TEST REPORT

No. I21N04067-BT

HMD Global Oy

Smart Phone

Model Name: TA-1446

with

Hardware Version: V01

Software Version: 00WW_0_031

FCC ID: 2AJOTTA-1446

Issued Date: 2022-03-23

Designation Number: CN1210

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 SAICT.

Test Laboratory:

Shenzhen Academy of Information and Communications Technology

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1. Summary of Test Report

1.1. Test Items

Product Name	Smart Phone
Model Name	TA-1446
Applicant's name	HMD Global Oy
Manufacturer's Name	HMD Global Oy

1.2. Test Standards

FCC Part15-2019; ANSI C63.10-2013

1.3. Test Result

Pass

Please refer to 5.2 Test Results.

1.4. Testing Location

Address: Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong, P. R. China

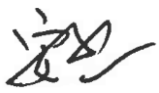
1.5. Project data

Testing Start Date:	2022-02-23
Testing End Date:	2022-03-22

1.6. Signature

Lin Zechuang

(Prepared this test report)



An Ran

(Reviewed this test report)

Zhang Bojun

(Approved this test report)

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2. Client Information

2.1. Applicant Information

Company Name:	HMD Global Oy
Address:	Bertel Jungin aukio 9, 02600 Espoo, Finland
Contact Person:	Reza Serafat
E-Mail:	reza.serafat@hmdglobal.com
Telephone:	+393 31 6272922
FAX:	/

2.2. Manufacturer Information

Company Name:	HMD Global Oy
Address:	Bertel Jungin aukio 9, 02600 Espoo, Finland
Contact Person:	Reza Serafat
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Telephone:	+393 31 6272922
FAX:	/

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3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Product Name	Smart Phone
Model Name	TA-1446
Frequency Band	2400MHz~2483.5MHz
Type of Modulation	GFSK/π/4 DQPSK/8DPSK
Number of Channels	79
Antenna Type	Integrated
Antenna Gain	-2.0dBi
Power Supply	3.6V DC by Battery
FCC ID	2AJOTTA-1446
Condition of EUT as received	No abnormality in appearance

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of Shenzhen Academy of Information and Communications Technology.

3.2. Internal Identification of EUT

EUT ID*	IMEI	HW Version	SW Version	Receive Date
UT01aa	353906800005705	V01	00WW_0_031	2022-02-14
UT05aa	353906800005689	V01	00WW_0_031	2022-02-14

*EUT ID: is used to identify the test sample in the lab internally.
*UT01aa is used for Conduction test; UT05aa is used for Radiation test and AC Power line Conducted Emission test.

3.3. Internal Identification of AE

AE ID*	Description	AE ID*
AE1	Battery	/
AE2	Charger	/
AE3	USB Cable	/
AE4	Headset	/

AE1

Model	GH5781
Manufacturer	Shenzhen Aerospace Electronic Co.,Ltd
Capacity	2400mAh
Nominal Voltage	3.8V

AE2

Model	A806A-050100U-EU1
Manufacturer	Dongguan Aohai Technology Co., Ltd

AE3

Model	MO34B1000100

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Manufacturer	FKY-QY Electronic Technology Co. Ltd

AE4

Model	JWEP1199-M01H
Manufacturer	JUWEI ELECTRONICS CO.,LTD

*AE ID: is used to identify the test sample in the lab internally.

3.4. General Description

The Equipment under Test (EUT) is a model of Mobile Phone with integrated antenna and battery.
It consists of normal options: Lithium Battery, Charger, USB Cable and Headset.
Manual and specifications of the EUT were provided to fulfil the test.
Samples undergoing test were selected by the client.
According to the customer's description, TA-1446 is a variant of TA-1471. The main difference between them is that TA-1471 is dual SIM and TA-1446 is Single SIM.
The spot check of output power see ANNEX attached to the end of report.
This difference does not affect the following test cases. All results can be referred to the initial model. The initial model report number is I21N04075-BT.

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4. Reference Documents

4.1. Documents supplied by applicant

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 15	FCC CFR 47, Part 15, Subpart C: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.247 Operation within the bands 902-928MHz, 2400-2483.5 MHz, and 5725-5850 MHz	2019
ANSI C63.10	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	2013

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5. Test Results

5.1. Testing Environment

Normal Temperature: 15~35°C

Relative Humidity: 20~75%

5.2. Test Results

No	Test cases	Sub-clause of Part 15C	Verdict
0	Antenna Requirement	15.203	**P**
1	Maximum Peak Output Power	15.247 (b)	**P**
2	Band Edges Compliance	15.247 (d)	**P**
3	Conducted Spurious Emission	15.247 (d)	**P**
4	Radiated Spurious Emission	15.247, 15.205, 15.209	**P**
5	Occupied 20dB bandwidth	15.247 (a)	**/**
6	Time of Occupancy (Dwell Time)	15.247 (a)	**P**
7	Number of Hopping Channel	15.247 (a)	**P**
8	Carrier Frequency Separation	15.247 (a)	**P**
9	AC Power line Conducted Emission	15.107, 15.207	**P**

See **ANNEX A** for details.

5.3. Statements

SAICT has evaluated the test cases requested by the applicant/manufacturer as listed in section 5.2 of this report, for the EUT specified in section 3, according to the standards or reference documents listed in section 4.2.

Disclaimer:

A. After confirmation with the customer, the sample information provided by the customer may affect the validity of the measurement results in this report, and the impact and consequences arising therefrom shall be borne by the customer.

B. The samples in this report are provided by the customer, and the test results are only applicable to the samples received.

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6. Test Equipments Utilized

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1	Vector Signal Analyzer	FSV40	100903	Rohde & Schwarz	2022-12-29	1 year
2	Power Sensor	U2021XA	MY55430013	Keysight	2022-12-29	1 year
3	Data Acquisiton	U2531A	TW55443507	Keysight	/	/
4	Bluetooth Tester	CBT32	100584	Rohde & Schwarz	2022-12-29	1 year
5	Test Receiver	ESCI	100701	Rohde & Schwarz	2022-08-08	1 year
6	LISN	ENV216	102067	Rohde & Schwarz	2022-07-15	1 year

Radiated test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1	Loop Antenna	HLA6120	35779	TESEQ	2022-04-25	3 years
2	BiLog Antenna	3142E	0224831	ETS-Lindgren	2024-05-27	3 years
3	Horn Antenna	3117	00066577	ETS-Lindgren	2022-04-02	3 years
4	Horn Antenna	QSH-SL-18 -26-S-20	17013	Q-par	2023-01-06	3 years
5	Horn Antenna	QSH-SL-8-26-40-K-20	17014	Q-par	2023-01-06	3 years
6	Test Receiver	ESR7	101676	Rohde & Schwarz	2022-11-24	1 year
7	Spectrum Analyser	FSV40	101192	Rohde & Schwarz	2023-01-12	1 year
8	Chamber	FACT3-2.0	1285	ETS-Lindgren	2023-05-29	2 years

Test software

No.	Equipment	Manufacturer	Version
1	TechMgr Software	CAICT	2.1.1
2	EMC32	Rohde & Schwarz	10.50.40

EUT is engineering software provided by the customer to control the transmitting signal.
The EUT was programmed to be in continuously transmitting mode.

Anechoic chamber

Fully anechoic chamber by ETS-Lindgren

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7. Laboratory Environment

Semi-anechoic chamber

Temperature	Min. = 15 ˚C, Max. = 35 ˚C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-18000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4 Ω
Normalised site attenuation (NSA)	< ±4 dB, 3 m distance, from 30 to 1000 MHz

Shielded room

Temperature	Min. = 15 ˚C, Max. = 35 ˚C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-1000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4 Ω

Fully-anechoic chamber

Temperature	Min. = 15 ˚C, Max. = 35 ˚C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-18000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4 Ω
Voltage Standing Wave Ratio (VSWR)	≤ 6 dB, from 1 to 18 GHz，3 m distance
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz

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8. Measurement Uncertainty

Test Name	Uncertainty (*k*=2)	
1. Maximum Peak Output Power	1.32dB	
2. Band Edges Compliance	1.92dB	
3. Transmitter Spurious Emission - Conducted	30MHz≤f<1GHz	1.41dB
	1GHz≤f<7GHz	1.92dB
	7GHz≤f<13GHz	2.31dB
	13GHz≤f≤26GHz	2.61dB
4.. Transmitter Spurious Emission - Radiated	9kHz≤f<30MHz	1.79dB
	30MHz≤f<1GHz	4.86dB
	1GHz≤f<18GHz	4.50dB
	18GHz≤f≤40GHz	2.90dB
5. 20dB Bandwidth	66Hz	
6. Time of Occupancy (Dwell Time) & Number of Hopping Channels	0.58ms	
7. Carrier Frequency Separation	66Hz	
8. AC Power line Conducted Emission	150kHz≤f≤30MHz	2.62dB

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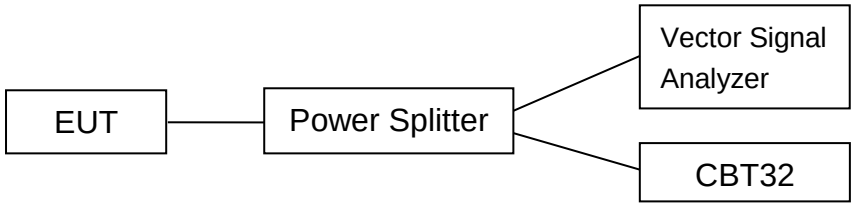
ANNEX A: Detailed Test Results

Test Configuration

The measurement is made according to ANSI C63.10.

1) Conducted Measurements

1. Connect the EUT to the test system correctly.
2. Set the EUT to the required work mode.
3. Set the EUT to the required channel.
4. Set the EUT hopping mode (hopping on or hopping off).
5. Set the spectrum analyzer to start measurement.
6. Record the values.

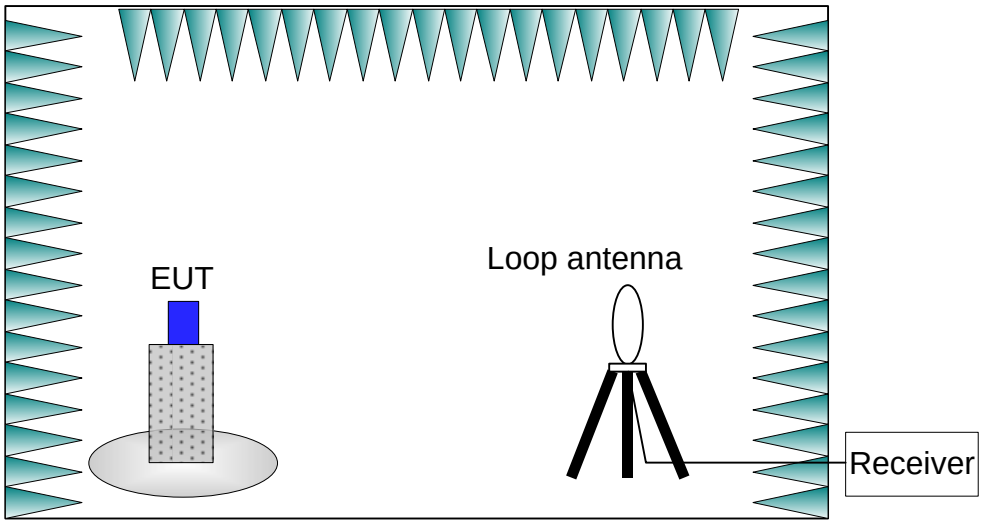


2) Radiated Measurements

Test setup:

9kHz-30MHz：

The EUT are measured in a semi-anechoic chamber. The EUT is placed on a non-conductive stand of 80cm high, and at a measurement distance of 3m from the receiving antenna. The center of the receiving loop antenna is 1.0 meter above the ground. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT and adjusting the receiver antenna polarization.



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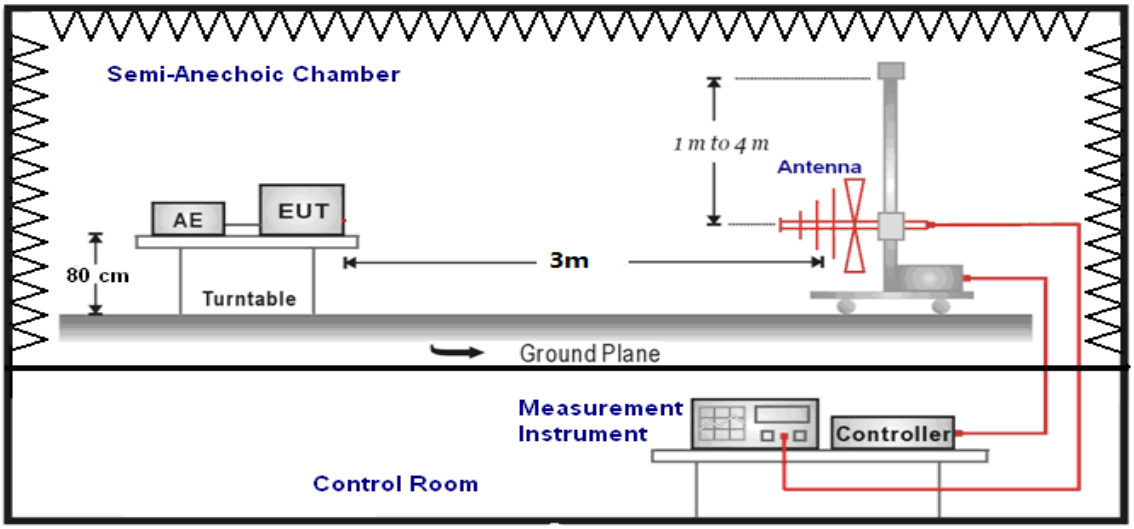
30MHz-1GHz:

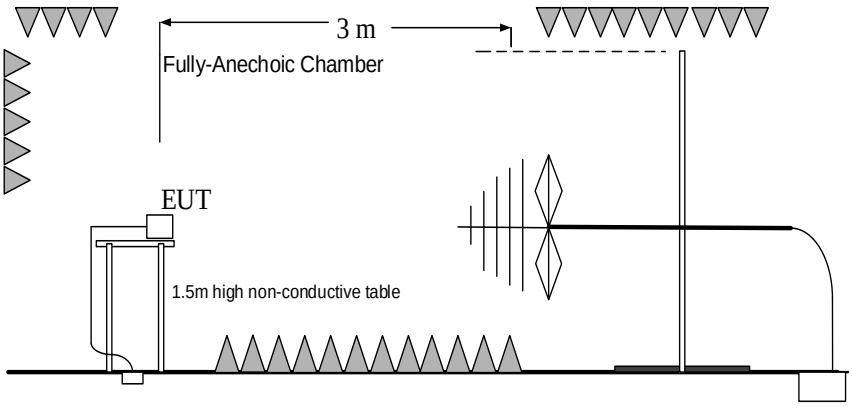
The EUT are measured in a semi-anechoic chamber. The EUT is placed on a non-conductive stand of 80cm high, and at a measurement distance of 3m from the receiving antenna. The center of the receiving antenna is 1.0 meter to 4.0 meter above the ground. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT and adjusting the receiver antenna polarization.



Above 1GHz：

EUT was placed on a 1.5 meter high non-conductive table at a 3 meter test distance from the receive antenna. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUT and adjusting the receiving antenna polarization.

1GHz-3GHz：



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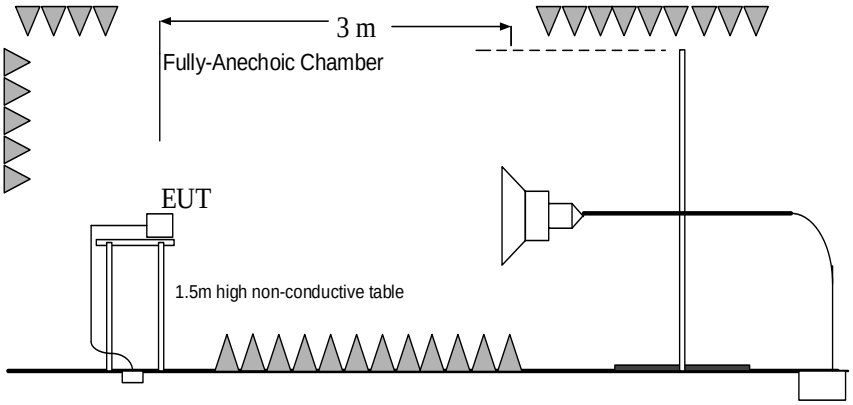
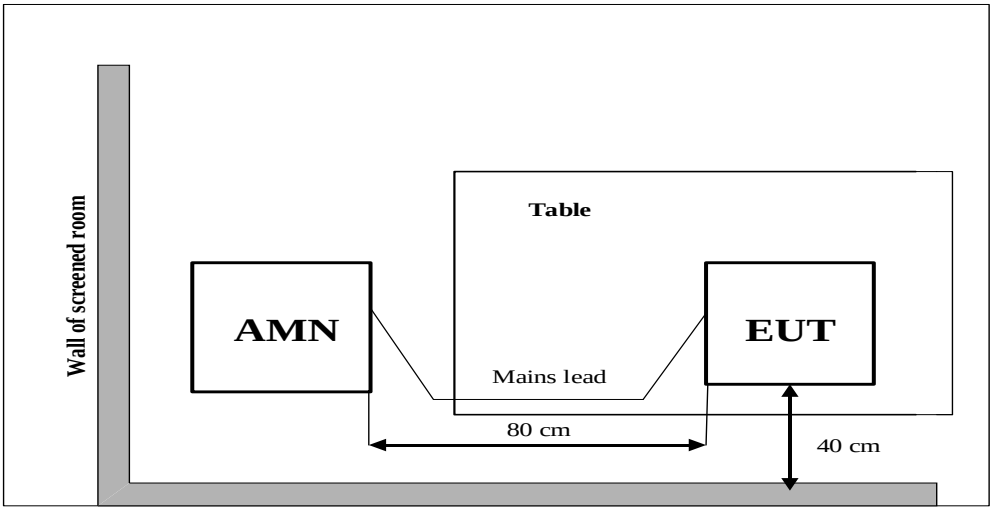
3GHz-40GHz：



3) AC Power line Conducted Emission Measurement

The EUT is working as Bluetooth terminal. A communication link of Bluetooth is set up with a System Simulator (SS). The EUT is commanded to operate at maximum transmitting power.



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A.0 Antenna requirement

Measurement Limit:

Standard	Requirement
FCC CRF Part 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

Conclusion: The Directional gains of antenna used for transmitting is -2.0dBi.
The RF transmitter uses an integrate antenna without connector.

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A.1 Maximum Peak Output Power

Method of Measurement: See ANSI C63.10-clause 7.8.5.

A peak responding power meter may be used, where the power meter and sensor system video bandwidth is greater than the occupied bandwidth of the unlicensed wireless device, rather than a spectrum analyzer.

Measurement Limit:

Standard	Limit (dBm)	E.I.R.P Limit (dBm)
FCC CRF Part 15.247 (b)	< 30	< 36

Measurement Results:

Conducted transmitter power

Mode	Peak Conducted Output Power (dBm)		
	2402MHz (Ch0)	2441MHz (Ch39)	2480MHz (Ch78)
GFSK	7.31	7.21	6.14
π/4 DQPSK	6.34	6.27	5.18
8DPSK	6.64	6.52	5.48

E.I.R.P

Mode	Peak Conducted Output Power (dBm)		
	2402MHz (Ch0)	2441MHz (Ch39)	2480MHz (Ch78)
GFSK	5.31	5.21	4.14
π/4 DQPSK	4.34	4.27	3.18
8DPSK	4.64	4.52	3.48

Note: E.I.R.P value = Conducted values (with conducted samples) + Antenna Gain.

Conclusion: Pass

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A.2 Band Edges Compliance

Measurement Limit:

Standard	Limit (dB)
FCC 47 CFR Part 15.247 (d)	> 20

Measurement Result:

Mode	Channel	Hopping	Test Results	Conclusion
GFSK	0	ON	Fig.1	**P**
	78	ON	Fig.2	**P**
π/4 DQPSK	0	ON	Fig.3	**P**
	78	ON	Fig.4	**P**
8DPSK	0	ON	Fig.5	**P**
	78	ON	Fig.6	**P**

Mode	Channel	Hopping	Test Results	Conclusion
GFSK	0	OFF	Fig.7	**P**
	78	OFF	Fig.8	**P**
π/4 DQPSK	0	OFF	Fig.9	**P**
	78	OFF	Fig.10	**P**
8DPSK	0	OFF	Fig.11	**P**
	78	OFF	Fig.12	**P**

See below for test graphs.

Conclusion: Pass

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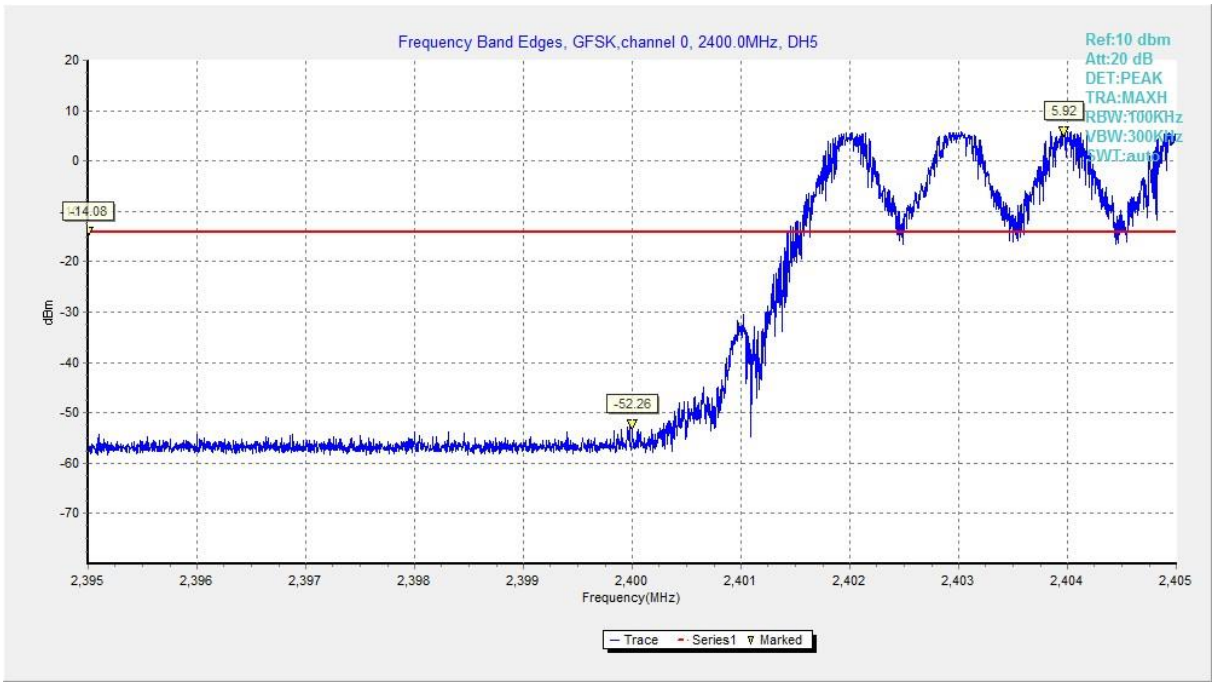

Fig. 1 Band Edges (GFSK, Ch 0, Hopping ON)

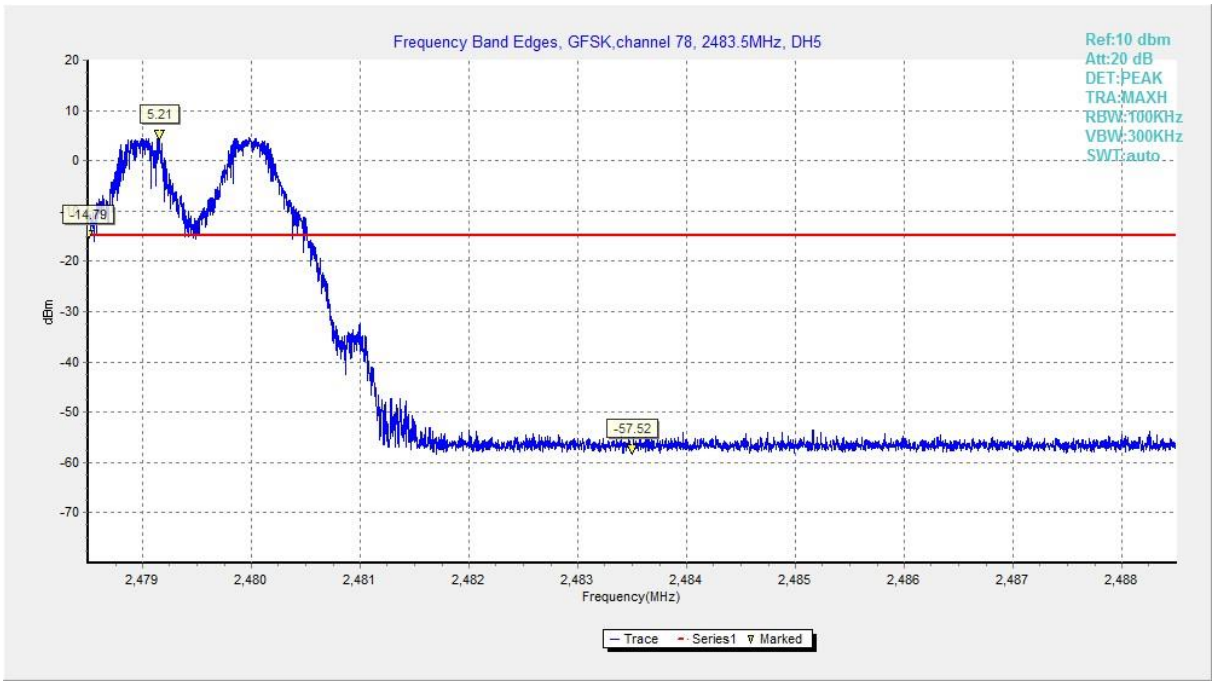

Fig. 2 Band Edges (GFSK, Ch 78, Hopping ON)

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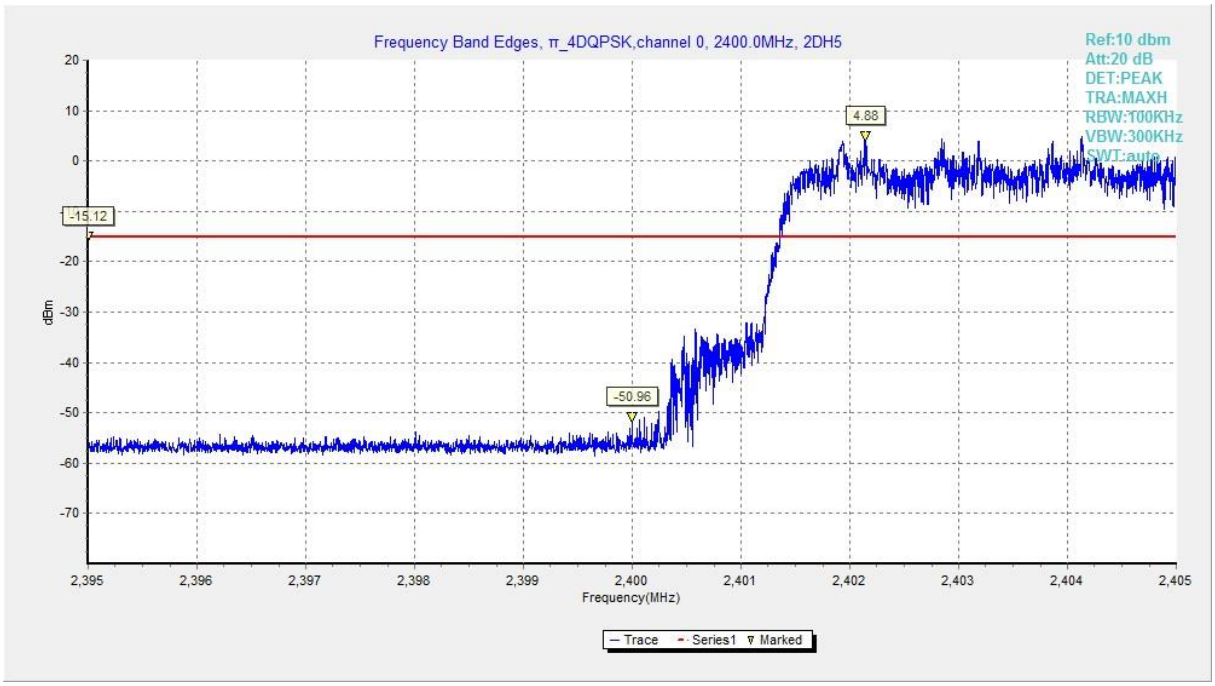

Fig. 3 Band Edges (π/4 DQPSK, Ch 0, Hopping ON)

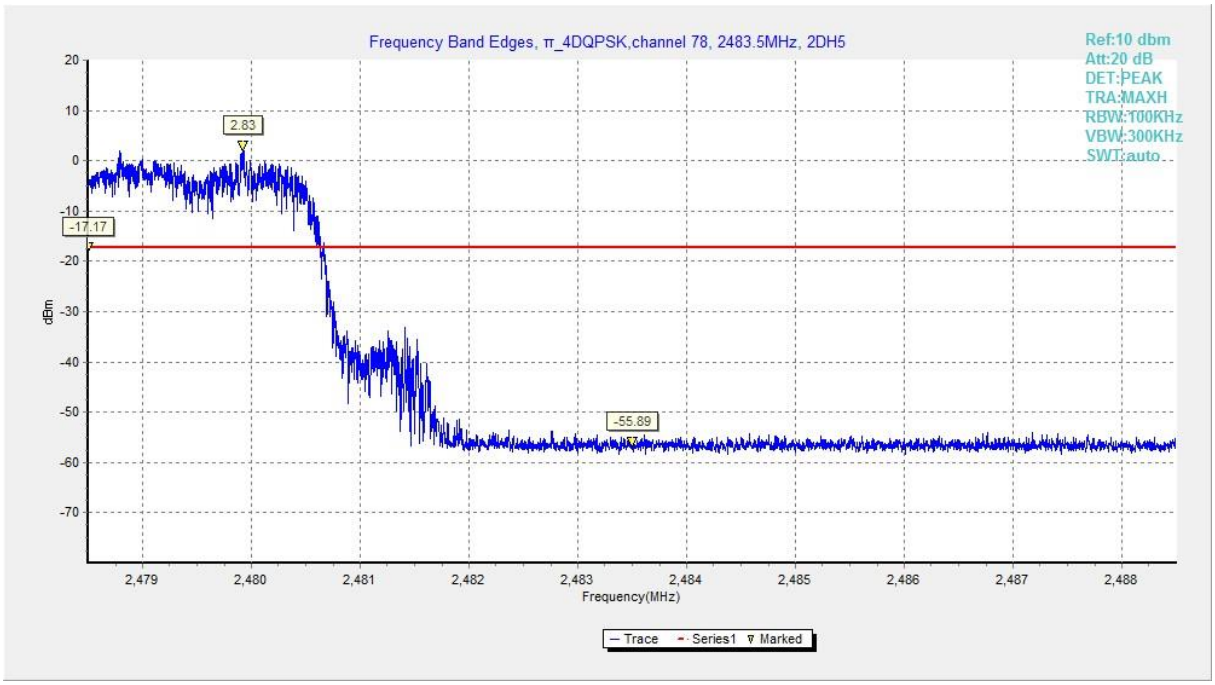

Fig. 4 Band Edges (π/4 DQPSK, Ch 78, Hopping ON)

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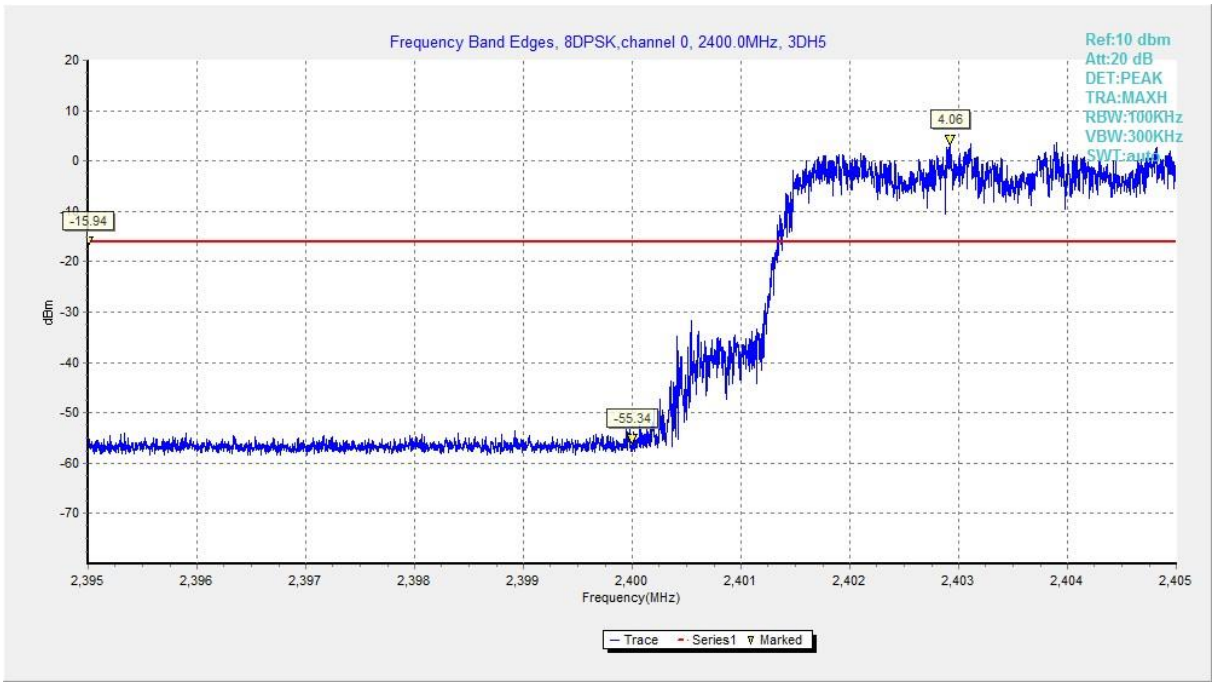

Fig. 5 Band Edges (8DPSK, Ch 0, Hopping ON)

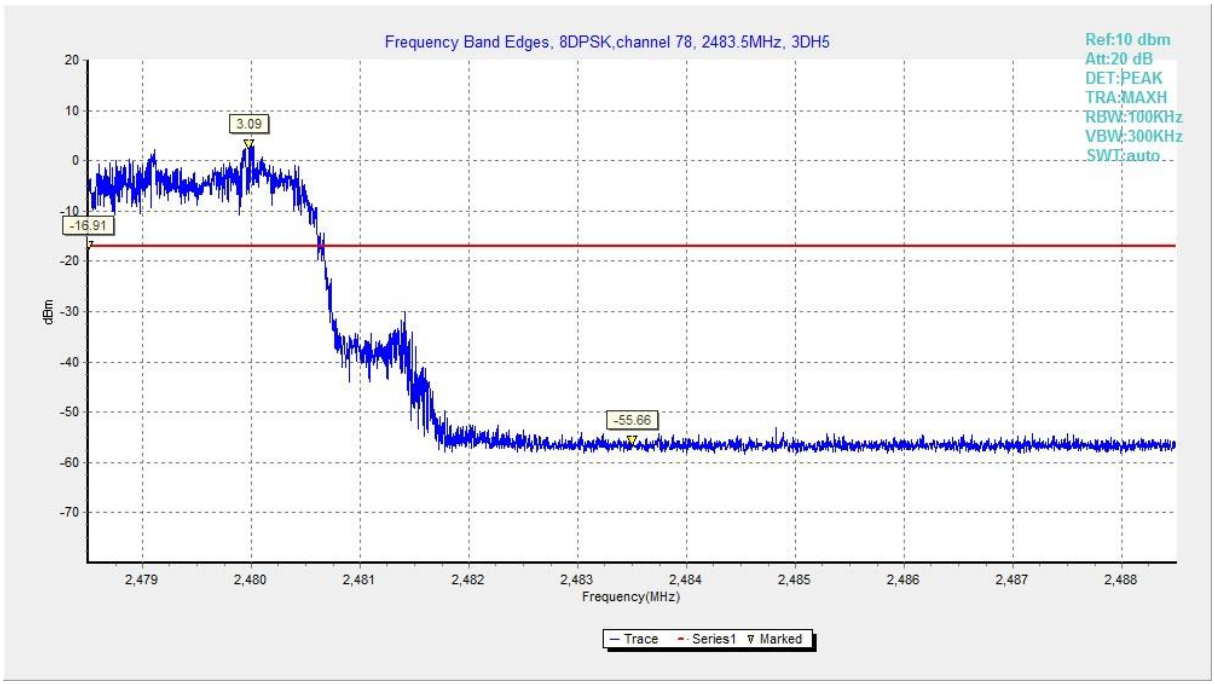

Fig. 6 Band Edges (8DPSK, Ch 78, Hopping ON)

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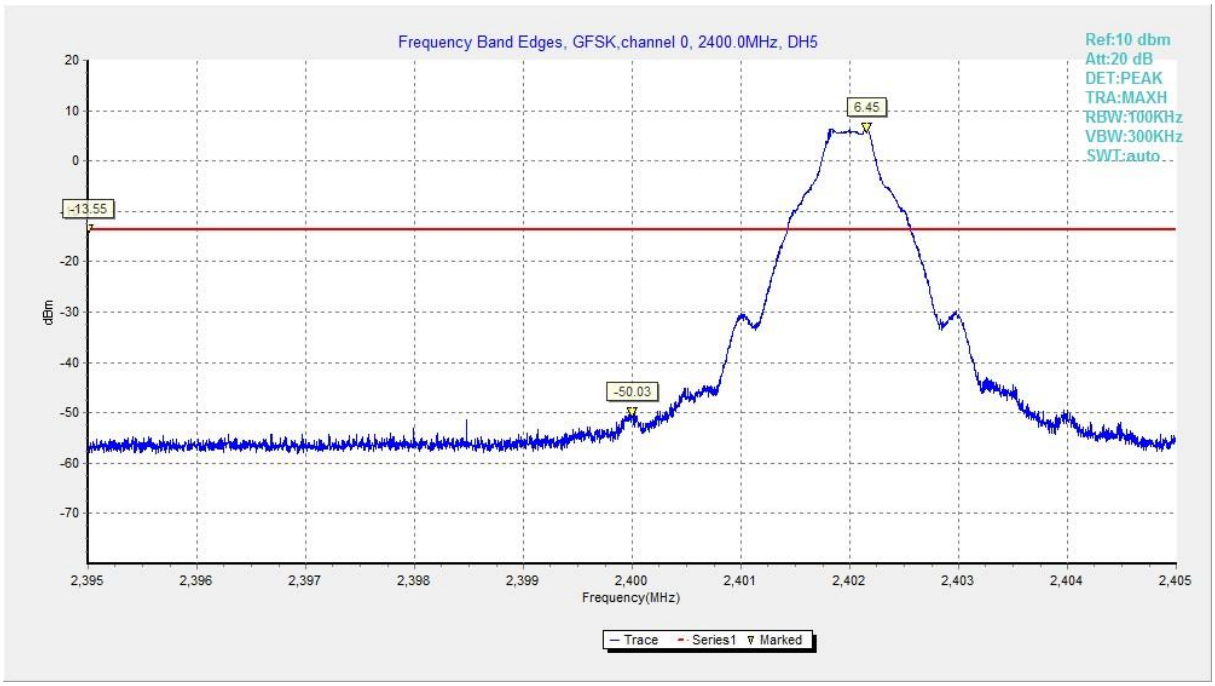

Fig. 7 Band Edges (GFSK, Ch 0, Hopping OFF)

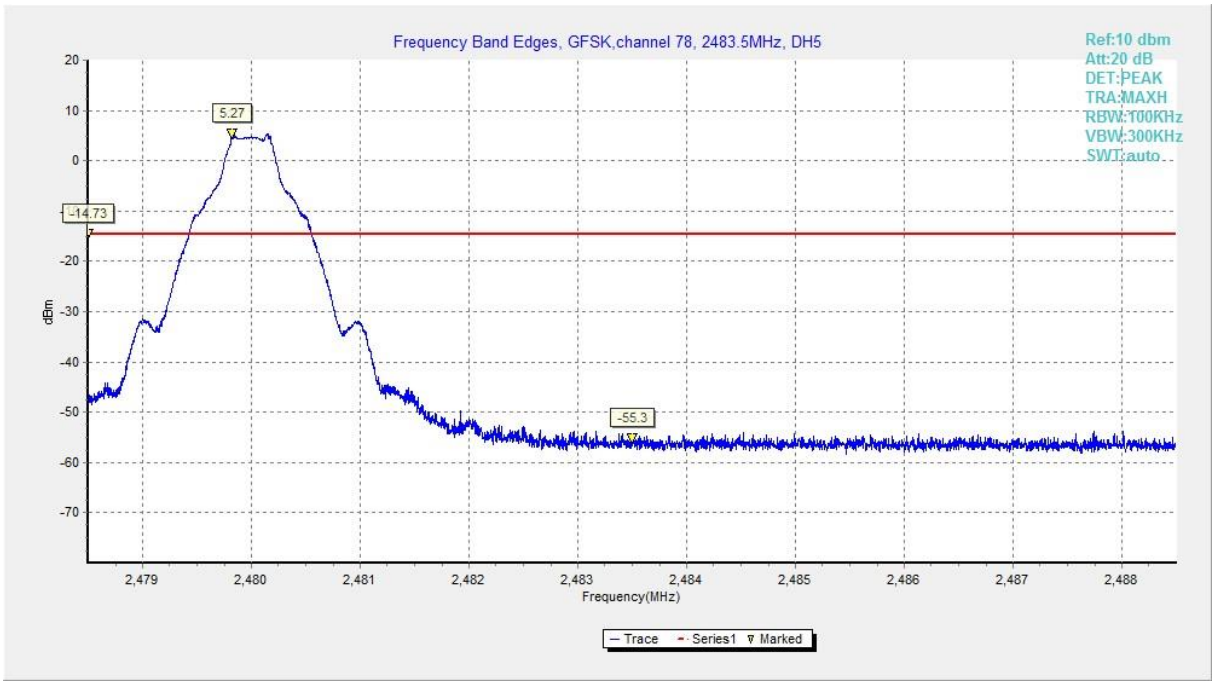

Fig. 8 Band Edges (GFSK, Ch 78, Hopping OFF)

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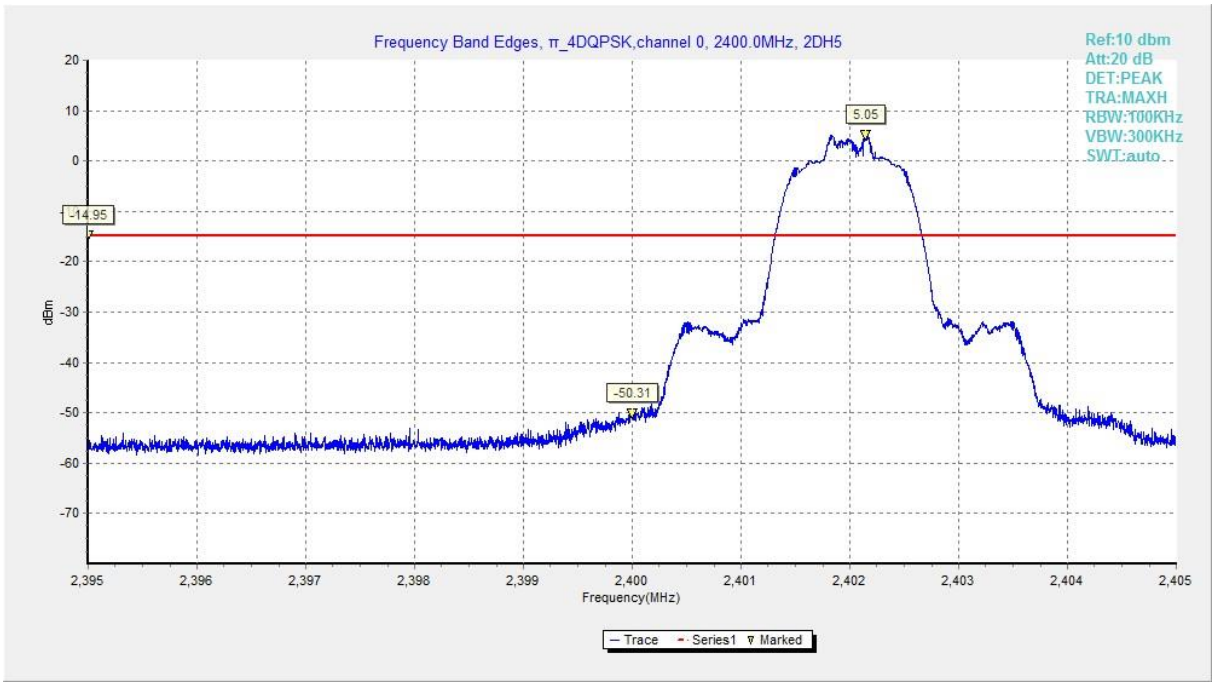

Fig. 9 Band Edges (π/4 DQPSK, Ch 0, Hopping OFF)

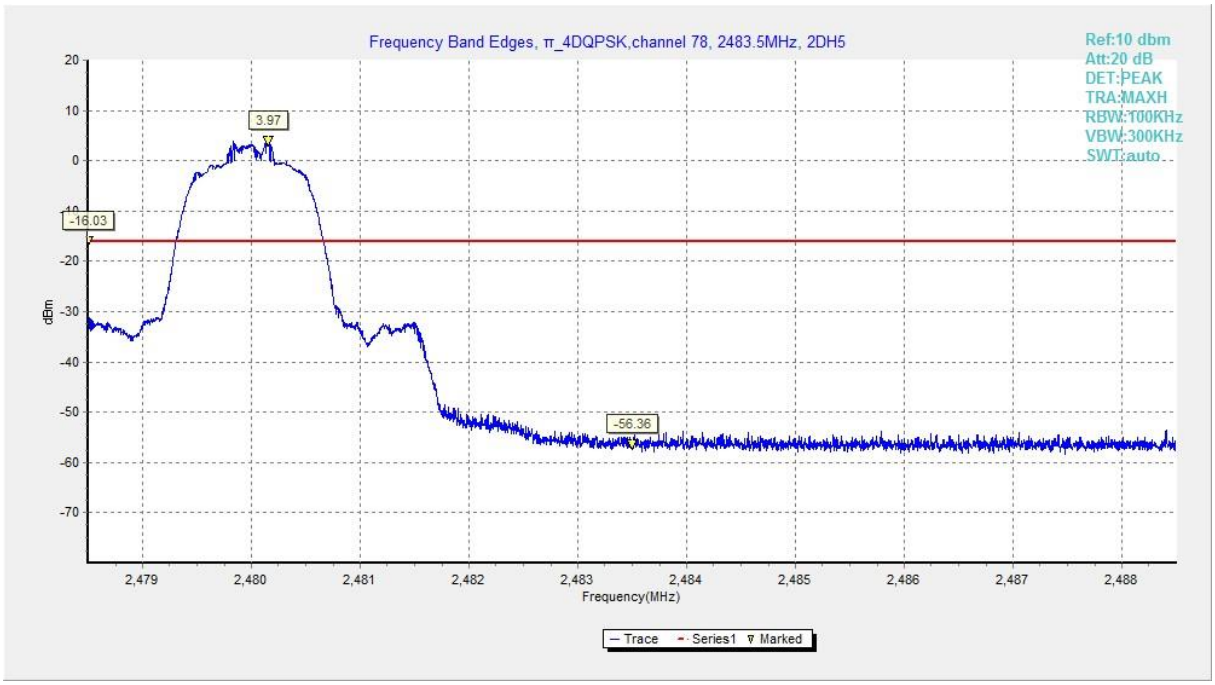

Fig. 10 Band Edges (π/4 DQPSK, Ch 78, Hopping OFF)

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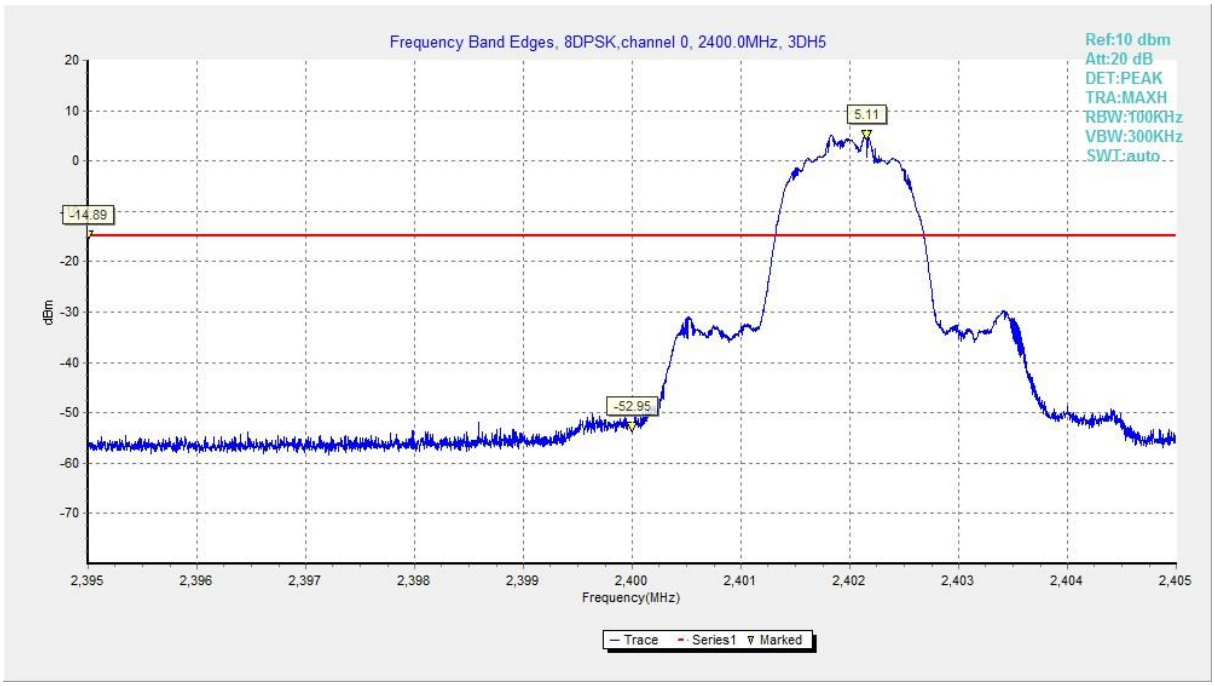

Fig. 11 Band Edges (8DPSK, Ch 0, Hopping OFF)

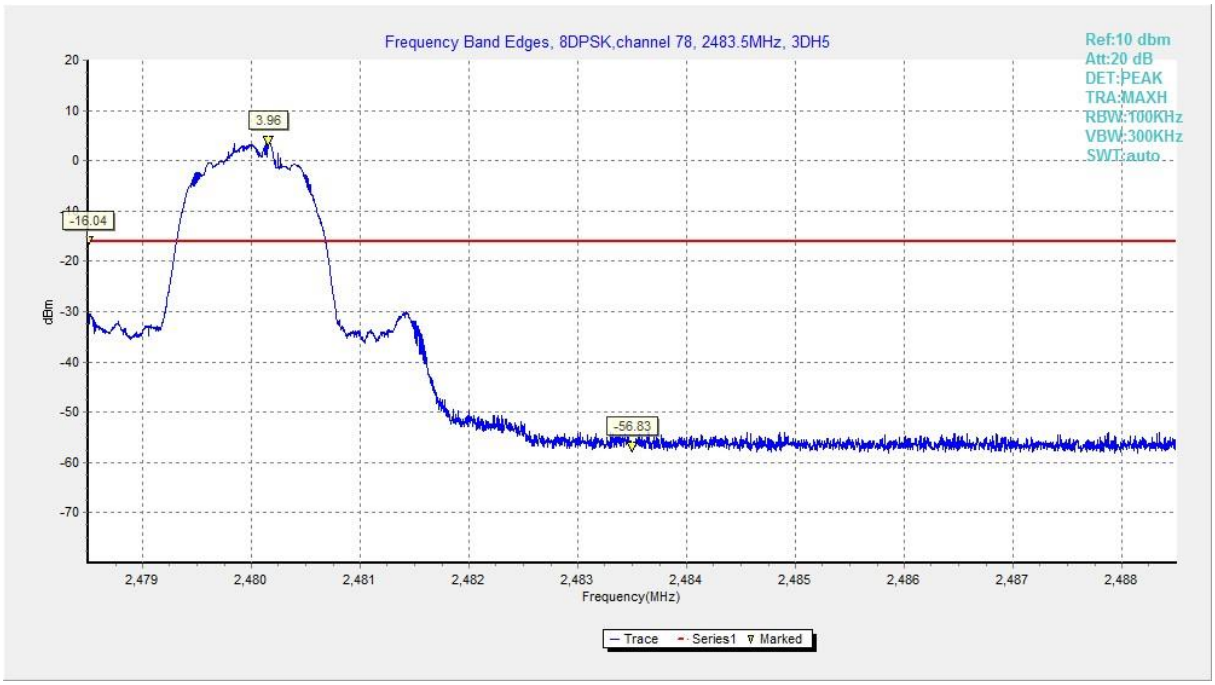

Fig. 12 Band Edges (8DPSK, Ch 78, Hopping OFF)

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A.3 Conducted Emission

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247 (d)	20dB below peak output power in 100 kHz bandwidth

Measurement Results:

MODE	Channel	Frequency Range	Test Results	Conclusion
GFSK	0	2.402 GHz	Fig.13	P
		1GHz-3GHz	Fig.14	P
		3GHz-10GHz	Fig.15	P
	39	2.441 GHz	Fig.16	P
		1GHz-3GHz	Fig.17	P
		3GHz-10GHz	Fig.18	P
	78	2.480 GHz	Fig.19	P
		1GHz-3GHz	Fig.20	P
		3GHz-10GHz	Fig.21	P
π/4 DQPSK	0	2.402 GHz	Fig.22	P
		1GHz-3GHz	Fig.23	P
		3GHz-10GHz	Fig.24	P
	39	2.441 GHz	Fig.25	P
		1GHz-3Ghz	Fig.26	P
		3GHz-10GHz	Fig.27	P
	78	2.480 GHz	Fig.28	P
		1GHz-3Ghz	Fig.29	P
		3GHz-10GHz	Fig.30	P
8DPSK	0	2.402 GHz	Fig.31	P
		1GHz-3GHz	Fig.32	P
		3GHz-10GHz	Fig.33	P
	39	2.441 GHz	Fig.34	P
		1GHz-3GHz	Fig.35	P
		3GHz-10GHz	Fig.36	P
	78	2.480 GHz	Fig.37	P
		1GHz-3GHz	Fig.38	P
		3GHz-10GHz	Fig.39	P
/	All channels	30 MHz-1GHz	Fig.40	P
		10GHz-26GHz	Fig.41	P

See below for test graphs.

Conclusion: Pass

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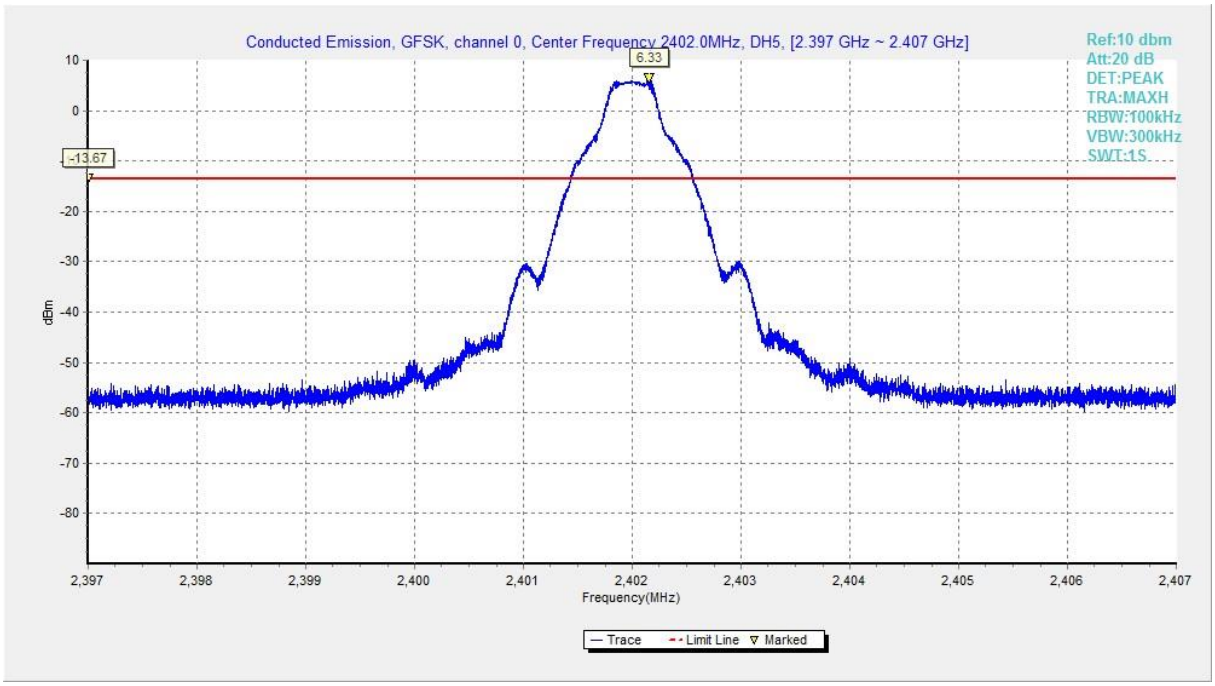

Fig. 13 Conducted Spurious Emission (GFSK, Ch0, 2.402GHz)

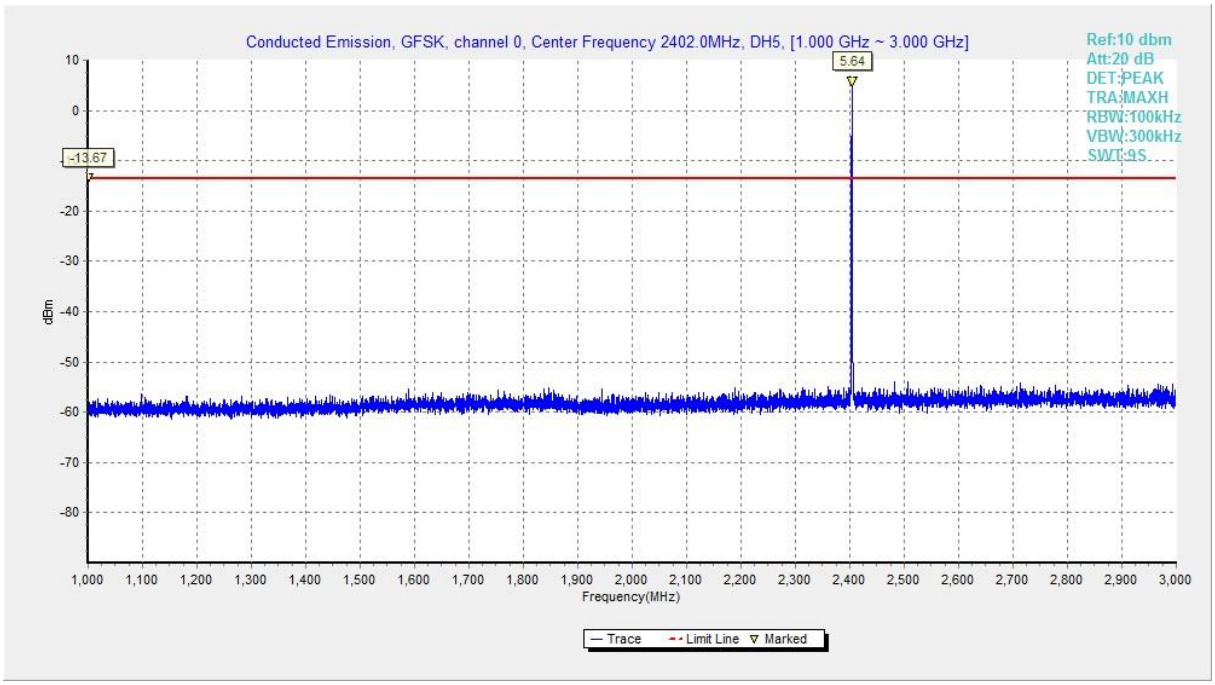

Fig. 14 Conducted Spurious Emission (GFSK, Ch0, 1GHz-3GHz)

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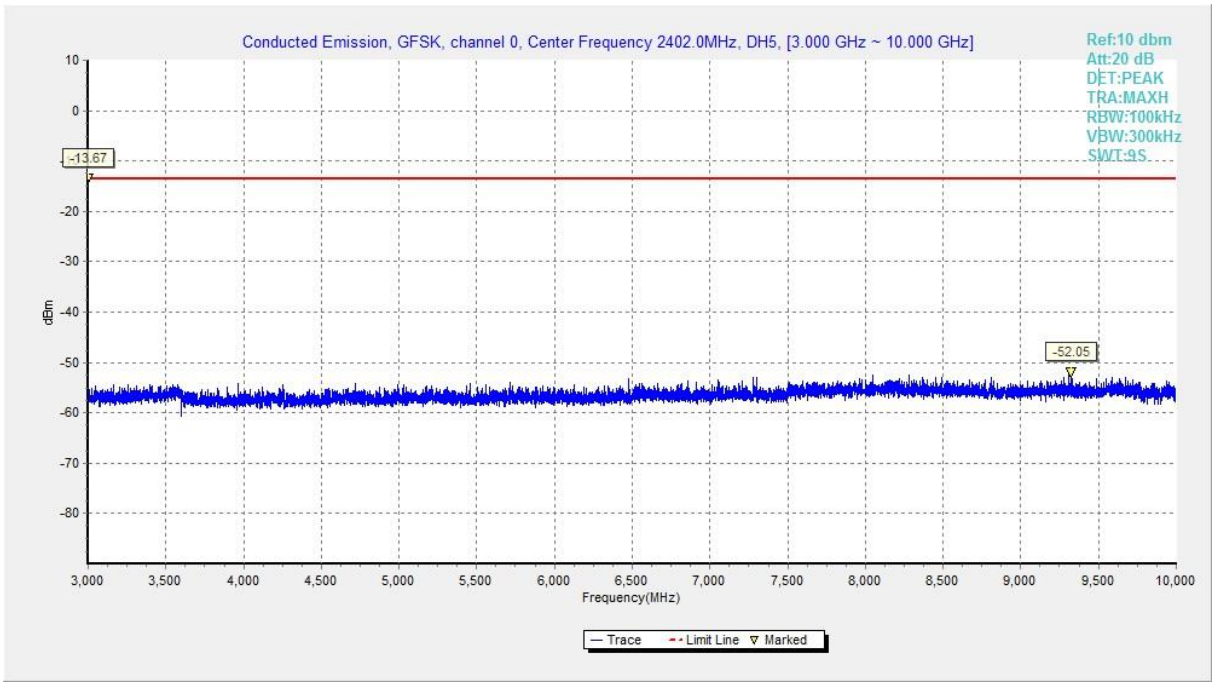

Fig. 15 Conducted Spurious Emission (GFSK, Ch0, 3GHz-10GHz)

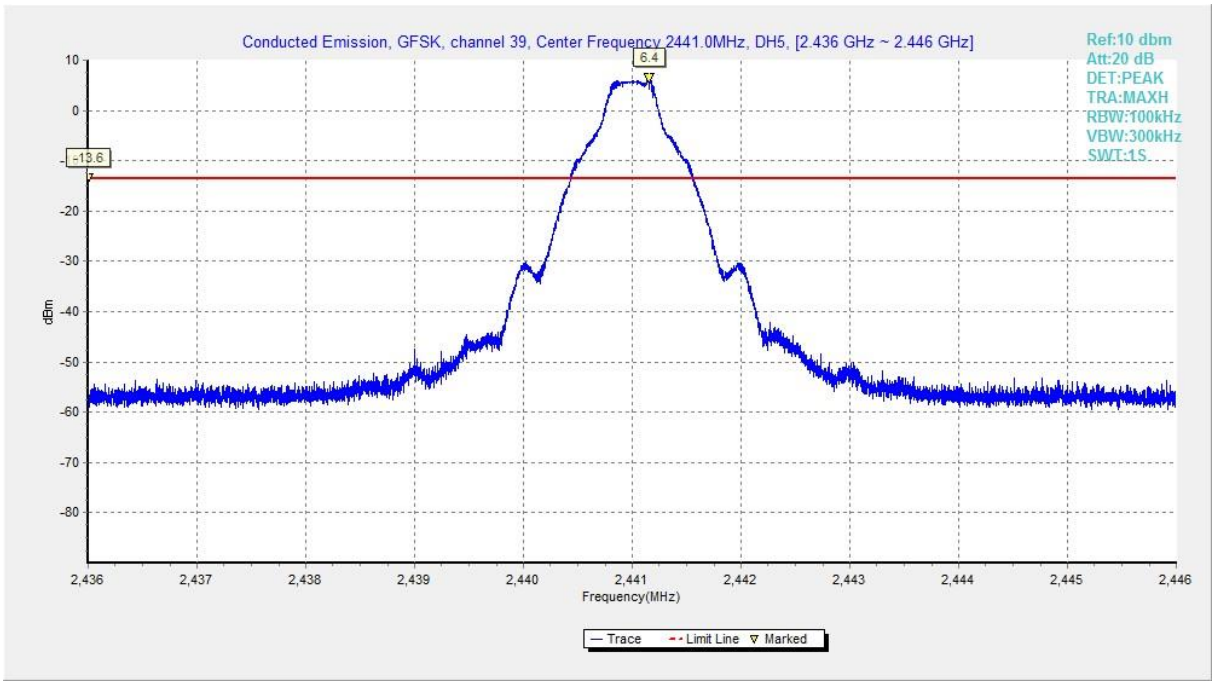

Fig. 16 Conducted Spurious Emission (GFSK, Ch39, 2.441GHz)

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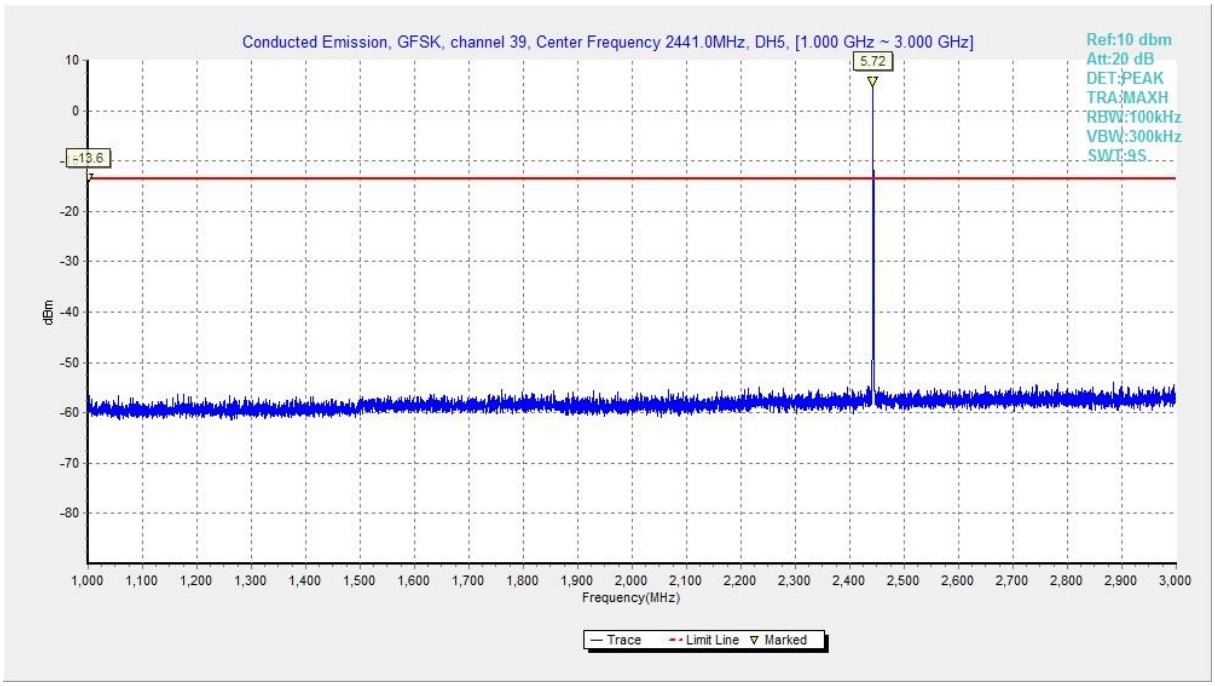

Fig. 17 Conducted Spurious Emission (GFSK, Ch39, 1GHz-3GHz)

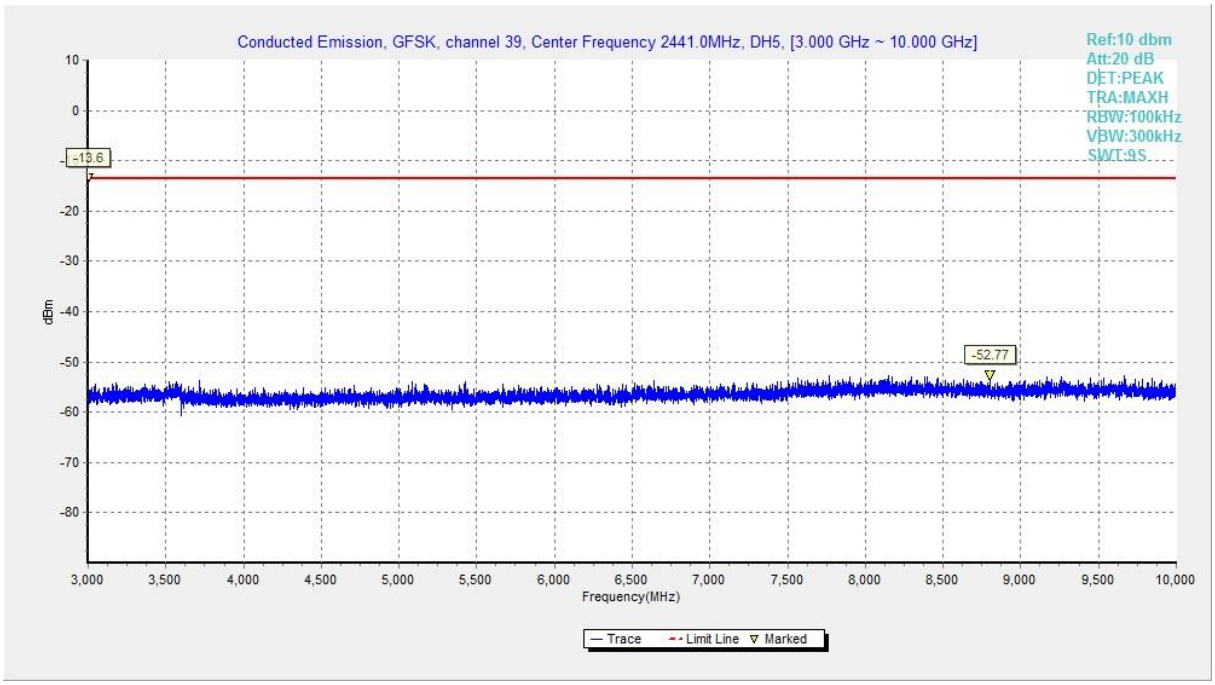

Fig. 18 Conducted Spurious Emission (GFSK, Ch39, 3GHz-10GHz)

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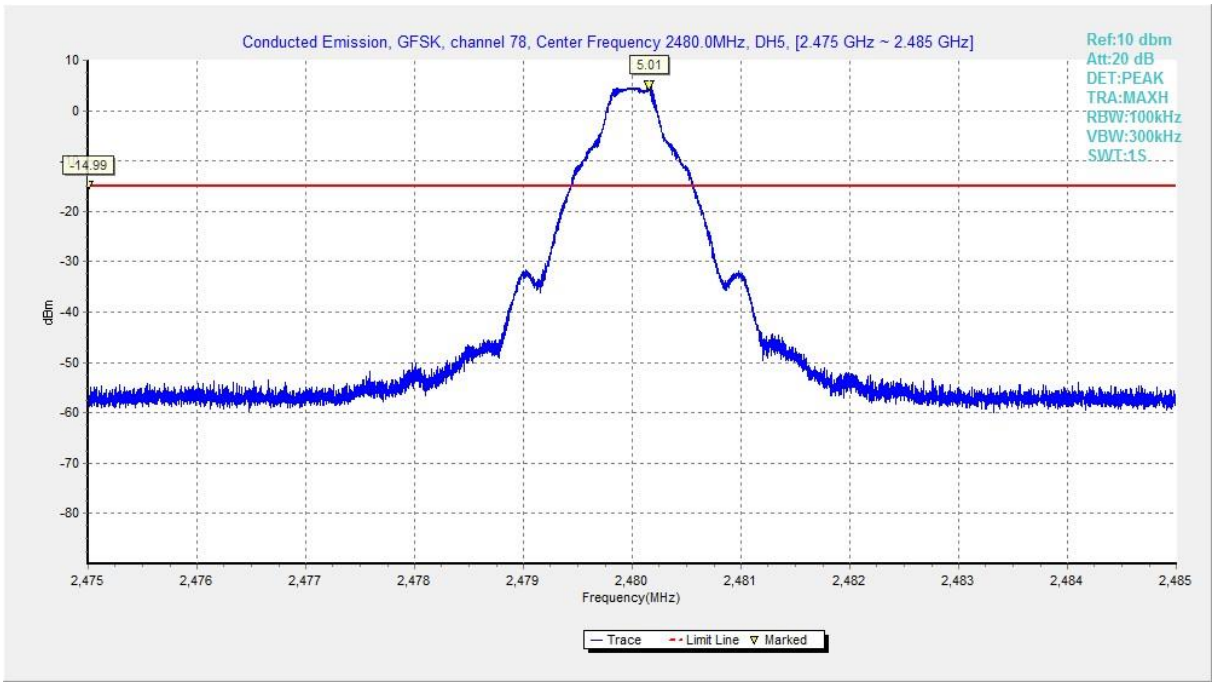

Fig. 19 Conducted Spurious Emission (GFSK, Ch78, 2.480GHz)

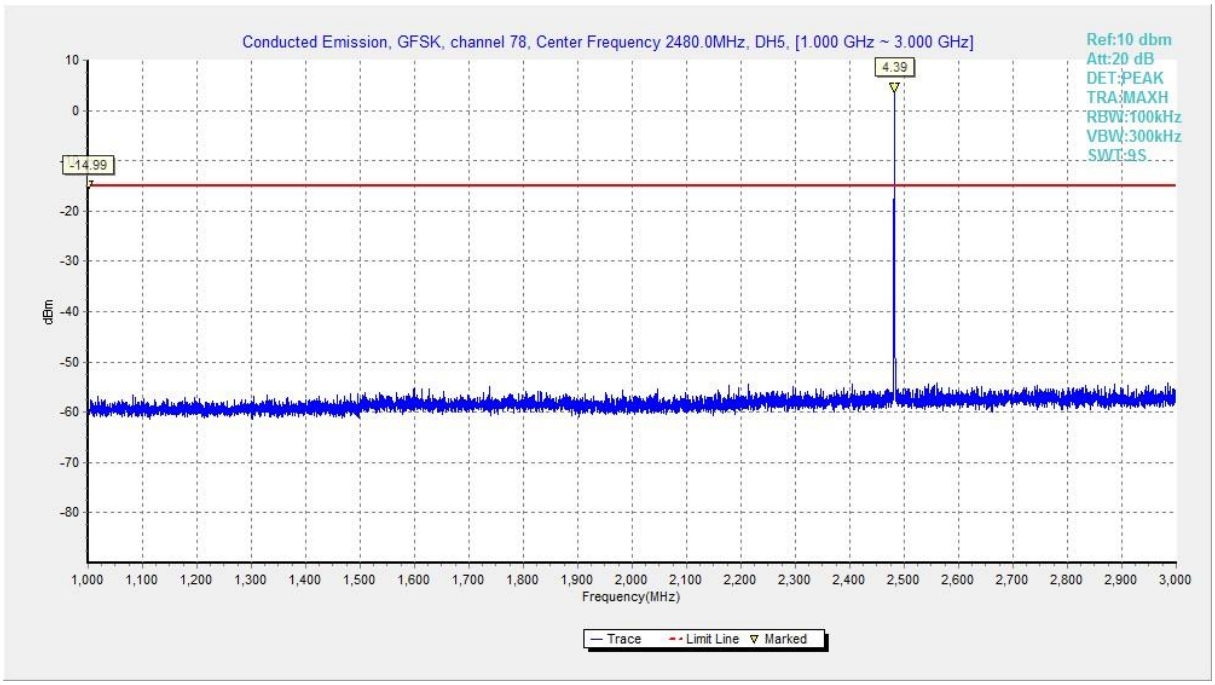

Fig. 20 Conducted Spurious Emission (GFSK, Ch78, 1GHz-3GHz)

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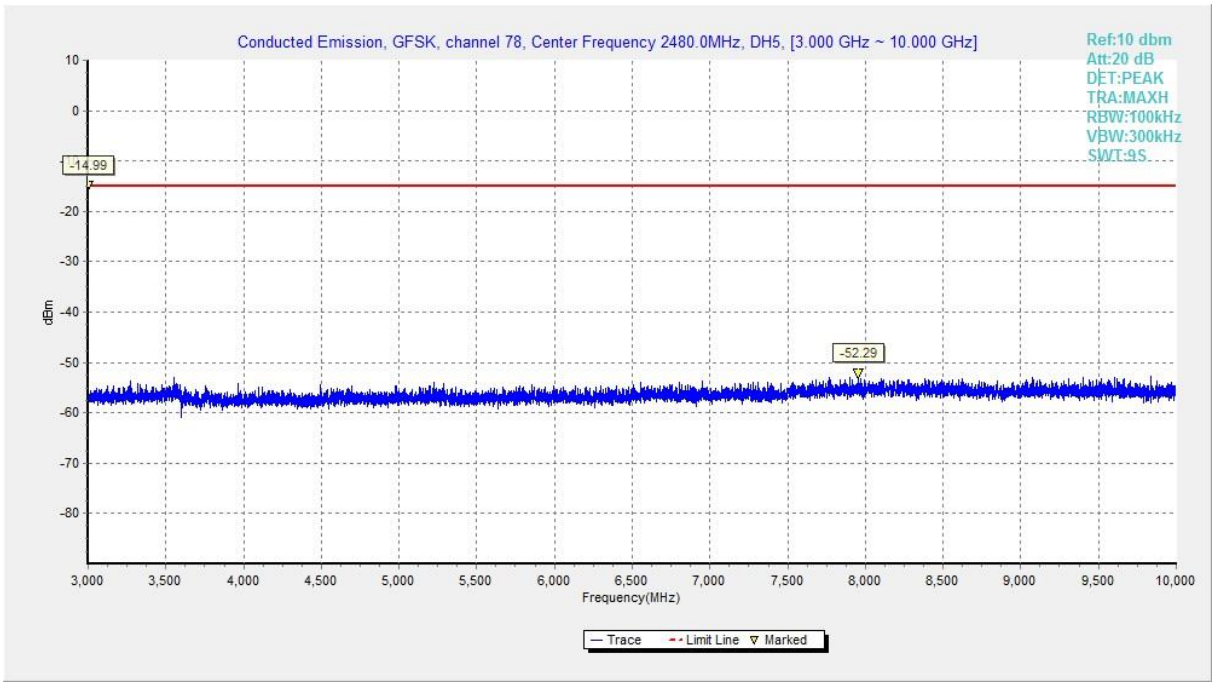

Fig. 21 Conducted Spurious Emission (GFSK, Ch78, 3GHz-10GHz)

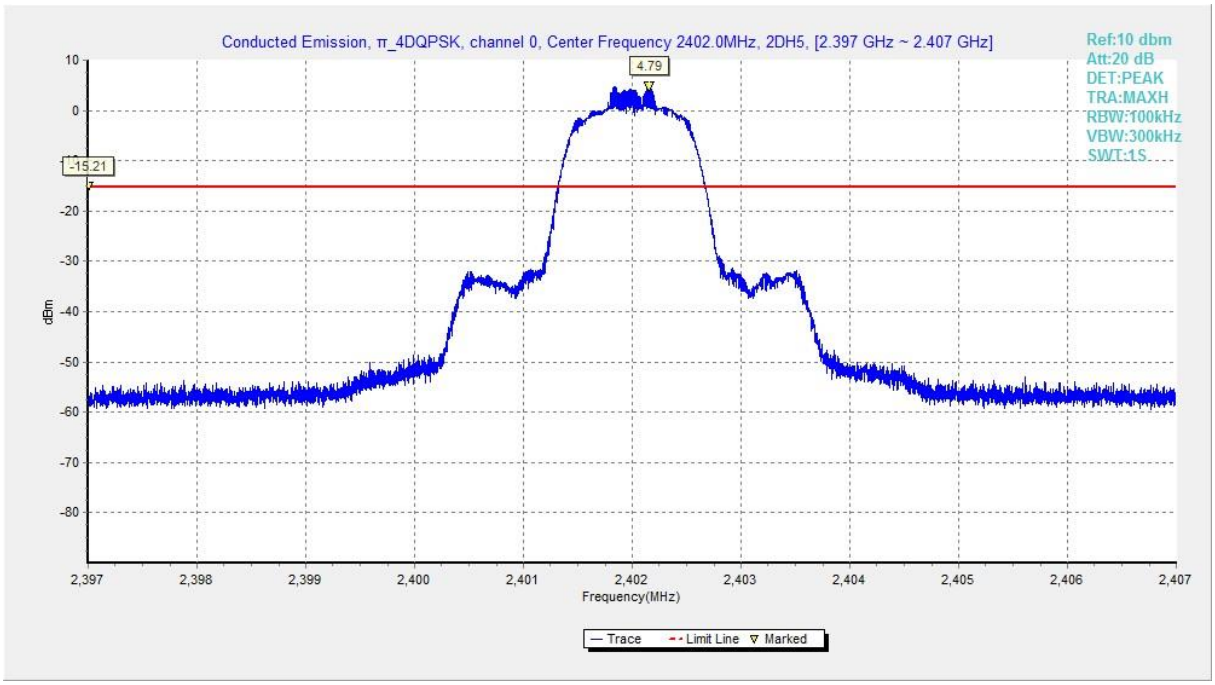

Fig. 22 Conducted Spurious Emission (π/4 DQPSK, Ch0, 2.402GHz)

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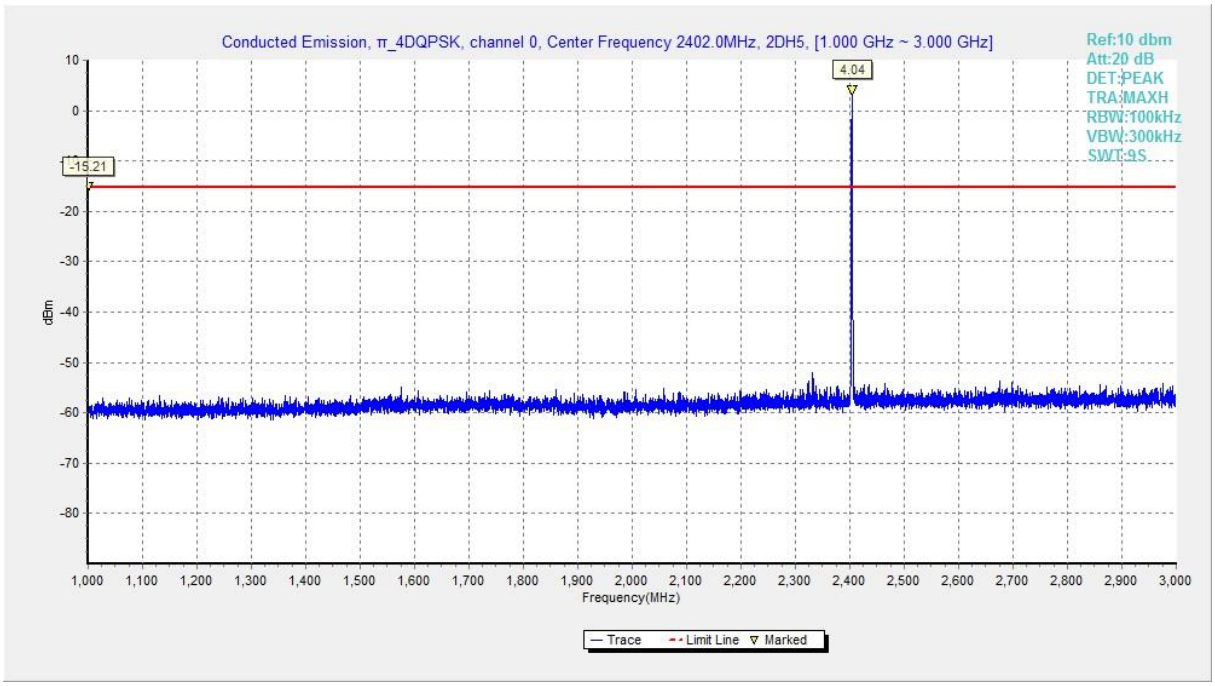

Fig. 23 Conducted Spurious Emission (π/4 DQPSK, Ch0, 1GHz-3GHz)

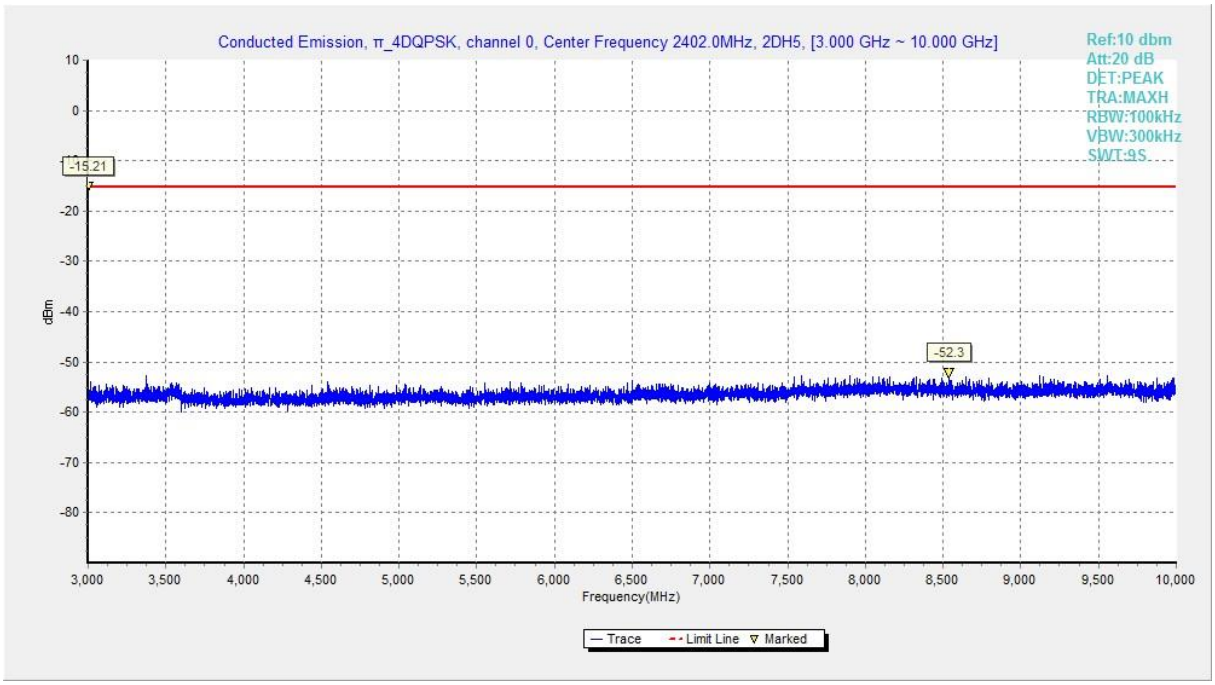

Fig. 24 Conducted Spurious Emission (π/4 DQPSK, Ch0, 3GHz-10GHz)

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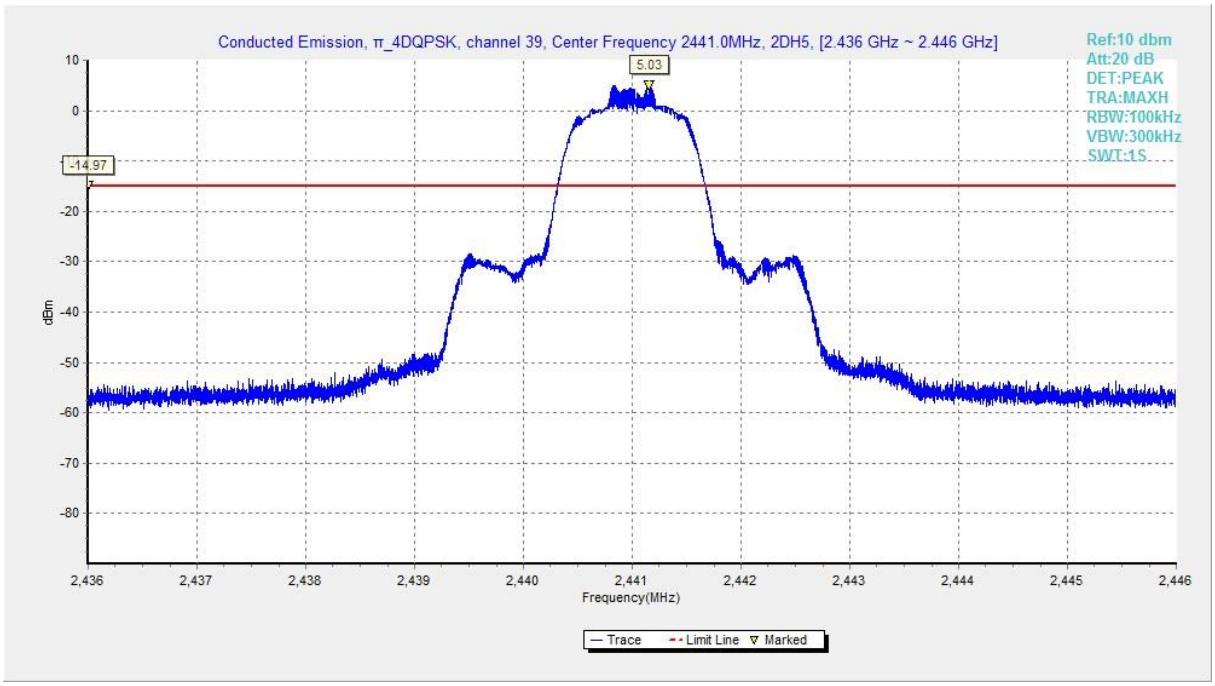

Fig. 25 Conducted Spurious Emission (π/4 DQPSK, Ch39, 2.441GHz)

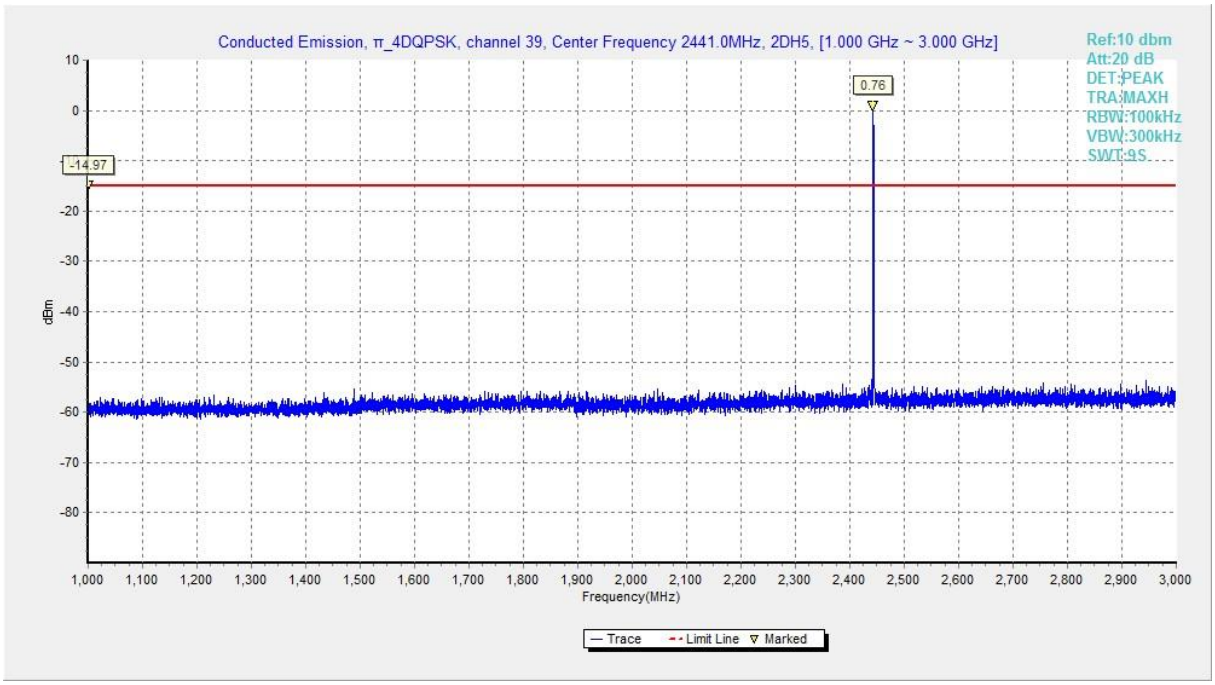

Fig. 26 Conducted Spurious Emission (π/4 DQPSK, Ch39, 1GHz-3GHz)

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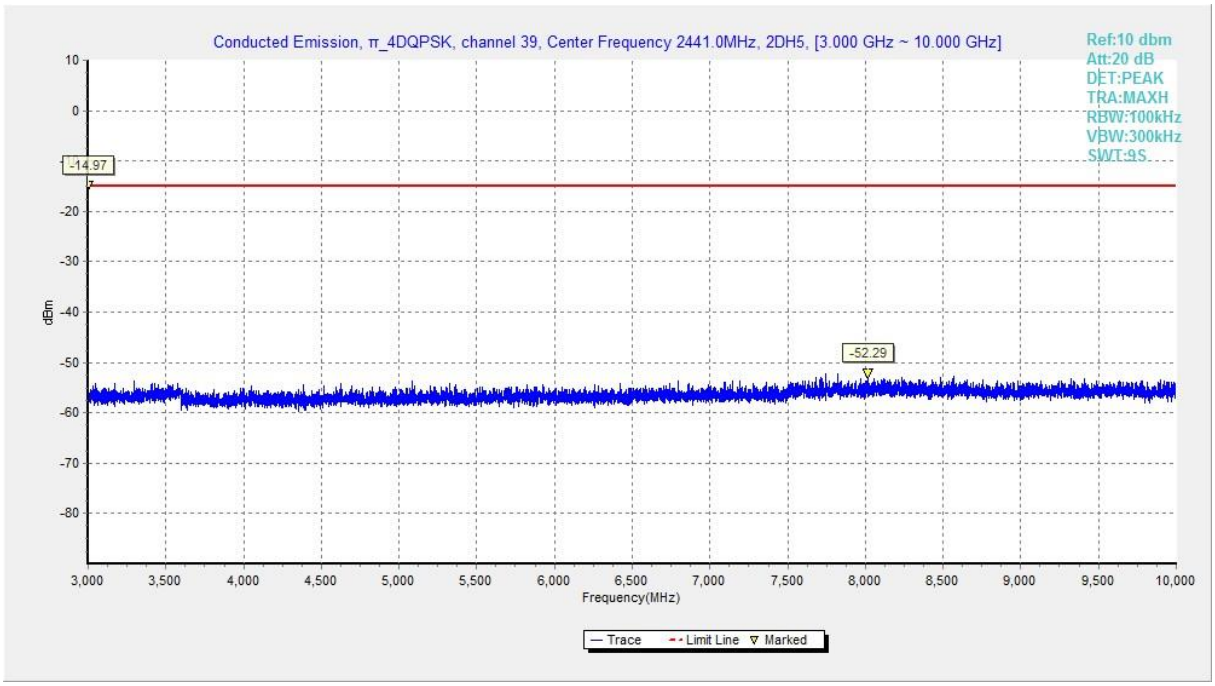

Fig. 27 Conducted Spurious Emission (π/4 DQPSK, Ch39, 3GHz-10GHz)

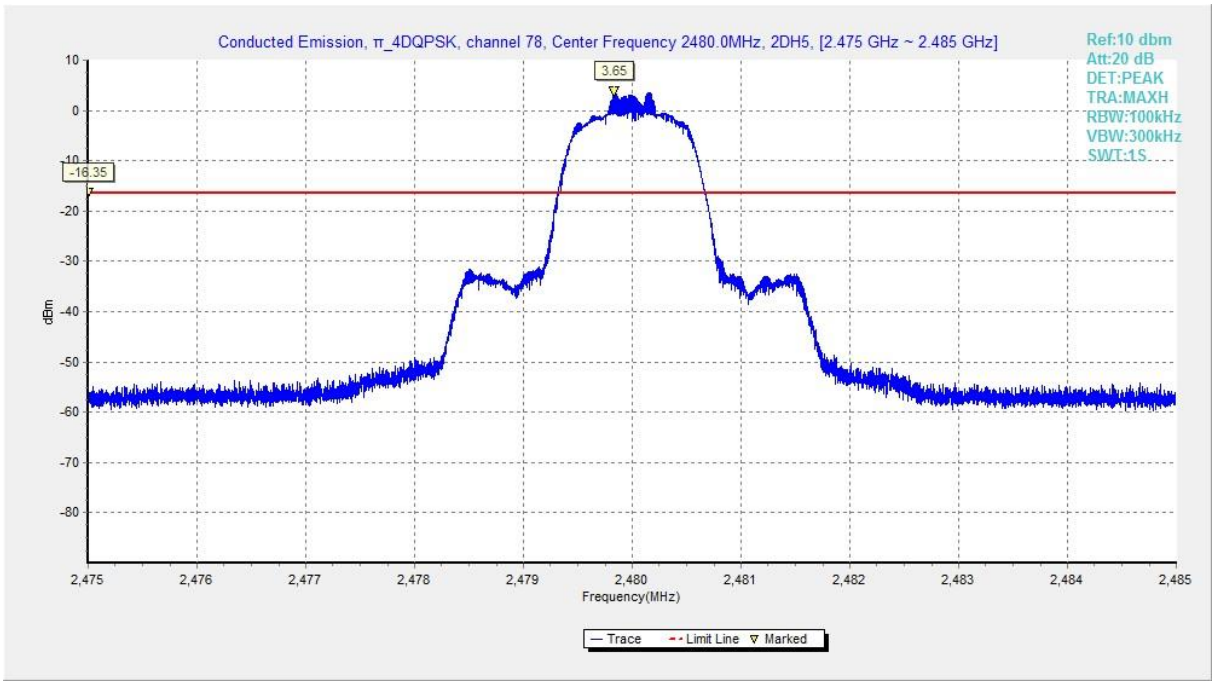

Fig. 28 Conducted Spurious Emission (π/4 DQPSK, Ch78, 2.480GHz)

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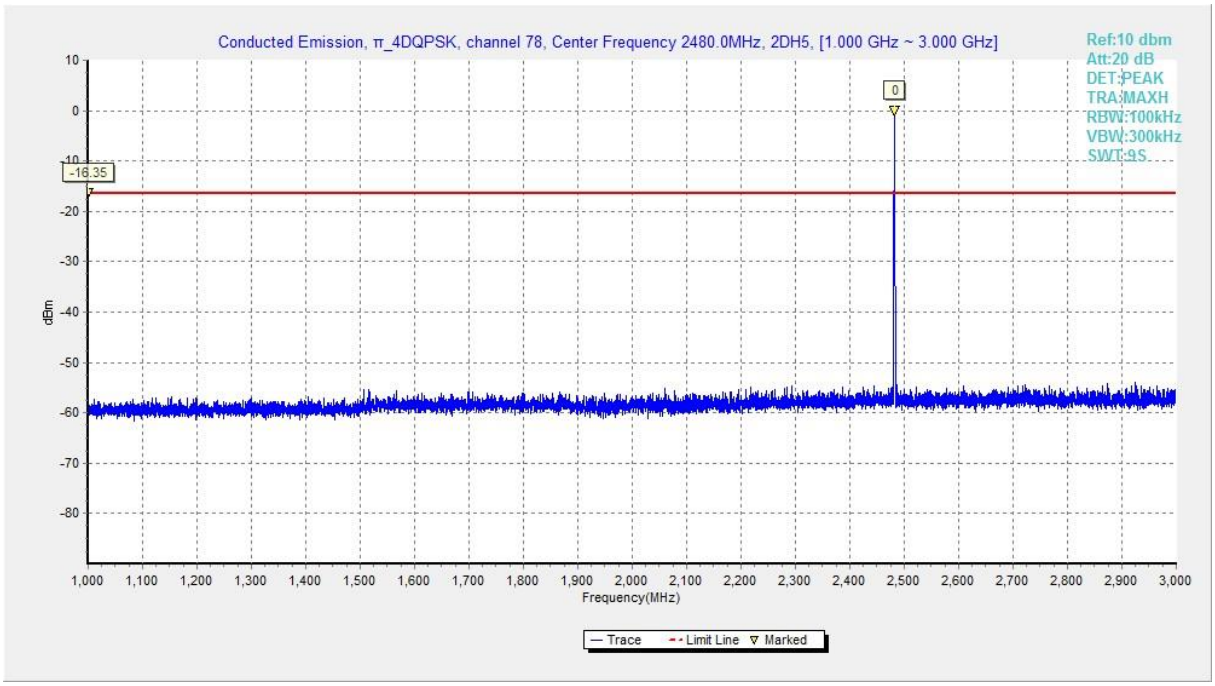

Fig. 29 Conducted Spurious Emission (π/4 DQPSK, Ch78, 1GHz-3GHz)

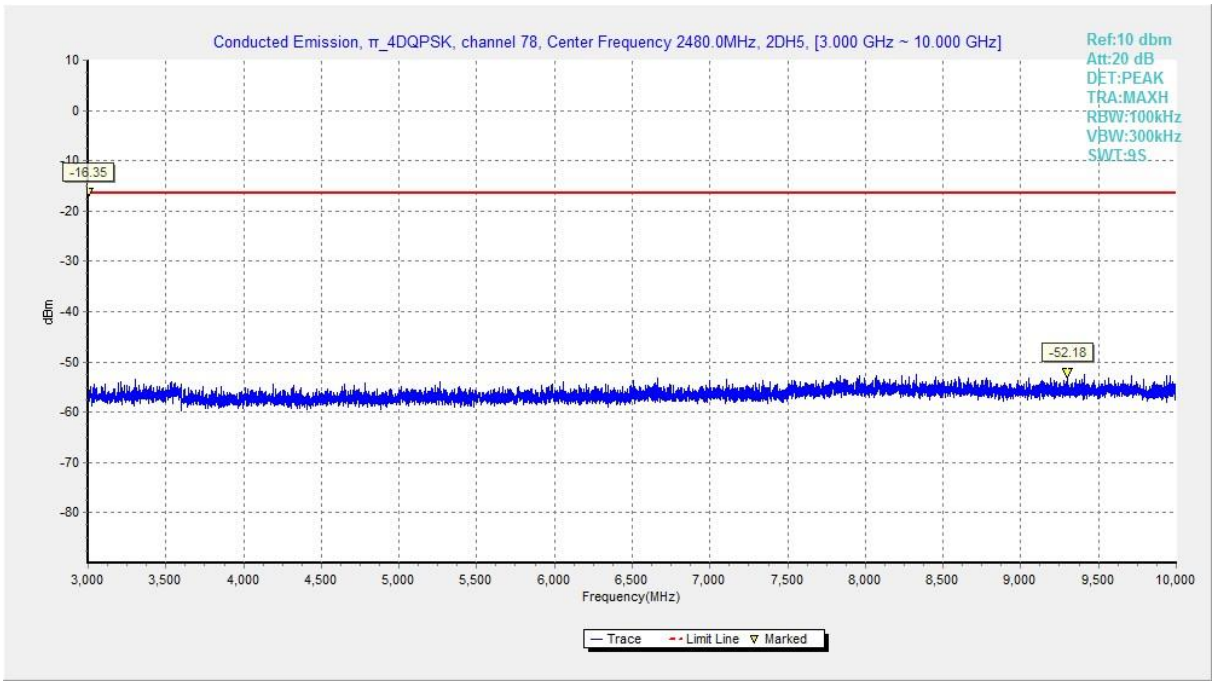

Fig. 30 Conducted Spurious Emission (π/4 DQPSK, Ch78, 3GHz-10GHz)

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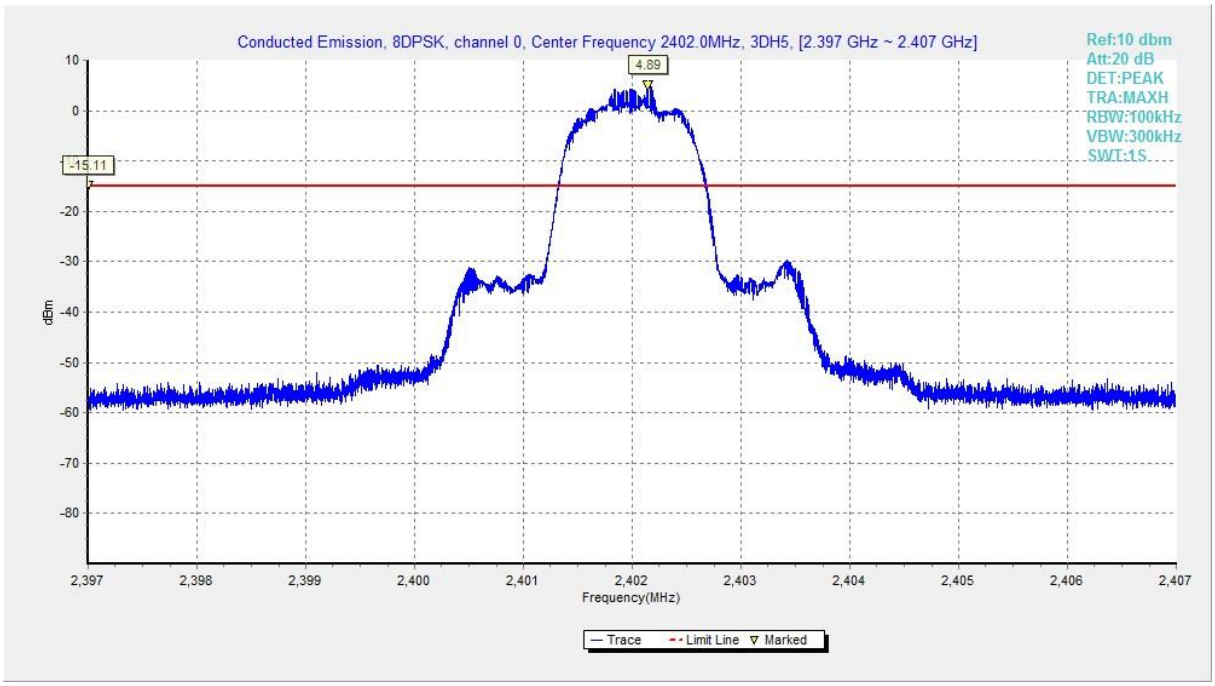

Fig. 31 Conducted Spurious Emission (8DPSK, Ch0, 2.402GHz)

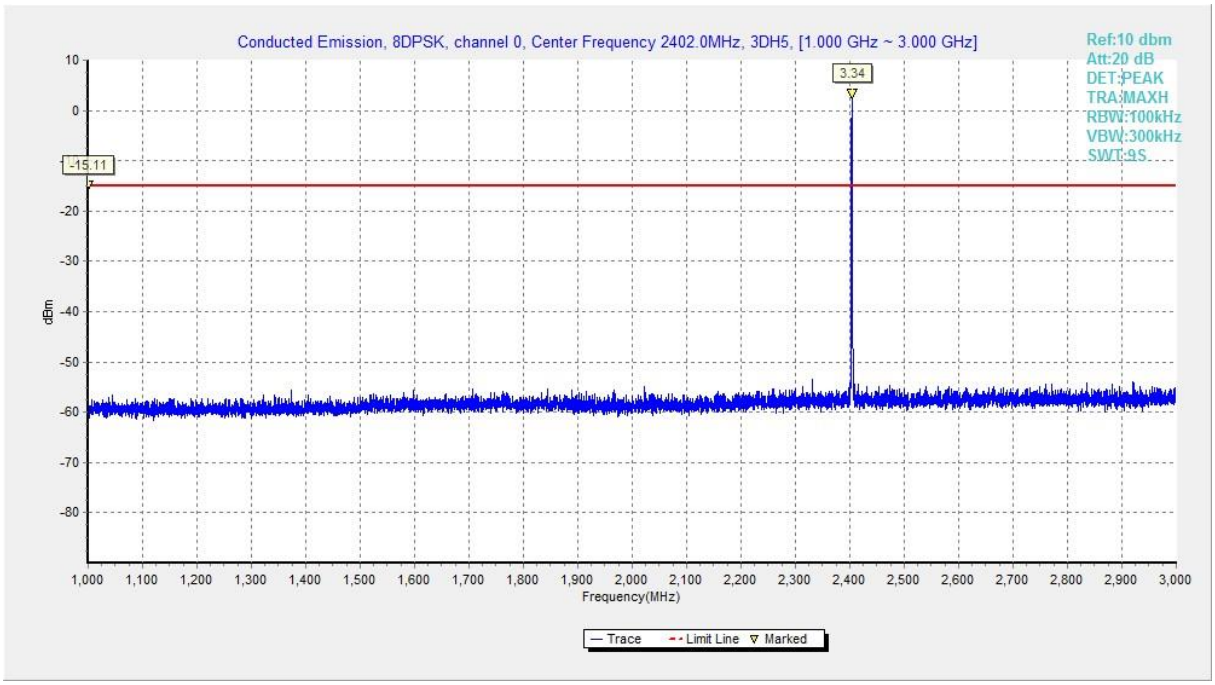

Fig. 32 Conducted Spurious Emission (8DPSK, Ch0, 1GHz-3GHz)

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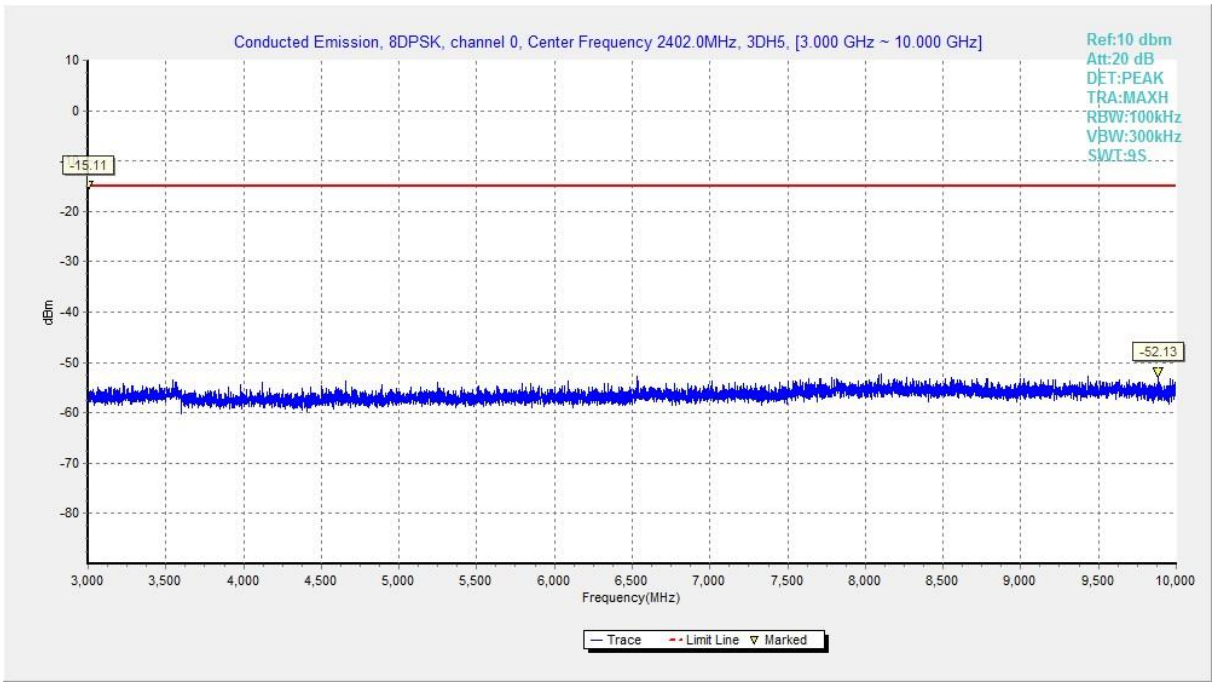

Fig. 33 Conducted Spurious Emission (8DPSK, Ch0, 3GHz-10GHz)

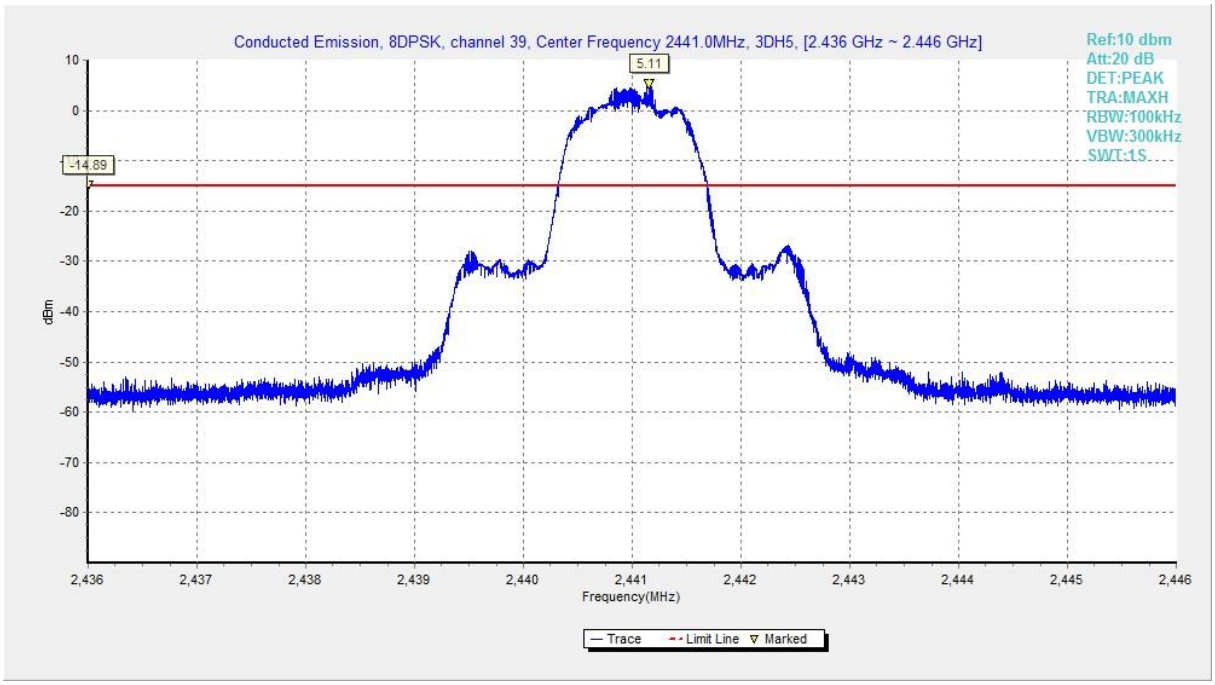

Fig. 34 Conducted Spurious Emission (8DPSK, Ch39, 2.441GHz)

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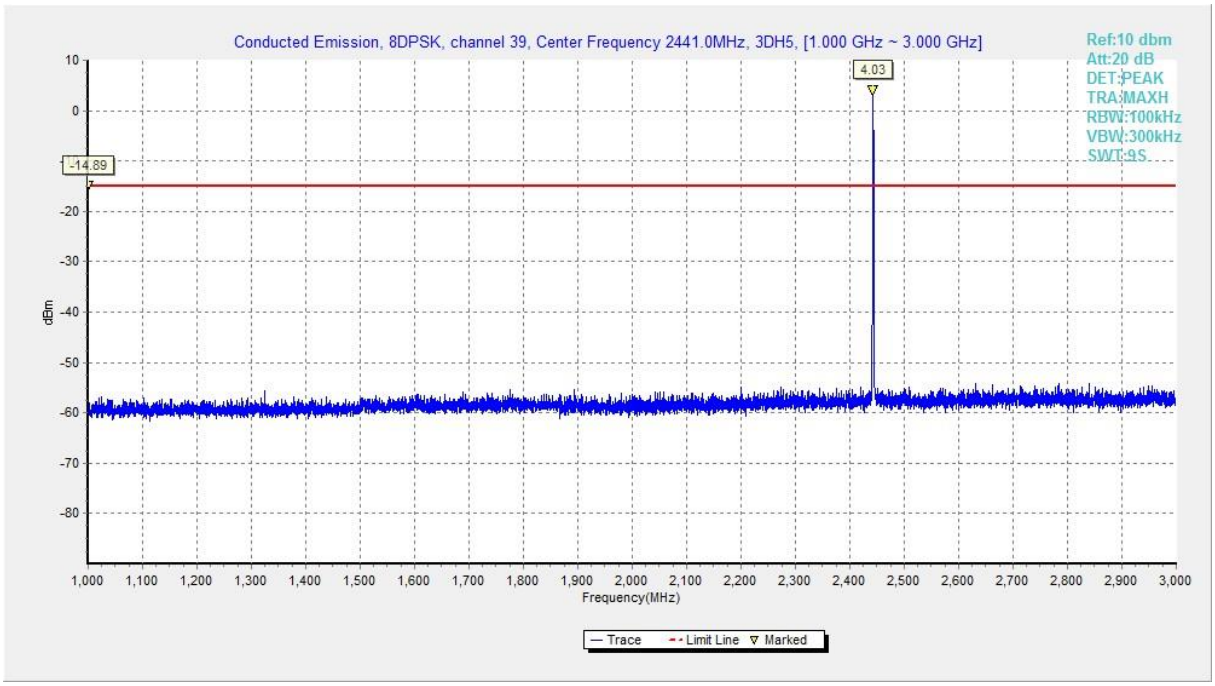

Fig. 35 Conducted Spurious Emission (8DPSK, Ch39, 1GHz-3GHz)

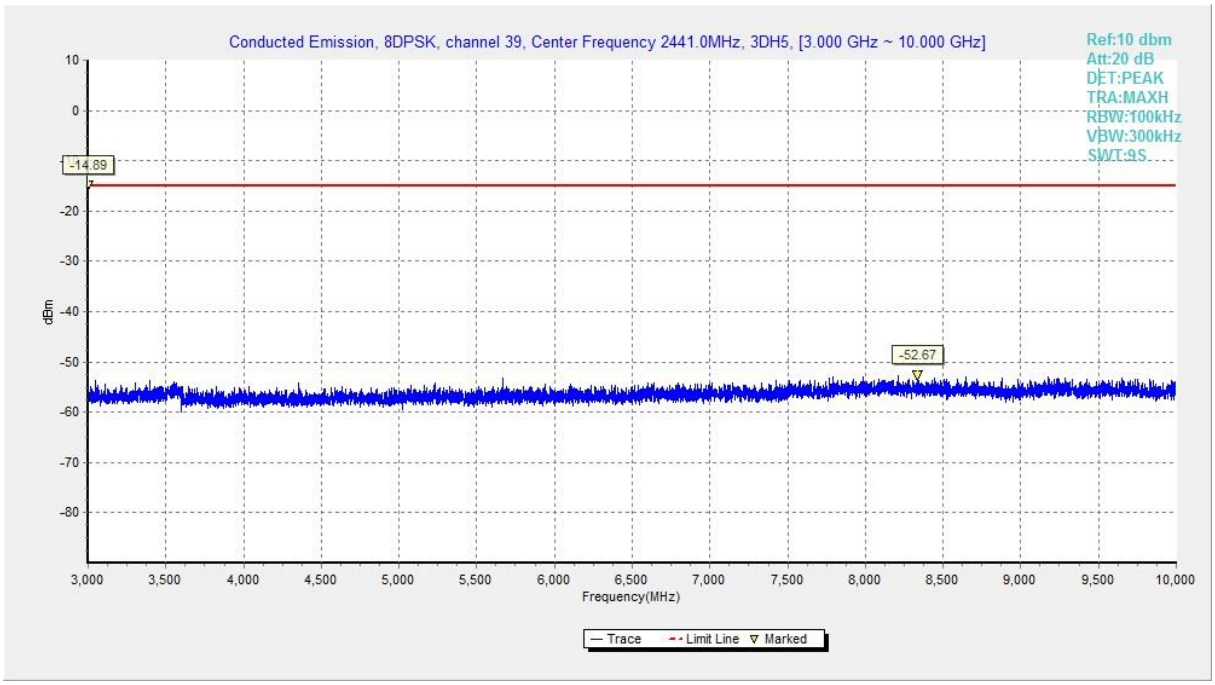

Fig. 36 Conducted Spurious Emission (8DPSK, Ch39, 3GHz-10GHz)

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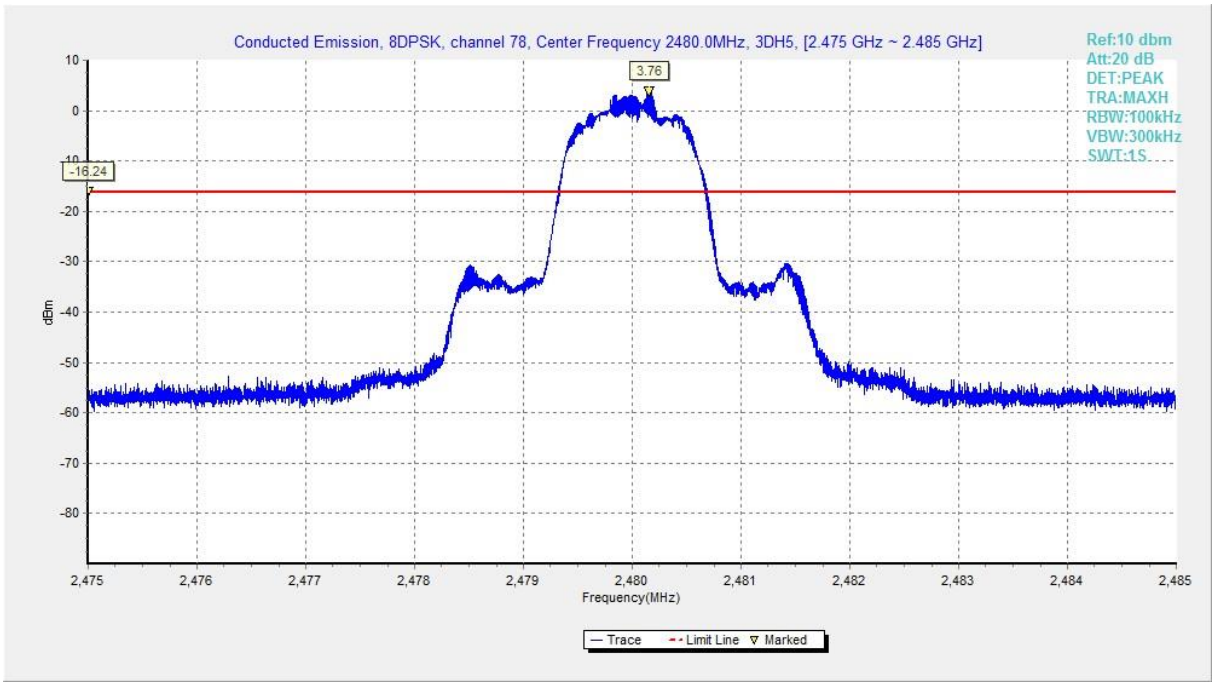

Fig. 37 Conducted Spurious Emission (8DPSK, Ch78, 2.480GHz)

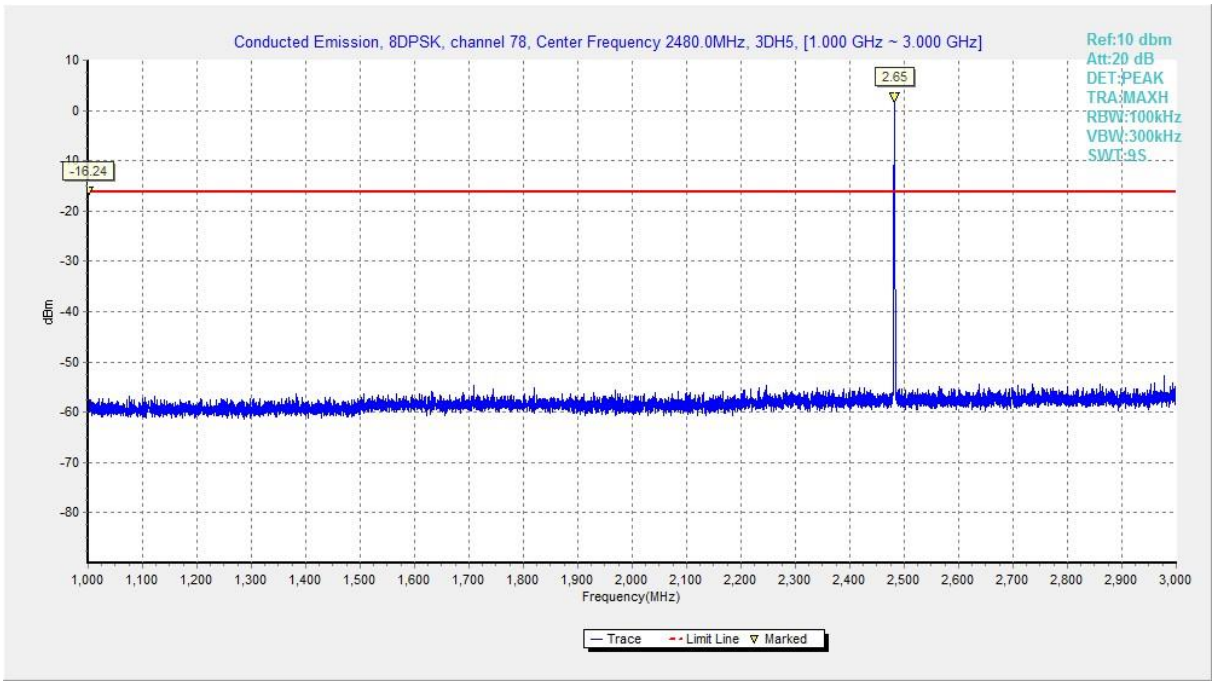

Fig. 38 Conducted Spurious Emission (8DPSK, Ch78, 1GHz-3GHz)

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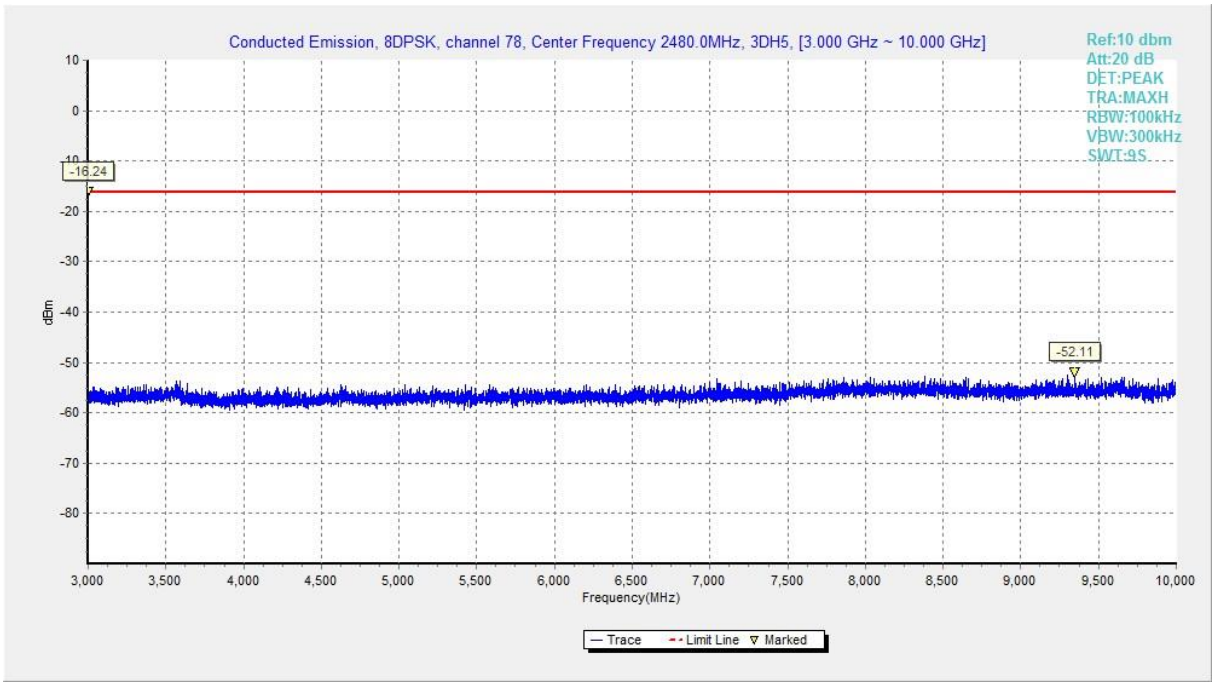

Fig. 39 Conducted Spurious Emission (8DPSK, Ch78, 3GHz-10GHz)

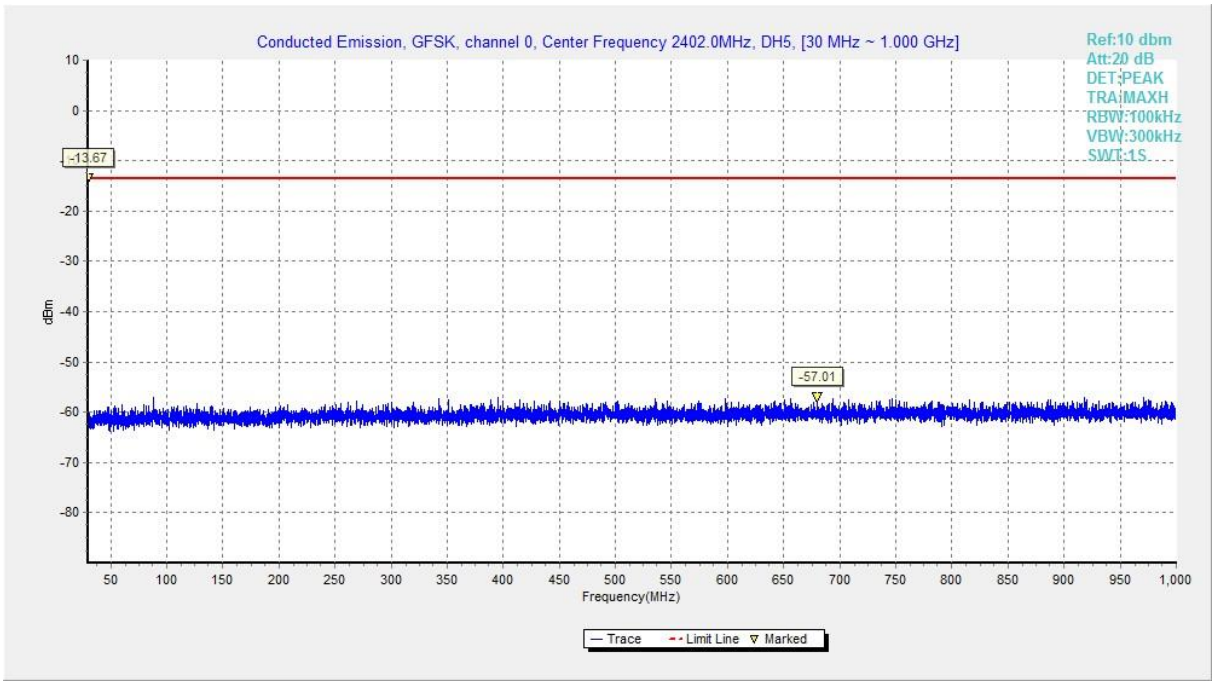

Fig. 40 Conducted Spurious Emission (All channel, 30MHz-1GHz)

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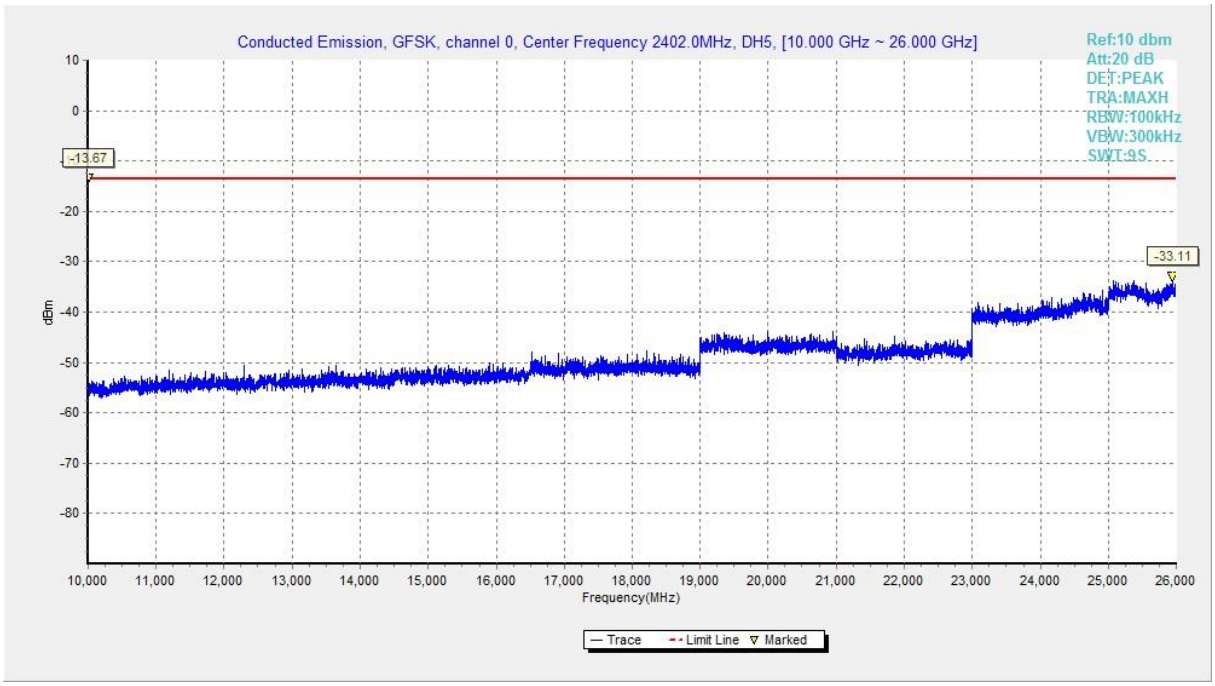

Fig. 41 Conducted Spurious Emission (All channel, 10GHz-26GHz)

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A.4 Radiated Emission

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247, 15.205, 15.209	20dB below peak output power

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

Limit in restricted band:

Frequency of emission (MHz)	Field strength (μV/m)	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

Test Condition:

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

Frequency of emission (MHz)	RBW/VBW	Sweep Time (s)
30-1000	120kHz/300kHz	5
1000-4000	1MHz/3MHz	15
4000-18000	1MHz/3MHz	40
18000-26500	1MHz/3MHz	20

Note: According to the performance evaluation, the radiated emission margin of EUT is over 20dB in the band from 9kHz to 30MHz. Therefore, the measurement starts from 30MHz to tenth harmonic.

The measurement results include the horizontal polarization and vertical polarization measurements.

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Measurement Results:

Mode	Channel	Frequency Range	Test Results	Conclusion
GFSK	0	1 GHz ~ 18 GHz	Fig.42	**P**
	39	1 GHz ~ 18 GHz	Fig.43	**P**
	78	1 GHz ~ 18 GHz	Fig.44	**P**
	Restricted Band(CH0)	2.38 GHz ~ 2.45 GHz	Fig.45	**P**
	Restricted Band (CH78)	2.45 GHz ~ 2.5 GHz	Fig.46	**P**
π/4 DQPSK	0	1 GHz ~ 18 GHz	Fig.47	**P**
	39	1 GHz ~ 18 GHz	Fig.48	**P**
	78	1 GHz ~ 18 GHz	Fig.49	**P**
	Restricted Band (CH0)	2.38 GHz ~ 2.45 GHz	Fig.50	**P**
	Restricted Band (CH78)	2.45 GHz ~ 2.5 GHz	Fig.51	**P**
8DPSK	0	1 GHz ~ 18 GHz	Fig.52	**P**
	39	1 GHz ~ 18 GHz	Fig.53	**P**
	78	1 GHz ~ 18 GHz	Fig.54	**P**
	Restricted Band (CH0)	2.38 GHz ~ 2.45 GHz	Fig.55	**P**
	Restricted Band (CH78)	2.45 GHz ~ 2.5 GHz	Fig.56	**P**
/	All channels	9 kHz ~30 MHz	Fig.57	**P**
		30 MHz ~1 GHz	Fig.58	**P**
		18 GHz ~ 26.5 GHz	Fig.59	**P**

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Worst Case Result

GFSK CH0 (1-18GHz)

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
5997.300000	48.38	74.00	25.62	H	5.1
8117.571429	45.53	74.00	28.47	V	6.0
11493.000000	48.79	74.00	25.21	V	10.1
14401.714286	49.26	74.00	24.74	V	11.5
16860.428571	55.07	74.00	18.93	V	18.0
17992.714286	55.10	74.00	18.90	H	19.2

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
5997.300000	39.52	54.00	14.48	H	5.1
8117.571429	37.22	54.00	16.78	V	6.0
11493.000000	41.37	54.00	12.63	V	10.1
14401.714286	41.16	54.00	12.84	V	11.5
16860.428571	46.27	54.00	7.73	V	18.0
17992.714286	46.03	54.00	7.97	H	19.2

π/4 DQPSK CH0 (1-18GHz)

Frequency (MHz)	MaxPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7508.142857	46.33	74.00	27.67	V	5.7
8889.428572	46.21	74.00	27.79	V	6.5
10450.285714	48.40	74.00	25.60	V	9.0
11876.571429	47.48	74.00	26.52	V	10.1
14777.571429	51.30	74.00	22.70	V	12.7
17103.428571	55.30	74.00	18.70	V	18.4

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB)
7508.142857	33.16	54.00	20.84	V	5.7
8889.428572	33.51	54.00	20.49	V	6.5
10450.285714	35.66	54.00	18.34	V	9.0
11876.571429	35.08	54.00	18.92	V	10.1
14777.571429	38.49	54.00	15.51	V	12.7
17103.428571	42.67	54.00	11.33	V	18.4

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8DPSK CH0 (1-18GHz)

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB)
5988.300000	48.90	74.00	25.10	H	5.0
8245.714286	45.38	74.00	28.62	V	5.9
10459.714286	47.84	74.00	26.16	V	9.0
14831.571429	50.82	74.00	23.18	V	12.9
16638.857143	54.23	74.00	19.77	H	17.1
17991.857143	55.14	74.00	18.86	V	19.2

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB)
5988.300000	38.47	54.00	15.53	H	5.0
8245.714286	37.45	54.00	16.55	V	5.9
10459.714286	39.40	54.00	14.60	V	9.0
14831.571429	38.71	42.71	11.29	V	12.9
16638.857143	41.71	45.71	8.29	H	17.1
17991.857143	43.02	46.02	8.98	V	19.2

Note:

A "reference path loss" is established and the A_{Rpl} is the attenuation of “reference path loss”, and Antenna Factor, the gain of the preamplifier, the cable loss. P_{Mea} is the field strength recorded from the instrument.

The measurement results are obtained as described below:

Result = P_{Mea} + Cable Loss + Antenna Factor - Gain of the preamplifier

See below for test graphs.

Conclusion: Pass

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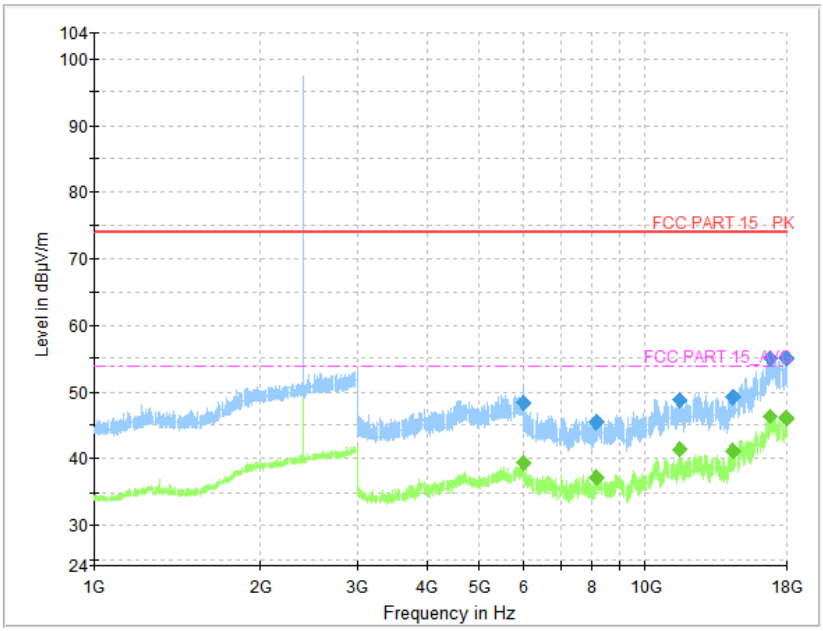

Fig. 42 Radiated Spurious Emission (GFSK, Ch0, 1GHz ~ 18GHz)

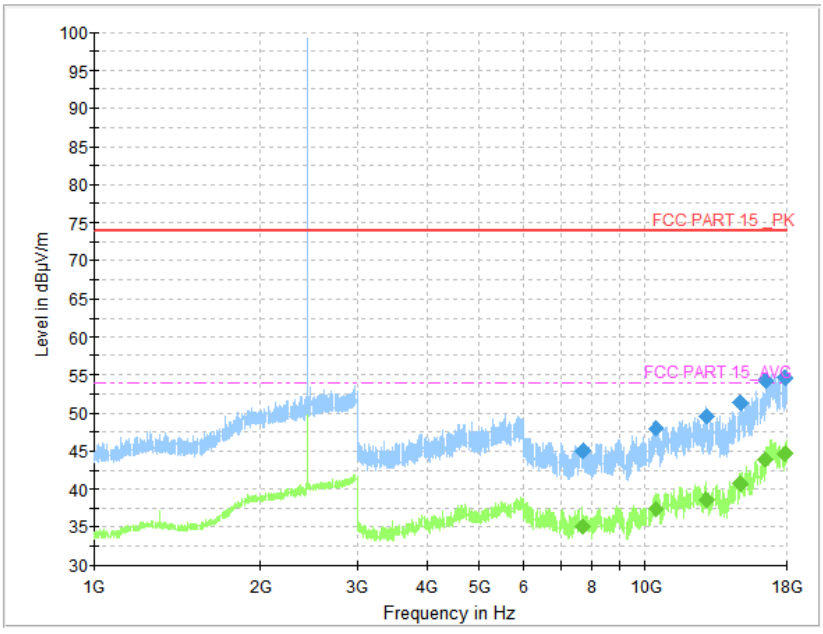

Fig. 43 Radiated Spurious Emission (GFSK, Ch39, 1GHz ~ 18GHz)

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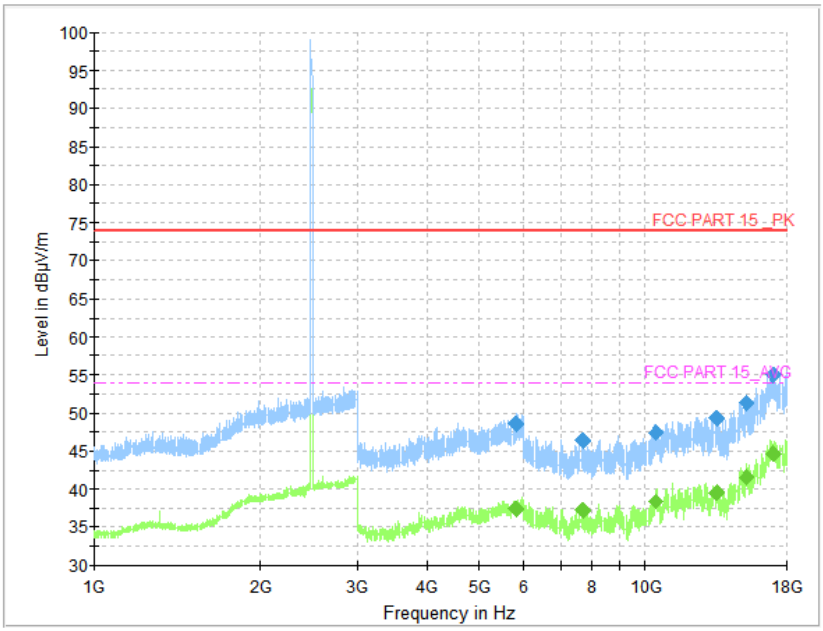

Fig. 44 Radiated Spurious Emission (GFSK, Ch78, 1GHz ~ 18GHz)

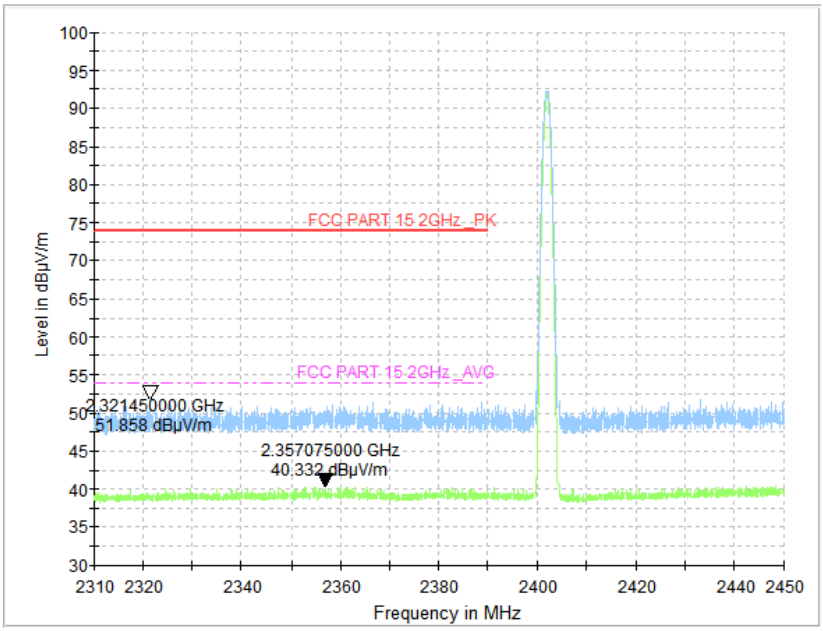

Fig. 45 Radiated Band Edges (GFSK, Ch0, 2380GHz ~ 2450GHz)

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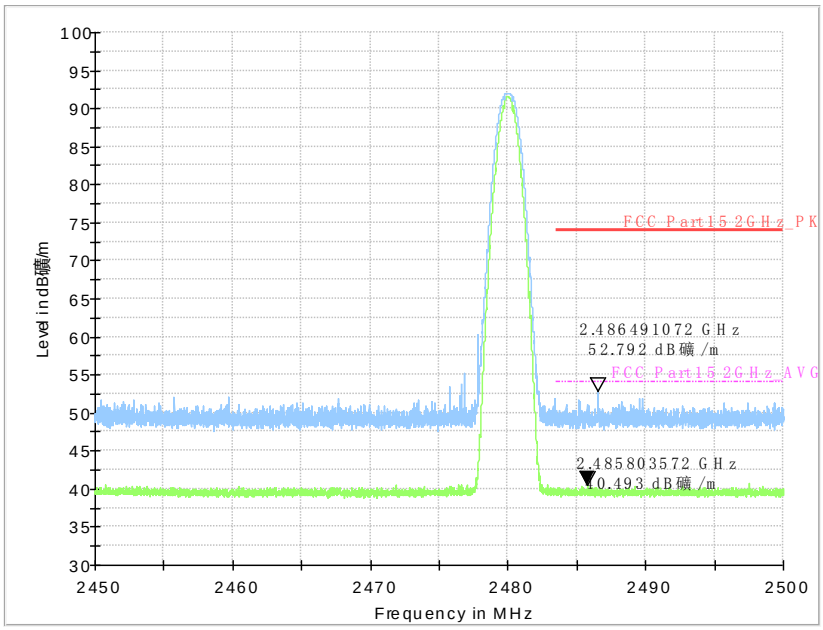

Fig. 46 Radiated Band Edges (GFSK, Ch78, 2450GHz ~ 2500GHz)

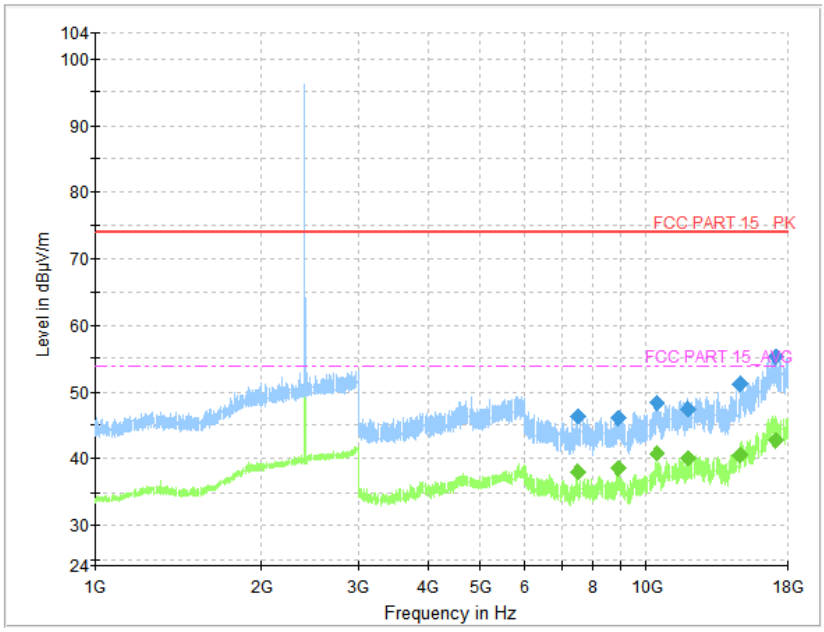

Fig. 47 Radiated Spurious Emission (π/4 DQPSK, Ch0, 1GHz ~ 18GHz)

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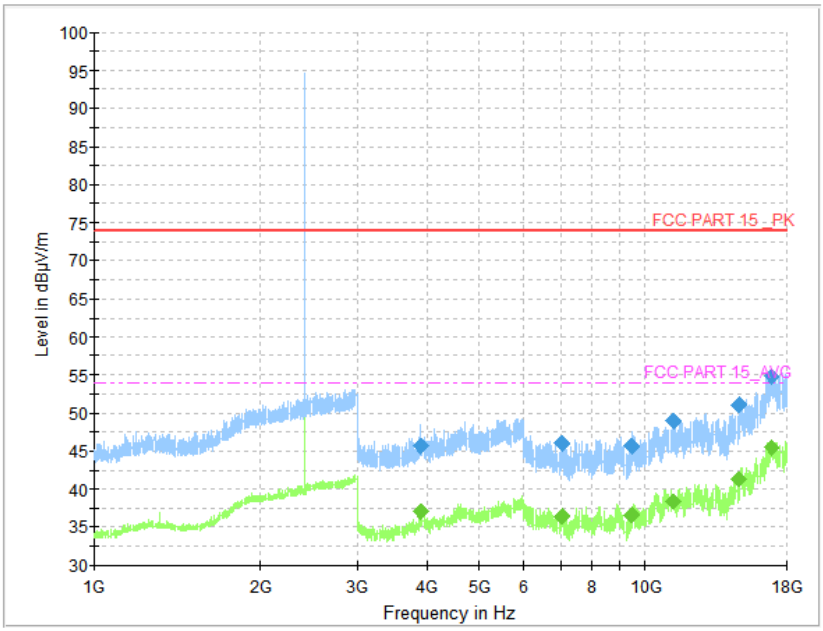

Fig. 48 Radiated Spurious Emission (π/4 DQPSK, Ch39, 1GHz ~ 18GHz)

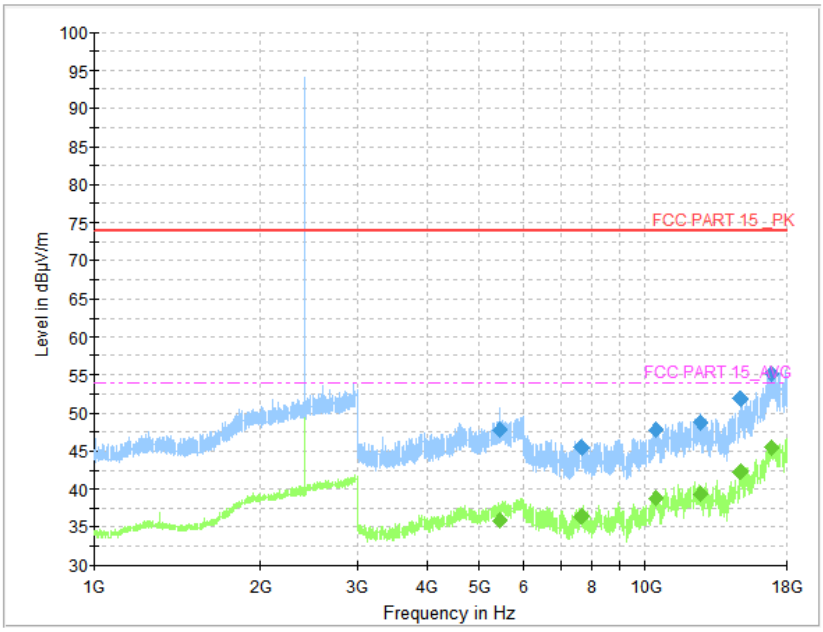

Fig. 49 Radiated Spurious Emission (π/4 DQPSK, Ch78, 1GHz ~ 18GHz)

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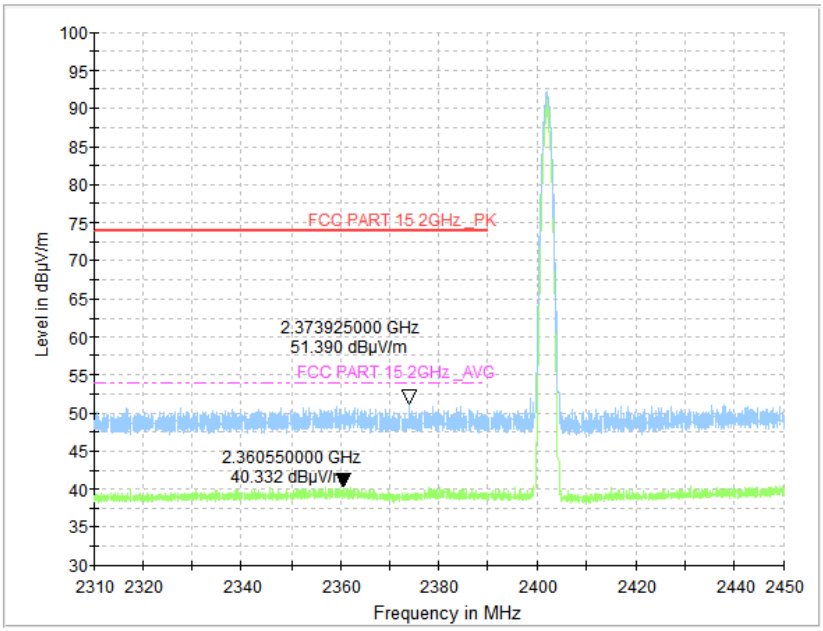

Fig. 50 Radiated Band Edges (π/4 DQPSK, Ch0, 2380GHz ~ 2450GHz)

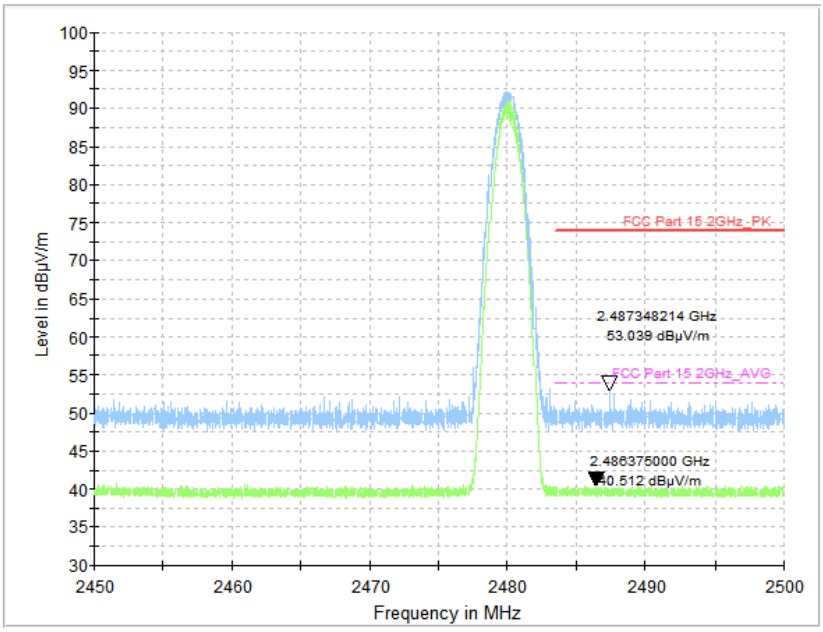

Fig. 51 Radiated Band Edges (π/4 DQPSK, Ch78, 2450GHz ~ 2500GHz)

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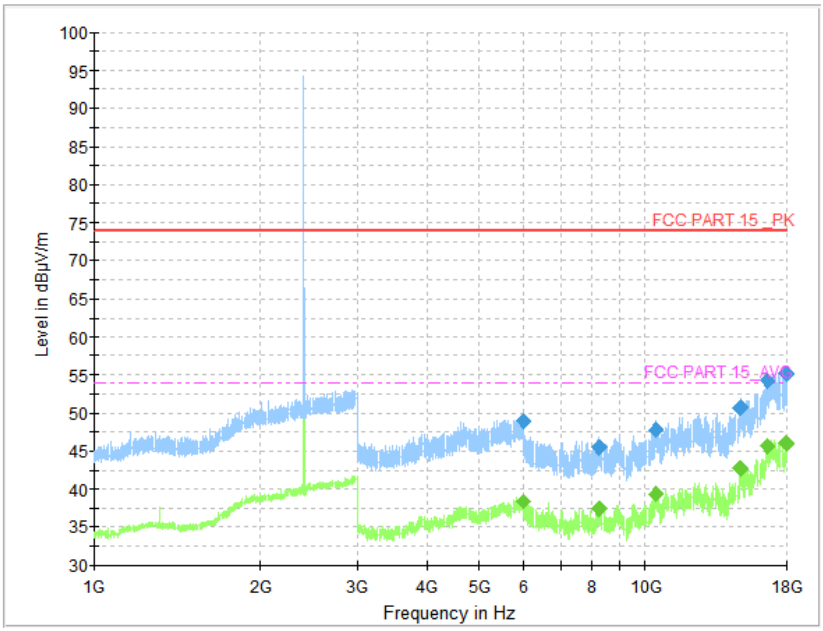

Fig. 52 Radiated Spurious Emission (8DPSK, Ch0, 1GHz ~ 18GHz)

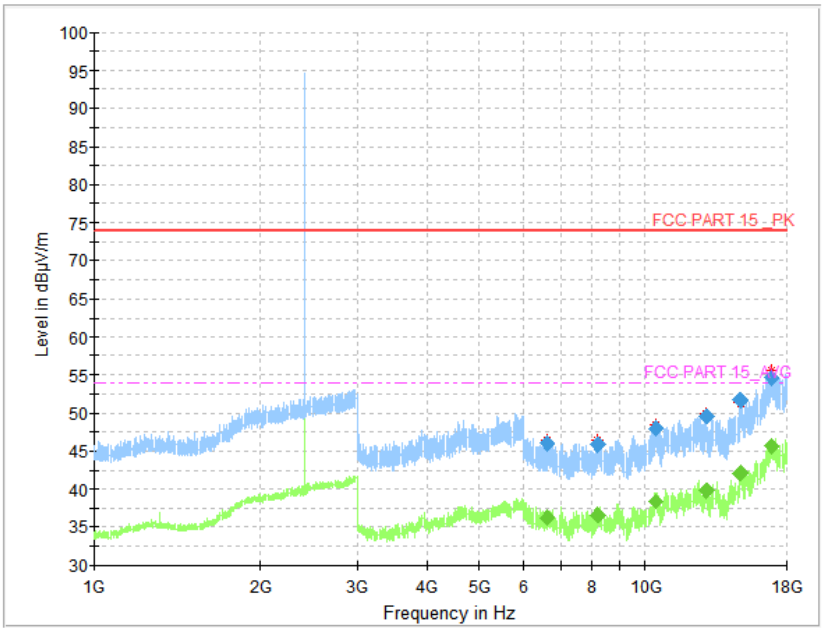

Fig. 53 Radiated Spurious Emission (8DPSK, Ch39, 1GHz ~ 18GHz)

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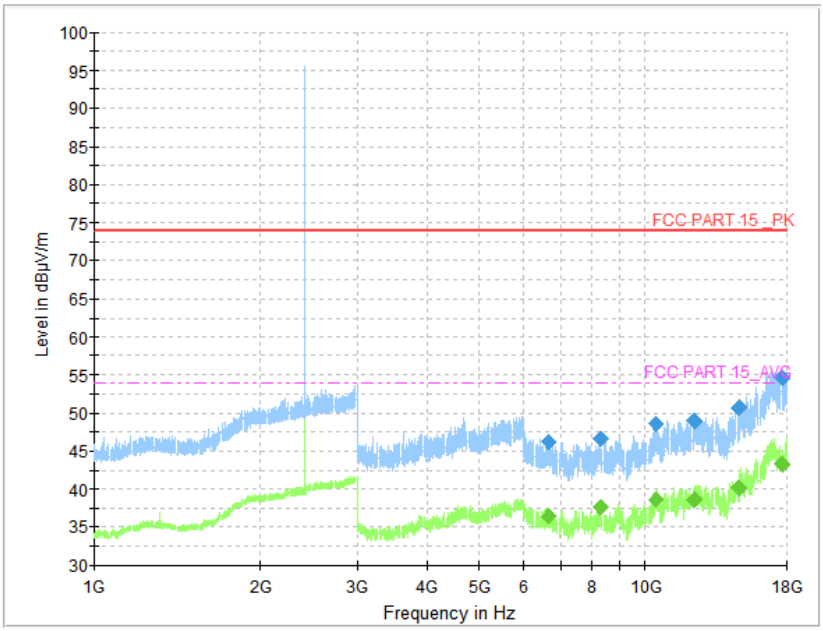

Fig. 54 Radiated Spurious Emission (8DPSK, Ch78, 1GHz ~ 18GHz)

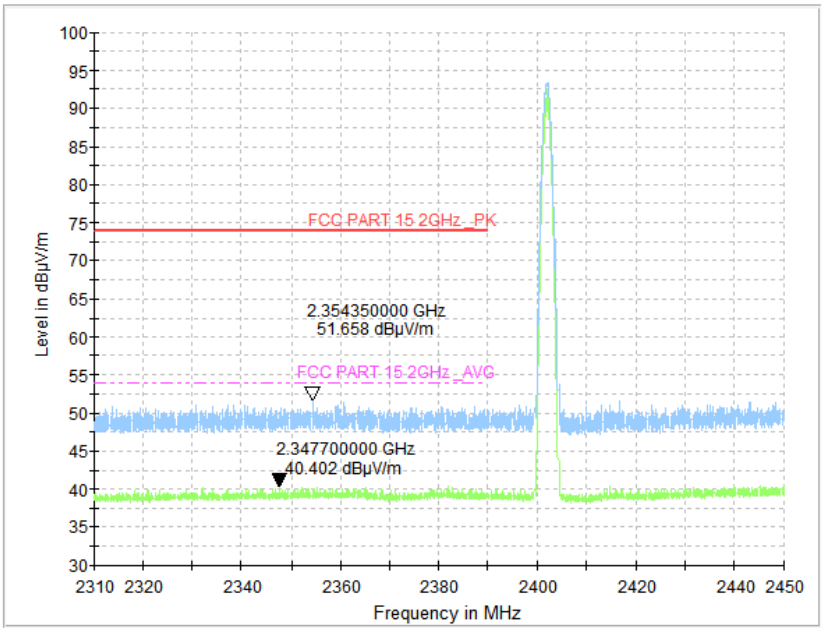

Fig. 55 Radiated Band Edges (8DPSK, Ch0, 2380GHz ~ 2450GHz)

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