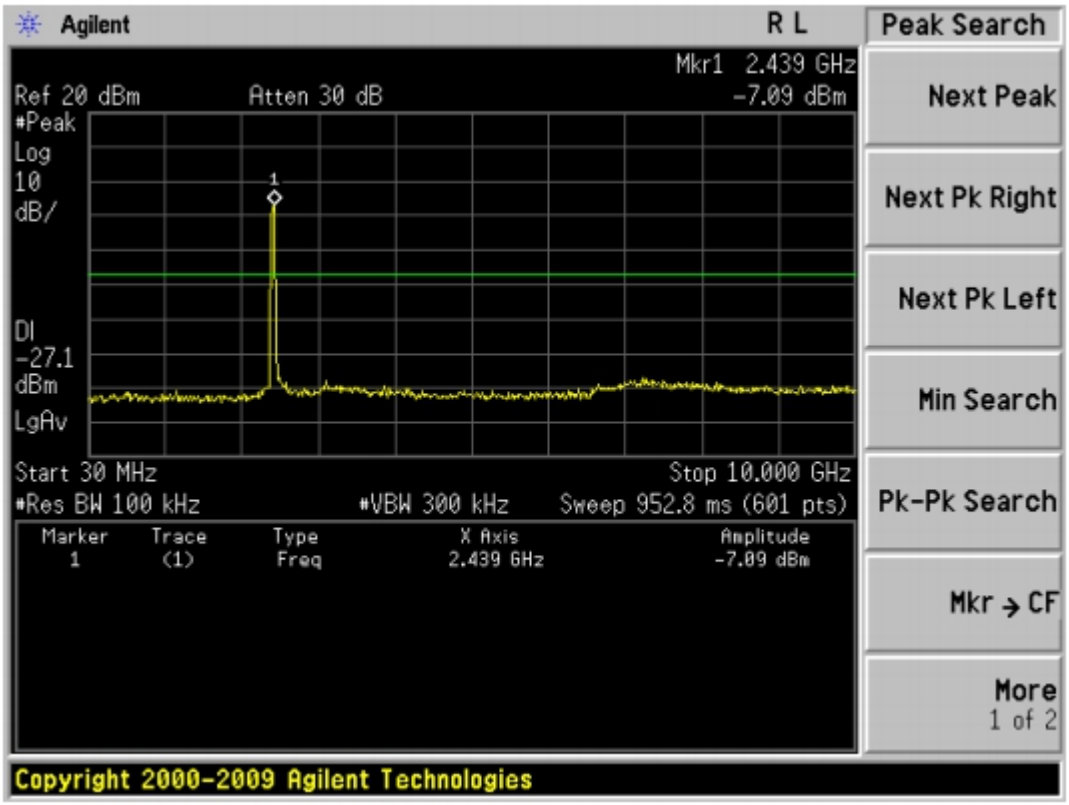
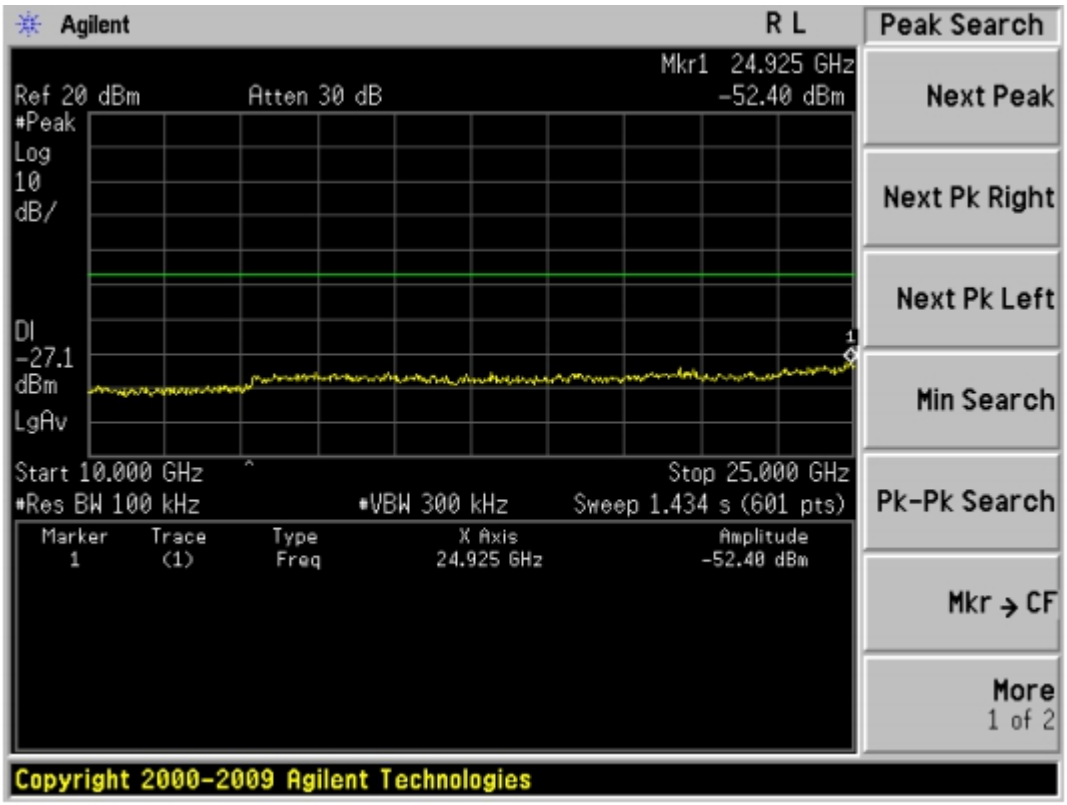
802.11n 40 Middle CH, 2437MHz

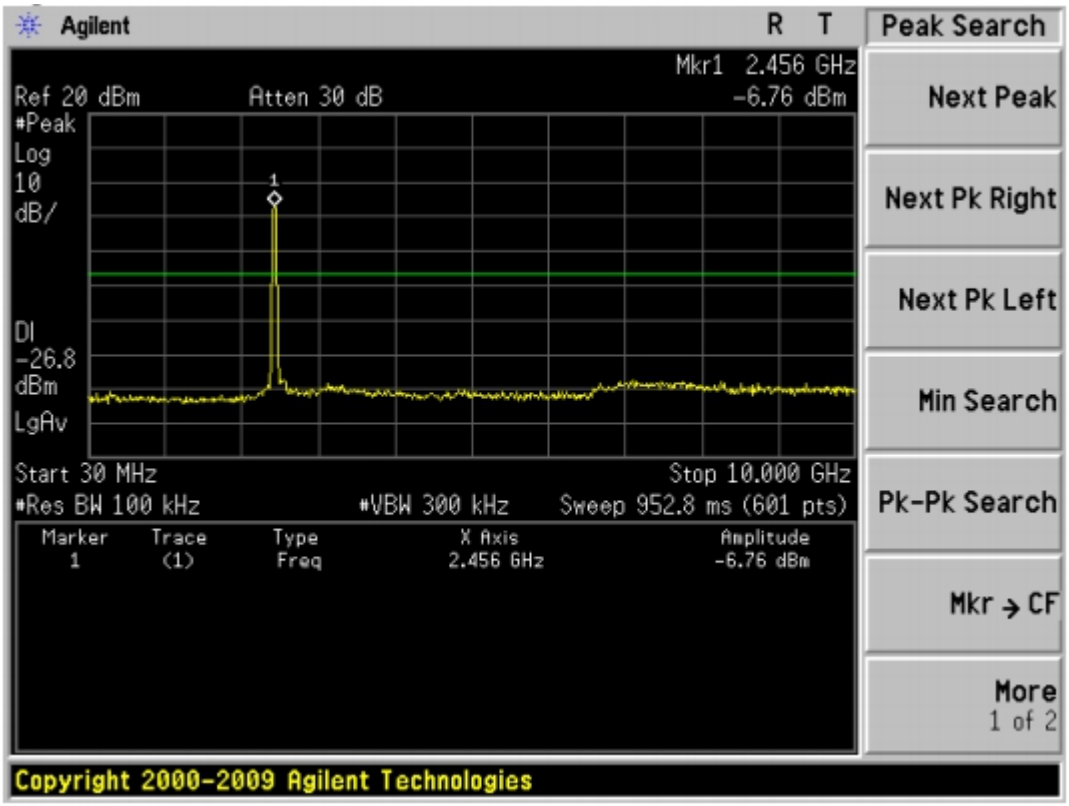
30MHZ-10GHZ



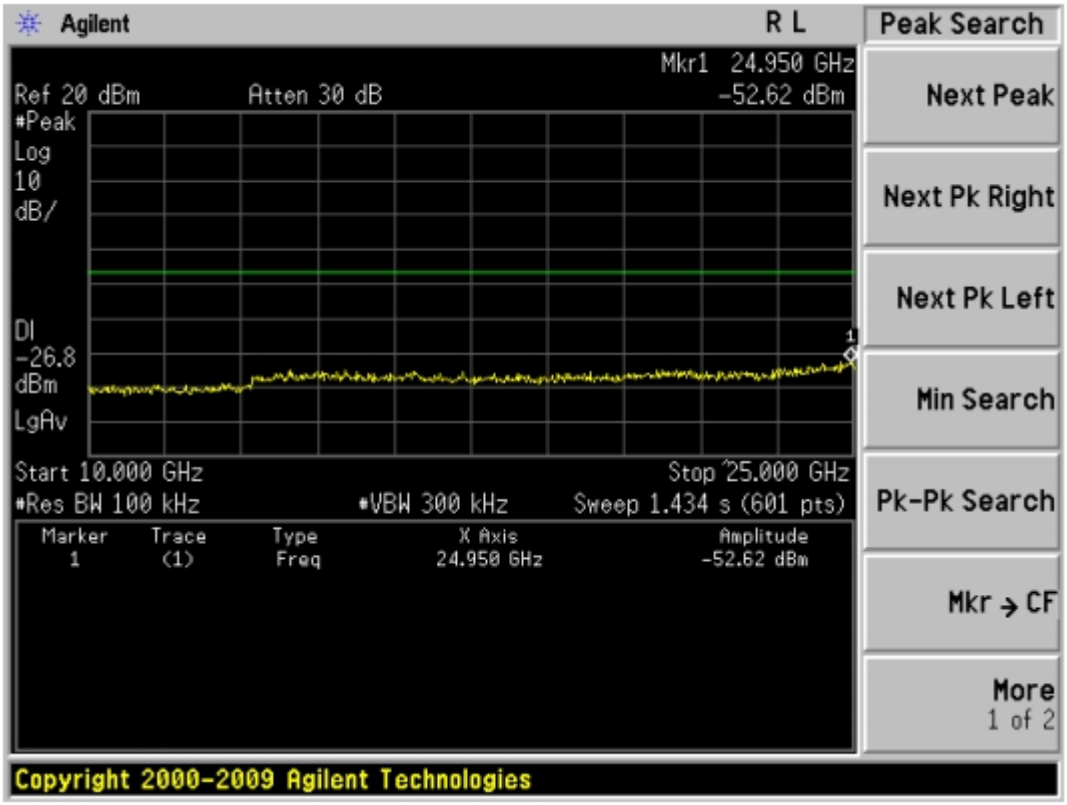

10GHZ-25GHZ



802.11n 40 High CH, 2452MHz
30MHZ-10GHZ




10GHZ-25GHZ



# 7 RADIATED EMISSION MEASUREMENT

## 7.1 RADIATED EMISSION LIMITS

In any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the Restricted band specified on Part15.205(a)&209(a) limit in the table and according to ANSI C63.10-2013 below has to be followed

LIMITS OF RADIATED EMISSION MEASUREMENT (0.009MHz - 1000MHz)

| Frequencies (MHz) | Field Strength (micorvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 0.009~0.490 | 2400/F(KHz) | 300 |
| 0.490~1.705 | 24000/F(KHz) | 30 |
| 1.705~30.0 | 30 | 30 |
| 30~88 | 100 | 3 |
| 88~216 | 150 | 3 |
| 216~960 | 200 | 3 |
| Above 960 | 500 | 3 |

LIMITS OF RADIATED EMISSION MEASUREMENT (1GHz-25 GHz)

| FREQUENCY (MHz) | (dBuV/m) (at 3M) | |
|---|---|---|
| | PEAK | AVERAGE |
| Above 1000 | 74 | 54 |

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

For Radiated Emission

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Detector | Peak/AV |
| Start Frequency | 1000 MHz(Peak/AV) |
| Stop Frequency | 10th carrier hamonic(Peak/AV) |
| RB / VB (emission in restricted band) | PK=1MHz / 1MHz, AV=1 MHz /10 Hz |

For Band edge

| Spectrum Parameter | Setting |
|---|---|
| Detector | Peak/AV |
| Start/Stop Frequency | Lower Band Edge: 2300 to 2403 MHz<br>Upper Band Edge: 2479 to 2500 MHz |
| RB / VB (emission in restricted band) | PK=1MHz / 1MHz, AV=1 MHz / 10 Hz |

| Receiver Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start ~ Stop Frequency | 9kHz~90kHz / RB 200Hz for PK & AV |
| Start ~ Stop Frequency | 90kHz~110kHz / RB 200Hz for QP |
| Start ~ Stop Frequency | 110kHz~490kHz / RB 200Hz for PK & AV |
| Start ~ Stop Frequency | 490kHz~30MHz / RB 9kHz for QP |
| Start ~ Stop Frequency | 30MHz~1000MHz / RB 120kHz for QP |

7.2 TEST PROCEDURE

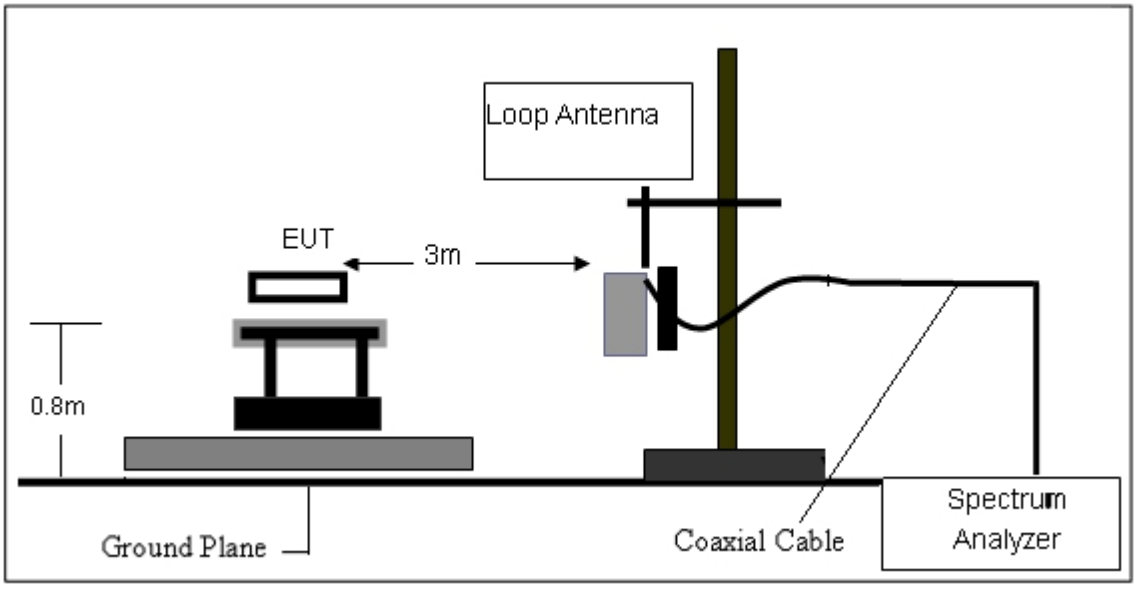
a. The measuring distance of at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz,and above 1GHz.
b. The EUT was placed on the top of a rotating table 0.8 meters (above 1GHz is 1.5 m) above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment shall be 0.8 m(above 1GHz is 1.5 m); the height of the test antenna shall vary between 1 m to 4 m. horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then QuasiPeak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

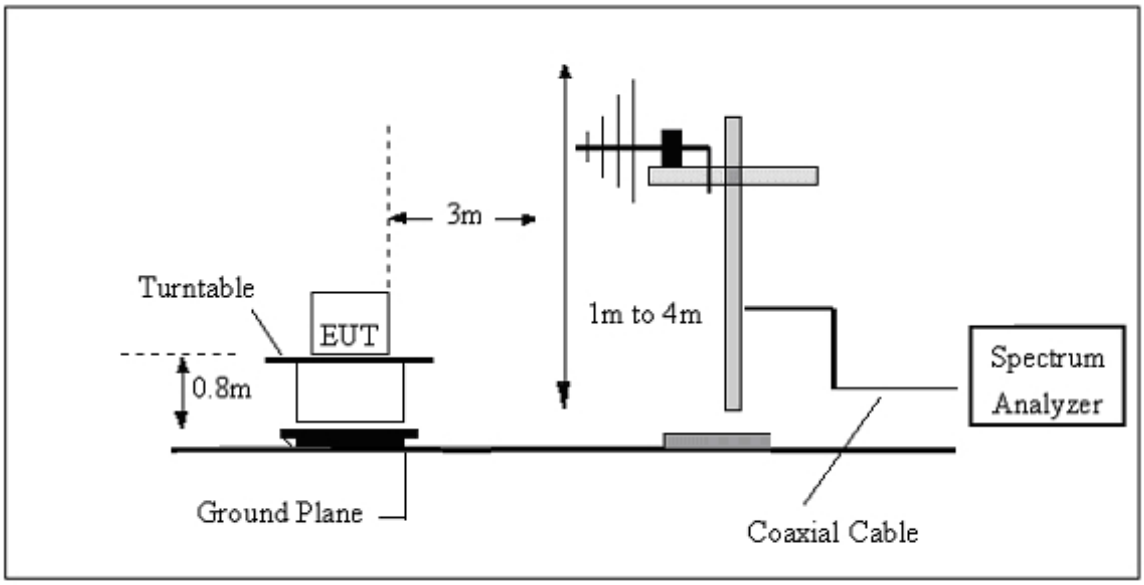
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

7.3 TESTSETUP

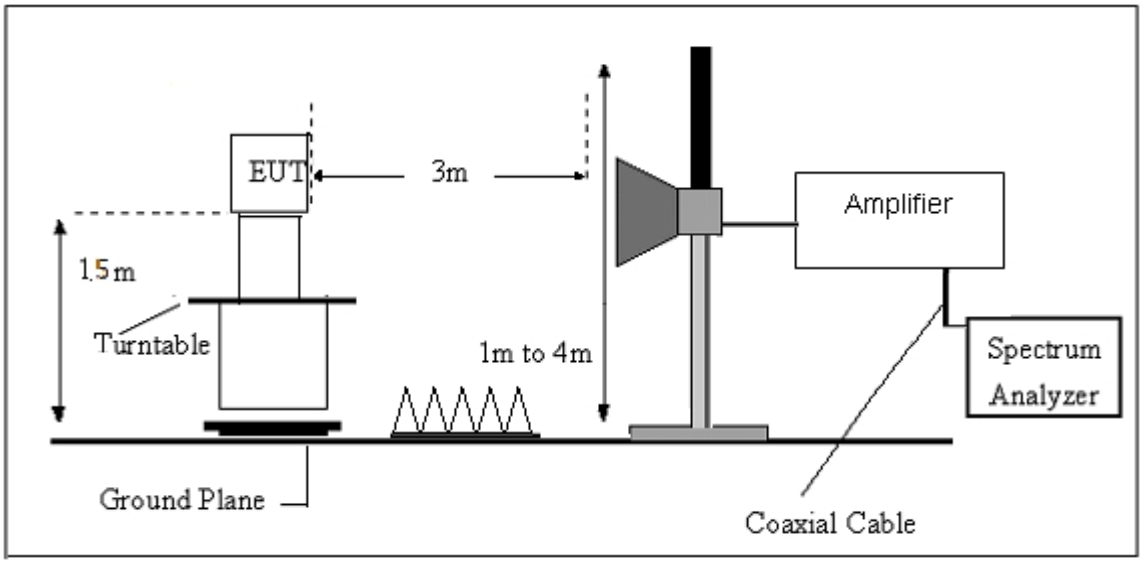
（A）Radiated Emission Test-Up Frequency Below 30MHz




（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



## 7.4. TEST RESULTS

(9KHz-30MHz)

| Temperature: | 22.7℃ | Relative Humidity: | 61% |
|---|---|---|---|
| Test Voltage: | DC 12V | Test Mode: | 802.11b |

| Freq. | Reading | Limit | Margin | State | Test Result |
|---|---|---|---|---|---|
| (MHz) | (dBuV/m) | (dBuV/m) | (dB) | P/F | |
| -- | -- | -- | -- | -- | PASS |
| -- | -- | -- | -- | -- | PASS |

Note:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =40 log (specific distance/test distance)(dB);

Limit line = specific limits (dBuv) + distance extrapolation factor.

(30MHz-1000MHz)

| | | | |
|---|---|---|---|
| Temperature: | 24.7℃ | Relative Humidity: | 61% |
| Test Voltage: | DC 12V | Phase: | Horizontal |
| Test Mode: | 802.11b(worst) | | |

| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|
| 1 | 40.5591 | 32.11 | -17.01 | 15.10 | 40.00 | -24.90 | QP |
| 2 | 71.3300 | 39.64 | -20.64 | 19.00 | 40.00 | -21.00 | QP |
| 3 | 110.9570 | 32.65 | -17.84 | 14.81 | 43.50 | -28.69 | QP |
| 4 | 254.7281 | 44.52 | -17.58 | 26.94 | 46.00 | -19.06 | QP |
| 5 | 435.5898 | 54.31 | -14.44 | 39.87 | 46.00 | -6.13 | QP |
| 6 | 599.3211 | 35.18 | -11.36 | 23.82 | 46.00 | -22.18 | QP |

Note: 1. Margin = Result (Result =Reading + Factor )–Limit

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

| | | | |
|---|---|---|---|
| Temperature: | 22.7℃ | Relative Humidity: | 61% |
| Test Voltage: | DC 12V | Phase: | Vertical |
| Test Mode: | ON | | |

| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|
| 1 | 41.2764 | 65.42 | -40.24 | 25.18 | 40.00 | -14.82 | QP |
| 2 | 51.3004 | 69.52 | -40.24 | 29.28 | 40.00 | -10.72 | QP |
| 3 | 71.5806 | 64.62 | -40.24 | 24.38 | 40.00 | -15.62 | QP |
| 4 | 171.9944 | 62.83 | -40.24 | 22.59 | 43.50 | -20.91 | QP |
| 5 | 249.4250 | 67.43 | -40.24 | 27.19 | 46.00 | -18.81 | QP |
| 6 | 449.5557 | 80.76 | -40.24 | 40.52 | 46.00 | -5.48 | QP |

Note: 1. Margin = Result (Result =Reading + Factor )–Limit

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

(1GHz~25GHz) Restricted band and Spurious emission Requirements

802.11b(Worst)-Low

**Peak value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
|---|---|---|---|---|---|---|---|---|
| 4824.00 | 36.26 | 31.79 | 8.62 | 32.10 | 44.57 | 74.00 | -29.43 | Vertical |
| 7236.00 | 31.67 | 36.19 | 11.68 | 31.97 | 47.57 | 74.00 | -26.43 | Vertical |
| 9648.00 | 30.89 | 38.07 | 14.16 | 31.56 | 51.56 | 74.00 | -22.44 | Vertical |
| 12060.00 | * | | | | | 74.00 | | Vertical |
| 14472.00 | * | | | | | 74.00 | | Vertical |
| 16884.00 | * | | | | | 74.00 | | Vertical |
| 4824.00 | 35.56 | 31.79 | 8.62 | 32.10 | 43.87 | 74.00 | -30.13 | Horizontal |
| 7236.00 | 31.74 | 36.19 | 11.68 | 31.97 | 47.64 | 74.00 | -26.36 | Horizontal |
| 9648.00 | 30.61 | 38.07 | 14.16 | 31.56 | 51.28 | 74.00 | -22.72 | Horizontal |
| 12060.00 | * | | | | | 74.00 | | Horizontal |
| 14472.00 | * | | | | | 74.00 | | Horizontal |
| 16884.00 | * | | | | | 74.00 | | Horizontal |

**Average value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
|---|---|---|---|---|---|---|---|---|
| 4824.00 | 25.66 | 31.79 | 8.62 | 32.10 | 33.97 | 54.00 | -20.03 | Vertical |
| 7236.00 | 20.63 | 36.19 | 11.68 | 31.97 | 36.53 | 54.00 | -17.47 | Vertical |
| 9648.00 | 21.31 | 38.07 | 14.16 | 31.56 | 41.98 | 54.00 | -12.02 | Vertical |
| 12060.00 | * | | | | | 54.00 | | Vertical |
| 14472.00 | * | | | | | 54.00 | | Vertical |
| 16884.00 | * | | | | | 54.00 | | Vertical |
| 4824.00 | 25.31 | 31.79 | 8.62 | 32.10 | 33.62 | 54.00 | -20.38 | Horizontal |
| 7236.00 | 20.39 | 36.19 | 11.68 | 31.97 | 36.29 | 54.00 | -17.71 | Horizontal |
| 9648.00 | 20.42 | 38.07 | 14.16 | 31.56 | 41.09 | 54.00 | -12.91 | Horizontal |
| 12060.00 | * | | | | | 54.00 | | Horizontal |
| 14472.00 | * | | | | | 54.00 | | Horizontal |
| 16884.00 | * | | | | | 54.00 | | Horizontal |

802.11b(Worst)-Middle

**Peak value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
|---|---|---|---|---|---|---|---|---|
| 4874.00 | 36.02 | 31.85 | 8.66 | 32.12 | 44.41 | 74.00 | -29.59 | Vertical |
| 7311.00 | 32.18 | 36.37 | 11.71 | 31.91 | 48.35 | 74.00 | -25.65 | Vertical |
| 9748.00 | 32.23 | 38.27 | 14.25 | 31.56 | 53.19 | 74.00 | -20.81 | Vertical |
| 12185.00 | * | | | | | 74.00 | | Vertical |
| 14622.00 | * | | | | | 74.00 | | Vertical |
| 17059.00 | * | | | | | 74.00 | | Vertical |
| 4874.00 | 37.02 | 31.85 | 8.66 | 32.12 | 45.41 | 74.00 | -28.59 | Horizontal |
| 7311.00 | 31.09 | 36.37 | 11.71 | 31.91 | 47.26 | 74.00 | -26.74 | Horizontal |
| 9748.00 | 32.23 | 38.27 | 14.25 | 31.56 | 53.19 | 74.00 | -20.81 | Horizontal |
| 12185.00 | * | | | | | 74.00 | | Horizontal |
| 14622.00 | * | | | | | 74.00 | | Horizontal |
| 17059.00 | * | | | | | 74.00 | | Horizontal |

**Average value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
|---|---|---|---|---|---|---|---|---|
| 4874.00 | 27.13 | 31.85 | 8.66 | 32.12 | 35.52 | 54.00 | -18.48 | Vertical |
| 7311.00 | 20.57 | 36.37 | 11.71 | 31.91 | 36.74 | 54.00 | -17.26 | Vertical |
| 9748.00 | 21.54 | 38.27 | 14.25 | 31.56 | 42.50 | 54.00 | -11.50 | Vertical |
| 12185.00 | * | | | | | 54.00 | | Vertical |
| 14622.00 | * | | | | | 54.00 | | Vertical |
| 17059.00 | * | | | | | 54.00 | | Vertical |
| 4874.00 | 27.30 | 31.85 | 8.66 | 32.12 | 35.69 | 54.00 | -18.31 | Horizontal |
| 7311.00 | 20.23 | 36.37 | 11.71 | 31.91 | 36.40 | 54.00 | -17.60 | Horizontal |
| 9748.00 | 22.00 | 38.27 | 14.25 | 31.56 | 42.96 | 54.00 | -11.04 | Horizontal |
| 12185.00 | * | | | | | 54.00 | | Horizontal |
| 14622.00 | * | | | | | 54.00 | | Horizontal |
| 17059.00 | * | | | | | 54.00 | | Horizontal |

802.11b(Worst)-High

**Peak value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
|---|---|---|---|---|---|---|---|---|
| 4924.00 | 39.14 | 31.90 | 8.70 | 32.15 | 47.59 | 74.00 | -26.41 | Vertical |
| 7386.00 | 31.33 | 36.49 | 11.76 | 31.83 | 47.75 | 74.00 | -26.25 | Vertical |
| 9848.00 | 34.43 | 38.62 | 14.31 | 31.77 | 55.59 | 74.00 | -18.41 | Vertical |
| 12310.00 | * | | | | | 74.00 | | Vertical |
| 14772.00 | * | | | | | 74.00 | | Vertical |
| 17234.00 | * | | | | | 74.00 | | Vertical |
| 4924.00 | 39.34 | 31.90 | 8.70 | 32.15 | 47.79 | 74.00 | -26.21 | Horizontal |
| 7386.00 | 30.69 | 36.49 | 11.76 | 31.83 | 47.11 | 74.00 | -26.89 | Horizontal |
| 9848.00 | 30.80 | 38.62 | 14.31 | 31.77 | 51.96 | 74.00 | -22.04 | Horizontal |
| 12310.00 | * | | | | | 74.00 | | Horizontal |
| 14772.00 | * | | | | | 74.00 | | Horizontal |
| 17234.00 | * | | | | | 74.00 | | Horizontal |

**Average value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | polarization |
|---|---|---|---|---|---|---|---|---|
| 4924.00 | 30.50 | 31.90 | 8.70 | 32.15 | 38.95 | 54.00 | -15.05 | Vertical |
| 7386.00 | 21.38 | 36.49 | 11.76 | 31.83 | 37.80 | 54.00 | -16.20 | Vertical |
| 9848.00 | 23.04 | 38.62 | 14.31 | 31.77 | 44.20 | 54.00 | -9.80 | Vertical |
| 12310.00 | * | | | | | 54.00 | | Vertical |
| 14772.00 | * | | | | | 54.00 | | Vertical |
| 17234.00 | * | | | | | 54.00 | | Vertical |
| 4924.00 | 30.00 | 31.90 | 8.70 | 32.15 | 38.45 | 54.00 | -15.55 | Horizontal |
| 7386.00 | 20.18 | 36.49 | 11.76 | 31.83 | 36.60 | 54.00 | -17.40 | Horizontal |
| 9848.00 | 20.15 | 38.62 | 14.31 | 31.77 | 41.31 | 54.00 | -12.69 | Horizontal |
| 12310.00 | * | | | | | 54.00 | | Horizontal |
| 14772.00 | * | | | | | 54.00 | | Horizontal |
| 17234.00 | * | | | | | 54.00 | | Horizontal |

Radiated Band Edge data

Remark: All restriction band have been tested, and only the worst case is shown in report

802.11 b low CH

**Peak value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|---|---|---|---|---|---|---|---|---|
| 2390.00 | 48.89 | 27.59 | 5.38 | 34.01 | 47.85 | 74.00 | -26.15 | Horizontal |
| 2400.00 | 54.73 | 27.58 | 5.39 | 34.01 | 53.69 | 74.00 | -20.31 | Horizontal |
| 2390.00 | 47.76 | 27.59 | 5.38 | 34.01 | 46.72 | 74.00 | -27.28 | Vertical |
| 2400.00 | 51.59 | 27.58 | 5.39 | 34.01 | 50.55 | 74.00 | -23.45 | Vertical |

**Average value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|---|---|---|---|---|---|---|---|---|
| 2390.00 | 37.90 | 27.59 | 5.38 | 34.01 | 36.86 | 54.00 | -17.14 | Horizontal |
| 2400.00 | 43.82 | 27.58 | 5.39 | 34.01 | 42.78 | 54.00 | -11.22 | Horizontal |
| 2390.00 | 36.12 | 27.59 | 5.38 | 34.01 | 35.08 | 54.00 | -18.92 | Vertical |
| 2400.00 | 40.68 | 27.58 | 5.39 | 34.01 | 39.64 | 54.00 | -14.36 | Vertical |

802.11 b High CH

**Peak value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|---|---|---|---|---|---|---|---|---|
| 2483.50 | 48.23 | 27.53 | 5.47 | 33.92 | 47.31 | 74.00 | -26.69 | Horizontal |
| 2500.00 | 45.87 | 27.55 | 5.49 | 29.93 | 48.98 | 74.00 | -25.02 | Horizontal |
| 2483.50 | 47.68 | 27.53 | 5.47 | 33.92 | 46.76 | 74.00 | -27.24 | Vertical |
| 2500.00 | 44.05 | 27.55 | 5.49 | 29.93 | 47.16 | 74.00 | -26.84 | Vertical |

**Average value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|---|---|---|---|---|---|---|---|---|
| 2483.50 | 37.14 | 27.53 | 5.47 | 33.92 | 36.22 | 54.00 | -17.78 | Horizontal |
| 2500.00 | 34.14 | 27.55 | 5.49 | 29.93 | 37.25 | 54.00 | -16.75 | Horizontal |
| 2483.50 | 35.29 | 27.53 | 5.47 | 33.92 | 34.37 | 54.00 | -19.63 | Vertical |
| 2500.00 | 32.40 | 27.55 | 5.49 | 29.93 | 35.51 | 54.00 | -18.49 | Vertical |

802.11 g Low CH

**Peak value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|---|---|---|---|---|---|---|---|---|
| 2390.00 | 61.94 | 27.59 | 5.38 | 34.01 | 60.90 | 74.00 | -13.10 | Horizontal |
| 2400.00 | 70.56 | 27.58 | 5.39 | 34.01 | 69.52 | 74.00 | -4.48 | Horizontal |
| 2390.00 | 58.19 | 27.59 | 5.38 | 34.01 | 57.15 | 74.00 | -16.85 | Vertical |
| 2400.00 | 67.21 | 27.58 | 5.39 | 34.01 | 66.17 | 74.00 | -7.83 | Vertical |

**Average value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|---|---|---|---|---|---|---|---|---|
| 2390.00 | 44.24 | 27.59 | 5.38 | 34.01 | 43.20 | 54.00 | -10.80 | Horizontal |
| 2400.00 | 50.90 | 27.58 | 5.39 | 34.01 | 49.86 | 54.00 | -4.14 | Horizontal |
| 2390.00 | 41.78 | 27.59 | 5.38 | 34.01 | 40.74 | 54.00 | -13.26 | Vertical |
| 2400.00 | 47.82 | 27.58 | 5.39 | 34.01 | 46.78 | 54.00 | -7.22 | Vertical |

802.11 g High CH

**Peak value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|---|---|---|---|---|---|---|---|---|
| 2483.50 | 53.82 | 27.53 | 5.47 | 33.92 | 52.90 | 74.00 | -21.10 | Horizontal |
| 2500.00 | 47.07 | 27.55 | 5.49 | 29.93 | 50.18 | 74.00 | -23.82 | Horizontal |
| 2483.50 | 48.91 | 27.53 | 5.47 | 33.92 | 47.99 | 74.00 | -26.01 | Vertical |
| 2500.00 | 45.36 | 27.55 | 5.49 | 29.93 | 48.47 | 74.00 | -25.53 | Vertical |

**Average value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|---|---|---|---|---|---|---|---|---|
| 2483.50 | 36.70 | 27.53 | 5.47 | 33.92 | 35.78 | 54.00 | -18.22 | Horizontal |
| 2500.00 | 34.80 | 27.55 | 5.49 | 29.93 | 37.91 | 54.00 | -16.09 | Horizontal |
| 2483.50 | 35.25 | 27.53 | 5.47 | 33.92 | 34.33 | 54.00 | -19.67 | Vertical |
| 2500.00 | 33.11 | 27.55 | 5.49 | 29.93 | 36.22 | 54.00 | -17.78 | Vertical |

802.11 N 20 Low CH

**Peak value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|---|---|---|---|---|---|---|---|---|
| 2390.00 | 61.98 | 27.59 | 5.38 | 34.01 | 60.94 | 74.00 | -13.06 | Horizontal |
| 2400.00 | 72.50 | 27.58 | 5.39 | 34.01 | 71.46 | 74.00 | -2.54 | Horizontal |
| 2390.00 | 57.89 | 27.59 | 5.38 | 34.01 | 56.85 | 74.00 | -17.15 | Vertical |
| 2400.00 | 68.39 | 27.58 | 5.39 | 34.01 | 67.35 | 74.00 | -6.65 | Vertical |

**Average value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|---|---|---|---|---|---|---|---|---|
| 2390.00 | 46.17 | 27.59 | 5.38 | 34.01 | 45.13 | 54.00 | -8.87 | Horizontal |
| 2400.00 | 51.36 | 27.58 | 5.39 | 34.01 | 50.32 | 54.00 | -3.68 | Horizontal |
| 2390.00 | 42.53 | 27.59 | 5.38 | 34.01 | 41.49 | 54.00 | -12.51 | Vertical |
| 2400.00 | 47.69 | 27.58 | 5.39 | 34.01 | 46.65 | 54.00 | -7.35 | Vertical |

802.11 N 20 High CH

**Peak value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|---|---|---|---|---|---|---|---|---|
| 2483.50 | 52.73 | 27.53 | 5.47 | 33.92 | 51.81 | 74.00 | -22.19 | Horizontal |
| 2500.00 | 47.15 | 27.55 | 5.49 | 29.93 | 50.26 | 74.00 | -23.74 | Horizontal |
| 2483.50 | 48.88 | 27.53 | 5.47 | 33.92 | 47.96 | 74.00 | -26.04 | Vertical |
| 2500.00 | 45.26 | 27.55 | 5.49 | 29.93 | 48.37 | 74.00 | -25.63 | Vertical |

**Average value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|---|---|---|---|---|---|---|---|---|
| 2483.50 | 36.68 | 27.53 | 5.47 | 33.92 | 35.76 | 54.00 | -18.24 | Horizontal |
| 2500.00 | 34.84 | 27.55 | 5.49 | 29.93 | 37.95 | 54.00 | -16.05 | Horizontal |
| 2483.50 | 35.51 | 27.53 | 5.47 | 33.92 | 34.59 | 54.00 | -19.41 | Vertical |
| 2500.00 | 33.13 | 27.55 | 5.49 | 29.93 | 36.24 | 54.00 | -17.76 | Vertical |

802.11 N 40 Low CH

**Peak value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|---|---|---|---|---|---|---|---|---|
| 2390.00 | 64.49 | 27.59 | 5.38 | 34.01 | 63.45 | 74.00 | -10.55 | Horizontal |
| 2400.00 | 70.04 | 27.58 | 5.39 | 34.01 | 69.00 | 74.00 | -5.00 | Horizontal |
| 2390.00 | 64.94 | 27.59 | 5.38 | 34.01 | 63.90 | 74.00 | -10.10 | Vertical |
| 2400.00 | 69.36 | 27.58 | 5.39 | 34.01 | 68.32 | 74.00 | -5.68 | Vertical |

**Average value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|---|---|---|---|---|---|---|---|---|
| 2390.00 | 48.59 | 27.59 | 5.38 | 34.01 | 47.55 | 54.00 | -6.45 | Horizontal |
| 2400.00 | 51.04 | 27.58 | 5.39 | 34.01 | 50.00 | 54.00 | -4.00 | Horizontal |
| 2390.00 | 49.03 | 27.59 | 5.38 | 34.01 | 47.99 | 54.00 | -6.01 | Vertical |
| 2400.00 | 50.90 | 27.58 | 5.39 | 34.01 | 49.86 | 54.00 | -4.14 | Vertical |

802.11 N 40 High CH

**Peak value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|---|---|---|---|---|---|---|---|---|
| 2483.50 | 64.38 | 27.53 | 5.47 | 33.92 | 63.46 | 74.00 | -10.54 | Horizontal |
| 2500.00 | 47.09 | 27.55 | 5.49 | 29.93 | 50.20 | 74.00 | -23.80 | Horizontal |
| 2483.50 | 61.70 | 27.53 | 5.47 | 33.92 | 60.78 | 74.00 | -13.22 | Vertical |
| 2500.00 | 45.22 | 27.55 | 5.49 | 29.93 | 48.33 | 74.00 | -25.67 | Vertical |

**Average value:**

| Frequency (MHz) | Read Level (dBuV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level (dBuV/m) | Limit Line (dBuV/m) | Over Limit (dB) | Polarization |
|---|---|---|---|---|---|---|---|---|
| 2483.50 | 45.68 | 27.53 | 5.47 | 33.92 | 44.76 | 54.00 | -9.24 | Horizontal |
| 2500.00 | 34.81 | 27.55 | 5.49 | 29.93 | 37.92 | 54.00 | -16.08 | Horizontal |
| 2483.50 | 44.31 | 27.53 | 5.47 | 33.92 | 43.39 | 54.00 | -10.61 | Vertical |
| 2500.00 | 33.03 | 27.55 | 5.49 | 29.93 | 36.14 | 54.00 | -17.86 | Vertical |

# 8 CONDUCTED EMISSION TEST

## 8.1.1 POWER LINE CONDUCTED EMISSION LIMITS

Operating frequency band. In case the emission fall within the restricted band specified on Part 207(a) limit in the table below has to be followed.

| FREQUENCY (MHz) | Conducted Emissionlimit (dBuV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15 -0.5 | 66 - 56 * | 56 - 46 * |
| 0.50 -5.0 | 56.00 | 46.00 |
| 5.0 -30.0 | 60.00 | 50.00 |

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

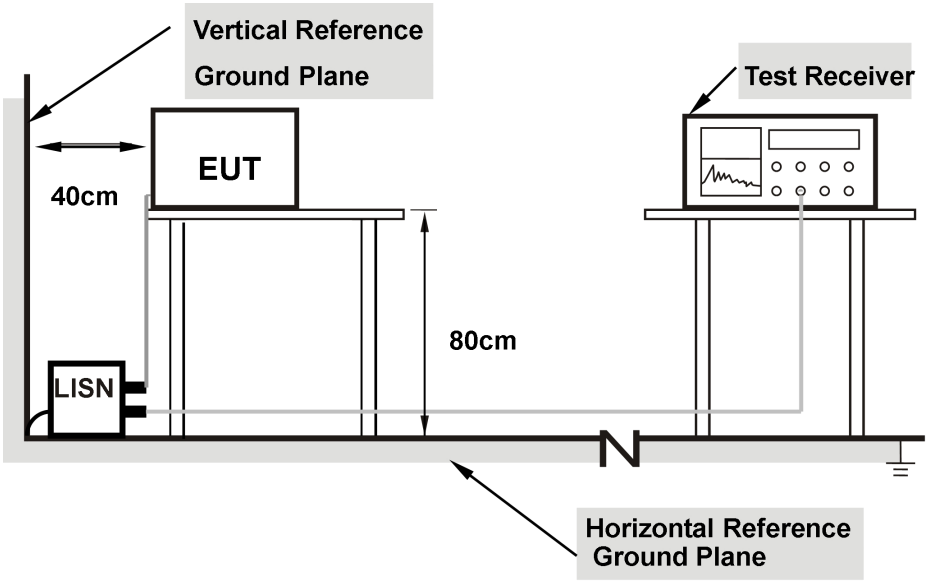
The following table is the setting of the receiver

| Receiver Parameters | Setting |
|---|---|
| Attenuation | 10 dB |
| Start Frequency | 0.15 MHz |
| Stop Frequency | 30 MHz |
| IF Bandwidth | 9 kHz |

8.1.2 TEST PROCEDURE

a. The EUT was 0.8 meters from the horizontal ground plane and 0.4 meters from the vertical ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

8.1.3 TEST SETUP

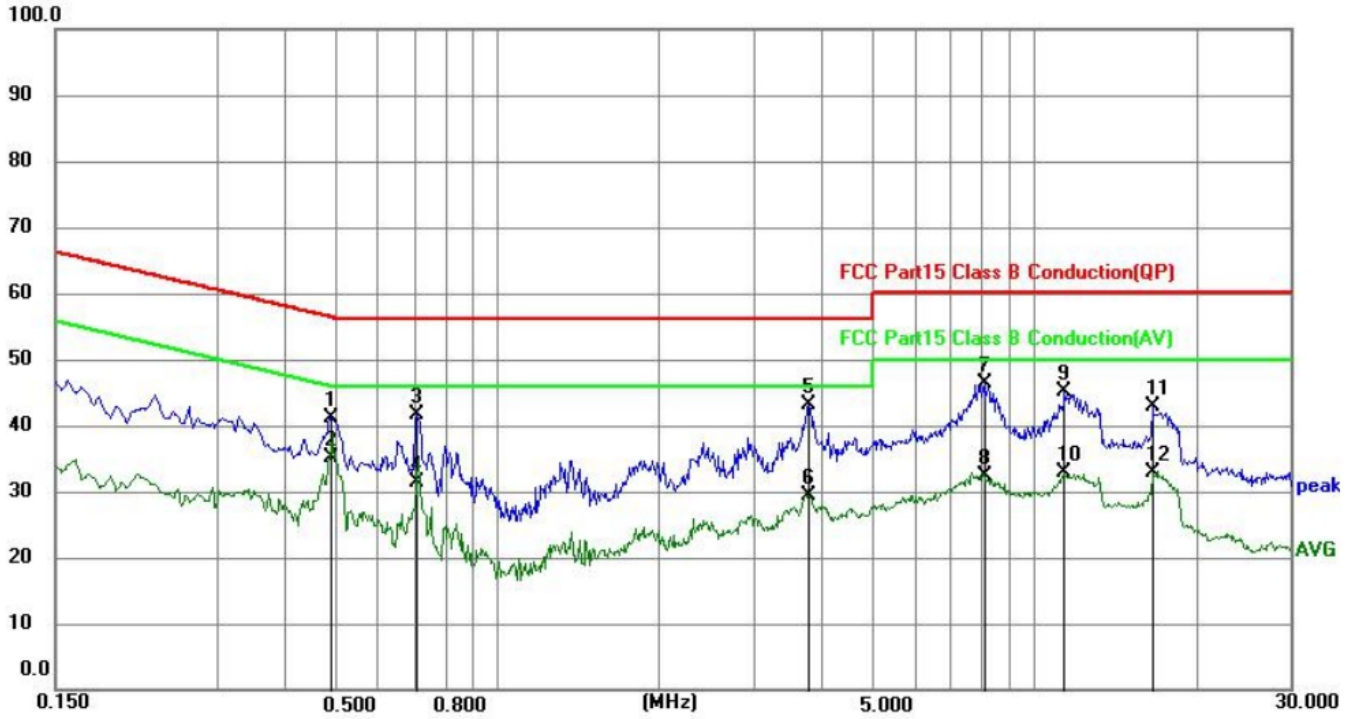



**Note: 1.Support units were connected to second LISN.**

**2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes**

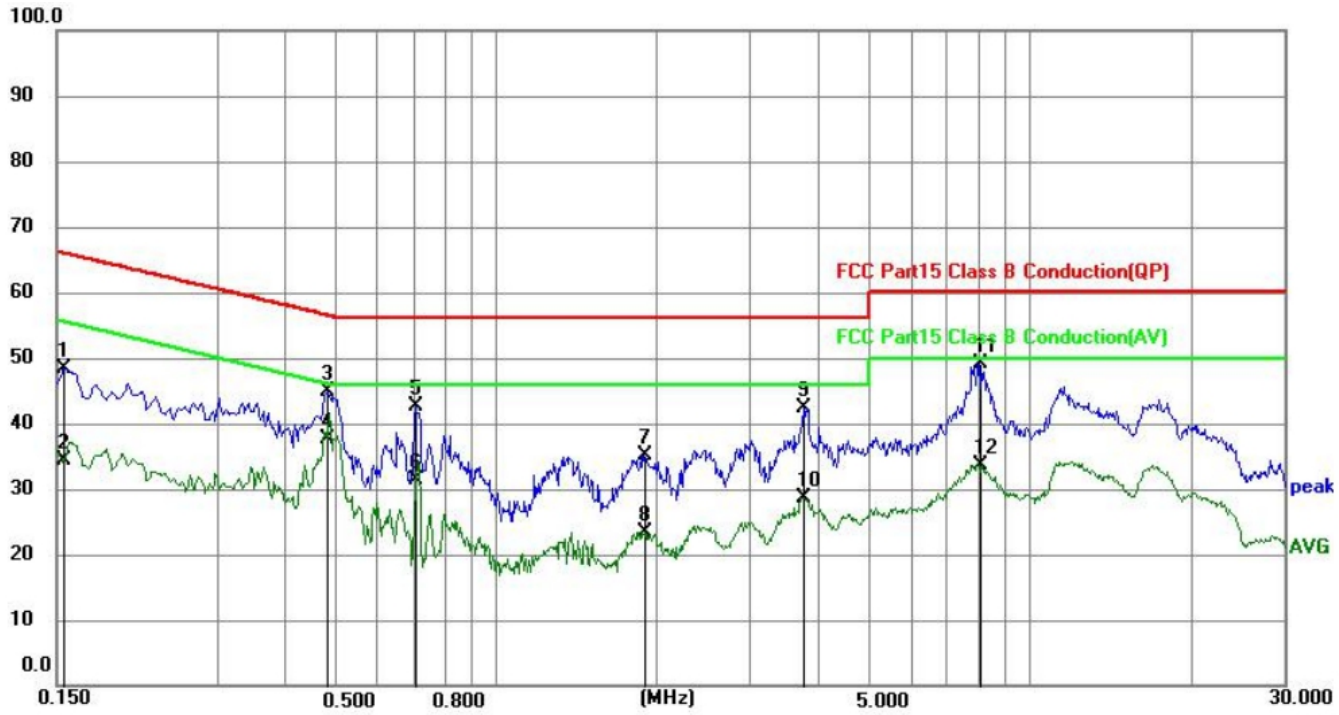
8.1.4 TEST RESULT

| Temperature: | 22.1 ℃ | Relative Humidity: | 56% |
|---|---|---|---|
| Test Voltage: | DC 12V | Phase: | L |
| Test Mode: | 802.11b(worst) | | |




| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|
| 1 | 0.4875 | 31.19 | 9.87 | 41.06 | 56.21 | 15.15 | QP |
| 2 | 0.4875 | 25.16 | 9.87 | 35.03 | 46.21 | 11.18 | AVG |
| 3 | 0.7080 | 31.84 | 9.89 | 41.73 | 56.00 | 14.27 | QP |
| 4 | 0.7080 | 21.50 | 9.89 | 31.39 | 46.00 | 14.61 | AVG |
| 5 | 3.7995 | 25.06 | 17.95 | 43.01 | 56.00 | 12.99 | QP |
| 6 | 3.7995 | 11.41 | 17.95 | 29.36 | 46.00 | 16.64 | AVG |
| 7 | 8.0700 | 26.40 | 20.00 | 46.40 | 60.00 | 13.60 | QP |
| 8 | 8.0700 | 12.27 | 20.00 | 32.27 | 50.00 | 17.73 | AVG |
| 9 | 11.4090 | 25.19 | 20.04 | 45.23 | 60.00 | 14.77 | QP |
| 10 | 11.4090 | 12.74 | 20.04 | 32.78 | 50.00 | 17.22 | AVG |
| 11 | 16.6560 | 22.85 | 20.13 | 42.98 | 60.00 | 17.02 | QP |
| 12 | 16.6560 | 12.66 | 20.13 | 32.79 | 50.00 | 17.21 | AVG |

| Temperature: | 22.1 ℃ | Relative Humidity: | 56% |
|---|---|---|---|
| Test Voltage: | DC 12V | Phase: | N |
| Test Mode: | 802.11b(worst) | | |




| No. | Frequency (MHz) | Reading (dBuV) | Correct Factor(dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|
| 1 | 0.1545 | 38.68 | 9.77 | 48.45 | 65.75 | 17.30 | QP |
| 2 | 0.1545 | 24.50 | 9.77 | 34.27 | 55.75 | 21.48 | AVG |
| 3 | 0.4830 | 34.97 | 9.87 | 44.84 | 56.29 | 11.45 | QP |
| 4 | 0.4830 | 27.87 | 9.87 | 37.74 | 46.29 | 8.55 | AVG |
| 5 | 0.7080 | 32.77 | 9.89 | 42.66 | 56.00 | 13.34 | QP |
| 6 | 0.7080 | 21.59 | 9.89 | 31.48 | 46.00 | 14.52 | AVG |
| 7 | 1.8960 | 20.64 | 14.41 | 35.05 | 56.00 | 20.95 | QP |
| 8 | 1.8960 | 8.94 | 14.41 | 23.35 | 46.00 | 22.65 | AVG |
| 9 | 3.7725 | 24.40 | 17.94 | 42.34 | 56.00 | 13.66 | QP |
| 10 | 3.7725 | 10.69 | 17.94 | 28.63 | 46.00 | 17.37 | AVG |
| 11 | 8.0475 | 29.05 | 20.14 | 49.19 | 60.00 | 10.81 | QP |
| 12 | 8.0475 | 13.37 | 20.14 | 33.51 | 50.00 | 16.49 | AVG |

# 9. ANTENNA REQUIREMENT

## 9.1 STANDARD REQUIREMENT

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

## 9.2 RESULT

The antennas used for this product are FPC antenna and other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is 1.0dBi.

※※※※※END OF THE REPORT※※※※※