BCGA2301 IC: 579C-A2301		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020002-16-R1.BCG	Test Dates: 12/12/2020 - 3/10/2021	EUT Type: Tablet Device	Page 256 of 257

8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Apple Tablet Device FCC ID: BCGA2301** and **IC: 579C-A2301** is in compliance with 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: BCGA2301 IC: 579C-A2301	 PCTEST Proud to be part of  element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
Test Report S/N: 1C2101020002-16-R1.BCG	Test Dates: 12/12/2020 - 3/10/2021	EUT Type: Tablet Device	Page 257 of 257