FCC Radio Test Report

FCC ID: 2ABQOAMK-K95-02B

FCC 47 CFR Part 15 Subpart C
RSS 247 Issue 1:2015

Product	:	Cycling Bluetooth Speaker
Trade Name	:	MEILUODI
Model No.	:	AMK-K95-02B
Serise No.	:	N/A

Issued for

Dongguan Meiluodi Electronics Co., Ltd

No.16, Zhenxing Road, Shangjiao, Chang'an, Dongguan, Guangdong, 523878 China

Issued by

Shenzhen ATL Testing Technology Co., Ltd.

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TEST RESULT CERTIFICATION

Product ..... :	Cycling Bluetooth Speaker
Applicant ..... :	Dongguan Meiluodi Electronics Co., Ltd
Address ..... :	No.16, Zhenxing Road, Shangjiao, Chang'an, Dongguan, Guangdong, 523878 China
Manufacturer ..... :	Dongguan Meiluodi Electronics Co., Ltd
Address ..... :	No.16, Zhenxing Road, Shangjiao, Chang'an, Dongguan, Guangdong, 523878 China
Model No..... :	AMK-K95-02B
Standards ..... :	FCC Part 15 Subpart C (15.247) RSS 247 Issue 1: 2015
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 of receipt of test item	2016-07-19
Date(s) of performance of test.....	2016-07-20 to 2016-07-24
Test Result .....:	**Pass**

Testing by	:	Sifeifei	**Date** :	2016-07-23
		(Si feifei)		
Check by	:	XieLingling	**Date** :	2016-07-23
		(Xie Lingling)		
Approved by	:	Xu Peng	**Date** :	2016-07-24
		(Xu Peng)		

Table of Contents **Page**

Table of Contents Page

Table of Contents **Page**

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(c)	RSS 247 5.5	Band Edge Measurement	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.

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 **y ± U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %.

A. Conducted Emission :

The measurement uncertainty is evaluated as ± 3.2 dB.

B. Radiated Measurement :

The measurement uncertainty is evaluated as ± 3.7 dB.

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Cycling Bluetooth Speaker
Model Name	AMK-K95-02B
Additional Model Number(s)	N/A
Model Difference	N/A
Frequency Range	Bluetooth V2.1+EDR: 2402~2480 MHz
Modulation Type	Bluetooth: GFSK/ π /4-DQPSK/8-DPSK
RF Output Power	GFSK: 4.765 dBm 8-DPSK: 3.514 dBm
Antenna Type	PCB Antenna (Gain: 0 dBi)
Power Source	DC Powered by host system or Battery .
Power Rating	DC 5V from USB interference. DC 3.7V from Battery.
Remark	More details EUT technical specifications, please refer to the User's Manual.

Note:

(1) 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.

(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

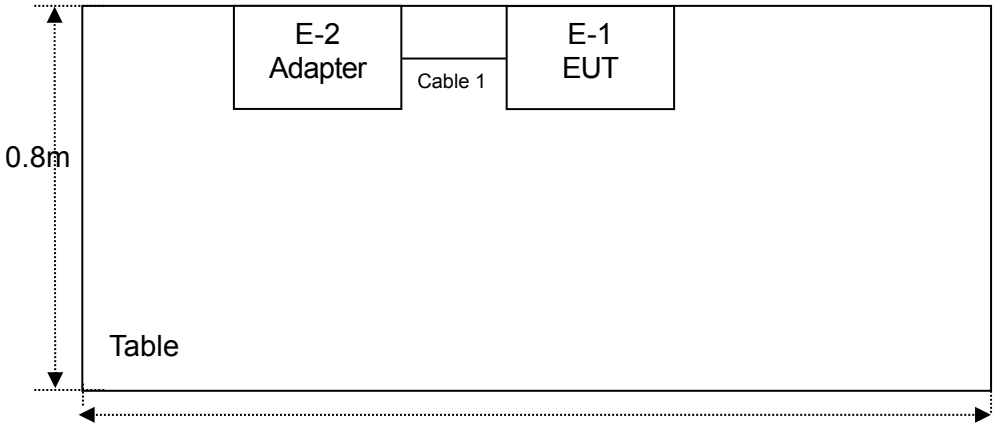
For Conducted Test	
Final Test Mode	Description
Mode 1	BT TX(GFSK) Mode

For Radiated Test	
Final Test Mode	Description
Mode 1	BT TX(GFSK) Mode
Mode 2	BT TX(8-DPSK) Mode

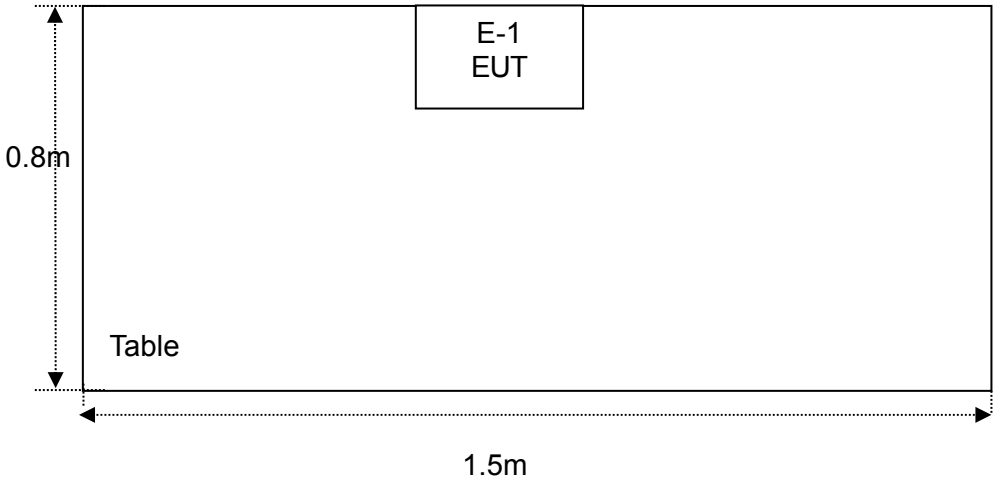
Note:
(1) Software used to control the EUT for staying in continuous transmitting mode was programmed. After verification, all tests were carried out with the worst case test modes as shown below.
(2) GFSK Mode:
Channel (2402/2441/2480 MHz) with DH1 data packet were chosen for full testing.
(3) 8-DPSK Mode:
Channel (2402/2441/2480 MHz) with 3DH1 data packet were chosen for full testing.
(4) 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.

2.3 DESCRIPTION OF TEST SETUP

Conducted Emission



Radiated Emission



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.	Series No.	Note
E-1	Cycling Bluetooth Speaker	MEILUODI	AMK-K95-02B	N/A	EUT
E-2	Adapter	HUAWEI	N/A	DOC	

Item	Shielded Type	Ferrite Core	Length	Note
1	NO	NO	15cm	

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.
(3) “YES” means “shielded” “with core”; “NO” means “unshielded” “without core”.

2.5 EUT Exercise Software

Test Software	**BK3221 RF Test**
GFSK: The command set for RF power-DEF 8-DPSK:The command set for RF power-DEF	

3. CONDUCTED EMISSION TEST

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

FREQUENCY (MHz)	Quasi-peak	Average
	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.

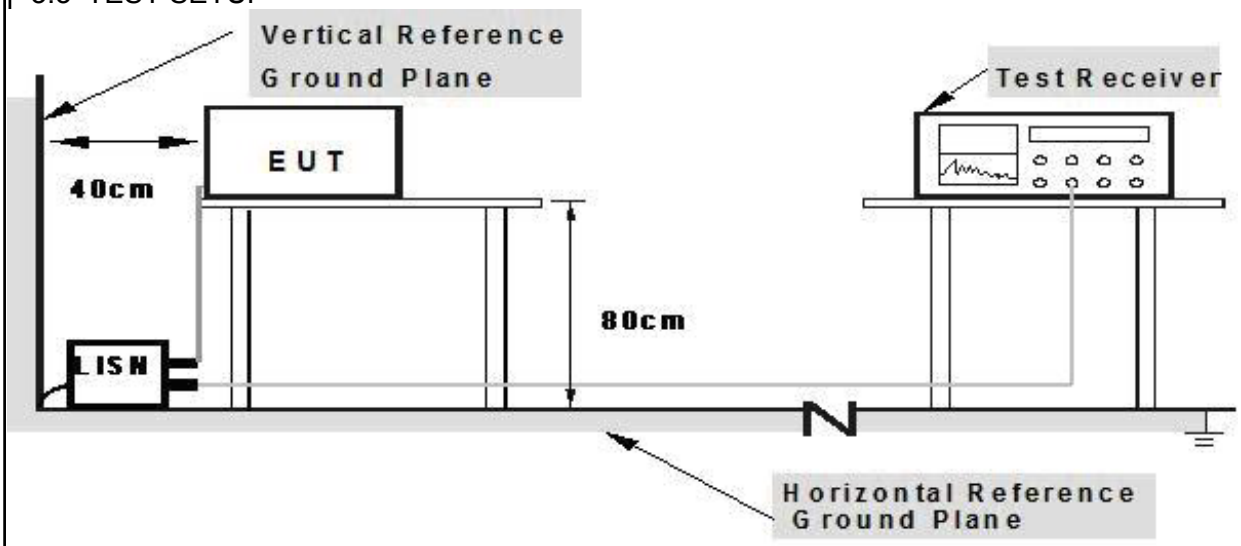
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

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.

3.3 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.4 TEST INSTRUMENTS

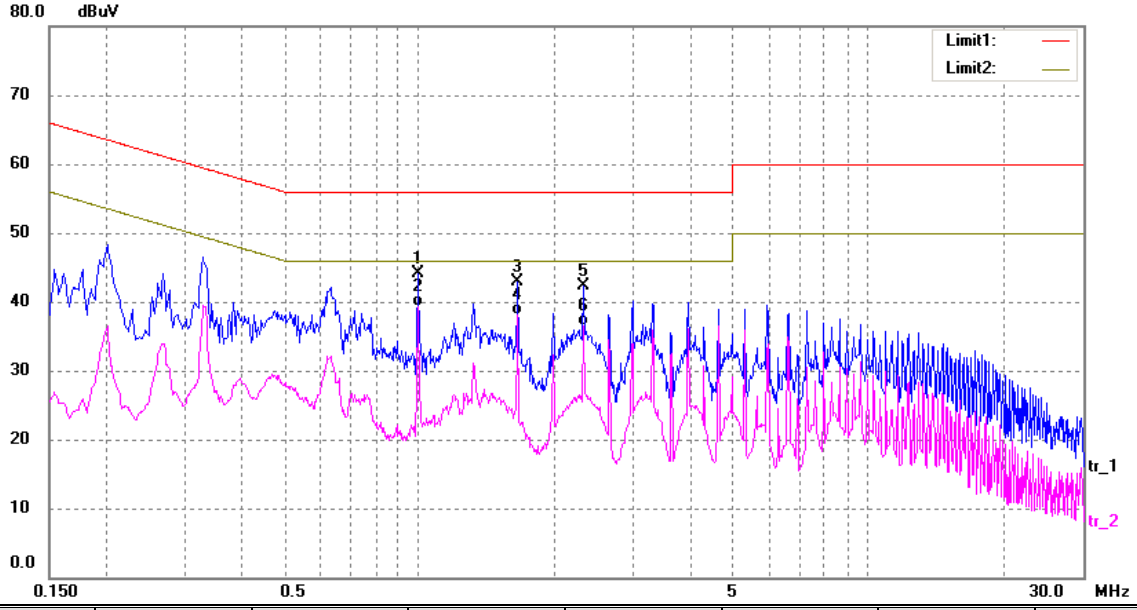
Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
LISN	R&S	NSLK81	8126466	Jul. 04, 2016	Jul. 03. 2017	1 year
LISN	R&S	NSLK81	8126487	Jul. 04, 2016	Jul. 03. 2017	1 year
50Ω Switch	ANRITSU CORP	MP59B	6200983704	Jul. 04, 2016	Jul. 03. 2017	1 year
Test Cable	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：	Cycling Bluetooth Speaker	Model Name. ：	AMK-K95-02B
Temperature：	26 ℃	Relative Humidity：	56%
Pressure：	1010hPa	Test Date：	2016-07-23
Test Mode：	Mode 1	Phase：	Line
Test Voltage ：	120V/ 60Hz		

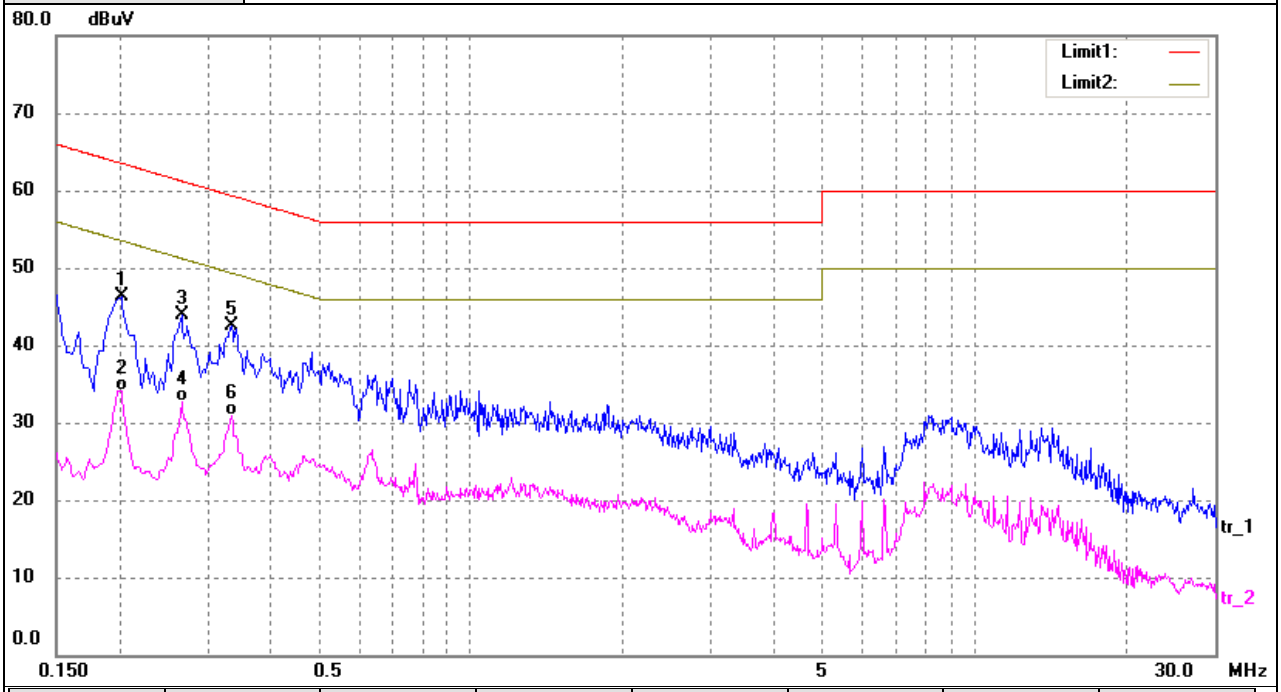


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.9940	34.46	9.68	44.14	56.00	-11.86	QP
2*	0.9940	29.57	9.68	39.25	46.00	-6.75	AVG
3	1.6540	33.19	9.77	42.96	56.00	-13.04	QP
4	1.6540	28.31	9.77	38.08	46.00	-7.92	AVG
5	2.3140	32.52	9.86	42.38	56.00	-13.62	QP
6	2.3140	26.61	9.86	36.47	46.00	-9.53	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

EUT：	Cycling Bluetooth Speaker	Model Name. ：	AMK-K95-02B
Temperature：	26 ℃	Relative Humidity：	56%
Pressure：	1010hPa	Test Date：	2016-07-23
Test Mode：	Mode 1	Phase：	Neutral
Test Voltage ：	120V/ 60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2020	36.75	9.50	46.25	63.53	-17.28	QP
2	0.2020	24.54	9.50	34.04	53.53	-19.49	AVG
3	0.2660	34.43	9.50	43.93	61.24	-17.31	QP
4	0.2660	23.21	9.50	32.71	51.24	-18.53	AVG
5*	0.3340	33.05	9.50	42.55	59.35	-16.80	QP
6	0.3340	21.36	9.50	30.86	49.35	-18.49	AVG

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.

FREQUENCY (MHz)	Field Strength (uV/m at meter)	Measurement Distance (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)

FREQUENCY (MHz)	Class A (dBuV/m)(at 3 M)		Class B (dBuV/m)(at 3 M)	
	Peak	Average		Peak
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	10th carrier harmonic
RB/ VB (emission in restricted band)	1MHz/ 3 MHz for Peak, 1MHz/ 10Hz for Average

4.2 TEST PROCEDURE

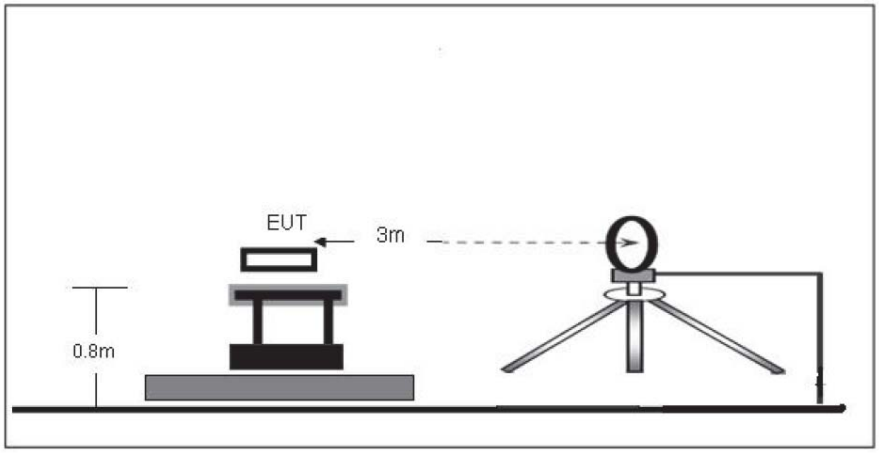
a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.

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.

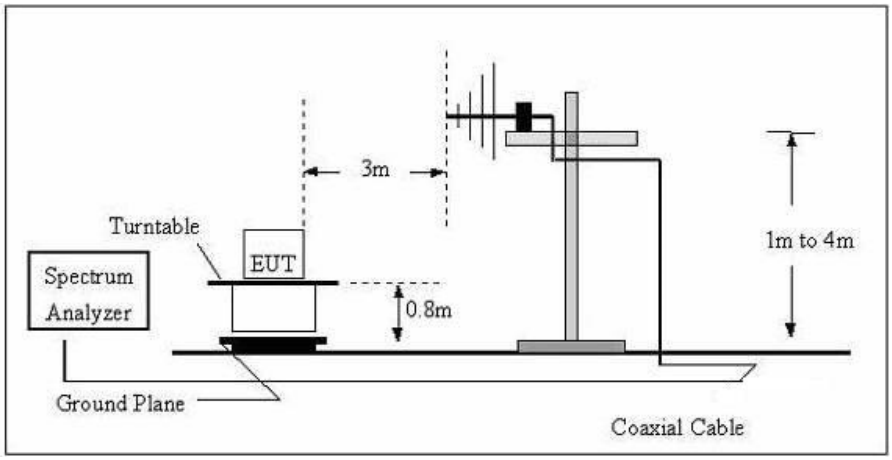
Note:
Both horizontal and vertical antenna polarities were tested.
And performed pretest to three orthogonal axis. The worst case emissions were reported.

4.3 TEST SETUP

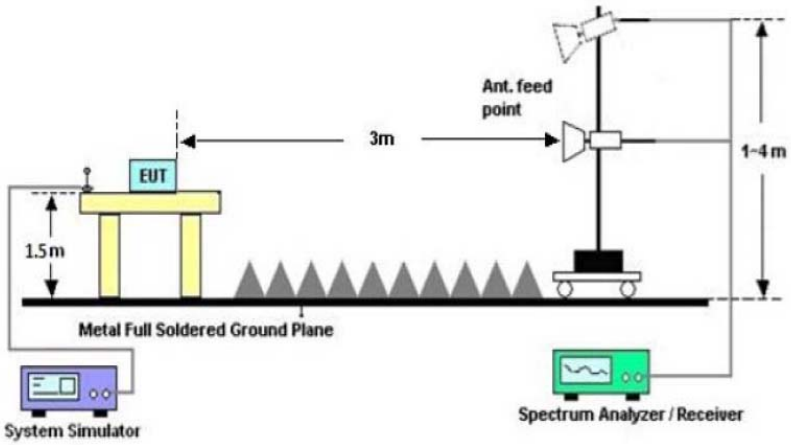
(A) Radiated Emission Test Set-Up Frequency 9KHz~30MHz



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



(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

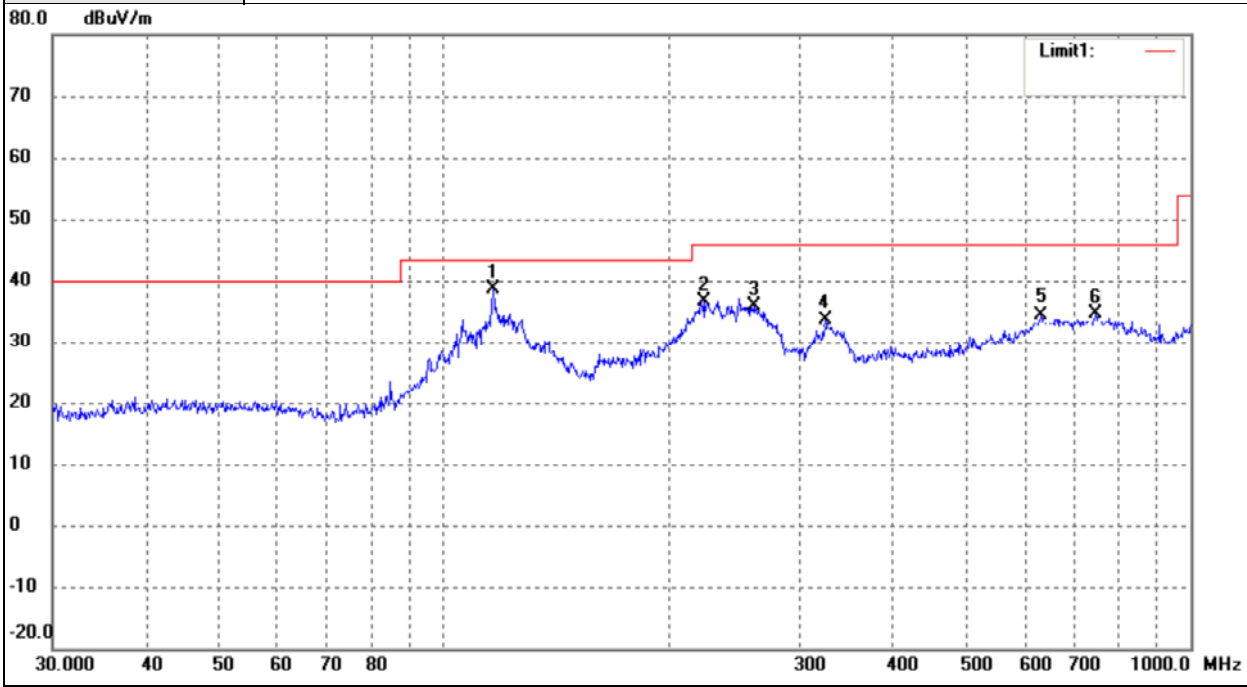
4.5 EUT OPERATING CONDITIONS

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.

4.6 TEST RESULTS

4.6.1 TEST RESULTS (Bellow 1GHz)

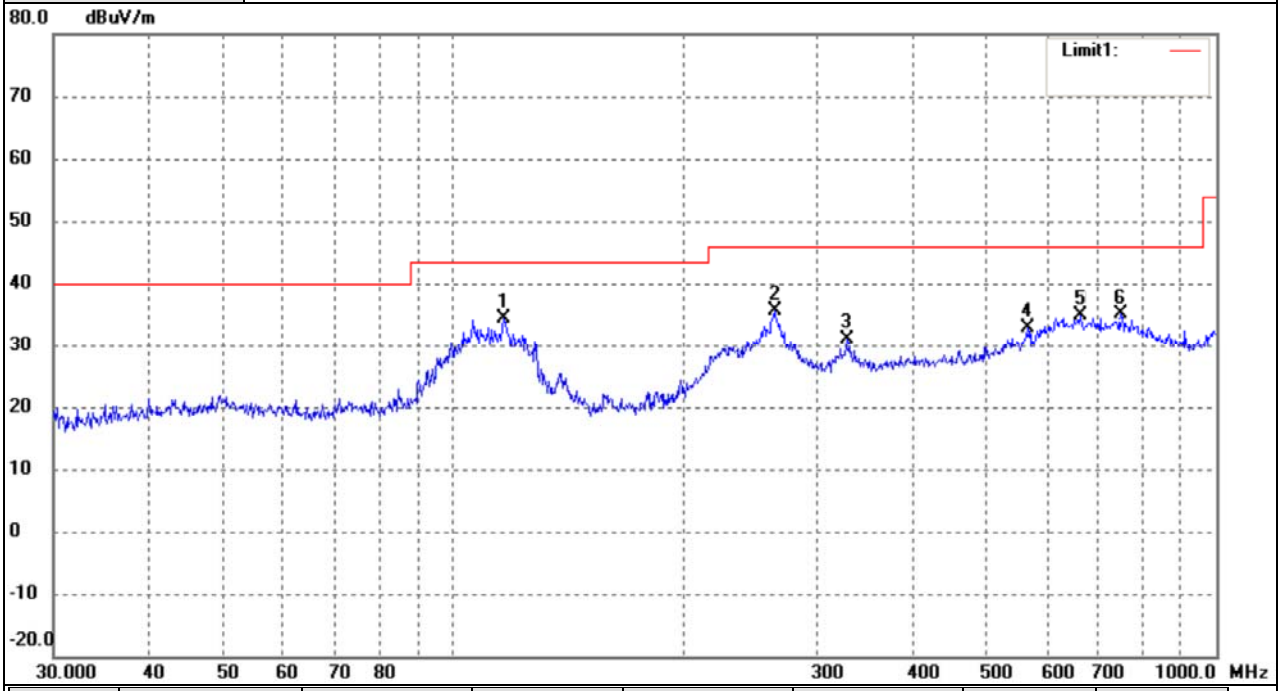
EUT：	Cycling Bluetooth Speaker	Model Name. ：	AMK-K95-02B
Temperature：	26 ℃	Relative Humidity：	56%
Pressure：	1010 hPa	Test Date：	2016-07-23
Test Mode ：	BT TX Mode	Polarization：	Horizontal
Test Power ：	DC 5V		



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	116.5401	33.76	4.83	38.59	43.50	-4.91	peak
2	222.9502	28.82	7.85	36.67	46.00	-9.33	peak
3	260.1444	26.18	9.69	35.87	46.00	-10.13	peak
4	324.5432	22.18	11.03	33.21	46.00	-12.79	peak
5	633.6218	17.35	16.32	33.67	46.00	-12.33	peak
6	748.2342	14.95	18.94	33.89	46.00	-12.11	peak

Remark:
Factor = Antenna Factor + Cable Loss.

EUT：	Cycling Bluetooth Speaker	Model Name. ：	AMK-K95-02B
Temperature：	26 ℃	Relative Humidity：	56%
Pressure：	1010 hPa	Test Date：	2016-07-23
Test Mode ：	BT TX Mode	Polarization：	Vertical
Test Power ：	DC 5V		



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
1	116.5401	29.63	4.83	34.46	43.50	-9.04	peak
2	263.8190	25.64	9.96	35.60	46.00	-10.40	peak
3	327.6549	20.00	11.43	31.43	46.00	-14.57	peak
4	568.3267	17.13	15.62	32.73	46.00	13.27	peak
5	663.4729	17.01	17.76	34.77	46.00	-11.23	peak
6	750.3421	16.55	18.34	34.89	46.00	-11.11	peak

Remark:
Factor = Antenna Factor + Cable Loss.

4.6.2 TEST RESULTS (Above 1GHz)

EUT：	Cycling Bluetooth Speaker	Model Name. ：	AMK-K95-02B
Temperature：	26 ℃	Relative Humidity：	56%
Test Power：	DC 3.7V	Pressure：	1010 hPa
Test Mode：	GFSK TX 2402MHz	Test Date：	2016-07-23

Freq.	Deceiver Reading	Detector	Polar	Corrected Factor	Emission Level	Limit	Margin
MHz	dBuV	Peak/Avg	H/V	dB	dBuV /m	dBuV /m	dB
4804	62.75	Peak	H	-3.59	59.16	74	14.84
4804	51.61	Avg	H	-3.59	48.02	54	5.98
7206	58.03	Peak	H	-0.52	57.51	74	16.49
7206	45.18	Avg	H	-0.52	44.66	54	9.34
---	---	Peak	H			74	
---	---	Avg	H			54	
4804	62.73	Peak	V	-3.59	59.14	74	14.86
4804	51.36	Avg	V	-3.59	47.77	54	6.23
7206	56.94	Peak	V	-0.52	56.42	74	17.58
7206	44.18	Avg	V	-0.52	43.66	54	10.34
---	---	Peak	V			74	
---	---	Avg	V			54	

Remark:
Emission Level= Read Level+ Correct Factor
Margin= Emission Level-Limit
The testing has been conformed to 10^{th} harmonics(1G~25G)
Other harmonics emission are lower then 20dB below the allowable Limit

EUT：	Cycling Bluetooth Speaker	Model Name. ：	AMK-K95-02B
Temperature：	26 ℃	Relative Humidity：	56%
Test Power：	DC 3.7V	Pressure：	1010 hPa
Test Mode：	GFSK TX 2441MHz	Test Date：	2016-07-23

Freq.	Deceiver Reading	Detector	Polar	Corrected Factor	Emission Level	Limit	Margin
MHz	dBuV	Peak/Avg	H/V	dB	dBuV /m	dBuV /m	dB
4882	62.27	Peak	H	-3.49	58.78	74	15.22
4882	50.04	Avg	H	-3.49	46.55	54	7.45
7323	58.80	Peak	H	-0.47	58.33	74	15.67
7323	44.59	Avg	H	-0.47	44.12	54	9.88
---	---	Peak	H			74	
---	---	Avg	H			54	
4882	62.56	Peak	V	-3.49	59.07	74	14.93
4882	49.95	Avg	V	-3.49	46.46	54	7.54
7323	59.53	Peak	V	-0.47	59.06	74	14.94
7323	45.91	Avg	V	-0.47	45.44	54	8.56
---	---	Peak	V			74	
---	---	Avg	V			54	

Remark:
Emission Level= Read Level+ Correct Factor
Margin= Emission Level-Limit
The testing has been conformed to 10^{th} harmonics(1G~25G)
Other harmonics emission are lower then 20dB below the allowable Limit

EUT：	Cycling Bluetooth Speaker	Model Name. ：	AMK-K95-02B
Temperature：	26 ℃	Relative Humidity：	56%
Test Power：	DC 3.7V	Pressure：	1010 hPa
Test Mode：	GFSK TX 2480MHz	Test Date：	2016-07-23

Freq.	Deceiver Reading	Detector	Polar	Corrected Factor	Emission Level	Limit	Margin
MHz	dBuV	Peak/Avg	H/V	dB	dBuV /m	dBuV /m	dB
4960	62.39	Peak	H	-3.41	58.98	74	15.02
4960	50.66	Avg	H	-3.41	47.25	54	6.75
7440	57.21	Peak	H	-0.42	56.79	74	17.21
7440	43.3	Avg	H	-0.42	42.88	54	11.12
---	---	Peak	H			74	
---	---	Avg	H			54	
4960	63.05	Peak	V	-3.41	59.64	74	14.36
4960	50.29	Avg	V	-3.41	46.88	54	7.12
7440	58.17	Peak	V	-0.42	57.75	74	16.25
7440	44.1	Avg	V	-0.42	43.68	54	10.32
---	---	Peak	V			74	
---	---	Avg	V			54	

Remark:
Emission Level= Read Level+ Correct Factor
Margin= Emission Level-Limit
The testing has been conformed to 10^{th} harmonics(1G~25G)
Other harmonics emission are lower then 20dB below the allowable Limit

EUT：	Cycling Bluetooth Speaker	Model Name. ：	AMK-K95-02B
Temperature：	26 ℃	Relative Humidity：	56%
Test Power：	DC 3.7V	Pressure：	1010 hPa
Test Mode：	8-DPSK TX 2402MHz	Test Date：	2016-07-23

Freq.	Deceiver Reading	Detector	Polar	Corrected Factor	Emission Level	Limit	Margin
MHz	dBuV	Peak/Avg	H/V	dB	dBuV /m	dBuV /m	dB
4804	62.20	Peak	H	-3.59	58.61	74	15.39
4804	49.72	Avg	H	-3.59	46.13	54	7.87
7206	59.18	Peak	H	-0.52	58.66	74	15.34
7206	45.24	Avg	H	-0.52	44.72	54	9.28
---	---	Peak	H			74	
---	---	Avg	H			54	
4804	62.10	Peak	V	-3.59	58.51	74	15.49
4804	50.07	Avg	V	-3.59	46.48	54	7.52
7206	56.78	Peak	V	-0.52	56.26	74	17.74
7206	43.96	Avg	V	-0.52	43.44	54	10.56
---		Peak	V			74	
---		Avg	V			54	

Remark:
Emission Level= Read Level+ Correct Factor
Margin= Emission Level-Limit
The testing has been conformed to 10^{th} harmonics(1G~25G)
Other harmonics emission are lower then 20dB below the allowable Limit

EUT：	Cycling Bluetooth Speaker	Model Name. ：	AMK-K95-02B
Temperature：	26 ℃	Relative Humidity：	56%
Test Power：	DC 3.7V	Pressure：	1010 hPa
Test Mode：	8-DPSK TX 2441MHz	Test Date：	2016-07-23

Freq.	Deceiver Reading	Detector	Polar	Corrected Factor	Emission Level	Limit	Margin
MHz	dBuV	Peak/Avg	H/V	dB	dBuV /m	dBuV /m	dB
4882	60.24	Peak	H	-3.49	56.75	74	17.25
4882	50.52	Avg	H	-3.49	47.03	54	6.97
7323	58.15	Peak	H	-0.47	57.68	74	16.32
7323	44.72	Avg	H	-0.47	44.25	54	9.75
---	---	Peak	H			74	
---	---	Avg	H			54	
4882	59.8	Peak	V	-3.49	56.31	74	17.69
4882	50.32	Avg	V	-3.49	46.83	54	7.17
7323	57.91	Peak	V	-0.47	57.44	74	16.56
7323	44.24	Avg	V	-0.47	43.77	54	10.23
---		Peak	V			74	
---		Avg	V			54	

Remark:
Emission Level= Read Level+ Correct Factor
Margin= Emission Level-Limit
The testing has been conformed to 10^{th} harmonics(1G~25G)
Other harmonics emission are lower then 20dB below the allowable Limit

EUT：	Cycling Bluetooth Speaker	Model Name. ：	AMK-K95-02B
Temperature：	26 ℃	Relative Humidity：	56%
Test Power：	DC 3.7V	Pressure：	1010 hPa
Test Mode：	8-DPSK TX 2480MHz	Test Date：	2016-07-23

Freq.	Deceiver Reading	Detector	Polar	Corrected Factor	Emission Level	Limit	Margin
MHz	dBuV	Peak/Avg	H/V	dB	dBuV /m	dBuV /m	dB
4960	61.20	Peak	H	-3.41	57.79	74	16.21
4960	49.44	Avg	H	-3.41	46.03	54	7.97
7440	56.79	Peak	H	-0.42	56.37	74	17.63
7440	44.08	Avg	H	-0.42	43.66	54	10.34
---	---	Peak	H			74	
---	---	Avg	H			54	
4960	61.08	Peak	V	-3.41	57.67	74	16.33
4960	50.59	Avg	V	-3.41	47.18	54	6.82
7440	57.52	Peak	V	-0.42	57.10	74	16.90
7440	44.30	Avg	V	-0.42	43.88	54	10.12
---		Peak	V			74	
---		Avg	V			54	

Remark:
Emission Level= Read Level+ Correct Factor
Margin= Emission Level-Limit
The testing has been conformed to 10^{th} harmonics(1G~25G)
Other harmonics emission are lower then 20dB below the allowable Limit

5. CONDUCTED OUTPUT POWER MEASUREMENT

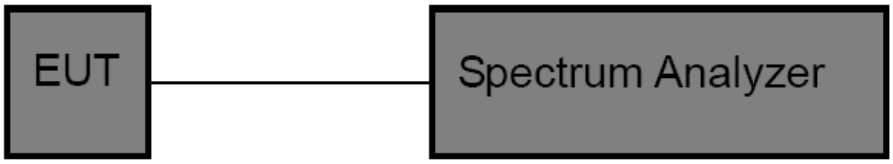
5.1 LIMITS

Peak Output Power	Hopping Channels>75 Power<1W(30dBm) 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

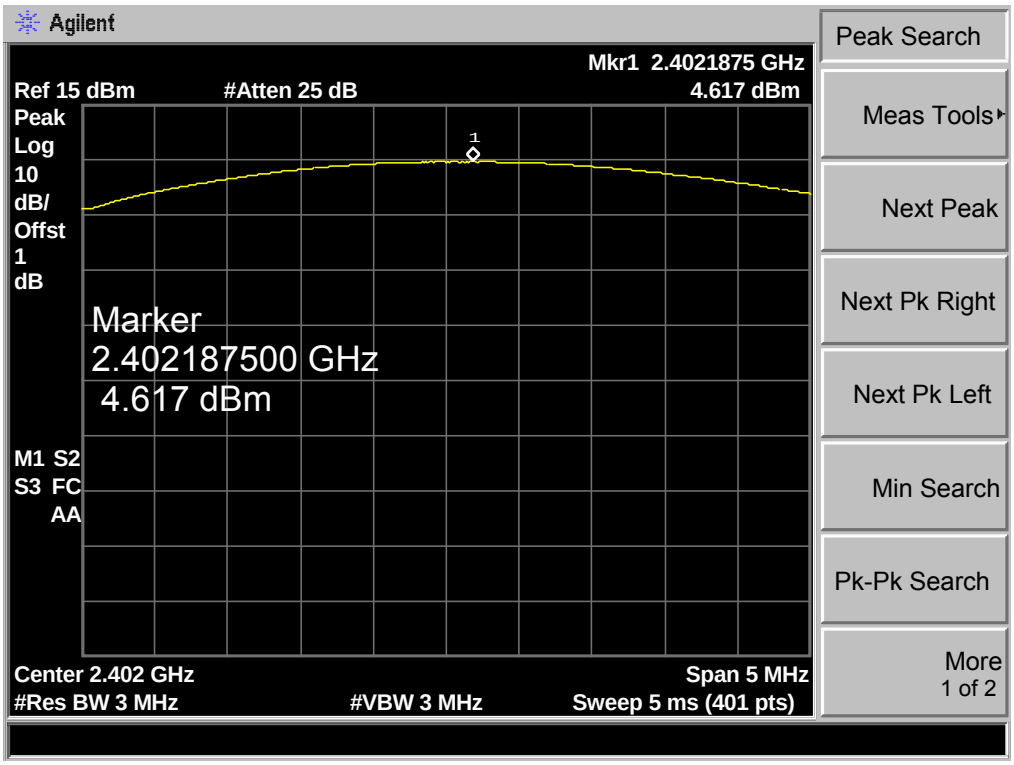
5.5 EUT OPERATING CONDITIONS

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

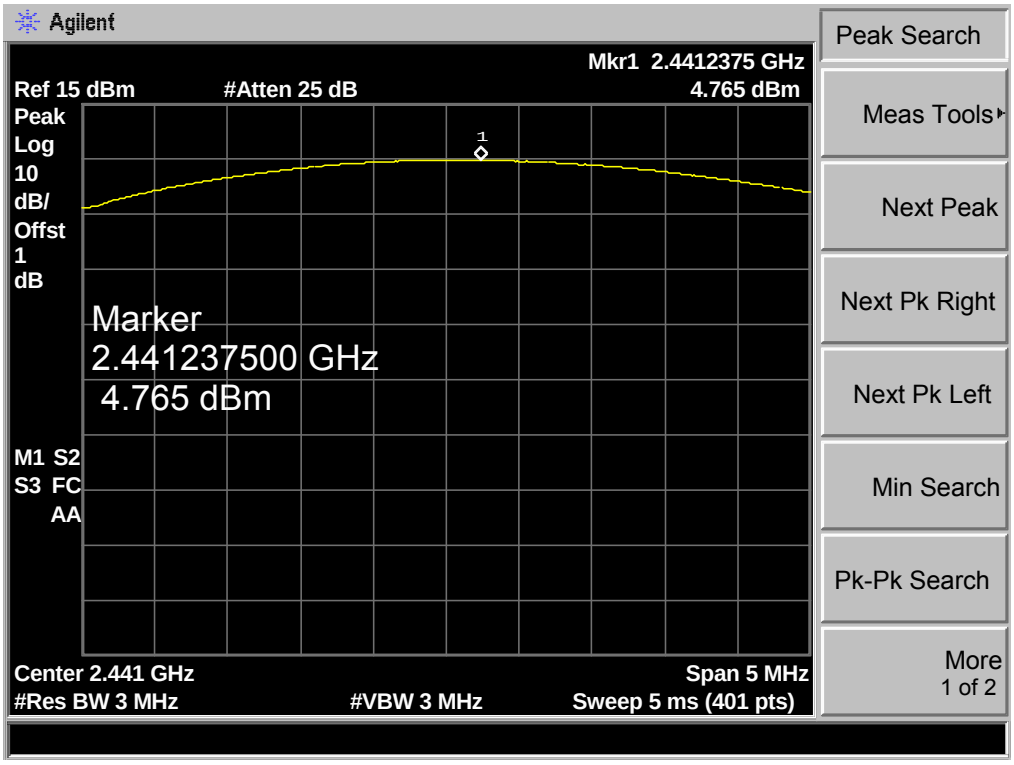
5.6 TEST RESULTS

GFSK (1Mbps)		
Frequency (MHz)	**Peak Output Power (dBm)**	**Limit (dBm)**
2402	4.617	<30
2441	4.765	
2480	4.650	

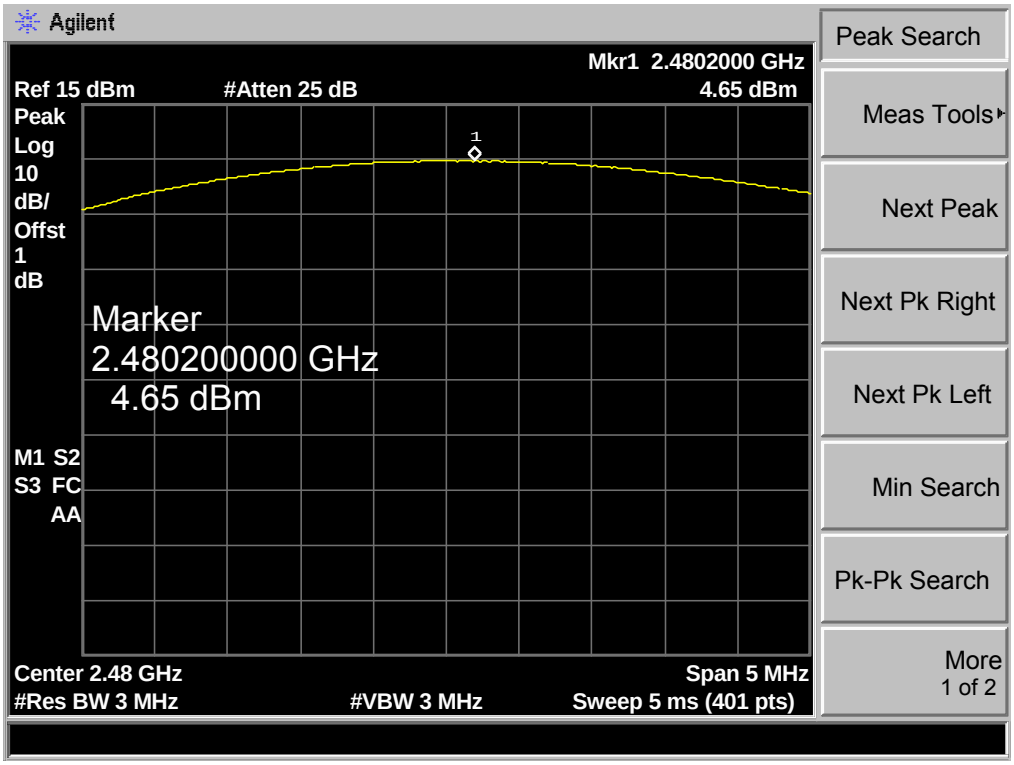
2402 MHz



2441 MHz

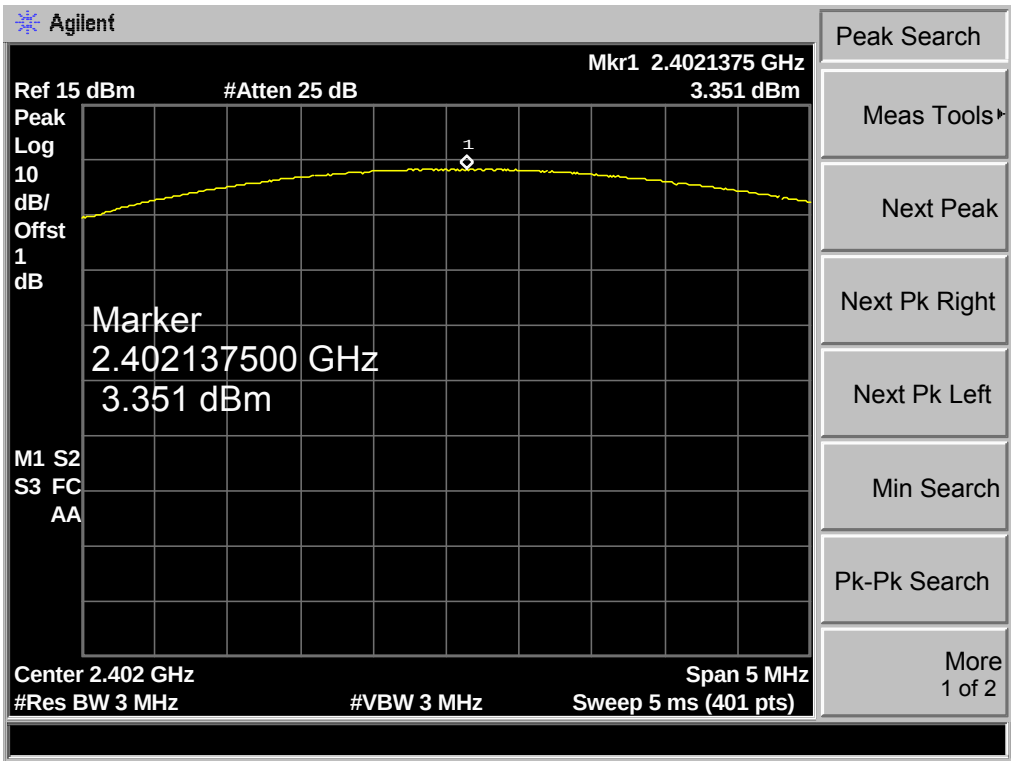


2480 MHz

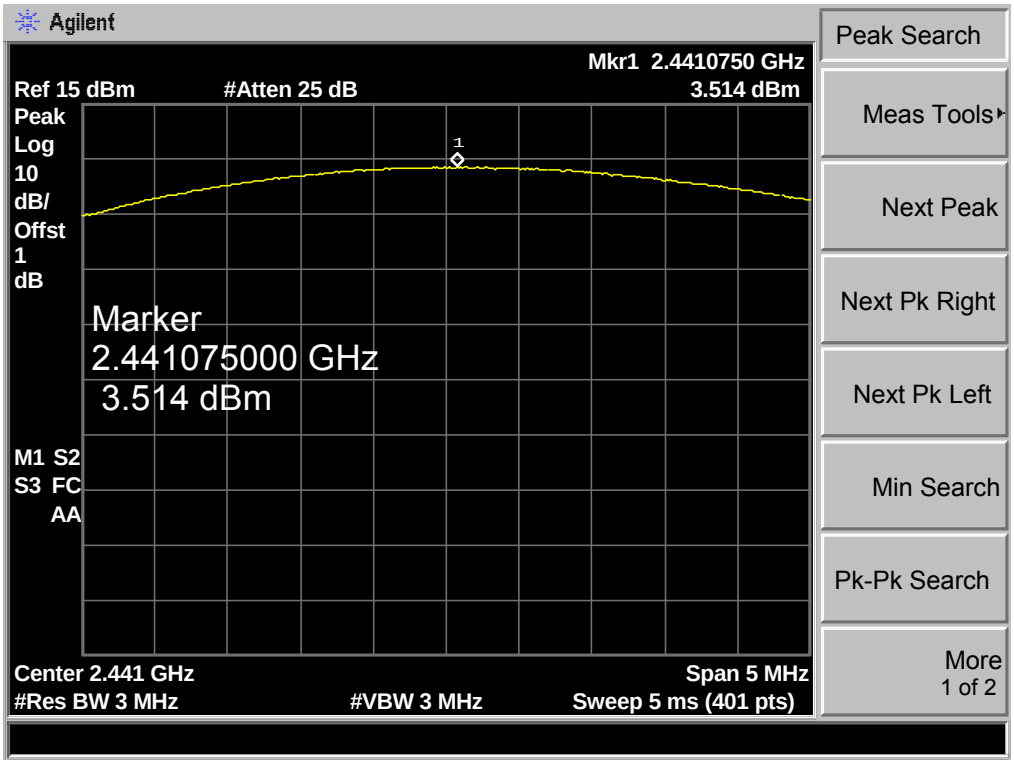


8-DPSK (3Mbps)		
Frequency (MHz)	**Peak Output Power (dBm)**	**Limit (dBm)**
2402	3.351	<21
2441	3.514	
2480	3.369	

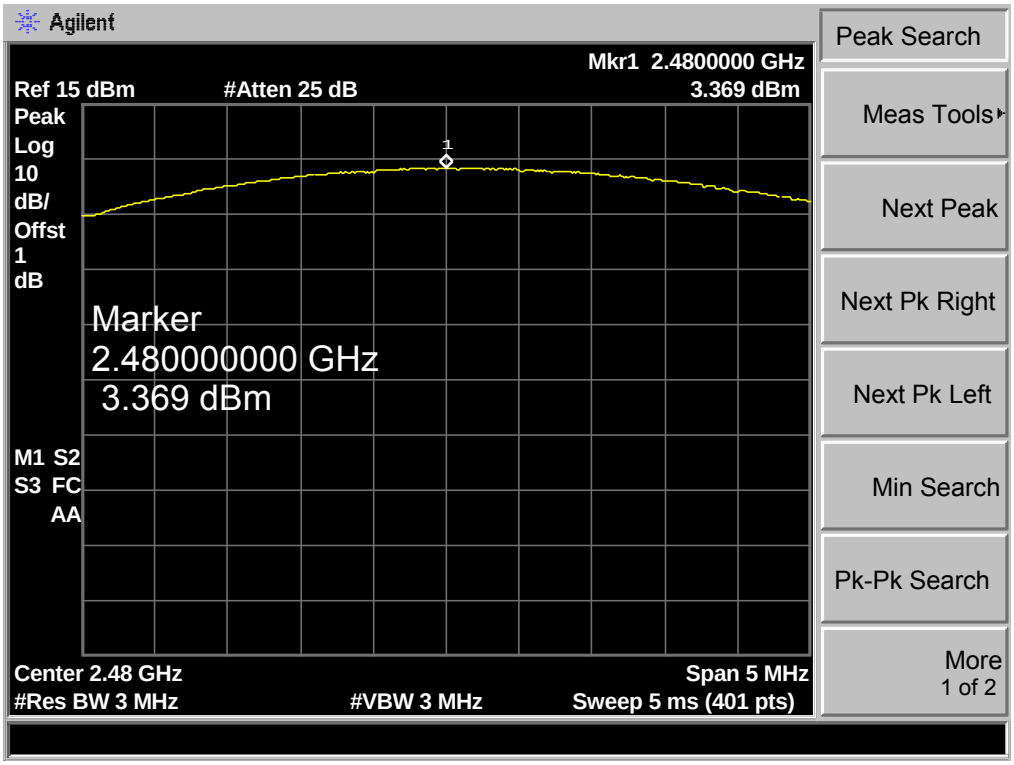
2402 MHz



2441 MHz



2480 MHz



6. OCCUPIED BANDWIDTH MEASUREMENT

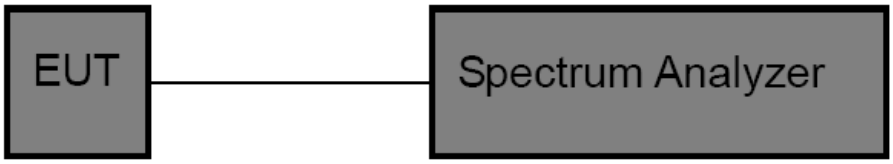
6.1 LIMITS

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.

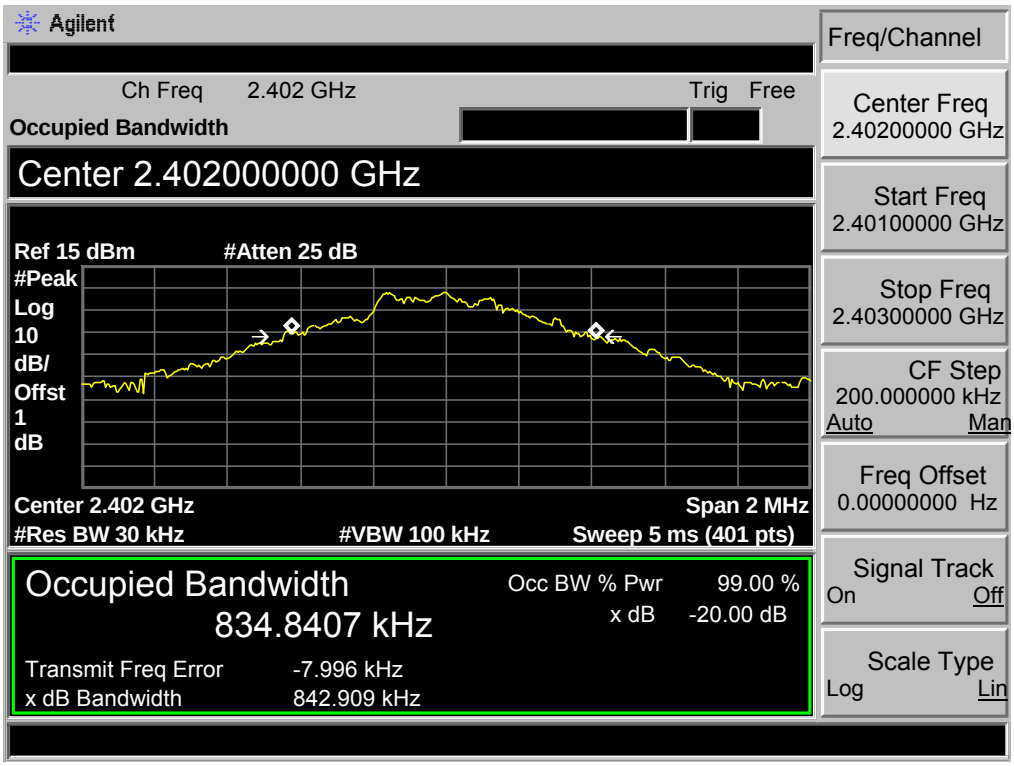
6.6 TEST RESULTS

GFSK Mode (1Mbps)			
Frequency (MHz)	**20dB Bandwidth (kHz)**	**99% OBW (kHz)**	**20dB Bandwidth *2/3 (kHz)**
2402	842.909	834.8407	
2441	852.035	837.0501	
2480	842.192	829.1857	

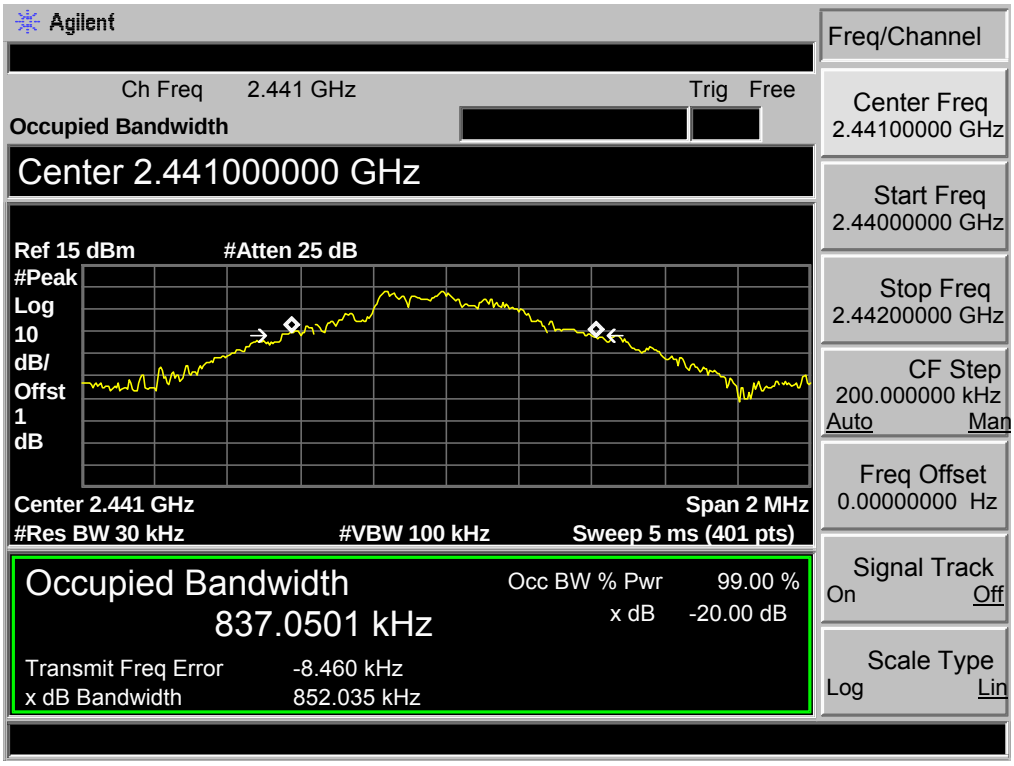
8-DPSK Mode (3Mbps)			
Frequency (MHz)	**20dB Bandwidth (kHz)**	**99% OBW (kHz)**	**20dB Bandwidth *2/3 (kHz)**
2402	1212.00	1135.20	808.000
2441	1207.00	1136.10	804.667
2480	1209.00	1133.10	806.000

Note: Test plots please refer following pages.

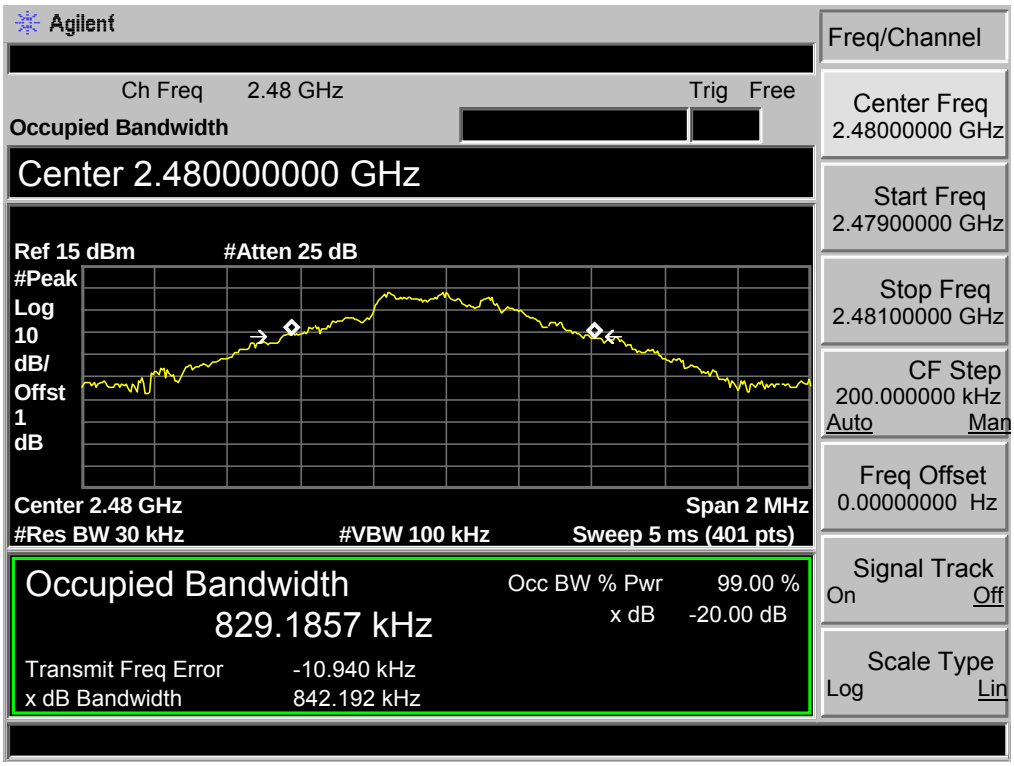
2402 MHz(GFSK) Bandwidth



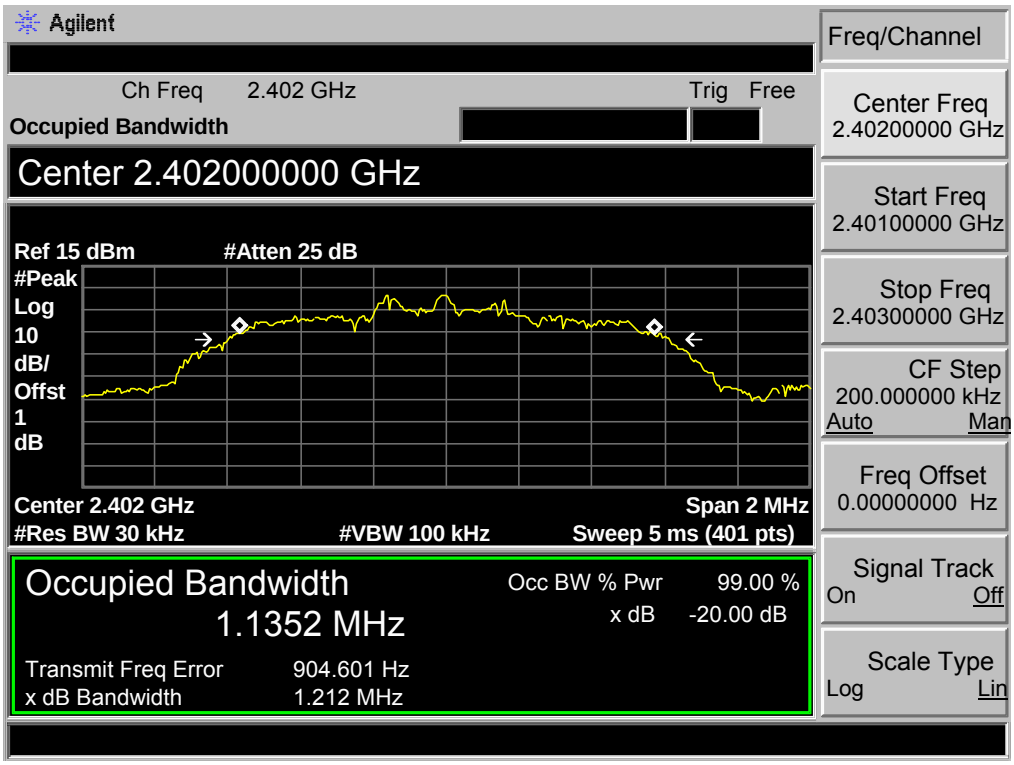
2441 MHz(GFSK) Bandwidth



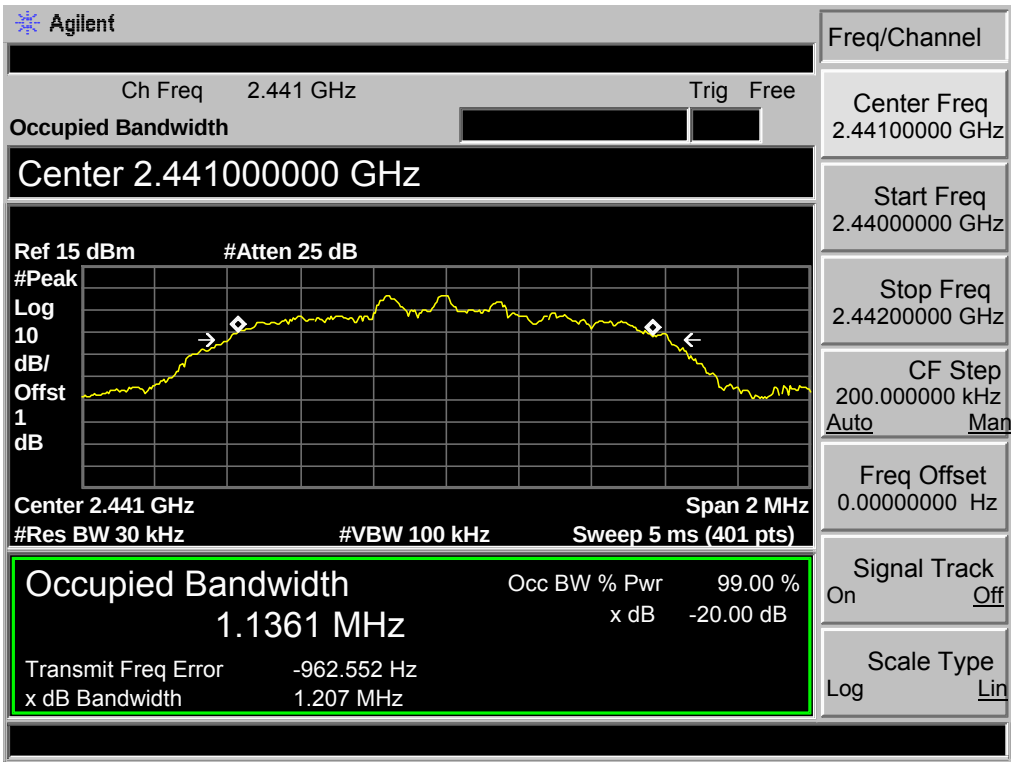
2480 MHz(GFSK) Bandwidth



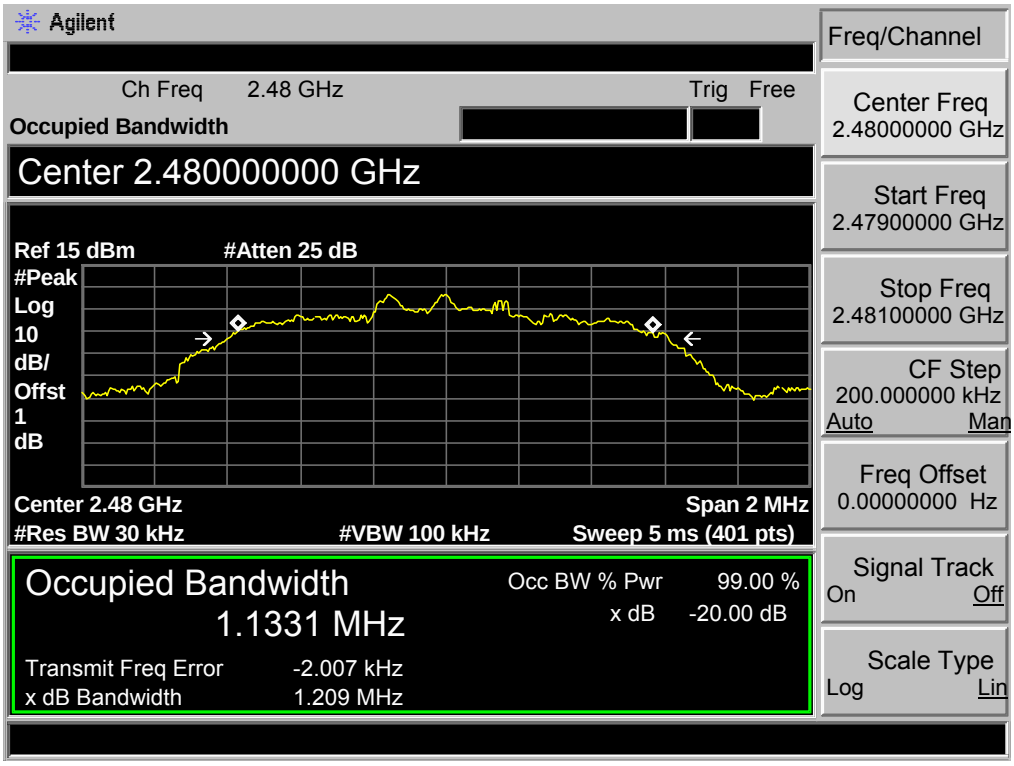
2402 MHz(8-DPSK) Bandwidth



2441 MHz(8-DPSK) Bandwidth



2480 MHz(8-DPSK) Bandwidth



7. CARRIER FREQUENCY SEPARATION MEASUREMENT

7.1 LIMITS

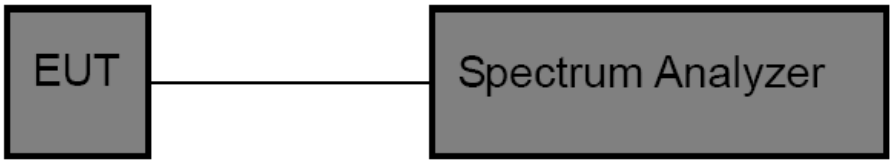
Frequency Separation	The channel spacing shall be a minimum of 25 kHz or two-thirds of the 20 dB Bandwidth

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

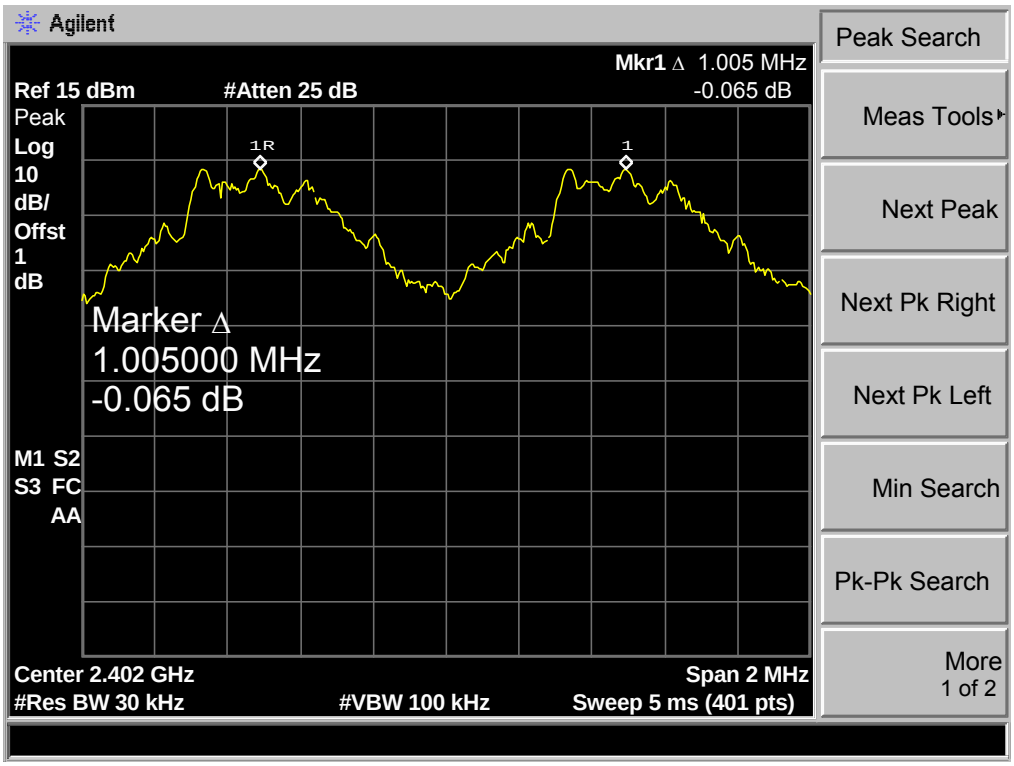
7.5 EUT OPERATING CONDITIONS

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

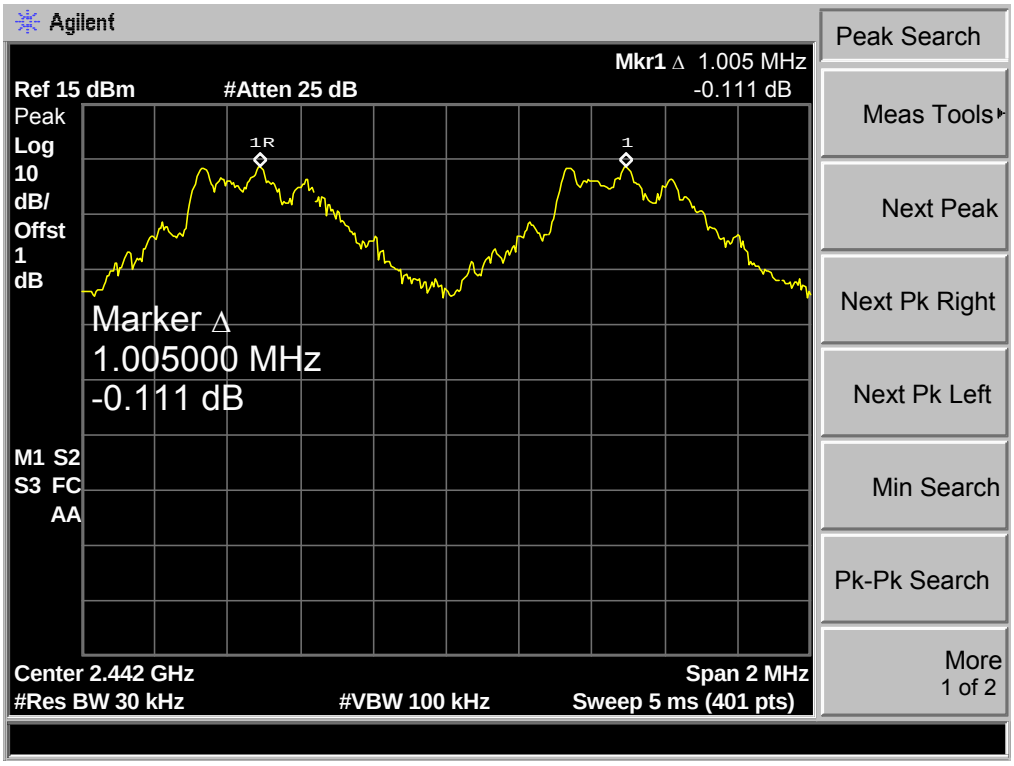
7.6 TEST RESULTS

GFSK Mode (1Mbps)		
Frequency (MHz)	**Channel Separation (kHz)**	**Limit (kHz)**
2402	1005.00	842.909
2441	1005.00	852.035
2480	1005.00	842.192
8-DPSK Mode (1Mbps)		
Frequency (MHz)	**Channel Separation (kHz)**	**Limit (kHz)**
2402	1005.00	808.000
2441	1005.00	804.667
2480	1005.00	806.000
Result: Frequency Separation> two-thirds of the 20 dB bandwidth		**PASS**
Note: Test plots please refer following pages.		

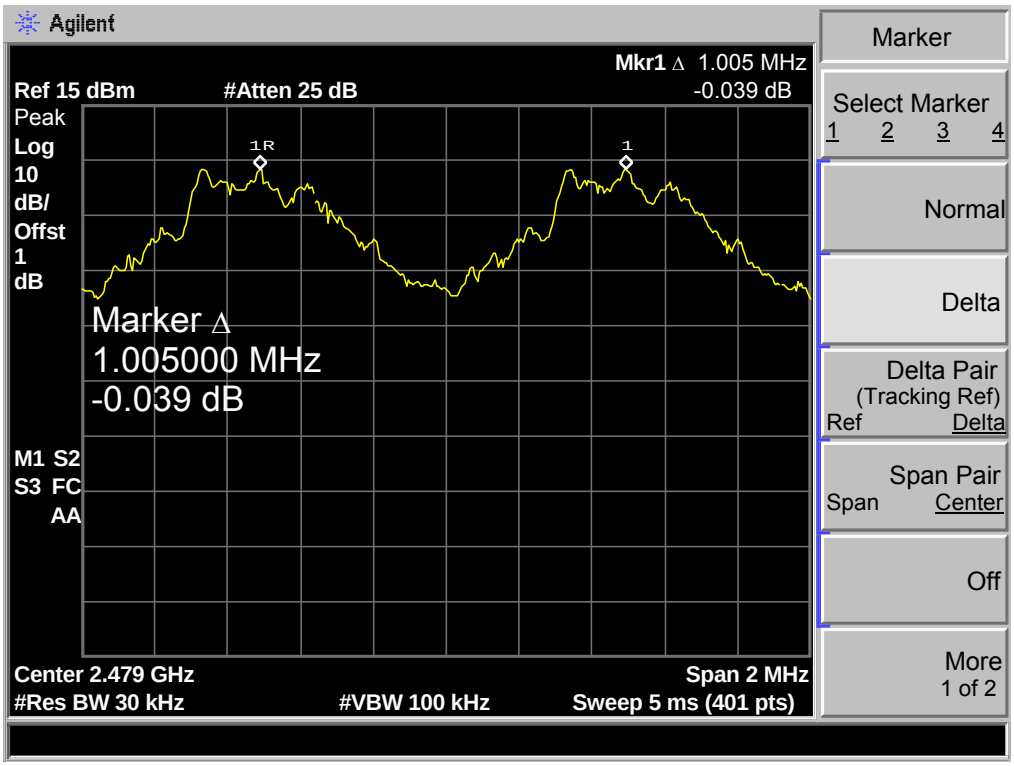
2402 MHz(GFSK)-Channel Separation



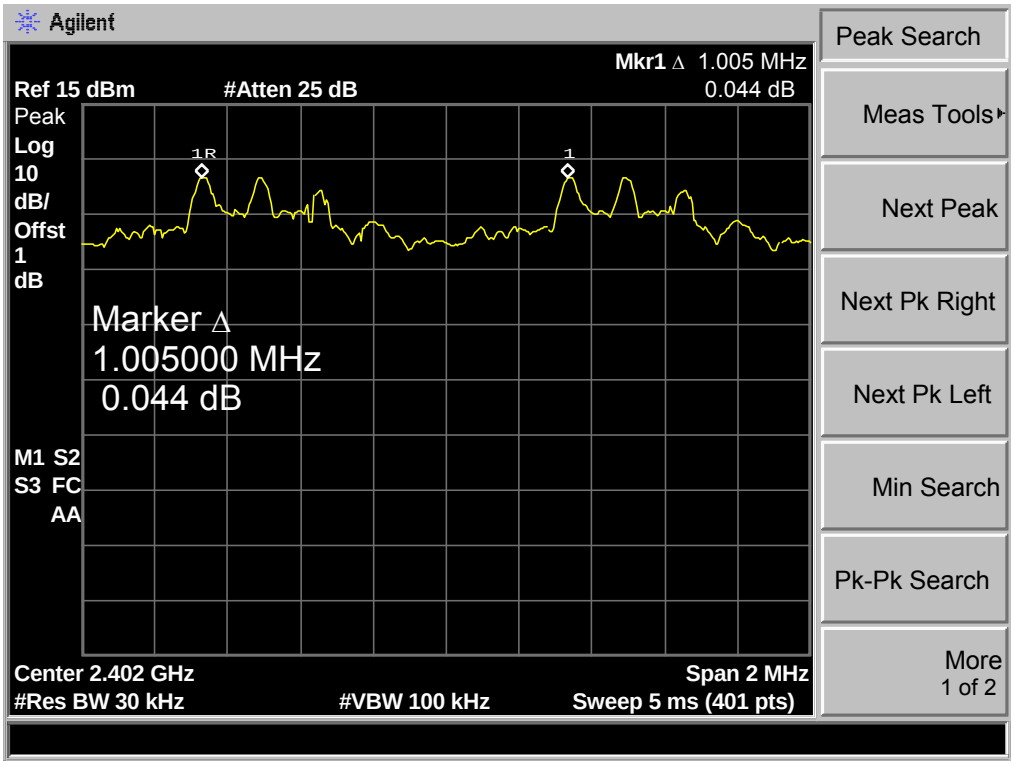
2441 MHz(GFSK)-Channel Separation



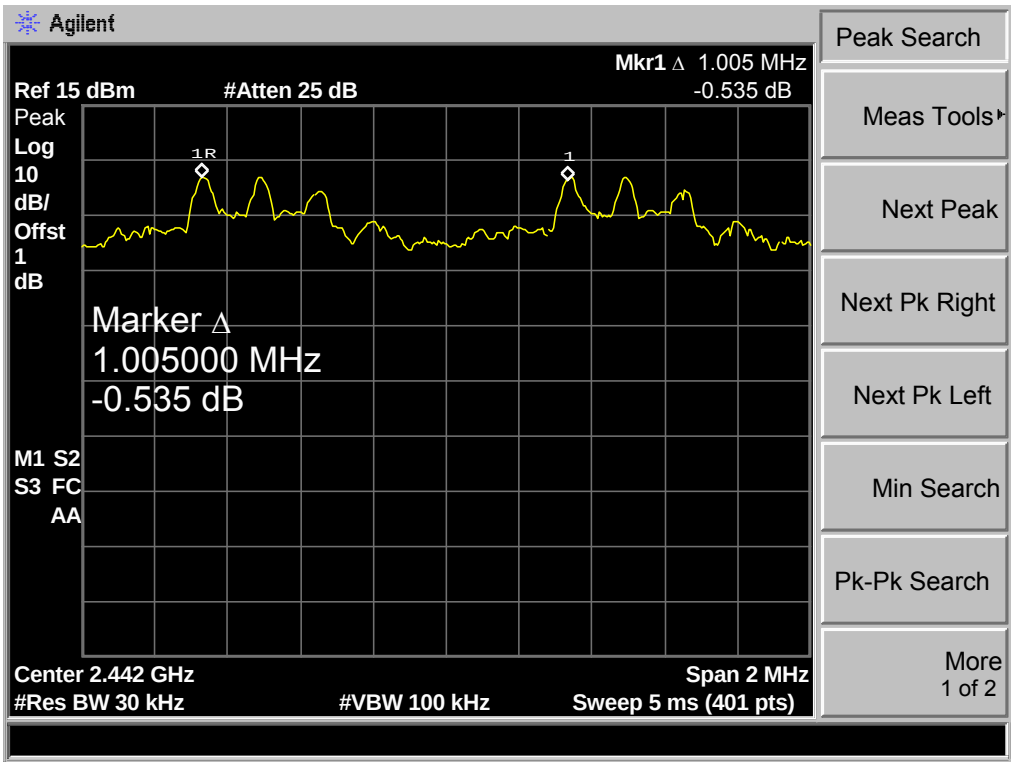
2480 MHz(GFSK)-Channel Separation



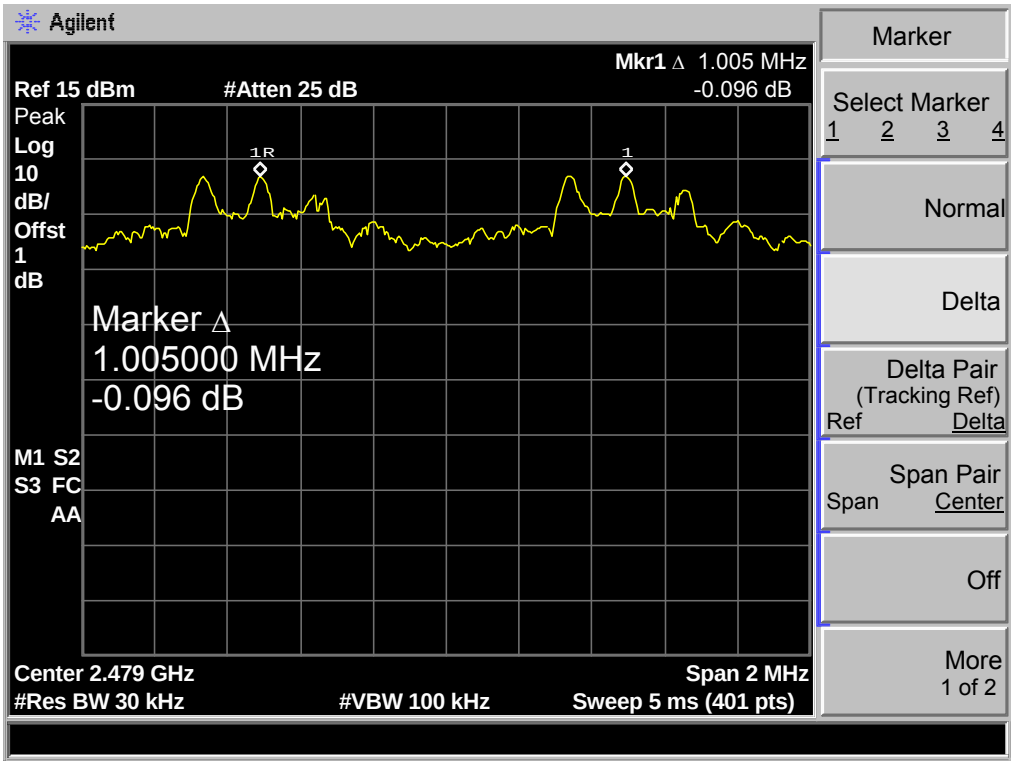
2402 MHz(8-DPSK)-Channel Separation



2441 MHz(8-DPSK)-Channel Separation



2480 MHz(8-DPSK)-Channel Separation



8. NUMBER OF HOPPING

8.1 LIMITS

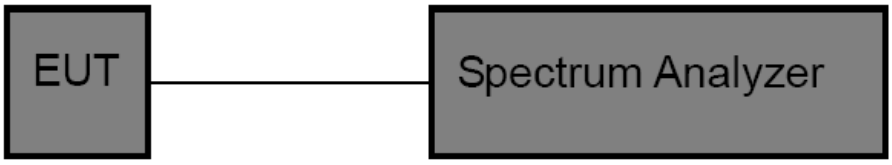
Hopping Number	Frequency hopping systems in 2400-2483.5 MHz band shall use at least 15 channels.

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

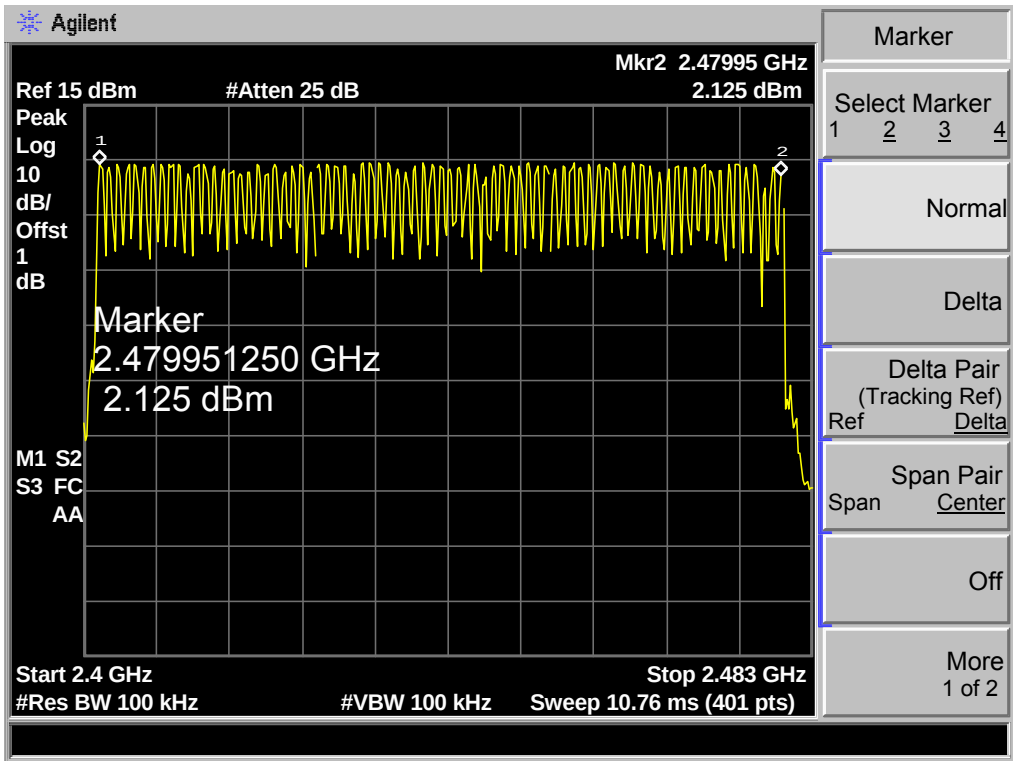
Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
Spectrum Analyzer	R&S	FSP40	100154	Jul. 04, 2016	Jul. 03. 2017	1 year
Spectrum Analyzer	Agilent	E4407B	MY41440432	Jul. 04, 2016	Jul. 03. 2017	1 year

8.5 EUT OPERATING CONDITIONS

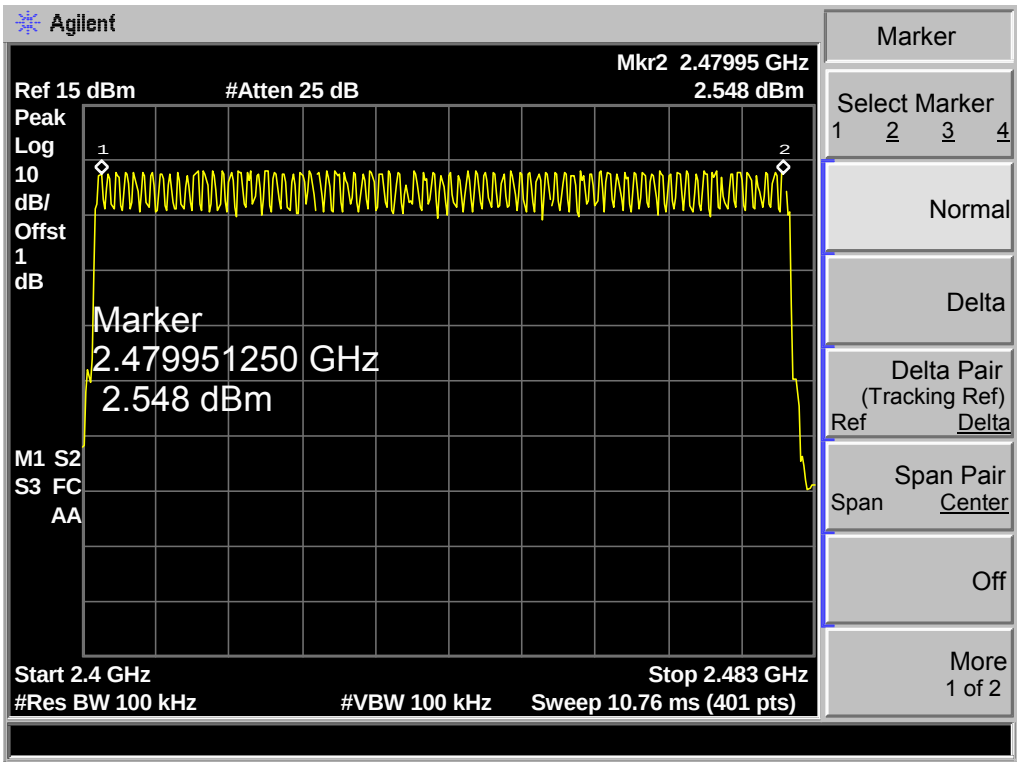
The EUT was set to continuously transmitting in the maximum power during the test.

8.6 TEST RESULTS

GFSK Mode (1Mbps)	
Measurement Number	**Limit**
79	>15



8-DPSK Mode (3Mbps)	
Measurement Number	**Limit**
79	>15



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.

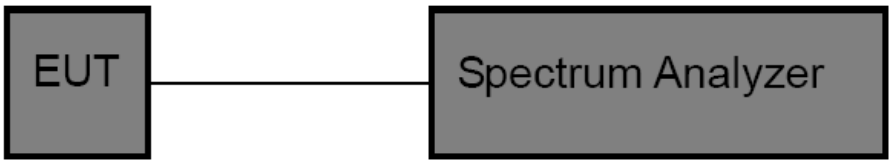
9.2 TEST PROCEDURE

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

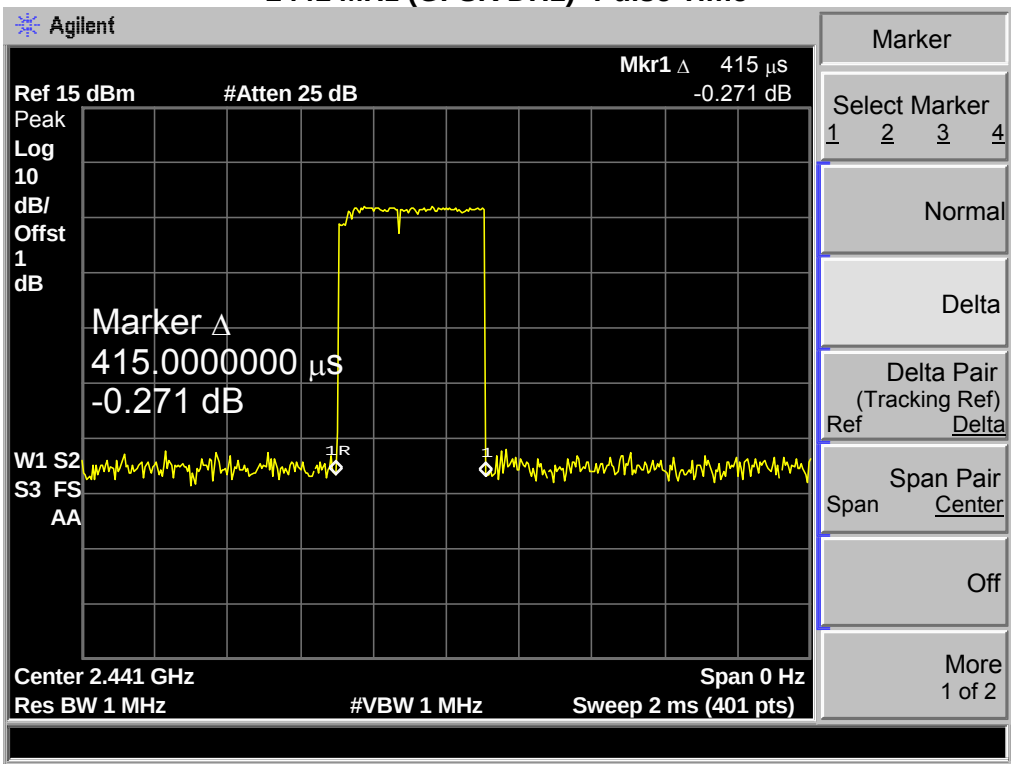
9.5 EUT OPERATING CONDITIONS

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

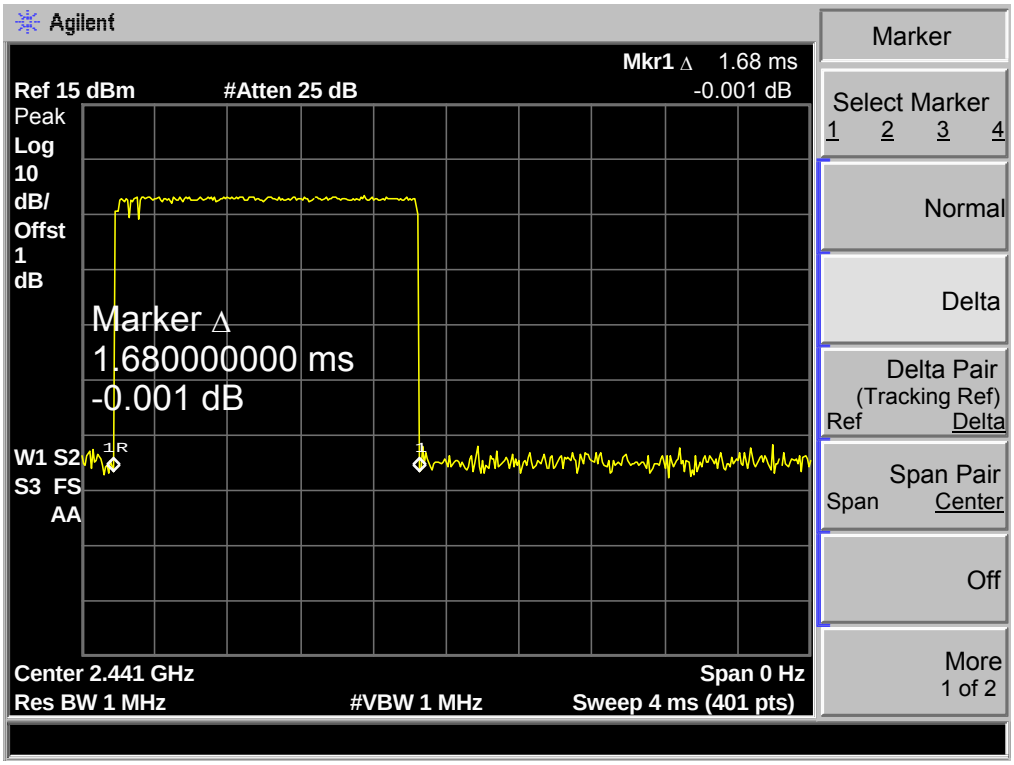
9.6 TEST RESULTS

Hopping Mode				
GFSK(1Mbps) 2441MHz				
Frequency (MHz)	**Pulse Time (ms)**	**Total of Dwell (ms)**	**Period Time (s)**	**Limit (ms)**
DH1	0.415	132.80	31.60	<400
DH3	1.680	268.80	31.60	
DH5	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*				
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	<400
3DH3	1.690	270.40	31.60	
3DH5	2.980	317.87	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.				

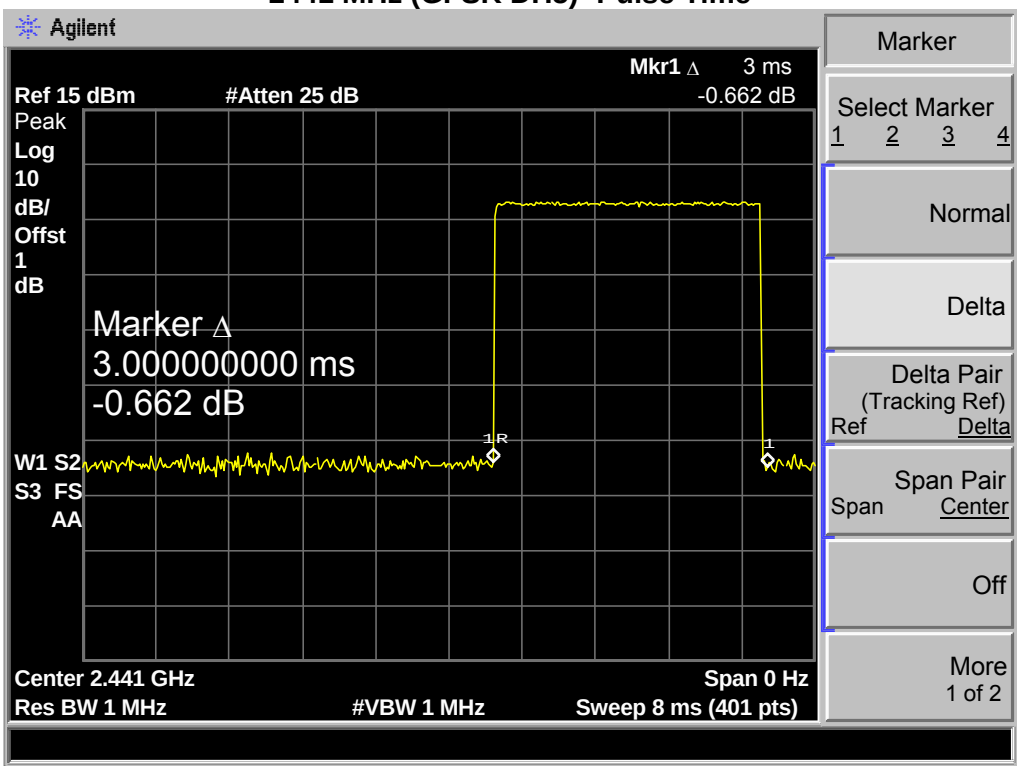
2441 MHz (GFSK DH1)- Pulse Time



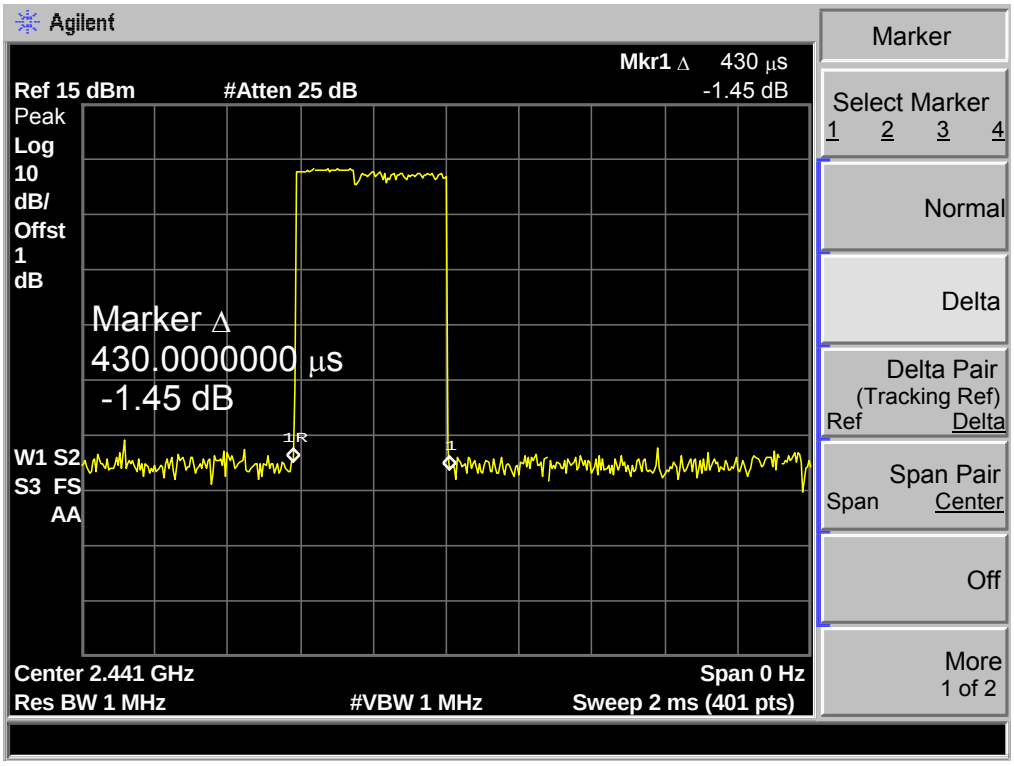
2441 MHz (GFSK DH3)- Pulse Time



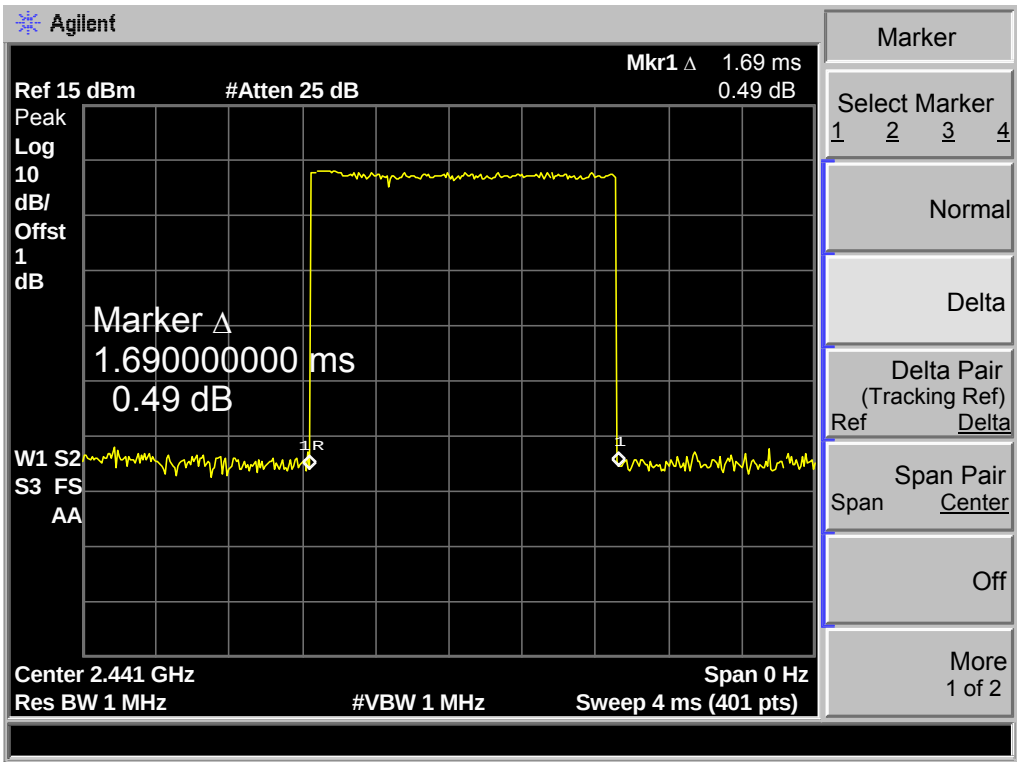
2441 MHz (GFSK DH5)- Pulse Time



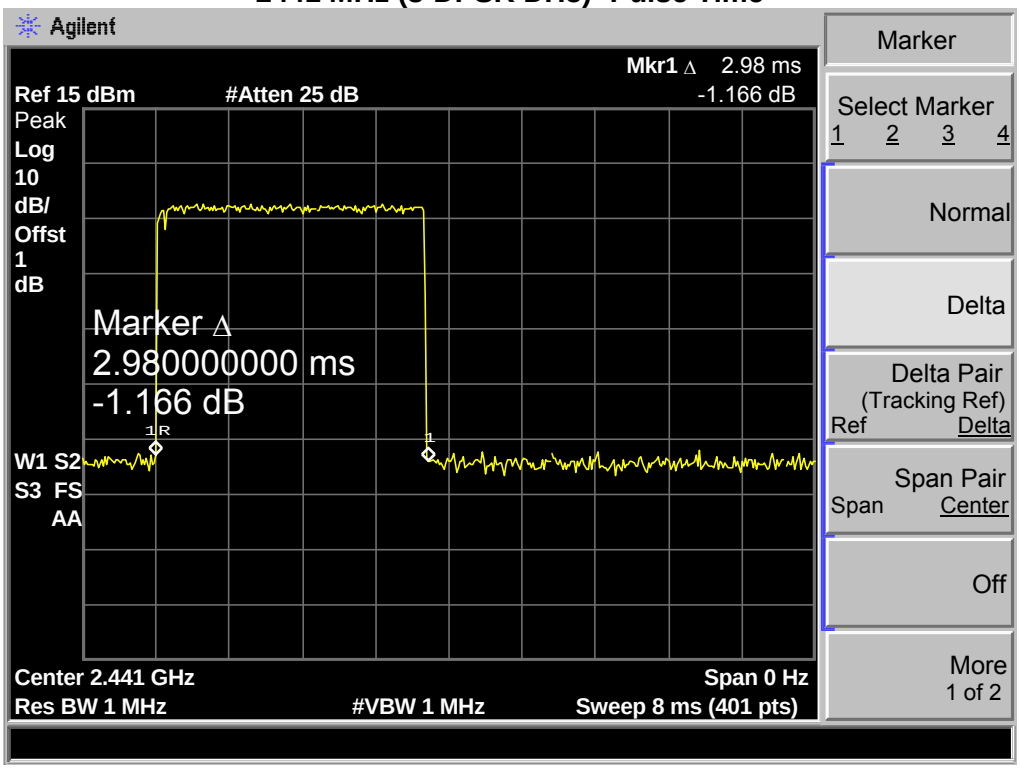
2441 MHz (8-DPSK DH1)- Pulse Time



2441 MHz (8-DPSK DH3)- Pulse Time



2441 MHz (8-DPSK DH5)- Pulse Time



10. BAND EDGES MEASUREMENT

10.1 LIMITS

Band Edges Requirement	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.

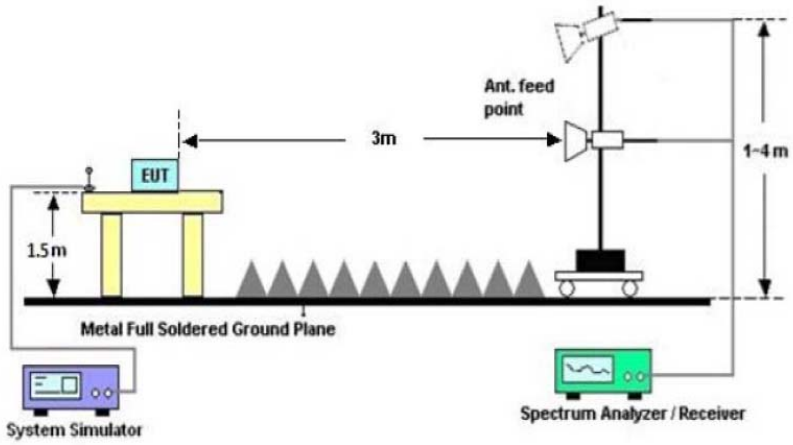
10.2 TEST PROCEDURE

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

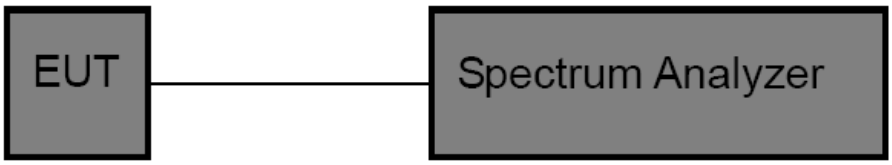
a. Set frequency range to capture low band-edge from 2310 MHz up to 2390 MHz, and for up band-edge from 2483.5 MHz up to 2500 MHz
b. For low band-edge set the equipment transmit at the lowest channel, and for up band-edge set the equipment transmit at the highest channel
c. Set the VBW≥3 RBW (100kHz/ 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

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

Bandedge(Radiated Emission)

EUT：	Cycling Bluetooth Speaker	**Model Name. ：**	AMK-K95-02B
Temperature：	26 ℃	**Relative Humidity：**	56%
Test Power：	DC 3.7V	**Pressure：**	1010 hPa
Test Mode：	TX GFSK Mode	**Test Date：**	2016-07-23

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	50.55	Peak	H	-3.00	47.55	74	26.45
2390	40.77	Avg	H	-3.00	37.77	54	16.23
2402	93.46	Peak	H	-3.12	90.34	Fundamental Frequency	
2402	89.66	Avg	H	-3.12	86.54	Fundamental Frequency	
2390	51.33	Peak	V	-3.00	48.33	74	25.67
2390	40.70	Avg	V	-3.00	37.70	54	16.30
2402	91.68	Peak	V	-3.12	88.56	Fundamental Frequency	
2402	86.85	Avg	V	-3.12	83.73	Fundamental Frequency	
High Channel- 2480MHz							
2480	91.95	Peak	H	-2.50	89.45	Fundamental Frequency	
2480	86.71	Avg	H	-2.50	84.21	Fundamental Frequency	
2483.5	60.52	Peak	H	-2.50	58.02	74	15.98
2483.5	51.27	Avg	H	-2.50	48.77	54	5.23
2480	89.85	Peak	V	-2.50	87.35	Fundamental Frequency	
2480	84.45	Avg	V	-2.50	81.95	Fundamental Frequency	
2483.5	61.53	Peak	V	-2.50	59.03	74	14.97
2483.5	50.64	Avg	V	-2.50	48.14	54	5.86

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.

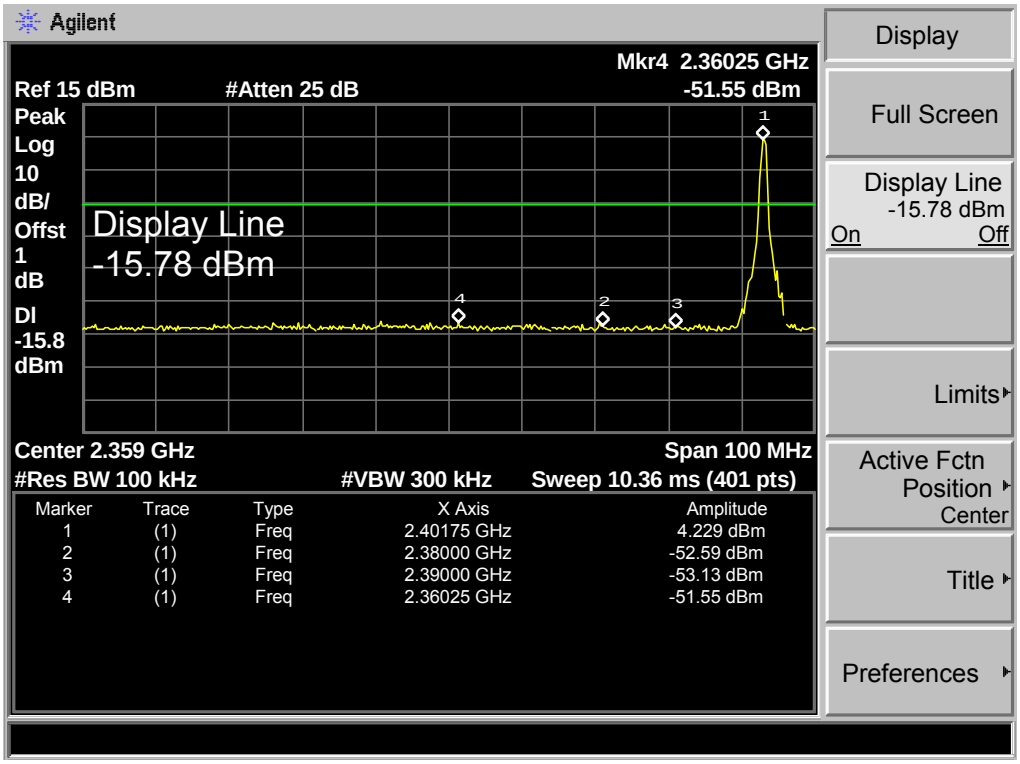
EUT：	Cycling Bluetooth Speaker	Model Name. ：	AMK-K95-02B
Temperature：	26 ℃	Relative Humidity：	56%
Test Power：	DC 3.7V	Pressure：	1010 hPa
Test Mode：	TX 8-DPSK Mode	Test Date：	2016-07-23

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	51.55	Peak	H	-3.00	48.55	74	25.45
2390	41.04	Avg	H	-3.00	38.04	54	15.96
2402	91.55	Peak	H	-3.12	88.43	Fundamental Frequency	
2402	86.07	Avg	H	-3.12	82.95	Fundamental Frequency	
2390	50.68	Peak	V	-3.00	47.68	74	26.32
2390	41.52	Avg	V	-3.00	38.52	54	15.48
2402	90.06	Peak	V	-3.12	86.94	Fundamental Frequency	
2402	83.37	Avg	V	-3.12	80.25	Fundamental Frequency	
High Channel- 2480MHz							
2480	89.43	Peak	H	-2.50	86.93	Fundamental Frequency	
2480	83.03	Avg	H	-2.50	80.53	Fundamental Frequency	
2483.5	62.16	Peak	H	-2.50	59.66	74	14.34
2483.5	52.27	Avg	H	-2.50	49.77	54	4.23
2480	90.82	Peak	V	-2.50	88.32	Fundamental Frequency	
2480	84.95	Avg	V	-2.50	82.45	Fundamental Frequency	
2483.5	60.85	Peak	V	-2.50	58.35	74	15.65
2483.5	51.11	Avg	V	-2.50	48.61	54	5.39

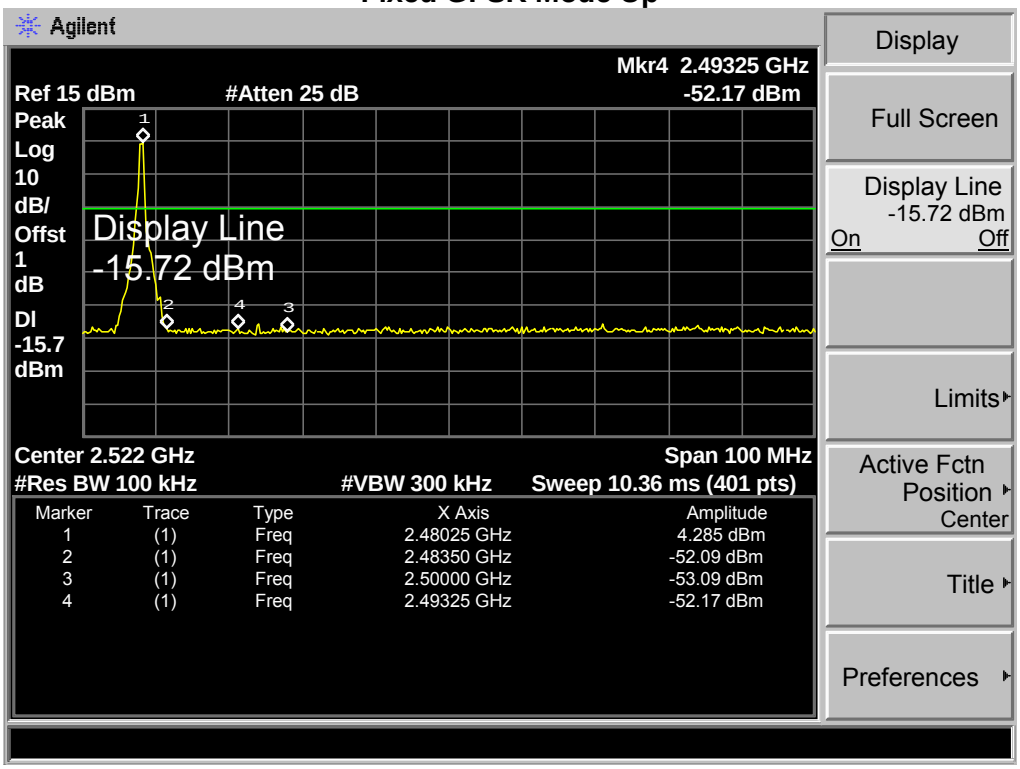
Remark:
Emission Level= Read Level+ Correct Factor
Margin= Emission Level-Limit
No report for the emission which more than 10 dB below the prescribed limit.

Bandedge(Conducted Emission)

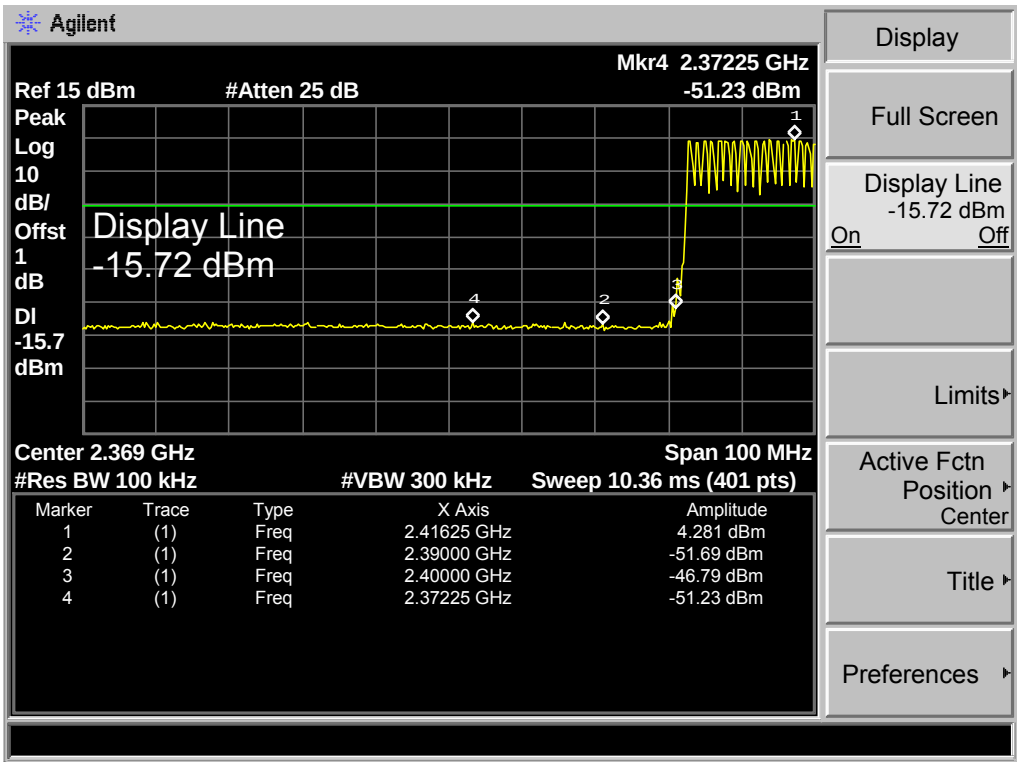
Fixed GFSK Mode Low



Fixed GFSK Mode Up



Hopping GFSK Mode Low



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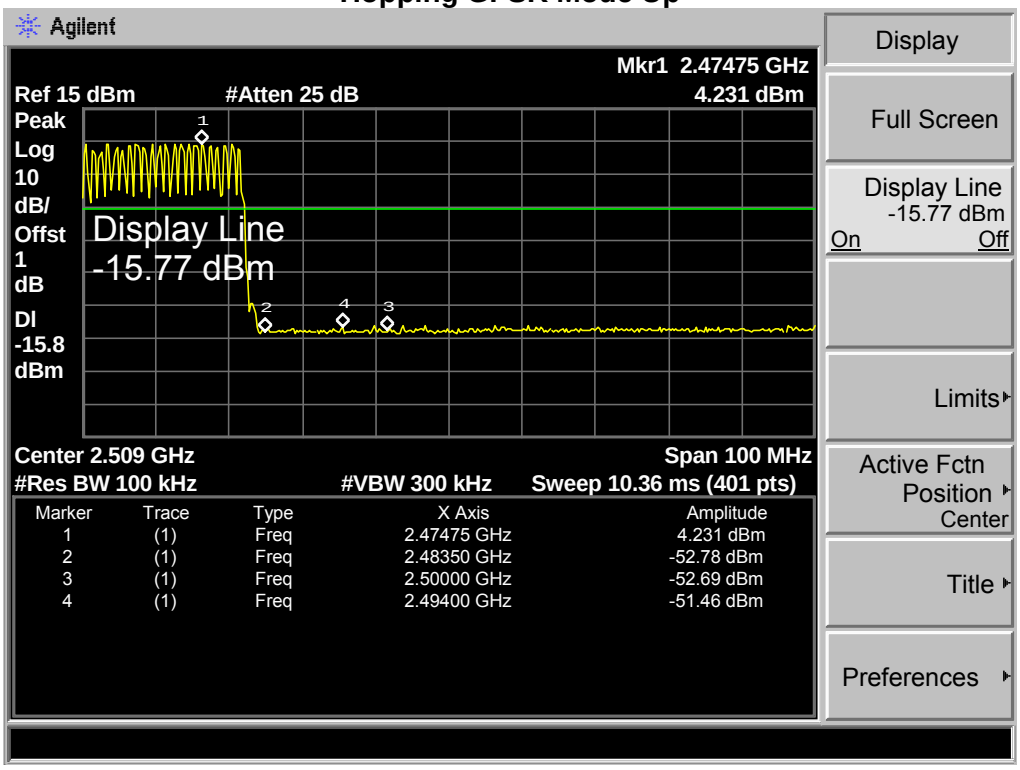
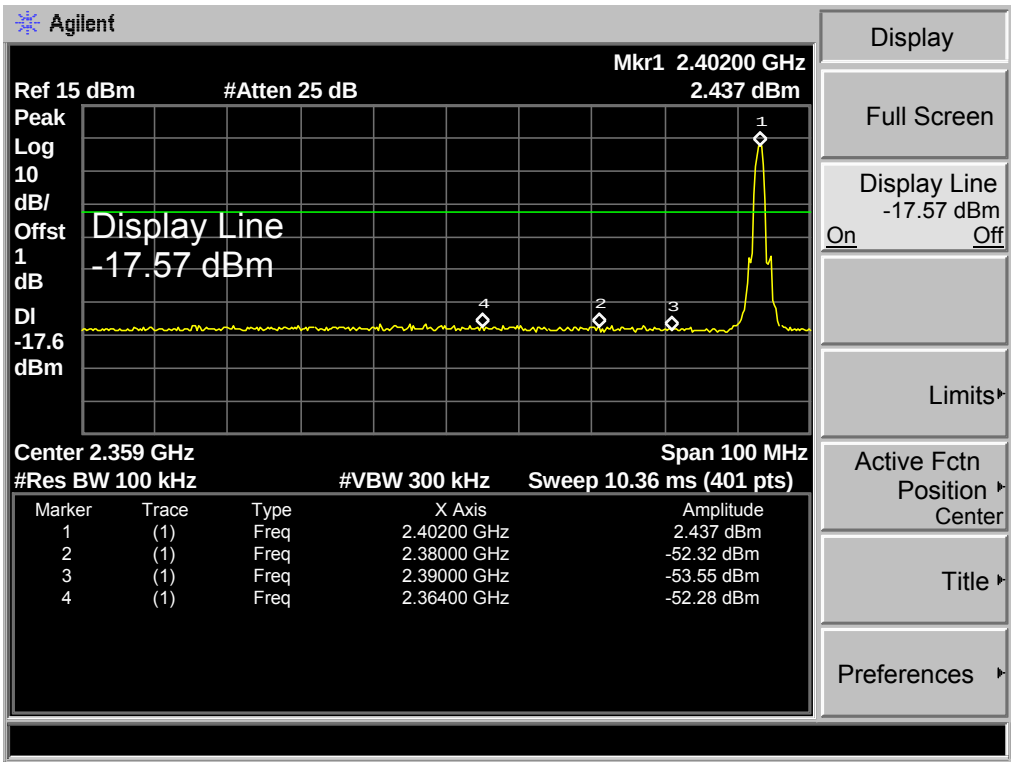
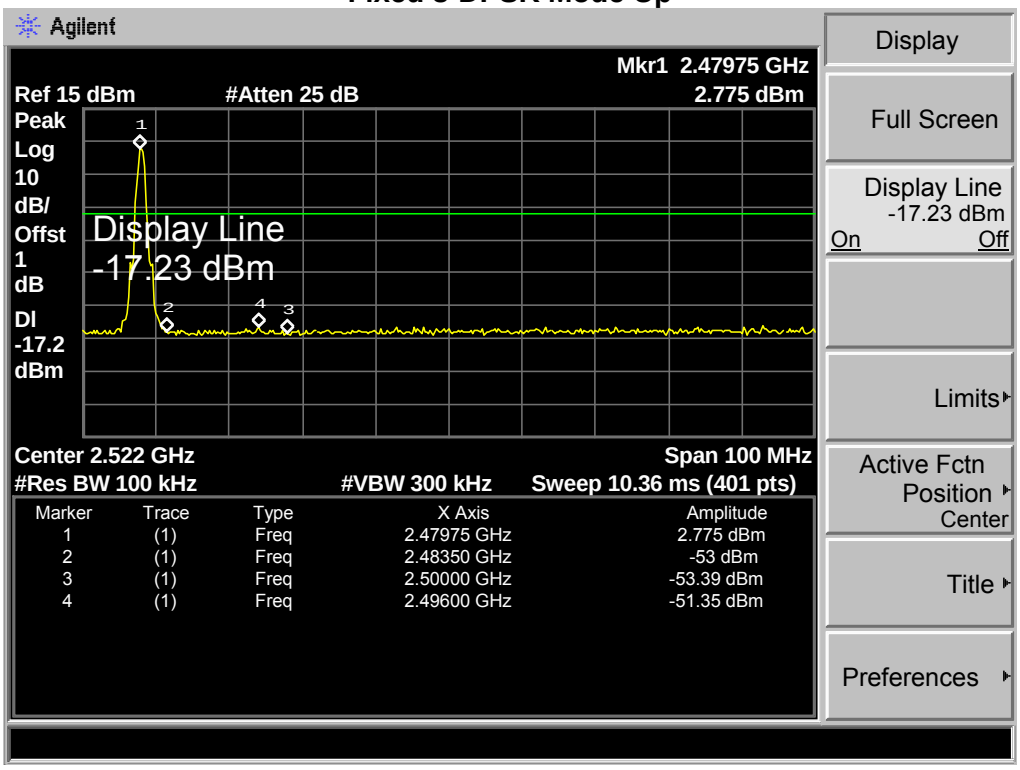


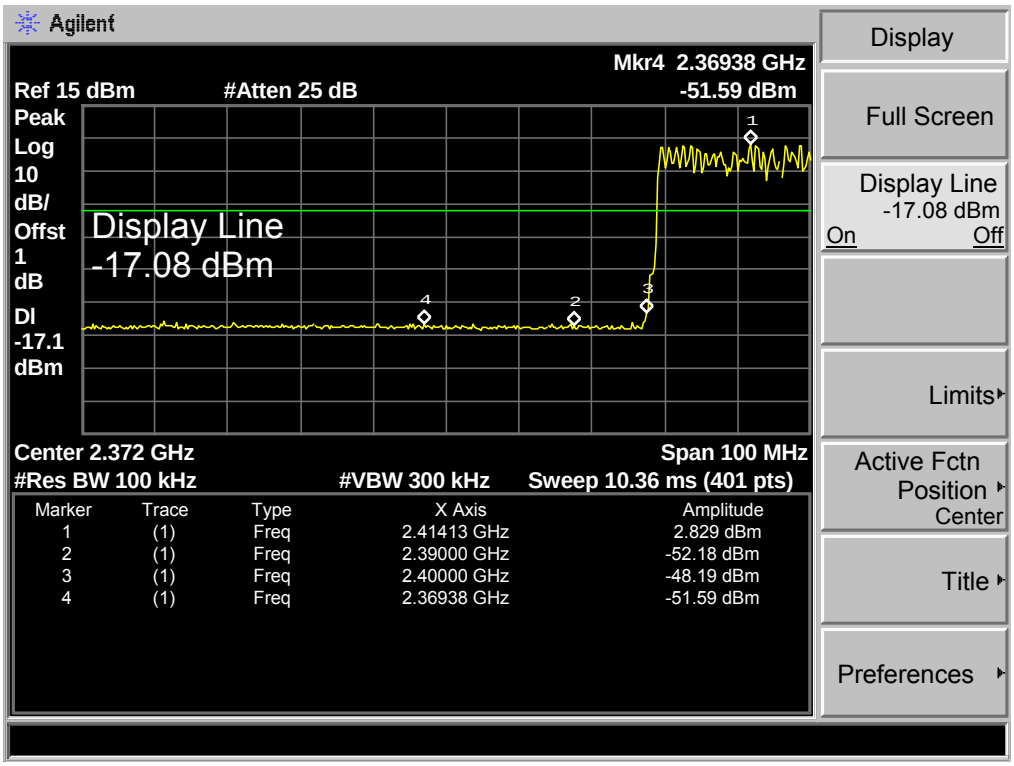
Fixed 8-DPSK Mode Low



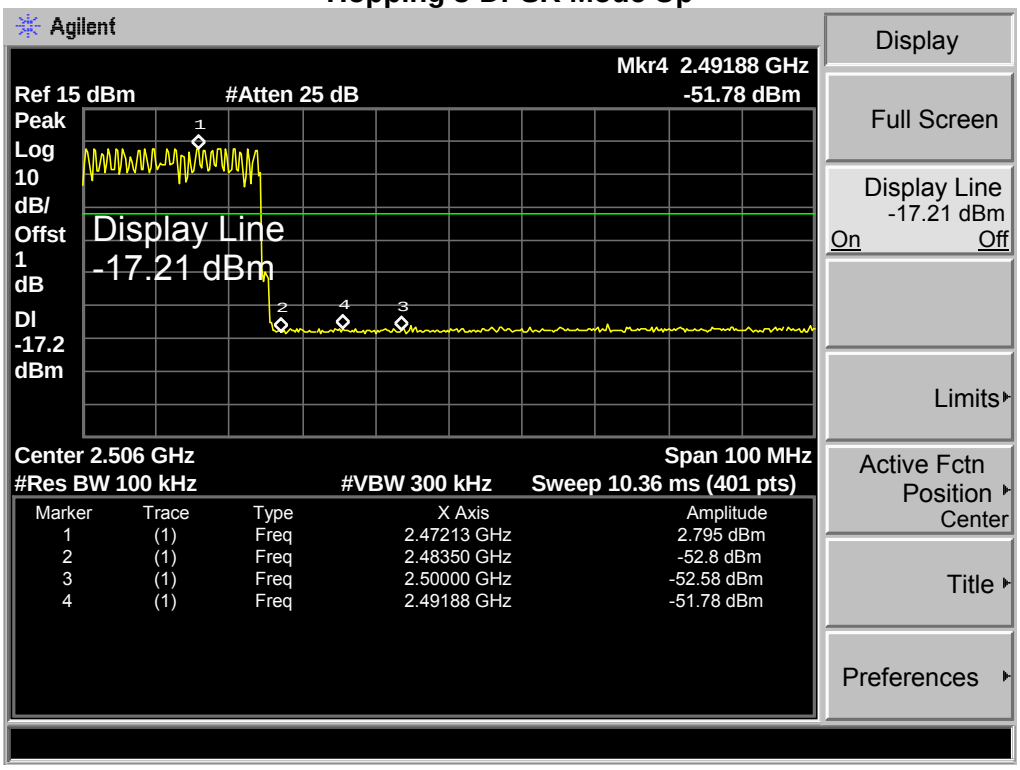
Fixed 8-DPSK Mode Up



Hopping 8-DPSK Mode Low



Hopping 8-DPSK Mode Up



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 (15.247)	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 PCB Antenna. And the maximum gain of this antenna is 0 dBi.
It complies with the standard requirement.

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