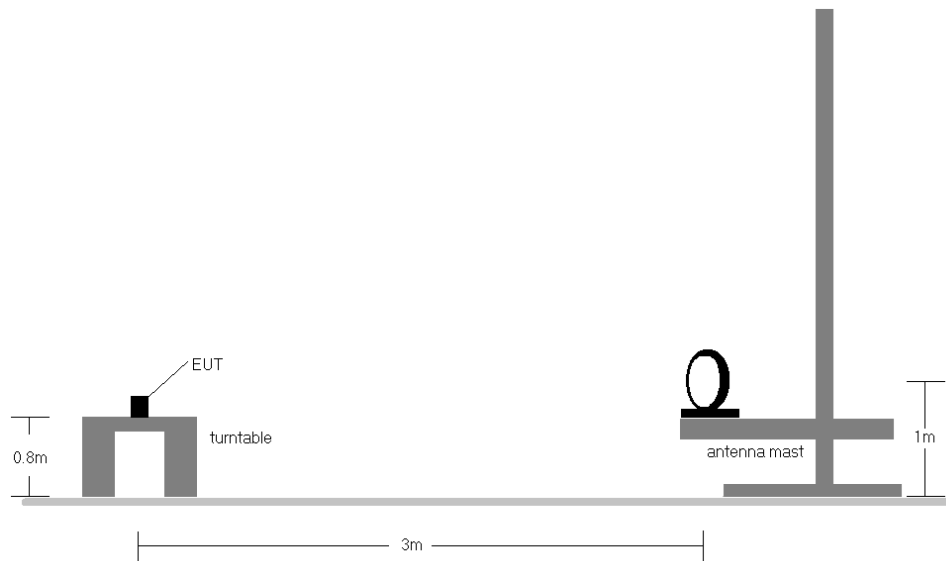
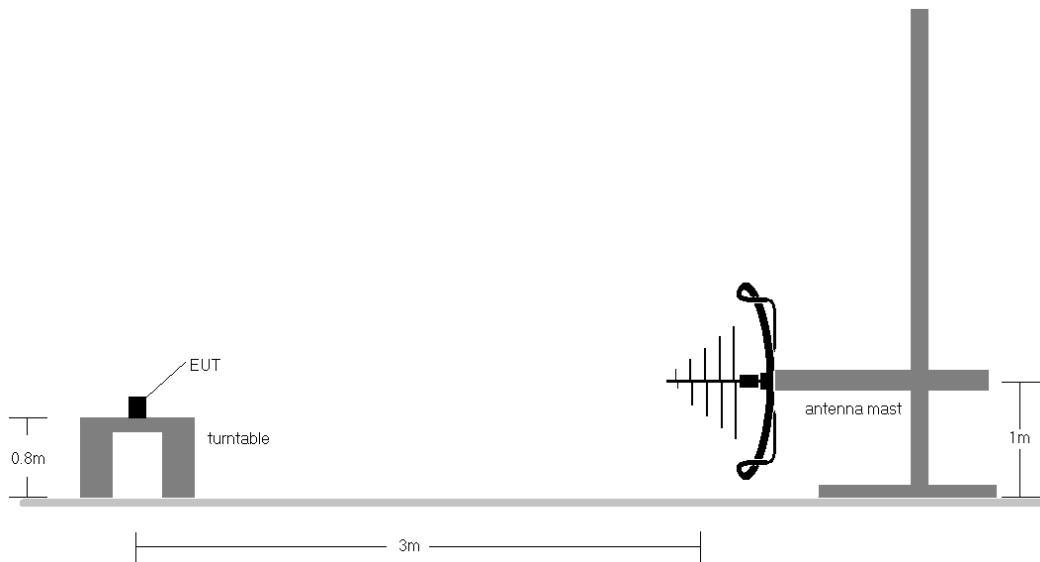


## Test Setup

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: BCGA1980                        |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |                            | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1C1806220013-07.BCG | Test Dates:<br>07/27/2018-09/21/2018                                                                                              | EUT Type:<br>Tablet Device | Page 274 of 282                 |

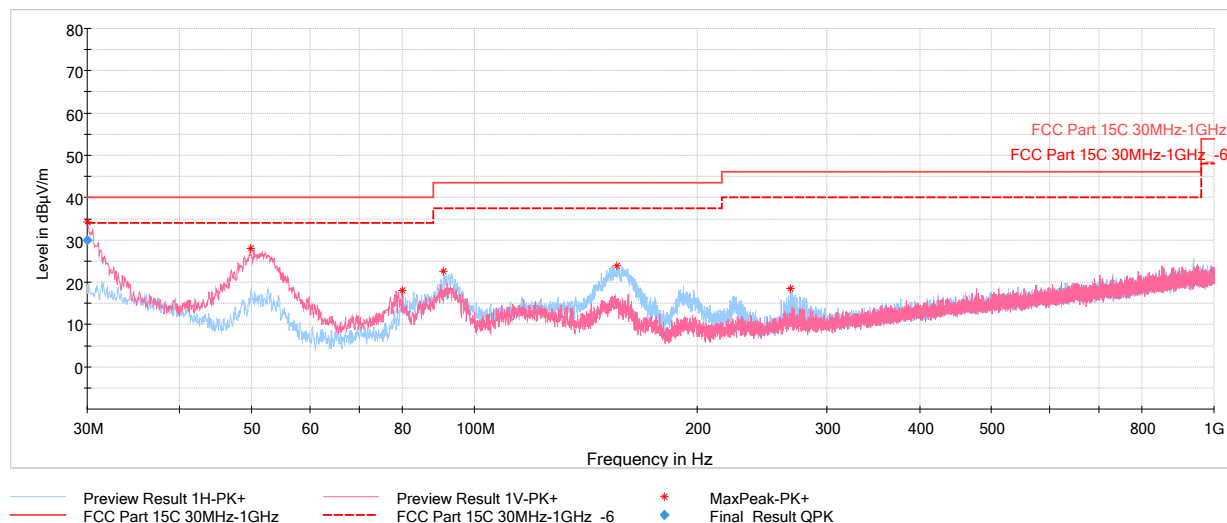
## Test Notes

1. All emissions lying in restricted bands specified in §15.205 and RSS-Gen (8.10) are below the limit shown in Table 7-75.
2. The broadband receive antenna is manipulated through vertical and horizontal polarizations during the tests. The EUT is manipulated through three orthogonal planes.
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. The worst-case emissions are reported however emissions whose levels were not within 20dB of the respective limits were not reported.
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. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. There were no emissions detected in the 30MHz – 1GHz frequency range, as shown in the subsequent plots.

|                                                |                                                                                                                                   |                                   |                                        |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|----------------------------------------|
| <b>FCC ID:</b> BCGA1980                        |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |                                   | <b>Approved by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>1C1806220013-07.BCG | <b>Test Dates:</b><br>07/27/2018-09/21/2018                                                                                       | <b>EUT Type:</b><br>Tablet Device | Page 275 of 282                        |

## CDD Radiated Spurious Emissions Measurements (Below 1GHz)

§15.209; RSS-Gen [8.9]



Plot 7-322. Radiated Spurious Plot below 1GHz CDD with Laptop (802.11n - U1 Ch. 36)

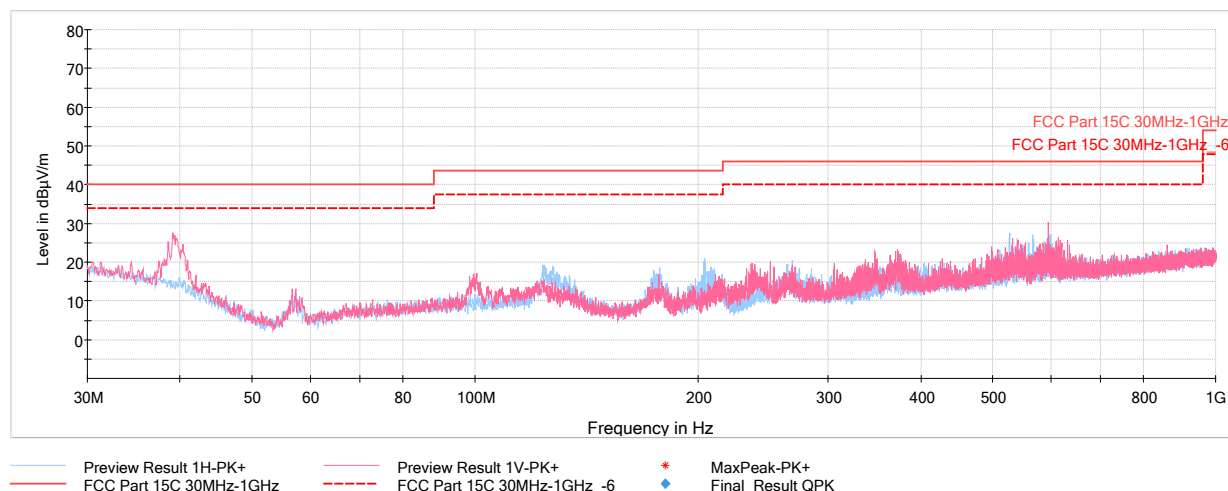
| Frequency [MHz] | Detector   | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Field Strength [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-----------------|------------|-----------------|---------------------|----------------------------|----------------------|-------------|-------------------------|----------------|-------------|
| 30.00           | Quasi-Peak | V               | 100                 | 39                         | -68.96               | -8.89       | 29.15                   | 40.00          | -10.85      |
| 49.84           | Max-Peak   | V               | 100                 | 11                         | -57.75               | -21.36      | 27.89                   | 40.00          | -12.11      |
| 90.92           | Max-Peak   | V               | 250                 | 324                        | -66.20               | -18.17      | 22.63                   | 43.52          | -20.90      |
| 156.15          | Max-Peak   | V               | 250                 | 230                        | -63.96               | -19.13      | 23.91                   | 43.52          | -19.61      |
| 191.80          | Max-Peak   | V               | 100                 | 349                        | -68.54               | -19.22      | 19.24                   | 43.52          | -24.28      |
| 267.46          | Max-Peak   | H               | 100                 | 238                        | -71.89               | -16.58      | 18.53                   | 46.02          | -27.49      |

Plot 7-323. Radiated Spurious Plot below 1GHz CDD with Laptop (802.11n - U1 Ch. 36)

|                                         |                                              |                            |                                 |
|-----------------------------------------|----------------------------------------------|----------------------------|---------------------------------|
| FCC ID: BCGA1980                        | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                            | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1C1806220013-07.BCG | Test Dates:<br>07/27/2018-09/21/2018         | EUT Type:<br>Tablet Device | Page 276 of 282                 |

## Simultaneous Tx Radiated Spurious Emissions Measurements (Below 1GHz)

§15.209; RSS-Gen [8.9]



Plot 7-324. Radiated Spurious Plot below 1GHz (2.4GHz – 5GHz)

| 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] |
|-----------------|------------|-----------------|---------------------|----------------------------|----------------------|-------------|-------------------------|----------------|-------------|
| 39.12           | Quasi-Peak | V               | 100                 | 78                         | -65.04               | -14.48      | 27.48                   | 40.00          | -12.52      |
| 57.35           | Quasi-Peak | V               | 250                 | 111                        | -69.95               | -23.93      | 13.12                   | 40.00          | -26.88      |
| 204.50          | Max-Peak   | V               | 100                 | 246                        | -66.81               | -19.35      | 20.84                   | 43.52          | -22.68      |
| 250.68          | Max-Peak   | V               | 100                 | 184                        | -69.14               | -17.69      | 20.17                   | 46.02          | -25.85      |
| 346.95          | Max-Peak   | V               | 100                 | 179                        | -69.46               | -14.78      | 22.76                   | 46.02          | -23.26      |
| 594.64          | Max-Peak   | H               | 100                 | 142                        | -67.16               | -9.48       | 30.36                   | 46.02          | -15.66      |

Plot 7-325. Radiated Spurious Plot below 1GHz (Dual Band Simult. Tx)

|                                         |                                              |                            |                                 |
|-----------------------------------------|----------------------------------------------|----------------------------|---------------------------------|
| FCC ID: BCGA1980                        | <b>MEASUREMENT REPORT</b><br>(CERTIFICATION) |                            | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1C1806220013-07.BCG | Test Dates:<br>07/27/2018-09/21/2018         | EUT Type:<br>Tablet Device | Page 277 of 282                 |

## 7.8 Line-Conducted Test Data

§15.407; 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 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) |           |
|-----------------------------|------------------------|-----------|
|                             | Quasi-peak             | Average   |
| 0.15 – 0.5                  | 66 to 56*              | 56 to 46* |
| 0.5 – 5                     | 56                     | 46        |
| 5 – 30                      | 60                     | 50        |

**Table 7-76. Conducted Limits**

\*Decreases with the logarithm of the frequency.

### Test Procedures Used

ANSI C63.10-2013, Section 6.2

### Test Settings

#### Quasi-Peak Field Strength 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

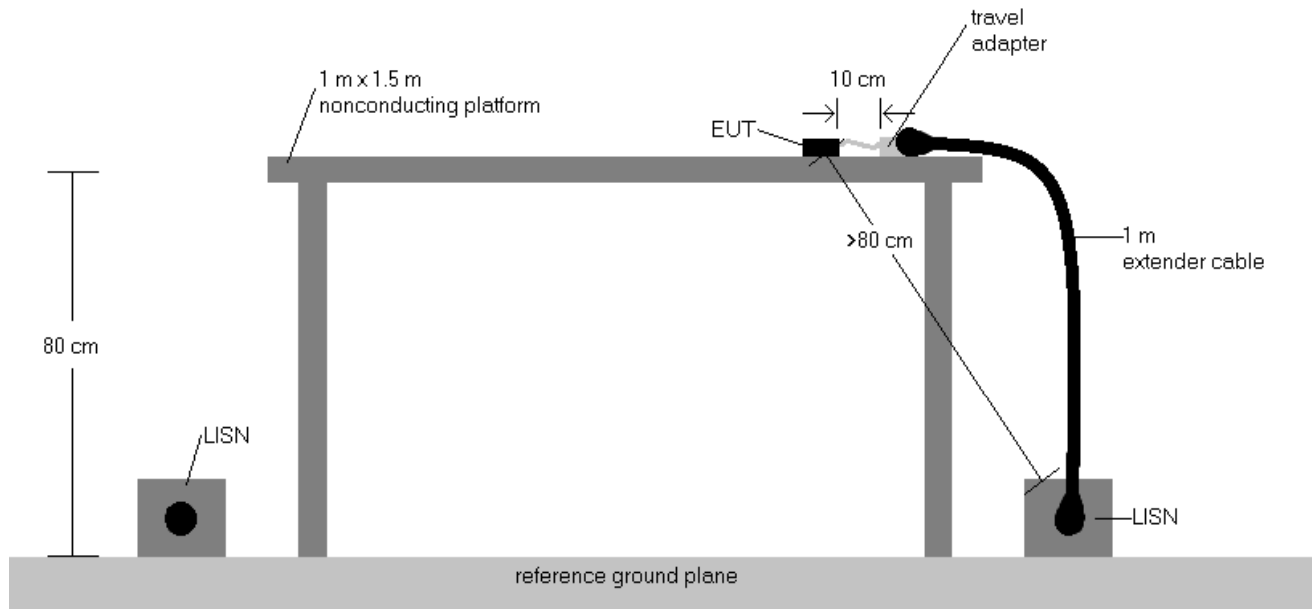
#### Average Field Strength Measurements

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: BCGA1980                        |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |                            | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1C1806220013-07.BCG | Test Dates:<br>07/27/2018-09/21/2018                                                                                              | EUT Type:<br>Tablet Device | Page 278 of 282                 |

## Test Setup

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

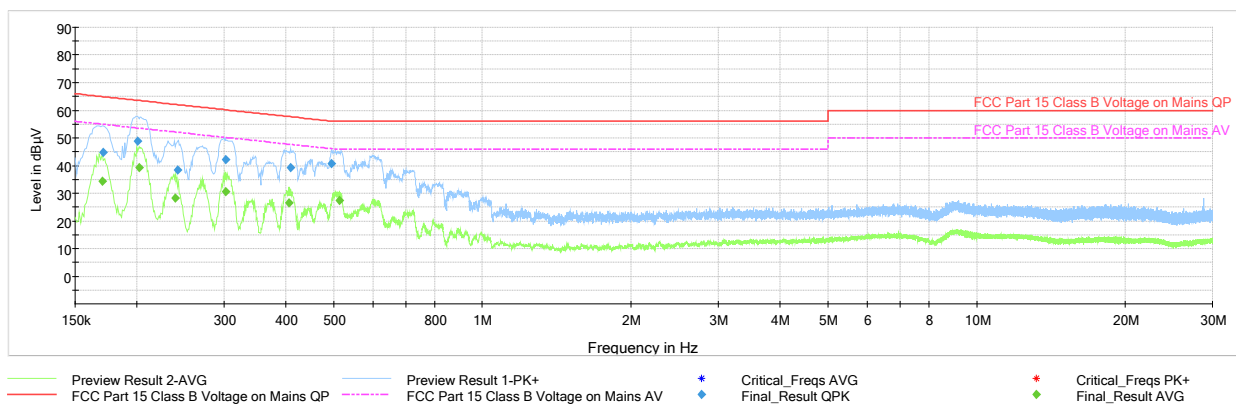


**Figure 7-8. Test Instrument & Measurement Setup**

## Test Notes

1. All modes of operation were investigated and the worst-case emissions are reported using mid channel. The emissions found were not affected by the choice of channel used during testing.
2. The limit for an intentional radiator from 150kHz to 30MHz are specified in 15.207 and RSS-Gen (8.8).
3.  $\text{Corr. (dB)} = \text{Cable loss (dB)} + \text{LISN insertion factor (dB)}$
4.  $\text{QP/AV Level (dB}\mu\text{V)} = \text{QP/AV Analyzer/Receiver Level (dB}\mu\text{V)} + \text{Corr. (dB)}$
5.  $\text{Margin (dB)} = \text{QP/AV Limit (dB}\mu\text{V)} - \text{QP/AV Level (dB}\mu\text{V)}$
6. Traces shown in plot are made using a peak detector.
7. Deviations to the Specifications: None.

|                                         |                                                                                                                                   |                            |                                 |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------|
| FCC ID: BCGA1980                        |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |                            | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1C1806220013-07.BCG | Test Dates:<br>07/27/2018-09/21/2018                                                                                              | EUT Type:<br>Tablet Device | Page 279 of 282                 |

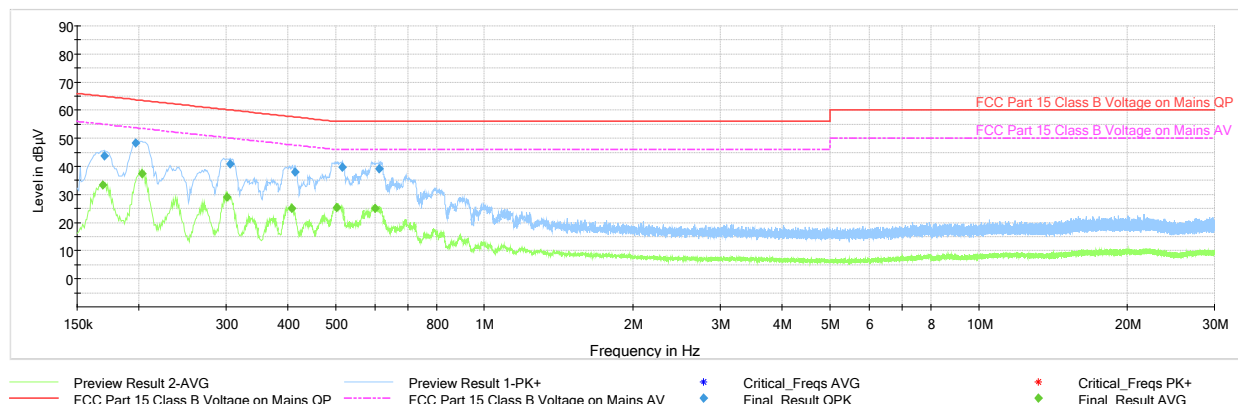


**Plot 7-326. Line Conducted Plot with 802.11a UNII Band 1 (L1)**

| Frequency MHz | Process State | QuasiPeak dBμV | Average dBμV | Limit dBμV | Margin dB | Bandwidth kHz | Line | PE  |
|---------------|---------------|----------------|--------------|------------|-----------|---------------|------|-----|
| 0.170000      | FINAL         | ---            | 34.36        | 54.96      | 20.60     | 9.000         | L1   | GND |
| 0.171000      | FINAL         | 44.73          | ---          | 64.91      | 20.18     | 9.000         | L1   | GND |
| 0.201000      | FINAL         | 48.77          | ---          | 63.57      | 14.80     | 9.000         | L1   | GND |
| 0.202000      | FINAL         | ---            | 39.38        | 53.53      | 14.15     | 9.000         | L1   | GND |
| 0.239000      | FINAL         | ---            | 28.26        | 52.13      | 23.87     | 9.000         | L1   | GND |
| 0.242000      | FINAL         | 38.43          | ---          | 62.03      | 23.60     | 9.000         | L1   | GND |
| 0.302000      | FINAL         | 42.03          | ---          | 60.19      | 18.16     | 9.000         | L1   | GND |
| 0.303000      | FINAL         | ---            | 30.61        | 50.16      | 19.55     | 9.000         | L1   | GND |
| 0.406000      | FINAL         | ---            | 26.57        | 47.73      | 21.16     | 9.000         | L1   | GND |
| 0.410000      | FINAL         | 39.35          | ---          | 57.65      | 18.30     | 9.000         | L1   | GND |
| 0.495000      | FINAL         | 40.62          | ---          | 56.08      | 15.46     | 9.000         | L1   | GND |
| 0.513000      | FINAL         | ---            | 27.35        | 46.00      | 18.65     | 9.000         | L1   | GND |

**Table 7-77. Line Conducted Data with 802.11a UNII Band 1 (L1)**

|                                         |                                           |                            |                                 |
|-----------------------------------------|-------------------------------------------|----------------------------|---------------------------------|
| FCC ID: BCGA1980                        | <b>MEASUREMENT REPORT (CERTIFICATION)</b> |                            | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1C1806220013-07.BCG | Test Dates:<br>07/27/2018-09/21/2018      | EUT Type:<br>Tablet Device | Page 280 of 282                 |



**Plot 7-327. Line Conducted Plot with 802.11a UNII Band 1 (N)**

| Frequency MHz | Process State | QuasiPeak dBμV | Average dBμV | Limit dBμV | Margin dB | Meas. Time ms | Bandwidth kHz | Line | PE  |
|---------------|---------------|----------------|--------------|------------|-----------|---------------|---------------|------|-----|
| 0.169000      | FINAL         | ---            | 33.31        | 55.01      | 21.70     | 10000.0       | 9.000         | N    | GND |
| 0.170000      | FINAL         | 43.79          | ---          | 64.96      | 21.17     | 10000.0       | 9.000         | N    | GND |
| 0.197000      | FINAL         | 48.31          | ---          | 63.74      | 15.43     | 10000.0       | 9.000         | N    | GND |
| 0.203000      | FINAL         | ---            | 37.50        | 53.49      | 15.99     | 10000.0       | 9.000         | N    | GND |
| 0.301000      | FINAL         | ---            | 29.20        | 50.22      | 21.02     | 10000.0       | 9.000         | N    | GND |
| 0.306000      | FINAL         | 40.81          | ---          | 60.08      | 19.27     | 10000.0       | 9.000         | N    | GND |
| 0.408000      | FINAL         | ---            | 25.17        | 47.69      | 22.52     | 10000.0       | 9.000         | N    | GND |
| 0.414000      | FINAL         | 37.98          | ---          | 57.57      | 19.59     | 10000.0       | 9.000         | N    | GND |
| 0.502000      | FINAL         | ---            | 25.44        | 46.00      | 20.56     | 10000.0       | 9.000         | N    | GND |
| 0.515000      | FINAL         | 39.81          | ---          | 56.00      | 16.19     | 10000.0       | 9.000         | N    | GND |
| 0.600000      | FINAL         | ---            | 25.07        | 46.00      | 20.93     | 10000.0       | 9.000         | N    | GND |
| 0.613000      | FINAL         | 39.20          | ---          | 56.00      | 16.80     | 10000.0       | 9.000         | N    | GND |

**Table 7-78. Line Conducted Data with 802.11a UNII Band 1 (N)**

|                                         |                                                                                                                                   |                            |                                 |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------------------|
| FCC ID: BCGA1980                        |  <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> |                            | Approved by:<br>Quality Manager |
| Test Report S/N:<br>1C1806220013-07.BCG | Test Dates:<br>07/27/2018-09/21/2018                                                                                              | EUT Type:<br>Tablet Device | Page 281 of 282                 |

## 8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Apple Tablet Device FCC ID: BCGA1980** 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> BCGA1980                        |  | <b>MEASUREMENT REPORT<br/>(CERTIFICATION)</b> | <b>Approved by:</b><br>Quality Manager |
| <b>Test Report S/N:</b><br>1C1806220013-07.BCG | <b>Test Dates:</b><br>07/27/2018-09/21/2018                                         | <b>EUT Type:</b><br>Tablet Device             | Page 282 of 282                        |