TEST REPORT

No. I20N01974-BT

for

Spectralink Corporation

Mobile Phone

Model Name: VC9240

with

Hardware Version: DVT1

Software Version: V138

FCC ID: IYG9240

IC: 2128B-9240

Issued Date: 2020-09-07

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. www.saict.ac.cn

CONTENTS

CONTENTS **2**

1. SUMMARY OF TEST REPORT **3**

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

2. CLIENT INFORMATION **4**

2.1. APPLICANT INFORMATION 4

2.2. MANUFACTURER INFORMATION 4

3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE) **5**

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

4. REFERENCE DOCUMENTS **7**

4.1. DOCUMENTS SUPPLIED BY APPLICANT 7

4.2. REFERENCE DOCUMENTS FOR TESTING 7

5. TEST RESULTS **8**

5.1. TESTING ENVIRONMENT 8

5.2. TEST RESULTS 8

5.3. STATEMENTS 8

6. TEST EQUIPMENTS UTILIZED **9**

7. LABORATORY ENVIRONMENT **10**

8. MEASUREMENT UNCERTAINTY **11**

ANNEX A: DETAILED TEST RESULTS **12**

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

A.10 OCCUPIED BANDWIDTH 67

©Copyright. All rights reserved by SAICT.

1. Summary of Test Report

1.1. Test Items

Description	Mobile Phone
Model Name	VC9240
Applicant's name	Spectralink Corporation
Manufacturer's Name	Spectralink Corporation

1.2. Test Standards

FCC Part15-2019; ANSI C63.10-2013; RSS-247 Issue 2; RSS-Gen Issue 5 A1

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:	2020-07-22
Testing End Date:	2020-09-04

1.6. Signature

Lin Zechuang

(Prepared this test report)

Tang Weisheng

(Reviewed this test report)

Zhang Bojun

(Approved this test report)

©Copyright. All rights reserved by SAICT.

2. Client Information

2.1. Applicant Information

Company Name:	Spectralink Corporation
Address:	2560 55th Street, Boulder CO 80301, USA
Contact Person	Paul Hampton
E-Mail	Paul.Hampton@spectralink.com
Telephone:	+1303-441-7593
Fax:	/

2.2. Manufacturer Information

Company Name:	Spectralink Corporation
Address:	2560 55th Street, Boulder CO 80301, USA
Contact Person	Paul Hampton
E-Mail	Paul.Hampton@spectralink.com
Telephone:	+1303-441-7593
Fax:	/

©Copyright. All rights reserved by SAICT.

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

3.1. About EUT

Description	Mobile Phone
Model Name	VC9240
Brand Name	Spectralink
Frequency Band	2400MHz~2483.5MHz
Type of Modulation	GFSK/ π /4 DQPSK/8DPSK
Number of Channels	79
Antenna Type	Integrated
Antenna Gain	1.5dBi
Power Supply	3.85V DC by Battery
FCC ID	IYG9240
IC	2128B-9240
Condition of EUT as received	No abnormality in appearance

Note1: According to the customer's description, VC9240 is a variant of VC9253. The differences between them are as follows.

Different rear cover and antenna frame. The VC9253 with scanner lens while the VC9240 without scanner lens, and their software is different because the VC9240 without driver code of scanner. Their Antenna is different, and the antenna gain of VC9240 is 1.5dBi while the antenna gain of VC9253 is 1.6dBi.

The conduction test data has been adjusted and the radiation test has been retested. The initial model report number is I20N01960-BT.

Note2: 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*	SN or IMEI	HW Version	SW Version	Receive Date
UT07aa	velc02bdcjd000t	DVT1	V138	2020-07-20
UT01aa	velc02bdcjd0020	DVT1	V138	2020-07-22
UT02aa	velc02bdcjd0058	DVT1	V138	2020-07-22

*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	/
AE3	Data Cable	/

AE1

Model	BLI9200100

©Copyright. All rights reserved by SAICT.

Manufacturer	Ningbo Veken Battery Co., Ltd.
Capacity	3040mAh
Nominal Voltage	3.85V
AE2	
Model	IN-CA-310Q
Manufacturer	INNO VISION INTERNATIONAL HOLDINGS LTD.
AE3	
Model	XG-US008
Manufacturer	Xunguang 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 and USB Cable.
Manual and specifications of the EUT were provided to fulfil the test.
Samples undergoing test were selected by the client.

©Copyright. All rights reserved by SAICT.

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
RSS-247	Spectrum Management and Telecommunications Radio Standards Specification Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and License-Exempt Local Area Network (LE-LAN) Devices	Issue 2 February, 2017
RSS-Gen	Spectrum Management and Telecommunications Radio Standards Specification General Requirements for Compliance of Radio Apparatus	Issue 5 March,2019 Amendment 1

©Copyright. All rights reserved by SAICT.

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	Sub-clause of IC	Verdict
0	Antenna Requirement	15.203	/	**P**
1	Maximum Peak Output Power	15.247 (b)	RSS-247 section 5.4	**P**
2	Band Edges Compliance	15.247 (d)	RSS-247 section 5.1	**P**
3	Conducted Spurious Emission	15.247 (d)	RSS-247 section 5.5/ RSS-Gen section 6.13	**P**
4	Radiated Spurious Emission	15.247,15.205,15.209	RSS-247 section 5.5/ RSS-Gen section 6.13	**P**
5	Occupied 20dB bandwidth	15.247(a)	RSS-247 section 5.1	**/**
6	Time of Occupancy (Dwell Time)	15.247(a)	RSS-247 section 5.1	**P**
7	Number of Hopping Channel	15.247(a)	RSS-247 section 5.1	**P**
8	Carrier Frequency Separation	15.247(a)	RSS-247 section 5.1	**P**
9	AC Power line Conducted Emission	15.107,15.207	RSS-Gen section 8.8	**P**
10	Occupied Bandwidth	/	RSS-Gen section 6.7	**/**

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.

©Copyright. All rights reserved by SAICT.

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	2021-08-09	1 year
4	LISN	ENV216	102067	Rohde & Schwarz	2021-07-16	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	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

©Copyright. All rights reserved by SAICT.

7. Laboratory Environment

Semi-anechoic chambe

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

©Copyright. All rights reserved by SAICT.

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	30MHz≤f≤1GHz	1.41dB
	1GHz≤f≤7GHz	1.92dB
	7GHz≤f≤13GHz	2.31dB
	13GHz≤f≤26GHz	2.61dB
5. Transmitter Spurious Emission - Radiated	9kHz≤f≤30MHz	1.70dB
	30MHz≤f≤1GHz	4.90dB
	1GHz≤f≤18GHz	4.60dB
	18GHz≤f≤40GHz	4.10dB
6. AC Power line Conducted Emission	150kHz≤f≤30MHz	3.00dB

©Copyright. All rights reserved by SAICT.

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 1.5dBi.
The RF transmitter uses an integrate antenna without connector.

©Copyright. All rights reserved by SAICT.

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)	E.I.R.P Limit (dBm)
FCC CRF Part 15.247(b)(1) & RSS-247 Section 5.4	< 30	< 36

Measurement Results:

Mode	Peak Conducted Output Power (dBm)		
	2402MHz (Ch0)	2441MHz (Ch39)	2480MHz (Ch78)
GFSK	8.34	8.94	8.10
π /4 DQPSK	7.13	7.80	6.95
8DPSK	7.49	7.99	7.08

The E.I.R.P Results are listed below:

Mode	E.I.R.P (dBm)		
	2402MHz (Ch0)	2441MHz (Ch39)	2480MHz (Ch78)
GFSK	9.84	10.44	9.60
π /4 DQPSK	8.63	9.30	8.45
8DPSK	8.99	9.49	8.58

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

Conclusion: Pass

©Copyright. All rights reserved by SAICT.

A.2 Band Edges Compliance

Measurement Limit:

Standard	Limit (dB)
FCC 47 CFR Part 15.247 (d) & RSS-247 Section 5.1	> 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

©Copyright. All rights reserved by SAICT.

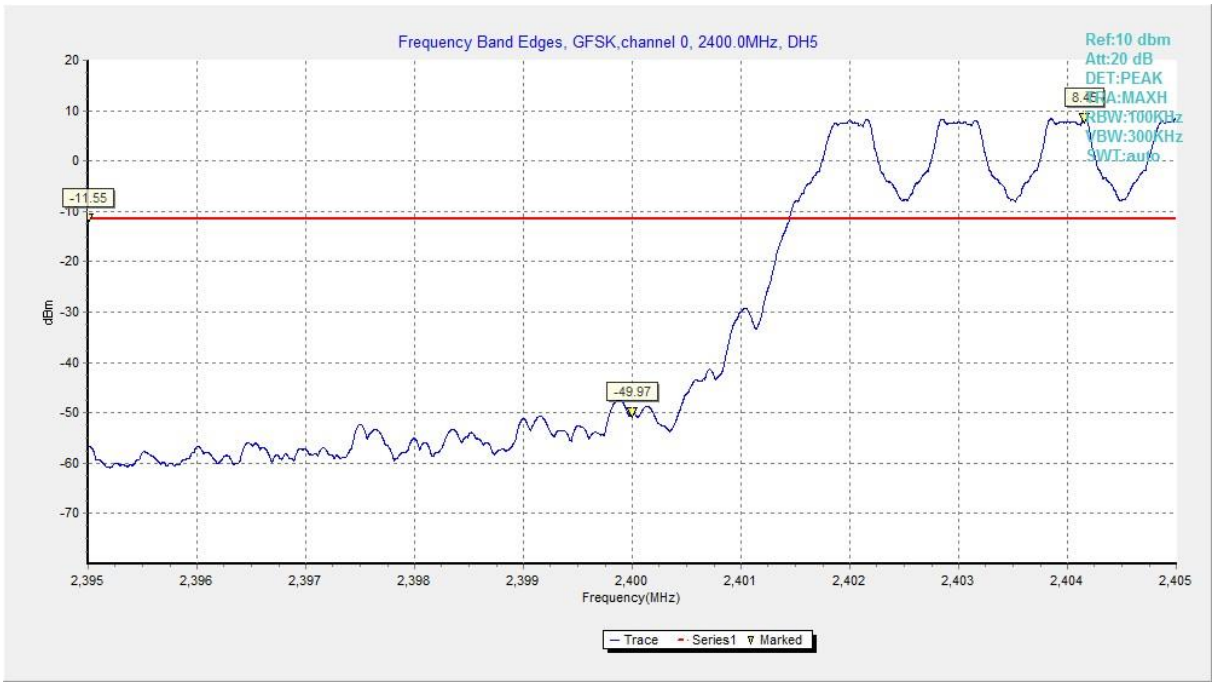

Fig. 1 Band Edges (GFSK, Ch 0, Hopping ON)

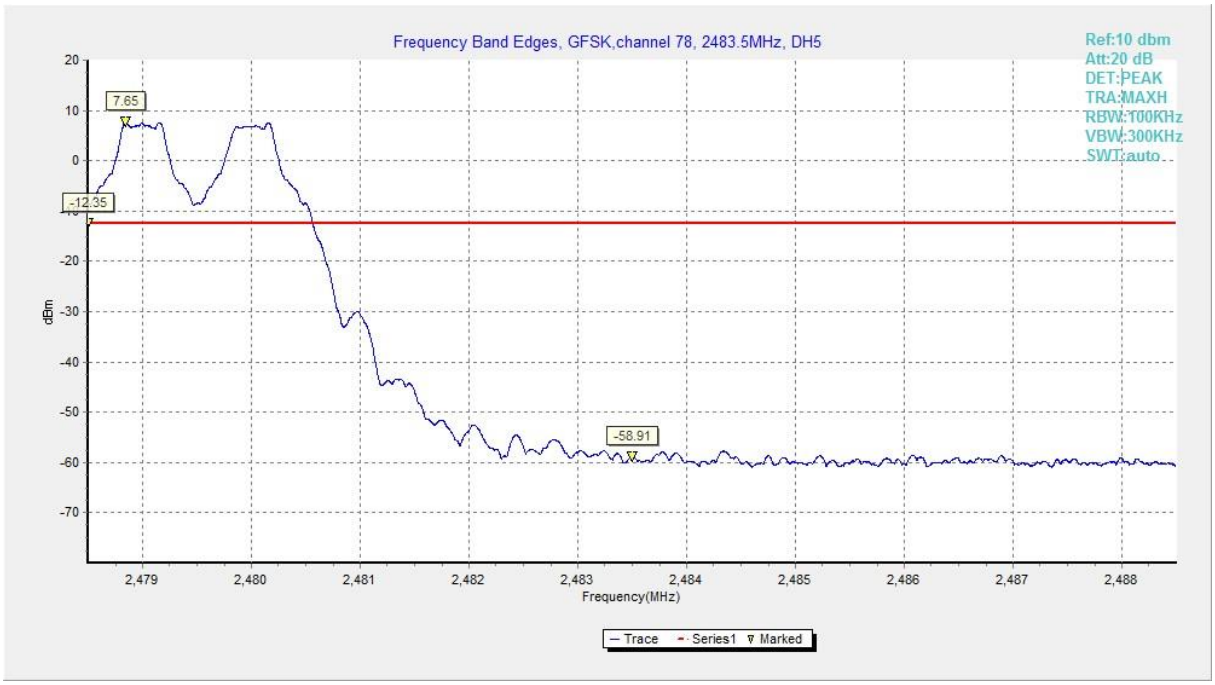

Fig. 2 Band Edges (GFSK, Ch 78, Hopping ON)

©Copyright. All rights reserved by SAICT.

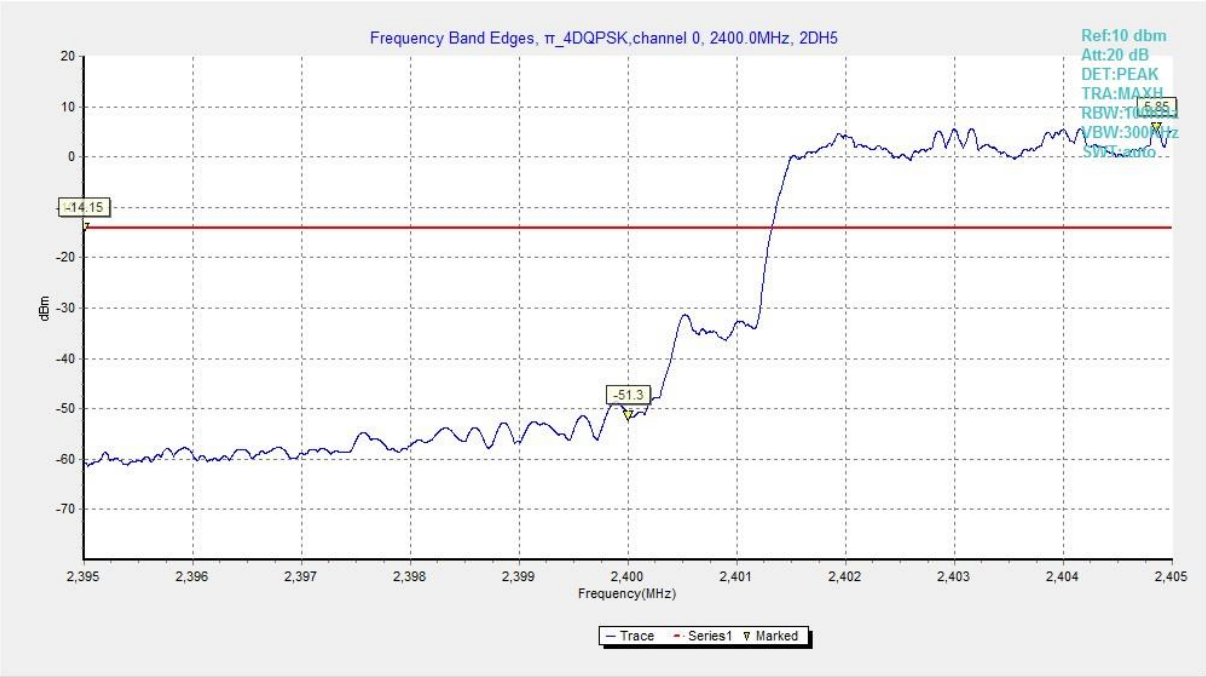

Fig. 3 Band Edges (π /4 DQPSK, Ch 0, Hopping ON)

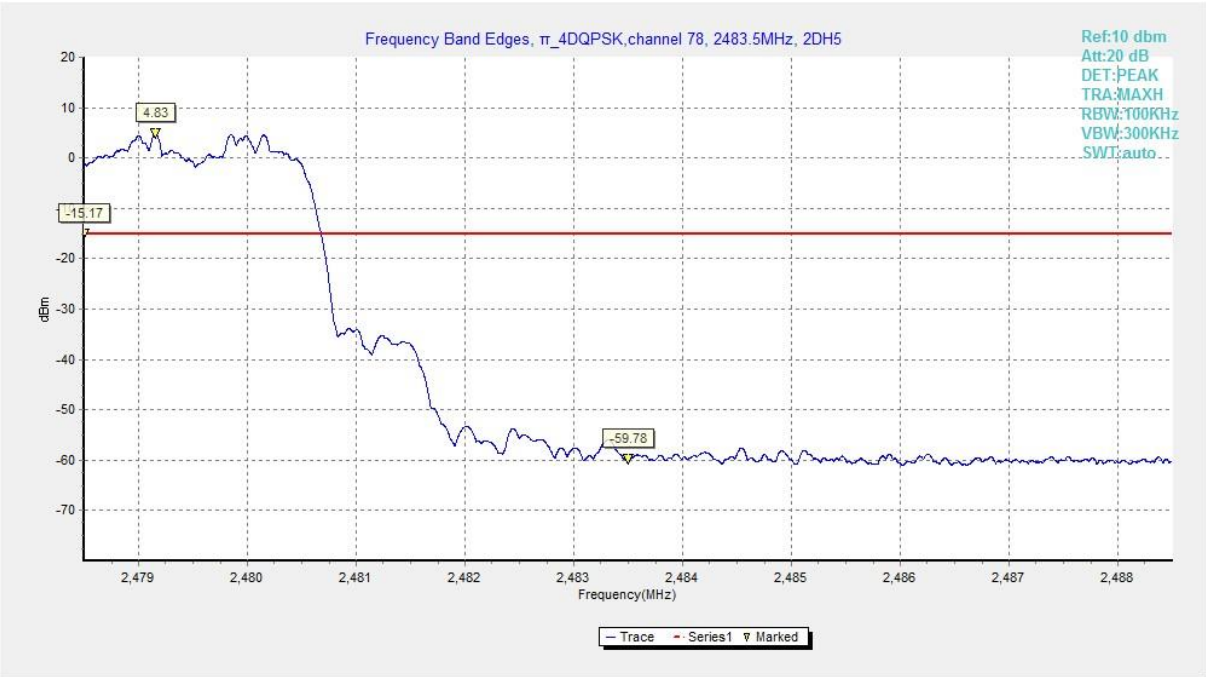

Fig. 4 Band Edges (π /4 DQPSK, Ch 78, Hopping ON)

©Copyright. All rights reserved by SAICT.

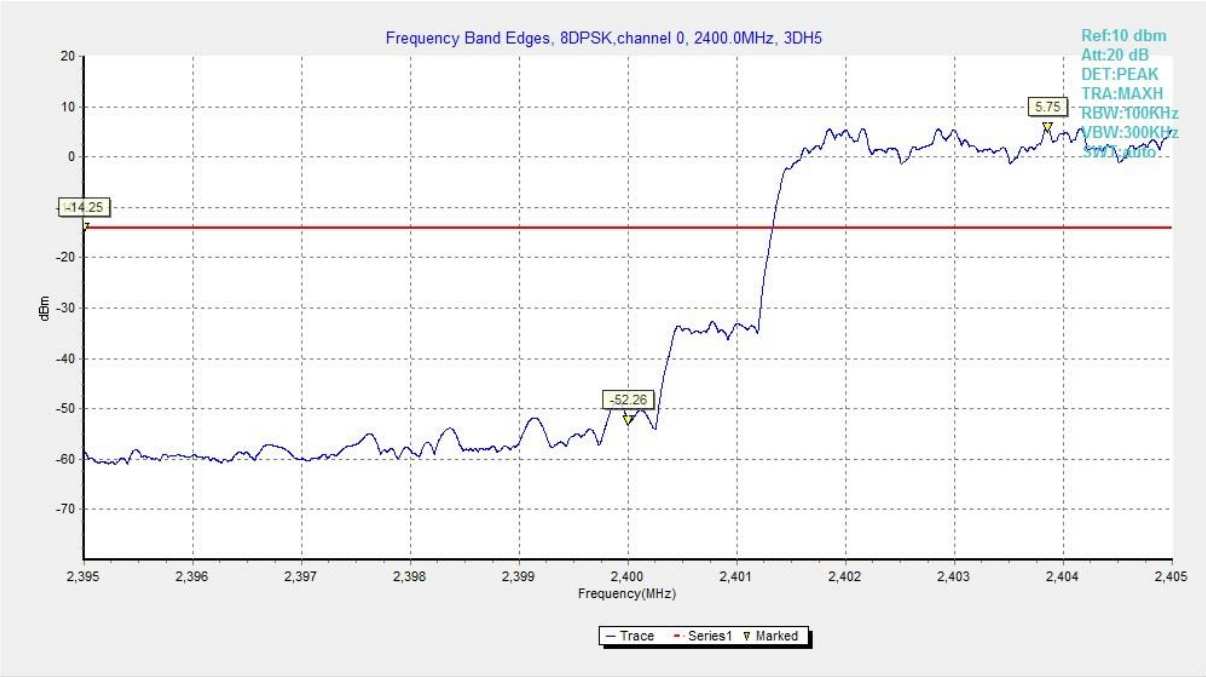

Fig. 5 Band Edges (8DPSK, Ch 0, Hopping ON)

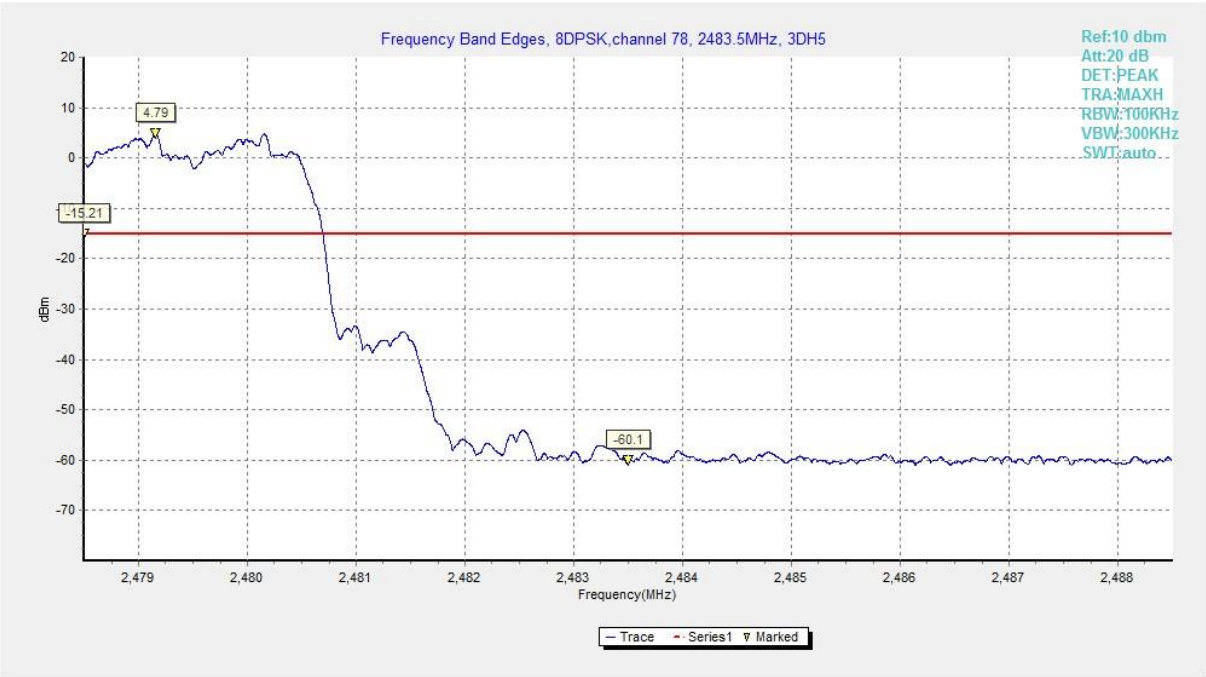

Fig. 6 Band Edges (8DPSK, Ch 78, Hopping ON)

©Copyright. All rights reserved by SAICT.

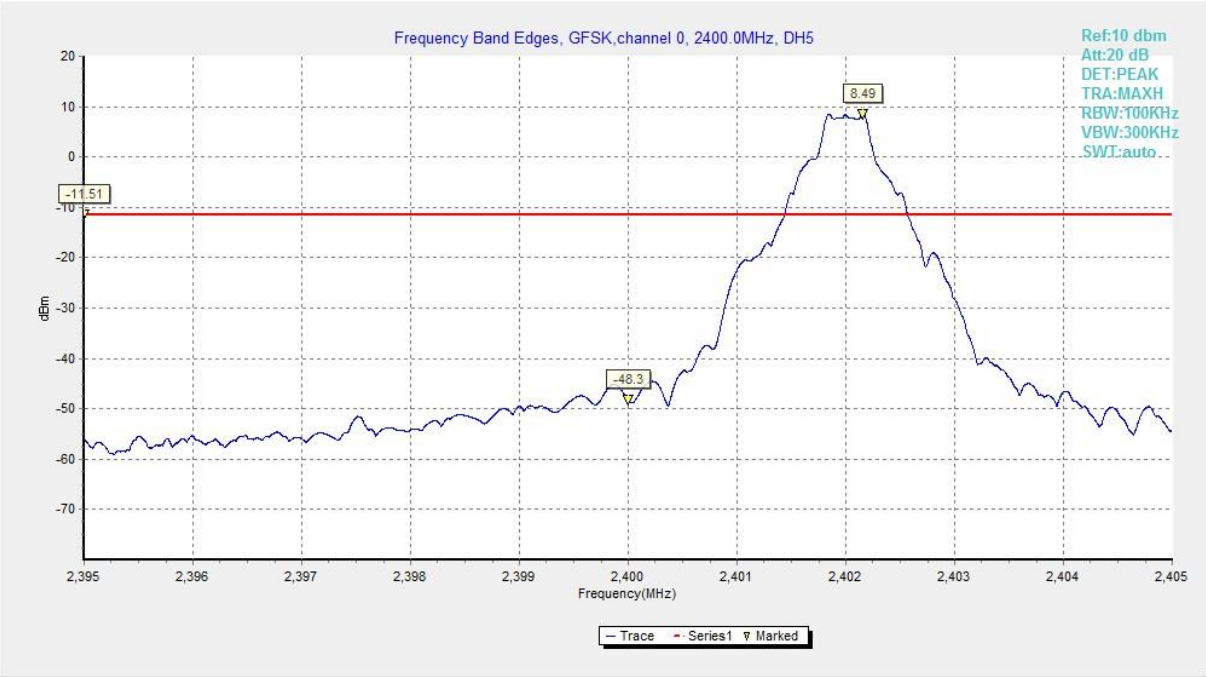

Fig. 7 Band Edges (GFSK, Ch 0, Hopping OFF)

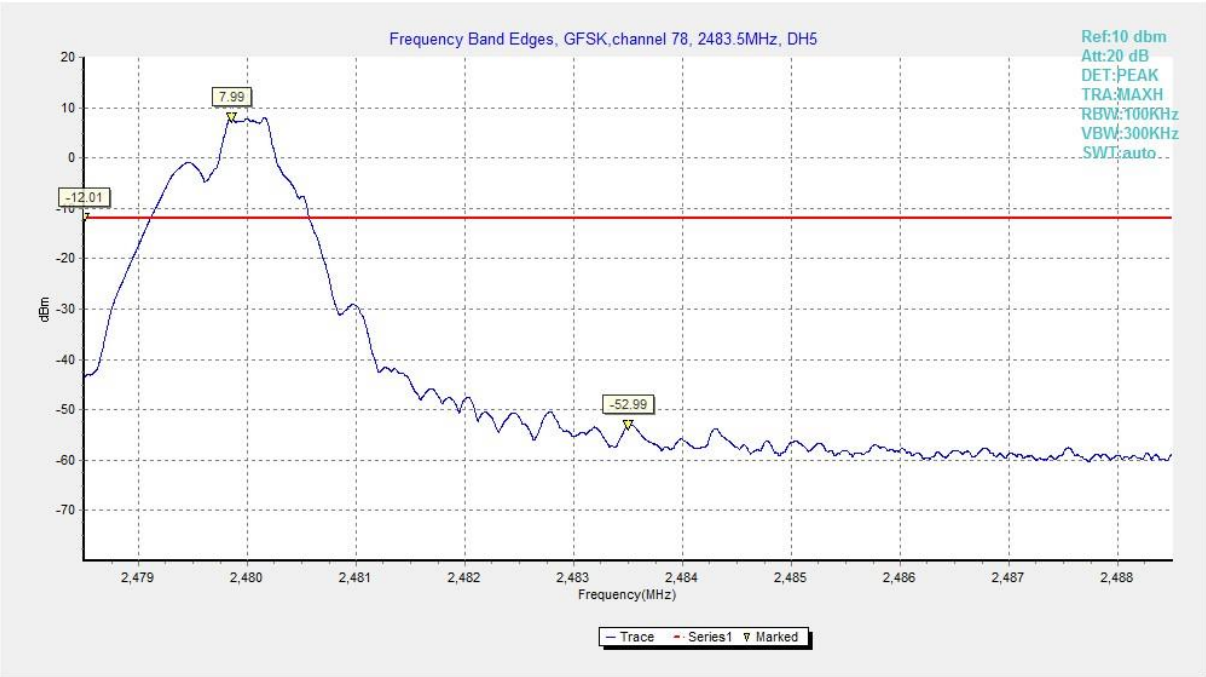

Fig. 8 Band Edges (GFSK, Ch 78, Hopping OFF)

©Copyright. All rights reserved by SAICT.

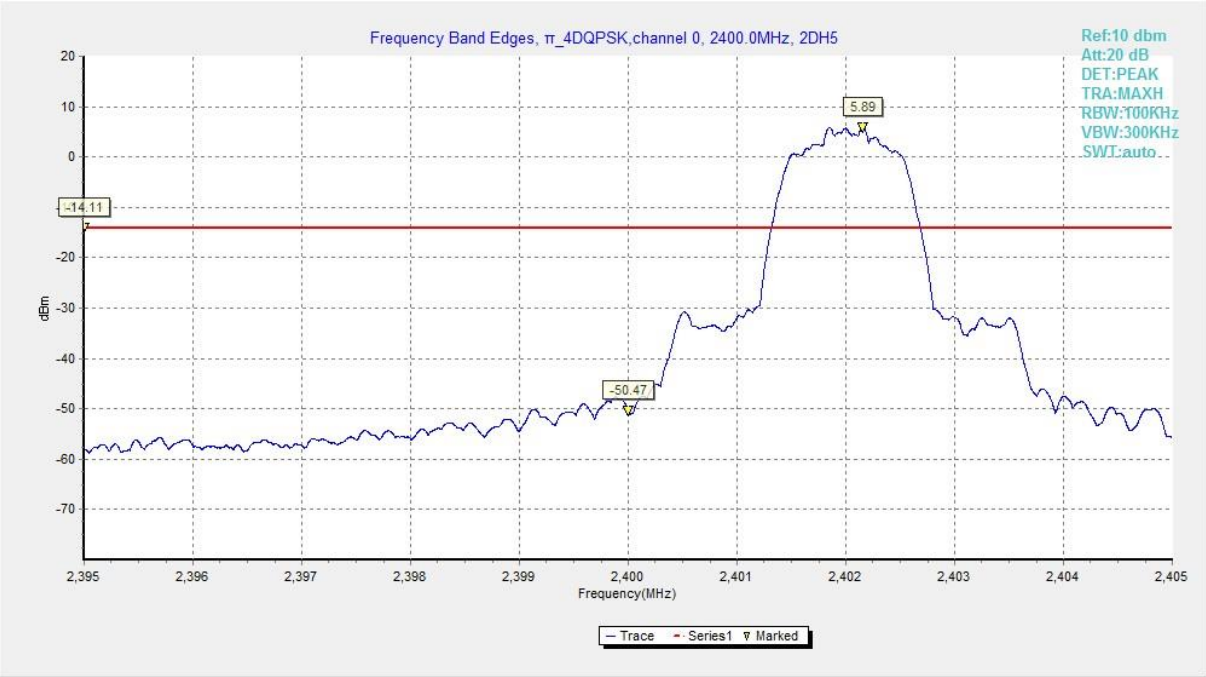

Fig. 9 Band Edges (π /4 DQPSK, Ch 0, Hopping OFF)

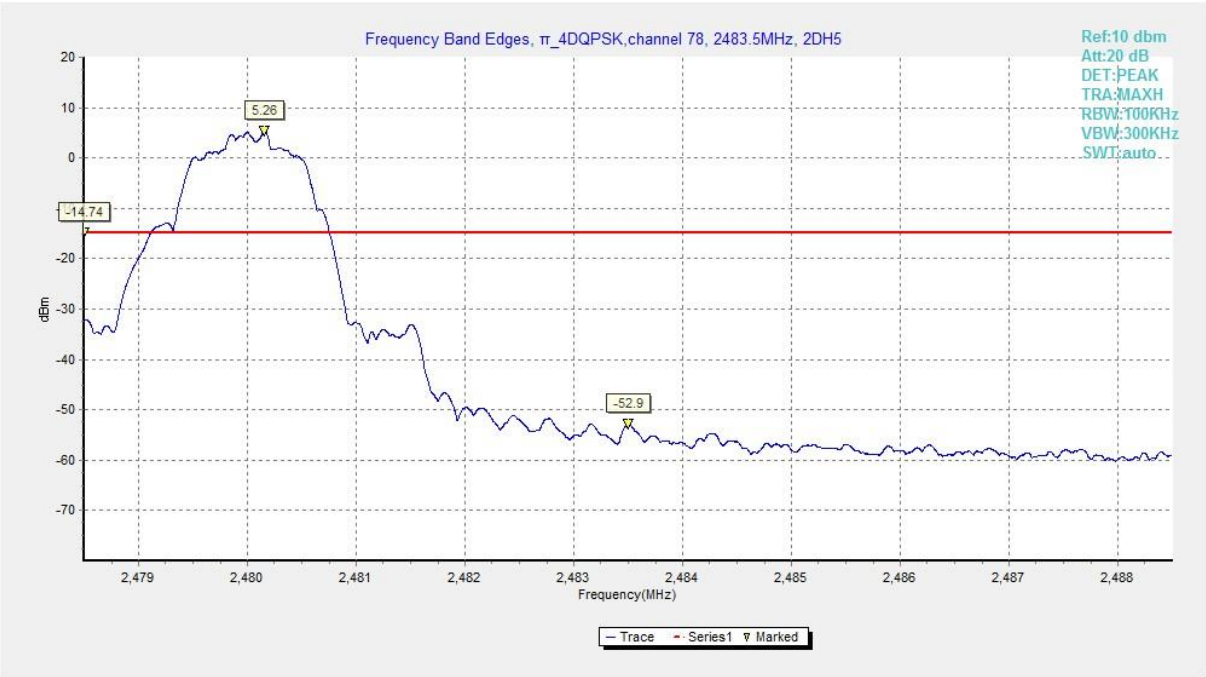

Fig. 10 Band Edges (π /4 DQPSK, Ch 78, Hopping OFF)

©Copyright. All rights reserved by SAICT.

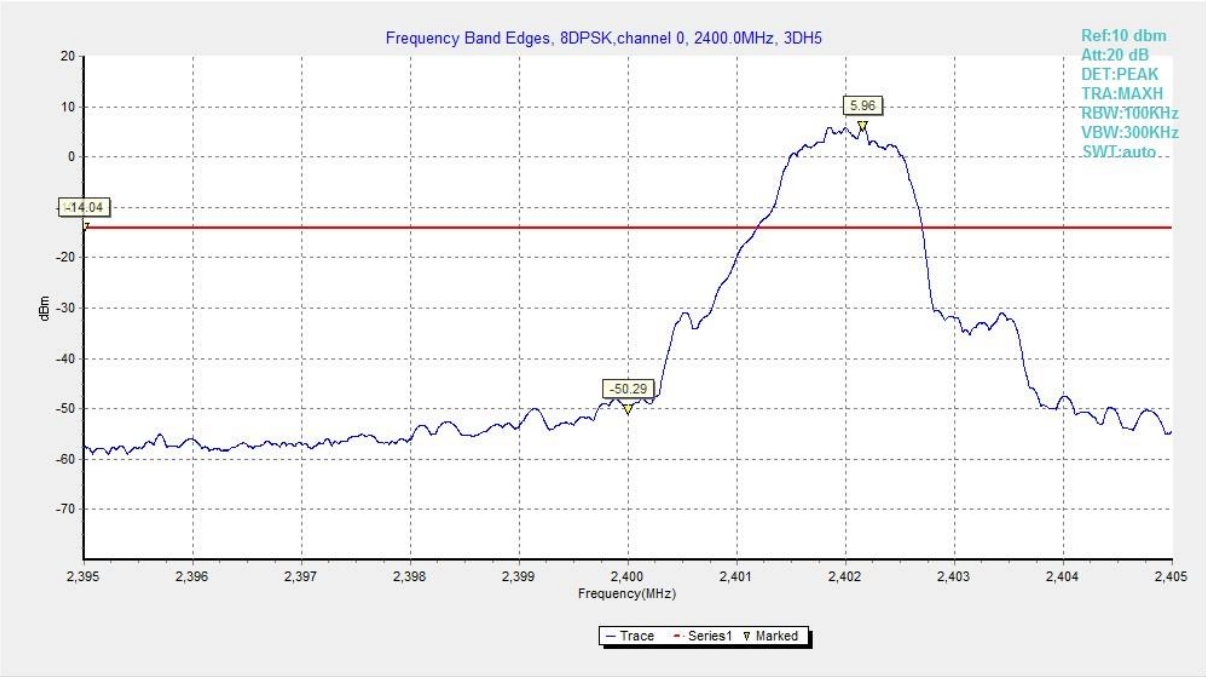

Fig. 11 Band Edges (8DPSK, Ch 0, Hopping OFF)

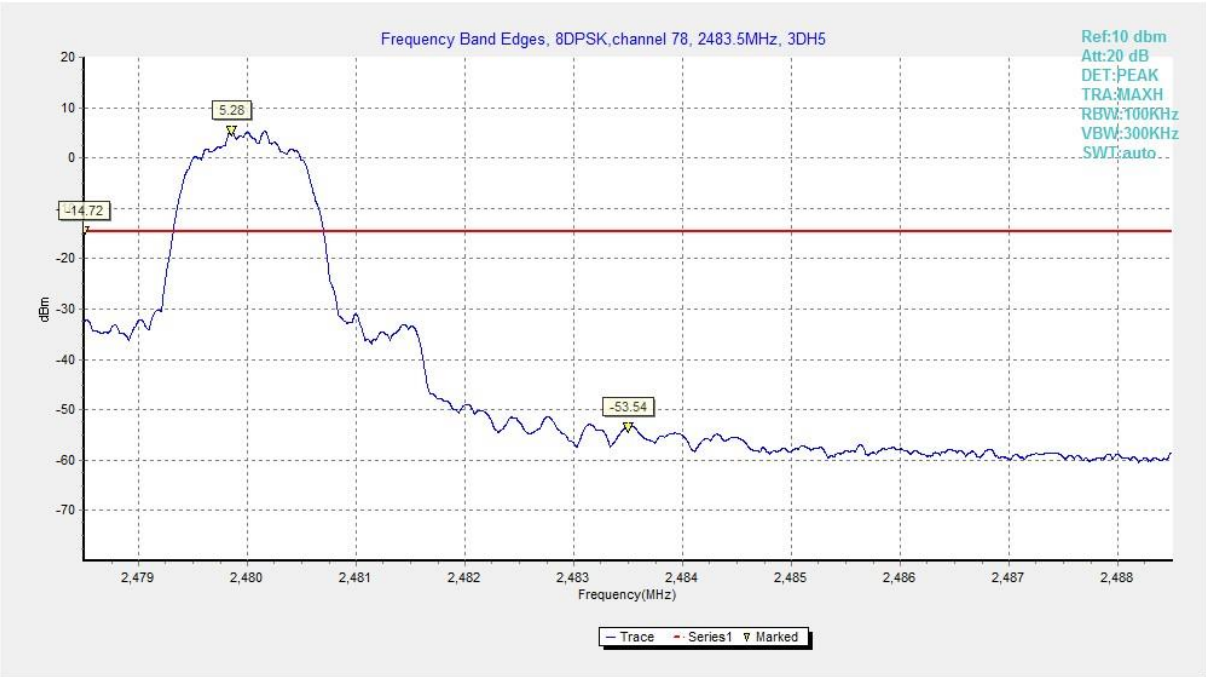

Fig. 12 Band Edges (8DPSK, Ch 78, Hopping OFF)

©Copyright. All rights reserved by SAICT.

A.3 Conducted Emission

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247 (d) & RSS-247 section 5.5/RSS-Gen section 6.13	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

©Copyright. All rights reserved by SAICT.

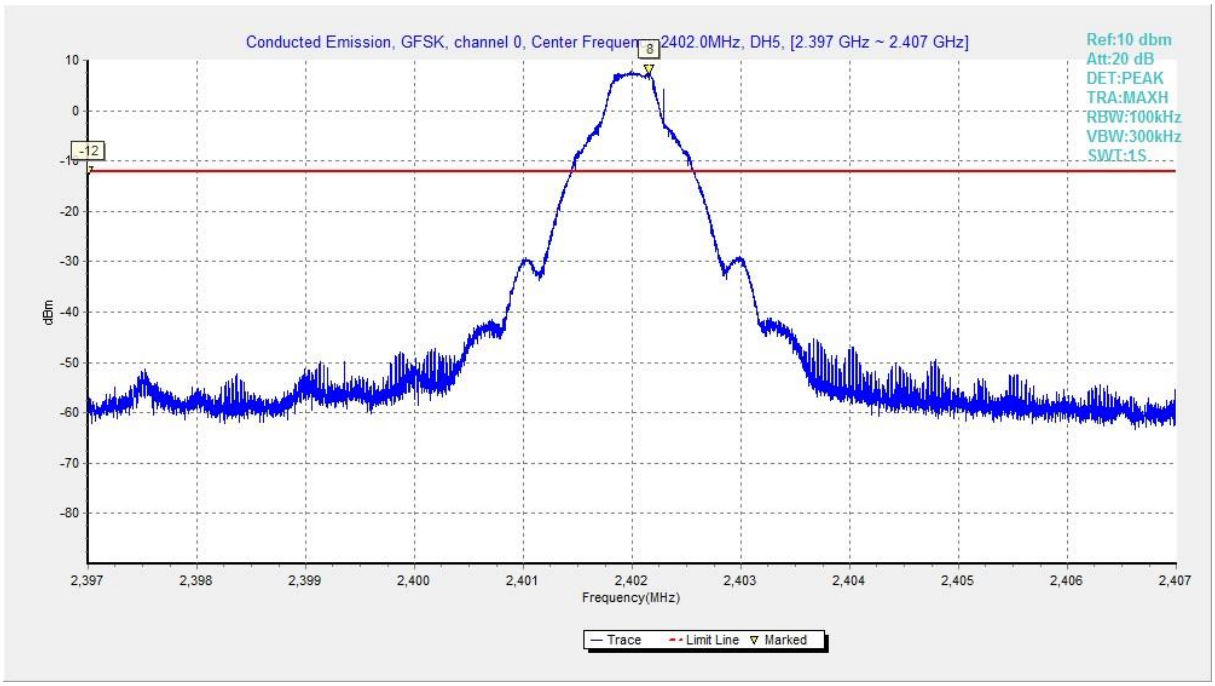

Fig. 13 Conducted Spurious Emission (GFSK, Ch0, 2.402GHz)

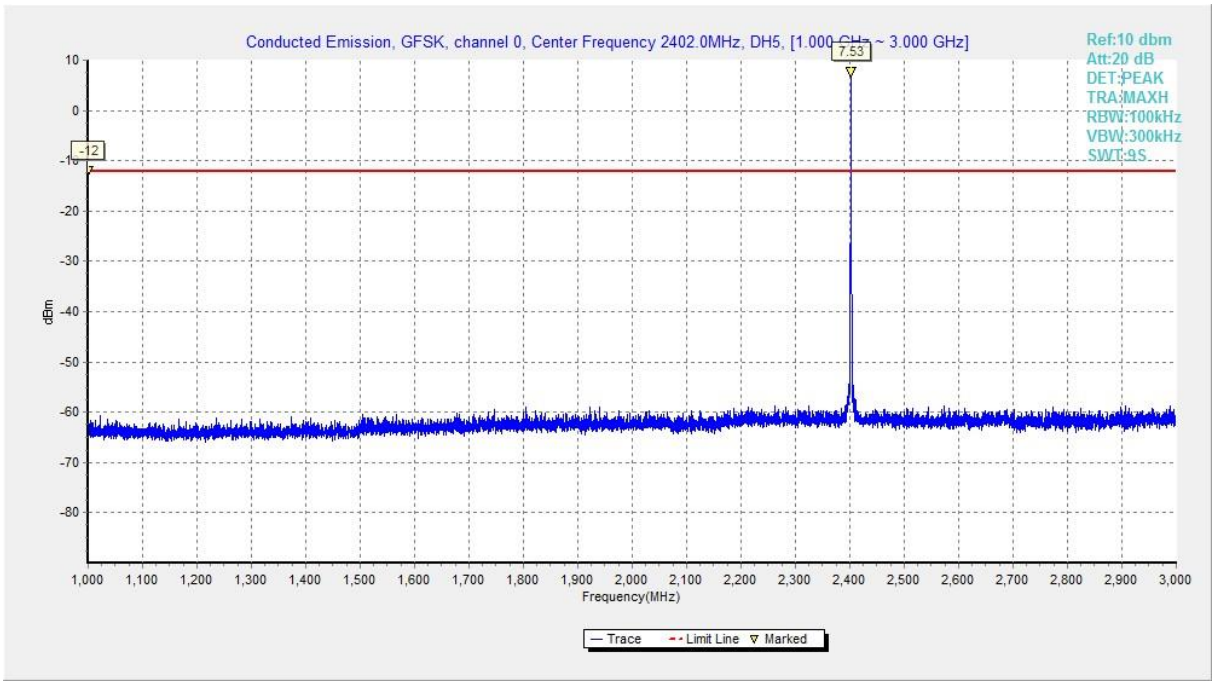

Fig. 14 Conducted Spurious Emission (GFSK, Ch0, 1 GHz-3 GHz)

©Copyright. All rights reserved by SAICT.

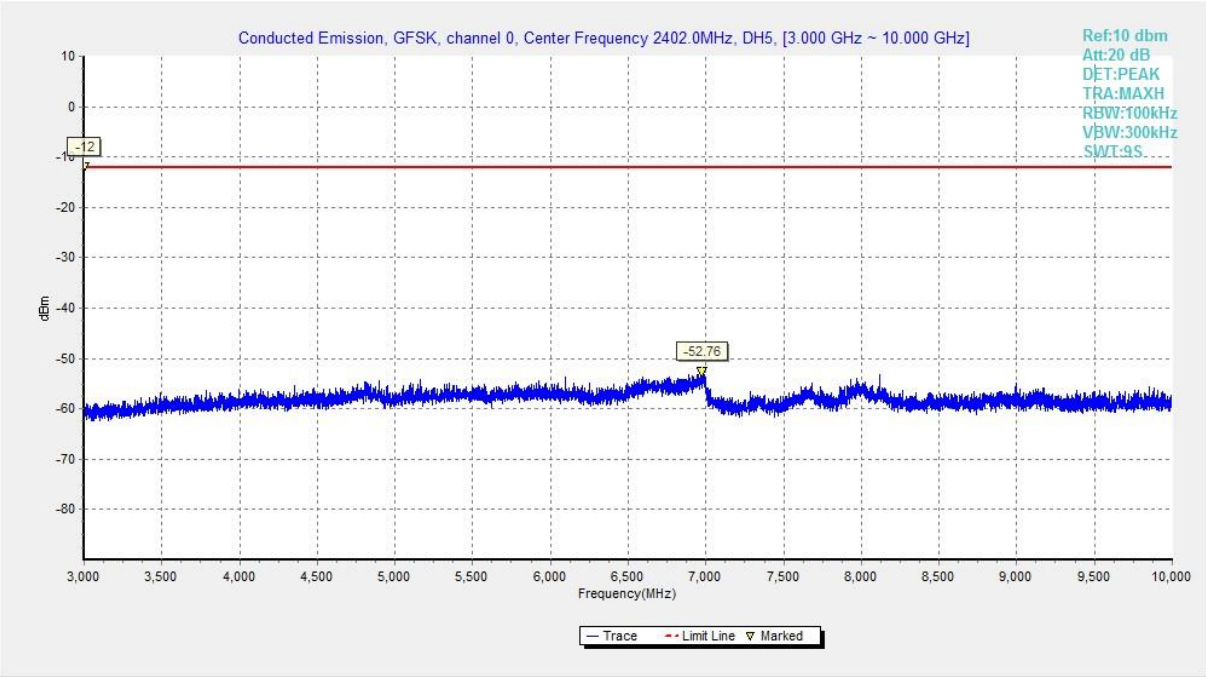

Fig. 15 Conducted Spurious Emission (GFSK, Ch0, 3GHz-10 GHz)

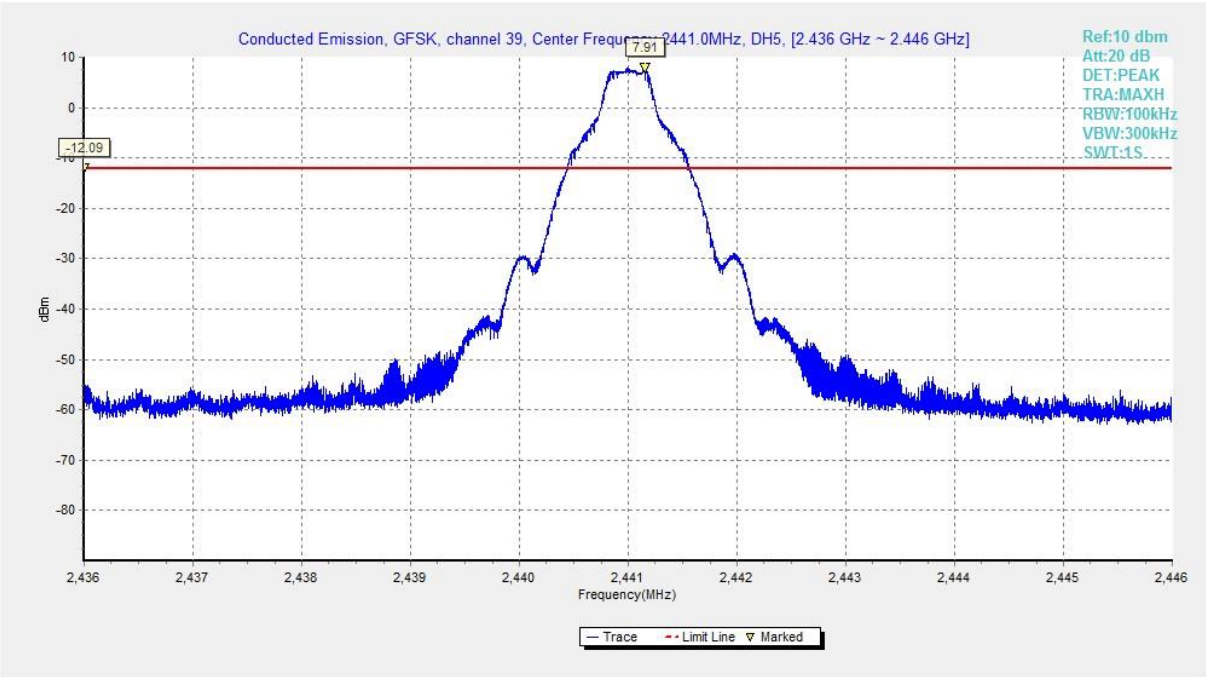

Fig. 16 Conducted Spurious Emission (GFSK, Ch39, 2.441GHz)

©Copyright. All rights reserved by SAICT.

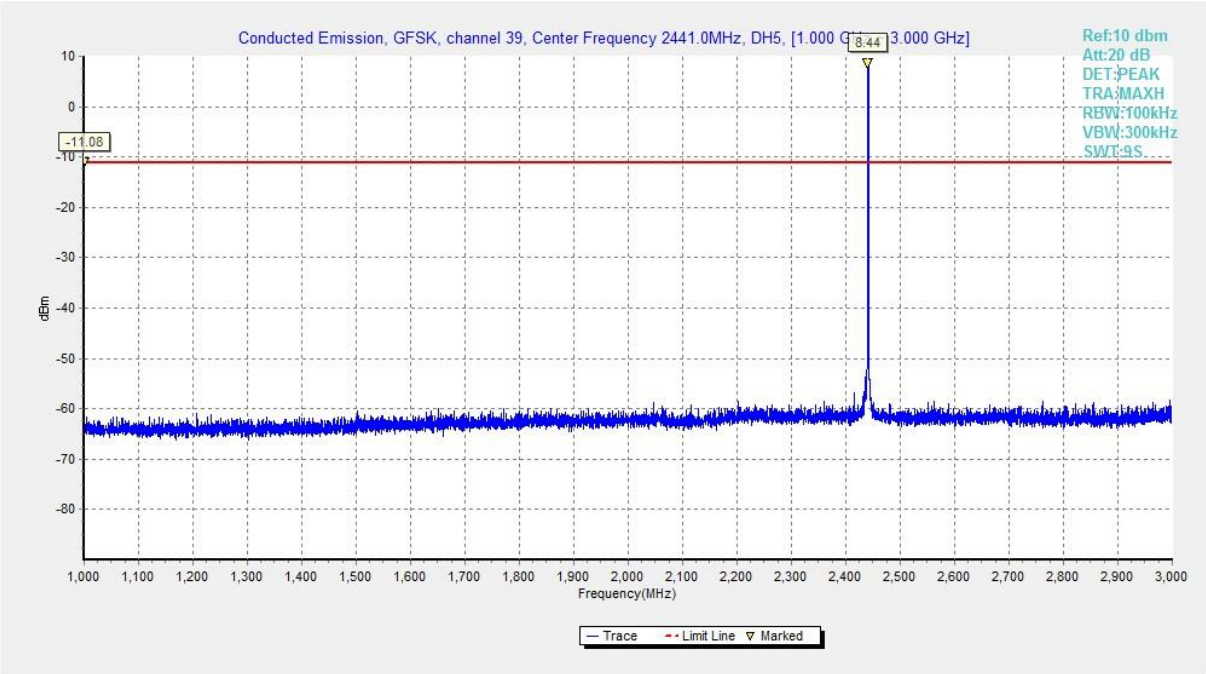

Fig. 17 Conducted Spurious Emission (GFSK, Ch39, 1GHz-3 GHz)

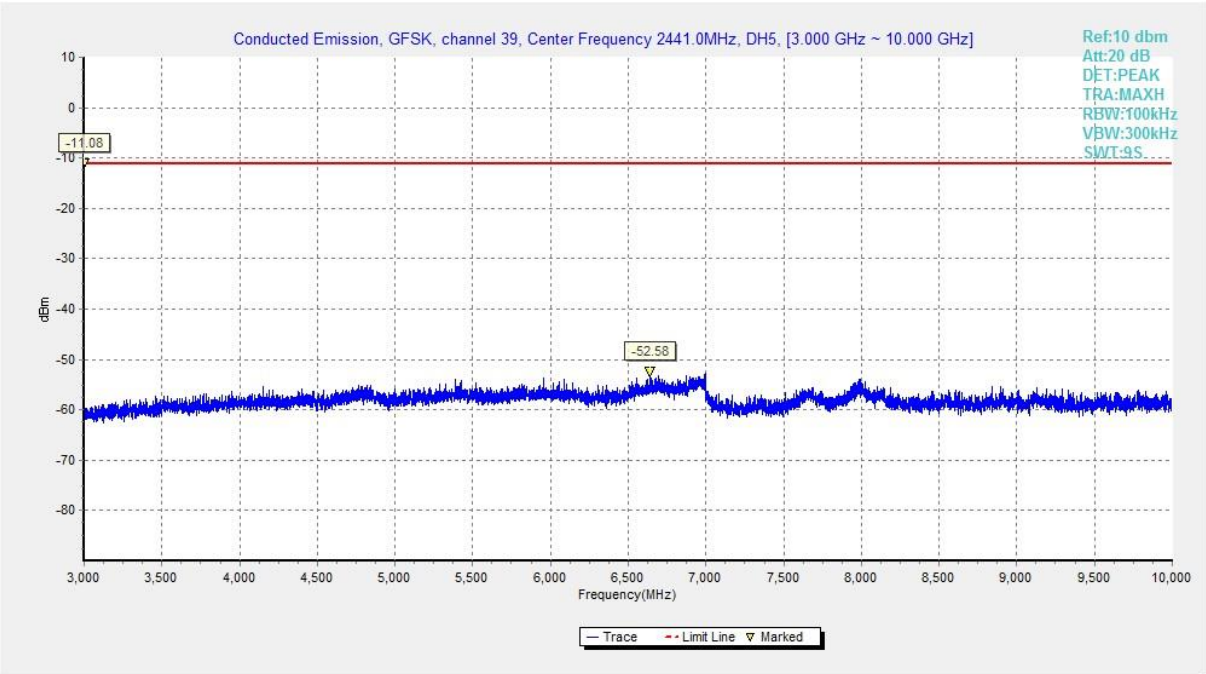

Fig. 18 Conducted Spurious Emission (GFSK, Ch39, 3GHz-10 GHz)

©Copyright. All rights reserved by SAICT.

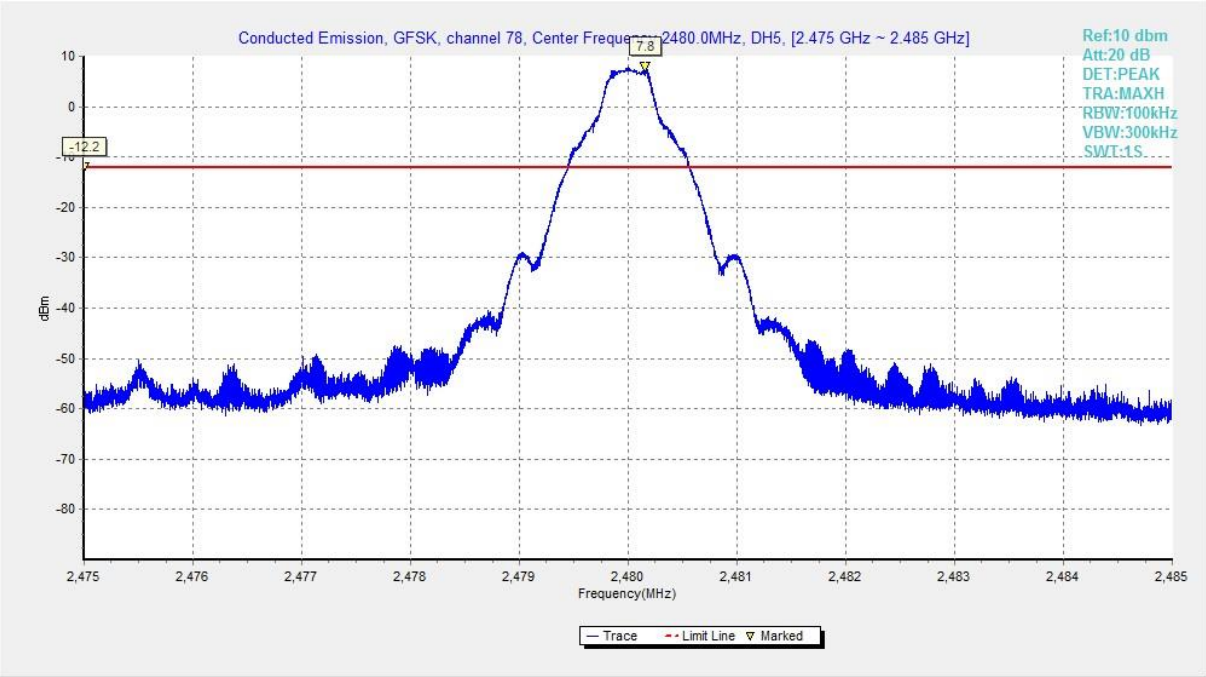

Fig. 19 Conducted Spurious Emission (GFSK, Ch78, 2.480GHz)

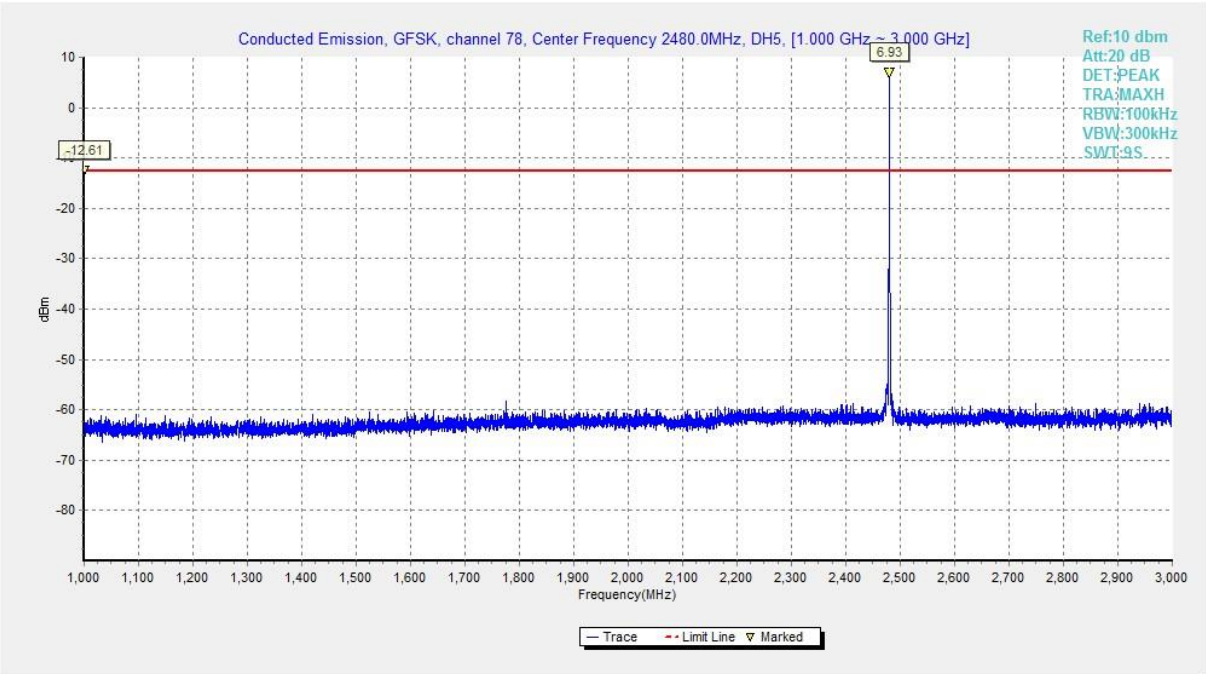

Fig. 20 Conducted Spurious Emission (GFSK, Ch78, 1GHz-3 GHz)

©Copyright. All rights reserved by SAICT.

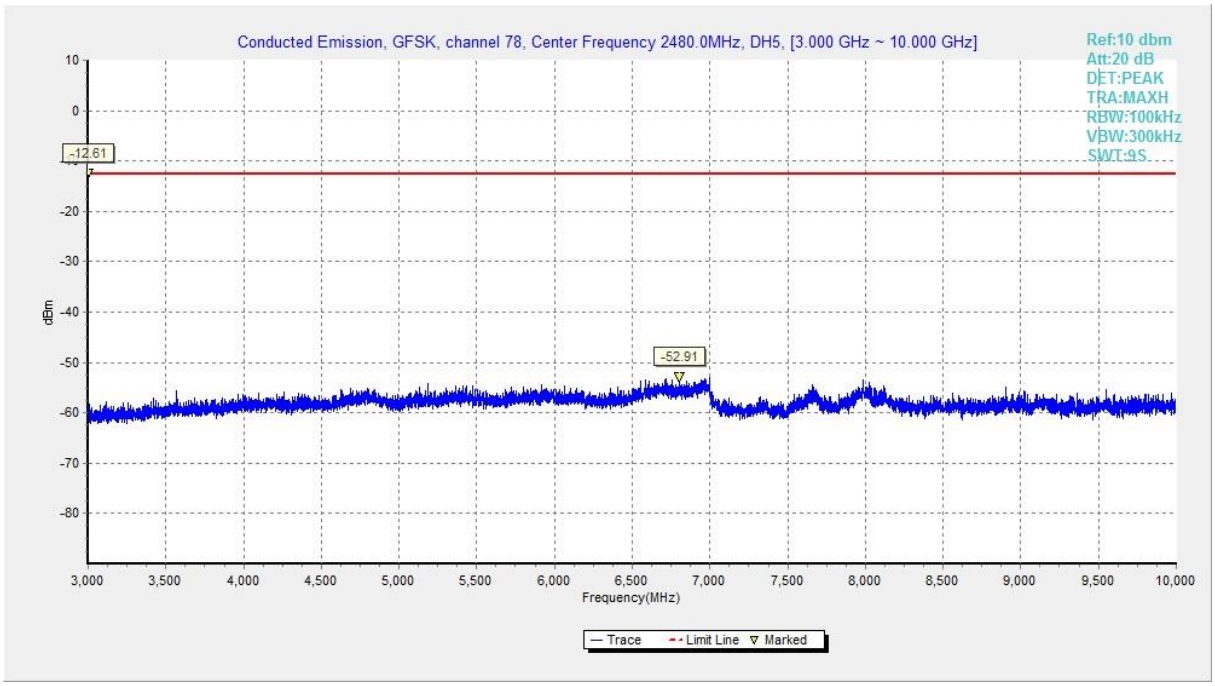

Fig. 21 Conducted Spurious Emission (GFSK, Ch78, 3GHz-10 GHz)

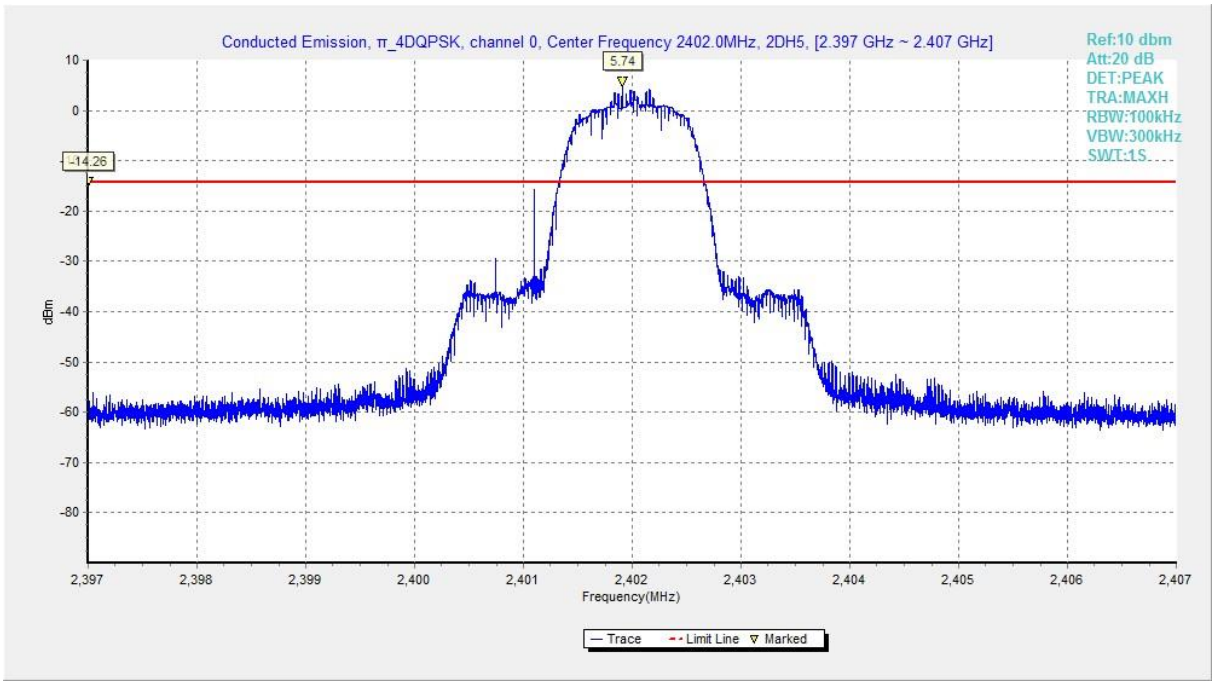

Fig. 22 Conducted Spurious Emission (π /4 DQPSK, Ch0, 2.402GHz)

©Copyright. All rights reserved by SAICT.

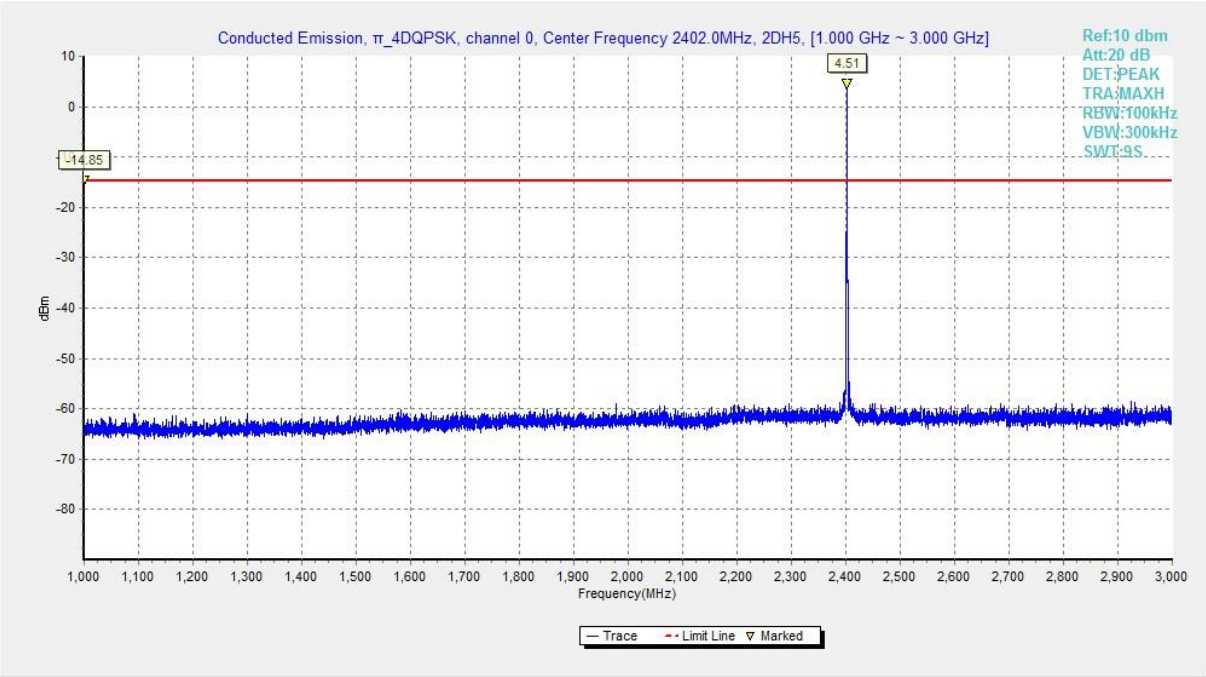

Fig. 23 Conducted Spurious Emission (π /4 DQPSK, Ch0, 1GHz-3 GHz)

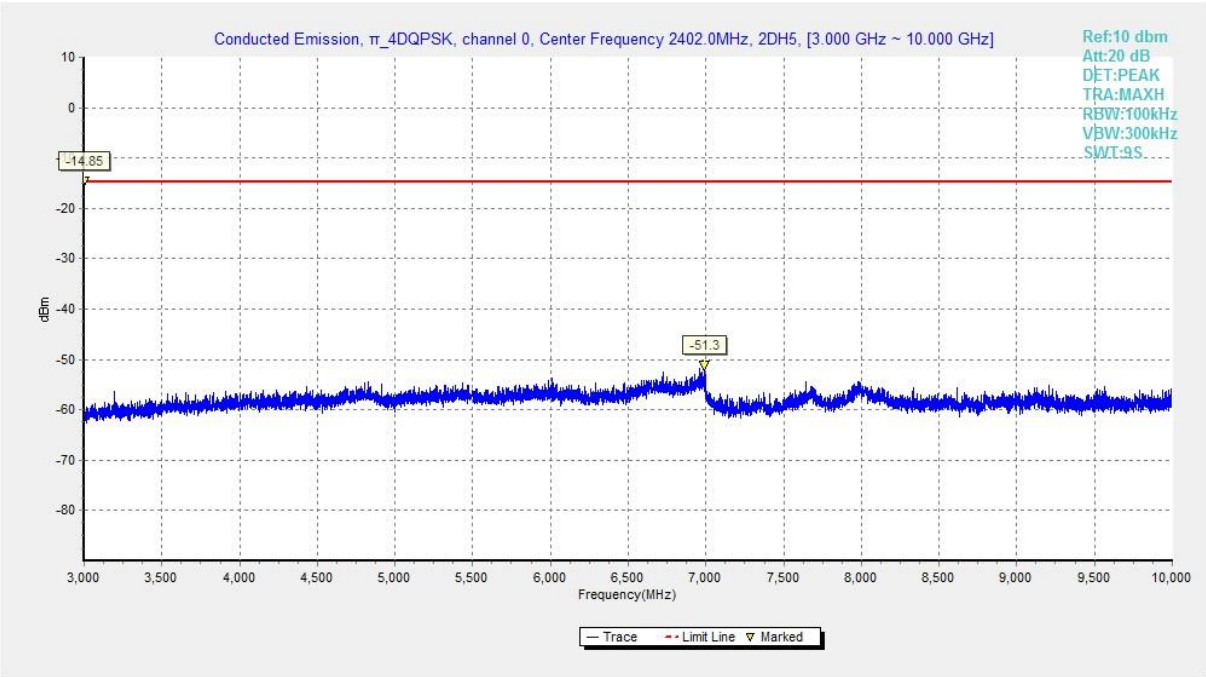

Fig. 24 Conducted Spurious Emission (π /4 DQPSK, Ch0, 3GHz-10 GHz)

©Copyright. All rights reserved by SAICT.

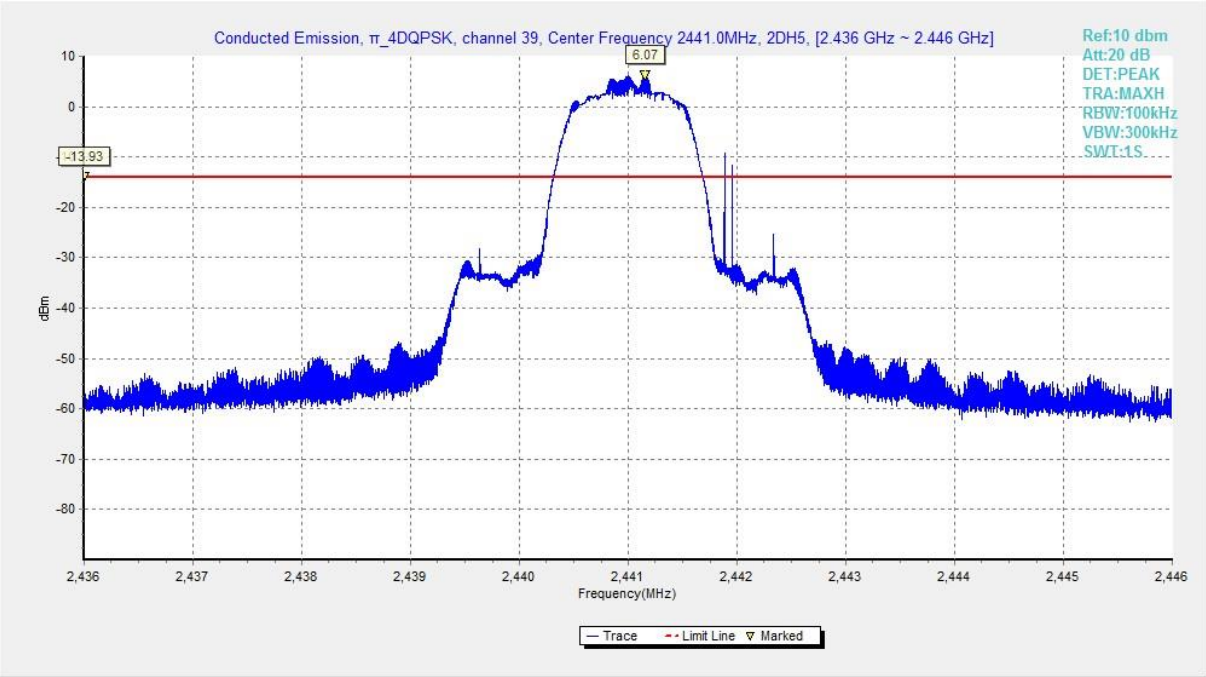

Fig. 25 Conducted Spurious Emission (π /4 DQPSK, Ch39, 2.441GHz)

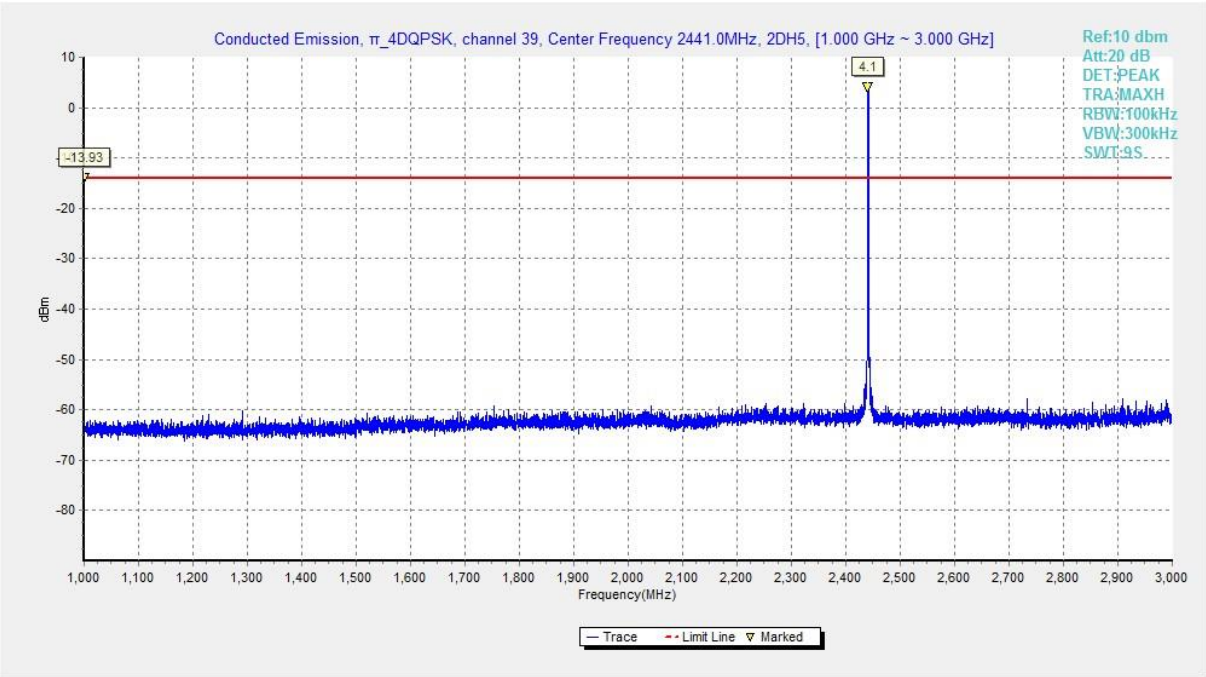

Fig. 26 Conducted Spurious Emission (π /4 DQPSK, Ch39, 1GHz-3 GHz)

©Copyright. All rights reserved by SAICT.

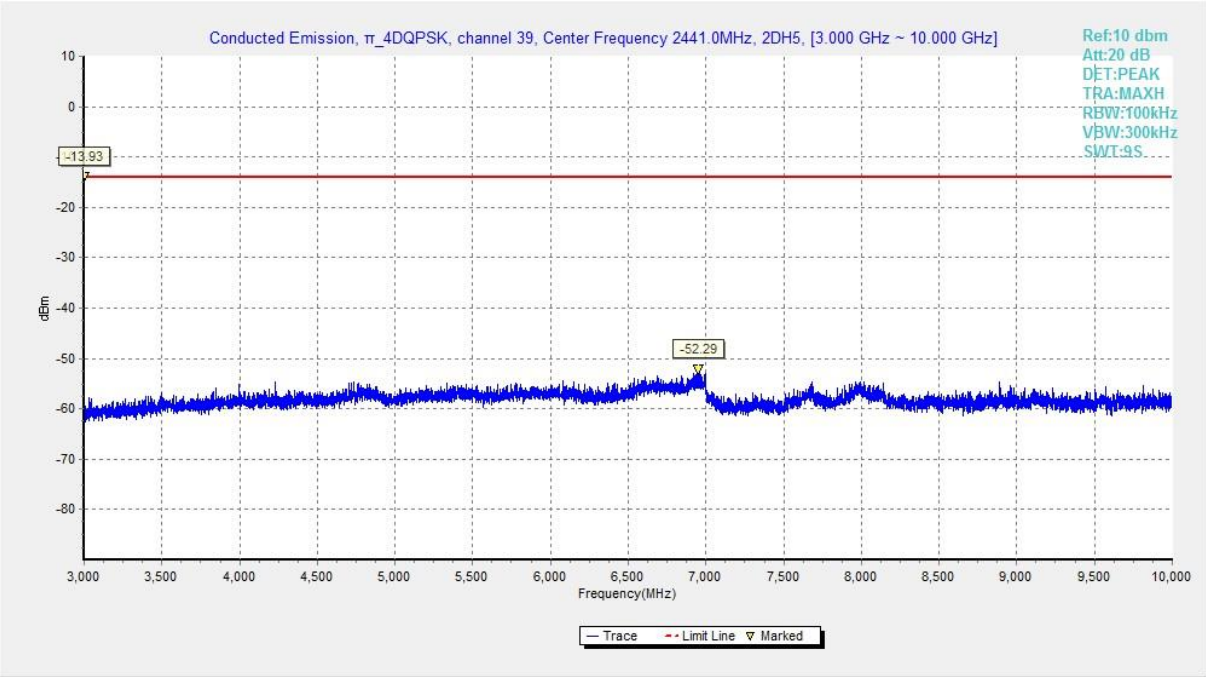

Fig. 27 Conducted Spurious Emission (π /4 DQPSK, Ch39, 3GHz-10 GHz)

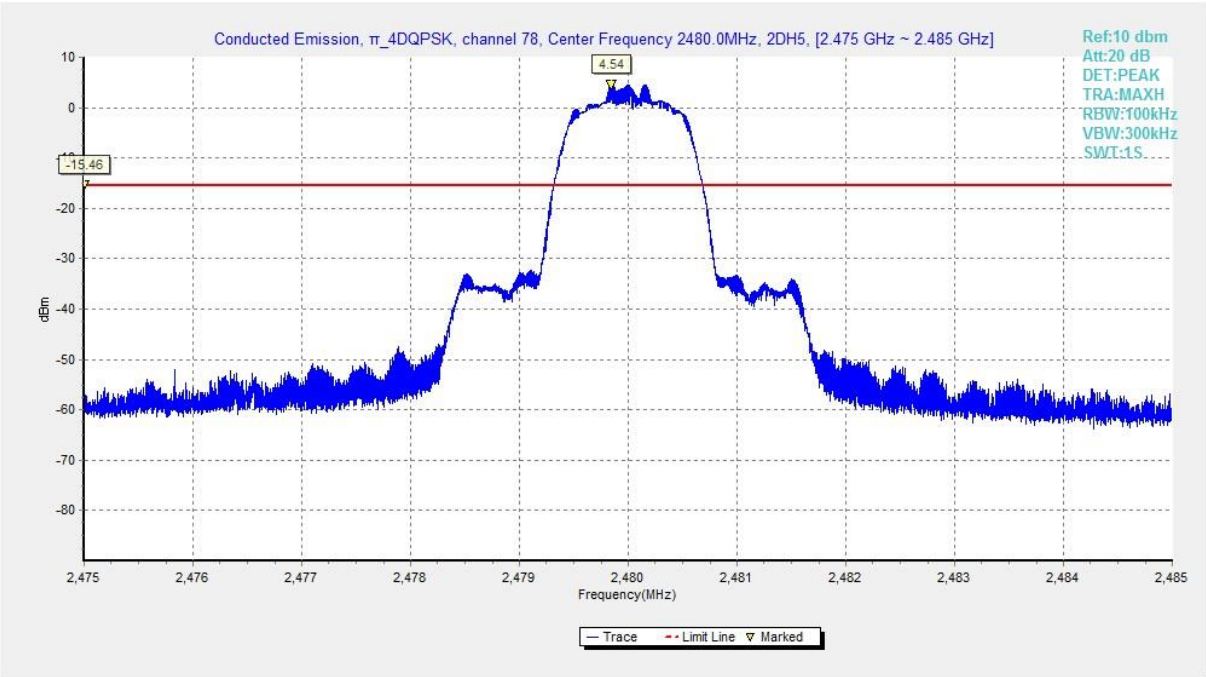

Fig. 28 Conducted Spurious Emission (π /4 DQPSK, Ch78, 2.480GHz)

©Copyright. All rights reserved by SAICT.

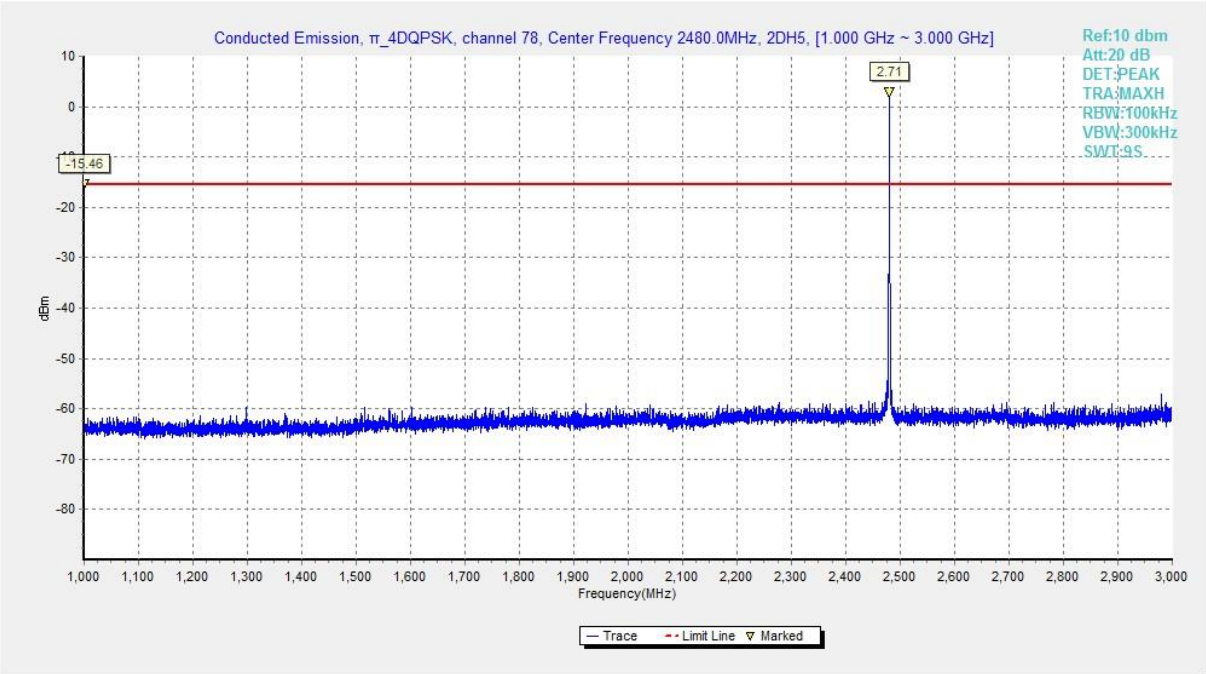

Fig. 29 Conducted Spurious Emission (π /4 DQPSK, Ch78, 1GHz-3 GHz)

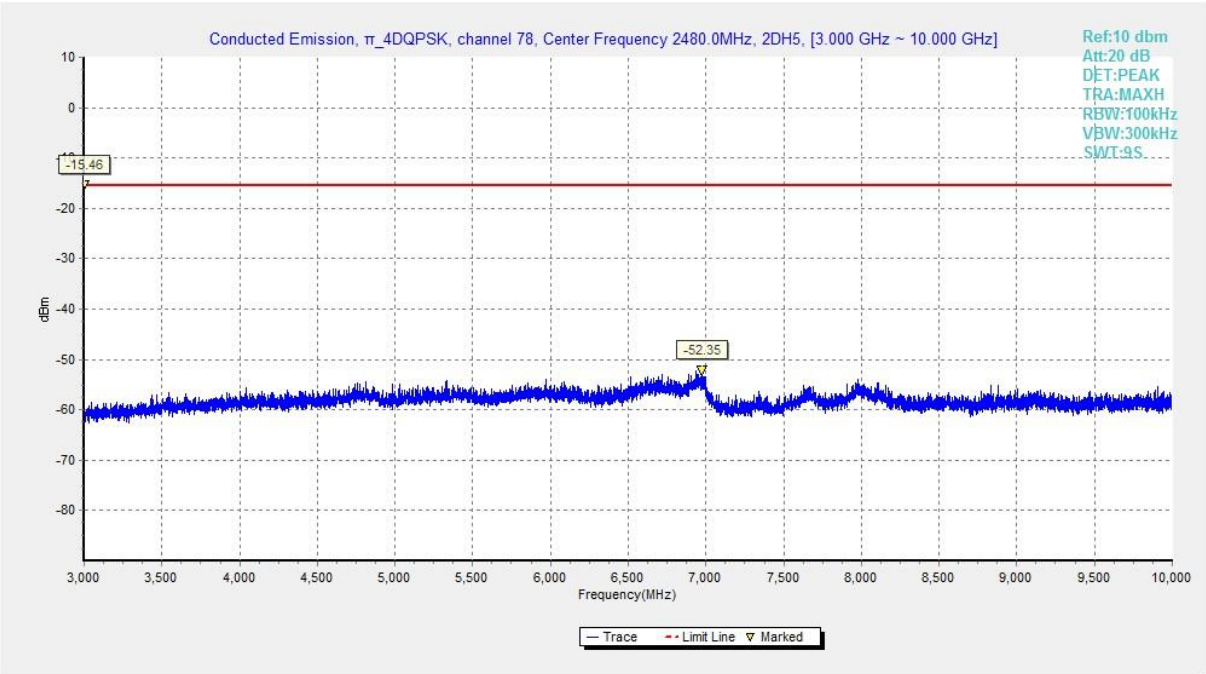

Fig. 30 Conducted Spurious Emission (π /4 DQPSK, Ch78, 3GHz-10 GHz)

©Copyright. All rights reserved by SAICT.

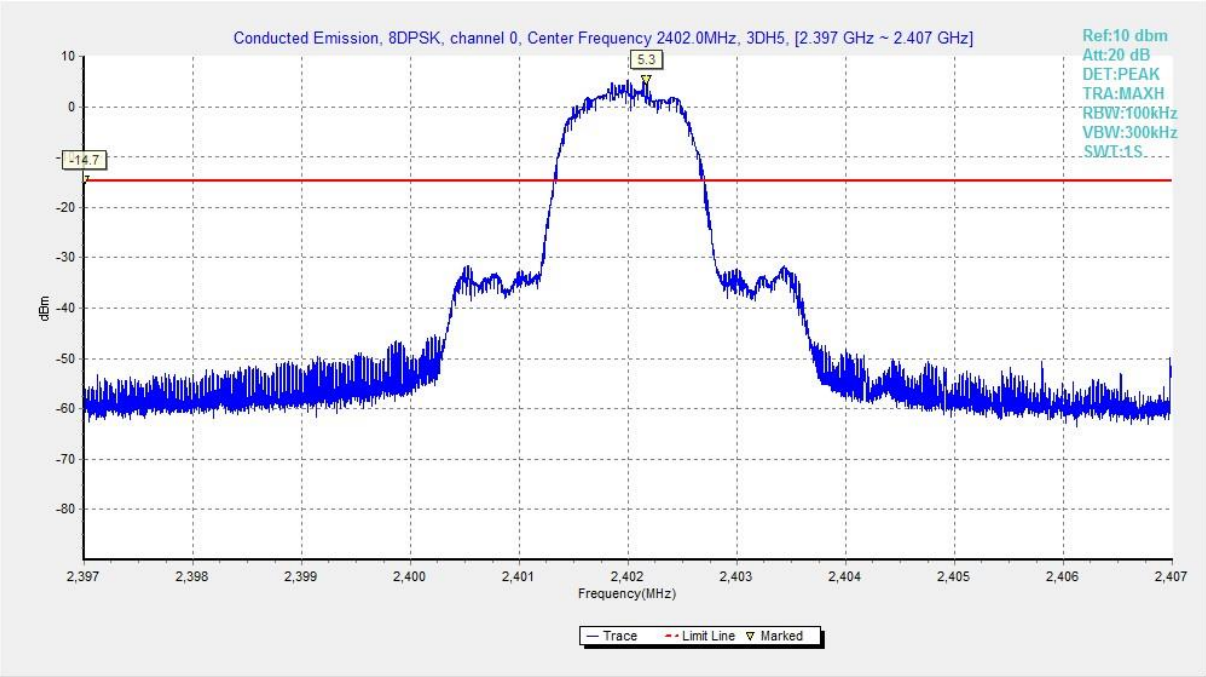

Fig. 31 Conducted Spurious Emission (8DPSK, Ch0, 2.402GHz)

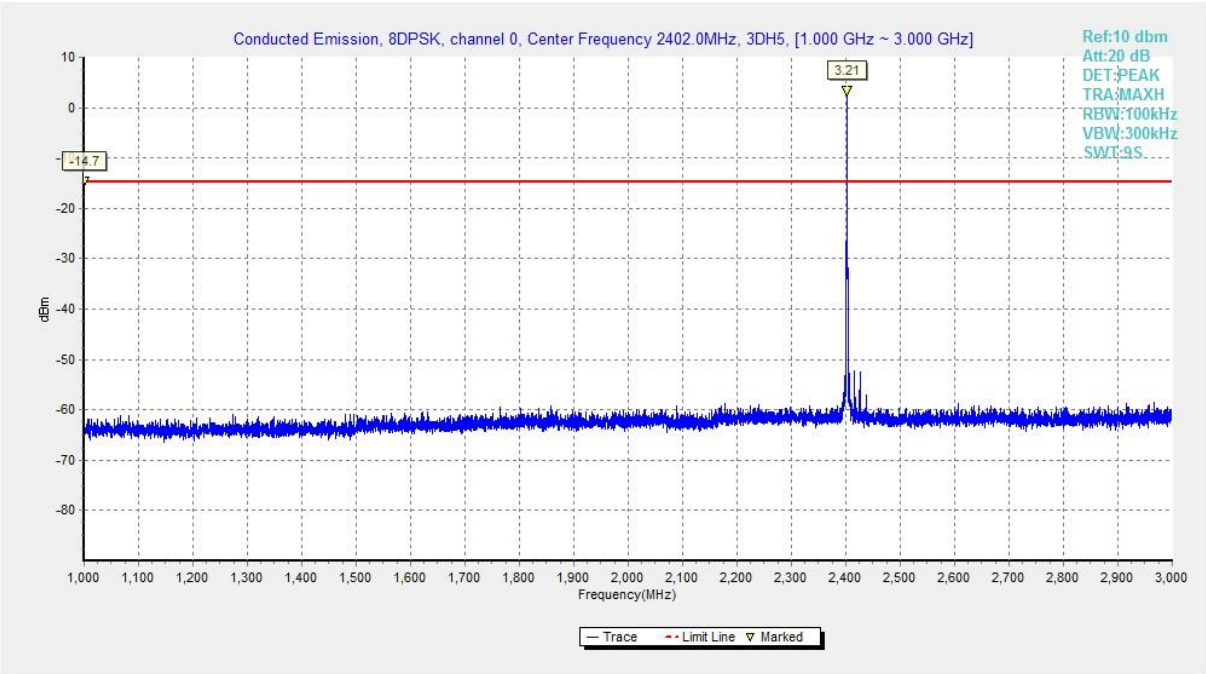

Fig. 32 Conducted Spurious Emission (8DPSK, Ch0, 1GHz-3 GHz)

©Copyright. All rights reserved by SAICT.

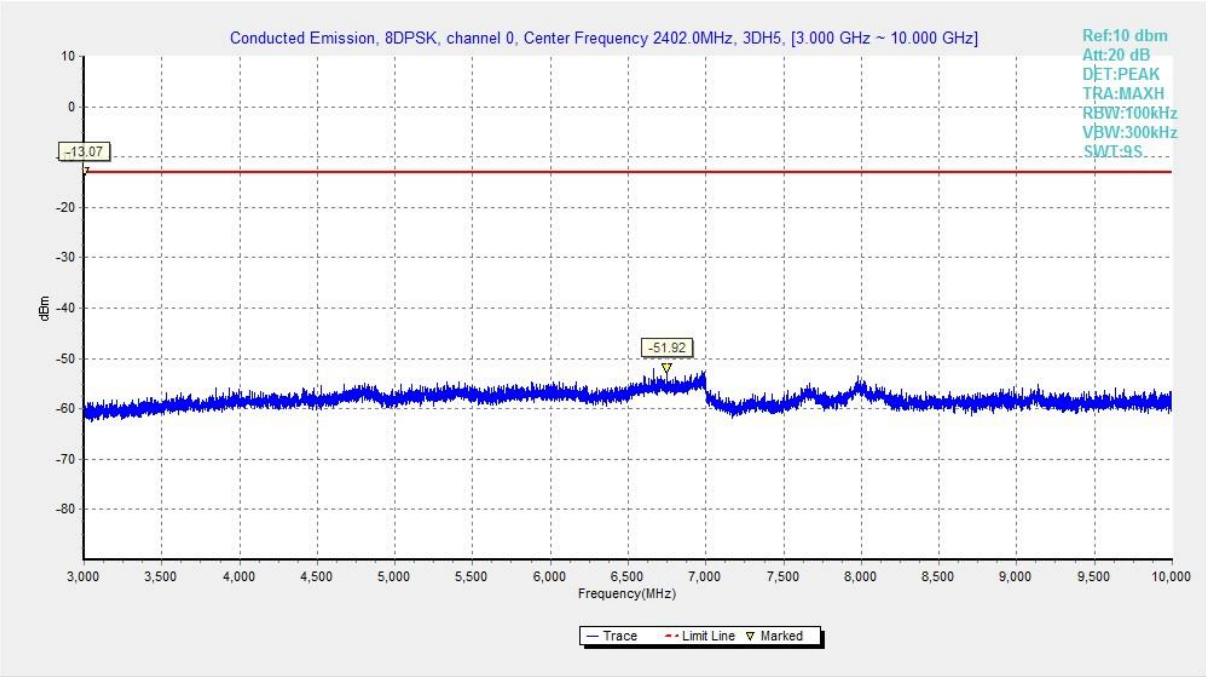

Fig. 33 Conducted Spurious Emission (8DPSK, Ch0, 3GHz-10 GHz)

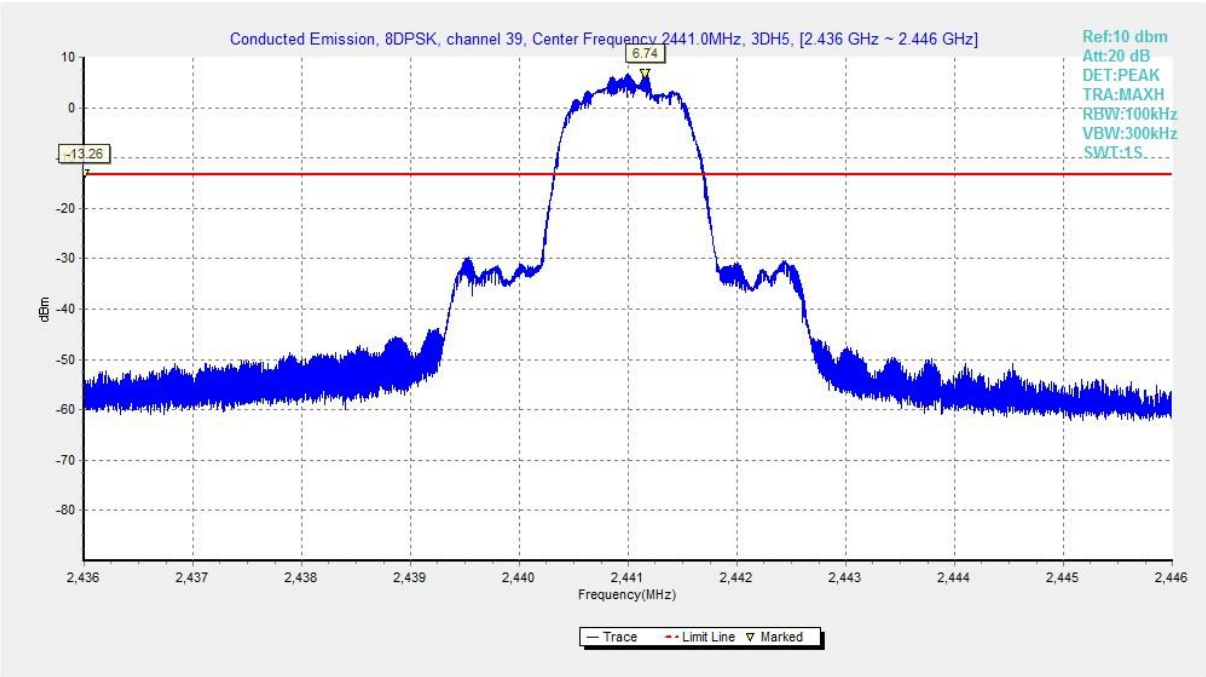

Fig. 34 Conducted Spurious Emission (8DPSK, Ch39, 2.441GHz)

©Copyright. All rights reserved by SAICT.

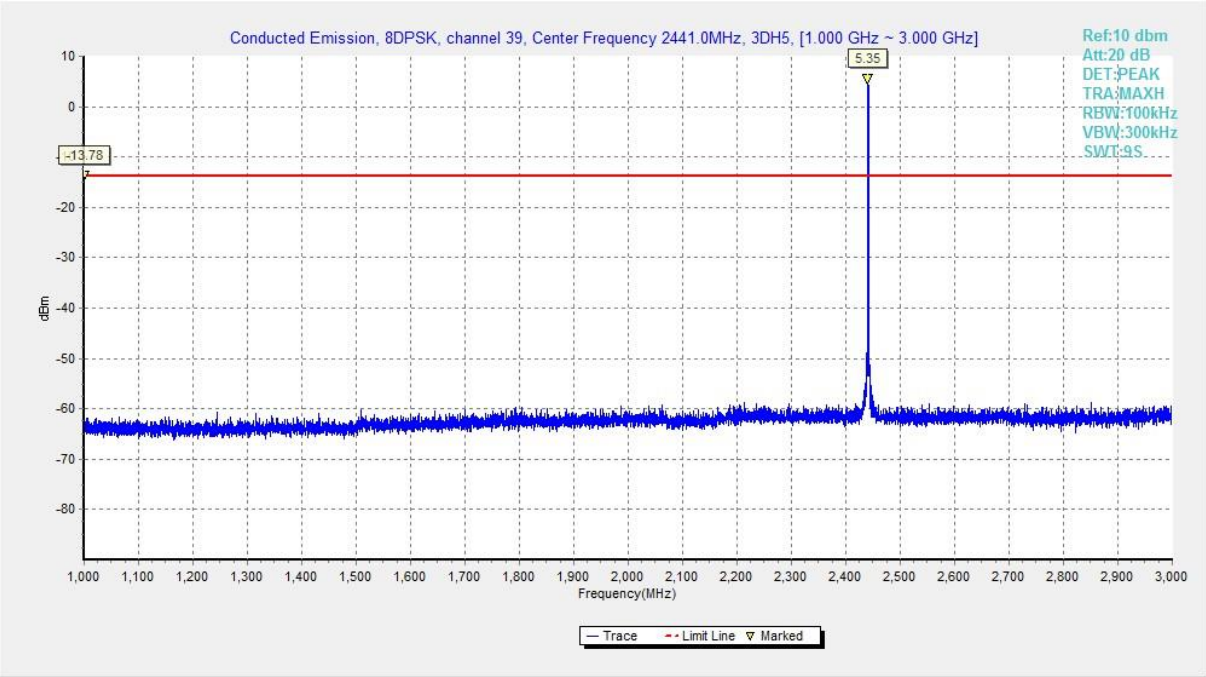

Fig. 35 Conducted Spurious Emission (8DPSK, Ch39, 1GHz-3 GHz)

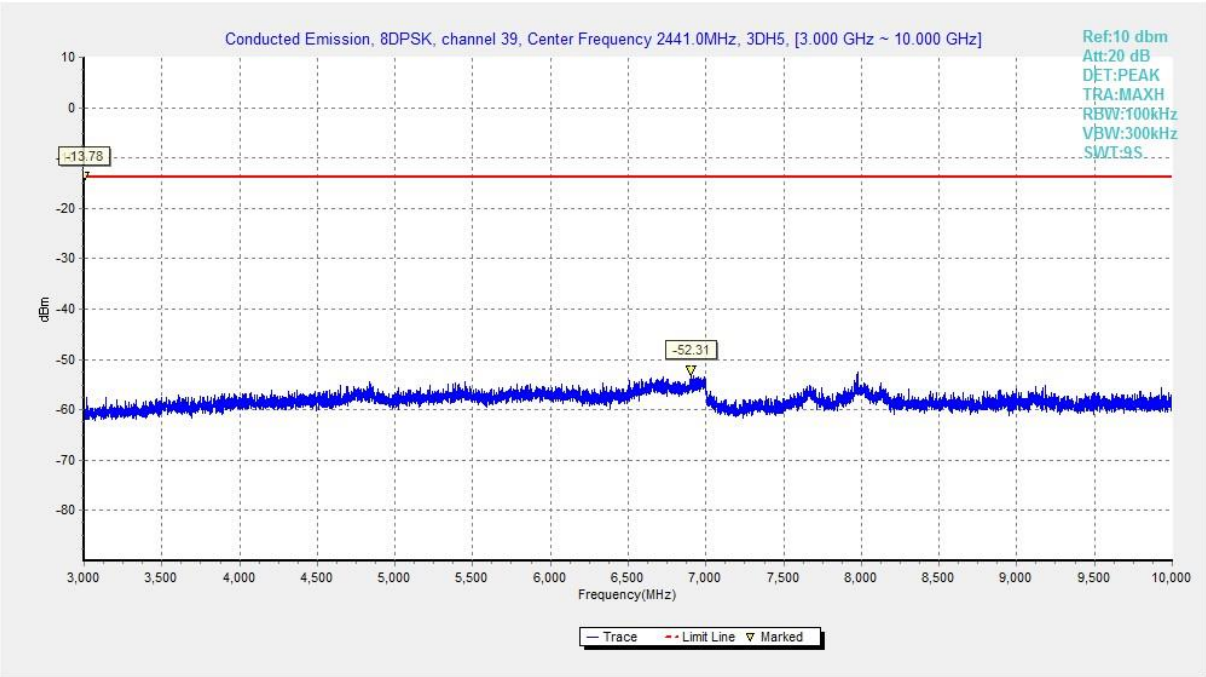

Fig. 36 Conducted Spurious Emission (8DPSK, Ch39, 3GHz-10 GHz)

©Copyright. All rights reserved by SAICT.

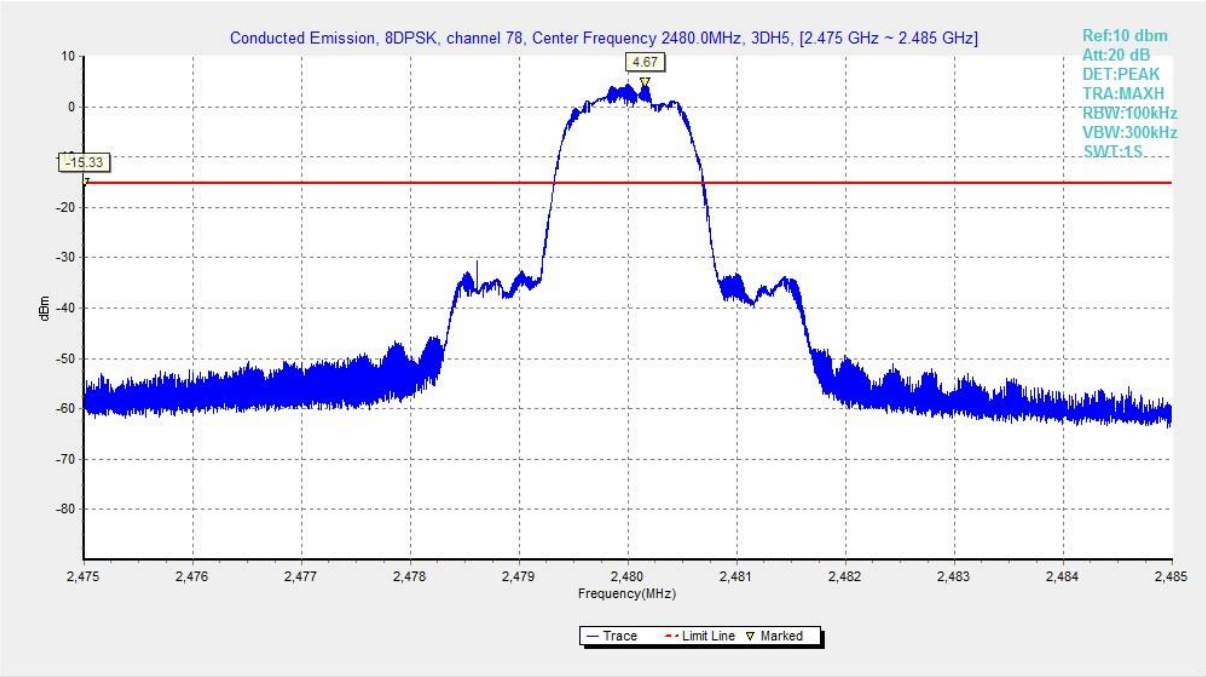

Fig. 37 Conducted Spurious Emission (8DPSK, Ch78, 2.480GHz)

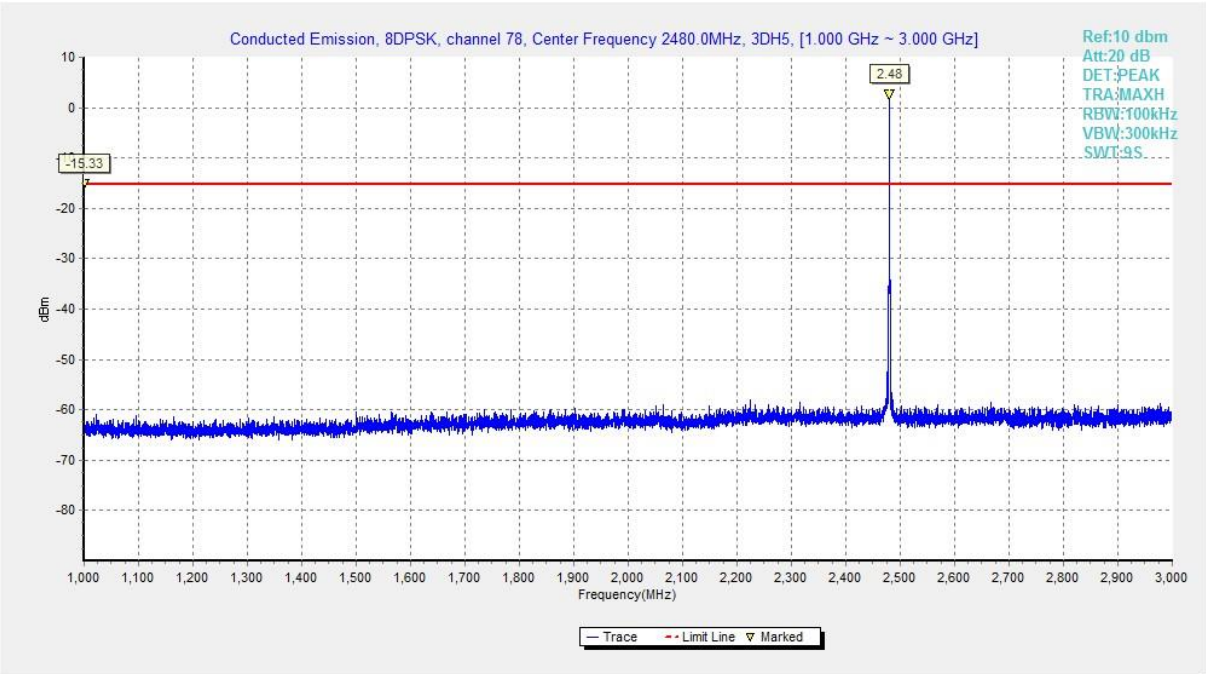

Fig. 38 Conducted Spurious Emission (8DPSK, Ch78, 1GHz-3 GHz)

©Copyright. All rights reserved by SAICT.

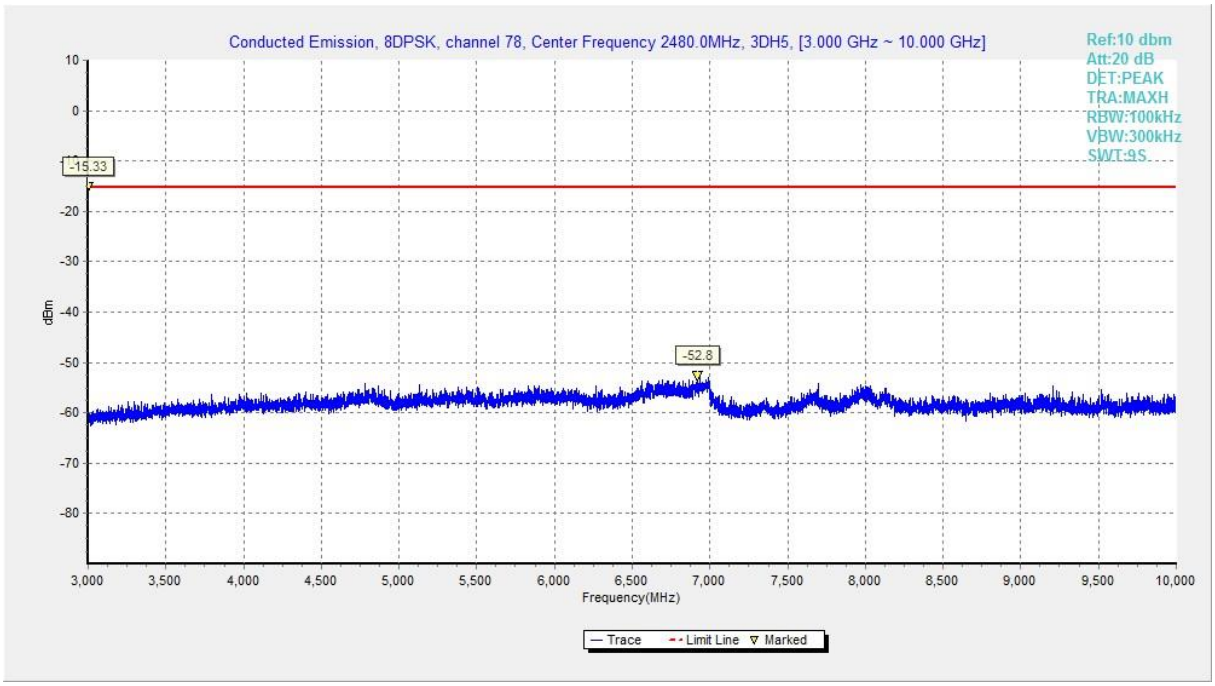

Fig. 39 Conducted Spurious Emission (8DPSK, Ch78, 3GHz-10 GHz)

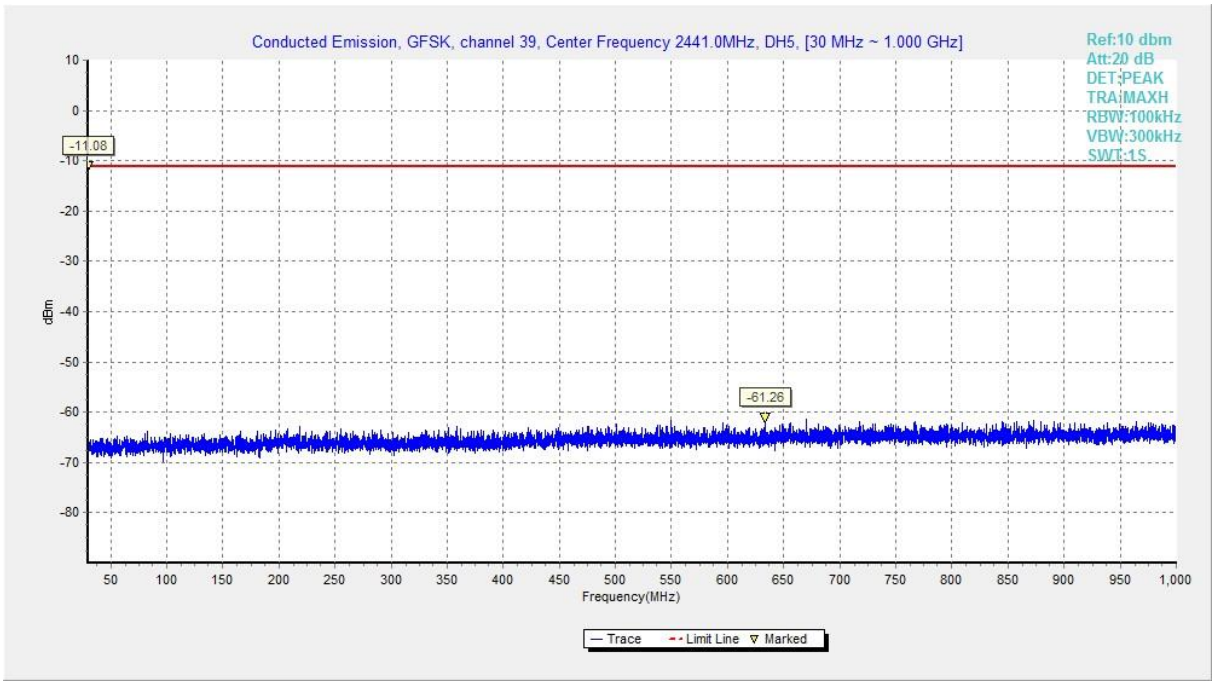

Fig. 40 Conducted Spurious Emission (All channel, 30 MHz-1 GHz)

©Copyright. All rights reserved by SAICT.

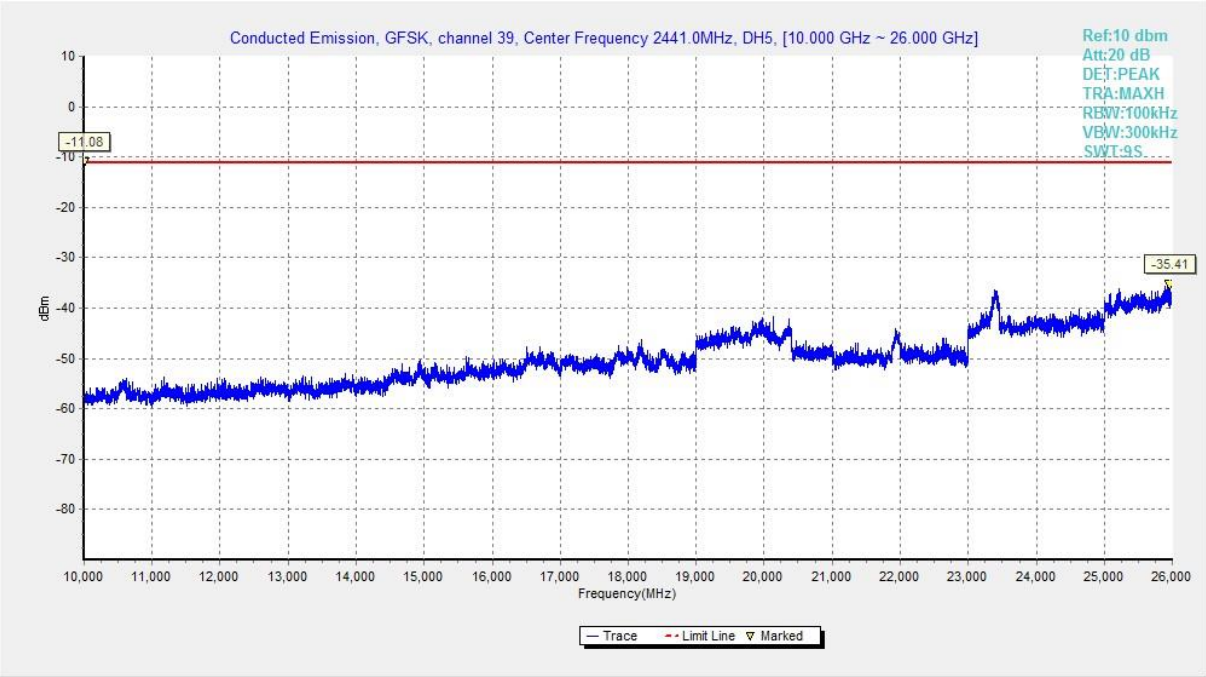

Fig. 41 Conducted Spurious Emission All channel, 10 GHz-26 GHz,)

©Copyright. All rights reserved by SAICT.

A.4 Radiated Emission

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247, 15.205, 15.209 & RSS-247 section 5.5/RSS-Gen section 6.13	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.

©Copyright. All rights reserved by SAICT.

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)	2.31 GHz ~ 2.43 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)	2.31 GHz ~ 2.43 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)	2.31 GHz ~ 2.43 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**

Worst Case Result

GFSK CH39 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
13951.000000	55.18	74.00	18.82	V	17
14542.000000	55.91	74.00	18.09	V	18
15575.250000	57.19	74.00	16.81	V	20
16243.500000	58.51	74.00	15.49	V	21
16964.750000	58.90	74.00	15.10	V	23
17496.750000	58.06	74.00	15.94	V	22

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
13959.500000	42.58	54.00	11.42	V	17
14561.750000	43.75	54.00	10.25	V	18
15576.250000	44.89	54.00	9.11	V	20
16282.250000	46.07	54.00	7.93	V	21
17024.250000	46.77	54.00	7.23	V	23
17703.750000	46.20	54.00	7.80	V	23

©Copyright. All rights reserved by SAICT.

π /4 DQPSK CH39 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
14113.250000	55.09	74.00	18.91	V	17
14530.500000	56.12	74.00	17.88	V	18
15566.250000	56.42	74.00	17.58	V	20
16154.000000	59.33	74.00	14.67	V	21
17044.250000	59.58	74.00	14.42	V	22
17927.500000	58.37	74.00	15.63	V	24

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
13949.500000	42.63	54.00	11.37	V	17
14576.000000	43.61	54.00	10.39	V	18
15576.250000	44.91	54.00	9.09	V	20
15676.250000	45.91	54.00	8.09	V	20
17020.500000	46.64	54.00	7.36	V	23
17487.750000	45.99	54.00	8.01	V	22

8DPSK CH39 (1-18GHz)

Frequency (MHz)	MaxPeak (dBuV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
13886.250000	55.30	74.00	18.70	V	17
14569.750000	56.26	74.00	17.74	V	18
15543.500000	57.71	74.00	16.29	V	19
16249.000000	59.01	74.00	14.99	V	21
16662.500000	58.71	74.00	15.29	V	22
17986.000000	59.66	74.00	14.34	V	23

Frequency (MHz)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Pol	Corr. (dB/m)
13947.250000	42.61	54.00	11.39	V	17
14566.500000	43.61	54.00	10.39	V	18
15577.000000	45.06	54.00	8.94	V	20
15668.000000	45.85	54.00	8.15	V	20
17018.250000	46.73	54.00	7.27	V	23
17703.500000	46.10	54.00	7.90	V	23

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.

©Copyright. All rights reserved by SAICT.

See below for test graphs.

Conclusion: Pass

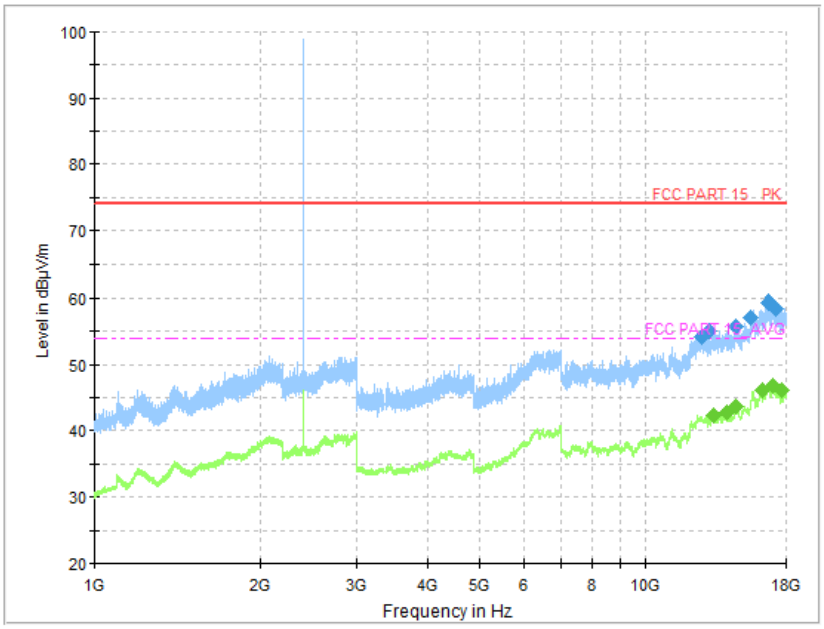

Fig. 42 Radiated Spurious Emission (GFSK, Ch0, 1 GHz ~18 GHz)

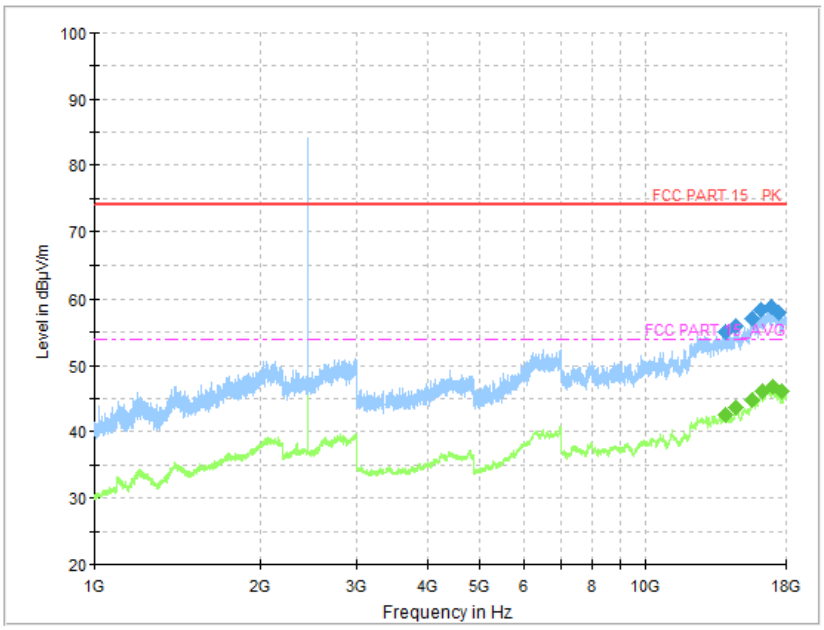

Fig. 43 Radiated Spurious Emission (GFSK, Ch39, 1 GHz ~18 GHz)

©Copyright. All rights reserved by SAICT.

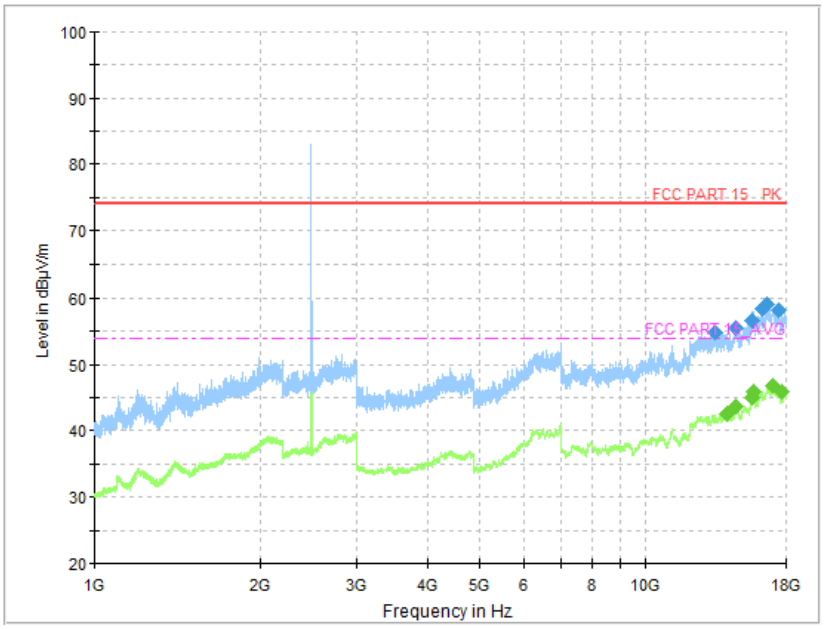

Fig. 44 Radiated Spurious Emission (GFSK, Ch78, 1 GHz ~18 GHz)

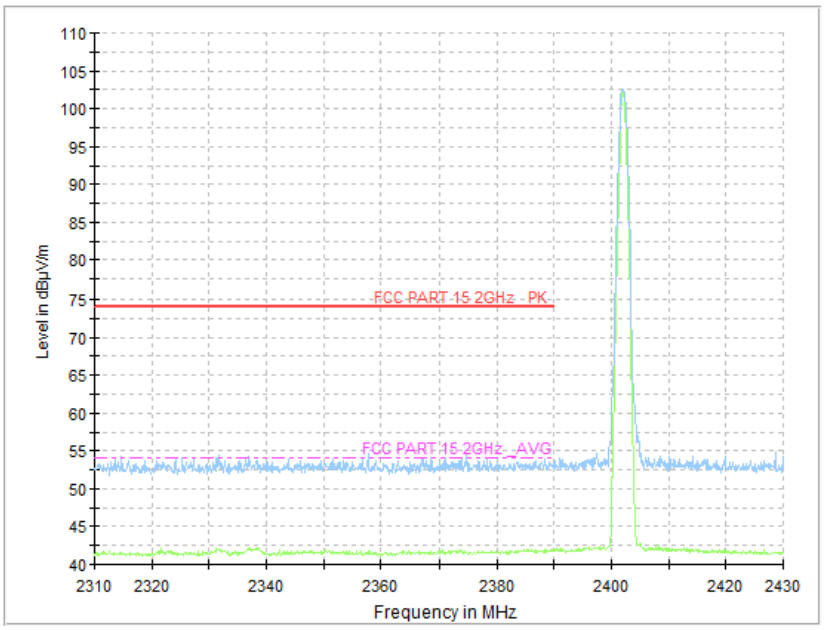

Fig. 45 Radiated Band Edges (GFSK, Ch0, 2310GHz~2430GHz)

©Copyright. All rights reserved by SAICT.

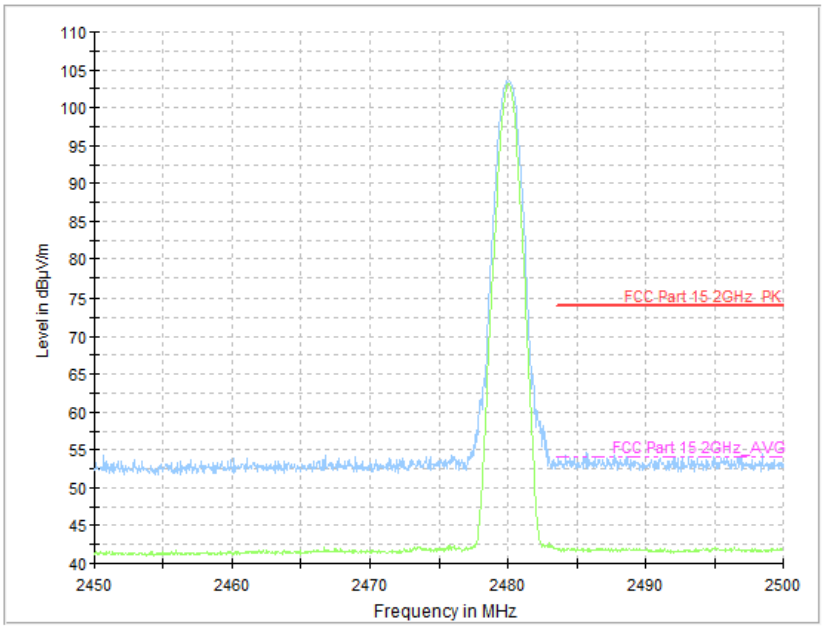

Fig. 46 Radiated Band Edges (GFSK, Ch78, 2450GHz~2500GHz)

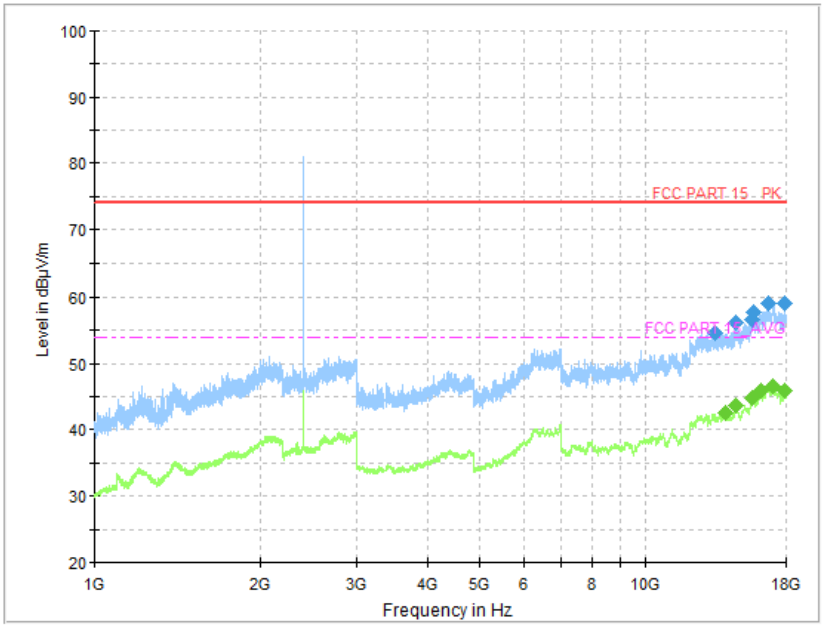

Fig. 47 Radiated Spurious Emission (π/4 DQPSK, Ch0, 1 GHz ~18 GHz)

©Copyright. All rights reserved by SAICT.

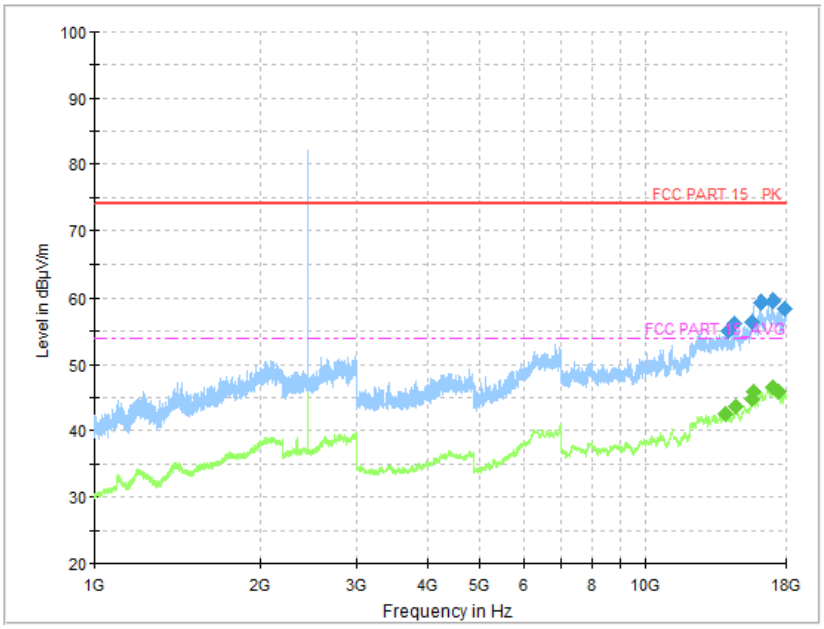

Fig. 48 Radiated Spurious Emission (π /4 DQPSK, Ch39, 1 GHz ~18 GHz)

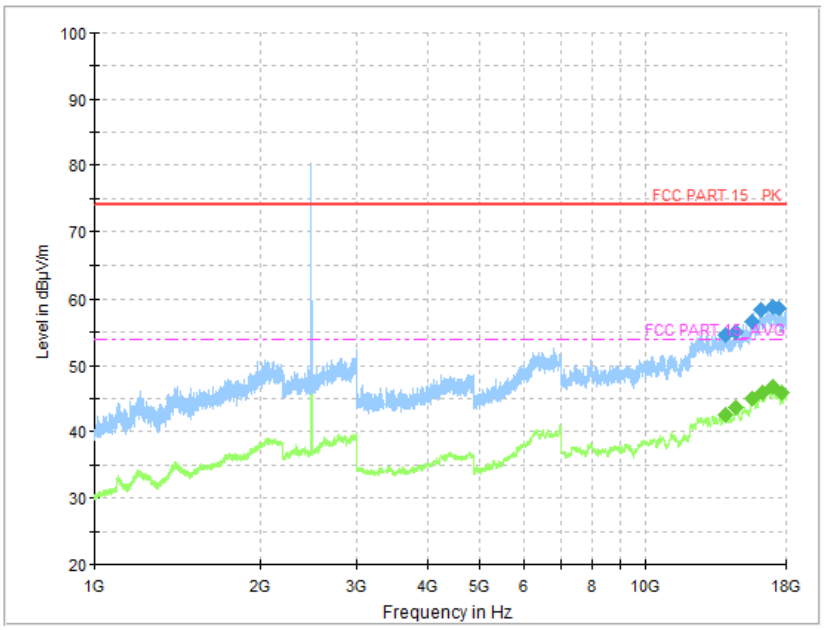

Fig. 49 Radiated Spurious Emission (π /4 DQPSK, Ch78, 1 GHz ~18 GHz)

©Copyright. All rights reserved by SAICT.

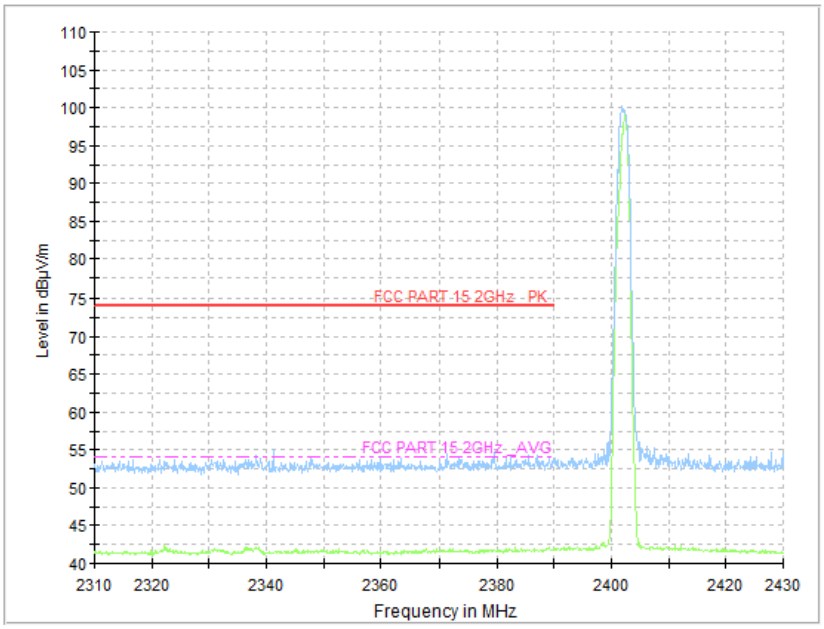

Fig. 50 Radiated Band Edges (π /4 DQPSK, Ch0, 2310GHz~2430GHz)

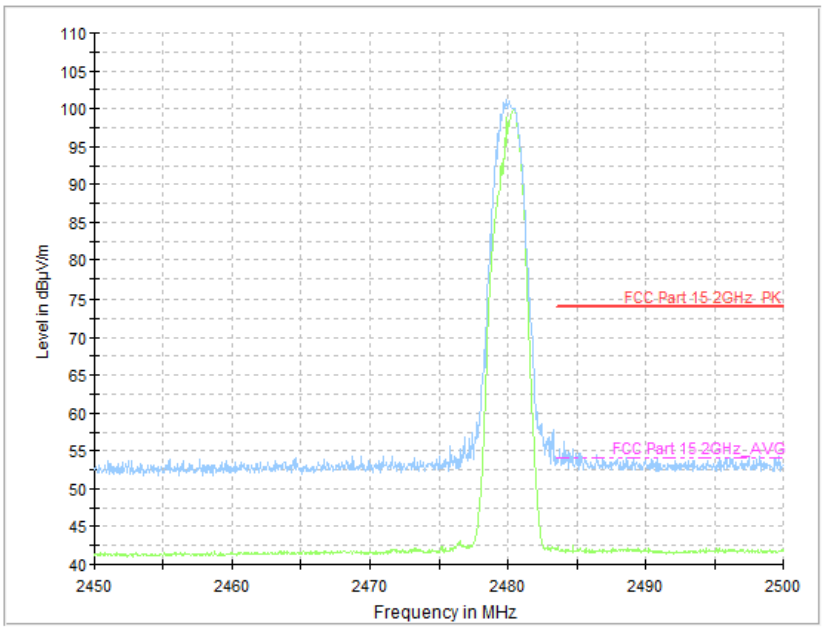

Fig. 51 Radiated Band Edges (π /4 DQPSK, Ch78, 2450GHz~2500GHz)

©Copyright. All rights reserved by SAICT.

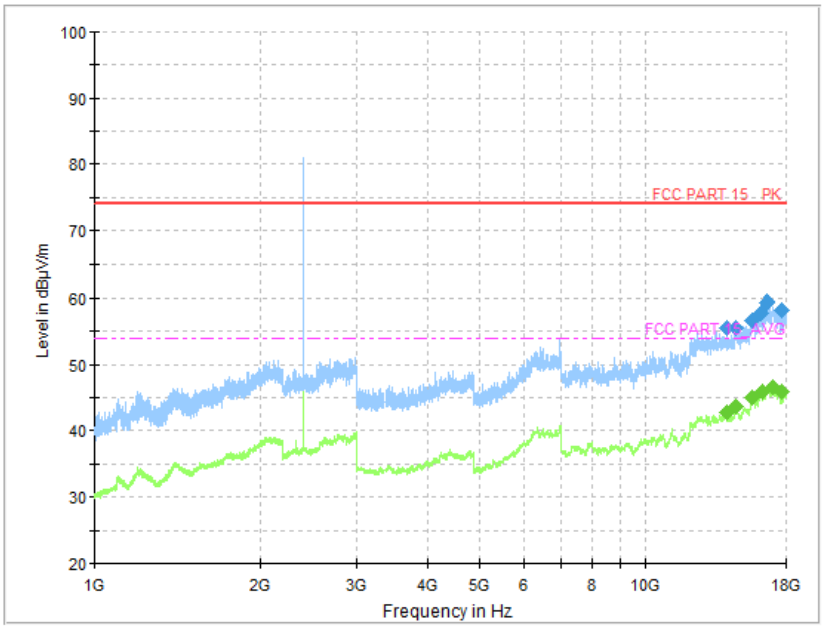

Fig. 52 Radiated Spurious Emission (8DPSK, Ch0, 1 GHz ~18 GHz)

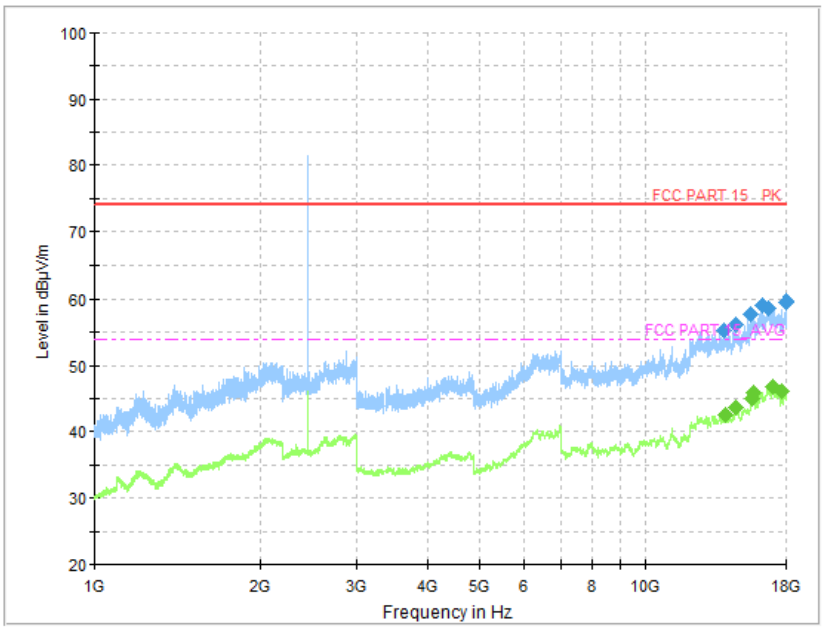

Fig. 53 Radiated Spurious Emission (8DPSK, Ch39, 1 GHz ~18 GHz)

©Copyright. All rights reserved by SAICT.

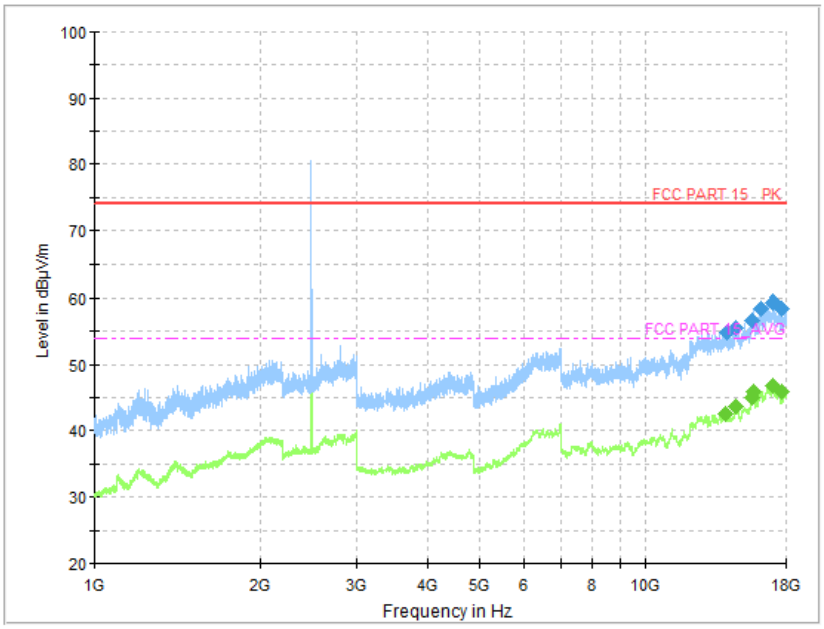

Fig. 54 Radiated Spurious Emission (8DPSK, Ch78, 1 GHz ~18 GHz)

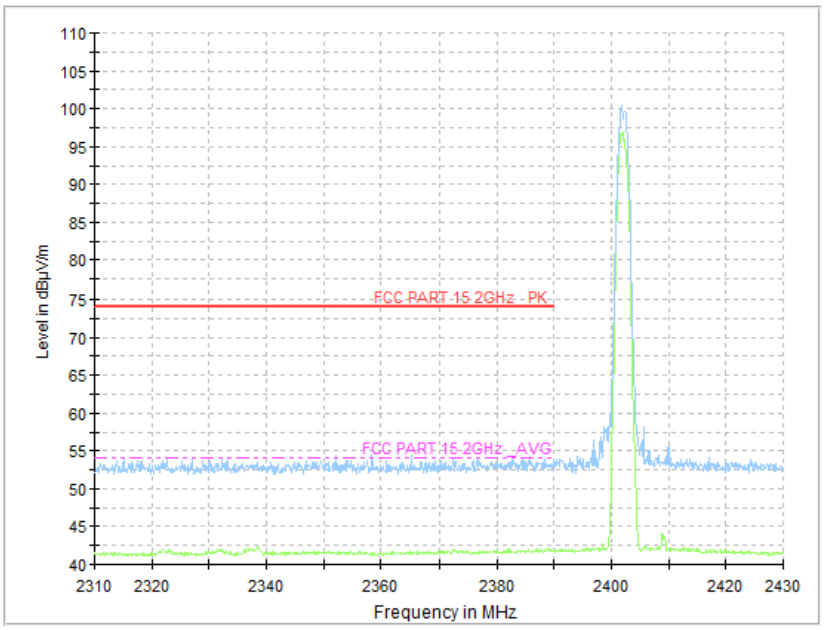

Fig. 55 Radiated Band Edges (8DPSK, Ch0, 2310GHz~2430GHz)

©Copyright. All rights reserved by SAICT.

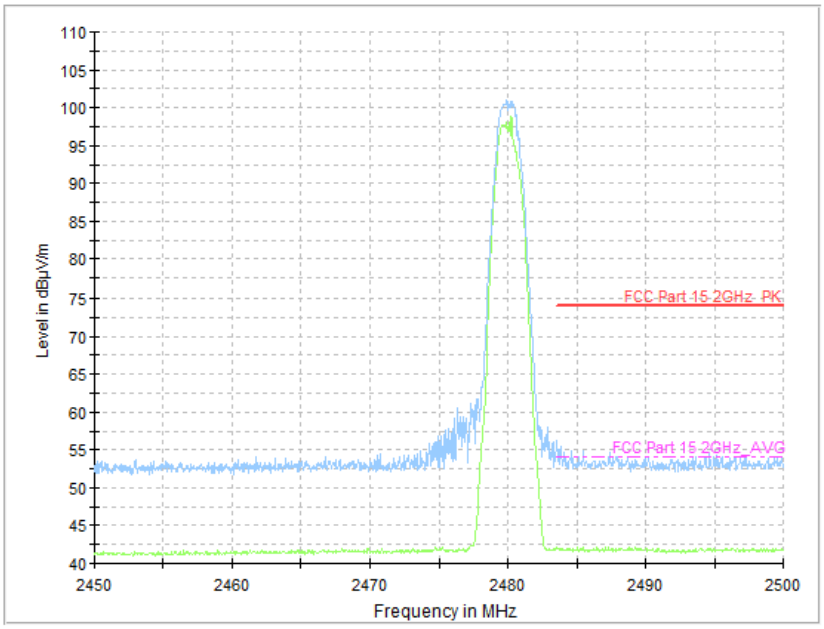

Fig. 56 Radiated Band Edges (8DPSK, Ch78, 2450GHz~2500GHz)

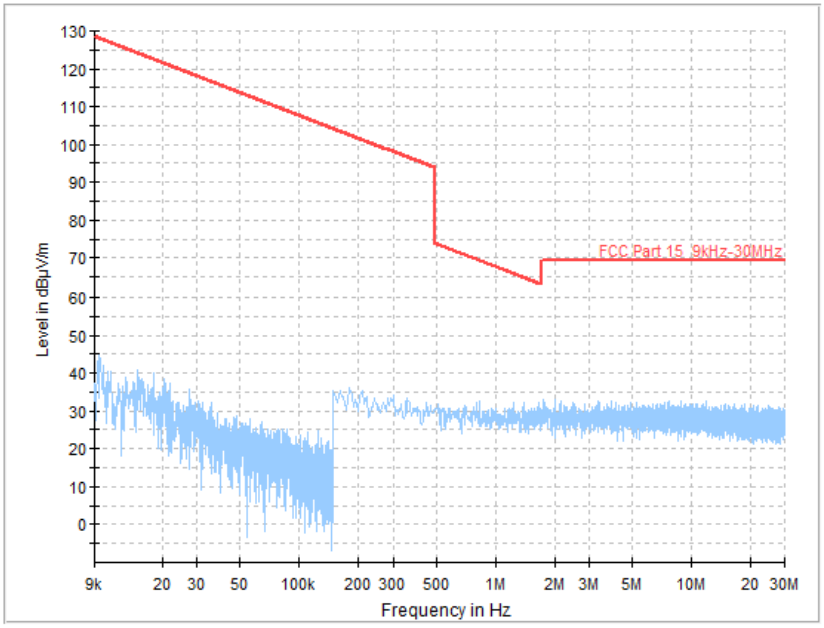

Fig. 57 Radiated Spurious Emission (All Channels, 9 kHz ~30 MHz)

©Copyright. All rights reserved by SAICT.

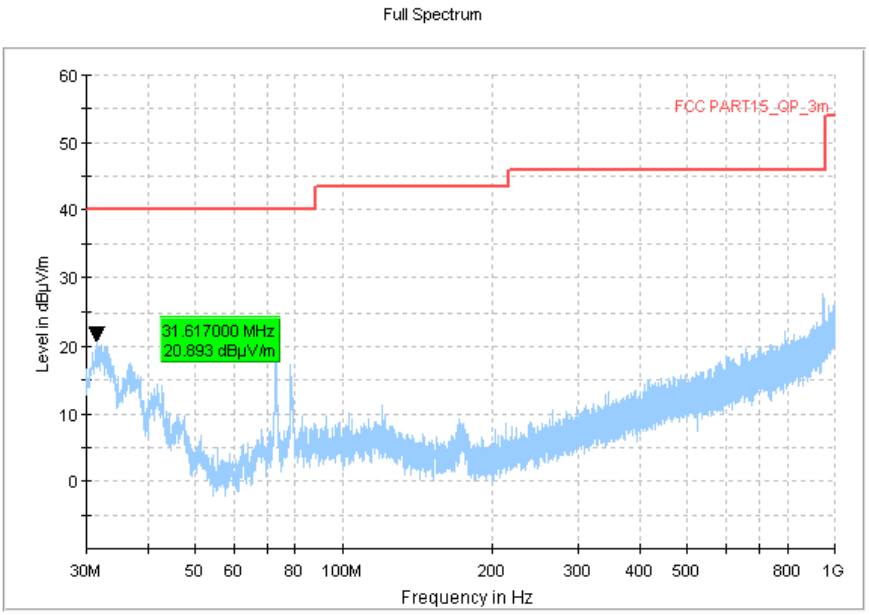

Fig. 58 Radiated Spurious Emission (All Channels, 30 MHz ~1 GHz)

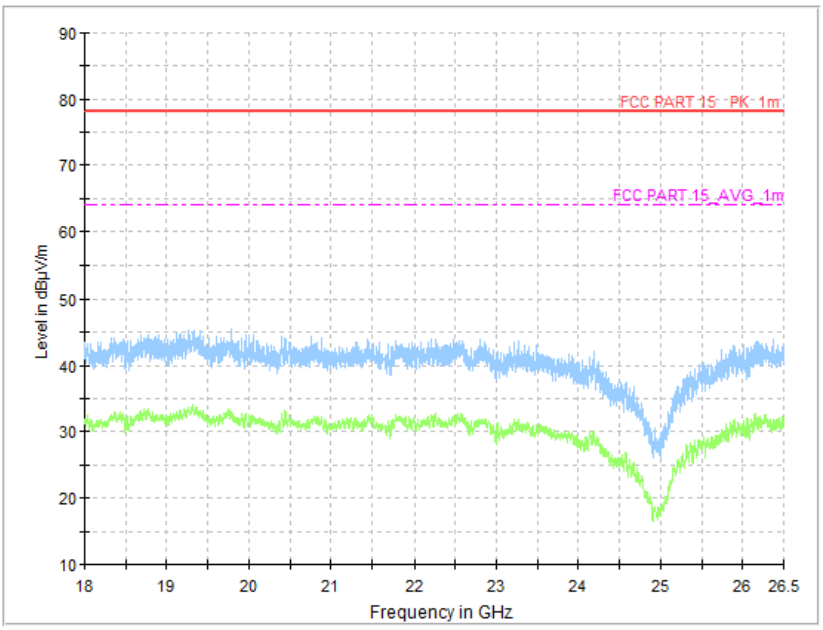

Fig. 59 Radiated Spurious Emission (All Channels, 18 GHz ~26.5 GHz)

©Copyright. All rights reserved by SAICT.

A.5 20dB Bandwidth

Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.247 (a) & RSS-247 Section 5.1	/

Measurement Result:

Mode	Channel	20dB Bandwidth (kHz)		conclusion
GFSK	0	Fig.60	946.50	/
	39	Fig.61	941.25	
	78	Fig.62	956.25	
π /4 DQPSK	0	Fig.63	1308.00	/
	39	Fig.64	1293.00	
	78	Fig.65	1312.50	
8DPSK	0	Fig.66	1290.75	/
	39	Fig.67	1300.50	
	78	Fig.68	1299.00	

See below for test graphs.

Conclusion: PASS

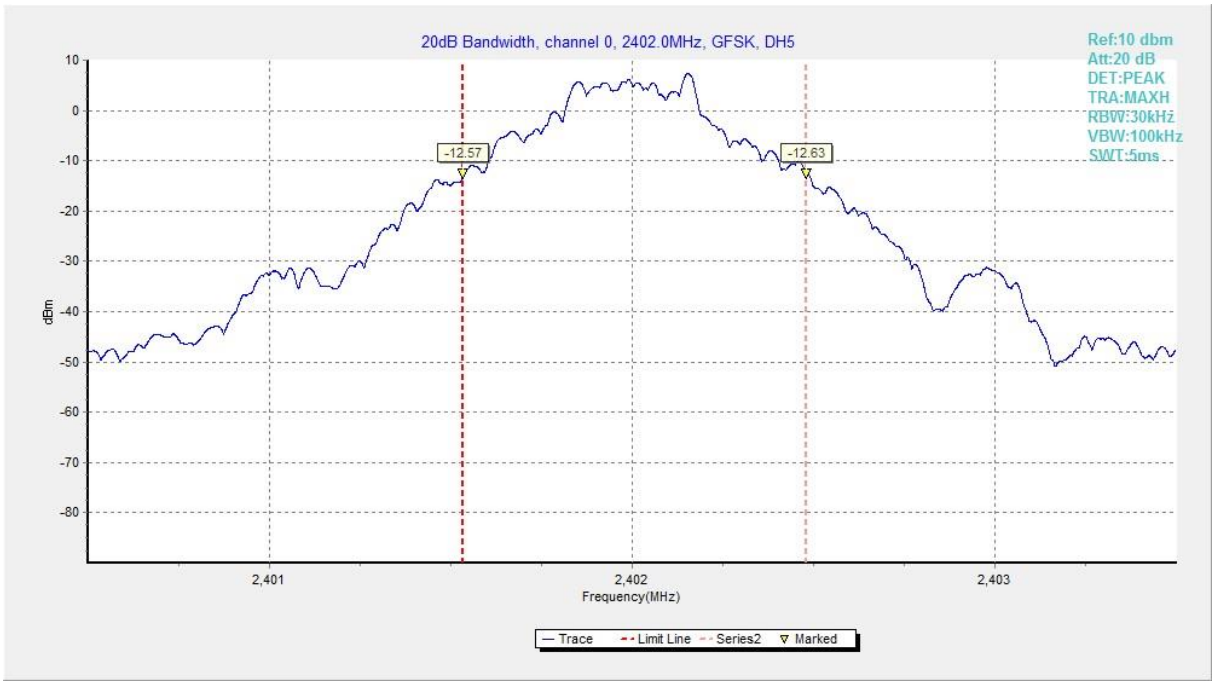

Fig. 60 20dB Bandwidth (GFSK, Ch 0)

©Copyright. All rights reserved by SAICT.

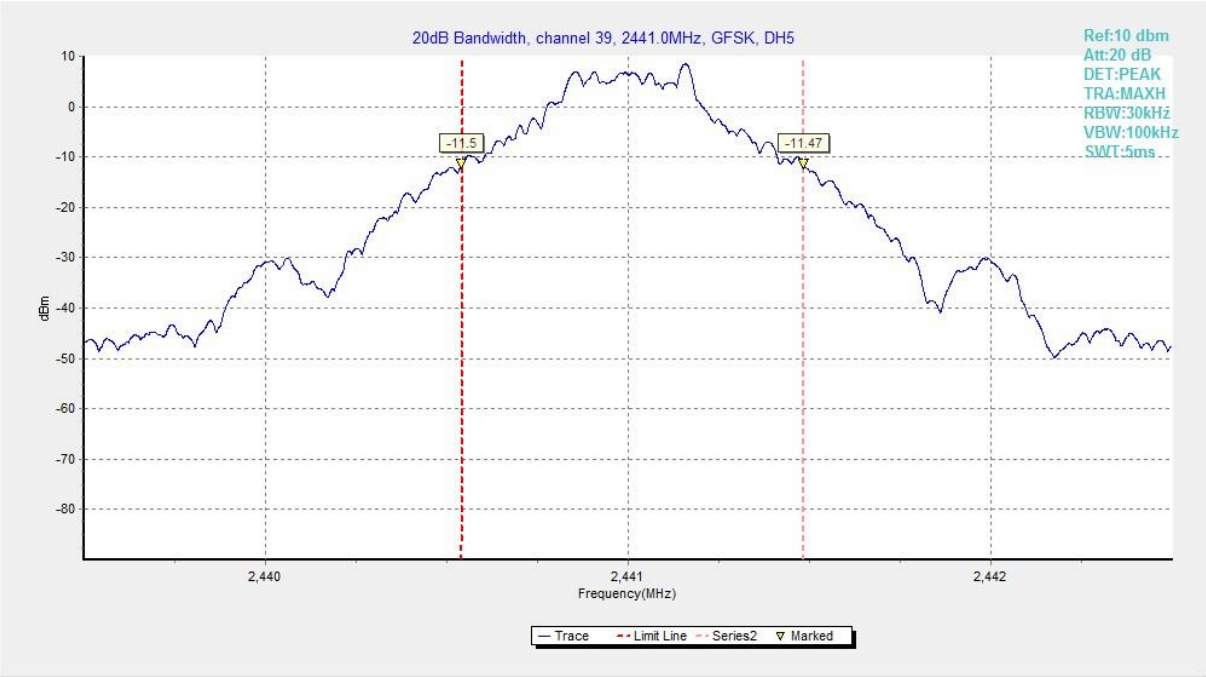

Fig. 61 20dB Bandwidth (GFSK, Ch 39)

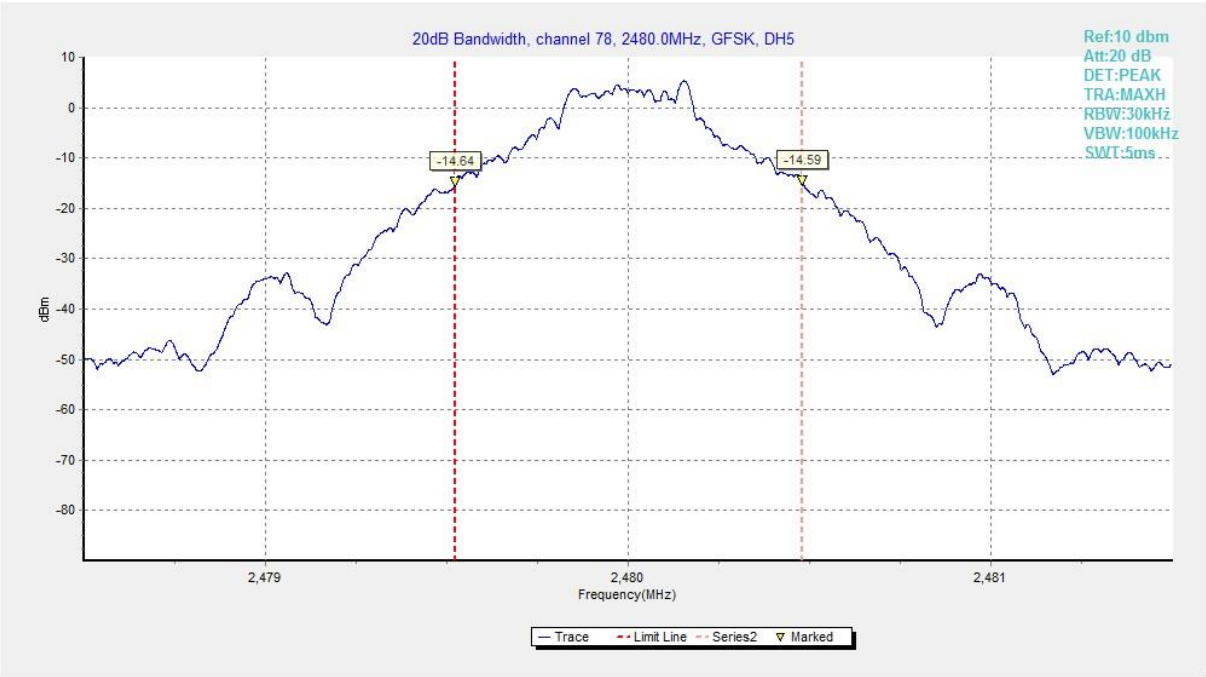

Fig. 62 20dB Bandwidth (GFSK, Ch 78)

©Copyright. All rights reserved by SAICT.

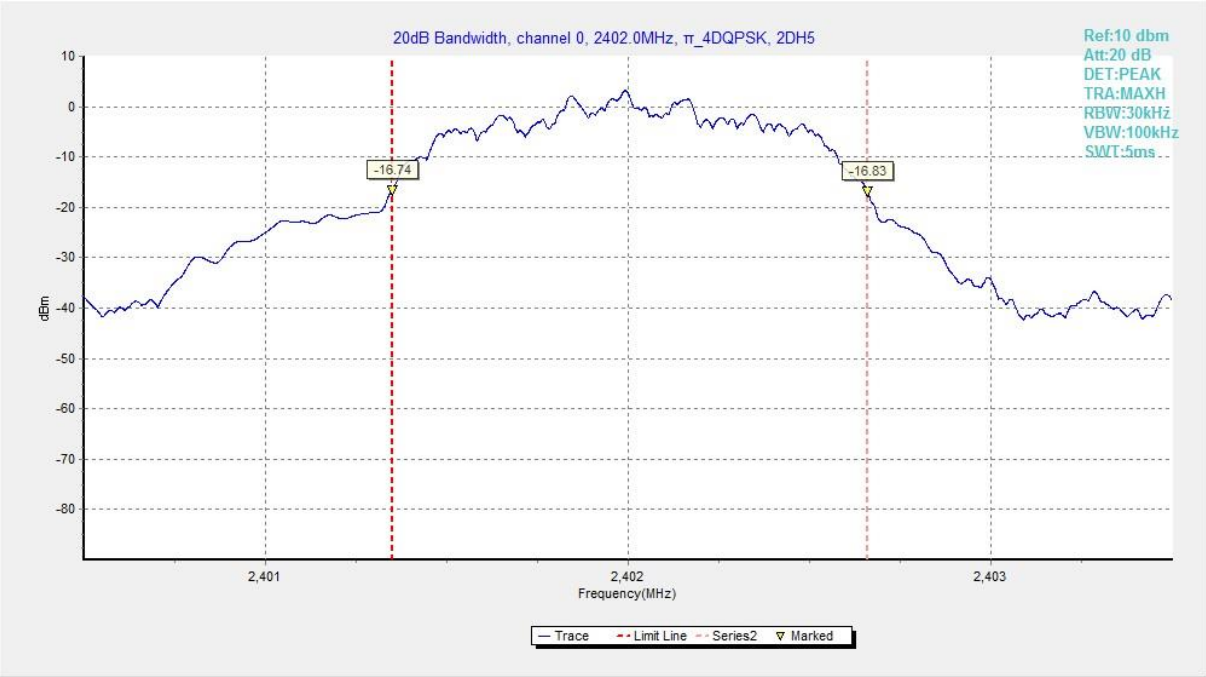

Fig. 63 20dB Bandwidth (π /4 DQPSK, Ch 0)

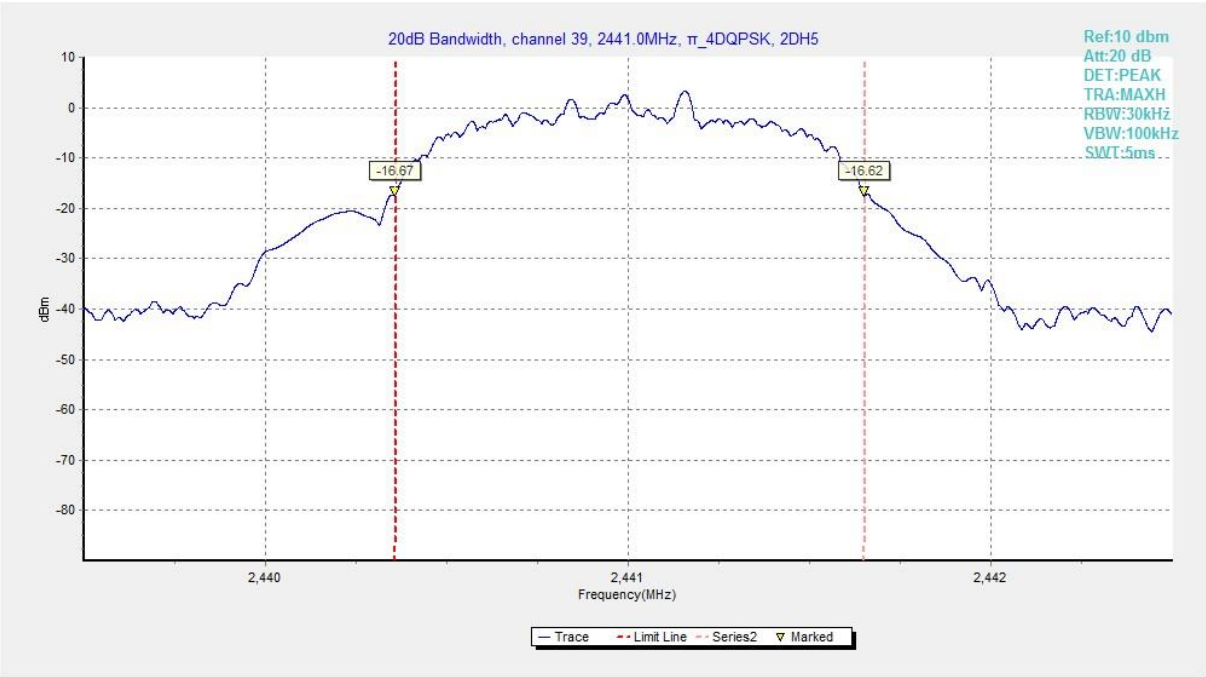

Fig. 64 20dB Bandwidth (π /4 DQPSK, Ch 39)

©Copyright. All rights reserved by SAICT.

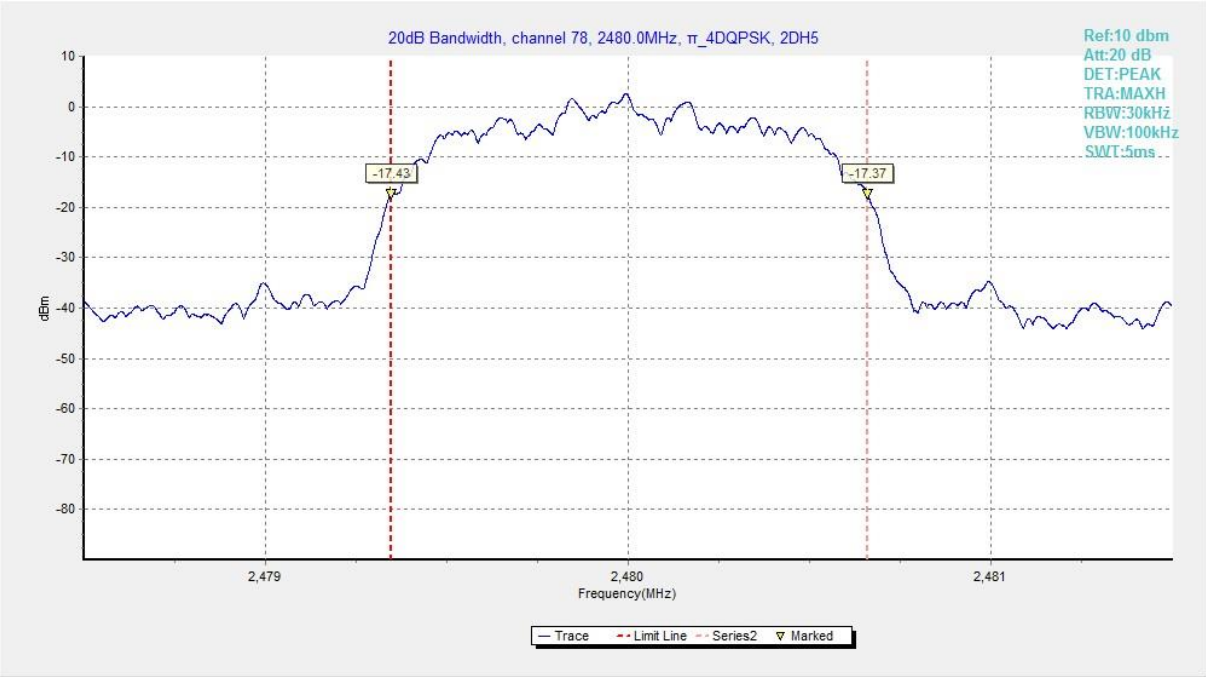

Fig. 65 20dB Bandwidth (π /4 DQPSK, Ch 78)

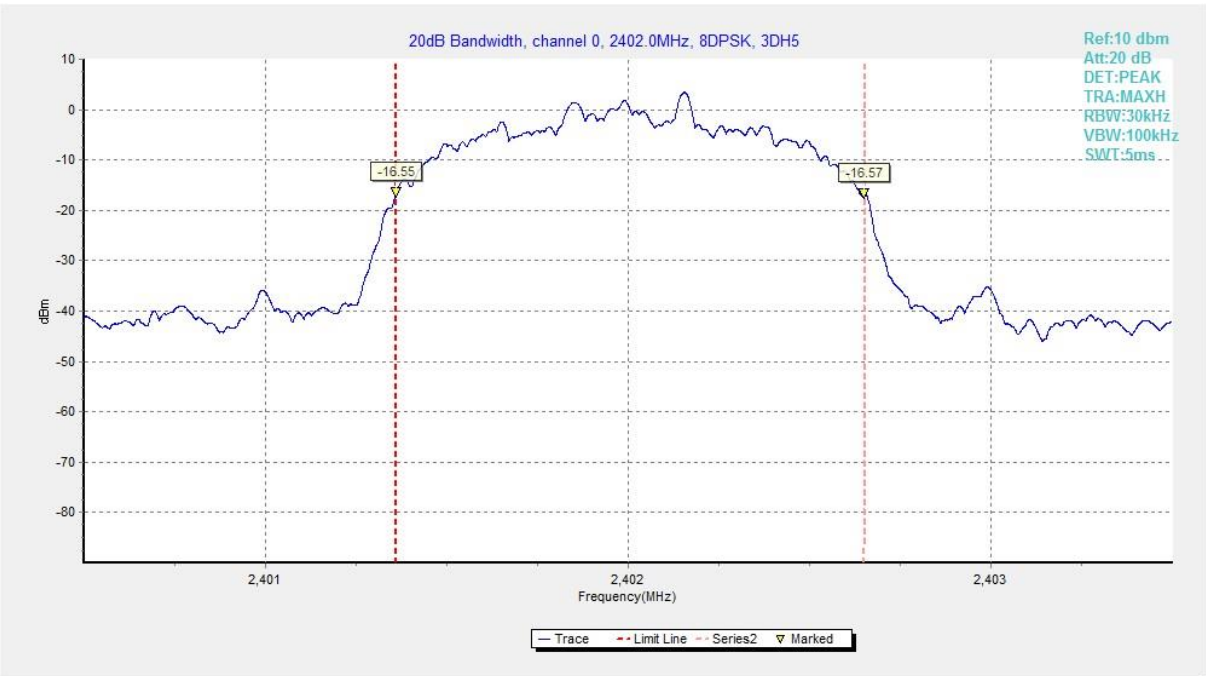

Fig. 66 20dB Bandwidth (8DPSK, Ch 0)

©Copyright. All rights reserved by SAICT.