



ТЕ	EST REPORT		
Report Reference No	TRE1710005801 R/C: 62161		
FCC ID::	2AKBO-4312		
Applicant's name:	Great American Merchandise & Events (GAME)		
Address	16444 N 91ST STREET, SCOTTSDALE, Arizona, United States		
Manufacturer	Great American Merchandise & Events (GAME)		
Address	16444 N 91ST STREET, SCOTTSDALE, Arizona, United States		
Test item description:	Wireless speaker and Light Show		
Trade Mark:	-		
Model/Type reference	4312		
Listed Model(s)			
Standard:	FCC CFR Title 47 Part 15 Subpart C Section 15.247		
Date of receipt of test sample:	Oct. 16, 2017		
Date of testing	Oct. 17, 2017 - Oct. 26, 2017		
Date of issue	Oct. 26, 2017		
Result	PASS		
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Approved by (Position+Printed name+Signature):	RF Manager Hans Hu		
Testing Laboratory Name	Shenzhen Huatongwei International Inspection Co., Ltd.		
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The test report merely correspond to the test sample.

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# 1. TEST STANDARDS AND REPORT VERSION

## 1.1. Test Standards

The tests were performed according to following standards:

<u>FCC Rules Part 15.247:</u> Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devicese

## 1.2. Report version

Version No.	Date of issue	Description
00	Oct. 26, 2017	Original

# 2. TEST DESCRIPTION

Test Item	Section in CFR 47	Result	Test Engineer
Antenna Requirement	15.203/15.247 (c)	Pass	William Wang
AC Power Line Conducted Emissions	15.207	Pass	William Wang
Conducted Peak Output Power	15.247 (b)(1)	Pass	William Wang
20 dB Bandwidth	15.247 (a)(1)	Pass	William Wang
Carrier Frequencies Separation	15.247 (a)(1)	Pass	William Wang
Hopping Channel Number	15.247 (a)(1)	Pass	William Wang
Dwell Time	15.247 (a)(1)	Pass	William Wang
Pseudorandom Frequency Hopping Sequence	15.247(b)(4)	Pass	William Wang
Restricted band	15.247(d)/15.205	Pass	William Wang
Radiated Emissions	15.247(d)/15.209	Pass	William Wang

Note: The measurement uncertainty is not included in the test result.

# 3. <u>SUMMARY</u>

## 3.1. Client Information

Applicant:	Great American Merchandise & Events (GAME)	
Address:	16444 N 91ST STREET, SCOTTSDALE, Arizona, United States	
Manufacturer:	Great American Merchandise & Events (GAME)	
Address:	16444 N 91ST STREET, SCOTTSDALE, Arizona, United States	

# 3.2. Product Description

Name of EUT:	Wireless speaker and Light Show
Trade Mark:	-
Model No.:	4312
Listed Model(s):	-
Power supply:	DC 5V for USB port & DC 3.7V for internal battery
Adapter information:	-
Hardware version:	-
Software version:	-
Bluetooth	
Bluetooth Version:	Supported BT4.0+EDR
	Supported BT4.0+EDR GFSK, π/4DQPSK, 8DPSK
Version:	
Version: Modulation:	GFSK, π/4DQPSK, 8DPSK
Version: Modulation: Operation frequency:	GFSK, π/4DQPSK, 8DPSK 2402MHz~2480MHz
Version: Modulation: Operation frequency: Channel number:	GFSK, π/4DQPSK, 8DPSK 2402MHz~2480MHz 79

## 3.3. Operation state

## Test frequency list

According to section 15.31(m), regards to the operating frequency range over 10 MHz, must select three channel which were tested. the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, please see the above gray bottom.

Channel	Frequency (MHz)	
00	2402	
01	2403	
:	:	
39	2441	
:	:	
77	2479	
78	2480	

## > TEST MODE

For RF test items:

The engineering test program was provided and enabled to make EUT continuous transmit

For AC power line conducted emissions:

The EUT was set to connect with the Bluetooth instrument under large package sizes transmission.

For Radiated suprious emissions test item:

The EUT in each of three orthogonal axis emissions had been tested ,but only the worst case (X axis) data recorded in the report.

## 3.4. EUT configuration

## The following peripheral devices and interface cables were connected during the measurement:

supplied by the manufacturer

	•••	•	
0	- supplied	l by the lab	

		Manufacturer:	/
	7	Model No.:	/
	Manufacturer:	/	
	7	Model No.:	/

## 3.5. Modifications

No modifications were implemented to meet testing criteria.

# 4. TEST ENVIRONMENT

## 4.1. Address of the test laboratory

Laboratory: Shenzhen Huatongwei International Inspection Co., Ltd. Address: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

## 4.2. Test Facility

## CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

## A2LA-Lab Cert. No.: 3902.01

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

## FCC-Registration No.: 762235

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files.

## IC-Registration No.:5377B-1

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No.: 5377B-1.

## ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

## 4.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35°C
Relative Humidity:	30~60 %
Air Pressure:	950~1050mba

## 4.4. 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 in calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report according to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2" and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd. quality system according to 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.

Here after the best measurement capability for Shenzhen Huatongwei International Inspection Co., Ltd. is reported:

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.57 dB	(1)
Transmitter power Radiated	2.20 dB	(1)
Conducted spurious emissions 9kHz~40GHz	1.60 dB	(1)
Radiated spurious emissions 9kHz~40GHz	2.20 dB	(1)
Conducted Emissions 9kHz~30MHz	3.39 dB	(1)
Radiated Emissions 30~1000MHz	4.24 dB	(1)
Radiated Emissions 1~18GHz	5.16 dB	(1)
Radiated Emissions 18~40GHz	5.54 dB	(1)
Occupied Bandwidth		(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

## 4.5. Equipments Used during the Test

Cond	Conducted Emissions				
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Artificial Mains	Rohde&Schwarz	ESH2-Z5	100028	2016/11/13
2	EMI Test Receiver	Rohde&Schwarz	ESCI3	100038	2016/11/13
3	Pulse Limiter	Rohde&Schwarz	ESHSZ2	100044	2016/11/13
4	EMI Test Software	Rohde&Schwarz	ES-K1 V1.71	-	-

Radia	ted Emissions				
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI test receiver	Rohde&Schwarz	ESI 26	100009	2016/11/13
2	Loop Antenna	Rohde&Schwarz	HFH2-Z2	100020	2016/11/13
3	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	538	2016/11/13
4	Horn antenna	ShwarzBeck	9120D	1011	2016/11/13
5	Horn Antenna	SCHWARZBECK	BBHA9170	25841	2016/11/13
6	Amplifier	Sonoma	310N	E009-13	2016/11/13
7	JS Amplifier	Rohde&Schwarz	JS4-00101800- 28-5A	F201504	2016/11/13
8	Amplifier	Compliance Direction systems	PAP1-4060	120	2016/11/13
9	High pass filter	Compliance Direction systems	BSU-6	34202	2016/11/13
10	EMI test Software	Rohde&Schwarz	ESK1	-	-
11	EMI test Software	Audix	E3	-	-
12	TURNTABLE	MATURO	TT2.0	-	-
13	ANTENNA MAST	MATURO	TAM-4.0-P	-	-

RF Co	onducted methods				
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Spectrum Analyzer	Rohde&Schwarz	FSP	1164.4391.40	2016/11/13
2	MXA Signal Analyzer	Agilent Technologies	N9020A	MY5050187	2016/11/13

The Cal.Interval was one year.

# 5. TEST CONDITIONS AND RESULTS

## 5.1. Antenna requirement

## <u>Requirement</u>

## FCC CFR Title 47 Part 15 Subpart C 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. The use of a permanently attached antenna or of anantenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

## FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1)(i):

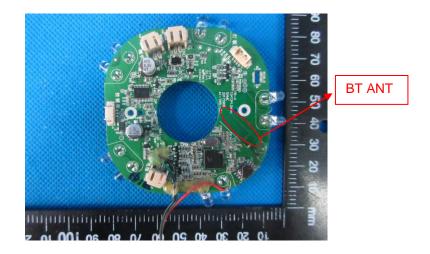
(i) Systems operating in the 2400~2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

## Test Result:

🛛 Passed

Not Applicable

The directional gain of the antenna less than 6 dBi, please refer to the below antenna photo.



# 5.2. Conducted Emissions (AC Main)

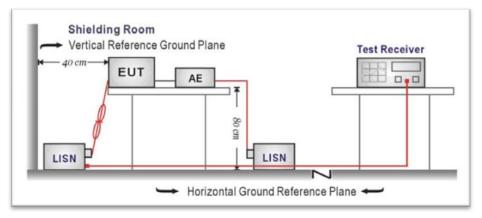
## <u>LIMIT</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.207

	Limit (dBuV)		
Frequency range (MHz)	Quasi-peak	Quasi-peakAverage66 to 56*56 to 46*	
0.15-0.5	66 to 56*	56 to 46*	
0.5-5	56	46	
5-30	60	50	

\* Decreases with the logarithm of the frequency.

## **TEST CONFIGURATION**



## TEST PROCEDURE

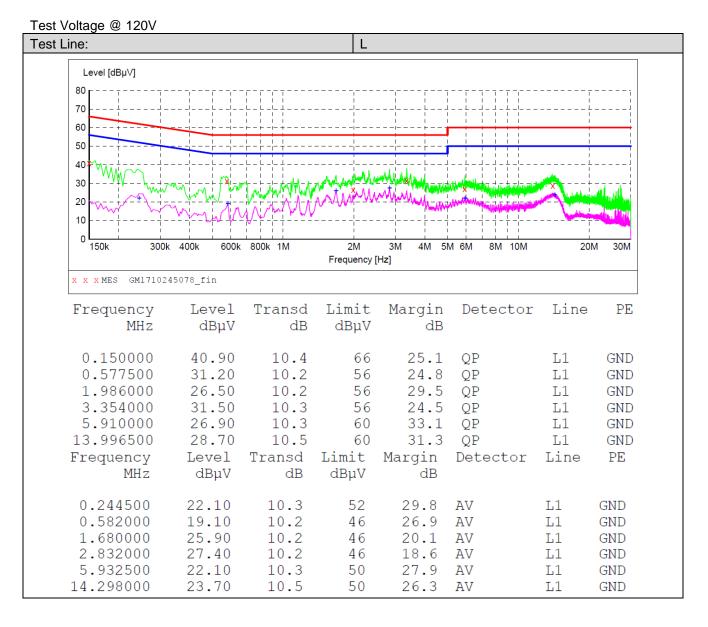
- 1. The EUT was setup according to ANSI C63.10:2013 requirements.
- 2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
- 3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment.
- 4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
- 5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
- 6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
- 7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
- 8. During the above scans, the emissions were maximized by cable manipulation.

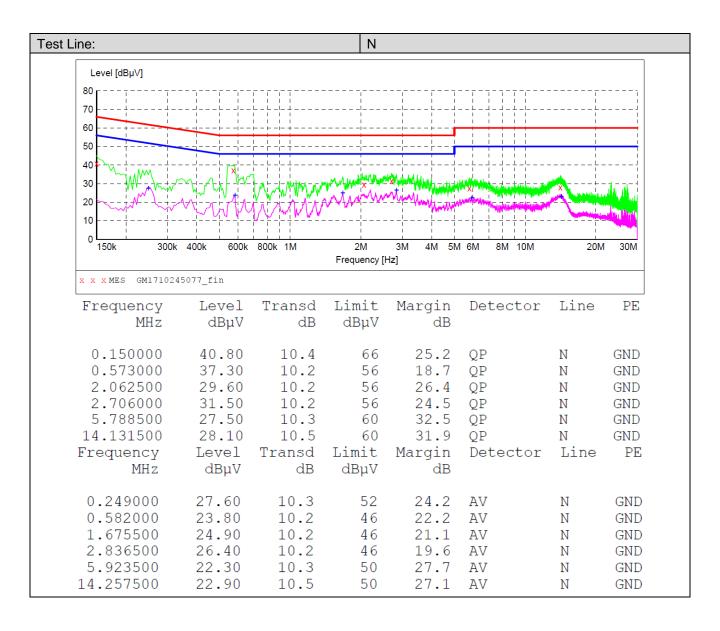
## TEST RESULTS

## ☑ Passed □ Not Applicable

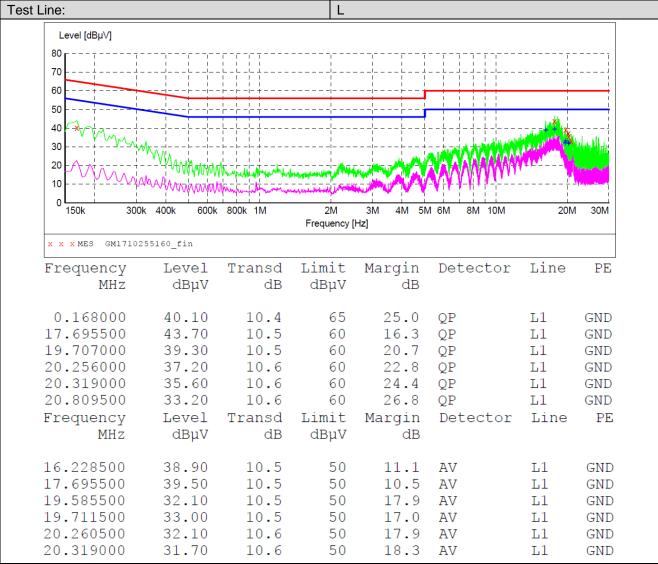
Note:

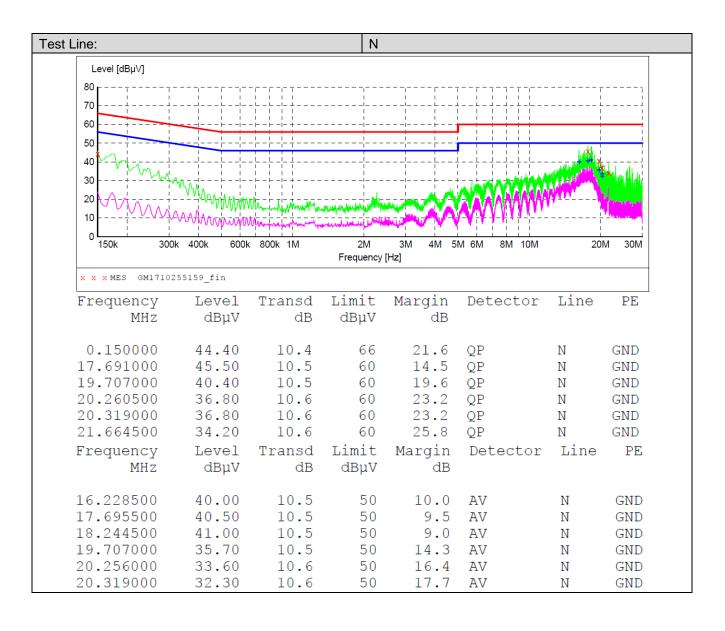
- 1) Transd= Cable lose + Pulse Limiter Factor + Artificial Mains Factor
- 2) Margin= Limit Level









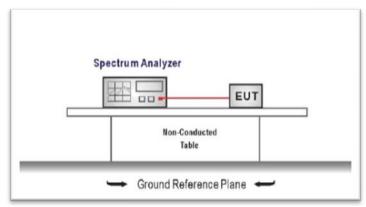


## 5.3. Conducted Peak Output Power

#### LIMIT

FCC CFR Title 47 Part 15 Subpart C 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.

## **TEST CONFIGURATION**



#### TEST PROCEDURE

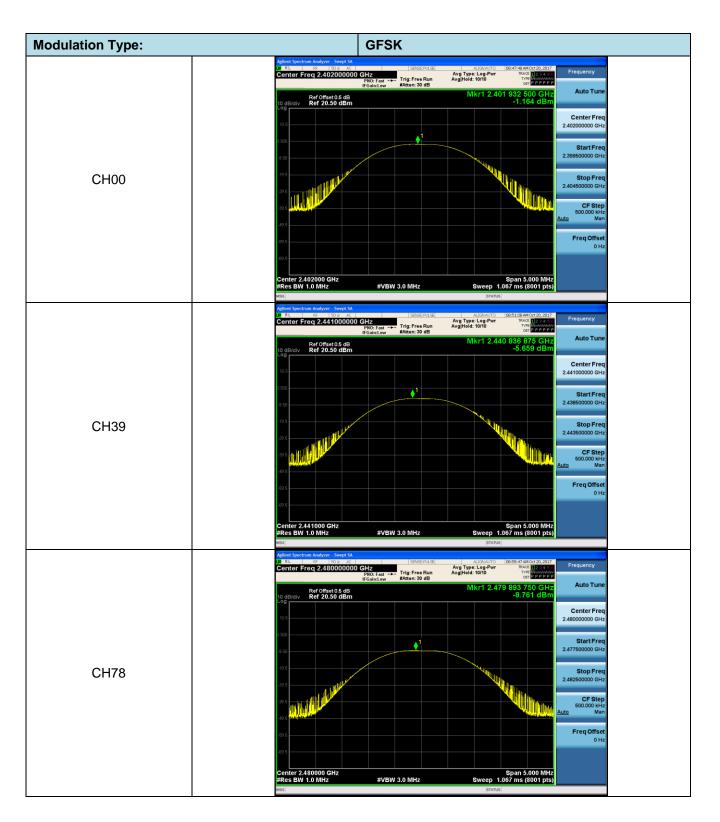
- 1. The transmitter output was connected to the spectrum analyzer through an attenuator, the pathloss was compensated to the results for each measurement.
- 2. Set to the maximum power setting and enable the EUT transmit continuously
- Use the following spectrum analyzer settings:
   Span = approximately 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
- 4. Measure and record the results in the test report.

#### TEST MODE:

Please refer to the clause 3.3

#### TEST RESULTS

Modulation type	Channel	Output power (dBm)	Limit (dBm)	Result
	00	-1.164		
GFSK	39	-5.659	≤ 30.00	Pass
	78	-8.761		
	00	-0.153		
π/4DQPSK	39	-4.377	≤ 21.00	Pass
	78	-7.384		
	00	-0.244		
8DPSK	39	-4.496	≤ 21.00	Pass
	78	-7.392		



Iodulation Type:	π/4DQPSK
	Agrient Spectrum Analyzer: Sweet SA 21 BL BF 200 AG Center Frag 2.402000000 GHz Frig: Frag 4.402000000 GHz Frig: Frag 4.4020000000 GHz Frig: Frag 4.40200000000 GHz Frig: Frag 4.4020000000 GHz Frig: Frag 4.4020000000000 GHz Frig: Frag 4.40200000000 GHz Frig: Frag 4.40200000000 GHz Frig: Frag 4.40200000000 GHz Frig: Frag 4.402000000000 GHz Frig: Frag 4.402000000000 GHz Frig: Frag 4.40200000000 GHz Frig: Frag 4.40200000000 GHz Frig: Frag 4.40200000000 GHz Frig: Frag 4.40200000000 GHz Frig: Frag 4.4020000000 GHz Frig: Frag 4.4020000000000 GHz Frig: Frag 4.40200000000 GHz Frig: Frag 4.40200000000 GHz Frig: Frag 4.402000000000 GHz Frig: Frag 4.40200000000000000 GHz Frig: Frag 4.4020000000000000000000000000000000000
	10.5 0.5 0.5
CH00	8.50         Start Freq           19.5         Stop Freq           2.404500000 GHz         2.404500000 GHz
	-35 CF Step 50,000 kHz Man Freq Offset
	Center 2.402000 GHz #VBW 6.0 MHz Sweep 1.067 ms (8001 pts)
	kron         status           Agtent Spectrum Analyzer - Swept SA         SERCE PLISE         AUXIANTO         (000250/MOCt20,2002           R.L         FF         50.0         AC         SERCE PLISE         AUXIANTO         (000250/MOCt20,2002
	Center Freq 2.441000000 GHz PNC: Fast IFGsinitew Ref Orfset 0.5 dB 10 dB/div Ref 20.50 dBm Log
	0.5 Center Freq 2.441000000 GHz
CH39	850 Start Freq 2.438500000 GHz 195 Stop Freq 2.443500000 GHz
	295 CF Step 5975 Auto Man
	Image: State
	Center 2.441000 GHz         Span 5.000 MHz           #Res BW 2.0 MHz         #VBW 6.0 MHz         Sweep 1.067 ms (8001 pts)           Misc         [STATUS]
	Adjent System Markyzer         System SA         State SS         SS         Adjent System Markyzer         State SS         SS         Adjent System Markyzer         State SS         SS         Adjent System Markyzer         State SS         SS         Adjent SS         SS         SS         Frequency
	10 dB(div Ref 20.50 dBm -/.394 dBm 2.49000000 GHz 2.4900000 GHz 2.4900000 GHz 2.4900000 GHz 2.49000000 GHz 2.4900000 GHz 2.49000000 GHZ 2.49000000 GHZ 2.49000000 GHZ 2.49000000 GHZ 2.4900000 GHZ 2.49000000 GHZ 2.490000000 GHZ 2.49000000 GHZ 2.490000000 GHZ 2.49000000 GHZ 2.490000000 GHZ 2.490000000 GHZ 2.490000000 GHZ 2.490000000000000 GHZ 2.49000000000000000000000000000000000000
CH78	8 50 2.47750000 GHz 19 5 <b>Stop Freq</b> 2.48250000 GHz
	555
	Center 2 480000 GHz Span 5 000 MHz
	Center 2: A80000 CHz         Span 5.000 MHz           #Res BW 2:0 MHz         #VBW 6.0 MHz         Sweep 1.067 ms (2001 pts)           Mig

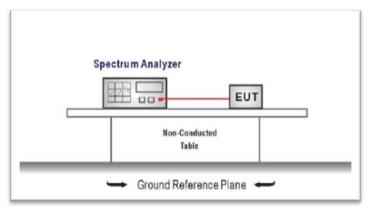
Iodulation Type:	8DPSK
	Agilent Spectrum Analyzer - Swigt SA         SPREFRUSE         AUSAUTO         (09:17:25/A40ct 20:20)7           Center Freq 2:4020000000 CH2 IFGain.lew         Trig: Free Run #Atten: 30 dB         Avg Type: Log-Pur Avg/Hold: 10/10         Trid: Tipe Engree Trid: Tipe Engree Mich 2:401 871 875 GHz         Frequency
	10 dB/dl/ Ref 20.30 dBm -0.244 dBm Center Free 10.5 Center Free 2.40200000 GHz
CH00	850 Start Freq 2.39950000 GHz 19.5 Stop Freq
	23.5 2.404500000 GHz 29.5 CF Step 500.00 kHz
	485 Freq Offset 0Hz
	Center 2.402000 GHz #Res BW 2.0 MHz #VBW 6.0 MHz Sweep 1.067 ms (8001 pts) ™© 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
	Address System Analyzer - Sweet SA         SENSE FLASE         AUXAUNO         0922-250-AM OR 120 2017           U         R.E.         IS         No         AL         SENSE FLASE         AUXAUNO         0922-250-AM OR 120 2017           Center Freq 2.441000000 GHz IFGainLow         Trig: Freq Run IFGainLow         Trig: Freq Run Avg/Hold: 1010         Mixt 120 480 322 500 GHz -4.459 GBr         Auto Tune           0 dB/dly         Ref Offset0.5 dB         Mixt 12.440 832 500 GHz -4.459 GBr         Auto Tune
	Log 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5
CH39	9 20 19 5 19 5 19 5 19 5 19 5 19 5 19 5 19 5
	CF Step 59.5 49.5
	000 Freq Offset 0 Hz
	Center 2.441000 GHz         Span 5.000 MHz           #Res BW 2.0 MHz         #VBW 6.0 MHz         Sweep 1.067 ms (8001 pts)           Mol         Istarus           Agend Spectrum Audyzer - Swept SA         Swept 1.067 ms (2001 pts)
	Diff         Let         SPREFALE         All TWR0         092282640402 3007         Frequency           Center Freq 2.480000000 GHz Fif0: Fast →- Fif0: Fast →- If Gaint.sw         Trig: Free Run Avgitheid: 1010         Max Type: Log-Pur Avgitheid: 1010         Trig: Free Run Avgitheid: 1010         Frequency         Frequency           Ref Offset0.5 dB 0.0Bdit/         Ref 0.050 dBm         -7.392 dBm         Auto Tunc
	10.5 Center Freq 2.48000000 GHz 1 Start Freq Start Freq
CH78	250 2.47750000 GHz 195 2.47550000 GHz 235 2.48250000 GHz
	455 CF Step 455 Freq Offset
	83.5
	Center 2.480000 GHz         Span 5.000 MHz           #Res BW 2.0 MHz         #VBW 6.0 MHz         Sweep 1.067 ms (8001 pts)           #statue         statue

## 5.4. 20 dB Bandwidth

## LIMIT

N/A

## **TEST CONFIGURATION**



## TEST PROCEDURE

- 1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
- 2. Set to the maximum power setting and enable the EUT transmit continuously
- 3. Use the following spectrum analyzer settings:

Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel RBW  $\ge$  1% of the 20 dB bandwidth, VBW  $\ge$  RBW

Sweep = auto, Detector function = peak, Trace = max hold

4. Measure and record the results in the test report.

## TEST MODE:

Please refer to the clause 3.3

## TEST RESULTS

**Passed** 

#### Not Applicable

Modulation type	Channel	20 dB Bandwidth (MHz)	Limit (MHz)	Result
	00	0.9425		
GFSK	39	0.9457	-	Pass
	78	0.9401		
	00	1.301		
π/4DQPSK	39	1.279	-	Pass
	78	1.296		
	00	1.299		
8DPSK	39	1.298	-	Pass
	78	1.294		

Iodulation Type:	GFSK
	Agtent Spectrum Analyzer         Occupied BW         EXEMPT Analyzer         Provide BMOX2020017         Provide BMOX202017         Provide BMOX202017         Provide BMOX202017         Provide BMOX202017         Provide BMOX202017         Provide BMOX202017         Radio Stat: Nense         Provide BMOX202017         Provide BMOX202017         Radio Stat: Nense         Provide BMOX202017         <
CH00	10 dBldlv Ref 10.30 dBm - 6.1845 dBm 200 200 200 200 200 200 200 20
CHOO	Center 2.402 GHz         #VEW 30 kHz         Span 2 MHz         CF Step 200.000 kHz           #Res BW 10 kHz         #VEW 30 kHz         Sweep 19.13 ms         200.000 kHz
	Occupied Bandwidth     Total Power     6.25 dBm     Auto     Man       894.92 kHz     Transmit Freq Error     -13.103 kHz     OBW Power     99.00 %     0 Hz       x dB Bandwidth     942.5 kHz     x dB     -20.00 dB     0 Hz
	Address Spectrum Analyzer : Decayled BW         SIDES PLASE         ALXAN/TO         DESS SAMORT20,2002         Frequency           Center Freq 2.441000000 GHz         Center Freq 2.441000000 GHz         Radio Stct.None
CH39	CF Step Res BW 10 kHz #VBW 30 kHz Sweep 16.13 ms 200000 kHz
	Occupied Bandwidth Total Power 1.71 dBm 897.31 kHz Transmit Freq Error -13.117 kHz OBW Power 99.00 % x dB Bandwidth 945.7 kHz x dB -20.00 dB
	MSG         Ipstatus           Aglent Spectrum Analyzer - Docupied BW         ISINGE-RULSE         ALIXMUND         0855514AMO0120,2017           Unit Rule Freque 240000000 GHz         Radie Stdr Nons         Frequency
	Center Freq 2,480000000 GHz #IFGaint.ew Center Freq 2,480000000 GHz #IFGaint.ew Center Freq 2,480000000 GHz #IFGaint.ew Center Freq 2,480000000 GHz Radio Std: None Radio Std: None Radi
CH78	2 3 3 2 48000000 GHz
GING	Center 2.48 GHz         Span 2 MHz         Span 2 MHz           #Res BW 10 kHz         #VBW 30 kHz         Sweep 19.13 ms         200 000 kHz
	Center     Z-statistic     Span Z vintz     Span Z vintz     CF Step       #Res BW 10 kHz     #VBW 30 kHz     Sweep 11.3 ms     200000 kHz       Occupied Bandwidth     Total Power     -1.47 dBm       900.36 kHz     Freq Offset
	Transmit Freq Error -14.266 kHz OBW Power 99.00 % x dB Bandwidth 940.1 kHz x dB -20.00 dB
	MSG STATUS

Modulation Type:	π/4DQPSK
CH00	Alter Low Analyzer Decented RM Center Freq 2.402000000 GHz IFFGalatow Redio Device: BTS Redio Device: BT
	Center 2.402 GHz #Res BW 30 Mz #VBW 100 kHz Sweep 2.667 ms Occupied Bandwidth Total Power 7.07 dBm 1.2008 MHz Transmit Freq Error -15.612 kHz OBW Power 99.00 % x dB Bandwidth 1.301 MHz x dB -20.00 dB
CH39	Refore Spectrum Analyzer Docugited BM         Center Freq 2.44100000 GHz       Frequency         Center Freq 2.44100000 GHz       Frequency         Ref offset0.6 dB       Mkr1 2.44116 GHz         Center Freq 2.44100000 GHz       Frequency         Ref offset0.6 dB       Mkr1 2.44116 GHz         Center Freq 2.44100 GBM       Center Freq 2.44100000 GHz         Span 2.5 MHz
CH78	Refers Spectrum Analyzer - Occased BW Canter Freq 2.480000000 GHz BEGainser Center Freq 2.480000000 GHz BEGainser Center Spectrum Analyzer - Occased BW Center Freq 2.4801575 GHz -10.012 dBm Center Freq 2.4801575 GHz -10.012 dBm Center Freq 2.48000000 GHz Spectrum Analyzer - Occased BW Center Freq 2.48000000 GHz Center Freq 2.48000000 GHz Center Freq 2.48000000 GHz Center Freq 2.48000000 GHz Center Spectrum Analyzer - Occased BW Center Spectrum Analyzer - Occased BW
	Occupied Bandwidth     Total Power     -0.77 dBm       1.1820 MHz     Image: Comparison of the second se

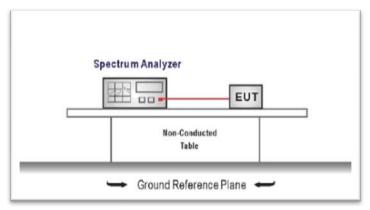
Iodulation Type:	8DPSK
CH00	Addent Spettrom Analyzer: Decayled BW         1590-597.03         0011599.8901230.2027           Center Freq 2.402000000 GHz         Center Free 2.40200000 GHz         Radio Std: None           Bit GainsLew         MitFGainsLew         Terree Tree Sing Analyzer         Center Free 2.40200000 GHz           10 dB/div         Ref 015.00 dBm         -2.1094 dBm         Center Free Quark           10 dB/div         Ref 10.50 dBm         -2.1094 dBm         Center Free Quark           20
	Center 2.402 CHz     Span 2.5 MHz       #Res BW 30 kHz     #VBW 100 kHz       Sweep 2.667 ms       Occupied Bandwidth     Total Power       1.1997 MHz       Transmit Freq Error       v dB Bandwidth       1.299 MHz       x dB Bandwidth       1.299 MHz       x dB
CH39	ALSNATO       OD222234400120.002         Center Freq 2.441000000 GHz       Center Freq 2.441000000 GHz         Center Freq 2.441000000 GHz       Center Freq 2.441000000 GHz         Center Freq 2.441000000 GHz       Center Freq 2.441000000 GHz         Center Freq 2.441000000 GHz       Center Freq 2.4411055 GHz         Center Freq 2.4411055 GHz       Center Freq 2.4411055 GHz         Center Freq 2.4411055 GHz       Center Freq 2.4411050 GHz         Center Freq 2.441105 GHz       Center Freq 2.44100000 GHz         Center Freq 2.441105 GHz       Center Freq 2.441000000 GHz         Center Freq 2.44100000 GHz       Center Freq 2.441000000 GHz         Center Freq 2.441105 GHz       Center Freq 2.441000000 GHz         Center Freq 2.4410 GHz       Center Freq 2.441000000 GHz         Center Freq 2.4410 GHz         Span 2.5 MHz         FVBW 100 kHz       Span 2.5 MHz         FVBW 100 kHz       Span 2.5 MHz
	Occupied Bandwidth     Total Power     2.26 dBm     Auto     Man       1.1845 MHz     Transmit Freq Error     -15.871 kHz     OBW Power     99.00 %     Freq Offset       x dB Bandwidth     1.298 MHz     x dB     -20.00 dB     Preq Offset     0 Hz       tdot     1.298 MHz     x dB     -20.00 dB     Preq Offset     0 Hz       tdot     1.298 MHz     x dB     -20.00 dB     Preq Offset     0 Hz
CH78	Center Freq 2.480000000 GHz         Center Freq 2.48000000 GHz         Radio Device: BTS         Radio Device: BTS           10 dB/div         Ref Offset0.5 dB         Mkr1 2.4801575 GHz         -10.048 dBm         Center Freq 2.48000000 GHz         Center Freq 2.48000000 GHz         Radio Device: BTS         Radio Device: BTS
	Center     2.43 GHz     #VBW     100 kHz     Span 2.5 MHz       #Res BW     30 kHz     #VBW     100 kHz     Sweep     2.667 ms       Occupied Bandwidth     Total Power     -0.83 dBm     Auto     Man       1.1827 MHz     Transmit Freq Error     -15.796 kHz     OBW Power     99.00 %       x dB Bandwidth     1.294 MHz     x dB     -20.00 dB     Hz

## 5.5. Carrier Frequencies Separation

## LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(1):Frequency hopping systems shall have hopping channel carrier frequencies separated by minimum of 25 kHz or the 2/3\*20 dB bandwidth of the hopping channel, whichever is greater.

## TEST CONFIGURATION



## TEST PROCEDURE

- 1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
- 2. Set to the maximum power setting and enable the EUT transmit continuously
- Use the following spectrum analyzer settings: Span = wide enough to capture the peaks of two adjacent channels RBW ≥ 1% of the span, VBW ≥ RBW Sweep = auto, Detector function = peak, Trace = max hold
- 4. Measure and record the results in the test report.

## TEST MODE:

Please refer to the clause 3.3

#### TEST RESULTS

#### ☑ Passed □ Not Applicable

Modulation type	Channel	Carrier Frequencies Separation (MHz)	Limit (MHz) *	Result
GFSK	39	1.010	≥0.946	Pass
π/4DQPSK	39	1.006	≥0.867	Pass
8DPSK	39	0.980	≥0.866	Pass

Note:

\*: GFSK limit = The maximum 20 dB Bandwidth for GFSK modulation on the section 5.4.  $\pi/4DQPSK$  limit = 2/3 \* The maximum 20 dB Bandwidth for  $\pi/4DQPSK$  modulation on the section 5.4. 8DPSK limit = 2/3 \* The maximum 20 dB Bandwidth for 8DPSK modulation on the section 5.4

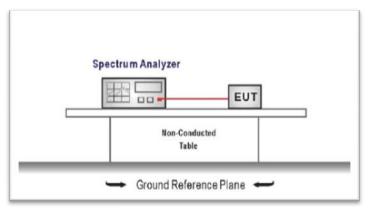
	Agilent Spectrum Analyzer - Swept SA
	DR RL RF S0 R AC SENSE:PULSE ALIGNAUTO 09:52:29 AMOCt 20, 2017 Marker 1 1.010250000 MHz Avg Type: Log-Pwr TRACE 23:4 5:0
	Ref Offset0.5 dB         ΔMkr1 1.010 25 MHz         Next Peak           10 dBldiv         Ref 0ffset0.5 dB         1.364 dB
	Log 6.00 3.00 135
	Next Pk Left
GFSK	And
	Start 2.440500 GHz         Stort 2.440500 GHz           #VBW 100 kHz         Sweep 2.133 ms (8001 pts)           Mkr→CF           M M0E TFC SL         X         Y         Falcton         Rancton worth         Rancton worth         Rancton worth           I Add 1         f         I Add 350 GHz         Y         Falcton         Rancton worth         Rancton worth
	2 F 1 7 2.440 343 50 GHz -16.818 dBm 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
	8 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	MSG    STATUS      STATUS
	M RL 6F 509 AC SERVISE ALIXANOTO 1100049AMORCA.2007 Martker 1 1.0006250000 MHz PRO:Wide →→ Trig:Free Run Avg]Heid:10/10 tree Para Search Freisik.ew Addres:25 40 Avg]Heid:10/10 cre Para Search
	F6ain:Low         #Atten: 26 dB         CettPEPEPE           Next Peak         ΔMkr1 1.006 25 MHz         Next Peak           10 dBldiv         Ref 0ffset0.5 dB         0.711 dB
	Next Pk Left
π/4DQPSK	All Delta
	Start 2,440500 GHz         Stort 2,440500 GHz           #Res BW 30 kHz         #VBW 100 kHz         Sweep 2,133 ms (8001 pts)           Mkr— <cf< th="">           Image: Imag</cf<>
	2 F 1 f 2.440 819 25 GHz -12 680 dBm 3 4 4 5 5 7 4 6 7 7 4 6 6 7 7 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
	8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
	MSG STATUS Agilent Spectrum Analyzer - Swept SA
	Marker 1980.000000 KHz Marker 1980.000000 KHz Provide Trig: Free Run Avg]Heid: 10/10 tree Preserve
	Ref Orget0.5 dB         ∆Mkr1 980.00 kHz         NextPeak           10 dB/dby         Ref 16.50 dBm         2.148 dB         2.148 dB
	5255
8DPSK	ASS Marker Delta
	Start 2.440500 GHz         Stop 2.442500 GHz           #Res BW 30 kHz         #VBW 100 kHz         Sweep 2.133 ms (8001 pts)           MR MODE TIC SCL         ×         Y         Function         Panction worth         Function worth           1 A2 (1)         1 (A)         > 990.00 kHz (A)         > 148 dBC         >         >
	1         A2         1         f         (Δ)         980 00 kHz (Δ)         2.148 dB           2         F         1         f         2.440 837 75 GHz         -15270 dBm         -15270 dBm           3         -         -         -         -         -         -         -         -         -         -         -         Mkr→RefLvl           5         -
	7 More

## 5.6. Hopping Channel Number

## <u>LIMIT</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(1):Frequency hopping systems in the 2400–2483.5 MHz band shall use at least **15** channels.

## **TEST CONFIGURATION**



## TEST PROCEDURE

- 1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
- 2. Set to the maximum power setting and enable the EUT transmit continuously
- Use the following spectrum analyzer settings: Span = the frequency band of operation RBW ≥ 1% of the span, VBW ≥ RBW Sweep = auto, Detector function = peak, Trace = max hold
- 4. Measure and record the results in the test report.

## TEST MODE:

Please refer to the clause 3.3

## TEST RESULTS

Modulation type	Channel number	Limit	Result
GFSK	79		
π/4DQPSK	79	≥15.00	Pass
8DPSK	79		

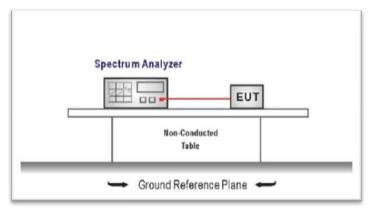
	Aglent Spectrum Analyzer - Swept SA
	DI         RL         PF         S0.9         Ac         SBRSEPLASE         AutoMutro         10094488Mot 20.2037           Center Freq 2.4417500000 GHz PR0: Fast +→-         Frequency         Frequency         Track Type: Log-Pwr
	IFGeint.ew         #Atten: 26 dB         Dec PPPPPP           Ref Offset0.5 dB         △Mkr1 777.919 MHz         Auto Tune           10 dBiddiv         -8.232 dB         -8.232 dB
	500 500 100 100 100 100 100 100
	225 33.5 33.5
GFSK	415 425 425 425 425 426 426 426 426 426 426 426 426
	Start 2.40000 GHz         Stop 2.48350 GHz         CF Step 8.350000 MHz           #Res BW 1.0 MHz         #VBW 3.0 MHz         Sweep 1.113 ms (8350 pts)         8.350000 MHz
	MRR MODE:         The State         Y         Function         Planction visibility         Function visibility <t< td=""></t<>
	4
	Mild         [status]           Aglient Spectrum Analyzer - Swept SA         SENSE-PULSE         ALSHAI/TO         09555514MOct 20, 2012           Mild Rev Fore Control Contron Contro Control Control Contron Control Control Control Control
	Center Fred Z441750000 GFZ PR0Fsst → PR0Fsst → FrGsin.tew #Atten: 25 dB Avg/Hoid>10/10 tree #2000 Fred #200
	10 dBldiv Ref 16.50 dBm -7.986 dB 60 60 Center Freq
	3.60 13.5 22.5 22.5 22.5 22.5 22.5 22.5 22.5 2
	.33 5 2.40000000 GHz
π/4DQPSK	63.5 Stop Freq 2.48350000 GHz
	Start 2,40000 GHz Stop 2,48350 GHz #VBW 3.0 MHz Sweep 1.113 ms (8350 pts) 8.350000 MHz 8.350000 MHz 8.350000 MHz 4.442 Man
	1         Δ2         1         f         (Δ)         77.996 dB         Fill         Fill<
	Addivid Spectrum Analyzer, Swept SA         SBSE-PLASE         ALBYAUTO         10:11-97A4Oct20,2017           Center Freq 2.441750000 GHz         Freq Name         Avg Type: Log+Pur         Two PLASE         Frequency           PR0: Feat         Trig: Free Run         Avg Type: Log+Pur         Two PLASE         Frequency           IFGint.ov         #Atten: 26 dB         Conter Freq 2.441750000         Conter Freq 2.441750000         Frequency
	Ref offset0.5 dB         ΔMkr1 78,119 MHz         Auto Tune           10 dBM/v         Ref 16.50 dBm         -7,762 dB         -7,762 dB
	6:00 3:00 13:50 13:50 13:50 13:50 14:20 14
	225 Start Freq 236 240000000 GHz 45 5
8DPSK	35 Stop Freq 2.48350000 GHz
	Start 2.40000 GHz         Stop 2.43350 GHz         CF Step           #Res BW 1.0 MHz         #VBW 3.0 MHz         Sweep 1.113 ms (8350 pts)         8350000 MHz
	Mm         Mode         Tect         Supervision         Panction         Panct
	4
	ISTATUS STATUS

## 5.7. Dwell Time

## <u>LIMIT</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(1):The average time of occupancy on any channel shall not be greater than 0.4 seconds within a pe-riod of 0.4 seconds multiplied by the number of hopping channels employed.

#### TEST CONFIGURATION



## TEST PROCEDURE

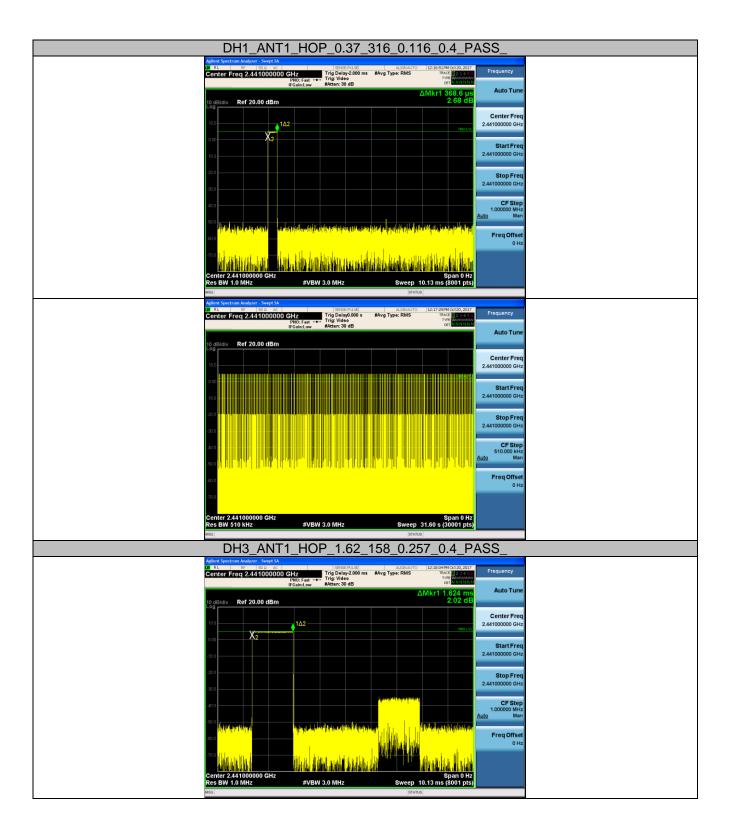
- 1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
- 2. Set to the maximum power setting and enable the EUT transmit continuously
- Use the following spectrum analyzer settings: Span = zero span, centered on a hopping channel, RBW= 1 MHz, VBW ≥ RBW Sweep = as necessary to capture the entire dwell time per hopping channel, Detector function = peak, Trace = max hold
- 4. Measure and record the results in the test report.

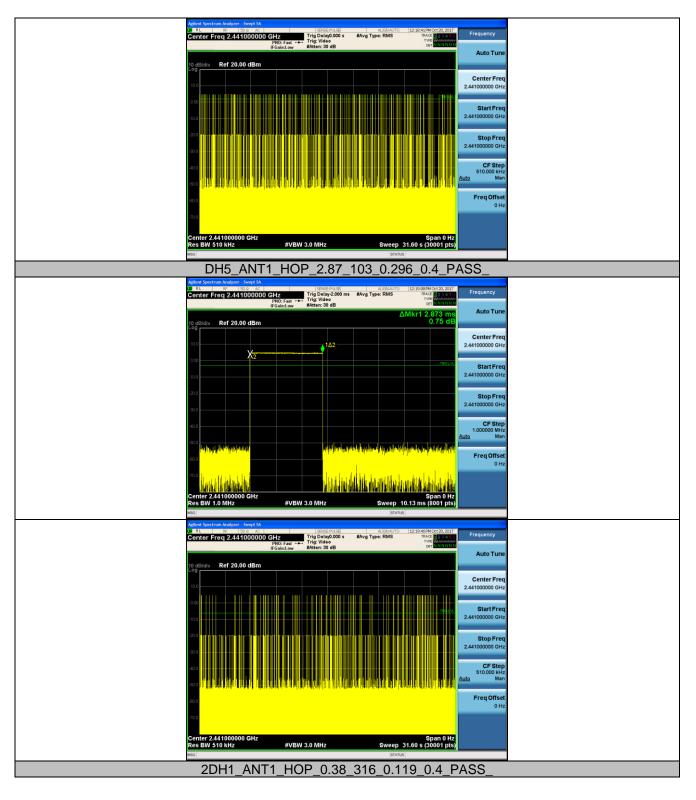
#### TEST MODE:

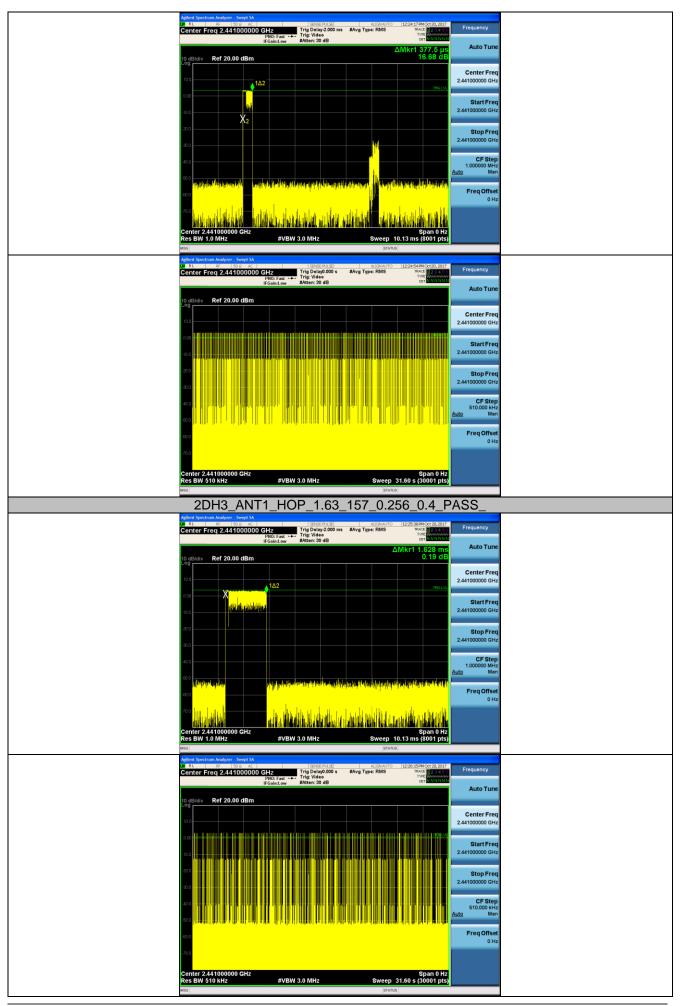
Please refer to the clause 3.3

#### TEST RESULTS

TestMode	Antenna	Channel	BurstWidth(ms)	TotalHops	Result(s)	Limit(s)	Verdict
DH1	ANT1	HOP	0.37	316	0.116	0.4	PASS
DH3	ANT1	HOP	1.62	158	0.257	0.4	PASS
DH5	ANT1	HOP	2.87	103	0.296	0.4	PASS
2DH1	ANT1	HOP	0.38	316	0.119	0.4	PASS
2DH3	ANT1	HOP	1.63	157	0.256	0.4	PASS
2DH5	ANT1	HOP	2.88	104	0.299	0.4	PASS
3DH1	ANT1	HOP	0.38	316	0.119	0.4	PASS
3DH3	ANT1	HOP	1.63	157	0.255	0.4	PASS
3DH5	ANT1	HOP	2.88	104	0.299	0.4	PASS

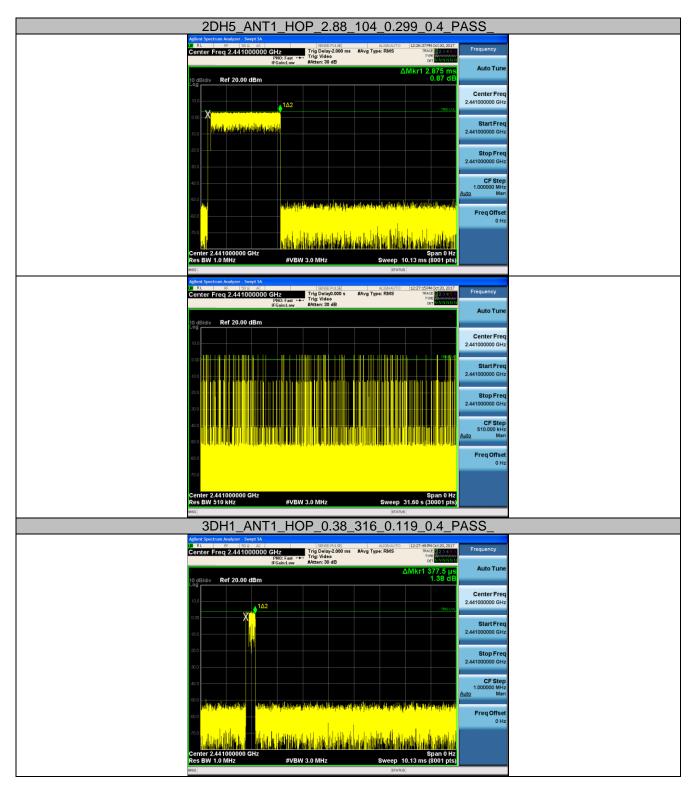


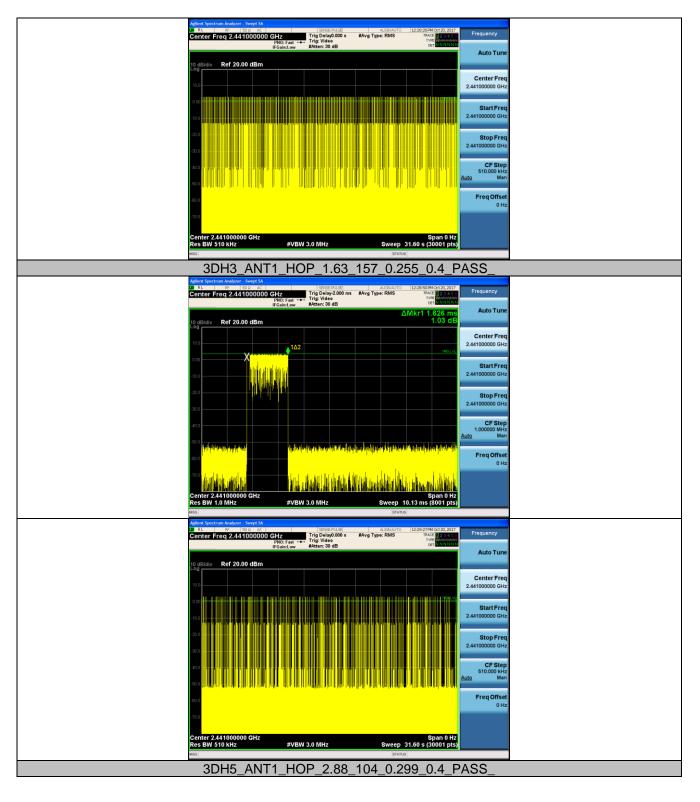


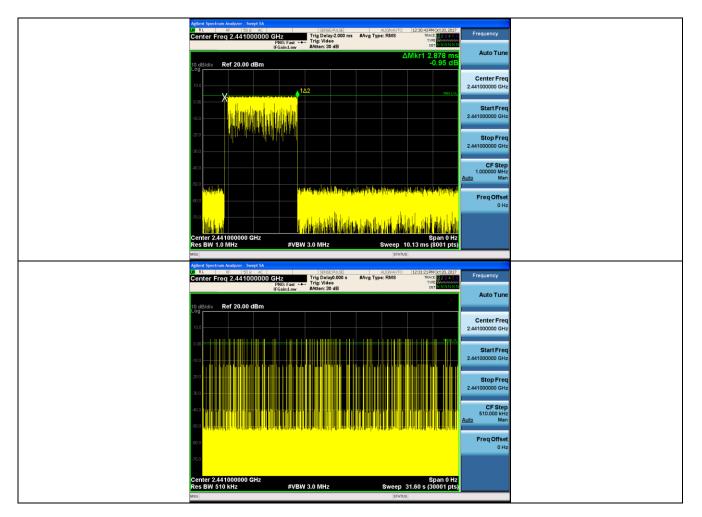


Shenzhen Huatongwei International Inspection Co., Ltd.

Report Template Version: H01 (2017-09)







## 5.8. Pseudorandom Frequency Hopping Sequence

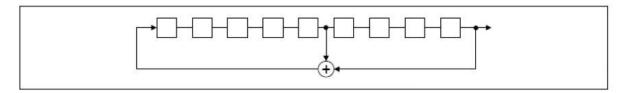
## <u>LIMIT</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(1):Frequency hopping systems shall have hopping channel carrier fre-quencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hop-ping channel, whichever is greater. Al-ternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier fre-quencies 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 chan-nel frequencies that are selected at the system hopping rate from a pseudo ran-domly ordered list of hopping fre-quencies. Each frequency must be used equally on the average by each trans-mitter. The system receivers shall have input bandwidths that match the hop-ping channel bandwidths of their cor-responding transmitters and shall shift frequencies in synchronization with the transmitted signals.

## TEST RESULTS

The pseudorandom frequency hopping sequence may be generated in a nice-stage shift register whose 5<sup>th</sup> and 9<sup>th</sup> stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the friststage. The sequence begins with the frist one of 9 consecutive ones, for example: the shift register is initialized with nine ones.

- Number of shift register stages: 9
- Length of pseudo-random sequence:29-1=511 bits
- Longest sequence of zeros: 8 (non-inverted signal)



Linear Feedback Shift Register for Generation of the PRBS sequence

An explame of pseudorandom frequency hopping sequence as follows:

0	2	4	6		62	64	78	1	73	75 77
٦				 	]		 1		 	
					3		1			
						18	1			
				 	1		 1		 	

Each frequency used equally one the average by each transmitter.

The system receiver have input bandwidths that match the hopping channel bandwidths of their corresponding transmitter and shift frequencies in synchronization with the transmitted signals.

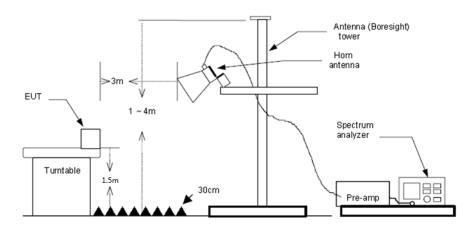
## 5.9. Restricted band (radiated)

## <u>LIMIT</u>

#### FCC CFR Title 47 Part 15 Subpart C 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, Radiated Emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the Radiated Emissions limits specified in §15.209(a) (see §15.205(c)).

#### **TEST CONFIGURATION**



#### TEST PROCEDURE

- 1. The EUT was setup and tested according to ANSI C63.10:2013 for compliance to FCC 47CFR 15.247 requirements.
- 2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
- 3. The EUT waspositioned such that the distance from antenna to the EUT was 3 meters.
- 4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
- The receiver set as follow: RBW=1 MHz, VBW=3 MHz Peak detector for Peak value RBW=1 MHz, VBW=10 Hz Peak detector for Average value.

#### TEST MODE:

Please refer to the clause 3.3

#### TEST RESULTS

☑ Passed □ Not Applicable

Note:

- 1) Final level= Read level + Antenna Factor+ Cable Loss- Preamp Factor
- 2) Have pre-scan all modulation mode, found the GFSK modulation which it was worst case, so only the worst case's data on the test report.
- 3) The peak level is lower than average limit(54 dBuV/m), this data is the too weak instrument of signal is unable to test.

					CH00				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
2310.00	36.88	28.05	6.62	37.65	33.90	74.00	-40.10	Horizontal	Peak
2390.03	35.29	27.65	6.75	37.87	31.82	74.00	-42.18	Horizontal	Peak
2310.00	38.73	28.05	6.62	37.65	35.75	74.00	-38.25	Vertical	Peak
2390.03	38.99	27.65	6.75	37.87	35.52	74.00	-38.48	Vertical	Peak
2310.00	21.81	28.05	6.62	37.65	18.83	54.00	-35.17	Horizontal	Average
2390.03	21.03	27.65	6.75	37.87	17.56	54.00	-36.44	Horizontal	Average
2310.00	21.17	28.05	6.62	37.65	18.19	54.00	-35.81	Vertical	Average
2390.03	22.65	27.65	6.75	37.87	19.18	54.00	-34.82	Vertical	Average

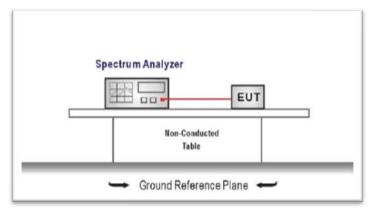
					CH78				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization	Test value
2483.55	47.99	27.26	6.83	37.87	44.21	74.00	-29.79	Horizontal	Peak
2500.00	58.70	27.20	6.84	37.87	54.87	74.00	-19.13	Horizontal	Peak
2483.50	53.66	27.26	6.83	37.87	49.88	74.00	-24.12	Vertical	Peak
2500.00	35.45	27.20	6.84	37.87	31.62	74.00	-42.38	Vertical	Peak
2483.50	42.56	27.26	6.83	37.87	38.78	54.00	-15.22	Horizontal	Average
2500.00	21.83	27.20	6.84	37.87	18.00	54.00	-36.00	Horizontal	Average
2483.50	36.39	27.26	6.83	37.87	32.61	54.00	-21.39	Vertical	Average
2500.00	21.91	27.20	6.84	37.87	18.08	54.00	-35.92	Vertical	Average

## 5.10. Band edge and Spurious Emissions (conducted)

#### <u>LIMIT</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d):In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.

## TEST CONFIGURATION



## TEST PROCEDURE

- 1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
- 2. Set to the maximum power setting and enable the EUT transmit continuously
- Use the following spectrum analyzer settings: RBW = 100 kHz, VBW ≥ RBW
   Sweep = auto, Detector function = peak, Trace = max hold
- 4. Measure and record the results in the test report.

#### TEST MODE:

Please refer to the clause 3.3

#### TEST RESULTS

Test Item:	Band edge	Modulation	n type:	GFSK
CH00 No hopping mode		Addimi Spectrum Analyzer, small Spectrum         In Control Freq 2.357500000 GHz, SPG Control Freq 2.357500000 GHz, SPG Control Freq 2.357500000 GHz, SPG Control Freq C	Avg Type: Log-Pwr AvgJHdd: 1010 Mkr4 2.376 -52	Center Freq         2.35750000 GHz           2.35750000 GHz         Start Freq           2.31000000 GHz         Stop Freq           2.405000000 GHz         Stop Freq
CH00 Hopping mode		Ref Offset Sectors         Sector State         Sector State         Sector State           Conter Freq 2.357500000 GHz Pio: Face         Pio: Face         Trig: Free Ru         Trig: Free Ru           0         Ref Offset 05 dB         Trig: Free Ru         Trig: Free Ru         Trig: Free Ru           0         Ref Offset 05 dB         Trig: Free Ru         Trig: Free Ru         Trig: Free Ru           0         Ref Offset 05 dB         Trig: Free Ru         Trig: Free Ru         Trig: Free Ru           0         Ref Offset 05 dB         Trig: Free Ru         Trig: Free Ru         Trig: Free Ru           0         Ref Offset 05 dB         Trig: Free Ru         Trig: Free Ru         Trig: Free Ru           0         Ref Offset 05 dB         Trig: Free Ru         Trig: Free Ru         Trig: Free Ru           0         Ref Offset 05 dB         Trig: Free Ru         Trig: Free Ru         Trig: Free Ru           0         Ref Offset 05 dB         Trig: Free Ru         Trig: Free Ru         Trig: Free Ru           0         Ref Offset 05 dB         Trig: Free Ru         Trig: Free Ru         Trig: Free Ru           0         Ref Offset 05 dB         Trig: Free Ru         Trig: Free Ru         Trig: Free Ru           0         Ref Offset 05 dB         Trig: Free R	E ALEXANTO 09-45 Arg Type Log Per Avg ried: 10/10 Mkr4 2.37( -59	Center Freq 2.357500000 GHz 2.30000000 GHz 2.40500000 GHz 2.405000 GHz 2.405000 GHz 9.50000 MHz
CH78 No hopping mode		Addition Speechaam Audityner Sweept SA Of R.L. PER 20.90 0.0000 CHZ Pro: Far 2.4899000.000 CHZ Pro: Far 2.489000.000 CHZ Pro: Far 2.489000.000 CHZ Pro: Far 2.489000.000 CHZ Pro: Far 2.489000.000 CHZ Start 2.47800 CHZ FREES BW 100 KHZ #VBW 300 KHZ #VBW 300 KHZ #VBW 300 KHZ *VBW 300 KHZ **VBW 300 KHZ	Avg Held: 10/10 Mkr4 2.484 5/ -57 -57 -57 -57 -57 -57 -57 -57	Center Freq 2.48900000 GHz           3100 et         Start Freq 2.47800000 GHz           32         Stop Freq 2.5000000 GHz

	Aglent Spectrum Analyzer Swept SA.         Spectrum Analyzer Swept SA.         Spectrum View Sale         Augment Spectrum View Sale         Provide Sale         Frequent Spectrum View Sale         Frequent Sale         Frequent Sale <t< th=""><th></th></t<>	
	Ref Offset 0.5 dB Mkr4 2.498 702 GHz 10 dB/div Ref 16.50 dBm61.076 dBm	Tune
	6.00 3.50 135 - Q <sup>1</sup>	
CH78		t Freq 00 GHz
	635 555 775	<b>Freq</b> 00 GHz
Hopping mode	#Res BW 100 kHz #VBW 300 kHz Sweep 2.133 ms (1001 pts) 2.20000	Step 0 MHz Man
	Image Mode         The Column         X         Y         Publicition         Publicition worth         Publicitio	
	MSG STATUS	

est Item:	Band edge	Modulation	type:	π/4DQPSK
t Item: CH00 No hopping mode	Adlant Spectrum D. R. Center Fre	Analyzer         Sweet SA SP         Istrace put of the second information of the second information of th	Avg Type Leg Par Avg Type Leg Par Avg Type Leg Par Mkr4 2.375 -54.	Auto Tune Sol GHZ 2.35760000 GHZ 2.31000000 GHZ 2.40500000 GHZ
CH00 Hopping mode		00 kHz #VBW 300 kHz SCL × Y f 2.401 865 GHz 4.747 dBm f 2.400 000 GHz 53.376 dBm f 2.390 000 GHz 58.316 dBm	Avg Hold: 10/10         Mkr4 2:383         -57.4           Mkr4 2:383         -57.4         -57.4           Stop 2:         -50.0         -50.0           Stop 2:         Stop 2:         -50.0           Stop 2:         -50.0         -50.0	Center Freq 2.36760000 GHz 2.31000000 GHz 2.31000000 GHz 2.40500000 GHz
CH78 No hopping mode		00 kHz #VBW 300 kHz SCL × Y f 2.479 834 25 GHz -9.044 dBm f 2.483 500 00 GHz -56 110 dBm	Avg Type: Leg-Pwr Avg Hold: 1010 11 Mkr4: 2.499 126 -56.	Center Freq 2.49900000 GHz 2.47800000 GHz 2.47800000 GHz 3 Stop Freq 2.5000000 GHz