# TEST REPORT

| | | |
|---|---|---|
| **Reference No.** | : | WTS15S0933272-1E |
| **FCC ID** | : | 2ADLSWLAV-C4111206 |
| **Applicant** | : | Nanjing IOT Sensor Technology Co., Ltd. |
| **Address** | : | No.12, Mozhou East Road, 211000 Nanjing, P.R.China |
| **Manufacturer** | : | Nanjing IOT Sensor Technology Co., Ltd |
| **Address** | : | No.12, Mozhou East Road, 211000 Nanjing, P.R.China |
| **Product Name** | : | Smart Lookever Camera(720P) |
| **Model No.** | : | WL-ZAVMDPW-C411121-06<br>WL-ZAVMDPB-C41112-01, WL-ZAVMDPU-C411121-02,<br>WL-ZAVMDPW-C41112-01, WL-ZAVMDPW-C41112-02,<br>WL-ZAVMDPW-C41112-03, WL-ZAVMDPB-C411121-02,<br>WL-ZAVMDPW-C411121-04, WL-ZAVMDPW-C411121-05,<br>WL-ZAVMDPW-C411121-07 |
| **Brand** | : | Wulian |
| **Standards** | : | FCC CFR47 Part 15 C Section 15.247:2015 |
| **Date of Receipt sample** | : | Sep. 06, 2015 |
| **Date of Test** | : | Sep. 07, 2015 ~ Oct. 28, 2015 |
| **Date of Issue** | : | Mar. 29, 2016 |
| **Test Result** | : | **Pass** |

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company.
The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.


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Compiled by:

Zero Zhou / Test Engineer

Approved by:

Philo Zhong / Manager

# 2 Test Summary

| Test Items | Test Requirement | Result |
|---|---|---|
| Conducted Emissions | 15.207(a) | PASS |
| Radiated Emissions | 15.247<br>15.205(a)<br>15.209(a) | PASS |
| 6dB Bandwidth | 15.247(a)(2) | PASS |
| Maximum Peak Output Power | 15.247(b)(3),(4) | PASS |
| Power Spectral Density | 15.247(e) | PASS |
| Band Edge | 15.247(d) | PASS |
| Antenna Requirement | 15.203 | PASS |
| Maximum Permissible Exposure<br>(Exposure of Humans to RF Fields) | 1.1307(b)(1) | PASS |

# 3 Contents

# 4 General Information

## 4.1 General Description of E.U.T.

| | |
|---|---|
| Product Name: | Smart Lookever Camera(720P) |
| Model No.: | WL-ZAVMDPW-C411121-06<br>WL-ZAVMDPB-C41112-01, WL-ZAVMDPU-C411121-02,<br>WL-ZAVMDPW-C41112-01, WL-ZAVMDPW-C41112-02,<br>WL-ZAVMDPW-C41112-03, WL-ZAVMDPB-C411121-02,<br>WL-ZAVMDPW-C411121-04, WL-ZAVMDPW-C411121-05,<br>WL-ZAVMDPW-C411121-07 |
| Model Difference: | these models are identical in interior structure, electrical circuits and components, and just product appearance color design and models are different for the marketing requirement. |
| Operation Frequency: | 2405MHz ~ 2480MHz, 2412MHz ~ 2462MHz, 2422MHz~2452MHz |
| The Lowest Oscillator: | 32.768KHz |
| Antenna Gain | 1.0 dBi for ZigBee<br>1.5 dBi for WIFI |
| Type of modulation: | IEEE 802.11b (CCK/QPSK/BPSK,11Mbps max.)<br>IEEE 802.11g (BPSK/QPSK/16QAM/64QAM,54Mbps max.)<br>IEEE 802.11n (BPSK/QPSK/16QAM/64QAM,HT20:72.2Mbps max.,<br>HT40:150Mbps max.)<br>IEEE 802.15.4ZigBee (O-QPSK, 250Kbps max.) |
| Remark: | The model WL-ZAVMDPW-C411121-06 is the tested sample. |

## 4.2 Details of E.U.T.

| | |
|---|---|
| Technical Data: | DC 5V, 1.0A by AC adapter(Model: WCF0500100E1WU<br>Input: 100-240V~ 50/60Hz, 0.15A; Output: 5.0V, 1.0A )<br>Or DC 5V, 1.0A by USB<br>In this report, only the data in the worst case that powered by adapter was showed. |

## 4.3 Channel List

ZigBee mode

| Channel No. | Frequency (MHz) | Channel No. | Frequency (MHz) | Channel No. | Frequency (MHz) | Channel No. | Frequency (MHz) |
|---|---|---|---|---|---|---|---|
| 1 | 2405 | 2 | 2410 | 3 | 2415 | 4 | 2420 |
| 5 | 2425 | 6 | 2430 | 7 | 2435 | 8 | 2440 |
| 9 | 2445 | 10 | 2450 | 11 | 2455 | 12 | 2460 |
| 13 | 2465 | 14 | 2470 | 15 | 2475 | 16 | 2480 |

WIFI mode

| Channel No. | Frequency (MHz) | Channel No. | Frequency (MHz) | Channel No. | Frequency (MHz) | Channel No. | Frequency (MHz) |
|---|---|---|---|---|---|---|---|
| 1 | 2412 | 2 | 2417 | 3 | 2422 | 4 | 2427 |
| 5 | 2432 | 6 | 2437 | 7 | 2442 | 8 | 2447 |
| 9 | 2452 | 10 | 2457 | 11 | 2462 | 12 | - |

## 4.4 Test Mode

Table 1 Tests Carried Out Under FCC part 15.247

| Test Items | Mode | Data Rate | Channel | TX/RX |
|---|---|---|---|---|
| Maximum Peak Output Power | 802.15.4 ZigBee | 250Kbps | 1/8/16 | TX |
| | 802.11b | 11 Mbps | 1/6/11 | TX |
| | 802.11g | 54 Mbps | 1/6/11 | TX |
| | 802.11n HT20 | 72.2 Mbps | 1/6/11 | TX |
| | 802.11n HT40 | 150 Mbps | 3/6/9 | TX |
| Power Spectral Density | 802.15.4 ZigBee | 250Kbps | 1/8/16 | TX |
| | 802.11b | 11 Mbps | 1/6/11 | TX |
| | 802.11g | 54 Mbps | 1/6/11 | TX |
| | 802.11n HT20 | 72.2 Mbps | 1/6/11 | TX |
| | 802.11n HT40 | 150 Mbps | 3/6/9 | TX |
| Band Edge | 802.15.4 ZigBee | 250Kbps | 1/8/16 | TX |
| | 802.11b | 11 Mbps | 1/6/11 | TX |
| | 802.11g | 54 Mbps | 1/6/11 | TX |
| | 802.11n HT20 | 72.2 Mbps | 1/6/11 | TX |
| | 802.11n HT40 | 150 Mbps | 3/6/9 | TX |
| Bandwidth | 802.15.4 ZigBee | 250Kbps | 1/8/16 | TX |
| | 802.11b | 11 Mbps | 1/6/11 | TX |
| | 802.11g | 54 Mbps | 1/6/11 | TX |
| | 802.11n HT20 | 72.2 Mbps | 1/6/11 | TX |
| | 802.11n HT40 | 150 Mbps | 3/6/9 | TX |
| Transmitter Spurious Emissions | 802.15.4 ZigBee | 250Kbps | 1/8/16 | TX |
| | 802.11b | 11 Mbps | 1/6/11 | TX |
| | 802.11g | 54 Mbps | 1/6/11 | TX |
| | 802.11n HT20 | 72.2 Mbps | 1/6/11 | TX |
| | 802.11n HT40 | 150 Mbps | 3/6/9 | TX |

**Note** :Parameters set by test software during channel & power tests, the software provided by the customer was used to set the operating channels as well as the output power level. The RF output power set is the power expected by the manufacturer and is going to be fixed on the firmware of the final product .

## 4.5 Test Facility

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: 7760A-1**

  Waltek Services(Shenzhen) Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration number 7760A-1,Oct. 15, 2015.

- **FCC Test Site 1#– Registration No.: 880581**

  Waltek Services(Shenzhen) Co., Ltd. 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 880581, April 29, 2014.

- **FCC Test Site 2#– Registration No.: 328995**

  Waltek Services(Shenzhen) Co., Ltd. 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 328995, December 3, 2014.

# 5 Equipment Used during Test

## 5.1 Equipments List

| Conducted Emissions Test Site 1# | | | | | | |
|---|---|---|---|---|---|---|
| **Item** | **Equipment** | **Manufacturer** | **Model No.** | **Serial No.** | **Last Calibration Date** | **Calibration Due Date** |
| 1. | EMI Test Receiver | R&S | ESCI | 100947 | Sep.15,2015 | Sep.14,2016 |
| 2. | LISN | R&S | ENV216 | 101215 | Sep.15,2015 | Sep.14,2016 |
| 3. | Cable | Top | TYPE16(3.5M) | - | Sep.15,2015 | Sep.14,2016 |
| **Conducted Emissions Test Site 2#** | | | | | | |
| **Item** | **Equipment** | **Manufacturer** | **Model No.** | **Serial No.** | **Last Calibration Date** | **Calibration Due Date** |
| 1. | EMI Test Receiver | R&S | ESCI | 101155 | Sep.15,2015 | Sep.14,2016 |
| 2. | LISN | SCHWARZBECK | NSLK 8128 | 8128-289 | Sep.15,2015 | Sep.14,2016 |
| 3. | Limiter | York | MTS-IMP-136 | 261115-001-0024 | Sep.15,2015 | Sep.14,2016 |
| 4. | Cable | LARGE | RF300 | - | Sep.15,2015 | Sep.14,2016 |
| **3m Semi-anechoic Chamber for Radiation Emissions Test site 1#** | | | | | | |
| **Item** | **Equipment** | **Manufacturer** | **Model No.** | **Serial No.** | **Last Calibration Date** | **Calibration Due Date** |
| 1 | EMC Analyzer | Agilent | E7405A | MY45114943 | Sep.14,2015 | Sep.13,2016 |
| 2 | Active Loop Antenna | Beijing Dazhi | ZN30900A | - | Sep.14,2015 | Sep.13,2016 |
| 3 | Trilog Broadband Antenna | SCHWARZBECK | VULB9163 | 336 | Apr.18,2015 | Apr.17,2016 |
| 4 | Coaxial Cable (below 1GHz) | Top | TYPE16(13M) | - | Sep.14,2015 | Sep.13,2016 |
| 5 | Broad-band Horn Antenna | SCHWARZBECK | BBHA 9120 D | 667 | Apr.18,2015 | Apr.17,2016 |
| 6 | Broad-band Horn Antenna | SCHWARZBECK | BBHA 9170 | 335 | Apr.18,2015 | Apr.17,2016 |
| 7 | Broadband Preamplifier | COMPLIANCE DIRECTION | PAP-1G18 | 2004 | Mar.16,2015 | Mar.15,2016 |
| 8 | Coaxial Cable (above 1GHz) | Top | 1GHz-25GHz | EW02014-7 | Apr.09,2015 | Apr.08,2016 |
| **3m Semi-anechoic Chamber for Radiation Emissions Test site 2#** | | | | | | |
| **Item** | **Equipment** | **Manufacturer** | **Model No.** | **Serial No** | **Last Calibration Date** | **Calibration Due Date** |
| 1 | Test Receiver | R&S | ESCI | 101296 | Sep.14,2015 | Sep.13,2016 |
| 2 | Trilog Broadband Antenna | SCHWARZBECK | VULB9160 | 9160-3325 | Sep.14,2015 | Sep.13,2016 |
| 3 | Amplifier | Compliance pirection systems inc | PAP-0203 | 22024 | Sep.14,2015 | Sep.13,2016 |
| 4 | Cable | HUBER+SUHNER | CBL2 | 525178 | Sep.14,2015 | Sep.13,2016 |

| RF Conducted Testing | | | | | | |
|---|---|---|---|---|---|---|
| **Item** | **Equipment** | **Manufacturer** | **Model No.** | **Serial No.** | **Last Calibration Date** | **Calibration Due Date** |
| 1. | EMC Analyzer (9k~26.5GHz) | Agilent | E7405A | MY45114943 | Sep.14,2015 | Sep.13,2016 |
| 2. | Spectrum Analyzer (9k-6GHz) | R&S | FSL6 | 100959 | Sep.14,2015 | Sep.13,2016 |
| 3. | Signal Analyzer (9k~26.5GHz) | Agilent | N9010A | MY50520207 | Sep.14,2015 | Sep.13,2016 |

## 5.2 Description of Support Units

| Equipment | Manufacturer | Model No. |
|---|---|---|
| Wireless Gateway | Wulian | WL-ZGWMDPB-G110-01 |
| Mobile phone | ZTE | NX507J |
| Computer | Lenovo | T4900V |

## 5.3 Measurement Uncertainty

| Parameter | Uncertainty |
|---|---|
| Radio Frequency | ± 1 x $10^{-6}$ |
| RF Power | ± 1.0 dB |
| RF Power Density | ± 2.2 dB |
| Radiated Spurious Emissions test | ± 5.03 dB (30M~1000MHz) |
| | ± 5.47 dB (1000M~25000MHz) |
| Conducted Spurious Emissions test | ± 3.64 dB (AC mains 150KHz~30MHz) |

## 5.4 Test Equipment Calibration

All the test equipments used are valid and calibrated by CEPREI Certification Body that address is No.110 Dongguan Zhuang RD. Guangzhou, P.R.China.

# 6 Conducted Emission

| | |
|---|---|
| Test Requirement: | FCC CFR 47 Part 15 Section 15.207 |
| Test Method: | ANSI C63.10:2013 |
| Test Result: | PASS |
| Frequency Range: | 150kHz to 30MHz |
| Class/Severity: | Class B |
| Limit: | 66-56 dBμV between 0.15MHz & 0.5MHz |
| | 56 dBμV between 0.5MHz & 5MHz |
| | 60 dBμV between 5MHz & 30MHz |
| Detector: | Peak for pre-scan (9kHz Resolution Bandwidth) |

## 6.1 E.U.T. Operation

Operating Environment **:**

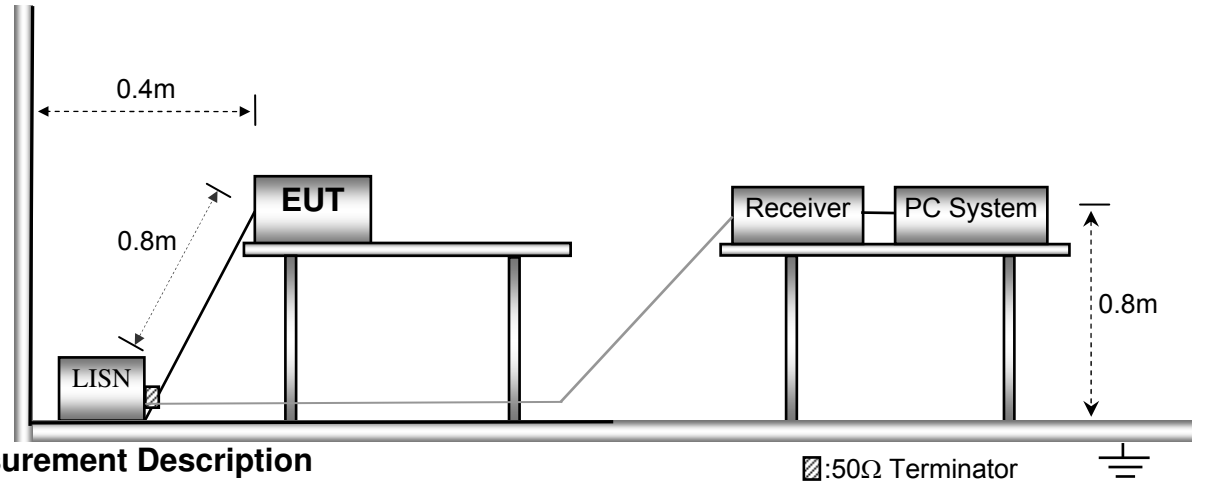
| | |
|---|---|
| Temperature: | 21.5 °C |
| Humidity: | 51.9 % RH |
| Atmospheric Pressure: | 101.2kPa |

EUT Operation **:**

The test was performed in Transmitting mode, the test data were shown in the report.

## 6.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10.



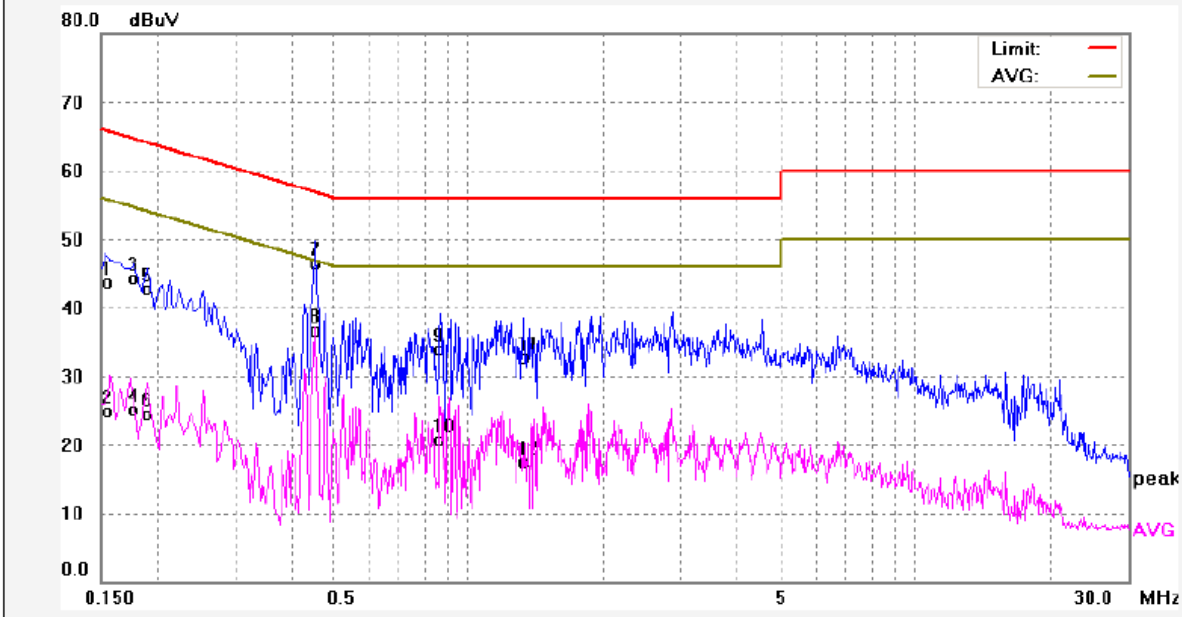

## 6.3 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

## 6.4 Conducted Emission Test Result

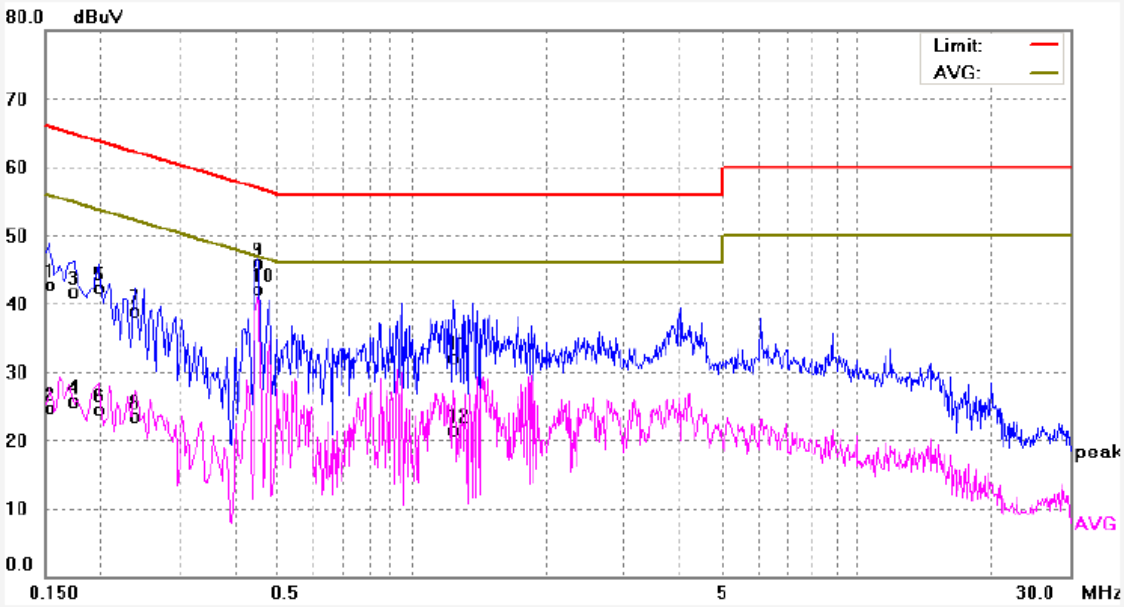
An initial pre-scan was performed on the live and neutral lines.

Live line:




| No. | Freq. (MHz) | Reading (dBuV) | Factor (dB) | Result (dBuV) | Limit dBuV | Margin (dB) | Detector | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.1539 | 33.62 | 10.13 | 43.75 | 65.78 | -22.03 | QP | |
| 2 | 0.1539 | 14.75 | 10.13 | 24.88 | 55.78 | -30.90 | AVG | |
| 3 | 0.1780 | 34.22 | 10.14 | 44.36 | 64.57 | -20.21 | QP | |
| 4 | 0.1780 | 14.99 | 10.14 | 25.13 | 54.57 | -29.44 | AVG | |
| 5 | 0.1900 | 32.46 | 10.15 | 42.61 | 64.03 | -21.42 | QP | |
| 6 | 0.1900 | 14.36 | 10.15 | 24.51 | 54.03 | -29.52 | AVG | |
| 7 | 0.4540 | 36.31 | 10.18 | 46.49 | 56.80 | -10.31 | QP | |
| 8 | 0.4540 | 26.56 | 10.18 | 36.74 | 46.80 | -10.06 | AVG | |
| 9 | 0.8620 | 23.73 | 10.22 | 33.95 | 56.00 | -22.05 | QP | |
| 10 | 0.8620 | 10.54 | 10.22 | 20.76 | 46.00 | -25.24 | AVG | |
| 11 | 1.3300 | 22.55 | 10.23 | 32.78 | 56.00 | -23.22 | QP | |
| 12 | 1.3300 | 7.32 | 10.23 | 17.55 | 46.00 | -28.45 | AVG | |

Neutral line:




| No. | Freq. (MHz) | Reading (dBuV) | Factor (dB) | Result (dBuV) | Limit dBuV | Margin (dB) | Detector | Remark |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.1539 | 32.55 | 10.13 | 42.68 | 65.78 | -23.10 | QP | |
| 2 | 0.1539 | 14.63 | 10.13 | 24.76 | 55.78 | -31.02 | AVG | |
| 3 | 0.1740 | 31.60 | 10.14 | 41.74 | 64.76 | -23.02 | QP | |
| 4 | 0.1740 | 15.54 | 10.14 | 25.68 | 54.76 | -29.08 | AVG | |
| 5 | 0.1980 | 32.13 | 10.15 | 42.28 | 63.69 | -21.41 | QP | |
| 6 | 0.1980 | 14.40 | 10.15 | 24.55 | 53.69 | -29.14 | AVG | |
| 7 | 0.2380 | 28.80 | 10.16 | 38.96 | 62.16 | -23.20 | QP | |
| 8 | 0.2380 | 13.34 | 10.16 | 23.50 | 52.16 | -28.66 | AVG | |
| 9 | 0.4500 | 35.82 | 10.18 | 46.00 | 56.87 | -10.87 | QP | |
| 10 | 0.4500 | 31.90 | 10.18 | 42.08 | 46.87 | -4.79 | AVG | |
| 11 | 1.2420 | 21.88 | 10.23 | 32.11 | 56.00 | -23.89 | QP | |
| 12 | 1.2420 | 11.20 | 10.23 | 21.43 | 46.00 | -24.57 | AVG | |

# 7 Radiated Emissions

Test Requirement: FCC CFR47 Part 15 Section 15.209 & 15.247

Test Method: ANSI C63.10:2013

Test Result: PASS

Measurement Distance: 3m

Limit:

| Frequency (MHz) | Field Strength | | Field Strength Limit at 3m Measurement Dist | |
|---|---|---|---|---|
| | uV/m | Distance (m) | uV/m | dBuV/m |
| 0.009 ~ 0.490 | 2400/F(kHz) | 300 | 10000 * 2400/F(kHz) | $20\log^{(2400/F(kHz))} + 80$ |
| 0.490 ~ 1.705 | 24000/F(kHz) | 30 | 100 * 24000/F(kHz) | $20\log^{(24000/F(kHz))} + 40$ |
| 1.705 ~ 30 | 30 | 30 | 100 * 30 | $20\log^{(30)} + 40$ |
| 30 ~ 88 | 100 | 3 | 100 | $20\log^{(100)}$ |
| 88 ~ 216 | 150 | 3 | 150 | $20\log^{(150)}$ |
| 216 ~ 960 | 200 | 3 | 200 | $20\log^{(200)}$ |
| Above 960 | 500 | 3 | 500 | $20\log^{(500)}$ |

## 7.1 EUT Operation

Operating Environment **:**

Temperature: 23.5 °C

Humidity: 52.1 % RH

Atmospheric Pressure: 101.2kPa

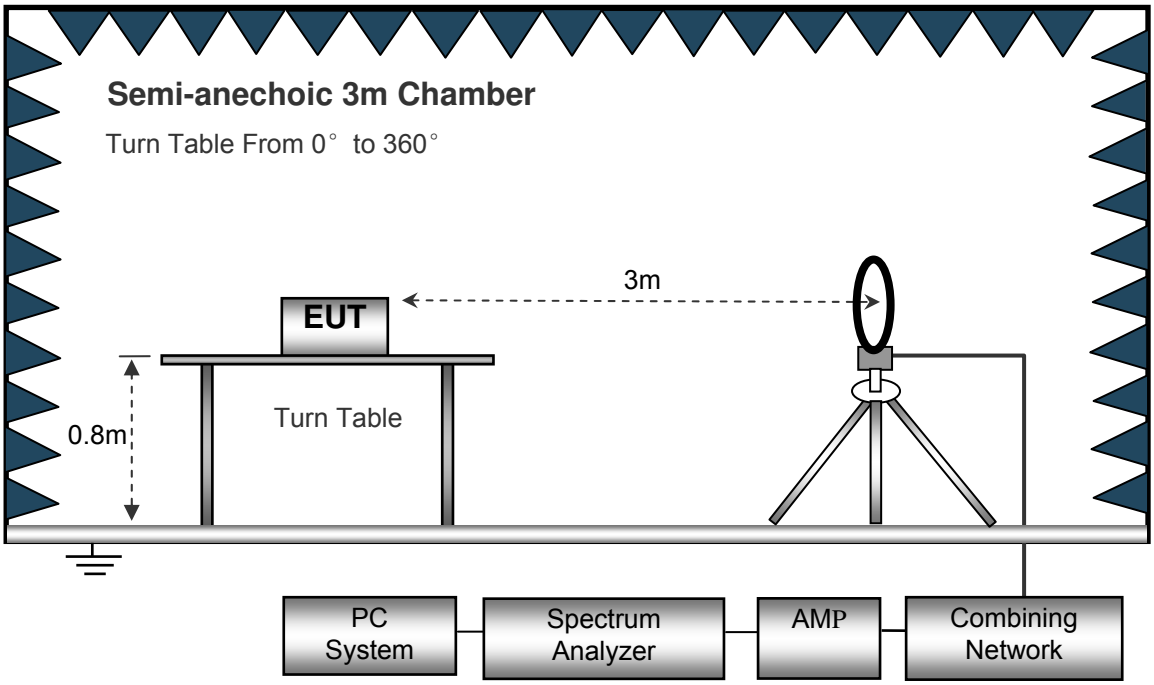
EUT Operation **:**

The test was performed in transmitting mode, the test data were shown in the report.

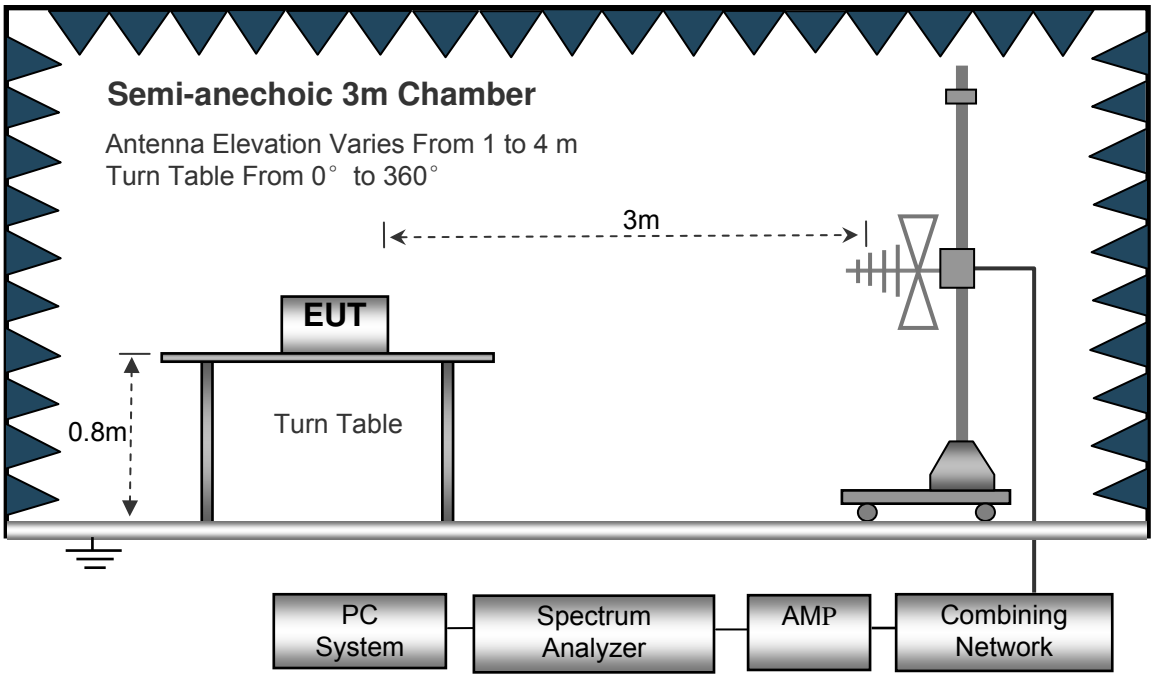
## 7.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.10.

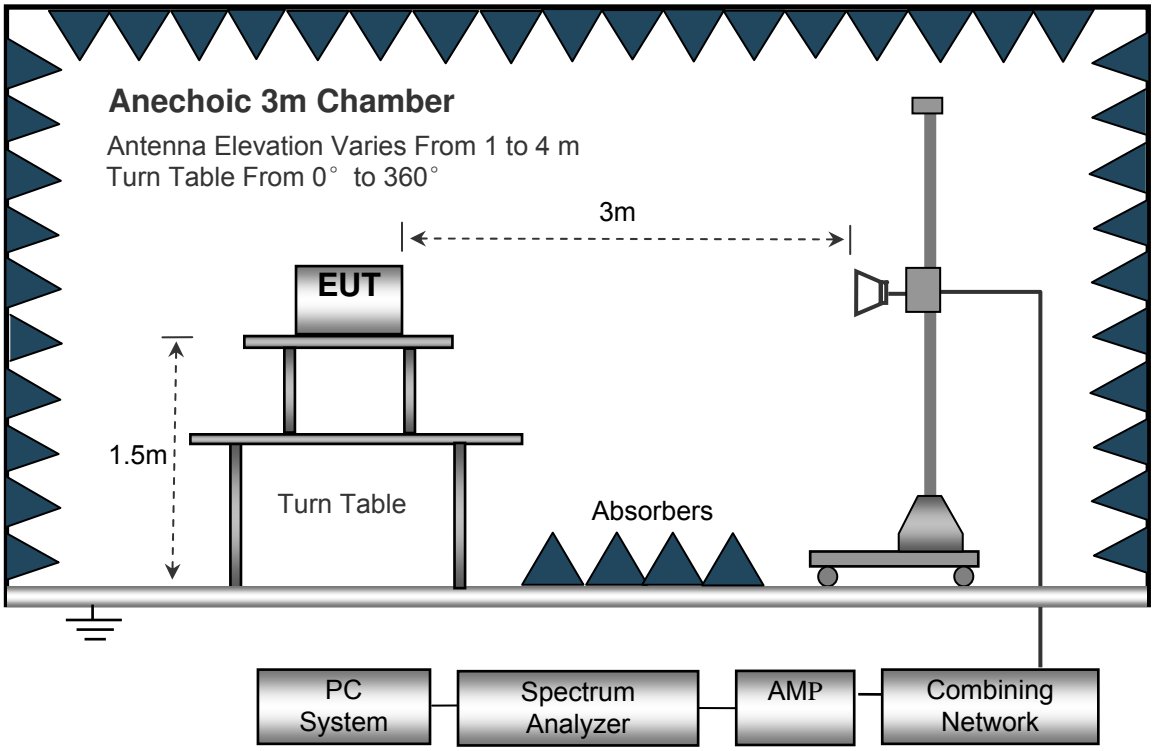
The test setup for emission measurement below 30MHz.




The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.




## 7.3 Spectrum Analyzer Setup

Below 30MHz

Sweep Speed ..... Auto
IF Bandwidth..... 10kHz
Video Bandwidth..... 10kHz
Resolution Bandwidth..... 10kHz

30MHz ~ 1GHz

Sweep Speed ..... Auto
Detector ..... PK
Resolution Bandwidth..... 100kHz
Video Bandwidth..... 300kHz

Above 1GHz

Sweep Speed ..... Auto
Detector ..... PK
Resolution Bandwidth..... 1MHz
Video Bandwidth..... 3MHz
Detector ..... Ave.
Resolution Bandwidth..... 1MHz
Video Bandwidth..... 10Hz

## 7.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane below 1GHz and 1.5m above 1GHz.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are performed in X,Y and Z axis positioning(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand),the worst condition was tested putting the eut in X axis,so the worst data were shown as follow.
8. A 2.4GHz high –pass filter is used druing radiated emissions above 1GHz measurement.

## 7.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – Limit

## 7.6 Summary of Test Results

**Test Frequency : 32.768kHz ~ 30MHz**

The measurements were more than 20 dB below the limit and not reported.

**Test Frequency : 30MHz ~ 18GHz**

| Frequency | Receiver Reading | Detector | Turn table Angle | RX Antenna | | Corrected Factor | Corrected Amplitude | FCC Part 15.247 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Height | Polar | | | Limit | Margin |
| (MHz) | (dBμV) | (PK/QP/Ave) | Degree | (m) | (H/V) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| O-QPSK Low Channel | | | | | | | | | |
| 268.35 | 36.89 | QP | 175 | 1.2 | H | -13.35 | 23.54 | 46.00 | -22.46 |
| 268.35 | 41.33 | QP | 235 | 1.8 | V | -13.35 | 27.98 | 46.00 | -18.02 |
| 4810.00 | 46.15 | PK | 75 | 1.9 | V | -1.06 | 45.09 | 74.00 | -28.91 |
| 4810.00 | 43.52 | Ave | 75 | 1.9 | V | -1.06 | 42.46 | 54.00 | -11.54 |
| 7215.00 | 40.62 | PK | 274 | 1.7 | H | 1.33 | 41.95 | 74.00 | -32.05 |
| 7215.00 | 35.37 | Ave | 274 | 1.7 | H | 1.33 | 36.70 | 54.00 | -17.30 |
| 2316.80 | 46.77 | PK | 58 | 1.7 | V | -13.19 | 33.58 | 74.00 | -40.42 |
| 2316.80 | 38.58 | Ave | 58 | 1.7 | V | -13.19 | 25.39 | 54.00 | -28.61 |
| 2378.35 | 44.27 | PK | 58 | 1.1 | H | -13.14 | 31.13 | 74.00 | -42.87 |
| 2378.35 | 38.60 | Ave | 58 | 1.1 | H | -13.14 | 25.46 | 54.00 | -28.54 |
| 2493.12 | 42.58 | PK | 242 | 1.2 | V | -13.08 | 29.50 | 74.00 | -44.50 |
| 2493.12 | 36.41 | Ave | 242 | 1.2 | V | -13.08 | 23.33 | 54.00 | -30.67 |

| Frequency | Receiver Reading | Detector | Turn table Angle | RX Antenna | | Corrected Factor | Corrected Amplitude | FCC Part 15.247 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Height | Polar | | | Limit | Margin |
| (MHz) | (dBμV) | (PK/QP/Ave) | Degree | (m) | (H/V) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| O-QPSK Middle Channel | | | | | | | | | |
| 268.35 | 36.85 | QP | 77 | 1.8 | H | -13.35 | 23.50 | 46.00 | -22.50 |
| 268.35 | 40.85 | QP | 266 | 1.6 | V | -13.35 | 27.50 | 46.00 | -18.50 |
| 4880.00 | 46.27 | PK | 262 | 2.0 | V | -0.62 | 45.65 | 74.00 | -28.35 |
| 4880.00 | 43.94 | Ave | 262 | 2.0 | V | -0.62 | 43.32 | 54.00 | -10.68 |
| 7320.00 | 41.59 | PK | 122 | 1.3 | H | 2.21 | 43.80 | 74.00 | -30.20 |
| 7320.00 | 36.63 | Ave | 122 | 1.3 | H | 2.21 | 38.84 | 54.00 | -15.16 |
| 2310.71 | 46.21 | PK | 199 | 1.4 | V | -13.19 | 33.02 | 74.00 | -40.98 |
| 2310.71 | 39.34 | Ave | 199 | 1.4 | V | -13.19 | 26.15 | 54.00 | -27.85 |
| 2379.79 | 44.44 | PK | 271 | 1.3 | H | -13.14 | 31.30 | 74.00 | -42.70 |
| 2379.79 | 38.04 | Ave | 271 | 1.3 | H | -13.14 | 24.90 | 54.00 | -29.10 |
| 2483.92 | 43.03 | PK | 100 | 1.7 | V | -13.08 | 29.95 | 74.00 | -44.05 |
| 2483.92 | 38.07 | Ave | 100 | 1.7 | V | -13.08 | 24.99 | 54.00 | -29.01 |

| Frequency | Receiver Reading | Detector | Turn table Angle | RX Antenna | | Corrected Factor | Corrected Amplitude | FCC Part 15.247 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Height | Polar | | | Limit | Margin |
| (MHz) | (dBμV) | (PK/QP/Ave) | Degree | (m) | (H/V) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| O-QPSK High Channel | | | | | | | | | |
| 268.35 | 36.89 | QP | 182 | 1.8 | H | -13.35 | 23.54 | 46.00 | -22.46 |
| 268.35 | 42.30 | QP | 86 | 1.4 | V | -13.35 | 28.95 | 46.00 | -17.05 |
| 4960.00 | 46.11 | PK | 256 | 1.5 | V | -0.24 | 45.87 | 74.00 | -28.13 |
| 4960.00 | 43.91 | Ave | 256 | 1.5 | V | -0.24 | 43.67 | 54.00 | -10.33 |
| 7440.00 | 40.39 | PK | 256 | 1.8 | H | 2.84 | 43.23 | 74.00 | -30.77 |
| 7440.00 | 37.10 | Ave | 256 | 1.8 | H | 2.84 | 39.94 | 54.00 | -14.06 |
| 2335.04 | 45.97 | PK | 13 | 1.5 | V | -13.19 | 32.78 | 74.00 | -41.22 |
| 2335.04 | 39.54 | Ave | 13 | 1.5 | V | -13.19 | 26.35 | 54.00 | -27.65 |
| 2374.32 | 44.54 | PK | 25 | 1.5 | H | -13.14 | 31.40 | 74.00 | -42.60 |
| 2374.32 | 38.17 | Ave | 25 | 1.5 | H | -13.14 | 25.03 | 54.00 | -28.97 |
| 2485.38 | 42.49 | PK | 249 | 1.0 | V | -13.08 | 29.41 | 74.00 | -44.59 |
| 2485.38 | 38.55 | Ave | 249 | 1.0 | V | -13.08 | 25.47 | 54.00 | -28.53 |

| Frequency | Receiver Reading | Detector | Turn table Angle | RX Antenna | | Corrected Factor | Corrected Amplitude | FCC Part 15.247 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Height | Polar | | | Limit | Margin |
| (MHz) | (dBμV) | (PK/QP/Ave) | Degree | (m) | (H/V) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| 11b: Low Channel 2412MHz | | | | | | | | | |
| 223.49 | 41.09 | QP | 285 | 1.5 | H | -11.62 | 29.47 | 46.00 | -16.53 |
| 223.49 | 36.23 | QP | 55 | 1.6 | V | -11.62 | 24.61 | 46.00 | -21.39 |
| 4824.00 | 50.47 | PK | 254 | 1.5 | V | -1.06 | 49.41 | 74.00 | -24.59 |
| 4824.00 | 46.35 | Ave | 254 | 1.5 | V | -1.06 | 45.29 | 54.00 | -8.71 |
| 7236.00 | 41.06 | PK | 227 | 1.0 | H | 1.33 | 42.39 | 74.00 | -31.61 |
| 7236.00 | 41.98 | Ave | 227 | 1.0 | H | 1.33 | 43.31 | 54.00 | -10.69 |
| 2323.17 | 45.23 | PK | 271 | 1.1 | V | -13.19 | 32.04 | 74.00 | -41.96 |
| 2323.17 | 38.27 | Ave | 271 | 1.1 | V | -13.19 | 25.08 | 54.00 | -28.92 |
| 2375.98 | 42.93 | PK | 235 | 1.6 | H | -13.14 | 29.79 | 74.00 | -44.21 |
| 2375.98 | 37.51 | Ave | 235 | 1.6 | H | -13.14 | 24.37 | 54.00 | -29.63 |
| 2493.61 | 42.56 | PK | 206 | 1.4 | V | -13.08 | 29.48 | 74.00 | -44.52 |
| 2493.61 | 36.59 | Ave | 206 | 1.4 | V | -13.08 | 23.51 | 54.00 | -30.49 |

| Frequency | Receiver Reading | Detector | Turn table Angle | RX Antenna | | Corrected Factor | Corrected Amplitude | FCC Part 15.247 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Height | Polar | | | Limit | Margin |
| (MHz) | (dBμV) | (PK/QP/Ave) | Degree | (m) | (H/V) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| 11b: Middle Channel 2437MHz | | | | | | | | | |
| 223.49 | 42.07 | QP | 90 | 1.1 | H | -11.62 | 30.45 | 46.00 | -15.55 |
| 223.49 | 35.32 | QP | 96 | 1.5 | V | -11.62 | 23.70 | 46.00 | -22.30 |
| 4874.00 | 50.47 | PK | 116 | 1.2 | V | -0.62 | 49.85 | 74.00 | -24.15 |
| 4874.00 | 45.29 | Ave | 116 | 1.2 | V | -0.62 | 44.67 | 54.00 | -9.33 |
| 7311.00 | 40.38 | PK | 173 | 1.4 | H | 2.21 | 42.59 | 74.00 | -31.41 |
| 7311.00 | 41.77 | Ave | 173 | 1.4 | H | 2.21 | 43.98 | 54.00 | -10.02 |
| 2348.19 | 45.28 | PK | 231 | 1.4 | V | -13.19 | 32.09 | 74.00 | -41.91 |
| 2348.19 | 37.46 | Ave | 231 | 1.4 | V | -13.19 | 24.27 | 54.00 | -29.73 |
| 2363.59 | 42.58 | PK | 12 | 1.5 | H | -13.14 | 29.44 | 74.00 | -44.56 |
| 2363.59 | 36.34 | Ave | 12 | 1.5 | H | -13.14 | 23.20 | 54.00 | -30.80 |
| 2497.18 | 44.04 | PK | 197 | 1.3 | V | -13.08 | 30.96 | 74.00 | -43.04 |
| 2497.18 | 37.03 | Ave | 197 | 1.3 | V | -13.08 | 23.95 | 54.00 | -30.05 |

| Frequency | Receiver Reading | Detector | Turn table Angle | RX Antenna | | Corrected Factor | Corrected Amplitude | FCC Part 15.247 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Height | Polar | | | Limit | Margin |
| (MHz) | (dBμV) | (PK/QP/Ave) | Degree | (m) | (H/V) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| 11b: High Channel 2462MHz | | | | | | | | | |
| 223.49 | 42.40 | QP | 157 | 1.1 | H | -11.62 | 30.78 | 46.00 | -15.22 |
| 223.49 | 34.06 | QP | 130 | 1.7 | V | -11.62 | 22.44 | 46.00 | -23.56 |
| 4924.00 | 49.20 | PK | 156 | 1.6 | V | -0.24 | 48.96 | 74.00 | -25.04 |
| 4924.00 | 46.23 | Ave | 156 | 1.6 | V | -0.24 | 45.99 | 54.00 | -8.01 |
| 7386.00 | 39.28 | PK | 305 | 1.5 | H | 2.84 | 42.12 | 74.00 | -31.88 |
| 7386.00 | 42.43 | Ave | 305 | 1.5 | H | 2.84 | 45.27 | 54.00 | -8.73 |
| 2327.92 | 46.09 | PK | 309 | 2.0 | V | -13.19 | 32.90 | 74.00 | -41.10 |
| 2327.92 | 39.21 | Ave | 309 | 2.0 | V | -13.19 | 26.02 | 54.00 | -27.98 |
| 2386.44 | 44.87 | PK | 44 | 1.1 | H | -13.14 | 31.73 | 74.00 | -42.27 |
| 2386.44 | 38.17 | Ave | 44 | 1.1 | H | -13.14 | 25.03 | 54.00 | -28.97 |
| 2494.76 | 43.20 | PK | 266 | 1.4 | V | -13.08 | 30.12 | 74.00 | -43.88 |
| 2494.76 | 37.80 | Ave | 266 | 1.4 | V | -13.08 | 24.72 | 54.00 | -29.28 |

| Frequency | Receiver Reading | Detector | Turn table Angle | RX Antenna | | Corrected Factor | Corrected Amplitude | FCC Part 15.247 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Height | Polar | | | Limit | Margin |
| (MHz) | (dBμV) | (PK/QP/Ave) | Degree | (m) | (H/V) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| 11g: Low Channel 2412MHz | | | | | | | | | |
| 223.49 | 41.89 | QP | 175 | 1.3 | H | -11.62 | 30.27 | 46.00 | -15.73 |
| 223.49 | 33.98 | QP | 88 | 1.6 | V | -11.62 | 22.36 | 46.00 | -23.64 |
| 4824.00 | 48.80 | PK | 326 | 1.8 | V | -1.06 | 47.74 | 74.00 | -26.26 |
| 4824.00 | 46.35 | Ave | 326 | 1.8 | V | -1.06 | 45.29 | 54.00 | -8.71 |
| 7236.00 | 38.40 | PK | 122 | 1.1 | H | 1.33 | 39.73 | 74.00 | -34.27 |
| 7236.00 | 42.40 | Ave | 122 | 1.1 | H | 1.33 | 43.73 | 54.00 | -10.27 |
| 2345.31 | 46.43 | PK | 291 | 2.0 | V | -13.19 | 33.24 | 74.00 | -40.76 |
| 2345.31 | 39.63 | Ave | 291 | 2.0 | V | -13.19 | 26.44 | 54.00 | -27.56 |
| 2353.51 | 42.32 | PK | 176 | 1.8 | H | -13.14 | 29.18 | 74.00 | -44.82 |
| 2353.51 | 37.54 | Ave | 176 | 1.8 | H | -13.14 | 24.40 | 54.00 | -29.60 |
| 2489.20 | 44.31 | PK | 216 | 1.2 | V | -13.08 | 31.23 | 74.00 | -42.77 |
| 2489.20 | 37.38 | Ave | 216 | 1.2 | V | -13.08 | 24.30 | 54.00 | -29.70 |

| Frequency | Receiver Reading | Detector | Turn table Angle | RX Antenna | | Corrected Factor | Corrected Amplitude | FCC Part 15.247 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Height | Polar | | | Limit | Margin |
| (MHz) | (dBμV) | (PK/QP/Ave) | Degree | (m) | (H/V) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| 11g: Middle Channel 2437MHz | | | | | | | | | |
| 223.49 | 40.61 | QP | 18 | 1.5 | H | -11.62 | 28.99 | 46.00 | -17.01 |
| 223.49 | 33.47 | QP | 89 | 1.4 | V | -11.62 | 21.85 | 46.00 | -24.15 |
| 4874.00 | 49.42 | PK | 7 | 1.3 | V | -0.62 | 48.80 | 74.00 | -25.20 |
| 4874.00 | 45.55 | Ave | 7 | 1.3 | V | -0.62 | 44.93 | 54.00 | -9.07 |
| 7311.00 | 38.05 | PK | 61 | 1.9 | H | 2.21 | 40.26 | 74.00 | -33.74 |
| 7311.00 | 42.77 | Ave | 61 | 1.9 | H | 2.21 | 44.98 | 54.00 | -9.02 |
| 2310.82 | 46.03 | PK | 64 | 1.7 | V | -13.19 | 32.84 | 74.00 | -41.16 |
| 2310.82 | 38.90 | Ave | 64 | 1.7 | V | -13.19 | 25.71 | 54.00 | -28.29 |
| 2366.57 | 44.83 | PK | 122 | 1.4 | H | -13.14 | 31.69 | 74.00 | -42.31 |
| 2366.57 | 38.48 | Ave | 122 | 1.4 | H | -13.14 | 25.34 | 54.00 | -28.66 |
| 2498.85 | 43.24 | PK | 267 | 2.0 | V | -13.08 | 30.16 | 74.00 | -43.84 |
| 2498.85 | 36.19 | Ave | 267 | 2.0 | V | -13.08 | 23.11 | 54.00 | -30.89 |

| Frequency | Receiver Reading | Detector | Turn table Angle | RX Antenna | | Corrected Factor | Corrected Amplitude | FCC Part 15.247 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Height | Polar | | | Limit | Margin |
| (MHz) | (dBμV) | (PK/QP/Ave) | Degree | (m) | (H/V) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| 11g: High Channel 2462MHz | | | | | | | | | |
| 223.49 | 41.22 | QP | 275 | 1.2 | H | -11.62 | 29.60 | 46.00 | -16.40 |
| 223.49 | 32.48 | QP | 331 | 1.8 | V | -11.62 | 20.86 | 46.00 | -25.14 |
| 4924.00 | 49.92 | PK | 139 | 1.3 | V | -0.24 | 49.68 | 74.00 | -24.32 |
| 4924.00 | 44.38 | Ave | 139 | 1.3 | V | -0.24 | 44.14 | 54.00 | -9.86 |
| 7386.00 | 38.90 | PK | 225 | 1.4 | H | 2.84 | 41.74 | 74.00 | -32.26 |
| 7386.00 | 44.03 | Ave | 225 | 1.4 | H | 2.84 | 46.87 | 54.00 | -7.13 |
| 2314.60 | 45.39 | PK | 353 | 1.0 | V | -13.19 | 32.20 | 74.00 | -41.80 |
| 2314.60 | 38.70 | Ave | 353 | 1.0 | V | -13.19 | 25.51 | 54.00 | -28.49 |
| 2357.04 | 43.18 | PK | 12 | 1.0 | H | -13.14 | 30.04 | 74.00 | -43.96 |
| 2357.04 | 38.70 | Ave | 12 | 1.0 | H | -13.14 | 25.56 | 54.00 | -28.44 |
| 2487.01 | 42.39 | PK | 143 | 2.0 | V | -13.08 | 29.31 | 74.00 | -44.69 |
| 2487.01 | 38.03 | Ave | 143 | 2.0 | V | -13.08 | 24.95 | 54.00 | -29.05 |

| Frequency | Receiver Reading | Detector | Turn table Angle | RX Antenna | | Corrected Factor | Corrected Amplitude | FCC Part 15.247 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Height | Polar | | | Limit | Margin |
| (MHz) | (dBμV) | (PK/QP/Ave) | Degree | (m) | (H/V) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| n20: Low Channel 2412MHz | | | | | | | | | |
| 223.49 | 41.98 | QP | 150 | 1.5 | H | -11.62 | 30.36 | 46.00 | -15.64 |
| 223.49 | 31.48 | QP | 205 | 1.1 | V | -11.62 | 19.86 | 46.00 | -26.14 |
| 4824.00 | 49.13 | PK | 110 | 1.8 | V | -1.06 | 48.07 | 74.00 | -25.93 |
| 4824.00 | 43.71 | Ave | 110 | 1.8 | V | -1.06 | 42.65 | 54.00 | -11.35 |
| 7236.00 | 39.80 | PK | 349 | 1.7 | H | 1.33 | 41.13 | 74.00 | -32.87 |
| 7236.00 | 43.21 | Ave | 349 | 1.7 | H | 1.33 | 44.54 | 54.00 | -9.46 |
| 2345.75 | 46.89 | PK | 111 | 1.2 | V | -13.19 | 33.70 | 74.00 | -40.30 |
| 2345.75 | 39.71 | Ave | 111 | 1.2 | V | -13.19 | 26.52 | 54.00 | -27.48 |
| 2372.18 | 42.31 | PK | 128 | 1.6 | H | -13.14 | 29.17 | 74.00 | -44.83 |
| 2372.18 | 38.13 | Ave | 128 | 1.6 | H | -13.14 | 24.99 | 54.00 | -29.01 |
| 2495.37 | 44.61 | PK | 329 | 1.3 | V | -13.08 | 31.53 | 74.00 | -42.47 |
| 2495.37 | 38.75 | Ave | 329 | 1.3 | V | -13.08 | 25.67 | 54.00 | -28.33 |

| Frequency | Receiver Reading | Detector | Turn table Angle | RX Antenna | | Corrected Factor | Corrected Amplitude | FCC Part 15.247 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Height | Polar | | | Limit | Margin |
| (MHz) | (dBμV) | (PK/QP/Ave) | Degree | (m) | (H/V) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| n20: Middle Channel 2437MHz | | | | | | | | | |
| 223.49 | 41.35 | QP | 18 | 1.7 | H | -11.62 | 29.73 | 46.00 | -16.27 |
| 223.49 | 31.26 | QP | 62 | 1.9 | V | -11.62 | 19.64 | 46.00 | -26.36 |
| 4874.00 | 50.43 | PK | 51 | 1.5 | V | -0.62 | 49.81 | 74.00 | -24.19 |
| 4874.00 | 43.94 | Ave | 51 | 1.5 | V | -0.62 | 43.32 | 54.00 | -10.68 |
| 7311.00 | 39.81 | PK | 206 | 1.4 | H | 2.21 | 42.02 | 74.00 | -31.98 |
| 7311.00 | 42.28 | Ave | 206 | 1.4 | H | 2.21 | 44.49 | 54.00 | -9.51 |
| 2321.46 | 46.52 | PK | 30 | 1.3 | V | -13.19 | 33.33 | 74.00 | -40.67 |
| 2321.46 | 39.97 | Ave | 30 | 1.3 | V | -13.19 | 26.78 | 54.00 | -27.22 |
| 2382.66 | 43.94 | PK | 155 | 1.3 | H | -13.14 | 30.80 | 74.00 | -43.20 |
| 2382.66 | 36.72 | Ave | 155 | 1.3 | H | -13.14 | 23.58 | 54.00 | -30.42 |
| 2495.87 | 44.82 | PK | 106 | 1.1 | V | -13.08 | 31.74 | 74.00 | -42.26 |
| 2495.87 | 37.11 | Ave | 106 | 1.1 | V | -13.08 | 24.03 | 54.00 | -29.97 |

| Frequency | Receiver Reading | Detector | Turn table Angle | RX Antenna | | Corrected Factor | Corrected Amplitude | FCC Part 15.247 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Height | Polar | | | Limit | Margin |
| (MHz) | (dBμV) | (PK/QP/Ave) | Degree | (m) | (H/V) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| n20: High Channel 2462MHz | | | | | | | | | |
| 223.49 | 42.14 | QP | 203 | 1.6 | H | -11.62 | 30.52 | 46.00 | -15.48 |
| 223.49 | 32.17 | QP | 131 | 1.3 | V | -11.62 | 20.55 | 46.00 | -25.45 |
| 4924.00 | 51.17 | PK | 158 | 1.2 | V | -0.24 | 50.93 | 74.00 | -23.07 |
| 4924.00 | 44.98 | Ave | 158 | 1.2 | V | -0.24 | 44.74 | 54.00 | -9.26 |
| 7386.00 | 39.97 | PK | 146 | 1.2 | H | 2.84 | 42.81 | 74.00 | -31.19 |
| 7386.00 | 42.68 | Ave | 146 | 1.2 | H | 2.84 | 45.52 | 54.00 | -8.48 |
| 2337.16 | 46.87 | PK | 234 | 1.4 | V | -13.19 | 33.68 | 74.00 | -40.32 |
| 2337.16 | 39.91 | Ave | 234 | 1.4 | V | -13.19 | 26.72 | 54.00 | -27.28 |
| 2378.61 | 43.16 | PK | 319 | 1.9 | H | -13.14 | 30.02 | 74.00 | -43.98 |
| 2378.61 | 38.57 | Ave | 319 | 1.9 | H | -13.14 | 25.43 | 54.00 | -28.57 |
| 2492.86 | 43.20 | PK | 74 | 1.7 | V | -13.08 | 30.12 | 74.00 | -43.88 |
| 2492.86 | 37.98 | Ave | 74 | 1.7 | V | -13.08 | 24.90 | 54.00 | -29.10 |

| Frequency | Receiver Reading | Detector | Turn table Angle | RX Antenna | | Corrected Factor | Corrected Amplitude | FCC Part 15.247 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Height | Polar | | | Limit | Margin |
| (MHz) | (dBμV) | (PK/QP/Ave) | Degree | (m) | (H/V) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| n40: Low Channel 2422MHz | | | | | | | | | |
| 223.49 | 41.10 | QP | 28 | 1.6 | H | -11.62 | 29.48 | 46.00 | -16.52 |
| 223.49 | 31.65 | QP | 114 | 1.7 | V | -11.62 | 20.03 | 46.00 | -25.97 |
| 4844.00 | 48.31 | PK | 15 | 1.6 | V | -1.06 | 47.25 | 74.00 | -26.75 |
| 4844.00 | 42.83 | Ave | 15 | 1.6 | V | -1.06 | 41.77 | 54.00 | -12.23 |
| 7266.00 | 38.80 | PK | 177 | 1.1 | H | 1.33 | 40.13 | 74.00 | -33.87 |
| 7266.00 | 40.01 | Ave | 177 | 1.1 | H | 1.33 | 41.34 | 54.00 | -12.66 |
| 2311.61 | 46.62 | PK | 278 | 1.4 | V | -13.19 | 33.43 | 74.00 | -40.57 |
| 2311.61 | 38.24 | Ave | 278 | 1.4 | V | -13.19 | 25.05 | 54.00 | -28.95 |
| 2352.56 | 44.37 | PK | 304 | 1.6 | H | -13.14 | 31.23 | 74.00 | -42.77 |
| 2352.56 | 38.28 | Ave | 304 | 1.6 | H | -13.14 | 25.14 | 54.00 | -28.86 |
| 2491.24 | 44.80 | PK | 171 | 1.8 | V | -13.08 | 31.72 | 74.00 | -42.28 |
| 2491.24 | 37.54 | Ave | 171 | 1.8 | V | -13.08 | 24.46 | 54.00 | -29.54 |

| Frequency | Receiver Reading | Detector | Turn table Angle | RX Antenna | | Corrected Factor | Corrected Amplitude | FCC Part 15.247 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Height | Polar | | | Limit | Margin |
| (MHz) | (dBμV) | (PK/QP/Ave) | Degree | (m) | (H/V) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| n40: Middle Channel 2437MHz | | | | | | | | | |
| 223.49 | 40.43 | QP | 143 | 1.3 | H | -11.62 | 28.81 | 46.00 | -17.19 |
| 223.49 | 32.12 | QP | 323 | 1.1 | V | -11.62 | 20.50 | 46.00 | -25.50 |
| 4874.00 | 47.70 | PK | 58 | 1.4 | V | -0.62 | 47.08 | 74.00 | -26.92 |
| 4874.00 | 41.94 | Ave | 58 | 1.4 | V | -0.62 | 41.32 | 54.00 | -12.68 |
| 7311.00 | 38.46 | PK | 306 | 1.4 | H | 2.21 | 40.67 | 74.00 | -33.33 |
| 7311.00 | 39.44 | Ave | 306 | 1.4 | H | 2.21 | 41.65 | 54.00 | -12.35 |
| 2314.56 | 46.48 | PK | 35 | 1.7 | V | -13.19 | 33.29 | 74.00 | -40.71 |
| 2314.56 | 37.83 | Ave | 35 | 1.7 | V | -13.19 | 24.64 | 54.00 | -29.36 |
| 2351.06 | 42.17 | PK | 65 | 2.0 | H | -13.14 | 29.03 | 74.00 | -44.97 |
| 2351.06 | 38.52 | Ave | 65 | 2.0 | H | -13.14 | 25.38 | 54.00 | -28.62 |
| 2492.58 | 44.80 | PK | 314 | 1.7 | V | -13.08 | 31.72 | 74.00 | -42.28 |
| 2492.58 | 37.09 | Ave | 314 | 1.7 | V | -13.08 | 24.01 | 54.00 | -29.99 |

| Frequency | Receiver Reading | Detector | Turn table Angle | RX Antenna | | Corrected Factor | Corrected Amplitude | FCC Part 15.247 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Height | Polar | | | Limit | Margin |
| (MHz) | (dBμV) | (PK/QP/Ave) | Degree | (m) | (H/V) | (dB) | (dBμV/m) | (dBμV/m) | (dB) |
| n40: High Channel 2452MHz | | | | | | | | | |
| 223.49 | 40.60 | QP | 301 | 1.3 | H | -11.62 | 28.98 | 46.00 | -17.02 |
| 223.49 | 32.16 | QP | 75 | 1.0 | V | -11.62 | 20.54 | 46.00 | -25.46 |
| 4904.00 | 47.08 | PK | 118 | 1.4 | V | -0.24 | 46.84 | 74.00 | -27.16 |
| 4904.00 | 41.79 | Ave | 118 | 1.4 | V | -0.24 | 41.55 | 54.00 | -12.45 |
| 7356.00 | 37.73 | PK | 125 | 1.8 | H | 2.84 | 40.57 | 74.00 | -33.43 |
| 7356.00 | 40.25 | Ave | 125 | 1.8 | H | 2.84 | 43.09 | 54.00 | -10.91 |
| 2332.25 | 45.42 | PK | 333 | 1.2 | V | -13.19 | 32.23 | 74.00 | -41.77 |
| 2332.25 | 39.54 | Ave | 333 | 1.2 | V | -13.19 | 26.35 | 54.00 | -27.65 |
| 2352.99 | 43.78 | PK | 54 | 1.8 | H | -13.14 | 30.64 | 74.00 | -43.36 |
| 2352.99 | 36.93 | Ave | 54 | 1.8 | H | -13.14 | 23.79 | 54.00 | -30.21 |
| 2494.13 | 42.51 | PK | 193 | 1.1 | V | -13.08 | 29.43 | 74.00 | -44.57 |
| 2494.13 | 37.24 | Ave | 193 | 1.1 | V | -13.08 | 24.16 | 54.00 | -29.84 |

**Test Frequency: 18GHz~25GHz**

The measurements were more than 20 dB below the limit and not reported.

# 8 Band Edge Measurement

| | |
|---|---|
| Test Requirement: | FCC CFR47 Part 15 Section 15.247 |
| Test Method: | 558074 D01 DTS Meas Guidance v03r04 January 7, 2016 |
| Test Limit: | Regulation 15.247 (d),In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)). |
| Test Mode: | Transmitting |

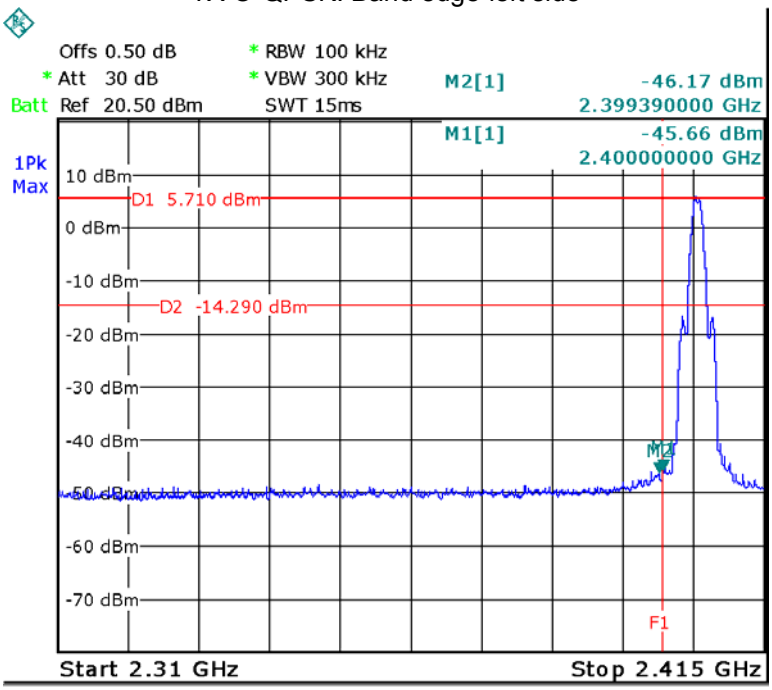
## 8.1 Test Produce

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

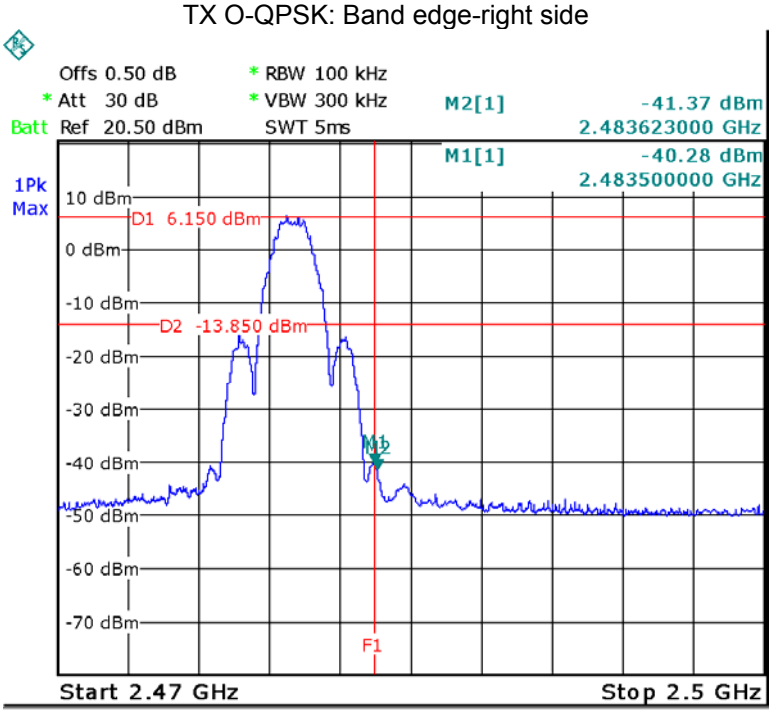
## 8.2 Test Result

Test result plots shown as follows:

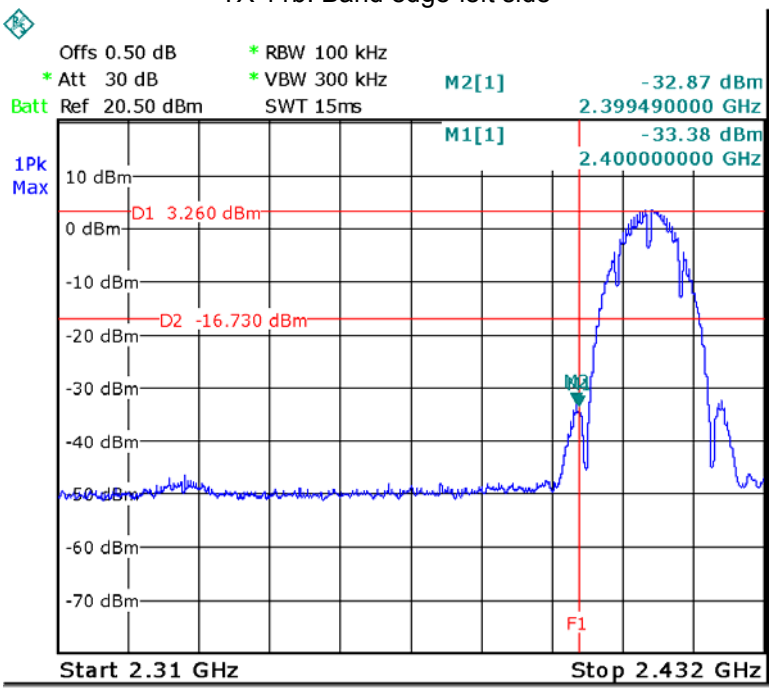
TX O-QPSK: Band edge-left side



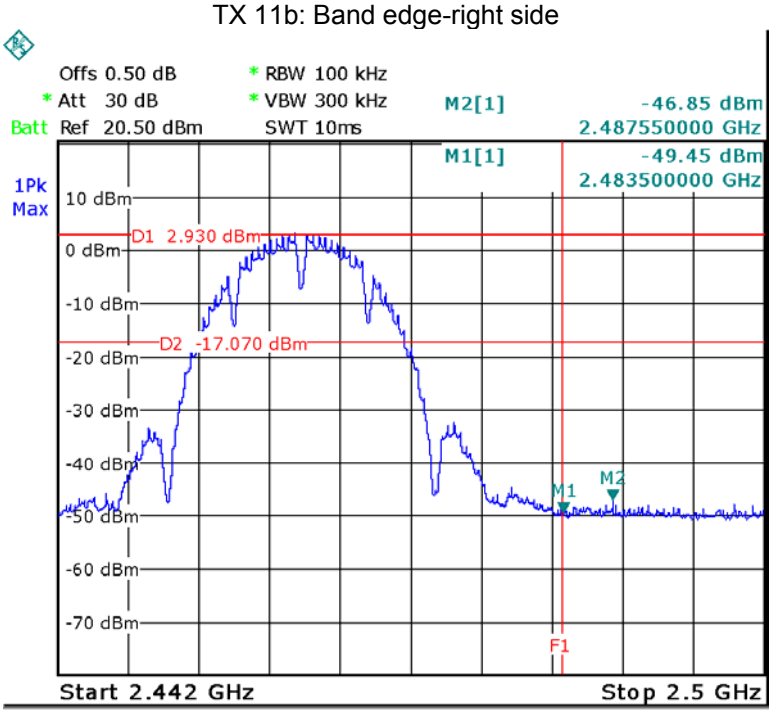

TX O-QPSK: Band edge-right side



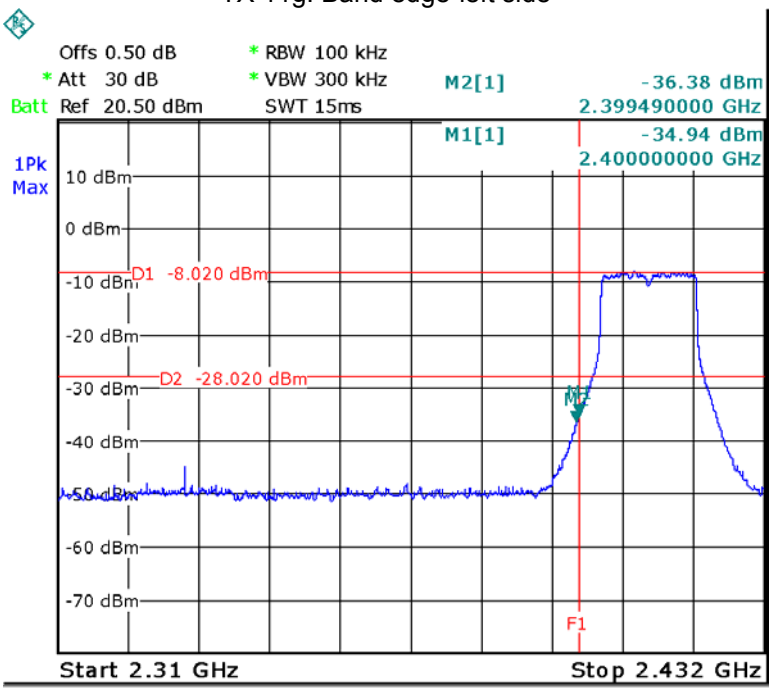
TX 11b: Band edge-left side



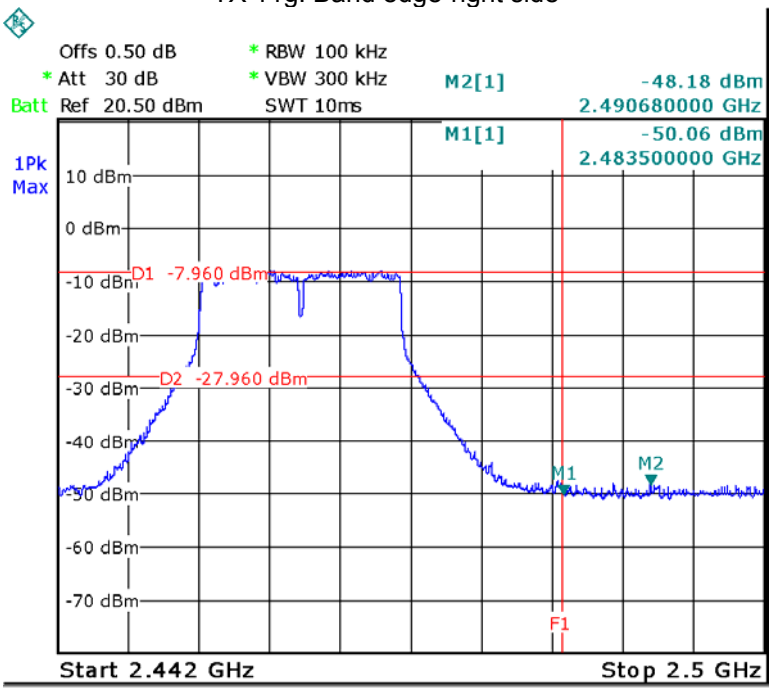

TX 11b: Band edge-right side



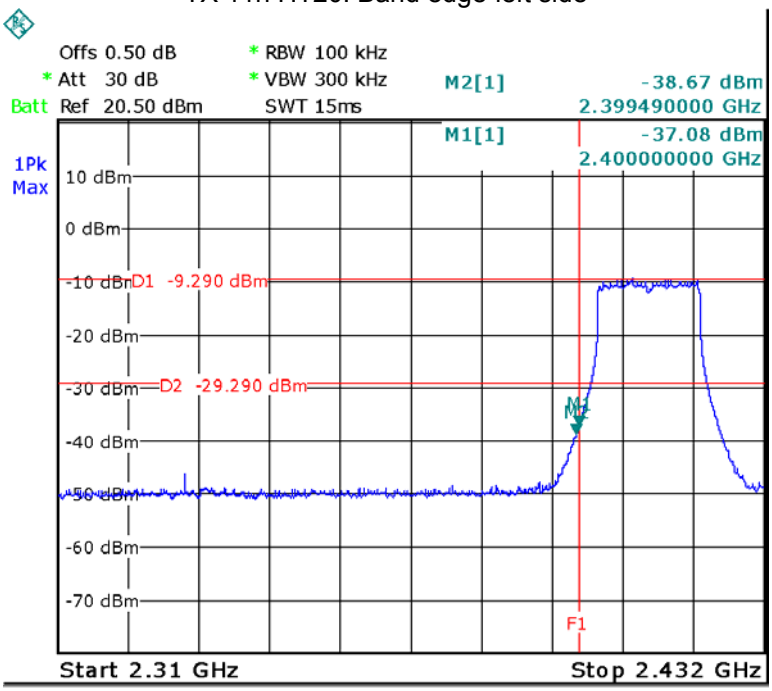
TX 11g: Band edge-left side



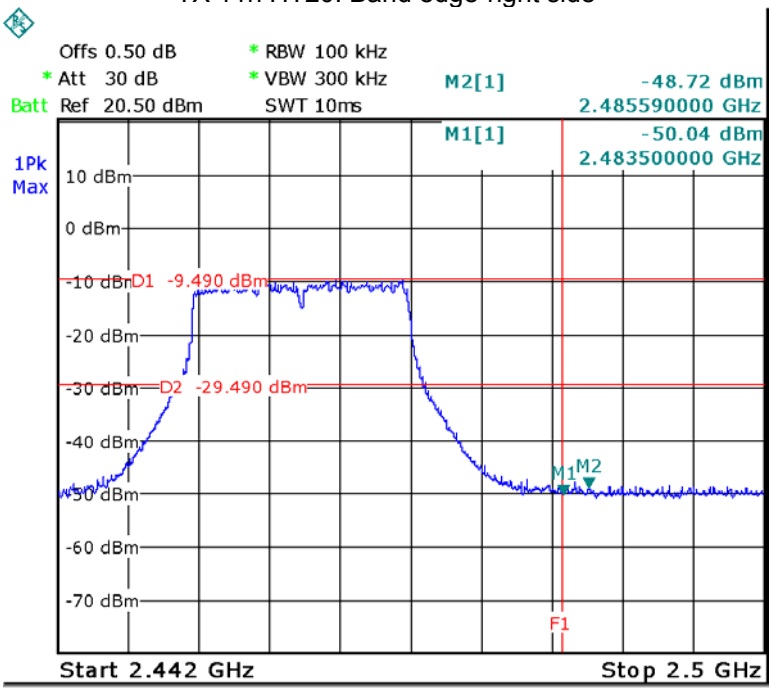

TX 11g: Band edge-right side



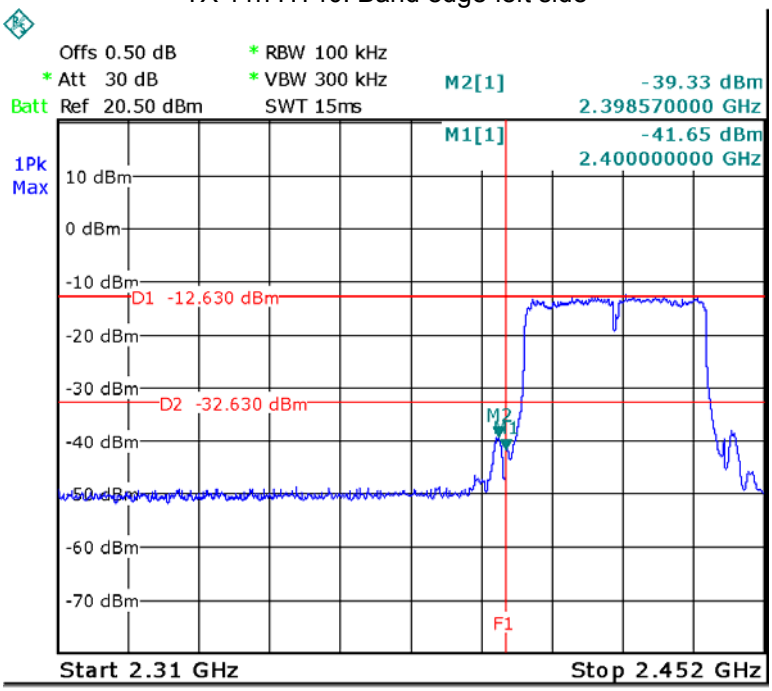
TX 11n HT20: Band edge-left side



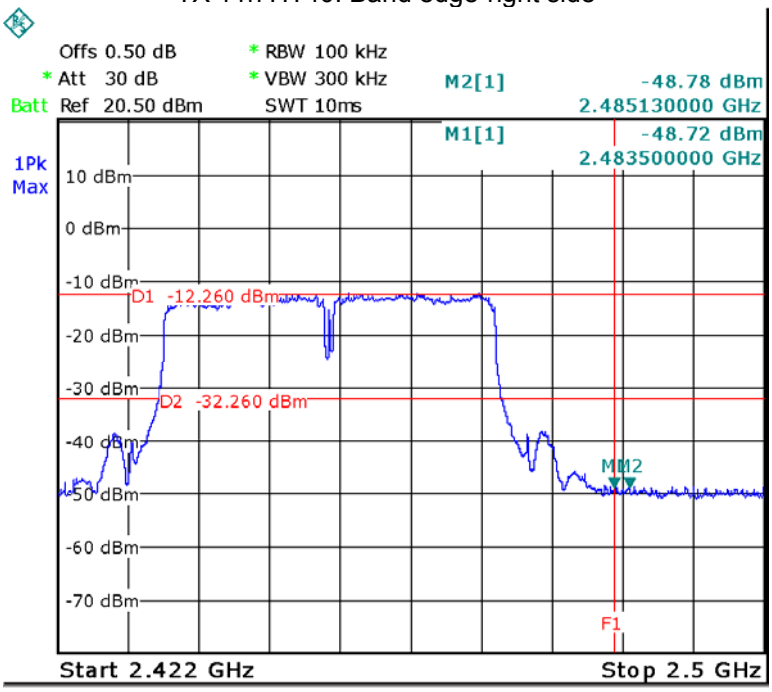

TX 11n HT20: Band edge-right side



TX 11n HT40: Band edge-left side




TX 11n HT40: Band edge-right side



# 9 6 dB Bandwidth Measurement

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: 558074 D01 DTS Meas Guidance v03r04 January 7, 2016

## 9.1 Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;

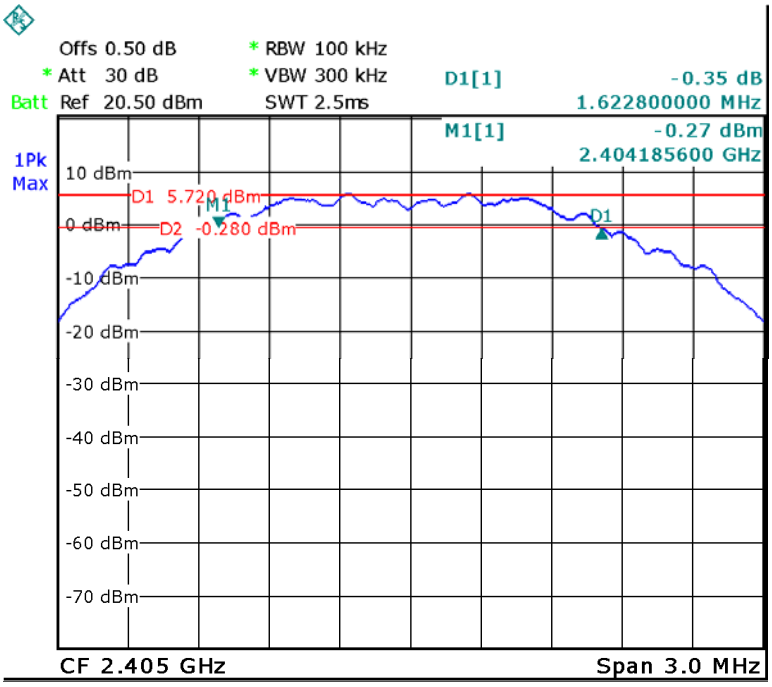
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz

## 9.2 Test Result:

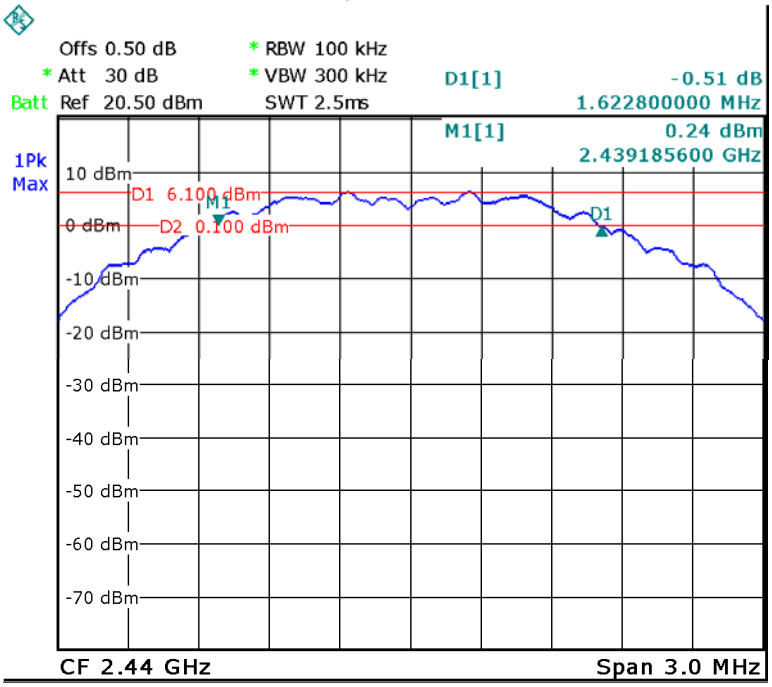
| Operation mode | Bandwidth (MHz) | | |
|---|---|---|---|
| TX O-QPSK | Low Channel | Middle Channel | High Channel |
| | 1.623 | 1.623 | 1.623 |
| TX 11b | Low Channel | Middle Channel | High Channel |
| | 10.060 | 10.060 | 10.060 |
| TX 11g | Low Channel | Middle Channel | High Channel |
| | 16.617 | 16.617 | 16.617 |
| TX 11n HT20 | Low Channel | Middle Channel | High Channel |
| | 17.838 | 17.838 | 17.838 |
| TX 11n HT40 | Low Channel | Middle Channel | High Channel |
| | 36.560 | 36.560 | 36.560 |

Test result plot as follows:

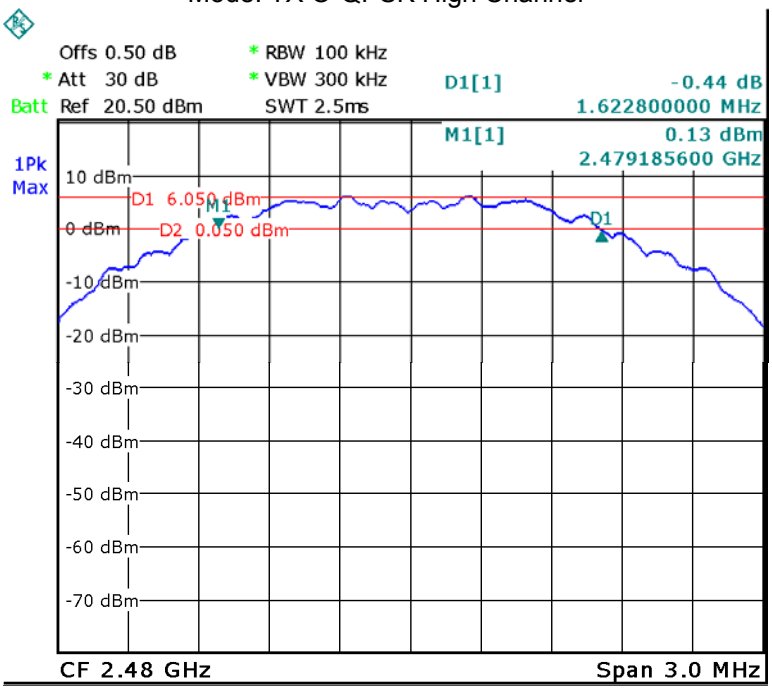
Mode: TX O-QPSK Low Channel



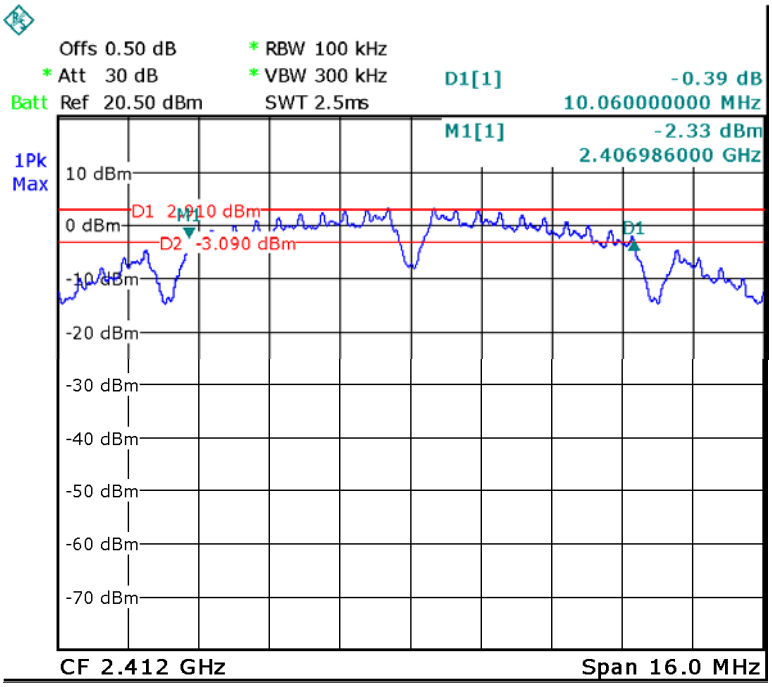

Mode: TX O-QPSK Middle Channel



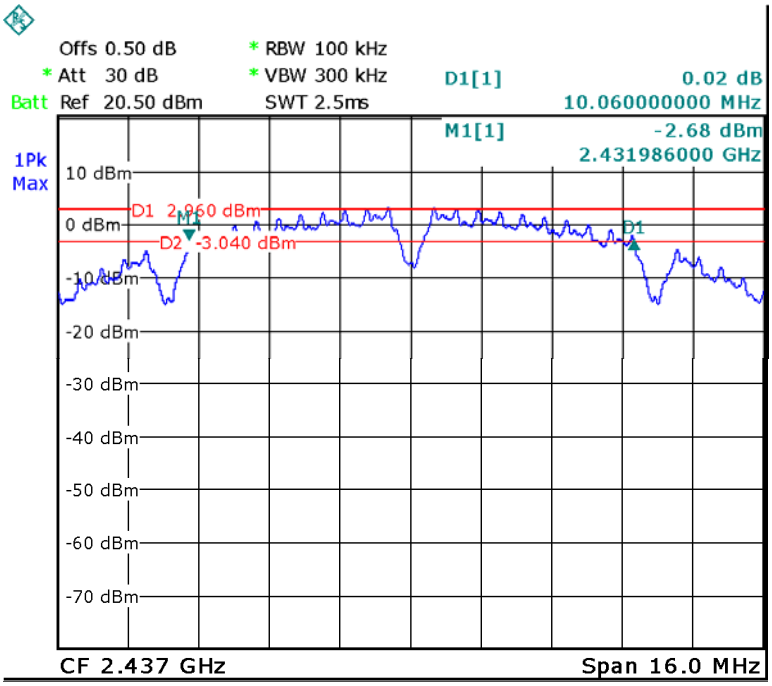
Mode: TX O-QPSK High Channel



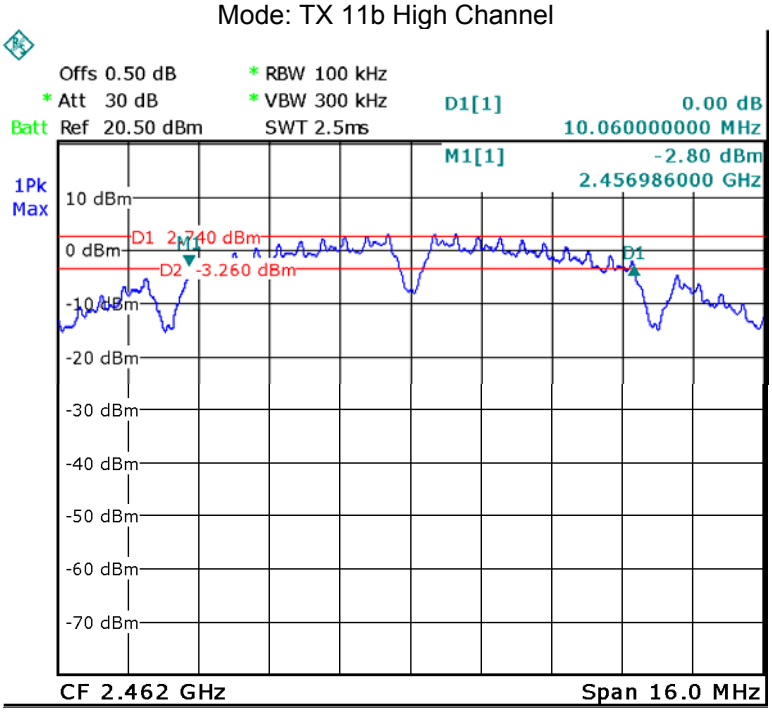

Mode: TX 11b Low Channel



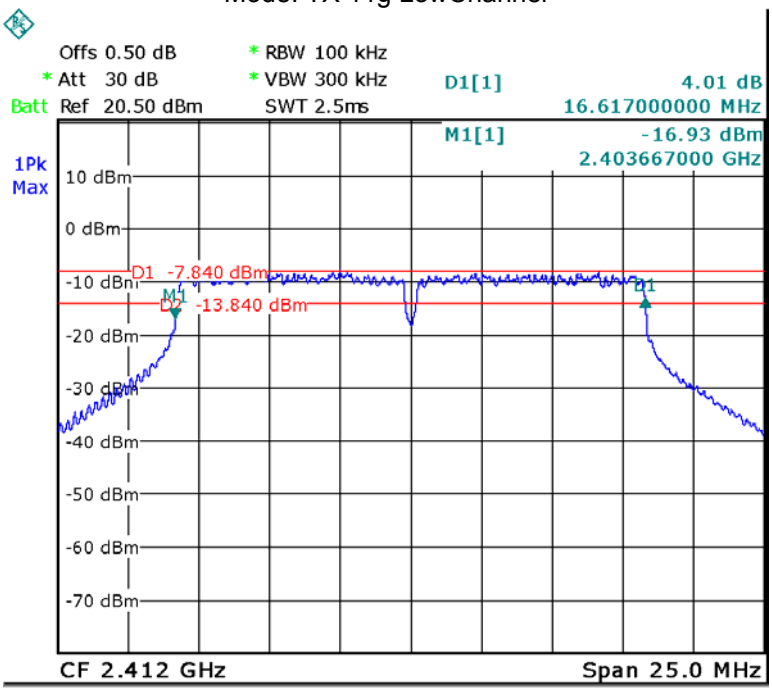
Mode: TX 11b Middle Channel



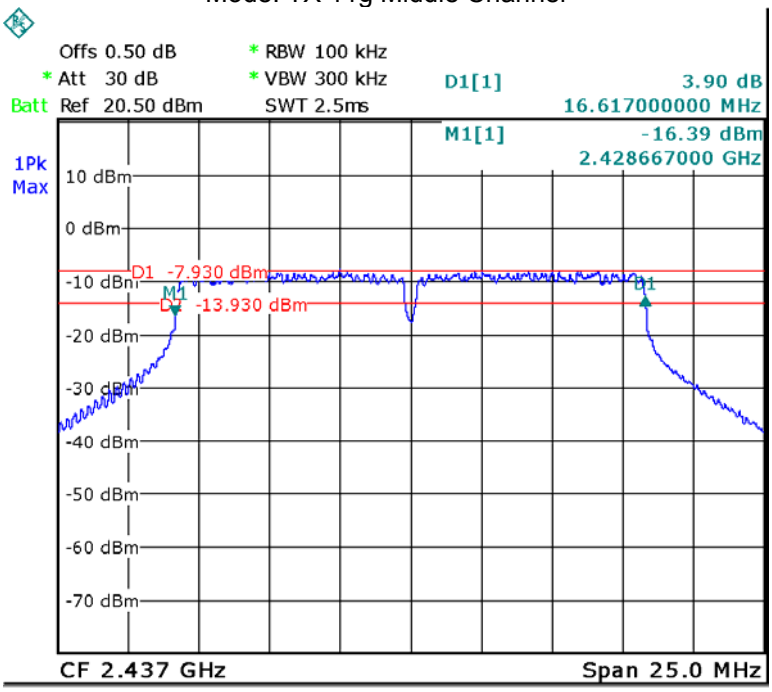

Mode: TX 11b High Channel



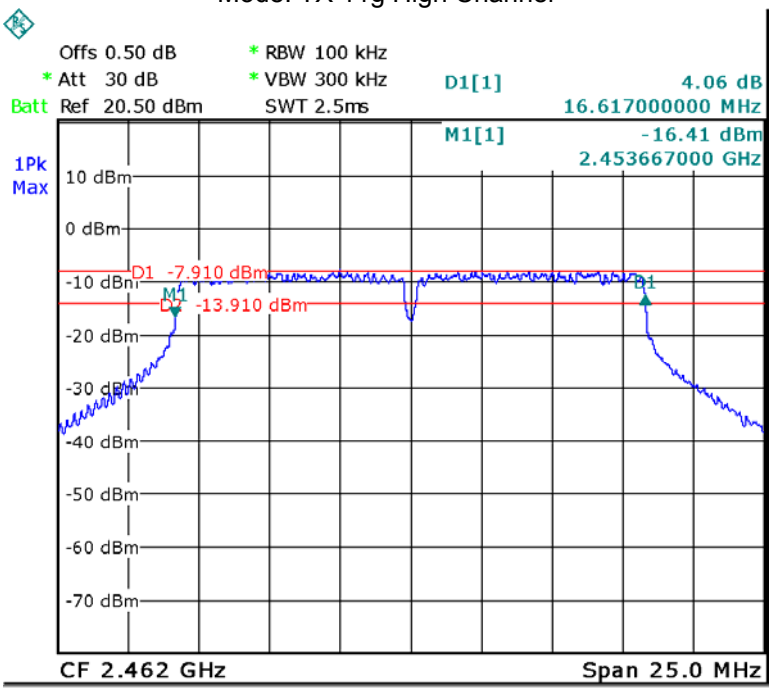
Mode: TX 11g LowChannel



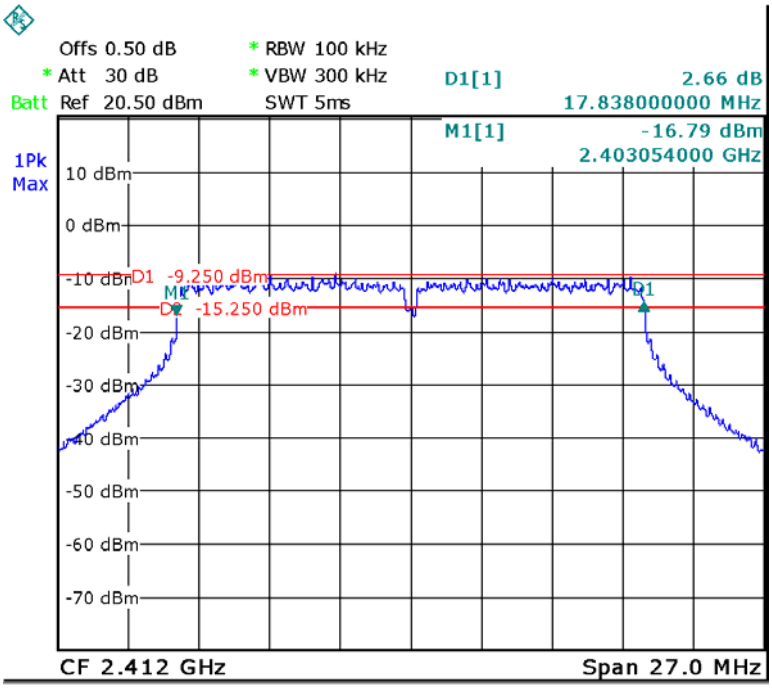

Mode: TX 11g Middle Channel



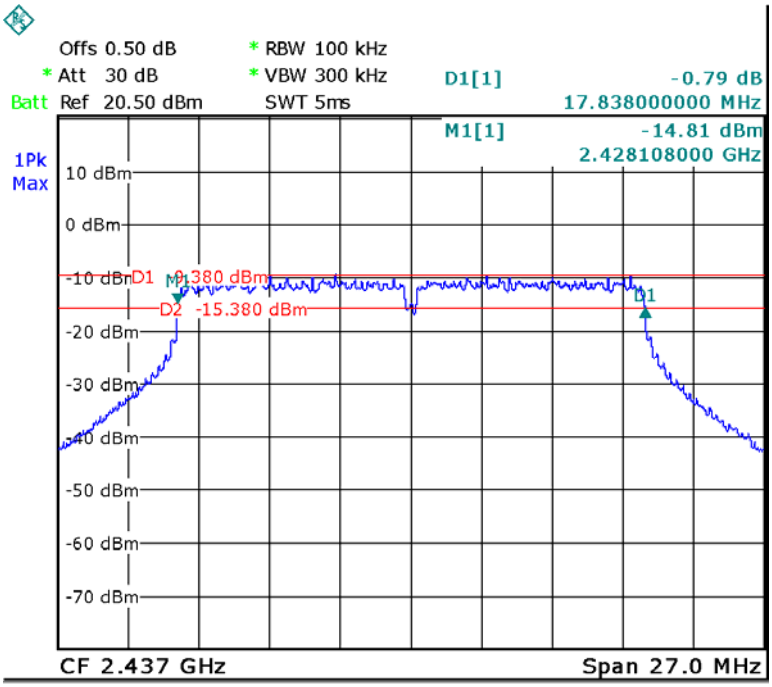
Mode: TX 11g High Channel



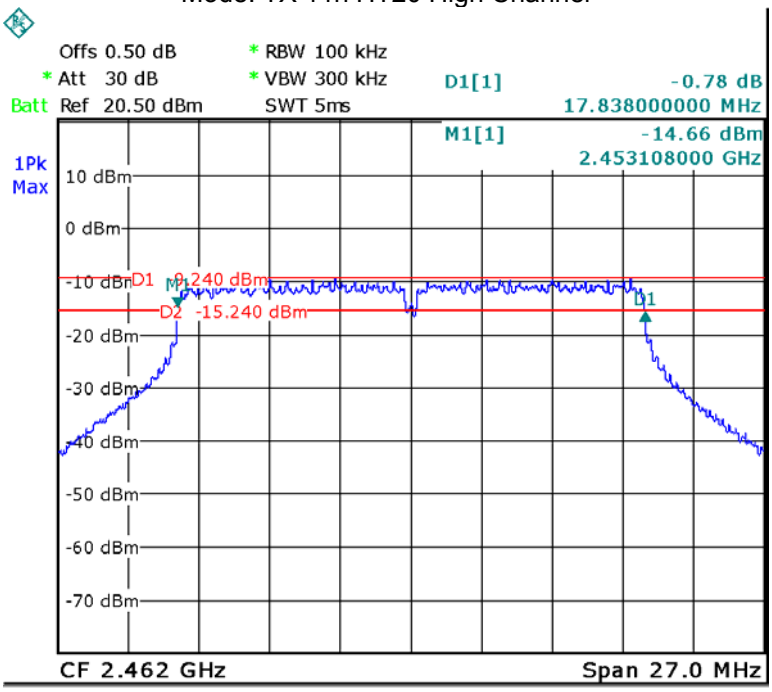

Mode: TX 11n HT20 Low Channel



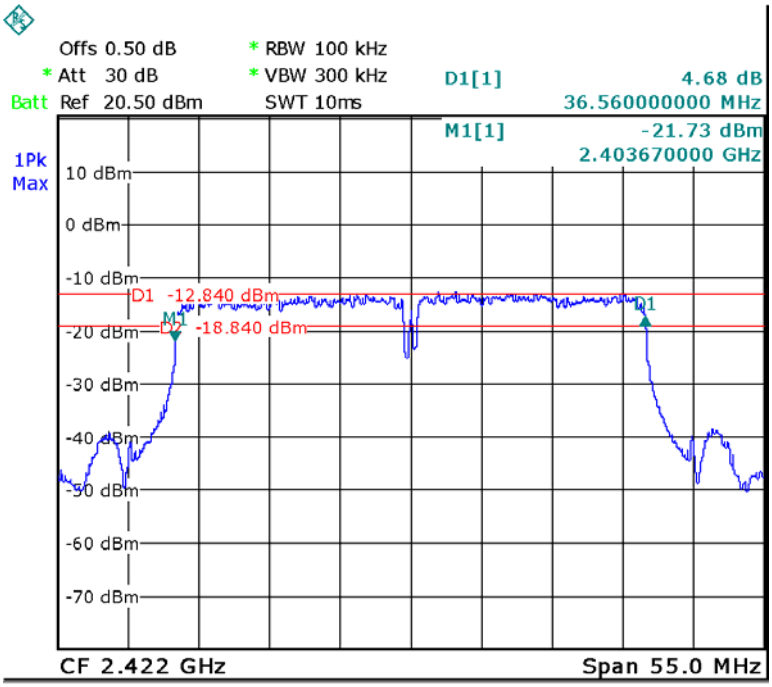
Mode: TX 11n HT20 Middle Channel



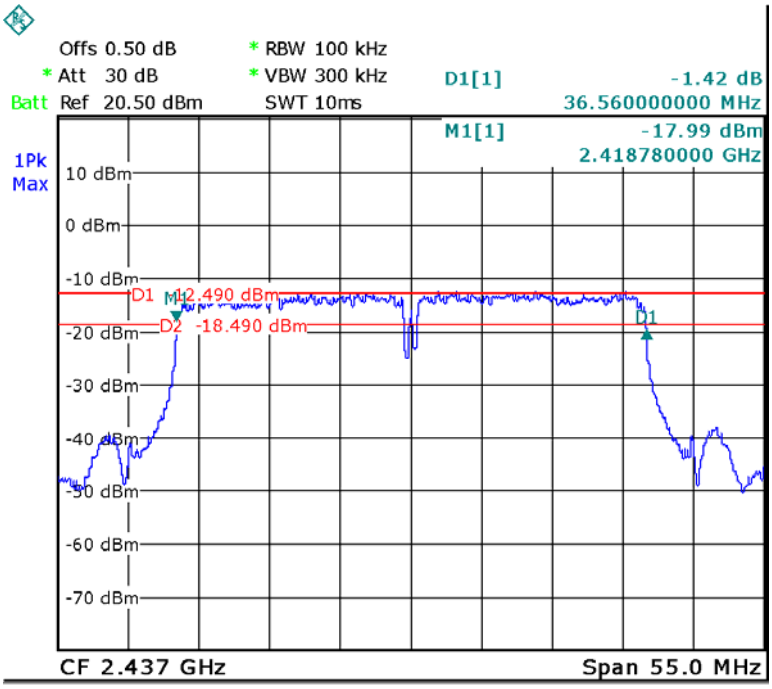

Mode: TX 11n HT20 High Channel



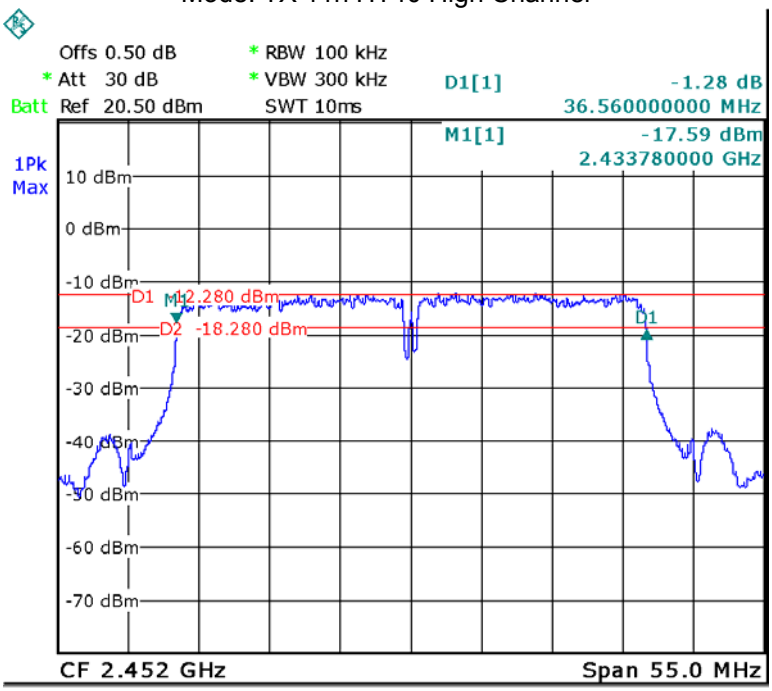
Mode: TX 11n HT40 Low Channel




Mode: TX 11n HT40 Middle Channel



Mode: TX 11n HT40 High Channel



# 10 Maximum Peak Output Power

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: 558074 D01 DTS Meas Guidance v03r04 January 7, 2016

## 10.1 Test Procedure:

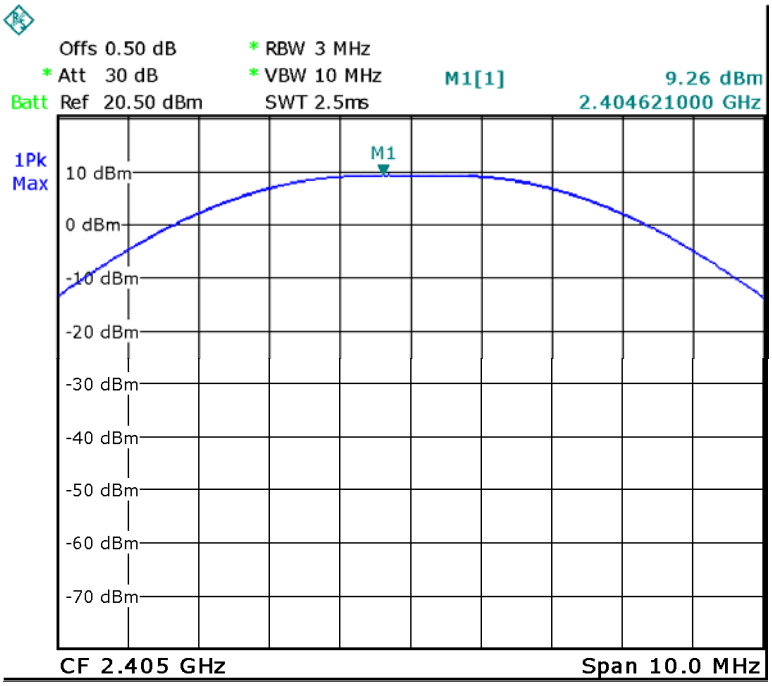
KDB 558074 D01 DTS Meas Guidance v03r04

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 1MHz(WIFI)/3MHz(ZigBee),VBW =3MHz(WIFI)/10MHz(ZigBee). Sweep = auto; Detector Function = Peak, Set the span to fully encompass the DTS bandwidth.
3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

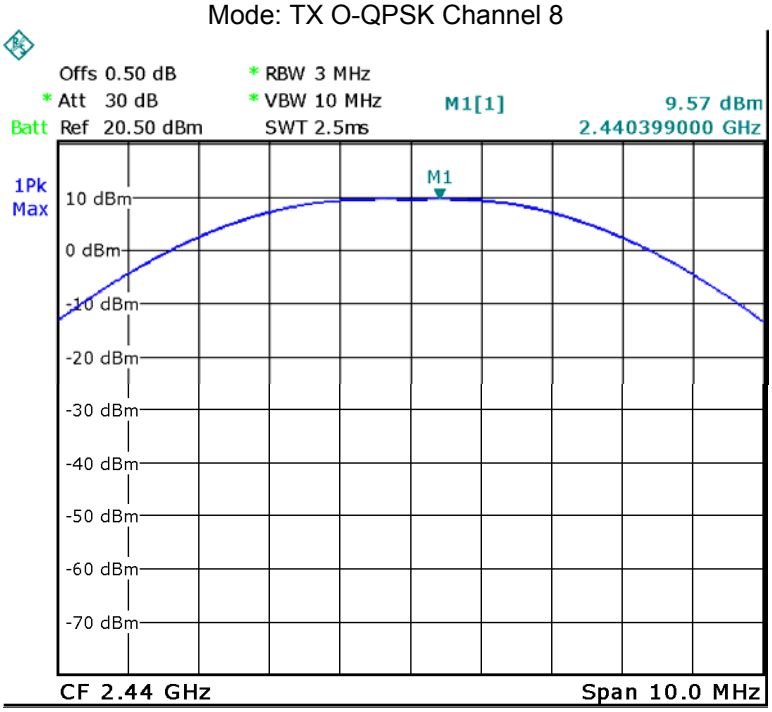
## 10.2 Test Result:

| Test mode :TX O-QPSK | | |
|---|---|---|
| Maximum Peak Output Power (dBm) | | |
| 2405MHz | 2440MHz | 2480MHz |
| 9.26 | 9.57 | 9.67 |
| Limit: 1W/30dBm | | |
| Test mode : TX 11b | | |
| Maximum Peak Output Power (dBm) | | |
| 2412MHz | 2437MHz | 2462MHz |
| 16.28 | 16.08 | 16.04 |
| Limit: 1W/30dBm | | |
| Test mode : TX 11g | | |
| Maximum Peak Output Power (dBm) | | |
| 2412MHz | 2437MHz | 2462MHz |
| 14.03 | 14.11 | 14.24 |
| Limit: 1W/30dBm | | |
| Test mode : TX 11n HT20 | | |
| Maximum Peak Output Power (dBm) | | |
| 2412MHz | 2437MHz | 2462MHz |
| 13.03 | 13.08 | 13.07 |
| Limit: 1W/30dBm | | |
| Test mode : TX 11n HT40 | | |
| Maximum Peak Output Power (dBm) | | |
| 2422MHz | 2437MHz | 2452MHz |
| 13.04 | 13.17 | 13.23 |
| Limit: 1W/30dBm | | |

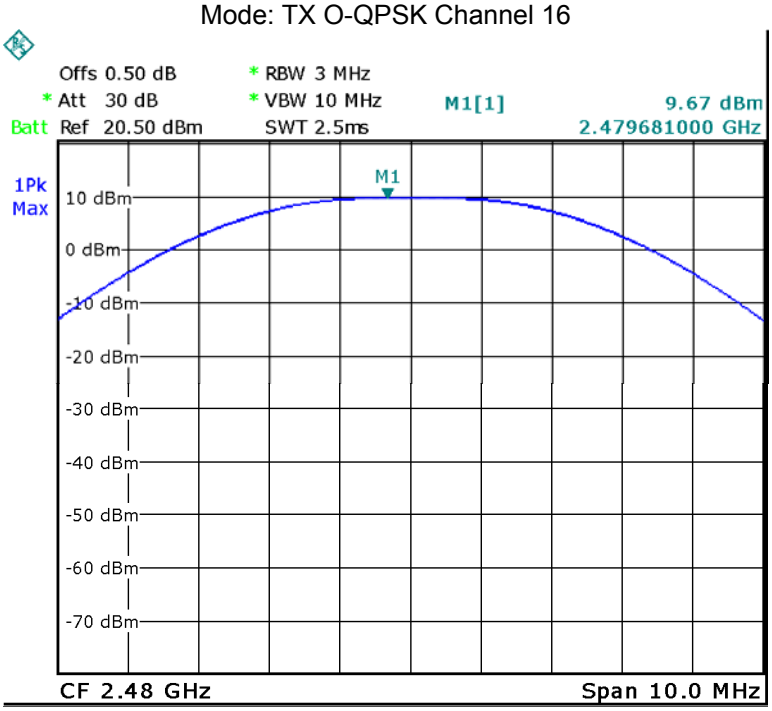
Mode: TX O-QPSK Channel 1



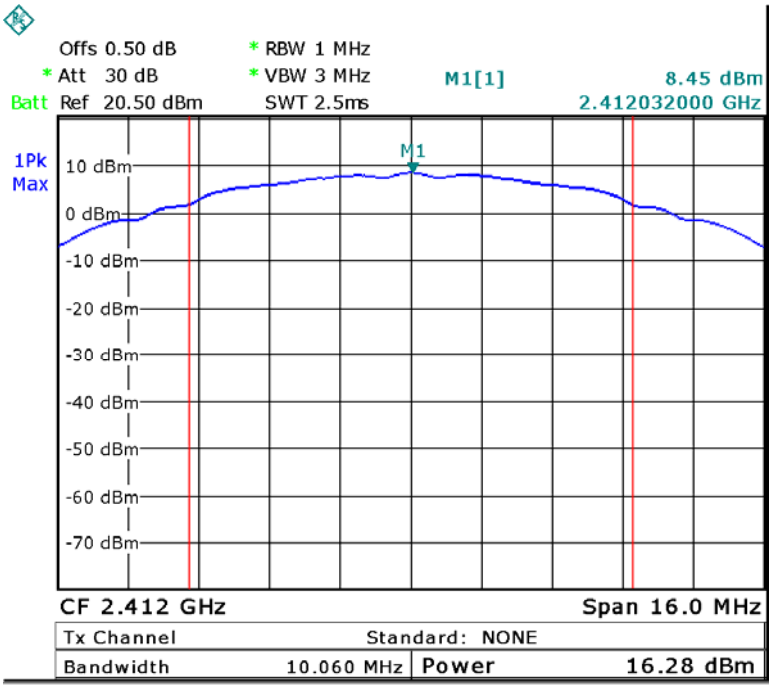

Mode: TX O-QPSK Channel 8



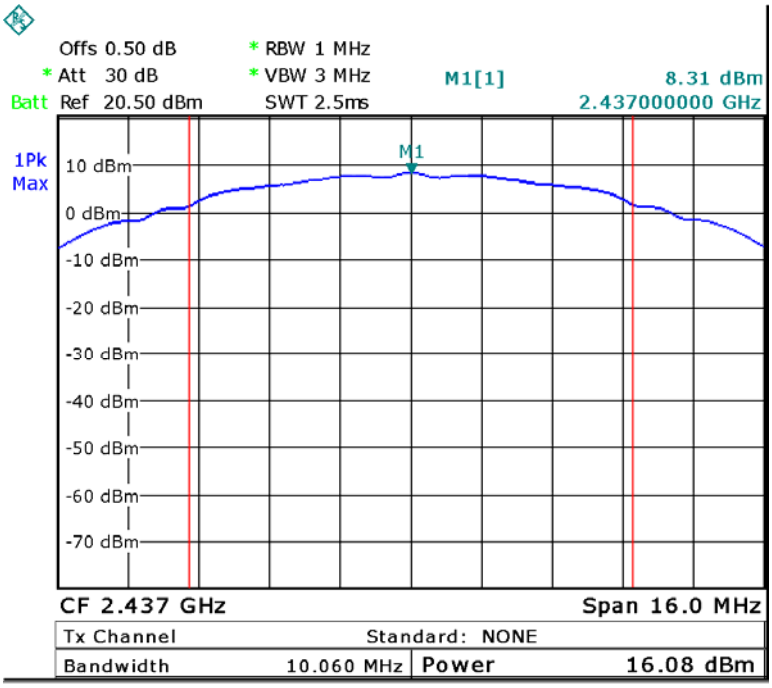
Mode: TX O-QPSK Channel 16



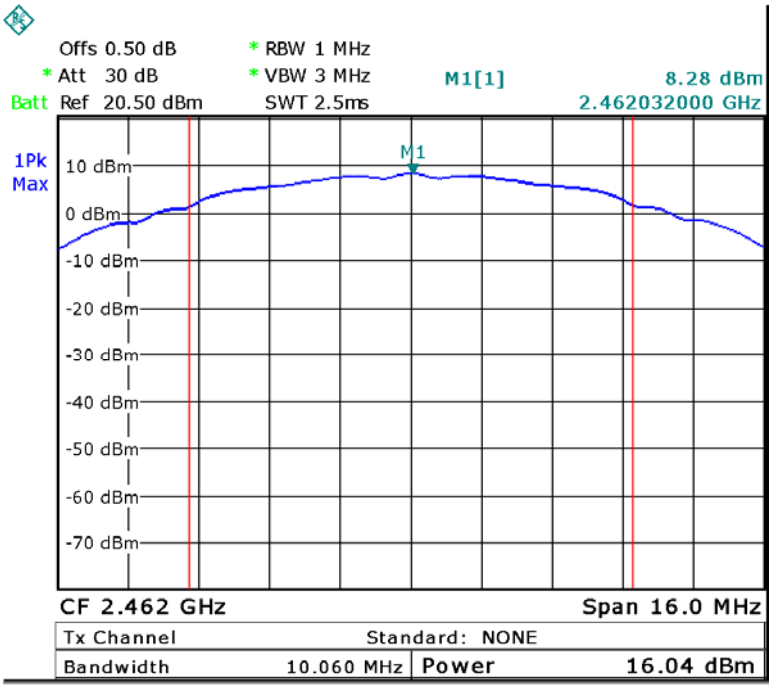

Mode: TX 11b channel 1



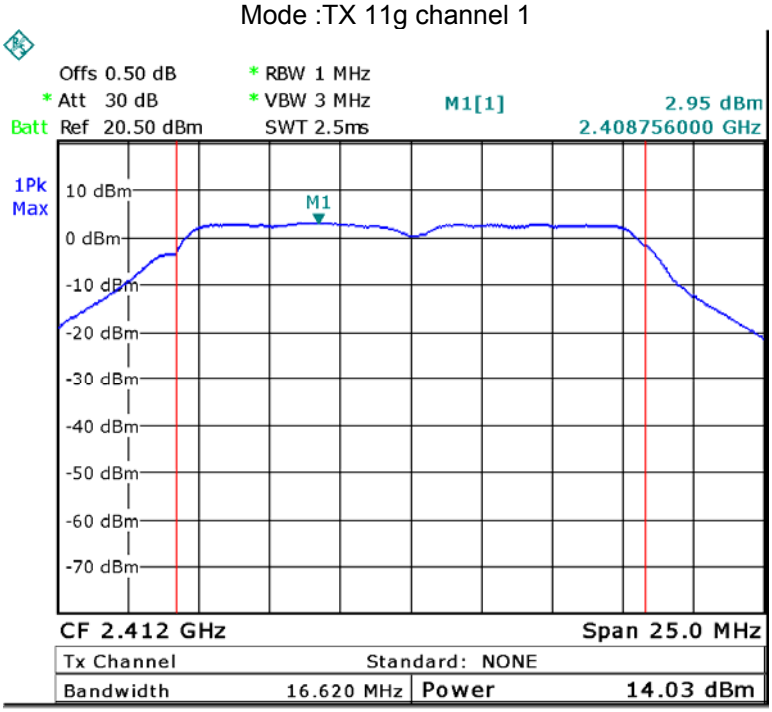
Mode: TX 11b channel 6



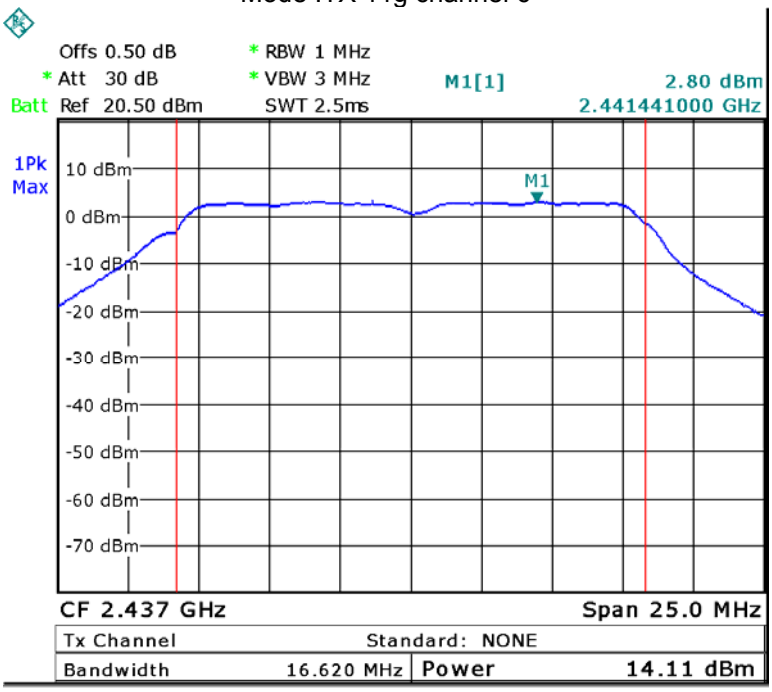

Mode: TX 11b channel 11



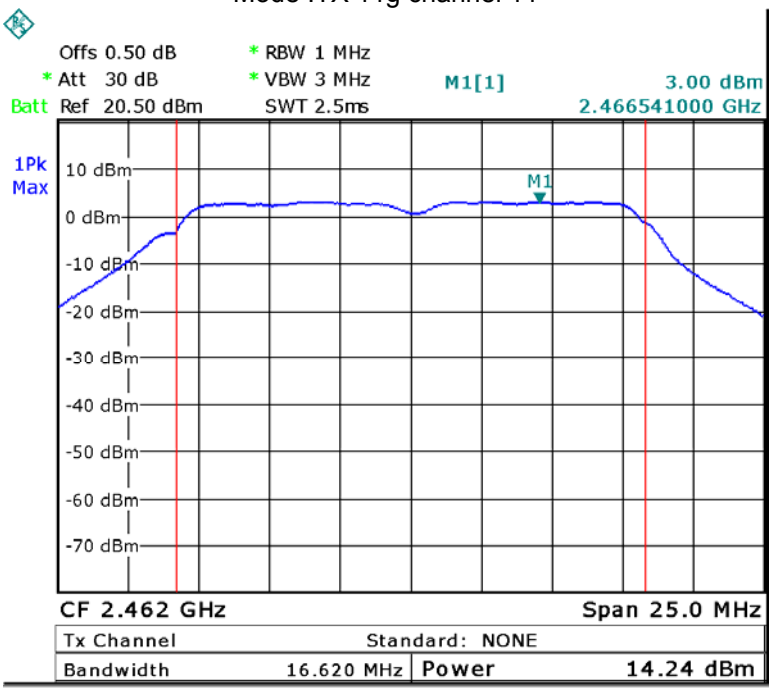
Mode :TX 11g channel 1



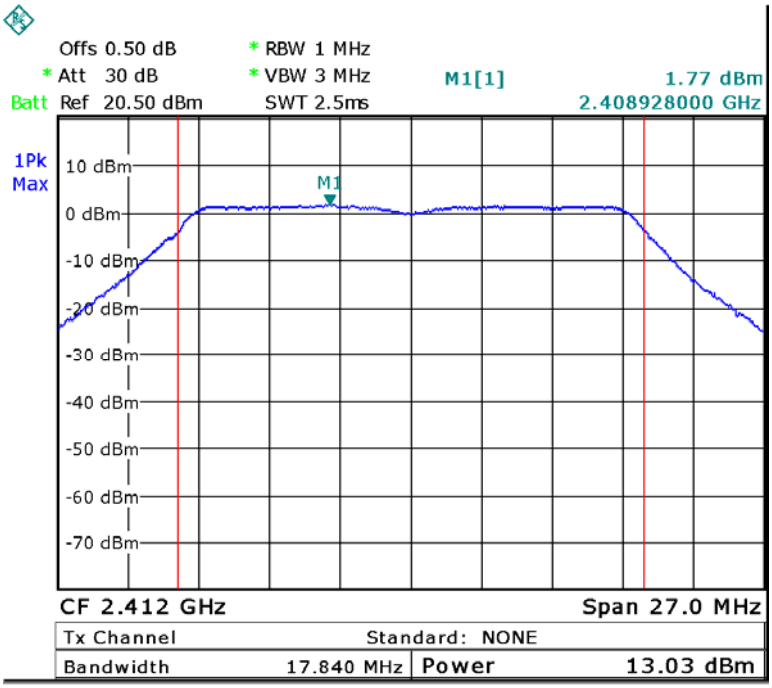

Mode :TX 11g channel 6



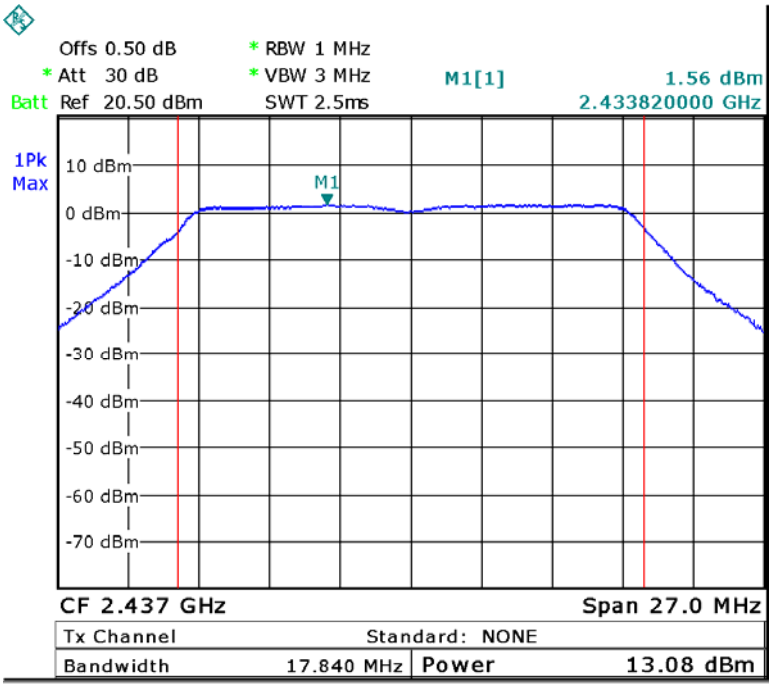
Mode :TX 11g channel 11



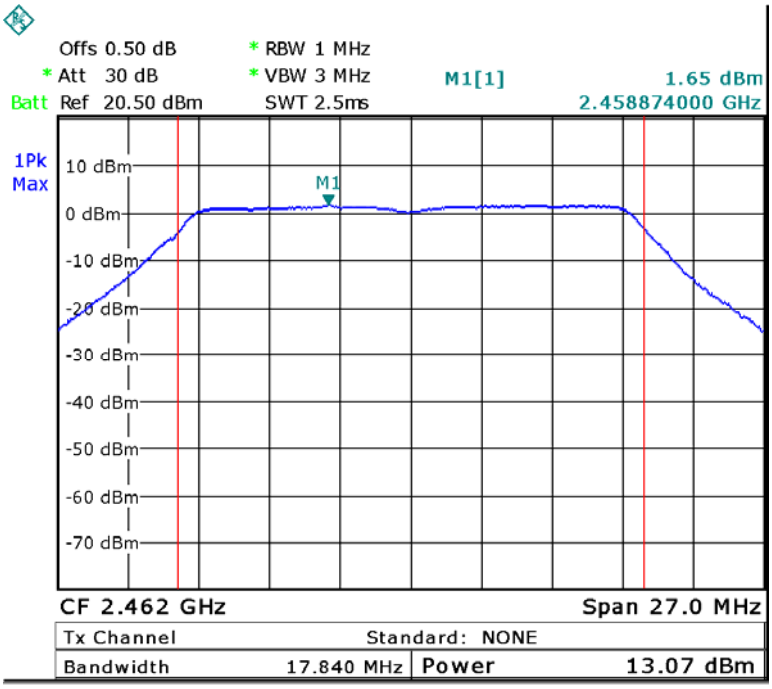

Mode: TX 11n HT20 channel 1



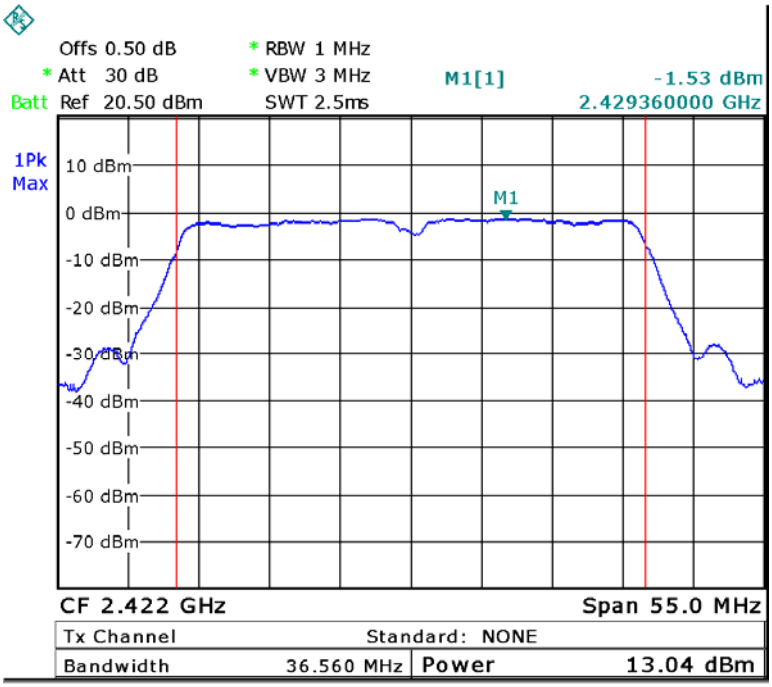
Mode: TX 11n HT20 channel 6



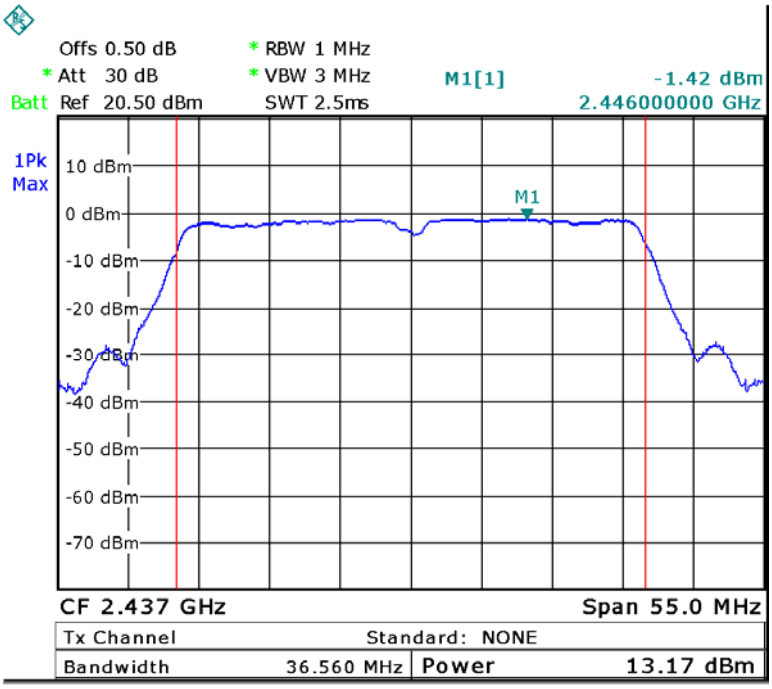

Mode: TX 11n HT20 channel 11



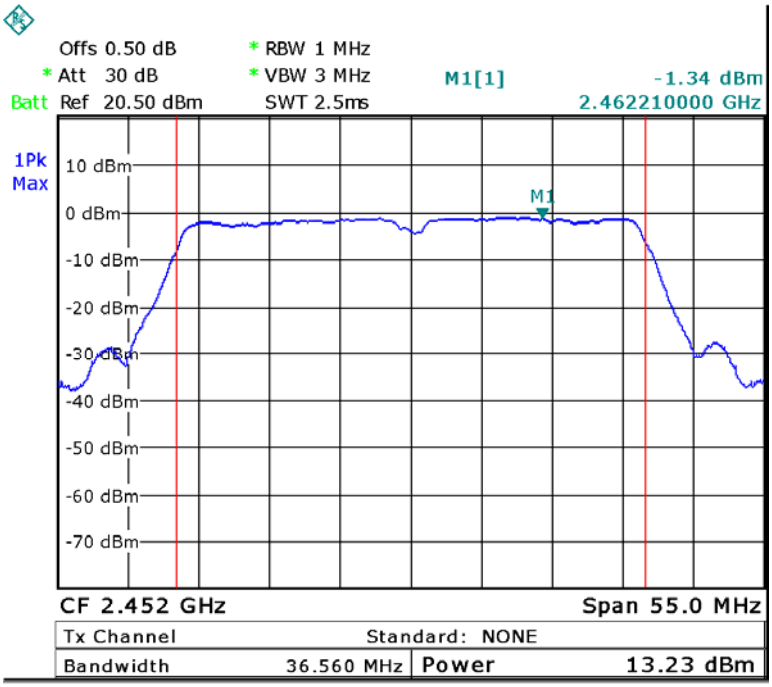
Mode: TX 11n HT40 channel 3




Mode: TX 11n HT40 channel 6



Mode: TX 11n HT40 channel 9



# 11 Power Spectral density

Test Requirement: FCC CFR47 Part 15 Section 15.247

Test Method: 558074 D01 DTS Meas Guidance v03r04 January 7, 2016

## 11.1 Test Procedure:

KDB 558074 D01 DTS Meas Guidance v03r04 section 10.2

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

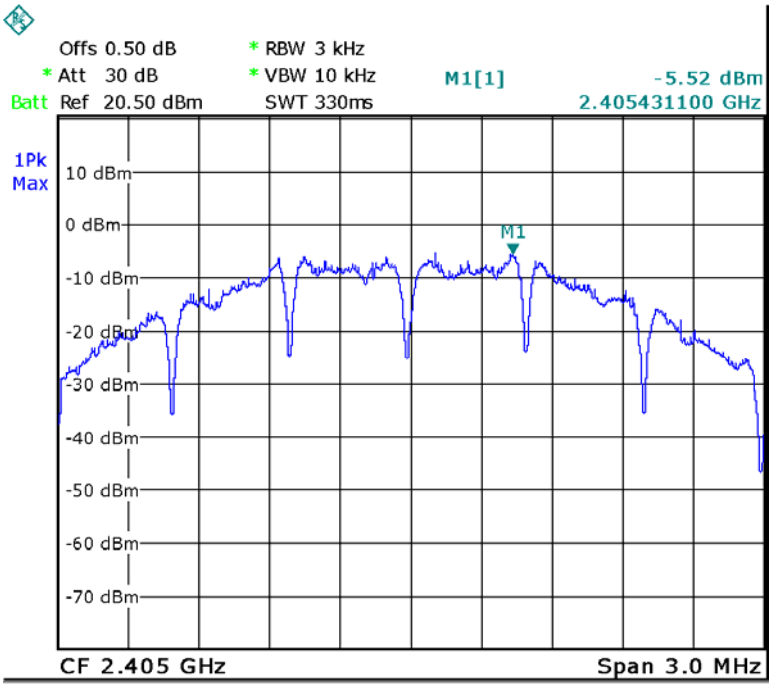
2. Set the spectrum analyzer: RBW = 3kHz. VBW = 10kHz , Span = 1.5 times the DTS channel bandwidth(6 dB bandwidth). Sweep = auto; Detector Function = Peak. Trace = Max hold.

3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

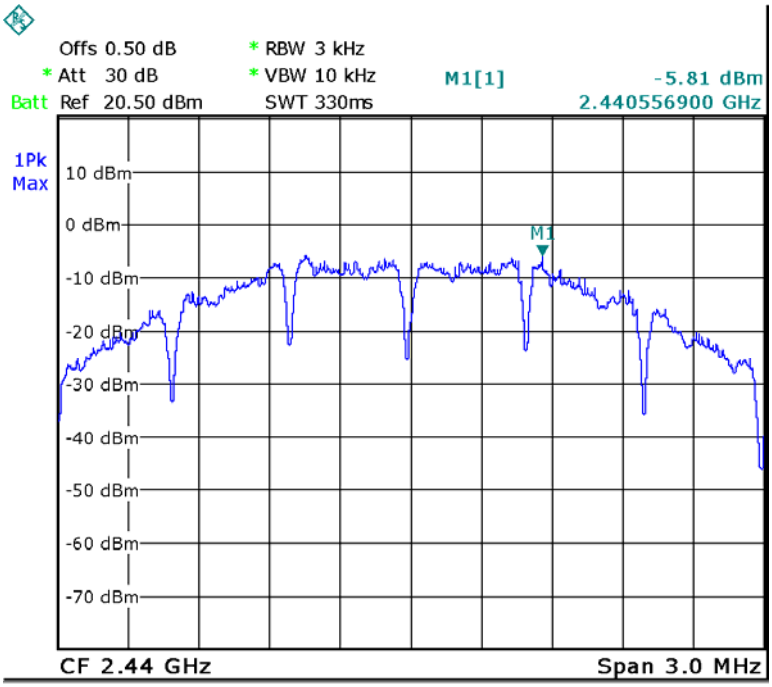
## 11.2 Test Result:

| Test mode : TX O-QPSK | | |
|---|---|---|
| Power Spectral (dBm per 3kHz) | | |
| Low Channel | Middle Channel | High Channel |
| -5.52 | -5.81 | -5.41 |
| Limit: 8dBm per 3kHz | | |
| Test mode : TX 11b | | |
| Power Spectral (dBm per 3kHz) | | |
| Low Channel | Middle Channel | High Channel |
| -17.02 | -17.43 | -17.41 |
| Limit: 8dBm per 3kHz | | |
| Test mode : TX 11g | | |
| Power Spectral (dBm per 3kHz) | | |
| Low Channel | Middle Channel | High Channel |
| -22.47 | -22.64 | -22.47 |
| Limit: 8dBm per 3kHz | | |
| Test mode : TX 11n HT20 | | |
| Power Spectral (dBm per 3kHz) | | |
| Low Channel | Middle Channel | High Channel |
| -19.06 | -18.92 | -18.16 |
| Limit: 8dBm per 3kHz | | |
| Test mode : TX 11n HT40 | | |
| Power Spectral (dBm per 3kHz) | | |
| Low Channel | Middle Channel | High Channel |
| -19.02 | -18.93 | -18.47 |
| Limit: 8dBm per 3kHz | | |

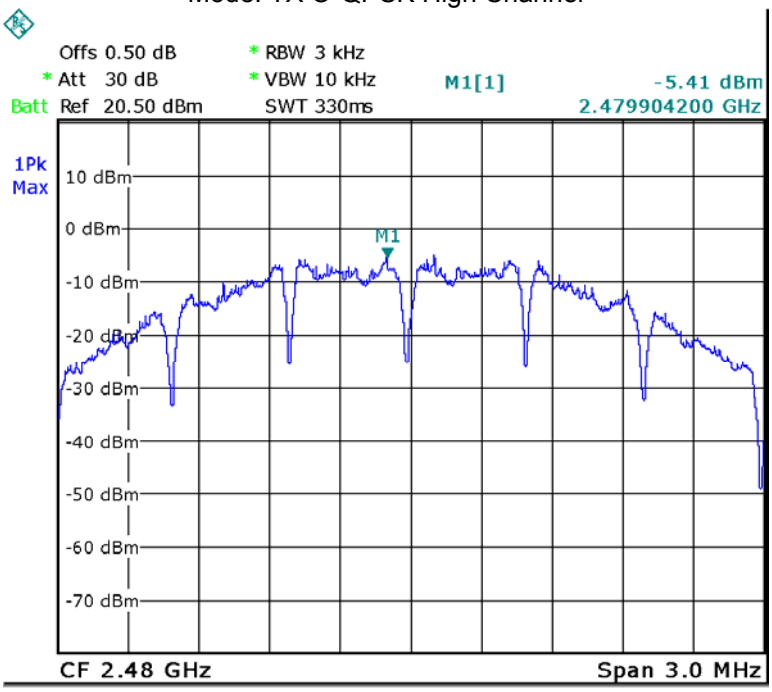
Mode: TX O-QPSK Low Channel



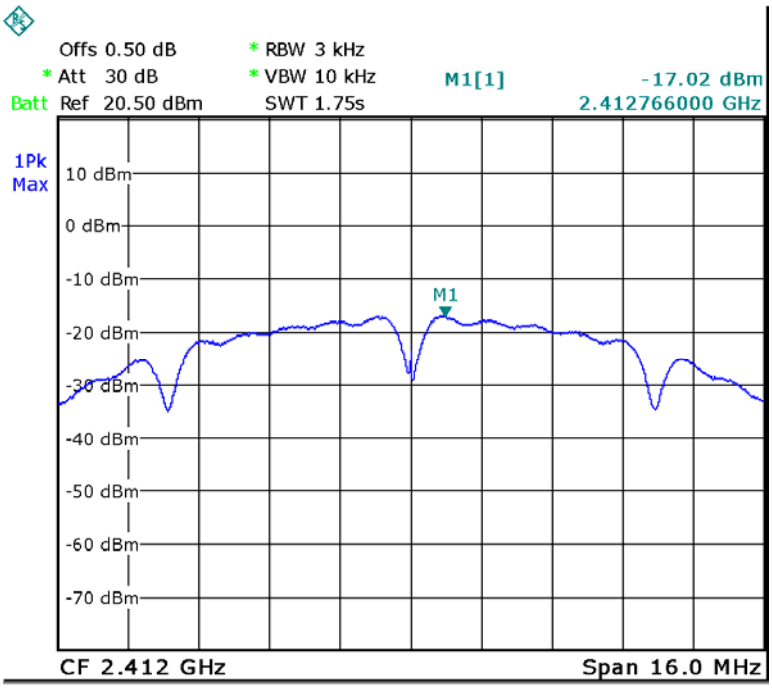

Mode: TX O-QPSK Middle Channel



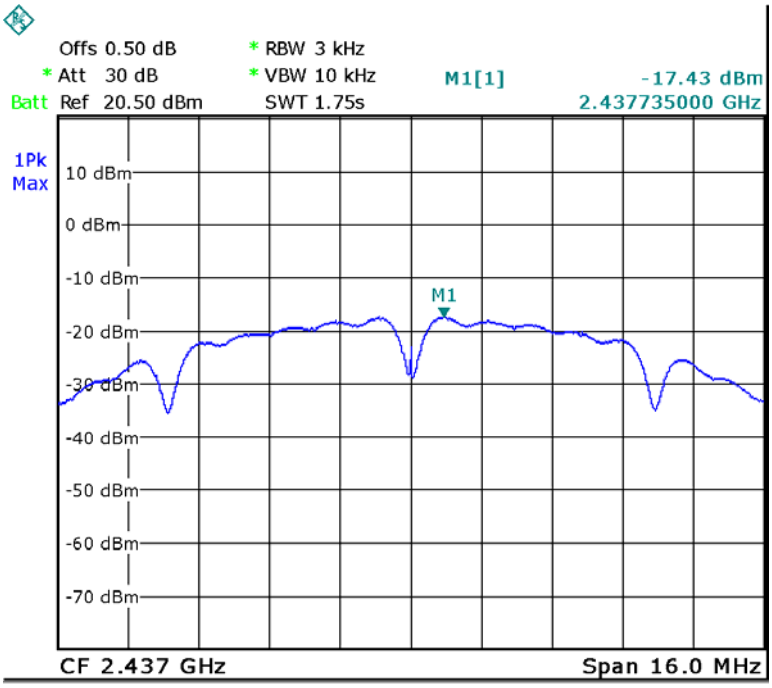
Mode: TX O-QPSK High Channel



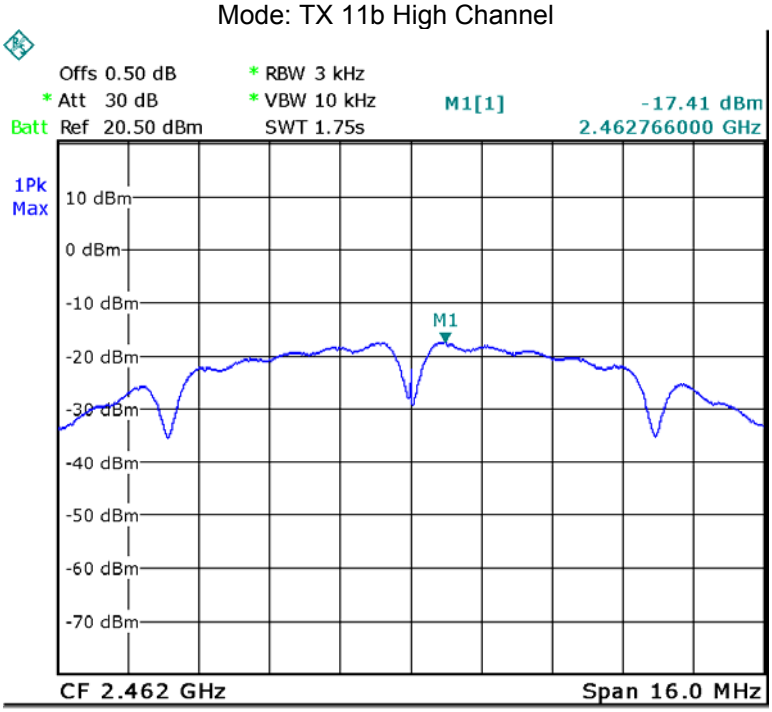

Mode: TX 11b Low Channel



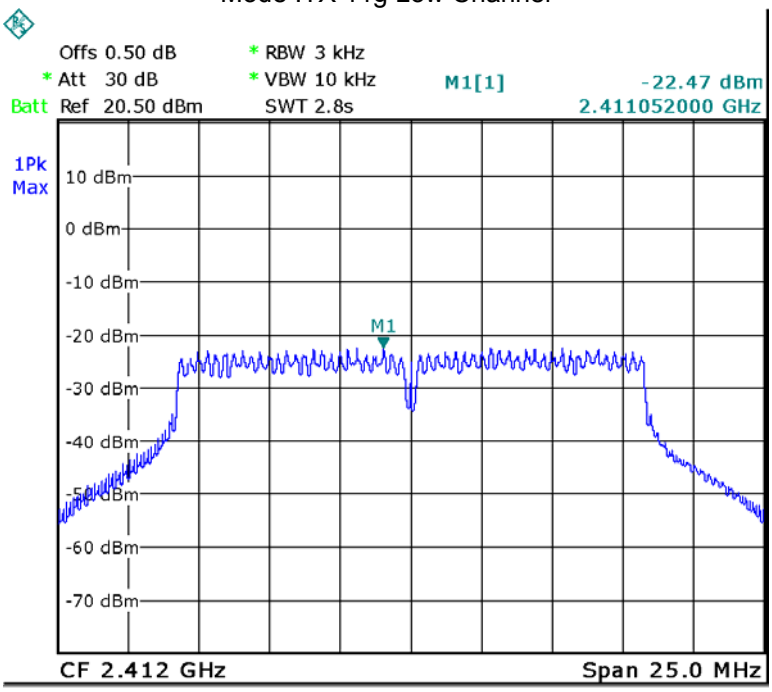
Mode: TX 11b Middle Channel



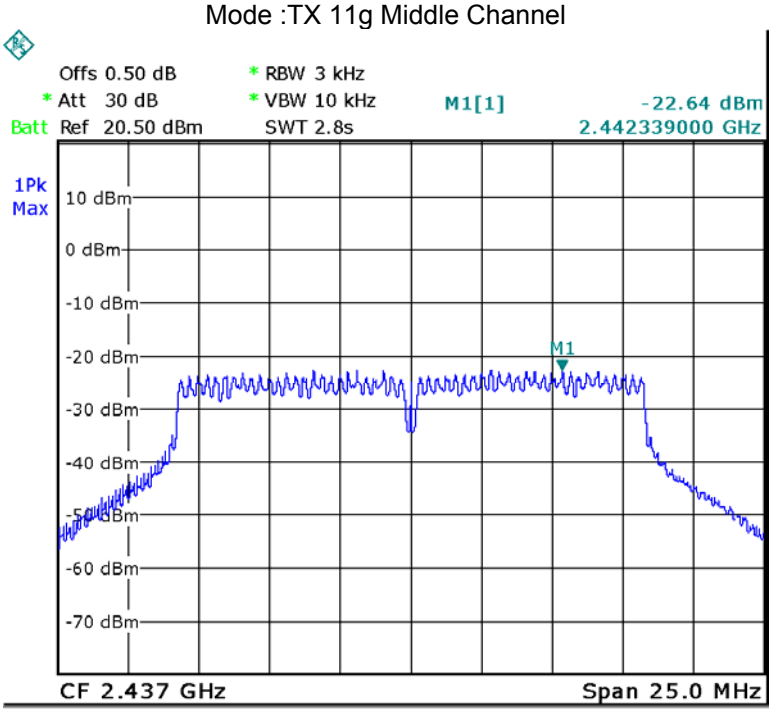

Mode: TX 11b High Channel



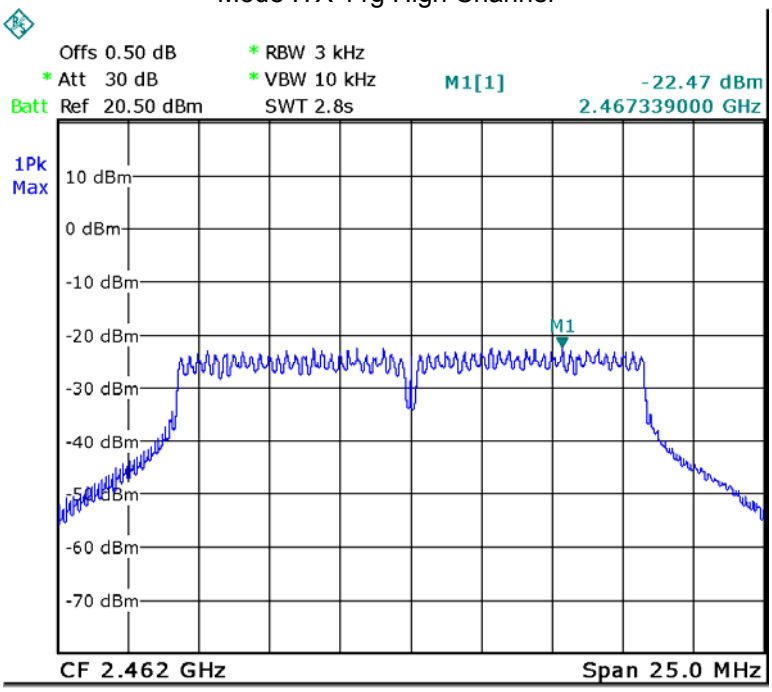
Mode :TX 11g Low Channel



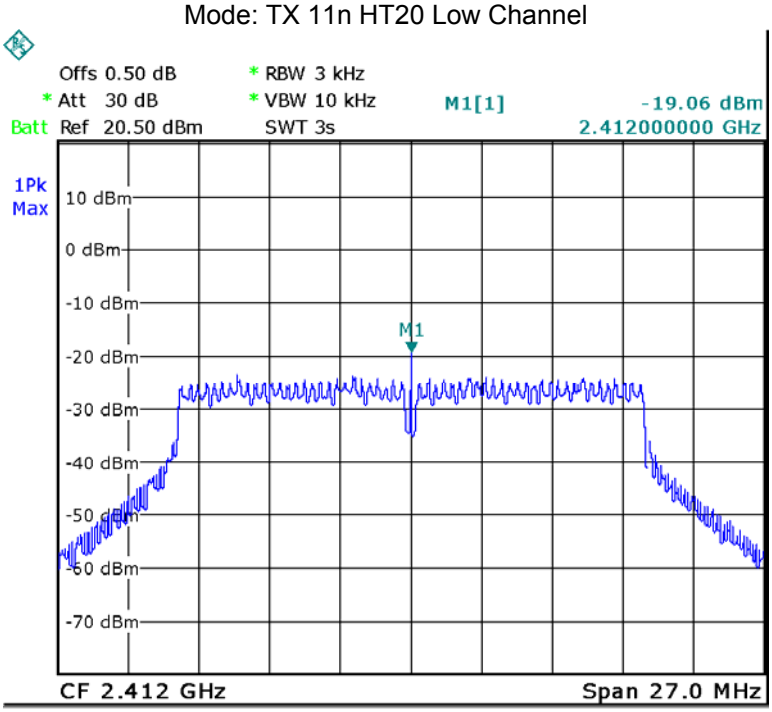

Mode :TX 11g Middle Channel



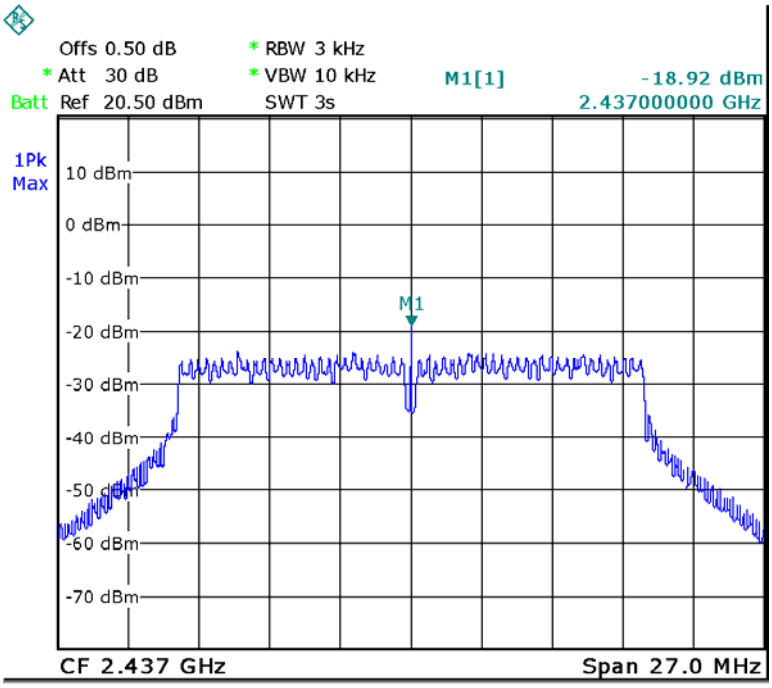
Mode :TX 11g High Channel



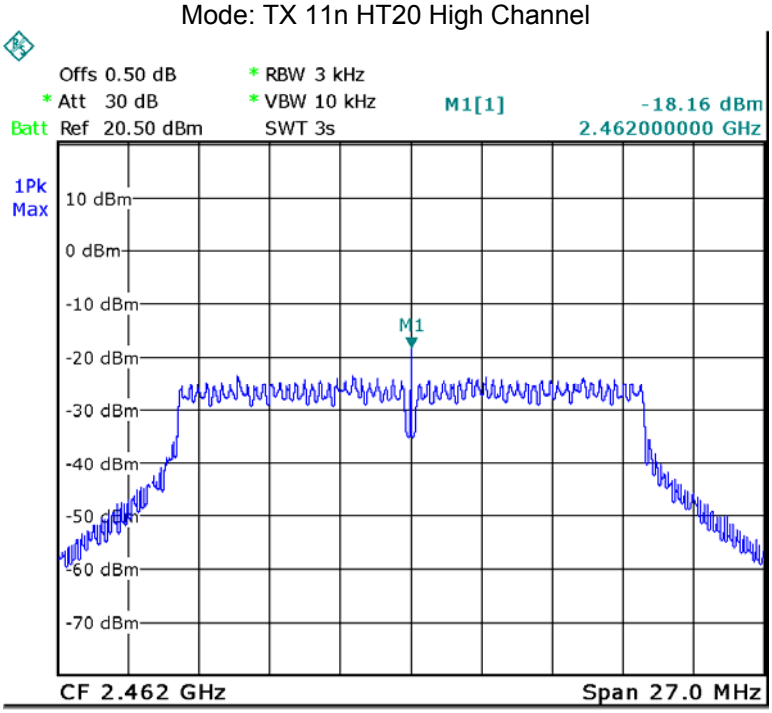

Mode: TX 11n HT20 Low Channel



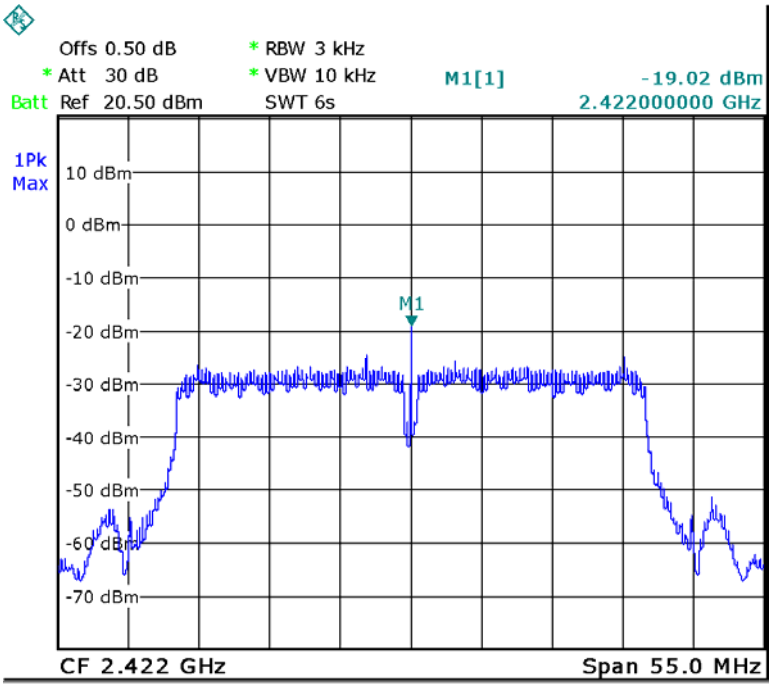
Mode: TX 11n HT20 Middle Channel



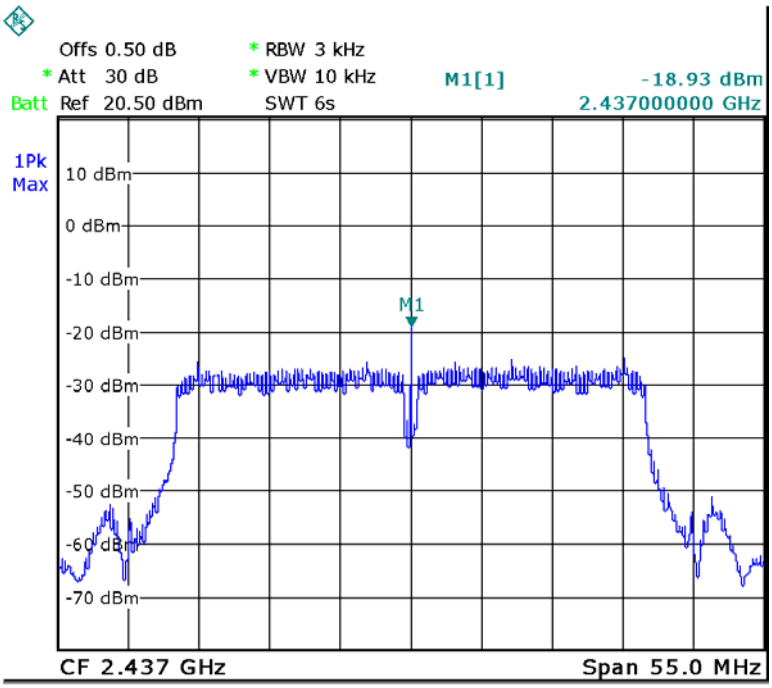

Mode: TX 11n HT20 High Channel



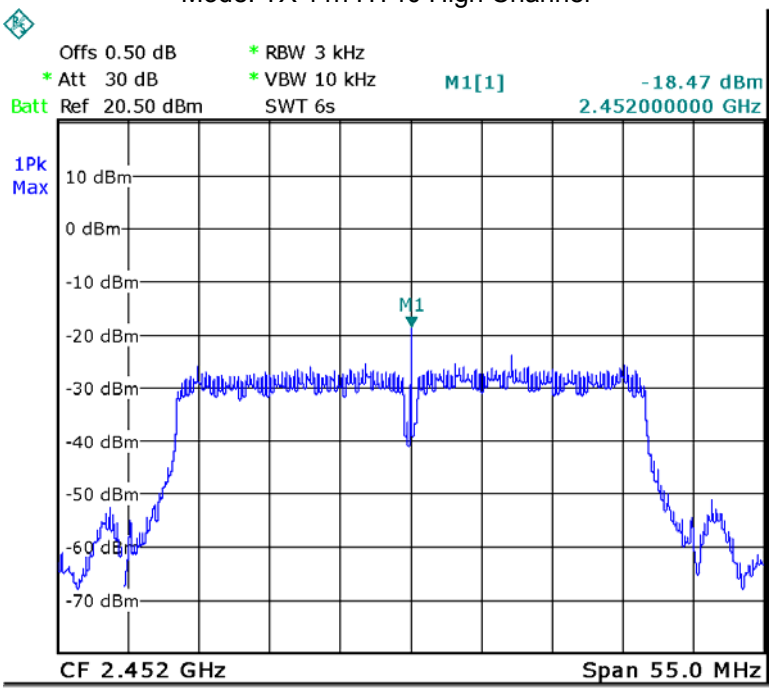
Mode: TX 11n HT40 Low Channel




Mode: TX 11n HT40 Middle Channel



Mode: TX 11n HT40 High Channel



# 12 Antenna Requirement

According to the FCC Part 15 Paragraph 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. This product has a Integrated Antenna for ZigBee and a Integrated Antenna for WIFI ,fulfill the requirement of this section.

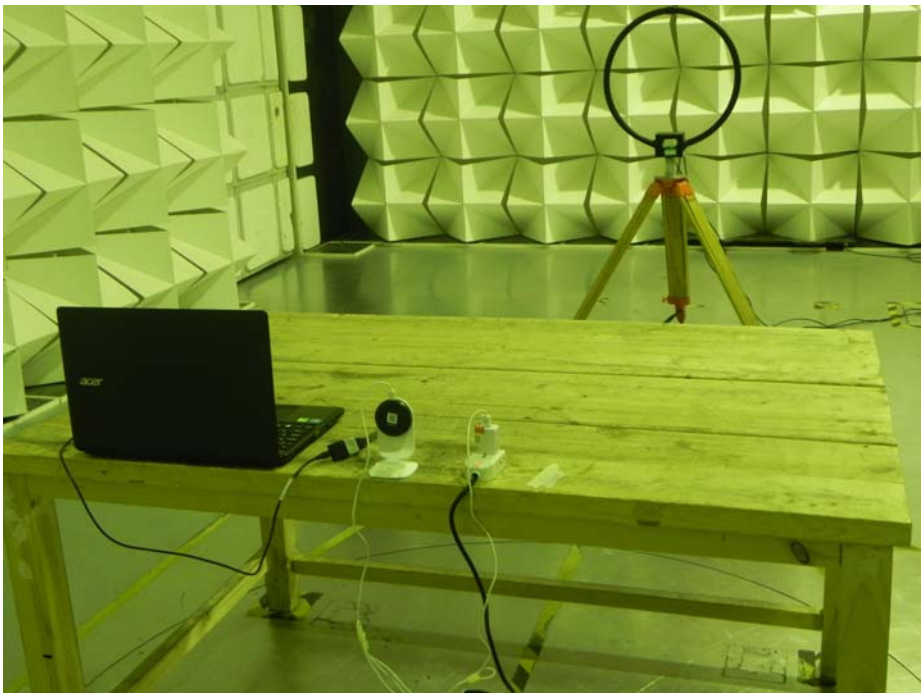
# 13 RF Exposure

Remark: refer to RF Exposure test report: WTS15S0933272-2E-RF Exposure.

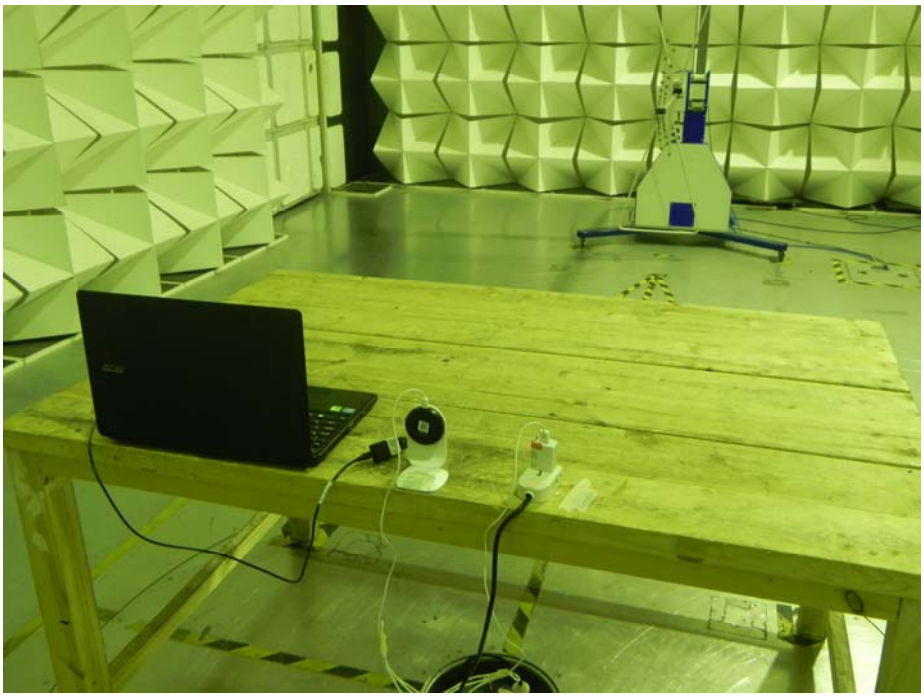
# 14 Photographs – Model WL-ZAVMDPW-C411121-06 Test Setup

## 14.1 Radiated Emission

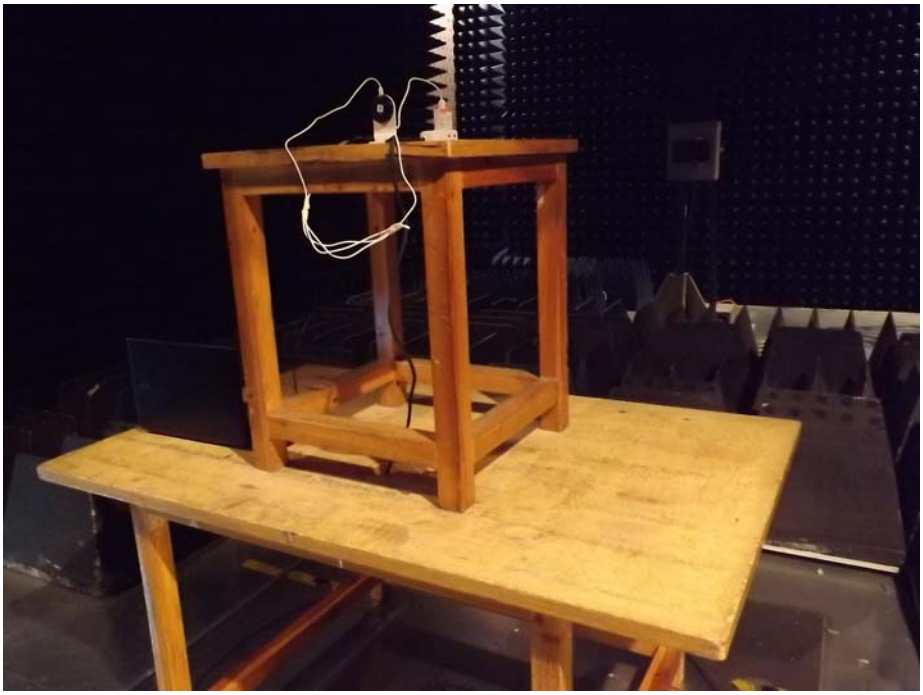
Test frequency 32.768kHz to 30MHz at Test Site 2#



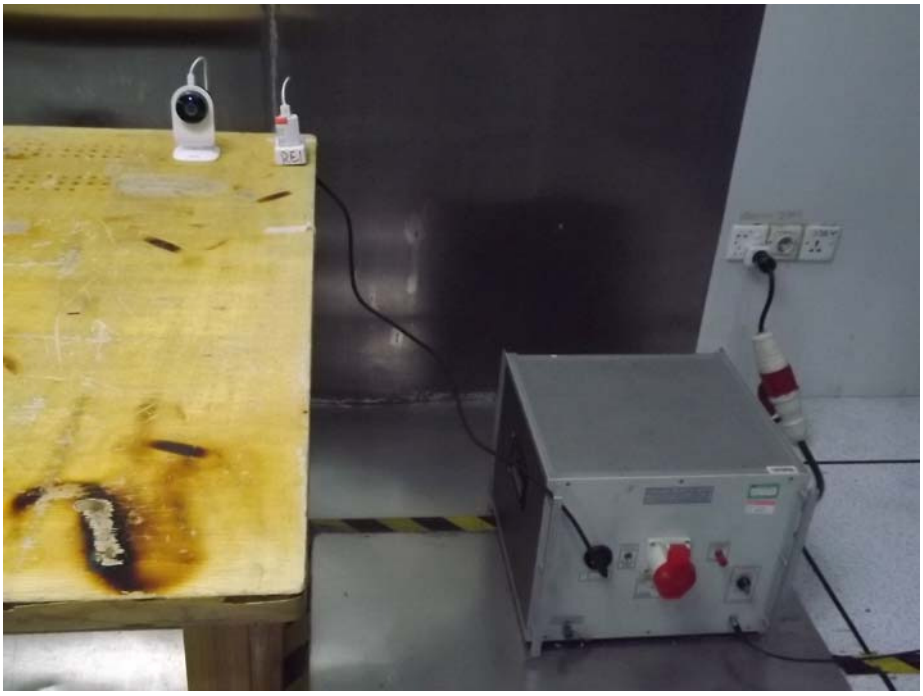
Test frequency from 30MHz to 1GHz at Test Site 2#



Test frequency above 1GHz at Test Site 1#



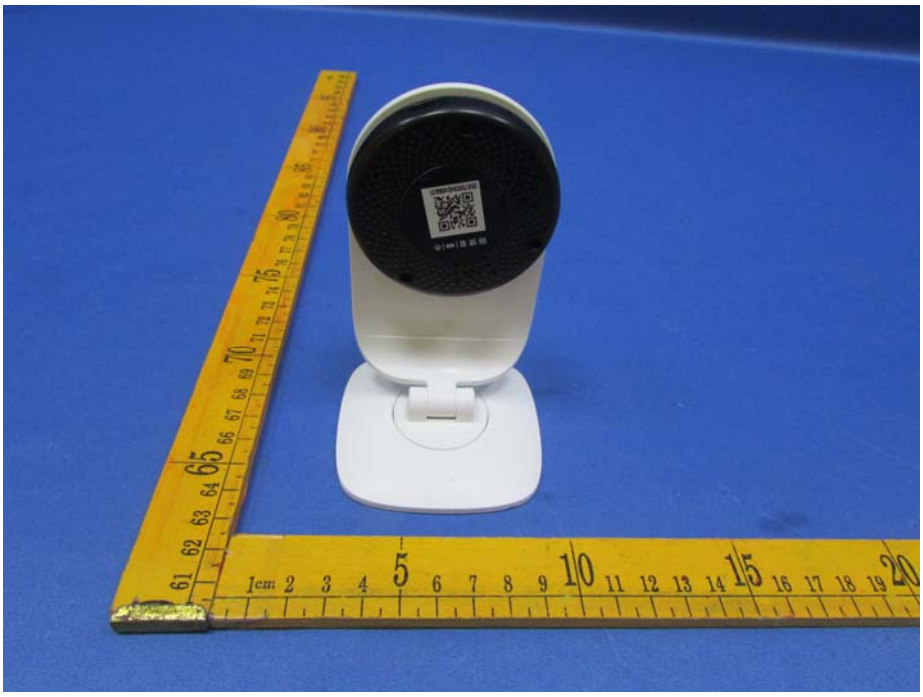
## 14.2 Conducted Emission at Test Site 1#

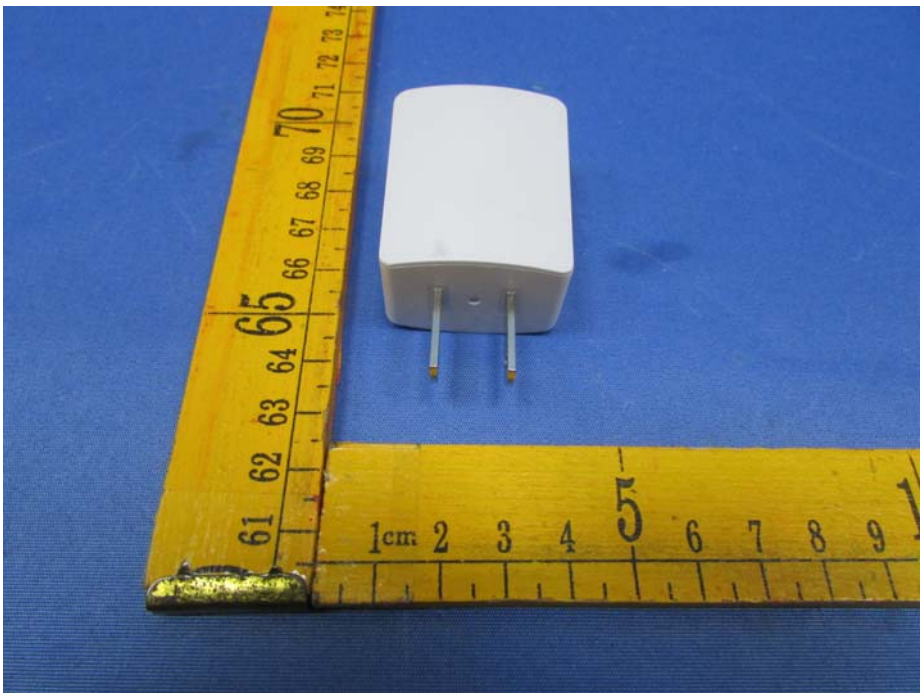


# 15 Photographs - Constructional Details

## 15.1 External Photos

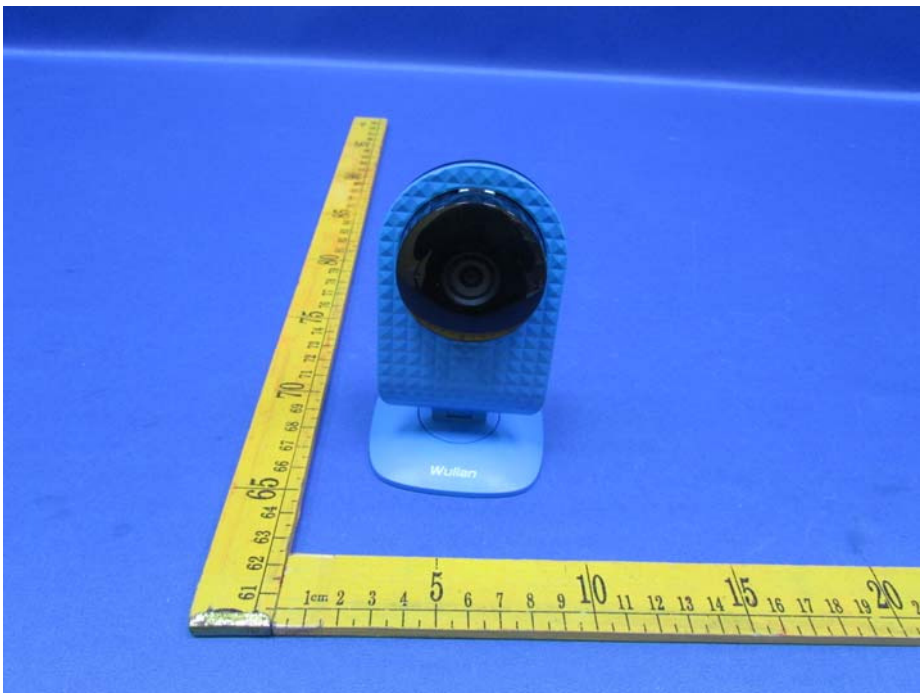
Model WL-ZAVMDPW-C411121-06/ WL-ZAVMDPW-C41112-02

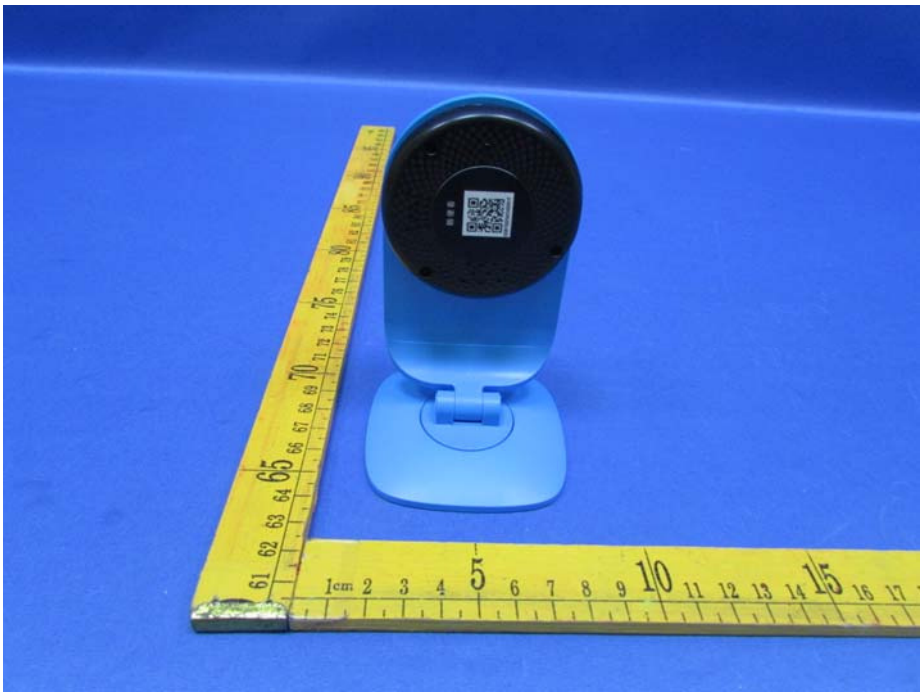





Model WL-ZAVMDPB-C411121-02

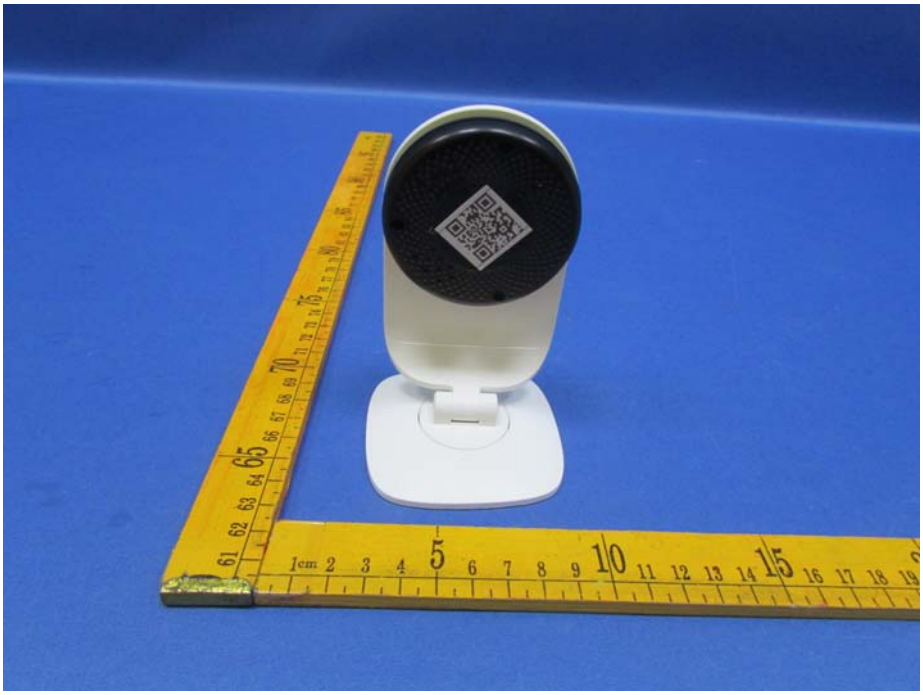
Model WL-ZAVMDPU-C411121-02





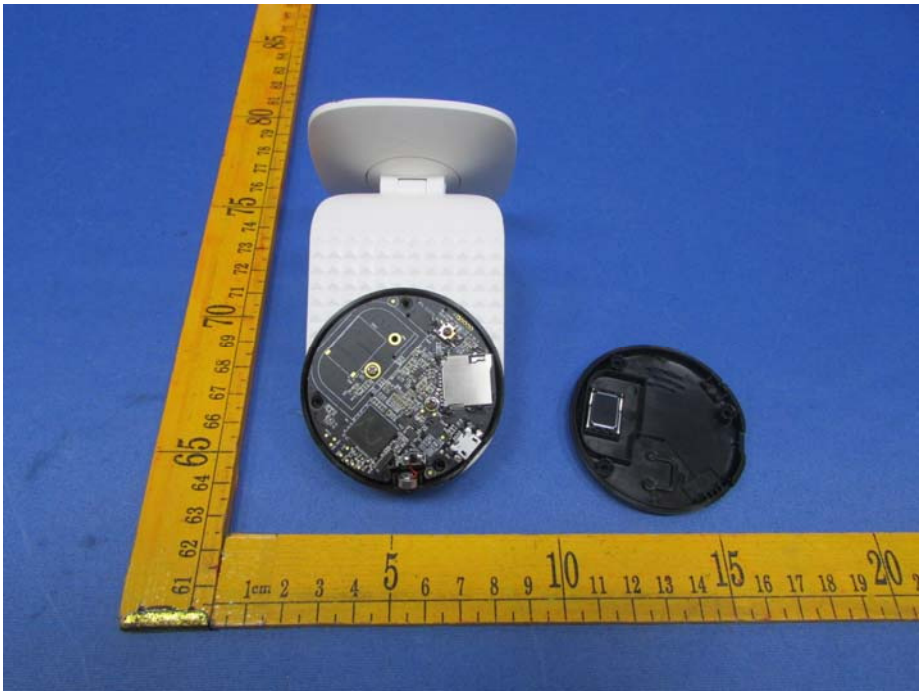
Model WL-ZAVMDPW-C411121-05/WL-ZAVMDPW-C41112-01

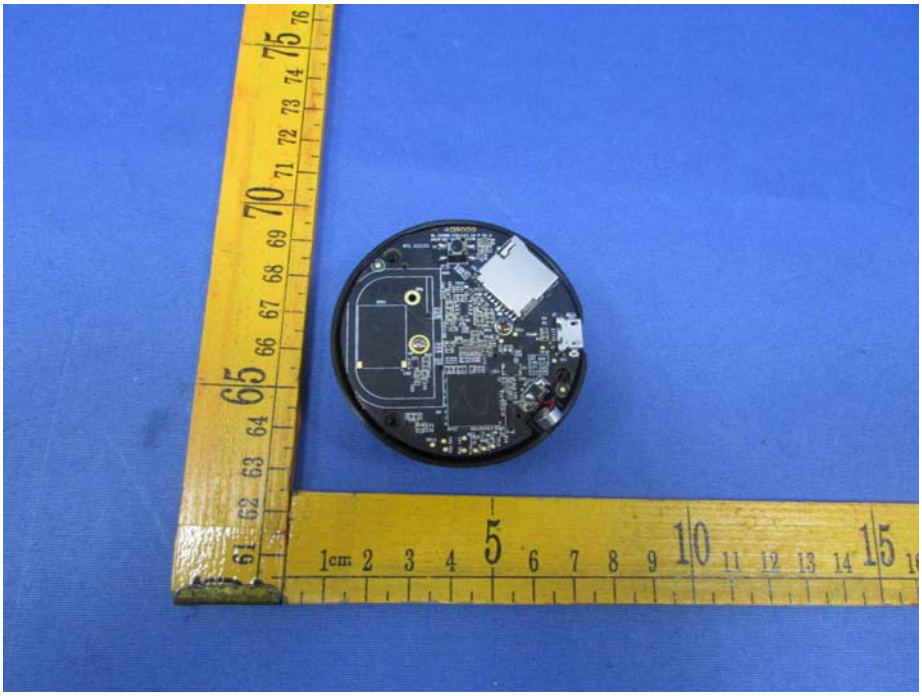

Wulian

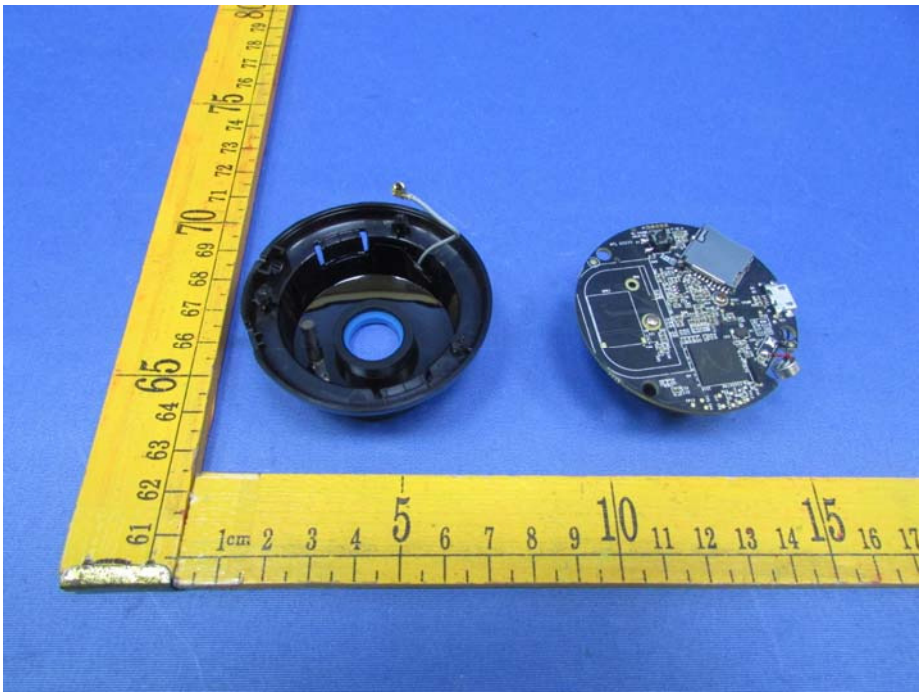


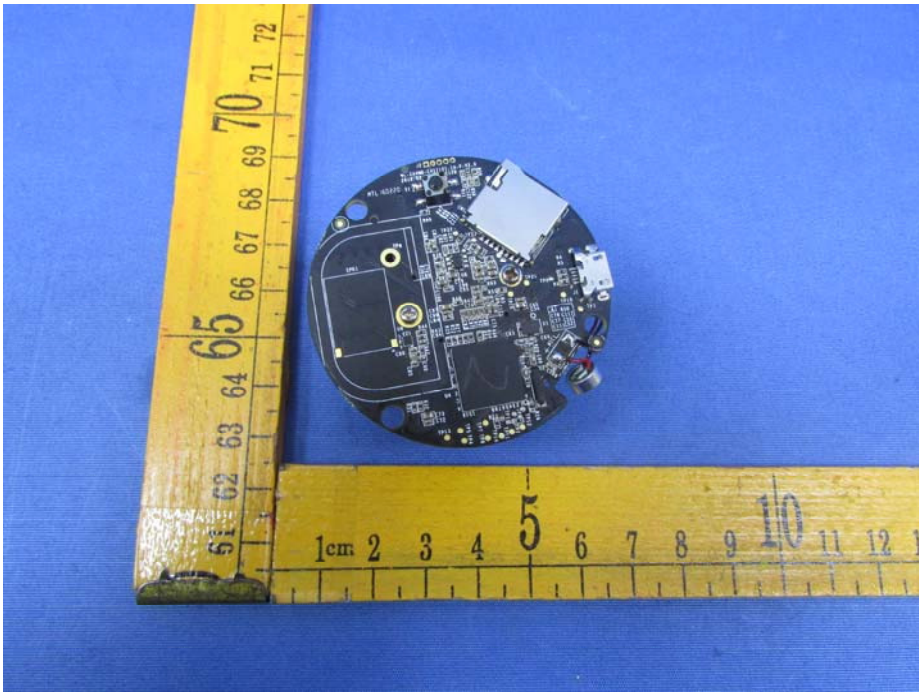
## 15.2 Internal Photos

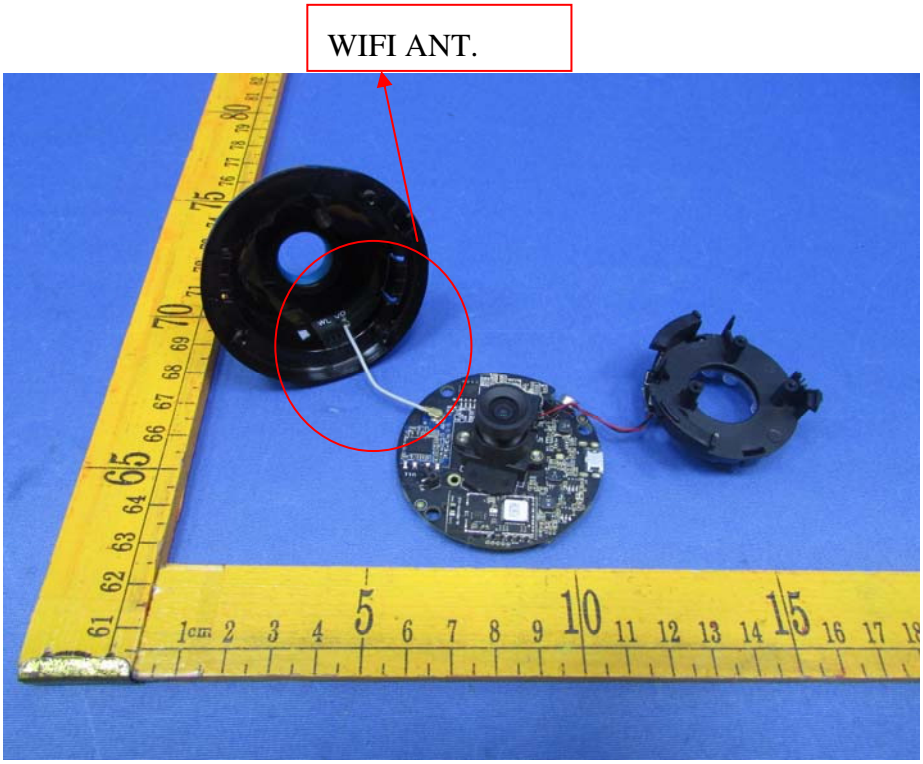
Model WL-ZAVMDPW-C411121-06

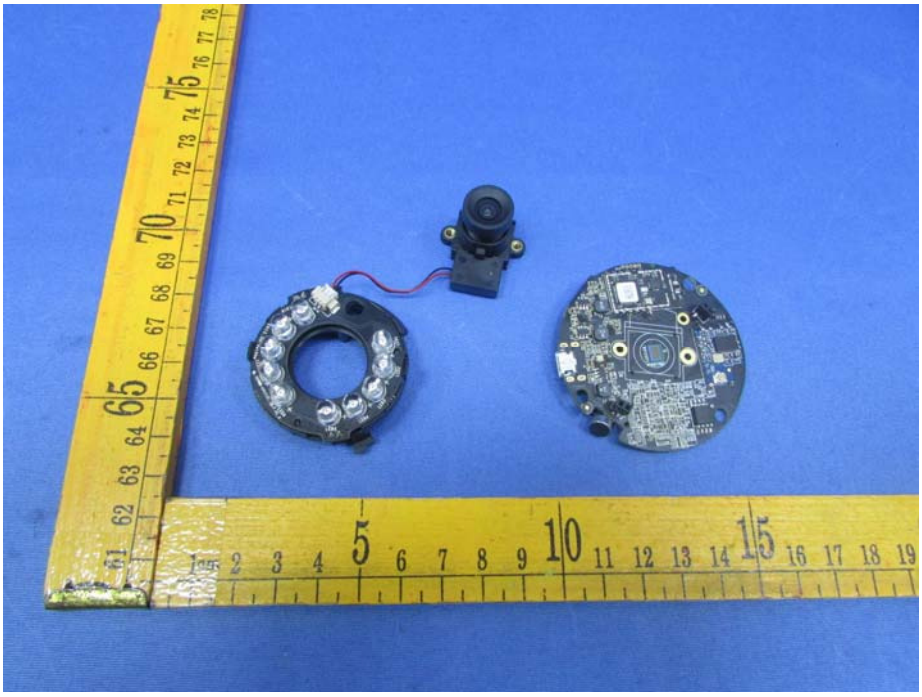


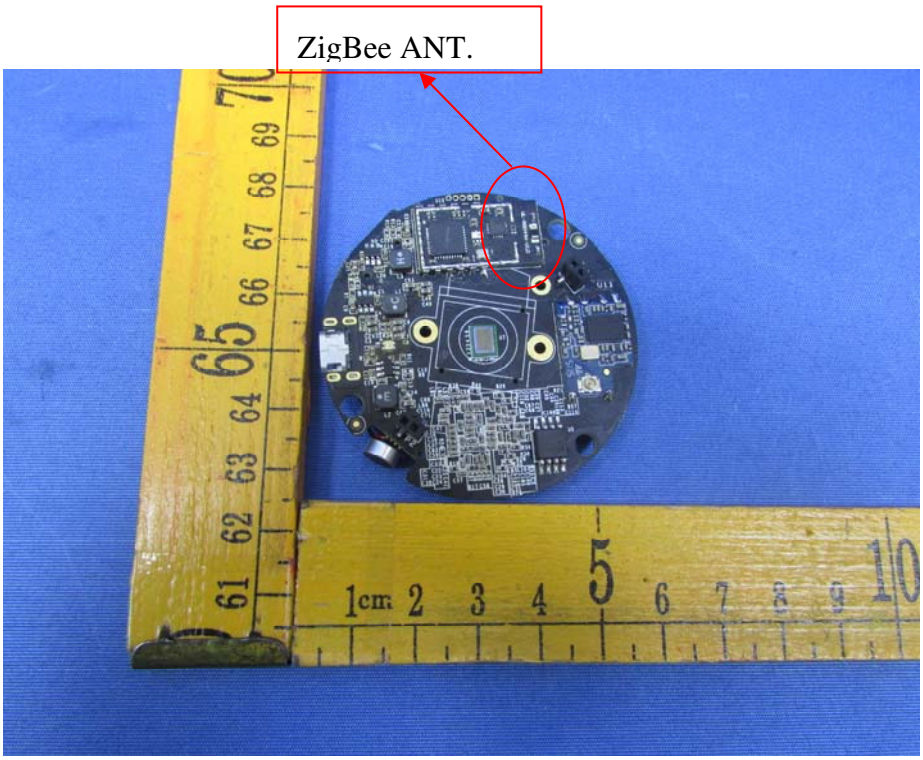


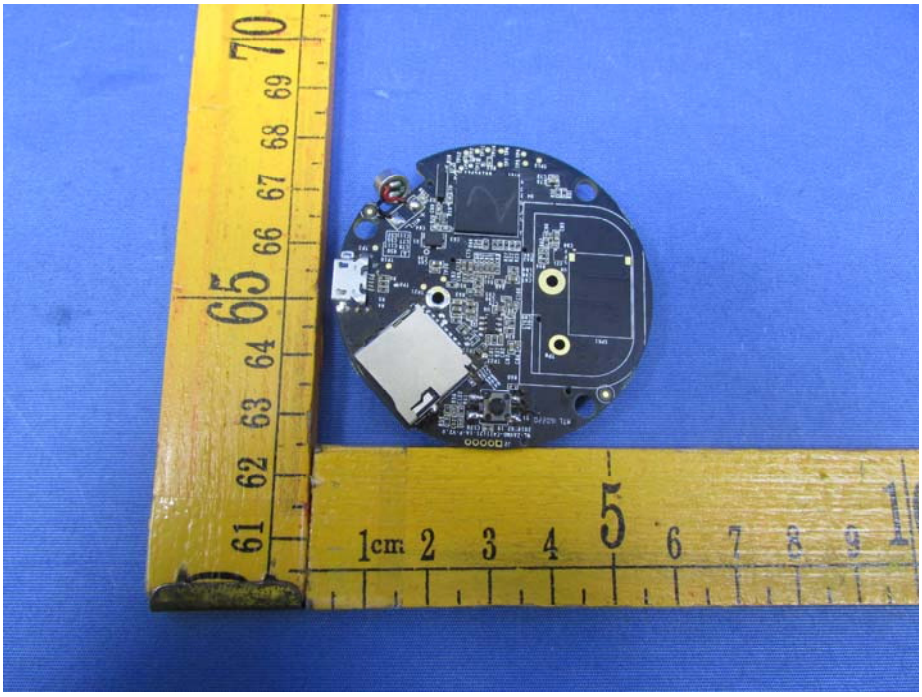


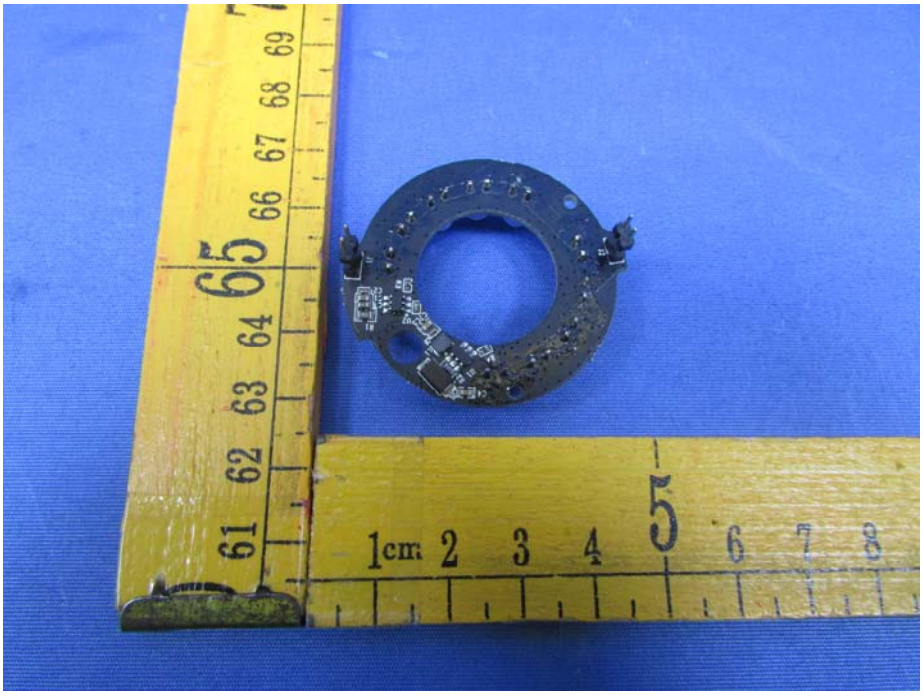


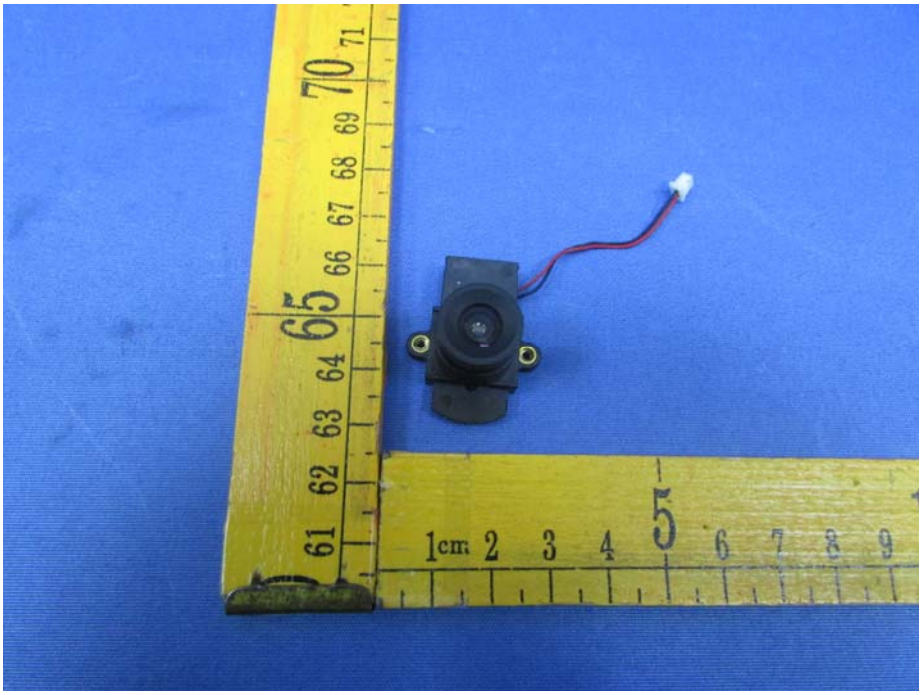

WIFI ANT.

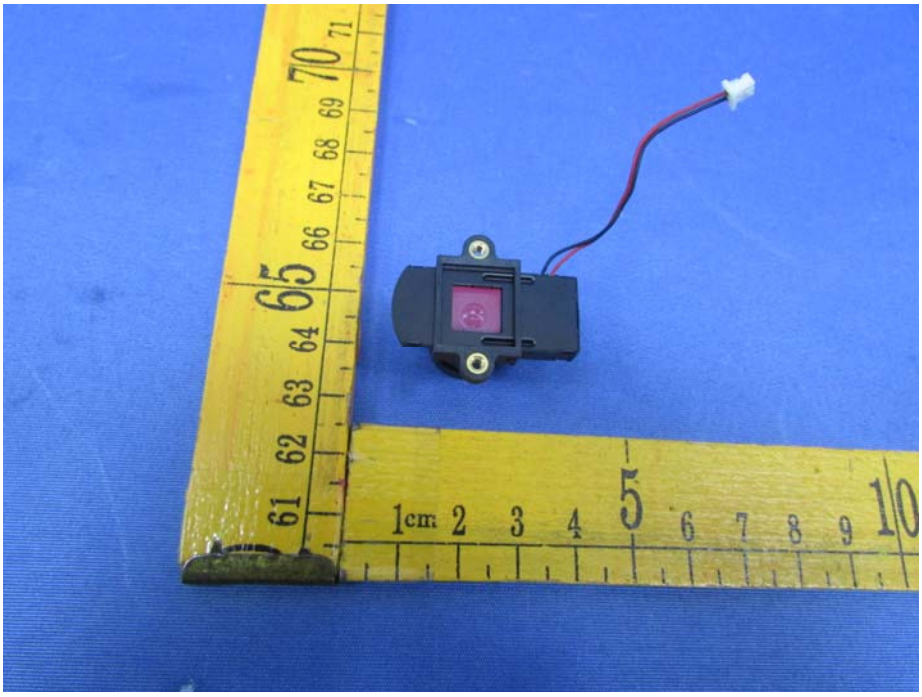



ZigBee ANT.

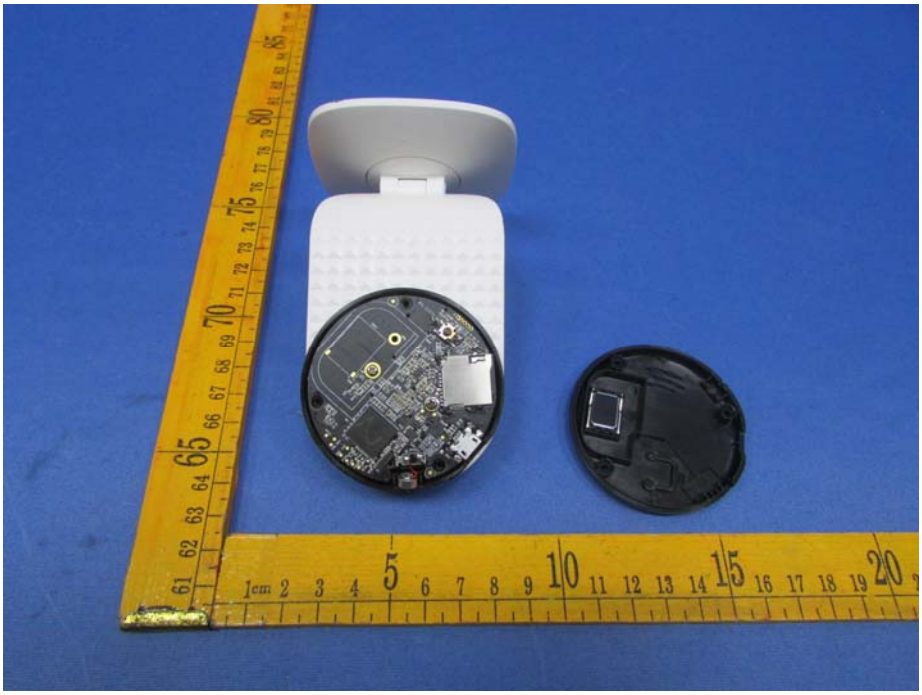

70
69
68
67
66
65
64
63
62
61
1cm 2 3 4 5 6 7

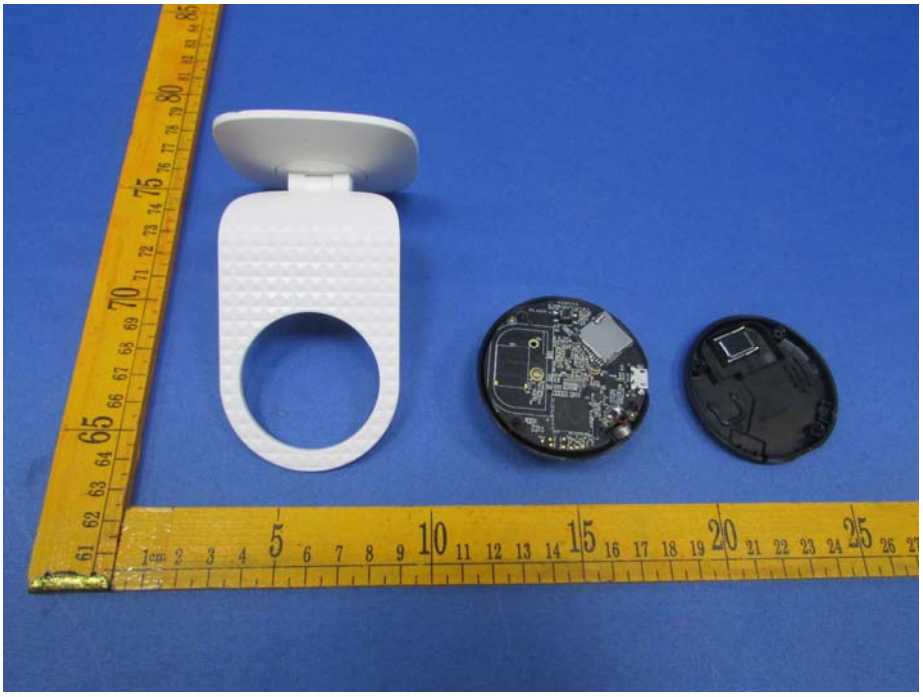

69
68
67
66
65
64
63
62
61
1cm 2 3 4 5 6 7 8

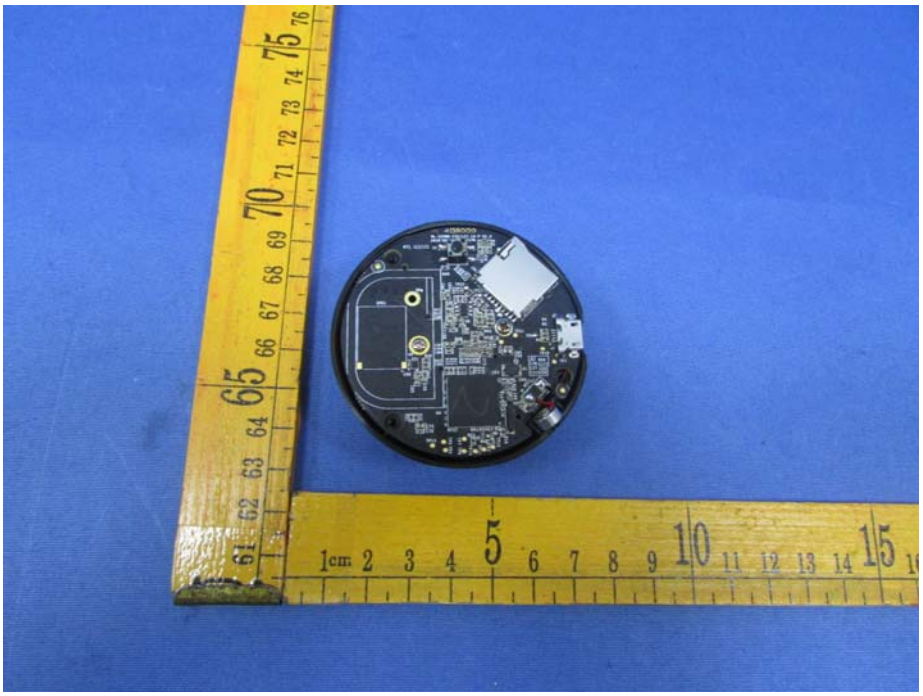


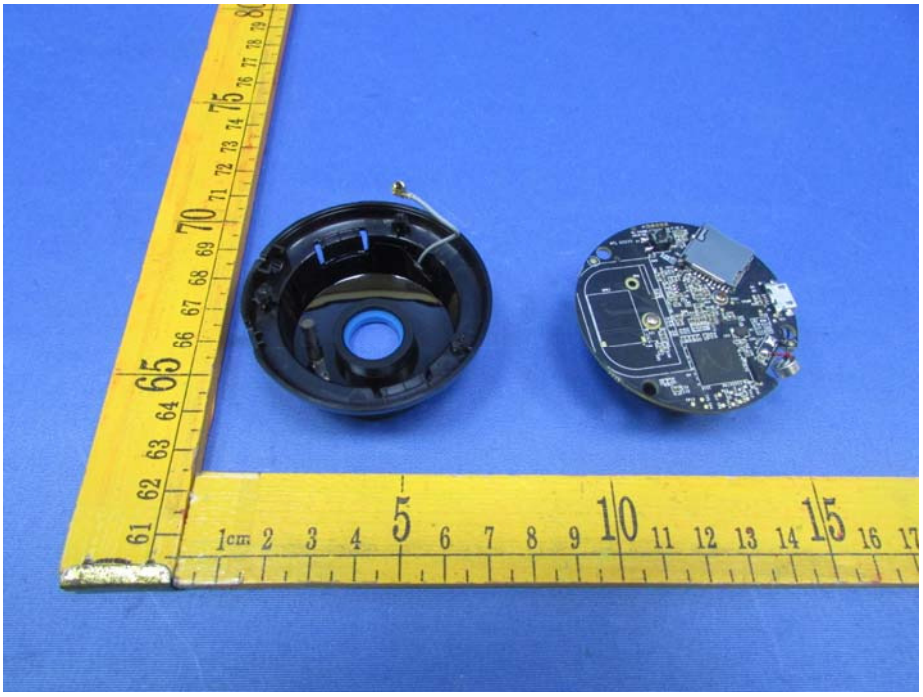


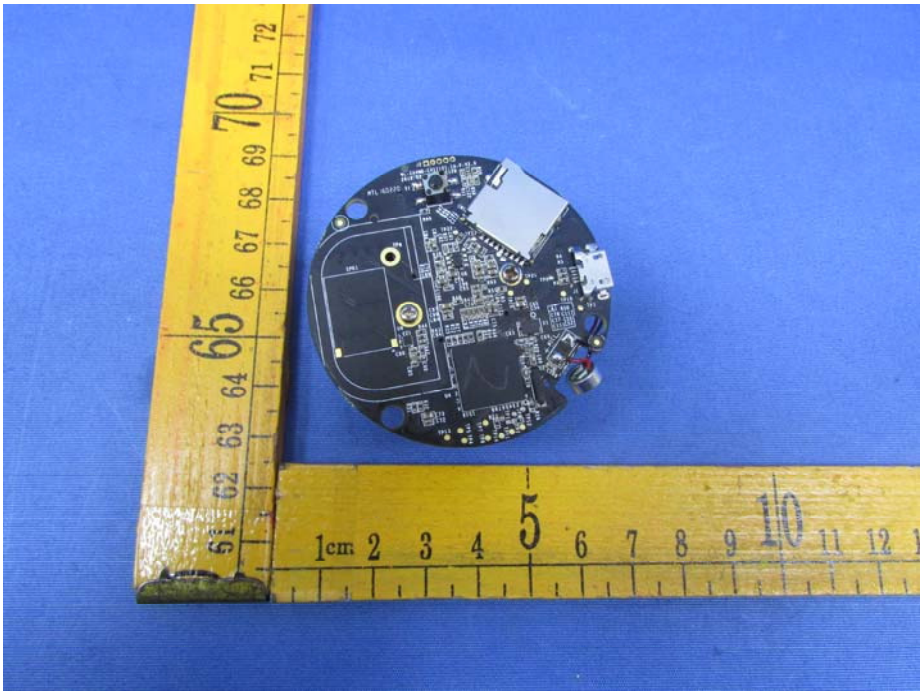
Model WL-ZAVMDPW-C41112-02

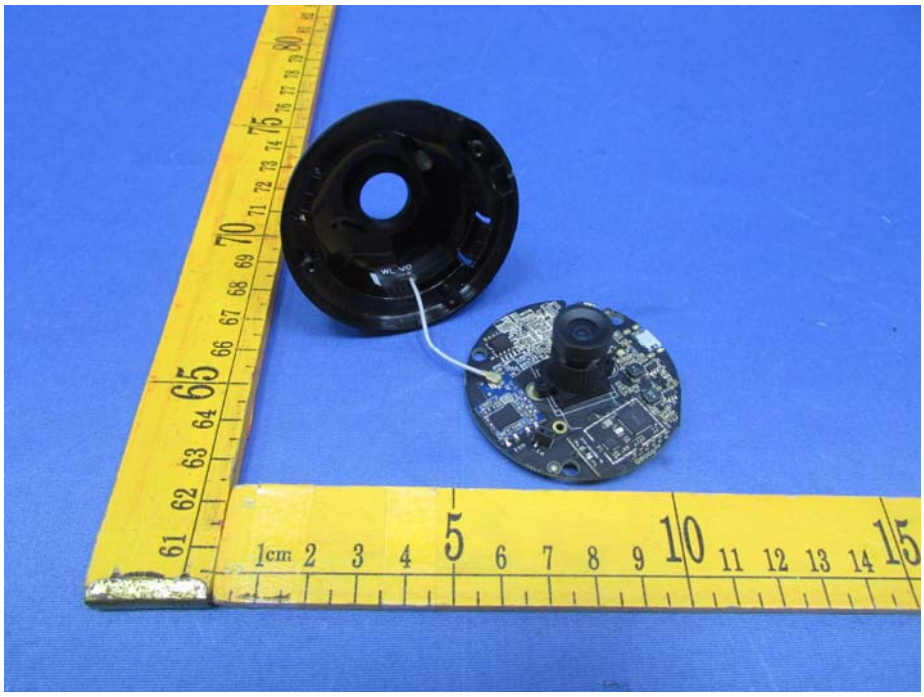




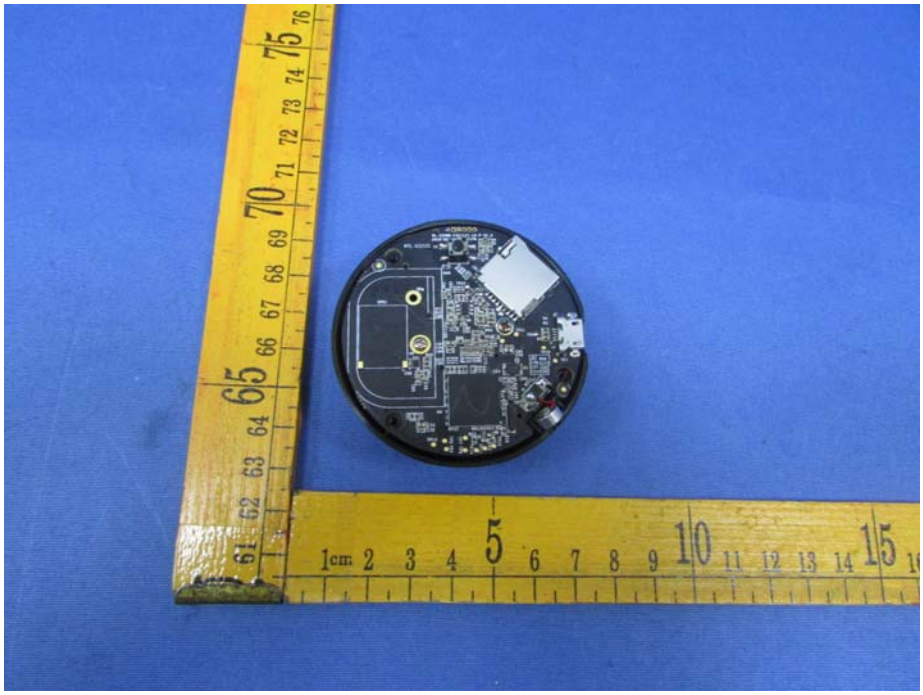


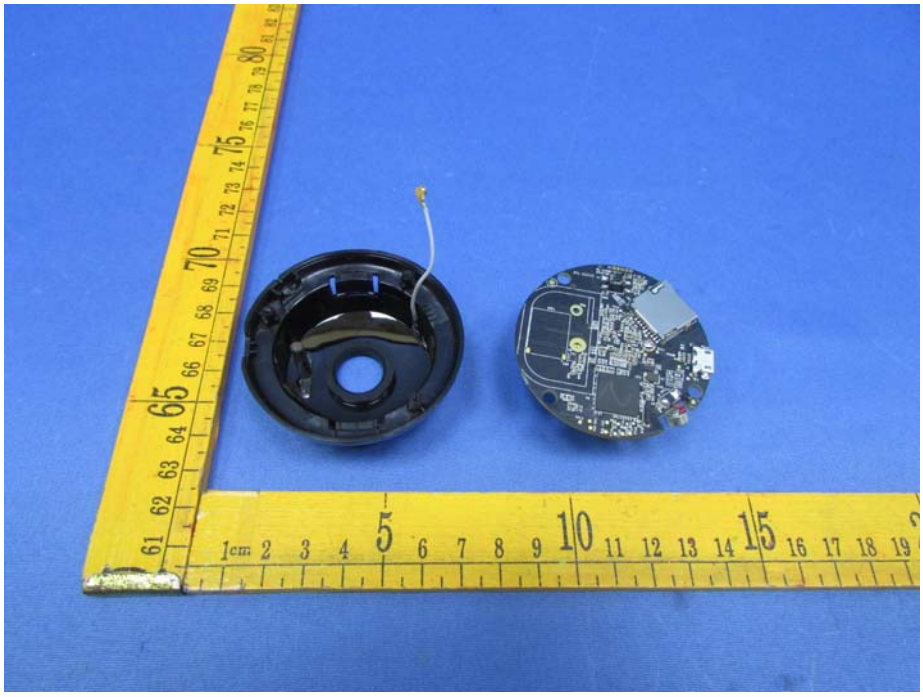


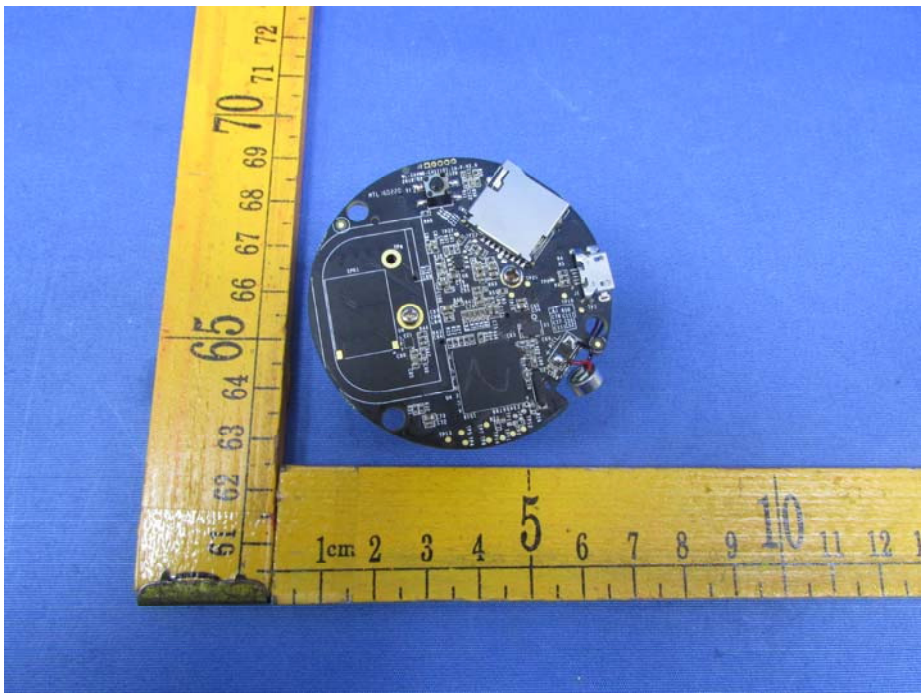


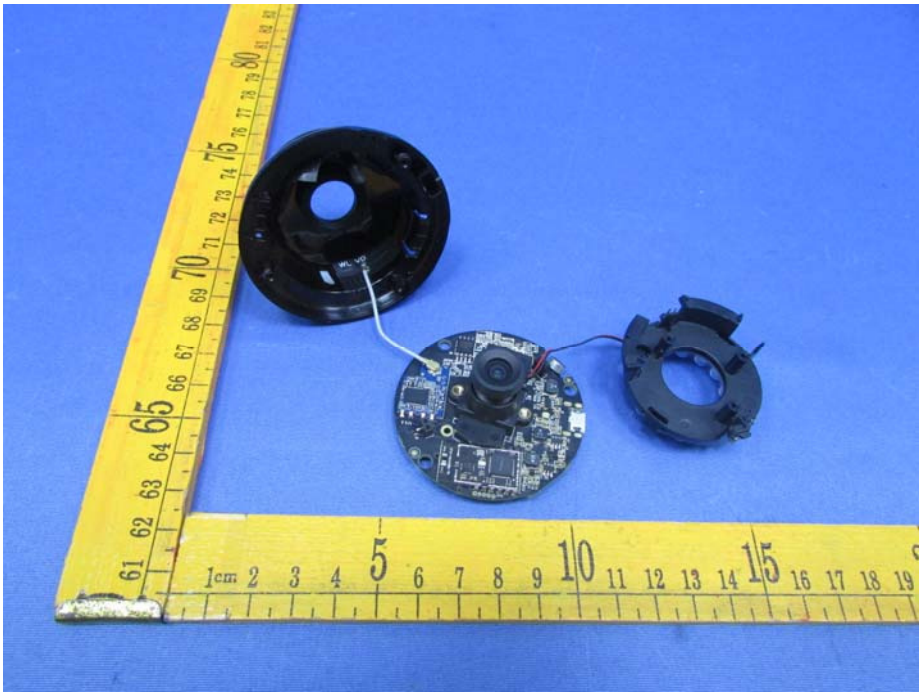


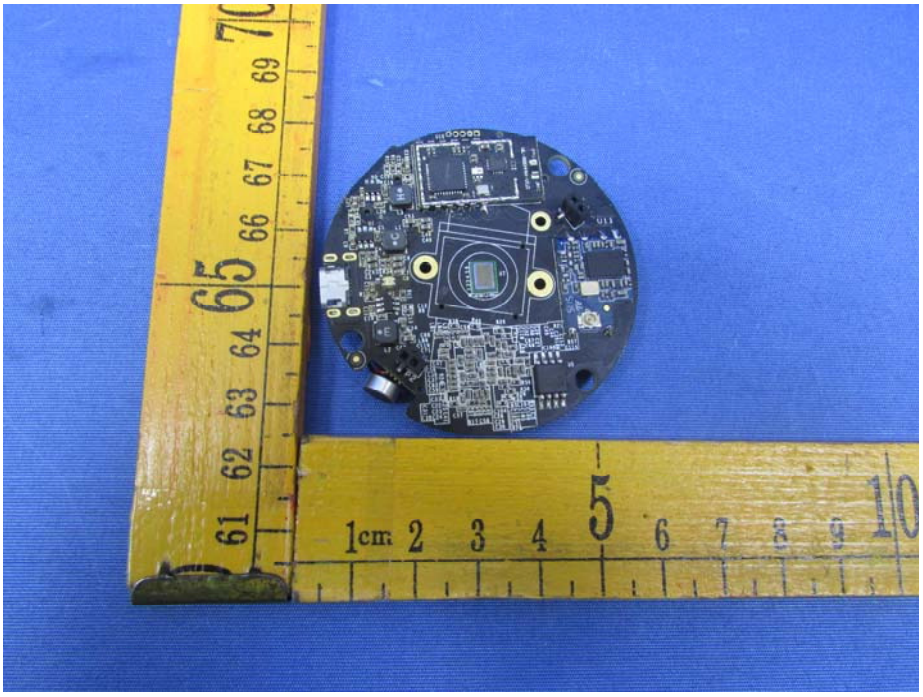
Model WL-ZAVMDPB-C411121-02

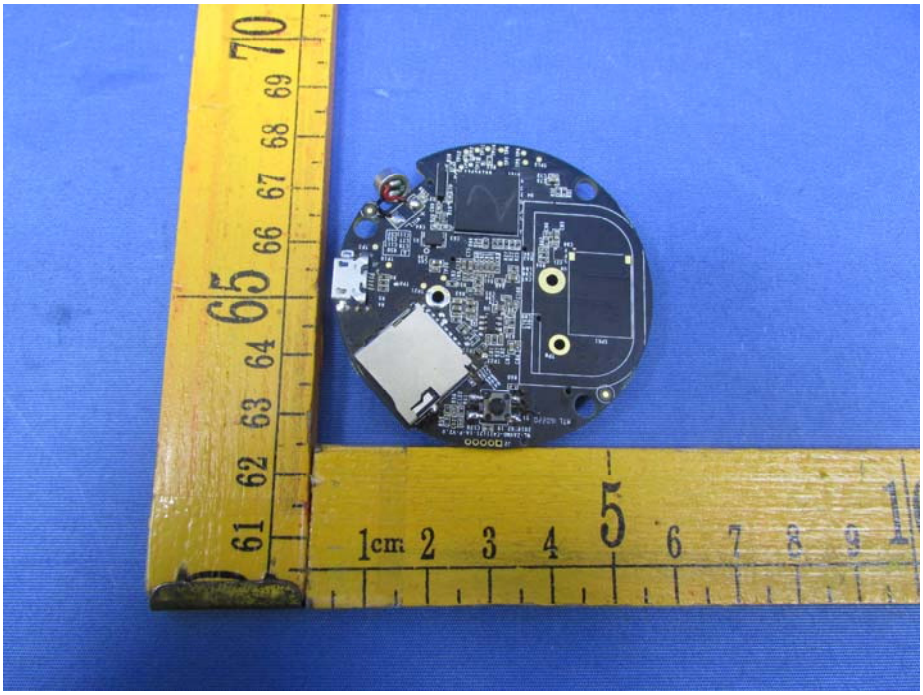


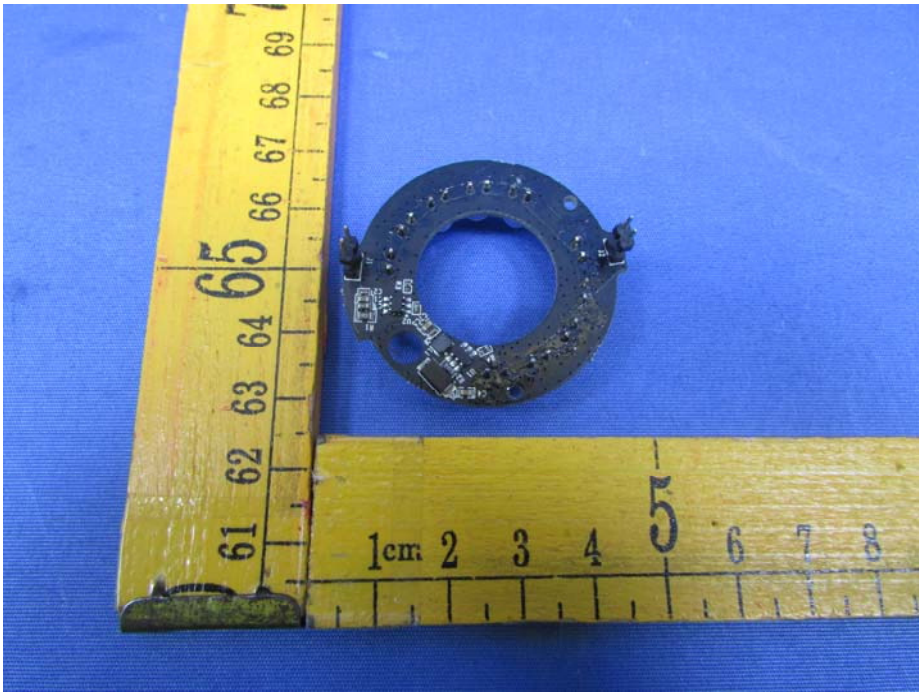


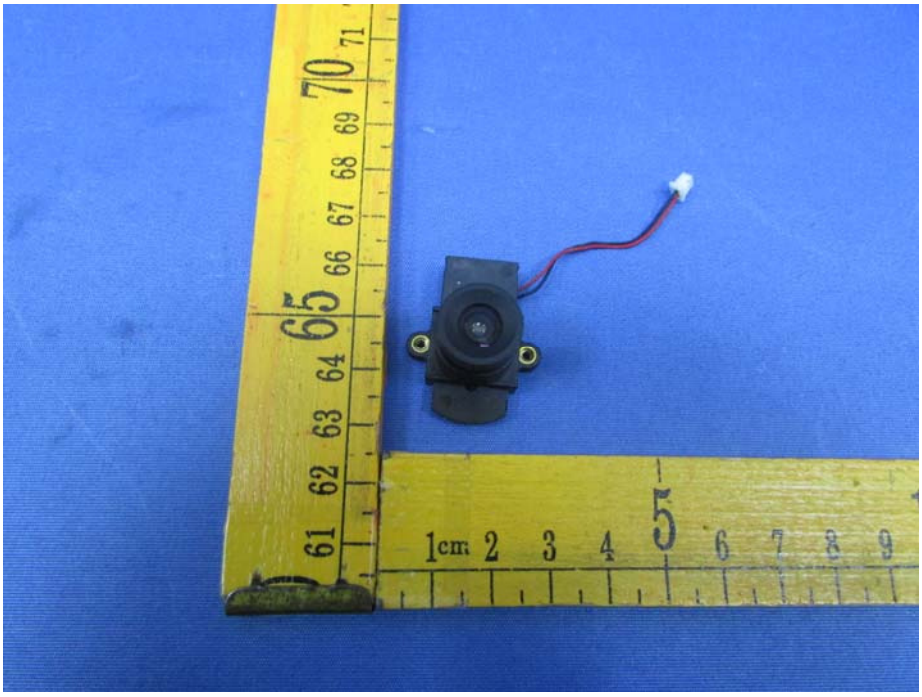


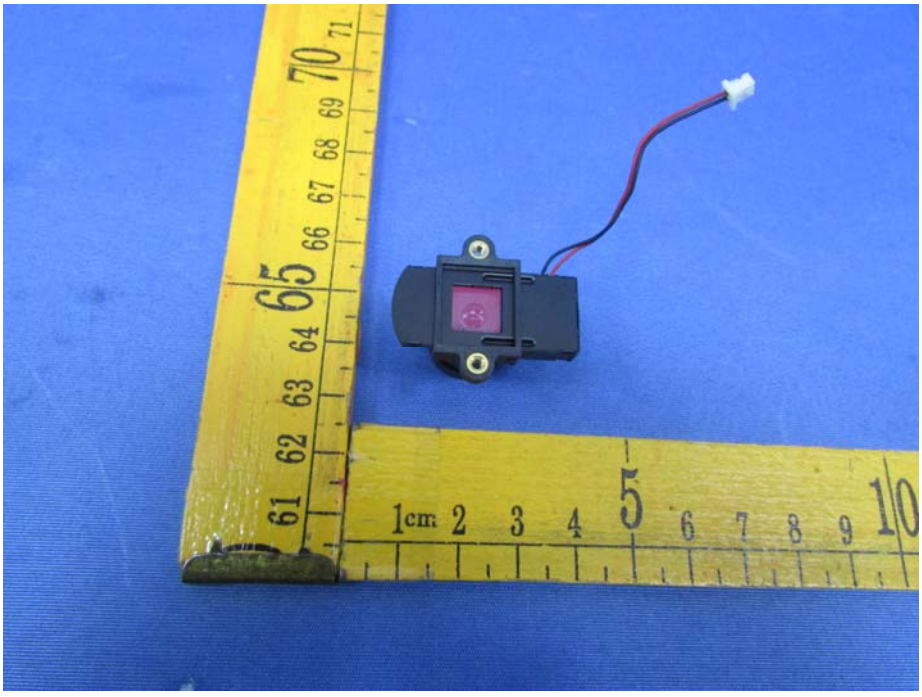




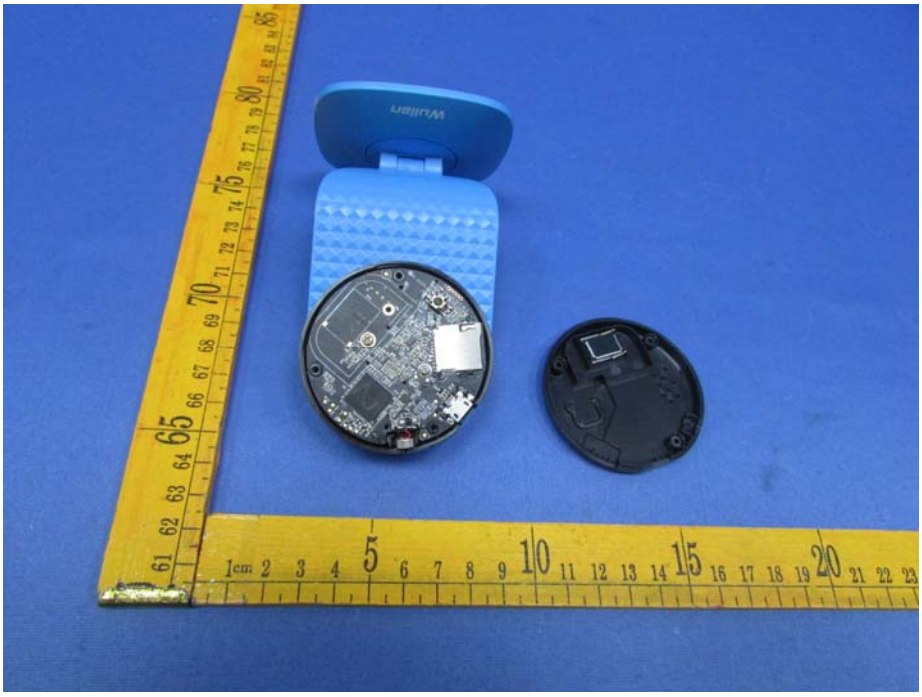


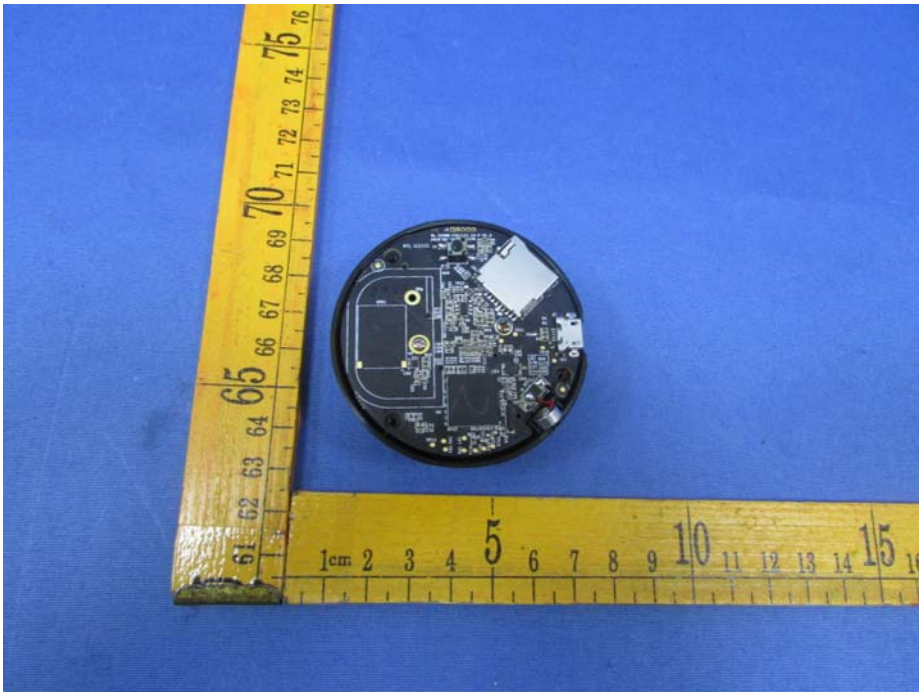


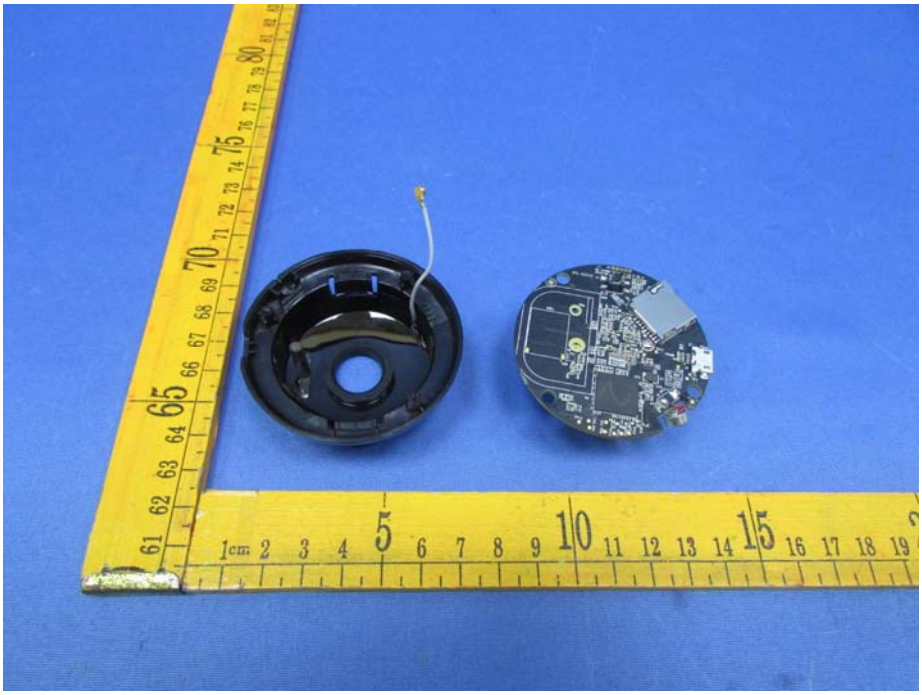


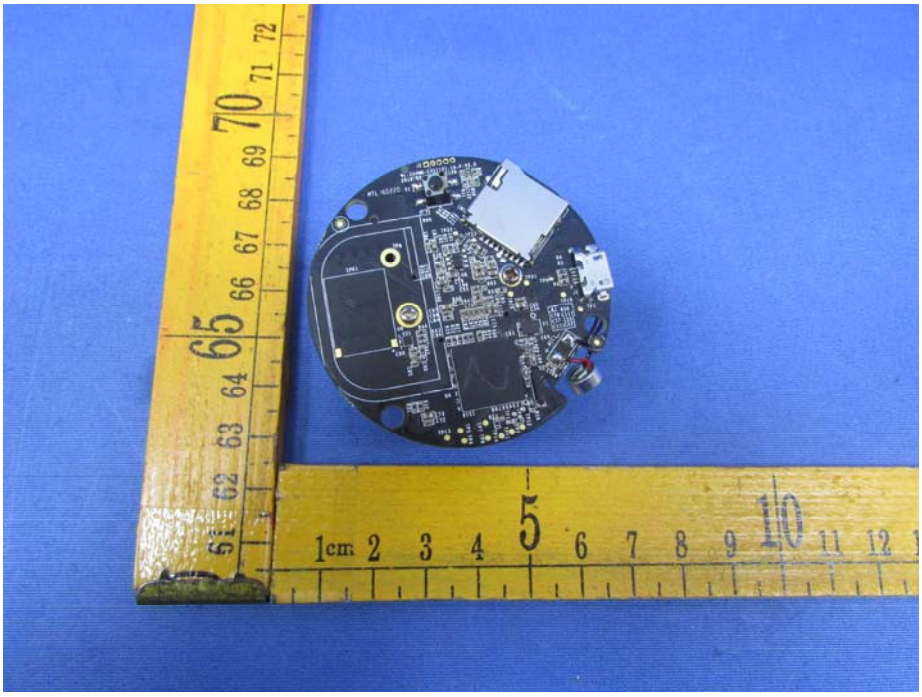


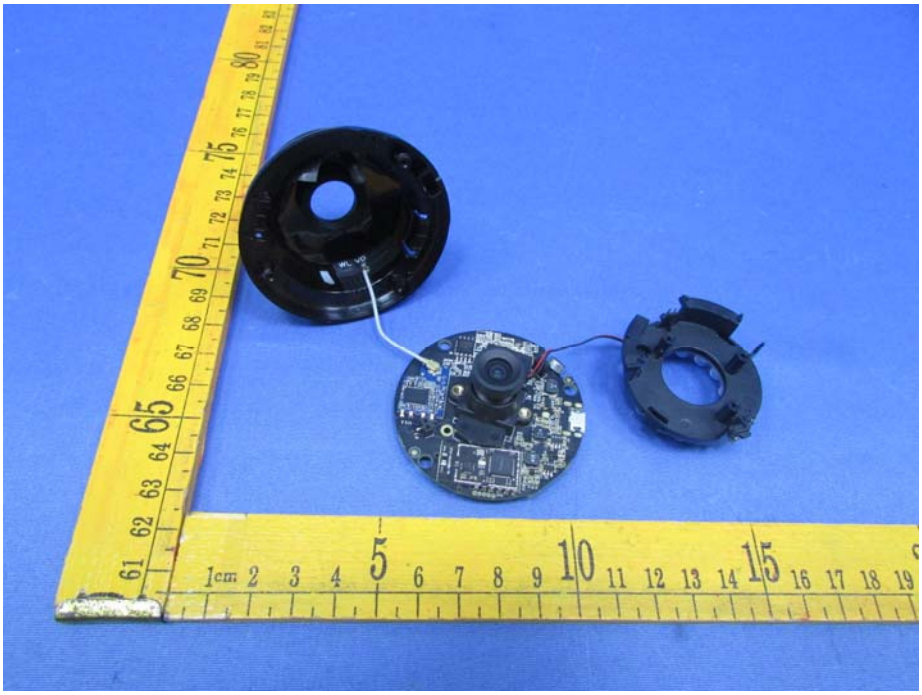
Model WL-ZAVMDPU-C411121-02

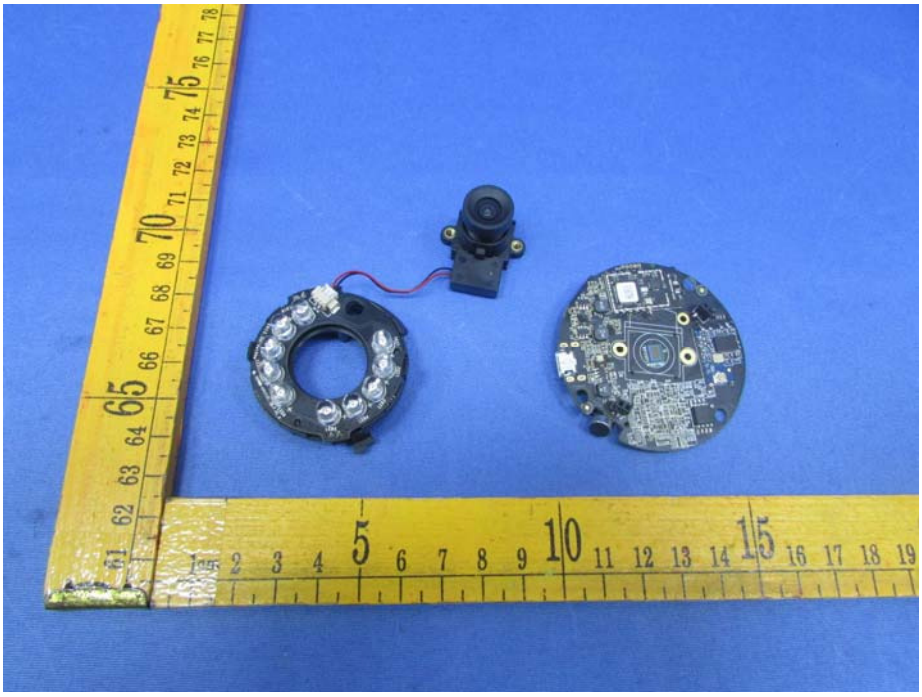


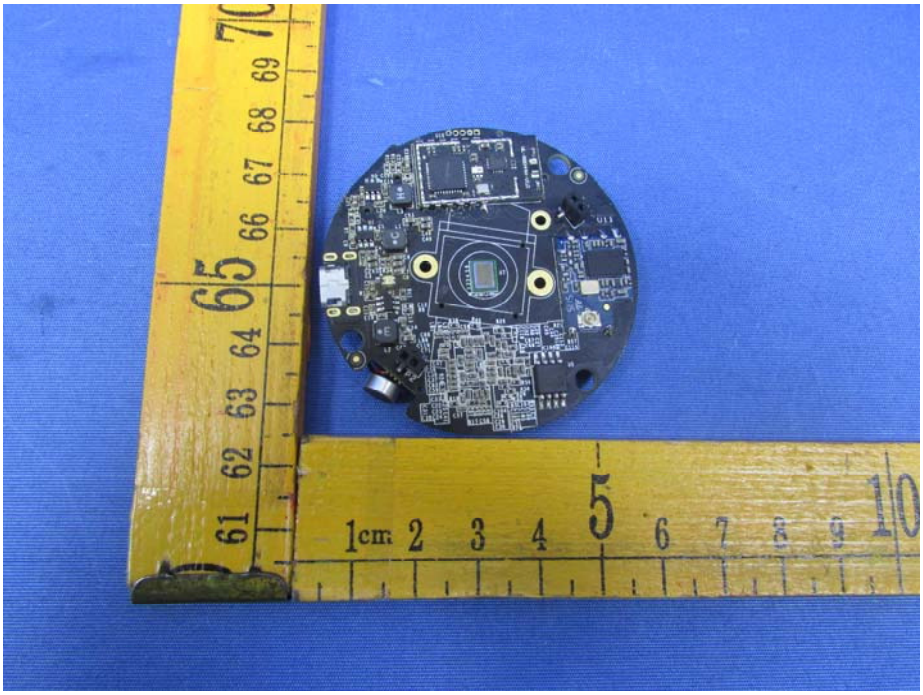


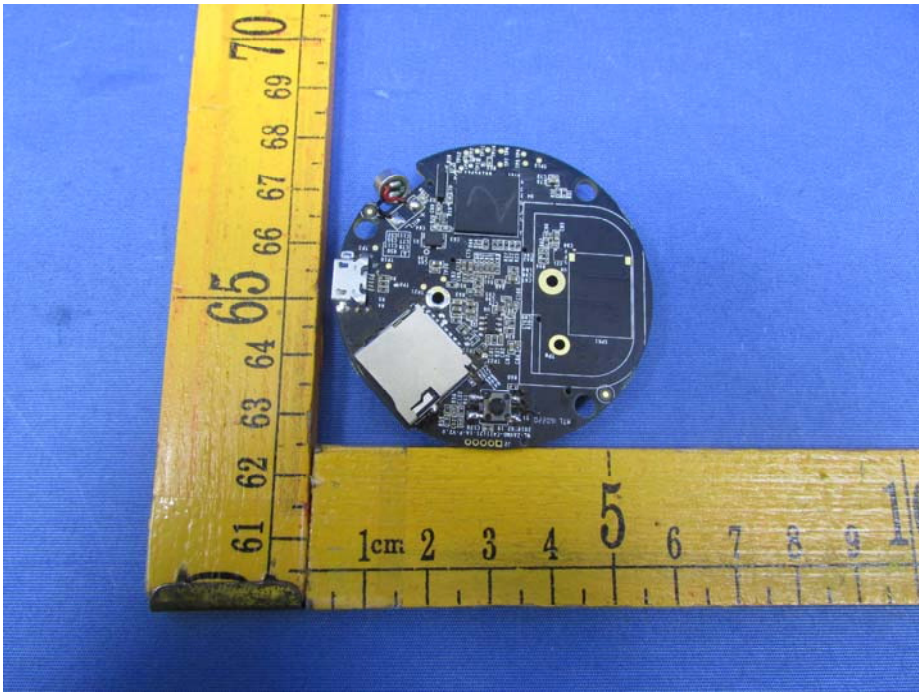











70
69
68
67
66
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64
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62
61
1cm
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3
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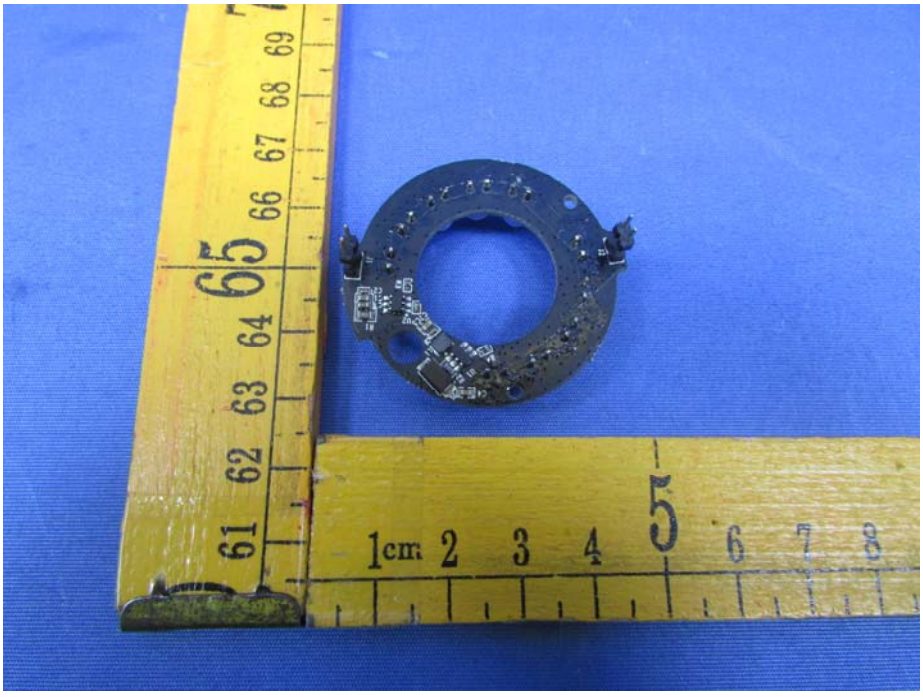
5
6
7


69
68
67
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64
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62
61
1cm
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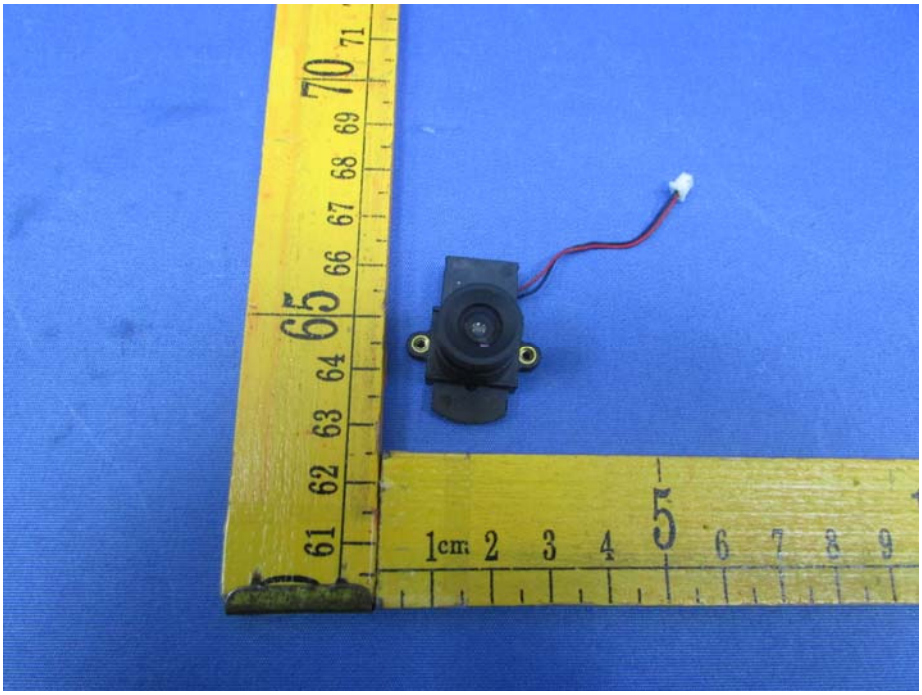
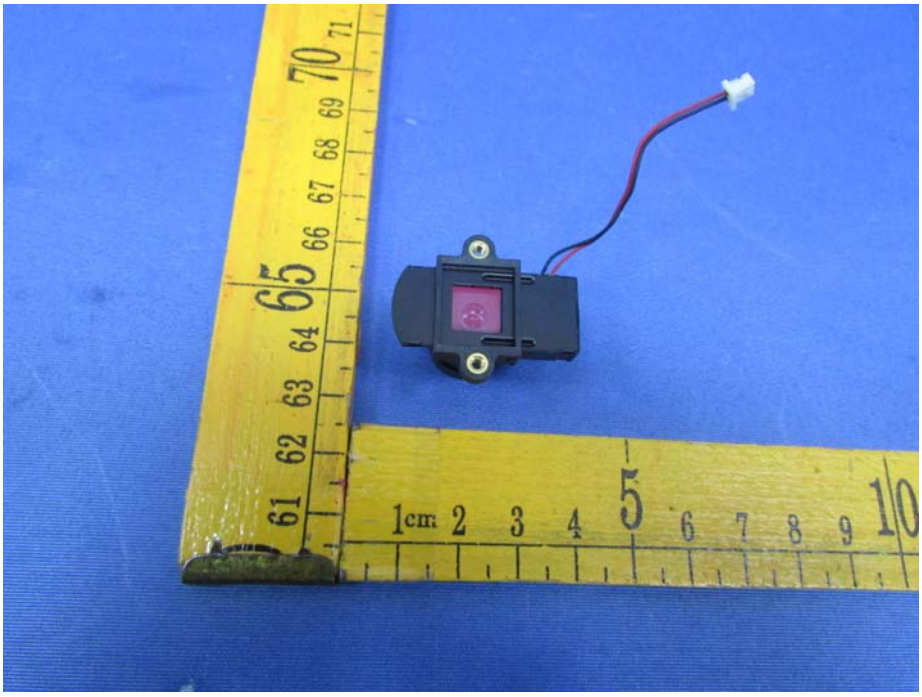
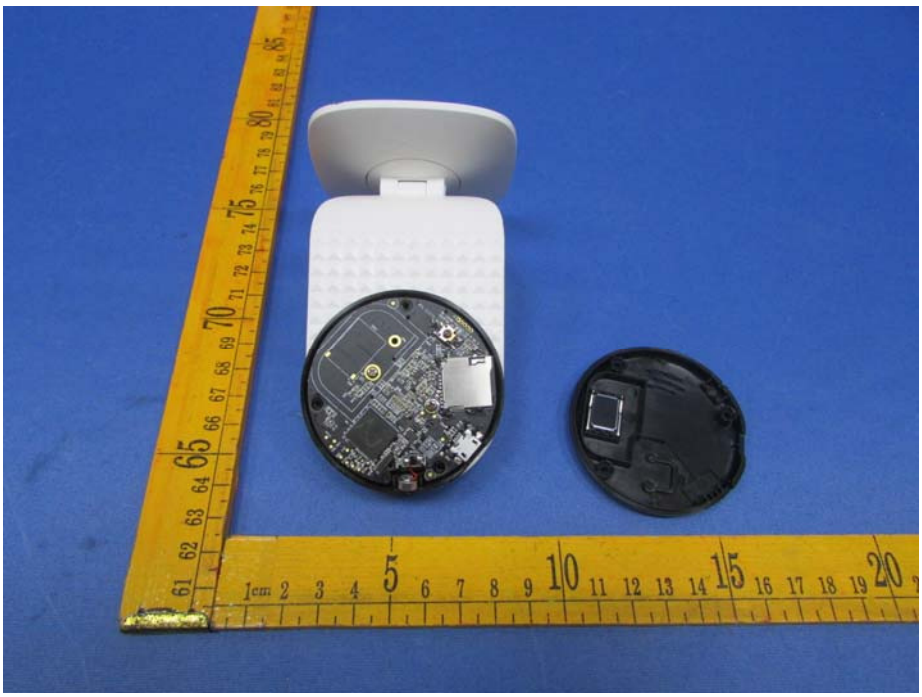
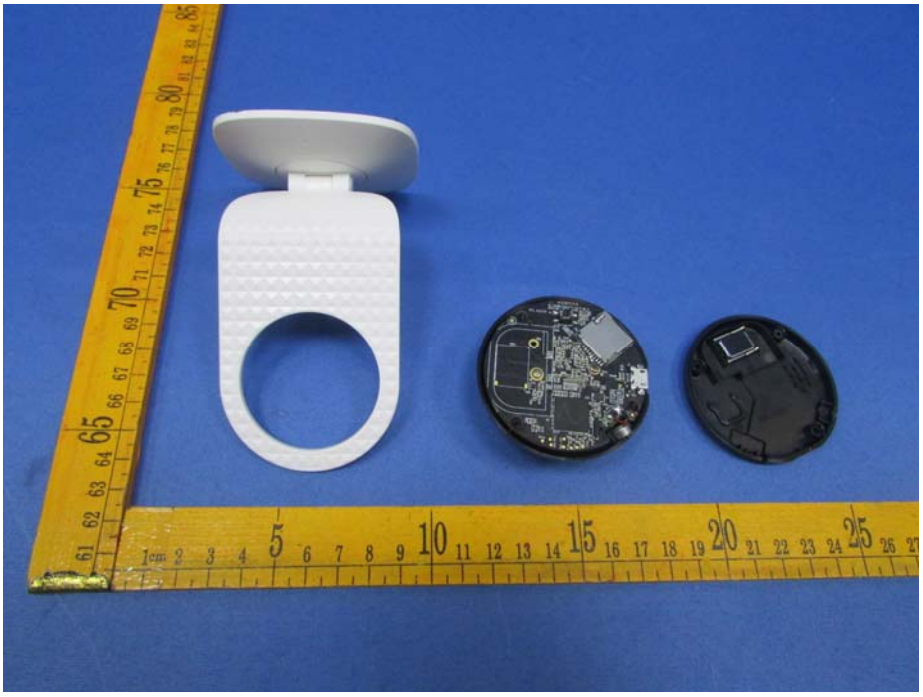
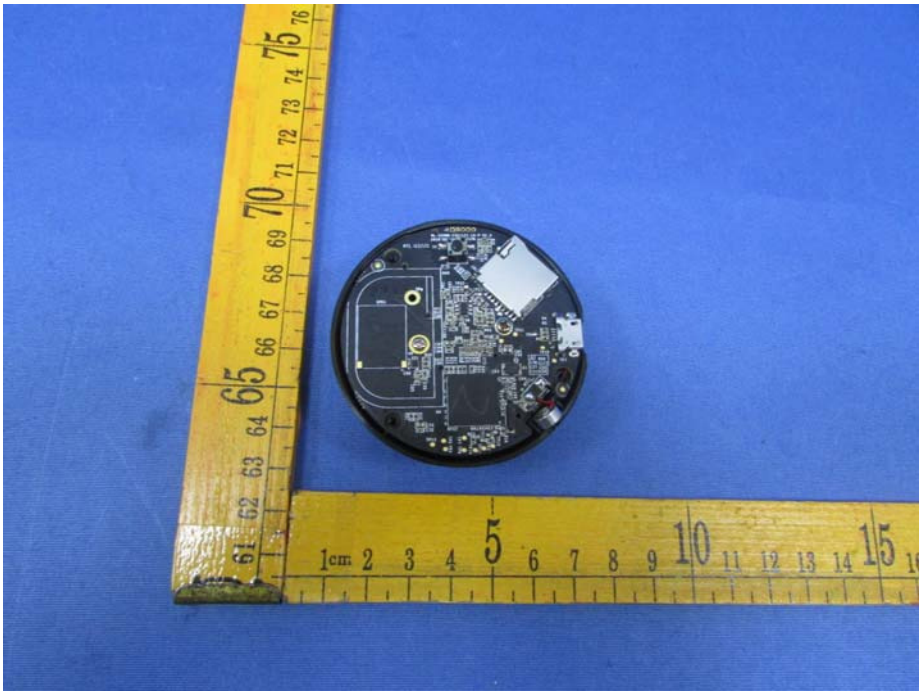


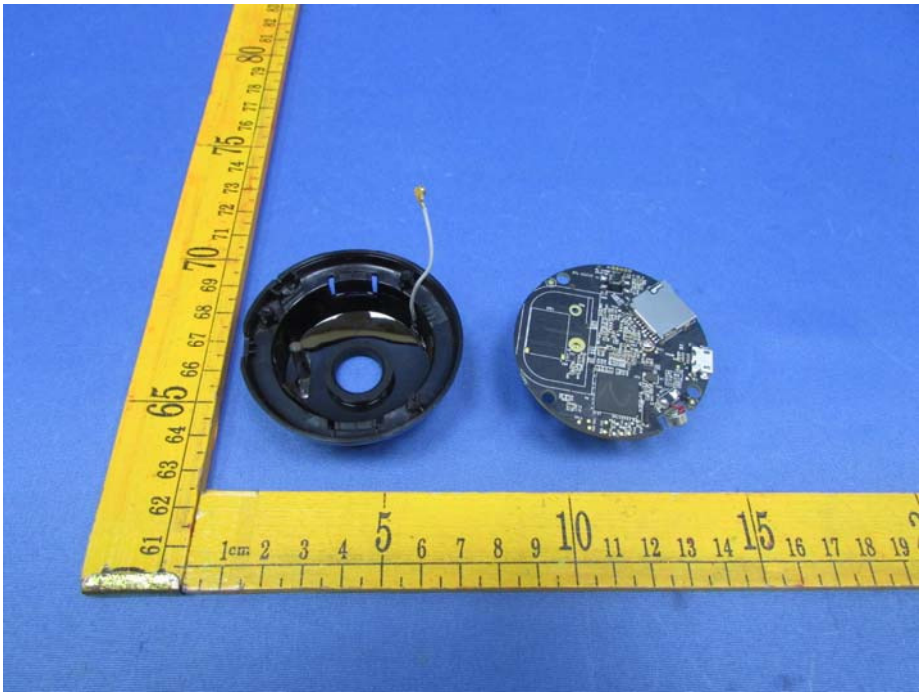


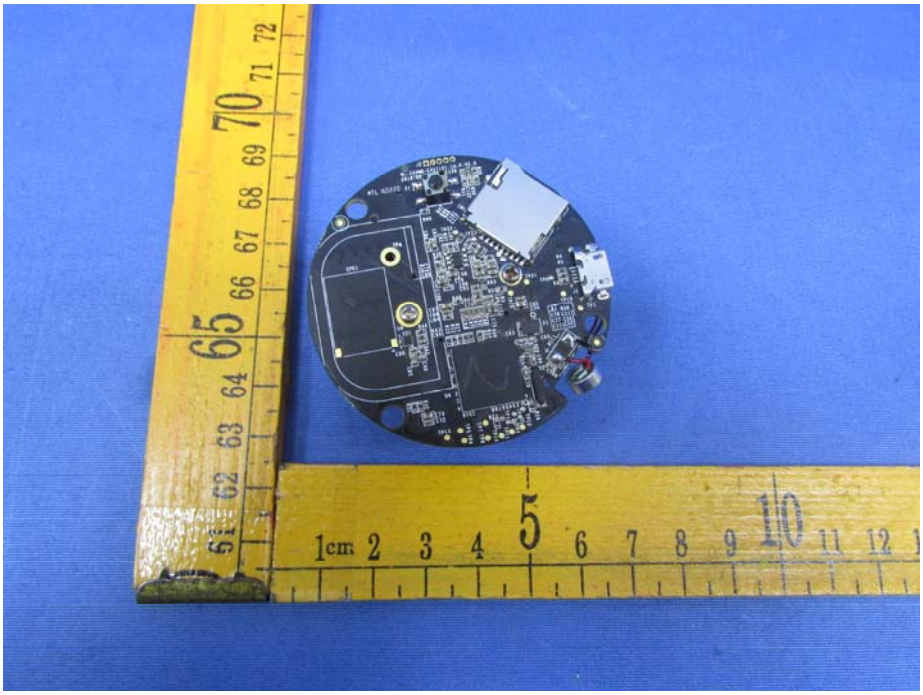
Model WL-ZAVMDPW-C411121-05

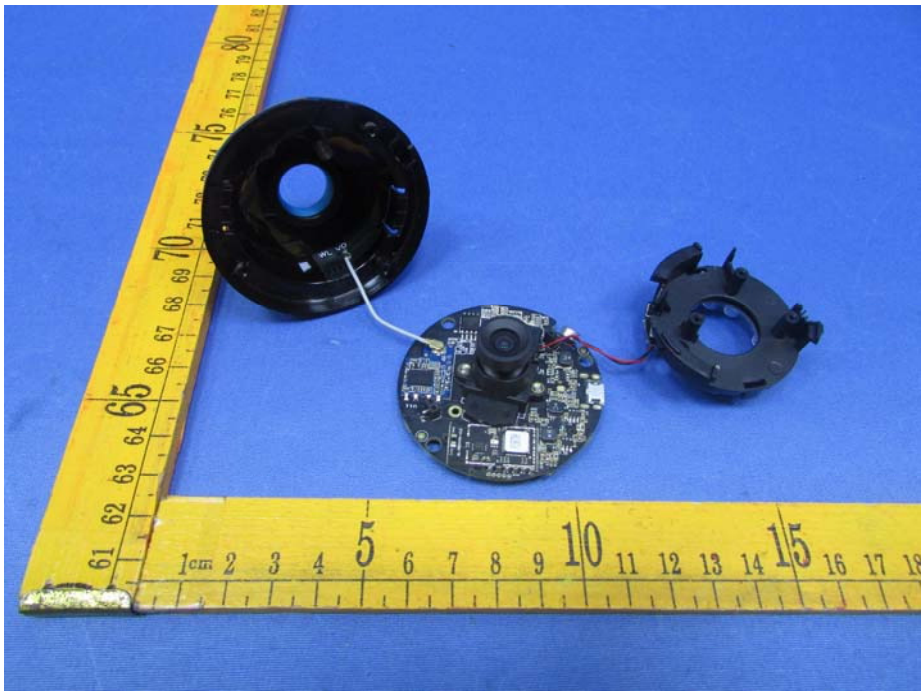


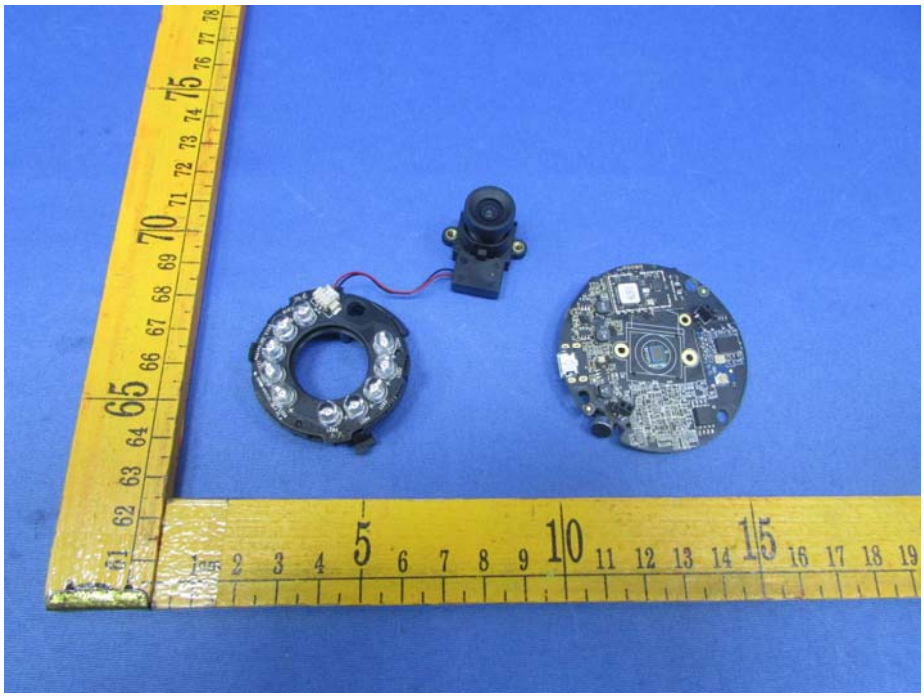


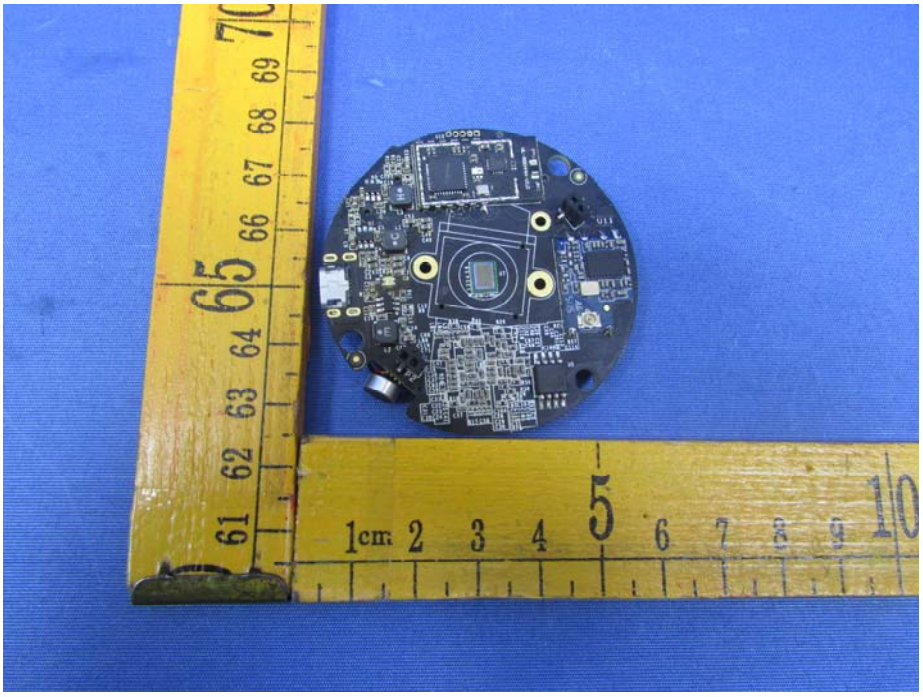








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1cm
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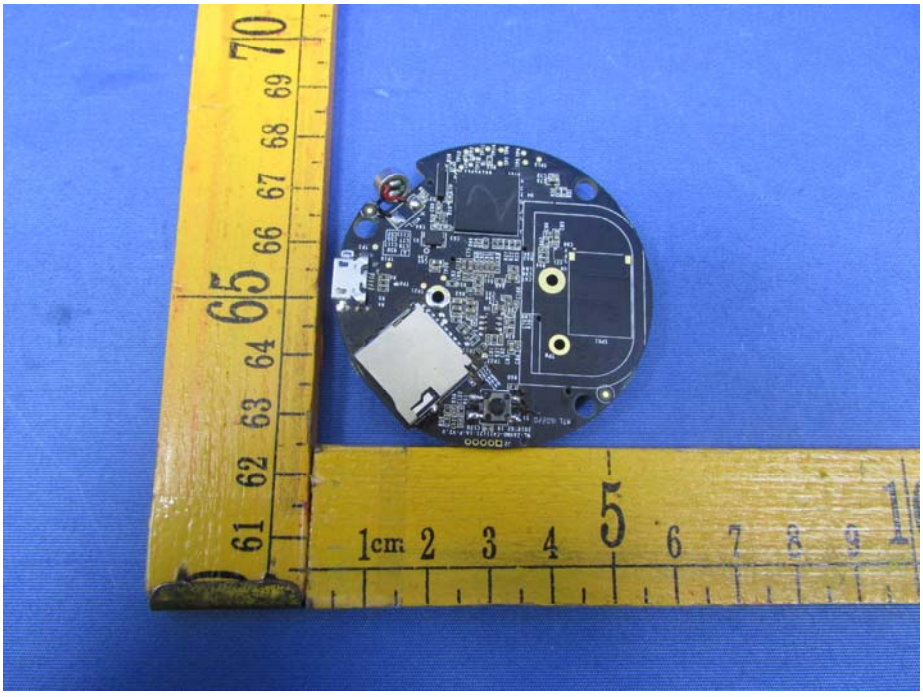
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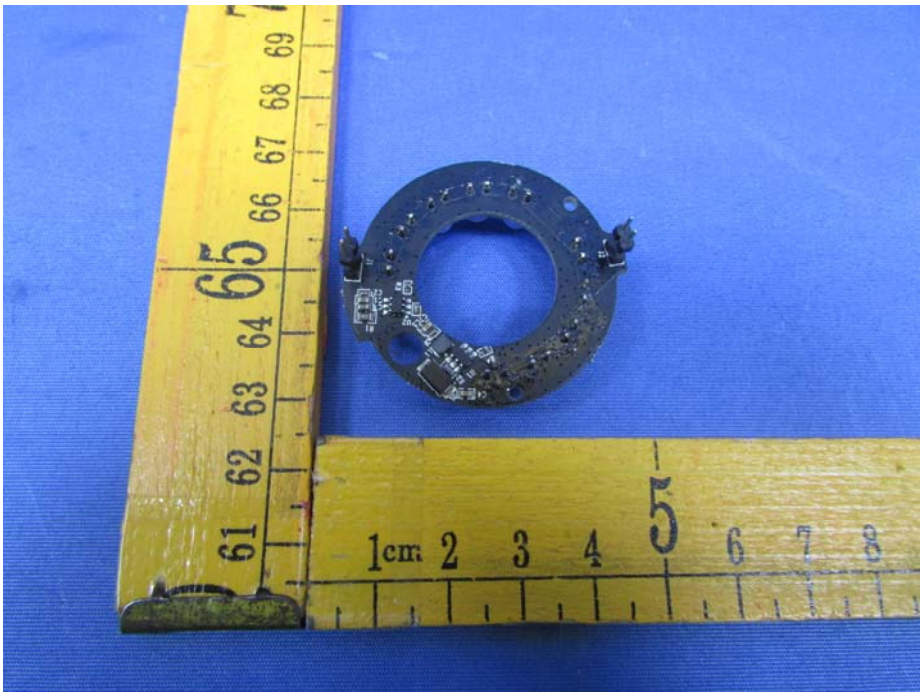
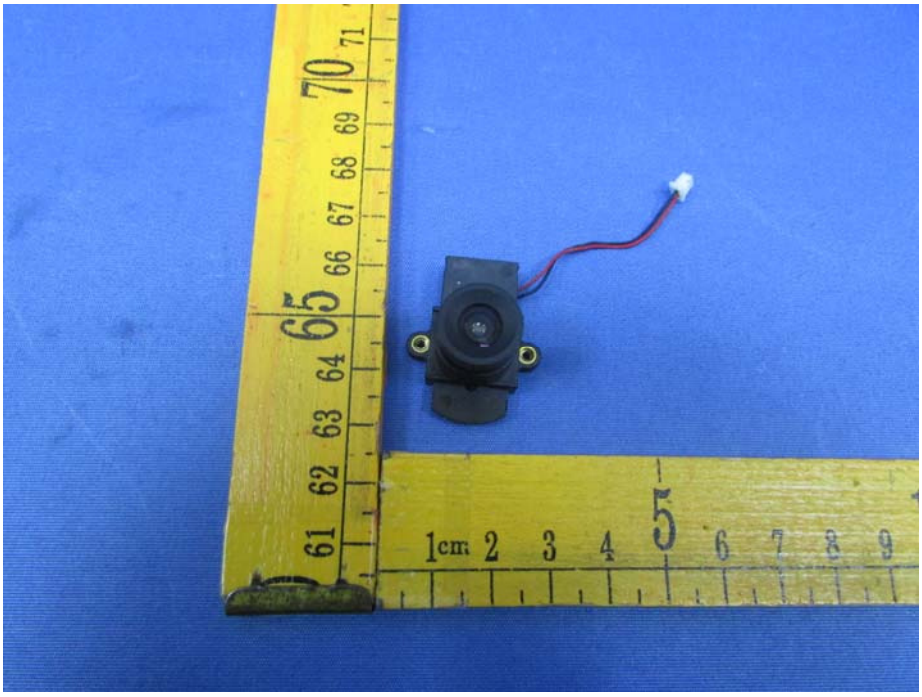
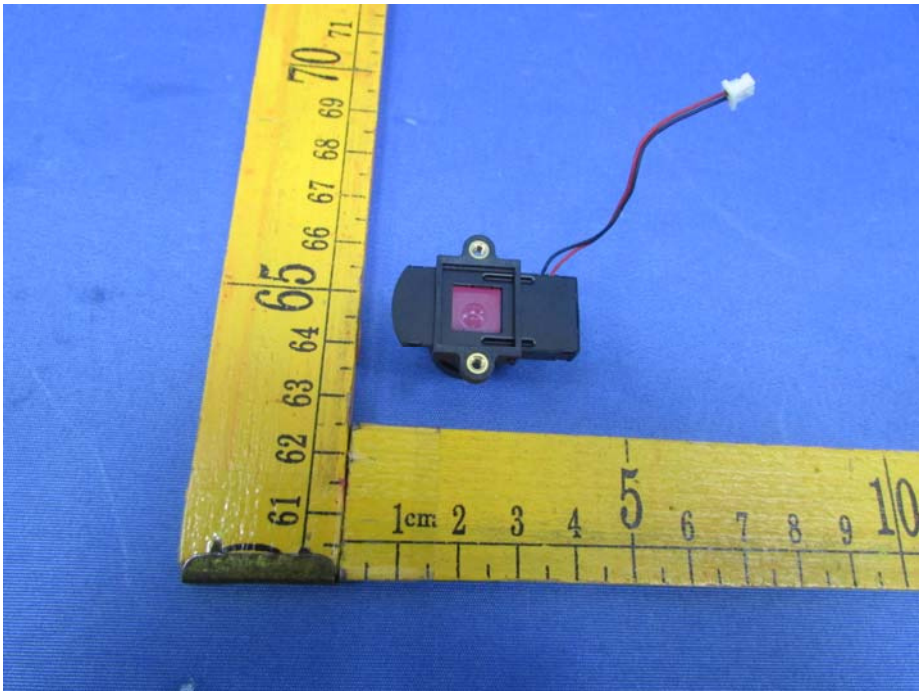
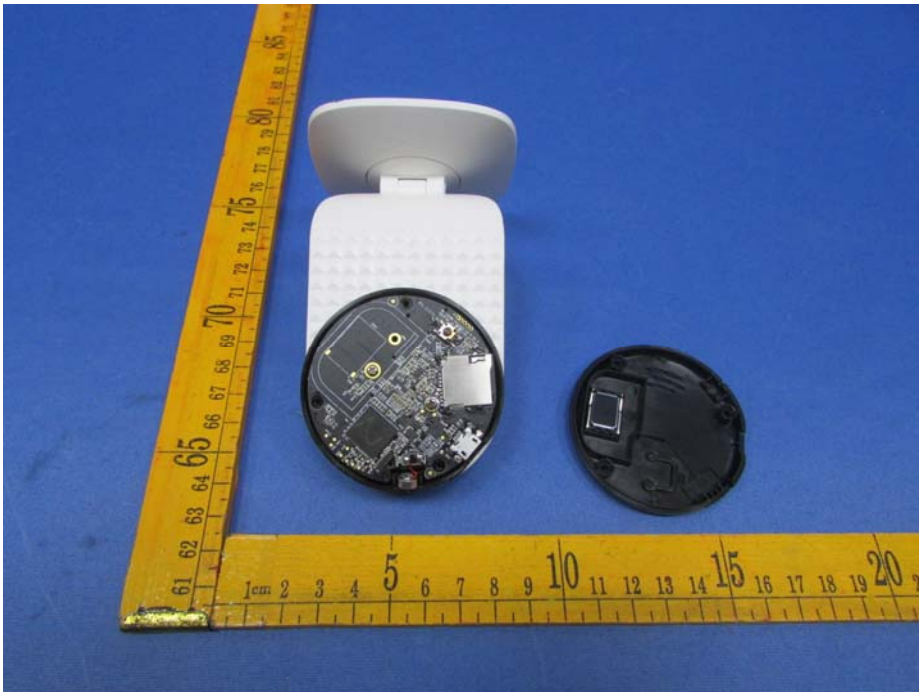
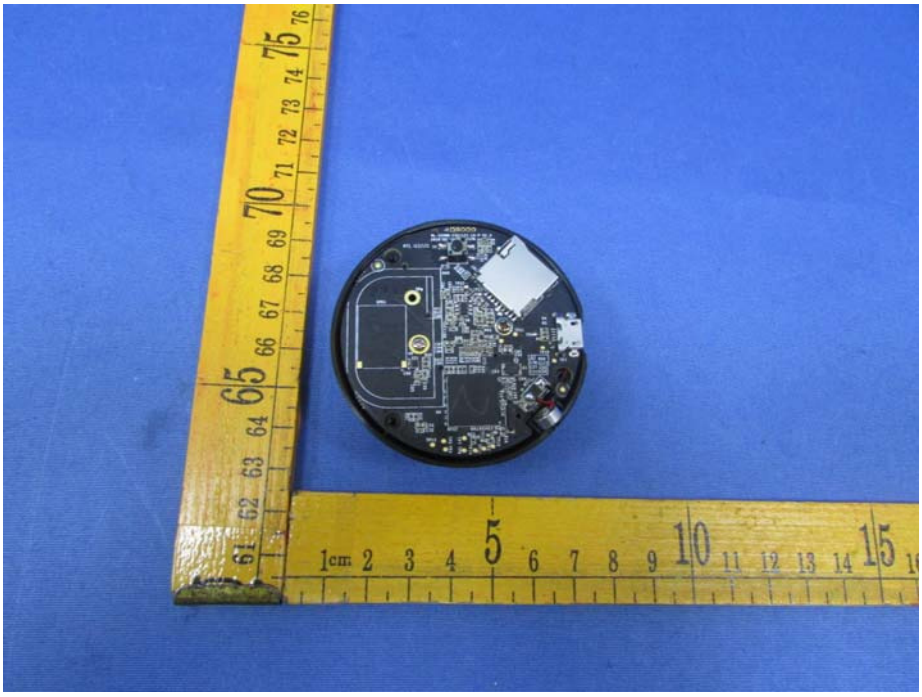


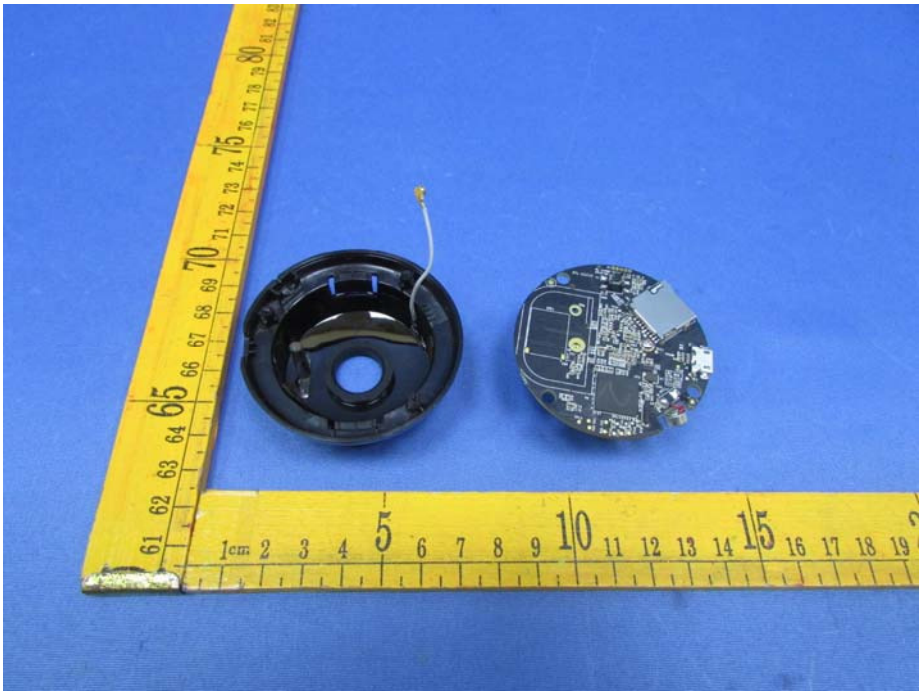

1cm 2 3 4 5 6 7 8 9
61 62 63 64 65 66 67 68 69 70 71

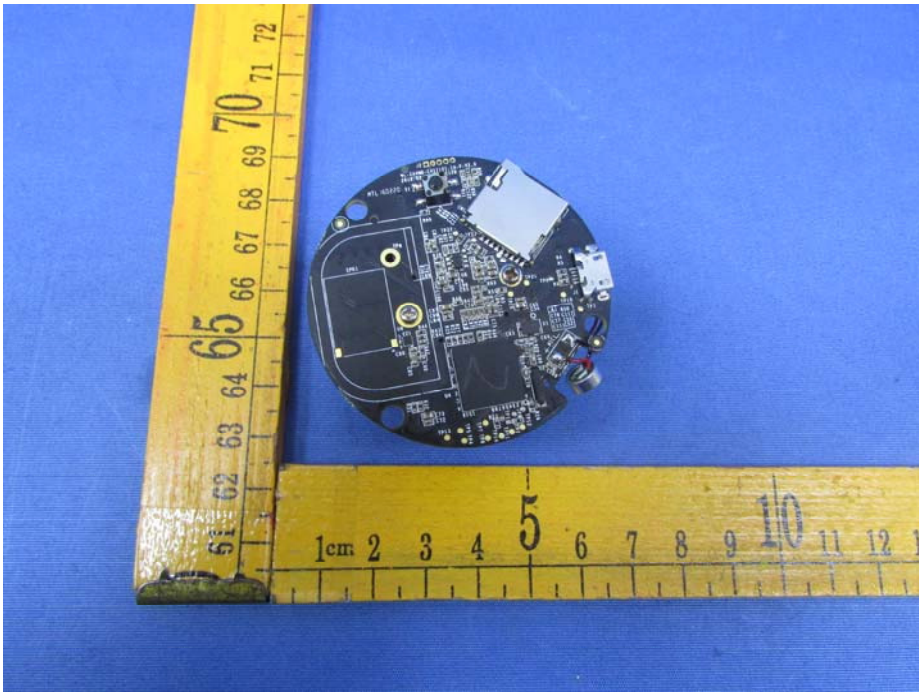

1cm 2 3 4 5 6 7 8 9 10
61 62 63 64 65 66 67 68 69 70 71

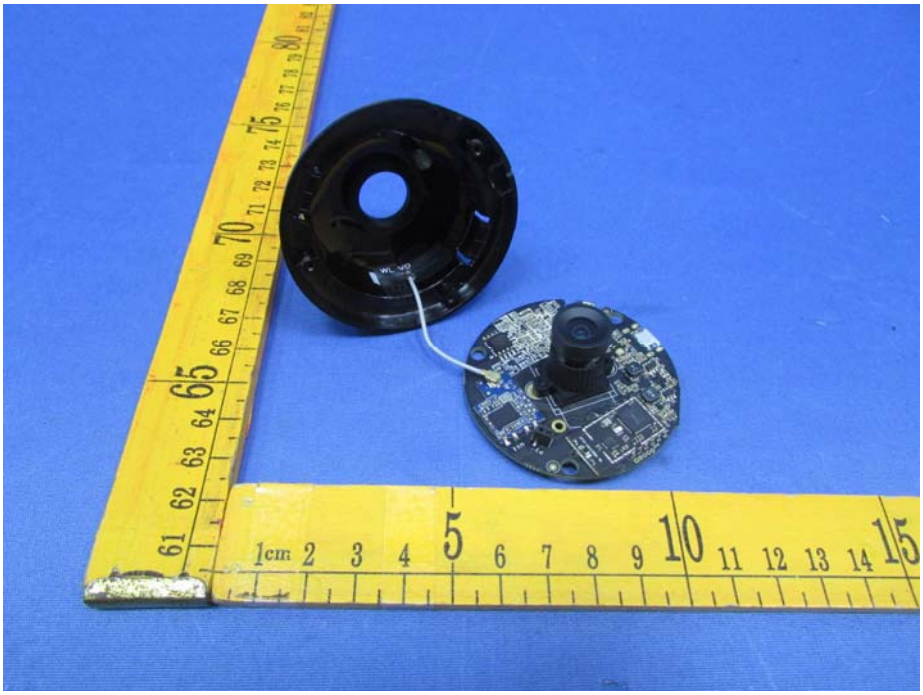
Model WL-ZAVMDPW-C41112-01













======End of Report======