| Test mode: | | 802.11g(6Mbps) | | Test channel: | | Lowest | |
|---|---|---|---|---|---|---|---|
| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Over (dB) | Detector Type | Ant. Pol. H/V |
| 4824.000 | 52.90 | -4.26 | 48.64 | 74 | -25.36 | peak | H |
| 4824.000 | 37.87 | -4.26 | 33.61 | 54 | -20.39 | AVG | H |
| 7236.000 | 50.42 | 1.18 | 51.60 | 74 | -22.40 | peak | H |
| 7236.000 | 37.07 | 1.18 | 38.25 | 54 | -15.75 | AVG | H |
| 4824.000 | 55.12 | -4.26 | 50.86 | 74 | -23.14 | peak | V |
| 4824.000 | 38.87 | -4.26 | 34.61 | 54 | -19.39 | AVG | V |
| 7236.000 | 51.97 | 1.18 | 53.15 | 74 | -20.85 | peak | V |
| 7236.000 | 35.86 | 1.18 | 37.04 | 54 | -16.96 | AVG | V |

| Test mode: | | 802.11g(6Mbps) | | Test channel: | | Middle | |
|---|---|---|---|---|---|---|---|
| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Over (dB) | Detector Type | Ant. Pol. H/V |
| 4874.000 | 52.30 | -4.12 | 48.18 | 74 | -25.82 | peak | H |
| 4874.000 | 36.72 | -4.12 | 32.60 | 54 | -21.40 | AVG | H |
| 7311.000 | 49.91 | 1.46 | 51.37 | 74 | -22.63 | peak | H |
| 7311.000 | 35.28 | 1.46 | 36.74 | 54 | -17.26 | AVG | H |
| 4874.000 | 52.78 | -4.12 | 48.66 | 74 | -25.34 | peak | V |
| 4874.000 | 36.73 | -4.12 | 32.61 | 54 | -21.39 | AVG | V |
| 7311.000 | 48.58 | 1.46 | 50.04 | 74 | -23.96 | peak | V |
| 7311.000 | 36.87 | 1.46 | 38.33 | 54 | -15.67 | AVG | V |

| Test mode: | | 802.11g(6Mbps) | | Test channel: | | Highest | |
|---|---|---|---|---|---|---|---|
| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Over (dB) | Detector Type | Ant. Pol. H/V |
| 4924.000 | 51.48 | -4.03 | 47.45 | 74 | -26.55 | peak | H |
| 4924.000 | 37.30 | -4.03 | 33.27 | 54 | -20.73 | AVG | H |
| 7386.000 | 49.80 | 1.66 | 51.46 | 74 | -22.54 | peak | H |
| 7386.000 | 36.09 | 1.66 | 37.75 | 54 | -16.25 | AVG | H |
| 4924.000 | 54.15 | -4.03 | 50.12 | 74 | -23.88 | peak | V |
| 4924.000 | 38.03 | -4.03 | 34.00 | 54 | -20.00 | AVG | V |
| 7386.000 | 50.32 | 1.66 | 51.98 | 74 | -22.02 | peak | V |
| 7386.000 | 37.95 | 1.66 | 39.61 | 54 | -14.39 | AVG | V |

Remark:

1) The 6Mbps of rate of 802.11g is the worst case.
2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
   Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
3) Scan from 9kHz to 25GHz,The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

| Test mode: | | 802.11n20(mcs0) | | Test channel: | | Lowest | |
|---|---|---|---|---|---|---|---|
| Frequency | Meter Reading | Factor | Emission Level | Limits | Over | Detector Type | Ant. Pol. |
| (MHz) | (dBμV) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | | H/V |
| 4824.000 | 53.58 | -4.26 | 49.32 | 74 | -24.68 | peak | H |
| 4824.000 | 36.75 | -4.26 | 32.49 | 54 | -21.51 | AVG | H |
| 7236.000 | 51.76 | 1.18 | 52.94 | 74 | -21.06 | peak | H |
| 7236.000 | 38.66 | 1.18 | 39.84 | 54 | -14.16 | AVG | H |
| 4824.000 | 54.99 | -4.26 | 50.73 | 74 | -23.27 | peak | V |
| 4824.000 | 38.02 | -4.26 | 33.76 | 54 | -20.24 | AVG | V |
| 7236.000 | 51.94 | 1.18 | 53.12 | 74 | -20.88 | peak | V |
| 7236.000 | 35.59 | 1.18 | 36.77 | 54 | -17.23 | AVG | V |

| Test mode: | | 802.11n20(mcs0) | | Test channel: | | Middle | |
|---|---|---|---|---|---|---|---|
| Frequency | Meter Reading | Factor | Emission Level | Limits | Over | Detector Type | Ant. Pol. |
| (MHz) | (dBμV) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | | H/V |
| 4874.000 | 51.91 | -4.12 | 47.79 | 74 | -26.21 | peak | H |
| 4874.000 | 37.28 | -4.12 | 33.16 | 54 | -20.84 | AVG | H |
| 7311.000 | 48.97 | 1.46 | 50.43 | 74 | -23.57 | peak | H |
| 7311.000 | 35.26 | 1.46 | 36.72 | 54 | -17.28 | AVG | H |
| 4874.000 | 53.46 | -4.12 | 49.34 | 74 | -24.66 | peak | V |
| 4874.000 | 37.58 | -4.12 | 33.46 | 54 | -20.54 | AVG | V |
| 7311.000 | 49.85 | 1.46 | 51.31 | 74 | -22.69 | peak | V |
| 7311.000 | 35.37 | 1.46 | 36.83 | 54 | -17.17 | AVG | V |

| Test mode: | | 802.11n20(mcs0) | | Test channel: | | Highest | |
|---|---|---|---|---|---|---|---|
| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Over (dB) | Detector Type | Ant. Pol. H/V |
| 4924.000 | 51.80 | -4.03 | 47.77 | 74 | -26.23 | peak | H |
| 4924.000 | 37.94 | -4.03 | 33.91 | 54 | -20.09 | AVG | H |
| 7386.000 | 51.15 | 1.66 | 52.81 | 74 | -21.19 | peak | H |
| 7386.000 | 36.18 | 1.66 | 37.84 | 54 | -16.16 | AVG | H |
| 4924.000 | 54.08 | -4.03 | 50.05 | 74 | -23.95 | peak | V |
| 4924.000 | 37.12 | -4.03 | 33.09 | 54 | -20.91 | AVG | V |
| 7386.000 | 49.51 | 1.66 | 51.17 | 74 | -22.83 | peak | V |
| 7386.000 | 37.94 | 1.66 | 39.60 | 54 | -14.40 | AVG | V |

Remark:

1) The MCS0 of rate of 802.11n20 is the worst case.
2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
   Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
3) Scan from 9kHz to 25GHz,The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

## 5.9 Restricted bands around fundamental frequency

| | |
|---|---|
| Test Requirement: | 47 CFR Part 15C Section 15.209 and 15.205 |
| Test Method: | ANSI C63.10 2013 |
| Test Site: | Measurement Distance: 3m (Semi-Anechoic Chamber) |
| Limit: | |

| Frequency | Limit (dBuV/m @3m) | Remark |
|---|---|---|
| 30MHz-88MHz | 40.0 | Quasi-peak Value |
| 88MHz-216MHz | 43.5 | Quasi-peak Value |
| 216MHz-960MHz | 46.0 | Quasi-peak Value |
| 960MHz-1GHz | 54.0 | Quasi-peak Value |
| Above 1GHz | 54.0 | Average Value |
| | 74.0 | Peak Value |

Test Setup:

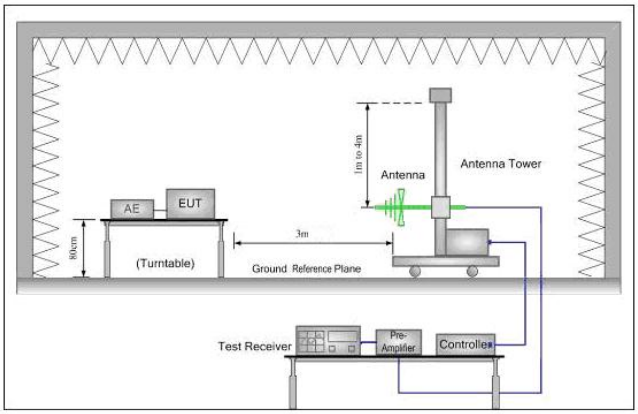



Figure 1. 30MHz to 1GHz

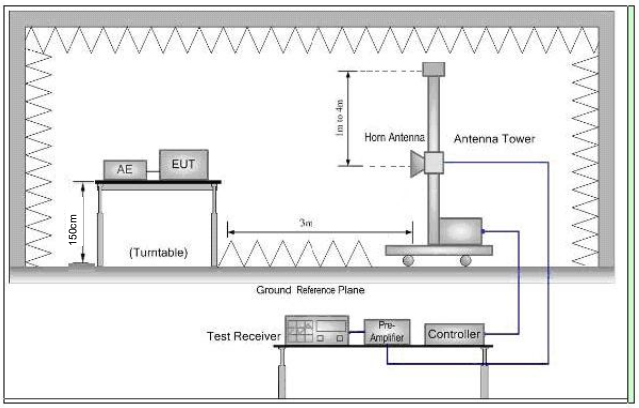



Figure 2. Above 1 GHz

Test Procedure:

a. 1) Below 1G: The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2) Above 1G: The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
Note: For the radiated emission test above 1GHz:
Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the

| | |
|---|---|
| | measurement.<br>d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.<br>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.<br>f. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel<br>g. Test the EUT in the lowest channel, the middle channel, the Highest channel.<br>h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode,And found the X axis positioning which it is worse case .<br>i. Repeat above procedures until all frequencies measured was complete. |
| Exploratory Test Mode: | Transmitting with all kind of modulations, data rates.<br>Transmitting mode. |
| Final Test Mode: | Pretest the EUT at Transmitting mode, found the Transmitting mode which it is worse case.<br>Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20); 13.5Mbps of rate is the worst case of 802.11n(HT40).<br>Only the worst case is recorded in the report. |
| Test Results: | Pass |

**Test data:**

| Worse case mode: | | 802.11b(1Mbps) | | Test channel: | | Lowest | |
|---|---|---|---|---|---|---|---|
| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Over (dB) | Detector Type | Ant. Pol. H/V |
| 2390.000 | 58.90 | -9.2 | 49.70 | 74 | -24.30 | peak | H |
| 2390.000 | 44.76 | -9.2 | 35.56 | 54 | -18.44 | AVG | H |
| 2400.000 | 59.54 | -9.39 | 50.15 | 74 | -23.85 | peak | H |
| 2400.000 | 46.19 | -9.39 | 36.80 | 54 | -17.20 | AVG | H |
| 2390.000 | 58.35 | -9.2 | 49.15 | 74 | -24.85 | peak | V |
| 2390.000 | 44.80 | -9.2 | 35.60 | 54 | -18.40 | AVG | V |
| 2400.000 | 60.06 | -9.39 | 50.67 | 74 | -23.33 | peak | V |
| 2400.000 | 46.96 | -9.39 | 37.57 | 54 | -16.43 | AVG | V |

| Worse case mode: | | 802.11b(1Mbps) | | Test channel: | | Highest | |
|---|---|---|---|---|---|---|---|
| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Over (dB) | Detector Type | Ant. Pol. H/V |
| 2483.500 | 58.31 | -9.29 | 49.02 | 74 | -24.98 | peak | H |
| 2483.500 | 44.21 | -9.29 | 34.92 | 54 | -19.08 | AVG | H |
| 2483.500 | 58.12 | -9.29 | 48.83 | 74 | -25.17 | peak | V |
| 2483.500 | 46.44 | -9.29 | 37.15 | 54 | -16.85 | AVG | V |

| Worse case mode: | | 802.11g(6Mbps) | | Test channel: | | Lowest | |
|---|---|---|---|---|---|---|---|
| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Over (dB) | Detector Type | Ant. Pol. H/V |
| 2390.000 | 59.00 | -9.2 | 49.80 | 74 | -24.20 | peak | H |
| 2390.000 | 44.95 | -9.2 | 35.75 | 54 | -18.25 | AVG | H |
| 2400.000 | 59.44 | -9.39 | 50.05 | 74 | -23.95 | peak | H |
| 2400.000 | 46.92 | -9.39 | 37.53 | 54 | -16.47 | AVG | H |
| 2390.000 | 58.55 | -9.2 | 49.35 | 74 | -24.65 | peak | V |
| 2390.000 | 44.42 | -9.2 | 35.22 | 54 | -18.78 | AVG | V |
| 2400.000 | 59.50 | -9.39 | 50.11 | 74 | -23.89 | peak | V |
| 2400.000 | 46.53 | -9.39 | 37.14 | 54 | -16.86 | AVG | V |

| Worse case mode: | | 802.11g(6Mbps) | | Test channel: | | Highest | |
|---|---|---|---|---|---|---|---|
| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Over (dB) | Detector Type | Ant. Pol. H/V |
| 2483.500 | 58.16 | -9.29 | 48.87 | 74 | -25.13 | peak | H |
| 2483.500 | 43.53 | -9.29 | 34.24 | 54 | -19.76 | AVG | H |
| 2483.500 | 58.13 | -9.29 | 48.84 | 74 | -25.16 | peak | V |
| 2483.500 | 45.69 | -9.29 | 36.40 | 54 | -17.60 | AVG | V |

| Worse case mode: | | 802.11n(HT20)(6.5Mbps) | | Test channel: | | Lowest | |
|---|---|---|---|---|---|---|---|
| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Over (dB) | Detector Type | Ant. Pol. H/V |
| 2390.000 | 58.96 | -9.2 | 49.76 | 74 | -24.24 | peak | H |
| 2390.000 | 44.08 | -9.2 | 34.88 | 54 | -19.12 | AVG | H |
| 2400.000 | 59.45 | -9.39 | 50.06 | 74 | -23.94 | peak | H |
| 2400.000 | 46.14 | -9.39 | 36.75 | 54 | -17.25 | AVG | H |
| 2390.000 | 58.48 | -9.2 | 49.28 | 74 | -24.72 | peak | V |
| 2390.000 | 44.35 | -9.2 | 35.15 | 54 | -18.85 | AVG | V |
| 2400.000 | 59.41 | -9.39 | 50.02 | 74 | -23.98 | peak | V |
| 2400.000 | 46.76 | -9.39 | 37.37 | 54 | -16.63 | AVG | V |

| Worse case mode: | | 802.11n(HT20)(6.5Mbps) | | Test channel: | | Highest | |
|---|---|---|---|---|---|---|---|
| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Over (dB) | Detector Type | Ant. Pol. H/V |
| 2483.500 | 57.93 | -9.29 | 48.64 | 74 | -25.36 | peak | H |
| 2483.500 | 44.13 | -9.29 | 34.84 | 54 | -19.16 | AVG | H |
| 2483.500 | 58.23 | -9.29 | 48.94 | 74 | -25.06 | peak | V |
| 2483.500 | 45.95 | -9.29 | 36.66 | 54 | -17.34 | AVG | V |

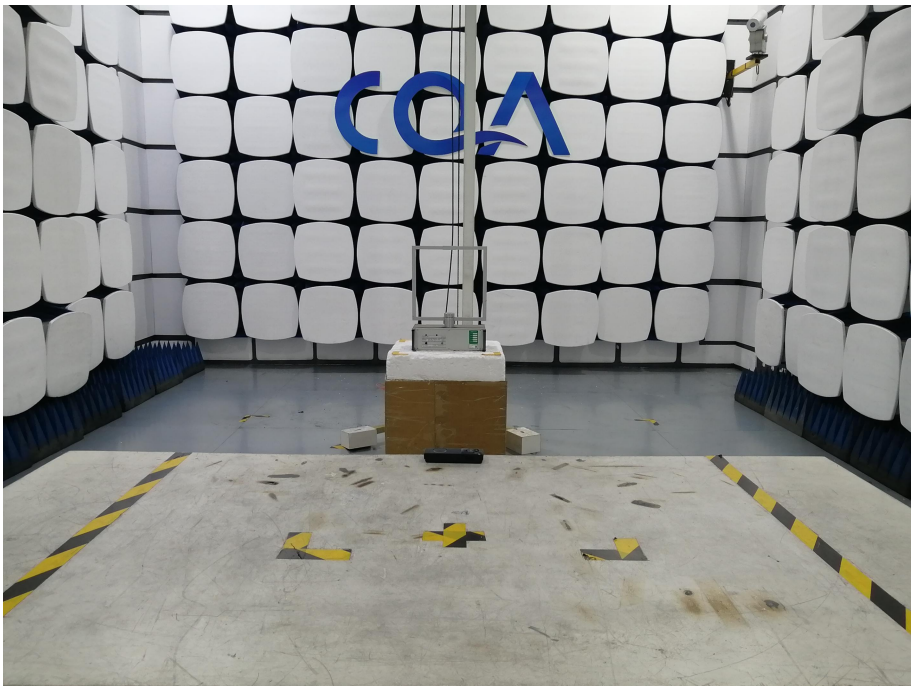
*Note:*
*The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:*

*Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor*

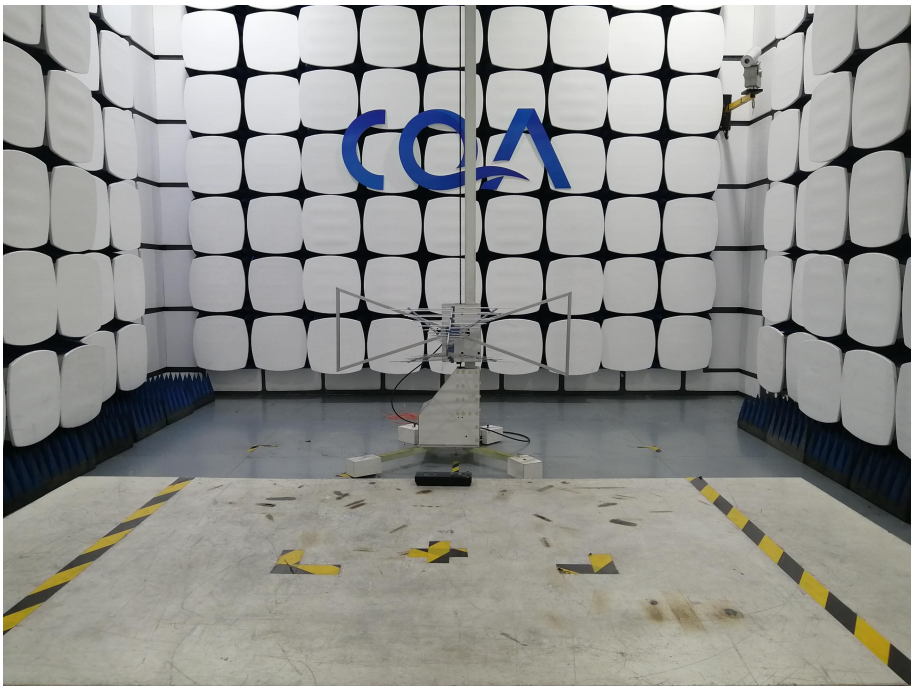
# 6 Photographs - EUT Test Setup

## 6.1 Radiated Spurious Emission

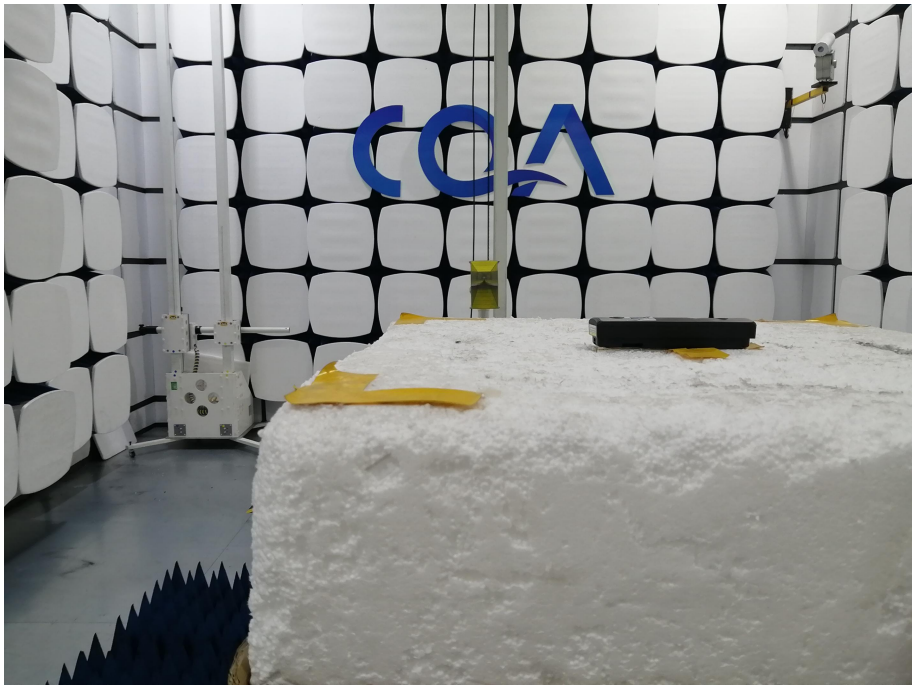
9kHz~30MHz:



30MHz~1GHz:



Above 1GHz:



## 6.2 Conducted Emission

# 7 Photographs - EUT Constructional Details

Note: Please insert the pin here to open the doorbell.
Made in China

Made in China

CM
Made in China
撸尺

CM
Made in China
撸尺

CM 1 2 3 4 5 6 7 8 9
Made in China

DC-5V
9 10 11 12 13 14 15