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Report Template Version: V04

Report Template Revision Date: 2018-07-06

# Test Report

**Report No. :** CQASZ20200300117E-01

**Applicant:** SHENZHEN HUBSAN TECHNOLOGY CO., LTD

**Address of Applicant:** 13th Floor, Bldg 1C, Shenzhen Software Industry Base, Xuefu Road, Nanshan District, Shenzhen, China 518054

**Equipment Under Test (EUT):**

**Product:** HUBSAN ZINO 2

**Model No.:** ZINO 2

**Brand Name:** HUBSAN

**FCC ID:** 2AN75-ZINO2-1RX

**Standards:** 47 CFR Part 15, Subpart E

KDB 789033 D02 General UNII Test Procedures New Rules v02

KDB 558074 D01 Meas Guidance v05

**Date of Receipt:** 2020-03-06

**Date of Test:** 2020-03-06 to 2020-03-10

**Date of Issue:** 2020-03-10

**Test Result :** PASS\*

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

**Tested By :**

*Tom Chen*

(Tom chen)

**Reviewed By:**

*Aaron Ma*

(Aaron Ma)

**Approved By:**

*Jack Ai*

( Jack Ai)



## 1 Version

### Revision History Of Report

| Report No.           | Version | Description    | Issue Date |
|----------------------|---------|----------------|------------|
| CQASZ20200300117E-01 | Rev.01  | Initial report | 2020-03-10 |

## 2 Test Summary

| Test Item                                                         | Test Requirement                                                        | Test method              | Result |
|-------------------------------------------------------------------|-------------------------------------------------------------------------|--------------------------|--------|
| Antenna Requirement                                               | 47 CFR Part 15 Subpart C<br>Section 15.203                              | ANSI C63.10-2013         | PASS   |
| AC Power Line Conducted Emission                                  | 47 CFR Part 15 Subpart E<br>Section 15.407 (b)(6)                       | ANSI C63.10-2013         | N/A    |
| Conducted Output Power and transmit power control mechanism       | 47 CFR Part 15 Subpart E<br>Section 15.407 (a)(1)(2)(4)(h)(1)           | ANSI C63.10-2013         | PASS   |
| Emission Bandwidth                                                | 47 CFR Part 15 Subpart E<br>Section 15.407 (a)(1)(2)                    | ANSI C63.10-2013         | PASS   |
| Peak Power Spectral Density                                       | 47 CFR Part 15 Subpart E<br>Section 15.407 (a)(1)(2)(5)                 | ANSI C63.10-2013         | PASS   |
| Frequency stability                                               | 47 CFR Part 15 Subpart E<br>Section 15.407 (g)                          | ANSI C63.10-2013         | PASS   |
| Operation in the absence of information to the transmit           | 47 CFR Part 15 Subpart E<br>Section 15.407 (c)                          | 47 CFR Part 15 Subpart E | PASS   |
| Radiated Spurious Emissions                                       | 47 CFR Part 15 Subpart E<br>Section 15.407 (b)(1)(2)(3)(5)<br>(6)(7)(8) | ANSI C63.10-2013         | PASS   |
| Restricted bands around fundamental frequency (Radiated Emission) | 47 CFR Part 15 Subpart E<br>Section 15.407 (b)(6)(7)(8)                 | ANSI C63.10-2013         | PASS   |

**Remark:**

The tested sample(s) and the sample information are provided by the client.

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radiated Frequency.

CH: In this whole report CH means channel.

Volt: In this whole report Volt means Voltage.

Temp: In this whole report Temp means Temperature.

Humid: In this whole report Humid means humidity.

Press: In this whole report Press means Pressure.

N/A: When the EUT charging, WIFI will not work , So Not Applicable

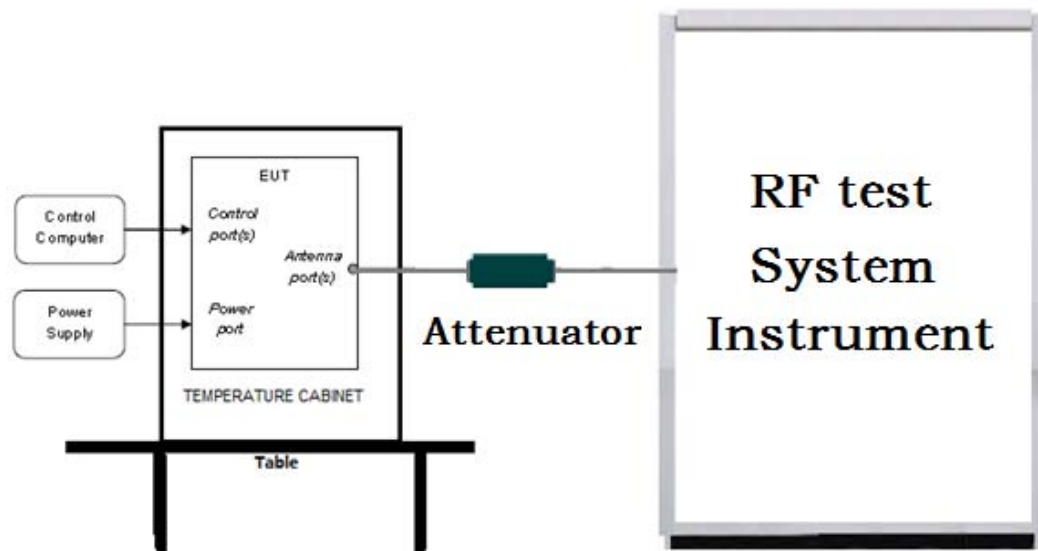
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## 4 Test Requirement

### 4.1 Test setup

#### 4.1.1 For Conducted test setup



#### 4.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

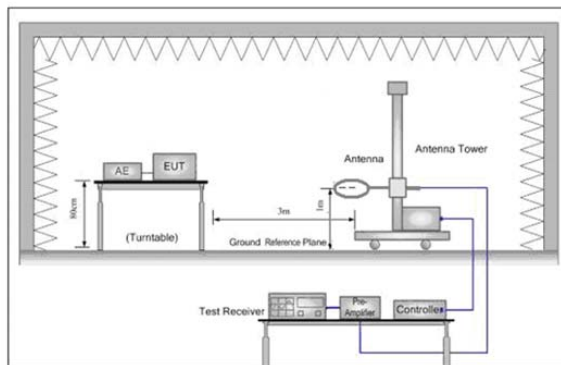


Figure 1. Below 30MHz

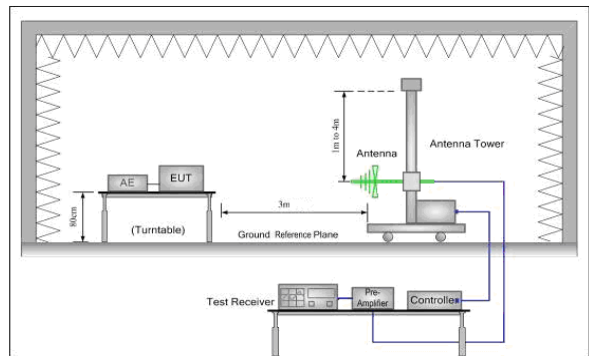


Figure 2. 30MHz to 1GHz

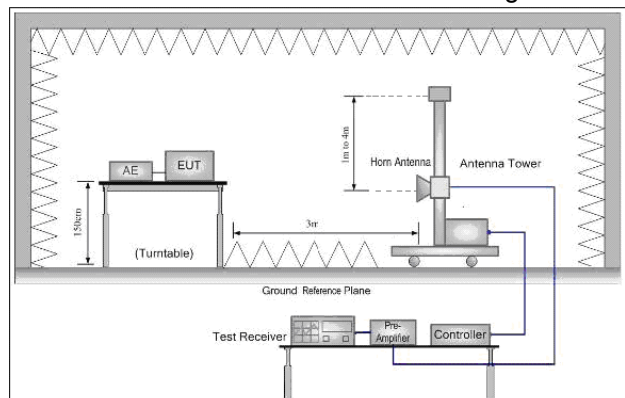
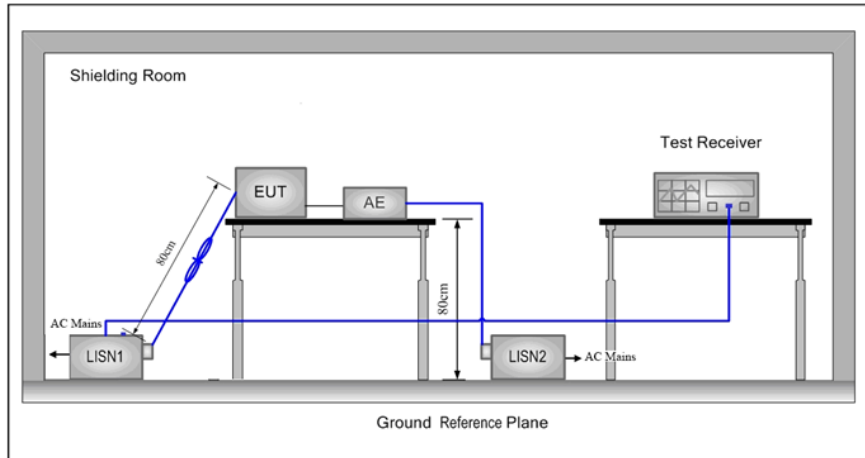


Figure 3. Above 1GHz

#### 4.1.3 For Conducted Emissions test setup

##### Conducted Emissions setup



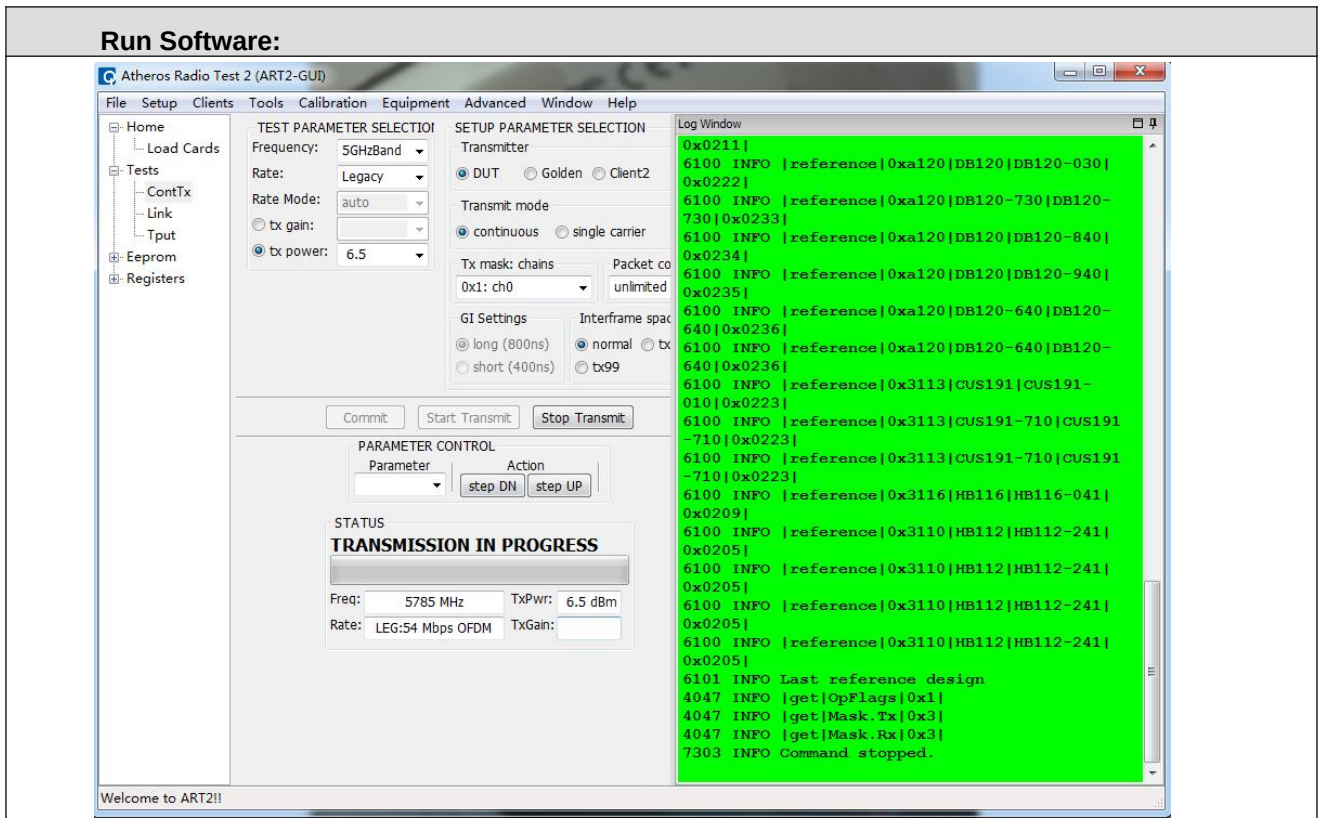
## 4.2 Test Environment

| Operating Environment:                                                                                                                                                                                           |                  |             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------|
| Radiated Emissions:                                                                                                                                                                                              |                  |             |
| Temperature:                                                                                                                                                                                                     | 24.1 °C          |             |
| Humidity:                                                                                                                                                                                                        | 51 % RH          |             |
| Atmospheric Pressure:                                                                                                                                                                                            | 1015 mbar        |             |
| Radio conducted item test (RF Conducted test room):                                                                                                                                                              |                  |             |
| Humidity:                                                                                                                                                                                                        | 68 % RH          |             |
| Atmospheric Pressure:                                                                                                                                                                                            | 1015 mbar        |             |
| Test Condition                                                                                                                                                                                                   | Temperature (°C) | Voltage (V) |
| TN/VN                                                                                                                                                                                                            | +15 to +35       | 15.2        |
| TL/VL                                                                                                                                                                                                            | -20              | 12          |
| TH/VL                                                                                                                                                                                                            | 50               | 12          |
| TL/VH                                                                                                                                                                                                            | -20              | 17.4        |
| TH/VH                                                                                                                                                                                                            | 50               | 17.4        |
| Remark:                                                                                                                                                                                                          |                  |             |
| 1)The EUT just work in such extreme temperature of -20 °C to 50 °C and the extreme voltage of 12 V to 17.4 V, so here the EUT is tested in the temperature of -20 °C to 50 °C and the voltage of 12 V to 17.4 V. |                  |             |
| 2VN: Normal Voltage; TN: Normal Temperature;                                                                                                                                                                     |                  |             |
| TL: Low Extreme Test Temperature; TH: High Extreme Test Temperature;                                                                                                                                             |                  |             |
| VL: Low Extreme Test Voltage; VH: High Extreme Test Voltage.                                                                                                                                                     |                  |             |

## 4.3 Test Condition

Test channel:

| Test Mode | Tx/Rx             | RF Channel  |             |             |
|-----------|-------------------|-------------|-------------|-------------|
|           |                   | Low(L)      | Middle(M)   | High(H)     |
| 802.11a   | 5725MHz ~5850 MHz | Channel 149 | Channel 157 | Channel 165 |
|           |                   | 5745MHz     | 5785MHz     | 5825MHz     |



Test mode:

Pre-scan under all rate at lowest channel for Ant1 and Ant2

Through Pre-scan, 6Mbps is the worst case of 802.11a (20M) for 5725MHz ~5850 MHz.

## 5 General Information

### 5.1 Client Information

|                          |                                                                                                            |
|--------------------------|------------------------------------------------------------------------------------------------------------|
| Applicant:               | SHENZHEN HUBSAN TECHNOLOGY CO., LTD                                                                        |
| Address of Applicant:    | 13th Floor, Bldg 1C, Shenzhen Software Industry Base, Xuefu Road, Nanshan District, Shenzhen, China 518054 |
| Manufacturer:            | SHENZHEN HUBSAN TECHNOLOGY CO., LTD                                                                        |
| Address of Manufacturer: | 13th Floor, Bldg 1C, Shenzhen Software Industry Base, Xuefu Road, Nanshan District, Shenzhen, China 518054 |

### 5.2 General Description of EUT

|               |                                                                                                                                                     |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Name: | HUBSAN ZINO 2                                                                                                                                       |
| Model No.:    | ZINO 2                                                                                                                                              |
| Trade Mark:   | HUBSAN                                                                                                                                              |
| Power Supply: | Battery: 15.2 V 3800 mAh Li-Po<br>Power Supply:<br>MODEL: P173D3000<br>INPUT: 100-240V~50/60Hz 1.2A<br>OUTPUT: 17.3V $\overline{\text{---}}$ 3000mA |

### 5.3 Product Specification subjective to this standard

|                                          |                                                                                                                    |
|------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Operation Frequency:                     | IEEE 802.11a: 5725MHz ~5850 MHz                                                                                    |
| Channel Numbers:                         | IEEE 802.11a: 5725MHz ~5850MHz/ 5 channel                                                                          |
| Channel Separation:                      | IEEE 802.11a: 20 MHz                                                                                               |
| Transmitter Operating channel width(OCW) | ≤20MHz (provider declaration)                                                                                      |
| Type of Modulation:                      | OFDM(BPSK\QPSK\16QAM\64QAM)                                                                                        |
| Sample Type:                             | <input checked="" type="checkbox"/> Mobile <input type="checkbox"/> Portable <input type="checkbox"/> Fix Location |
| Hardware version:                        | EA04058086-02                                                                                                      |
| Software version:                        | V0.1.1                                                                                                             |
| Test Software of EUT:                    | Atheros Radio Test 2 (manufacturer declare)                                                                        |
| Antenna Type:                            | Integral antenna                                                                                                   |
| Antenna gain:                            | ANT1: 3.0dBi                                                                                                       |
|                                          | ANT2: 3.0dBi                                                                                                       |

Operation Frequency each of channel

| For 802.11a( 20M) Operation in the 5725MHz ~5850 MHz band |           |         |           |
|-----------------------------------------------------------|-----------|---------|-----------|
| Channel                                                   | Frequency | Channel | Frequency |
| 149                                                       | 5745MHz   | 161     | 5805MHz   |
| 153                                                       | 5765MHz   | 165     | 5825MHz   |
| 157                                                       | 5785MHz   | NA      | NA        |

## 5.4 Description of Support Units

The EUT has been tested with associated equipment below.

### 1) Support equipment

| Description | Manufacturer | Model No.      | Remark         | FCC certification |
|-------------|--------------|----------------|----------------|-------------------|
| PC          | Lenovo       | ThinkPad E450c | FCC ID and DOC | CQA               |

### 2) Cable

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

## 5.5 Test Location

All tests were performed at:

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

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

## 5.6 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

## 5.7 Deviation from Standards

None.

## 5.8 Abnormalities from Standard Conditions

None.

## 5.9 Other Information Requested by the Customer

None.

## 5.10 Measurement Uncertainty (95% confidence levels, k=2)

| No. | Item                            | Measurement Uncertainty |
|-----|---------------------------------|-------------------------|
| 1   | Radio Frequency                 | $3 \times 10^{-8}$      |
| 2   | RF power, conducted             | 0.86dB                  |
| 3   | Radiated Spurious emission test | 5.12dB (Below 1GHz)     |
|     |                                 | 4.6dB (Above 1GHz)      |
| 4   | Conduction emission             | 3.5dB (9kHz to 150kHz)  |
|     |                                 | 3.1dB (150kHz to 30MHz) |
| 5   | Temperature test                | 0.8°C                   |
| 6   | Humidity test                   | 2.0%                    |
| 7   | DC power voltages               | 0.5%                    |

## 6 Equipment List

| Test Equipment                            | Manufacturer | Model No.              | Instrument No. | Calibration Date | Calibration Due Date |
|-------------------------------------------|--------------|------------------------|----------------|------------------|----------------------|
| EMI Test Receiver                         | R&S          | ESR7                   | CQA-005        | 2019/10/25       | 2020/10/24           |
| Spectrum analyzer                         | R&S          | FSU26                  | CQA-038        | 2019/10/25       | 2020/10/24           |
| Spectrum analyzer                         | R&S          | FSV40                  | CQA-075        | 2019/6/11        | 2020/6/10            |
| Preamplifier                              | MITEQ        | AFS4-00010300-18-10P-4 | 4012339        | 2019/10/25       | 2020/10/24           |
| Preamplifier                              | MITEQ        | AMF-6D-02001800-29-20P | CQA-036        | 2019/10/25       | 2020/10/24           |
| Preamplifier                              | EMCI         | EMC184055SE            | CQA-089        | 2019/9/25        | 2020/9/24            |
| Loop antenna                              | Schwarzbeck  | FMZB1516               | CQA-060        | 2019/10/21       | 2020/10/20           |
| Bilog Antenna                             | R&S          | HL562                  | CQA-011        | 2019/9/26        | 2020/9/25            |
| Horn Antenna                              | R&S          | HF906                  | CQA-012        | 2019/9/26        | 2020/9/25            |
| Horn Antenna                              | Schwarzbeck  | BBHA 9170              | CQA-088        | 2019/9/25        | 2020/9/24            |
| Coaxial Cable (Above 1GHz)                | CQA          | N/A                    | C007           | 2019/9/26        | 2020/9/25            |
| Coaxial Cable (Below 1GHz)                | CQA          | N/A                    | C013           | 2019/9/26        | 2020/9/25            |
| Antenna Connector                         | CQA          | RFC-01                 | CQA-080        | 2019/9/26        | 2020/9/25            |
| Power Sensor                              | KEYSIGHT     | U2021XA                | CQA-30         | 2019/9/26        | 2020/9/25            |
| N1918A Power Analysis Manager Power Panel | Agilent      | N1918A                 | CQA-074        | 2019/9/26        | 2020/9/25            |
| Power divider                             | MIDWEST      | PWD-2533-02-SMA-79     | CQA-067        | 2019/9/26        | 2020/9/25            |
| EMI Test Receiver                         | R&S          | ESR7                   | CQA-005        | 2019/10/25       | 2020/10/24           |
| LISN                                      | R&S          | ENV216                 | CQA-003        | 2019/10/23       | 2020/10/22           |
| Coaxial cable                             | CQA          | N/A                    | CQA-C009       | 2019/9/26        | 2020/9/25            |
| high-low temperature chamber              | Auchno       | OJN-9606               | CQA-S003       | 2019/9/25        | 2020/9/24            |
| DC power                                  | KEYSIGHT     | E3631A                 | CQA-028        | 2019/9/26        | 2020/9/25            |

## 7 Radio Technical Requirements Specification

### Reference documents for testing:

| No. | Identity                                                      | Document Title                                                                                                        |
|-----|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| 1   | 47 CFR Part 15, Subpart E                                     | Subpart C-Intentional Radiators                                                                                       |
| 2   | ANSI C63.10-2013                                              | American National Standard for Testing Unlicensed Wireless Devices                                                    |
| 3   | KDB 789033 D02 General U-NII Test Procedures New Rules v02r01 | Guidelines for compliance testing of unlicensed national information infrastructure (U-NII) device part 15, subpart E |
| 4   | KDB 662911 D01 Multiple Transmitter Output v02r01             | Emissions Testing of Transmitters with Multiple Outputs in the Same Band                                              |

### Test Results List:

| Test Requirement                                | Test method            | Test item                                                        | Verdict | Note        |
|-------------------------------------------------|------------------------|------------------------------------------------------------------|---------|-------------|
| Part15E Section 15.407 (a)(1)(2)                | KDB789033              | Emission Bandwidth and Occupied Bandwidth                        | PASS    | Appendix A) |
| Part15E Section 15.407 (a)(1)(2)(4)(h)(1)       | KDB789033 / KDB 662911 | Conducted Output Power and transmit power control mechanism      | PASS    | Appendix B) |
| Part15E Section 15.407 (a)(1)(2)(5)             | KDB789033 / KDB 662911 | Power Spectral Density                                           | PASS    | Appendix C) |
| Part15E Section 15.407 (g)                      | KDB789033              | Frequency stability                                              | PASS    | Appendix D) |
| Part15C Section 15.203                          | ANSI C63.10            | Antenna Requirement                                              | PASS    | Appendix E) |
| Part15E Section 15.407 (c)                      | Section 15.407         | Operation in the absence of information to the transmit          | PASS    | Appendix F) |
| Part15E Section 15.407 (b)(6)(7)(8)             | KDB789033              | Restricted bands around fundamental frequency(Radiated Emission) | PASS    | Appendix G) |
| Part15E Section 15.407 (b)(1)(2)(3)(5)(6)(7)(8) | KDB789033              | Radiated Spurious Emissions                                      | PASS    | Appendix H) |

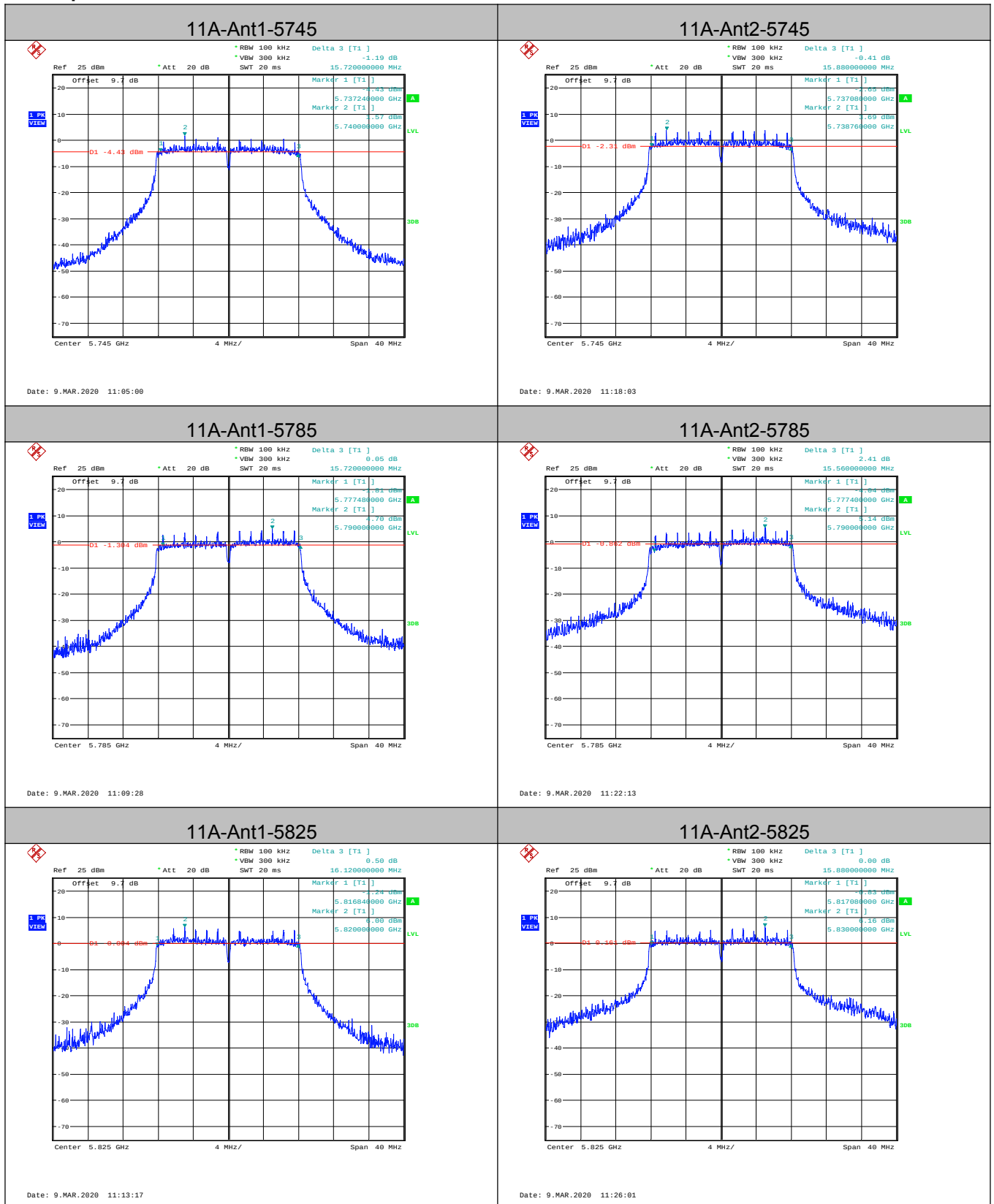
## Appendix A): Emission Bandwidth

6dB Occupied Bandwidth:

Measurement Data

| Test Mode | Test Channel | Ant  | EBW[MHz] | Limit[MHz] | Verdict |
|-----------|--------------|------|----------|------------|---------|
| 11A       | 5745         | Ant1 | 15.720   | 0.5        | PASS    |
| 11A       | 5745         | Ant2 | 15.880   | 0.5        | PASS    |
| 11A       | 5785         | Ant1 | 15.720   | 0.5        | PASS    |
| 11A       | 5785         | Ant2 | 15.560   | 0.5        | PASS    |
| 11A       | 5825         | Ant1 | 16.120   | 0.5        | PASS    |
| 11A       | 5825         | Ant2 | 15.880   | 0.5        | PASS    |

Test plot as follows:

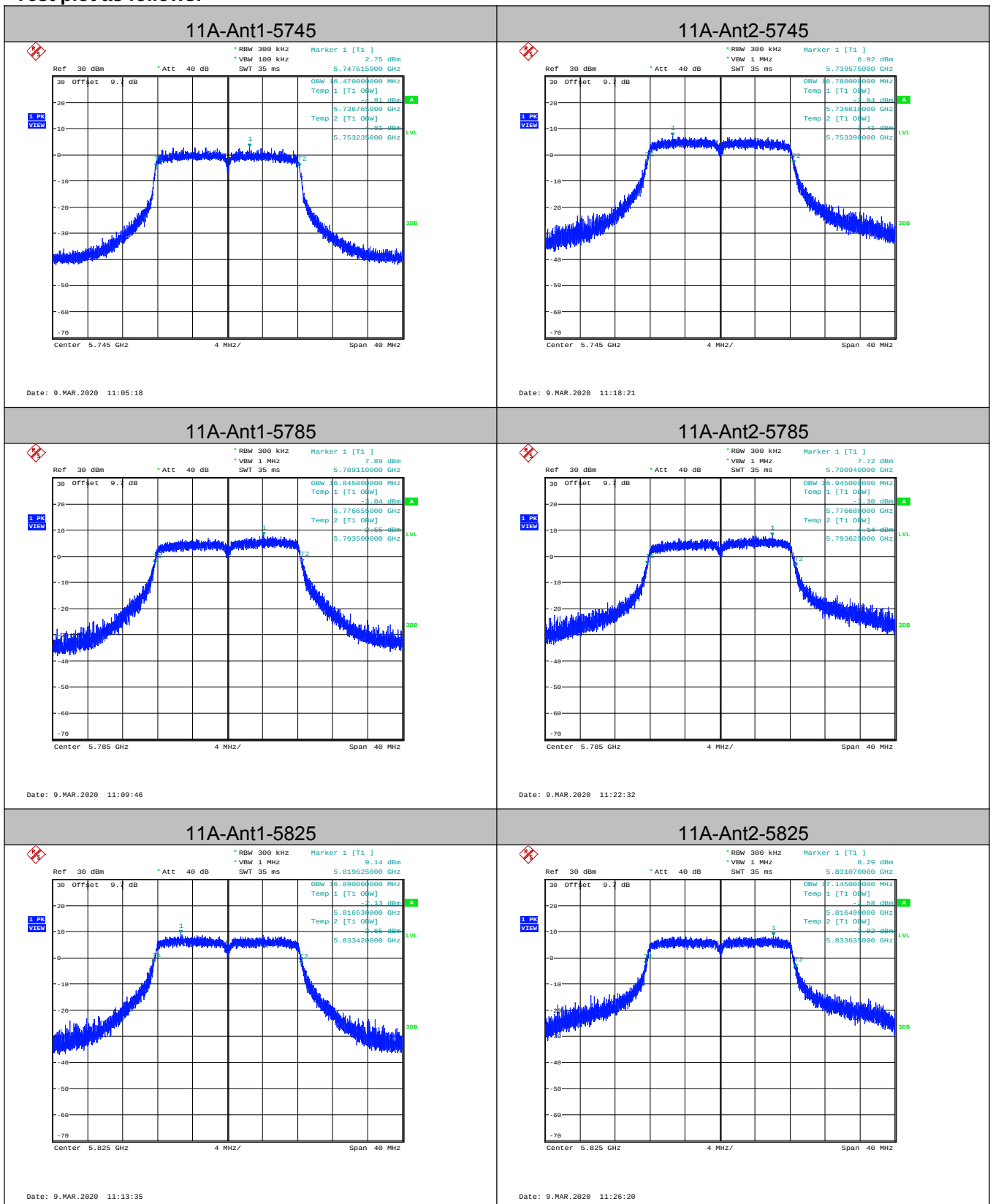


**99% Occupied Bandwidth:**

**Measurement Data**

| Test Mode | Test Channel | Ant  | EBW[MHz] | Limit[MHz] | Verdict |
|-----------|--------------|------|----------|------------|---------|
| 11A       | 5745         | Ant1 | 16.470   | ---        | PASS    |
| 11A       | 5745         | Ant2 | 16.780   | ---        | PASS    |
| 11A       | 5785         | Ant1 | 16.845   | ---        | PASS    |
| 11A       | 5785         | Ant2 | 16.945   | ---        | PASS    |
| 11A       | 5825         | Ant1 | 16.890   | ---        | PASS    |
| 11A       | 5825         | Ant2 | 17.145   | ---        | PASS    |

Test plot as follows:



## Appendix B): Maximum Conduct Output Power

### Directional Antenna Gain

The TX chains are correlated, the antenna gain is equal among the chains.

Employs an antenna that operates simultaneously on multiple directional beams using the same frequency channels. No carrier aggregation techniques.

The directional gain is:

|                        |                        |
|------------------------|------------------------|
| Antenna 1<br>Gain(dBi) | Antenna 2<br>Gain(dBi) |
| 3.0                    | 3.0                    |

### Duty Cycle:

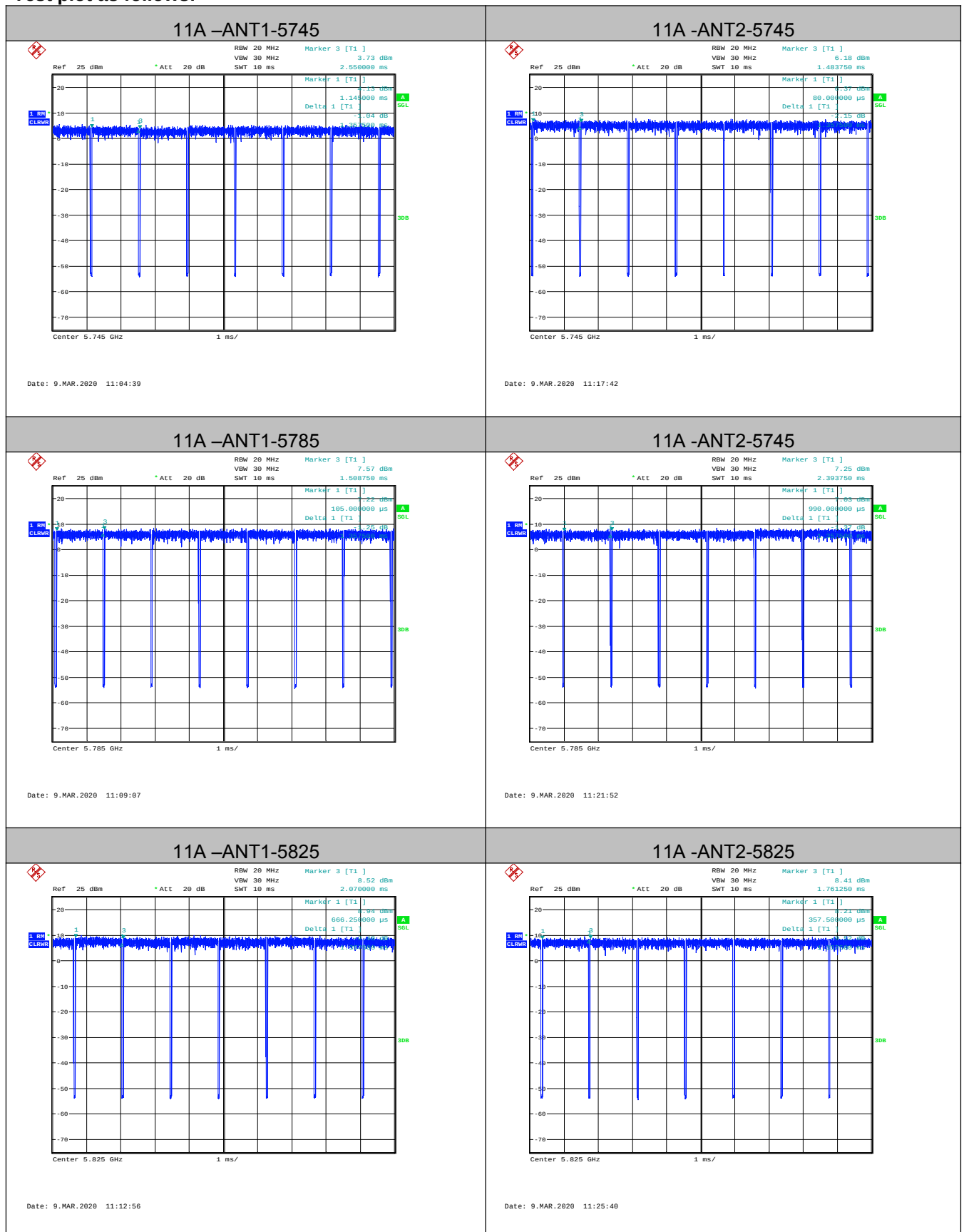
| Test Mode | Channel | Ant  | Duty Cycle[%] | Duty Cycle factor (dB) |
|-----------|---------|------|---------------|------------------------|
| 11A       | 5745    | Ant1 | 96.62         | 0.15                   |
| 11A       | 5745    | Ant2 | 96.71         | 0.15                   |
| 11A       | 5785    | Ant1 | 96.71         | 0.15                   |
| 11A       | 5785    | Ant2 | 96.71         | 0.15                   |
| 11A       | 5825    | Ant1 | 96.71         | 0.15                   |
| 11A       | 5825    | Ant2 | 96.71         | 0.15                   |

### Remark:

1) Duty cycle= On Time/ Period;

2) Duty Cycle factor =  $10 * \log(1/ \text{Duty cycle})$ ;

Test plot as follows:



**Conducted Average Output Power:****Measurement Data**

| Test Mode | Antenna | Test Channel | Level [dBm] | Duty Cycle factor (dB) | Power [dBm] | Limit [dBm] | Verdict |
|-----------|---------|--------------|-------------|------------------------|-------------|-------------|---------|
| 11A       | Ant1    | 5745         | 15.34       | 0.15                   | 15.49       | 30.00       | PASS    |
| 11A       | Ant2    | 5745         | 15.05       | 0.15                   | 15.20       | 30.00       | PASS    |
| 11A       | Ant1    | 5785         | 15.39       | 0.15                   | 15.54       | 30.00       | PASS    |
| 11A       | Ant2    | 5785         | 15.64       | 0.15                   | 15.79       | 30.00       | PASS    |
| 11A       | Ant1    | 5825         | 15.09       | 0.15                   | 15.24       | 30.00       | PASS    |
| 11A       | Ant2    | 5825         | 15.32       | 0.15                   | 15.47       | 30.00       | PASS    |

## Appendix C): Power Spectral Density

### Measurement Data

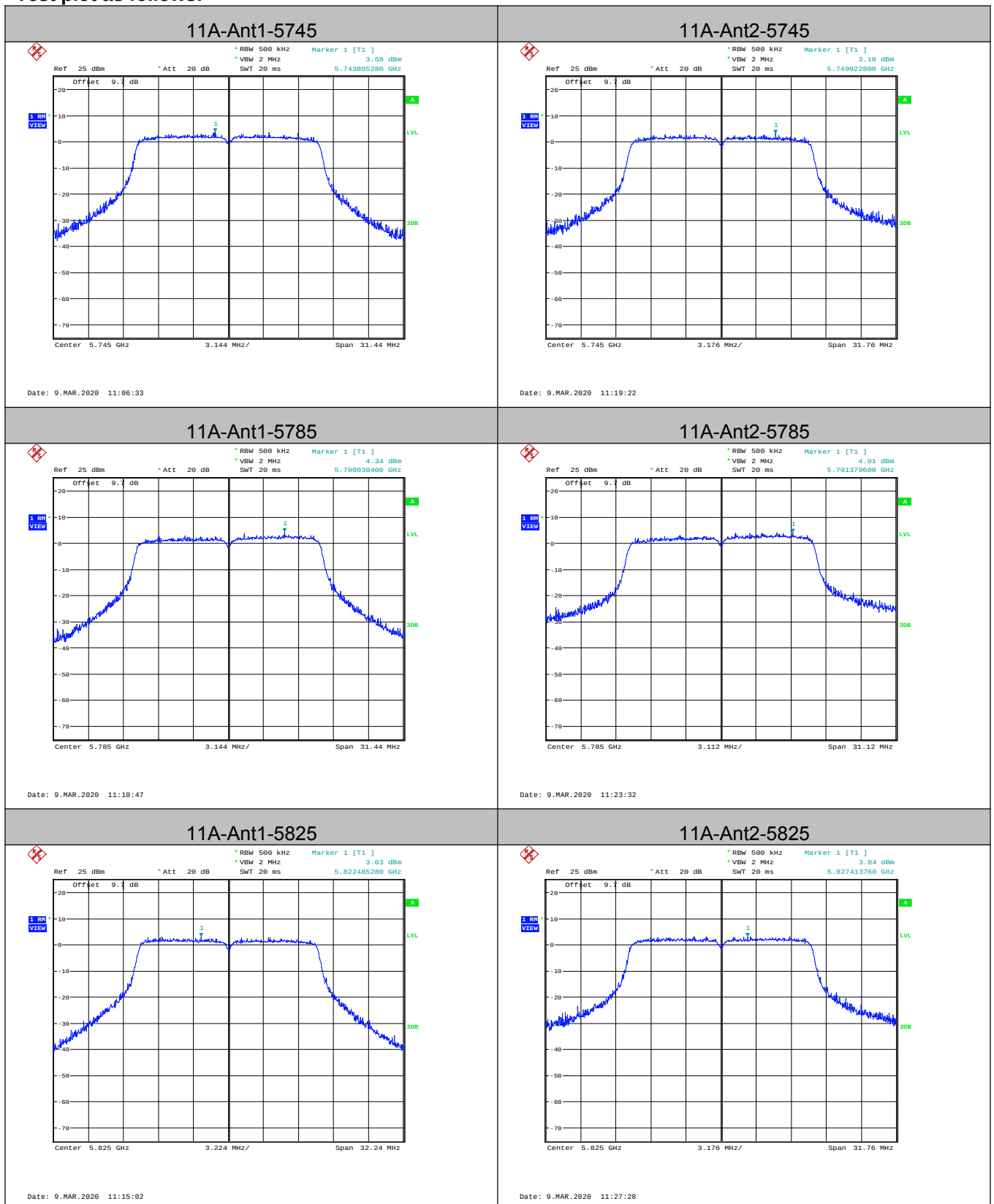
#### For U-NII-3 Band:

| Test Mode | Test Channel | Antenna | Meas PSD [dBm/500kHz] | Duty Cycle Factor [dB] | PSD [dBm/500kHz] | Limit [dBm/500kHz] | Verdict |
|-----------|--------------|---------|-----------------------|------------------------|------------------|--------------------|---------|
| 11A       | 5745         | Ant1    | 3.59                  | 0.15                   | 3.74             | 30.00              | PASS    |
| 11A       | 5745         | Ant2    | 3.10                  | 0.15                   | 3.25             | 30.00              | PASS    |
| 11A       | 5785         | Ant1    | 4.34                  | 0.15                   | 4.49             | 30.00              | PASS    |
| 11A       | 5785         | Ant2    | 4.01                  | 0.15                   | 4.16             | 30.00              | PASS    |
| 11A       | 5825         | Ant1    | 3.03                  | 0.15                   | 3.18             | 30.00              | PASS    |
| 11A       | 5825         | Ant2    | 3.04                  | 0.15                   | 3.19             | 30.00              | PASS    |

#### Remark:

PSD = Meas PSD + Duty Cycle Factor

Test plot as follows:



## Appendix D): Frequency Stability

### Measurement Data

| Frequency Stability Versus Temp.   |         |                    |                 |
|------------------------------------|---------|--------------------|-----------------|
| Operating Frequency: 5785 MHz ANT2 |         |                    |                 |
| Temp                               | Voltage | Measured Frequency | Frequency Drift |
| (°C)                               |         | (MHz)              | (ppm)           |
| 50                                 | VN      | 5785.02            | 3.457217        |
| 40                                 |         | 5785.05            | 8.643042        |
| 30                                 |         | 5785.05            | 8.643042        |
| 20                                 |         | 5785.03            | 5.185825        |
| 10                                 |         | 5785.00            | 0.00000         |
| 0                                  |         | 5785.05            | 8.643042        |
| -10                                |         | 5785.05            | 8.643042        |
| -20                                |         | 5785.01            | 1.728608        |

| Frequency Stability Versus Temp.   |         |                    |                 |
|------------------------------------|---------|--------------------|-----------------|
| Operating Frequency: 5180 MHz ANT2 |         |                    |                 |
| Temp.                              | Voltage | Measured Frequency | Frequency Drift |
|                                    |         | (MHz)              | (ppm)           |
| TN                                 | VL      | 5785.01            | 1.728608        |
|                                    | VN      | 5785.03            | 5.185825        |
|                                    | VH      | 5785.02            | 3.457217        |

Note: All the modulation and channels had been tested, but only the worst data recorded in the report.

## Appendix E): Antenna Requirement

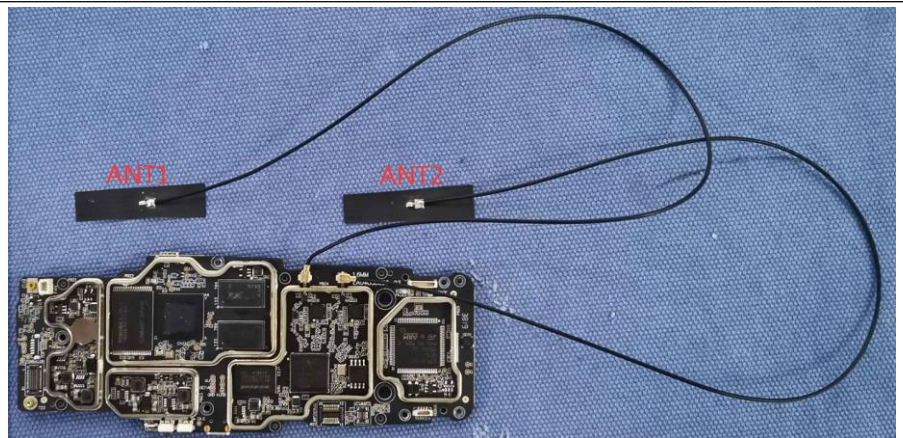
### 15.203 requirement:

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.

### 15.407(a)(1) (2) requirement:

The conducted output power limit specified in paragraph (a) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (a) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power and the peak power spectral density shall be reduced by the by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### EUT Antenna:



The antenna is internal antenna with ipex connector.

The best case gain of the ANT1 is 3.0dBi. The best case gain of the ANT2 is 3.0dBi.

Note: These tow antennas does not transmit simultaneously.

## Appendix F): Operation in the absence of information to the transmit

### 15.407(c) requirement:

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signal ling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

### Operation in the absence of information to the transmit

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ASK message transmitting from remote device and verify whether it shall resend or discontinue transmission. (manufacturer declare )

## Appendix G) Restricted bands around fundamental frequency (Radiated Emission)

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                           |        |                  |            |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------|------------------|------------|
| Receiver Setup: | Frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Detector                  | RBW    | VBW              | Remark     |
|                 | 30MHz-1GHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Quasi-peak                | 120kHz | 300kHz           | Quasi-peak |
|                 | Above 1GHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Peak                      | 1MHz   | 3MHz             | Peak       |
|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Peak                      | 1MHz   | 10Hz             | Average    |
| Test Procedure: | <p><b>Below 1GHz test procedure as below:</b></p> <ol style="list-style-type: none"> <li>The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</li> <li>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.</li> <li>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 was turned from 0 degrees to 360 degrees to find the maximum reading.</li> <li>The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>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</li> </ol> <p><b>Above 1GHz test procedure as below:</b></p> <ol style="list-style-type: none"> <li>Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre( Above 18GHz the distance is 1 meter and table is 1.5 metre).</li> <li>Test the EUT in the lowest channel , the Highest channel</li> <li>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.</li> <li>Repeat above procedures until all frequencies measured was complete.</li> </ol> |                           |        |                  |            |
| Limit:          | Frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Limit (dB $\mu$ V/m @3cm) |        | 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 plot as follows:

**ANT1:**

| Worse case mode: |               | 802.11a(6Mbps) |                | Test channel: |        | 149           |           |
|------------------|---------------|----------------|----------------|---------------|--------|---------------|-----------|
| Frequency        | Meter Reading | Factor         | Emission Level | Limits        | Over   | Detector Type | Ant. Pol. |
| (MHz)            | (dBμV)        | (dB)           | (dBμV/m)       | (dBμV/m)      | (dB)   |               | H/V       |
| 5650             | 57.81         | -3.46          | 54.35          | 68.2          | -13.85 | peak          | H         |
| 5738.39          | 96.93         | -3.44          | 93.49          | 122.2         | -28.71 | peak          | H         |
| 5650             | 56.50         | -3.46          | 53.04          | 68.2          | -15.16 | peak          | V         |
| 5738.17          | 98.11         | -3.44          | 94.67          | 122.2         | -27.53 | peak          | V         |

| Worse case mode: |               | 802.11a(6Mbps) |                | Test channel: |        | 165           |           |
|------------------|---------------|----------------|----------------|---------------|--------|---------------|-----------|
| Frequency        | Meter Reading | Factor         | Emission Level | Limits        | Over   | Detector Type | Ant. Pol. |
| (MHz)            | (dBμV)        | (dB)           | (dBμV/m)       | (dBμV/m)      | (dB)   |               | H/V       |
| 5820.12          | 98.28         | -3.42          | 94.86          | 122.2         | -27.34 | peak          | H         |
| 5925             | 58.21         | -3.41          | 54.80          | 68.2          | -13.40 | peak          | H         |
| 5824.76          | 97.60         | -3.42          | 94.18          | 122.2         | -28.02 | peak          | V         |
| 5925             | 58.08         | -3.41          | 54.67          | 68.2          | -13.53 | peak          | V         |

**ANT2:**

| Worse case mode: |               | 802.11a(6Mbps) |                | Test channel: |        | 149           |           |
|------------------|---------------|----------------|----------------|---------------|--------|---------------|-----------|
| Frequency        | Meter Reading | Factor         | Emission Level | Limits        | Over   | Detector Type | Ant. Pol. |
| (MHz)            | (dBμV)        | (dB)           | (dBμV/m)       | (dBμV/m)      | (dB)   |               | H/V       |
| 5650             | 58.24         | -3.46          | 54.78          | 68.2          | -13.42 | peak          | H         |
| 5740.36          | 98.27         | -3.44          | 94.83          | 122.2         | -27.37 | peak          | H         |
| 5650             | 58.11         | -3.46          | 54.65          | 68.2          | -13.55 | peak          | V         |
| 5743.18          | 98.19         | -3.44          | 94.75          | 122.2         | -27.45 | peak          | V         |

| Worse case mode: |               | 802.11a(6Mbps) |                | Test channel: |        | 165           |           |
|------------------|---------------|----------------|----------------|---------------|--------|---------------|-----------|
| Frequency        | Meter Reading | Factor         | Emission Level | Limits        | Over   | Detector Type | Ant. Pol. |
| (MHz)            | (dBμV)        | (dB)           | (dBμV/m)       | (dBμV/m)      | (dB)   |               | H/V       |
| 5824.53          | 98.54         | -3.42          | 95.12          | 122.2         | -27.08 | peak          | H         |
| 5925             | 56.66         | -3.41          | 53.25          | 68.2          | -14.95 | peak          | H         |
| 5827.14          | 96.34         | -3.42          | 92.92          | 122.2         | -29.28 | peak          | V         |
| 5925             | 56.80         | -3.41          | 53.39          | 68.2          | -14.81 | peak          | 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

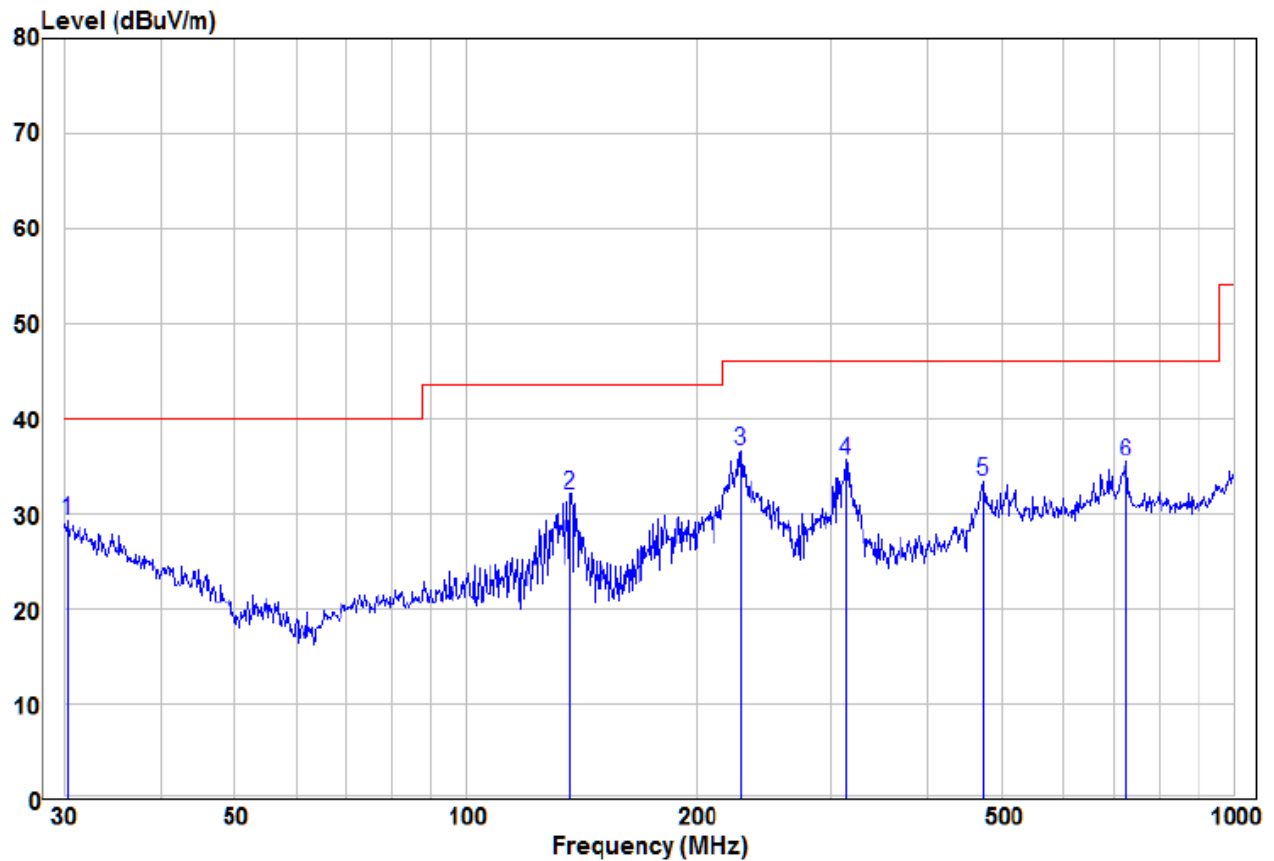
## Appendix H): Radiated Spurious Emissions

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                             |                                  |                 |            |                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------|------------|---------------------------|
| 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                       | 120kHz          | 300kHz     | Quasi-peak                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Above 1GHz                                                                                                                                                                                                                                                                  | Peak                             | 1MHz            | 3MHz       | Peak                      |
| Peak                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                             | 1MHz                             | 10Hz            | Average    |                           |
| Test Procedure:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                             |                                  |                 |            |                           |
| <b>Below 1GHz test procedure as below:</b><br>a. 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>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 rota 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><b>Above 1GHz test procedure as below:</b><br>g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre( Above 18GHz the distance is 1 meter and table is 1.5 metre)<br>h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel<br>i. 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>j. Repeat above procedures until all frequencies measured was complete. |                                                                                                                                                                                                                                                                             |                                  |                 |            |                           |
| Limit:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Frequency                                                                                                                                                                                                                                                                   | Field strength (microvolt/meter) | Limit (dBµV/cm) | Remark     | Measurement distance (cm) |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 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 result: PASS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                             |                                  |                 |            |                           |

**Test Data:**

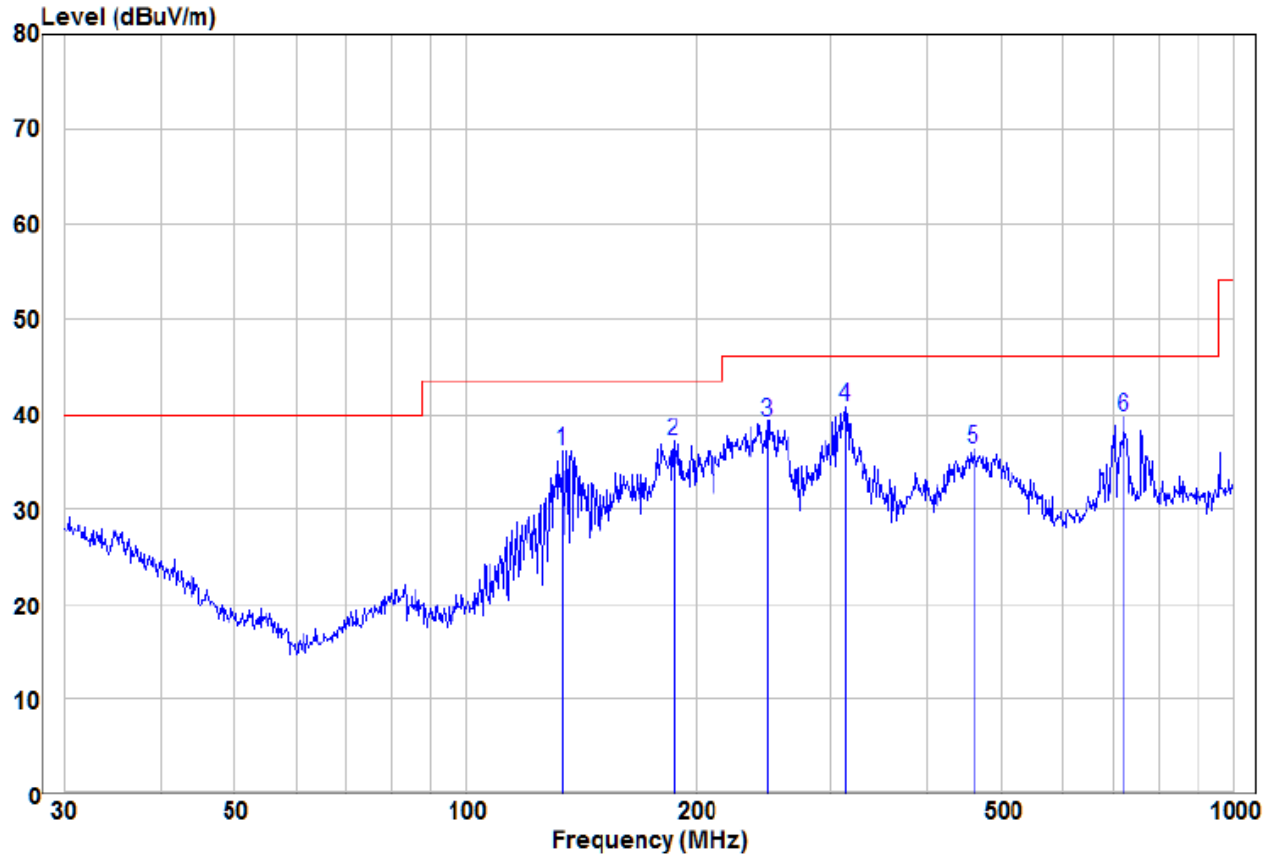
**Radiated Emission below 1GHz**

| 30MHz~1GHz |              |          |
|------------|--------------|----------|
| Test mode: | Transmitting | Vertical |



|      | Freq   | Read Level | Factor | Level  | Limit Line | Over Limit | Remark | Pol/Phase |
|------|--------|------------|--------|--------|------------|------------|--------|-----------|
|      | MHz    | dBuV       | dB/m   | dBuV/m | dBuV/m     | dB         |        |           |
| 1    | 30.21  | 10.93      | 18.33  | 29.26  | 40.00      | -10.74     | Peak   | VERTICAL  |
| 2    | 136.94 | 23.41      | 8.74   | 32.15  | 43.50      | -11.35     | Peak   | VERTICAL  |
| 3 pp | 228.49 | 27.33      | 9.39   | 36.72  | 46.00      | -9.28      | Peak   | VERTICAL  |
| 4    | 312.18 | 23.62      | 12.03  | 35.65  | 46.00      | -10.35     | Peak   | VERTICAL  |
| 5    | 472.18 | 17.06      | 16.41  | 33.47  | 46.00      | -12.53     | Peak   | VERTICAL  |
| 6    | 726.81 | 15.21      | 20.27  | 35.48  | 46.00      | -10.52     | Peak   | VERTICAL  |

|            |              |            |
|------------|--------------|------------|
| Test mode: | Transmitting | Horizontal |
|------------|--------------|------------|



|      | Read   |        |        | Limit  | Over  |            |            |
|------|--------|--------|--------|--------|-------|------------|------------|
| Freq | Level  | Factor | Level  | Line   | Limit | Remark     | Pol/Phase  |
| MHz  | dBuV   | dB/m   | dBuV/m | dBuV/m | dB    |            |            |
| 1    | 133.62 | 26.66  | 9.50   | 36.16  | 43.50 | -7.34 Peak | HORIZONTAL |
| 2    | 186.44 | 29.10  | 8.10   | 37.20  | 43.50 | -6.30 Peak | HORIZONTAL |
| 3    | 247.68 | 29.22  | 10.01  | 39.23  | 46.00 | -6.77 Peak | HORIZONTAL |
| 4 pp | 312.18 | 28.73  | 12.03  | 40.76  | 46.00 | -5.24 Peak | HORIZONTAL |
| 5    | 459.11 | 20.31  | 16.01  | 36.32  | 46.00 | -9.68 Peak | HORIZONTAL |
| 6    | 721.73 | 19.60  | 20.23  | 39.83  | 46.00 | -6.17 Peak | HORIZONTAL |

### Transmitter Emission above 1GHz

| Test mode: |               | 802.11a(6Mbps)_Ant2 |                | Test channel: |        | 157           |           |
|------------|---------------|---------------------|----------------|---------------|--------|---------------|-----------|
| Frequency  | Meter Reading | Factor              | Emission Level | Limits        | Over   | Detector Type | Ant. Pol. |
| (MHz)      | (dBμV)        | (dB)                | (dBμV/m)       | (dBμV/m)      | (dB)   |               | H/V       |
| 11570.000  | 50.47         | 2.47                | 52.94          | 74            | -21.06 | peak          | H         |
| 11570.000  | 37.94         | 2.47                | 40.41          | 54            | -13.59 | AVG           | H         |
| 17355.000  | 46.09         | 3.96                | 50.05          | 74            | -23.95 | peak          | H         |
| 17355.000  | 37.60         | 3.96                | 41.56          | 54            | -12.44 | AVG           | H         |
| 11570.000  | 49.56         | 2.47                | 52.03          | 74            | -21.97 | peak          | V         |
| 11570.000  | 39.42         | 2.47                | 41.89          | 54            | -12.11 | AVG           | V         |
| 17355.000  | 47.55         | 3.96                | 51.51          | 74            | -22.49 | peak          | V         |
| 17355.000  | 37.61         | 3.96                | 41.57          | 54            | -12.43 | AVG           | V         |

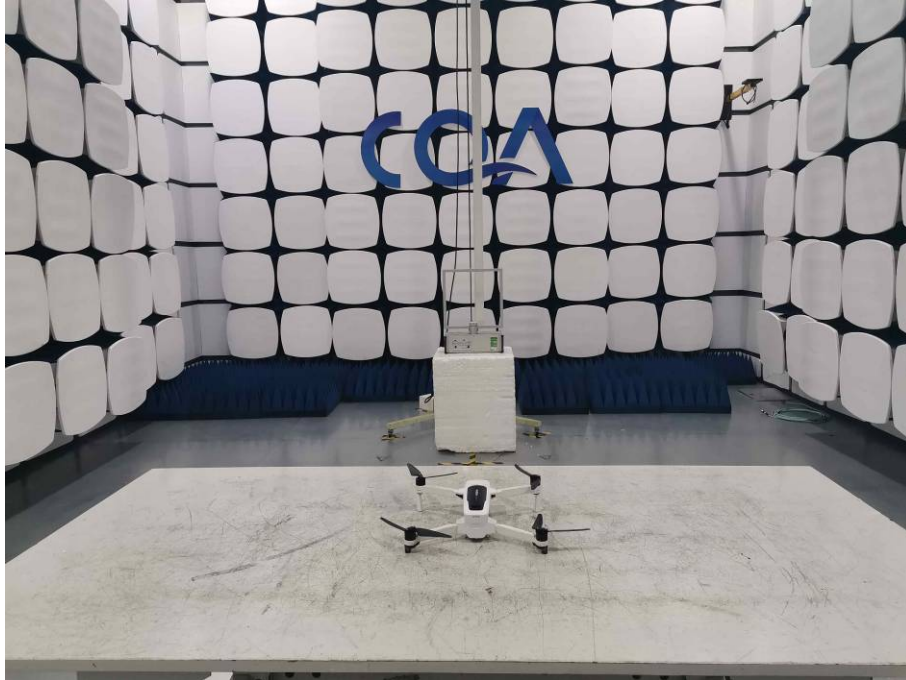
#### Remark:

- 1) The 6Mbps of rate of 802.11a\_Ant2 at 157 channel is the worst case, only the worst data recorded in the report.
- 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 40GHz, The disturbance above 18GHz 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.

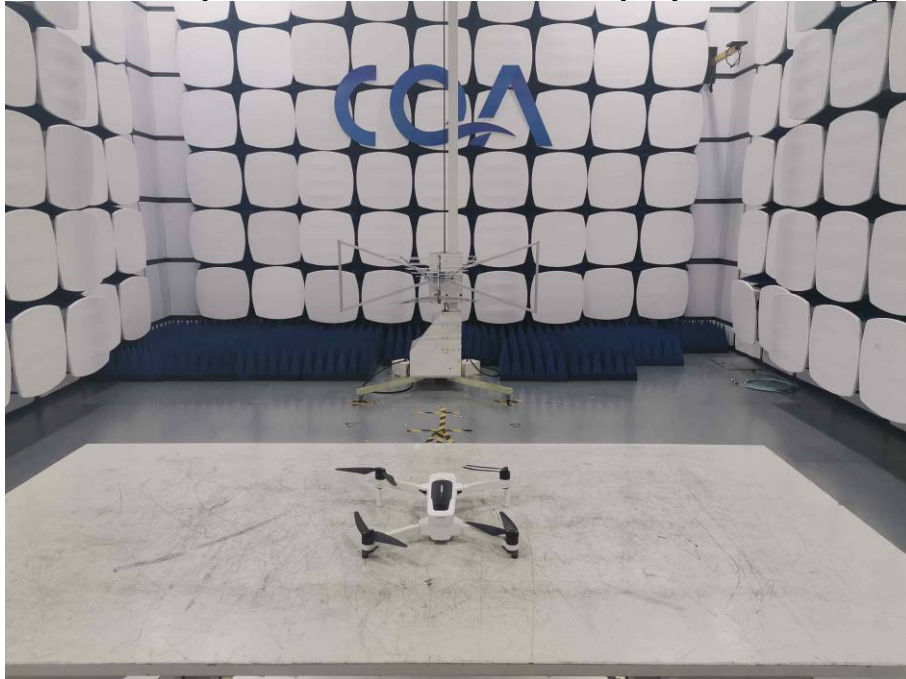
## PHOTOGRAPHS OF TEST SETUP

Test model No.: ZINO 2

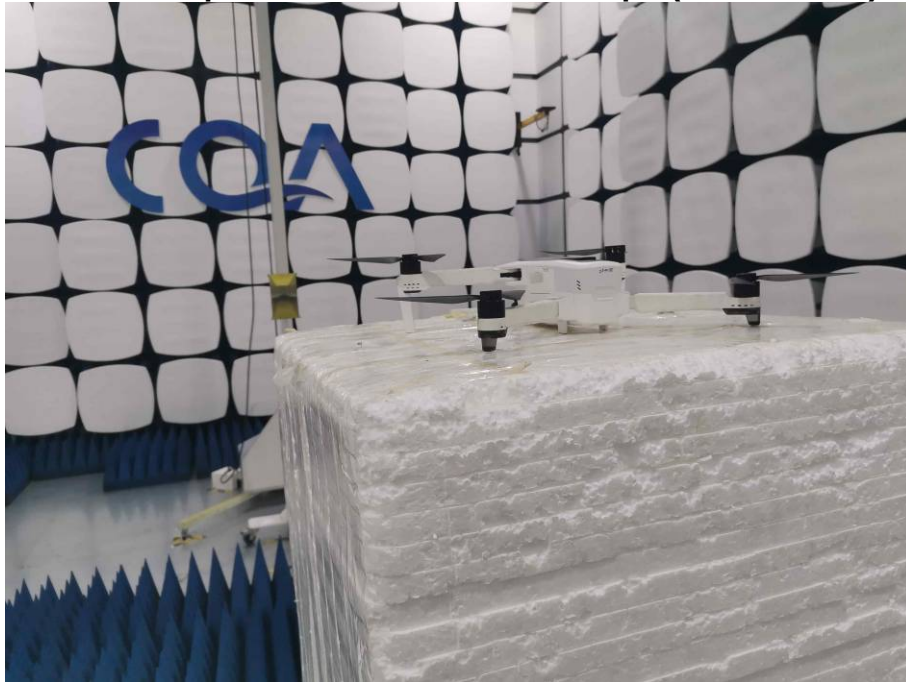
**Radiated spurious emission Test Setup-1(Below 30MHz)**



**Radiated spurious emission Test Setup-2(30MHz-1GHz)**



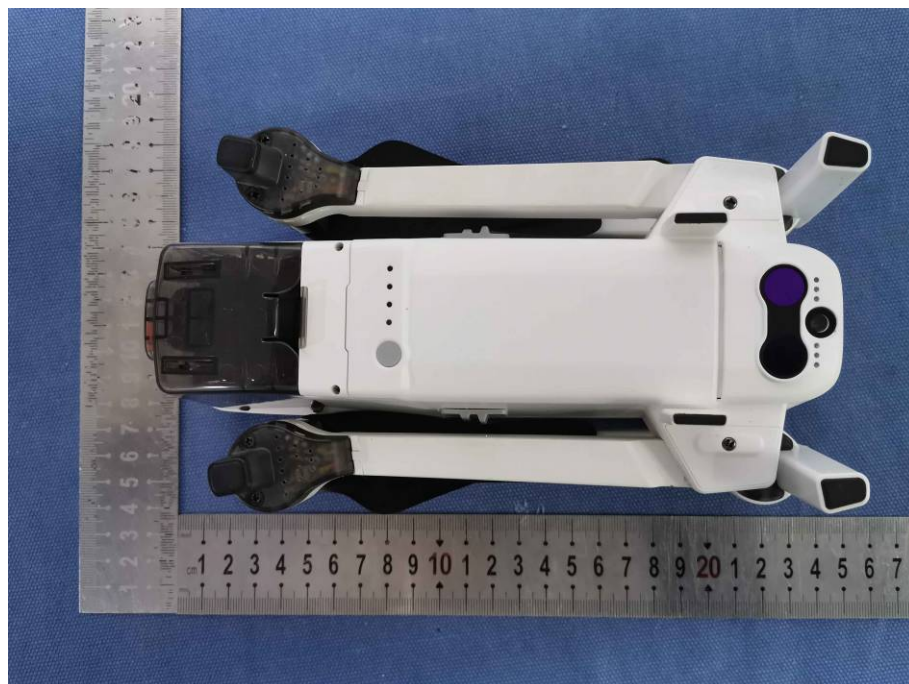
**Radiated spurious emission Test Setup-3(Above 1GHz)**

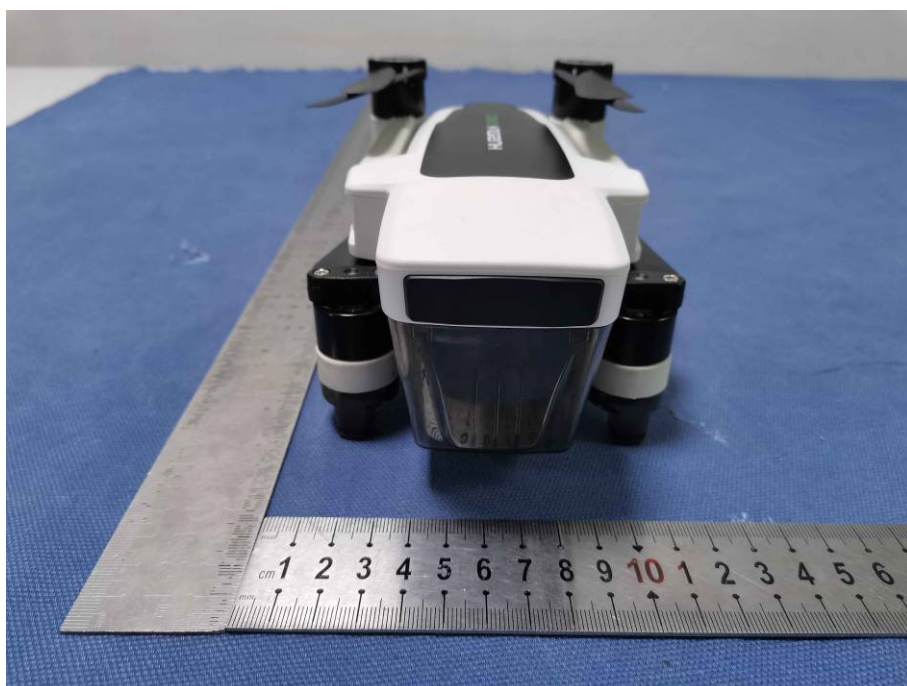
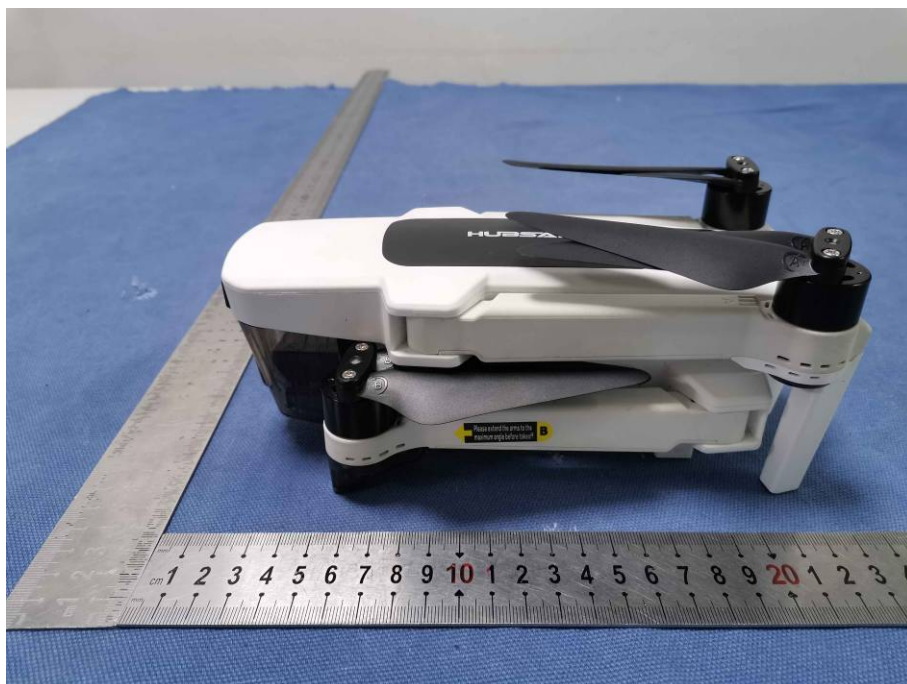


## PHOTOGRAPHS OF EUT Constructional Details

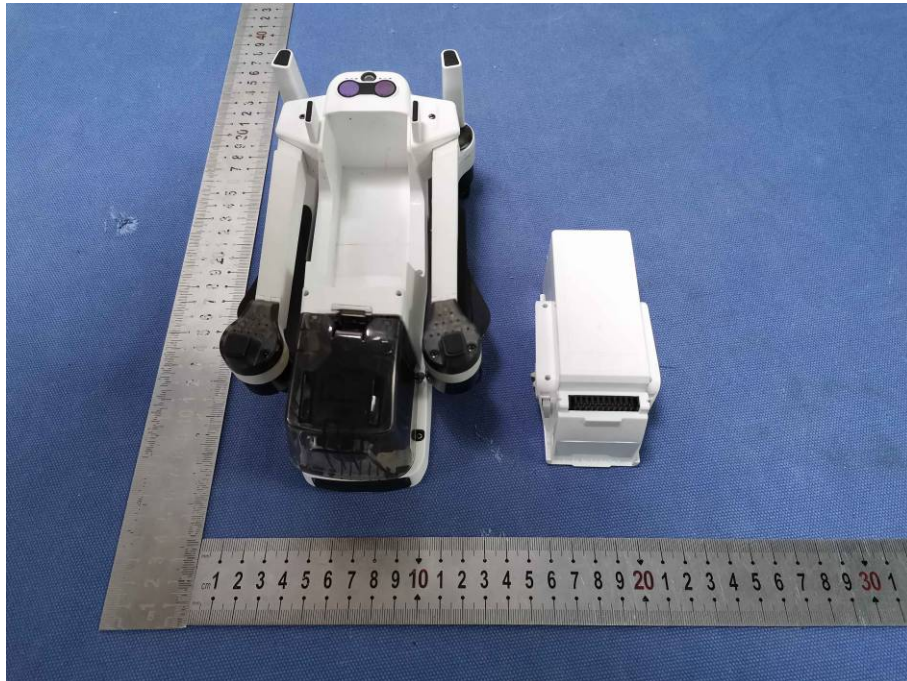
Test model No.: ZINO 2

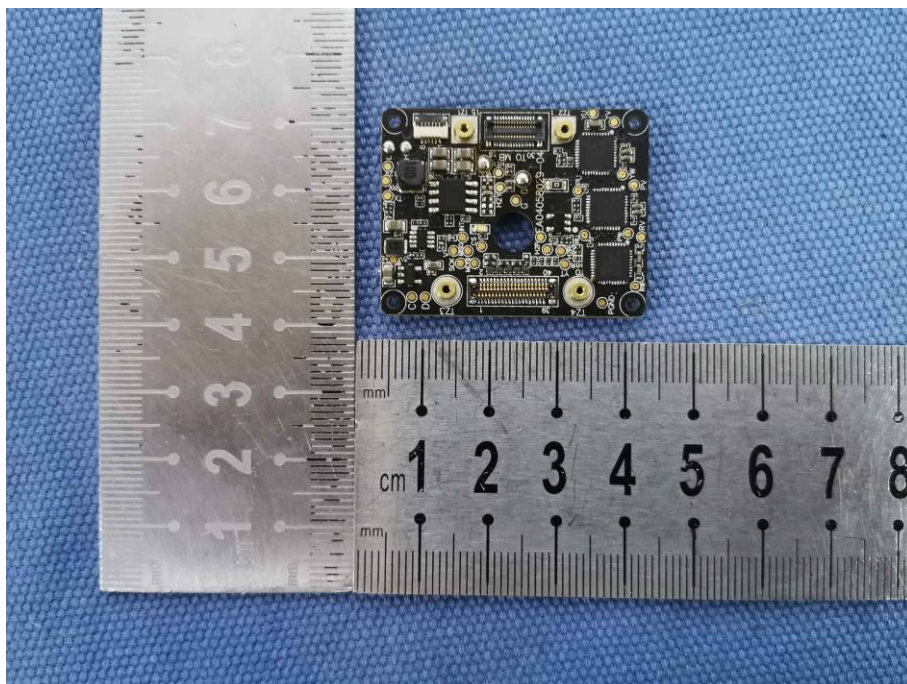
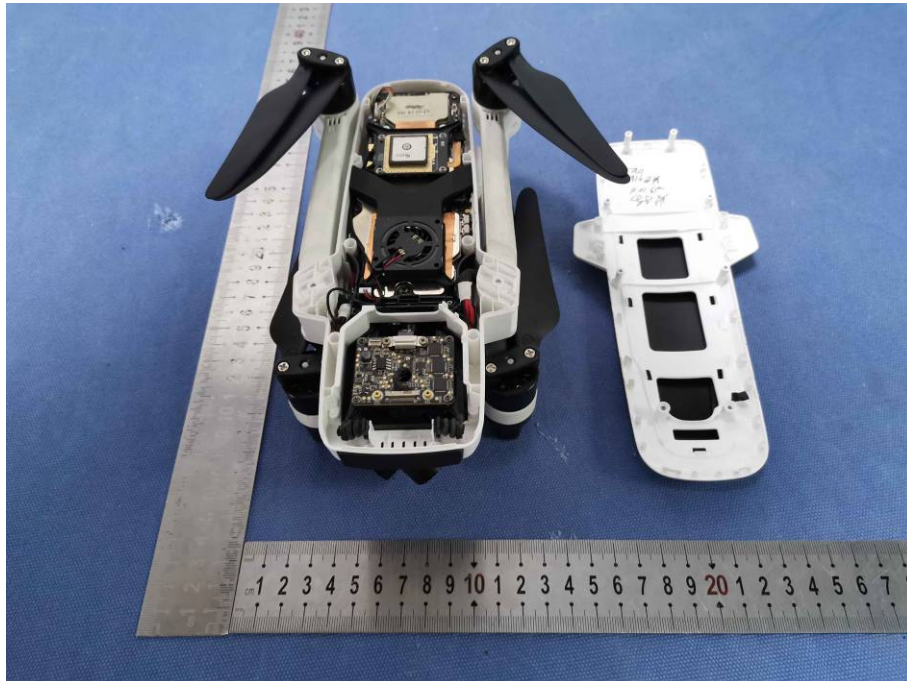


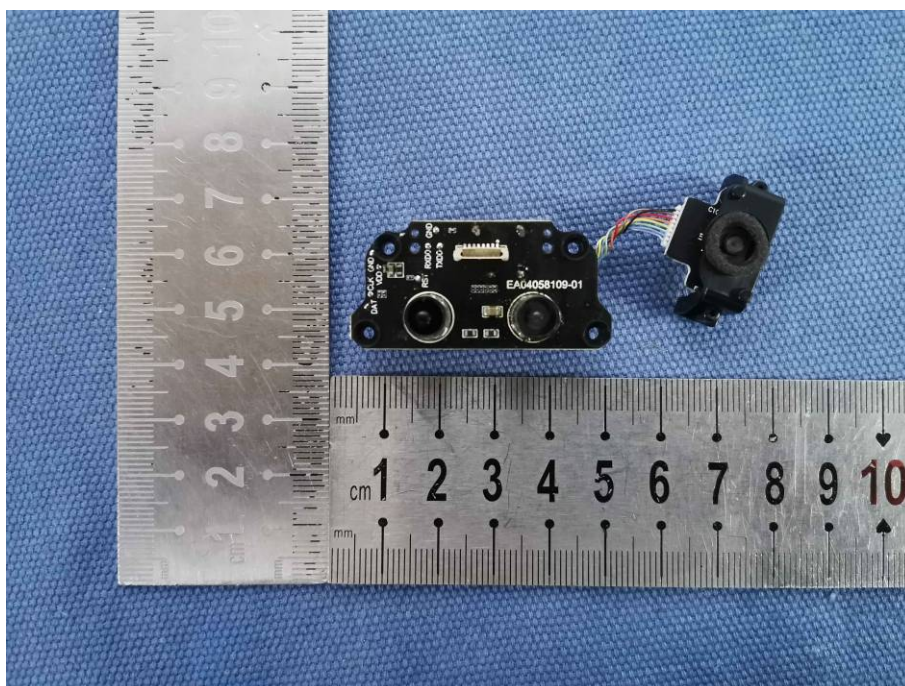
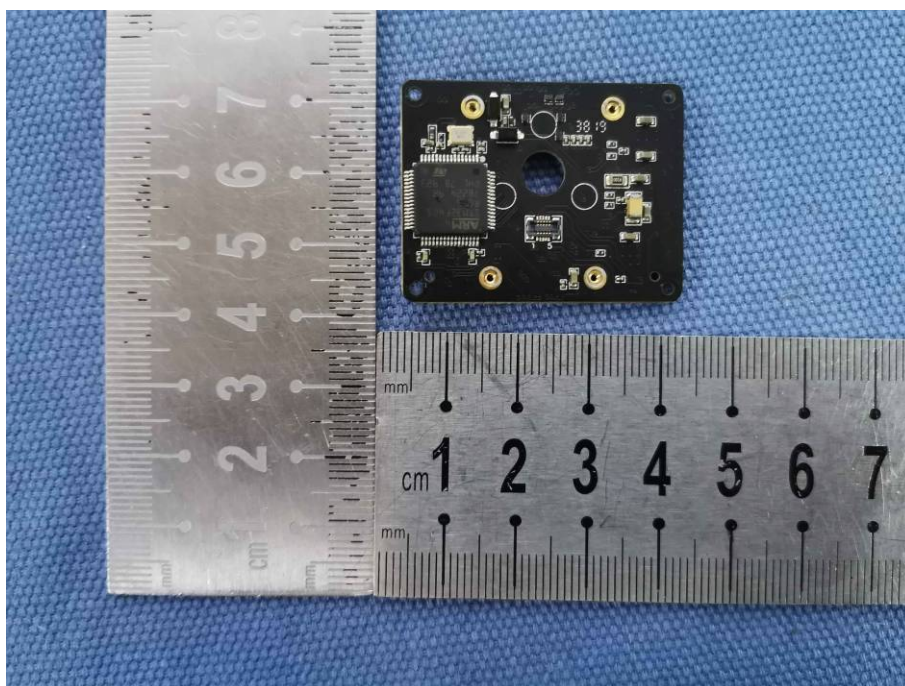


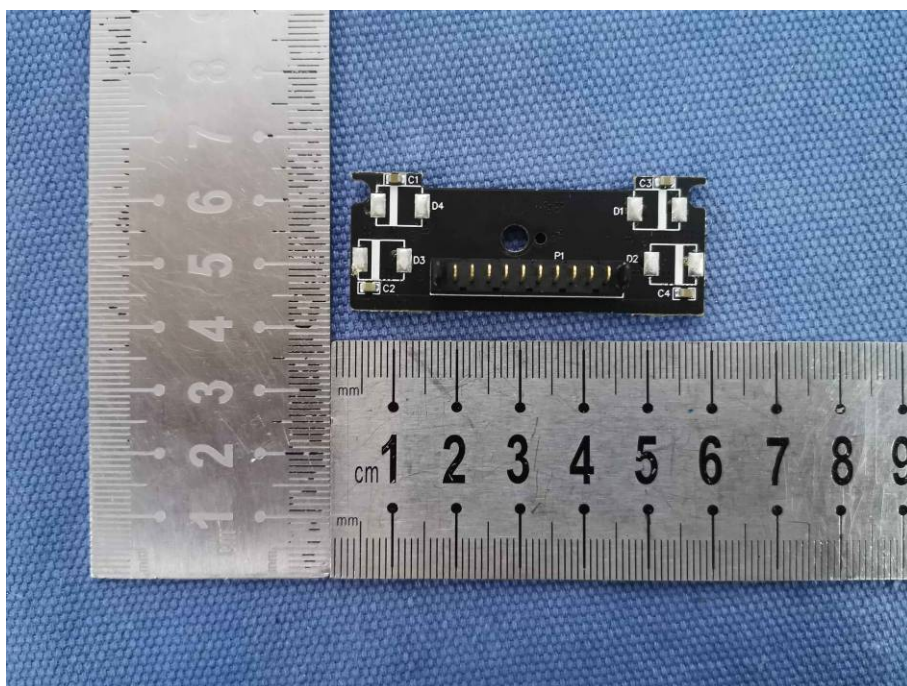
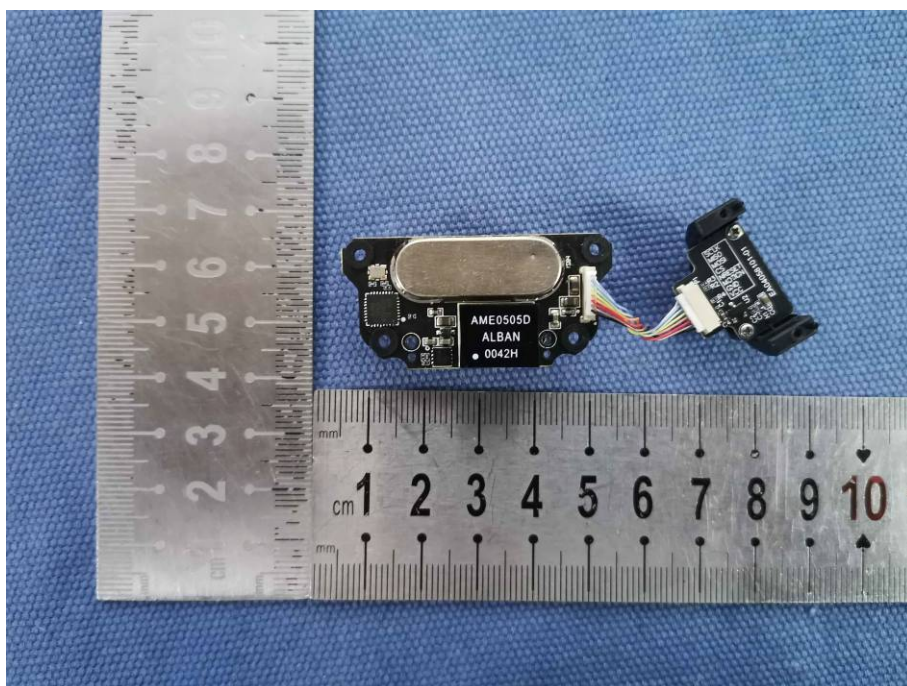


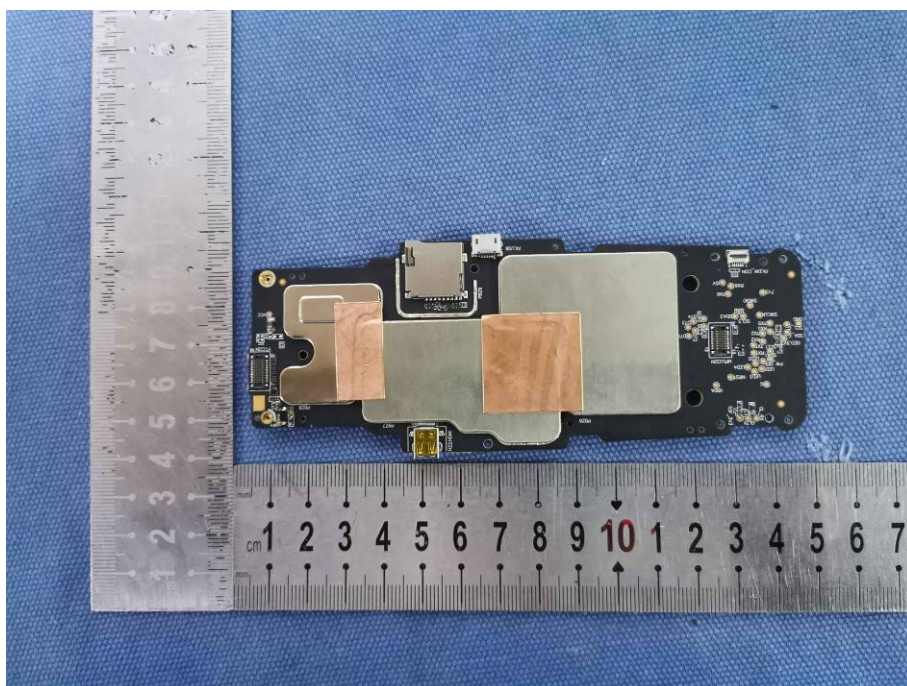
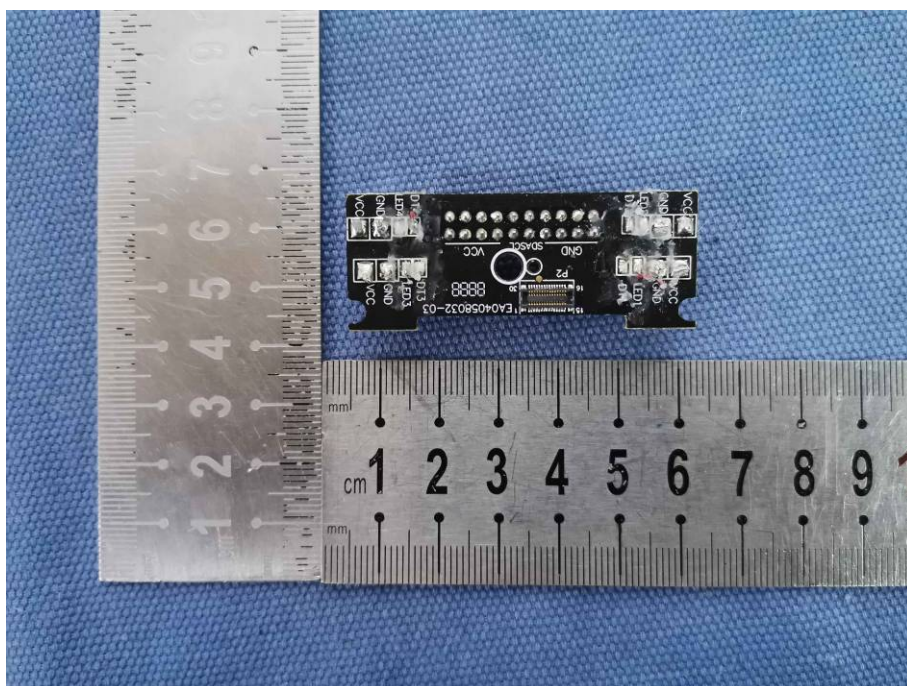


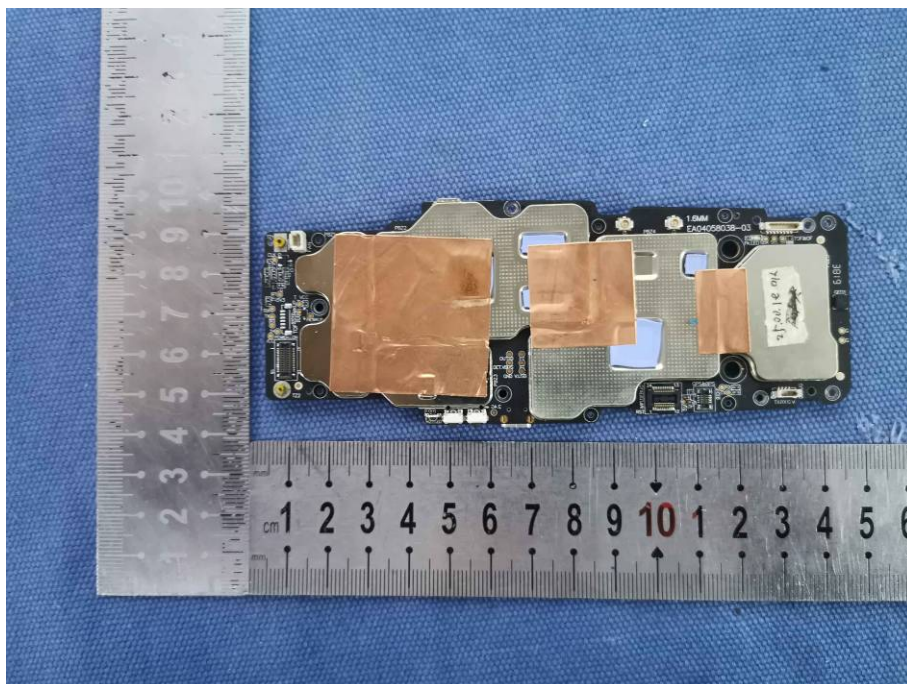
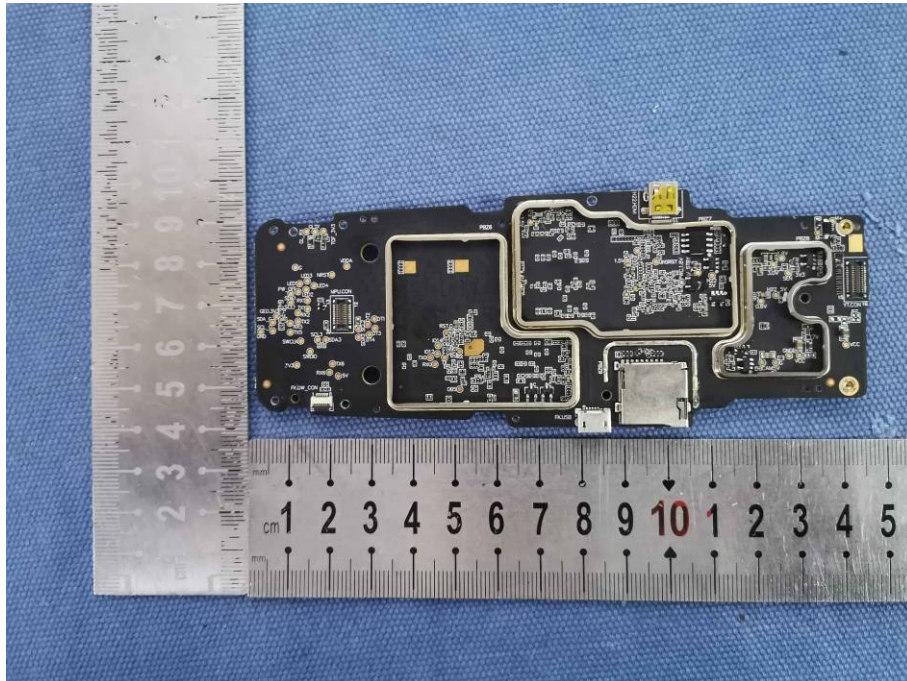


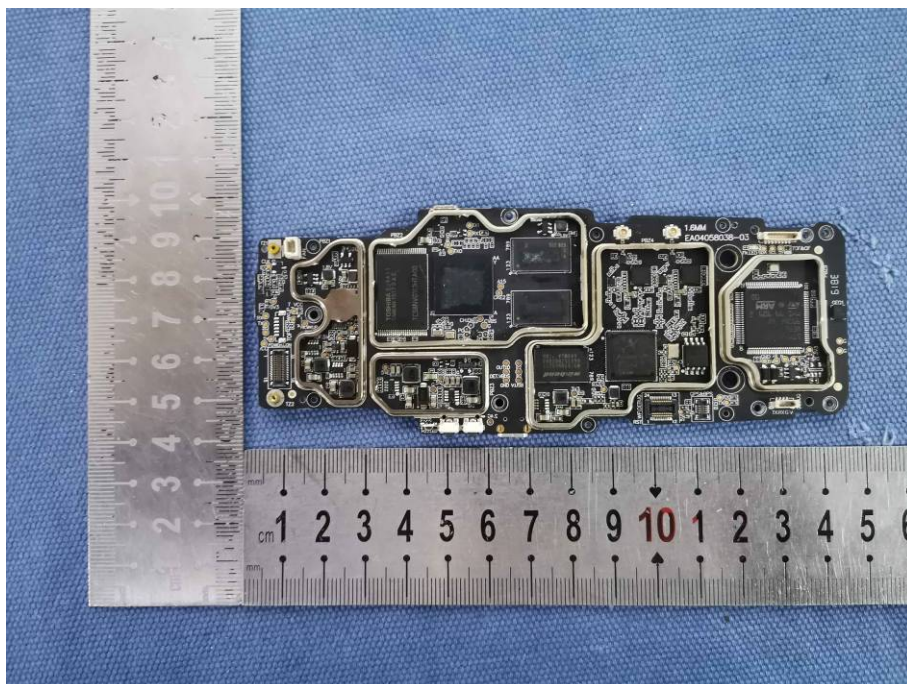
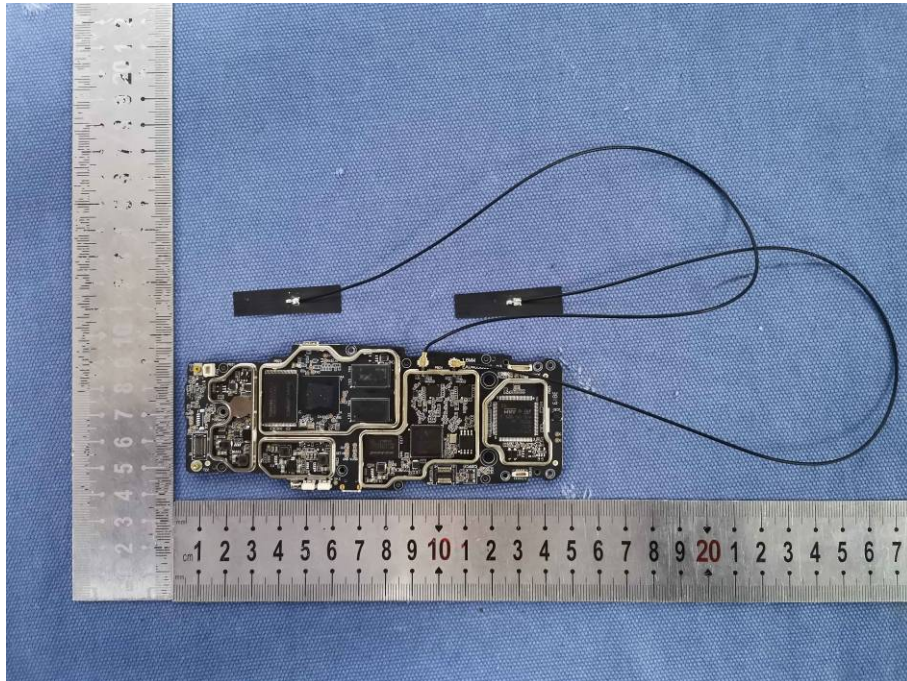


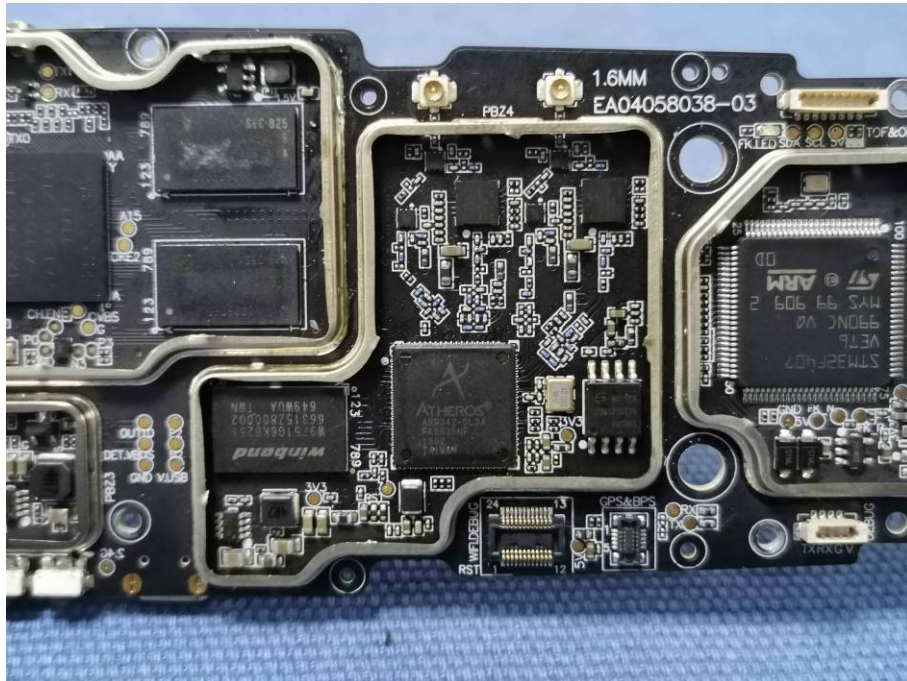












\*\*\* End of Report \*\*\*