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## APPLICATION CERTIFICATION FCC Part 15C On Behalf of

Elec-Tech International Co., Ltd.

LED ceiling lamp

Model No.: 546203XX

FCC ID: XZH-5462032017

Prepared for : Elec-Tech International Co., Ltd.

Address : No.1 Jinfeng Road, Tangjiawan Town, Xiangzhou

District, Zhuhai City, Guangdong Province, P.R. China

519085

Prepared by : Shenzhen Accurate Technology Co., Ltd.

Address : 1/F., Building A, Changyuan New Material Port, Science

& Industry Park, Nanshan District, Shenzhen, Guangdong,

P.R. China

Tel: (0755) 26503290 Fax: (0755) 26503396

Report No. : ATE20171126

Date of Test : June 18-June 21, 2017

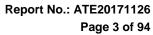
Date of Report : June 23, 2017



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## **Test Report Certification**

Applicant : Elec-Tech International Co., Ltd.

Manufacturer 1 : WUHU 3E LIGHTING CO LTD

Manufacturer 2 : Guangdong NVCETi Lighting Co., Ltd

EUT Description : LED ceiling lamp

Model No. : 546203XX

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

Measurement Procedure Used:

# FCC Rules and Regulations Part 15 Subpart C Section 15.247:2016 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:	June 18-June 21, 2017
Date of Report:	June 23, 2017
Prepared by :	Star Jany
Approved & Authorized Signer:	(Stern February)
,рр. о . о а . о	(Sean Liu, Manager)
	(Ocarr Era, Mariagor)



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#### 1. GENERAL INFORMATION

#### 1.1.Description of Device (EUT)

Model Number : 546203XX

(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

54620311 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 for BT classic mode

Antenna Gain(Max) : -1.0dBi

Antenna type : Integrate Antenna

Adapter Input Voltage : AC 120V,60Hz

Modulation mode : GFSK,  $\pi/4$  DQPSK, 8DPSK for BT classic mode

Applicant : Elec-Tech International Co., Ltd.

Address : No.1 Jinfeng Road, Tangjiawan Town, Xiangzhou

District, Zhuhai City, Guangdong Province, P.R. China

519085

Manufacturer 1 : WUHU 3E LIGHTING CO LTD

Address : 11 WEI ER CI RD EASTERN WUHU ECONOMIC &

TECHNOLOGICAL DEVELOPMENT AREA WUHU

ANHUI 241000 China

Manufacturer 2 : Guangdong NVCETi Lighting Co., Ltd

Address : Factory#2-2, No. 1, South Zhongzhu Road Science &

Technology Road, Innovation Coast, High Tech District, Zhuhai City, Guangdong Province, P.R. China 519085

Date of sample received: June 15, 2017

Date of Test : June 18-June 21, 2017



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## 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 (ISEDC)

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)



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# 2. MEASURING DEVICE AND TEST EQUIPMENT

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

Kind of equipment	Manufacturer	Туре	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



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3. OPERATION OF EUT DURING TESTING

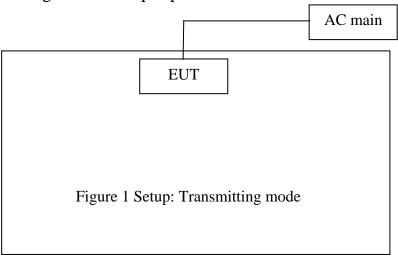
## 3.1. Operating Mode

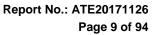
The mode is used: Transmitting mode

Low Channel: 2402MHz Middle Channel: 2441MHz High Channel: 2480MHz

Hopping

# 3.2.Configuration and peripherals







4. TEST PROCEDURES AND RESULTS

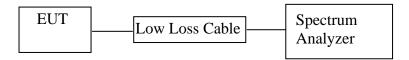
FCC Rules	<b>Description of Test</b>	Result
Section 15.207	Conducted Emission Test	Compliant
Section 15.247(a)(1)	20dB Bandwidth Test	Compliant
Section 15.247(a)(1)	Carrier Frequency Separation Test	Compliant
Section 15.247(a)(1)(iii)	Number Of Hopping Frequency Test	Compliant
Section 15.247(a)(1)(iii)	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



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### 5. 20DB BANDWIDTH TEST

#### 5.1.Block Diagram of Test Setup



(EUT: LED ceiling lamp)

## 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.



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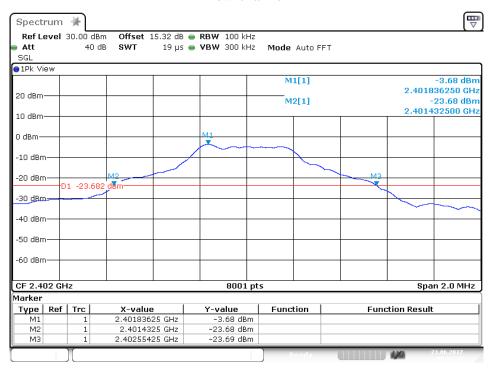
#### 5.6.Test Result

Channel	Frequency (MHz)	GFSK 20dB Bandwidth (MHz)	∏/4-DQPSK 20dB Bandwidth (MHz)	8DPSK 20dB Bandwidth (MHz)	Result
Low	2402	1.122	1.344	1.316	Pass
Middle	2441	1.127	1.341	1.308	Pass
High	2480	1.114	1.338	1.312	Pass

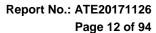
The spectrum analyzer plots are attached as below.

#### **GFSK Mode**

#### Low channel

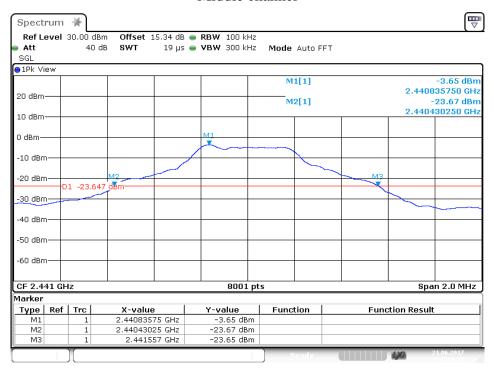


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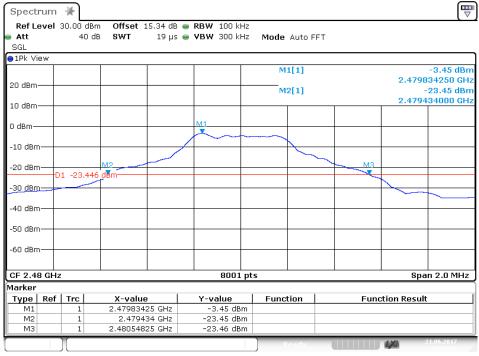


#### Middle channel



Date: 21.JUN.2017 10:10:23

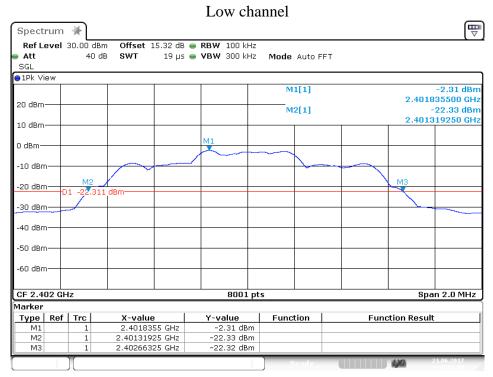
#### High channel



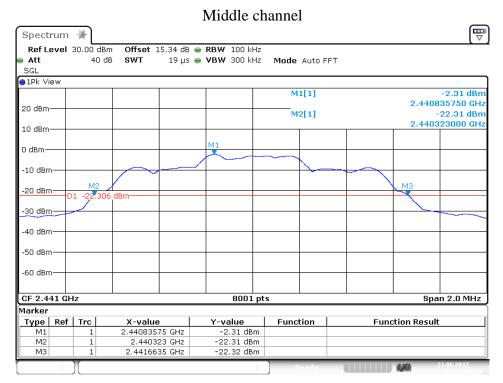
Date: 21.JUN.2017 10:12:17



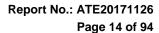
## ∏/4-DQPSK Mode



Date: 21.JUN.2017 10:22:04



Date: 21.JUN.2017 10:28:21





High channel Spectrum Offset 15.34 dB 
RBW 100 kHz Ref Level 30.00 dBm Att 40 dB 19 μs 🎃 **VBW** 300 kHz Mode Auto FFT SGL ● 1Pk View M1[1] 2.479834250 GHz -22.25 dBm 20 dBm-M2[1] 2.479321500 GHz 10 dBm--10 dBm -20 dBm -30 dBm--40 dBm -50 dBm-CF 2.48 GHz 8001 pts Span 2.0 MHz Marker Type | Ref | Trc | Function **Function Result** X-value Y-value 2.47983425 GHz 2.4793215 GHz -2.25 dBm -22.25 dBm M2

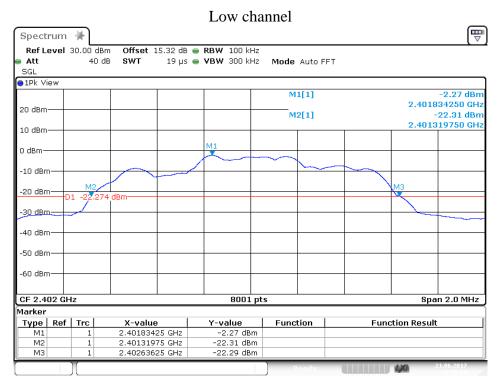
-22.26 dBm

Date: 21.JUN.2017 10:30:01

2.480659 GHz

МЗ

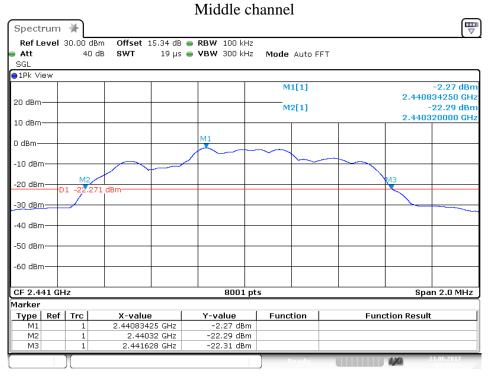
#### 8DPSK Mode



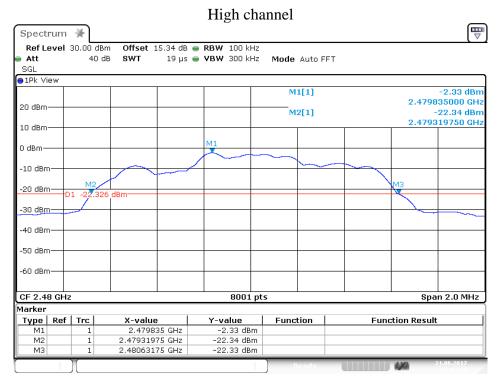
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Date: 21.JUN.2017 11:01:19



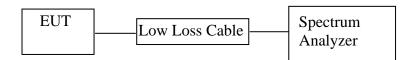
Date: 21.JUN.2017 11:03:48



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## 6. CARRIER FREQUENCY SEPARATION TEST

#### 6.1.Block Diagram of Test Setup



(EUT: LED ceiling lamp)

#### 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.



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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**

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

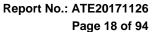
#### $\Pi/4$ -DQPSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	0.999	25KHz or 2/3*20dB	PASS
LOW	2403	0.999	bandwidth	1 Abb
Middle	2440	0.999	25KHz or 2/3*20dB	PASS
	2441		bandwidth	LASS
III ala	2479	1.000	25KHz or 2/3*20dB	PASS
High	2480	1.000	bandwidth	PASS

#### 8DPSK

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

The spectrum analyzer plots are attached as below.





#### **GFSK Mode**

#### Low channel

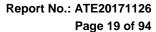


Date: 21.JUN.2017 13:14:06

#### Middle channel



Date: 21.JUN.2017 13:15:51



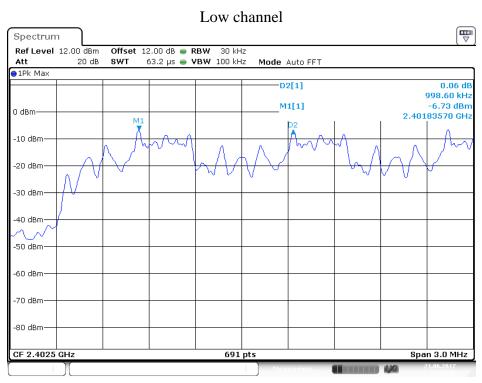


## High channel



Date: 21.JUN.2017 13:16:45

#### ∏/4-DQPSK Mode

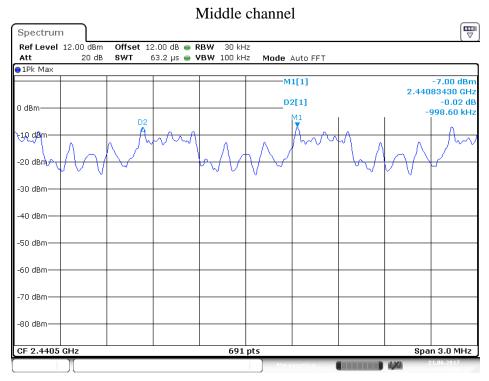


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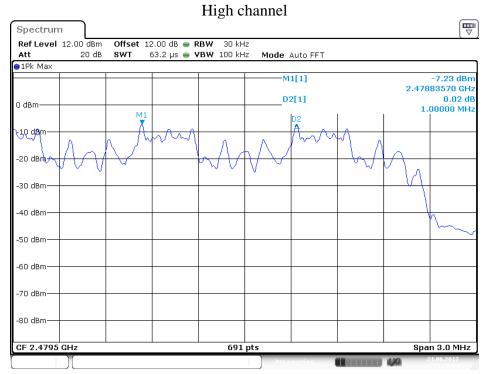




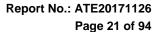
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Date: 21.JUN.2017 13:25:58

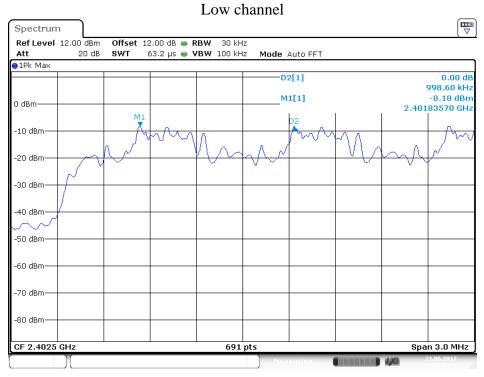


Date: 21.JUN.2017 13:22:04

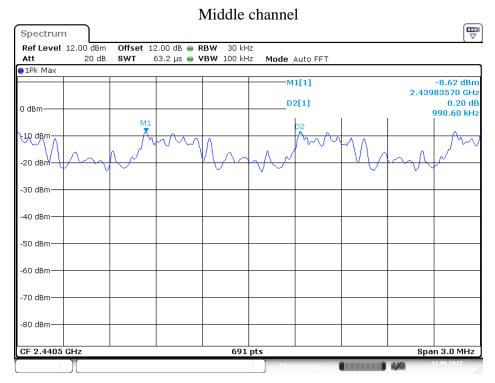




#### 8DPSK Mode



Date: 21.JUN.2017 13:31:29

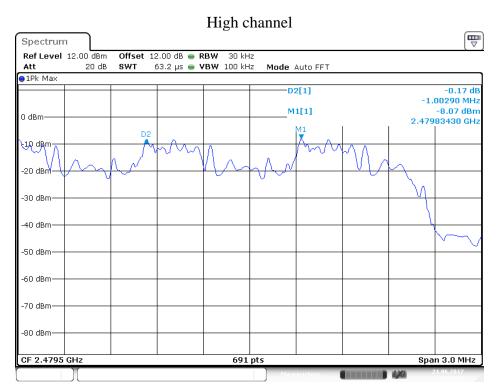


Date: 21.JUN.2017 13:32:36





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Date: 21.JUN.2017 13:33:28

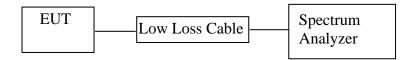


ATC

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# 7. NUMBER OF HOPPING FREQUENCY TEST

### 7.1.Block Diagram of Test Setup



(EUT: LED ceiling lamp)

## 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.

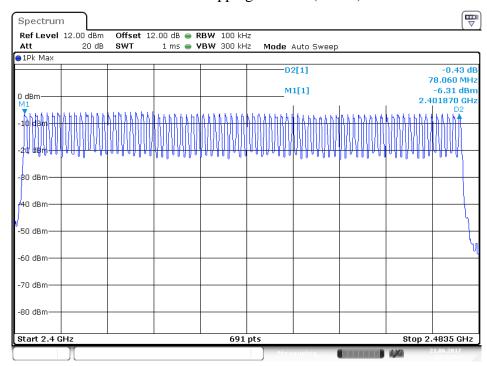


7.6.Test Result

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

The spectrum analyzer plots are attached as below.

## Number of hopping channels(GFSK)



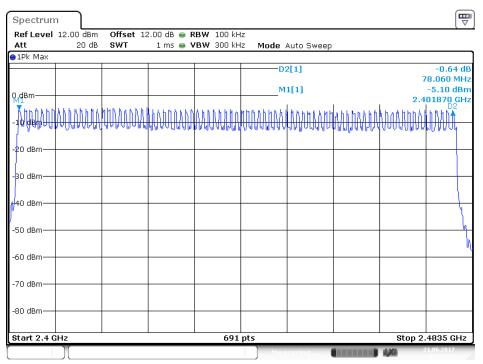
Date: 21.JUN.2017 12:53:54





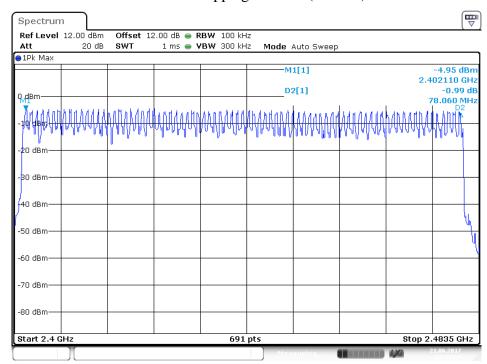
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## Number of hopping channels $(\Pi/4-DQPSK)$



Date: 21.JUN.2017 12:52:22

#### Number of hopping channels(8DPSK)



Date: 21.JUN.2017 12:50:59



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#### 8. DWELL TIME TEST

#### 8.1.Block Diagram of Test Setup



(EUT: LED ceiling lamp)

#### 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.



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

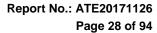
## 8.6.Test Result

#### GFSK Mode

Mode	Channel Frequency	Pulse Time	Dwell Time	Limit
Wiode	(MHz)	(ms)	(ms)	(ms)
	2402	0.406	129.92	400
DH1	2441	0.406	129.92	400
	2480	0.406	129.92	400
A period to	ransmit time = $0.4 \times 79$ =	31.6 Dwell time = $pt$	alse time $\times$ (1600/(2*)	79))×31.6
	2402	1.681	268.96	400
DH3	2441	1.681	268.96	400
	2480	1.681	268.96	400
A period to	ransmit time = $0.4 \times 79 =$	31.6 Dwell time = $pu$	ulse time $\times$ (1600/(4*)	79))×31.6
	2402	2.986	318.51	400
DH5	2441	2. 986	318.51	400
	2480	2. 986	318.51	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)	
	2402	0.406	129.92	400	
DH1	2441	0.406	129.92	400	
	2480	0.406	129.92	400	
A period to	ransmit time = $0.4 \times 79 =$	31.6 Dwell time = $pt$	alse time $\times$ (1600/(2*)	79))×31.6	
	2402	1.667	266.72	400	
DH3	2441	1. 681	268.96	400	
	2480	1. 681	268.96	400	
A period to	ransmit time = $0.4 \times 79 =$	31.6 Dwell time = $pt$	ulse time $\times$ (1600/(4*7)	79))×31.6	
	2402	2.986	318.51	400	
DH5	2441	2.986	318.51	400	
	2480	2.986	318.51	400	
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6*79)) \times 31.6$					



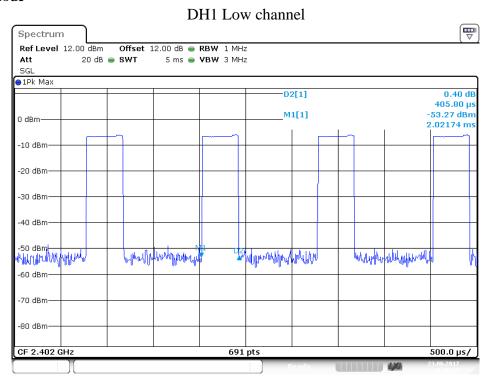


#### 8DPSK Mode

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.406	129.92	400
	2441	0.406	129.92	400
	2480	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	2402	1.681	268.96	400
	2441	1.681	268.96	400
	2480	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	2402	2.986	318.51	400
	2441	2.986	318.51	400
	2480	2.986	318.51	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6*79)) \times 31.6$				

The spectrum analyzer plots are attached as below.

#### **GFSK Mode**

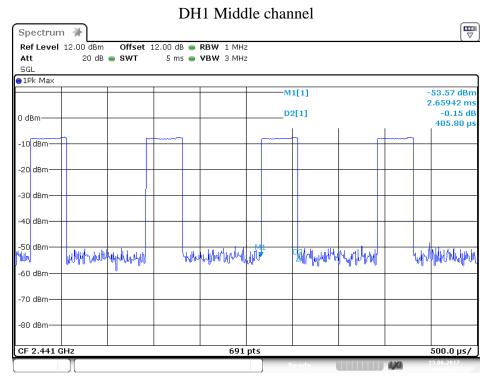


Date: 23.JUN.2017 12:20:25

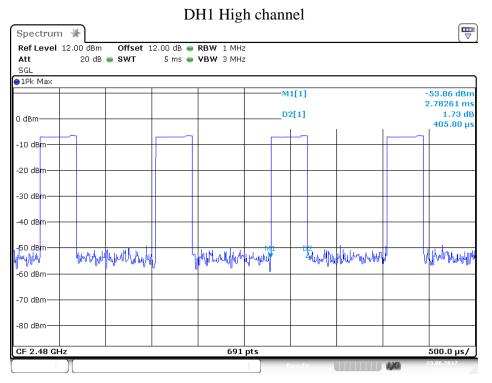




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Date: 23.JUN.2017 12:24:25

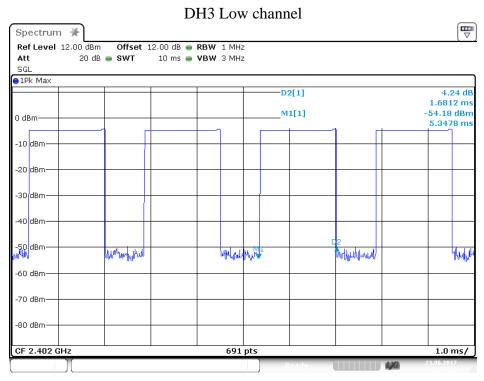


Date: 23.JUN.2017 12:31:58

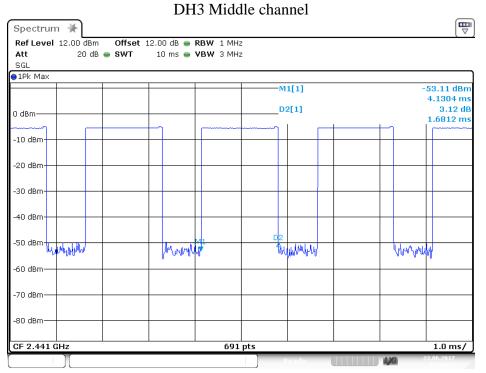




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Date: 23.JUN.2017 12:35:20

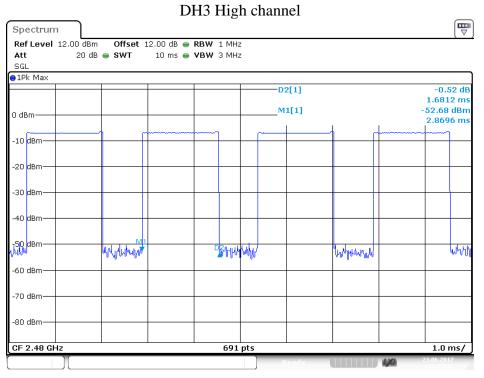


Date: 23.JUN.2017 12:34:34

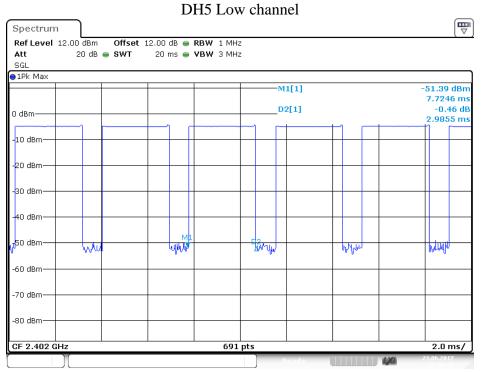




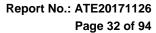
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Date: 23.JUN.2017 12:33:38



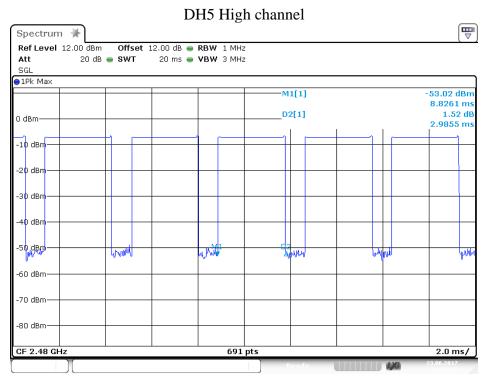
Date: 23.JUN.2017 12:36:46





DH5 Middle channel Spectrum Ref Level 12.00 dBm Offset 12.00 dB 
RBW 1 MHz Att 20 dB 🅌 SWT 20 ms 🎃 **VBW** 3 MHz SGL ●1Pk Max D2[1] 1.11 dE 2.9855 m M1[1] -52.93 dBn 0 dBm-8.6812 m 0 dBr -\$0 dBm MAN HH. -60 dBm -70 dBm--80 dBm-691 pts 2.0 ms/ CF 2.441 GHz

Date: 23.JUN.2017 12:37:34



Date: 23.JUN.2017 12:38:18

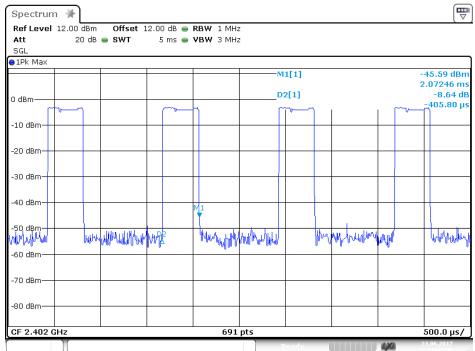




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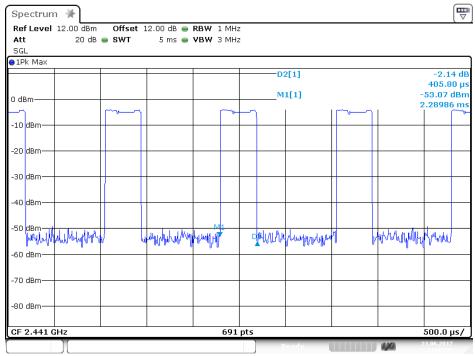
#### $\Pi/4$ -DQPSK





Date: 23.JUN.2017 12:41:46

#### 2DH1 Middle channel

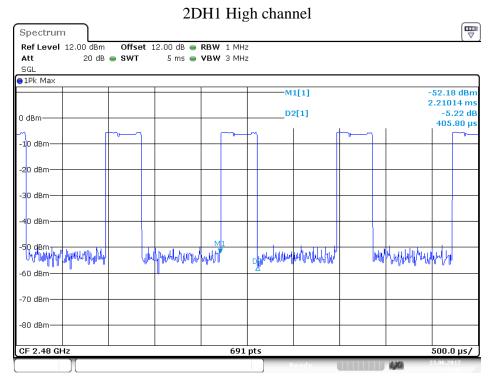


Date: 23.JUN.2017 12:40:47

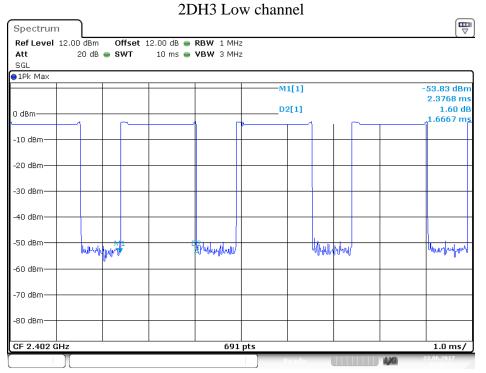




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Date: 23.JUN.2017 12:39:47

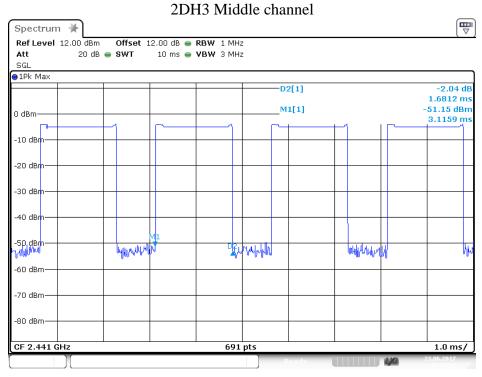


Date: 23.JUN.2017 12:42:51

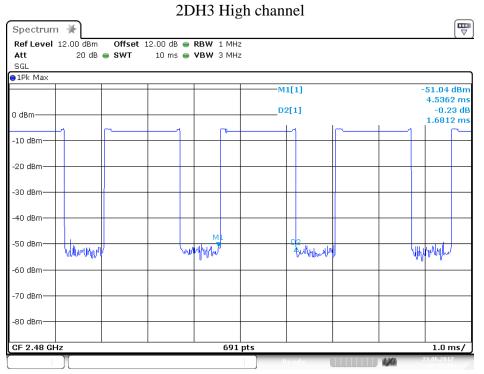




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Date: 23.JUN.2017 12:43:31

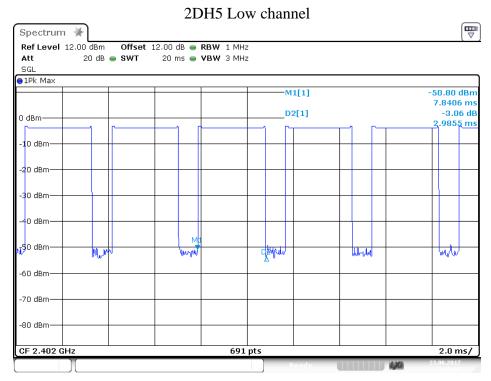


Date: 23.JUN.2017 12:45:09

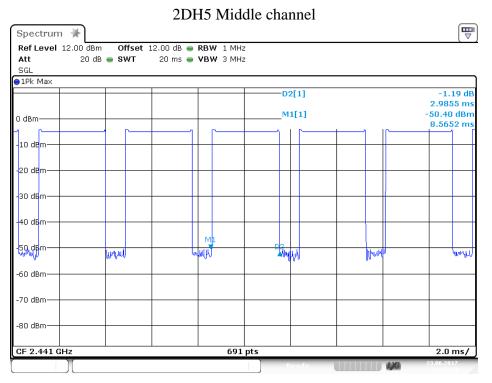




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Date: 23.JUN.2017 12:48:20

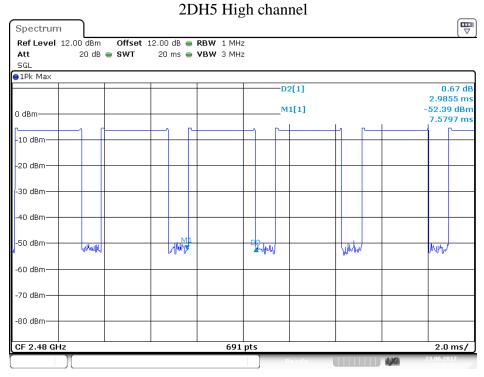


Date: 23.JUN.2017 12:47:30



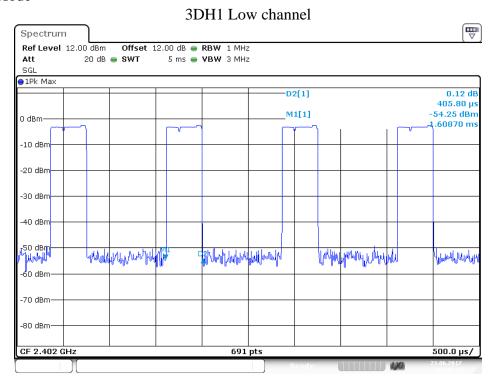


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Date: 23.JUN.2017 12:46:37

#### 8DPSK Mode

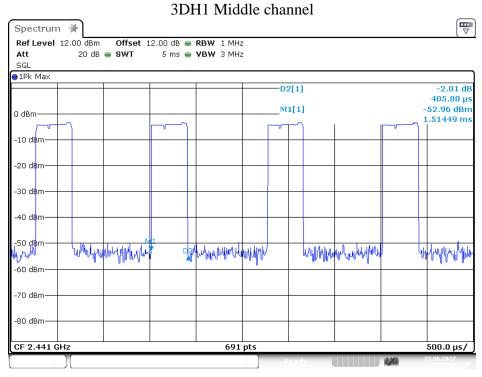


Date: 23.JUN.2017 12:49:36

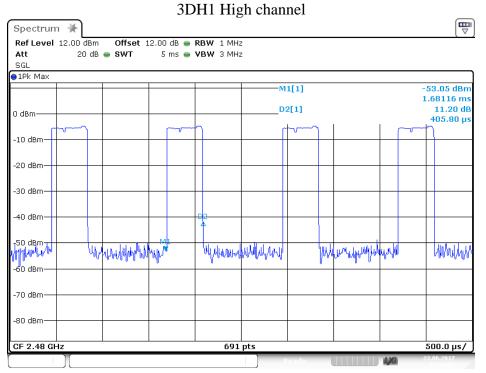




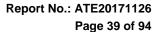
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Date: 23.JUN.2017 12:50:19



Date: 23.JUN.2017 12:51:07



1.0 ms/

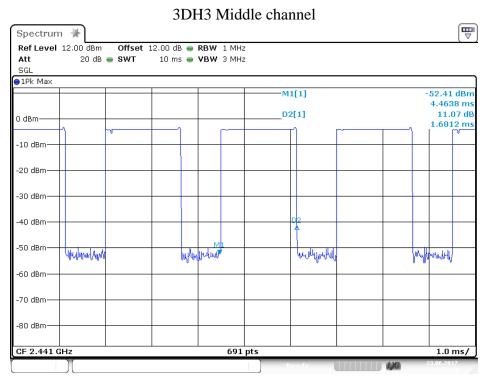


3DH3 Low channel Spectrum Ref Level 12.00 dBm Offset 12.00 dB @ RBW 1 MHz Att 20 dB 🅌 SWT 10 ms 🎃 **VBW** 3 MHz SGL ●1Pk Max 4.35 dB D2[1] 1.6812 m M1[1] -54.58 dBn 0 dBm-3.2609 m -10 dBm -20 dBm -30 dBm 40 dBm -50 dBm Halling Land Who hip hours -60 dBm -70 dBm--80 dBm-

691 pts

Date: 23.JUN.2017 12:53:30

CF 2.402 GHz

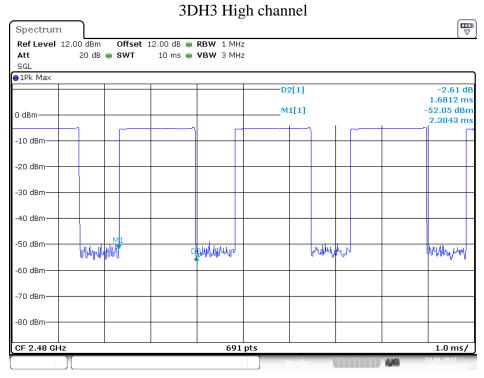


Date: 23.JUN.2017 12:52:41

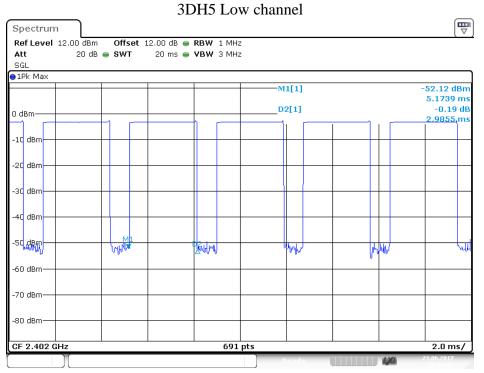




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Date: 23.JUN.2017 12:51:50

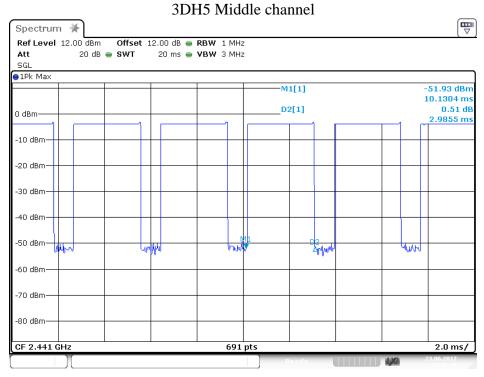


Date: 23.JUN.2017 12:54:42

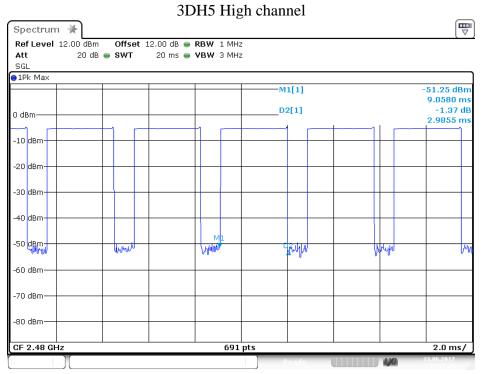




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Date: 23.JUN.2017 12:56:41



Date: 23.JUN.2017 12:57:28



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### 9. MAXIMUM PEAK OUTPUT POWER TEST

### 9.1.Block Diagram of Test Setup



(EUT: LED ceiling lamp)

### 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.



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## 9.6.Test Result

## GFSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	0.37/0.0011	21 / 0.125
Middle	2441	0.23/0.0011	21 / 0.125
High	2480	0.34/0.0011	21 / 0.125

## ∏/4-DQPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	-0.85/0.0008	21 / 0.125
Middle	2441	-0.87/0.0008	21 / 0.125
High	2480	-0.81/0.0008	21 / 0.125

## 8DPSK Mode

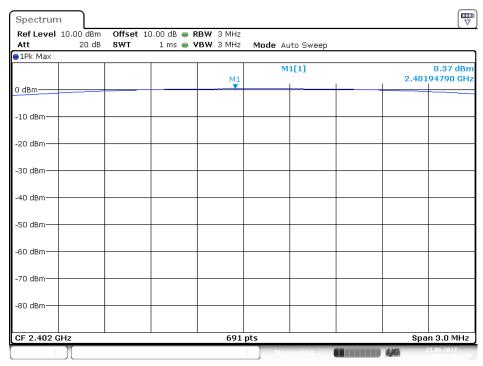
Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	-0.34/0.0009	21 / 0.125
Middle	2441	-0.29/0.0009	21 / 0.125
High	2480	-0.45/0.0009	21 / 0.125

The spectrum analyzer plots are attached as below.



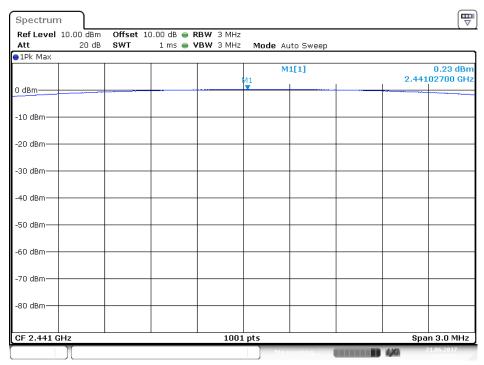
**GFSK Mode** 

#### Low channel

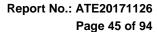


Date: 21.JUN.2017 08:57:42

#### Middle channel

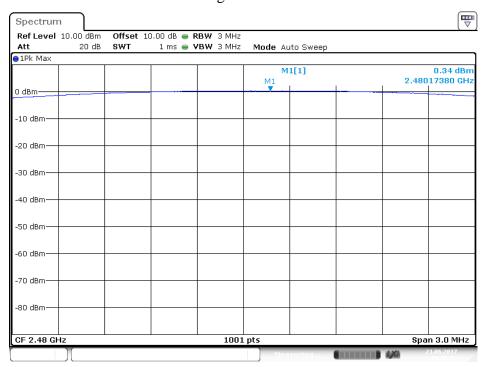


Date: 21.JUN.2017 08:58:57





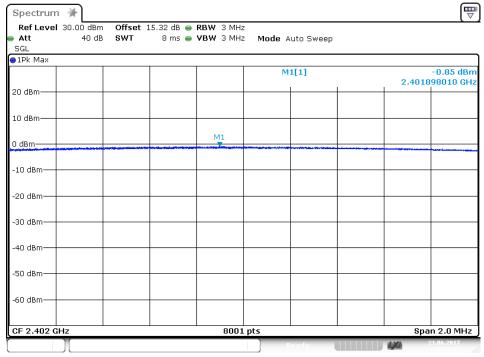
High channel



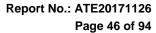
Date: 21.JUN.2017 09:00:51

### ∏/4-DQPSK Mode

### Low channel

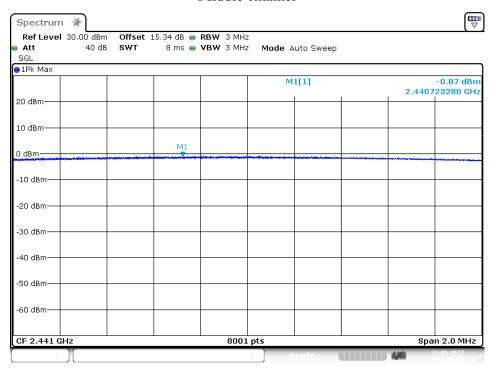


Date: 21.JUN.2017 10:22:37



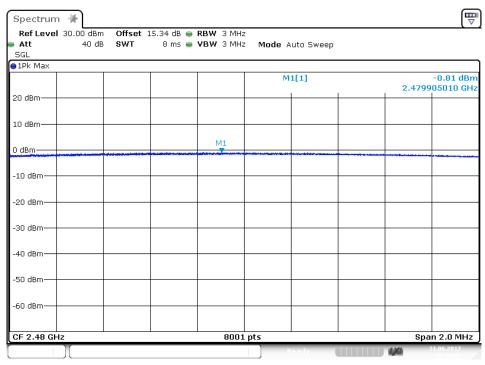


### Middle channel

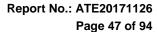


Date: 21.JUN.2017 10:28:54

## High channel



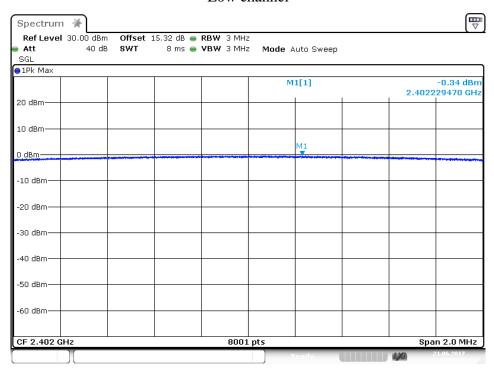
Date: 21.JUN.2017 10:30:34





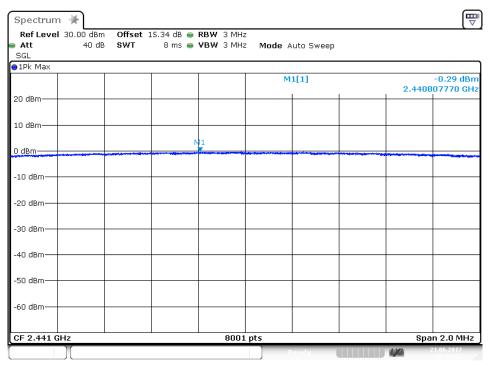
8DPSK Mode

#### Low channel



Date: 21.JUN.2017 10:57:27

#### Middle channel



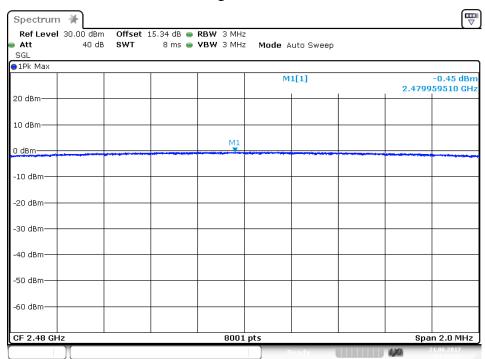
Date: 21.JUN.2017 11:01:52



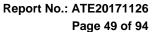


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# High channel



Date: 21.JUN.2017 11:04:21

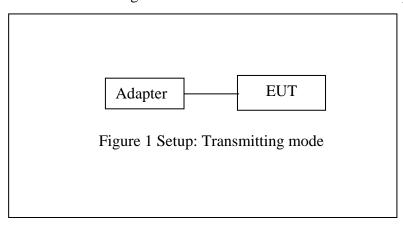




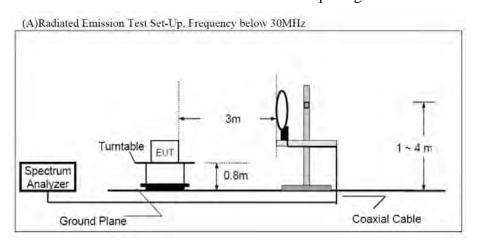
10. RADIATED EMISSION TEST

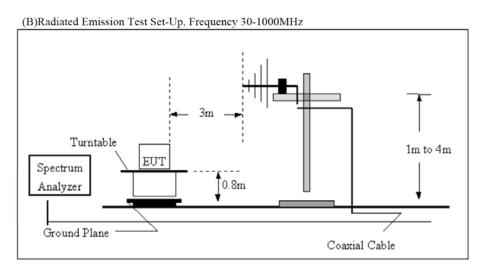
## 10.1.Block Diagram of Test Setup

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



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

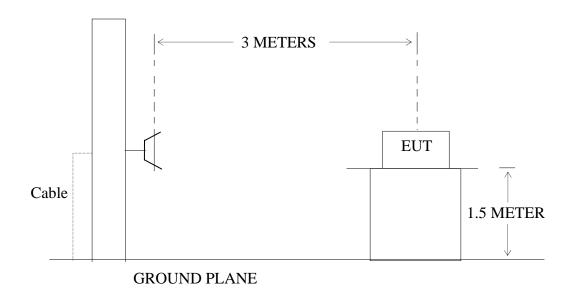




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(C) Radiated Emission Test Set-Up, Frequency above 1GHz



### 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).



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### 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:

	ntted in any of the freque		
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	$\binom{2}{2}$
13.36-13.41			

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

(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 Section15.209 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.

<sup>&</sup>lt;sup>2</sup>Above 38.6



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#### 10.5.Test Procedure

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

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

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

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

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.



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#### **Below 1GHz**



## ACCURATE TECHNOLOGY CO., LTD.

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Job No.: NTC #355

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

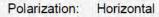
Temp.( C)/Hum.(%) 25 C / 55 %

EUT: LED ceiling lamp
Mode: TX 2402MHz(GFSK)

Model: 54620311

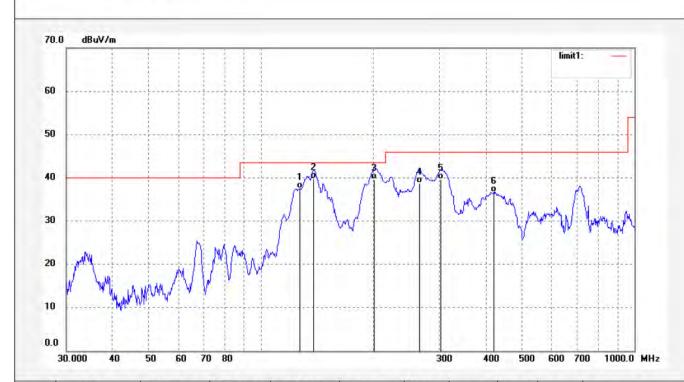
Manufacturer: WUHU 3E LIGHTING

Note: Report NO.:ATE20171126



Power Source: AC 120V/60Hz

Date: 2017/06/19 Time: 20:12:24 Engineer Signature: 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	126.6931	59.62	-22.08	37.54	43.50	-5.96	QP			
2	138.3251	62.02	-22.28	39.74	43.50	-3.76	QP			
3	200.7473	58.19	-18.63	39.56	43.50	-3.94	QP			
4	265.9035	56.02	-17.21	38.81	46.00	-7.19	QP			
5	302.8193	55.32	-15.63	39.69	46.00	-6.31	QP			
6	419.8509	49.35	-12.67	36.68	46.00	-9.32	QP			



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Job No.: NTC #354

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: LED ceiling lamp
Mode: TX 2402MHz(GFSK)

Model: 54620311

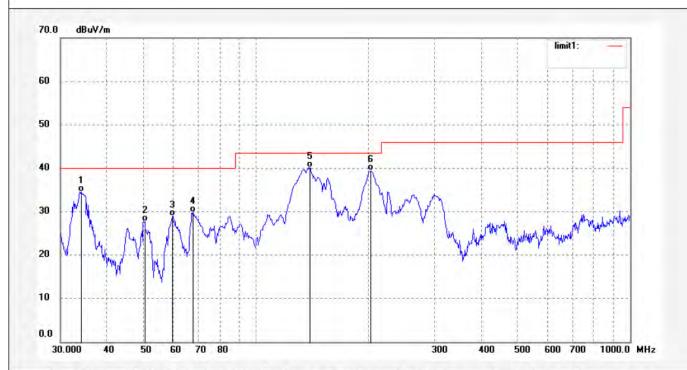
Manufacturer: WUHU 3E LIGHTING

Note: Report NO.:ATE20171126

Polarization: Vertical

Power Source: AC 120V/60Hz

Date: 2017/06/19 Time: 20:10:51 Engineer Signature: 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	34.0451	50.31	-15.72	34.59	40.00	-5.41	QP			
2	50.4613	48.65	-20.88	27.77	40.00	-12.23	QP			
3	59.7314	50.83	-21.79	29.04	40.00	-10.96	QP			
4	67.7856	51.86	-22.00	29.86	40.00	-10.14	QP			
5	139.3006	62.45	-22.30	40.15	43.50	-3.35	QP			
6	202.8745	57.98	-18.56	39.42	43.50	-4.08	QP			



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Job No.: NTC #356

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: LED ceiling lamp

Mode: TX 2441MHz(GFSK)

Model: 54620311

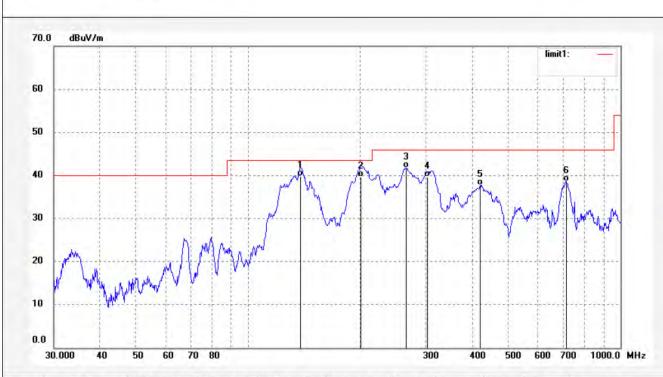
Manufacturer: WUHU 3E LIGHTING

Note: Report NO.:ATE20171126

Polarization: Horizontal

Power Source: AC 120V/60Hz

Date: 2017/06/19 Time: 20:14:24 Engineer Signature: 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	138.3251	62.02	-22.28	39.74	43.50	-3.76	QP			
2	200.7473	58.19	-18.63	39.56	43.50	-3.94	QP	LE		
3	265.9035	59.02	-17.21	41.81	46.00	-4.19	QP			
4	302.8193	55.32	-15.63	39.69	46.00	-6.31	QP			
5	419.8509	50.35	-12.67	37.68	46.00	-8.32	QP			
6	716.2038	44.48	-5.96	38.52	46.00	-7.48	QP			



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Job No.: NTC #357

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: LED ceiling lamp
Mode: TX 2441MHz(GFSK)

Model: 54620311

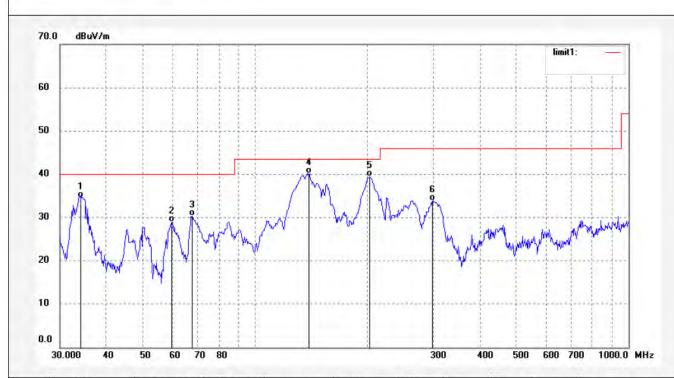
Manufacturer: WUHU 3E LIGHTING

Note: Report NO.:ATE20171126



Power Source: AC 120V/60Hz

Date: 2017/06/19 Time: 20:16:51 Engineer Signature: 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	34.0451	50.31	-15.72	34.59	40.00	-5.41	QP			
2	59.7314	50.83	-21.79	29.04	40.00	-10.96	QP			
3	67.7856	52.36	-22.00	30.36	40.00	-9.64	QP			
4	139.3006	62.45	-22.30	40.15	43.50	-3.35	QP			
5	202.8745	57.98	-18.56	39.42	43.50	-4.08	QP			
6	298.5932	49.64	-15.78	33.86	46.00	-12.14	QP		1 - 1	



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Job No.: NTC #359

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: LED ceiling lamp

Mode: TX 2480MHz(GFSK)

Model: 54620311

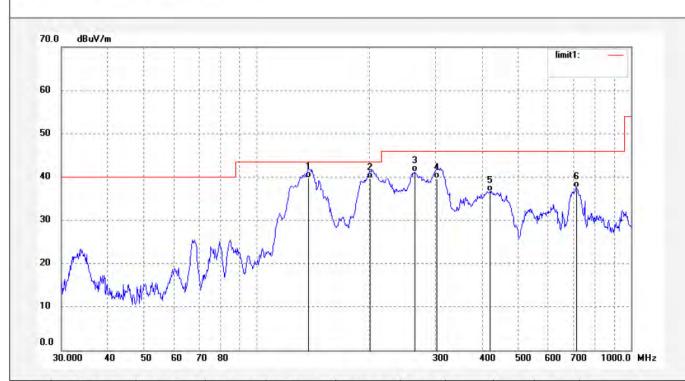
Manufacturer: WUHU 3E LIGHTING

Note: Report NO.:ATE20171126

Polarization: Horizontal

Power Source: AC 120V/60Hz

Date: 2017/06/19 Time: 20:20:24 Engineer Signature: 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	138.3251	62.02	-22.28	39.74	43.50	-3.76	QP		1	
2	200.7473	58.19	-18.63	39.56	43.50	-3.94	QP			
3	264.9707	58.42	-17.25	41.17	46.00	-4.83	QP			
4	302.8193	55.32	-15.63	39.69	46.00	-6.31	QP			
5	419.8509	49.35	-12.67	36.68	46.00	-9.32	QP			
6	716.2038	43.48	-5.96	37.52	46.00	-8.48	QP			



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Job No.: NTC #358

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: LED ceiling lamp

Mode: TX 2480MHz(GFSK)

Model: 54620311

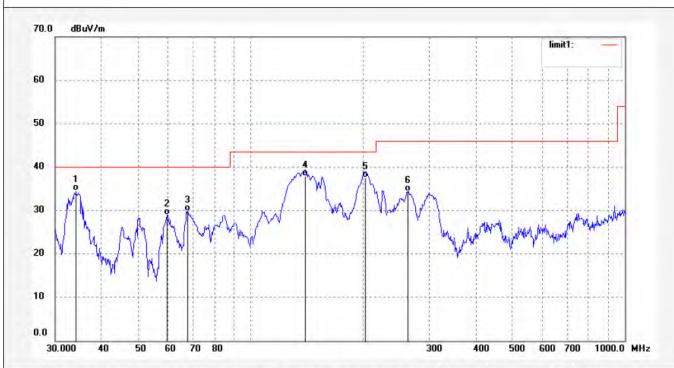
Manufacturer: WUHU 3E LIGHTING

Note: Report NO.:ATE20171126

Polarization: Vertical

Power Source: AC 120V/60Hz

Date: 2017/06/19 Time: 20:18:33 Engineer Signature: 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	34.0451	50.31	-15.72	34.59	40.00	-5.41	QP			
2	59.7314	50.83	-21.79	29.04	40.00	-10.96	QP			
3	67.7856	51.86	-22.00	29.86	40.00	-10.14	QP			
4	139.3006	60.24	-22.30	37.94	43.50	-5.56	QP			
5	202.8745	56.16	-18.56	37.60	43.50	-5.90	QP			
6	263.1154	51.70	-17.35	34.35	46.00	-11.65	QP			



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#### **Above 1GHz**



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

Job No.: DING1 #836

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: LED ceiling lamp Mode: TX 2402MHz(GFSK)

Model: 54620311

Note:

Manufacturer: WUHU 3E LIGHTING

Report NO.:ATE20171126

Polarization: Horizontal

Power Source: AC 120V/60Hz

Date: 17/06/20/ Time: 9/19/52

Engineer Signature: DING

Distance: 3m

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	000.000				Limit	Margin	Detector	Height	Degree	Remark
1	Freq.	Reading	Factor	Result						
	Freq. (MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	11110	(cm)	(deg.)	DARK AND III
1	Freq. (MHz) 2402.719	(dBuV/m) 94.23	(dB) -6.37	(dBuV/m) 87.86	(dBuV/m)	(dB)	peak	(CIII)	(deg.)	[]
1	Freq. (MHz)	(dBuV/m)	(dB)	(dBuV/m)		(dB) -25.35 -13.49	11110	(cm)	(deg.)	



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Job No.: DING1 #835

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: LED ceiling lamp

Mode: TX 2402MHz(GFSK)

Model: 54620311

Manufacturer: WUHU 3E LIGHTING

Note: Report NO.:ATE20171126

Polarization: Vertical

Power Source: AC 120V/60Hz

Date: 17/06/20/ Time: 9/17/55

Engineer Signature: DING

Distance: 3m

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20.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit	Margin	Detector	Height		Ten and



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Job No.: DING1 #837

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: LED ceiling lamp

Mode: TX 2441MHz(GFSK)

Model: 54620311

Manufacturer: WUHU 3E LIGHTING

Note: Report NO.:ATE20171126

Polarization: Horizontal

Power Source: AC 120V/60Hz

Date: 17/06/20/ Time: 9/24/28

Engineer Signature: DING

Distance: 3m

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20.0		20	00	3000	5000	6000	7000 8000	9000		18000.0 MHz
20.0		Reading (dBuV/m)	Factor (dB)	3000 Result (dBuV/m)	5000 Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	18000.0 MHz Remark
20.0	000.000 Freq.	Reading	Factor	Result	Limit	Margin		Height		
20.0	000.000 Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit	Margin	Detector	Height		



ACCURATE TECH

Report No.: ATE20171126

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



ACCURATE TECHNOLOGY CO., LTD.

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

Job No.: DING1 #838 Polarization

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: LED ceiling lamp

Mode: TX 2441MHz(GFSK)

Model: 54620311

Manufacturer: WUHU 3E LIGHTING

Note: Report NO.:ATE20171126

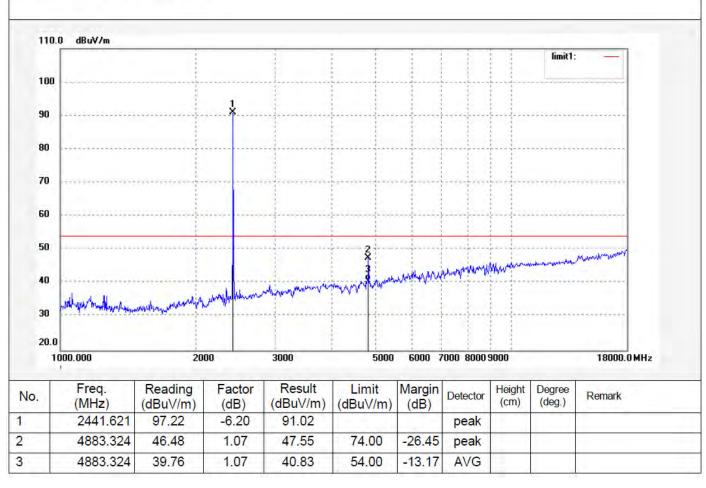
Polarization: Vertical

Power Source: AC 120V/60Hz

Date: 17/06/20/ Time: 9/27/28

Engineer Signature: DING

Distance: 3m





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

Horizontal

Power Source: AC 120V/60Hz

Job No.: DING1 #840

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: LED ceiling lamp Mode:

Manufacturer: WUHU 3E LIGHTING

Model: 54620311

Engineer Signature: DING TX 2480MHz(GFSK) Distance:

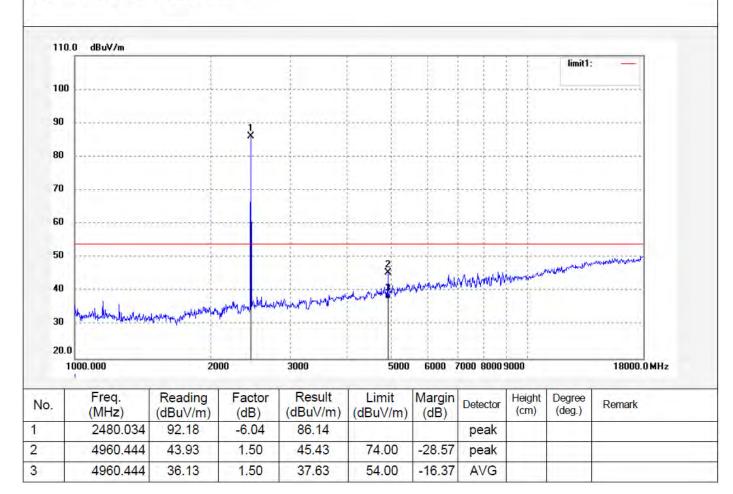
3m

Polarization:

Date: 17/06/20/

Time: 9/36/39

Note: Report NO.:ATE20171126





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

Job No.: DING1 #839

Standard: FCC Class B 3M Radiated

Test item: Radiation Test

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

EUT: LED ceiling lamp Mode:

Model: 54620311

Manufacturer: WUHU 3E LIGHTING

Note:

Engineer Signature: DING TX 2480MHz(GFSK)

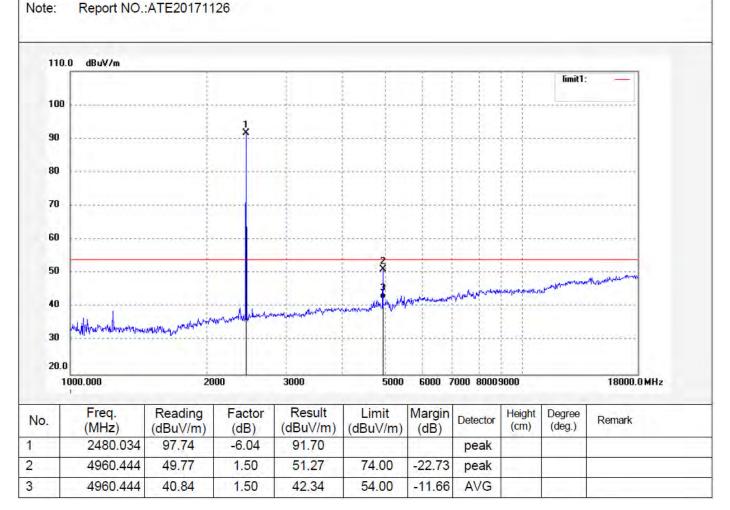
Distance: 3m

Date: 17/06/20/

Time: 9/35/24

Polarization: Vertical

Power Source: AC 120V/60Hz

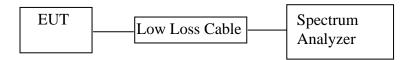




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### 11.BAND EDGE COMPLIANCE TEST

### 11.1.Block Diagram of Test Setup



(EUT: LED ceiling lamp)

### 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.





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### 11.5.Test Procedure

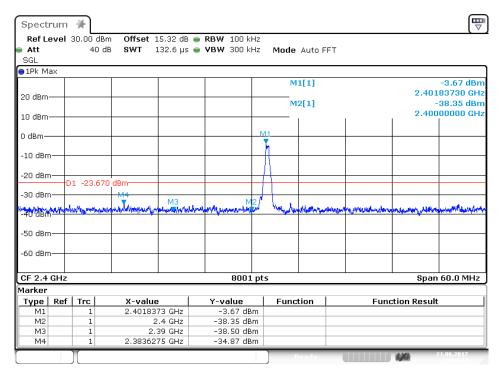
- 11.5.1.The transmitter output was connected to the spectrum analyzer via a low loss cable.
- 11.5.2.Set RBW of spectrum analyzer to 100 kHz and VBW to 300 kHz with convenient frequency span including 100 kHz bandwidth from band edge.
- 11.5.3. The band edges was measured and recorded.

## 11.6.Test Result

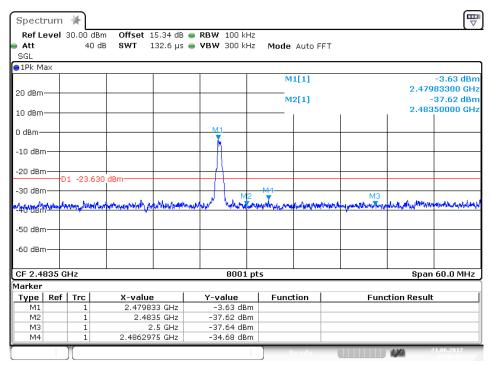
Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
	GFSK	
2400.00	42.02	> 20dBc
2483.50	41.25	> 20dBc
	∏/4-DQPSK Mode	
2400.00	40.87	> 20dBc
2483.50	39.89	> 20dBc
	8DPSK	
2400.00	41.07	> 20dBc
2483.50	39.60	> 20dBc



### GFSK



Date: 21.JUN.2017 10:04:44

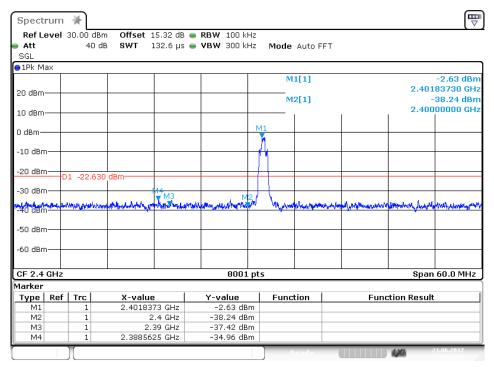


Date: 21.JUN.2017 10:13:07

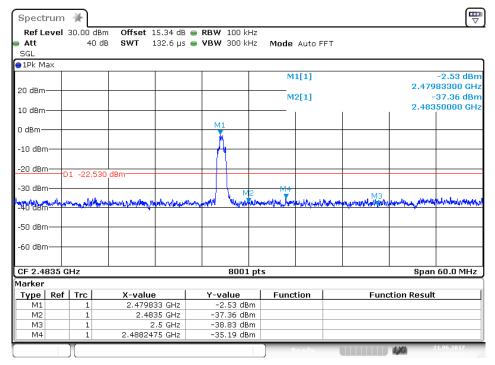


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### ∏/4-DQPSK Mode



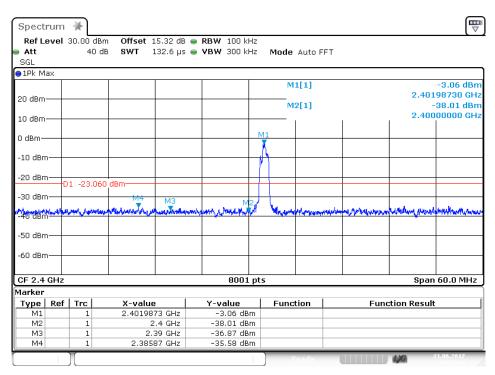
Date: 21.JUN.2017 10:22:54



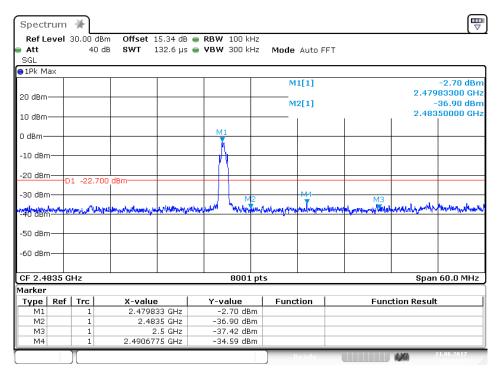
Date: 21.JUN.2017 10:30:51



#### 8DPSK



Date: 21.JUN.2017 10:57:44



Date: 21.JUN.2017 11:04:38



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#### **Radiated Band Edge Result**

Note:

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

Result = Reading + Corrected Factor

3. Display the measurement of peak values.

#### Test Procedure:

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

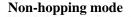
Let the EUT work in TX (Hopping off, Hopping on) modes measure it. We select 2402MHz, 2480MHz TX frequency to transmit(Hopping off mode). We select 2402-2480MHz TX frequency to transmit(Hopping on mode).

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

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



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## ACCURATE TECHNOLOGY CO., LTD.

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Job No.: DING1 #864

Standard: FCC PK

Test item: Radiation Test

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

EUT: LED ceiling lamp

Mode: TX 2402MHz(GFSK)

Model: 54620311

Manufacturer: WUHU 3E LIGHTING

Note: Report NO.:ATE20171126

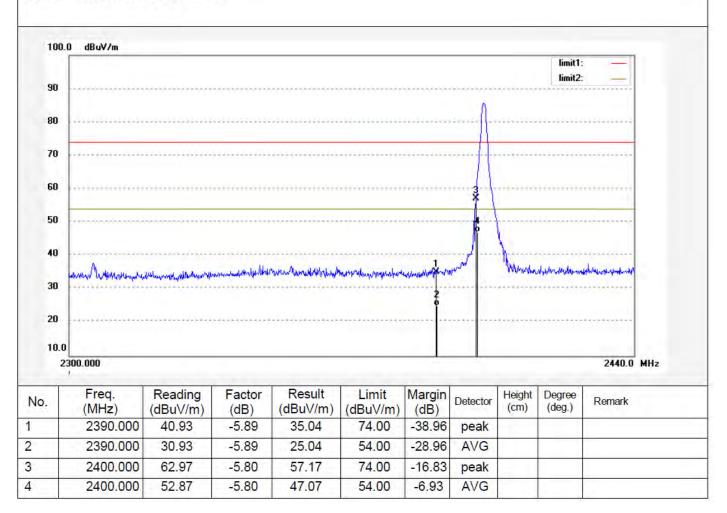
Polarization: Horizontal

Power Source: AC 120V/60Hz

Date: 17/06/20/ Time: 13/42/04

Engineer Signature: DING

Distance: 3m





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### ACCURATE TECHNOLOGY CO., LTD.

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

Job No.: DING1 #863

Standard: FCC PK

Test item: Radiation Test

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

EUT: LED ceiling lamp Mode: TX 2402MHz(GFSK)

Model:

Manufacturer: WUHU 3E LIGHTING

Note:

54620311

Report NO.:ATE20171126

Time: 13/39/33 Engineer Signature: DING

Power Source: AC 120V/60Hz

Polarization: Vertical

Distance: 3m

Date: 17/06/20/

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20 10.0 2		Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)		<b>4</b> Hz
20 10.0 2	300.000 Freq.					Margin (dB)	Detector	Height	Degree	2440.0 M	ИНz
20 10.0	300.000 Freq. (MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	peak	Height	Degree	2440.0 M	МНz
20 10.0 2	300.000 Freq. (MHz) 2390.000	(dBuV/m) 39.87	(dB) -5.89	(dBuV/m) 33.98	(dBuV/m) 74.00	(dB) -40.02	peak AVG	Height	Degree	2440.0 M	ИНz



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# 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.: DING1 #861

Standard: FCC PK

Test item: Radiation Test

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

EUT: LED ceiling lamp

Mode: TX 2480MHz(GFSK)

Model: 54620311

Manufacturer: WUHU 3E LIGHTING

Note: Report NO.:ATE20171126

Polarization: Horizontal

Power Source: AC 120V/60Hz

Date: 17/06/20/ Time: 13/33/55

Engineer Signature: DING

Distance: 3m

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30 20 10.	0	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)		Height (cm)	Degree (deg.)	2600.0 MHz
30 20 10.	0 2440.000 Freq.	Reading	Factor			Margin		Height (cm)	Degree (deg.)	
30 20 10.	0 2440.000 Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	(dBuV/m)	(dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	
30 20 10.	Freq. (MHz) 2483.500	Reading (dBuV/m) 53.42	Factor (dB) -5.51	(dBu√/m) 47.91	(dBuV/m) 74.00	Margin (dB) -26.09	Detector peak	Height (cm)	Degree (deg.)	



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## 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.: DING1 #862 Standard: FCC PK

Test item: Radiation Test

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

EUT: LED ceiling lamp

Mode: TX 2480MHz(GFSK)

Model: 54620311

Note:

Manufacturer: WUHU 3E LIGHTING

Report NO.:ATE20171126

4620311

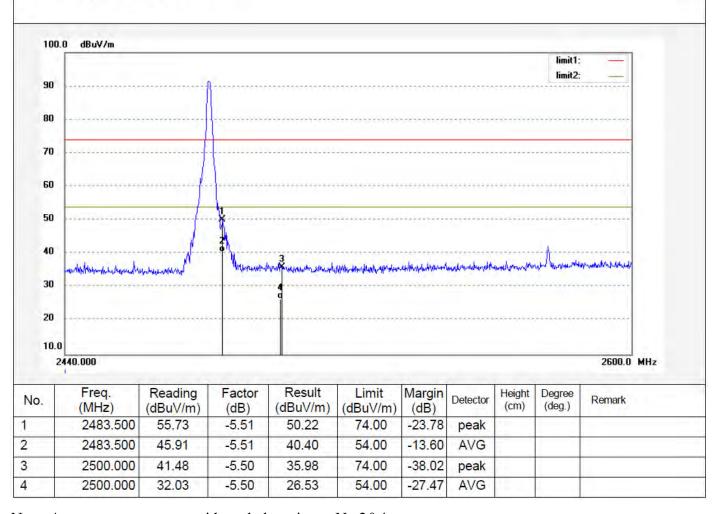
Polarization: Vertical

Power Source: AC 120V/60Hz

Date: 17/06/20/ Time: 13/36/27

Engineer Signature: DING

Distance: 3m





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#### 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.: DING1 #857 Standard: FCC PK

Test item: Radiation Test

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

EUT: LED ceiling lamp

Mode: TX 2402MHz(pi/4DQPSK)

Model: 54620311

Manufacturer: WUHU 3E LIGHTING

Note: Report NO.:ATE20171126

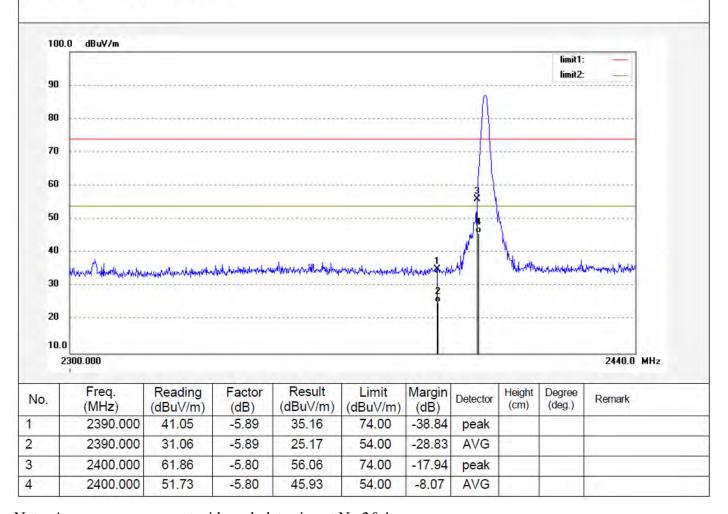
Polarization: Horizontal

Power Source: AC 120V/60Hz

Date: 17/06/20/ Time: 13/23/37

Engineer Signature: DING

Distance: 3m





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## 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.: DING1 #858 Standard: FCC PK

Test item: Radiation Test

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

EUT: LED ceiling lamp

Mode: TX 2402MHz(pi/4DQPSK)

Model: 54620311

Manufacturer: WUHU 3E LIGHTING

Note: Report NO.:ATE20171126

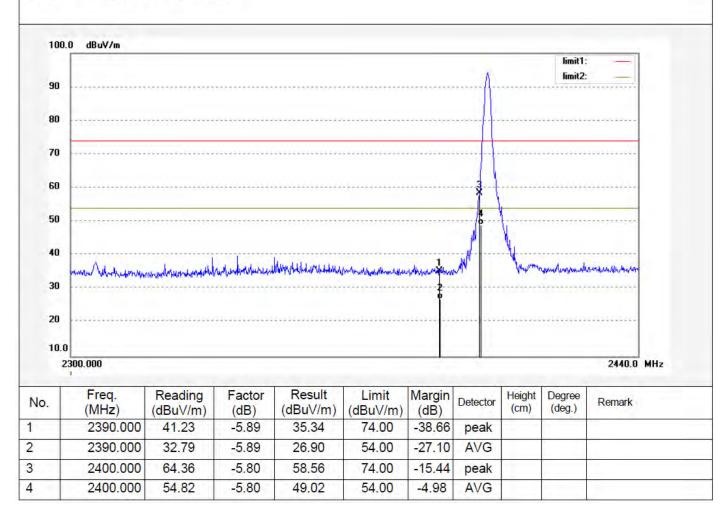
Polarization: Vertical

Power Source: AC 120V/60Hz

Date: 17/06/20/ Time: 13/25/22

Engineer Signature: DING

Distance: 3m





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#### 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.: DING1 #860 Standard: FCC PK

Test item: Radiation Test

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

EUT: LED ceiling lamp

Mode: TX 2480MHz(pi/4DQPSK)

Model: 54620311

Manufacturer: WUHU 3E LIGHTING

Note: Report NO.:ATE20171126

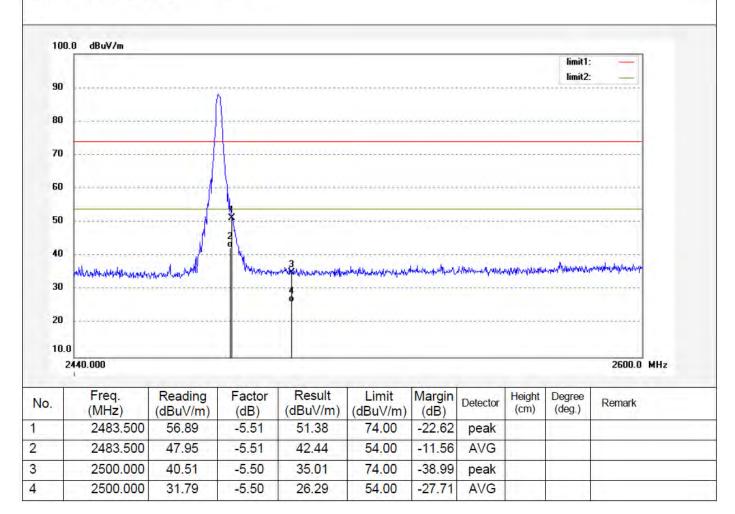
Polarization: Horizontal

Power Source: AC 120V/60Hz

Date: 17/06/20/ Time: 13/30/35

Engineer Signature: DING

Distance: 3m





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#### 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.: DING1 #859

Standard: FCC PK

Test item: Radiation Test

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

EUT: LED ceiling lamp

Mode: TX 2480MHz(pi/4DQPSK)

Model: 54620311

Note:

Manufacturer: WUHU 3E LIGHTING

Report NO.:ATE20171126

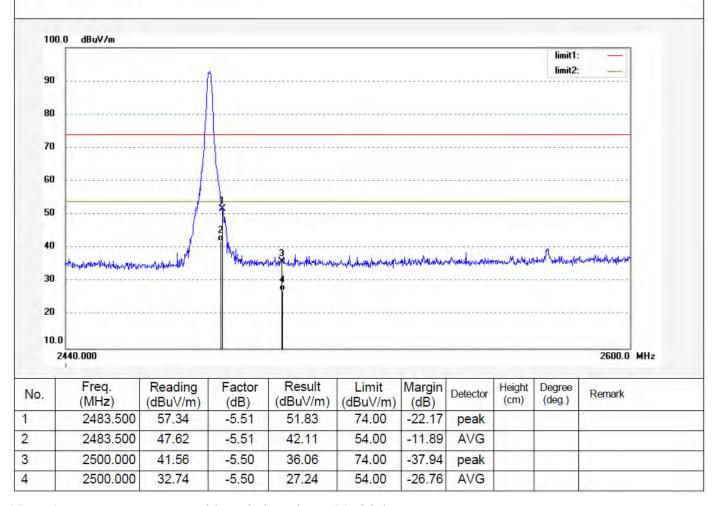
Polarization: Vertical

Power Source: AC 120V/60Hz

Date: 17/06/20/ Time: 13/28/49

Engineer Signature: DING

Distance: 3m





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# 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.: DING1 #856 Standard: FCC PK

Test item: Radiation Test

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

EUT: LED ceiling lamp Mode: TX 2402MHz(8DPSK)

Model: 54620311

Manufacturer: WUHU 3E LIGHTING

Report NO.:ATE20171126

Note:

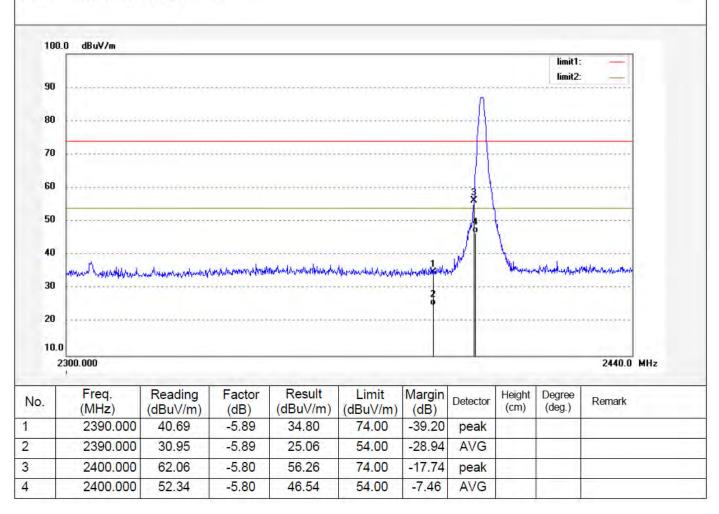
Polarization: Horizontal

Power Source: AC 120V/60Hz

Date: 17/06/20/ Time: 13/19/56

Engineer Signature: DING

Distance: 3m





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## 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.: DING1 #855

Standard: FCC PK

Test item: Radiation Test

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

EUT: LED ceiling lamp

Mode: TX 2402MHz(8DPSK)

Model: 54620311

Manufacturer: WUHU 3E LIGHTING

Note: Report NO.:ATE20171126

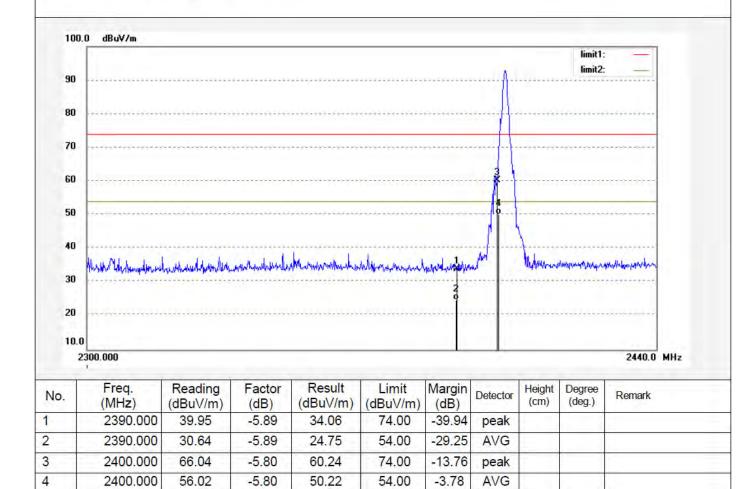
Polarization: Vertical

Power Source: AC 120V/60Hz

Date: 17/06/20/ Time: 13/17/10

Engineer Signature: DING

Distance: 3m





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## 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.: DING1 #853 Standard: FCC PK

Test item: Radiation Test

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

EUT: LED ceiling lamp Mode: TX 2480MHz(8DPSK)

Model: 54620311

Manufacturer: WUHU 3E LIGHTING

Report NO.:ATE20171126

Note:

Polarization: Horizontal

Power Source: AC 120V/60Hz

Date: 17/06/20/ Time: 13/12/12

Engineer Signature: DING

Distance: 3m

100.	.0 dBuV/m									
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30 20 10.0 2	1	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin	Detector	Height (cm)	Degree (deg.)	
30 20 10.0 2	) 440.000 Freq.	Reading	Factor	Result	Limit	Margin	~~~~~	Height	Degree	2600.0 MHz
30 20 10.0 2	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height	Degree	2600.0 MHz



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## 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.: DING1 #854

Standard: FCC PK

Test item: Radiation Test

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

EUT: LED ceiling lamp

Mode: TX 2480MHz(8DPSK)

Model: 54620311

Manufacturer: WUHU 3E LIGHTING

Note: Report NO.:ATE20171126

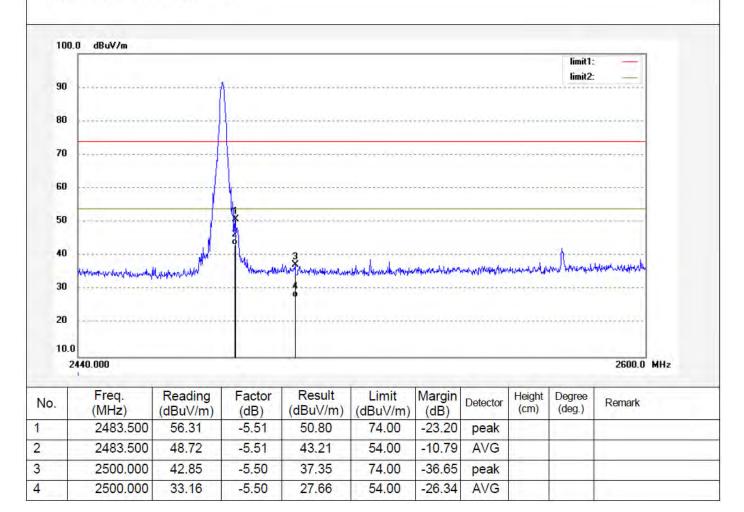
Polarization: Vertical

Power Source: AC 120V/60Hz

Date: 17/06/20/ Time: 13/14/21

Engineer Signature: DING

Distance: 3m





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# 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.: DING1 #865

Standard: FCC PK

Test item: Radiation Test

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

EUT: LED ceiling lamp Mode: HOPPING(GFSK)

Model: 54620311

Manufacturer: WUHU 3E LIGHTING

Note: Report NO.:ATE20171126

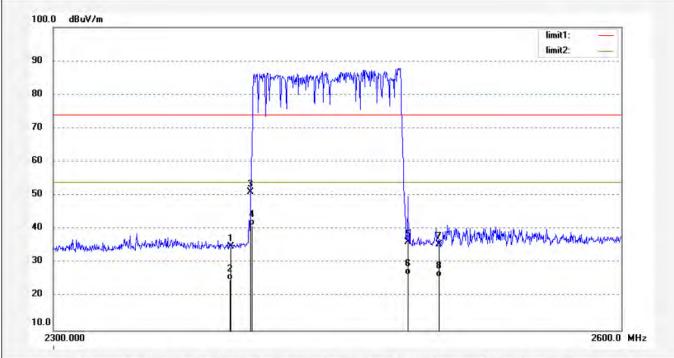
Polarization: Horizontal

Power Source: AC 120V/60Hz

Date: 17/06/20/ Time: 13/48/30

Engineer Signature: DING

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	40.83	-5.89	34.94	74.00	-39.06	peak				
2	2390.000	30.85	-5.89	24.96	54.00	-29.04	AVG				
3	2400.000	56.88	-5.80	51.08	74.00	-22.92	peak				
4	2400.000	46.91	-5.80	41.11	54.00	-12.89	AVG				
5	2483.500	41.74	-5.51	36.23	74.00	-37.77	peak				100
6	2483.500	32.03	-5.51	26.52	54.00	-27.48	AVG				
7	2500.000	40.99	-5.50	35.49	74.00	-38.51	peak				
8	2500.000	31.42	-5.50	25.92	54.00	-28.08	AVG				



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# 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.: DING1 #866

Standard: FCC PK

Test item: Radiation Test

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

EUT: LED ceiling lamp Mode: HOPPING(GFSK)

Model: 54620311

Manufacturer: WUHU 3E LIGHTING

Note: Report NO.:ATE20171126

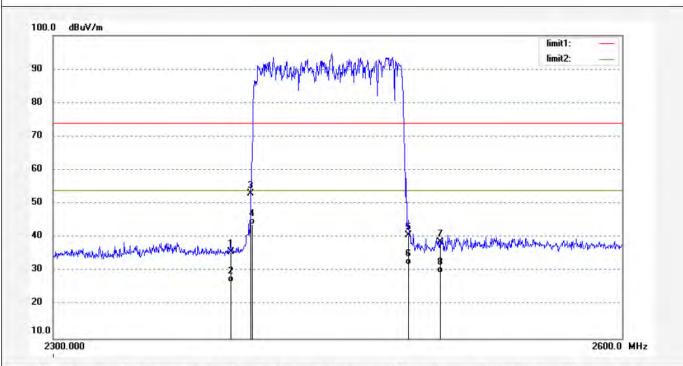
Polarization: Vertical

Power Source: AC 120V/60Hz

Date: 17/06/20/ Time: 13/51/54

Engineer Signature: DING

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	41.58	-5.89	35.69	74.00	-38.31	peak				
2	2390.000	32.75	-5.89	26.86	54.00	-27.14	AVG				
3	2400.000	58.85	-5.80	53.05	74.00	-20.95	peak				
4	2400.000	49.61	-5.80	43.81	54.00	-10.19	AVG				
5	2483.500	46.24	-5.51	40.73	74.00	-33.27	peak				
6	2483.500	37.43	-5.51	31.92	54.00	-22.08	AVG	4			
7	2500.000	44.27	-5.50	38.77	74.00	-35.23	peak				
8	2500.000	34.86	-5.50	29.36	54.00	-24.64	AVG	1			



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## 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.: DING1 #868 Standard: FCC PK

Test item: Radiation Test

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

EUT: LED ceiling lamp

Mode: HOPPING(pi/4DQPSK)

Model: 54620311

Manufacturer: WUHU 3E LIGHTING

Note: Report NO.:ATE20171126

Polarization: Horizontal

Power Source: AC 120V/60Hz

Date: 17/06/20/ Time: 14/06/08

Engineer Signature: DING

Distance: 3m

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30			
20		*******************	

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	41.49	-5.89	35.60	74.00	-38.40	peak			
2	2390.000	32.46	-5.89	26.57	54.00	-27.43	AVG			
3	2400.000	56.27	-5.80	50.47	74.00	-23.53	peak			
4	2400.000	48.17	-5.80	42.37	54.00	-11.63	AVG	11		
5	2483.500	49.96	-5.51	44.45	74.00	-29.55	peak			
6	2483.500	40.22	-5.51	34.71	54.00	-19.29	AVG			
7	2500.000	43.30	-5.50	37.80	74.00	-36.20	peak			
8	2500.000	34.64	-5.50	29.14	54.00	-24.86	AVG			



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## 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.: DING1 #867 Standard: FCC PK

Test item: Radiation Test

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

EUT: LED ceiling lamp Mode: HOPPING(pi/4DQPSK)

54620311 Model:

Manufacturer: WUHU 3E LIGHTING

Note: Report NO.:ATE20171126

Vertical Polarization:

Power Source: AC 120V/60Hz

Date: 17/06/20/ Time: 13/56/24

Engineer Signature: DING

3m Distance:

peak

AVG

peak

AVG

peak

AVG

peak

AVG

-28.64

-15.86

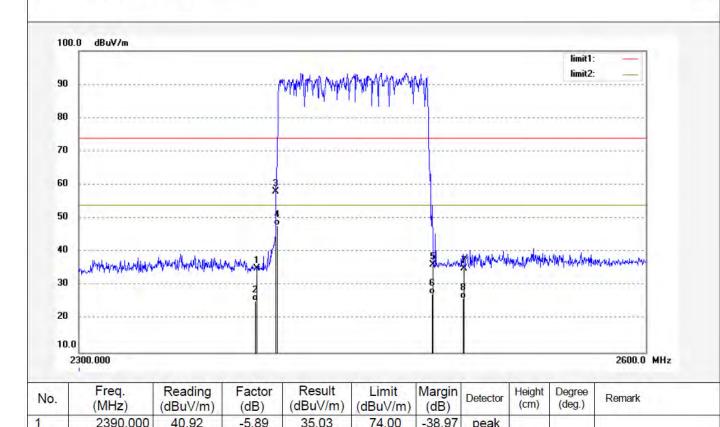
-6.04

-37.78

-26.64

-38.83

-27.94



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

-5.89

-5.80

-5.80

-5.51

-5.51

-5.50

-5.50

25.36

58.14

47.96

36.22

27.36

35.17

26.06

54.00

74.00

54.00

74.00

54.00

74.00

54.00

2

3

4

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6

7

8

2390,000

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2400,000

2483.500

2483,500

2500,000

2500.000

31.25

63.94

53.76

41.73

32.87

40.67

31.56



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## 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

Horizontal

Power Source: AC 120V/60Hz

Engineer Signature: DING

3m

Polarization:

Date: 17/06/20/

Time: 14/13/06

Distance:

Job No.: DING1 #869 Standard: FCC PK

Test item: Radiation Test Temp.( C)/Hum.(%) 25 C / 55 %

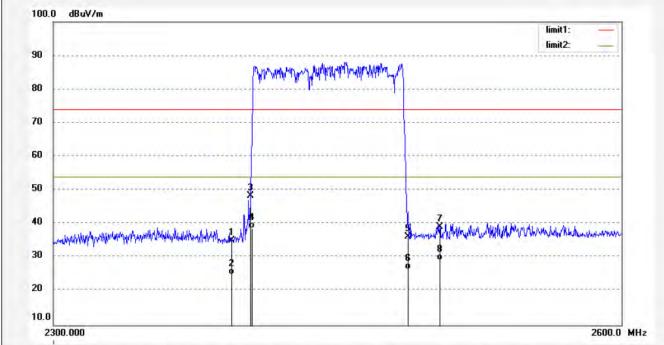
EUT: LED ceiling lamp HOPPING(8DPSK) Mode:

Model: 54620311

Manufacturer: WUHU 3E LIGHTING

Note:

Report NO.:ATE20171126



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	40.95	-5.89	35.06	74.00	-38.94	peak			
2	2390.000	30.84	-5.89	24.95	54.00	-29.05	AVG			_
3	2400.000	54.09	-5.80	48.29	74.00	-25.71	peak			
4	2400.000	44.56	-5.80	38.76	54.00	-15.24	AVG			
5	2483.500	41.82	-5.51	36.31	74.00	-37.69	peak			
6	2483.500	32.01	-5.51	26.50	54.00	-27.50	AVG			
7	2500.000	44.71	-5.50	39.21	74.00	-34.79	peak			
8	2500.000	34.83	-5.50	29.33	54.00	-24.67	AVG			



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# ACCURATE TECHNOLOGY CO., LTD.

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

Job No.: DING1 #870 Standard: FCC PK

Test item: Radiation Test

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

EUT: LED ceiling lamp HOPPING(8DPSK) Mode:

Model: 54620311

Manufacturer: WUHU 3E LIGHTING

Report NO.:ATE20171126

Note:

Polarization: Vertical

Power Source: AC 120V/60Hz

Date: 17/06/20/ Time: 14/22/17

Engineer Signature: DING

Distance: 3m

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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	41.75	-5.89	35.86	74.00	-38.14	peak			
2	2390.000	32.74	-5.89	26.85	54.00	-27.15	AVG			
3	2400.000	65.77	-5.80	59.97	74.00	-14.03	peak			
4	2400.000	55.69	-5.80	49.89	54.00	-4.11	AVG	1-1		
5	2483.500	45.45	-5.51	39.94	74.00	-34.06	peak			
6	2483.500	35.98	-5.51	30.47	54.00	-23.53	AVG			
7	2500.000	44.33	-5.50	38.83	74.00	-35.17	peak			
8	2500.000	35.27	-5.50	29.77	54.00	-24.23	AVG			



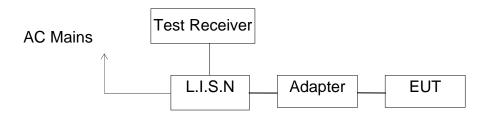
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# 12.AC POWER LINE CONDUCTED EMISSION FOR FCC PART

# 15 SECTION 15.207(A)

#### 12.1.Block Diagram of Test Setup



(EUT: LED ceiling lamp)

#### 12.2. Power Line Conducted Emission Measurement Limits

Frequency	Limit d	B(μV)
(MHz)	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 following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner, which tends to maximize its emission characteristics in a normal application.

# 12.4. 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.



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#### 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.

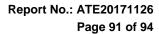
The bandwidth of test receiver (R & S ESCS30) is set at 9kHz.

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

#### 12.6. Power Line Conducted Emission Measurement Results

#### PASS.

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

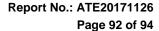




Test mode : BT communicating(AC 120V/60Hz)											
MEASUREMENT	RESULT:	"CB-0	618-01	_fin"							
6/18/2017 5:1											
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE				
0.310000 0.655000 0.955000 4.990000 5.520000 18.175000	37.40 41.10 40.30 40.50 41.20 36.60	10.6 10.8 10.8 11.2 11.2	60 56 56 56 60 60	14.9 15.7 15.5	QP QP QP QP	L1 L1 L1 L1 L1	GND GND GND GND GND GND				
MEASUREMENT	RESULT:	"CB-0	618-01	_fin2"							
6/18/2017 5:1	7PM			_							
Frequency MHz		Transd dB	Limit dBµV	Margin dB	Detector	Line	PE				
0.305000 0.650000 0.990000 4.750000 5.170000 13.270000	28.70 33.40 31.70 30.00 31.80 28.10	10.6 10.8 10.8 11.1 11.2 11.3	50 46 46 46 50 50	12.6 14.3	AV AV	L1 L1 L1 L1 L1	GND GND GND GND GND GND				
MEASUREMENT	RESULT:	"CB-0	618-02	_fin"							
6/18/2017 5:2	1PM										
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE				
0.305000 0.805000 0.890000 4.880000 6.170000 17.005000	32.70 35.60 34.20 33.50 36.50 29.70	10.6 10.8 10.8 11.1 11.2 11.4	56 56 56	20.4 21.8 22.5 23.5	QP QP QP QP	N N N N N	GND GND GND GND GND GND				
MEASUREMENT	RESULT:	"CB-0	618-02	_fin2"							
6/18/2017 5:2											
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE				
0.325000 0.670000 0.895000 4.770000 5.670000 12.475000	21.10 26.30 25.30 24.40 28.00 23.20	10.6 10.8 10.8 11.1 11.2	50 46 46 46 50 50	28.5 19.7 20.7 21.6 22.0 26.8	AV AV AV AV AV	N N N N N	GND GND GND GND GND GND				

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

The spectral diagrams are attached as below.





ACCURATE TECHNOLOGY CO., LTD

#### CONDUCTED EMISSION STANDARD FCC PART 15B

LED ceiling lamp M/N:54620311

Manufacturer: WUHU 3E LIGHTING Operating Condition: BT communicating Test Site: 1#Shielding Room

Operator: DING Test Specification: N 120V/60Hz

Report NO.:ATE20171126 Comment: Start of Test: 6/18/2017 / 5:18:16PM

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

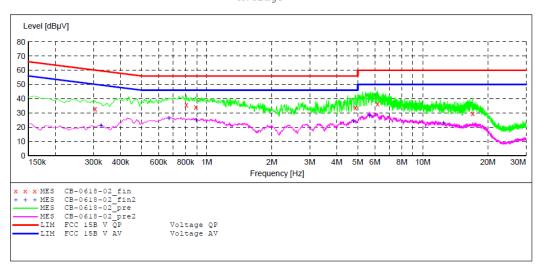
Short Description: Start Stop \_\_\_\_SUB\_STD\_VTERM2 1.70

Step ТF Detector Meas. Transducer Stop

Frequency Frequency Width 9.0 kHz 150.0 kHz 100.0 Hz Bandw. Time

200 Hz NSLK8126 2008 QuasiPeak 1.0 s Average 150.0 kHz 30.0 MHz 5.0 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008

Average

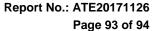


#### MEASUREMENT RESULT: "CB-0618-02 fin"

6/18/2017 5:3 Frequency MHz	21PM Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.305000	32.70	10.6	60	27.4	QP	N	GND
0.805000	35.60	10.8	56	20.4	QP	N	GND
0.890000	34.20	10.8	56	21.8	QP	N	GND
4.880000	33.50	11.1	56	22.5	QP	N	GND
6.170000	36.50	11.2	60	23.5	QP	N	GND
17.005000	29.70	11.4	60	30.3	QP	N	GND

#### MEASUREMENT RESULT: "CB-0618-02 fin2"

6/18/2017 5:2 Frequency MHz	21PM Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.325000	21.10	10.6	50	28.5	AV	N	GND
0.670000	26.30	10.8	46	19.7	AV	N	GND
0.895000	25.30	10.8	46	20.7	AV	N	GND
4.770000	24.40	11.1	46	21.6	AV	N	GND
5.670000	28.00	11.2	50	22.0	AV	N	GND
12.475000	23.20	11.3	50	26.8	AV	N	GND



Transducer



#### ACCURATE TECHNOLOGY CO., LTD

#### CONDUCTED EMISSION STANDARD FCC PART 15B

LED ceiling lamp M/N:54620311

WUHU 3E LIGHTING Manufacturer: Operating Condition: BT communicating 1#Shielding Room Test Site:

Operator: DING Test Specification: L 120V/60Hz

Report NO.:ATE20171126 Comment: 6/18/2017 / 5:13:10PM Start of Test:

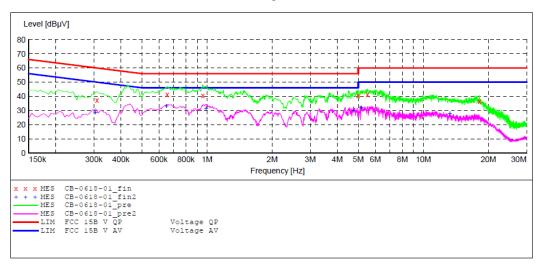
SCAN TABLE: "V 9K-30MHz fin"
Short Description: \_SU \_\_\_\_SUB\_STD\_VTERM2 1.70 Detector Meas. Step IF Start Stop

Frequency Frequency Width 9.0 kHz 150.0 kHz 100.0 Hz Bandw. Time 200 Hz NSLK8126 2008 QuasiPeak 1.0 s

Average

150.0 kHz 30.0 MHz 5.0 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008

Average



#### MEASUREMENT RESULT: "CB-0618-01 fin"

6/18/2017 5:17PM							
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.310000	37.40	10.6	60	22.6	QP	L1	GND
0.655000	41.10	10.8	56	14.9	QP	L1	GND
0.955000	40.30	10.8	56	15.7	QP	L1	GND
4.990000	40.50	11.2	56	15.5	QP	L1	GND
5.520000	41.20	11.2	60	18.8	QP	L1	GND
18.175000	36.60	11.4	60	23.4	QP	L1	GND

#### MEASUREMENT RESULT: "CB-0618-01 fin2"

6/18/2017 5:1 Frequency MHz	.7PM Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.305000	28.70	10.6	50	21.4	AV	L1	GND
0.650000	33.40	10.8	46	12.6	AV	L1	GND
0.990000	31.70	10.8	46	14.3	AV	L1	GND
4.750000	30.00	11.1	46	16.0	AV	L1	GND
5.170000	31.80	11.2	50	18.2	AV	L1	GND
13.270000	28.10	11.3	50	21.9	AV	L1	GND



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# 13.ANTENNA REQUIREMENT

# 13.1.The Requirement

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

#### 13.2.Antenna Construction

Device is equipped with permanent attached antenna, which isn't displaced by other antenna. The Max Antenna gain of EUT is -1.0dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.

