

## APPLICATION CERTIFICATION FCC Part 15C

On Behalf of

Shenzhen Sowak Electronic Co., Ltd.

True Connect Truly Wireless Earphones

Model No.: MZX635

FCC ID: 2AS3I-MZX635

Prepared for : Shenzhen Sowak Electronic Co., Ltd.  
Address : No.88, Jinkang Road, Jinsha Community, Kengzi  
Street, Pingshan, Shenzhen, China

Prepared by : Shenzhen Accurate Technology Co., Ltd.  
Address : 1/F., Building A, Changyuan New Material Port,  
Science & Industry Park, Nanshan District, Shenzhen,  
Guangdong, P.R. China.

Tel: (0755) 26503290

Fax: (0755) 26503396

Report No. : ATE20190647  
Date of Test : May 11, 2019--May 21, 2019  
Date of Report : May 22, 2019

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## Test Report Certification

Applicant : Shenzhen Sowak Electronic Co., Ltd.  
Address : No.88, Jinkang Road, Jinsha Community, Kengzi Street, Pingshan, Shenzhen, China  
Manufacturer : Shenzhen Sowak Electronic Co., Ltd.  
Address : No.88, Jinkang Road, Jinsha Community, Kengzi Street, Pingshan, Shenzhen, China  
Product : True Connect Truly Wireless Earphones  
Model No. : MZX635  
Trade name : Altec Lansing

Measurement Procedure Used:

**FCC Rules and Regulations Part 15 Subpart C Section 15.247**  
**ANSI C63.10: 2013**

The device described above is tested by SHENZHEN ACCURATE TECHNOLOGY CO. LTD to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C Section 15.247 limits. The measurement results are contained in this test report and SHENZHEN ACCURATE TECHNOLOGY CO. LTD is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of SHENZHEN ACCURATE TECHNOLOGY CO. LTD.

Date of Test : May 11, 2019--May 21, 2019  
Date of Report: May 22, 2019

Prepared by :

(Tim Zhang, Engineer)

Approved &  
Authorized Signer :

(Sean Liu, Manager)

## 1. GENERAL INFORMATION

### 1.1. Description of Device (EUT)

|                         |   |                                                                                    |
|-------------------------|---|------------------------------------------------------------------------------------|
| EUT                     | : | True Connect Truly Wireless Earphones                                              |
| Model Number            | : | MZX635                                                                             |
| Rating                  | : | DC 3.7V (Powered by battery)                                                       |
| Bluetooth version       | : | BT V5.0<br>This report is for BT classic mode                                      |
| Frequency Range         | : | 2402MHz-2480MHz                                                                    |
| Number of Channels      | : | 79                                                                                 |
| Antenna Gain(Max)       | : | 1.2dBi                                                                             |
| Antenna type            | : | Integral Antenna                                                                   |
| Hardware version        | : | IT1-ETA9640-V1.4                                                                   |
| Software version        | : | V5.0                                                                               |
| Trade Name              | : | Altec Lansing                                                                      |
| Modulation mode         | : | GFSK, $\pi/4$ DQPSK, 8DPSK                                                         |
| Applicant               | : | Shenzhen Sowak Electronic Co., Ltd                                                 |
| Address                 | : | No.88, Jinkang Road, Jinsha Community, Kengzi Street,<br>Pingshan, Shenzhen, China |
| Manufacturer            | : | Shenzhen Sowak Electronic Co., Ltd                                                 |
| Address                 | : | No.88, Jinkang Road, Jinsha Community, Kengzi Street,<br>Pingshan, Shenzhen, China |
| Date of sample received | : | May 07, 2019                                                                       |
| Date of Test            | : | May 11, 2019--May 21, 2019                                                         |

## 1.2. Accessory and Auxiliary Equipment

|                                                 |   |                               |
|-------------------------------------------------|---|-------------------------------|
| Adapter information<br>(provided by laboratory) | : | Model: MX12X6-0502000VU       |
|                                                 |   | Input: 100-240V~50/60Hz 0.35A |
|                                                 |   | Output: DC 5V/1A              |

|                                |   |                      |
|--------------------------------|---|----------------------|
| PC<br>(provided by laboratory) | : | Manufacturer: LENOVO |
|                                |   | M/N: 4290-RT8        |
|                                |   | S/N: R9-FW93G 11/08  |

## 1.3. Description of Test Facility

EMC Lab : Recognition of accreditation by Federal Communications Commission (FCC)  
The Designation Number is CN1189  
The Registration Number is 708358

Listed by Innovation, Science and Economic Development Canada (ISED)  
The Registration Number is 5077A-2

Accredited by China National Accreditation Service for Conformity Assessment (CNAS)  
The Registration Number is CNAS L3193

Accredited by American Association for Laboratory Accreditation (A2LA)  
The Certificate Number is 4297.01

Name of Firm : Shenzhen Accurate Technology Co., Ltd.  
Site Location : 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

#### 1.4.Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

Radiated emission expanded uncertainty = 3.08dB, k=2  
(9kHz-30MHz)

Radiated emission expanded uncertainty = 4.42dB, k=2  
(30MHz-1000MHz)

Radiated emission expanded uncertainty = 4.06dB, k=2  
(Above 1GHz)

## 2. MEASURING DEVICE AND TEST EQUIPMENT

**Table 1: List of Test and Measurement Equipment**

| Kind of equipment                                       | Manufacturer              | Type                                    | S/N                | Calibrated dates | Calibrated until |
|---------------------------------------------------------|---------------------------|-----------------------------------------|--------------------|------------------|------------------|
| EMI Test Receiver                                       | Rohde&Schwarz             | ESCS30                                  | 100307             | Jan. 05, 2019    | 1 Year           |
| EMI Test Receiver                                       | Rohde&Schwarz             | ESPI3                                   | 101526/003         | Jan. 05, 2019    | 1 Year           |
| Spectrum Analyzer                                       | Rohde&Schwarz             | FSV-40                                  | 101495             | Jan. 05, 2019    | 1 Year           |
| Spectrum Analyzer                                       | Agilent                   | E7405A                                  | MY45115511         | Jan. 05, 2019    | 1 Year           |
| Pre-Amplifier                                           | Rohde&Schwarz             | CBLU118354<br>0-01                      | 3791               | Jan. 05, 2019    | 1 Year           |
| Loop Antenna                                            | Schwarzbeck               | FMZB1516                                | 1516131            | Jan. 05, 2019    | 1 Year           |
| Bilog Antenna                                           | Schwarzbeck               | VULB9163                                | 9163-323           | Jan. 05, 2019    | 1 Year           |
| Horn Antenna                                            | Schwarzbeck               | BBHA9120D                               | 9120D-655          | Jan. 05, 2019    | 1 Year           |
| Horn Antenna                                            | Schwarzbeck               | BBHA9170                                | 9170-359           | Jan. 05, 2019    | 1 Year           |
| Open Switch and<br>Control Unit                         | Rohde&Schwarz             | OSP120 +<br>OSP-B157                    | 101244 +<br>100866 | Jan. 05, 2019    | 1 Year           |
| LISN                                                    | Rohde&Schwarz             | ESH3-Z5                                 | 100305             | Jan. 05, 2019    | 1 Year           |
| LISN                                                    | Schwarzbeck               | NSLK8126                                | 8126431            | Jan. 05, 2019    | 1 Year           |
| Highpass Filter                                         | Wainwright<br>Instruments | WHKX3.6/18<br>G-10SS                    | N/A                | Jan. 05, 2019    | 1 Year           |
| Band Reject Filter                                      | Wainwright<br>Instruments | WRCG2400/2<br>485-2375/2510<br>-60/11SS | N/A                | Jan. 05, 2019    | 1 Year           |
| RF Coaxial Cable<br>(Conducted<br>Emission)             | SUHNER                    | N-2m                                    | No.2               | Jan. 05, 2019    | 1 Year           |
| RF Coaxial Cable<br>(Radiated Emission)                 | SUHNER                    | N-5m                                    | NO.3               | Jan. 05, 2019    | 1 Year           |
| RF Coaxial Cable<br>(Radiated Emission)                 | SUHNER                    | N-5m                                    | NO.4               | Jan. 05, 2019    | 1 Year           |
| RF Coaxial Cable<br>(Radiated Emission)                 | SUHNER                    | N-1m                                    | NO.5               | Jan. 05, 2019    | 1 Year           |
| RF Coaxial Cable<br>(Radiated Emission)                 | SUHNER                    | N-1m                                    | NO.6               | Jan. 05, 2019    | 1 Year           |
| Conducted Emission Measurement Software: ES-K1 V1.71    |                           |                                         |                    |                  |                  |
| Radiated Emission Measurement Software: EZ EMC V1.1.4.2 |                           |                                         |                    |                  |                  |



### 3. OPERATION OF EUT DURING TESTING

#### 3.1. Operating Mode

The mode is used: Transmitting mode

Low Channel: 2402MHz

Middle Channel: 2441MHz

High Channel: 2480MHz

Hopping

Note: The Bluetooth has been tested under continuous transmission mode.

#### 3.2. EUT Pseudorandom Frequency Hopping Sequence

Pseudorandom Frequency Hopping Sequence Table as below:

Channel: 08, 24, 40, 56, 34, 51, 72, 09, 01, 64, 22, 33, 41, 32, 47, 65, 73, 53, 69, 06, 17, 04, 20, 36, 52, 38, 66, 70, 78, 68, 76, 21, 29, 10, 26, 49, 00, 58, 44, 59, 75, 13, 03, 14, 11, 35, 43, 37, 50, 61, 77, 55, 71, 02, 23, 07, 27, 39, 54, 46, 48, 15, 63, 62, 67, 25, 31, 12, 28, 19, 60, 42, 57, 74, 16, 05, 18, 30, 45, etc.

The system receiving have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

#### 3.3. Frequency Hopping System

This transmitter device is frequency hopping device, and complies with FCC part 15.247 rule.

This device uses Bluetooth radio which operates in 2400-2483.5 MHz band. Bluetooth uses a radio technology called frequency-hopping spread spectrum, which chops up the data being sent and transmits chunks of it on up to 79 bands (1 MHz each; centred from 2402 to 2480 MHz) in the range 2,400-2,483.5MHz. The transmitter switches hop frequencies 1,600 times per second to assure a high degree of data security. All Bluetooth devices participating in a given piconet are synchronized to the frequency-hopping channel for the piconet. The frequency hopping sequence is determined by the master's device address and the phase of the hopping sequence (the frequency to hop at a specific time) is determined by the master's internal clock. Therefore, all slaves in a piconet must know the master's device address and must synchronize their clocks with the master's clock.

Adaptive Frequency Hopping (AFH) was introduced in the Bluetooth specification to provide an effective way for a Bluetooth radio to counteract normal interference. AFH identifies "bad" channels, where either other wireless devices are interfering with the Bluetooth signal or the Bluetooth signal is interfering with another device. The AFH-enabled Bluetooth device will then communicate with other devices within its piconet to share details of any identified bad channels. The devices will then switch to alternative available "good" channels, away

from

the areas of interference, thus having no impact on the bandwidth used.

This device was tested with a bluetooth system receiver to check that the device maintained hopping synchronization, and the device complied with these requirements FCC Part 15.247 rule.

### 3.4.Configuration and peripherals

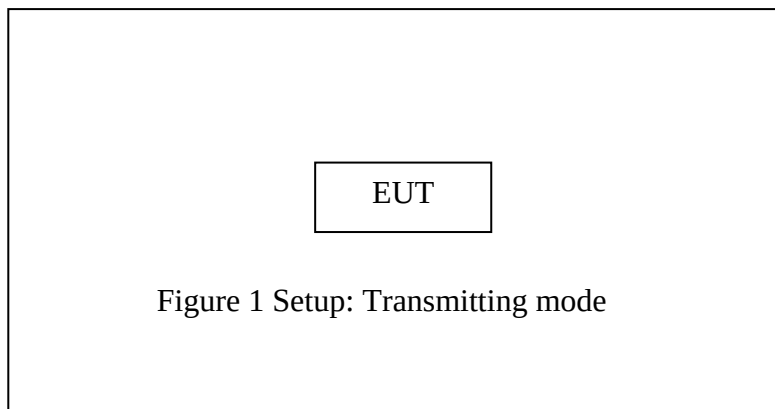


Figure 1 Setup: Transmitting mode

(EUT: Bluetooth earphone)

Note: The power was switched from 85% to 115%, and the worse case data was recorded.

#### 4. TEST PROCEDURES AND RESULTS

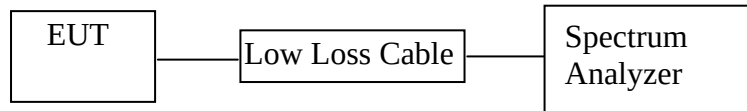
| FCC&IC Rules                        | Description of Test                   | Result    |
|-------------------------------------|---------------------------------------|-----------|
| Section 15.207                      | AC Power Line Conducted Emission Test | Compliant |
| Section 15.247(a)(1)                | 20dB Bandwidth Test                   | Compliant |
| Section 15.247(a)(1)                | Carrier Frequency Separation Test     | Compliant |
| Section 15.247(a)(1)(iii)           | Number Of Hopping Frequency Test      | Compliant |
| Section 15.247(a)(1)(iii)           | Dwell Time Test                       | Compliant |
| Section 15.247(b)(1)                | Maximum Peak Output Power Test        | Compliant |
| Section 15.247(d)<br>Section 15.209 | Radiated Emission Test                | Compliant |
| Section 15.247(d)                   | Band Edge Compliance Test             | Compliant |
| Section 15.203                      | Antenna Requirement                   | Compliant |

**Note:**

The product is a pair of Bluetooth headphones. They have the same Bluetooth module and antenna, so we only tested one of them.

## 5. 20DB BANDWIDTH TEST

### 5.1. Block Diagram of Test Setup



(EUT: True Connect Truly Wireless Earphones)

### 5.2. The Requirement For Section 15.247(a)(1)

Section 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.

### 5.3. EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

### 5.4. Operating Condition of EUT

5.4.1. Setup the EUT and simulator as shown as Section 5.1.

5.4.2. Turn on the power of all equipment.

5.4.3. Let the EUT work in TX (Hopping off) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

### 5.5. Test Procedure

5.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

5.5.2. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

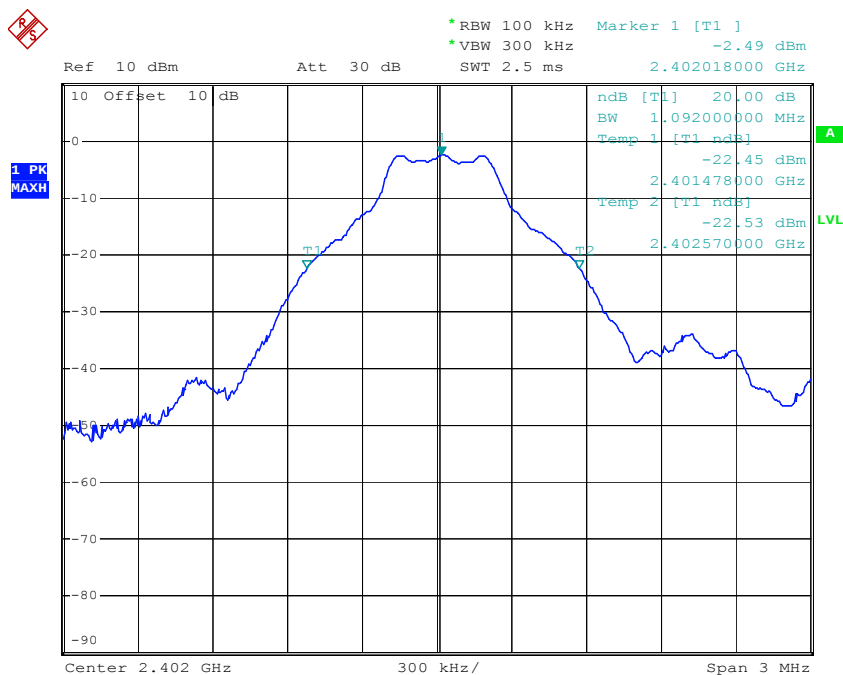
## 5.6.Test Result

| Channel | Frequency (MHz) | GFSK mode<br>20dB Bandwidth (MHz) | $\pi/4$ DQPSK mode<br>20dB Bandwidth (MHz) | 8DPSK mode<br>20dB Bandwidth (MHz) | Result |
|---------|-----------------|-----------------------------------|--------------------------------------------|------------------------------------|--------|
| Low     | 2402            | 1.092                             | 1.350                                      | 1.332                              | Pass   |
| Middle  | 2441            | 1.098                             | 1.356                                      | 1.344                              | Pass   |
| High    | 2480            | 1.092                             | 1.356                                      | 1.344                              | Pass   |

The spectrum analyzer plots are attached as below.

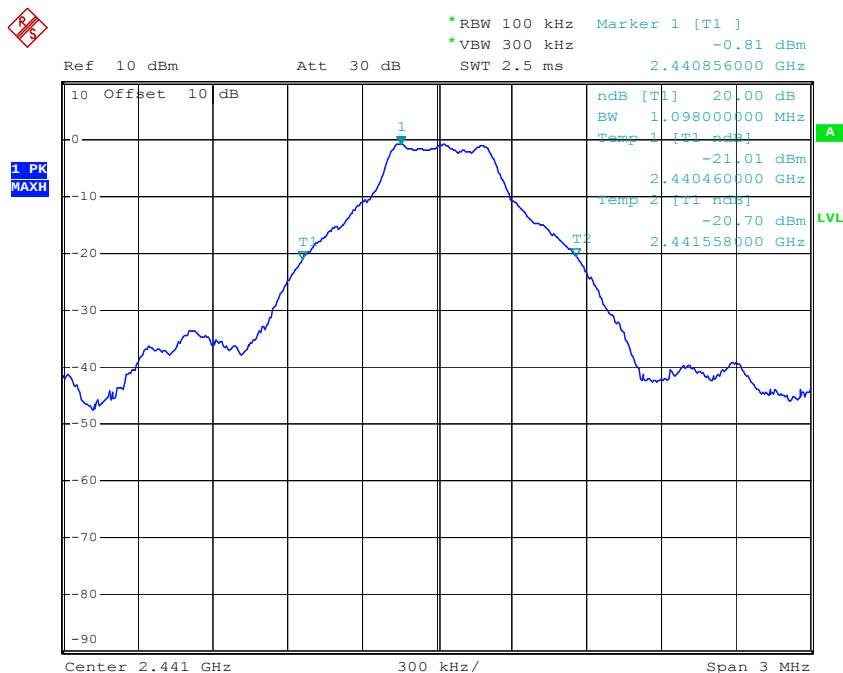
### GFSK Mode

#### Low channel



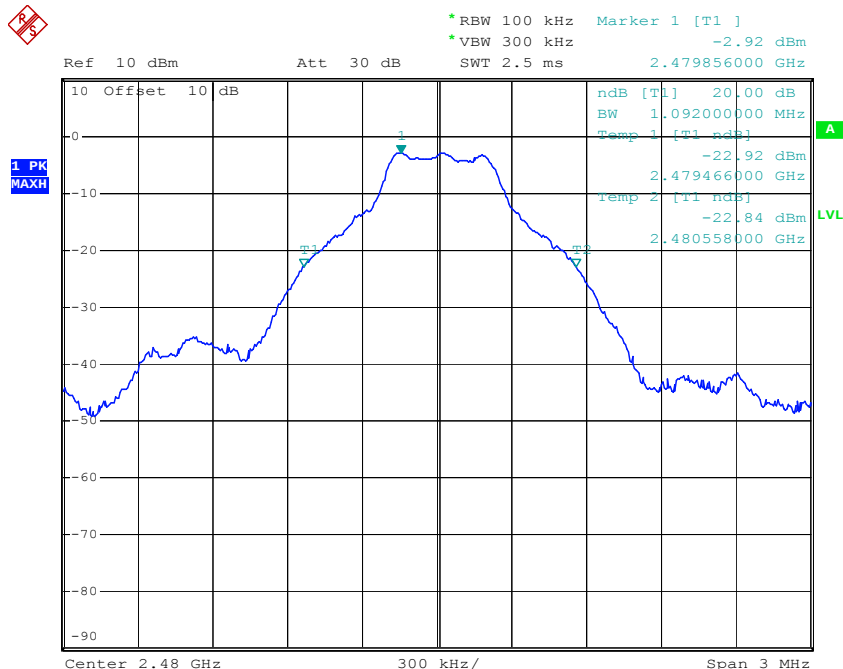
Comment A:  
Date: 20.MAY.2019 10:18:21

## Middle channel



Comment A:  
Date: 20.MAY.2019 10:19:13

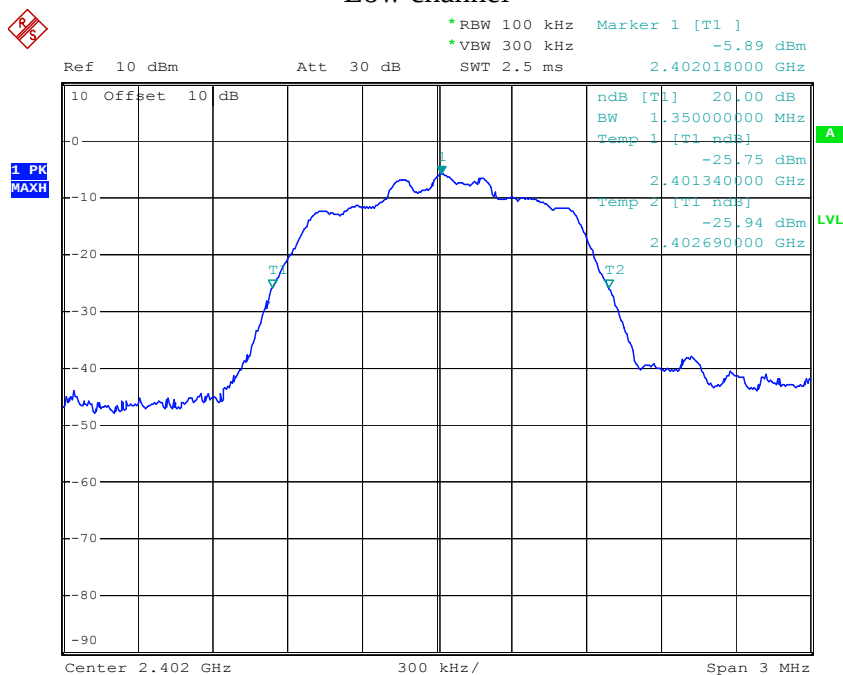
## High channel



Comment A:  
Date: 20.MAY.2019 10:20:11

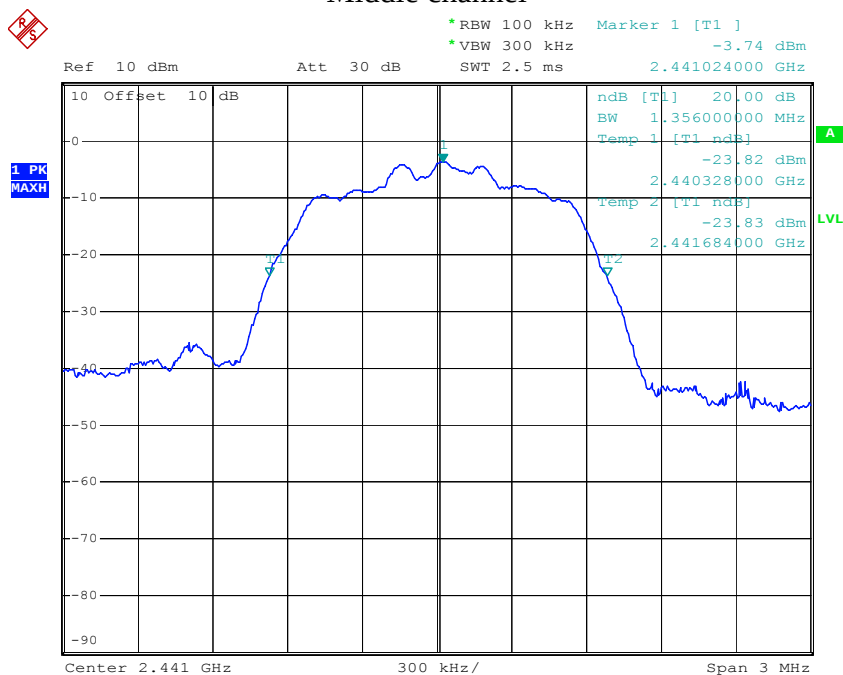
## $\pi/4$ DQPSK Mode

### Low channel



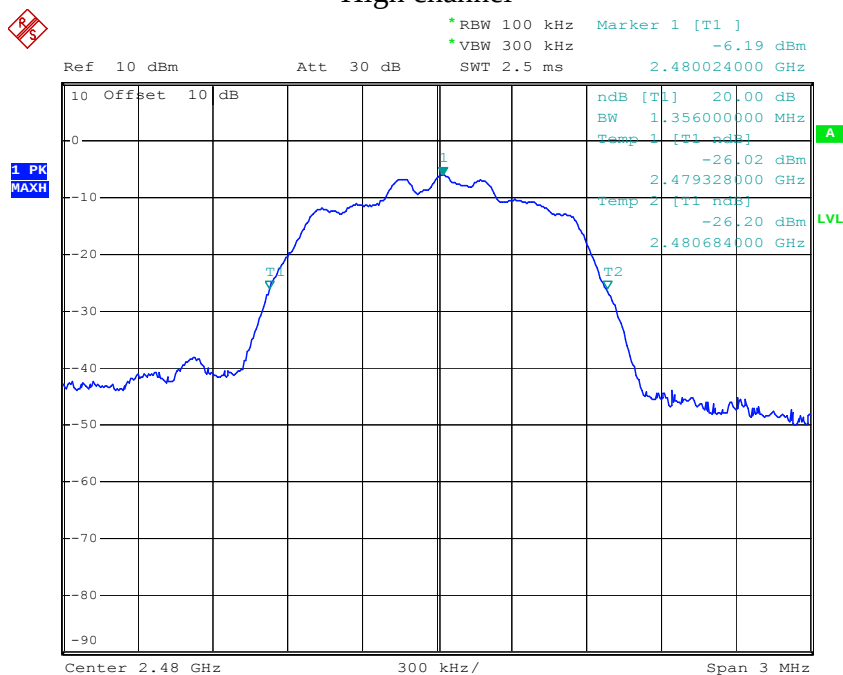
Comment A:  
Date: 20.MAY.2019 10:24:28

### Middle channel



Comment A:  
Date: 20.MAY.2019 10:23:22

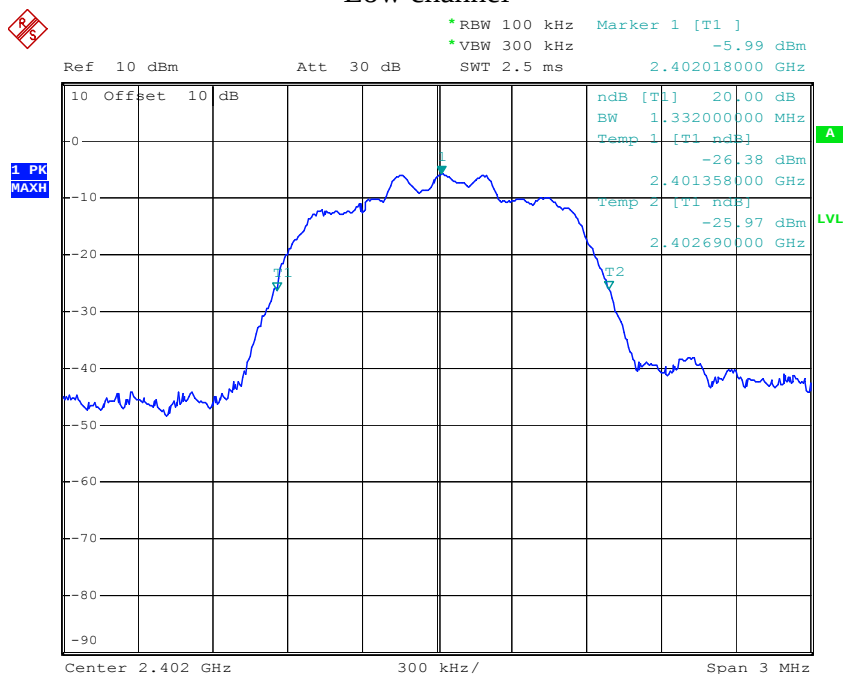
## High channel



Comment A:  
Date: 20.MAY.2019 10:22:14

## 8DPSK Mode

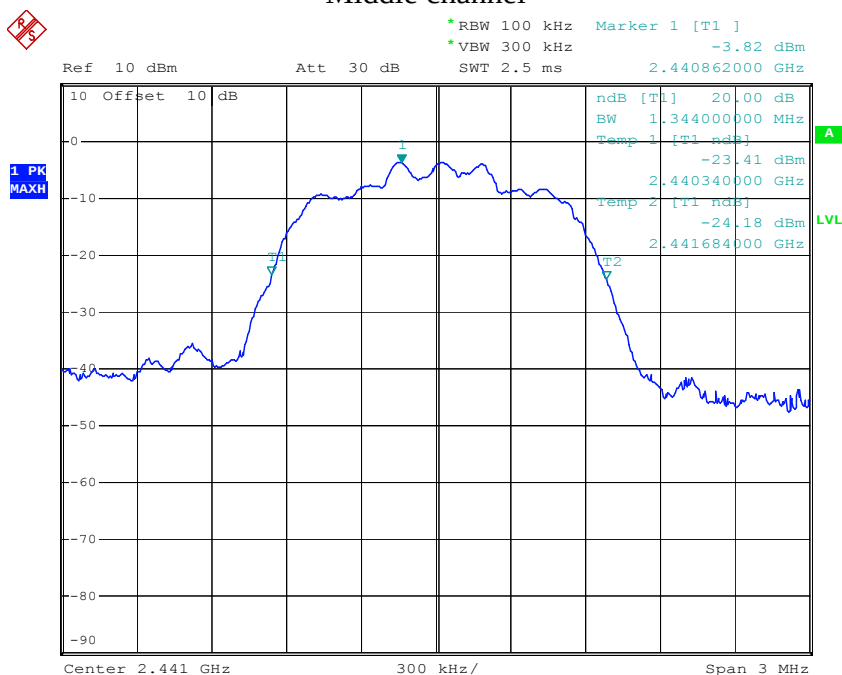
## Low channel



Comment A:  
Date: 20.MAY.2019 10:26:03

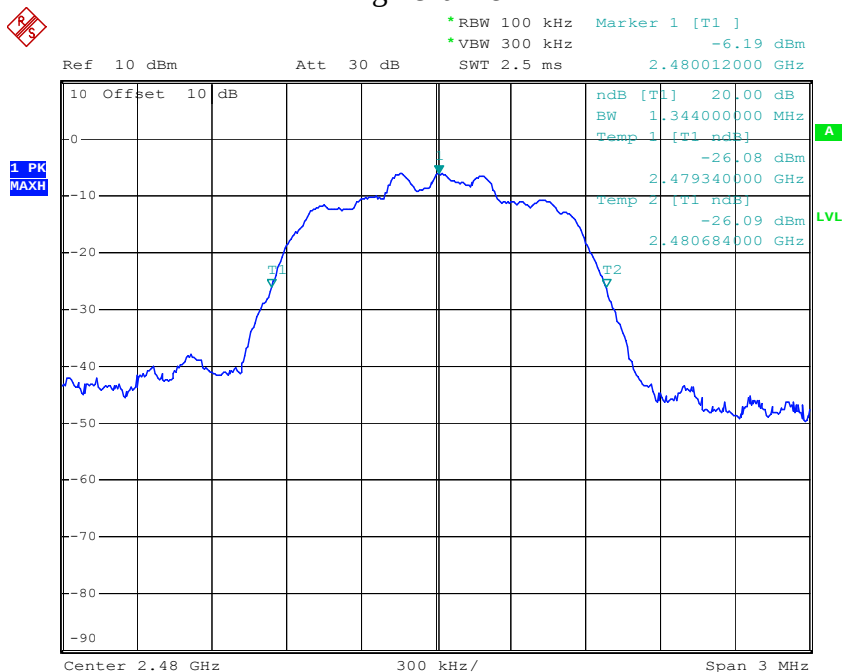


## Middle channel



Comment A:  
Date: 20.MAY.2019 10:27:02

## High channel



Comment A:  
Date: 20.MAY.2019 10:28:11

## 6. CARRIER FREQUENCY SEPARATION TEST

### 6.1. Block Diagram of Test Setup



(EUT: True Connect Truly Wireless Earphones)

### 6.2. The Requirement For Section 15.247(a)(1)

Section 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. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudorandomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

### 6.3. EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

### 6.4. Operating Condition of EUT

6.4.1. Setup the EUT and simulator as shown as Section 6.1.

6.4.2. Turn on the power of all equipment.

6.4.3. Let the EUT work in TX (Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

## 6.5.Test Procedure

6.5.1.The transmitter output was connected to the spectrum analyzer through a low loss cable.

6.5.2.Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz. Adjust Span to 3MHz.

6.5.3.Set the adjacent channel of the EUT Maxhold another trace.

6.5.4.Measurement the channel separation

## 6.6.Test Result

### GFSK mode

| Channel | Frequency (MHz) | Channel Separation(MHz) | Limit              | Result |
|---------|-----------------|-------------------------|--------------------|--------|
| Low     | 2402            | 1.002                   | 25KHz or 0.784 MHz | PASS   |
|         | 2403            |                         |                    |        |
| Middle  | 2440            | 0.996                   | 25KHz or 0.772 MHz | PASS   |
|         | 2441            |                         |                    |        |
| High    | 2479            | 1.002                   | 25KHz or 0.788 MHz | PASS   |
|         | 2480            |                         |                    |        |

### $\pi/4$ DQPSK mode

| Channel | Frequency (MHz) | Channel Separation(MHz) | Limit              | Result |
|---------|-----------------|-------------------------|--------------------|--------|
| Low     | 2402            | 1.008                   | 25KHz or 0.892 MHz | PASS   |
|         | 2403            |                         |                    |        |
| Middle  | 2440            | 1.002                   | 25KHz or 0.904 MHz | PASS   |
|         | 2441            |                         |                    |        |
| High    | 2479            | 1.002                   | 25KHz or 0.884 MHz | PASS   |
|         | 2480            |                         |                    |        |

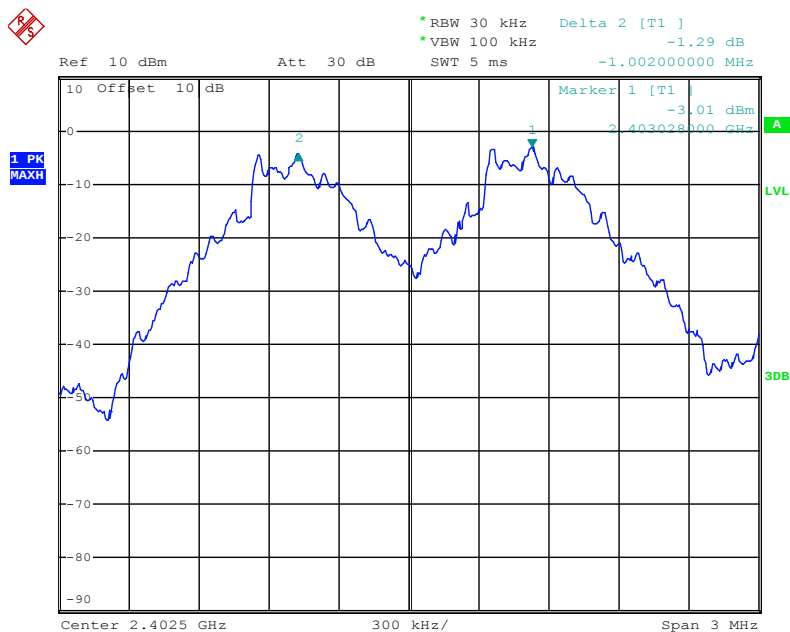
### 8DPSK mode

| Channel | Frequency (MHz) | Channel Separation(MHz) | Limit              | Result |
|---------|-----------------|-------------------------|--------------------|--------|
| Low     | 2402            | 1.008                   | 25KHz or 0.928 MHz | PASS   |
|         | 2403            |                         |                    |        |
| Middle  | 2440            | 1.002                   | 25KHz or 0.920 MHz | PASS   |
|         | 2441            |                         |                    |        |
| High    | 2479            | 0.996                   | 25KHz or 0.936 MHz | PASS   |
|         | 2480            |                         |                    |        |

The spectrum analyzer plots are attached as below.

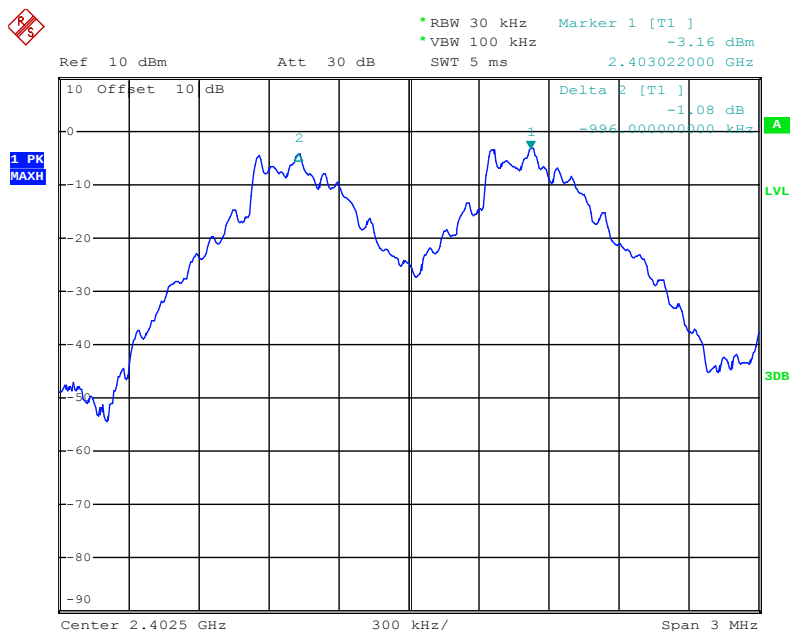
## GFSK Mode

### Low channel



Date: 20.MAY.2019 09:13:56

### Middle channel



Date: 20.MAY.2019 09:13:18

shenzhen Accurate Technology Co., Ltd.

Address: 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

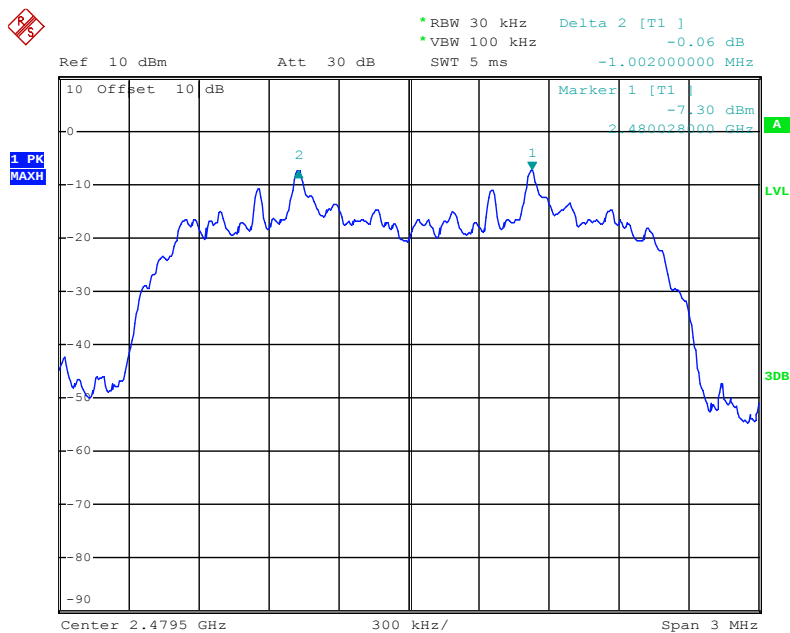
Tel: +86-755-26503290

Fax: +86-755-26503396

E-mail: webmaster@atc-lab.com

[Http://www.atc-lab.com](http://www.atc-lab.com)

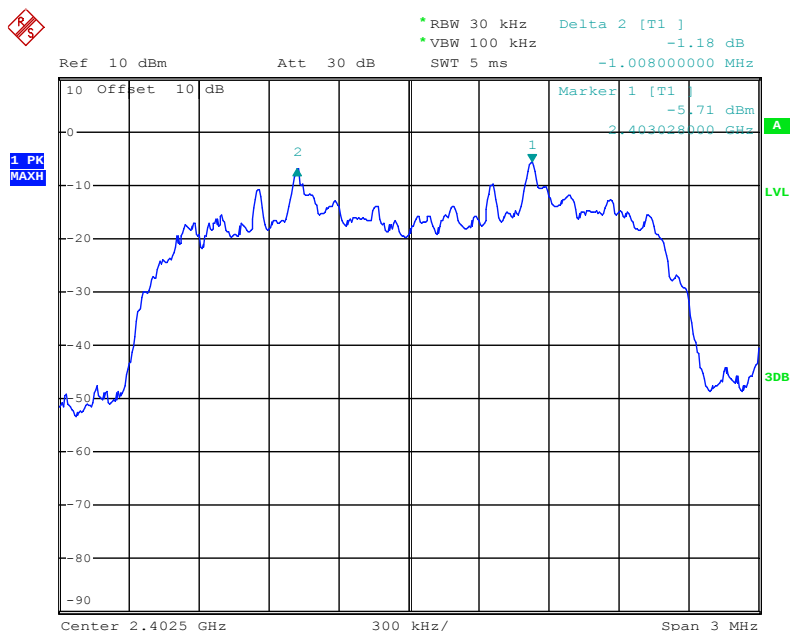
## High channel



Date: 20.MAY.2019 09:16:38

## $\pi/4$ DQPSK Mode

## Low channel



Date: 20.MAY.2019 09:18:34

shenzhen Accurate Technology Co., Ltd.

Address: 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

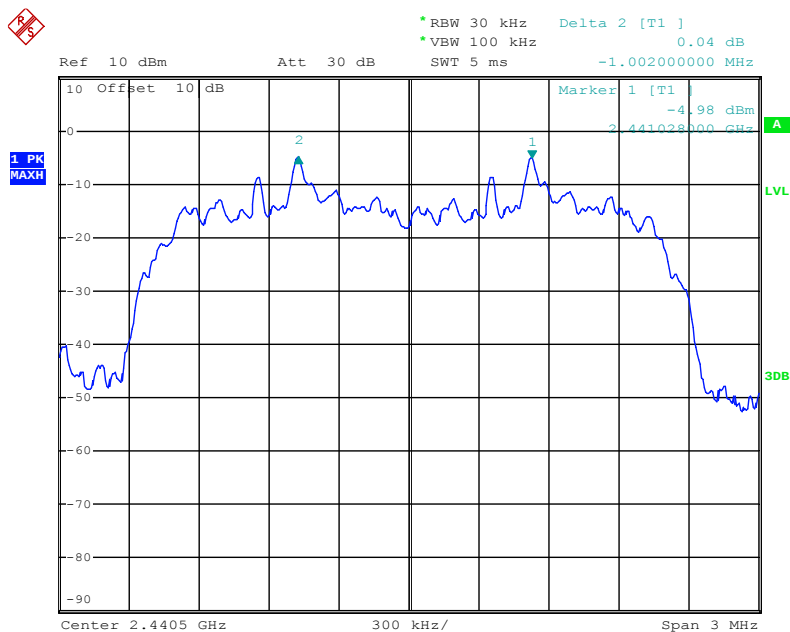
Tel: +86-755-26503290

Fax: +86-755-26503396

E-mail: webmaster@atc-lab.com

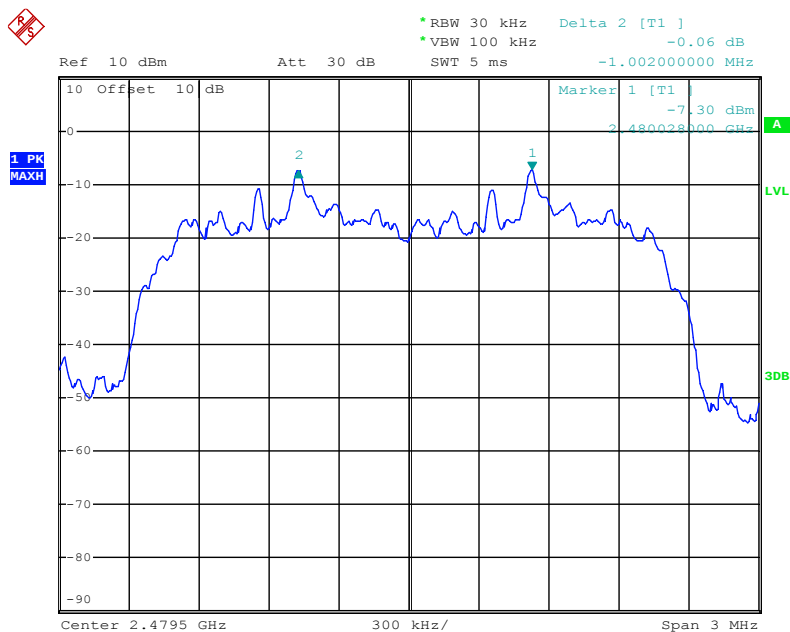
[Http://www.atc-lab.com](http://www.atc-lab.com)

## Middle channel



Date: 20.MAY.2019 09:17:42

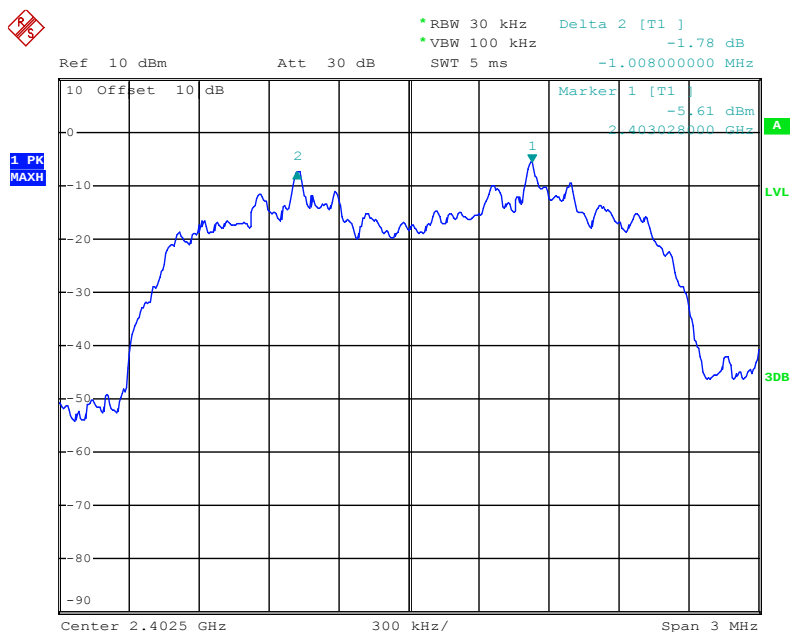
## High channel



Date: 20.MAY.2019 09:16:38

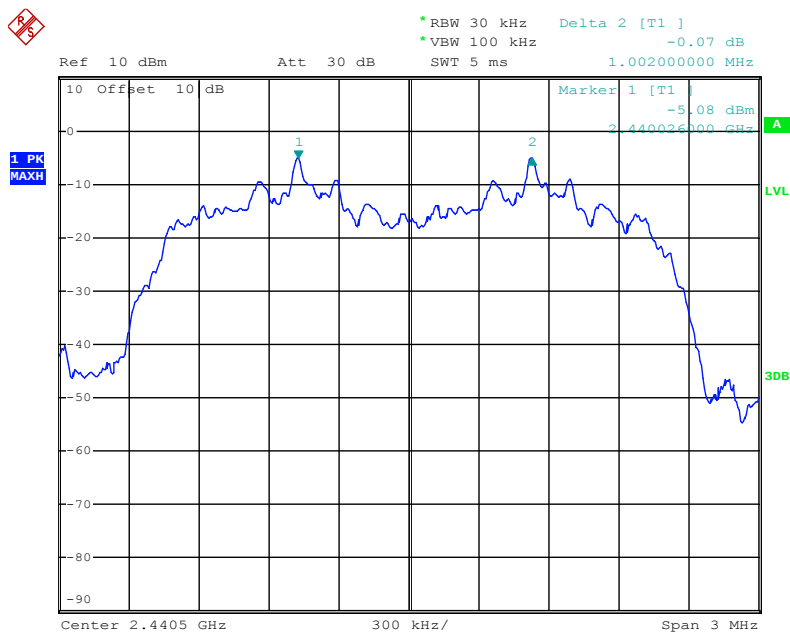
## 8DPSK Mode

### Low channel



Date: 20.MAY.2019 09:20:19

### Middle channel



Date: 20.MAY.2019 09:21:17

shenzhen Accurate Technology Co., Ltd.

Address: 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

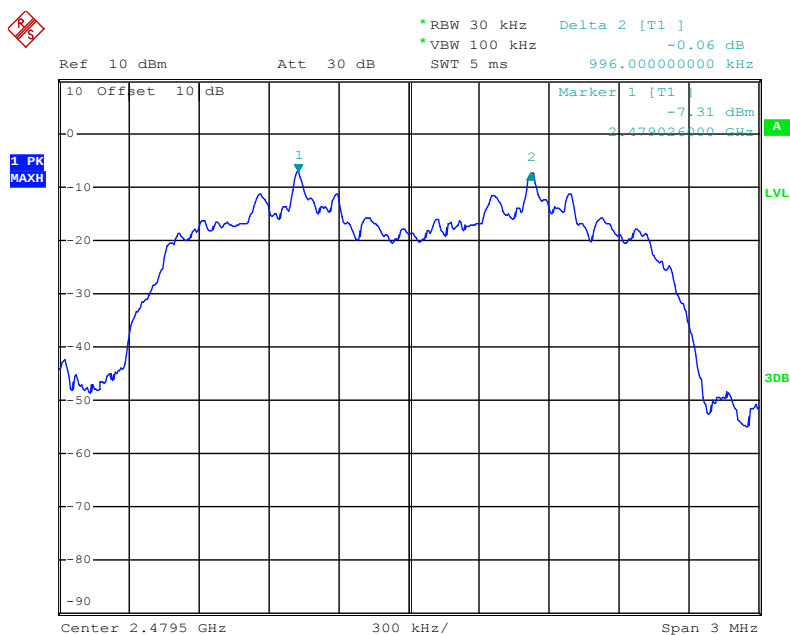
Tel: +86-755-26503290

Fax: +86-755-26503396

E-mail: webmaster@atc-lab.com

[Http://www.atc-lab.com](http://www.atc-lab.com)

## High channel



Date: 20.MAY.2019 09:22:24



## 7. NUMBER OF HOPPING FREQUENCY TEST

### 7.1. Block Diagram of Test Setup



(EUT: True Connect Truly Wireless Earphones)

### 7.2. The Requirement For Section 15.247(a)(1)(iii)

Section 15.247(a)(1)(iii): Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

### 7.3. EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

### 7.4. Operating Condition of EUT

7.4.1. Setup the EUT and simulator as shown as Section 7.1.

7.4.2. Turn on the power of all equipment.

7.4.3. Let the EUT work in TX (Hopping on) modes measure it.

### 7.5. Test Procedure

7.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

7.5.2. Set the spectrum analyzer as Span=85MHz, RBW=100 kHz, VBW=300 kHz.

7.5.3. Max hold, view and count how many channel in the band.

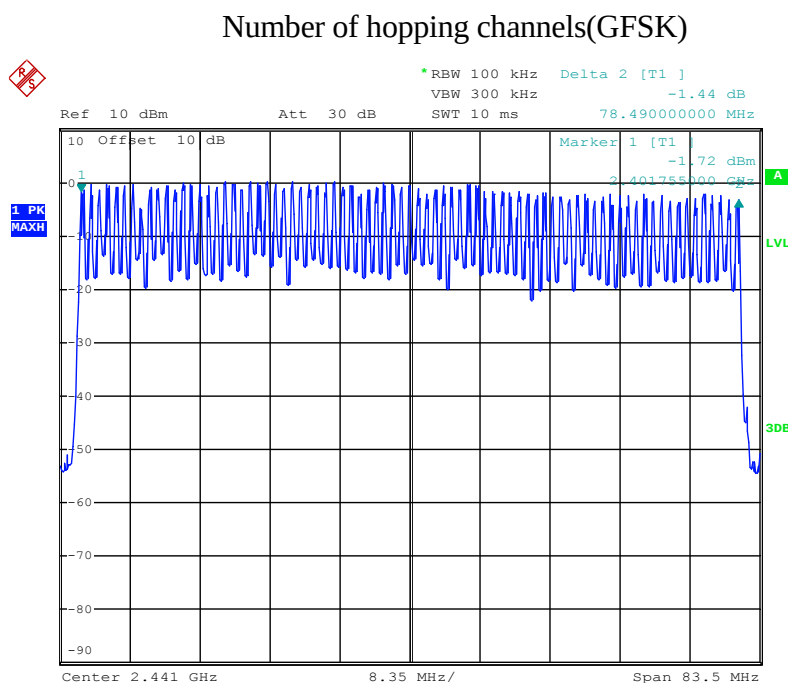
## 7.6.Test Result

| Total number of hopping channel (GFSK mode) | Measurement result(CH) | Limit(CH) |
|---------------------------------------------|------------------------|-----------|
|                                             | 79                     | $\geq 15$ |

| Total number of hopping channel ( $\pi/4$ DQPSK mode) | Measurement result(CH) | Limit(CH) |
|-------------------------------------------------------|------------------------|-----------|
|                                                       | 79                     | $\geq 15$ |

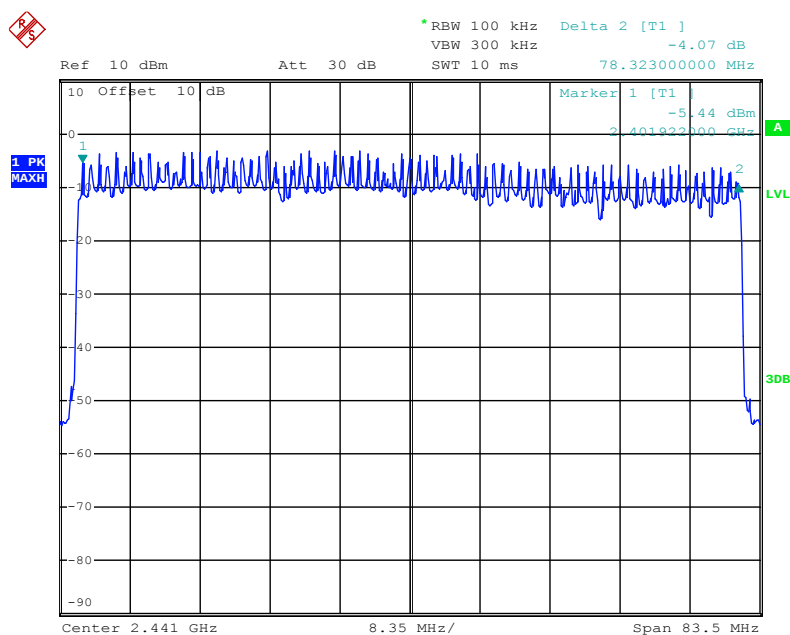
| Total number of hopping channel (8DPSK mode) | Measurement result(CH) | Limit(CH) |
|----------------------------------------------|------------------------|-----------|
|                                              | 79                     | $\geq 15$ |

The spectrum analyzer plots are attached as below.



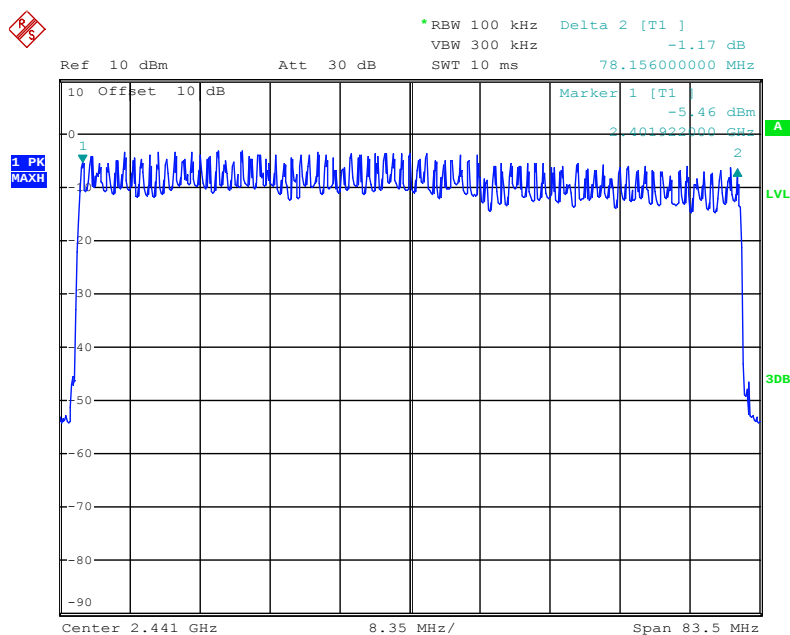
Date: 20.MAY.2019 13:48:38

## Number of hopping channels( $\pi/4$ DQPSK)



Date: 20.MAY.2019 13:53:09

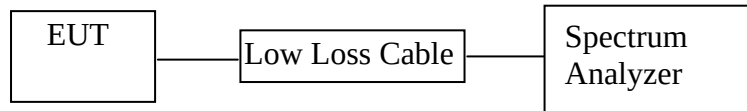
## Number of hopping channels(8DPSK)



Date: 20.MAY.2019 13:55:04

## 8. DWELL TIME TEST

### 8.1. Block Diagram of Test Setup



(EUT: True Connect Truly Wireless Earphones)

### 8.2. The Requirement For Section 15.247(a)(1)(iii)

Section 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.

### 8.3. EUT Configuration on Measurement

The equipment are installed on the emission measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

### 8.4. Operating Condition of EUT

8.4.1. Setup the EUT and simulator as shown as Section 8.1.

8.4.2. Turn on the power of all equipment.

8.4.3. Let the EUT work in TX (Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

### 8.5. Test Procedure

8.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

8.5.2. Set center frequency of spectrum analyzer = operating frequency.

8.5.3. Set the spectrum analyzer as RBW=1MHz, VBW=3MHz, Span=0Hz, Adjust

Sweep=5ms, 10ms, 15ms. Get the pulse time.

8.5.4.Repeat above procedures until all frequency measured were complete.

## 8.6.Test Result

### GFSK Mode

| Mode                                                                                                              | Channel Frequency (MHz) | Pulse Time (ms) | Dwell Time (ms) | Limit (ms) |
|-------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------|-----------------|------------|
| DH1                                                                                                               | 2402                    | 0.430           | 137.60          | 400        |
|                                                                                                                   | 2441                    | 0.430           | 137.60          | 400        |
|                                                                                                                   | 2480                    | 0.430           | 137.60          | 400        |
| A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2 \times 79)) \times 31.6$ |                         |                 |                 |            |
| DH3                                                                                                               | 2402                    | 1.710           | 273.60          | 400        |
|                                                                                                                   | 2441                    | 1.690           | 270.40          | 400        |
|                                                                                                                   | 2480                    | 1.710           | 273.60          | 400        |
| A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4 \times 79)) \times 31.6$ |                         |                 |                 |            |
| DH5                                                                                                               | 2402                    | 2.980           | 317.87          | 400        |
|                                                                                                                   | 2441                    | 2.980           | 317.87          | 400        |
|                                                                                                                   | 2480                    | 2.960           | 315.73          | 400        |
| A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6 \times 79)) \times 31.6$ |                         |                 |                 |            |

### $\pi/4$ DQPSK Mode

| Mode                                                                                                              | Channel Frequency (MHz) | Pulse Time (ms) | Dwell Time (ms) | Limit (ms) |
|-------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------|-----------------|------------|
| 2DH1                                                                                                              | 2402                    | 0.440           | 140.80          | 400        |
|                                                                                                                   | 2441                    | 0.450           | 144.00          | 400        |
|                                                                                                                   | 2480                    | 0.450           | 144.00          | 400        |
| A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2 \times 79)) \times 31.6$ |                         |                 |                 |            |
| 2DH3                                                                                                              | 2402                    | 1.730           | 276.80          | 400        |
|                                                                                                                   | 2441                    | 1.730           | 276.80          | 400        |
|                                                                                                                   | 2480                    | 1.730           | 276.80          | 400        |
| A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4 \times 79)) \times 31.6$ |                         |                 |                 |            |
| 2DH5                                                                                                              | 2402                    | 3.020           | 322.13          | 400        |
|                                                                                                                   | 2441                    | 2.990           | 318.93          | 400        |
|                                                                                                                   | 2480                    | 3.000           | 320.00          | 400        |
| A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6 \times 79)) \times 31.6$ |                         |                 |                 |            |

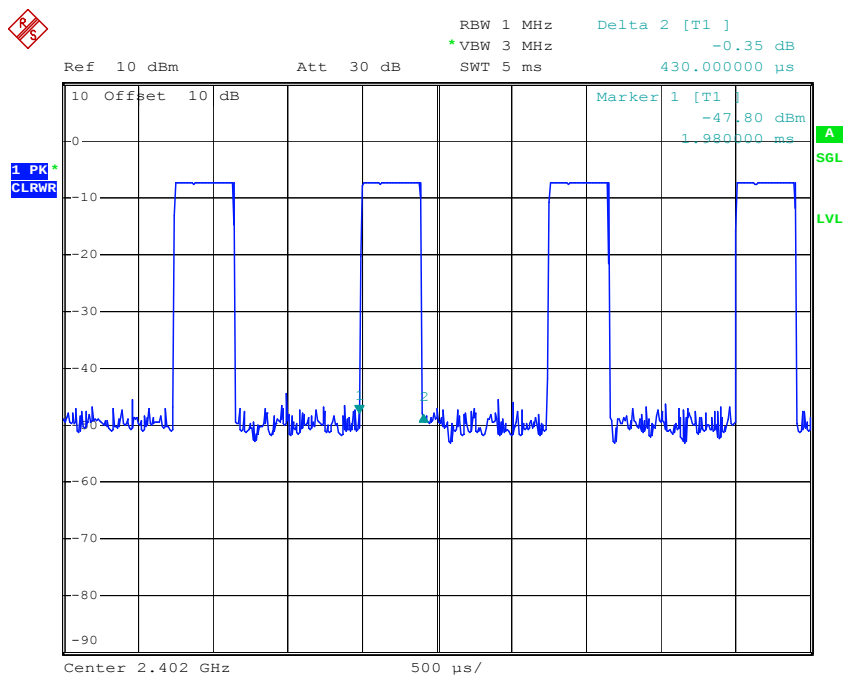
### 8DPSK Mode

| Mode                                                                                                              | Channel Frequency (MHz) | Pulse Time (ms) | Dwell Time (ms) | Limit (ms) |
|-------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------|-----------------|------------|
| 3DH1                                                                                                              | 2402                    | 0.440           | 140.80          | 400        |
|                                                                                                                   | 2441                    | 0.450           | 144.00          | 400        |
|                                                                                                                   | 2480                    | 0.450           | 144.00          | 400        |
| A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2 \times 79)) \times 31.6$ |                         |                 |                 |            |
| 3DH3                                                                                                              | 2402                    | 1.710           | 273.60          | 400        |
|                                                                                                                   | 2441                    | 1.670           | 267.20          | 400        |
|                                                                                                                   | 2480                    | 1.720           | 275.20          | 400        |
| A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4 \times 79)) \times 31.6$ |                         |                 |                 |            |
| 3DH5                                                                                                              | 2402                    | 3.000           | 320.00          | 400        |
|                                                                                                                   | 2441                    | 2.950           | 314.67          | 400        |
|                                                                                                                   | 2480                    | 2.990           | 318.93          | 400        |
| A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6 \times 79)) \times 31.6$ |                         |                 |                 |            |

The spectrum analyzer plots are attached as below.

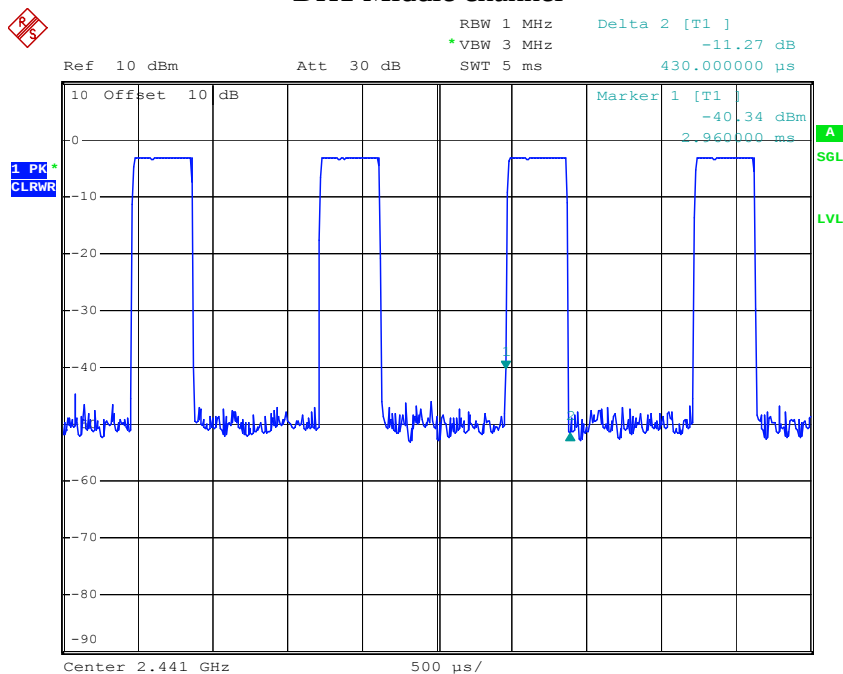
## GFSK Mode

### DH1 Low channel



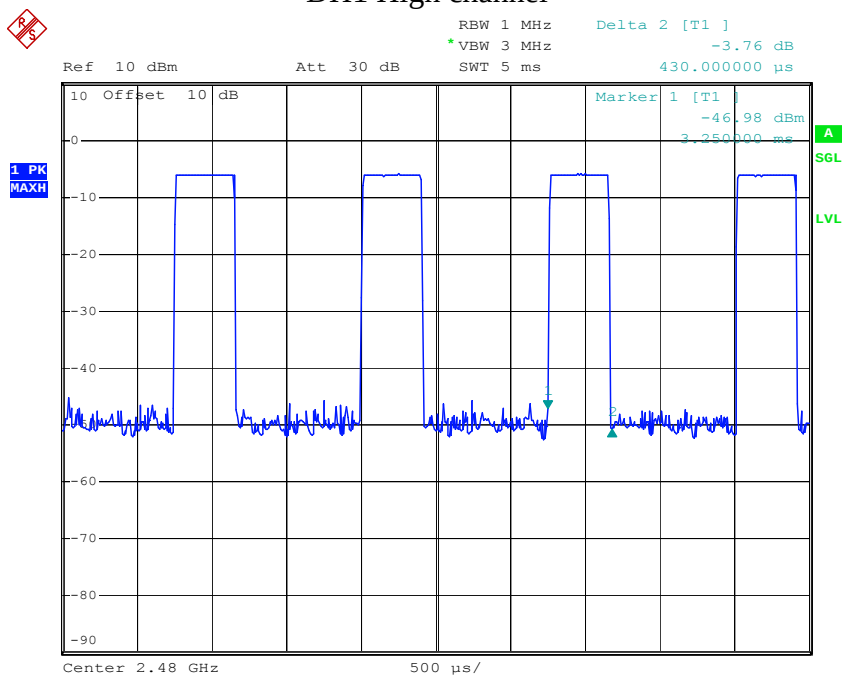
Comment A:  
 Date: 20.MAY.2019 16:36:56

### DH1 Middle channel



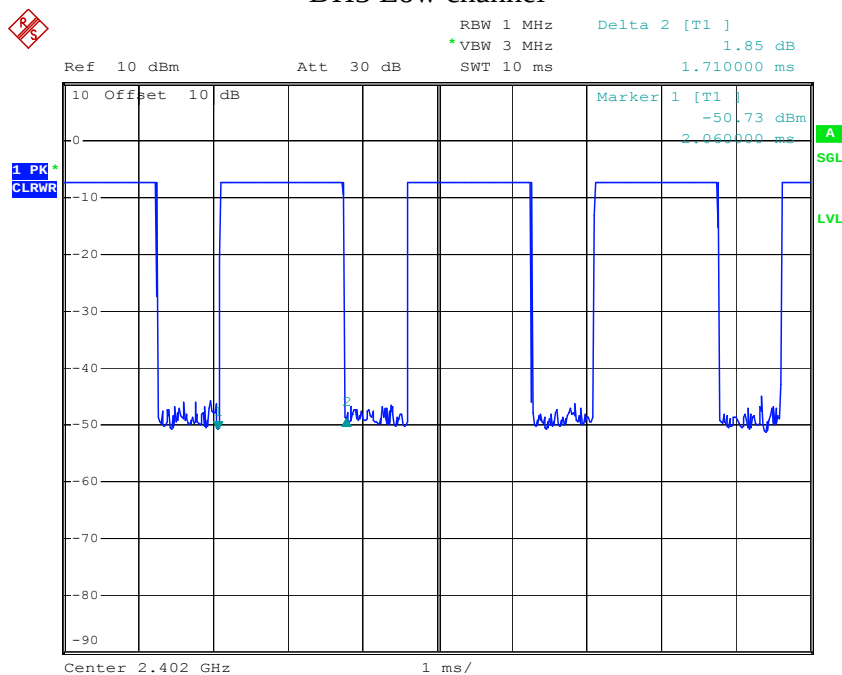
Comment A:  
 Date: 20.MAY.2019 16:48:33

## DH1 High channel



Comment A:  
 Date: 20.MAY.2019 17:17:22

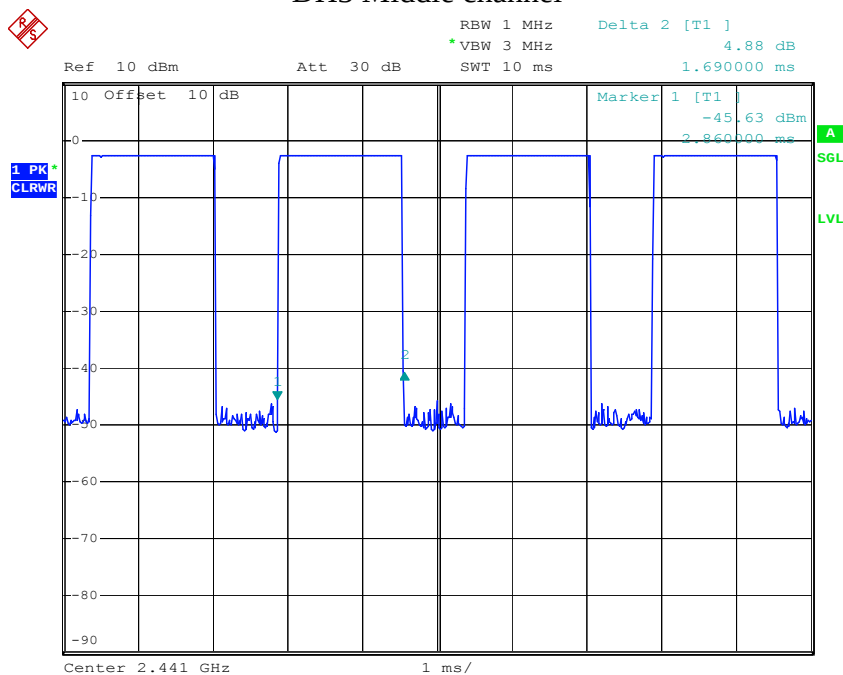
## DH3 Low channel



Comment A:  
 Date: 20.MAY.2019 16:38:05

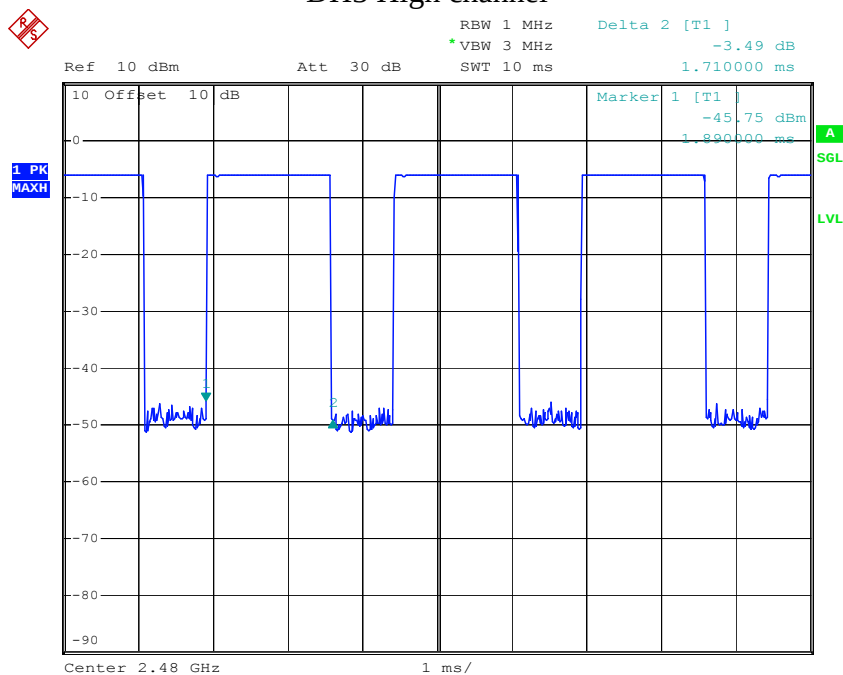


## DH3 Middle channel



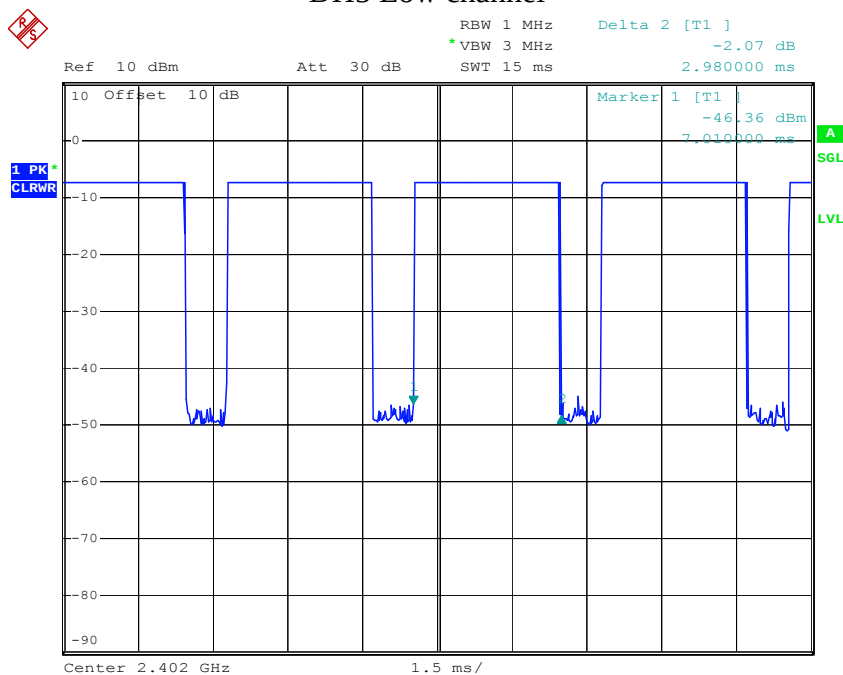
Comment A:  
 Date: 20.MAY.2019 16:50:10

## DH3 High channel



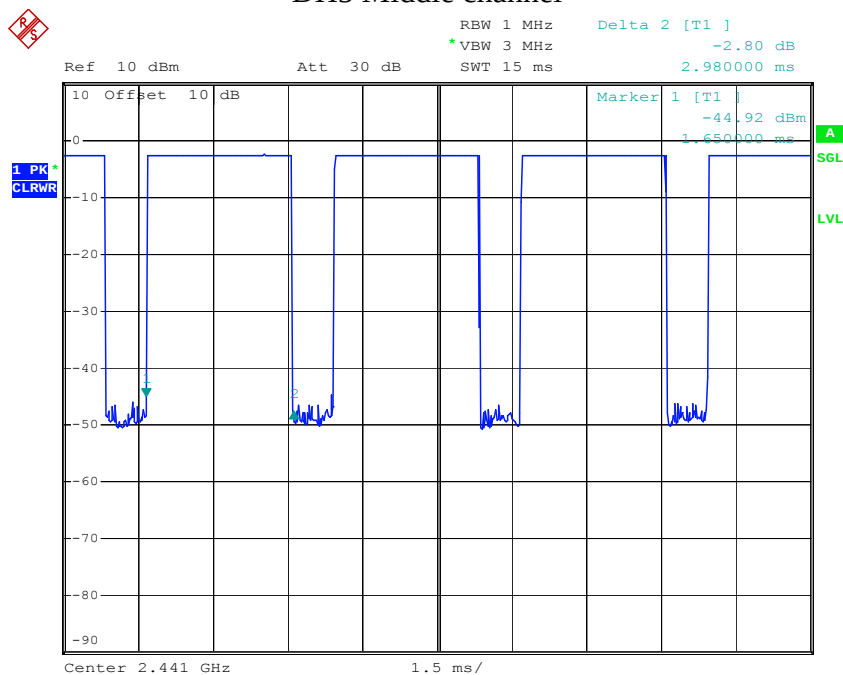
Comment A:  
 Date: 20.MAY.2019 17:18:20

## DH5 Low channel



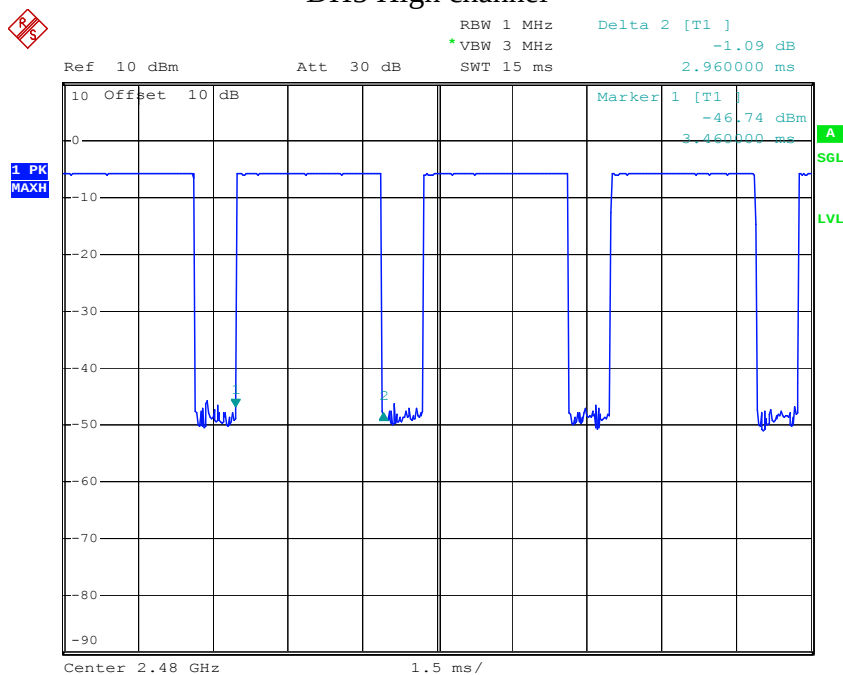
Comment A:  
 Date: 20.MAY.2019 16:39:08

## DH5 Middle channel



Comment A:  
 Date: 20.MAY.2019 16:51:07

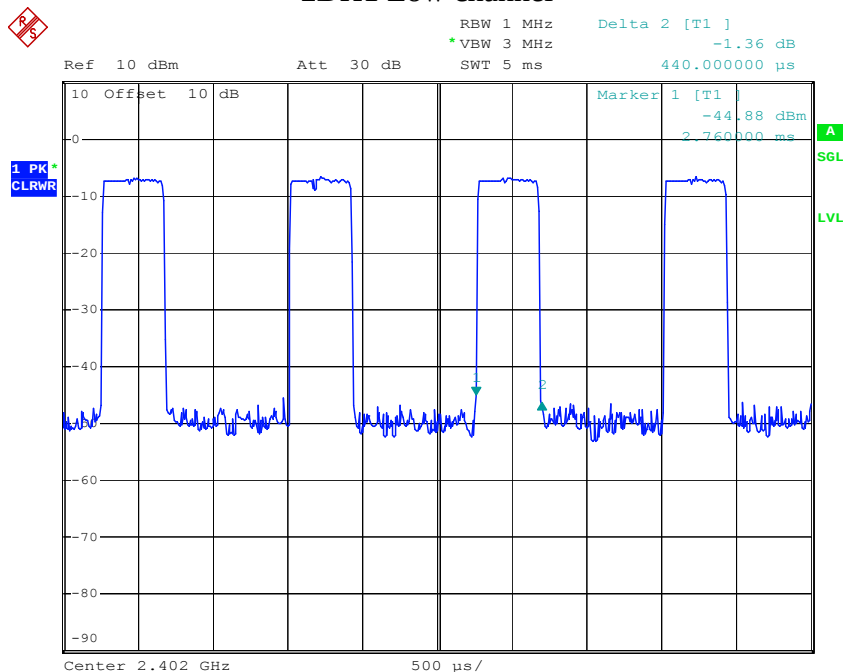
## DH5 High channel



Comment A:  
Date: 20.MAY.2019 17:19:17

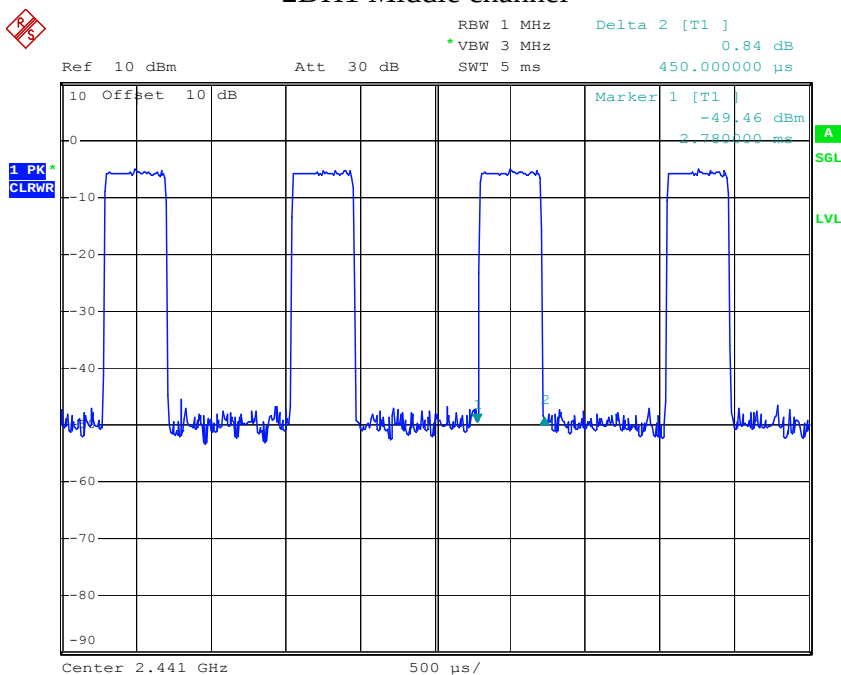
## $\pi/4$ DQPSK Mode

## 2DH1 Low channel



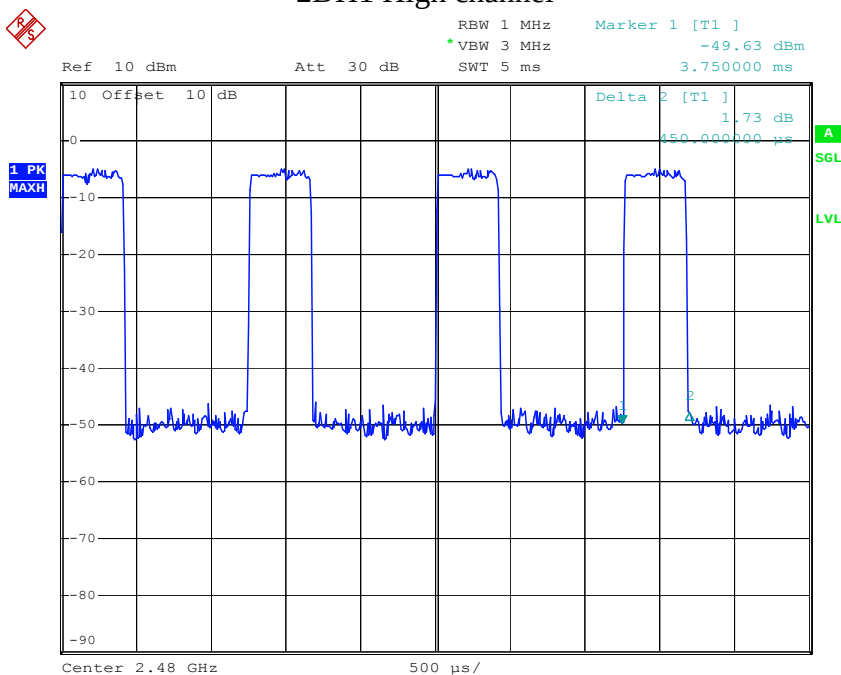
Comment A:  
Date: 20.MAY.2019 16:40:40

## 2DH1 Middle channel



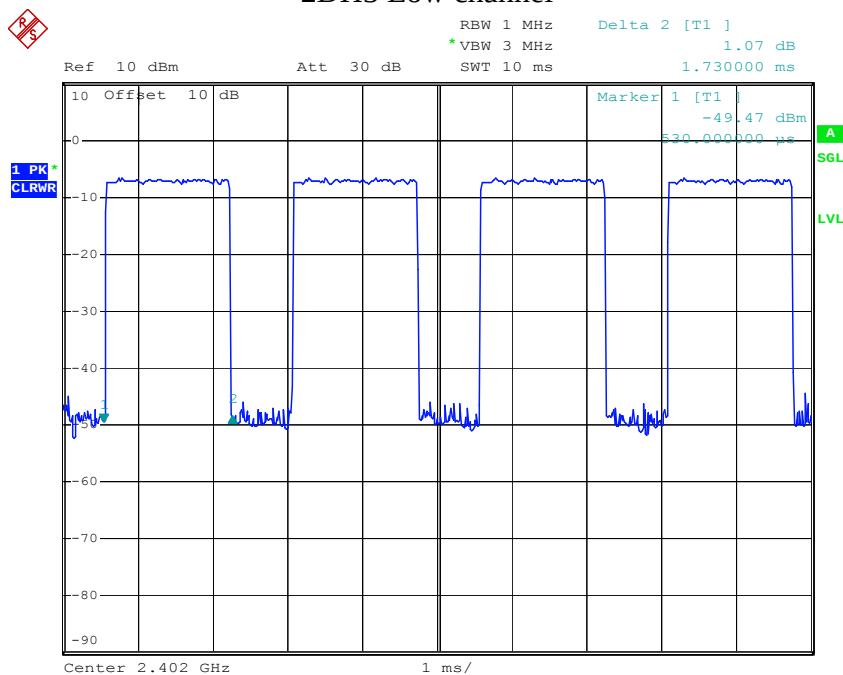
Comment A:  
 Date: 20.MAY.2019 16:52:06

## 2DH1 High channel



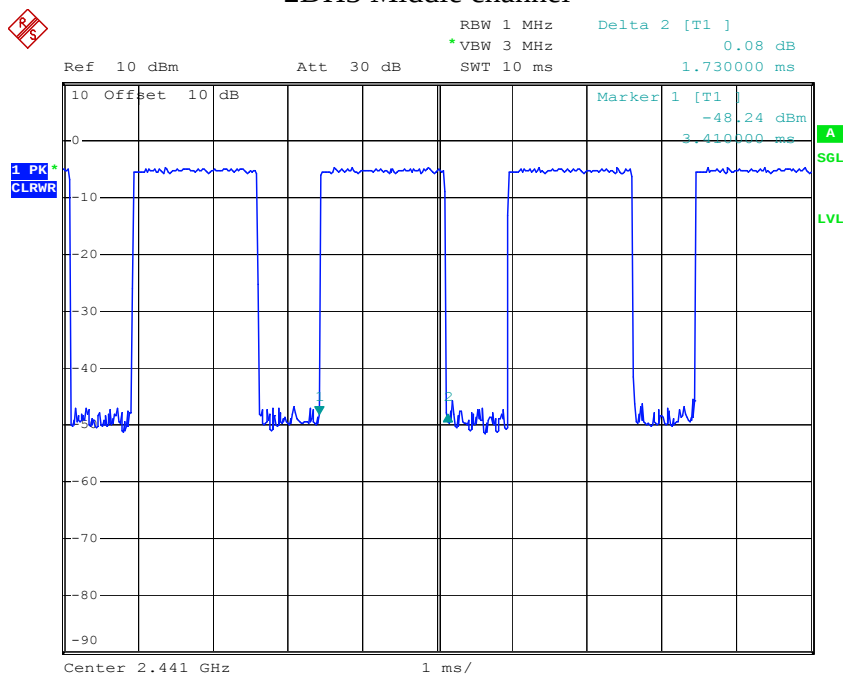
Comment A:  
 Date: 20.MAY.2019 17:15:09

## 2DH3 Low channel



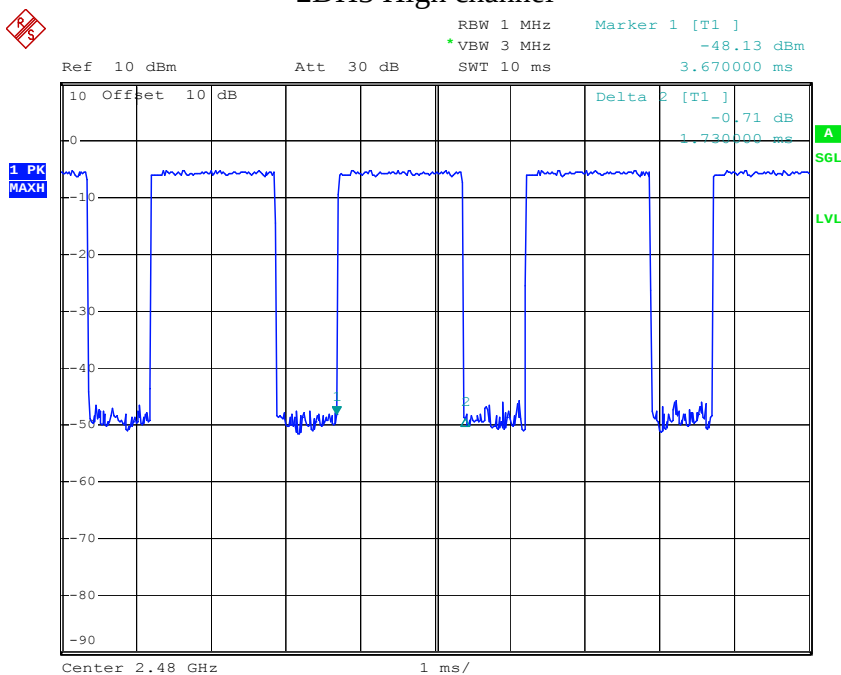
Comment A:  
 Date: 20.MAY.2019 16:41:38

## 2DH3 Middle channel



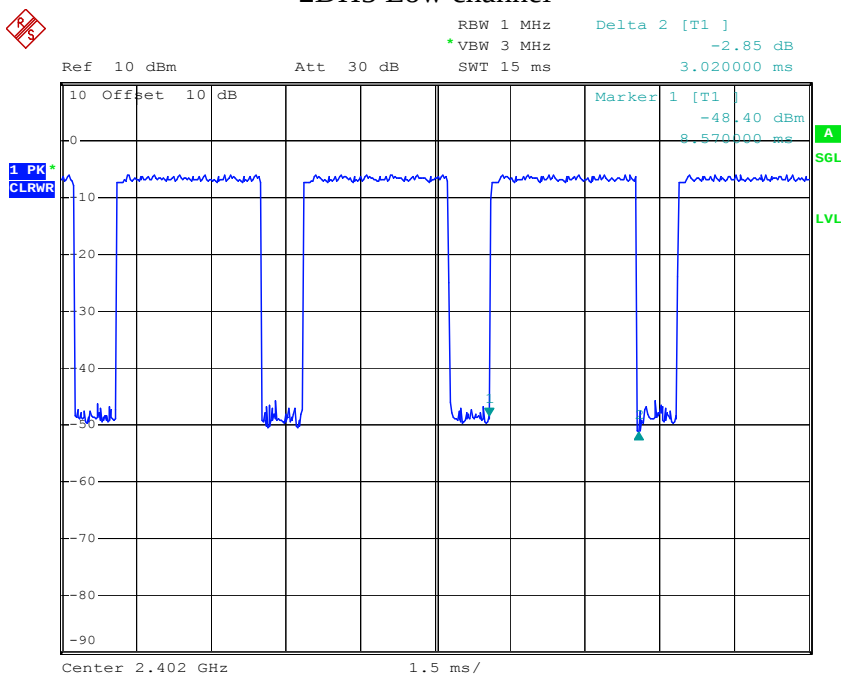
Comment A:  
 Date: 20.MAY.2019 16:52:59

## 2DH3 High channel



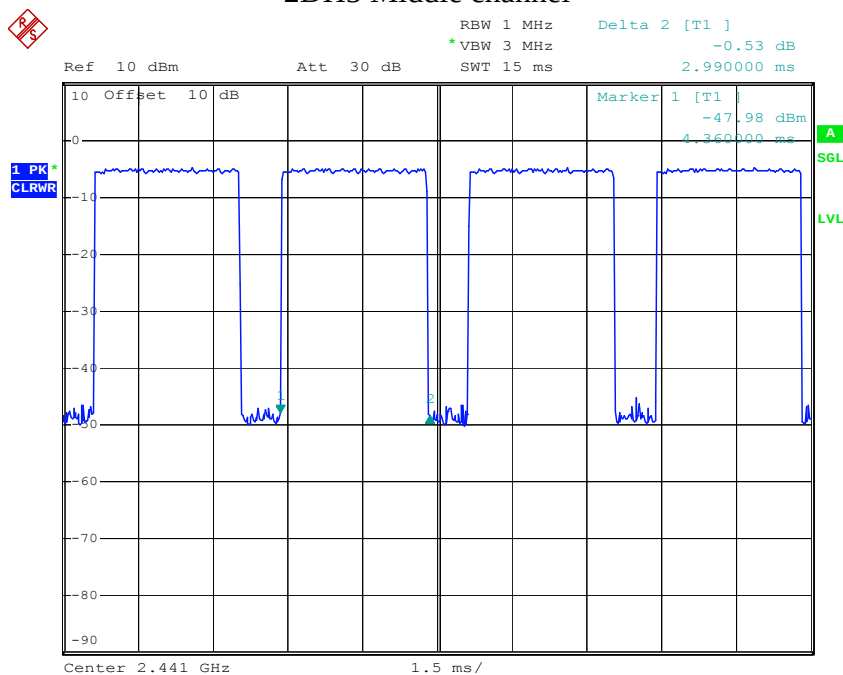
Comment A:  
Date: 20.MAY.2019 17:14:15

## 2DH5 Low channel



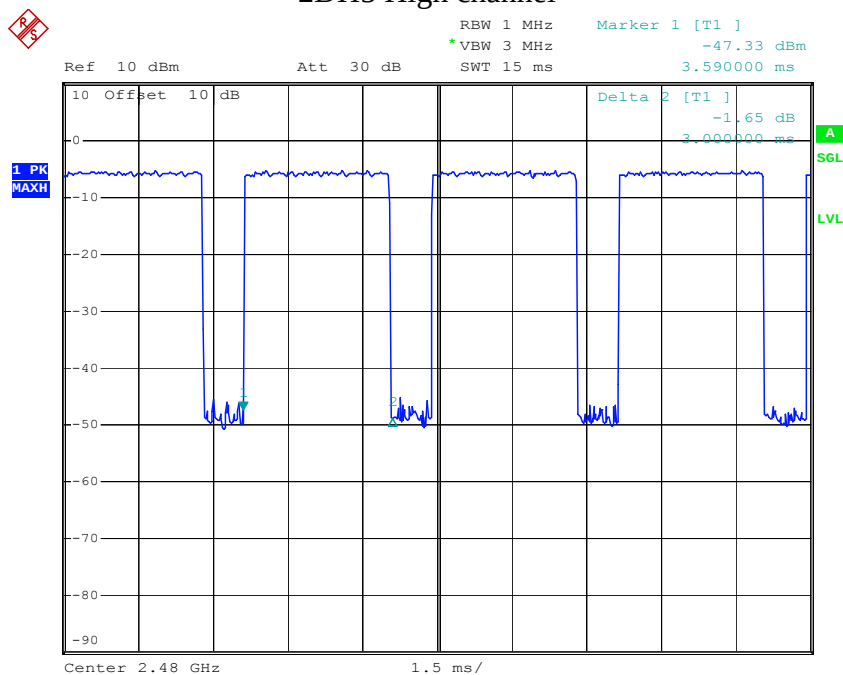
Comment A:  
Date: 20.MAY.2019 16:42:59

## 2DH5 Middle channel



Comment A:  
Date: 20.MAY.2019 16:54:03

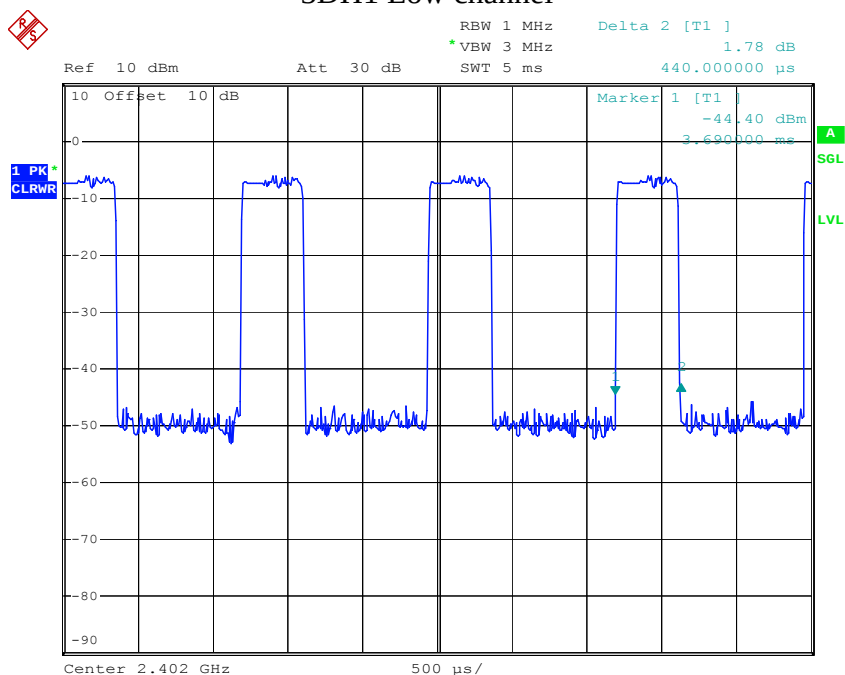
## 2DH5 High channel



Comment A:  
Date: 20.MAY.2019 17:13:18

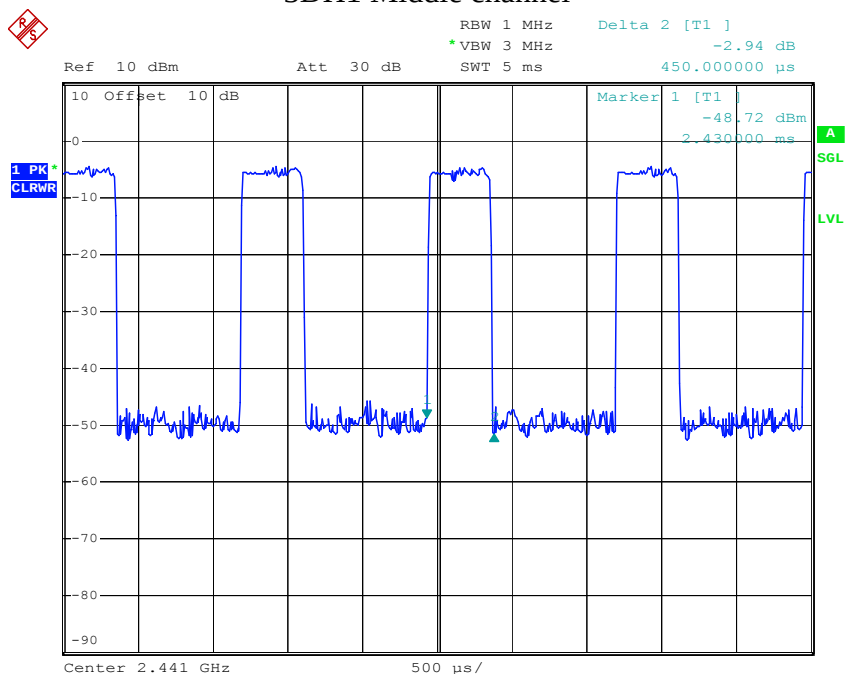
## 8DPSK Mode

### 3DH1 Low channel



Comment A:  
Date: 20.MAY.2019 16:43:54

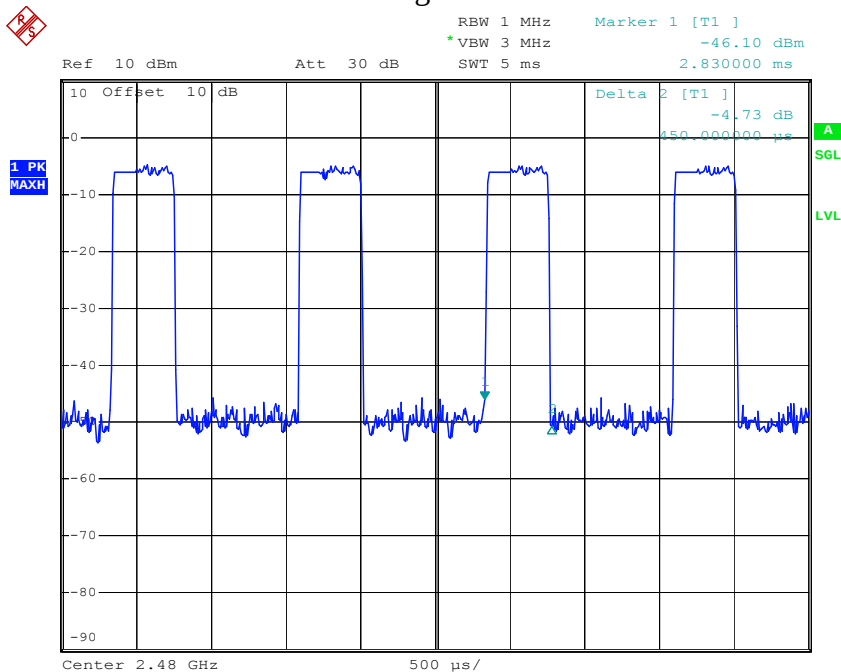
### 3DH1 Middle channel



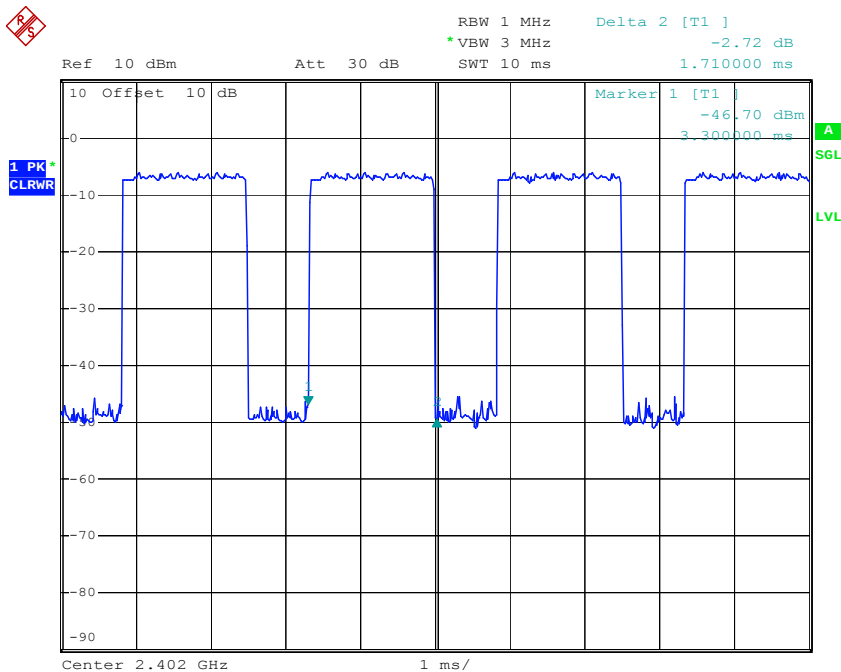
Comment A:  
Date: 20.MAY.2019 16:55:04



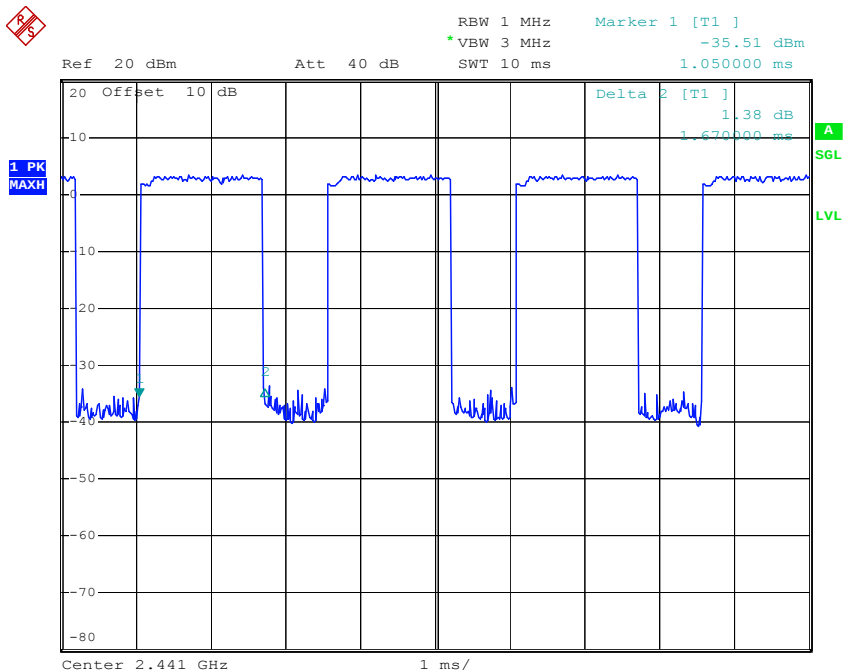
## 3DH1 High channel



## 3DH3 Low channel

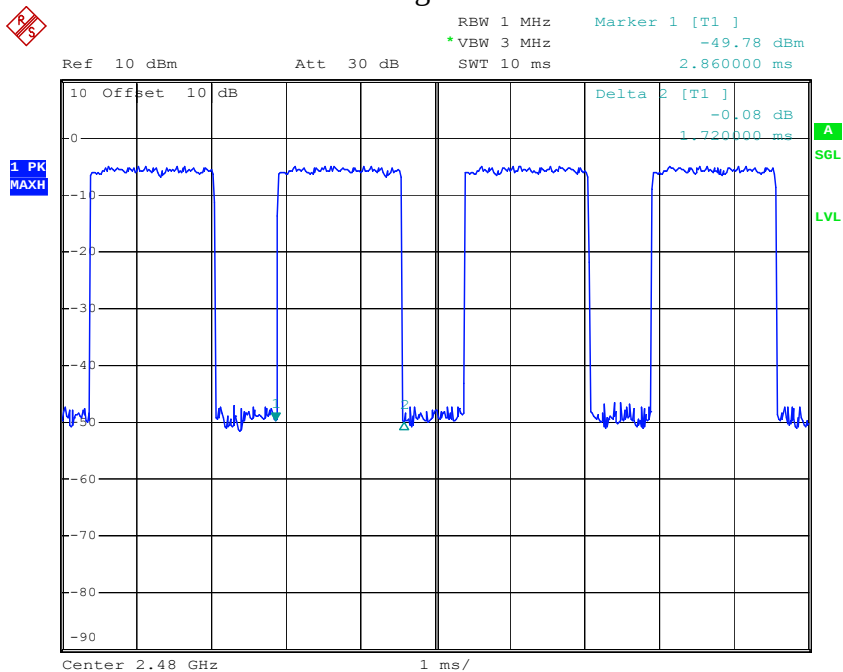


## 3DH3 Middle channel



Comment A:  
Date: 20.MAY.2019 20:14:46

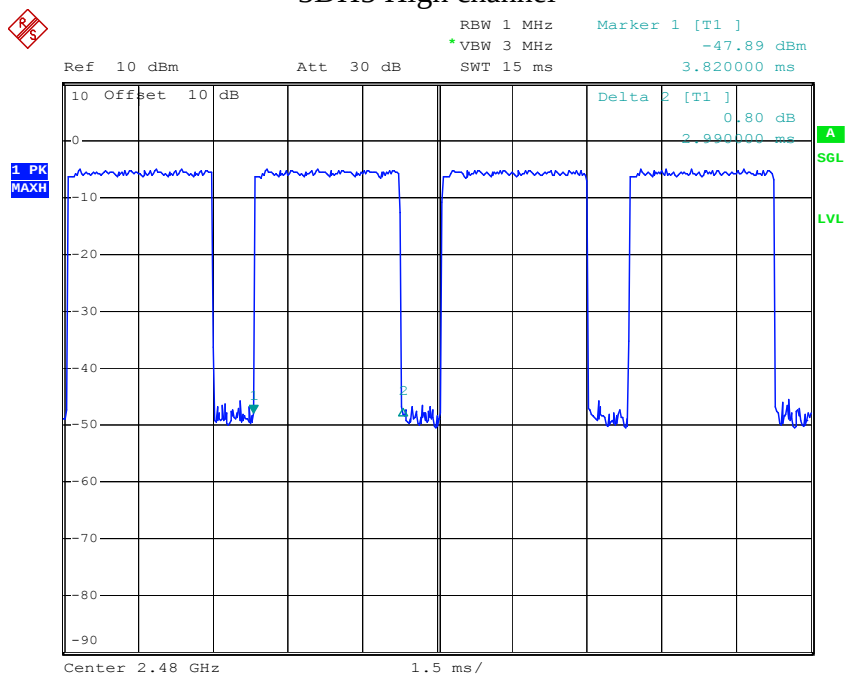
## 3DH3 High channel



Comment A:  
Date: 20.MAY.2019 17:11:09



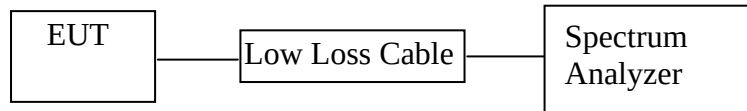
## 3DH5 High channel



Comment A:  
Date: 20.MAY.2019 17:09:36

## 9. MAXIMUM PEAK OUTPUT POWER TEST

### 9.1. Block Diagram of Test Setup



(EUT: True Connect Truly Wireless Earphones)

### 9.2. The Requirement For Section 15.247(b)(1)

Section 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: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

### 9.3. EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

### 9.4. Operating Condition of EUT

9.4.1. Setup the EUT and simulator as shown as Section 9.1.

9.4.2. Turn on the power of all equipment.

9.4.3. Let the EUT work in TX (Hopping off) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2441MHz, and 2480MHz TX frequency to transmit.

### 9.5. Test Procedure

9.5.1. The transmitter output was connected to the spectrum analyzer through a low loss cable.

9.5.2. Set RBW of spectrum analyzer to 3MHz and VBW to 10MHz for BDR mode

9.5.3. Set RBW of spectrum analyzer to 3MHz and VBW to 10MHz for EDR mode

9.5.4. Measurement the maximum peak output power.

## 9.6. Test Result

### GFSK Mode

| Frequency (MHz) | Maximum peak conducted output power (dBm) | Maximum peak conducted output power (W) | Limits dBm / W |
|-----------------|-------------------------------------------|-----------------------------------------|----------------|
| 2402            | -2.08                                     | 0.00062                                 | 21 / 0.125     |
| 2441            | -0.43                                     | 0.00091                                 | 21 / 0.125     |
| 2480            | -2.63                                     | 0.00055                                 | 21 / 0.125     |

### $\pi/4$ DQPSK Mode

| Frequency (MHz) | Maximum peak conducted output power (dBm) | Maximum peak conducted output power (W) | Limits dBm / W |
|-----------------|-------------------------------------------|-----------------------------------------|----------------|
| 2402            | -4.46                                     | 0.00036                                 | 21 / 0.125     |
| 2441            | -2.63                                     | 0.00055                                 | 21 / 0.125     |
| 2480            | -5.05                                     | 0.00031                                 | 21 / 0.125     |

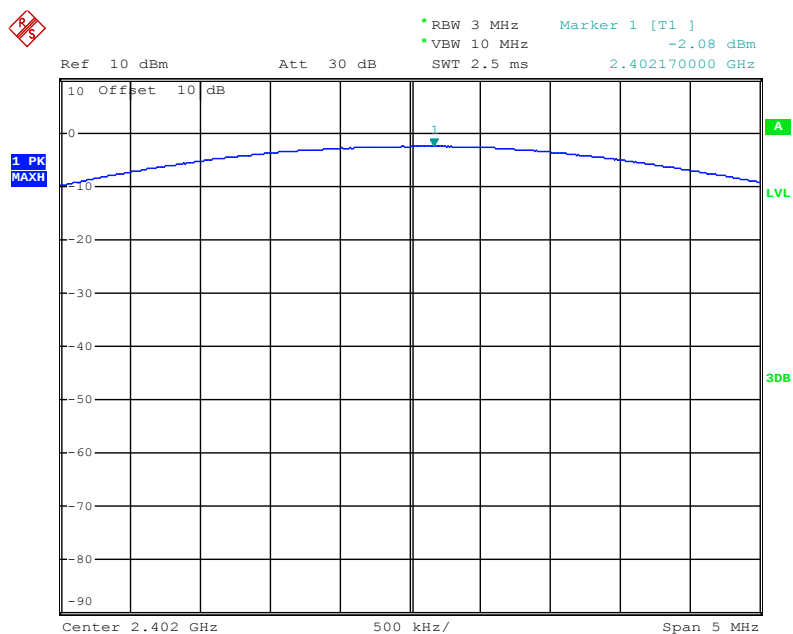
### 8DPSK Mode

| Frequency (MHz) | Maximum peak conducted output power (dBm) | Maximum peak conducted output power (W) | Limits dBm / W |
|-----------------|-------------------------------------------|-----------------------------------------|----------------|
| 2402            | -3.76                                     | 0.00042                                 | 21 / 0.125     |
| 2441            | -2.08                                     | 0.00062                                 | 21 / 0.125     |
| 2480            | -4.64                                     | 0.00034                                 | 21 / 0.125     |

The spectrum analyzer plots are attached as below.

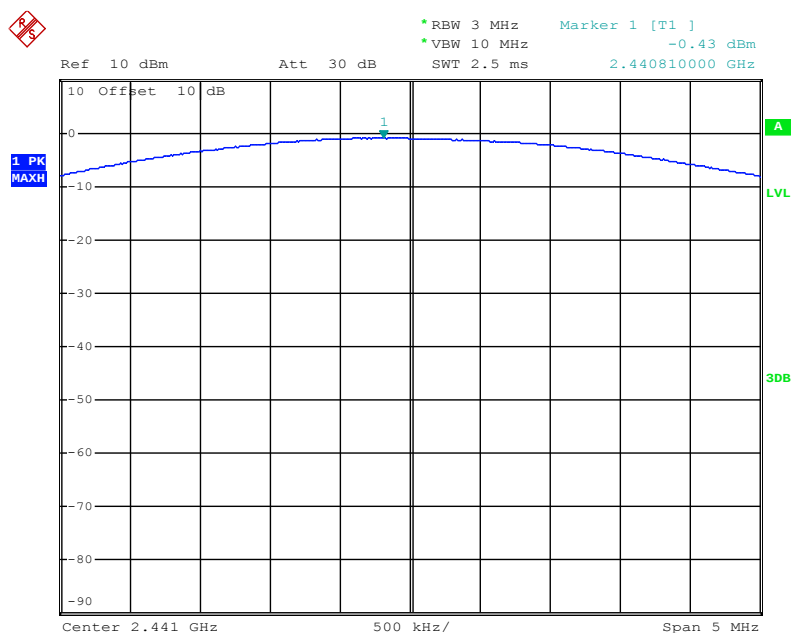
## GFSK Mode

### Low channel



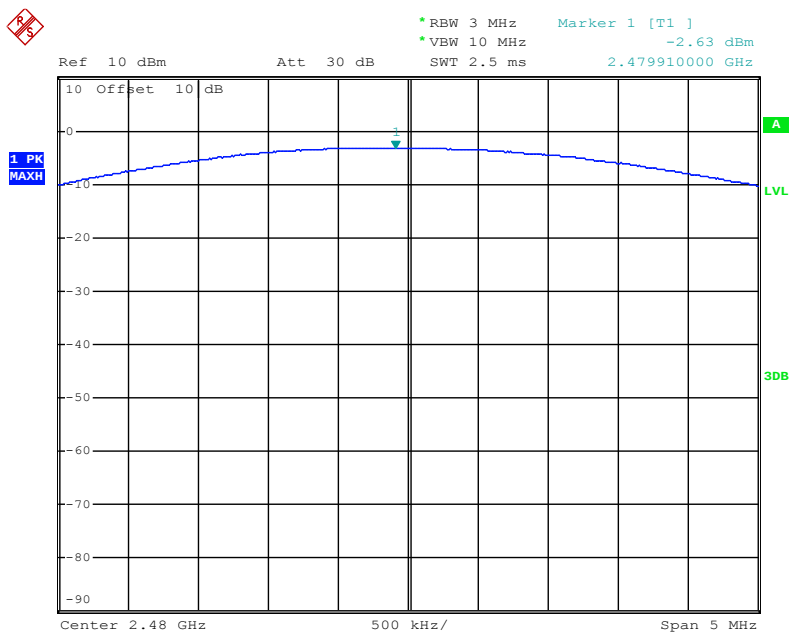
Date: 20.MAY.2019 08:57:15

### Middle channel



Date: 20.MAY.2019 08:58:01

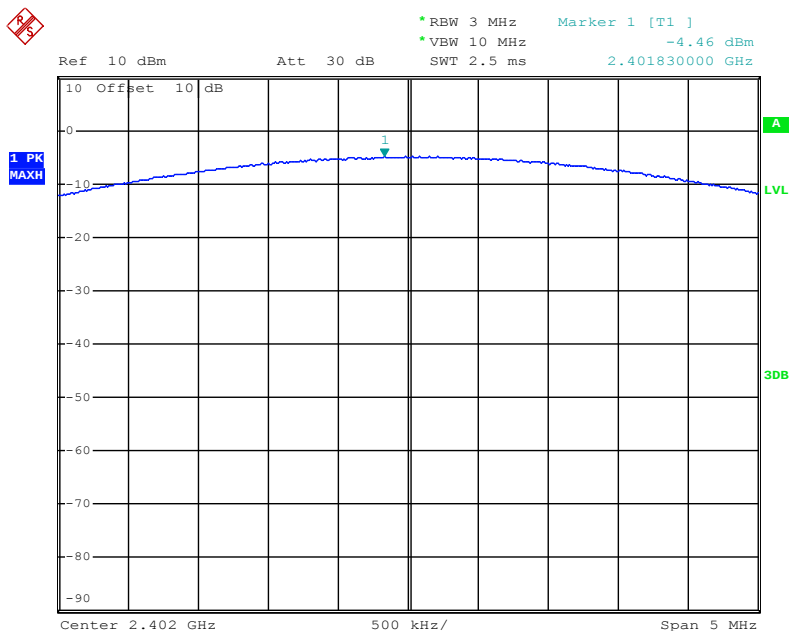
## High channel



Date: 20.MAY.2019 08:58:40

## $\pi/4$ DQPSK Mode

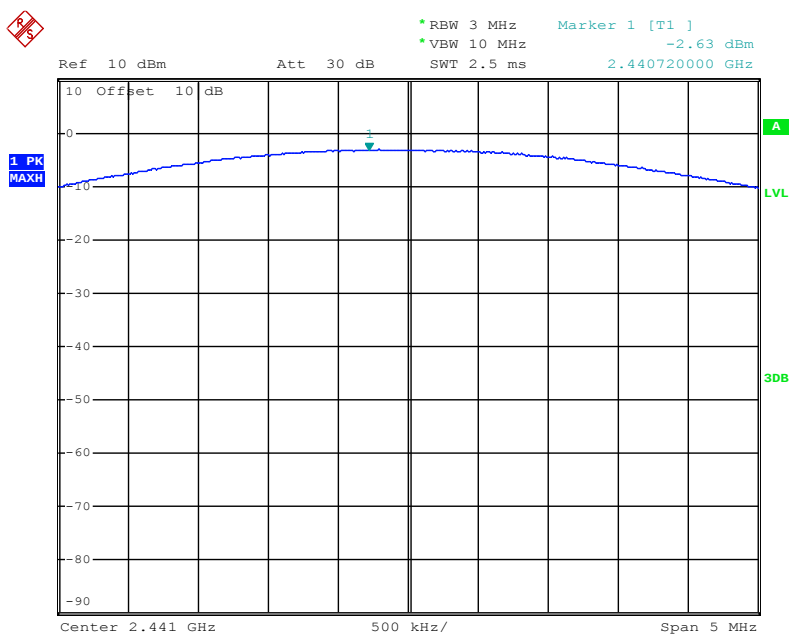
## Low channel



Date: 20.MAY.2019 09:00:38

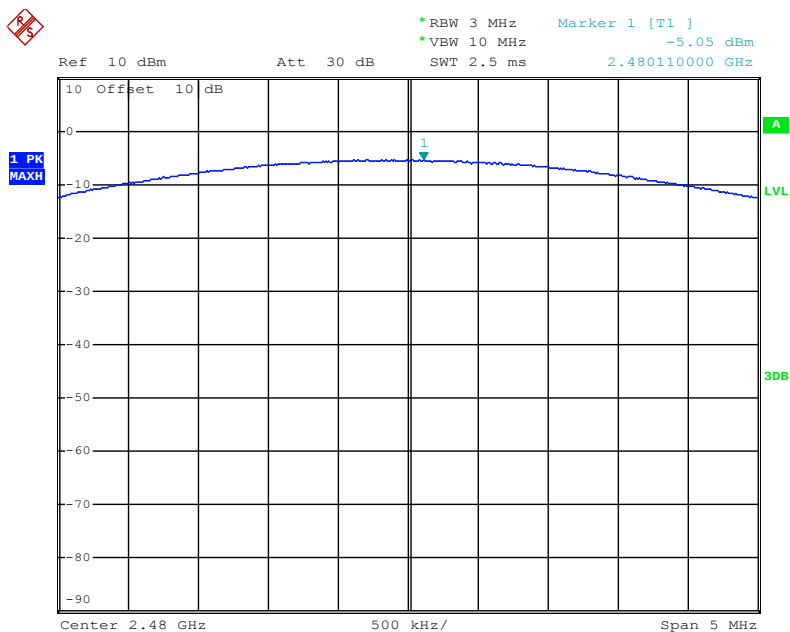


## Middle channel



Date: 20.MAY.2019 09:00:09

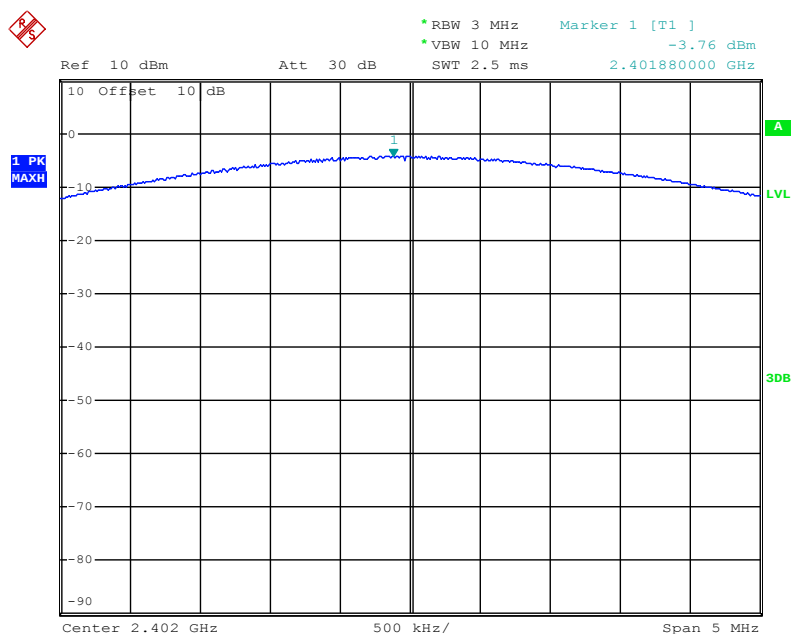
## High channel



Date: 20.MAY.2019 08:59:33

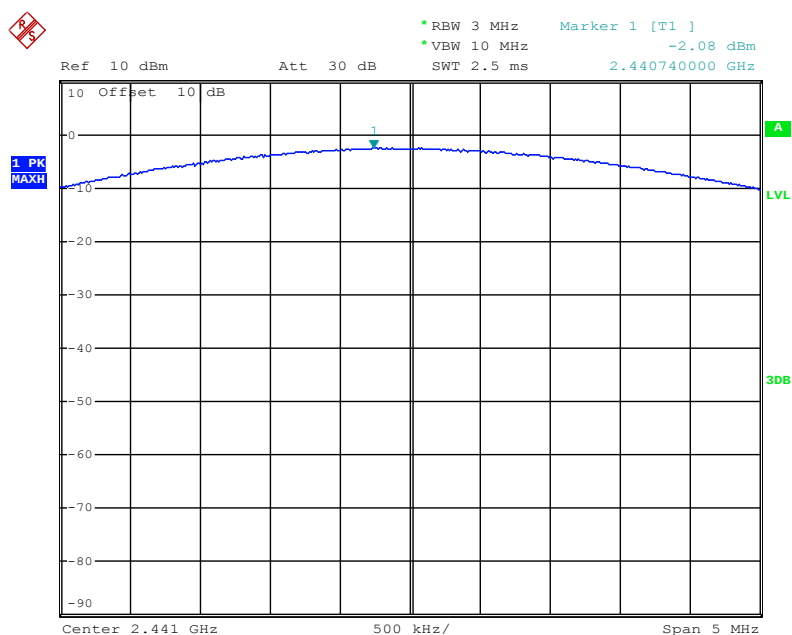
## 8DPSK Mode

### Low channel



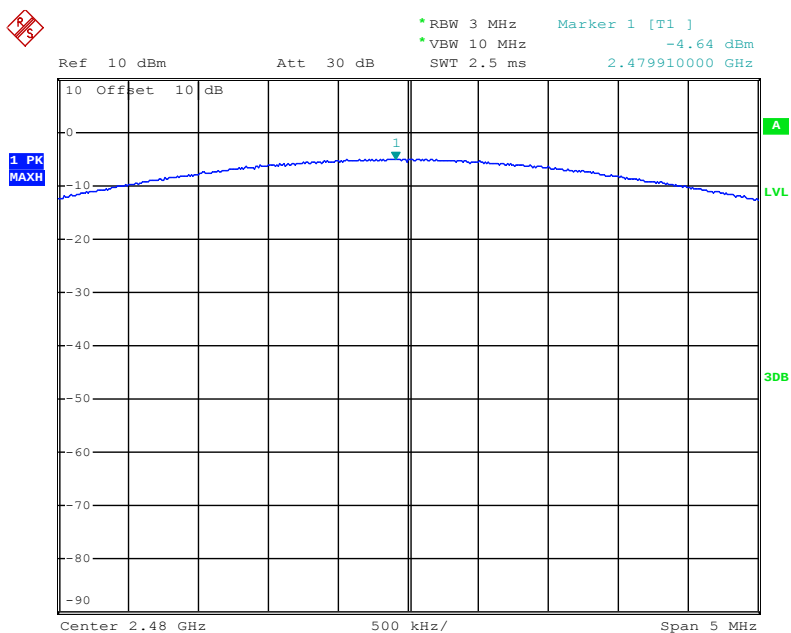
Date: 20.MAY.2019 09:01:38

### Middle channel



Date: 20.MAY.2019 09:02:12

## High channel

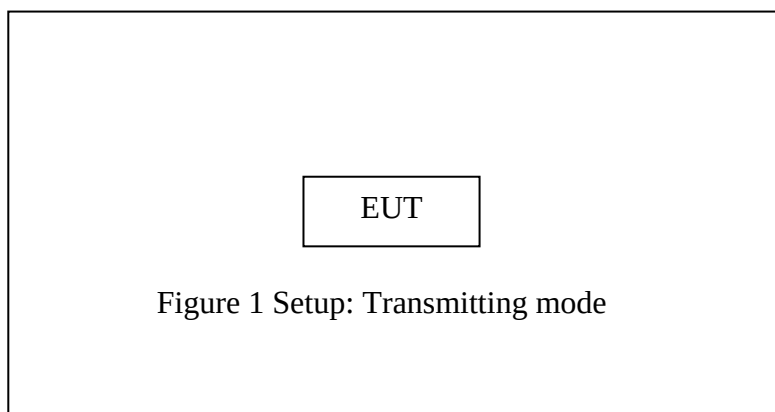


Date: 20.MAY.2019 09:03:42

## 10.RADIATED EMISSION TEST

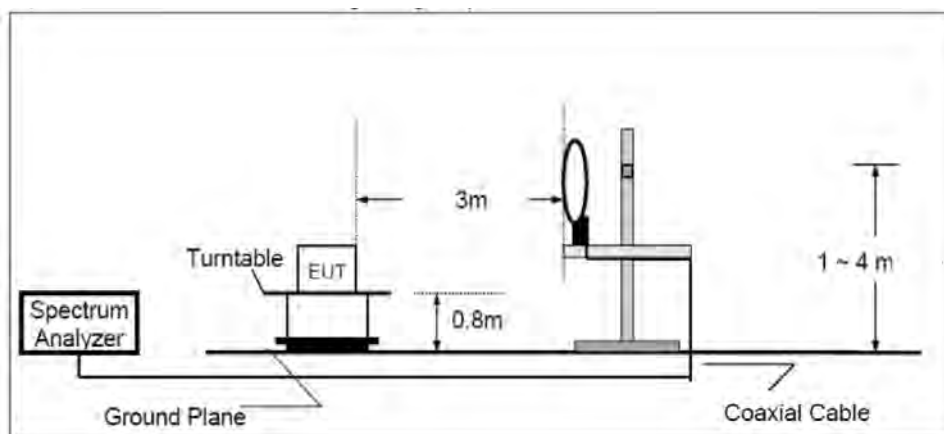
### 10.1.Block Diagram of Test Setup

#### 10.1.1.Block diagram of connection between the EUT and peripherals

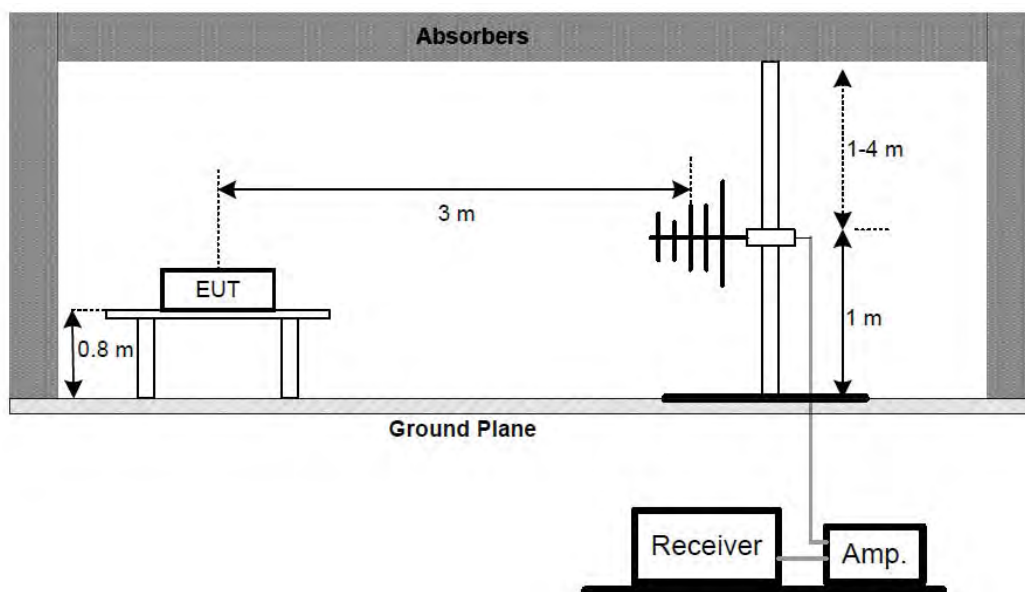


#### 10.1.2.Semi-Anechoic Chamber Test Setup Diagram

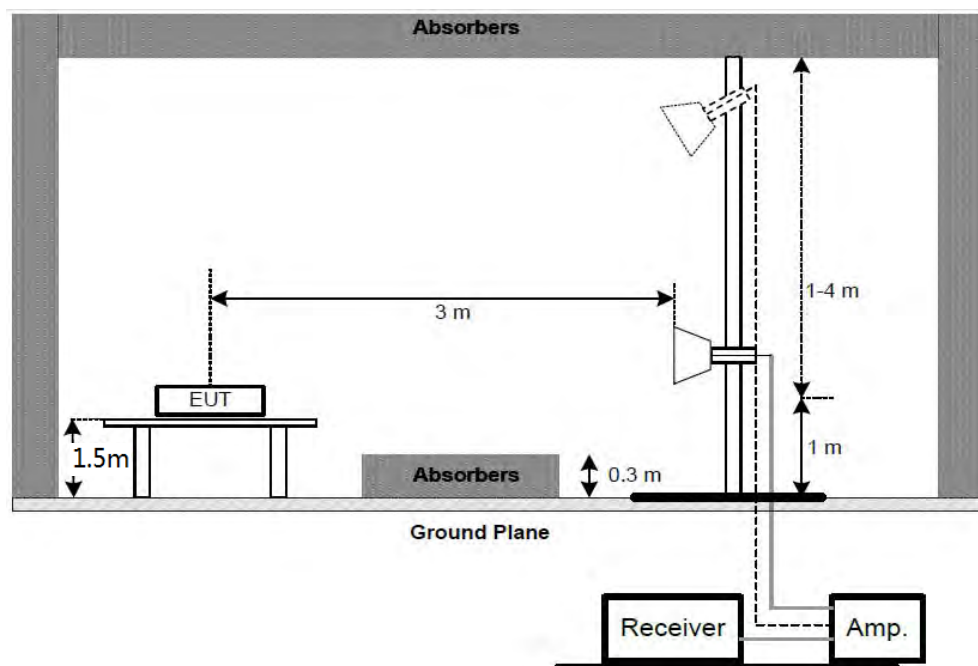
##### (A) Radiated Emission Test Set-Up, Frequency below 30MHz



(B) Radiated Emission Test Set-Up, Frequency below 1GHz



Above 1GHz:



## 10.2.The Limit For Section 15.247(d)

Section 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).

## 10.3.Restricted bands of operation

### 10.3.1.FCC Part 15.205 Restricted bands of operation

(a) Except as shown in paragraph (d) of this section, Only spurious emissions are permitted in any of the frequency bands listed below:

| MHz                      | MHz                 | MHz           | GHz              |
|--------------------------|---------------------|---------------|------------------|
| 0.090-0.110              | 16.42-16.423        | 399.9-410     | 4.5-5.15         |
| <sup>1</sup> 0.495-0.505 | 16.69475-16.69525   | 608-614       | 5.35-5.46        |
| 2.1735-2.1905            | 16.80425-16.80475   | 960-1240      | 7.25-7.75        |
| 4.125-4.128              | 25.5-25.67          | 1300-1427     | 8.025-8.5        |
| 4.17725-4.17775          | 37.5-38.25          | 1435-1626.5   | 9.0-9.2          |
| 4.20725-4.20775          | 73-74.6             | 1645.5-1646.5 | 9.3-9.5          |
| 6.215-6.218              | 74.8-75.2           | 1660-1710     | 10.6-12.7        |
| 6.26775-6.26825          | 108-121.94          | 1718.8-1722.2 | 13.25-13.4       |
| 6.31175-6.31225          | 123-138             | 2200-2300     | 14.47-14.5       |
| 8.291-8.294              | 149.9-150.05        | 2310-2390     | 15.35-16.2       |
| 8.362-8.366              | 156.52475-156.52525 | 2483.5-2500   | 17.7-21.4        |
| 8.37625-8.38675          | 156.7-156.9         | 2690-2900     | 22.01-23.12      |
| 8.41425-8.41475          | 162.0125-167.17     | 3260-3267     | 23.6-24.0        |
| 12.29-12.293             | 167.72-173.2        | 3332-3339     | 31.2-31.8        |
| 12.51975-12.52025        | 240-285             | 3345.8-3358   | 36.43-36.5       |
| 12.57675-12.57725        | 322-335.4           | 3600-4400     | ( <sup>2</sup> ) |
| 13.36-13.41              |                     |               |                  |

<sup>1</sup>Until February 1, 1999, this restricted band shall be 0.490-0.510

<sup>2</sup>Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section 15.209 shall be demonstrated

based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

#### 10.4. Configuration of EUT on Measurement

The equipment is installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

#### 10.5. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground (Below 1GHz). The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground (Above 1GHz). The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

### 10.6.Data Sample

| Frequency<br>(MHz) | Reading<br>(dB $\mu$ v) | Factor<br>(dB/m) | Result<br>(dB $\mu$ v/m) | Limit<br>(dB $\mu$ v/m) | Margin<br>(dB) | Remark |
|--------------------|-------------------------|------------------|--------------------------|-------------------------|----------------|--------|
| X.XX               | 48.69                   | -13.35           | 35.34                    | 46                      | -10.66         | QP     |

Frequency(MHz) = Emission frequency in MHz

Reading(dB $\mu$ v) = Uncorrected Analyzer/Receiver reading

Factor (dB/m) = Antenna factor + Cable Loss – Amplifier gain

Result(dB $\mu$ v/m) = Reading(dB $\mu$ v) + Factor(dB/m)

Limit (dB $\mu$ v/m) = Limit stated in standard

Margin (dB) = Result(dB $\mu$ v/m) - Limit (dB $\mu$ v/m)

QP = Quasi-peak Reading

Calculation Formula:

Margin(dB) = Result (dB $\mu$ V/m)–Limit(dB $\mu$ V/m)

Result(dB $\mu$ V/m)= Reading(dB $\mu$ V)+ Factor(dB/m)

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the limit.

### 10.7.The Field Strength of Radiation Emission Measurement Results

**Note: 1.We tested GFSK mode,  $\Pi/4$ -DQPSK Mode, 8DPSK mode and recorded the worst case data (GFSK mode) for all test mode.**

**2.The radiation emissions from 9kHz-30MHz and 18-25GHz are not reported, because the test values lower than the limits of 20dB.**



## 30MHz-1000MHz test data



### ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: FRANK2019-BT #2

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: Charging

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Horizontal

Power Source: AC 120V/60Hz

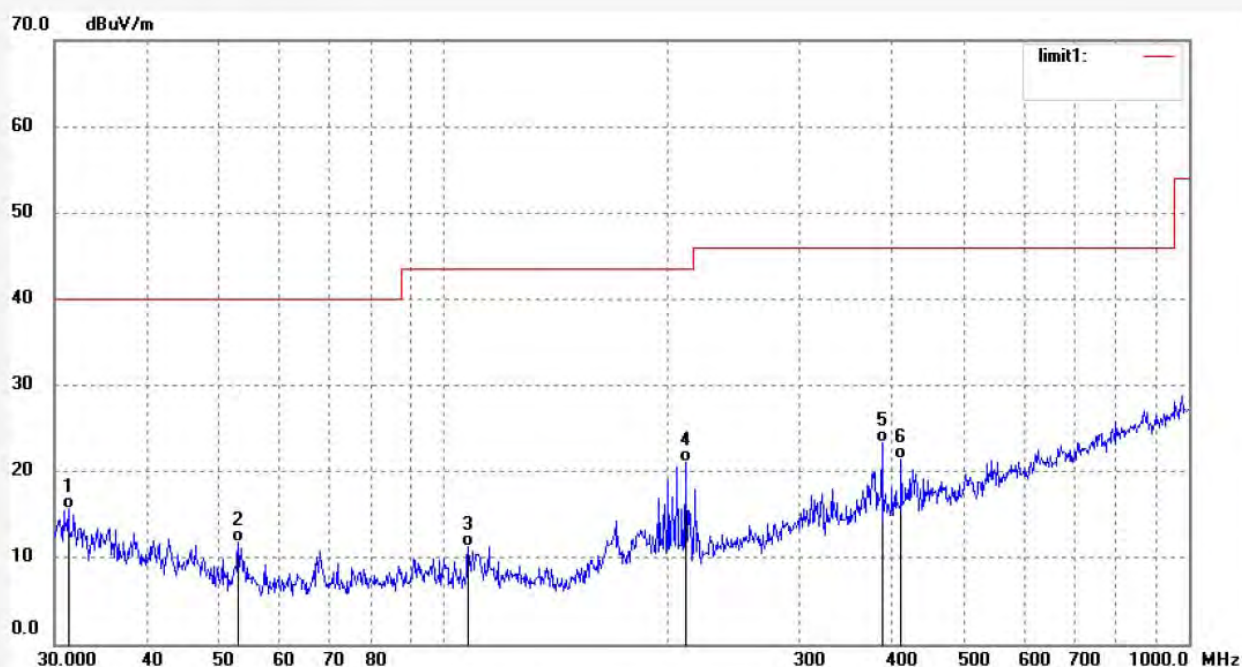
Date: 19/05/18/

Time: 8/53/52

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 31.2918     | 36.24            | -20.53      | 15.71           | 40.00          | -24.29      | QP       | 200         | 103           |        |
| 2   | 53.0056     | 38.56            | -26.69      | 11.87           | 40.00          | -28.13      | QP       | 200         | 229           |        |
| 3   | 107.7853    | 38.92            | -27.66      | 11.26           | 43.50          | -32.24      | QP       | 200         | 96            |        |
| 4   | 210.8689    | 45.12            | -24.10      | 21.02           | 43.50          | -22.48      | QP       | 200         | 110           |        |
| 5   | 387.2565    | 41.98            | -18.53      | 23.45           | 46.00          | -22.55      | QP       | 200         | 136           |        |
| 6   | 411.0924    | 39.62            | -18.11      | 21.51           | 46.00          | -24.49      | QP       | 200         | 331           |        |

shenzhen Accurate Technology Co., Ltd.

Address: 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

Tel: +86-755-26503290

Fax: +86-755-26503396

E-mail: webmaster@atc-lab.com

[Http://www.atc-lab.com](http://www.atc-lab.com)



## ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: FRANK2019-BT #1

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: Charging

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Vertical

Power Source: AC 120V/60Hz

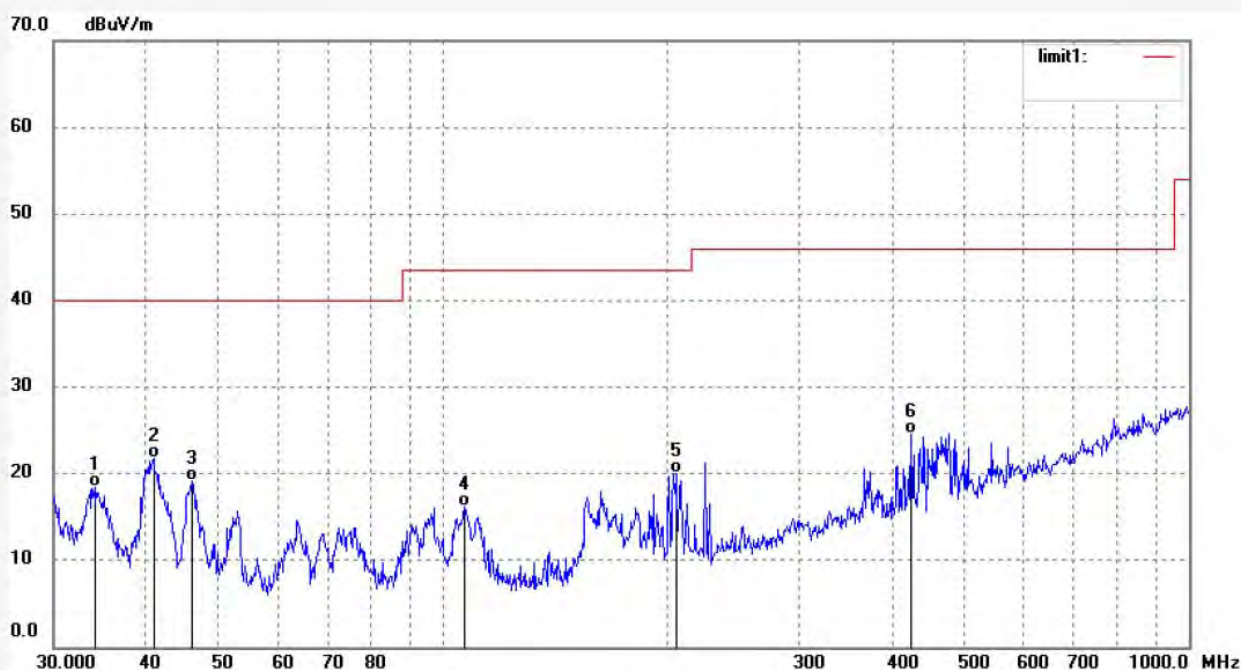
Date: 19/05/18/

Time: 8/52/35

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 34.0449     | 39.67            | -21.22      | 18.45           | 40.00          | -21.55      | QP       | 100         | 233           |        |
| 2   | 40.8699     | 45.58            | -23.73      | 21.85           | 40.00          | -18.15      | QP       | 100         | 201           |        |
| 3   | 46.0557     | 43.91            | -24.80      | 19.11           | 40.00          | -20.89      | QP       | 100         | 92            |        |
| 4   | 106.6551    | 43.99            | -27.86      | 16.13           | 43.50          | -27.37      | QP       | 100         | 119           |        |
| 5   | 205.0243    | 44.26            | -24.16      | 20.10           | 43.50          | -23.40      | QP       | 100         | 63            |        |
| 6   | 424.2998    | 42.61            | -17.94      | 24.67           | 46.00          | -21.33      | QP       | 100         | 123           |        |

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Address: 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

Tel: +86-755-26503290

Fax: +86-755-26503396

E-mail: webmaster@atc-lab.com

[Http://www.atc-lab.com](http://www.atc-lab.com)





## ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: FRANK2019-BT #6

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2402MHz

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Horizontal

Power Source: DC 3.7V

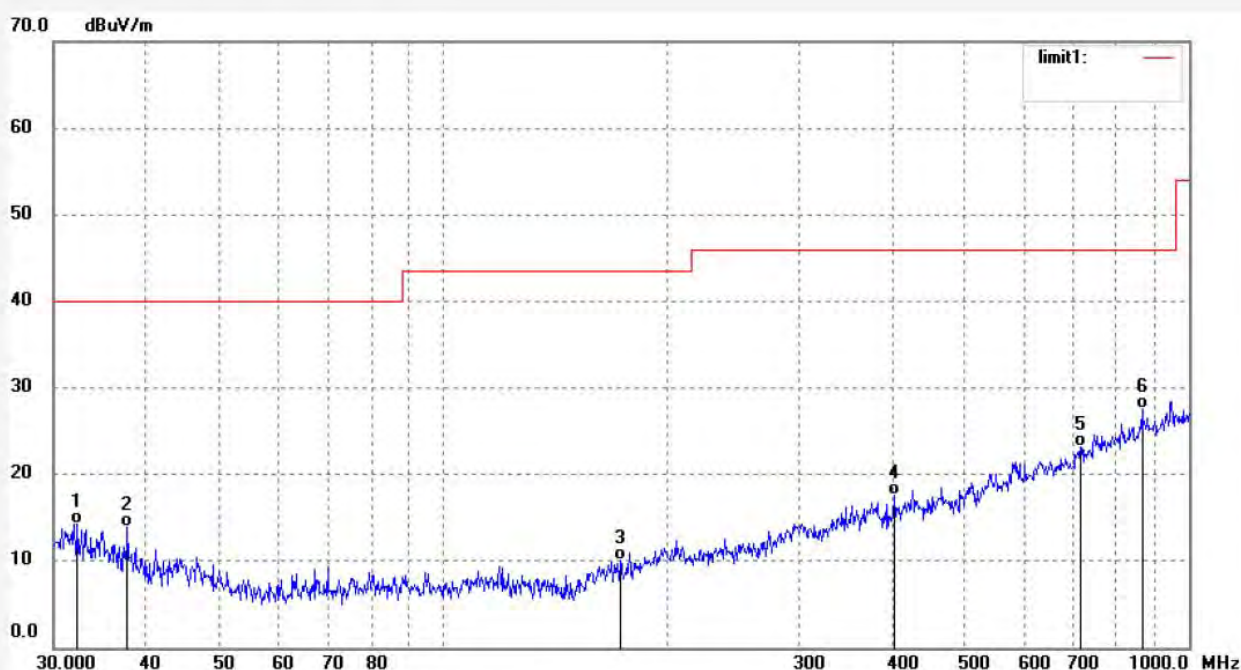
Date: 19/05/18/

Time: 8/57/56

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 32.2972     | 35.04            | -20.78      | 14.26           | 40.00          | -25.74      | QP       | 200         | 221           |        |
| 2   | 37.6970     | 36.48            | -22.60      | 13.88           | 40.00          | -26.12      | QP       | 200         | 66            |        |
| 3   | 172.5975    | 36.40            | -26.27      | 10.13           | 43.50          | -33.37      | QP       | 200         | 115           |        |
| 4   | 402.5167    | 35.88            | -18.26      | 17.62           | 46.00          | -28.38      | QP       | 200         | 93            |        |
| 5   | 716.2038    | 34.31            | -11.09      | 23.22           | 46.00          | -22.78      | QP       | 200         | 221           |        |
| 6   | 865.8383    | 35.27            | -7.75       | 27.52           | 46.00          | -18.48      | QP       | 200         | 103           |        |

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Address: 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

Tel: +86-755-26503290

Fax: +86-755-26503396

E-mail: webmaster@atc-lab.com

[Http://www.atc-lab.com](http://www.atc-lab.com)

Job No.: FRANK2019-BT #5

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2402MHz

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Vertical

Power Source: DC 3.7V

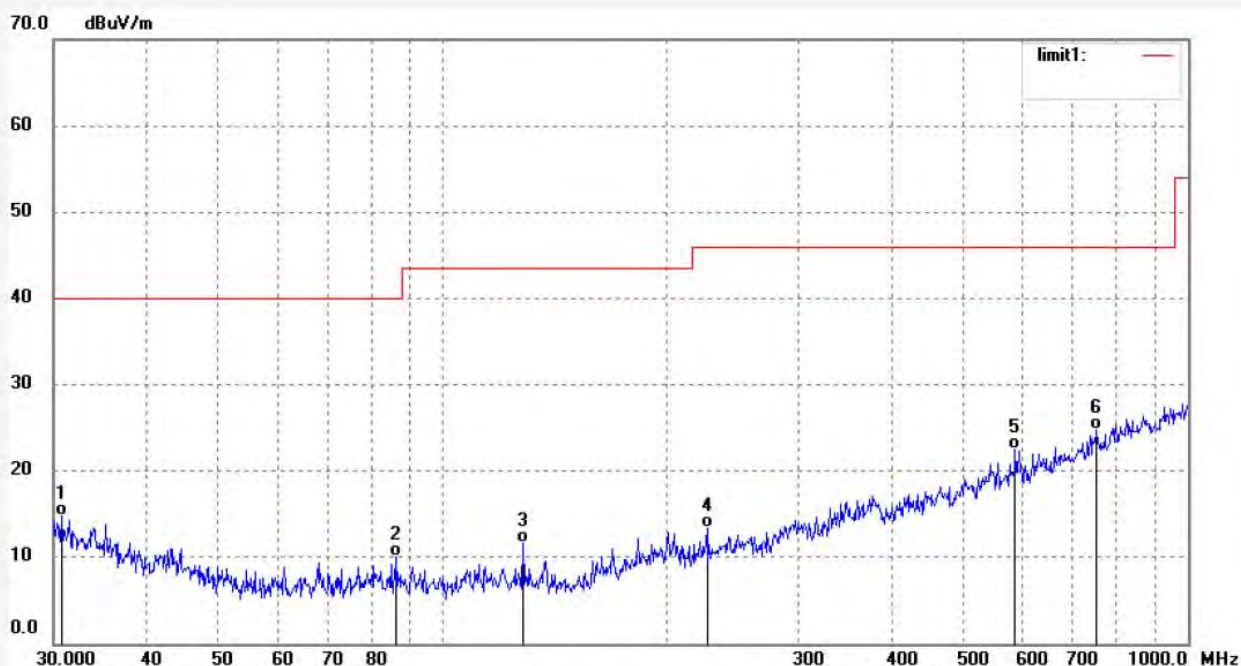
Date: 19/05/18/

Time: 8/57/26

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 30.7469     | 35.20            | -20.39      | 14.81           | 40.00          | -25.19      | QP       | 100         | 213           |        |
| 2   | 86.6867     | 37.52            | -27.45      | 10.07           | 40.00          | -29.93      | QP       | 100         | 52            |        |
| 3   | 128.0355    | 39.26            | -27.66      | 11.60           | 43.50          | -31.90      | QP       | 100         | 331           |        |
| 4   | 226.2202    | 37.40            | -23.93      | 13.47           | 46.00          | -32.53      | QP       | 100         | 93            |        |
| 5   | 586.2172    | 36.42            | -13.98      | 22.44           | 46.00          | -23.56      | QP       | 100         | 221           |        |
| 6   | 754.9628    | 35.00            | -10.19      | 24.81           | 46.00          | -21.19      | QP       | 100         | 103           |        |



Job No.: FRANK2019-BT #7

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2441MHz

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Horizontal

Power Source: DC 3.7V

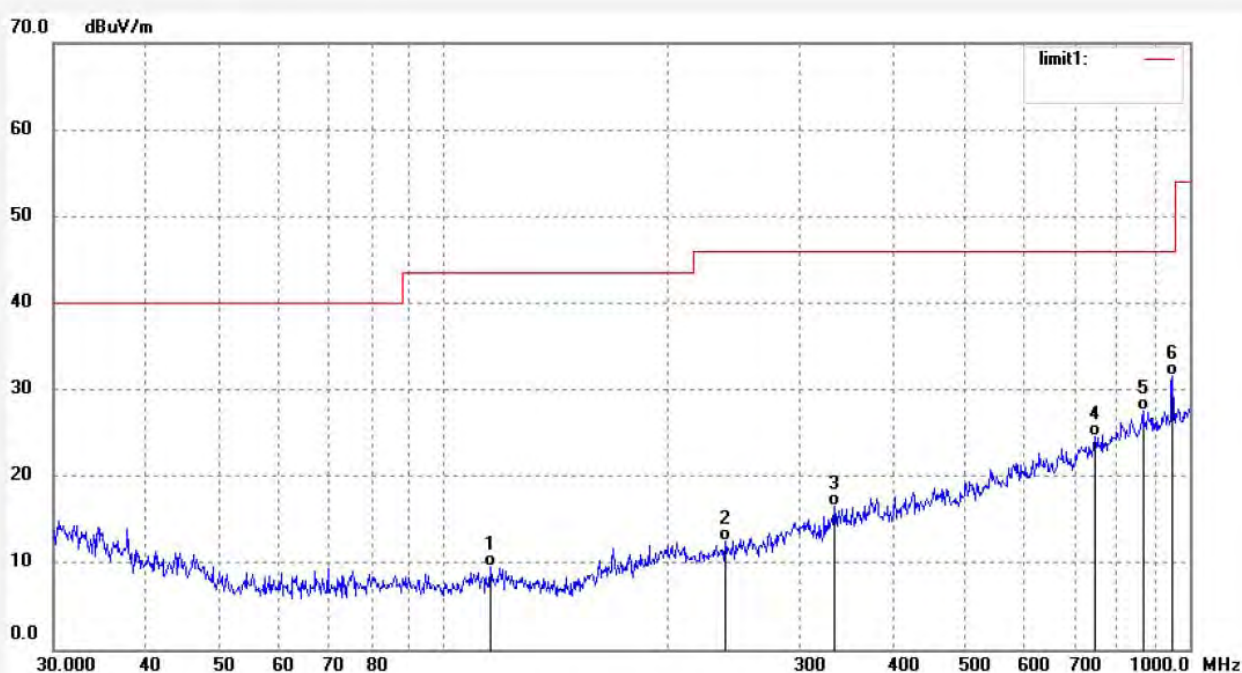
Date: 19/05/18/

Time: 8/58/28

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 115.6321    | 36.92            | -27.36      | 9.56            | 43.50          | -33.94      | QP       | 200         | 52            |        |
| 2   | 238.4626    | 36.26            | -23.75      | 12.51           | 46.00          | -33.49      | QP       | 200         | 321           |        |
| 3   | 334.1254    | 36.44            | -19.94      | 16.50           | 46.00          | -29.50      | QP       | 200         | 115           |        |
| 4   | 747.0465    | 35.07            | -10.40      | 24.67           | 46.00          | -21.33      | QP       | 200         | 92            |        |
| 5   | 865.8383    | 35.27            | -7.75       | 27.52           | 46.00          | -18.48      | QP       | 200         | 36            |        |
| 6   | 948.6609    | 37.92            | -6.35       | 31.57           | 46.00          | -14.43      | QP       | 200         | 103           |        |

Job No.: FRANK2019-BT #8

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2441MHz

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Vertical

Power Source: DC 3.7V

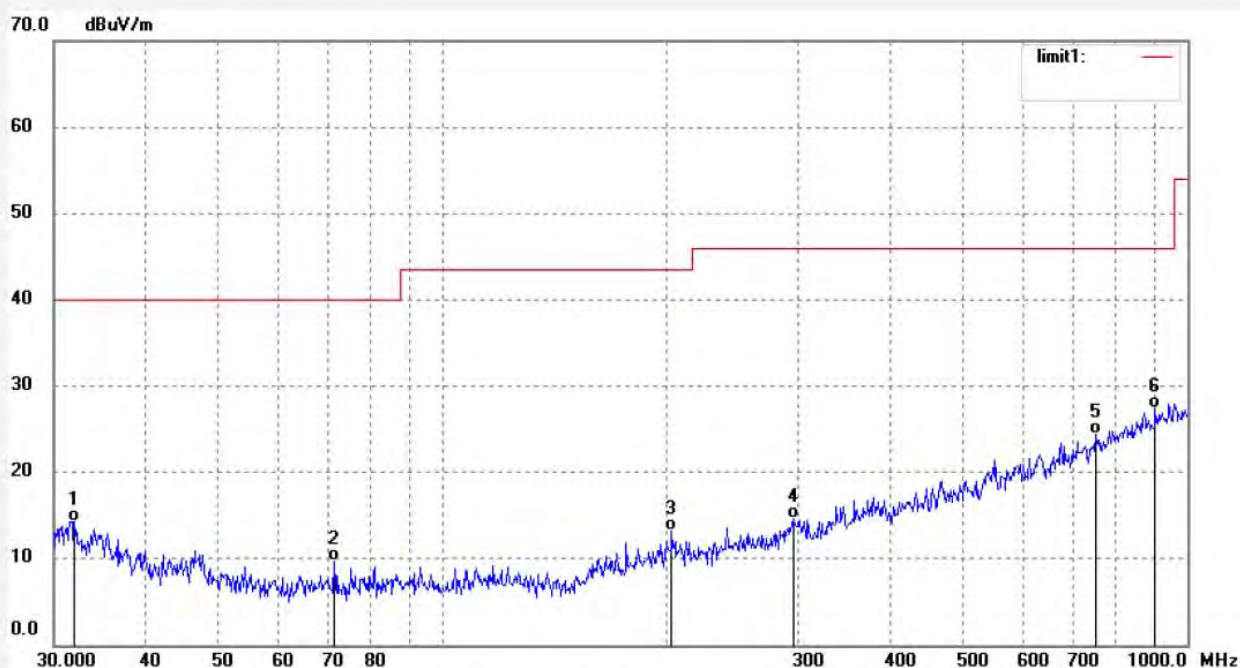
Date: 19/05/18/

Time: 8/59/09

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq.<br>(MHz) | Reading<br>(dBuV/m) | Factor<br>(dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|----------------|---------------------|----------------|--------------------|-------------------|----------------|----------|----------------|------------------|--------|
| 1   | 31.9586        | 34.98               | -20.69         | 14.29              | 40.00             | -25.71         | QP       | 100            | 89               |        |
| 2   | 71.4539        | 37.23               | -27.54         | 9.69               | 40.00             | -30.31         | QP       | 100            | 201              |        |
| 3   | 202.8745       | 37.47               | -24.25         | 13.22              | 43.50             | -30.28         | QP       | 100            | 331              |        |
| 4   | 295.4623       | 36.02               | -21.39         | 14.63              | 46.00             | -31.37         | QP       | 100            | 63               |        |
| 5   | 752.3147       | 34.69               | -10.28         | 24.41              | 46.00             | -21.59         | QP       | 100            | 221              |        |
| 6   | 906.3040       | 34.40               | -7.08          | 27.32              | 46.00             | -18.68         | QP       | 100            | 193              |        |





## ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: FRANK2019-BT #10

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2480MHz

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Horizontal

Power Source: DC 3.7V

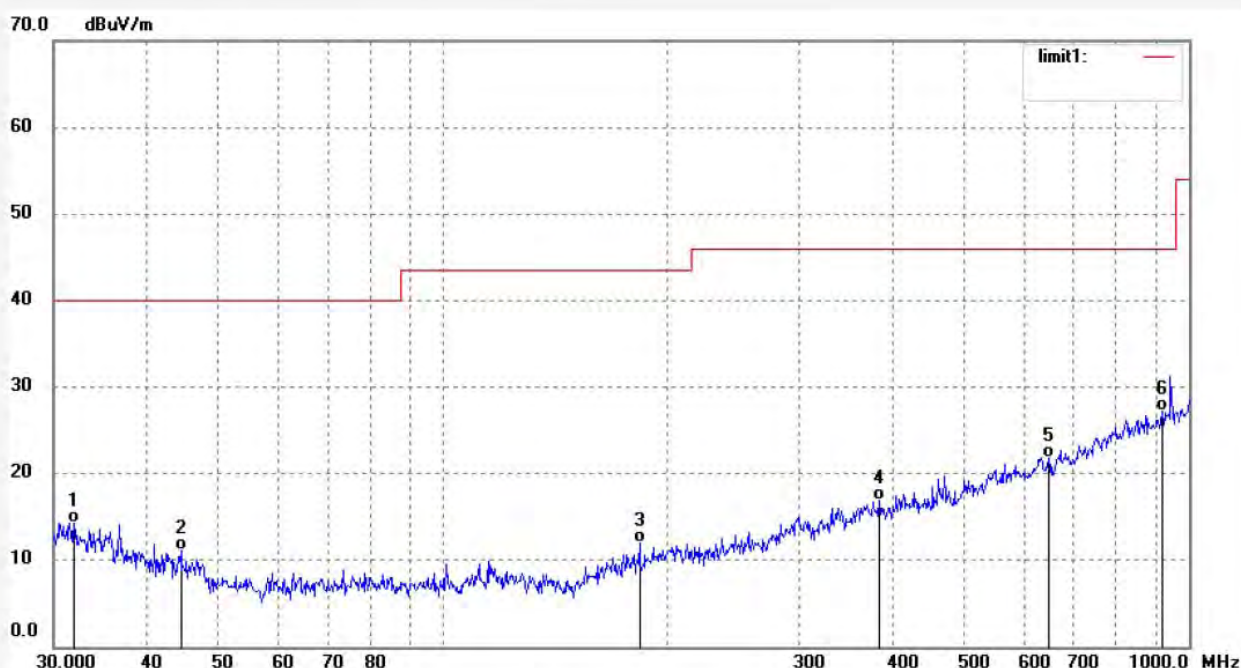
Date: 19/05/18/

Time: 9/00/12

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 31.9586     | 35.04            | -20.69      | 14.35           | 40.00          | -25.65      | QP       | 200         | 116           |        |
| 2   | 44.4656     | 35.46            | -24.34      | 11.12           | 40.00          | -28.88      | QP       | 200         | 51            |        |
| 3   | 183.2211    | 37.67            | -25.71      | 11.96           | 43.50          | -31.54      | QP       | 200         | 252           |        |
| 4   | 384.5446    | 35.42            | -18.57      | 16.85           | 46.00          | -29.15      | QP       | 200         | 96            |        |
| 5   | 649.0983    | 34.50            | -12.67      | 21.83           | 46.00          | -24.17      | QP       | 200         | 221           |        |
| 6   | 922.3667    | 33.99            | -6.81       | 27.18           | 46.00          | -18.82      | QP       | 200         | 103           |        |

shenzhen Accurate Technology Co., Ltd.

Address: 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

Tel: +86-755-26503290

Fax: +86-755-26503396

E-mail: webmaster@atc-lab.com

[Http://www.atc-lab.com](http://www.atc-lab.com)



## ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg.A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: FRANK2019-BT #9

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2480MHz

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Vertical

Power Source: DC 3.7V

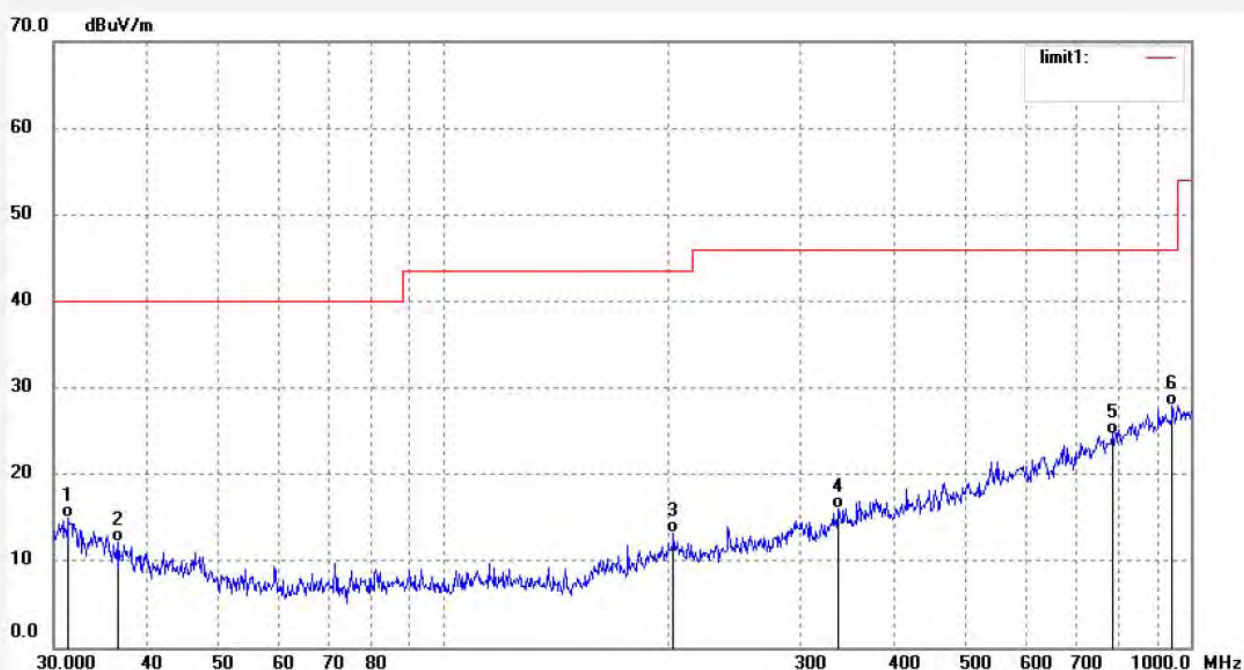
Date: 19/05/18/

Time: 8/59/23

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 31.4021     | 35.52            | -20.55      | 14.97           | 40.00          | -25.03      | QP       | 100         | 219           |        |
| 2   | 36.6520     | 34.35            | -22.16      | 12.19           | 40.00          | -27.81      | QP       | 100         | 110           |        |
| 3   | 202.8745    | 37.47            | -24.25      | 13.22           | 43.50          | -30.28      | QP       | 100         | 24            |        |
| 4   | 337.6660    | 35.86            | -19.81      | 16.05           | 46.00          | -29.95      | QP       | 100         | 93            |        |
| 5   | 784.7128    | 33.92            | -9.40       | 24.52           | 46.00          | -21.48      | QP       | 100         | 224           |        |
| 6   | 945.3336    | 34.32            | -6.41       | 27.91           | 46.00          | -18.09      | QP       | 100         | 103           |        |

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Address: 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

Tel: +86-755-26503290

Fax: +86-755-26503396

E-mail: webmaster@atc-lab.com

[Http://www.atc-lab.com](http://www.atc-lab.com)



## 1GHz-18GHz test data



### ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: FRANK2019-BT #11

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2402MHz

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Horizontal

Power Source: DC 3.7V

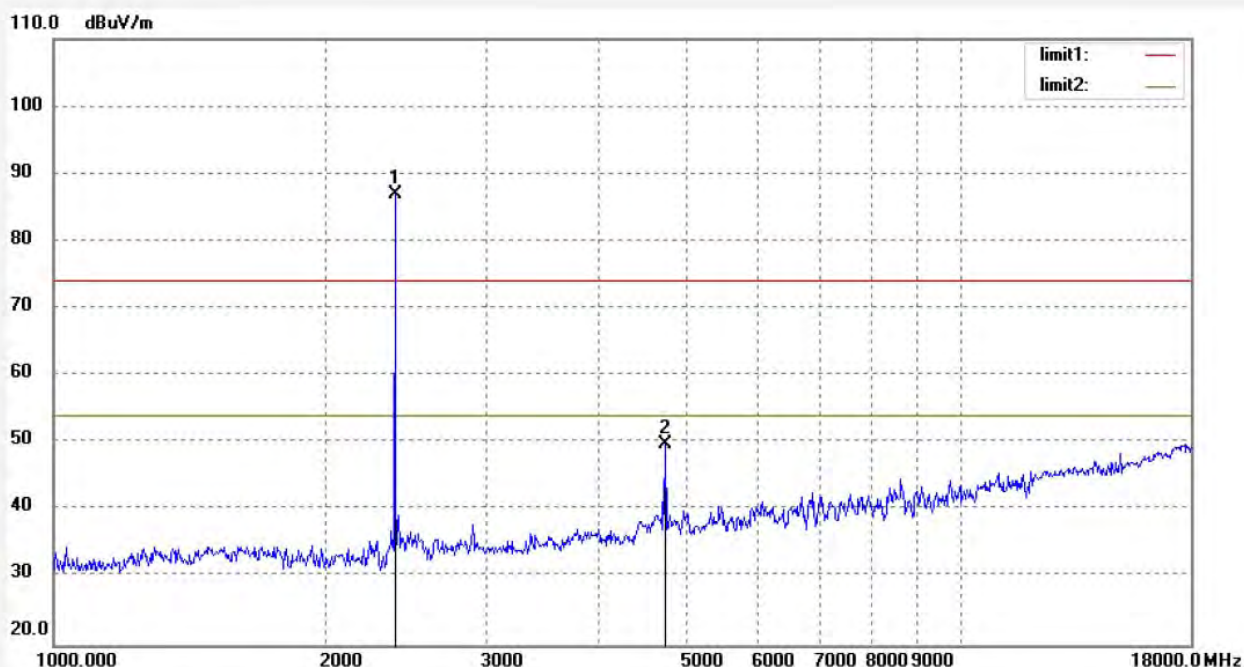
Date: 19/05/18/

Time: 9/25/43

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2402.419    | 93.40            | -6.37       | 87.03           |                |             | peak     | 200         | 65            |        |
| 2   | 4804.957    | 49.00            | 0.70        | 49.70           | 74.00          | -24.30      | peak     | 200         | 109           |        |

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Address: 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

Tel: +86-755-26503290

Fax: +86-755-26503396

E-mail: webmaster@atc-lab.com

[Http://www.atc-lab.com](http://www.atc-lab.com)

Job No.: FRANK2019-BT #12

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2402MHz

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Vertical

Power Source: DC 3.7V

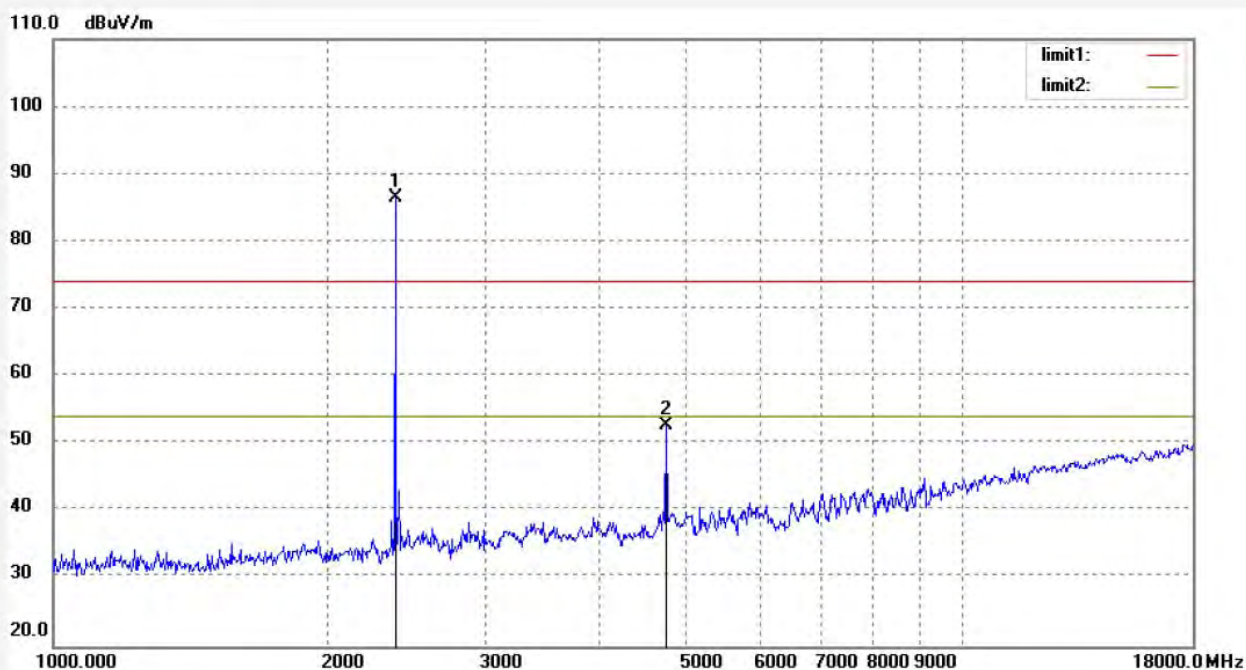
Date: 19/05/18/

Time: 9/26/43

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2402.419    | 92.87            | -6.37       | 86.50           |                |             | peak     | 150         | 331           |        |
| 2   | 4804.957    | 52.06            | 0.70        | 52.76           | 74.00          | -21.24      | peak     | 150         | 106           |        |



Job No.: FRANK2019-BT #14

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2441MHz

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Horizontal

Power Source: DC 3.7V

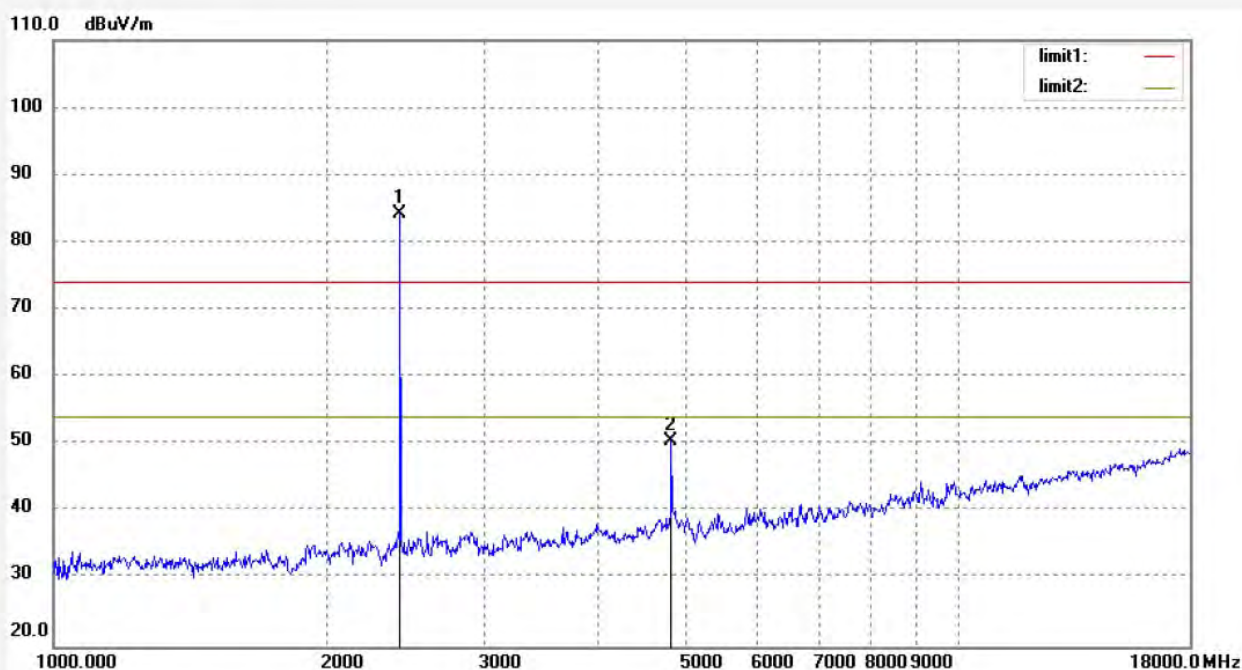
Date: 19/05/18/

Time: 9/33/04

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2441.121    | 90.41            | -6.20       | 84.21           |                |             | peak     | 200         | 66            |        |
| 2   | 4882.324    | 49.38            | 1.07        | 50.45           | 74.00          | -23.55      | peak     | 200         | 109           |        |

Job No.: FRANK2019-BT #13

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2441MHz

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Vertical

Power Source: DC 3.7V

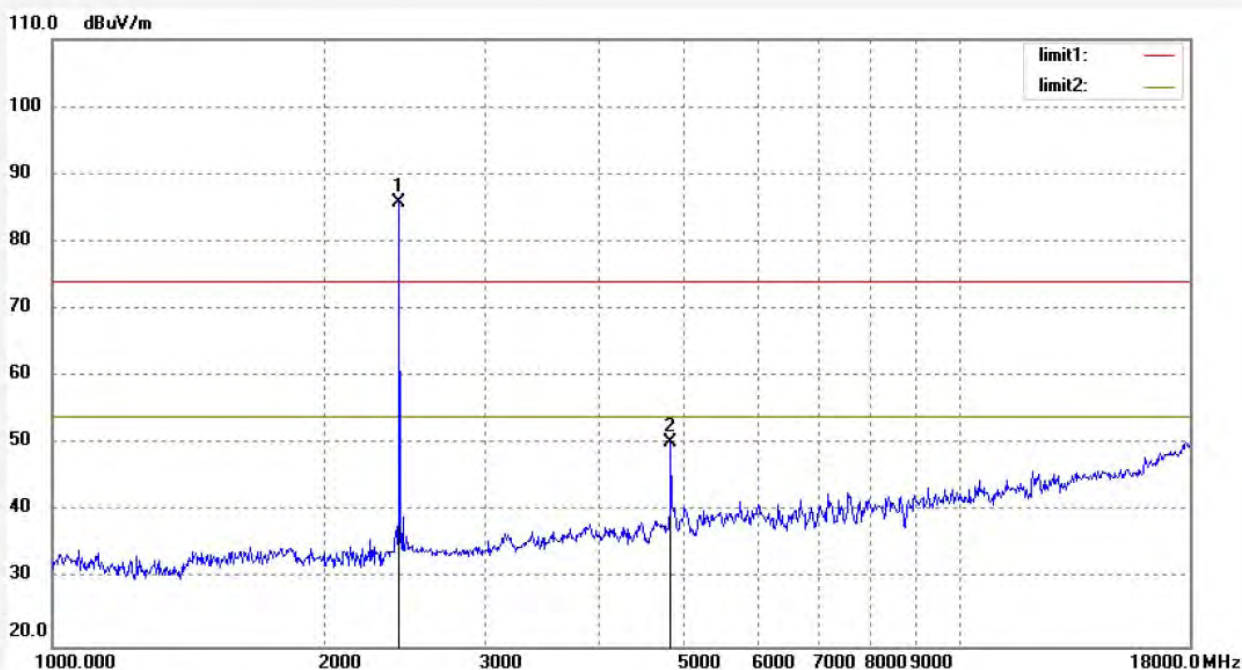
Date: 19/05/18/

Time: 9/28/03

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2441.121    | 91.98            | -6.20       | 85.78           |                |             | peak     | 150         | 166           |        |
| 2   | 4882.324    | 49.27            | 1.07        | 50.34           | 74.00          | -23.66      | peak     | 150         | 109           |        |



Job No.: FRANK2019-BT #15

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2480MHz

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Horizontal

Power Source: DC 3.7V

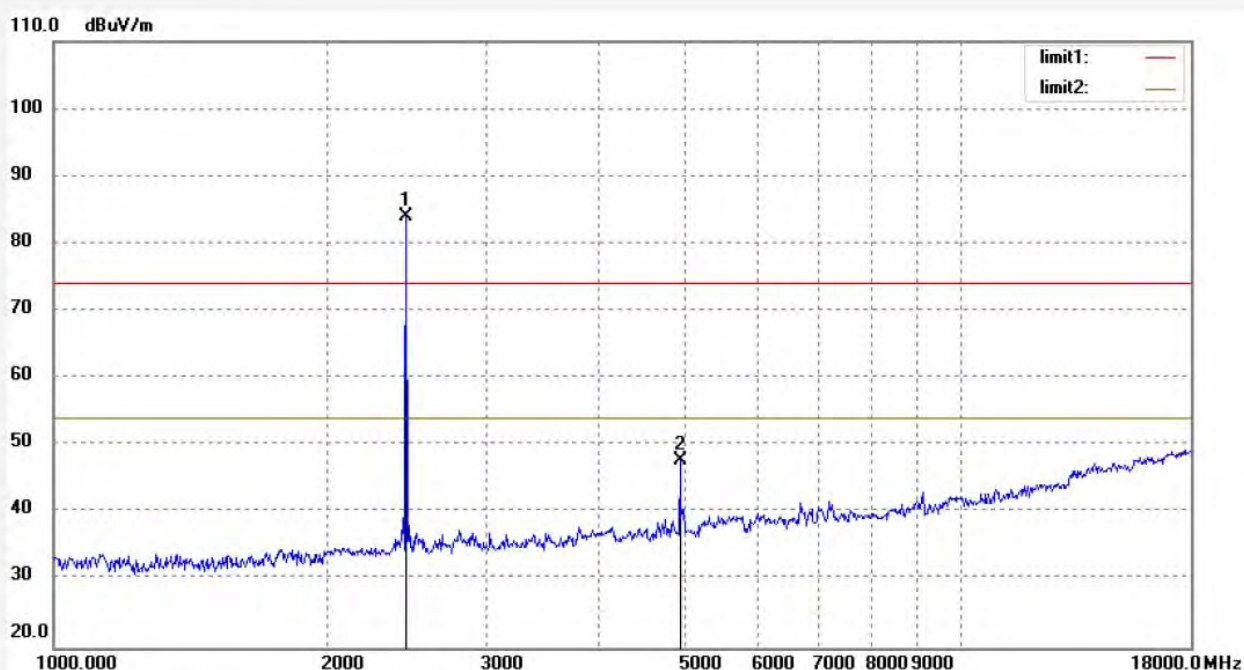
Date: 19/05/18/

Time: 9/34/25

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2480.034    | 89.99            | -6.04       | 83.95           |                |             | peak     | 200         | 66            |        |
| 2   | 4960.444    | 46.20            | 1.50        | 47.70           | 74.00          | -26.30      | peak     | 200         | 103           |        |



## ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: FRANK2019-BT #16

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2480MHz

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Vertical

Power Source: DC 3.7V

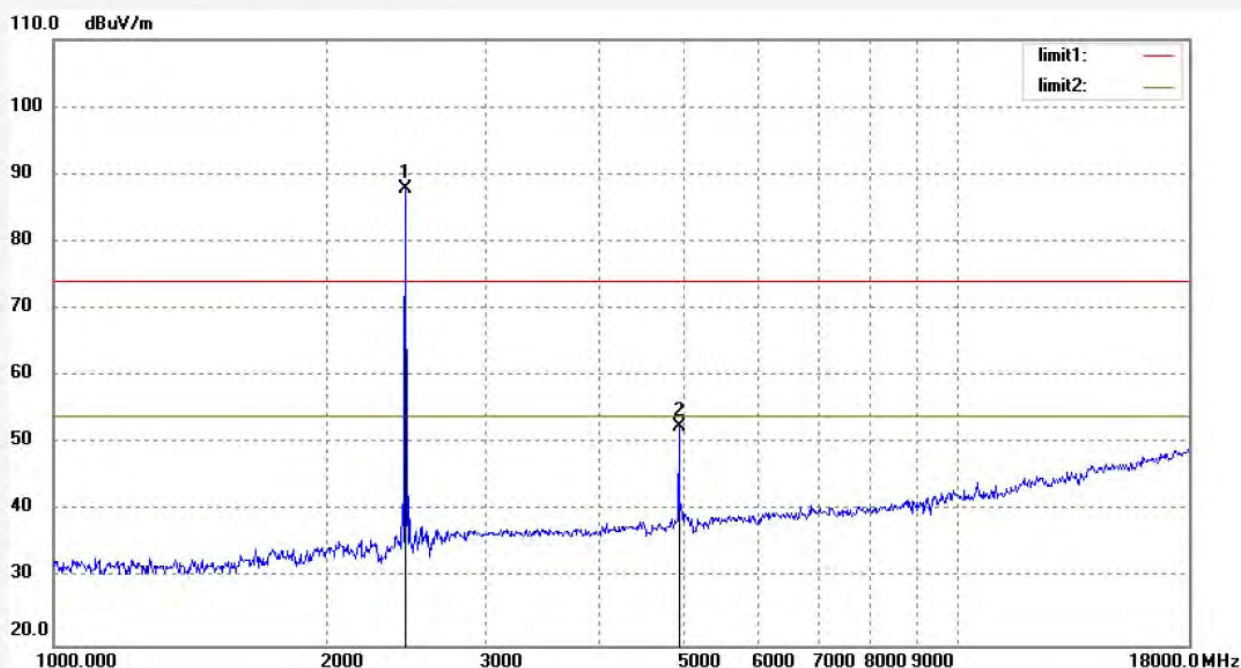
Date: 19/05/18/

Time: 9/35/39

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2480.034    | 93.94            | -6.04       | 87.90           |                |             | peak     | 150         | 96            |        |
| 2   | 4960.444    | 50.91            | 1.50        | 52.41           | 74.00          | -21.59      | peak     | 150         | 136           |        |

shenzhen Accurate Technology Co., Ltd.

Address: 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

Tel: +86-755-26503290

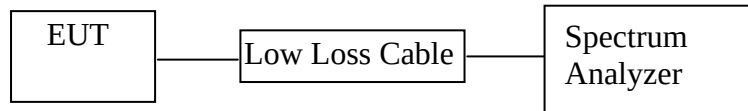
Fax: +86-755-26503396

E-mail: webmaster@atc-lab.com

[Http://www.atc-lab.com](http://www.atc-lab.com)

## 11.BAND EDGE COMPLIANCE TEST

### 11.1.Block Diagram of Test Setup



(EUT: True Connect Truly Wireless Earphones)

### 11.2.The Requirement For Section 15.247(d)

Section 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).

### 11.3.EUT Configuration on Measurement

The equipment are installed on the emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

### 11.4.Operating Condition of EUT

11.4.1.Setup the EUT and simulator as shown as Section 11.1.

11.4.2.Turn on the power of all equipment.

11.4.3.Let the EUT work in TX (Hopping off, Hopping on) modes measure it. The transmit frequency are 2402-2480MHz. We select 2402MHz, 2480MHz TX frequency to transmit.

## 11.5. Test Procedure

11.5.1. The transmitter output was connected to the spectrum analyzer via a low loss cable.

11.5.2. Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz with convenient frequency span including 100 kHz bandwidth from band edge.

11.5.3. The band edges was measured and recorded.

## 11.6. Test Result

### Non-hopping mode

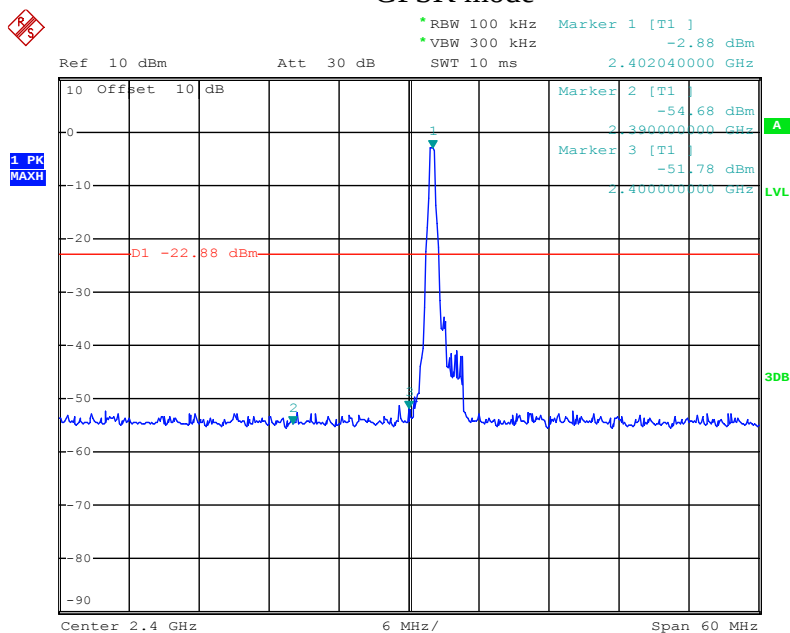
| Frequency (MHz) | Result of Band Edge (dBc) | Limit of Band Edge (dBc) |
|-----------------|---------------------------|--------------------------|
| GFSK mode       |                           |                          |
| 2400.00         | 48.90                     | > 20dBc                  |
| 2483.50         | 50.79                     | > 20dBc                  |
| $\pi/4$ DQPSK   |                           |                          |
| 2400.00         | 48.45                     | > 20dBc                  |
| 2483.5          | 48.00                     | > 20dBc                  |
| 8DPSK mode      |                           |                          |
| 2400.00         | 47.12                     | > 20dBc                  |
| 2483.5          | 47.15                     | > 20dBc                  |

The spectrum analyzer plots are attached as below.

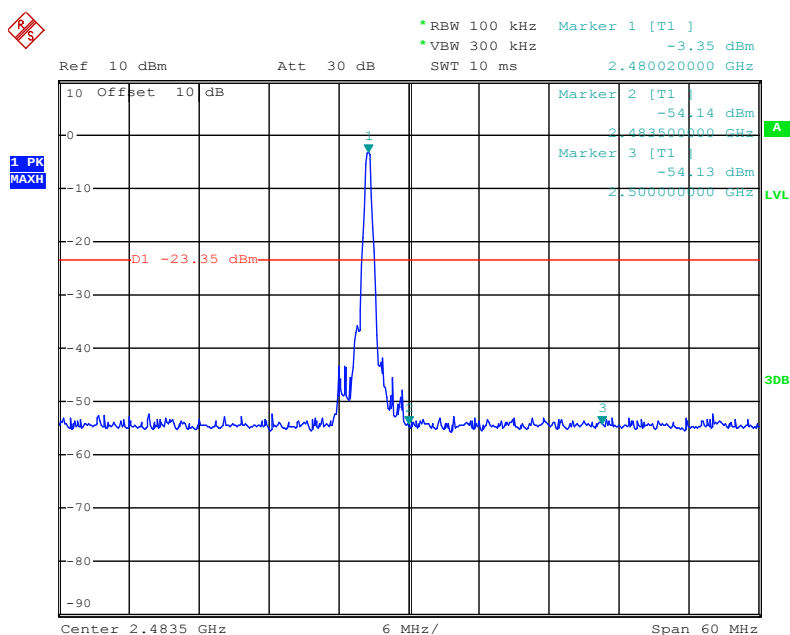


## Non-hopping mode

### GFSK mode



Date: 20.MAY.2019 09:11:32



Date: 20.MAY.2019 09:10:10

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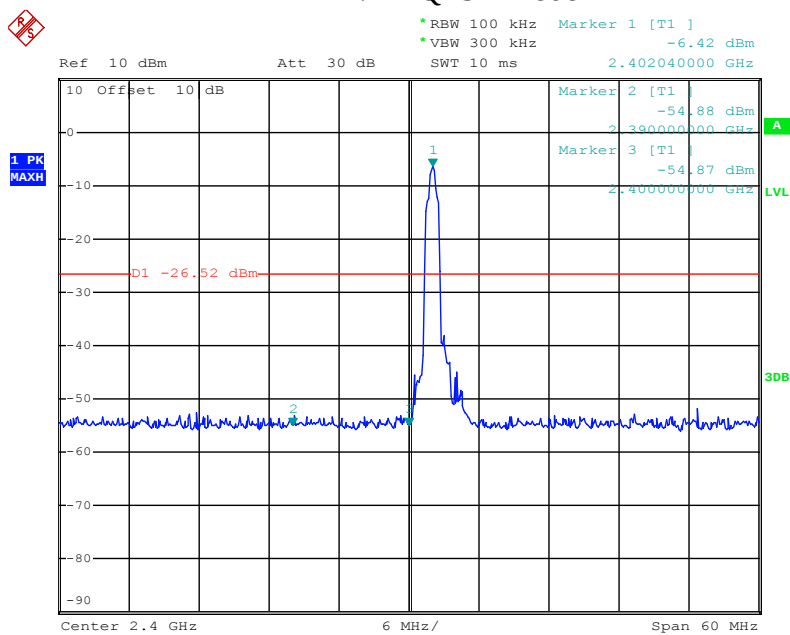
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Fax: +86-755-26503396

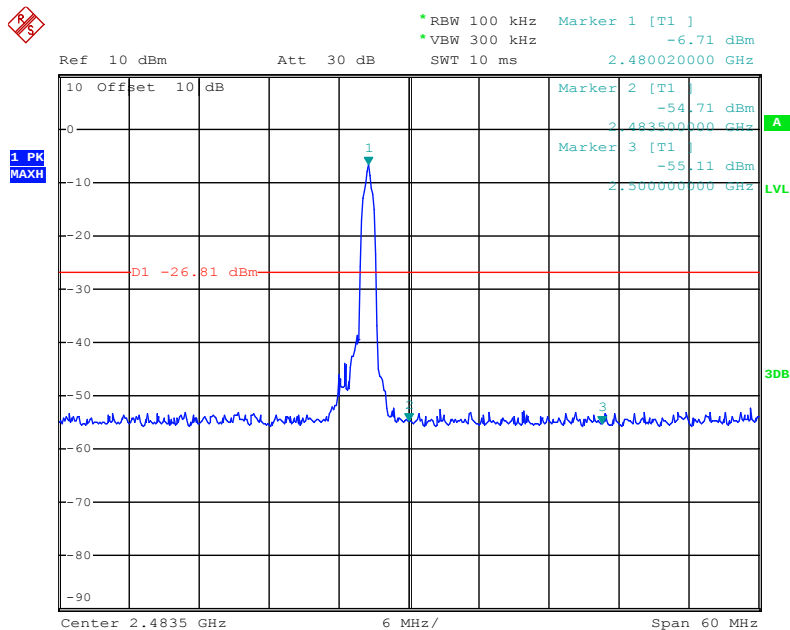
E-mail: webmaster@atc-lab.com

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## $\pi/4$ DQPSK mode

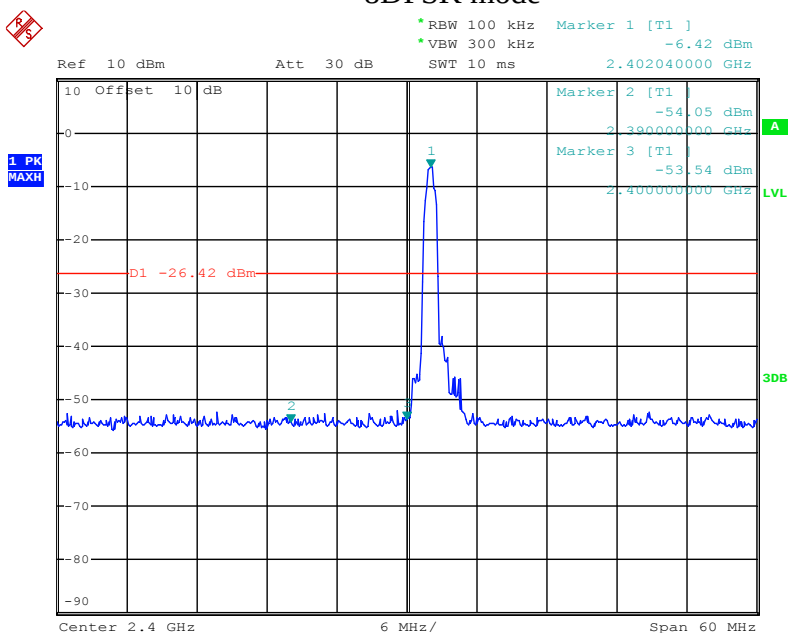


Date: 20.MAY.2019 09:08:16

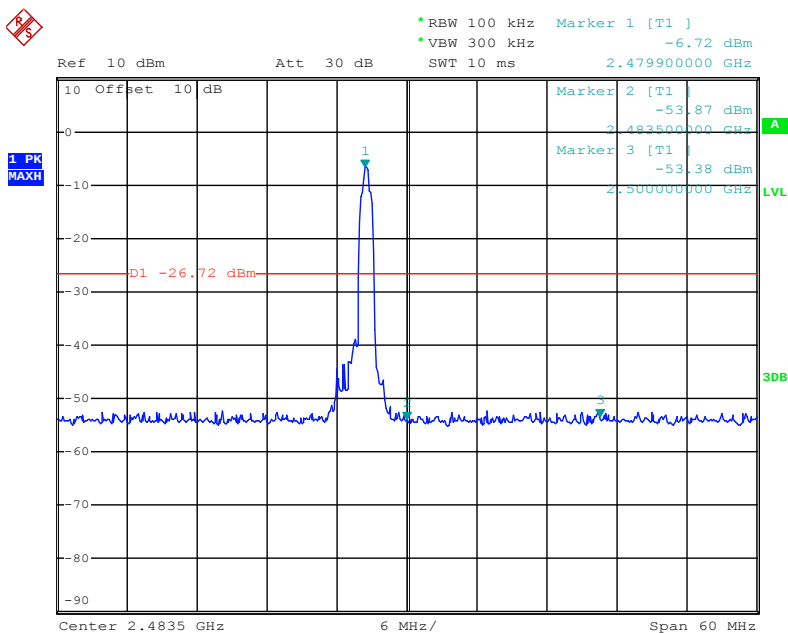


Date: 20.MAY.2019 09:09:16

## 8DPSK mode



Date: 20.MAY.2019 09:06:42



Date: 20.MAY.2019 09:05:32

## Radiated Band Edge Result

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. The field strength is calculated by adding the antenna factor, high pass filter loss(if used) and cable loss, and subtracting the amplifier gain(if any)from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

3. Display the measurement of peak values.

Test Procedure:

The EUT and its simulators are placed on a turntable, which is 1.5 meter high above ground(Above 1GHz). The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bi-log antenna) is used as receiving antenna. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the EUT location must be manipulated according to ANSI C63.10:2013 on radiated emission measurement. The EUT was tested in 3 orthogonal planes.

Let the EUT work in TX (Hopping off, Hopping on) modes measure it.

We select 2402MHz, 2480MHz TX frequency to transmit(Hopping off mode).

We select 2402-2480MHz TX frequency to transmit(Hopping on mode).

During the radiated emission test, the spectrum analyzer was set with the following configurations:

- 1.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz.
- 2.The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.
- 3.All modes of operation were investigated and the worst-case emissions are reported.

## Non-hopping mode(GFSK)



### ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg.A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: FRANK2019-BT #27

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2402MHz(GFSK)

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Horizontal

Power Source: DC 3.7V

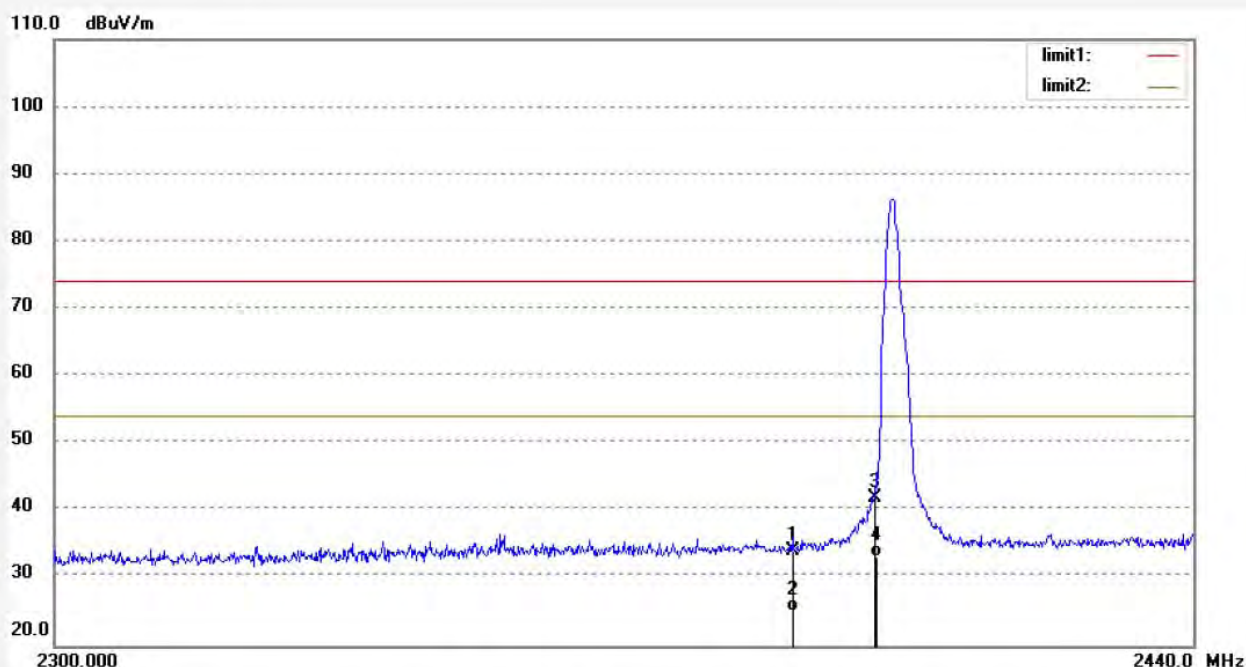
Date: 19/05/18/

Time: 9/53/24

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2390.000    | 40.35            | -6.32       | 34.03           | 74.00          | -39.97      | peak     | 200         | 193           |        |
| 2   | 2390.000    | 31.48            | -6.32       | 25.16           | 54.00          | -28.84      | AVG      | 200         | 321           |        |
| 3   | 2400.000    | 48.18            | -6.27       | 41.91           | 74.00          | -32.09      | peak     | 200         | 201           |        |
| 4   | 2400.000    | 39.48            | -6.27       | 33.21           | 54.00          | -20.79      | AVG      | 200         | 96            |        |

shenzhen Accurate Technology Co., Ltd.

Address: 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

Tel: +86-755-26503290

Fax: +86-755-26503396

E-mail: webmaster@atc-lab.com

[Http://www.atc-lab.com](http://www.atc-lab.com)

Job No.: FRANK2019-BT #28

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2402MHz(GFSK)

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Vertical

Power Source: DC 3.7V

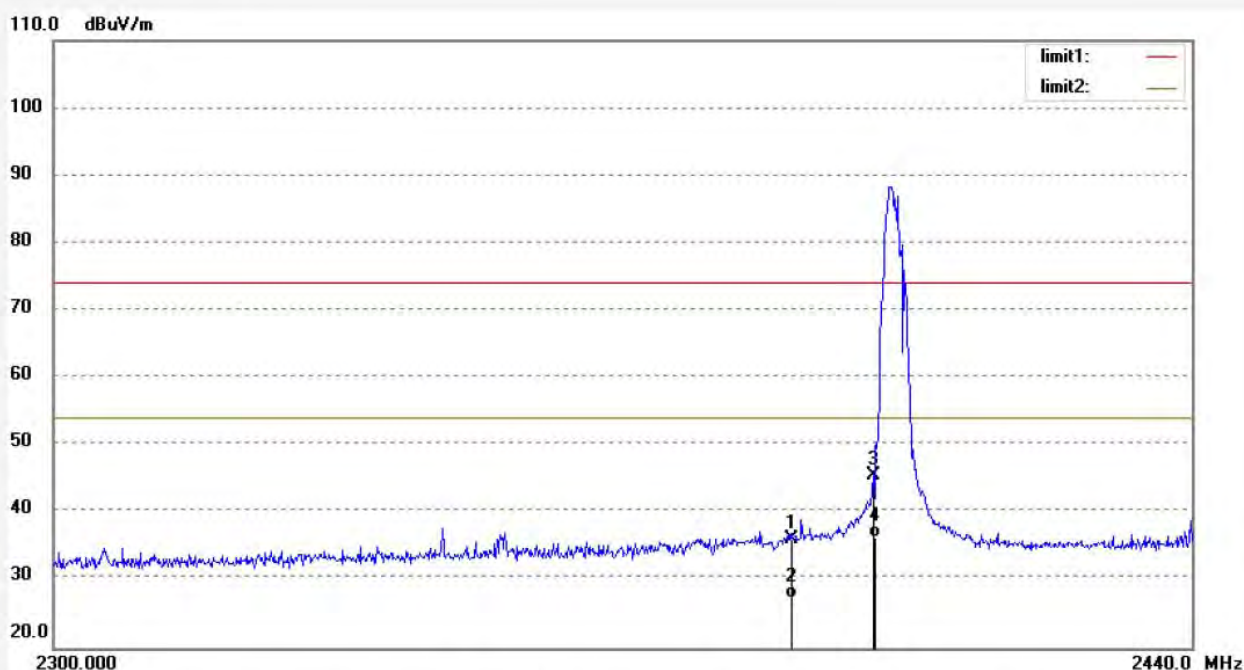
Date: 19/05/18/

Time: 9/54/59

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2390.000    | 42.37            | -6.32       | 36.05           | 74.00          | -37.95      | peak     | 150         | 103           |        |
| 2   | 2390.000    | 33.54            | -6.32       | 27.22           | 54.00          | -26.78      | AVG      | 150         | 92            |        |
| 3   | 2400.000    | 51.72            | -6.27       | 45.45           | 74.00          | -28.55      | peak     | 150         | 63            |        |
| 4   | 2400.000    | 42.65            | -6.27       | 36.38           | 54.00          | -17.62      | AVG      | 150         | 165           |        |



Job No.: FRANK2019-BT #18

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2480MHz(GSKF)

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Horizontal

Power Source: DC 3.7V

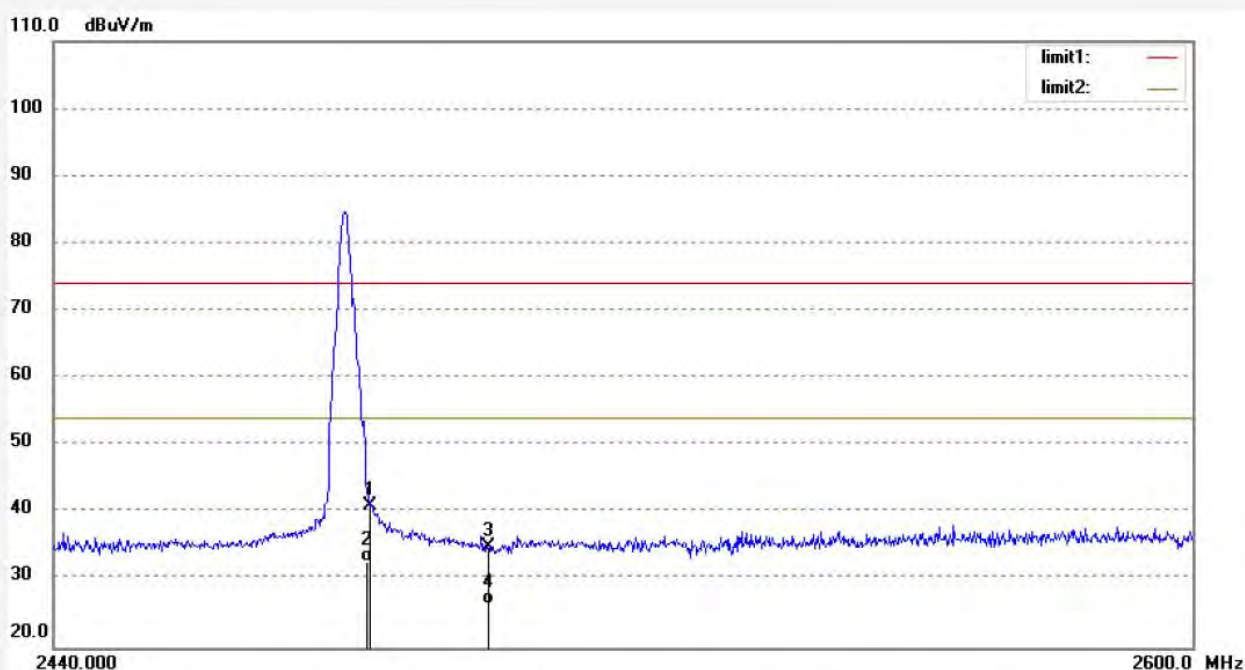
Date: 19/05/18/

Time: 9/38/30

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2483.500    | 46.82            | -5.89       | 40.93           | 74.00          | -33.07      | peak     | 200         | 103           |        |
| 2   | 2483.500    | 38.49            | -5.89       | 32.60           | 54.00          | -21.40      | AVG      | 200         | 66            |        |
| 3   | 2500.000    | 40.68            | -5.81       | 34.87           | 74.00          | -39.13      | peak     | 200         | 218           |        |
| 4   | 2500.000    | 32.22            | -5.81       | 26.41           | 54.00          | -27.59      | AVG      | 200         | 73            |        |





## ACCURATE TECHNOLOGY CO., LTD.

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Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: FRANK2019-BT #17

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2480MHz(GSKF)

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Vertical

Power Source: DC 3.7V

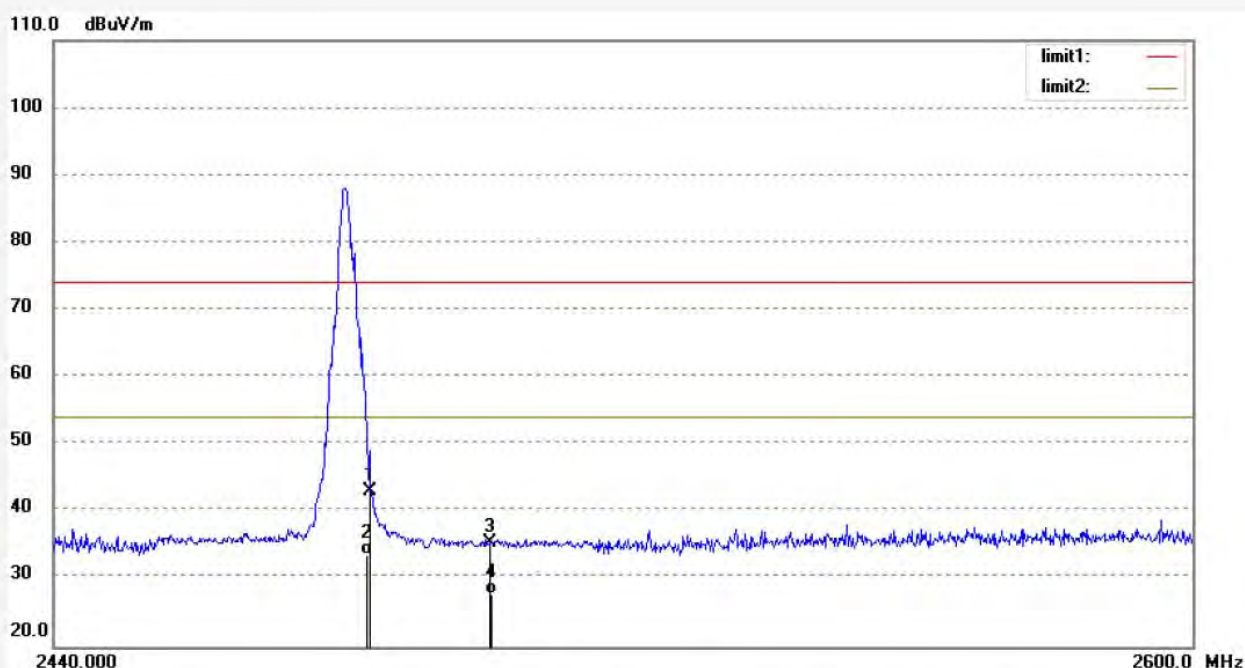
Date: 19/05/18/

Time: 9/36/59

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2483.500    | 48.92            | -5.89       | 43.03           | 74.00          | -30.97      | peak     | 150         | 139           |        |
| 2   | 2483.500    | 39.48            | -5.89       | 33.59           | 54.00          | -20.41      | AVG      | 150         | 69            |        |
| 3   | 2500.000    | 41.24            | -5.81       | 35.43           | 74.00          | -38.57      | peak     | 150         | 215           |        |
| 4   | 2500.000    | 33.49            | -5.81       | 27.68           | 54.00          | -26.32      | AVG      | 150         | 331           |        |

shenzhen Accurate Technology Co., Ltd.

Address: 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

Tel: +86-755-26503290

Fax: +86-755-26503396

E-mail: webmaster@atc-lab.com

[Http://www.atc-lab.com](http://www.atc-lab.com)

## Non-hopping mode( $\pi/4$ DQPSK)



### ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: FRANK2019-BT #26

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2402MHz( $\pi/4$  DQPSK)

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Horizontal

Power Source: DC 3.7V

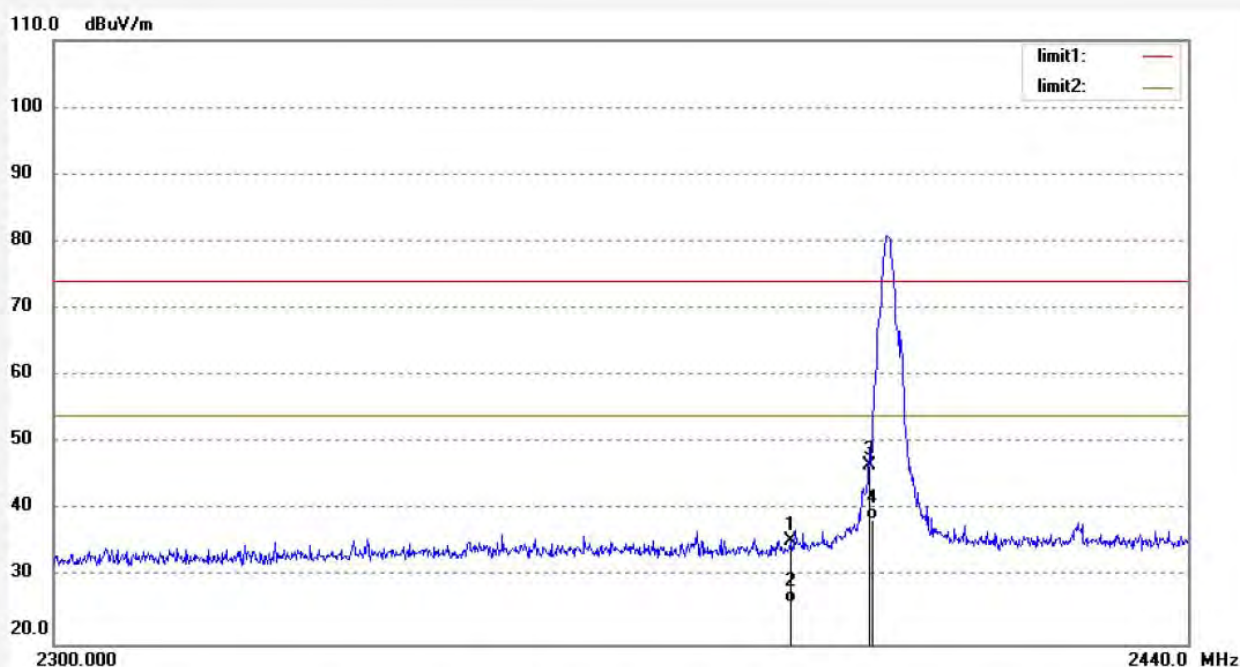
Date: 19/05/18/

Time: 9/51/34

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2390.000    | 41.71            | -6.32       | 35.39           | 74.00          | -38.61      | peak     | 200         | 116           |        |
| 2   | 2390.000    | 32.49            | -6.32       | 26.17           | 54.00          | -27.83      | AVG      | 200         | 52            |        |
| 3   | 2400.000    | 53.01            | -6.27       | 46.74           | 74.00          | -27.26      | peak     | 200         | 324           |        |
| 4   | 2400.000    | 44.90            | -6.27       | 38.63           | 54.00          | -15.37      | AVG      | 200         | 93            |        |

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Address: 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

Tel: +86-755-26503290

Fax: +86-755-26503396

E-mail: webmaster@atc-lab.com

[Http://www.atc-lab.com](http://www.atc-lab.com)



Job No.: FRANK2019-BT #25

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2402MHz( $\pi/4$  DQPSK)

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Vertical

Power Source: DC 3.7V

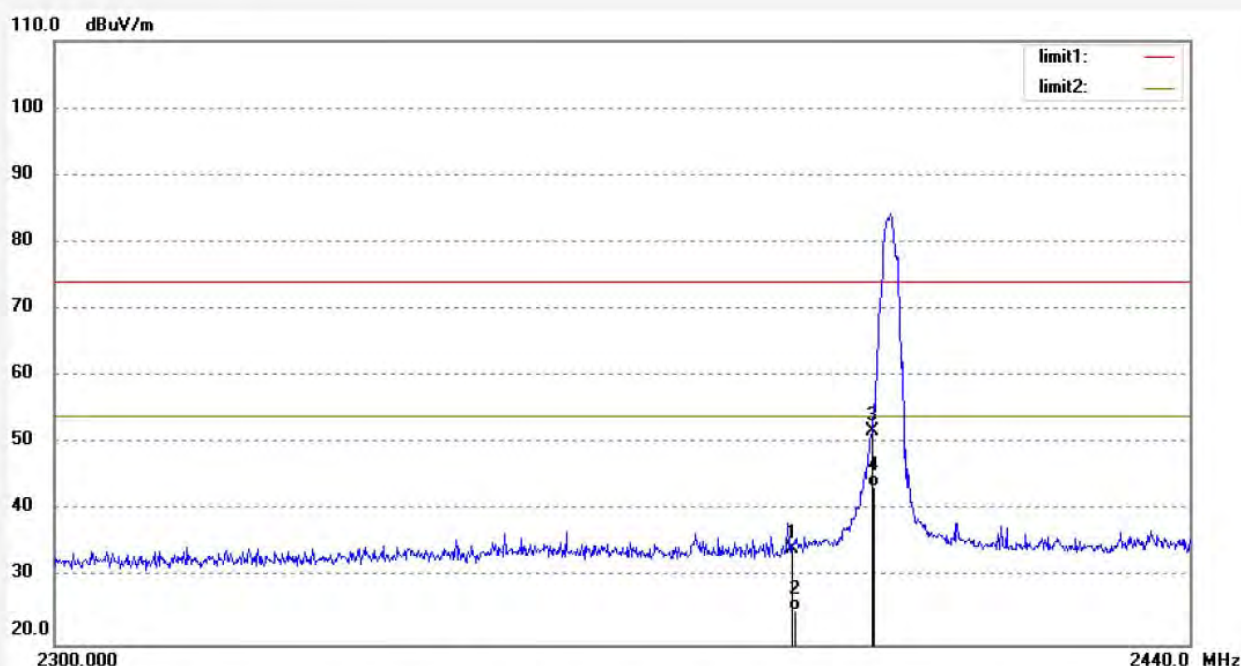
Date: 19/05/18/

Time: 9/49/07

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2390.000    | 40.71            | -6.32       | 34.39           | 74.00          | -39.61      | peak     | 150         | 196           |        |
| 2   | 2390.000    | 31.45            | -6.32       | 25.13           | 54.00          | -28.87      | AVG      | 150         | 310           |        |
| 3   | 2400.000    | 58.03            | -6.27       | 51.76           | 74.00          | -22.24      | peak     | 150         | 212           |        |
| 4   | 2400.000    | 49.85            | -6.27       | 43.58           | 54.00          | -10.42      | AVG      | 150         | 204           |        |

Job No.: FRANK2019-BT #19

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2480MHz( $\pi/4$  DQPSK)

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Horizontal

Power Source: DC 3.7V

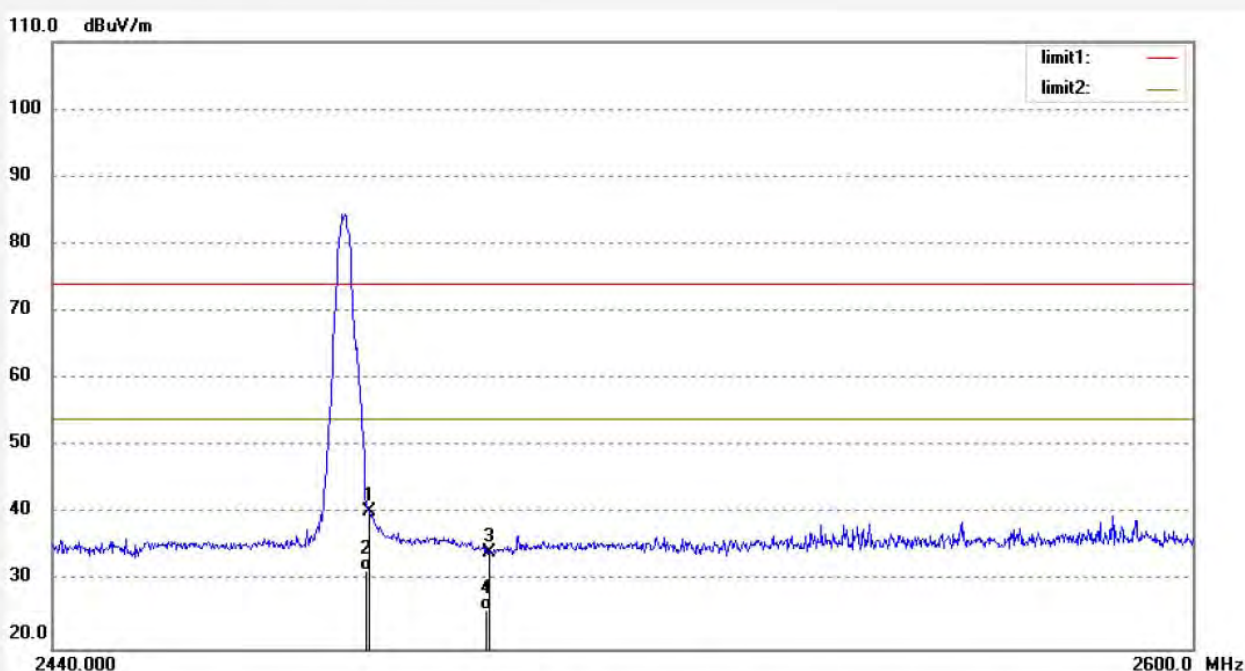
Date: 19/05/18/

Time: 9/40/25

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2483.500    | 46.21            | -5.89       | 40.32           | 74.00          | -33.68      | peak     | 200         | 66            |        |
| 2   | 2483.500    | 37.46            | -5.89       | 31.57           | 54.00          | -22.43      | AVG      | 200         | 106           |        |
| 3   | 2500.000    | 40.15            | -5.81       | 34.34           | 74.00          | -39.66      | peak     | 200         | 96            |        |
| 4   | 2500.000    | 31.49            | -5.81       | 25.68           | 54.00          | -28.32      | AVG      | 200         | 156           |        |



Job No.: FRANK2019-BT #20

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2480MHz( $\pi/4$  DQPSK)

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Vertical

Power Source: DC 3.7V

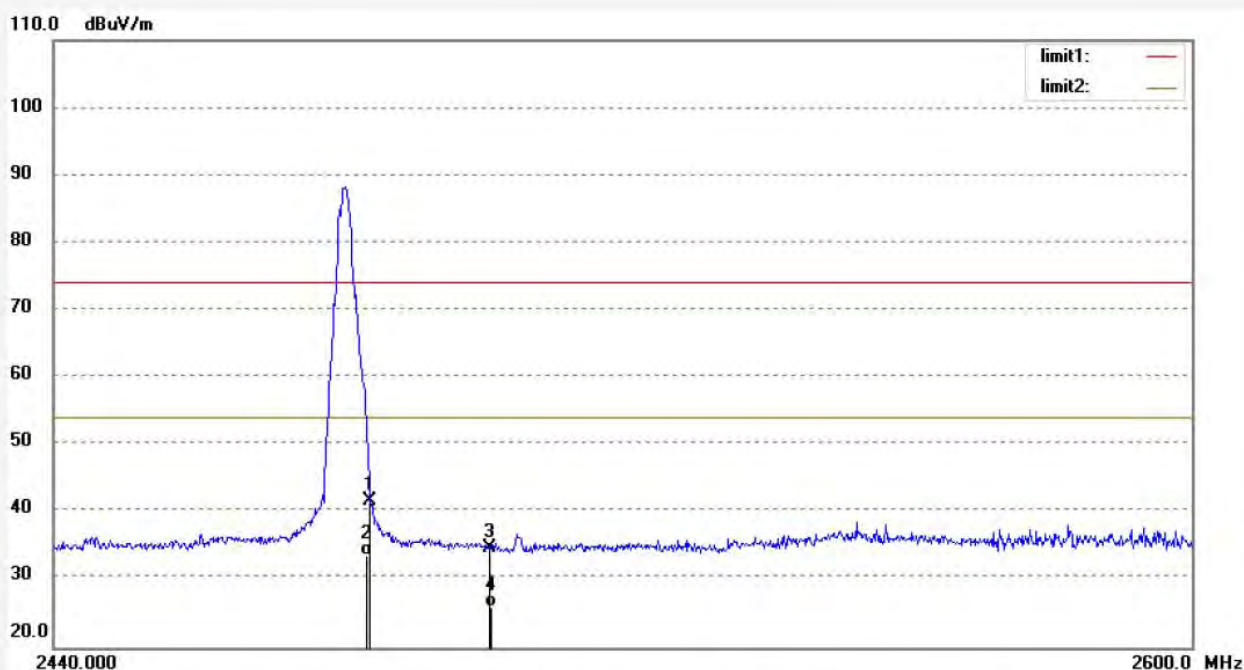
Date: 19/05/18/

Time: 9/41/28

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq.<br>(MHz) | Reading<br>(dBuV/m) | Factor<br>(dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|----------------|---------------------|----------------|--------------------|-------------------|----------------|----------|----------------|------------------|--------|
| 1   | 2483.500       | 47.55               | -5.89          | 41.66              | 74.00             | -32.34         | peak     | 150            | 63               |        |
| 2   | 2483.500       | 39.49               | -5.89          | 33.60              | 54.00             | -20.40         | AVG      | 150            | 165              |        |
| 3   | 2500.000       | 40.53               | -5.81          | 34.72              | 74.00             | -39.28         | peak     | 150            | 58               |        |
| 4   | 2500.000       | 31.78               | -5.81          | 25.97              | 54.00             | -28.03         | AVG      | 150            | 163              |        |

## Non-hopping mode(8DPSK)



### ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: FRANK2019-BT #23

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2402MHz(8DPSK)

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Horizontal

Power Source: DC 3.7V

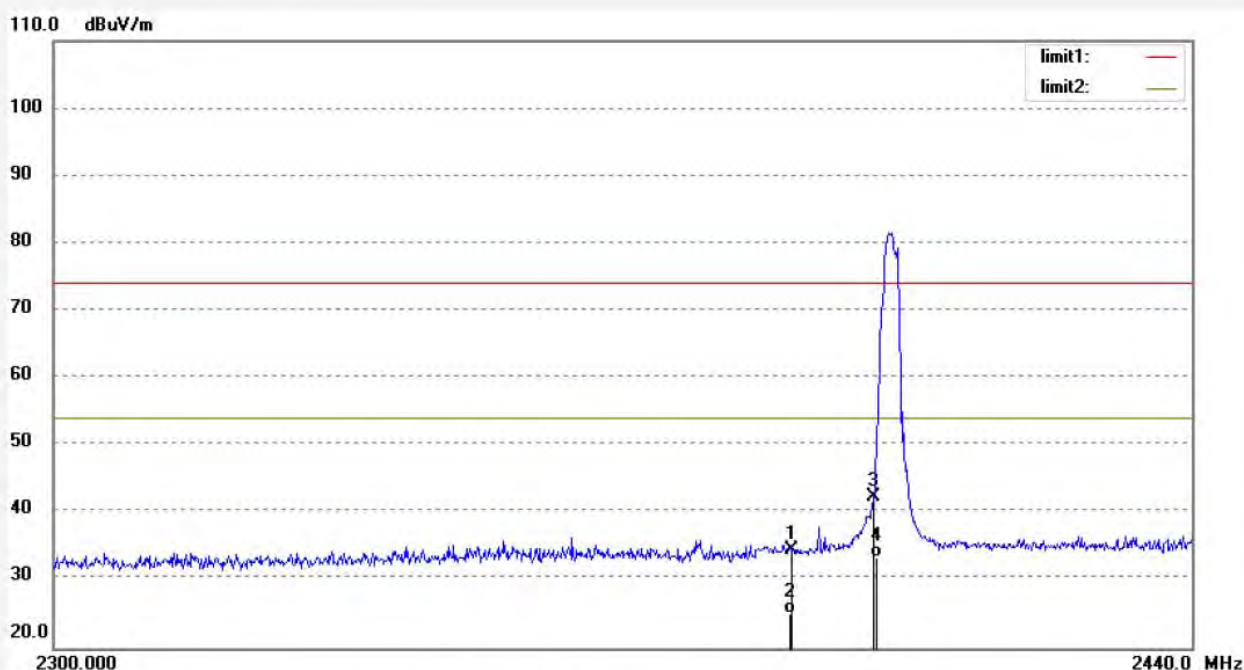
Date: 19/05/18/

Time: 9/46/06

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2390.000    | 40.93            | -6.32       | 34.61           | 74.00          | -39.39      | peak     | 200         | 52            |        |
| 2   | 2390.000    | 31.49            | -6.32       | 25.17           | 54.00          | -28.83      | AVG      | 250         | 321           |        |
| 3   | 2400.000    | 48.72            | -6.27       | 42.45           | 74.00          | -31.55      | peak     | 200         | 64            |        |
| 4   | 2400.000    | 39.75            | -6.27       | 33.48           | 54.00          | -20.52      | AVG      | 250         | 196           |        |

shenzhen Accurate Technology Co., Ltd.

Address: 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

Tel: +86-755-26503290

Fax: +86-755-26503396

E-mail: webmaster@atc-lab.com

[Http://www.atc-lab.com](http://www.atc-lab.com)



Job No.: FRANK2019-BT #24

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2402MHz(8DPSK)

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Vertical

Power Source: DC 3.7V

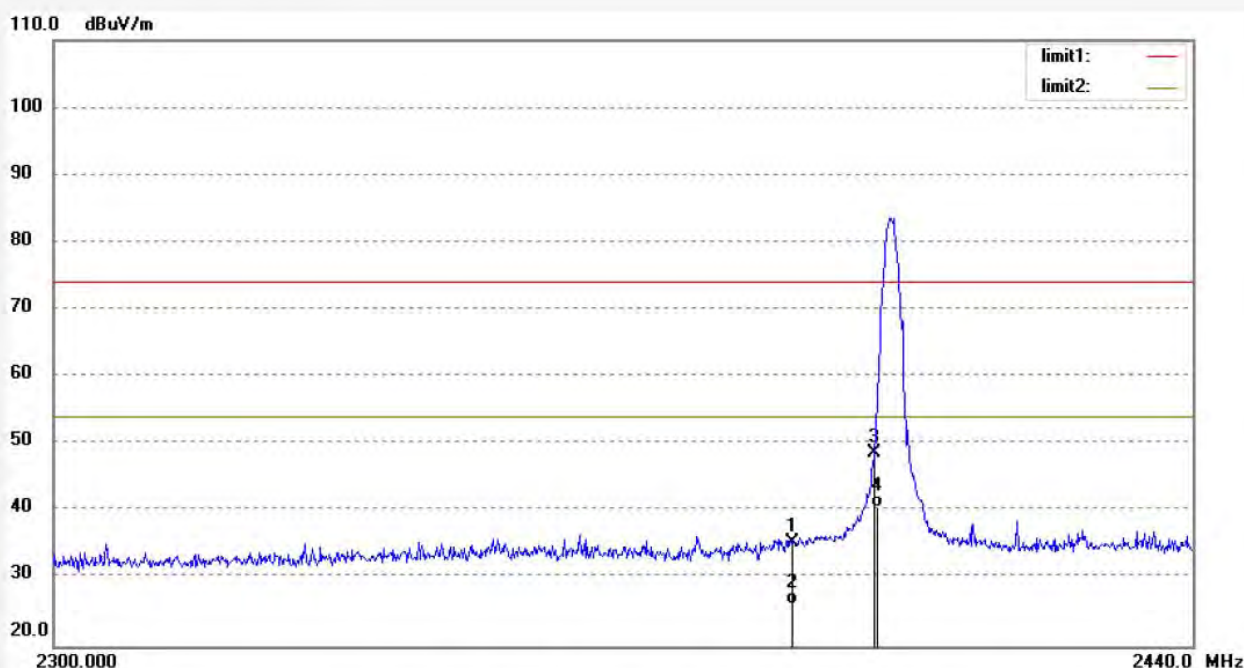
Date: 19/05/18/

Time: 9/47/20

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2390.000    | 41.63            | -6.32       | 35.31           | 74.00          | -38.69      | peak     | 150         | 332           |        |
| 2   | 2390.000    | 32.49            | -6.32       | 26.17           | 54.00          | -27.83      | AVG      | 150         | 66            |        |
| 3   | 2400.000    | 54.86            | -6.27       | 48.59           | 74.00          | -25.41      | peak     | 150         | 159           |        |
| 4   | 2400.000    | 46.78            | -6.27       | 40.51           | 54.00          | -13.49      | AVG      | 150         | 102           |        |



Job No.: FRANK2019-BT #22

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2480MHz(8DPSK)

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Horizontal

Power Source: DC 3.7V

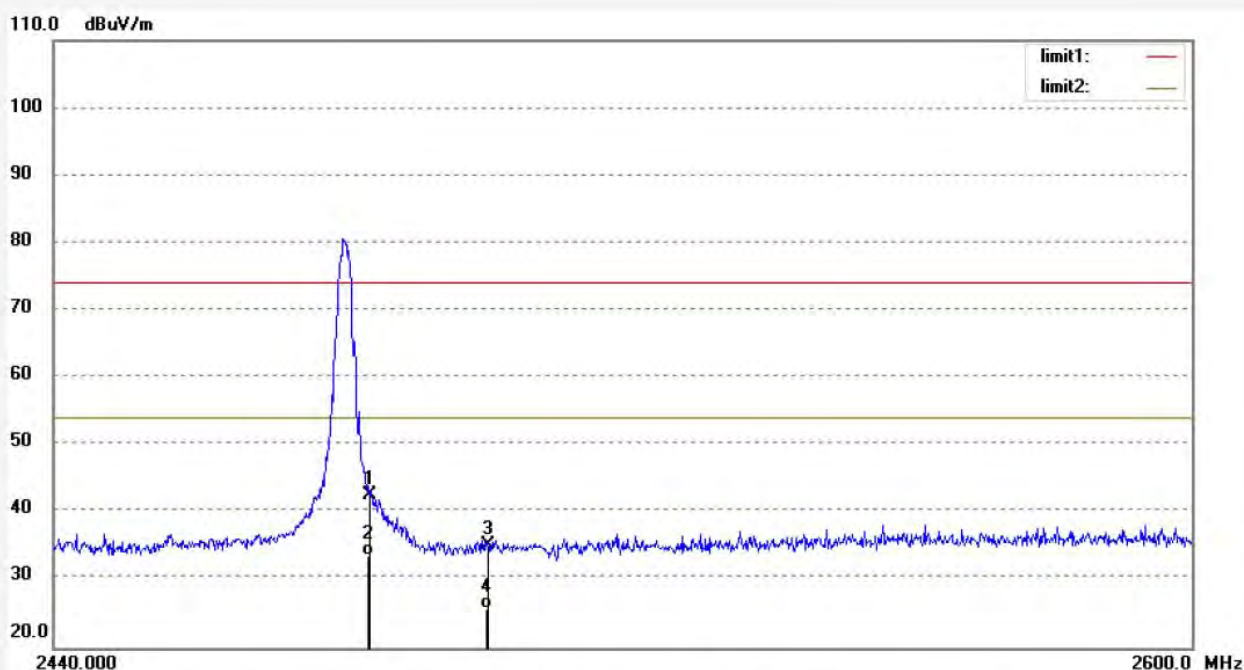
Date: 19/05/18/

Time: 9/44/38

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2483.500    | 48.61            | -5.89       | 42.72           | 74.00          | -31.28      | peak     | 200         | 120           |        |
| 2   | 2483.500    | 39.45            | -5.89       | 33.56           | 54.00          | -20.44      | AVG      | 250         | 320           |        |
| 3   | 2500.000    | 40.94            | -5.81       | 35.13           | 74.00          | -38.87      | peak     | 200         | 214           |        |
| 4   | 2500.000    | 31.45            | -5.81       | 25.64           | 54.00          | -28.36      | AVG      | 250         | 302           |        |

Job No.: FRANK2019-BT #21

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: TX 2480MHz(8DPSK)

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Vertical

Power Source: DC 3.7V

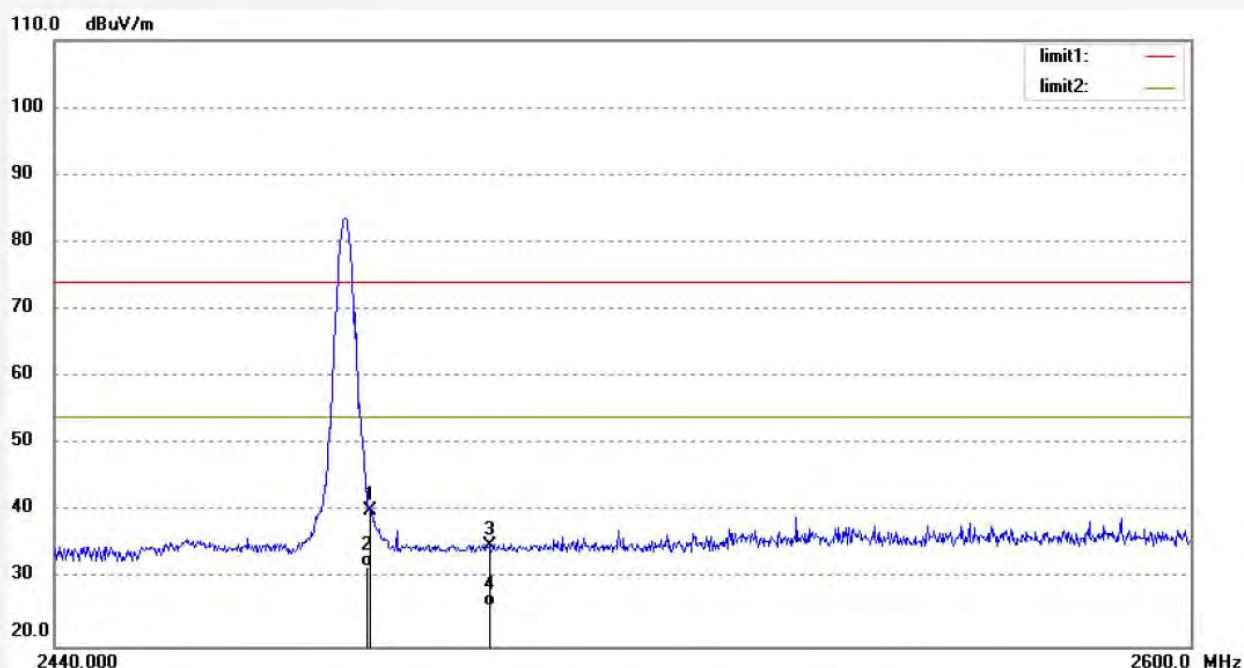
Date: 19/05/18/

Time: 9/43/11

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2483.500    | 46.14            | -5.89       | 40.25           | 74.00          | -33.75      | peak     | 150         | 96            |        |
| 2   | 2483.500    | 37.68            | -5.89       | 31.79           | 54.00          | -22.21      | AVG      | 150         | 210           |        |
| 3   | 2500.000    | 40.85            | -5.81       | 35.04           | 74.00          | -38.96      | peak     | 150         | 332           |        |
| 4   | 2500.000    | 31.78            | -5.81       | 25.97           | 54.00          | -28.03      | AVG      | 150         | 126           |        |



## Hopping mode(GFSK)



### ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: FRANK2019-BT #30

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: HOPPING(GFSK)

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Horizontal

Power Source: DC 3.7V

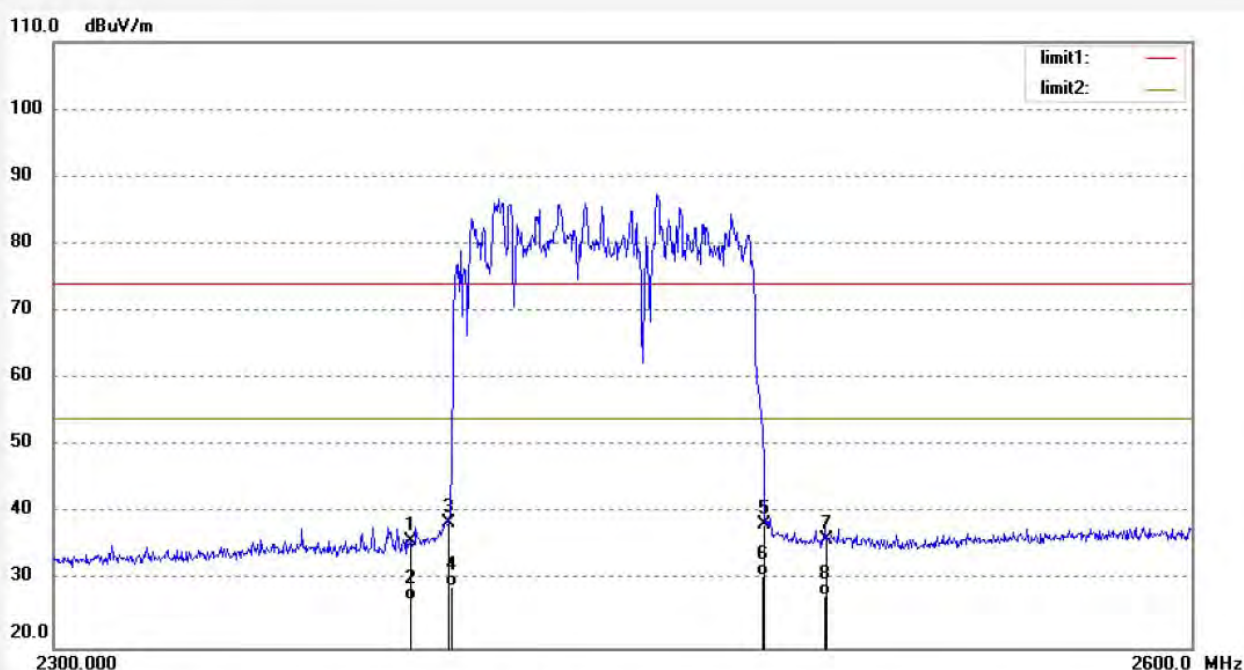
Date: 19/05/18/

Time: 10/01/54

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2390.000    | 42.28            | -6.32       | 35.96           | 74.00          | -38.04      | peak     | 200         | 89            |        |
| 2   | 2390.000    | 33.45            | -6.32       | 27.13           | 54.00          | -26.87      | AVG      | 200         | 201           |        |
| 3   | 2400.000    | 44.88            | -6.27       | 38.61           | 74.00          | -35.39      | peak     | 200         | 210           |        |
| 4   | 2400.000    | 35.48            | -6.27       | 29.21           | 54.00          | -24.79      | AVG      | 200         | 332           |        |
| 5   | 2483.500    | 44.18            | -5.89       | 38.29           | 74.00          | -35.71      | peak     | 200         | 93            |        |
| 6   | 2483.500    | 36.48            | -5.89       | 30.59           | 54.00          | -23.41      | AVG      | 200         | 211           |        |
| 7   | 2500.000    | 41.89            | -5.81       | 36.08           | 74.00          | -37.92      | peak     | 200         | 52            |        |
| 8   | 2500.000    | 33.49            | -5.81       | 27.68           | 54.00          | -26.32      | AVG      | 200         | 146           |        |

shenzhen Accurate Technology Co., Ltd.

Address: 1/F., Building A, Changyuan New Material Port, Science &amp; Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

Tel: +86-755-26503290

Fax: +86-755-26503396

E-mail: webmaster@atc-lab.com

[Http://www.atc-lab.com](http://www.atc-lab.com)

Job No.: FRANK2019-BT #29

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: HOPPING(GFSK)

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Vertical

Power Source: DC 3.7V

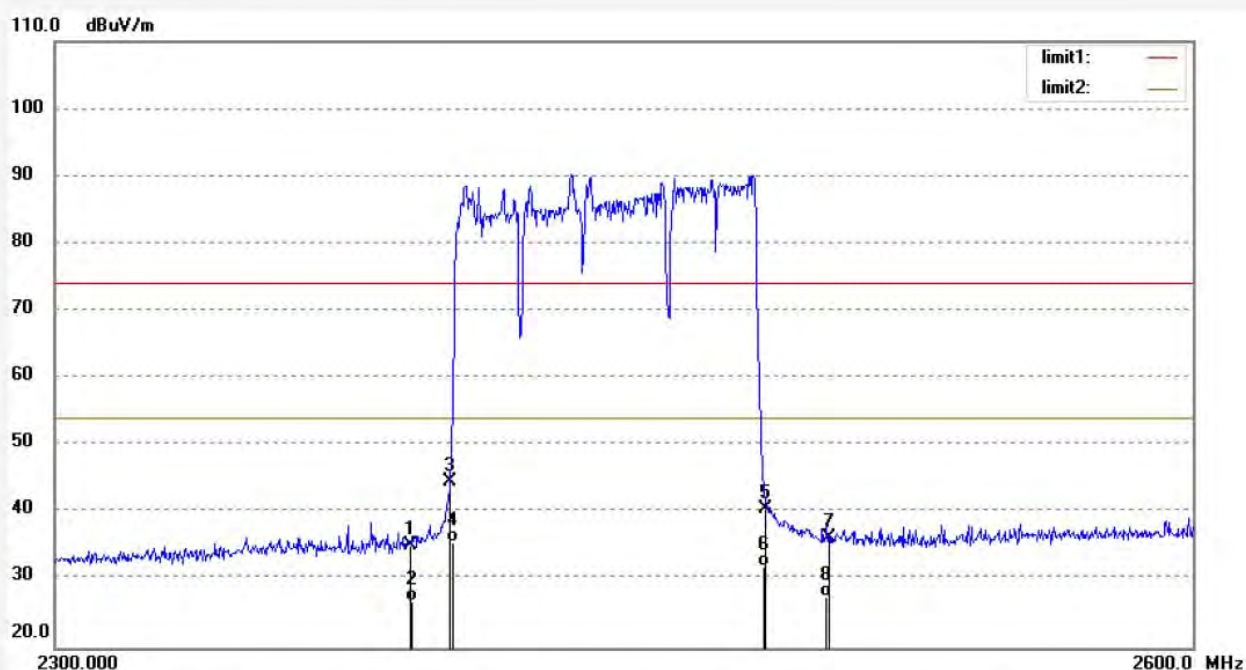
Date: 19/05/18/

Time: 9/59/13

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2390.000    | 41.62            | -6.32       | 35.30           | 74.00          | -38.70      | peak     | 150         | 115           |        |
| 2   | 2390.000    | 33.16            | -6.32       | 26.84           | 54.00          | -27.16      | AVG      | 150         | 320           |        |
| 3   | 2400.000    | 50.90            | -6.27       | 44.63           | 74.00          | -29.37      | peak     | 150         | 213           |        |
| 4   | 2400.000    | 41.97            | -6.27       | 35.70           | 54.00          | -18.30      | AVG      | 150         | 63            |        |
| 5   | 2483.500    | 46.46            | -5.89       | 40.57           | 74.00          | -33.43      | peak     | 150         | 115           |        |
| 6   | 2483.500    | 37.98            | -5.89       | 32.09           | 54.00          | -21.91      | AVG      | 150         | 92            |        |
| 7   | 2500.000    | 42.07            | -5.81       | 36.26           | 74.00          | -37.74      | peak     | 150         | 322           |        |
| 8   | 2500.000    | 33.42            | -5.81       | 27.61           | 54.00          | -26.39      | AVG      | 150         | 166           |        |



## Hopping mode( $\pi/4$ DQPSK)



### ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: FRANK2019-BT #31

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: HOPPING( $\pi/4$  DQPSK)

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Horizontal

Power Source: DC 3.7V

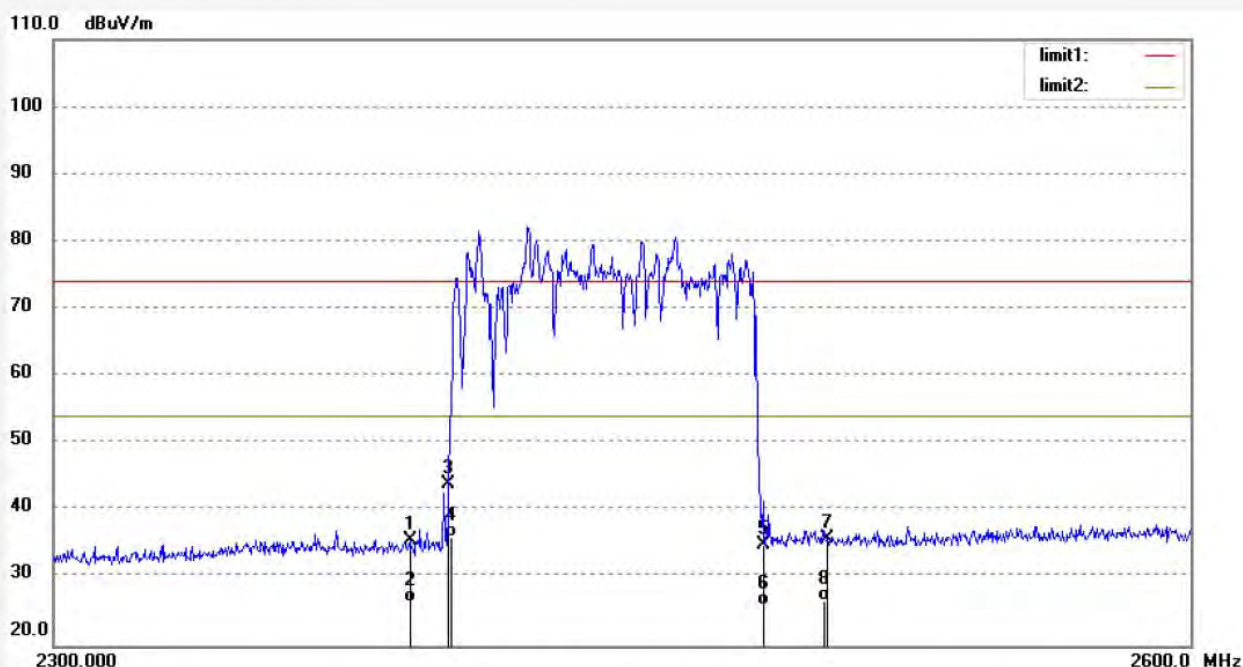
Date: 19/05/18/

Time: 10/04/28

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2390.000    | 41.93            | -6.32       | 35.61           | 74.00          | -38.39      | peak     | 200         | 195           |        |
| 2   | 2390.000    | 32.78            | -6.32       | 26.46           | 54.00          | -27.54      | AVG      | 200         | 332           |        |
| 3   | 2400.000    | 50.24            | -6.27       | 43.97           | 74.00          | -30.03      | peak     | 200         | 102           |        |
| 4   | 2400.000    | 42.45            | -6.27       | 36.18           | 54.00          | -17.82      | AVG      | 200         | 119           |        |
| 5   | 2483.500    | 40.78            | -5.89       | 34.89           | 74.00          | -39.11      | peak     | 200         | 96            |        |
| 6   | 2483.500    | 31.78            | -5.89       | 25.89           | 54.00          | -28.11      | AVG      | 200         | 324           |        |
| 7   | 2500.000    | 41.63            | -5.81       | 35.82           | 74.00          | -38.18      | peak     | 200         | 56            |        |
| 8   | 2500.000    | 32.45            | -5.81       | 26.64           | 54.00          | -27.36      | AVG      | 200         | 201           |        |

shenzhen Accurate Technology Co., Ltd.

Address: 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

Tel: +86-755-26503290

Fax: +86-755-26503396

E-mail: webmaster@atc-lab.com

[Http://www.atc-lab.com](http://www.atc-lab.com)

Job No.: FRANK2019-BT #32

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: HOPPING( $\pi/4$  DQPSK)

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Vertical

Power Source: DC 3.7V

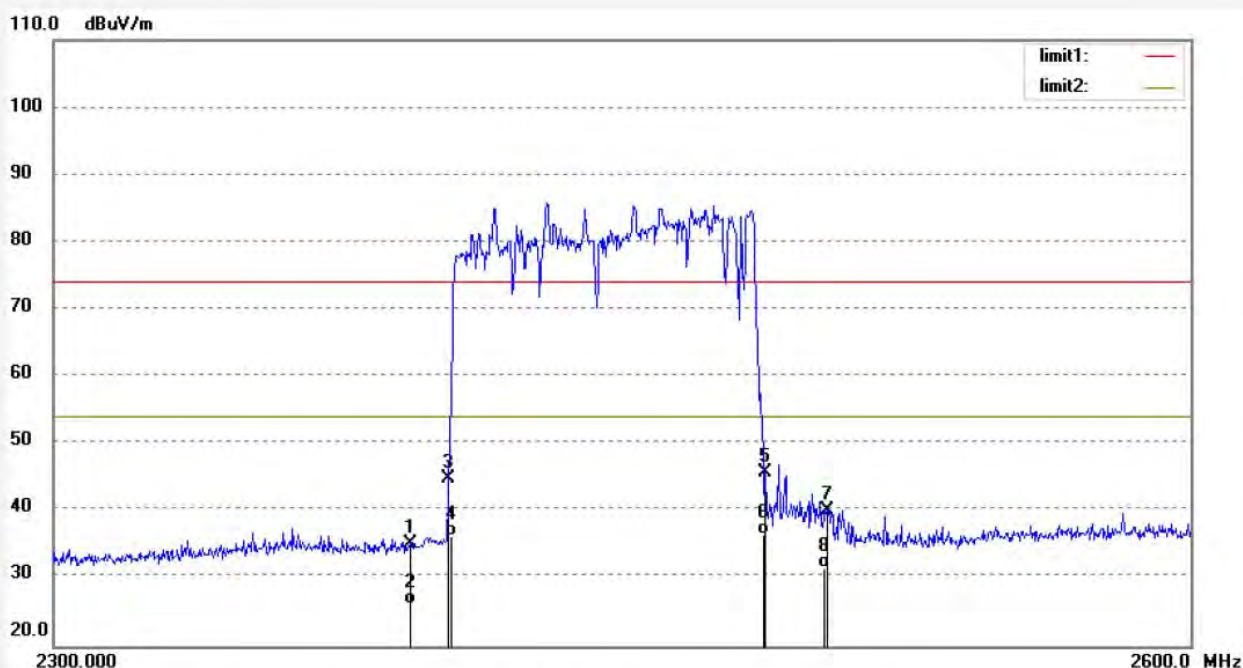
Date: 19/05/18/

Time: 10/06/46

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647





## Hopping mode(8DPSK)



### ACCURATE TECHNOLOGY CO., LTD.

F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: FRANK2019-BT #34

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: HOPPING(8DPSK)

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Horizontal

Power Source: DC 3.7V

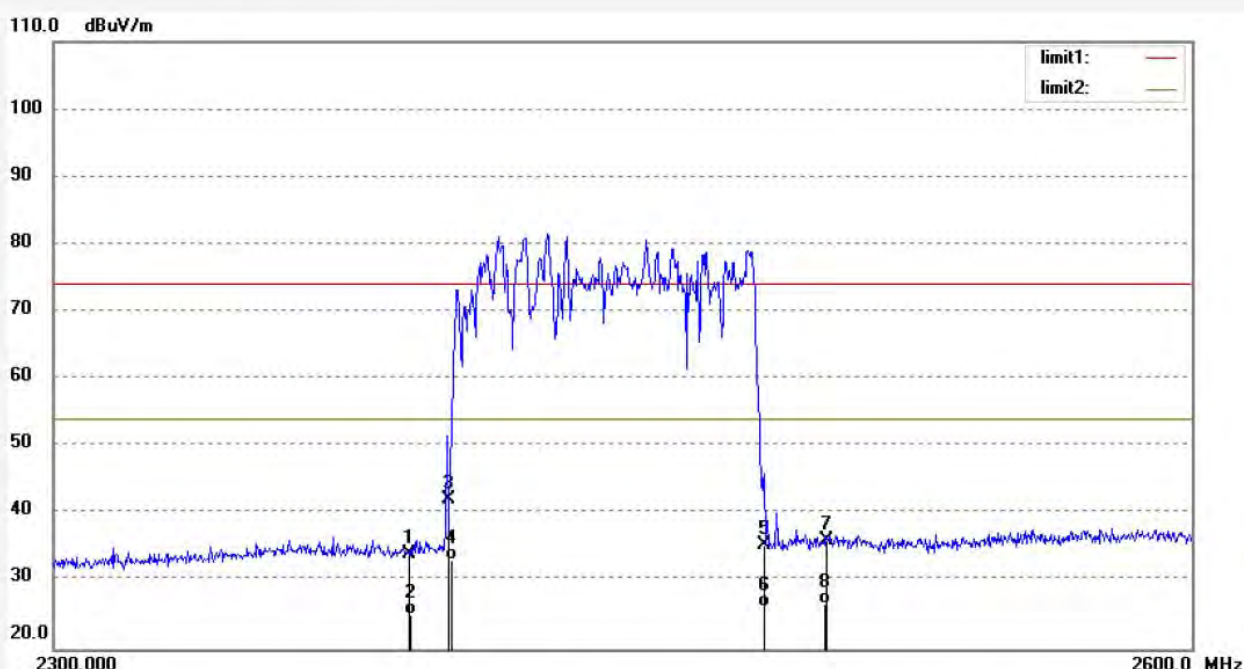
Date: 19/05/18/

Time: 10/11/28

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647



| No. | Freq.<br>(MHz) | Reading<br>(dBuV/m) | Factor<br>(dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|----------------|---------------------|----------------|--------------------|-------------------|----------------|----------|----------------|------------------|--------|
| 1   | 2390.000       | 40.27               | -6.32          | 33.95              | 74.00             | -40.05         | peak     | 200            | 210              |        |
| 2   | 2390.000       | 31.48               | -6.32          | 25.16              | 54.00             | -28.84         | AVG      | 200            | 96               |        |
| 3   | 2400.000       | 48.36               | -6.27          | 42.09              | 74.00             | -31.91         | peak     | 200            | 311              |        |
| 4   | 2400.000       | 39.49               | -6.27          | 33.22              | 54.00             | -20.78         | AVG      | 200            | 201              |        |
| 5   | 2483.500       | 41.34               | -5.89          | 35.45              | 74.00             | -38.55         | peak     | 200            | 99               |        |
| 6   | 2483.500       | 32.10               | -5.89          | 26.21              | 54.00             | -27.79         | AVG      | 250            | 331              |        |
| 7   | 2500.000       | 41.81               | -5.81          | 36.00              | 74.00             | -38.00         | peak     | 250            | 211              |        |
| 8   | 2500.000       | 32.45               | -5.81          | 26.64              | 54.00             | -27.36         | AVG      | 250            | 85               |        |

shenzhen Accurate Technology Co., Ltd.

Address: 1/F., Building A, Changyuan New Material Port, Science &amp; Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

Tel: +86-755-26503290

Fax: +86-755-26503396

E-mail: webmaster@atc-lab.com

[Http://www.atc-lab.com](http://www.atc-lab.com)

Job No.: FRANK2019-BT #33

Standard: FCC PK

Test item: Radiation Test

Temp.( C)/Hum.(%) 25 C / 55 %

EUT: True Connect Truly Wireless Earphones

Mode: HOPPING(8DPSK)

Model: MZX635

Manufacturer: Shenzhen Sowak Electronic Co., Ltd.

Polarization: Vertical

Power Source: DC 3.7V

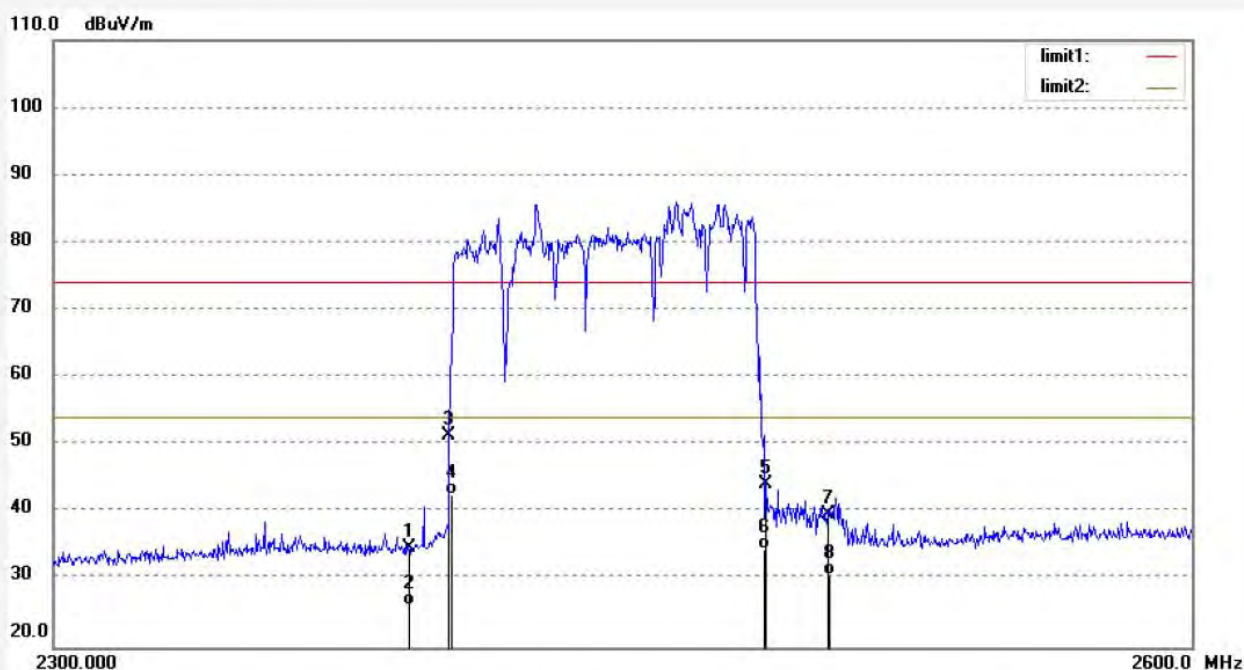
Date: 19/05/18/

Time: 10/09/20

Engineer Signature:

Distance: 3m

Note: Report NO.:ATE20190647

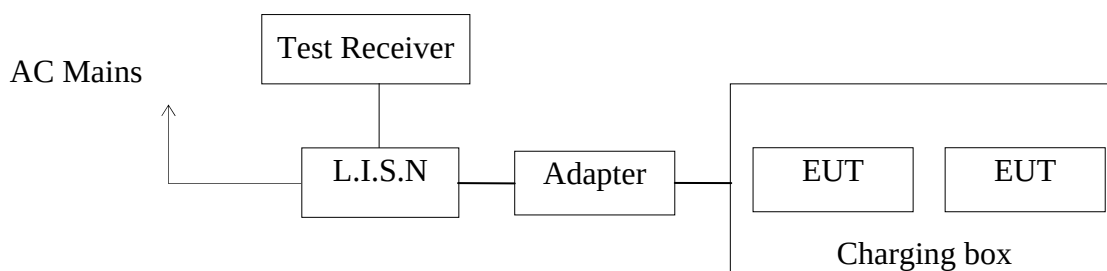


| No. | Freq.<br>(MHz) | Reading<br>(dBuV/m) | Factor<br>(dB) | Result<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(dB) | Detector | Height<br>(cm) | Degree<br>(deg.) | Remark |
|-----|----------------|---------------------|----------------|--------------------|-------------------|----------------|----------|----------------|------------------|--------|
| 1   | 2390.000       | 41.03               | -6.32          | 34.71              | 74.00             | -39.29         | peak     | 150            | 103              |        |
| 2   | 2390.000       | 32.48               | -6.32          | 26.16              | 54.00             | -27.84         | AVG      | 150            | 219              |        |
| 3   | 2400.000       | 57.63               | -6.27          | 51.36              | 74.00             | -22.64         | peak     | 150            | 66               |        |
| 4   | 2400.000       | 48.88               | -6.27          | 42.61              | 54.00             | -11.39         | AVG      | 150            | 116              |        |
| 5   | 2483.500       | 50.10               | -5.89          | 44.21              | 74.00             | -29.79         | peak     | 150            | 63               |        |
| 6   | 2483.500       | 40.48               | -5.89          | 34.59              | 54.00             | -19.41         | AVG      | 150            | 215              |        |
| 7   | 2500.000       | 45.40               | -5.81          | 39.59              | 74.00             | -34.41         | peak     | 150            | 54               |        |
| 8   | 2500.000       | 36.45               | -5.81          | 30.64              | 54.00             | -23.36         | AVG      | 150            | 117              |        |

## 12.AC POWER LINE CONDUCTED EMISSION FOR FCC PART

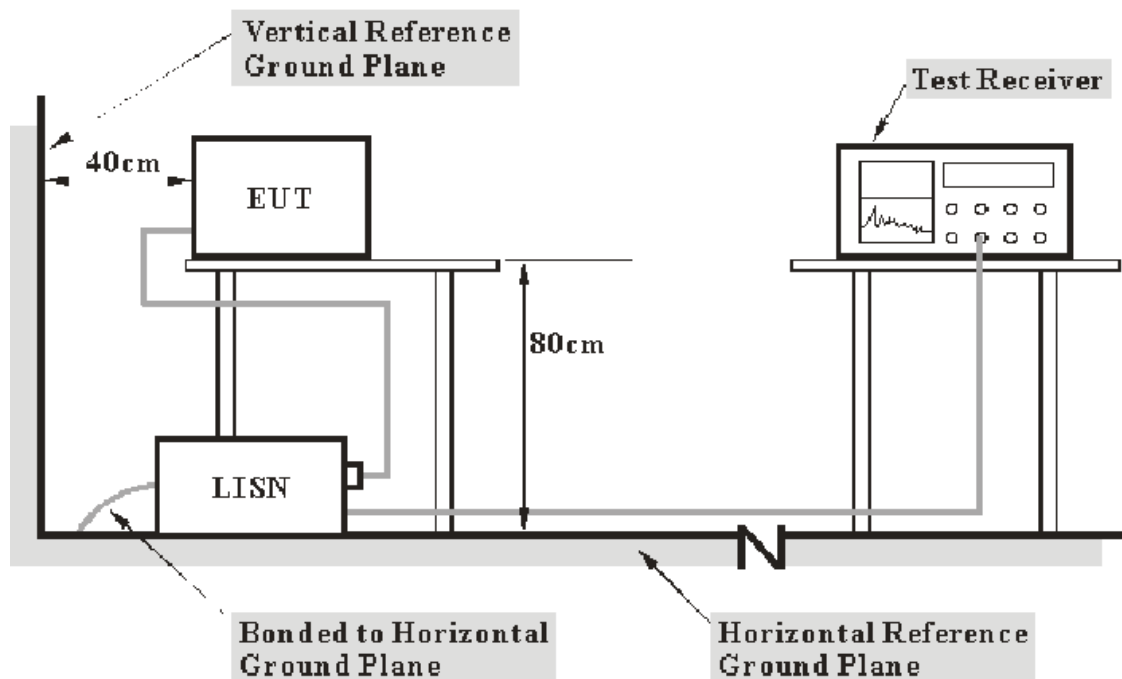
### 15 SECTION 15.207(A)

#### 12.1.Block Diagram of Test Setup



(EUT: True Connect Truly Wireless Earphones)

#### 12.2.Test System Setup



- Note:**
1. Support units were connected to second LISN.
  2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

### 12.3.Power Line Conducted Emission Measurement Limits

| Frequency<br>(MHz)                                                                                       | Limit dB( $\mu$ V) |               |
|----------------------------------------------------------------------------------------------------------|--------------------|---------------|
|                                                                                                          | Quasi-peak Level   | Average Level |
| 0.15 - 0.50                                                                                              | 66.0 – 56.0 *      | 56.0 – 46.0 * |
| 0.50 - 5.00                                                                                              | 56.0               | 46.0          |
| 5.00 - 30.00                                                                                             | 60.0               | 50.0          |
| NOTE1: The lower limit shall apply at the transition frequencies.                                        |                    |               |
| NOTE2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz. |                    |               |

### 12.4.Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

### 12.5.Operating Condition of EUT

12.5.1.Setup the EUT and simulator as shown as Section 12.1.

12.5.2.Turn on the power of all equipment.

12.5.3.Let the EUT work in test mode and measure it.

### 12.6.Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Measurement.

The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.



### 12.7.Data Sample

| Frequency<br>(MHz) | Transducer<br>value<br>(dB) | QuasiPeak<br>Level<br>(dB $\mu$ V) | Average<br>Level<br>(dB $\mu$ V) | QuasiPeak<br>Limit<br>(dB $\mu$ V) | Average<br>Limit<br>(dB $\mu$ V) | QuasiPeak<br>Margin<br>(dB) | Average<br>Margin<br>(dB) | Remark<br>(Pass/Fail) |
|--------------------|-----------------------------|------------------------------------|----------------------------------|------------------------------------|----------------------------------|-----------------------------|---------------------------|-----------------------|
| X.XX               | 10.6                        | 25.3                               | 17.0                             | 59.0                               | 49.0                             | 33.4                        | 31.7                      | Pass                  |

Frequency(MHz) = Emission frequency in MHz

Transducer value(dB) = Insertion loss of LISN + Cable Loss

Level(dB $\mu$ V) = Quasi-peak Reading/Average Reading + Transducer value

Limit (dB $\mu$ V) = Limit stated in standard

Margin = Limit (dB $\mu$ V) - Level (dB $\mu$ V)

Calculation Formula:

Margin = Limit (dB $\mu$ V) - Level (dB $\mu$ V)



## 12.8.Power Line Conducted Emission Measurement Results

### PASS.

The frequency range from 150kHz to 30MHz is checked.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

Emissions attenuated more than 20 dB below the permissible value are not reported.

We tested the conducted emission of high and low voltage mode and recorded the worst mode data. All data was recorded in the Quasi-peak and average detection mode.

The wireless function of EUT will be inactive while charging, so we perform the charging mode test in the AC power line conducted test.

| Test mode : CHARGING (AC 120V/60Hz) |               |              |               |              |          |      |     |  |
|-------------------------------------|---------------|--------------|---------------|--------------|----------|------|-----|--|
| MEASUREMENT RESULT: "F-0647-2_fin"  |               |              |               |              |          |      |     |  |
| 2019-5-13 14:54                     |               |              |               |              |          |      |     |  |
| Frequency<br>MHz                    | Level<br>dBuV | Transd<br>dB | Limit<br>dBuV | Margin<br>dB | Detector | Line | PE  |  |
| 0.150000                            | 50.60         | 10.8         | 66            | 15.4         | QP       | N    | GND |  |
| 0.438000                            | 38.70         | 11.0         | 57            | 18.4         | QP       | N    | GND |  |
| 1.734000                            | 30.90         | 11.2         | 56            | 25.1         | QP       | N    | GND |  |
| 2.472000                            | 30.60         | 11.3         | 56            | 25.4         | QP       | N    | GND |  |
| 5.401500                            | 28.00         | 11.5         | 60            | 32.0         | QP       | N    | GND |  |
| 15.342000                           | 22.30         | 11.7         | 60            | 37.7         | QP       | N    | GND |  |
| MEASUREMENT RESULT: "F-0647-2_fin2" |               |              |               |              |          |      |     |  |
| 2019-5-13 14:54                     |               |              |               |              |          |      |     |  |
| Frequency<br>MHz                    | Level<br>dBuV | Transd<br>dB | Limit<br>dBuV | Margin<br>dB | Detector | Line | PE  |  |
| 0.150000                            | 45.90         | 10.8         | 56            | 10.1         | AV       | N    | GND |  |
| 0.438000                            | 28.80         | 11.0         | 47            | 18.3         | AV       | N    | GND |  |
| 1.792500                            | 22.90         | 11.2         | 46            | 23.1         | AV       | N    | GND |  |
| 3.187500                            | 17.30         | 11.4         | 46            | 28.7         | AV       | N    | GND |  |
| 5.343000                            | 16.50         | 11.5         | 50            | 33.5         | AV       | N    | GND |  |
| 15.301500                           | 13.40         | 11.7         | 50            | 36.6         | AV       | N    | GND |  |
| MEASUREMENT RESULT: "F-0647-1_fin"  |               |              |               |              |          |      |     |  |
| 2019-5-13 14:51                     |               |              |               |              |          |      |     |  |
| Frequency<br>MHz                    | Level<br>dBuV | Transd<br>dB | Limit<br>dBuV | Margin<br>dB | Detector | Line | PE  |  |
| 0.325500                            | 34.70         | 10.9         | 60            | 24.9         | QP       | L1   | GND |  |
| 0.433500                            | 32.90         | 11.0         | 57            | 24.3         | QP       | L1   | GND |  |
| 1.851000                            | 22.30         | 11.2         | 56            | 33.7         | QP       | L1   | GND |  |
| 2.341500                            | 25.00         | 11.3         | 56            | 31.0         | QP       | L1   | GND |  |
| 5.496000                            | 23.20         | 11.5         | 60            | 36.8         | QP       | L1   | GND |  |
| 16.633500                           | 11.00         | 11.7         | 60            | 49.0         | QP       | L1   | GND |  |
| MEASUREMENT RESULT: "F-0647-1_fin2" |               |              |               |              |          |      |     |  |
| 2019-5-13 14:51                     |               |              |               |              |          |      |     |  |
| Frequency<br>MHz                    | Level<br>dBuV | Transd<br>dB | Limit<br>dBuV | Margin<br>dB | Detector | Line | PE  |  |
| 0.150000                            | 36.40         | 10.8         | 56            | 19.6         | AV       | L1   | GND |  |
| 0.433500                            | 26.80         | 11.0         | 47            | 20.4         | AV       | L1   | GND |  |
| 1.851000                            | 16.70         | 11.2         | 46            | 29.3         | AV       | L1   | GND |  |
| 3.156000                            | 11.90         | 11.4         | 46            | 34.1         | AV       | L1   | GND |  |
| 5.383500                            | 16.60         | 11.5         | 50            | 33.4         | AV       | L1   | GND |  |
| 14.406000                           | 3.10          | 11.6         | 50            | 46.9         | AV       | L1   | GND |  |

The spectral diagrams are attached as below.

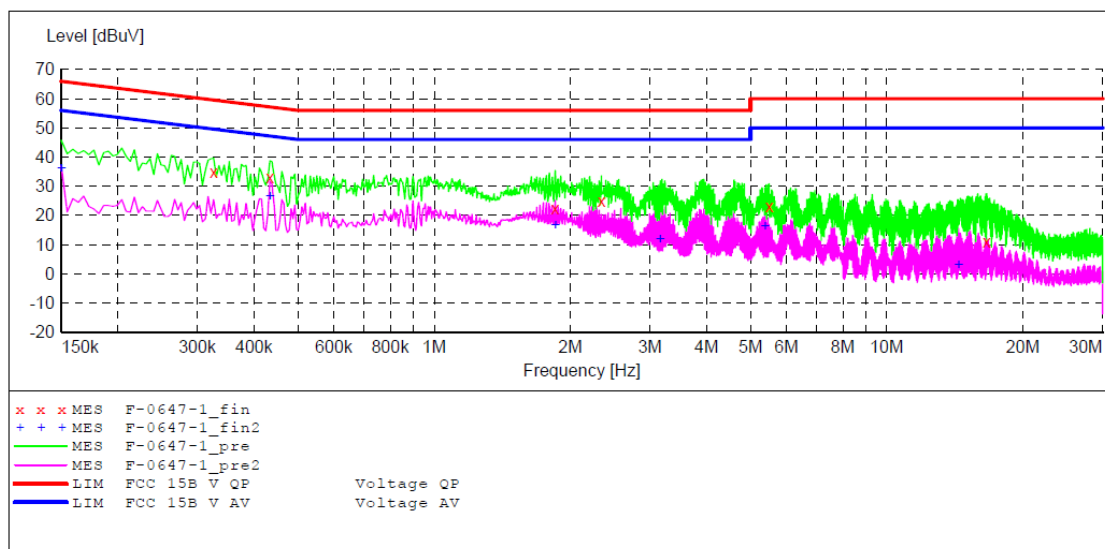
## ACCURATE TECHNOLOGY CO., LTD

### CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: True Connect Truly Wireless Earphones M/N:MZX635  
 Manufacturer: Shenzhen Sowak Electronic Co.,Ltd.  
 Operating Condition: CHARGING  
 Test Site: 1#Shielding Room  
 Operator: Frank  
 Test Specification: L 120V 60Hz  
 Comment: Report NO.:ATE20190647  
 Start of Test: 2019-5-13 / 14:49:05

### SCAN TABLE: "V 150K-30MHz fin"

Short Description: SUB STD VTERM2 1.70  
 Start Stop Step Detector Meas. IF Transducer  
 Frequency Frequency Width Time Bandw.  
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008  
 Average



### MEASUREMENT RESULT: "F-0647-1\_fin"

2019-5-13 14:51

| Frequency<br>MHz | Level<br>dBuV | Transd<br>dB | Limit<br>dBuV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.325500         | 34.70         | 10.9         | 60            | 24.9         | QP       | L1   | GND |
| 0.433500         | 32.90         | 11.0         | 57            | 24.3         | QP       | L1   | GND |
| 1.851000         | 22.30         | 11.2         | 56            | 33.7         | QP       | L1   | GND |
| 2.341500         | 25.00         | 11.3         | 56            | 31.0         | QP       | L1   | GND |
| 5.496000         | 23.20         | 11.5         | 60            | 36.8         | QP       | L1   | GND |
| 16.633500        | 11.00         | 11.7         | 60            | 49.0         | QP       | L1   | GND |

### MEASUREMENT RESULT: "F-0647-1\_fin2"

2019-5-13 14:51

| Frequency<br>MHz | Level<br>dBuV | Transd<br>dB | Limit<br>dBuV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.150000         | 36.40         | 10.8         | 56            | 19.6         | AV       | L1   | GND |
| 0.433500         | 26.80         | 11.0         | 47            | 20.4         | AV       | L1   | GND |
| 1.851000         | 16.70         | 11.2         | 46            | 29.3         | AV       | L1   | GND |
| 3.156000         | 11.90         | 11.4         | 46            | 34.1         | AV       | L1   | GND |
| 5.383500         | 16.60         | 11.5         | 50            | 33.4         | AV       | L1   | GND |
| 14.406000        | 3.10          | 11.6         | 50            | 46.9         | AV       | L1   | GND |

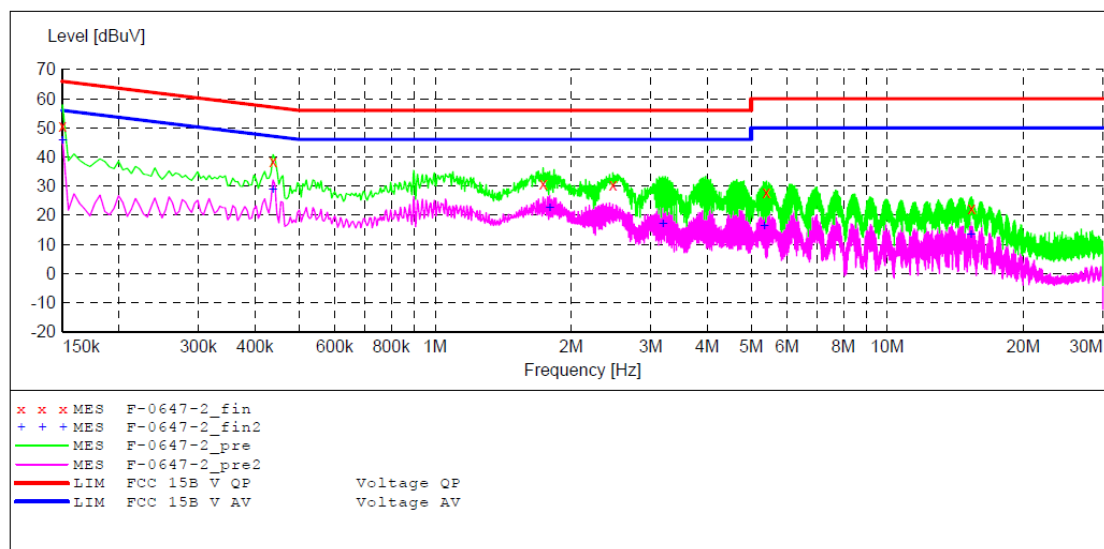
## ACCURATE TECHNOLOGY CO.,LTD

### CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: True Connect Truly Wireless Earphones M/N:MZX635  
 Manufacturer: Shenzhen Sowak Electronic Co.,Ltd.  
 Operating Condition: CHARGING  
 Test Site: 1#Shielding Room  
 Operator: Frank  
 Test Specification: N 120V 60Hz  
 Comment: Report NO.:ATE20190647  
 Start of Test: 2019-5-13 / 14:52:01

### SCAN TABLE: "V 150K-30MHz fin"

Short Description: SUB STD VTERM2 1.70  
 Start Stop Step Detector Meas. IF Transducer  
 Frequency Frequency Width Time Bandw.  
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008  
 Average



### MEASUREMENT RESULT: "F-0647-2\_fin"

2019-5-13 14:54

| Frequency<br>MHz | Level<br>dBuV | Transd<br>dB | Limit<br>dBuV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.150000         | 50.60         | 10.8         | 66            | 15.4         | QP       | N    | GND |
| 0.438000         | 38.70         | 11.0         | 57            | 18.4         | QP       | N    | GND |
| 1.734000         | 30.90         | 11.2         | 56            | 25.1         | QP       | N    | GND |
| 2.472000         | 30.60         | 11.3         | 56            | 25.4         | QP       | N    | GND |
| 5.401500         | 28.00         | 11.5         | 60            | 32.0         | QP       | N    | GND |
| 15.342000        | 22.30         | 11.7         | 60            | 37.7         | QP       | N    | GND |

### MEASUREMENT RESULT: "F-0647-2\_fin2"

2019-5-13 14:54

| Frequency<br>MHz | Level<br>dBuV | Transd<br>dB | Limit<br>dBuV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.150000         | 45.90         | 10.8         | 56            | 10.1         | AV       | N    | GND |
| 0.438000         | 28.80         | 11.0         | 47            | 18.3         | AV       | N    | GND |
| 1.792500         | 22.90         | 11.2         | 46            | 23.1         | AV       | N    | GND |
| 3.187500         | 17.30         | 11.4         | 46            | 28.7         | AV       | N    | GND |
| 5.343000         | 16.50         | 11.5         | 50            | 33.5         | AV       | N    | GND |
| 15.301500        | 13.40         | 11.7         | 50            | 36.6         | AV       | N    | GND |

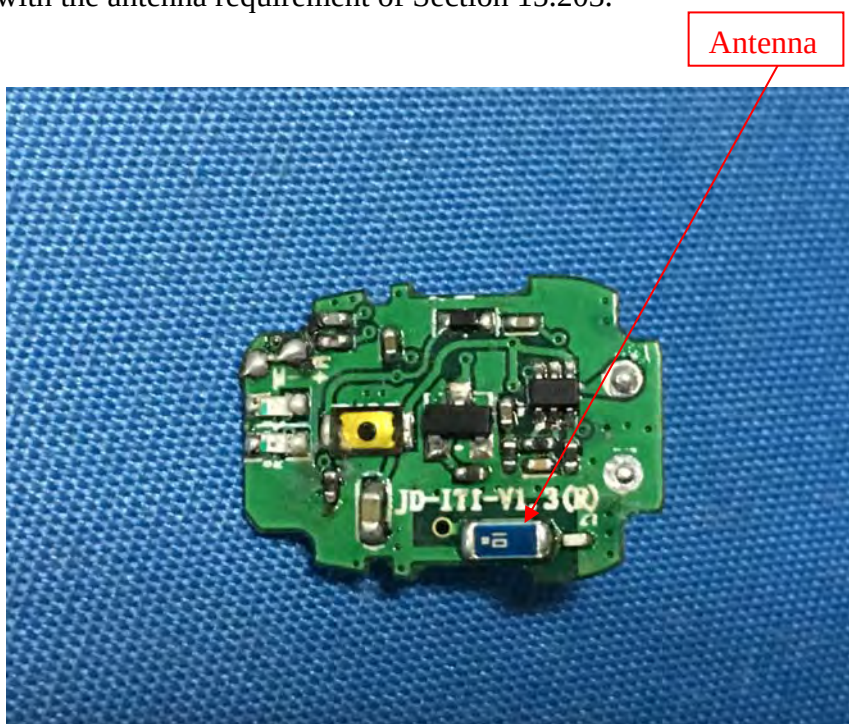
## 13.ANTENNA REQUIREMENT

### 13.1.The Requirement

According to Section 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.

### 13.2.Antenna Construction

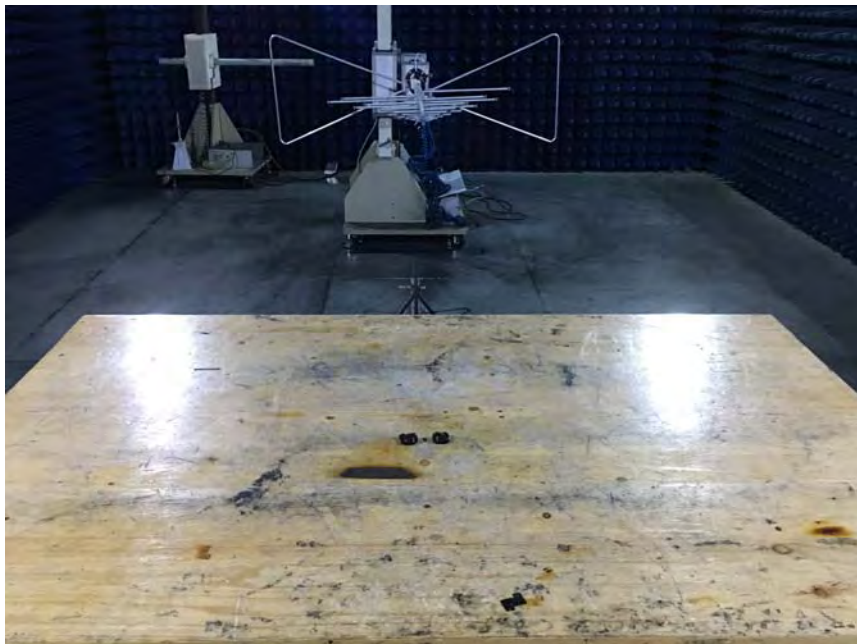
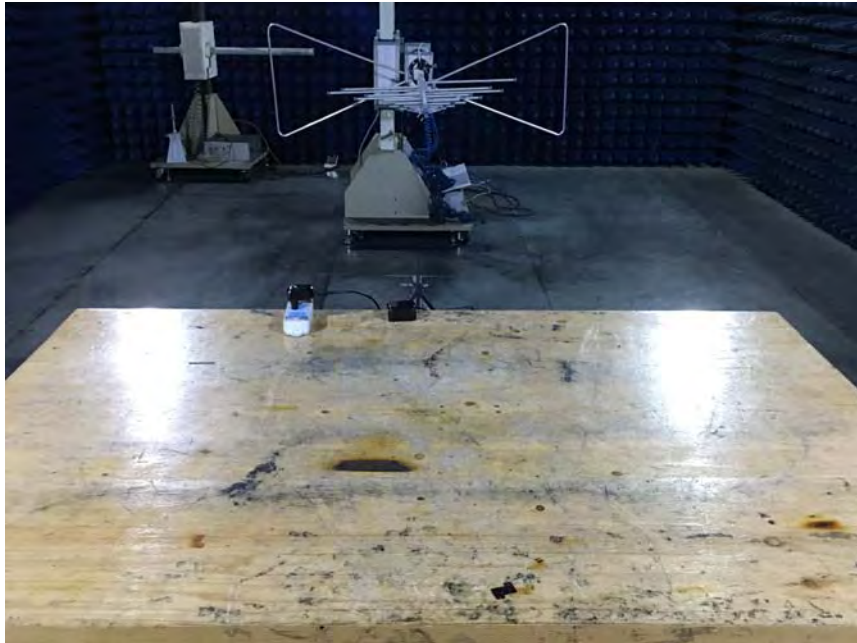
Device is equipped with permanent attached antenna, which isn't displaced by other antenna. The Max Antenna gain of EUT is 1.2dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.





## 14. PHOTOGRAPHS

### 14.1. Photos of Radiated Emission Measurement







14.2.Photo of Conducted Emission Measurement



### 14.3.Photos of EUT









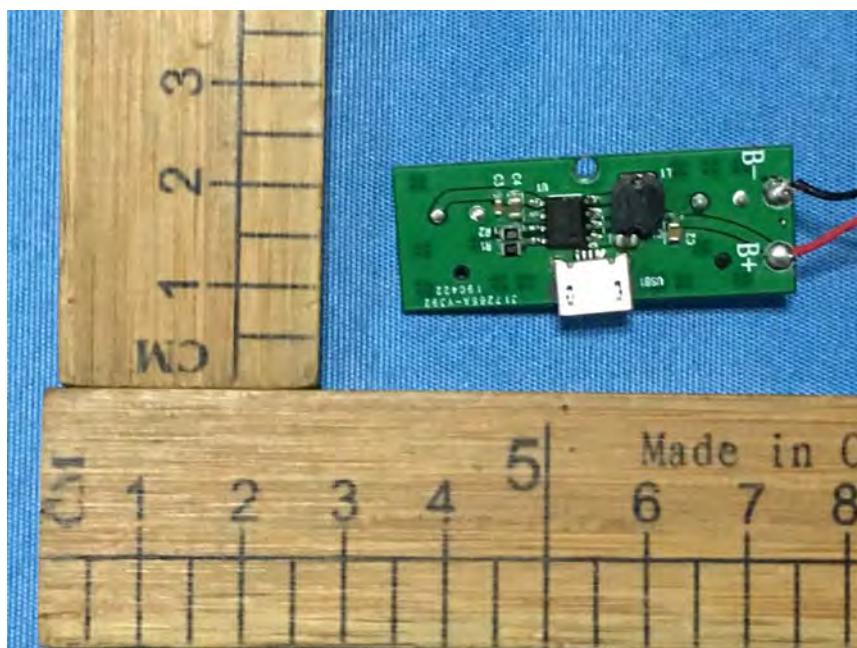


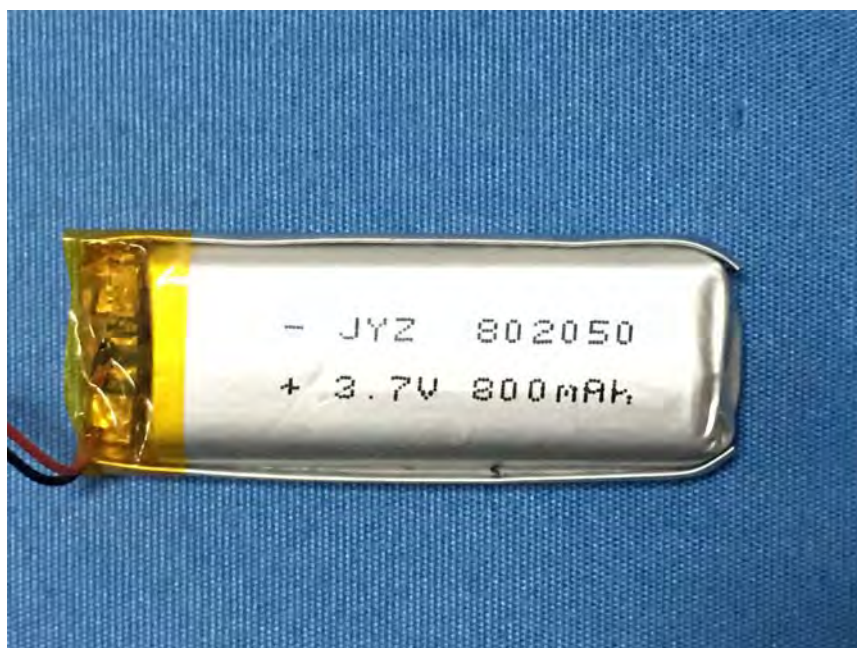
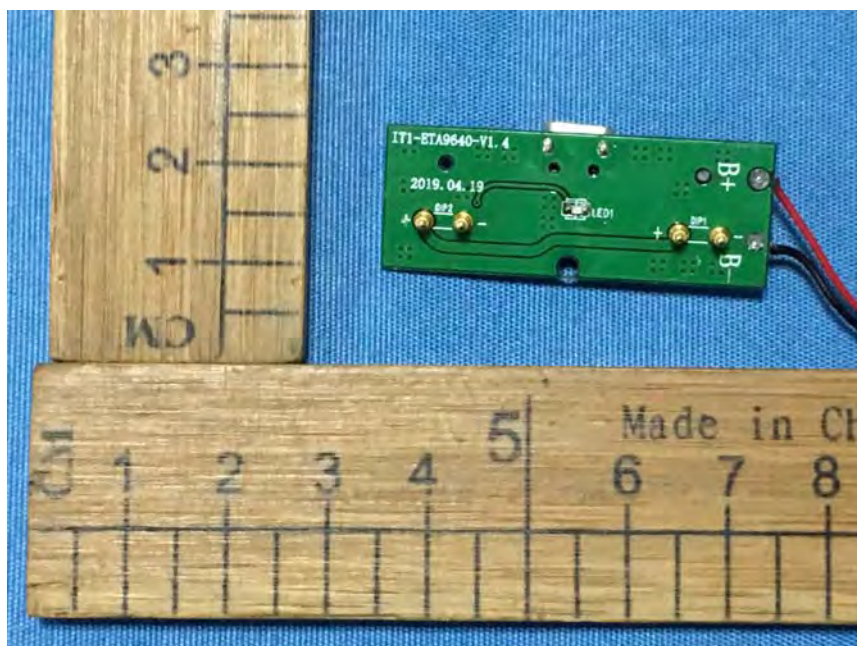




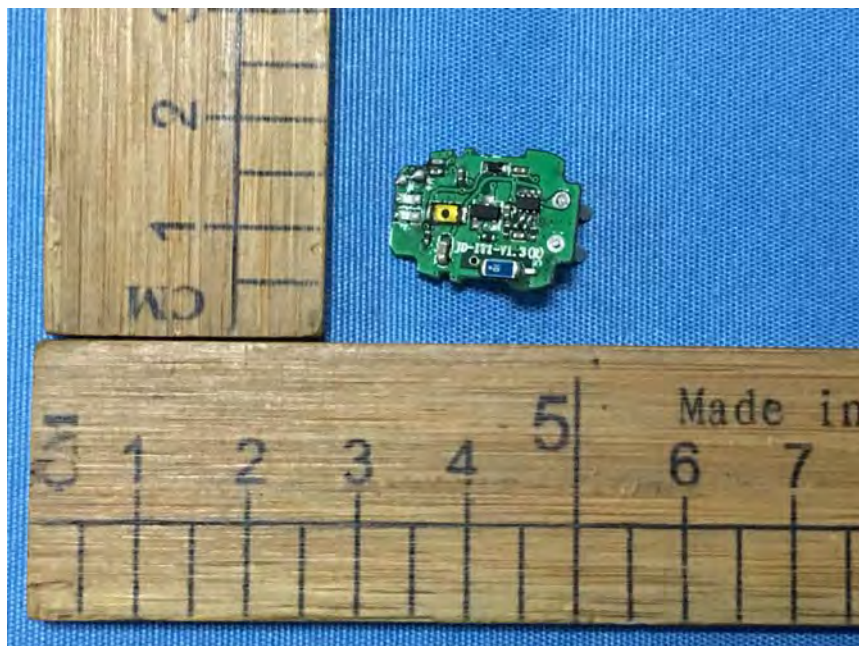




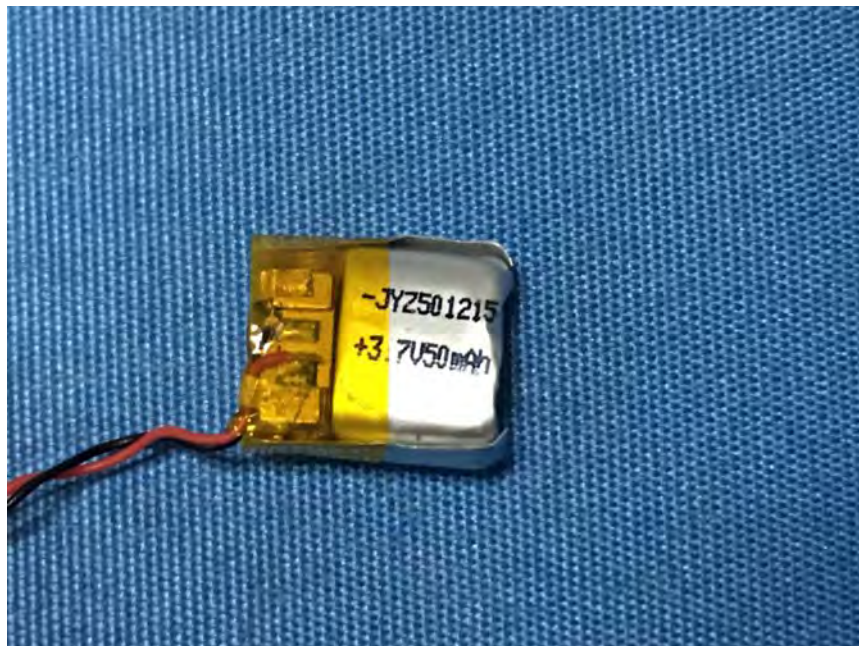
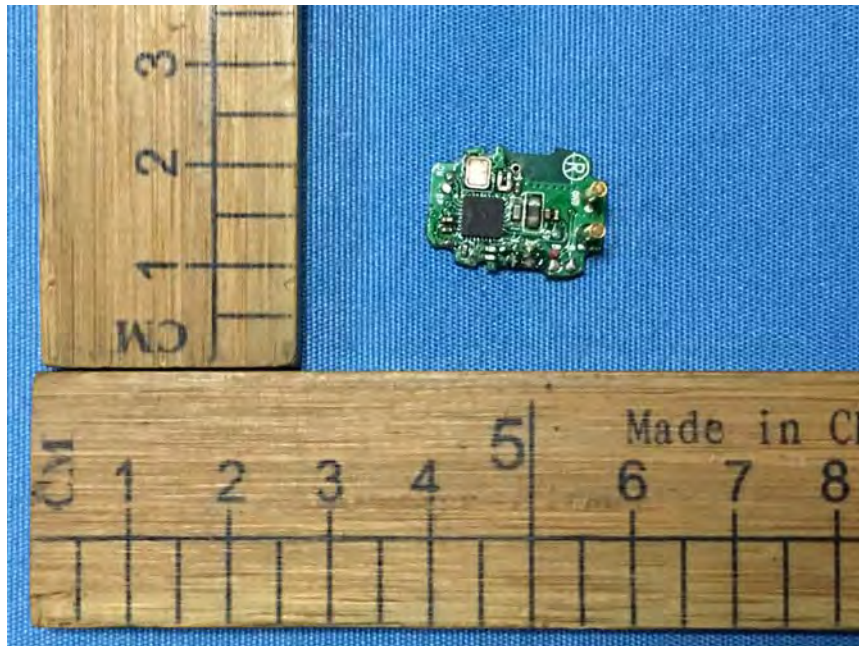














**\*\*\*\*\* End of Test Report \*\*\*\*\***