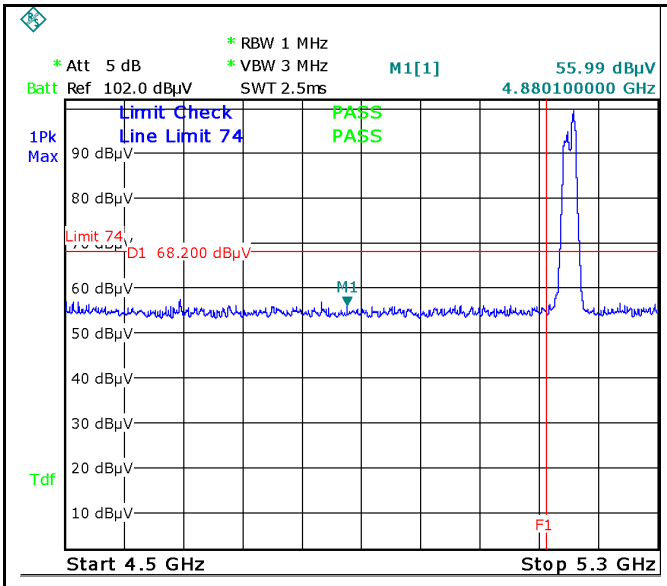
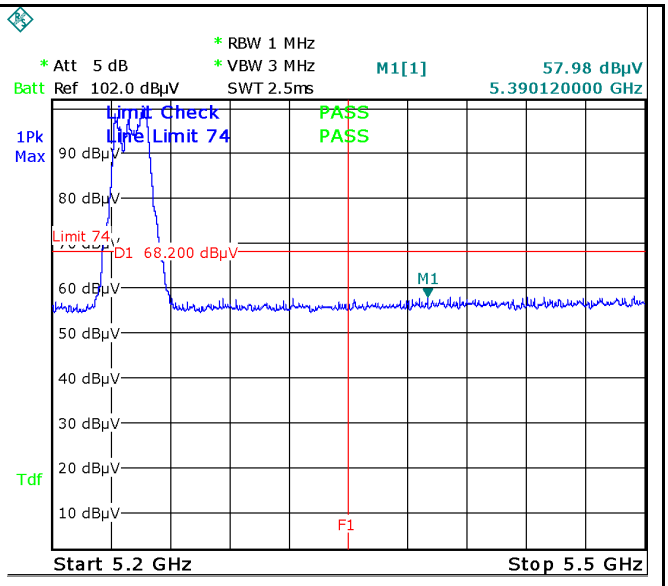


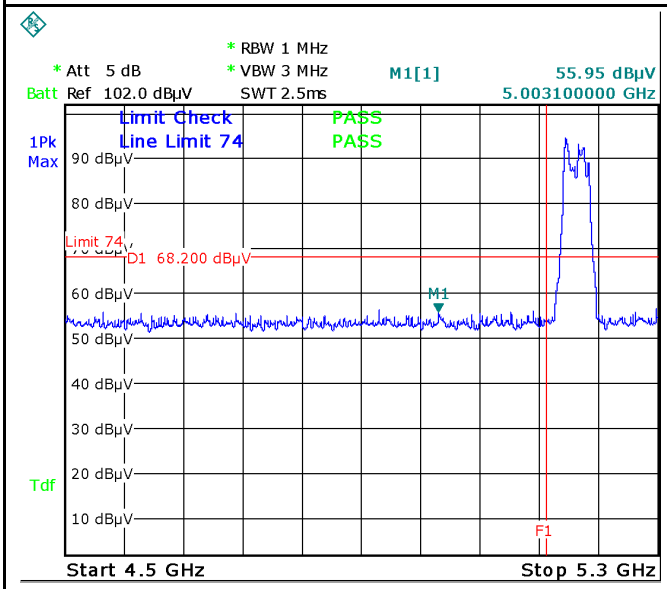

Band Edge, Left Side (Peak) - n20

**Note: F1 is frequency 4500MHz;**



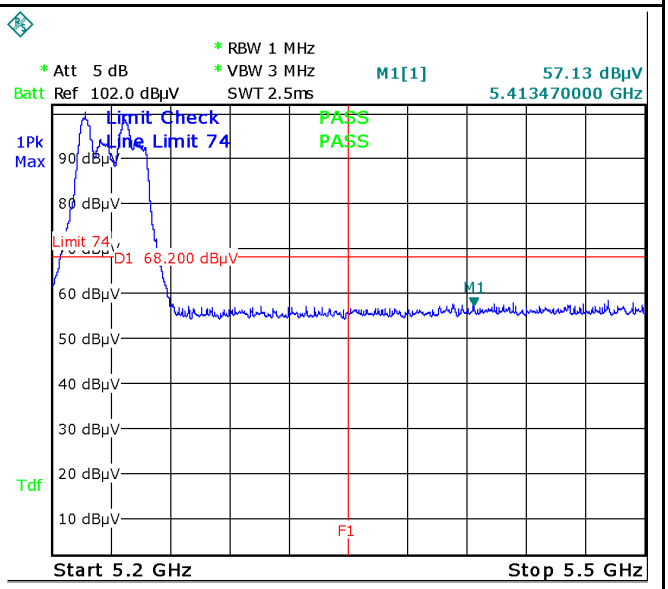

Band Edge, Right Side (Peak) - n20

**Note: F1 is frequency 5200MHz**




Band Edge, Left Side (Peak) - n40

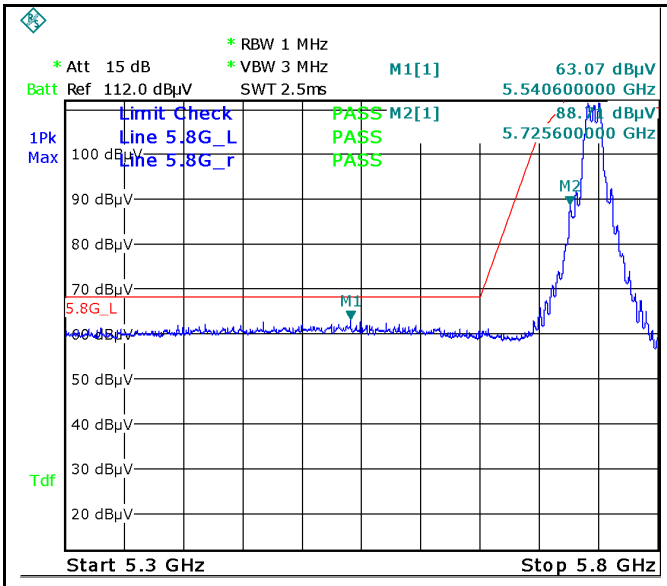
Note: F1 is frequency 4500MHz;




Band Edge, Right Side (Peak) - n40

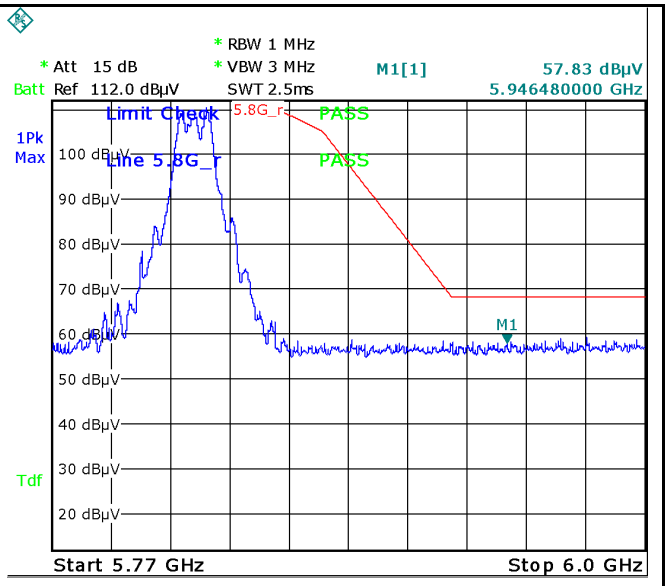
Note: F1 is frequency 5200MHz

## 5725-5825MHz



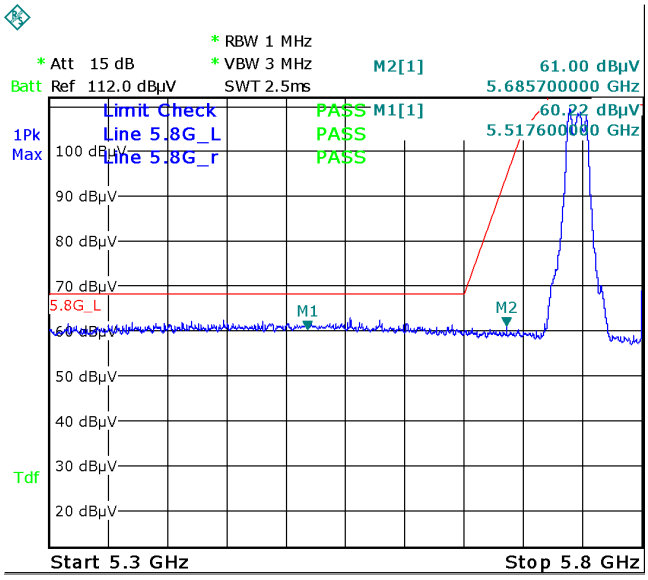

Band Edge, Left Side (Peak) - a

**Note: F1 is frequency 5100MHz;**



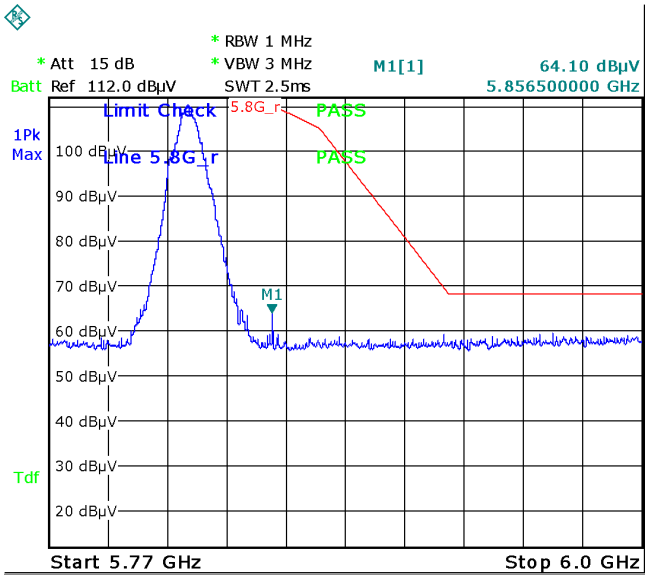

Band Edge, Right Side (Peak) - a

**Note: F1 is frequency 5400MHz**



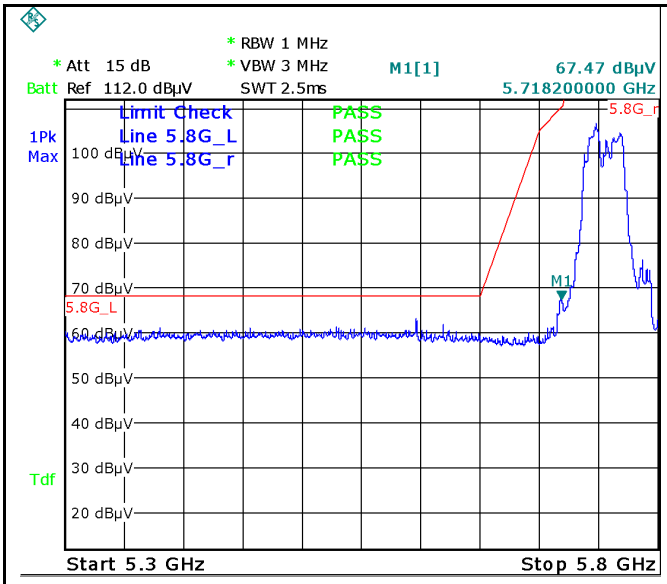

Band Edge, Left Side (Peak) - ac20

Note: F1 is frequency 5100MHz;



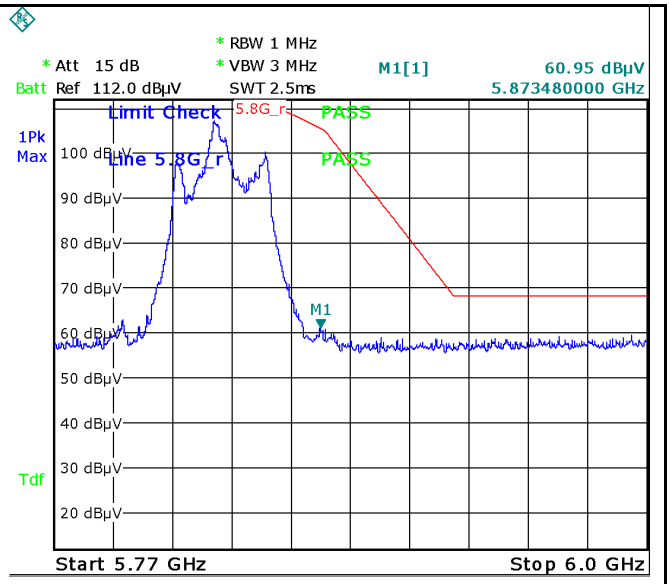

Band Edge, Right Side (Peak) - ac20

Note: F1 is frequency 5400MHz



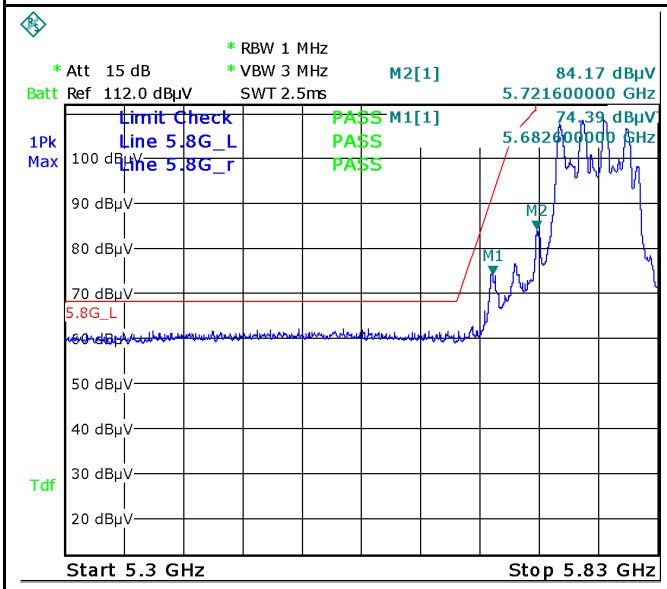

Band Edge, Left Side (Peak) - ac40

**Note: F1 is frequency 5100MHz;**



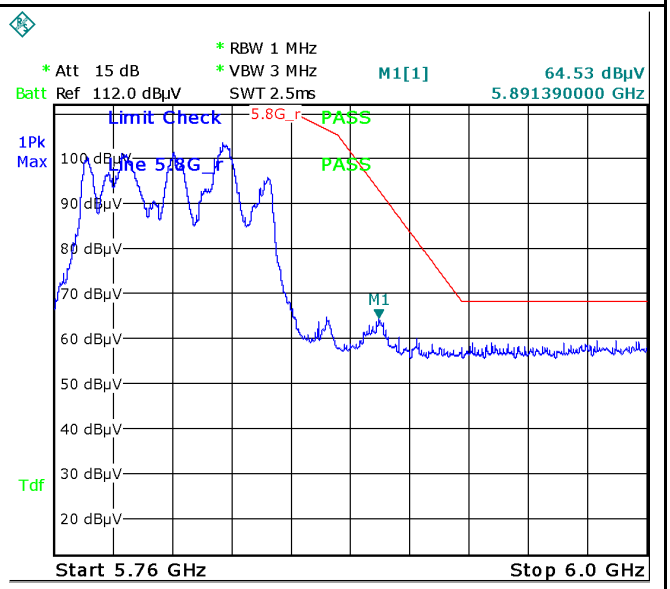

Band Edge, Right Side (Peak) - ac40

**Note: F1 is frequency 5400MHz**



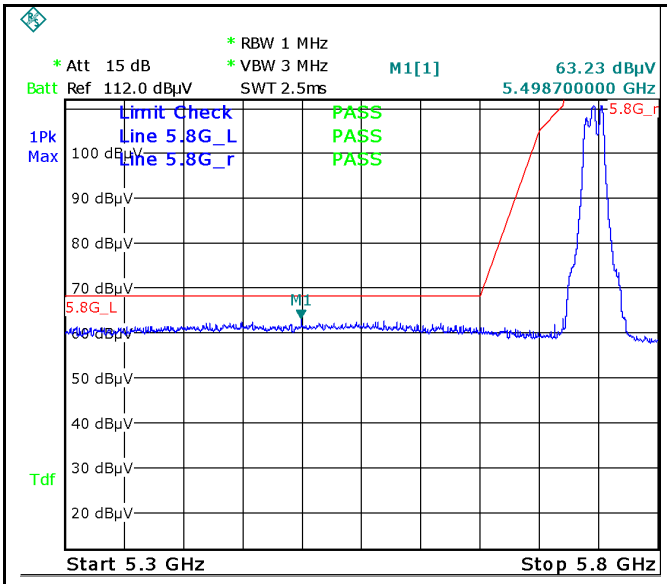

Band Edge, Left Side (Peak) - ac80

Note: F1 is frequency 5100MHz;



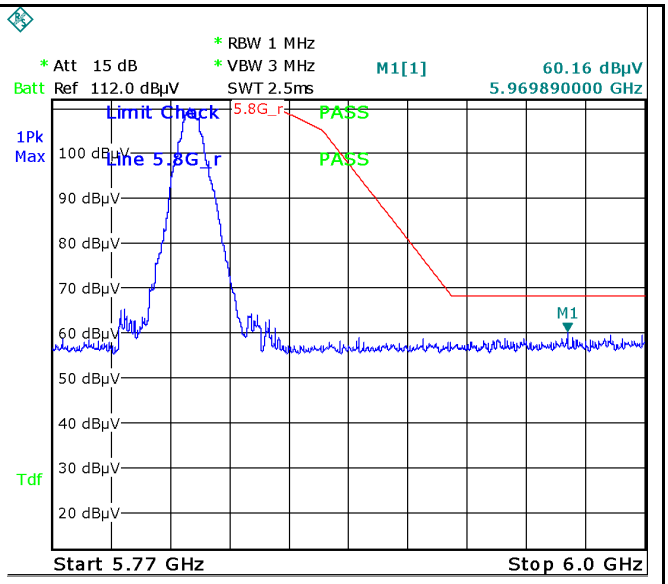

Band Edge, Right Side (Peak) - ac80

Note: F1 is frequency 5400MHz



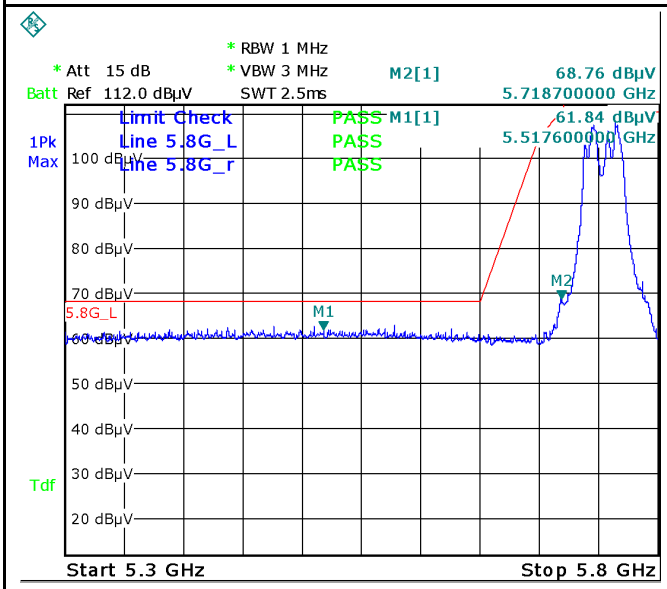

Band Edge, Left Side (Peak) - n20

**Note: F1 is frequency 5100MHz;**



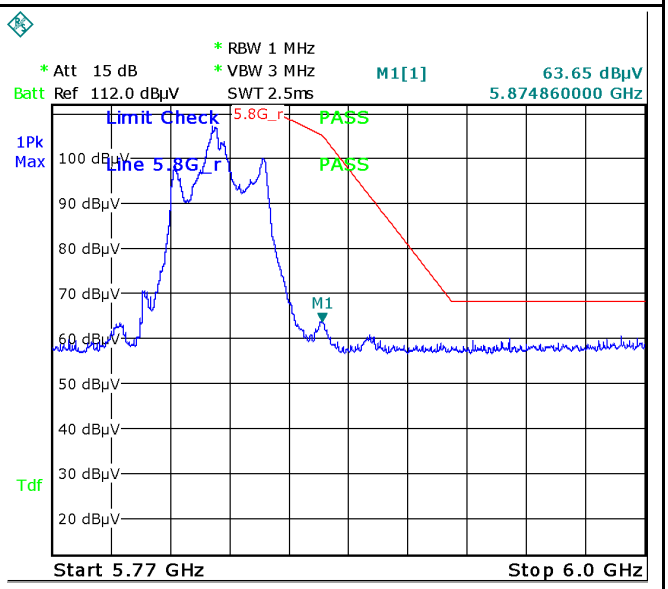

Band Edge, Right Side (Peak) - n20

**Note: F1 is frequency 5400MHz**




Band Edge, Left Side (Peak) - n40

Note: F1 is frequency 5100MHz;




Band Edge, Right Side (Peak) - n40

Note: F1 is frequency 5400MHz

# 6.7 §15.207 (a) - AC Power Line Conducted Emissions

Requirement:

| Frequency of emission (MHz) | Conducted limit (dBμ V) | |
| --- | --- | --- |
| | Quasi-peak | Average |
| 0.15– 0.5 | 66 to 56* | 56 to 46* |
| 0.5– 5 | 56 | 46 |
| 5– 30 | 60 | 50 |

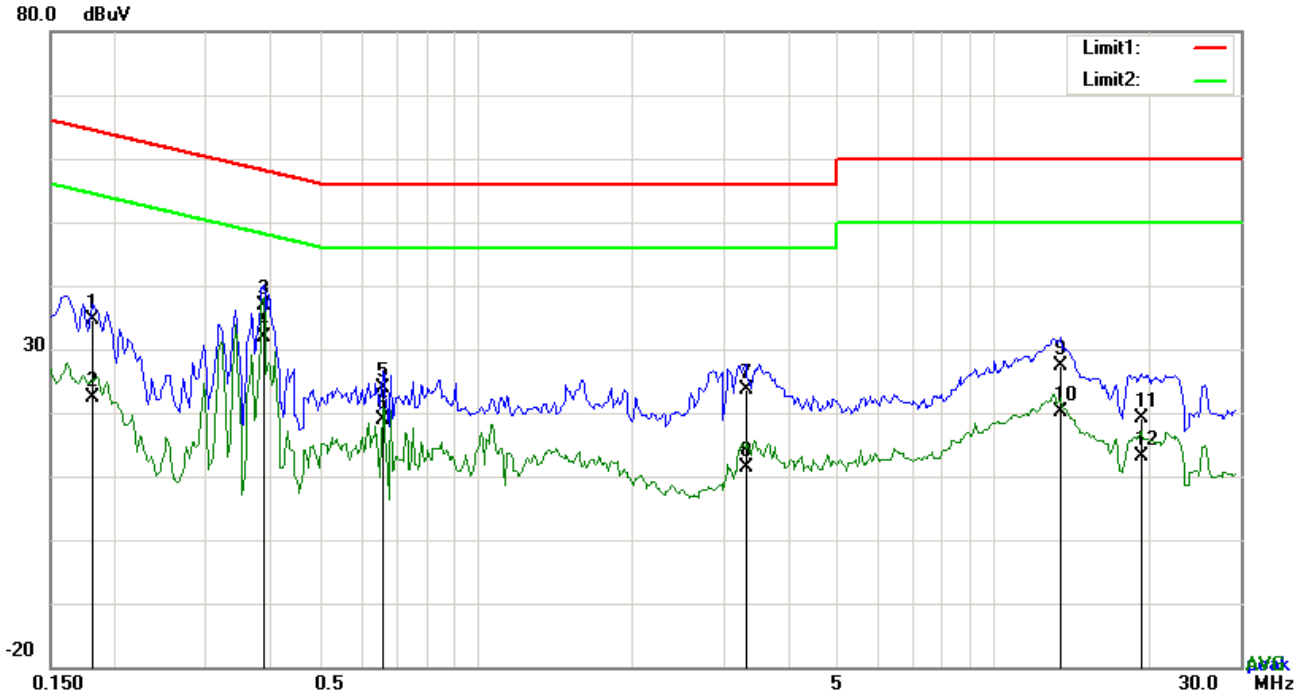
*Decreases with the logarithm of the frequency.

**Procedures:**

1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR and Average detectors, are reported. All other emissions were relatively insignificant.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. Conducted Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 9kHz – 30MHz (Average & Quasi-peak) is ±3.5dB.
4. Environmental Conditions
   Temperature 25°C
   Relative Humidity 57%
   Atmospheric Pressure 1015mbar
5. Test date : December 12, 2017
   Tested By : Aaron Liang

**Result: PASS**

| Test Mode: | Transmitting Mode |
| --- | --- |

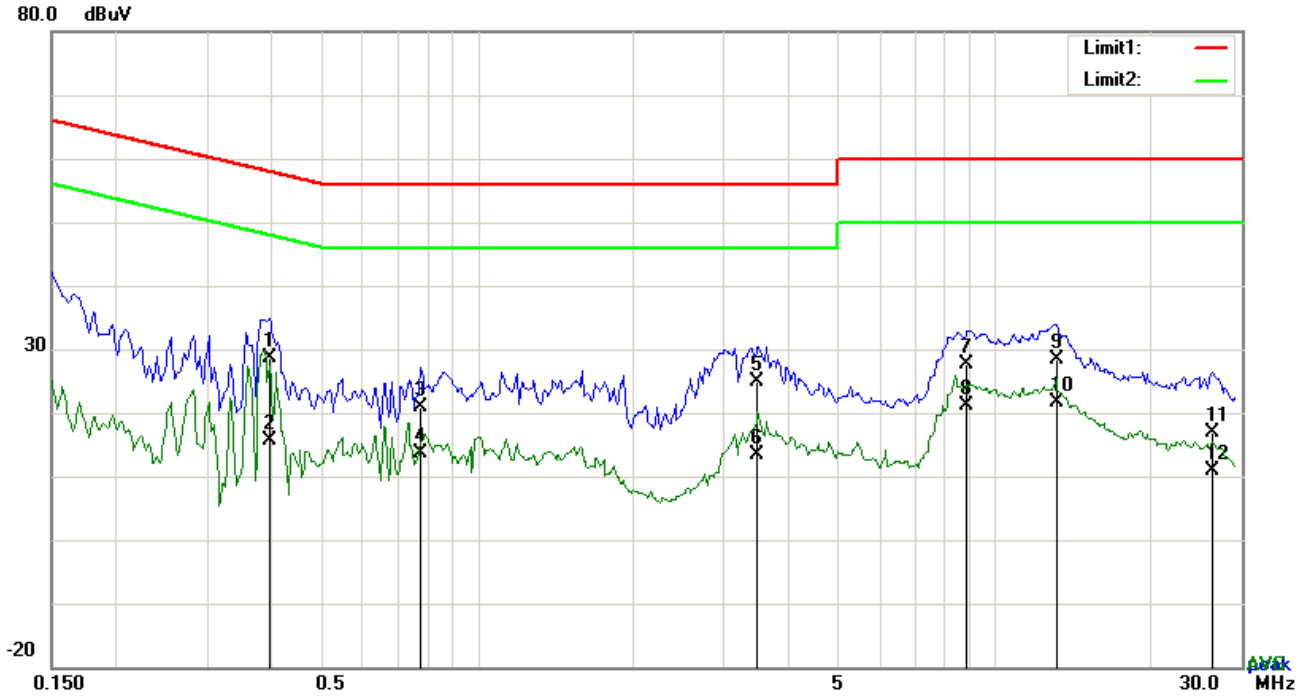



*Test Data*

Phase Line Plot at 120Vac, 60Hz

| No. | P/L | Frequency (MHz) | Reading (dBµV) | Detector | Corrected (dB) | Result (dBµV) | Limit (dBµV) | Margin (dB) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | L1 | 0.1812 | 24.49 | QP | 10.03 | 34.52 | 64.43 | -29.91 |
| 2 | L1 | 0.1812 | 12.27 | AVG | 10.03 | 22.30 | 54.43 | -32.13 |
| 3 | L1 | 0.3879 | 26.89 | QP | 10.03 | 36.92 | 58.11 | -21.19 |
| 4 | L1 | 0.3879 | 21.96 | AVG | 10.03 | 31.99 | 48.11 | -16.12 |
| 5 | L1 | 0.6609 | 13.82 | QP | 10.03 | 23.85 | 56.00 | -32.15 |
| 6 | L1 | 0.6609 | 8.84 | AVG | 10.03 | 18.87 | 46.00 | -27.13 |
| 7 | L1 | 3.3120 | 13.60 | QP | 10.06 | 23.66 | 56.00 | -32.34 |
| 8 | L1 | 3.3120 | 1.36 | AVG | 10.06 | 11.42 | 46.00 | -34.58 |
| 9 | L1 | 13.4910 | 17.27 | QP | 10.20 | 27.47 | 60.00 | -32.53 |
| 10 | L1 | 13.4910 | 9.96 | AVG | 10.20 | 20.16 | 50.00 | -29.84 |
| 11 | L1 | 19.2474 | 8.76 | QP | 10.29 | 19.05 | 60.00 | -40.95 |
| 12 | L1 | 19.2474 | 2.84 | AVG | 10.29 | 13.13 | 50.00 | -36.87 |

| Test Mode: | Transmitting Mode |
|---|---|

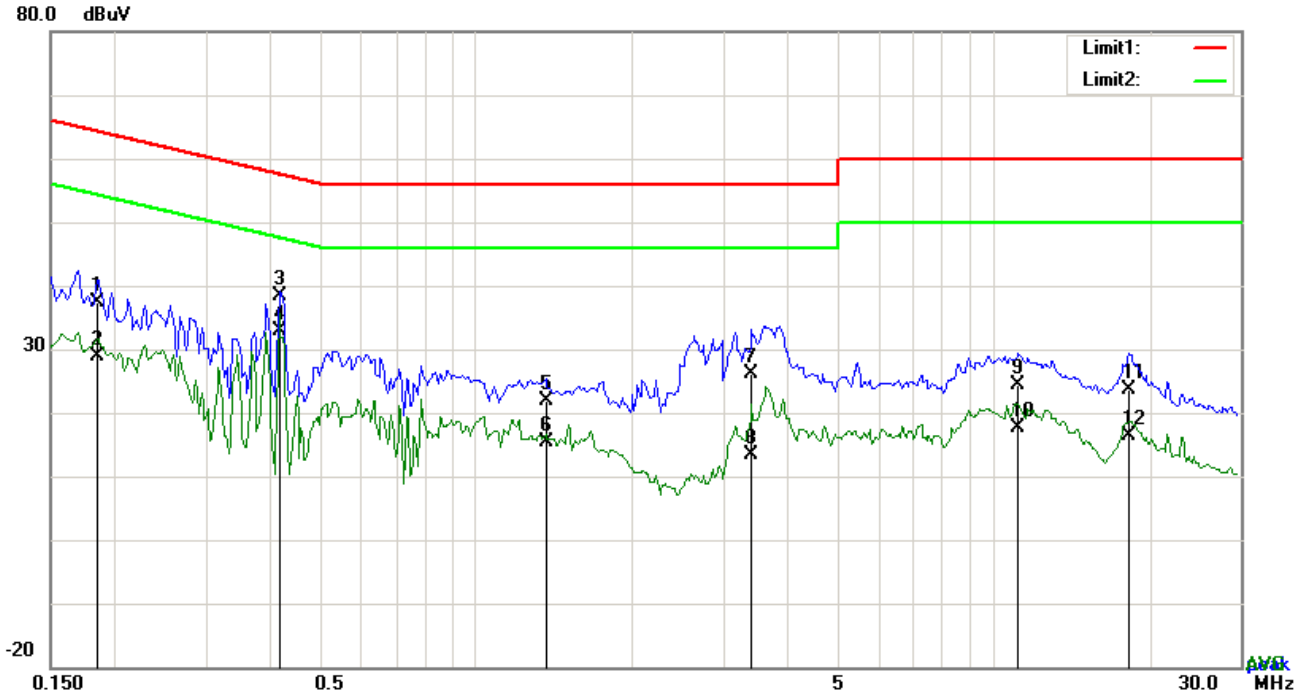



*Test Data*

Phase Neutral Plot at 120Vac, 60Hz

| No. | P/L | Frequency (MHz) | Reading (dBµV) | Detector | Corrected (dB) | Result (dBµV) | Limit (dBµV) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| 1 | N | 0.3957 | 18.70 | QP | 10.03 | 28.73 | 57.94 | -29.21 |
| 2 | N | 0.3957 | 5.70 | AVG | 10.03 | 15.73 | 47.94 | -32.21 |
| 3 | N | 0.7779 | 10.83 | QP | 10.03 | 20.86 | 56.00 | -35.14 |
| 4 | N | 0.7779 | 3.61 | AVG | 10.03 | 13.64 | 46.00 | -32.36 |
| 5 | N | 3.4875 | 14.85 | QP | 10.06 | 24.91 | 56.00 | -31.09 |
| 6 | N | 3.4875 | 3.40 | AVG | 10.06 | 13.46 | 46.00 | -32.54 |
| 7 | N | 8.8617 | 17.45 | QP | 10.13 | 27.58 | 60.00 | -32.42 |
| 8 | N | 8.8617 | 11.04 | AVG | 10.13 | 21.17 | 50.00 | -28.83 |
| 9 | N | 13.1985 | 18.26 | QP | 10.20 | 28.46 | 60.00 | -31.54 |
| 10 | N | 13.1985 | 11.34 | AVG | 10.20 | 21.54 | 50.00 | -28.46 |
| 11 | N | 26.2986 | 6.44 | QP | 10.42 | 16.86 | 60.00 | -43.14 |
| 12 | N | 26.2986 | 0.38 | AVG | 10.42 | 10.80 | 50.00 | -39.20 |

| Test Mode: | Transmitting Mode |
| --- | --- |

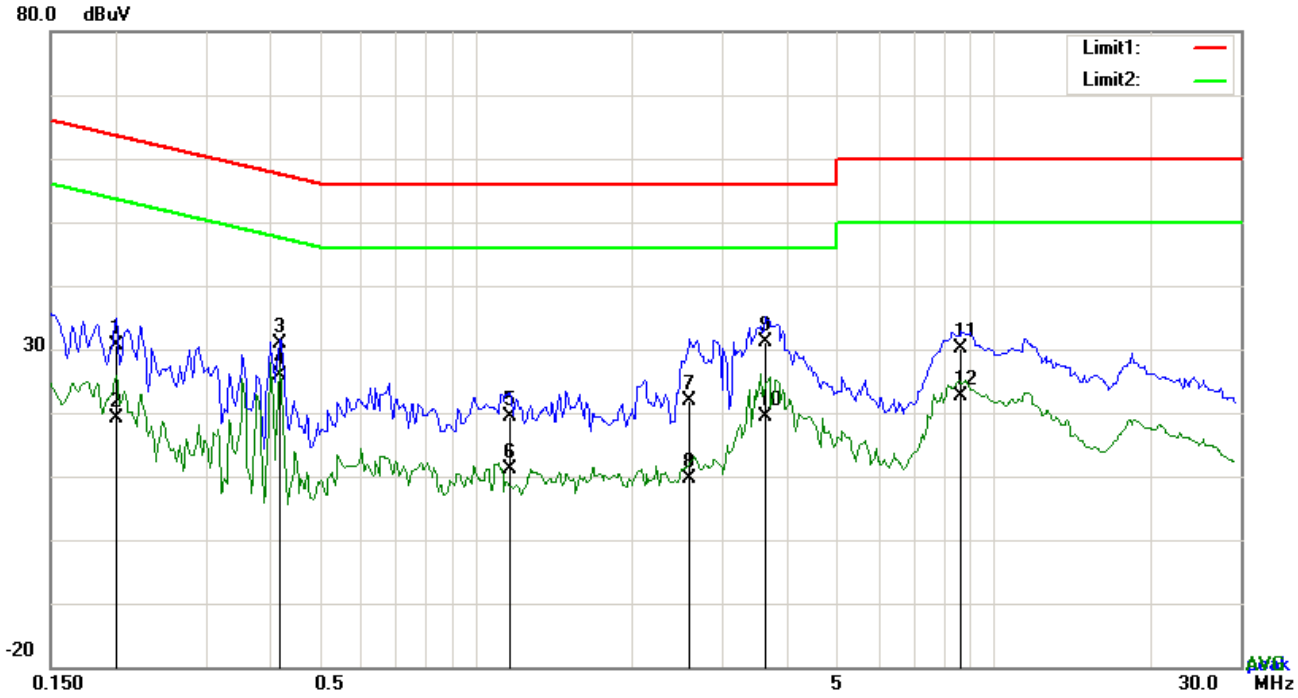



*Test Data*

Phase Line Plot at 240Vac, 60Hz

| No. | P/L | Frequency (MHz) | Reading (dBµV) | Detector | Corrected (dB) | Result (dBµV) | Limit (dBµV) | Margin (dB) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | L1 | 0.1851 | 27.32 | QP | 10.03 | 37.35 | 64.25 | -26.90 |
| 2 | L1 | 0.1851 | 18.93 | AVG | 10.03 | 28.96 | 54.25 | -25.29 |
| 3 | L1 | 0.4152 | 28.27 | QP | 10.03 | 38.30 | 57.54 | -19.24 |
| 4 | L1 | 0.4152 | 22.73 | AVG | 10.03 | 32.76 | 47.54 | -14.78 |
| 5 | L1 | 1.3629 | 11.97 | QP | 10.03 | 22.00 | 56.00 | -34.00 |
| 6 | L1 | 1.3629 | 5.41 | AVG | 10.03 | 15.44 | 46.00 | -30.56 |
| 7 | L1 | 3.4134 | 16.17 | QP | 10.06 | 26.23 | 56.00 | -29.77 |
| 8 | L1 | 3.4134 | 3.27 | AVG | 10.06 | 13.33 | 46.00 | -32.67 |
| 9 | L1 | 11.1510 | 14.21 | QP | 10.17 | 24.38 | 60.00 | -35.62 |
| 10 | L1 | 11.1510 | 7.56 | AVG | 10.17 | 17.73 | 50.00 | -32.27 |
| 11 | L1 | 18.3231 | 13.25 | QP | 10.27 | 23.52 | 60.00 | -36.48 |
| 12 | L1 | 18.3231 | 6.21 | AVG | 10.27 | 16.48 | 50.00 | -33.52 |

| Test Mode: | Transmitting Mode |
|---|---|




*Test Data*

Phase Neutral Plot at 240Vac, 60Hz

| No. | P/L | Frequency (MHz) | Reading (dBµV) | Detector | Corrected (dB) | Result (dBµV) | Limit (dBµV) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| 1 | N | 0.2007 | 20.49 | QP | 10.02 | 30.51 | 63.58 | -33.07 |
| 2 | N | 0.2007 | 9.10 | AVG | 10.02 | 19.12 | 53.58 | -34.46 |
| 3 | N | 0.4191 | 20.89 | QP | 10.02 | 30.91 | 57.47 | -26.56 |
| 4 | N | 0.4191 | 15.96 | AVG | 10.02 | 25.98 | 47.47 | -21.49 |
| 5 | N | 1.1640 | 9.36 | QP | 10.03 | 19.39 | 56.00 | -36.61 |
| 6 | N | 1.1640 | 1.16 | AVG | 10.03 | 11.19 | 46.00 | -34.81 |
| 7 | N | 2.5836 | 11.79 | QP | 10.05 | 21.84 | 56.00 | -34.16 |
| 8 | N | 2.5836 | -0.31 | AVG | 10.05 | 9.74 | 46.00 | -36.26 |
| 9 | N | 3.6123 | 21.02 | QP | 10.06 | 31.08 | 56.00 | -24.92 |
| 10 | N | 3.6123 | 9.20 | AVG | 10.06 | 19.26 | 46.00 | -26.74 |
| 11 | N | 8.6589 | 19.92 | QP | 10.12 | 30.04 | 60.00 | -29.96 |
| 12 | N | 8.6589 | 12.58 | AVG | 10.12 | 22.70 | 50.00 | -27.30 |

# 6.8 §15.209, §15.205 & §15.407(b) - Radiated Spurious Emissions & Unwanted Emissions into Restricted Frequency Bands

1. All possible modes of operation were investigated. Only the 6 worst case emissions measured, using the correct CISPR detectors, are reported. All other emissions were relatively insignificant.
2. A "-ve" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency.
3. Radiated Emissions Measurement Uncertainty
   All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2, in the range 30MHz – 1GHz & 1GHz above ( 3m & 10m) is +/-6dB.
4. Environmental Conditions

| | |
|---|---|
| Temperature | 25°C |
| Relative Humidity | 57% |
| Atmospheric Pressure | 1015mbar |

5. Test date : December 07, 2017
   Tested By : Aaron Liang

**Requirement: §15.407(b)** specifies that emissions which fall in the restricted bands, as defined in **§15.205(a)**, must comply with the radiated emission limits specified in **§15.209(a)**.

**Procedures:**

**Radiated Spurious Emissions Measurement**

An additional consideration when performing conducted measurements of restricted band emissions is that unwanted emissions radiating from the EUT cabinet, control circuits, power leads, or intermediate circuit elements will likely go undetected in a conducted measurement configuration. To address this concern, a radiated test shall be performed to ensure that emissions emanating from the EUT cabinet (rather than the antenna port) also comply with the applicable limits.

For these radiated spurious emission measurements the EUT transmit antenna may be replaced with a termination matching the nominal impedance of the antenna. Established procedures for performing radiated measurements shall be used (see C63.10). All detected emissions must comply with the applicable limits.

## Measurement Detectors

§15.35(a) specifies that on frequencies less than and below 1000 MHz, the radiated emissions limits assume the use of a CISPR quasi-peak detector function and related measurement bandwidths. §15.35(b) specifies that on frequencies above 1000 MHz, the radiated emissions limits assume the use of an average detector and a minimum resolution bandwidth of 1 MHz. In addition, §15.35(b) that when average radiated emissions measurements are specified there is also a limit on the peak emissions level which is 20 dB above the applicable maximum permitted average emission limit. These specifications also apply to conducted emissions measurements.

### 1. CISPR Quasi-Peak Measurement

The specifications for the measuring instrument using the CISPR quasi-peak detector can be found in Publication 16 of the International Special Committee on Radio Frequency Interference (CISPR) of the International Electrotechnical Commission.

As an alternative to CISPR quasi-peak measurement, compliance can be demonstrated to the applicable emission limits using a peak detector.

### 2. Peak Power Measurement Procedure

Utilize the peak power measurement procedure specified in Section 8.1.1 with the following modifications:

Set analyzer center frequency to the frequency associated with the restricted band emission under examination.

Set RBW = 1 MHz.

Note that if the peak measured value complies with the average limit, it is not necessary to perform a separate average measurement. If this option is exercised, it should be so noted in the test report.

### 3. Average Power Measurement Procedures

The average restricted band emission levels must be measured with the EUT transmitting continuously (≥ 98% duty cycle) at its maximum power control level. Optionally, video triggering/signal gating can be used to ensure that measurements are performed only when the EUT is transmitting at its maximum power control level.

The average power measurement procedures described in Section 8.2 shall be used with the following modifications:

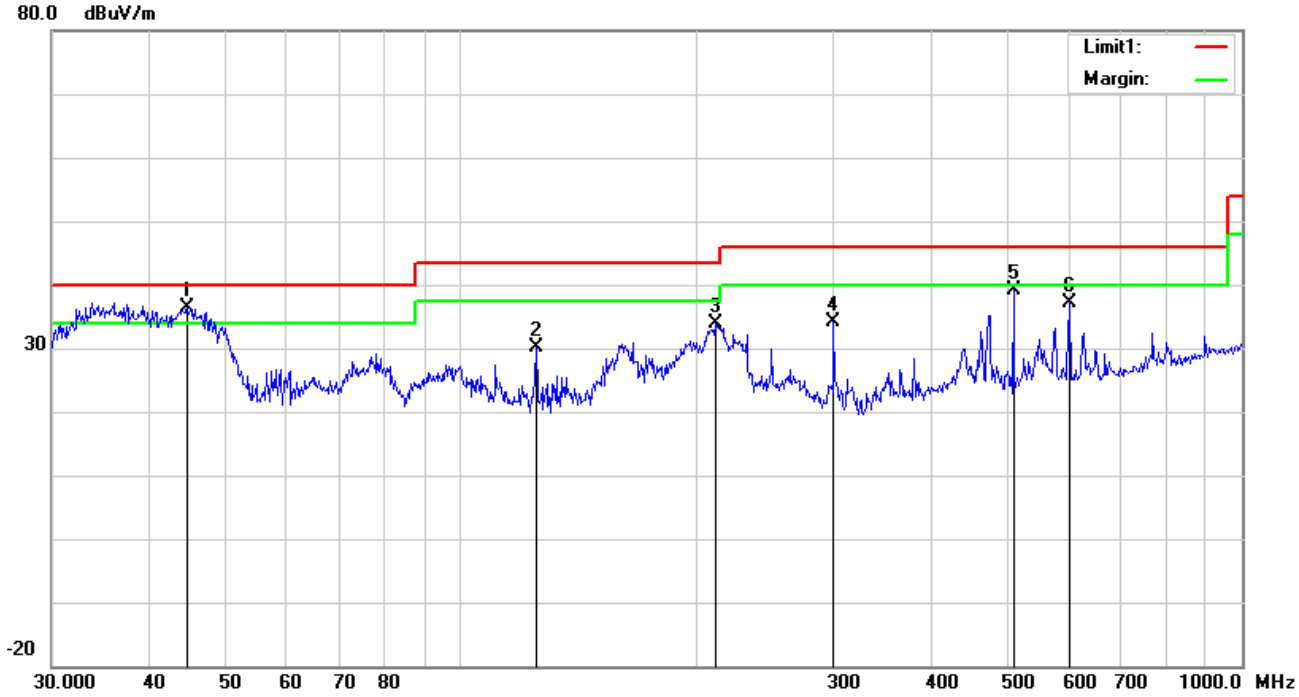
Set analyzer center frequency to the frequency associated with the restricted band emission.

Set span to at least 1 MHz.

Use peak marker function to determine the highest amplitude within the RBW (1 MHz).

| Test Mode: | Transmitting Mode |
|---|---|

(Below 1GHz)

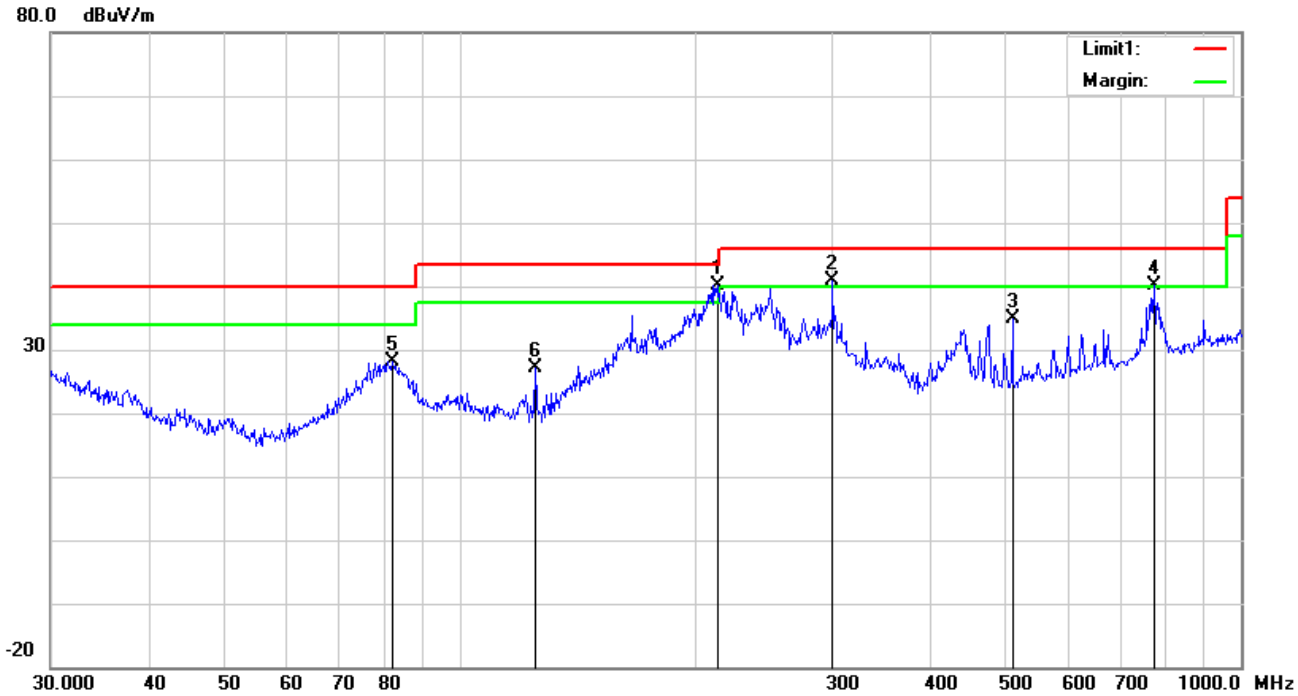



*Test Data*

Vertical Polarity Plot @3m

| No. | Frequency | Reading | Detector | Ant_F | PA_G | Cab_L | Result | Limit | Margin | Height | Degree |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | (MHz) | (dBuV/m) | | (dB/m) | (dB) | (dB) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ) |
| 1 | 44.7434 | 46.25 | QP | 10.77 | 22.29 | 0.75 | 35.48 | 40.00 | -4.52 | 100 | 127 |
| 2 | 125.0066 | 37.68 | peak | 13.57 | 22.37 | 1.18 | 30.06 | 43.50 | -13.44 | 100 | 45 |
| 3 | 212.2695 | 42.61 | peak | 11.93 | 22.36 | 1.58 | 33.76 | 43.50 | -9.74 | 100 | 223 |
| 4 | 300.3673 | 41.08 | peak | 13.61 | 22.29 | 1.79 | 34.19 | 46.00 | -11.81 | 100 | 114 |
| 5 | 510.0436 | 40.62 | peak | 17.84 | 21.79 | 2.43 | 39.10 | 46.00 | -6.90 | 100 | 252 |
| 6 | 601.4265 | 37.17 | peak | 19.12 | 21.58 | 2.49 | 37.20 | 46.00 | -8.80 | 100 | 322 |

(Below 1GHz)




*Test Data*

Horizontal Polarity Plot @3m

| No. | Frequency | Reading | Detector | Ant_F | PA_G | Cab_L | Result | Limit | Margin | Height | Degree |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | (MHz) | (dBuV/m) | | (dB/m) | (dB) | (dB) | (dBuV/m) | (dBuV/m) | (dB) | (cm) | ( ) |
| 1 | 213.7634 | 47.91 | QP | 11.91 | 22.36 | 1.58 | 39.04 | 43.50 | -4.46 | 100 | 159 |
| 2 | 300.3673 | 47.83 | QP | 13.61 | 22.29 | 1.79 | 40.94 | 46.00 | -5.06 | 100 | 307 |
| 3 | 510.0436 | 36.36 | peak | 17.84 | 21.79 | 2.43 | 34.84 | 46.00 | -11.16 | 100 | 44 |
| 4 | 774.1584 | 37.44 | QP | 21.09 | 21.20 | 2.91 | 40.24 | 46.00 | -5.76 | 100 | 312 |
| 5 | 82.0706 | 41.83 | peak | 7.68 | 22.40 | 1.06 | 28.17 | 40.00 | -11.83 | 100 | 190 |
| 6 | 125.0066 | 34.65 | peak | 13.57 | 22.37 | 1.18 | 27.03 | 43.50 | -16.47 | 100 | 337 |

## Above 1GHz

## 5150-5250MHz

| Test Mode: | Transmitting Mode |
|---|---|

Low Channel (5180 MHz-a mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10416 | 44.09 | AV | V | 39.7 | 45.01 | 11.13 | 49.91 | 54 | -4.09 |
| 10560 | 43.52 | AV | H | 39.71 | 45.24 | 11.18 | 49.17 | 54 | -4.83 |
| 10416 | 52.71 | PK | V | 39.7 | 45.01 | 11.13 | 58.53 | 74 | -15.47 |
| 10560 | 50.87 | PK | H | 39.71 | 45.24 | 11.18 | 56.52 | 74 | -17.48 |
| 5189.446 | 54.83 | AV | V | 34.02 | 45.65 | 8.07 | 51.27 | 54 | -2.73 |
| 3840.534 | 53.51 | AV | H | 31.44 | 48.97 | 6.64 | 42.62 | 54 | -11.38 |
| 5189.446 | 64.27 | PK | V | 34.02 | 45.65 | 8.07 | 60.71 | 74 | -13.29 |
| 3840.534 | 59.18 | PK | H | 31.44 | 48.97 | 6.64 | 48.29 | 74 | -25.71 |

Middle Channel (5200 MHz-a mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10440 | -26.57 | AV | V | 39.92 | 10.54 | 47.02 | 49.83 | 54 | -4.17 |
| 10440 | -28.02 | AV | H | 39.92 | 10.54 | 47.02 | 48.38 | 54 | -5.62 |
| 10440 | -20.41 | PK | V | 39.92 | 10.54 | 47.02 | 55.99 | 74 | -18.01 |
| 10440 | -21.26 | PK | H | 39.92 | 10.54 | 47.02 | 55.14 | 74 | -18.86 |
| 3840.534 | 53.45 | AV | V | 31.44 | 48.97 | 6.64 | 42.56 | 54 | -7.08 |
| 1019.905 | 61.58 | AV | H | 24.33 | 48.23 | 3.4 | 41.08 | 54 | -16.72 |
| 3840.534 | 58.9 | PK | V | 31.44 | 48.97 | 6.64 | 48.01 | 74 | -19.95 |
| 1019.905 | 64.25 | PK | H | 24.33 | 48.23 | 3.4 | 43.75 | 74 | -31.69 |

High Channel (5240 MHz-a mode)

| Frequency (MHz) | S.A. Reading (dBμV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10416 | 43.69 | AV | V | 39.7 | 45.01 | 11.13 | 49.51 | 54 | -4.49 |
| 10344 | 43.98 | AV | H | 39.67 | 44.8 | 11.09 | 49.94 | 54 | -4.06 |
| 10416 | 53.96 | PK | V | 39.7 | 45.01 | 11.13 | 59.78 | 74 | -14.22 |
| 10344 | 50.7 | PK | H | 39.67 | 44.8 | 11.09 | 56.66 | 74 | -17.34 |
| 17843.125 | -25.22 | AV | V | 42.77 | 16.95 | 47 | 47.6 | 54 | -6.4 |
| 17843.432 | -35.83 | AV | H | 42.77 | 16.95 | 47 | 36.99 | 54 | -17.01 |
| 17843.125 | -18.42 | PK | V | 42.77 | 16.95 | 47 | 54.4 | 74 | -19.6 |
| 17843.432 | -30.96 | PK | H | 42.77 | 16.95 | 47 | 41.86 | 74 | -32.14 |

**Note:**

*1, The testing has been conformed to 40GHz;*
*2, All other emissions more than 30 dB below the limit*
*3, The radiated spurious test above 18GHz is subcontracted to "BV 7LAYERS COMMUNICATION TRCHNOLOGY(SHENZHEN)CO.,LTD" Laboratories. and found 30dB below the limit at least.*

| Test Mode: | Transmitting Mode |
|---|---|

Low Channel (5180 MHz-ac20 mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10416 | 42.45 | AV | V | 39.7 | 45.01 | 11.13 | 48.27 | 54 | -5.73 |
| 10476 | 43.92 | AV | H | 39.72 | 45.19 | 11.17 | 49.62 | 54 | -4.38 |
| 10416 | 52.55 | PK | V | 39.7 | 45.01 | 11.13 | 58.37 | 74 | -15.63 |
| 10476 | 50.91 | PK | H | 39.72 | 45.19 | 11.17 | 56.61 | 74 | -17.39 |
| 5515.414 | 49.69 | AV | V | 34.26 | 46.09 | 9.39 | 47.25 | 54 | -6.75 |
| 5525.306 | 49.8 | AV | H | 34.27 | 46.14 | 9.39 | 47.32 | 54 | -6.68 |
| 5515.414 | 57.98 | PK | V | 34.26 | 46.09 | 9.39 | 55.54 | 74 | -18.46 |
| 5525.306 | 57.31 | PK | H | 34.27 | 46.14 | 9.39 | 54.83 | 74 | -19.17 |

Middle Channel (5200 MHz-ac20 mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10440 | -28.35 | AV | V | 39.92 | 10.54 | 47.02 | 48.05 | 54 | -5.95 |
| 10440 | -28.77 | AV | H | 39.92 | 10.54 | 47.02 | 47.63 | 54 | -6.37 |
| 10440 | -20.66 | PK | V | 39.92 | 10.54 | 47.02 | 55.74 | 74 | -18.26 |
| 10440 | -20.69 | PK | H | 39.92 | 10.54 | 47.02 | 55.71 | 74 | -18.29 |
| 3840.534 | 57.45 | AV | V | 31.44 | 48.97 | 6.64 | 46.56 | 54 | -5.73 |
| 1393.022 | 58.32 | AV | H | 25.25 | 48.31 | 3.99 | 39.25 | 54 | -17.27 |
| 3840.534 | 62.55 | PK | V | 31.44 | 48.97 | 6.64 | 51.66 | 74 | -18.88 |
| 1393.022 | 59.94 | PK | H | 25.25 | 48.31 | 3.99 | 40.87 | 74 | -31.67 |

High Channel (5240 MHz-ac20 mode)

| Frequency (MHz) | S.A. Reading (dBμV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10416 | 42.66 | AV | V | 39.7 | 45.01 | 11.13 | 48.48 | 54 | -5.52 |
| 10320 | 44.63 | AV | H | 39.67 | 44.73 | 11.07 | 50.64 | 54 | -3.36 |
| 10416 | 52.99 | PK | V | 39.7 | 45.01 | 11.13 | 58.81 | 74 | -15.19 |
| 10320 | 50.21 | PK | H | 39.67 | 44.73 | 11.07 | 56.22 | 74 | -17.78 |
| 17843 | -25.8 | AV | V | 42.77 | 16.95 | 47 | 47.02 | 54 | -6.98 |
| 17843 | -35.02 | AV | H | 42.77 | 16.95 | 47 | 37.8 | 54 | -16.2 |
| 17843 | -18.41 | PK | V | 42.77 | 16.95 | 47 | 54.41 | 74 | -19.59 |
| 17843 | -30.81 | PK | H | 42.77 | 16.95 | 47 | 42.01 | 74 | -31.99 |

**Note:**

*1, The testing has been conformed to 40GHz;*
*2, All other emissions more than 30 dB below the limit*
*3, The radiated spurious test above 18GHz is subcontracted to "BV 7LAYERS COMMUNICATION TRCHNOLOGY(SHENZHEN)CO.,LTD" Laboratories. and found 30dB below the limit at least.*

| Test Mode: | Transmitting Mode |
|---|---|

Low Channel (5190 MHz-ac40 mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10416 | 44.79 | AV | V | 39.7 | 45.01 | 11.13 | 50.61 | 54 | -3.39 |
| 10512 | 44.62 | AV | H | 39.73 | 45.26 | 11.18 | 50.27 | 54 | -3.73 |
| 10416 | 52.23 | PK | V | 39.7 | 45.01 | 11.13 | 58.05 | 74 | -15.95 |
| 10512 | 51.18 | PK | H | 39.73 | 45.26 | 11.18 | 56.83 | 74 | -17.17 |
| 5535.214 | 51.77 | AV | V | 34.28 | 46.18 | 9.4 | 49.27 | 54 | -4.73 |
| 2423.297 | 52.23 | AV | H | 29.04 | 48.11 | 5.21 | 38.37 | 54 | -15.63 |
| 5535.214 | 59.08 | PK | V | 34.28 | 46.18 | 9.4 | 56.58 | 74 | -17.42 |
| 2423.297 | 58.19 | PK | H | 29.04 | 48.11 | 5.21 | 44.33 | 74 | -29.67 |

Middle Channel (5230 MHz-ac40 mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10440 | -26.98 | AV | V | 39.92 | 10.54 | 47.02 | 49.42 | 54 | -4.58 |
| 10440 | -28.35 | AV | H | 39.92 | 10.54 | 47.02 | 48.05 | 54 | -5.95 |
| 10440 | -18.62 | PK | V | 39.92 | 10.54 | 47.02 | 57.78 | 74 | -16.22 |
| 10440 | -21.96 | PK | H | 39.92 | 10.54 | 47.02 | 54.44 | 74 | -19.56 |
| 5189.446 | 52.36 | AV | V | 34.02 | 45.65 | 8.07 | 48.8 | 54 | -5.2 |
| 3840.534 | 46.81 | AV | H | 31.44 | 48.97 | 6.64 | 35.92 | 54 | -18.08 |
| 5189.446 | 60.02 | PK | V | 34.02 | 45.65 | 8.07 | 56.46 | 74 | -17.54 |
| 3840.534 | 54.54 | PK | H | 31.44 | 48.97 | 6.64 | 43.65 | 74 | -30.35 |

High Channel (5250 MHz-a mode)

| Frequency (MHz) | S.A. Reading (dBμV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 10416 | 44.82 | AV | V | 39.7 | 45.01 | 11.13 | 50.64 | 54 | -3.36 |
| 10524 | 44.73 | AV | H | 39.72 | 45.25 | 11.18 | 50.38 | 54 | -3.62 |
| 10416 | 53.46 | PK | V | 39.7 | 45.01 | 11.13 | 59.28 | 74 | -14.72 |
| 10524 | 50.86 | PK | H | 39.72 | 45.25 | 11.18 | 56.51 | 74 | -17.49 |
| 17843 | -25.68 | AV | V | 42.77 | 16.95 | 47 | 47.14 | 54 | -6.86 |
| 17843 | -35.27 | AV | H | 42.77 | 16.95 | 47 | 37.55 | 54 | -16.45 |
| 17843 | -18.05 | PK | V | 42.77 | 16.95 | 47 | 54.77 | 74 | -19.23 |
| 17843 | -30.7 | PK | H | 42.77 | 16.95 | 47 | 42.12 | 74 | -31.88 |

**Note:**

*1, The testing has been conformed to 40GHz;*
*2, All other emissions more than 30 dB below the limit*
*3, The radiated spurious test above 18GHz is subcontracted to "BV 7LAYERS COMMUNICATION TRCHNOLOGY(SHENZHEN)CO.,LTD" Laboratories. and found 30dB below the limit at least.*

| Test Mode: | Transmitting Mode |
|---|---|

Low Channel (5210 MHz-ac80 mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10416 | 42.66 | AV | V | 39.7 | 45.01 | 11.13 | 48.48 | 54 | -5.52 |
| 10392 | 42.38 | AV | H | 39.69 | 44.94 | 11.12 | 48.25 | 54 | -5.75 |
| 10416 | 51.96 | PK | V | 39.7 | 45.01 | 11.13 | 57.78 | 74 | -16.22 |
| 10392 | 50.72 | PK | H | 39.69 | 44.94 | 11.12 | 56.59 | 74 | -17.41 |
| 2543.412 | 51.07 | AV | V | 34.26 | 46.09 | 9.39 | 48.63 | 54 | -5.37 |
| 5515.414 | 50.7 | AV | H | 34.24 | 46 | 9.35 | 48.29 | 54 | -5.71 |
| 2543.412 | 58.57 | PK | V | 29.28 | 48.18 | 5.34 | 45.01 | 74 | -28.99 |
| 5515.414 | 58.75 | PK | H | 34.26 | 46.09 | 9.39 | 56.31 | 74 | -17.69 |

Middle Channel (5250 MHz-ac80 mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10435 | -29.05 | AV | V | 39.92 | 10.54 | 47.02 | 47.35 | 54 | -6.65 |
| 10442 | -28.92 | AV | H | 39.92 | 10.54 | 47.02 | 47.48 | 54 | -6.52 |
| 10435 | -16.75 | PK | V | 39.92 | 10.54 | 47.02 | 59.65 | 74 | -14.35 |
| 10442 | -18.09 | PK | H | 39.92 | 10.54 | 47.02 | 58.31 | 74 | -15.69 |
| 5189.446 | 52.93 | AV | V | 34.02 | 45.65 | 8.07 | 49.37 | 54 | -7.02 |
| 5495.685 | 50.7 | AV | H | 34.24 | 46 | 9.35 | 48.29 | 54 | -7.82 |
| 5189.446 | 61.92 | PK | V | 34.02 | 45.65 | 8.07 | 58.36 | 74 | -27.6 |
| 5495.685 | 58.06 | PK | H | 34.24 | 46 | 9.35 | 55.65 | 74 | -16.84 |

High Channel (5270 MHz-ac80 mode)

| Frequency (MHz) | S.A. Reading (dBμV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 10416 | 43.96 | AV | V | 39.7 | 45.01 | 11.13 | 49.78 | 54 | -4.22 |
| 10476 | 43.78 | AV | H | 39.72 | 45.19 | 11.17 | 49.48 | 54 | -4.52 |
| 10416 | 52.71 | PK | V | 39.7 | 45.01 | 11.13 | 58.53 | 74 | -15.47 |
| 10476 | 50.99 | PK | H | 39.72 | 45.19 | 11.17 | 56.69 | 74 | -17.31 |
| 17843 | -25.61 | AV | V | 42.77 | 16.95 | 47 | 47.21 | 54 | -6.79 |
| 17843 | -35.67 | AV | H | 42.77 | 16.95 | 47 | 37.15 | 54 | -16.85 |
| 17843 | -18.64 | PK | V | 42.77 | 16.95 | 47 | 54.18 | 74 | -19.82 |
| 17843 | -30.62 | PK | H | 42.77 | 16.95 | 47 | 42.2 | 74 | -31.8 |

**Note:**

*1, The testing has been conformed to 40GHz;*
*2, All other emissions more than 30 dB below the limit*
*3, The radiated spurious test above 18GHz is subcontracted to "BV 7LAYERS COMMUNICATION TRCHNOLOGY(SHENZHEN)CO.,LTD" Laboratories. and found 30dB below the limit at least.*

| Test Mode: | Transmitting Mode |
|---|---|

Low Channel (5180 MHz-n20 mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10416 | 42.42 | AV | V | 39.7 | 45.01 | 11.13 | 48.24 | 54 | -5.76 |
| 10476 | 44.54 | AV | H | 39.72 | 45.19 | 11.17 | 50.24 | 54 | -3.76 |
| 10416 | 52.84 | PK | V | 39.7 | 45.01 | 11.13 | 58.66 | 74 | -15.34 |
| 10476 | 50.72 | PK | H | 39.72 | 45.19 | 11.17 | 56.42 | 74 | -17.58 |
| 5189.446 | 52.93 | AV | V | 34.02 | 45.65 | 8.07 | 49.37 | 54 | -4.63 |
| 5495.685 | 50.7 | AV | H | 34.24 | 46 | 9.35 | 48.29 | 54 | -5.71 |
| 5189.446 | 61.92 | PK | V | 34.02 | 45.65 | 8.07 | 58.36 | 74 | -15.64 |
| 5495.685 | 58.06 | PK | H | 34.24 | 46 | 9.35 | 55.65 | 74 | -18.35 |

Middle Channel (5200 MHz-n20 mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10440 | -27.04 | AV | V | 39.92 | 10.54 | 47.02 | 49.36 | 54 | -4.64 |
| 10440 | -27.66 | AV | H | 39.92 | 10.54 | 47.02 | 48.74 | 54 | -5.26 |
| 10440 | -20.48 | PK | V | 39.92 | 10.54 | 47.02 | 55.92 | 74 | -18.08 |
| 10440 | -21.26 | PK | H | 39.92 | 10.54 | 47.02 | 55.14 | 74 | -18.86 |
| 3840.534 | 56.1 | AV | V | 31.44 | 48.97 | 6.64 | 45.21 | 54 | -7.19 |
| 3840.534 | 54.45 | AV | H | 31.44 | 48.97 | 6.64 | 43.56 | 54 | -16.81 |
| 3840.534 | 62.61 | PK | V | 31.44 | 48.97 | 6.64 | 51.72 | 74 | -19.76 |
| 3840.534 | 61.28 | PK | H | 31.44 | 48.97 | 6.64 | 50.39 | 74 | -32.08 |

High Channel (5240 MHz-n20 mode)

| Frequency (MHz) | S.A. Reading (dBμV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 10416 | 45.36 | AV | V | 38.7 | 45.01 | 11.13 | 50.18 | 54 | -3.82 |
| 10440 | 46.41 | AV | H | 37.71 | 45.08 | 11.14 | 50.18 | 54 | -3.82 |
| 10416 | 52.98 | PK | V | 39.7 | 45.01 | 11.13 | 58.8 | 74 | -15.2 |
| 10440 | 51.51 | PK | H | 39.71 | 45.08 | 11.14 | 57.28 | 74 | -16.72 |
| 17843 | -26.08 | AV | V | 42.77 | 16.95 | 47 | 46.74 | 54 | -7.26 |
| 17843 | -35.57 | AV | H | 42.77 | 16.95 | 47 | 37.25 | 54 | -16.75 |
| 17843 | -18.71 | PK | V | 42.77 | 16.95 | 47 | 54.11 | 74 | -19.89 |
| 17843 | -30.64 | PK | H | 42.77 | 16.95 | 47 | 42.18 | 74 | -31.82 |

**Note:**

*1, The testing has been conformed to 40GHz;*
*2, All other emissions more than 30 dB below the limit*
*3, The radiated spurious test above 18GHz is subcontracted to "BV 7LAYERS COMMUNICATION TRCHNOLOGY(SHENZHEN)CO.,LTD" Laboratories. and found 30dB below the limit at least.*

| Test Mode: | Transmitting Mode |
|---|---|

Low Channel (5190 MHz-n40 mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10416 | 44.45 | AV | V | 39.7 | 45.01 | 11.13 | 50.27 | 54 | -3.73 |
| 10308 | 43.36 | AV | H | 39.66 | 44.7 | 11.06 | 49.38 | 54 | -4.62 |
| 10416 | 52.96 | PK | V | 39.7 | 45.01 | 11.13 | 58.78 | 74 | -15.22 |
| 10308 | 50.49 | PK | H | 39.66 | 44.7 | 11.06 | 56.51 | 74 | -17.49 |
| 5189.446 | 52.83 | AV | V | 34.02 | 45.65 | 8.07 | 49.27 | 54 | -4.73 |
| 5535.214 | 49.09 | AV | H | 34.28 | 46.18 | 9.4 | 46.59 | 54 | -7.41 |
| 5189.446 | 60.3 | PK | V | 34.02 | 45.65 | 8.07 | 56.74 | 74 | -17.26 |
| 5535.214 | 58.38 | PK | H | 34.28 | 46.18 | 9.4 | 55.88 | 74 | -18.12 |

Middle Channel (5230 MHz-n40 mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10440 | -28.61 | AV | V | 39.92 | 10.54 | 47.02 | 47.79 | 54 | -6.21 |
| 10440 | -29.08 | AV | H | 39.92 | 10.54 | 47.02 | 47.32 | 54 | -6.68 |
| 10440 | -17.87 | PK | V | 39.92 | 10.54 | 47.02 | 58.53 | 74 | -15.47 |
| 10440 | -19.31 | PK | H | 39.92 | 10.54 | 47.02 | 57.09 | 74 | -16.91 |
| 9946.127 | -32.45 | AV | V | 39.79 | 10.46 | 48.48 | 45.36 | 54 | -8.64 |
| 9946.548 | -39.24 | AV | H | 39.79 | 10.46 | 48.48 | 38.57 | 54 | -15.43 |
| 9946.127 | -21.12 | PK | V | 39.79 | 10.46 | 48.48 | 56.69 | 74 | -17.31 |
| 9946.548 | -33.4 | PK | H | 39.79 | 10.46 | 48.48 | 44.41 | 74 | -29.59 |

High Channel (5250 MHz-n40 mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 10416 | 47.99 | AV | V | 37.7 | 45.01 | 11.13 | 51.81 | 52 | -4.19 |
| 10392 | 43.75 | AV | H | 39.69 | 44.94 | 11.12 | 49.62 | 54 | -4.38 |
| 10416 | 54.14 | PK | V | 39.7 | 45.01 | 11.13 | 59.96 | 74 | -14.04 |
| 10392 | 50.43 | PK | H | 39.69 | 44.94 | 11.12 | 56.3 | 74 | -17.7 |
| 17843 | -26.17 | AV | V | 42.77 | 16.95 | 47 | 46.65 | 54 | -7.35 |
| 17843 | -34.97 | AV | H | 42.77 | 16.95 | 47 | 37.85 | 54 | -16.15 |
| 17843 | -19.18 | PK | V | 42.77 | 16.95 | 47 | 53.64 | 74 | -20.36 |
| 17843 | -29.93 | PK | H | 42.77 | 16.95 | 47 | 42.89 | 74 | -31.11 |

## Above 1GHz

## 5725-5825MHz

| Test Mode: | Transmitting Mode |
|---|---|

Low Channel (5745 MHz-a mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 11532 | 39.73 | AV | V | 39.92 | 43.56 | 11.78 | 47.87 | 54 | -6.13 |
| 11580 | 40.52 | AV | H | 39.91 | 43.66 | 11.8 | 48.57 | 54 | -5.43 |
| 11532 | 50.97 | PK | V | 39.91 | 43.75 | 11.83 | 58.96 | 74 | -15.04 |
| 11580 | 50.84 | PK | H | 39.92 | 43.56 | 11.78 | 58.98 | 74 | -15.02 |
| 3840.534 | 52.76 | AV | V | 31.44 | 48.97 | 6.64 | 41.87 | 54 | -12.13 |
| 4002.11 | 51.23 | AV | H | 31.76 | 48.55 | 6.77 | 41.21 | 54 | -12.79 |
| 3840.534 | 59.9 | PK | V | 31.44 | 48.97 | 6.64 | 49.01 | 74 | -24.99 |
| 4002.11 | 57.95 | PK | H | 31.76 | 48.55 | 6.77 | 47.93 | 74 | -26.07 |

Middle Channel (5785 MHz-a mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 11540 | -29.9 | AV | V | 39.92 | 10.54 | 47.02 | 46.5 | 54 | -7.5 |
| 11540 | -27.79 | AV | H | 39.92 | 10.54 | 47.02 | 48.61 | 54 | -5.39 |
| 11540 | -20.84 | PK | V | 39.92 | 10.54 | 47.02 | 55.56 | 74 | -18.44 |
| 11540 | -22.39 | PK | H | 39.92 | 10.54 | 47.02 | 54.01 | 74 | -19.99 |
| 3840.534 | 55.75 | AV | V | 31.44 | 48.97 | 6.64 | 44.86 | 54 | -11.51 |
| 3840.534 | 53.02 | AV | H | 31.44 | 48.97 | 6.64 | 42.13 | 54 | -18.31 |
| 3840.534 | 62.01 | PK | V | 31.44 | 48.97 | 6.64 | 51.12 | 74 | -24.76 |
| 3840.534 | 60.08 | PK | H | 31.44 | 48.97 | 6.64 | 49.19 | 74 | -36.68 |

High Channel (5825 MHz-a mode)

| Frequency (MHz) | S.A. Reading (dBμV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 11640 | -28.29 | AV | V | 39.67 | 10.56 | 47.04 | 47.86 | 54 | -6.14 |
| 11640 | -32.16 | AV | H | 39.67 | 10.56 | 47.04 | 43.99 | 54 | -10.01 |
| 11640 | -24.53 | PK | V | 39.67 | 10.56 | 47.04 | 51.62 | 74 | -22.38 |
| 11640 | -21.58 | PK | H | 39.67 | 10.56 | 47.04 | 54.57 | 74 | -19.43 |
| 17843 | -25.65 | AV | V | 42.77 | 16.95 | 47 | 47.17 | 54 | -6.83 |
| 17843 | -38.7 | AV | H | 42.77 | 16.95 | 47 | 34.12 | 54 | -19.88 |
| 17843 | -23.25 | PK | V | 42.77 | 16.95 | 47 | 49.57 | 74 | -24.43 |
| 17843 | -31.78 | PK | H | 42.77 | 16.95 | 47 | 41.04 | 74 | -32.96 |

**Note:**

*1, The testing has been conformed to 40GHz;*
*2, All other emissions more than 30 dB below the limit*
*3, The radiated spurious test above 18GHz is subcontracted to "BV 7LAYERS COMMUNICATION TRCHNOLOGY(SHENZHEN)CO.,LTD" Laboratories. and found 30dB below the limit at least.*

| Test Mode: | Transmitting Mode |
|---|---|

Low Channel (5745 MHz-ac20 mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 11520 | 40.38 | AV | V | 39.93 | 43.54 | 11.77 | 48.54 | 54 | -5.46 |
| 11448 | 39.59 | AV | H | 39.88 | 43.66 | 11.7 | 47.51 | 54 | -6.49 |
| 11520 | 50.7 | PK | V | 39.93 | 43.54 | 11.77 | 58.86 | 74 | -15.14 |
| 11448 | 50.8 | PK | H | 39.88 | 43.66 | 11.7 | 58.72 | 74 | -15.28 |
| 5505.541 | 53.06 | AV | V | 34.25 | 46.04 | 9.38 | 50.65 | 54 | -3.35 |
| 5757.763 | 52.41 | AV | H | 34.52 | 47.28 | 9.62 | 49.27 | 54 | -4.73 |
| 5505.541 | 57.9 | PK | V | 34.25 | 46.04 | 9.38 | 55.49 | 74 | -18.51 |
| 5757.763 | 61.33 | PK | H | 34.52 | 47.28 | 9.62 | 58.19 | 74 | -15.81 |

Middle Channel (5785 MHz-ac20 mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 11640 | -31.23 | AV | V | 39.92 | 10.54 | 47.02 | 45.17 | 54 | -8.83 |
| 11640 | -29.51 | AV | H | 39.92 | 10.54 | 47.02 | 46.89 | 54 | -7.11 |
| 11640 | -23.01 | PK | V | 39.92 | 10.54 | 47.02 | 53.39 | 74 | -20.61 |
| 11640 | -22.27 | PK | H | 39.92 | 10.54 | 47.02 | 54.13 | 74 | -19.87 |
| 9946 | -35.19 | AV | V | 39.79 | 10.46 | 48.48 | 42.62 | 54 | -11.38 |
| 9946 | -44.48 | AV | H | 39.79 | 10.46 | 48.48 | 33.33 | 54 | -20.67 |
| 9946 | -25.96 | PK | V | 39.79 | 10.46 | 48.48 | 51.85 | 74 | -22.15 |
| 9946 | -37.1 | PK | H | 39.79 | 10.46 | 48.48 | 40.71 | 74 | -33.29 |

High Channel (5825 MHz-ac20 mode)

| Frequency (MHz) | S.A. Reading (dBμV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 11680 | -28.19 | AV | V | 39.67 | 10.56 | 47.04 | 47.96 | 54 | -6.04 |
| 11680 | -29.76 | AV | H | 39.67 | 10.56 | 47.04 | 46.39 | 54 | -7.61 |
| 11680 | -22.4 | PK | V | 39.67 | 10.56 | 47.04 | 53.75 | 74 | -20.25 |
| 11680 | -23.06 | PK | H | 39.67 | 10.56 | 47.04 | 53.09 | 74 | -20.91 |
| 17843 | -27.94 | AV | V | 42.77 | 16.95 | 47 | 44.88 | 54 | -9.12 |
| 17843 | -38.04 | AV | H | 42.77 | 16.95 | 47 | 34.78 | 54 | -19.22 |
| 17843 | -19.69 | PK | V | 42.77 | 16.95 | 47 | 53.13 | 74 | -20.87 |
| 17843 | -30.2 | PK | H | 42.77 | 16.95 | 47 | 42.62 | 74 | -31.38 |

**Note:**

*1, The testing has been conformed to 40GHz;*
*2, All other emissions more than 30 dB below the limit*
*3, The radiated spurious test above 18GHz is subcontracted to "BV 7LAYERS COMMUNICATION TRCHNOLOGY(SHENZHEN)CO.,LTD" Laboratories. and found 30dB below the limit at least.*

| Test Mode: | Transmitting Mode |
|---|---|

Low Channel (5755 MHz-ac40 mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 11508 | 38.61 | AV | V | 39.93 | 43.52 | 11.76 | 46.78 | 54 | -7.22 |
| 11532 | 40.07 | AV | H | 39.92 | 43.56 | 11.78 | 48.21 | 54 | -5.79 |
| 11508 | 50.9 | PK | V | 39.93 | 43.52 | 11.76 | 59.07 | 74 | -14.93 |
| 11532 | 50.96 | PK | H | 39.92 | 43.56 | 11.78 | 59.1 | 74 | -14.9 |
| 5485.847 | 53.12 | AV | V | 34.23 | 45.99 | 9.31 | 50.67 | 54 | -3.33 |
| 5757.763 | 54.39 | AV | H | 34.52 | 47.28 | 9.62 | 51.25 | 54 | -2.75 |
| 5485.847 | 58.97 | PK | V | 34.23 | 45.99 | 9.31 | 56.52 | 74 | -17.48 |
| 5757.763 | 60.08 | PK | H | 34.52 | 47.28 | 9.62 | 56.94 | 74 | -17.06 |

Middle Channel (5795 MHz-ac40 mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 11540 | -26.7 | AV | V | 39.92 | 10.54 | 47.02 | 49.7 | 54 | -4.3 |
| 11540 | -28.16 | AV | H | 39.92 | 10.54 | 47.02 | 48.24 | 54 | -5.76 |
| 11540 | -20.82 | PK | V | 39.92 | 10.54 | 47.02 | 55.58 | 74 | -18.42 |
| 11540 | -21.36 | PK | H | 39.92 | 10.54 | 47.02 | 55.04 | 74 | -18.96 |
| 3840.534 | 56.1 | AV | V | 31.44 | 48.97 | 6.64 | 45.21 | 54 | -6.43 |
| 1019.905 | 61.06 | AV | H | 24.33 | 48.23 | 3.4 | 40.56 | 54 | -17.2 |
| 3840.534 | 63.82 | PK | V | 31.44 | 48.97 | 6.64 | 52.93 | 74 | -19.31 |
| 1019.905 | 63.71 | PK | H | 24.33 | 48.23 | 3.4 | 43.21 | 74 | -31.49 |

High Channel (5835 MHz-a mode)

| Frequency (MHz) | S.A. Reading (dBμV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 11680 | -29.12 | AV | V | 39.67 | 10.56 | 47.04 | 47.03 | 54 | -6.97 |
| 11680 | -27.81 | AV | H | 39.67 | 10.56 | 47.04 | 48.34 | 54 | -5.66 |
| 11680 | -20 | PK | V | 39.67 | 10.56 | 47.04 | 56.15 | 74 | -17.85 |
| 11680 | -21.24 | PK | H | 39.67 | 10.56 | 47.04 | 54.91 | 74 | -19.09 |
| 17843 | -25.36 | AV | V | 42.77 | 16.95 | 47 | 47.46 | 54 | -6.54 |
| 17843 | -35.19 | AV | H | 42.77 | 16.95 | 47 | 37.63 | 54 | -16.37 |
| 17843 | -18.56 | PK | V | 42.77 | 16.95 | 47 | 54.26 | 74 | -19.74 |
| 17843 | -30.98 | PK | H | 42.77 | 16.95 | 47 | 41.84 | 74 | -32.16 |

**Note:**

*1, The testing has been conformed to 40GHz;*
*2, All other emissions more than 30 dB below the limit*
*3, The radiated spurious test above 18GHz is subcontracted to "BV 7LAYERS COMMUNICATION TRCHNOLOGY(SHENZHEN)CO.,LTD" Laboratories. and found 30dB below the limit at least.*

| Test Mode: | Transmitting Mode |
|---|---|

Low Channel (5775 MHz-ac80 mode)

| Frequency (MHz) | S.A. Reading (dBμV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 11532 | 39.73 | AV | V | 39.92 | 43.56 | 11.78 | 47.87 | 54 | -6.13 |
| 11544 | 39.43 | AV | H | 39.92 | 43.59 | 11.78 | 47.54 | 54 | -6.46 |
| 11532 | 50.79 | PK | V | 39.92 | 43.56 | 11.78 | 58.93 | 74 | -15.07 |
| 11544 | 51.46 | PK | H | 39.92 | 43.59 | 11.78 | 59.57 | 74 | -14.43 |
| 4926 | -27.1 | AV | V | 33.74 | 7.76 | 48.81 | 47.69 | 54 | -6.31 |
| 5757.763 | 53.79 | AV | H | 34.52 | 47.28 | 9.62 | 50.65 | 54 | -3.35 |
| 4926 | -24.2 | PK | V | 33.74 | 7.76 | 48.81 | 50.59 | 74 | -23.41 |
| 5757.763 | 59.93 | PK | H | 34.52 | 47.28 | 9.62 | 56.79 | 74 | -17.21 |

Middle Channel (5815 MHz-ac80 mode)

| Frequency (MHz) | S.A. Reading (dBμV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 11440 | -28.3 | AV | V | 39.92 | 10.54 | 47.02 | 48.1 | 54 | -5.9 |
| 11440 | -27.56 | AV | H | 39.92 | 10.54 | 47.02 | 48.84 | 54 | -5.16 |
| 11440 | -20.59 | PK | V | 39.92 | 10.54 | 47.02 | 55.81 | 74 | -18.19 |
| 11440 | -20.94 | PK | H | 39.92 | 10.54 | 47.02 | 55.46 | 74 | -18.54 |
| 1018.079 | 60.63 | AV | V | 24.33 | 48.23 | 3.4 | 40.13 | 54 | -11.21 |
| 1019.905 | 60.63 | AV | H | 24.33 | 48.23 | 3.4 | 40.13 | 54 | -12.7 |
| 1018.079 | 63.92 | PK | V | 24.33 | 48.23 | 3.4 | 43.42 | 74 | -23.88 |
| 1019.905 | 64.49 | PK | H | 24.33 | 48.23 | 3.4 | 43.99 | 74 | -25.09 |

High Channel (5855 MHz-ac80 mode)

| Frequency (MHz) | S.A. Reading (dBμV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 11680 | -29.73 | AV | V | 39.67 | 10.56 | 47.04 | 46.42 | 54 | -7.58 |
| 11680 | -30.06 | AV | H | 39.67 | 10.56 | 47.04 | 46.09 | 54 | -7.91 |
| 11680 | -20.49 | PK | V | 39.67 | 10.56 | 47.04 | 55.66 | 74 | -18.34 |
| 11680 | -20.96 | PK | H | 39.67 | 10.56 | 47.04 | 55.19 | 74 | -18.81 |
| 3840.534 | 57.12 | AV | V | 31.44 | 48.97 | 6.64 | 46.23 | 54 | -11.63 |
| 3840.534 | 56.57 | AV | H | 31.44 | 48.97 | 6.64 | 45.68 | 54 | -12.56 |
| 3840.534 | 61.87 | PK | V | 31.44 | 48.97 | 6.64 | 50.98 | 74 | -22.81 |
| 3840.534 | 61.46 | PK | H | 31.44 | 48.97 | 6.64 | 50.57 | 74 | -25.27 |

**Note:**

*1, The testing has been conformed to 40GHz;*
*2, All other emissions more than 30 dB below the limit*
*3, The radiated spurious test above 18GHz is subcontracted to "BV 7LAYERS COMMUNICATION TRCHNOLOGY(SHENZHEN)CO.,LTD" Laboratories. and found 30dB below the limit at least.*

| Test Mode: | Transmitting Mode |
|---|---|

Low Channel (5745 MHz-n20 mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 11628 | 40.25 | AV | V | 39.91 | 43.75 | 11.83 | 48.24 | 54 | -5.76 |
| 11484 | 39.43 | AV | H | 39.92 | 43.55 | 11.74 | 47.54 | 54 | -6.46 |
| 11628 | 50.97 | PK | V | 39.91 | 43.75 | 11.83 | 58.96 | 74 | -15.04 |
| 11484 | 51.23 | PK | H | 39.92 | 43.55 | 11.74 | 59.34 | 74 | -14.66 |
| 3840.534 | 54.53 | AV | V | 31.44 | 48.97 | 6.64 | 43.64 | 54 | -10.36 |
| 4926.683 | 56.3 | AV | H | 33.67 | 45.72 | 7.96 | 52.21 | 54 | -4.79 |
| 3840.534 | 60.39 | PK | V | 31.44 | 48.97 | 6.64 | 49.5 | 74 | -24.5 |
| 4926.683 | 65.56 | PK | H | 33.67 | 45.72 | 7.96 | 61.47 | 74 | -12.53 |

Middle Channel (5785 MHz-n20 mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 11540 | -26.96 | AV | V | 39.92 | 10.54 | 47.02 | 49.44 | 54 | -4.56 |
| 11540 | -28.21 | AV | H | 39.92 | 10.54 | 47.02 | 48.19 | 54 | -5.81 |
| 11540 | -19.63 | PK | V | 39.92 | 10.54 | 47.02 | 56.77 | 74 | -17.23 |
| 11540 | -20.75 | PK | H | 39.92 | 10.54 | 47.02 | 55.65 | 74 | -18.35 |
| 1393.022 | 58.63 | AV | V | 25.25 | 48.31 | 3.99 | 39.56 | 54 | -6.54 |
| 1019.905 | 61.06 | AV | H | 24.33 | 48.23 | 3.4 | 40.56 | 54 | -16.4 |
| 1393.022 | 59.23 | PK | V | 25.25 | 48.31 | 3.99 | 40.16 | 74 | -20.4 |
| 1019.905 | 63.56 | PK | H | 24.33 | 48.23 | 3.4 | 43.06 | 74 | -31.08 |

High Channel (5825 MHz-n20 mode)

| Frequency (MHz) | S.A. Reading (dBμV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 10480 | -26.17 | AV | V | 39.67 | 10.56 | 47.04 | 49.98 | 54 | -4.02 |
| 10480 | -27.9 | AV | H | 39.67 | 10.56 | 47.04 | 48.25 | 54 | -5.75 |
| 10480 | -20.57 | PK | V | 39.67 | 10.56 | 47.04 | 55.58 | 74 | -18.42 |
| 10480 | -20.63 | PK | H | 39.67 | 10.56 | 47.04 | 55.52 | 74 | -18.48 |
| 17843 | -26.37 | AV | V | 42.77 | 16.95 | 47 | 46.45 | 54 | -7.55 |
| 17843 | -34.76 | AV | H | 42.77 | 16.95 | 47 | 38.06 | 54 | -15.94 |
| 17843 | -18.17 | PK | V | 42.77 | 16.95 | 47 | 54.65 | 74 | -19.35 |
| 17843 | -29.97 | PK | H | 42.77 | 16.95 | 47 | 42.85 | 74 | -31.15 |

**Note:**

*1, The testing has been conformed to 40GHz;*
*2, All other emissions more than 30 dB below the limit*
*3, The radiated spurious test above 18GHz is subcontracted to "BV 7LAYERS COMMUNICATION TRCHNOLOGY(SHENZHEN)CO.,LTD" Laboratories. and found 30dB below the limit at least.*

| Test Mode: | Transmitting Mode |
|---|---|

Low Channel (5755 MHz-n20 mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 11532 | 39.73 | AV | V | 39.92 | 43.56 | 11.78 | 47.87 | 54 | -6.13 |
| 11520 | 40.7 | AV | H | 39.93 | 43.54 | 11.77 | 48.86 | 54 | -5.14 |
| 11532 | 50.77 | PK | V | 39.92 | 43.56 | 11.78 | 58.91 | 74 | -15.09 |
| 11520 | 51.4 | PK | H | 39.93 | 43.54 | 11.77 | 59.56 | 74 | -14.44 |
| 2436.358 | 57.38 | AV | V | 29.07 | 48.11 | 5.22 | 43.56 | 54 | -6.99 |
| 5757.763 | 56.3 | AV | H | 33.67 | 45.72 | 7.96 | 52.21 | 54 | -16.83 |
| 2436.358 | 62.54 | PK | V | 29.07 | 48.11 | 5.22 | 48.72 | 74 | -19.47 |
| 5757.763 | 65.56 | PK | H | 33.67 | 45.72 | 7.96 | 61.47 | 74 | -31.66 |

Middle Channel (5795 MHz-n20 mode)

| Frequency (MHz) | S.A. Reading (dBµV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 11540 | -30.78 | AV | V | 39.92 | 10.54 | 47.02 | 45.62 | 54 | -8.38 |
| 11540 | -28.5 | AV | H | 39.92 | 10.54 | 47.02 | 47.9 | 54 | -6.1 |
| 11540 | -24.14 | PK | V | 39.92 | 10.54 | 47.02 | 52.26 | 74 | -21.74 |
| 11540 | -25.72 | PK | H | 39.92 | 10.54 | 47.02 | 50.68 | 74 | -23.32 |
| 9946 | -31.56 | AV | V | 39.79 | 10.46 | 48.48 | 46.25 | 54 | -7.75 |
| 9946 | -44.98 | AV | H | 39.79 | 10.46 | 48.48 | 32.83 | 54 | -21.17 |
| 9946 | -24.56 | PK | V | 39.79 | 10.46 | 48.48 | 53.25 | 74 | -20.75 |
| 9946 | -39.34 | PK | H | 39.79 | 10.46 | 48.48 | 38.47 | 74 | -35.53 |

High Channel (5835 MHz-n20 mode)

| Frequency (MHz) | S.A. Reading (dBμV) | Detector (PK/AV) | Polarity (H/V) | Ant. Factor (dB/m) | Cable Loss (dB) | Pre-Amp. Gain (dB) | Cord Amp. (dBμV/m) | Limit (dBμV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| 11680 | -29.05 | AV | V | 39.67 | 10.56 | 47.04 | 47.1 | 54 | -6.9 |
| 11680 | -27.77 | AV | H | 39.67 | 10.56 | 47.04 | 48.38 | 54 | -5.62 |
| 11680 | -21.35 | PK | V | 39.67 | 10.56 | 47.04 | 54.8 | 74 | -19.2 |
| 11680 | -20.82 | PK | H | 39.67 | 10.56 | 47.04 | 55.33 | 74 | -18.67 |
| 17843 | -29 | AV | V | 42.77 | 16.95 | 47 | 43.82 | 54 | -10.18 |
| 17843 | -38.43 | AV | H | 42.77 | 16.95 | 47 | 34.39 | 54 | -19.61 |
| 17843 | -20.18 | PK | V | 42.77 | 16.95 | 47 | 52.64 | 74 | -21.36 |
| 17843 | -32.85 | PK | H | 42.77 | 16.95 | 47 | 39.97 | 74 | -34.03 |

**Note:**

*1, The testing has been conformed to 40GHz;*
*2, All other emissions more than 30 dB below the limit*
*3, The radiated spurious test above 18GHz is subcontracted to "BV 7LAYERS COMMUNICATION TRCHNOLOGY(SHENZHEN)CO.,LTD" Laboratories. and found 30dB below the limit at least.*

# Annex A. TEST INSTRUMENT

## Annex A.i. TEST INSTRUMENTATION & GENERAL PROCEDURES

| Instrument | Model | Serial # | Cal Date | Cal Due | In use |
|---|---|---|---|---|---|
| **AC Line Conducted** | | | | | |
| EMI test receiver | ESCS30 | 8471241027 | 09/15/2017 | 09/14/2018 | ☑ |
| Line Impedance | LI-125A | 191106 | 09/23/2017 | 09/22/2018 | ☑ |
| Line Impedance | LI-125A | 191107 | 09/23/2017 | 09/22/2018 | ☑ |
| ISN | ISN T800 | 34373 | 09/23/2017 | 09/22/2018 | ☐ |
| Transient Limiter | LIT-153 | 531118 | 08/30/2017 | 08/29/2018 | ☐ |
| **RF conducted test** | | | | | |
| Agilent ESA-E SERIES | E4407B | MY45108319 | 09/15/2017 | 09/14/2018 | ☑ |
| Power Splitter | 1# | 1# | 08/30/2017 | 08/29/2018 | ☑ |
| DC Power Supply | E3640A | MY40004013 | 09/15/2017 | 09/14/2018 | ☑ |
| **Radiated Emissions** | | | | | |
| EMI test receiver | ESL6 | 100262 | 09/15/2017 | 09/14/2018 | ☑ |
| Positioning Controller | UC3000 | MF780208282 | 11/18/2016 | 11/17/2017 | ☑ |
| OPT 010 AMPLIFIER (0.1-1300MHz) | 8447E | 2727A02430 | 08/30/2017 | 08/29/2018 | ☑ |
| Microwave Preamplifier (1 ~ 26.5GHz) | 8449B | 3008A02402 | 03/23/2017 | 03/22/2018 | ☑ |
| Horn Antenna | BBHA9170 | 3145226D1 | 09/27/2017 | 09/26/2018 | ☑ |
| Active Antenna (9kHz-30MHz) | AL-130 | 121031 | 10/12/2017 | 10/11/2018 | ☑ |
| Bilog Antenna (30MHz~6GHz) | JB6 | A110712 | 09/19/2017 | 09/18/2018 | ☑ |
| Double Ridge Horn Antenna (1 ~18GHz) | AH-118 | 71283 | 09/22/2017 | 09/21/2018 | ☑ |
| Universal Radio Communication Tester | CMU200 | 121393 | 09/23/2017 | 09/22/2018 | ☑ |

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
| --- | --- | --- | --- | --- | --- |
| 3m Semi-anechoic Chamber | ETS-LINDGREN | 9m*6m*6m | Euroshieldpn-CT0001143-1216 | May 06,17 | May 05,18 |
| Horn Antenna (18GHz-40GHz) | N/A | QWH-SL-18-40-K-SG/QMS-00361 | 15433 | Dec. 16,16 | Dec. 15,17 |
| Test Software | ADT | ADT_Radiated_V7.6.15.9.2 | N/A | N/A | N/A |
| 10dB Attenuator | JFW/USA | 50HF-010-SMA | 1505 | Jul. 24,17 | Jul. 23,18 |
| MXE EMI Receiver | KEYSIGHT | N9038A-544 | MY54450026 | Mar. 10,17 | Mar. 09,18 |
| Signal Pre-Amplifier | EMSI | EMC 184045B | 980259 | Jul. 24,17 | Jul. 23,18 |

# Annex A.ii. CONDUCTED EMISSIONS TEST DESCRIPTION

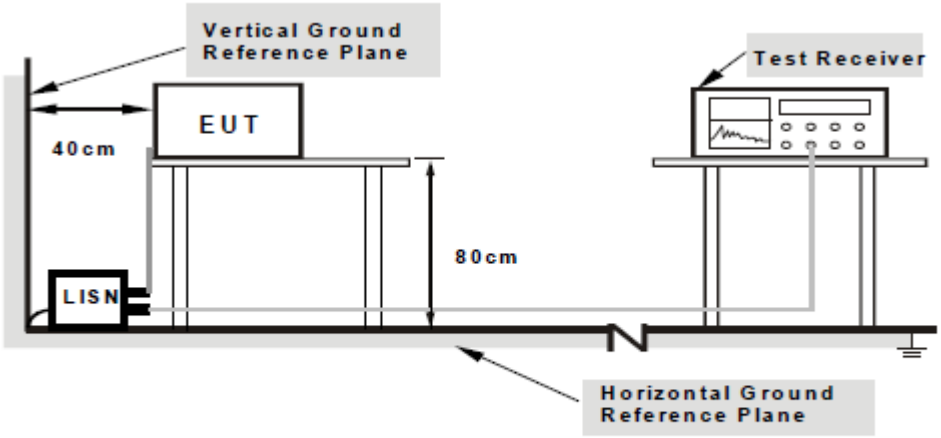
## Test Set-up

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table, as shown in Annex B.

2. The power supply for the EUT was fed through a 50Ω/50μH EUT LISN, connected to filtered mains.

3. The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable.

4. All other supporting equipments were powered separately from another main supply.




Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration1.

## Test Method

1. The EUT was switched on and allowed to warm up to its normal operating condition.

2. A scan was made on the NEUTRAL line (for AC mains) or Earth line (for DC power) over the required frequency range using an EMI test receiver.

3. High peaks, relative to the limit line, were then selected.

4. The EMI test receiver was then tuned to the selected frequencies and the necessary measurements made with a receiver bandwidth setting of 10 kHz. For FCC tests, only Quasi-peak measurements were made; while for CISPR/EN tests, both Quasi-peak and Average measurements were made.

5. Steps 2 to 4 were then repeated for the LIVE line (for AC mains) or DC line (for DC power).

## Description of Conducted Emission Program

This EMC Measurement software run LabView automation software and offers a common user interface for electromagnetic interference (EMI) measurements. This software is a modern and powerful tool for controlling and monitoring EMI test receivers and EMC test systems. It guarantees reliable collection, evaluation, and documentation of measurement results. Basically, this program will run a pre-scan measurement before it proceeds with the final measurement. The pre-scan routine will run the common scan range from 150 kHz to 30 MHz; the program will first start a peak and average scan on selectable measurement time and step size. After the program complete the pre-scan, this program will perform the Quasi Peak and Average measurement, based on the pre-scan peak data reduction result.

## Sample Calculation Example

At 20 MHz limit = 250 μV = 47.96 dBμV

Transducer factor of LISN, pulse limiter & cable loss at 20 MHz = 11.20 dB

Q-P reading obtained directly from EMI Receiver = 40.00 dBμV
(Calibrated for system losses)

Therefore, Q-P margin = 47.96 – 40.00 = 7.96 i.e. **7.96 dB below limit**

## Annex A. iii RADIATED EMISSIONS TEST DESCRIPTION

### EUT Characterisation

EUT characterisation, over the frequency range from 30MHz to 10th Harmonic , was done in order to minimise radiated emissions testing time while still maintaining high confidence in the test results.

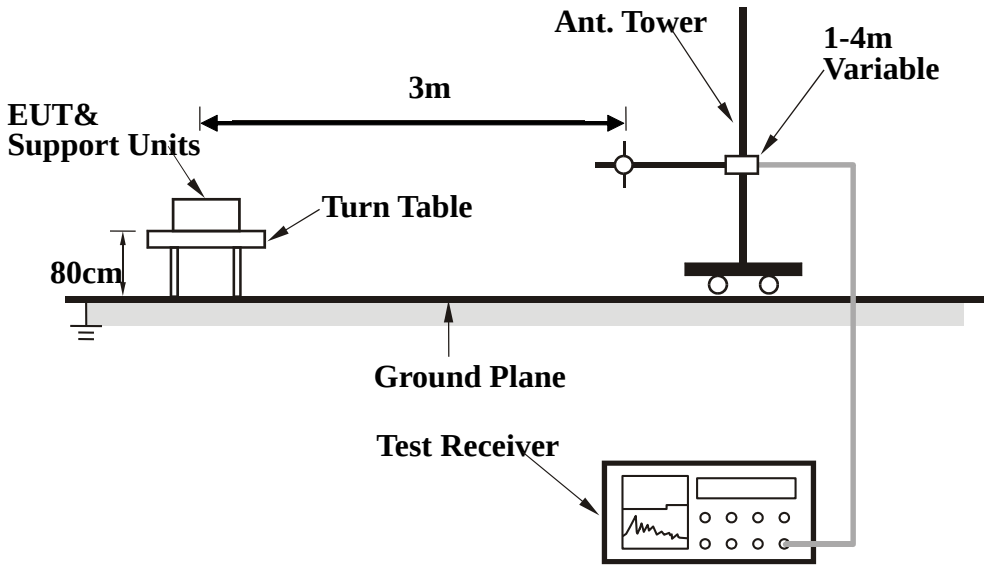
The EUT was placed in the chamber, at a height of about 0.8m on a turntable. Its radiated emissions frequency profile was observed, using a spectrum analyzer /receiver with the appropriate broadband antenna placed 3m away from the EUT. Radiated emissions from the EUT were maximised by rotating the turntable manually, changing the antenna polarisation and manipulating the EUT cables while observing the frequency profile on the spectrum analyzer / receiver. Frequency points at which maximum emissions occurred, clock frequencies and operating frequencies were then noted for the formal radiated emissions test at the Open Area Test Site (OATS).

### Test Set-up

1. The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m X 1.0m X 0.8m high, non-metallic table.

2. The filtered power supply for the EUT and supporting equipment were tapped from the appropriate power sockets located on the turntable.

3. The relevant broadband antenna was set at the required test distance away from the EUT and supporting equipment boundary.



## Test Method

The following procedure was performed to determine the maximum emission axis of EUT:
1. With the receiving antenna is H polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
2. With the receiving antenna is V polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
3. Compare the results derived from above two steps. So, the axis of maximum emission from EUT was determined and the configuration was used to perform the final measurement.

Final Radiated Emission Measurement
1. Setup the configuration according to figure 1. Turn on EUT and make sure that it is in normal function.

2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a shielded chamber to determine the accurate frequencies of higher emissions will be checked on a open test site. As the same purpose, for emission frequencies measured above 1 GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.

3. For emission frequencies measured below and above 1 GHz, set the spectrum analyzer on a 100 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.

4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0。 to 360。 with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading.

5. Repeat step 4 until all frequencies need to be measured was complete.

6. Repeat step 5 with search antenna in vertical polarized orientations.

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

| Frequency Band (MHz) | Function | Resolution bandwidth | Video Bandwidth |
| --- | --- | --- | --- |
| 30 to 1000 | Peak | 100 kHz | 100 kHz |

| | | | |
|---|---|---|---|
| Above 1000 | Peak | 1 MHz | 1 MHz |
| | Average | 1 MHz | 10 Hz |

**Sample Calculation Example**

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. For the limit is employed average value, therefore the peak value can be transferred to average value by subtracting the duty factor. The basic equation with a sample calculation is as follows:

Peak = Reading + Corrected Factor

where

Corr. Factor = Antenna Factor + Cable Factor - Amplifier Gain (if any)

And the average value is

Average = Peak Value + Duty Factor or

Set RBW = 1MHz, VBW = 10Hz.

Note :

If the measured frequencies are fall in the restricted frequency band, the limit employed must be quasi peak value when frequencies are below or equal to 1 GHz. And the measuring instrument is set to quasi peak detector function.

# Annex B. EUT

## Annex B.i. Photograph: EUT External Photo

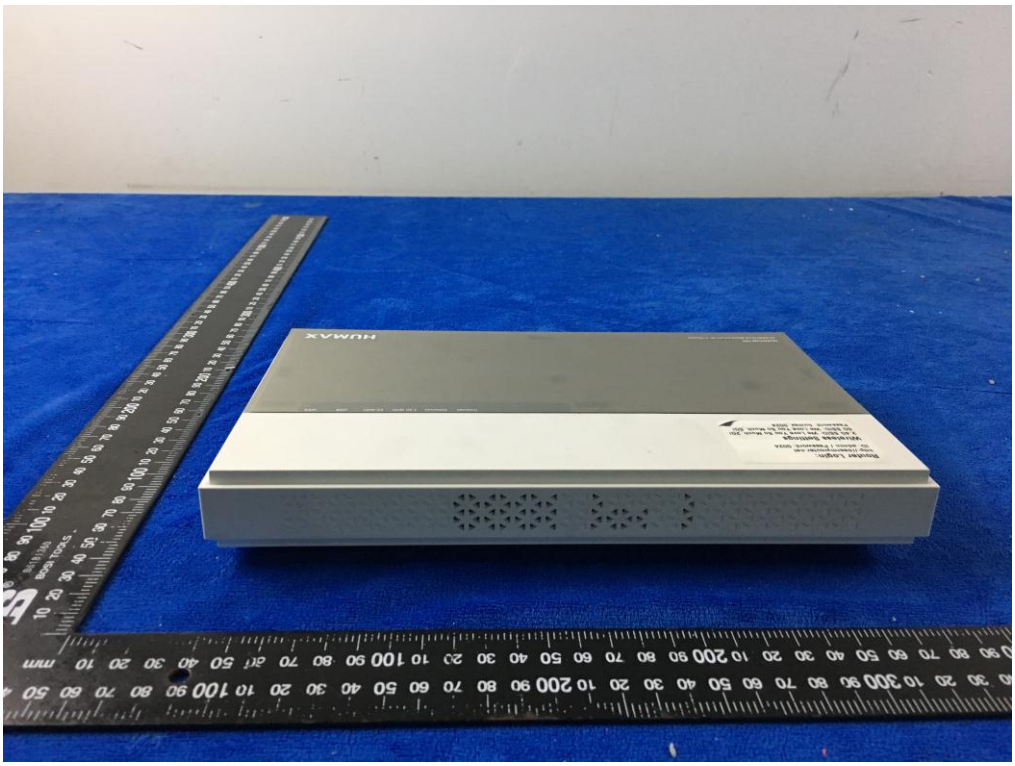
Whole Package View


Adapter - Front View

EUT - Front View

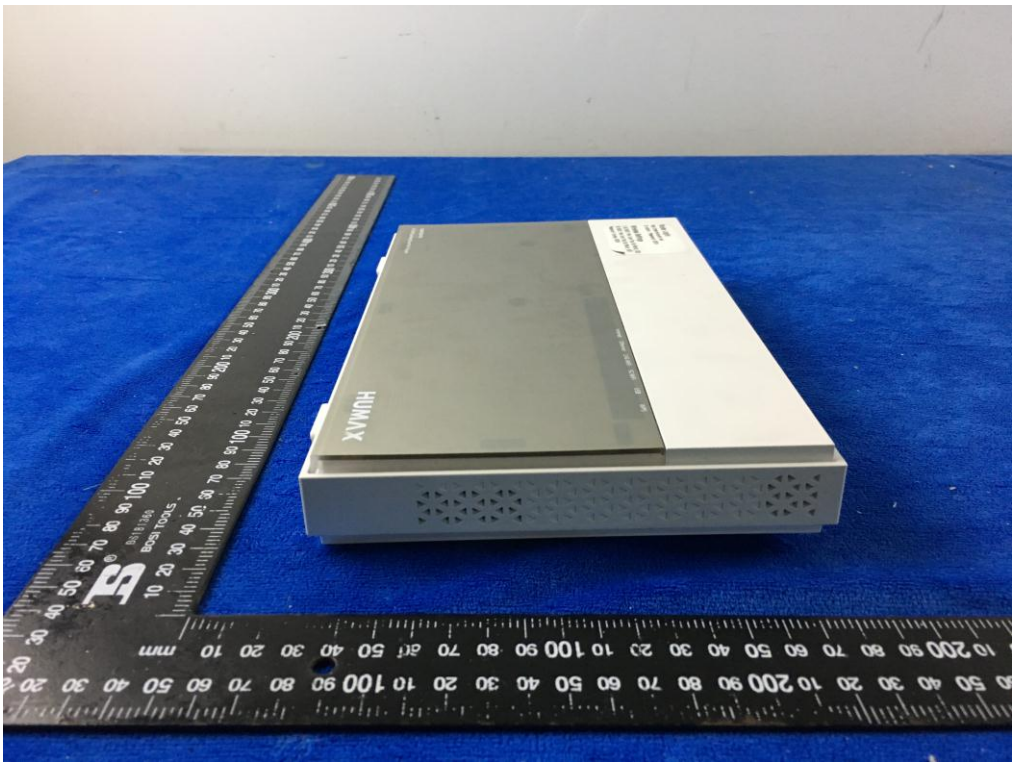

EUT - Rear View

EUT - Top View

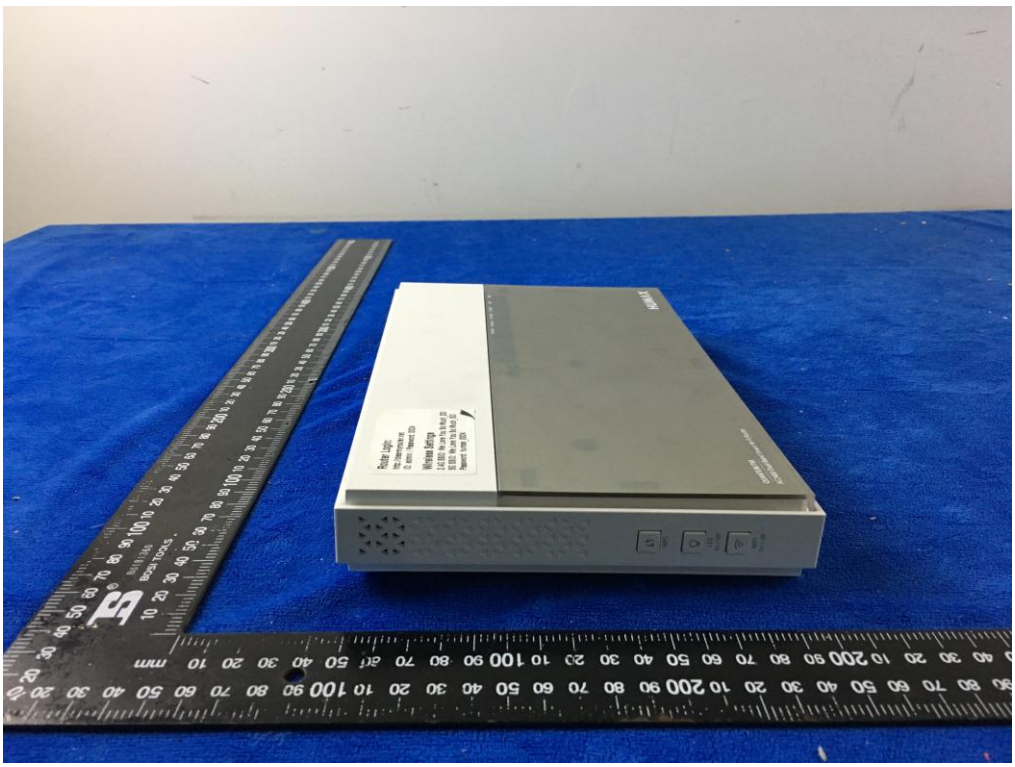



EUT - Bottom View

EUT - Left View



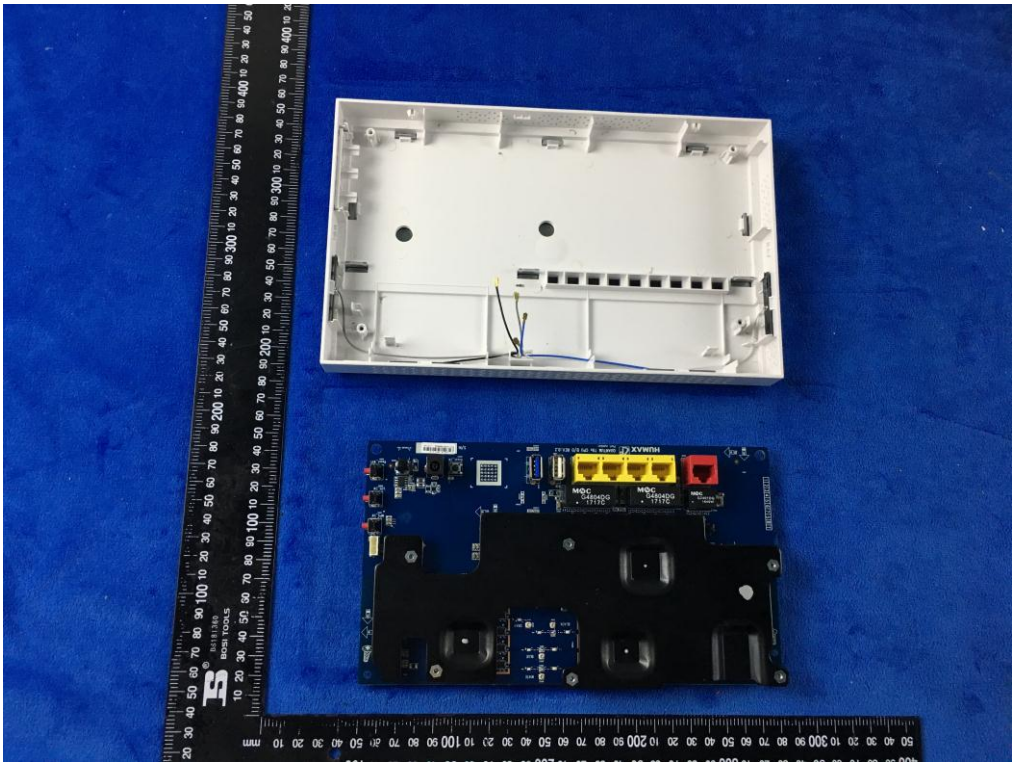

EUT - Right View



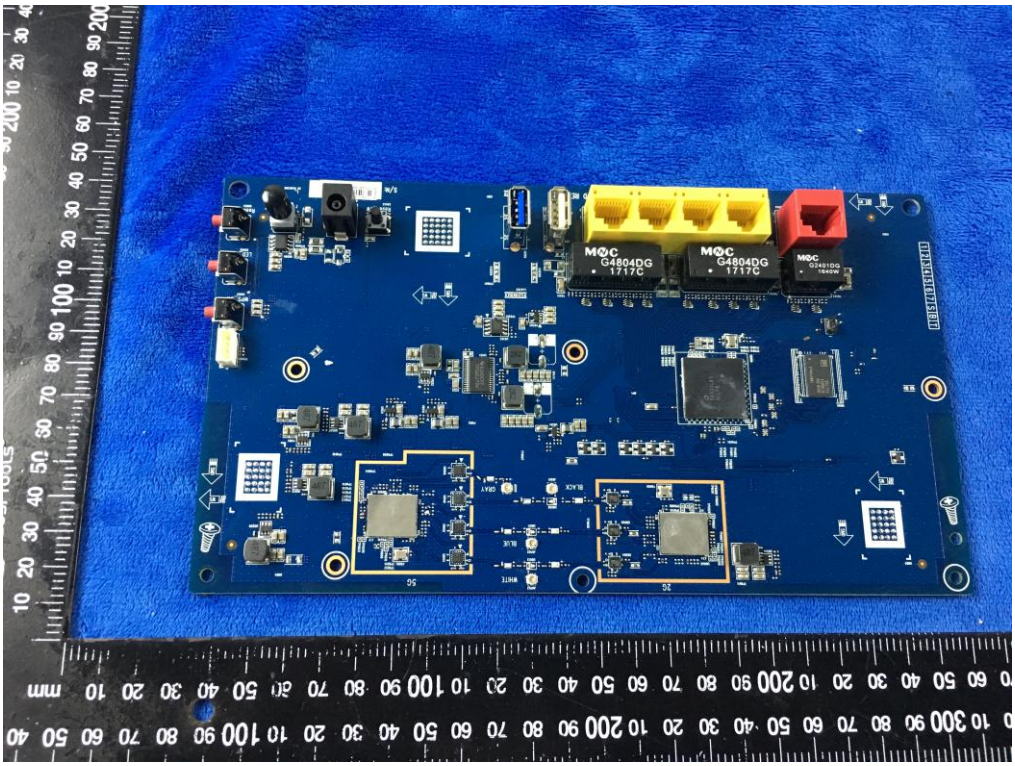
## Annex B.ii. Photograph: EUT Internal Photo

Cover Off - Top View 1

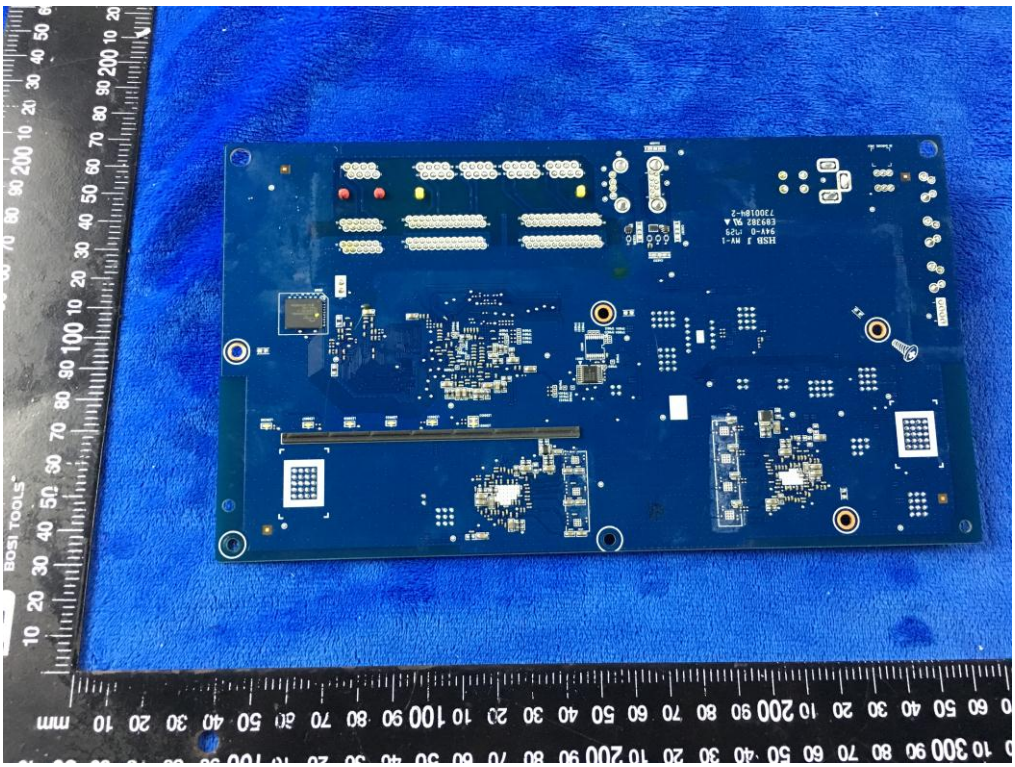
Cover Off - Top View 2



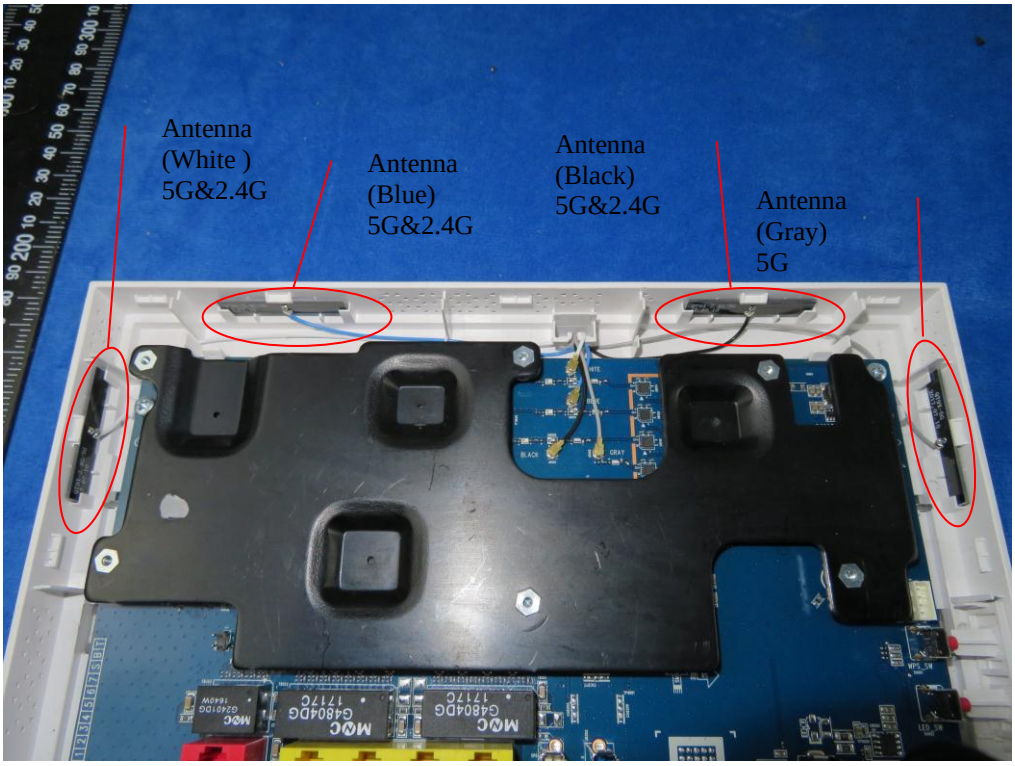
Mainboard with Shielding - Front View



Mainboard without Shielding - Front View

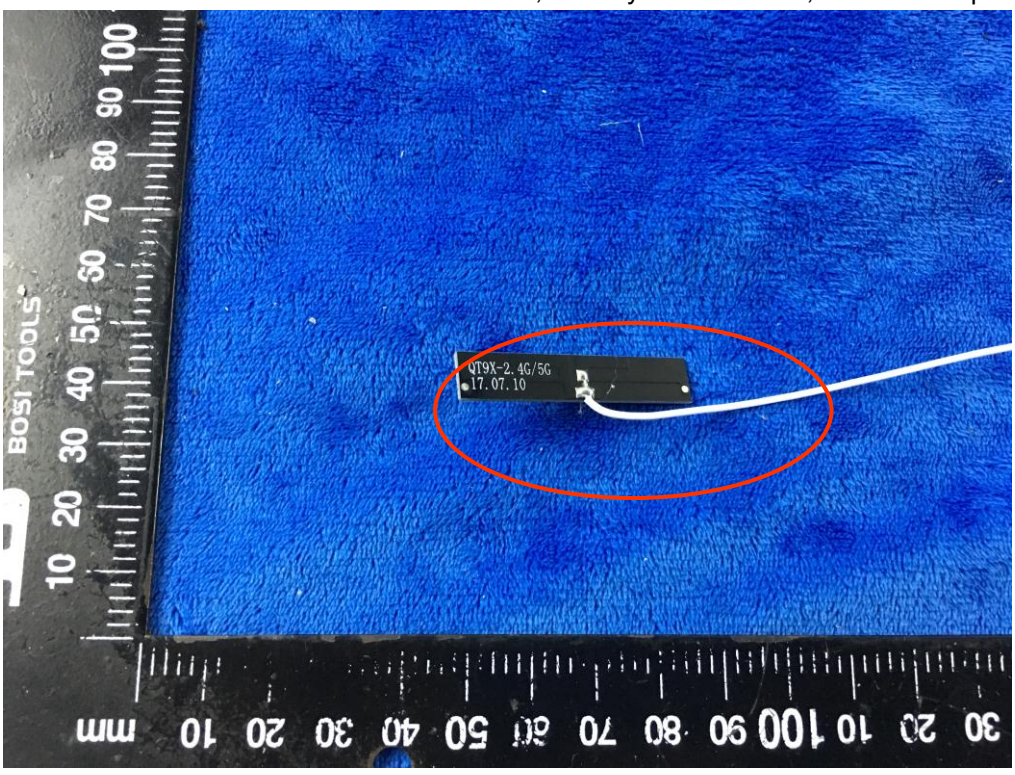


2.4G&5G Antenna View



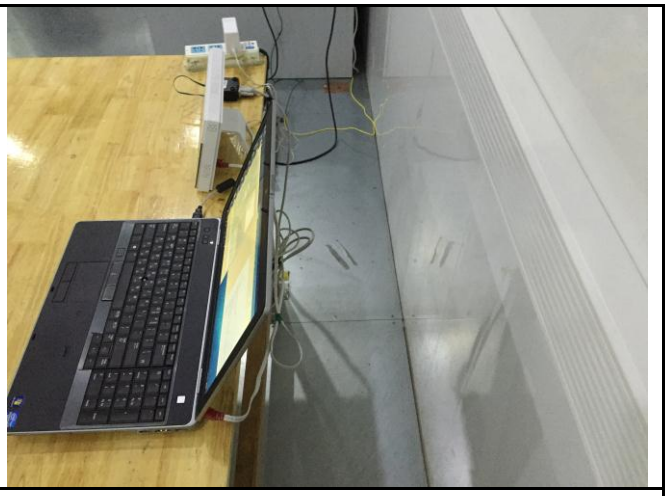
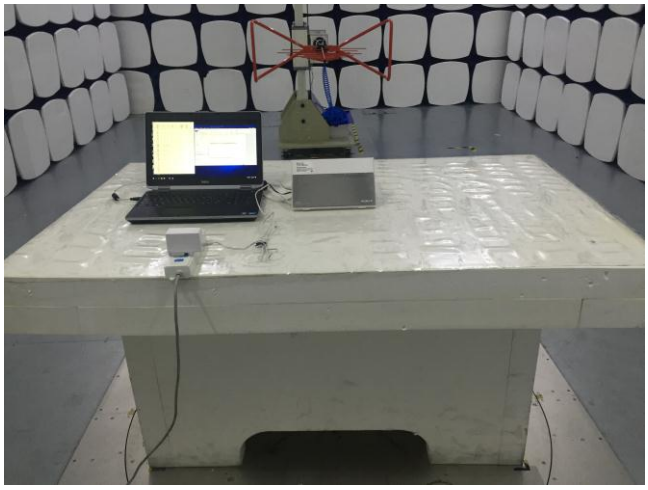
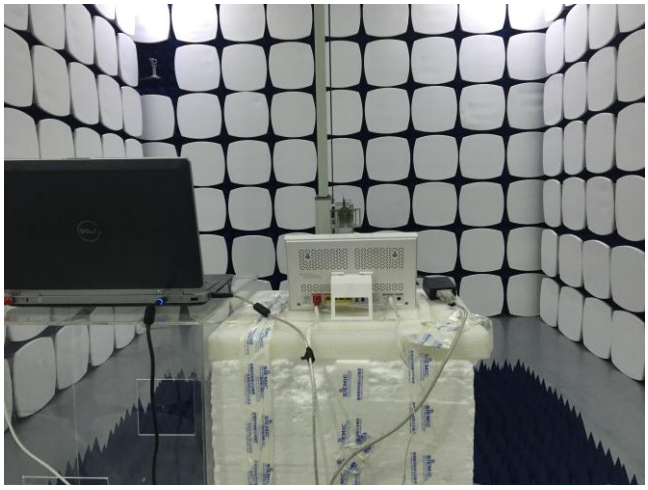

Close-up View

Note : Because all of the antenna are same, we only show the one, as a Close-up.



# Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

## Annex B.iii. Photograph: Test Setup Photo

| | |
| --- | --- |
|  |  |
| Conducted Emissions Test Setup Front View | Conducted Emissions Test Setup Side View |
|  |  |
| Radiated Spurious Emissions Test Setup Below 1GHz | Radiated Spurious Emissions Test Setup Above 1GHz |

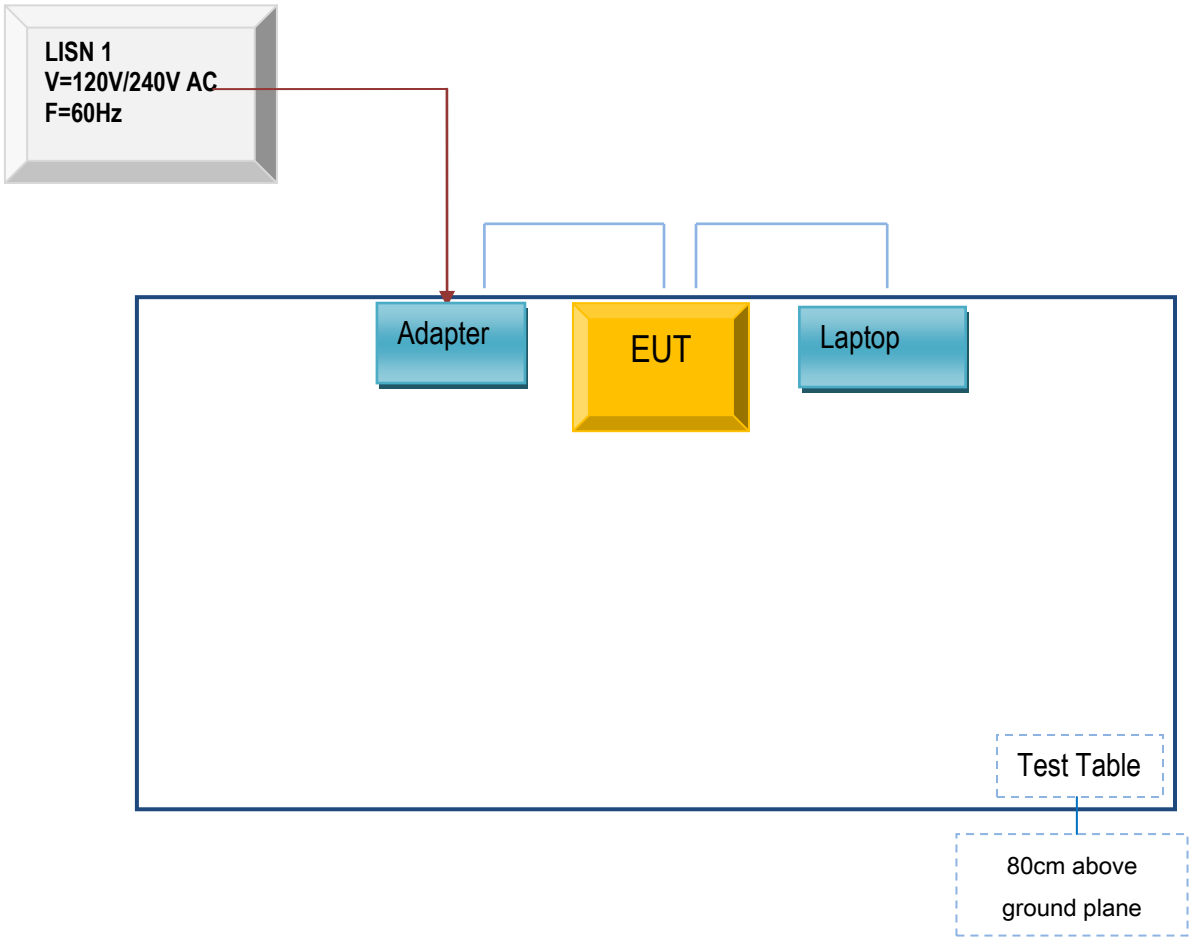
## Annex C. i. SUPPORTING EQUIPMENT DESCRIPTION

The following is a description of supporting equipment and details of cables used with the EUT.

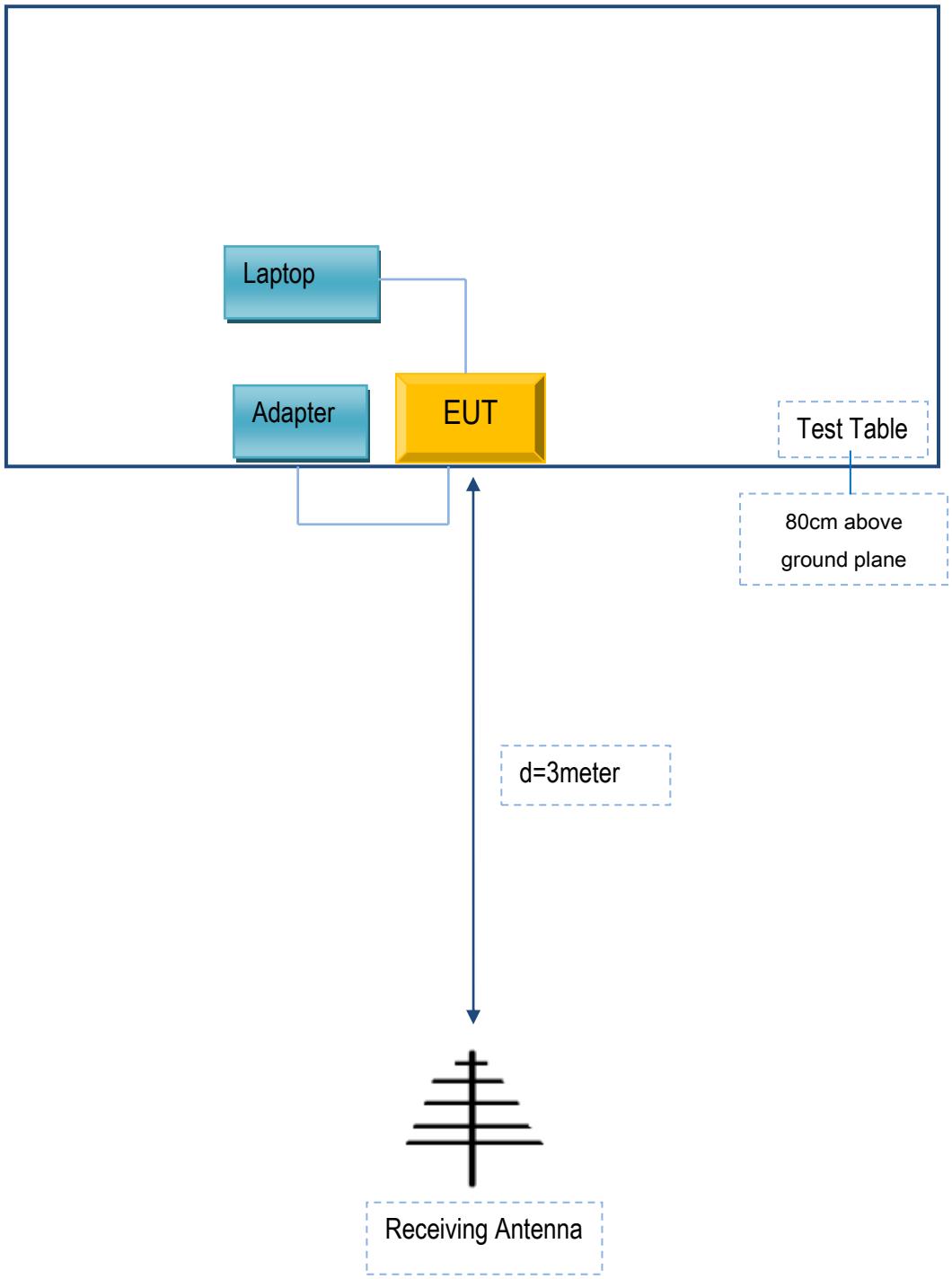
**Supporting Equipment:**

| Manufacturer | Equipment Description | Model | Serial No |
| --- | --- | --- | --- |
| Humax Co., Ltd. | Adapter | ADS-30FD-12 12030E | N/A |
| Lenovo | Laptop | E40 | N/A |

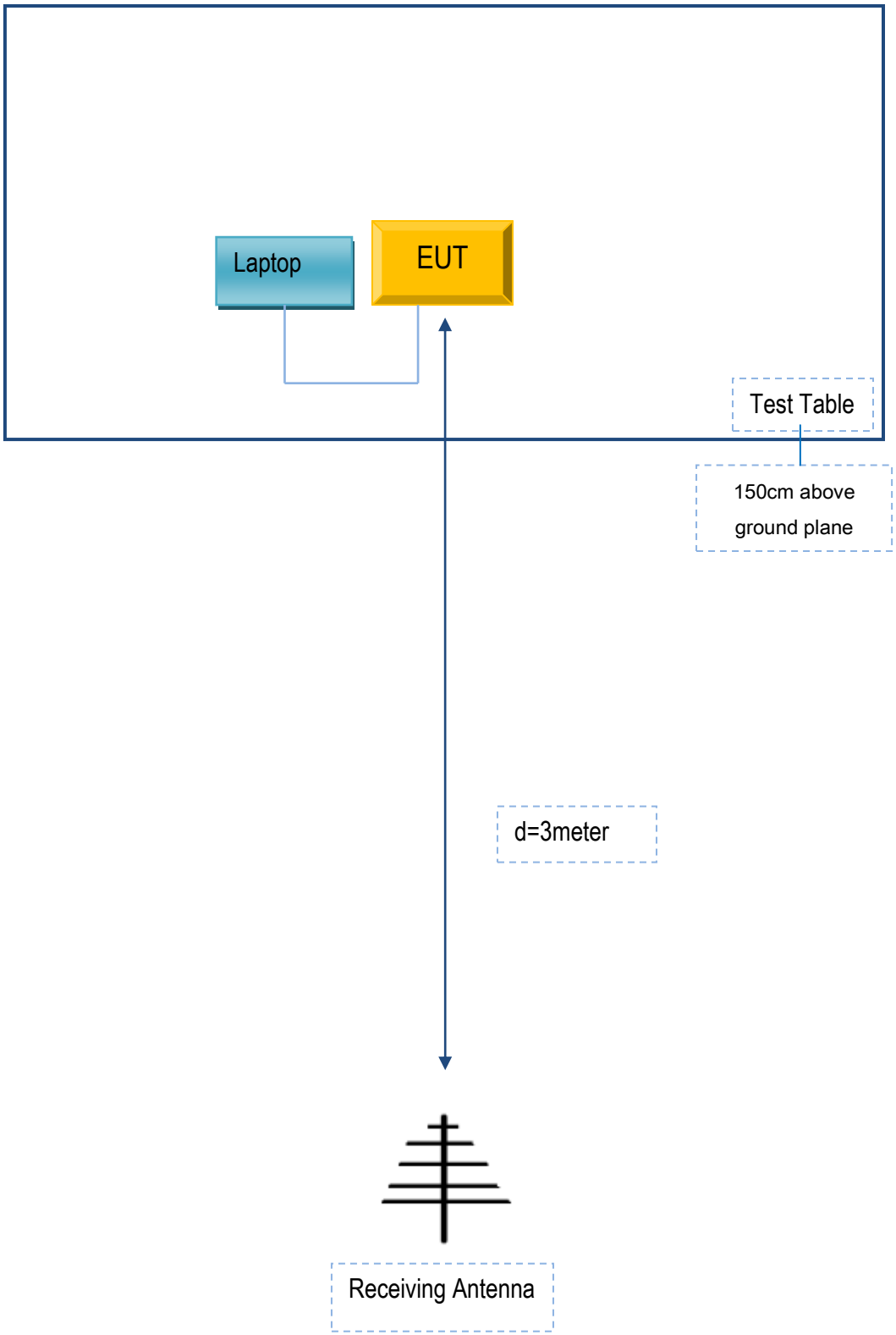
## Block Configuration Diagram for AC Line Conducted Emissions



## Block Configuration Diagram for Radiated Emissions （Below 1GHz）.



## Block Configuration Diagram for Radiated Emissions （Above 1GHz）.



## Annex C.ii. EUT OPERATING CONDITIONS

The following is the description of how the EUT is exercised during testing.

| Test | Description Of Operation |
| --- | --- |
| Emissions Testing | The EUT was continuously transmitting to stimulate the worst case. |

# Annex D. User Manual / Block Diagram / Schematics / Partlist

See attachment

# Annex E. DECLARATION OF SIMILARITY

**Humax Co., Ltd.**

To: SIEMIC ,775 Montague Expressway, Milpitas, CA 95035,USA

## Declaration Letter

Dear Sir,

For our business issue and marketing requirement, we would like to list 3 model numbers on the **FCC&CE** certificates and reports, as following:

Model No.: QUANTUM T9x,QUANTUM T7x ,QUANTUM T5x

FCC ID: O6ZT9X

We declare that, All the model PCB, Antenna and appearance shape, accessories are the same. The difference of these is listed as below:

| Main Model No | Serial Model No | Difference |
| --- | --- | --- |
| QUANTUM T9x | QUANTUM T7x ,QUANTUM T5x | only unused antennas is removed |

Thank you!

Signature:

Printed name/ title: Inseok Seo / Senior Engineer

Address: HUMAX Village, 11-4, Sunae-dong, Bundang-gu, Seongnam city, Gyeonggi-do, South Korea 463-825