FCC TEST REPORT

FOR

Shenzhen Jie Xin Chuang Zhan Science and Technology Co.,Ltd

Wireless Solid Wood Speaker

Model No.: Wood Rhythm I

Additional Model NO. : /

Prepared for	:	Shenzhen Jie Xin Chuang Zhan Science and Technology Co.,Ltd
Address	:	3/F Building 6 ,Dayang Development Zone Fuyong Street, Baoan District,Shenzhen,CHINA
Prepared by	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	:	1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China
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Web	:	www.LCS-cert.com
Mail	:	webmaster@LCS-cert.com
Date of receipt of test sample	:	June 16, 2017
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	June 16, 2017~July 12, 2017
Date of Report	:	July 12, 2017

FCC TEST REPORT

FCC CFR 47 PART 15 C(15.247): 2016

Report Reference No. ..... :		**LCS170622061AE**
Date of Issue	:	July 12, 2017
Testing Laboratory Name ..... :		**Shenzhen LCS Compliance Testing Laboratory Ltd.**
Address	:	1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China
Testing Location/ Procedure	:	Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's Name ..... :		**Shenzhen Jie Xin Chuang Zhan Science and Technology Co.,Ltd**
Address	:	3/F Building 6 ,Dayang Development Zone Fuyong Street, Baoan District,Shenzhen,CHINA
Test Specification		
Standard.....	:	FCC CFR 47 PART 15 C(15.247): 2016
Test Report Form No.....	:	LCSEMC-1.0
TRF Originator.....	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF	:	Dated 2011-03

Test Item Description. ..... :		Wireless Solid Wood Speaker
Trade Mark	:	
Model/ Type reference	:	Wood Rhythm I
Ratings	:	DC 11.1V by Li-ion Battery*3 (2200mah) Recharge Voltage: 5V/3A
Result ..... :		**Positive**

Compiled by:	**Supervised by:**	**Approved by:**
Chaz Liu	Dick Su	Gavin Liang
Chaz Liu / File administrators	Dick Su / Technique principal	Gavin Liang/ Manager

FCC -- TEST REPORT

Test Report No. : LCS170622061AE	July 12, 2017 Date of issue

Type / Model.....	:	Wood Rhythm I
EUT.....	:	Wireless Solid Wood Speaker
Applicant.....	**:**	**Shenzhen Jie Xin Chuang Zhan Science and Technology Co.,Ltd**
Address.....	:	3/F Building 6 ,Dayang Development Zone Fuyong Street, Baoan District,Shenzhen,CHINA
Telephone.....	:	/
Fax.....	:	/
Manufacturer.....	**:**	**Shenzhen Jie Xin Chuang Zhan Science and Technology Co.,Ltd**
Address.....	:	3/F Building 6 ,Dayang Development Zone Fuyong Street, Baoan District,Shenzhen,CHINA
Telephone.....	:	/
Fax.....	:	/
Factory.....	:	**Shenzhen Jie Xin Chuang Zhan Science and Technology Co.,Ltd**
Address.....	:	3/F Building 6 ,Dayang Development Zone Fuyong Street, Baoan District,Shenzhen,CHINA
Telephone.....	:	/
Fax.....	:	/

Test Result	**Positive**

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Revision	Issue Date	Revisions	Revised By
00	July 12, 2017	Initial Issue	Gavin Liang

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT	:	Wireless Solid Wood Speaker
Test Model	:	Wood Rhythm I
Model Number	:	Wood Rhythm I
Model Declaration	:	/
Hardware version	:	BT:F-3288V1.0 ; WiFi:V04
Software version	:	BT：V1.3 ; WiFi:V04
Power Supply	:	DC 11.1V by Li-ion Battery*3 (2200mah) Recharge Voltage: 5V/3A
Bluetooth	:	Supported BT 3.0
Operation frequency	:	2402MHz-2480MHz
Channel Spacing	:	1MHz for Bluetooth 3.0
Modulation Type	:	GFSK,π/4DQPSK, 8DPSK
Bluetooth Version	:	3.0
Channel Number	:	79 Channels for Bluetooth 3.0(DSS)
Antenna Type	:	PCB Antenna
Antenna Gain	:	0dBi (Max.) For BT
WLAN	:	Supported 802.11b/802.11g/802.11n
WLAN FCC Operation Frequency	:	IEEE 802.11b:2412-2462MHz IEEE 802.11g:2412-2462MHz IEEE 802.11n HT20:2412-2462MHz IEEE 802.11n HT40:2422-2452MHz
WLAN Channel Number	:	11 Channels for WIFI 20MHz Bandwidth(802.11b/g/n-HT20) 7 Channels for WIFI 40MHz Bandwidth(802.11n-HT40)
WLAN Modulation Technology	:	IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM (64QAM, 16QAM,QPSK,BPSK)
Antenna Type	:	PCB Antenna
Antenna Gain	:	0 dBi(max.) For WIFI
Extreme temp. Tolerance	:	-10°C to +50°C
Extreme vol. Limits	:	3.30VDC to 4.20VDC (nominal: 3.70VDC)

1.2 Support equipment List

Manufacturer	Description	Model	Serial Number	Certificate
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1.3 External I/O Cable

I/O Port Description	Quantity	Cable
AUX IN	1	40cm
Micro USB Port	1	90cm

1.4 Description of Test Facility

CNAS Registration Number. is L4595.
FCC Registration Number. is 899208.
Industry Canada Registration Number. is 9642A-1.
ESMD Registration Number. is ARCB0108.
UL Registration Number. is 100571-492.
TUV SUD Registration Number. is SCN1081.
TUV RH Registration Number. is UA 50296516-001
The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.4:2014 and CISPR 16-1-4:2010 SVSWR requirement for radiated emission above 1GHz.

1.5 Statement of the Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

1.6 Measurement Uncertainty

Test Item		Frequency Range	Uncertainty	Note
Radiation Uncertainty	:	9KHz~30MHz	±3.10dB	(1)
		30MHz~200MHz	±2.96dB	(1)
		200MHz~1000MHz	±3.10dB	(1)
		1GHz~26.5GHz	±3.80dB	(1)
		26.5GHz~40GHz	±3.90dB	(1)
Conduction Uncertainty	:	150kHz~30MHz	±1.63dB	(1)
Power disturbance	:	30MHz~300MHz	±1.60dB	(1)

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.7 Description of Test Modes

Bluetooth operates in the unlicensed ISM Band at 2.4GHz. With basic data rate feature, the data rates can be up to 1 Mb/s by modulating the RF carrier using GFSK techniques. The EUT works in the X-axis, Y-axis, Z-axis. The following operating modes were applied for the related test items. All test modes were tested, only the result of the worst case was recorded in the report.

Mode of Operations	Frequency Range (MHz)	Data Rate (Mbps)
BT V 4.0	2402	1/2/3
	2441	1/2/3
	2480	1/2/3
For Conducted Emission		
Test Mode	TX Mode	
For Radiated Emission		
Test Mode	TX Mode	

Worst-case mode and channel used for 150 KHz-30 MHz power line conducted emissions was the mode and channel with the highest output power that was determined to be TX (1Mbps).

Worst-case mode and channel used for 9 KHz-1000 MHz radiated emissions was the mode and channel with the highest output power, that was determined to be TX(1Mbps-Low Channel).

Pre-test AC conducted emission at both power adapter and charge from PC mode, recorded worst case.

Pre-test AC conducted emission at both voltage AC 120V/60Hz and AC 240V/50Hz, recorded worst case.

Channel List & Frequency

Bluetooth V4.0 (DSS)

Channel	Frequency(MHz)	Channel	Frequency(MHz)
0	2402	40	2442
1	2403	---	---
2	2404	---	---
---	---	76	2478
---	---	77	2479
38	2440	78	2480
39	2441		

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, FCC CFR PART 15C 15.207, 15.209, 15.247 and DA 00-705.

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The EUT was operated in the normal operating mode for Hopping Numbers and Dwell Time test and a continuous transmits mode for other tests.

According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209, 15.247 under the FCC Rules Part 15 Subpart C.

2.3 General Test Procedures

2.3.1 Conducted Emissions

The EUT is directly placed on the ground. According to the requirements in Section 6.2.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

2.3.2 Radiated Emissions

The EUT is placed on a turntable, which is directly placed on the ground. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 6.3 of ANSI C63.10-2013

2.4. Test Sample

The application provides 2 samples to meet requirement;

Sample Number	Description
Sample 1	Engineer sample – continuous transmit
Sample 2	Normal sample – Intermittent transmit

3. SYSTEM TEST CONFIGURATION

3.1 Justification

The system was configured for testing in a continuous transmits condition.

3.2 EUT Exercise Software

The system was configured for testing in a continuous transmits condition and change test channels by software (CSR Bluetest 3) provided by application.

3.3 Special Accessories

Manufacturer	Description	Model	Serial Number	Certificate
Lenovo	ADAPTER for notebook	ADP-90DD B	36001941	FCC
Lenovo	Notebook	B470	WB05067151	FCC

3.4 Block Diagram/Schematics

Please refer to the related document.

3.5 Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

3.6 Test Setup

Please refer to the test setup photo.

4. SUMMARY OF TEST RESULTS

Applied Standard: FCC Part 15 Subpart C			
FCC Rules	**Description of Test**	**Test Sample**	**Result**
§15.247(b)(1)	Maximum Conducted Output Power	Sample 1	Compliant
§15.247(c)	Frequency Separation And 20 dB Bandwidth	Sample 1	Compliant
§15.247(a)(1)(ii)	Number Of Hopping Frequency	Sample 2	Compliant
§15.247(a)(1)(iii)	Time Of Occupancy (Dwell Time)	Sample 2	Compliant
§15.209, §15.247(d)	Radiated and Conducted Spurious Emissions	Sample 1	Compliant
§15.205	Emissions at Restricted Band	Sample 1	Compliant
§15.207(a)	Conducted Emissions	Sample 1	Compliant
§15.203	Antenna Requirements	Sample 1	Compliant
§15.247(i)§2.1093	RF Exposure	N/A	Compliant

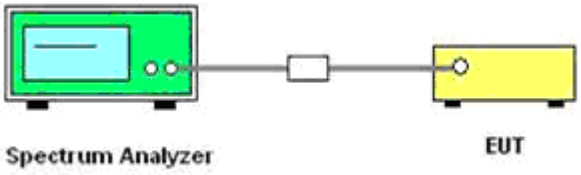
5. SUMMARY OF TEST EQUIPMENT

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Power Sensor	R&S	NRV-Z51	100458	2017-06-18	2018-06-17
2	Power Sensor	R&S	NRV-Z32	10057	2017-06-18	2018-06-17
3	Power Meter	R&S	NRVS	100444	2017-06-18	2018-06-17
4	DC Filter	MPE	23872C	N/A	2017-06-18	2018-06-17
5	RF Cable	Harbour Industries	1452	N/A	2017-06-18	2018-06-17
6	SMA Connector	Harbour Industries	9625	N/A	2017-06-18	2018-06-17
7	Spectrum Analyzer	Agilent	N9020A	MY50510140	2016-10-27	2017-10-26
8	Signal analyzer	Agilent	E4448A(External mixers to 40GHz)	US44300469	2017-06-16	2018-06-15
9	RF Cable	Harbour Industries	Sucoflex104	FP2RX2	2017-06-18	2018-06-17
10	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2017-06-18	2018-06-17
11	Amplifier	SCHAFFNER	COA9231A	18667	2017-06-18	2018-06-17
12	Amplifier	Agilent	8449B	3008A02120	2017-06-16	2018-06-15
13	Amplifier	MITEQ	AMF-6F-260400	9121372	2017-06-16	2018-06-15
14	Loop Antenna	R&S	HFH2-Z2	860004/001	2017-06-18	2018-06-17
15	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2017-06-10	2018-06-09
16	Horn Antenna	EMCO	3115	6741	2017-06-10	2018-06-09
17	Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	2017-06-10	2018-06-09
18	RF Cable-R03m	Jye Bao	RG142	CB021	2017-06-18	2018-06-17
19	RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	2017-06-18	2018-06-17
20	EMI Test Receiver	R&S	ESCI	101142	2017-06-18	2018-06-17
21	Artificial Mains	R&S	ENV216	101288	2017-06-18	2018-06-17
22	EMI Test Software	AUDIX	E3	N/A	2017-06-18	2018-06-17

6. ANTENNA PORT MEASUREMENT

6.1 Peak Power

6.1.1 Block Diagram of Test Setup



6.1.2 Limit

According to §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 system in the 2400–2483.5 MHz band: 0.125 watts.

6.1.3 Test Procedure

Use the following spectrum analyzer settings:

Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel

RBW > the 20 dB bandwidth of the emission being measured

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power

6.1.4 Test Results

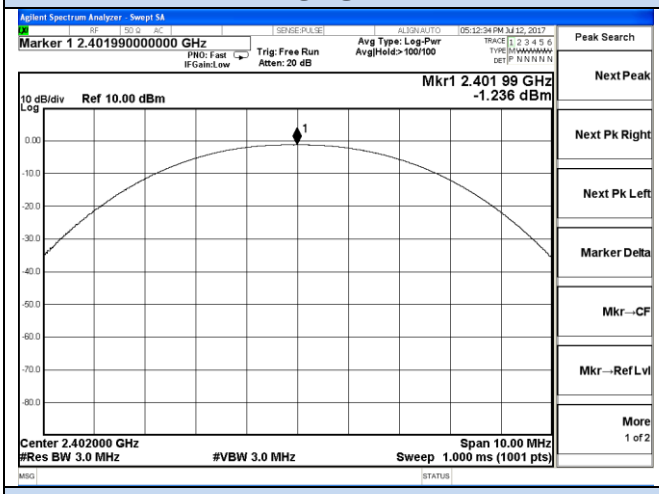
Test Mode	Channel	Frequency (MHz)	Measured Maximum Power (dBm)	Limits (dBm)	Verdict
GFSK	0	2402	-1.236	30.00	PASS
	39	2441	-1.073		
	78	2480	-1.349		
π/4DQPSK	0	2402	-2.193	21.00	PASS
	39	2441	-1.870		
	78	2480	-2.239		
8DPSK	0	2402	-1.979	21.00	PASS
	39	2441	-1.635		
	78	2480	-1.730		

Remark:

1. *Measured output power at difference Packet Type for each mode and recorded worst case for each mode.*
2. *Worst case data at DH5 for GFSK, 2DH5 for π/4DQPSK, 3DH5 for 8DPSK modulation type;*

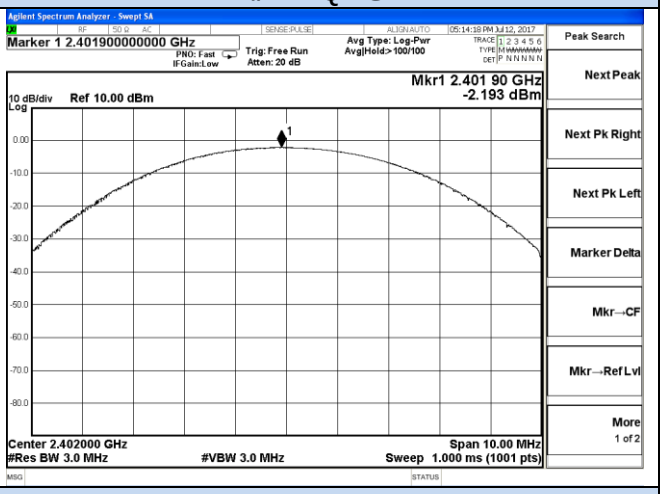
Peak Output Power

GFSK

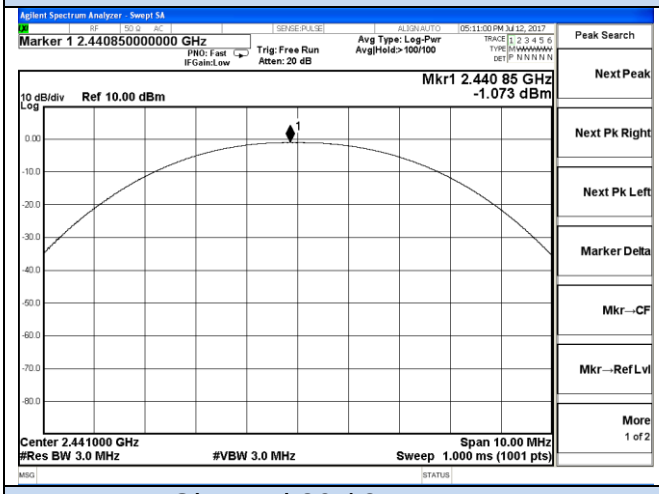


Channel 0 / 2402 MHz

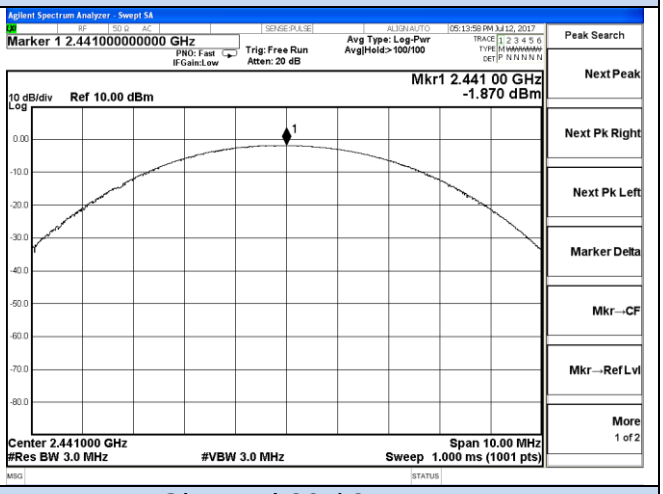
π/4-DQPSK



Channel 0 / 2402 MHz



Channel 39 / 2441 MHz



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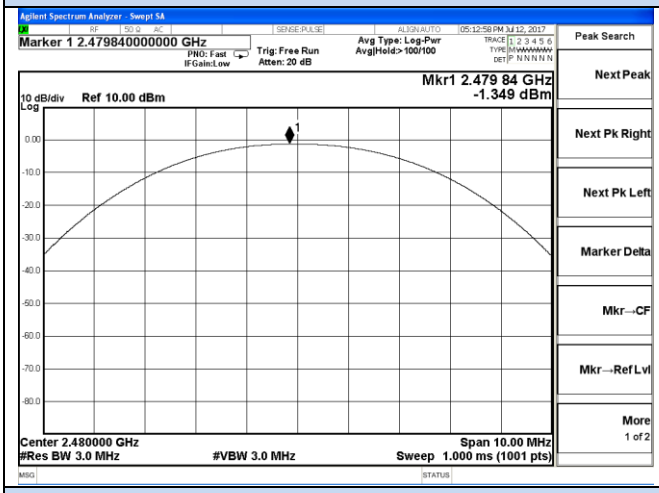
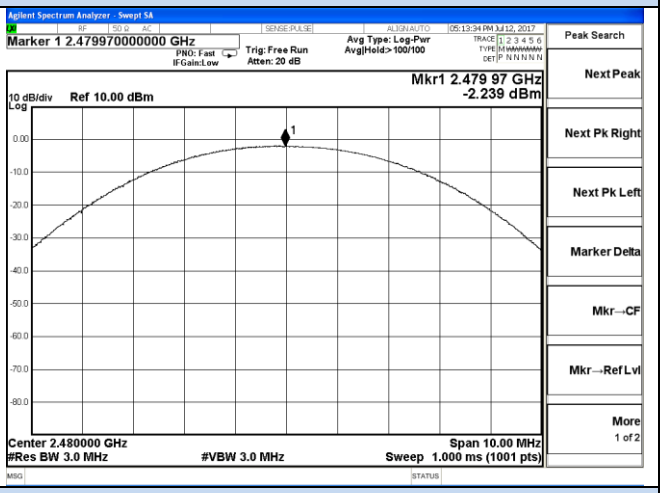
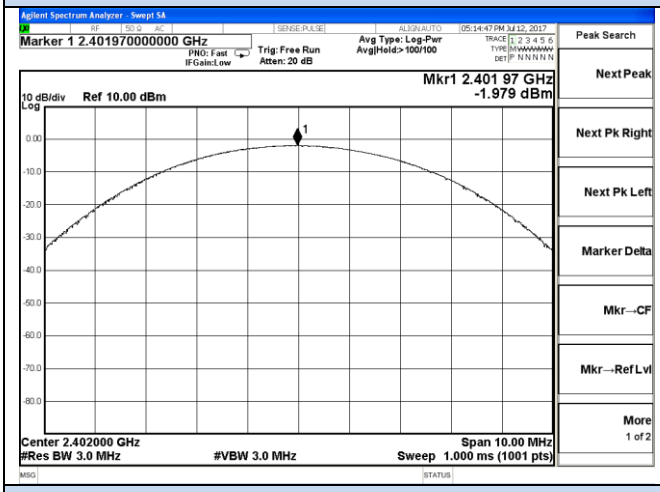


Channel 78 / 2480 MHz



Channel 78 / 2480 MHz

Peak Output Power	
8DPSK	
	
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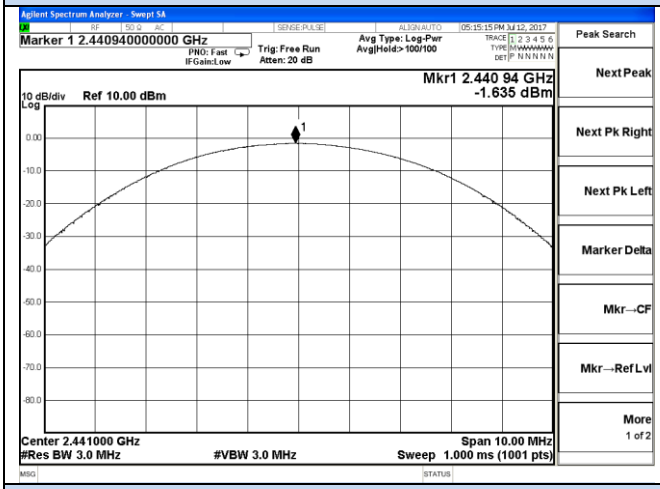
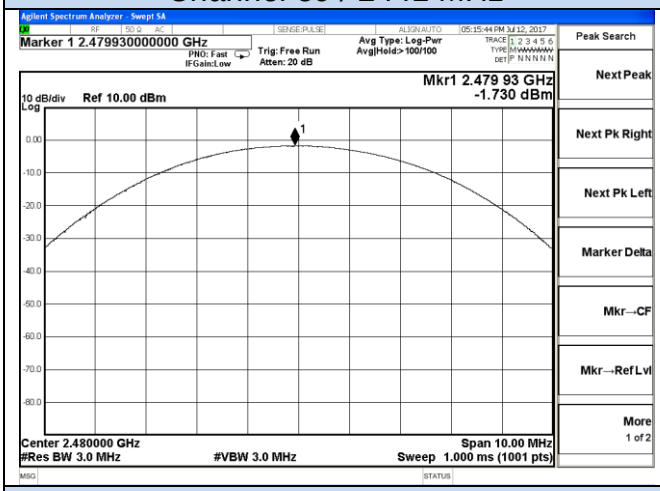
	
Channel 39 / 2441 MHz	
	
Channel 78 / 2480 MHz	

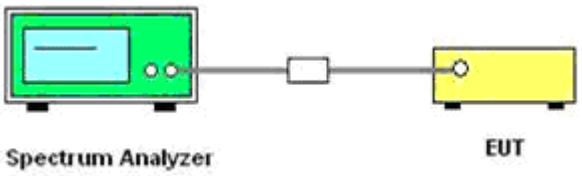
6.2 Frequency Separation and 20 dB Bandwidth

6.2.1 Limit

§ 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.

According to §15.247(c) or A8.1(a), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in15.209(a).

6.2.2 Block Diagram of Test Setup



6.2.3 Test Procedure

Frequency separation test procedure：

1). Place the EUT on the table and set it in transmitting mode.

2). Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Spectrum Analyzer.

3). Set center frequency of Spectrum Analyzer = middle of hopping channel.

4). Set the Spectrum Analyzer as RBW = 100 KHz, VBW = 300 KHz, Span = wide enough to capture the peaks of two adjacent channels, Sweep = auto.

5). Max hold, mark 2 peaks of hopping channel and record the 2 peaks frequency.

20dB bandwidth test procedure：

1). Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel.

2). RBW = 30 KHz, VBW = 100 KHz.

3). Detector function = peak.

4). Trace = max hold.

6.2.4 Test Results

6.2.4.1 20dB Bandwidth

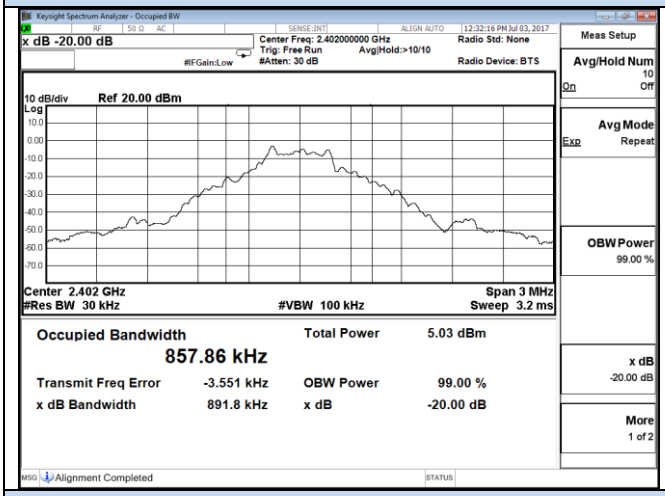
Test Mode	Channel	Frequency (MHz)	Measured Bandwidth (KHz)		Limits (KHz)	Verdict
			99%	20dB		
GFSK	0	2402	857.86	891.80	No Limits	PASS
	39	2441	854.17	891.90		
	78	2480	854.08	896.00		
π/4DQPSK	0	2402	1072.10	1127.00	No Limits	PASS
	39	2441	1073.10	1124.00		
	78	2480	1073.00	1128.00		
8DPSK	0	2402	1079.90	1155.00	No Limits	PASS
	39	2441	1080.00	1152.00		
	78	2480	1081.80	1157.00		

Remark:

1. *Measured 20dB and occupied bandwidth at difference Packet Type for each mode and recorded worst case for each mode.*
2. *Worst case data at DH5 for GFSK, 2DH5 for π/4DQPSK, 3DH5 for 8DPSK modulation type;*
3. *Please refer following test plots;*

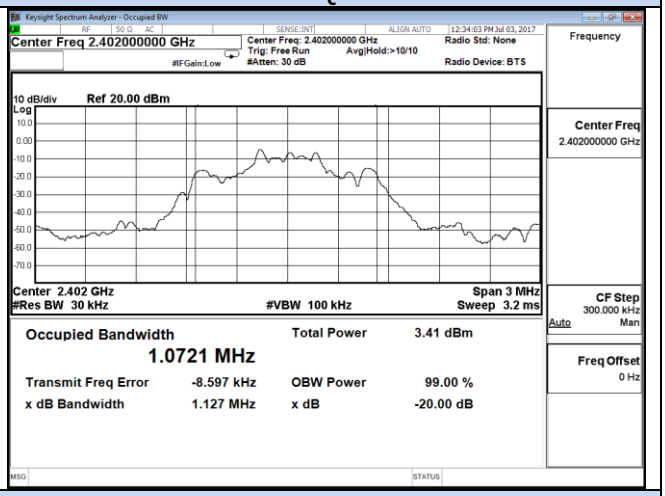
20dB Bandwidth and 99% Bandwidth

GFSK

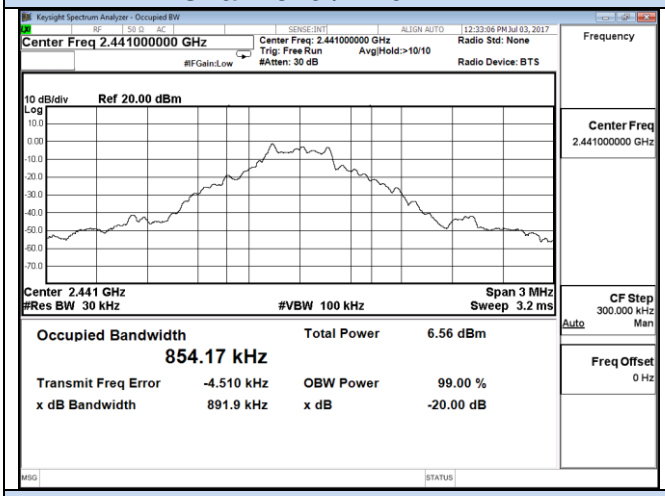


Channel 0 / 2402 MHz

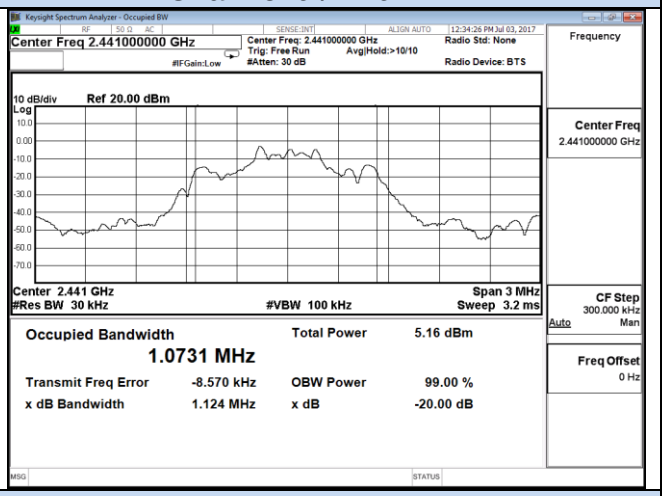
π/4DQPSK



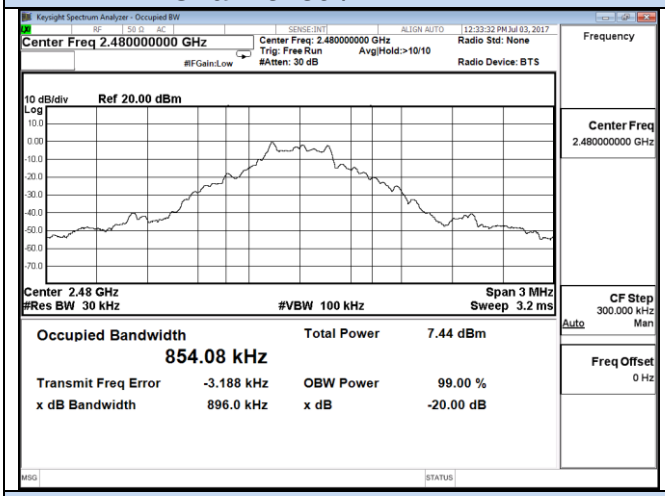
Channel 0 / 2402 MHz



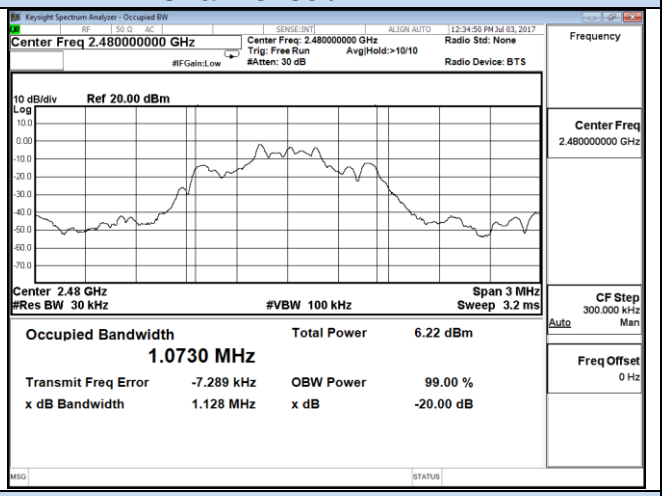
Channel 39 / 2441 MHz



Channel 39 / 2441 MHz



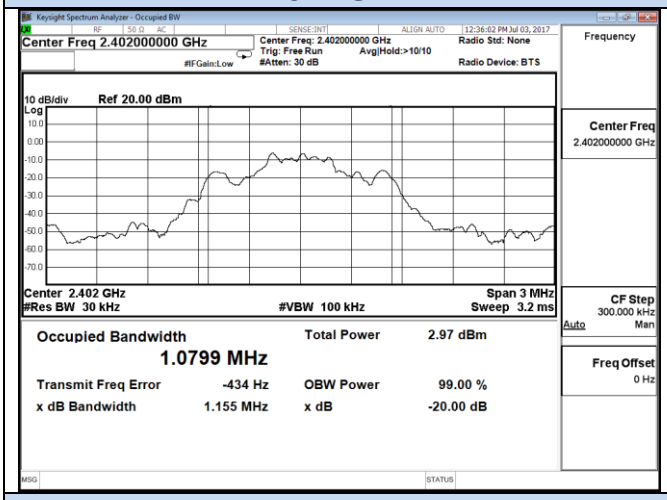
Channel 78 / 2480 MHz



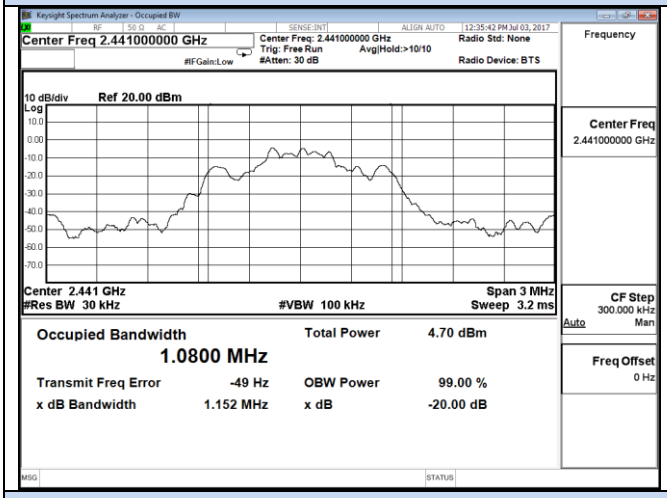
Channel 78 / 2480 MHz

20dB Bandwidth and 99% Bandwidth

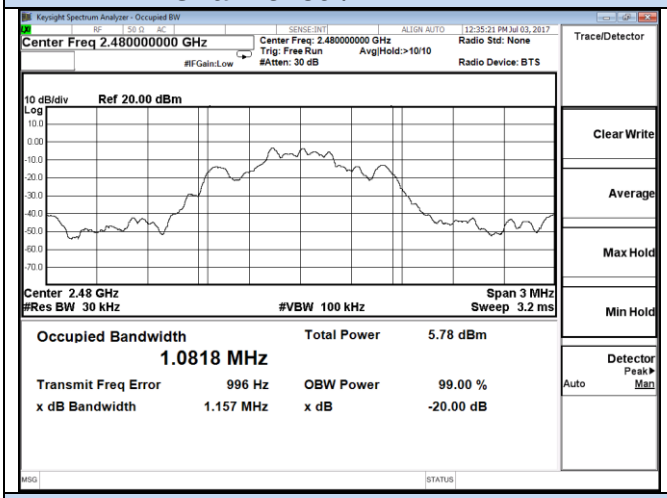
8DPSK



Channel 0 / 2402 MHz



Channel 39 / 2441 MHz



Channel 78 / 2480 MHz

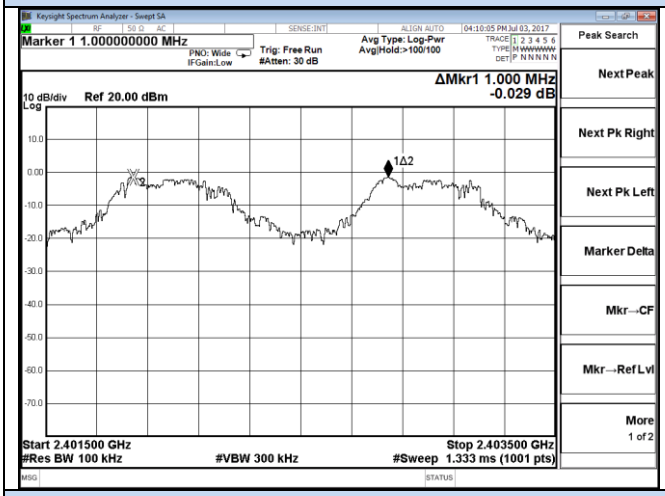
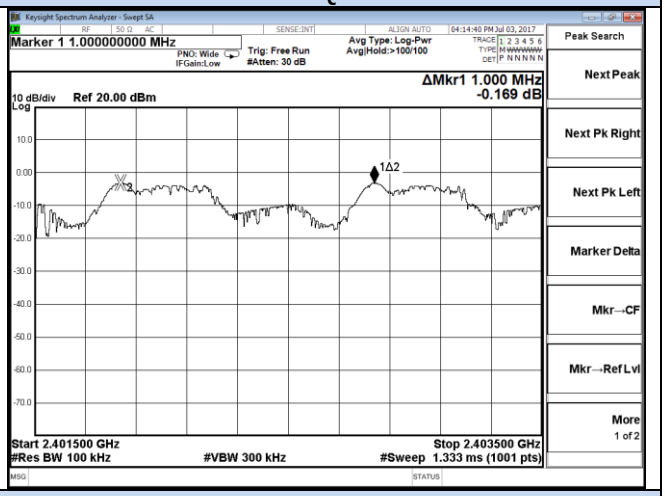
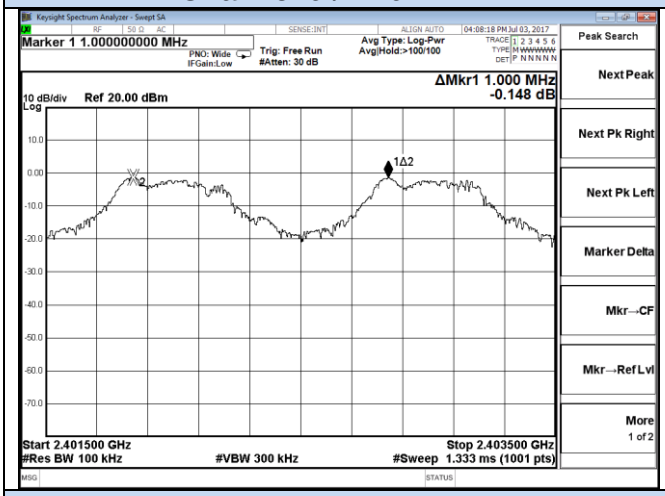
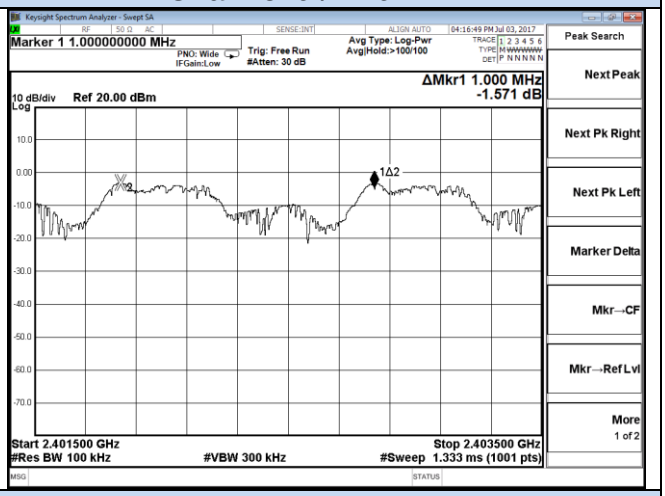
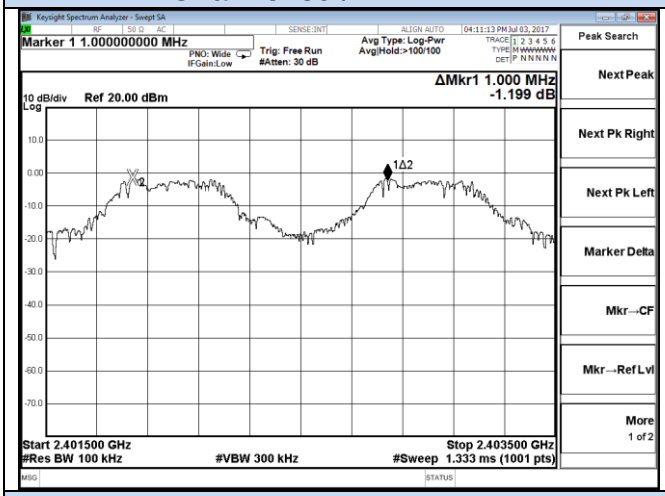
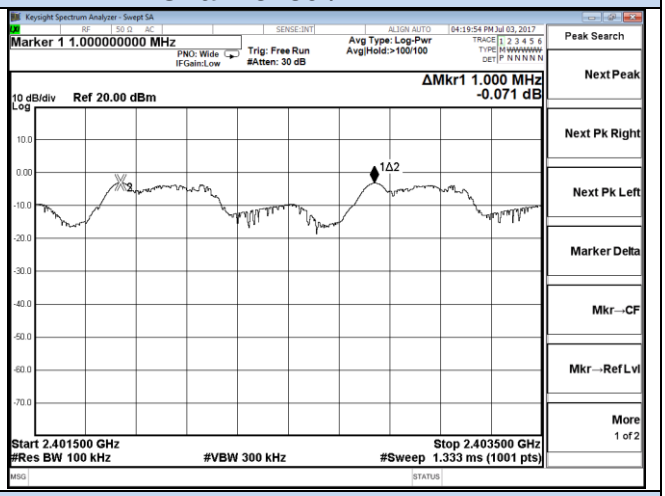
6.2.4.2 Frequency Separation

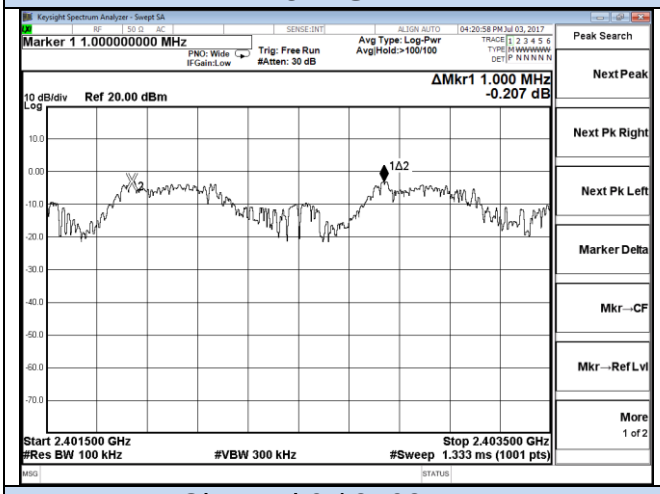
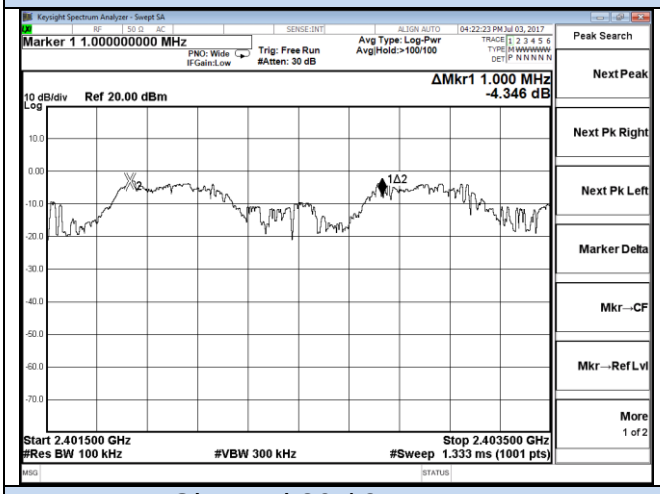
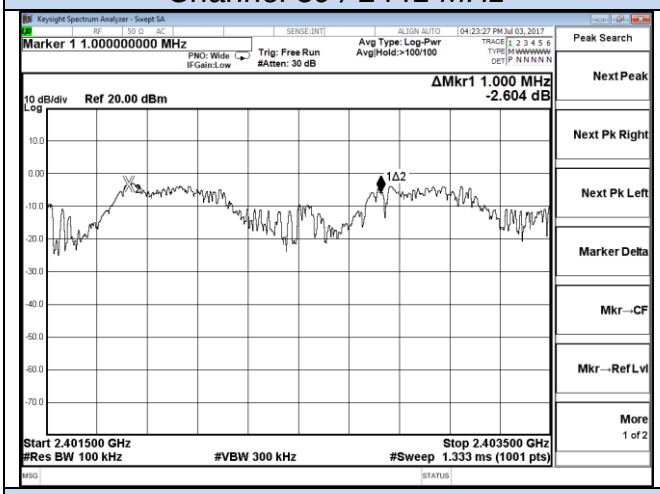
The Measurement Result With 1Mbps For GFSK Modulation				
Channel	20dB Bandwidth (KHz)	Channel Separation (MHz)	Limit (KHz)	Result
Low	891.80	1.000	≥825.50	Pass
Middle	891.90	1.000	≥828.70	Pass
High	896.00	1.000	≥830.80	Pass
The Measurement Result With 2Mbps For π/4-DQPSK Modulation				
Channel	20dB Bandwidth (KHz)	Channel Separation (MHz)	Limit (KHz)	Result
Low	1127.00	1.000	≥744.67	Pass
Middle	1124.00	1.000	≥744.00	Pass
High	1128.00	1.000	≥744.67	Pass
The Measurement Result With 3Mbps For 8-DPSK Modulation				
Channel	20dB Bandwidth (KHz)	Channel Separation (MHz)	Limit (KHz)	Result
Low	1155.00	1.000	≥776.00	Pass
Middle	1152.00	1.000	≥774.67	Pass
High	1157.00	1.000	≥775.33	Pass

Remark:

1. *Please refer to following plots;*
2. *Measured at difference Packet Type for each mode and recorded worst case for each mode.*
3. *Worst case data at DH5 for GFSK, 2DH5 for π/4-DQPSK, 3DH5 for 8DPSK modulation type;*

Frequency Separation

GFSK	π/4DQPSK
	
Channel 0 / 2402 MHz	Channel 0 / 2402 MHz
	
Channel 39 / 2441 MHz	Channel 39 / 2441 MHz
	
Channel 78 / 2480 MHz	Channel 78 / 2480 MHz

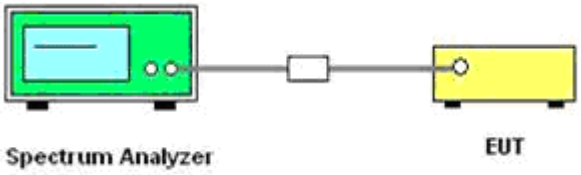
Frequency Separation	
8DPSK	
	
Channel 0 / 2402 MHz	
	
Channel 39 / 2441 MHz	
	
Channel 78 / 2480 MHz	

6.3 Number of Hopping Frequency

6.3.1 Limit

According to §15.247(a)(1)(ii) or A8.1 (d), Frequency hopping systems operating in the band 2400-2483.5 MHz shall use at least 15 hopping channels.

6.3.2 Block Diagram of Test Setup



6.3.3 Test Procedure

1). Place the EUT on the table and set it in transmitting mode.

2). Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Spectrum Analyzer.

3). Set Spectrum Analyzer Start=2400MHz, Stop = 2483.5MHz, Sweep = auto.

4). Set the Spectrum Analyzer as RBW = 1 MHz, VBW=1MHz.

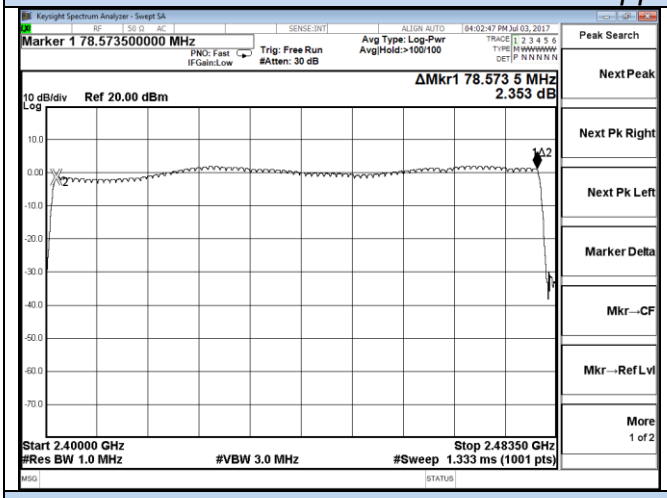
5). Max hold, view and count how many channel in the band.

6.3.4 Test Results

Test Mode	Measurement Result (No. of Channels)	Limit (No. of Channels)	Result
GFSK	79	≥15	PASS
π/4DQPSK	79	≥15	PASS
8DPSK	79	≥15	PASS

Remark:

1. *Measured output power at difference Packet Type for each mode and recorded worst case for each mode.*
2. *Worst case data at DH5 for GFSK, 2DH5 for π/4DQPSK, 3DH5 for 8DPSK modulation type;*
3. *Record test plots only for GFSK;*
4. *Please refer following test plots;*

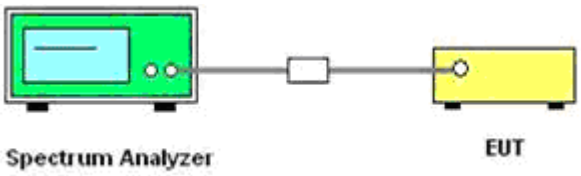
Number of Hopping Frequency	
	
GFSK	

6.4 Time of Occupancy (Dwell Time)

6.4.1 Limit

According to §15.247(a)(1)(iii) or A8.1 (d), Frequency hopping systems operating in the 2400MHz-2483.5 MHz bands. The average time of occupancy on any channels shall not greater than 0.4 s within a period 0.4 s multiplied by the number of hopping channels employed.

6.4.2 Block Diagram of Test Setup



6.4.3 Test Procedure

1). Place the EUT on the table and set it in transmitting mode.
2). Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Spectrum Analyzer.
3). Set center frequency of Spectrum Analyzer = operating frequency.
4). Set the Spectrum Analyzer as RBW, VBW=1MHz, Span = 0Hz, Sweep = auto.
5). Repeat above procedures until all frequency measured was complete.

6.4.4 Test Results

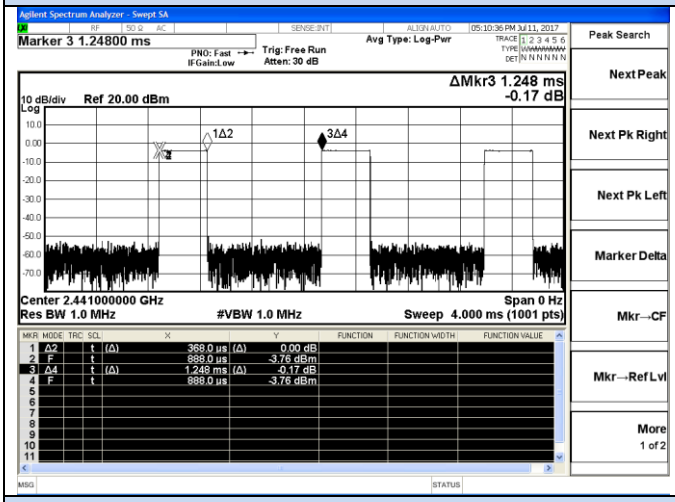
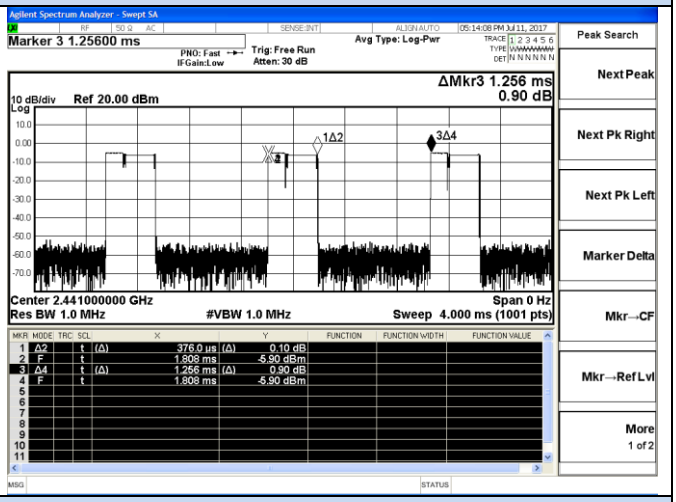
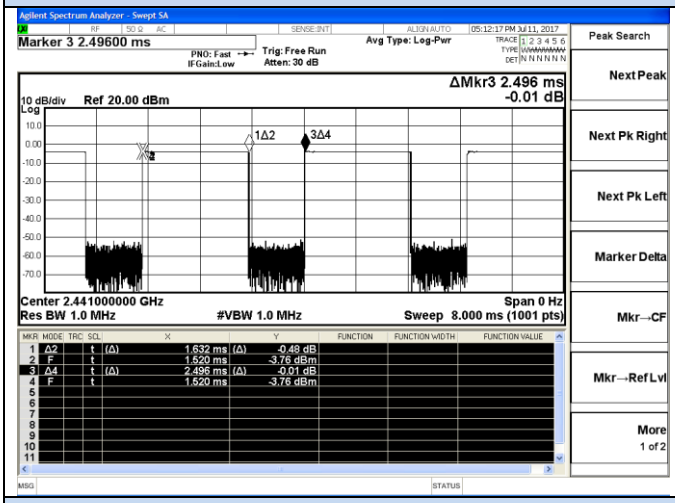
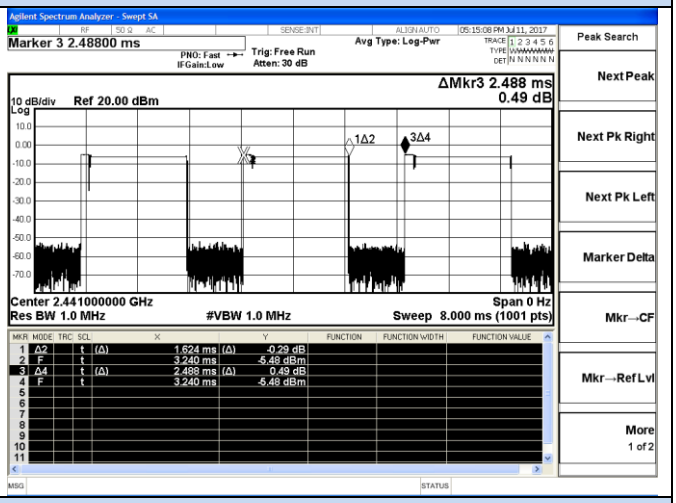
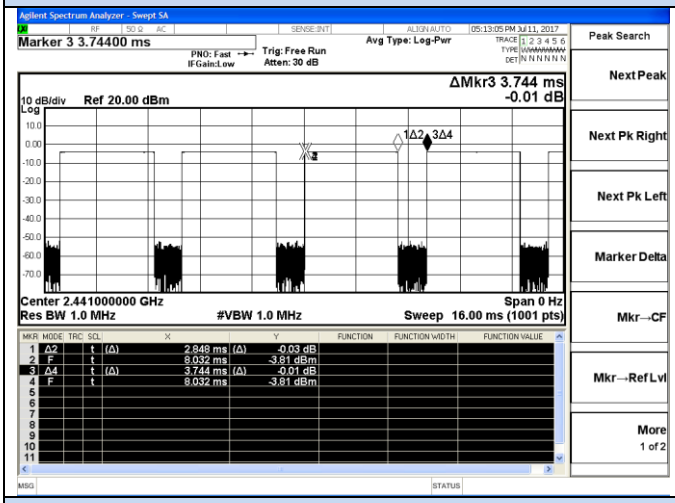
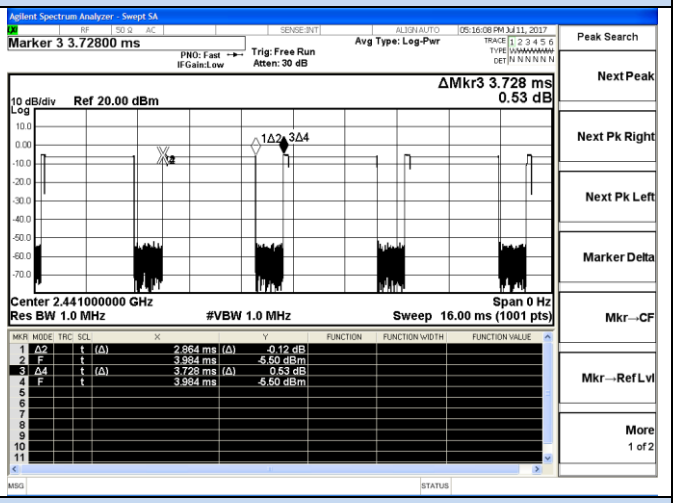
The Dwell Time=Burst Width*Total Hops. The detailed calculations are showed as follows:
The duration for dwell time calculation: 0.4[s]*hopping number=0.4[s]*79[ch]=31.6[s*ch];
The burst width [ms/hop/ch], which is directly measured, refers to the duration on one channel hop.
The hops per second for all channels: The selected EUT Conf uses a slot type of 5-Tx&1-Rx and a hopping rate of 1600 [ch*hop/s] for all channels. So the final hopping rate for all channels is 1600/6=266.67 [ch*hop/s]
The hops per second on one channel: 266.67 [ch*hops/s]/79 [ch]=3.38 [hop/s];
The total hops for all channels within the dwell time calculation duration: 3.38 [hop/s]*31.6[s*ch]=106.67 [hop*ch];
The dwell time for all channels hopping: 106.67 [hop*ch]*Burst Width [ms/hop/ch].

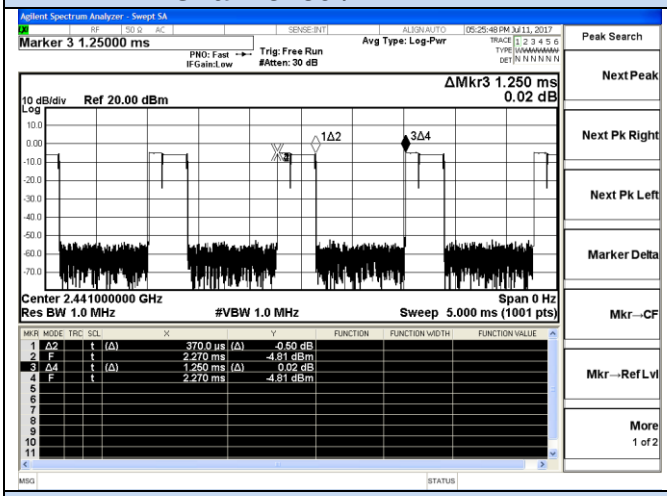
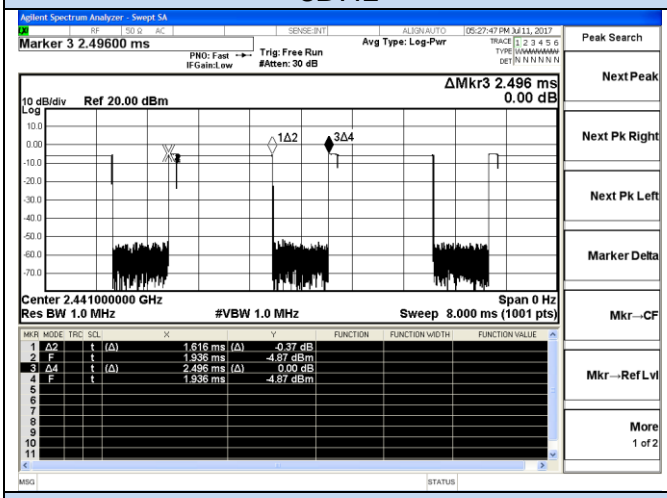
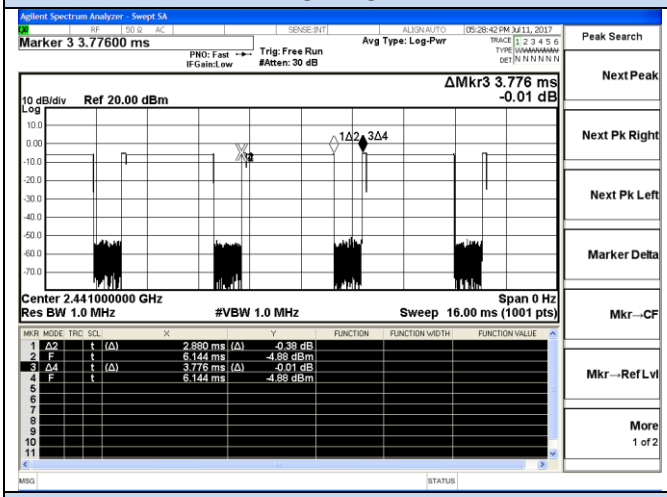
Mode	Frequency (MHz)	Burst Type	Pulse Width (ms)	Dwell Time (S)	Limit (S)	Verdict
GFSK	2441	DH1	0.368	0.118	0.4	PASS
		DH3	1.632	0.261	0.4	PASS
		DH5	2.848	0.304	0.4	PASS
π/4-DQPSK	2441	2DH1	0.376	0.120	0.4	PASS
		2DH3	1.624	0.260	0.4	PASS
		2DH5	2.846	0.304	0.4	PASS
8DPSK	2441	3DH1	0.370	0.118	0.4	PASS
		3DH3	1.616	0.259	0.4	PASS
		3DH5	2.880	0.307	0.4	PASS

Remark:
1. *Test results including cable loss;*
2. *Please refer to following plots;*
3. *Measured at difference Packet Type for each mode and recorded worst case for each mode.*
4. *Dwell Time Calculate formula:*
   DH1: Dwell time=Pulse time (ms) × (1600 ÷ 2 ÷ 79) ×31.6 Second
   DH3: Dwell time=Pulse time (ms) × (1600 ÷ 4 ÷ 79) ×31.6 Second

DH5: Dwell time=Pulse Time (ms) × (1600 ÷ 6 ÷ 79) ×31.6 Second

5. *Measured at low, middle and high channel, recorded worst at middle channel;*

Dwell time	
GFSK	π/4-DQPSK
Channel 39 / 2441 MHz	Channel 39 / 2441 MHz
	
DH1	2DH1
	
DH3	2DH3
	
DH5	2DH5

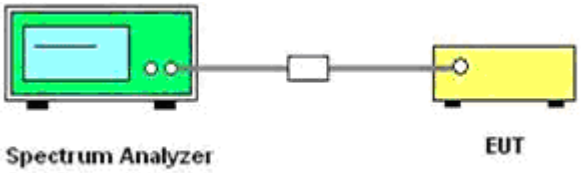
Dwell time	
8DPSK	
Channel 39 / 2441 MHz	
	
3DH1	
	
3DH3	
	
3DH5	

6.5 Conducted Spurious Emissions and Band Edges Test

6.5.1 Limit

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. Attenuation below the general limits specified in Section 15.209(a) is not required.

6.5.2 Block Diagram of Test Setup



6.5.3 Test Procedure

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.
The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 KHz. The video bandwidth is set to 300 KHz.
Measurements are made over the 9 KHz to 26.5GHz range with the transmitter set to the lowest, middle, and highest channels

6.5.4 Test Results of Conducted Spurious Emissions

No non-compliance noted. Only record the worst test result (TX-GFSK) in this report. The test data refer to the following page.

Test Mode	Channel	Frequency (MHz)	Spurious RF Conducted Emission (dBc)	Limits (dBc)	Verdict
GFSK	0	2402	<-20	-20	PASS
	39	2441	<-20		
	78	2480	<-20		
π/4-DQPSK	0	2402	<-20	-20	PASS
	39	2441	<-20		
	78	2480	<-20		
8DPSK	0	2402	<-20	-20	PASS
	39	2441	<-20		
	78	2480	<-20		

Remark:
1. *Test results including cable loss;*
2. *Please refer to following plots;*
3. *Measured at difference Packet Type for each mode and recorded worst case for each mode.*
4. *Worst case data at DH5 for GFSK, 2DH5 for π/4-DQPSK, 3DH5 for 8DPSK modulation type;*