FCC TEST REPORT FOR

ShenZhen Aoni Electronic Industry Co., Ltd.

Bluetooth Headset

Model No.: B032

Additional Model No.: Please refer to page 6

Prepared for : ShenZhen Aoni Electronic Industry Co., Ltd.

Address : HongHui Industrial Park,2nd LiuXian Road, Xin'An streets, District

68, Bao'an District, ShenZhen, China

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd.

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Date of receipt of test sample : April 17, 2017

Number of tested samples : 1

Serial number : Prototype

Date of Test : April 17, 2017~May 17, 2017

Date of Report : May 17, 2017

FCC TEST REPORT

FCC CFR 47 PART 15 C(15.247): 2015

Report Reference No.: LCS170417133AE

Date of Issue: May 17, 2017

Testing Laboratory Name: Shenzhen LCS Compliance Testing Laboratory Ltd.

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 Aoni Electronic Industry Co., Ltd.

Address: HongHui Industrial Park,2nd LiuXian Road, Xin'An streets, District

68, Bao'an District, ShenZhen, China

Test Specification

Standard...... : FCC CFR 47 PART 15 C(15.247): 2017

Test Report Form No.....: LCSEMC-1.0

TRF Originator: Shenzhen LCS Compliance Testing Laboratory Ltd.

Master TRF: Dated 2011-03

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Test Item Description.: Bluetooth Headset

Trade Mark...... : Aoni, Ausdom, Mixcder

B023, 869, 897, 872, 877, 861, 850, 862, 863, 894, 895, 883, 304,

B037

Ratings DC 3.7V by battery

Recharging parameter: DC 5V/500mA

Result: Positive

Compiled by:

Supervised by:

Approved by:

Kyle Yin/ File administrators

Glin Lu/ Technique principal

Gavin Liang/ Manager

FCC -- TEST REPORT

May 17, 2017 **Test Report No.:** LCS170417133AE Date of issue

EUT.....: : Bluetooth Headset Type / Model..... : B032 Applicant..... : ShenZhen Aoni Electronic Industry Co., Ltd. Address..... : HongHui Industrial Park,2nd LiuXian Road, Xin'An streets, District 68, Bao'an District, ShenZhen, China Telephone.....:: : / Fax..... Manufacturer..... : ShenZhen Aoni Electronic Industry Co., Ltd. : HongHui Industrial Park,2nd LiuXian Road, Xin'An streets, District Address..... 68, Bao'an District, ShenZhen, China Telephone.....:: : / Fax..... Factory..... : ShenZhen Aoni Electronic Industry Co., Ltd. Address..... : HongHui Industrial Park,2nd LiuXian Road, Xin'An streets, District 68, Bao'an 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	2017-05-19	Initial Issue	Gavin Liang

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1. GENERAL INFORMATION

1.1 Description of Device (EUT)

Name of EUT	Bluetooth Headset
Model Number	B023, 869, 897, 872, 877, 861, 850, 862, 863, 894, 895, 883, 304, 806, 860, 881, 853, B031, B021, B033, B025, B040, B043, B030, B037
Antenna Gain	1.0dBi (max.) For BT
Hardware version	1.1
Software version	1.0
Antenna Type	Integral Antenna
BT Modulation Type	GFSK,8DPSK,π/4DQPSK(BT V4.2)
Extreme temp. Tolerance	-30°C to +50°C
Extreme vol. Limits	3.40VDC to 4.2VDC (nominal: 3.70VDC)

1.2. Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	Certificate

1.3. External I/O Cable

I/O Port Description	Quantity	Cable
USB	1	N/A
Earphone	1	N/A

1.4. Description of Test Facility

CNAS Registration Number. is L4595.

FCC Registration Number. is 899208.

Industry Canada Registration Number. is 9642A-1.

VCCI Registration Number. is C-4260 and R-3804.

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

FCC ID: Z63-D7B032

Test Item		Frequency Range	Uncertainty	Note
		9KHz~30MHz	±3.10dB	(1)
		30MHz~200MHz	±2.96dB	(1)
Radiation Uncertainty	:	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)		
	2402	1/2/3		
BT V 3.0	2441	1/2/3		
	2480	1/2/3		
F	For Conducted Emission			
Test Mode	-	ΓX Mode		
For Radiated Emission				
Test Mode	-	ΓX 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 9kHz-1000 MHz radiated emissions was the mode and channel with the highest output power, that was determined to be TX(1Mbps-Low Channel).

AC conducted emission pre-test at both at AC 120V/60Hz and AC 240V/50Hz modes, recorded worst case;

AC conducted emission pre-test at both at power adapter and power from PC modes, recorded worst case;

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 engineering mode to fix the TX frequency that was for the purpose of the measurements.

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

3. SYSTEM TEST CONFIGURATION

3.1 Justification

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

3.2 EUT Exercise Software

The sample will control by special test software (RF Test Tool) to control sample change channel, modulation provided by application;

3.3 Special Accessories

No.	Equipment	Manufactur er	Model No.	Serial No.	Length	shielded/ unshielded	Notes
1	PC	Lenovo	Ideapad	A13110155 0	/	/	DOC
2	Power adapter	Lenovo	CPA-A090	36200414	1.00m	unshielded	DOC

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	Result				
§15.247(b)(1)	Maximum Conducted Output Power	Compliant				
§15.247(c)	Frequency Separation And 20 dB Bandwidth	Compliant				
§15.247(a)(1)(ii)	Number Of Hopping Frequency	Compliant				
§15.247(a)(1)(iii)	Time Of Occupancy (Dwell Time)	Compliant				
§15.209, §15.205	Conducted Spurious Emissions and Band Edges Test	Compliant				
§15.209, §15.247(d)	Radiated and Conducted Spurious Emissions	Compliant				
§15.205	Emissions at Restricted Band	Compliant				
§15.207(a)	Conducted Emissions	Compliant				
§15.203	Antenna Requirements	Compliant				
§15.247(i)§2.1093	RF Exposure	Compliant				

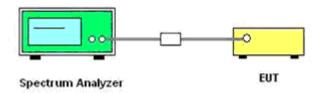
5. SUMMARY OF TEST EQUIPMENT

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1	Power Sensor	R&S	NRV-Z51	100458	2016-06-18	2017-06-17
2	Power Sensor	R&S	NRV-Z32	10057	2016-06-18	2017-06-17
3	Power Meter	R&S	NRVS	100444	2016-06-18	2017-06-17
4	DC Filter	MPE	23872C	N/A	2016-06-18	2017-06-17
5	RF Cable	Harbour Industries	1452	N/A	2016-06-18	2017-06-17
6	SMA Connector	Harbour Industries	9625	N/A	2016-06-18	2017-06-17
7	Spectrum Analyzer	Agilent	N9020A	MY50510140	2016-10-27	2017-10-26
8	Signal analyzer	Agilent	E4448A(Exter nal mixers to 40GHz)	US44300469	2016-06-16	2017-06-15
9	RF Cable	Hubersuhne	Sucoflex104	FP2RX2	2016-06-18	2017-06-17
10	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2016-06-18	2017-06-17
11	Amplifier	SCHAFFNER	COA9231A	18667	2016-06-18	2017-06-17
12	Amplifier	Agilent	8449B	3008A02120	2016-06-16	2017-06-15
13	Amplifier	MITEQ	AMF-6F-2604 00	9121372	2016-06-16	2017-06-15
14	Loop Antenna	R&S	HFH2-Z2	860004/001	2016-06-18	2017-06-17
15	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2016-06-10	2017-06-09
16	Horn Antenna	EMCO	3115	6741	2016-06-10	2017-06-09
17	Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	2016-06-10	2017-06-09
18	RF Cable-R03m	Jye Bao	RG142	CB021	2016-06-18	2017-06-17
19	RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	2016-06-18	2017-06-17
20	EMI Test Receiver	R&S	ESCI	101142	2016-06-18	2017-06-17
21	Artificial Mains	R&S	ENV216	101288	2016-06-18	2017-06-17
22	EMI Test Software	AUDIX	E3	N/A	2016-06-18	2017-06-17

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 systems 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

 $VBW \ge RBW$

Sweep = auto

Detector function = peak

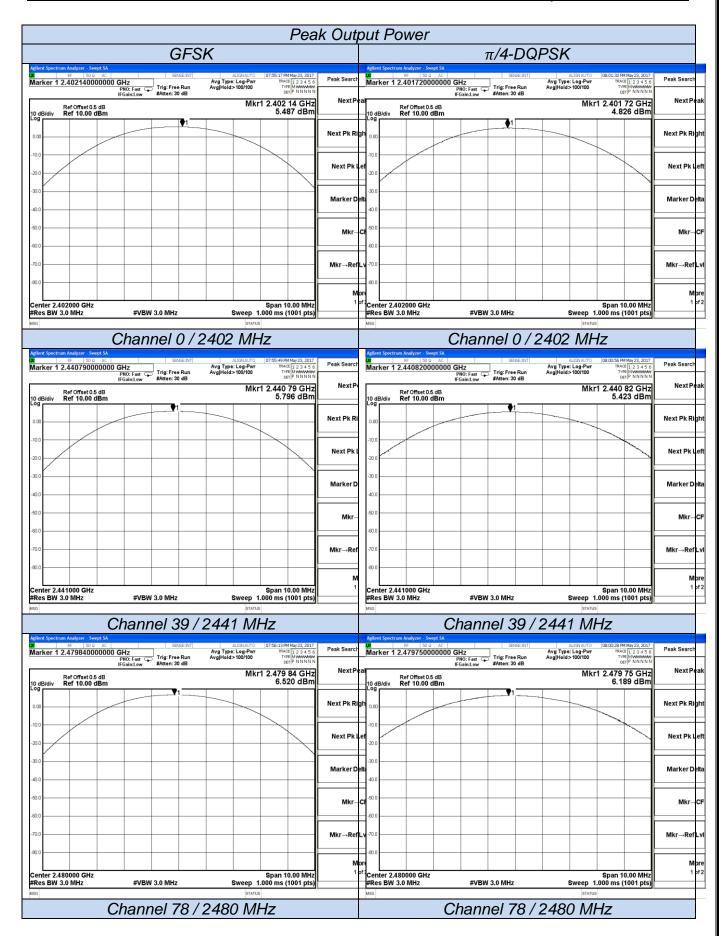
Trace = max hold

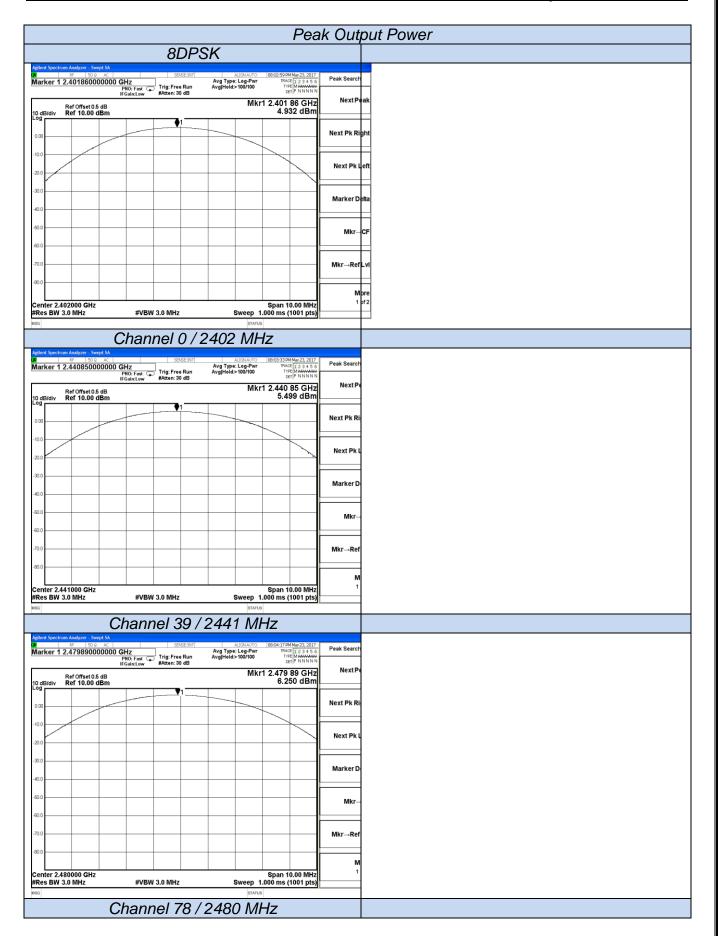
Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power

6.1.4 Test Results

Test Mode	Channel	Frequency (MHz)	Measured Maximum Power (dBm)	Limits (dBm)	Verdict
	0	2402	5.487		
GFSK	39	2441	5.796	30.00	PASS
	78	2480	6.520		
	0	2402	4.826		
π/4DQPSK	39	2441	5.423	30.00	PASS
	78	2480	6.189		
	0	2402	4.932		
8DPSK	39	2441	5.499	30.00	PASS
	78	2480	6.250		

- 1. Test results including cable loss;
- 2. Measured output power at difference Packet Type for each mode and recorded worst case for each mode
- 3. Worst case data at DH1 for GFSK, 2DH1 for π/4DQPSK, 3DH1 for 8DPSK modulation type;



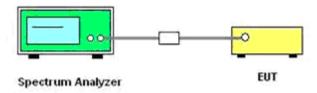


6.2 Frequency Separation and 20 dB Bandwidth

6.2.1 Limit

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:

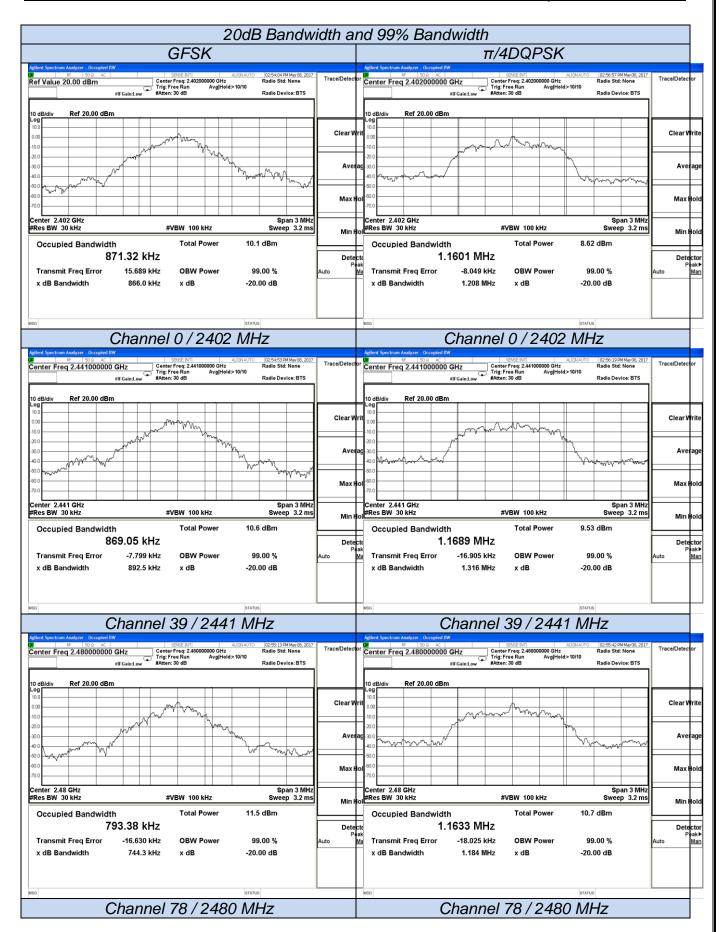
- 1). Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel.
- 2). RBW = 30 KHz, VBW = 100 KHz.
- 3). Detector function = peak.
- 4). Trace = max hold.

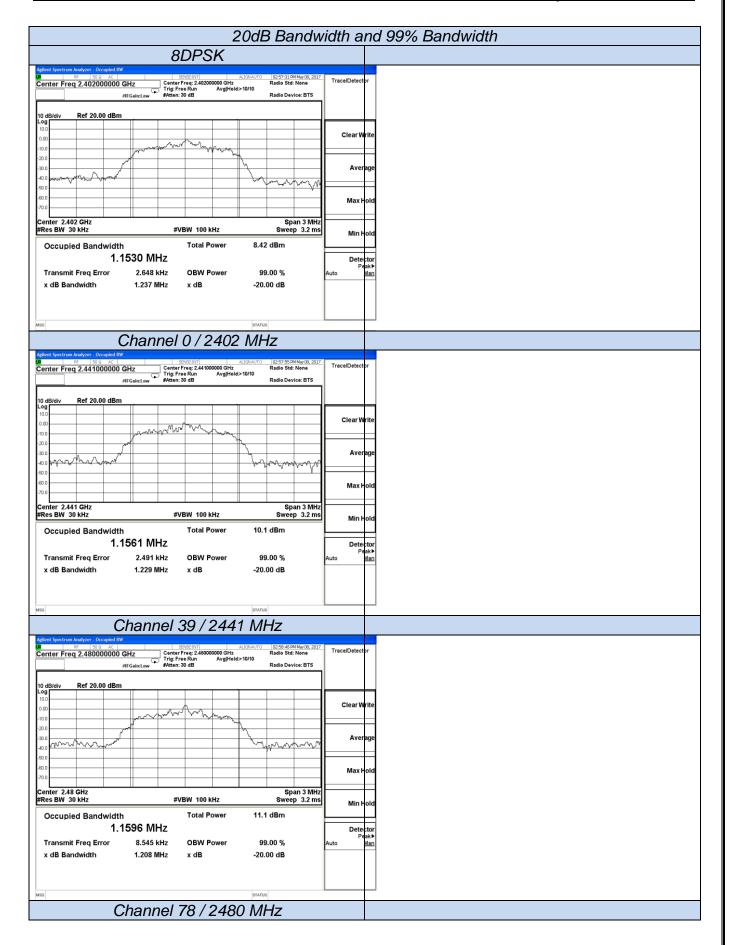
6.2.4 Test Results

6.2.4.1 20dB Bandwidth

Test Mode	Channel	Frequency	Measured Bandwidth (KHz)		Limits	Verdict
rest wode	Channel	(MHz)	99%	20dB	(KHz)	verdict
GFSK	0	2402	871.32	866.00	No Limits	PASS
	39	2441	869.05	892.50		
	78	2480	793.38	744.30		
π/4DQPSK	0	2402	1160.10	1208.00		PASS
	39	2441	1168.90	1316.00	No Limits	
	78	2480	1163.30	1184.00		
8DPSK	0	2402	1153.00	1237.00		
	39	2441	1156.10	1229.00	No Limits	PASS
	78	2480	1159.60	1208.00		

- 1. Test results including cable loss;
- 2. Measured output power at difference Packet Type for each mode and recorded worst case for each mode.
- 3. Worst case data at DH1 for GFSK, 2DH1 for π/4DQPSK, 3DH1 for 8DPSK modulation type;
- 4. Please refer following test plots;

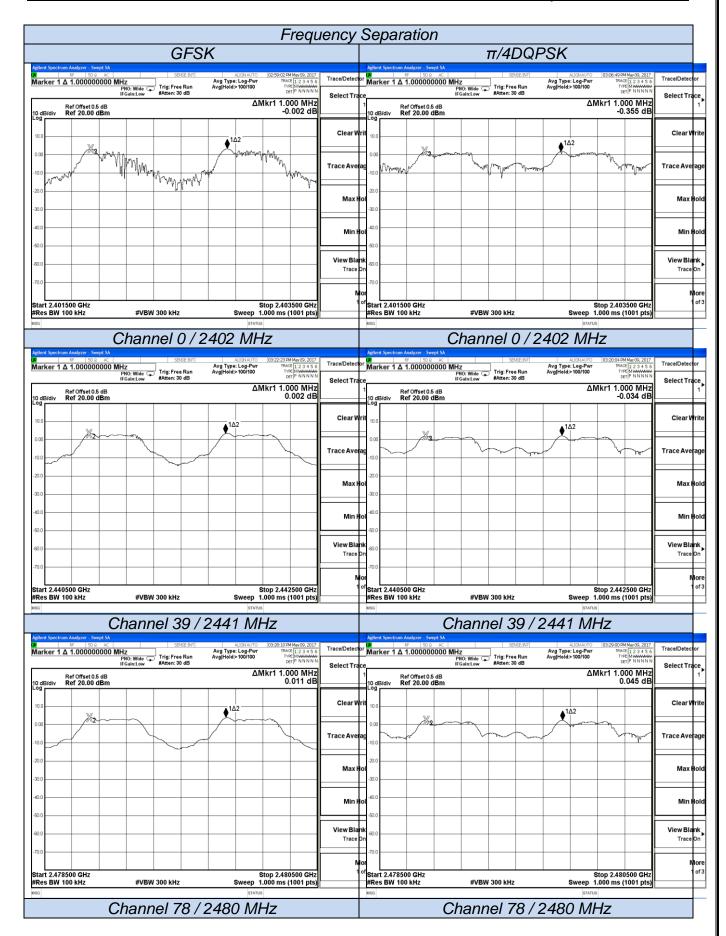


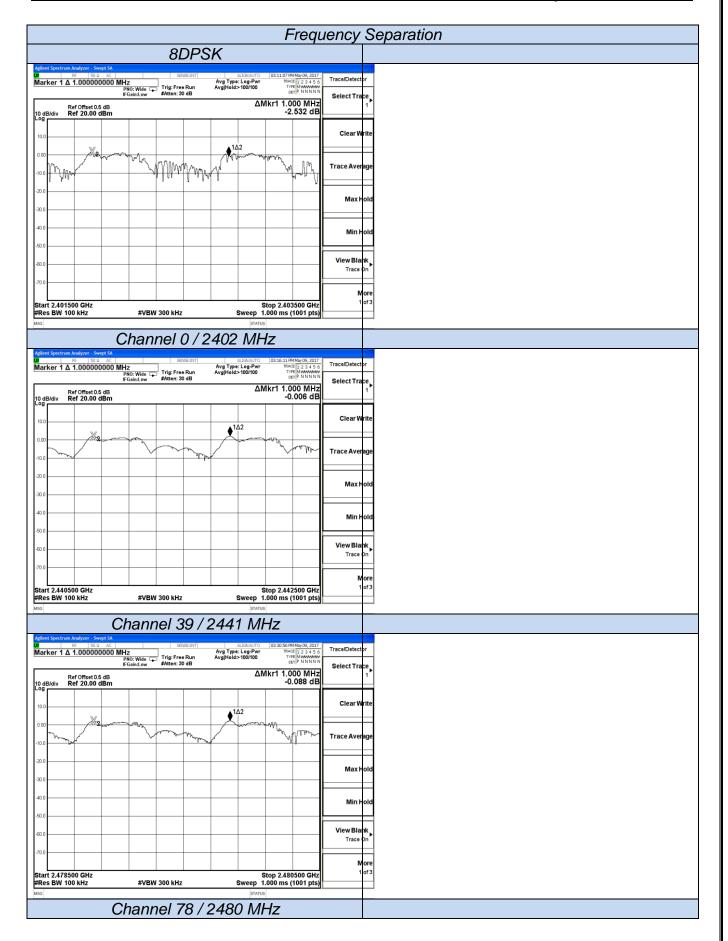


6.2.4.2 Frequency Separation

The Measurement Result With 1Mbps For GFSK Modulation						
Channel	20dB Bandwidth (KHz)	Channel Separation (MHz)	Limit (KHz)	Result		
Low	866.00		1000.00	Pass		
Middle	892.50	1.000	1000.00	Pass		
High	744.30		1000.00	Pass		
The Measurement Result With 2Mbps For π/4-DQPSK Modulation						
Channel	20dB Bandwidth (KHz)	Channel Separation (MHz)	Limit (KHz)	Result		
Low	1208.00		1000.00	Pass		
Middle	1316.00	1.000	1000.00	Pass		
High	1184.00		1000.00	Pass		
The Measurement Result With 3Mbps For 8-DPSK Modulation						
Channel	20dB Bandwidth (KHz)	Channel Separation (MHz)	Limit (KHz)	Result		
Low	1237.00		1000.00	Pass		
Middle	1229.00	1.000	1000.00	Pass		
High	1208.00		1000.00	Pass		

- 1. Test results including cable loss;
- 2. Please refer to following plots;
- Measured at difference Packet Type for each mode and recorded worst case for each mode.
 Worst case data at DH1 for GFSK, 2DH1 for π/4-DQPSK, 3DH1 for 8DPSK modulation type;



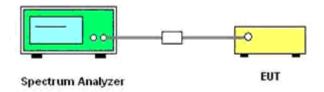


6.3 Number of Hopping Frequency

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



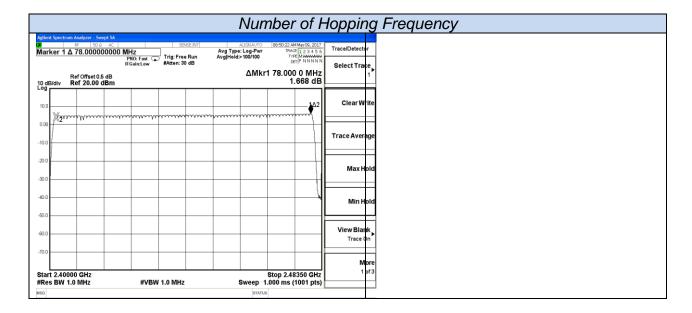
6.3.3 Test Procedure

- 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	

- 1. Test results including cable loss;
- 2. Measured output power at difference Packet Type for each mode and recorded worst case for each mode.
- 3. Worst case data at DH1 for GFSK, 2DH1 for π/4DQPSK, 3DH1 for 8DPSK modulation type;
- 4. Record test plots only for GFSK;
- 5. Please refer following test plots;



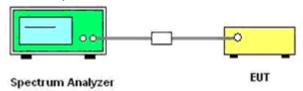
6.4 Time of Occupancy (Dwell Time)

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.

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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

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	0.392	0.1254	0.4	PASS
		DH3	1.640	0.2624	0.4	PASS
		DH5	2.896	0.3089	0.4	PASS
π/4-DQPSK	2441	2DH1	0.400	0.1280	0.4	PASS
		2DH3	1.648	0.2637	0.4	PASS
		2DH5	2.880	0.3072	0.4	PASS
8DPSK	2441	3DH1	0.404	0.1293	0.4	PASS
		3DH3	1.648	0.2637	0.4	PASS
		3DH5	2.880	0.3072	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) \times (1600 \div 2 \div 79) \times 31.6 Second

DH3: Dwell time=Pulse time (ms) \times (1600 \div 4 \div 79) \times 31.6 Second

DH5: Dwell time=Pulse Time (ms) x (1600 ÷ 6 ÷ 79) x31.6 Second

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

