



TEST REPORT

No. I21N03995-BT

TCL Communication Ltd.

Tablet PC

Model Name: 8491X

with

Hardware Version: P10

Software Version: JC2-AA5

FCC ID: 2ACCJB175

Issued Date: 2022-03-02

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.

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1. Summary of Test Report

1.1. Test Items

Description	Tablet PC
Model Name	8491X
Applicant's name	TCL Communication Ltd.
Manufacturer's Name	TCL Communication Ltd.

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:	2022-01-16
Testing End Date:	2022-02-15

1.6. Signature



Ma Rui

(Prepared this test report)



An Ran

(Reviewed this test report)



Zhang Bojun

(Approved this test report)



2. Client Information

2.1. Applicant Information

Company Name: TCL Communication Ltd.
Address: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
Contact Person: Peter yang
E-Mail: peter yang@tcl.com
Telephone: +86 755 3664 5759
FAX: +86 755 3661 2000-81722

2.2. Manufacturer Information

Company Name: TCL Communication Ltd.
Address: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
Contact Person: Peter yang
E-Mail: peter yang@tcl.com
Telephone: +86 755 3664 5759
FAX: +86 755 3661 2000-81722

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

3.1. About EUT

Description	Tablet PC
Model Name	8491X
Frequency Band	2400MHz~2483.5MHz
Type of Modulation	GFSK/ π /4 DQPSK/8DPSK
Number of Channels	79
Antenna Type	Integrated
Antenna Gain	2.44 dBi
Power Supply	3.85V DC by Battery
FCC ID	2ACCJB175
Condition of EUT as received	No abnormality in appearance

3.2. Internal Identification of EUT

EUT ID*	IMEI	HW Version	SW Version	Receive Date
UT08aa	/	PIO	JC2-AA5	2022-01-16
UT01aa	/	PIO	JC2-AA5	2022-02-10
UT02aa	/	PIO	JC2-AA5	2022-02-10

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

*UT08aa is used for Conduction test; UT01aa,UT02aa are used for Radiation test and AC Power line Conducted Emission test.

3.3. Internal Identification of AE

AE ID*	Description	SN
AE1	Battery	/
AE2	Charger	/
AE3	Data Cable	/

*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 Tablet PC with integrated antenna and battery. It consists of normal options: Lithium Battery and Charger. Manual and specifications of the EUT were provided to fulfil the test. Samples undergoing test were selected by the client.



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

5. Test Results

5.1. Testing Environment

Normal Temperature: 15~35℃

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/manufacture 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.

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	Bluetooth Tester	CBT32	100584	Rohde & Schwarz	2022-12-29	1 year
3	Power Sensor	U2021XA	MY55430013	Keysight	2022-12-29	1 year
4	Data Acquisition	U2531A	TW55443507	Keysight	/	/

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period
1	LISN	ESH2-Z5	100196	R&S	2022-12-31	1 year
2	Test Receiver	ESCI	100701	R&S	2022-08-04	1 year
3	Loop Antenna	HLA6120	35779	TESEQ	2022-05-01	3 year
4	BiLog Antenna	VULB9163	9163 329	Schwarzbeck	2024-02-15	3 year
5	Horn Antenna	3117	00066585	ETS-Lindgren	2022-03-04	3 year
6	Test Receiver	ESR7	101675	R&S	2022-07-16	1 year
7	Spectrum Analyzer	FSP 40	100378	R&S	2022-12-10	1 year
8	Chamber	FACT5-2.0	4166	ETS-Lindgren	2024-05-11	3 year
9	Antenna	QSH-SL-1 8-26-S-20	17013	Q-par	2024-01-13	3 year
10	Antenna	QSH-SL-2 6-40-K-20	17014	Q-par	2024-01-19	3 year

Test software

No.	Equipment	Manufacturer	Version
1	TechMgr Software	CAICT	2.1.1
2	EMC32	Rohde & Schwarz	8.53.0
3	EMC32	Rohde & Schwarz	10.01.00

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

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	> 2M Ω
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	> 2M Ω
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	> 2M Ω
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

8. Measurement Uncertainty

Test Name	Uncertainty ($k=2$)	
1. RF Output Power - Conducted	1.32dB	
2. Time of Occupancy - Conducted	0.58ms	
3. Occupied channel bandwidth - Conducted	66Hz	
4. Transmitter Spurious Emission - Conducted	$30\text{MHz} \leq f < 1\text{GHz}$	1.41dB
	$1\text{GHz} \leq f < 7\text{GHz}$	1.92dB
	$7\text{GHz} \leq f < 13\text{GHz}$	2.31dB
	$13\text{GHz} \leq f \leq 26\text{GHz}$	2.61dB
5. Transmitter Spurious Emission - Radiated	$9\text{kHz} \leq f < 30\text{MHz}$	1.70dB
	$30\text{MHz} \leq f < 1\text{GHz}$	4.90dB
	$1\text{GHz} \leq f < 18\text{GHz}$	4.60dB
	$18\text{GHz} \leq f \leq 40\text{GHz}$	4.10dB
6. AC Power line Conducted Emission	$150\text{kHz} \leq f \leq 30\text{MHz}$	3.00dB

ANNEX A: Detailed Test Results

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 2.44dBi. The RF transmitter uses an integrate antenna without connector.

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	6.67	6.43	6.00
$\pi/4$ DQPSK	6.26	6.06	5.68
8DPSK	6.35	6.15	5.76

E.I.R.P

Mode	Peak Conducted Output Power (dBm)		
	2402MHz (Ch0)	2441MHz (Ch39)	2480MHz (Ch78)
GFSK	9.11	8.87	8.44
$\pi/4$ DQPSK	8.70	8.30	8.12
8DPSK	8.79	8.59	8.20

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

Conclusion: Pass

A.2 Band Edges Compliance

Measurement Limit:

Standard	Limit (dBc)
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
$\pi/4$ 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
$\pi/4$ 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

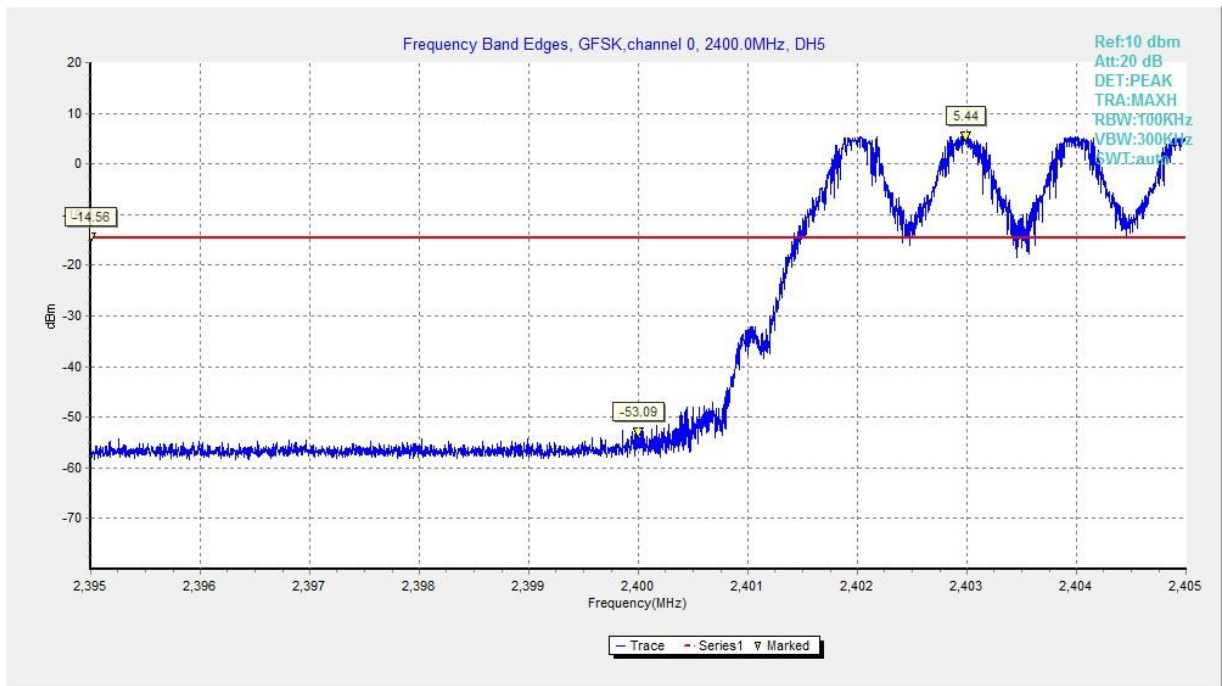


Fig. 1 Band Edges (GFSK, Ch 0, Hopping ON)

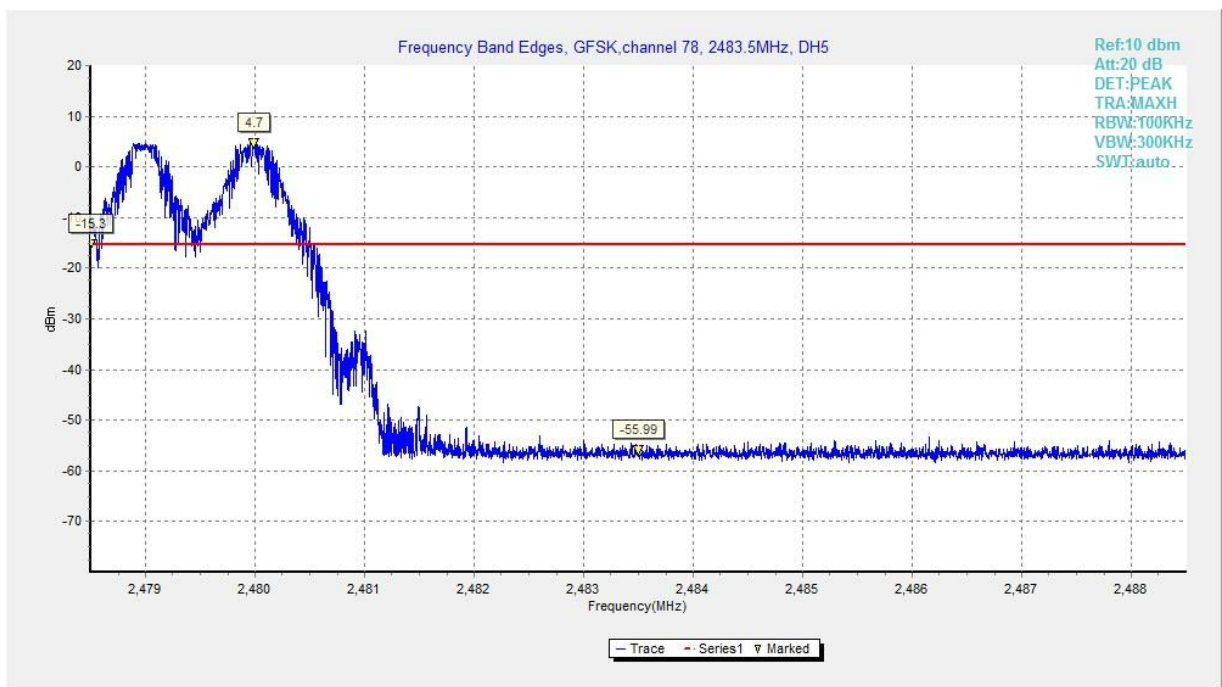


Fig. 2 Band Edges (GFSK, Ch 78, Hopping ON)

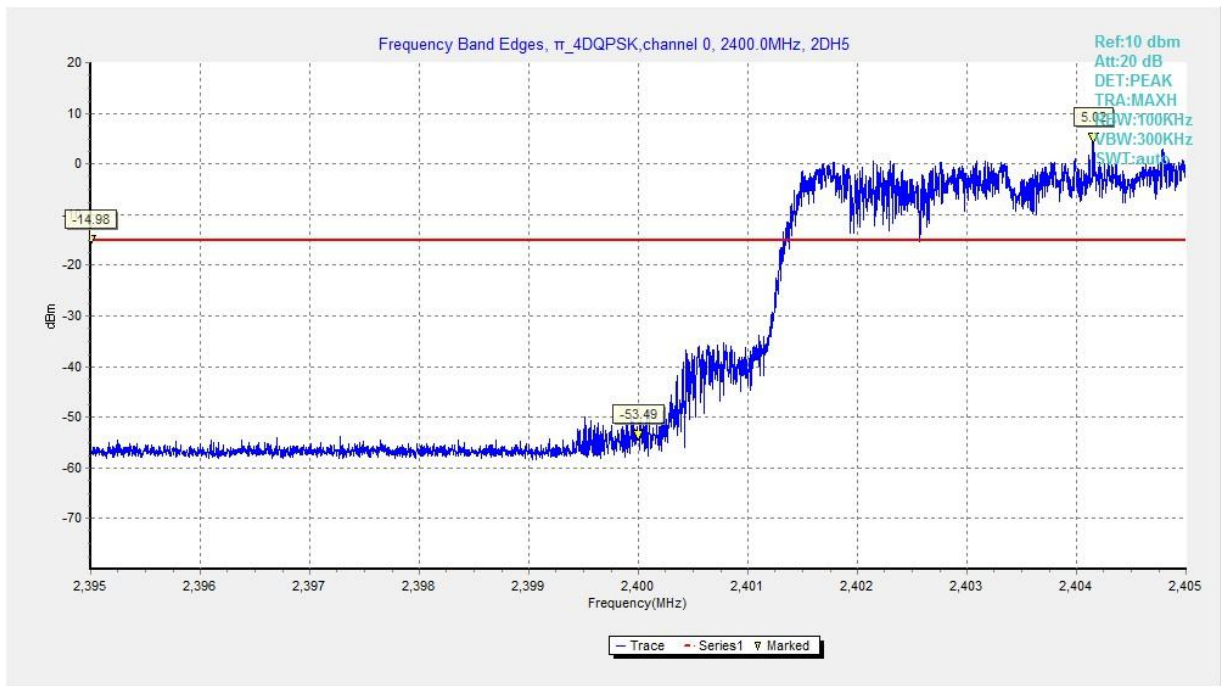


Fig. 3 Band Edges ($\pi/4$ DQPSK, Ch 0, Hopping ON)

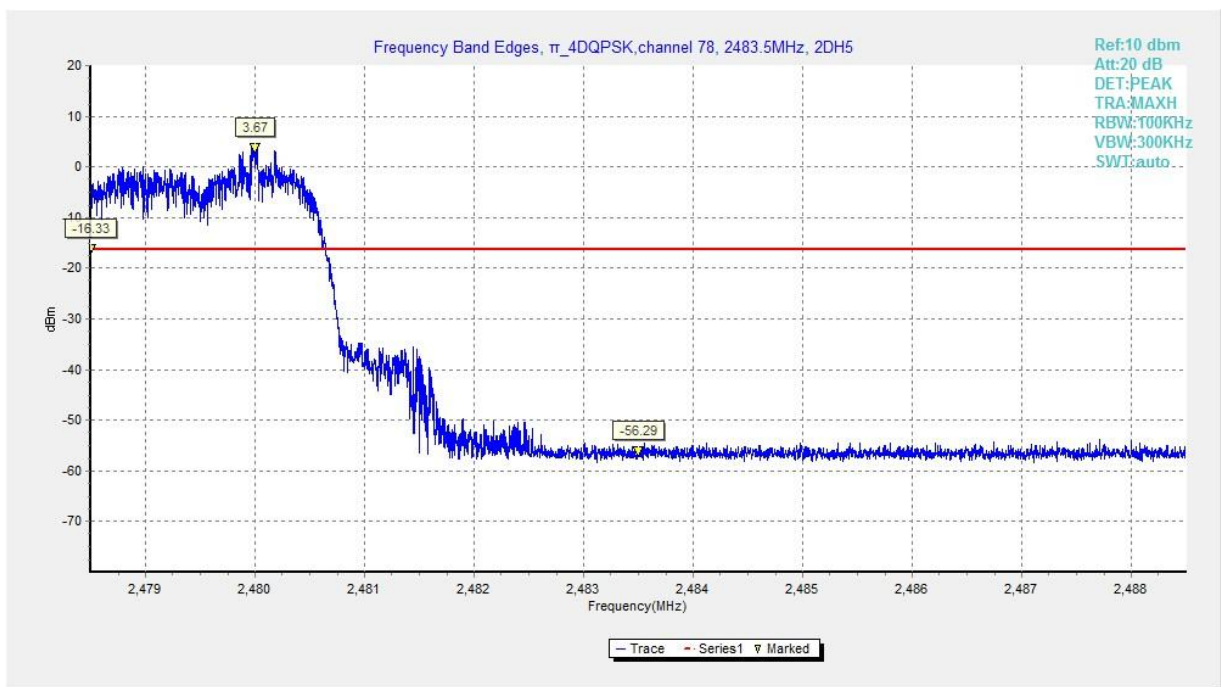


Fig. 4 Band Edges ($\pi/4$ DQPSK, Ch 78, Hopping ON)

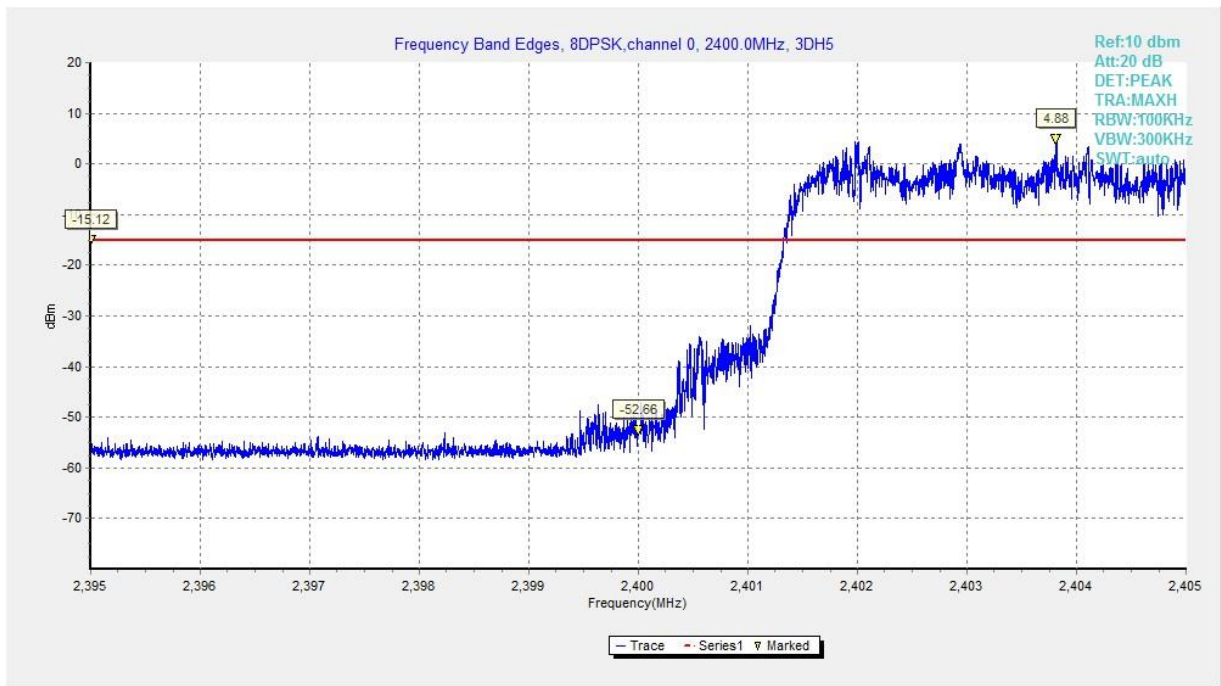


Fig. 5 Band Edges (8DPSK, Ch 0, Hopping ON)

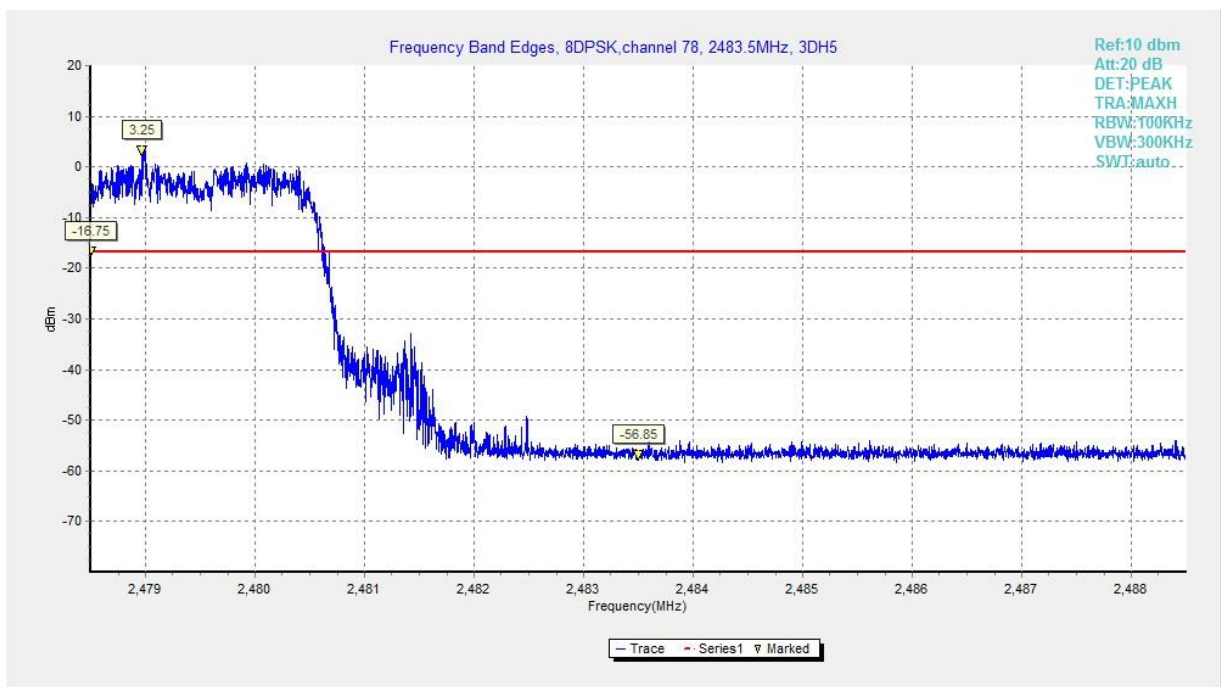


Fig. 6 Band Edges (8DPSK, Ch 78, Hopping ON)

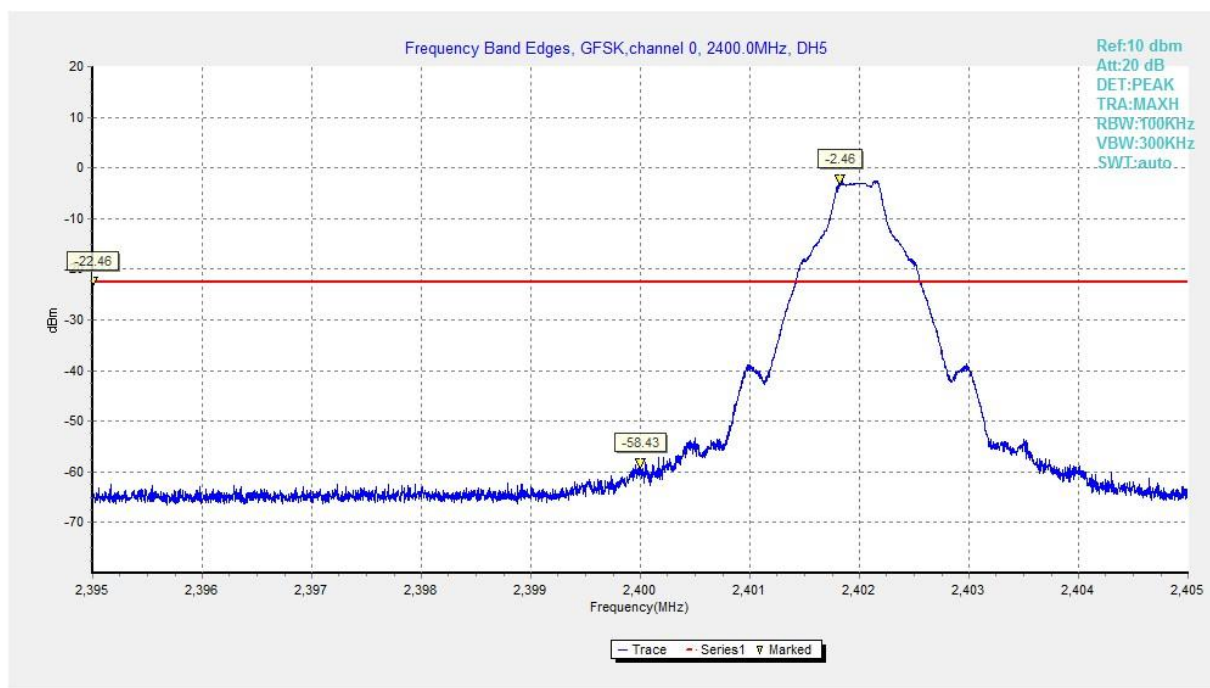


Fig. 7 Band Edges (GFSK, Ch 0, Hopping OFF)

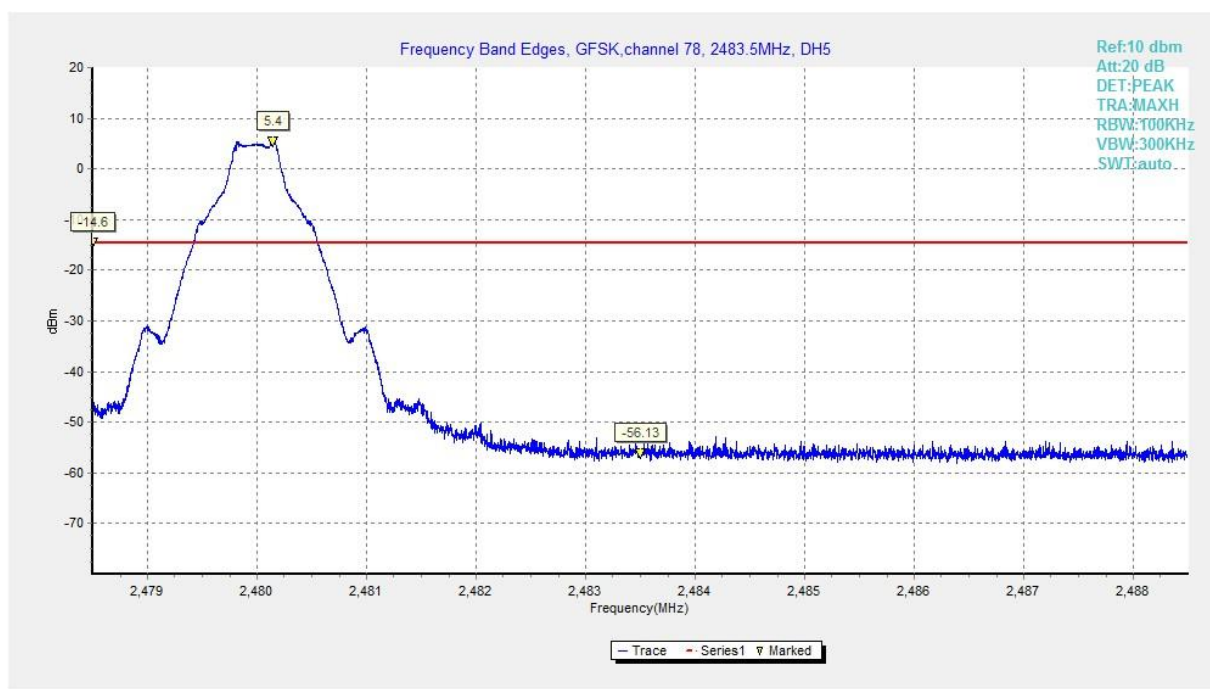


Fig. 8 Band Edges (GFSK, Ch 78, Hopping OFF)

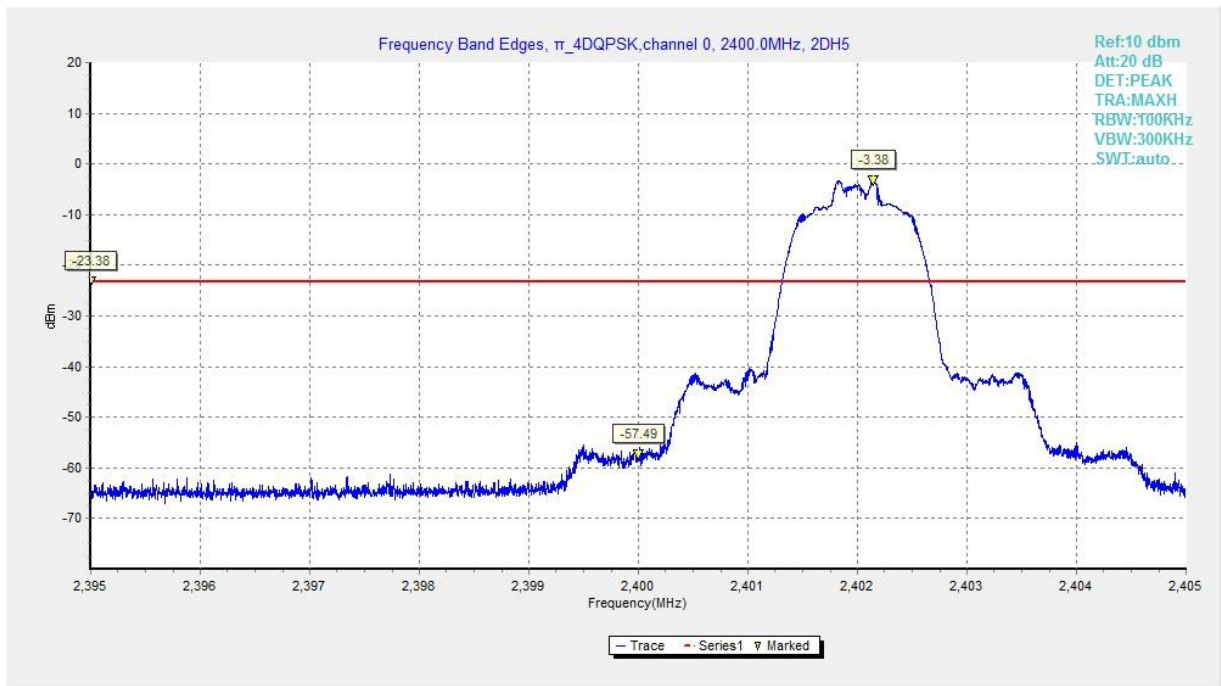


Fig. 9 Band Edges ($\pi/4$ DQPSK, Ch 0, Hopping OFF)

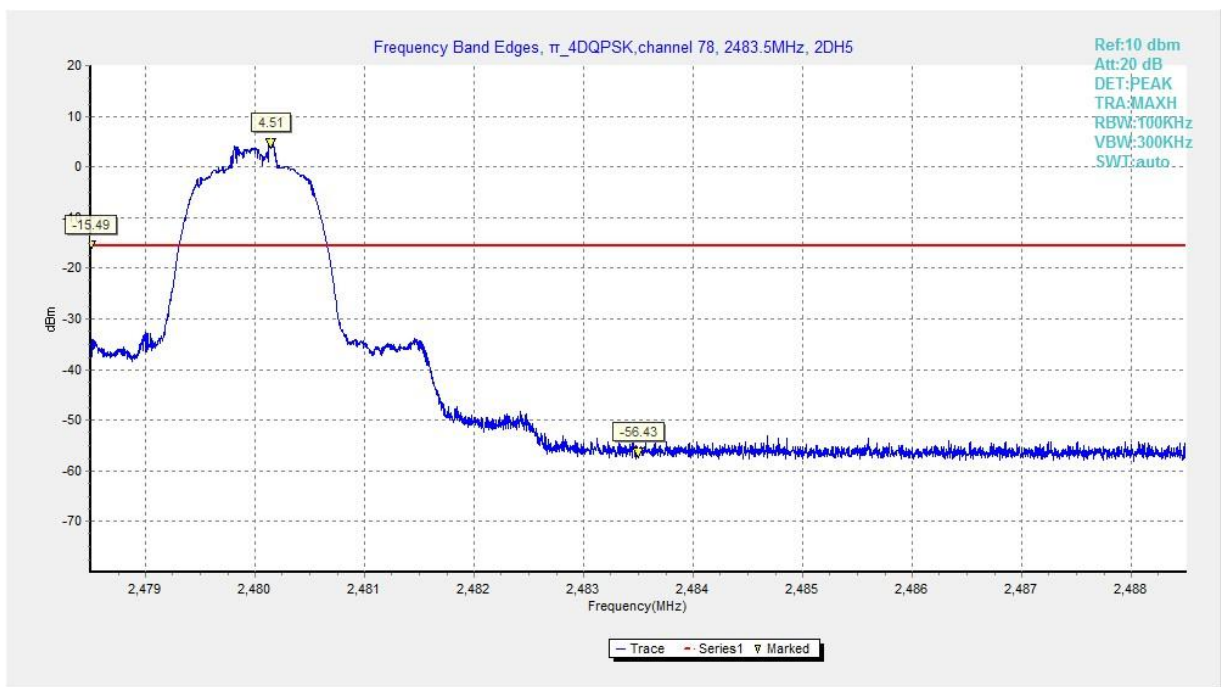


Fig. 10 Band Edges ($\pi/4$ DQPSK, Ch 78, Hopping OFF)

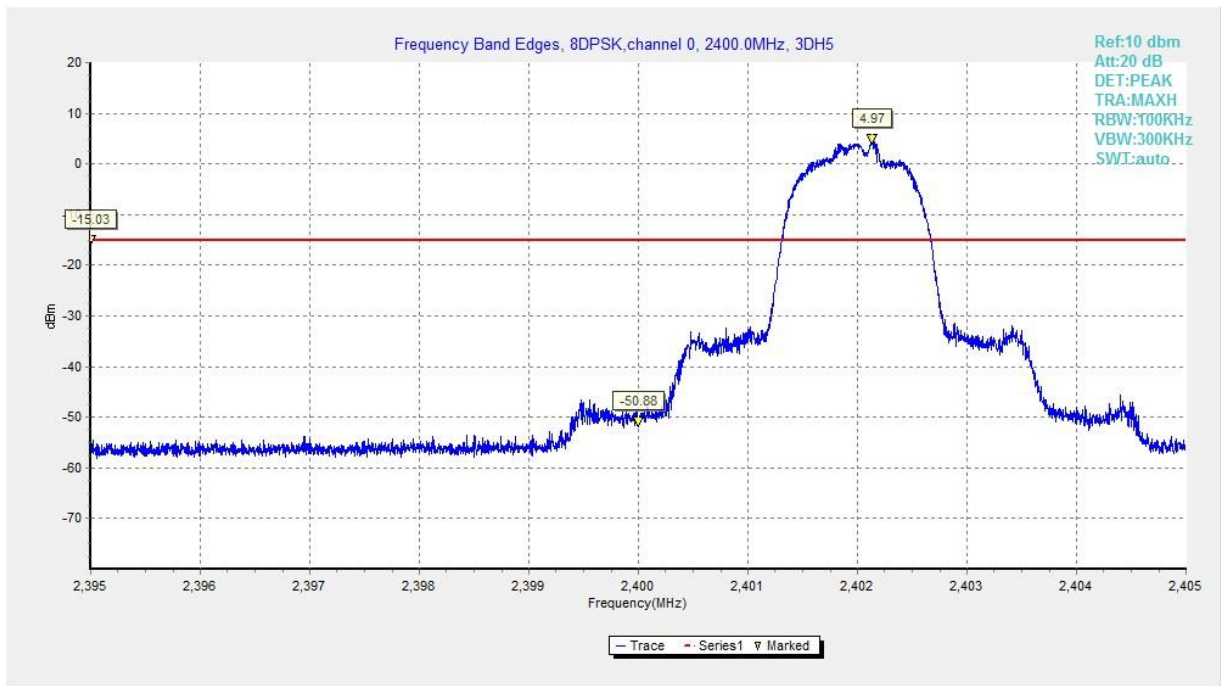


Fig. 11 Band Edges (8DPSK, Ch 0, Hopping OFF)

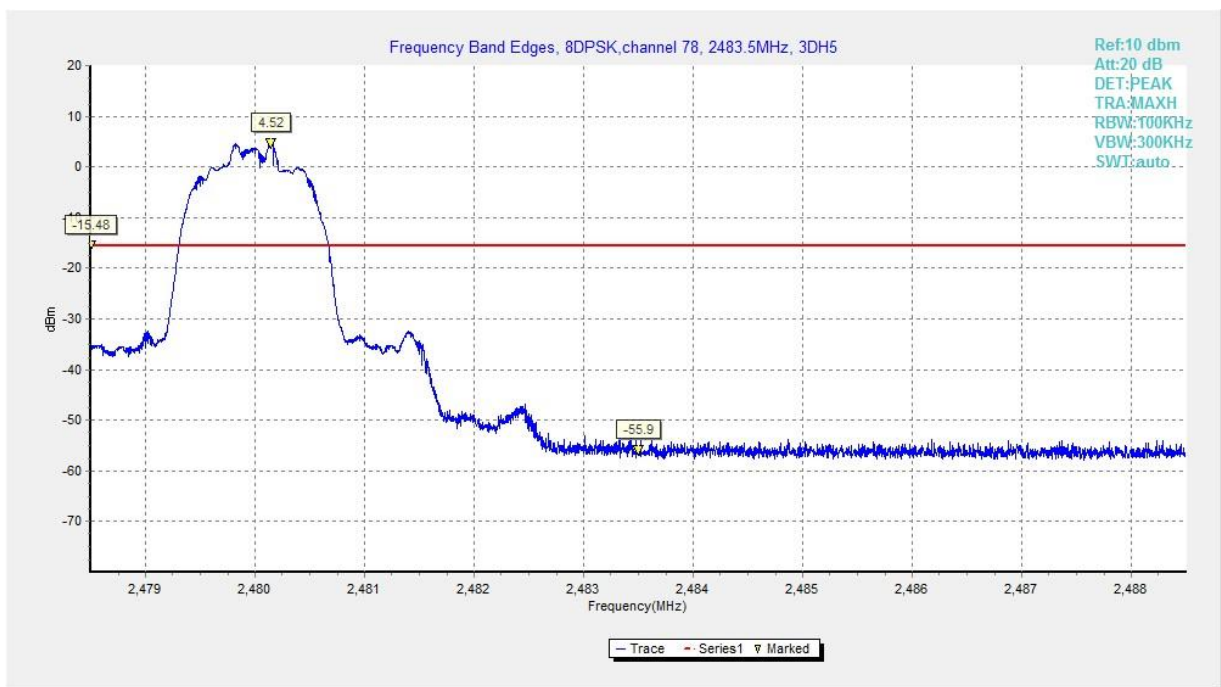


Fig. 12 Band Edges (8DPSK, Ch 78, Hopping OFF)

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
$\pi/4$ 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

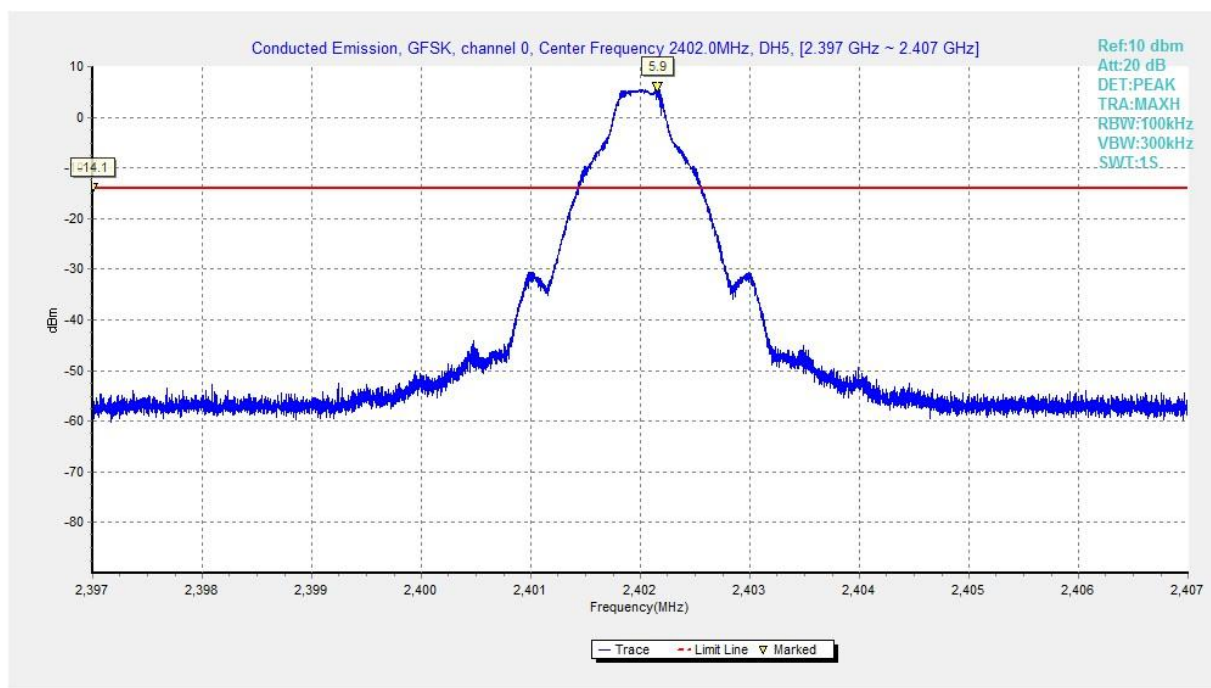


Fig. 13 Conducted Spurious Emission (GFSK, Ch0, 2.402GHz)

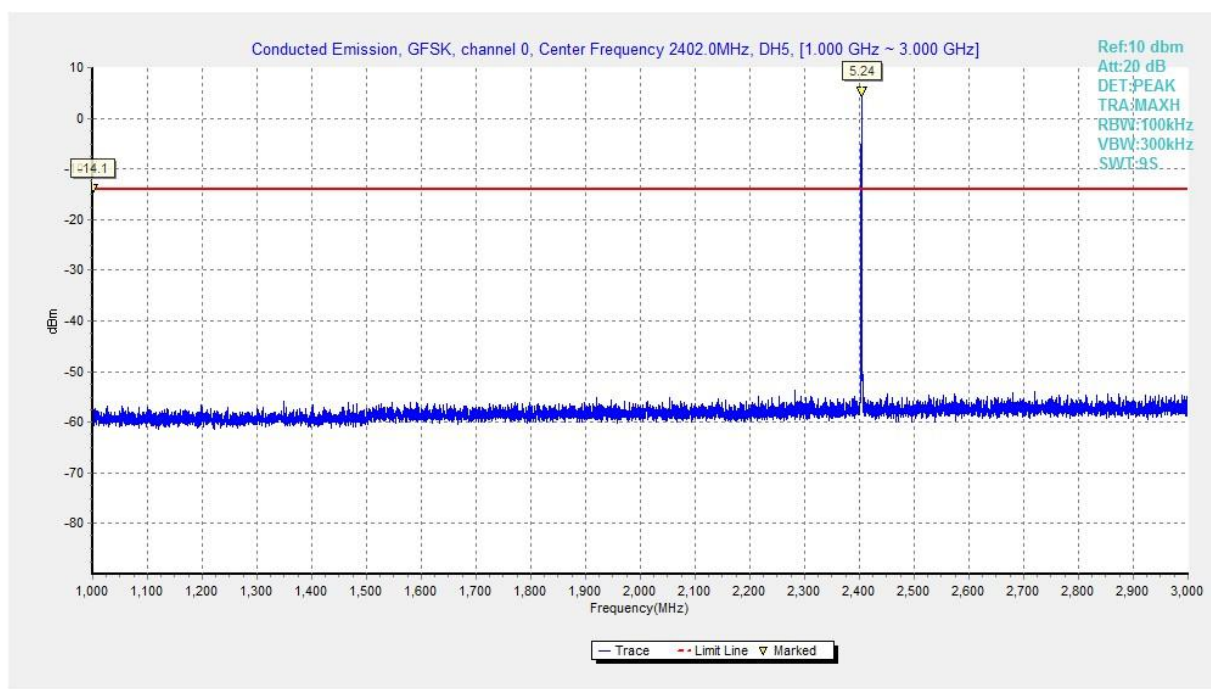


Fig. 14 Conducted Spurious Emission (GFSK, Ch0, 1GHz-3GHz)

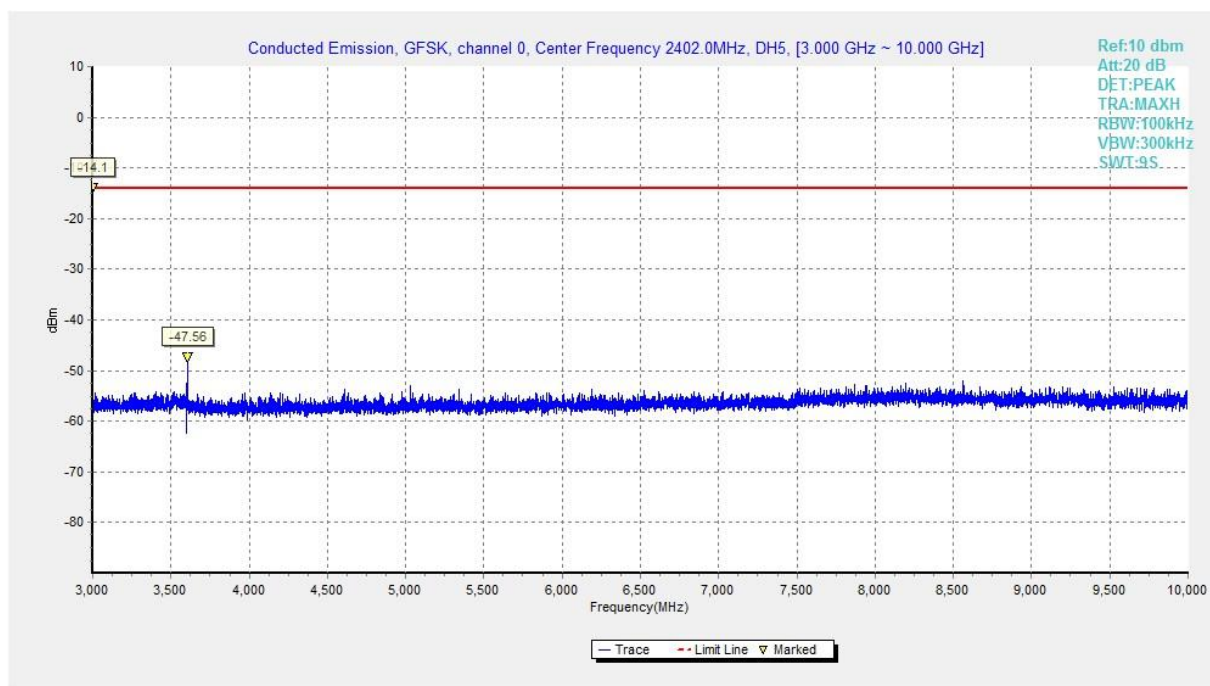


Fig. 15 Conducted Spurious Emission (GFSK, Ch0, 3GHz-10GHz)

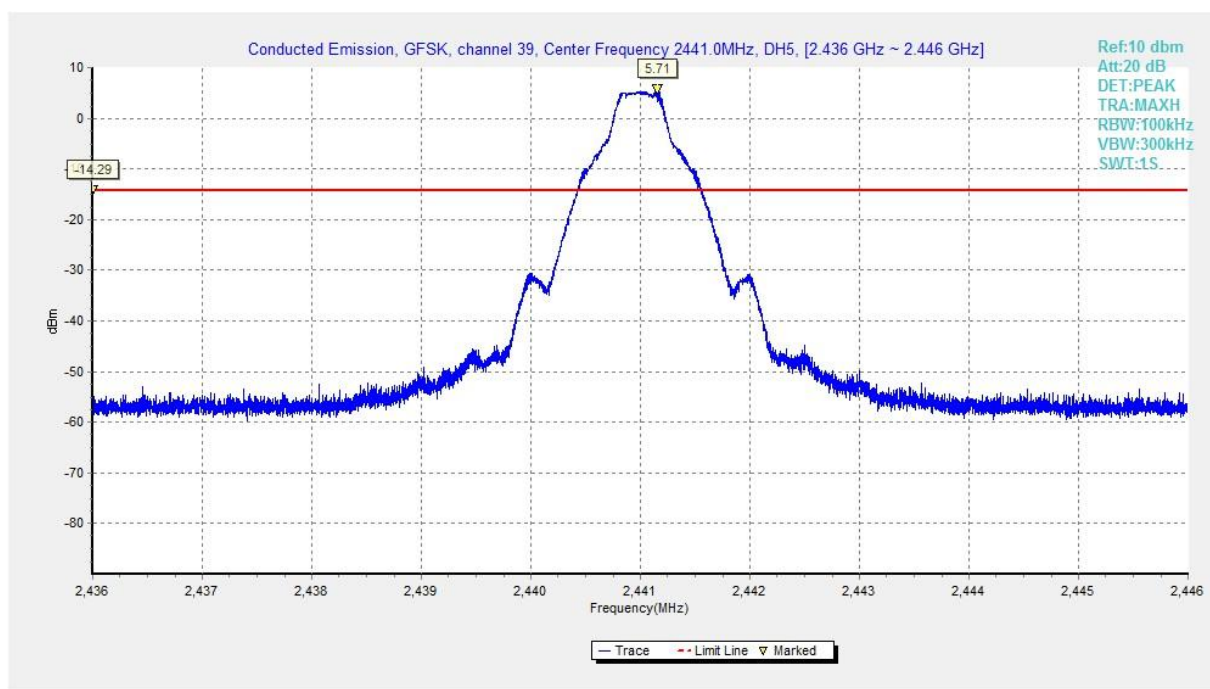


Fig. 16 Conducted Spurious Emission (GFSK, Ch39, 2.441GHz)

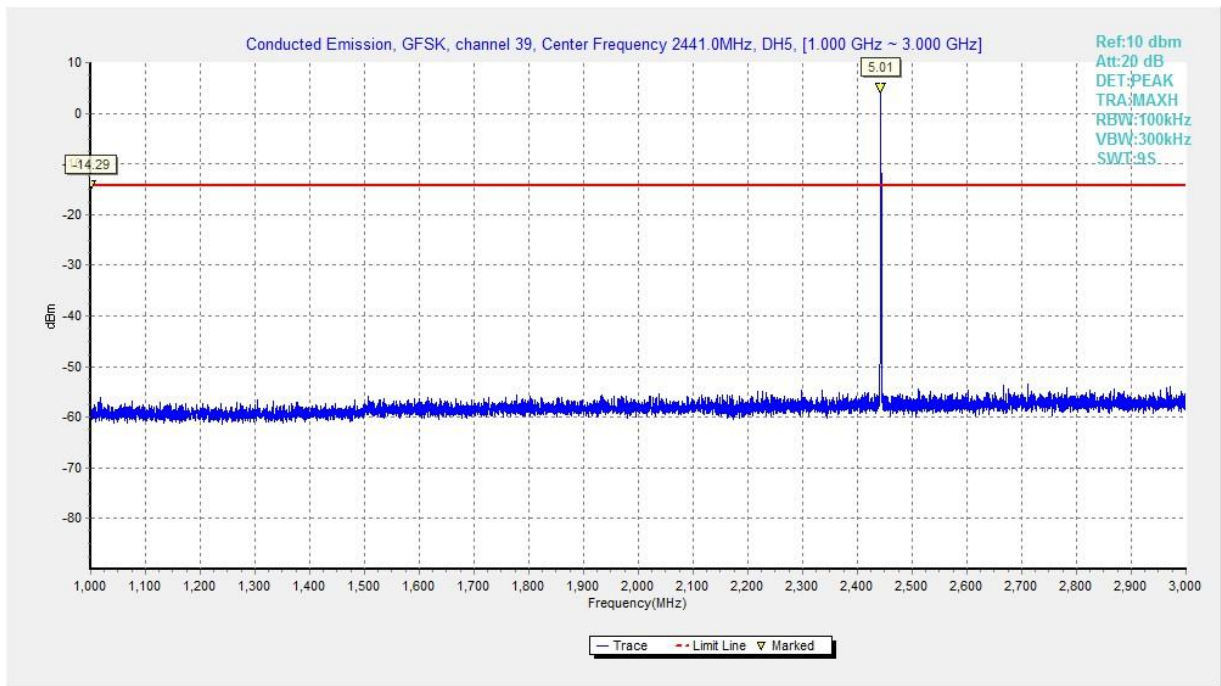


Fig. 17 Conducted Spurious Emission (GFSK, Ch39, 1GHz-3GHz)

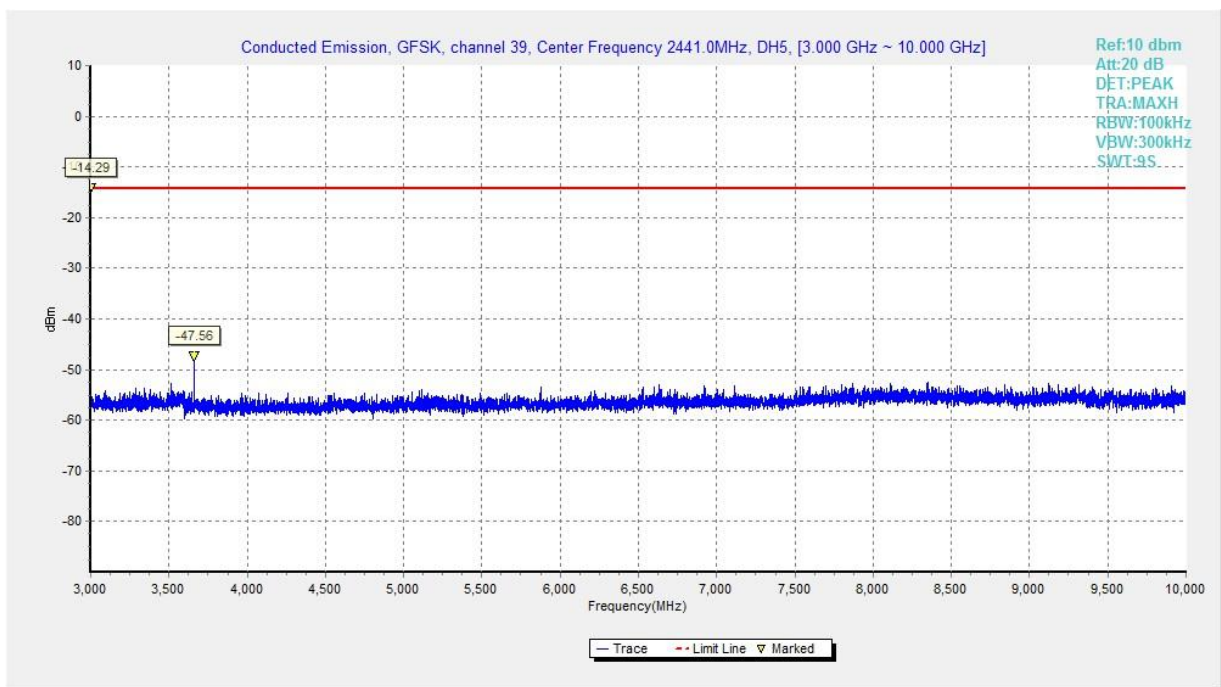


Fig. 18 Conducted Spurious Emission (GFSK, Ch39, 3GHz-10GHz)

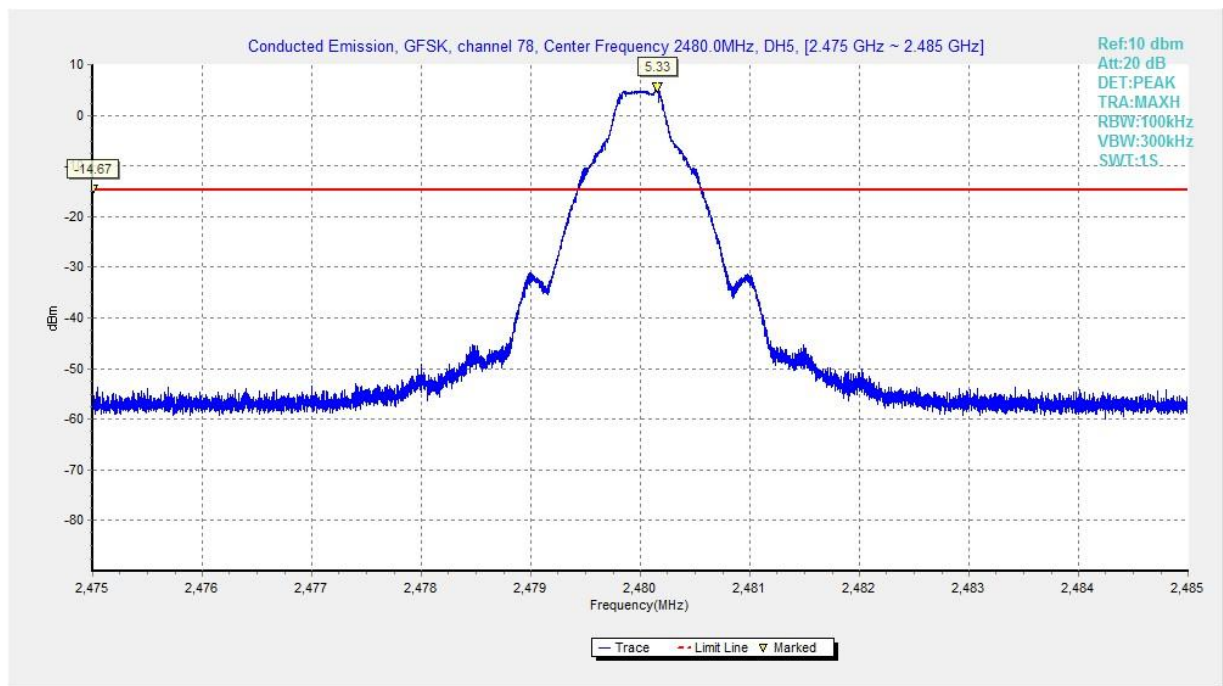


Fig. 19 Conducted Spurious Emission (GFSK, Ch78, 2.480GHz)

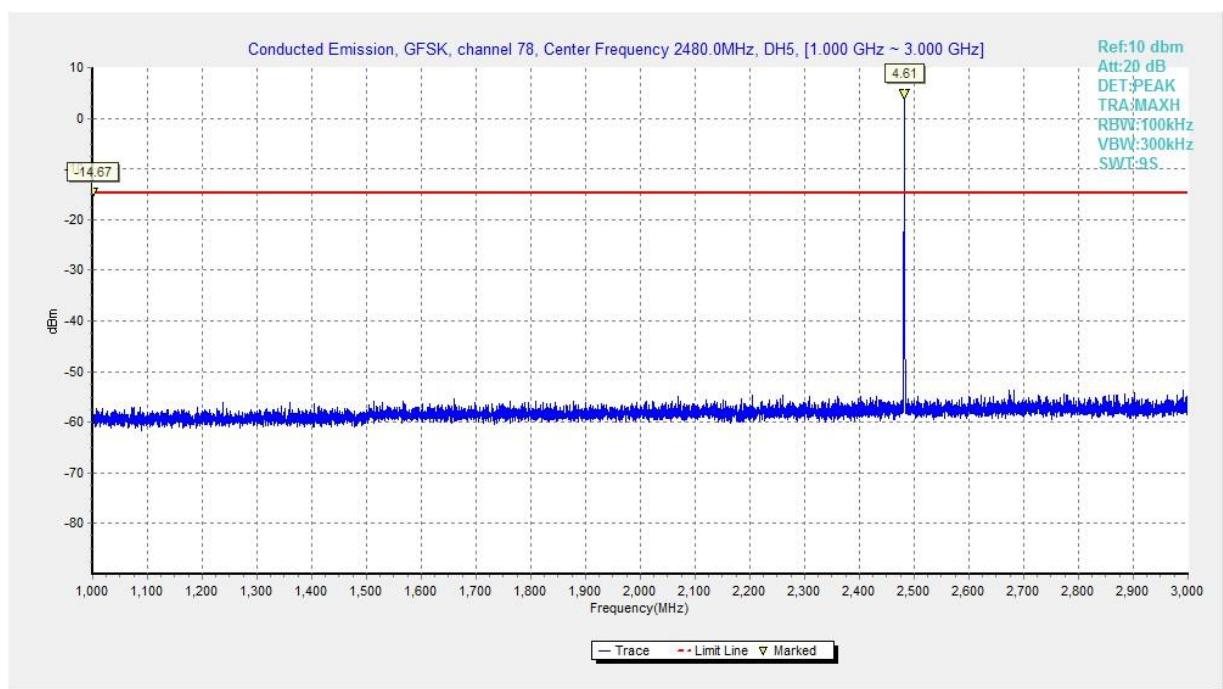


Fig. 20 Conducted Spurious Emission (GFSK, Ch78, 1GHz-3GHz)

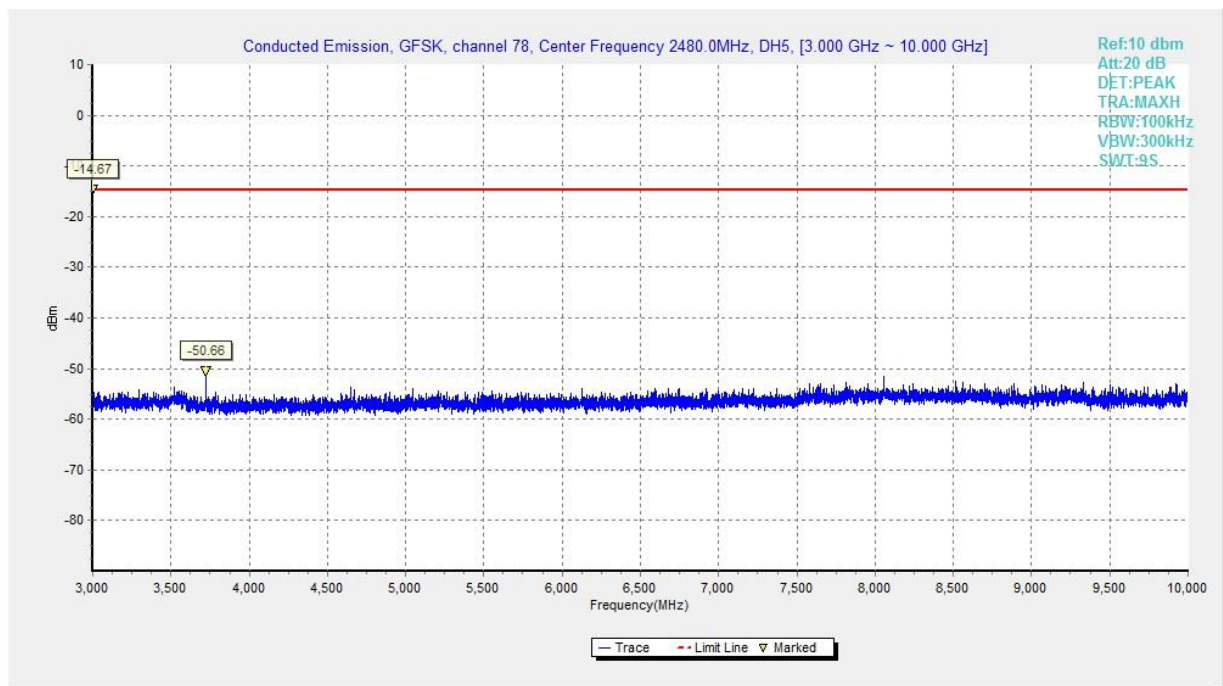


Fig. 21 Conducted Spurious Emission (GFSK, Ch78, 3GHz-10GHz)

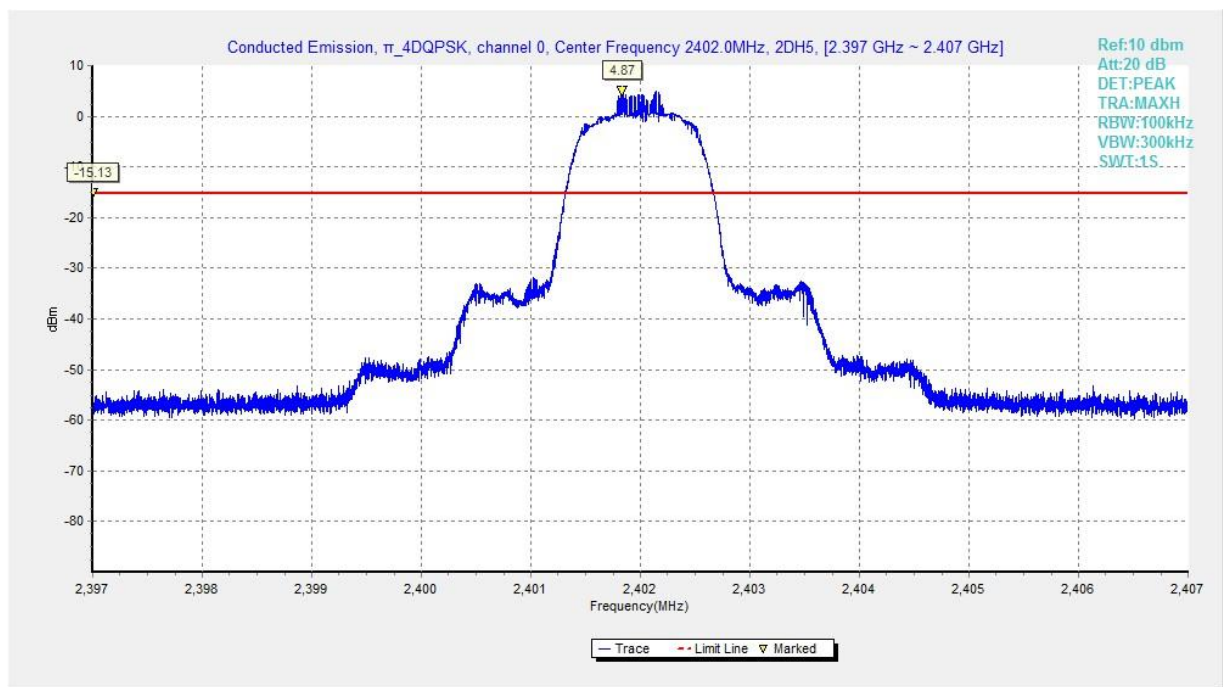


Fig. 22 Conducted Spurious Emission (π_4 DQPSK, Ch0, 2.402GHz)

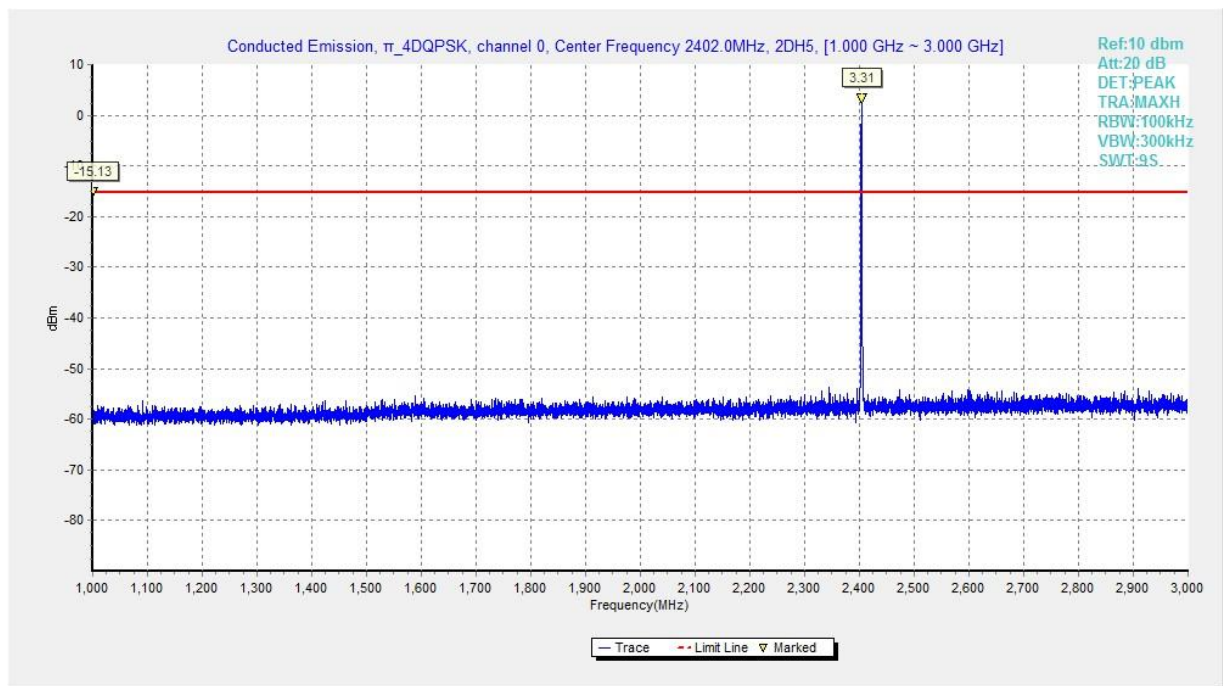


Fig. 23 Conducted Spurious Emission ($\pi/4$ DQPSK, Ch0, 1GHz-3GHz)

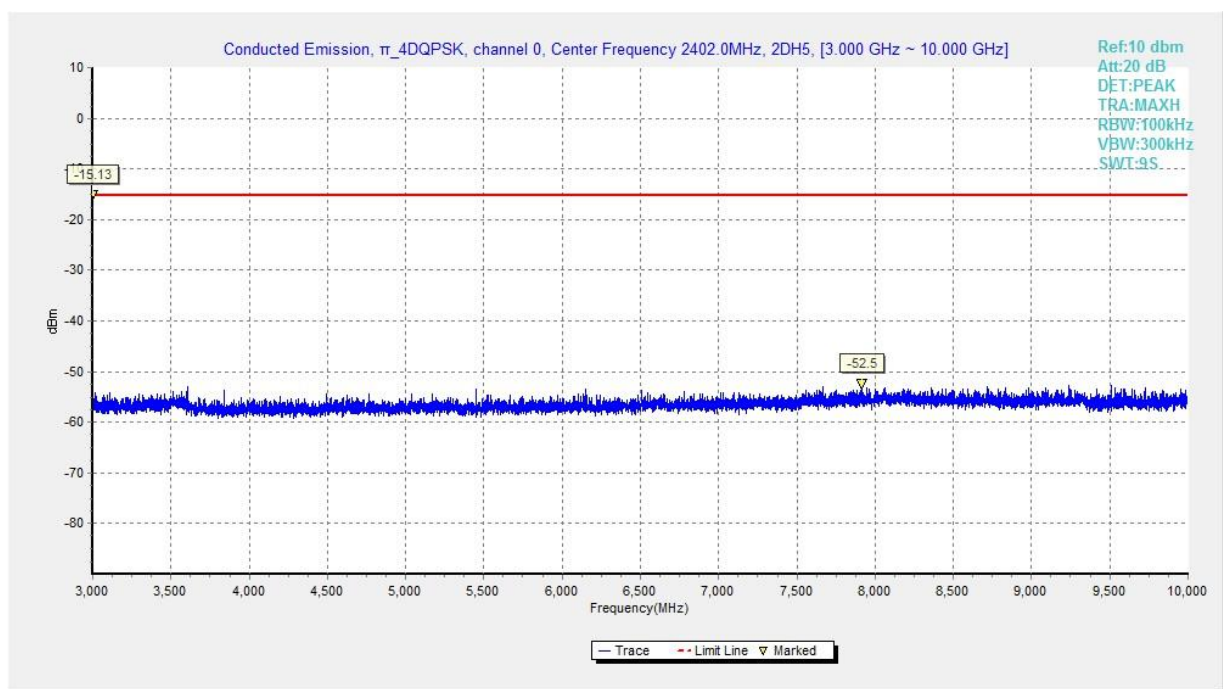


Fig. 24 Conducted Spurious Emission ($\pi/4$ DQPSK, Ch0, 3GHz-10GHz)

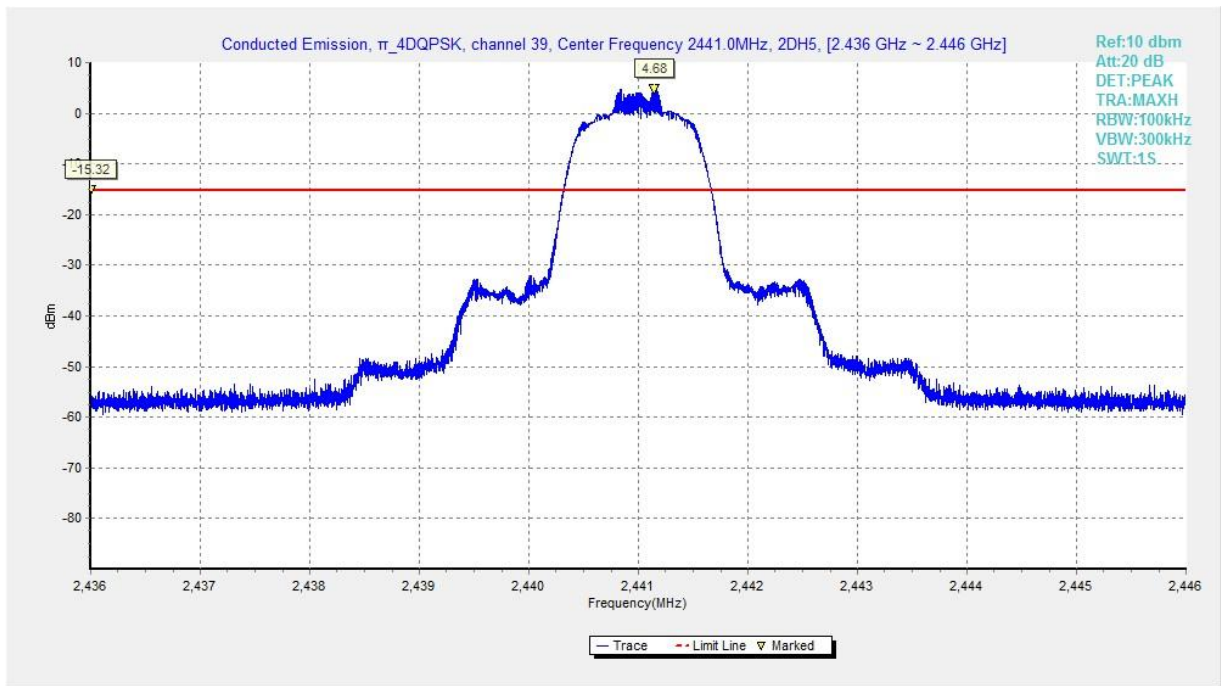


Fig. 25 Conducted Spurious Emission ($\pi/4$ DQPSK, Ch39, 2.441GHz)

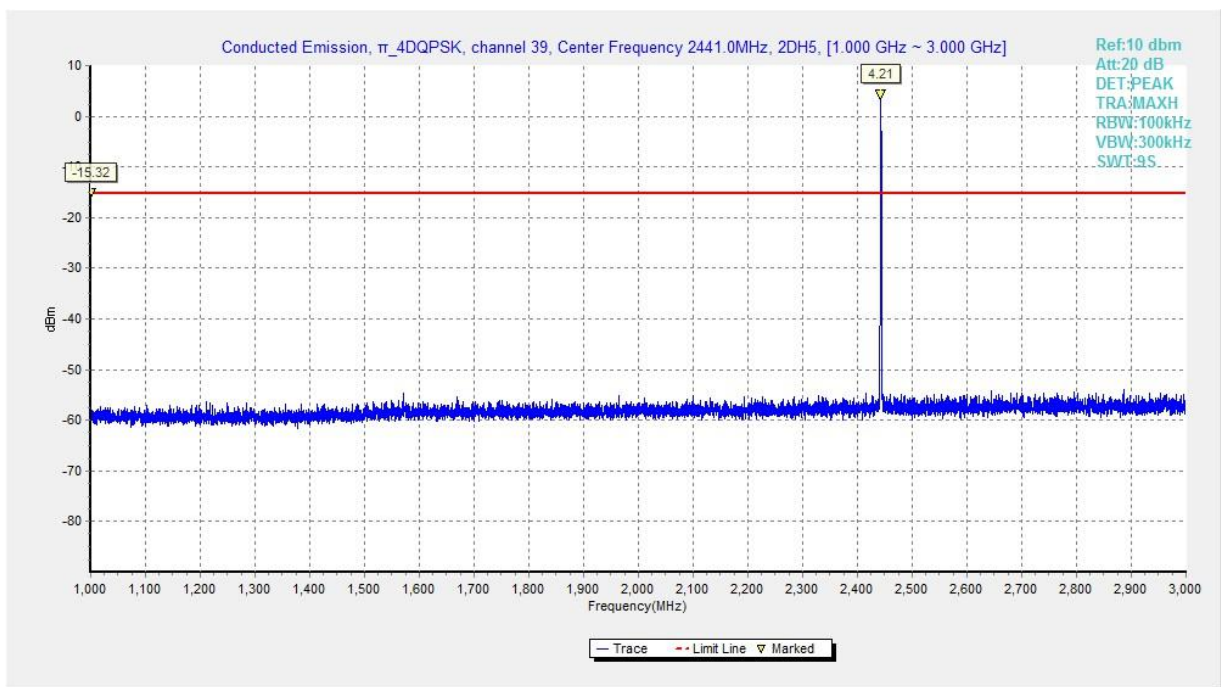


Fig. 26 Conducted Spurious Emission ($\pi/4$ DQPSK, Ch39, 1GHz-3GHz)

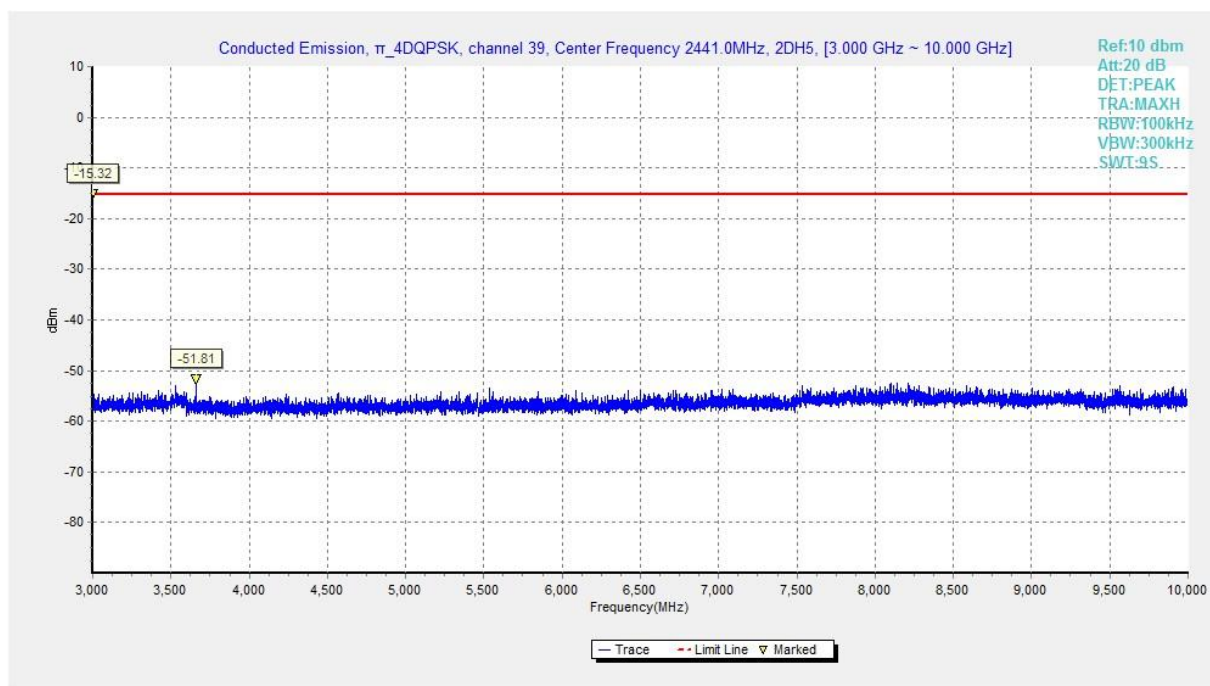


Fig. 27 Conducted Spurious Emission ($\pi/4$ DQPSK, Ch39, 3GHz-10GHz)

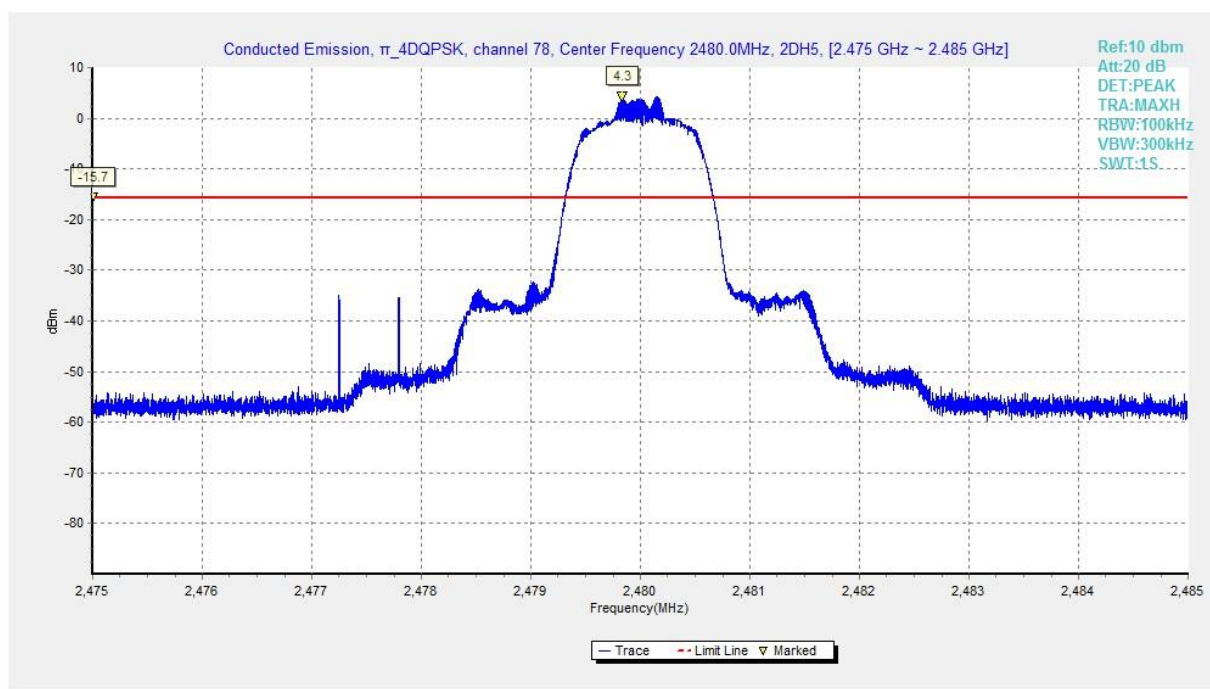


Fig. 28 Conducted Spurious Emission ($\pi/4$ DQPSK, Ch78, 2.480GHz)

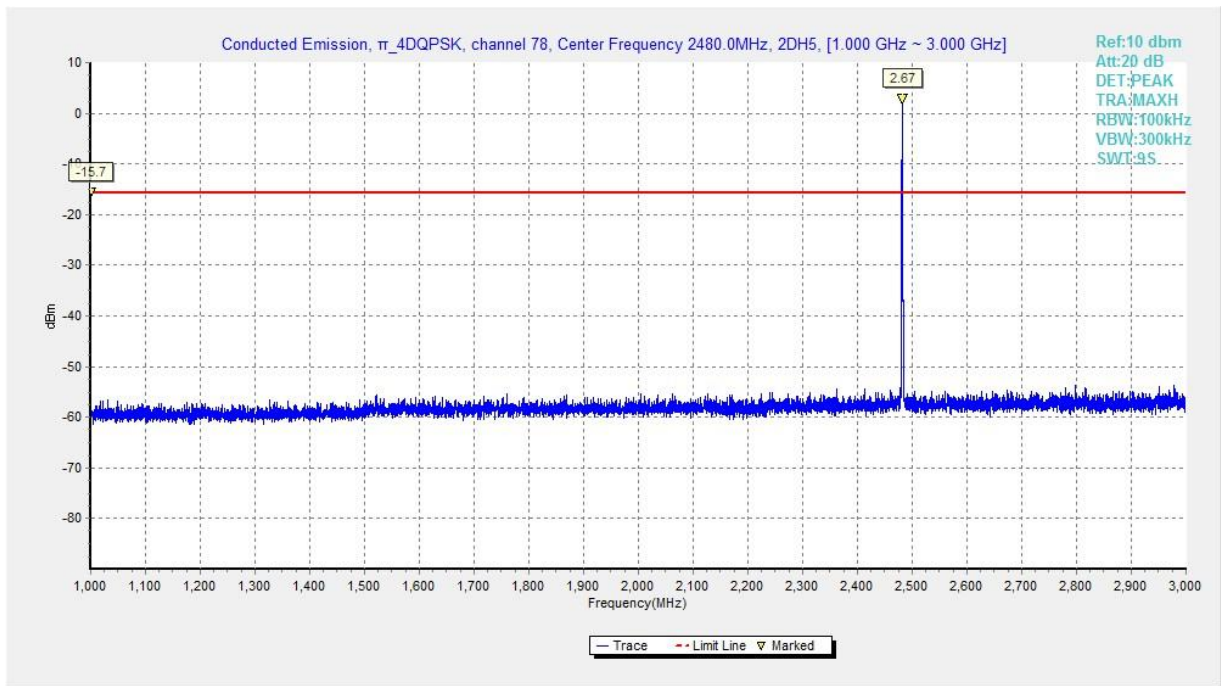


Fig. 29 Conducted Spurious Emission ($\pi/4$ DQPSK, Ch78, 1GHz-3GHz)

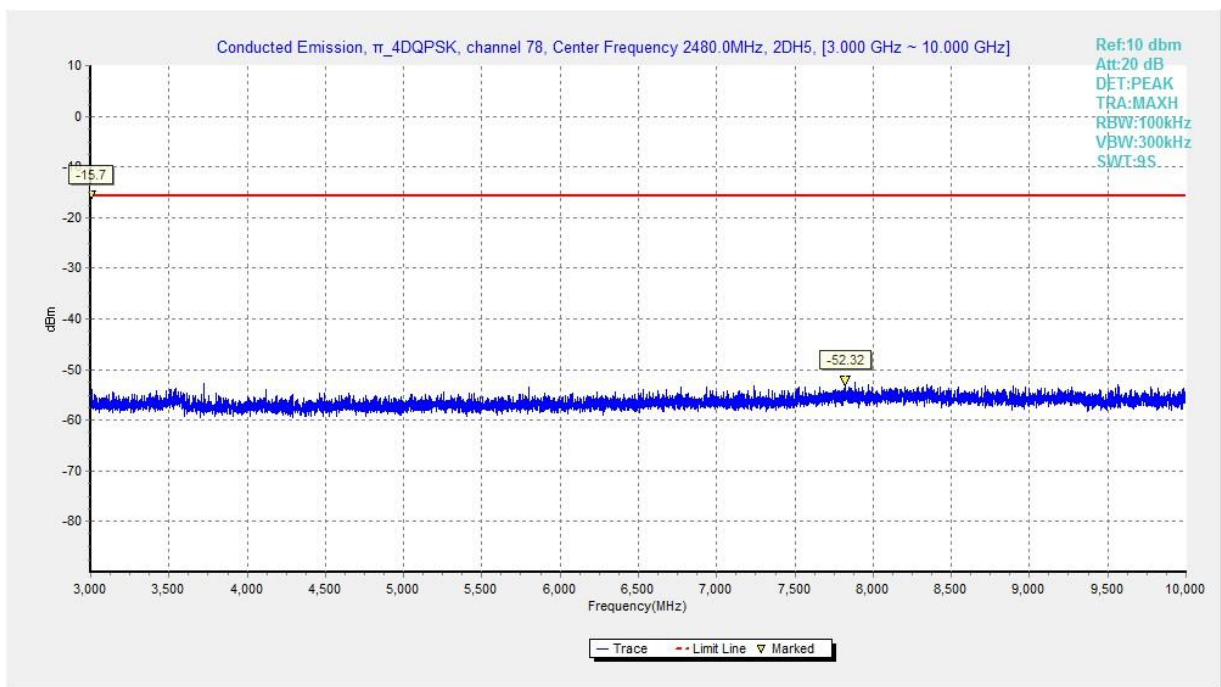


Fig. 30 Conducted Spurious Emission ($\pi/4$ DQPSK, Ch78, 3GHz-10GHz)

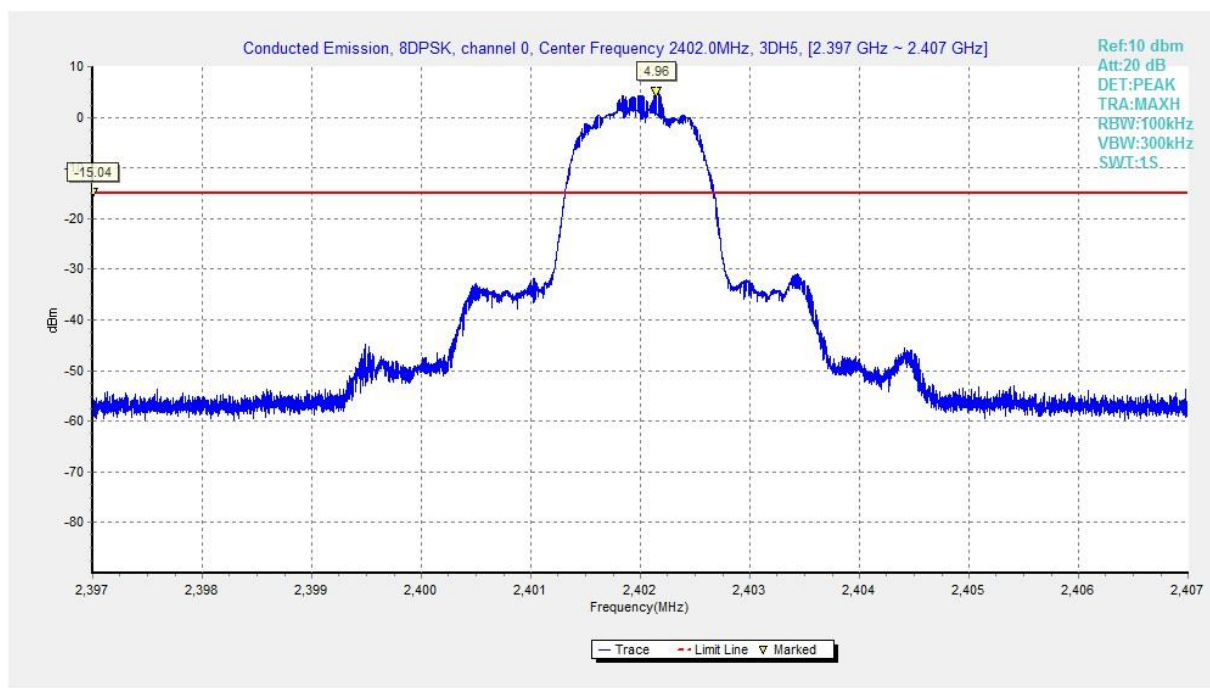


Fig. 31 Conducted Spurious Emission (8DPSK, Ch0, 2.402GHz)

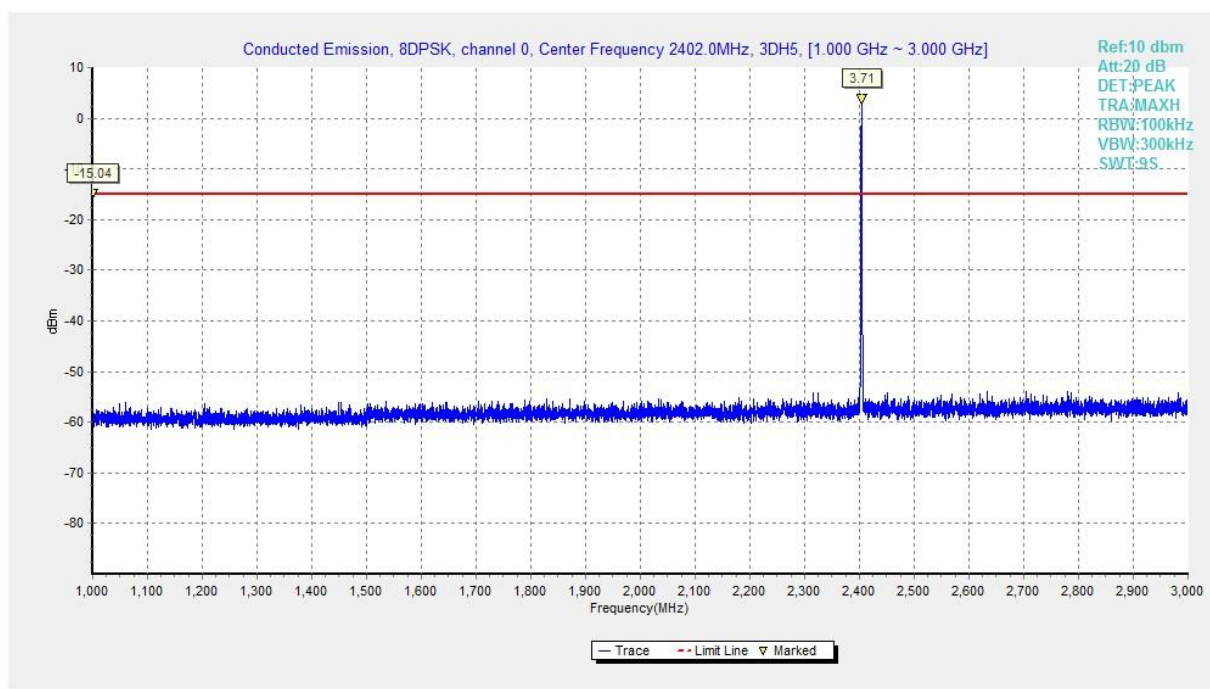


Fig. 32 Conducted Spurious Emission (8DPSK, Ch0, 1GHz-3GHz)

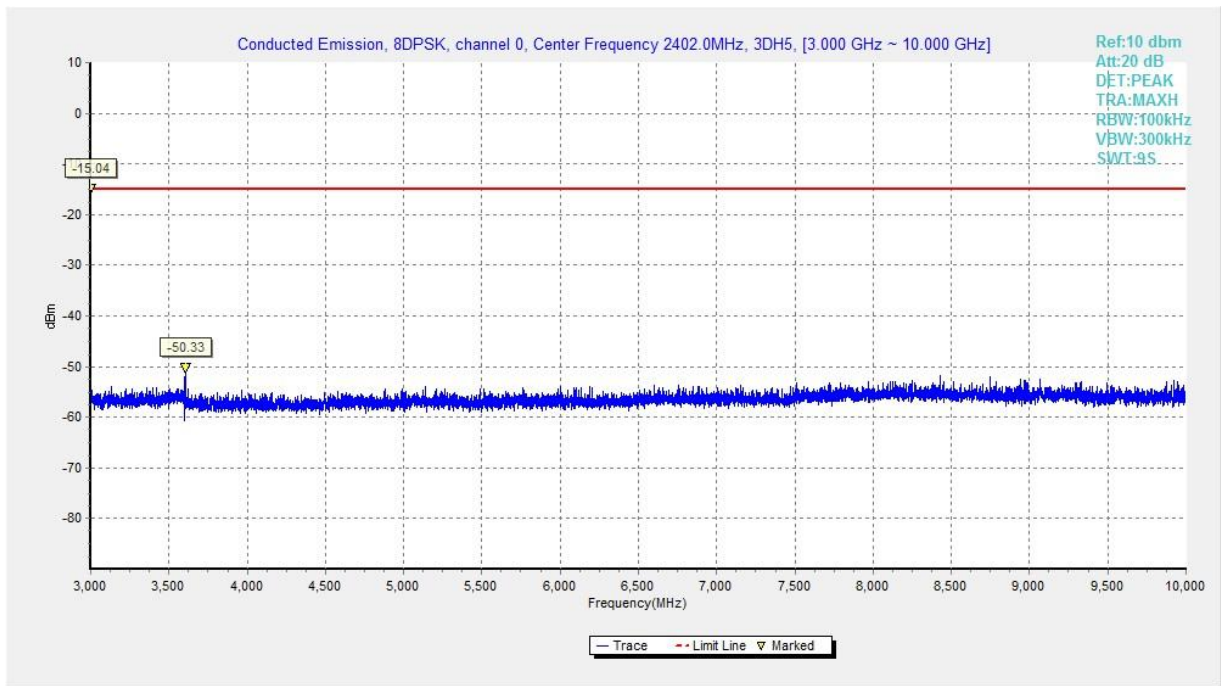


Fig. 33 Conducted Spurious Emission (8DPSK, Ch0, 3GHz-10GHz)

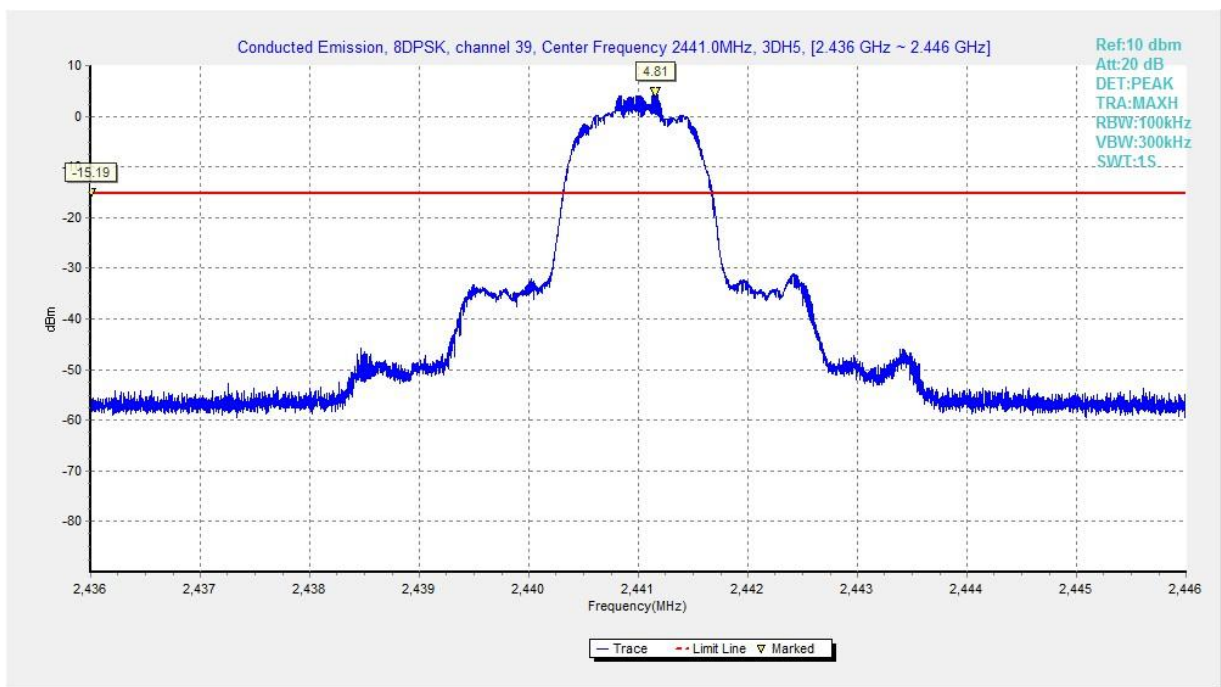


Fig. 34 Conducted Spurious Emission (8DPSK, Ch39, 2.441GHz)

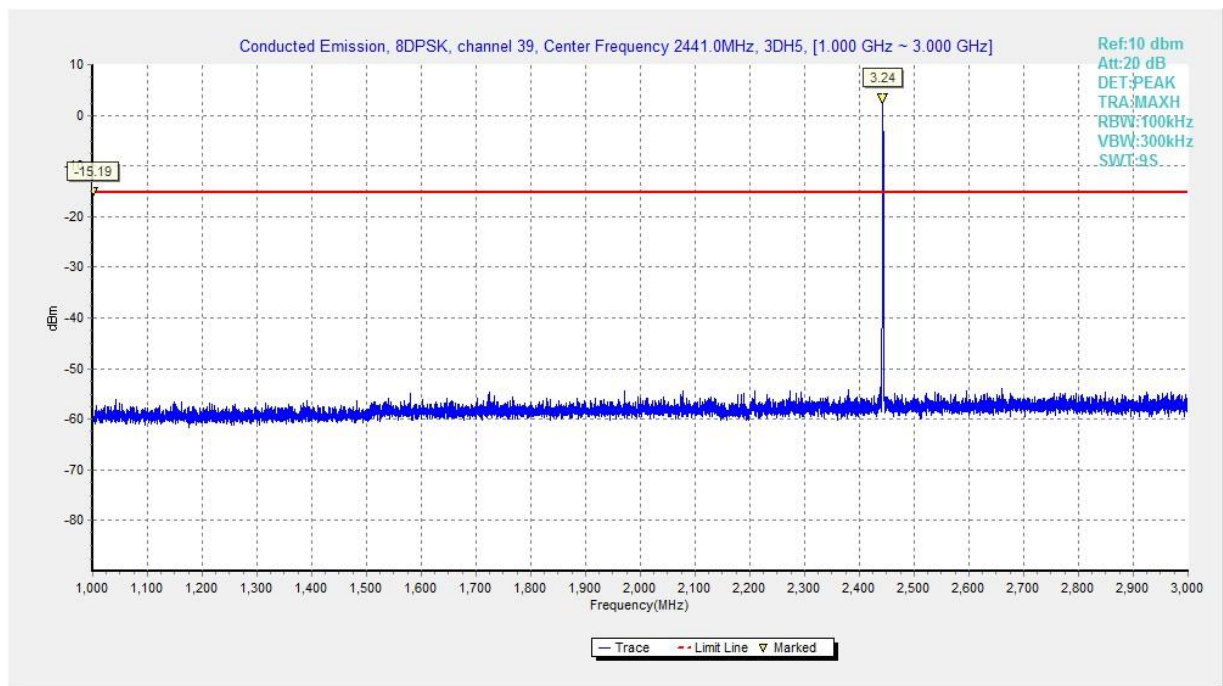


Fig. 35 Conducted Spurious Emission (8DPSK, Ch39, 1GHz-3GHz)

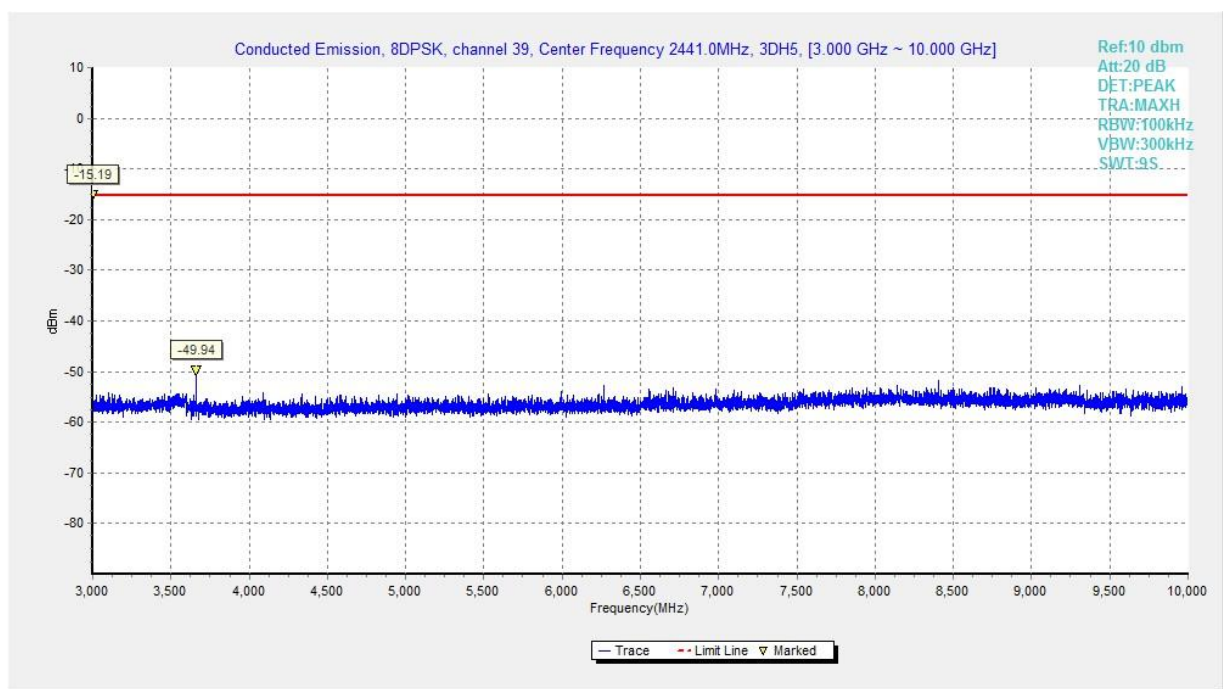


Fig. 36 Conducted Spurious Emission (8DPSK, Ch39, 3GHz-10GHz)

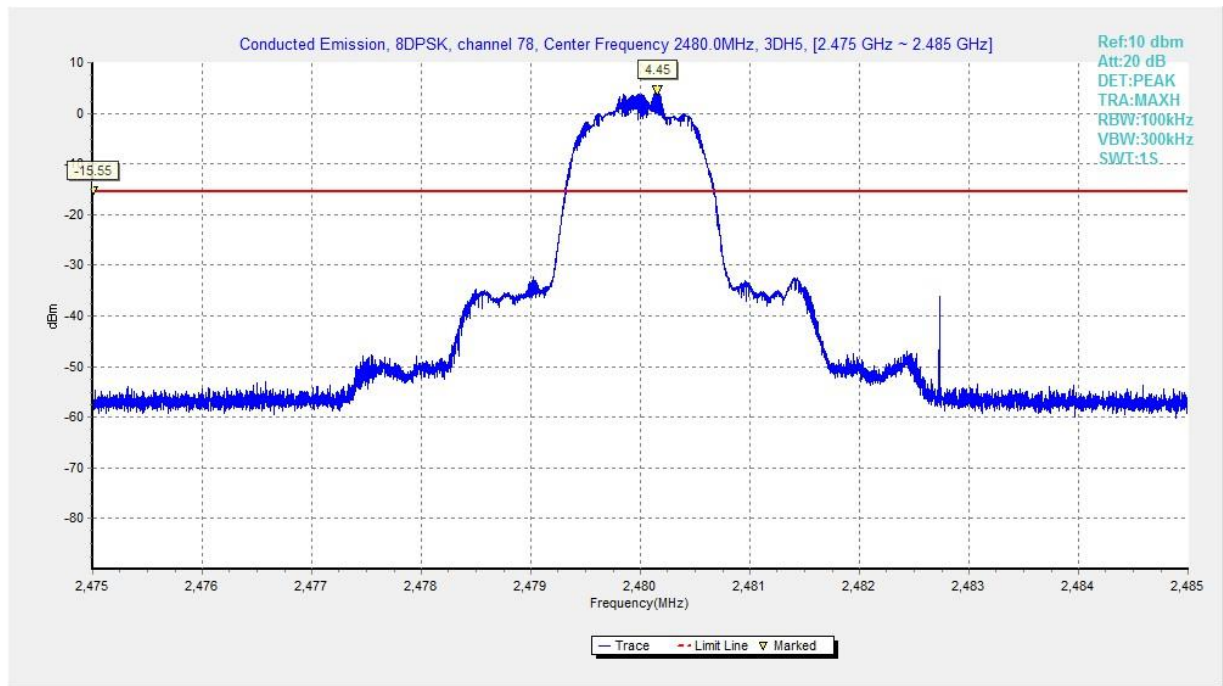


Fig. 37 Conducted Spurious Emission (8DPSK, Ch78, 2.480GHz)

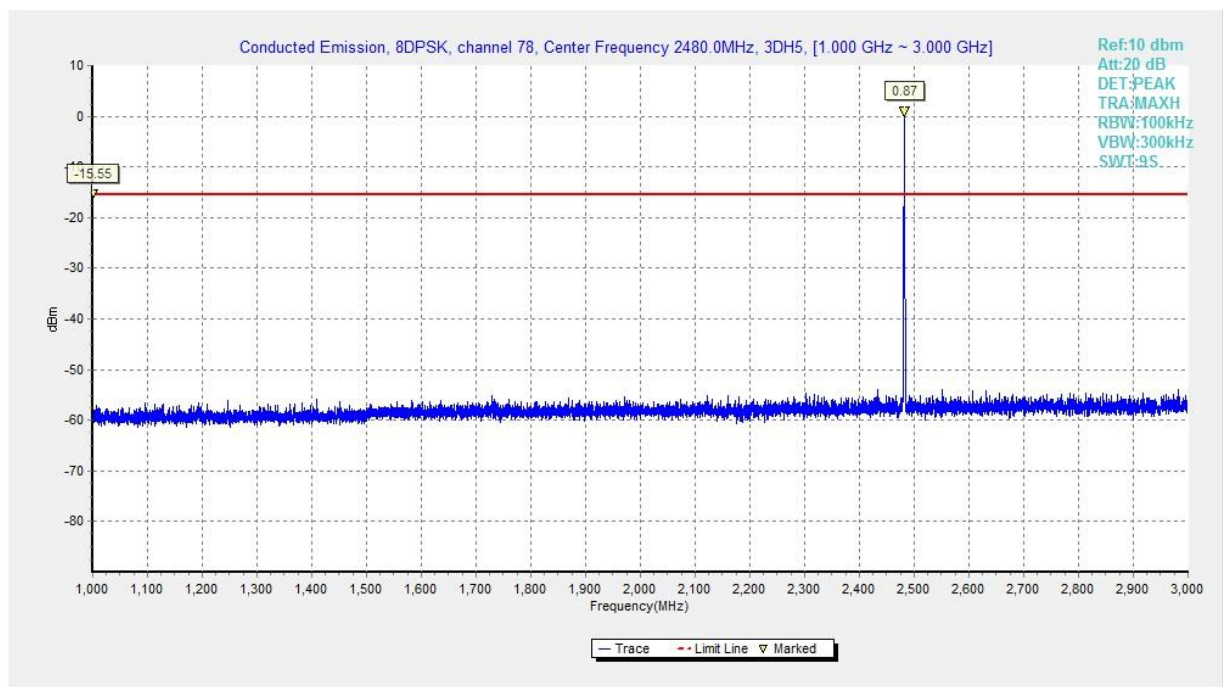


Fig. 38 Conducted Spurious Emission (8DPSK, Ch78, 1GHz-3GHz)

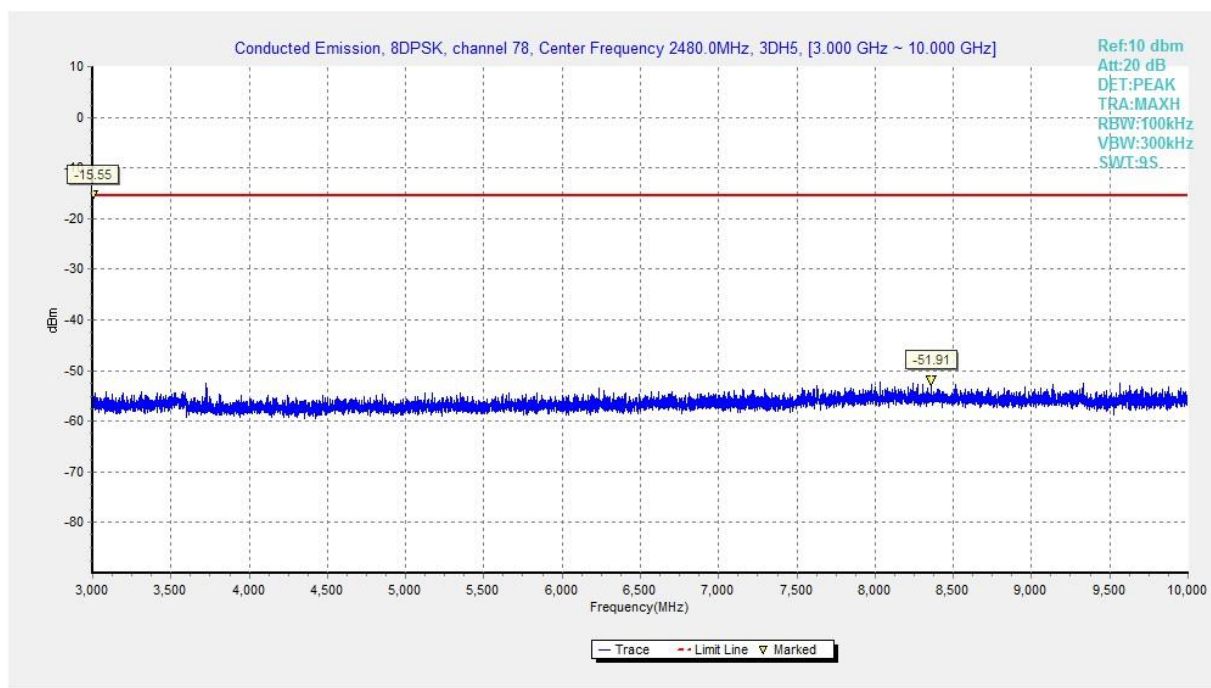


Fig. 39 Conducted Spurious Emission (8DPSK, Ch78, 3GHz-10GHz)

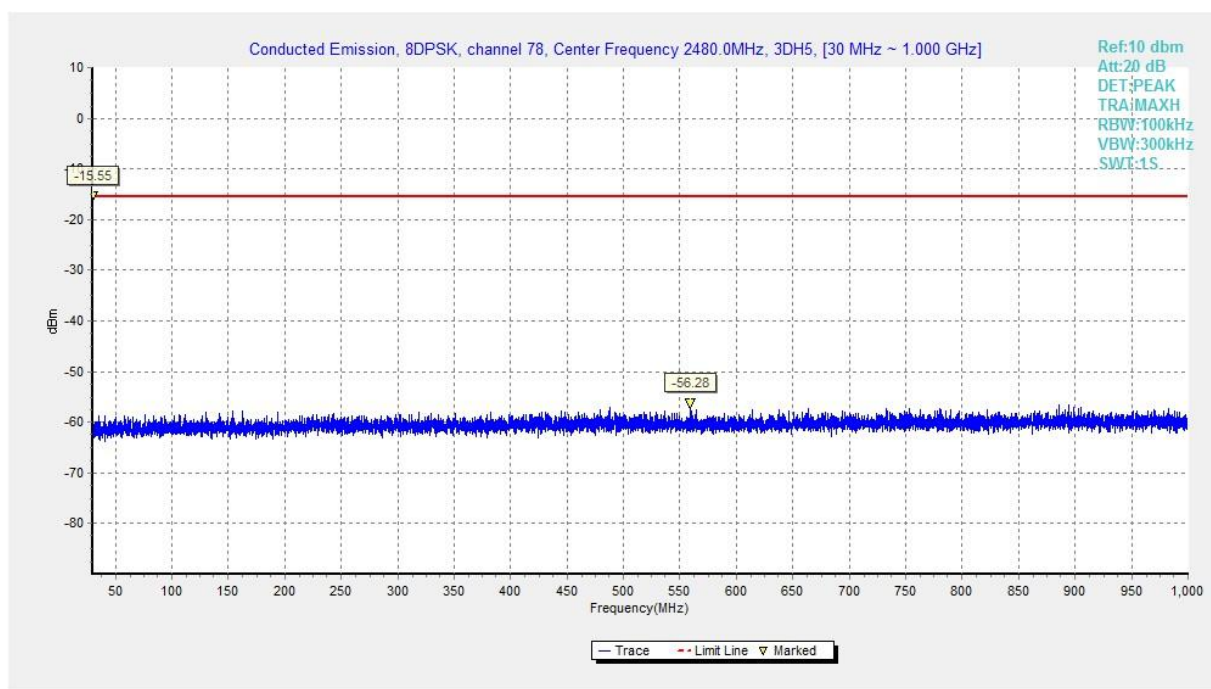


Fig. 40 Conducted Spurious Emission (All channel, 30MHz-1GHz)

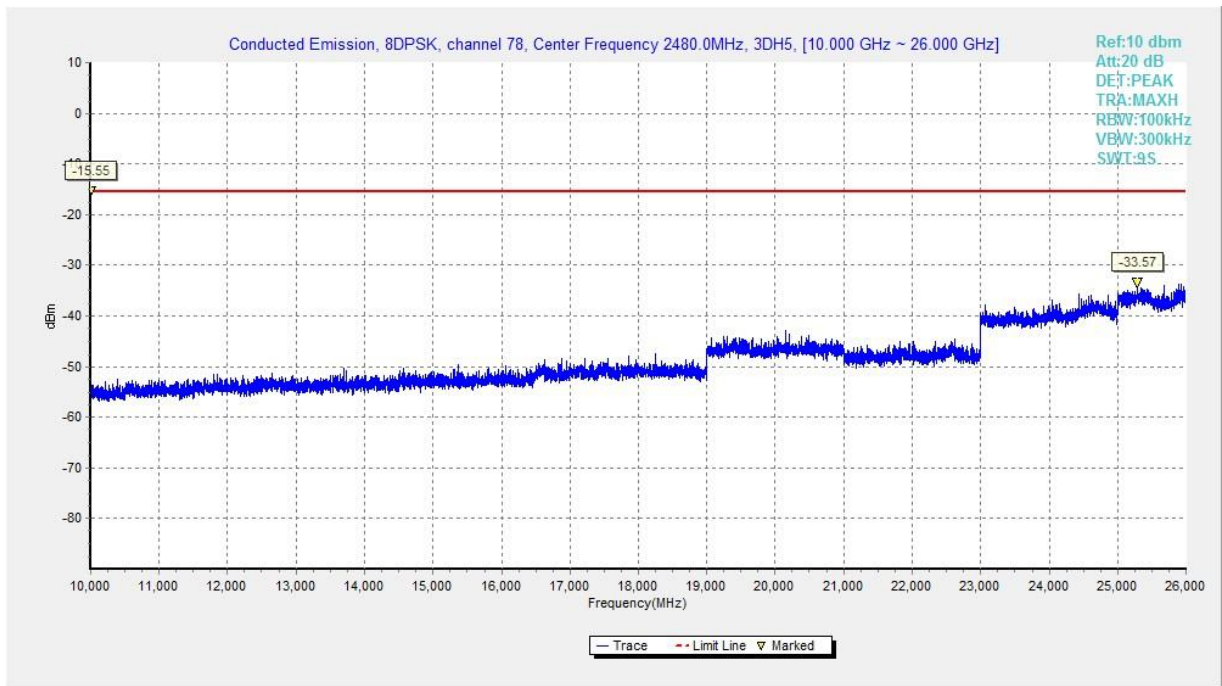


Fig. 41 Conducted Spurious Emission (All channel, 10GHz-26GHz)