

# FCC Test Report

## Part 15 subpart C

### Client Information:

Applicant : Shen Zhen Lianhua Electronics Co.,Ltd.

Applicant add. : 3F/11 Tanlang A Indusry Zone Xili Town,Nnanshang District, Shenzhen, China

### EUT Information:

EUT Name : Smart LED table lamp with speaker

Model No. : A8

Brand Name : N/A

FCC ID : QOG-A8

### Prepared By:

Shenzhen ZCT Technology Co.,Ltd.

Add. : 3/F., Building 5, Hongsheng Industrial Zone, Bao'an Road, Xixiang Street, Bao'an  
Shajing street, Bao'an district, Shenzhen City, China

Date of Receipt: May 10, 2017

Date of Test: May 11~18, 2017

Date of Issue: May 19, 2017

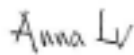
Test Result: **Pass**

### Test procedure used: ANSI C63.10-2013

This device described above has been tested by Shenzhen ZCT Technology Co.,Ltd., and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

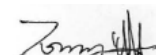
\*This test report must not be used by the client to claim product endorsement by any agency of the U.S. government.

Reviewed by:



Anna Lv

Approved by:



Tomy Wu

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## 2 Test Summary

### 2.1 Compliance with FCC Part 15 subpart C

| Test                          | Test Requirement   | Standard Paragraph         | Result |
|-------------------------------|--------------------|----------------------------|--------|
| Antenna Requirement           | FCC Part 15 C:2017 | Section 15.247(c)          | PASS   |
| Conduction Emissions          | FCC Part 15 C:2017 | Section 15.207(a)          | PASS   |
| Radiated Emissions            | FCC Part 15 C:2017 | Section 15.247(d)          | PASS   |
| Carrier Frequencies Separated | FCC Part 15 C:2017 | Section 15.247(a)(1)       | PASS   |
| Hopping Channel Number        | FCC Part 15 C:2017 | Section 15.247(a)(1) (iii) | PASS   |
| Dwell Time                    | FCC Part 15 C:2017 | Section 15.247(a)(1) (iii) | PASS   |
| Maximum Peak Output Power     | FCC Part 15 C:2017 | Section 15.247(b)          | PASS   |
| Band edge                     | FCC Part 15 C:2017 | Section 15.247(d)          | PASS   |
| Conducted Spurious Emissions  | FCC Part 15 C:2017 | Section 15.247(d)          | PASS   |

### 2.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, The following measurements uncertainty Levels have estimated based on ANSI C63.10:2013, the maximum value of the uncertainty as below

| No. | Item                    | Uncertainty         |
|-----|-------------------------|---------------------|
| 1   | Conducted Emission Test | $\pm 1.38\text{dB}$ |
| 2   | Radiated Emission Test  | $\pm 3.57\text{dB}$ |

### 3 General Information

#### 3.1 General Description of EUT

|                                                 |                                                                            |               |
|-------------------------------------------------|----------------------------------------------------------------------------|---------------|
| <b>Manufacturer:</b>                            | Shenzhen Lianhua Electronics Co., Ltd.                                     |               |
| <b>Address:</b>                                 | 3F/11 Tanlang A Indusry Zone Xili Town,Nnanshang District, Shenzhen, China |               |
| <b>EUT Name:</b>                                | Smart LED table lamp with speaker                                          |               |
| <b>Model No:</b>                                | A8                                                                         |               |
| <b>Derivative model No.:</b>                    | N/A                                                                        |               |
| <b>Operation frequency:</b>                     | 2402MHz to 2480MHz                                                         |               |
| <b>Channel Number:</b>                          | 79                                                                         |               |
| <b>Modulation Technology:</b>                   | GFSK, ( $\pi/4$ )DQPSK, 8DPSK                                              |               |
| <b>Bluetooth version:</b>                       | Bluetooth 2.1                                                              |               |
| <b>H/W No.:</b>                                 | V3.0                                                                       |               |
| <b>S/W No.:</b>                                 | V1.0                                                                       |               |
| <b>AntennaType:</b>                             | PCB antenna                                                                |               |
| <b>Antenna Gain:</b>                            | Maximum 1.2 dBi                                                            |               |
| <b>Brand Name:</b>                              | N/A                                                                        |               |
| <b>Power Supply Range:</b>                      | DC 5V from adapter, AC 120V/60Hz for adapter or DC 3.7V from battery       |               |
| <b>Power Supply:</b>                            | DC 5V from adapter, AC 120V/60Hz for adapter or DC 3.7V from battery       |               |
| <b>Power Cord:</b>                              | N/A                                                                        |               |
| <b>Signal Cord:</b>                             | N/A                                                                        |               |
| <b>Effective Isotropic Radiated Power(max):</b> | 1Mbps: 2.22dBm                                                             | Peak detector |
|                                                 | 3Mbps: 0.95dBm                                                             |               |

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

| Channel List |                 |         |                 |         |                 |
|--------------|-----------------|---------|-----------------|---------|-----------------|
| Channel      | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 00           | 2402            | 27      | 2429            | 54      | 2456            |
| 01           | 2403            | 28      | 2430            | 55      | 2457            |
| 02           | 2404            | 29      | 2431            | 56      | 2458            |
| 03           | 2405            | 30      | 2432            | 57      | 2459            |
| 04           | 2406            | 31      | 2433            | 58      | 2460            |
| 05           | 2407            | 32      | 2434            | 59      | 2461            |
| 06           | 2408            | 33      | 2435            | 60      | 2462            |
| 07           | 2409            | 34      | 2436            | 61      | 2463            |
| 08           | 2410            | 35      | 2437            | 62      | 2464            |
| 09           | 2411            | 36      | 2438            | 63      | 2465            |
| 10           | 2412            | 37      | 2439            | 64      | 2466            |
| 11           | 2413            | 38      | 2440            | 65      | 2467            |
| 12           | 2414            | 39      | 2441            | 66      | 2468            |
| 13           | 2415            | 40      | 2442            | 67      | 2469            |
| 14           | 2416            | 41      | 2443            | 68      | 2470            |
| 15           | 2417            | 42      | 2444            | 69      | 2471            |
| 16           | 2418            | 43      | 2445            | 70      | 2472            |
| 17           | 2419            | 44      | 2446            | 71      | 2473            |
| 18           | 2420            | 45      | 2447            | 72      | 2474            |
| 19           | 2421            | 46      | 2448            | 73      | 2475            |
| 20           | 2422            | 47      | 2449            | 74      | 2476            |
| 21           | 2423            | 48      | 2450            | 75      | 2477            |
| 22           | 2424            | 49      | 2451            | 76      | 2478            |
| 23           | 2425            | 50      | 2452            | 77      | 2479            |
| 24           | 2426            | 51      | 2453            | 78      | 2480            |
| 25           | 2427            | 52      | 2454            |         |                 |
| 26           | 2428            | 53      | 2455            |         |                 |

## 3.2 Test Location

All tests were performed at:

Dongguan Yaxu (AiT) Technology Limited

No.22, Jinqianling Third Street, Jitigang, Huangjiang,Dongguan, Guangdong, China

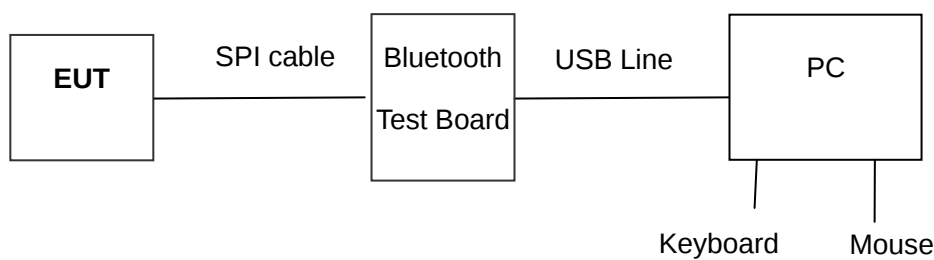
Tel.: +86.769.82020499 Fax.: +86.769.82020495

The FCC Registration No. of Dongguan Yaxu (AiT) Technology Limited is 248337.

### 3.3 Description of Test conditions

- (1) EUT was tested in normal configuration (Please See following Block diagram)

1. Block diagram of EUT configuration(TX Mode)



Note:

- 1.Connect the EUT as above block diagram of configuration, Run the software, set the transmit serial port/power/channel/packet type/data type/hopping or not,send configuration,than EUT enter the TX mode.
- 2.Using the laptop and the transform board to control the fixed transmitting frequency and other test mode. After finishing the test setting, the notebook and the transform board will be removed during measurements.
- 3.This product is performing independent test under the battery is fully charged.

- (2) E.U.T. test conditions:

15.31(e): For intentional radiators, measurements of the variation of the input power or the adiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

- (3) Test frequencies:

According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and. If required reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table:

| Frequency range over which device operates | Number of frequencies | Location in the range of operation          |
|--------------------------------------------|-----------------------|---------------------------------------------|
| 1 MHz or less                              | 1                     | Middle                                      |
| 1 to 10 MHz                                | 2                     | 1 near top and 1 near bottom                |
| More than 10 MHz                           | 3                     | 1 near top, 1 near middle and 1 near bottom |

- (4) Frequency range of radiated measurements:

According to the 15.33, The test range will be up to the tenth harmonic of the highest fundamental frequency .

- (5) Pre-test the EUT in all transmitting mode at the lowest (2402 MHz), middle (2441 MHz) and highest (2480 MHz) channel with different data packet and conducted to determine the worst-case mode, only the worst-case results(1Mbps/3Mbps) are recorded in this report.
- (6) The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.

### 3.4 EUT Peripheral List

| No. | Equipment    | Manufacturer | EMC Compliance | Model No. | Serial No. | Power cord                  | signal cable                |
|-----|--------------|--------------|----------------|-----------|------------|-----------------------------|-----------------------------|
| 1   | AUX IN cable | N/A          | N/A            | N/A       | N/A        | N/A                         | 0.4m/unshielded /detachable |
| 1   | USB cable    | N/A          | N/A            | N/A       | N/A        | 0.4m/unshielded /detachable | N/A                         |

### 3.5 Test Peripheral List

| No. | Equipment            | Manufacturer | EMC Compliance | Model No. | Serial No. | Power cord                  | signal cable |
|-----|----------------------|--------------|----------------|-----------|------------|-----------------------------|--------------|
| 1   | Lap top              | ASUS         | N/A            | X401A     | X16-9 6072 | N/A                         | N/A          |
| 2   | Adapter (laptop)     | ASUS         | N/A            | EXA0703YH | N/A        | 1.8m/unshielded /detachable | N/A          |
| 3   | Bluetooth Test Board | N/A          | N/A            | N/A       | N/A        | N/A                         | N/A          |
| 4   | Adapter              | N/A          | N/A            | SCO602BTA | N/A        | 0.8m x 2 wires unscreened   | N/A          |

## 4 Equipments List for All Test Items

| No | Test Equipment                                             | Manufacturer    | Model No         | Serial No   | Cal. Date  | Cal. Due Date |
|----|------------------------------------------------------------|-----------------|------------------|-------------|------------|---------------|
| 1  | Spectrum Analyzer                                          | ADVANTEST       | R3182            | 150900201   | 2016.06.29 | 2017.06.28    |
| 2  | EMI Measuring Receiver                                     | Schaffner       | SCR3501          | 235         | 2016.06.29 | 2017.06.28    |
| 3  | Low Noise Pre Amplifier                                    | Tsj             | MLA-10K01-B01-27 | 1205323     | 2016.06.29 | 2017.06.28    |
| 4  | Low Noise Pre Amplifier                                    | Tsj             | MLA-0120-A02-34  | 2648A04738  | 2016.06.29 | 2017.06.28    |
| 5  | TRILOG Super Broadband test Antenna                        | SCHWARZBECK     | VULB9160         | 9160-3206   | 2016.06.29 | 2017.06.28    |
| 6  | Broadband Horn Antenna                                     | SCHWARZBECK     | BBHA9120D        | 452         | 2016.06.29 | 2017.06.28    |
| 7  | SHF-EHF Horn Antenna                                       | SCHWARZBECK     | BBHA9170         | BBHA9170367 | 2016.06.29 | 2017.06.28    |
| 8  | 50Ω Coaxial Switch                                         | Anritsu         | MP59B            | 6200264416  | 2016.06.29 | 2017.06.28    |
| 9  | EMI Test Receiver                                          | R&S             | ESCI             | 100124      | 2016.06.29 | 2017.06.28    |
| 10 | LISN                                                       | Kyoritsu        | KNW-242          | 8-837-4     | 2016.06.29 | 2017.06.28    |
| 11 | LISN                                                       | Kyoritsu        | KNW-407          | 8-1789-3    | 2016.06.29 | 2017.06.28    |
| 12 | 50Ω Coaxial Switch                                         | Anritsu         | MP59B            | 6200264417  | 2016.06.29 | 2017.06.28    |
| 13 | Loop Antenna                                               | ARA             | PLA-1030/B       | 1029        | 2016.06.29 | 2017.06.28    |
| 14 | Power Meter                                                | R&S             | NRVS             | 101336      | 2016.06.29 | 2017.06.28    |
| 15 | EMI Test Receiver                                          | Rohde & Schwarz | ESIB26           | 100394      | 2016.06.29 | 2017.06.28    |
| 16 | Radiated Cable 1# (30MHz-1GHz)                             | FUJIKURA        | 5D-2W            | 01          | 2016.06.29 | 2017.06.28    |
| 17 | Radiated Cable 2# (1GHz -25GHz)                            | FUJIKURA        | 10D2W            | 02          | 2016.06.29 | 2017.06.28    |
| 18 | Conducted Cable 1#(9KHz-30MHz)                             | FUJIKURA        | 1D-2W            | 01          | 2016.06.29 | 2017.06.28    |
| 19 | SMA Antenna connector (Impedance:50OHM, cable loss:0.5dBm) | Dosin           | Dosin-SMA        | N/A         | N/A        | N/A           |
| 20 | Power sensor                                               | Anritsu         | MA2411B          | 1126168     | 2016.06.29 | 2017.06.28    |

Note: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

## 5 Test Result

### 5.1 Antenna Requirement

#### 5.1.1 Standard requirement

15.203 requirement: For intentional device, according to 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.

15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

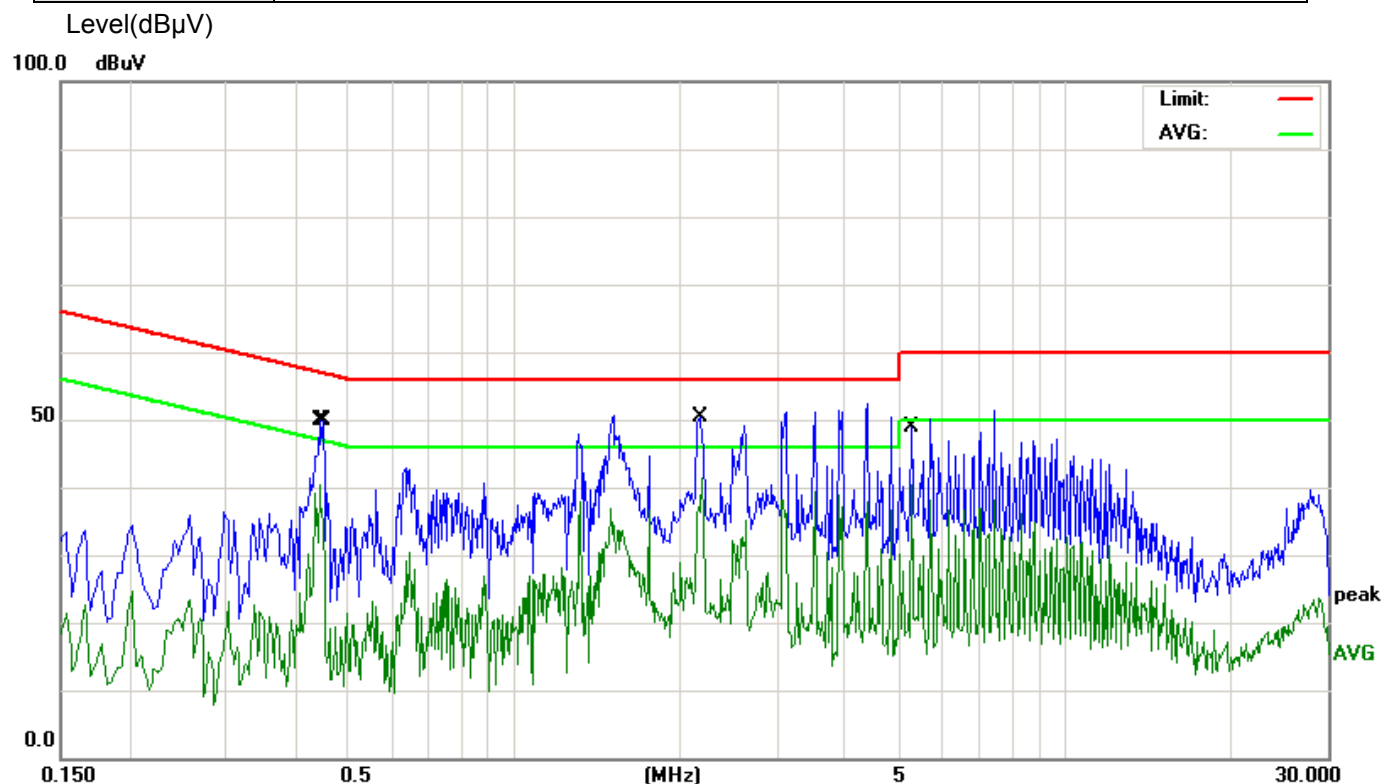
#### 5.1.2 EUT Antenna

The antenna is integrated on the main PCB and no consideration of replacement. Antenna gain is maximum 1.2 dBi from 2.4GHz to 2.5GHz.



## 5.2.4 Test results

|                       |                                              |                    |            |
|-----------------------|----------------------------------------------|--------------------|------------|
| EUT:                  | SMART LED TABLE LAMP WITH SPEAKER            | Model Name. :      | A8         |
| Temperature:          | 26 °C                                        | Relative Humidity: | 54%        |
| Pressure:             | 1010hPa                                      | Test Date :        | 2017-05-15 |
| Test Mode:            | TX (1Mbps) CH00 (worst case)                 | Phase :            | Line       |
| <b>Test Voltage :</b> | DC 5V from adapter, AC 120V/60Hz for adapter |                    |            |



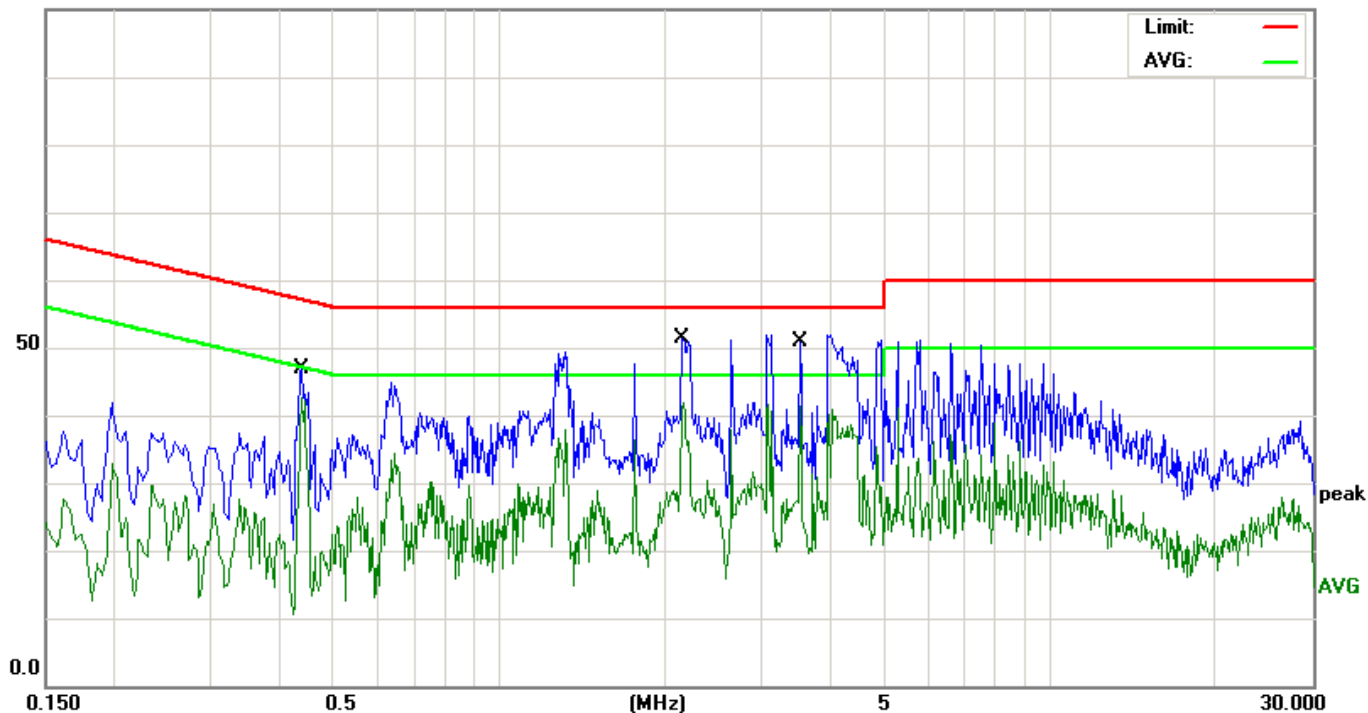
Measure data:

| No. | Mk. | Freq.  | Reading Level | Correct Factor | Measure-ment | Limit | Over   |          |
|-----|-----|--------|---------------|----------------|--------------|-------|--------|----------|
|     |     | MHz    | dBμV          | dB             | dBμV         | dBμV  | dB     | Detector |
| 1   |     | 0.4420 | 38.38         | 1.91           | 40.29        | 47.02 | -6.73  | AVG      |
| 2   |     | 0.4500 | 44.38         | 5.53           | 49.91        | 56.87 | -6.96  | QP       |
| 3   |     | 2.1739 | 40.50         | 10.00          | 50.50        | 56.00 | -5.50  | QP       |
| 4   | *   | 2.1979 | 31.36         | 10.00          | 41.36        | 46.00 | -4.64  | AVG      |
| 5   |     | 5.2698 | 38.83         | 10.12          | 48.95        | 60.00 | -11.05 | QP       |
| 6   |     | 5.2698 | 30.33         | 10.12          | 40.45        | 50.00 | -9.55  | AVG      |

|                |                                              |                    |            |
|----------------|----------------------------------------------|--------------------|------------|
| EUT:           | SMART LED TABLE LAMP WITH SPEAKER            | Model Name. :      | A8         |
| Temperature:   | 26 °C                                        | Relative Humidity: | 54%        |
| Pressure:      | 1010hPa                                      | Test Date :        | 2017-05-15 |
| Test Mode:     | TX (1Mbps) CH00 (worst case)                 | Phase :            | Neutral    |
| Test Voltage : | DC 5V from adapter, AC 120V/60Hz for adapter |                    |            |

Level(dBμV)

100.0 dBμV



Measure result:

| No. | Mk. | Freq.  | Reading Level | Correct Factor | Measure-ment | Limit | Over   |          |
|-----|-----|--------|---------------|----------------|--------------|-------|--------|----------|
|     |     | MHz    | dBμV          | dB             | dBμV         | dBμV  | dB     | Detector |
| 1   |     | 0.4380 | 45.85         | 1.00           | 46.85        | 57.10 | -10.25 | QP       |
| 2   |     | 0.4380 | 41.56         | 1.00           | 42.56        | 47.10 | -4.54  | AVG      |
| 3   |     | 2.1459 | 41.50         | 10.00          | 51.50        | 56.00 | -4.50  | QP       |
| 4   | *   | 2.1619 | 31.91         | 10.00          | 41.91        | 46.00 | -4.09  | AVG      |
| 5   |     | 3.5259 | 40.83         | 10.04          | 50.87        | 56.00 | -5.13  | QP       |
| 6   |     | 3.5259 | 31.39         | 10.04          | 41.43        | 46.00 | -4.57  | AVG      |

Factor = LISN factor + Cable Loss + Pulse limiter factor.

## 5.3 Radiated Emissions Measurement

### 5.3.1 Applied procedures / Limit

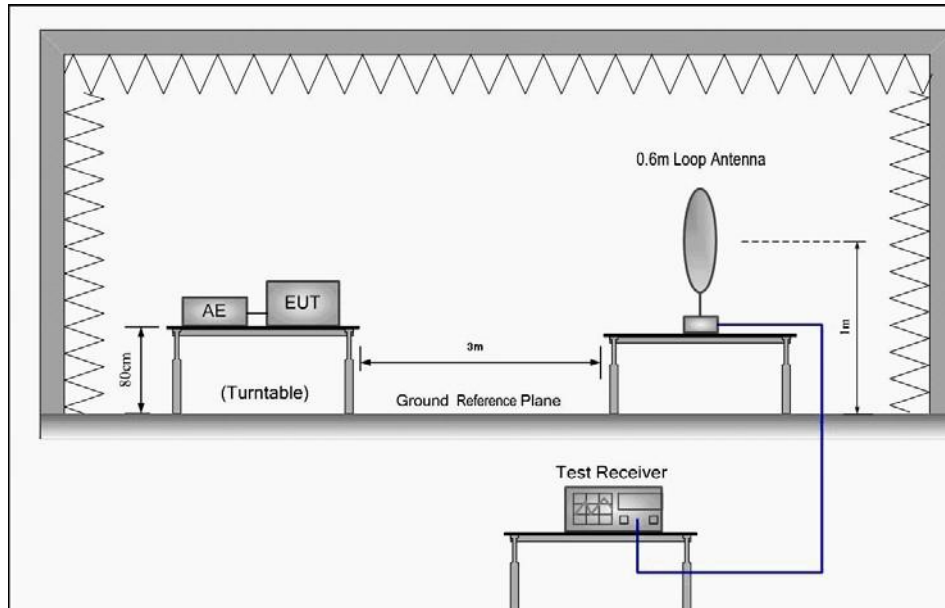
15.247(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that 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 Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

| Frequency of Emission (MHz) | Field Strength  |                          | Measurement Distance (meters) |
|-----------------------------|-----------------|--------------------------|-------------------------------|
|                             | $\mu\text{V/m}$ | $\text{dB}\mu\text{V/m}$ |                               |
| 0.009-0.49                  | 2400/F(kHz)     |                          | 300                           |
| 0.49-1.705                  | 24000/F(kHz)    |                          | 30                            |
| 1.705-30                    | 30              |                          | 30                            |
| 30-88                       | 100             | 40                       | 3                             |
| 88-216                      | 150             | 43.5                     | 3                             |
| 216-960                     | 200             | 46                       | 3                             |
| Above 960                   | 500             | 54                       | 3                             |

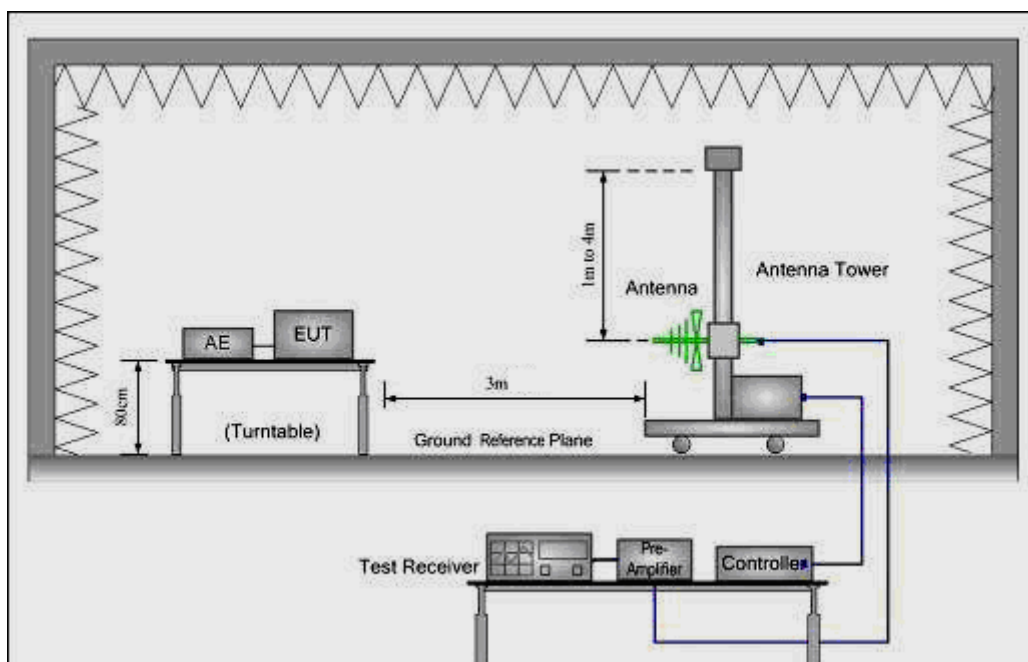
### 5.3.2 Test setup

#### Test Configuration:

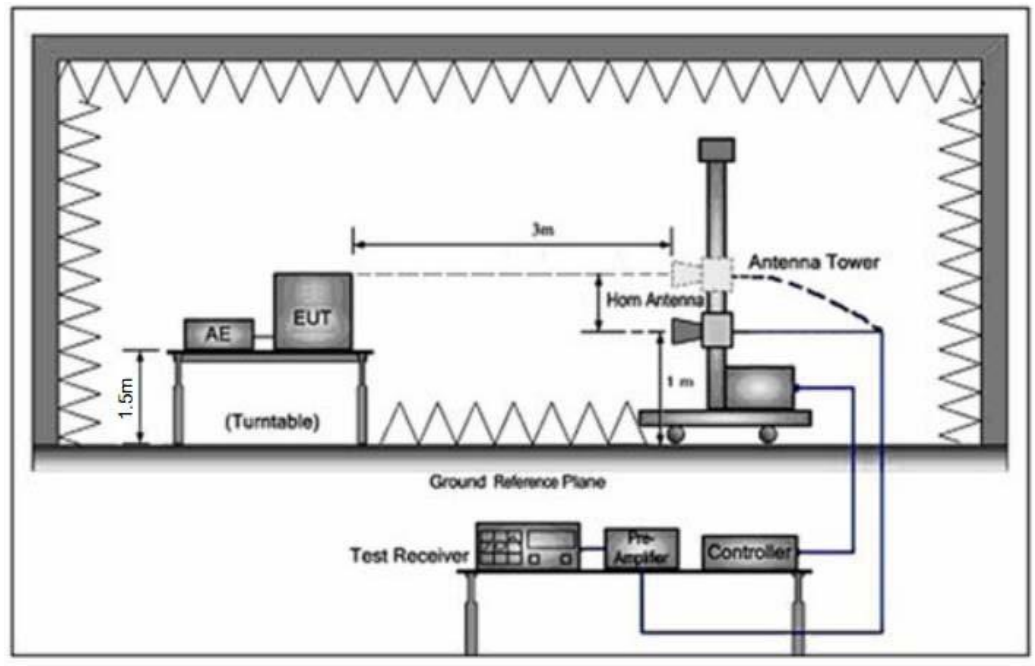
- 1) 9 kHz to 30 MHz emissions:



- 2) 30 MHz to 1 GHz emissions:



## 3) 1 GHz to 25 GHz emissions:



### 5.3.3 Test procedure

- a. The EUT was placed on the top of a wooden 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.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 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, for the test frequency of above 1GHz, horn antenna opening in the test would have been facing the EUT when rise or fall) and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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. The resolution bandwidth and video bandwidth of the test receiver was 1MHz and 1MHz for Peak detection at frequency above 1GHz.
- g. Test the EUT in the lowest channel (2402MHz), the middle channel (2441MHz), the Highest channel (2480MHz)
- h. Repeat above procedures until all frequencies measured was complete.

For measurement at frequency above 1GHz

EUT was placed upon a wooden test table which was placed on the turn table 1.5m above the horizontal metal ground plane.

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

In 18GHz to 25GHz, The EUT was checked by Horn ANT. But the test result at least have 20dB margin. The EUT was tested in Chamber Site.

### 5.3.4 Test Result

#### Radiated Emissions Test Data Below 30MHz

|                      |                                                          |                    |                      |
|----------------------|----------------------------------------------------------|--------------------|----------------------|
| EUT:                 | SMART LED TABLE LAMP WITH SPEAKER                        | Model Name :       | A8                   |
| Temperature:         | 25 °C                                                    | Test Data          | 2017-05-15           |
| Pressure:            | 1010 hPa                                                 | Relative Humidity: | 60%                  |
| Test Mode :          | TX                                                       | Test Voltage :     | DC 3.7V from battery |
| Measurement Distance | 3 m                                                      | Frenqucy Range     | 9KHz to 30MHz        |
| RBW/VBW              | 9KHz~150KHz/RB 200Hz for QP, 150KHz~30MHz/RB 9KHz for QP |                    |                      |

No emission found between lowest internal used/generated frequencies to 30MHz.

## Radiated Emissions Test Data Below 1GHz

|                      |                                                        |                    |                      |
|----------------------|--------------------------------------------------------|--------------------|----------------------|
| EUT:                 | SMART LED TABLE LAMP WITH SPEAKER                      | Model Name :       | A8                   |
| Temperature:         | 25 °C                                                  | Test Data          | 2017-05-15           |
| Pressure:            | 1010 hPa                                               | Relative Humidity: | 60%                  |
| Test Mode :          | TX (1Mbps) CH00 (worst case)                           | Test Voltage :     | DC 3.7V from battery |
| Measurement Distance | 3 m                                                    | Frenqucy Range     | 30MHz to 1GHz        |
| RBW/VBW              | 100KHz / 300KHz for spectrum, RBW=120KHz for receiver. |                    |                      |

### (a) Antenna polarization: Horizontal

| Frequency (MHz) | Reading Level (dBuV) | Correct Factor (dB) | Measure Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector Type |
|-----------------|----------------------|---------------------|------------------------|----------------|-------------|---------------|
| 38.6160         | 29.39                | -14.49              | 14.90                  | 40.00          | -25.10      | QUASIPeAK     |
| 65.8031         | 34.75                | -17.65              | 17.10                  | 40.00          | -22.90      | QUASIPeAK     |
| 137.4201        | 33.95                | -14.80              | 19.15                  | 43.50          | -24.35      | QUASIPeAK     |
| 207.8500        | 53.46                | -16.74              | 36.72                  | 43.50          | -6.78       | QUASIPeAK     |
| 400.4318        | 31.79                | -6.89               | 24.90                  | 46.00          | -21.10      | QUASIPeAK     |
| 716.6820        | 32.39                | -0.41               | 31.98                  | 46.00          | -14.02      | QUASIPeAK     |

### (b) Antenna polarization: vertical

| Frequency (MHz) | Reading Level (dBuV) | Correct Factor (dB) | Measure Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector Type |
|-----------------|----------------------|---------------------|------------------------|----------------|-------------|---------------|
| 37.4164         | 38.02                | -16.70              | 21.32                  | 40.00          | -18.68      | QUASIPeAK     |
| 102.7192        | 36.45                | -13.76              | 22.69                  | 43.50          | -20.81      | QUASIPeAK     |
| 169.0054        | 41.19                | -15.26              | 25.93                  | 43.50          | -17.57      | QUASIPeAK     |
| 211.5264        | 56.51                | -16.61              | 39.90                  | 43.50          | -3.60       | QUASIPeAK     |
| 230.0985        | 54.91                | -15.12              | 39.79                  | 46.00          | -6.21       | QUASIPeAK     |
| 798.9796        | 28.36                | 3.44                | 31.80                  | 46.00          | -14.20      | QUASIPeAK     |

Note:

Measurement Level = Reading Level + Factor

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier

**Radiated Emissions Test Data Above 1GHz**

|                      |                                            |                    |                      |
|----------------------|--------------------------------------------|--------------------|----------------------|
| EUT:                 | SMART LED TABLE LAMP WITH SPEAKER          | Model Name :       | A8                   |
| Temperature:         | 25 °C                                      | Test Data          | 2017-05-15           |
| Pressure:            | 1010 hPa                                   | Relative Humidity: | 60%                  |
| Test Mode :          | 1Mbps                                      | Test Voltage :     | DC 3.7V from battery |
| Measurement Distance | 3 m                                        | Frenqucy Range     | 1GHz to 25GHz        |
| RBW/VBW              | 1MHz/1MHz for Peak, 1MHz/10Hz for Average. |                    |                      |

1~25 GHz Harmonics &amp; Spurious Emissions. Peak &amp; Average Measurement

**Vertical Measurement:**

| Frequency (MHz) | Reading Level (dB $\mu$ V) | factor (dB) | Emission Level (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) | Antenna polarization |
|-----------------|----------------------------|-------------|-------------------------------|----------------------|-------------|----------------------|
| 4804.000        | 50.10                      | 5.06        | 55.16                         | 74.00                | -18.84      | peak                 |
| 4804.000        | 36.46                      | 5.06        | 41.52                         | 54.00                | -12.48      | AVG                  |
| 7206.000        | 49.27                      | 7.03        | 56.30                         | 74.00                | -17.70      | peak                 |
| 7206.000        | 31.69                      | 7.03        | 38.72                         | 54.00                | -15.28      | AVG                  |
| 9608.000        | 42.88                      | 10.63       | 53.51                         | 74.00                | -20.49      | peak                 |
| 9608.000        | 28.43                      | 10.63       | 39.06                         | 54.00                | -14.94      | AVG                  |

**Horizontal Measurement:**

| Frequency (MHz) | Reading Level (dB $\mu$ V) | factor (dB) | Emission Level (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) | Antenna polarization |
|-----------------|----------------------------|-------------|-------------------------------|----------------------|-------------|----------------------|
| 4804.000        | 52.57                      | 5.06        | 57.63                         | 74.00                | -16.37      | peak                 |
| 4804.000        | 36.63                      | 5.06        | 41.69                         | 54.00                | -12.31      | AVG                  |
| 7206.000        | 48.47                      | 7.03        | 55.50                         | 74.00                | -18.50      | peak                 |
| 7206.000        | 33.25                      | 7.03        | 40.28                         | 54.00                | -13.72      | AVG                  |
| 9608.000        | 43.11                      | 10.63       | 53.74                         | 74.00                | -20.26      | peak                 |
| 9608.000        | 28.37                      | 10.63       | 39.00                         | 54.00                | -15.00      | AVG                  |

Note:

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss-Preamp Factor

Low Channel 00: 2402 MHz

Data rate: 1Mbps

## 1~25 GHz Harmonics &amp; Spurious Emissions. Peak &amp; Average Measurement

## Vertical Measurement:

| Frequency (MHz) | Reading Level (dB $\mu$ V) | factor (dB) | Emission Level (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) | Antenna polarization |
|-----------------|----------------------------|-------------|-------------------------------|----------------------|-------------|----------------------|
| 4882.000        | 51.44                      | 5.14        | 56.58                         | 74.00                | -17.42      | peak                 |
| 4882.000        | 36.56                      | 5.14        | 41.70                         | 54.00                | -12.30      | AVG                  |
| 7323.000        | 45.39                      | 7.54        | 52.93                         | 74.00                | -21.07      | peak                 |
| 7323.000        | 31.45                      | 7.54        | 38.99                         | 54.00                | -15.01      | AVG                  |
| 9764.000        | 40.71                      | 11.39       | 52.10                         | 74.00                | -21.90      | peak                 |
| 9764.000        | 28.43                      | 11.39       | 39.82                         | 54.00                | -14.18      | AVG                  |

## Horizontal Measurement:

| Frequency (MHz) | Reading Level (dB $\mu$ V) | factor (dB) | Emission Level (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) | Antenna polarization |
|-----------------|----------------------------|-------------|-------------------------------|----------------------|-------------|----------------------|
| 4882.000        | 52.47                      | 5.14        | 57.61                         | 74.00                | -16.39      | peak                 |
| 4882.000        | 35.89                      | 5.14        | 41.03                         | 54.00                | -12.97      | AVG                  |
| 7323.000        | 45.67                      | 7.54        | 53.21                         | 74.00                | -20.79      | peak                 |
| 7323.000        | 32.99                      | 7.54        | 40.53                         | 54.00                | -13.47      | AVG                  |
| 9764.000        | 41.85                      | 11.39       | 53.24                         | 74.00                | -20.76      | peak                 |
| 9764.000        | 25.42                      | 11.39       | 36.81                         | 54.00                | -17.19      | AVG                  |

## Note:

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss-Preamp Factor

Middle Channel 39: 2441 MHz

Data rate: 1Mbps

## 1~25 GHz Harmonics &amp; Spurious Emissions. Peak &amp; Average Measurement

**Vertical Measurement:**

| Frequency (MHz) | Reading Level (dB $\mu$ V) | factor (dB) | Emission Level (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) | Antenna polarization |
|-----------------|----------------------------|-------------|-------------------------------|----------------------|-------------|----------------------|
| 4960.000        | 50.72                      | 5.22        | 55.94                         | 74.00                | -18.06      | peak                 |
| 4960.000        | 35.63                      | 5.22        | 40.85                         | 54.00                | -13.15      | AVG                  |
| 7440.000        | 46.41                      | 8.06        | 54.47                         | 74.00                | -19.53      | peak                 |
| 7440.000        | 33.61                      | 8.06        | 41.67                         | 54.00                | -12.33      | AVG                  |
| 9920.000        | 42.37                      | 12.10       | 54.47                         | 74.00                | -19.53      | peak                 |
| 9920.000        | 28.22                      | 12.10       | 40.32                         | 54.00                | -13.68      | AVG                  |

**Horizontal Measurement:**

| Frequency (MHz) | Reading Level (dB $\mu$ V) | factor (dB) | Emission Level (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) | Antenna polarization |
|-----------------|----------------------------|-------------|-------------------------------|----------------------|-------------|----------------------|
| 4960.000        | 52.75                      | 5.22        | 57.97                         | 74.00                | -16.03      | peak                 |
| 4960.000        | 37.86                      | 5.22        | 43.08                         | 54.00                | -10.92      | AVG                  |
| 7440.000        | 45.55                      | 8.06        | 53.61                         | 74.00                | -20.39      | peak                 |
| 7440.000        | 33.79                      | 8.06        | 41.85                         | 54.00                | -12.15      | AVG                  |
| 9920.000        | 40.83                      | 12.10       | 52.93                         | 74.00                | -21.07      | peak                 |
| 9920.000        | 25.21                      | 12.10       | 37.31                         | 54.00                | -16.69      | AVG                  |

## Note:

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss-Preamplifier Factor

High Channel 78: 2480 MHz

Data rate: 1Mbps

|                      |                                            |                    |                      |
|----------------------|--------------------------------------------|--------------------|----------------------|
| EUT:                 | SMART LED TABLE LAMP WITH SPEAKER          | Model Name :       | A8                   |
| Temperature:         | 25 °C                                      | Test Data          | 2017-05-15           |
| Pressure:            | 1010 hPa                                   | Relative Humidity: | 60%                  |
| Test Mode :          | 3Mbps                                      | Test Voltage :     | DC 3.7V from battery |
| Measurement Distance | 3 m                                        | Frenqucy Range     | 1GHz to 25GHz        |
| RBW/VBW              | 1MHz/1MHz for Peak, 1MHz/10Hz for Average. |                    |                      |

# 1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

## Vertical Measurement:

| Frequency (MHz) | Reading Level (dBμV) | factor (dB) | Emission Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Antenna polarization |
|-----------------|----------------------|-------------|-------------------------|----------------|-------------|----------------------|
| 4804.000        | 50.62                | 5.06        | 55.68                   | 74.00          | -18.32      | peak                 |
| 4804.000        | 35.42                | 5.06        | 40.48                   | 54.00          | -13.52      | AVG                  |
| 7206.000        | 43.83                | 7.03        | 50.86                   | 74.00          | -23.14      | peak                 |
| 7206.000        | 27.32                | 7.03        | 34.35                   | 54.00          | -19.65      | AVG                  |
| 9608.000        | 39.86                | 10.63       | 50.49                   | 74.00          | -23.51      | peak                 |
| 9608.000        | 24.57                | 10.63       | 35.20                   | 54.00          | -18.80      | AVG                  |

## Horizontal Measurement:

| Frequency (MHz) | Reading Level (dBμV) | factor (dB) | Emission Level (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Antenna polarization |
|-----------------|----------------------|-------------|-------------------------|----------------|-------------|----------------------|
| 4804.000        | 52.65                | 5.06        | 57.71                   | 74.00          | -16.29      | peak                 |
| 4804.000        | 36.83                | 5.06        | 41.89                   | 54.00          | -12.11      | AVG                  |
| 7206.000        | 46.45                | 7.03        | 53.48                   | 74.00          | -20.52      | peak                 |
| 7206.000        | 32.43                | 7.03        | 39.46                   | 54.00          | -14.54      | AVG                  |
| 9608.000        | 42.56                | 10.63       | 53.19                   | 74.00          | -20.81      | peak                 |
| 9608.000        | 26.11                | 10.63       | 36.74                   | 54.00          | -17.26      | AVG                  |

## Note:

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss-Preamp Factor

Low Channel 00: 2402 MHz

Data rate: 3Mbps

## 1~25 GHz Harmonics &amp; Spurious Emissions. Peak &amp; Average Measurement

## Vertical Measurement:

| Frequency (MHz) | Reading Level (dB $\mu$ V) | factor (dB) | Emission Level (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) | Antenna polarization |
|-----------------|----------------------------|-------------|-------------------------------|----------------------|-------------|----------------------|
| 4882.000        | 49.57                      | 5.14        | 54.71                         | 74.00                | -19.29      | peak                 |
| 4882.000        | 36.63                      | 5.14        | 41.77                         | 54.00                | -12.23      | AVG                  |
| 7323.000        | 42.44                      | 7.54        | 49.98                         | 74.00                | -24.02      | peak                 |
| 7323.000        | 32.21                      | 7.54        | 39.75                         | 54.00                | -14.25      | AVG                  |
| 9764.000        | 39.52                      | 11.39       | 50.91                         | 74.00                | -23.09      | peak                 |
| 9764.000        | 26.73                      | 11.39       | 38.12                         | 54.00                | -15.88      | AVG                  |

## Horizontal Measurement:

| Frequency (MHz) | Reading Level (dB $\mu$ V) | factor (dB) | Emission Level (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) | Antenna polarization |
|-----------------|----------------------------|-------------|-------------------------------|----------------------|-------------|----------------------|
| 4882.000        | 51.28                      | 5.14        | 56.42                         | 74.00                | -17.58      | peak                 |
| 4882.000        | 36.46                      | 5.14        | 41.60                         | 54.00                | -12.40      | AVG                  |
| 7323.000        | 47.61                      | 7.54        | 55.15                         | 74.00                | -18.85      | peak                 |
| 7323.000        | 31.29                      | 7.54        | 38.83                         | 54.00                | -15.17      | AVG                  |
| 9764.000        | 42.73                      | 11.39       | 54.12                         | 74.00                | -19.88      | peak                 |
| 9764.000        | 28.25                      | 11.39       | 39.64                         | 54.00                | -14.36      | AVG                  |

Note:

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss-Preamp Factor

Middle Channel 39: 2441 MHz

Data rate: 3Mbps

## 1~25 GHz Harmonics &amp; Spurious Emissions. Peak &amp; Average Measurement

## Vertical Measurement:

| Frequency (MHz) | Reading Level (dB $\mu$ V) | factor (dB) | Emission Level (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) | Antenna polarization |
|-----------------|----------------------------|-------------|-------------------------------|----------------------|-------------|----------------------|
| 4960.000        | 50.66                      | 5.22        | 55.88                         | 74.00                | -18.12      | peak                 |
| 4960.000        | 36.82                      | 5.22        | 42.04                         | 54.00                | -11.96      | AVG                  |
| 7440.000        | 46.79                      | 8.06        | 54.85                         | 74.00                | -19.15      | peak                 |
| 7440.000        | 31.13                      | 8.06        | 39.19                         | 54.00                | -14.81      | AVG                  |
| 9920.000        | 40.62                      | 12.10       | 52.72                         | 74.00                | -21.28      | peak                 |
| 9920.000        | 28.72                      | 12.10       | 40.82                         | 54.00                | -13.18      | AVG                  |

## Horizontal Measurement:

| Frequency (MHz) | Reading Level (dB $\mu$ V) | factor (dB) | Emission Level (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) | Antenna polarization |
|-----------------|----------------------------|-------------|-------------------------------|----------------------|-------------|----------------------|
| 4960.000        | 51.23                      | 5.22        | 56.45                         | 74.00                | -17.55      | 51.03                |
| 4960.000        | 36.29                      | 5.22        | 41.51                         | 54.00                | -12.49      | 36.45                |
| 7440.000        | 48.89                      | 8.06        | 56.95                         | 74.00                | -17.05      | 48.73                |
| 7440.000        | 34.33                      | 8.06        | 42.39                         | 54.00                | -11.61      | 34.58                |
| 9920.000        | 42.18                      | 12.10       | 54.28                         | 74.00                | -19.72      | 42.40                |
| 9920.000        | 25.09                      | 12.10       | 37.19                         | 54.00                | -16.81      | 25.57                |

## Note:

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss-Preamplifier Factor

High Channel 78: 2480 MHz

Data rate: 3Mbps

### 5.3.5 TEST RESULTS (Restricted Bands Requirements)

|              |                                                                                                                                                                                                                                                                                                                          |                    |                      |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------|
| EUT:         | SMART LED TABLE LAMP<br>WITH SPEAKER                                                                                                                                                                                                                                                                                     | Model Name :       | A8                   |
| Temperature: | 26 °C                                                                                                                                                                                                                                                                                                                    | Relative Humidity: | 60%                  |
| Pressure:    | 1010 hPa                                                                                                                                                                                                                                                                                                                 | Test Voltage :     | DC 3.7V from battery |
| Test Mode :  | TX 2402MHz/2480MHz (1Mbps)                                                                                                                                                                                                                                                                                               |                    |                      |
| Note:        | 1. The transmitter was setup to transmit at the lowest channel (CH00). Then the field strength was measured at 2310-2390 MHz.<br>2. The transmitter was setup to transmit at the highest channel (CH78). Then the field strength was measured at 2483.5-2500 MHz.<br>3. The data of 2390MHz and 2483.5MHz was the worst. |                    |                      |

| Freq.<br>(MHz) | Ant.Pol.<br>H/V | Reading        |              | Ant/CF<br>CF(dB) | Act              |                | Limit            |                | Note |
|----------------|-----------------|----------------|--------------|------------------|------------------|----------------|------------------|----------------|------|
|                |                 | Peak<br>(dBuv) | AV<br>(dBuv) |                  | Peak<br>(dBuv/m) | AV<br>(dBuv/m) | Peak<br>(dBuv/m) | AV<br>(dBuv/m) |      |
| 2390.00        | V               | 40.35          | 26.54        | -5.79            | 34.56            | 20.75          | 74.00            | 54.00          | CH00 |
| 2390.00        | H               | 39.97          | 26.85        | -5.79            | 34.18            | 21.06          | 74.00            | 54.00          | CH00 |
| 2483.50        | V               | 39.43          | 29.66        | -4.98            | 34.45            | 24.68          | 74.00            | 54.00          | CH78 |
| 2483.50        | H               | 38.83          | 29.68        | -4.98            | 33.85            | 24.70          | 74.00            | 54.00          | CH78 |

#### Remark:

- (1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode
- (2) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna
- (3) Corr.Factor = Antenna Factor + Cable Loss – Pre-amplifier.

|              |                                                                                                                                                                                                                                                                                                                          |                    |                      |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------------|
| EUT:         | SMART LED TABLE LAMP WITH SPEAKER                                                                                                                                                                                                                                                                                        | Model Name :       | A8                   |
| Temperature: | 26℃                                                                                                                                                                                                                                                                                                                      | Relative Humidity: | 60%                  |
| Pressure:    | 1010 hPa                                                                                                                                                                                                                                                                                                                 | Test Voltage :     | DC 3.7V from battery |
| Test Mode :  | TX 2402MHz/2480MHz (3Mbps)                                                                                                                                                                                                                                                                                               |                    |                      |
| Note:        | 1. The transmitter was setup to transmit at the lowest channel (CH00). Then the field strength was measured at 2310-2390 MHz.<br>2. The transmitter was setup to transmit at the highest channel (CH78). Then the field strength was measured at 2483.5-2500 MHz.<br>3. The data of 2390MHz and 2483.5MHz was the worst. |                    |                      |

| Freq.<br>(MHz) | Ant.Pol.<br>H/V | Reading        |              | Ant/CF<br>CF(dB) | Act              |                | Limit            |                | Note |
|----------------|-----------------|----------------|--------------|------------------|------------------|----------------|------------------|----------------|------|
|                |                 | Peak<br>(dBuv) | AV<br>(dBuv) |                  | Peak<br>(dBuv/m) | AV<br>(dBuv/m) | Peak<br>(dBuv/m) | AV<br>(dBuv/m) |      |
| 2390.00        | V               | 39.96          | 26.78        | -5.79            | 34.17            | 20.99          | 74.00            | 54.00          | CH00 |
| 2390.00        | H               | 38.64          | 27.72        | -5.79            | 32.85            | 21.93          | 74.00            | 54.00          | CH00 |
| 2483.50        | V               | 40.68          | 29.93        | -4.98            | 35.70            | 24.95          | 74.00            | 54.00          | CH78 |
| 2483.50        | H               | 38.56          | 29.58        | -4.98            | 33.58            | 24.60          | 74.00            | 54.00          | CH78 |

#### Remark:

- (1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode
- (2) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna
- (3) Corr.Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Remark: No any other emission which falls in restricted bands can be detected and be reported.

**Test result: The unit does meet the FCC requirements.**

## 5.4 BANDWIDTH TEST

### 5.4.1 Applied procedures / Limit

For frequency hopping system operating in the 2400-2483.5MHz, If the 20dB bandwidth of hopping channel is greater than 25kHz, two-thirds 20dB bandwidth of hopping channel shall be a minimum limit for the hopping channel separation.

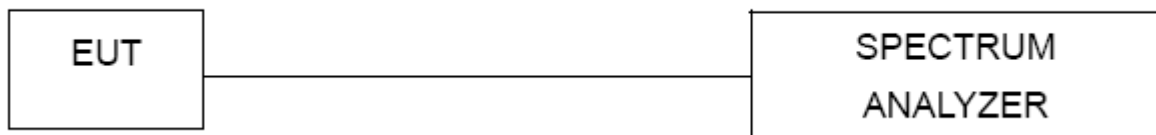
### 5.4.2 Test procedure

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. Spectrum Setting: RBW= 100KHz, VBW  $\geq$  RBW, Sweep time = Auto.

### 5.4.3 Deviation from standard

No deviation.

### 5.4.4 Test setup



## 5.4.5 Test results

|              |                                      |                    |                      |
|--------------|--------------------------------------|--------------------|----------------------|
| EUT:         | SMART LED TABLE LAMP<br>WITH SPEAKER | Model Name :       | A8                   |
| Temperature: | 26 °C                                | Relative Humidity: | 53%                  |
| Pressure:    | 1010 hPa                             | Test Power :       | DC 3.7V from battery |
| Test Mode :  | TX 1Mbps\ 2Mbps\ 3Mbps               |                    |                      |

### Test result:

#### Normal mode:

| Test Channel | Bandwidth(MHz) | 2/3 bandwidth(MHz) |
|--------------|----------------|--------------------|
| Lowest       | 1.088625       | 0.72575            |
| Middle       | 1.091625       | 0.72775            |
| Highest      | 1.085437       | 0.72362            |

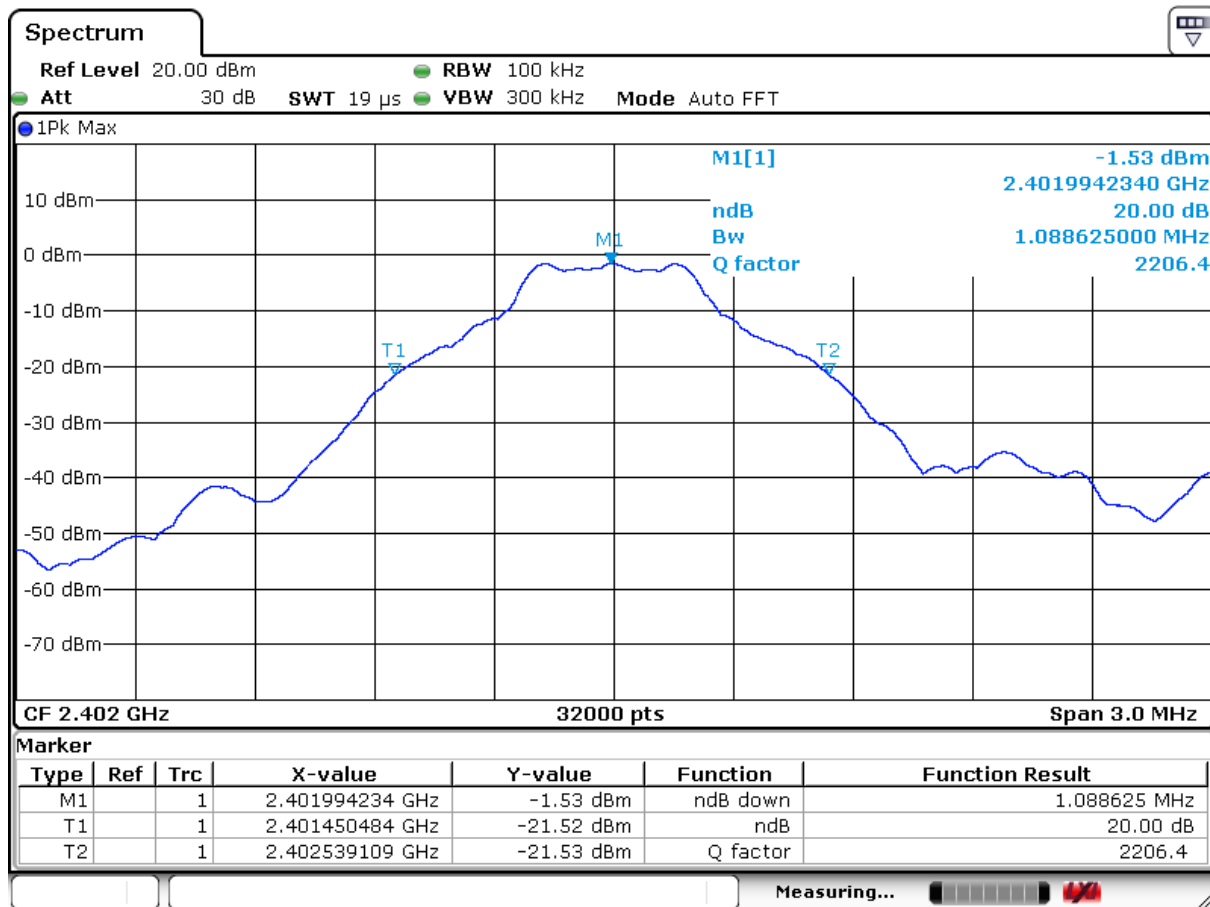
#### 2EDR mode:

| Test Channel | bandwidth | 2/3 bandwidth |
|--------------|-----------|---------------|
| Lowest       | 1.348219  | 0.89881       |
| Middle       | 1.342031  | 0.89469       |
| Highest      | 1.353094  | 0.90206       |

#### 3EDR mode:

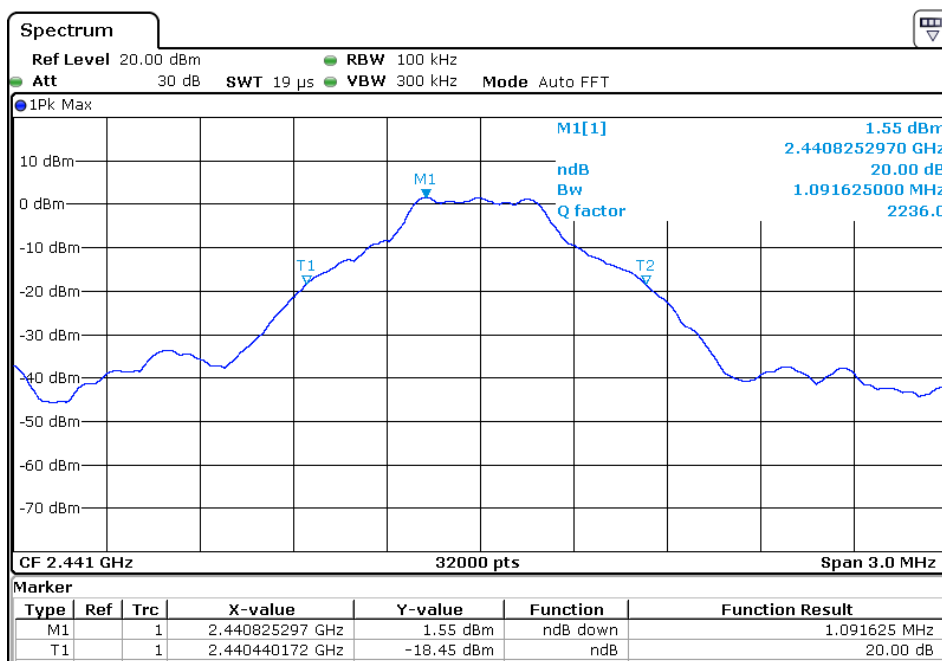
| Test Channel | bandwidth | 2/3 bandwidth |
|--------------|-----------|---------------|
| Lowest       | 1.333031  | 0.88869       |
| Middle       | 1.334906  | 0.88994       |
| Highest      | 1.335375  | 0.89025       |

## CH00-1Mbps

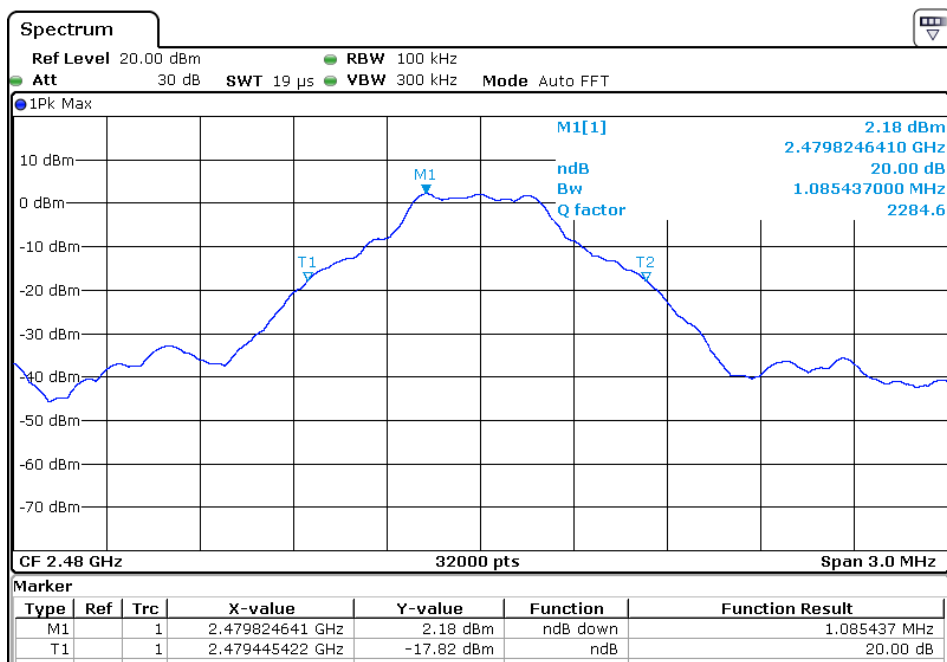


Date: 18 MAY 2017 10:55:33

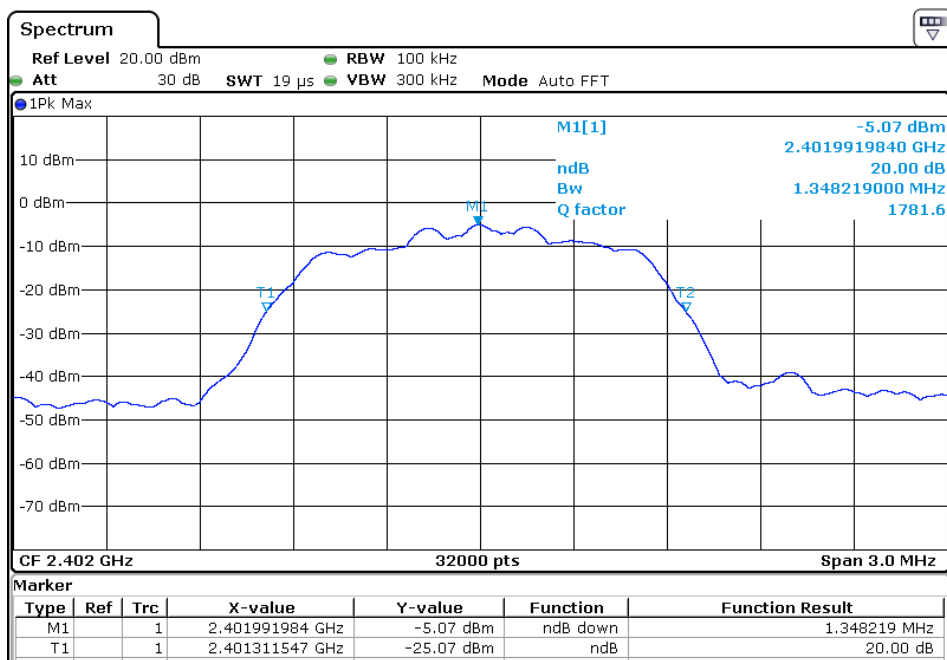
## CH 39-1Mbps



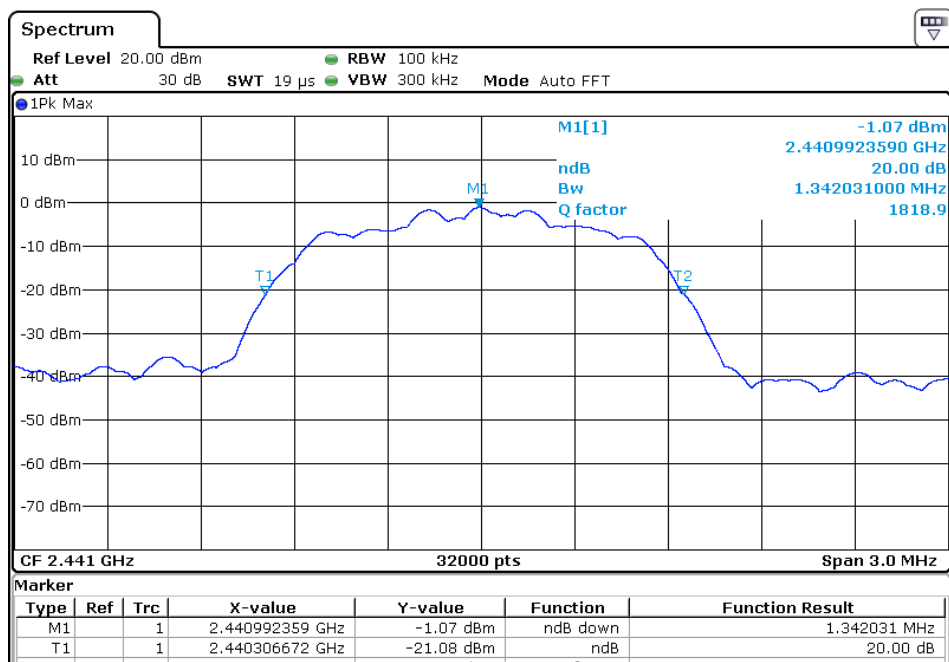
## CH 78-1Mbps



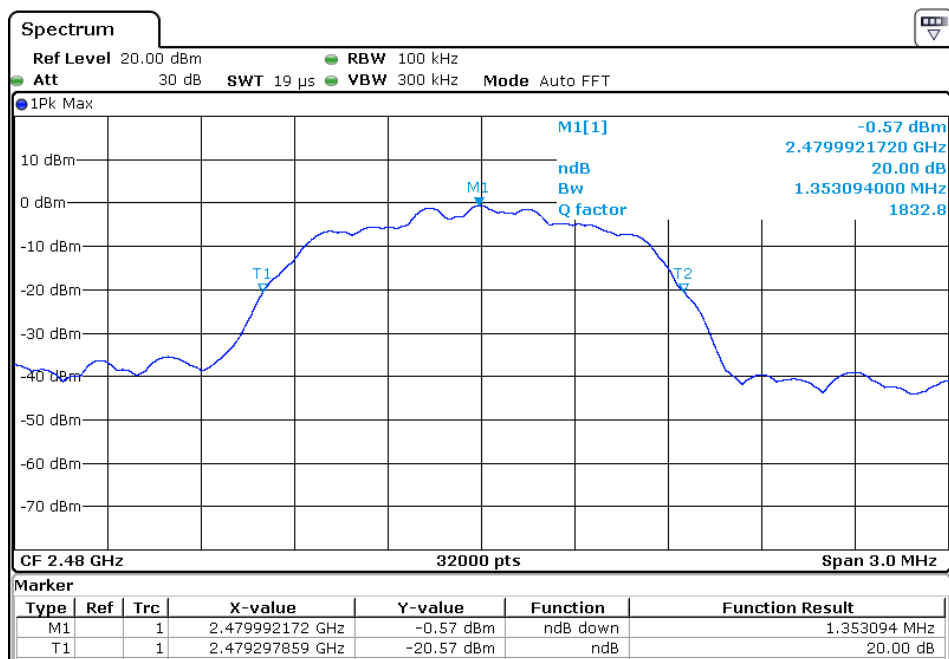
## CH 00-2Mbps



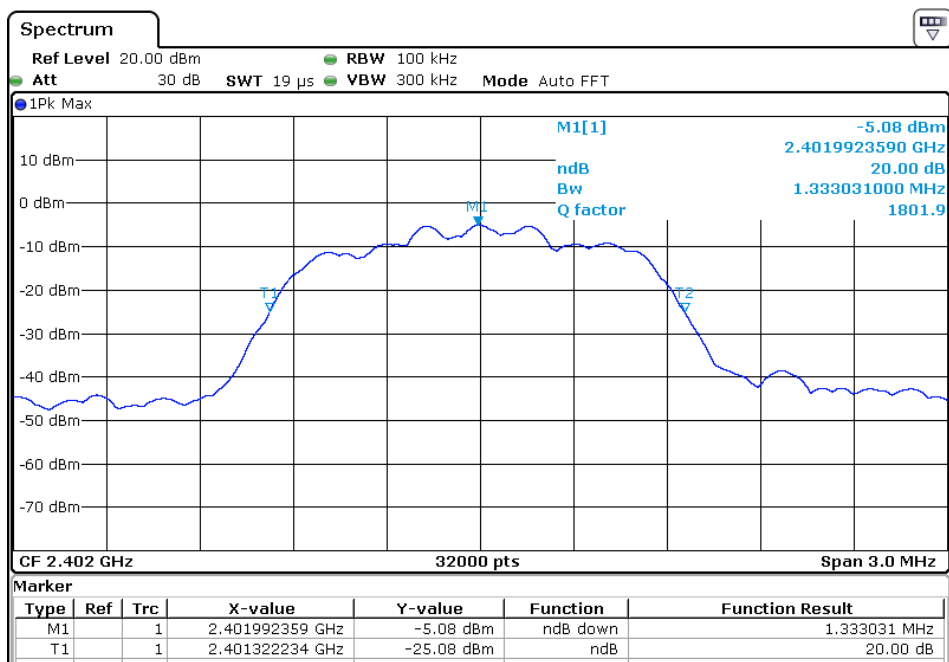
## CH 39-2Mbps



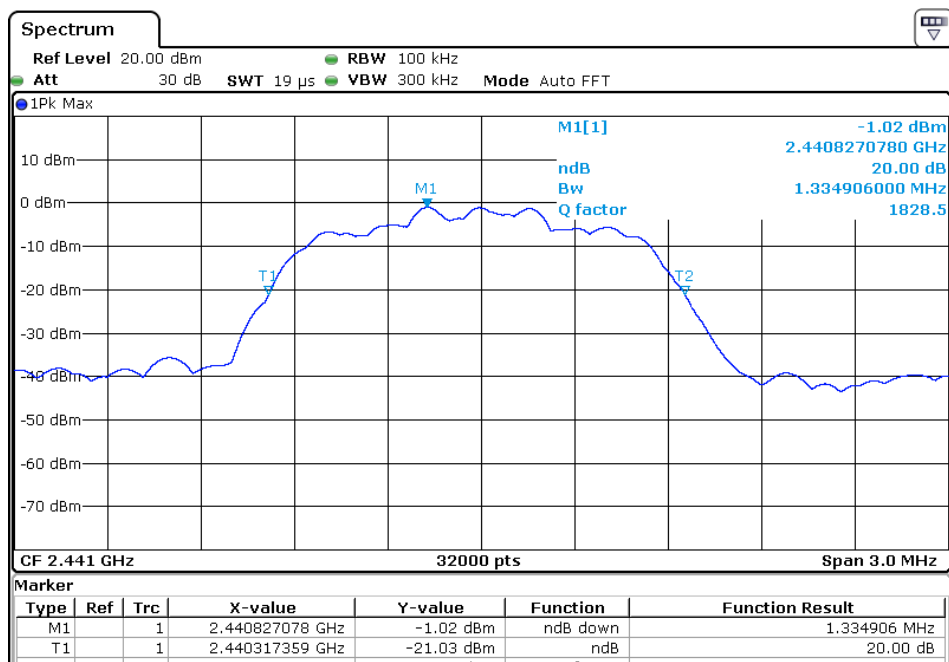
## CH 78-2Mbps



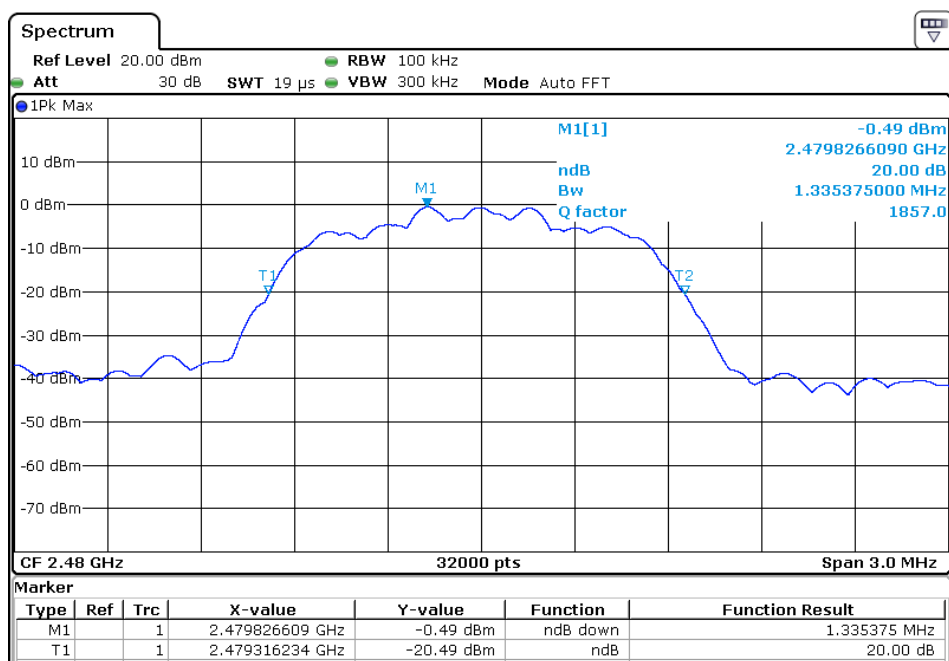
## CH 00-3Mbps



## CH 39-3Mbps



## CH 78-3Mbps



## 5.5 Carrier Frequencies Separated

### 5.5.1 Applied procedures / Limit

15.247(a) (1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

### 5.5.2 Test procedure

- (1) Connected the antenna port to the Spectrum Analyzer, set the Spectrum Analyzer as RBW=100kHz, VBW $\geq$ RBW, Sweep time=Auto, Detector Function=Peak.
- (2) The EUT should be transmitting at its maximum data rate. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.
- (3) The above procedure shall be repeated at the lowest, the middle, and the highest frequency of the stated frequency range with modulated mode. also shall be performed at different modes of operation.

### 5.5.3 Deviation from standard

No deviation.

### 5.5.4 Test setup



### 5.5.5 Test results

|              |                                   |                    |                      |
|--------------|-----------------------------------|--------------------|----------------------|
| EUT:         | SMART LED TABLE LAMP WITH SPEAKER | Model Name :       | A8                   |
| Temperature: | 22 °C                             | Relative Humidity: | 53%                  |
| Pressure:    | 1010 hPa                          | Test Power :       | DC 3.7V from battery |
| Test Mode :  | TX 1Mbps/ 3Mbps                   |                    |                      |

**Test result:****1Mbps**

| Test Channel                                   | Carrier Frequencies Separated (MHz) | Pass/Fail |
|------------------------------------------------|-------------------------------------|-----------|
| Lower Channels<br>(channel 0 and channel 1)    | 1.001063                            | Pass      |
| Middle Channels<br>(channel 39 and channel 40) | 1.002094                            | Pass      |
| Upper Channels<br>(channel 77 and channel 78)  | 0.999281                            | Pass      |

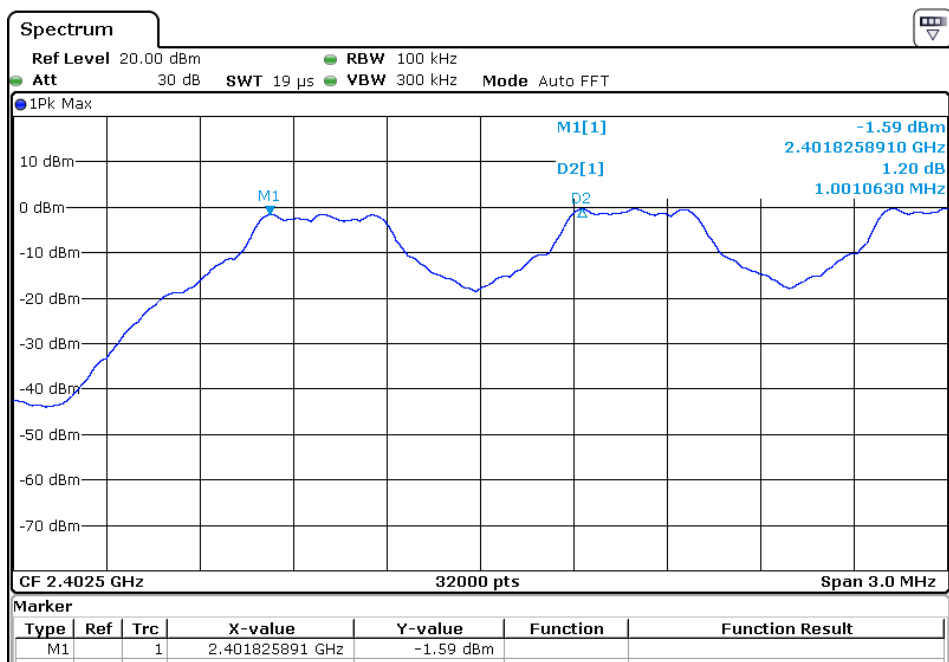
**3Mbps**

| Test Channel                                   | Carrier Frequencies Separated | Pass/Fail |
|------------------------------------------------|-------------------------------|-----------|
| Lower Channels<br>(channel 0 and channel 1)    | 0.995438                      | Pass      |
| Middle Channels<br>(channel 39 and channel 40) | 1.002938                      | Pass      |
| Upper Channels<br>(channel 77 and channel 78)  | 0.998344                      | Pass      |

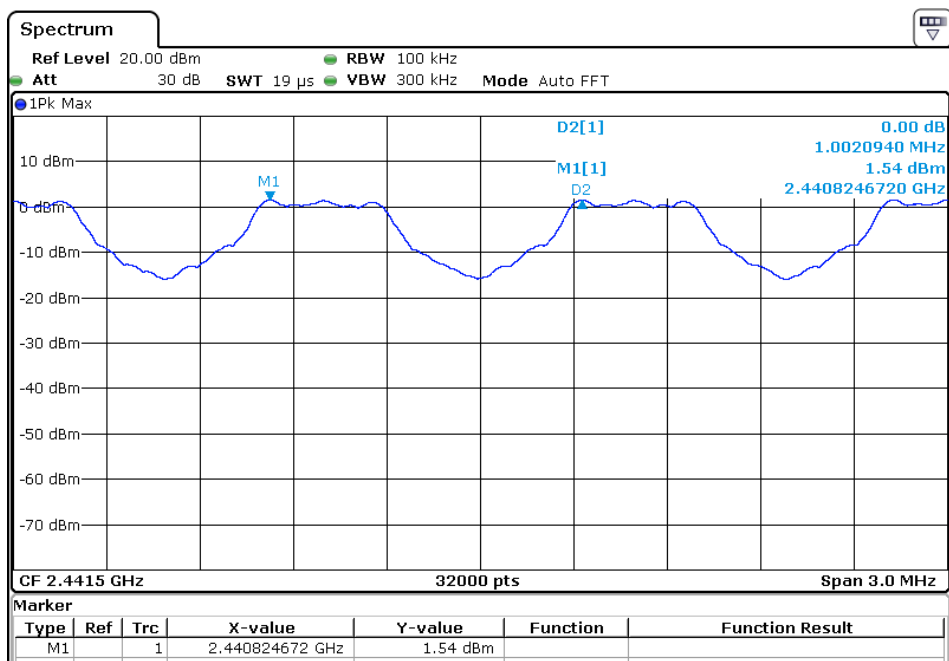
**Remark:**

The limit is maximum two-thirds of the 20 dB bandwidth: 905.9 KHz.

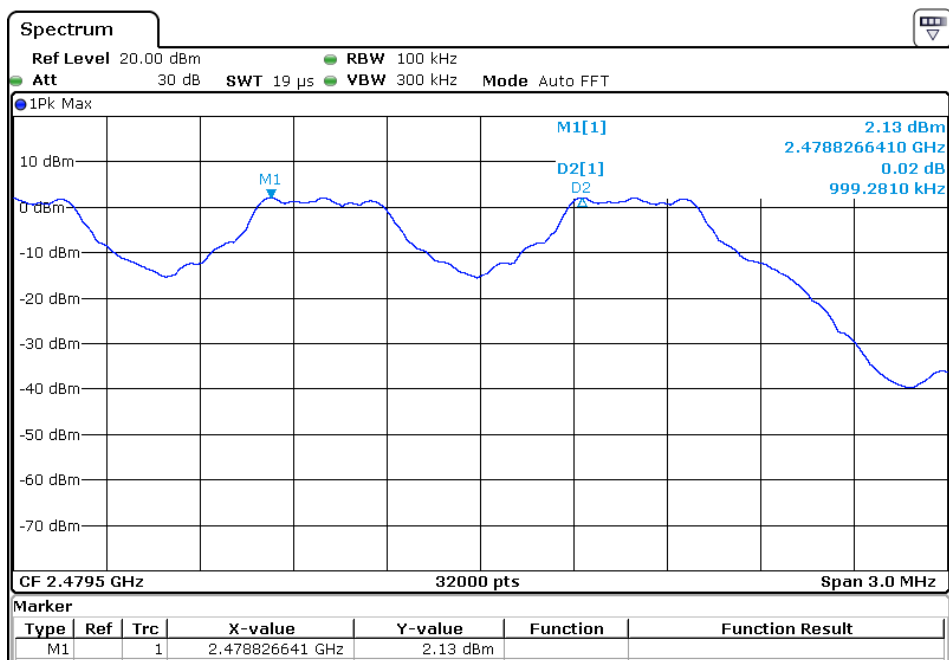
## CH 00-1Mbps



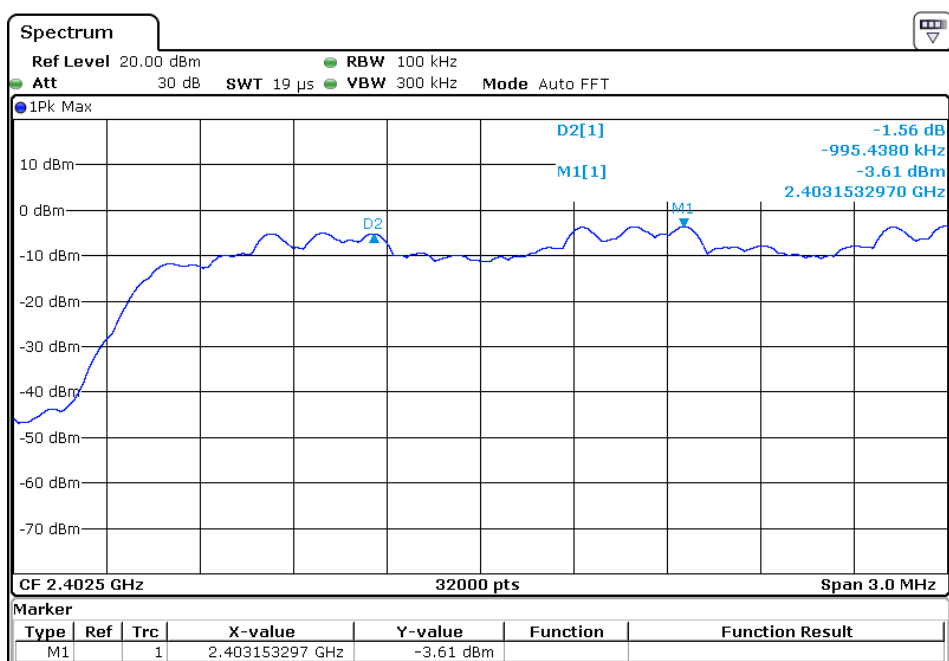
## CH 39-1Mbps



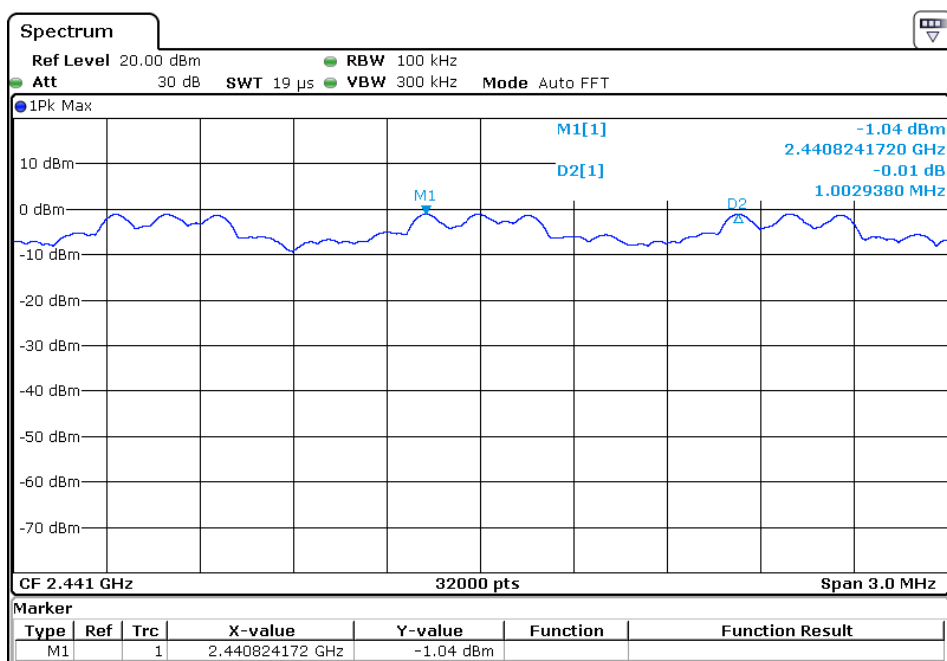
## CH 78-1Mbps



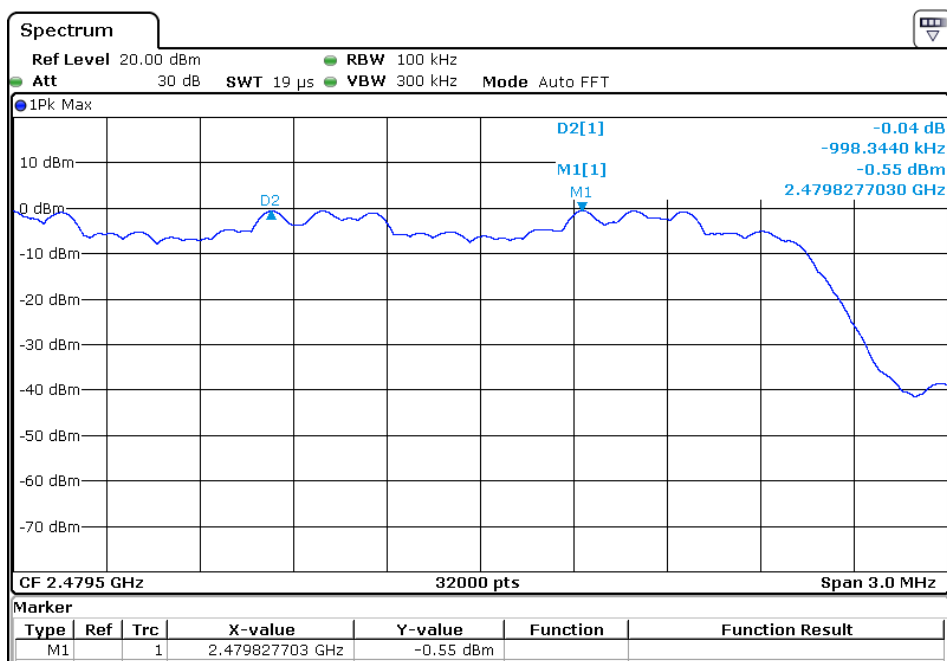
## CH00 -3Mbps



### CH39 -3Mbps



### CH78 -3Mbps



**Test result: The unit does meet the FCC requirements.**

## 5.6 Hopping Channel Number

### 5.6.1 Applied procedures / Limit

15.247(a) (1) (iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

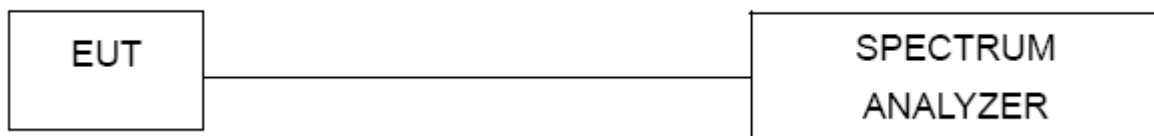
### 5.6.2 Test procedure

- (1) Connected the antenna port to the Spectrum Analyzer , set the Spectrum Analyzer as RBW=100kHz,VBW $\geq$ RBW, Sweep time=Auto, Detector Function=Peak Trace=Maxhold.
- (2) The EUT should be have its hopping function enabled. Maxhold and record hopping channels It may prove necessary to break the span up to sections, in order to clearly show all of the hopping frequencies.

### 5.6.3 Deviation from standard

No deviation.

### 5.6.4 Test setup

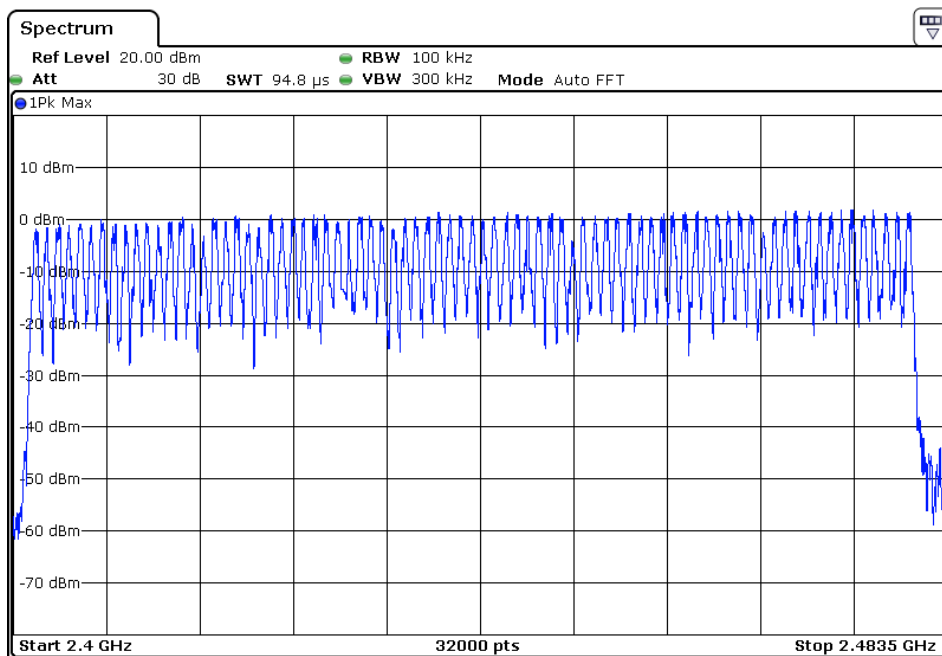


### 5.6.5 Test result

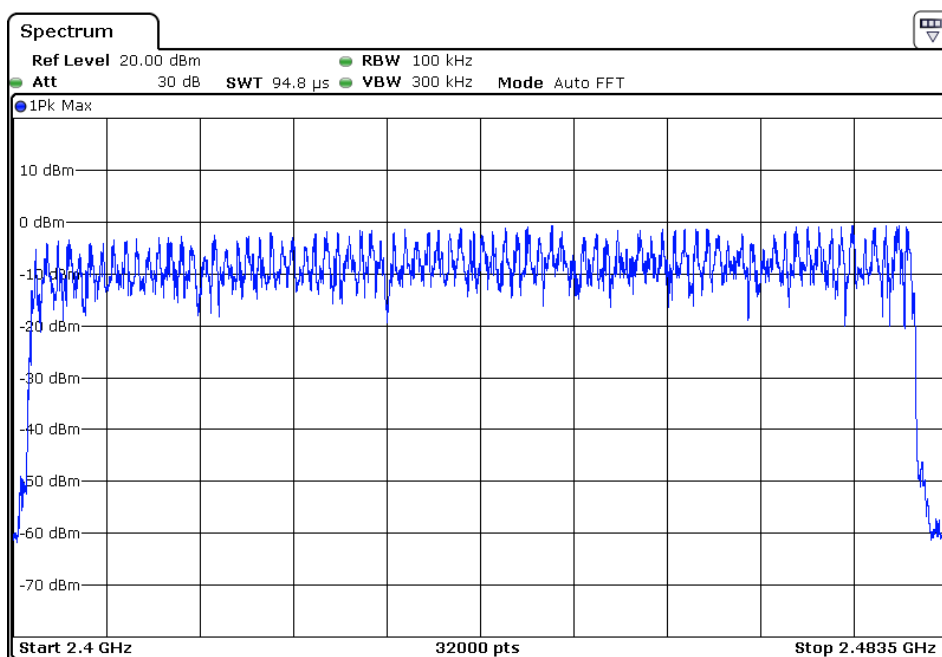
| Hopping Channel Number result     |       |                      |
|-----------------------------------|-------|----------------------|
| Operating Mode: 1Mbps\ 3Mbps Mode |       | Test date:2017-05-15 |
| Result                            | Limit | Conclusion           |
| 79                                | 15    | Pass                 |

|              |                                   |                    |                      |
|--------------|-----------------------------------|--------------------|----------------------|
| EUT:         | SMART LED TABLE LAMP WITH SPEAKER | Model Name :       | A8                   |
| Temperature: | 22 °C                             | Relative Humidity: | 53%                  |
| Pressure:    | 1010 hPa                          | Test Power :       | DC 3.7V from battery |
| Test Mode :  | TX 1Mbps/ 3Mbps                   |                    |                      |

1Mbps



3Mbps



Test result: The unit does meet the FCC requirements.

## 5.7 Dwell time

### 5.7.1 Applied procedures / Limit

15.247(a) (1) (iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

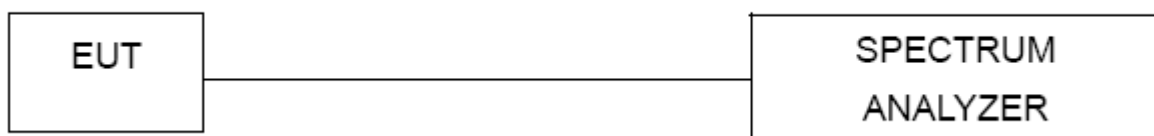
### 5.7.2 Test procedure

- (1) Place the EUT on the table in the chamber or connect the antenna port of the EUT to spectrum analyzer and set it in transmitting mode.
- (2) Set RBW of spectrum analyzer to 1MHz, VBW  $\geq$  RBW
- (3) Use a video trigger with the trigger level set to enable triggering only on full pulses.
- (4) Sweep Time is more than once pulse time.
- (5) Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- (6) Measure the maximum time duration of one single pulse.
- (7) Set the EUT for DH5, DH3 and DH1 packet transmitting.
- (8) Measure the maximum time duration of one single pulse.
- (9) A Period Time =  $79 \times 0.4 = 31.6$  S  
DH1 Time Slot: Reading \*  $(1600/2) \times 31.6/79$   
DH3 Time Slot: Reading \*  $(1600/4) \times 31.6/79$   
DH5 Time Slot: Reading \*  $(1600/6) \times 31.6/79$

### 5.7.3 Deviation from standard

No deviation.

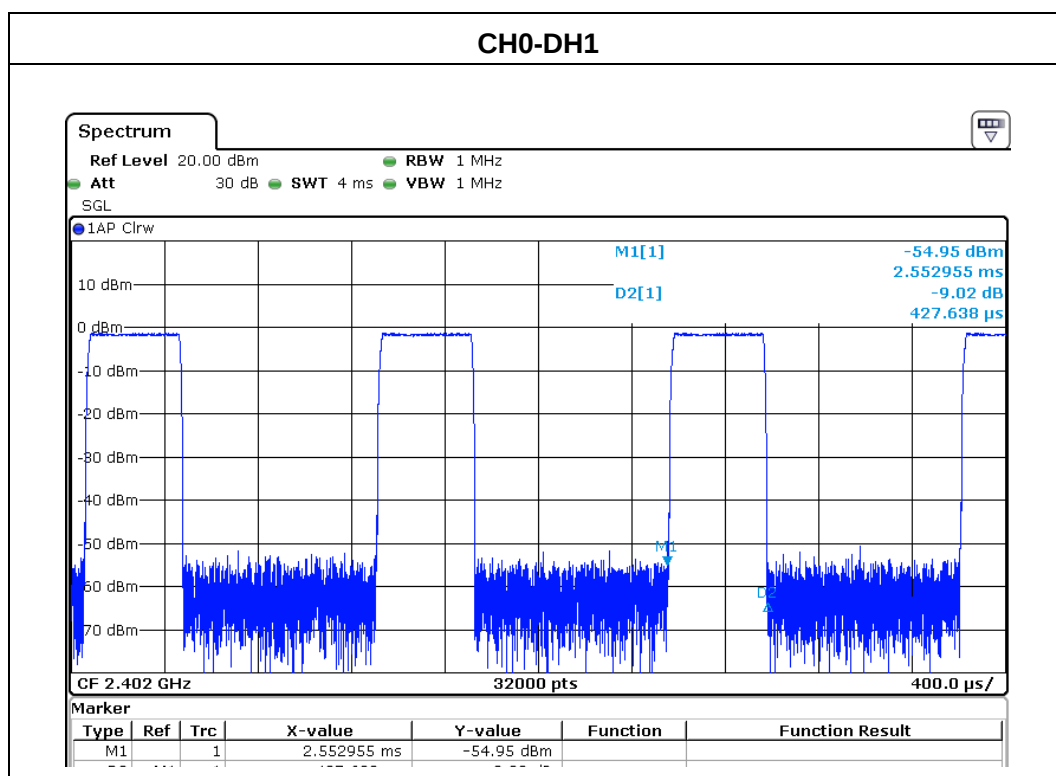
### 5.7.4 TEST SETUP



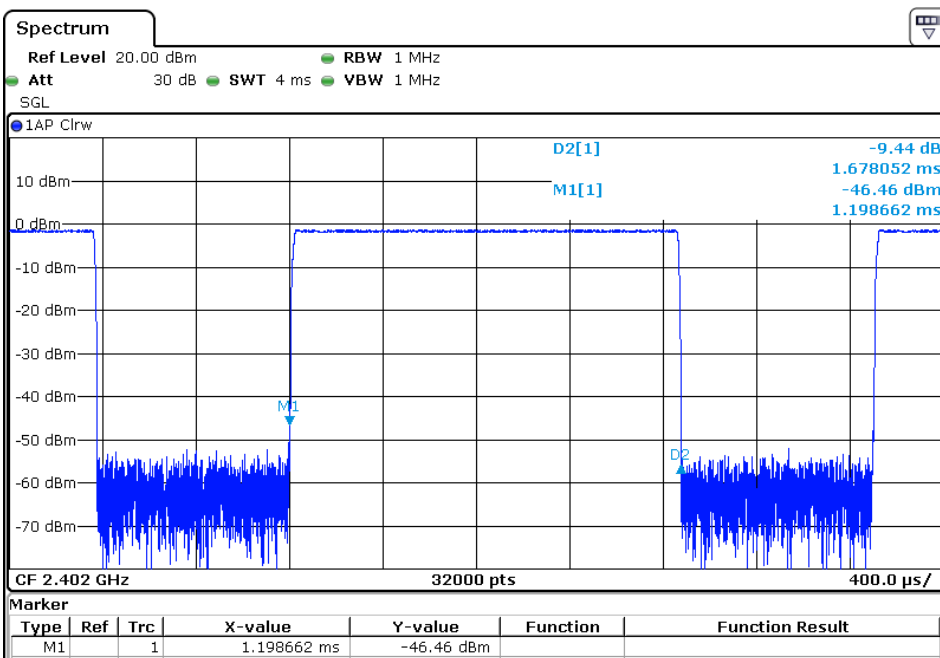
## 5.7.5 Test result

|              |                                   |                    |                      |
|--------------|-----------------------------------|--------------------|----------------------|
| EUT:         | SMART LED TABLE LAMP WITH SPEAKER | Model Name :       | A8                   |
| Temperature: | 26 ℃                              | Relative Humidity: | 60%                  |
| Pressure:    | 1012 hPa                          | Test Voltage :     | DC 3.7V from battery |
| Test Mode :  | CH0-DH1/DH3/DH5 (1Mbps Mode)      |                    |                      |

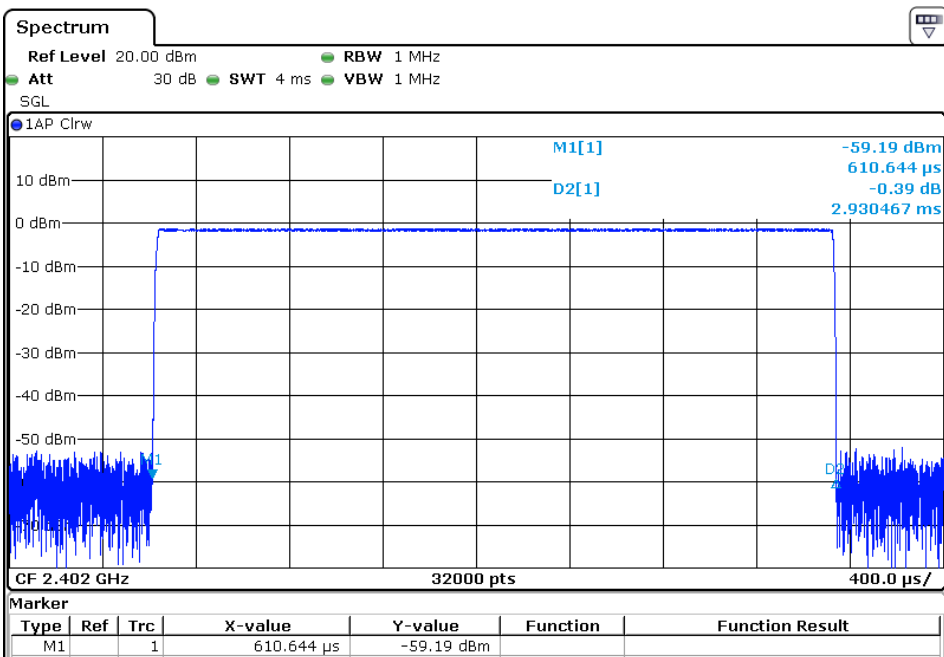
| Data Packet | Frequency | Pulse Duration (ms) | Dwell Time (s) | Limits (s) |
|-------------|-----------|---------------------|----------------|------------|
| DH1         | 2402 MHz  | 0.428               | 0.137          | 0.4000     |
| DH3         | 2402 MHz  | 1.678               | 0.268          | 0.4000     |
| DH5         | 2402 MHz  | 2.930               | 0.313          | 0.4000     |



### CH0-DH3

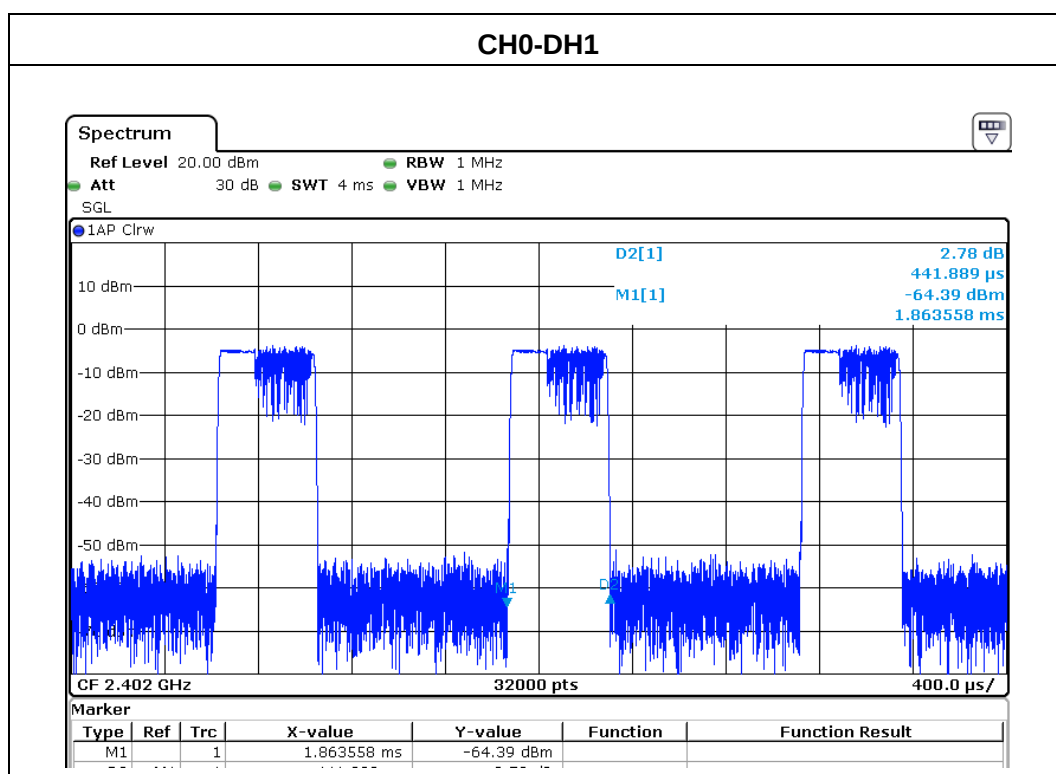


### CH0-DH5

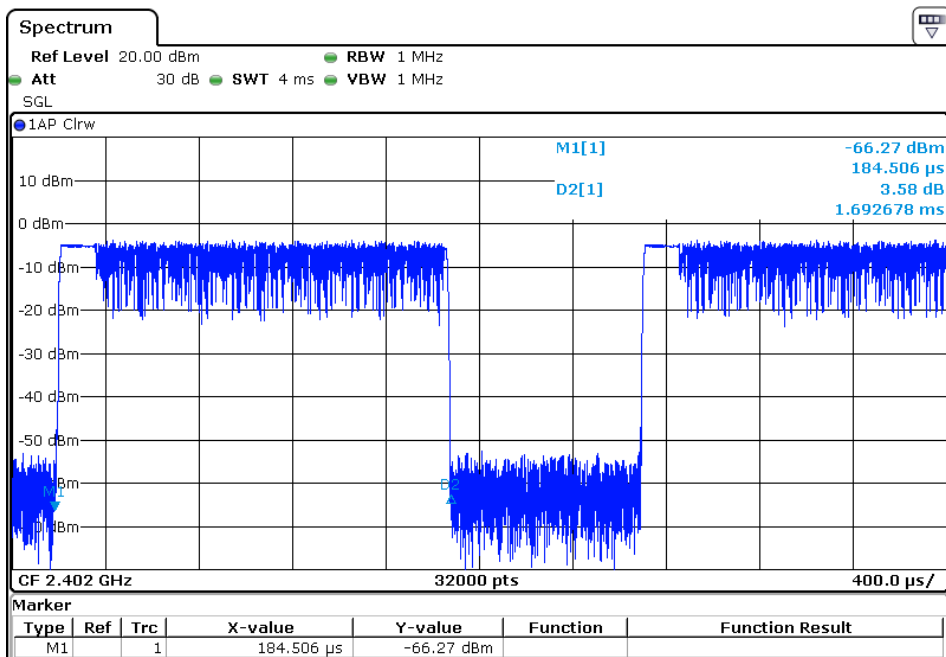


|              |                                      |                    |                      |
|--------------|--------------------------------------|--------------------|----------------------|
| EUT:         | SMART LED TABLE LAMP<br>WITH SPEAKER | Model Name :       | A8                   |
| Temperature: | 26 °C                                | Relative Humidity: | 60%                  |
| Pressure:    | 1012 hPa                             | Test Voltage :     | DC 3.7V from battery |
| Test Mode :  | CH0-3DH1/3DH3/3DH5 (3Mbps Mode)      |                    |                      |

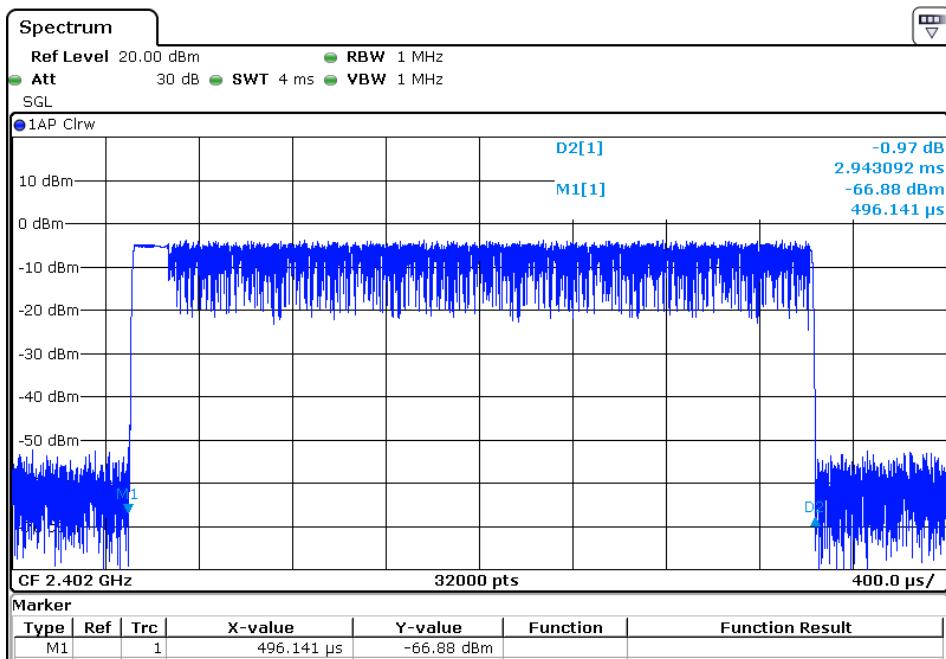
| Data Packet | Frequency | Pulse Duration<br>(ms) | Dwell Time<br>(s) | Limits<br>(s) |
|-------------|-----------|------------------------|-------------------|---------------|
| DH1         | 2402 MHz  | 0.442                  | 0.141             | 0.4000        |
| DH3         | 2402 MHz  | 1.693                  | 0.271             | 0.4000        |
| DH5         | 2402 MHz  | 2.943                  | 0.314             | 0.4000        |



### CH0-DH3



### CH0-DH5



## 5.8 Maximum Peak Output Power

### 5.8.1 Applied procedures / Limit

5.247(a) (1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

15.247(b) (1) For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

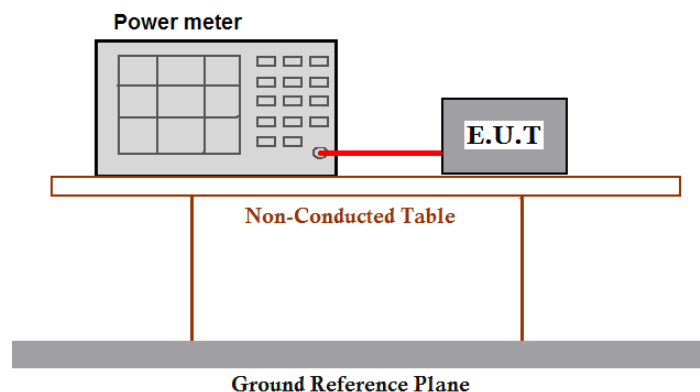
### 5.8.2 Test procedure

- (1) Connected the antenna port to the broadband peak RF power meter, Allow the transmitted power to stabilize, record the max peak value.
- (2) The EUT should be transmitting at its maximum data rate.
- (3) The above procedure shall be repeated at the lowest, the middle, and the highest frequency of the stated frequency range with modulated mode. also shall be performed at different modes of operation.

### 5.8.3 Deviation from standard

No deviation.

### 5.8.4 Test setup



## 5.8.5 Test results

|                                                                                |                                   |                    |                      |
|--------------------------------------------------------------------------------|-----------------------------------|--------------------|----------------------|
| EUT:                                                                           | SMART LED TABLE LAMP WITH SPEAKER | Model Name :       | A8                   |
| Temperature:                                                                   | 22 °C                             | Relative Humidity: | 60%                  |
| Pressure:                                                                      | 1010 hPa                          | Test Voltage :     | DC 3.7V from battery |
| Test Mode :                                                                    | TX                                |                    |                      |
| Note: All the data rates have be tested and the worst-case as the table below. |                                   |                    |                      |

| <b>Test Result:</b>                                          |                             |                    |             |        |
|--------------------------------------------------------------|-----------------------------|--------------------|-------------|--------|
| <b>Normal mode:</b>                                          |                             |                    |             |        |
| Test Channel                                                 | Fundamental Frequency (MHz) | Output Power (dBm) | Limit (dBm) | Result |
| Lowest                                                       | 2402                        | -2.13              | 21.0        | Pass   |
| Middle                                                       | 2441                        | 0.68               | 21.0        | Pass   |
| Highest                                                      | 2480                        | 2.22               | 21.0        | Pass   |
| <b>2EDR mode:</b>                                            |                             |                    |             |        |
| Test Channel                                                 | Fundamental Frequency (MHz) | Output Power (dBm) | Limit (dBm) | Result |
| Lowest                                                       | 2402                        | -4.12              | 21.0        | Pass   |
| Middle                                                       | 2441                        | -0.18              | 21.0        | Pass   |
| Highest                                                      | 2480                        | 0.43               | 21.0        | Pass   |
| <b>3EDR mode:</b>                                            |                             |                    |             |        |
| Test Channel                                                 | Fundamental Frequency (MHz) | Output Power (dBm) | Limit (dBm) | Result |
| Lowest                                                       | 2402                        | -3.90              | 21.0        | Pass   |
| Middle                                                       | 2441                        | 0.08               | 21.0        | Pass   |
| Highest                                                      | 2480                        | 0.95               | 21.0        | Pass   |
| <b>Test result: The unit does meet the FCC requirements.</b> |                             |                    |             |        |

## 5.9 Band edge

### 5.9.1 Applied procedures / Limit

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 Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

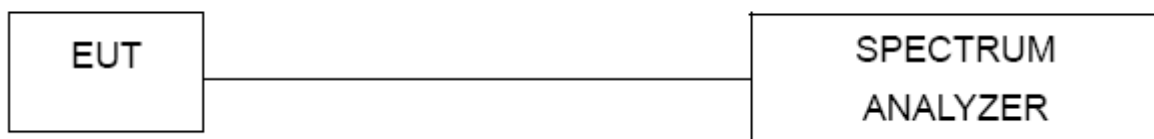
### 5.9.2 Test procedure

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. Span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation,  $RBW \geq 1\%$  of the span,  $VBW \geq RBW$ , Sweep = auto, Detector function = peak, Trace = max hold

### 5.9.3 Deviation from standard

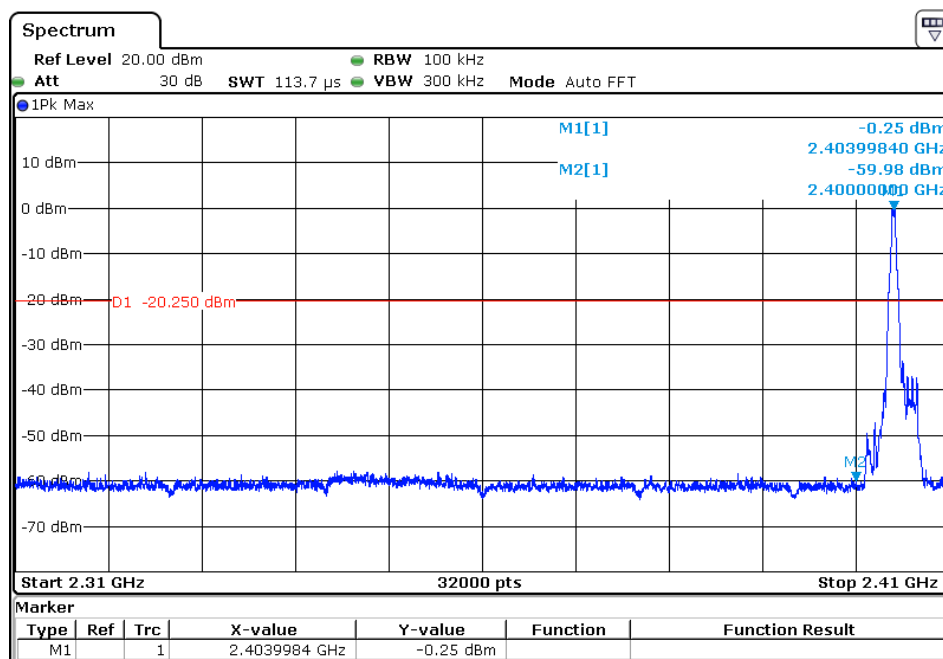
No deviation.

### 5.9.4 Test setup

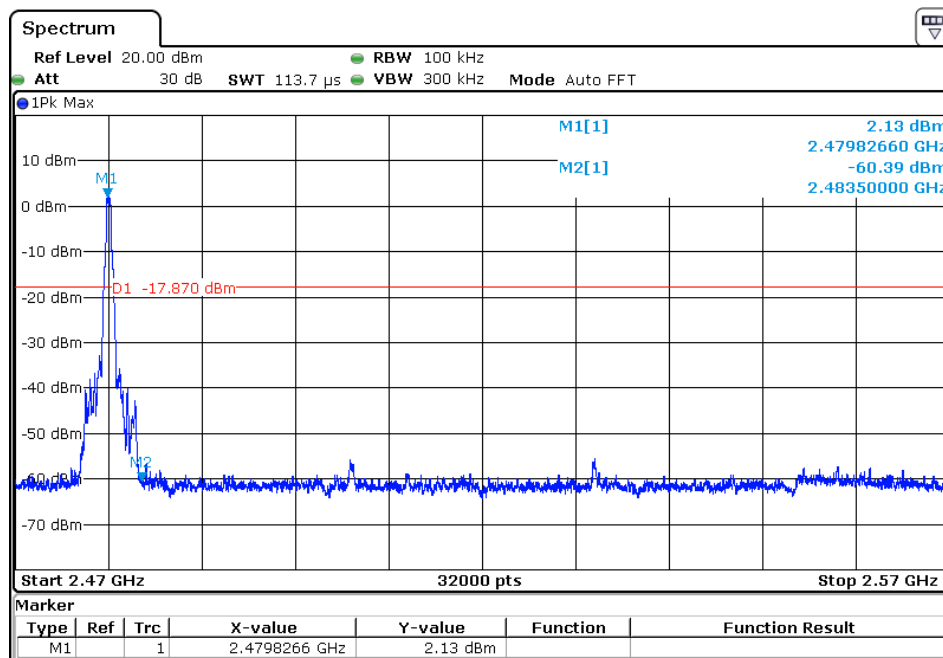


## 5.9.5 Test results

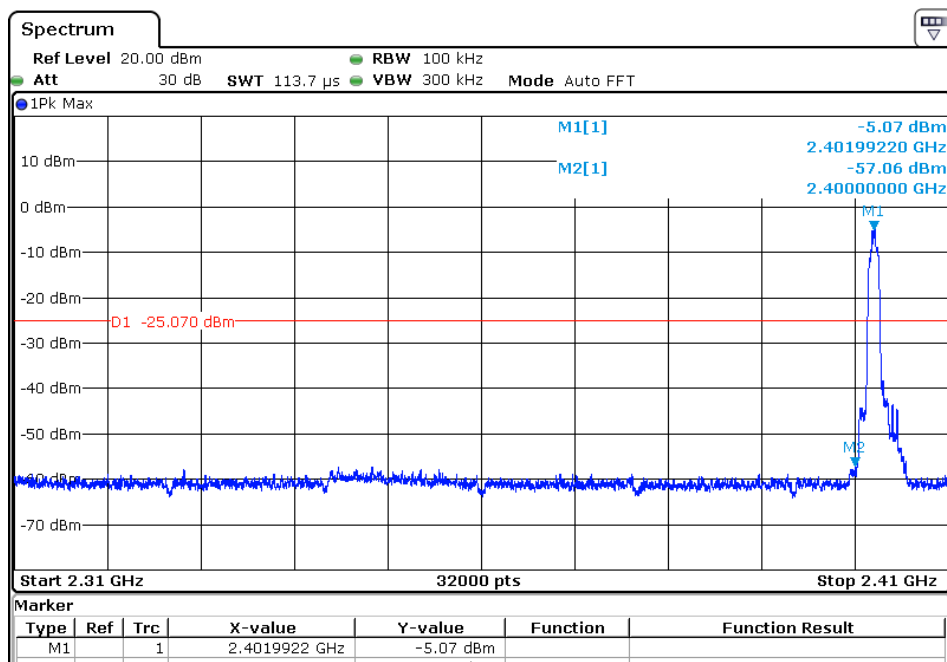
### Conducted Band edge CH00 (Lower) Data rate 1Mbps



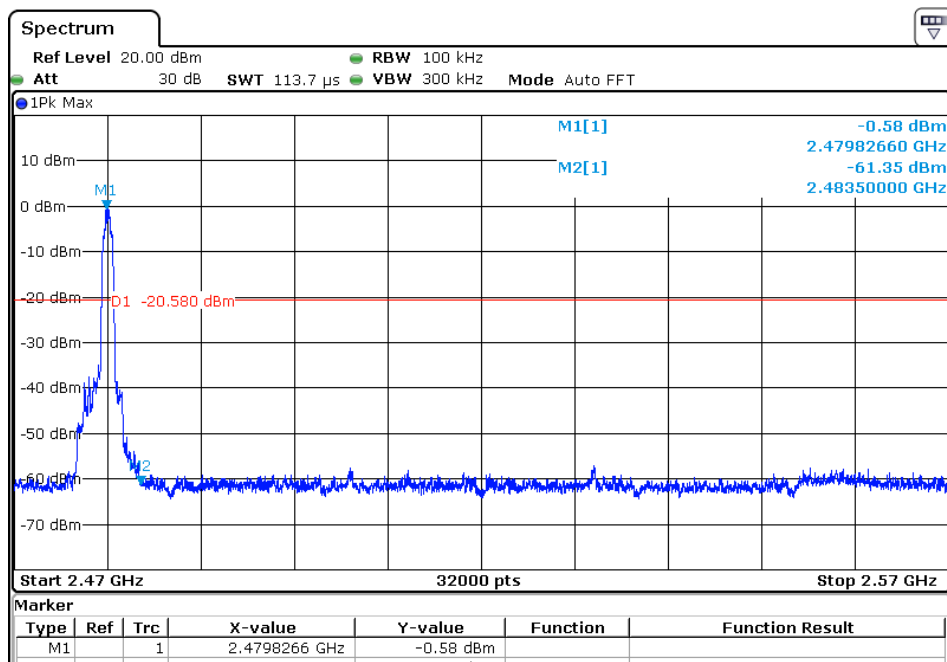
### CH 78 (Upper) Data rate 1Mbps



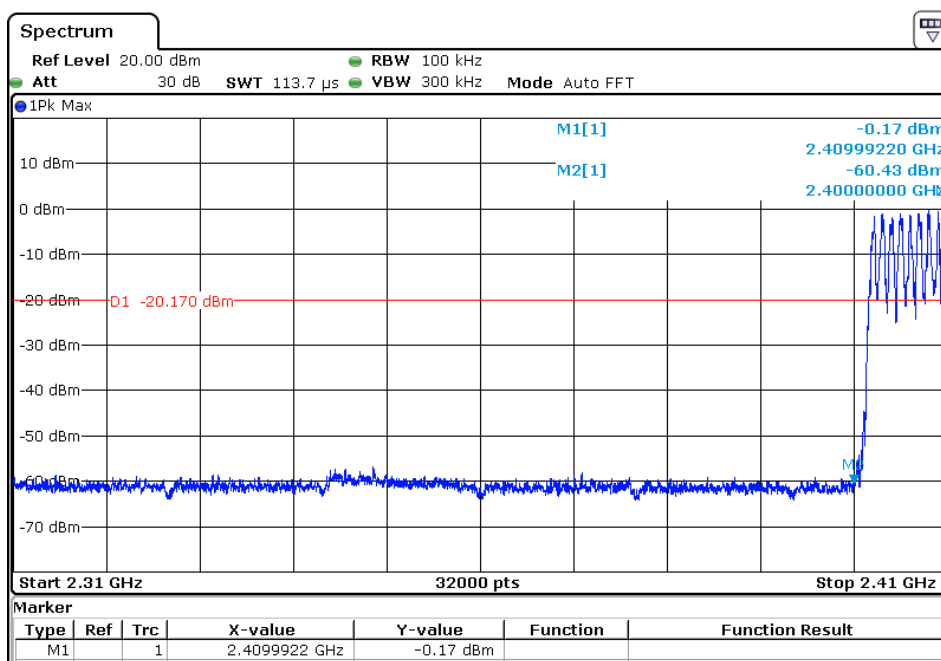
### CH00 (Lower) Data rate 3Mbps



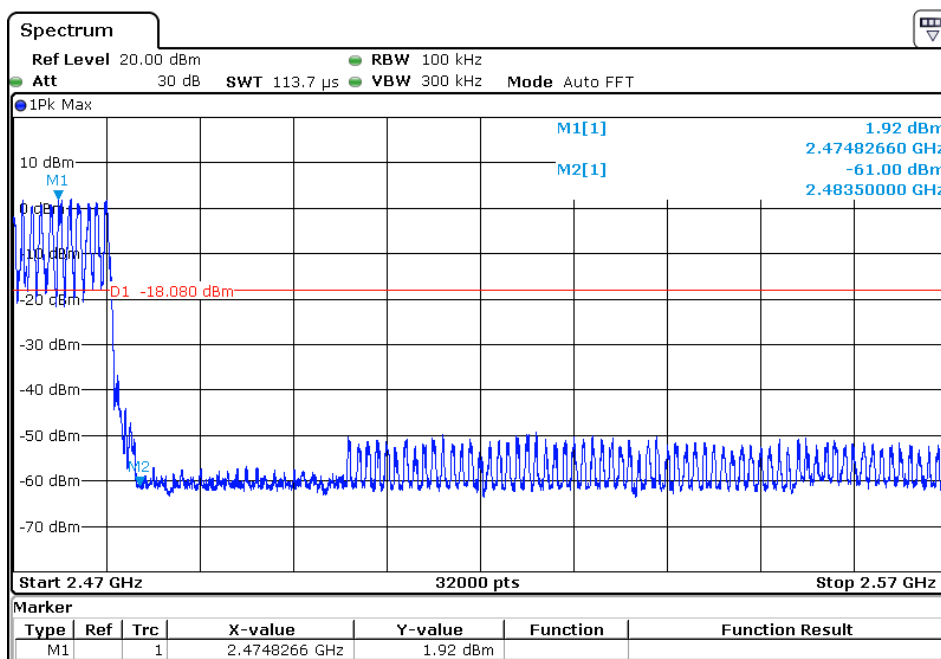
### CH 78 (Upper) Data rate 3Mbps



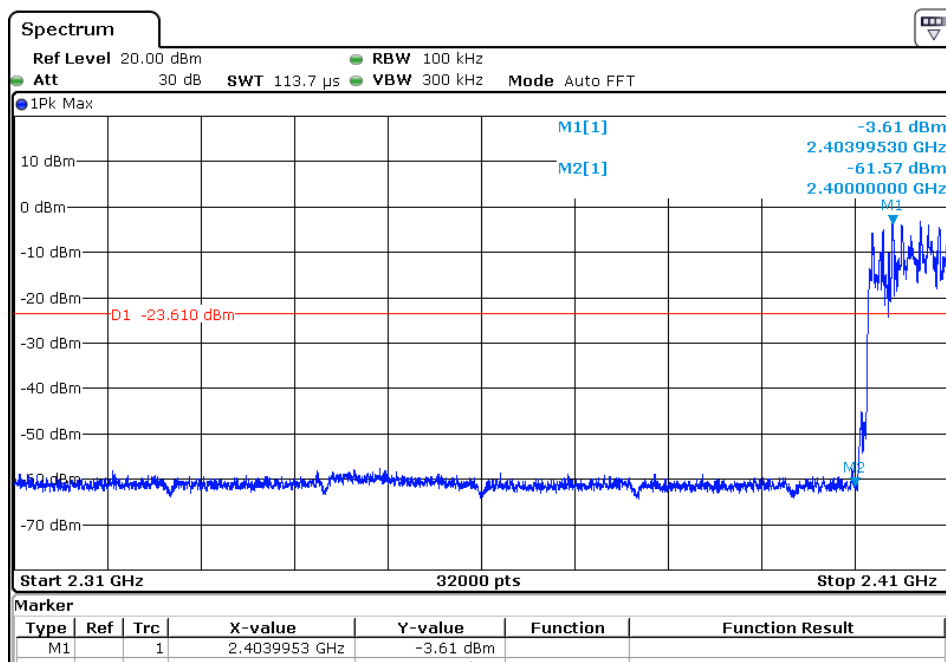
## CH00 (Lower) Data rate 1Mbps



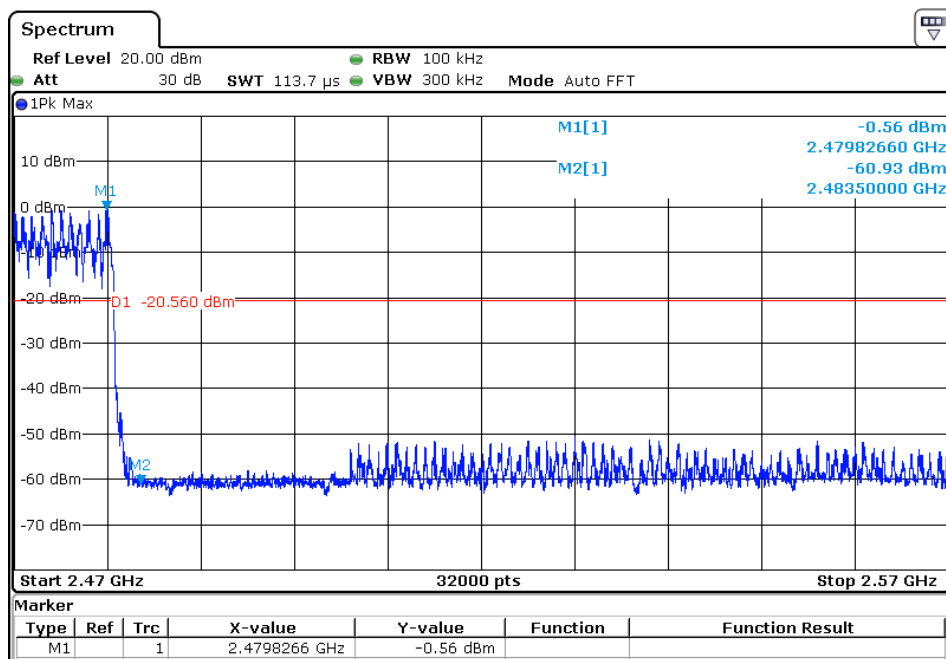
## CH 78 (Upper) Data rate 1Mbps



### CH00 (Lower) Data rate 3Mbps



### CH 78 (Upper) Data rate 3Mbps



## 5.10 Conducted Spurious Emissions

### 5.10.1 Applied procedures / Limit

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 Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

### 5.10.2 Test procedure

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10<sup>th</sup> harmonic. Typically, several plots are required to cover this entire span. RBW = 100 kHz  
VBW  $\geq$  RBW, Sweep = auto, Detector function = peak, Trace = max hold  
sweep points  $\geq$  investigated frequency range/RBW.

### 5.10.3 Deviation from standard

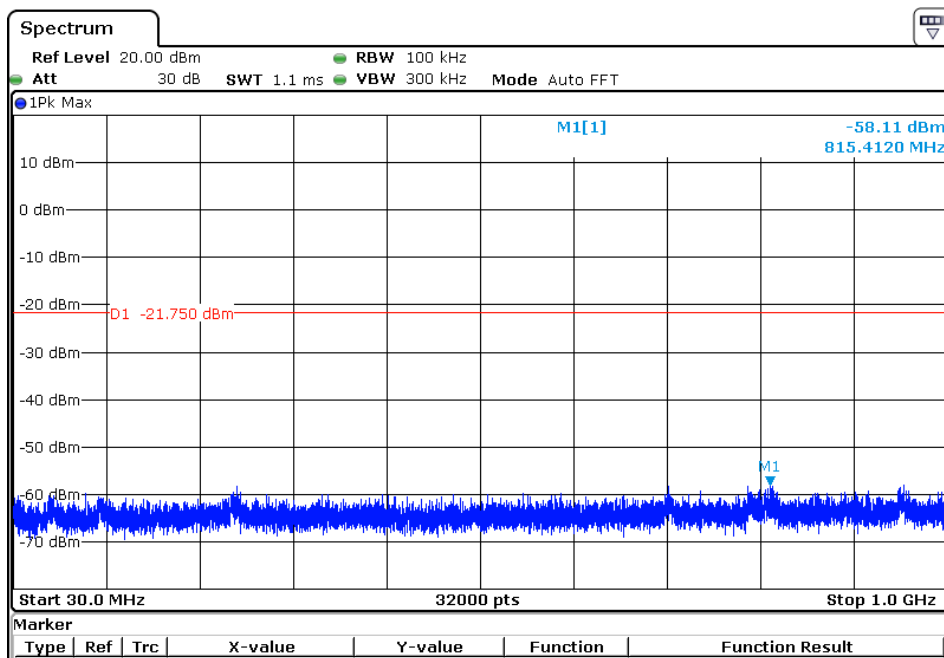
No deviation.

### 5.10.4 Test setup

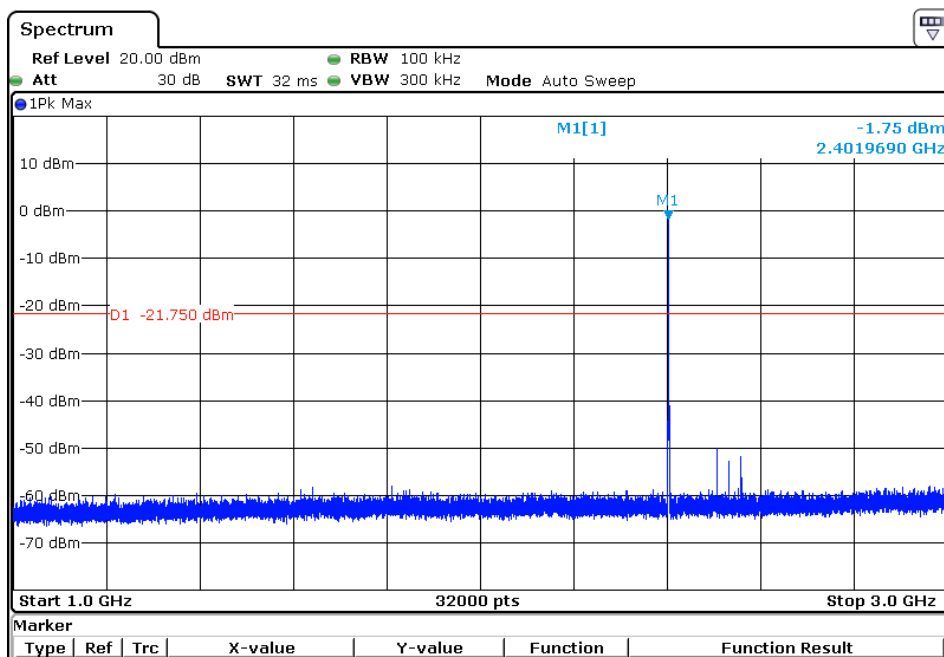


## 5.10.5 Test results

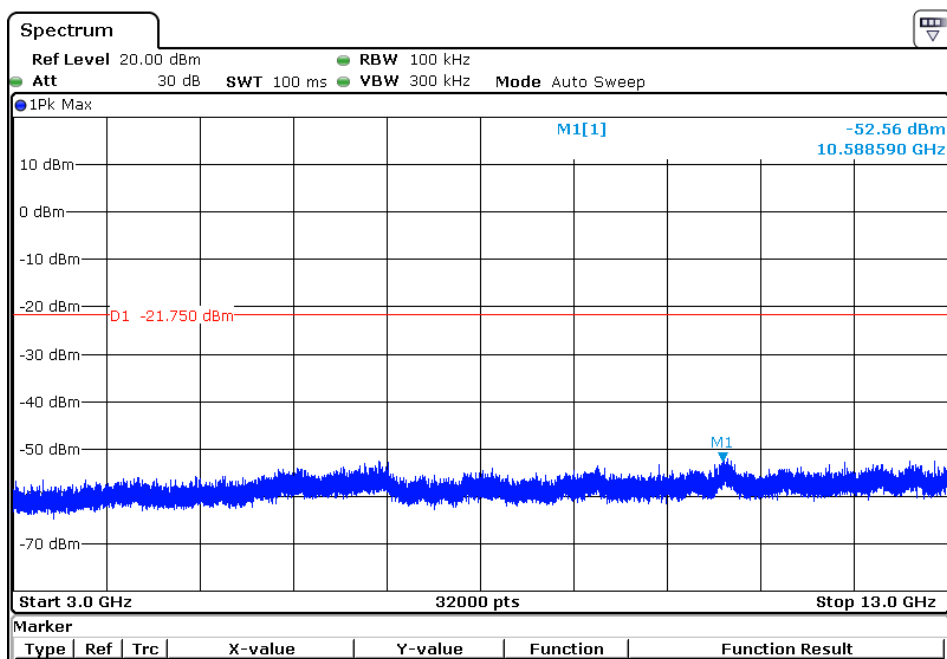
### CH00 Data rate 1Mbps 30MHz to 25GHz



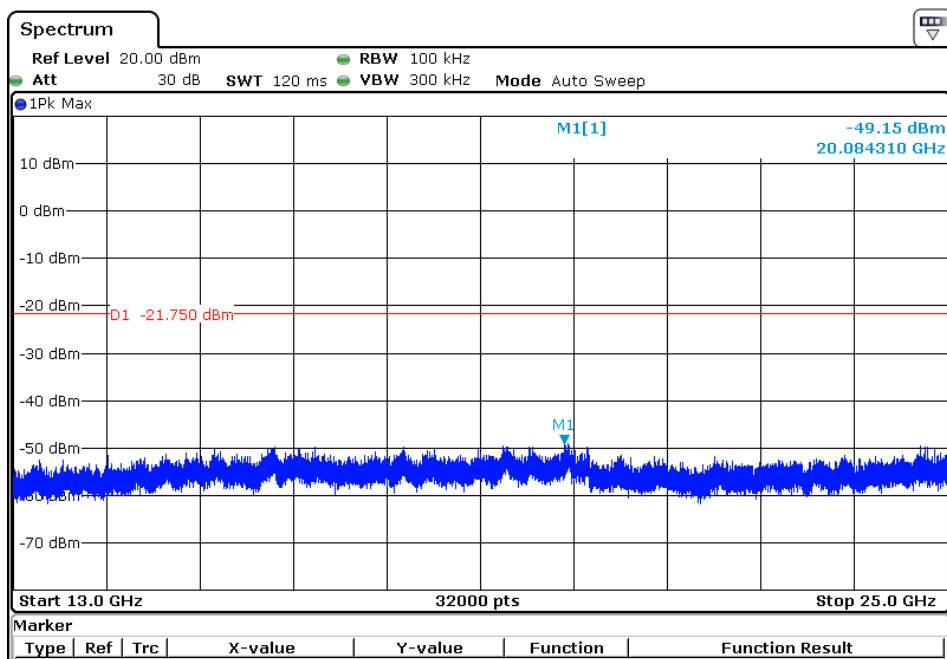
Note: Sweep Points=9700



Note: Sweep Points=20000

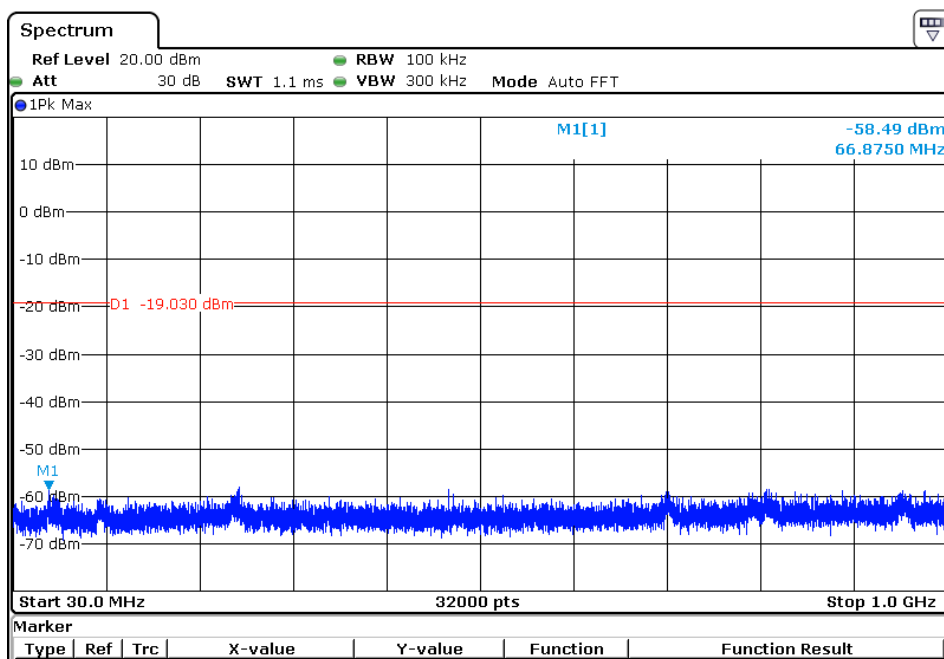


Note: Sweep Points=100000

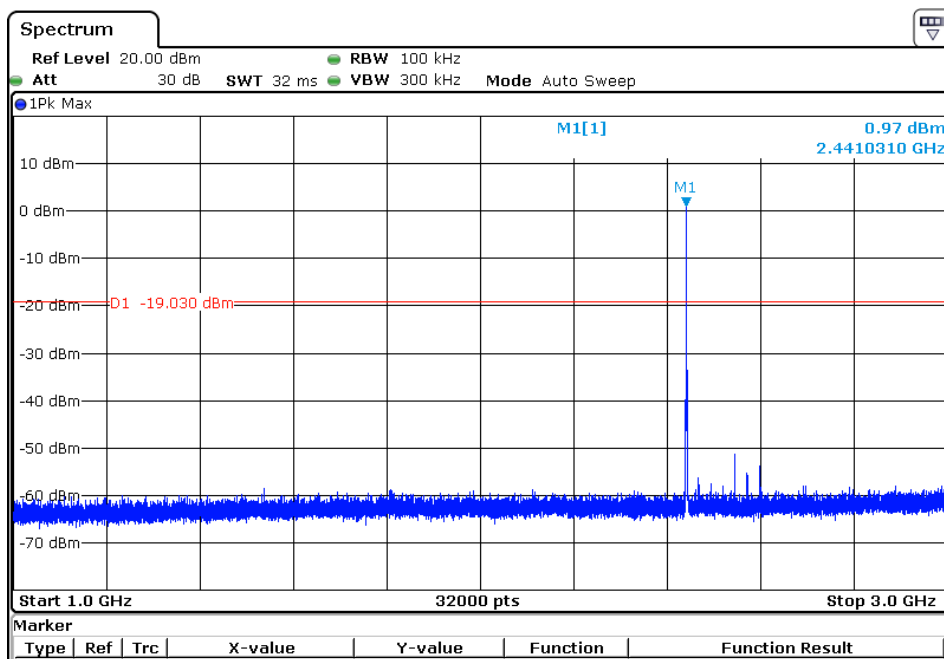


Note: Sweep Points=120000

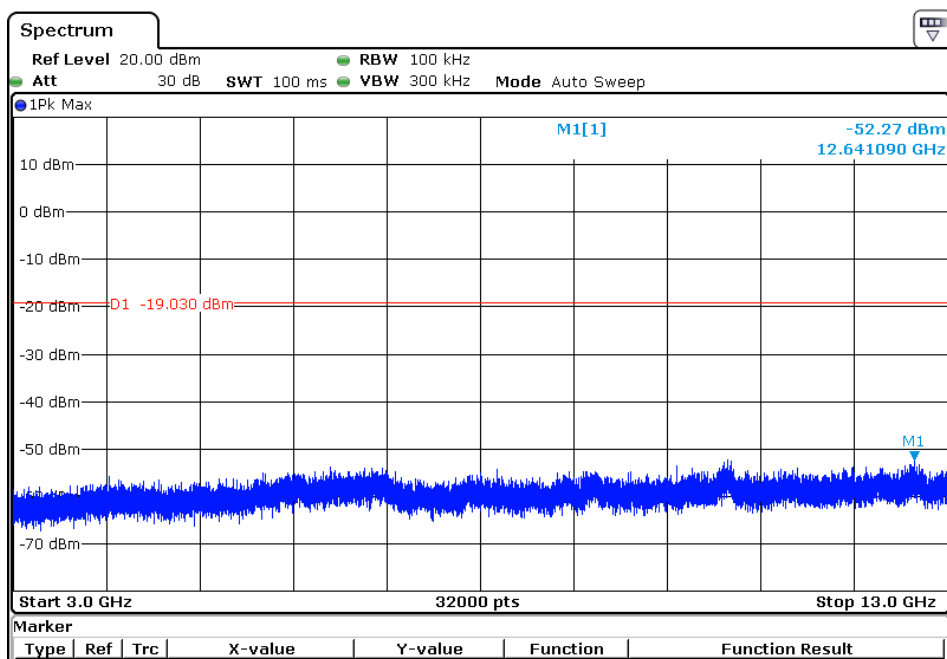
### CH39 Data rate 1Mbps 30MHz to 25GHz



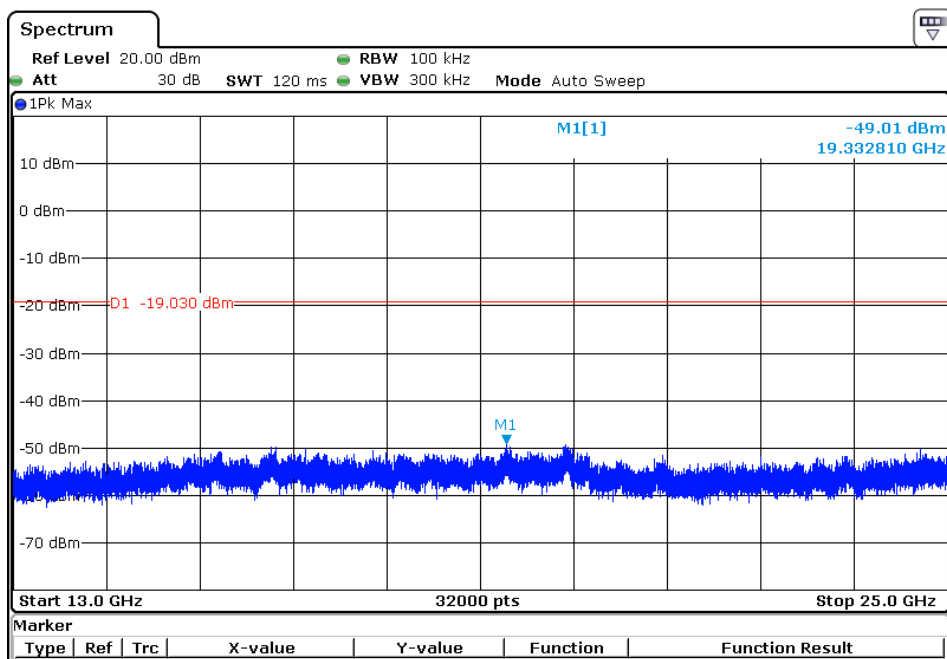
Note: Sweep Points=9700



Note: Sweep Points=20000

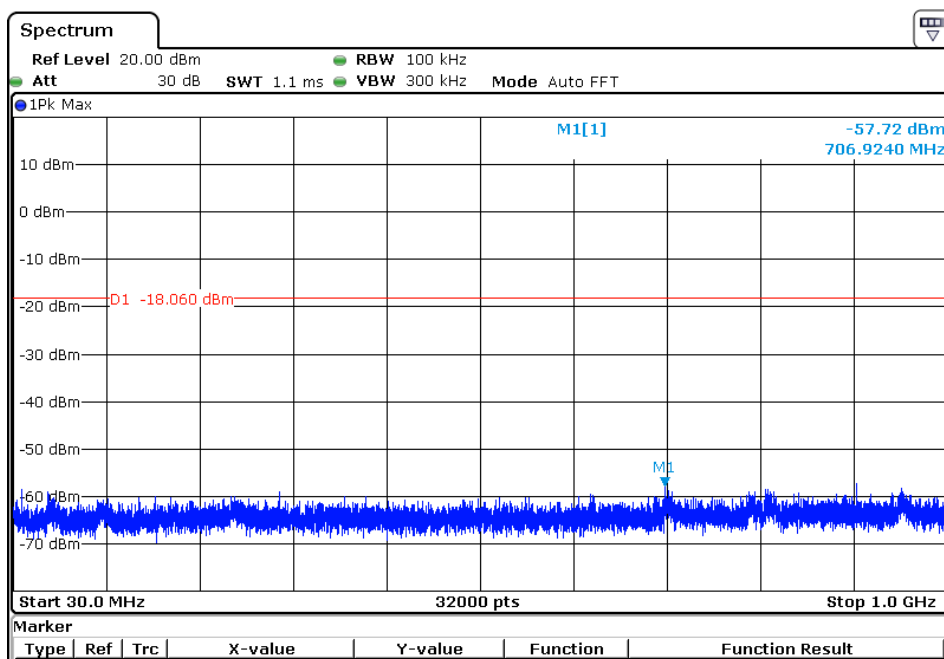


Note: Sweep Points=100000

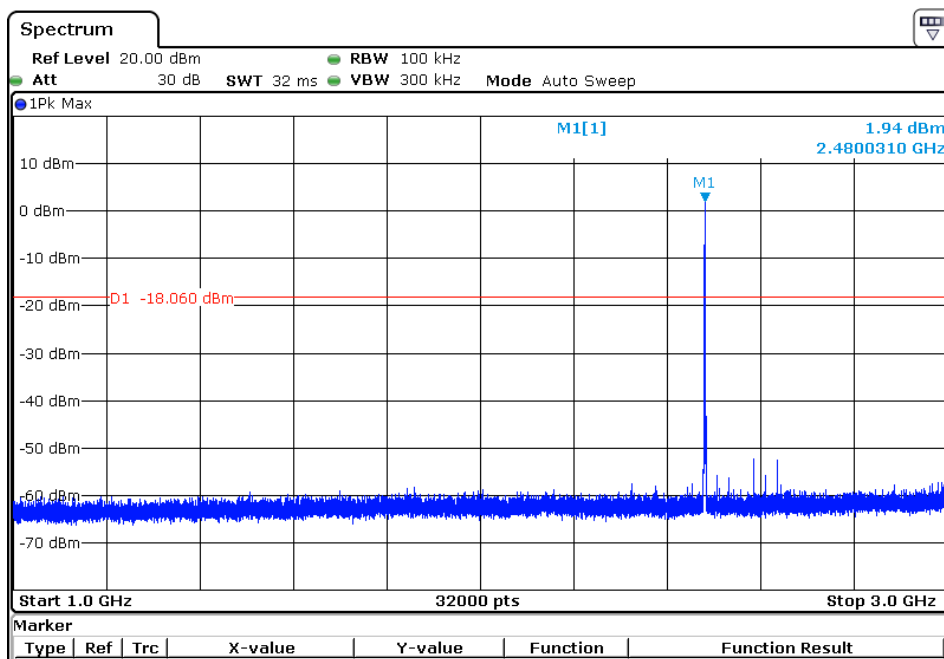


Note: Sweep Points=120000

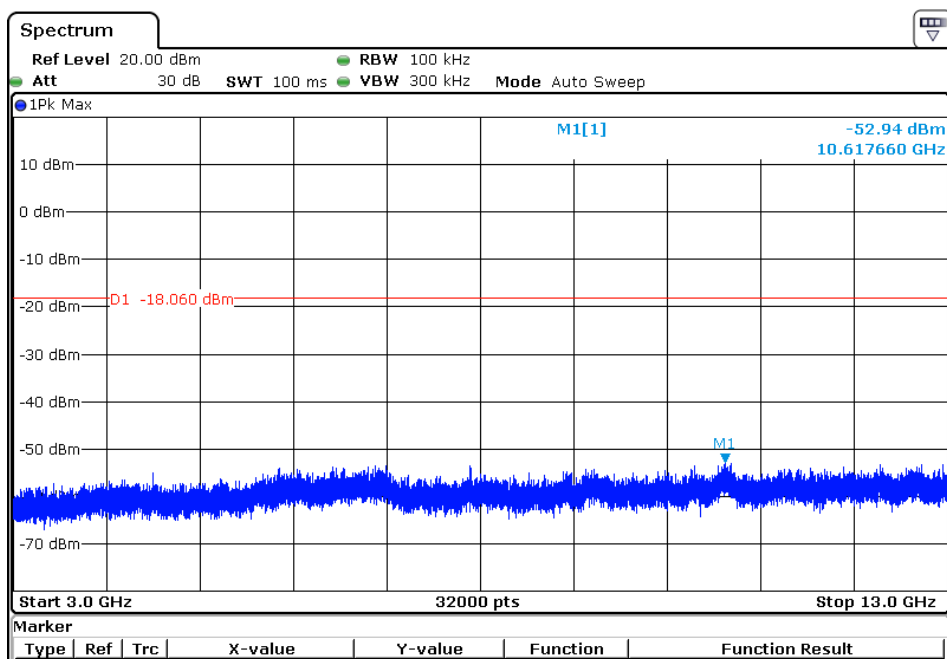
### CH78 Data rate 1Mbps 30MHz to 25GHz



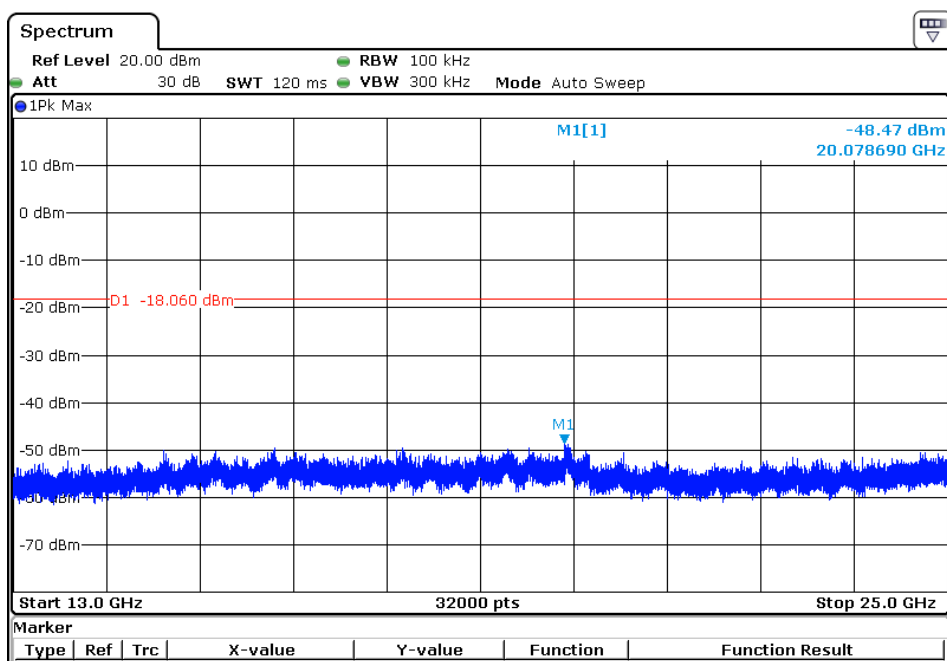
Note: Sweep Points=9700



Note: Sweep Points=20000

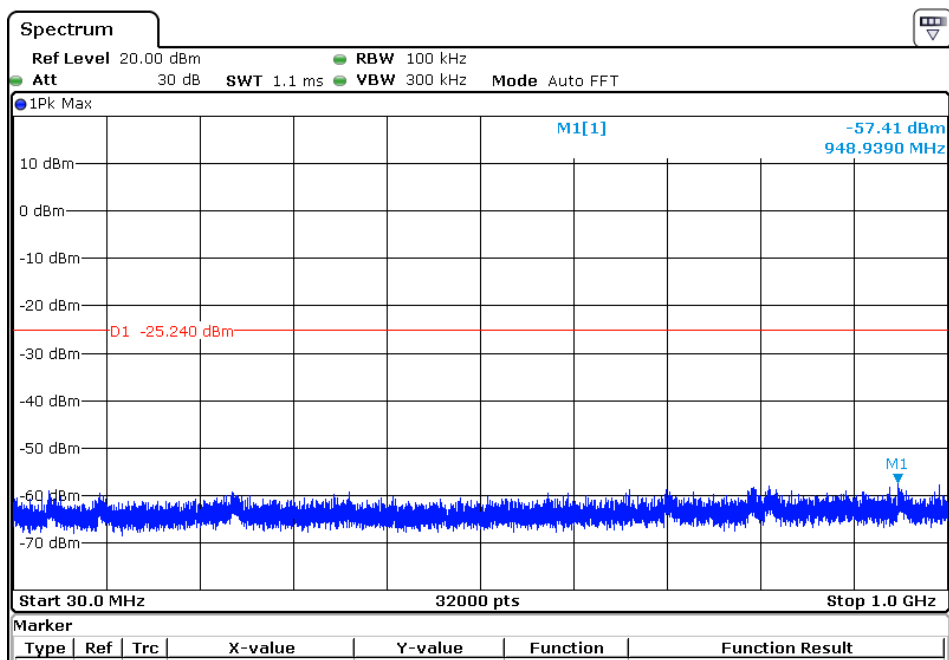


Note: Sweep Points=100000

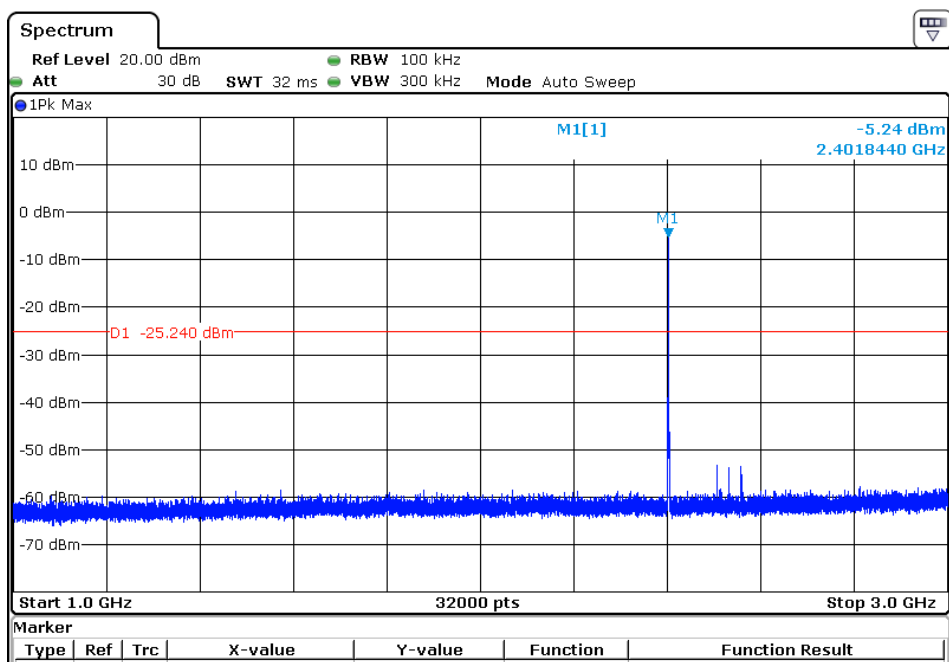


Note: Sweep Points=120000

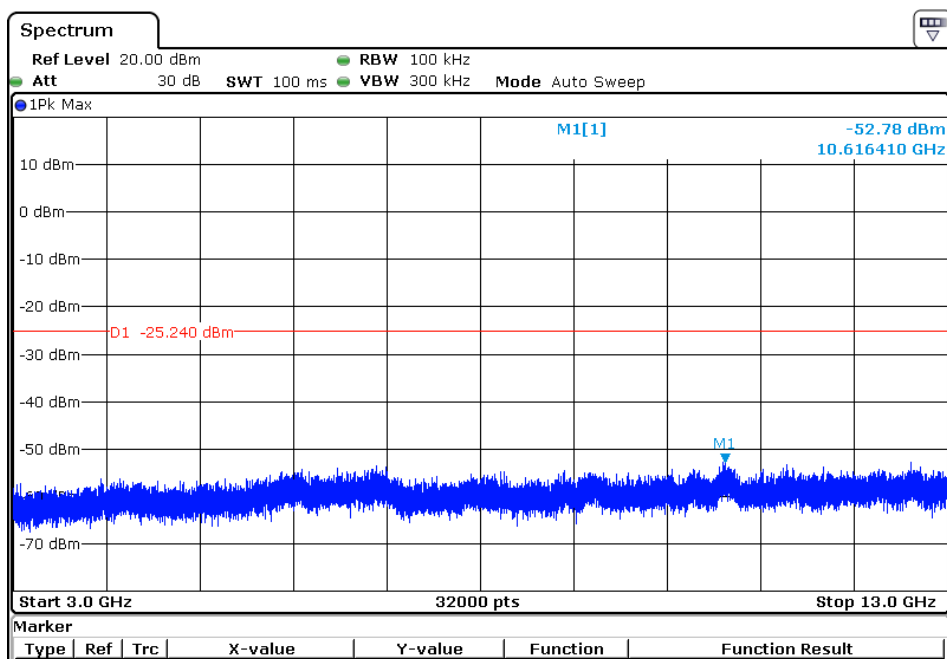
## CH00 Data rate 3Mbps 30MHz to 25GHz



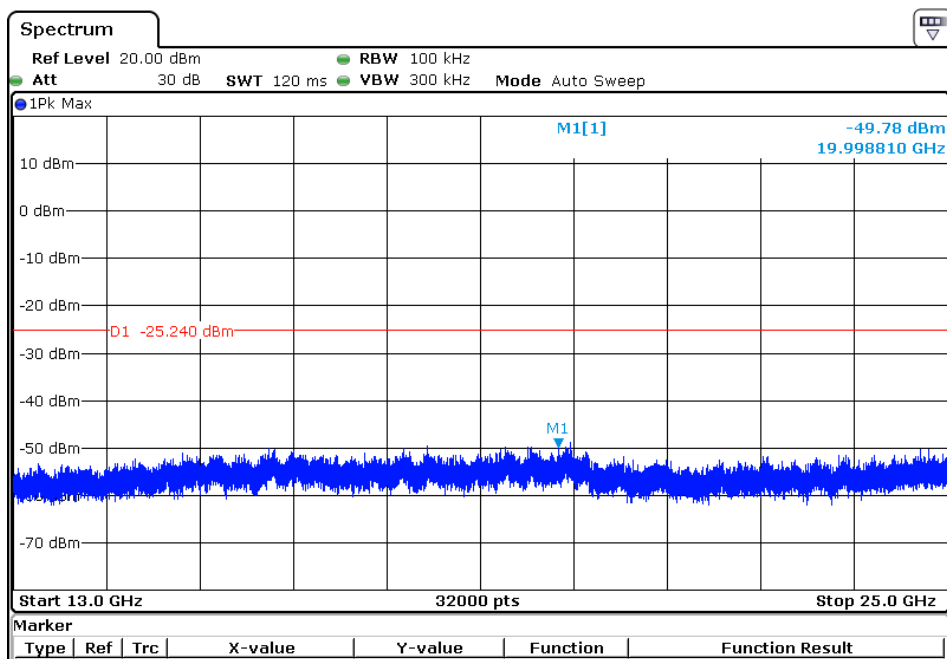
Note: Sweep Points=9700



Note: Sweep Points=20000

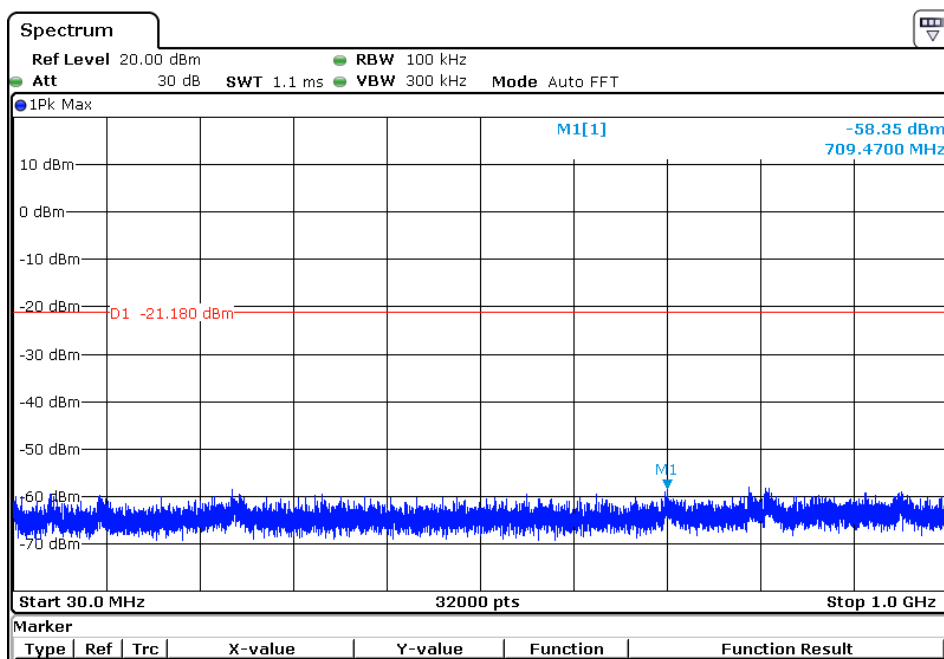


Note: Sweep Points=100000

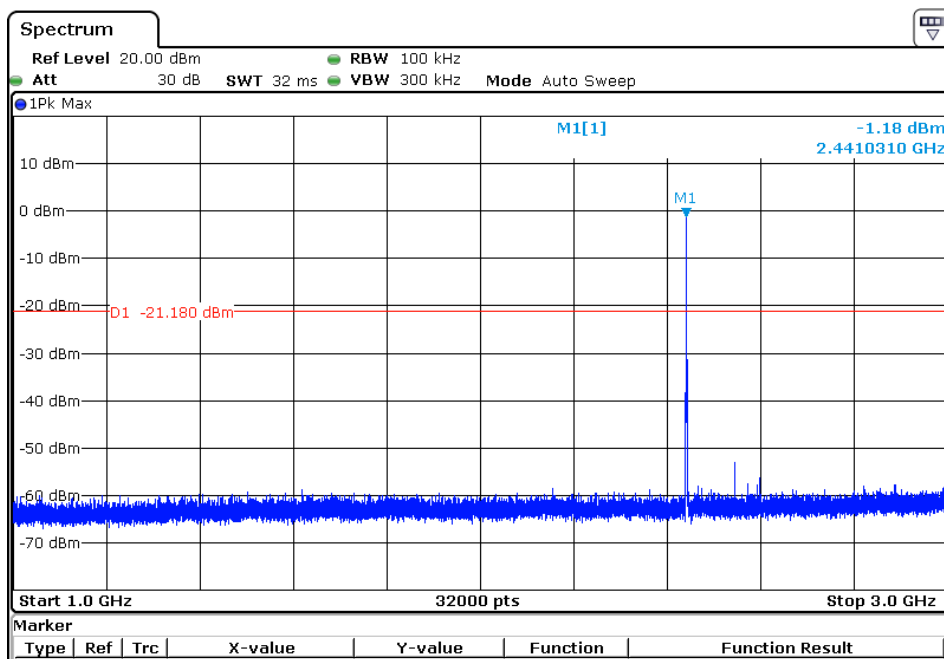


Note: Sweep Points=120000

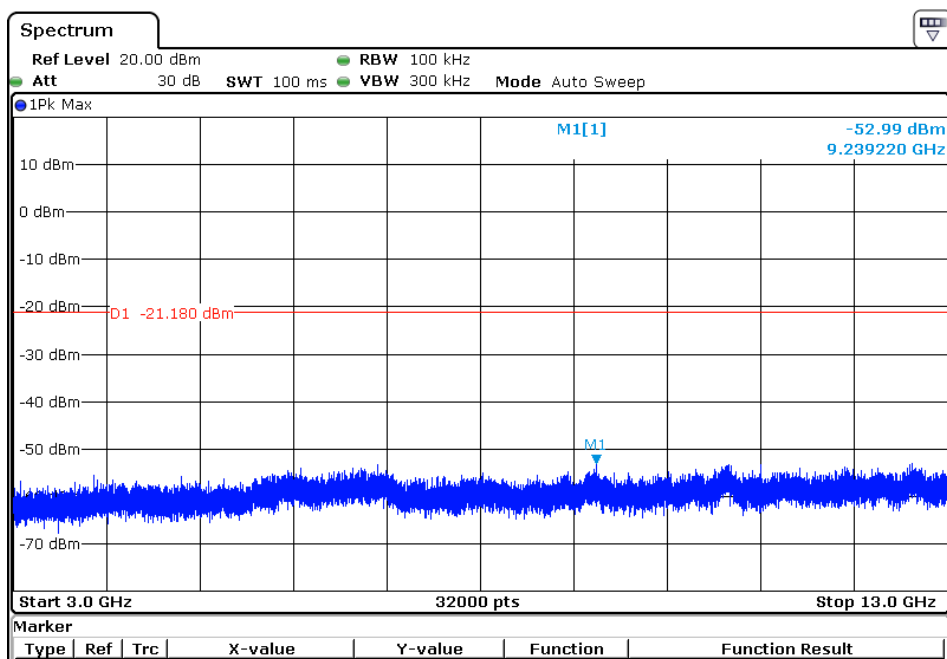
### CH39 Data rate 3Mbps 30MHz to 25GHz



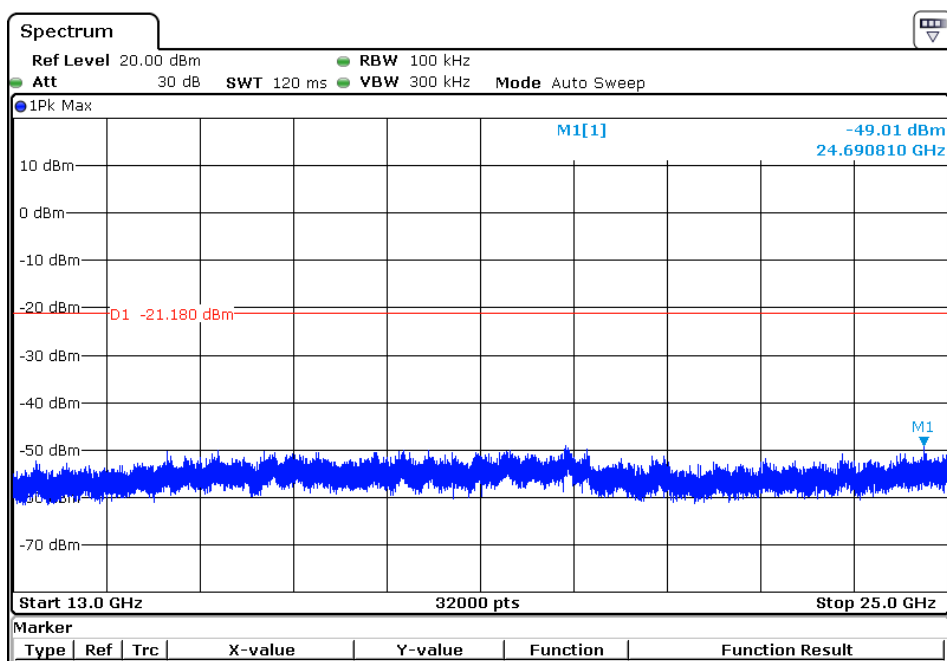
Note: Sweep Points=9700



Note: Sweep Points=20000

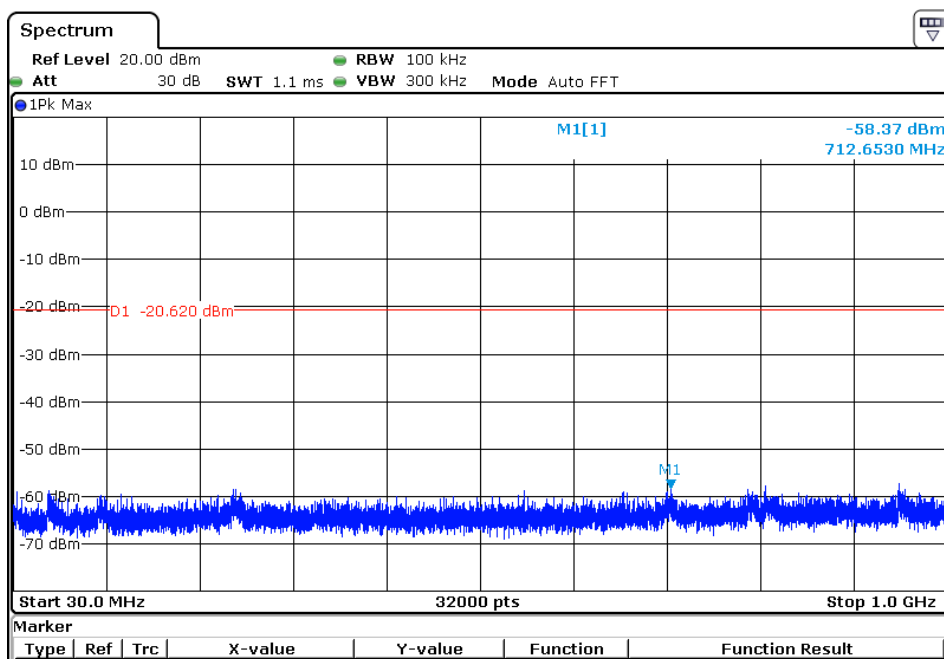


Note: Sweep Points=100000

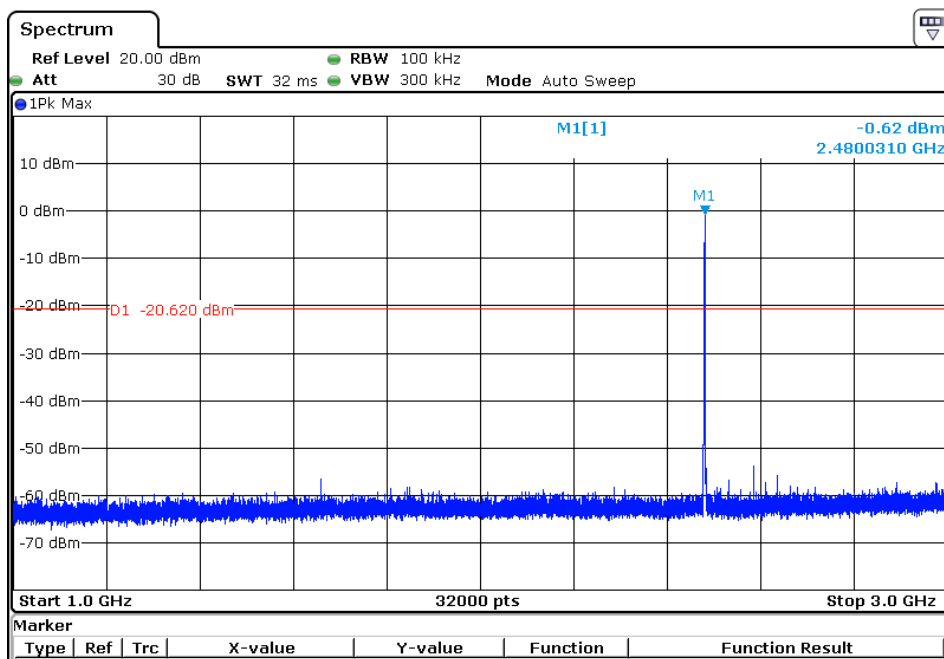


Note: Sweep Points=120000

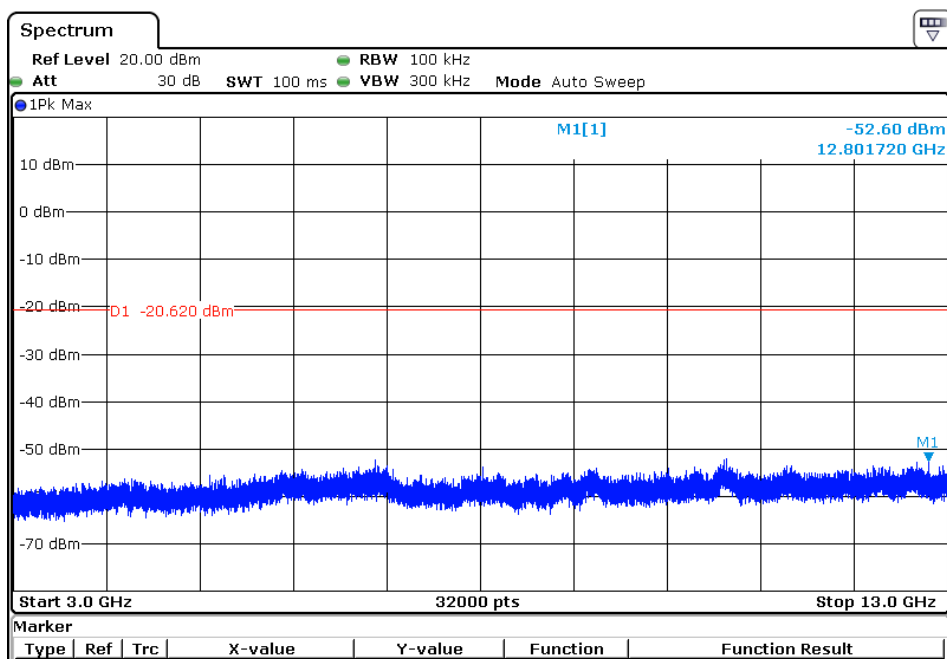
### CH78 Data rate 3Mbps 30MHz to 25GHz



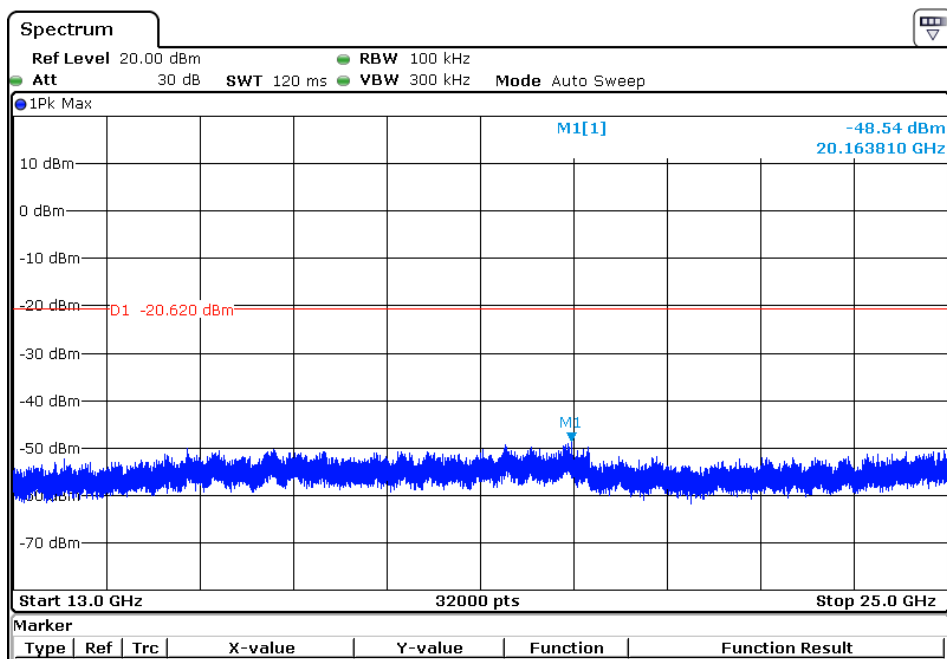
Note: Sweep Points=9700



Note: Sweep Points=20000



Note: Sweep Points=100000



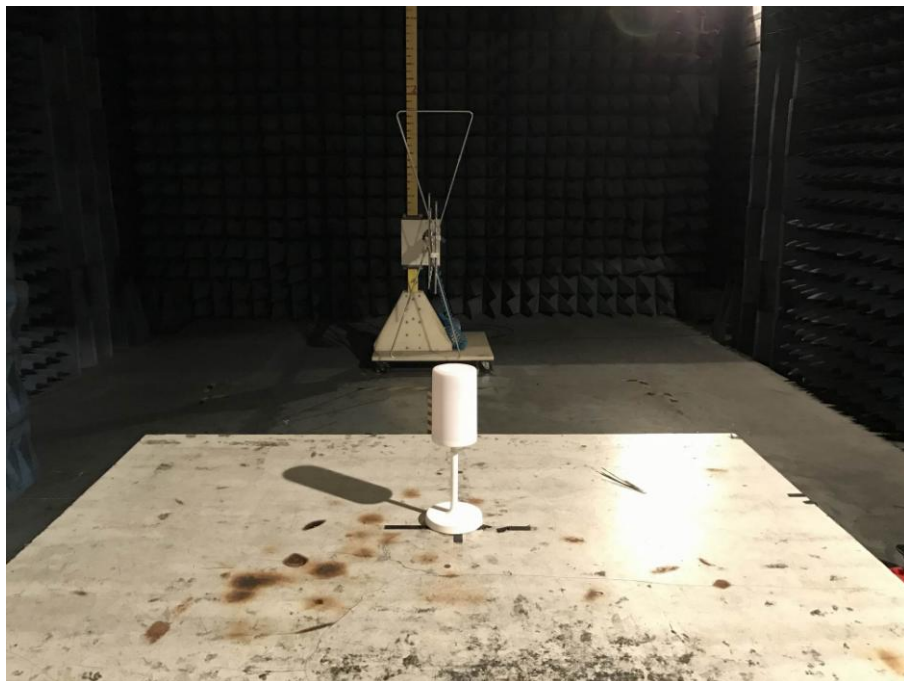
Note: Sweep Points=120000

## 6 Photographs

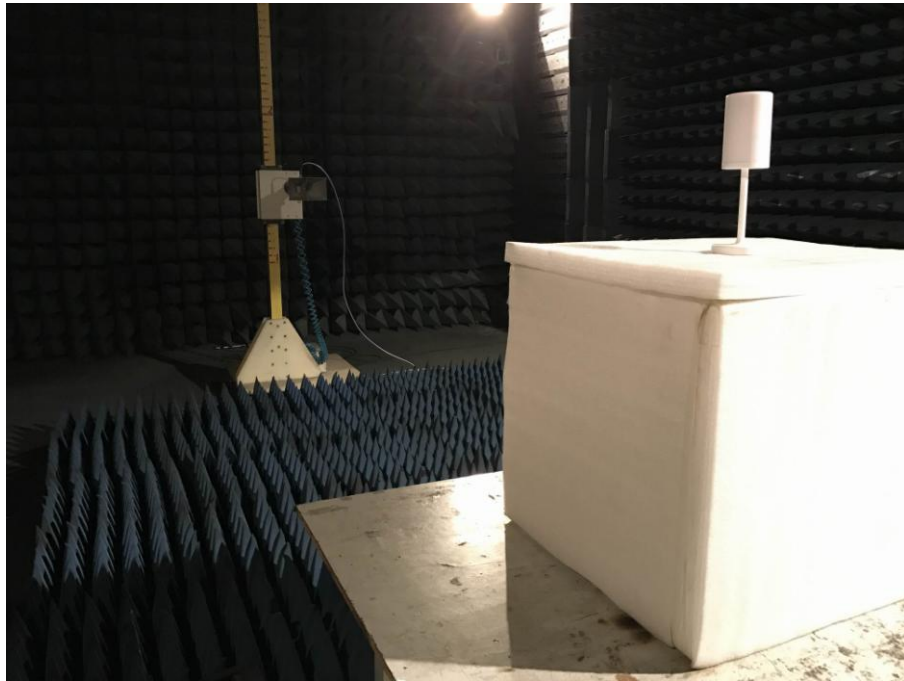
### 6.1 Conducted emissions Test Setup



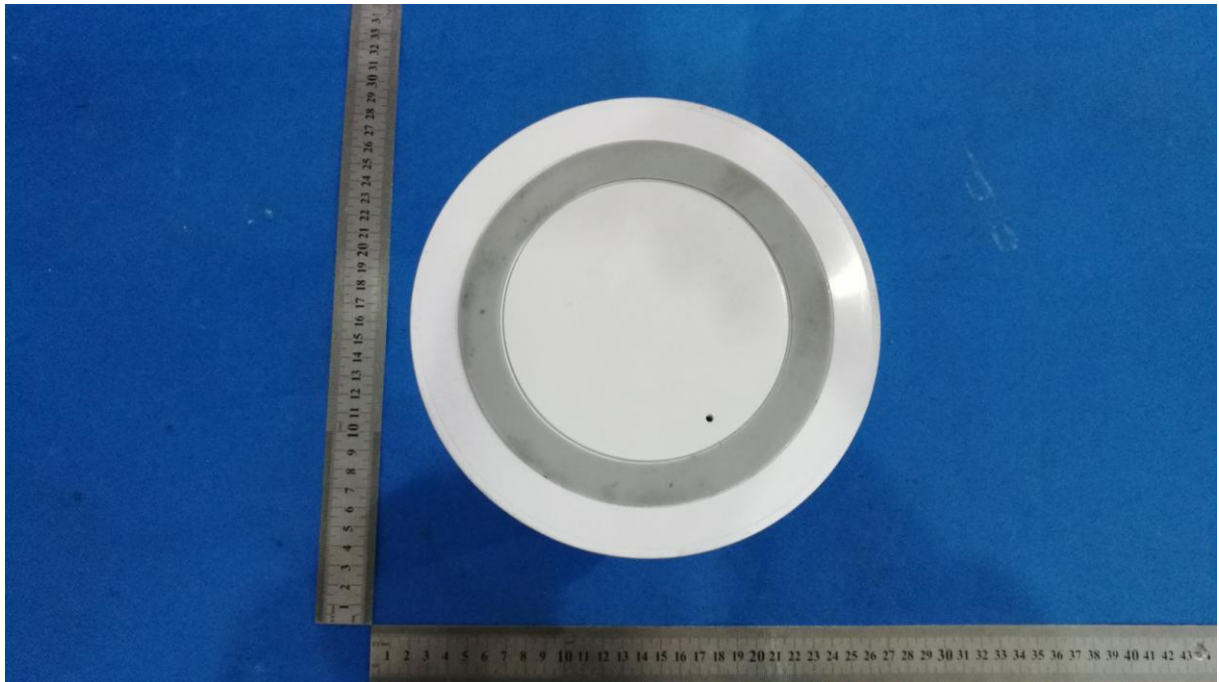
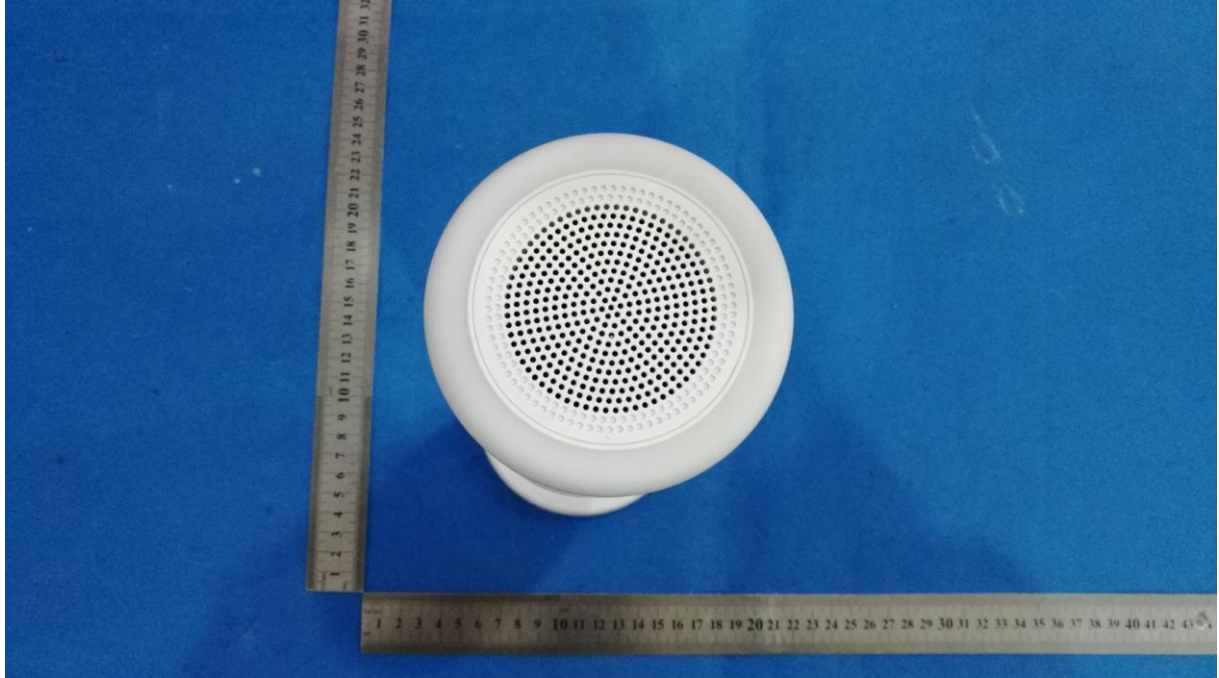
### 6.2 Radiated spurious emissions Test Setup(below 1GHz)

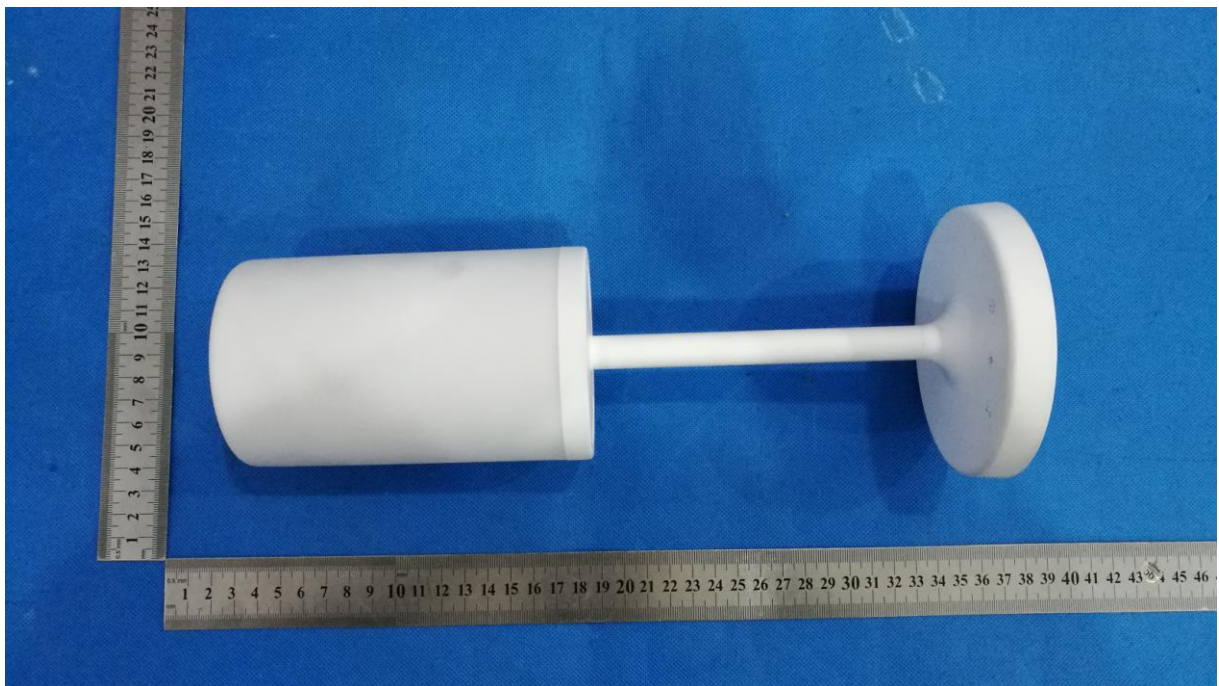
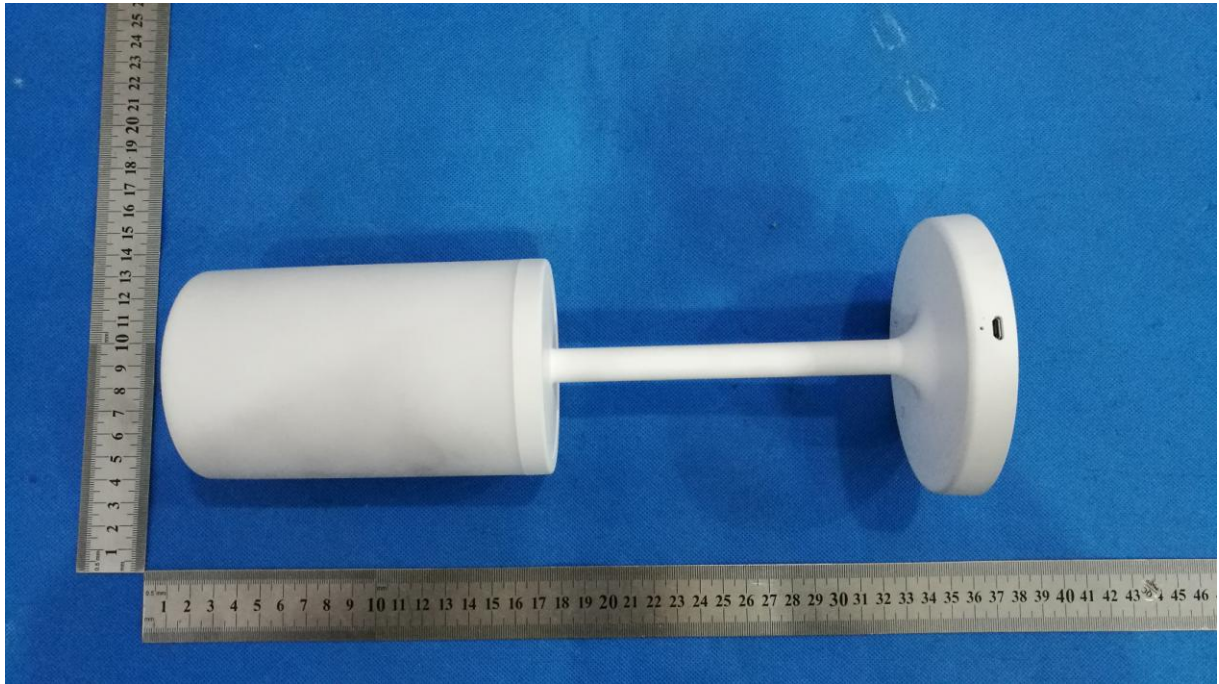


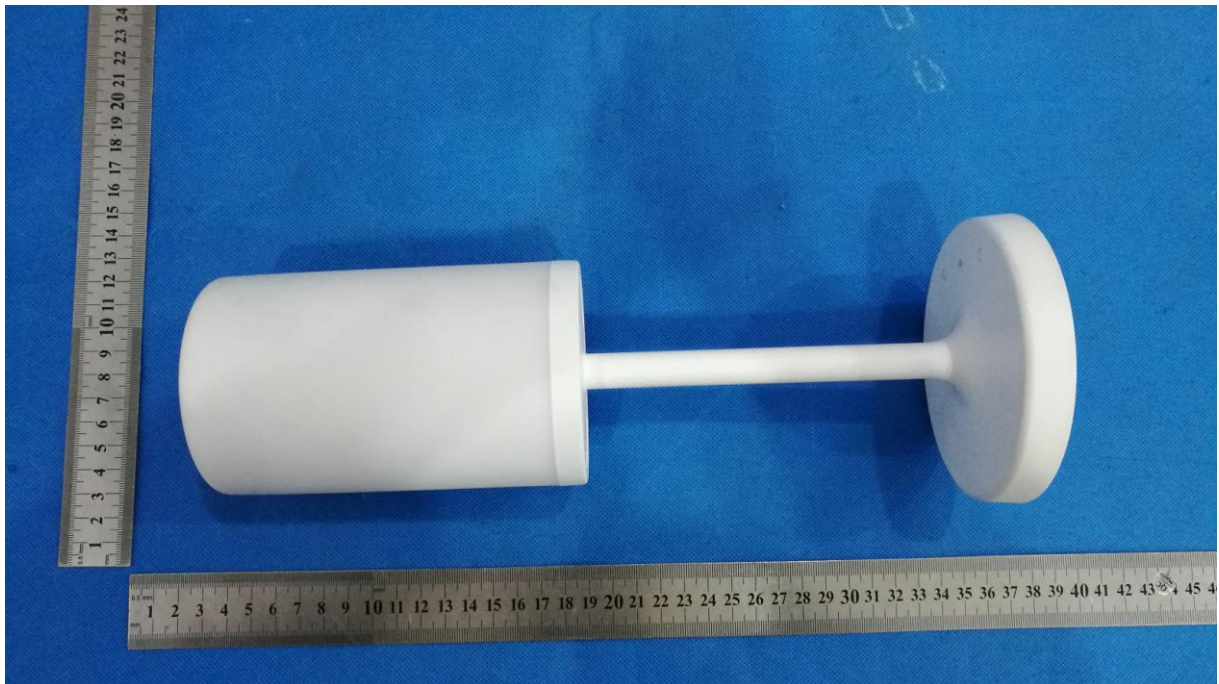
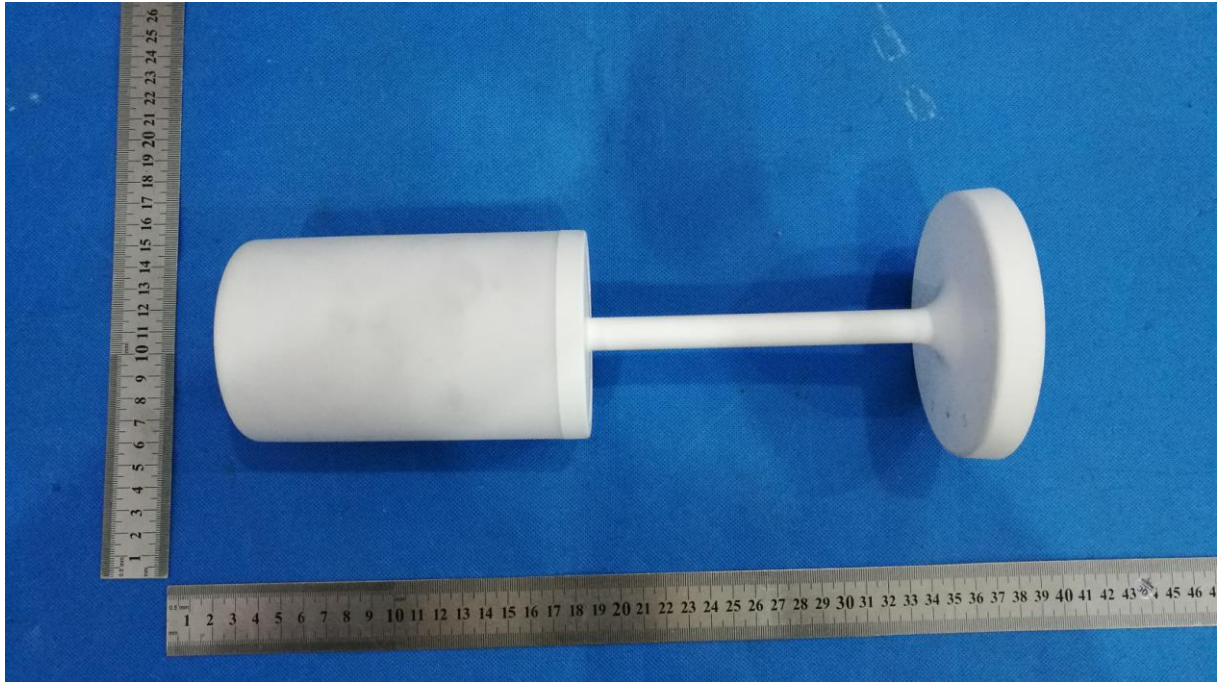
### 6.3 Radiated spurious emissions Test Setup(above 1GHz)

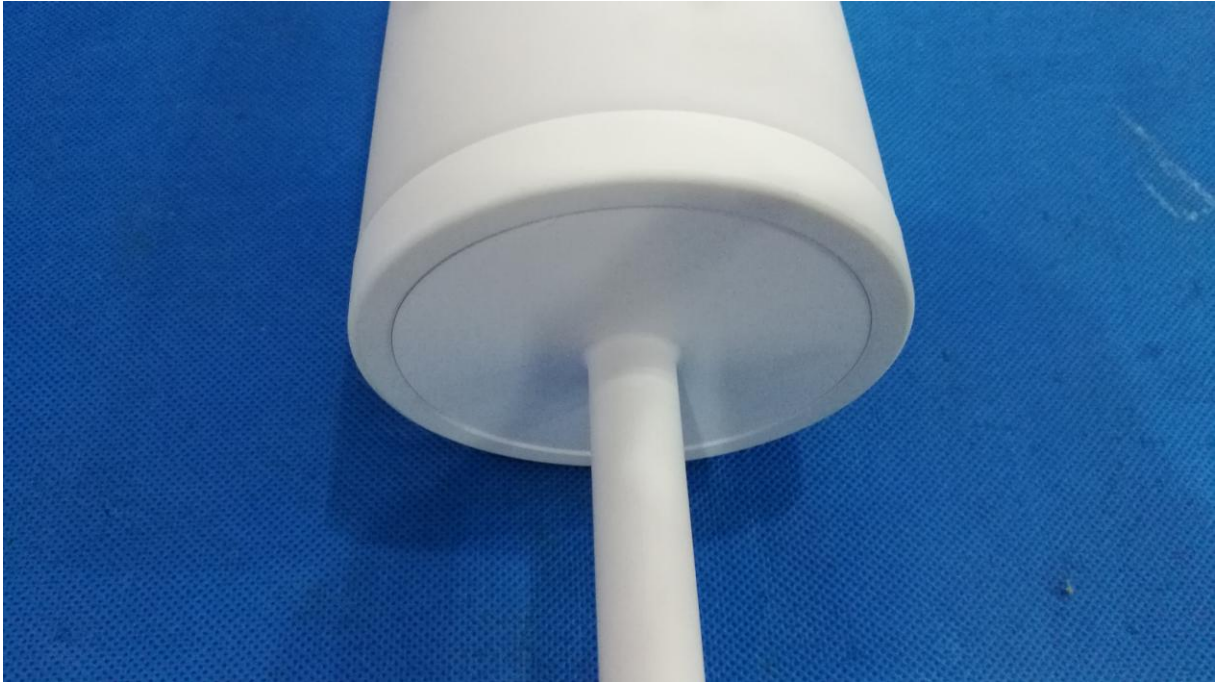


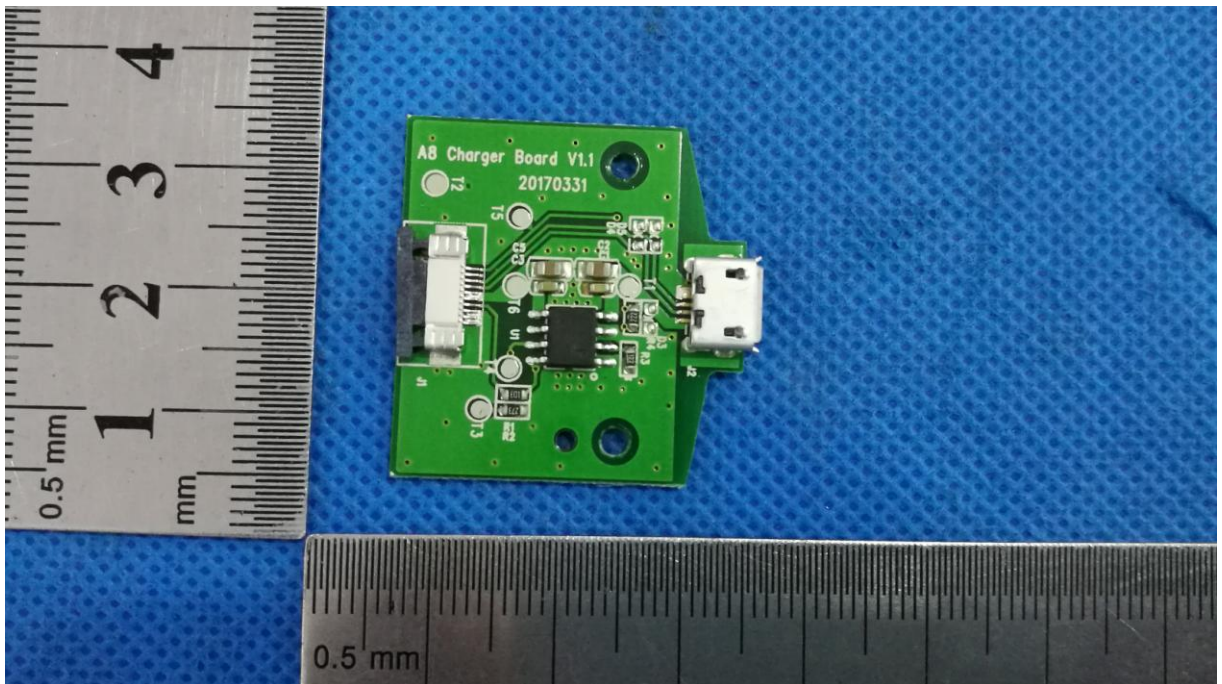
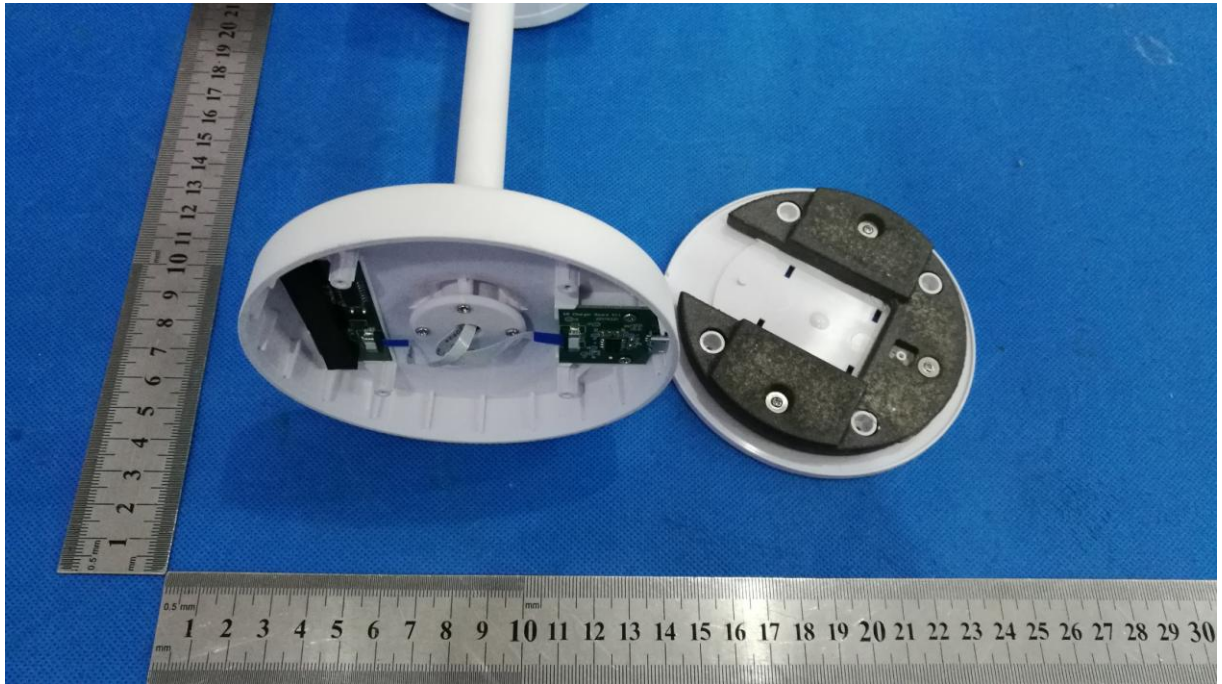
## 6.4 EUT Constructional Details

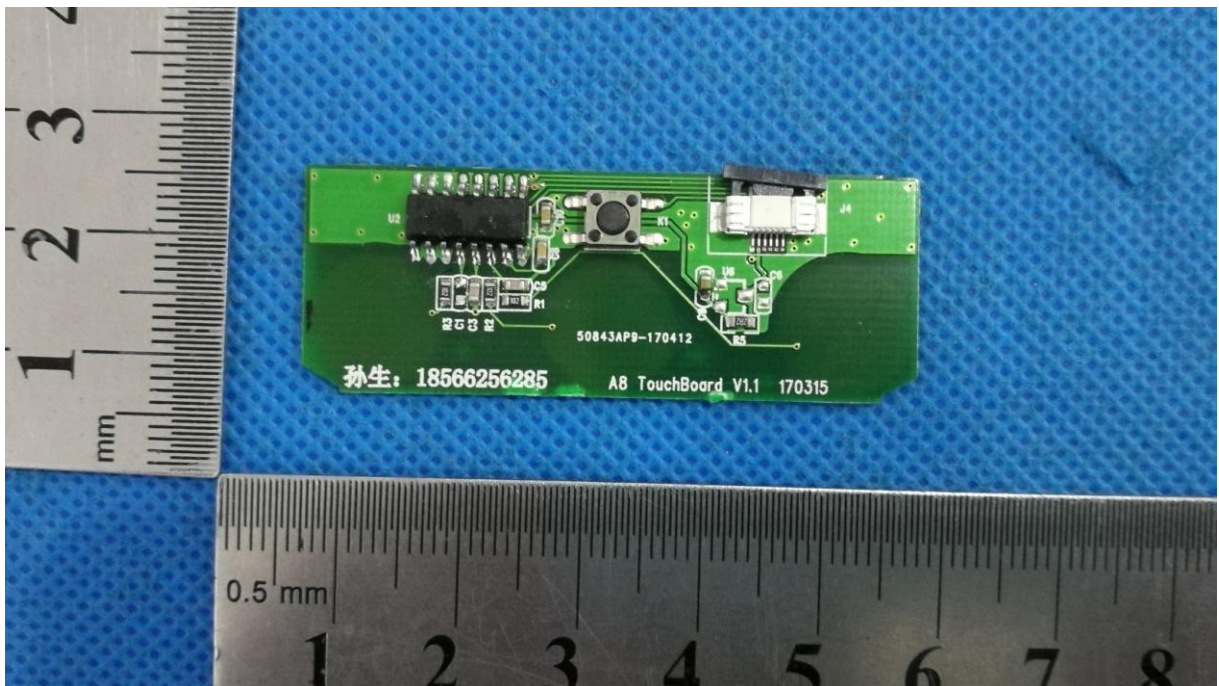
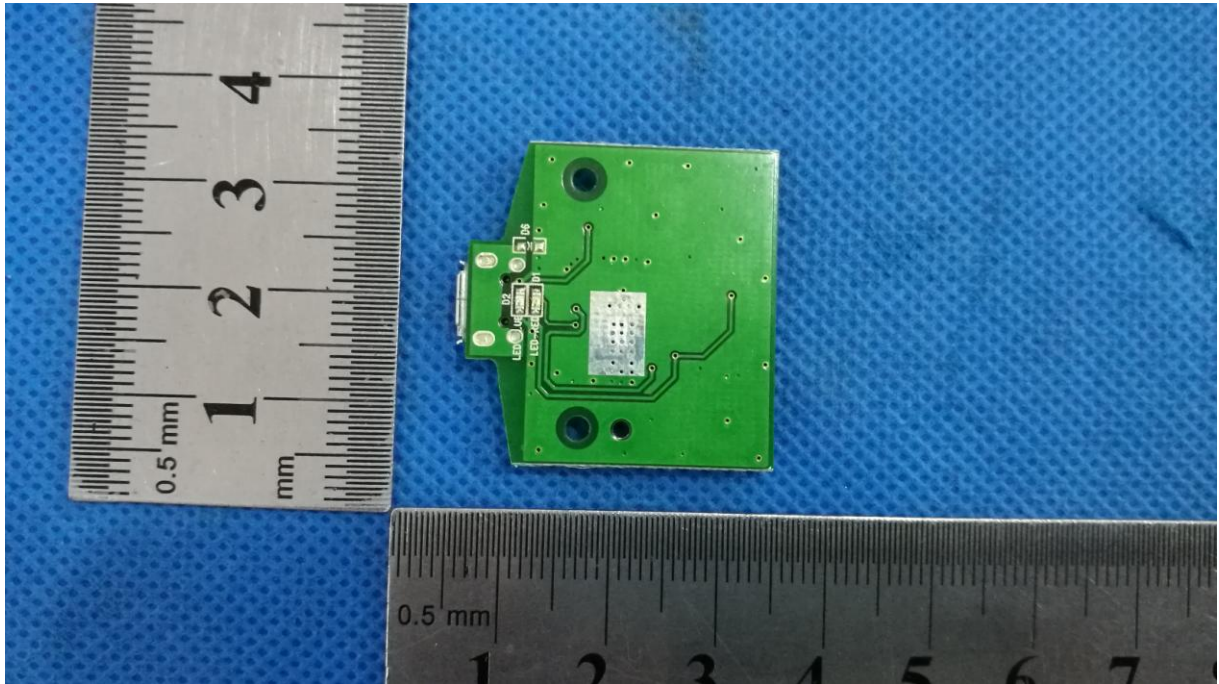


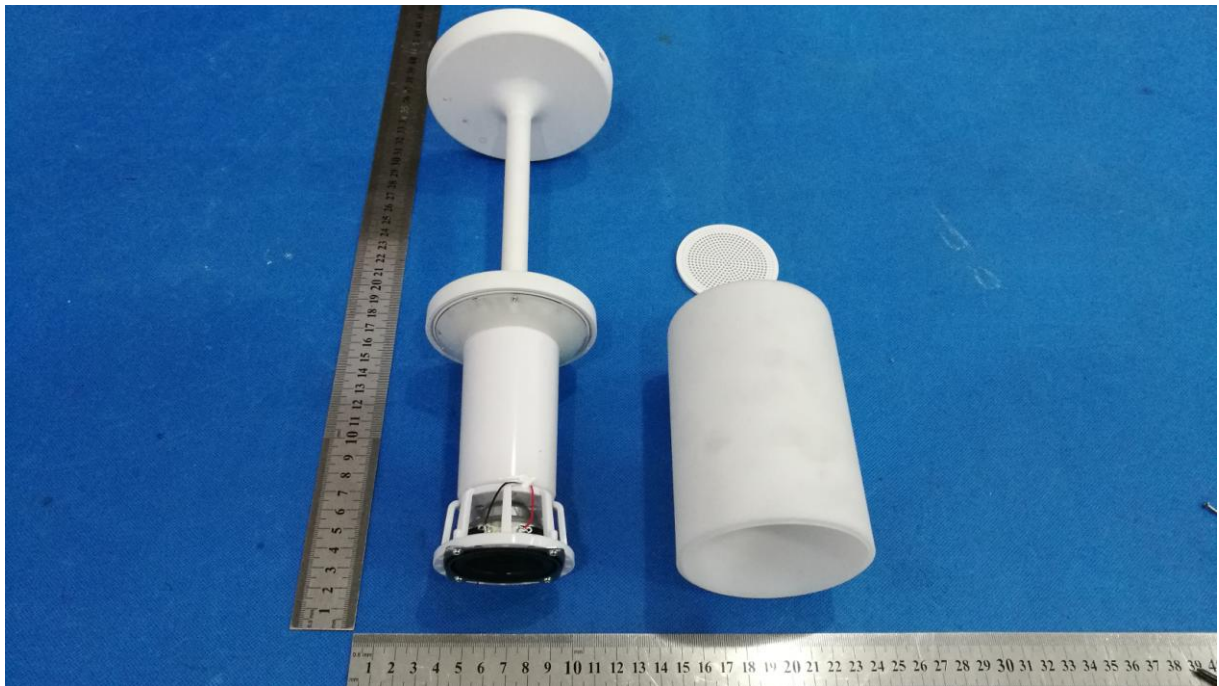


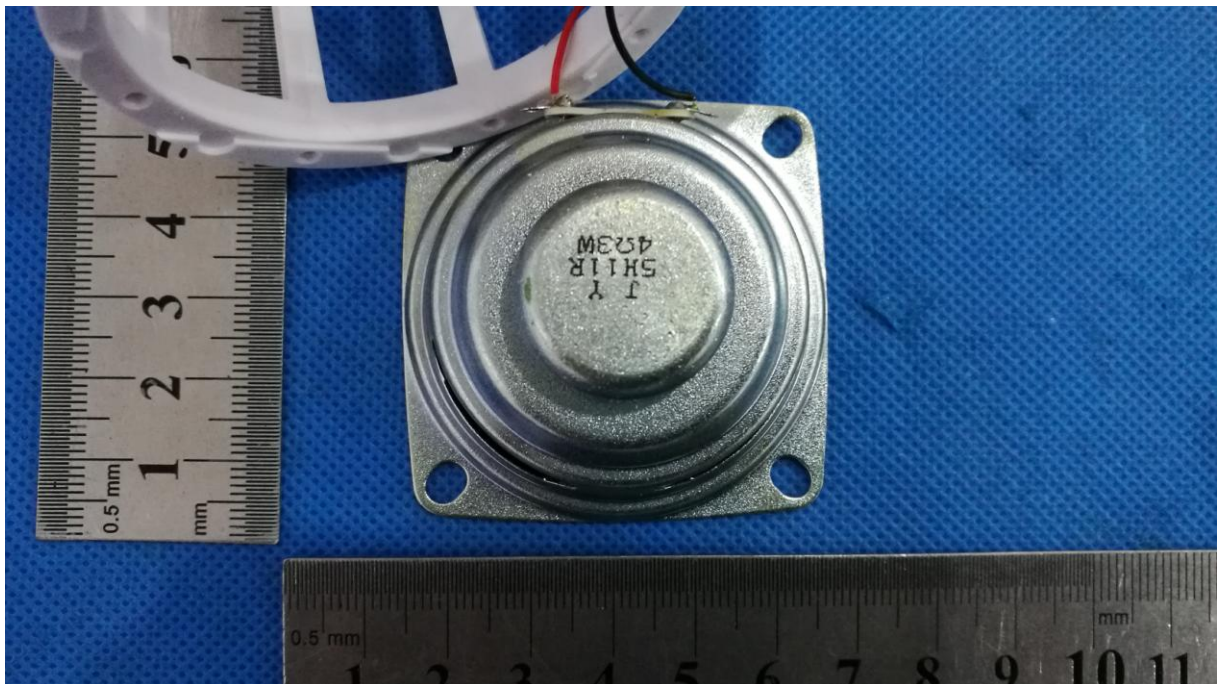
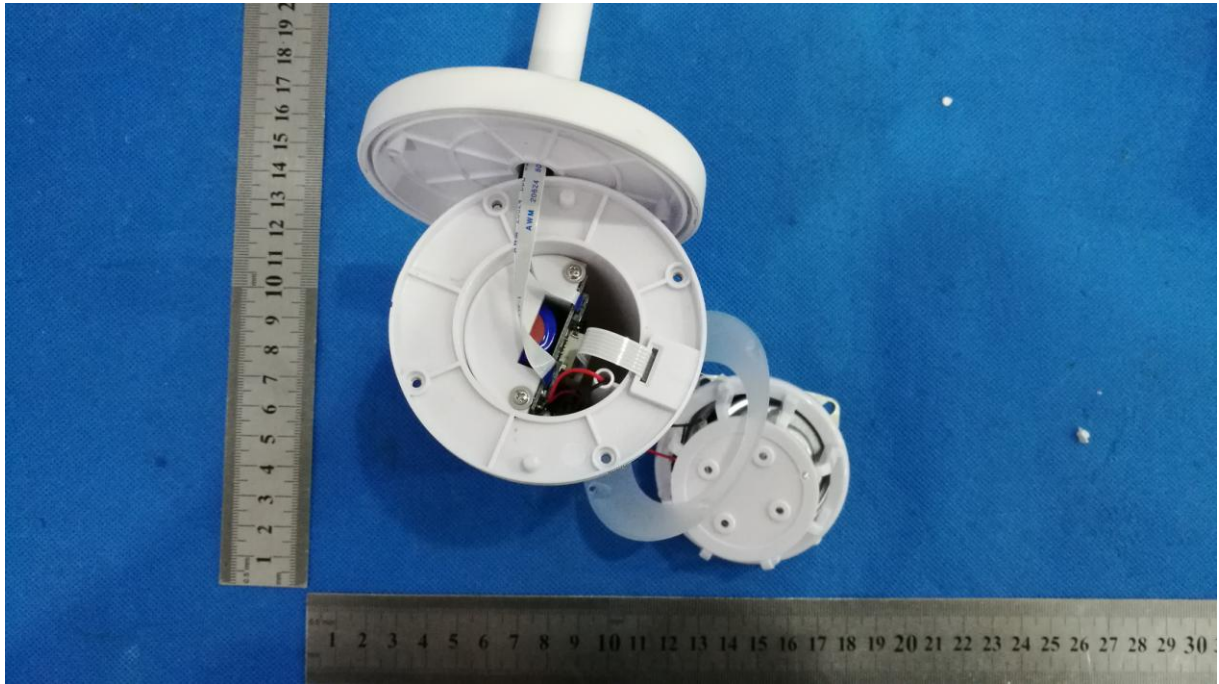


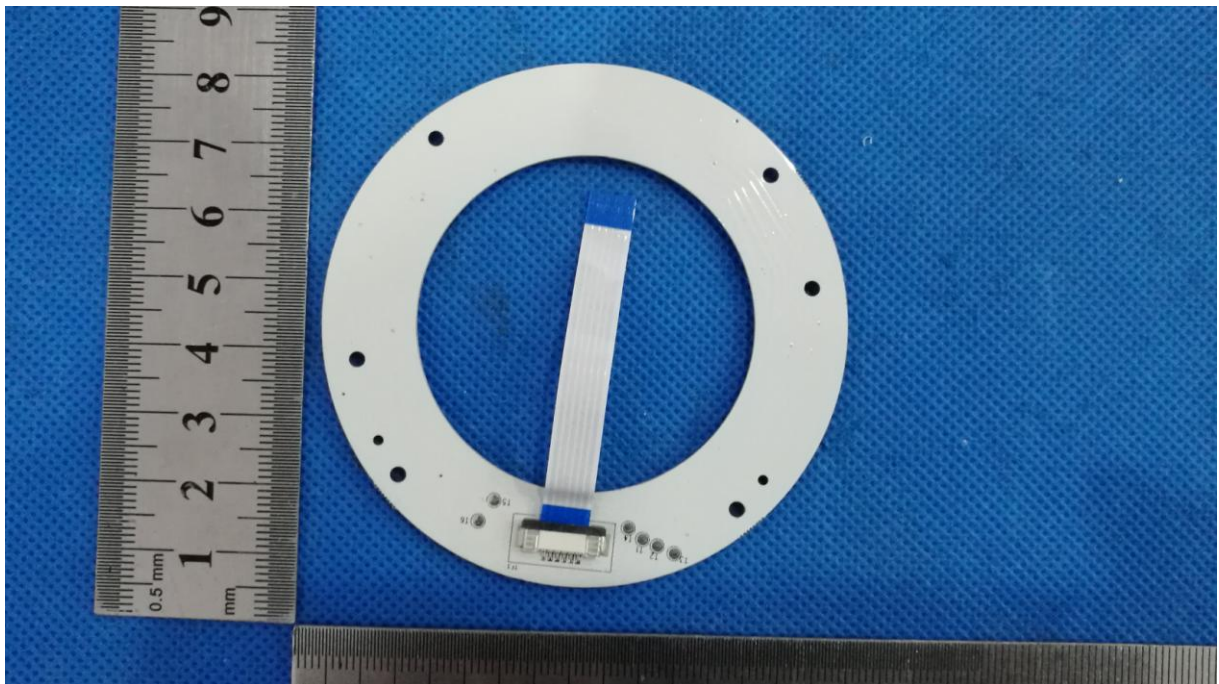
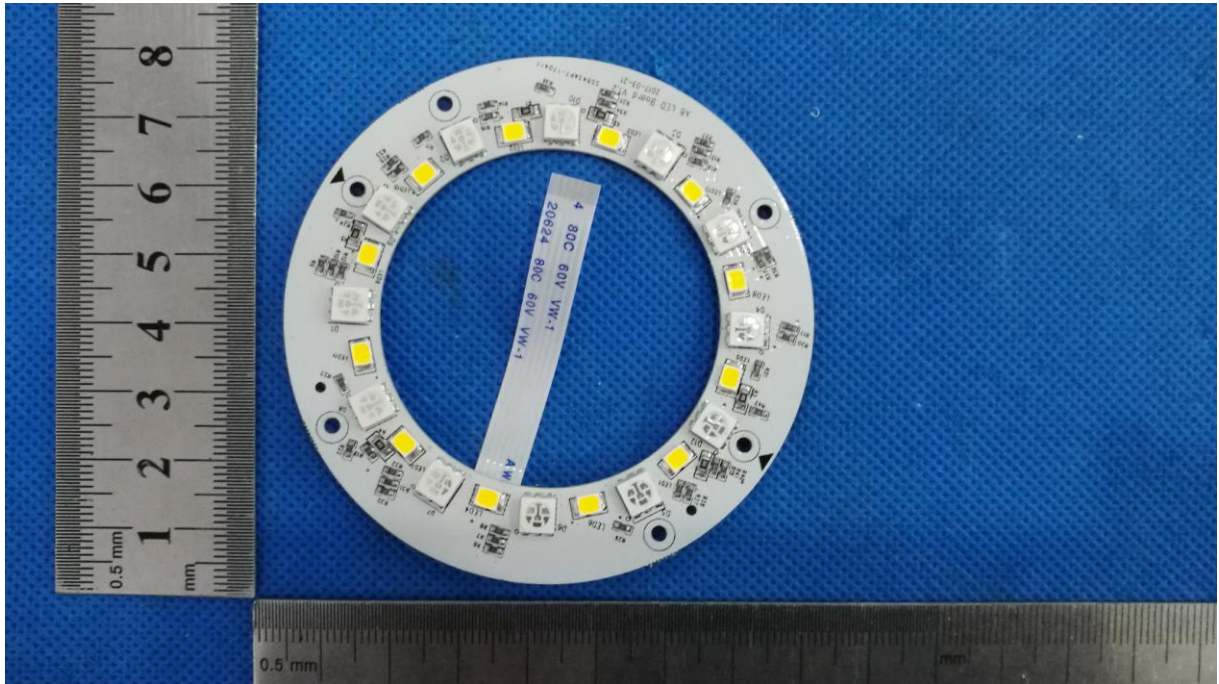


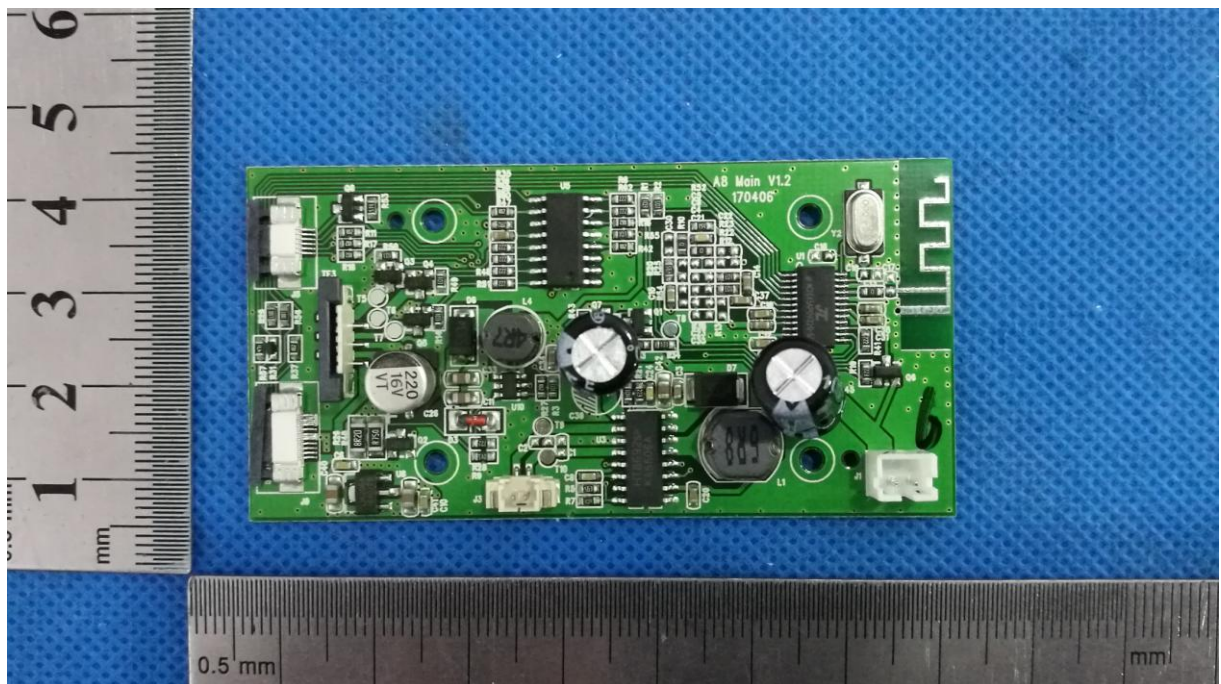
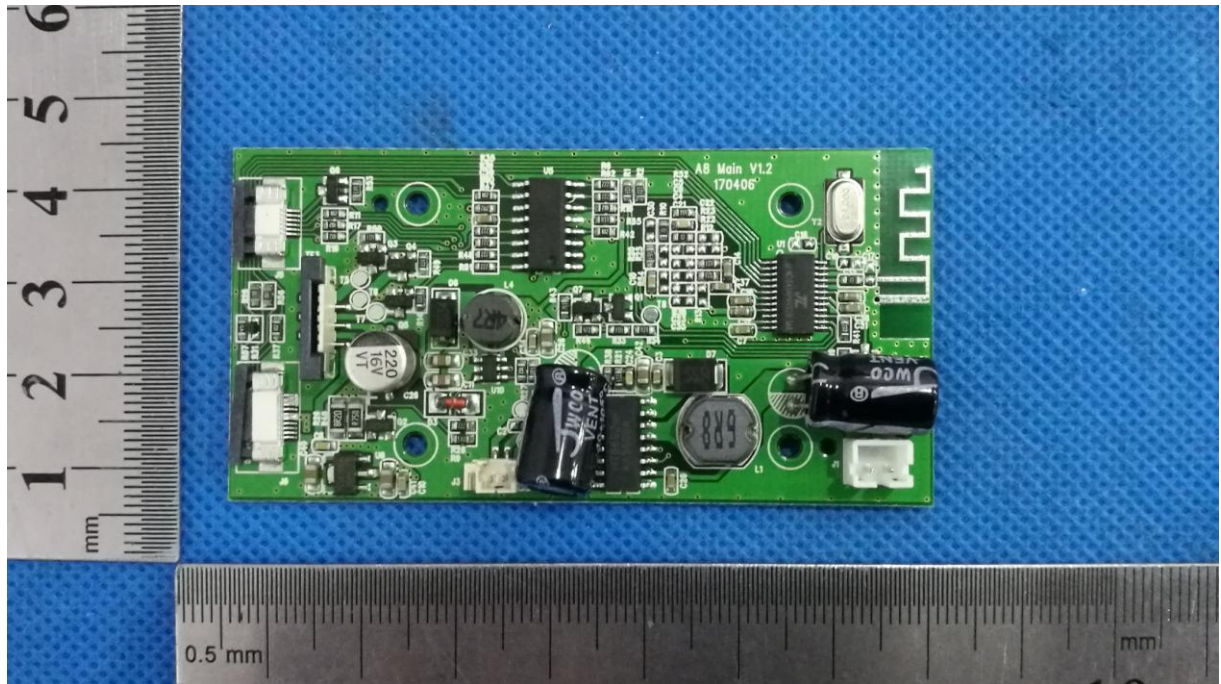


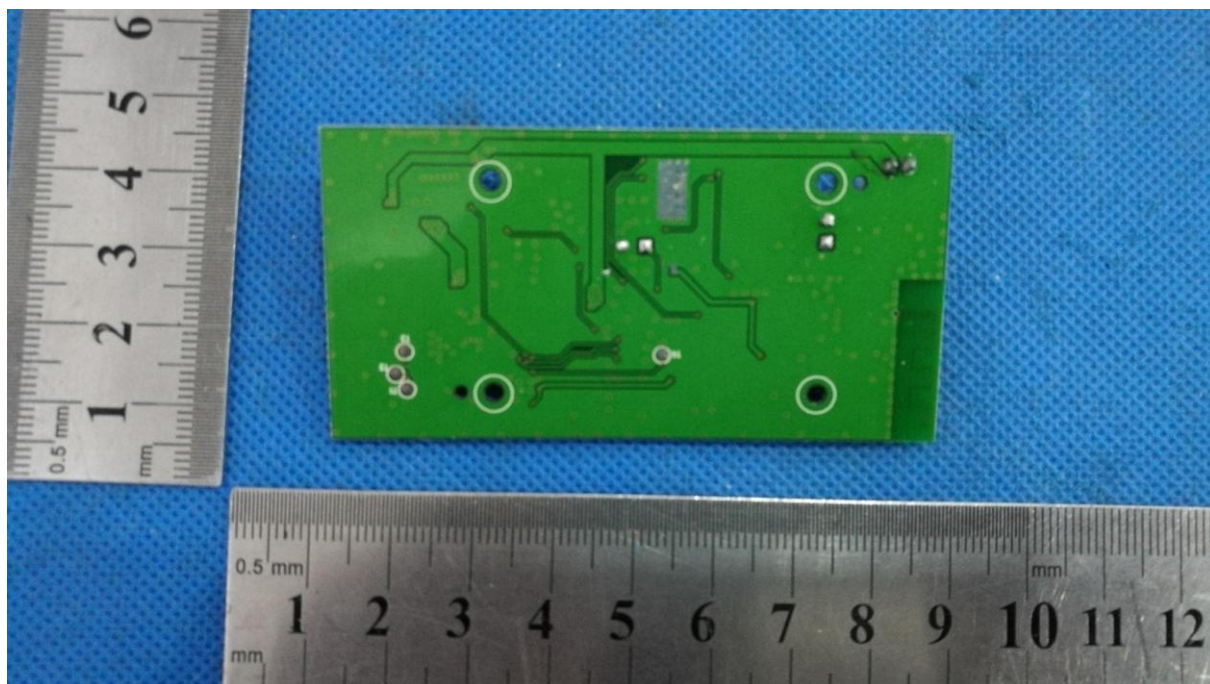












**\*\*End of report\*\***