



# TEST REPORT

No. I20N01406-BT

for

**TCL Communication Ltd**

**Tablet PC**

**Model Name: 9032T**

**with**

**Hardware Version: PIO**

**Software Version: 1A57**

**FCC ID: 2ACCJB130**

**Issued Date: 2020-07-09**

**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:**

**SAICT, Shenzhen Academy of Information and Communications Technology**

Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen,  
Guangdong, P. R. China 518026.

Tel:+86(0)755-33322000, Fax:+86(0)755-33322001

Email: [yewu@caict.ac.cn](mailto:yewu@caict.ac.cn). [www.saict.ac.cn](http://www.saict.ac.cn)

## **CONTENTS**

<b>CONTENTS .....</b>	<b>2</b>
<b>1. SUMMARY OF TEST REPORT.....</b>	<b>3</b>
1.1. TEST ITEMS.....	3
1.2. TEST STANDARDS .....	3
1.3. TEST RESULT .....	3
1.4. TESTING LOCATION .....	3
1.5. PROJECT DATA .....	3
1.6. SIGNATURE .....	3
<b>2. CLIENT INFORMATION.....</b>	<b>4</b>
2.1. APPLICANT INFORMATION .....	4
2.2. MANUFACTURER INFORMATION .....	4
<b>3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE) .....</b>	<b>5</b>
3.1. ABOUT EUT .....	5
3.2. INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST .....	5
3.3. INTERNAL IDENTIFICATION OF AE USED DURING THE TEST .....	5
3.4. GENERAL DESCRIPTION.....	6
<b>4. REFERENCE DOCUMENTS.....</b>	<b>7</b>
4.1. DOCUMENTS SUPPLIED BY APPLICANT .....	7
4.2. REFERENCE DOCUMENTS FOR TESTING.....	7
<b>5. TEST RESULTS .....</b>	<b>8</b>
5.1. TESTING ENVIRONMENT.....	8
5.2. TEST RESULTS .....	8
5.3. STATEMENTS.....	8
<b>6. TEST EQUIPMENTS UTILIZED .....</b>	<b>9</b>
<b>7. LABORATORY ENVIRONMENT .....</b>	<b>10</b>
<b>8. MEASUREMENT UNCERTAINTY .....</b>	<b>11</b>
<b>ANNEX A: DETAILED TEST RESULTS.....</b>	<b>12</b>
A.0 ANTENNA REQUIREMENT .....	12
A.1 MAXIMUM PEAK OUTPUT POWER .....	13
A.2 BAND EDGES COMPLIANCE .....	14
A.3 CONDUCTED EMISSION.....	21
A.4 RADIATED EMISSION.....	37
A.5 20dB BANDWIDTH.....	49
A.6 TIME OF OCCUPANCY (DWELL TIME) .....	54
A.7 NUMBER OF HOPPING CHANNELS.....	58
A.8 CARRIER FREQUENCY SEPARATION .....	62
A.9 AC POWER LINE CONDUCTED EMISSION .....	64

## 1. Summary of Test Report

### 1.1. Test Items

Description	Tablet PC
Model Name	9032T
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

### 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:	2020-05-25
Testing End Date:	2020-06-23

### 1.6. Signature



Lin Zechuang

(Prepared this test report)



Tang Weisheng

(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: Gong Zhizhou  
E-Mail: zhizhou.gong@tcl.com  
Telephone: 0086-755-36611722  
Fax: 0086-755-36612000-81722

### **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: Gong Zhizhou  
E-Mail: zhizhou.gong@tcl.com  
Telephone: 0086-755-36611722  
Fax: 0086-755-36612000-81722

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

#### **3.1. About EUT**

Description	Tablet PC
Model Name	9032T
Brand Name	alcatel
Frequency Band	2400MHz~2483.5MHz
Type of Modulation	GFSK/ $\pi$ /4 DQPSK/8DPSK
Number of Channels	79
Antenna Type	Integrated
Antenna Gain	0.46dBi
Power Supply	3.85V DC by Battery
FCC ID	2ACCJB130
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 used during the test**

EUT ID*	IMEI	HW Version	SW Version	Receive Date
UT05aa	350583090000127	PIO	1A57	2020-05-27
UT03aa	350583090000119	PIO	1A57	2020-05-25

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

#### **3.3. Internal Identification of AE used during the test**

AE ID*	Description	AE ID*
AE1	Battery	/
AE2	Charger	Aa01a,Aa02a,Ab01a,Ab02a
AE3	Data Cable	Ca01a, Ca02a, Cb01a, Cb02a

##### **AE1**

Model	TLp040M7
Manufacturer	VEKEN
Capacity	4000mAh
Nominal Voltage	3.85v

##### **AE2-1**

Model	UC11US(CBA0058AGAC5)
Manufacturer	PUAN

##### **AE2-2**

Model	UC11US(CBA0058AGAC7)
Manufacturer	Chenyang

##### **AE3-1**



Model CDA0000123C2  
Manufacturer SHENGHUA  
AE3-2  
Model CDA0000123C1  
Manufacturer JUWEI

\*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, Charger and USB Cable.

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.

<b>Reference</b>	<b>Title</b>	<b>Version</b>
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 2013 Testing of Unlicensed Wireless Devices	

## 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)	I
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.

## 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	2021-01-15	1 year
2	Bluetooth Tester	CBT32	100584	Rohde & Schwarz	2021-01-01	1 year
3	Test Receiver	ESCI	100701	Rohde & Schwarz	2020-08-10	1 year
4	LISN	ENV216	102067	Rohde & Schwarz	2020-07-17	1 year

### Radiated emission 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	00224831	ETS-Lindgren	2021-05-17	3 years
3	Horn Antenna	3117	00066577	ETS-Lindgren	2022-04-02	3 years
4	Test Receiver	ESR7	101676	Rohde & Schwarz	2020-11-27	1 year
5	Spectrum Analyser	FSV40	101192	Rohde & Schwarz	2021-01-14	1 year
6	Chamber	FACT3-2.0	1285	ETS-Lindgren	2021-07-19	2 years
7	Horn Antenna	QSH-SL-18-26-S-20	17013	Q-par	2023-01-06	3 years

### 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	> 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

## **8. Measurement Uncertainty**

<b>Test Name</b>	<b>Uncertainty (<i>k</i>=2)</b>	
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	$30\text{MHz} \leq f \leq 1\text{GHz}$	1.41dB
	$1\text{GHz} \leq f \leq 7\text{GHz}$	1.92dB
	$7\text{GHz} \leq f \leq 13\text{GHz}$	2.31dB
	$13\text{GHz} \leq f \leq 26\text{GHz}$	2.61dB
5. Transmitter Spurious Emission - Radiated	$9\text{kHz} \leq f \leq 30\text{MHz}$	1.70dB
	$30\text{MHz} \leq f \leq 1\text{GHz}$	4.90dB
	$1\text{GHz} \leq f \leq 18\text{GHz}$	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:**

<b>Standard</b>	<b>Requirement</b>
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 0.46dBi.**

**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.

Use the following spectrum analyzer settings:

- a) Set Span = 6 MHz.
- b) Set RBW = 3 MHz.
- c) Set VBW = 3 MHz.
- d) Sweep time = auto.
- e) Detector = peak.
- f) Trace = max hold.
- g) Allow trace to stabilize.
- h) Use the marker-to-peak function to set the marker to the peak of the emission.
- I) The indicated level is the peak output power.

### Measurement Limit:

Standard	Limit (dBm)
FCC CRF Part 15.247(b)(1)	< 30

### Measurement Results:

Mode	Peak output power (dBm)		
	2402 MHz (Ch0)	2441 MHz (Ch39)	2480 MHz (Ch78)
GFSK	9.53	9.13	9.49
$\pi/4$ DQPSK	8.79	8.20	8.78
8DPSK	8.78	8.28	8.79

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

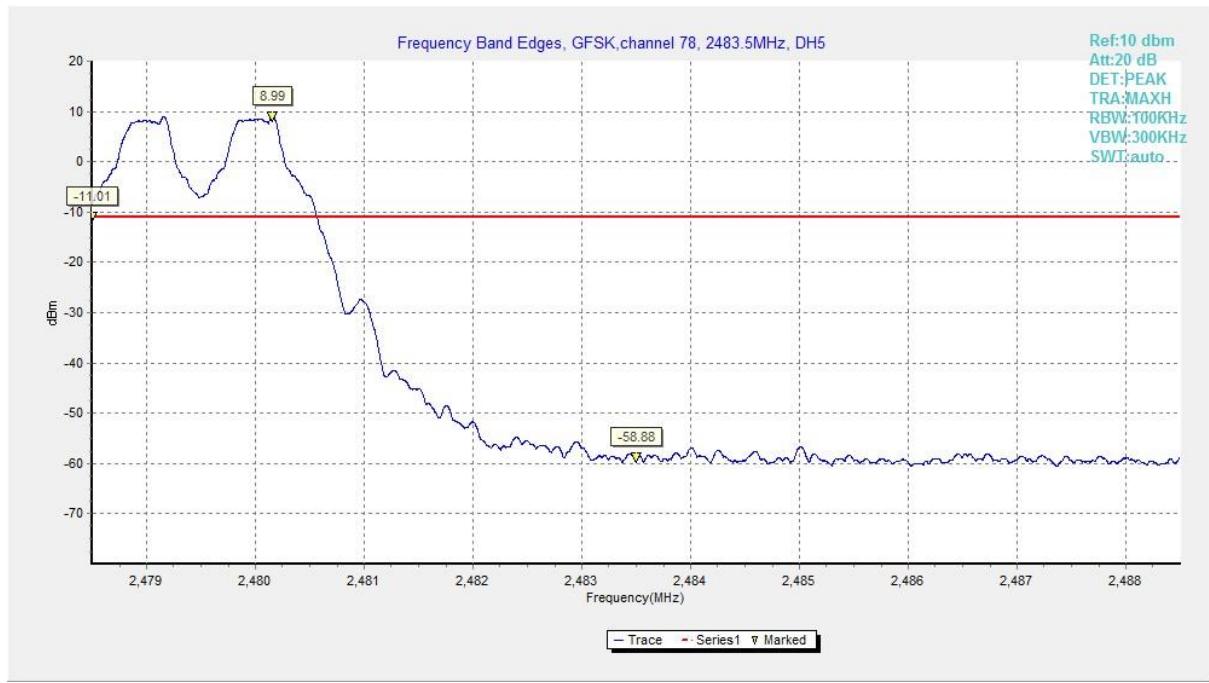
Mode	Channel	Hopping	Test Results	Conclusion
GFSK	0	OFF	Fig.7	P
	78	OFF	Fig.8	P
$\pi/4$ DQPSK	0	OFF	Fig.9	P
	78	OFF	Fig.10	P
8DPSK	0	OFF	Fig.11	P
	78	OFF	Fig.12	P

See below for test graphs.

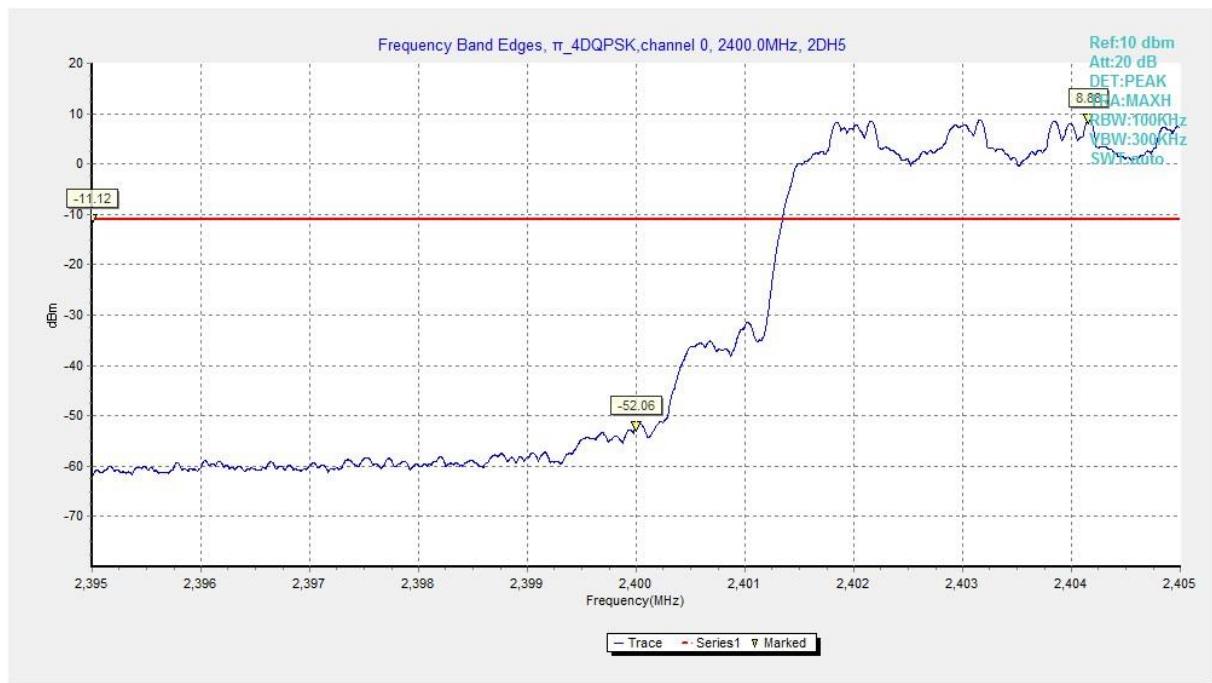
Conclusion: Pass



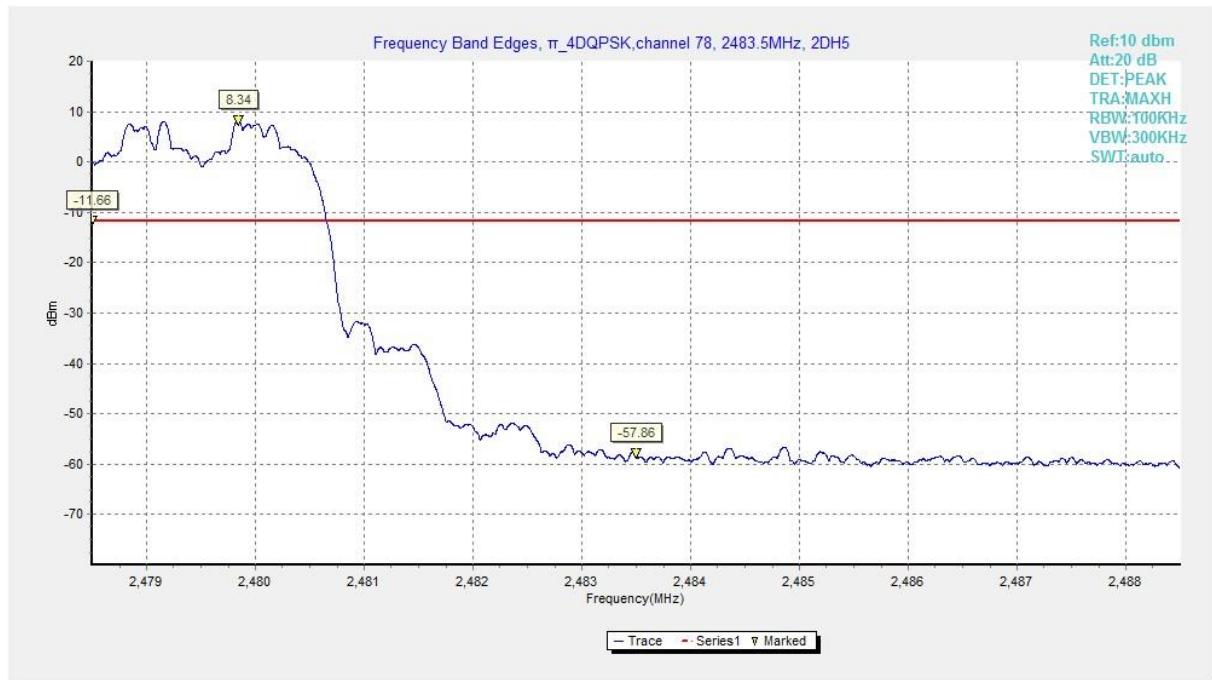
**Fig. 1 Band Edges (GFSK, Ch 0, Hopping ON)**



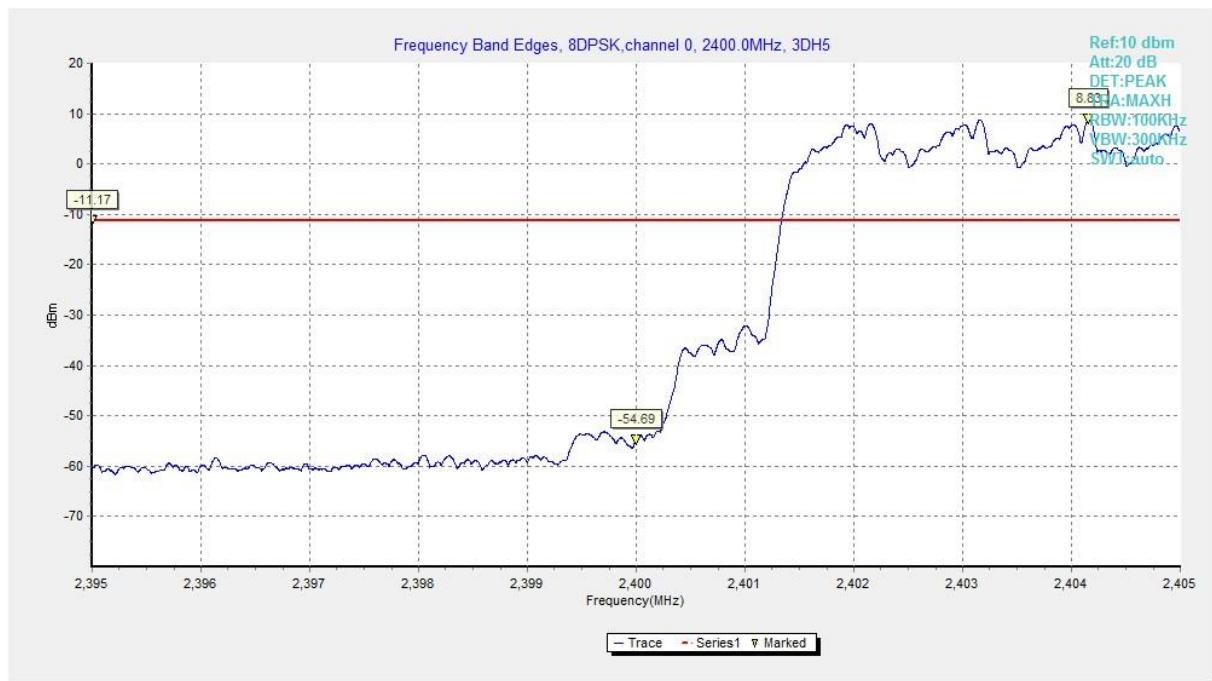
**Fig. 2 Band Edges (GFSK, Ch 78, Hopping ON)**



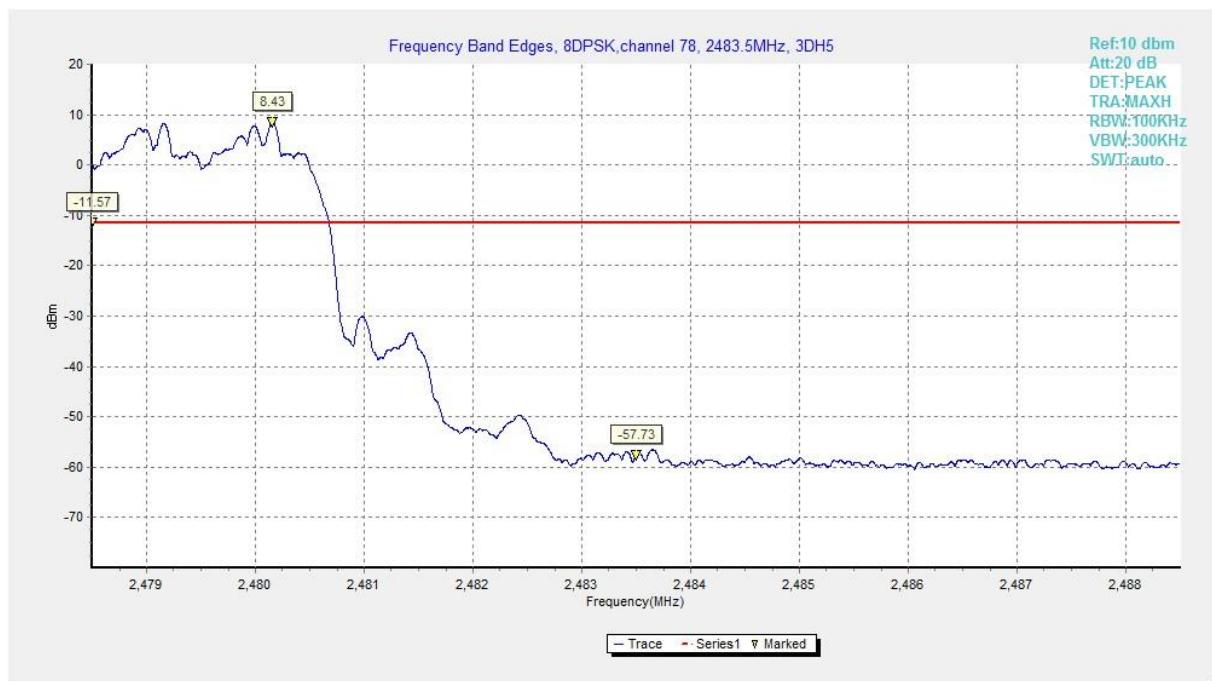
**Fig. 3 Band Edges (  $\pi/4$  DQPSK, Ch 0, Hopping ON)**



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



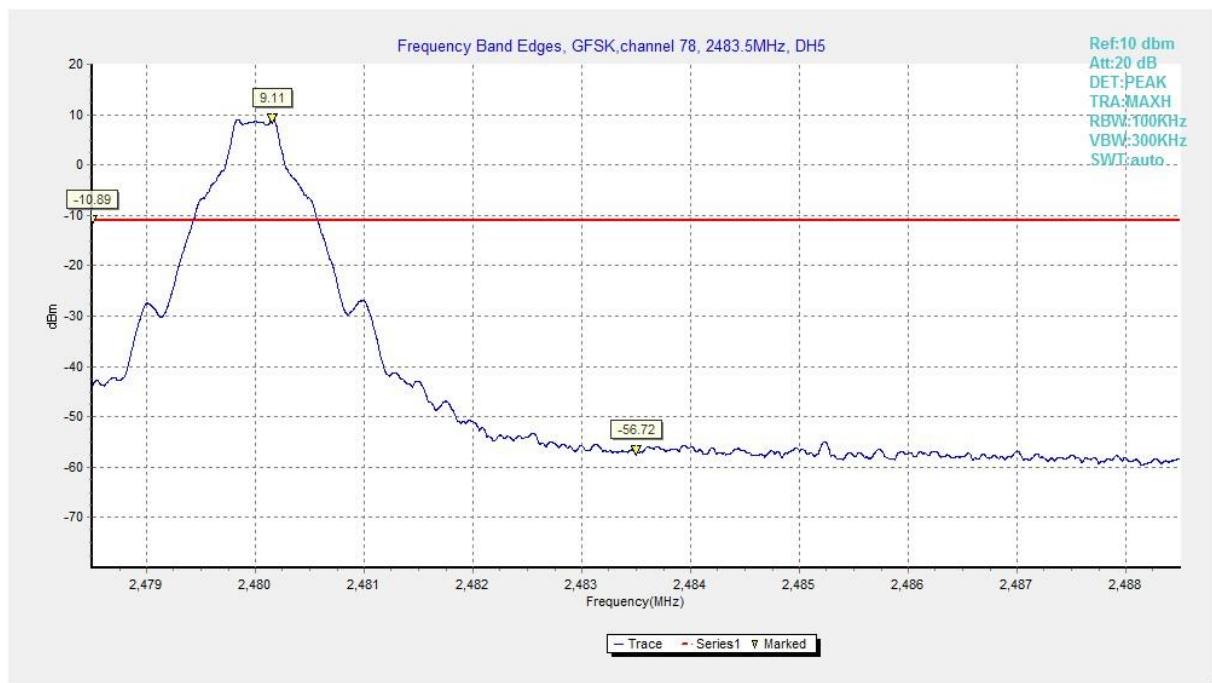
**Fig. 5 Band Edges (8DPSK, Ch 0, Hopping ON)**



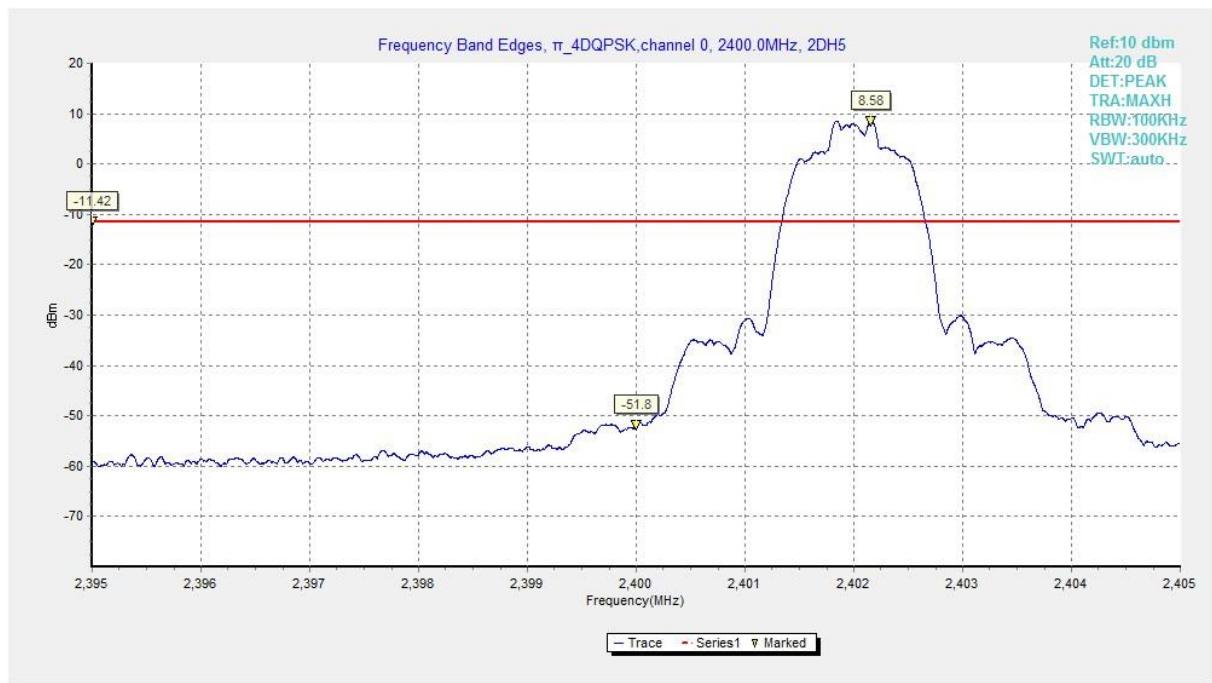
**Fig. 6 Band Edges (8DPSK, Ch 78, Hopping ON)**



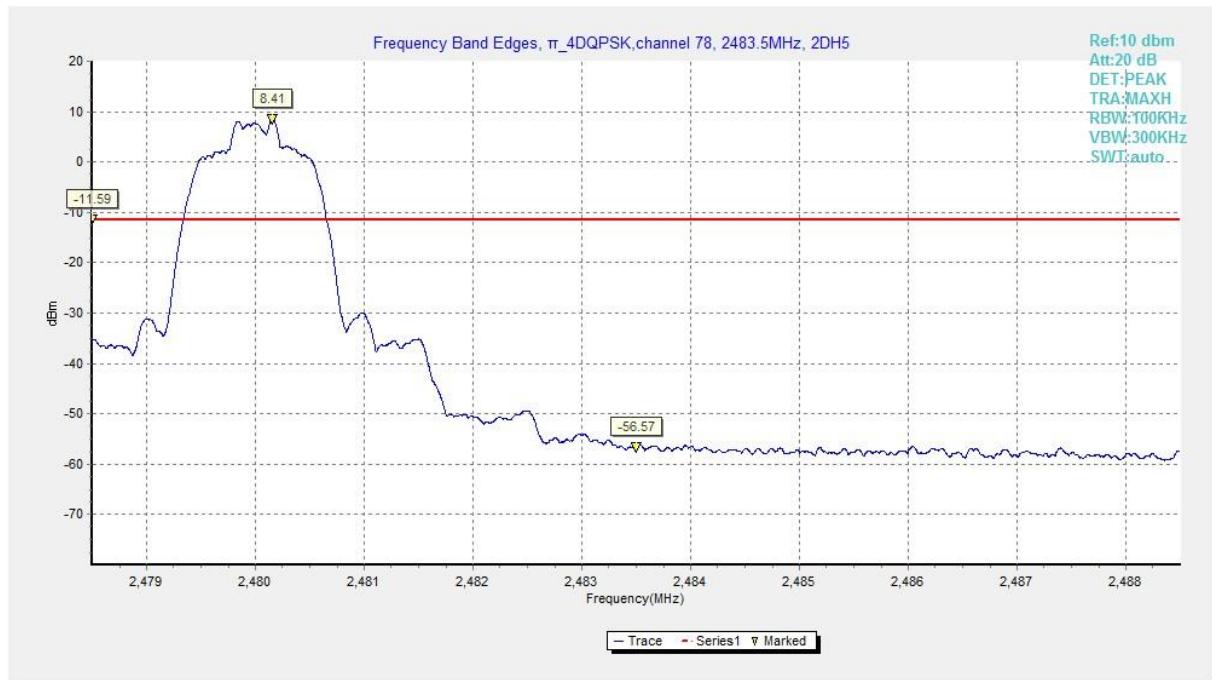
**Fig. 7 Band Edges (GFSK, Ch 0, Hopping OFF)**



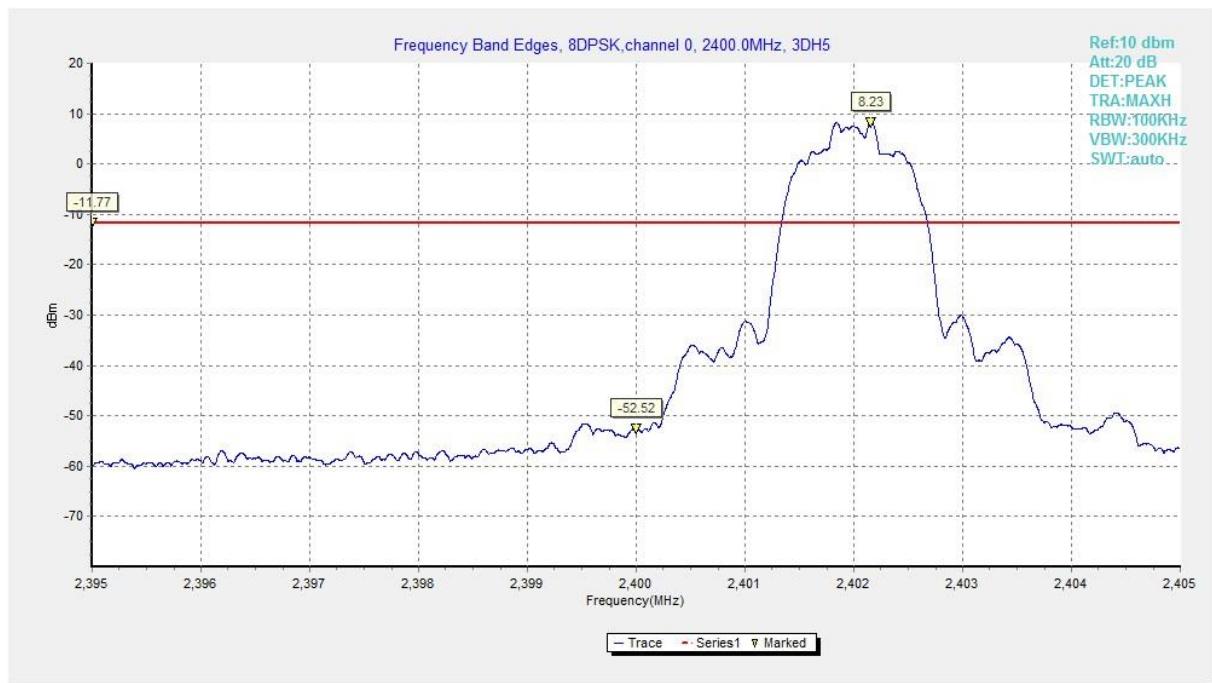
**Fig. 8 Band Edges (GFSK, Ch 78, Hopping OFF)**



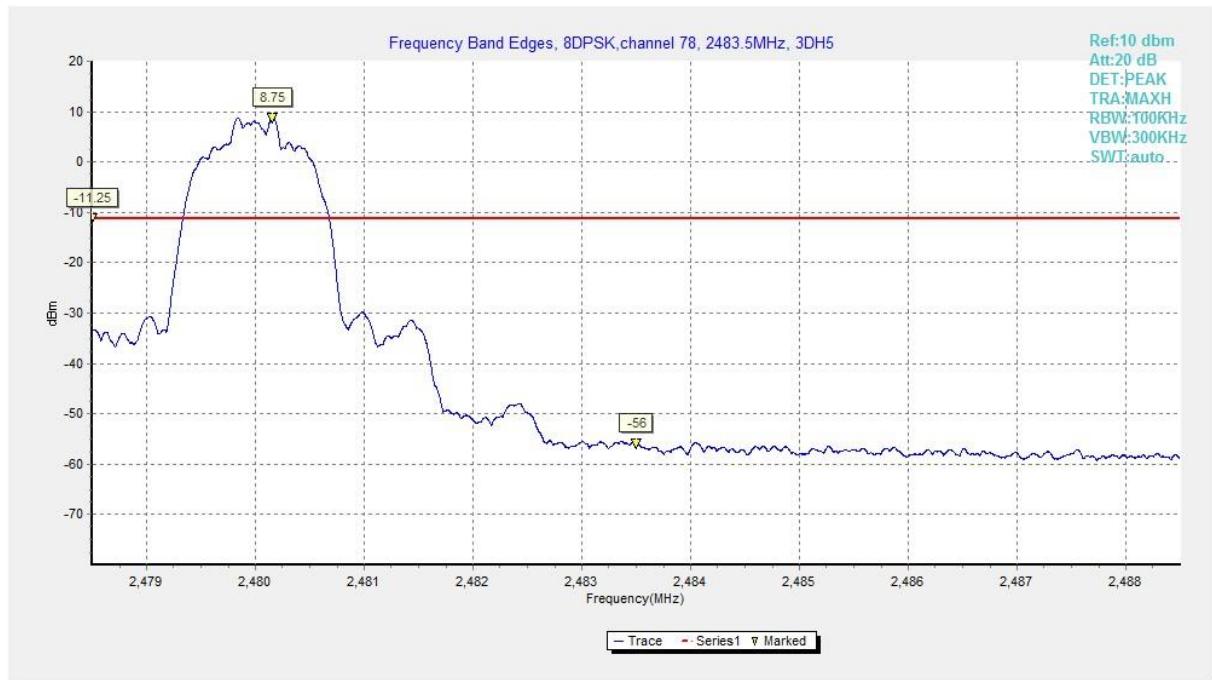
**Fig. 9 Band Edges (  $\pi$ /4 DQPSK, Ch 0, Hopping OFF)**



**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:

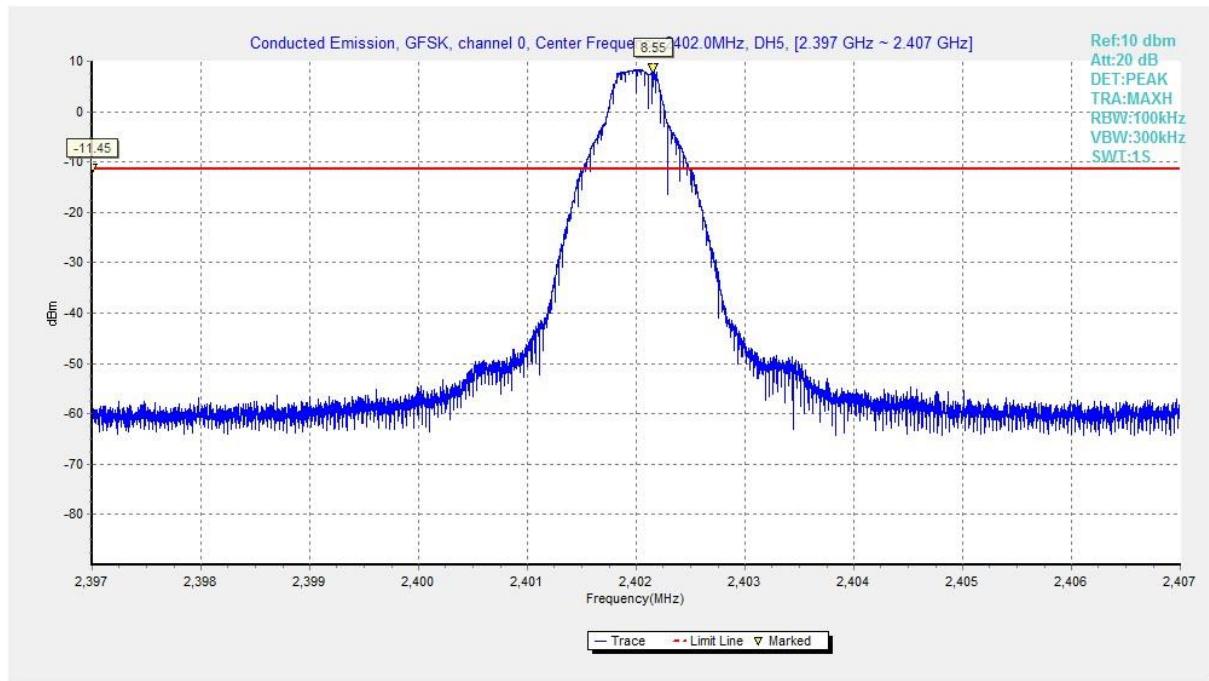
Standard	Limit
FCC 47 CFR Part 15.247 (d)	20dB below peak output power in 100 kHz bandwidth

#### Measurement Results:

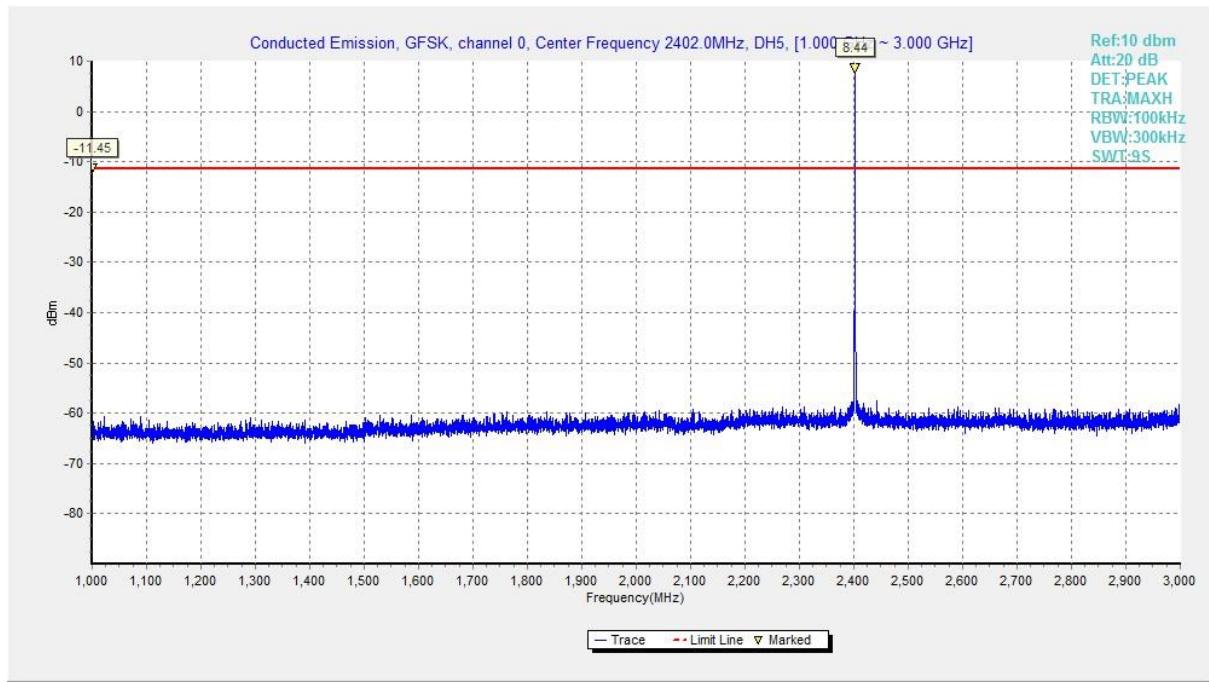
MODE	Channel	Frequency Range	Test Results	Conclusion
GFSK	0	2.402 GHz	Fig.13	P
		1GHz-3GHz	Fig.14	P
		3GHz-10GHz	Fig.15	P
	39	2.441 GHz	Fig.16	P
		1GHz-3GHz	Fig.17	P
		3GHz-10GHz	Fig.18	P
	78	2.480 GHz	Fig.19	P
		1GHz-3GHz	Fig.20	P
		3GHz-10GHz	Fig.21	P
$\pi/4$ DQPSK	0	2.402 GHz	Fig.22	P
		1GHz-3GHz	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.

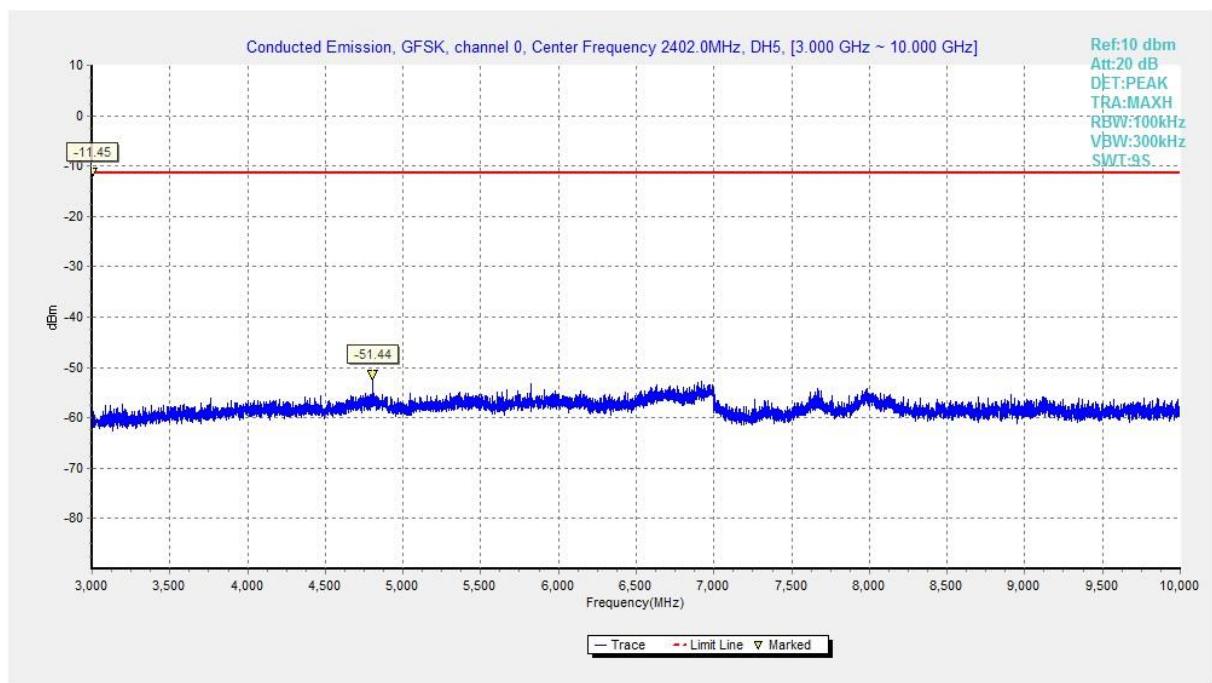
Conclusion: Pass



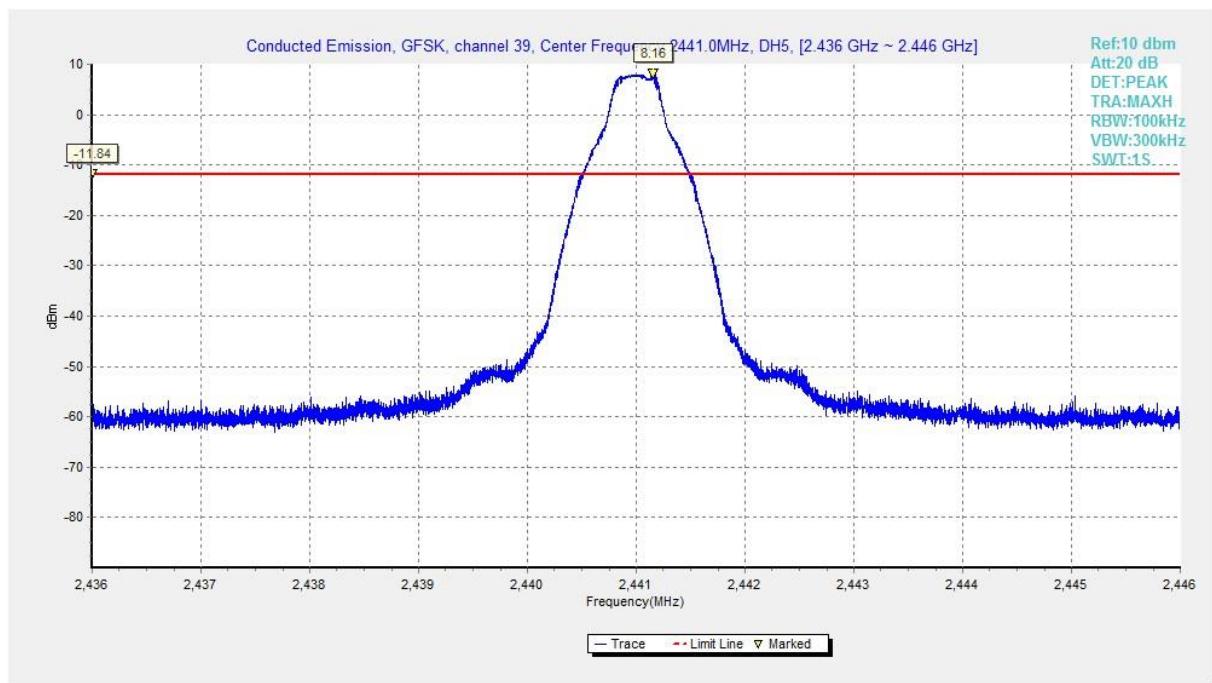
**Fig. 13 Conducted Spurious Emission (GFSK, Ch0, 2.402GHz)**



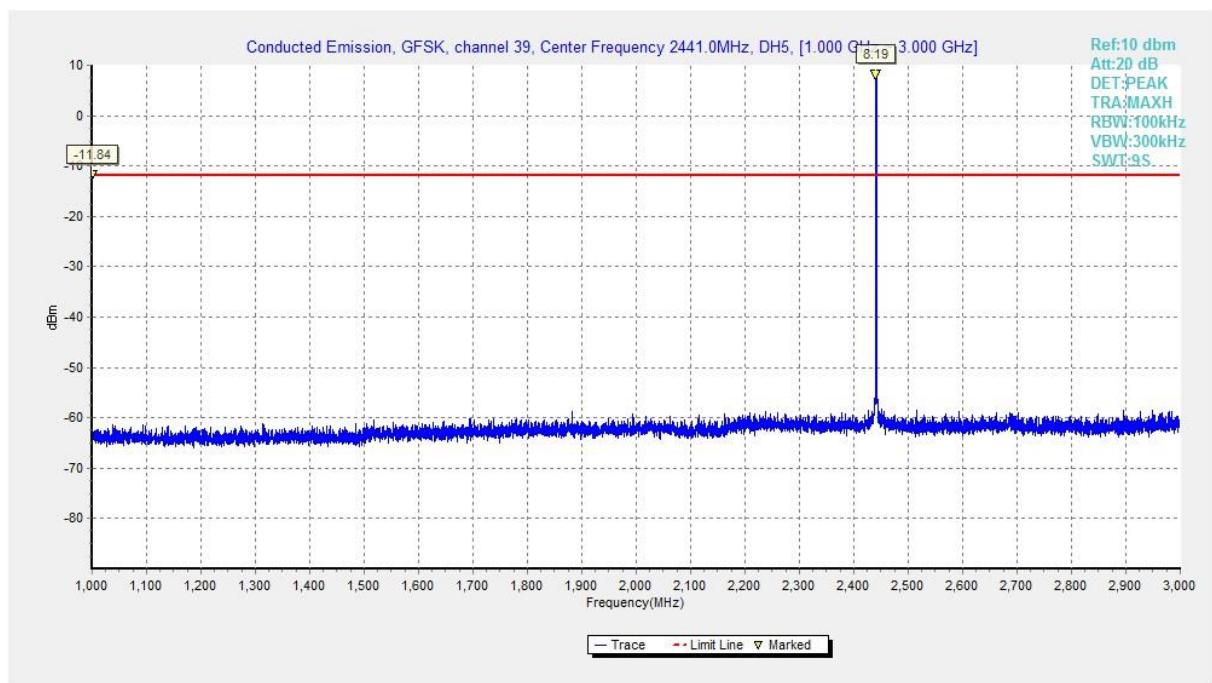
**Fig. 14 Conducted Spurious Emission (GFSK, Ch0, 1 GHz-3 GHz)**



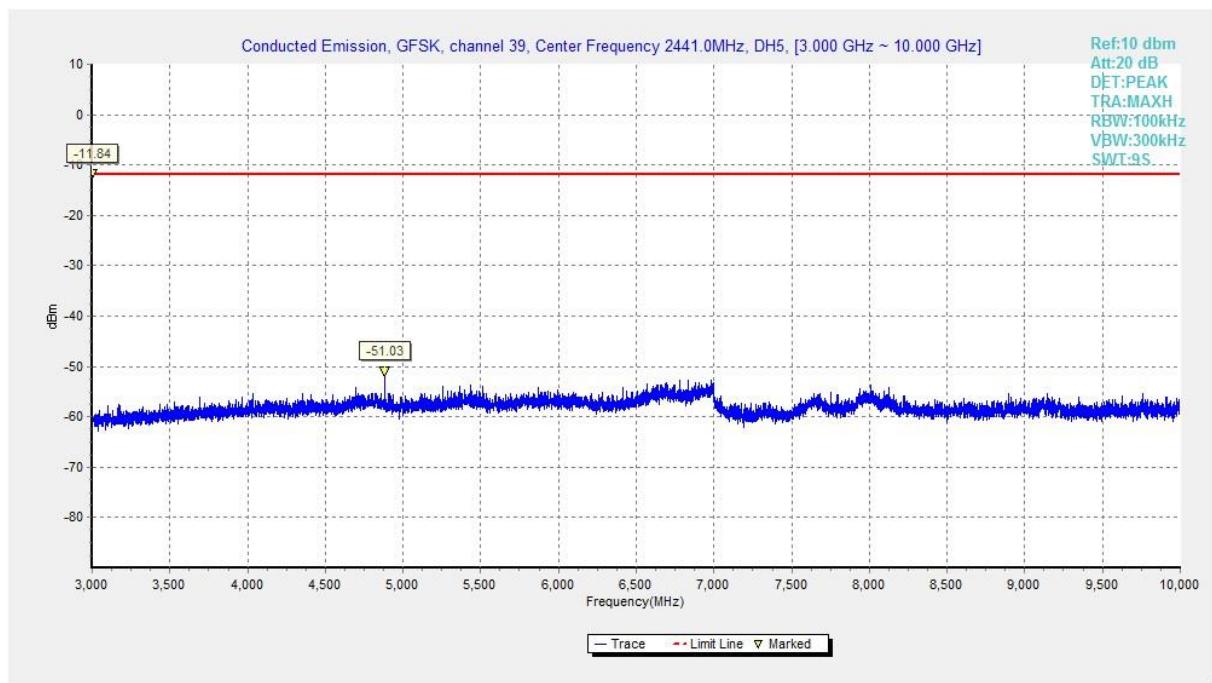
**Fig. 15 Conducted Spurious Emission (GFSK, Ch0, 3GHz-10 GHz)**



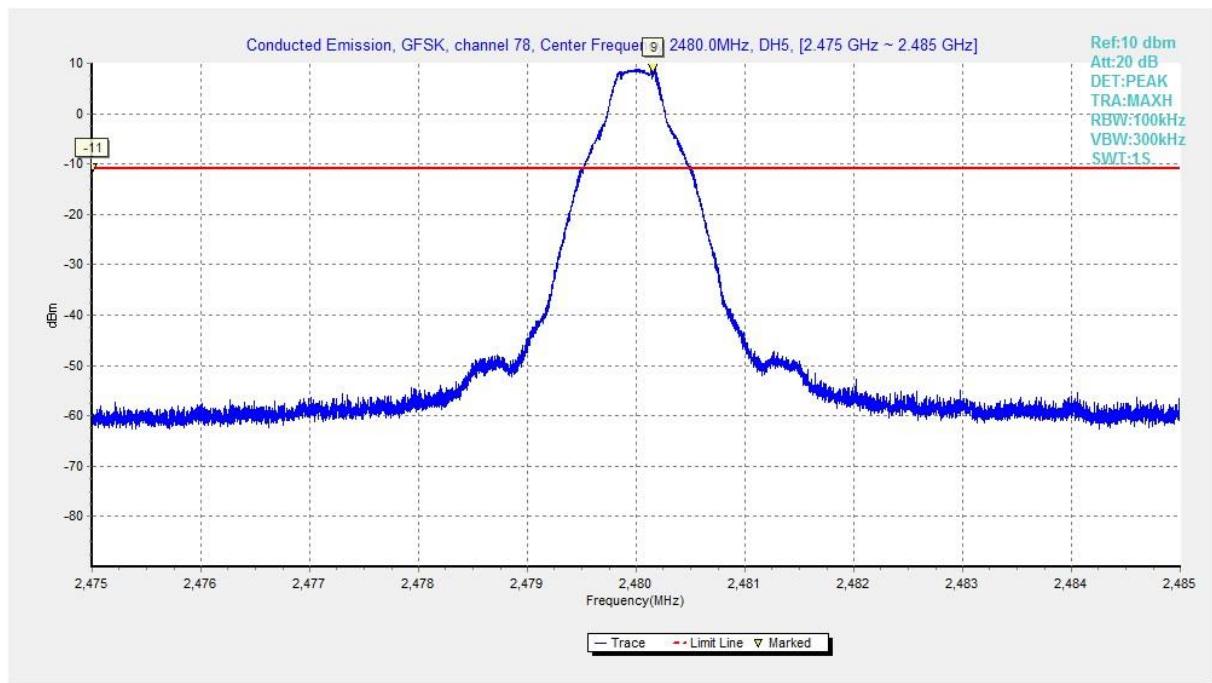
**Fig. 16 Conducted Spurious Emission (GFSK, Ch39, 2.441GHz)**



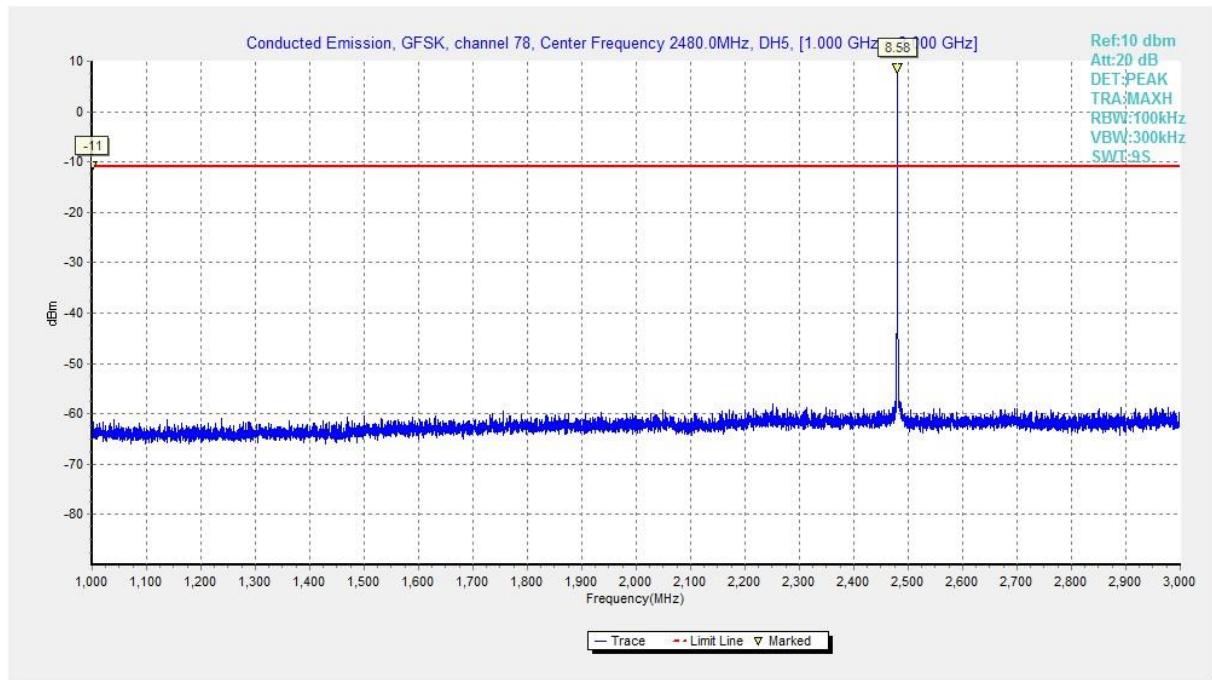
**Fig. 17 Conducted Spurious Emission (GFSK, Ch39, 1GHz-3 GHz)**



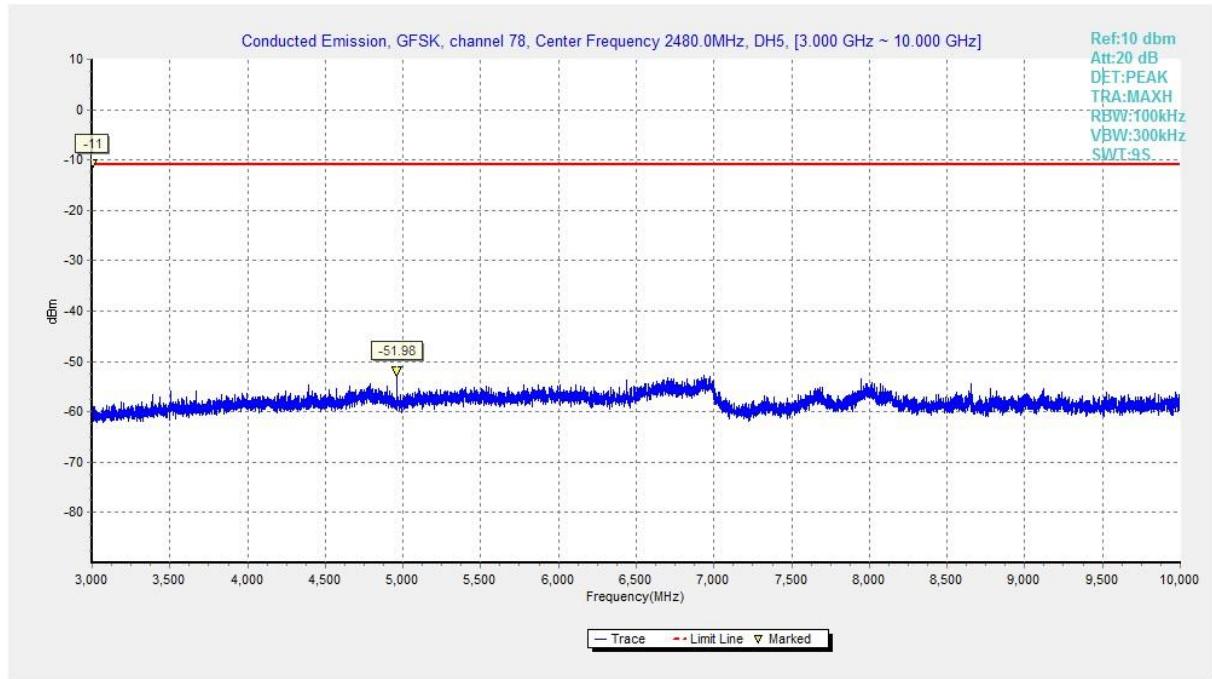
**Fig. 18 Conducted Spurious Emission (GFSK, Ch39, 3GHz-10 GHz)**



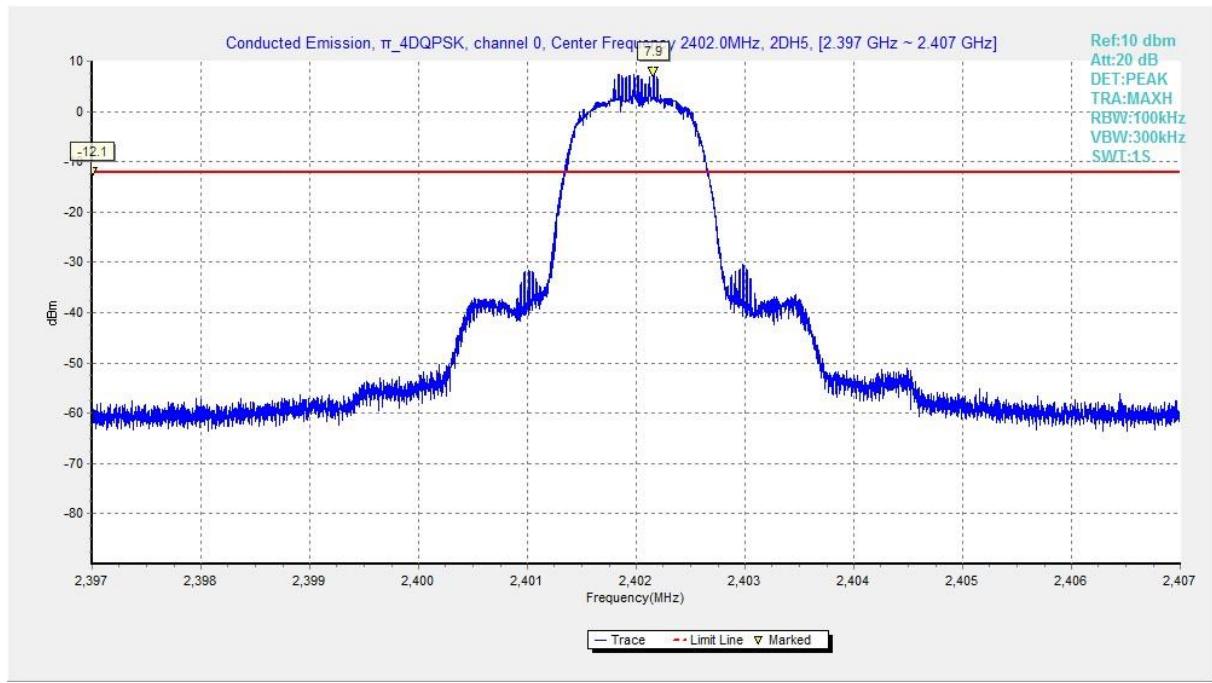
**Fig. 19 Conducted Spurious Emission (GFSK, Ch78, 2.480GHz)**



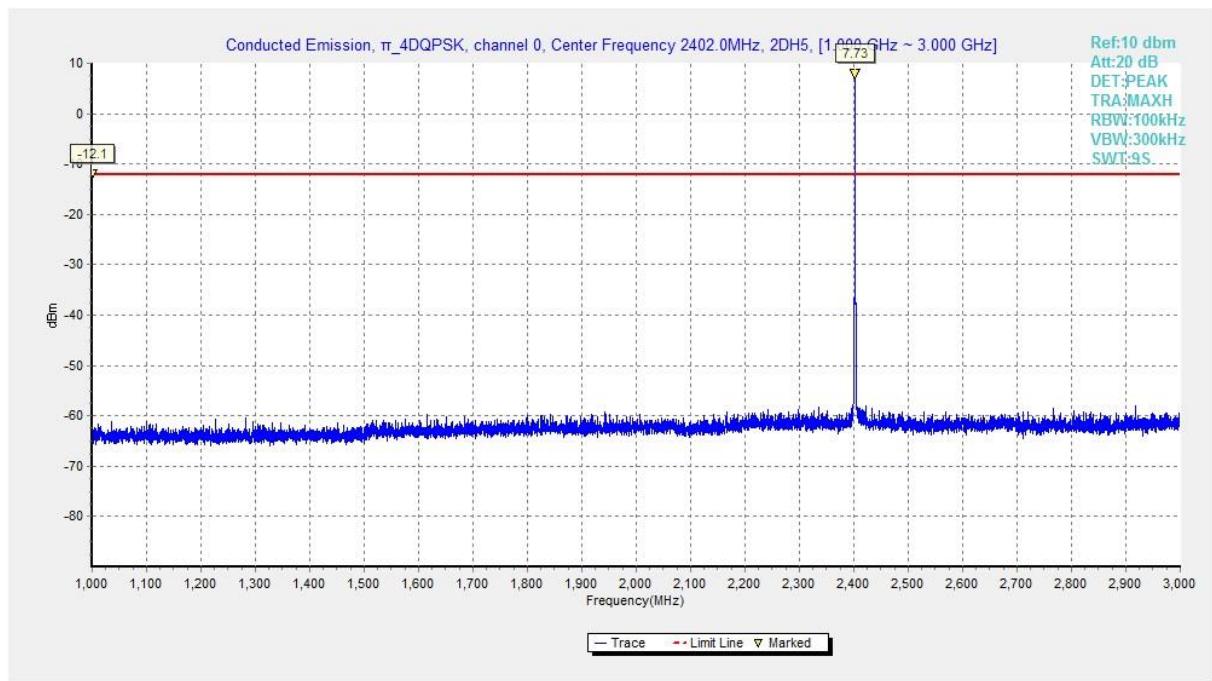
**Fig. 20 Conducted Spurious Emission (GFSK, Ch78, 1GHz-3 GHz)**



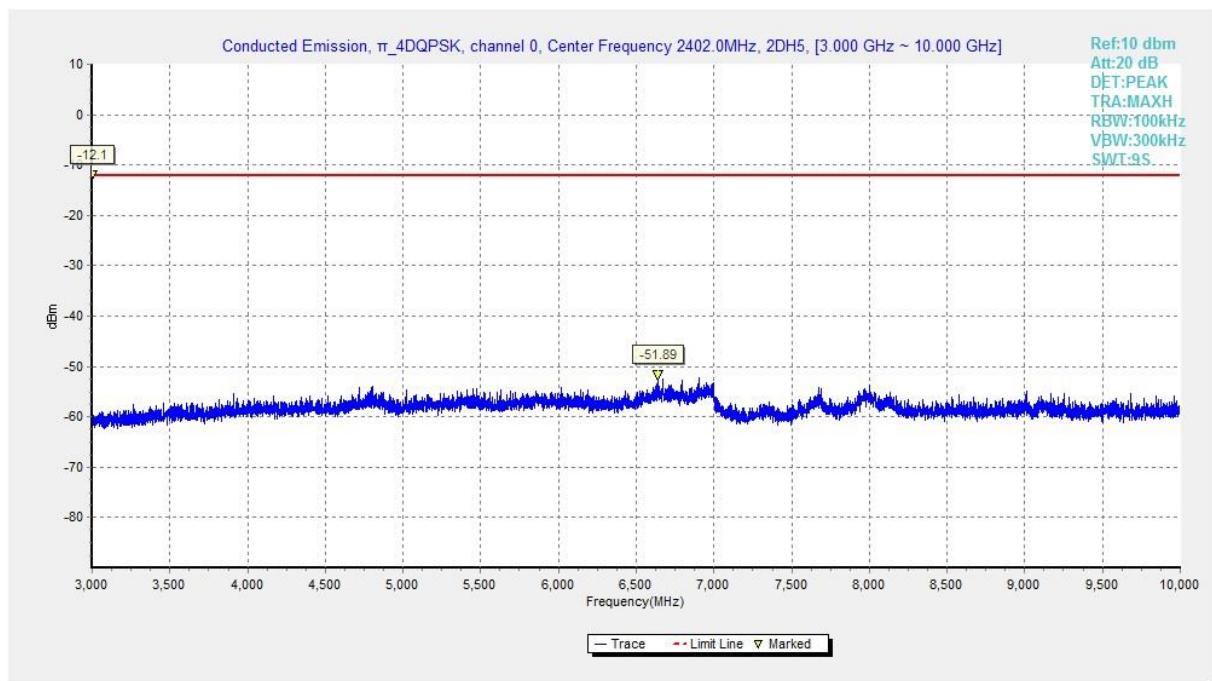
**Fig. 21 Conducted Spurious Emission (GFSK, Ch78, 3GHz-10 GHz)**



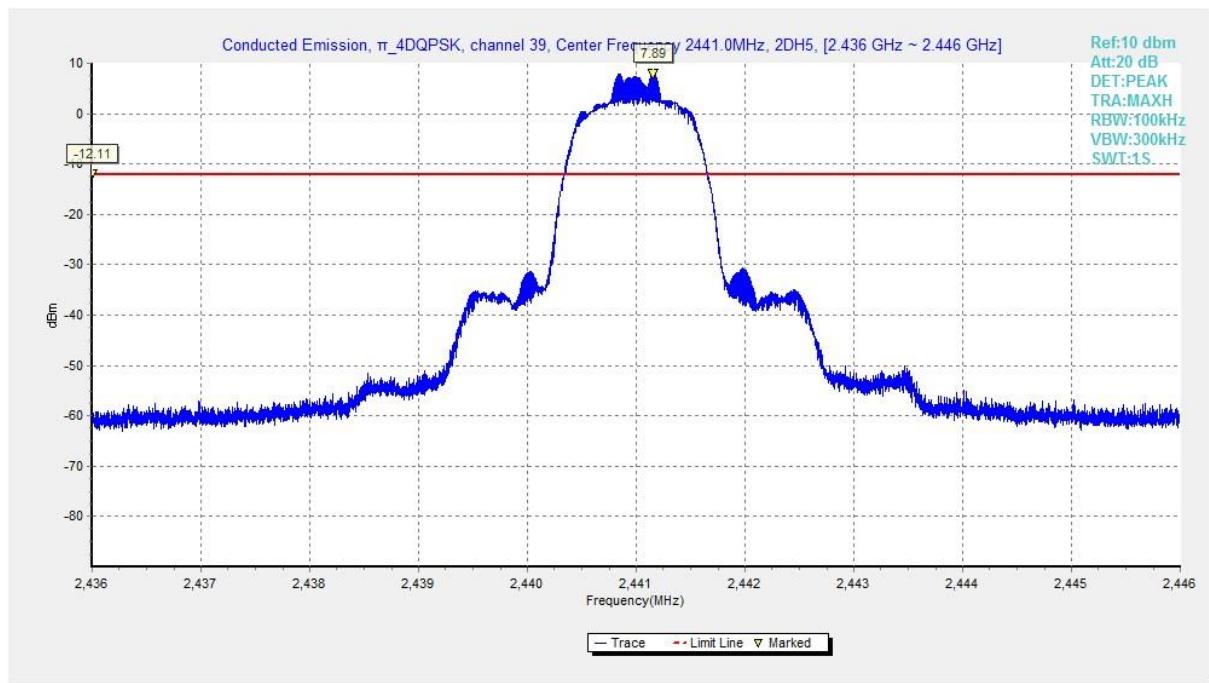
**Fig. 22 Conducted Spurious Emission (  $\pi/4$  DQPSK, Ch0, 2.402GHz)**



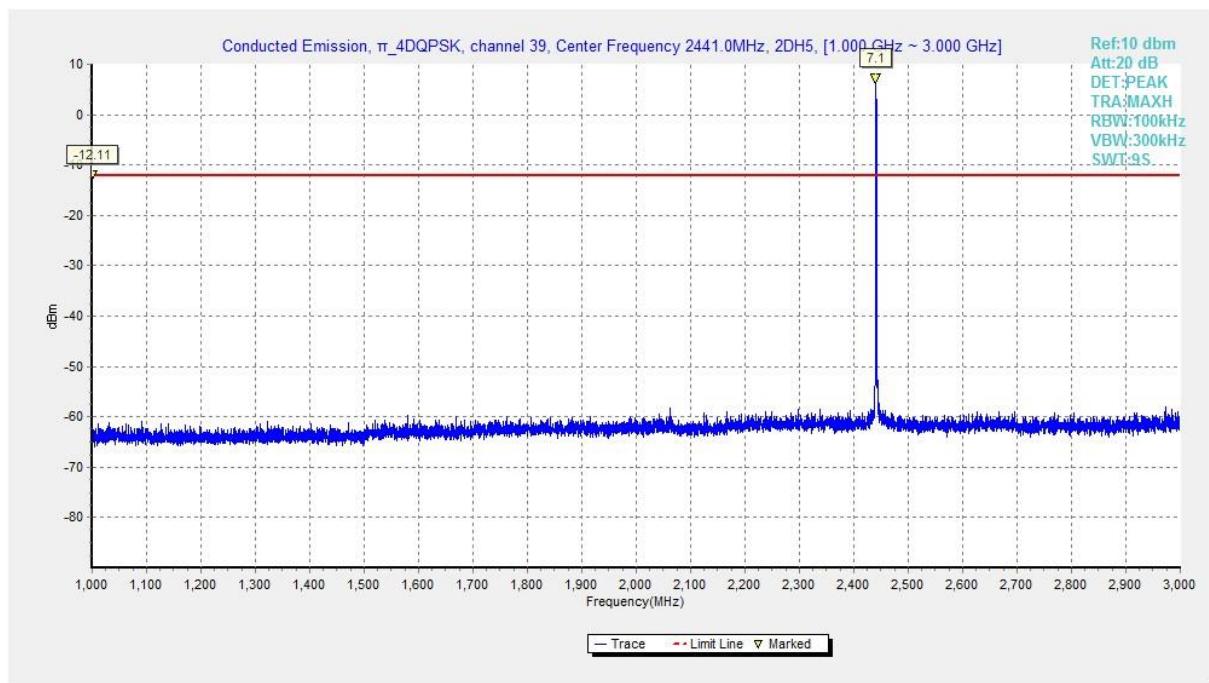
**Fig. 23 Conducted Spurious Emission (  $\pi/4$  DQPSK, Ch0, 1GHz-3 GHz)**



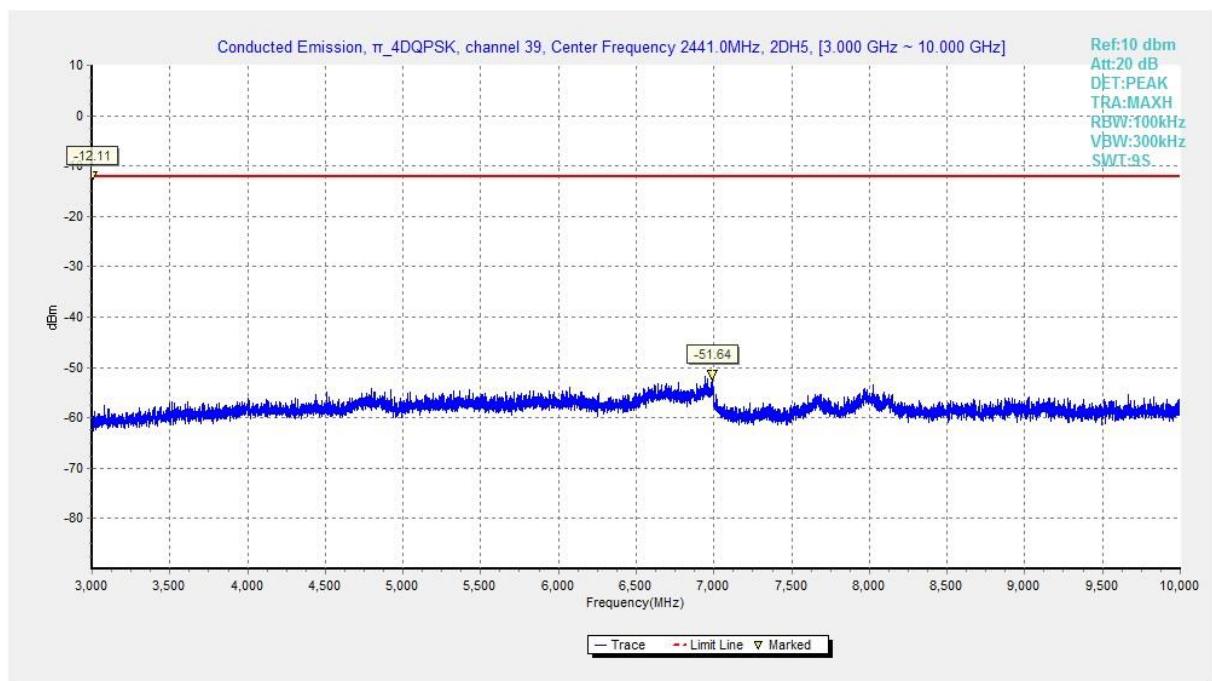
**Fig. 24 Conducted Spurious Emission (  $\pi/4$  DQPSK, Ch0, 3GHz-10 GHz)**



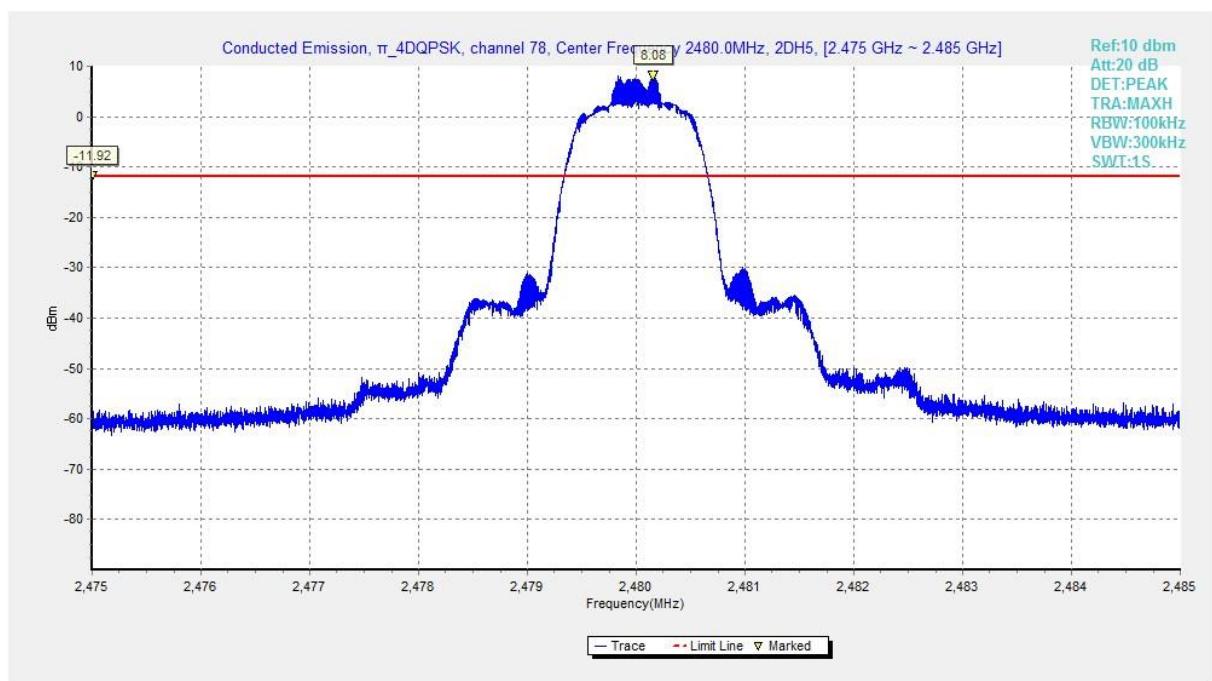
**Fig. 25 Conducted Spurious Emission ( $\pi/4$  DQPSK, Ch39, 2.441GHz)**



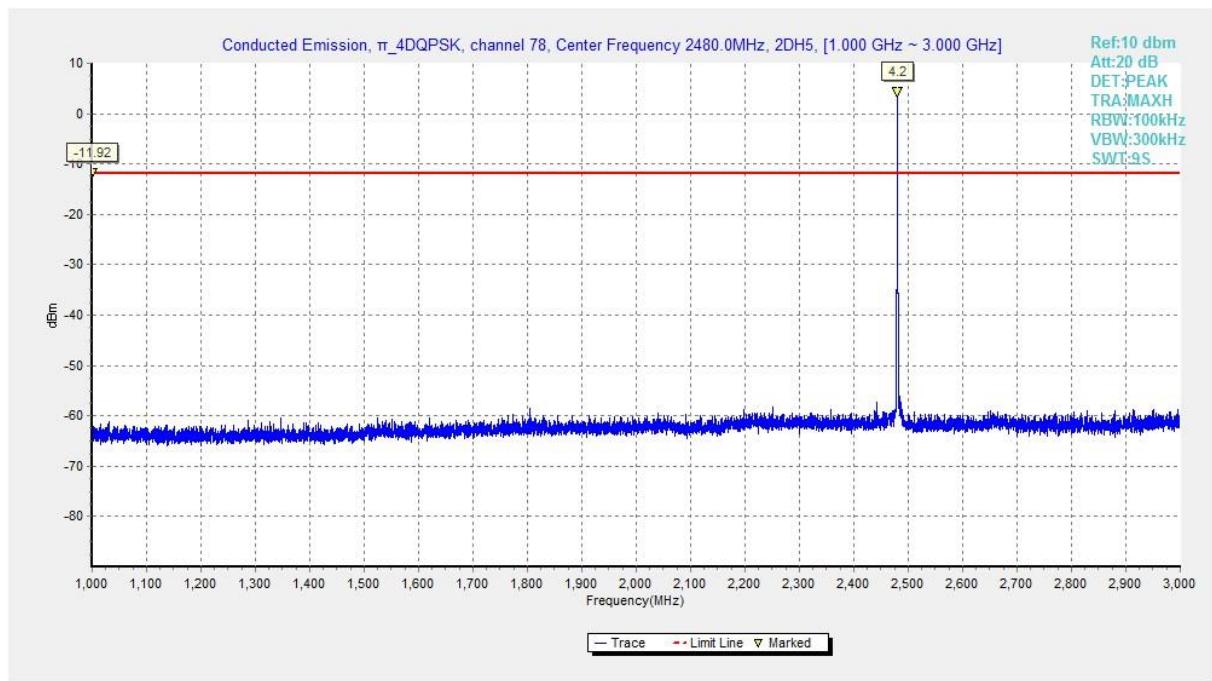
**Fig. 26 Conducted Spurious Emission ( $\pi/4$  DQPSK, Ch39, 1GHz-3 GHz)**



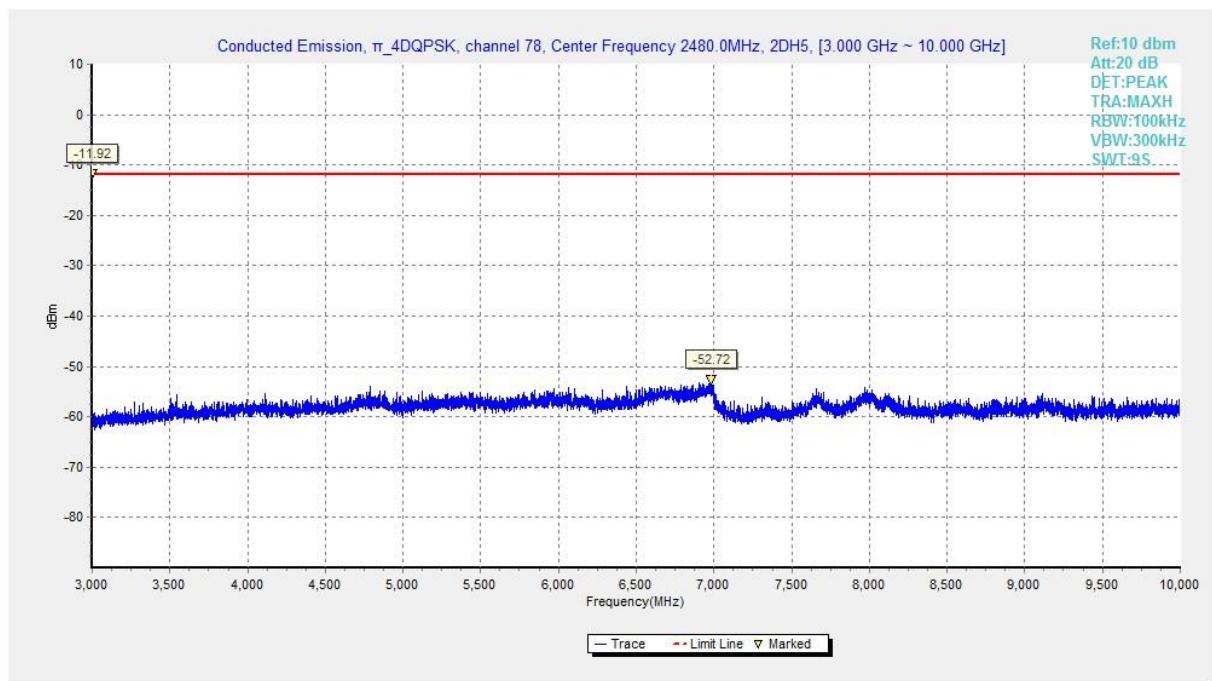
**Fig. 27 Conducted Spurious Emission (  $\pi/4$  DQPSK, Ch39, 3GHz-10 GHz)**



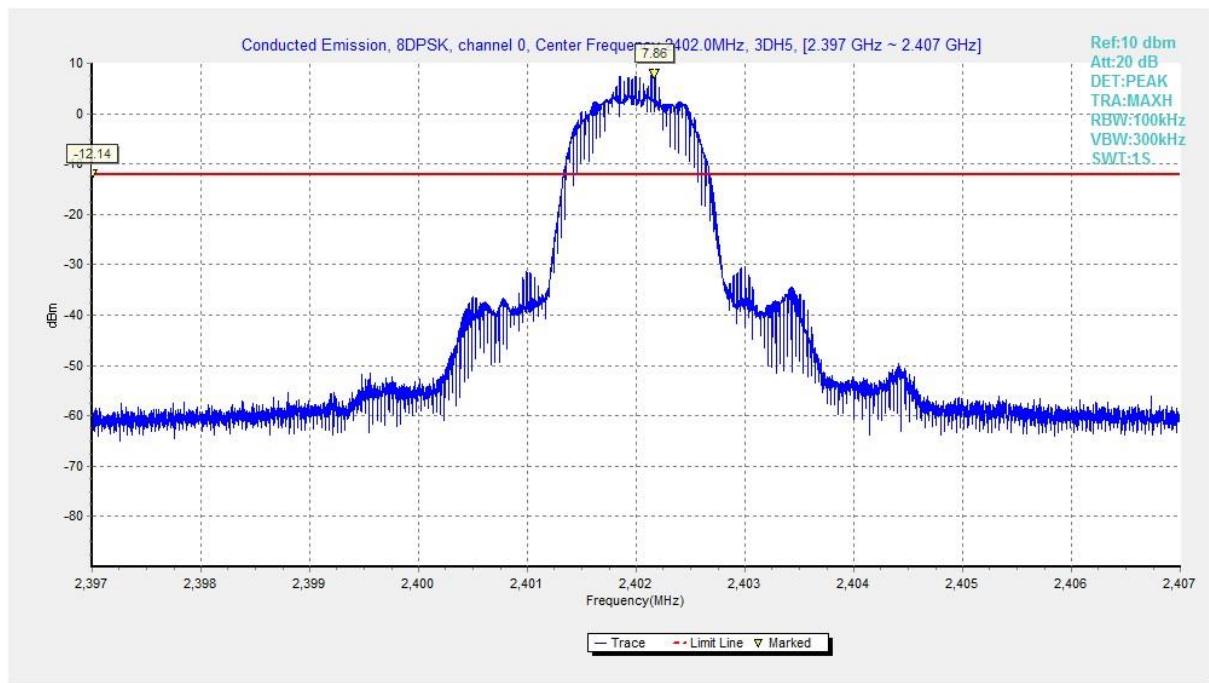
**Fig. 28 Conducted Spurious Emission (  $\pi/4$  DQPSK, Ch78, 2.480GHz)**



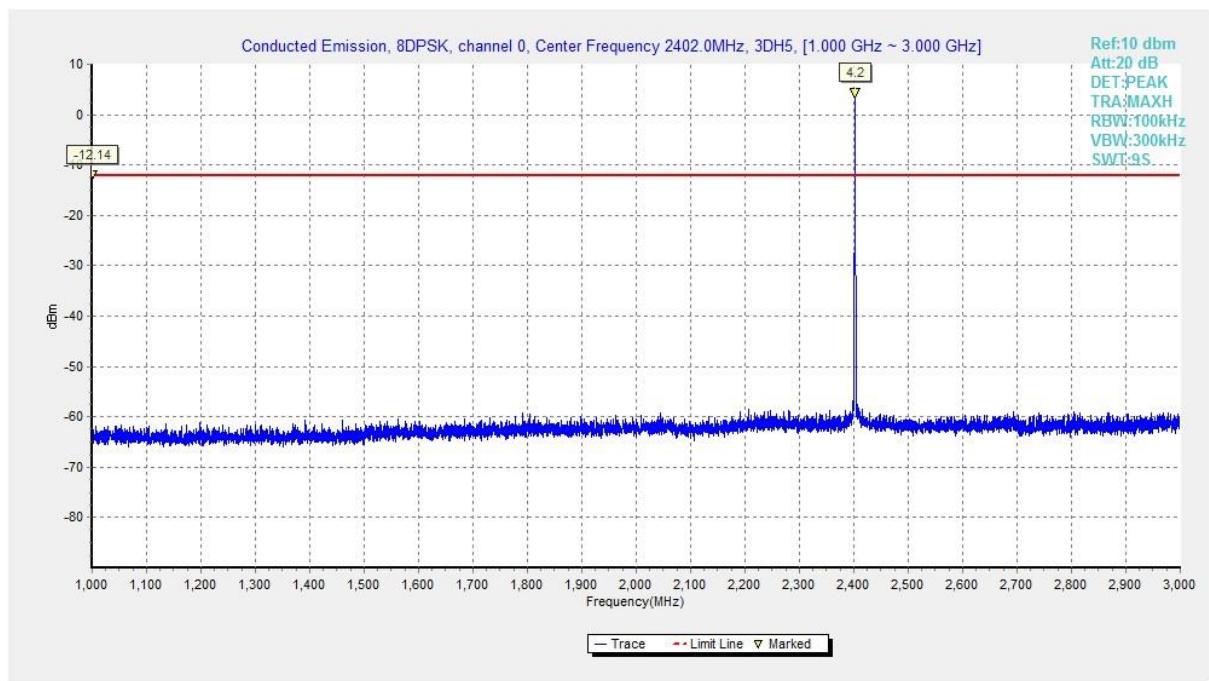
**Fig. 29 Conducted Spurious Emission (  $\pi/4$  DQPSK, Ch78, 1GHz-3 GHz)**



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



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



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