

APPLICATION CERTIFICATION FCC Part 15C  
On Behalf of

Bulk Unlimited Corp

Stage Karaoke  
Model No.: 2700

FCC ID: 2AE67-2700

Prepared for : Bulk Unlimited Corp  
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11211

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Report No. : ATE20172103  
Date of Test : Oct. 26-Nov. 8, 2017  
Date of Report : Nov. 10, 2017

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## Test Report Certification

Applicant : Bulk Unlimited Corp  
Manufacturer : Dynamic Scientific Ltd  
EUT Description : Stage Karaoke  
Model No. : 2700  
Trade Name : Croove

Measurement Procedure Used:

**FCC Rules and Regulations Part 15 Subpart C Section 15.247: 2017**  
**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 : Oct. 26-Nov. 8, 2017

Date of Report : Nov. 10, 2017

Prepared by :

Star Yang  
(Star Yang, Engineer)

Approved & Authorized Signer :

Sean Liu  
(Sean Liu, Manager)

## 1. GENERAL INFORMATION

### 1.1. Description of Device (EUT)

|                       |   |                                                                                    |
|-----------------------|---|------------------------------------------------------------------------------------|
| Model Number          | : | 2700                                                                               |
| Bluetooth version     | : | V 4.2<br>This report is for BT classic mode                                        |
| Frequency Range       | : | 2402MHz-2480MHz                                                                    |
| Number of Channels    | : | 79                                                                                 |
| Antenna Gain(Max)     | : | 0dBi                                                                               |
| Antenna type          | : | Integral antenna                                                                   |
| Adapter Input Voltage | : | DC 3.7V (Powered by Lithium battery) or<br>DC 5V (Powered by USB port)             |
| Modulation mode       | : | GFSK, $\pi/4$ DQPSK, 8DPSK                                                         |
| Applicant             | : | Bulk Unlimited Corp                                                                |
| Address               | : | 199 Lee Ave. Suite 464, Brooklyn, New York, United<br>States 11211                 |
| Manufacturer          | : | Dynamic Scientific Ltd                                                             |
| Address               | : | Room 04&05, 21/F, Canny Industrial Building, 33 San Po<br>Kong, Kowloon, Hong Kong |

### 1.2. Accessory and Auxiliary Equipment

N/A

### 1.3.Description of Test Facility

|               |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EMC Lab       | : | Recognition of accreditation by Federal Communications Commission (FCC)<br>The Designation Number is CN1189<br>The Registration Number is 708358<br><br>Listed by Innovation, Science and Economic Development Canada (ISED)<br>The Registration Number is 5077A-2<br><br>Accredited by China National Accreditation Service for Conformity Assessment (CNAS)<br>The Registration Number is CNAS L3193<br><br>Accredited by American Association for Laboratory Accreditation (A2LA)<br>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<br>(9kHz-30MHz)    | = | 3.08dB, k=2 |
| Radiated emission expanded uncertainty<br>(30MHz-1000MHz) | = | 4.42dB, k=2 |
| Radiated emission expanded uncertainty<br>(Above 1GHz)    | = | 4.06dB, k=2 |

## 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. 07, 2017    | 1 Year           |
| EMI Test Receiver  | Rohde&Schwarz             | ESPI3                                   | 101526/003 | Jan. 07, 2017    | 1 Year           |
| Spectrum Analyzer  | Agilent                   | E7405A                                  | MY45115511 | Jan. 07, 2017    | 1 Year           |
| Pre-Amplifier      | Rohde&Schwarz             | CBLU118354<br>0-01                      | 3791       | Jan. 07, 2017    | 1 Year           |
| Loop Antenna       | Schwarzbeck               | FMZB1516                                | 1516131    | Jan. 13, 2017    | 1 Year           |
| Bilog Antenna      | Schwarzbeck               | VULB9163                                | 9163-323   | Jan. 13, 2017    | 1 Year           |
| Horn Antenna       | Schwarzbeck               | BBHA9120D                               | 9120D-655  | Jan. 13, 2017    | 1 Year           |
| Horn Antenna       | Schwarzbeck               | BBHA9170                                | 9170-359   | Jan. 13, 2017    | 1 Year           |
| LISN               | Rohde&Schwarz             | ESH3-Z5                                 | 100305     | Jan. 07, 2017    | 1 Year           |
| LISN               | Schwarzbeck               | NSLK8126                                | 8126431    | Jan. 07, 2017    | 1 Year           |
| Highpass Filter    | Wainwright<br>Instruments | WHKX3.6/18<br>G-10SS                    | N/A        | Jan. 07, 2017    | 1 Year           |
| Band Reject Filter | Wainwright<br>Instruments | WRCG2400/2<br>485-2375/2510<br>-60/11SS | N/A        | Jan. 07, 2017    | 1 Year           |

### 3. OPERATION OF EUT DURING TESTING

#### 3.1.Operating Mode

The mode is used: Transmitting mode

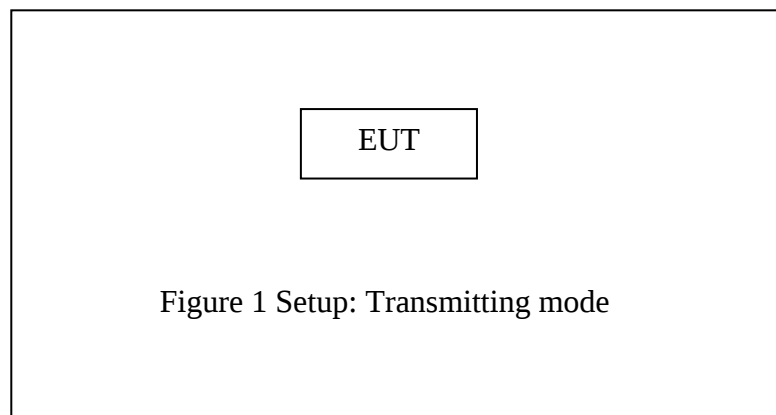
Low Channel: 2402MHz

Middle Channel: 2441MHz

High Channel: 2480MHz

Hopping

#### 3.2.Configuration and peripherals

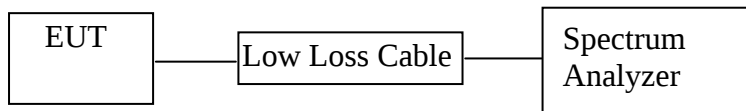


#### 4. TEST PROCEDURES AND RESULTS

| FCC Rules                           | Description of Test               | Result    |
|-------------------------------------|-----------------------------------|-----------|
| Section 15.207                      | 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 |

## 5. 20DB BANDWIDTH TEST

### 5.1. Block Diagram of Test Setup



(EUT: Stage Karaoke)

### 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. Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz.

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

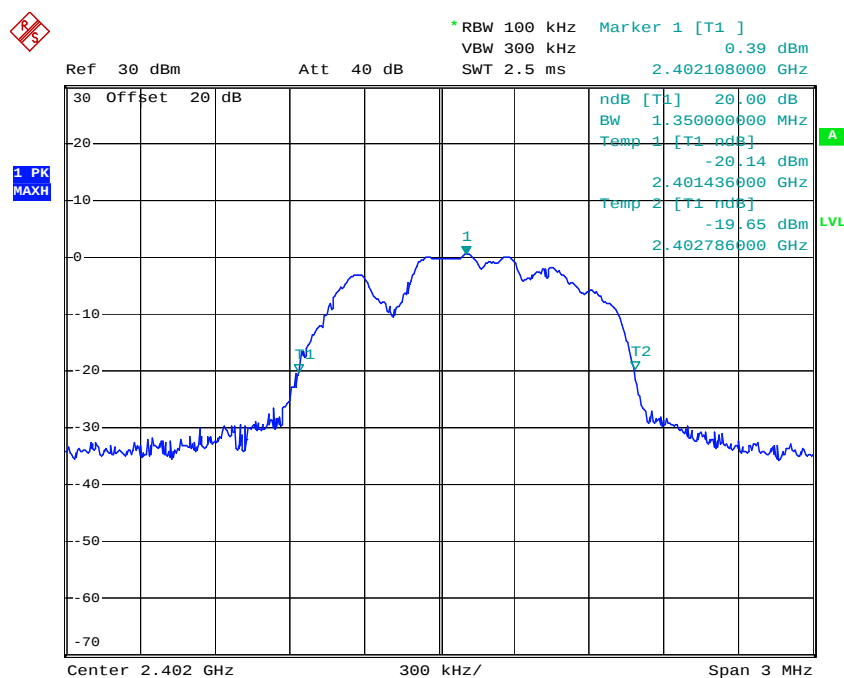
## 5.6. Test Result

| Channel | Frequency (MHz) | GFSK 20dB Bandwidth (MHz) | Π/4-DQPSK 20dB Bandwidth (MHz) | 8DPSK 20dB Bandwidth (MHz) | Result |
|---------|-----------------|---------------------------|--------------------------------|----------------------------|--------|
| Low     | 2402            | 1.350                     | 1.122                          | 1.296                      | Pass   |
| Middle  | 2441            | 1.344                     | 1.158                          | 1.284                      | Pass   |
| High    | 2480            | 1.152                     | 1.248                          | 1.302                      | Pass   |

The spectrum analyzer plots are attached as below.

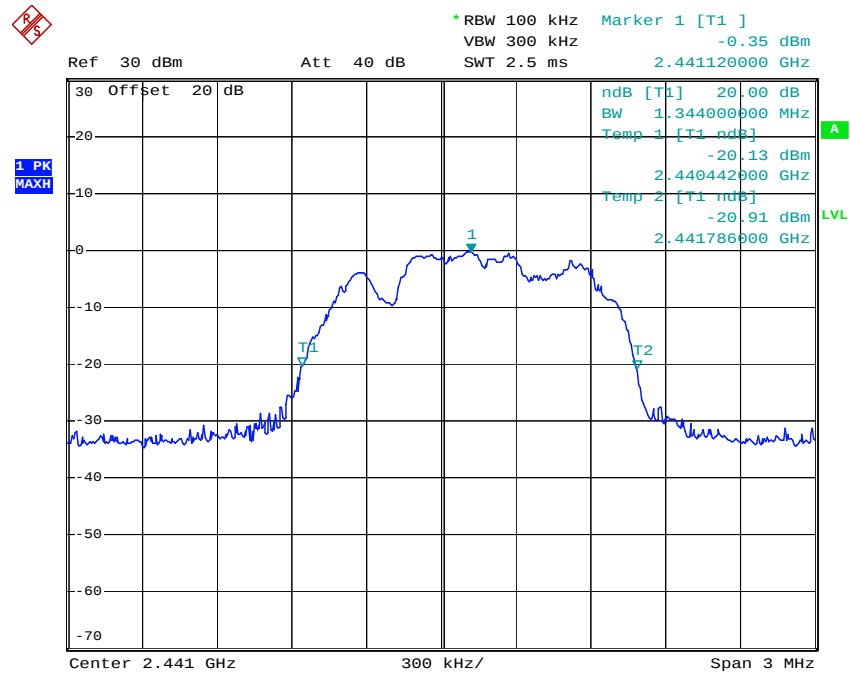
### GFSK Mode

#### Low channel



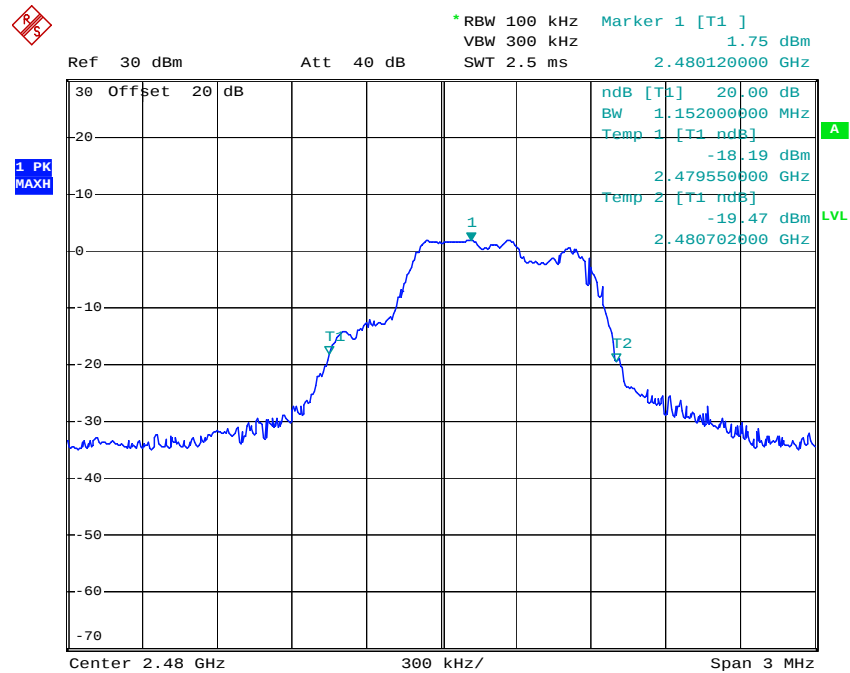
Comment A:  
Date: 8.NOV.2017 10:09:11

## Middle channel



Comment A:  
Date: 8.NOV.2017 10:12:46

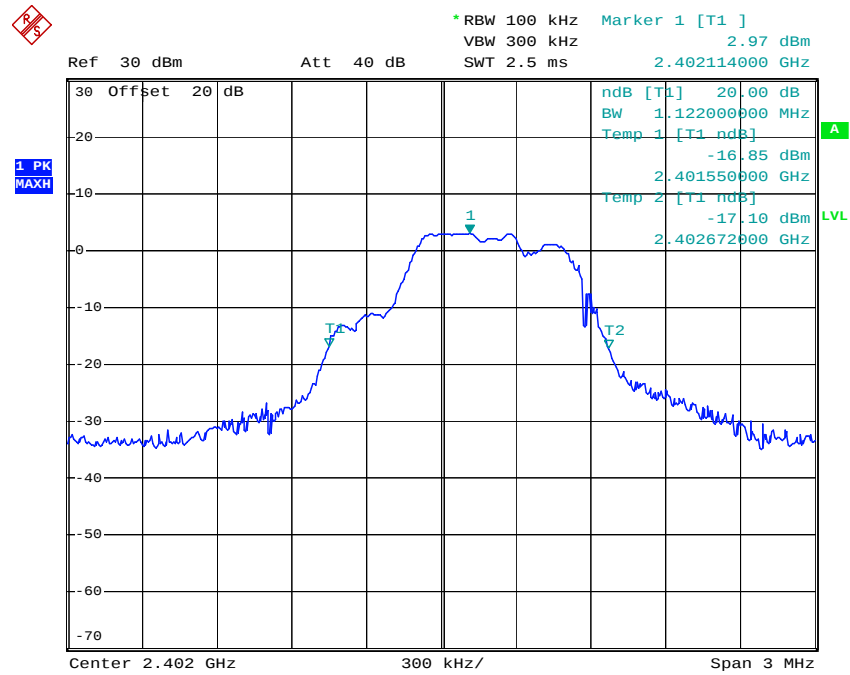
## High channel



Comment A:  
Date: 8.NOV.2017 10:16:20

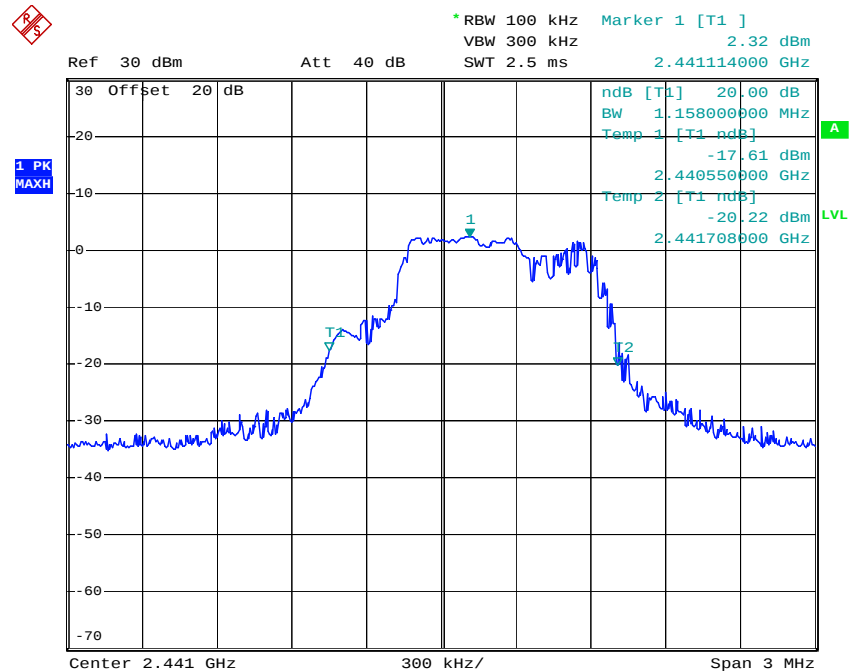
## Π/4-DQPSK Mode

### Low channel



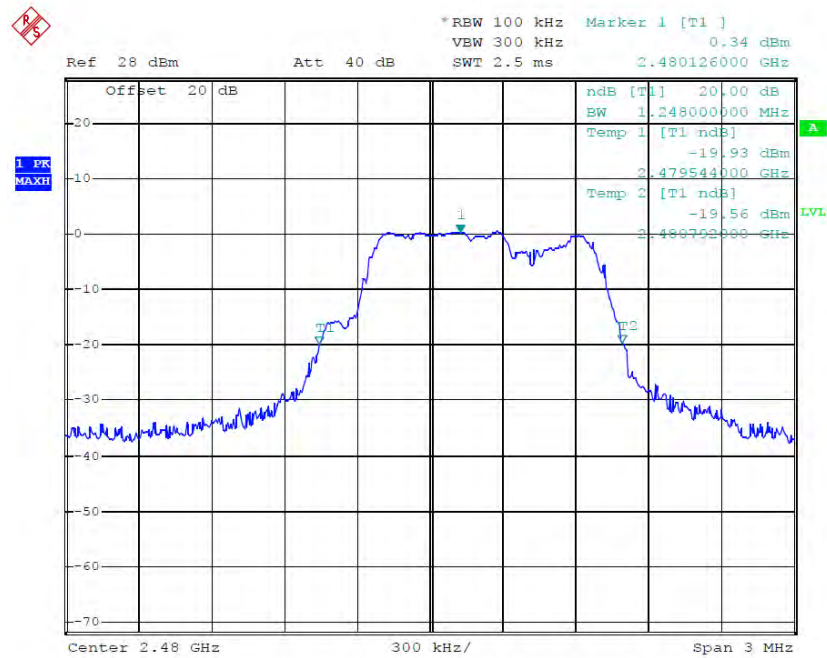
Comment A:  
Date: 8.NOV.2017 09:56:55

### Middle channel



Comment A:  
Date: 8.NOV.2017 09:59:03

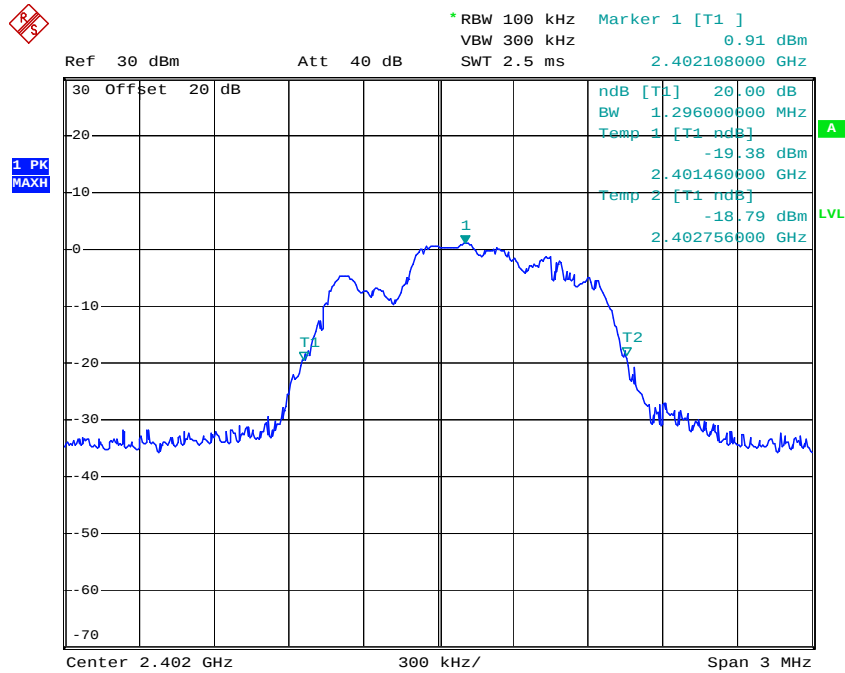
## High channel



Comment A:  
Date: 8.NOV.2017 10:03:09

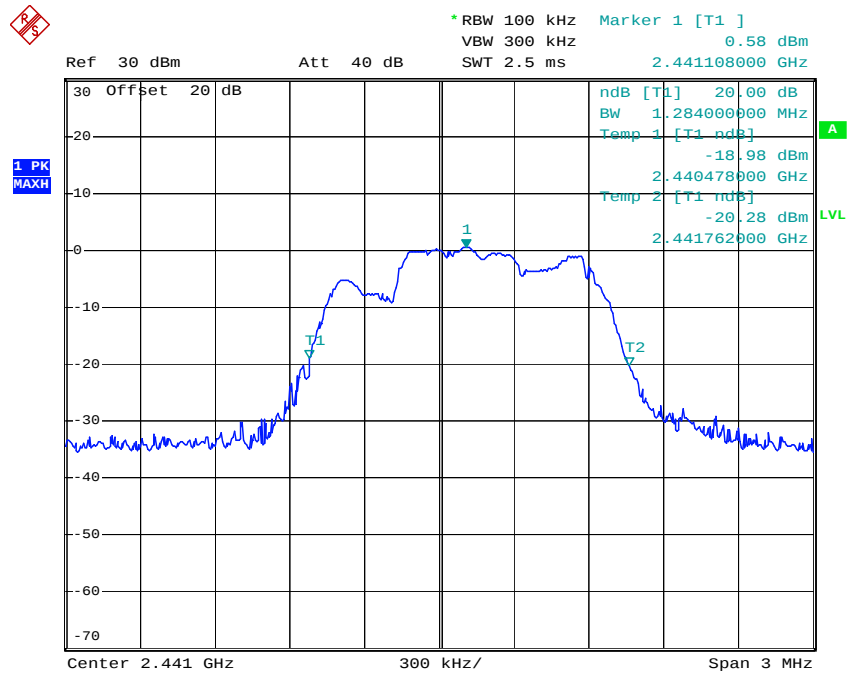
## 8DPSK Mode

## Low channel



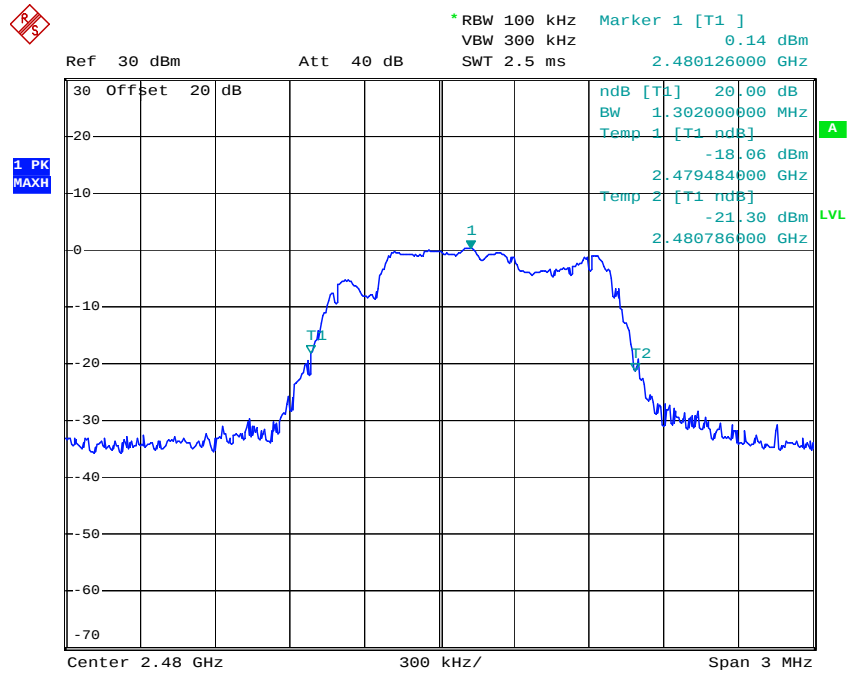
Comment A:  
Date: 8.NOV.2017 10:07:57

## Middle channel



Comment A:  
Date: 8.NOV.2017 10:06:45

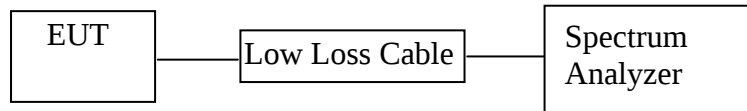
## High channel



Comment A:  
Date: 8.NOV.2017 10:04:38

## 6. CARRIER FREQUENCY SEPARATION TEST

### 6.1. Block Diagram of Test Setup



(EUT: Stage Karaoke)

### 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 30 kHz and VBW to 100 kHz. Adjust Span to 2MHz.

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

| Channel | Frequency (MHz) | Channel Separation(MHz) | Limit (MHz)                 | Result |
|---------|-----------------|-------------------------|-----------------------------|--------|
| Low     | 2402            | 1.008                   | 25KHz or 2/3*20dB bandwidth | PASS   |
|         | 2403            |                         |                             |        |
| Middle  | 2440            | 1.002                   | 25KHz or 2/3*20dB bandwidth | PASS   |
|         | 2441            |                         |                             |        |
| High    | 2479            | 1.002                   | 25KHz or 2/3*20dB bandwidth | PASS   |
|         | 2480            |                         |                             |        |

### Π/4-DQPSK

| Channel | Frequency (MHz) | Channel Separation(MHz) | Limit (MHz)                 | Result |
|---------|-----------------|-------------------------|-----------------------------|--------|
| Low     | 2402            | 0.998                   | 25KHz or 2/3*20dB bandwidth | PASS   |
|         | 2403            |                         |                             |        |
| Middle  | 2440            | 1.002                   | 25KHz or 2/3*20dB bandwidth | PASS   |
|         | 2441            |                         |                             |        |
| High    | 2479            | 1.002                   | 25KHz or 2/3*20dB bandwidth | PASS   |
|         | 2480            |                         |                             |        |

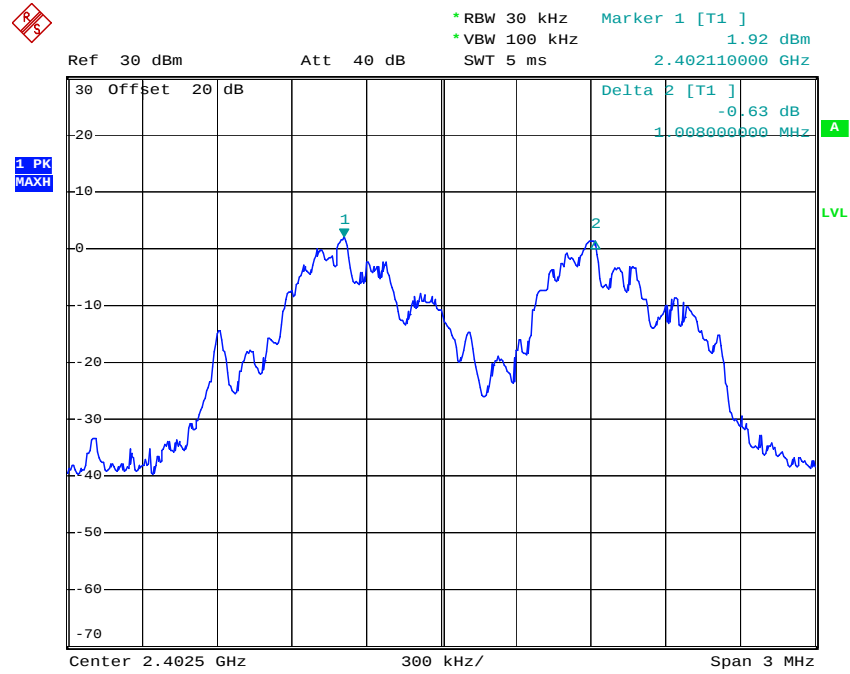
### 8DPSK

| Channel | Frequency (MHz) | Channel Separation(MHz) | Limit (MHz)                 | Result |
|---------|-----------------|-------------------------|-----------------------------|--------|
| Low     | 2402            | 1.002                   | 25KHz or 2/3*20dB bandwidth | PASS   |
|         | 2403            |                         |                             |        |
| Middle  | 2440            | 1.008                   | 25KHz or 2/3*20dB bandwidth | PASS   |
|         | 2441            |                         |                             |        |
| High    | 2479            | 1.014                   | 25KHz or 2/3*20dB bandwidth | PASS   |
|         | 2480            |                         |                             |        |

The spectrum analyzer plots are attached as below.

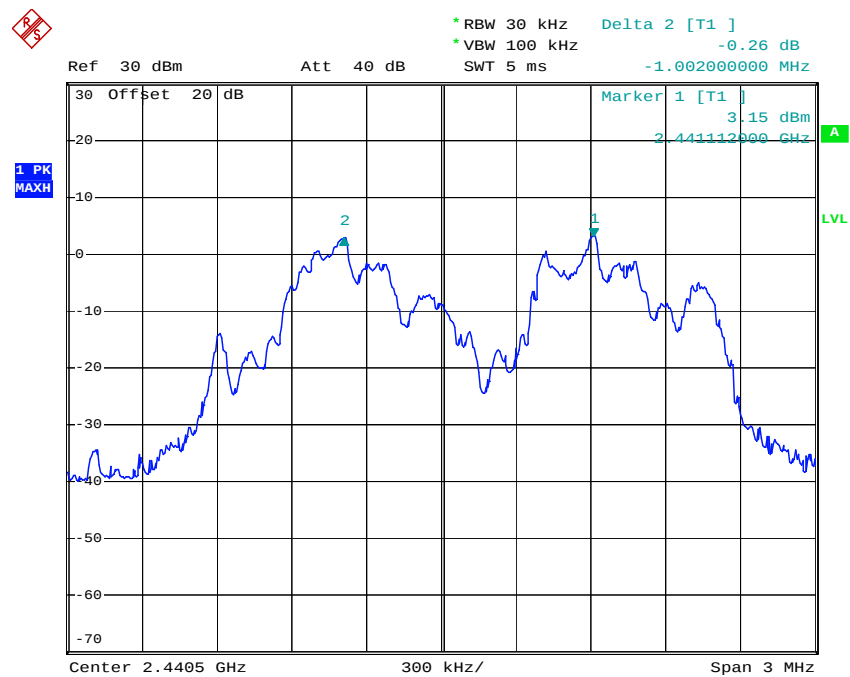
## GFSK Mode

### Low channel



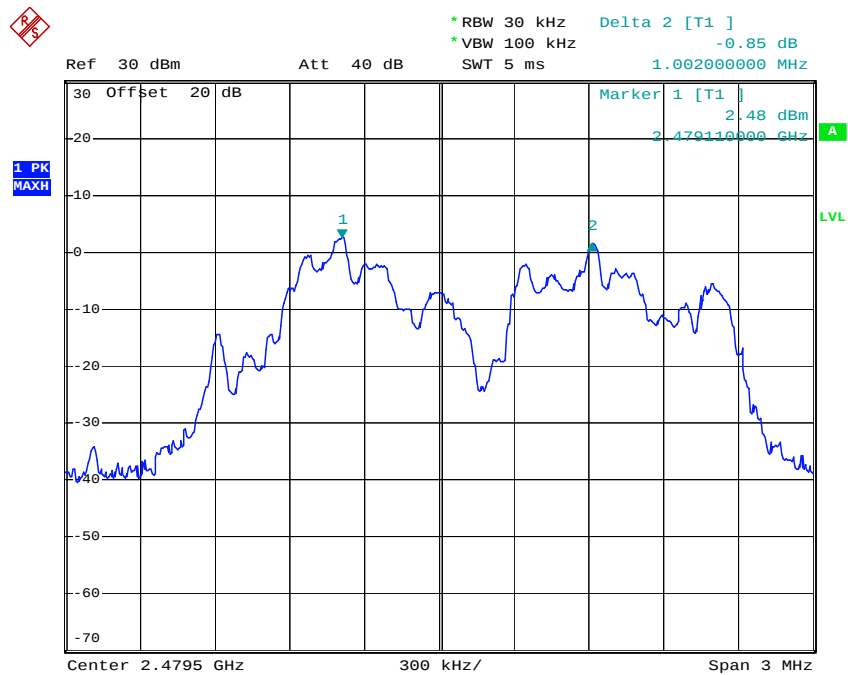
Comment A:  
Date: 8.NOV.2017 10:39:48

### Middle channel



Comment A:  
Date: 8.NOV.2017 10:38:16

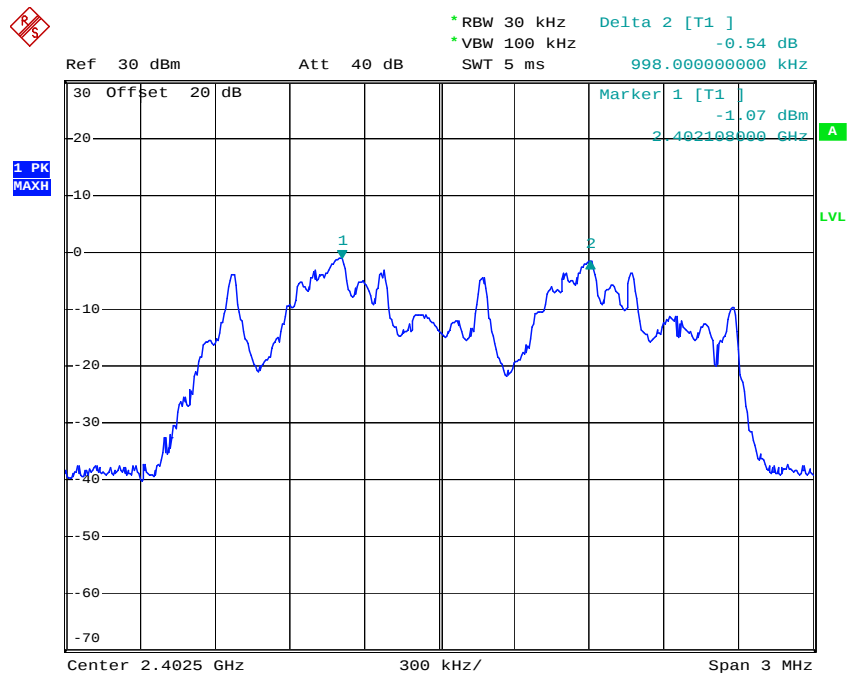
## High channel



Comment A:  
Date: 8.NOV.2017 10:36:56

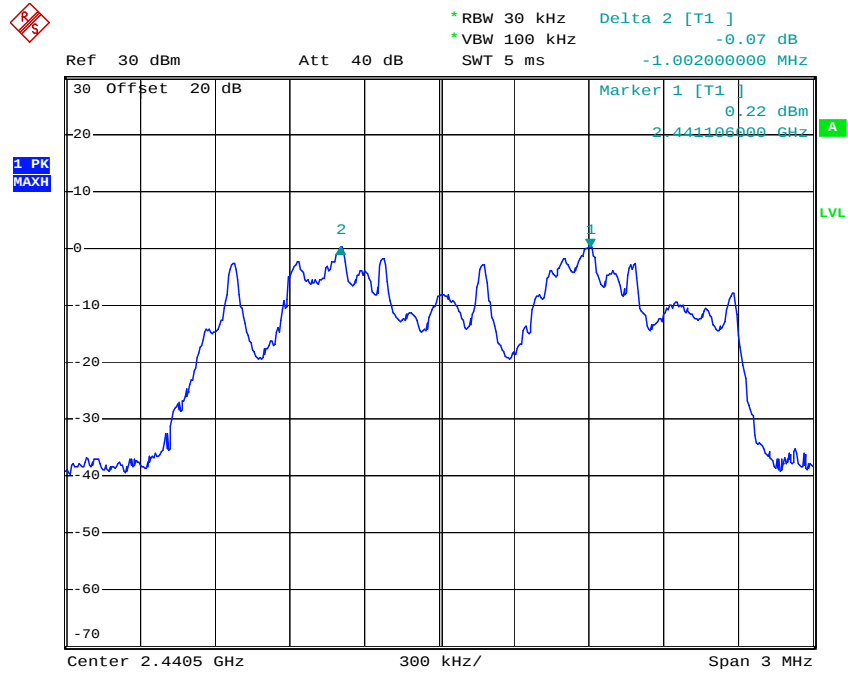
## Π/4-DQPSK Mode

## Low channel



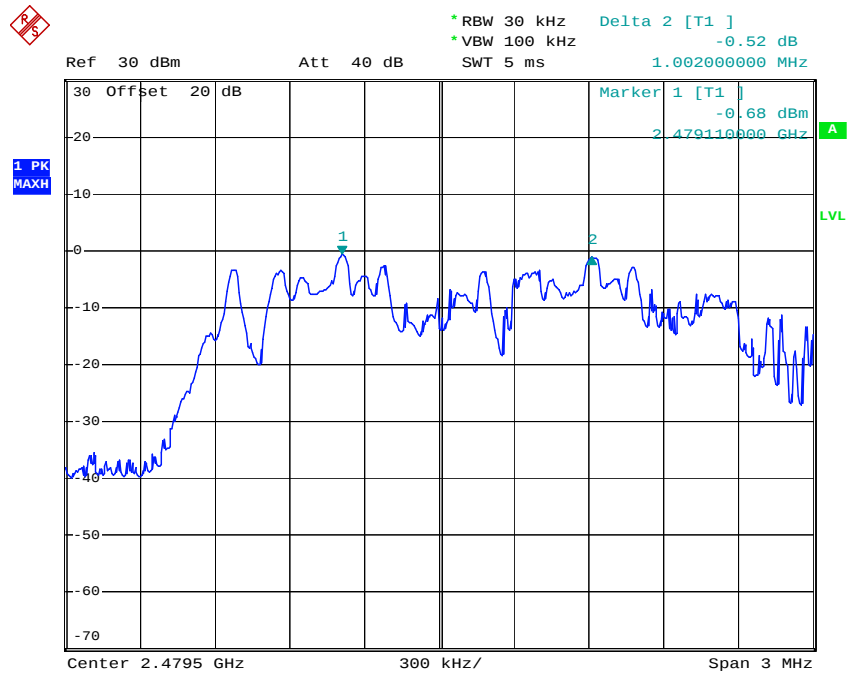
Comment A:  
Date: 8.NOV.2017 10:31:48

## Middle channel



Comment A:  
Date: 8.NOV.2017 10:33:48

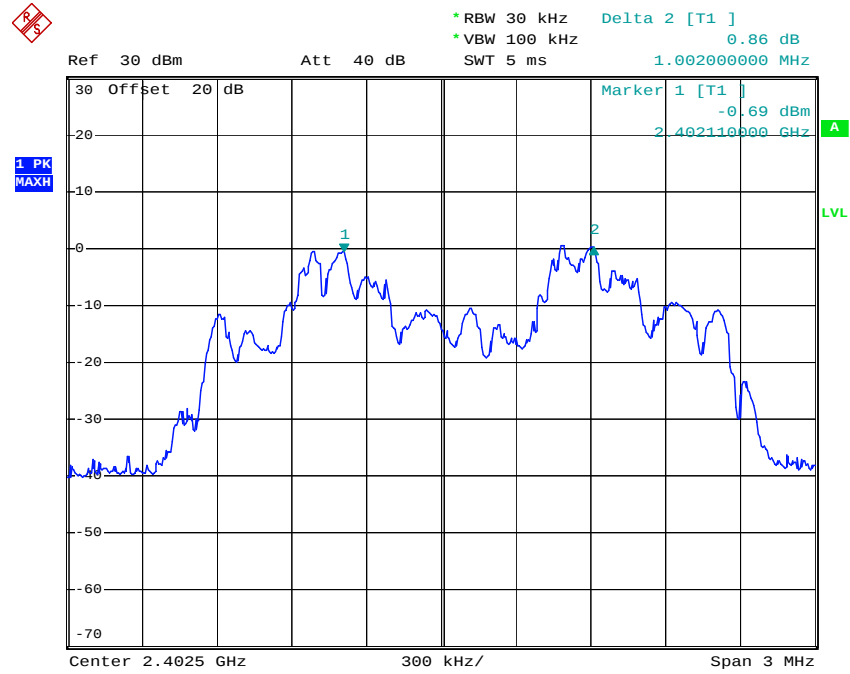
## High channel



Comment A:  
Date: 8.NOV.2017 10:35:32

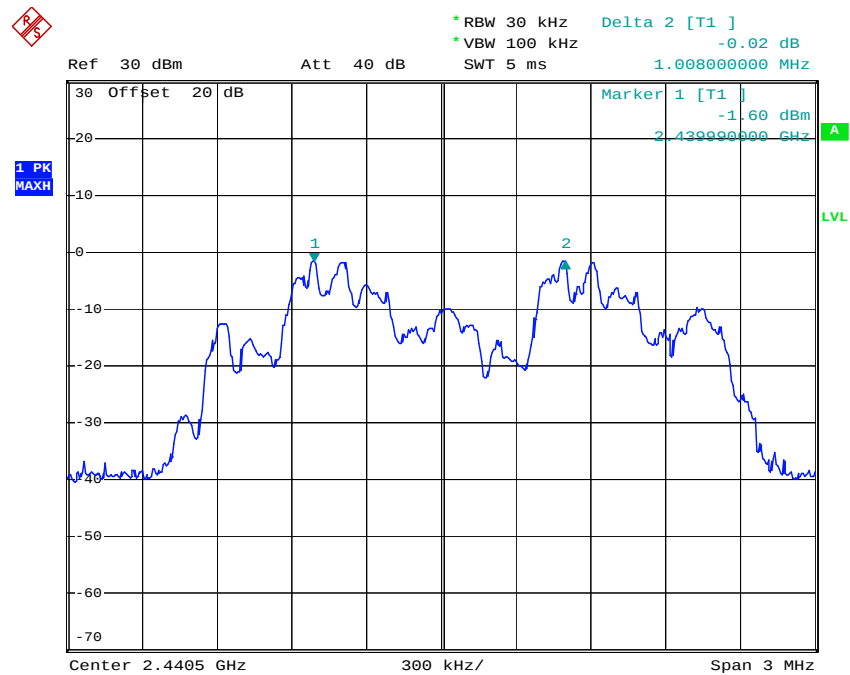
## 8DPSK Mode

### Low channel



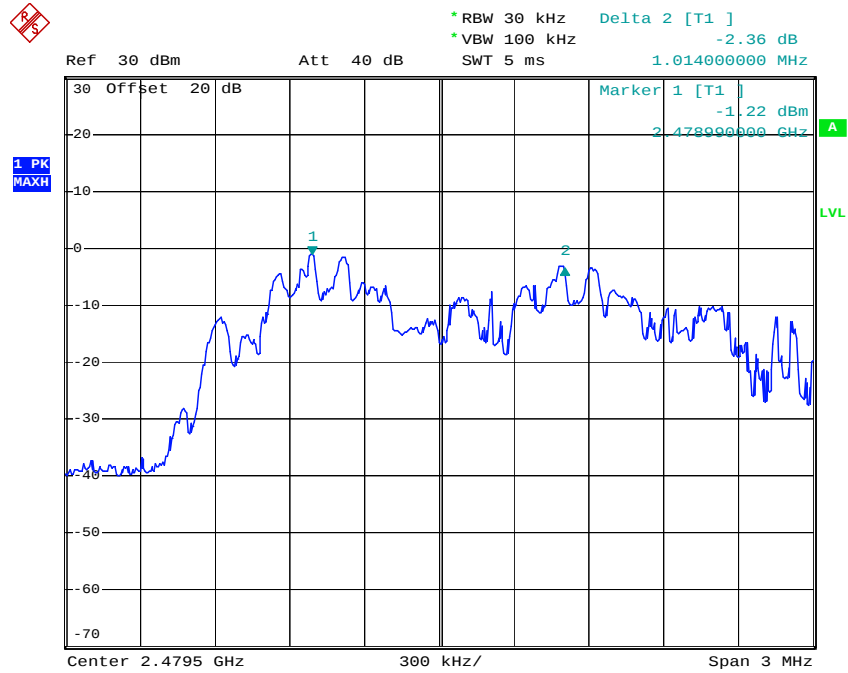
Comment A:  
Date: 8.NOV.2017 10:40:56

### Middle channel



Comment A:  
Date: 8.NOV.2017 10:42:55

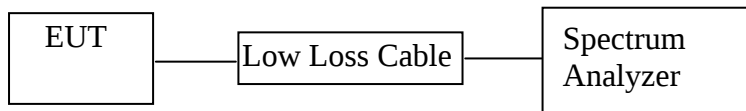
# High channel



Comment A:  
Date: 8.NOV.2017 10:44:21

## 7. NUMBER OF HOPPING FREQUENCY TEST

### 7.1. Block Diagram of Test Setup



(EUT: Stage Karaoke)

### 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 RBW=100 kHz, VBW=300 kHz.

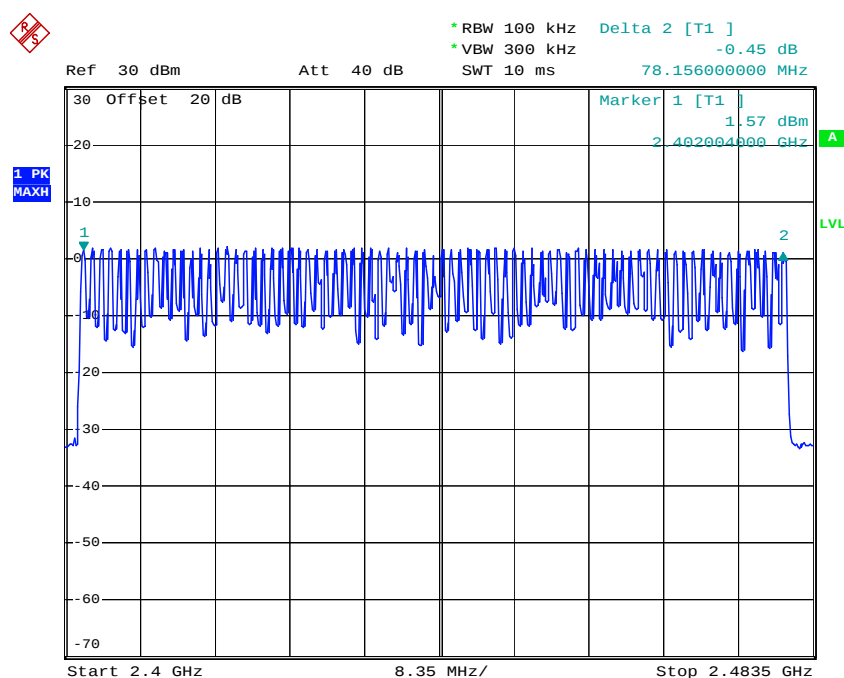
7.5.3. Max hold, view and count how many channel in the band.

## 7.6.Test Result

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

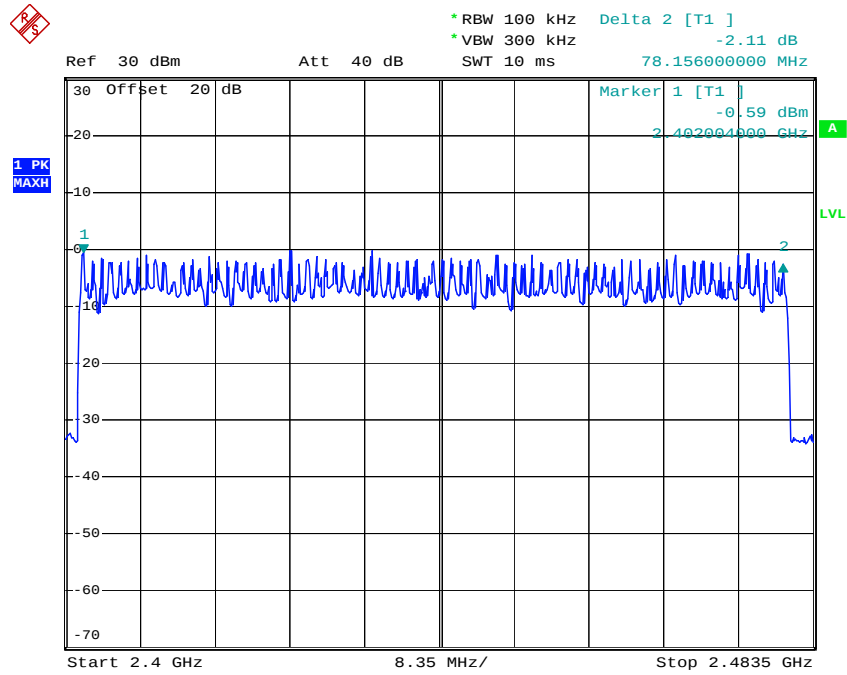
The spectrum analyzer plots are attached as below.

### Number of hopping channels(GFSK)



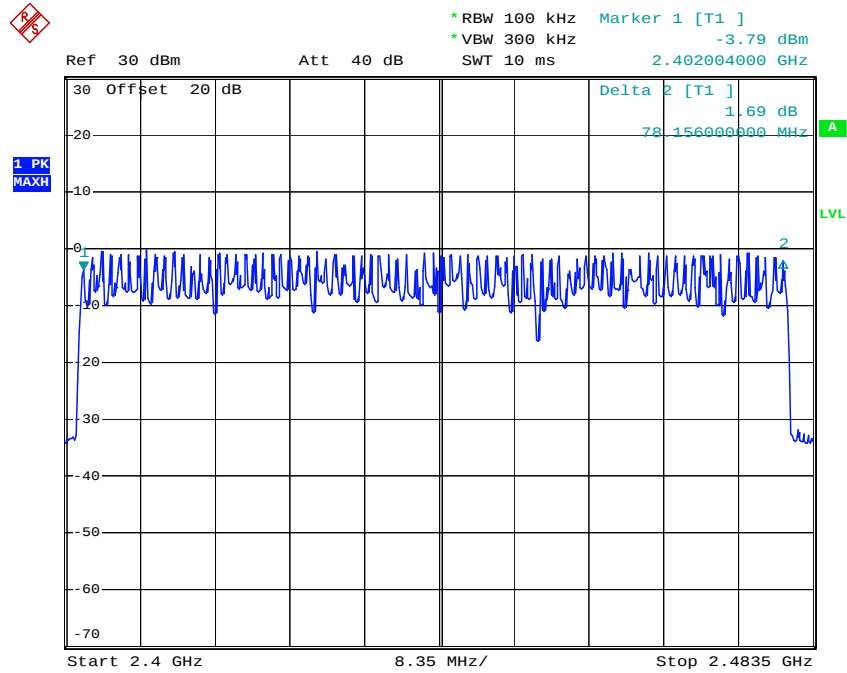
Comment A:  
Date: 8.NOV.2017 11:02:34

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



Comment A:  
Date: 8.NOV.2017 11:04:32

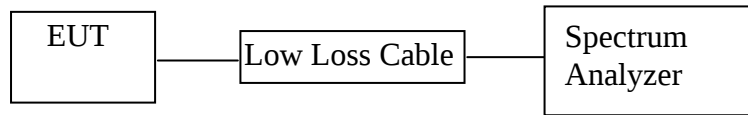
## Number of hopping channels(8DPSK)



Comment A:  
Date: 8.NOV.2017 11:08:23

## 8. DWELL TIME TEST

### 8.1. Block Diagram of Test Setup



(EUT: Stage Karaoke)

### 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                    | 0.507           | 162.24          | 400        |
|                                                                                                                   | 2441                    | 0.507           | 162.24          | 400        |
|                                                                                                                   | 2480                    | 0.507           | 162.24          | 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                    | 1.783           | 285.28          | 400        |
|                                                                                                                   | 2441                    | 1.783           | 285.28          | 400        |
|                                                                                                                   | 2480                    | 1.783           | 285.28          | 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                    | 3.080           | 328.53          | 400        |
|                                                                                                                   | 2441                    | 3.058           | 326.19          | 400        |
|                                                                                                                   | 2480                    | 3.051           | 325.44          | 400        |
| A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6 \times 79)) \times 31.6$ |                         |                 |                 |            |

### II/4-DQPSK

| Mode                                                                                                              | Channel Frequency (MHz) | Pulse Time (ms) | Dwell Time (ms) | Limit (ms) |
|-------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------|-----------------|------------|
| DH1                                                                                                               | 2402                    | 0.522           | 167.04          | 400        |
|                                                                                                                   | 2441                    | 0.522           | 167.04          | 400        |
|                                                                                                                   | 2480                    | 0.522           | 167.04          | 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                    | 1.797           | 287.52          | 400        |
|                                                                                                                   | 2441                    | 1.797           | 287.52          | 400        |
|                                                                                                                   | 2480                    | 1.783           | 285.28          | 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                    | 3.044           | 324.69          | 400        |
|                                                                                                                   | 2441                    | 3.036           | 323.84          | 400        |
|                                                                                                                   | 2480                    | 3.036           | 323.84          | 400        |
| A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6 \times 79)) \times 31.6$ |                         |                 |                 |            |

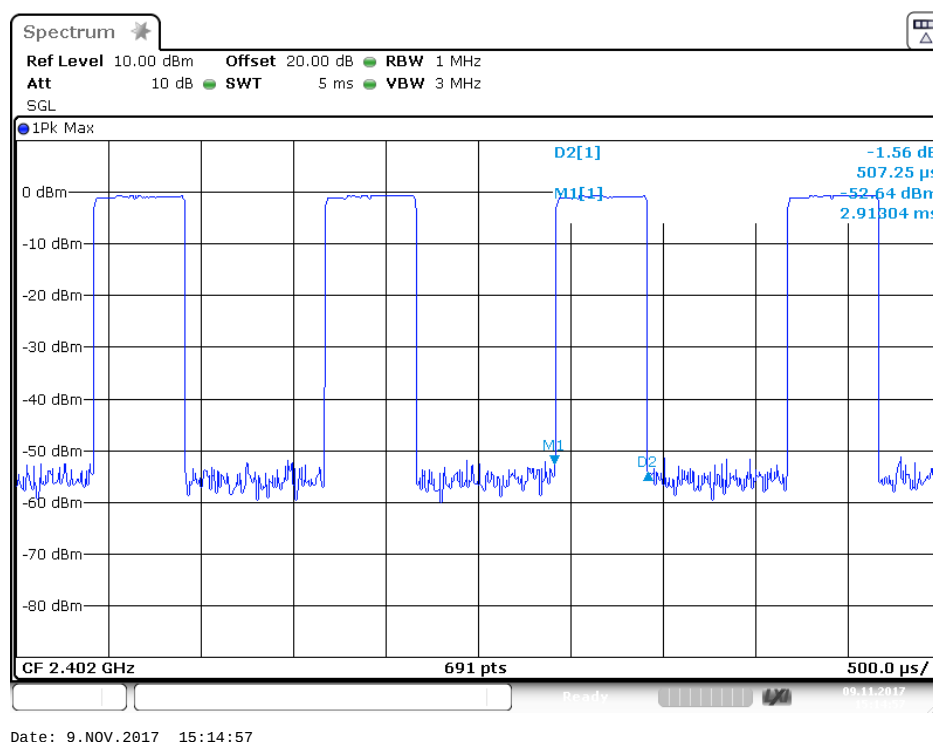
## 8DPSK Mode

| Mode                                                                                                              | Channel Frequency (MHz) | Pulse Time (ms) | Dwell Time (ms) | Limit (ms) |
|-------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------|-----------------|------------|
| DH1                                                                                                               | 2402                    | 0.522           | 167.04          | 400        |
|                                                                                                                   | 2441                    | 0.522           | 167.04          | 400        |
|                                                                                                                   | 2480                    | 0.522           | 167.04          | 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                    | 1.942           | 310.72          | 400        |
|                                                                                                                   | 2441                    | 1.790           | 286.40          | 400        |
|                                                                                                                   | 2480                    | 1.783           | 285.28          | 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                    | 3.044           | 324.69          | 400        |
|                                                                                                                   | 2441                    | 3.065           | 326.93          | 400        |
|                                                                                                                   | 2480                    | 3.044           | 324.69          | 400        |
| A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6 \times 79)) \times 31.6$ |                         |                 |                 |            |

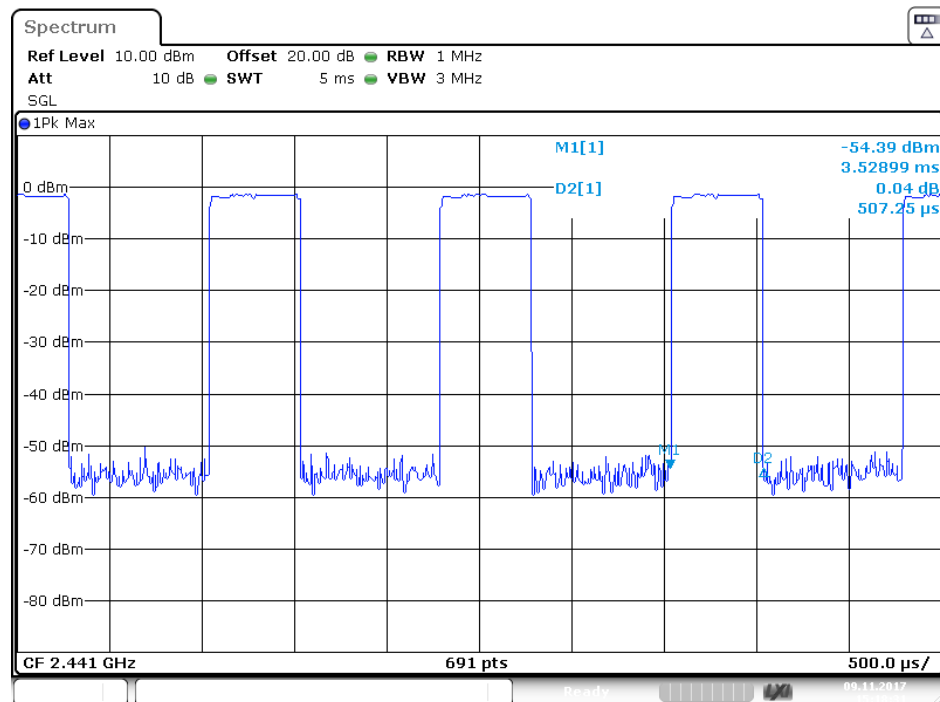
The spectrum analyzer plots are attached as below.

## GFSK Mode

### DH1 Low channel

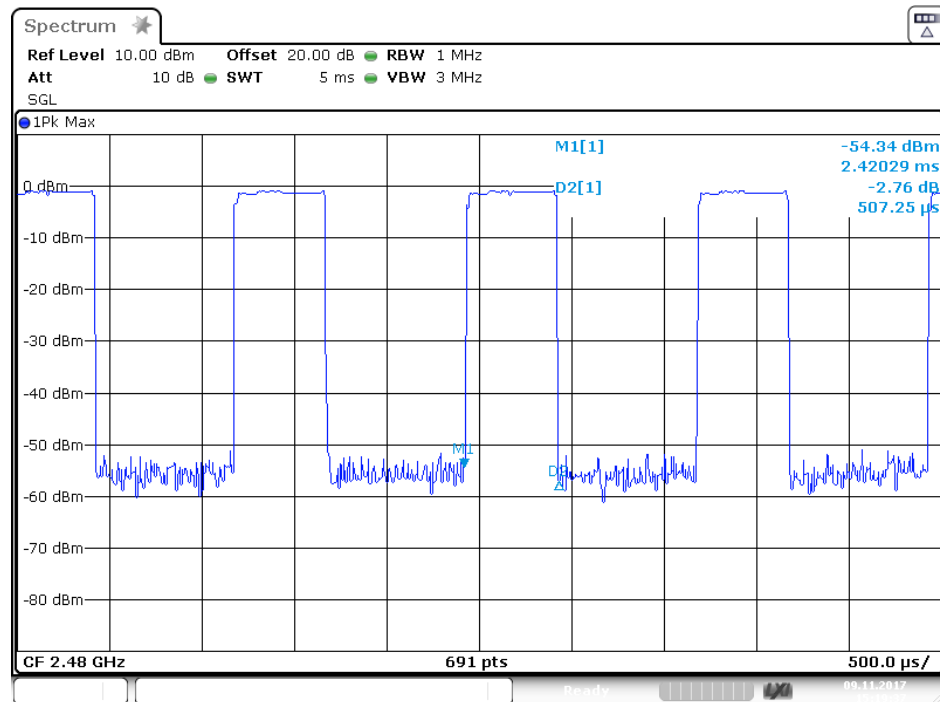


## DH1 Middle channel



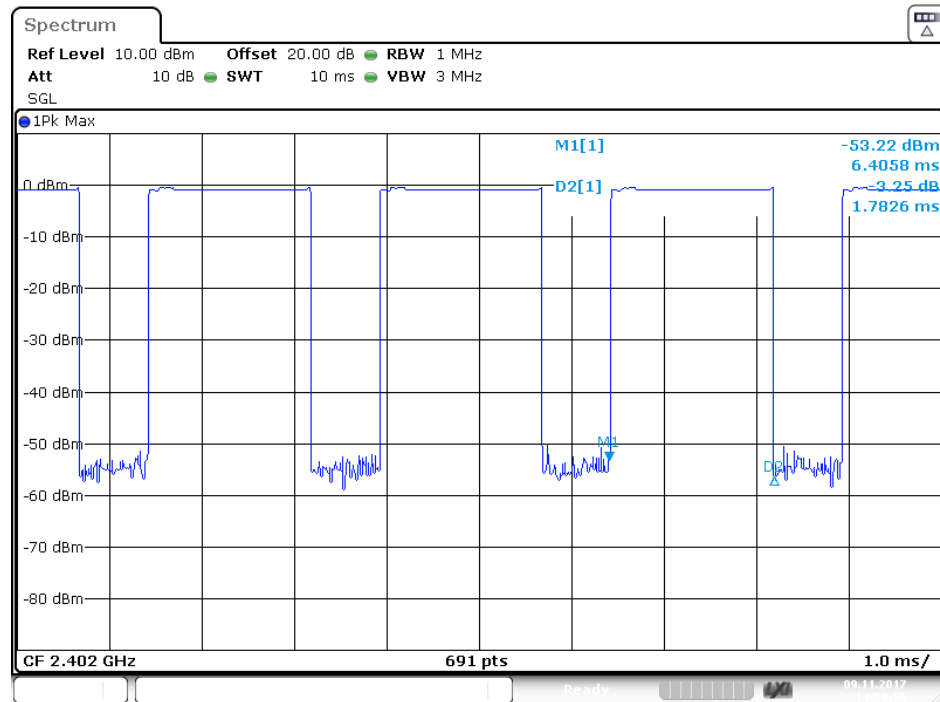
Date: 9.NOV.2017 15:18:31

## DH1 High channel



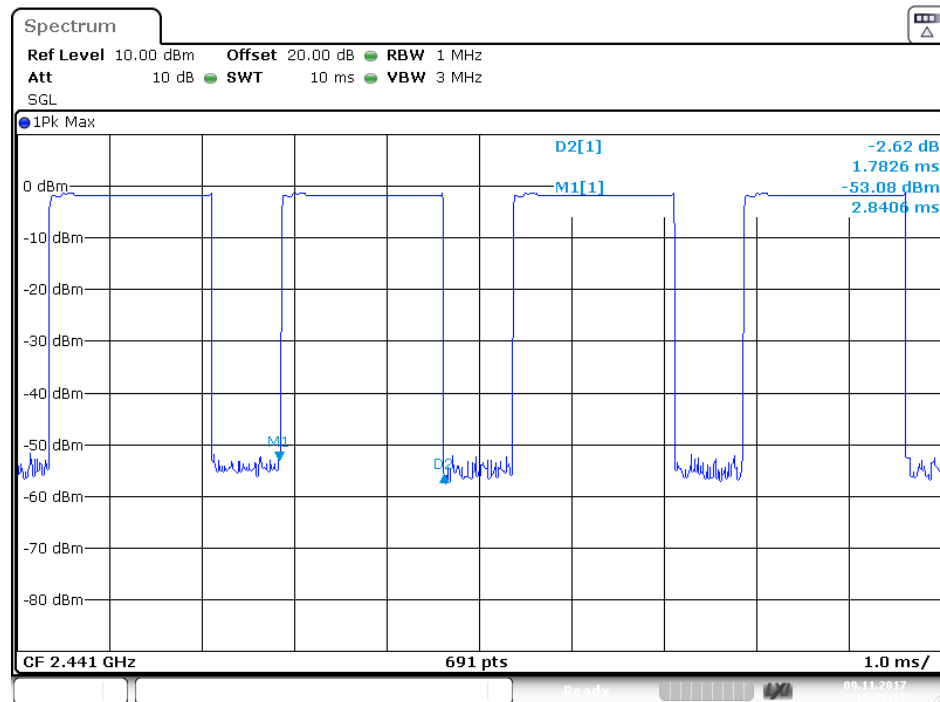
Date: 9.NOV.2017 15:19:37

## DH3 Low channel



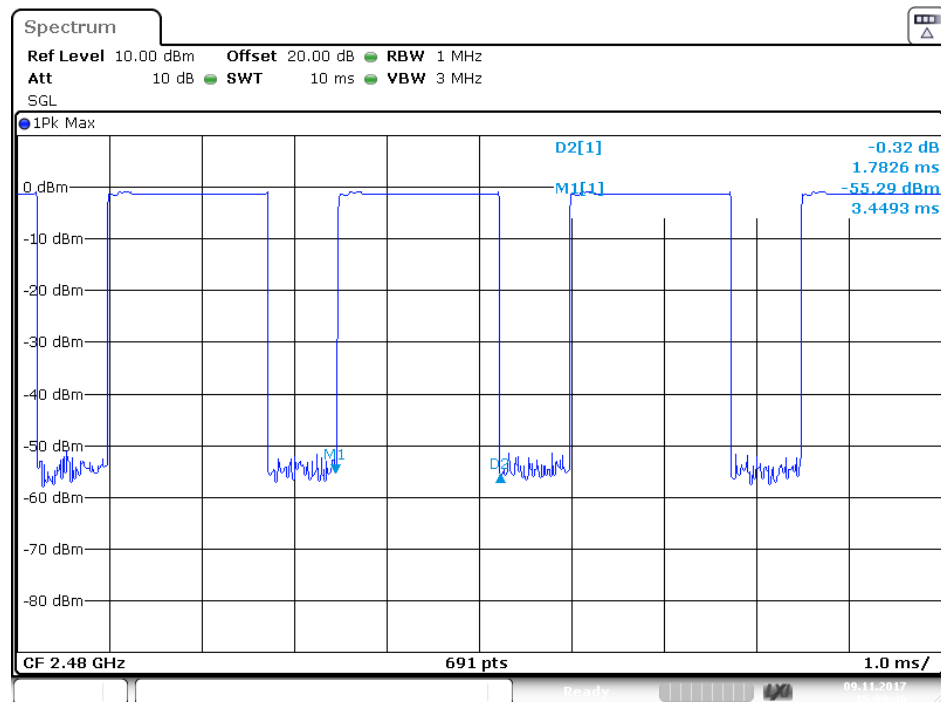
Date: 9.NOV.2017 14:59:56

## DH3 Middle channel



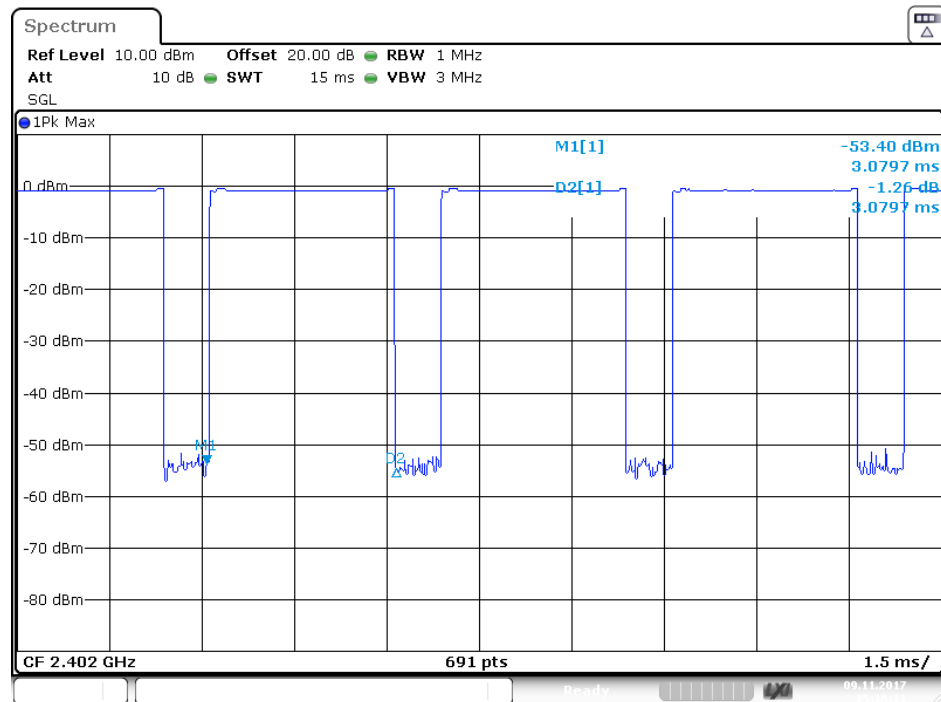
Date: 9.NOV.2017 15:05:17

## DH3 High channel



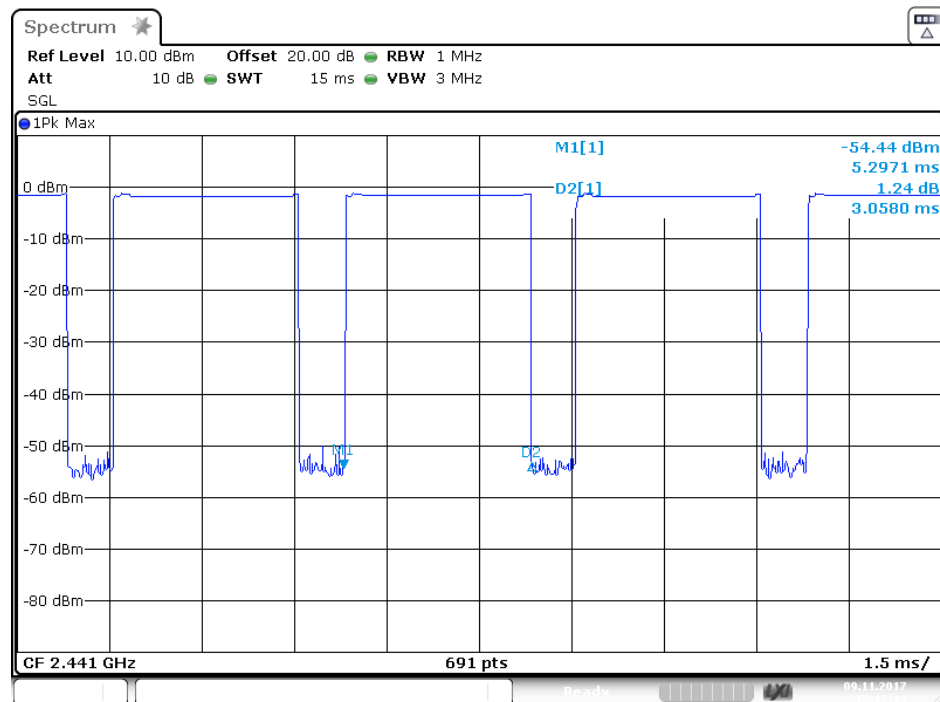
Date: 9.NOV.2017 15:09:46

## DH5 Low channel



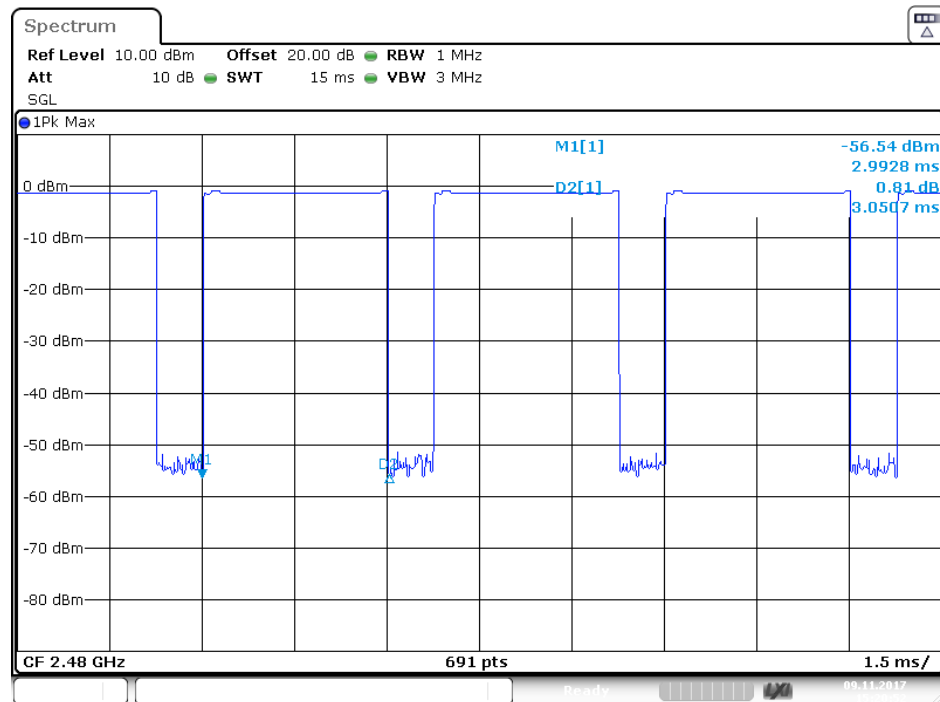
Date: 9.NOV.2017 15:16:11

## DH5 Middle channel



Date: 9.NOV.2017 15:17:13

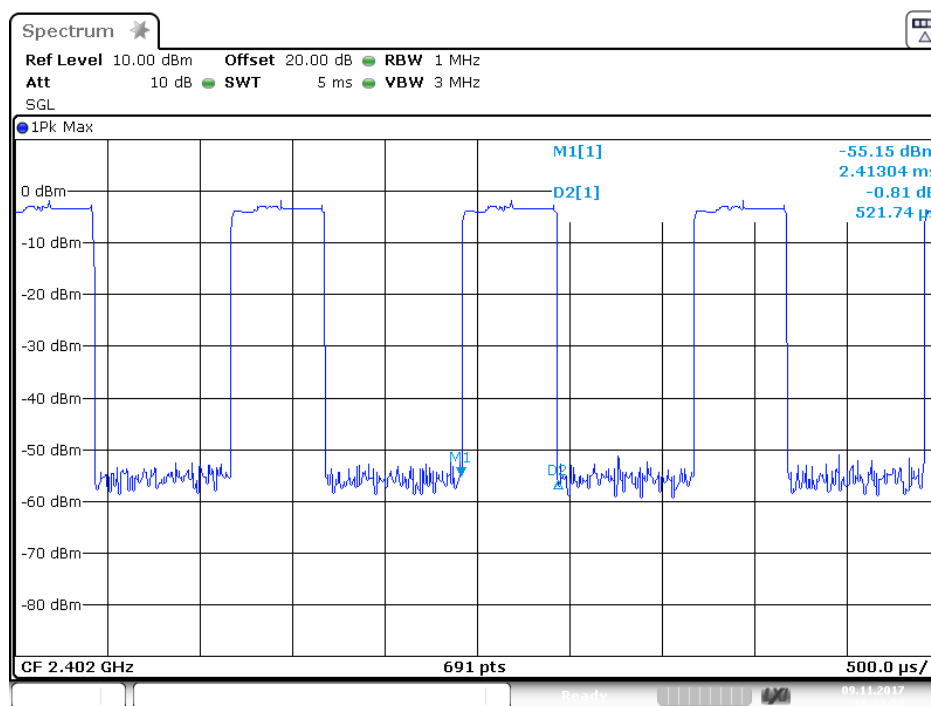
## DH5 High channel



Date: 9.NOV.2017 15:20:52

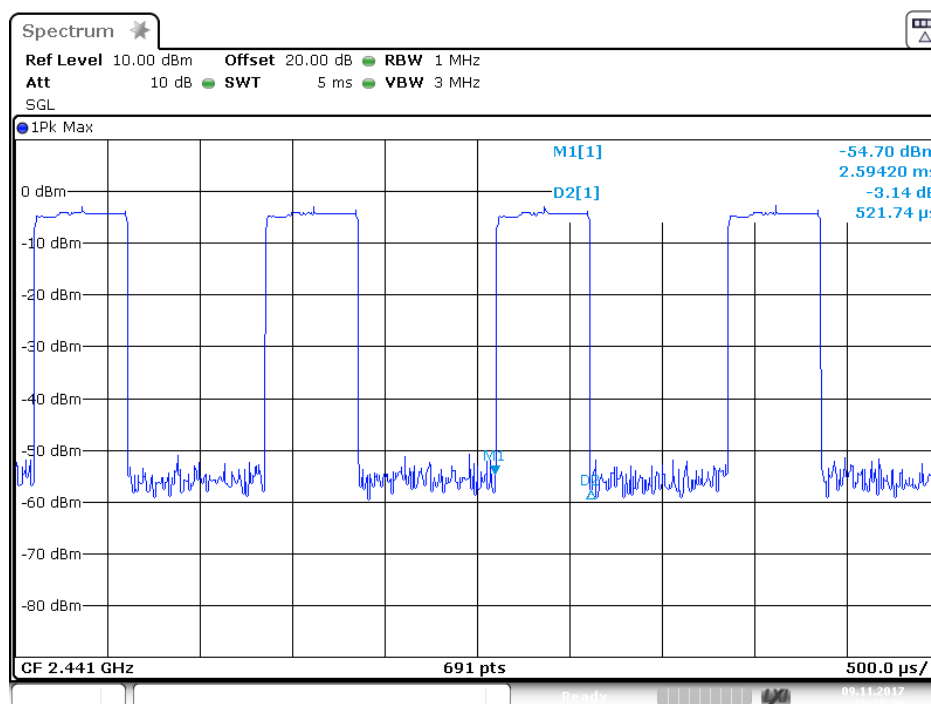
## Π/4-DQPSK

### 2DH1 Low channel



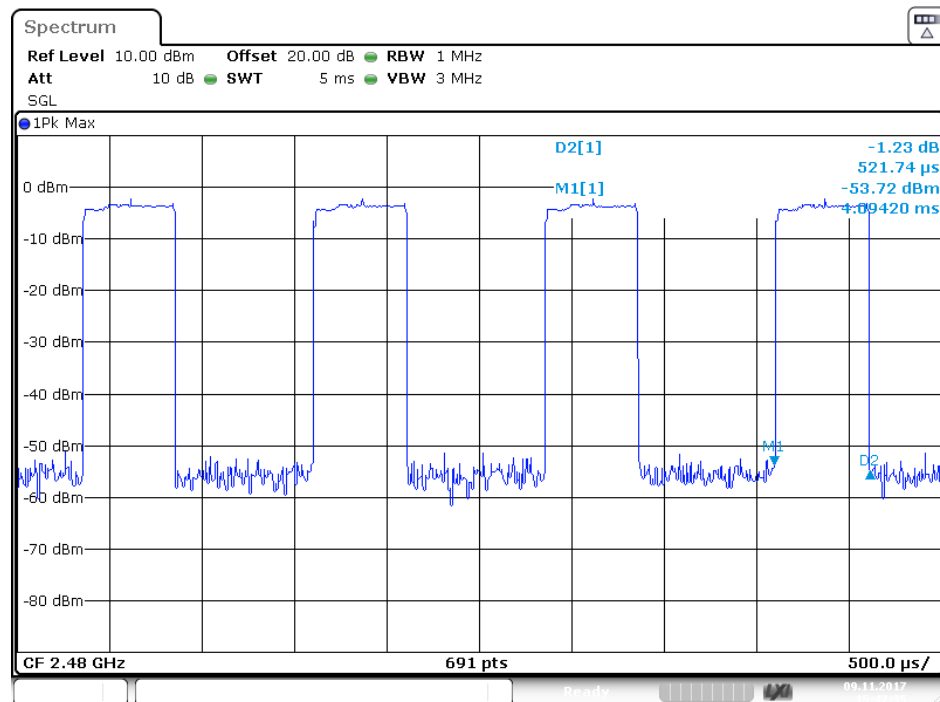
Date: 9.NOV.2017 15:22:53

### 2DH1 Middle channel



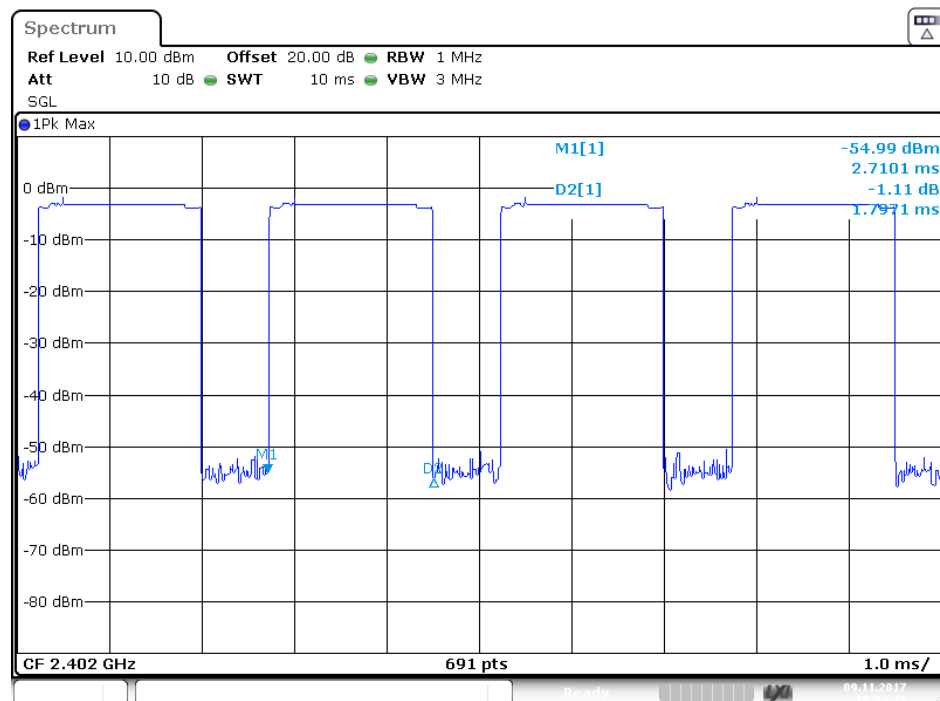
Date: 9.NOV.2017 15:29:39

## 2DH1 High channel



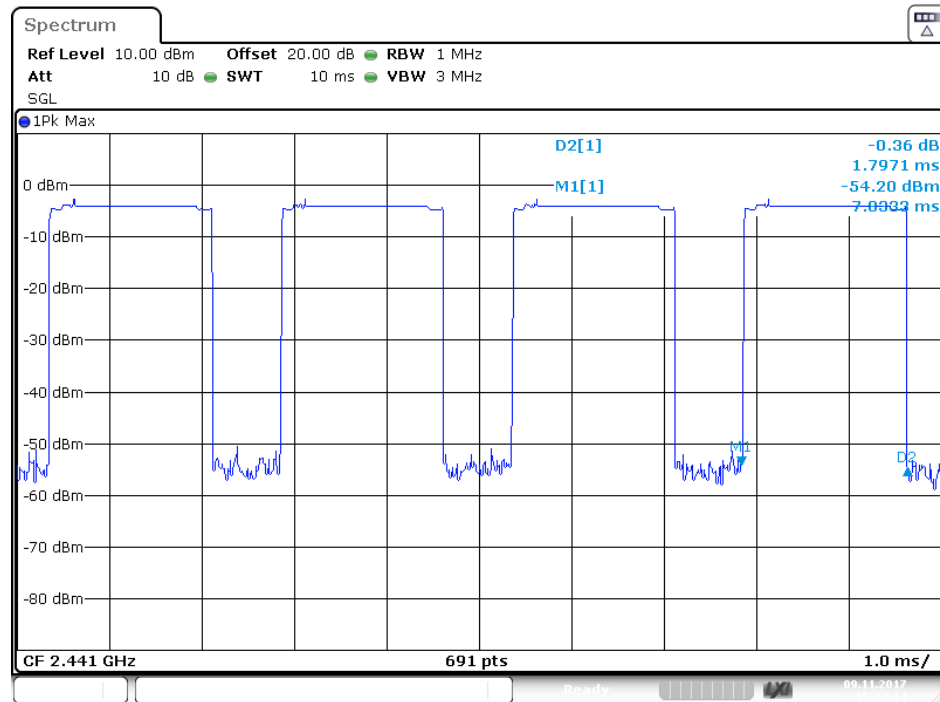
Date: 9.NOV.2017 15:47:35

## 2DH3 Low channel



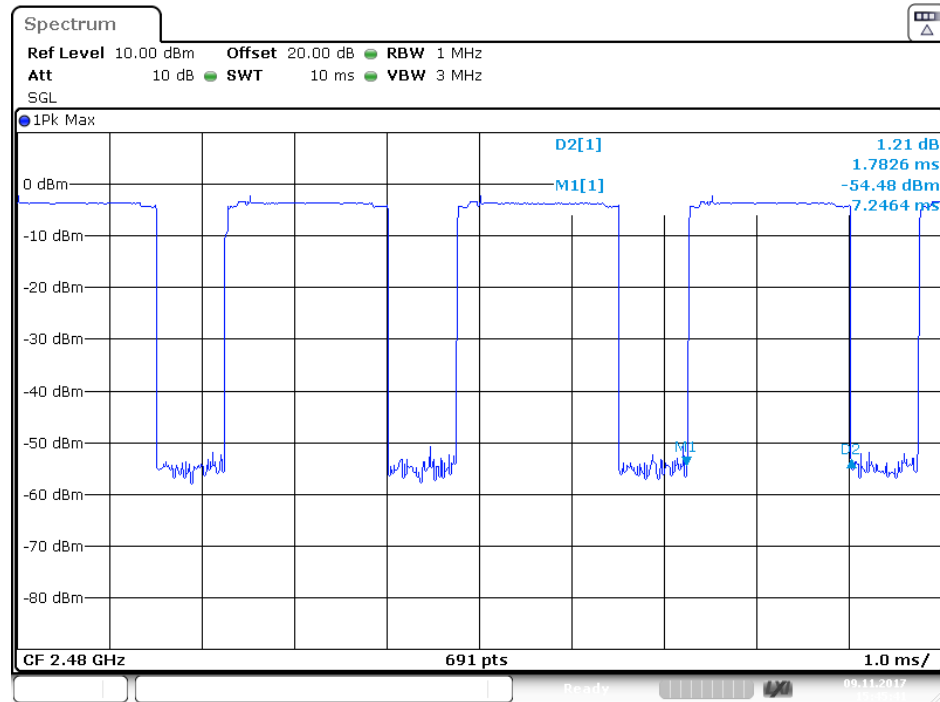
Date: 9.NOV.2017 15:24:22

## 2DH3 Middle channel



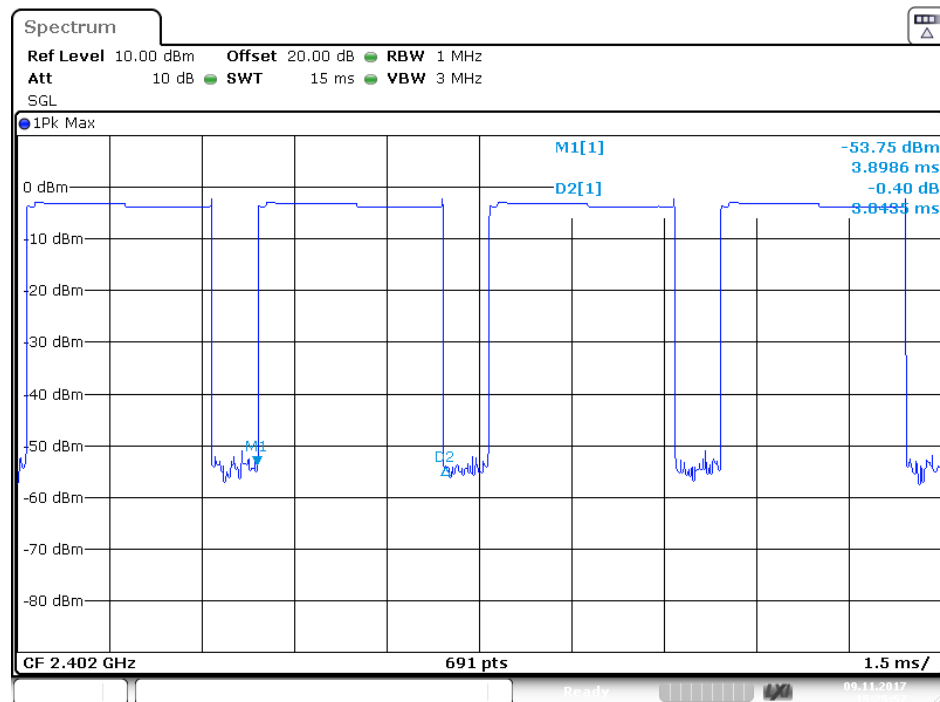
Date: 9.NOV.2017 15:33:15

## 2DH3 High channel



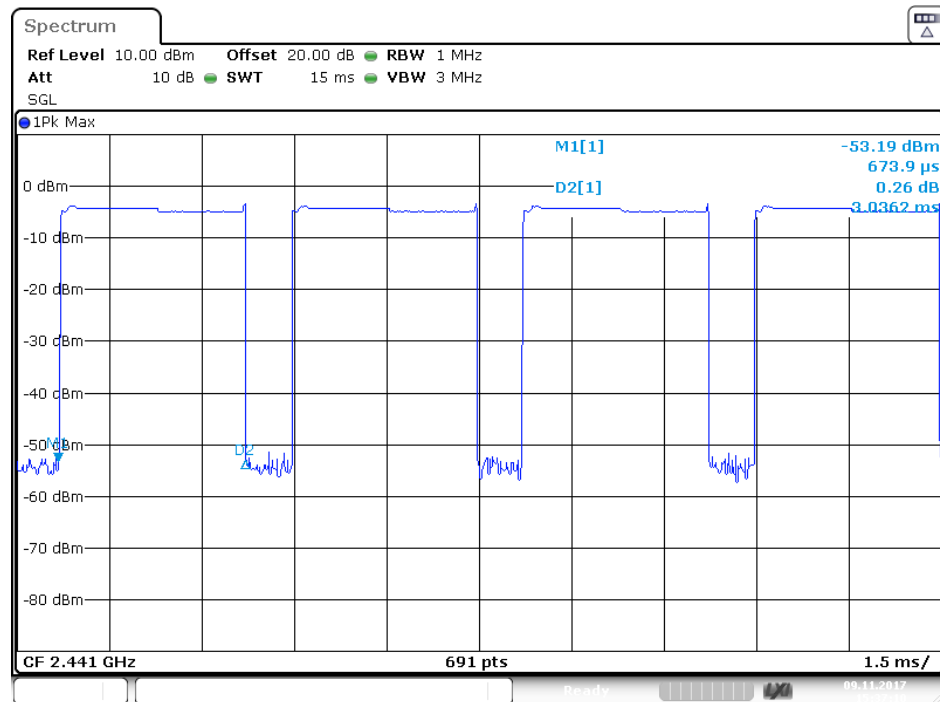
Date: 9.NOV.2017 15:45:41

## 2DH5 Low channel



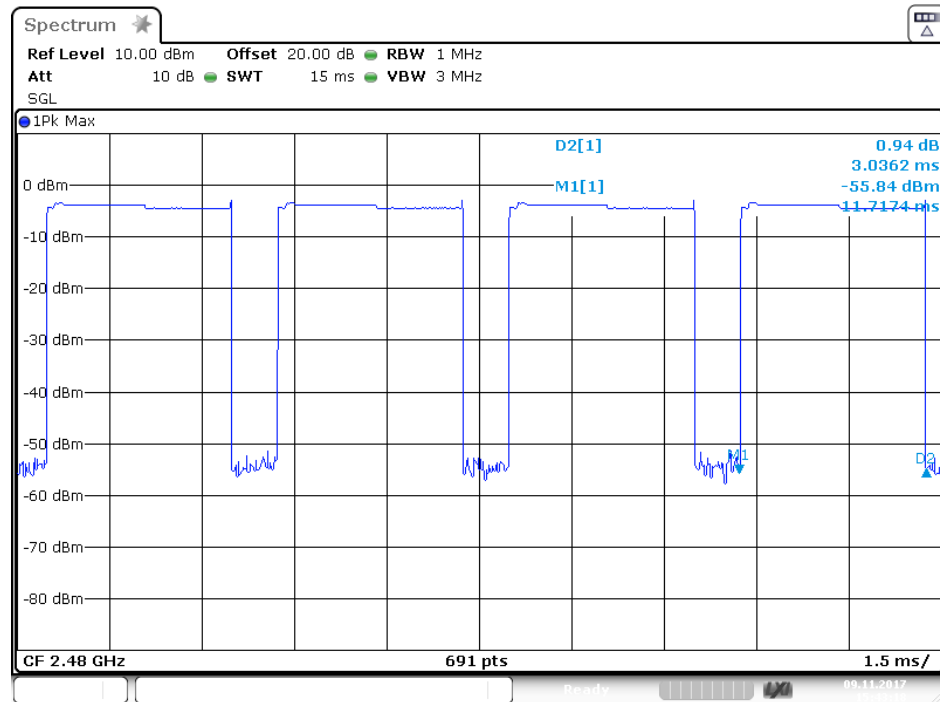
Date: 9.NOV.2017 15:25:58

## 2DH5 Middle channel



Date: 9.NOV.2017 15:37:10

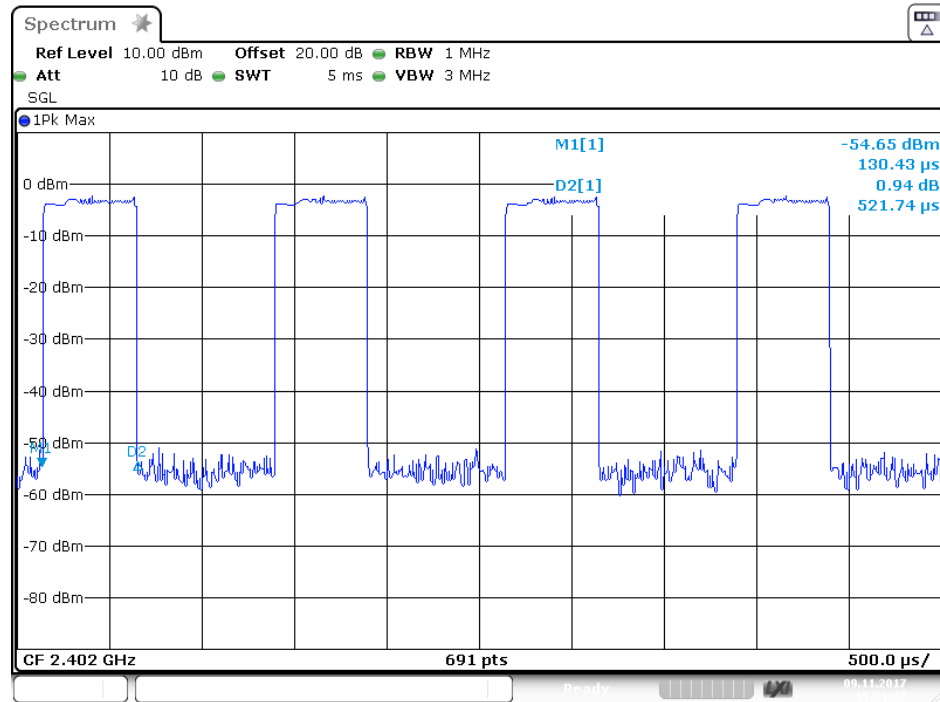
## 2DH5 High channel



Date: 9.NOV.2017 15:43:18

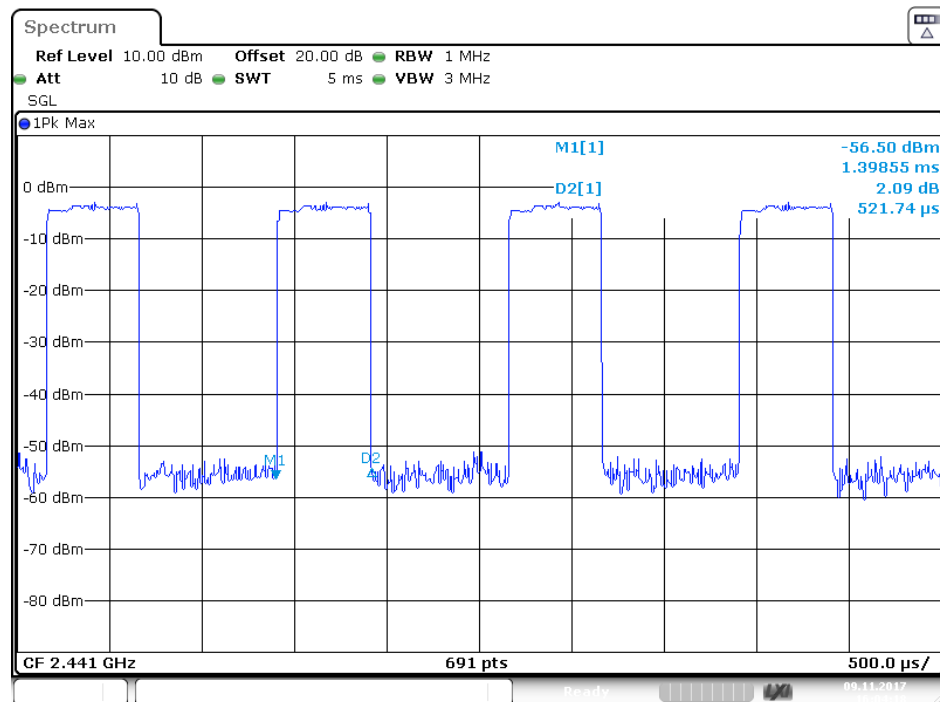
## 8DPSK Mode

## 3DH1 Low channel



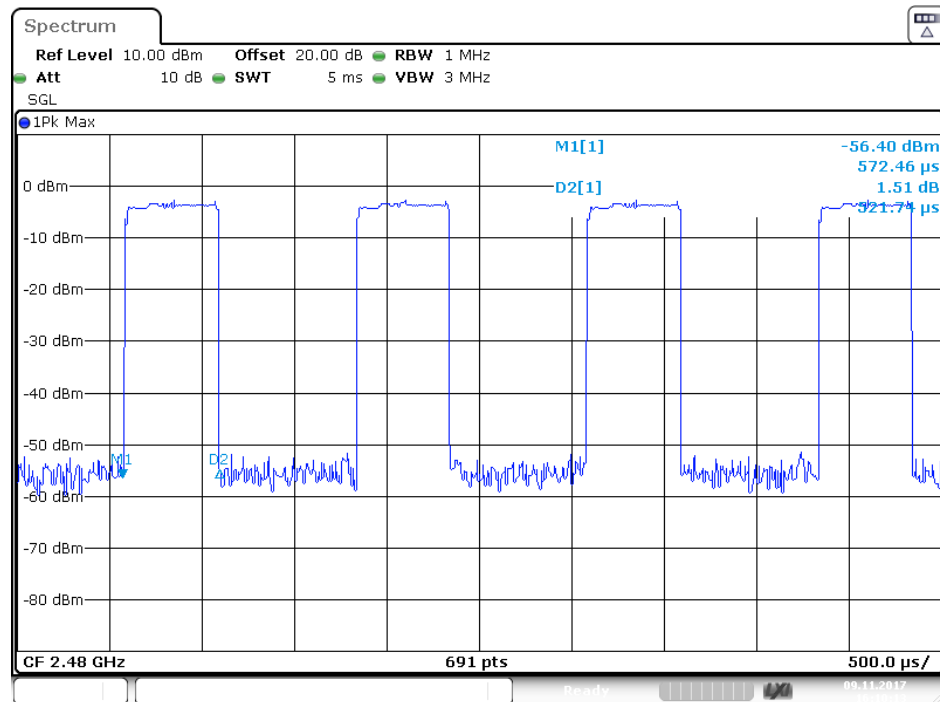
Date: 9.NOV.2017 15:51:27

## 3DH1 Middle channel



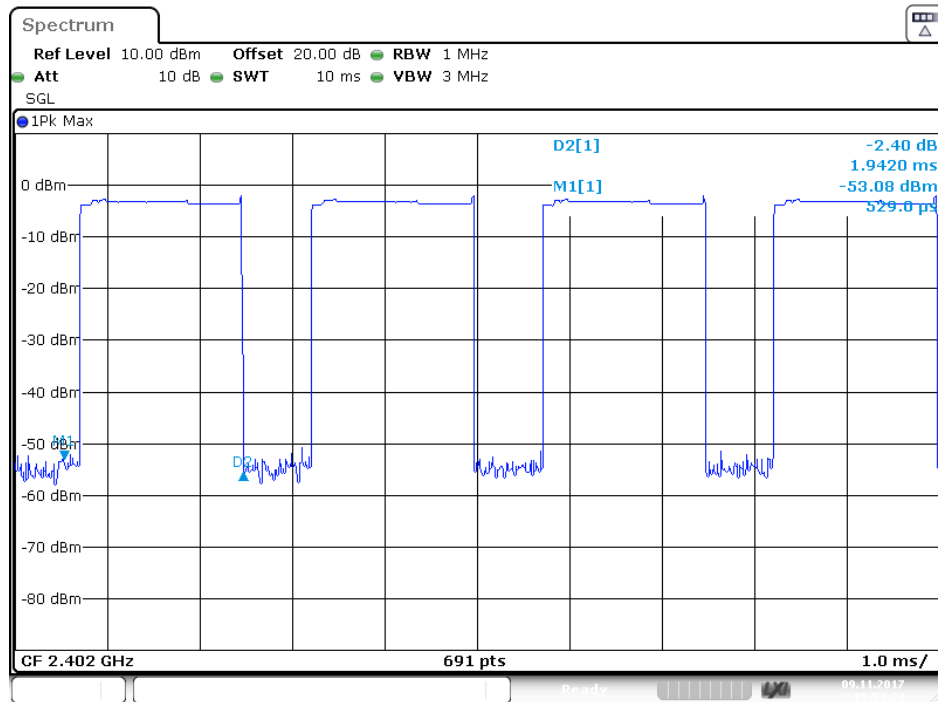
Date: 9.NOV.2017 16:04:19

## 3DH1 High channel



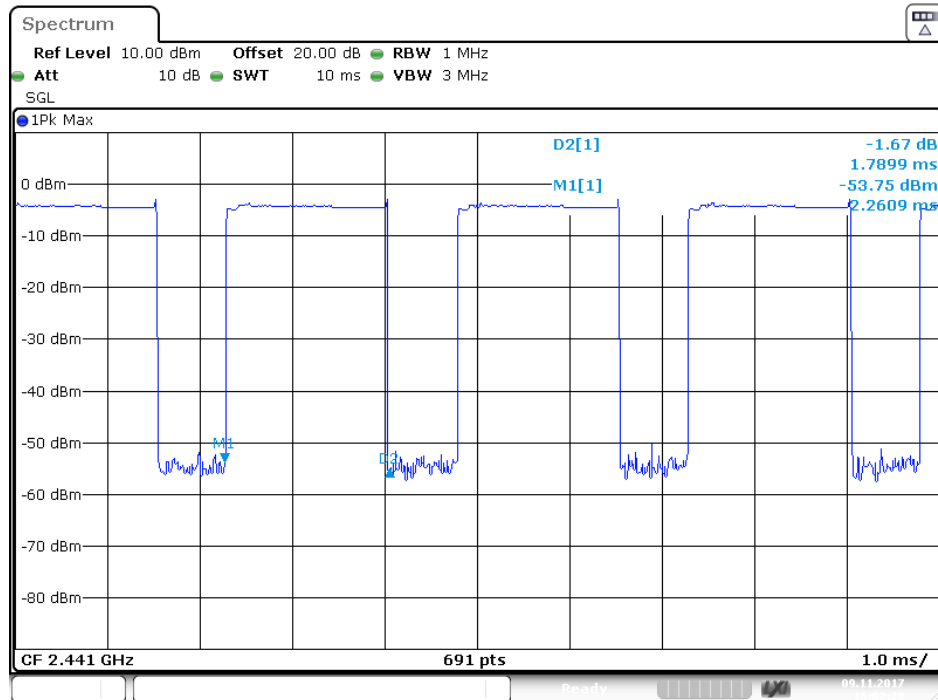
Date: 9.NOV.2017 16:10:13

### 3DH3 Low channel



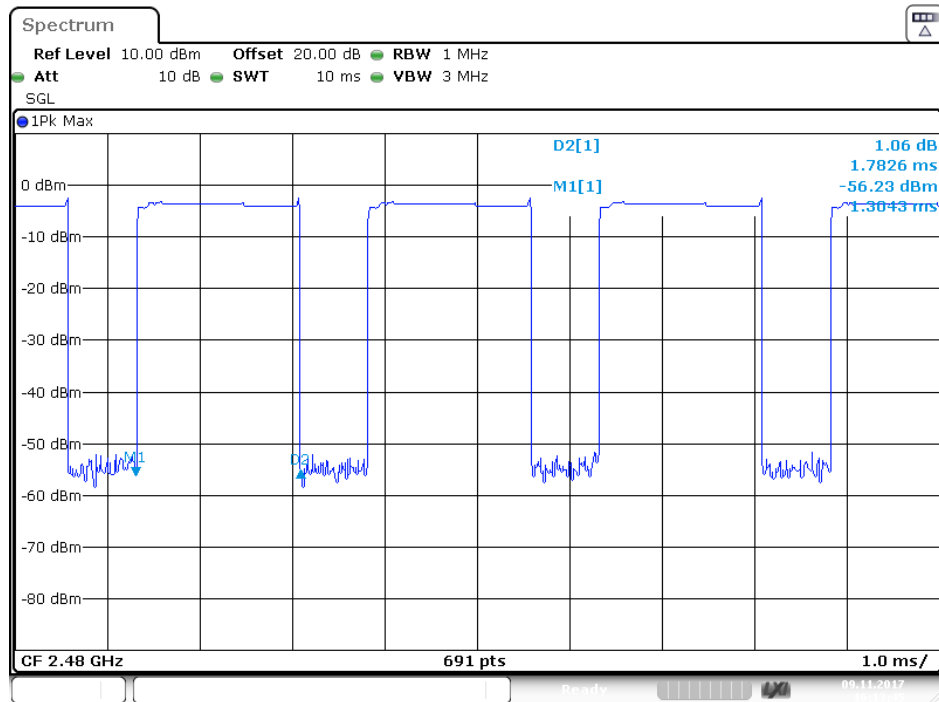
Date: 9.NOV.2017 15:53:24

### 3DH3 Middle channel

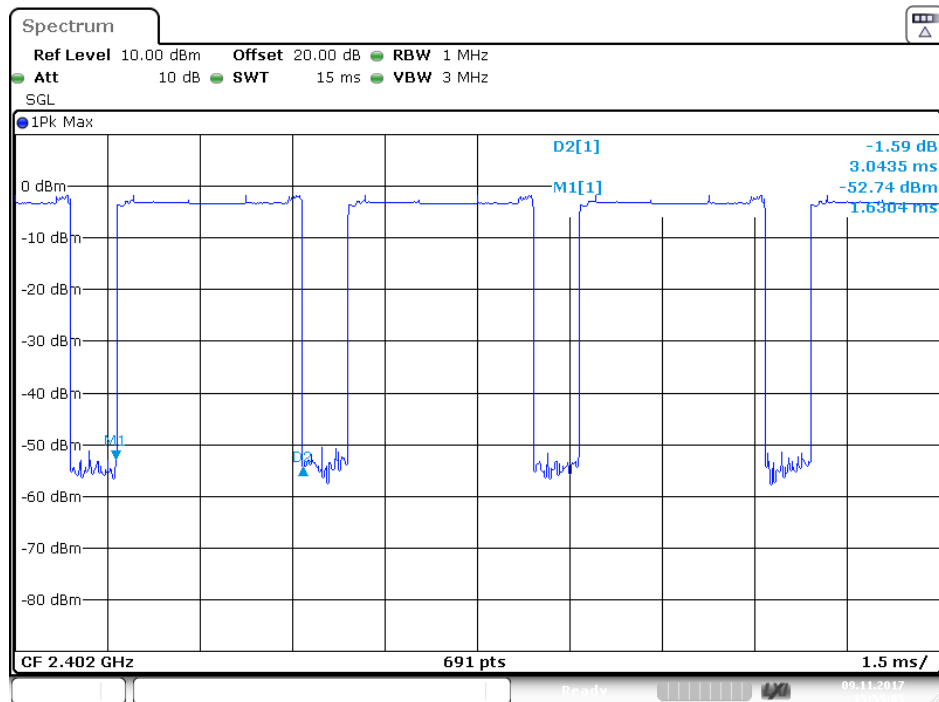


Date: 9.NOV.2017 16:02:29

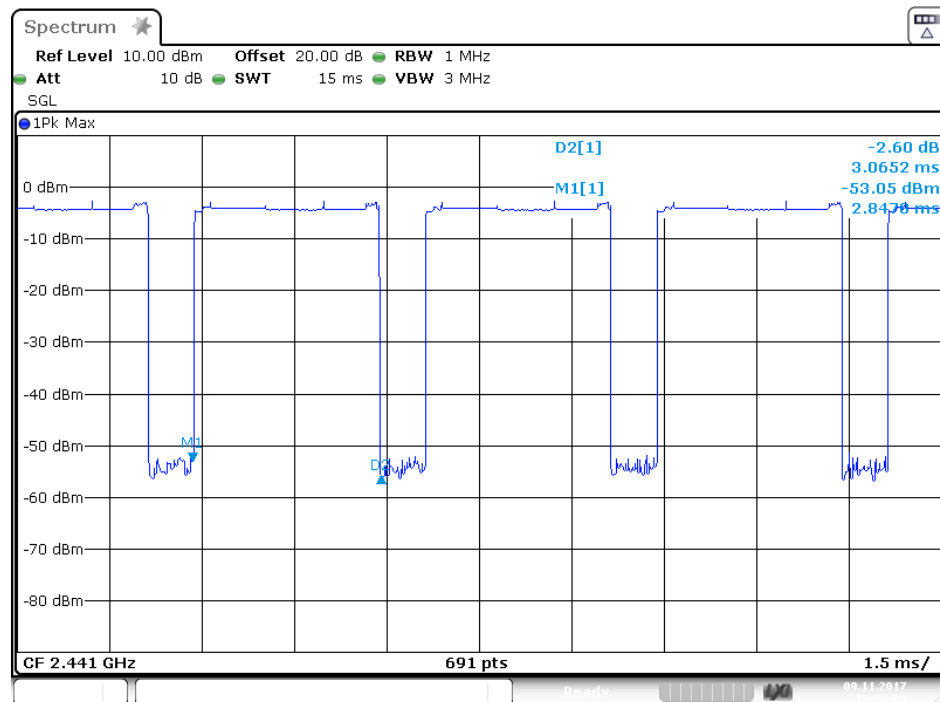
## 3DH3 High channel



## 3DH5 Low channel

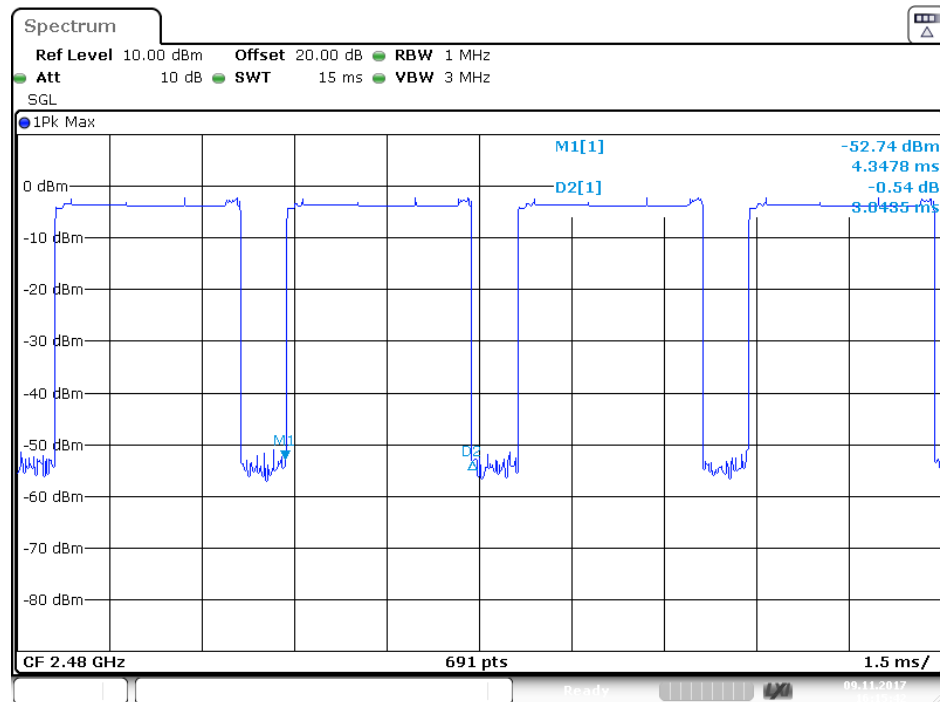


## 3DH5 Middle channel



Date: 9.NOV.2017 15:58:03

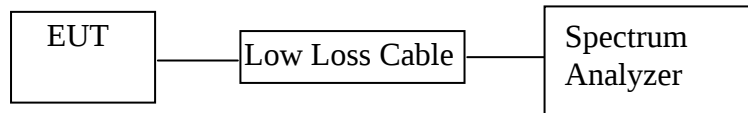
## 3DH5 High channel



Date: 9.NOV.2017 16:15:42

## 9. MAXIMUM PEAK OUTPUT POWER TEST

### 9.1. Block Diagram of Test Setup



(EUT: Stage Karaoke)

### 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 3MHz.

9.5.3. Measurement the maximum peak output power.

## 9.6. Test Result

### GFSK Mode

| Channel | Frequency (MHz) | Peak Output Power (dBm/W) | Limits dBm / W |
|---------|-----------------|---------------------------|----------------|
| Low     | 2402            | 0.98/0.0013               | 21 / 0.125     |
| Middle  | 2441            | 1.75/0.0015               | 21 / 0.125     |
| High    | 2480            | 1.61/0.0014               | 21 / 0.125     |

### II/4-DQPSK Mode

| Channel | Frequency (MHz) | Peak Output Power (dBm/W) | Limits dBm / W |
|---------|-----------------|---------------------------|----------------|
| Low     | 2402            | 3.29/0.0021               | 21 / 0.125     |
| Middle  | 2441            | 2.89/0.0019               | 21 / 0.125     |
| High    | 2480            | 2.63/0.0018               | 21 / 0.125     |

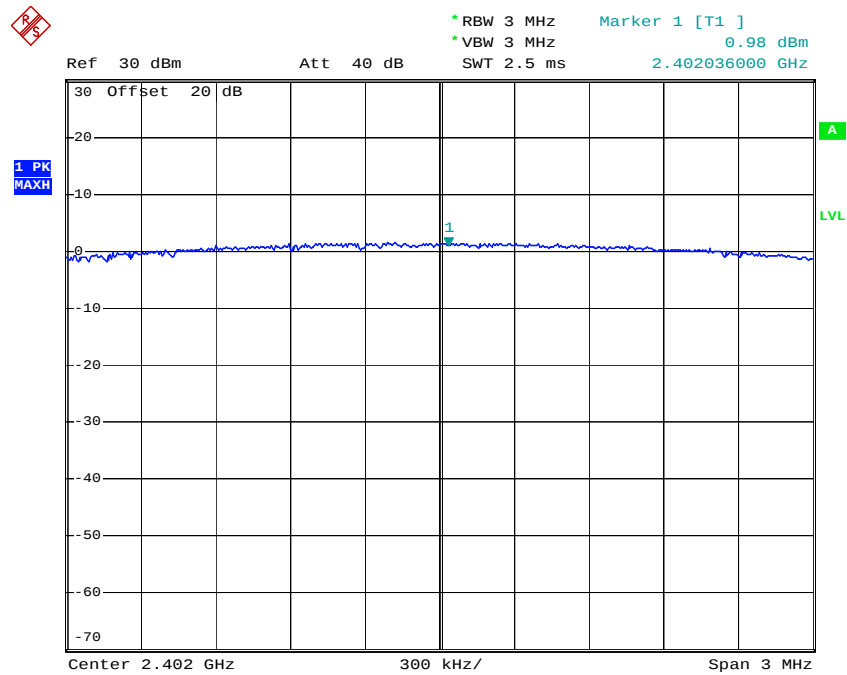
### 8DPSK Mode

| Channel | Frequency (MHz) | Peak Output Power (dBm/W) | Limits dBm / W |
|---------|-----------------|---------------------------|----------------|
| Low     | 2402            | 2.13/0.0016               | 21 / 0.125     |
| Middle  | 2441            | 0.97/0.0013               | 21 / 0.125     |
| High    | 2480            | 0.67/0.0012               | 21 / 0.125     |

The spectrum analyzer plots are attached as below.

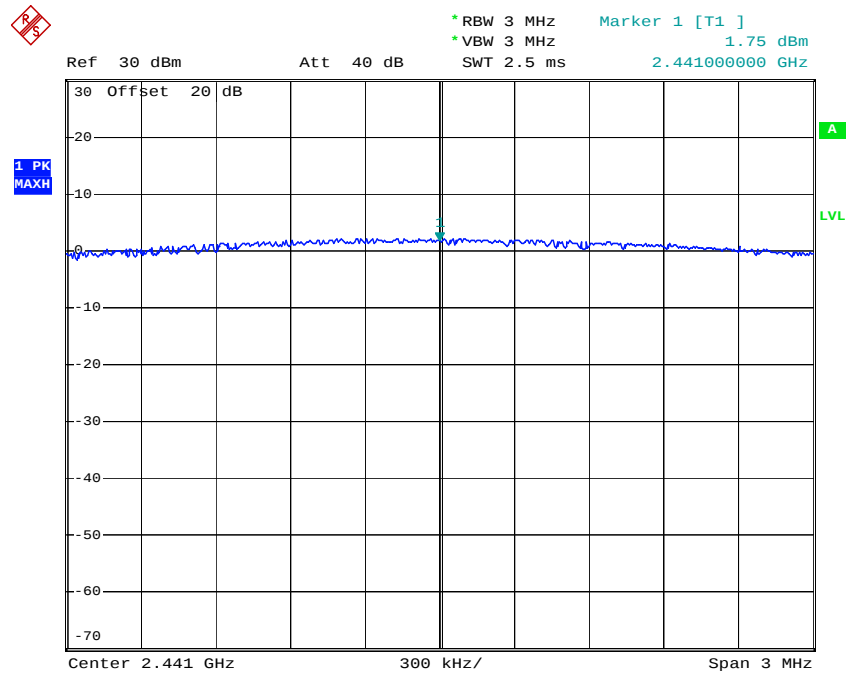
## GFSK Mode

### Low channel



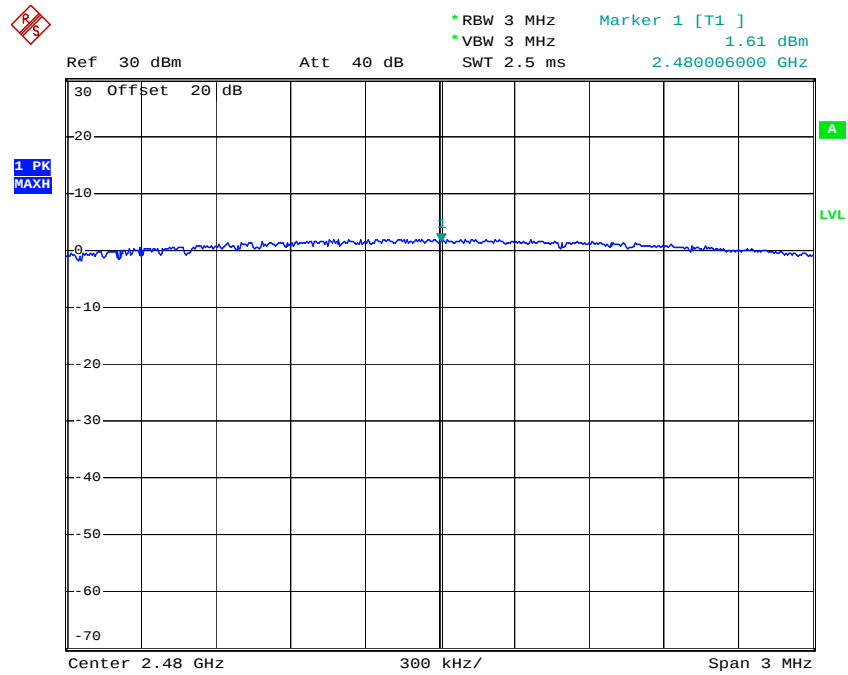
Comment A:  
Date: 8.NOV.2017 10:20:42

### Middle channel



Comment A:  
Date: 8.NOV.2017 10:21:31

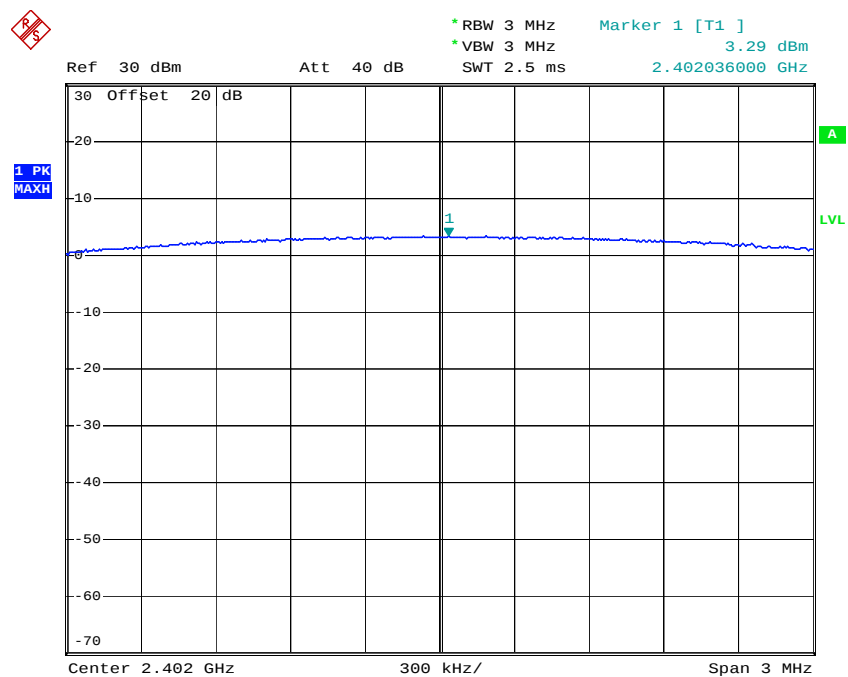
## High channel



Comment A:  
Date: 8.NOV.2017 10:22:35

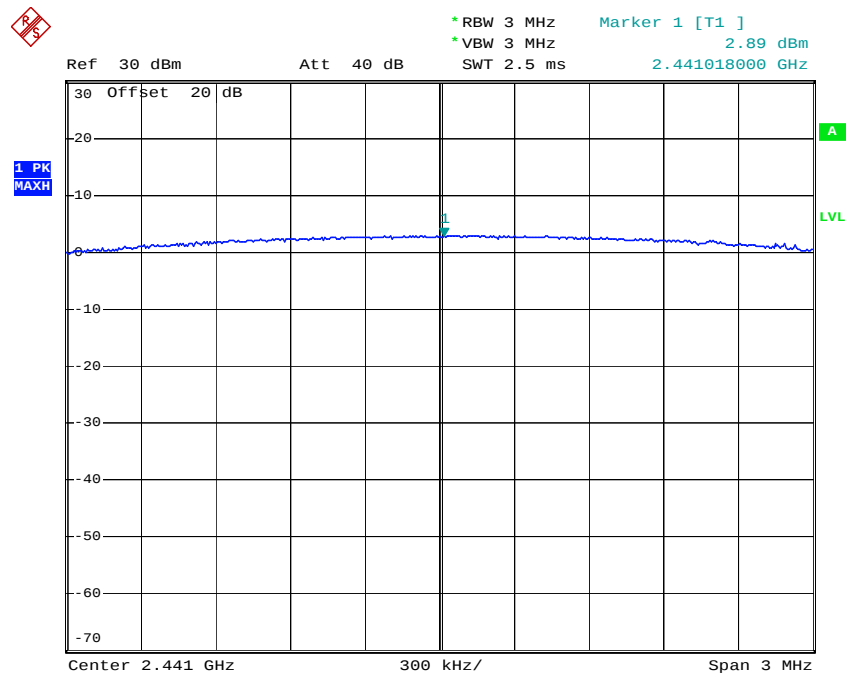
## Π/4-DQPSK Mode

## Low channel



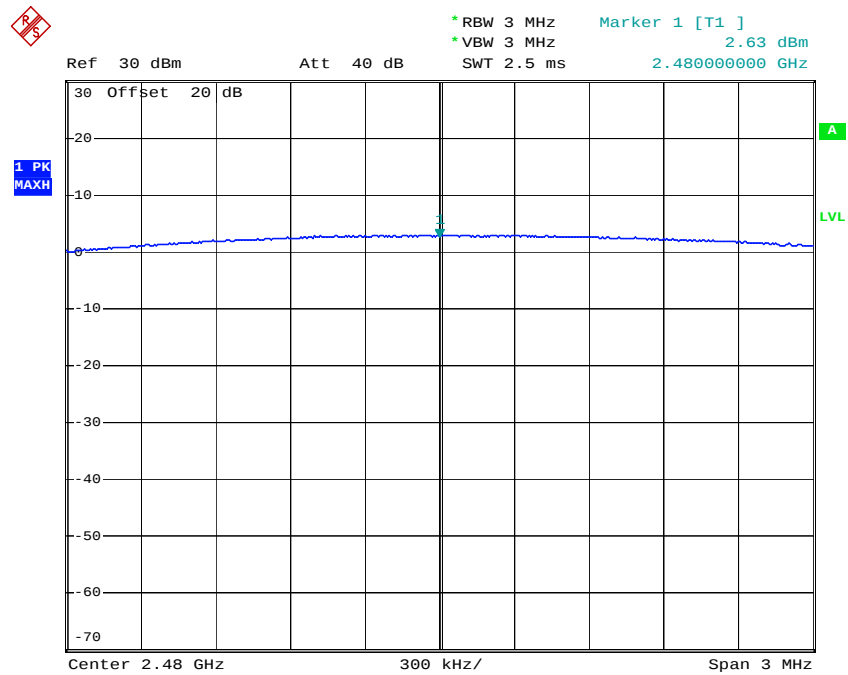
Comment A:  
Date: 8.NOV.2017 10:19:35

## Middle channel



Comment A:  
Date: 8.NOV.2017 10:18:57

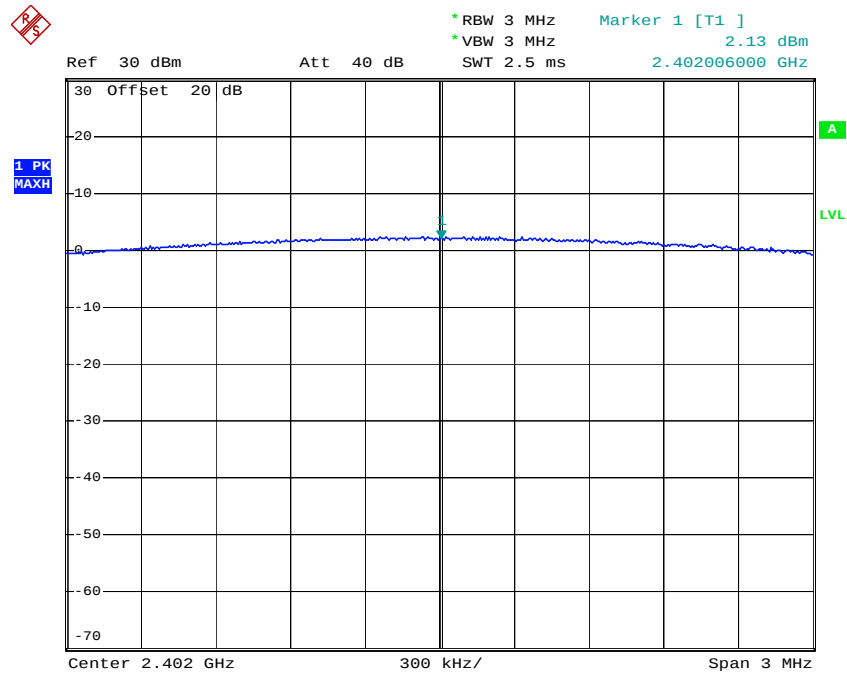
## High channel



Comment A:  
Date: 8.NOV.2017 10:18:05

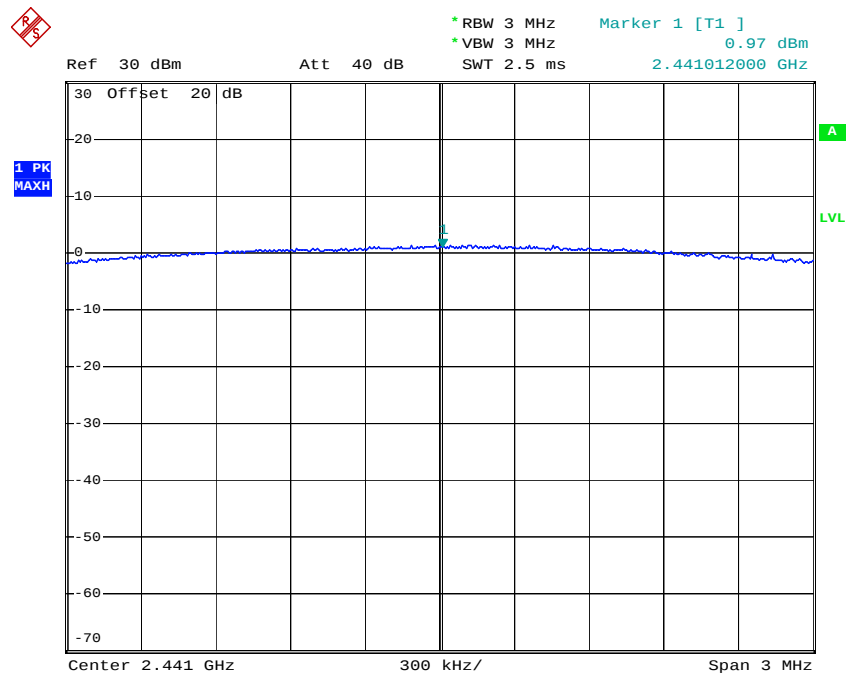
## 8DPSK Mode

### Low channel



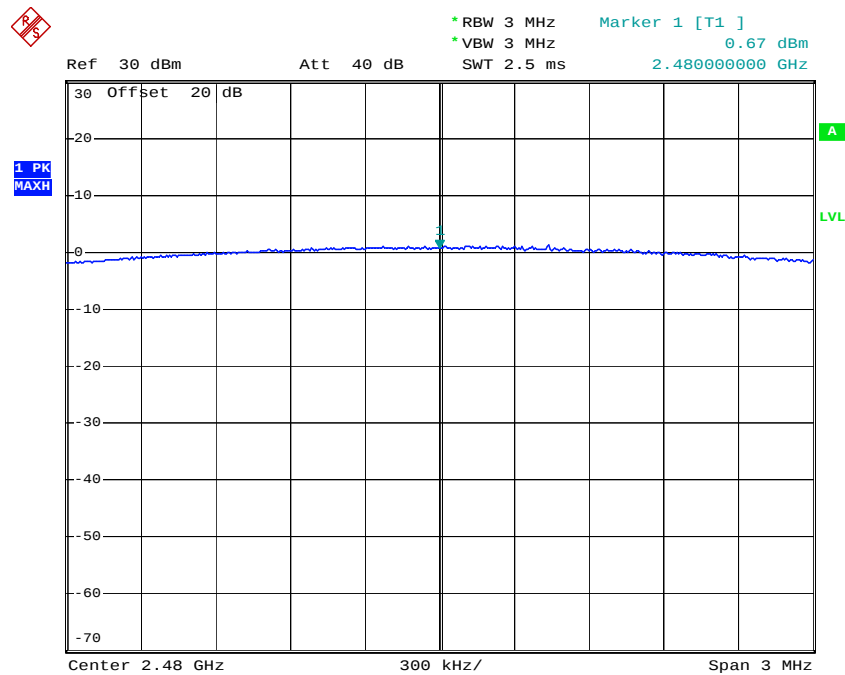
Comment A:  
Date: 8.NOV.2017 10:26:22

### Middle channel



Comment A:  
Date: 8.NOV.2017 10:24:53

High channel

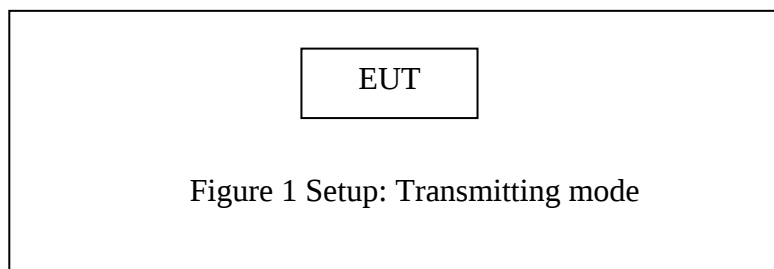


Comment A:  
Date: 8.NOV.2017 10:24:05

## 10.RADIATED EMISSION TEST

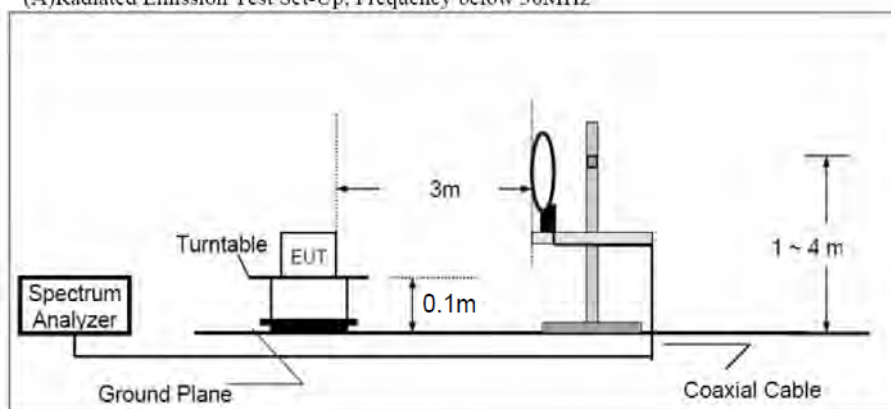
### 10.1.Block Diagram of Test Setup

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

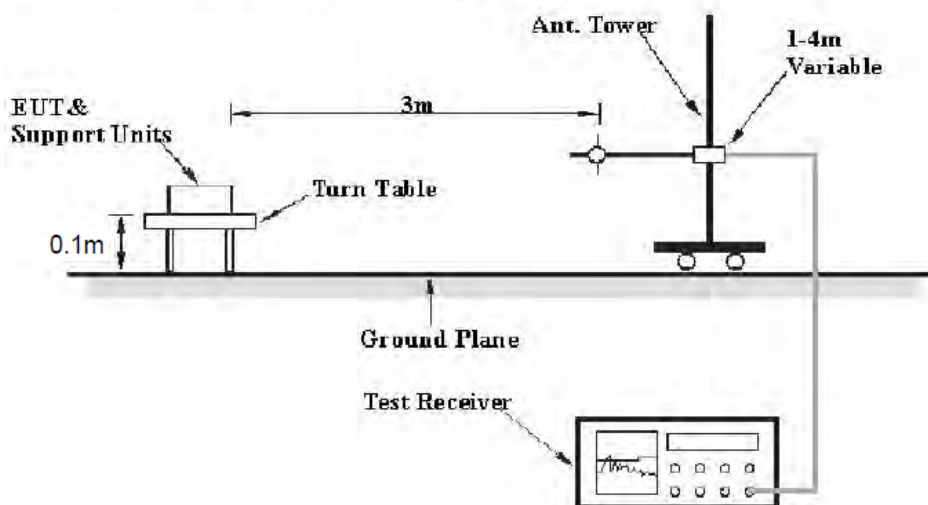


#### 10.1.2.Semi-Anechoic Chamber Test Setup Diagram

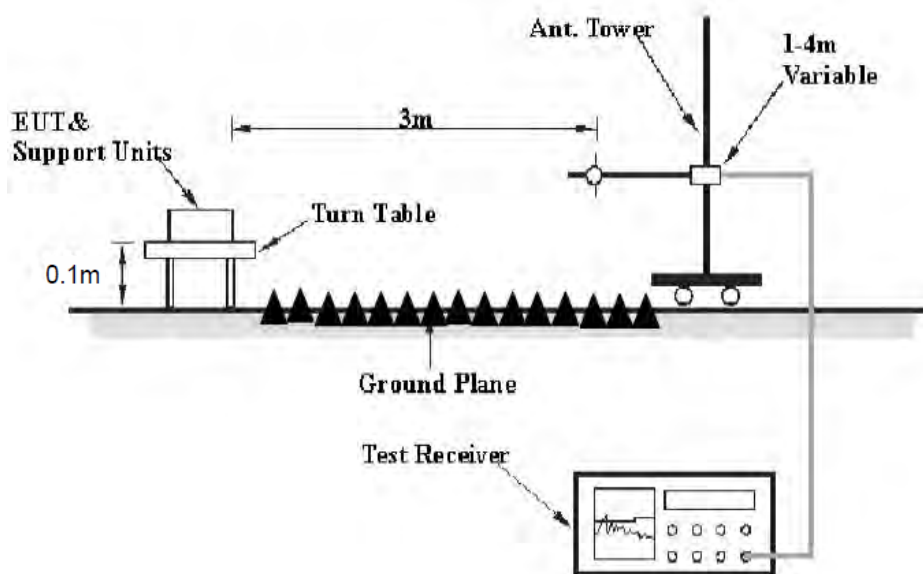
(A)Radiated Emission Test Set-Up, Frequency below 30MHz



(B)Radiated Emission Test Set-Up, Frequency 30MHz-1GHz



(C) Radiated Emission Test Set-Up, Frequency 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. Operating Condition of EUT

10.5.1. Setup the EUT and simulator as shown as Section 10.1.

10.5.2. Turn on the power of all equipment.

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

## 10.6. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.1 meter high above ground. 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.

### 10.7.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.

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

**PASS.**

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

**2. The test frequency is from 30MHz to 25GHz, The 18-25GHz emissions are not reported, because the levels are too low against the limit.**

## Below 1GHz



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Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: frank2017 #1353

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Stage Karaoke

Mode: TX 2402MHz(GFSK)

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Horizontal

Power Source: AC 120V/60Hz

Date: 17/10/30/

Time: 9/40/57

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 44.6550     | 53.48            | -18.86      | 34.62           | 40.00          | -5.38       | QP       | 200         | 197           |        |
| 2   | 108.1294    | 58.67            | -22.15      | 36.52           | 43.50          | -6.98       | QP       | 200         | 138           |        |
| 3   | 125.7056    | 60.15            | -22.05      | 38.10           | 43.50          | -5.40       | QP       | 200         | 75            |        |
| 4   | 150.7238    | 60.15            | -22.29      | 37.86           | 43.50          | -5.64       | QP       | 200         | 158           |        |
| 5   | 259.8150    | 56.15            | -17.55      | 38.60           | 46.00          | -7.40       | QP       | 200         | 154           |        |
| 6   | 297.4168    | 54.46            | -15.82      | 38.64           | 46.00          | -7.36       | QP       | 200         | 287           |        |



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Site: 1# Chamber

Tel:+86-0755-26503290

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Job No.: frank2017 #1354

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Stage Karaoke

Mode: TX 2402MHz(GFSK)

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Vertical

Power Source: AC 120V/60Hz

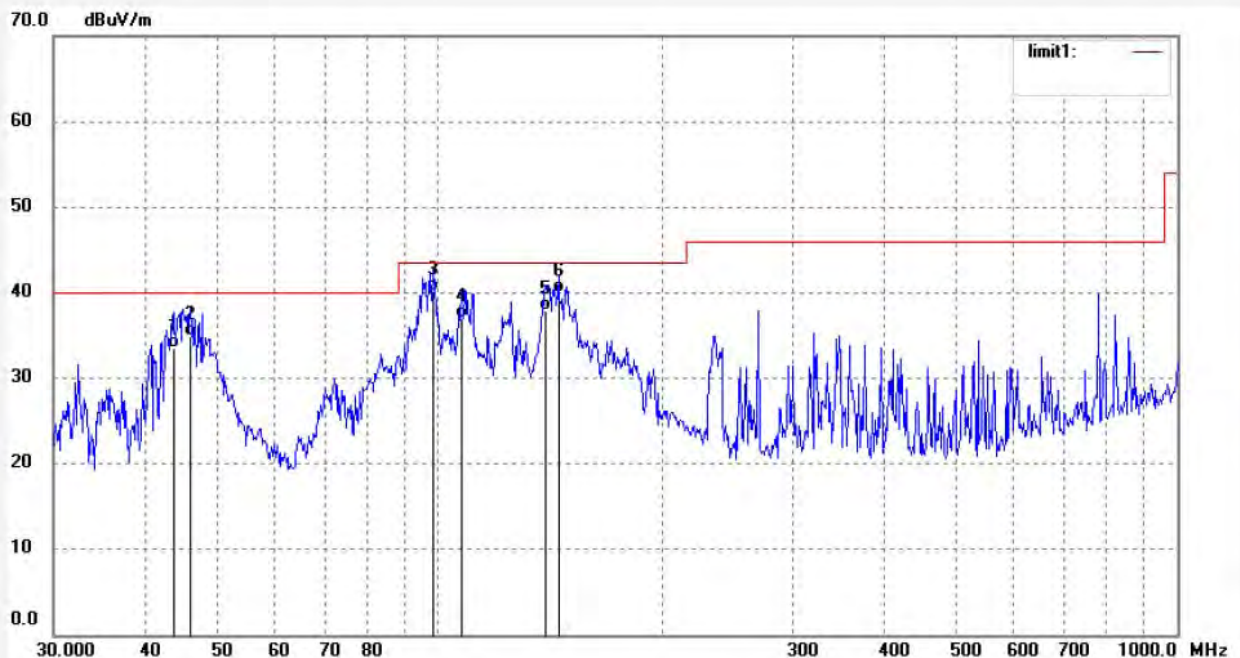
Date: 17/10/30/

Time: 9/41/19

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 43.6323     | 52.15            | -18.70      | 33.45           | 40.00          | -6.55       | QP       | 100         | 153           |        |
| 2   | 46.0561     | 54.15            | -19.31      | 34.84           | 40.00          | -5.16       | QP       | 100         | 147           |        |
| 3   | 98.1782     | 62.45            | -22.36      | 40.09           | 43.50          | -3.41       | QP       | 100         | 213           |        |
| 4   | 107.2977    | 59.34            | -22.30      | 37.04           | 43.50          | -6.46       | QP       | 100         | 325           |        |
| 5   | 139.5207    | 60.18            | -22.30      | 37.88           | 43.50          | -5.62       | QP       | 100         | 247           |        |
| 6   | 145.0141    | 62.34            | -22.37      | 39.97           | 43.50          | -3.53       | QP       | 100         | 338           |        |



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Tel:+86-0755-26503290

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Job No.: frank2017 #1356

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Stage Karaoke

Mode: TX 2441MHz(GFSK)

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Horizontal

Power Source: AC 120V/60Hz

Date: 17/10/30/

Time: 9/41/52

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 44.8278     | 52.74            | -18.90      | 33.84           | 40.00          | -6.16       | QP       | 200         | 164           |        |
| 2   | 106.0618    | 53.15            | -22.53      | 30.62           | 43.50          | -12.88      | QP       | 200         | 247           |        |
| 3   | 126.6803    | 56.34            | -22.08      | 34.26           | 43.50          | -9.24       | QP       | 200         | 327           |        |
| 4   | 151.8925    | 53.18            | -22.19      | 30.99           | 43.50          | -12.51      | QP       | 200         | 144           |        |
| 5   | 255.8325    | 55.15            | -17.80      | 37.35           | 46.00          | -8.65       | QP       | 200         | 134           |        |
| 6   | 271.0899    | 55.45            | -17.03      | 38.42           | 46.00          | -7.58       | QP       | 200         | 135           |        |



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Tel:+86-0755-26503290

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Job No.: frank2017 #1355

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Stage Karaoke

Mode: TX 2441MHz(GFSK)

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Vertical

Power Source: AC 120V/60Hz

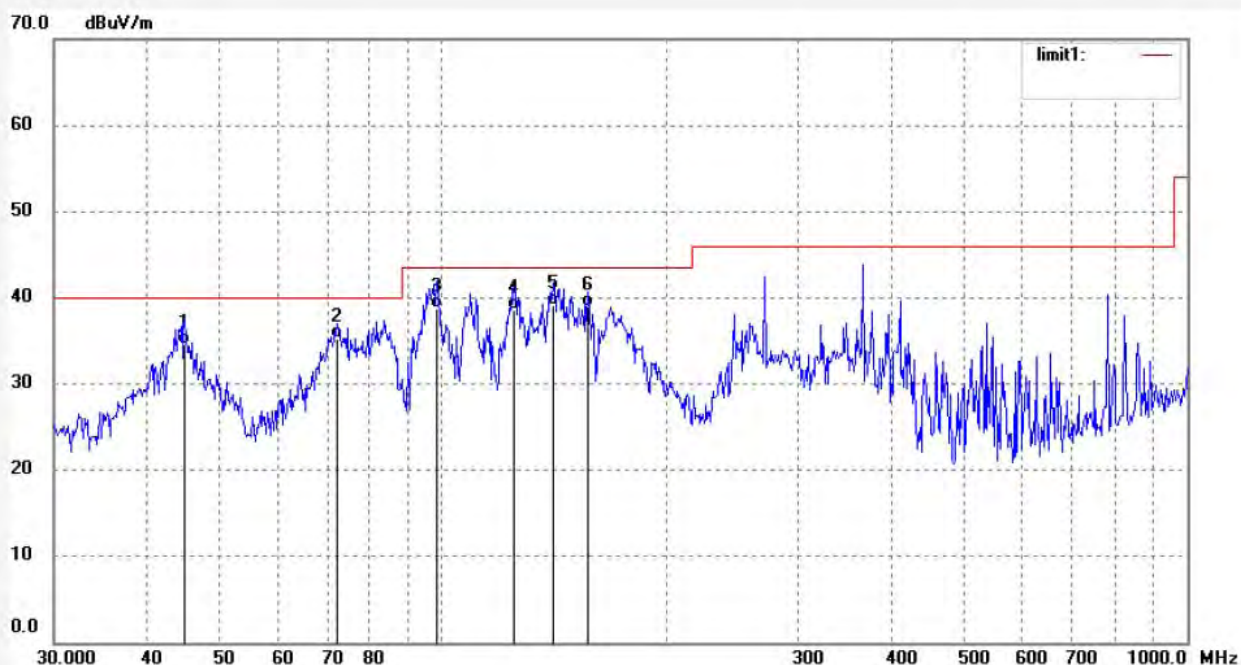
Date: 17/10/30/

Time: 9/41/30

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 45.0013     | 53.48            | -18.92      | 34.56           | 40.00          | -5.44       | QP       | 100         | 324           |        |
| 2   | 72.0841     | 57.46            | -22.17      | 35.29           | 40.00          | -4.71       | QP       | 100         | 225           |        |
| 3   | 98.1782     | 61.20            | -22.36      | 38.84           | 43.50          | -4.66       | QP       | 100         | 155           |        |
| 4   | 124.7385    | 60.67            | -22.03      | 38.64           | 43.50          | -4.86       | QP       | 100         | 325           |        |
| 5   | 140.6024    | 61.48            | -22.32      | 39.16           | 43.50          | -4.34       | QP       | 100         | 95            |        |
| 6   | 156.6585    | 60.65            | -21.74      | 38.91           | 43.50          | -4.59       | QP       | 100         | 165           |        |



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Tel:+86-0755-26503290

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Job No.: frank2017 #1357

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Stage Karaoke

Mode: TX 2480MHz(GFSK)

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Horizontal

Power Source: AC 120V/60Hz

Date: 17/10/30/

Time: 9/42/01

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 44.4829     | 52.15            | -18.84      | 33.31           | 40.00          | -6.69       | QP       | 250         | 153           |        |
| 2   | 106.8841    | 54.15            | -22.38      | 31.77           | 43.50          | -11.73      | QP       | 200         | 323           |        |
| 3   | 121.4116    | 57.15            | -21.95      | 35.20           | 43.50          | -8.30       | QP       | 250         | 58            |        |
| 4   | 126.6803    | 56.30            | -22.08      | 34.22           | 43.50          | -9.28       | QP       | 200         | 189           |        |
| 5   | 149.5643    | 56.10            | -22.35      | 33.75           | 43.50          | -9.75       | QP       | 200         | 167           |        |
| 6   | 271.0899    | 57.32            | -17.03      | 40.29           | 46.00          | -5.71       | QP       | 200         | 199           |        |



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Job No.: frank2017 #1358

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: Stage Karaoke

Mode: TX 2480MHz(GFSK)

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Vertical

Power Source: AC 120V/60Hz

Date: 17/10/30/

Time: 9/42/28

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 44.4829     | 53.88            | -18.84      | 35.04           | 40.00          | -4.96       | QP       | 200         | 133           |        |
| 2   | 95.1914     | 60.78            | -21.95      | 38.83           | 43.50          | -4.67       | QP       | 200         | 215           |        |
| 3   | 108.5480    | 58.12            | -22.07      | 36.05           | 43.50          | -7.45       | QP       | 200         | 325           |        |
| 4   | 124.7385    | 61.12            | -22.03      | 39.09           | 43.50          | -4.41       | QP       | 200         | 224           |        |
| 5   | 140.6024    | 60.16            | -22.32      | 37.84           | 43.50          | -5.66       | QP       | 200         | 148           |        |
| 6   | 150.7238    | 60.12            | -22.29      | 37.83           | 43.50          | -5.67       | QP       | 200         | 327           |        |

## Above 1GHz



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Tel:+86-0755-26503290

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Job No.: frank2017 #1444

Standard: FCC PK

Test item: Radiation Test

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

EUT: Stage Karaoke

Mode: TX 2402MHz(GFSK)

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Horizontal

Power Source: AC 120V/60Hz

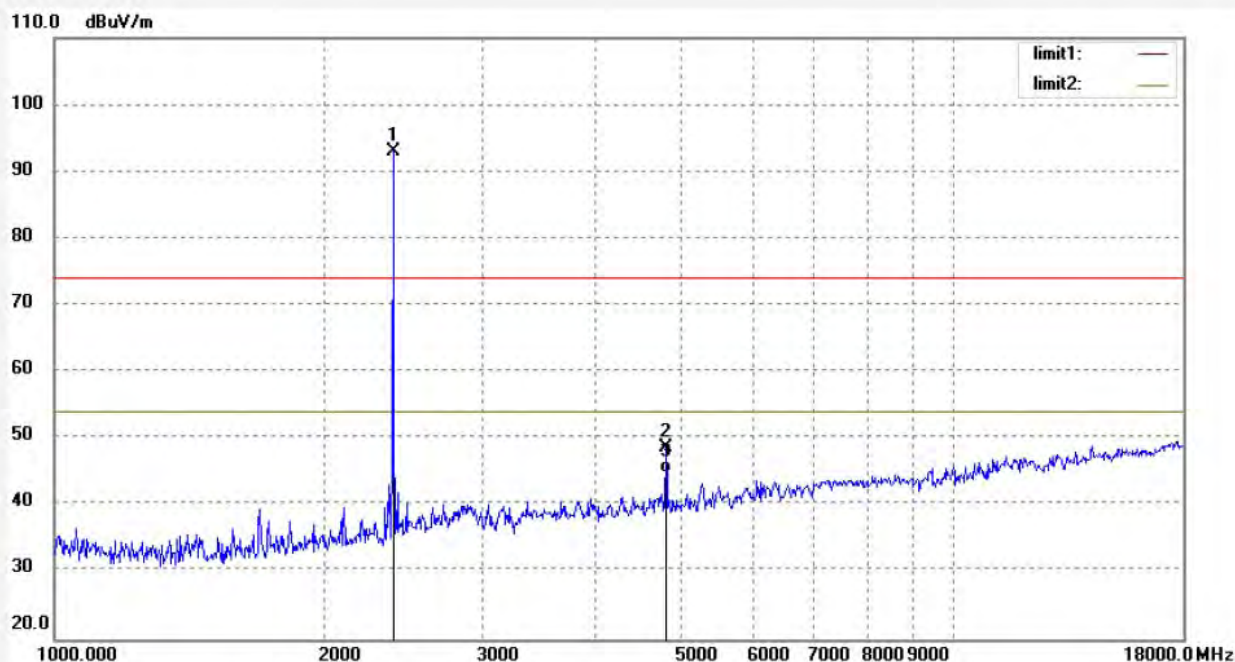
Date: 2017/11/04

Time: 15:58:53

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2402.019    | 97.07            | -4.01       | 93.06           |                |             | peak     |             |               |        |
| 2   | 4804.373    | 45.08            | 3.70        | 48.78           | 74.00          | -25.22      | peak     |             |               |        |
| 3   | 4804.373    | 41.23            | 3.70        | 44.93           | 54.00          | -9.07       | AVG      | 150         | 321           |        |

Note: Average measurement with peak detection at No.3



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Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: frank2017 #1445

Standard: FCC PK

Test item: Radiation Test

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

EUT: Stage Karaoke

Mode: TX 2402MHz(GFSK)

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Vertical

Power Source: AC 120V/60Hz

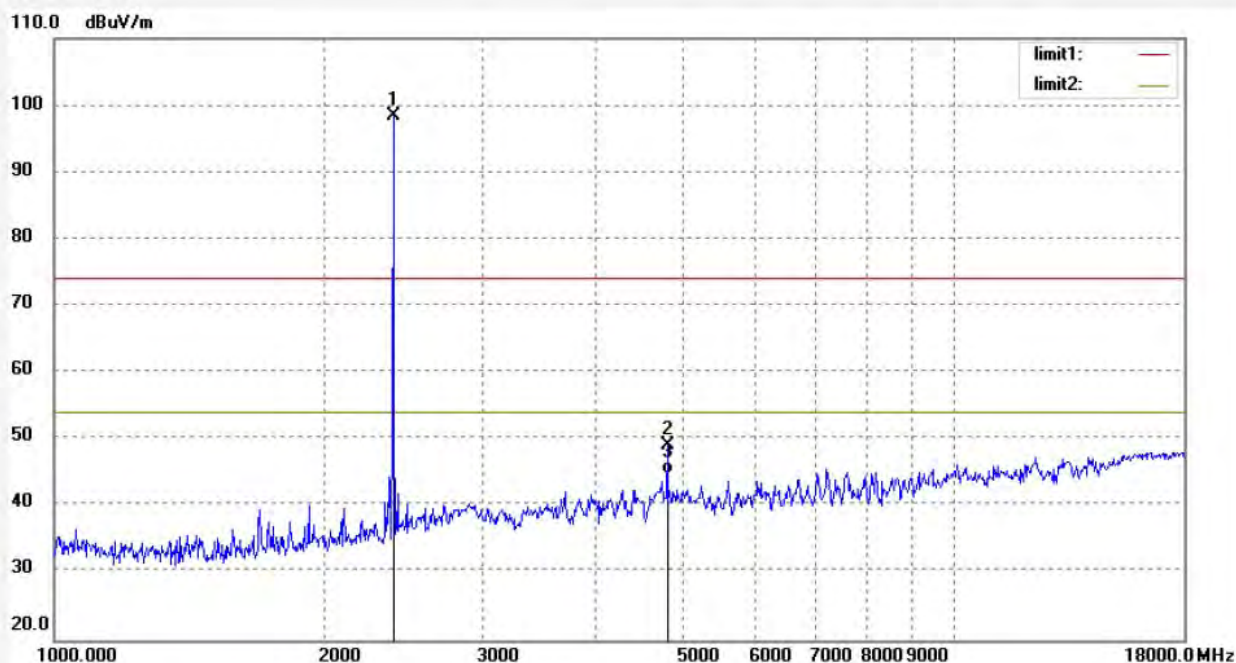
Date: 2017/11/04

Time: 15:58:59

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2402.019    | 102.39           | -4.01       | 98.38           |                |             | peak     |             |               |        |
| 2   | 4804.328    | 45.35            | 3.75        | 49.10           | 74.00          | -24.90      | peak     |             |               |        |
| 3   | 4804.328    | 41.21            | 3.75        | 44.96           | 54.00          | -9.04       | AVG      | 150         | 312           |        |

Note: Average measurement with peak detection at No.3



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Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: frank2017 #1447

Standard: FCC PK

Test item: Radiation Test

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

EUT: Stage Karaoke

Mode: TX 2441MHz(GFSK)

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Horizontal

Power Source: AC 120V/60Hz

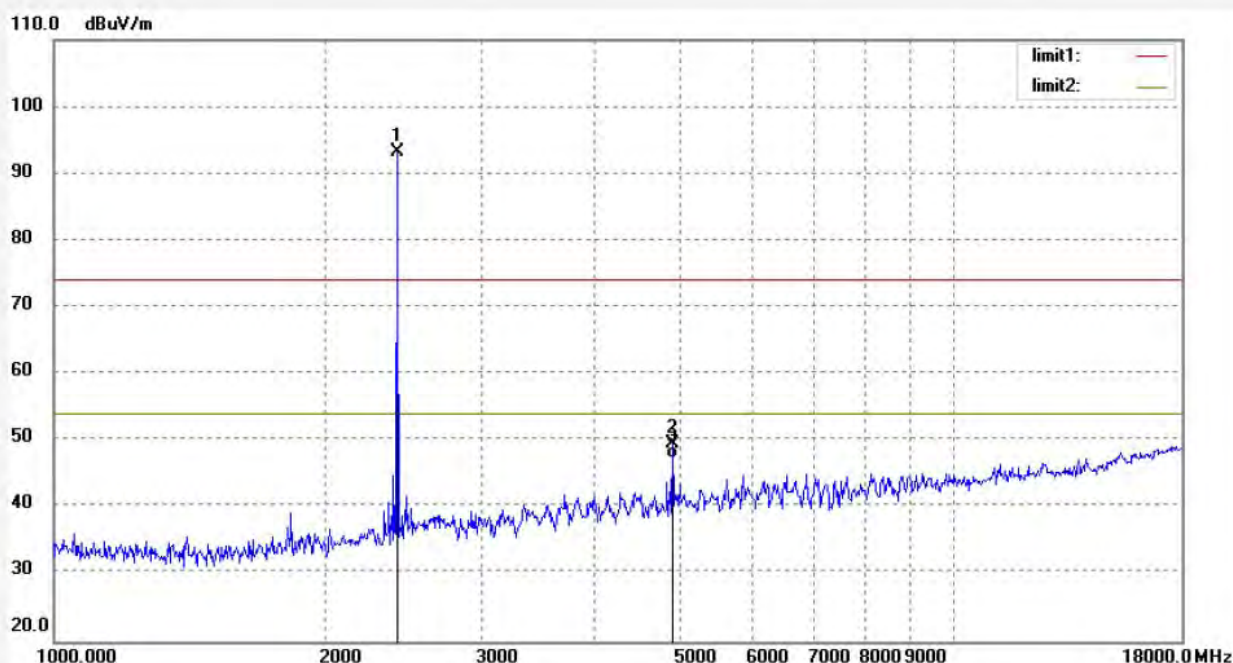
Date: 2017/11/04

Time: 16:00:39

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2441.200    | 97.06            | -3.87       | 93.19           |                |             | peak     |             |               |        |
| 2   | 4882.017    | 45.44            | 4.11        | 49.55           | 74.00          | -24.45      | peak     |             |               |        |
| 3   | 4882.017    | 43.12            | 4.11        | 47.23           | 54.00          | -6.77       | AVG      | 250         | 315           |        |

Note: Average measurement with peak detection at No.3



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Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: frank2017 #1446

Standard: FCC PK

Test item: Radiation Test

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

EUT: Stage Karaoke

Mode: TX 2441MHz(GFSK)

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Vertical

Power Source: AC 120V/60Hz

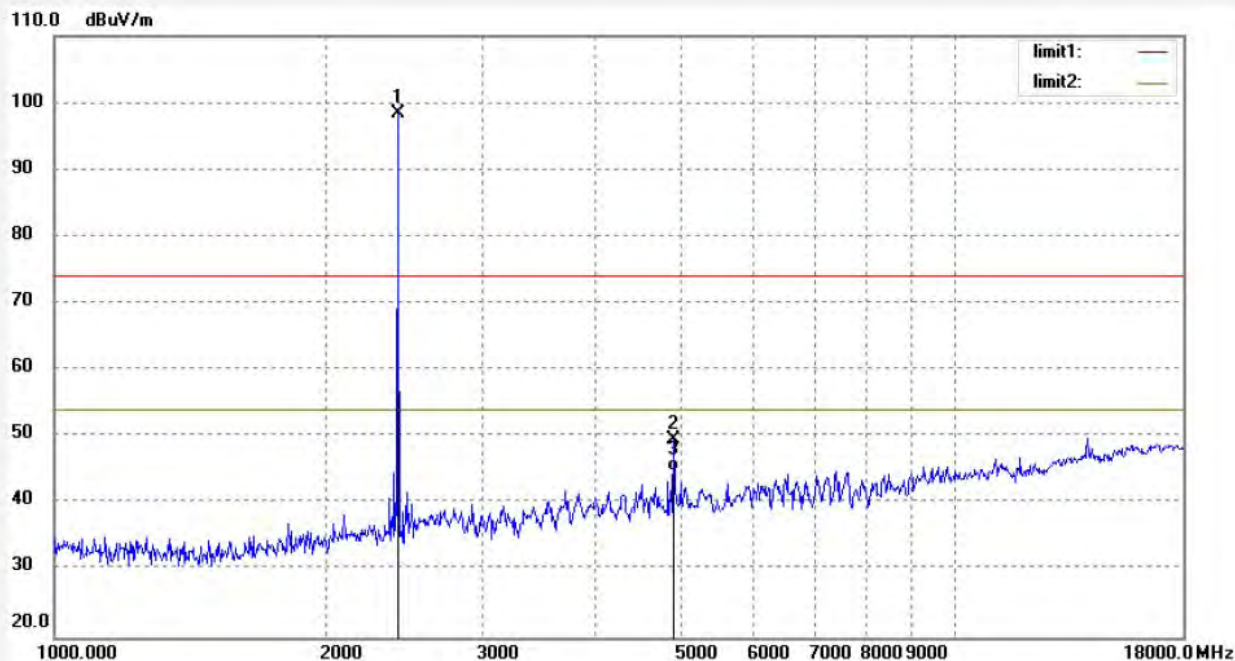
Date: 2017/11/04

Time: 16:00:31

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| No. | Freq. (MHz) | Reading (dBuV/m) | Factor (dB) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Height (cm) | Degree (deg.) | Remark |
|-----|-------------|------------------|-------------|-----------------|----------------|-------------|----------|-------------|---------------|--------|
| 1   | 2441.100    | 102.28           | -3.87       | 98.41           |                |             | peak     |             |               |        |
| 2   | 4882.017    | 45.44            | 4.11        | 49.55           | 74.00          | -24.45      | peak     |             |               |        |
| 3   | 4882.017    | 40.65            | 4.11        | 44.76           | 54.00          | -9.24       | AVG      | 250         | 43            |        |

Note: Average measurement with peak detection at No.3



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Tel:+86-0755-26503290

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Job No.: frank2017 #1448

Standard: FCC PK

Test item: Radiation Test

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

EUT: Stage Karaoke

Mode: TX 2480MHz(GFSK)

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Horizontal

Power Source: AC 120V/60Hz

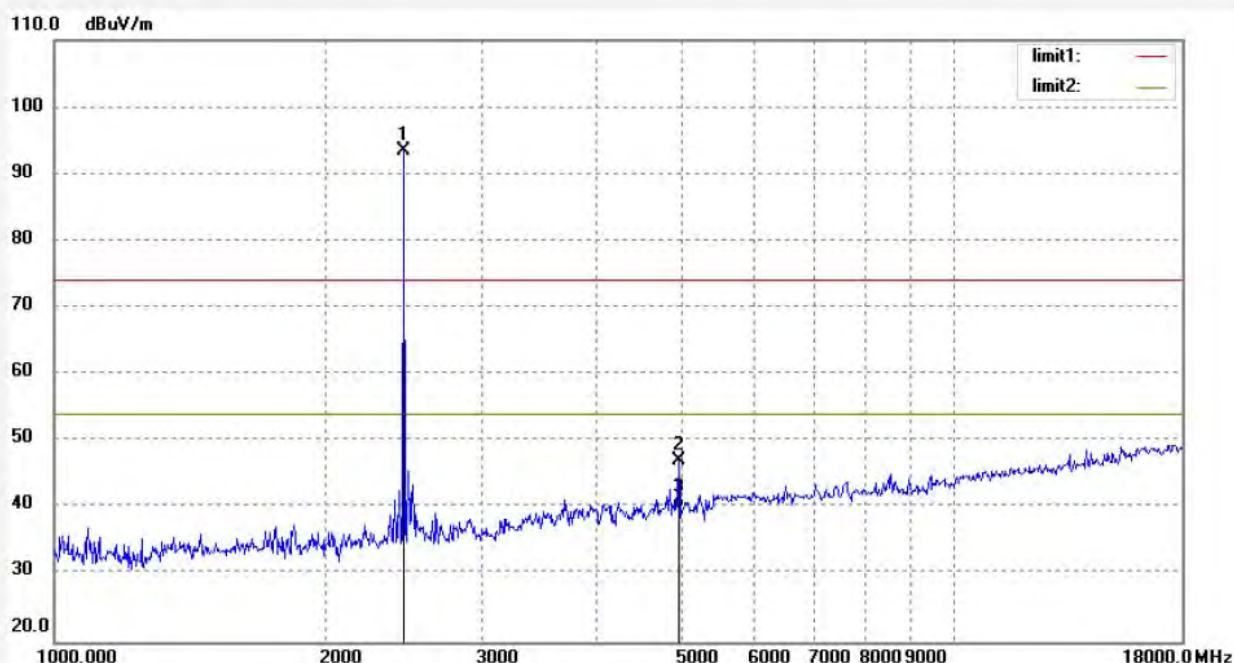
Date: 2017/11/04

Time: 16:01:41

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| 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    | 97.17            | -3.67       | 93.50           |                |             | peak     |             |               |        |
| 2   | 4960.546    | 42.61            | 4.42        | 47.03           | 74.00          | -26.97      | peak     |             |               |        |
| 3   | 4960.546    | 35.45            | 4.42        | 39.87           | 54.00          | -14.13      | AVG      | 250         | 135           |        |

Note: Average measurement with peak detection at No.3



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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.: frank2017 #1449

Standard: FCC PK

Test item: Radiation Test

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

EUT: Stage Karaoke

Mode: TX 2480MHz(GFSK)

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Vertical

Power Source: AC 120V/60Hz

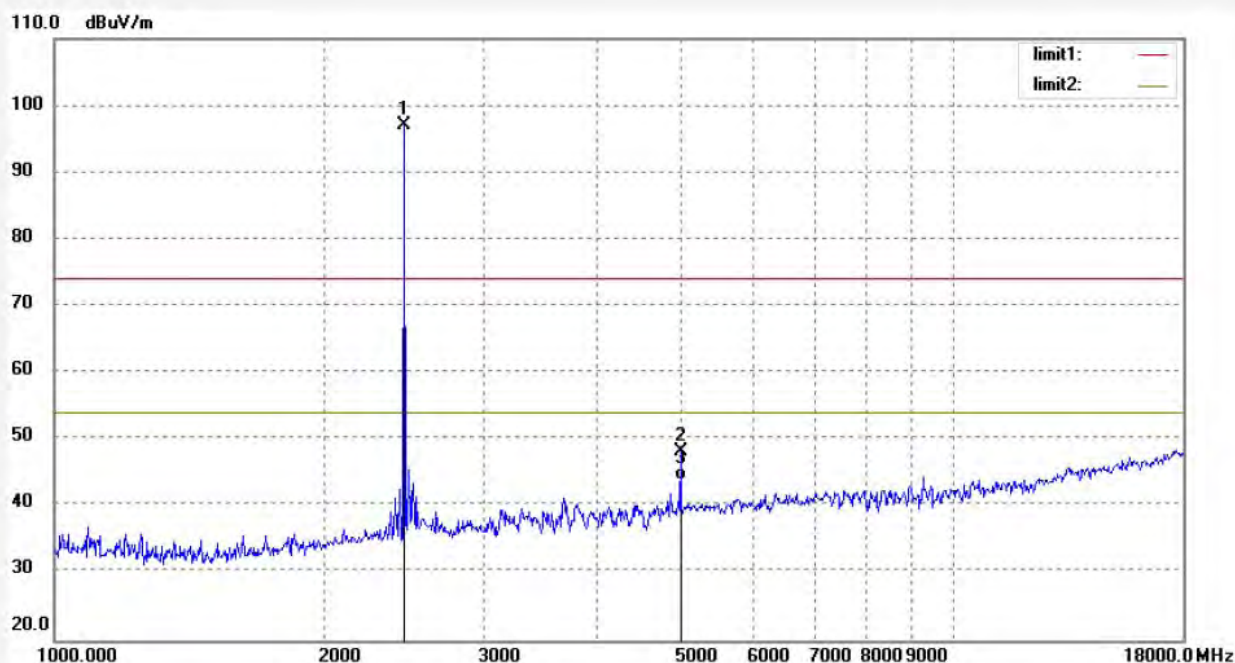
Date: 2017/11/04

Time: 16:01:50

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| 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    | 100.68           | -3.67       | 97.01           |                |             | peak     |             |               |        |
| 2   | 4960.197    | 43.65            | 4.49        | 48.14           | 74.00          | -25.86      | peak     |             |               |        |
| 3   | 4960.197    | 39.45            | 4.49        | 43.94           | 54.00          | -10.06      | AVG      | 150         | 133           |        |

Note: Average measurement with peak detection at No.3

## 11.BAND EDGE COMPLIANCE TEST

### 11.1.Block Diagram of Test Setup



(EUT: Stage Karaoke)

### 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.

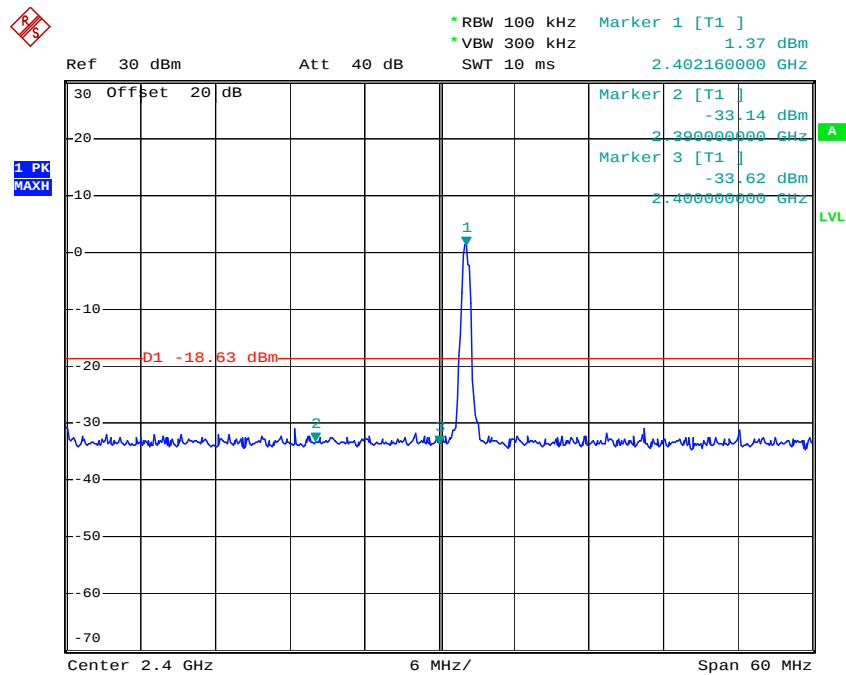
11.5.2. Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz with convenient frequency span including 100 kHz bandwidth from band edge.

11.5.3. The band edges was measured and recorded.

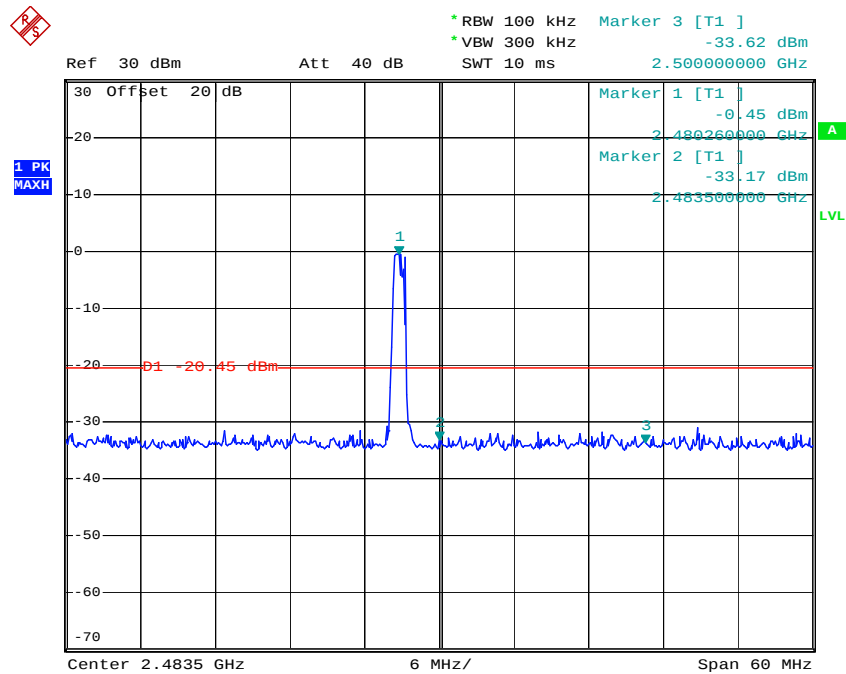
## 11.6. Test Result

| Frequency<br>(MHz) | Result of Band Edge<br>(dBc) | Limit of Band Edge<br>(dBc) |
|--------------------|------------------------------|-----------------------------|
| GFSK Mode          |                              |                             |
| 2400.00            | 32.25                        | > 20dBc                     |
| 2483.50            | 32.72                        | > 20dBc                     |
| Π/4-DQPSK Mode     |                              |                             |
| 2400.00            | 33.24                        | > 20dBc                     |
| 2483.50            | 30.34                        | > 20dBc                     |
| 8DPSK Mode         |                              |                             |
| 2400.00            | 32.60                        | > 20dBc                     |
| 2483.50            | 32.00                        | > 20dBc                     |

## GFSK Mode

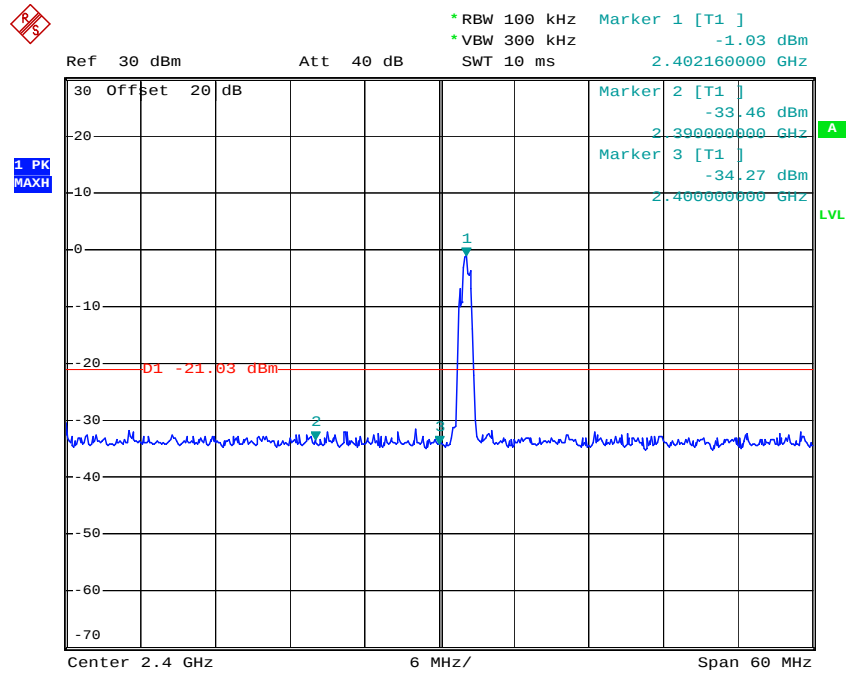


Comment A:  
Date: 8.NOV.2017 10:54:47

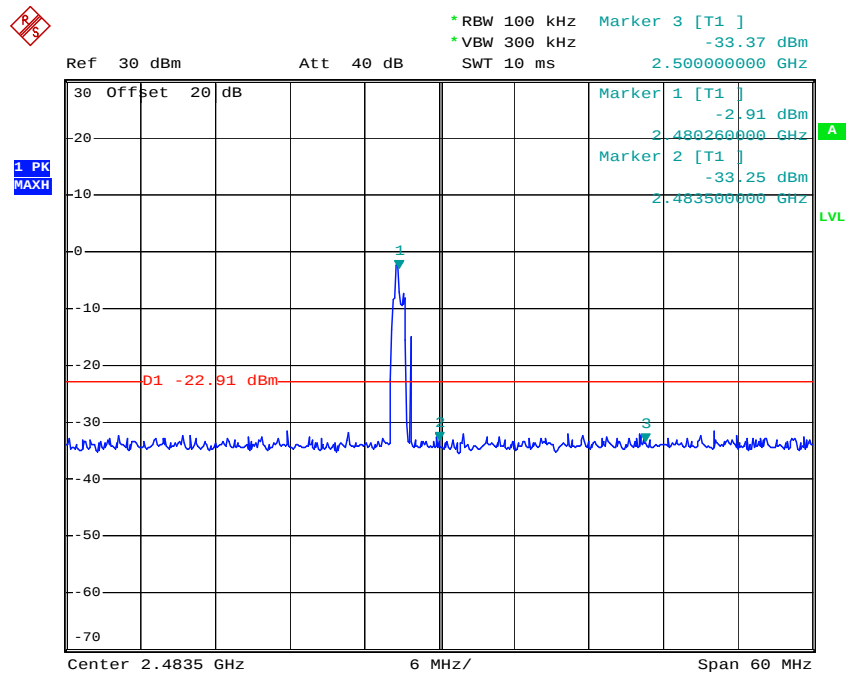


Comment A:  
Date: 8.NOV.2017 10:53:16

## $\Pi/4$ -DQPSK Mode

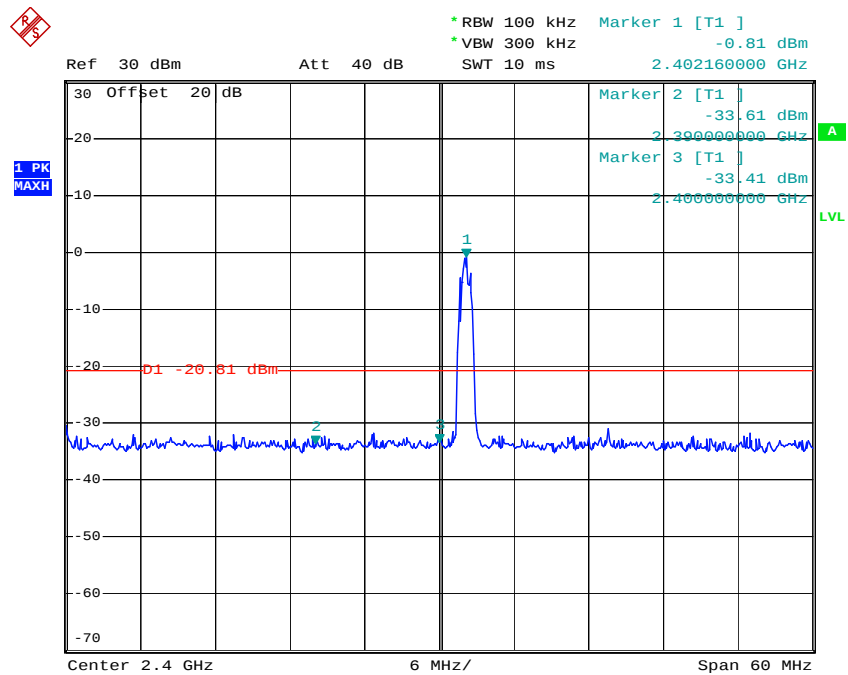


Comment A:  
Date: 8.NOV.2017 10:55:45

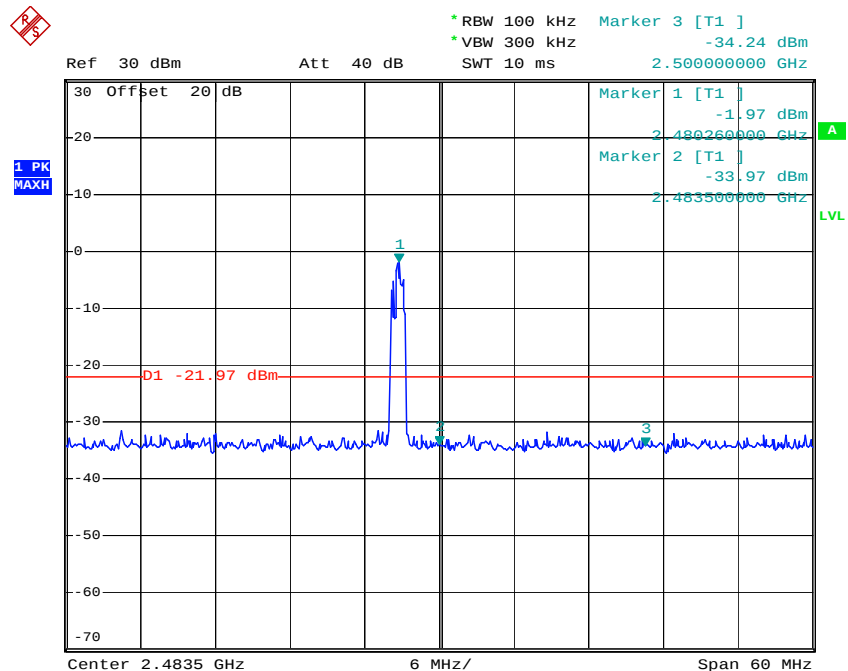


Comment A:  
Date: 8.NOV.2017 10:49:54

## 8DPSK Mode



Comment A:  
Date: 8.NOV.2017 10:56:57



Comment A:  
Date: 8.NOV.2017 10:50:52

## 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 0.1 meter high above ground. 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



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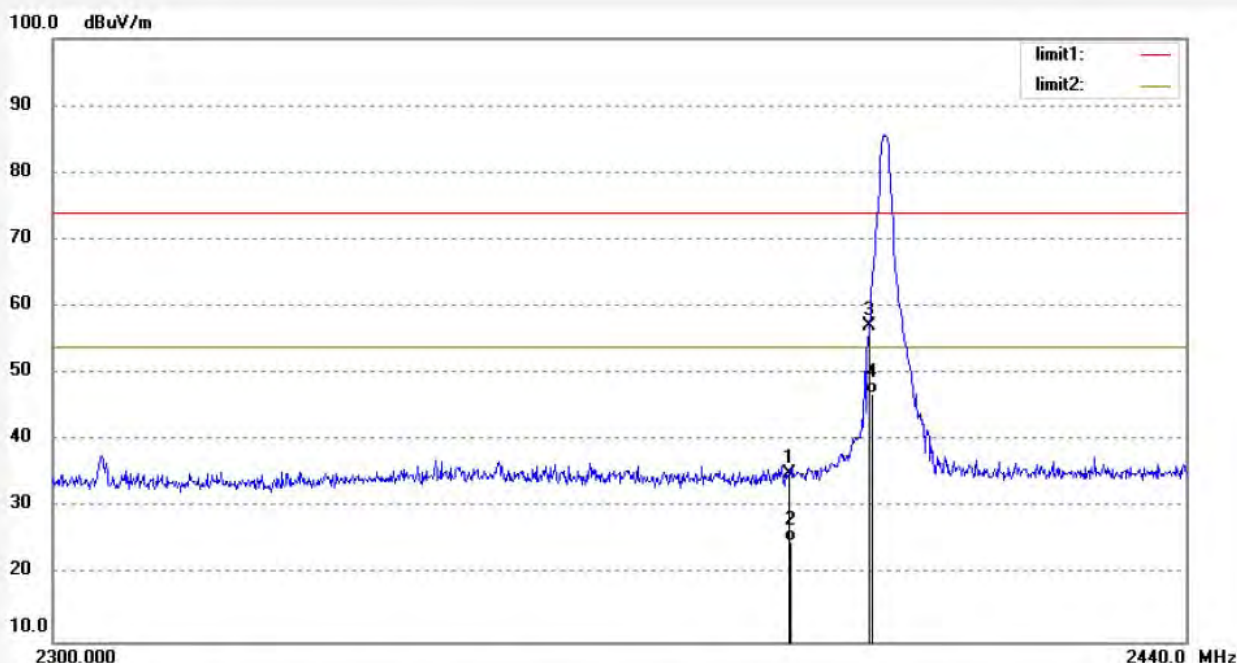
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: frank2017 #864  
Standard: FCC PK  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: Stage Karaoke  
Mode: TX 2402MHz(GFSK)  
Model: 2700  
Manufacturer: Dynamic Scientific Ltd

Polarization: Horizontal  
Power Source: AC 120V/60Hz  
Date: 2017/11/04  
Time: 13/42/04  
Engineer Signature: Frank  
Distance: 3m

Note: Report NO.:ATE20172103



| 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            | -5.89       | 35.04           | 74.00          | -38.96      | peak     |             |               |        |
| 2   | 2390.000    | 30.93            | -5.89       | 25.04           | 54.00          | -28.96      | AVG      |             |               |        |
| 3   | 2400.000    | 62.97            | -5.80       | 57.17           | 74.00          | -16.83      | peak     |             |               |        |
| 4   | 2400.000    | 52.87            | -5.80       | 47.07           | 54.00          | -6.93       | AVG      |             |               |        |

Note: Average measurement with peak detection at No.2&4



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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: frank2017 #863

Standard: FCC PK

Test item: Radiation Test

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

EUT: Stage Karaoke

Mode: TX 2402MHz(GFSK)

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Vertical

Power Source: AC 120V/60Hz

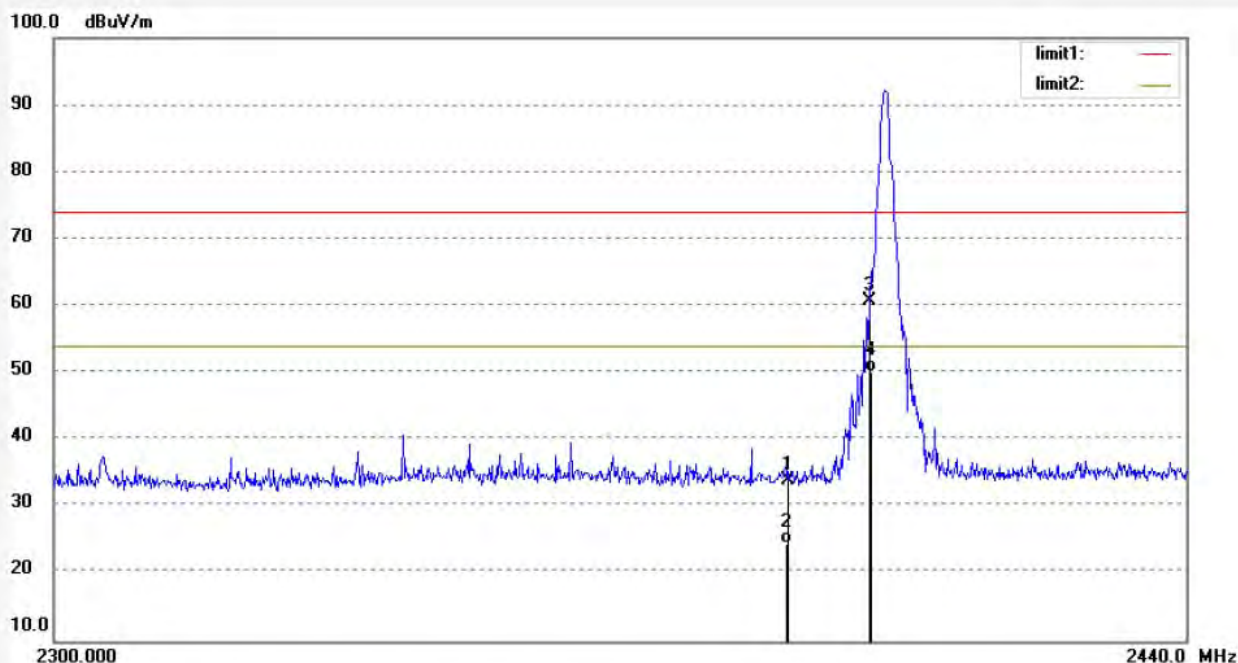
Date: 2017/11/04

Time: 13/39/33

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| 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    | 39.87            | -5.89       | 33.98           | 74.00          | -40.02      | peak     |             |               |        |
| 2   | 2390.000    | 30.46            | -5.89       | 24.57           | 54.00          | -29.43      | AVG      |             |               |        |
| 3   | 2400.000    | 66.62            | -5.80       | 60.82           | 74.00          | -13.18      | peak     |             |               |        |
| 4   | 2400.000    | 56.01            | -5.80       | 50.21           | 54.00          | -3.79       | AVG      |             |               |        |

Note: Average measurement with peak detection at No.2&4



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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: frank2017 #861

Standard: FCC PK

Test item: Radiation Test

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

EUT: Stage Karaoke

Mode: TX 2480MHz(GFSK)

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Horizontal

Power Source: AC 120V/60Hz

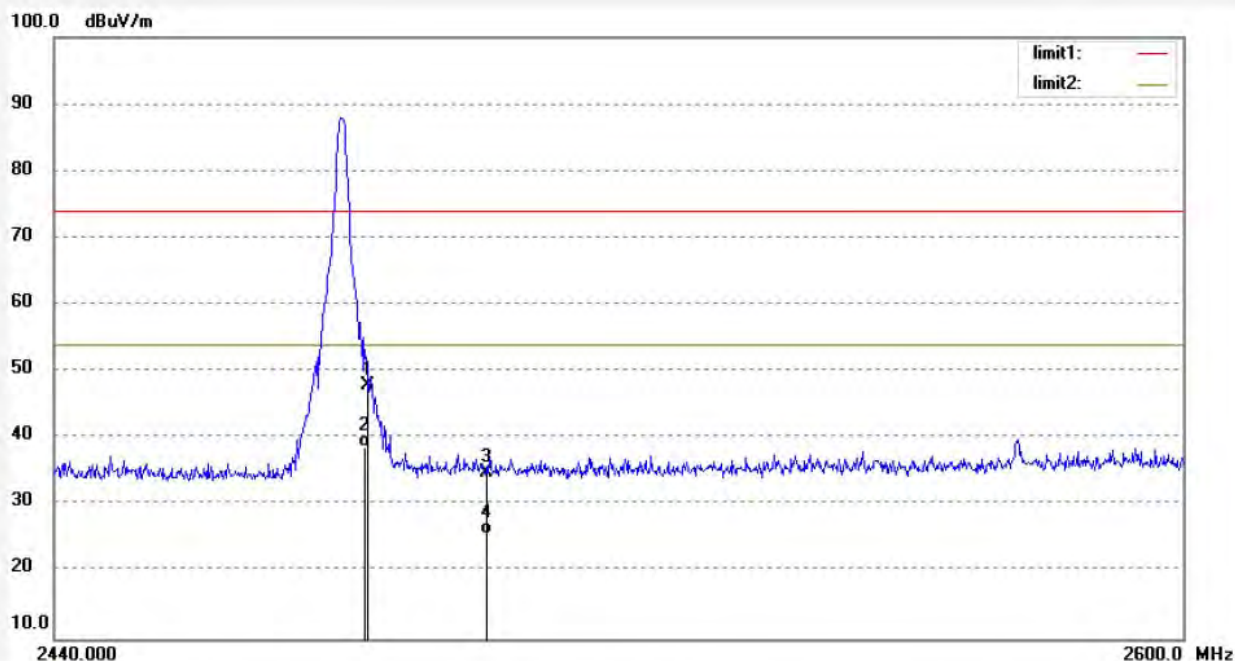
Date: 2017/11/04

Time: 13/33/55

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| 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    | 53.42            | -5.51       | 47.91           | 74.00          | -26.09      | peak     |             |               |        |
| 2   | 2483.500    | 44.15            | -5.51       | 38.64           | 54.00          | -15.36      | AVG      |             |               |        |
| 3   | 2500.000    | 40.35            | -5.50       | 34.85           | 74.00          | -39.15      | peak     |             |               |        |
| 4   | 2500.000    | 31.22            | -5.50       | 25.72           | 54.00          | -28.28      | AVG      |             |               |        |

Note: Average measurement with peak detection at No.2&4



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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.: frank2017 #862

Standard: FCC PK

Test item: Radiation Test

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

EUT: Stage Karaoke

Mode: TX 2480MHz(GFSK)

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Vertical

Power Source: AC 120V/60Hz

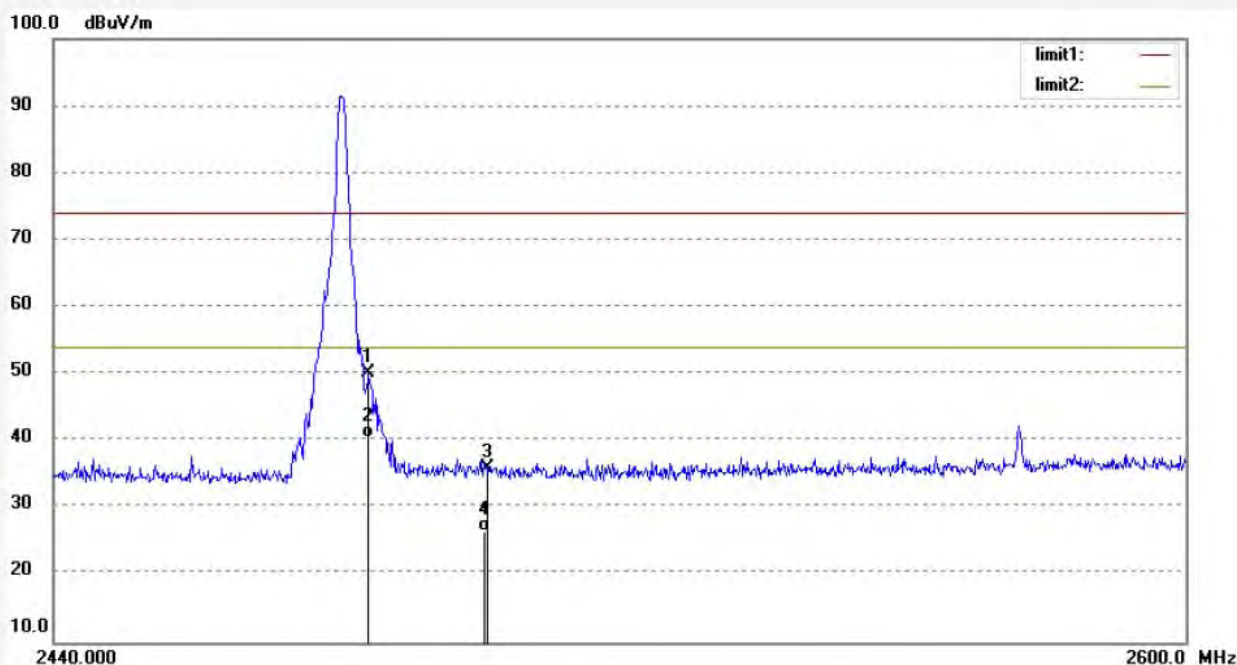
Date: 2017/11/04

Time: 13/36/27

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| 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    | 55.73            | -5.51       | 50.22           | 74.00          | -23.78      | peak     |             |               |        |
| 2   | 2483.500    | 45.91            | -5.51       | 40.40           | 54.00          | -13.60      | AVG      |             |               |        |
| 3   | 2500.000    | 41.48            | -5.50       | 35.98           | 74.00          | -38.02      | peak     |             |               |        |
| 4   | 2500.000    | 32.03            | -5.50       | 26.53           | 54.00          | -27.47      | AVG      |             |               |        |

Note: Average measurement with peak detection at No.2&4



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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.: frank2017 #857

Standard: FCC PK

Test item: Radiation Test

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

EUT: Stage Karaoke

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

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Horizontal

Power Source: AC 120V/60Hz

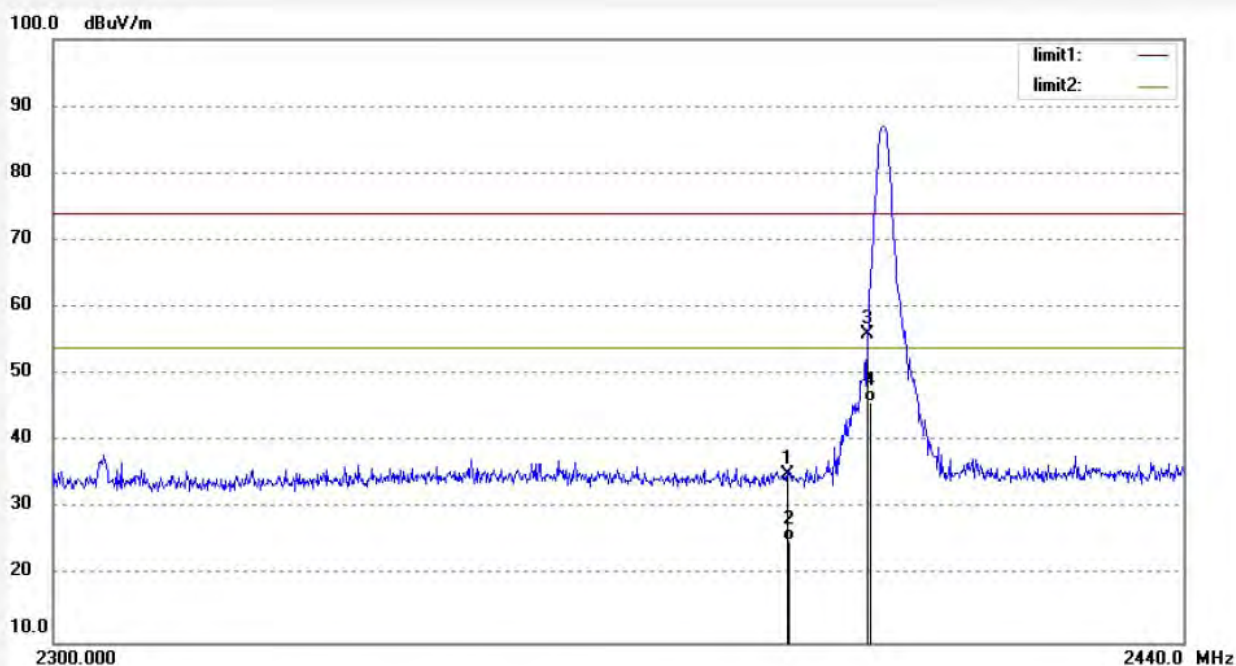
Date: 2017/11/04

Time: 13/23/37

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| 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    | 41.05            | -5.89       | 35.16           | 74.00          | -38.84      | peak     |             |               |        |
| 2   | 2390.000    | 31.06            | -5.89       | 25.17           | 54.00          | -28.83      | AVG      |             |               |        |
| 3   | 2400.000    | 61.86            | -5.80       | 56.06           | 74.00          | -17.94      | peak     |             |               |        |
| 4   | 2400.000    | 51.73            | -5.80       | 45.93           | 54.00          | -8.07       | AVG      |             |               |        |

Note: Average measurement with peak detection at No.2&4



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Site: 1# Chamber

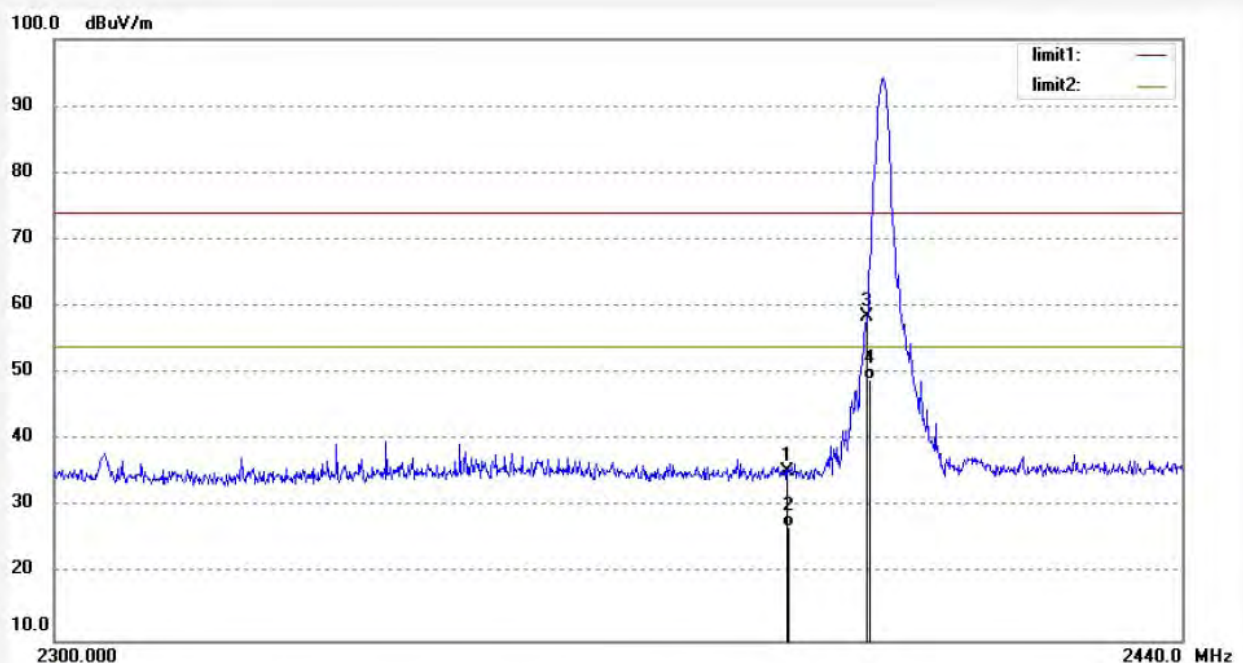
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: frank2017 #858  
Standard: FCC PK  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: Stage Karaoke  
Mode: TX 2402MHz( $\pi/4$  DQPSK)  
Model: 2700  
Manufacturer: Dynamic Scientific Ltd

Polarization: Vertical  
Power Source: AC 120V/60Hz  
Date: 2017/11/04  
Time: 13/25/22  
Engineer Signature: Frank  
Distance: 3m

Note: Report NO.:ATE20172103



| 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    | 41.23            | -5.89       | 35.34           | 74.00          | -38.66      | peak     |             |               |        |
| 2   | 2390.000    | 32.79            | -5.89       | 26.90           | 54.00          | -27.10      | AVG      |             |               |        |
| 3   | 2400.000    | 64.36            | -5.80       | 58.56           | 74.00          | -15.44      | peak     |             |               |        |
| 4   | 2400.000    | 54.82            | -5.80       | 49.02           | 54.00          | -4.98       | AVG      |             |               |        |

Note: Average measurement with peak detection at No.2&4



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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.: frank2017 #860

Standard: FCC PK

Test item: Radiation Test

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

EUT: Stage Karaoke

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

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Horizontal

Power Source: AC 120V/60Hz

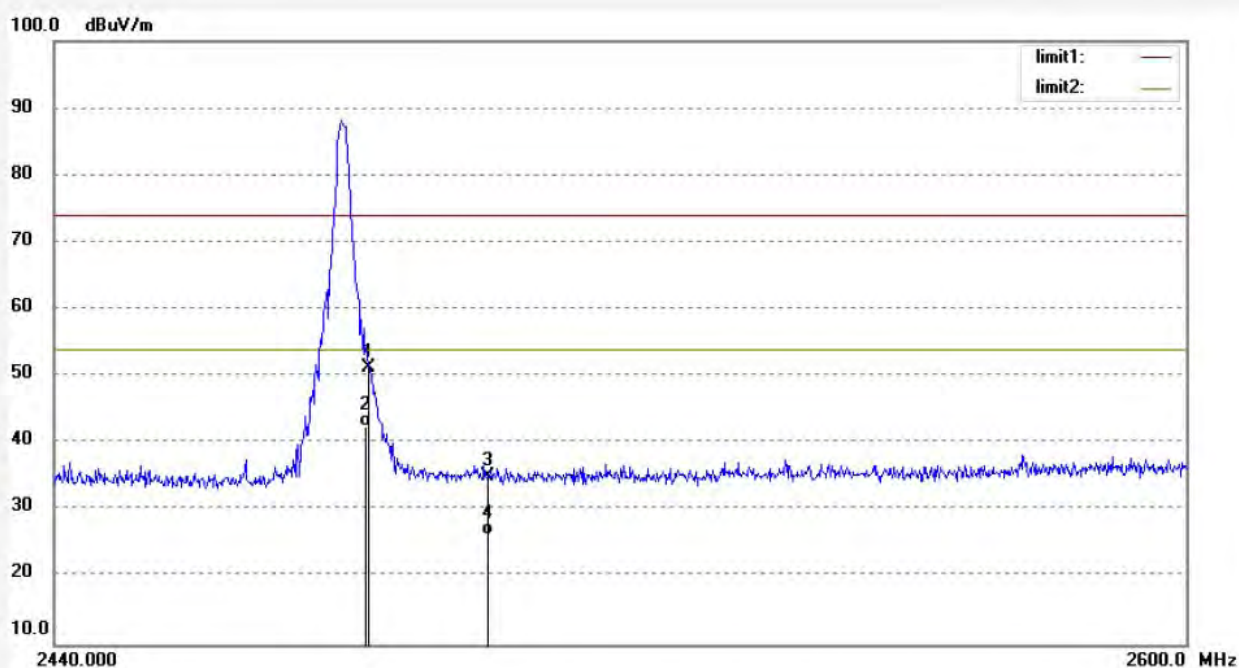
Date: 2017/11/04

Time: 13/30/35

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| 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    | 56.89            | -5.51       | 51.38           | 74.00          | -22.62      | peak     |             |               |        |
| 2   | 2483.500    | 47.95            | -5.51       | 42.44           | 54.00          | -11.56      | AVG      |             |               |        |
| 3   | 2500.000    | 40.51            | -5.50       | 35.01           | 74.00          | -38.99      | peak     |             |               |        |
| 4   | 2500.000    | 31.79            | -5.50       | 26.29           | 54.00          | -27.71      | AVG      |             |               |        |

Note: Average measurement with peak detection at No.2&4



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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.: frank2017 #859

Standard: FCC PK

Test item: Radiation Test

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

EUT: Stage Karaoke

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

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Vertical

Power Source: AC 120V/60Hz

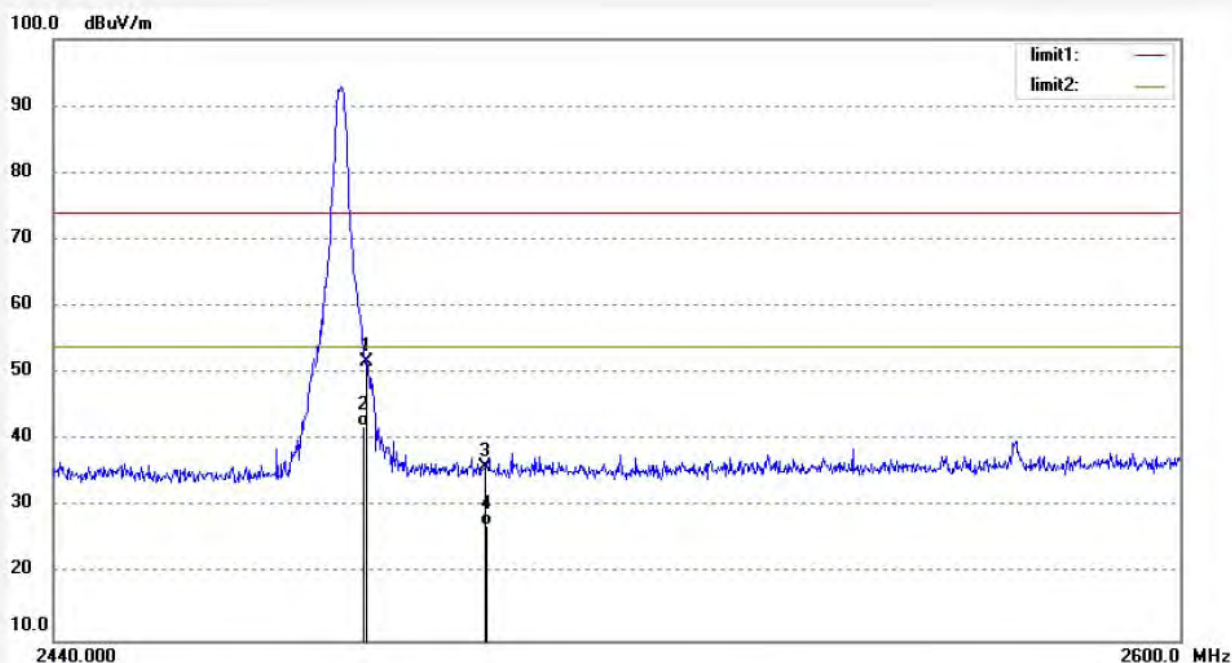
Date: 2017/11/04

Time: 13/28/49

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| 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    | 57.34            | -5.51       | 51.83           | 74.00          | -22.17      | peak     |             |               |        |
| 2   | 2483.500    | 47.62            | -5.51       | 42.11           | 54.00          | -11.89      | AVG      |             |               |        |
| 3   | 2500.000    | 41.56            | -5.50       | 36.06           | 74.00          | -37.94      | peak     |             |               |        |
| 4   | 2500.000    | 32.74            | -5.50       | 27.24           | 54.00          | -26.76      | AVG      |             |               |        |

Note: Average measurement with peak detection at No.2&4



## ACCURATE TECHNOLOGY CO., LTD.

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

Site: 1# Chamber

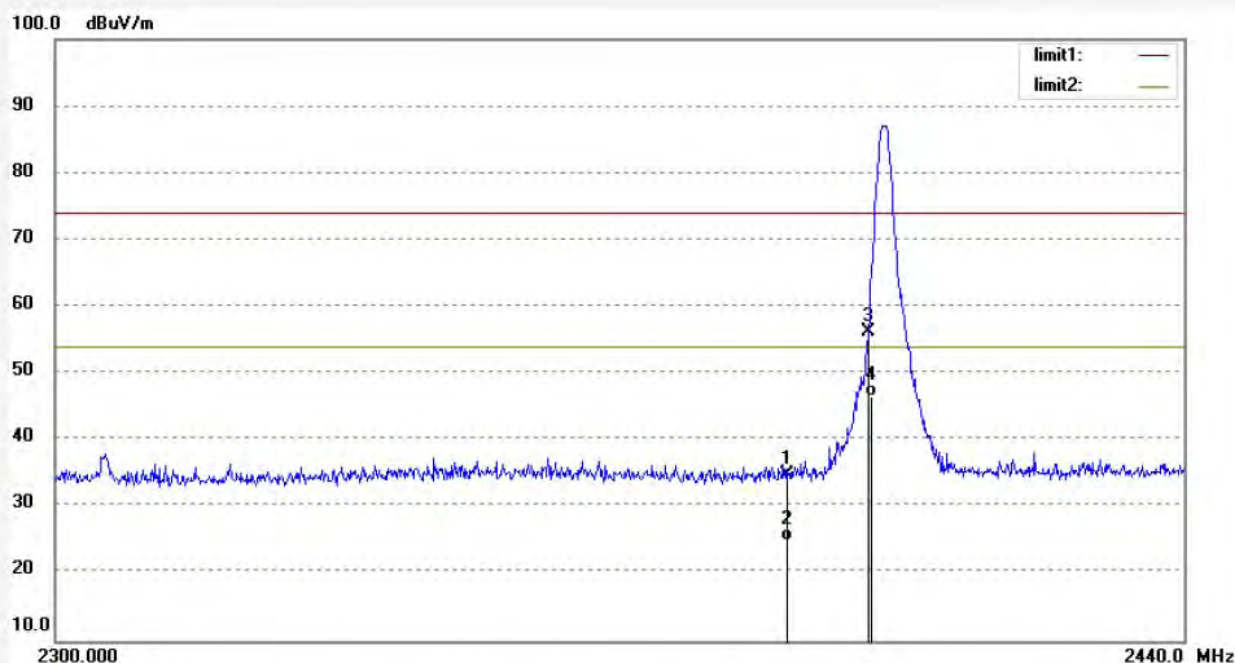
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: frank2017 #856  
Standard: FCC PK  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: Stage Karaoke  
Mode: TX 2402MHz(8DPSK)  
Model: 2700  
Manufacturer: Dynamic Scientific Ltd

Polarization: Horizontal  
Power Source: AC 120V/60Hz  
Date: 2017/11/04  
Time: 13/19/56  
Engineer Signature: Frank  
Distance: 3m

Note: Report NO.:ATE20172103



| 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    | 40.69            | -5.89       | 34.80           | 74.00          | -39.20      | peak     |             |               |        |
| 2   | 2390.000    | 30.95            | -5.89       | 25.06           | 54.00          | -28.94      | AVG      |             |               |        |
| 3   | 2400.000    | 62.06            | -5.80       | 56.26           | 74.00          | -17.74      | peak     |             |               |        |
| 4   | 2400.000    | 52.34            | -5.80       | 46.54           | 54.00          | -7.46       | AVG      |             |               |        |

Note: Average measurement with peak detection at No.2&4



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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.: frank2017 #855

Standard: FCC PK

Test item: Radiation Test

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

EUT: Stage Karaoke

Mode: TX 2402MHz(8DPSK)

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Vertical

Power Source: AC 120V/60Hz

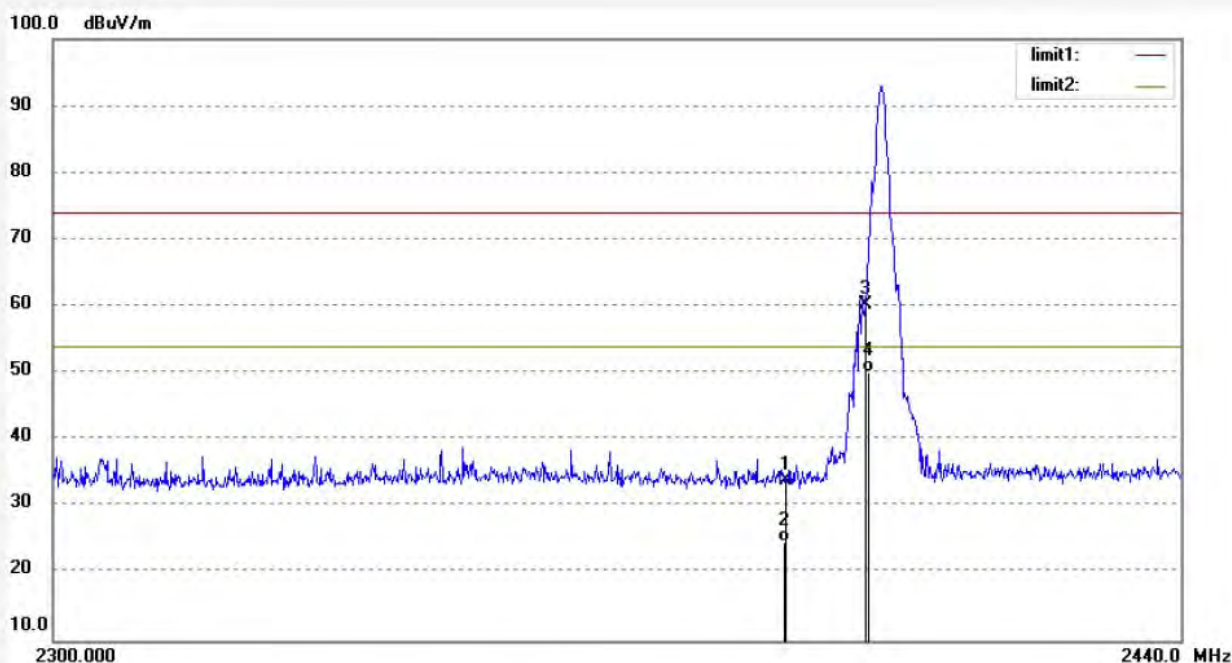
Date: 2017/11/04

Time: 13/17/10

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| 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    | 39.95            | -5.89       | 34.06           | 74.00          | -39.94      | peak     |             |               |        |
| 2   | 2390.000    | 30.64            | -5.89       | 24.75           | 54.00          | -29.25      | AVG      |             |               |        |
| 3   | 2400.000    | 66.04            | -5.80       | 60.24           | 74.00          | -13.76      | peak     |             |               |        |
| 4   | 2400.000    | 56.02            | -5.80       | 50.22           | 54.00          | -3.78       | AVG      |             |               |        |

Note: Average measurement with peak detection at No.2&4



## ACCURATE TECHNOLOGY CO., LTD.

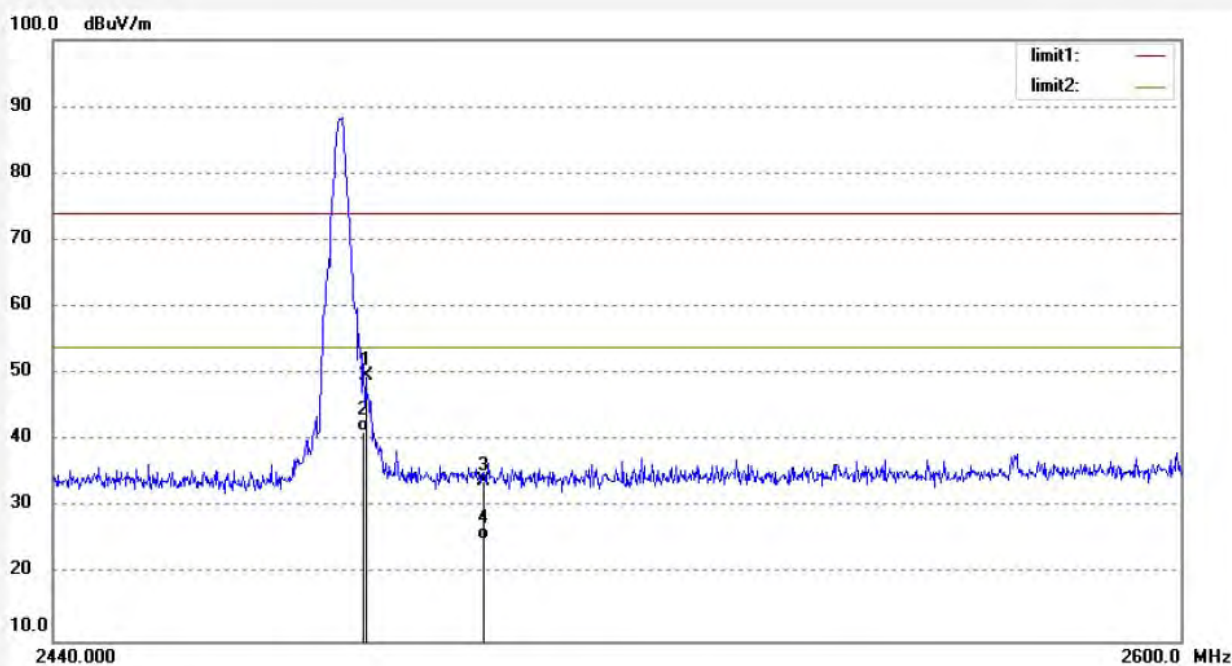
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: frank2017 #853  
Standard: FCC PK  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: Stage Karaoke  
Mode: TX 2480MHz(8DPSK)  
Model: 2700  
Manufacturer: Dynamic Scientific Ltd

Polarization: Horizontal  
Power Source: AC 120V/60Hz  
Date: 2017/11/04  
Time: 13/12/12  
Engineer Signature: Frank  
Distance: 3m

Note: Report NO.:ATE20172103



| 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    | 55.29            | -5.51       | 49.78           | 74.00          | -24.22      | peak     |             |               |        |
| 2   | 2483.500    | 46.83            | -5.51       | 41.32           | 54.00          | -12.68      | AVG      |             |               |        |
| 3   | 2500.000    | 39.41            | -5.50       | 33.91           | 74.00          | -40.09      | peak     |             |               |        |
| 4   | 2500.000    | 30.67            | -5.50       | 25.17           | 54.00          | -28.83      | AVG      |             |               |        |

Note: Average measurement with peak detection at No.2&4



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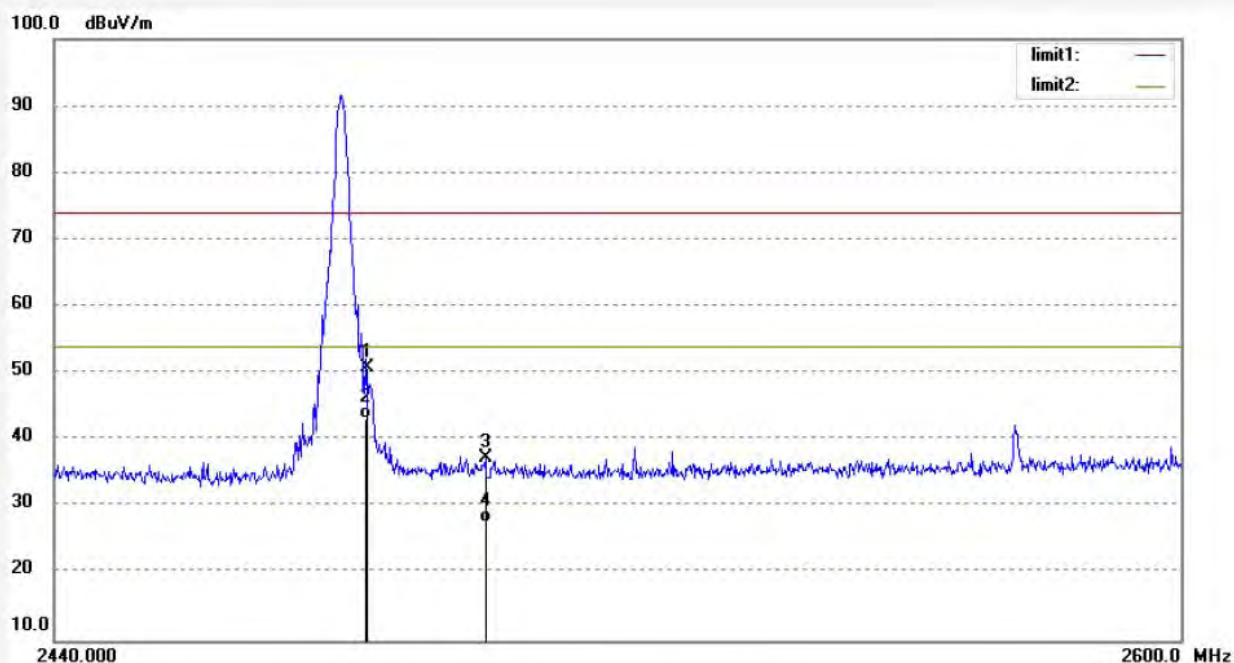
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber  
Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: frank2017 #854  
Standard: FCC PK  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: Stage Karaoke  
Mode: TX 2480MHz(8DPSK)  
Model: 2700  
Manufacturer: Dynamic Scientific Ltd

Polarization: Vertical  
Power Source: AC 120V/60Hz  
Date: 2017/11/04  
Time: 13/14/21  
Engineer Signature: Frank  
Distance: 3m

Note: Report NO.:ATE20172103



| 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    | 56.31            | -5.51       | 50.80           | 74.00          | -23.20      | peak     |             |               |        |
| 2   | 2483.500    | 48.72            | -5.51       | 43.21           | 54.00          | -10.79      | AVG      |             |               |        |
| 3   | 2500.000    | 42.85            | -5.50       | 37.35           | 74.00          | -36.65      | peak     |             |               |        |
| 4   | 2500.000    | 33.16            | -5.50       | 27.66           | 54.00          | -26.34      | AVG      |             |               |        |

Note: Average measurement with peak detection at No.2&4

## Hopping mode



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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.: frank2017 #1470

Standard: FCC PK

Test item: Radiation Test

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

EUT: Stage Karaoke

Mode: HOOPING(GFSK)

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Horizontal

Power Source: AC 120V/60Hz

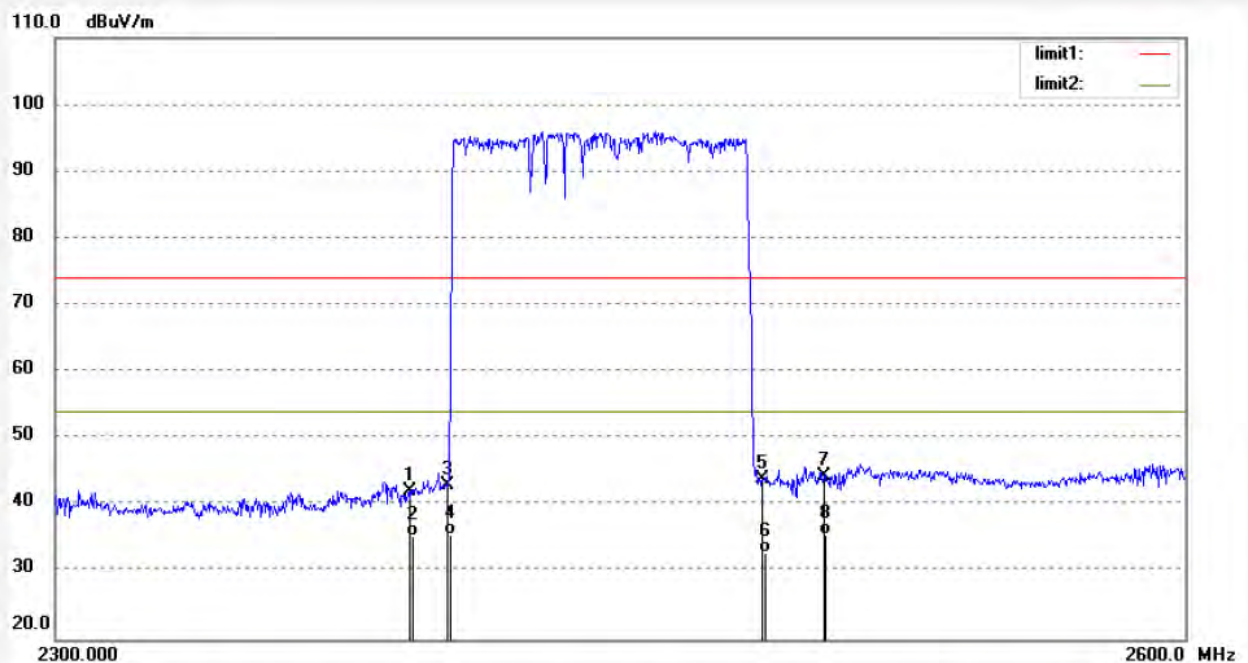
Date: 2017/11/04

Time: 16:13:48

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| 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    | 46.11            | -3.96       | 42.15           | 74.00          | -31.85      | peak     |             |               |        |
| 2   | 2390.000    | 39.45            | -3.96       | 35.49           | 54.00          | -18.51      | AVG      | 250         | 198           |        |
| 3   | 2400.000    | 46.90            | -3.91       | 42.99           | 74.00          | -31.01      | peak     |             |               |        |
| 4   | 2400.000    | 39.45            | -3.91       | 35.54           | 54.00          | -18.46      | AVG      | 200         | 360           |        |
| 5   | 2483.500    | 47.44            | -3.50       | 43.94           | 74.00          | -30.06      | peak     |             |               |        |
| 6   | 2483.500    | 36.45            | -3.50       | 32.95           | 54.00          | -21.05      | AVG      | 200         | 145           |        |
| 7   | 2500.000    | 47.87            | -3.42       | 44.45           | 74.00          | -29.55      | peak     |             |               |        |
| 8   | 2500.000    | 39.15            | -3.42       | 35.73           | 54.00          | -18.27      | AVG      | 250         | 153           |        |

Note: Average measurement with peak detection at No.2&4&6&8



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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.: frank2017 #1471

Standard: FCC PK

Test item: Radiation Test

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

EUT: Stage Karaoke

Mode: HOOPING(GFSK)

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Vertical

Power Source: AC 120V/60Hz

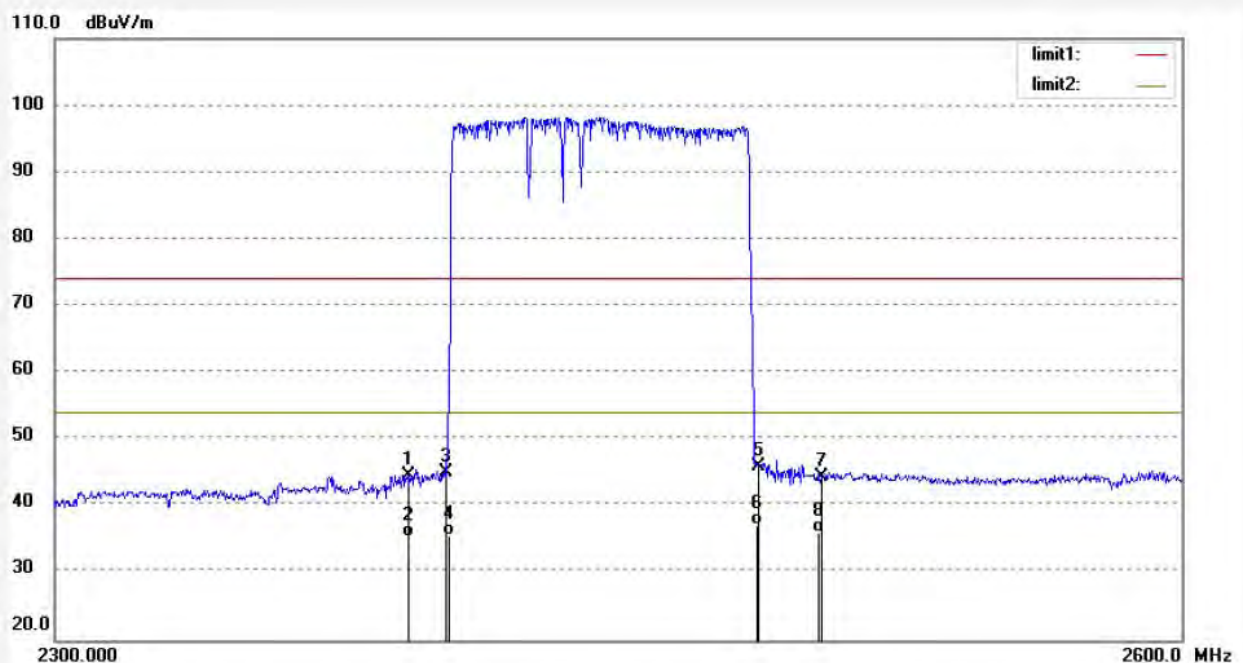
Date: 2017/11/04

Time: 16:13:57

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| 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    | 48.61            | -3.96       | 44.65           | 74.00          | -29.35      | peak     |             |               |        |
| 2   | 2390.000    | 39.48            | -3.96       | 35.52           | 54.00          | -18.48      | AVG      | 250         | 348           |        |
| 3   | 2400.000    | 48.90            | -3.91       | 44.99           | 74.00          | -29.01      | peak     |             |               |        |
| 4   | 2400.000    | 39.45            | -3.91       | 35.54           | 54.00          | -18.46      | AVG      | 200         | 121           |        |
| 5   | 2483.500    | 49.44            | -3.50       | 45.94           | 74.00          | -28.06      | peak     |             |               |        |
| 6   | 2483.500    | 40.78            | -3.50       | 37.28           | 54.00          | -16.72      | AVG      | 200         | 248           |        |
| 7   | 2500.000    | 47.87            | -3.42       | 44.45           | 74.00          | -29.55      | peak     |             |               |        |
| 8   | 2500.000    | 39.45            | -3.42       | 36.03           | 54.00          | -17.97      | AVG      | 150         | 113           |        |

Note: Average measurement with peak detection at No.2&4&6&8



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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.: frank2017 #1473

Standard: FCC PK

Test item: Radiation Test

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

EUT: Stage Karaoke

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

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Horizontal

Power Source: AC 120V/60Hz

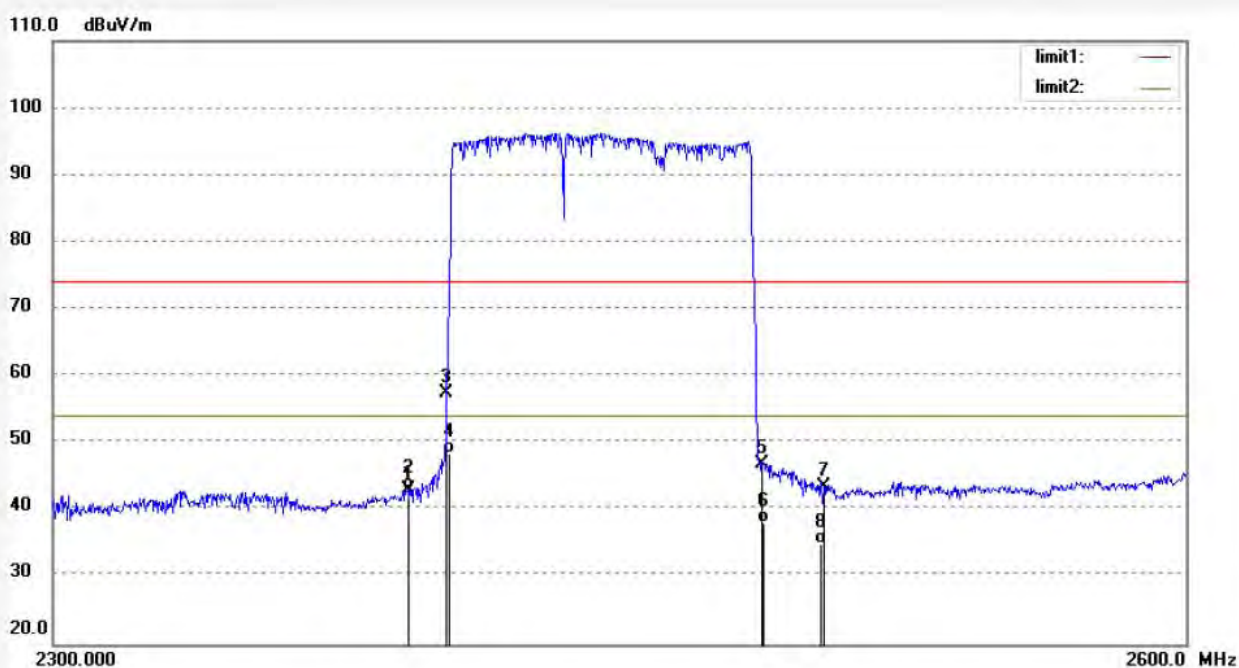
Date: 2017/11/04

Time: 16:14:24

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| 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    | 47.11            | -3.96       | 43.15           | 74.00          | -30.85      | peak     |             |               |        |
| 2   | 2390.000    | 47.11            | -3.96       | 43.15           | 54.00          | -10.85      | AVG      | 200         | 125           |        |
| 3   | 2400.000    | 61.40            | -3.91       | 57.49           | 74.00          | -16.51      | peak     |             |               |        |
| 4   | 2400.000    | 52.45            | -3.91       | 48.54           | 54.00          | -5.46       | AVG      | 200         | 43            |        |
| 5   | 2483.500    | 50.44            | -3.50       | 46.94           | 74.00          | -27.06      | peak     |             |               |        |
| 6   | 2483.500    | 41.65            | -3.50       | 38.15           | 54.00          | -15.85      | AVG      | 200         | 154           |        |
| 7   | 2500.000    | 46.87            | -3.42       | 43.45           | 74.00          | -30.55      | peak     |             |               |        |
| 8   | 2500.000    | 38.45            | -3.42       | 35.03           | 54.00          | -18.97      | AVG      | 250         | 273           |        |

Note: Average measurement with peak detection at No.2&4&6&8



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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.: frank2017 #1472

Standard: FCC PK

Test item: Radiation Test

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

EUT: Stage Karaoke

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

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Vertical

Power Source: AC 120V/60Hz

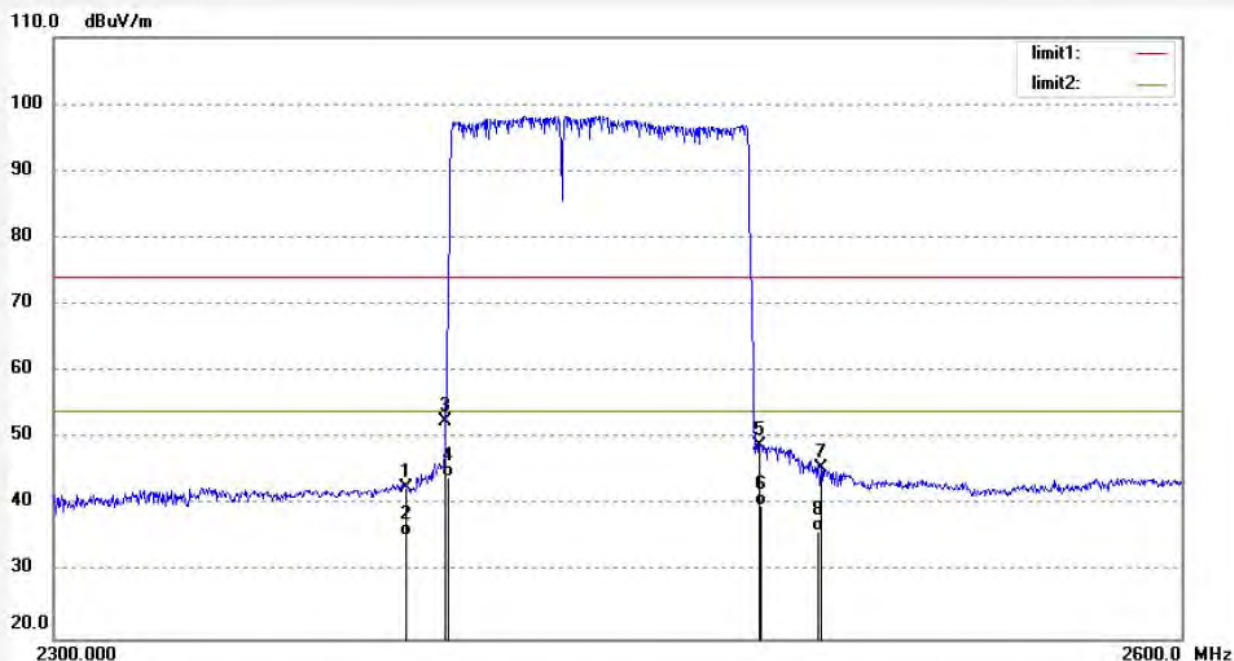
Date: 2017/11/04

Time: 16:14:16

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| 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    | 46.61            | -3.96       | 42.65           | 74.00          | -31.35      | peak     |             |               |        |
| 2   | 2390.000    | 39.45            | -3.96       | 35.49           | 54.00          | -18.51      | AVG      | 150         | 153           |        |
| 3   | 2400.000    | 56.40            | -3.91       | 52.49           | 74.00          | -21.51      | peak     |             |               |        |
| 4   | 2400.000    | 48.15            | -3.91       | 44.24           | 54.00          | -9.76       | AVG      | 250         | 45            |        |
| 5   | 2483.500    | 52.44            | -3.50       | 48.94           | 74.00          | -25.06      | peak     |             |               |        |
| 6   | 2483.500    | 43.45            | -3.50       | 39.95           | 54.00          | -14.05      | AVG      | 150         | 322           |        |
| 7   | 2500.000    | 48.87            | -3.42       | 45.45           | 74.00          | -28.55      | peak     |             |               |        |
| 8   | 2500.000    | 39.48            | -3.42       | 36.06           | 54.00          | -17.94      | AVG      | 150         | 157           |        |

Note: Average measurement with peak detection at No.2&4&6&8



## 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.: frank2017 #1476

Standard: FCC PK

Test item: Radiation Test

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

EUT: Stage Karaoke

Mode: HOOPING(8DPSK)

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Horizontal

Power Source: AC 120V/60Hz

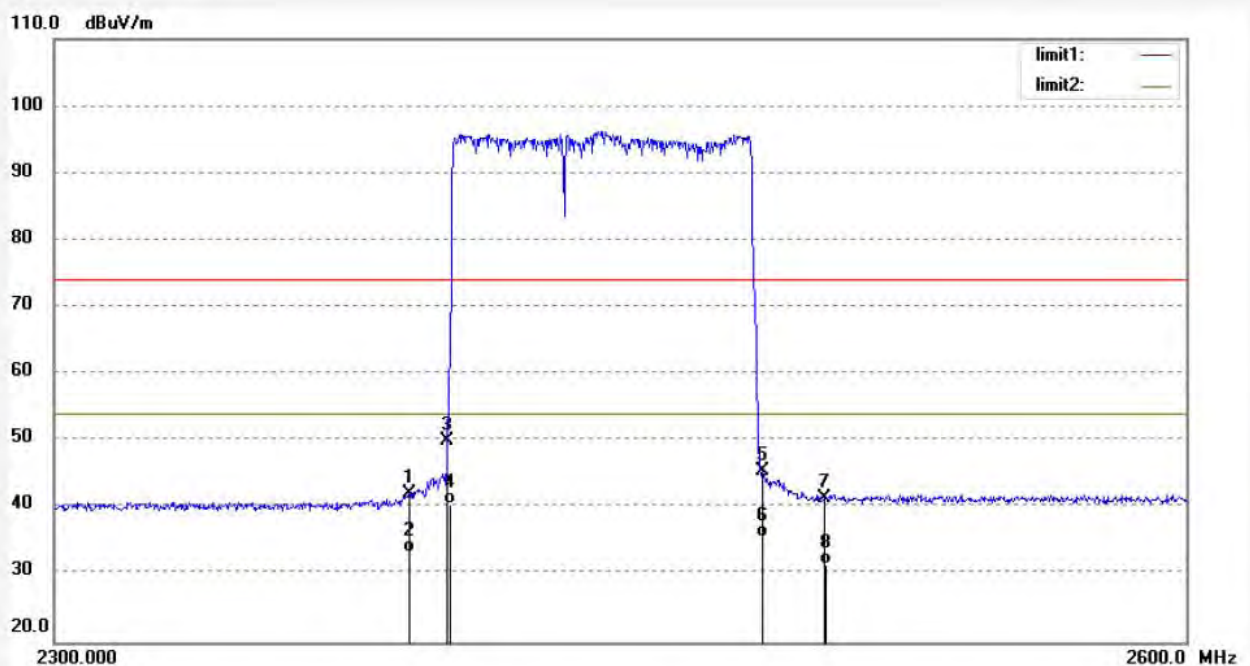
Date: 2017/11/04

Time: 16:14:38

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| 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    | 46.11            | -3.96       | 42.15           | 74.00          | -31.85      | peak     |             |               |        |
| 2   | 2390.000    | 37.45            | -3.96       | 33.49           | 54.00          | -20.51      | AVG      | 250         | 327           |        |
| 3   | 2400.000    | 53.90            | -3.91       | 49.99           | 74.00          | -24.01      | peak     |             |               |        |
| 4   | 2400.000    | 44.45            | -3.91       | 40.54           | 54.00          | -13.46      | AVG      | 250         | 198           |        |
| 5   | 2483.500    | 48.94            | -3.50       | 45.44           | 74.00          | -28.56      | peak     |             |               |        |
| 6   | 2483.500    | 39.15            | -3.50       | 35.65           | 54.00          | -18.35      | AVG      | 300         | 79            |        |
| 7   | 2500.000    | 44.87            | -3.42       | 41.45           | 74.00          | -32.55      | peak     |             |               |        |
| 8   | 2500.000    | 35.12            | -3.42       | 31.70           | 54.00          | -22.30      | AVG      | 200         | 168           |        |

Note: Average measurement with peak detection at No.2&4&6&8



## 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.: frank2017 #1475

Standard: FCC PK

Test item: Radiation Test

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

EUT: Stage Karaoke

Mode: HOOPING(8DPSK)

Model: 2700

Manufacturer: Dynamic Scientific Ltd

Polarization: Vertical

Power Source: AC 120V/60Hz

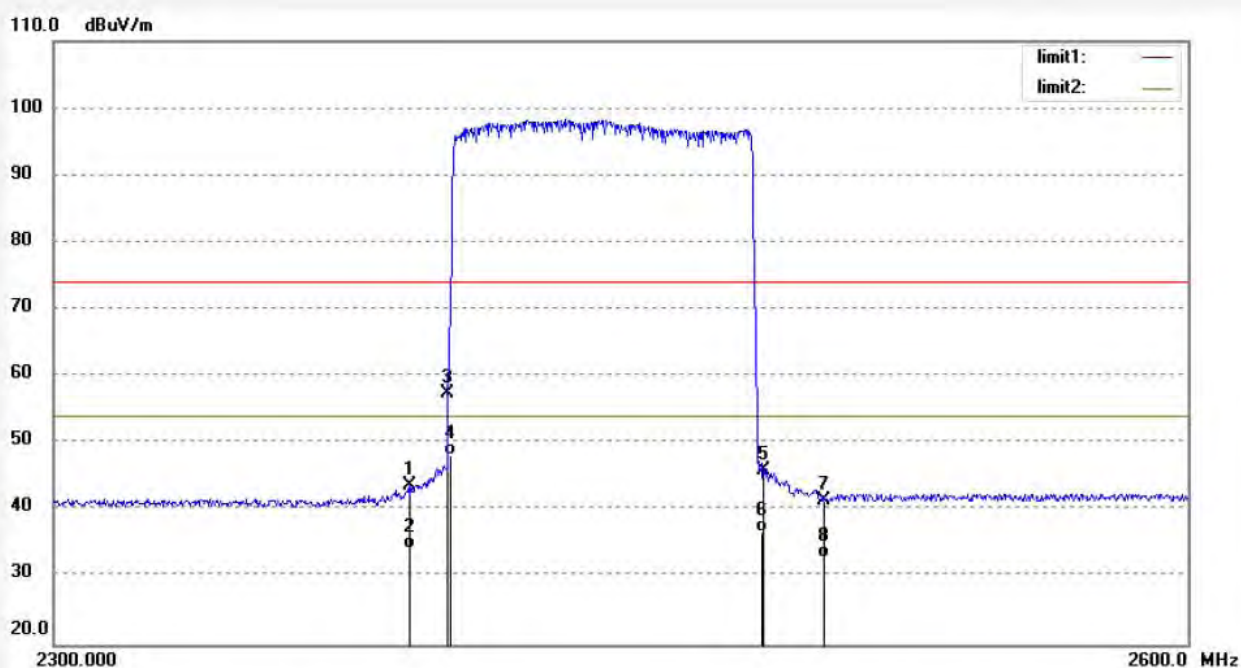
Date: 2017/11/04

Time: 16:14:43

Engineer Signature: Frank

Distance: 3m

Note: Report NO.:ATE20172103



| 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    | 47.61            | -3.96       | 43.65           | 74.00          | -30.35      | peak     |             |               |        |
| 2   | 2390.000    | 38.15            | -3.96       | 34.19           | 54.00          | -19.81      | AVG      | 150         | 133           |        |
| 3   | 2400.000    | 61.40            | -3.91       | 57.49           | 74.00          | -16.51      | peak     |             |               |        |
| 4   | 2400.000    | 52.12            | -3.91       | 48.21           | 54.00          | -5.79       | AVG      | 150         | 248           |        |
| 5   | 2483.500    | 49.44            | -3.50       | 45.94           | 74.00          | -28.06      | peak     |             |               |        |
| 6   | 2483.500    | 40.35            | -3.50       | 36.85           | 54.00          | -17.15      | AVG      | 150         | 348           |        |
| 7   | 2500.000    | 44.87            | -3.42       | 41.45           | 74.00          | -32.55      | peak     |             |               |        |
| 8   | 2500.000    | 36.34            | -3.42       | 32.92           | 54.00          | -21.08      | AVG      | 150         | 12            |        |

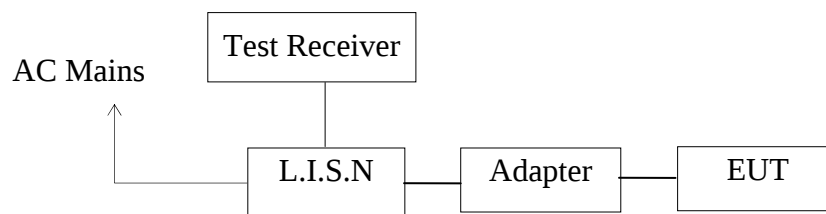
Note: Average measurement with peak detection at No.2&4&6&8

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

### 15 SECTION 15.207(A)

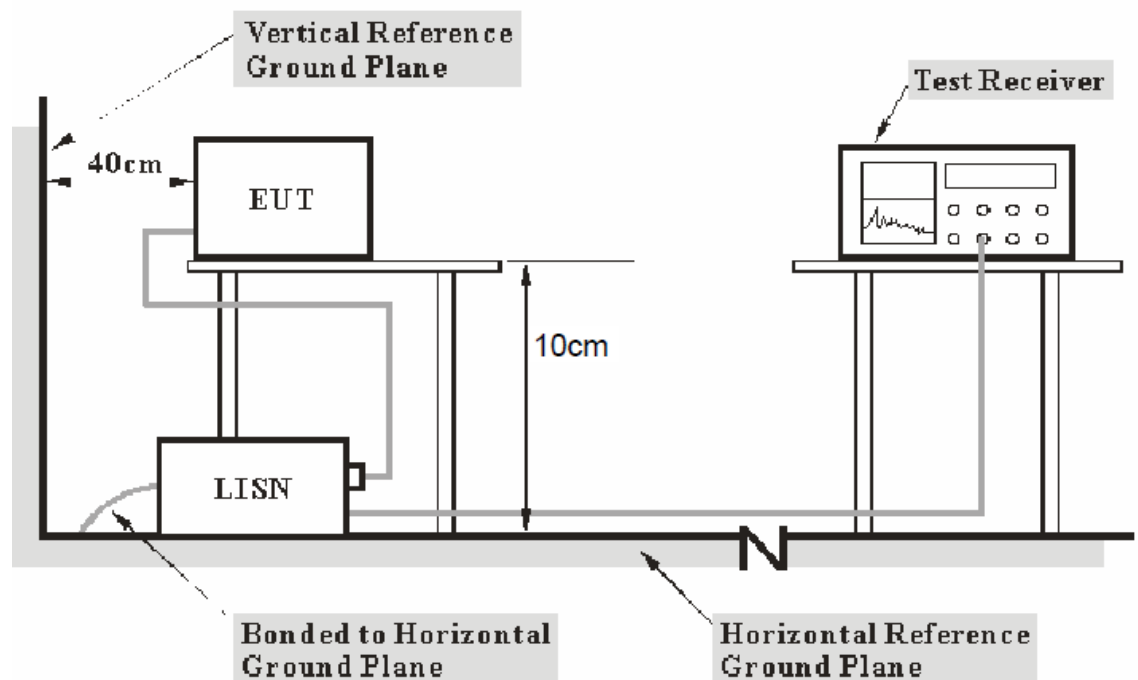
#### 12.1.Block Diagram of Test Setup

##### 12.1.1.Block diagram of connection between the EUT and simulators



(EUT: Stage Karaoke)

##### 12.1.2.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.

## 12.2.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. |                    |               |

## 12.3.Configuration of EUT on Measurement

The 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.

## 12.4.Operating Condition of EUT

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

12.4.2.Turn on the power of all equipment.

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

## 12.5.Test Procedure

The EUT is put on the plane 0.1m 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.

## 12.6.Data Sample

| Frequency (MHz) | Transducer value (dB) | QuasiPeak Level (dBμV) | Average Level (dBμV) | QuasiPeak Limit (dBμV) | Average Limit (dBμV) | QuasiPeak Margin (dB) | Average Margin (dB) | Remark (Pass/Fail) |
|-----------------|-----------------------|------------------------|----------------------|------------------------|----------------------|-----------------------|---------------------|--------------------|
| X.XX            | 10.5                  | 51.1                   | 34.2                 | 56.0                   | 46.0                 | 4.9                   | 11.8                | Pass               |

Frequency(MHz) = Emission frequency in MHz

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

Level(dBμV) = Quasi-peak Reading/Average Reading + Transducer value

Limit (dBμV) = Limit stated in standard

Margin = Limit (dBμV) - Level (dBμV)

Calculation Formula:

Margin = Limit (dBμV) - Level (dBμV)

## 12.7.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.

All data was recorded in the Quasi-peak and average detection mode.

The spectral diagrams are attached as below.

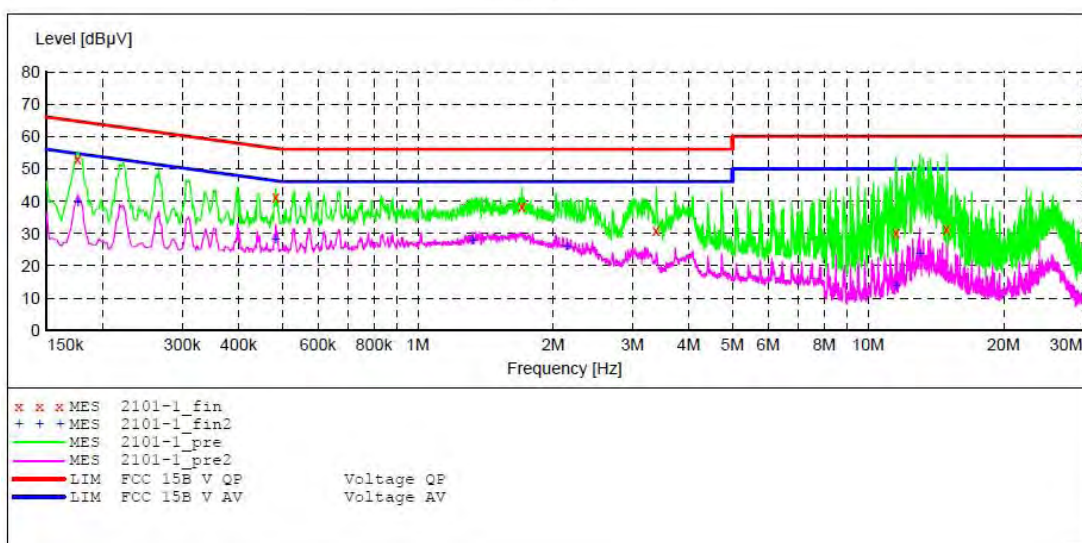
## ACCURATE TECHNOLOGY CO.,LTD

### CONDUCTED EMISSION STANDARD FCC PART15 B

EUT: Stage Karaoke M/N:2700  
 Manufacturer: Dynamic Scientific Ltd  
 Operating Condition: Charging with BT communication  
 Test Site: 1#Shielding Room  
 Operator: Frank  
 Test Specification: L 120V/60Hz  
 Comment: Report NO.:ATE20172103  
 Start of Test: 2017-10-26 / 17:09:48

### 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: "2101-1\_fin"

2017-10-26 17:12

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.176000         | 53.00         | 10.8         | 65            | 11.7         | QP       | L1   | GND |
| 0.484000         | 41.20         | 11.0         | 56            | 15.1         | QP       | L1   | GND |
| 1.704000         | 38.40         | 11.2         | 56            | 17.6         | QP       | L1   | GND |
| 3.385000         | 31.00         | 11.4         | 56            | 25.0         | QP       | L1   | GND |
| 11.540000        | 30.30         | 11.6         | 60            | 29.7         | QP       | L1   | GND |
| 14.920000        | 31.30         | 11.6         | 60            | 28.7         | QP       | L1   | GND |

### MEASUREMENT RESULT: "2101-1\_fin2"

2017-10-26 17:12

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.176000         | 39.80         | 10.8         | 55            | 14.9         | AV       | L1   | GND |
| 0.484000         | 28.40         | 11.0         | 46            | 17.9         | AV       | L1   | GND |
| 1.324000         | 28.00         | 11.2         | 46            | 18.0         | AV       | L1   | GND |
| 2.145000         | 26.10         | 11.3         | 46            | 19.9         | AV       | L1   | GND |
| 11.540000        | 14.00         | 11.6         | 50            | 36.0         | AV       | L1   | GND |
| 13.035000        | 24.10         | 11.6         | 50            | 25.9         | AV       | L1   | GND |

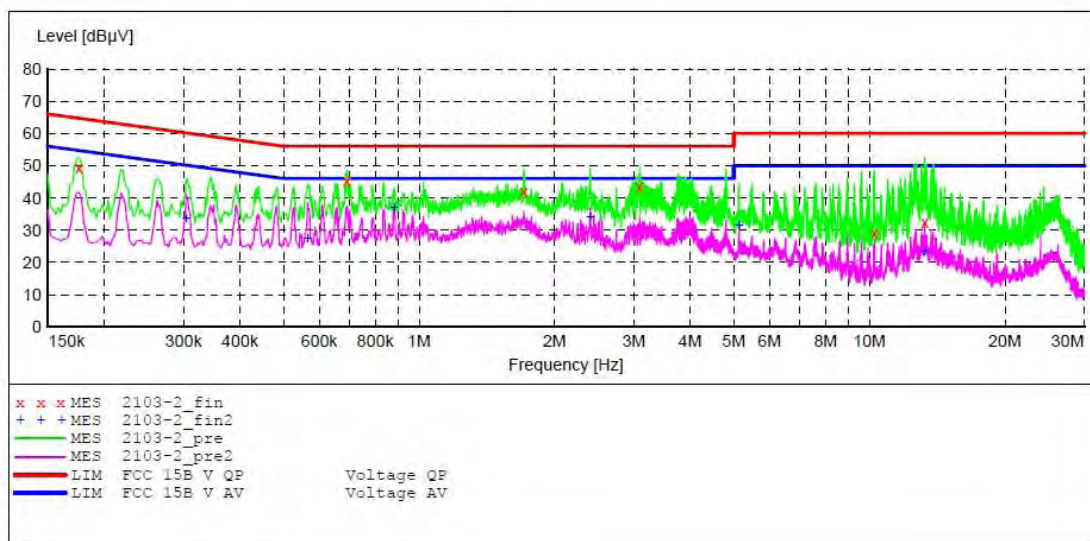
## ACCURATE TECHNOLOGY CO., LTD

### CONDUCTED EMISSION STANDARD FCC PART15 B

EUT: Stage Karaoke M/N:2700  
 Manufacturer: Dynamic Scientific Ltd  
 Operating Condition: Charging with BT communication  
 Test Site: 1#Shielding Room  
 Operator: Frank  
 Test Specification: N 120V/60Hz  
 Comment: Report NO.:ATE20172103  
 Start of Test: 2017-10-26 / 17:13:07

### 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: "2103-2\_fin"

2017-10-26 17:15

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.176000         | 49.50         | 10.8         | 65            | 15.2         | QP       | N    | GND |
| 0.692000         | 45.50         | 11.1         | 56            | 10.5         | QP       | N    | GND |
| 1.710000         | 42.00         | 11.2         | 56            | 14.0         | QP       | N    | GND |
| 3.085000         | 43.40         | 11.3         | 56            | 12.6         | QP       | N    | GND |
| 10.260000        | 29.10         | 11.6         | 60            | 30.9         | QP       | N    | GND |
| 13.270000        | 32.50         | 11.6         | 60            | 27.5         | QP       | N    | GND |

### MEASUREMENT RESULT: "2103-2\_fin2"

2017-10-26 17:15

| Frequency<br>MHz | Level<br>dBμV | Transd<br>dB | Limit<br>dBμV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.304000         | 34.00         | 10.9         | 50            | 16.1         | AV       | N    | GND |
| 0.566000         | 27.60         | 11.0         | 46            | 18.4         | AV       | N    | GND |
| 0.880000         | 37.10         | 11.1         | 46            | 8.9          | AV       | N    | GND |
| 2.400000         | 34.20         | 11.3         | 46            | 11.8         | AV       | N    | GND |
| 5.140000         | 31.70         | 11.4         | 50            | 18.3         | AV       | N    | GND |
| 13.270000        | 23.70         | 11.6         | 50            | 26.3         | AV       | N    | GND |

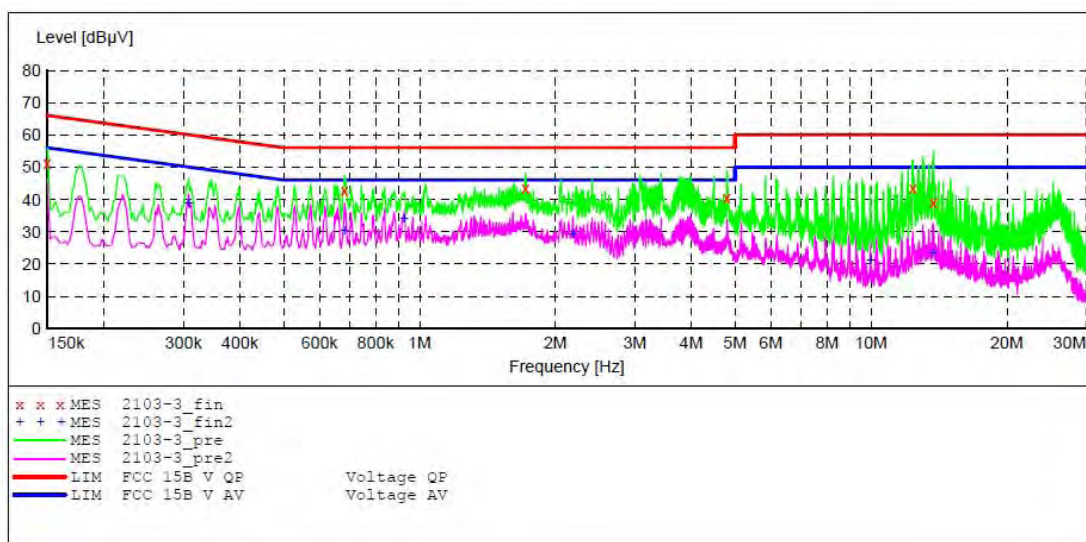
## ACCURATE TECHNOLOGY CO.,LTD

### CONDUCTED EMISSION STANDARD FCC PART15 B

EUT: Stage Karaoke M/N:2700  
 Manufacturer: Dynamic Scientific Ltd  
 Operating Condition: Charging with BT communication  
 Test Site: 1#Shielding Room  
 Operator: Frank  
 Test Specification: N 240V/60Hz  
 Comment: Report NO.:ATE20172103  
 Start of Test: 2017-10-26 / 17:16:13

### 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: "2103-3\_fin"

2017-10-26 17:18

| Frequency<br>MHz | Level<br>dBuV | Transd<br>dB | Limit<br>dBuV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.150000         | 51.40         | 10.8         | 66            | 14.6         | QP       | N    | GND |
| 0.682000         | 42.70         | 11.1         | 56            | 13.3         | QP       | N    | GND |
| 1.718000         | 43.40         | 11.2         | 56            | 12.6         | QP       | N    | GND |
| 4.795000         | 40.60         | 11.4         | 56            | 15.4         | QP       | N    | GND |
| 12.400000        | 43.60         | 11.6         | 60            | 16.4         | QP       | N    | GND |
| 13.735000        | 39.20         | 11.6         | 60            | 20.8         | QP       | N    | GND |

### MEASUREMENT RESULT: "2103-3\_fin2"

2017-10-26 17:18

| Frequency<br>MHz | Level<br>dBuV | Transd<br>dB | Limit<br>dBuV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.308000         | 39.00         | 10.9         | 50            | 11.0         | AV       | N    | GND |
| 0.682000         | 30.80         | 11.1         | 46            | 15.2         | AV       | N    | GND |
| 0.926000         | 34.30         | 11.1         | 46            | 11.7         | AV       | N    | GND |
| 2.185000         | 29.50         | 11.3         | 46            | 16.5         | AV       | N    | GND |
| 9.970000         | 21.60         | 11.6         | 50            | 28.4         | AV       | N    | GND |
| 13.700000        | 23.60         | 11.6         | 50            | 26.4         | AV       | N    | GND |

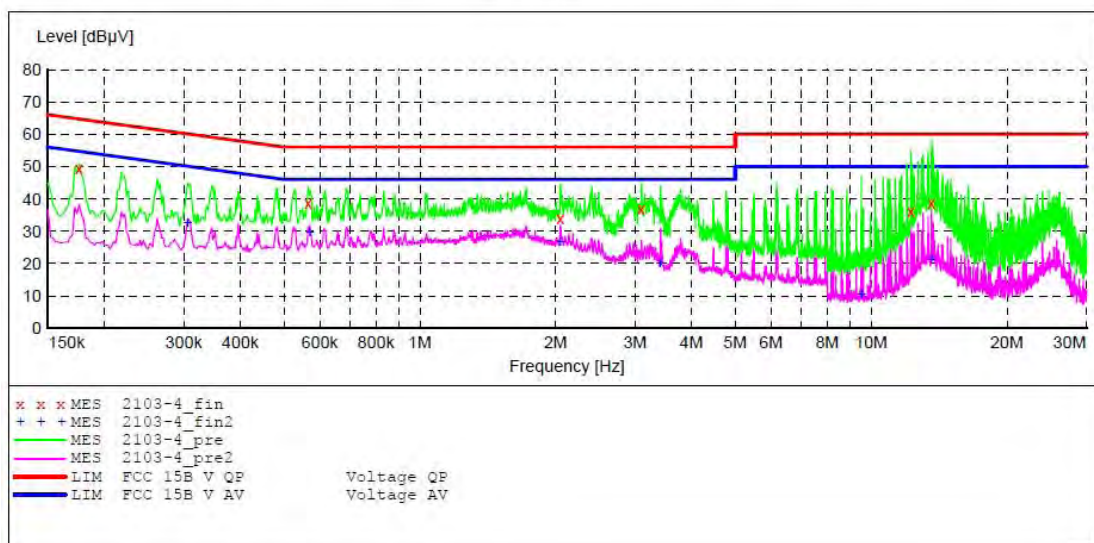
## ACCURATE TECHNOLOGY CO.,LTD

### CONDUCTED EMISSION STANDARD FCC PART15 B

EUT: Stage Karaoke M/N:2700  
 Manufacturer: Dynamic Scientific Ltd  
 Operating Condition: Charging with BT communication  
 Test Site: 1#Shielding Room  
 Operator: Frank  
 Test Specification: L 240V/60Hz  
 Comment: Report NO.:ATE20172103  
 Start of Test: 2017-10-26 / 17:19:17

### 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: "2103-4\_fin"

2017-10-26 17:22

| Frequency<br>MHz | Level<br>dBµV | Transd<br>dB | Limit<br>dBµV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.176000         | 49.20         | 10.8         | 65            | 15.5         | QP       | L1   | GND |
| 0.566000         | 38.70         | 11.0         | 56            | 17.3         | QP       | L1   | GND |
| 2.050000         | 34.00         | 11.3         | 56            | 22.0         | QP       | L1   | GND |
| 3.095000         | 36.70         | 11.3         | 56            | 19.3         | QP       | L1   | GND |
| 12.250000        | 36.00         | 11.6         | 60            | 24.0         | QP       | L1   | GND |
| 13.620000        | 38.60         | 11.6         | 60            | 21.4         | QP       | L1   | GND |

### MEASUREMENT RESULT: "2103-4\_fin2"

2017-10-26 17:22

| Frequency<br>MHz | Level<br>dBµV | Transd<br>dB | Limit<br>dBµV | Margin<br>dB | Detector | Line | PE  |
|------------------|---------------|--------------|---------------|--------------|----------|------|-----|
| 0.306000         | 32.70         | 10.9         | 50            | 17.4         | AV       | L1   | GND |
| 0.570000         | 29.90         | 11.0         | 46            | 16.1         | AV       | L1   | GND |
| 2.050000         | 26.90         | 11.3         | 46            | 19.1         | AV       | L1   | GND |
| 3.415000         | 20.20         | 11.4         | 46            | 25.8         | AV       | L1   | GND |
| 9.515000         | 10.80         | 11.6         | 50            | 39.2         | AV       | L1   | GND |
| 13.610000        | 21.50         | 11.6         | 50            | 28.5         | AV       | L1   | GND |

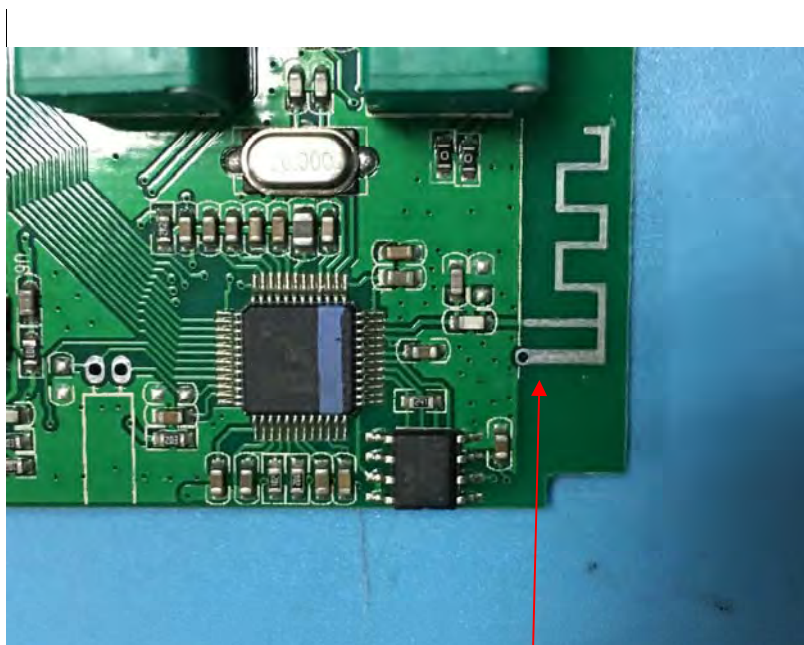
## 13.ANTENNA REQUIREMENT

### 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 0 dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.



Antenna

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