TEST REPORT

REPORT NUMBER: B17W00112-BT_Rev1

ON

Type of Equipment:	4G TLE mobile phone
Model Name:	A1-901
Manufacturer:	SHENZHEN FUTAIHONG PRECISION INDUSTRY CO.,LTD

ACCORDING TO

FCC Part 15, Subpart C, 2015:
15.205 Restricted bands of operation,15.209 Radiated emission limits; general requirements,
15.247 Operation within the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz
ANSI C63.4-2014, Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
ANSI C63.10-2013:American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
FCC Public Notice DA 00-705, March-2000, Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems

Chongqing Institute of Telecommunications

Month date, year
Jun, 07, 2017
Signature

Zhang Yan
Director

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of Chongqing Institute of Telecommunications.

FCC ID:	2AK9KA1
Report Date:	2017-06-07
Test Firm Name:	Chongqing Institute of Telecommunications
FCC Registration Number:	428018

Statement

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported tests were carried out on a sample equipment to demonstrate limited compliance with FCC Parts 15, subpart C. The sample tested was found to comply with the requirements defined in the applied rules.

CONTENTS

1 General Information

1.1 Notes

All reported tests were carried out on a sample equipment to demonstrate limited compliance with FCC Parts 15, subpart C and ANSI C63.4-2014 and FCC DA 00-705.

The test results of this test report relate exclusively to the item(s) tested as specified in section 2.

The following deviation from, additions to, or exclusions from the test specifications have been made. See Annex C.

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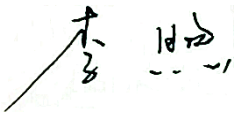
1.2 Testers

Name:	Li Xu
Position:	Engineer
Department:	Department of RF test
Date:	2017-02-21 to 2017-04-28
Signature:	

Editor of this test report:

Name:	Zhou Jin
Position:	Engineer
Department:	Department of RF test
Date:	2017-06-07
Signature:	

Technical responsibility for area of testing:

Name:	Zhang Yan
Position:	Manager
Department:	Director of the laboratory
Date:	2017-06-07
Signature:	

1.3 Testing Laboratory information

1.3.1 Location

Name:	Chongqing Institute of Telecommunications
Address:	No. 8, Yuma Road, Chayuan New City, Nan'an District Chongqing P. R. CHINA, 401336
Tel:	0086 23 88069965
Fax:	0086 23 88608777
Email:	songweiwei@chinattl.com

1.3.2 Details of accreditation status

Accredited by:	------
Registration number:	------
Standard:	------

1.3.3 Test location, where different from section 1.3.1

Name:	------
Street:	------
City:	------
Country:	------
Telephone:	------
Fax:	------
Postcode:	------

1.4 Details of applicant or manufacturer

Name:	Cloud Minds(Shenzhen) Holdings Co. Ltd
Address:	Room 201 Building A No.1 Qian hai shengang Corporation Zone Qian hai Road 1st Shenzhen（Stay by Shenzhen Qianhai Commerce Secretariat Co., Ltd ）
Country:	China
Telephone:	0086 13426155325
Fax:	------
Contact:	andy.xu
Email:	andy.xu@cloudminds.com

1.4.2 Manufacturer (if different from applicant in section 1.4.1)

Name:	SHENZHEN FUTAIHONG PRECISION INDUSTRY CO.,LTD
Address:	Office Address Floor 2.Building 3. Zone K1. Foxcon Technology park, 2ND DONGHUAN RD NO.2.LONGHUA Agency. LONGHUA NEW DISTRICT SHENZHEN
Country:	China
Telephone:	------
Fax:	------
Contact:	------
Email:	------

2 Test Item

2.1 General Information

Manufacturer:	SHENZHEN FUTAIHONG PRECISION INDUSTRY CO.,LTD
Type of Equipment:	4G TLE mobile phone
Model Name:	A1-901
Serial Number:	S7/18: 862851030000163/862851030020161 S15/18: 862851030000175/862851030020177
Production Status:	Product
Receipt date of test item:	2017-02-21

2.2 Outline of Equipment under Test

The A1-901, referred to as "EUT" hereafter, is a 4G TLE mobile phone operating on the GSM/UMTS/LTE networks. The table below shows the supported bands for the EUT.

Technology	Band	UL Freq.(MHz)	DL Freq.(MHz)	Note
GSM	GSM850	824 - 849	869 – 894	--
	PCS1900	1850 - 1910	1930 - 1990	--
WCDMA	B2	1850 – 1910	1930 – 1990	--
	B5	824 – 849	869 – 894	--
LTE	B2	1850-1910	1930-1990	--
	B4	1710-1755	2110-2155	--
	B7	2500-2570	2620-2690	--
	B17	704-716	734-746	--

2.3 Modifications Incorporated in EUT

The EUT has not been modified from what is described by the brand name and unique type identification stated above.

2.4 Equipment Configuration

Equipment configuration list:

Item	Generic Description	Manufacturer	Type	Serial No.	Remarks
A	Adaptor	None	None	--	None

2.5 Other Information

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3 Summary of Test Results

A brief summary of the tests carried out is shown as following.

FCC Rules	Name of Test	Result
15.247 (b)(3)(i),(ii)and(iii)	Peak power	Pass
15.247 (d)	Band edge (conducted)	Pass
15.247(a)(1)	Frequency separation	Pass
15.247(a)(1)(ii)	Number of hopping frequency	Pass
15.247(a)(1)(iii)	Time of occupancy	Pass
15.209(a) and 15.205(a)	Spurious emission (conducted)	Pass
15.209(a) and 15.205(a)	Spurious emission (radiated)	Pass
ANSI C63.4 voltage mains test	Power line Conducted Emissions	Pass

4 Test Equipments and Ancillaries Used For Tests

The test equipments and ancillaries used are as follows.

No.	Equipment	Model	SN	Manufacture	Cal. Due Date
1	EMI Test Receiver	ESU26	100367	R&S	2018-03-03
2	Trilog super broadband test antenna	VULB 9163	9163-544	R&S	2017-12-01
3	Double-Ridged Horn Antenna	HF907	100356	R&S	2017-12-01
4	Fully-Anechoic Chamber	11.8m×6.5 m×6.3m	--	ETS	2017-08-19
5	Universal Radio Communication Tester	CMW500	128181	R&S	2018-03-03
6	Signal Generator	SMU200A	104517	R&S	2018-03-03
7	spectrum analyzer	FSQ 26	201137/026	R&S	2018-03-03
8	spectrum analyzer	N9020A	MY50200376	Agilent	2018-03-03
9	Universal Radio Communication Tester	CMU200	112012	R&S	2018-03-03
10	Climate chamber	SH-241	92010759	ESPEC	2018-03-03
11	DC Power Supply	N6705B	MY50000919	Agilent	2017-12-06

5 Test Results

5.1 Peak power

Specifications:	FCC Part 15.247 (b)(3)(i),(ii)and(iii)
DUT Serial Number:	S15/18: 862851030000175/862851030020177
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

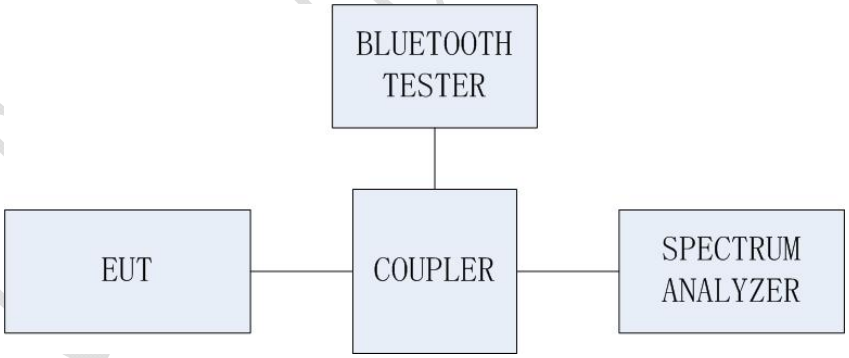
The maximum peak output power of the intentional radiator shall not exceed the following:

1. For systems using digital modulation in the bands of 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz: 1 watt.

2. Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Test Setup:

The BLUETOOTH TESTER was used to set the TX channel and power level. The transmitter output is connected to Spectrum analyzer through a coupler.



Test Method:

The transmitter output is connected to the Spectrum Analyzer. The Spectrum Analyzer is set to the peak detector mode. The RBW is set to 3MHz. The VBW is set to 3MHz.

The measurement is made according to Public notice FCC Public Notice DA 00-705, March 2000, and ANSI C63.10-2013.

Note: --

GFSK Mode:

Channel No.	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Conclusion
Low: 0	2401.650	7.84	30	Pass
Middle: 39	2441.290	9.09		Pass
High: 78	2479.660	7.40		Pass

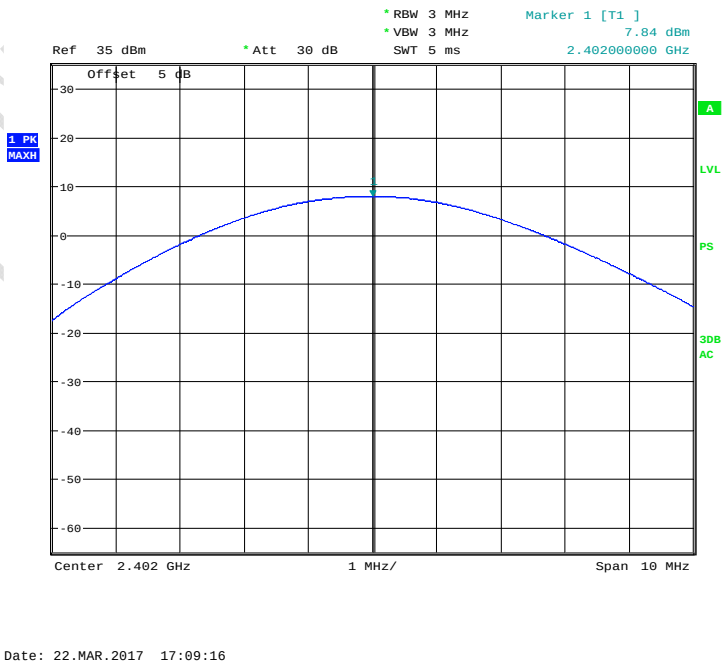
Pi/4 DQPSK Mode:

Channel No.	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Conclusion
Low: 0	2401.990	6.74	30	Pass
Middle: 39	2441.090	8.01		Pass
High: 78	2479.520	6.27		Pass

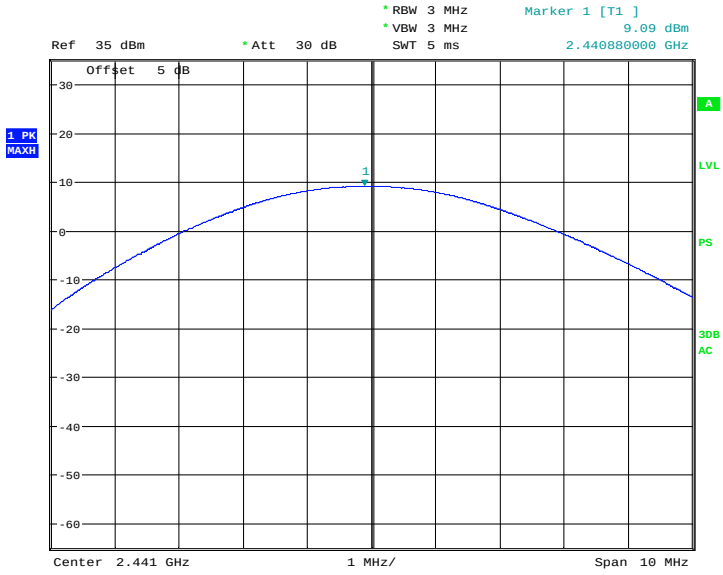
8DPSK Mode:

Channel No.	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Conclusion
Low: 0	2401.960	7.14	30	Pass
Middle: 39	2440.840	8.40		Pass
High: 78	2479.890	6.71		Pass

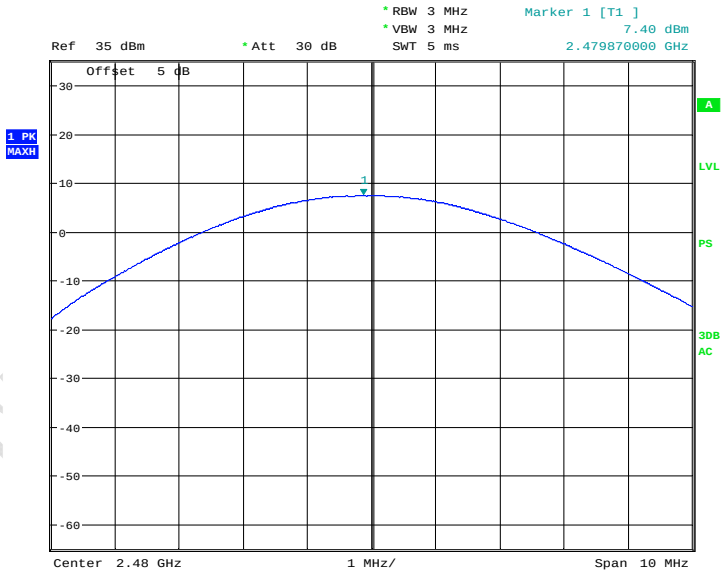
Graphical results :



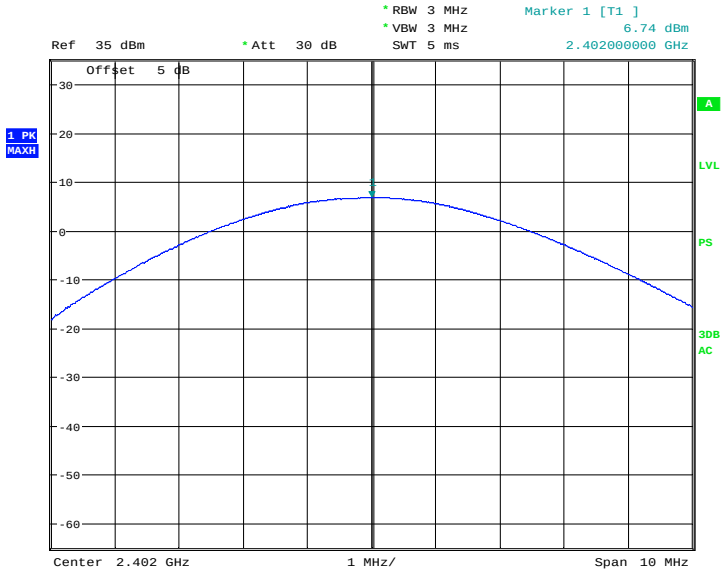
GFSK Channel 0



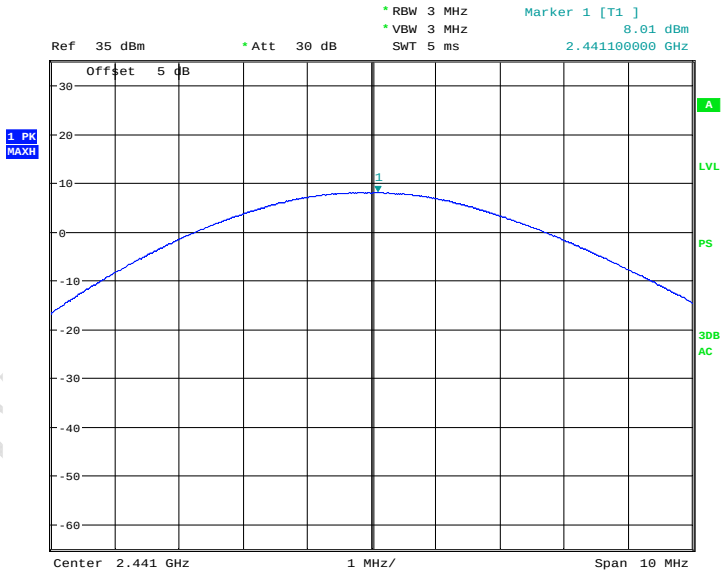
GFSK Channel 39



GFSK Channel 78



Pi/4 DQPSK Channel 0



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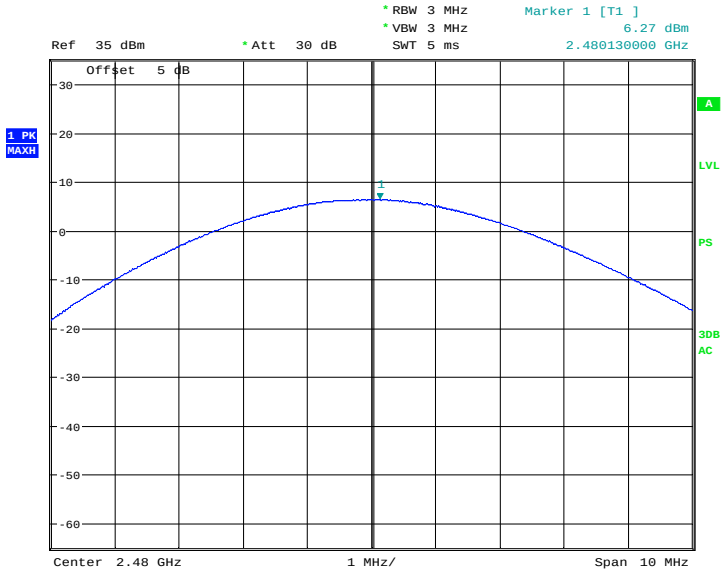

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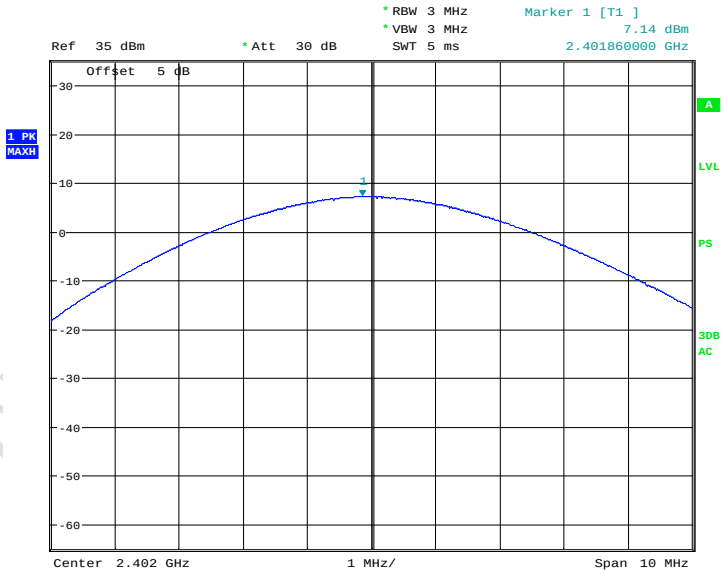
Pi/4 DQPSK Channel 78



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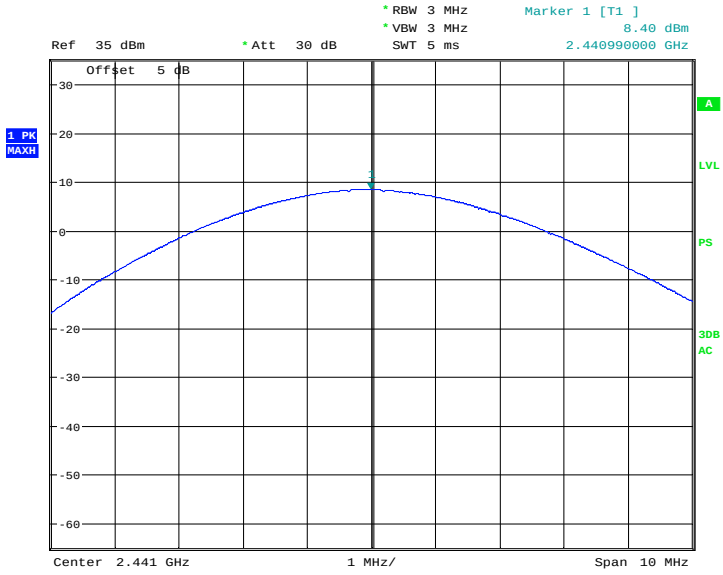
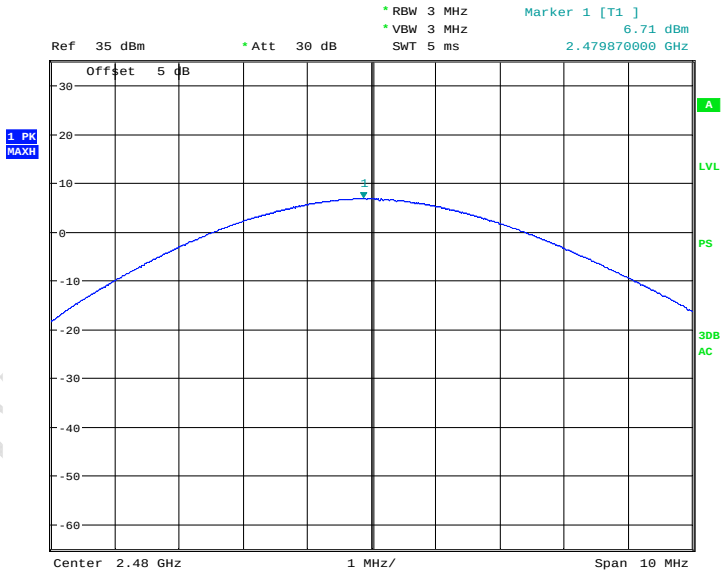
8DPSK Channel 0



8DPSK Channel 39



8DPSK Channel 78

5.2 Band edges

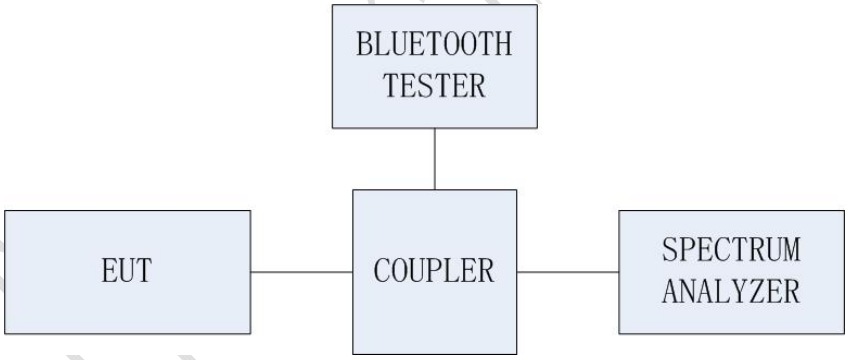
Specifications:	FCC Part 15.247 (d)
DUT Serial Number:	S15/18: 862851030000175/862851030020177
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	--

Limit Level Construction:

According to §15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

Test Setup:

The BLUETOOTH TESTER was used to set the TX channel and power level. The transmitter output is connected to Spectrum analyzer through a coupling.



Test procedure:

The transmitter output is connected to the Spectrum Analyzer. The Spectrum Analyzer is set to the peak detector mode. The spectrum analyzer is set to:

1. Span = 10 MHz
2. RBW = 100 KHz
3. VBW = 300 KHz
4. Sweep = auto

The measurement is made according to Public notice FCC Public Notice DA 00-705, March 2000, and ANSI C63.4-2003.

Note: --

Test Results:

GFSK Mode:

Hopping mode	Channel	Band-edge Freq.[MHz]	Delta[dB]	Conclusion
Hopping OFF	0, Left band-edge	2399.700	-55.96	Pass
Hopping ON	--, Left band-edge	2399.800	-57.38	Pass
Hopping OFF	78, Right band-edge	2483.520	-58.31	Pass
Hopping ON	--, Right band-edge	2484.120	-60.45	Pass

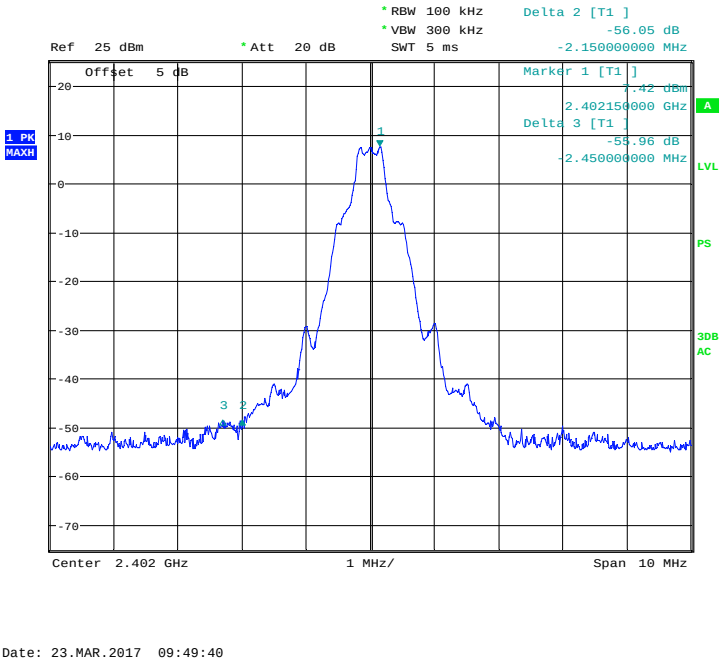
Pi/4 DQPSK Mode:

Hopping mode	Channel	Band-edge Freq.[MHz]	Delta[dB]	Conclusion
Hopping OFF	0, Left band-edge	2399.840	-51.76	Pass
Hopping ON	--, Left band-edge	2399.900	-54.30	Pass
Hopping OFF	78, Right band-edge	2483.510	-55.73	Pass
Hopping ON	--, Right band-edge	2484.210	-57.11	Pass

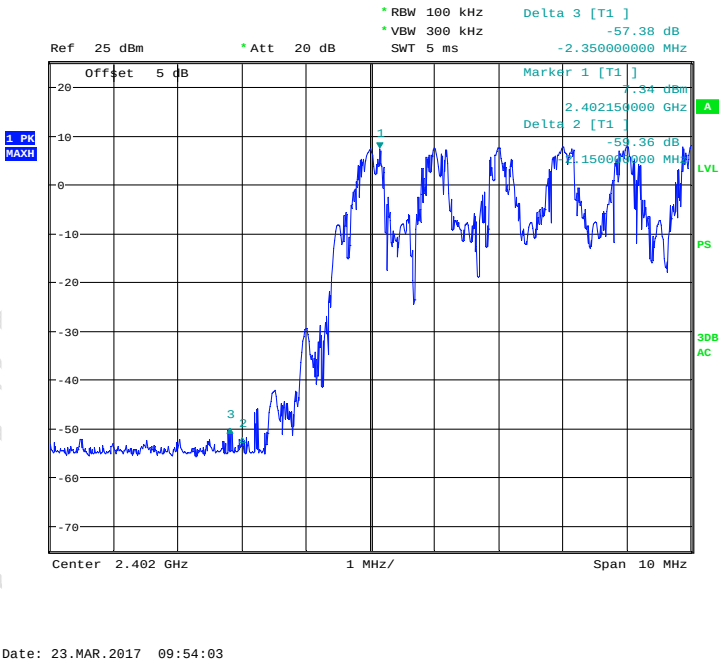
8PSK Mode:

Hopping mode	Channel	Band-edge Freq.[MHz]	Delta[dB]	Conclusion
Hopping OFF	0, Left band-edge	2399.850	-53.85	Pass
Hopping ON	--, Left band-edge	2399.840	-56.66	Pass
Hopping OFF	78, Right band-edge	2484.030	-55.22	Pass
Hopping ON	--, Right band-edge	2483.550	-51.04	Pass

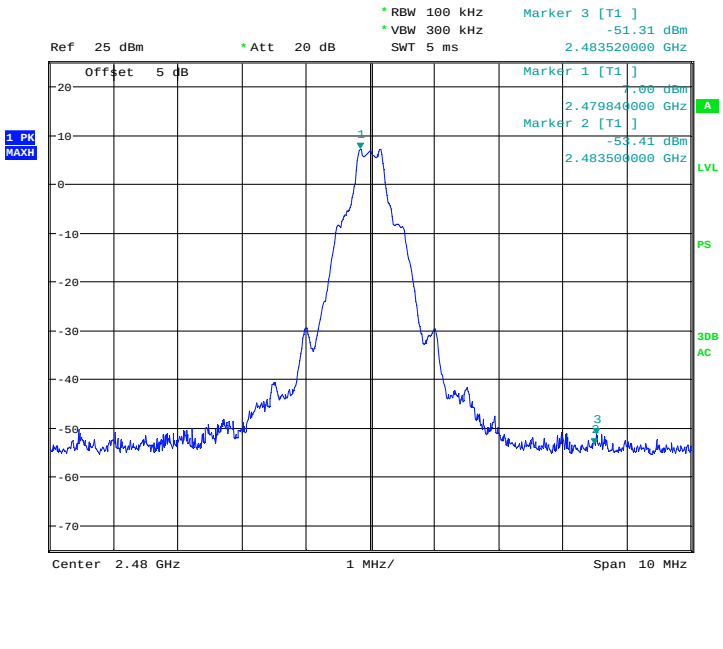
Graphical results:



GFSK Channel 0, fixed mode, left band-edge



GFSK Hopping mode, left band-edge



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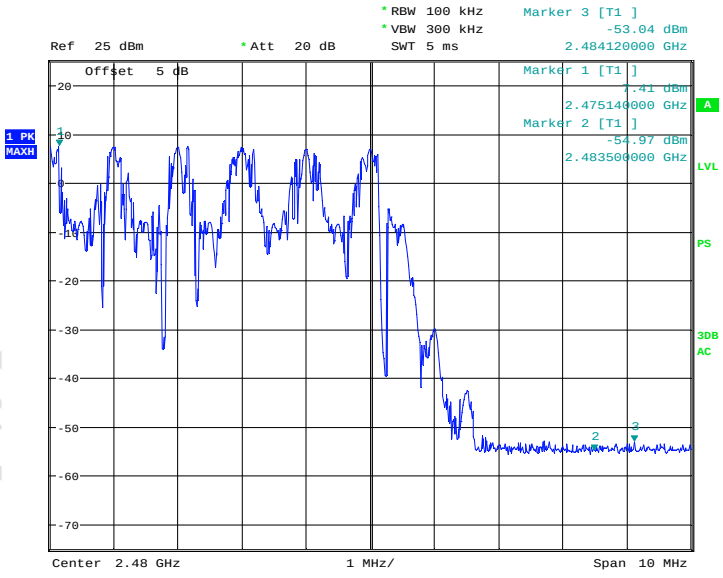
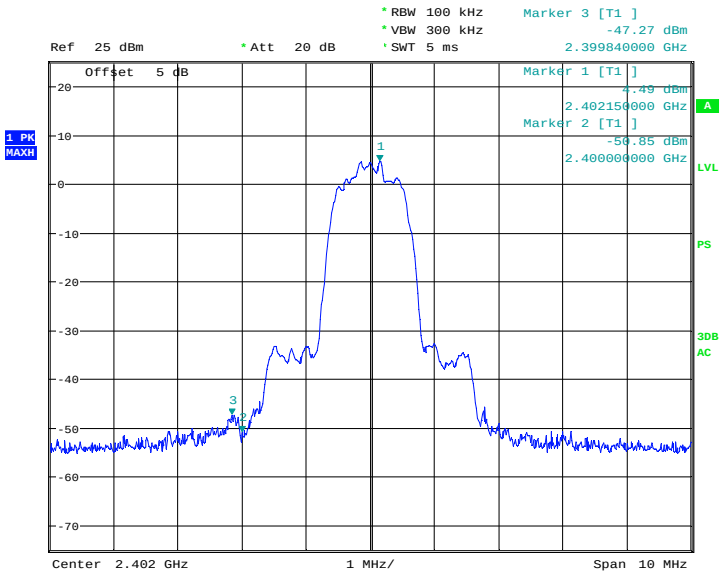
GFSK Channel 78, fixed mode, right band-edge



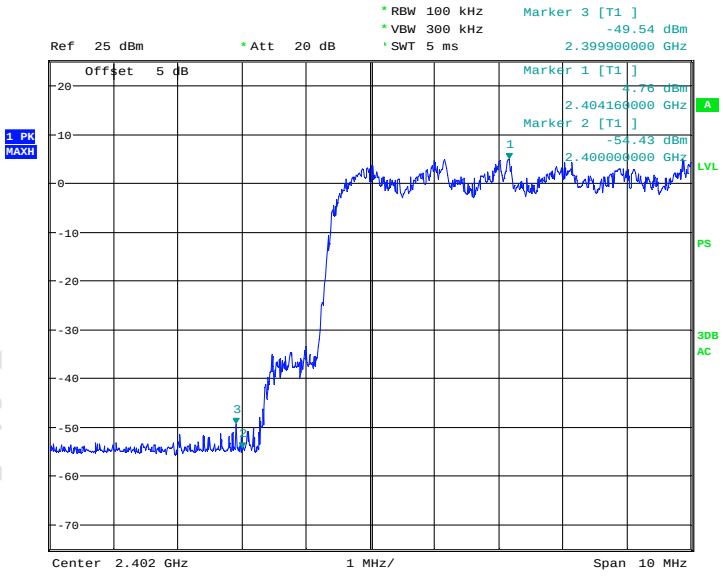
Date: 23.MAR.2017 10:04:48

GFSK Hopping mode, right band-edge



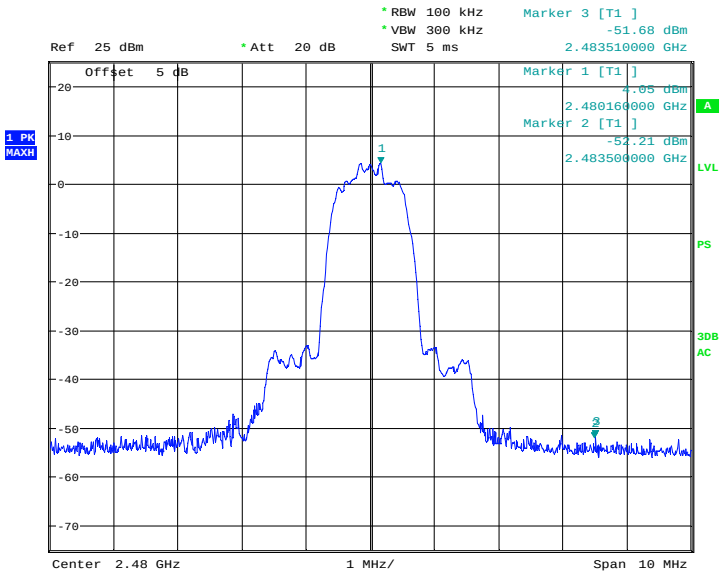
Date: 23.MAR.2017 10:51:34

Pi/4 DQPSK Channel 0, fixed mode, left band-edge



Date: 23.MAR.2017 10:55:45

Pi/4 DQPSK Hopping mode, left band-edge



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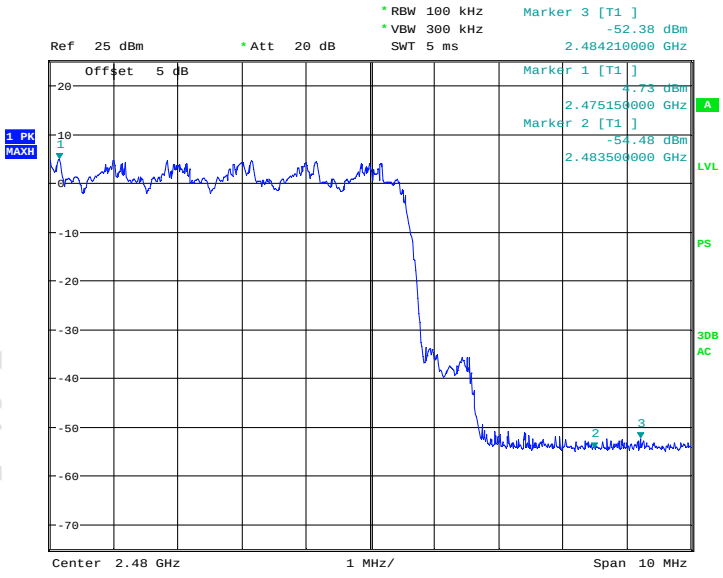
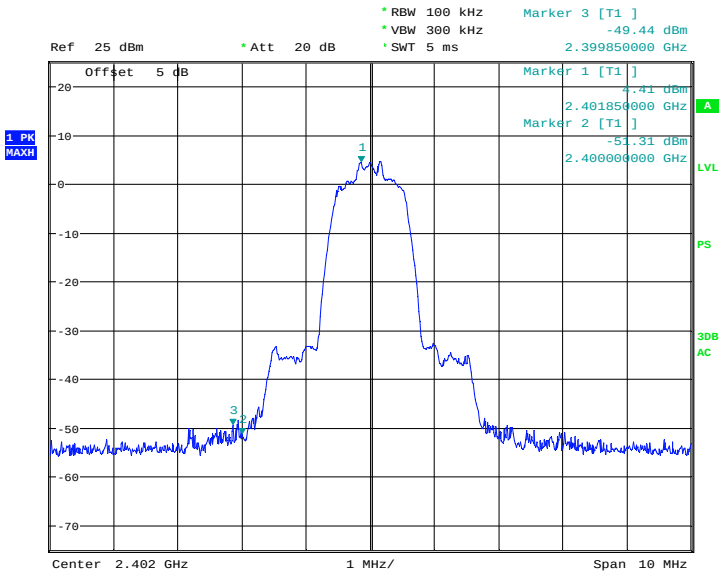
Pi/4 DQPSK Channel 78, fixed mode, right band-edge



Date: 23.MAR.2017 10:32:22

Pi/4 DQPSK Hopping mode, right band-edge



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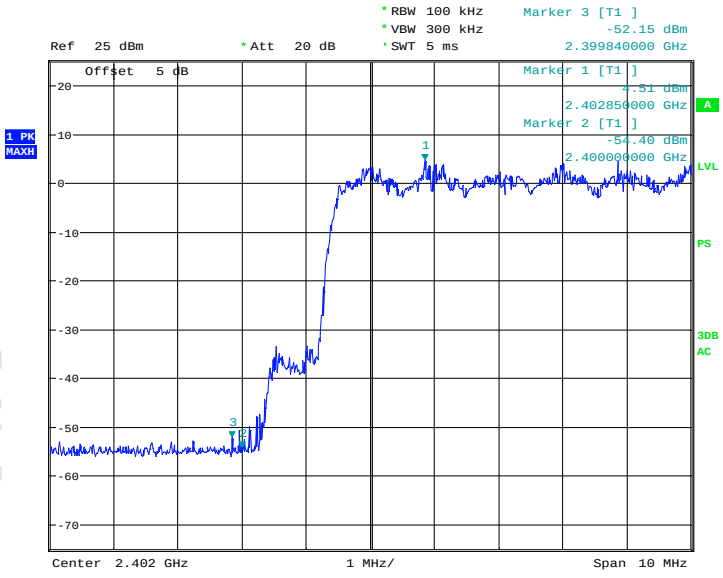
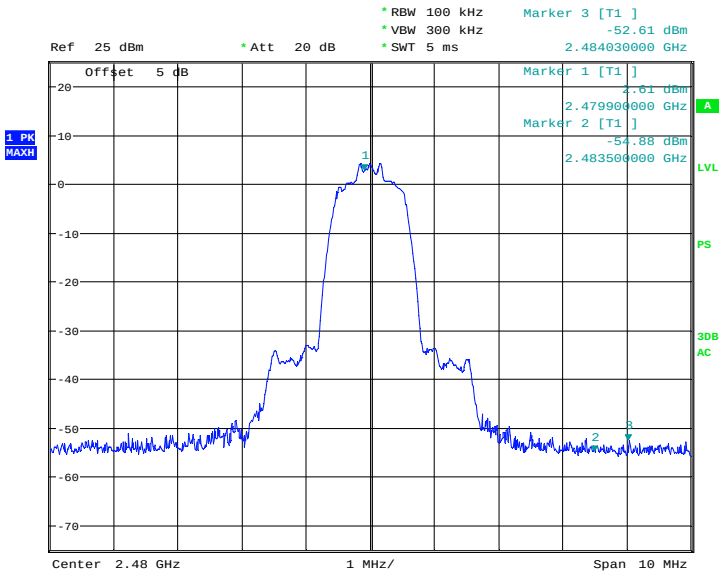
8DPSK Channel 0, fixed mode, left band-edge



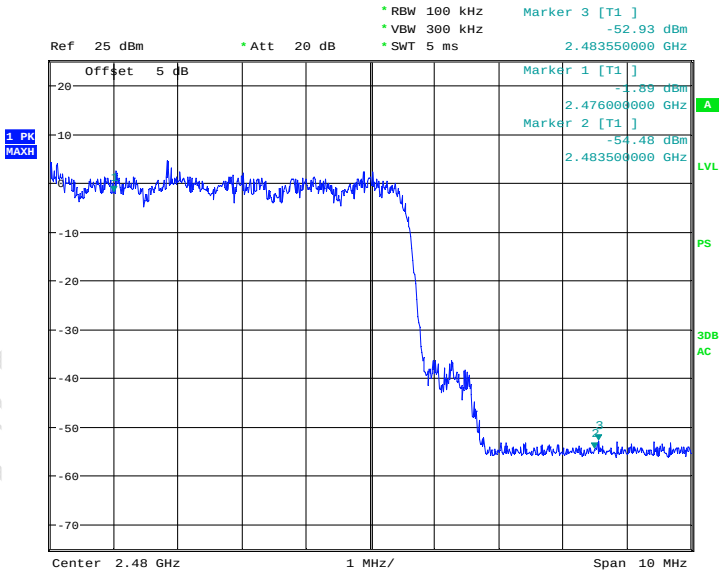
Date: 23.MAR.2017 11:00:19

8DPSK Hopping mode, left band-edge



Date: 23.MAR.2017 11:02:54

8DPSK Channel 78, fixed mode, right band-edge



Date: 23.MAR.2017 11:05:15

8DPSK Hopping mode, right band-edge

5.3 Frequency separation

Specifications:	FCC Part 15.247(a)(1)
DUT Serial Number:	S15/18: 862851030000175/862851030020177
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	--

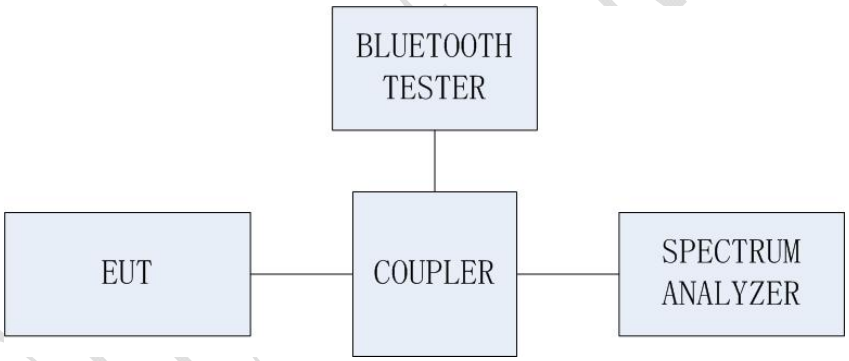
Limit Level Construction:

According to §15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by minimum of 25 kHz or 2/3 of the 20 dB bandwidth of the hopping channel (note), whichever is greater.

Note: it is for the power of less than 125 mw, and for others it is 20 dB bandwidth of the hopping channel.

Test Setup

The BLUETOOTH TESTER was used to set the TX channel and power level. The transmitter output is connected to Spectrum analyzer through a coupling.



Test Procedure

The spectrum analyzer is set to:

1. 20dBc Bandwidth: Span = 3 MHz, RBW=20 kHz, VBW=50 kHz, Sweep=auto.
2. Carrier Frequency Separation: Span = 3 MHz, RBW=100 kHz, VBW=300 kHz, Sweep=auto.

The trace was allowed to stabilize. The marker-delta function was used to determine the separation between the peaks of the adjacent channels.

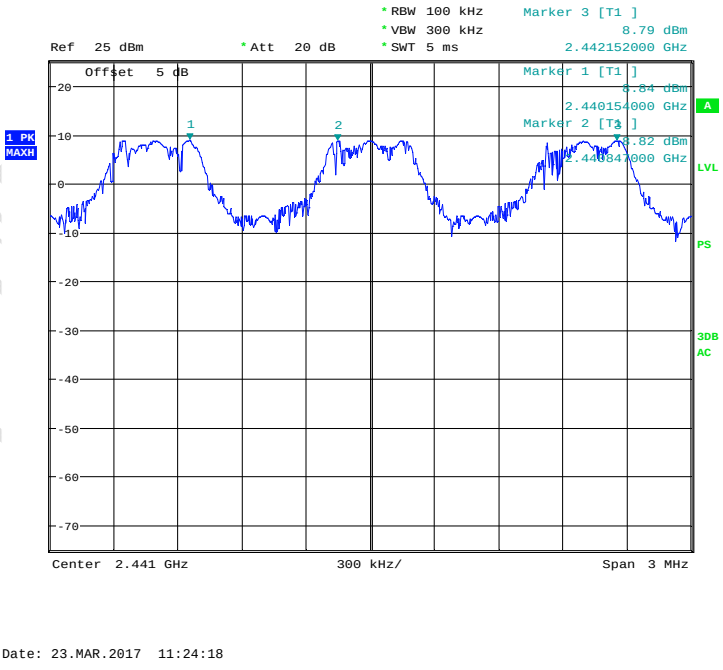
The measurement is made according to Public notice FCC Public Notice DA 00-705, March 2000, and ANSI C63.10-2013.

Note: --

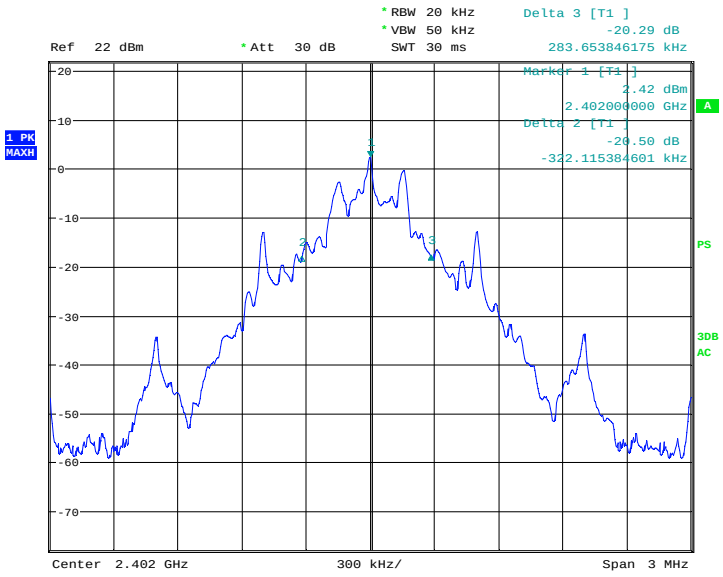
Test Result:

Channel separation(kHz)	20dB Bandwidth(kHz)		Limit(kHz)	Conclusion
GFSK				
693	Ch 0	606	>25	Pass
	Ch 39	683	>25	Pass
	Ch 78	635	>25	Pass
Pi/4 DQPSK				
1020	Ch 0	1308	>25	Pass
	Ch 39	1288	>25	Pass
	Ch 78	1279	>25	Pass
8DPSK				
856	Ch 0	1264	>25	Pass
	Ch 39	1269	>25	Pass
	Ch 78	1264	>25	Pass

Graphical results:

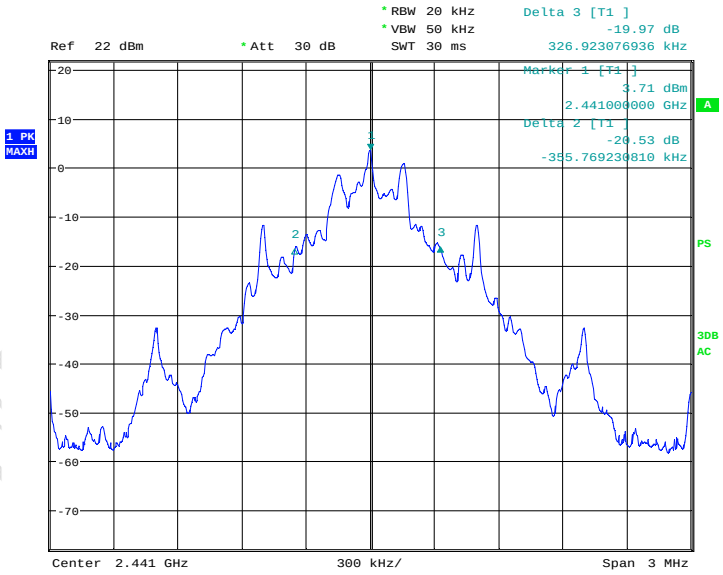


Channel Separation (GFSK)



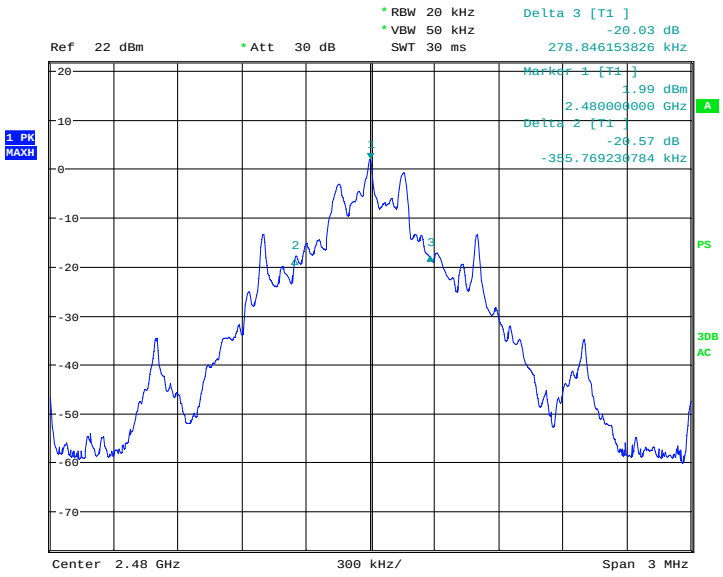
Date: 23.MAR.2017 11:48:42

20dB Bandwidth (GFSK Ch 0)



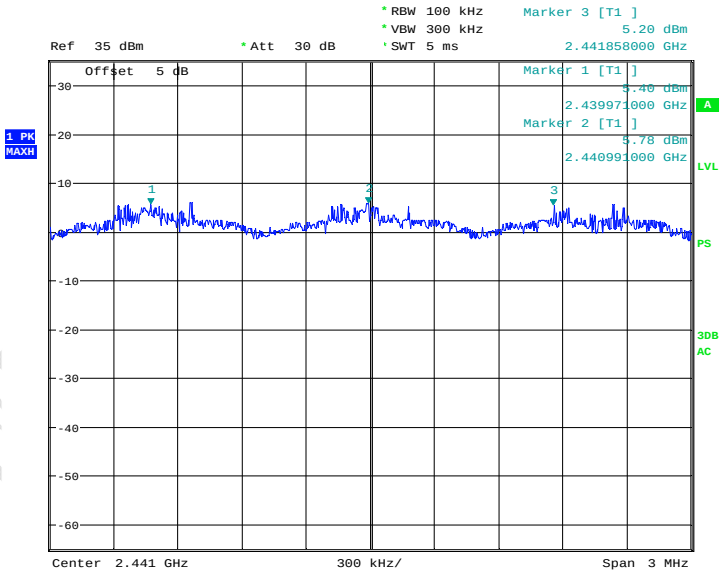
Date: 23.MAR.2017 11:58:35

20dB Bandwidth (GFSK Ch 39)



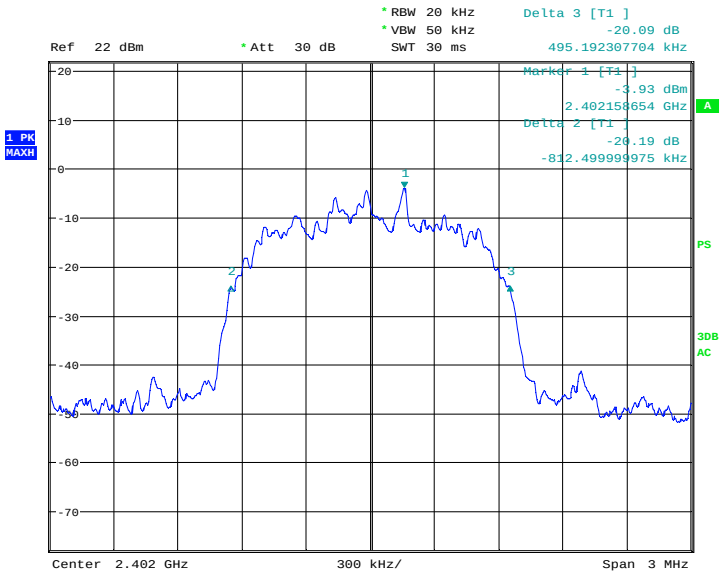
Date: 23.MAR.2017 14:03:29

20dB Bandwidth (GFSK Ch 78)



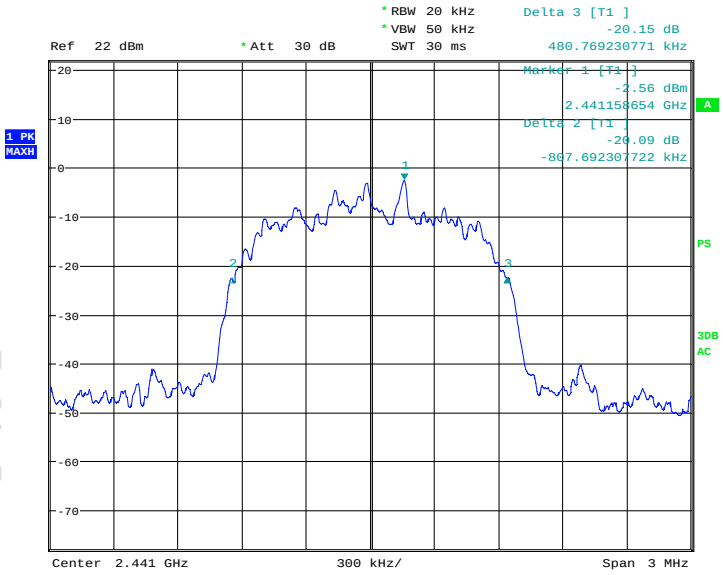
Date: 23.MAR.2017 11:29:06

Channel Separation (Pi/4 DQPSK)



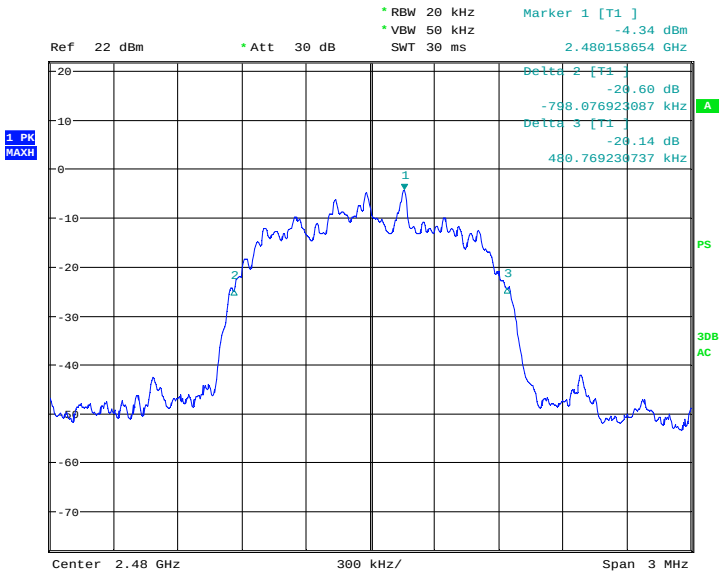
Date: 23.MAR.2017 11:50:15

20dB Bandwidth (Pi/4 DQPSK Ch0)



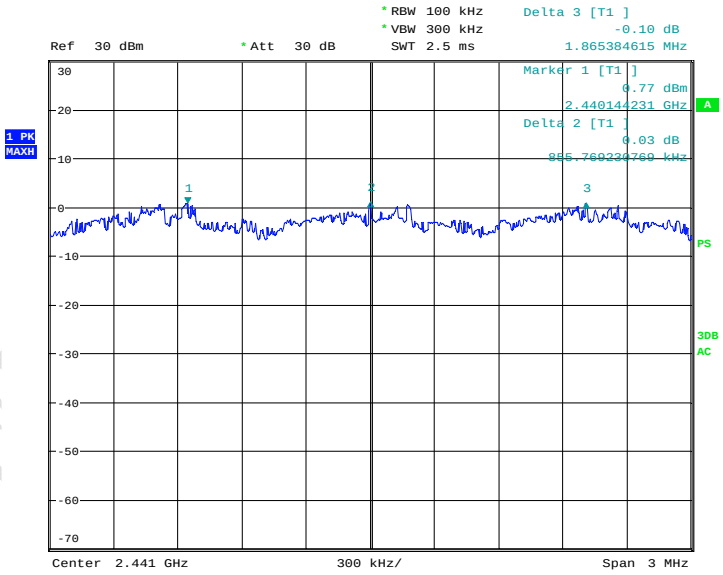
Date: 23.MAR.2017 11:57:15

20dB Bandwidth (Pi/4 DQPSK Ch39)



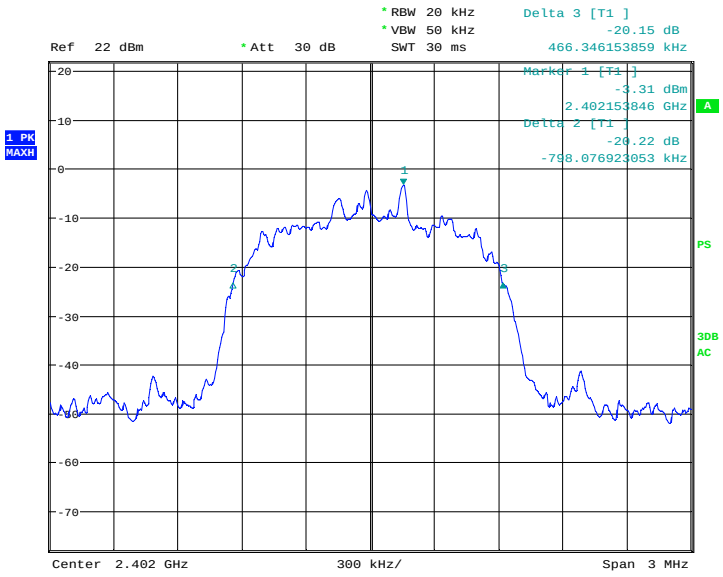
Date: 23.MAR.2017 14:04:13

20dB Bandwidth (Pi/4 DQPSK Ch78)



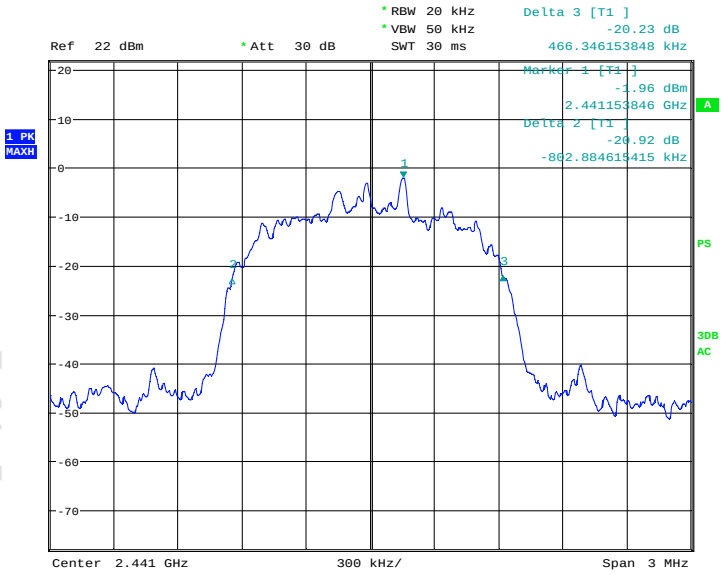
Date: 23.MAR.2017 11:44:04

Channel Separation (8DPSK)



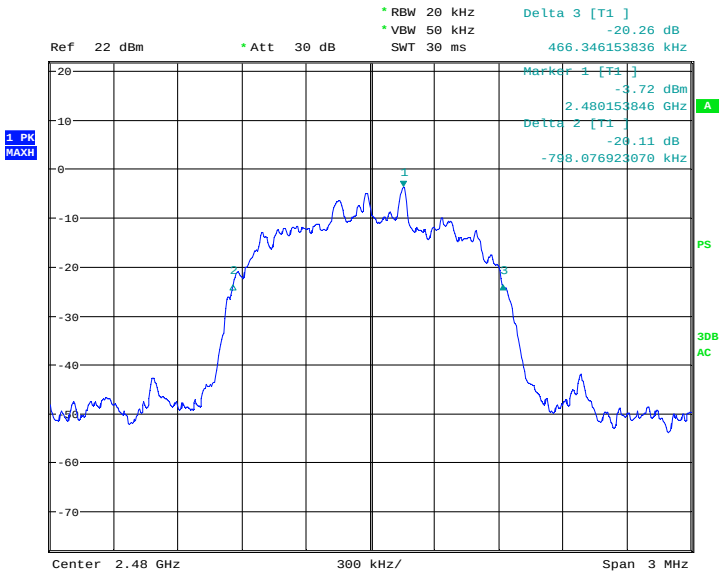
Date: 23.MAR.2017 11:53:08

20dB Bandwidth (8DPSK Ch0)



Date: 23.MAR.2017 11:56:14

20dB Bandwidth (8DPSK Ch39)



20dB Bandwidth (8DPSK Ch78)

5.4 Number of hopping frequency

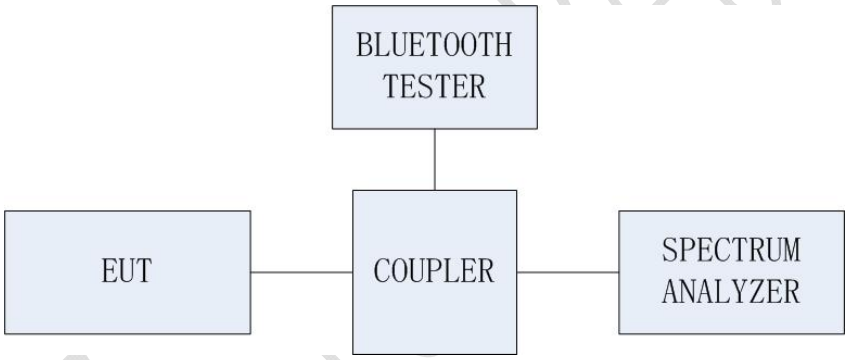
Specifications:	FCC Part 15.247(a)(1)(ii)
DUT Serial Number:	S15/18: 862851030000175/862851030020177
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	--

Limit Level Construction:

According to §15.247(a)(1)(ii), Frequency hopping systems operating in the 2400 MHz - 2483.5 MHz bands shall use at least 15 hopping frequencies.

Test Setup

The BLUETOOTH TESTER was used to set the TX channel and power level. The transmitter output is connected to Spectrum analyzer through a coupling.



Test Procedure

The Bluetooth frequency hopping function of the EUT was enabled. The spectrum analyzer was set to:

1. Span = the frequency band of operation, i.e. 2400-2441MHz and 2441-2484 MHz
2. RBW = 500 KHz
3. VBW = 500 KHz
4. Sweep = auto

The trace was allowed to stabilize.

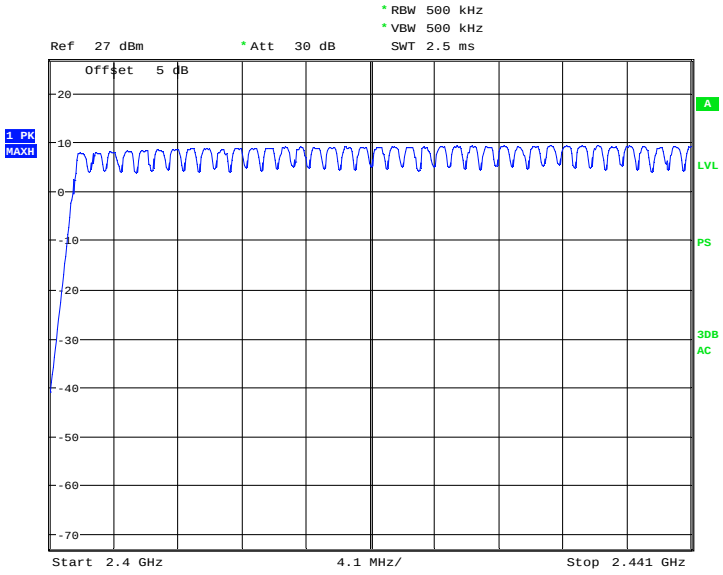
The measurement is made according to Public notice FCC Public Notice DA 00-705, March 2000, and ANSI C63.10-2013.

Note: --

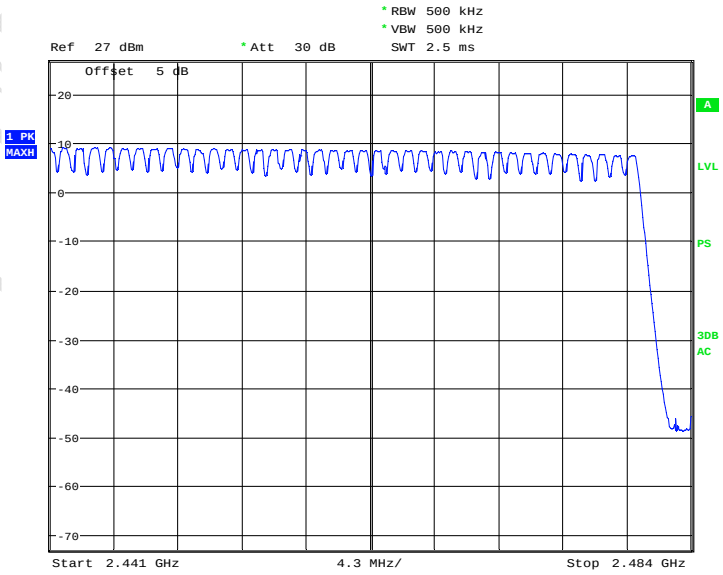
Test Result:

Modulation	No. of channels	Limit (No. of Ch)	Conclusion
GFSK	79	>75	Pass
Pi/4 DQPSK	79	>75	Pass
8DPSK	79	>75	Pass

Graphical results:

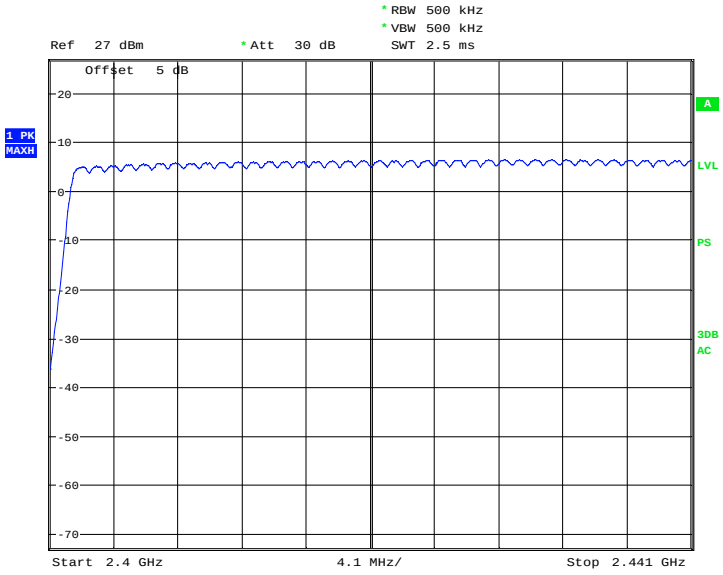


Date: 23.MAR.2017 14:13:19

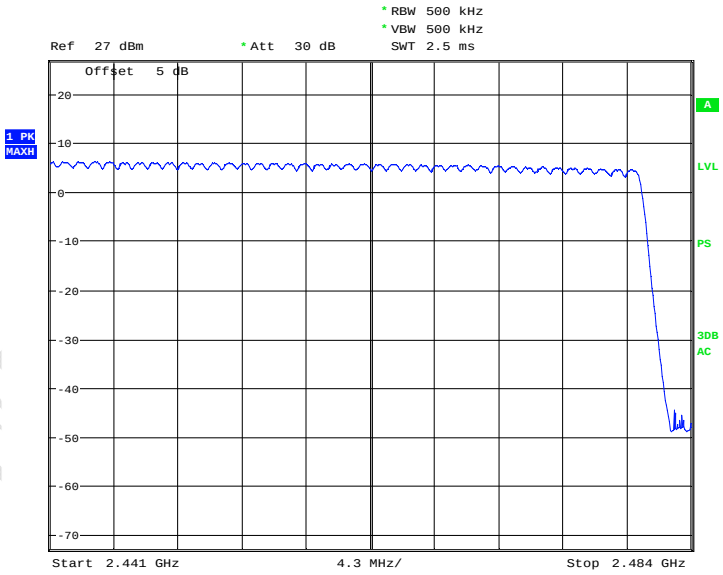


Date: 23.MAR.2017 14:17:37

Channel Number (GFSK)

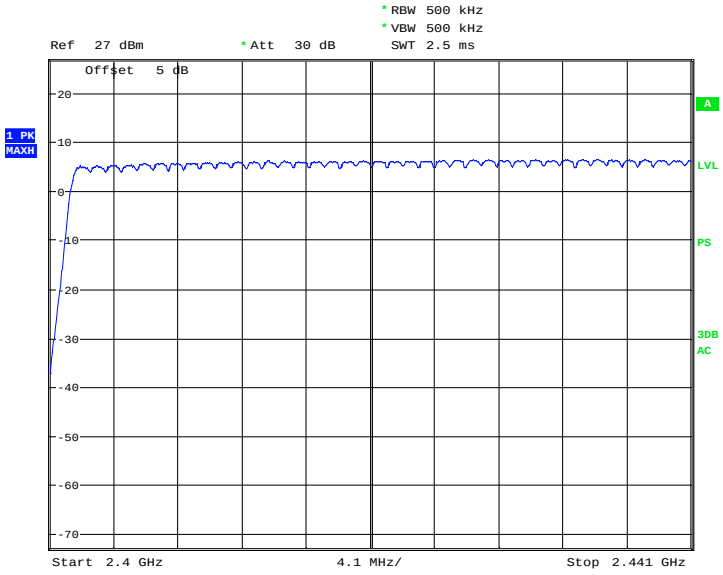


Date: 23.MAR.2017 14:27:14

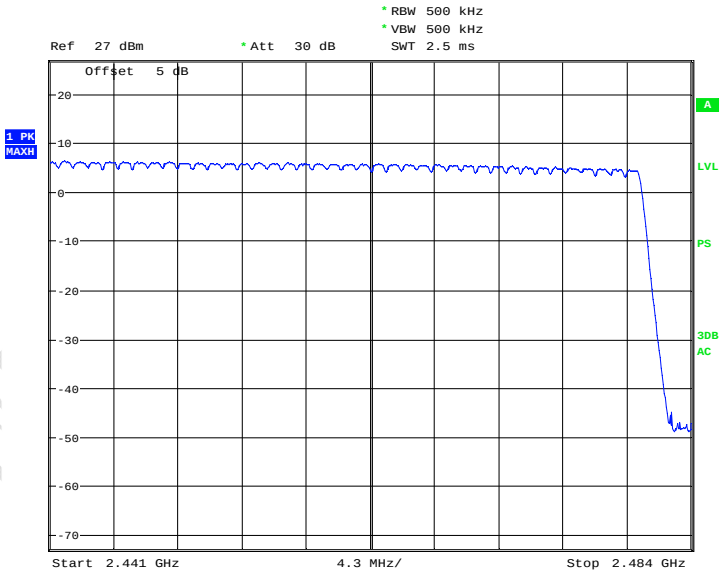


Date: 23.MAR.2017 14:20:32

Channel Number (Pi/4 DQPSK)



Date: 23.MAR.2017 14:31:42



Date: 23.MAR.2017 14:34:50

Channel Number (8DPSK)

5.5 Time of occupancy

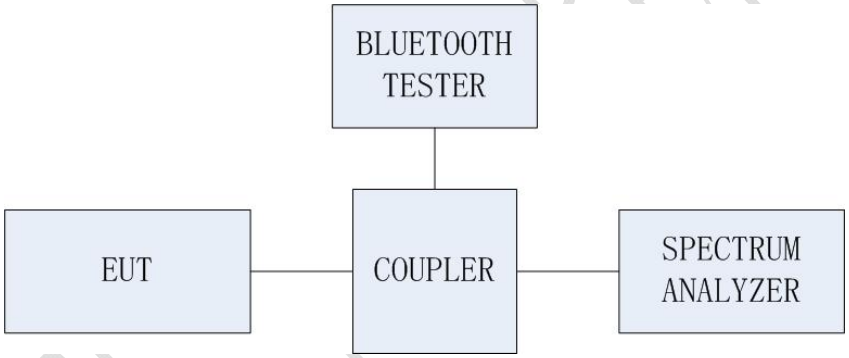
Specifications:	FCC Part 15.247(a)(1)(iii)
DUT Serial Number:	S15/18: 862851030000175/862851030020177
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	--

Limit

According to §15.247(a)(1)(iii), Frequency hopping systems operating in the 2400 MHz - 2483.5 MHz bands. The average time of occupancy on any channels shall not greater than 0.4 s within a period 0.4 s multiplied by the number of hopping channels employed.

Test Setup

The BLUETOOTH TESTER was used to set the TX channel and power level. The transmitter output is connected to Spectrum analyzer through a coupling.



Test Procedure

The spectrum analyzer is set to:

1. Span = zero span
2. RBW = 1 MHz
3. VBW = 3 MHz
4. Sweep = as necessary to capture the entire dwell time per channel

The marker-delta function was used to determine the dwell time.

The measurement is made according to Public notice FCC Public Notice DA 00-705, March 2000, and ANSI C63.10-2013.

Test Result:

GFSK DH1:

0.385*(1600/2)/79*31.6=123ms

Pulse time[ms]	Total dwell[ms]	Period time[s]	Conclusion
0.385	123	31.6	Pass

GFSK DH3:

1.652*(1600/4)/79*31.6=264ms

Pulse time[ms]	Total dwell[ms]	Period time[s]	Conclusion
1.652	264	31.6	Pass

GFSK DH5:

2.886*(1600/6)/79*31.6=308ms

Pulse time[ms]	Total dwell[ms]	Period time[s]	Conclusion
2.886	308	31.6	Pass

Pi/4 DQPSK 2DH1:

0.385*(1600/2)/79*31.6=123ms

Pulse time[ms]	Total dwell[ms]	Period time[s]	Conclusion
0.385	123	31.6	Pass

Pi/4 DQPSK 2DH3:

1.652*(1600/4)/79*31.6=264ms

Pulse time[ms]	Total dwell[ms]	Period time[s]	Conclusion
1.652	264	31.6	Pass

Pi/4 DQPSK 2DH5:

2.886*(1600/6)/79*31.6=308ms

Pulse time[ms]	Total dwell[ms]	Period time[s]	Conclusion
2.886	308	31.6	Pass

8DPSK 3DH1:

0.389*(1600/2)/79*31.6=124ms

Pulse time[ms]	Total dwell[ms]	Period time[s]	Conclusion
0.389	124	31.6	Pass

8DPSK 3DH3:

1.646*(1600/4)/79*31.6=260ms

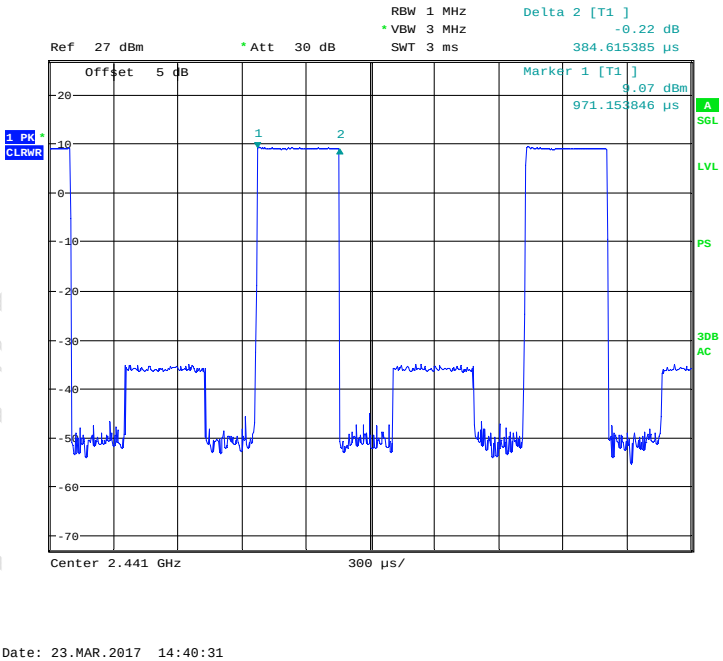
Pulse time[ms]	Total dwell[ms]	Period time[s]	Conclusion
1.646	263	31.6	Pass

8DPSK 3DH5:

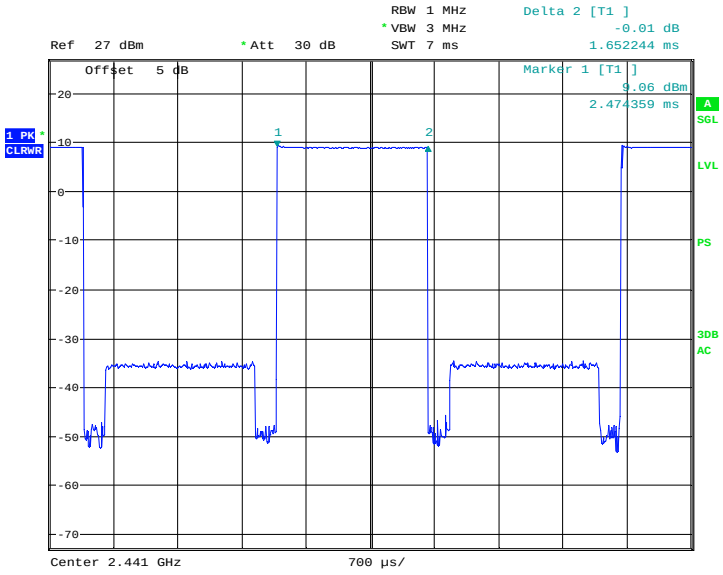
2.880*(1600/6)/79*31.6=307ms

Pulse time[ms]	Total dwell[ms]	Period time[s]	Conclusion
2.880	307	31.6	Pass

Graphical results:

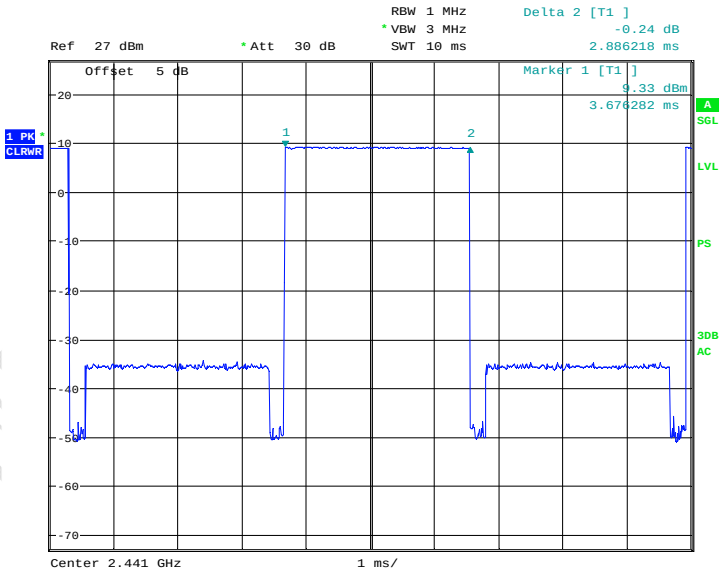


GFSK DH1



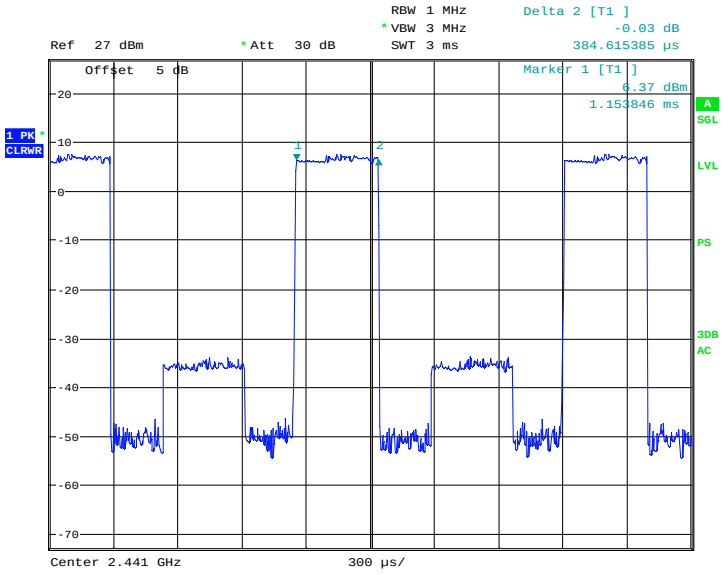
Date: 23.MAR.2017 14:41:17

GFSK DH3



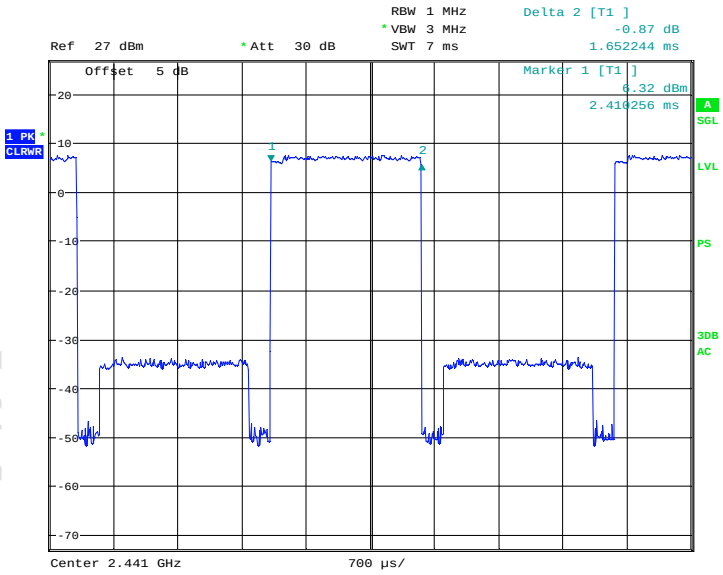
Date: 23.MAR.2017 14:41:49

GFSK DH5



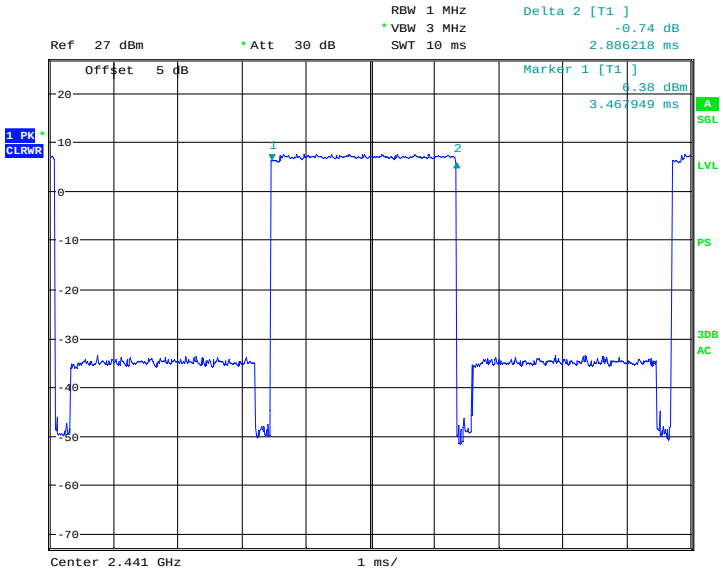
Date: 23.MAR.2017 14:42:49

Pi/4 DQPSK 2DH1



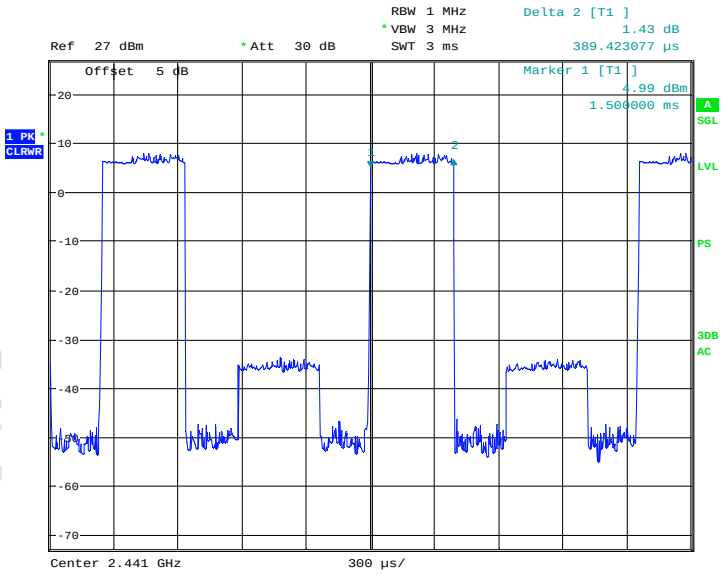
Date: 23.MAR.2017 14:43:38

Pi/4 DQPSK 2DH3



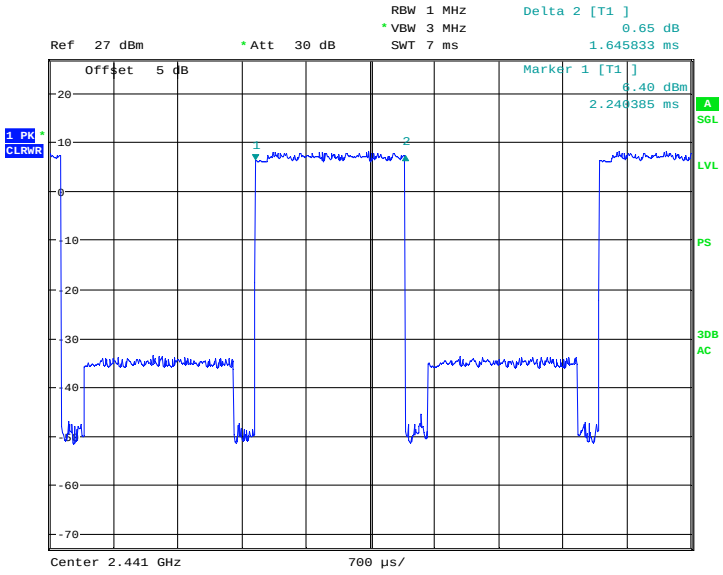
Date: 23.MAR.2017 14:44:08

Pi/4 DQPSK 2DH5



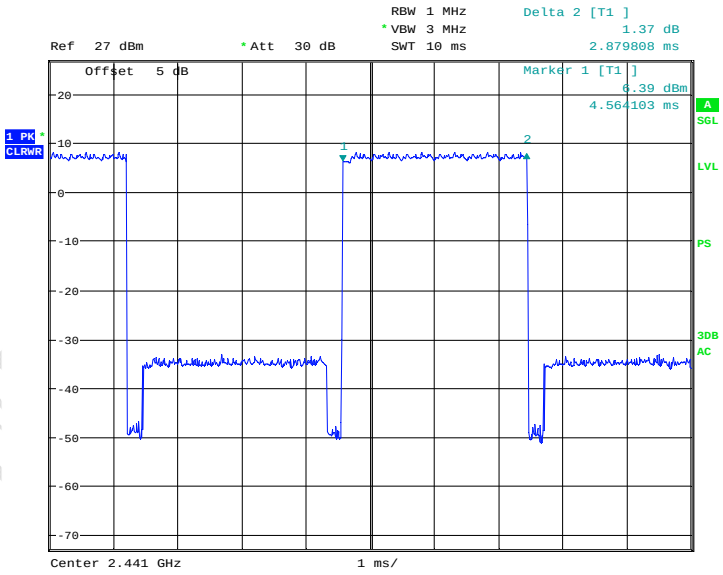
Date: 23.MAR.2017 14:44:38

8DPSK 3DH1



Date: 23.MAR.2017 14:44:58

8DPSK 3DH3



Date: 23.MAR.2017 14:45:30

8DPSK 3DH5

5.6 Spurious Measurement (Conducted)

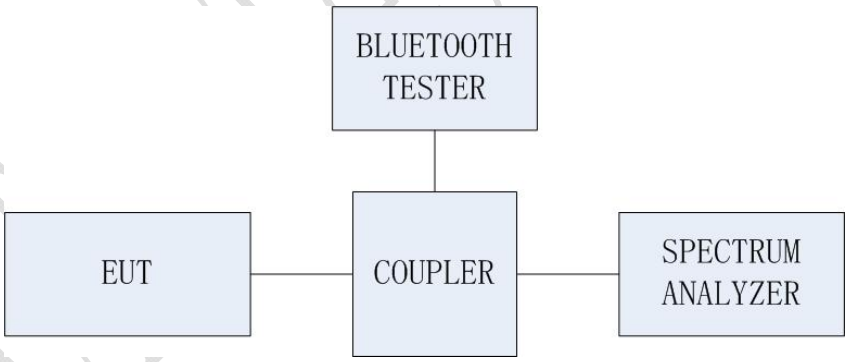
Specifications:	FCC Part 15.209(a), 15.205(a)
DUT Serial Number:	S15/18: 862851030000175/862851030020177
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	--

Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Test Setup

The BLUETOOTH TESTER was used to set the TX channel and power level. The transmitter output is connected to Spectrum analyzer through a coupling.



Test Procedure

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site. The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 KHz. The video bandwidth is set to 300 KHz. Measurements are made over the 30 MHz to 26 GHz range with the transmitter set to the lowest, middle, and highest channels.

The measurement is made according to Public notice FCC Public Notice DA 00-705, March 2000, and ANSI C63.10-2013.

Test Result:

GFSK

Channel	Frequency Range	Conclusion
0	Center Frequency	Pass
	30 MHz – 1 GHz	Pass
	1 GHz – 3 GHz	Pass
	3 GHz – 10 GHz	Pass
	10 GHz – 26.5 GHz	Pass
39	Center Frequency	Pass
	30 MHz – 1 GHz	Pass
	1 GHz – 3 GHz	Pass
	3 GHz – 10 GHz	Pass
	10 GHz – 26.5 GHz	Pass
78	Center Frequency	Pass
	30 MHz – 1 GHz	Pass
	1 GHz – 3 GHz	Pass
	3 GHz – 10 GHz	Pass
	10 GHz – 26.5 GHz	Pass

Pi/4 DQPSK

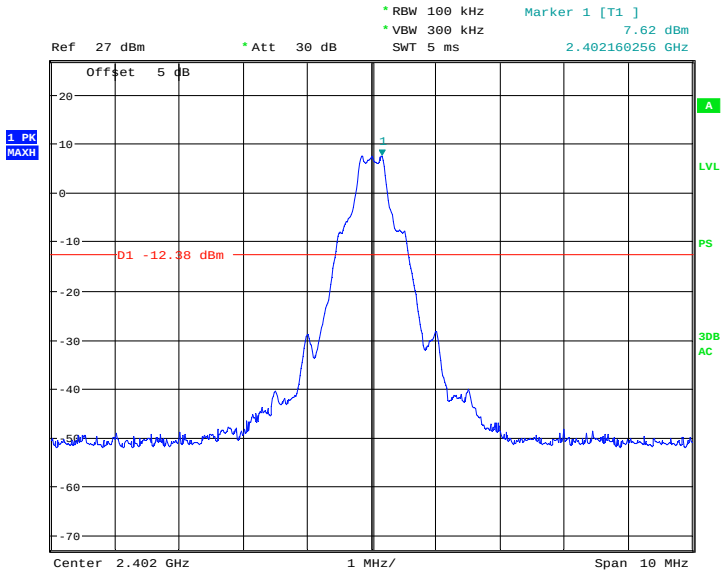
Channel	Frequency Range	Conclusion
0	Center Frequency	Pass
	30 MHz – 1 GHz	Pass
	1 GHz – 3 GHz	Pass
	3 GHz – 10 GHz	Pass
	10 GHz – 26.5 GHz	Pass
39	Center Frequency	Pass
	30 MHz – 1 GHz	Pass
	1 GHz – 3 GHz	Pass
	3 GHz – 10 GHz	Pass
	10 GHz – 26.5 GHz	Pass

78	Center Frequency	Pass
	30 MHz – 1 GHz	Pass
	1 GHz – 3 GHz	Pass
	3 GHz – 10 GHz	Pass
	10 GHz – 26.5 GHz	Pass

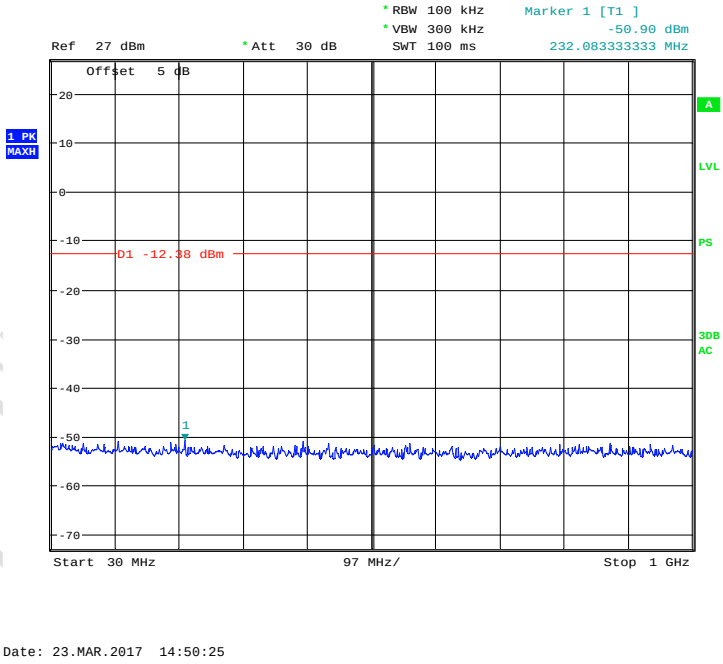
8DPSK

Channel	Frequency Range	Conclusion
0	Center Frequency	Pass
	30 MHz – 1 GHz	Pass
	1 GHz – 3 GHz	Pass
	3 GHz – 10 GHz	Pass
	10 GHz – 26.5 GHz	Pass
39	Center Frequency	Pass
	30 MHz – 1 GHz	Pass
	1 GHz – 3 GHz	Pass
	3 GHz – 10 GHz	Pass
	10 GHz – 26.5 GHz	Pass
78	Center Frequency	Pass
	30 MHz – 1 GHz	Pass
	1 GHz – 3 GHz	Pass
	3 GHz – 10 GHz	Pass
	10 GHz – 26.5 GHz	Pass

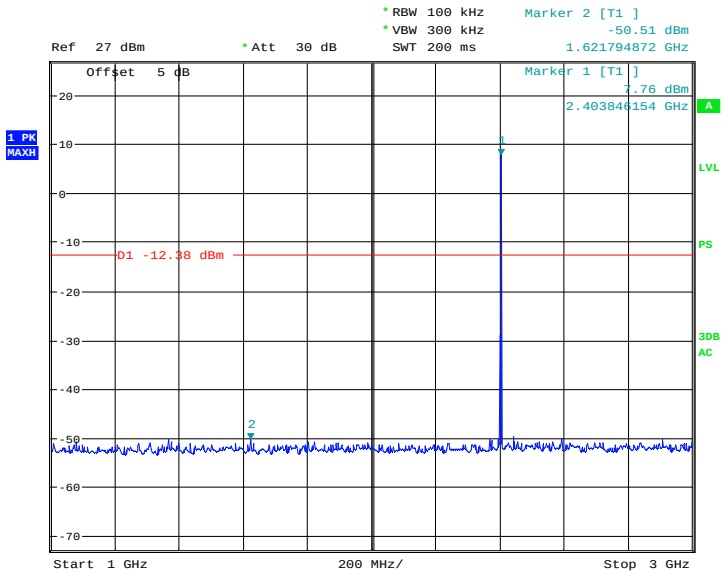
Graphical results:



GFSK CH0 Center Frequency

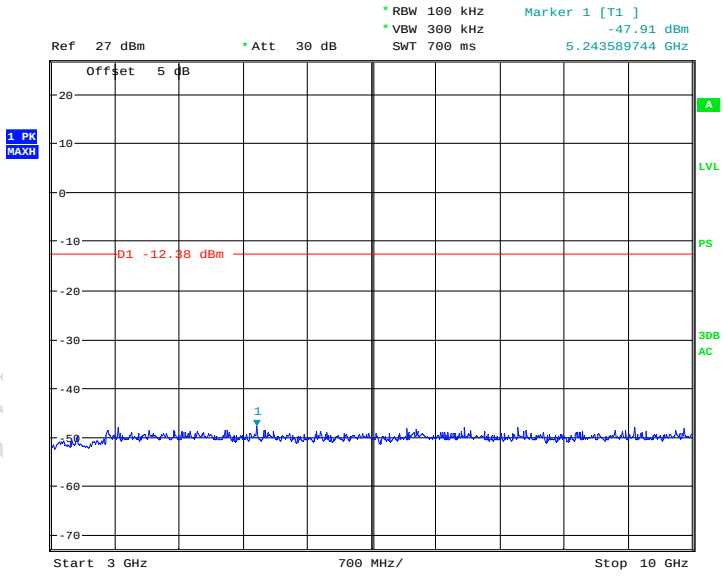


GFSK CH0 30MHz – 1GHz



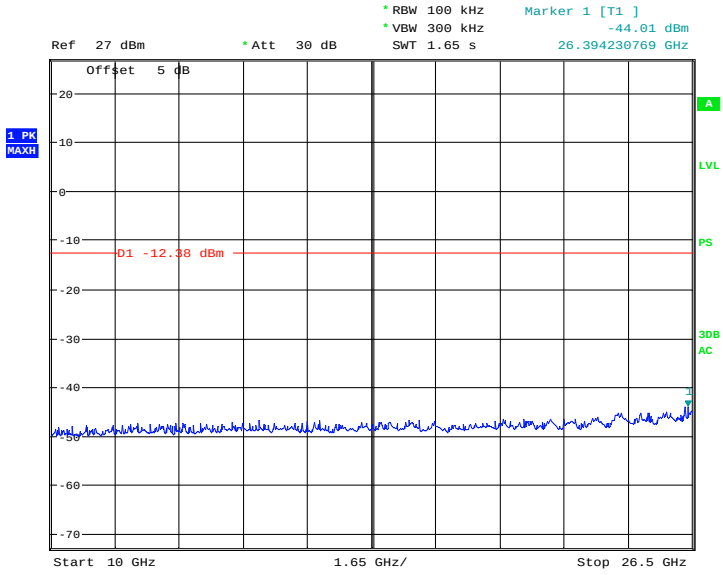
Date: 23.MAR.2017 15:03:22

GFSK CH0 1GHz – 3GHz



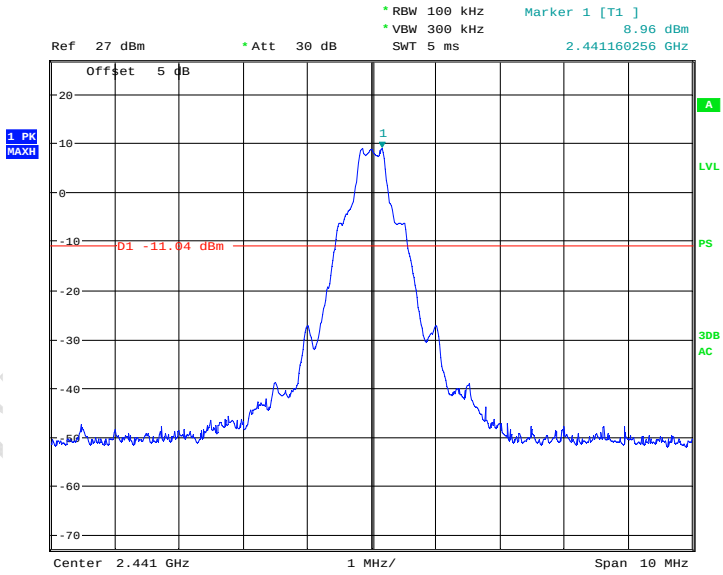
Date: 23.MAR.2017 15:04:24

GFSK CH0 3GHz – 10GHz



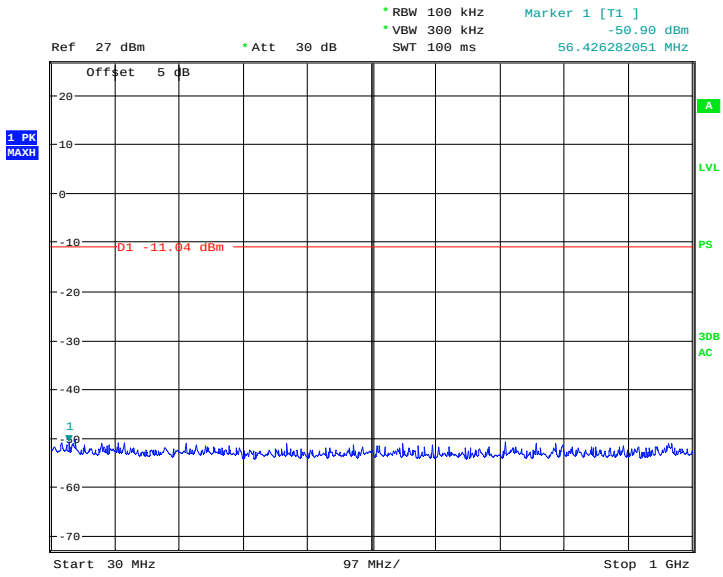
Date: 23.MAR.2017 15:05:53

GFSK CH0 10GHz – 26.5GHz



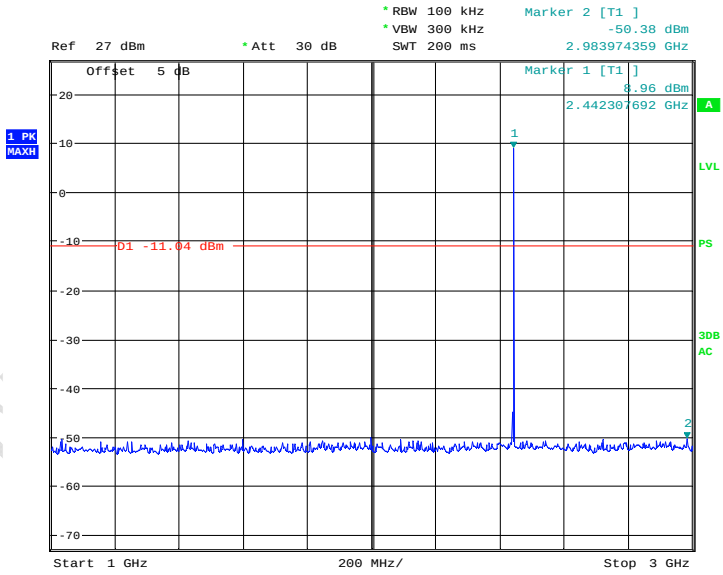
Date: 23.MAR.2017 15:09:35

GFSK CH39 Center Frequency



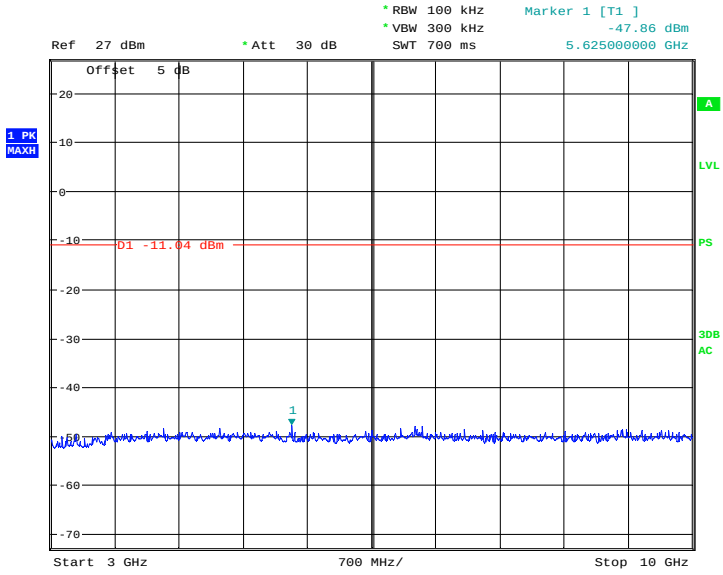
Date: 23.MAR.2017 15:09:58

GFSK CH39 30MHz – 1GHz



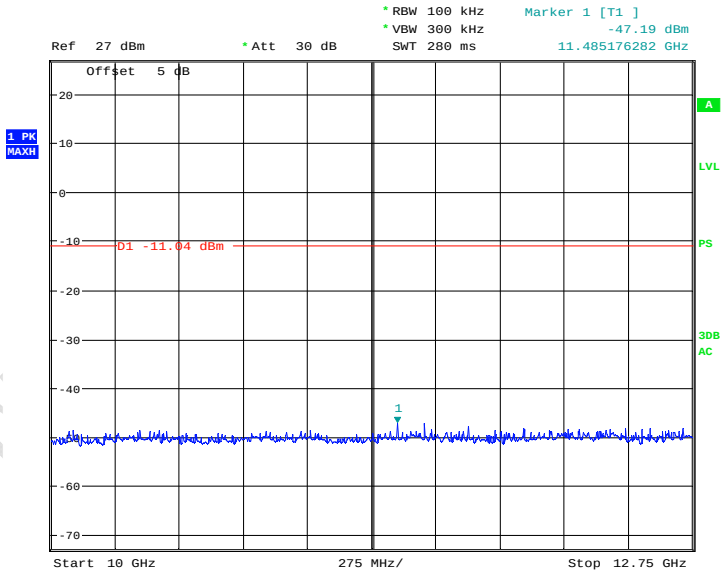
Date: 23.MAR.2017 15:10:23

GFSK CH39 1GHz – 3GHz



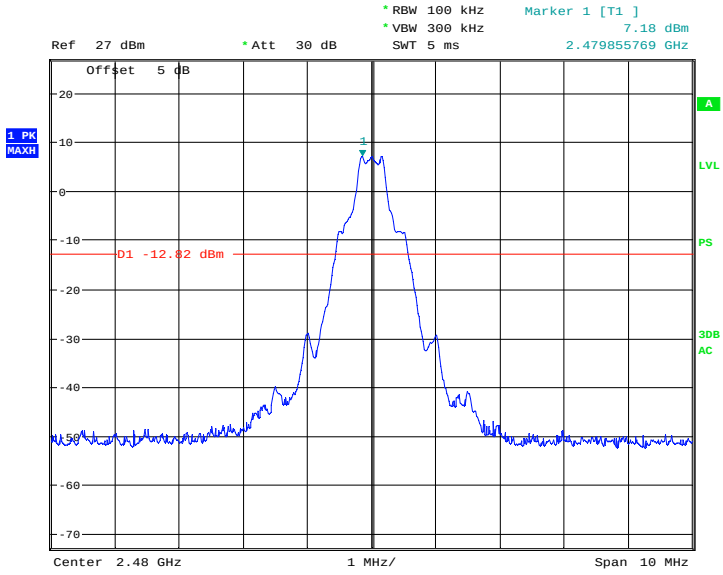
Date: 23.MAR.2017 15:10:53

GFSK CH39 3GHz – 10GHz

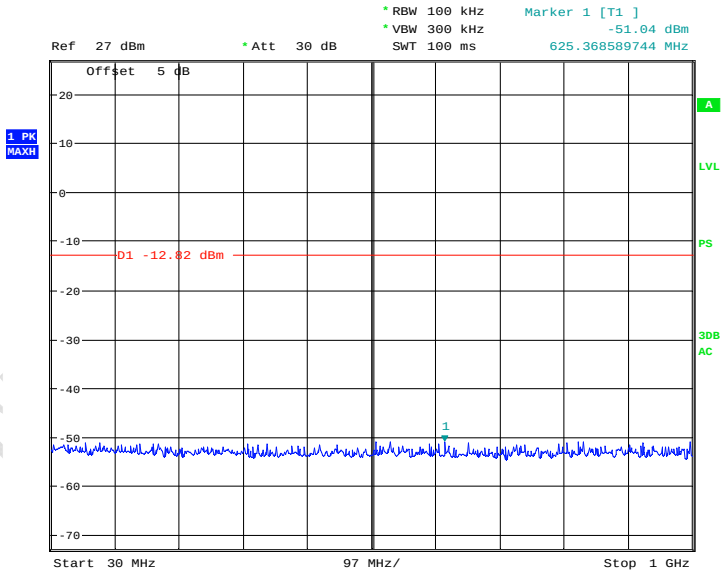


Date: 23.MAR.2017 15:11:16

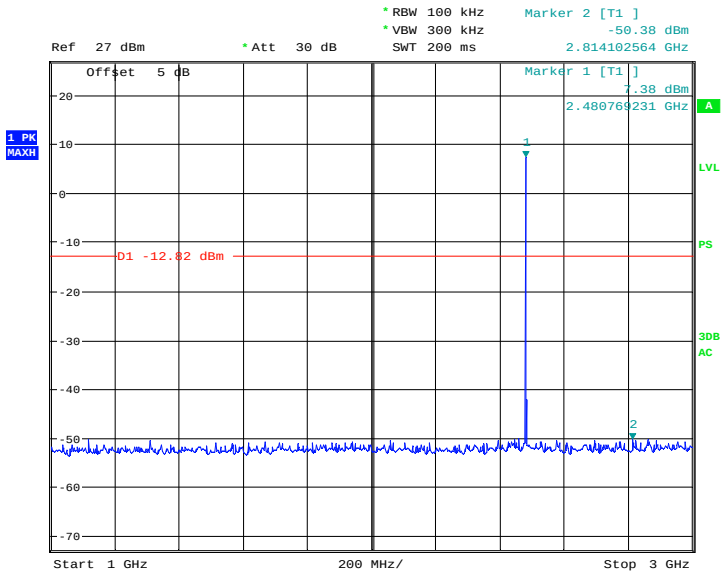
GFSK CH39 10GHz – 26.5GHz



GFSK CH78 Center Frequency

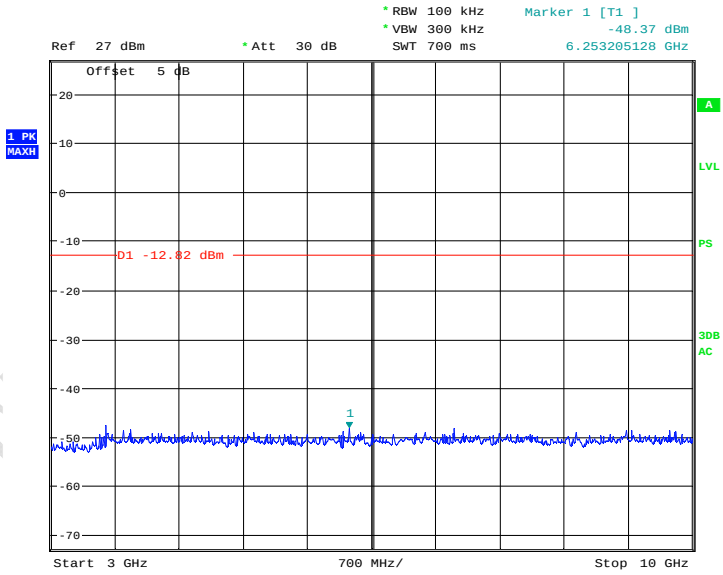


GFSK CH78 30MHz – 1GHz



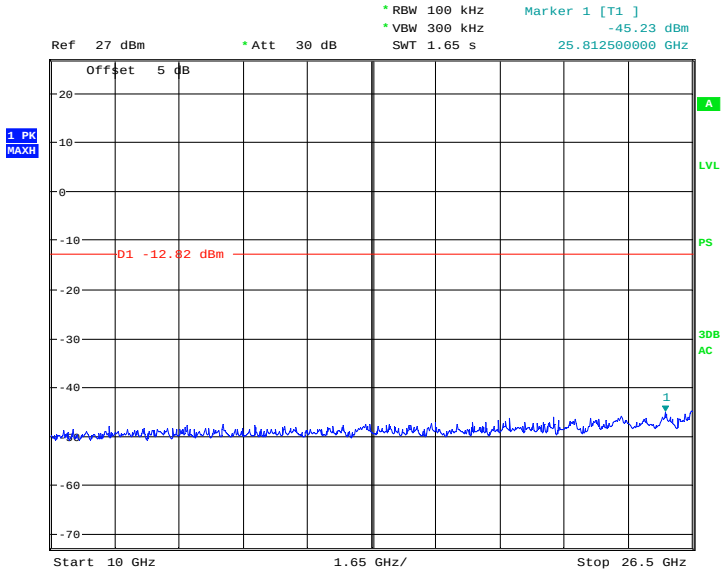
Date: 23.MAR.2017 15:15:48

GFSK CH78 1GHz – 3GHz



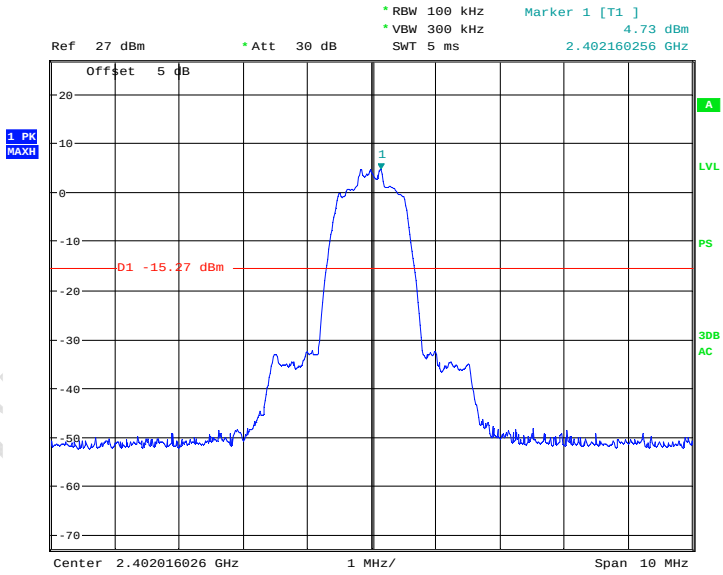
Date: 23.MAR.2017 15:16:05

GFSK CH78 3GHz – 10GHz



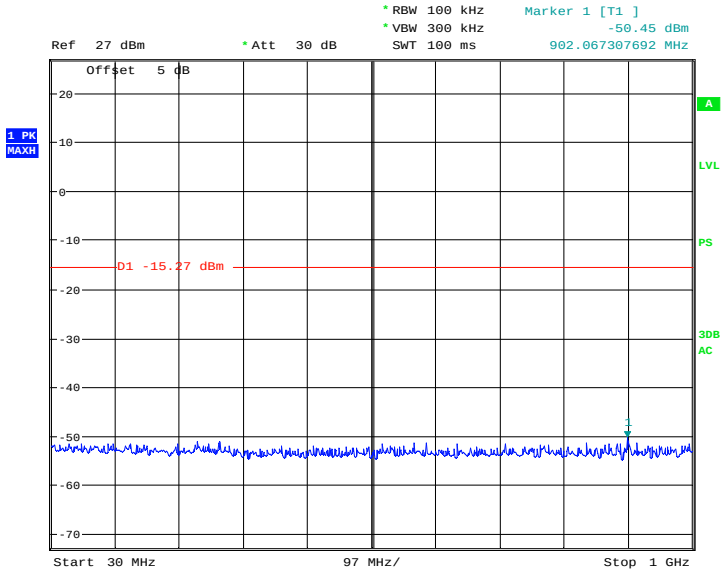
Date: 23.MAR.2017 15:16:28

GFSK CH78 10GHz – 26.5GHz



Date: 23.MAR.2017 15:23:11

PI/4 DQPSK CH0 Center Frequency



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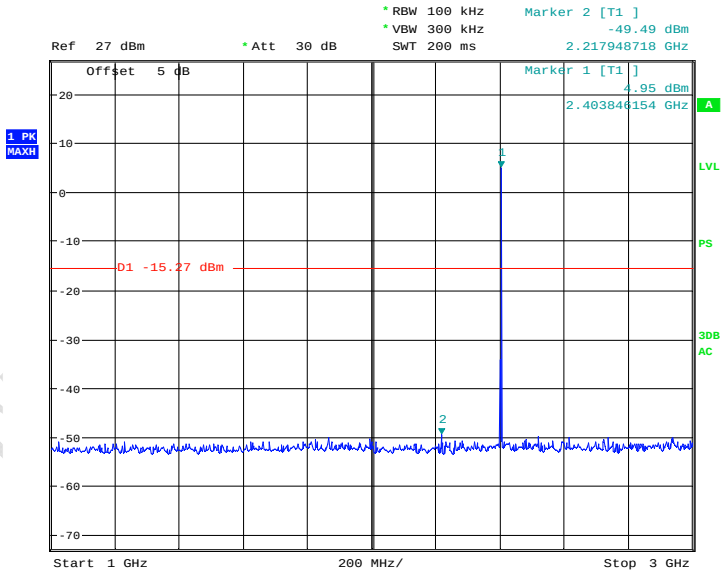
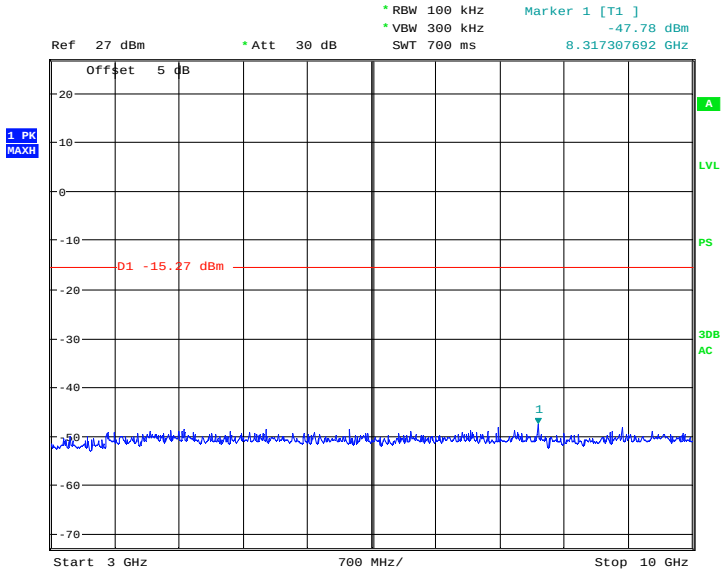
PI/4 DQPSK CH0 30MHz – 1GHz

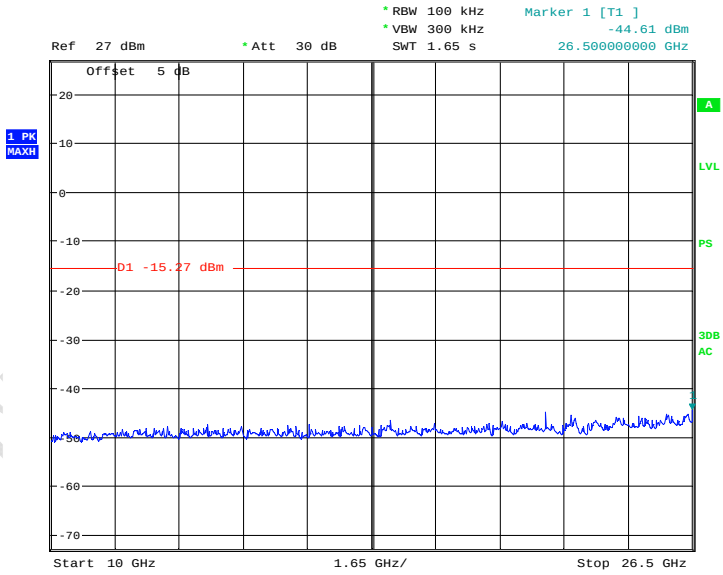


Date: 23.MAR.2017 15:23:53

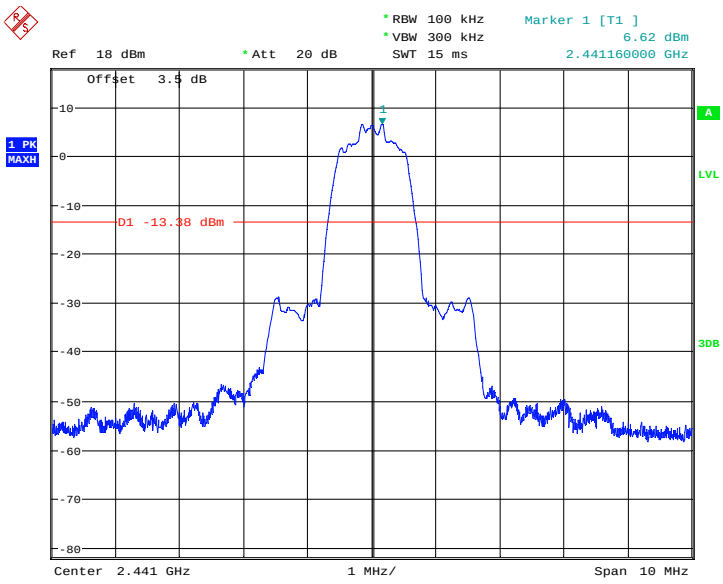
PI/4 DQPSK CH0 1GHz – 3GHz



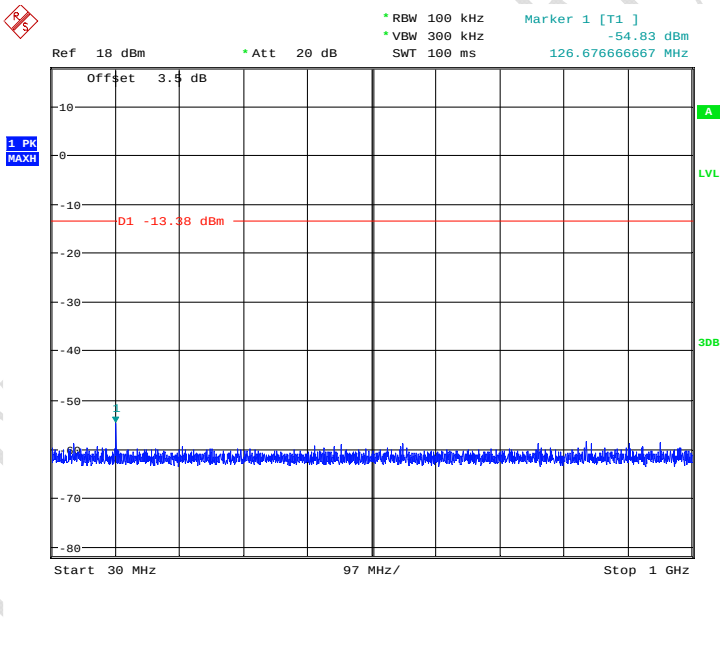
PI/4 DQPSK CH0 3GHz – 10GHz



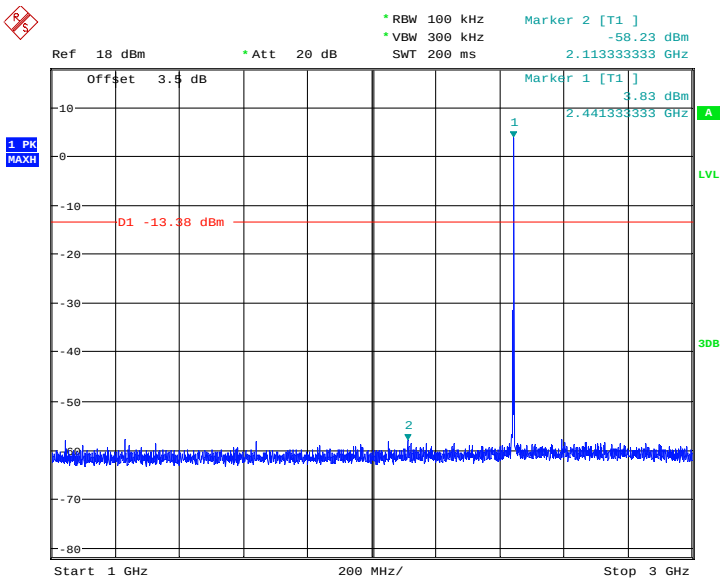
PI/4 DQPSK CH0 10GHz – 26.5GHz



PI/4 DQPSK CH39 Center Frequency



PI/4 DQPSK CH39 30MHz – 1GHz



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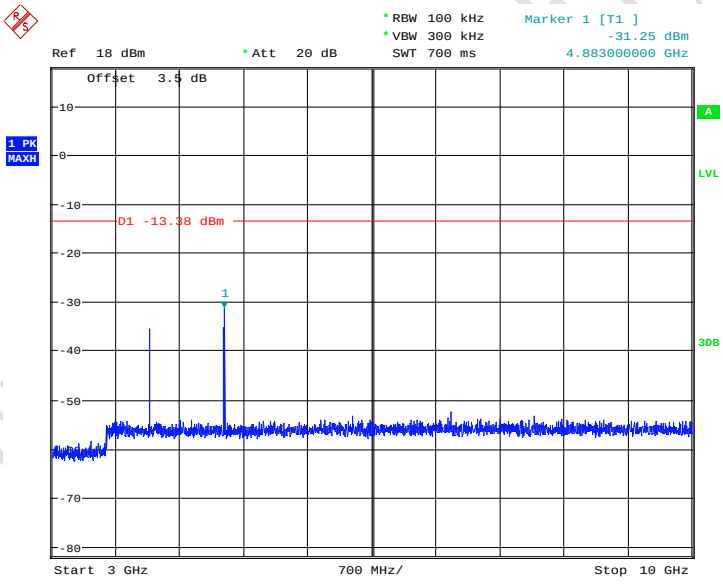
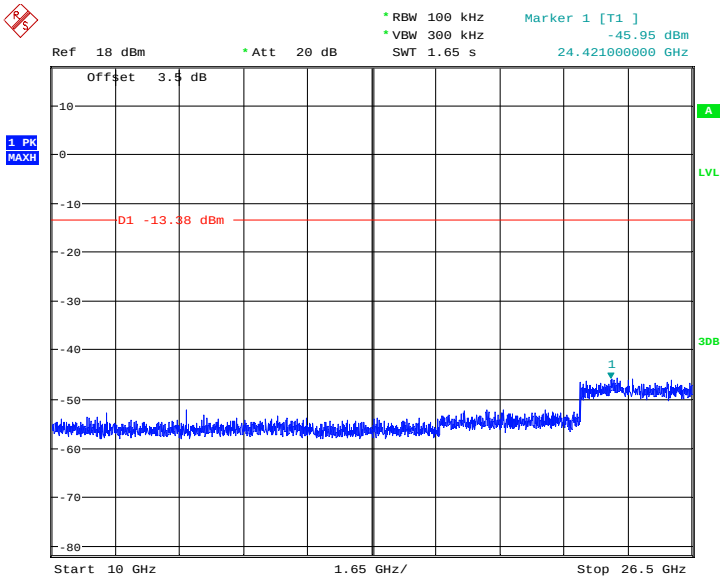
PI/4 DQPSK CH39 1GHz – 3GHz



Date: 28.APR.2017 16:08:16

PI/4 DQPSK CH39 3GHz – 10GHz



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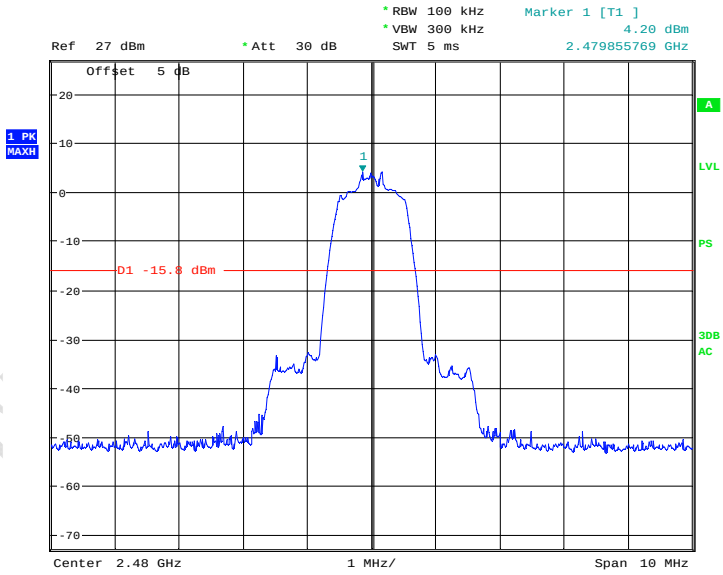
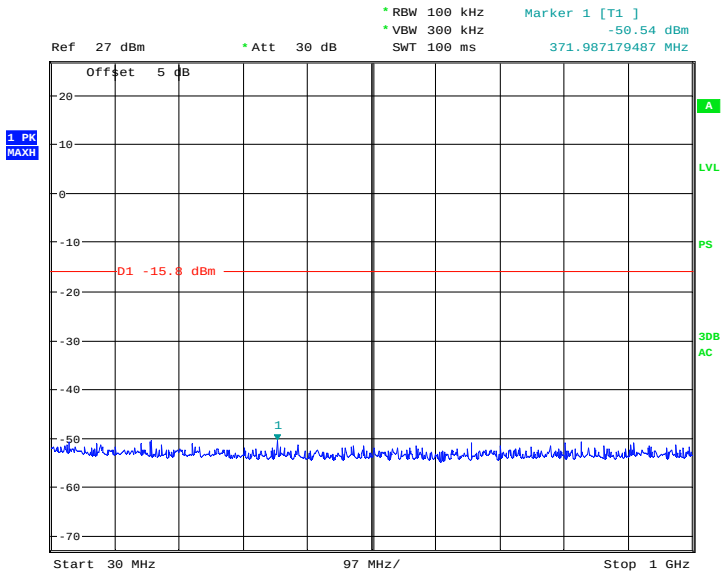
PI/4 DQPSK CH39 10GHz – 26.5GHz



Date: 23.MAR.2017 15:25:37

PI/4 DQPSK CH78 Center Frequency



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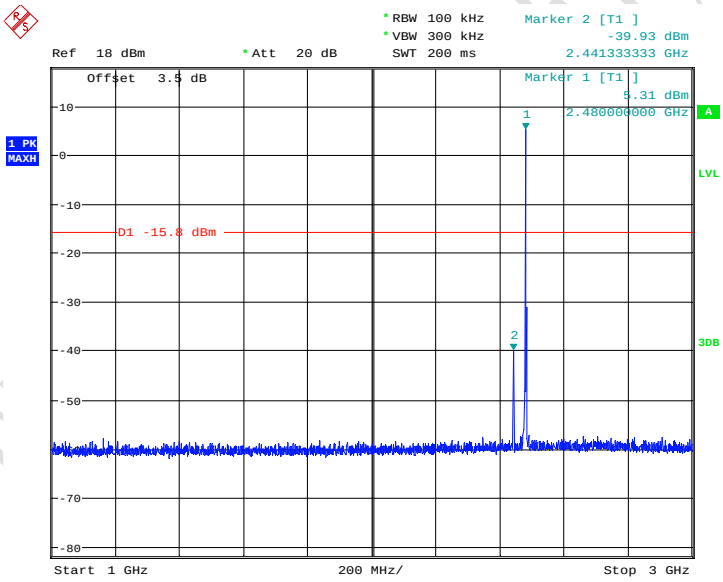
PI/4 DQPSK CH78 30MHz – 1GHz



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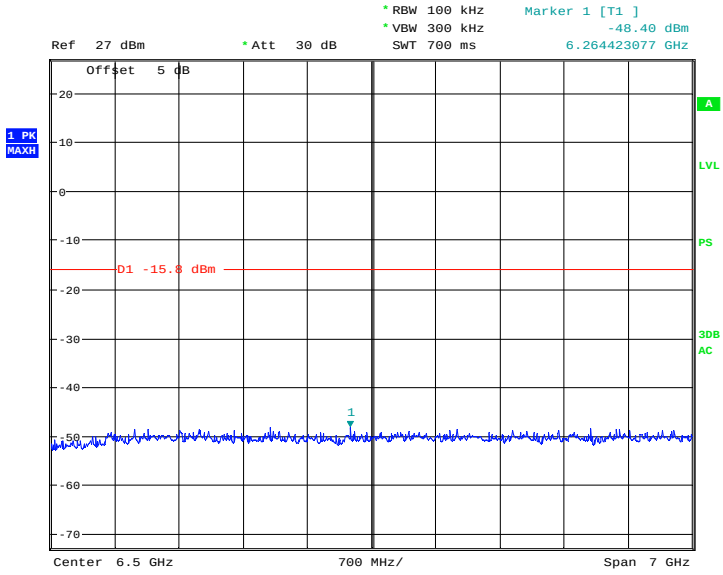
PI/4 DQPSK CH78 1GHz – 3GHz



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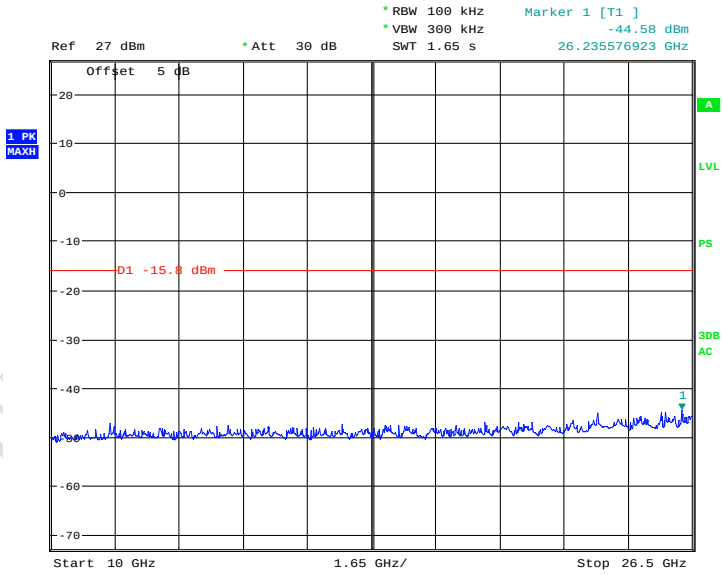
PI/4 DQPSK CH78 3GHz – 10GHz



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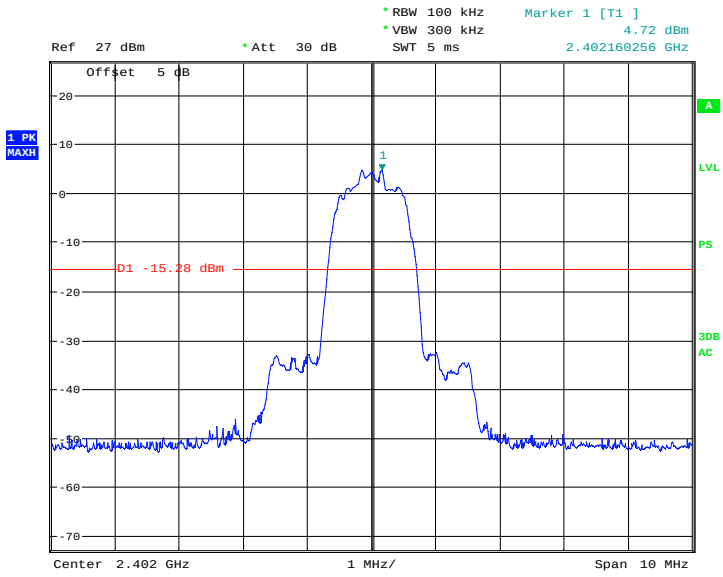
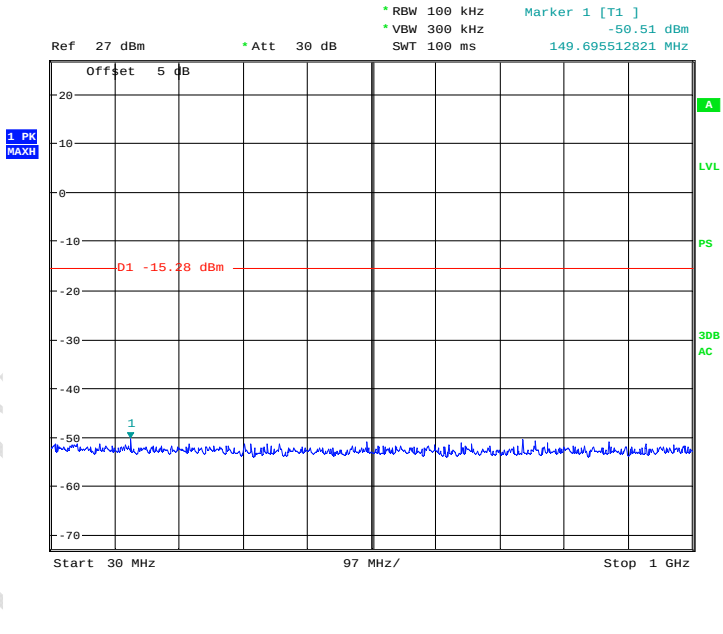
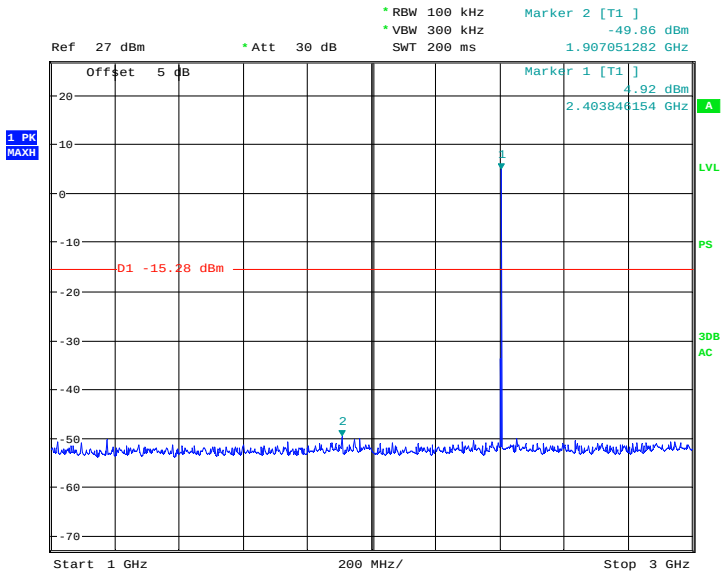
PI/4 DQPSK CH78 10GHz – 26.5GHz



8DPSK CH0 Center Frequency

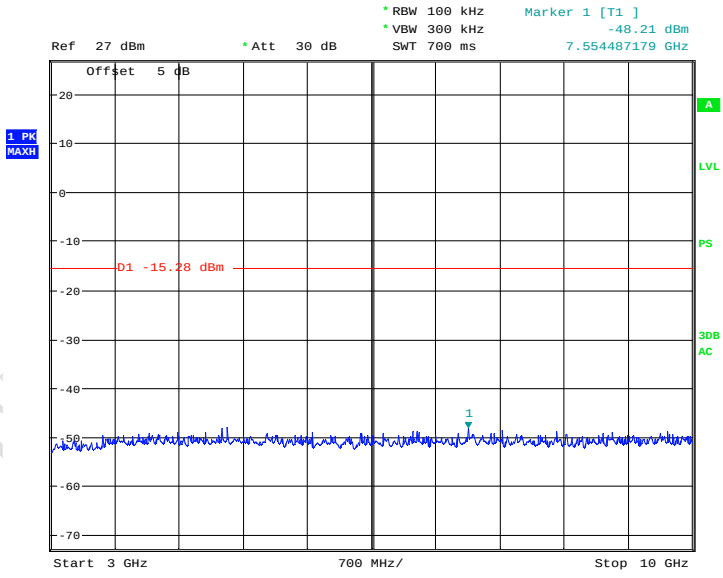


8DPSK CH0 30MHz – 1GHz



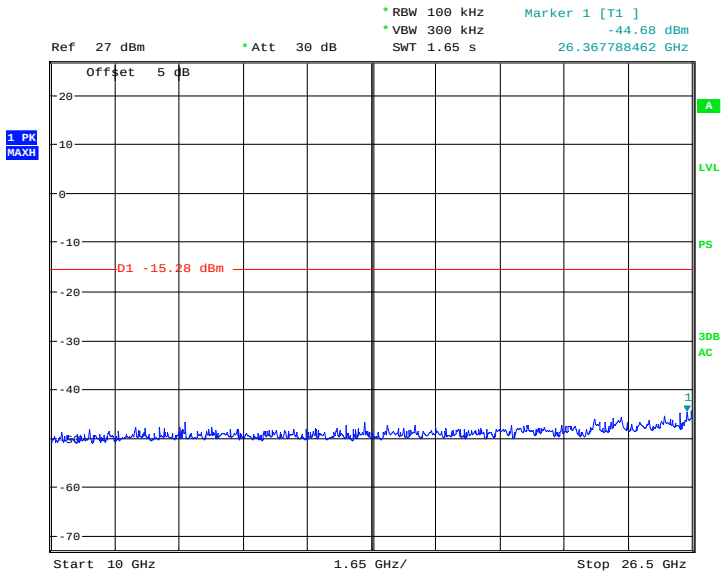
Date: 23.MAR.2017 15:29:12

8DPSK CH0 1GHz – 3GHz



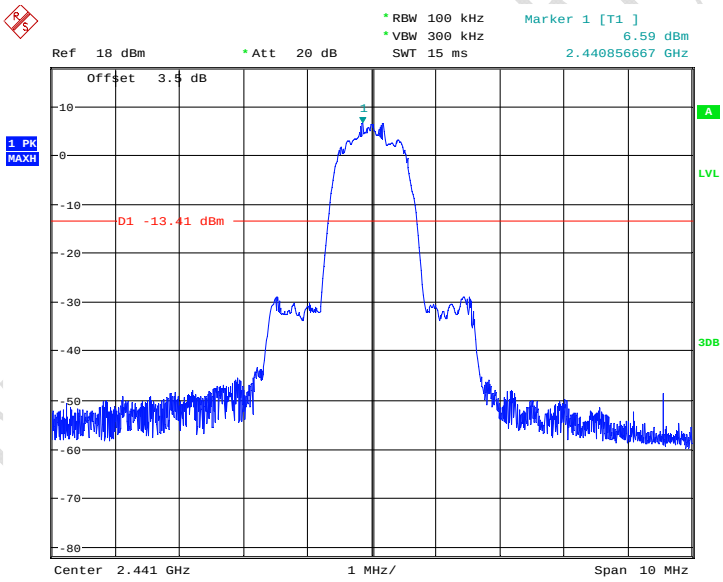
Date: 23.MAR.2017 15:29:33

8DPSK CH0 3GHz – 10GHz



Date: 23.MAR.2017 15:29:59

8DPSK CH0 10GHz – 26.5GHz



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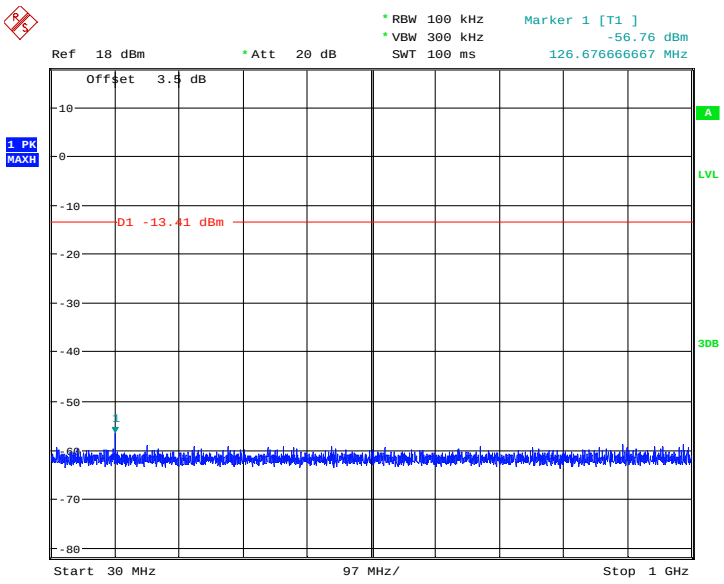
8DPSK CH39 Center Frequency



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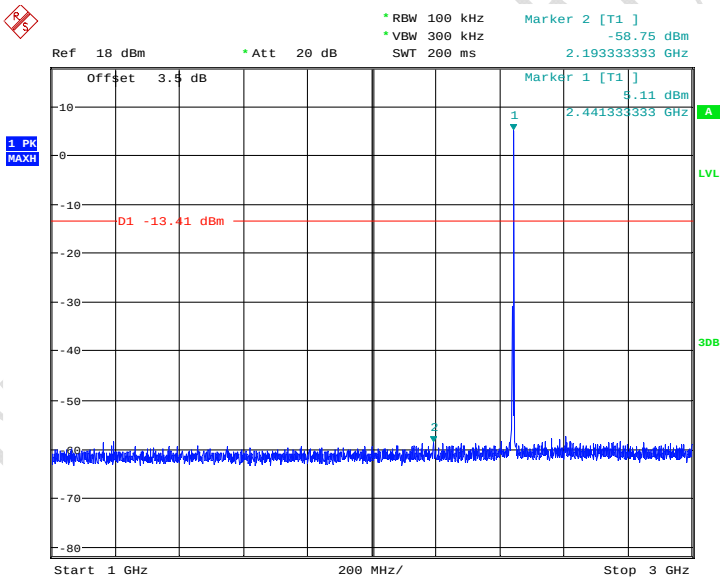
8DPSK CH39 30MHz – 1GHz



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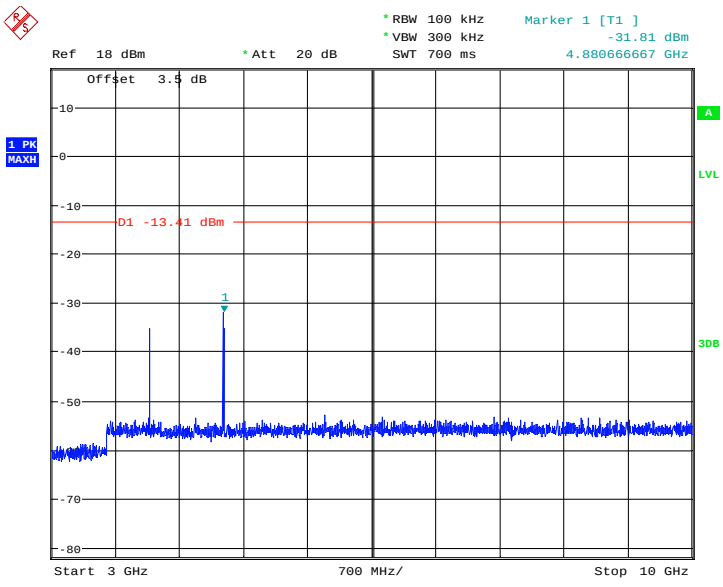
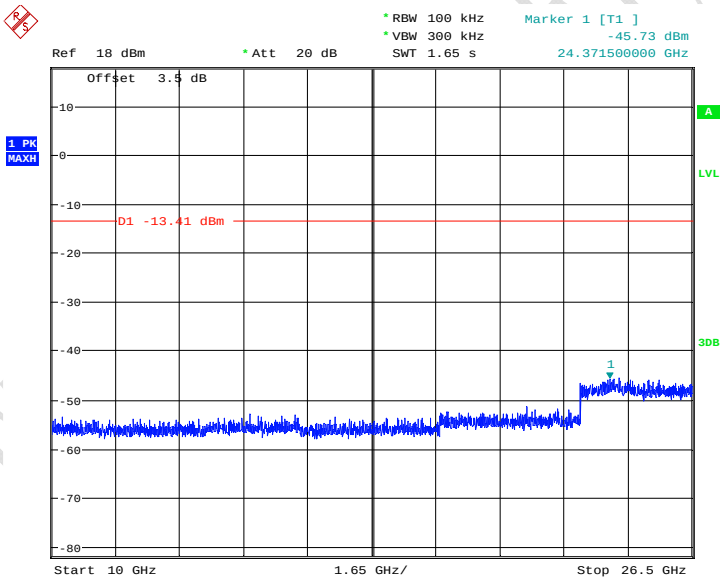
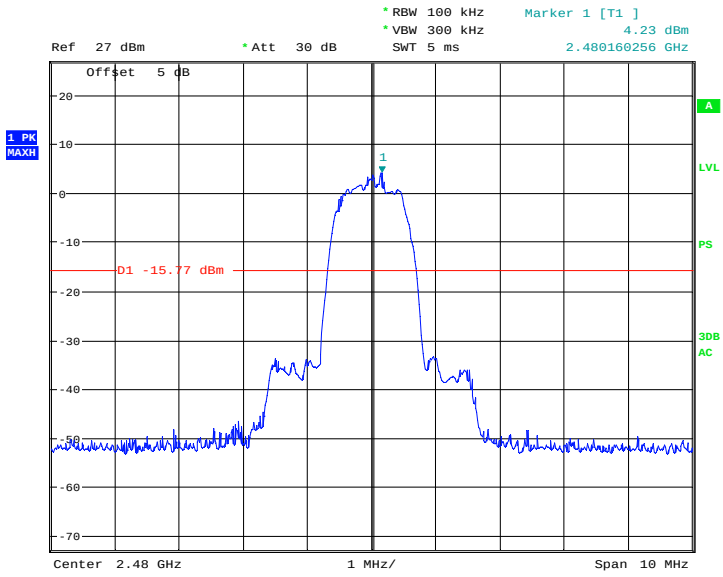
8DPSK CH39 1GHz – 3GHz



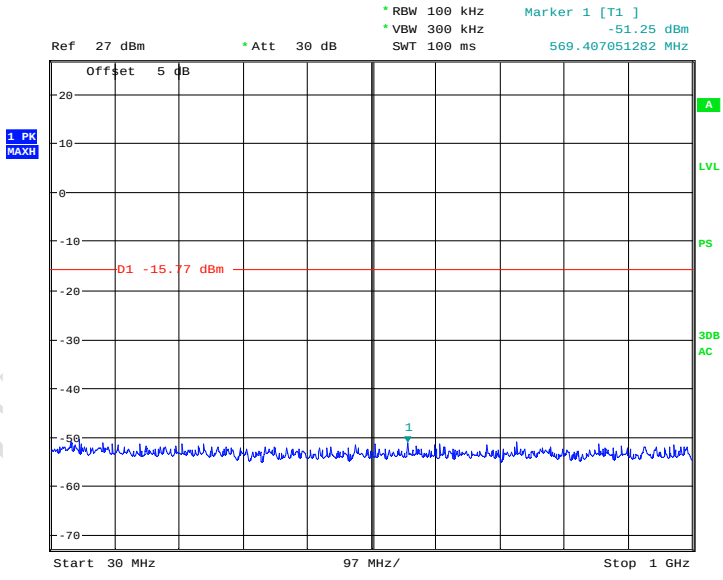
8DPSK CH39 3GHz – 10GHz



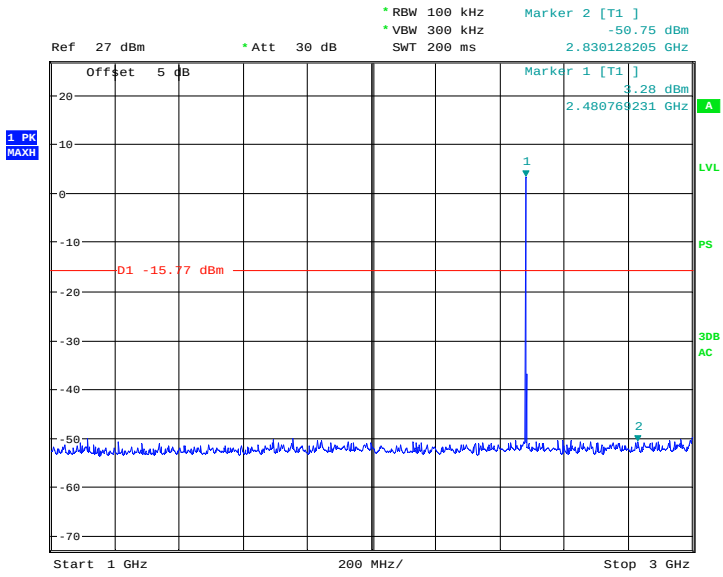
8DPSK CH39 10GHz – 26.5GHz



8DPSK CH78 Center Frequency

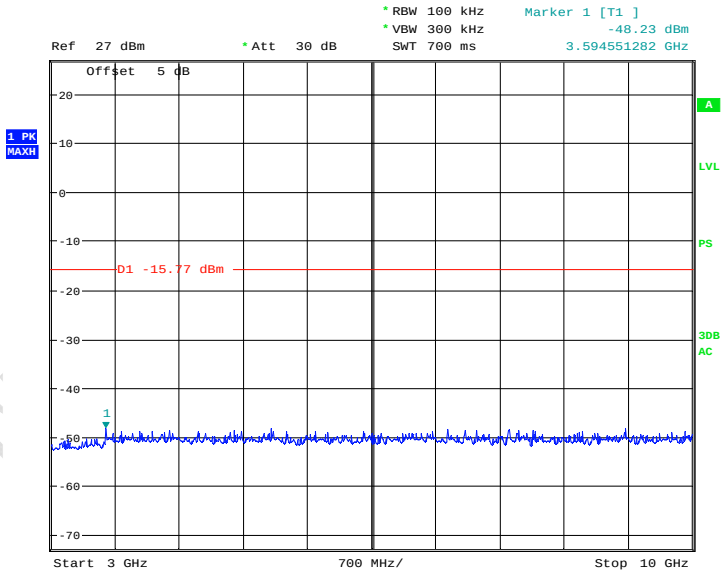


8DPSK CH78 30MHz – 1GHz



Date: 23.MAR.2017 15:31:34

8DPSK CH78 1GHz – 3GHz



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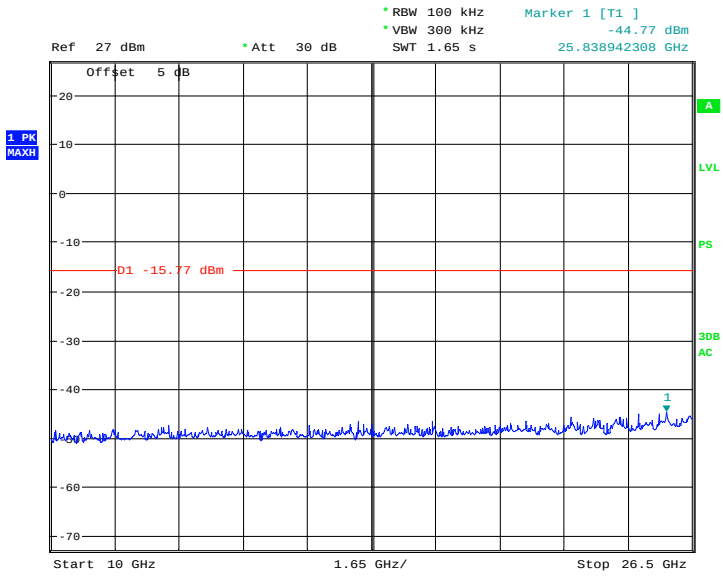
8DPSK CH78 3GHz – 10GHz



8DPSK CH78 10GHz – 26.5GHz

5.7 Ratio Radiated Emission Measurement

Specifications:	FCC Part 15.209(a) and 15.205(a)
DUT Serial Number:	S7/18: 862851030000163/862851030020161
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	--

Limit

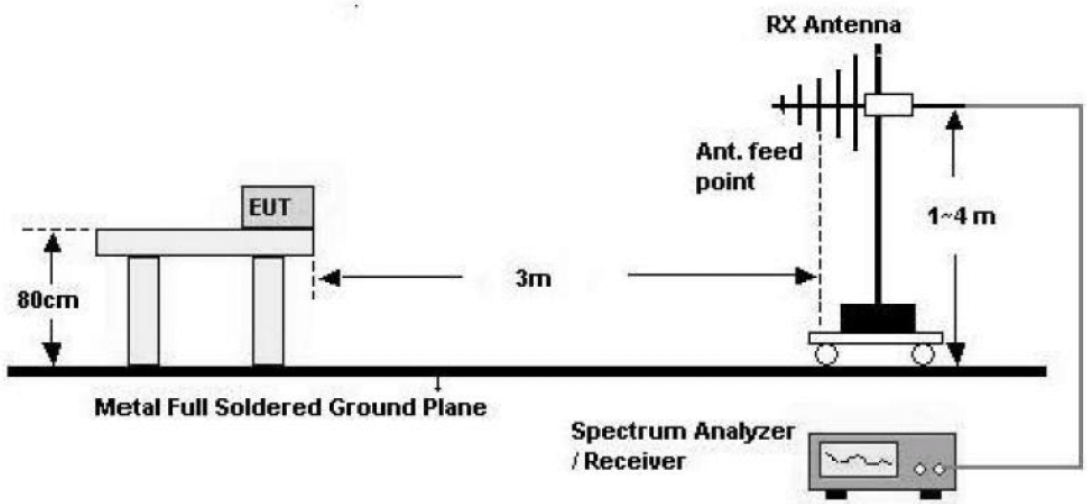
1. 20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed

Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

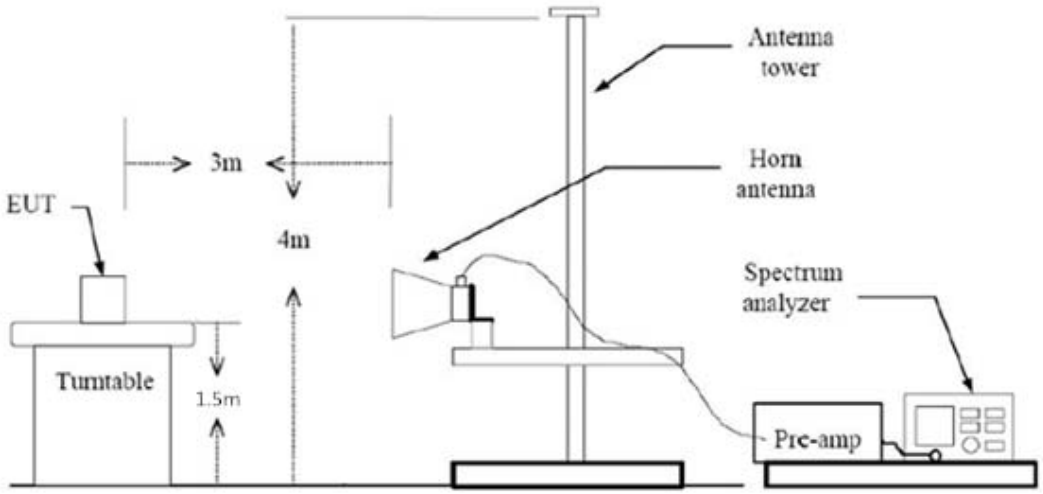
Test Setup

The EUT was placed in an anechoic chamber. The BLUETOOTH TESTER was used to set the TX channel and power level. The transmitter output is connected to Spectrum analyzer through a Bilog antenna (for frequency 30MHz-1GHz) or a horn antenna (for frequency above 1GHz).

30MHz-1GHz:



Above 1GHz:



Test Procedure

1. The EUT is placed on a turntable.

2. The turntable shall be rotated for 360 degrees on EUT's x, y and z axis to determine the position of maximum emission level.

3. EUT is set 3 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.

4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

6. Repeat above procedures until the measurements for all frequencies are complete.

The measurement is made according to Public notice FCC Public Notice DA 00-705, March 2000, and ANSI C63.4-2014.

Test Settings:

Frequency Range (MHz)	RBW/VBW	Sweep time (s)
30 – 1000	100kHz/300kHz	5
1000 – 4000	1MHz/3MHz	15
4000 – 18000	1MHz/3MHz	40
18000 – 26500	1MHz/3MHz	20

Note: Considering the GFSK modulation with packet type DH5 has the maximum transmission power, so only this mode is tested.

Test result:

Channel	Frequency Range	Results
Channel 0	30MHz – 1GHz	Pass
	1 GHz – 3GHz	Pass
	2.38GHz–2.45GHz*	Pass
	3 GHz – 18 GHz	Pass
Channel 39	30MHz – 1GHz	Pass
	1 GHz – 3GHz	Pass
	2.4GHz-2.48GHz*	Pass
	3 GHz – 18 GHz	Pass
Channel 78	30MHz – 1GHz	Pass
	1 GHz – 3GHz	Pass
	2.45GHz-2.5GHz*	Pass
	3 GHz – 18 GHz	Pass
All channels	18GHz-26.5GHz	Pass

Note*: these tests demonstrate the radiated band-edge test results

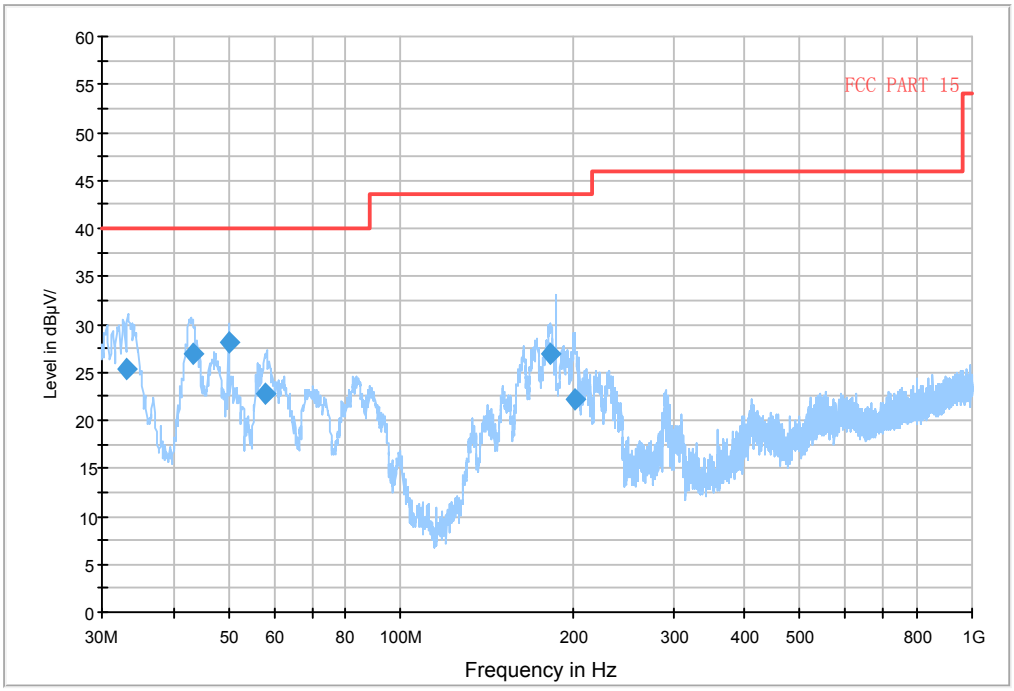
Notes:

1. Radiated emissions were measured with an instrument using Quasi-peak detector mode in frequency range from 30 MHz to 1000MHz, and with peak detector mode in frequency range from 1GHz – 26.5 GHz.

2 Total dBuV/m = Reading dBuV/m – Cable Loss dB + Antenna Gain dB.

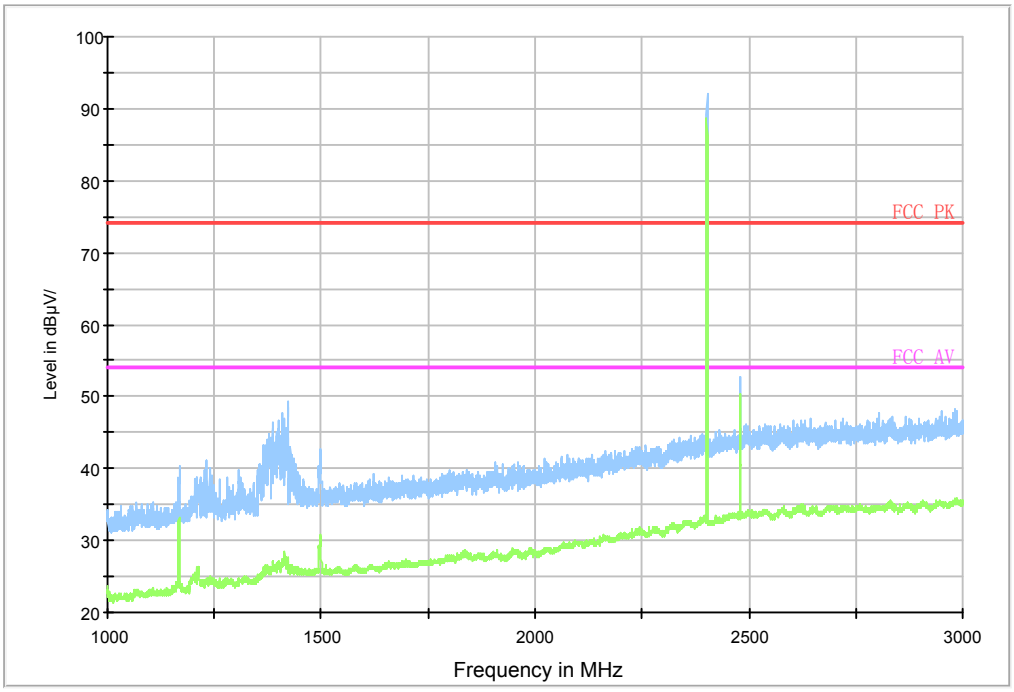
Test Plots:

RE 30MHz-1GHz



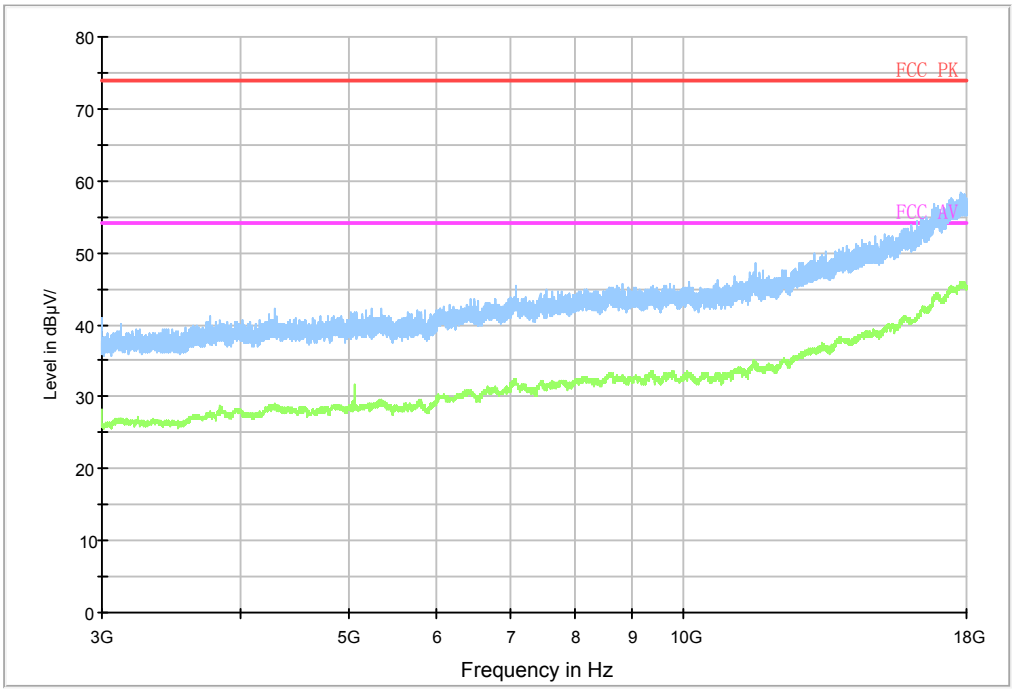
GFSK DH5 Channel 0 30MHz-1GHz

RE 1GHz-3GHz



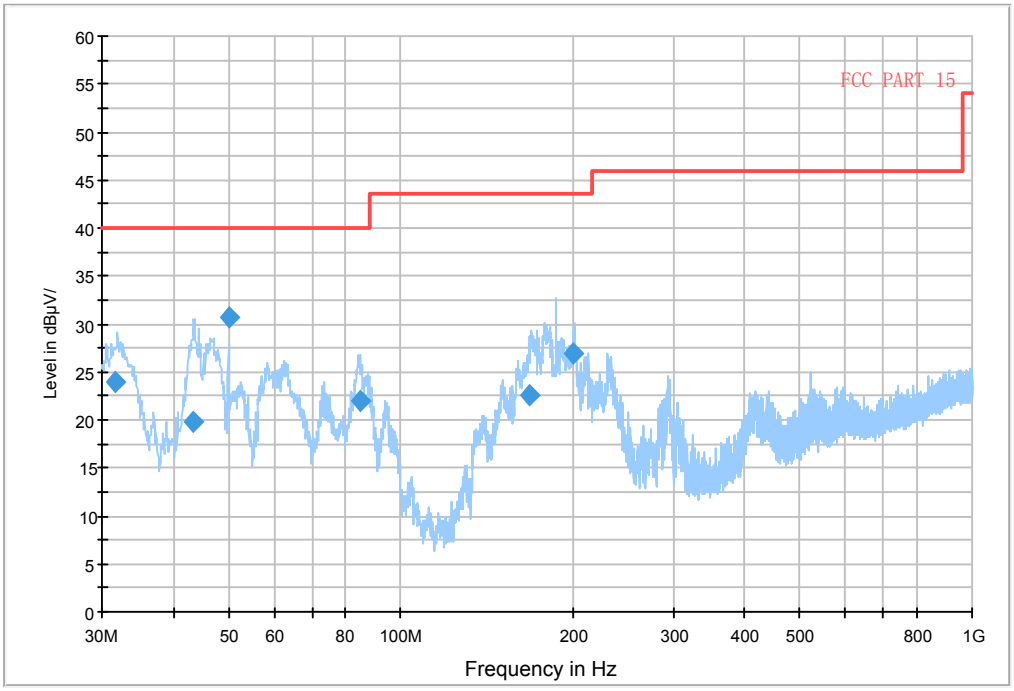
GFSK DH5 Channel 0 1-3GHz

RE 3GHz-18GHz



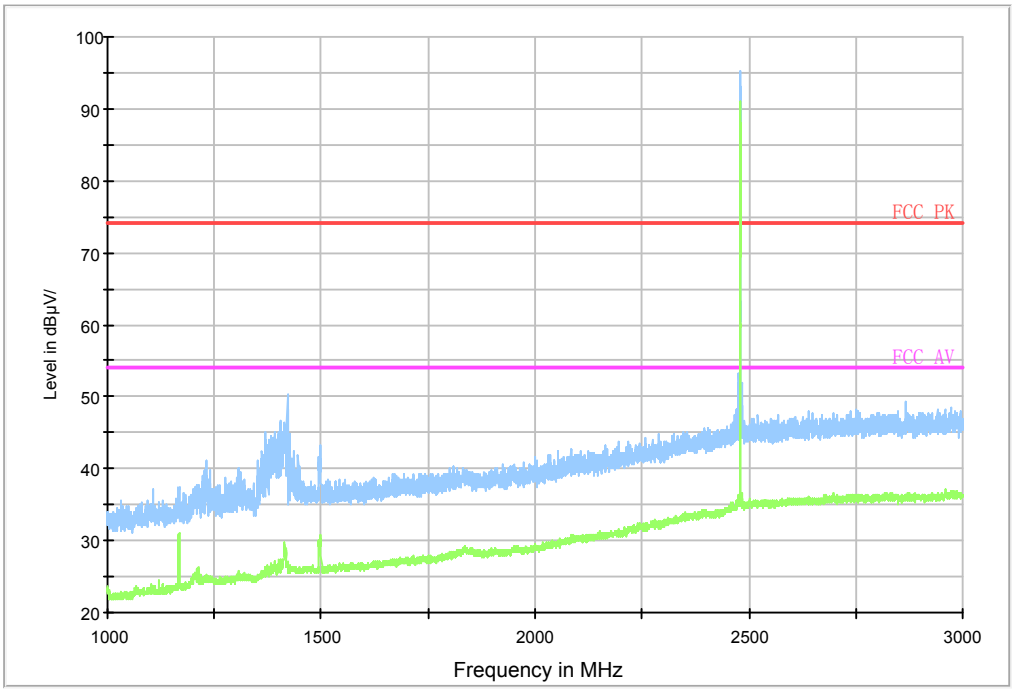
GFSK DH5 Channel 0 3G-18GHz

RE 30MHz-1GHz



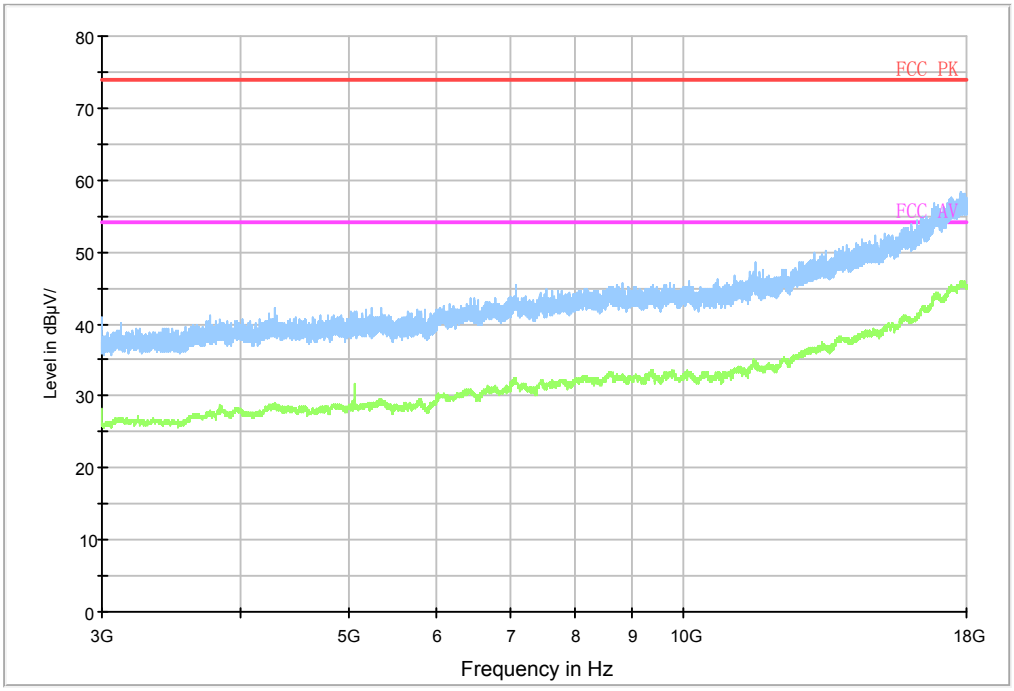
GFSK DH5 Channel 39 30MHz-1GHz

RE 1GHz-3GHz



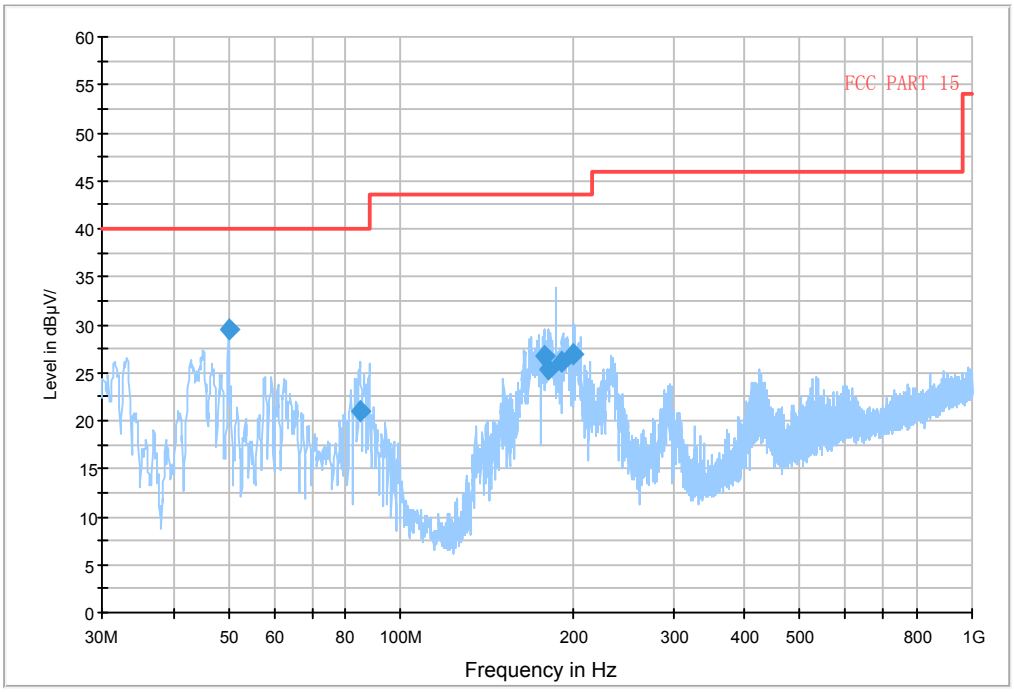
GFSK DH5 Channel 39 1-3GHz

RE 3GHz-18GHz



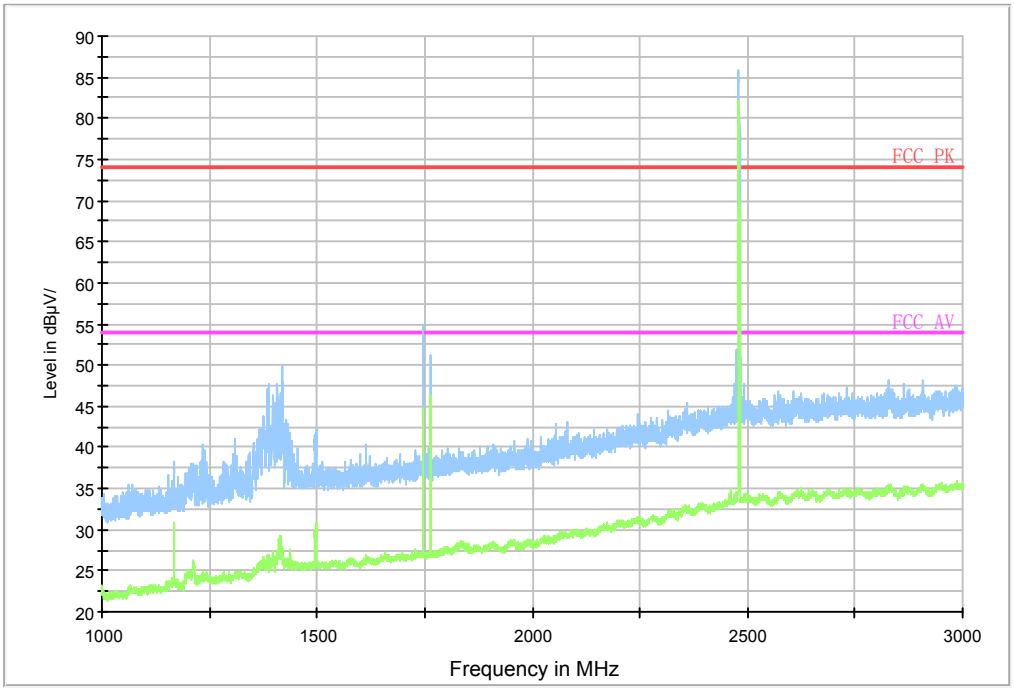
GFSK DH5 Channel 39 3-18GHz

RE 30MHz-1GHz



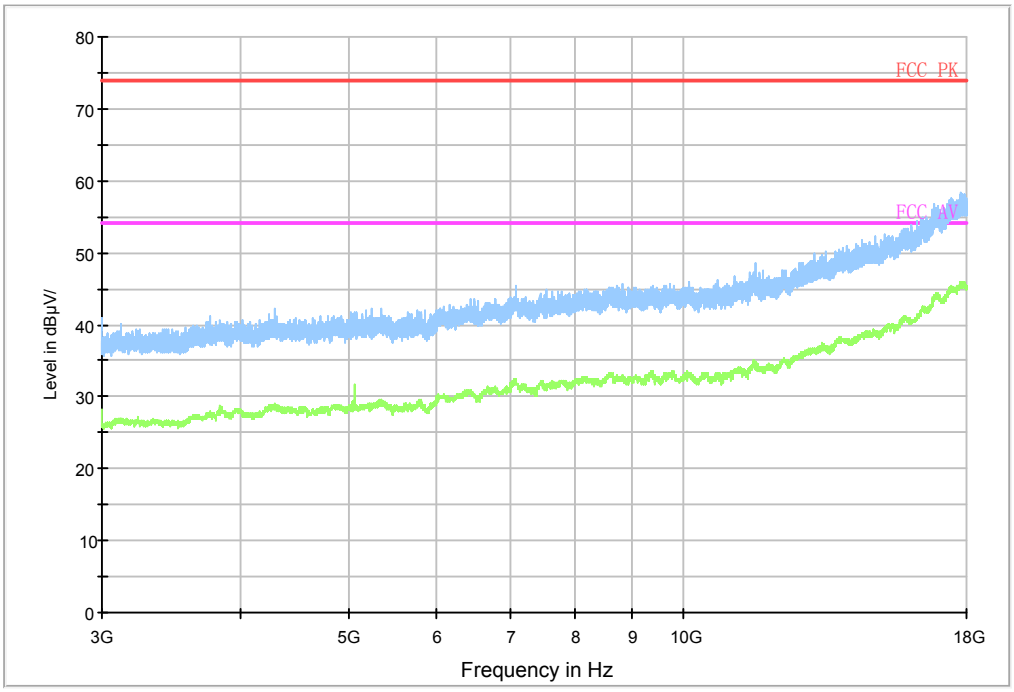
GFSK DH5 Channel 78 30MHz-1GHz

RE 1GHz-3GHz

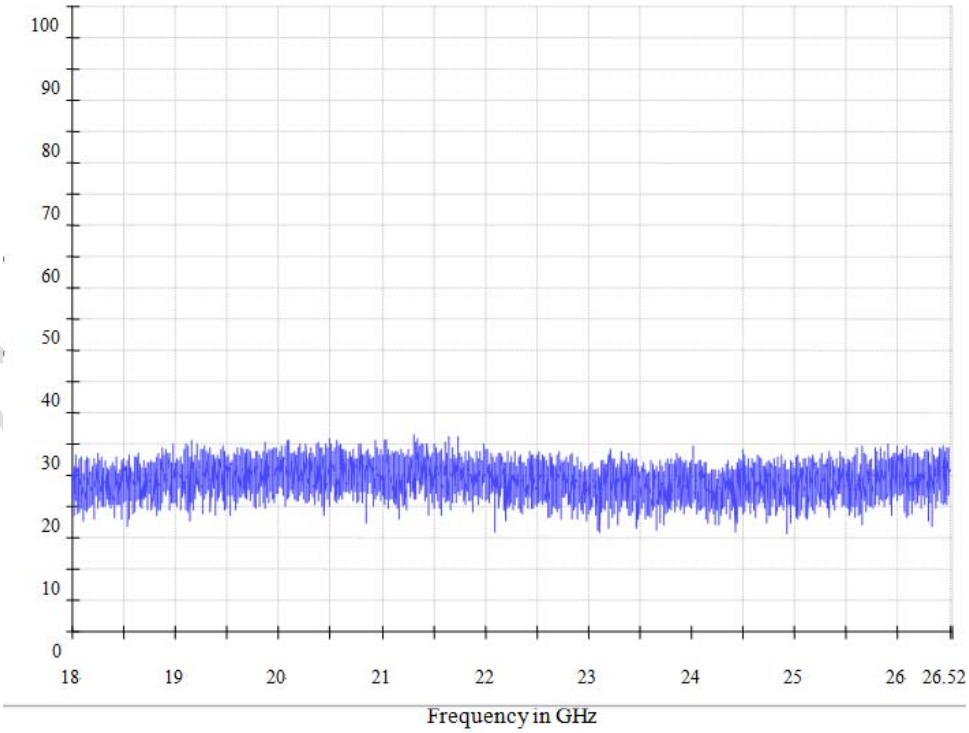


GFSK DH5 Channel 78 1-3GHz

RE 3GHz-18GHz



GFSK DH5 Channel 39 3-18GHz



GFSK DH5 all channels

Test photo

See the Pic1- Pic6 in document" A1-901 _Wifi_BT_Test Setup Photos".

5.8 Power line Conducted Emissions

Specifications:	ANSI C63.4 voltage mains test
DUT Serial Number:	S7/18: 862851030000163/862851030020161
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	--

Limit

The EUT meets the requirement of having a peak to average ratio of less than 13dB.

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolt (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range are listed as follows:

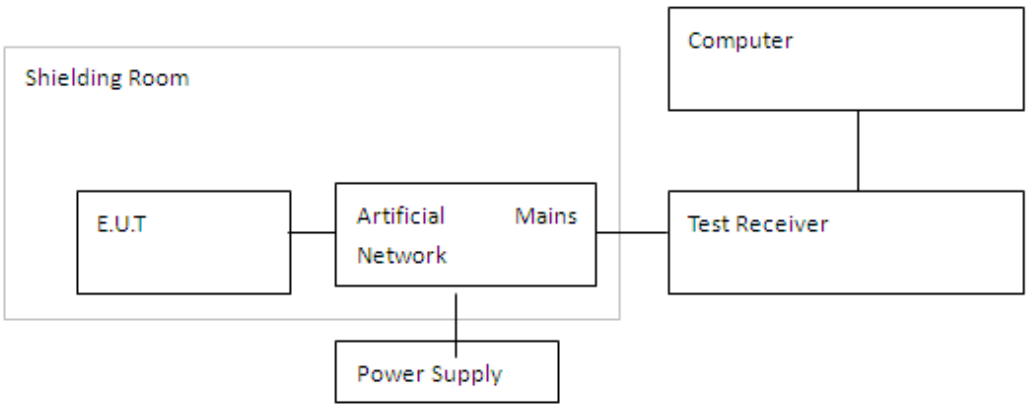
Limits of the conducted disturbance at the AC mains ports:

Frequency range	Limit(Quasi-peak)	Limit(Average)
0.15 MHz to 0.5 MHz	66 dBμV – 56 dBμV	56 dBμV – 46 dBμV
>0.5 MHz to 5MHz	56 dBμV	46 dBμV
>5 MHz to 30 MHz	60 dBμV	50 dBμV
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

Test Setup

The EUT was placed in a shielding room. The BLUETOOTH TESTER was used to set the TX channel and power level. The ac adapter output is connected to Receiver through an AMN (Artificial Mains Network).



Test Procedure

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors – Quasi Peak and Average Detector.

The measurement is made according to Public notice FCC Public Notice DA 00-705, March 2000, and ANSI C63.4-2014.

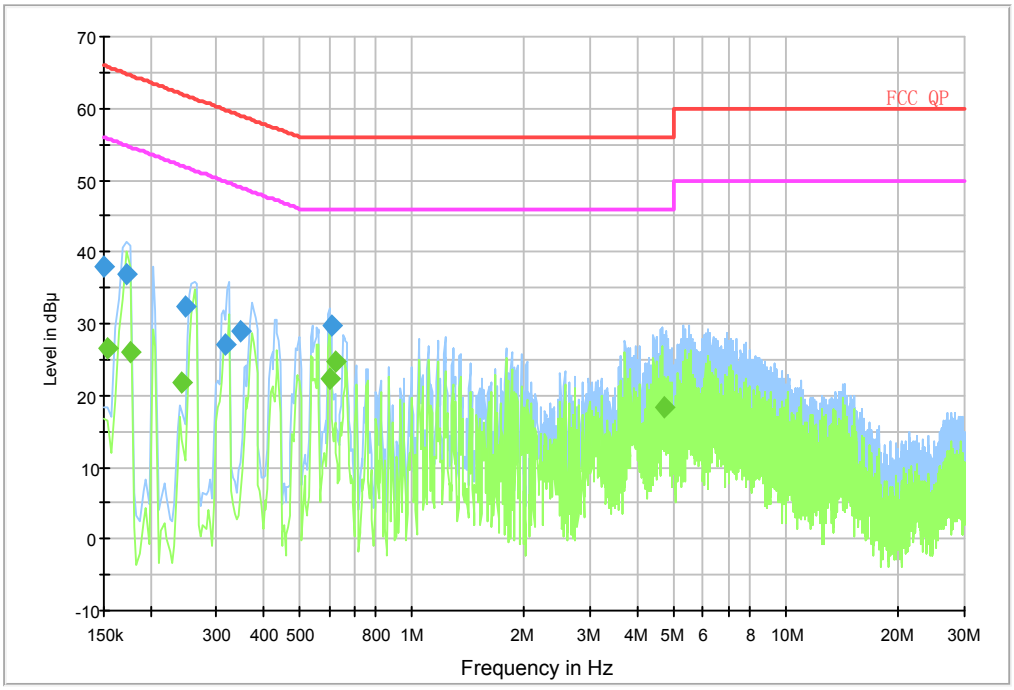
Test Result:

Line L&N					
Detector (QP)	**Frequency (MHz)**	**Level (dBμV)**	**Limit (dBμV)**	**Line**	**PE**
QP	0.150000	38.0	66.0	L	FLO
QP	0.171938	36.8	64.9	N	FLO
QP	0.247369	32.3	61.8	N	FLO
QP	0.315606	27.1	59.8	N	FLO
QP	0.347306	29.1	59.0	N	FLO
QP	0.607481	29.7	56.0	L	FLO

Line L&N					
Detector (AV)	**Frequency (MHz)**	**Level (dBμV)**	**Limit (dBμV)**	**Line**	**PE**
AV	0.154000	26.5	55.8	L	FLO
AV	0.175938	26.0	54.7	L	FLO
AV	0.243369	21.9	52.0	L	FLO
AV	0.603481	22.3	46.0	L	FLO
AV	0.626706	24.6	46.0	L	FLO
AV	4.750275	18.3	46.0	L	FLO

Conclusion: PASS

CISPR N&L1 Voltage 150k to 30MHz-Class B



Line L &Line N

Test photo

See the Pic7 in document" A1-901 _Wifi_BT_Test Setup Photos".

Annex A EUT Photos

See the document"A1-901-External Photos".
See the document"A1-901-Internal Photos".

ANNEX B Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

*****End Of Report*****