

FCC Radio Test Report

FCC ID: 2ALJI-G1608

FCC 47 CFR Part 15 Subpart C RSS 247 Issue 1:2016

Product	:	Bluetooth headset	
Trade Name	nde Name : GoNovate		
Model No.	:	G1608	
Serise No.		G1609, G1610, G1611, G1701, G1702, G1703, G1705, G1706, G1707, G1708, G1709	

Issued for

SHENZHEN ZIJIEYUANZI TECHNOLOGY CO., LTD.

1115, No.6 Building, Xishixiang, Changkeng Road, Bantian Street, Longgang District, Shenzhen, China

Issued by

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TEST RESULT CERTIFICATION

Product: Bluetooth headset

Applicant: SHENZHEN ZIJIEYUANZI TECHNOLOGY CO., LTD.

1115, No.6 Building, Xishixiang, Changkeng Road, Bantian Street, Address Longgang District, Shenzhen, China

Manufacturer: SHENZHEN ZIJIEYUANZI TECHNOLOGY CO., LTD.

1115, No.6 Building, Xishixiang, Changkeng Road, Bantian Street, Address Longgang District, Shenzhen, China

Model No....: G1608

FCC Part 15 Subpart C (15.247) Standards: RSS 247 Issue 1: 2016

Test Method.....: ANSI C63.10: 2013

The above equipment has been tested by Shenzhen ATL Testing Technology Co., Ltd. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Test

Date(s) of performance of test..... 2017-03-14 to 2017-03-23

Test Result Pass

Sifeifei Testing by : Date : 2017-03-13

(Si feifei)

Xielingling Check by : Date 2017-03-22

(Xie Lingling)

Approved by: Date : 2017-03-23

(Xu Peng)

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1. TEST SUMMARY

Test procedures according to the technical standards:

FCC Part 15 Subpart C (15.247)					
Standard Section		Test Item	Judgment	Remark	
15.207	RSS Gen 7.2.4	AC Power Conducted Emission	PASS		
15.247(c)	RSS 247 5.5	Transmitter Radiated Emissions	PASS		
15.247(b)(1)	RSS 247 5.1	Output Power	PASS		
15.247(a)(1)	RSS 247 5.1	20dB RF Bandwidth	PASS		
15.247(a)(1) (iii)	RSS 247 5.1	Carrier Frequency Separation	PASS		
15.247(a)(1) (iii)	RSS 247 5.1	Hopping Number	PASS		
15.247(a)(1) (iii)	RSS 247 5.1	Dwell Time	PASS		
15.247(c)	RSS 247 5.1	Occupied Bandwidth Measurement	PASS		
15.247(d)	RSS 247 5.5	Band Edge (Out of Band Emissions)	PASS		
15.203		Antenna Requirement	PASS		

NOTE:

- (1)" N/A" denotes test is not applicable in this Test Report
- (2)The test results of this report relate only to the tested sample(s) identified in this report.

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1.1 TEST FACILITY

Shenzhen ATL Testing Technology Co., Ltd.

Add.: F/4, Building 10, Dayuan Industrial Zone, Xili Town, Nanshan District, Shenzhen, China

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $\mathbf{y} \pm \mathbf{U}$, where expended uncertainty \mathbf{U} is based on a standard uncertainty multiplied by a coverage factor of $\mathbf{k=2}$, providing a level of confidence of approximately 95 %.

A. Conducted Emission:

The measurement uncertainty is evaluated as \pm 3.2 dB.

B. Radiated Measurement:

The measurement uncertainty is evaluated as \pm 3.7 dB.

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Bluetooth headset		
Model Name	G1608		
Additional Model Number(s)	G1609, G1610, G1611, G1701, G1702, G1703, G1705, G1706, G1707, G1708, G1709		
All these models are identical in the same PC and electrical circuit, the only difference is motor for commercial.			
Frequency Range	Bluetooth V4.1: 2402~2480 MHz		
Number of Channel:	79 Channels		
Modulation Type	Bluetooth: GFSK/ π /4-DQPSK/8-DPSK		
RF Output Power	GFSK: 4.493 dBm π /4-DQPSK: 3.411 dBm 8 -DPSK: 3.607 dBm		
Antenna Type Chip Antenna (Gain: 2.12dBi)			
Power Source	DC Powered by host system or Battery .		
Power Rating	DC 5V from USB interference.		
Remark	DC 3.7V from Battery. More details EUT technical specifications, please refer to the User's Manual.		

Note:

This Test Report is FCC Part 15 Subpart C, 15.247 for Bluetooth. And the Test procedure follows the FCC Public Notice DA 00-705-Filing and Measurement Guidance for Frequency Hopping Spectrum Systems.

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(1) Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	27	2429	54	2456
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		
26	2428	53	2455		

(2) Transmitting mode with antennas

Mode	TX Antenna (s)
Bluetooth	1



2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	BT TX(GFSK) Mode
Mode 2	BT TX(π /4-DQPSK) Mode
Mode 3	BT TX(8-DPSK) Mode

For Conducted Test					
Final Test Mode Description					
Mode 1	BT TX(GFSK) Mode				

For Radiated Test					
Final Test Mode Description					
Mode 1	BT TX(GFSK) Mode				
Mode 2	BT TX(π /4-DQPSK) Mode				
Mode 3	BT TX(8-DPSK) Mode				

Note:

- (1) Software used to control the EUT for staying in continuous transmitting mode was programmed. After verification, all tests were carried out with the worst case test modes as shown below.
- (2) GFSK Mode:
 - Channel (2402/2441/2480 MHz) with 1DH1 data packet were chosen for full testing.
- (3) π /4-DQPSK Mode
 - Channel (2402/2441/2480 MHz) with 2DH1 data packet were chosen for full testing.
- (4) 8-DPSK Mode:
 - Channel (2402/2441/2480 MHz) with 3DH1 data packet were chosen for full testing.
- (5) By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that "X axis" position was the worst, then the final test was executed the worst condition and test data were recorded in this report.

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Page 11 of 76 Report No.: ATL-FCC20170319821 2.3 DESCRIPTION OF TEST SETUP **Conducted Emission** E-2 E-1 EUT Adapter Cable 1 0.8m Table 1.5m **Radiated Emission** 0.8m E-1 **EUT** Table 1.5m



2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	VOC/DOC	Note
E-1	Bluetooth headset	N/A	G1608	/	EUT
E-2	Adapter	N/A	KA1517-050200CNU	VOC	EUT

Item	Shielded Type	Ferrite Core	Length	Note

Note:

- (1) The support equipment was authorized by Verification of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in <code>"Length_"</code> column.
- (3) "YES" means "shielded" "with core"; "NO" means "unshielded" "without core".

2.5 EUT Exercise Software

Test Software ISRT_V2.1.28.4678					
	GFSK: The command set for RF power-DEF				
π /4-DQPSK: The command set for RF power-DEF					
8-DPSK:The command set for RF power-DEF					

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3. CONDUCTED EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT (Frequency Range 150KHz-30MHz)

	Quasi-peak	Average
FREQUENCY (MHz)	dBuV	dBuV
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

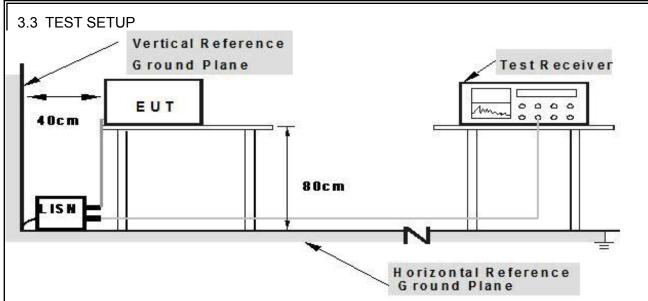
Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.2 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

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Note: 1.Support units were connected to second LISM.

2.Both of LISMs (AMM) are 80 cm from EUT and at least 80 from other units and other metal planes

3.4 TEST INSTRUMENTS

Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
LISN	R&S	NSLK81	8126466	Jul. 04, 2016	Jul. 03. 2017	1 year
LISN	R&S	NSLK81	8126487	Jul. 04, 2016	Jul. 03. 2017	1 year
50Ω Switch	ANRITSU CORP	MP59B	6200983704	Jul. 04, 2016	Jul. 03. 2017	1 year
Test Cable	N/A	C01	N/A	Jul. 04, 2016	Jul. 03. 2017	1 year
Test Cable	N/A	C02	N/A	Jul. 04, 2016	Jul. 03. 2017	1 year
Test Cable	N/A	C03	N/A	Jul. 04, 2016	Jul. 03. 2017	1 year
EMI Test Receiver	R&S	ESCI	1166.595	Jul. 04, 2016	Jul. 03. 2017	1 year
Passive Voltage Probe	ESH2-Z3	R&S	100196	Jul. 04, 2016	Jul. 03. 2017	1 year

3.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.



3.6 TEST RESULTS

EUT:	Bluetooth he	adset	Mod	del Name. :	G1608			
Temperature :	26 °C	ausci		ative Humidity				
Pressure:	1010hPa			t Date :	2017-03-20	<u> </u>		
Test Mode:	Mode 1			ase :	Line	<u>, </u>		
Test Voltage :	AC 120V/ 60) 	ГПС	156.	Line			
Level [dBµV]	AC 1207/ 00)I IZ						
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60						į		
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10				The second secon		X		
0 150k 300k	400k 600k	800k 1M	2M	3M 4M 5M 6	M 8M 10M	201	M 30M	
			Frequency [
Frequency	Level	Transd	Limit	_	Detector	Line	PE	
MHz	dΒμV	dB	dΒμV	dB				
0.276000	35.80	9.9	61	25.1	QP	L1	GND	
0.528000	31.20	9.8	56		ΣΡ	L1	GND	
1.144500	29.40	9.6	56		QP	L1	GND	
2.179500	24.10	9.5	56		QP	L1	GND	
10.936500	17.60	8.7	60		QΡ	L1	GND	
12.372000	10.70	8.5	60	49.3	QP	L1	GND	
Frequency	Level	Transd	Limit	Margin I	Detector	Line	PE	
MHz	dΒμV	dB	dΒμV	dB				
0 270500	00 00	0 0	4.0	06.2		T 1	CONTR	
0.370500 0.775500	22.20 23.60	9.9 9.7	49 46		7A 7A	L1 L1	GND GND	
0.933000	20.30	9.7	46		7V	ьı L1	GND	
2.116500	15.00	9.5	46		7V	L1	GND	
10.932000	13.40	8.7	50		γV	L1	GND	
12.502500	7.30	8.5	50	42.7 I	ΛΛ	L1	GND	

Remark:

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^{1.} All readings are Quasi-Peak and Average values.

^{2.} Factor = Insertion Loss + Cable Loss.



EUT: Bluetooth headset Model Name. : G1608 Temperature: 26 ℃ Relative Humidity: 56% Pressure: 1010hPa Test Date: 2017-03-20 Test Mode: Mode 1 Phase: Neutral Test Voltage AC 120V/ 60Hz Level [dBµV] 70 60 50 40 30 20 10 150k 300k 400k 5M 6M 20M 30M 600k 800k 1M Frequency [Hz] Frequency Level Transd Limit Margin Line PEDetector MHz dΒμV dΒ dΒμV dΒ 0.181500 35.40 10.0 64 29.0 QΡ Ν GND 32.10 23.9 0.546000 9.8 56 QΡ Ν GND 31.30 0.973500 9.6 56 24.7 QΡ Ν GND 2.161500 25.10 9.5 56 30.9 QΡ Ν GND 10.927500 22.90 8.7 60 37.1 QΡ N GND 18.078000 9.30 7.4 60 50.7 QΡ Ν GND Level Frequency Transd Limit Margin Detector Line PΕ MHz dΒμV dΒ dΒμV dΒ 0.181500 24.50 10.0 54 29.9 ΑV Ν GND 21.20 0.555000 9.8 46 24.8 ΑV Ν GND 0.888000 20.40 9.6 46 25.6 ΑV Ν GND 2.197500 14.40 9.5 46 31.6 ΑV Ν GND 11.049000 17.50 50 32.5 8.7 ΑV Ν GND 19.698000 3.90 7.1 50 46.1 ΑV Ν GND

Remark:

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^{1.} All readings are Quasi-Peak and Average values.

^{2.} Factor = Insertion Loss + Cable Loss.

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EUT:	Bluetooth he	eadset	Mo	odel Name. :	: (G1608		
Temperature:	26 ℃		Re	elative Humidi	ity: 5	66%		
Pressure:	1010hPa		Te	st Date :	2	2017-03-2	20	
Test Mode:	Mode 1		Ph	nase :	L	.ine		
Test Voltage :	AC 240V/ 60	0Hz						
Level [dBµV]								
80								
70	+	. + - + - - +			+-+	- +		
60		,						
50		<u> </u>				1 1 1		
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10		,	·				±	
150k 300k	400k 600k	800k 1M	2M		И 6M	8M 10M		20M 30M
			Frequency					
Frequency MHz	Level	Transd dB	Limit		рет	tector	Line	e PE
МПХ	dΒμV	uБ	dΒμV	dB				
0.285000	36.30	9.9	61	24.4	QP		L1	GND
0.627000	30.70	9.7	56		QΡ		L1	GND
0.919500	29.80	9.6	56		ÕР		L1	GND
2.224500	24.00	9.5	56		QΡ		L1	GND
10.900500	19.00	8.7	60		QΡ		L1	GND
14.685000	9.90	8.2	60		QΡ		L1	GND
Frequency	Level	Transd	Limit	Margin	Det	ector	Line	PE
MHz	dΒμV	dB	dΒμV	dB				
0.379500	22.20	9.8	48	26.1	AV		L1	GND
0.379500	23.60	9.7	46		AV		L1	GND
1.000500	20.00	9.6	46		AV		L1	GND
2.121000	14.90	9.5	46		AV		L1	GND
10.810500	14.80	8.8	50	35.2	AV		L1	GND
12.624000	7.60	8.5	50	42.4	AV		L1	GND

Remark

^{1.} All readings are Quasi-Peak and Average values.

^{2.} Factor = Insertion Loss + Cable Loss.

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					•		
EUT:	Bluetooth he	eadset		odel Name. :	G1608		
Temperature :	26 ℃		Re	elative Humidity	y: 56%		
Pressure:	1010hPa		Te	st Date :	2017-03-2	0	
Test Mode:	Mode 1		Ph	nase :	Neutral		
Test Voltage :	AC 240V/ 60	0Hz					
Level [dBµV]							
80			. – – – – – – -				
70	++				- 		
60	=- 		. – – – – – – – – – – – – – – – – – – –		1 1 1 1 1	<u> </u>	<u>——</u> []
50					1 1 1 1	<u> </u>	
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			 			Marin Committee	
150k 300k	400k 600k	800k 1M	2M	3M 4M 5M	6M 8M 10M	201	M 30M
Frequency	Level	Transd	Frequency Limit		Detector	Line	PE
MHz	dBµV	dB	dBuV	dB	Decector	птие	EE
	٠. ٢		αгμ.				
0.271500	37.20	9.9	61		QP	N	GND
0.564000	32.30	9.7	56		QP	N	GND
0.901500	31.00	9.6	56		QP	N	GND
2.206500	25.10	9.5	56		QP	N	GND
5.635500 14.847000	13.20 10.20	9.2 8.2	60 60		QP OB	N N	GND GND
					QP		
Frequency	Level	Transd	Limit		Detector	Line	PE
MHz	dΒμV	dB	dΒμV	dB			
0.366000	22.20	9.9	49	26.4	AV	N	GND
0.780000	22.80	9.7	46	23.2	AV	N	GND
0.978000	20.40	9.6	46	25.6	AV	N	GND
2.197500	14.50	9.5	46	31.5	AV	N	GND
10.873500	14.00	8.8	50	36.0	AV	N	GND
12.561000	6.60	8.5	50	43.4	AV	N	GND
i -							

Remark:

^{1.} All readings are Quasi-Peak and Average values.

^{2.} Factor = Insertion Loss + Cable Loss.



4. RADIATED EMISSION MEASUREMENT

4.1 RADIATED EMISSION LIMIT (Frequency Range 9KHz-1000MHz)

20 dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table bellow has to be followed.

	Field Strength	Measurement Distance
FREQUENCY (MHz)	(uV/m at meter)	(meters)
0.009 -0.490	2400/F(KHz)	300
0.490 -1.705	24000/F(KHz)	30
1.705 -30.0	30	30
30 -88	100	3
88 -216	150	3
216~960	200	3
Above 960	500	3

RADIATED EMISSION LIMITS (Above 1000MHz)

EDEOLIENCY (MHZ)	Class A (dBu	V/m)(at 3 M)	Class B (dBuV/m)(at 3 M)		
FREQUENCY (MHz)	Peak	Average	Peak	Average	
Above 1000	80	60	74	54	

Note:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (2) Emission Level(dBuV/m)=20log Emission Level(uV/m)

The following table is the setting of the receiver

Receiver Parameter	Setting
Attenuation	Auto
Start Frequency~ Stop Frequency	9kHz~150kHz/ RB 200Hz for QP
Start Frequency~ Stop Frequency	150kHz~30MHz/ RB 9kHz for QP
Start Frequency~ Stop Frequency	30MHz~1000MHz/ RB120kHz for QP

The following table is the setting of the spectrum

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10 th carrier harmonic
RB/ VB (emission in restricted band)	1MHz/ 3 MHz for Peak, 1MHz/ 10Hz for Average

4.2 TEST PROCEDURE

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.

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- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured, above 1G Average detector mode will be instead.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

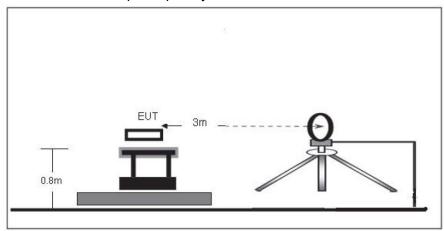
Note:

Both horizontal and vertical antenna polarities were tested.

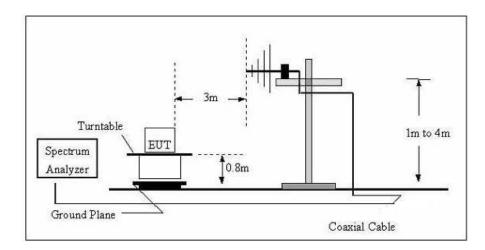
And performed pretest to three orthogonal axis. The worst case emissions were reported.

4.3 TEST SETUP

(A) Radiated Emission Test Set-Up Frequency 9KHz~30MHz



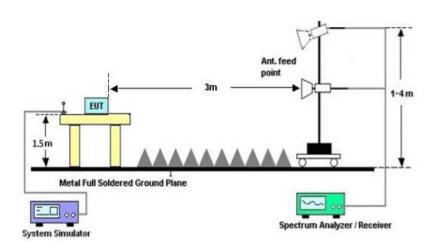
(B) Radiated Emission Test Set-Up Frequency Below 1 GHz



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(B) Radiated Emission Test Set-Up Frequency Above 1GHz



4.4 TEST INSTRUMENTS

Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
Broadband Antenna	R&S	VULB 9168	VULB 9168-456	Jul. 04, 2016	Jul. 03. 2017	1 year
Test Cable	N/A	R-01	N/A	Jul. 04, 2016	Jul. 03. 2017	1 year
Test Cable	N/A	R-02	N/A	Jul. 04, 2016	Jul. 03. 2017	1 year
EMI Test Receiver	R&S	ESCI	101324	Jul. 04, 2016	Jul. 03. 2017	1 year
Antenna Mast	EM	SC100_1	N/A	N/A	N/A	N/A
Turn Table	EM	SC100	060531	N/A	N/A	N/A
50Ω Switch	Anritsu Corp	MP59B	6200983705	Jul. 04, 2016	Jul. 03. 2017	1 year
Spectrum Analyzer	R&S	FSP40	100154	Jul. 04, 2016	Jul. 03. 2017	1 year
Horn Antenna	R&S	HF906	10029	Jul. 04, 2016	Jul. 03. 2017	1 year
Amplifier	EM	EM-30180	060538	Jul. 04, 2016	Jul. 03. 2017	1 year

4.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.3** Unless otherwise a special operating condition is specified in the follows during the testing.

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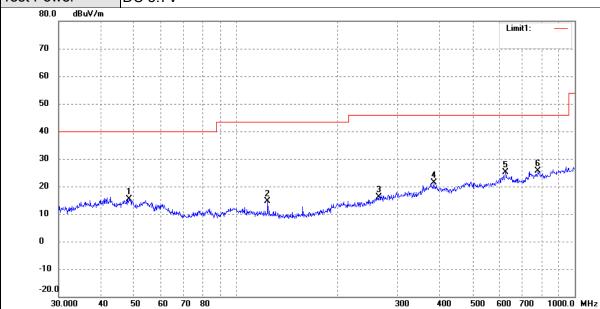


4.6 TEST RESULTS

4.6.1 TEST RESULTS (Bellow 1GHz)

EUT:	Bluetooth headset	Model Name. :	G1608
Temperature :	26 ℃	Relative Humidity:	56%
Pressure :	1010 hPa	Test Date :	2017-03-20
Test Mode :	BT TX Mode	Polarization :	Horizontal

Test Power : DC 3.7V



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	48.3318	23.57	-8.21	15.36	40.00	-24.64	peak
2	124.1330	26.21	-11.66	14.55	43.50	-28.95	peak
3	263.8190	22.84	-6.79	16.05	46.00	-29.95	peak
4	383.9318	23.71	-2.30	21.41	46.00	-24.59	peak
5	625.0780	24.10	1.11	25.21	46.00	-20.79	peak
6	779.6068	22.85	2.88	25.73	46.00	-20.27	peak

Remark:

Factor = Antenna Factor + Cable Loss.

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EUT:	Bluetooth headset	Model Name. :	G1608
Temperature:	26 ℃	Relative Humidity:	56%
Pressure :	1010 hPa	Test Date :	2017-03-20
Test Mode :	BT TX Mode	Polarization :	Vertical
T (D .	DO 0 71/	•	•

Test Power : DC 3.7V

80.0 dBuV/m

70

60

40

30

20

10

-10

No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	47.6586	30.29	-8.17	22.12	40.00	-17.88	peak
2	93.7685	26.57	-12.18	14.39	43.50	-29.11	peak
3	175.6516	31.55	-11.56	19.99	43.50	-23.51	peak
4	364.2595	23.66	-3.00	20.66	46.00	-25.34	peak
5	475.4991	23.26	-1.42	21.84	46.00	-24.16	peak
6	779.6068	22.34	2.88	25.22	46.00	-20.78	peak

300

Remark:

-20.0 30.000

Factor = Antenna Factor + Cable Loss.

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500 600 700 1000.0 MHz



4.6.2 TEST RESULTS (Above 1GHz)

EUT: Bluetooth headset Model Name. : G1608

Temperature: 26 ℃ Relative Humidity: 56%

Test Power: DC 3.7V Pressure: 1010 hPa

Test Mode: GFSK TX 2402MHz Test Date: 2017-03-20

Freq.	Deceiver Reading	Detector	Polar	Corrected Factor	Emission Level	Limit	Margin
MHz	dBuV	Peak/Avg	H/V	dB	dBuV /m	dBuV /m	dB
4804	63.96	Peak	Н	-3.59	60.37	74	-13.63
4804	50.76	Avg	Н	-3.59	47.17	54	-6.83
7206	57.68	Peak	Н	-0.52	57.16	74	-16.84
7206	45.16	Avg	Н	-0.52	44.64	54	-9.36
		Peak	Н			74	
		Avg	Н			54	
	_						
4804	63.24	Peak	V	-3.59	59.65	74	-14.35
4804	50.36	Avg	V	-3.59	46.77	54	-7.23
7206	56.31	Peak	V	-0.52	55.79	74	-18.21
7206	44.39	Avg	V	-0.52	43.87	54	-10.13
		Peak	V			74	
		Avg	V			54	

Remark:

Emission Level= Read Level+ Correct Factor

Margin= Emission Level-Limit

The testing has been conformed to 10th harmonics(1G~25G)

Other harmonics emission are lower then 20dB below the allowable Limit

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		.	.
EUT:	Bluetooth headset	Model Name. :	G1608
Temperature:	26 ℃	Relative Humidity:	56%
Test Power:	DC 3.7V	Pressure:	1010 hPa
Test Mode:	GFSK TX 2441MHz	Test Date :	2017-03-20

Freq.	Deceiver Reading	Detector	Polar	Corrected Factor	Emission Level	Limit	Margin
MHz	dBuV	Peak/Avg	H/V	dB	dBuV /m	dBuV /m	dB
4882	63.46	Peak	Н	-3.49	59.97	74	-14.03
4882	50.60	Avg	Н	-3.49	47.11	54	-6.89
7323	56.13	Peak	Н	-0.47	55.66	74	-18.34
7323	45.24	Avg	Н	-0.47	44.77	54	-9.23
		Peak	Н			74	
		Avg	Н			54	
		•	•	•	•		•
4882	63.95	Peak	V	-3.49	60.46	74	-13.54
4882	50.34	Avg	V	-3.49	46.85	54	-7.15
7323	56.61	Peak	V	-0.47	56.14	74	-17.86
7323	45.52	Avg	V	-0.47	45.05	54	-8.95
		Peak	V			74	
		Avg	V			54	

Remark:

Emission Level= Read Level+ Correct Factor

Margin= Emission Level-Limit

The testing has been conformed to 10th harmonics(1G~25G)
Other harmonics emission are lower then 20dB below the allowable Limit

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EUT:	Bluetooth headset	Model Name. :	G1608
Temperature:	26 ℃	Relative Humidity:	56%
Test Power:	DC 3.7V	Pressure:	1010 hPa
Test Mode:	GFSK TX 2480MHz	Test Date :	2017-03-20

Freq.	Deceiver Reading	Detector	Polar	Corrected Factor	Emission Level	Limit	Margin
MHz	dBuV	Peak/Avg	H/V	dB	dBuV /m	dBuV /m	dB
4960	63.98	Peak	Н	-3.41	60.57	74	-13.43
4960	50.37	Avg	Н	-3.41	46.96	54	-7.04
7440	56.48	Peak	Н	-0.42	56.06	74	-17.94
7440	45.21	Avg	Н	-0.42	44.79	54	-9.21
		Peak	Н			74	
		Avg	Н			54	
		•					•
4960	63.09	Peak	V	-3.41	59.68	74	-14.32
4960	50.54	Avg	V	-3.41	47.13	54	-6.87
7440	57.20	Peak	V	-0.42	56.78	74	-17.22
7440	45.50	Avg	V	-0.42	45.08	54	-8.92
		Peak	V			74	
		Avg	V			54	

Remark:

Emission Level= Read Level+ Correct Factor

Margin= Emission Level-Limit

The testing has been conformed to 10th harmonics(1G~25G)
Other harmonics emission are lower then 20dB below the allowable Limit

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Fred	Deceiver	Detector	Po	lar	Corrected	Emis	sion	Limit	Margin
Test Mode:	π/4-DQPSK T	X 2402MHz		Tes	t Date :		2017-	03-20	
Test Power:	DC 3.7V			Pres	ssure:		1010 hPa		
Temperature:	26 ℃			Rela	ative Humid	dity:	56%		
EUT:	Bluetooth head	dset		Mod	del Name.	:	G160	8	

Freq.	Deceiver Reading	Detector	Polar Factor		Emission Level	Limit	Margin
MHz	dBuV	Peak/Avg	H/V	dB	dBuV /m	dBuV /m	dB
4804	63.35	Peak	Н	-3.59	59.76	74	-14.24
4804	50.36	Avg	Н	-3.59	46.77	54	-7.23
7206	57.66	Peak	Н	-0.52	57.14	74	-16.86
7206	47.06	Avg	Н	-0.52	46.54	54	-7.46
		Peak	Н			74	
		Avg	Н			54	
4804	63.83	Peak	V	-3.59	60.24	74	-13.76
4804	50.03	Avg	V	-3.59	46.44	54	-7.56
7206	56.2	Peak	V	-0.52	55.68	74	-18.32
7206	45.28	Avg	V	-0.52	44.76	54	-9.24
		Peak	V			74	
		Avg	V			54	

Remark:

Emission Level= Read Level+ Correct Factor

Margin= Emission Level-Limit

The testing has been conformed to 10th harmonics(1G~25G)
Other harmonics emission are lower then 20dB below the allowable Limit

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EUT:				Mod	del Name.	:	G1608			
Temperature:	26 ℃			Rela	ative Humic	lity:	56%			
Test Power:	DC 3.7V			Pres	ssure:		1010 hPa			
Test Mode:	π/4-DQPSK T	X 2441MHz		Tes	t Date :		2017-03-20			
Freq.	Deceiver Reading	Detector	Po	lar	Corrected Factor		sion vel	Limit	Margin	
MUZ	dBuV	Doak/Aya	Ц	Λ/	4B	4Bu	V /m	dBuV/m	4B	

4882	63.71	Peak	Н	-3.49	60.22	74	-13.78
4882	50.45	Avg	Н	-3.49	46.96	54	-7.04
7323	55.03	Peak	Н	-0.47	54.56	74	-19.44
7323	44.49	Avg	Н	-0.47	44.02	54	-9.98
		Peak	Н			74	
		Avg	Н			54	
4882	63.63	Peak	V	-3.49	60.14	74	-13.86
4882	49.81	Avg	V	-3.49	46.32	54	-7.68
7323	57.11	Peak	V	-0.47	56.64	74	-17.36
7323	45.35	Avg	V	-0.47	44.88	54	-9.12
		Peak	V			74	
		Avg	V			54	

Remark:

Emission Level= Read Level+ Correct Factor

Margin= Emission Level-Limit

The testing has been conformed to 10th harmonics(1G~25G)
Other harmonics emission are lower then 20dB below the allowable Limit

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EUT:	Bluetooth head	dset	N	Mode	el Name.	:	G160	8	
Temperature :	26 ℃		F	Relat	tive Humi	dity:	56%		
Test Power:	DC 3.7V		P	res	sure :		1010	hPa	
Test Mode:	π /4-DQPSK T	X 2480MHz	T	est	Date :		2017-	03-20	
	Dagaines			-	2 4l	Г	!		

Freq.	Deceiver Reading	Detector	Polar	Corrected Factor	Emission Level	Limit	Margin
MHz	dBuV	Peak/Avg	H/V	dB	dBuV /m	dBuV /m	dB
4960	63.34	Peak	Н	-3.41	59.93	74	-14.07
4960	49.29	Avg	Н	-3.41	45.88	54	-8.12
7440	56.18	Peak	Н	-0.42	55.76	74	-18.24
7440	45.48	Avg	Н	-0.42	45.06	54	-8.94
		Peak	Н			74	
		Avg	Н			54	
		•		•			•
4960	63.56	Peak	V	-3.41	60.15	74	-13.85
4960	50.36	Avg	V	-3.41	46.95	54	-7.05
7440	56.2	Peak	V	-0.42	55.78	74	-18.22
7440	45.55	Avg	V	-0.42	45.13	54	-8.87
		Peak	V			74	
		Avg	V			54	

Remark:

Emission Level= Read Level+ Correct Factor

Margin= Emission Level-Limit

The testing has been conformed to 10th harmonics(1G~25G)
Other harmonics emission are lower then 20dB below the allowable Limit

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EUT:	Bluetooth headset	Model Name. :	G1608
Temperature:	26 ℃	Relative Humidity:	56%
Test Power:	DC 3.7V	Pressure:	1010 hPa
Test Mode:	8-DPSK TX 2402MHz	Test Date :	2017-03-20

Freq.	Deceiver Reading	Detector	Polar	Factor	Level	Limit	Margin
MHz	dBuV	Peak/Avg	H/V	dB	dBuV /m	dBuV /m	dB
4804	63.86	Peak	Н	-3.59	60.27	74	-13.73
4804	50.14	Avg	Н	-3.59	46.55	54	-7.45
7206	57.89	Peak	Н	-0.52	57.37	74	-16.63
7206	45.56	Avg	Н	-0.52	45.04	54	-8.96
		Peak	Н			74	
		Avg	Н			54	
4804	64.64	Peak	V	-3.59	61.05	74	-12.95
4804	50.72	Avg	V	-3.59	47.13	54	-6.87
7206	58.63	Peak	V	-0.52	58.11	74	-15.89
7206	46.43	Avg	V	-0.52	45.91	54	-8.09
		Peak	V			74	
		Avg	V			54	

Remark:

Emission Level= Read Level+ Correct Factor

Margin= Emission Level-Limit
The testing has been conformed to 10th harmonics(1G~25G)
Other harmonics emission are lower then 20dB below the allowable Limit



EUT: Bluetooth headset Model Name. : G1608

Temperature: 26 ℃ Relative Humidity: 56%

Test Power: DC 3.7V Pressure: 1010 hPa

Test Mode: 8-DPSK TX 2441MHz Test Date: 2017-03-20

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Freq.	Deceiver Reading	Detector	Polar	Corrected Factor	Emission Level	Limit	Margin
MHz	dBuV	Peak/Avg	H/V	dB	dBuV /m	dBuV /m	dB
4882	64.74	Peak	Н	-3.49	61.25	74	-12.75
4882	50.52	Avg	Н	-3.49	47.03	54	-6.97
7323	58.08	Peak	Н	-0.47	57.61	74	-16.39
7323	45.88	Avg	Н	-0.47	45.41	54	-8.59
		Peak	Н			74	
		Avg	Н			54	
4882	64.52	Peak	V	-3.49	61.03	74	-12.97
4882	51.03	Avg	V	-3.49	47.54	54	-6.46
7323	57.81	Peak	V	-0.47	57.34	74	-16.66
7323	44.74	Avg	V	-0.47	44.27	54	-9.73
		Peak	V			74	
		Avg	V			54	

Remark:

Emission Level= Read Level+ Correct Factor

Margin= Emission Level-Limit

The testing has been conformed to 10th harmonics(1G~25G)

Other harmonics emission are lower then 20dB below the allowable Limit

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EUT:	Bluetooth headset	Model Name. :	G1608
Temperature:	26 ℃	Relative Humidity:	56%
Test Power:	DC 3.7V	Pressure:	1010 hPa
Test Mode:	8-DPSK TX 2480MHz	Test Date :	2017-03-20

Freq.	Reading	Detector	Polar	Factor	Level	Limit	Margin
MHz	dBuV	Peak/Avg	H/V	dB	dBuV /m	dBuV /m	dB
4960	63.84	Peak	Н	-3.41	60.43	74	-13.57
4960	50.27	Avg	Н	-3.41	46.86	54	-7.14
7440	57.98	Peak	Н	-0.42	57.56	74	-16.44
7440	46.00	Avg	Н	-0.42	45.58	54	-8.42
		Peak	Н			74	
		Avg	Н			54	
4960	65.06	Peak	V	-3.41	61.65	74	-12.35
4960	51.07	Avg	V	-3.41	47.66	54	-6.34
7440	57.17	Peak	V	-0.42	56.75	74	-17.25
7440	45.30	Avg	V	-0.42	44.88	54	-9.12
		Peak	V			74	
		Avg	V		· ·	54	

Remark:

Emission Level= Read Level+ Correct Factor

Margin= Emission Level-Limit
The testing has been conformed to 10th harmonics(1G~25G)
Other harmonics emission are lower then 20dB below the allowable Limit



5. CONDUCTED OUTPUT POWER MEASUREMENT

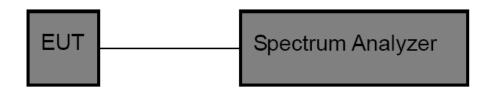
5.1 LIMITS

Dook Output Dower	Hopping Channels>75 Power<1W(30dBm)
Peak Output Power	Other <125 mW(21dBm)

5.2 TEST PROCEDURE

The EUT was directly connected to the power meter and antenna output port as show in the block diagram as bellow.

5.3 TEST SETUP



5.4 TEST INSTRUMENTS

Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
Spectrum Analyzer	R&S	FSP40	100154	Jul. 04, 2016	Jul. 03. 2017	1 year
Spectrum Analyzer	Agilent	E4407B	MY41440432	Jul. 04, 2016	Jul. 03. 2017	1 year

5.5 EUT OPERATING CONDITIONS

The EUT was set to continuously transmitting in the maximum power during the test.

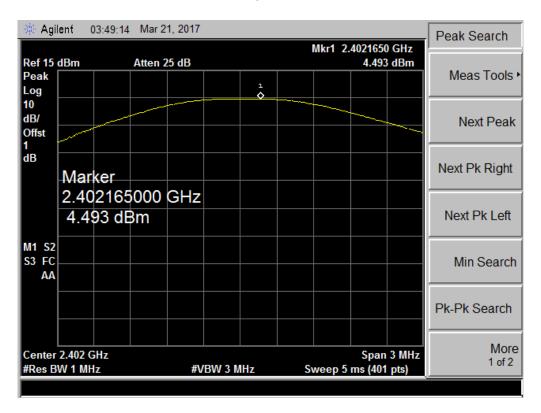
5.6 TEST RESULTS

Version: ATL-FCCRF-15V01.00



	GFSK (1Mbps)							
Frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)						
2402	4.493							
2441	4.481	<30						
2480	4.295							

2402 MHz

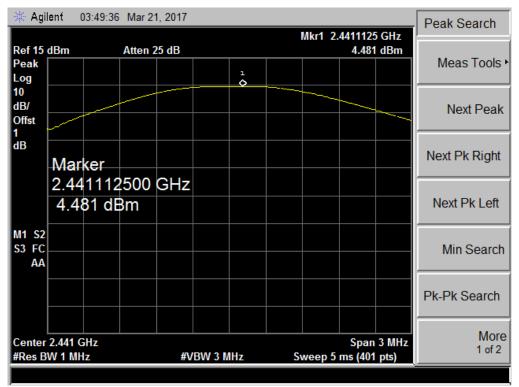


Version: ATL-FCCRF-15V01.00

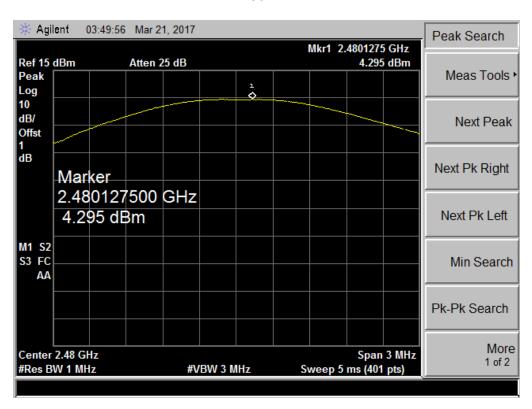


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2441 MHz



2480 MHz

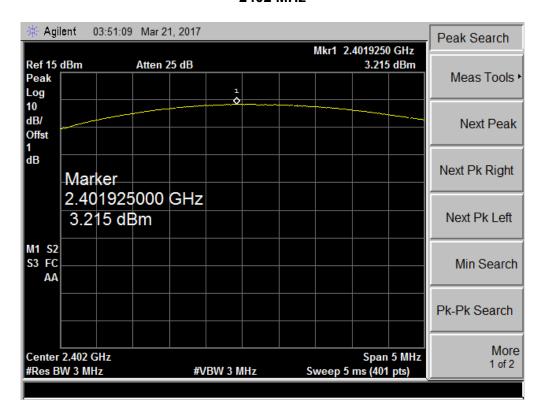


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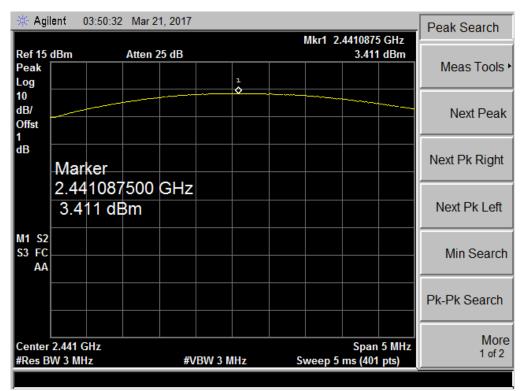
	π /4-DQPSK (2Mbps)							
Frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)						
2402	3.215							
2441	3.411	<21						
2480	3.247							

2402 MHz

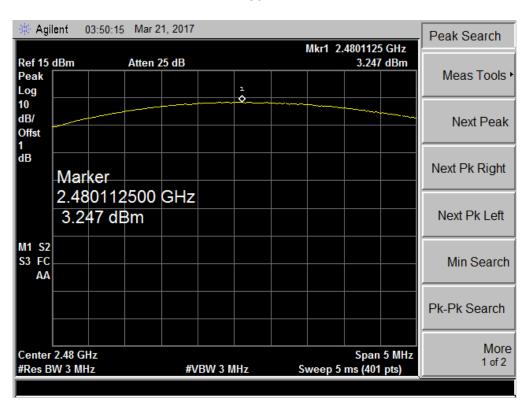








2480 MHz

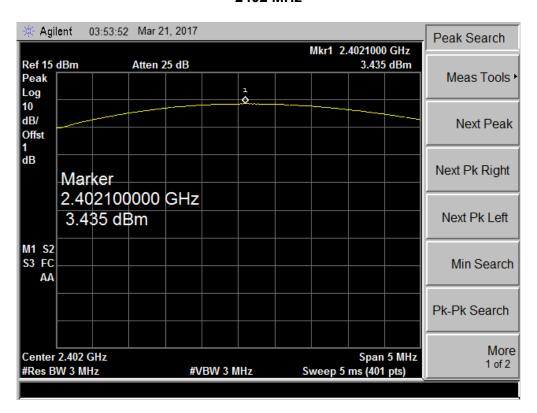


Version: ATL-FCCRF-15V01.00



	8-DPSK (3Mbps)				
Frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)			
2402	3.435				
2441	3.607	<21			
2480	3.417				

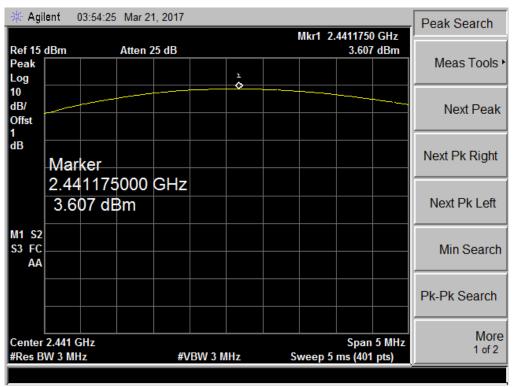
2402 MHz



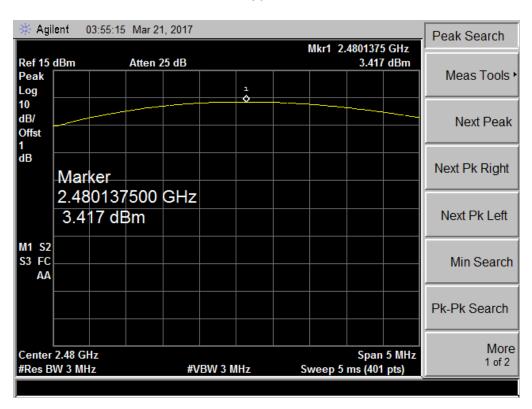


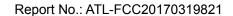
Report No.: ATL-FCC20170319821

2441 MHz



2480 MHz





6. OCCUPIED BANDWIDTH MEASUREMENT

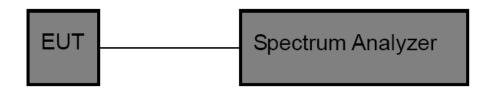
6.1 LIMITS

Test Item	Limit	Frequency Range(MHz)
Bandwidth	<=1 MHz (20dB bandwidth)	2400~2483.5
Channel Separation	>25KHz or >two-thirds of the 20 dB bandwidth Which is greater	2400~2483.5

6.2 TEST PROCEDURE

The EUT was directly connected to the power meter and antenna output port as show in the block diagram as bellow.

6.3 TEST SETUP



6.4 TEST INSTRUMENTS

Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
Spectrum Analyzer	R&S	FSP40	100154	Jul. 04, 2016	Jul. 03. 2017	1 year
Spectrum Analyzer	Agilent	E4407B	MY41440432	Jul. 04, 2016	Jul. 03. 2017	1 year

6.5 EUT OPERATING CONDITIONS

The EUT was set to continuously transmitting in the maximum power during the test.

6.6 TEST RESULTS



GFSK Mode (1Mbps)				
Frequency (MHz)	20dB Bandwidth (kHz)	99% OBW (kHz)	20dB Bandwidth *2/3 (kHz)	
2402	857.245	837.9851		
2441	850.203	818.7483		
2480	852.527	836.9787		

π /4-DQPSK Mode (2Mbps)				
Frequency (MHz)	20dB Bandwidth (kHz)	99% OBW (kHz)	20dB Bandwidth *2/3 (kHz)	
2402	1239.00	1152.00	826.00	
2441	1242.00	1154.50	828.00	
2480	1237.00	1155.10	824.67	

8-DPSK Mode (3Mbps)				
Frequency (MHz)	20dB Bandwidth (kHz)	99% OBW (kHz)	20dB Bandwidth *2/3 (kHz)	
2402	1220.00	1143.00	813.33	
2441	1218.00	1137.50	812.00	
2480	1215.00	1131.30	810.00	

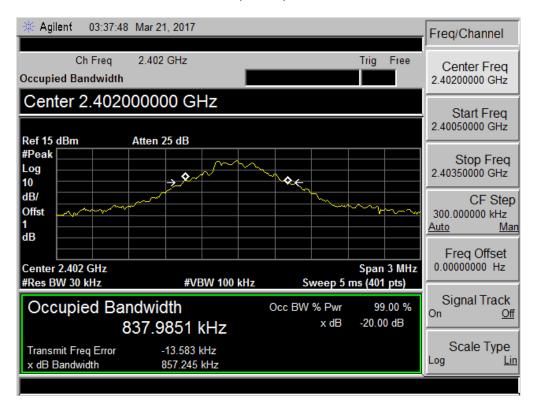
Note: Test plots please refer following pages.

Version: ATL-FCCRF-15V01.00

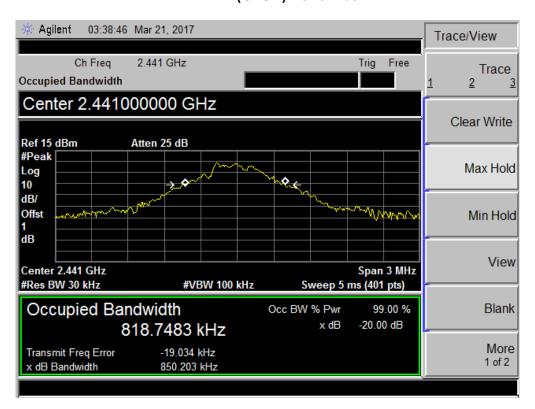


Report No.: ATL-FCC20170319821

2402 MHz(GFSK) Bandwidth



2441 MHz(GFSK) Bandwidth



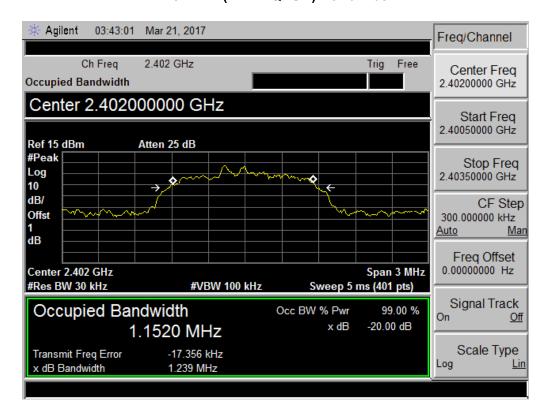
2480 MHz(GFSK) Bandwidth



Report No.: ATL-FCC20170319821

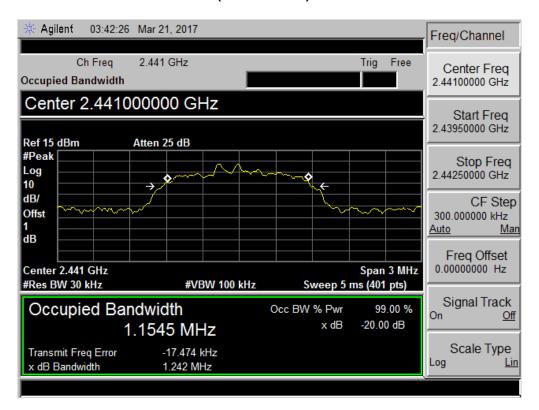
03:40:40 Mar 21, 2017 Agilent Freg/Channel Ch Freq 2.48 GHz Trig Free Center Freq Occupied Bandwidth 2.48000000 GHz Center 2.480000000 GHz Start Freq 2.47850000 GHz Ref 15 dBm Atten 25 dB #Peak Stop Freq Log) Ø 2.48150000 GHz **\$** < 10 dB/ CF Step Offst 300.000000 kHz dB Freq Offset 0.00000000 Hz Center 2.48 GHz Span 3 MHz #Res BW 30 kHz #VBW 100 kHz Sweep 5 ms (401 pts) Signal Track Occupied Bandwidth Occ BW % Pwr 99.00 % On x dB -20.00 dB 836.9787 kHz Scale Type -15.268 kHz Transmit Freq Error Log Lin x dB Bandwidth 852.527 kHz

2402 MHz(π/4-DQPSK) Bandwidth

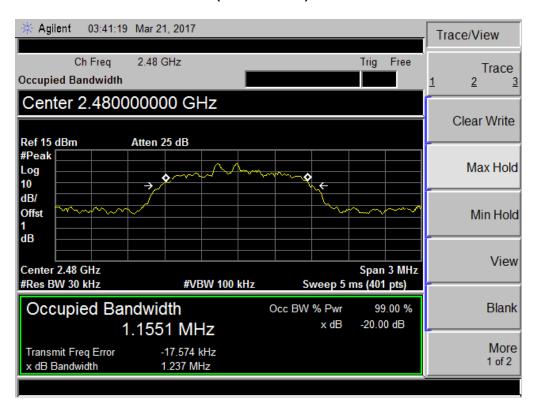




2441 MHz(π/4-DQPSK) Bandwidth



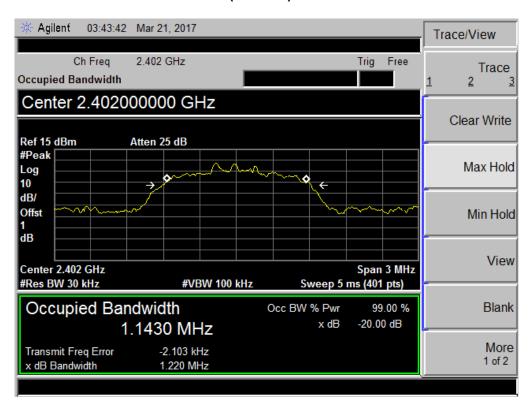
2480 MHz(π /4-DQPSK) Bandwidth



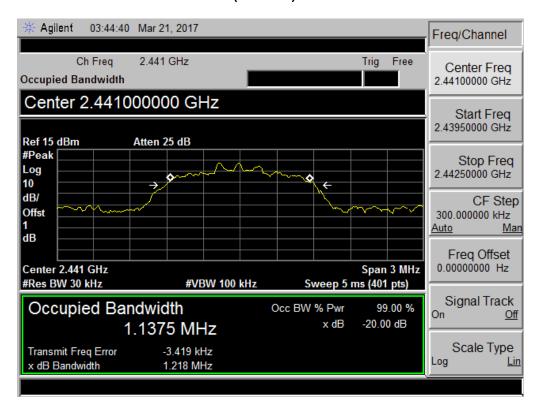
Version: ATL-FCCRF-15V01.00



2402 MHz(8-DPSK) Bandwidth



2441 MHz(8-DPSK) Bandwidth



Version: ATL-FCCRF-15V01.00



2480 MHz(8-DPSK) Bandwidth Agilent 03:45:26 Mar 21, 2017 Freq/Channel Ch Freq 2.48 GHz Trig Free Center Freq 2.48000000 GHz Occupied Bandwidth Center 2.480000000 GHz Start Freq 2.47850000 GHz Ref 15 dBm Atten 25 dB #Peak Stop Freq 2.48150000 GHz Log 10 dB/ CF Step Offst 300.000000 kHz <u>Auto</u> Man dB Freq Offset 0.00000000 Hz Center 2.48 GHz Span 3 MHz #Res BW 30 kHz **#VBW 100 kHz** Sweep 5 ms (401 pts) Signal Track Occupied Bandwidth Occ BW % Pwr 99.00 % On Off x dB -20.00 dB 1.1313 MHz Scale Type Transmit Freq Error -8.091 kHz Log x dB Bandwidth 1.215 MHz

Version: ATL-FCCRF-15V01.00



7. CARRIER FREQUENCY SEPARATION MEASUREMENT

7.1 LIMITS

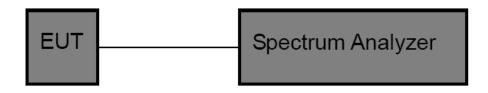
Frequency Separation	The channel spacing shall be a minimum of 25 kHz or two-thirds of the 20 dB Bandwidth

7.2 TEST PROCEDURE

The EUT was directly connected to the power meter and antenna output port as show in the block diagram as bellow.

- a. Set span= wide enough to capture the peaks of two adjacent channels.
- b. Set the RBW≥1% of the span
- c. Set the VBW≥3 RBW (30kHz/ 100kHz)
- d. Detector= Peak.
- e. Sweep time= auto couple
- f. Trace mode= max hold.
- g. Allow trace to fully stabilize.
- h. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

7.3 TEST SETUP



7.4 TEST INSTRUMENTS

Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
Spectrum Analyzer	R&S	FSP40	100154	Jul. 04, 2016	Jul. 03. 2017	1 year
Spectrum Analyzer	Agilent	E4407B	MY41440432	Jul. 04, 2016	Jul. 03. 2017	1 year

7.5 EUT OPERATING CONDITIONS

The EUT was set to continuously transmitting in the maximum power during the test.

7.6 TEST RESULTS

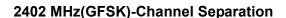
Version: ATL-FCCRF-15V01.00

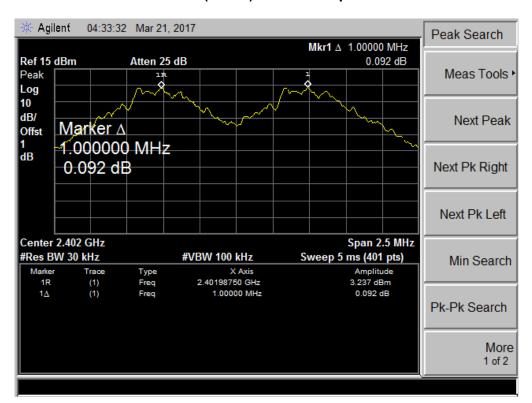


	GFSK Mode (1Mbps)	
Frequency (MHz)	Channel Separation (kHz)	Limit (kHz)
2402	1000.00	857.245
2441	1000.00	850.203
2480	1000.00	852.527
	π-DQPSK Mode (2Mbps)	
Frequency (MHz)	Channel Separation (kHz)	Limit (kHz)
2402	1000.00	826.00
2441	1000.00	828.00
2480	1000.00	824.67
sult: Frequency Separation	> two-thirds of the 20 dB bandwidth	PASS
	8-DPSK Mode (3Mbps)	
Frequency (MHz)	Channel Separation (kHz)	Limit (kHz)
2402	1000.00	813.33
2441	1000.00	812.00
		910.00
2480	1000.00	810.00

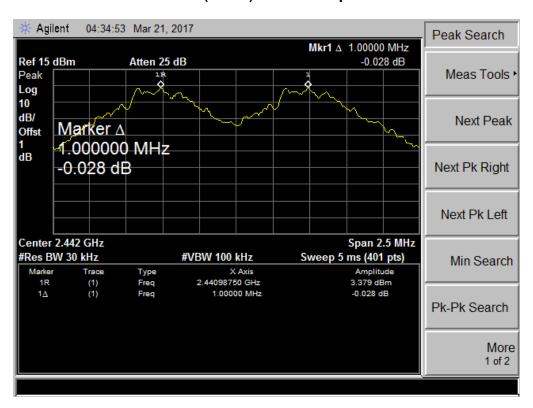
Version: ATL-FCCRF-15V01.00







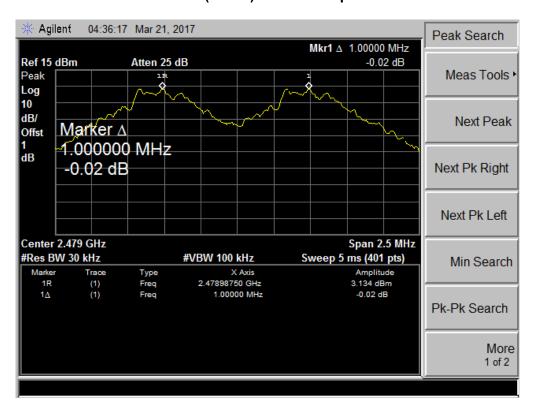
2441 MHz(GFSK)-Channel Separation



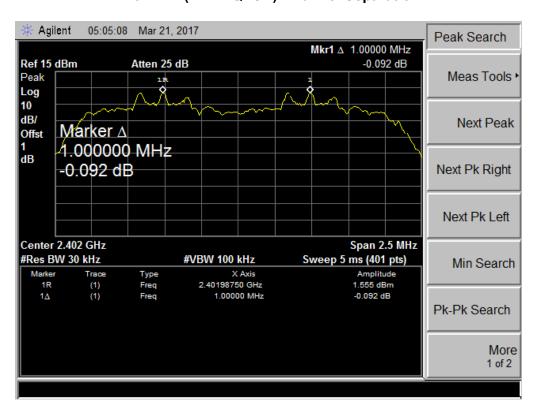
Version: ATL-FCCRF-15V01.00



2480 MHz(GFSK)-Channel Separation



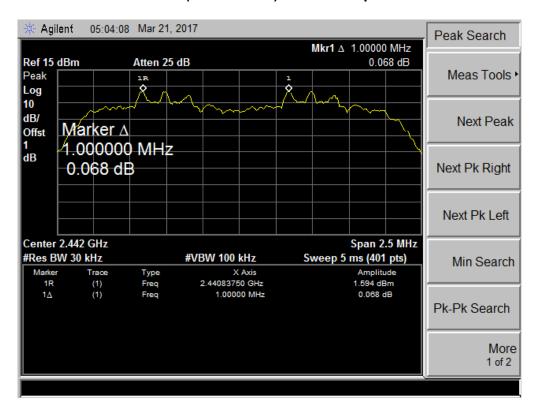
2402 MHz(π /4-DQPSK)-Channel Separation



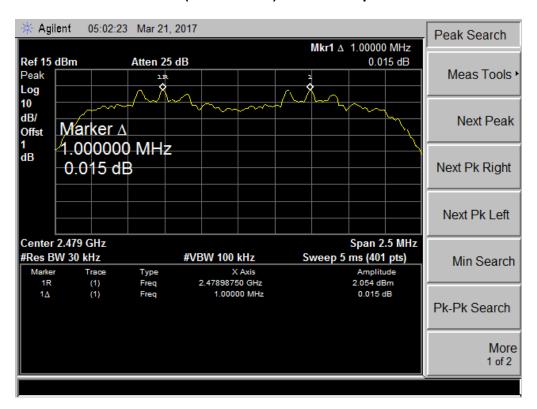
Version: ATL-FCCRF-15V01.00



2441 MHz(π /4-DQPSK)-Channel Separation

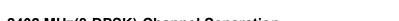


2480 MHz(π /4-DQPSK)-Channel Separation

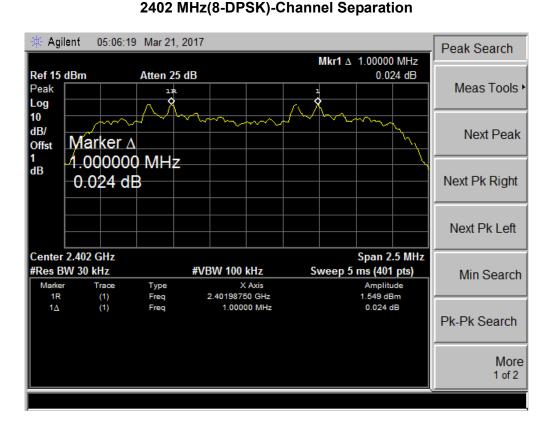


Version: ATL-FCCRF-15V01.00

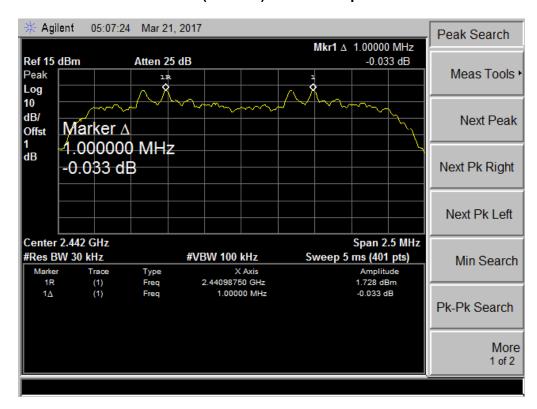




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2441 MHz(8-DPSK)-Channel Separation





2480 MHz(8-DPSK)-Channel Separation 🔆 Agilent 05:18:10 Mar 21, 2017 Peak Search Mkr1 A 1.00000 MHz Ref 15 dBm Atten 25 dB -0.325 dB Peak Meas Tools > Log 10 dB/ Next Peak Marker ∆ Offst 1 dB 1.000000 MHz -0.325 dB Next Pk Right Next Pk Left Center 2.479 GHz Span 2.5 MHz #Res BW 30 kHz **#VBW 100 kHz** Sweep 5 ms (401 pts) Min Search Type Freq Amplitude 1.905 dBm X Axis 2.47898750 GHz (1) (1) 1∆ 1.00000 MHz -0.325 dB Pk-Pk Search More 1 of 2

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8. NUMBER OF HOPPING

8.1 LIMITS

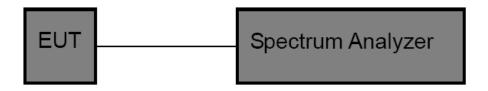
Hopping Number	Frequency hopping systems in 2400-2483.5 MHz band shall use at least 15 channels.
----------------	---

8.2 TEST PROCEDURE

The EUT was directly connected to the power meter and antenna output port as show in the block diagram as bellow.

- a. Set span= the frequency band of operation.
- b. Set the RBW≥1% of the span
- c. Set the VBW≥3 RBW (100kHz/ 300kHz)
- d. Detector= Peak.
- e. Sweep time= auto couple
- f. Trace mode= max hold.
- g. Allow trace to fully stabilize.

8.3 TEST SETUP



8.4 TEST INSTRUMENTS

Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
Spectrum Analyzer	R&S	FSP40	100154	Jul. 04, 2016	Jul. 03. 2017	1 year
Spectrum Analyzer	Agilent	E4407B	MY41440432	Jul. 04, 2016	Jul. 03. 2017	1 year

8.5 EUT OPERATING CONDITIONS

The EUT was set to continuously transmitting in the maximum power during the test.

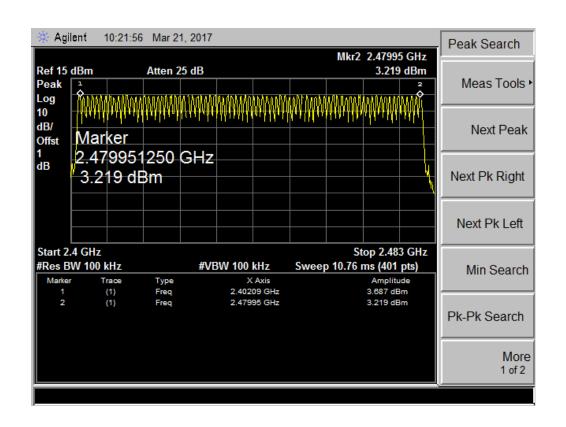
8.6 TEST RESULTS



GFSK Mode (1Mbps)

Measurement Number
Limit

79 >15



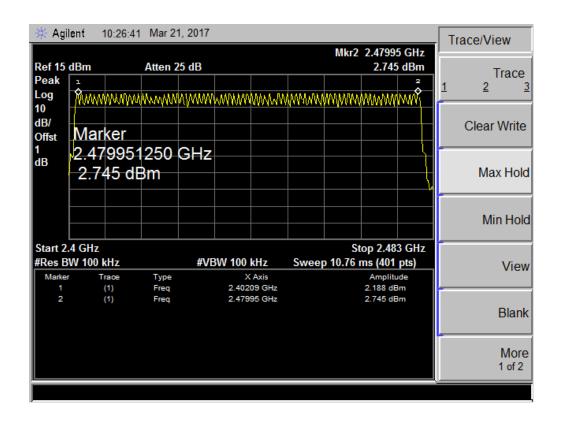
Version: ATL-FCCRF-15V01.00



π /4-DQPSK Mode (3Mbps)

Measurement Number Limit

79 >15



Version: ATL-FCCRF-15V01.00



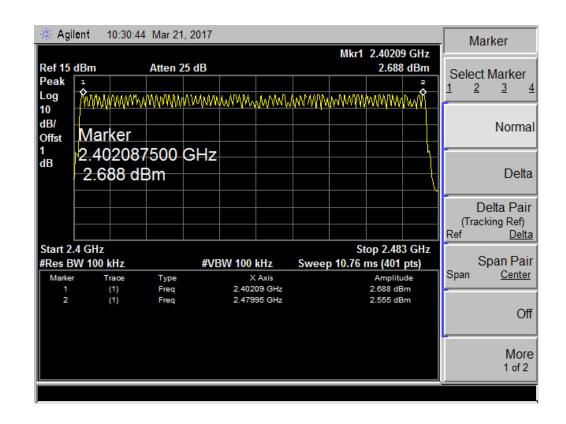
8-DPSK Mode (3Mbps)

Measurement Number

Limit

79

>15



Version: ATL-FCCRF-15V01.00



9. **DWELL TIME**

9.1 LIMITS

Dwell Time	The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied the number of hopping channels employed.

9.2 TEST PROCEDURE

The EUT was directly connected to the power meter and antenna output port as show in the block diagram as bellow.

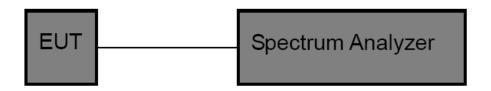
- a. Set span= zero
- b. Set the RBW= 1 MHz
- c. Set the VBW≥ RBW
- d. Detector= Peak.
- e. Sweep time= as necessary to capture the entire dwell time per hopping channel
- f. Trace mode= max hold
- g. Use the marker-delta function to determine the dwell time
- h. Set the EUT for DH5, DH3 and DH1 packet transmitting.
- i. Measure the maximum time duration of one single pulse.
- j. A Period Time = (channel number)*0.4

DH1 Time Slot: Reading * (1600/2)*31.6/(channel number)

DH3 Time Slot: Reading * (1600/4)*31.6/(channel number)

DH5 Time Slot: Reading * (1600/6)*31.6/(channel number)

9.3 TEST SETUP



9.4 TEST INSTRUMENTS

Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
Spectrum Analyzer	R&S	FSP40	100154	Jul. 04, 2016	Jul. 03. 2017	1 year
Spectrum Analyzer	Agilent	E4407B	MY41440432	Jul. 04, 2016	Jul. 03. 2017	1 year

9.5 EUT OPERATING CONDITIONS

The EUT was set to continuously transmitting in the maximum power during the test.

9.6 TEST RESULTS

Version: ATL-FCCRF-15V01.00



Hopping Mode GFSK(1Mbps) 2441MHz **Pulse Time Total of Dwell Period Time** Frequency Limit (MHz) (ms) (ms) (ms) **(s) 1DH1** 0.430 137.60 31.60 1DH3 1.700 272.00 31.60 <400 1DH5 3.000 320.00 31.60

DH1 Total of Dwell= Pulse Time*(1600/2)*31.6/79 DH3 Total of Dwell= Pulse Time*(1600/4)*31.6/79 DH5 Total of Dwell= Pulse Time*(1600/6)*31.6/79

π/4-DQPSK (2Mbps) 2441MHz

		` '		
Frequency (MHz)	Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)
2DH1	0.430	137.60	31.60	
2DH3	1.700	272.00	31.60	<400
2DH5	3.000	320.00	31.60	

2DH1 Total of Dwell= Pulse Time*(1600/2)*31.6/79 2DH3 Total of Dwell= Pulse Time*(1600/4)*31.6/79 2DH5 Total of Dwell= Pulse Time*(1600/6)*31.6/79

8-DPSK(3Mbps) 2441MHz

Frequency (MHz)	Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)
3DH1	0.430	137.60	31.60	
3DH3	1.700	272.00	31.60	<400
3DH5	3.000	320.00	31.60	

3DH1 Total of Dwell= Pulse Time*(1600/2)*31.6/79 3DH3 Total of Dwell= Pulse Time*(1600/4)*31.6/79 3DH5 Total of Dwell= Pulse Time*(1600/6)*31.6/79

Note: Test plots please refer following pages.

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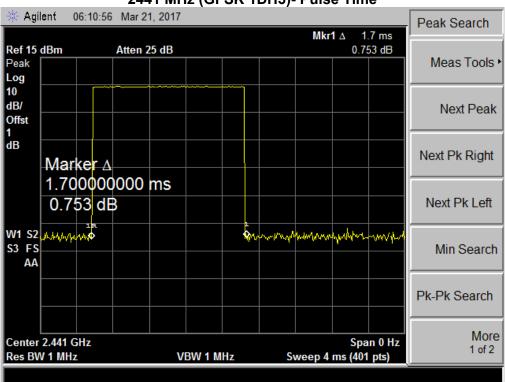
Res BW 1 MHz

2441 MHz (GFSK 1DH1)- Pulse Time Agilent 06:01:07 Mar 21, 2017 Peak Search Mkr1 Δ 430 μs -1.202 dB Ref 15 dBm Atten 25 dB Peak Meas Tools > Log 10 dB/ Next Peak Offst dB Next Pk Right Marker ∆ 430.0000000 µs -1.202 dB Next Pk Left yand yayayaman mashiylar yaydalyada bar ayah to W1 S2 Shorth James ar S3 FS Min Search AA Pk-Pk Search More Center 2.441 GHz Span 0 Hz 1 of 2



VBW 1 MHz

Sweep 2 ms (401 pts)



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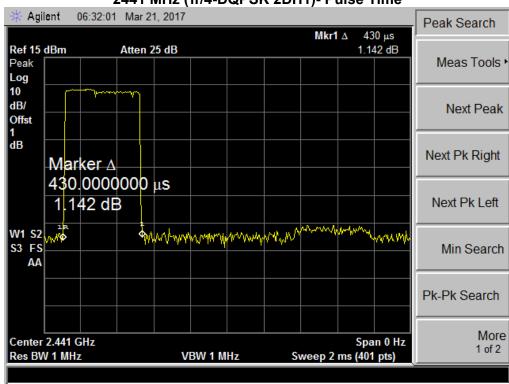
Res BW 1 MHz

2441 MHz (GFSK 1DH5)- Pulse Time 06:19:46 Mar 21, 2017 Agilent Peak Search Mkr1 ∆ 0.252 dB Ref 15 dBm Atten 25 dB Peak Meas Tools 1 Log 10 dB/ Next Peak Offst dB Next Pk Right Marker A 3.0000000000 ms 0.252 dB Next Pk Left W1 S2 S3 FS Min Search AA Pk-Pk Search More Center 2.441 GHz Span 0 Hz



VBW 1 MHz

Sweep 8 ms (401 pts)



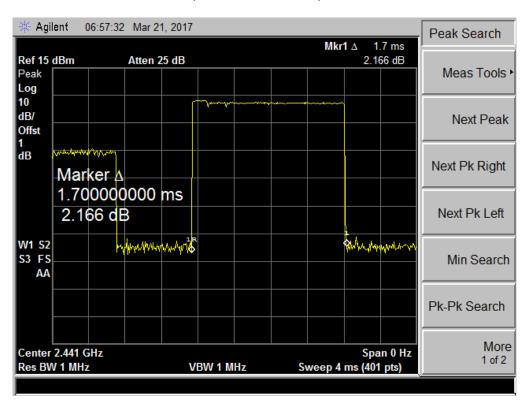
Version: ATL-FCCRF-15V01.00

Report No.: ATL-FCC20170319821

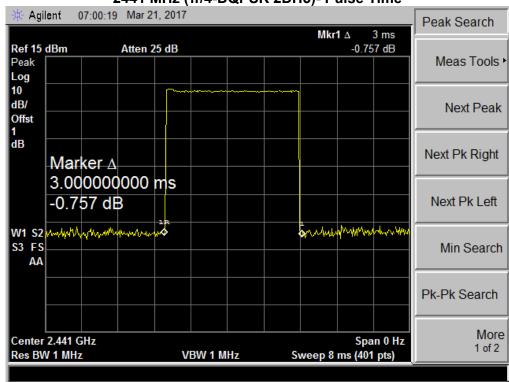
1 of 2



2441 MHz (π/4-DQPSK 2DH3)- Pulse Time



2441 MHz (π/4-DQPSK 2DH5)- Pulse Time

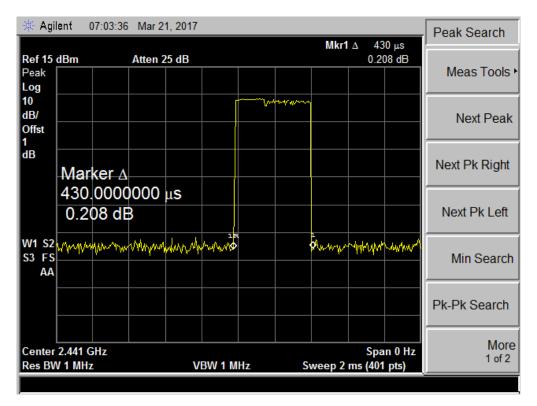


Version: ATL-FCCRF-15V01.00

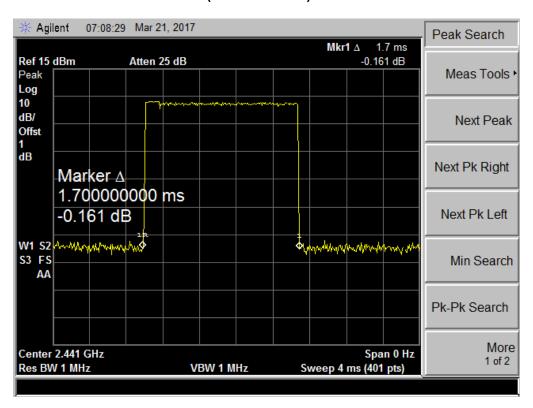


Report No.: ATL-FCC20170319821

2441 MHz (8-DPSK 3DH1)- Pulse Time

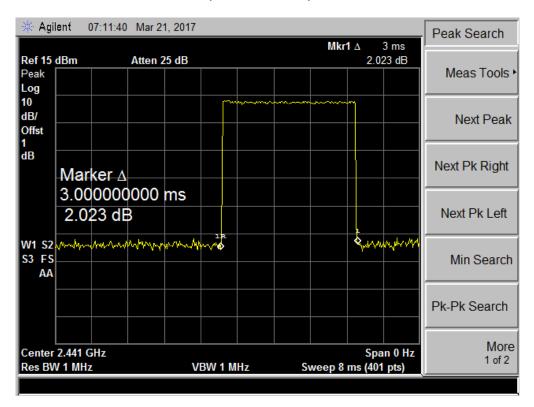


2441 MHz (8-DPSK 3DH3)- Pulse Time





2441 MHz (8-DPSK 3DH5)- Pulse Time



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10. BAND EDGES MEASUREMENT

10.1 LIMITS

Band Edges Requirement fre

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

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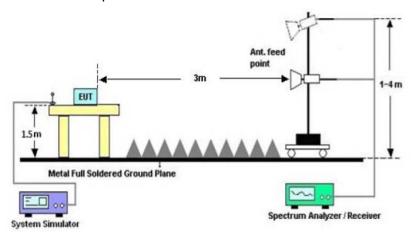
10.2 TEST PROCEDURE

The EUT was directly connected to the power meter and antenna output port as show in the block diagram as bellow.

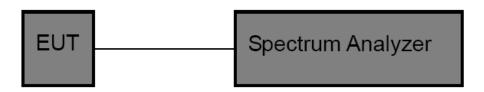
- Set frequency range to capture low band-edge from 2310 MHz up to 2390 MHz, and for up band-edge from 2483.5 MHz up to 2500 MHz
- b. For low band-edge set the equipment transmit at the lowest channel, and for up band-edge set the equipment transmit at the highest channel
- c. Set the VBW≥3 RBW (100kHz/ 300kHz) for conducted measurement
- d. For radiated measurements the RBW set to 1 MHz, and the VBW set to 1 MHz for peak measurements and 10 Hz for average measurement

10.3 TEST SETUP

(A) Radiated Emission Test Set-Up



(B) Conducted Emission Test Setup



10.4 TEST INSTRUMENTS

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Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
Broadband Antenna	R&S	VULB 9168	VULB 9168-456	Jul. 04, 2016	Jul. 03. 2017	1 year
Test Cable	N/A	R-01	N/A	Jul. 04, 2016	Jul. 03. 2017	1 year
Test Cable	N/A	R-02	N/A	Jul. 04, 2016	Jul. 03. 2017	1 year
EMI Test Receiver	R&S	ESCI	101324	Jul. 04, 2016	Jul. 03. 2017	1 year
Spectrum Analyzer	Agilent	E4407B	MY41440432	Jul. 04, 2016	Jul. 03. 2017	1 year
Antenna Mast	EM	SC100_1	N/A	N/A	N/A	N/A
Turn Table	EM	SC100	060531	N/A	N/A	N/A
50Ω Switch	Anritsu Corp	MP59B	6200983705	Jul. 04, 2016	Jul. 03. 2017	1 year
Spectrum Analyzer	R&S	FSP40	100154	Jul. 04, 2016	Jul. 03. 2017	1 year
Horn Antenna	R&S	HF906	10029	Jul. 04, 2016	Jul. 03. 2017	1 year
Amplifier	EM	EM-30180	060538	Jul. 04, 2016	Jul. 03. 2017	1 year

10.5 EUT OPERATING CONDITIONS

The EUT was set to continuously transmitting in the maximum power during the test.

10.6 TEST RESULTS

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Bandedge(Radiated Emission)

EUT:	Bluetooth headset	Model Name. :	G1608
Temperature:	26 ℃	Relative Humidity:	56%
Test Power:	DC 3.7V	Pressure :	1010 hPa
Test Mode:	TX GFSK Mode	Test Date :	2017-03-20

Deceluses						
Deceiver Reading	Detector	Polar	Corrected Factor	Emission Level	Limit	Margin
dBuV	Peak/Avg	H/V	dB	dBuV /m	dBuV /m	dB
Low Channel- 2402MHz						
51.66	Peak	H -3.00 48.66		48.66	74	-25.34
40.72	Avg	Н	-3.00	37.72	54	-16.28
94.46	Peak	Н	-3.12	91.34	Fundamental F	requency
89.75	Avg	Н	-3.12	86.63	Fundamental F	requency
52.02	Peak	V	-3.00	49.02	74	-24.98
39.66	Avg	V	-3.00	36.66	54	-17.34
92.08	Peak	V	-3.12	88.96	Fundamental F	requency
86.96	Avg	V	-3.12	83.84	Fundamental Frequency	
	High C	hannel-	2480MHz			-
93.38	Peak	Н	-2.5	90.88	Fundamental Frequency	
88.12	Avg	Н	-2.5	85.62	Fundamental F	requency
62.25	Peak	Н	-2.50	59.75	74	-14.25
51.52	Avg	Н	-2.50	49.02	54	-4.98
90.62	Peak	V	-2.5	88.12	Fundamental F	requency
85.92	Avg	V	-2.5	83.42	Fundamental F	requency
61.82	Peak	V	-2.50	59.32	74	-14.68
51.38	Avg	V	-2.50	48.88	54	-5.12
	80.08 86.96 93.38 88.12 62.25 51.52 90.62 85.92 61.82	Reading Detector dBuV Peak/Avg Low C 51.66 Peak 40.72 Avg 94.46 Peak 89.75 Avg 52.02 Peak 39.66 Avg 92.08 Peak 86.96 Avg High C 93.38 Peak Avg 62.25 Peak 51.52 Avg 90.62 Peak 85.92 Avg 61.82 Peak	Reading Detector Polar dBuV Peak/Avg H/V Low Channel-2 51.66 Peak H 40.72 Avg H 94.46 Peak H 89.75 Avg H 52.02 Peak V 39.66 Avg V 92.08 Peak V 86.96 Avg V High Channel-2 93.38 Peak H 88.12 Avg H 62.25 Peak H 51.52 Avg H 90.62 Peak V 85.92 Avg V 61.82 Peak V	Reading Detector Polar Factor dBuV Peak/Avg H/V dB Low Channel- 2402MHz 51.66 Peak H -3.00 40.72 Avg H -3.00 94.46 Peak H -3.12 89.75 Avg H -3.12 52.02 Peak V -3.00 39.66 Avg V -3.00 92.08 Peak V -3.12 86.96 Avg V -3.12 High Channel- 2480MHz H -2.5 88.12 Avg H -2.5 88.12 Avg H -2.5 62.25 Peak H -2.50 51.52 Avg H -2.50 90.62 Peak V -2.5 85.92 Avg V -2.5 61.82 Peak V -2.50	Reading Detector Polar Factor Level dBuV Peak/Avg H/V dB dBuV /m Low Channel- 2402MHz 51.66 Peak H -3.00 48.66 40.72 Avg H -3.00 37.72 94.46 Peak H -3.12 91.34 89.75 Avg H -3.12 86.63 52.02 Peak V -3.00 49.02 39.66 Avg V -3.00 36.66 92.08 Peak V -3.12 88.96 86.96 Avg V -3.12 83.84 High Channel- 2480MHz 93.38 Peak H -2.5 90.88 88.12 Avg H -2.5 85.62 62.25 Peak H -2.50 59.75 51.52 Avg H -2.50 49.02 90.62 Peak V -2.5 88.12 <	Reading

Remark:

Emission Level= Read Level+ Correct Factor

Margin= Emission Level-Limit

No report for the emission which more than 10 dB below the prescribed limit.



 EUT:
 Bluetooth headset
 Model Name.
 G1608

 Temperature:
 26 °C
 Relative Humidity:
 56%

 Test Power:
 DC 3.7V
 Pressure:
 1010 hPa

 Test Mode:
 TX GFSK π /4-DQPSK Mode
 Test Date:
 2017-03-20

. oot modo	17. 01 01 / 1	ix of ortanione lost buto.					
Freq.	Deceiver Reading	Detector	Polar	Corrected Factor	Emission Level	Limit	Margin
MHz	dBuV	Peak/Avg	H/V	dB	dBuV /m	dBuV /m	dB
	Low Channel- 2402MHz						
2390	51.66	Peak	Н	-3.00	48.66	74	-25.34
2390	40.78	Avg	Н	-3.00	37.78	54	-16.22
2402	93.57	Peak	Н	-3.12	90.45	Fundamental	Frequency
2402	88.99	Avg	Н	-3.12	85.87	Fundamental	Frequency
2390	52.44	Peak	V	-3.00	49.44	74	-24.56
2390	40.16	Avg	V	-3.00	37.16	54	-16.84
2402	92.57	Peak	V	-3.12	89.45	Fundamental Frequency	
2402	87.35	Avg	V -3.12 84.23 Fundamenta		Fundamental	Frequency	
	_	High C	hannel-	2480MHz		,	
2480	93.02	Peak	Н	-2.50	90.52	Fundamental	Frequency
2480	87.48	Avg	Н	-2.50	84.98	Fundamental	Frequency
2483.5	62.45	Peak	Н	-2.50	59.95	74	-14.05
2483.5	52.27	Avg	Н	-2.50	49.77	54	-4.23
2480	89.57	Peak	V	-2.50	87.07	Fundamental	Frequency
2480	84.75	Avg	V	-2.50	82.25	Fundamental	Frequency
2483.5	60.87	Peak	V	-2.50	58.37	74	-15.63
2483.5	51.03	Avg	V	-2.50	48.53	54	-5.47

Remark:

Emission Level= Read Level+ Correct Factor

Margin= Emission Level-Limit

No report for the emission which more than 10 dB below the prescribed limit.

Version: ATL-FCCRF-15V01.00



EUT:	Bluetooth headset			Mod	del Name.	:	G1608		
Temperature:	26 ℃		ı	Relative Humidity: 56%					
Test Power:	DC 3.7V				ressure: 1010 hPa				
Test Mode:	TX 8-DPSK M	ode	•	Tes	t Date :		2017-	03-20	
Freq.	Deceiver Reading	Detector	Pol	lar	Corrected Factor	Emis Le	sion vel	Limit	Margin
MHz	dBuV	Peak/Avg	H/	V	dB	dBu	V /m	dBuV /m	dB
		Low C	hann	el- 2	2402MHz				
2390	50.57	Peak	Н	l	-3.00	47	.57	74	-26.43
2390	39.14	Avg	Н		-3.00	36	.14	54	-17.86
2402	93.44	Peak	Н		-3.12	90	.32	Fundamental F	requency
2402	88.36	Avg	Н		-3.12	85	.24	Fundamental F	requency
2390	50.79	Peak	V	′	-3.00	47	.79	74	-26.21
2390	39.54	Avg	V	'	-3.00	36	.54	54	-17.46
2402	92.64	Peak	V	'	-3.12	89	.52	Fundamental Frequency	
2402	87.85	Avg	_	V -3.12 84		84	.73	Fundamental Frequency	
		High C	hann	iel-	2480MHz				
2480	92.42	Peak	Н		-2.50	89	.92	Fundamental F	requency
2480	86.85	Avg	Н		-2.50	84	.35	Fundamental F	requency
2483.5	61.18	Peak	Н		-2.50	58	.68	74	-15.32
2483.5	51.17	Avg	Н		-2.50	48	.67	54	-5.33
2480	90.09	Peak	V	′	-2.50	87	.59	Fundamental F	requency
2480	85.13	Avg	V	'	-2.50	82	.63	Fundamental F	requency
2483.5	60.52	Peak	V	<u>'</u>	-2.50	58	.02	74	-15.98
2483.5	50.63	Avg	V	<u>'</u>	-2.50	48	.13	54	-5.87

Remark:

Emission Level= Read Level+ Correct Factor

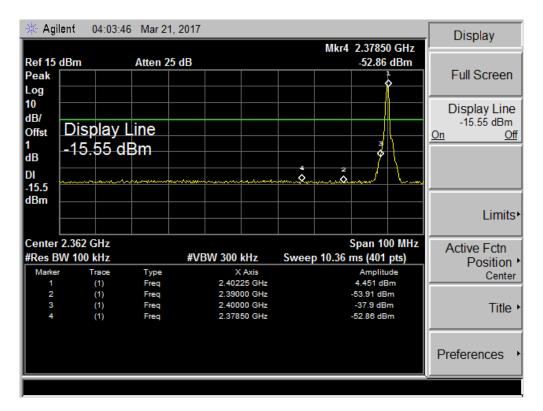
Margin= Emission Level-Limit

No report for the emission which more than 10 dB below the prescribed limit.

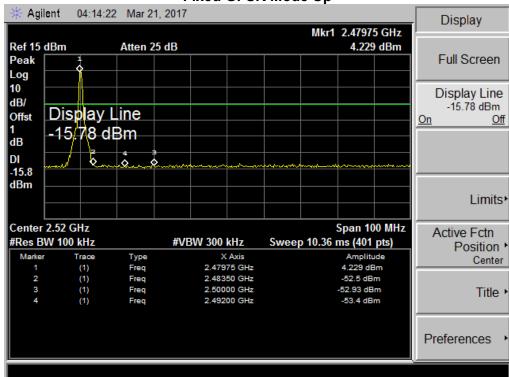


Bandedge(Conducted Emission)

Fixed GFSK Mode Low



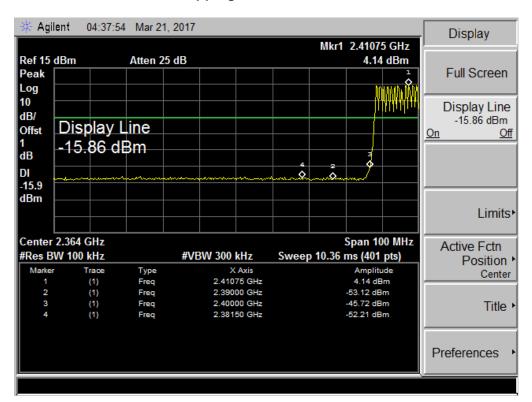
Fixed GFSK Mode Up



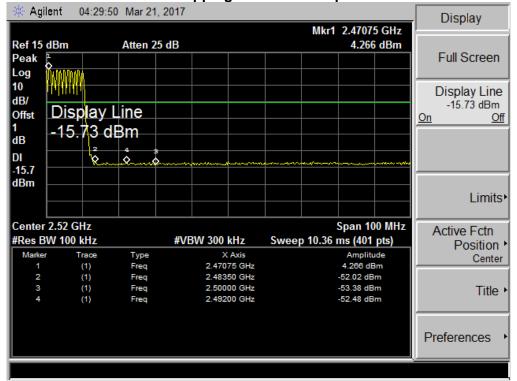
Version: ATL-FCCRF-15V01.00



Hopping GFSK Mode Low



Hopping GFSK Mode Up

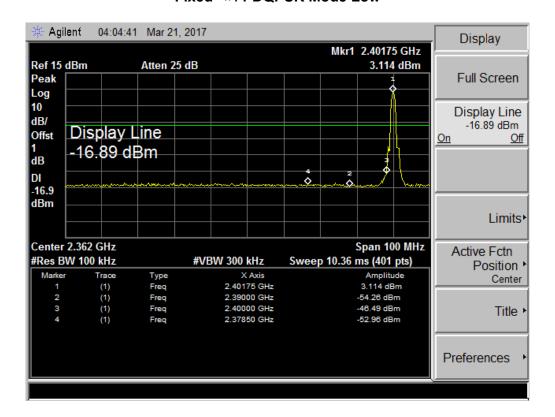


Version: ATL-FCCRF-15V01.00

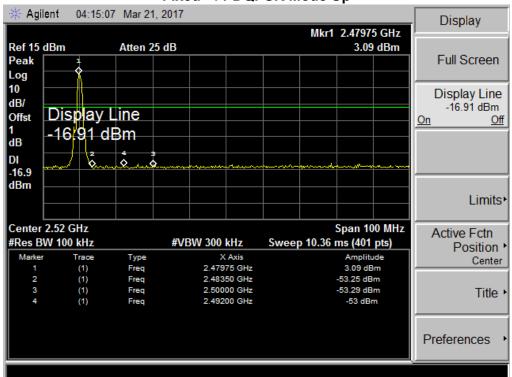


Fixed π/4-DQPSK Mode Low

Report No.: ATL-FCC20170319821

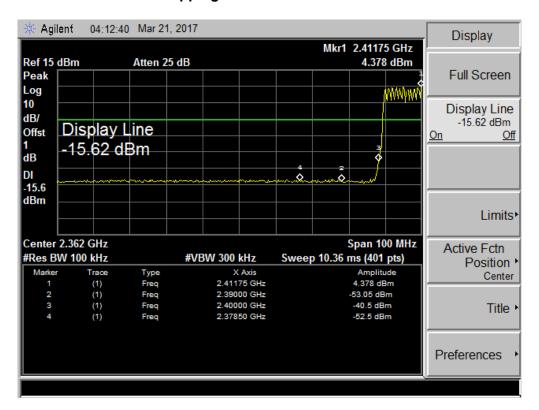


Fixed π /4-DQPSK Mode Up

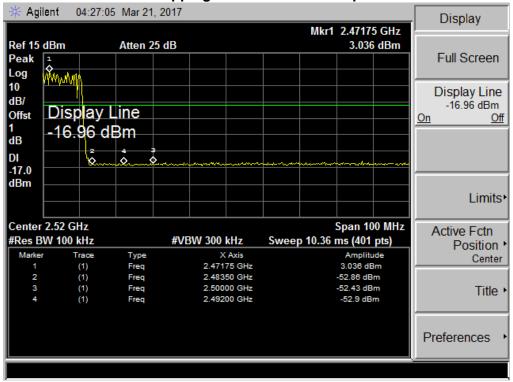




Hopping π /4-DQPSK Mode Low



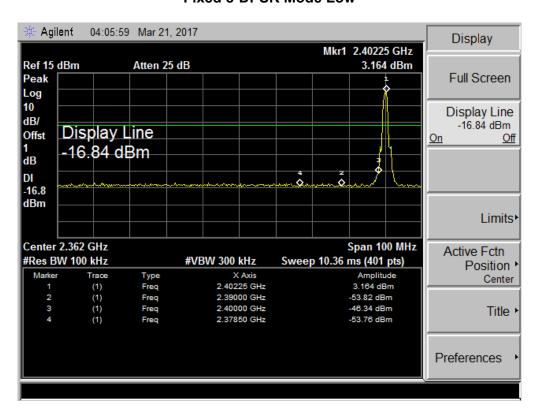
Hopping π /4-DQPSK Mode Up



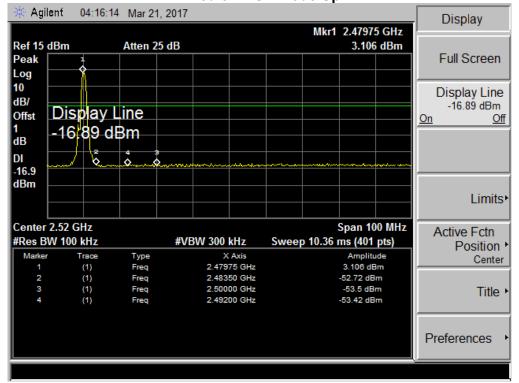
Version: ATL-FCCRF-15V01.00



Fixed 8-DPSK Mode Low



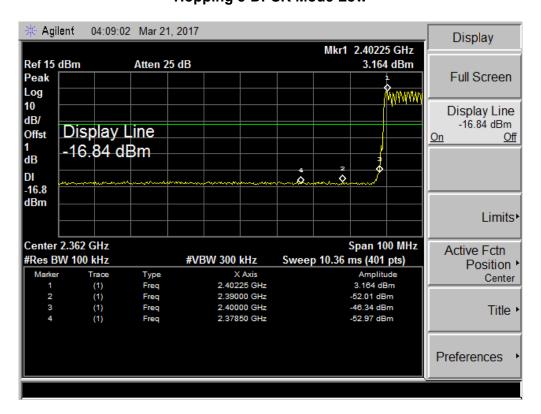
Fixed 8-DPSK Mode Up



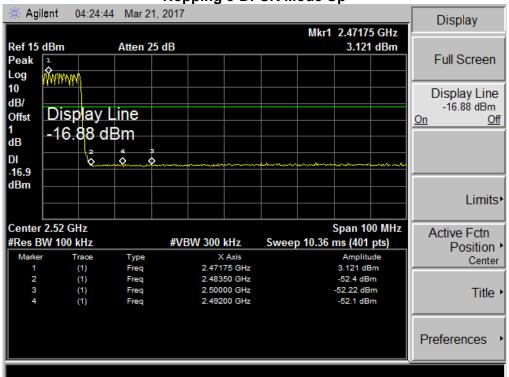
Version: ATL-FCCRF-15V01.00



Hopping 8-DPSK Mode Low



Hopping 8-DPSK Mode Up



Version: ATL-FCCRF-15V01.00



11. ANTENNA REQUIREMENT

11.1 REQUIREMENT

Antenna Requirement (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 an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. 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.
Antenna Requirement	If transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

11.2 ANTENNA CONNECTOR CONSTRUCTION

The EUT antenna is a Chip Antenna. And the maximum gain of this antenna is 2.12 dBi. It complies with the standard requirement.

*****END OF REPORT*****

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