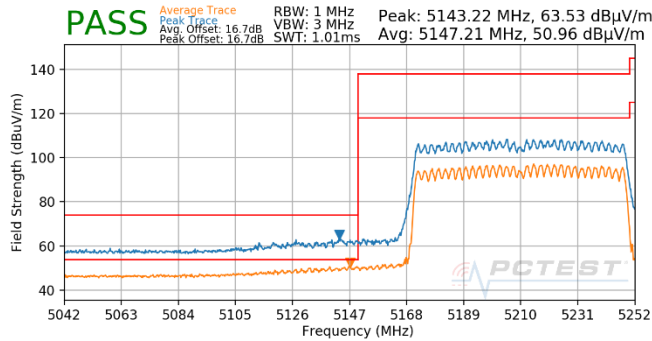
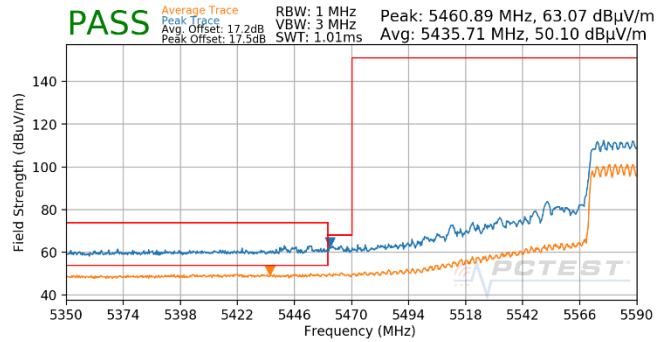


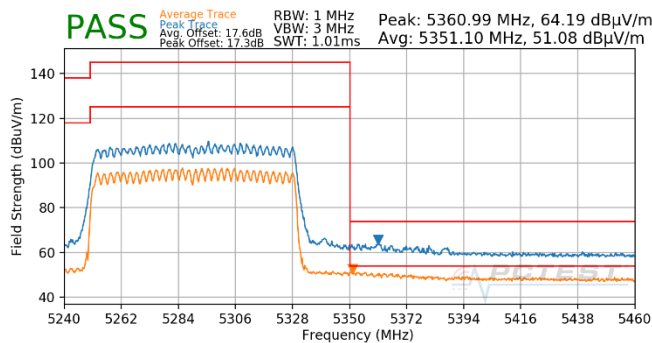
## RU996



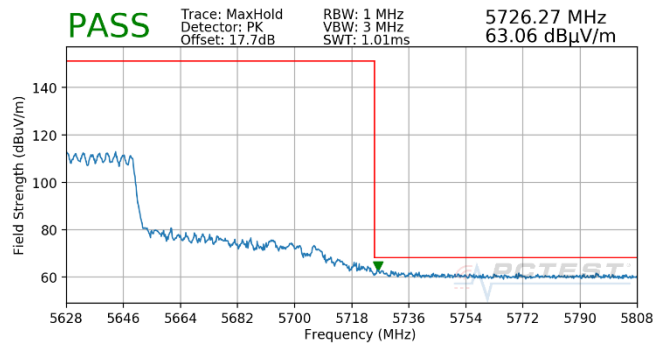
Plot 7-564. CDD (Pk & Avg, RU996, Index 67, Ch.42, MCS11)



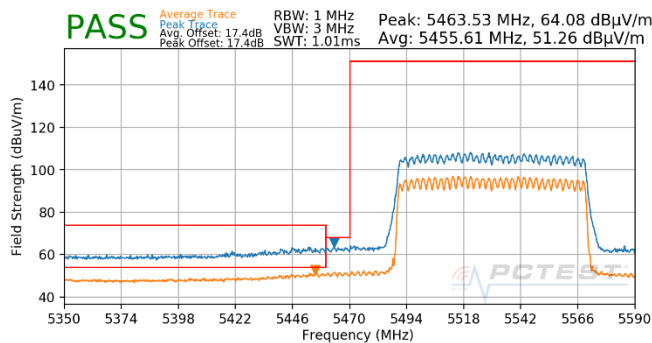
Plot 7-567. (FCC Only) CDD (Pk & Avg, RU996, Index 67, Ch.122, MCS11)



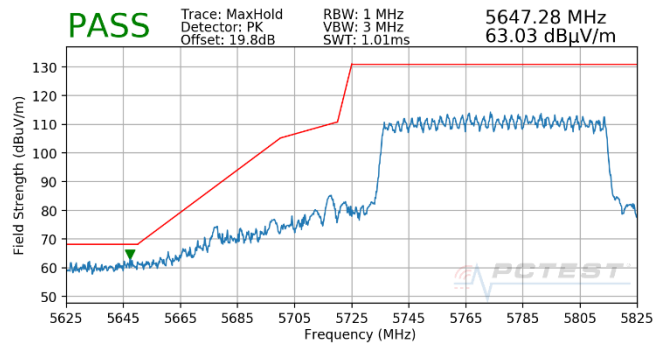
Plot 7-565. CDD (Pk & Avg, RU996, Index 67, Ch.58, MCS11)



Plot 7-568. (FCC Only) CDD (Pk, RU996, Index 67, Ch.122, MCS11)

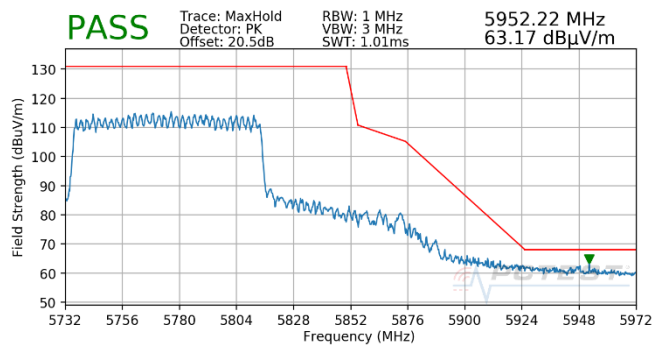


Plot 7-566. CDD (Pk & Avg, RU996, Index 67, Ch.106, MCS11)



Plot 7-569. CDD (Pk, RU996, Index 67, Ch.155, MCS11)

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Plot 7-570. CDD (Pk, RU996, Index 67, Ch.155, MCS11)

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## 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 7-155 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 7-155. 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

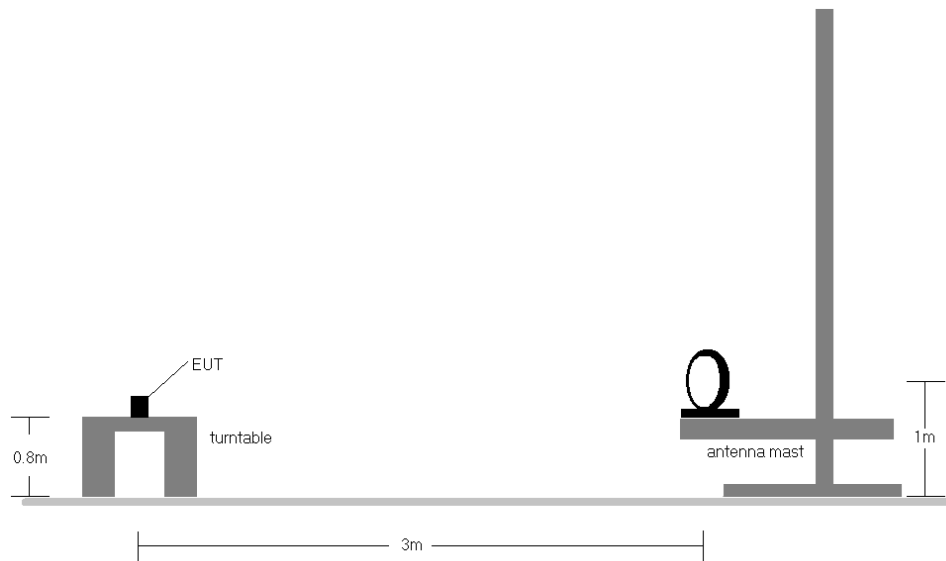
##### Average Measurements

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

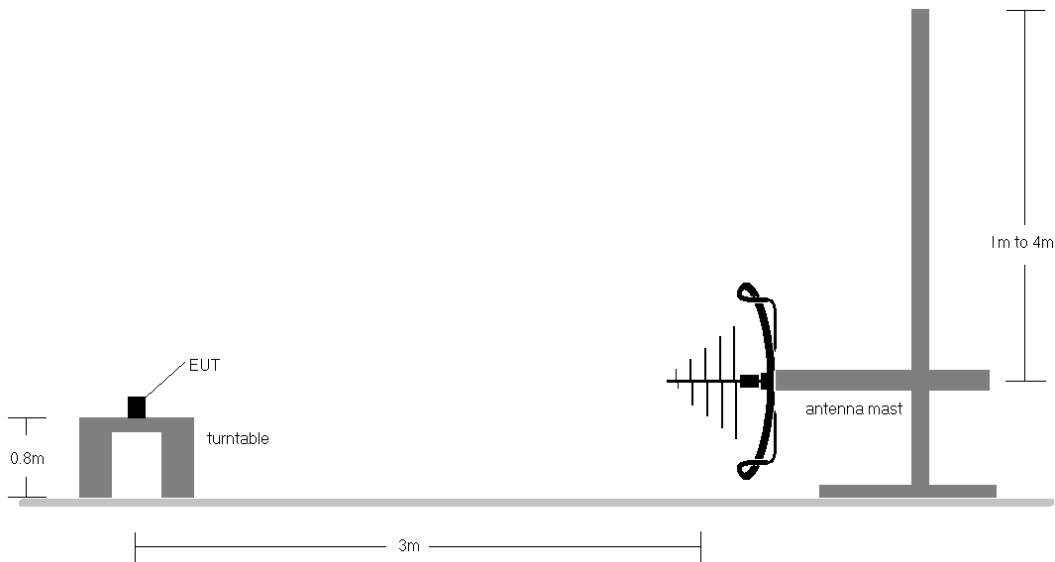
FCC ID: BCGA2377 IC: 579C-A2377	 <b>PCTEST</b> Proud to be part of 	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1C2101020001-09-R1.BCG	<b>Test Dates:</b> 12/12/2020 - 03/17/2021	<b>EUT Type:</b> Tablet Device	Page 237 of 246

## 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 and RSS-Gen (8.10) are below the limit shown in Table 7-155.
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

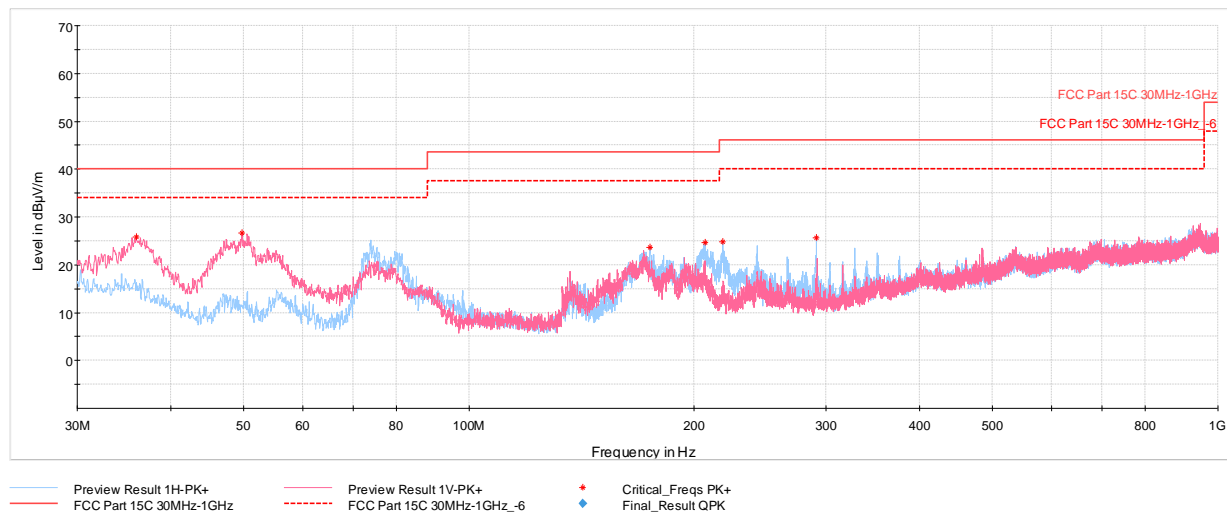
### Determining Spurious Emissions Levels

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

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## SDM Radiated Spurious Emissions (Below 1GHz)

§15.209; RSS-Gen [8.9]

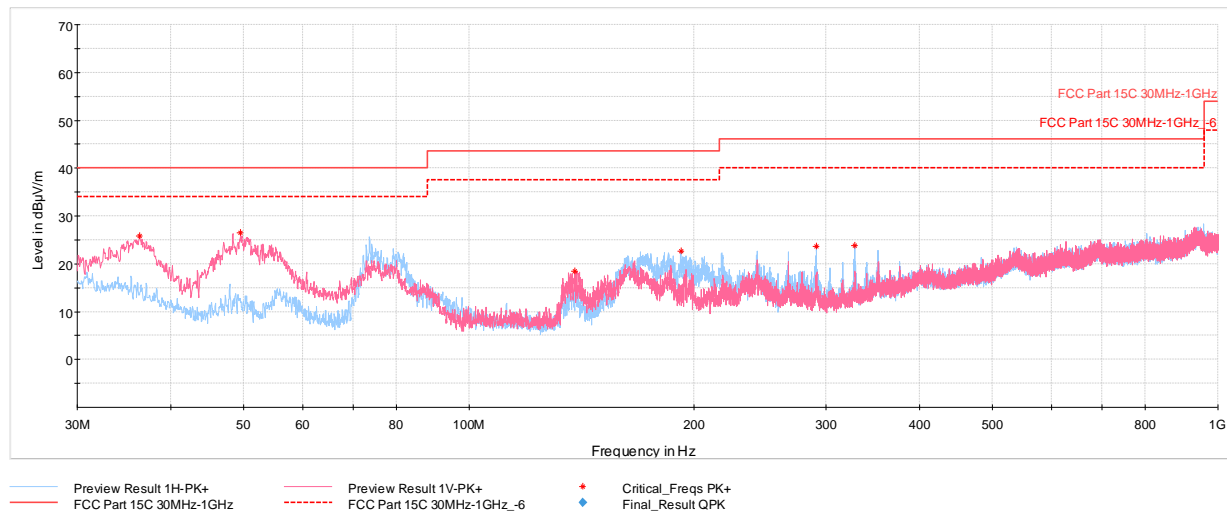


**Plot 7-571. RSE below 1GHz SDM (RU26 – Ch.40), with AC/DC Adapter**

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]
35.97	Max Peak	V	100	336	-66.47	-14.77	25.76	40.00	-14.24
49.79	Max Peak	V	100	318	-59.27	-21.03	26.70	40.00	-13.30
174.34	Max Peak	H	100	262	-66.27	-17.12	23.61	43.52	-19.91
206.64	Max Peak	H	100	356	-65.79	-16.52	24.69	43.52	-18.83
218.28	Max Peak	H	100	334	-65.58	-16.55	24.87	46.02	-21.15
291.08	Max Peak	H	100	279	-66.46	-14.83	25.71	46.02	-20.31

**Table 7-156. RSE below 1GHz SDM (RU26 – Ch.40), with AC/DC Adapter**

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Plot 7-572. RSE below 1GHz 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]
36.31	Max Peak	V	100	346	-66.15	-14.98	25.87	40.00	-14.13
49.55	Max Peak	V	100	0	-59.50	-20.98	26.52	40.00	-13.48
138.40	Max Peak	V	100	76	-69.88	-18.61	18.51	43.52	-25.01
191.84	Max Peak	H	100	321	-66.70	-17.72	22.58	43.52	-20.94
291.08	Max Peak	H	100	92	-68.56	-14.83	23.61	46.02	-22.41
327.45	Max Peak	H	100	356	-69.63	-13.53	23.84	46.02	-22.18

Table 7-157. RSE below 1GHz SDM (RU242– Ch.40), with AC/DC Adapter

FCC ID: BCGA2377 IC: 579C-A2377		MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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## 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 7-158. 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

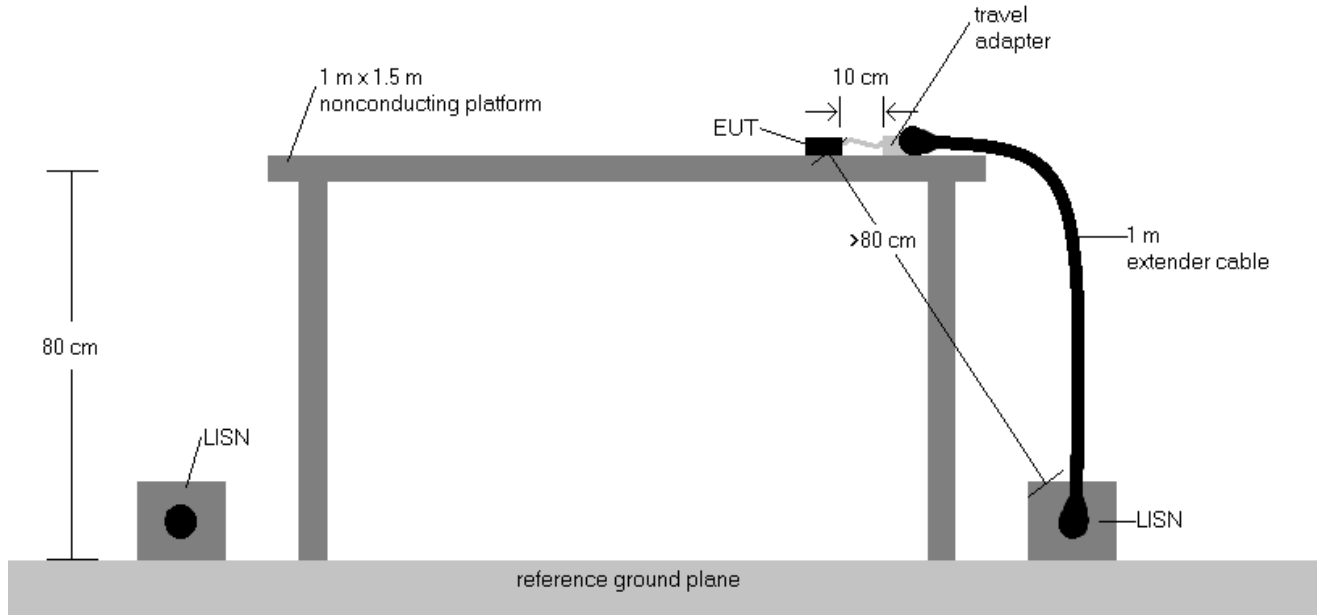
7. Analyzer center frequency was set to the frequency of the spurious emission of interest
8. RBW = 9kHz (for emissions from 150kHz – 30MHz)
9. Detector = RMS
10. Sweep time = auto couple
11. Trace mode = max hold
12. Trace was allowed to stabilize

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## Test Setup

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

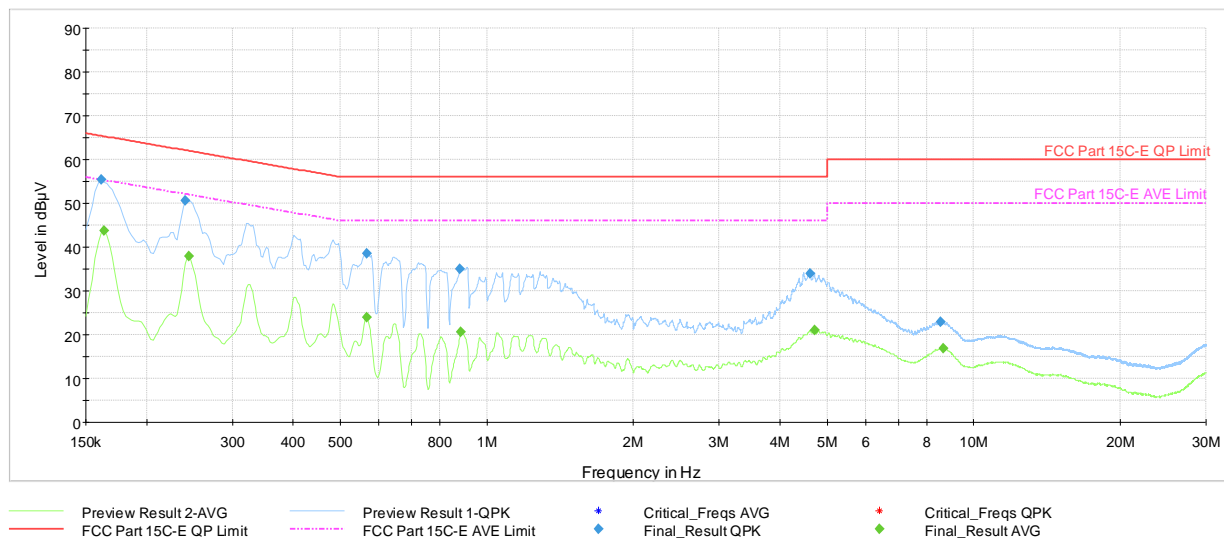


**Figure 7-8. Test Instrument & Measurement Setup**

## Test Notes

- 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.

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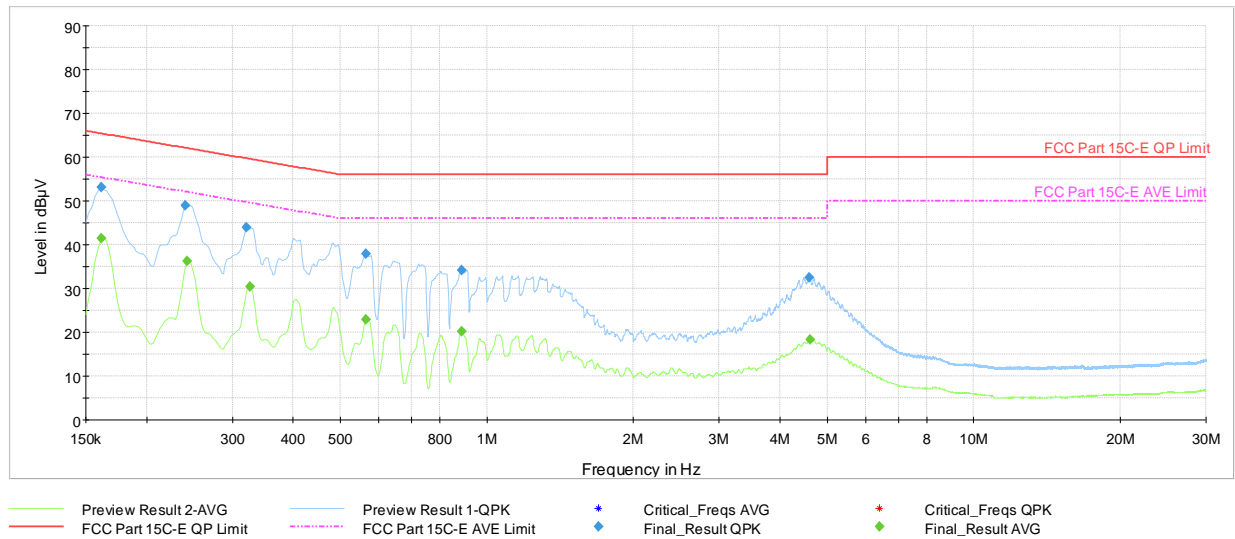


**Plot 7-573. AC Line Conducted Plot with SDM 11ax UNII Band 1 – RU26 – Ch.40 (L1) with AC/DC Adapter**

Frequency [MHz]	Process State	QuasiPeak [dBμV]	Average [dBμV]	Limit [dBμV]	Margin [dB]	Line	PE
0.161	FINAL	55.5	—	65.40	-9.93	L1	GND
0.164	FINAL	—	43.65	55.28	-11.63	L1	GND
0.240	FINAL	50.6	—	62.10	-11.46	L1	GND
0.245	FINAL	—	37.82	51.94	-14.13	L1	GND
0.566	FINAL	38.6	—	56.00	-17.39	L1	GND
0.566	FINAL	—	23.97	46.00	-22.03	L1	GND
0.881	FINAL	34.9	—	56.00	-21.06	L1	GND
0.884	FINAL	—	20.59	46.00	-25.41	L1	GND
4.607	FINAL	33.9	—	56.00	-22.13	L1	GND
4.704	FINAL	—	21.01	46.00	-24.99	L1	GND
8.565	FINAL	22.8	—	60.00	-37.18	L1	GND
8.669	FINAL	—	16.78	50.00	-33.22	L1	GND

**Table 7-159. AC Line Conducted with SDM 11ax UNII Band 1 – RU26 – Ch.40 (L1) with AC/DC Adapter**

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	MEASUREMENT REPORT (CERTIFICATION)	Approved by: Quality Manager
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**Plot 7-574. AC Line Conducted Plot with SDM 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
0.161	FINAL	53.1	—	65.40	-12.34	N	GND
0.161	FINAL	—	41.52	55.40	-13.88	N	GND
0.240	FINAL	48.9	—	62.10	-13.17	N	GND
0.242	FINAL	—	36.21	52.02	-15.81	N	GND
0.321	FINAL	43.9	—	59.68	-15.78	N	GND
0.326	FINAL	—	30.41	49.57	-19.15	N	GND
0.564	FINAL	—	22.91	46.00	-23.09	N	GND
0.564	FINAL	37.9	—	56.00	-18.07	N	GND
0.886	FINAL	—	20.19	46.00	-25.81	N	GND
0.886	FINAL	34.2	—	56.00	-21.81	N	GND
4.592	FINAL	32.4	—	56.00	-23.58	N	GND
4.603	FINAL	—	18.39	46.00	-27.61	N	GND

**Table 7-160. AC Line Conducted with SDM 11ax UNII Band 1 – RU26 – Ch.40 (N) with AC/DC Adapter**

FCC ID: BCGA2377 IC: 579C-A2377	<b>PCTEST</b> Proud to be part of element	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>Approved by:</b> Quality Manager
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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: BCGA2377** and **IC: 579C-A2377** 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.

<b>FCC ID:</b> BCGA2377 <b>IC:</b> 579C-A2377	 <b>PCTEST</b> Proud to be part of  element	<b>MEASUREMENT REPORT (CERTIFICATION)</b>	<b>Approved by:</b> Quality Manager
<b>Test Report S/N:</b> 1C2101020001-09-R1.BCG	<b>Test Dates:</b> 12/12/2020 - 03/17/2021	<b>EUT Type:</b> Tablet Device	Page 246 of 246