

APPLICATION CERTIFICATION FCC Part 15C  
On Behalf of

Elec-Tech International Co., Ltd.

LED Shop light  
Model No.: 545692XX

FCC ID: XZH-5456922017

Prepared for : Elec-Tech International Co., Ltd.  
Address : No.1 Jinfeng Road, Tangjiawan Town, Xiangzhou  
District, Zhuhai City, Guangdong Province, P.R.China  
519085

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Report No. : ATE20172223  
Date of Test : Dec. 8-Dec. 13, 2017  
Date of Report : Dec. 14, 2017

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## Test Report Certification

Applicant : Elec-Tech International Co., Ltd.  
Manufacturer 1 : ETI Solid State Lighting (Zhuhai) Ltd  
Manufacturer 2 : ETI Solid State Lighting (Wuhu) Ltd  
EUT Description : LED Shop light  
Model No. : 545692XX

(Note: XX = 00-99, which respectively represents different LED source colour temperature.)

### Measurement Procedure Used:

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

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

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Shenzhen Accurate Technology Co., Ltd.

Date of Test :

Dec. 8-Dec. 13, 2017

Date of Report :

Dec. 14, 2017

Prepared by :

*Stan Yang*  
Stan Yang, Engineer  
  
ATC ACCURATE TECHNOLOGY CO., LTD.  
APPROVED

Approved & Authorized Signer :

*Sean Liu*  
(Sean Liu, Manager)

## 1. GENERAL INFORMATION

### 1.1. Description of Device (EUT)

Model Number	:	545692XX (Note: XX = 00-99, which respectively represents different LED source colour temperature, We hereby state that these models are identical in interior structure, electrical circuits and components, Therefore, only model 54569241 is tested for EMC tests.)
Bluetooth version	:	BT V4.1 Single mode This report is for BT classic mode
Frequency Range	:	2402MHz-2480MHz
Number of Channels	:	79
Antenna Gain(Max)	:	-1dBi
Antenna type	:	PCB Antenna
Adapter Input Voltage	:	AC 120V,60Hz
Modulation mode	:	GFSK, $\pi/4$ DQPSK, 8DPSK
Applicant Address	:	Elec-Tech International Co., Ltd. No.1 Jinfeng Road, Tangjiawan Town, Xiangzhou District, Zhuhai City, Guangdong Province, P.R.China 519085
Manufacturer 1 Address	:	ETI Solid State Lighting (Zhuhai) Ltd No.1, Zhongzhu Road South, Science & Technology Innovation Coast, High Tech District, Zhuhai City, Guangdong Prov., China
Manufacturer 2 Address	:	ETI Solid State Lighting (Wuhu) Ltd No.11, Wei Er ci Rd., East Zone of Wuhu Economic & Technical Development Zone, Wuhu City, Anhui Prov., China

## 1.2. Accessory and Auxiliary Equipment

PC :

Manufacturer: LENOVO  
M/N: 4290-RT8  
S/N: R9-FW93G 11/08

## 1.3. Description of Test Facility

EMC Lab

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

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

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

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

Name of Firm

: Shenzhen Accurate Technology Co., Ltd.

Site Location

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

## 1.4. Measurement Uncertainty

Conducted Emission Expanded Uncertainty = 2.23dB, k=2

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

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

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

## 2. MEASURING DEVICE AND TEST EQUIPMENT

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

Kind of equipment	Manufacturer	Type	S/N	Calibrated dates	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 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 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 Instruments	WHKX3.6/18 G-10SS	N/A	Jan. 07, 2017	1 Year
Band Reject Filter	Wainwright Instruments	WRCG2400/2 485-2375/2510 -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

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

#### 3.2.Configuration and peripherals

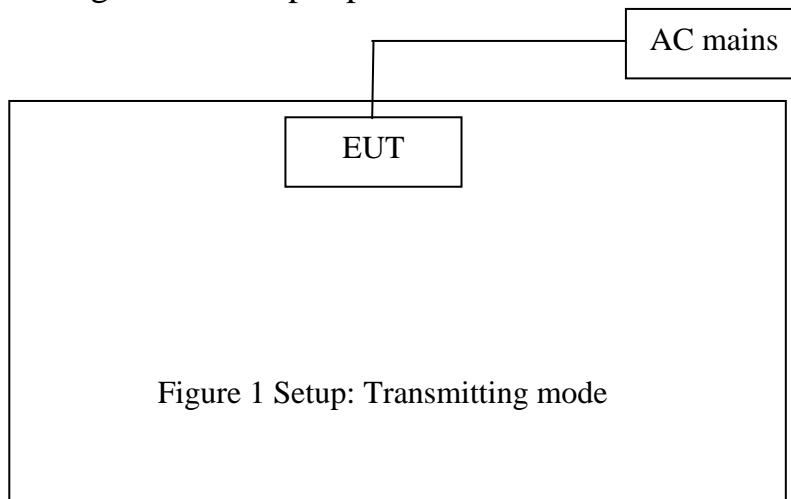


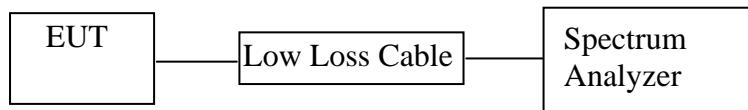
Figure 1 Setup: Transmitting mode

## 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) 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: LED Shop light)

### 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.

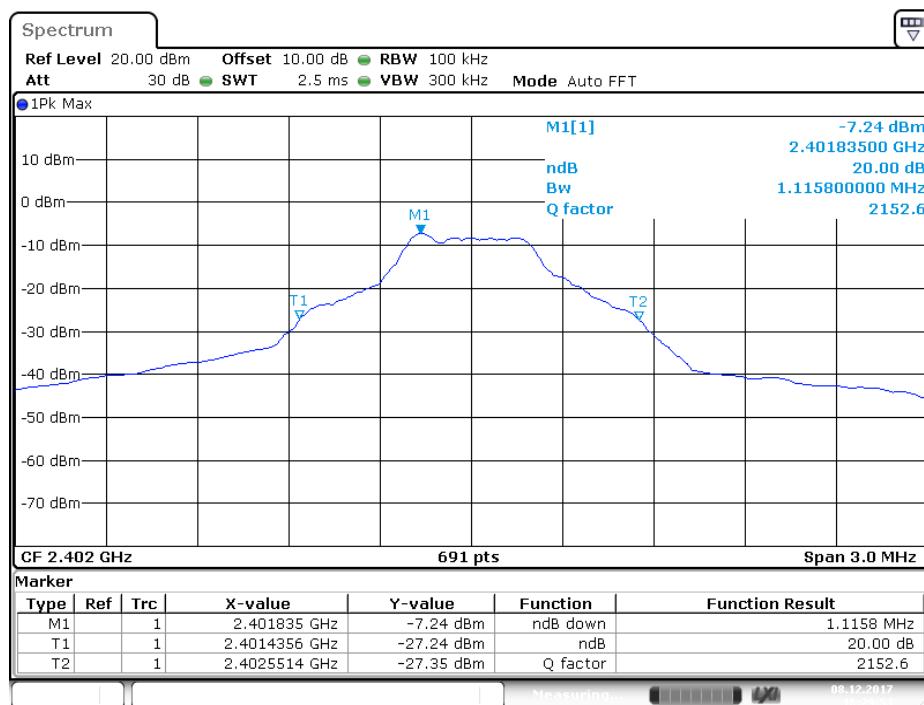
## 5.6. Test Result

Channel	Frequency (MHz)	GFSK 20dB Bandwidth (MHz)	$\Pi/4$ -DQPSK 20dB Bandwidth (MHz)	8DPSK 20dB Bandwidth (MHz)	Result
Low	2402	1.116	1.303	1.324	Pass
Middle	2441	1.116	1.285	1.337	Pass
High	2480	1.116	1.294	1.324	Pass

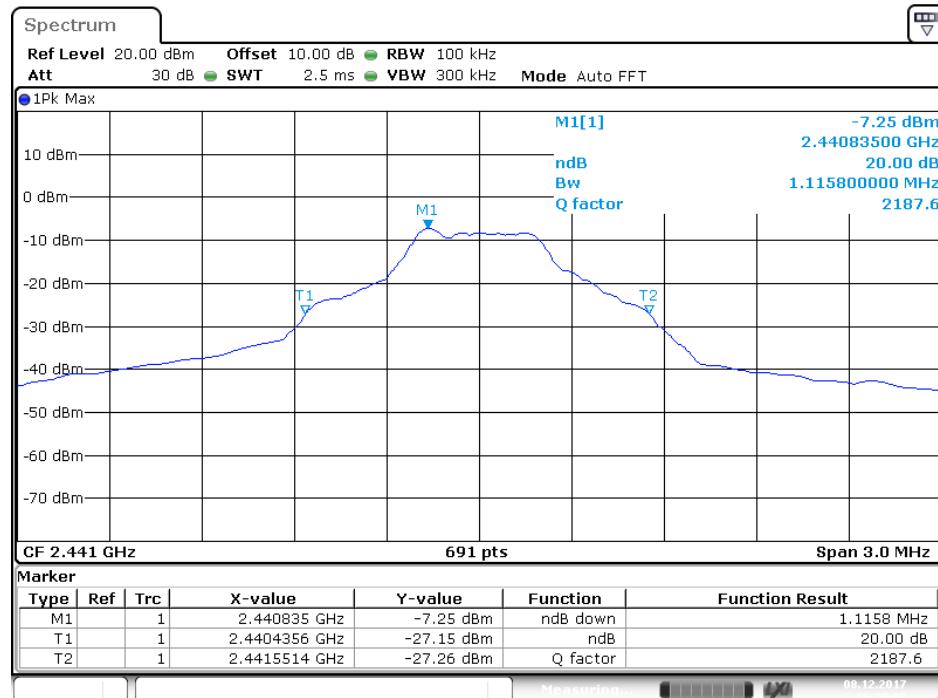
The spectrum analyzer plots are attached as below.

### GFSK Mode

Low channel

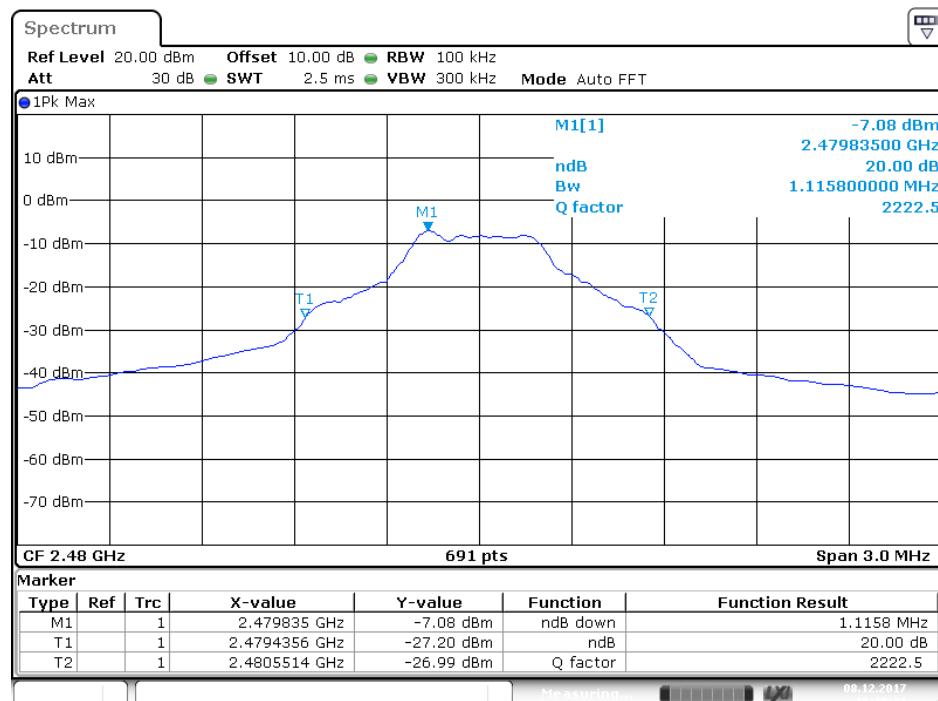


## Middle channel



Date: 8.DEC.2017 16:29:09

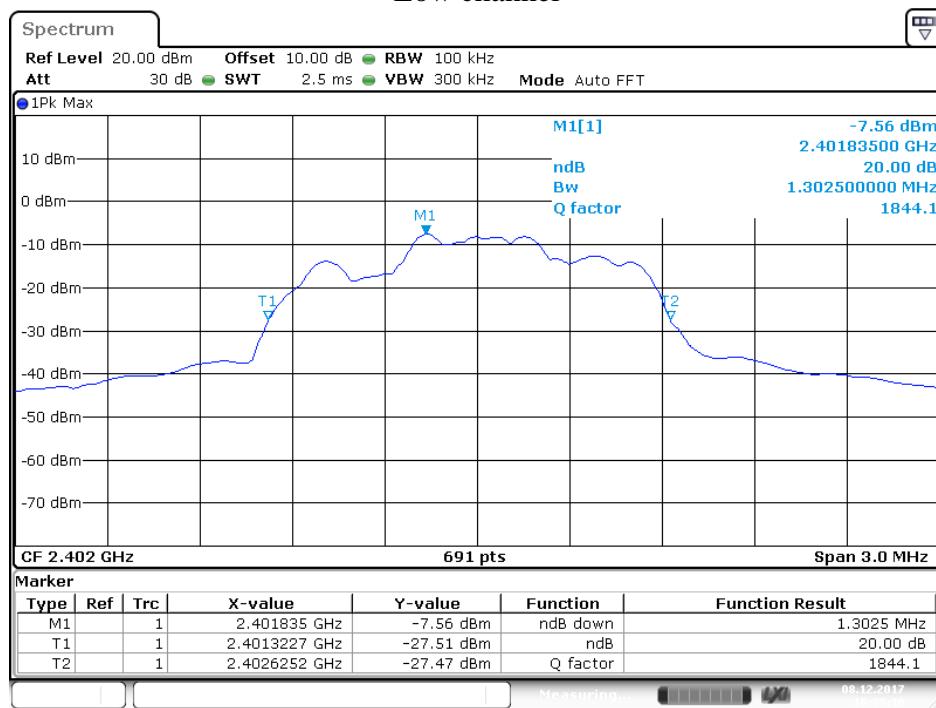
## High channel



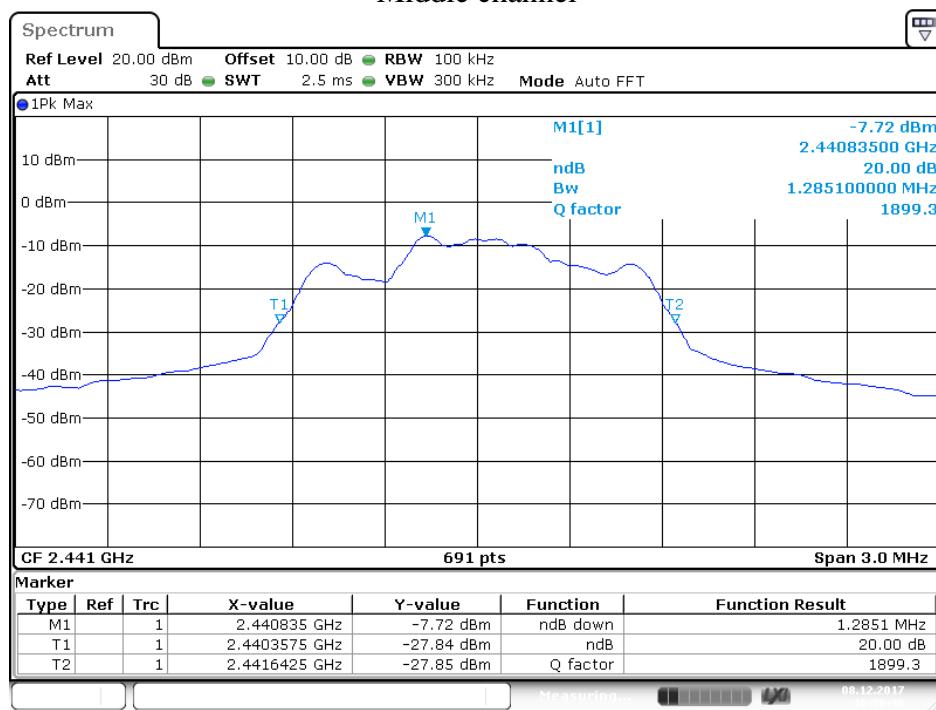
Date: 8.DEC.2017 16:28:31

## Π/4-DQPSK Mode

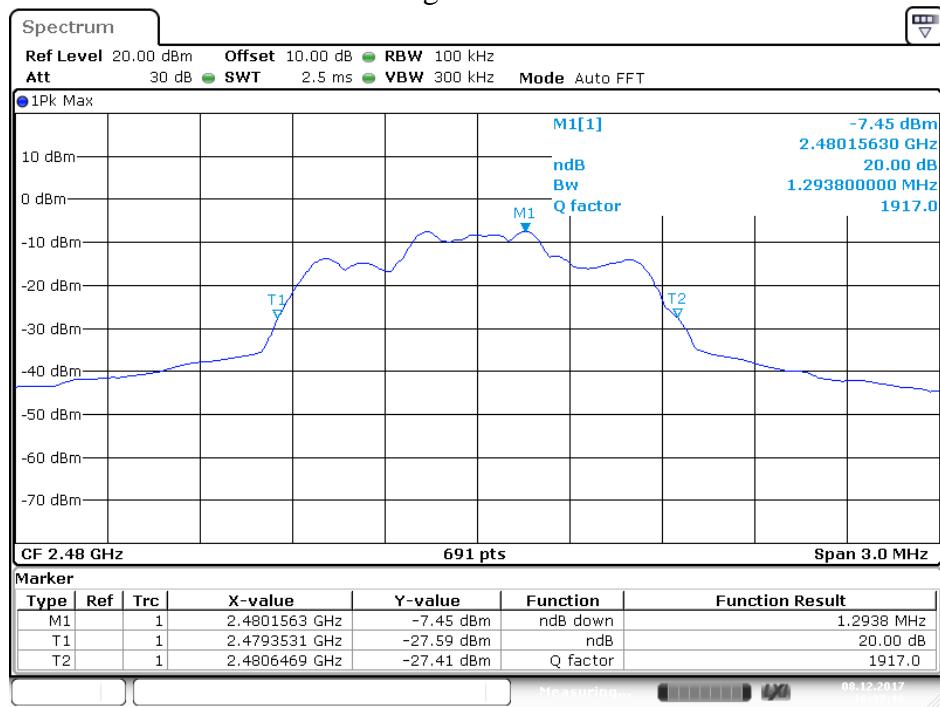
## Low channel



## Middle channel



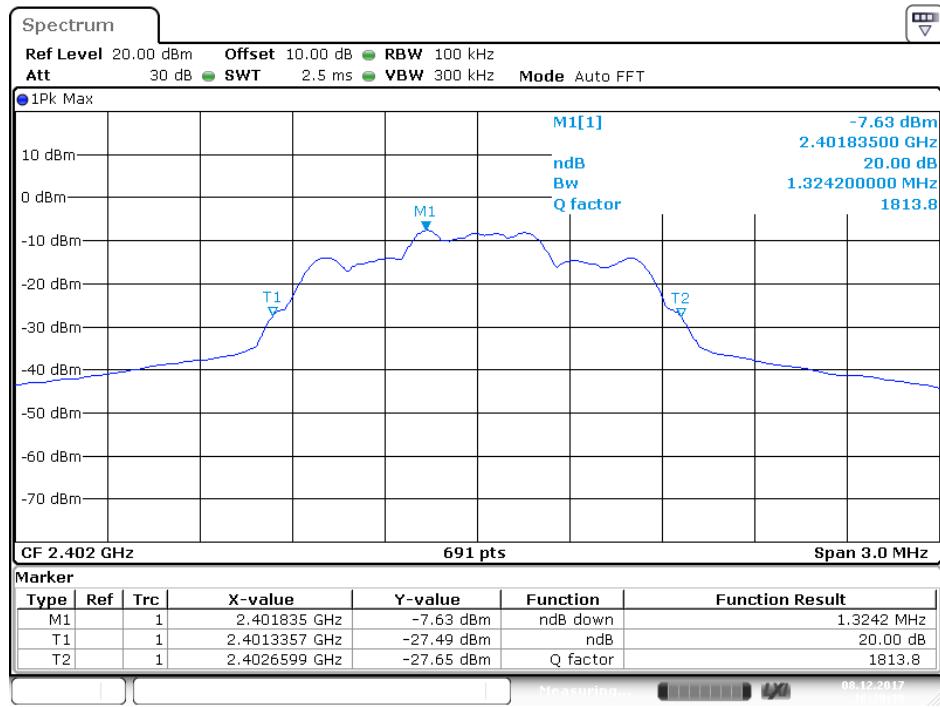
## High channel



Date: 8.DEC.2017 16:37:10

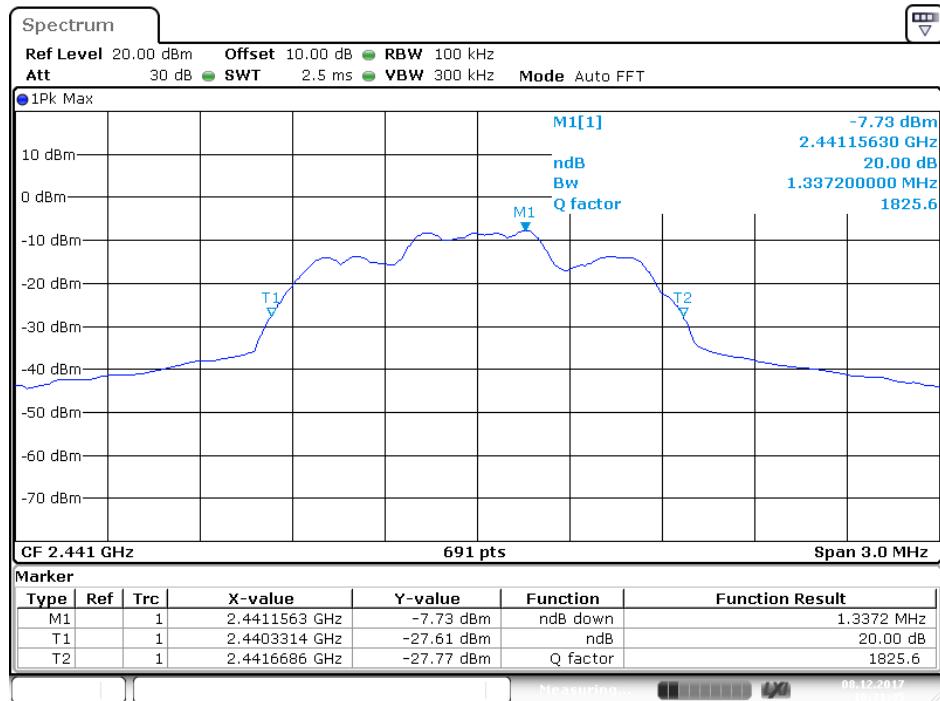
## 8DPSK Mode

## Low channel



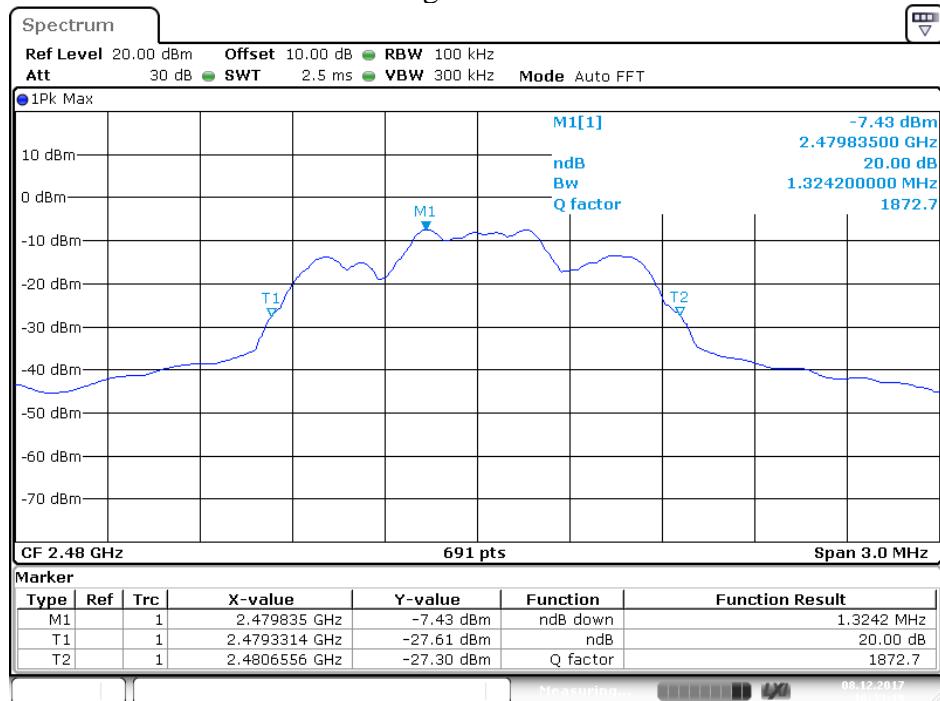
Date: 8.DEC.2017 16:30:40

## Middle channel



Date: 8.DEC.2017 16:31:46

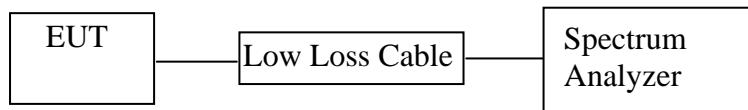
## High channel



Date: 8.DEC.2017 16:33:19

## 6. CARRIER FREQUENCY SEPARATION TEST

### 6.1. Block Diagram of Test Setup



(EUT: LED Shop light)

### 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	1.003	25KHz or 2/3*20dB bandwidth	PASS
	2403			
Middle	2440	1.003	25KHz or 2/3*20dB bandwidth	PASS
	2441			
High	2479	0.999	25KHz or 2/3*20dB bandwidth	PASS
	2480			

### Π/4-DQPSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.003	25KHz or 2/3*20dB bandwidth	PASS
	2403			
Middle	2440	1.151	25KHz or 2/3*20dB bandwidth	PASS
	2441			
High	2479	1.003	25KHz or 2/3*20dB bandwidth	PASS
	2480			

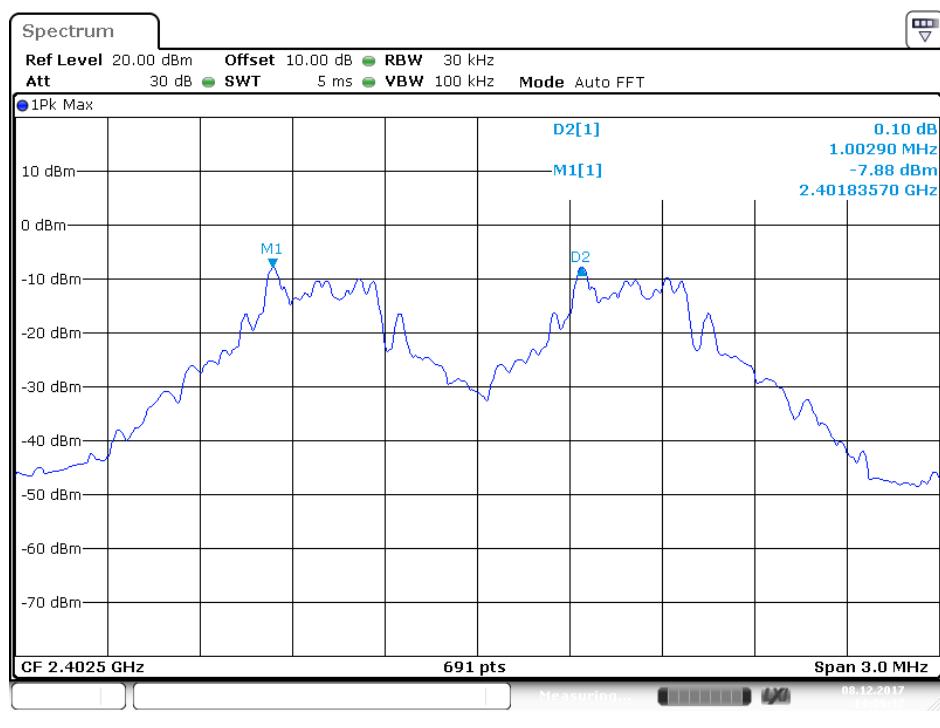
### 8DPSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	0.999	25KHz or 2/3*20dB bandwidth	PASS
	2403			
Middle	2440	0.999	25KHz or 2/3*20dB bandwidth	PASS
	2441			
High	2479	1.003	25KHz or 2/3*20dB bandwidth	PASS
	2480			

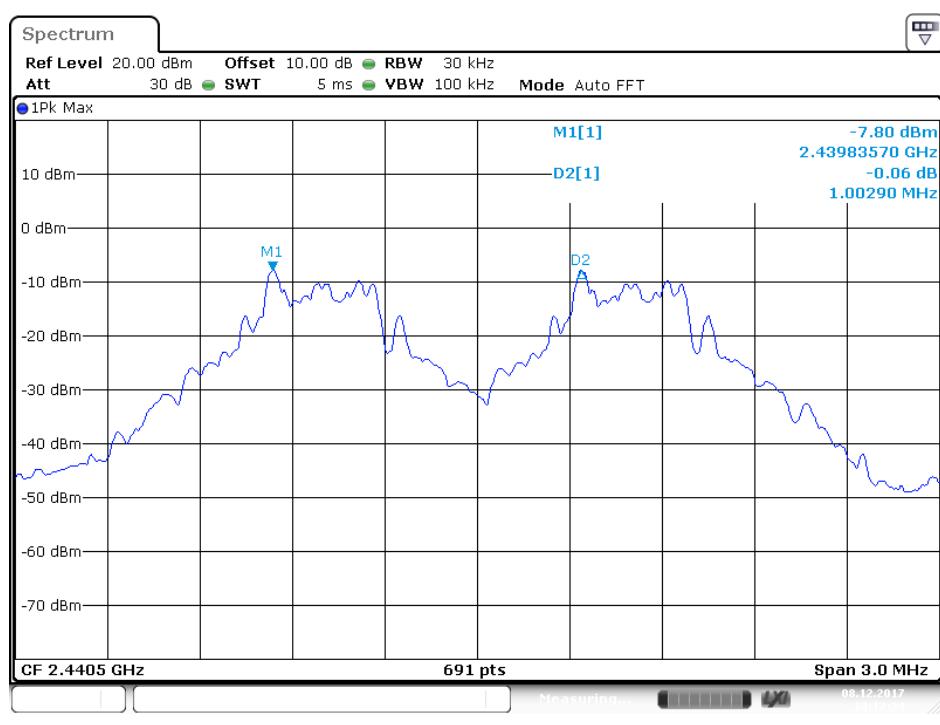
The spectrum analyzer plots are attached as below.

## GFSK Mode

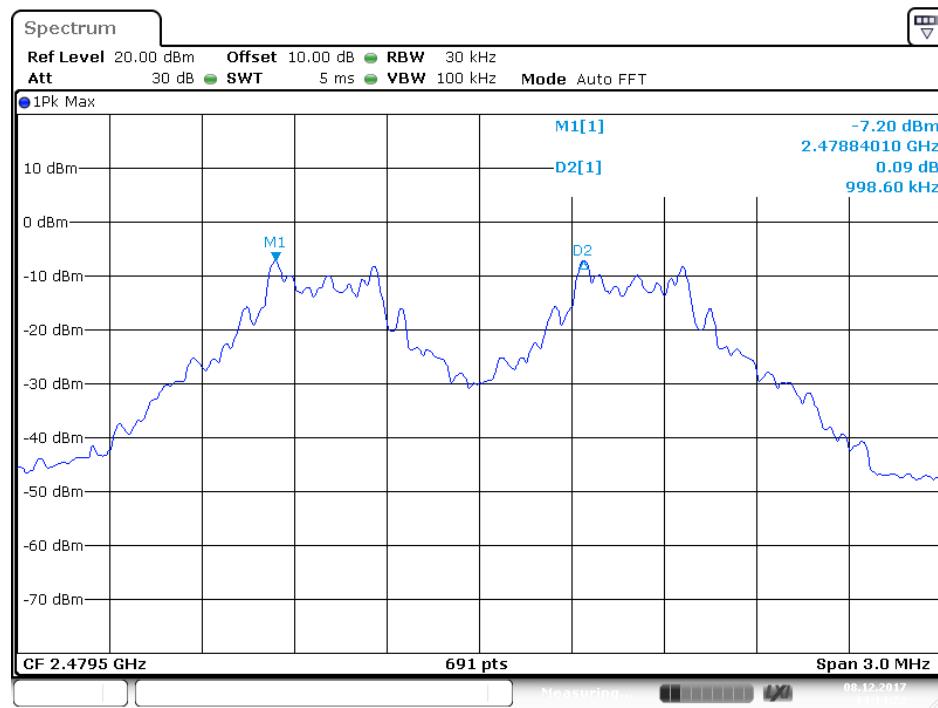
## Low channel



## Middle channel

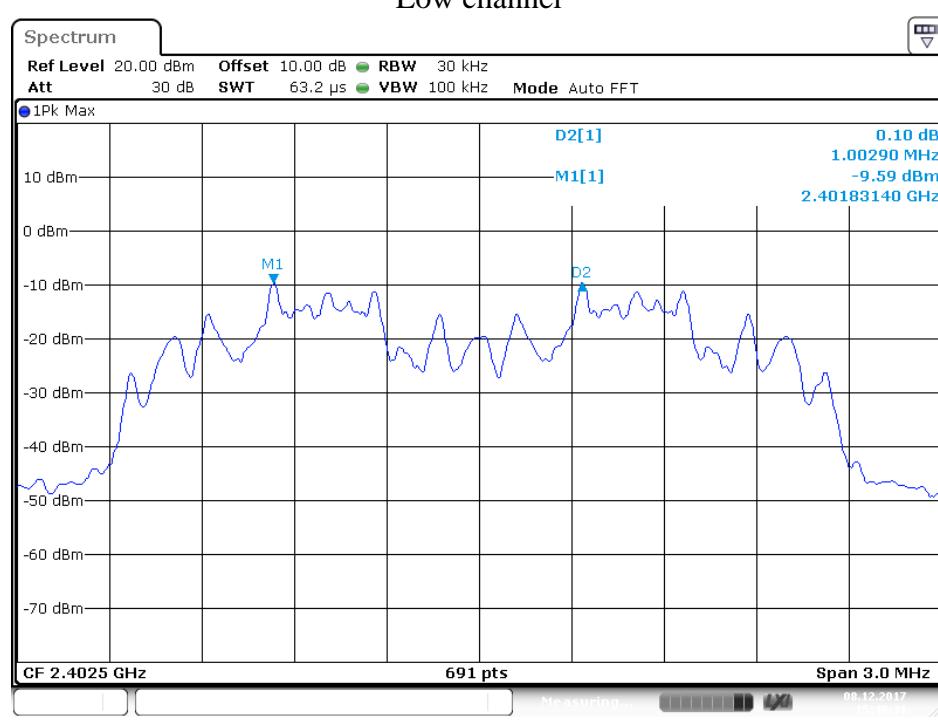


## High channel

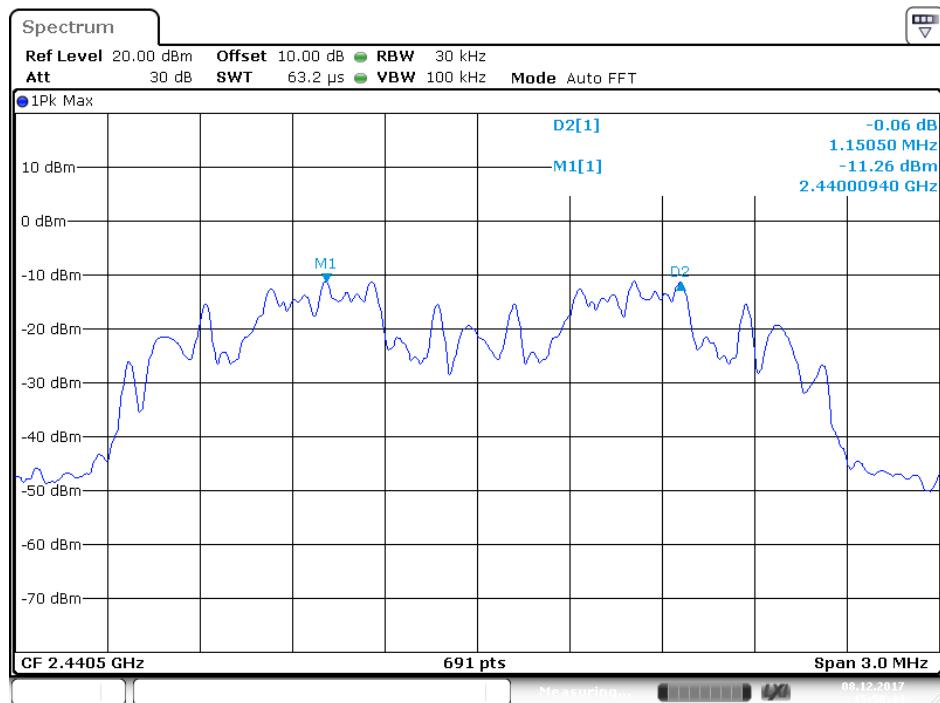


## Π/4-DQPSK Mode

## Low channel

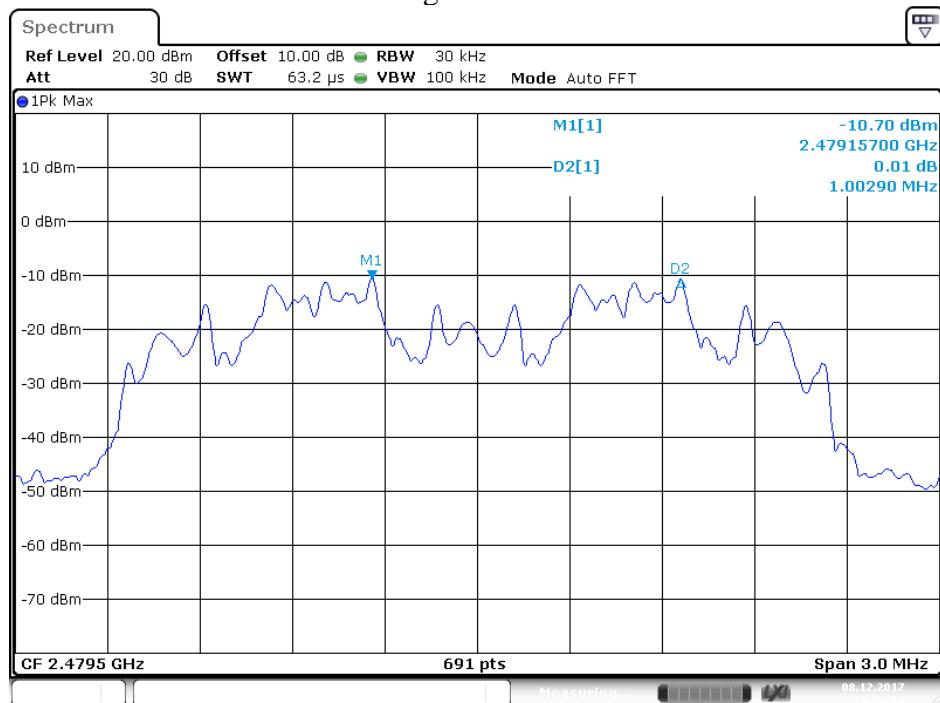


## Middle channel



Date: 8.DEC.2017 15:50:45

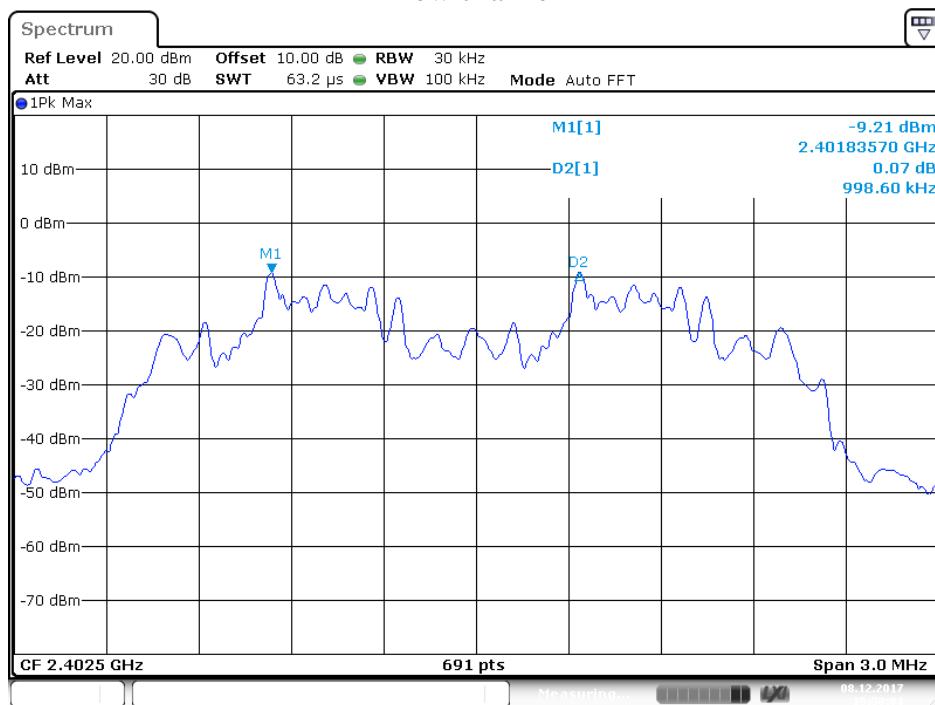
## High channel



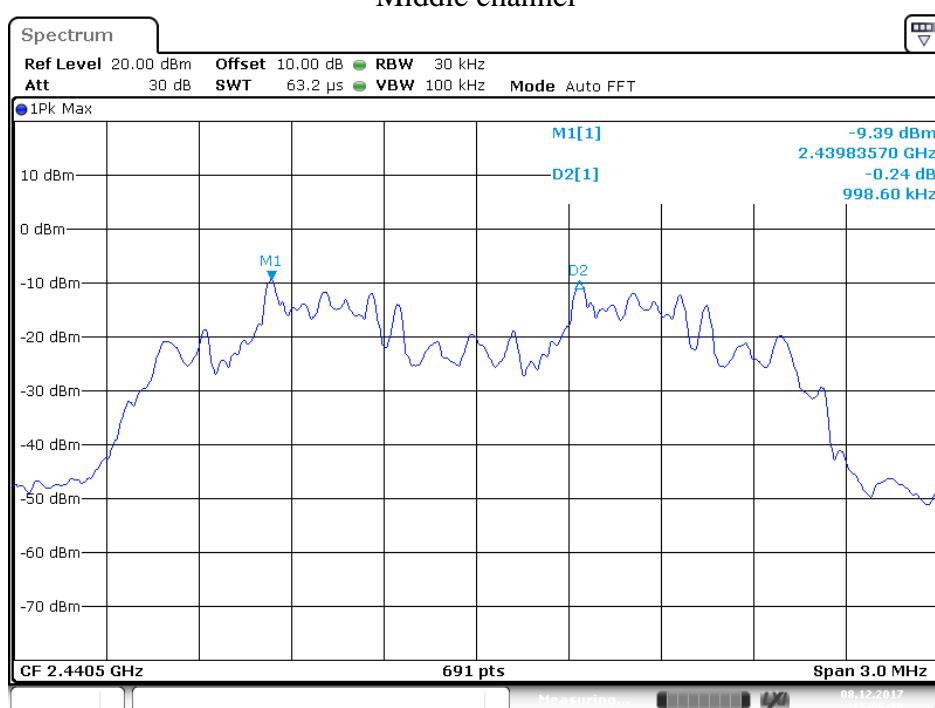
Date: 8.DEC.2017 15:52:51

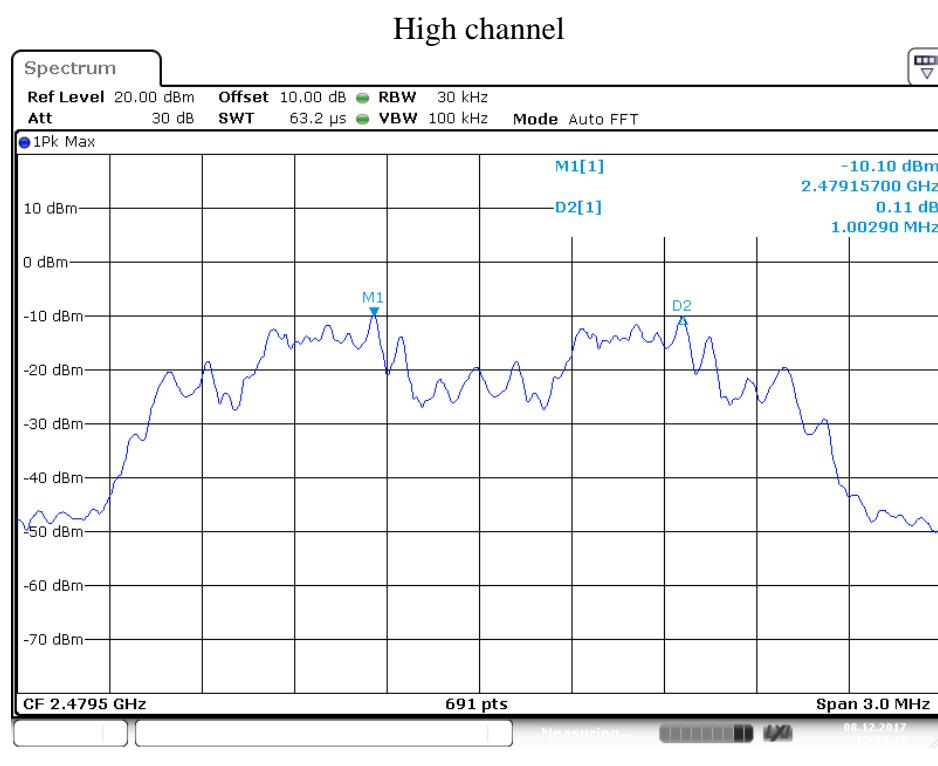
## 8DPSK Mode

## Low channel



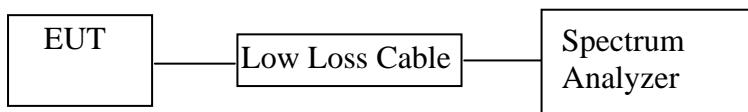
## Middle channel





## 7. NUMBER OF HOPPING FREQUENCY TEST

### 7.1. Block Diagram of Test Setup



(EUT: LED Shop light)

### 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.

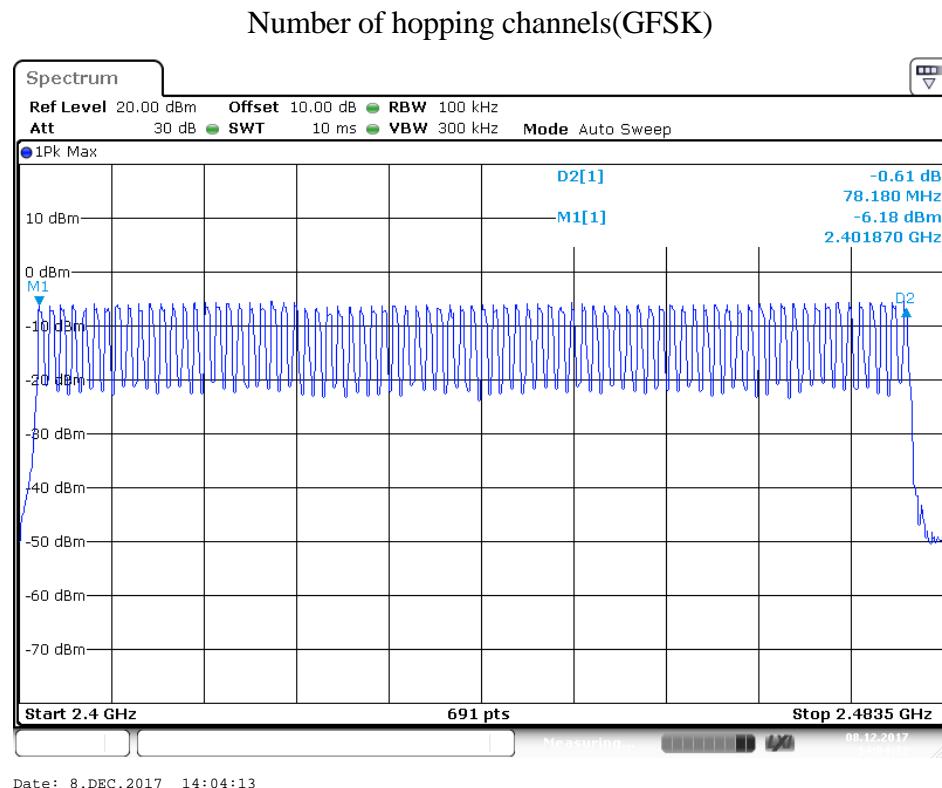
7.5.2. Set the spectrum analyzer as RBW=100 kHz, VBW=300 kHz.

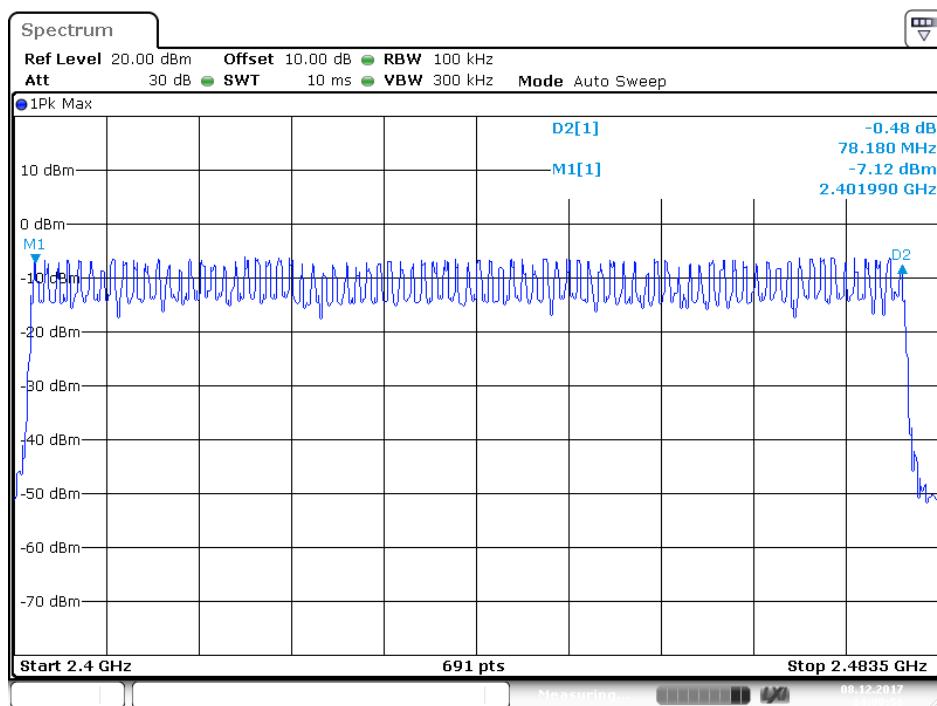
7.5.3. Max hold, view and count how many channel in the band.

## 7.6. Test Result

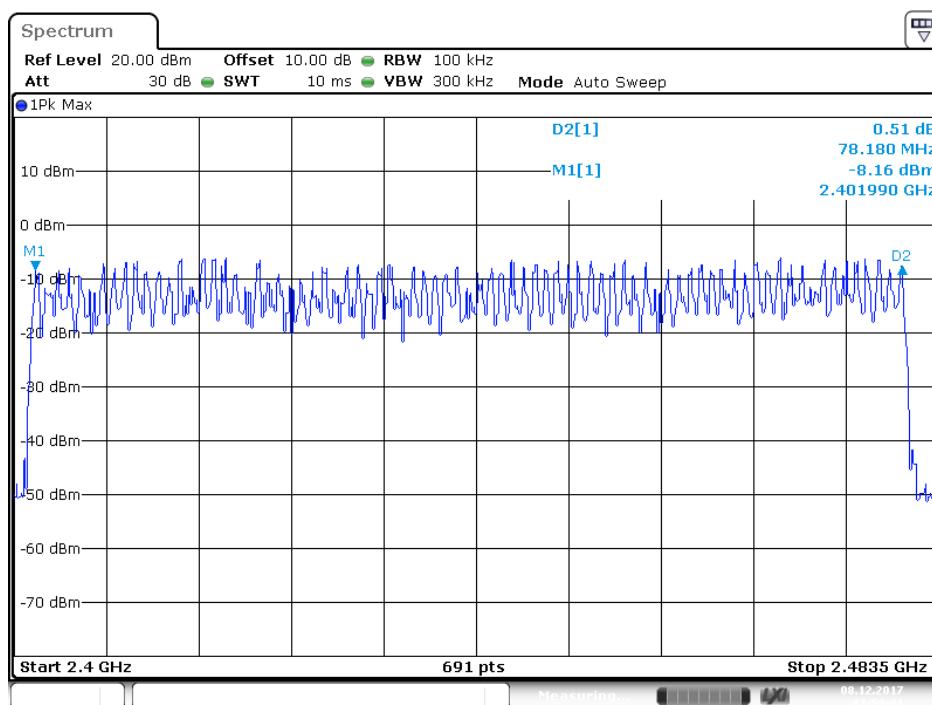
Total number of hopping channel	Measurement result(CH)	Limit(CH)
	79	≥15

The spectrum analyzer plots are attached as below.



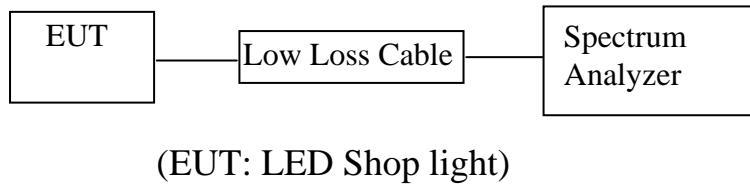
Number of hopping channels( $\pi/4$ -DQPSK)

## Number of hopping channels(8DPSK)



## 8. DWELL TIME TEST

### 8.1. Block Diagram of Test Setup



### 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	2441	0.406	129.92	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2*79)) \times 31.6$				
DH3	2441	1.681	268.96	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4*79)) \times 31.6$				
DH5	2441	2.942	313.81	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6*79)) \times 31.6$				

### $\Pi/4$ -DQPSK

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2441	0.399	127.68	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2*79)) \times 31.6$				
DH3	2441	1.659	265.44	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4*79)) \times 31.6$				
DH5	2441	2.920	311.47	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6*79)) \times 31.6$				

### 8DPSK Mode

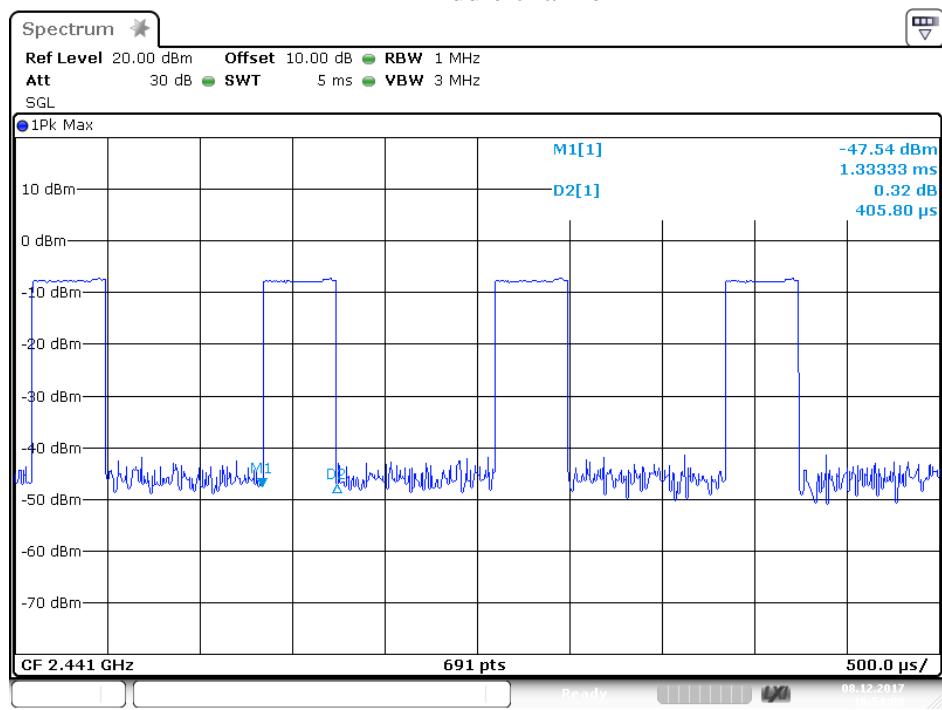
Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2441	0.406	129.92	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2*79)) \times 31.6$				
DH3	2441	1.667	266.72	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4*79)) \times 31.6$				
DH5	2441	2.928	312.32	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6*79)) \times 31.6$				

Note: We tested GFSK mode,  $\Pi/4$ -DQPSK Mode & 8QPSK mode the low, middle and high channel and recorded the worst case data for all test mode.

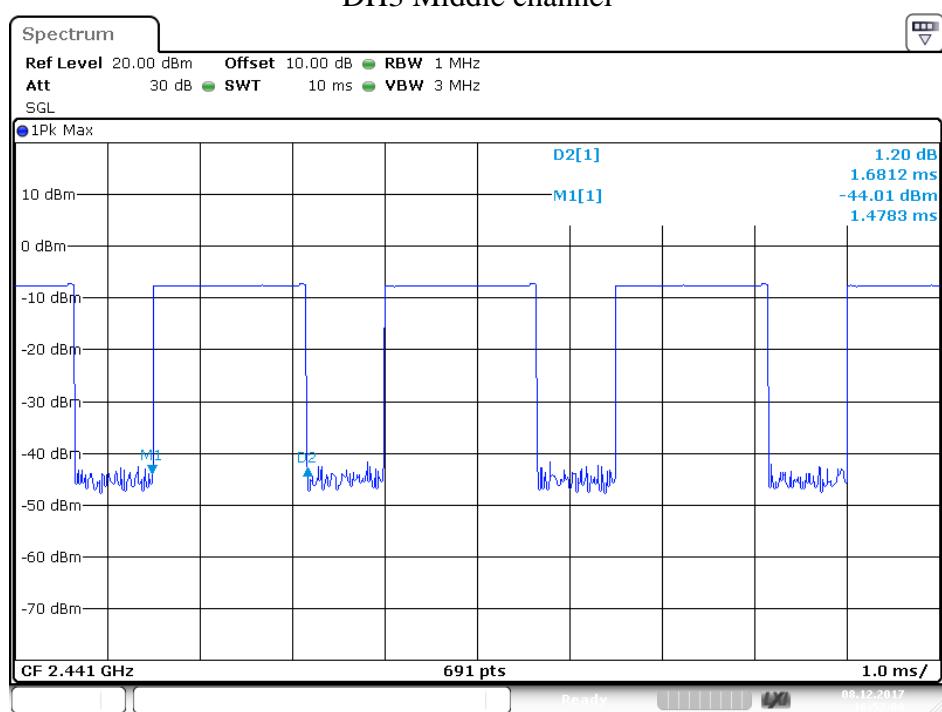
The spectrum analyzer plots are attached as below.

## GFSK Mode

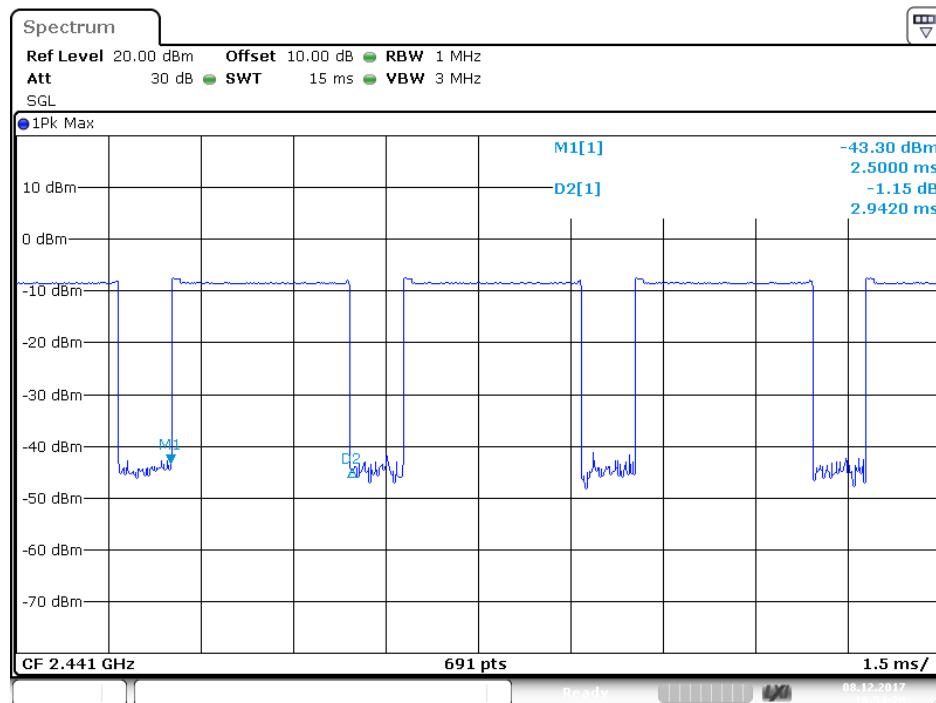
## DH1 Middle channel



## DH3 Middle channel



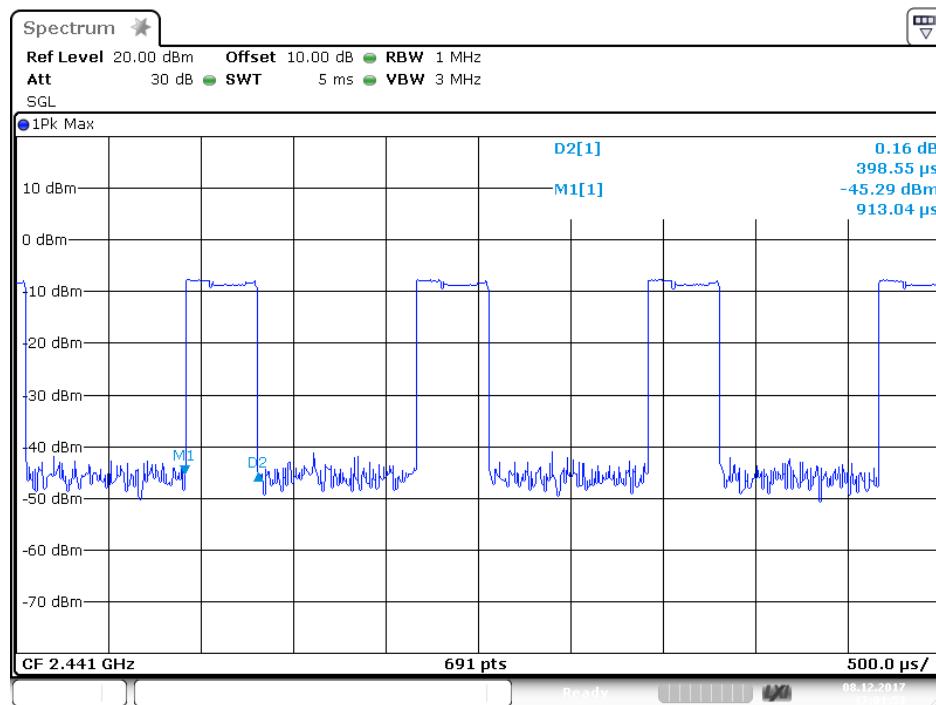
## DH5 Middle channel



Date: 8.DEC.2017 16:54:20

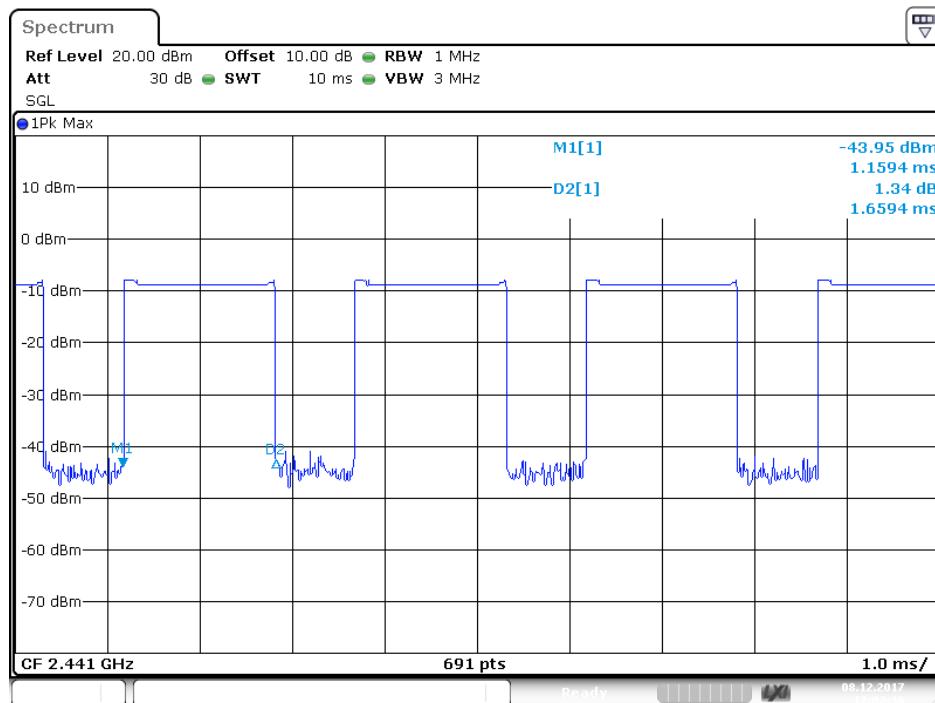
## Π/4-DQPSK

## 2DH1 Middle channel

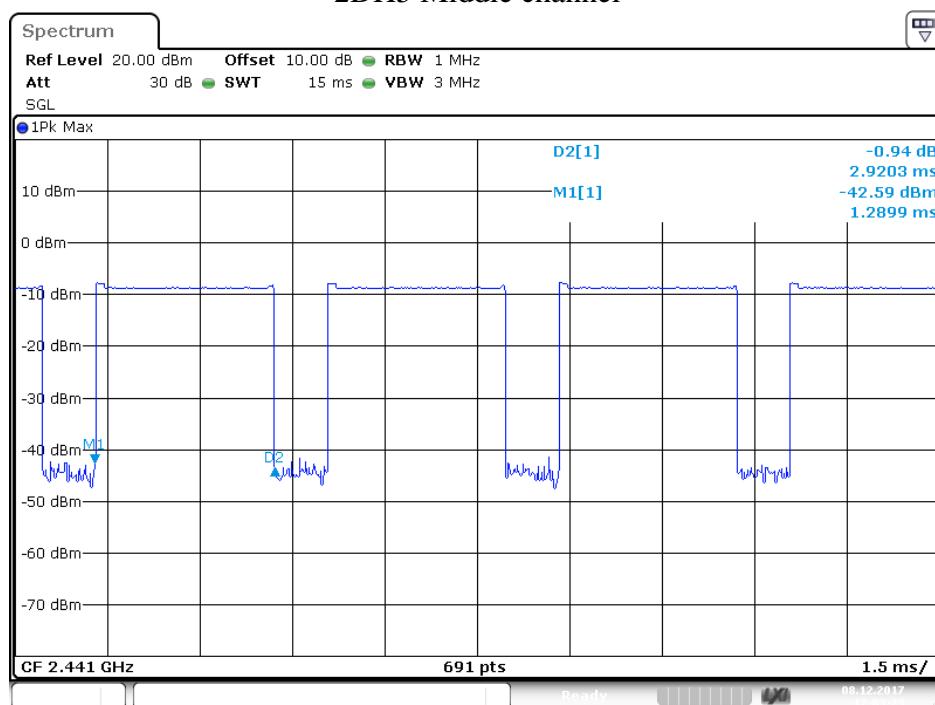


Date: 8.DEC.2017 17:01:53

## 2DH3 Middle channel

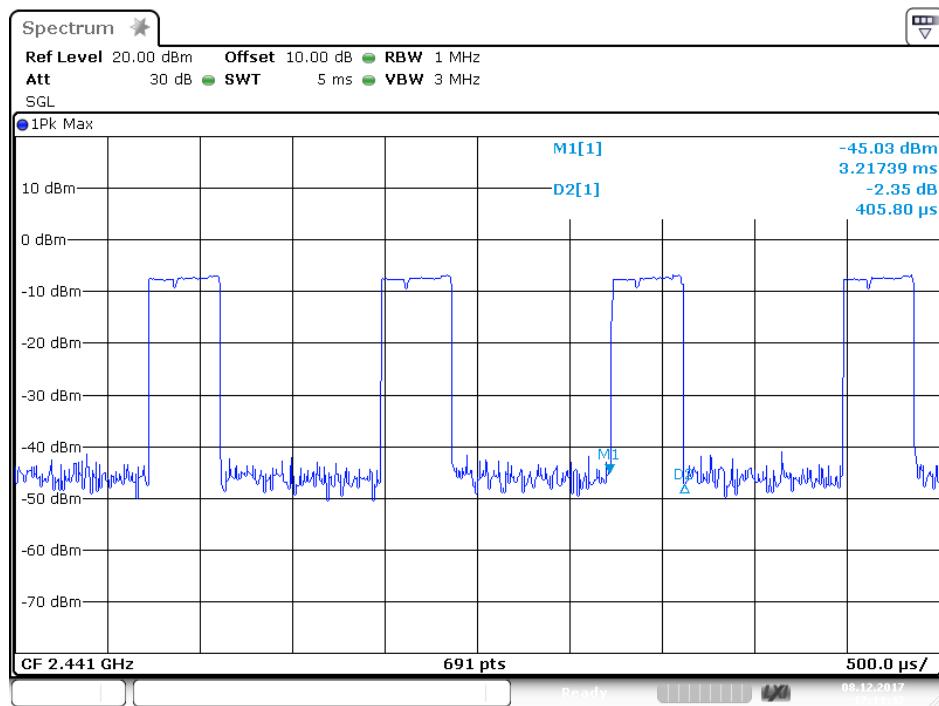


## 2DH5 Middle channel

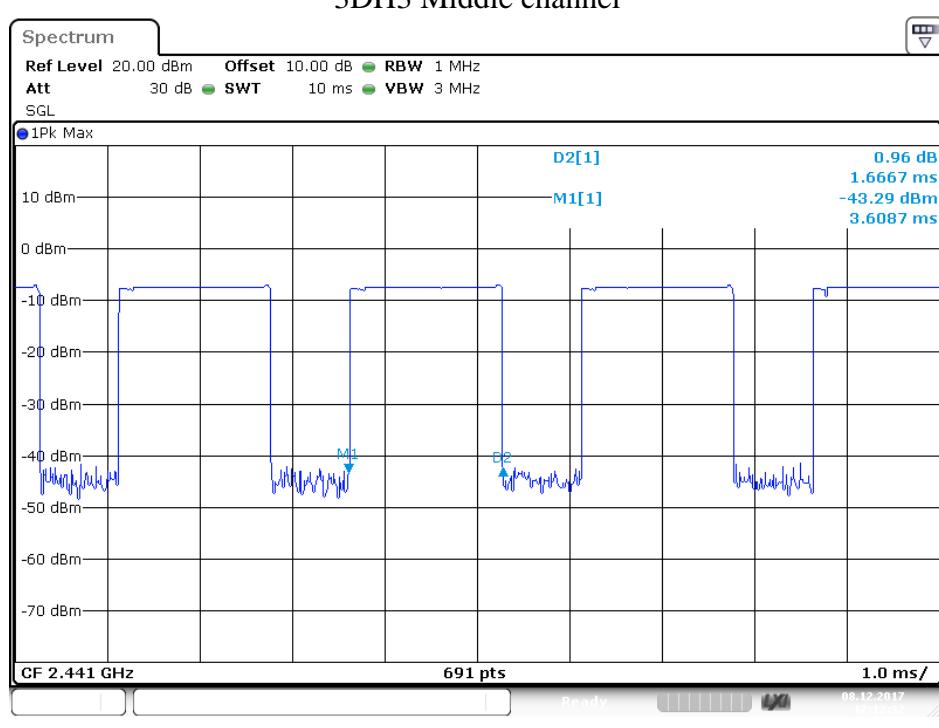


## 8DPSK Mode

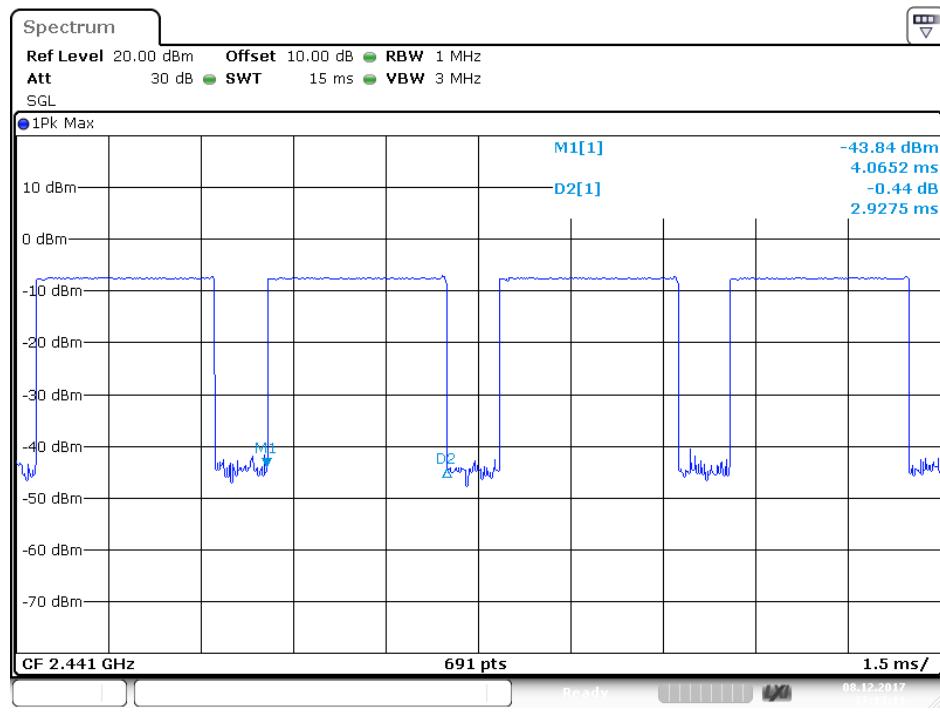
## 3DH1 Middle channel



## 3DH3 Middle channel



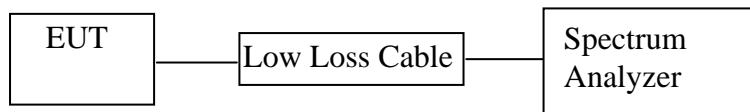
## 3DH5 Middle channel



Date: 8.DEC.2017 17:13:12

## 9. MAXIMUM PEAK OUTPUT POWER TEST

### 9.1. Block Diagram of Test Setup



(EUT: LED Shop light)

### 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	-6.71/0.0002	21 / 0.125
Middle	2441	-6.66/0.0002	21 / 0.125
High	2480	-5.84/0.0003	21 / 0.125

### $\Pi/4$ -DQPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	-6.14/0.0002	21 / 0.125
Middle	2441	-6.20/0.0002	21 / 0.125
High	2480	-5.76/0.0003	21 / 0.125

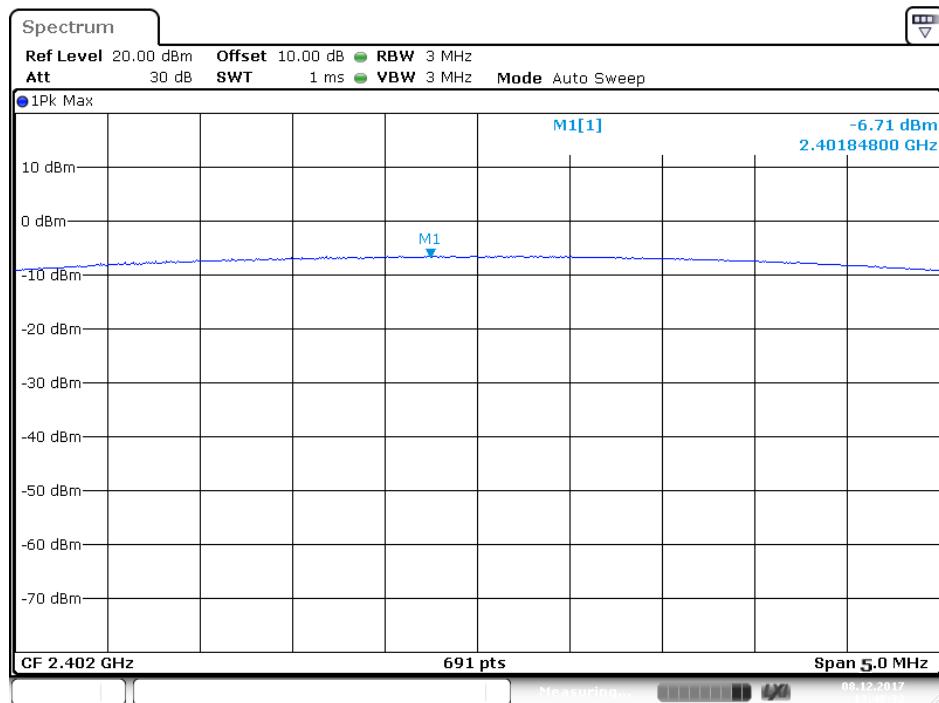
### 8DPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	-5.52/0.0003	21 / 0.125
Middle	2441	-5.60/0.0003	21 / 0.125
High	2480	-5.31/0.0003	21 / 0.125

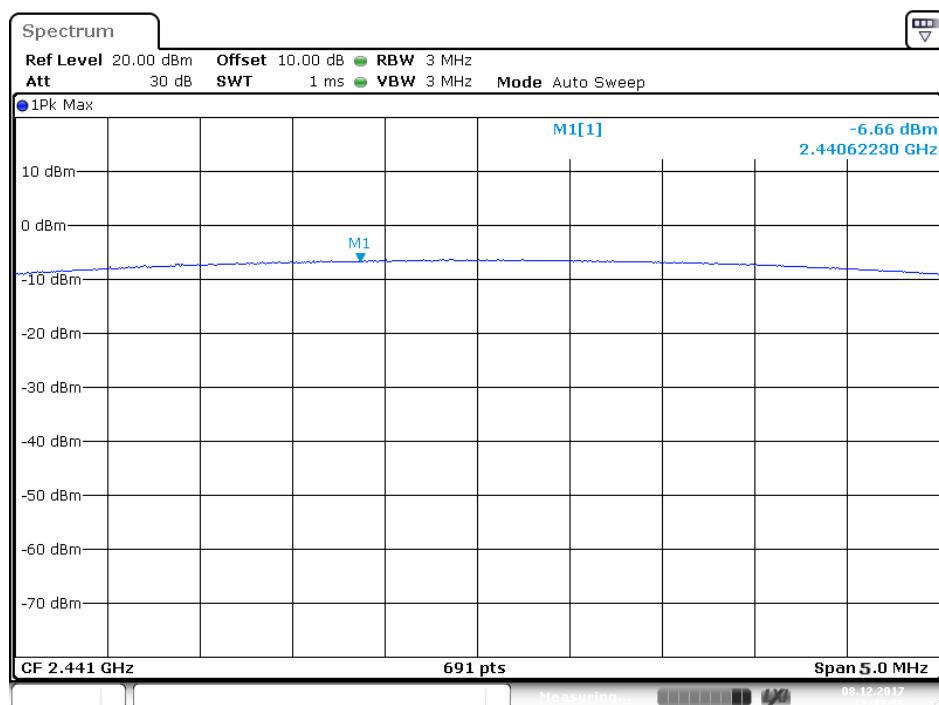
The spectrum analyzer plots are attached as below.

## GFSK Mode

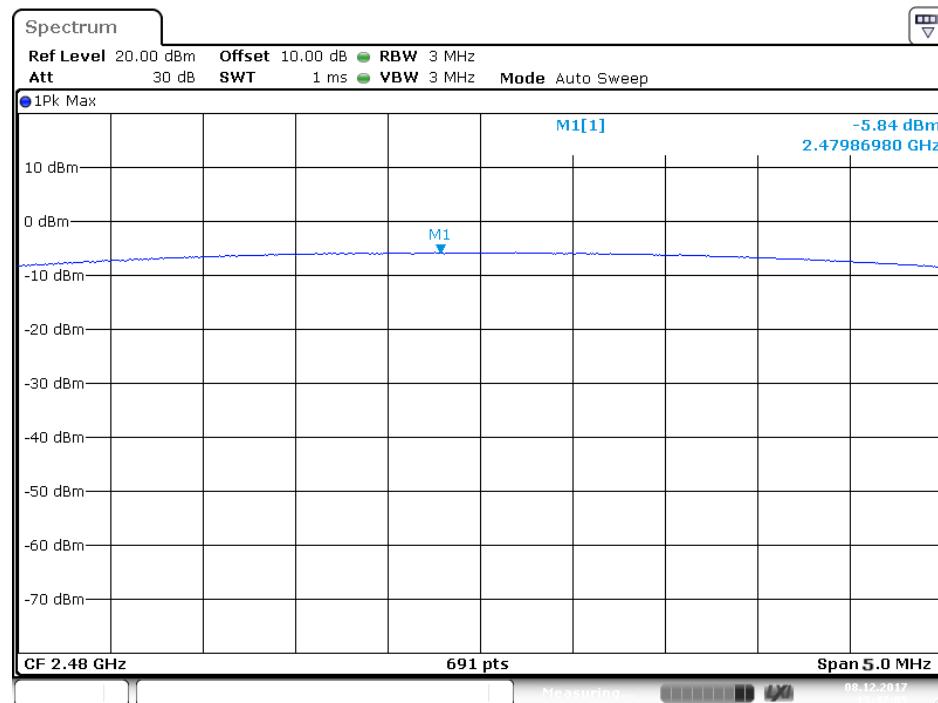
## Low channel



## Middle channel

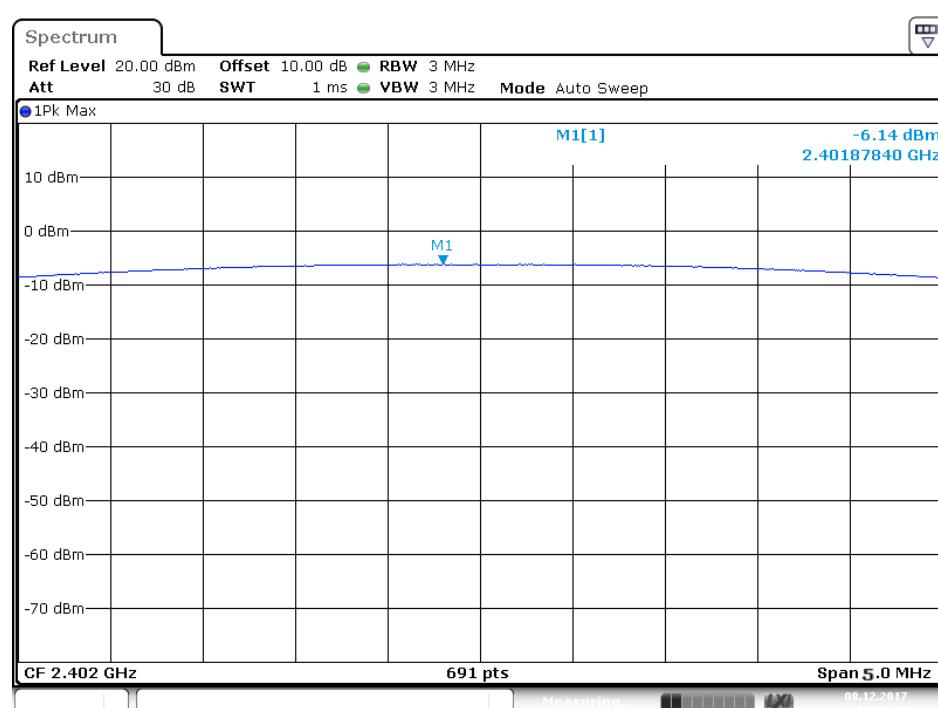


## High channel

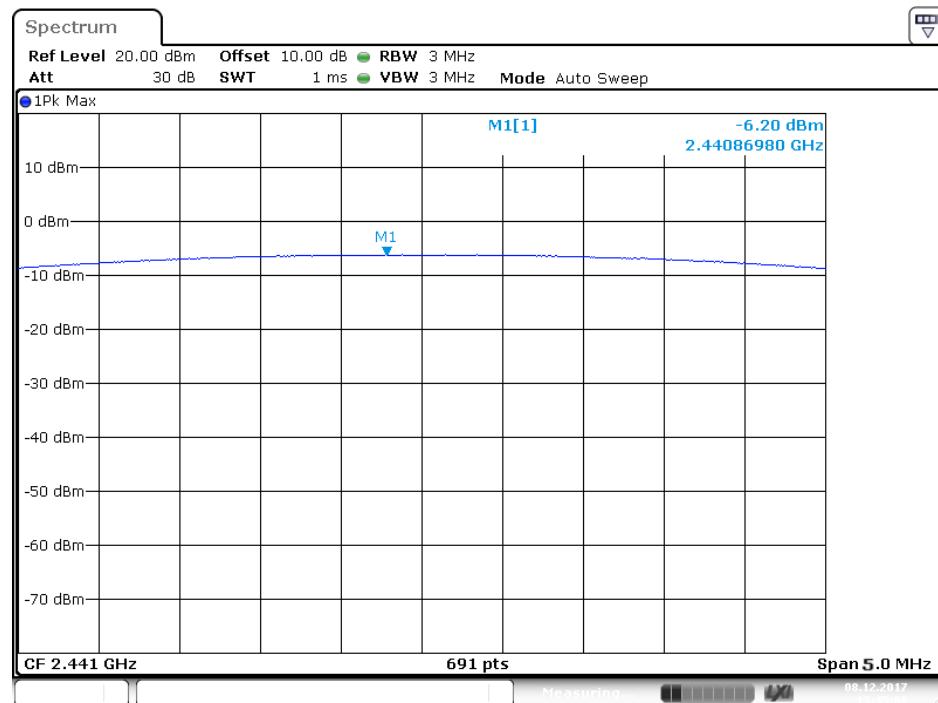


## Π/4-DQPSK Mode

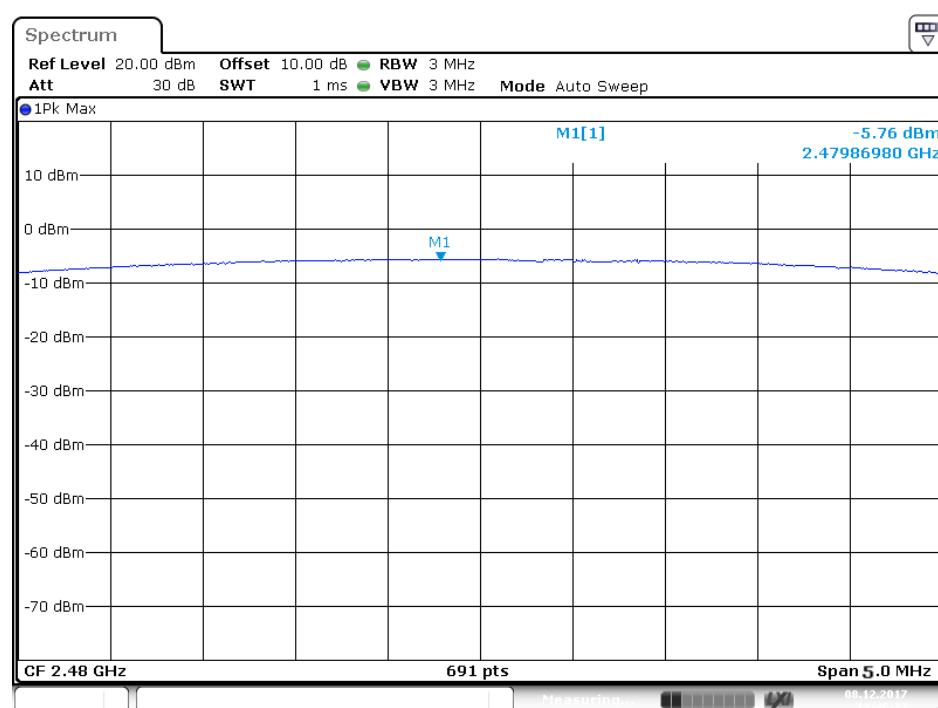
## Low channel



## Middle channel

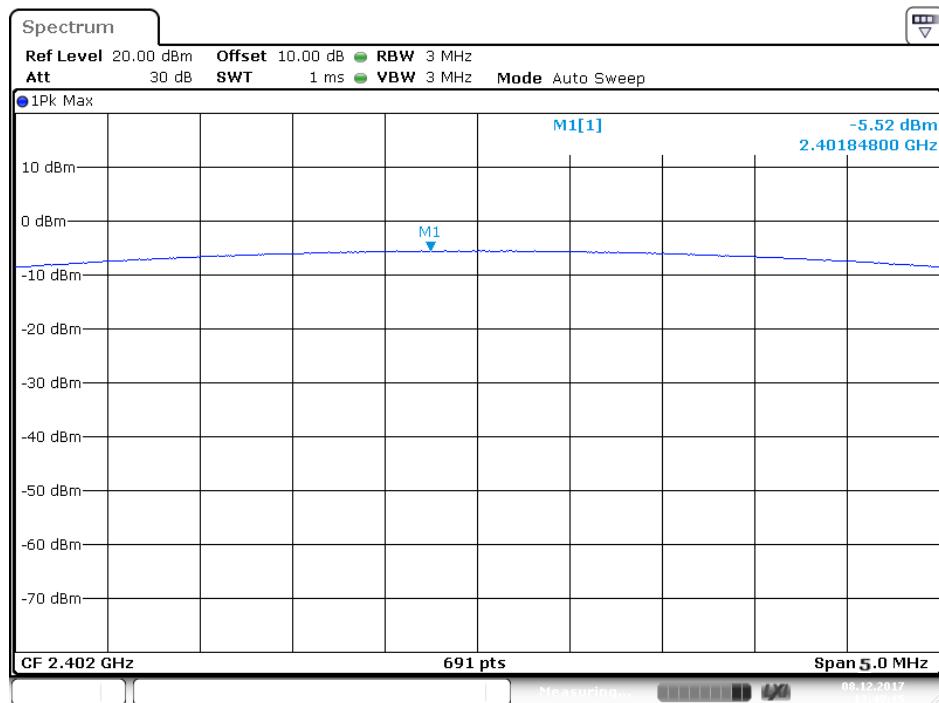


## High channel

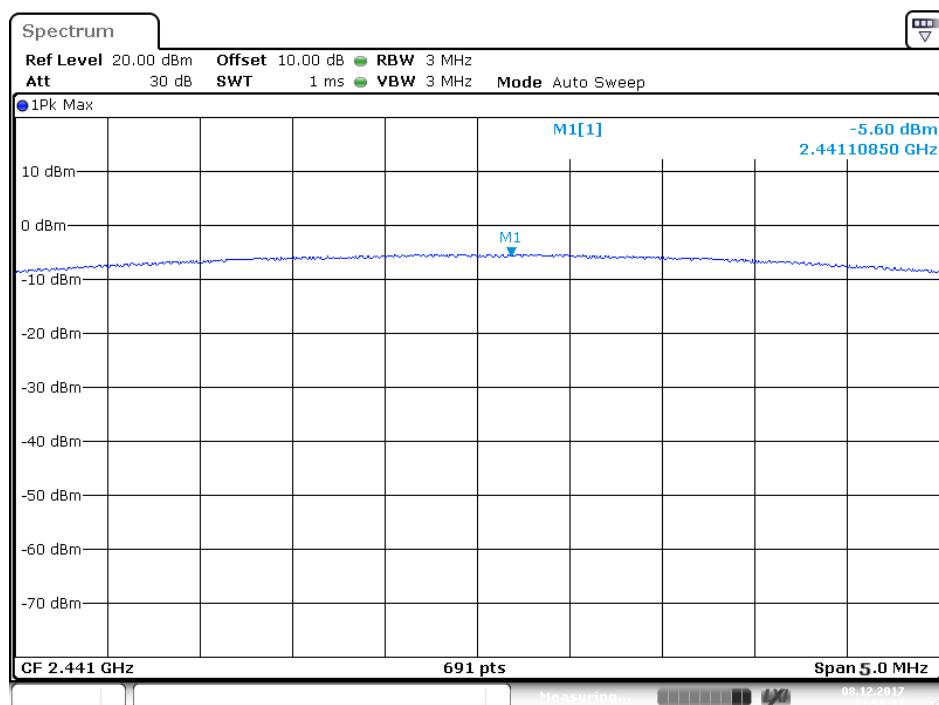


## 8DPSK Mode

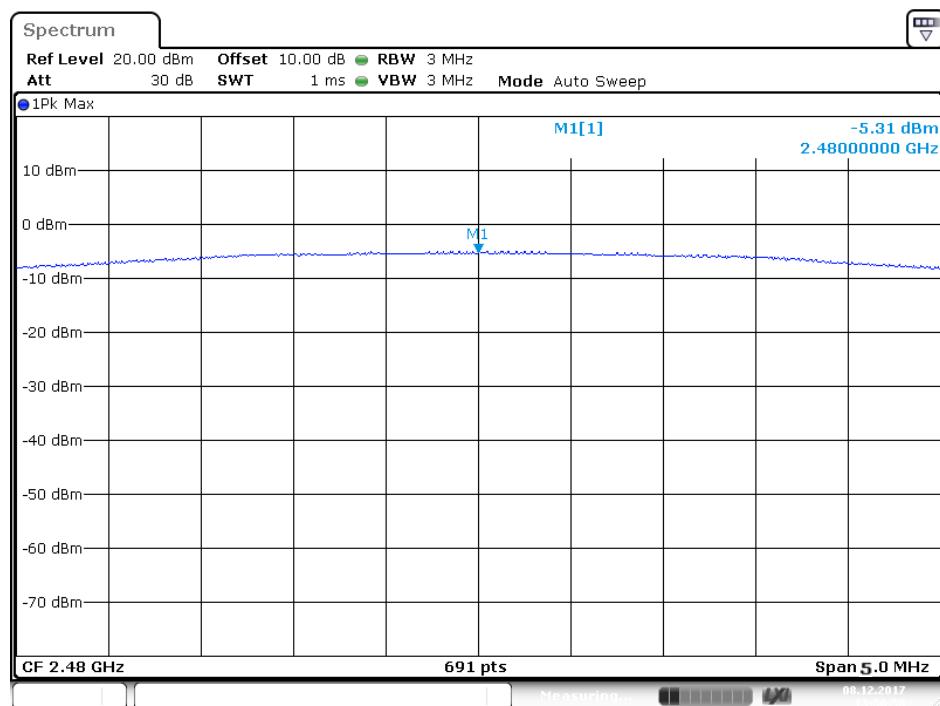
## Low channel



## Middle channel



## High channel



## 10. RADIATED EMISSION TEST

### 10.1. Block Diagram of Test Setup

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

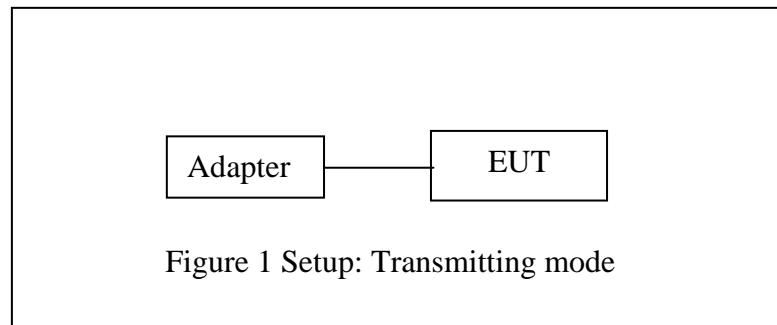
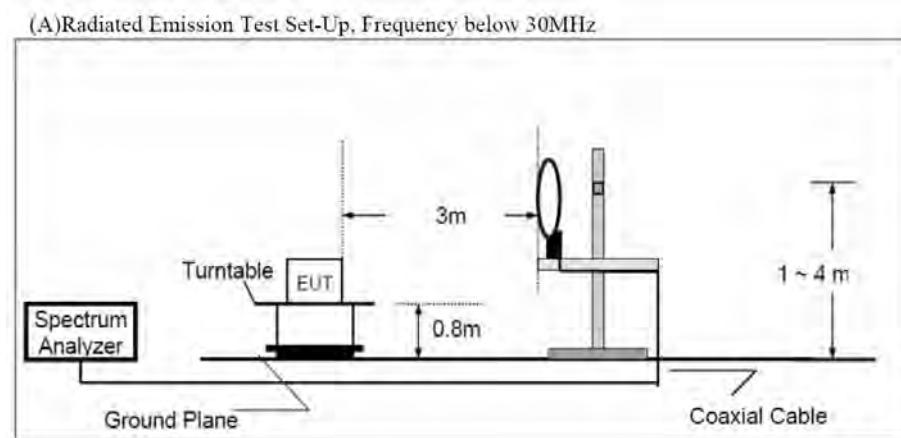
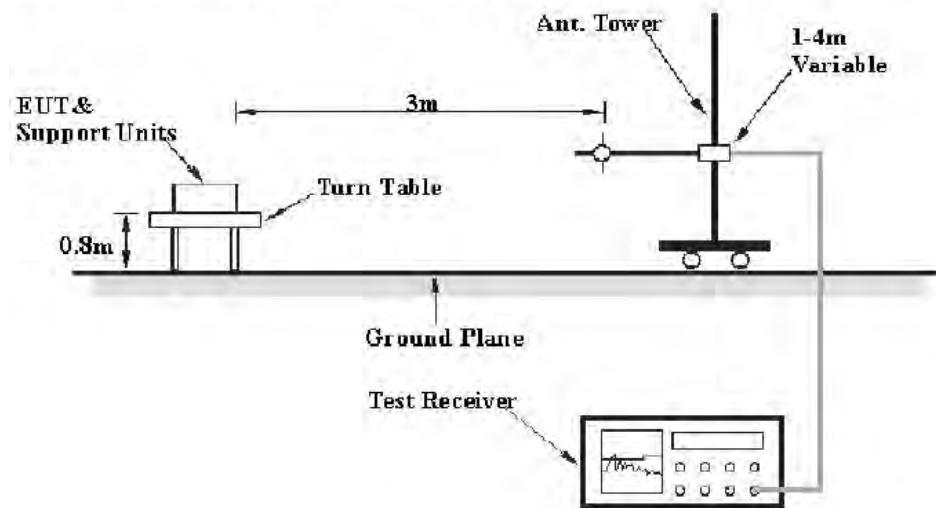


Figure 1 Setup: Transmitting mode

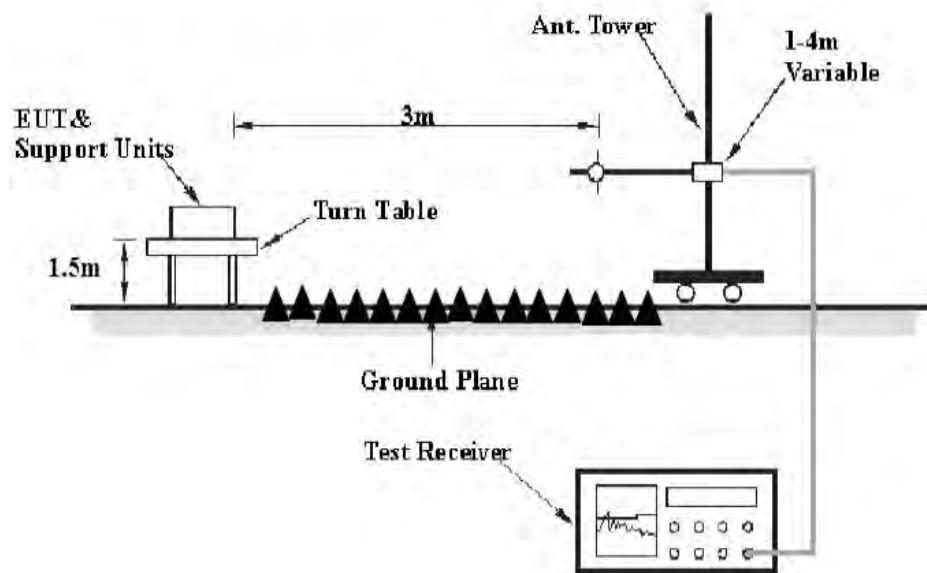
#### 10.1.2. Semi-Anechoic Chamber Test Setup Diagram



(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. Test Procedure

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

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

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

## 10.6.Data Sample

Frequency (MHz)	Reading (dB $\mu$ V)	Factor (dB/m)	Result (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Remark
X.XX	28.66	-15.19	13.47	40.0	-26.53	QP

Frequency(MHz) = Emission frequency in MHz

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

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

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

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

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

QP = Quasi-peak Reading

Calculation Formula:

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

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

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

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

**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 26.5GHz, The 18-26.5GHz 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 #1732

Polarization: Horizontal

Standard: FCC Class B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/12/13

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

Time: 12:34:57

EUT: LED Shop light

Engineer Signature: Frank

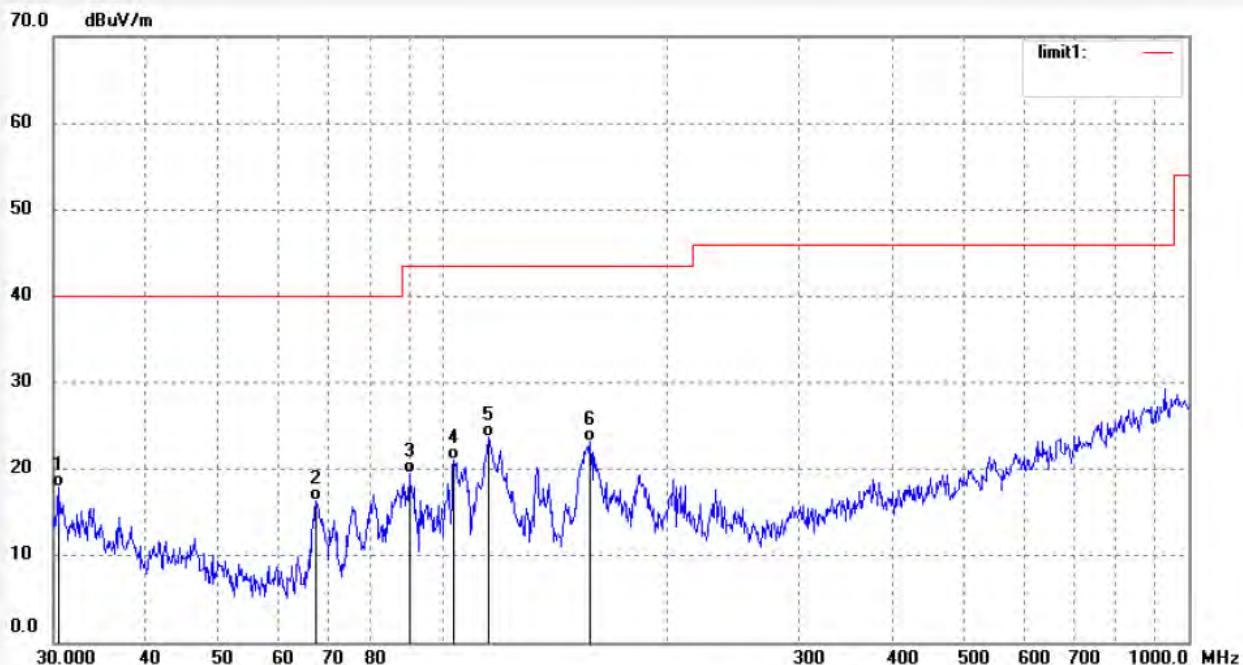
Mode: TX 2402MHz(GFSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	30.4246	38.19	-20.31	17.88	40.00	-22.12	QP	200	321	
2	67.5477	43.83	-27.39	16.44	40.00	-23.56	QP	200	256	
3	90.1025	46.93	-27.41	19.52	43.50	-23.98	QP	200	200	
4	103.3353	49.19	-28.10	21.09	43.50	-22.41	QP	200	103	
5	115.2266	51.12	-27.35	23.77	43.50	-19.73	QP	200	204	
6	157.5289	50.49	-27.34	23.15	43.50	-20.35	QP	200	195	



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Fax:+86-0755-26503396

Job No.: frank2017 #1737

Polarization: Vertical

Standard: FCC Class B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/12/13

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

Time: 12:36:19

EUT: LED Shop light

Engineer Signature: Frank

Mode: TX 2402MHz(GFSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	33.1015	46.15	-20.98	25.17	40.00	-14.83	QP	100	12	
2	33.8066	41.86	-21.16	20.70	40.00	-19.30	QP	100	123	
3	36.9106	41.45	-22.27	19.18	40.00	-20.82	QP	100	155	
4	68.2634	43.65	-27.42	16.23	40.00	-23.77	QP	100	47	
5	133.5491	44.99	-27.80	17.19	43.50	-26.31	QP	100	54	
6	157.5288	43.98	-27.34	16.64	43.50	-26.86	QP	100	123	



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Job No.: frank2017 #1733

Polarization: Horizontal

Standard: FCC Class B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/12/13

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

Time: 12:35:29

EUT: LED Shop light

Engineer Signature: Frank

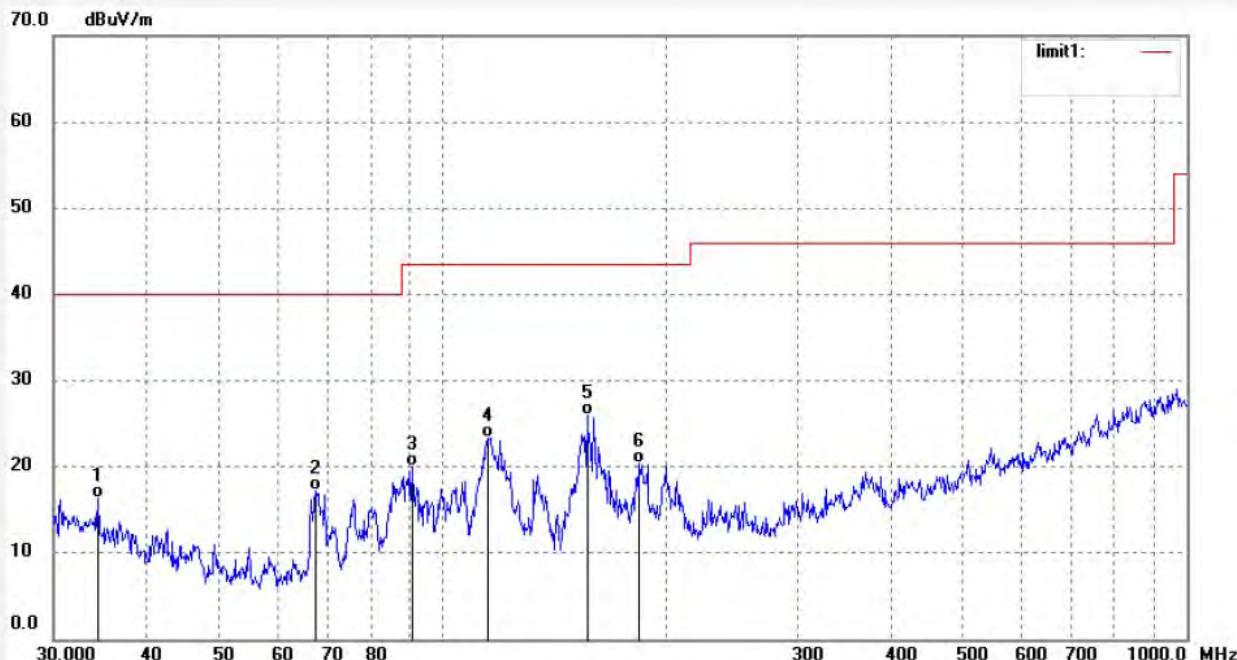
Mode: TX 2441MHz(GFSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	34.4059	37.66	-21.30	16.36	40.00	-23.64	QP	200	132	
2	67.5477	44.59	-27.39	17.20	40.00	-22.80	QP	200	120	
3	91.0574	47.37	-27.41	19.96	43.50	-23.54	QP	200	123	
4	115.2266	50.76	-27.35	23.41	43.50	-20.09	QP	200	278	
5	156.4259	53.48	-27.46	26.02	43.50	-17.48	QP	200	357	
6	183.8660	46.02	-25.65	20.37	43.50	-23.13	QP	200	165	



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Fax:+86-0755-26503396

Job No.: frank2017 #1734

Polarization: Vertical

Standard: FCC Class B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/12/13

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

Time: 12:36:19

EUT: LED Shop light

Engineer Signature: Frank

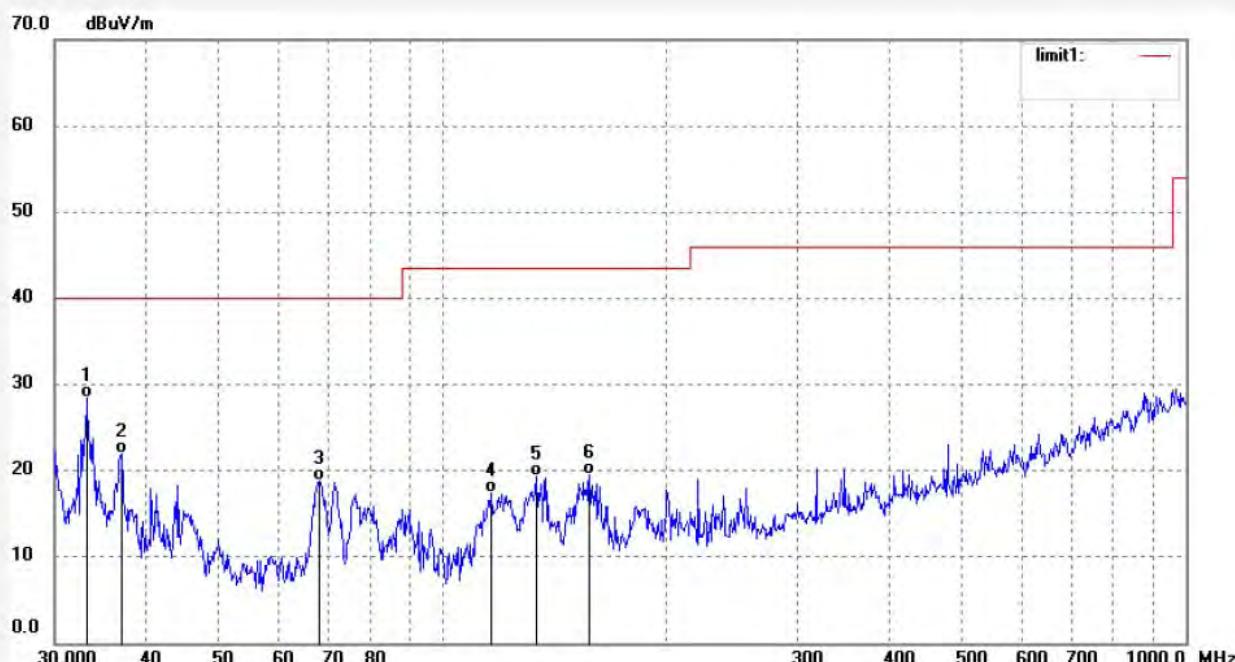
Mode: TX 2441MHz(GFSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	33.1015	49.46	-20.98	28.48	40.00	-11.52	QP	100	102	
2	36.9106	44.18	-22.27	21.91	40.00	-18.09	QP	100	128	
3	68.2635	46.16	-27.42	18.74	40.00	-21.26	QP	100	235	
4	116.0391	44.72	-27.37	17.35	43.50	-26.15	QP	100	224	
5	133.5491	47.12	-27.80	19.32	43.50	-24.18	QP	100	198	
6	157.5289	46.84	-27.34	19.50	43.50	-24.00	QP	100	324	



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

Job No.: frank2017 #1736

Polarization: Horizontal

Standard: FCC Class B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/12/13

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

Time: 12:37:15

EUT: LED Shop light

Engineer Signature: Frank

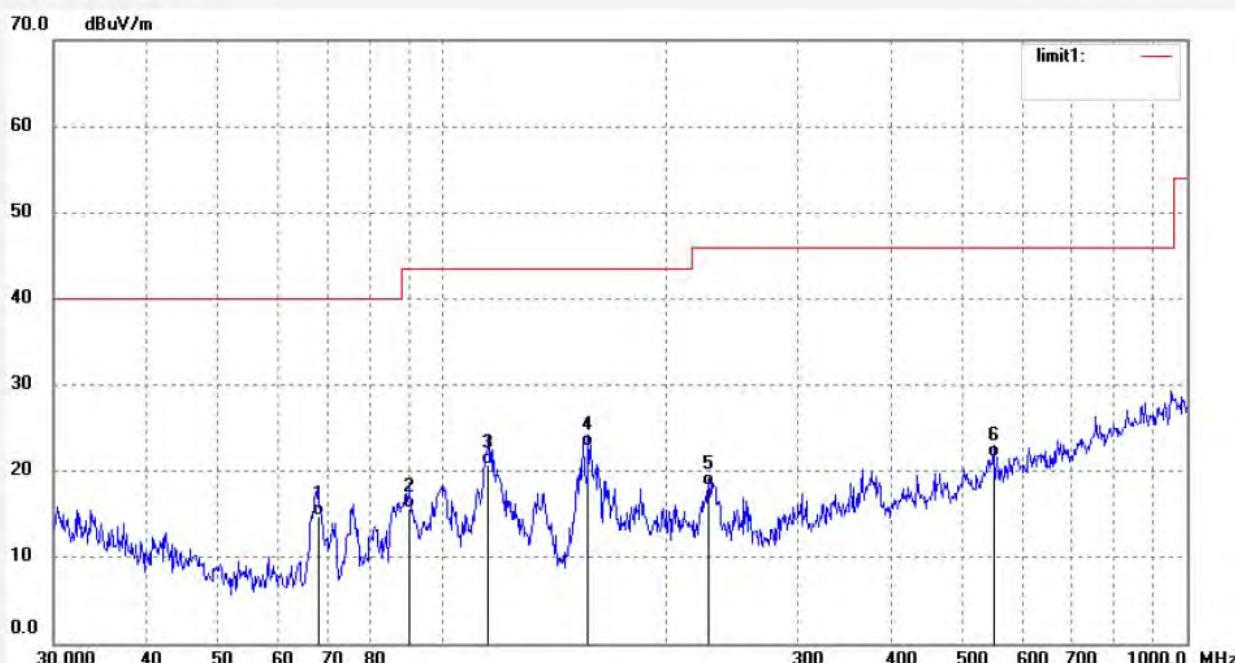
Mode: TX 2480MHz(GFSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	68.0241	42.12	-27.41	14.71	40.00	-25.29	QP	200	145	
2	90.4196	43.15	-27.42	15.73	43.50	-27.77	QP	200	187	
3	115.2266	48.15	-27.35	20.80	43.50	-22.70	QP	200	135	
4	156.9764	50.32	-27.41	22.91	43.50	-20.59	QP	200	234	
5	227.8154	42.15	-23.89	18.26	46.00	-27.74	QP	200	120	
6	550.2902	36.48	-14.79	21.69	46.00	-24.31	QP	200	241	



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

Job No.: frank2017 #1735

Polarization: Vertical

Standard: FCC Class B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/12/13

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

Time: 12:36:45

EUT: LED Shop light

Engineer Signature: Frank

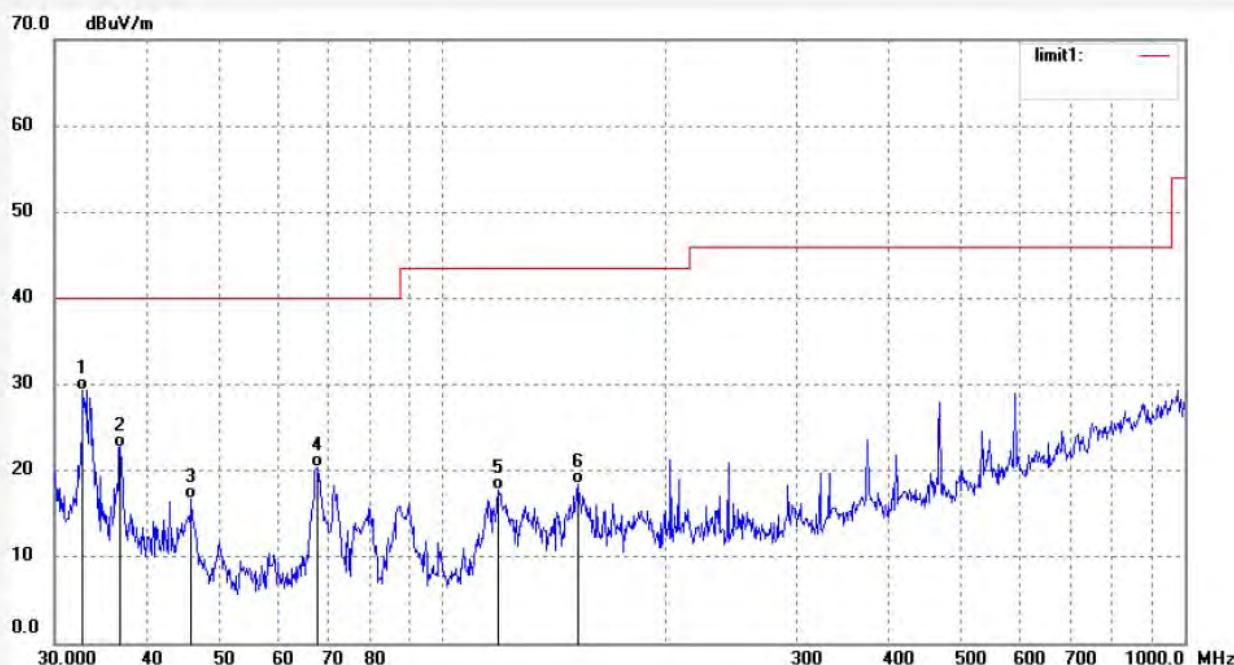
Mode: TX 2480MHz(GFSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	32.7542	50.24	-20.89	29.35	40.00	-10.65	QP	100	328	
2	36.7811	44.96	-22.21	22.75	40.00	-17.25	QP	100	157	
3	45.8943	41.49	-24.74	16.75	40.00	-23.25	QP	100	49	
4	67.7856	47.82	-27.40	20.42	40.00	-19.58	QP	100	256	
5	118.9284	45.23	-27.42	17.81	43.50	-25.69	QP	100	223	
6	152.0902	46.31	-27.87	18.44	43.50	-25.06	QP	100	120	

## Above 1GHz



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Tel:+86-0755-26503290  
Fax:+86-0755-26503396

Job No.: frank2017 #1707

Polarization: Horizontal

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 17/12/12/

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

Time: 9/09/58

EUT: LED Shop light

Engineer Signature: Frank

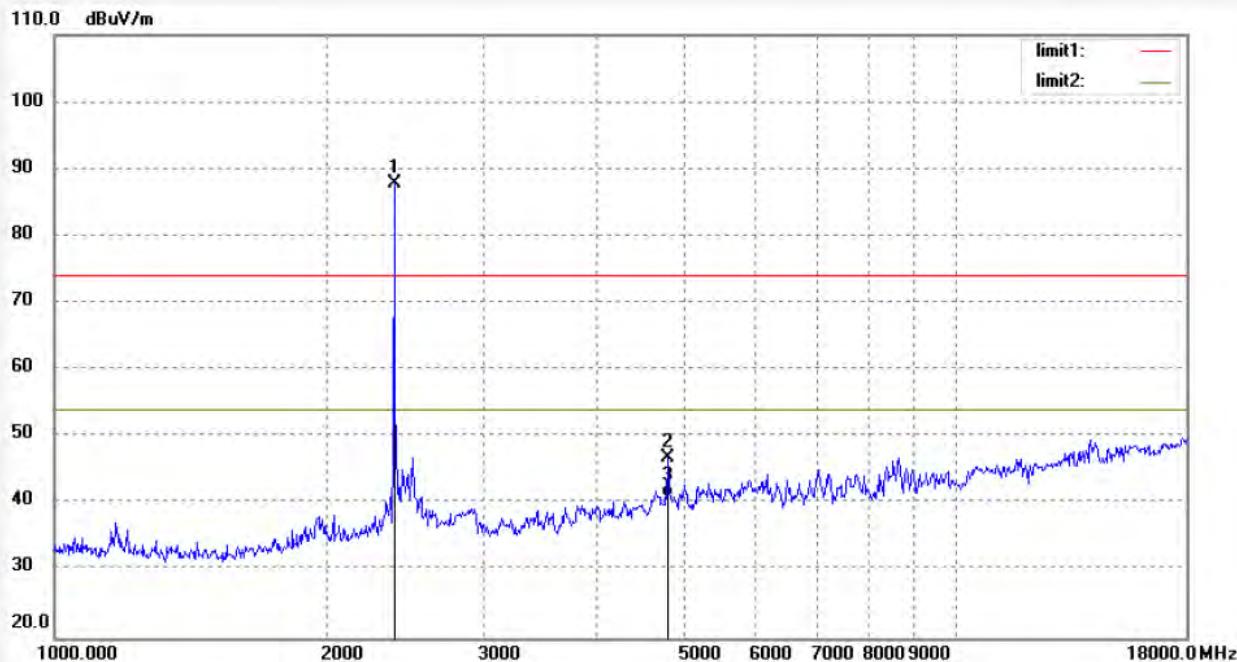
Mode: TX 2402MHz(GFSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



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	94.32	-6.37	87.95			peak	200	291	
2	4804.173	45.83	0.95	46.78	74.00	-27.22	peak	250	176	
3	4804.073	40.12	0.95	41.07	54.00	-12.93	AVG	250	341	

Note: Average measurement with peak detection at No.3



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

Job No.: frank2017 #1706

Polarization: Vertical

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 17/12/12

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

Time: 9/07/51

EUT: LED Shop light

Engineer Signature: Frank

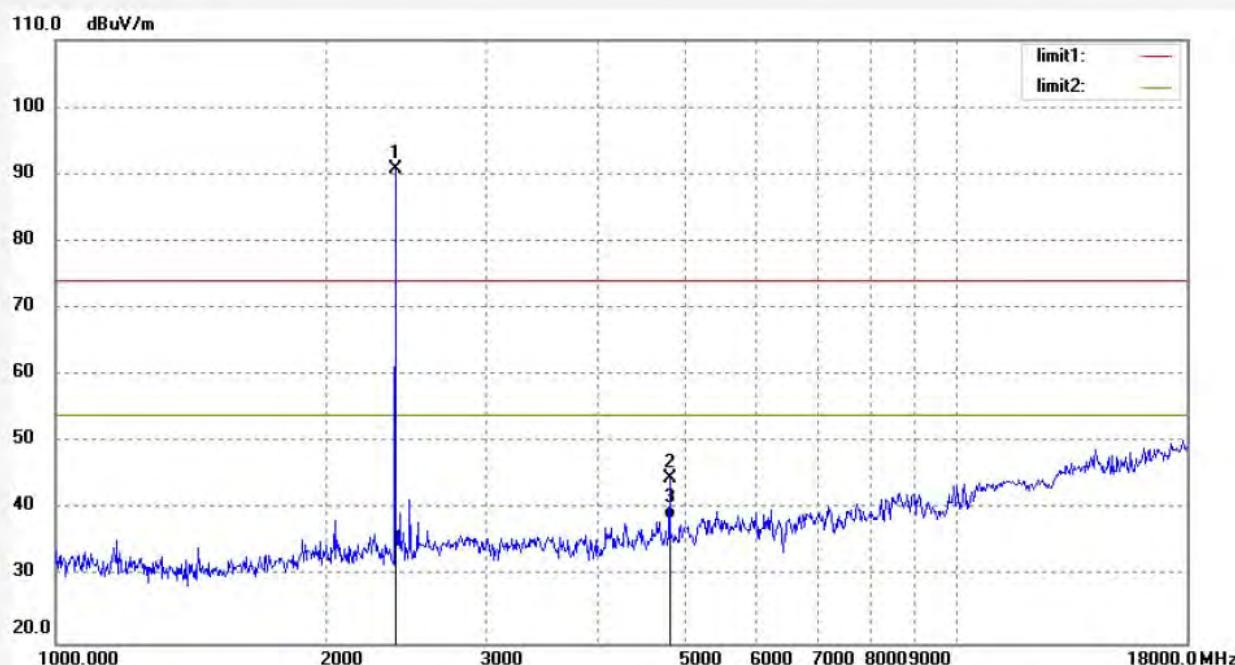
Mode: TX 2402MHz(GFSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



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	-6.37	90.70			peak	150	246	
2	4804.028	43.57	1.00	44.57	74.00	-29.43	peak	150	163	
3	4804.028	37.45	1.00	38.45	54.00	-15.55	AVG	150	124	

Note: Average measurement with peak detection at No.3



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

Job No.: frank2017 #1709

Polarization: Horizontal

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 17/12/12

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

Time: 9/11/36

EUT: LED Shop light

Engineer Signature: Frank

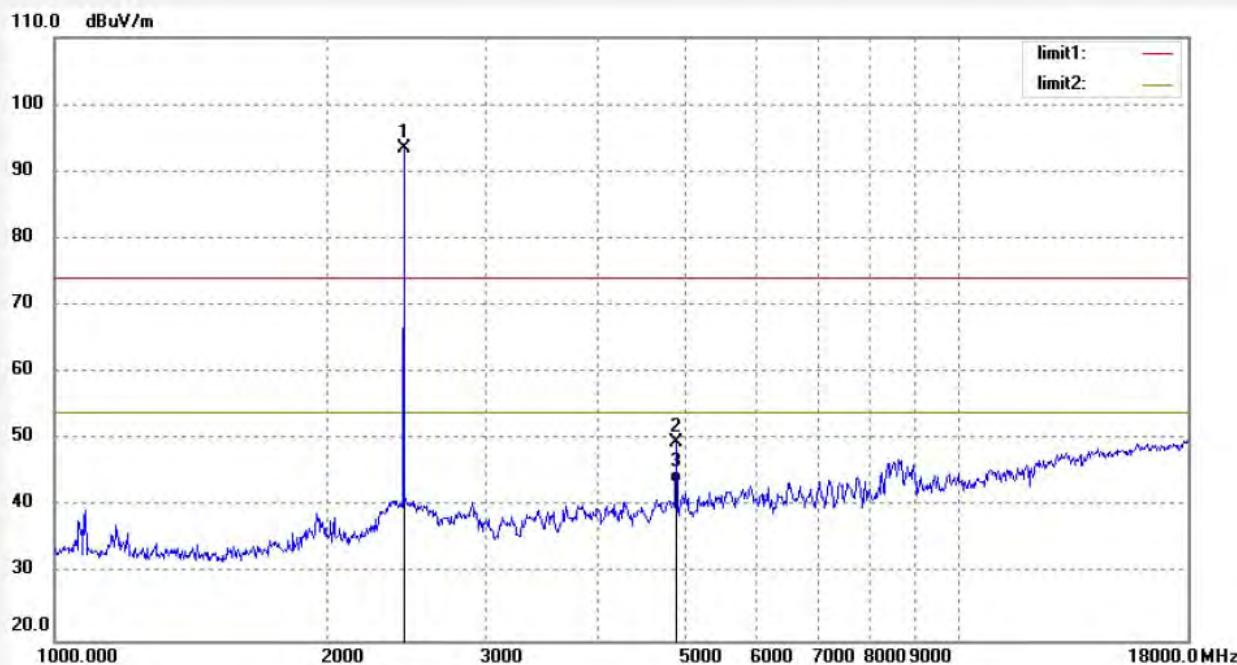
Mode: TX 2441MHz(GFSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.007	99.62	-6.10	93.52			peak	150	210	
2	4882.017	48.12	1.36	49.48	74.00	-24.52	peak	150	199	
3	4882.017	42.13	1.36	43.49	54.00	-10.51	AVG	150	132	

Note: Average measurement with peak detection at No.3



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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: frank2017 #1708

Polarization: Vertical

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 17/12/12

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

Time: 9/11/36

EUT: LED Shop light

Engineer Signature: Frank

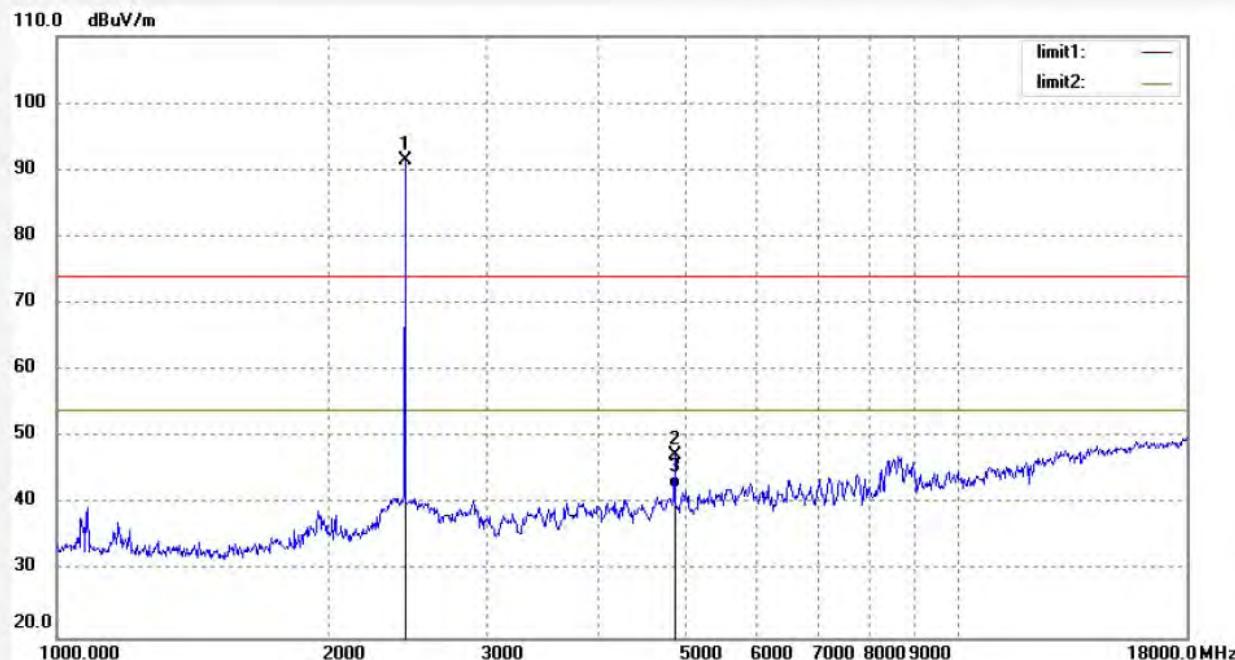
Mode: TX 2441MHz(GFSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.007	97.62	-6.10	91.52			peak	200	76	
2	4882.057	46.09	1.25	47.34	74.00	-26.66	peak	200	164	
3	4882.057	41.12	1.25	42.37	54.00	-11.63	AVG	250	112	

Note: Average measurement with peak detection at No.3



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

Job No.: frank2017 #1710

Polarization: Horizontal

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 17/12/12/

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

Time: 9/11/36

EUT: LED Shop light

Engineer Signature: Frank

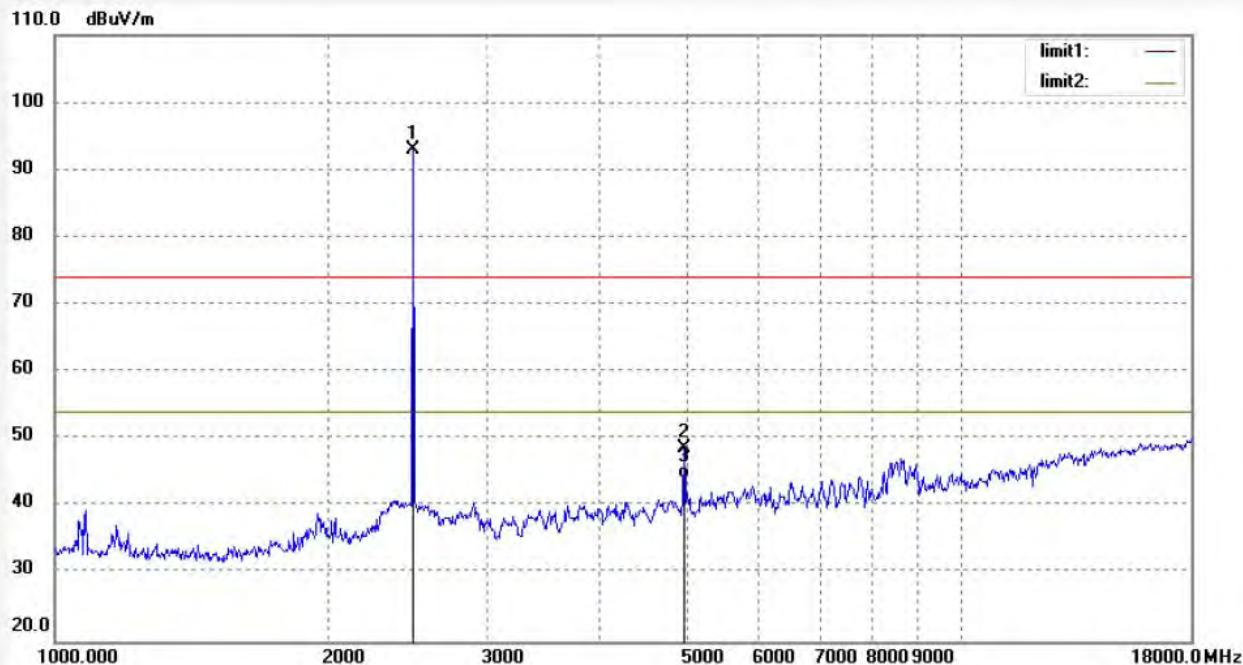
Mode: TX 2480MHz(GFSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.067	98.90	-5.87	93.03			peak	150	266	
2	4960.046	46.95	1.68	48.63	74.00	-25.37	peak	150	175	
3	4960.046	42.47	1.68	44.15	54.00	-9.85	AVG	150	322	

Note: Average measurement with peak detection at No.3



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Site: 1# Chamber

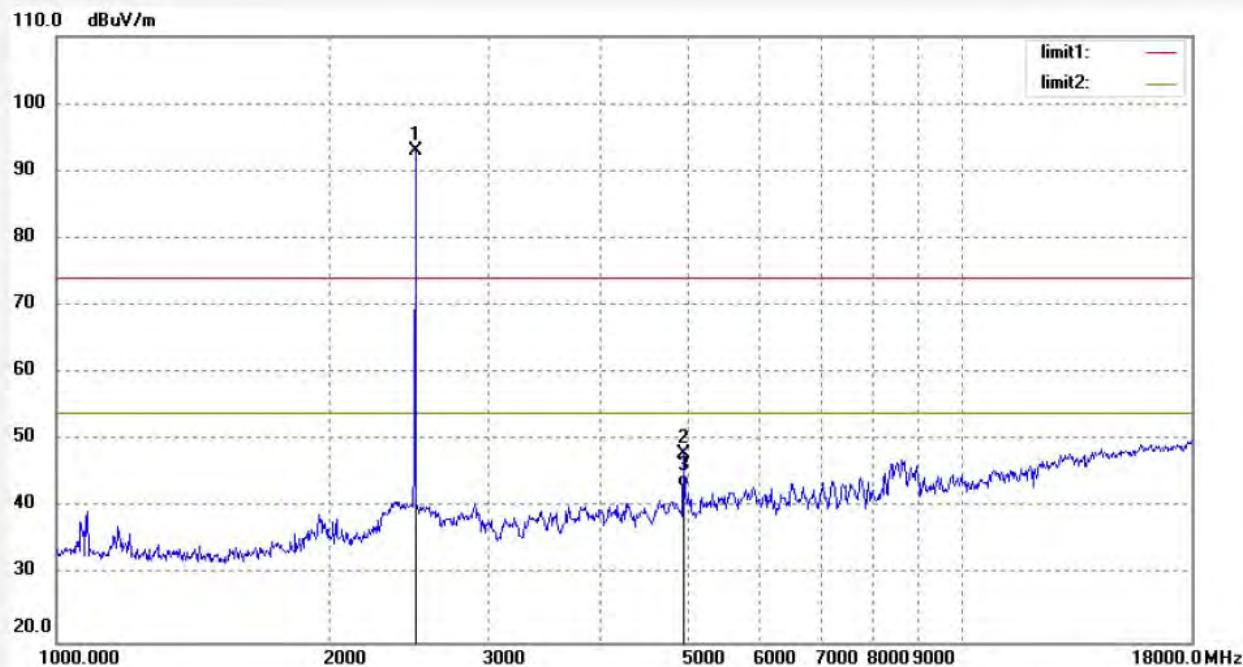
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: frank2017 #1711  
Standard: FCC PK  
Test item: Radiation Test  
Temp. ( C)/Hum.(%) 25 C / 55 %  
EUT: LED Shop light  
Mode: TX 2480MHz(GFSK)  
Model: 54569241  
Manufacturer: ETI

Polarization: Vertical  
Power Source: AC 120V/60Hz  
Date: 17/12/12/  
Time: 9/11/36  
Engineer Signature: Frank  
Distance: 3m

Note: Report NO.:ATE20172223

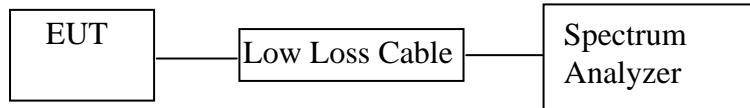


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.016	98.93	-5.84	93.09			peak	200	203	
2	4960.137	46.44	1.62	48.06	74.00	-25.94	peak	250	147	
3	4960.137	41.38	1.62	43.00	54.00	-11.00	AVG	250	178	

Note: Average measurement with peak detection at No.3

## 11. BAND EDGE COMPLIANCE TEST

### 11.1. Block Diagram of Test Setup



(EUT: LED Shop light)

### 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

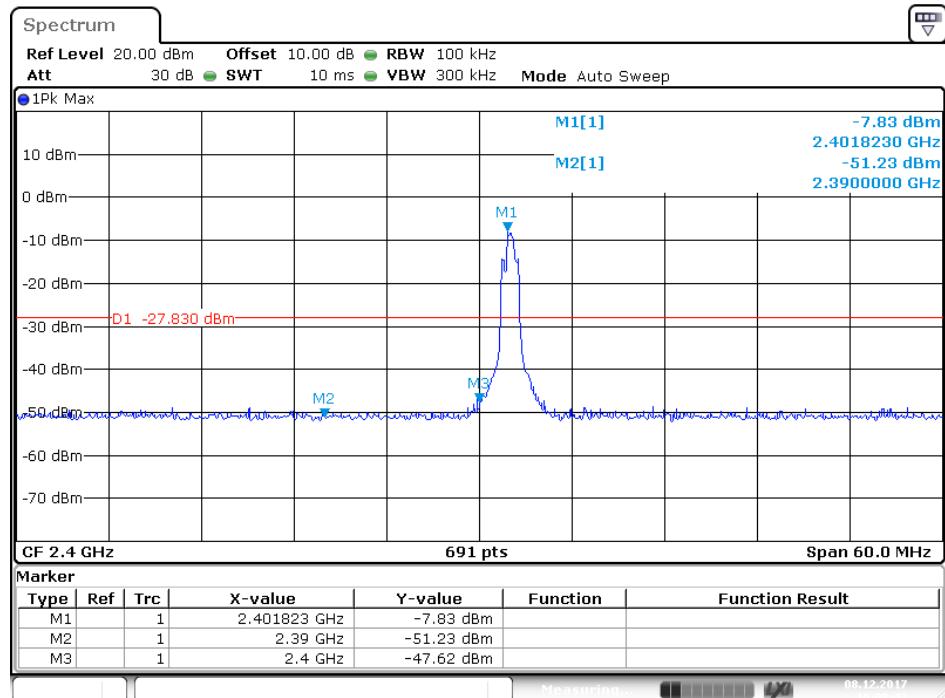
- 11.5.1. The transmitter output was connected to the spectrum analyzer via a low loss cable.
- 11.5.2. Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz with convenient frequency span including 100 kHz bandwidth from band edge.
- 11.5.3. The band edges was measured and recorded.

## 11.6. Test Result

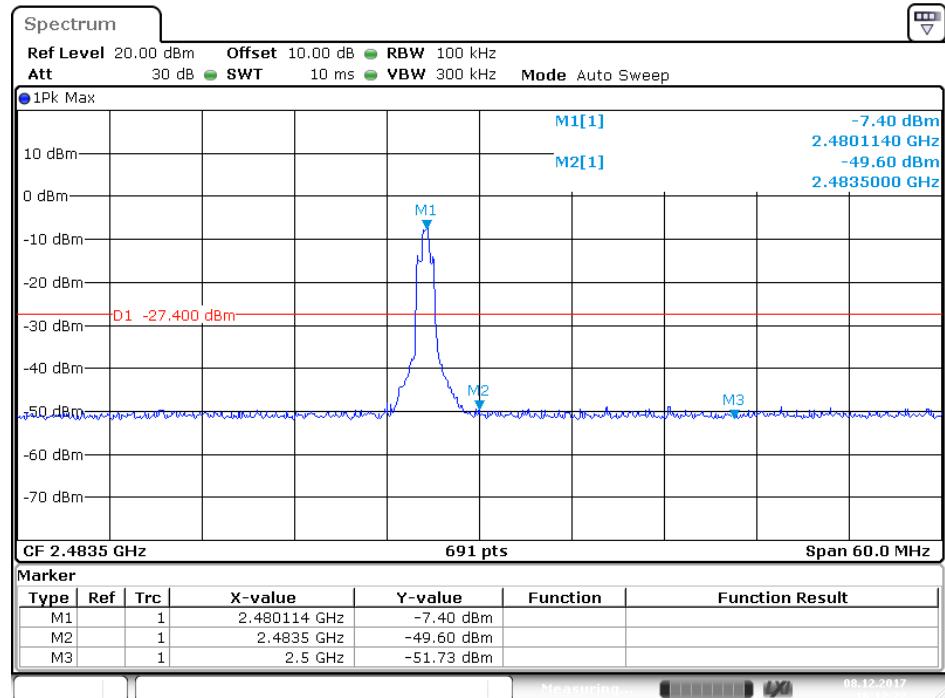
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
GFSK Mode		
2400.00	39.79	> 20dBc
2483.50	42.20	> 20dBc
$\Pi/4$ -DQPSK Mode		
2400.00	39.71	> 20dBc
2483.50	43.32	> 20dBc
8DPSK Mode		
2400.00	40.01	> 20dBc
2483.50	44.67	> 20dBc

The spectrum analyzer plots are attached as below.

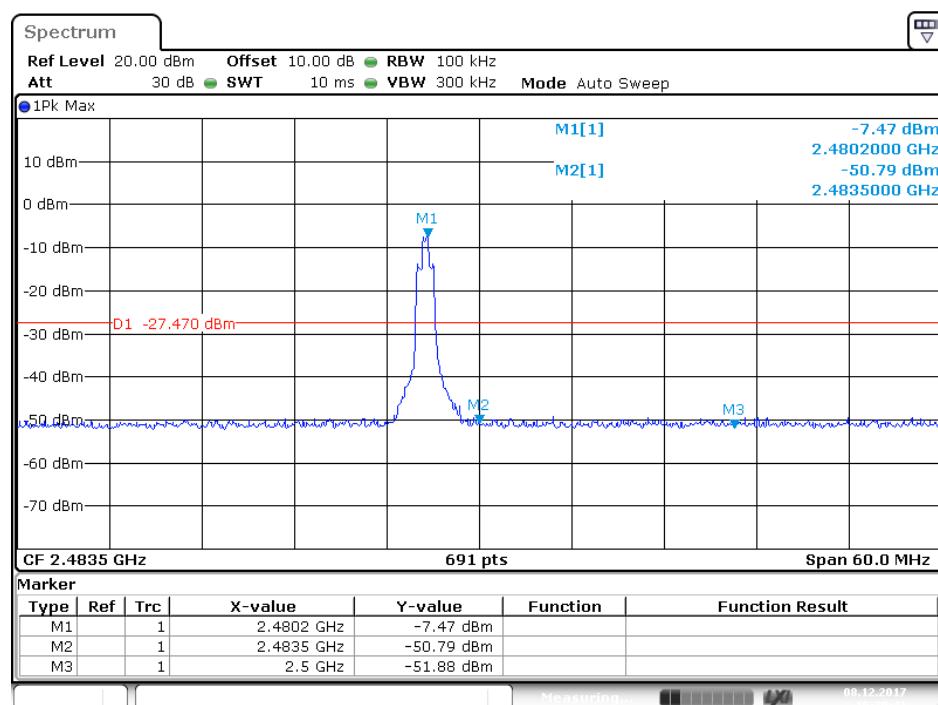
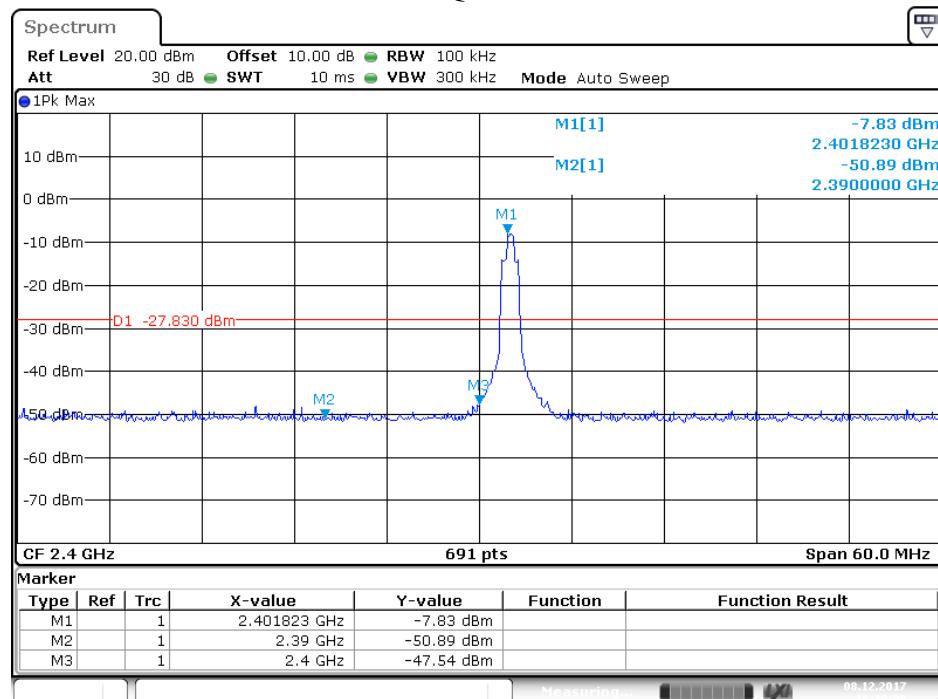
## GFSK Mode



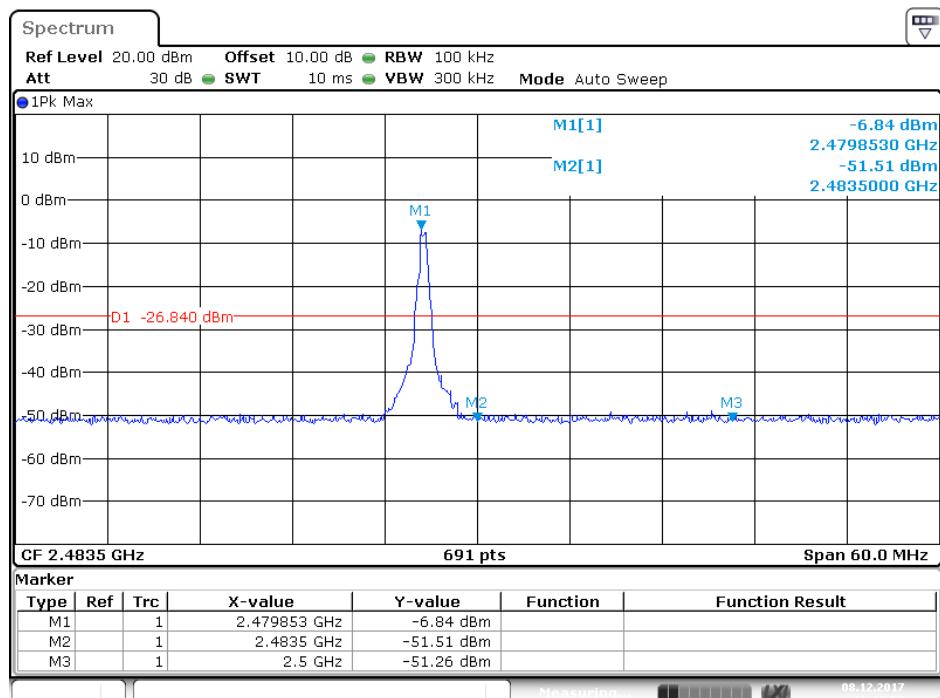
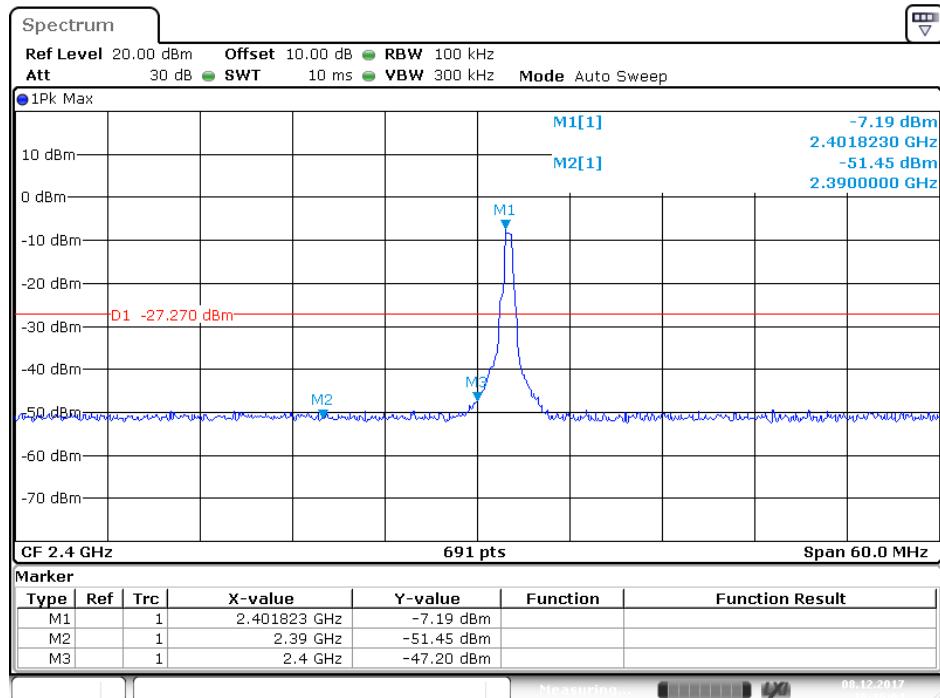
Date: 8.DEC.2017 16:08:43



Date: 8.DEC.2017 16:12:22

$\Pi/4$ -DQPSK Mode

## 8DPSK Mode



## Radiated Band Edge Result

Note:

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

Result = Reading + Corrected Factor

3. Display the measurement of peak values.

Test Procedure:

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

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.

The spectrum analyzer plots are attached as below.

## Non-hopping mode



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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: frank2017 #1725

Polarization: Horizontal

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/12/13

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

Time: 12:22:59

EUT: LED Shop light

Engineer Signature: Frank

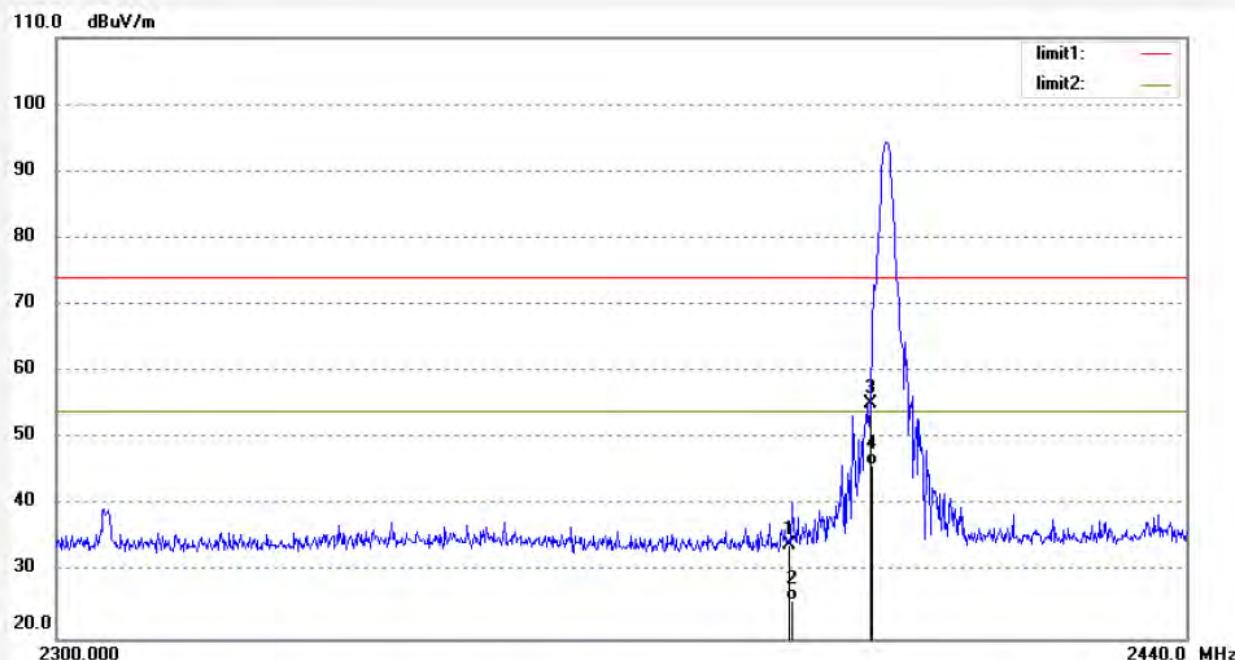
Mode: TX 2402MHz(GFSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



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	40.49	-6.32	34.17	74.00	-39.83	peak	250	77	
2	2390.000	32.15	-6.32	25.83	54.00	-28.17	AVG	250	89	
3	2400.000	61.55	-6.27	55.28	74.00	-18.72	peak	250	124	
4	2400.000	52.15	-6.27	45.88	54.00	-8.12	AVG	250	137	

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



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

Job No.: frank2017 #1726

Polarization: Vertical

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/12/13

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

Time: 12:24:11

EUT: LED Shop light

Engineer Signature: Frank

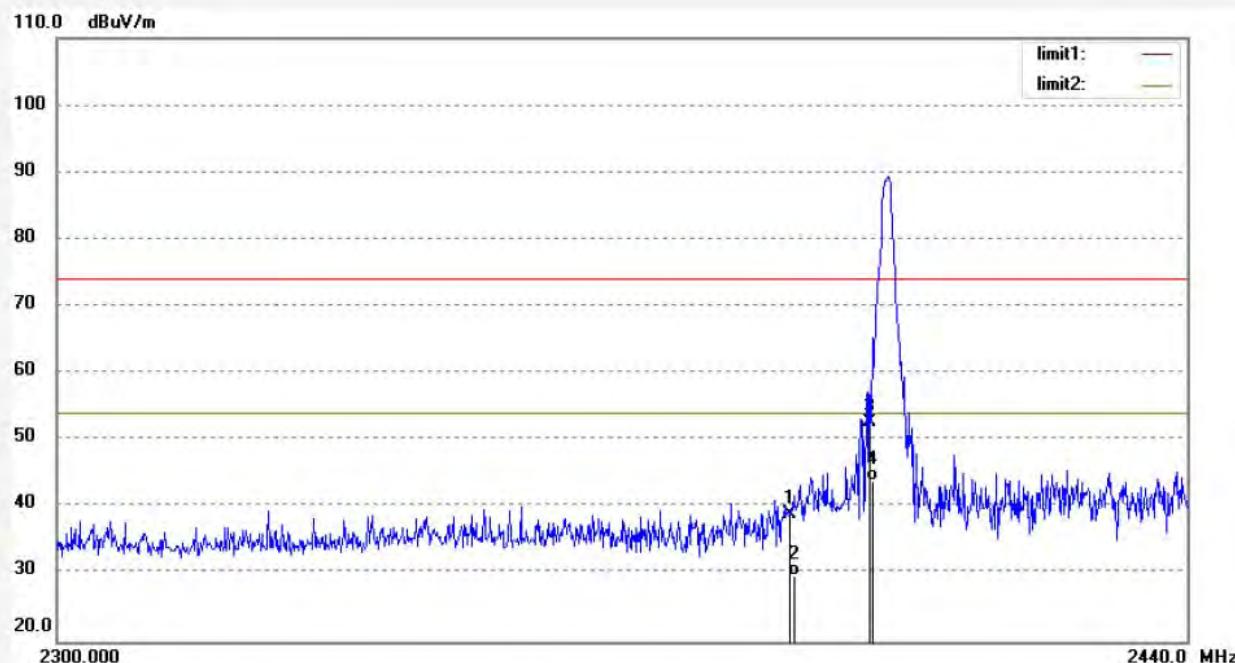
Mode: TX 2402MHz(GFSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



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	45.40	-6.32	39.08	74.00	-34.92	peak	150	240	
2	2390.000	36.18	-6.32	29.86	54.00	-24.14	AVG	150	248	
3	2400.000	59.11	-6.27	52.84	74.00	-21.16	peak	150	300	
4	2400.000	50.15	-6.27	43.88	54.00	-10.12	AVG	150	312	

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



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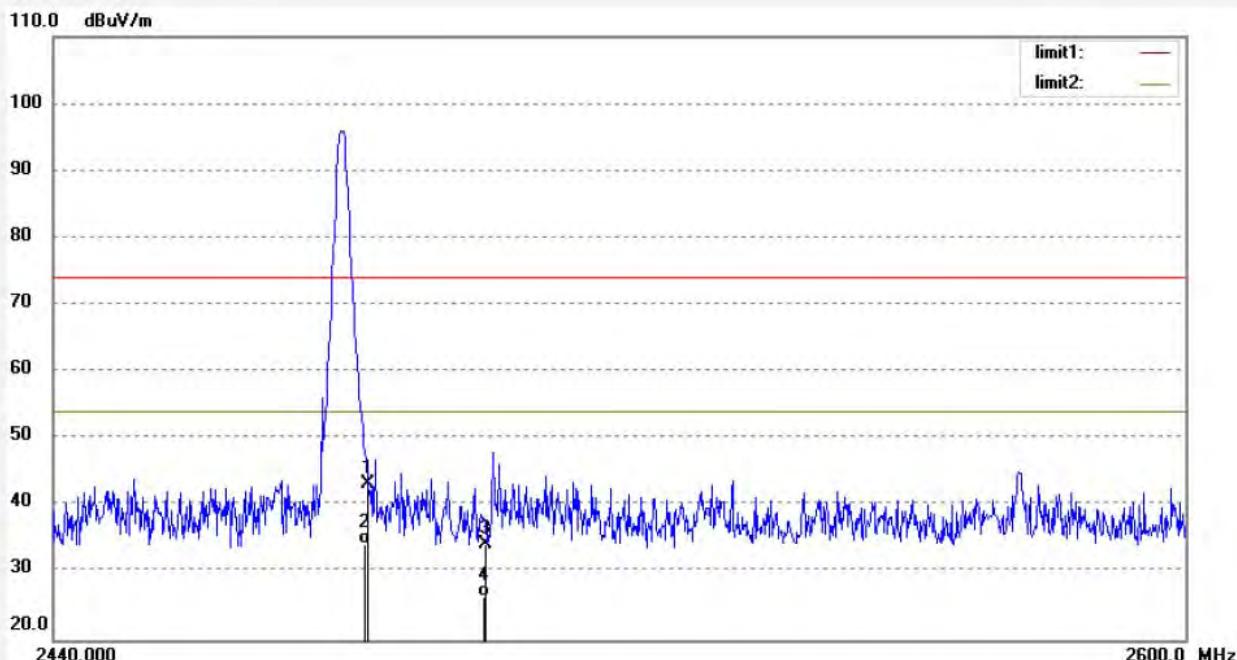
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

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

Job No.: frank2017 #1720  
Standard: FCC PK  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: LED Shop light  
Mode: TX 2480MHz(GFSK)  
Model: 54569241  
Manufacturer: ETI

Polarization: Horizontal  
Power Source: AC 120V/60Hz  
Date: 17/12/12/  
Time: 9/29/47  
Engineer Signature: Frank  
Distance: 3m

Note: Report NO.:ATE20172223



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	49.27	-5.89	43.38	74.00	-30.62	peak	250	132	
2	2483.500	40.15	-5.89	34.26	54.00	-19.74	AVG	250	111	
3	2500.000	40.04	-5.81	34.23	74.00	-39.77	peak	250	166	
4	2500.000	32.18	-5.81	26.37	54.00	-27.63	AVG	250	157	

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 #1718

Polarization: Vertical

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 17/12/12

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

Time: 9/28/53

EUT: LED Shop light

Engineer Signature: Frank

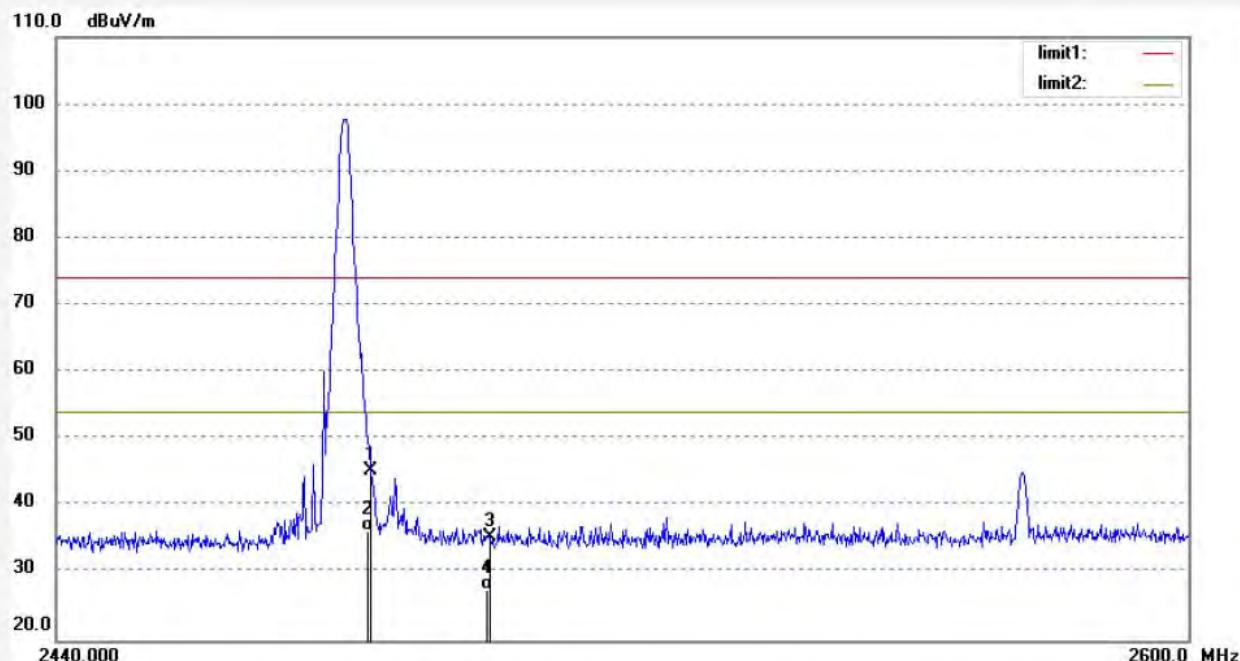
Mode: TX 2480MHz(GFSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



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	51.22	-5.89	45.33	74.00	-28.67	peak	150	300	
2	2483.500	42.12	-5.89	36.23	54.00	-17.77	AVG	150	322	
3	2500.000	41.24	-5.81	35.43	74.00	-38.57	peak	150	46	
4	2500.000	33.42	-5.81	27.61	54.00	-26.39	AVG	150	29	

Note: Average measurement with peak detection at No.2&amp;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 #1728

Polarization: Horizontal

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/12/13

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

Time: 12:26:08

EUT: LED Shop light

Engineer Signature: Frank

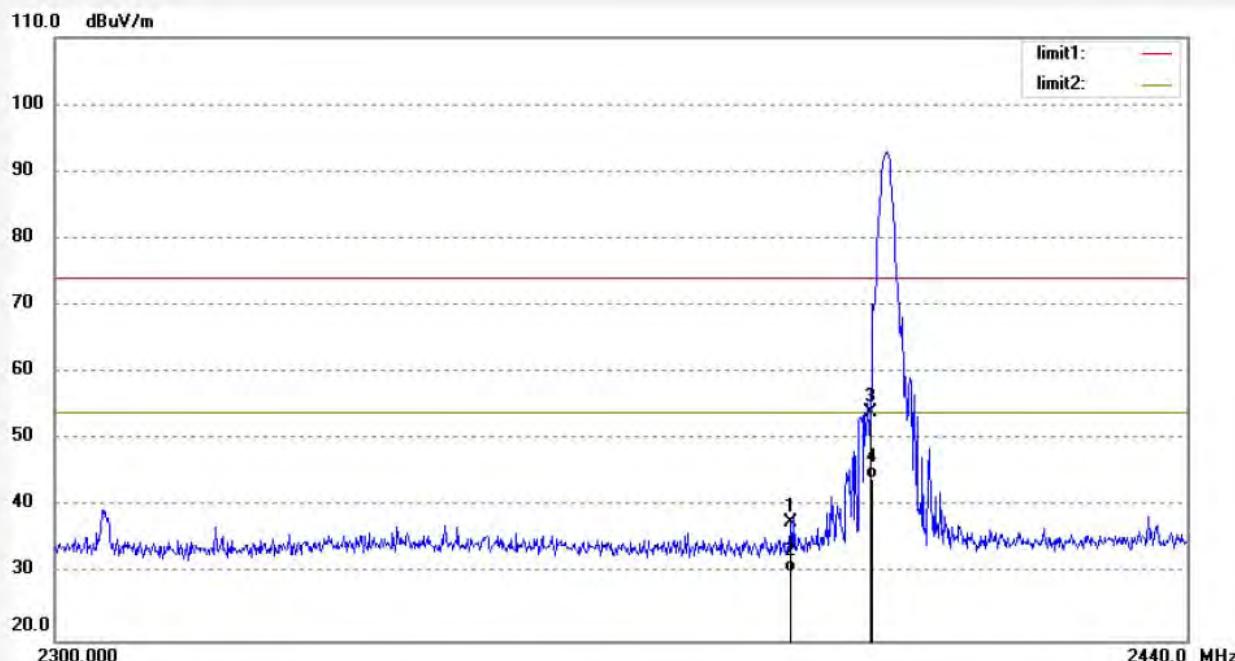
Mode: TX 2402MHz(Π/4-DQPSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



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	43.99	-6.32	37.67	74.00	-36.33	peak	250	100	
2	2390.000	36.45	-6.32	30.13	54.00	-23.87	AVG	250	58	
3	2400.000	60.26	-6.27	53.99	74.00	-20.01	peak	250	149	
4	2400.000	50.48	-6.27	44.21	54.00	-9.79	AVG	250	138	

Note: Average measurement with peak detection at No.2&amp;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 #1727

Polarization: Vertical

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/12/13

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

Time: 12:25:14

EUT: LED Shop light

Engineer Signature: Frank

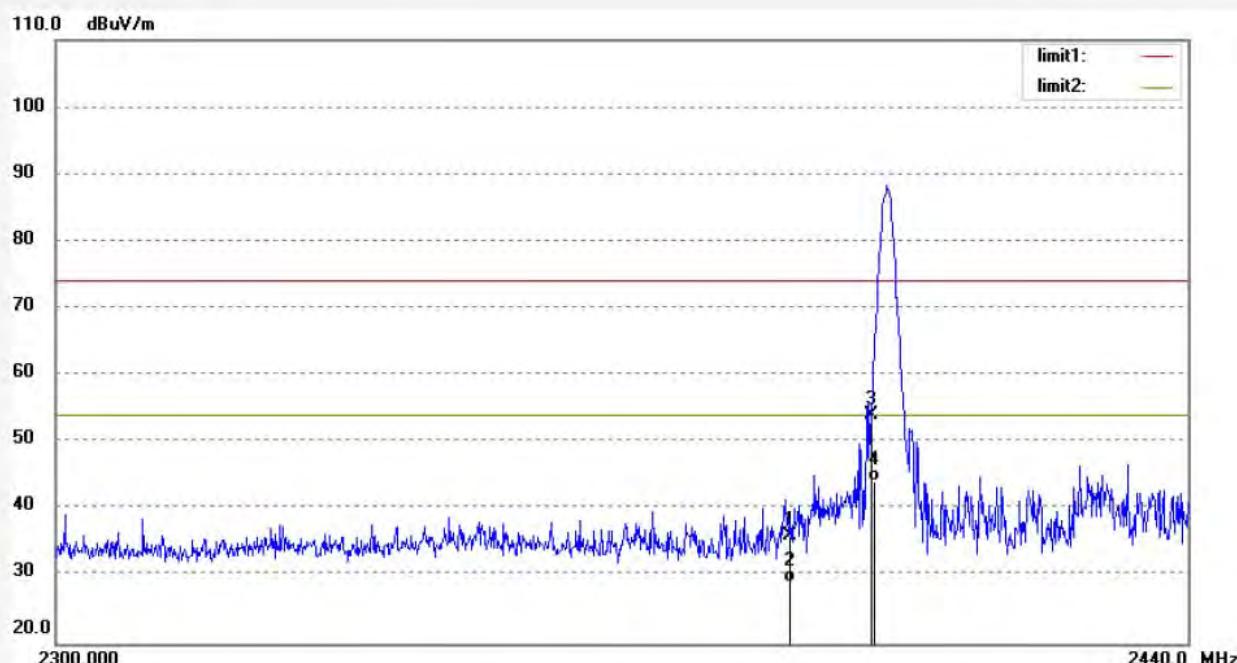
Mode: TX 2402MHz( $\Pi/4$ -DQPSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	42.31	-6.32	35.99	74.00	-38.01	peak	150	219	
2	2390.000	35.45	-6.32	29.13	54.00	-24.87	AVG	150	225	
3	2400.000	60.28	-6.27	54.01	74.00	-19.99	peak	150	354	
4	2400.000	50.48	-6.27	44.21	54.00	-9.79	AVG	150	327	

Note: Average measurement with peak detection at No.2&amp;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 #1721

Polarization: Horizontal

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 17/12/12

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

Time: 9/31/52

EUT: LED Shop light

Engineer Signature: Frank

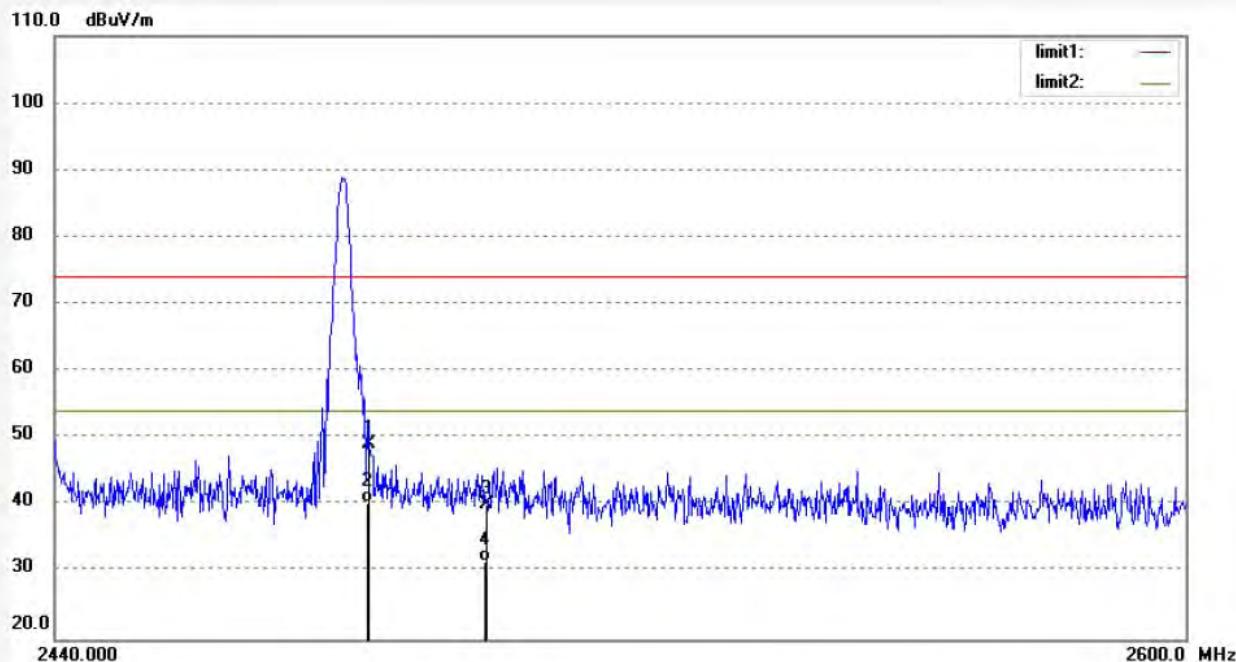
Mode: TX 2480MHz( $\pi/4$ -DQPSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



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	55.04	-5.89	49.15	74.00	-24.85	peak	250	122	
2	2483.500	46.18	-5.89	40.29	74.00	-33.71	QP	250	137	
3	2500.000	45.97	-5.81	40.16	74.00	-33.84	peak	250	244	
4	2500.000	37.48	-5.81	31.67	74.00	-42.33	QP	250	298	

Note: Average measurement with peak detection at No.2&amp;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 #1722

Polarization: Vertical

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 17/12/12/

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

Time: 9/32/56

EUT: LED Shop light

Engineer Signature: Frank

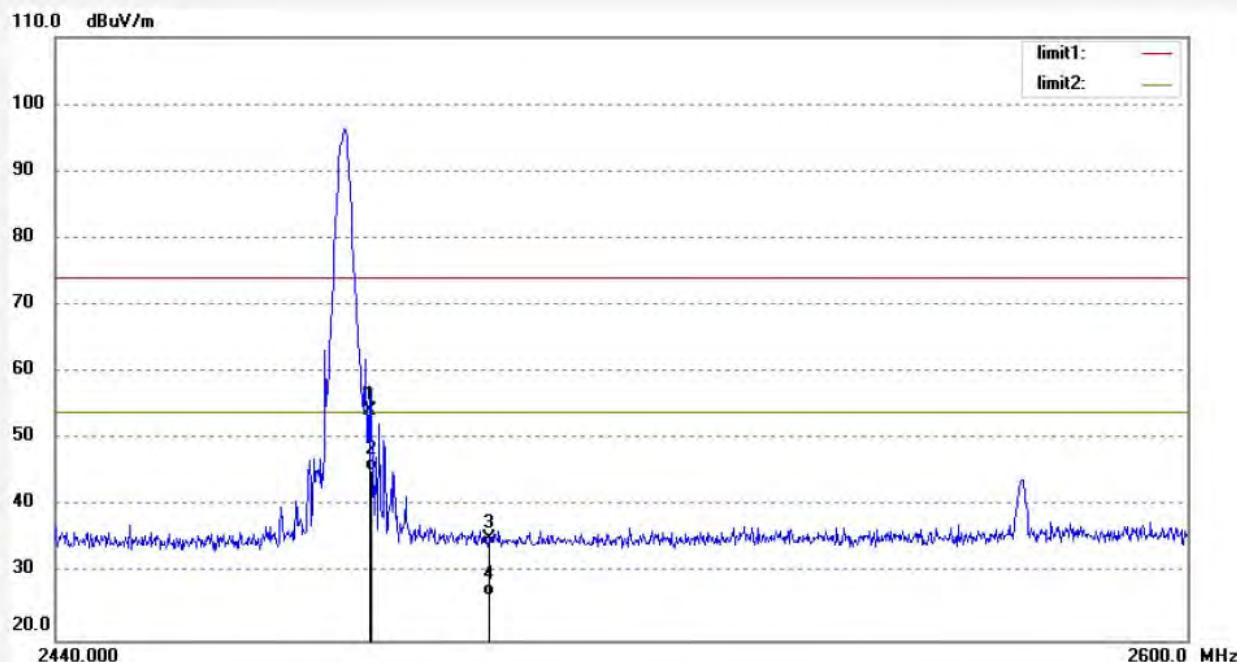
Mode: TX 2480MHz(1/4-DQPSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



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	60.29	-5.89	54.40	74.00	-19.60	peak	150	91	
2	2483.500	51.15	-5.89	45.26	54.00	-8.74	AVG	150	53	
3	2500.000	40.93	-5.81	35.12	74.00	-38.88	peak	150	300	
4	2500.000	32.48	-5.81	26.67	54.00	-27.33	AVG	150	311	

Note: Average measurement with peak detection at No.2&amp;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 #1729

Polarization: Horizontal

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/12/13

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

Time: 12:27:32

EUT: LED Shop light

Engineer Signature: Frank

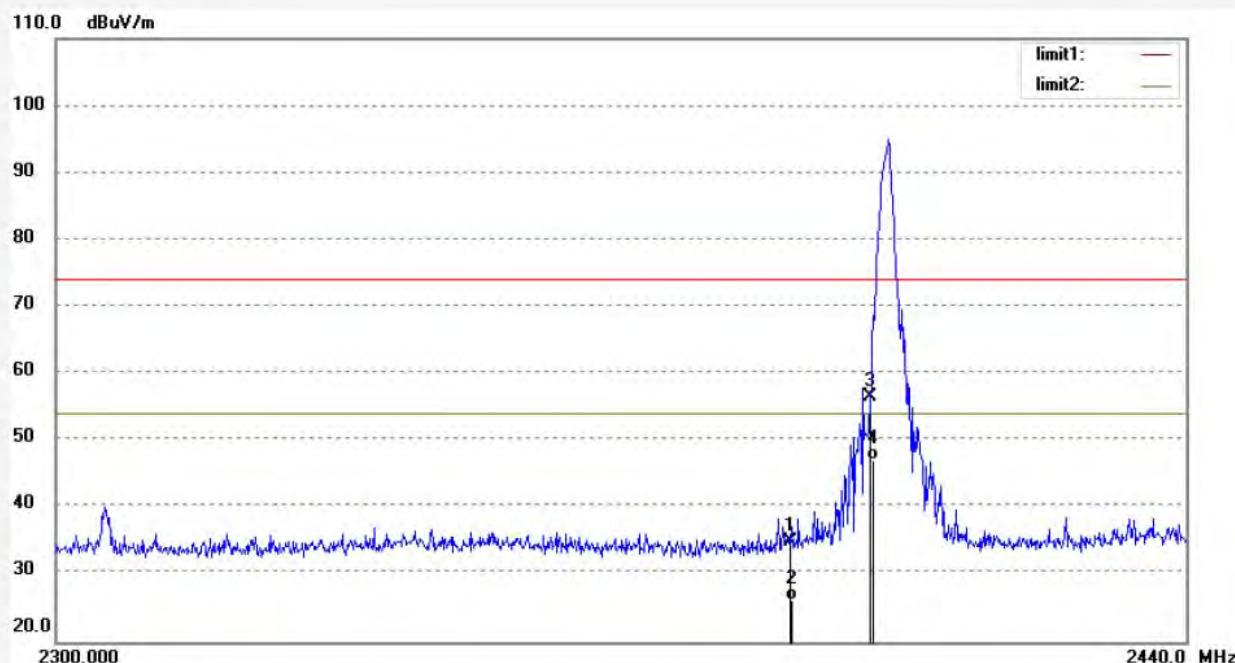
Mode: TX 2402MHz(8DPSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



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	41.34	-6.32	35.02	74.00	-38.98	peak	250	104	
2	2390.000	32.45	-6.32	26.13	54.00	-27.87	AVG	250	112	
3	2400.000	62.73	-6.27	56.46	74.00	-17.54	peak	300	169	
4	2400.000	53.48	-6.27	47.21	54.00	-6.79	AVG	300	138	

Note: Average measurement with peak detection at No.2&amp;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 #1730

Polarization: Vertical

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/12/13

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

Time: 12:28:41

EUT: LED Shop light

Engineer Signature: Frank

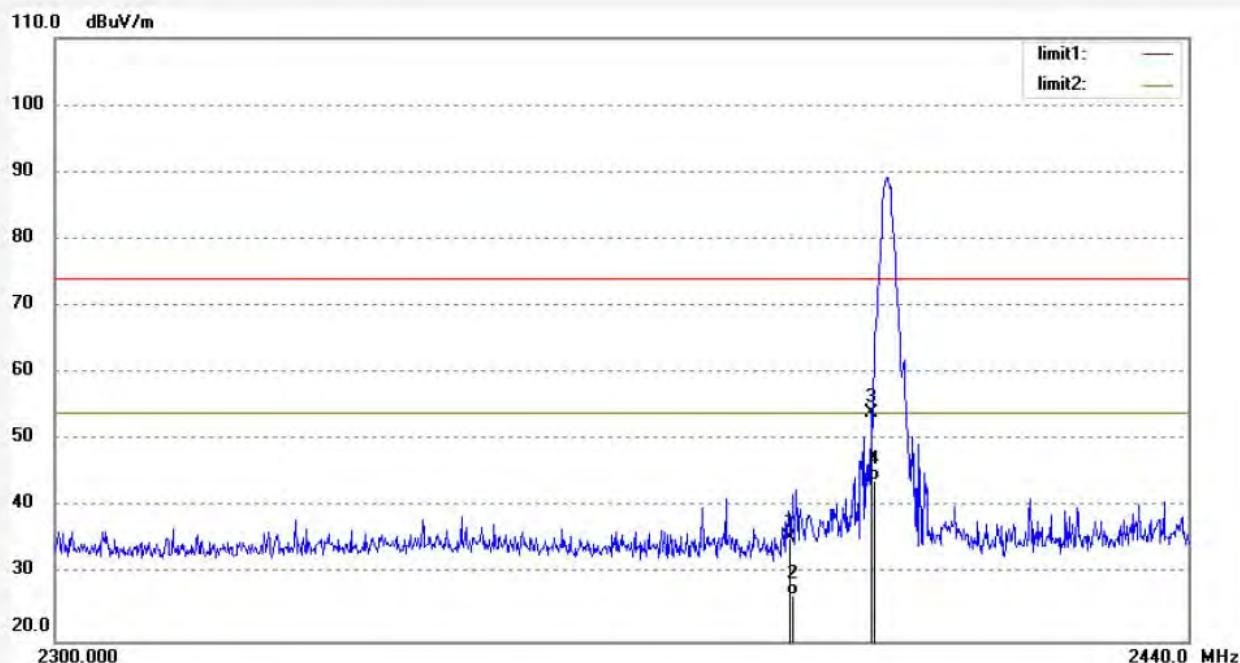
Mode: TX 2402MHz(8DPSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



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	41.66	-6.32	35.34	74.00	-38.66	peak	150	177	
2	2390.000	33.15	-6.32	26.83	54.00	-27.17	AVG	150	154	
3	2400.000	60.36	-6.27	54.09	74.00	-19.91	peak	150	311	
4	2400.000	50.15	-6.27	43.88	54.00	-10.12	AVG	150	324	

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



## ACCURATE TECHNOLOGY CO., LTD.

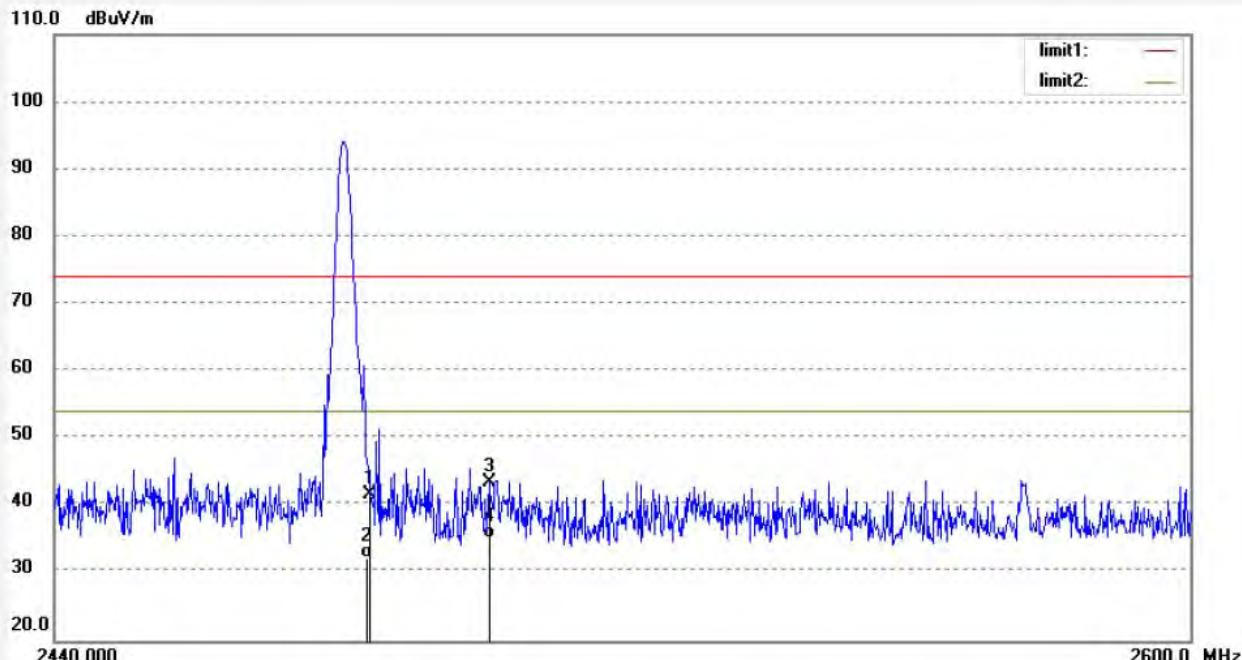
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

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

Job No.: frank2017 #1724  
Standard: FCC PK  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: LED Shop light  
Mode: TX 2480MHz(8DPSK)  
Model: 54569241  
Manufacturer: ETI

Polarization: Horizontal  
Power Source: AC 120V/60Hz  
Date: 17/12/12  
Time: 9/34/59  
Engineer Signature: Frank  
Distance: 3m

Note: Report NO.:ATE20172223



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	47.53	-5.89	41.64	74.00	-32.36	peak	250	233	
2	2483.500	38.15	-5.89	32.26	54.00	-21.74	AVG	250	248	
3	2500.000	49.34	-5.81	43.53	74.00	-30.47	peak	250	312	
4	2500.000	40.98	-5.81	35.17	54.00	-18.83	AVG	250	318	

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 #1723

Polarization: Vertical

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 17/12/12

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

Time: 9/34/02

EUT: LED Shop light

Engineer Signature: Frank

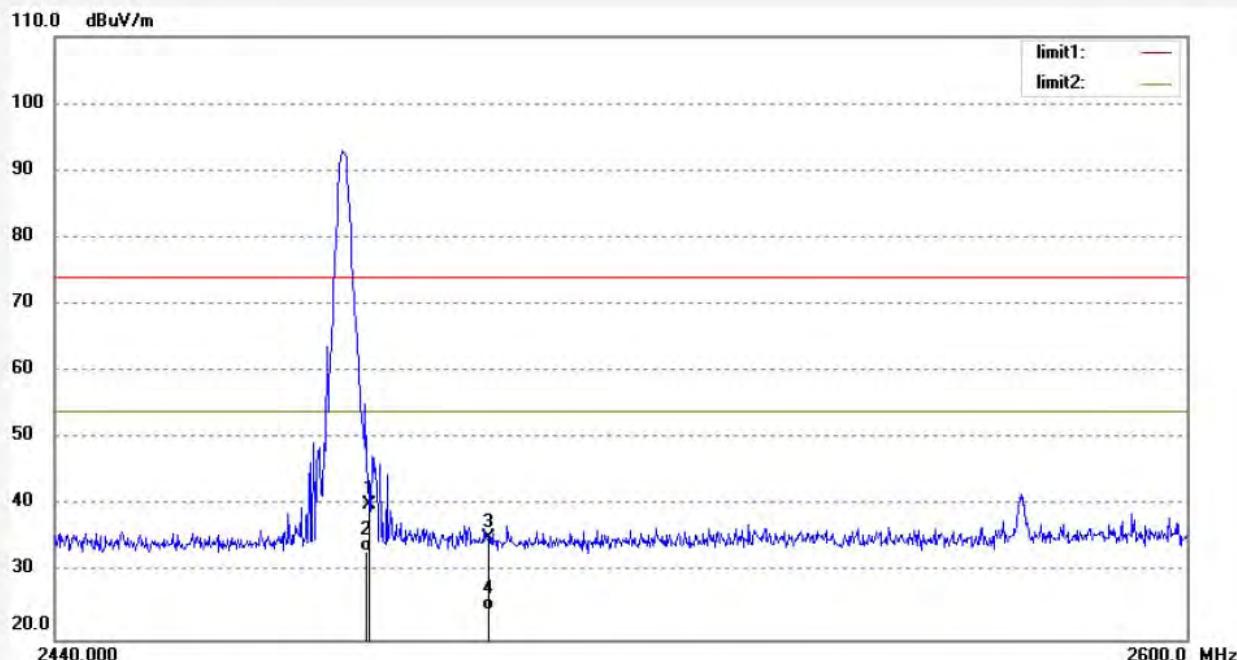
Mode: TX 2480MHz(8DPSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	46.09	-5.89	40.20	74.00	-33.80	peak	150	109	
2	2483.500	39.15	-5.89	33.26	54.00	-20.74	AVG	150	115	
3	2500.000	40.96	-5.81	35.15	74.00	-38.85	peak	150	144	
4	2500.000	30.15	-5.81	24.34	54.00	-29.66	AVG	150	153	

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

## Hopping mode



## 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 #1812

Polarization: Horizontal

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 17/12/13/

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

Time: 9/14/01

EUT: LED Shop light

Engineer Signature: Frank

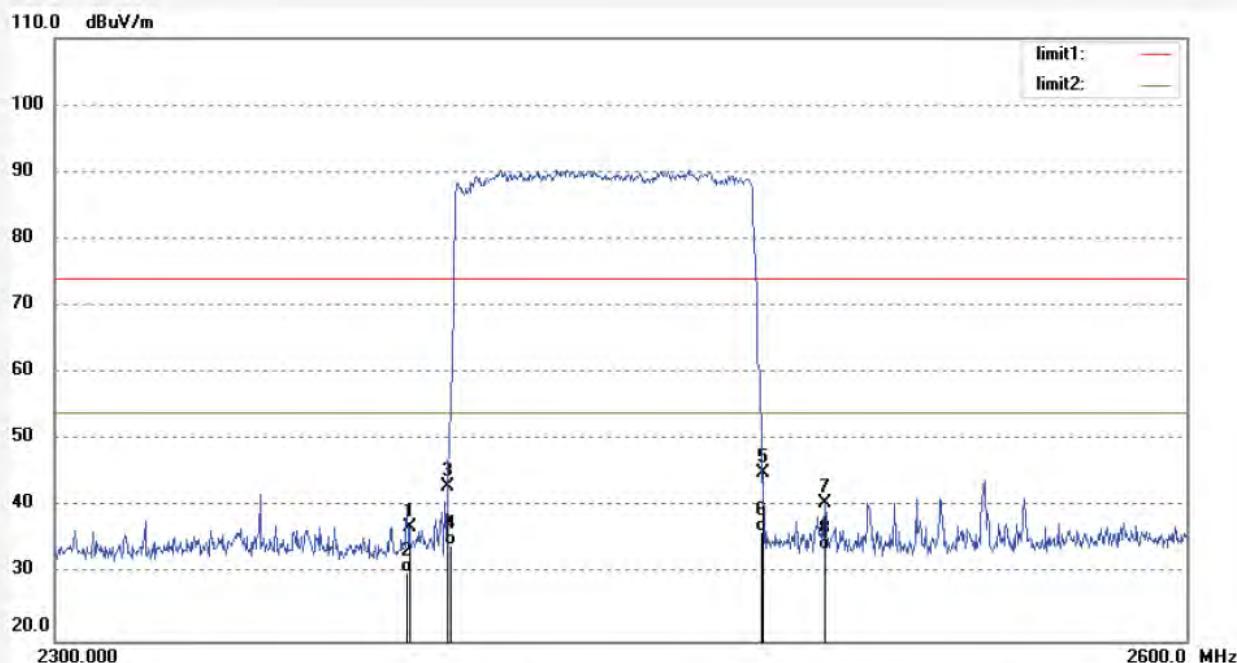
Mode: Hopping (GFSK)

Distance: 3m

Model: 54569241

Manufacturer: ETI

Note: Report NO.:ATE20172223



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	43.25	-6.32	36.93	74.00	-37.07	peak	250	100	
2	2390.000	36.48	-6.32	30.16	54.00	-23.84	AVG	250	132	
3	2400.000	49.42	-6.27	43.15	74.00	-30.85	peak	250	244	
4	2400.000	40.48	-6.27	34.21	54.00	-19.79	AVG	250	221	
5	2483.500	50.89	-5.89	45.00	74.00	-29.00	peak	250	296	
6	2483.500	42.15	-5.89	36.26	54.00	-17.74	AVG	250	314	
7	2500.000	46.33	-5.81	40.52	74.00	-33.48	peak	250	113	
8	2500.000	39.45	-5.81	33.64	54.00	-20.36	AVG	250	97	

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



## ACCURATE TECHNOLOGY CO., LTD.

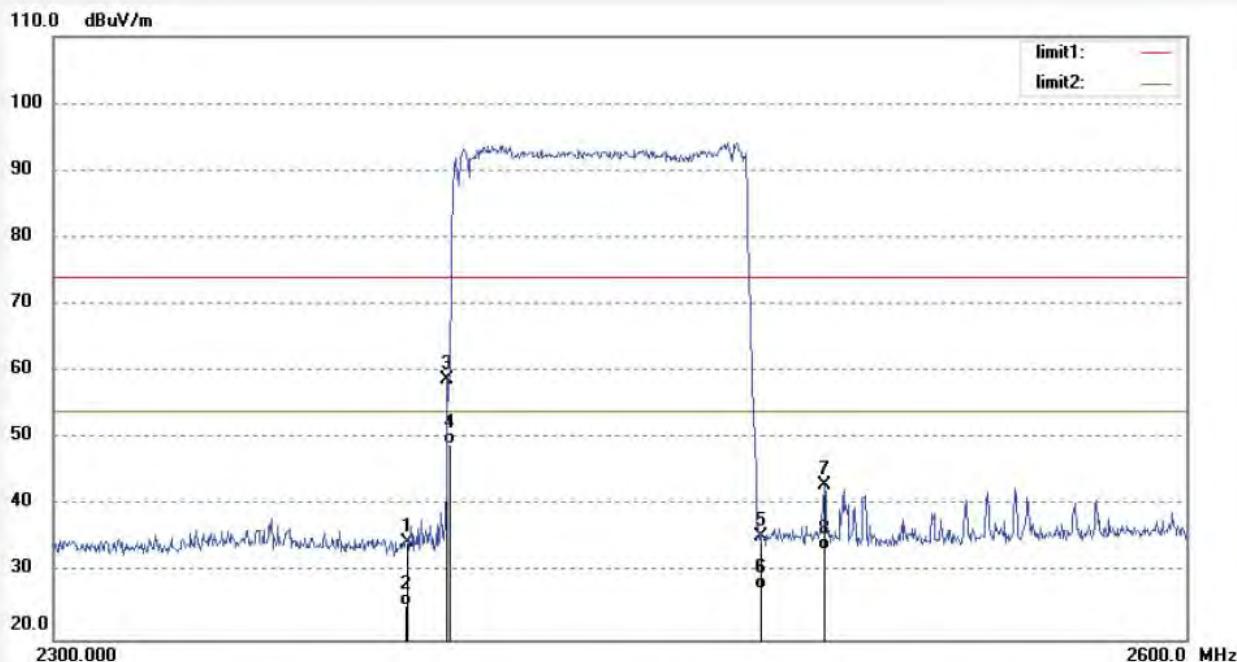
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

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

Job No.: frank2017 #1811  
Standard: FCC PK  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: LED Shop light  
Mode: Hopping (GFSK)  
Model: 54569241  
Manufacturer: ETI

Polarization: Vertical  
Power Source: AC 120V/60Hz  
Date: 17/12/13/  
Time: 9/11/17  
Engineer Signature: Frank  
Distance: 3m

Note: Report NO.:ATE20172223



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	40.80	-6.32	34.48	74.00	-39.52	peak	150	105	
2	2390.000	31.28	-6.32	24.96	54.00	-29.04	AVG	150	122	
3	2400.000	65.14	-6.27	58.87	74.00	-15.13	peak	150	306	
4	2400.000	55.48	-6.27	49.21	54.00	-4.79	AVG	150	324	
5	2483.500	41.38	-5.89	35.49	74.00	-38.51	peak	150	114	
6	2483.500	33.45	-5.89	27.56	54.00	-26.44	AVG	150	87	
7	2500.000	48.80	-5.81	42.99	74.00	-31.01	peak	150	99	
8	2500.000	39.15	-5.81	33.34	54.00	-20.66	AVG	150	105	

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

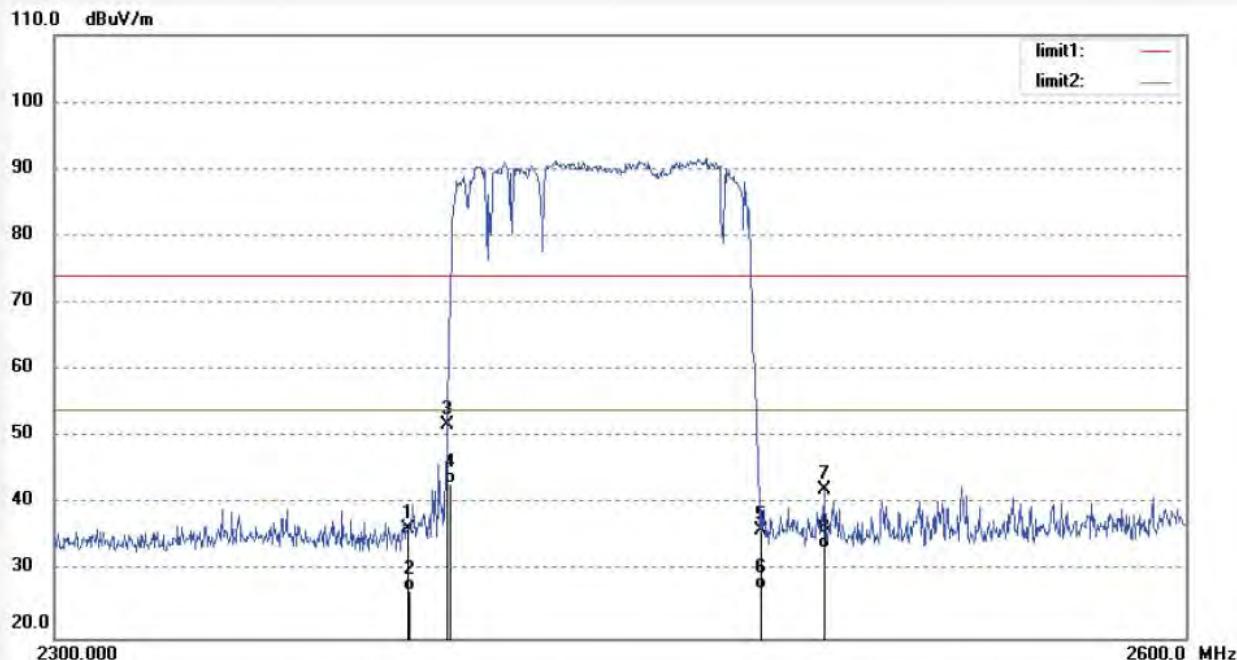
Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: frank2017 #1813  
Standard: FCC PK  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: LED Shop light  
Mode: Hopping ( $\Delta$ /4-DQPSK)  
Model: 54569241  
Manufacturer: ETI  
Note: Report NO.:ATE20172223

Polarization: Horizontal  
Power Source: AC 120V/60Hz  
Date: 17/12/13/  
Time: 9/17/02  
Engineer Signature: Frank  
Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	42.53	-6.32	36.21	74.00	-37.79	peak	250	123	
2	2390.000	33.48	-6.32	27.16	54.00	-26.84	AVG	250	131	
3	2400.000	58.01	-6.27	51.74	74.00	-22.26	peak	250	199	
4	2400.000	49.42	-6.27	43.15	54.00	-10.85	AVG	250	221	
5	2483.500	42.00	-5.89	36.11	74.00	-37.89	peak	250	128	
6	2483.500	33.15	-5.89	27.26	54.00	-26.74	AVG	250	272	
7	2500.000	48.06	-5.81	42.25	74.00	-31.75	peak	250	115	
8	2500.000	39.15	-5.81	33.34	54.00	-20.66	AVG	250	123	

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

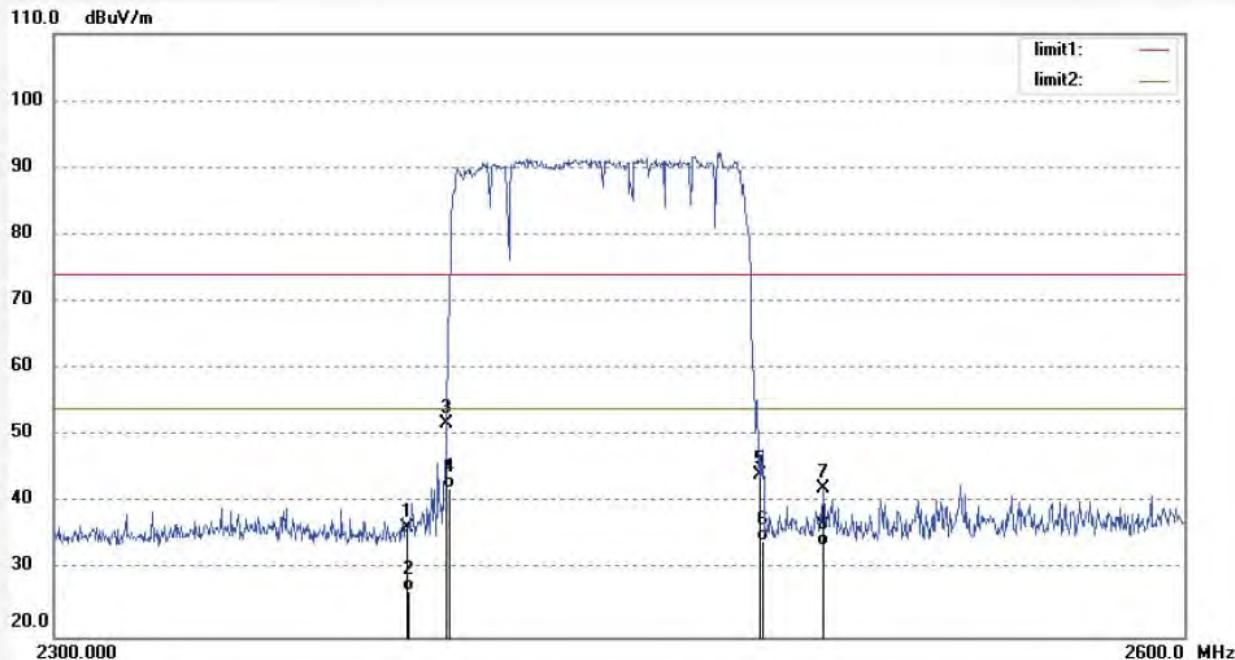
Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: frank2017 #1814  
Standard: FCC PK  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: LED Shop light  
Mode: Hopping ( $\pi/4$ -DQPSK)  
Model: 54569241  
Manufacturer: ETI

Polarization: Vertical  
Power Source: AC 120V/60Hz  
Date: 17/12/13/  
Time: 9/18/19  
Engineer Signature: Frank  
Distance: 3m

Note: Report NO.:ATE20172223



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	42.53	-6.32	36.21	74.00	-37.79	peak	150	274	
2	2390.000	33.18	-6.32	26.86	54.00	-27.14	AVG	150	324	
3	2400.000	58.01	-6.27	51.74	74.00	-22.26	peak	150	229	
4	2400.000	48.48	-6.27	42.21	54.00	-11.79	AVG	150	241	
5	2483.500	50.00	-5.89	44.11	74.00	-29.89	peak	150	101	
6	2483.500	40.15	-5.89	34.26	54.00	-19.74	AVG	150	125	
7	2500.000	48.06	-5.81	42.25	74.00	-31.75	peak	150	200	
8	2500.000	39.45	-5.81	33.64	54.00	-20.36	AVG	150	218	

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



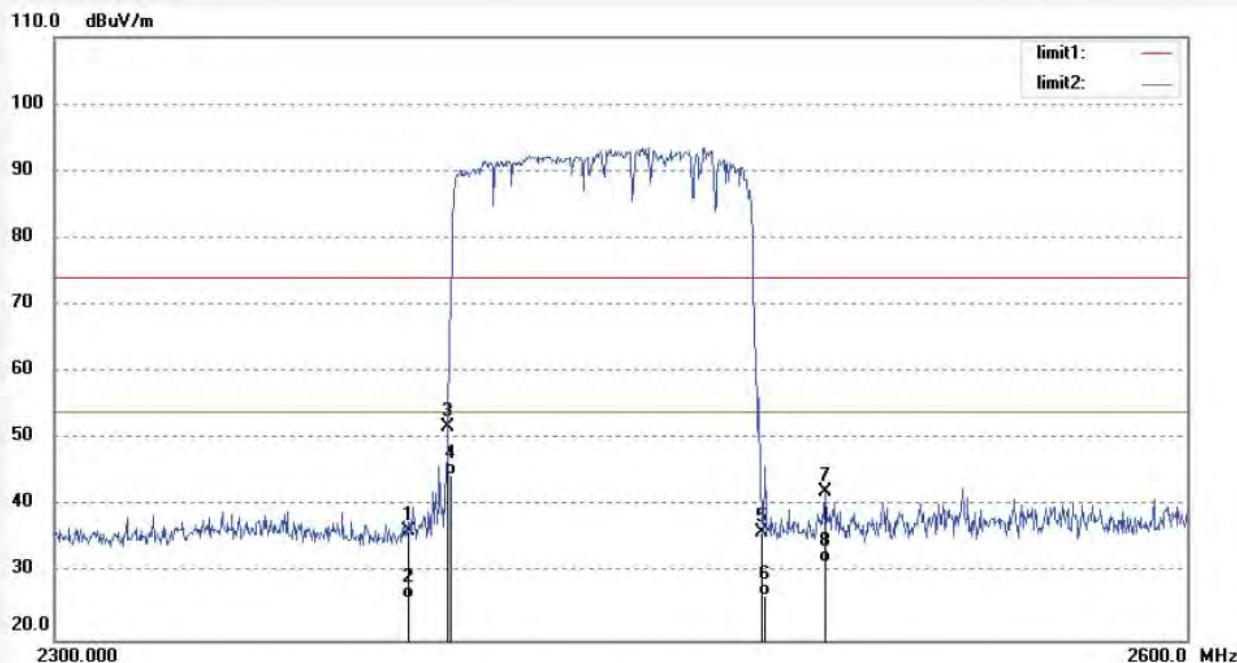
## ACCURATE TECHNOLOGY CO., LTD.

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 #1816  
Standard: FCC PK  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: LED Shop light  
Mode: Hopping (8DPSK)  
Model: 54569241  
Manufacturer: ETI  
Note: Report NO.:ATE20172223

Polarization: Horizontal  
Power Source: AC 120V/60Hz  
Date: 17/12/13/  
Time: 9/20/18  
Engineer Signature: Frank  
Distance: 3m



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	42.53	-6.32	36.21	74.00	-37.79	peak	250	76	
2	2390.000	32.55	-6.32	26.23	54.00	-27.77	AVG	250	37	
3	2400.000	58.01	-6.27	51.74	74.00	-22.26	peak	250	264	
4	2400.000	50.80	-6.27	44.53	54.00	-9.47	AVG	250	248	
5	2483.500	42.00	-5.89	36.11	74.00	-37.89	peak	250	109	
6	2483.500	32.45	-5.89	26.56	54.00	-27.44	AVG	250	128	
7	2500.000	48.06	-5.81	42.25	74.00	-31.75	peak	250	219	
8	2500.000	37.45	-5.81	31.64	54.00	-22.36	AVG	250	135	

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



## ACCURATE TECHNOLOGY CO., LTD.

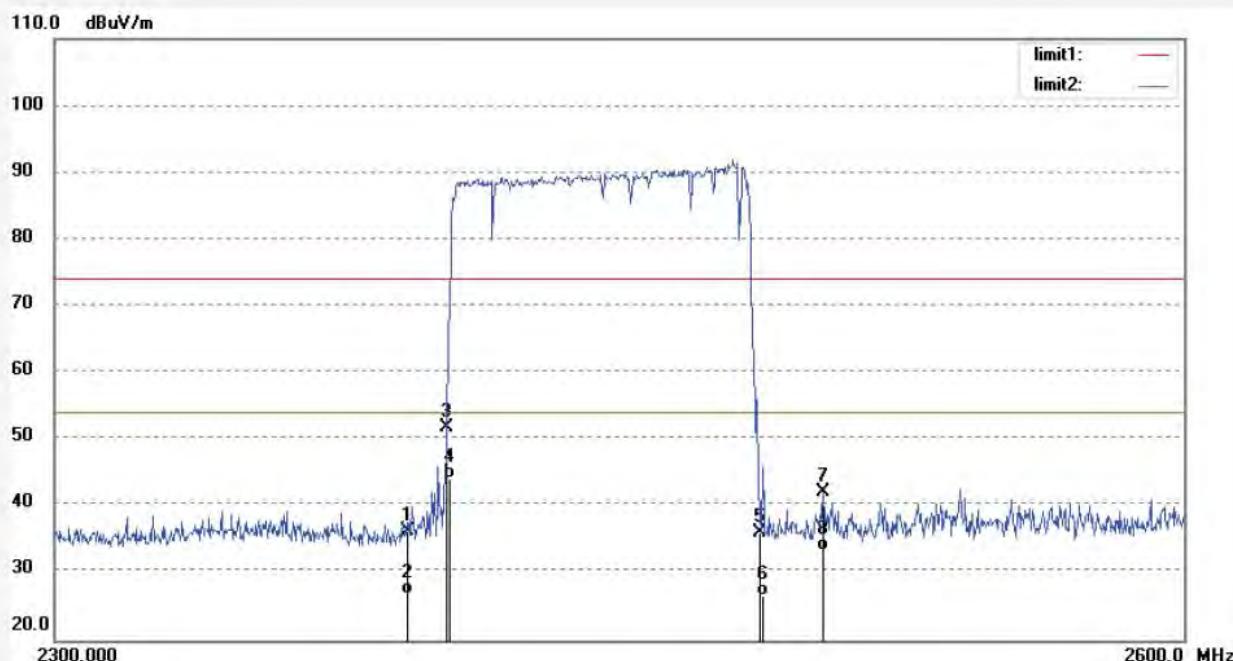
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,  
Science & Industry Park,Nanshan Shenzhen,P.R.China

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

Job No.: frank2017 #1815  
Standard: FCC PK  
Test item: Radiation Test  
Temp.( C)/Hum.(%) 25 C / 55 %  
EUT: LED Shop light  
Mode: Hopping (8DPSK)  
Model: 54569241  
Manufacturer: ETI

Polarization: Vertical  
Power Source: AC 120V/60Hz  
Date: 17/12/13/  
Time: 9/19/49  
Engineer Signature: Frank  
Distance: 3m

Note: Report NO.:ATE20172223



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	42.53	-6.32	36.21	74.00	-37.79	peak	150	233	
2	2390.000	33.18	-6.32	26.86	54.00	-27.14	AVG	150	231	
3	2400.000	58.01	-6.27	51.74	74.00	-22.26	peak	150	299	
4	2400.000	50.48	-6.27	44.21	54.00	-9.79	AVG	150	257	
5	2483.500	42.00	-5.89	36.11	74.00	-37.89	peak	150	128	
6	2483.500	32.48	-5.89	26.59	54.00	-27.41	AVG	150	135	
7	2500.000	48.06	-5.81	42.25	74.00	-31.75	peak	150	50	
8	2500.000	39.18	-5.81	33.37	54.00	-20.63	AVG	150	38	

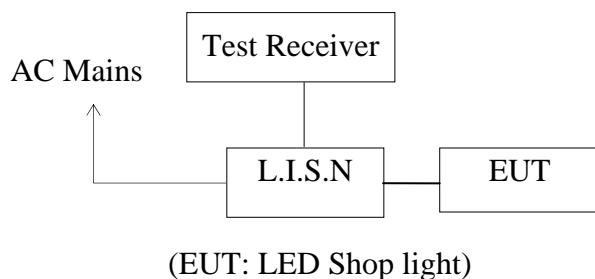
Note: Average measurement with peak detection at No.2&4&6&8

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

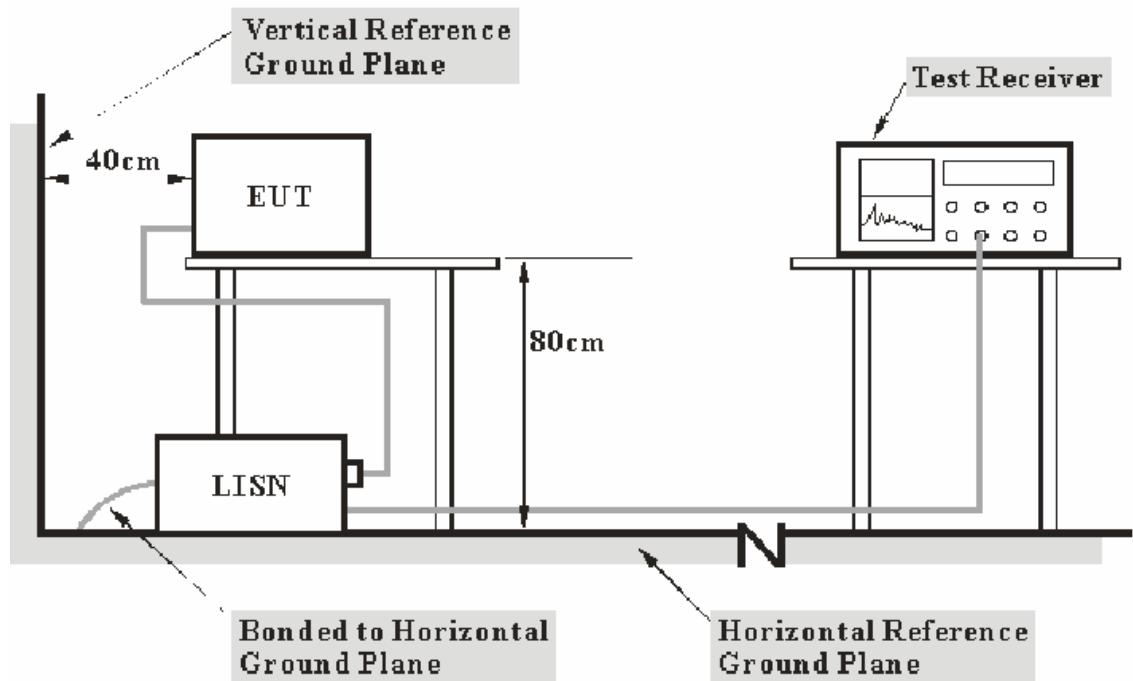
### 15 SECTION 15.207(A)

#### 12.1.Block Diagram of Test Setup

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



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

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

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

## 12.6.Data Sample

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

Frequency(MHz) = Emission frequency in MHz

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

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

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

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

Calculation Formula:

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

## 12.7.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.

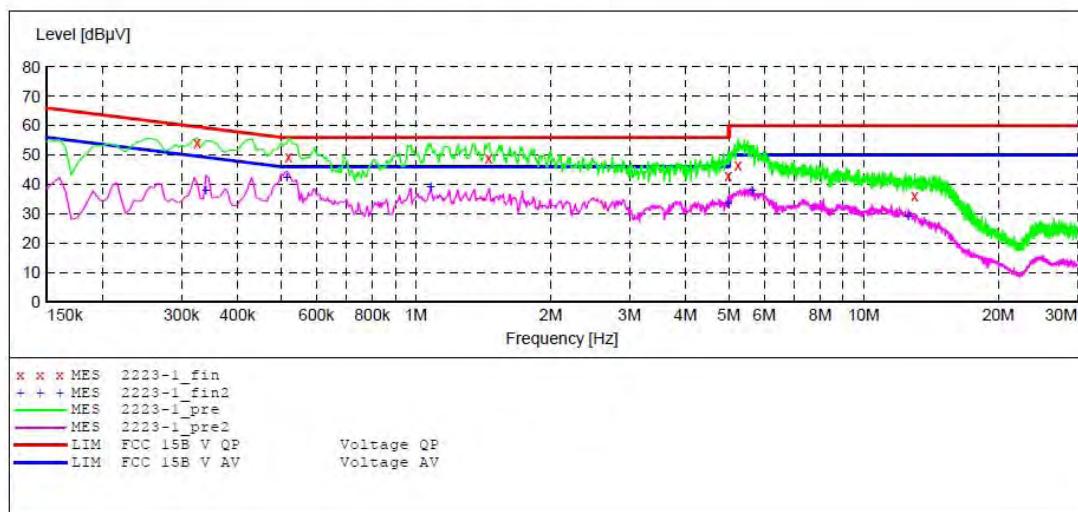
## ACCURATE TECHNOLOGY CO., LTD

## CONDUCTED EMISSION STANDARD FCC PART 15 B

EUT: LED Shop light M/N:54569241  
 Manufacturer: ETI  
 Operating Condition: ON  
 Test Site: 1#Shielding Room  
 Operator: Frank  
 Test Specification: L 120V/60Hz  
 Comment: Report NO.:ATE20172223  
 Start of Test: 12/13/2017 / 9:57:29AM

## SCAN TABLE: "V 9K-30MHz fin"

Short Description: SUB\_STD\_VTERM2 1.70  
 Start Stop Step - Detector Meas. IF Transducer  
 Frequency Frequency Width Time Bandw.  
 9.0 kHz 150.0 kHz 100.0 Hz QuasiPeak 1.0 s 200 Hz NSLK8126 2008  
 Average  
 150.0 kHz 30.0 MHz 5.0 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008  
 Average



## MEASUREMENT RESULT: "2223-1\_fin"

12/13/2017 10:05AM							
Frequency	Level	Transd	Limit	Margin	Detector	Line	PE
MHz	dB $\mu$ V	dB	dB $\mu$ V	dB			
0.325000	54.10	10.6	60	5.5	QP	L1	GND
0.520000	49.50	10.7	56	6.5	QP	L1	GND
1.455000	48.90	10.9	56	7.1	QP	L1	GND
4.980000	42.70	11.2	56	13.3	QP	L1	GND
5.240000	46.60	11.2	60	13.4	QP	L1	GND
13.000000	36.10	11.3	60	23.9	QP	L1	GND

## MEASUREMENT RESULT: "2223-1\_fin2"

12/13/2017 10:05AM							
Frequency	Level	Transd	Limit	Margin	Detector	Line	PE
MHz	dB $\mu$ V	dB	dB $\mu$ V	dB			
0.340000	38.10	10.6	49	11.1	AV	L1	GND
0.515000	42.50	10.7	46	3.5	AV	L1	GND
1.080000	39.20	10.9	46	6.8	AV	L1	GND
4.980000	33.60	11.2	46	12.4	AV	L1	GND
5.640000	38.10	11.2	50	11.9	AV	L1	GND
12.580000	29.10	11.3	50	20.9	AV	L1	GND

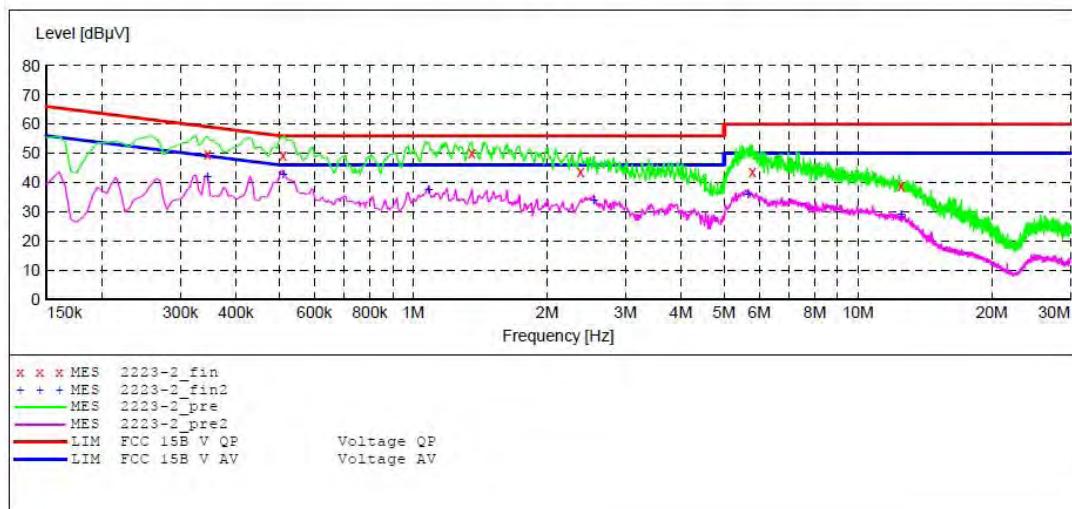
## ACCURATE TECHNOLOGY CO., LTD

## CONDUCTED EMISSION STANDARD FCC PART 15 B

EUT: LED Shop light M/N:54569241  
 Manufacturer: ETI  
 Operating Condition: ON  
 Test Site: 1#Shielding Room  
 Operator: Frank  
 Test Specification: N 120V/60Hz  
 Comment: Report NO.:ATE20172223  
 Start of Test: 12/13/2017 / 10:06:17AM

## SCAN TABLE: "V 9K-30MHz fin"

Short Description: \_SUB\_STD\_VTERM2 1.70  
 Start Stop Step Detector Meas. IF Transducer  
 Frequency Frequency Width Time Bandw.  
 9.0 kHz 150.0 kHz 100.0 Hz QuasiPeak 1.0 s 200 Hz NSLK8126 2008  
 Average  
 150.0 kHz 30.0 MHz 5.0 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008  
 Average



## MEASUREMENT RESULT: "2223-2\_fin"

12/13/2017 10:09AM							
Frequency	Level	Transd	Limit	Margin	Detector	Line	PE
MHz	dB $\mu$ V	dB	dB $\mu$ V	dB			
0.345000	49.80	10.6	59	9.3	QP	N	GND
0.510000	49.20	10.7	56	6.8	QP	N	GND
1.355000	50.10	10.9	56	5.9	QP	N	GND
2.380000	43.70	11.0	56	12.3	QP	N	GND
5.790000	43.50	11.2	60	16.5	QP	N	GND
12.505000	38.80	11.3	60	21.2	QP	N	GND

## MEASUREMENT RESULT: "2223-2\_fin2"

12/13/2017 10:09AM							
Frequency	Level	Transd	Limit	Margin	Detector	Line	PE
MHz	dB $\mu$ V	dB	dB $\mu$ V	dB			
0.345000	41.90	10.6	49	7.2	AV	N	GND
0.510000	43.00	10.7	46	3.0	AV	N	GND
1.085000	37.80	10.9	46	8.2	AV	N	GND
2.550000	34.10	11.0	46	11.9	AV	N	GND
5.660000	36.20	11.2	50	13.8	AV	N	GND
12.505000	29.30	11.3	50	20.7	AV	N	GND

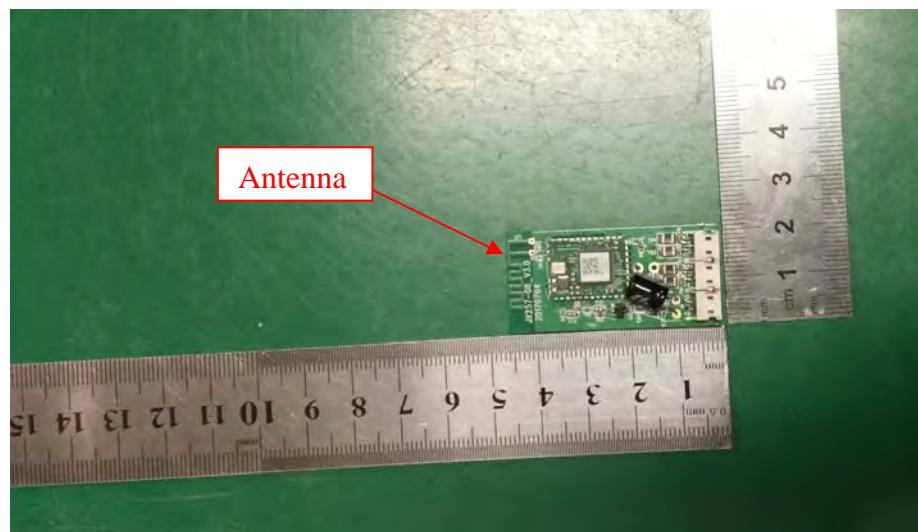
## 13. ANTENNA REQUIREMENT

### 13.1. The Requirement

According to Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

### 13.2. Antenna Construction

Device is equipped with permanent attached antenna, which isn't displaced by other antenna. The Max Antenna gain of EUT is -1dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.



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