**Shenzhen Huaxia Testing Technology Co., Ltd.**

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Report Template Version: V05
Report Template Revision Date: 2021-11-03

# Test Report

| | |
|---|---|
| **Report No.:** | CQASZ20230601019E-01 |
| **Applicant:** | Shenzhen Itian Technology Co.,Ltd. |
| **Address of Applicant:** | 6F, Building D, Phase 2nd, Anfeng Industrial Park, Dalang Street, Longhua District, Shenzhen, China |
| **Equipment Under Test (EUT):** | |
| **Product:** | 3 in 1 MagSafe Charger |
| **Model No.:** | V13,V15A, V15S |
| **Test Model No.:** | V13 |
| **Brand Name:** | ITIAN |
| **FCC ID:** | 2AUDO-V13V15AV15S |
| **Standards:** | 47 CFR Part 15, Subpart C |
| **Date of Receipt:** | 2023-6-7 |
| **Date of Test:** | 2023-6-7 to 2023-6-14 |
| **Date of Issue:** | 2023-6-30 |
| **Test Result:** | **PASS*** |

***In the configuration tested, the EUT complied with the standards specified above**

***Tested By:*** _____
***( Joe Wang )***

***Reviewed By:*** _____
***( Timo Lei )***

***Approved By:*** _____
***( Jack Ai )***

# 1 Version

**Revision History Of Report**

| Report No. | Version | Description | Issue Date |
|---|---|---|---|
| CQASZ20230601019E-01 | Rev.01 | Initial report | 2023-6-30 |

# 2 Test Summary

| Test Item | Test Requirement | Test method | Result |
|---|---|---|---|
| Antenna Requirement | 47 CFR Part 15, Subpart C Section 15.203 | ANSI C63.10 2013 | PASS |
| AC Power Line Conducted Emission | 47 CFR Part 15, Subpart C Section 15.207 | ANSI C63.10 2013 | PASS |
| 20dB Occupied Bandwidth | 47 CFR Part 15, Subpart C Section 15.215 | ANSI C63.10 2013 | PASS |
| Radiated Emission , Radiated Spurious Emissions | 47 CFR Part 15, Subpart C Section 15.209 | ANSI C63.10 2013 | PASS |

# 3 Contents

# 4 General Information

## 4.1 Client Information

| | |
|---|---|
| Applicant: | Shenzhen Itian Technology Co.,Ltd. |
| Address of Applicant: | 6F, Building D, Phase 2nd, Anfeng Industrial Park, Dalang Street, Longhua District, Shenzhen, China |
| Manufacturer: | Shenzhen Itian Technology Co.,Ltd. |
| Address of Manufacturer: | 6F, Building D, Phase 2nd, Anfeng Industrial Park, Dalang Street, Longhua District, Shenzhen, China |
| Factory: | Shenzhen Itian Technology Co.,Ltd. |
| Address of Factory: | 6F, Building D, Phase 2nd, Anfeng Industrial Park, Dalang Street, Longhua District, Shenzhen, China |

## 4.2 General Description of EUT

| | |
|---|---|
| Product Name: | 3 in 1 MagSafe Charger |
| Model No.: | V13,V15A, V15S |
| Test Model No.: | V13 |
| Brand Name: | ITIAN |
| Software Version: | V13-1024-5004-V1 |
| Hardware Version: | V13-1024-5004-5001-V10 |
| Power Supply: | DC 5V-2A / 9V-2A |

## 4.3 Product Specification subjective to this standard

| | |
|---|---|
| Equipment Category: | Non-ISM frequency |
| Operation Frequency range: | 110kHz~205kHz |
| Modulation Type: | ASK |
| Antenna Type: | Induction coil |
| Antenna Gain: | 0dBi |
| Power: | Output: 15W(Max) |

Note:
1. In section 15.31(m), regards to the operating frequency range less 1 MHz.
2.Model No.: V13,V15A, V15S
Only the model V13 was tested, since the circuit design, layout, components used and internal wiring are all the same, except for the color difference.

## 4.4 Test Environment

| | |
|---|---|
| **Operating Environment:** | |
| **Radiated Emissions:** | |
| Temperature: | 25.5 °C |
| Humidity: | 53 % RH |
| Atmospheric Pressure: | 1009 mbar |
| **Conducted Emissions:** | |
| Temperature: | 25.5 °C |
| Humidity: | 55 % RH |
| Atmospheric Pressure: | 1009 mbar |
| **Radio conducted item test (RF Conducted test room):** | |
| Temperature: | 27.1 °C |
| Humidity: | 56 % RH |
| Atmospheric Pressure: | 1009 mbar |
| **Test Mode:** | |
| Mode a: | Wireless output Mode at 15W (Max) |
| Mode b: | Wireless output Mode at 5W (Max) |
| Mode c: | Wireless output Mode at 3W (Max) |
| Mode d: | Wireless total output Mode at 23W (Max) |

## 4.5 Description of Support Units

The EUT has been tested with associated equipment below.

1）Support equipment

| Description | Manufacturer | Model No. | Certification | Supplied by |
|---|---|---|---|---|
| Adapter | / | LPL-C010050200Z | / | CQA |
| Wireless charge load | / | / | / | CQA |
| Apple Watch | Apple | / | / | CQA |
| Air Pods | Apple | / | / | CQA |

2) Cable

| Cable No. | Description | Manufacturer | Cable Type/Length | Supplied by |
|---|---|---|---|---|
| / | / | / | / | / |

## 4.6 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate.

The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities.

The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the **Shenzhen Huaxia Testing Technology Co., Ltd.** quality system acc. to DIN EN ISO/IEC 17025.

Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CQA laboratory is reported:

| No. | Item | Uncertainty | Notes |
|---|---|---|---|
| 1 | Radiated Emission (Below 1GHz) | 5.12dB | (1) |
| 2 | Radiated Emission (Above 1GHz) | 4.60dB | (1) |
| 3 | Occupied Bandwidth | 1.1% | (1) |
| 4 | Temperature test | 0.8℃ | (1) |
| 5 | Humidity test | 2.0% | (1) |

(1)This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 4.7 Test Location

Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

## 4.8 Test Facility

• **A2LA (Certificate No. 4742.01)**
Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4742.01.

• **FCC Registration No.: 522263**
Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.:522263

## 4.9 Deviation from Standards

None.

## 4.10 Other Information Requested by the Customer

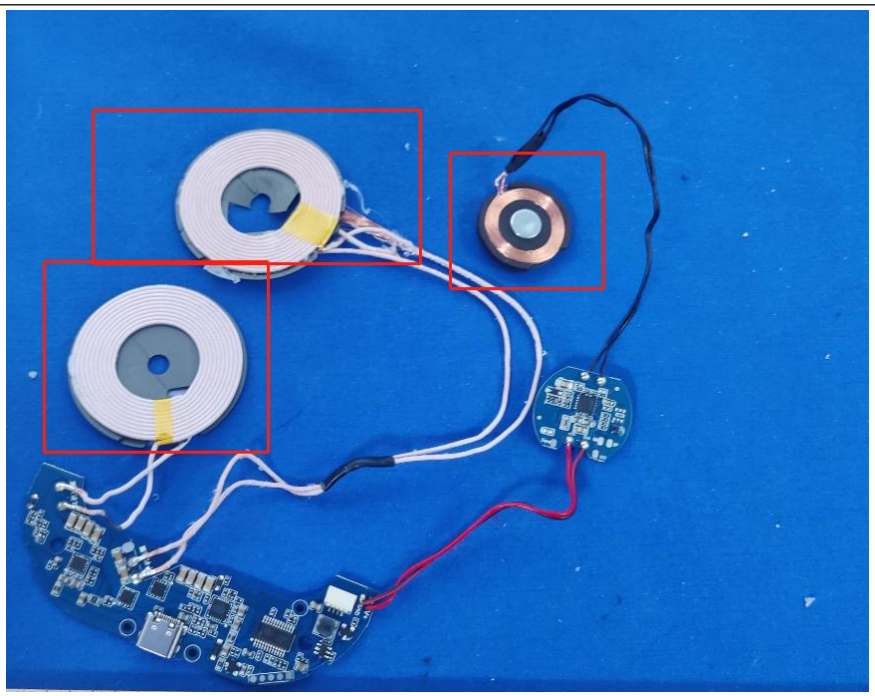
None.

## 4.11 Equipment List

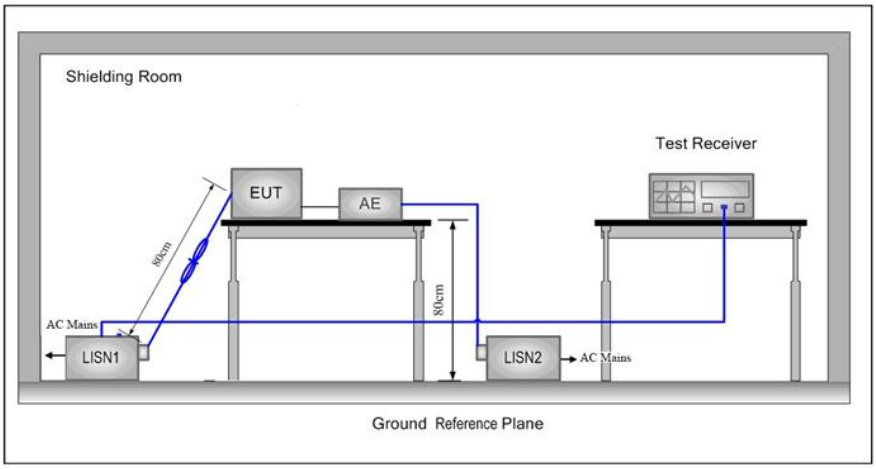
| Test Equipment | Manufacturer | Model No. | Instrument No. | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| EMI Test Receiver | R&S | ESR7 | CQA-005 | 2022/9/9 | 2023/9/8 |
| Spectrum analyzer | R&S | FSU26 | CQA-038 | 2022/9/9 | 2023/9/8 |
| Preamplifier | MITEQ | AMF-6D-02001800-29-20P | CQA-036 | 2022/9/9 | 2023/9/8 |
| Loop antenna | Schwarzbeck | FMZB1516 | CQA-060 | 2021/9/16 | 2024/9/15 |
| Bilog Antenna | R&S | HL562 | CQA-011 | 2021/9/16 | 2024/9/15 |
| Horn Antenna | R&S | HF906 | CQA-012 | 2021/9/16 | 2024/9/15 |
| Horn Antenna | Schwarzbeck | BBHA 9170 | CQA-088 | 2021/9/16 | 2024/9/15 |
| Coaxial Cable (Above 1GHz) | CQA | N/A | C007 | 2022/9/9 | 2023/9/8 |
| Coaxial Cable (Below 1GHz) | CQA | N/A | C013 | 2022/9/9 | 2023/9/8 |
| Antenna Connector | CQA | RFC-01 | CQA-080 | 2022/9/9 | 2023/9/8 |
| RF cable(9KHz~40GHz) | CQA | RF-01 | CQA-079 | 2022/9/9 | 2023/9/8 |
| Power divider | MIDWEST | PWD-2533-02-SMA-79 | CQA-067 | 2022/9/9 | 2023/9/8 |
| EMI Test Receiver | R&S | ESR7 | CQA-005 | 2022/9/9 | 2023/9/8 |
| LISN | R&S | ENV216 | CQA-003 | 2022/9/9 | 2023/9/8 |
| Coaxial cable | CQA | N/A | CQA-C009 | 2022/9/9 | 2023/9/8 |
| DC power | KEYSIGHT | E3631A | CQA-028 | 2022/9/9 | 2023/9/8 |

# 5 Test results and Measurement Data

## 5.1 Antenna Requirement

| **Standard requirement:** | 47 CFR Part 15C Section 15.203 |
|---|---|
| 15.203 requirement:<br>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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.<br>15.247(b) (4) requirement:<br>The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi. | |
| **EUT Antenna:** |  |
| The antenna is Induction coil. The best case gain of the antenna is 0dBi. | |

## 5.2 Conducted Emissions

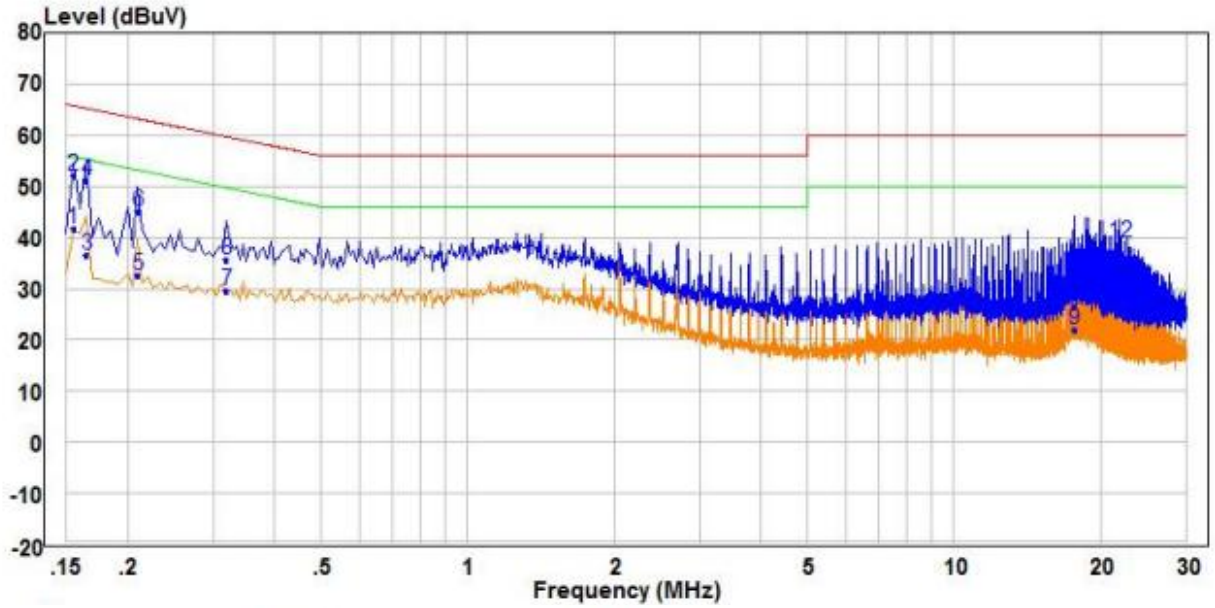
| | |
|---|---|
| Test Requirement: | 47 CFR Part 15C Section 15.207 |
| Test Method: | ANSI C63.10: 2013 |
| Test Frequency Range: | 150kHz to 30MHz |
| Limit: | Frequency range (MHz) / Limit (dBuV): Quasi-peak / Average<br>0.15-0.5: 66 to 56* / 56 to 46*<br>0.5-5: 56 / 46<br>5-30: 60 / 50<br>* Decreases with the logarithm of the frequency. |
| Test Procedure: | 1) The mains terminal disturbance voltage test was conducted in a shielded room.<br>2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.<br>3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane.<br>4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.<br>5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement. |
| Test Setup: |  |
| Test Results: | Pass |

**Measurement Data**

The worst case:

Mode a:

Live line:




| | | Freq | Read Level | Factor | Level | Limit Line | Over Limit | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | | |
| 1 | AV | 0.155 | 32.20 | 9.49 | 41.69 | 55.73 | -14.04 | Average | Line |
| 2 | PP | 0.155 | 42.45 | 9.49 | 51.94 | 65.73 | -13.79 | QP | Line |
| 3 | | 0.165 | 27.00 | 9.49 | 36.49 | 55.21 | -18.72 | Average | Line |
| 4 | | 0.165 | 41.51 | 9.49 | 51.00 | 65.21 | -14.21 | QP | Line |
| 5 | | 0.210 | 23.20 | 9.49 | 32.69 | 53.21 | -20.52 | Average | Line |
| 6 | | 0.210 | 35.57 | 9.49 | 45.06 | 63.21 | -18.15 | QP | Line |
| 7 | | 0.320 | 20.16 | 9.49 | 29.65 | 49.71 | -20.06 | Average | Line |
| 8 | | 0.320 | 26.11 | 9.49 | 35.60 | 59.71 | -24.11 | QP | Line |
| 9 | | 17.700 | 11.98 | 10.00 | 21.98 | 50.00 | -28.02 | Average | Line |
| 10 | | 17.700 | 16.64 | 10.00 | 26.64 | 60.00 | -33.36 | QP | Line |
| 11 | | 21.885 | 16.30 | 10.08 | 26.38 | 50.00 | -23.62 | Average | Line |
| 12 | | 21.885 | 28.97 | 10.08 | 39.05 | 60.00 | -20.95 | QP | Line |

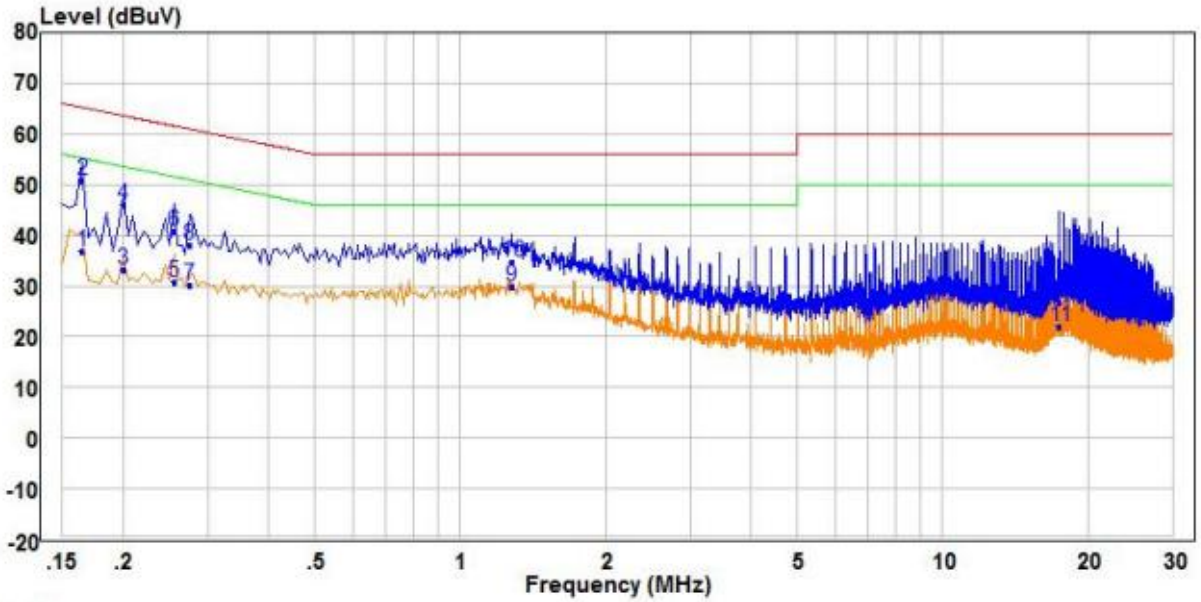
Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

The worst case:

Mode a:

Neutral line:




| | | Freq | Read Level | Factor | Level | Limit Line | Over Limit | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | | |
| 1 | | 0.165 | 27.07 | 9.67 | 36.74 | 55.21 | -18.47 | Average | Neutral |
| 2 | PP | 0.165 | 41.23 | 9.67 | 50.90 | 65.21 | -14.31 | QP | Neutral |
| 3 | | 0.200 | 23.63 | 9.61 | 33.24 | 53.61 | -20.37 | Average | Neutral |
| 4 | | 0.200 | 36.45 | 9.61 | 46.06 | 63.61 | -17.55 | QP | Neutral |
| 5 | | 0.255 | 21.34 | 9.53 | 30.87 | 51.59 | -20.72 | Average | Neutral |
| 6 | | 0.255 | 31.19 | 9.53 | 40.72 | 61.59 | -20.87 | QP | Neutral |
| 7 | | 0.275 | 20.55 | 9.51 | 30.06 | 50.97 | -20.91 | Average | Neutral |
| 8 | | 0.275 | 28.51 | 9.51 | 38.02 | 60.97 | -22.95 | QP | Neutral |
| 9 | AV | 1.280 | 20.02 | 9.71 | 29.73 | 46.00 | -16.27 | Average | Neutral |
| 10 | | 1.280 | 25.00 | 9.71 | 34.71 | 56.00 | -21.29 | QP | Neutral |
| 11 | | 17.485 | 12.29 | 9.78 | 22.07 | 50.00 | -27.93 | Average | Neutral |
| 12 | | 17.485 | 17.12 | 9.78 | 26.90 | 60.00 | -33.10 | QP | Neutral |

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:

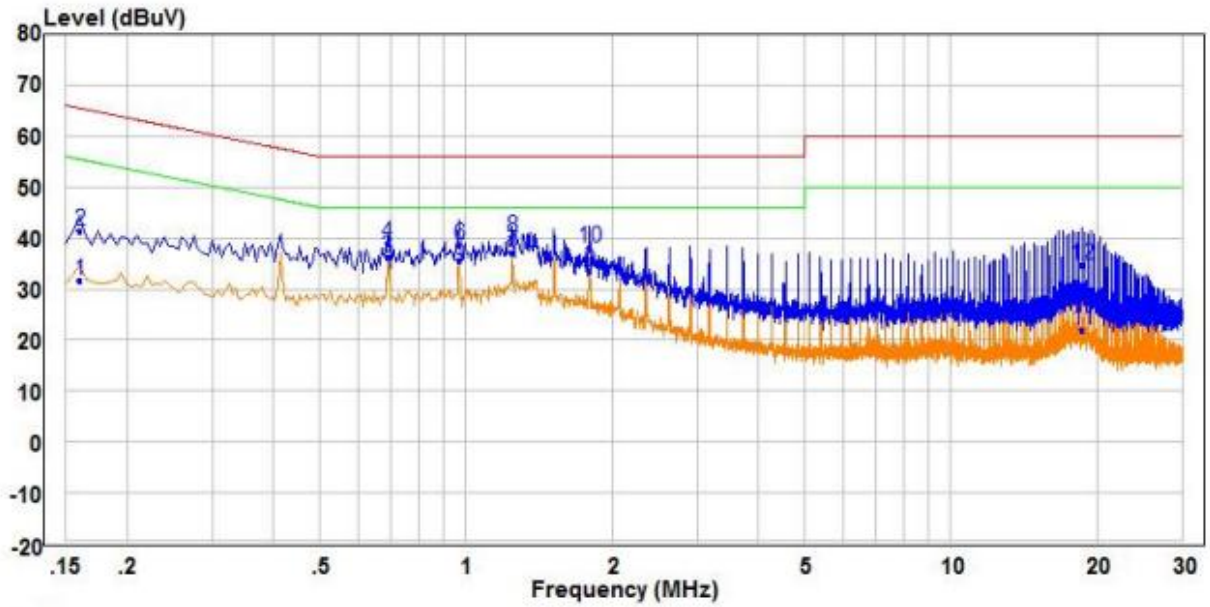
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

3. If the Peak value under Average limit, the Average value is not recorded in the report.

The worst case:

Mode d:

Live line:




| | | Freq | Read Level | Factor | Level | Limit Line | Over Limit | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | | |
| 1 | | 0.160 | 21.98 | 9.68 | 31.66 | 55.46 | -23.80 | Average | Line |
| 2 | | 0.160 | 31.67 | 9.68 | 41.35 | 65.46 | -24.11 | QP | Line |
| 3 | | 0.690 | 26.45 | 9.89 | 36.34 | 46.00 | -9.66 | Average | Line |
| 4 | | 0.690 | 29.19 | 9.89 | 39.08 | 56.00 | -16.92 | QP | Line |
| 5 | | 0.970 | 25.98 | 9.72 | 35.70 | 46.00 | -10.30 | Average | Line |
| 6 | | 0.970 | 28.94 | 9.72 | 38.66 | 56.00 | -17.34 | QP | Line |
| 7 | PP | 1.245 | 26.70 | 10.31 | 37.01 | 46.00 | -8.99 | Average | Line |
| 8 | QP | 1.245 | 30.01 | 10.31 | 40.32 | 56.00 | -15.68 | QP | Line |
| 9 | | 1.800 | 22.22 | 11.35 | 33.57 | 46.00 | -12.43 | Average | Line |
| 10 | | 1.800 | 26.59 | 11.35 | 37.94 | 56.00 | -18.06 | QP | Line |
| 11 | | 18.680 | 12.18 | 9.81 | 21.99 | 50.00 | -28.01 | Average | Line |
| 12 | | 18.680 | 25.05 | 9.81 | 34.86 | 60.00 | -25.14 | QP | Line |

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:

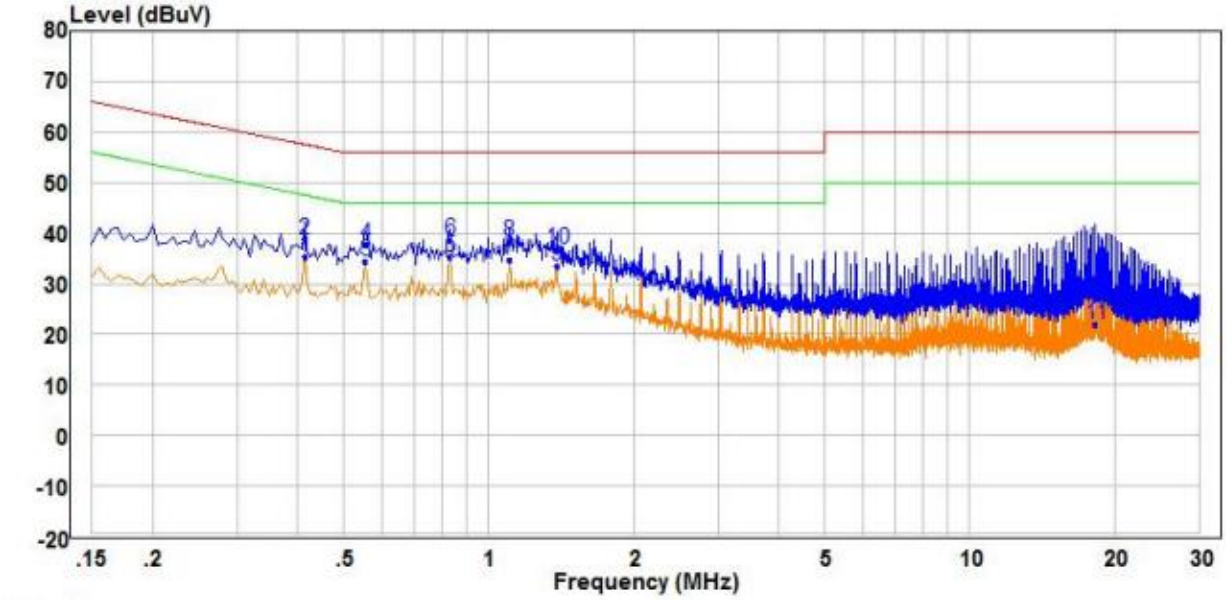
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

3. If the Peak value under Average limit, the Average value is not recorded in the report.

The worst case:

Mode d:

Neutral line:

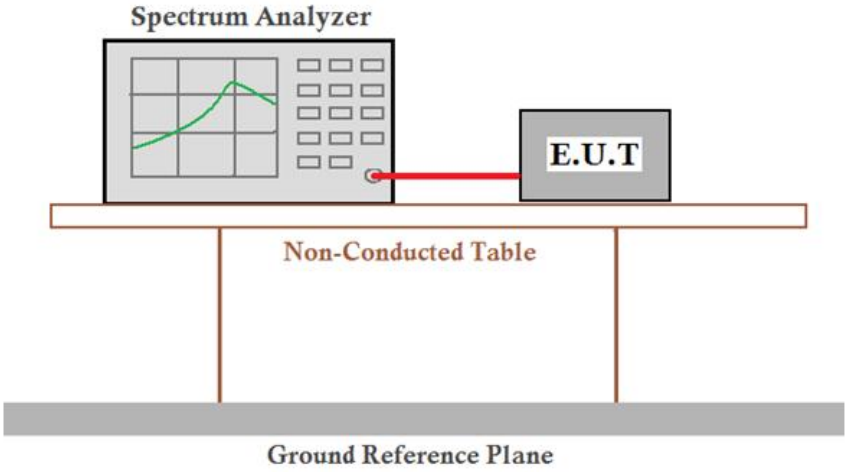



| | | Freq | Read Level | Factor | Level | Limit Line | Over Limit | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | | |
| 1 | | 0.415 | 25.71 | 9.62 | 35.33 | 47.55 | -12.22 | Average | Neutral |
| 2 | | 0.415 | 29.16 | 9.62 | 38.78 | 57.55 | -18.77 | QP | Neutral |
| 3 | | 0.555 | 24.67 | 9.76 | 34.43 | 46.00 | -11.57 | Average | Neutral |
| 4 | | 0.555 | 28.06 | 9.76 | 37.82 | 56.00 | -18.18 | QP | Neutral |
| 5 | PP | 0.830 | 25.59 | 9.81 | 35.40 | 46.00 | -10.60 | Average | Neutral |
| 6 | QP | 0.830 | 28.85 | 9.81 | 38.66 | 56.00 | -17.34 | QP | Neutral |
| 7 | | 1.105 | 24.91 | 9.71 | 34.62 | 46.00 | -11.38 | Average | Neutral |
| 8 | | 1.105 | 28.66 | 9.71 | 38.37 | 56.00 | -17.63 | QP | Neutral |
| 9 | | 1.385 | 23.88 | 9.72 | 33.60 | 46.00 | -12.40 | Average | Neutral |
| 10 | | 1.385 | 27.22 | 9.72 | 36.94 | 56.00 | -19.06 | QP | Neutral |
| 11 | | 18.255 | 12.25 | 9.80 | 22.05 | 50.00 | -27.95 | Average | Neutral |
| 12 | | 18.255 | 17.40 | 9.80 | 27.20 | 60.00 | -32.80 | QP | Neutral |

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

## 5.3 20dB Occupy Bandwidth

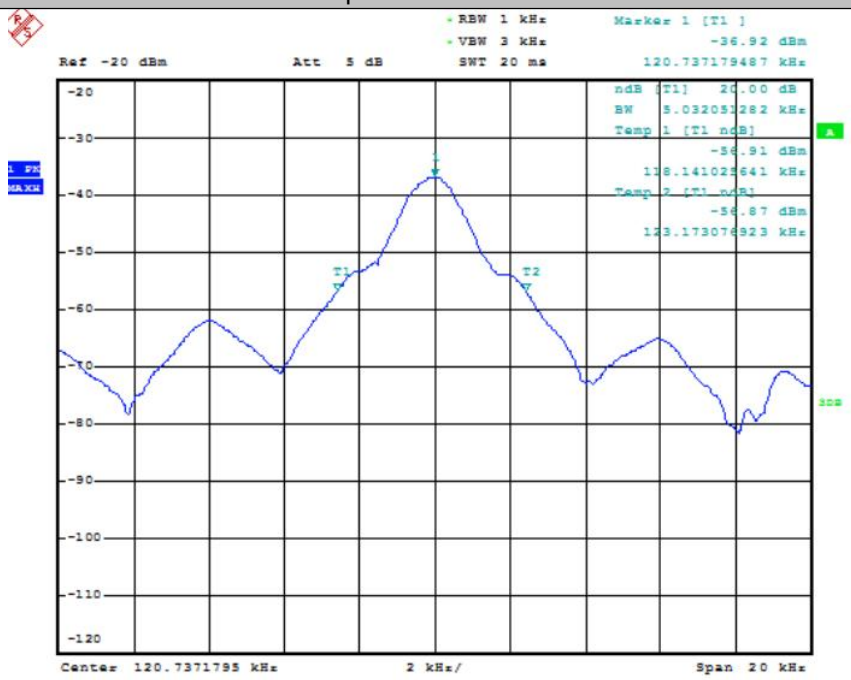
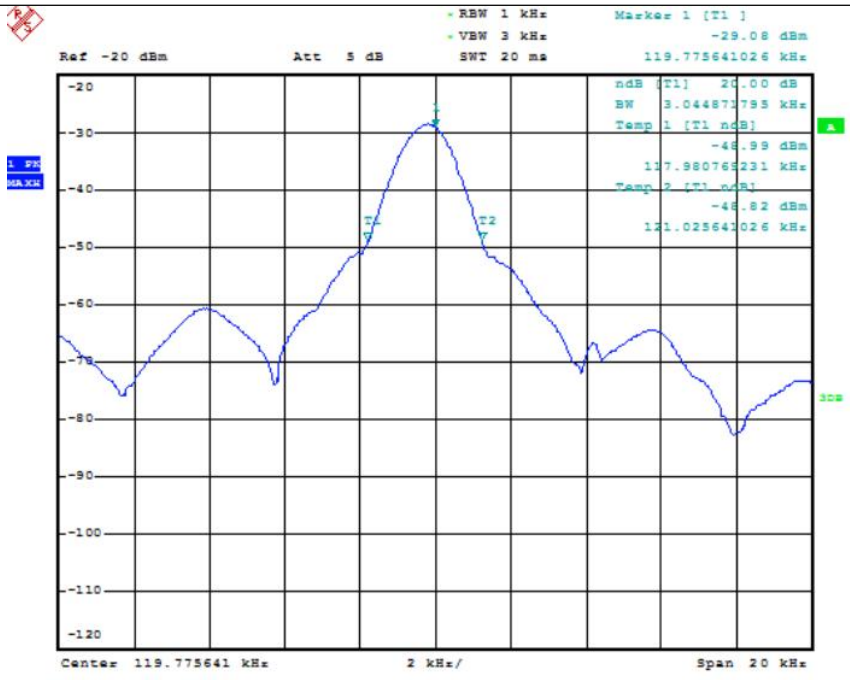
| | |
|---|---|
| Test Requirement: | 47 CFR Part 15C Section 15.215 |
| Test Method: | ANSI C63.10 2013 |
| Test Setup: |  *Remark: Offset=Cable loss+ attenuation factor.* |
| Test Results: | Pass |

**Measurement Data**

| Mode a | | |
|---|---|---|
| Test Frequency (kHz) | 20dB Occupy Bandwidth (Hz) | Result |
| 120.7 | 5032 | Pass |

| Mode d | | |
|---|---|---|
| Test Frequency (kHz) | 20dB Occupy Bandwidth (Hz) | Result |
| 120.0 | 3045 | Pass |

**Test plot as follows:**

| Graphs | |
|---|---|
| 120.7kHz |  |
| 120.0kHz |  |

## 5.4 Radiated Spurious Emission & Restricted bands

### 5.4.1 Spurious Emissions

| | |
|---|---|
| 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) |

Receiver Setup:

| Frequency | Detector | RBW | VBW | Remark |
|---|---|---|---|---|
| 0.009MHz-0.090MHz | Peak | 10kHz | 30kHz | Peak |
| 0.009MHz-0.090MHz | Average | 10kHz | 30kHz | Average |
| 0.090MHz-0.110MHz | Quasi-peak | 10kHz | 30kHz | Quasi-peak |
| 0.110MHz-0.490MHz | Peak | 10kHz | 30kHz | Peak |
| 0.110MHz-0.490MHz | Average | 10kHz | 30kHz | Average |
| 0.490MHz -30MHz | Quasi-peak | 10kHz | 30kHz | Quasi-peak |
| 30MHz-1GHz | Quasi-peak | 100 kHz | 300kHz | Quasi-peak |
| Above 1GHz | Peak | 1MHz | 3MHz | Peak |
| | Peak | 1MHz | 10Hz | Average |

Limit:

| Frequency | Field strength (microvolt/meter) | Limit (dBuV/m) | Remark | Measurement distance (m) |
|---|---|---|---|---|
| 0.009MHz-0.490MHz | 2400/F(kHz) | - | - | 300 |
| 0.490MHz-1.705MHz | 24000/F(kHz) | - | - | 30 |
| 1.705MHz-30MHz | 30 | - | - | 30 |
| 30MHz-88MHz | 100 | 40.0 | Quasi-peak | 3 |
| 88MHz-216MHz | 150 | 43.5 | Quasi-peak | 3 |
| 216MHz-960MHz | 200 | 46.0 | Quasi-peak | 3 |
| 960MHz-1GHz | 500 | 54.0 | Quasi-peak | 3 |
| Above 1GHz | 500 | 54.0 | Average | 3 |

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

| Test Setup: | |
|---|---|

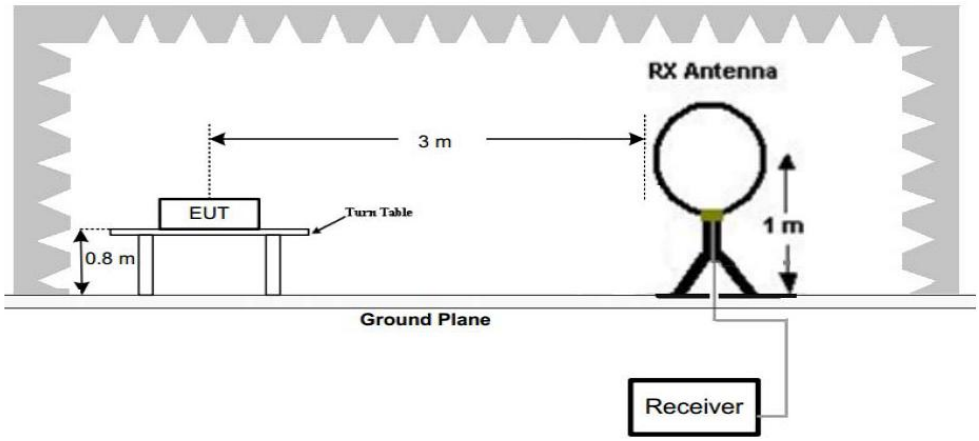



Figure 1. Below 30MHz

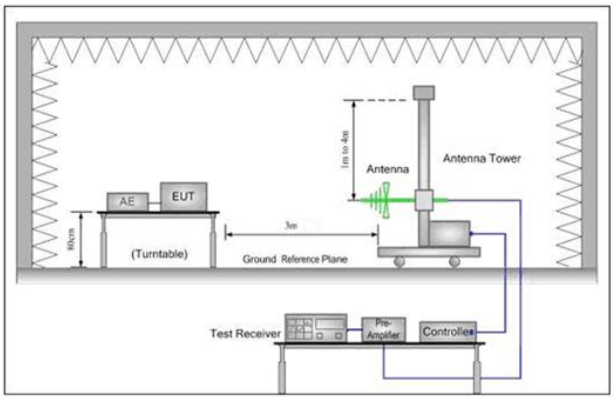



Figure 2. 30MHz to 1GHz

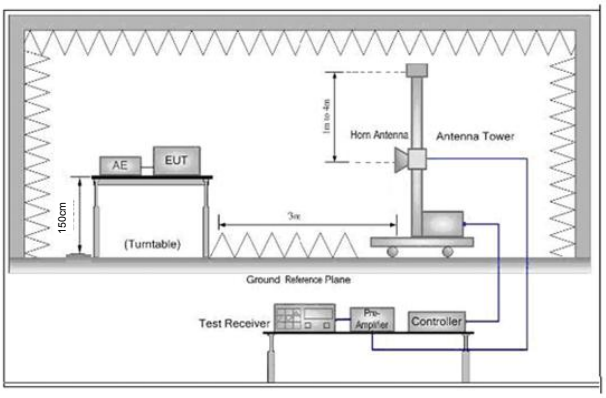



Figure 3. Above 1 GHz

| 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.<br>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.<br>Note: For the radiated emission test above 1GHz:<br>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.<br>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.<br>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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) 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. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.<br>g. Repeat above procedures until all frequencies measured was complete. |
| Test Results: | Pass |

| Radiated Emission below 9k~30MHz | |
|---|---|
| the worst case | |
| Test mode: | Mode a |

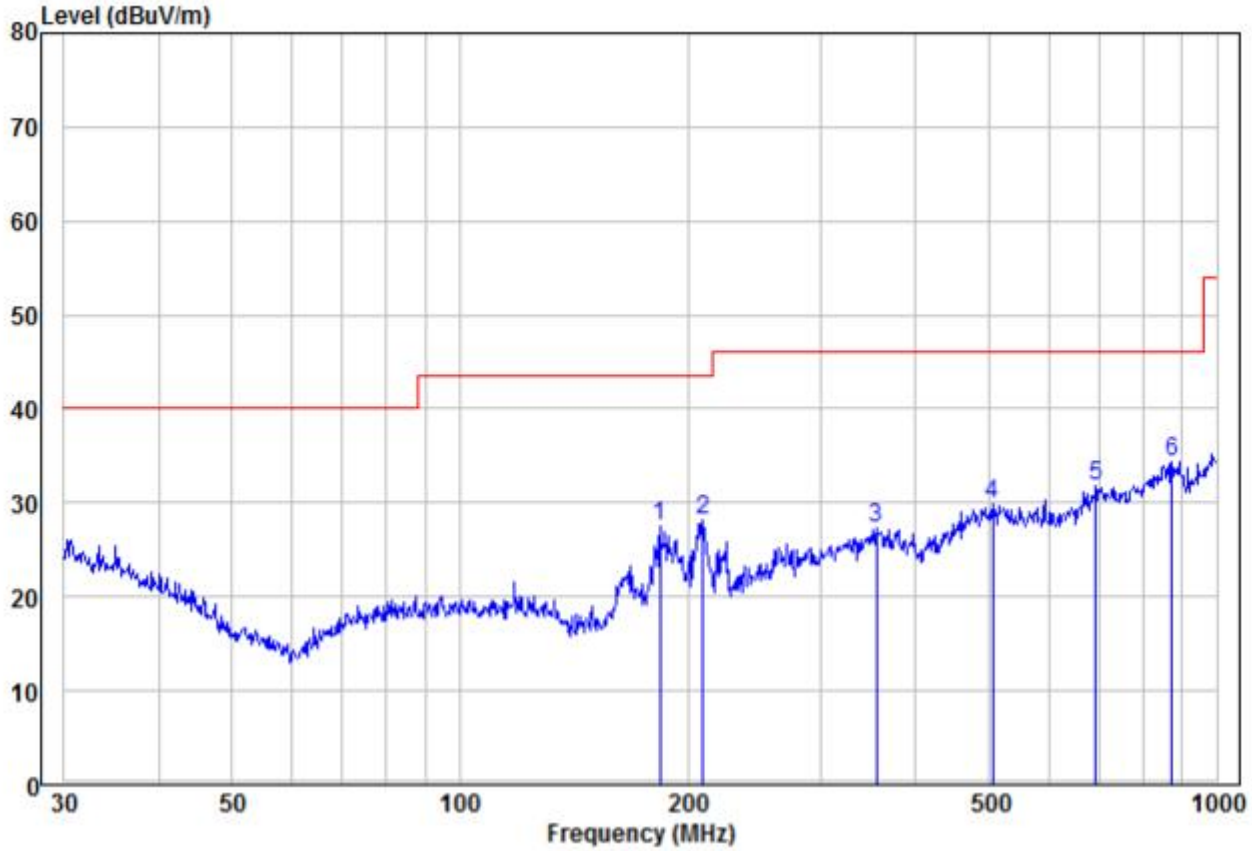
| Frequency MHz | Polarization | Reading dB(uV) | Factor dB (1/m) | Level dB(uV/m) Peak | Limit dB(uV/m) Average | Margin dB | Pass/Fail |
|---|---|---|---|---|---|---|---|
| 0.1207 | Face | 39.87 | 19.63 | 59.5 | 105.97 | -46.47 | Pass |
| 0.1207 | Side | 43.18 | 19.63 | 62.81 | 105.97 | -43.16 | Pass |

| Radiated Emission below 9k~30MHz | |
|---|---|
| the worst case | |
| Test mode: | Mode d |

| Frequency MHz | Polarization | Reading dB(uV) | Factor dB (1/m) | Level dB(uV/m) Peak | Limit dB(uV/m) Average | Margin dB | Pass/Fail |
|---|---|---|---|---|---|---|---|
| 0.120 | Face | 41.15 | 19.63 | 60.78 | 106.02 | -45.24 | Pass |
| 0.120 | Side | 42.69 | 19.63 | 62.32 | 106.02 | -43.70 | Pass |

Note: No other emissions found between lowest internal used/generated frequencies to 30MHz. The peak level of the emission is less than the average limit, so the average level shall be less than1 the limit without test.

| Radiated Emission | | |
|---|---|---|
| 30MHz~1GHz, the worst case | | |
| Test mode: | Mode a | Horizontal |



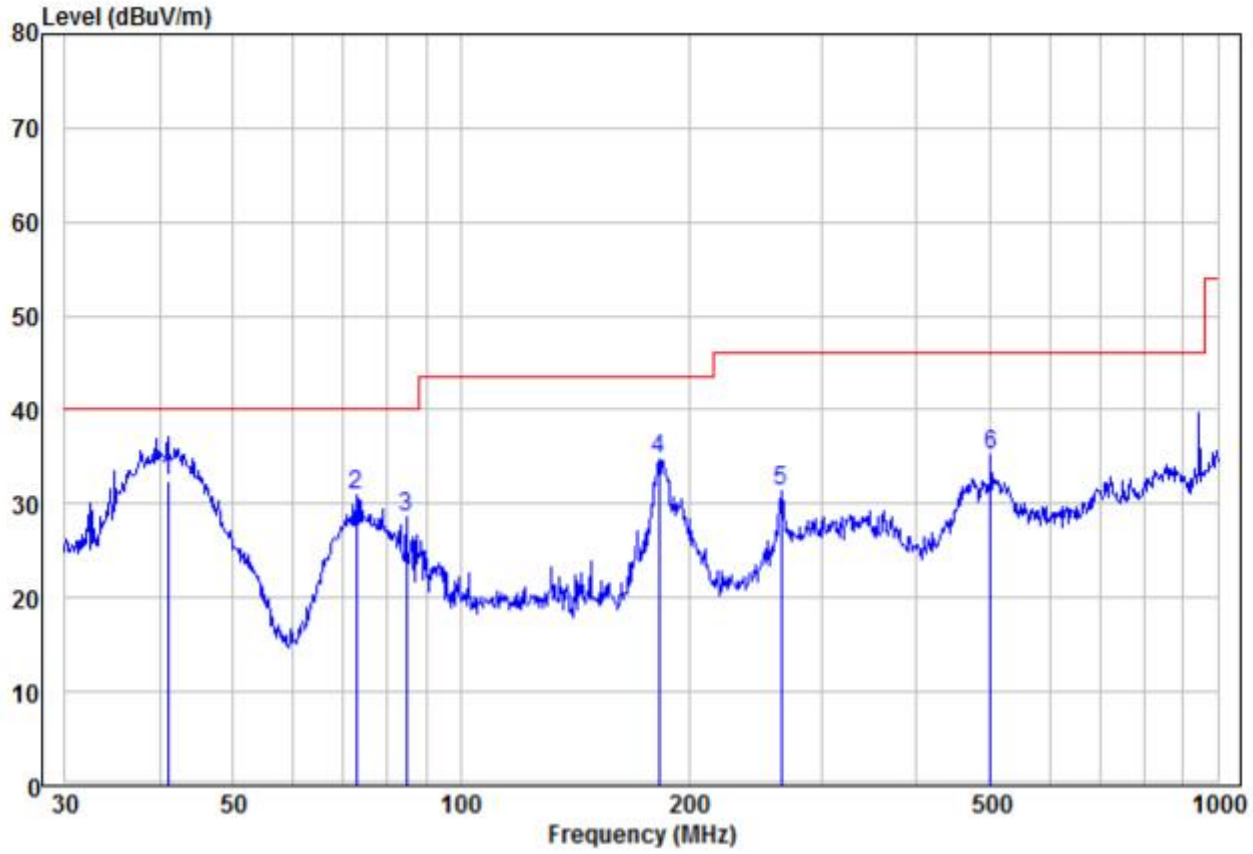

| | Freq | Read Level | Factor | Level | Limit Line | Over Limit | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB/m | dBuV/m | dBuV/m | dB | | |
| 1 | 183.84 | 19.39 | 8.20 | 27.59 | 43.50 | -15.91 | Peak | HORIZONTAL |
| 2 | 209.31 | 19.31 | 8.79 | 28.10 | 43.50 | -15.40 | Peak | HORIZONTAL |
| 3 | 355.43 | 12.15 | 15.08 | 27.23 | 46.00 | -18.77 | Peak | HORIZONTAL |
| 4 | 506.48 | 11.43 | 18.35 | 29.78 | 46.00 | -16.22 | Peak | HORIZONTAL |
| 5 | 691.99 | 10.78 | 20.94 | 31.72 | 46.00 | -14.28 | Peak | HORIZONTAL |
| 6 pp | 872.18 | 10.45 | 23.96 | 34.41 | 46.00 | -11.59 | Peak | HORIZONTAL |

Remark:

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

| 30MHz~1GHz, the worst case | | |
|---|---|---|
| Test mode: | Mode a | Vertical |



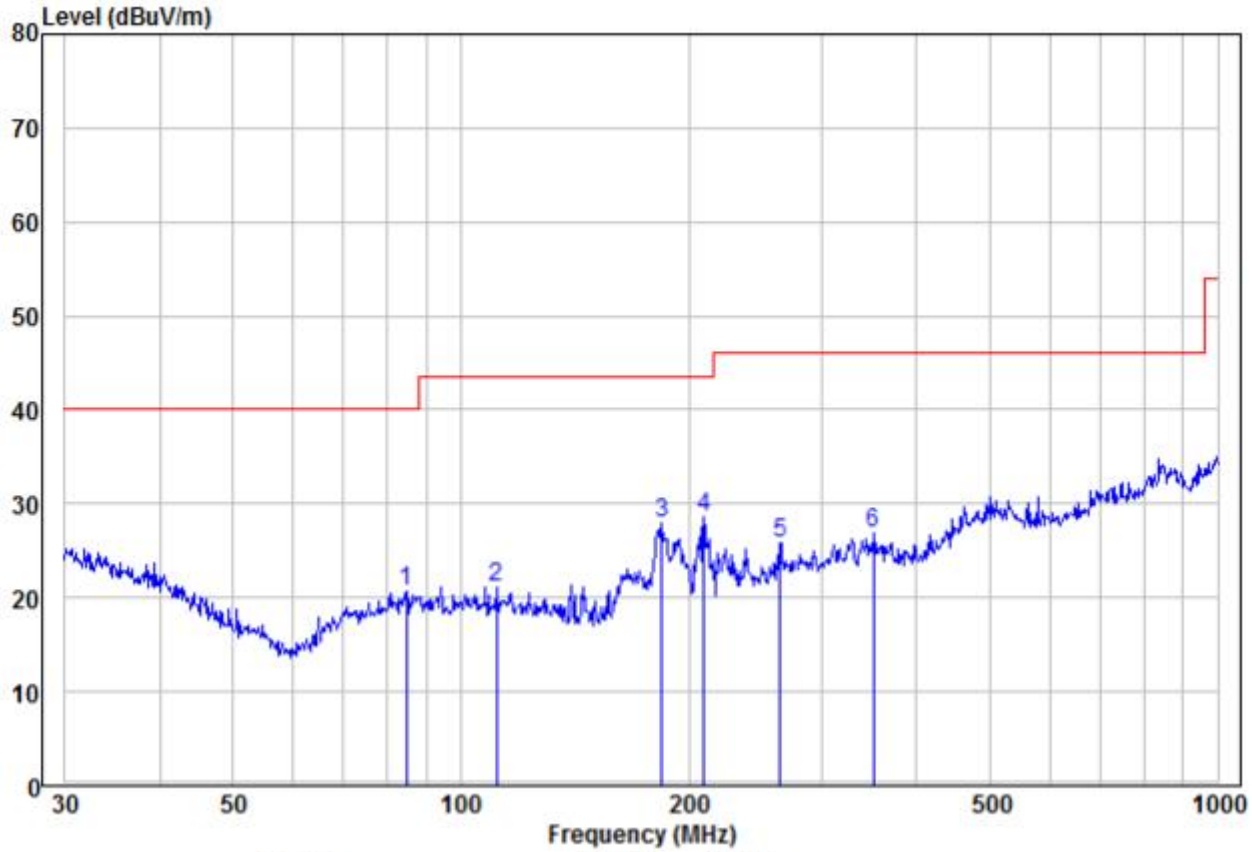

| | Freq | Read Level | Factor | Level | Limit Line | Over Limit | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB/m | dBuV/m | dBuV/m | dB | | |
| 1 pp | 40.99 | 20.09 | 12.34 | 32.43 | 40.00 | -7.57 | QP | VERTICAL |
| 2 | 72.85 | 22.40 | 8.62 | 31.02 | 40.00 | -8.98 | Peak | VERTICAL |
| 3 | 84.70 | 18.69 | 9.89 | 28.58 | 40.00 | -11.42 | Peak | VERTICAL |
| 4 pk | 182.56 | 26.43 | 8.25 | 34.68 | 43.50 | -8.82 | Peak | VERTICAL |
| 5 | 264.75 | 18.84 | 12.57 | 31.41 | 46.00 | -14.59 | Peak | VERTICAL |
| 6 | 501.18 | 16.88 | 18.29 | 35.17 | 46.00 | -10.83 | Peak | VERTICAL |

Remark:

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

| 30MHz~1GHz, the worst case | | |
|---|---|---|
| Test mode: | Mode d | Horizontal |



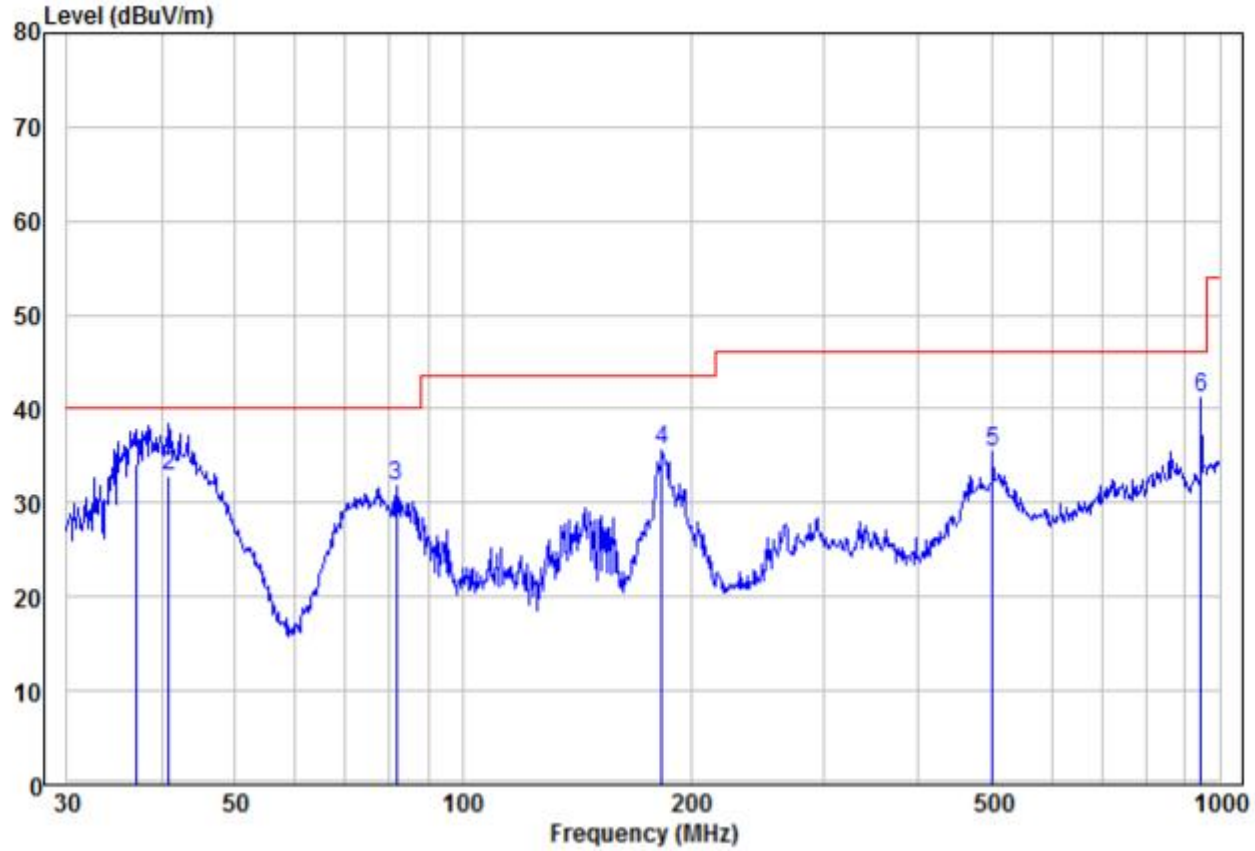

| | Freq | Read Level | Factor | Limit Level | Limit Line | Over Limit | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB/m | dBuV/m | dBuV/m | dB | | |
| 1 | 84.70 | 10.70 | 9.89 | 20.59 | 40.00 | -19.41 | Peak | HORIZONTAL |
| 2 | 111.35 | 10.84 | 10.25 | 21.09 | 43.50 | -22.41 | Peak | HORIZONTAL |
| 3 | 184.49 | 19.84 | 8.17 | 28.01 | 43.50 | -15.49 | Peak | HORIZONTAL |
| 4 pp | 209.31 | 19.80 | 8.79 | 28.59 | 43.50 | -14.91 | Peak | HORIZONTAL |
| 5 | 263.82 | 13.30 | 12.54 | 25.84 | 46.00 | -20.16 | Peak | HORIZONTAL |
| 6 | 350.48 | 11.93 | 14.96 | 26.89 | 46.00 | -19.11 | Peak | HORIZONTAL |

Remark:

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

| 30MHz~1GHz, the worst case | | |
|---|---|---|
| Test mode: | Mode d | Vertical |




| | Freq | Read Level | Factor | Level | Limit Line | Over Limit | Remark | Pol/Phase |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB/m | dBuV/m | dBuV/m | dB | | |
| 1 qp | 37.02 | 20.20 | 13.87 | 34.07 | 40.00 | -5.93 | QP | VERTICAL |
| 2 | 40.84 | 20.40 | 12.40 | 32.80 | 40.00 | -7.20 | QP | VERTICAL |
| 3 | 81.78 | 21.86 | 9.83 | 31.69 | 40.00 | -8.31 | Peak | VERTICAL |
| 4 | 183.20 | 27.38 | 8.22 | 35.60 | 43.50 | -7.90 | Peak | VERTICAL |
| 5 | 501.18 | 17.22 | 18.29 | 35.51 | 46.00 | -10.49 | Peak | VERTICAL |
| 6 pp | 945.44 | 17.56 | 23.62 | 41.18 | 46.00 | -4.82 | Peak | VERTICAL |

Remark:

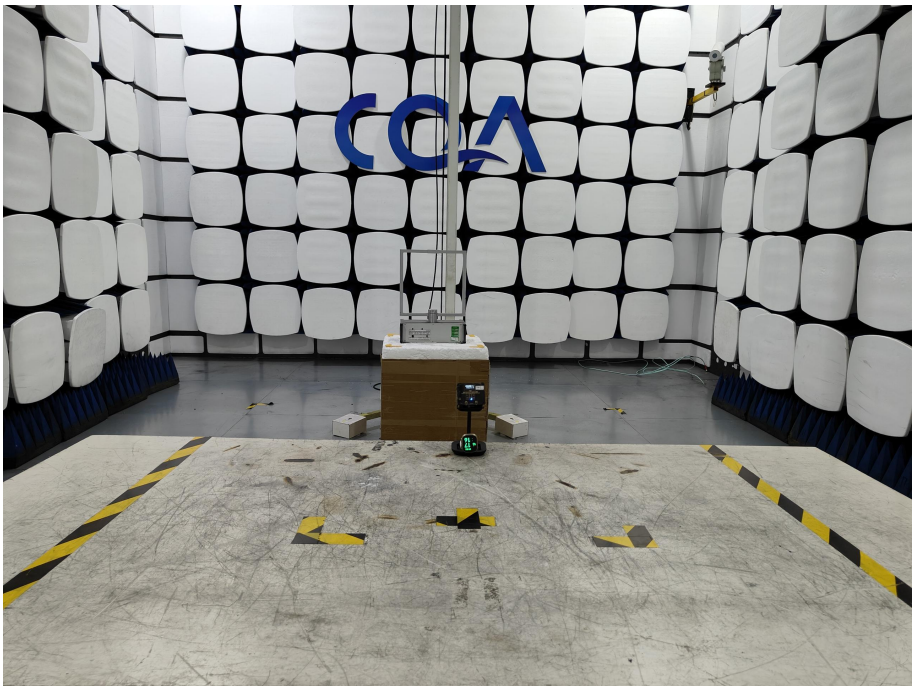
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor

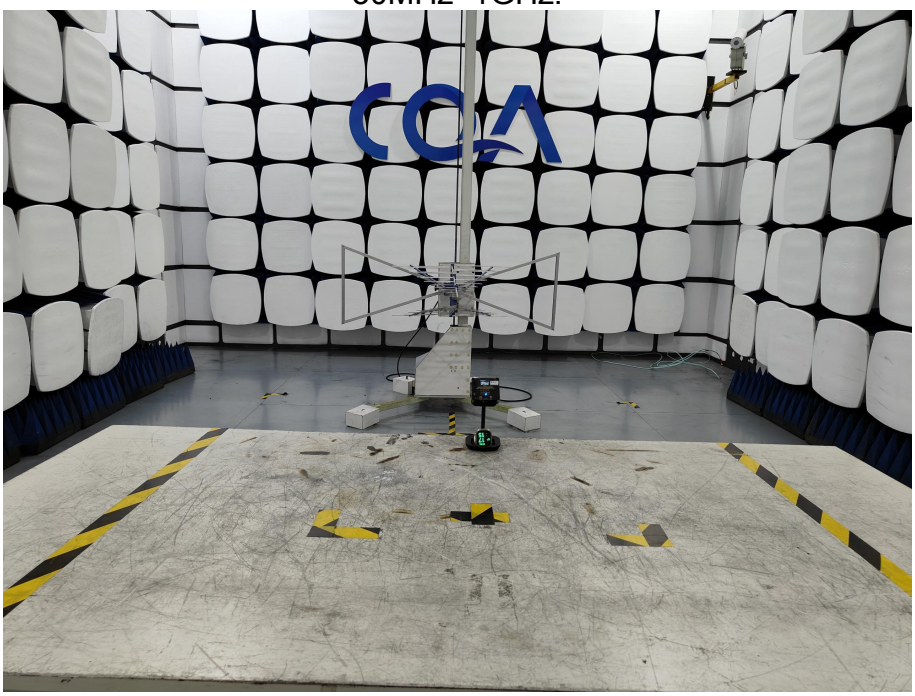
# 6 Photographs - EUT Test Setup

## 6.1 Radiated Emission

9kHz~30MHz:

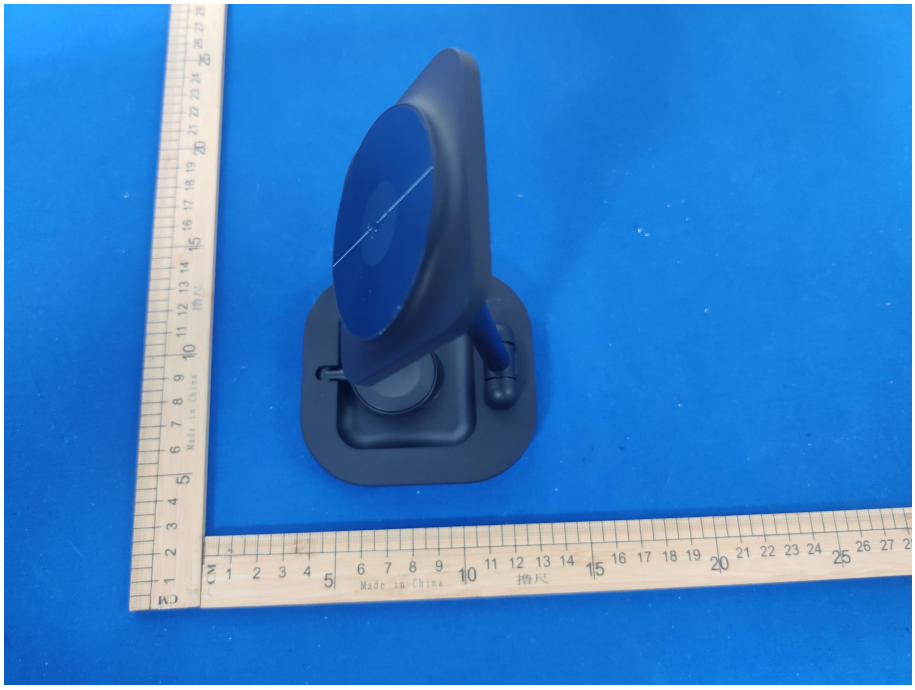


30MHz~1GHz:



## 6.2 Conducted Emission

# 7 Photographs - EUT Constructional Details

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