

Guangdong Huesent Testing & Inspection Technology Co., Ltd. Total 107 pages

# **TEST REPORT**

Report No. : HST201609-5692-FCC

Product description: Speaker

Model/Type : A17-P1226BNF, A17-T06BUFL-1, A17-P1236BNF-3, A17-P1236BNF-6, A17-P1226BNF-3, A17-P1226BNF-6, A17-P1516BFK, A17-P1526BFK Applicant's name: Guangzhou Panyu Minfu Speaker Factory



TEST REPORT				
FCC Part 15.247: 2015				
	FCCI	D: OGGTQ1	314	
Report Reference No	HST201609-	5692-FCC		
Tested by (+ signature)	Lemon	Fu	Lemon Fu	
Review by (+ signature)	Sandy Yı	L	Sandy Yu	
Approved by (+ signature)	, Band of		Robin Peng	
Date of Sample Receive	Sep. 5, 2016	i		
Date of Test:	Sep. 5, 2016	to Sep. 25, 2016	i de la construcción de la constru	
Date of issue:	Sep. 30, 201	6		
Total number of pages:	107 Pages			
Testing Laboratory         Address	Guangdong Environment Radiation Monitoring Center (Accredited by CNAS, Accredited Number: L5539) FCC- Registration No: 667318 Renewal on Sep. 12, 2012 No. 860, South Guangzhou Avenue, Guangzhou, 510300 China			
Annlicant's name	GUANGZHOU PANYU MINFU SPEAKER FACTORY			
Address	DONG SHENG SAN HENG RD., CHADONG, SHIJI, PANYU DIS GUANGZHOU, China			
Manufacturer's name:	Guangzhou I	Guangzhou Panyu Minfu Speaker Factory		
Address:	DONG SHENG SAN HENG RD., CHADONG, SHIJI, PANYU DIS GUANGZHOU, China			
Test specification:	Entrusted testing			
Standard	FCC Part 15.247: 2015			
Non-standard test method:	N/A			
Test item description:	Speaker			
Trade Mark	N/A			
Model/Type reference:	A17-P1226BNF			
Ratings:	120Vac or 240Vac, 40hm, 100W			

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# 1 TEST SUMMARY

Test Item	Standard Section	Test method	Result
Conducted Emission	15.207		PASS
Hopping Channel Separation	15.247(a)(1)		PASS
Output Power	15.247(a)(1)&(b)(1)		PASS
Radiated Spurious Emission	15.247(c)		PASS
Conducted Spurious		ANSI C63.10: 2013	PASS
Band Edge	15.247(d)		PASS
Number of Hopping Frequency	15.247(a)(iii)		PASS
Dwell Time	15.247(a)(iii)		PASS
Bandwidth	15.247(a)(1)		PASS
Band Edge Emission	15.247(d) & 15.205		PASS
Antenna Requirement	15.247(c) & 15.203		PASS

# Remark:

N/A: not applicable. Refer to the relative section for the details.

EUT: In this whole report EUT means Equipment Under Test.

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radio Frequency.

ANSI C63.10: the detail version is ANSI C63.10:2013 in the whole report.

DA 00-705: "Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems"

Model No.: A17-P1226BNF, A17-T06BUFL-1, A17-P1236BNF-3, A17-P1236BNF-6, A17-P1226BNF-3, A17-P1226BNF-6, A17-P1516BFK, A17-P1526BFK

According to the confirmation from the applicant, all models are totally the same in and electrical and mechanical construction, except model No., appearance.

Therefore only one model A17-P1226BNF was tested in this report.

# 2 GENERAL INFORMATION

# 2.1 Client Information

Applicant:	Guangzhou Panyu Minf	Guangzhou Panyu Minfu Speaker Factory			
Address of Application	nt: DONG SHENG SAN HE	DONG SHENG SAN HENG RD., CHADONG, SHIJI, PANYU DIS			
	GUANGZHOU, China	GUANGZHOU, China			
2.2 General Description	on of E.U.T.	f E.U.T.			
Name: Model No.:	Speaker A17-P1226BNF, A17-T( P1236BNF-6, A17-P122 A17-P1526BFK	Speaker A17-P1226BNF, A17-T06BUFL-1, A17-P1236BNF-3, A17- P1236BNF-6, A17-P1226BNF-3, A17-P1226BNF-6, A17-P1516BFK, A17-P1526BEK			
Trade Mark:	/				
Operating Frequence	y: 2402 MHz to 2480 MHz				
Channels:	79 channels with 1MHz	step			
Type of Modulation	GFSK(1Mbps), π/4-DQF	PSK(2Mbps), 8-DPSK(3Mbps)			
Antenna Type	Internal antenna				
Antenna gain:	BT antenna: 0dBi.				
Function:	Mixer with BT function t	o receive audio signal.			
2.3 Details of E.U.T.					
EUT Power Supply:	120Vac or 240Vac, 4Oh	120Vac or 240Vac, 4Ohm, 100W			
Rated power:	100W	100W			
Power cord/ signal cord:	N/A	N/A			
Test mode:	The program used to co transmitting mode is pro	The program used to control the EUT for staying in continuous transmitting mode is programmed.			
	Channel lowest (2402M (2480MHz) are chosen t	Channel lowest (2402MHz), middle (2441MHz) and highest (2480MHz) are chosen for full testing.			
	Normal mode: the Bluet GFSK;	both has been tested on the Modulation of			
	EDR mode: the Bluetoo (π/4)DQPSK and 8DPS on 8DPSK.	h has been tested on the Modulation of K, compliance test and record the worst case			
Pretest Mode	Description	Data Rate/Modulation			
Mode 1	TX CH00	1Mbps/GFSK			
Mode 2	TX CH39	1Mbps/GFSK			
Mode 3	TX CH78	1Mbps/GFSK			
Mode 4	TX CH00	2 Mbps/π/4-DQPSK			
Mode 5	TX CH39	2 Mbps/π/4-DQPSK			
Mode 6	TX CH78	2 Mbps/π/4-DQPSK			
Mode 7	TX CH00	3 Mbps/8-DPSK			

Mode 8	TX CH39	3 Mbps/8-DPSK
Mode 9	TX CH78	3 Mbps/8-DPSK
Mode 10	For AC Conducted Emission	Keeping BT TX

2.4 Description of Support Units

The EUT has been tested as an independent unit for fixed frequency by testing lab.

# 2.5 Test Location

Guangdong Environment Radiation Monitoring Center

Address: No. 860, South Guangzhou Avenue, Guangzhou, 510300 China

Accredited by CNAS, Accredited Number: L5539

FCC- Registration No: 667318 Renewal on Sep. 12, 2012

# 2.6 Deviation from Standards

Biconical and log periodic antennas were used instead of dipole antennas.

2.7 Abnormalities from Standard Conditions

None.

# 2.8 Other Information Requested by the Customer

None.

# 2.9 Measurement Uncertainty

Parameter	Uncertainty
Conducted Emission (9KHz-150KHz)	±2.88dB
Conducted Emission (150KHz-30MHz)	±2.67dB
RF power,conducted	±0.70dB
Spurious emissions, conducted	±1.19dB
All emissions,radiated (<30M) (9KHz- 30MHz)	±2.45dB
All emissions,radiated(<1G) 30MHz- 200MHz	±2.83dB
All emissions,radiated(<1G) 200MHz- 1000MHz	±2.94dB
All emissions,radiated(>1G)	±3.03dB
Temperature	±0.5°C
Humidity	±2%

# **3 TEST RESULTS**

3.1 E.U.T. test conditions

Test Voltage:	Input: AC 120V, 60 Hz
Temperature:	20.0 -25.0 °C
Humidity:	38-50 % RH
Atmospheric Pressure:	1000 -1010 mbar
Test frequencies and frequency range:	According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and, if required, reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table:
	According to the 15.33 (a) For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated

According to the 15.33 (a) For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to at least the frequency shown in the following table:

Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
1 MHz or less	1	Middle
1 MHz to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top, 1 near middle and 1 near bottom

# Number of fundamental frequencies to be tested in EUT transmit band

# Frequency range of radiated emission measurements

Lowest frequency generated	Upper frequency range of measurement	
in the device		
9 kHz to below 10 GHz	10th harmonic of highest fundamental frequency or to 40 GHz, whichever is lower	
At or above 10 GHz to below 30 GHz	5th harmonic of highest fundamental frequency or to 100 GHz, whichever is lower	
At or above 30 GHz	5th harmonic of highest fundamental frequency or to 200 GHz, whichever is lower, unless otherwise specified	

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	11	2413	22	2424
1	2403	12	2414	23	2425
2	2404	13	2415	24	2426
3	2405	14	2416	25	2427
4	2406	15	2417	26	2428
5	2407	16	2418	27	2429
6	2408	17	2419	28	2430
7	2409	18	2420	29	2431
8	2410	19	2421	30	2432
9	2411	20	2422	31	2433
10	2412	21	2423	32	2434
33	2435	49	2451	65	2467
34	2436	50	2452	66	2468
35	2437	51	2453	67	2469
36	2438	52	2454	68	2470
37	2439	53	2455	69	2471
38	2440	54	2456	70	2472
39	2441	55	2457	71	2473
40	2442	56	2458	72	2474
41	2443	57	2459	73	2475
42	2444	58	2460	74	2476
43	2445	59	2461	75	2477
44	2446	60	2462	76	2478
45	2447	61	2463	77	2479
46	2448	62	2464	78	2480
47	2449	63	2465		
48	2450	64	2466		

EUT channels and frequencies list:

Test frequencies are the lowest channel: 0 channel(2402 MHz), middle channel: 39 channel(2441 MHz) and highest channel: 78 channel(2480 MHz)

# 3.2 Conducted Emissions at Mains Terminals 150 kHz to 30 MHz

Test Requirement:	FCC Part 15 C section 15.207
Test Method:	ANSI C63.10: Clause 6.2 & DA 00-705
Frequency Range:	150 kHz to 30 MHz
Detector:	Peak for pre-scan (9 kHz Resolution Bandwidth)

**Test Limit** 

Limits for conducted disturbance at the mains ports of class B				
Eroguopov Bongo	Class B Limit dB(µV)			
	Quasi-peak	Average		
0.15 to 0.50	66 to 56	56 to 46		
0.50 to 5	56	46		
5 to 30 60 50				
NOTE 1 The limit decreases linearly with the logarithm of the frequency in the range 0,15 MHz to 0,50 MHz.				

# EUT Operation:

Test in normal operating mode. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage.

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

#### **Test Configuration:**



### Test procedure:

1. The mains terminal disturbance voltage test was conducted in a shielded room.

2. The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a  $50\Omega/50\mu$ H +  $5\Omega$  linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.

4. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0,4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0,8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0,8 m from the LISN 2.

# Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected. For EUT the communicating was worst case mode.





Date: 29.SEP.2016 06:53:32

Freq. (MHz)	Line	LISN Factor (dB)	Cable Loss (dB)	QP (dBµV)	QP limit (dBµV)	Margin (dB)	AV (dBμV)	AV limit (dBµV)	Margin (dB)
0.162	Live	0.1	0.1	57.0	65.4	-8.4	29.5	55.4	-25.9
0.312	Live	0.1	0.1	50.2	59.9	-9.7	25.1	49.9	-24.8
0.540	Live	0.1	0.1	38.1	56	-17.9	12.6	46	-33.4
3.526	Live	0.1	0.1	22.3	56	-33.7	10.7	46	-35.3
12.43	Live	0.2	0.2	16.1	60	-43.9	9.2	50	-40.8
15.01	Live	0.3	0.3	16.7	60	-43.3	13.6	50	-36.4



### Date: 29.SEP.2016 06:54:51

# **Quasi-peak and Average measurement**

Freq. (MHz)	Line	LISN Factor (dB)	Cable Loss (dB)	QP (dBµV)	QP limit (dBµV)	Margin (dB)	AV (dBµV)	AV limit (dBµV)	Margin (dB)
0.156	Neutral	0.1	0.1	60.0	65.7	-5.7	34.6	55.7	-21.1
0.272	Neutral	0.1	0.1	52.4	61.1	-8.7	26.0	51.1	-25.1
0.589	Neutral	0.1	0.1	35.3	56	-20.7	12.3	46	-33.7
0.736	Neutral	0.1	0.1	29.6	56	-26.4	10.7	46	-35.3
15.20	Neutral	0.3	0.2	21.4	60	-38.6	19.2	50	-30.8
22.02	Neutral	0.3	0.3	17.1	60	-42.9	11.5	50	-38.5

# 3.3 Radiated Spurious Emissions

Test Requirement:	FCC Part15 C section 15.247, 15.205
Test Method:	<ul> <li>(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating. The radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that Contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, and provided the transmitter demonstrates compliance with the peak conducted power limits.</li> <li>ANSI C63.10: Clause 6.4, 6.5 and 6.6 &amp; DA 00-705</li> </ul>
Test Status:	Pre-test the EUT in continuous transmitting mode at the lowest (2402 MHz), middle (2441 MHz) and highest (2480 MHz) channel with different data packet. Compliance test in continuous transmitting mode with normal mode (DH5) as the worst case was found.
Detector:	For PK value: RBW = 1 MHz for $f \ge 1$ GHz, 100 kHz for $f < 1$ GHz, 9kHz for <30MHz VBW $\ge$ RBW
	Sweep = auto Detector function = peak Trace = max hold For AV value: RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz, 9kHz for <30MHz VBW =10 Hz Sweep = auto Detector function = peak Trace = max hold
15.209 Limit:	40.0 dB $\mu$ V/m between 30MHz & 88MHz 43.5 dB $\mu$ V/m between 88MHz & 216MHz 46.0 dB $\mu$ V/m between 216MHz & 960MHz 54.0 dB $\mu$ V/m above 960MHz
For Band edge:	Detector: Peak Start/Stop Frequency: Lower Band Edge: 2300 to 2430 MHz Upper Band Edge: 2450 to 2500 MHz RB/ VB (emission in restricted band): 1MHz/ 1MHz, AV= 1MHz/ 10Hz

# **Test Configuration:**

1) 9kHz to 30MHz emissions:



2) 30 MHz to 1 GHz emissions:





#### 3) 1 GHz to 40 GHz emissions:

**Test Procedure:** The procedure used was ANSI Standard C63.4: 2014. The receiver was scanned from 30MHz to 25GHz.When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. The worst case emissions were reported.

Now set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a "duty cycle correction factor", derived from

20log(dwell time/100 ms), in an effort to demonstrate compliance with the

15.209 limit. Submit this data.

# Harmonic and other spurious emissions

# Test at low Channel in transmitting status

9kHz~30MHz Test result

The Low frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not report

# 30 MHz~1 GHz Spurious Emissions .Quasi-Peak Measurement

### Horizontal:

Pre-test in mode 1/2/3/4/5/6/7/8/9, and choose the worst mode 1 as the final measurement.



Frequency	Reading	Correct	Result	Limit	Margin	Remark
MHz	dBuV	Factor (dB)	dBuV/m	dBuV/m	dB	
31.9	7.6	17.7	25.3	40	-14.7	QP
42.9	10.0	11.9	21.9	40	-18.1	QP
90.9	24.2	9.6	33.8	43.5	-9.7	QP
139.9	26.0	12.0	38.0	43.5	-5.5	QP
154.3	25.0	11.9	36.9	43.5	-6.6	QP
397.6	19.8	17.9	37.7	46	-8.3	QP

Note:

1) Scan with GFSK,  $\pi$ /4-DQPSK, 8DPSK, the worst case if GFSK Mode.

2) Factor = Antenna Factor + Cable Loss – Pre-amplifier.

In scan frequency range: 30MHz to 1GHz, pre-amplifier factor = 0 dB. Emission Level = Meter Reading + Factor

Margin = Emission Level - Limit.

# Vertical:

Pre-test in mode 1/2/3/4/5/6/7/8/9, and choose the worst mode 1 as the final measurement.



Frequency	Reading	Correct	Result	Limit	Margin	Remark
MHz	dBuV	Factor (dB)	dBuV/m	dBuV/m	dB	
32.1	15.1	17.6	32.7	40	-7.3	QP
42.7	22.1	11.9	34.0	40	-6.0	QP
54.5	24.5	6.4	30.9	40	-9.1	QP
86.8	20.8	9.1	29.9	40	-10.1	QP
154.7	23.2	11.9	35.1	43.5	-8.4	QP
317.7	9.3	15.3	24.6	46	-21.4	QP

Frequency	Meter	Factor	Emission	Limit	Margin	Detector	Antenna				
(MHz)	(dBuV/m)	(dB)	Level (dBµV/m)	(dBµV/m)	(dB)		polarization				
Low Channel: 2402 MHz											
4804.2	67.3	-3.6	63.7	74	-10.3	PK	V (Vertical)				
4804.2	47.3	-3.6	43.7	54	-10.3	AV	V				
7206.1	62.8	-0.9	61.9	74	-12.1	PK	V				
7206.1	42.2	-0.9	41.3	54	-12.7	AV	V				
4804.0	62.7	-3.6	59.1	74	-14.9	PK	H (Horizontal)				
4804.0	45.3	-3.6	41.7	54	-12.3	AV	Н				
Mid Chanr	nel: 2441 MH	z									
4882.1	65.6	-3.7	61.9	74	-12.1	PK	V				
4882.1	50.1	-3.7	46.4	54	-7.6	AV	V				
7323.2	61.4	-0.8	60.6	74	-13.4	PK	V				
7323.2	45.1	-0.8	44.3	54	-9.7	AV	V				
4882.2	62.1	-3.7	58.4	74	-15.6	PK	Н				
4882.2	45.7	-3.7	42.0	54	-12.0	AV	Н				
High Chan	nel: 2480 MH	łz									
4960.3	61.7	-3.6	58.1	74	-15.9	PK	V				
4960.3	46.3	-3.6	42.7	54	-11.3	AV	V				
7440.3	61.7	-0.8	60.9	74	-13.1	PK	V				
7440.3	46.1	-0.8	45.3	54	-8.7	AV	V				
4960.3	61.7	-3.6	58.1	74	-15.9	PK	Н				
4960.3	46.1	-3.6	42.5	54	-11.5	AV	Н				

1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Note:

1)Scan with GFSK,  $\pi$ /4-DQPSK, 8DPSK, the worst case if GFSK Mode.

2)Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Emission Level = Meter Reading + Factor

Margin = Emission Level - Limit.

Band edge							
Frequency (MHz)	Meter Reading (dBuV/m)	Factor (dB)	Emission Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Antenna polarization
GFSK							
2400.0	69.5	-13.0	56.5	74	-17.5	PK	V
2400.0	55.1	-13.0	42.1	54	-11.9	AV	V
2400.0	70.2	-13.0	57.2	74	-16.8	PK	Н
2400.0	54.1	-13.0	41.1	54	-12.9	AV	Н
2483.5	71.1	-12.8	58.3	74	-15.7	PK	V
2483.5	54.1	-12.8	41.3	54	-12.7	AV	V
2483.5	71.3	-12.8	58.5	74	-15.5	PK	Н
2483.5	54.3	-12.8	41.5	54	-12.5	AV	Н
π/4-DQPS	K						
2400.0	71.5	-13.0	58.5	74	-15.5	PK	V
2400.0	54.4	-13.0	41.4	54	-12.6	AV	V
2400.0	70.1	-13.0	57.1	74	-16.9	PK	Н
2400.0	55.0	-13.0	42.0	54	-12.0	AV	Н
2483.5	71.4	-12.8	58.6	74	-15.4	PK	V
2483.5	56.2	-12.8	43.4	54	-10.6	AV	V
2483.5	71.2	-12.8	58.4	74	-15.6	PK	Н
2483.5	54.5	-12.8	41.7	54	-12.3	AV	Н
8DPSK							
2400.0	71.5	-13.0	58.5	74	-15.5	PK	V
2400.0	54.4	-13.0	41.4	54	-12.6	AV	V
2400.0	70.1	-13.0	57.1	74	-16.9	PK	Н
2400.0	55.1	-13.0	42.1	54	-11.9	AV	Н
2483.5	71.4	-12.8	58.7	74	-15.3	PK	V
2483.5	56.2	-12.8	43.4	54	-10.6	AV	V
2483.5	71.2	-12.8	58.4	74	-15.6	PK	Н
2483.5	54.5	-12.8	41.7	54	-12.3	AV	Н

Low measurement frequencies is range from 2310 to 2400 MHz, high measurement frequencies is range from 2483.5 to 2500 MHz.

Only show the worst point data of the emissions in the frequency 2310-2400 MHz and 2483.5-2500 MHz.

Frequency	Meter	Factor	Emission	Limit	Margin	Detector	Antenna
(MHz)	Reading (dBuV/m)	(dB)	Level (dBµV/m)	(dBµV/m)	(dB)		polarization
GFSK					I		1
2400.0	69.1	-13.0	56.1	74	-17.9	PK	V
2400.0	55.1	-13.0	42.1	54	-11.9	AV	V
2400.0	68.4	-13.0	55.4	74	-18.6	PK	Н
2400.0	54.1	-13.0	41.1	54	-12.9	AV	Н
2483.5	67.1	-12.8	54.3	74	-19.7	PK	V
2483.5	55.2	-12.8	42.4	54	-11.6	AV	V
2483.5	68.1	-12.8	55.3	74	-18.7	PK	Н
2483.5	55.1	-12.8	42.3	54	-11.7	AV	Н
π/4-DQPS	K			·			•
2400.0	69.0	-13.0	56.0	74.0	-18.0	PK	V
2400.0	56.2	-13.0	43.2	54.0	-10.8	AV	V
2400.0	68.0	-13.0	55.0	74.0	-19.0	PK	Н
2400.0	54.1	-13.0	41.1	54.0	-12.9	AV	Н
2483.5	68.1	-12.8	55.3	74.0	-18.7	PK	V
2483.5	54.1	-12.8	41.3	54.0	-12.7	AV	V
2483.5	69.1	-12.8	56.3	74.0	-17.7	PK	Н
2483.5	55.2	-12.8	42.4	54.0	-11.6	AV	Н
8DPSK							
2400.0	69.1	-13.0	56.1	74.0	-17.9	PK	V
2400.0	55.1	-13.0	42.1	54.0	-11.9	AV	V
2400.0	68.1	-13.0	55.1	74.0	-18.9	PK	Н
2400.0	55.2	-13.0	42.2	54.0	-11.8	AV	Н
2483.5	69.2	-12.8	56.4	74.0	-17.6	PK	V
2483.5	55.2	-12.8	42.4	54.0	-11.6	AV	V
2483.5	68.0	-12.8	55.2	74.0	-18.8	PK	Н
2483.5	55.1	-12.8	42.3	54.0	-11.7	AV	Н

Hopping (Band edge)

Low measurement frequencies is range from 2310 to 2400 MHz, high measurement frequencies is range from 2483.5 to 2500 MHz.

Only show the worst point data of the emissions in the frequency 2310-2400 MHz and 2483.5-2500 MHz.

# 3.4 Conducted Spurious

Test Requirement:	FCC Part15 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. 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 radiated
	measurement. Provided the transmitter demonstrates compliance
	with the peak conducted power limits.
Test Method:	ANSI C63.10: Clause 6.7 & DA 00-705
Test Status:	Pre-test the EUT in continuous transmitting mode at the lowest (2402 MHz), middle (2441 MHz) and highest (2480 MHz) channel with different data packet. Compliance test in continuous transmitting mode with normal mode (DH5) as the worst case was found.

# **Test Configuration:**



# Test Procedure:

1. Remove the antenna from the EUT and then connect a low attenuation RF cable from the antenna port to the spectrum.

2. Set the spectrum analyzer: RBW = 100 kHz. VBW >= RBW. Sweep = auto; Detector Function = Peak (Max. hold).

RL	pectr	um An RE	Sn o A	6.	1	SENSE: IN	т	ALIGN AUTO	03:43:30 AM Mar 23, 2016	1	
ente	r Fi	eq	12.515000	PNO: F	ast 🖵 Low	Trig: Free Run #Atten: 30 dB	Avg	Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P P P P P	Frequency	
0 dB/d	liv	Ref Ref	Offset 0.5 dE 9.87 dBm	3			Mkr1 2.401 5 GH 4.867 dBn				
og 0.13		Y								Center Fre	
10.1		_							-15.13 dBm	12.515000000 GH	
20.1									2		
30.1										Start Fre	
10.1									(Č	30.000000 MH	
20.1		ar all	and the second second	and add of the state of the	. In Base	Manual Manual And	Server Start	No. of Concession	and the second second		
70.1	-1.									Stop Fre	
30.1										25.000000000 GH	
tart 3 Res E	30 N BW	1Hz 100	kHz	;	#VBW	300 kHz		Sweep	Stop 25.00 GHz 2.39 s (35000 pts)	CF Ste	
KR MOD	DE TF	C SCL		×	-	Y.	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Ma	
1 N 2 N	1	f		2.401 5 GF 24.414 3 GF	lz lz	4.867 dBm -48.009 dBm					
3 4 5 6										Freq Offs 0 H	
7											
9											
1											
2									1		

# Test result plot as follows: GFSK(1Mbps)-00/39/78 CH 00 CH:

Agilent Spec	trum Analyzi	er - Swept SA							
Center I	RF Freq 12.	50 Q AC	0 GHz	SENSE:I	NT Avg	ALIGN AUTO	04:38:32 AM TRACE TYPE	Mar 23, 2016	Frequency
10 dB/db	Ref Off	set 0.5 dB	IFGain:Low	#Atten: 30 dB	Ext	Gain: 3.50 dB	r1 2.440	7 GHz	Auto Tune
-4.06	×ei 5.							-19.06 dBm	Center Freq 12.515000000 GHz
-34.1 -44.1 -54.1	Lune						-	8	Start Freq 30.000000 MHz
-64.1 -74.1									Stop Fred 25.00000000 GHz
Start 30 #Res BW	MHz V 100 kH	2	#VBV	/ 300 kHz		Sweep	Stop 25 2.39 s (35	.00 GHz 000 pts)	CF Step 2.497000000 GHz
N         Adde           1         N           2         N           3         4           5         6           7         8           9         10           11         12	1 f 1 f	2. 24.	440 7 GHz 596 9 GHz	0.94 dBm -52.19 dBm	FUNCTION		PORCHO	(VALUE	Freq Offset 0 Hz
MSG						STATUS	5		

								Swept SA	ım Analyzer - S	t Spectr	Agiler
Display		M Mar 23, 2016	06:49:13 AI	ALIGNAUTO	Ava Tre	SENSE:INT		DQ AC	RF 50		
		E M WWWWW T P P P P P P	TYP DE	48/100	Avg Hold	Trig: Free Run #Atten: 30 dB	PNO: Fast 🕞 IFGain:Low		ine -17.50	лау ц	
Annotation		8 8 GHz 33 dBm	2 21.028	Mkr				0.5 dB 0 dBm	Ref Offset Ref 10.0	3/div	10 d
	-								V1		og
Title											0.00
		-17.38 dBm									-10.0
	-										20.0
Graticul			1.05								-30.0
Of	<u>On</u>		¢ <sup>2</sup>								-40.0
				and the second	and the second second		and the second				00.0
<b>Display Lin</b>											70.0
-17.38 dBr											.80.0
	-										
		5.00 GHz 5000 pts)	Stop 2: 2.39 s (3:	Sweep		300 kHz	#VBW		Hz 100 kHz	t 30 N s BW	Star #Re
		IN VALUE	FUNCTIO	NCTION WIDTH	NCTION F	Y F	80.0 GHz	× 2.49	C SCL	NODE TH	MKE 1
						-51.683 dBm	28 8 GHz	21.02	f	N 1	2
System Display Settings											3456
											78
											9
											11
				1						_	12
				STATUS							SG

# π/4 - DQPSK(2Mbps)-00/39/78 CH 00 CH:

RL	RF 50	Ω AC	SENSE:INT	ALIGNAUTO	07:52:58 AM Mar 23, 2016	12 BO B
arker 1	2.402931	226606 GHz		Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6	Peak Search
		PNO: Fast IFGain:Low	#Atten: 30 dB	000 X0 10000 - 2000X	DET P P P P P P	NextDee
dB/div	Ref Offset Ref 6.84	0.5 dB <b>dB</b> m		Mk	r1 2.402 9 GHz 1.839 dBm	NextPea
16	1					
32						Next Pk Rig
2.0					-18.16 dBm	455040419394944022495624026249
3.2						
0.2					2	Next Dir Le
5.2				31/2021 2/22/22		NextPKLe
3.2	and the same	and the second s	al an	and the second sec		
3.2						
3.2						Marker Del
3.2						
tart 30 N	IHz				Stop 25.00 GHz	
Res BW	100 kHz	#VE	3W 300 kHz	Sweep	2.39 s (35000 pts)	Mkr. C
R MODE TH	C  SCL	×	Y I F	UNCTION FUNCTION WIDTH	FUNCTION VALUE	MKI→C
1 N 1	f	2.402 9 GHz	1.839 dBm			
2 N 1 3	T	24.780 3 GHZ	-48.910 dBm			
4						Mkr→RefL
6						
7 R						
9						Mo
1						1 of
2						

# 39 CH:

Agilent Spec	trum Analyzer -	Swept SA						
Conton	RF 5		SENSE:INT	Ava Type	ALIGN AUTO	05:41:53 A	M Mar 23, 2016	Frequency
Center	Freq 12.51	PNO: Fast	Trig: Free Run	0.8.136	e. Lvg-i wi	TYP	EMWWWWW	
		IFGain:Low	#Atten: 30 dB			DE	TIFFFFFF	Auto Tupo
10 dB/div	Ref Offset Ref 6.75	0.5 dB dBm			Mk	r1 2.441 1.74	5 GHz 15 dBm	Auto Tune
Log	1							
-3.23								Center Freq
-13.3							-18 25 dBm	12.515000000 GHz
-23.3								
-33.3			-		-	^2		Start Fred
-43.3						$\bigcirc$		30.000000 MHz
-53.3	LINI, JUL	مر به بالم الم الم الم	and the second sec	and the second second	A STATE OF			
-63.3	A Designation		and the second sec		1			
-73.3								Stop Freq
-83.3					-			25.00000000 GHz
Start 30 #Res BV	MHz V 100 kHz	#VBV	V 300 kHz		Sweep	Stop 2 2.39 s (3	5.00 GHz 5000 pts)	CF Step 2 497000000 GHz
MKR MODE	TRC SCL	X	Y is	UNCTION FU	INCTION WIDTH	FUNCTIC	N VALUE	Auto Man
1 N	1 f	2.441 5 GHz	1.75 dBm					
3		21.000 8 6Hz	-48.00 dBill				-	Erea Offeet
4								0 Hz
6								0 12
7								
9								
10								
12								
MSG					STATUS			

Agilent Spect	rum Analyzer - Sv	wept SA				
Center F	RF 501 Freq 12.515	Ω AC 000000 GHz	SENSE:INT	ALIGNAUTO Avg Type: Log-Pwr	08:05:57 AM Mar 23, 2016 TRACE 1 2 3 4 5 6 TYPE M WWWWW	Frequency
10 dB/div	Ref Offset 0 Ref 6.63 c	IFGain:Low	#Atten: 30 dB	Mk	r1 2.480 0 GHz 1.634 dBm	Auto Tune
-3.37 -13.4 -23.4	×1				-18.37 dBm	Center Freq 12.515000000 GHz
-33.4		. I s Justice and some de			- B	Start Freq 30.000000 MHz
-63.4 -73.4						<b>Stop Freq</b> 25.000000000 GHz
Start 30 #Res BW	MHz 100 kHz	#VB	W 300 kHz	Sweep	Stop 25.00 GHz 2.39 s (35000 pts)	CF Step 2.497000000 GHz
INER         IZODE         1         N           1         N         2         N         3           4         5         6         6         7         8         9         9         10         14	RC SCL 1 f 1 f	X 2.480 0 GHz 24.412 1 GHz	¥ F 1.634 dBm -47.518 dBm	UNCTION FUNCTION W/DTH	FUNCTION VALUE	Auto Man Freq Offset 0 Hz
12 MSG				STATUS	\$	

# 8DPSK(3Mbps)-00/39/78 CH

# 00 CH:

						Swept SA	n Analyzer -	ectrun	nt Spe	Agile
Amplitude	08:26:13 AM Mar 23, 2016 TRACE 1 2 3 4 5 6	ALIGNAUTO : Log-Pwr	Avg Ty	SENSE:INT		ο Ω AC	Level (	nce	fere	Ret
RefLeve				Trig: Free Run #Atten: 30 dB	PNO: Fast 😱 -Gain:Low	l				
6.83 dBn	1 2.402 2 GHz 1.828 dBm	Mk				0.5 dB dBm	Ref Offset Ref 6.83	v	B/di	10 0
Attenuation						2	1		-	-3.17
[30 dB]	-18.17 dBm					_				-13.2
Scale/Di						_			2	-33.2
10 dE		a na land								-43.2
								-		-63.2
Scale Type Log Lir									2	-73.2 -83.2
Brocol Conto	Stop 25.00 GHz 2.39 s (35000 pts)	Sweep	1	00 kHz	#VBW		Hz 00 kHz	0 MH W 1	rt 30 es B	Sta #Re
PreserCente	FUNCTION VALUE	NCTION WIDTH	ICTION	Y FUI 1.828 dBm	2 2 GHz	× 2.402	SCL	TRC 1	MODE N	MKE 1
Presel Adjus 0 H;				49.260 dBm	46 GHz	24.724	f	1	N	23456
More 1 of 2										7 8 9 10 11
		STATUS					tin site			MSG

Agilent Spe	etrum Analyz	zer - Swept SA							
LXI RL	RF	50 Q AC		SENSE:INT		ALIGN AUTO	01:45:17 A	M Mar 23, 2016	Frequency
Center	Freq 12	.51500000	DO GHZ	Trig: Free Run	Avg Typ	e: Log-Pwr	TYP	E M WWWWW	Trequency
			IFGain:Low	#Atten: 30 dB			DE	PPPPP	
	N 10 1 100 1 100 100 100					Mk	r1 2 44	5 GHz	Auto Tune
10 dB/div	Ref Of Ref 6	fset 0.5 dB				IVIN	1.8	00 dBm	-
Log	¥1								
-3.20									Center Fred
-13.2						-		-18 20 dBm	12.515000000 GHz
-23.2							-	CAN'S D'S LONDA	
-33.2						-			
12.2							/∖2		Start Free
*43.2					and the second second		Y.	and the second second	30.000000 MHz
-53.2	River	and a second	Street and street and street in	والمحافظ المحافظ والمحاج والمحافظ	the second second second				
-63.2		La contra de la co	(heading the first start st						
-73.2									Stop Fred
-83.2							-		25.00000000 GHz
						0			
Start 30	MHz						Stop 2	5.00 GHz	CE Sten
#Res B	W 100 kH	IZ	#VB	W 300 kHz		Sweep	2.39 s (3	5000 pts)	2.497000000 GHz
MKR MODE	TRC SCL	Х		Y	FUNCTION FU	INCTION WIDTH	FUNCTIO	IN VALUE	<u>Auto</u> Mar
1 N	1 f	2	.441 5 GHz	1.80 dBm					0
2 N 3	1 1	21	.617 5 GHZ	-48.14 dBm					E
4									Frequise
5									0 Hz
7									
8									
10									
11									
12									
MSG						STATUS			

70	011
78	CH:

I I La		RF   5	UΩ AC		SENSE	INT		ALIGN AUTO	08:05:57 A	vl Mar 23, 2016	- New York Party and Arts								
enter	Freq 12.515000000 GHz PNO: Fast IFGain:Low		Freq 12.515000000 GHz PNO: Fast IFGain:Low		q 12.515000000 GHz PNO: Fast IFGain:Low		req 12.515000000 GHz PNO: Fast IFGain:Low		eq 12.515000000 GHz PNO: Fast FGain:Low		req 12.515000000 GHz PNO: Fast G IEGain: 1 ow		Trig: Free Ri #Atten: 30 dl	un 3	Avg Type	: Log-Pwr	TRAC TYP DE	123456 EMWWWWW TPPPPPP	Frequency
Ref Offset 0.5 dB Mkr1 2.480 0 GHz 10 dB/div Ref 6.63 dBm 1.634 dBm									0 GHz 4 dBm	Auto Tun									
-og 3.37 13.4 23.4		1								-18:37 dbm	Center Fre 12.515000000 GH								
33.4 43.4 53.4			La la seconda				and the second second			(P	Start Fre 30.000000 M⊦								
63.4 73.4 83.4											Stop Fre 25.000000000 GH								
itart 30 Res Bl	) MH2 W 10	: 0 kHz		#VB\	W 300 kHz			Sweep	Stop 2: 2.39 s (3:	5.00 GHz 5000 pts)	CF Ste								
	TRC S	CL) f	× 2.48	0 0 GHz	1.634 dBm	FUNCT	ION FUN	ICTION WIDTH	FUNCTIO	N VALUE	<u>Auto</u> Ma								
2 N 3 4 5 6	1 :		24.41	2 1 GHZ	-47.518 dBm						Freq Offs 0 H								
7 8 9 10																			

# 3.5 Band Edges Test Requirement: FCC Part15 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, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)). 2400 MHz to 2483.5 MHz **Frequency Band: Test Method:** ANSI C63.10: Clause 6.9 & DA 00-705 Test Status: Pre-test the EUT in continuous transmitting mode at the lowest (2402 MHz), and highest (2480 MHz) channel and hopping mode with different data packet. Compliance test in continuous transmitting mode with normal (DH5) and EDR mode (3DH5) as the worst case was found.

### **Test Configuration:**



Ground Reference Plane

Test Procedure:Set RBW of spectrum analyzer to 100 kHz and VBW of spectrum<br/>analyzer to 100 kHz with suitable frequency span including 100<br/>kHz bandwidth from band edge.

The band edges was measured and recorded Result:

The Lower Edges attenuated more than 20dB.

The Upper Edges attenuated more than 20dB.

The graph as below. Represents the emissions take for this device. GFSK(1Mbps)-00/78 CH

## For band edge:





1000	AM Mar 23, 2016	05:09:48 A	ALIGN AUTO		SENSE:INT	S		AC	50 Ω	RF		L
Marker	CE 123456	TRAC	: Log-Pwr	Avg Typ			Hz	00000 G	350660	3 2.4	er 3	rŀ
Select Marke	DET P N N N N N	DE	>100/100	Avg Hold	ee Run 20 dB	Trig: Fre Atten: 2	PNO: Fast ⊂ Gain:Low	P				
2	066 GHz 144 dBm	2.485 0 -61.9	Mkr3		Ref Offset 0.5 dB Ref 10.00 dB/m - 9 V4							
						8				Y		
Norn	-15.64 dBm					-				1		j
									1			
De			0					_	4		N	0
			-	-			A3	Δ2	have		M	0
		14-11 - 11-11-1		and a strend of	monthe	manne	monor	mucha	1			0
Fixe	T CHAN CHAN											
		<b></b>								7000		
	(1001 pts)	stop 2.50 2.13 ms (	Sweep 2		z	V 300 kHz	#VB		GHZ kHz	100	8 BW	es
,	ION VALUE	FUNCTIO	NCTION WIDTH	NCTION FL	12.00	Y		×		RC SCI	ODE T	R M
	F				dBm	-61.736 c	48 GHZ 00 GHZ	2.479 84		f	N	
Propertie					ubm	-01.944 (	00 GHZ	2.405 00			N	
Ma												
1.0												

For Hopping band edge:

00	<b>CIL</b>
	(.H)
~~	<b>U</b>

C RL			BE	50 (	2 AC	-	SENS	SE:INT		ALIGNAUTO	04:54:50 A	M Mar 23, 2016	0.40
Cen	ter	Fre	eq 2	.3590	00000	GHz	Trig: Free I	Run	Avg Ty	Avg Type: Log-Pwr TRACE 12345 (			Frequency
						IFGain:Low	#Atten: 30	dB DET  P P P P					A
10 dE	3/div		Ref ( Ref	0ffset 0 9.85 d	.5 dB					Mkr2	2.403 8	84 GHz 23 dBm	
-og 0.15												ANA 2A	Center Fre
10.2			_									-15.15 dBm	2.359000000 GH
20.2	-												
-30.2					5						29		Start Free
-40.2													2.310000000 GH
60.2	and also		malita	الم المعالم الم	Laweshiney	and the second second	Lindiana alla and	Mainden	the market and and the	Witchildren The	Conversion Hora-J	<u>У</u>	-
70.2	-		-		-	-	-			-			Stop Free
80.2													2.408000000 GH
Star #Res	t 2. s Bl	310 N 1	00 C	Hz Hz		#VB\	V 300 kHz			Sweep	Stop 2.40 9.40 ms (*	1800 GHz 1001 pts)	CF Step
MKR I	MODE	TRC	SCL		2 390	964 GHz	55 26 dB	FU	NCTION   F	UNCTION WIDTH	FUNCTIO	N VALUE	Auto Mai
2	N	1	f		2.403	884 GHz	4.92 dB	m					
4													Freq Offse
67													
8 9													
10 11													

78 CH

	1 JU 36 MC 1		SENSE:IN		ALIGN AUTU	104:50:50 AM Mar 23, 20	10
nter Freq 2.4	88000000	GHz PNO: Fast G IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg 1	ype: Log-Pwr	TRACE 12345 TYPE MWWWW DET P P P P	6 Frequency
Ref Offe dB/div Ref 9.3	set 0.5 dB 35 dBm		an 195		Mkr2	2.483 584 GH -58.981 dBr	z Auto Tu
	X.					-15.65 dF	Center Fr 2.488000000 G
7 7 7 7 7		2					Start Fr 2.476000000 G
7	46	mature		hand a	nut fur milane off		Stop Fr 2.500000000 0
art 2.47600 GH es BW 100 kHz	z 2	#VB\	V 300 kHz		Sweep 3	Stop 2.50000 GH 2.33 ms (1001 pts	Z CF Si
MODE TRC SCL	× 2.479	840 GHz	4.35 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	Auto N
N 1 f	2.483	584 GHz	-58.98 dBm				Freq Off 0

# π/4 - DQPSK(2Mbps)-00/78 CH For band edge:

00	Cł	ł:

310000000 G f Offset 0.5 dB f 10.00 dBm	Hz PNO: Fast IFGain:Low	Trig: Free Run Atten: 20 dB	Avg Type: Log-Pwr Avg Hold:>100/100 Mkr1	TRACE 23456 TYPE M MARKAN DET P N N N N 2.401 838 GHz 3.407 dBm	Frequency Auto Tune
f Offset 0.5 dB f 10.00 dBm			Mkr1	2.401 838 GHz 3.407 dBm	Auto Tune
				-16.61 dBm	Center Fred 2.357000000 GH:
					Start Free 2.310000000 GH:
and the second	M	egi alka edipativetal etcvienover	haten of the procession of the second s	ward marked	Stop Free 2.404000000 GH:
GHz kHz	#VBN	/ 300 kHz	Sweep	Stop 2.40400 GHz 9.00 ms (1001 pts)	CF Step 9.400000 MH
2.40	838 GHz	3.407 dBm	UNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Mar
2.390	000 GHz	-66.095 dBm			Freq Offse 0 H:
	GHz KHz 2.400 2.390	GHz KHz #VBW	GHz KHz 2.400 000 GHz 2.390 000 GHz 4.66.095 dBm 4.111111111111111111111111111111111111	GHz         #VBW 300 kHz         Function           X40         34.07 dBm         54.599 dBm         54.599 dBm           2.390 000 GHz         54.599 dBm         54.599 dBm         54.595 dBm	GHz         #VBW 300 kHz         Stop 2.40400 GHz           2.400 000 GHz         3.407 dBm         2.400 000 GHz           2.390 000 GHz         -54.599 dBm         -           -66.095 dBm         -         -

								vept SÅ	alyzer - Sw	ctrum A	nt Spe	Agiler
Marker	AM Mar 23, 2016 CE 1 2 3 4 5 6	05:52:53,4 TRA	ALIGNAUTO :: Log-Pwr	Avg Type	NSE:INT	SE	Hz	Ω AC	50 £	1 2.4	ker	xı Mar
Select Marke	ET P N N N N N	TY D	>100/100	Avg Hold	e Run dB	Trig: Free Atten: 20	PNO: Fast G Gain:Low	1				
1	73 dBm	2.479 8 3.3	Mkr1					.8 dB dBm	Offset 0. f 10.00	Re	B/div	10 d
						-			X	1		0.00
Norm	+16.65 dBm								1	1		-10.0
									ha	ļ	A	-20.0
Del		-						1 50		u	F	-40.0
						-	$\langle \rangle^3$	2 Pro-	6		1	-50.0
Fixed	water	manerum	mon	non-server and	man	all mary						-70.0
											-	-80,0
	0000 GHz (1001 pts)	Stop 2.5 1.00 ms (	Sweep			300 kHz	#VBW		GHz Hz	47800   100	t 2.4 BW	Stai Res
0	ON VALUE	FUNCTI	NCTION WIDTH	CTION FU	FU	Y		X		TRC SC	MODE	MKR
					Bm Bm Bm	-58.191 di	44 GHZ 07 GHZ 02 GHZ	2.4798		f	N N N	23
Properties						02.111 0	02 0112	2.1000				4 5
												6 7
Мо												9 10
1 of												11 12
			STATUS									ISG

# For hopping band edge: **00 CH:**

Agilent S	pect	rum	Ana	lyzer - S	Swep	I SA			-											
RL			RF	250	)Ω 000	AC		-	_	- H-	SENSE:INT		Ava T	ALI	GN AUTO	05:5	7:39 AM TRACE	Mar 23, 20	16	Frequency
ente	er F	re	q z	.359	000	000		IZ NO: Ea	st 🕟	Trig: Fr	ee Run		nığı.	ype. L	vg-r wi		TYPE	MWWW		
							IFG	jain:L	ow	#Atten:	30 dB						DET	P P P P F	P	
															Mkr	2.40	7 80	04 GH	z	Auto Tune
10 dB//	dis	1	er i	S 16	dB	m m											3.28	9 dBr	m	
	414	_		0.10			_	-				-				1			2	0
-1.84	_		-		-		_					-				-	-	AUG	Ĩ.	Center Fre
11.8																			1	2 359000000 GH
21.0	_		-		-		-				-	-				-		/15.84 dl		2.555000000 GH
-21.0																				
-31.8			-		-			-		-						-		1	-1	Start Ere
-41.8 -			-		-		-	-				-		-		-		4	-11	2 240000000 CU
-51.8			_		_						_			_			<	) <b>'</b>	-11	2.31000000 GH
61.8	shand		+m	mannh	hend	mand	applica	W-D-M	-	un musinger	and many marker in	matures	and the second second	mus	man	and and the second	anger sands	XI.		Č.
74.0								-												Stop Fro
-71.8								-												SUPFIC
-81.8			-		-			-				-		-		-	-		-11	2.408000000 GH
		100												-75		01.00	0.40	000.01		
Start .	2.3	100		SHZ				-++	1014	200 24	1-				Noon	Stop	2.40	800 GF		CF Ster
HRES	074	- 10	)U P	ΠZ	_			#	A D AA	300 KF	12			3	weep	9.401	115 (1	001 pt	5)	9.800000 MH
MKR MO	DE T	RC	SCL			×				Y		FUNC	TION	FUNCTI	ON WIDTI	H FL	INCTION	I VALUE		<u>Auto</u> Mar
1 N		1	f			2.39	9 474	4 GH	z	-55.43	dBm									
3						2.40	001	+ 011	2	5.25	ubiii									Erog Offee
4																				Frequise
6																			-11	OH
7																				
8																				
10																				
11																				
12		_					_					_		_			_			
ISG															STATU	IS			0.00	

Agilent Spectrum Analyzer - Swept SA							
M         RL         RF         50 Ω         AC           Center Freq 2.488000000	GHz	SENSE:INT	Avg Type	ALIGN AUTO : Log-Pwr	05:59:36 AN TRACE	Mar 23, 2016	Frequency
Ref Offset 0.5 dB	IFGain:Low	Atten: 30 dB		Mkr2	2.483 50 -60.13	60 GHz 5 dBm	Auto Tune
-2:41 -12:4 -22:4						-17.41 dBm	Center Freq 2.488000000 GHz
-32.4 -42.4 -52.4	2						<b>Start Freq</b> 2.476000000 GHz
-62.4 -72.4 -82.4							<b>Stop Freq</b> 2.500000000 GHz
Start 2.47600 GHz #Res BW 100 kHz	#VBW 3	00 kHz		Sweep 2	Stop 2.50 2.33 ms (1	000 GHz 001 pts)	CF Step 2.400000 MHz
MARE MODE TRE SCL         ×           1         N         1         f         2.477           2         N         1         f         2.477           3         4         5         6         7           5         6         7         8         9         10           10         11         12         12         12         12	032 GHz	2.66 dBm -60.14 dBm			FUNCTIO	V VALUE	Auto Man Freq Offset 0 Hz
MSG				STATUS			3°

# 8DPSK(3Mbps)-00/78 CH

For band edge: **00 CH:** 

Agilent Sp	oectru	m Analyzer	- Swept SA							
KI RL	-	RF 1	50 Q AC		SENSE:INT	Ανα Τν	ALIGN AUTO	06:44:24 A	M Mar 23, 2016	Frequency
Start	Tec	2.3100	00000	PNO: Fast G IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Ho	ld:>100/100	TYF	P P P P P P	
10 dB/d	iv	Ref Offse Ref 10.0	t0.5 dB 00 dBm				Mkr1	2.402 0	26 GHz 37 dBm	Auto Tune
0.00										Center Freq
-10.0									-16.80 dBm	2.357000000 GHz
-30.0									12 Y	Start Freq
-50.0	-	and and and a second	- Gipalouacel	الم معروف المعالية المعالية المعالية الم		a	- marker and	<sup>3</sup>	ma	2.010000000 0112
-70.0										<b>Stop Freq</b> 2.404000000 GHz
Start 2 #Res E	.310 3W 1	00 GHz 00 kHz		#VBI	№ 300 kHz		Sweep	Stop 2.40 9.00 ms (	0400 GHz 1001 pts)	CF Step 9,400000 MHz
MKE MOD	E TRO	SCL f	2.4 2.4	02 026 GHz	3.237 dBm	FUNCTION	FUNCTION WIDTH	FUNCTIC	IN VALUE	<u>Auto</u> Man
3 N 4 5	1	f	2.3	90 000 GHz	-59.588 dBm					Freq Offset 0 Hz
7 8 9										
10 11 12										
MSG							STATUS			

Agiler	nt Spo	ectru	m An	alyzer -	Swe	ept Si	A											
LXI	L		RF	1700	50 Ω	AC				-	SENSE:INT	Α.,	a Tun	ALIGN AUTO	06:45:	26 AM N	lar 23, 2016	Frequency
Stal	πF	req	2.4	1/80	000	000	I GH2	Z PNO FGai	:Fast 🖵 in:Low	Trig: F #Atter	ree Run : 30 dB	Avg	g Type  Hold	>100/100	22	TYPE N DET F	PPPPP	
10 d	B/di	v	Ref Ref	Offse f 10.0	t0.5 00 d	idB 1Bn	n			2			Mkr1 2.480 046 GH 2.875 dBr					Auto Tun
0.00 -10.0 -20.0		1	M														-17.13 dBm	Center Fre 2.489000000 GH
-30.0 -40.0 -50.0	ſ	N		W	5	n.n	$\langle \rangle^2$		∕ <mark>}³</mark>									Start Fre 2.478000000 G⊦
-60.0 -70.0 -80.0							~~100.04		1920-2019-1920-1920-1920-1920-1920-1920-	accomene hol		letten (besellet	by					Stop Fre 2.500000000 G⊦
Star #Re	t2. sB	478 W 1	00	GHz kHz					#VBW	300 k	Hz			Sweep	Stop 2 2.13 m	2.500 Is (10	00 GHz 01 pts)	CF Ste
MKE 1	MODE	TRC	f			2.	× 480 0-	46 (	GHz	¥ 2.87	5 dBm	FUNCTION	FU	NCTION WIDTH	FUN	NCTION \	ALUE	<u>Auto</u> Ma
23456	N	3	f			2.	.483 51 .485 0	66 (	GHz	-59.204	dBm 4 dBm							Freq Offso 0 H
7 9 10 11 12																		
MSG														STATU	s			

# For hopping band edge: 00 CH:

Agilent Spect	rum Analyzer	- Swept SA					22	
Center F	RF	50 Q AC	SENSE:IN	T AL Avg Type: L	IGNAUTO 06:55:26 A .og-Pwr TRAC	M Mar 23, 2016	Frequency	
Contor I	109 2.000	PNO: Fast ( IFGain:Low	Trig: Free Run #Atten: 30 dB		TYI		Auto Tuno	
10 dB/div	Ref Offse Ref 7.6	t 0.5 dB 1 dBm			Mkr2 2.401 8 2.6	26 GHz 08 dBm	Auto Tune	
-2.39 -12.4						17.39 dBm	Center Freq 2.359000000 GHz	
-22.4 -32.4 -42.4						<u>_</u>	Start Freq 2.310000000 GHz	
-62.4 -62.4 -72.4 -82.4	gertendet and tender	สถึงการที่เสาไหลุกแล้งหมดได้ผู้กรุงหนึ่งมีใหญ่ของ	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	1.5.99-37-935-94-69-99-69-99-69-99-99-99-99-99-99-99-99-	hanna marailitha ann	1	<b>Stop Freq</b> 2.408000000 GHz	
Start 2.3 #Res BW	1000 GHz 100 kHz	#VB	₩ 300 kHz	SUNCTION	Stop 2.40 weep 9.40 ms (	0800 GHz 1001 pts)	CF Step 9.800000 MHz	
1 N	1 f 1 f	2.399 964 GHz 2.401 826 GHz	-52.93 dBm 2.61 dBm	FORCHON		JN WALCE	Auto Mar	
3 4 5 6							Freq Offset 0 Hz	
7 8 9 10 11								
MSG					STATUS			

# 78 CH:

Agilo	nt Sp	ectru	m An	alyzer - Sv	vept SÅ								
Ce	nter	Fre	RF eq	50 s 2.4880	2 AC 00000 0	GHz	SE Trive	NSE:INT	Avg T	ALIGNAUTO ype: Log-Pwr	06:57:12 A	M Mar 23, 2016	Frequency
			Ref	Offset 0	.5 dB	PNO: Fast( IFGain:Low	#Atten: 3	odB		Mkr2	2.483 5	12 GHz	Auto Tune
10 d Log -2.6 -12.		run.	Re'									-17.65 dBm	Center Freq 2.488000000 GHz
-32. -42. -52.	7				m	¢ <sup>2</sup>		, mar and the second	marken	Antonoutine	marina	and a start of the	Start Freq 2.476000000 GHz
-62. -72. -82.	7												<b>Stop Freq</b> 2.500000000 GHz
Sta #R	rt 2. es B	.476 W 1	00 00	GHz kHz		#VB	W 300 kHz			Sweep	Stop 2.5 2.33 ms (	0000 GHz 1001 pts)	CF Step 2.400000 MHz
1 2 3 4 5 6 7 8 9 10 11 12	NN		f		2.476 2.483	024 GHz 512 GHz	2.451 d -59.384 d	Bm				JA VALUE	Freq Offset 0 Hz
MSG										STATUS	5		

Test result: The unit does meet the FCC requirements.

# 3.6 Hopping Channel Number

Test Requirement:	FCC Part15 C section 15.247
	(a)(1)(iii) Frequency hopping systems in the 2400-2483.5 MHz band
	shall use at least 15 channels.
Test Method:	DA 00-705
Test Status:	Pre-test the EUT in hopping mode with different data packet. Compliance test in hopping with normal mode (DH5) as the worst case was found.

### **Test Configuration:**



# **Test Procedure:**

- 1. Remove the antenna from the EUT and then connect a low attenuation RF cable from the antenna port to the spectrum.
- Set the spectrum analyzer: RBW = 100 kHz. VBW = 300 kHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
- Allow the trace to stabilize. It may prove necessary to break the span up to sections. in order to clearly show all of the hopping frequencies. The limit is specified in one of the subparagraphs of this Section.
- 4. Set the spectrum analyzer: start frequency = 2400 MHz. stop frequency = 2483.5 MHz. Submit the test result graph.





Test result: The unit does meet the FCC requirements.

# 3.7 Dwell Time

**Test Requirement:** FCC Part 15 C section 15.247

(a)(1)(iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

# Test Method: DA 00-705

1) **Test Status:** Pre-test the EUT in continuous transmitting mode at the lowest (00CH: 2402 MHz), middle (39CH: 2441 MHz) and highest (78CH: 2480 MHz) channel with different data packet: GFSK (1Mbps) , $\pi$ /4-DQPSK (2Mbps) , 8DPSK (3Mbps) . Compliance test in hopping with EDR mode (3DH1, 3DH3 and as the worst case was middle (39CH: 2441 MHz) found.

# **Test Configuration:**



#### Test Procedure:

1. Remove the antenna from the EUT and then connect a low attenuation RF cable from the antenna port to the spectrum.

2.Set spectrum analyzer span = 0. centered on a hopping channel;

3.Set RBW = 1 MHz and VBW = 1 MHz. Sweep = as necessary to capture the entire dwell time per hopping channel. Detector Function = Peak. Trace = View;

4. Use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.). Repeat this test for each variation.

The limit is specified in one of the subparagraphs of this Section. Submit this plot(s). An oscilloscope may be used instead of a spectrum analyzer.

#### **Test Result:**

The test period: T= 0.4 Second/Channel x 79 Channel = 31.6 s

**39 CH:** 2.441GHz 1) GFSK (1Mbps) -DH1/DH3/DH5 DH1 time slot = 0.37 (ms) \* (1600/(2\*79)) \* 31.6 = 118 ms DH3 time slot = 1.63 (ms) \* (1600/(4\*79)) \* 31.6 = 261 ms DH5 time slot = 2.88 (ms) \* (1600/(6\*79)) \* 31.6 = 307 ms 2)  $\pi$ /4-DQPSK (2Mbps) -2DH1/2DH3/2DH5 2DH1 time slot = 0.38 (ms) \* (1600/(2\*79)) \* 31.6 = 122 ms 2DH3 time slot = 1.64 (ms) \* (1600/(4\*79)) \* 31.6 = 262 ms 2DH5 time slot = 2.88 (ms) \* (1600/(6\*79)) \* 31.6 = 307 ms 3) 8DPSK (3Mbps) -3DH1/3DH3/3DH5 3DH1 time slot = 0.38 (ms) \* (1600/(2\*79)) \* 31.6 = 122 ms 3DH3 time slot = 1.64 (ms) \* (1600/(2\*79)) \* 31.6 = 262 ms 3DH3 time slot = 1.64 (ms) \* (1600/(2\*79)) \* 31.6 = 262 ms 3DH3 time slot = 2.89 (ms) \* (1600/(6\*79)) \* 31.6 = 308 ms

The unit does meet the FCC requirements.

Please refer the graph as below: 39 CH 1) GFSK (1Mbps) -DH1/DH3/DH5





TRF No. /



# 3) 8DPSK (3Mbps) -3DH1/3DH3/3DH5





# 3.8 Carrier Frequencies Separated

**Test Requirement:** FCC Part 15 C section 15.247

(a),(1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Test Method: DA 00-705

Test Status:Pre-test the EUT in continuous transmitting mode at the lowest<br/>(2402 MHz), middle (2441 MHz) and highest (2480 MHz) channel<br/>and hopping mode with different data packet. Compliance test in<br/>hopping GFSK(1Mbps), π/4-DQPSK(2Mbps), 8-DPSK(3Mbps)<br/>modes.

# **Test Configuration:**



**Test Procedure:** 

1. Remove the antenna from the EUT and then connect a low attenuation RF cable from the antenna port to the spectrum.

2. Set the spectrum analyzer: RBW >= 1% of the span, VBW >= RBW,. Sweep = auto; Detector

Function = Peak. Trace = Max, hold.

 Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section. Submit this plot.

CH00 / CH39 /CH78 (GFSK(1Mbps) Mode)											
Frequency	Ch. Separation	20 dB BW	2/3 20 dB BW								
(MHz)	(MHz)	(MHz)	(MHz)								
2402	1.000	0.830	1								
2441	1.000	0.834	1								
2480 1.000 0.836 /											
Note: Pass, for GFSK: Ch. Separation Limits: >20dB bandwidth.											

Agilent Sp	iestru	m Ana	lyzer - Swept SA							
Refere	ence	RF E Le	50 Ω AC vel 20.00 dBm	SE Trig: Free	Run	Avg Ty	ALIGNAUTO pe: Log-Pwr	03:44:49 TRA TV	AM Mar 23, 2016 CE 1 2 3 4 5 6 PE Minternation	Amplitude
		_	IFGain:L	ow #Atten: 30	dB				ETPPPPP	Ref Level
10 dB/d	İv	Ref (	Dffset 0.5 dB 20.00 dBm				MKr2	2.402 0	72 dBm	20.00 dBm
10.0 0.00			×1	m	j	2	~			Attenuation [30 dB]
-20.0		7	~~~		$\sim$			M	-	Scale/Div 10 dB
-50.0 -60.0 -70.0									v	Scale Type
Center #Res E	2.4 3W 3	0250 30 kH	10 GHz 1z #	VBW 100 kHz			#Sweep	Span 3 5.00 ms	3.000 MHz 5 (601 pts)	Presel Center
MISE MOD	e tro 1	f	× 2.401 840 GH	z 4.878 d	Bm	ION	FUNCTION WIDTH	FUNCT	ON VALUE	
2 N 3 4 5 6	1	f	2.402 840 GH	z 4.872 di	Bm					Presel Adjust 0 Hz
8 9 10 11 12										More 1 of 2
MSG							STATUS	1		

# CH00 -1Mbps

Test result:

Agilent Spectrum Analyzer - Swept SA				
Reference Level 17.00 dBm	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	04:41:51 AM Mar 23, 2016 TRACE 1 3 4 5 6	Amplitude
PNO: Wide G IFGain:Low	Trig: Free Run #Atten: 30 dB	Ext Gain: 3.50 dB	2.441 840 GHz	Ref Level
Ref Offset 0.5 dB 10 dB/div Ref 17.00 dBm		(Lease	0.923 dBm	17.00 4511
7.00		Anny		Attenuation [30 dB]
-23.0 -33.0 -43.0	- mor	السري ( )	mun	Scale/Div 10 dB
-63.0 -63.0 -73.0				Scale Type Log Lin
Center 2.441500 GHz #Res BW 30 kHz #VBW	100 kHz	#Sweep	Span 3.000 MHz 5.00 ms (601 pts)	Presel Center
MKE MODE THE SCI. X 1 N 1 f 2.440 840 GHz 2 N 1 f 2.440 840 GHz	0.966 dBm	UNCTION FUNCTION WIDTH	FUNCTION VALUE	
3 4 5 6 7	0.920 0.511			Presel Adjust 0 Hz
8 9 10 11 12				More 1 of 2
MSG		STATUS		

### CH39 -1Mbps

# CH78 -1Mbps



# CH00 / CH39 /CH78 (π/4-DQPSK(2Mbps) Mode)

Frequency (MHz)	Ch. Separation (MHz)	20 dB BW (MHz)	2/3 20 dB BW (MHz)
2402	1.000	1.113	0.742
2441	1.000	1.114	0.743
2480	1.000	1.113	0.742
Note: Pass, forπ/4	-DQPSK: Ch. Separation L	imits: > two-thirds 20c	lB bandwidth.

05:19:22 AM Mar 23, 2016	ALIGNAUTO		SENSE:INT		AC	50 R	RF		RL
TRACE 1 3 3 4 5 6	e: Log-Pwr	Avg Ty	Trig: Free Run		.00 dBm	vel 20	e Le	renc	efe
DETPPPPP	1000		#Atten: 30 dB	FGain:Low	IF				
2.403 125 GHz 1.969 dBm	Mkr2				5 dB dBm	Offset 0. 20.00	Ref Ref	/div	dE
	2- M	m		with					9 0.0
A L	M					1	/	20	).0 ).0 ).0
									0.0 0.0 0.0
Span 3.000 MHz 5.00 ms (601 pts)	#Sweep		100 kHz	#VBW		00 GHz Hz	025 30 k	er 2.4 BW	eni
FUNCTION VALUE	UNCTION WIDTH	UNCTION	Y 1.991 dBm	25 GHz	2.402 12	ę.	f	ODE TR	
			1.969 05m	25 GH2	2.403 12			N 1	3455
									8 9 0
	05:19:22 AM 23, 2016 TRACE 12 34 5 6 TRACE 12 34 5 6 TRACE 12 34 5 6 TRACE 12 34 5 6 TRACE 12 4 5 6 TRACE 12 4 5 6 1.969 dBm 5.00 ms (601 pts) FUNCTION VALUE	ALIGN AUTO 05:19:22 AM Mar 23,2016 IPPE: Log-PWY IRACE 112 3 5 6 DET P P P P P P Mkr2 2.403 125 GHz 1.969 dBm 2 2 3 5 5 5 5 5 5 5 5 5 5 5 5 5	ALIGNAUTO 05:19:22 AM Mar 23, 2016 Avg Type: Log-Pwr TRACE 12 3 5 6 UP P P P P P Mkr2 2.403 125 GHz 1.969 dBm 2 2 4 4 5 5 5 5 1 1 5 1 1 5 1 1 5 1 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1	SENSE: UNT     AUGY AUTO     D5:19:22 AM Mar 23, 2016       Trig: Free Run #Atten: 30 dB     Trace Trype     Trace Trype       Mkr2 2.403 125 GHz 1.969 dBm       22       400 kHz       Span 3.000 MHz       100 kHz       FUNCTION       Y       FUNCTION       FUNCTION       1.969 dBm	SENEE:INT     ALIGNAUTO     05:19:22 AM Mar 23, 2016       100: Wide Trig: Free Run Bain:Low     Trig: Free Run #Atten: 30 dB     Avg Type: Log-Pwr Trace     Trace       Mkr2 2.403 125 GHz 1.969 dBm       Mkr2 2.403 125 GHz 1.969 dBm       #We Wide Colspan="2">Span 3.000 MHz       Span 3.000 MHz       #VBW 100 kHz       FUNCTION       FUNCTION	AC SENSE:INT ALIGN AUTO 00:19:22 AM Mar 23, 2016 OO dBm Arg Type: Log-Pwr Race 13, 45, 6 TYPE Color PPPPP P So dB Mkr2 2.403 125 GHz 1.969 dBm 1.969 dBm #VBW 100 kHz #Sweep 5.00 ms (601 pts) X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE 2.403 125 GHz 1.991 dBm 2.403 125 GHz 1.999 dBm	SD R     ALIGNATIO     DIS:19:22 AM Mar 23, 2010       Bavel 20.00 dBm     Trig: Free Run #Atten: 30 dB     Avg Type: Log-Pwr     Trace     13 4 5 6       Offset 0.5 dB     Mkr2 2.403 125 GHz     1.969 dBm       F 20.00 dBm     1     0     0       Offset 0.5 dB     Mkr2 2.403 125 GHz     1.969 dBm       Mkr2 2.403 125 GHz     1.969 dBm     1.969 dBm       00 GHz     #VBW 100 kHz     #Sweep 5.00 ms (601 pts)       X     Y     FUNCTION WIDH       2.402 125 GHz     1.991 dBm       2.403 125 GHz     1.969 dBm	PF     S0 R     S0 R     ALIGNAUTO     D5:19:22 AM Mar 23, 2016       e     Level 20.00 dBm     Avg Type: Log-Pwr     Ref     I 3 a 3 G       PN0: Wide     Trig: Free Run #Atten: 30 dB     Mkr2 2.403 125 GHz       Ref Offset 0.5 dB     Mkr2 2.403 125 GHz       Ref 20.00 dBm     1.969 dBm       02500 GHz     Span 3.000 MHz       30 kHz     Y BW 100 kHz     Span 3.000 MHz       f     2.403 125 GHz     1.969 dBm       Control worth     Function worth     Function worth       f     2.403 125 GHz     1.969 dBm	RF     50.9. AC     SENSE INT     AUGNAUTO     DS:19:22 AMM 23, 2016       Prence Level 20.00 dBm     PN0: Wide IFGain:Low     Trig: Free Run #Atten: 30 dB     Avg Type: Log-Pwr     Trace     3.4.56       Ref Offset 0.5 dB     Ref 20.00 dBm     Mikr2 2.403 125 GHz     1.969 dBm       Server 2.402500 GHz     Span 3.000 MHz       BW 30 kHz     #VBW 100 kHz     #Sweep 5.00 ms (601 pts)       Note 125 SEC     X     Y       Note 125 GHz     1.969 dBm