

APPLICATION CERTIFICATION FCC Part 15C
On Behalf of

Cooper Lighting LLC

Shop Light
Model No.: 4SHP3240BTS

FCC ID: 2AKCY-4SHP3240BTS

Prepared for : Cooper Lighting LLC
Address : 1121 Hwy 74 S Peachtree City, GA 30269, United States Of America

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. : ATE20171548
Date of Test : July 27-August 5, 2017
Date of Report : August 8, 2017

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Test Report Certification

Applicant : Cooper Lighting LLC
Manufacturer : COOPER WIRING DEVICES INC.
EUT Description : Shop Light
Model No. : 4SHP3240BTS
Trade Name : N/A

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 : _____
Date of Report: _____

July 27-August 5, 2017

August 7, 2017

Prepared by : _____



Approved & Authorized Signer : _____

(Sean Liu, Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Model Number : 4SHP3240BTS

Bluetooth version : BT V4.0 Single mode
This report is for BT classic mode

Frequency Range : 2402MHz-2480MHz

Number of Channels : 79 for BT classic mode

Antenna Gain(Max) : 0 dBi

Antenna type : PCB Antenna

Adapter Input Voltage : AC 120V/60Hz

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

Applicant : Cooper Lighting LLC

Address : 1121 Hwy 74 S Peachtree City, GA 30269, United States Of America

Manufacturer : COOPER WIRING DEVICES INC.

Address : 203 Cooper Circle Peachtree City GA 30269 United States Of America

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 (9kHz-30MHz) = 3.08dB, k=2
- Radiated emission expanded uncertainty (30MHz-1000MHz) = 4.42dB, k=2
- Radiated emission expanded uncertainty (Above 1GHz) = 4.06dB, k=2

2. MEASURING DEVICE AND TEST EQUIPMENT

Table 1: List of Test and Measurement Equipment

Kind of equipment	Manufacturer	Type	S/N	Calibrated dates	Calibrated until
EMI Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 07, 2017	1 Year
EMI Test Receiver	Rohde&Schwarz	ESPI3	101526/003	Jan. 07, 2017	1 Year
Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 07, 2017	1 Year
Pre-Amplifier	Rohde&Schwarz	CBLU118354 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

3.2.Configuration and peripherals

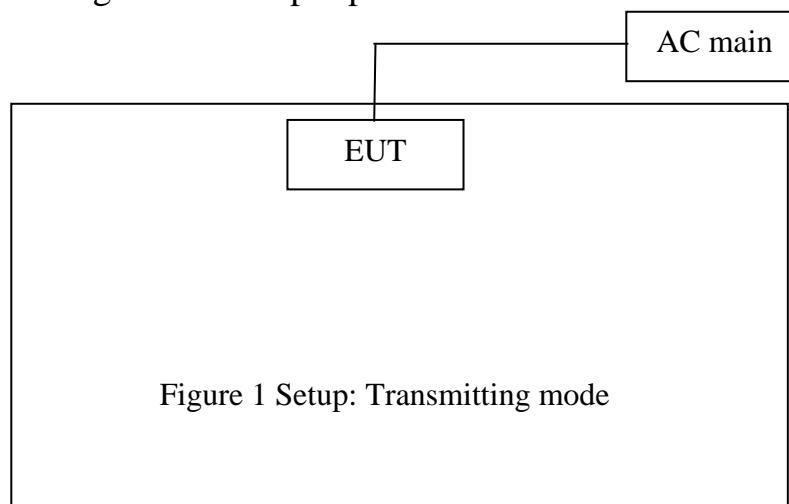


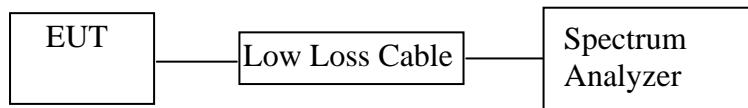
Figure 1 Setup: Transmitting mode

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: 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.

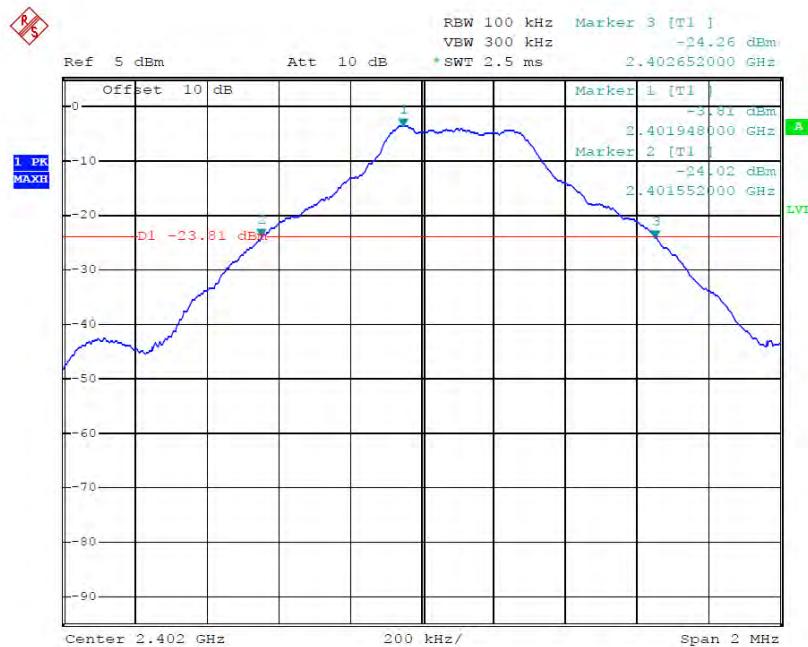
5.6. Test Result

Channel	Frequency (MHz)	GFSK 20dB Bandwidth (MHz)	$\Pi/4$ -DQPSK 20dB Bandwidth (MHz)	8DPSK 20dB Bandwidth (MHz)	Result
Low	2402	1.100	1.292	1.296	Pass
Middle	2441	1.104	1.356	1.304	Pass
High	2480	1.116	1.316	1.308	Pass

The spectrum analyzer plots are attached as below.

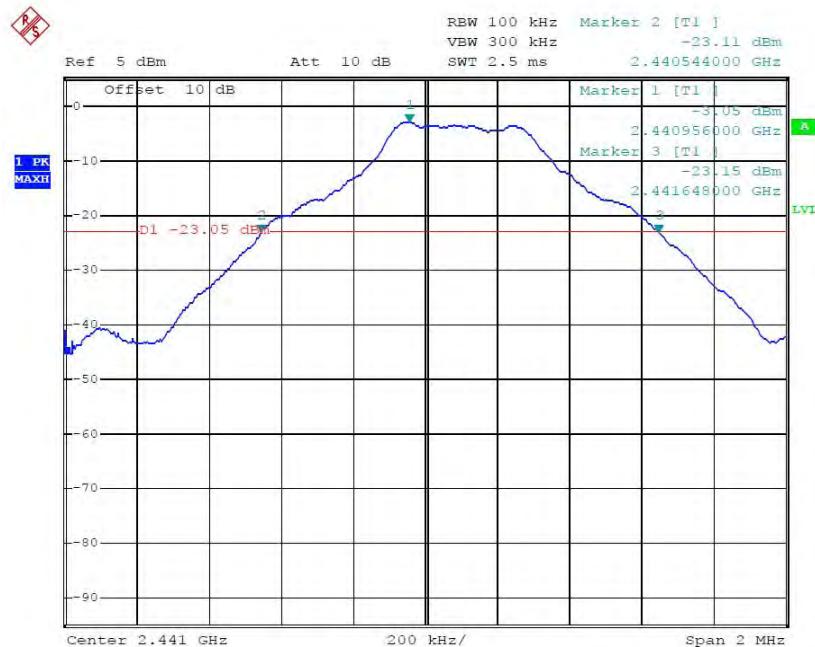
GFSK Mode

Low channel



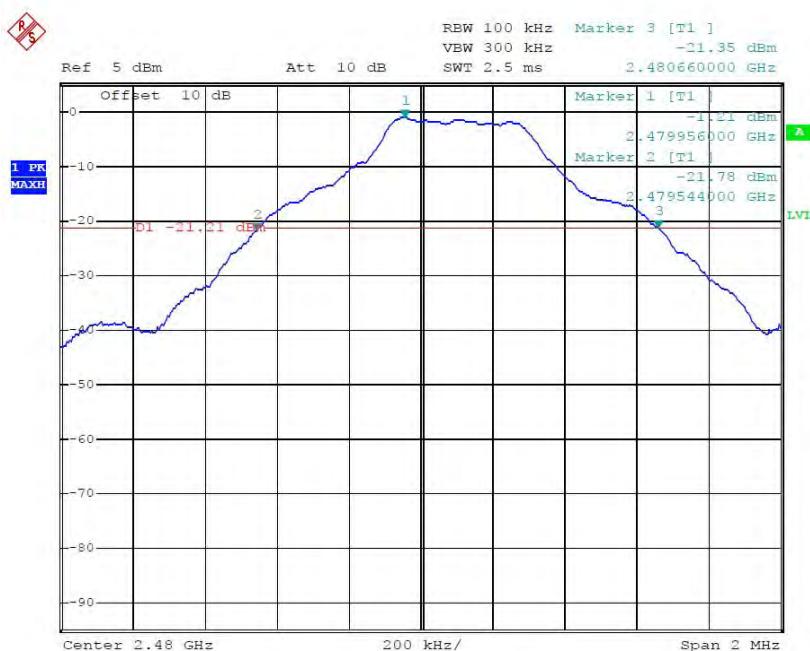
Date: 5.AUG.2017 11:10:06

Middle channel



Date: 5.AUG.2017 11:16:28

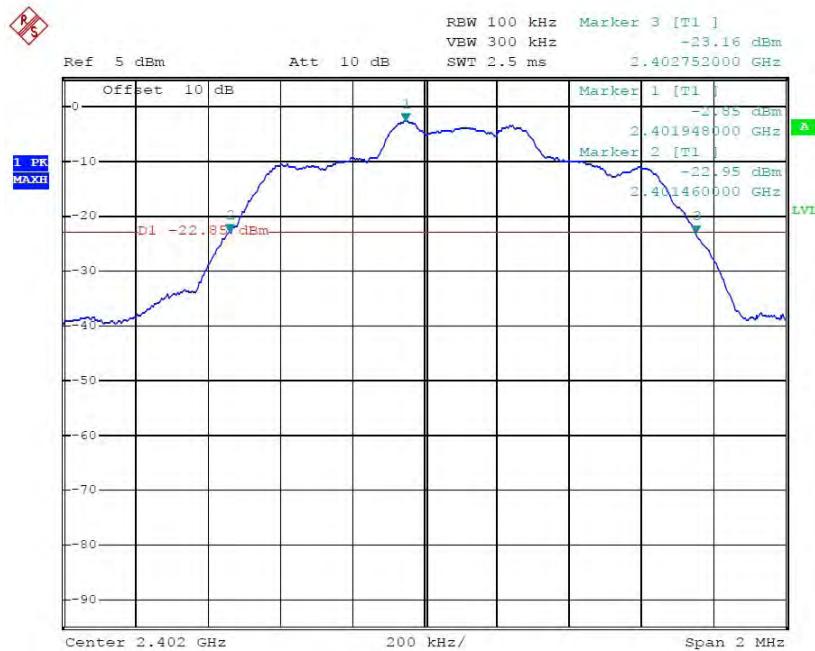
High channel



Date: 5.AUG.2017 11:32:05

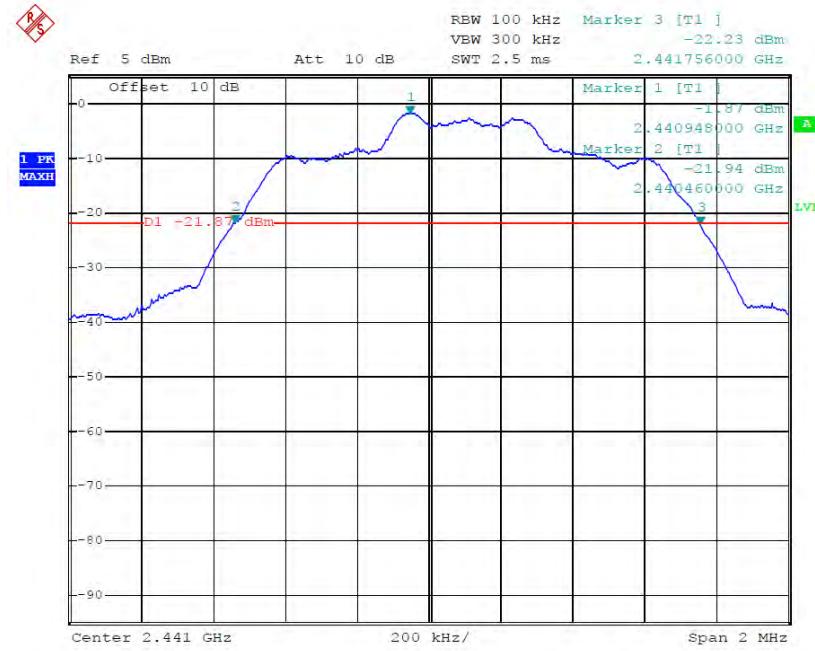
Π/4-DQPSK Mode

Low channel



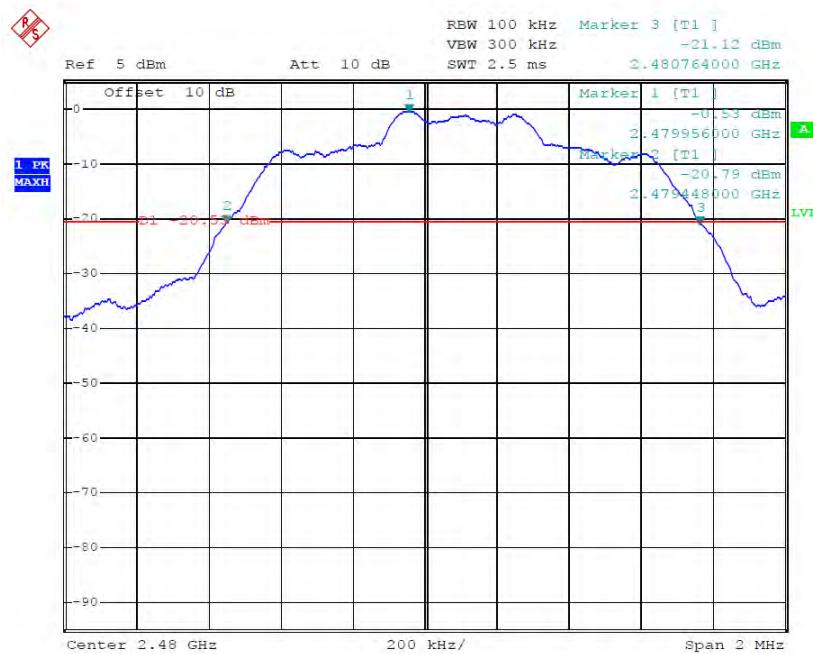
Date: 5.AUG.2017 11:35:25

Middle channel



Date: 5.AUG.2017 11:40:03

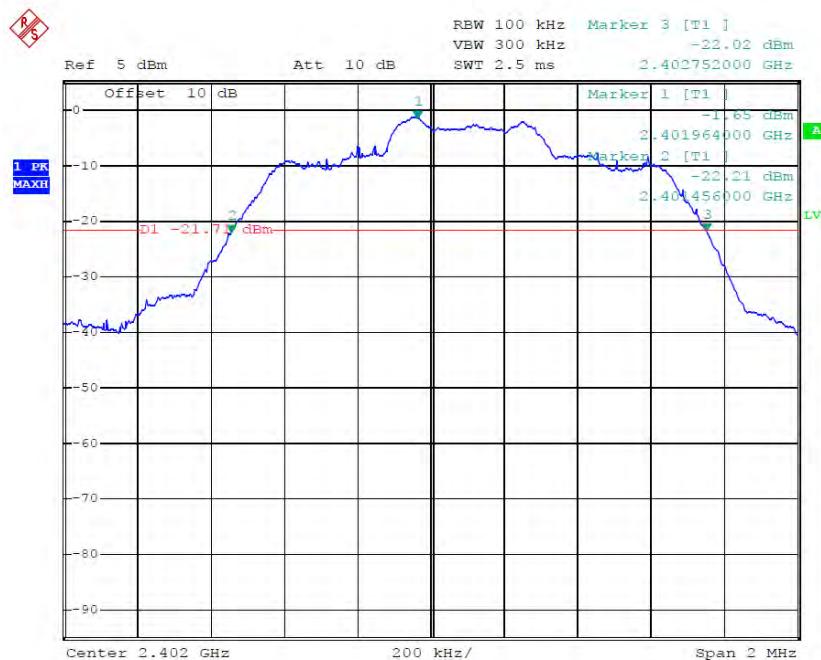
High channel



Date: 5.AUG.2017 11:42:53

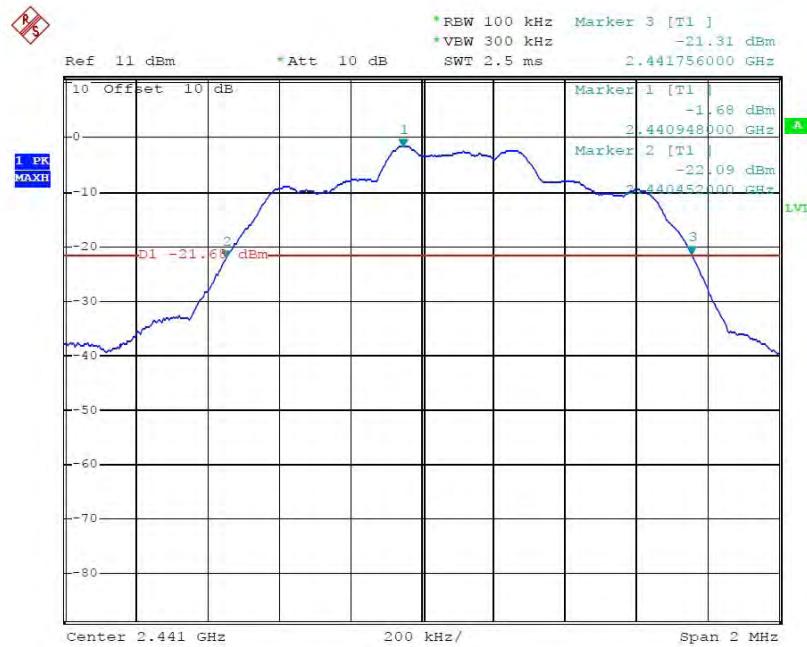
8DPSK Mode

Low channel



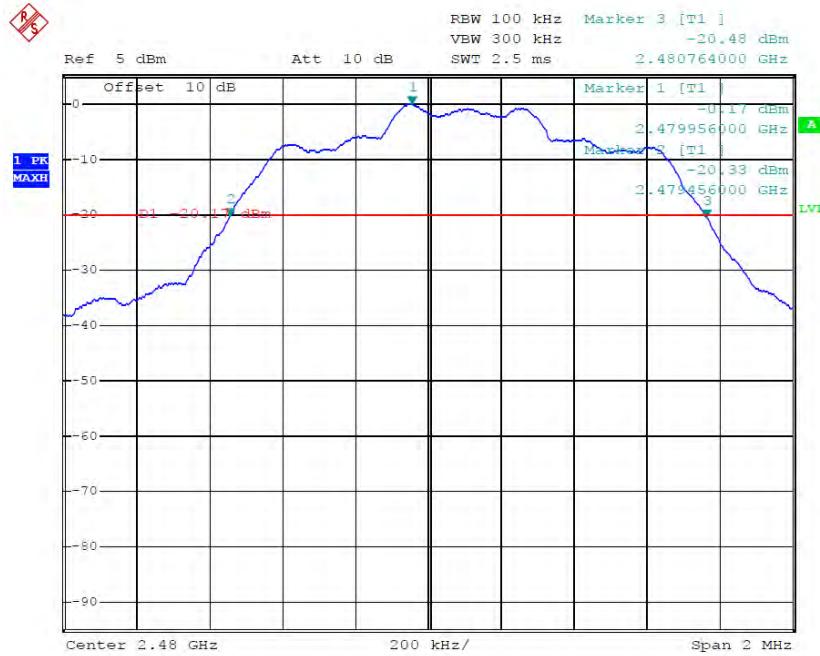
Date: 5.AUG.2017 11:46:13

Middle channel



Date: 5.AUG.2017 17:49:53

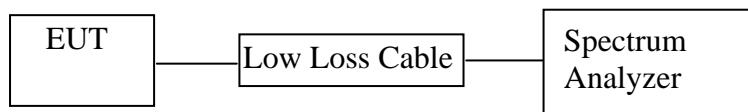
High channel



Date: 5.AUG.2017 11:58:47

6. CARRIER FREQUENCY SEPARATION TEST

6.1. Block Diagram of Test Setup



(EUT: 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	1.000	25KHz or 2/3*20dB bandwidth	PASS
	2403			
Middle	2440	1.000	25KHz or 2/3*20dB bandwidth	PASS
	2441			
High	2479	0.996	25KHz or 2/3*20dB bandwidth	PASS
	2480			

Π/4-DQPSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	1.004	25KHz or 2/3*20dB bandwidth	PASS
	2403			
Middle	2440	1.000	25KHz or 2/3*20dB bandwidth	PASS
	2441			
High	2479	1.000	25KHz or 2/3*20dB bandwidth	PASS
	2480			

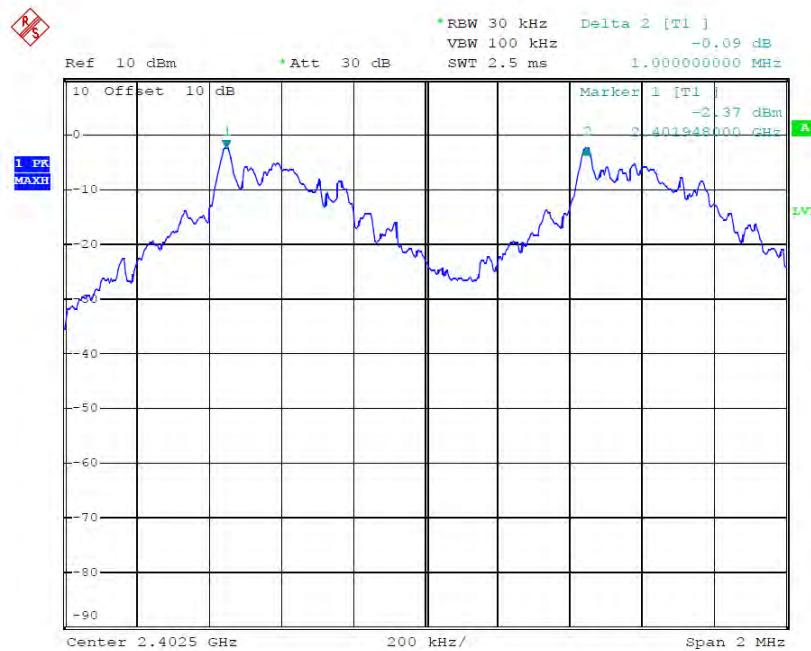
8DPSK

Channel	Frequency (MHz)	Channel Separation(MHz)	Limit (MHz)	Result
Low	2402	0.996	25KHz or 2/3*20dB bandwidth	PASS
	2403			
Middle	2440	1.008	25KHz or 2/3*20dB bandwidth	PASS
	2441			
High	2479	1.000	25KHz or 2/3*20dB bandwidth	PASS
	2480			

The spectrum analyzer plots are attached as below.

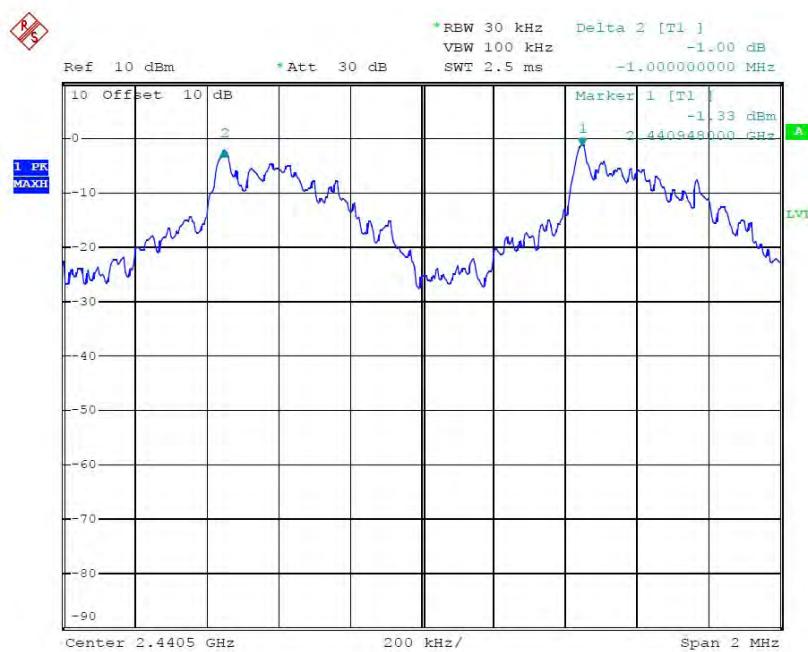
GFSK Mode

Low channel



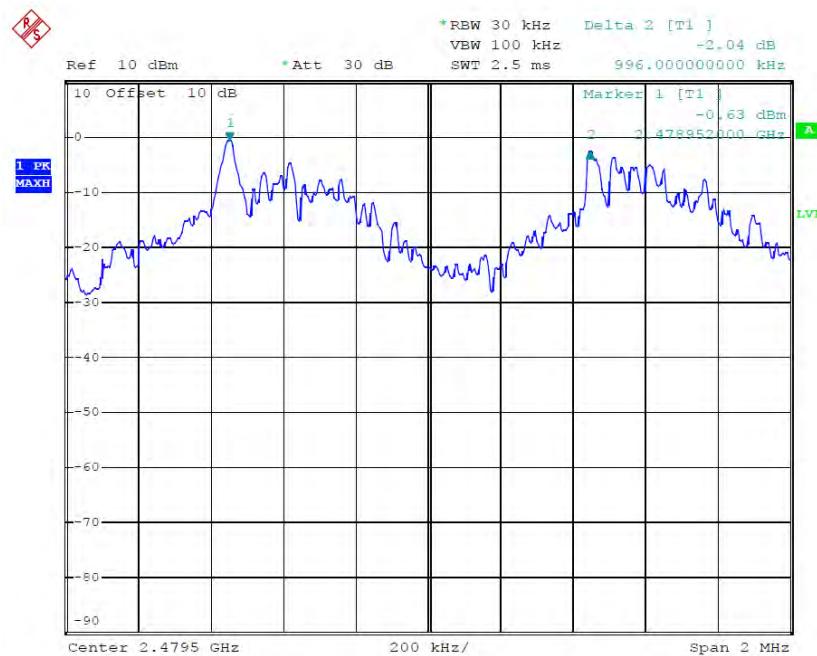
Date: 5.AUG.2017 13:19:51

Middle channel



Date: 5.AUG.2017 13:21:59

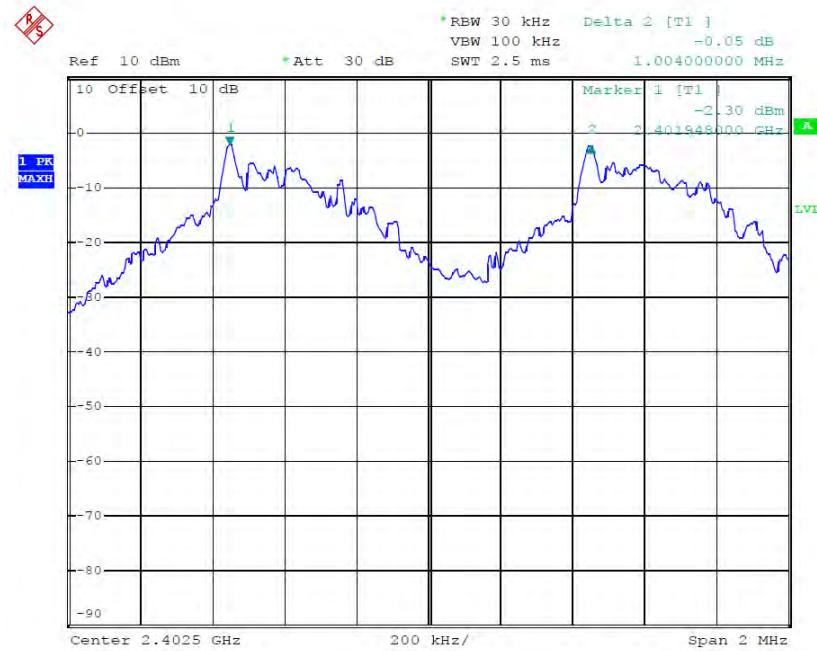
High channel



Date: 5.AUG.2017 13:23:05

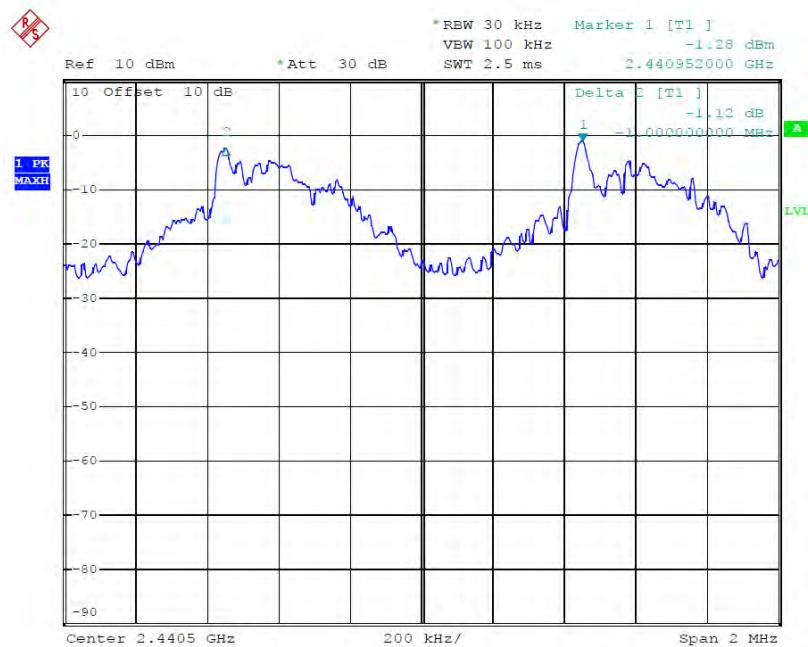
Pi/4-DQPSK Mode

Low channel



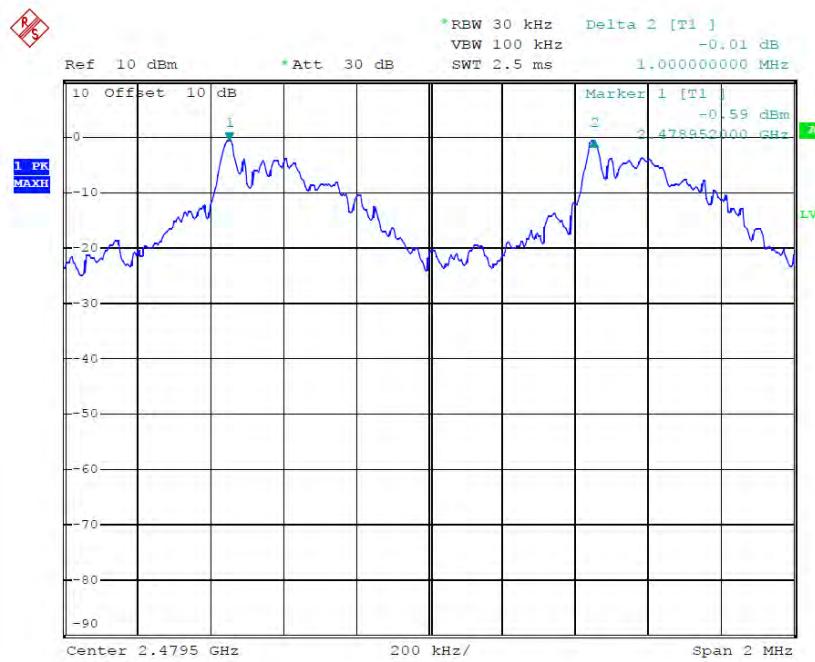
Date: 5.AUG.2017 12:42:53

Middle channel



Date: 5.AUG.2017 12:45:40

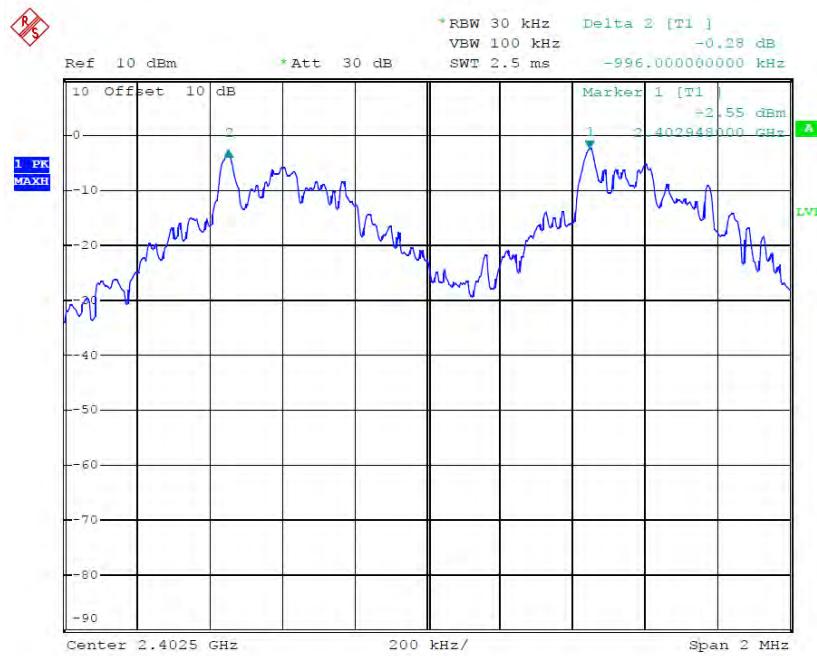
High channel



Date: 5.AUG.2017 13:12:57

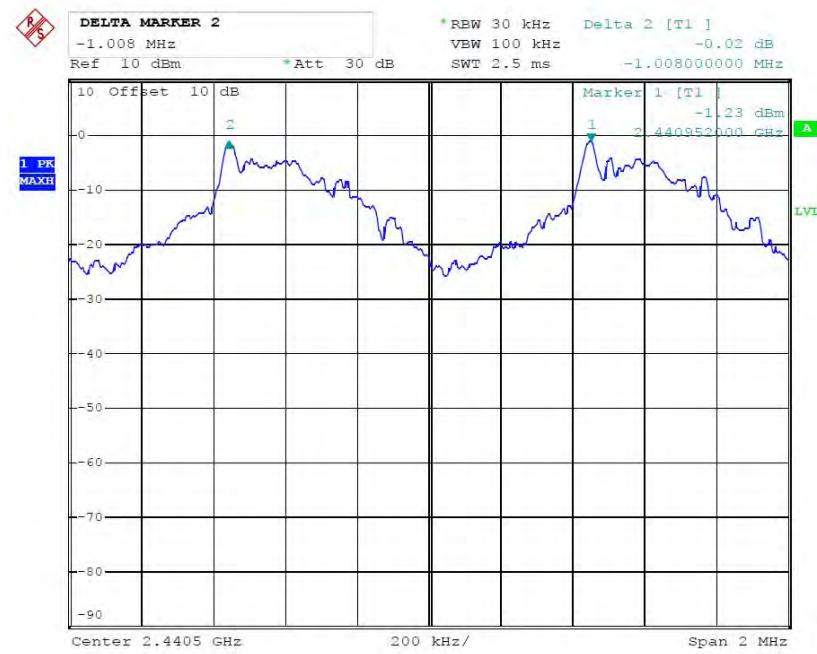
8DPSK Mode

Low channel



Date: 5.AUG.2017 12:19:26

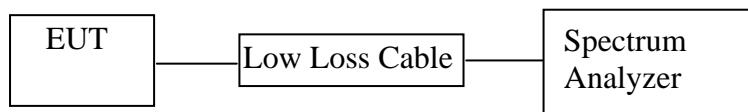
Middle channel



Date: 5.AUG.2017 12:26:42

7. NUMBER OF HOPPING FREQUENCY TEST

7.1. Block Diagram of Test Setup



(EUT: 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.

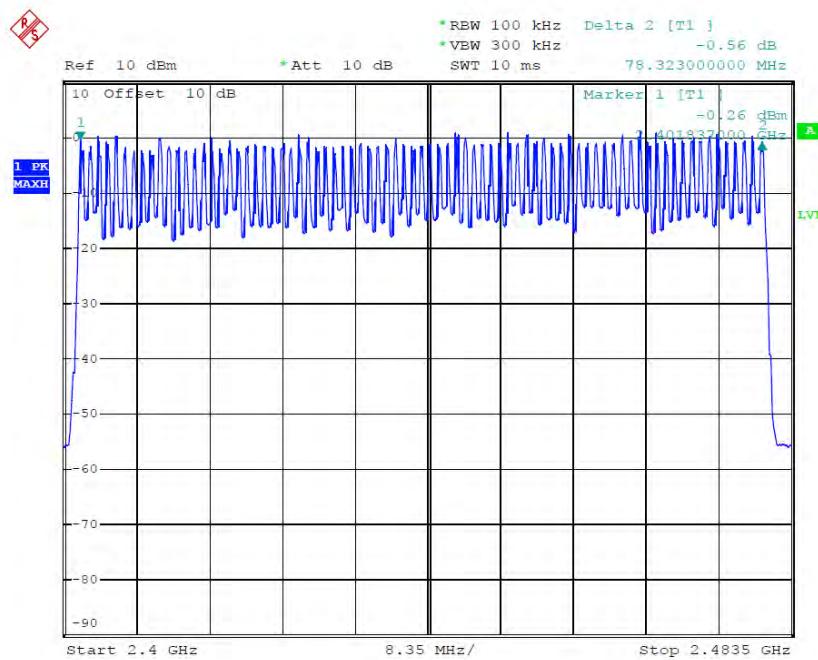
7.5.3. Max hold, view and count how many channel in the band.

7.6. Test Result

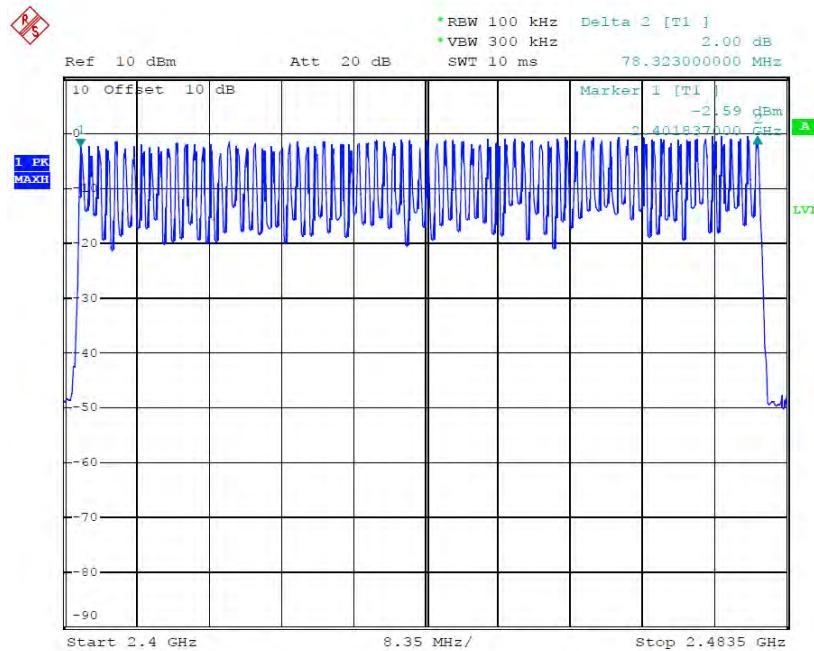
Total number of hopping channel	Measurement result(CH)	Limit(CH)
	79	≥ 15

The spectrum analyzer plots are attached as below.

Number of hopping channels(GFSK)

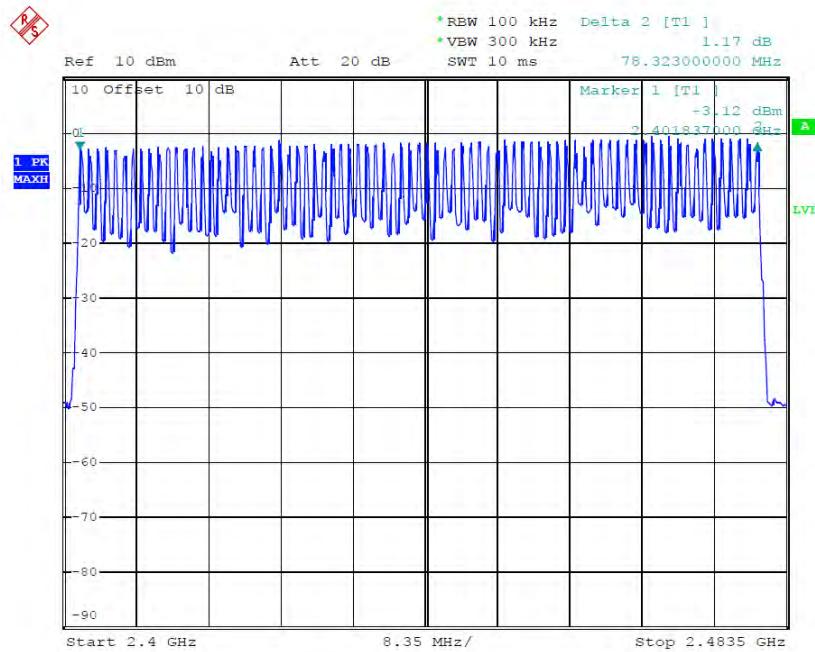


Date: 5.AUG.2017 13:34:05

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

Date: 5.AUG.2017 14:21:24

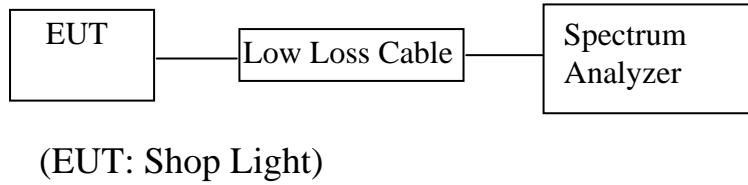
Number of hopping channels(8DPSK)



Date: 5.AUG.2017 14:23:26

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	2402	0.450	144.00	400
	2441	0.460	147.20	400
	2480	0.450	144.00	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2*79)) \times 31.6$				
DH3	2402	1.750	280.00	400
	2441	1.750	280.00	400
	2480	1.750	280.00	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4*79)) \times 31.6$				
DH5	2402	3.030	323.20	400
	2441	3.000	320.00	400
	2480	3.030	323.20	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	2402	0.470	150.40	400
	2441	0.470	150.40	400
	2480	0.470	150.40	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2*79)) \times 31.6$				
DH3	2402	1.760	281.60	400
	2441	1.760	281.60	400
	2480	1.760	281.60	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4*79)) \times 31.6$				
DH5	2402	3.030	323.20	400
	2441	3.030	323.20	400
	2480	3.030	323.20	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(6*79)) \times 31.6$				

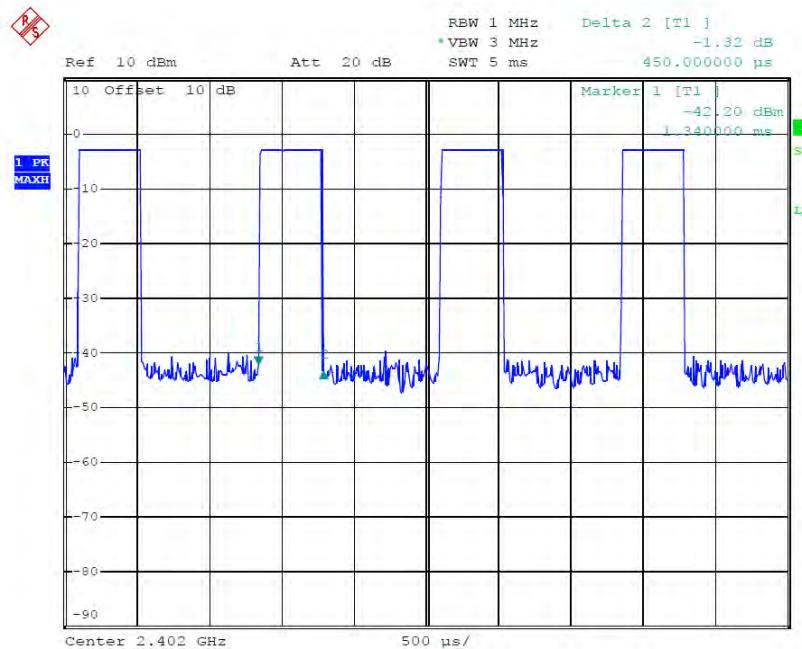
8DPSK Mode

Mode	Channel Frequency (MHz)	Pulse Time (ms)	Dwell Time (ms)	Limit (ms)
DH1	2402	0.470	150.40	400
	2441	0.470	150.40	400
	2480	0.470	150.40	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(2*79)) \times 31.6$				
DH3	2402	1.730	276.80	400
	2441	1.750	280.00	400
	2480	1.750	280.00	400
A period transmit time = $0.4 \times 79 = 31.6$ Dwell time = pulse time $\times (1600/(4*79)) \times 31.6$				
DH5	2402	3.020	322.13	400
	2441	3.020	322.13	400
	2480	3.020	322.13	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.

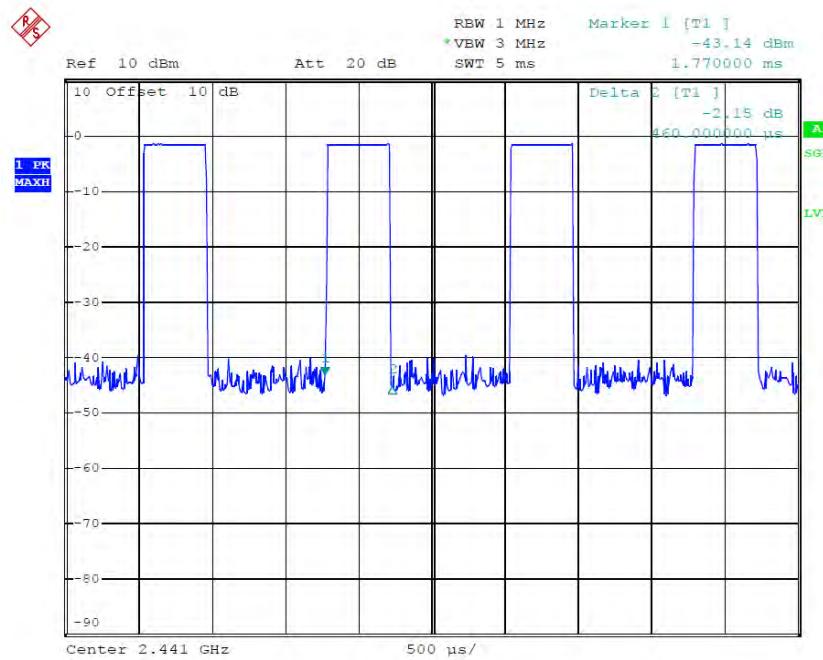
GFSK Mode

DH1 Low channel



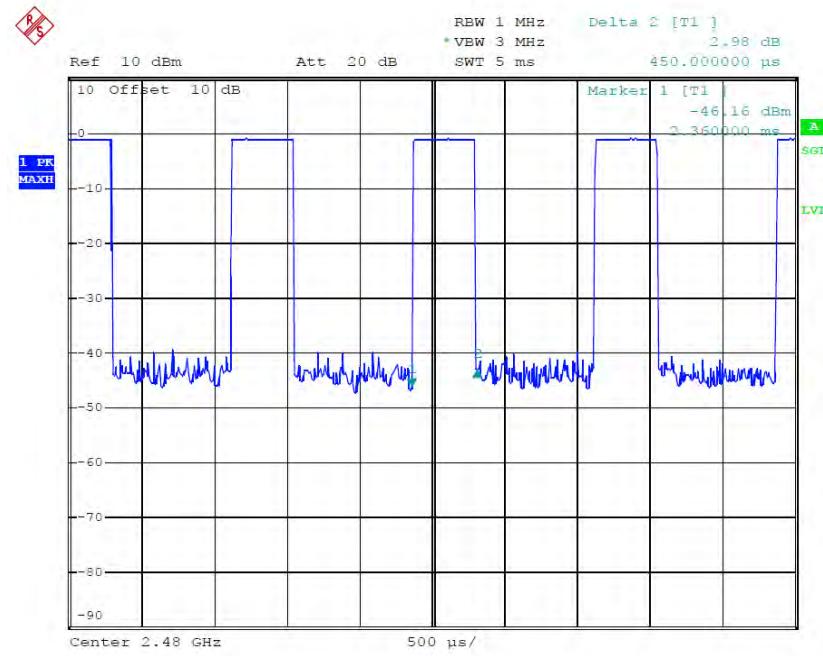
Date: 5.AUG.2017 14:38:05

DH1 Middle channel



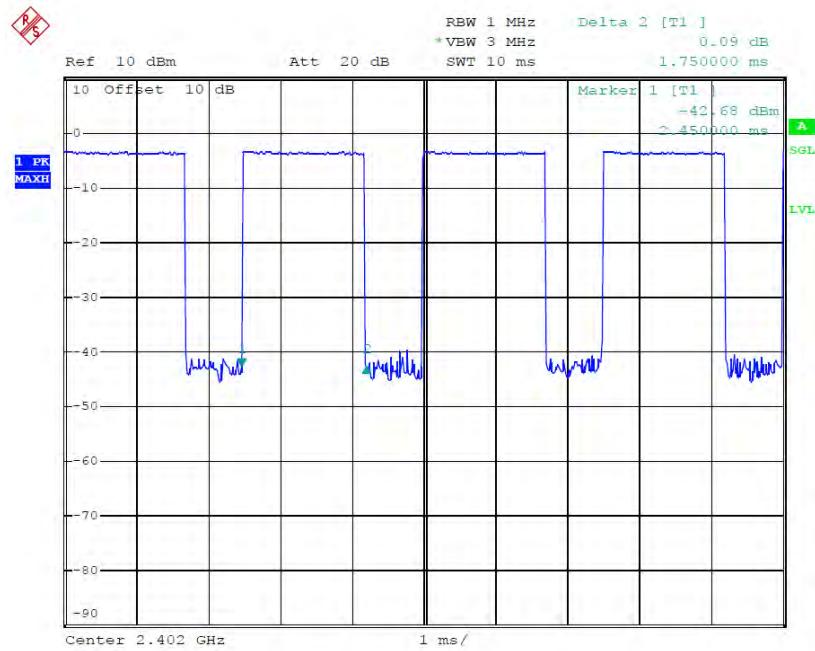
Date: 5.AUG.2017 14:41:21

DH1 High channel



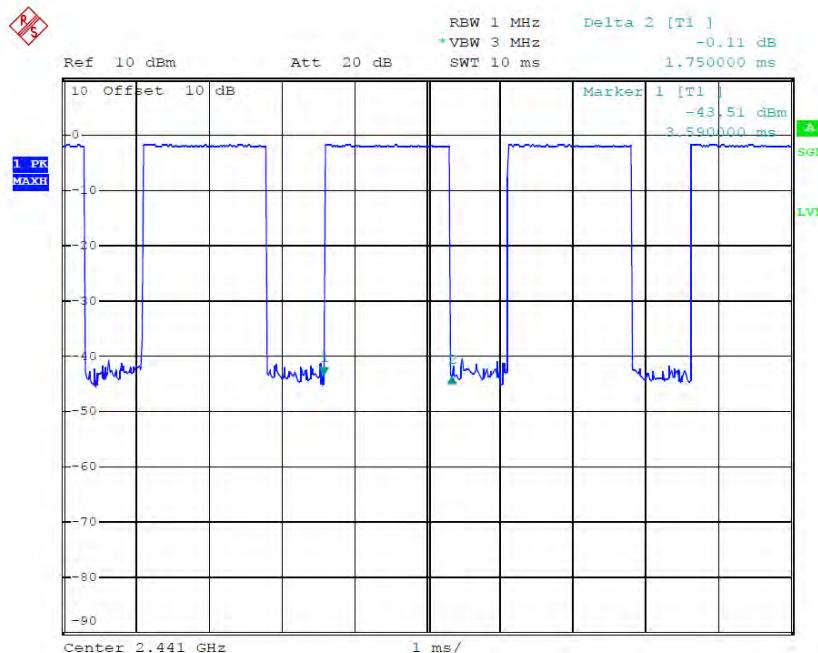
Date: 5.AUG.2017 14:42:41

DH3 Low channel



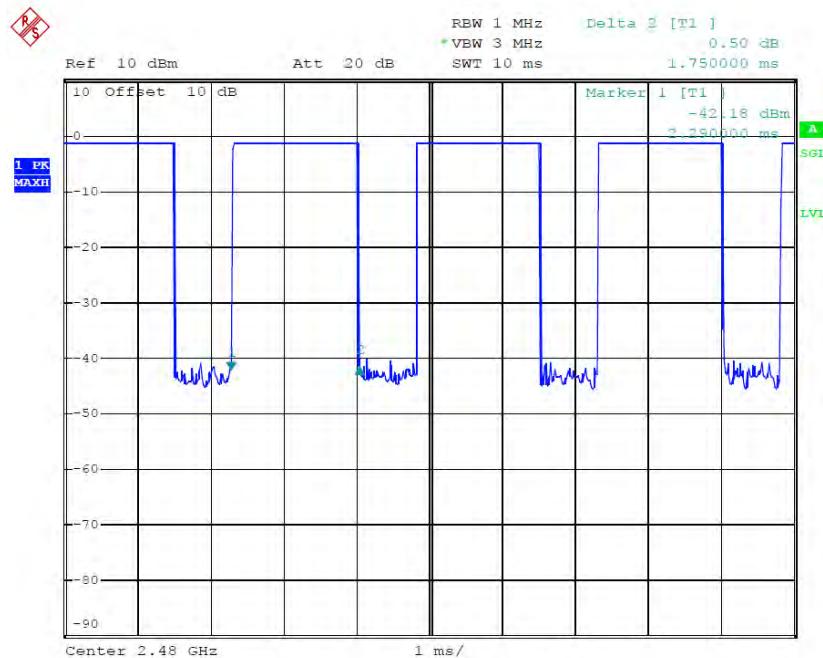
Date: 5.AUG.2017 14:47:51

DH3 Middle channel



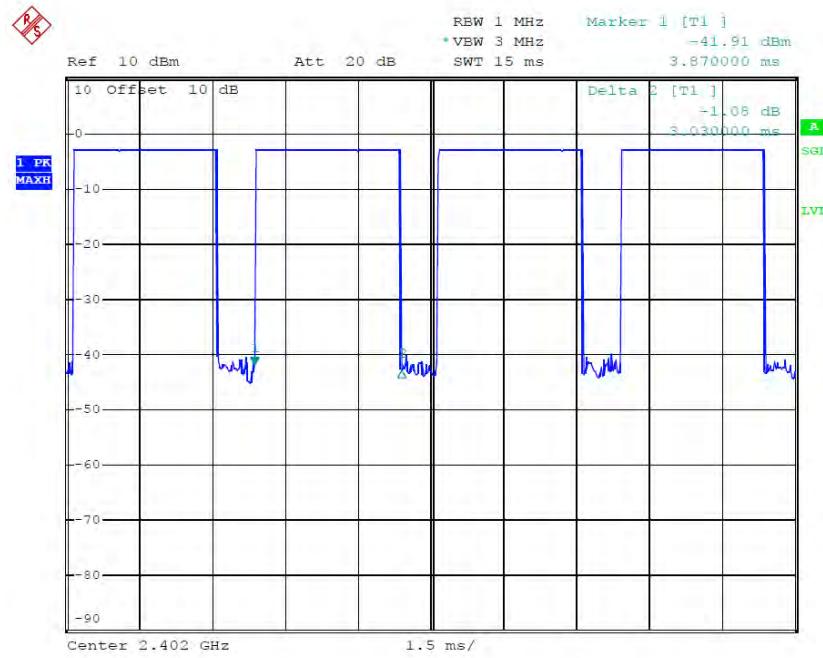
Date: 5.AUG.2017 14:48:55

DH3 High channel



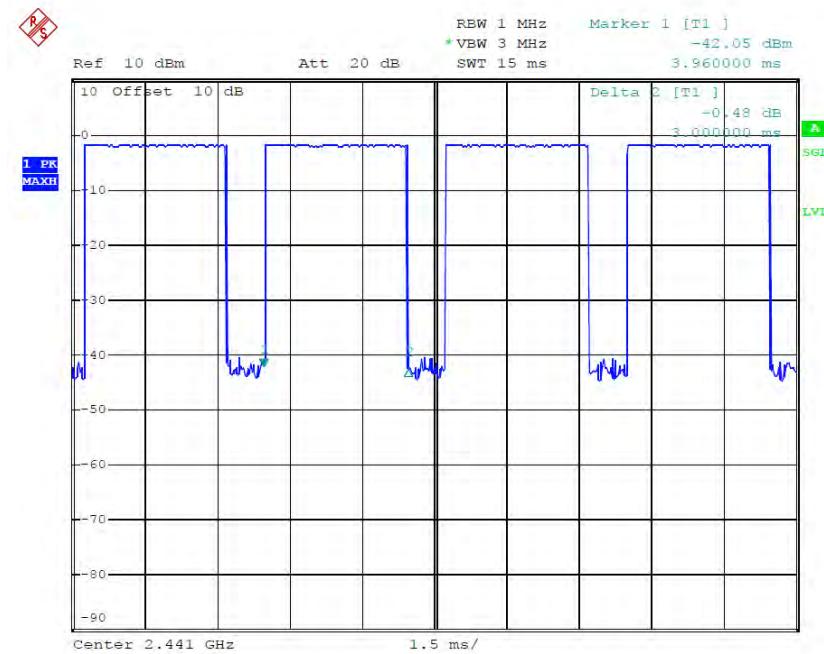
Date: 5.AUG.2017 14:51:53

DH5 Low channel



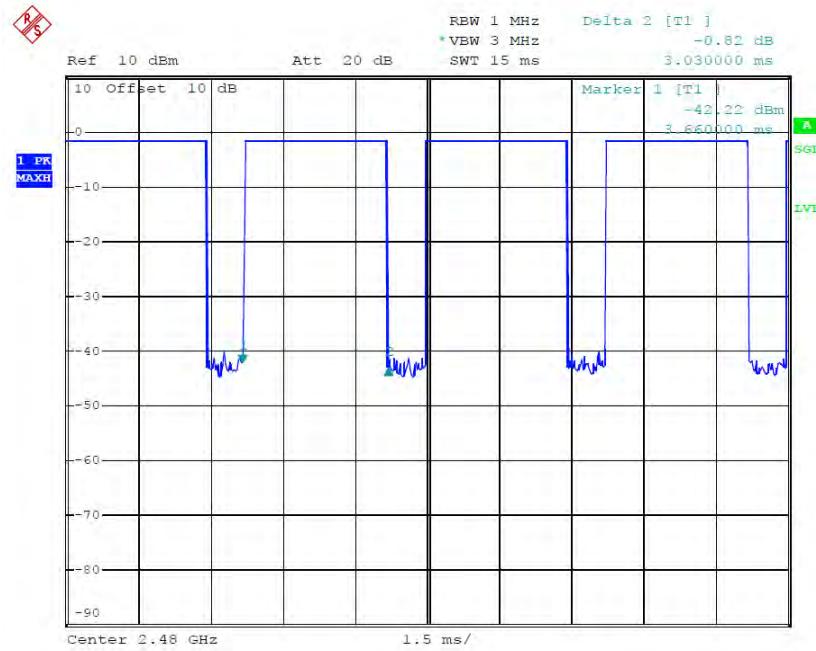
Date: 5.AUG.2017 14:57:14

DH5 Middle channel



Date: 5.AUG.2017 14:56:18

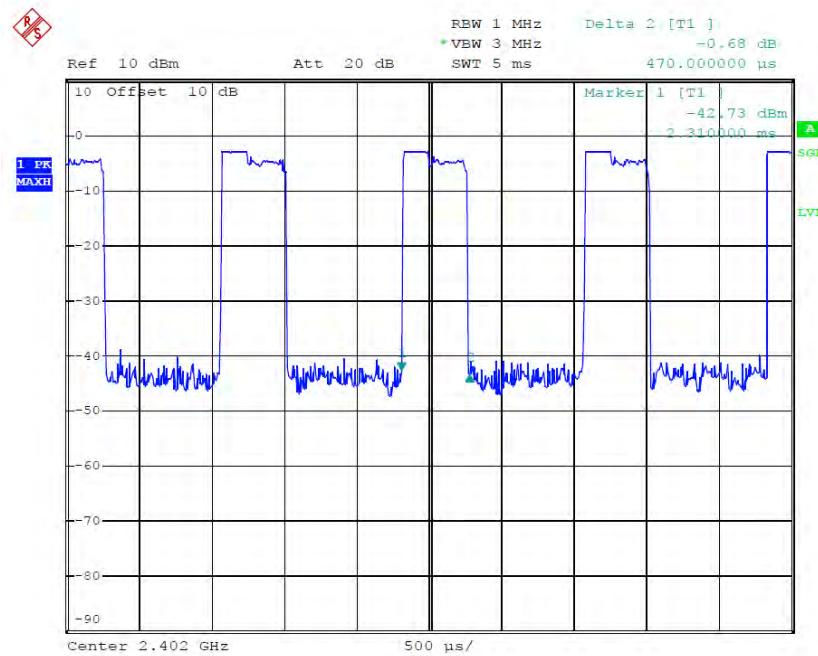
DH5 High channel



Date: 5.AUG.2017 14:55:03

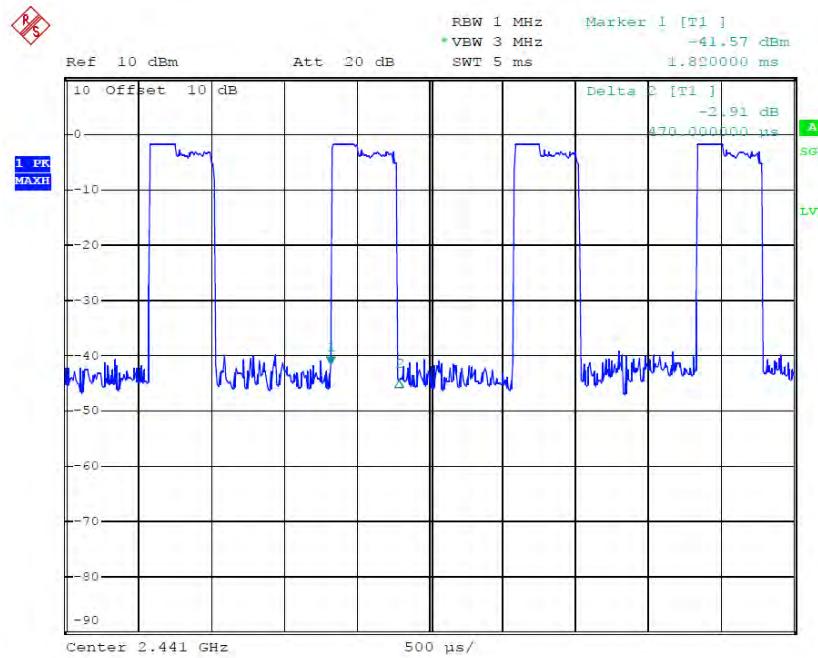
Π/4-DQPSK

2DH1 Low channel



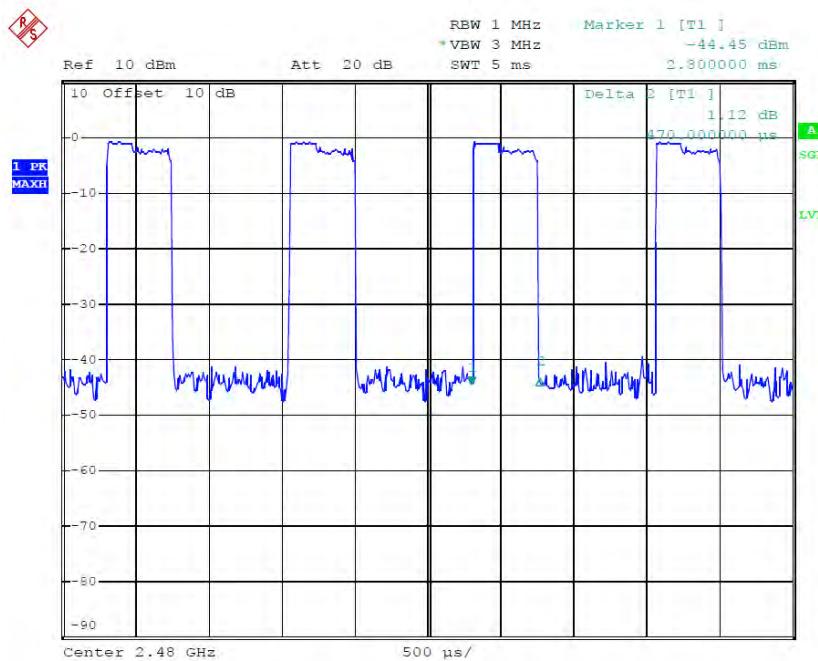
Date: 5.AUG.2017 15:04:57

2DH1 Middle channel



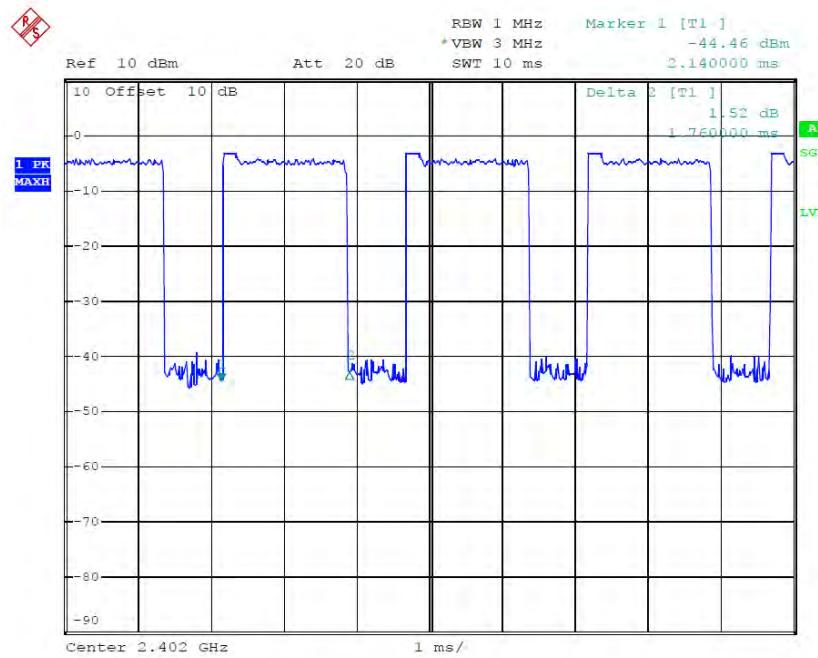
Date: 5.AUG.2017 15:05:58

2DH1 High channel



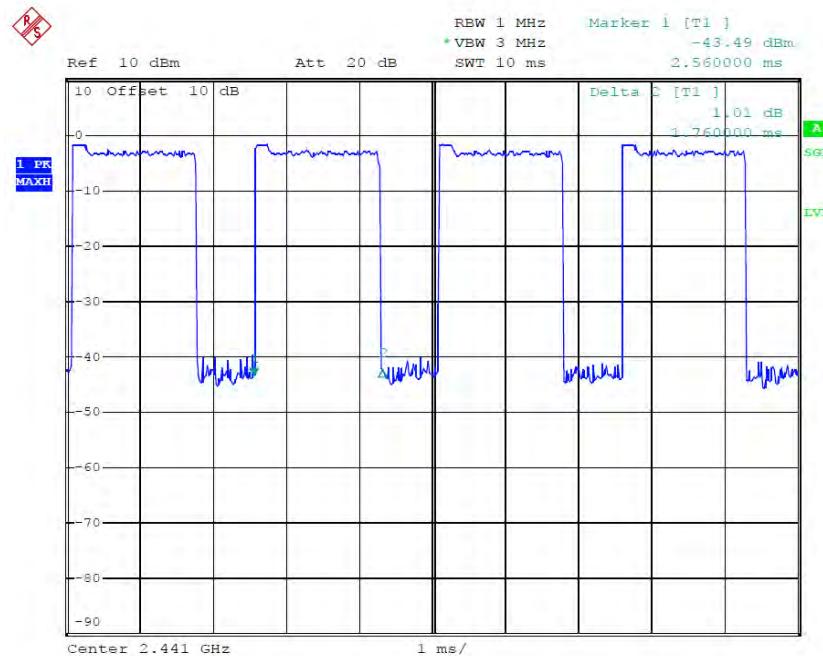
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2DH3 Low channel



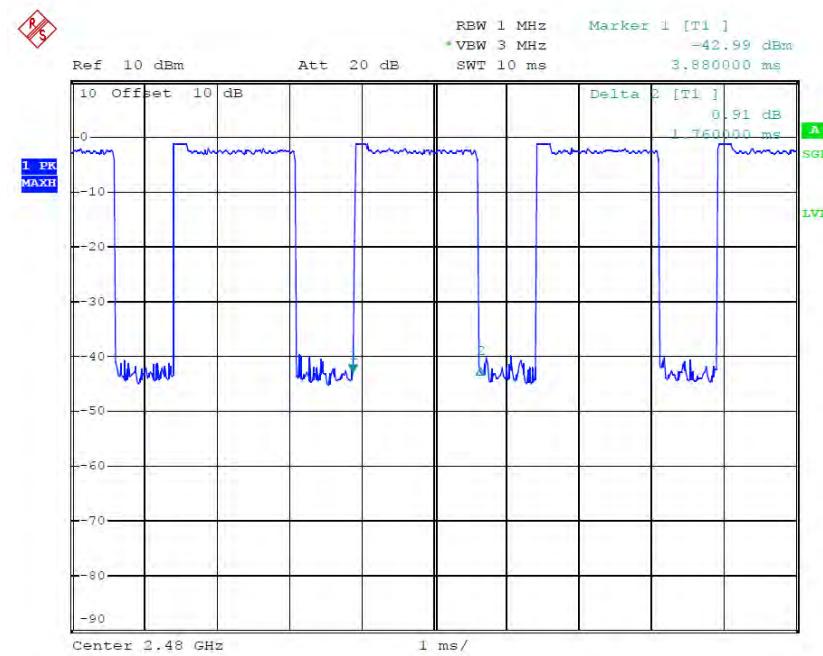
Date: 5.AUG.2017 15:03:52

2DH3 Middle channel



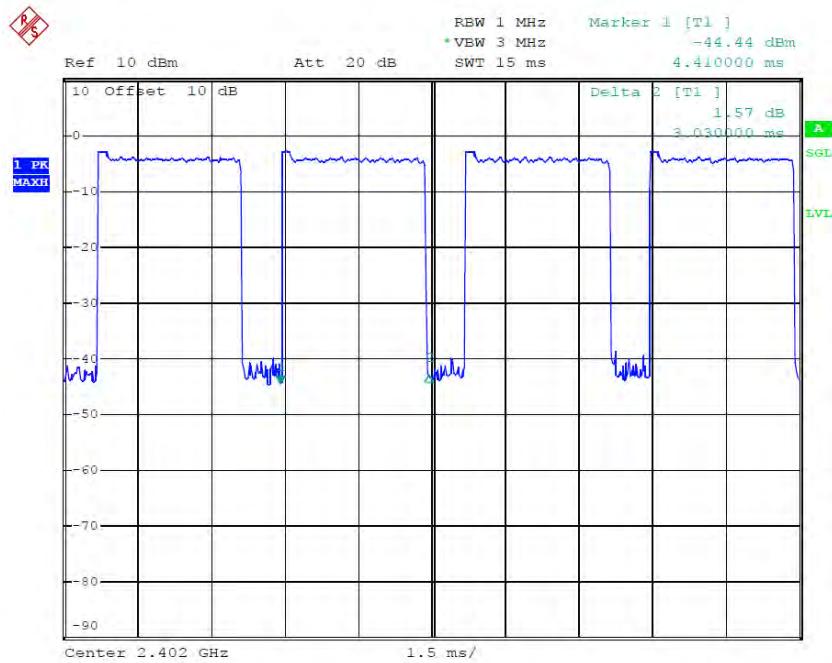
Date: 5.AUG.2017 15:03:08

2DH3 High channel



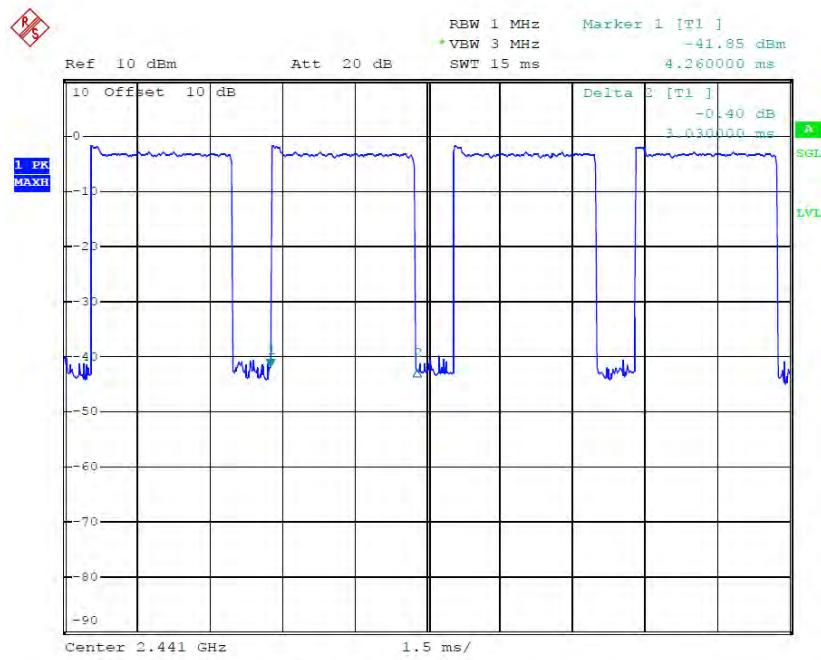
Date: 5.AUG.2017 15:02:27

2DH5 Low channel



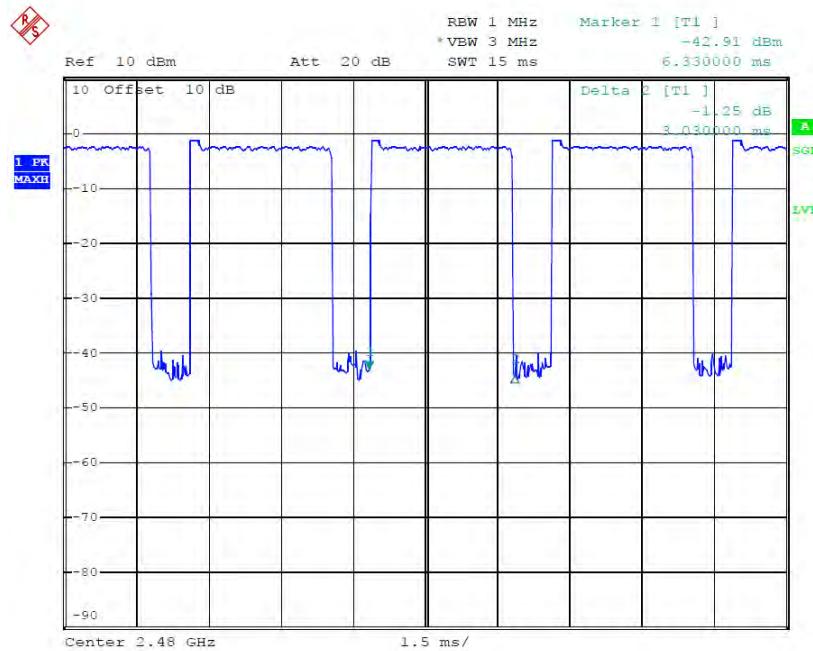
Date: 5.AUG.2017 14:58:37

2DH5 Middle channel



Date: 5.AUG.2017 14:59:24

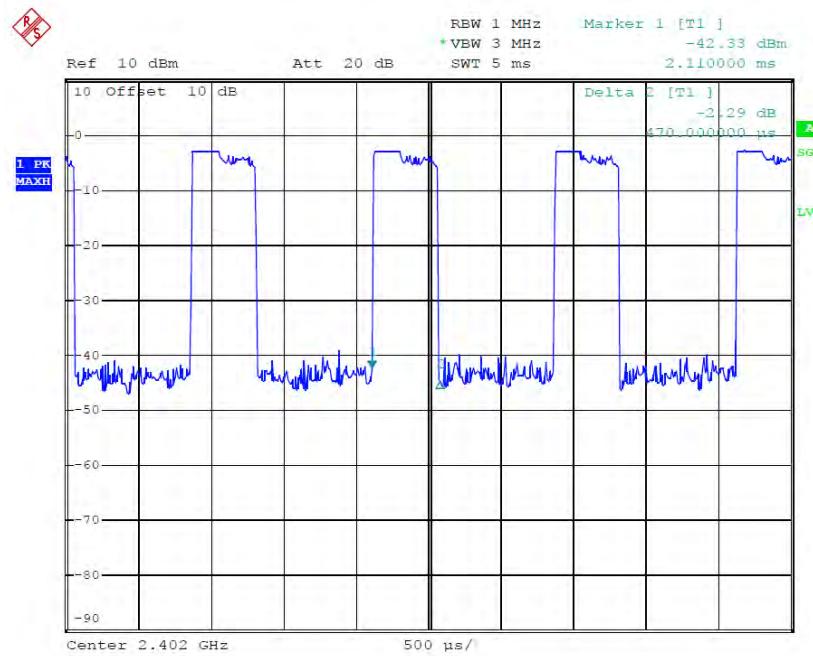
2DH5 High channel



Date: 5.AUG.2017 15:01:05

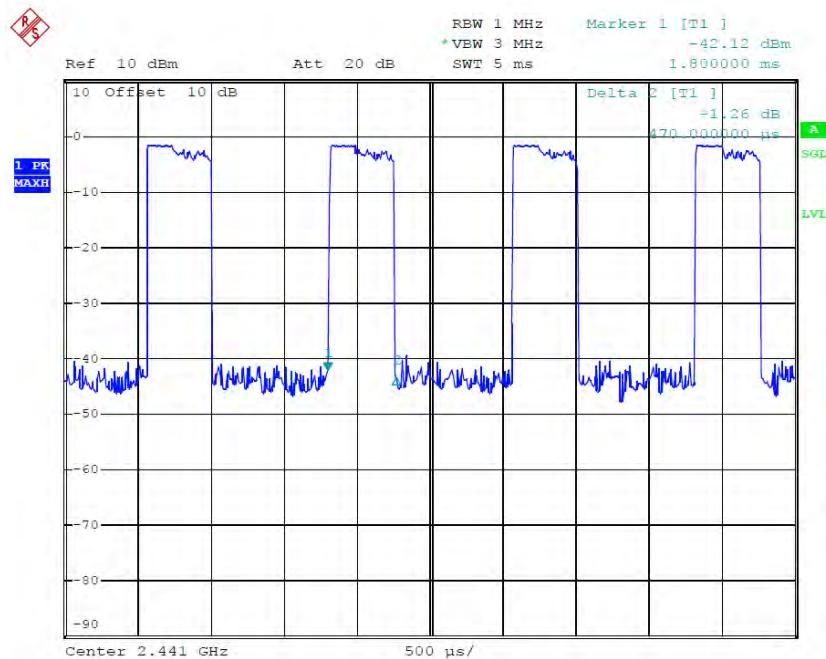
8DPSK Mode

3DH1 Low channel



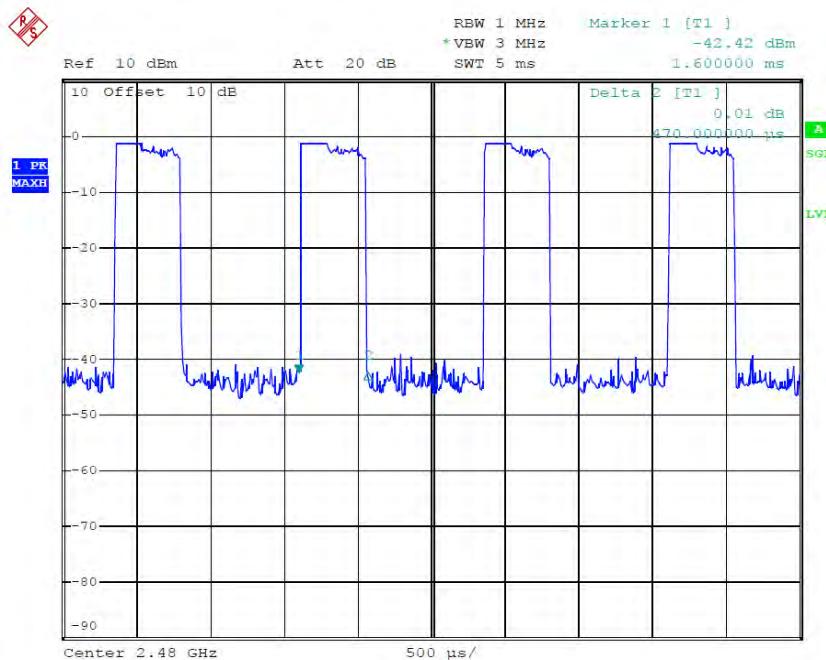
Date: 5.AUG.2017 15:14:06

3DH1 Middle channel



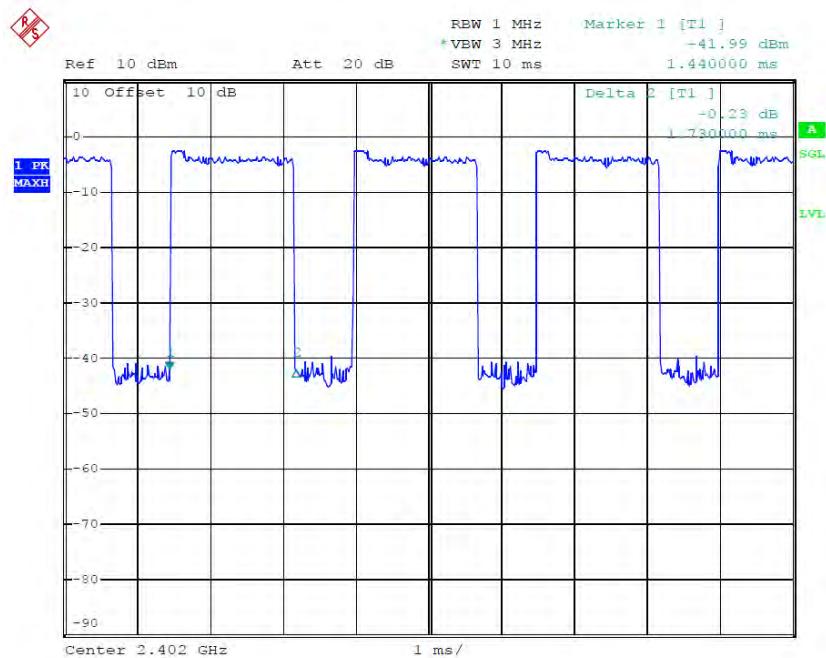
Date: 5.AUG.2017 15:08:36

3DH1 High channel



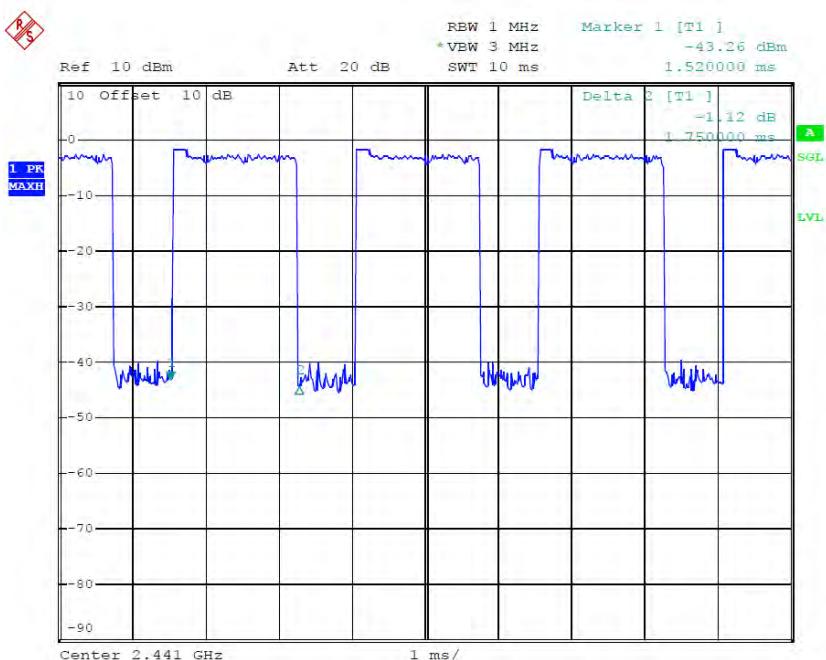
Date: 5.AUG.2017 15:09:14

3DH3 Low channel



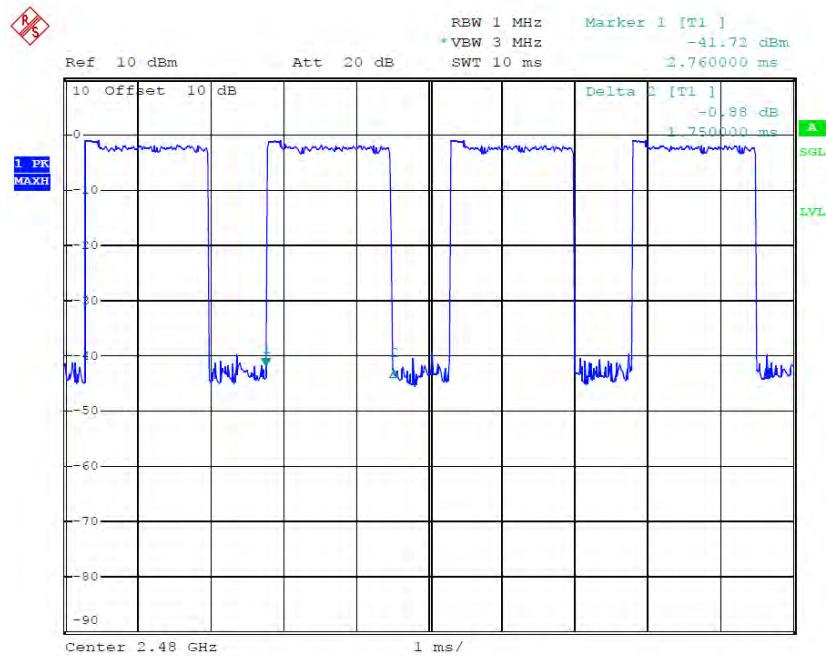
Date: 5.AUG.2017 15:12:25

3DH3 Middle channel



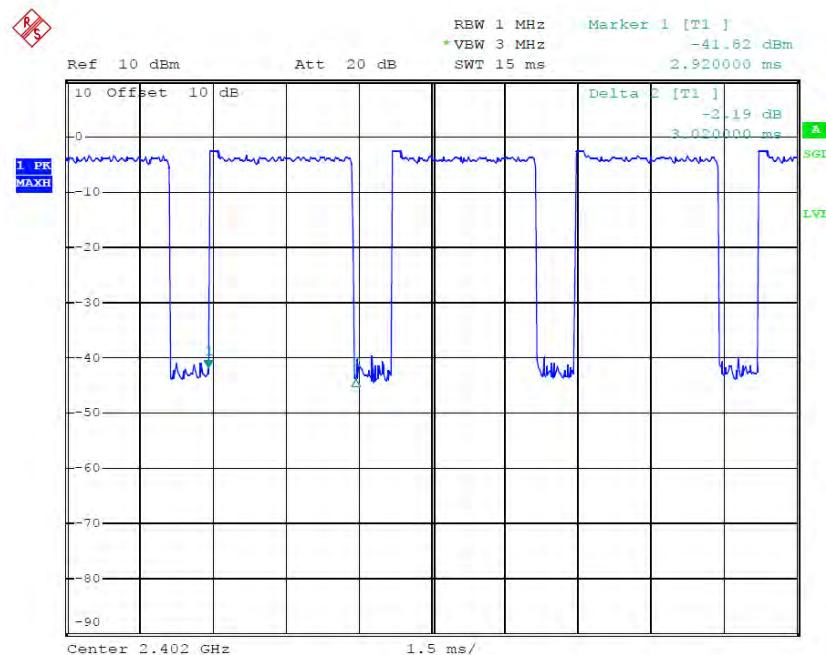
Date: 5.AUG.2017 15:11:53

3DH3 High channel



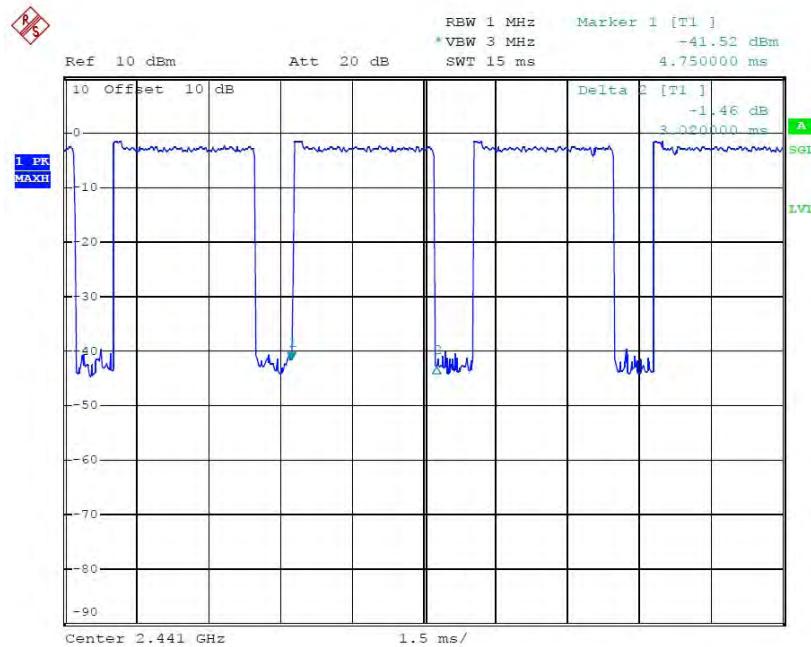
Date: 5.AUG.2017 15:09:57

3DH5 Low channel



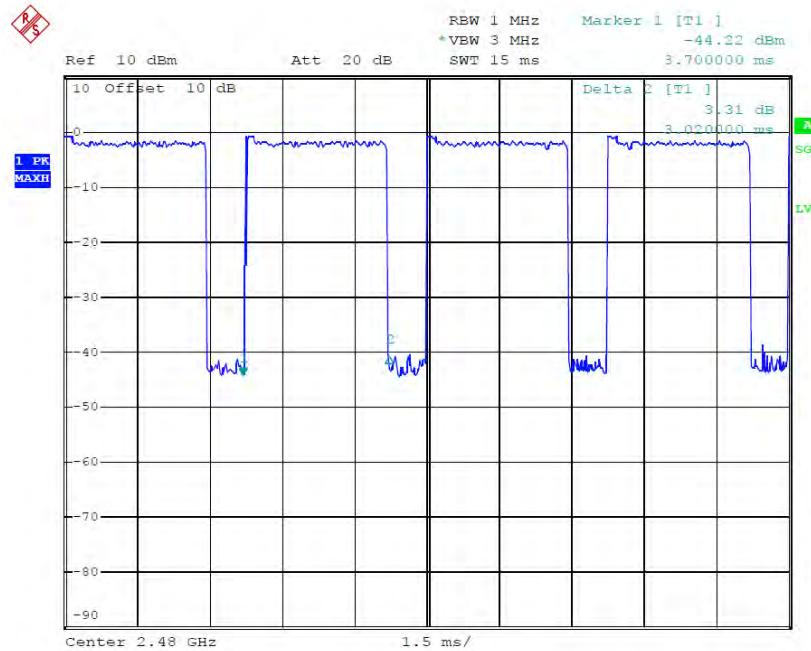
Date: 5.AUG.2017 15:15:18

3DH5 Middle channel



Date: 5.AUG.2017 15:17:19

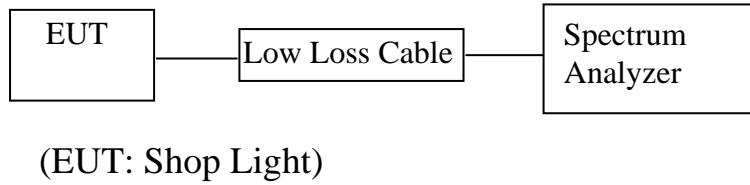
3DH5 High channel



Date: 5.AUG.2017 15:16:36

9. MAXIMUM PEAK OUTPUT POWER TEST

9.1. Block Diagram of Test Setup



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	2.02/0.0016	21 / 0.125
Middle	2441	2.09/0.0016	21 / 0.125
High	2480	1.71/0.0015	21 / 0.125

Π/4-DQPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	1.80/0.0015	21 / 0.125
Middle	2441	1.74/0.0015	21 / 0.125
High	2480	1.33/0.0014	21 / 0.125

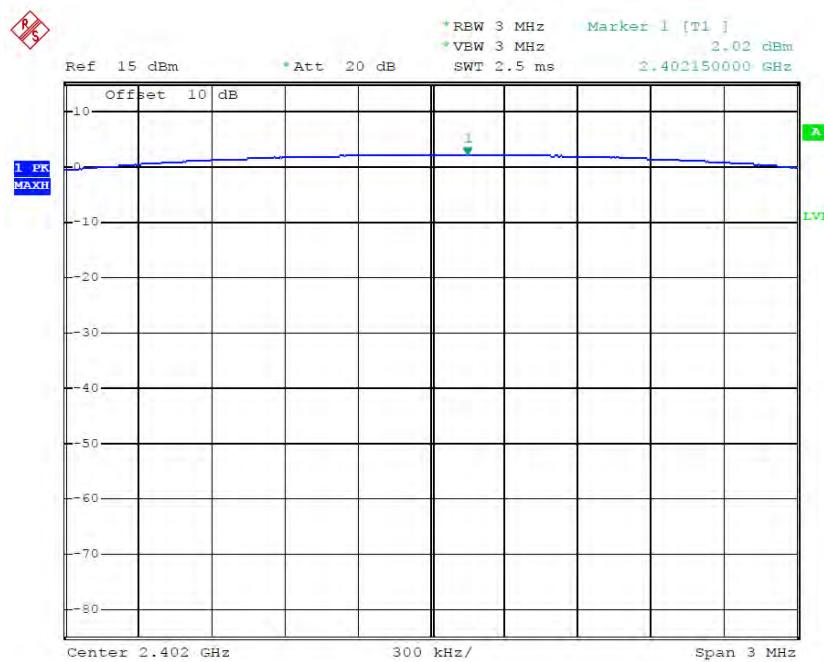
8DPSK Mode

Channel	Frequency (MHz)	Peak Output Power (dBm/W)	Limits dBm / W
Low	2402	1.34/0.0014	21 / 0.125
Middle	2441	1.73/0.0015	21 / 0.125
High	2480	1.22/0.0013	21 / 0.125

The spectrum analyzer plots are attached as below.

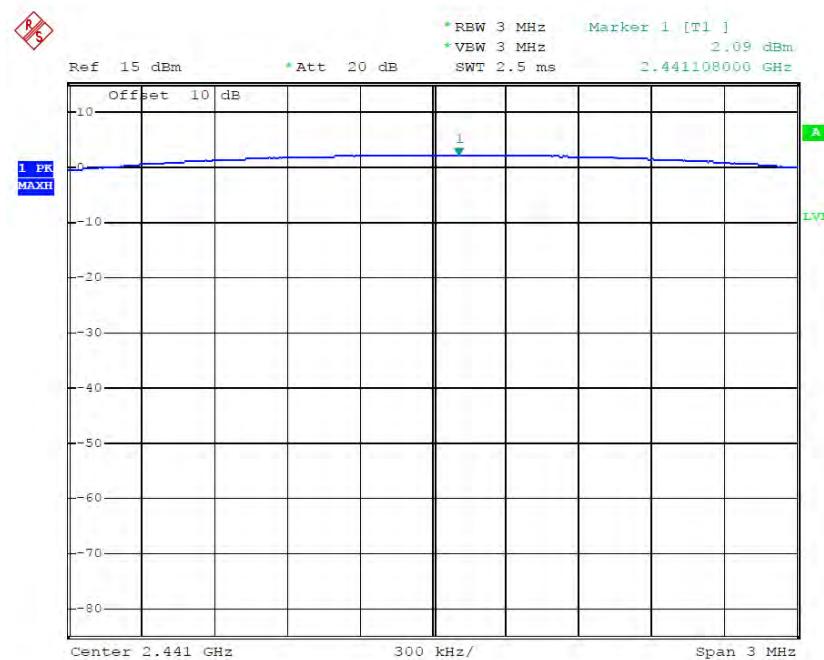
GFSK Mode

Low channel



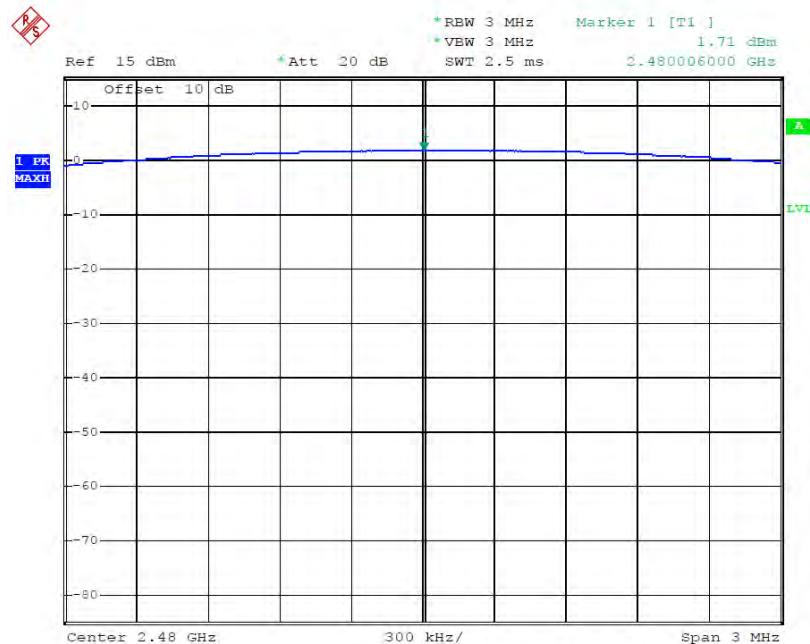
Date: 5.AUG.2017 17:33:21

Middle channel



Date: 5.AUG.2017 17:21:39

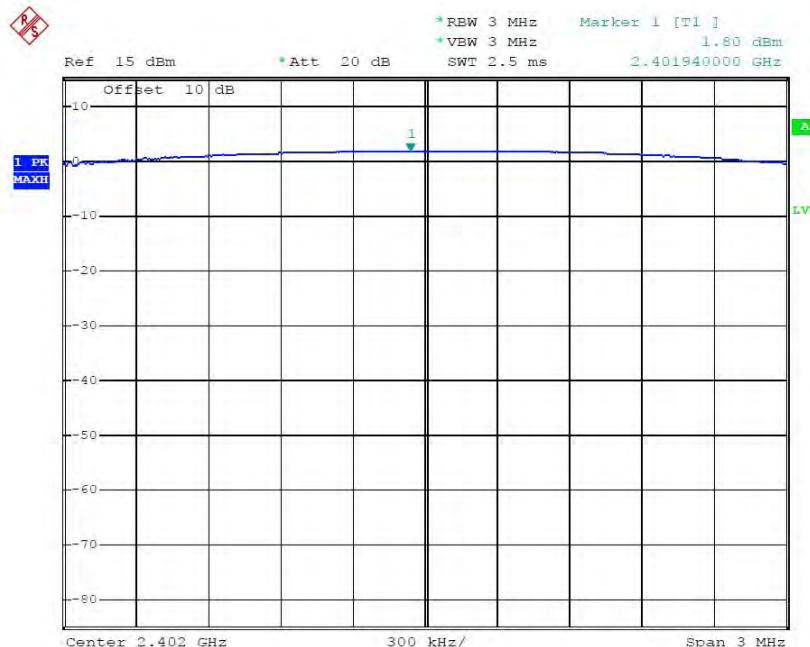
High channel



Date: 5.AUG.2017 17:34:47

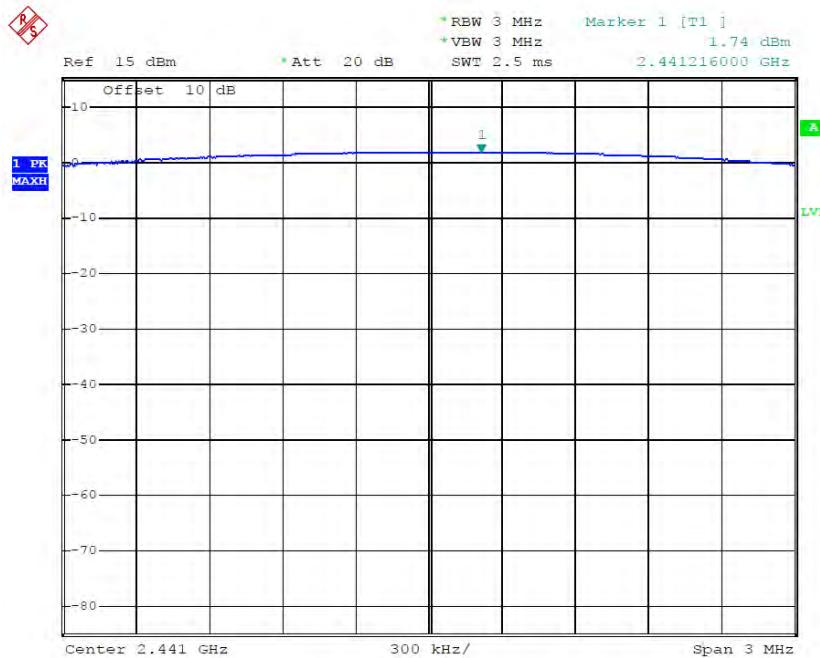
Pi/4-DQPSK Mode

Low channel



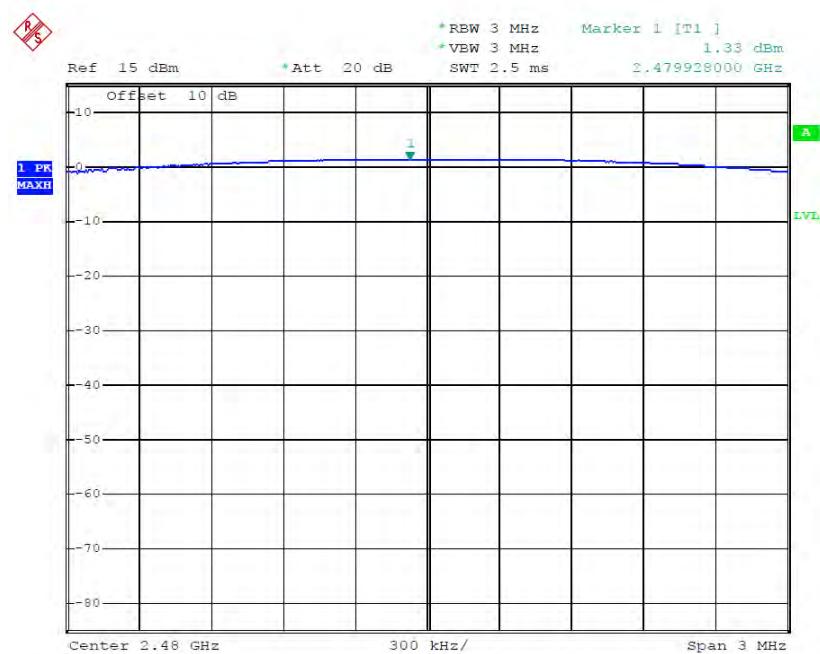
Date: 5.AUG.2017 17:31:22

Middle channel



Date: 5.AUG.2017 17:30:01

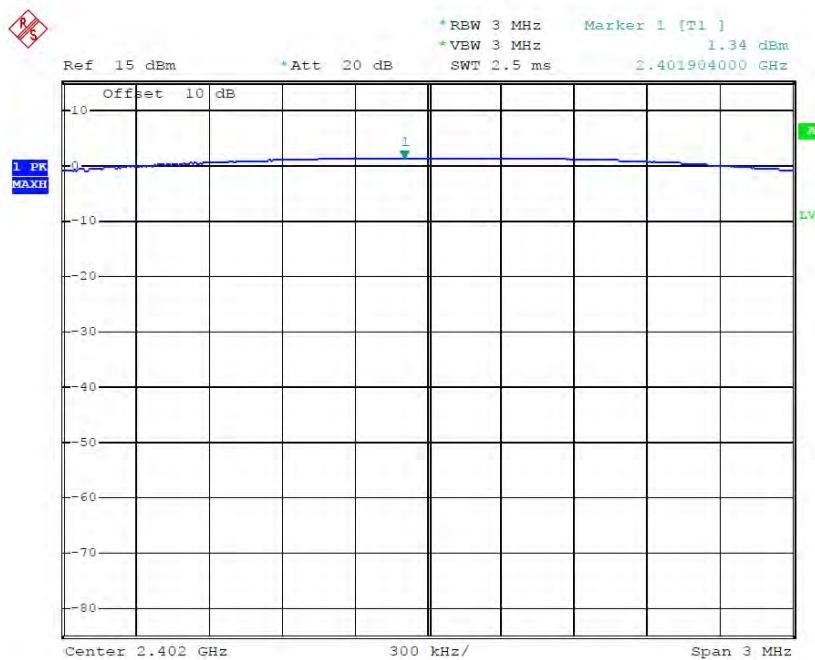
High channel



Date: 5.AUG.2017 17:32:14

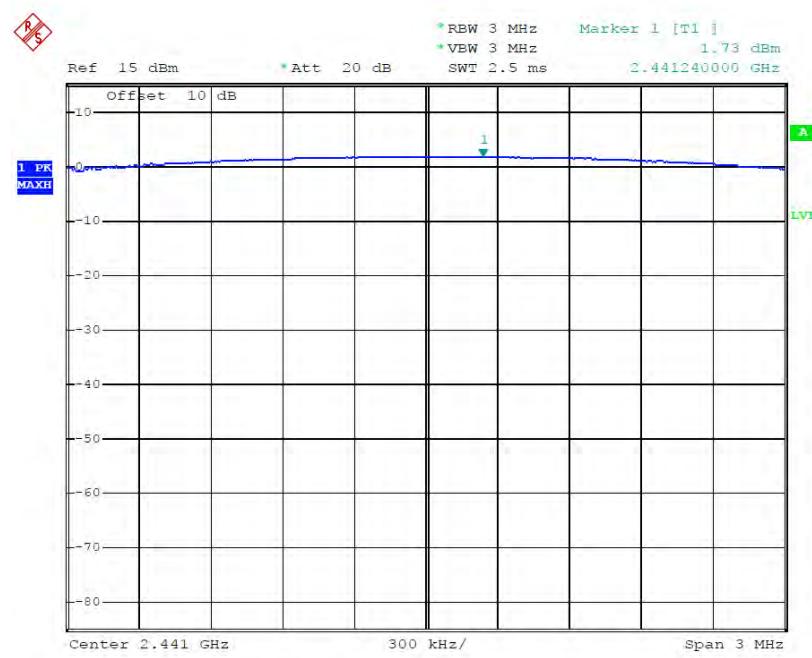
8DPSK Mode

Low channel



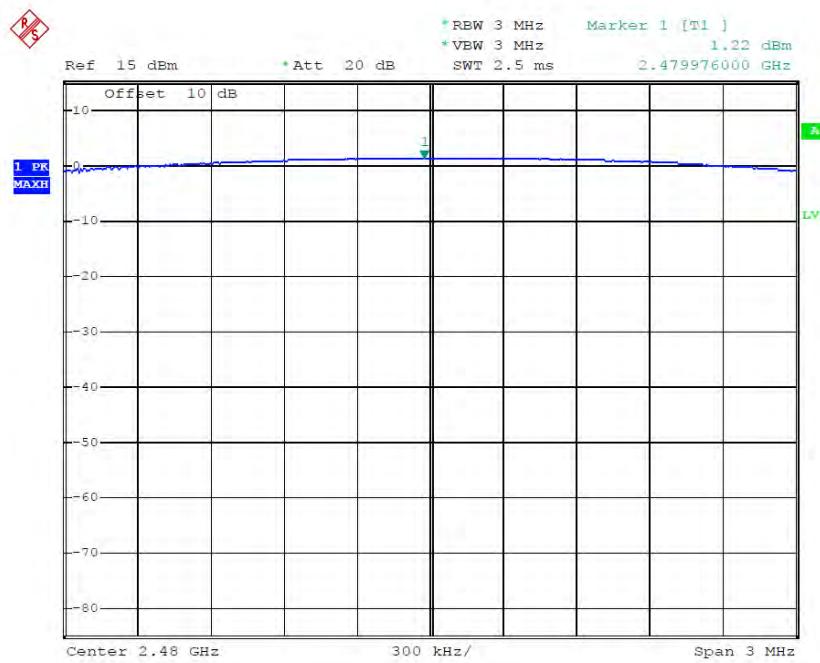
Date: 5.AUG.2017 17:25:21

Middle channel



Date: 5.AUG.2017 17:29:00

High channel



Date: 5.AUG.2017 17:27:02

10. RADIATED EMISSION TEST

10.1. Block Diagram of Test Setup

10.1.1. Block diagram of connection between the EUT and peripherals

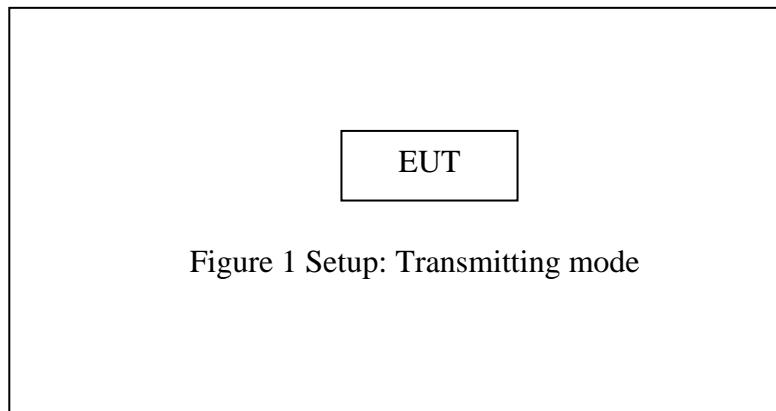
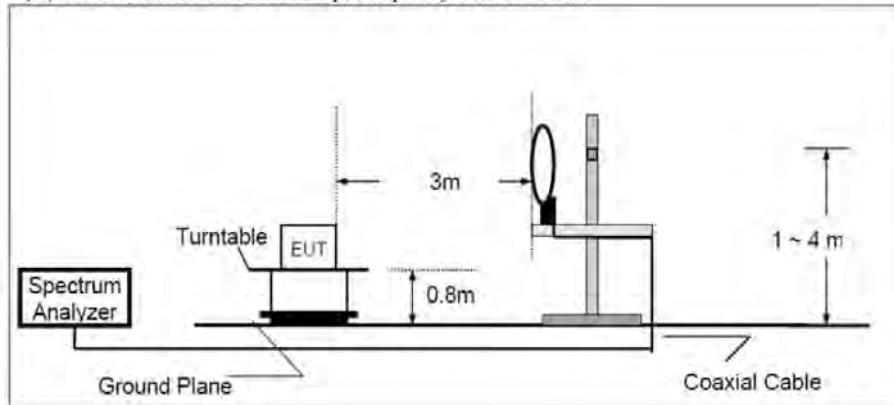


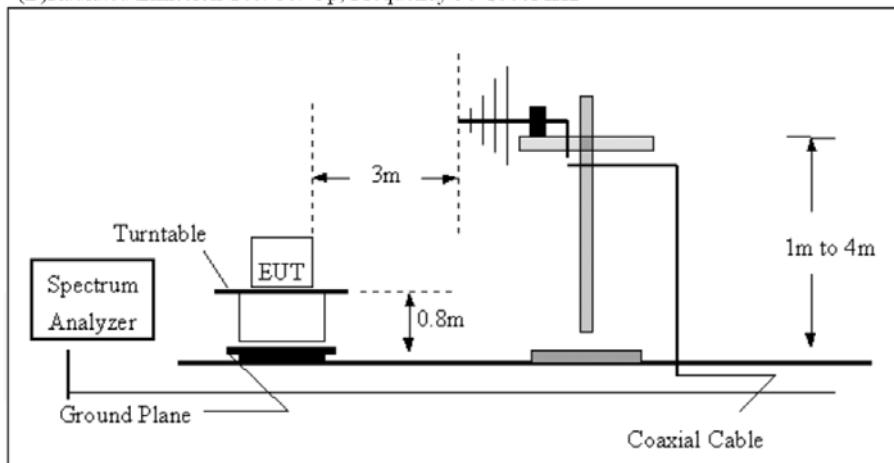
Figure 1 Setup: Transmitting mode

10.1.2. Semi-Anechoic Chamber Test Setup Diagram

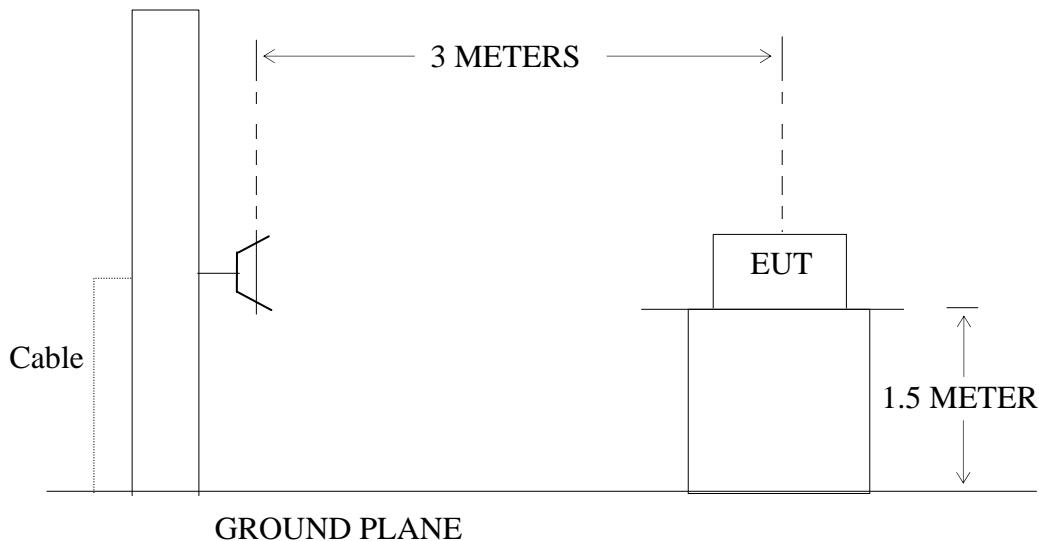
(A) Radiated Emission Test Set-Up, Frequency below 30MHz



(B) Radiated Emission Test Set-Up, Frequency 30-1000MHz



(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
¹ 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	(²)
13.36-13.41			

¹Until February 1, 1999, this restricted band shall be 0.490-0.510

²Above 38.6

- (b) Except as provided in paragraphs (d) and (e), the field strength of emission appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000MHz, Compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

10.4. Configuration of EUT on Measurement

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

10.5. Test Procedure

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

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

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

10.6. 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.

Below 1GHz



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.: Ix #986

Polarization: Horizontal

Standard: FCC Class B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/07/27

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

Time: 16:24:16

EUT: Shop Light

Engineer Signature: MILLER

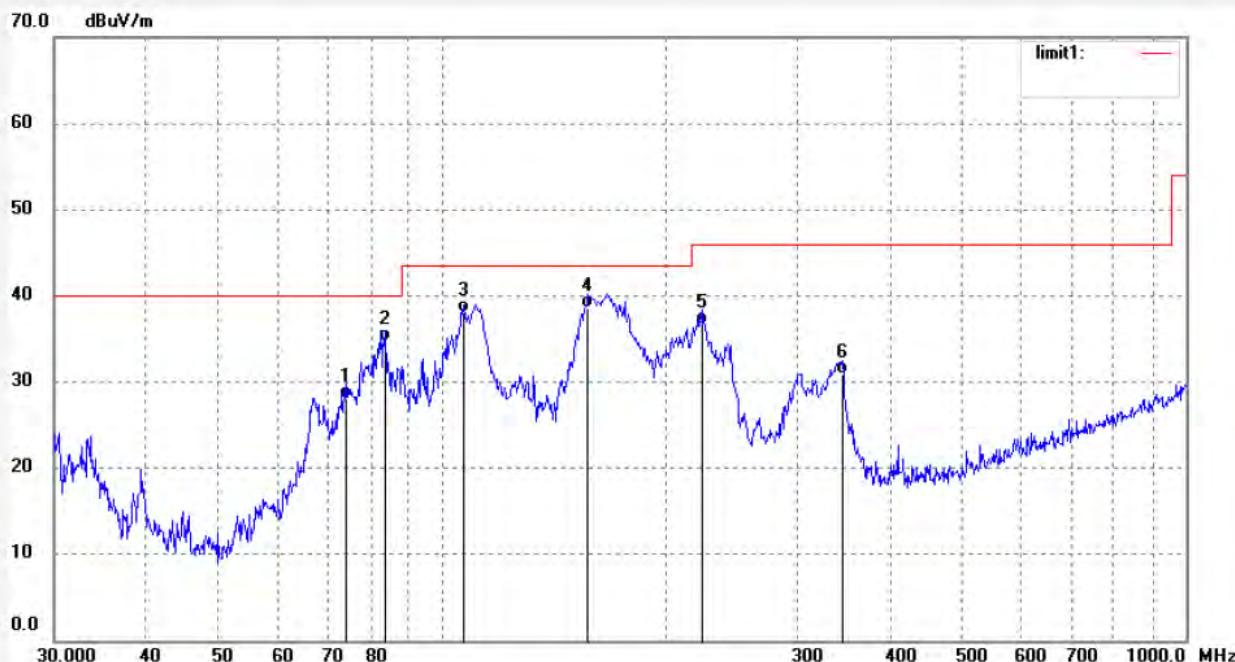
Mode: TX 2402MHz(GFSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	73.7496	50.36	-22.25	28.11	40.00	-11.89	QP	300	186	
2	83.6937	56.78	-21.98	34.80	40.00	-5.20	QP	300	180	
3	106.6552	60.44	-22.43	38.01	43.50	-5.49	QP	200	176	
4	156.9765	60.35	-21.71	38.64	43.50	-4.86	QP	200	168	
5	223.0630	54.94	-18.35	36.59	46.00	-9.41	QP	300	168	
6	344.8602	44.86	-14.03	30.83	46.00	-15.17	QP	200	149	



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.: Ix #985

Polarization: Vertical

Standard: FCC Class B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/07/27

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

Time: 16:22:16

EUT: Shop Light

Engineer Signature: MILLER

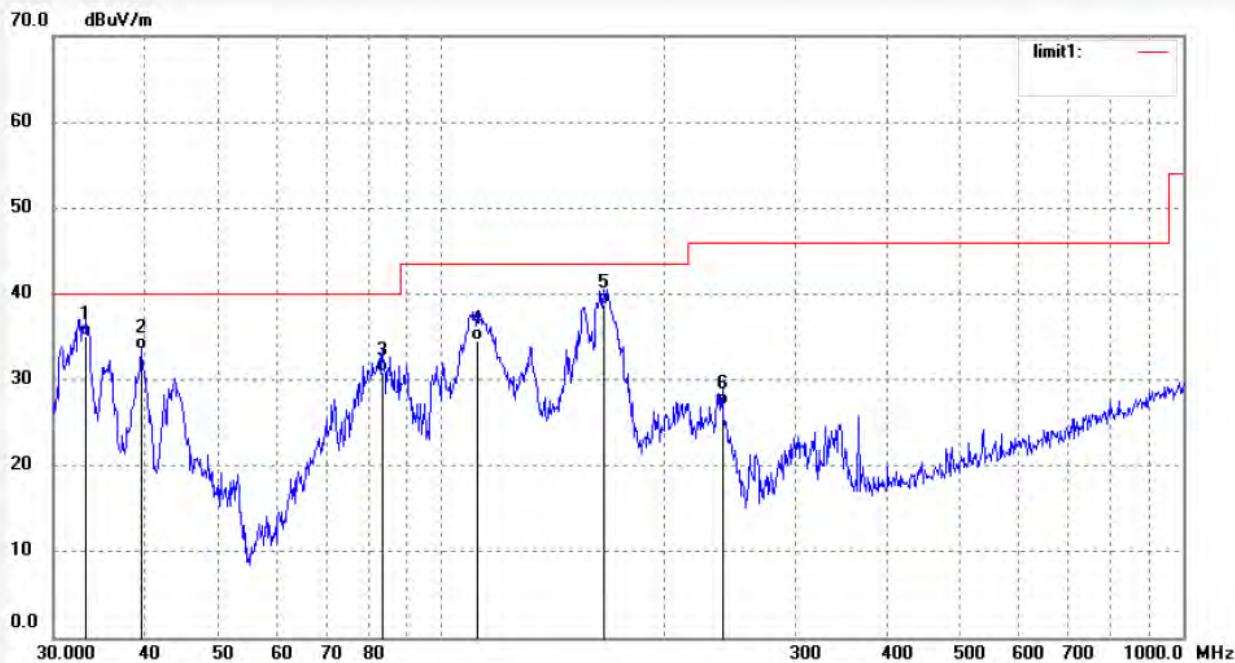
Mode: TX 2402MHz(GFSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	33.2180	50.63	-15.50	35.13	40.00	-4.87	QP	200	168	
2	39.4587	51.36	-17.87	33.49	40.00	-6.51	QP	200	360	
3	83.4001	52.79	-21.97	30.82	40.00	-9.18	QP	100	183	
4	112.0328	56.39	-21.83	34.56	43.50	-8.94	QP	200	175	
5	165.4716	59.63	-20.78	38.85	43.50	-4.65	QP	300	159	
6	239.3019	45.16	-18.18	26.98	46.00	-19.02	QP	300	354	



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.: Ix #987

Polarization: Horizontal

Standard: FCC Class B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/07/28

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

Time: 16:20:42

EUT: Shop Light

Engineer Signature: MILLER

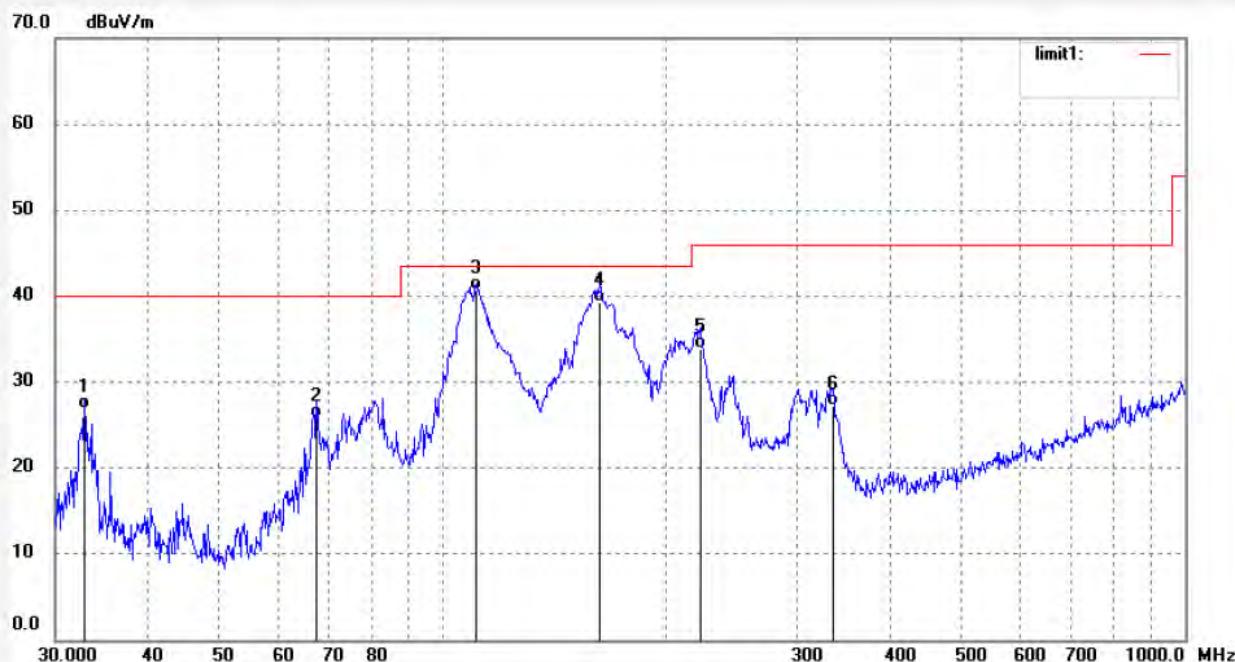
Mode: TX 2441MHz(GFSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	32.8697	42.32	-15.41	26.91	40.00	-13.09	QP	300	167	
2	67.5477	47.86	-21.99	25.87	40.00	-14.13	QP	200	49	
3	110.8580	61.92	-21.83	40.09	43.50	-3.41	QP	200	325	
4	162.5900	60.46	-21.10	39.36	43.50	-4.14	QP	300	46	
5	222.2806	52.17	-18.37	33.80	46.00	-12.20	QP	100	167	
6	335.3016	41.65	-14.38	27.27	46.00	-18.73	QP	200	180	



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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Ix #988

Polarization: Vertical

Standard: FCC Class B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/07/28

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

Time: 16:21:35

EUT: Shop Light

Engineer Signature: MILLER

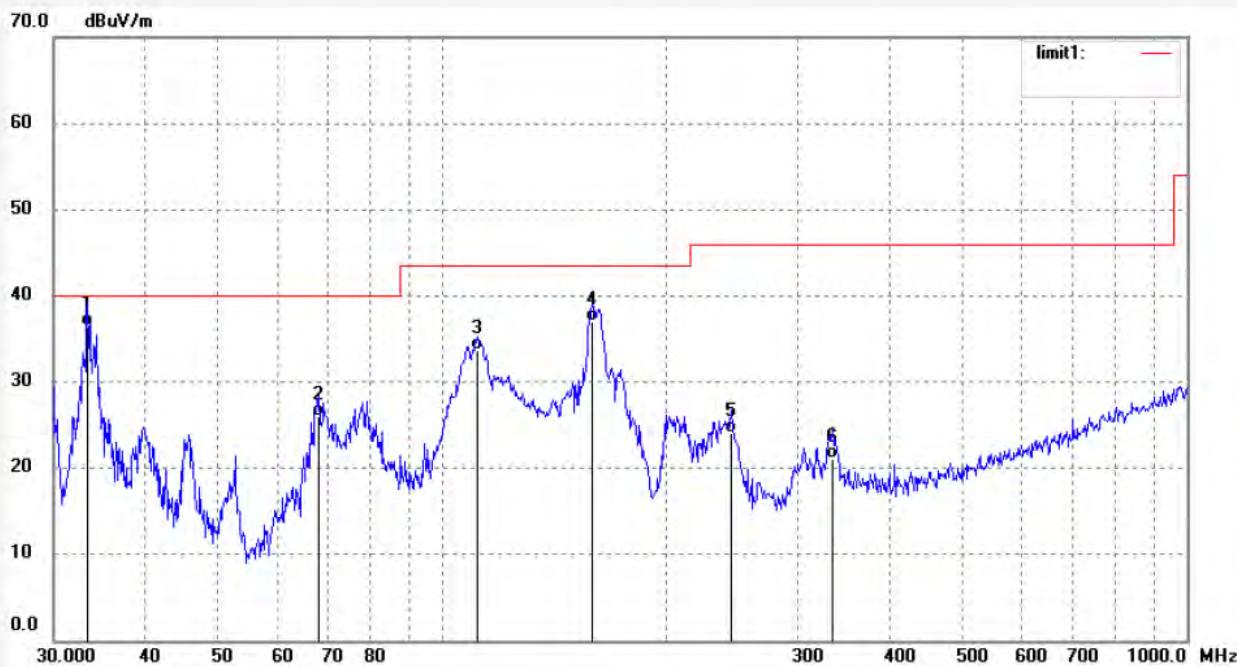
Mode: TX 2441MHz(GFSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	33.3349	52.05	-15.53	36.52	40.00	-3.48	QP	100	45	
2	68.0241	48.08	-22.01	26.07	40.00	-13.93	QP	200	123	
3	111.2483	55.48	-21.83	33.65	43.50	-9.85	QP	200	59	
4	158.6399	58.46	-21.52	36.94	43.50	-6.56	QP	100	156	
5	244.4004	42.19	-18.15	24.04	46.00	-21.96	QP	300	186	
6	334.1255	35.55	-14.44	21.11	46.00	-24.89	QP	100	248	



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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Ix #990

Polarization: Horizontal

Standard: FCC Class B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/07/28

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

Time: 16:23:33

EUT: Shop Light

Engineer Signature: MILLER

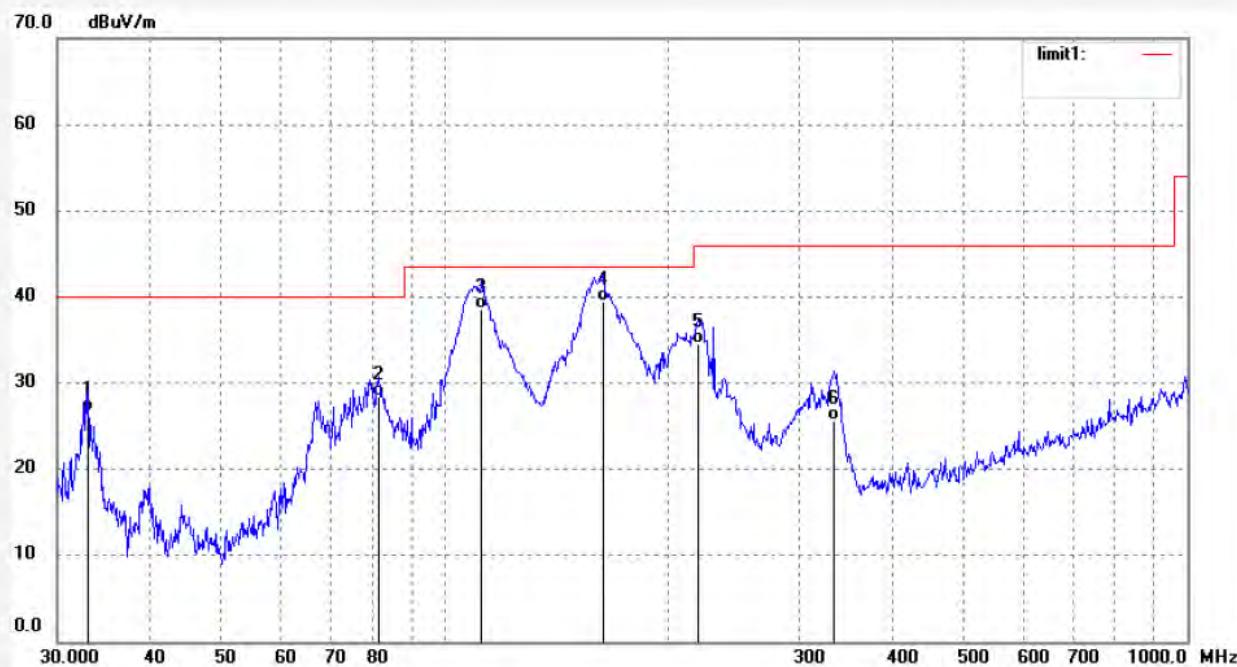
Mode: TX 2480MHz(GFSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	32.9854	42.16	-15.45	26.71	40.00	-13.29	QP	200	52	
2	81.3740	50.46	-21.99	28.47	40.00	-11.53	QP	300	156	
3	112.0328	60.49	-21.83	38.66	43.50	-4.84	QP	100	324	
4	163.1623	60.56	-21.03	39.53	43.50	-3.97	QP	300	125	
5	219.1785	52.91	-18.40	34.51	46.00	-11.49	QP	200	198	
6	334.1255	40.16	-14.44	25.72	46.00	-20.28	QP	100	46	



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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Ix #989

Polarization: Vertical

Standard: FCC Class B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/07/28

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

Time: 16:22:30

EUT: Shop Light

Engineer Signature: MILLER

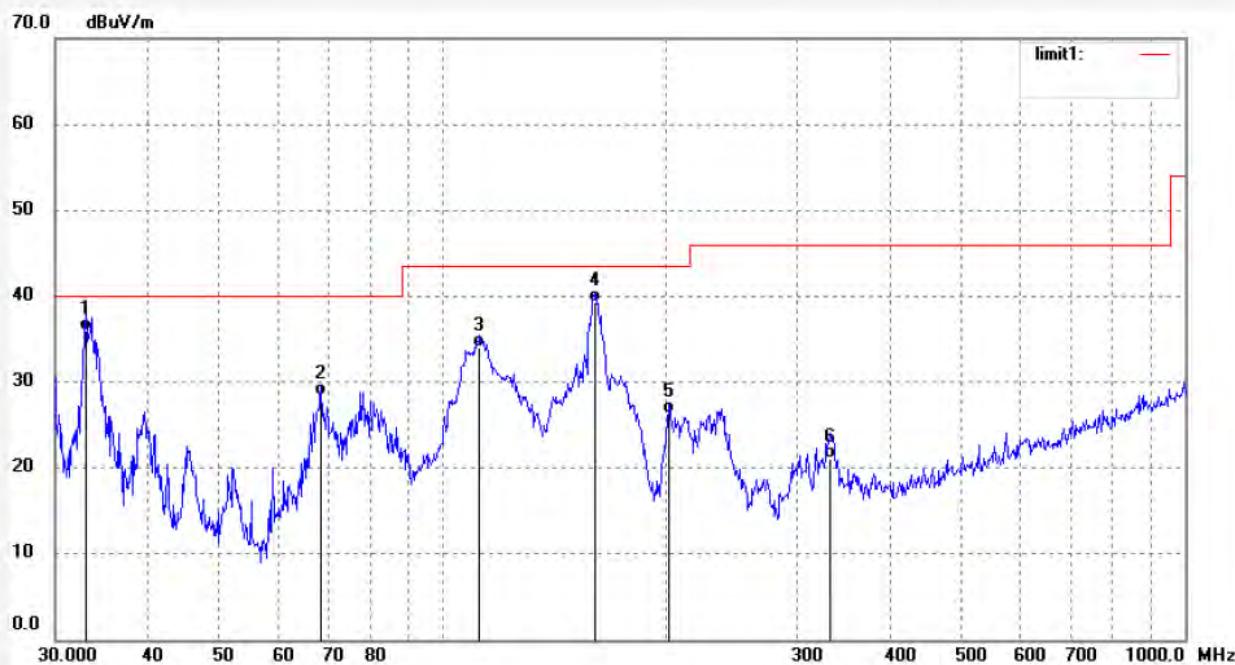
Mode: TX 2480MHz(GFSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	32.9854	51.46	-15.45	36.01	40.00	-3.99	QP	100	156	
2	68.5038	50.46	-22.02	28.44	40.00	-11.56	QP	300	186	
3	112.0328	55.94	-21.83	34.11	43.50	-9.39	QP	200	173	
4	160.3209	60.67	-21.34	39.33	43.50	-4.17	QP	100	186	
5	201.4539	44.96	-18.61	26.35	43.50	-17.15	QP	200	156	
6	332.9536	35.66	-14.49	21.17	46.00	-24.83	QP	100	178	

Above 1GHz



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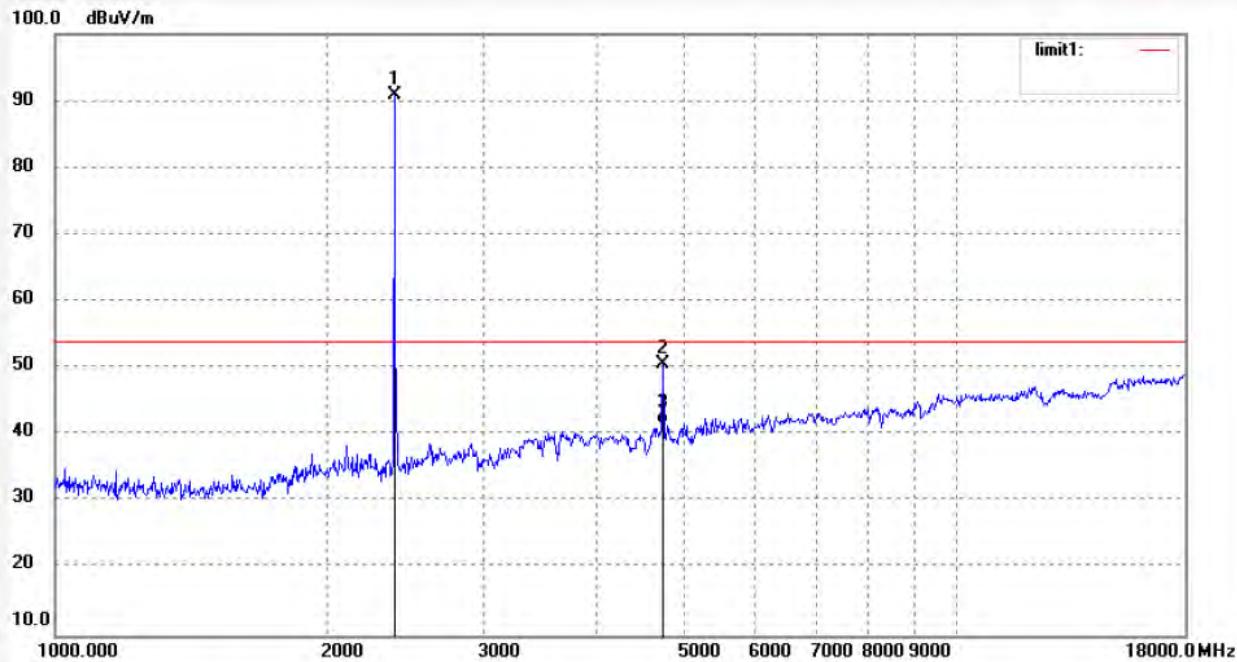
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.:	Ix #1038	Polarization:	Horizontal
Standard:	FCC PART 15B 3M Radiated	Power Source:	AC 120V/60Hz
Test item:	Radiation Test	Date:	2017/08/05
Temp.(C)/Hum.(%)	25 C / 55 %	Time:	16:17:14
EUT:	Shop Light	Engineer Signature:	MILLER
Mode:	TX 2402MHz(GFSK)	Distance:	3m
Model:	4SHP3240BTS		
Manufacturer:	COOPER WIRING DEVICES INC.		
Note:	Report NO.:ATE20171548		



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.719	97.18	-6.37	90.81			peak			
2	4804.057	49.84	0.70	50.54	74.00	-23.46	peak			
3	4804.057	40.83	0.70	41.53	54.00	-12.47	AVG	300	210	

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.: Ix #1037

Polarization: Vertical

Standard: FCC PART 15B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/08/05

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

Time: 16:15:28

EUT: Shop Light

Engineer Signature: MILLER

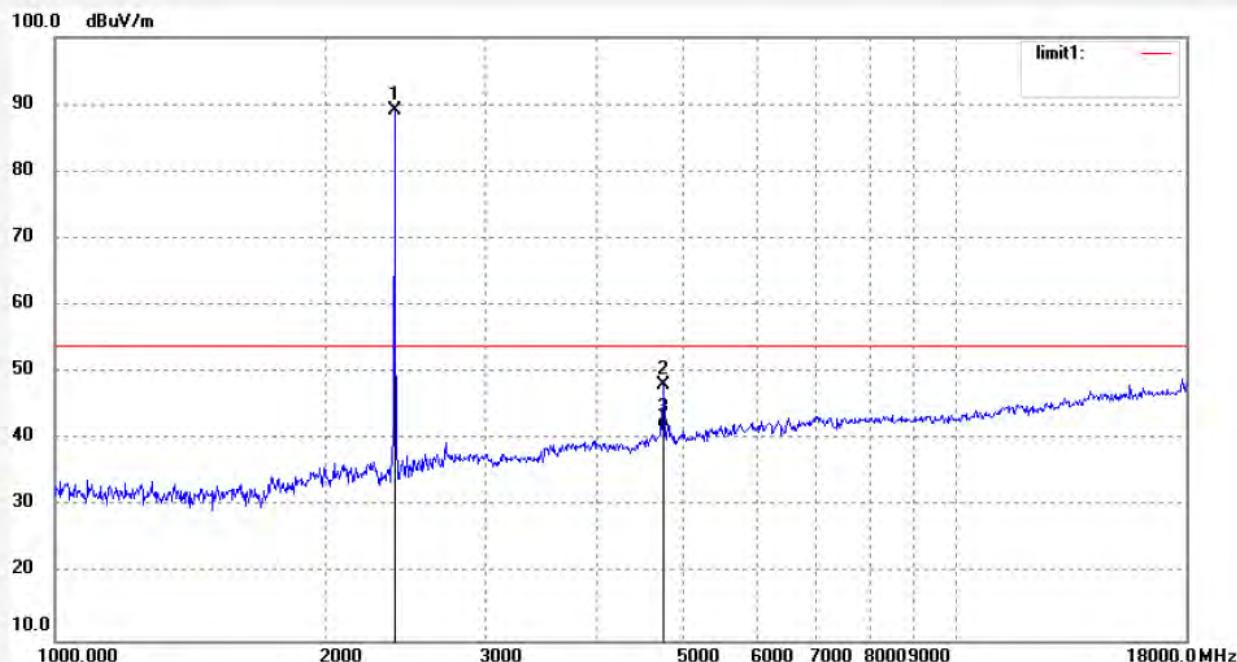
Mode: TX 2402MHz(GFSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2402.719	95.47	-6.37	89.10			peak			
2	4804.057	47.53	0.70	48.23	74.00	-25.77	peak			
3	4804.057	40.86	0.70	41.56	54.00	-12.44	AVG	200	159	

Note: Average measurement with peak detection at No.3



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

Job No.: Ix #1034

Polarization: Horizontal

Standard: FCC PART 15B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/08/05

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

Time: 16:13:01

EUT: Shop Light

Engineer Signature: MILLER

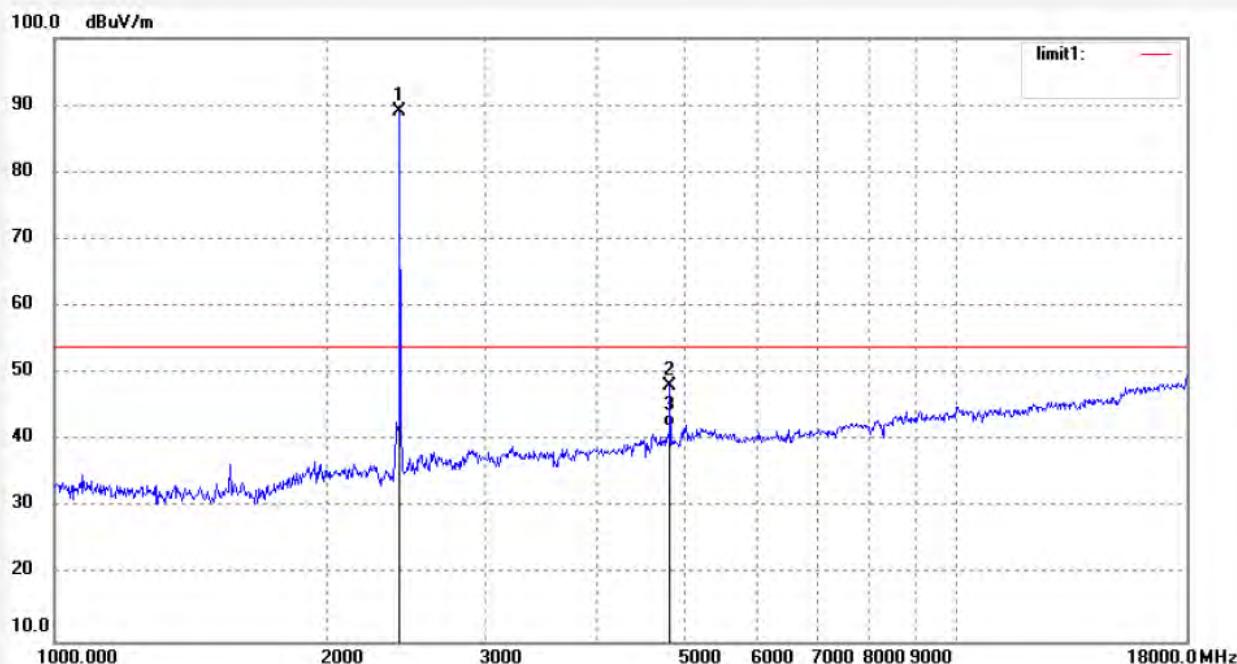
Mode: TX 2441MHz(GFSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.621	95.34	-6.20	89.14			peak			
2	4882.324	47.01	1.07	48.08	74.00	-25.92	peak			
3	4882.324	40.89	1.07	41.96	54.00	-12.04	AVG	200	145	

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.: Ix #1035

Polarization: Vertical

Standard: FCC PART 15B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/08/05

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

Time: 16:13:44

EUT: Shop Light

Engineer Signature: MILLER

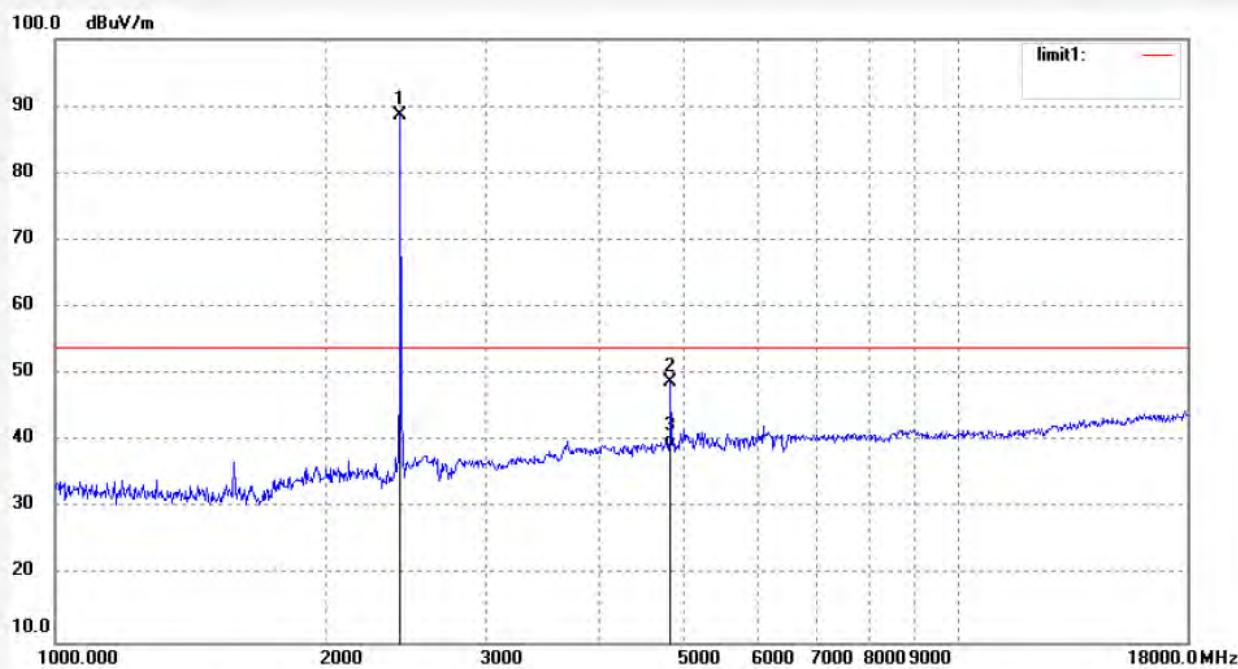
Mode: TX 2441MHz(GFSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2441.621	94.85	-6.20	88.65			peak			
2	4882.324	47.77	1.07	48.84	74.00	-25.16	peak			
3	4882.324	38.09	1.07	39.16	54.00	-14.84	AVG	200	45	

Note: Average measurement with peak detection at No.3



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

Job No.: Ix #1032

Standard: FCC PART 15B 3M Radiated

Test item: Radiation Test

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

EUT: Shop Light

Mode: TX 2480MHz(GFSK)

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Polarization: Horizontal

Power Source: AC 120V/60Hz

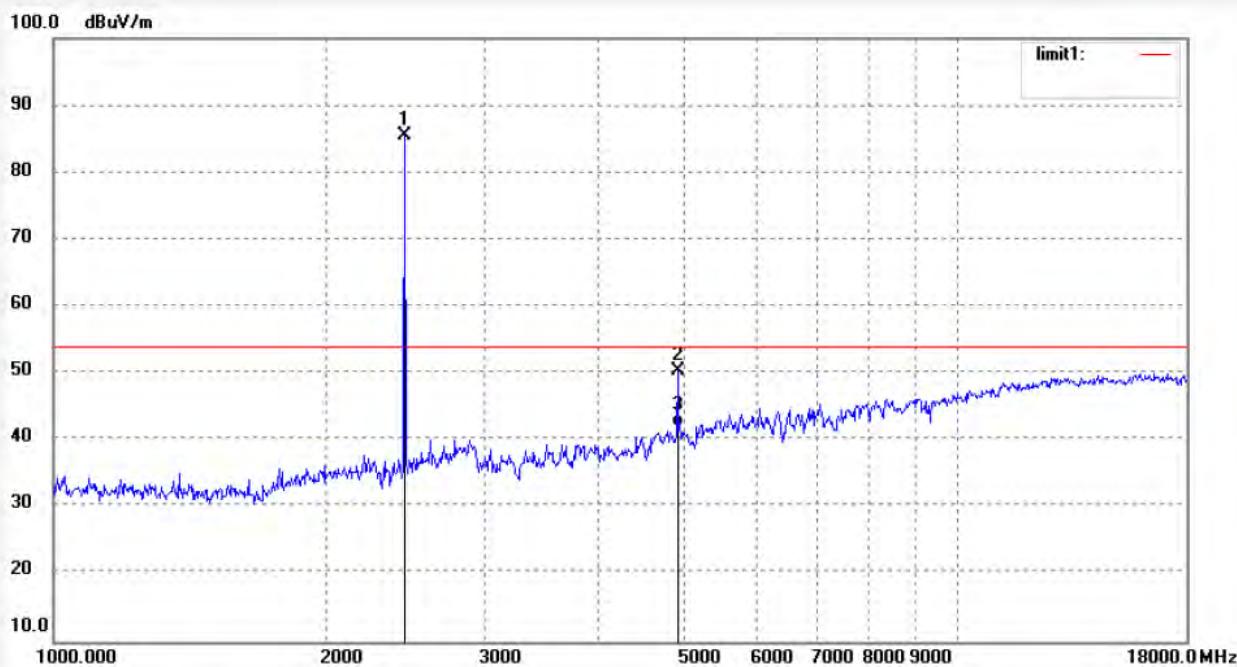
Date: 2017/08/05

Time: 16:11:09

Engineer Signature: MILLER

Distance: 3m

Note: Report NO.:ATE20171548



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.034	91.45	-6.04	85.41			peak			
2	4960.444	48.98	1.50	50.48	74.00	-23.52	peak			
3	4960.444	40.60	1.50	42.10	54.00	-11.90	AVG			

Note: Average measurement with peak detection at No.3

Job No.: Ix #1033

Polarization: Vertical

Standard: FCC PART 15B 3M Radiated

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/08/05

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

Time: 16:11:48

EUT: Shop Light

Engineer Signature: MILLER

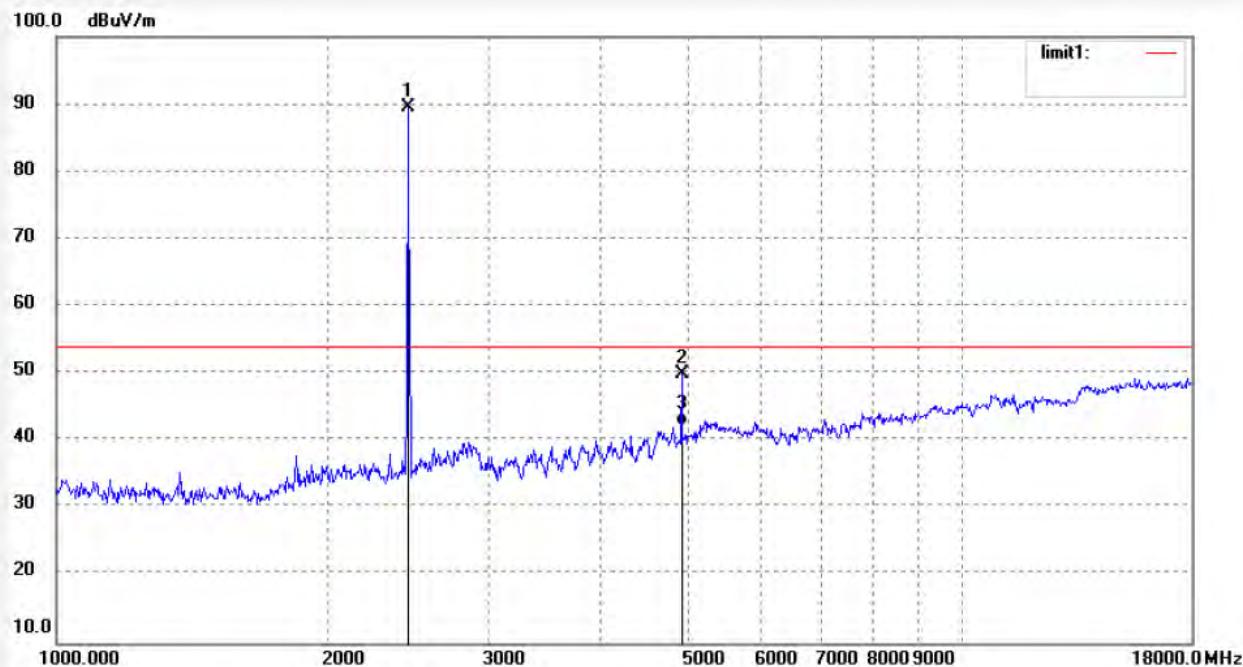
Mode: TX 2480MHz(GFSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548

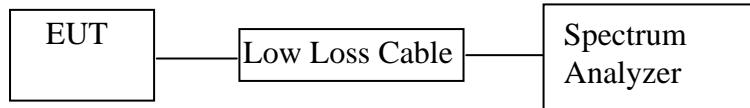


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2480.034	95.58	-6.04	89.54			peak			
2	4960.444	48.41	1.50	49.91	74.00	-24.09	peak			
3	4960.444	40.89	1.50	42.39	54.00	-11.61	AVG	200	172	

Note: Average measurement with peak detection at No.3

11.BAND EDGE COMPLIANCE TEST

11.1.Block Diagram of Test Setup



(EUT: 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.

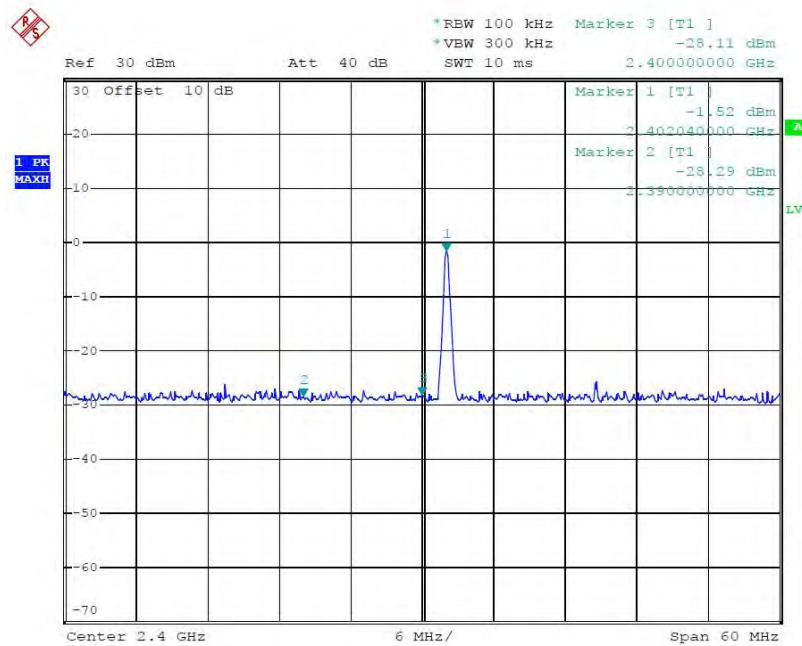
11.5. Test Procedure

- 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.

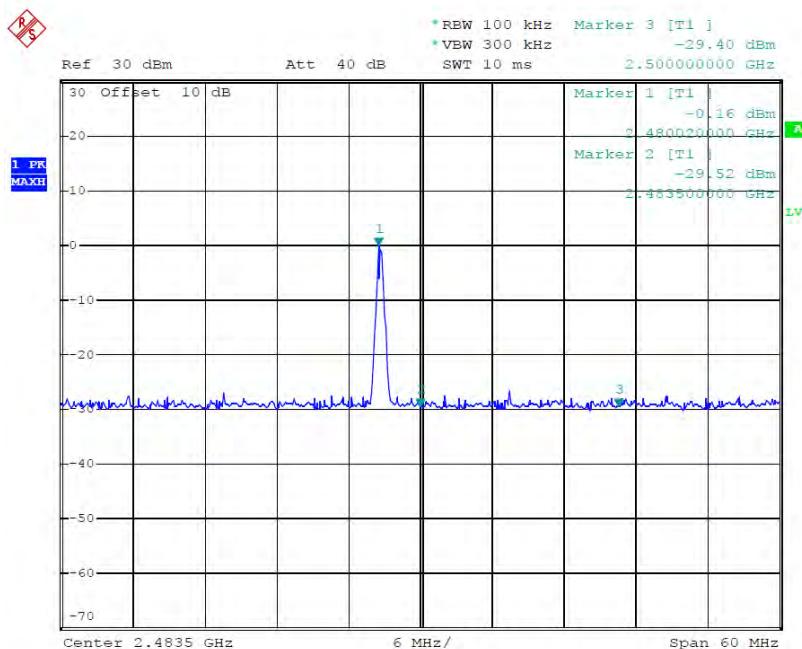
11.6. Test Result

Frequency (MHz)	Result of Band Edge (dBc)	Limit of Band Edge (dBc)
GFSK		
2400.00	26.77	> 20dBc
2483.50	29.36	> 20dBc
$\Pi/4$ -DQPSK Mode		
2400.00	27.54	> 20dBc
2483.50	28.40	> 20dBc
8DPSK		
2400.00	25.83	> 20dBc
2483.50	28.58	> 20dBc

GFSK

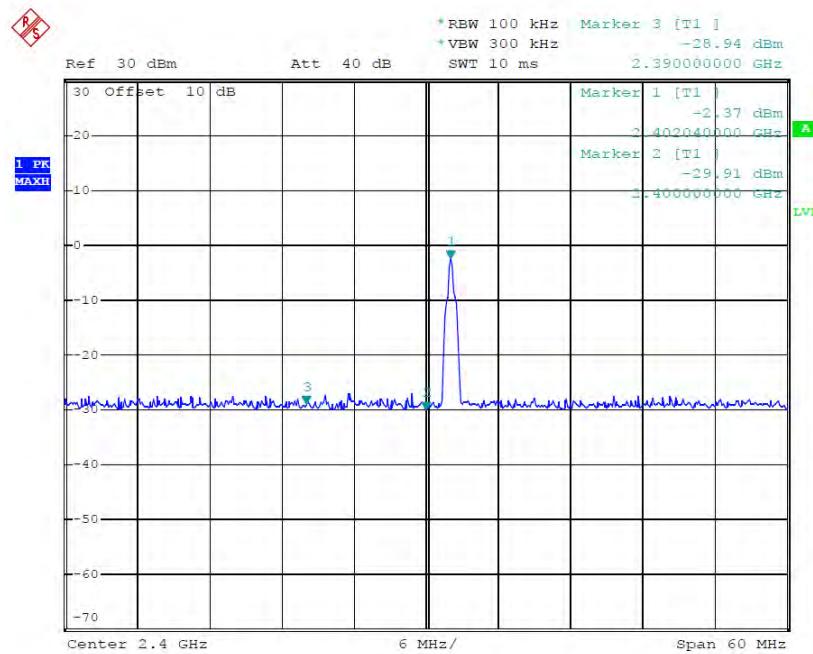


Date: 5.AUG.2017 16:10:48

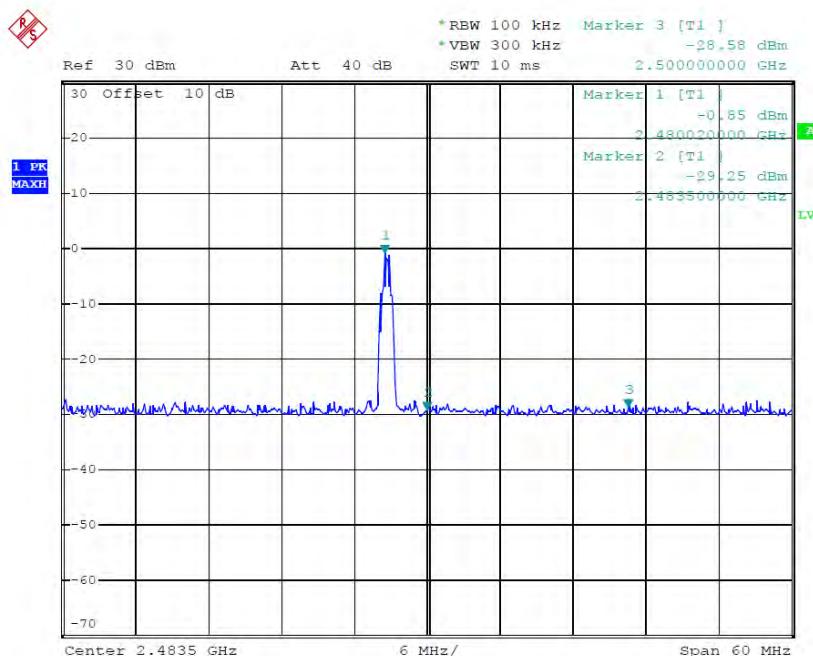


Date: 5.AUG.2017 16:15:31

Π/4-DQPSK Mode

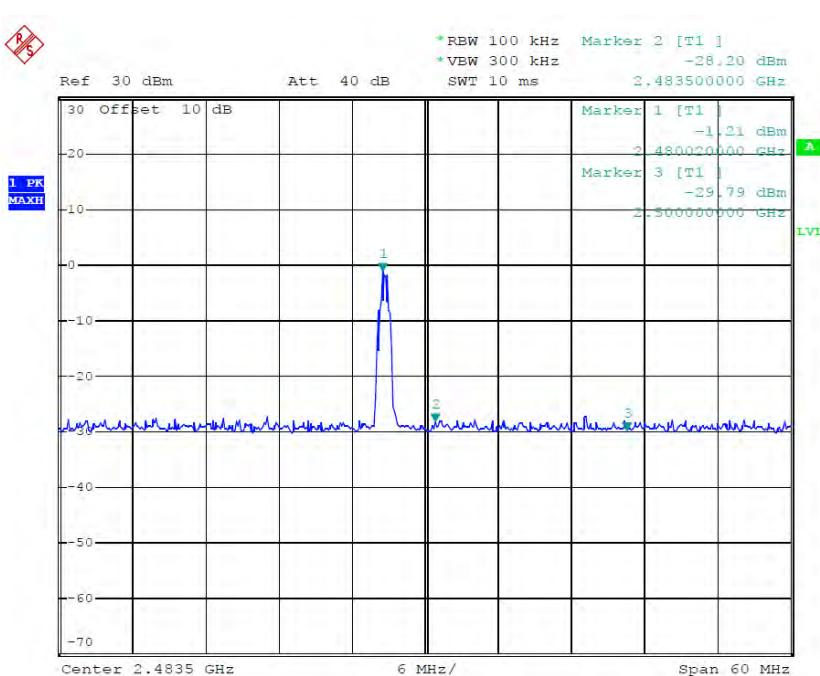
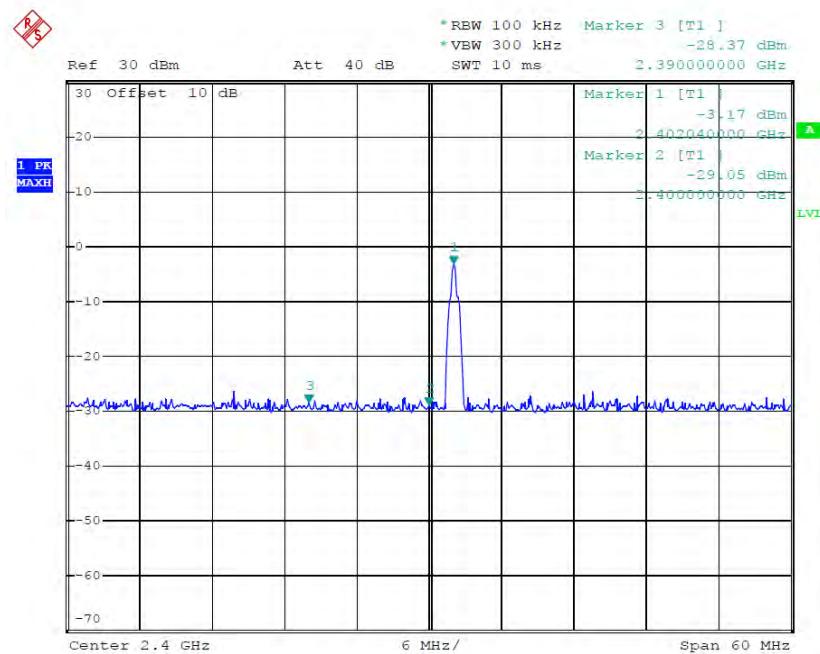


Date: 5.AUG.2017 16:19:53



Date: 5.AUG.2017 16:17:44

8DPSK



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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 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.: Ix #1054

Polarization: Horizontal

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/08/05

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

Time: 16:48:06

EUT: Shop Light

Engineer Signature: MILLER

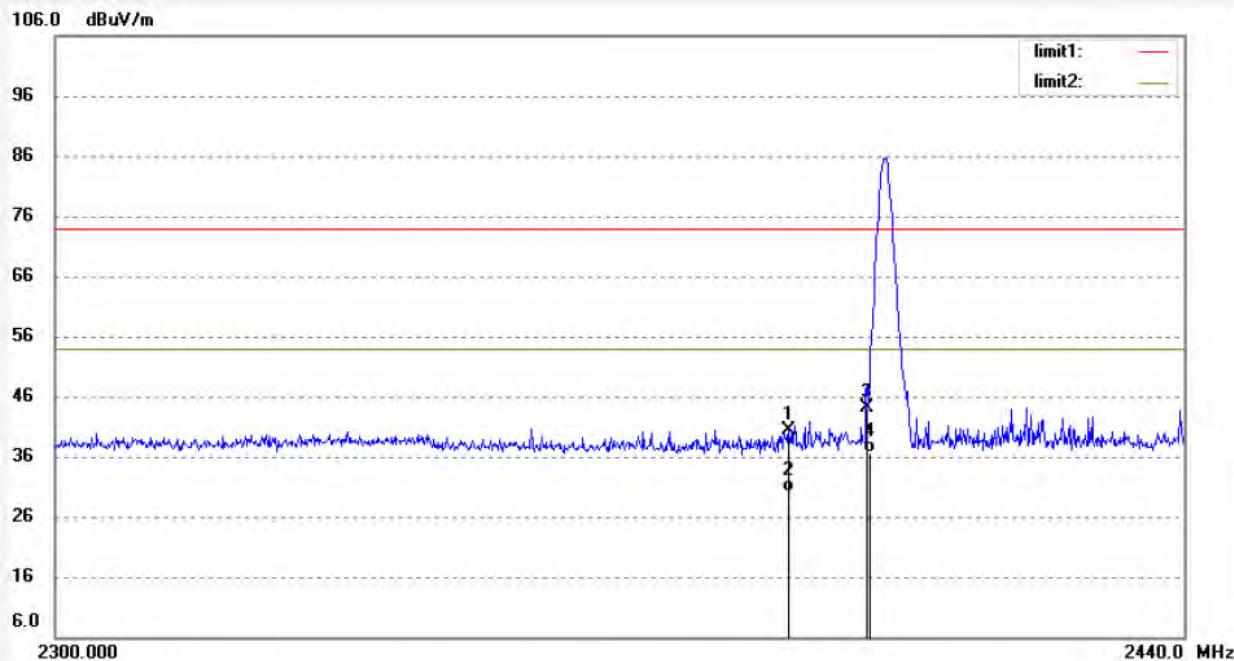
Mode: TX 2402MHz(GFSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	46.72	-6.32	40.40	74.00	-33.60	peak			
2	2390.000	36.55	-6.32	30.23	54.00	-23.77	AVG	200	33	
3	2400.000	50.38	-6.27	44.11	74.00	-29.89	peak			
4	2400.000	42.86	-6.27	36.59	54.00	-17.41	AVG	100	25	

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



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

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Ix #1055

Polarization: Vertical

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/08/05

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

Time: 16:49:46

EUT: Shop Light

Engineer Signature: MILLER

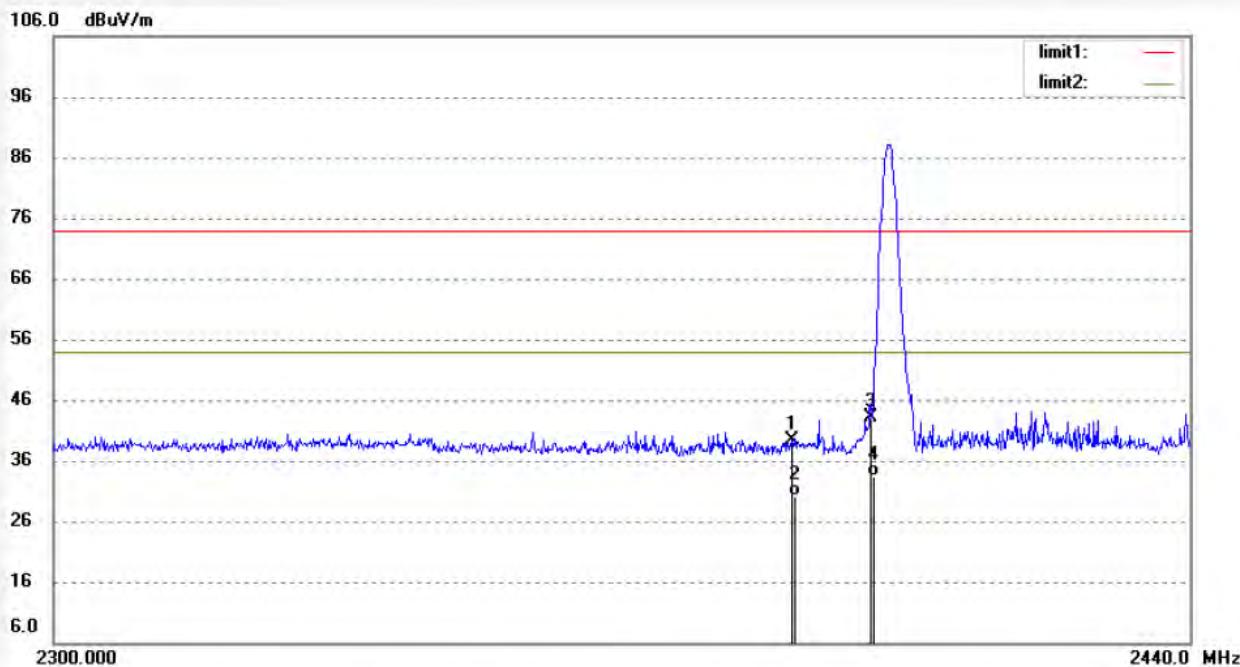
Mode: TX 2402MHz(GFSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



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	45.72	-6.32	39.40	74.00	-34.60	peak			
2	2390.000	36.44	-6.32	30.12	54.00	-23.88	AVG	200	256	
3	2400.000	49.38	-6.27	43.11	74.00	-30.89	peak			
4	2400.000	39.55	-6.27	33.28	54.00	-20.72	AVG	300	316	

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



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

Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Ix #1056

Polarization: Horizontal

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/08/05

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

Time: 16:52:21

EUT: Shop Light

Engineer Signature: MILLER

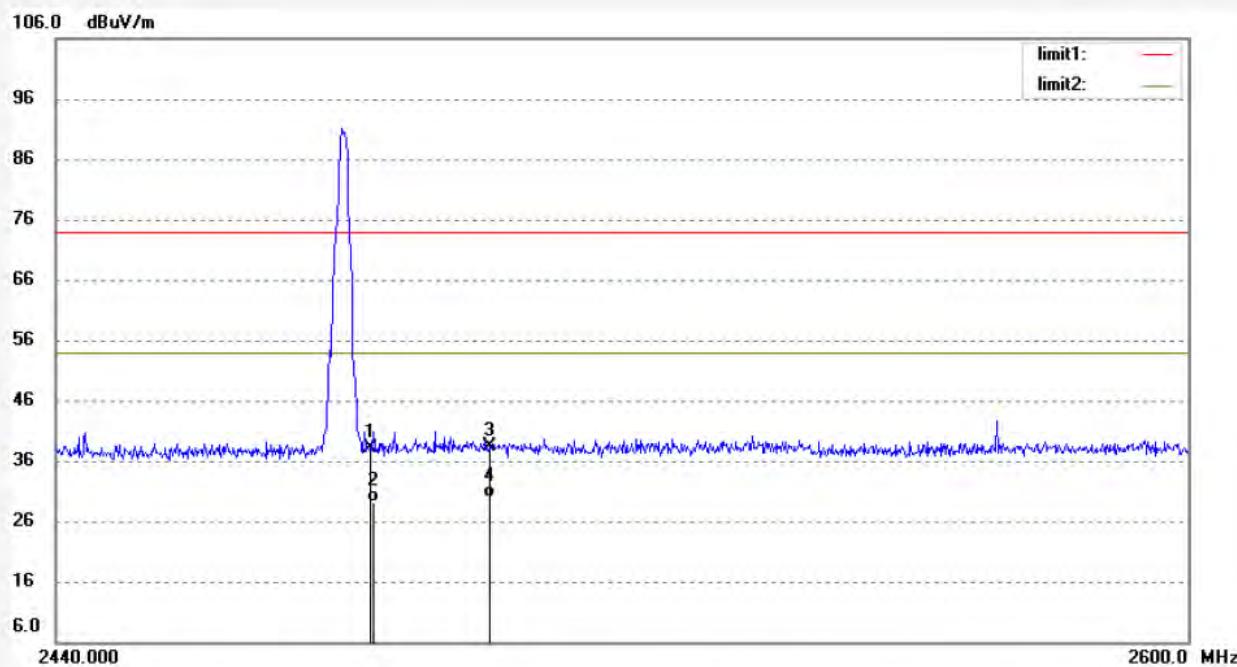
Mode: TX 2480MHz(GFSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



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	44.08	-5.89	38.19	74.00	-35.81	peak			
2	2483.500	34.97	-5.89	29.08	54.00	-24.92	AVG	200	344	
3	2500.000	44.30	-5.81	38.49	74.00	-35.51	peak			
4	2500.000	35.61	-5.81	29.80	54.00	-24.20	AVG	200	156	

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

Job No.: Ix #1057

Polarization: Vertical

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/08/05

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

Time: 16:55:13

EUT: Shop Light

Engineer Signature: MILLER

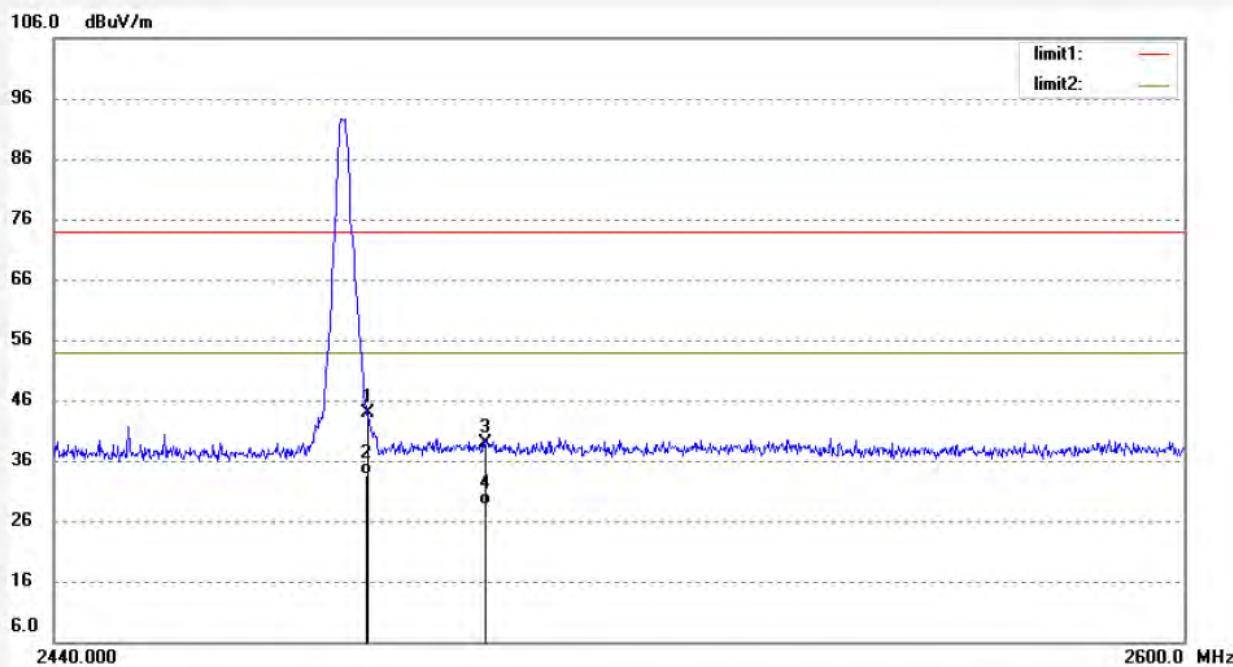
Mode: TX 2480MHz(GFSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



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	49.67	-5.89	43.78	74.00	-30.22	peak			
2	2483.500	39.55	-5.89	33.66	54.00	-20.34	AVG	200	21	
3	2500.000	44.77	-5.81	38.96	74.00	-35.04	peak			
4	2500.000	34.55	-5.81	28.74	54.00	-25.26	AVG	200	360	

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.: Ix #1052

Polarization: Horizontal

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/08/05

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

Time: 16:46:49

EUT: Shop Light

Engineer Signature: MILLER

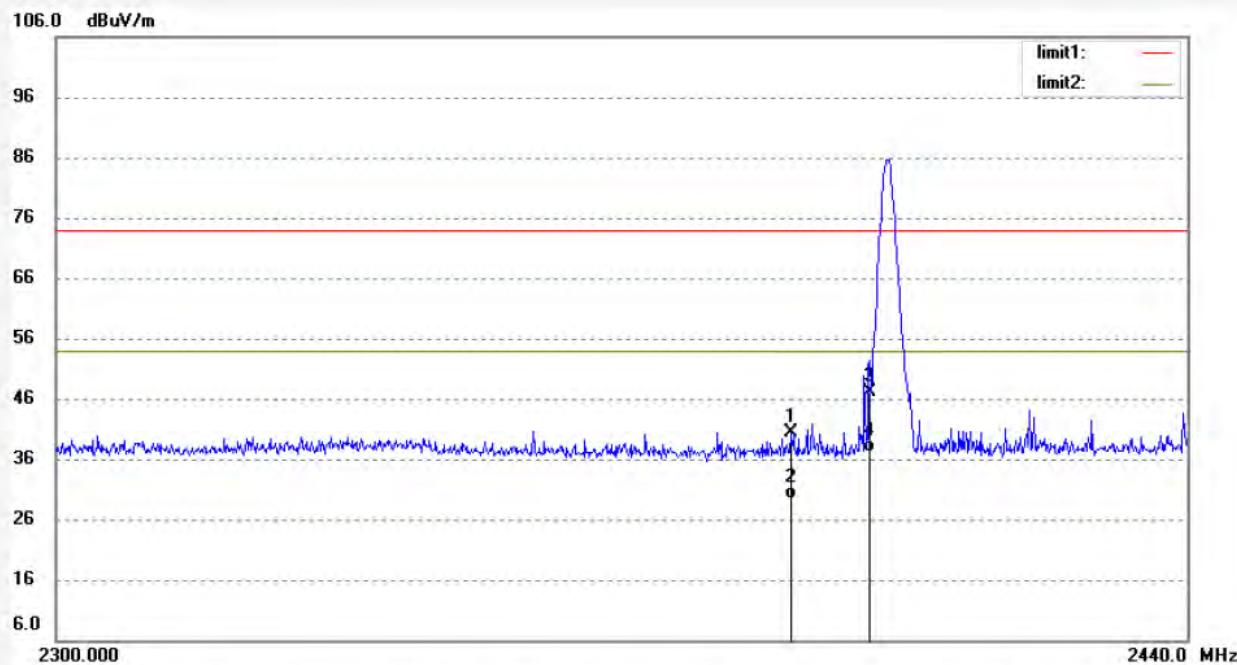
Mode: TX 2402MHz(1/4-DQPSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	46.72	-6.32	40.40	74.00	-33.60	peak			
2	2390.000	35.66	-6.32	29.34	54.00	-24.66	AVG	200	343	
3	2400.000	53.38	-6.27	47.11	74.00	-26.89	peak			
4	2400.000	43.51	-6.27	37.24	54.00	-16.76	AVG	100	115	

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



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Fax:+86-0755-26503396

Job No.: Ix #1053

Polarization: Vertical

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/08/05

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

Time: 16:47:14

EUT: Shop Light

Engineer Signature: MILLER

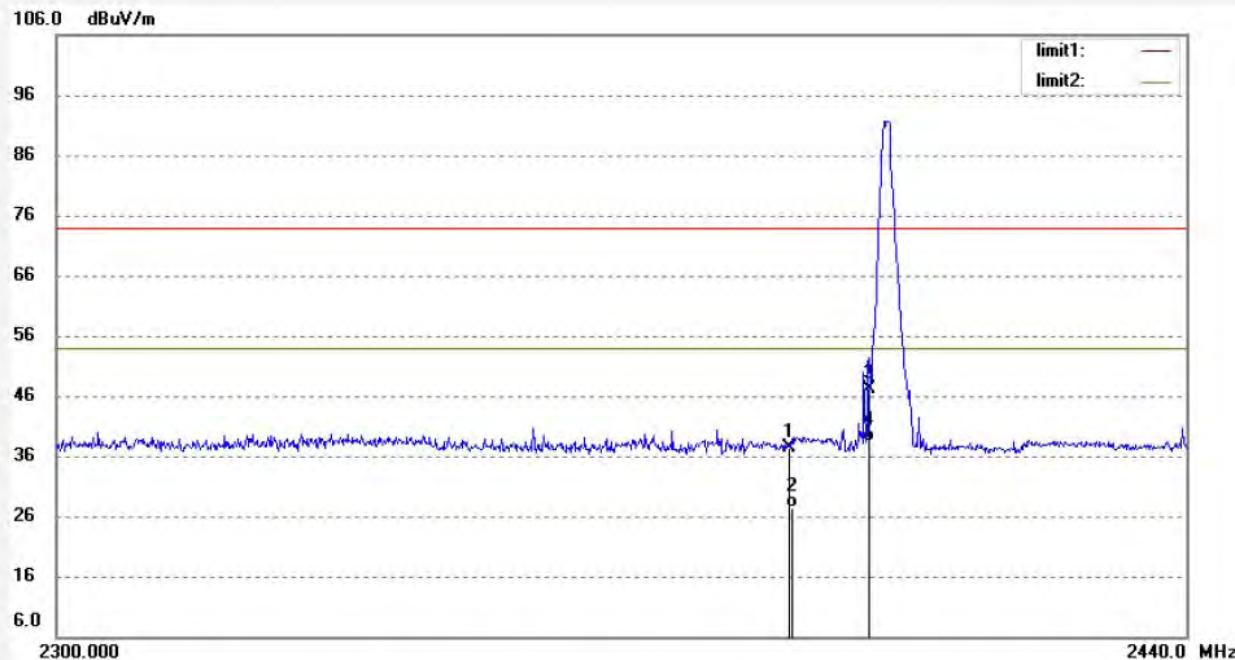
Mode: TX 2402MHz(1/4-DQPSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



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	43.72	-6.32	37.40	74.00	-36.60	peak			
2	2390.000	33.64	-6.32	27.32	54.00	-26.68	AVG	100	243	
3	2400.000	53.38	-6.27	47.11	74.00	-26.89	peak			
4	2400.000	44.65	-6.27	38.38	54.00	-15.62	AVG	300	123	

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.: Ix #1058

Polarization: Horizontal

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/08/05

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

Time: 16:55:45

EUT: Shop Light

Engineer Signature: MILLER

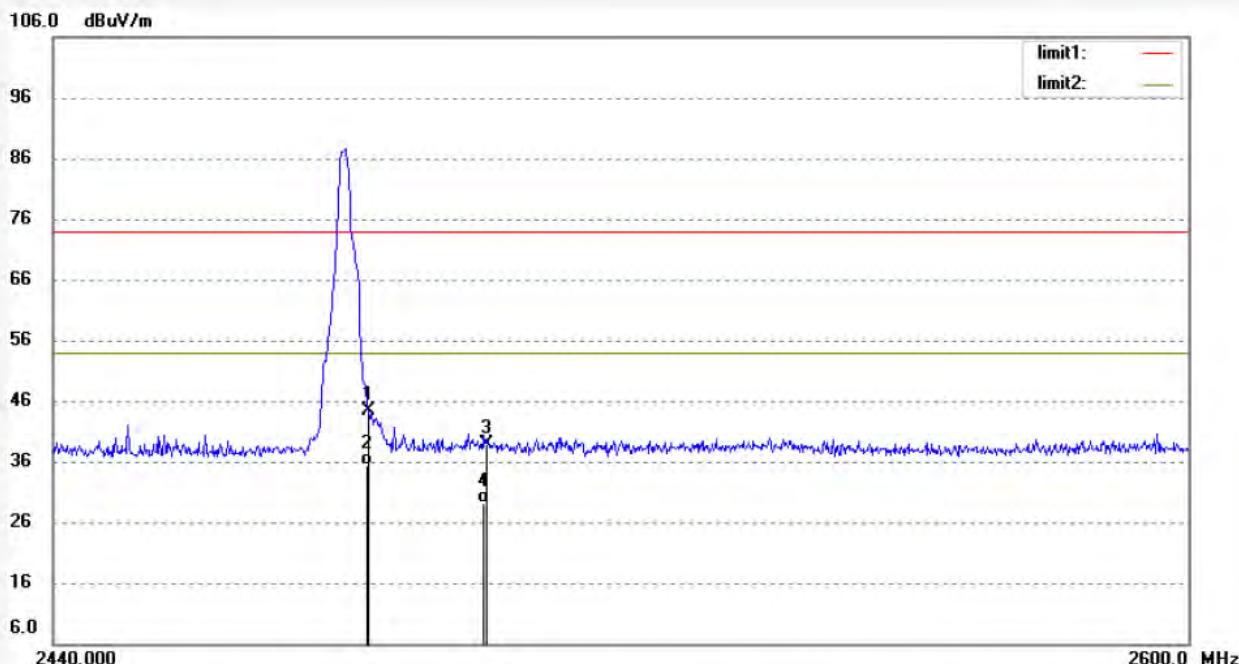
Mode: TX 2480MHz(Π/4-DQPSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



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	50.17	-5.89	44.28	74.00	-29.72	peak			
2	2483.500	41.20	-5.89	35.31	54.00	-18.69	AVG	300	10	
3	2500.000	44.77	-5.81	38.96	74.00	-35.04	peak			
4	2500.000	34.86	-5.81	29.05	54.00	-24.95	AVG	200	25	

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.: Ix #1059

Polarization: Vertical

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/08/05

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

Time: 16:57:07

EUT: Shop Light

Engineer Signature: MILLER

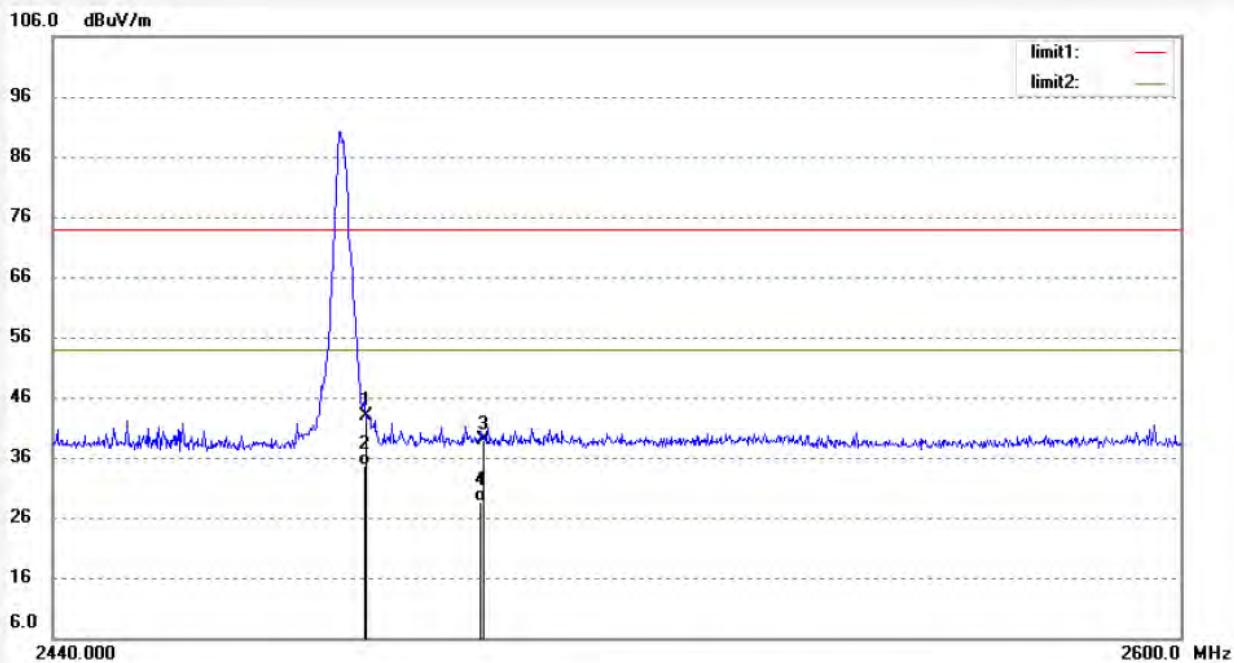
Mode: TX 2480MHz(Π/4-DQPSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	48.67	-5.89	42.78	74.00	-31.22	peak			
2	2483.500	40.59	-5.89	34.70	54.00	-19.30	AVG			
3	2500.000	44.77	-5.81	38.96	74.00	-35.04	peak			
4	2500.000	34.53	-5.81	28.72	54.00	-25.28	AVG			

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



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Site: 1# Chamber

Tel:+86-0755-26503290

Fax:+86-0755-26503396

Job No.: Ix #1050

Polarization: Horizontal

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/08/05

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

Time: 16:43:34

EUT: Shop Light

Engineer Signature: MILLER

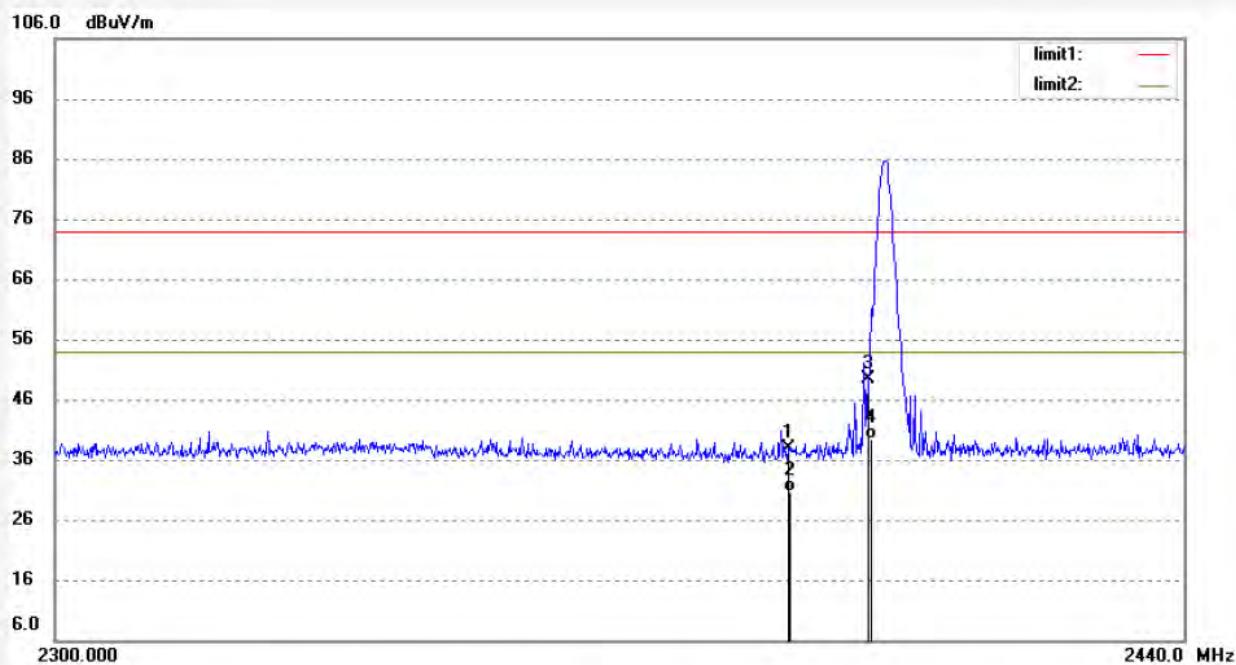
Mode: TX 2402MHz(8DPSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



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	44.09	-6.32	37.77	74.00	-36.23	peak			
2	2390.000	36.84	-6.32	30.52	54.00	-23.48	AVG	300	46	
3	2400.000	55.59	-6.27	49.32	74.00	-24.68	peak			
4	2400.000	45.56	-6.27	39.29	54.00	-14.71	AVG	200	51	

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.: Ix #1051

Polarization: Vertical

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/08/05

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

Time: 16:44:40

EUT: Shop Light

Engineer Signature: MILLER

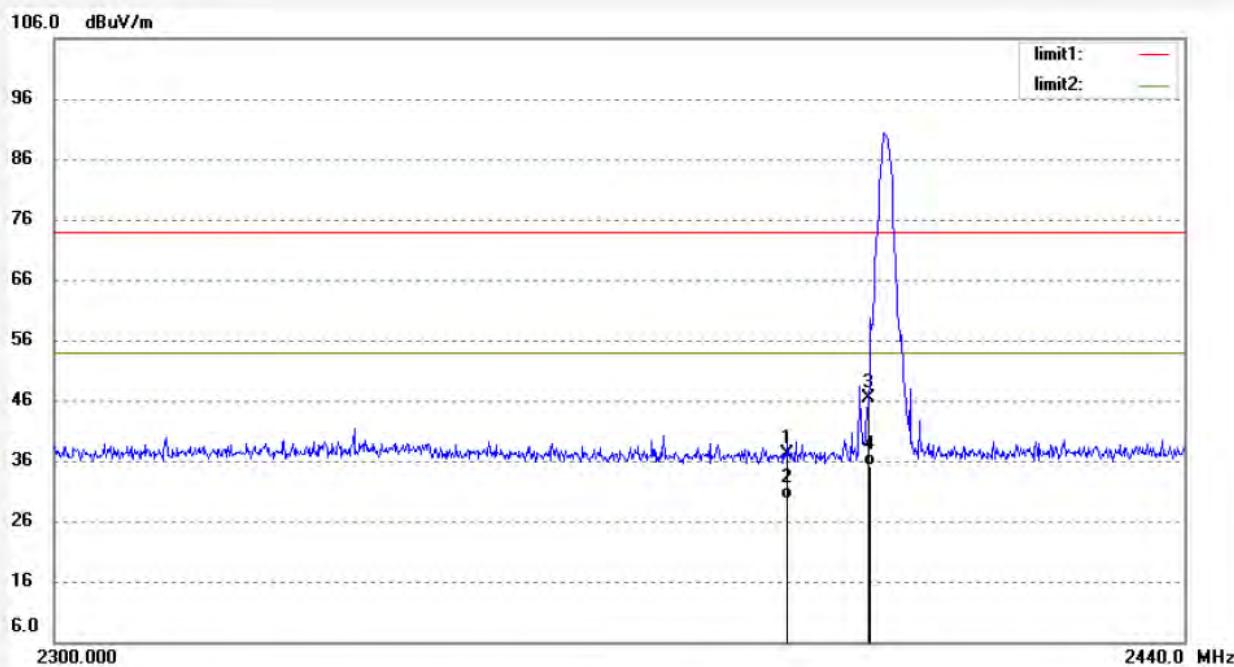
Mode: TX 2402MHz(8DPSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



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	43.41	-6.32	37.09	74.00	-36.91	peak			
2	2390.000	35.94	-6.32	29.62	54.00	-24.38	AVG	200	55	
3	2400.000	52.64	-6.27	46.37	74.00	-27.63	peak			
4	2400.000	41.51	-6.27	35.24	54.00	-18.76	AVG	300	75	

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.: Ix #1060

Polarization: Horizontal

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/08/05

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

Time: 16:57:51

EUT: Shop Light

Engineer Signature: MILLER

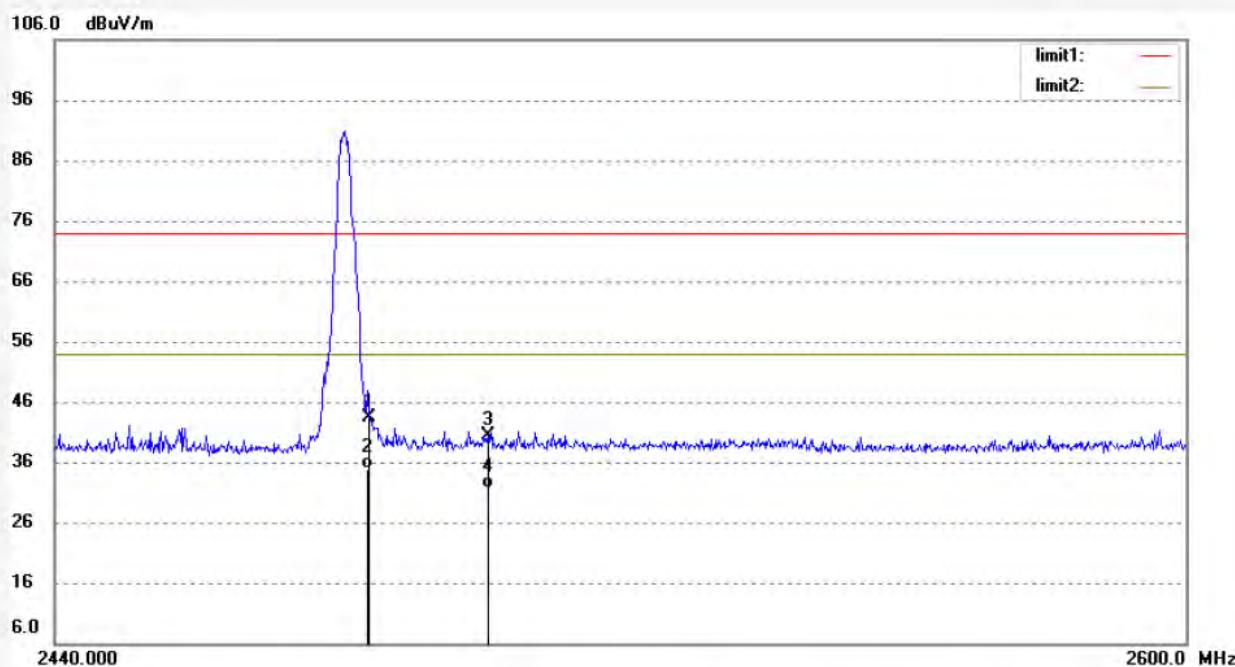
Mode: TX 2480MHz(8DPSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



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	49.17	-5.89	43.28	74.00	-30.72	peak			
2	2483.500	40.86	-5.89	34.97	54.00	-19.03	AVG	200	230	
3	2500.000	46.29	-5.81	40.48	74.00	-33.52	peak			
4	2500.000	37.56	-5.81	31.75	54.00	-22.25	AVG	200	126	

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.: IX #1061

Polarization: Vertical

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/08/05

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

Time: 16:58:35

EUT: Shop Light

Engineer Signature: MILLER

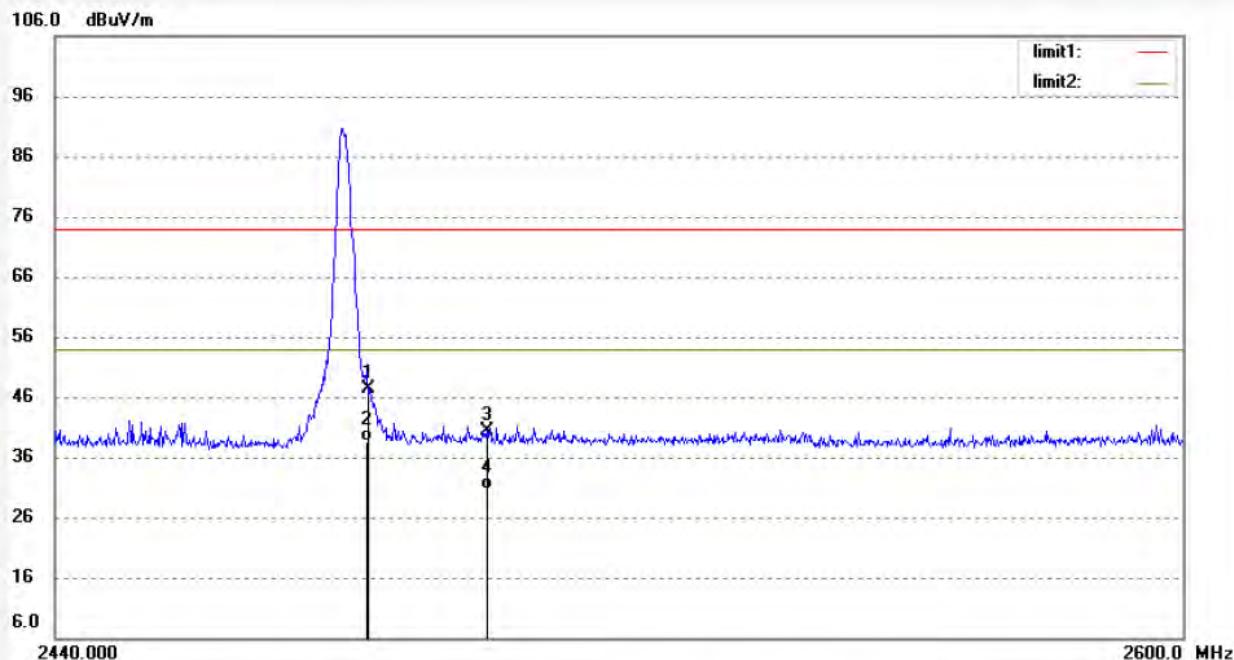
Mode: TX 2480MHz(8DPSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2483.500	53.17	-5.89	47.28	74.00	-26.72	peak			
2	2483.500	44.56	-5.89	38.67	54.00	-15.33	AVG	200	112	
3	2500.000	46.29	-5.81	40.48	74.00	-33.52	peak			
4	2500.000	36.56	-5.81	30.75	54.00	-23.25	AVG	200	235	

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

Hopping mode



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Site: 1# Chamber

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Fax:+86-0755-26503396

Job No.: Ix #1044

Polarization: Horizontal

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/08/05

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

Time: 16:25:36

EUT: Shop Light

Engineer Signature: MILLER

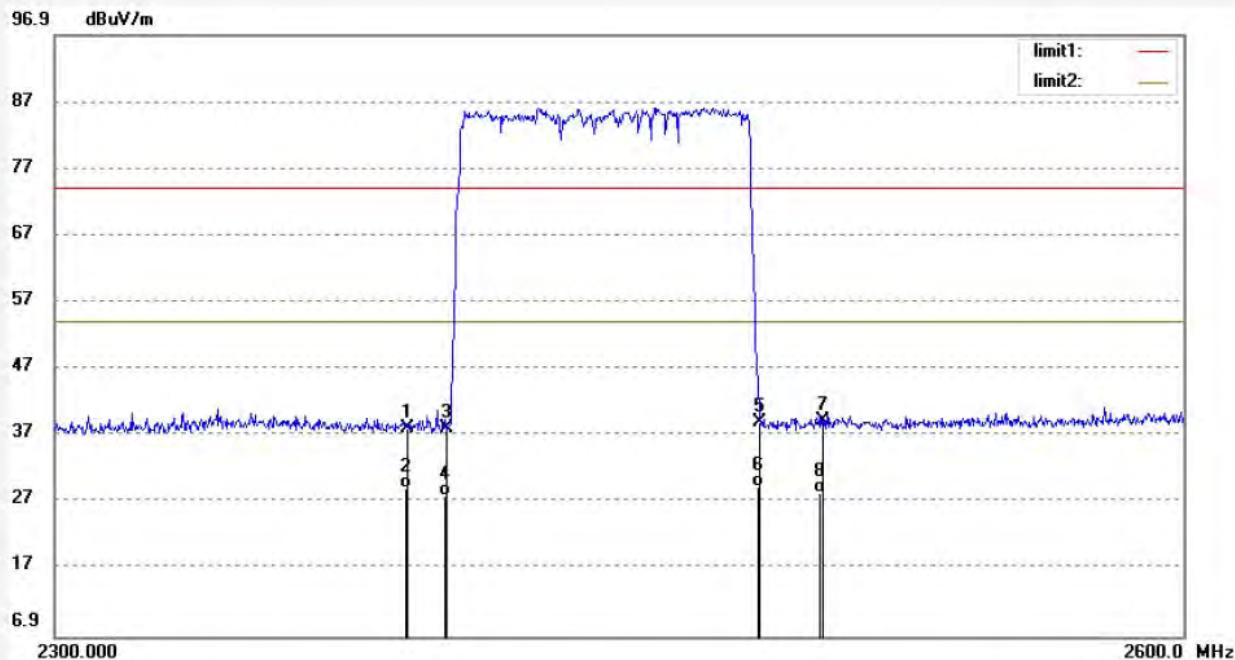
Mode: HOPPING(GFSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



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	44.46	-6.32	38.14	74.00	-35.86	peak			
2	2390.000	35.29	-6.32	28.97	54.00	-25.03	AVG	200	168	
3	2400.000	44.37	-6.27	38.10	74.00	-35.90	peak			
4	2400.000	34.30	-6.27	28.03	54.00	-25.97	AVG	300	201	
5	2483.500	44.91	-5.89	39.02	74.00	-34.98	peak			
6	2483.500	35.18	-5.89	29.29	54.00	-24.71	AVG	200	65	
7	2500.000	44.98	-5.81	39.17	74.00	-34.83	peak			
8	2500.000	34.29	-5.81	28.48	54.00	-25.52	AVG	300	254	

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

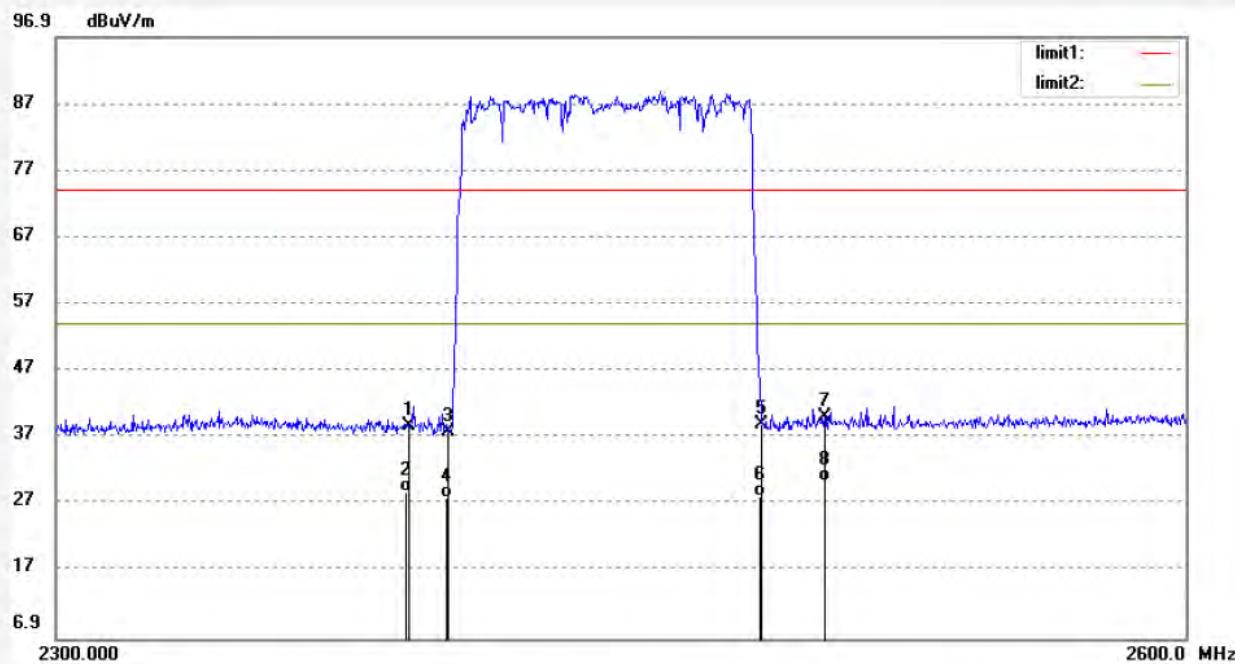


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Site: 1# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.:	Ix #1045	Polarization:	Vertical
Standard:	FCC PK	Power Source:	AC 120V/60Hz
Test item:	Radiation Test	Date:	2017/08/05
Temp.(C)/Hum.(%)	25 C / 55 %	Time:	16:27:47
EUT:	Shop Light	Engineer Signature:	MILLER
Mode:	HOPPING(GFSK)	Distance:	3m
Model:	4SHP3240BTS		
Manufacturer:	COOPER WIRING DEVICES INC.		
Note:	Report NO.:ATE20171548		



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	45.01	-6.32	38.69	74.00	-35.31	peak			
2	2390.000	35.12	-6.32	28.80	54.00	-25.20	AVG	200	25	
3	2400.000	44.17	-6.27	37.90	74.00	-36.10	peak			
4	2400.000	34.28	-6.27	28.01	54.00	-25.99	AVG	300	20	
5	2483.500	44.91	-5.89	39.02	74.00	-34.98	peak			
6	2483.500	34.08	-5.89	28.19	54.00	-25.81	AVG	300	46	
7	2500.000	46.00	-5.81	40.19	74.00	-33.81	peak			
8	2500.000	36.28	-5.81	30.47	54.00	-23.53	AVG	300	39	

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



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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.: Ix #1046

Polarization: Horizontal

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/08/05

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

Time: 16:31:38

EUT: Shop Light

Engineer Signature: MILLER

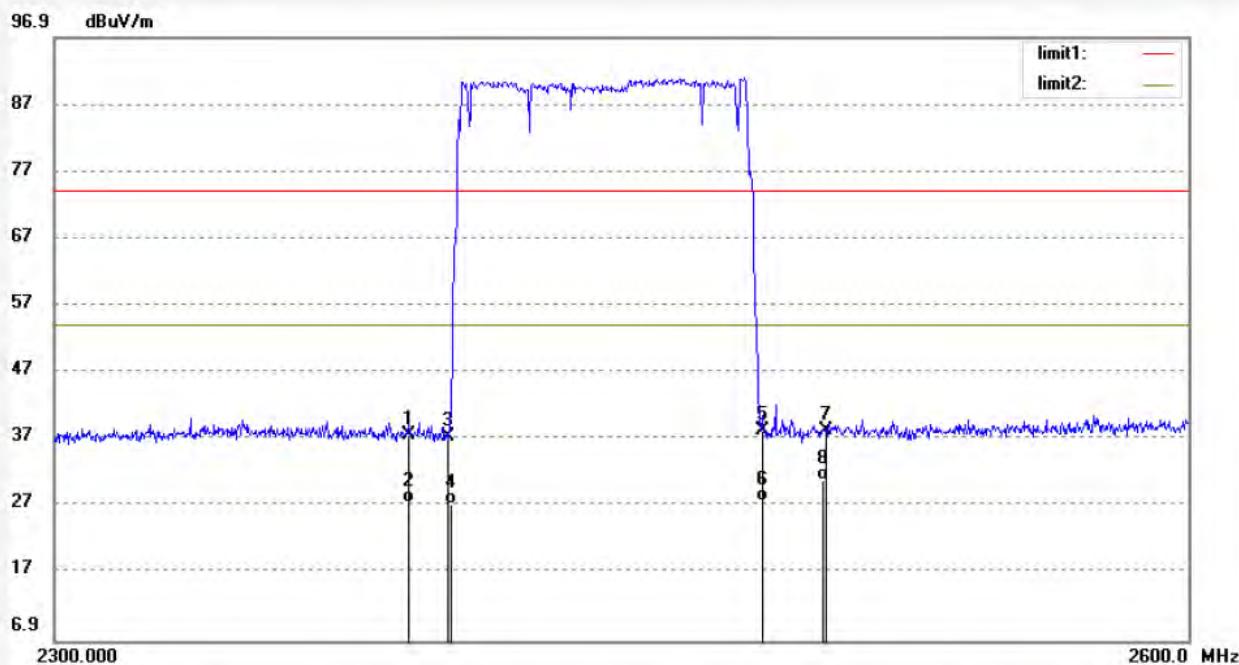
Mode: HOPPING(Π/4-DQPSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

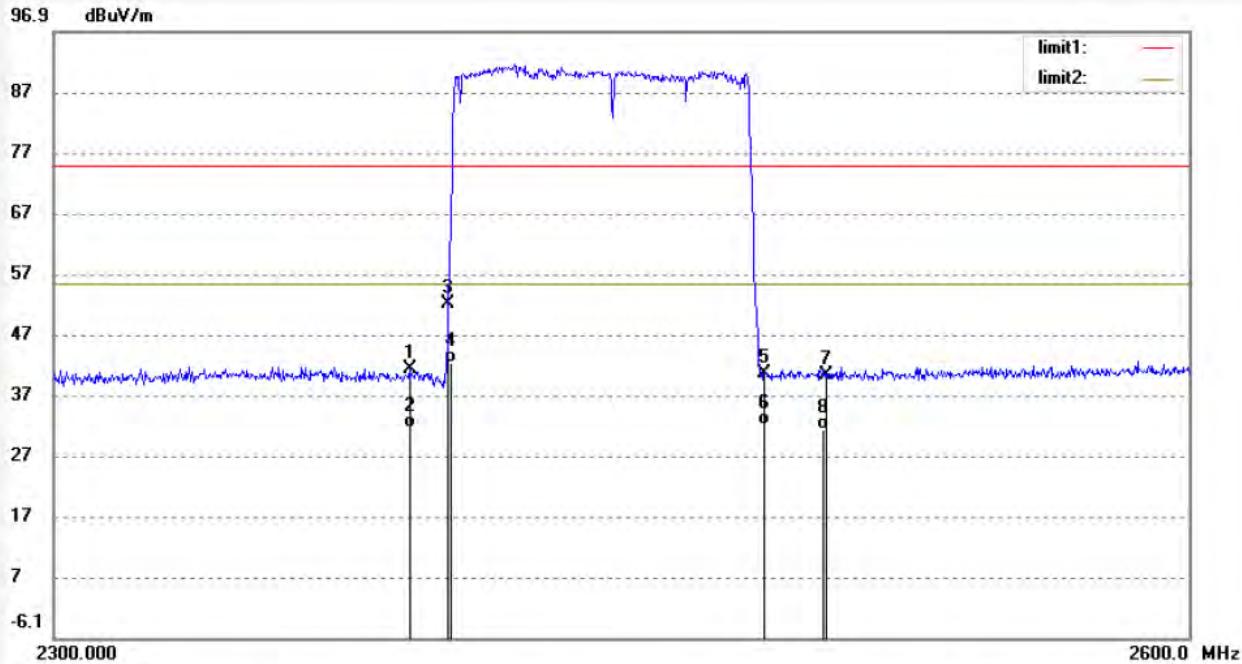
Note: Report NO.:ATE20171548



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	43.84	-6.32	37.52	74.00	-36.48	peak			
2	2390.000	33.86	-6.32	27.54	54.00	-26.46	AVG	300	52	
3	2400.000	43.58	-6.27	37.31	74.00	-36.69	peak			
4	2400.000	33.56	-6.27	27.29	54.00	-26.71	AVG	200	39	
5	2483.500	44.25	-5.89	38.36	74.00	-35.64	peak			
6	2483.500	33.56	-5.89	27.67	54.00	-26.33	AVG	200	102	
7	2500.000	44.18	-5.81	38.37	74.00	-35.63	peak			
8	2500.000	36.78	-5.81	30.97	54.00	-23.03	AVG	200	49	

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

Job No.:	Ix #1047	Polarization:	Vertical
Standard:	FCC PK	Power Source:	AC 120V/60Hz
Test item:	Radiation Test	Date:	2017/08/05
Temp.(C)/Hum.(%)	25 C / 55 %	Time:	16:36:56
EUT:	Shop Light	Engineer Signature:	MILLER
Mode:	HOPPING(Π/4-DQPSK)	Distance:	3m
Model:	4SHP3240BTS		
Manufacturer:	COOPER WIRING DEVICES INC.		
Note:	Report NO.:ATE20171548		



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	45.83	-6.32	39.51	74.00	-34.49	peak			
2	2390.000	35.89	-6.32	29.57	54.00	-24.43	AVG	200	186	
3	2400.000	56.93	-6.27	50.66	74.00	-23.34	peak			
4	2400.000	46.82	-6.27	40.55	54.00	-13.45	AVG	300	146	
5	2483.500	44.73	-5.89	38.84	74.00	-35.16	peak			
6	2483.500	35.94	-5.89	30.05	54.00	-23.95	AVG	300	45	
7	2500.000	44.26	-5.81	38.45	74.00	-35.55	peak			
8	2500.000	34.99	-5.81	29.18	54.00	-24.82	AVG	300	109	

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



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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.: Ix #1048

Polarization: Horizontal

Standard: FCC PK

Power Source: AC 120V/60Hz

Test item: Radiation Test

Date: 2017/08/05

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

Time: 16:38:34

EUT: Shop Light

Engineer Signature: MILLER

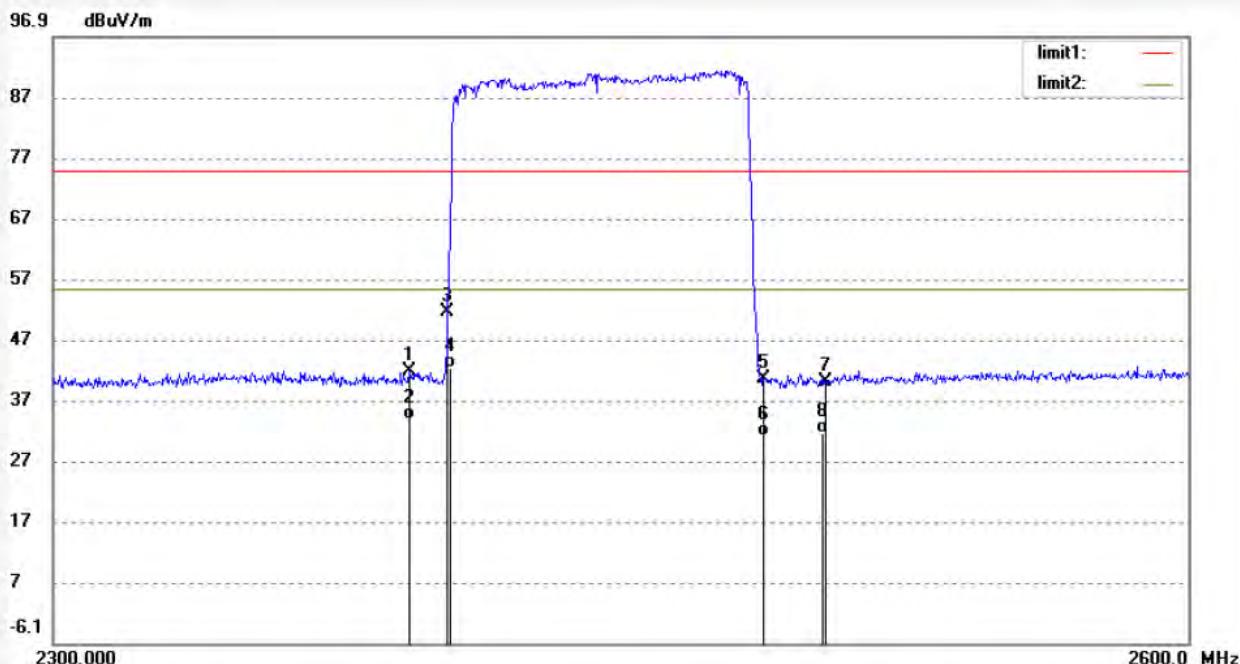
Mode: HOPPING(8DPSK)

Distance: 3m

Model: 4SHP3240BTS

Manufacturer: COOPER WIRING DEVICES INC.

Note: Report NO.:ATE20171548



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	46.33	-6.32	40.01	74.00	-33.99	peak			
2	2390.000	38.21	-6.32	31.89	54.00	-22.11	AVG	300	159	
3	2400.000	56.43	-6.27	50.16	74.00	-23.84	peak			
4	2400.000	46.96	-6.27	40.69	54.00	-13.31	AVG	200	146	
5	2483.500	44.73	-5.89	38.84	74.00	-35.16	peak			
6	2483.500	34.86	-5.89	28.97	54.00	-25.03	AVG	200	59	
7	2500.000	44.24	-5.81	38.43	74.00	-35.57	peak			
8	2500.000	35.46	-5.81	29.65	54.00	-24.35	AVG	100	54	

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

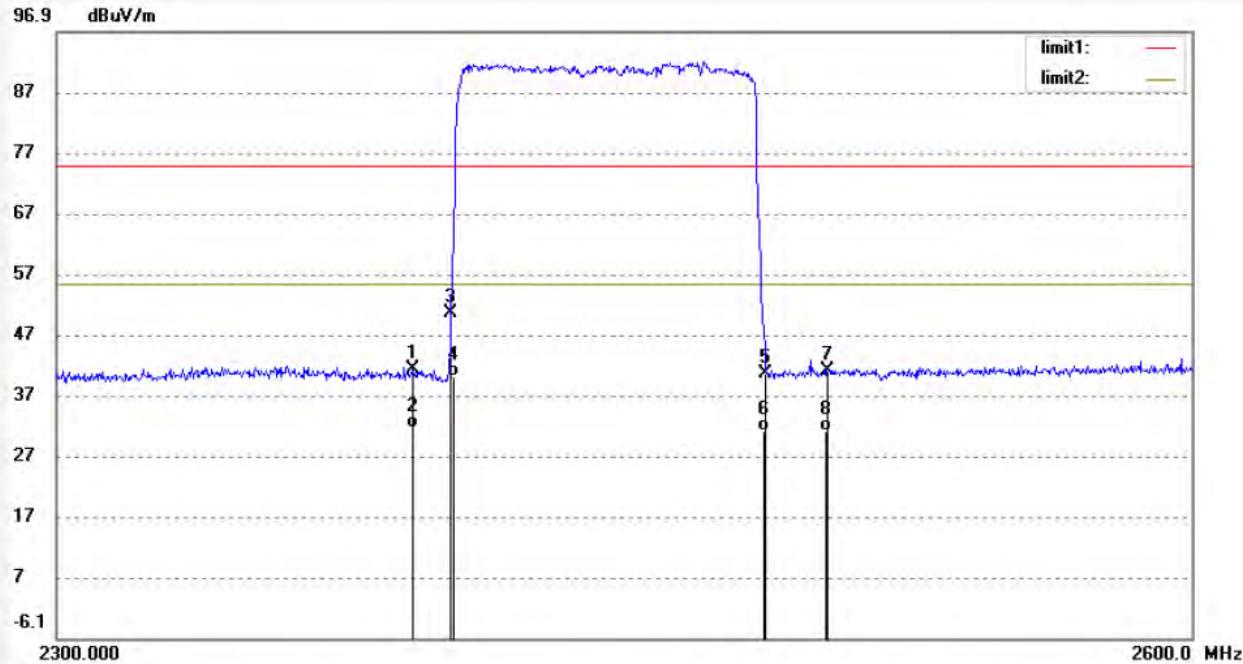


ACCURATE TECHNOLOGY CO., LTD.

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.:	Ix #1049	Polarization:	Vertical
Standard:	FCC PK	Power Source:	AC 120V/60Hz
Test item:	Radiation Test	Date:	2017/08/05
Temp.(C)/Hum.(%)	25 C / 55 %	Time:	16:39:36
EUT:	Shop Light	Engineer Signature:	MILLER
Mode:	HOPPING(8DPSK)	Distance:	3m
Model:	4SHP3240BTS		
Manufacturer:	COOPER WIRING DEVICES INC.		
Note:	Report NO.:ATE20171548		



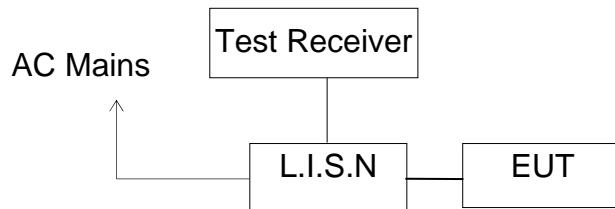
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	2390.000	45.83	-6.32	39.51	74.00	-34.49	peak			
2	2390.000	36.00	-6.32	29.68	54.00	-24.32	AVG	300	26	
3	2400.000	55.43	-6.27	49.16	74.00	-24.84	peak			
4	2400.000	44.53	-6.27	38.26	54.00	-15.74	AVG	300	46	
5	2483.500	44.73	-5.89	38.84	74.00	-35.16	peak			
6	2483.500	34.97	-5.89	29.08	54.00	-24.92	AVG	100	28	
7	2500.000	45.24	-5.81	39.43	74.00	-34.57	peak			
8	2500.000	34.88	-5.81	29.07	54.00	-24.93	AVG	300	52	

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



(EUT: Shop Light)

12.2.Power Line Conducted Emission Measurement Limits

Frequency (MHz)	Limit dB(μ V)	
	Quasi-peak Level	Average Level
0.15 - 0.50	66.0 – 56.0 *	56.0 – 46.0 *
0.50 - 5.00	56.0	46.0
5.00 - 30.00	60.0	50.0

NOTE1: The lower limit shall apply at the transition frequencies.
NOTE2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

12.3.Configuration of EUT on Measurement

The 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.

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: "1547-05_fin"

2017-7-27 16:34

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.150000	55.20	10.8	66	10.8	QP	N	GND
0.760000	45.10	11.1	56	10.9	QP	N	GND
1.902000	42.00	11.3	56	14.0	QP	N	GND
4.570000	47.70	11.4	56	8.3	QP	N	GND
6.845000	44.20	11.5	60	15.8	QP	N	GND
26.525000	40.70	11.8	60	19.3	QP	N	GND

MEASUREMENT RESULT: "1547-05_fin2"

2017-7-27 16:34

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.180000	35.40	10.8	55	19.1	AV	N	GND
0.378000	41.80	10.9	48	6.5	AV	N	GND
1.904000	34.40	11.3	46	11.6	AV	N	GND
3.800000	37.80	11.4	46	8.2	AV	N	GND
5.320000	38.60	11.4	50	11.4	AV	N	GND
12.570000	33.30	11.6	50	16.7	AV	N	GND

MEASUREMENT RESULT: "1547-06_fin"

2017-7-27 16:36

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.150000	56.40	10.8	66	9.6	QP	L1	GND
0.762000	38.60	11.1	56	17.4	QP	L1	GND
1.906000	35.30	11.3	56	20.7	QP	L1	GND
4.555000	44.40	11.4	56	11.6	QP	L1	GND
5.310000	44.50	11.4	60	15.5	QP	L1	GND
18.190000	41.20	11.7	60	18.8	QP	L1	GND

MEASUREMENT RESULT: "1547-06_fin2"

2017-7-27 16:36

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.178000	35.50	10.8	55	19.1	AV	L1	GND
0.762000	34.40	11.1	46	11.6	AV	L1	GND
1.140000	37.70	11.2	46	8.3	AV	L1	GND
4.555000	34.10	11.4	46	11.9	AV	L1	GND
5.310000	36.40	11.4	50	13.6	AV	L1	GND
13.260000	33.40	11.6	50	16.6	AV	L1	GND

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

The spectral diagrams are attached as below.

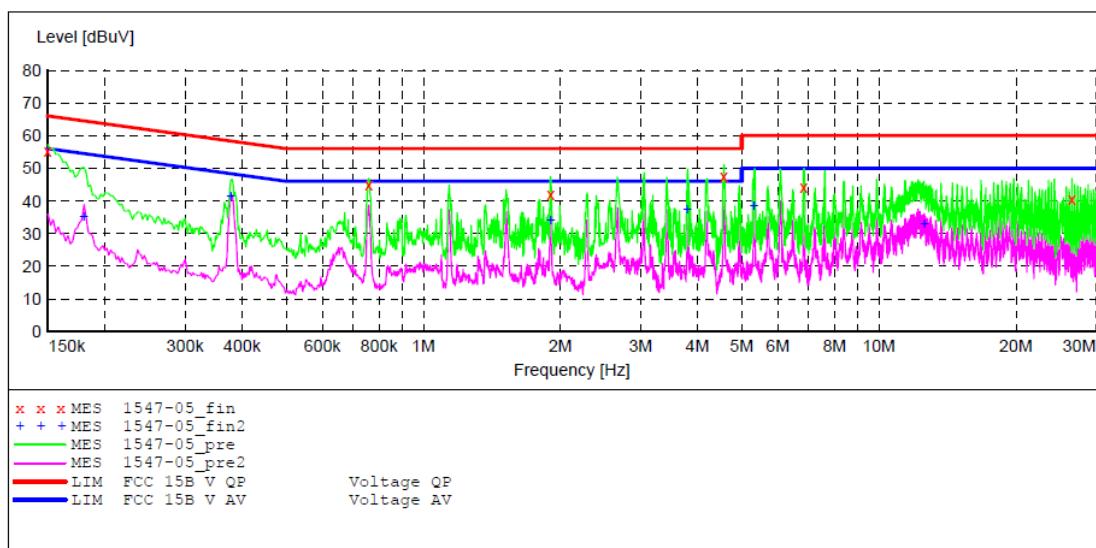
ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: Shop Light M/N:4SH3240BTS
 Manufacturer: COOPER WIRING DEVICES INC.
 Operating Condition: BT communicating
 Test Site: 1#Shielding Room
 Operator: MILLER
 Test Specification: N 120V/60Hz
 Comment: Report NO.:ATE20171548
 Start of Test: 2017-7-27 / 16:32:31

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

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average



MEASUREMENT RESULT: "1547-05_fin"

2017-7-27 16:34

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.150000	55.20	10.8	66	10.8	QP	N	GND
0.760000	45.10	11.1	56	10.9	QP	N	GND
1.902000	42.00	11.3	56	14.0	QP	N	GND
4.570000	47.70	11.4	56	8.3	QP	N	GND
6.845000	44.20	11.5	60	15.8	QP	N	GND
26.525000	40.70	11.8	60	19.3	QP	N	GND

MEASUREMENT RESULT: "1547-05_fin2"

2017-7-27 16:34

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.180000	35.40	10.8	55	19.1	AV	N	GND
0.378000	41.80	10.9	48	6.5	AV	N	GND
1.904000	34.40	11.3	46	11.6	AV	N	GND
3.800000	37.80	11.4	46	8.2	AV	N	GND
5.320000	38.60	11.4	50	11.4	AV	N	GND
12.570000	33.30	11.6	50	16.7	AV	N	GND

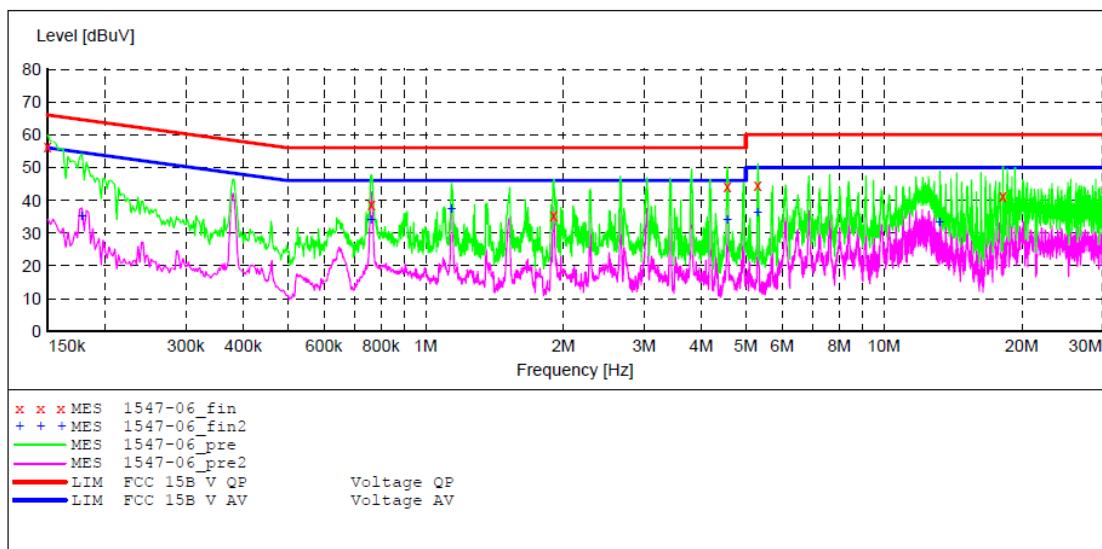
ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD FCC PART 15B

EUT: Shop Light M/N:4SH3240BTS
 Manufacturer: COOPER WIRING DEVICES INC.
 Operating Condition: BTcommunicating
 Test Site: 1#Shielding Room
 Operator: MILLER
 Test Specification: L 120V/60Hz
 Comment: Report NO.:ATE20171548
 Start of Test: 2017-7-27 / 16:34:52

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

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average



MEASUREMENT RESULT: "1547-06_fin"

2017-7-27 16:36

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.150000	56.40	10.8	66	9.6	QP	L1	GND
0.762000	38.60	11.1	56	17.4	QP	L1	GND
1.906000	35.30	11.3	56	20.7	QP	L1	GND
4.555000	44.40	11.4	56	11.6	QP	L1	GND
5.310000	44.50	11.4	60	15.5	QP	L1	GND
18.190000	41.20	11.7	60	18.8	QP	L1	GND

MEASUREMENT RESULT: "1547-06_fin2"

2017-7-27 16:36

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line	PE
0.178000	35.50	10.8	55	19.1	AV	L1	GND
0.762000	34.40	11.1	46	11.6	AV	L1	GND
1.140000	37.70	11.2	46	8.3	AV	L1	GND
4.555000	34.10	11.4	46	11.9	AV	L1	GND
5.310000	36.40	11.4	50	13.6	AV	L1	GND
13.260000	33.40	11.6	50	16.6	AV	L1	GND

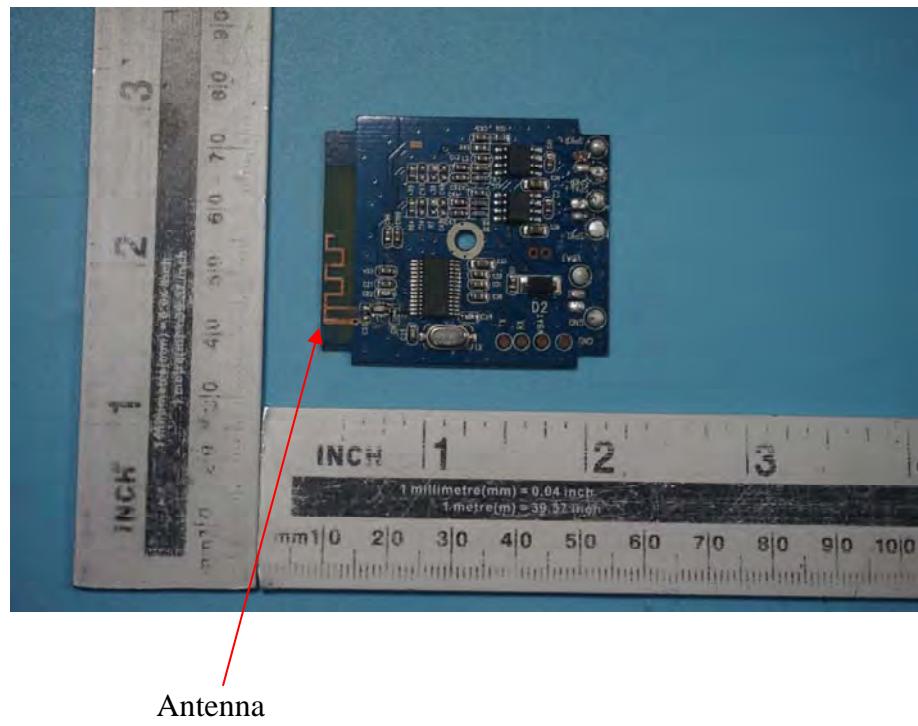
13. ANTENNA REQUIREMENT

13.1. The Requirement

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

13.2. Antenna Construction

Device is equipped with permanent attached antenna, which isn't displaced by other antenna. The Max Antenna gain of EUT is 0 dBi. Therefore, the equipment complies with the antenna requirement of Section 15.203.



----- THE END OF TEST REPORT -----