



**CAICT**



# FCC PART 15C TEST REPORT No. I19Z61867-IOT02

for

**TCL Communication Ltd.**

**LTE/UMTS/GSM mobile phone**

**Model Name: A508DL**

**FCC ID: 2ACCJH112**

with

**Hardware Version: PIO**

**Software Version: vC41**

**Issued Date: 2019-11-8**

**Note:**

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## **REPORT HISTORY**

<b>Report Number</b>	<b>Revision</b>	<b>Description</b>	<b>Issue Date</b>
I19Z61867-IOT02	Rev.0	1st edition	2019-11-8

## **CONTENTS**

<b>1. TEST LABORATORY .....</b>	<b>5</b>
1.1. INTRODUCTION & ACCREDITATION .....	5
1.2. TESTING LOCATION .....	5
1.3. TESTING ENVIRONMENT .....	6
1.4. PROJECT DATA .....	6
1.5. SIGNATURE .....	6
<b>2. CLIENT INFORMATION.....</b>	<b>7</b>
2.1. APPLICANT INFORMATION .....	7
2.2. MANUFACTURER INFORMATION .....	7
<b>3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE) .....</b>	<b>8</b>
3.1. ABOUT EUT.....	8
3.2. INTERNAL IDENTIFICATION OF EUT .....	8
3.3. INTERNAL IDENTIFICATION OF AE .....	8
3.4. NORMAL ACCESSORY SETTING .....	9
3.5. GENERAL DESCRIPTION.....	9
<b>4. REFERENCE DOCUMENTS .....</b>	<b>10</b>
4.1. DOCUMENTS SUPPLIED BY APPLICANT.....	10
4.2. REFERENCE DOCUMENTS FOR TESTING .....	10
<b>5. TEST RESULTS.....</b>	<b>11</b>
5.1. SUMMARY OF TEST RESULTS .....	11
5.2. STATEMENTS.....	11
<b>6. TEST FACILITIES UTILIZED .....</b>	<b>12</b>
<b>7. MEASUREMENT UNCERTAINTY .....</b>	<b>13</b>
7.1. PEAK OUTPUT POWER - CONDUCTED .....	13
7.2. FREQUENCY BAND EDGES .....	13
7.3. TRANSMITTER SPURIOUS EMISSION - CONDUCTED .....	13
7.4. TRANSMITTER SPURIOUS EMISSION - RADIATED .....	13
7.5. TIME OF OCCUPANCY (DWELL TIME) .....	13
7.6. 20dB BANDWIDTH .....	13
7.7. CARRIER FREQUENCY SEPARATION .....	14
7.8. AC POWERLINE CONDUCTED EMISSION.....	14
<b>ANNEX A: DETAILED TEST RESULTS .....</b>	<b>15</b>
A.1. MEASUREMENT METHOD .....	15
A.2. PEAK OUTPUT POWER – CONDUCTED .....	16
A.3. FREQUENCY BAND EDGES – CONDUCTED .....	17
A.4. TRANSMITTER SPURIOUS EMISSION - CONDUCTED .....	24

A.5. TRANSMITTER SPURIOUS EMISSION - RADIATED .....	49
A.6. TIME OF OCCUPANCY (DWELL TIME) .....	59
A.7. 20dB BANDWIDTH.....	69
A.8. CARRIER FREQUENCY SEPARATION .....	75
A.9. NUMBER OF HOPPING CHANNELS.....	78
A.10. AC POWERLINE CONDUCTED EMISSION.....	82
<b>ANNEX B: ACCREDITATION CERTIFICATE.....</b>	<b>86</b>

## **1. Test Laboratory**

### **1.1. Introduction & Accreditation**

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2005 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (CN0066). The detail accreditation scope can be found on NVLAP website.

### **1.2. Testing Location**

Conducted testing Location: CTT(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,  
P. R. China 100191

Radiated testing Location: CTT(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,  
P. R. China 100191

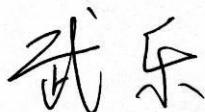
### 1.3. Testing Environment

Normal Temperature: 15-35°C  
Relative Humidity: 20-75%

### 1.4. Project data

Testing Start Date: 2019-10-15  
Testing End Date: 2019-10-31

### 1.5. Signature



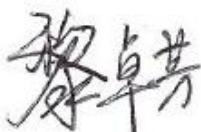
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Wu Le  
(Prepared this test report)



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Sun Zhenyu  
(Reviewed this test report)



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Li Zhuofang  
(Approved this test report)

## **2. Client Information**

### **2.1. Applicant Information**

Company Name: TCL Communication Ltd.  
Address /Post: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong  
City: Hong Kong  
Postal Code: /  
Country: China  
Telephone: 0086-755-36611722  
Fax: 0086-755-36612000-81722

### **2.2. Manufacturer Information**

Company Name: TCL Communication Ltd.  
Address /Post: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong  
City: Hong Kong  
Postal Code: /  
Country: China  
Telephone: 0086-755-36611722  
Fax: 0086-755-36612000-81722

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

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

Description	LTE/UMTS/GSM mobile phone
Model Name	A508DL
FCC ID	2ACCJH112
Frequency Band	ISM 2400MHz~2483.5MHz
Type of Modulation	GFSK/ $\pi/4$ DQPSK/8DPSK
Number of Channels	79
Power Supply	3.8V DC by Battery

#### **3.2. Internal Identification of EUT**

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	015592000016591	PIO	vC41
EUT2	015592000016542	PIO	vC41

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

#### **3.3. Internal Identification of AE**

AE ID*	AE ID*	Description
AE1	battery	/
AE2	Travel charger	/
AE3	USB Cable	/
AE1		
	Model	CAC3400011C1
	Manufacturer	BYD
	Capacitance	3400mAh
	Nominal voltage	/
AE2		
	Model	CBA0059AGAC5
	Manufacturer	PUAN
	Length of cable	/
AE3		
	Model	CDA0000141C1
	Manufacturer	JUWEI
	Length of cable	/

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

### 3.4. Normal Accessory setting

Fully charged battery should be used during the test.

### 3.5. General Description

The Equipment Under Test (EUT) is a model of LTE/UMTS/GSM mobile phone with integrated antenna. It consists of normal options: lithium battery, charger. Manual and specifications of the EUT were provided to fulfill 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 client 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 Part15	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.	2018
ANSI C63.10	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	June,2013

## 5. Test Results

### 5.1. Summary of Test Results

Abbreviations used in this clause:

- P** Pass, The EUT complies with the essential requirements in the standard.  
**F** Fail, The EUT does not comply with the essential requirements in the standard  
**NA** Not Applicable, The test was not applicable  
**NP** Not Performed, The test was not performed by CTTL

SUMMARY OF MEASUREMENT RESULTS	Sub-clause	Verdict
Peak Output Power - Conducted	15.247 (b)(1)	<b>P</b>
Frequency Band Edges	15.247 (d)	<b>P</b>
Transmitter Spurious Emission - Conducted	15.247 (d)	<b>P</b>
Transmitter Spurious Emission - Radiated	15.247, 15.205, 15.209	<b>P</b>
Time of Occupancy (Dwell Time)	15.247 (a) (1)(iii)	<b>P</b>
20dB Bandwidth	15.247 (a)(1)	<b>NA</b>
Carrier Frequency Separation	15.247 (a)(1)	<b>P</b>
Number of hopping channels	15.247 (a)(b)(iii)	<b>P</b>
AC Powerline Conducted Emission	15.107, 15.207	<b>P</b>

Please refer to **ANNEX A** for detail.

The measurement is made according to ANSI C63.10.

### 5.2. Statements

CTTL has evaluated the test cases requested by the applicant /manufacturer as listed in section 5.1 of this report for the EUT specified in section 3 according to the standards or reference documents listed in section 4.2

## 6. Test Facilities Utilized

### Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Vector Signal Analyzer	FSQ26	200136	Rohde & Schwarz	1 year	2019-11-21
2	Bluetooth Tester	CBT32	100649	Rohde & Schwarz	1 year	2020-11-29
3	LISN	ENV216	101200	R&S	1 year	2020-03-14
4	Test Receiver	ESCI 3	100344	R&S	1 year	2020-02-14
5	Bluetooth Tester	CBT	101042	R&S	1 year	2020-03-08

### Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	BiLog Antenna	VULB9163	9163-1222	Schwarzbeck	1 year	2020-03-14
2	Dual-Ridge Waveguide Horn Antenna	3115	6914	ETS-Lindgren	1 year	2020-01-03
3	Test Receiver	ESU26	100235	R&S	1 year	2020-03-01
4	EMI Antenna	3116	2663	ETS-Lindgren	1 year	2020-05-31
5	Bluetooth Tester	CBT	101042	R&S	1 year	2020-03-08

## 7. Measurement Uncertainty

### 7.1. Peak Output Power - Conducted

**Measurement Uncertainty:**

Measurement Uncertainty (k=2)	0.66dB
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### 7.2. Frequency Band Edges

**Measurement Uncertainty:**

Measurement Uncertainty (k=2)	0.66dB
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### 7.3. Transmitter Spurious Emission - Conducted

**Measurement Uncertainty:**

Frequency Range	Uncertainty (k=2)
30 MHz ~ 8 GHz	1.22dB
8 GHz ~ 12.75 GHz	1.51dB
12.7GHz ~ 26 GHz	1.51dB

### 7.4. Transmitter Spurious Emission - Radiated

**Measurement Uncertainty:**

Frequency Range	Uncertainty (k=2)
< 1 GHz	4.86dB
> 1 GHz	5.26dB

### 7.5. Time of Occupancy (Dwell Time)

**Measurement Uncertainty:**

Measurement Uncertainty (k=2)	0.88ms
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### 7.6. 20dB Bandwidth

**Measurement Uncertainty:**

Measurement Uncertainty (k=2)	61.936Hz
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## 7.7. Carrier Frequency Separation

**Measurement Uncertainty:**

Measurement Uncertainty (k=2)	61.936Hz
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## 7.8. AC Powerline Conducted Emission

**Measurement Uncertainty:**

Measurement Uncertainty (k=2)	3.38dB
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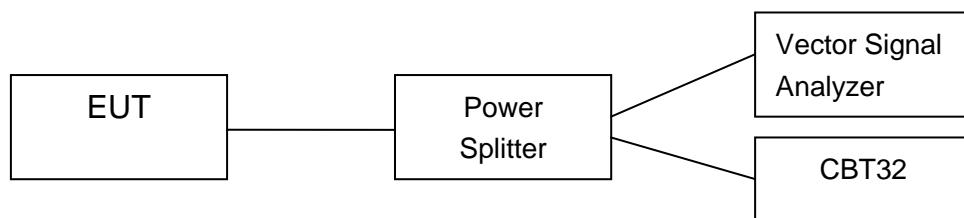
## **ANNEX A: Detailed Test Results**

### **A.1. Measurement Method**

#### **A.1.1. Conducted Measurements**

The measurement is made according to ANSI C63.10.

- 1). Connect the EUT to the test system correctly.
- 2). Set the EUT to the required work mode (Transmitter, receiver or transmitter & receiver).
- 3). Set the EUT to the required channel.
- 4). Set the EUT hopping mode (hopping or hopping off).
- 5). Set the spectrum analyzer to start measurement.
- 6). Record the values. Vector Signal Analyzer



#### **A.1.2. Radiated Emission Measurements**

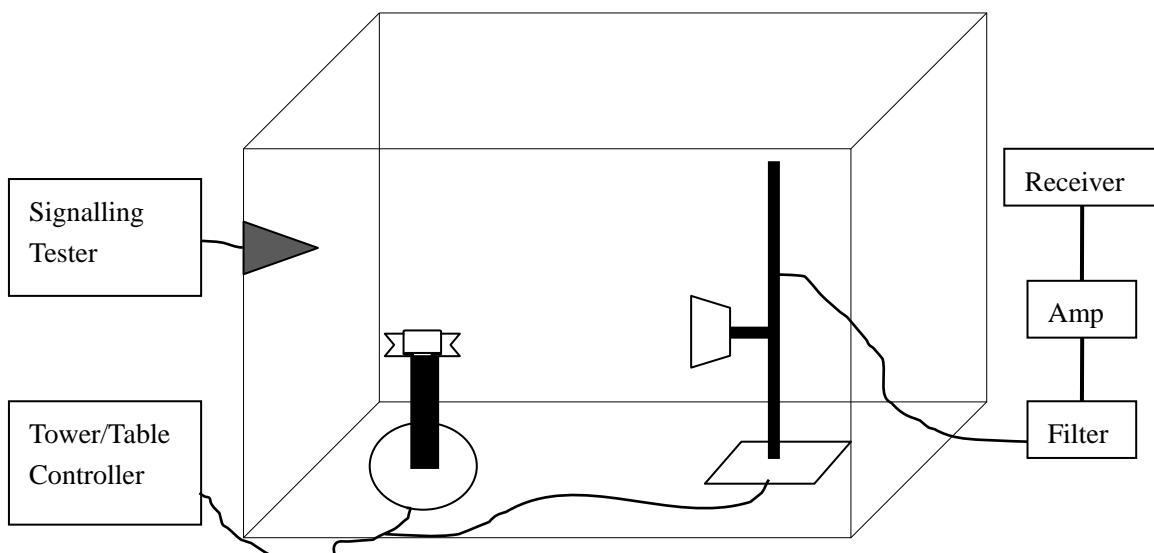
The measurement is made according to ANSI C63.10

The radiated emission test is performed in semi-anechoic chamber. The distance from the EUT to the reference point of measurement antenna is 3m. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept. During the test, the turntable is rotated 360° and the measurement antenna is moved from 1m to 4m to get the maximization result.

In the case of radiated emission, the used settings are as follows,

Sweep frequency from 30 MHz to 1GHz, RBW = 100 kHz, VBW = 300 kHz;

Sweep frequency from 1 GHz to 26GHz, RBW = 1MHz, VBW = 1MHz;



## A.2. Peak Output Power – Conducted

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

- a) Use the following spectrum analyzer settings:
  - Span: 6MHz
  - RBW: 3MHz
  - VBW: 3MHz
  - Sweep time: 2.5ms
  - Detector function: peak
  - Trace: max hold
- b) Allow trace to stabilize.
- c) Use the marker-to-peak function to set the marker to the peak of the emission.
- d) The indicated level is the peak output power.

**Measurement Limit:**

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

**Measurement Results:**

**For GFSK**

Channel	Ch 0 2402 MHz	Ch 39 2441 MHz	Ch 78 2480 MHz	Conclusion
Peak Conducted Output Power (dBm)	4.31	5.30	4.03	P

**For  $\pi/4$  DQPSK**

Channel	Ch 0 2402 MHz	Ch 39 2441 MHz	Ch 78 2480 MHz	Conclusion
Peak Conducted Output Power (dBm)	4.15	4.51	3.81	P

**For 8DPSK**

Channel	Ch 0 2402 MHz	Ch 39 2441 MHz	Ch 78 2480 MHz	Conclusion
Peak Conducted Output Power (dBm)	5.10	5.42	4.71	P

**Conclusion: PASS**

### A.3. Frequency Band Edges – Conducted

#### Method of Measurement: See ANSI C63.10-clause 7.8.6

Connect the spectrum analyzer to the EUT using an appropriate RF cable connected to the EUT output. Configure the spectrum analyzer settings as described below (be sure to enter all losses between the unlicensed wireless device output and the spectrum analyzer).

- Span: 10 MHz
- Resolution Bandwidth: 100 kHz
- Video Bandwidth: 300 kHz
- Sweep Time: Auto
- Detector: Peak
- Trace: max hold

Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel.

Observe the stored trace and measure the amplitude delta between the peak of the fundamental and the peak of the band-edge emission. This is not an absolute field strength measurement; it is only a relative measurement to determine the amount by which the emission drops at the band edge relative to the highest fundamental emission level.

#### Measurement Limit:

Standard	Limit (dBc)
FCC 47 CFR Part 15.247 (d)	< -20

#### Measurement Result:

##### For GFSK

Channel	Hopping	Band Edge Power ( dBc)		Conclusion
0	Hopping OFF	Fig.1	-62.17	P
	Hopping ON	Fig.2	-67.04	P
78	Hopping OFF	Fig.3	-64.57	P
	Hopping ON	Fig.4	-64.06	P

##### For π/4 DQPSK

Channel	Hopping	Band Edge Power ( dBc)		Conclusion
0	Hopping OFF	Fig.5	-56.16	P
	Hopping ON	Fig.6	-60.19	P
78	Hopping OFF	Fig.7	-63.55	P
	Hopping ON	Fig.8	-62.99	P

##### For 8DPSK

Channel	Hopping	Band Edge Power ( dBc)		Conclusion
0	Hopping OFF	Fig.9	-57.28	P
	Hopping ON	Fig.10	-65.11	P

78	Hopping OFF	Fig.11	-62.62	P
	Hopping ON	Fig.12	-65.51	P

**Conclusion: PASS**

**Test graphs as below**

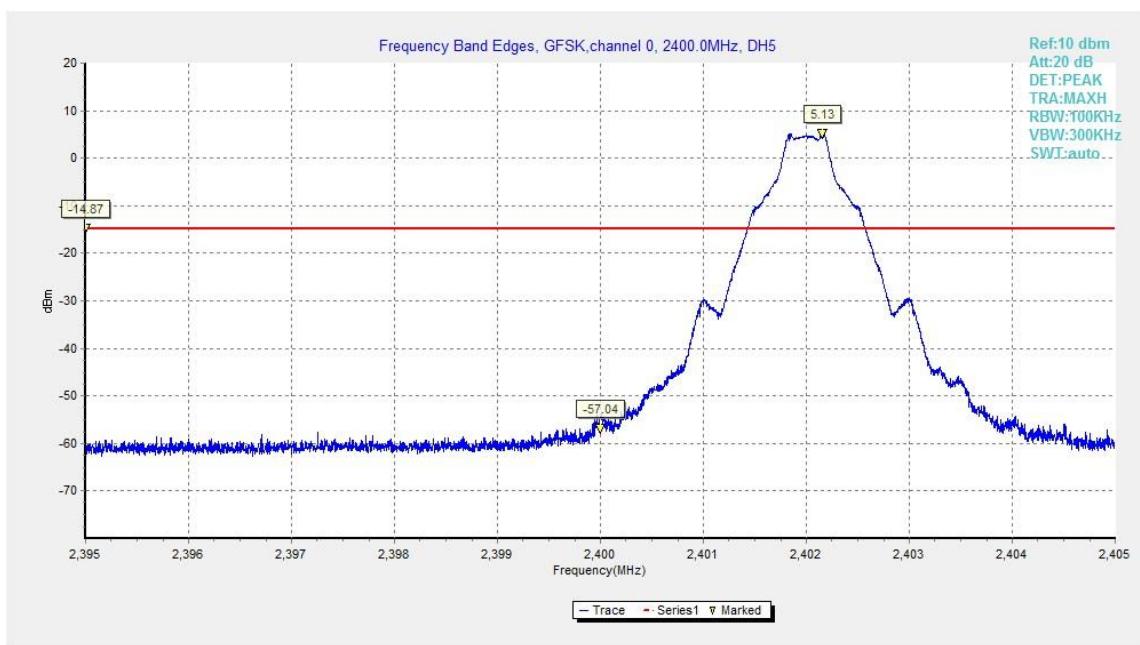


Fig.1. Frequency Band Edges: GFSK, Channel 0, Hopping Off

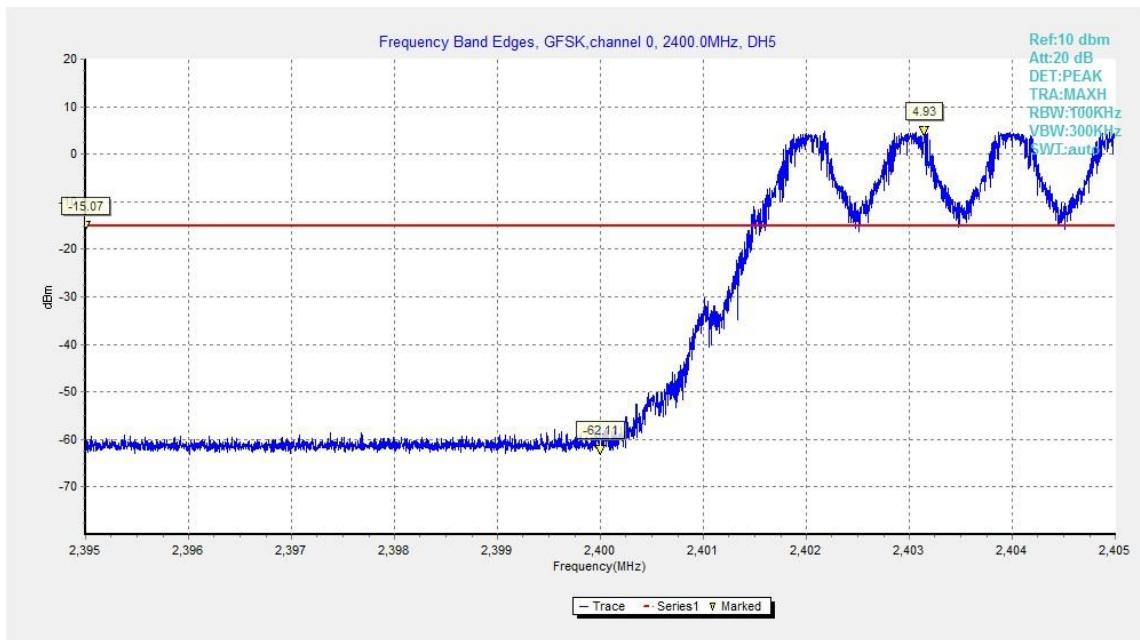


Fig.2. Frequency Band Edges: GFSK, Channel 0, Hopping On

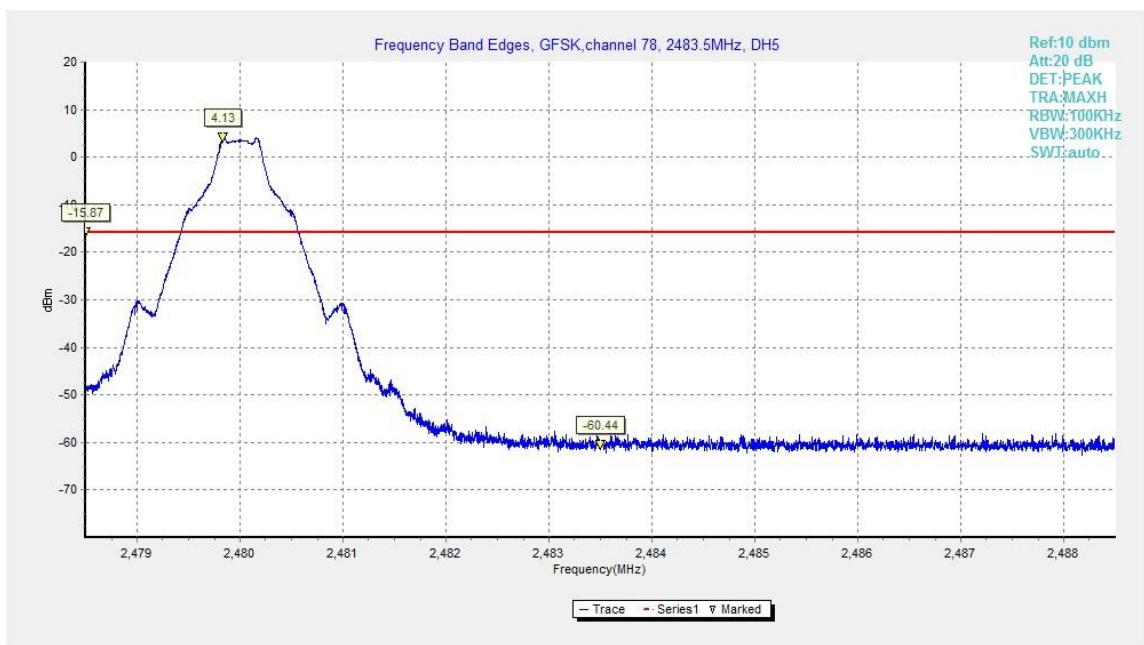


Fig.3. Frequency Band Edges: GFSK, Channel 78, Hopping Off

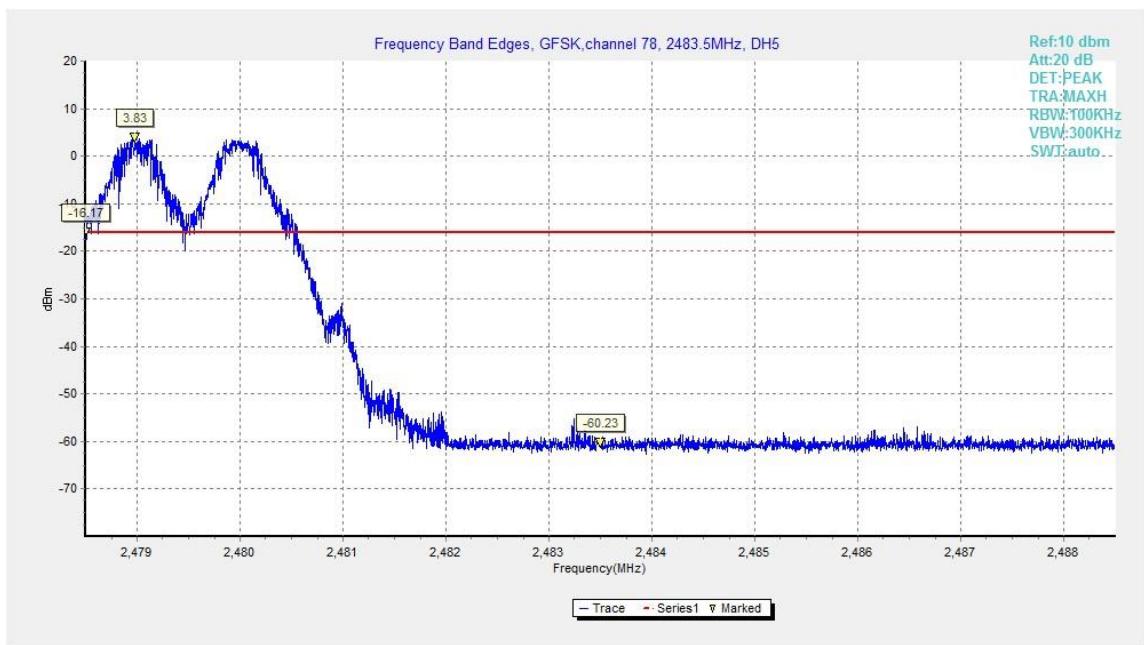


Fig.4. Frequency Band Edges: GFSK, Channel 78, Hopping On

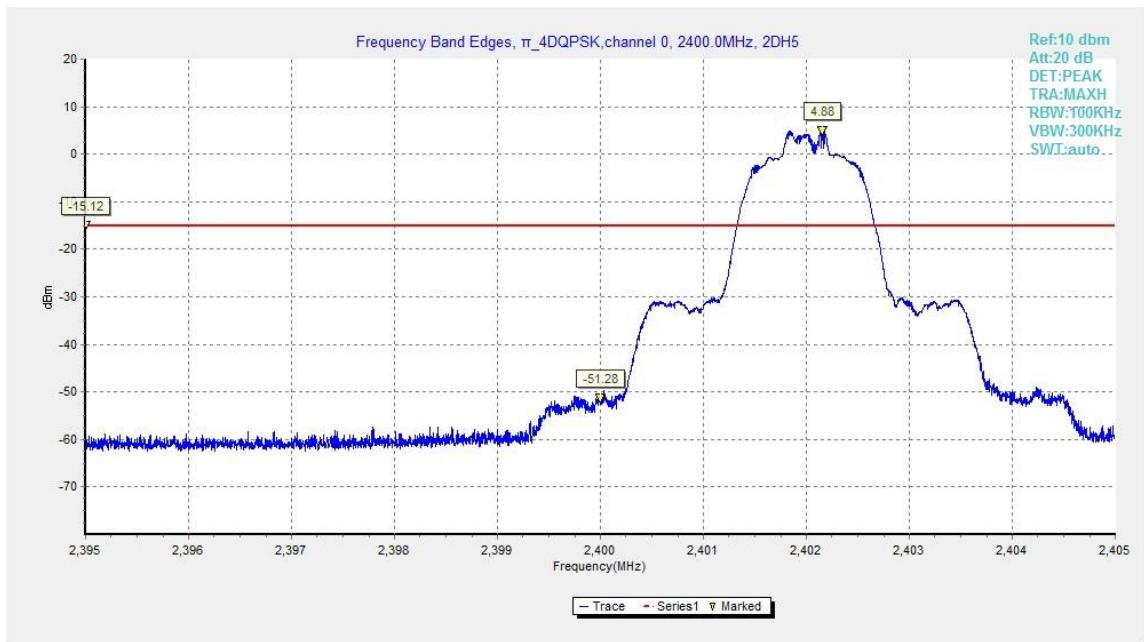


Fig.5. Frequency Band Edges:  $\pi/4$  DQPSK, Channel 0, Hopping Off

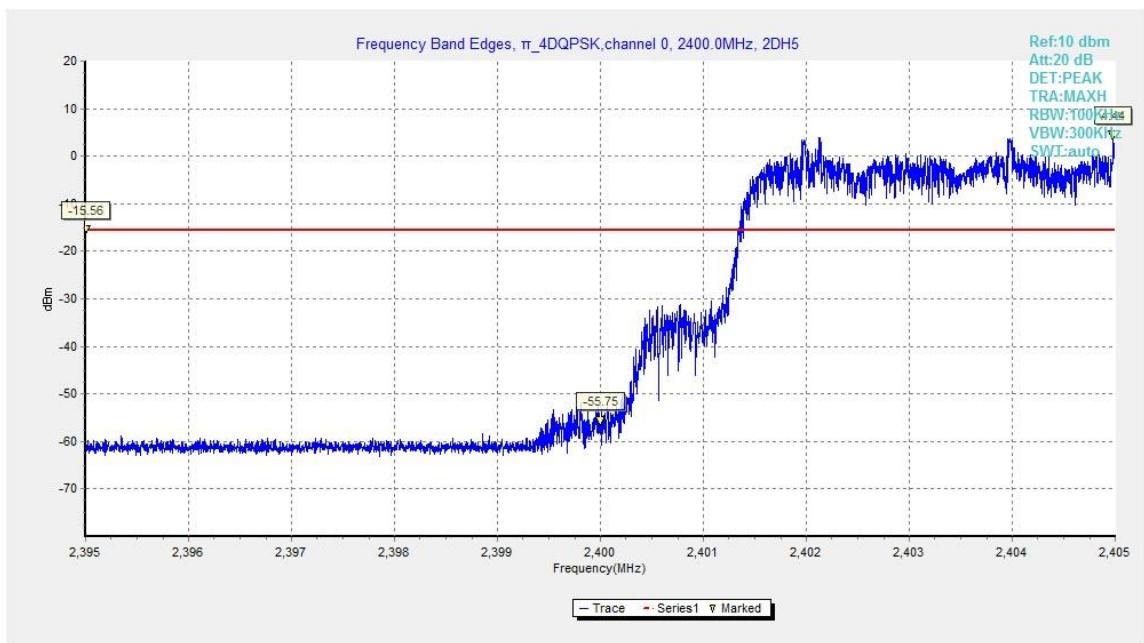


Fig.6. Frequency Band Edges:  $\pi/4$  DQPSK, Channel 0, Hopping On

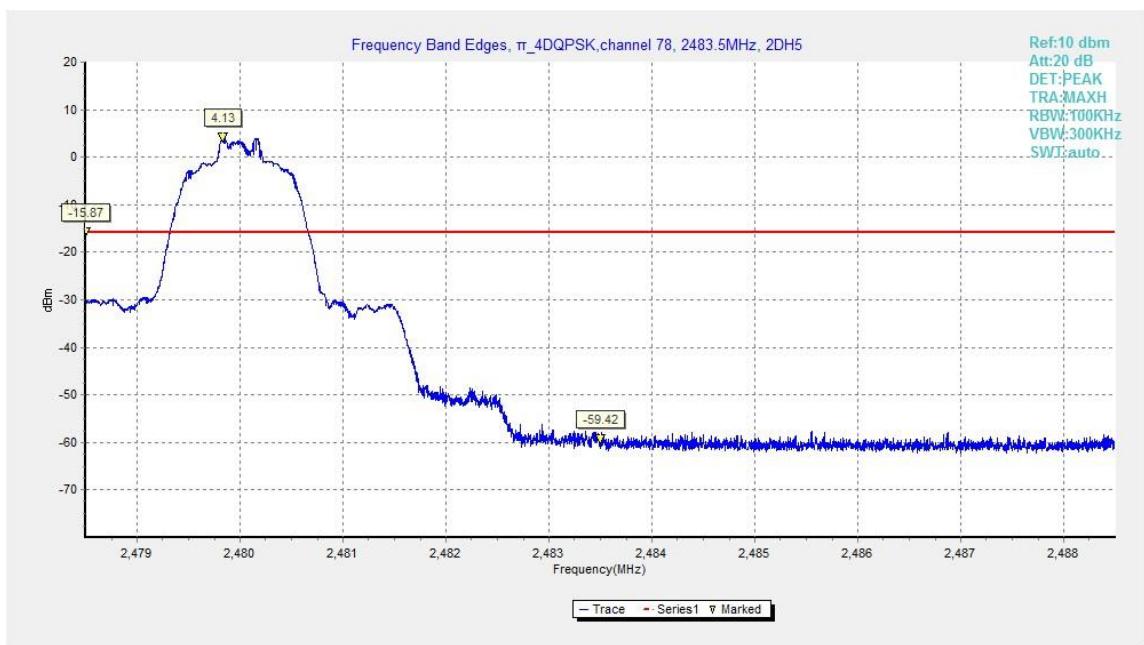


Fig.7. Frequency Band Edges:  $\pi/4$  DQPSK, Channel 78, Hopping Off

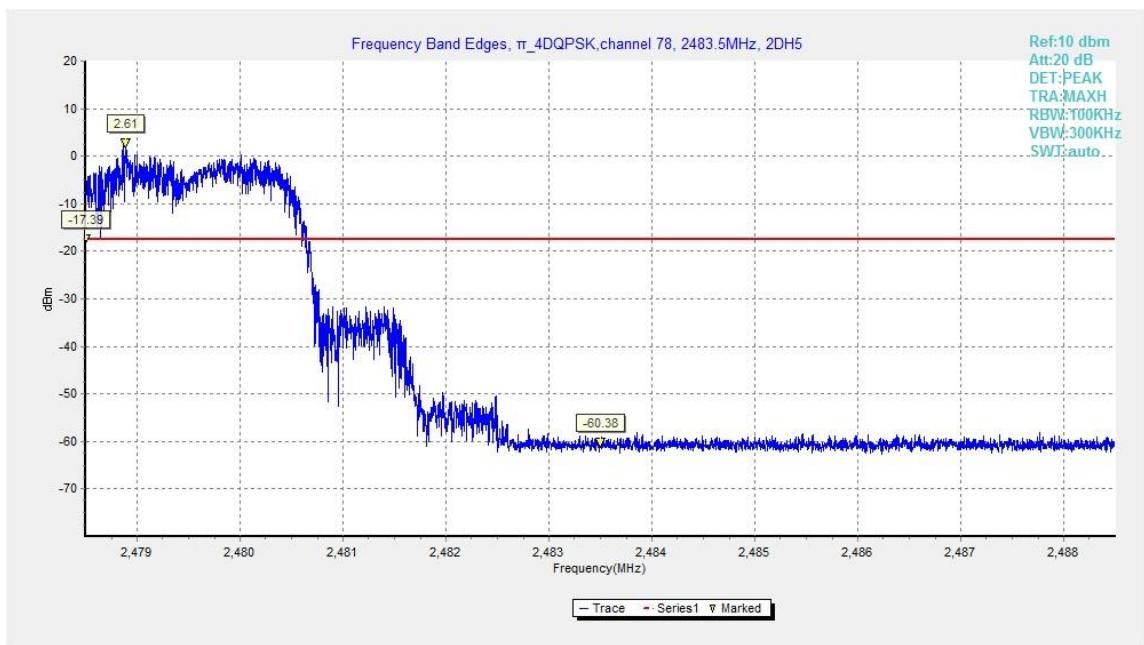


Fig.8. Frequency Band Edges:  $\pi/4$  DQPSK, Channel 78, Hopping On

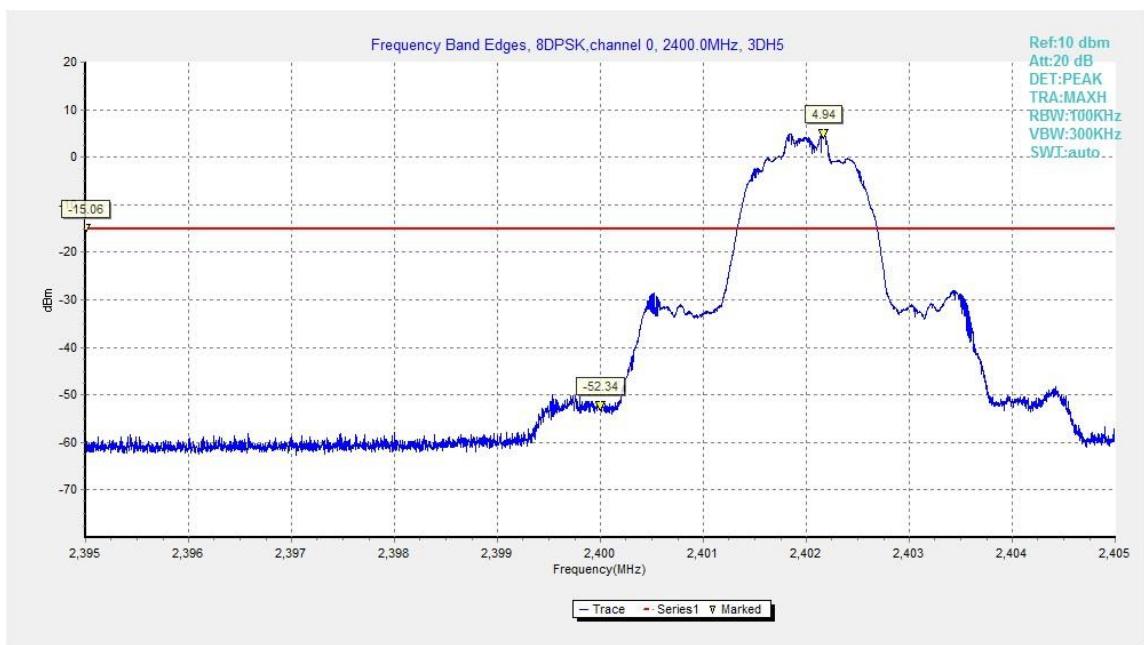


Fig.9. Frequency Band Edges: 8DPSK, Channel 0, Hopping Off

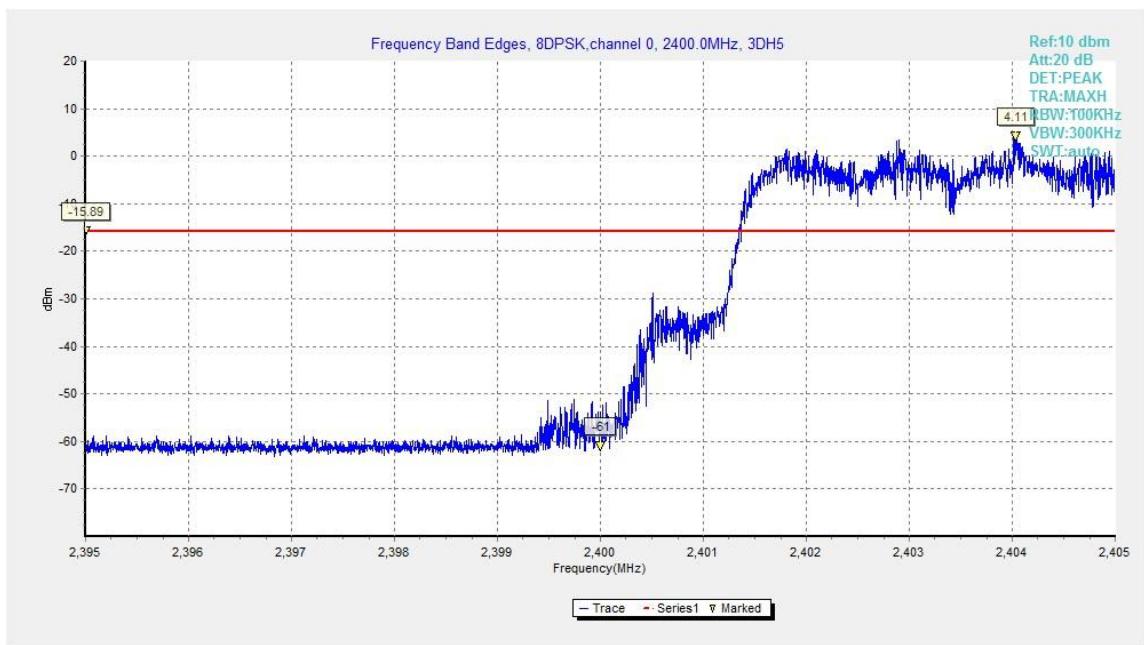


Fig.10. Frequency Band Edges: 8DPSK, Channel 0, Hopping On

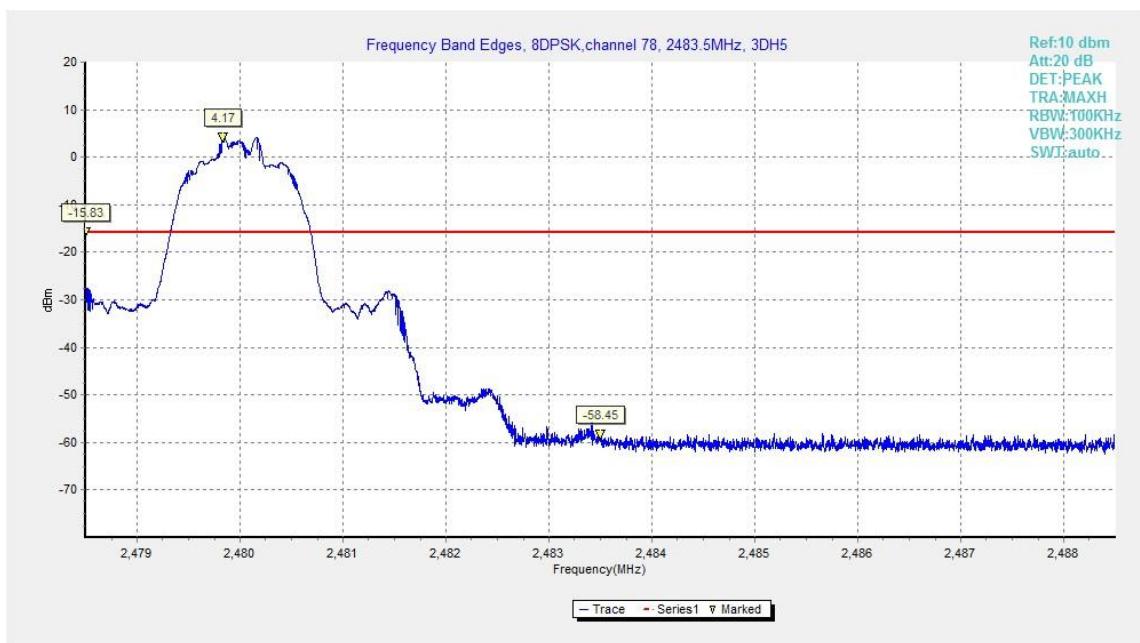


Fig.11. Frequency Band Edges: 8DPSK, Channel 78, Hopping Off

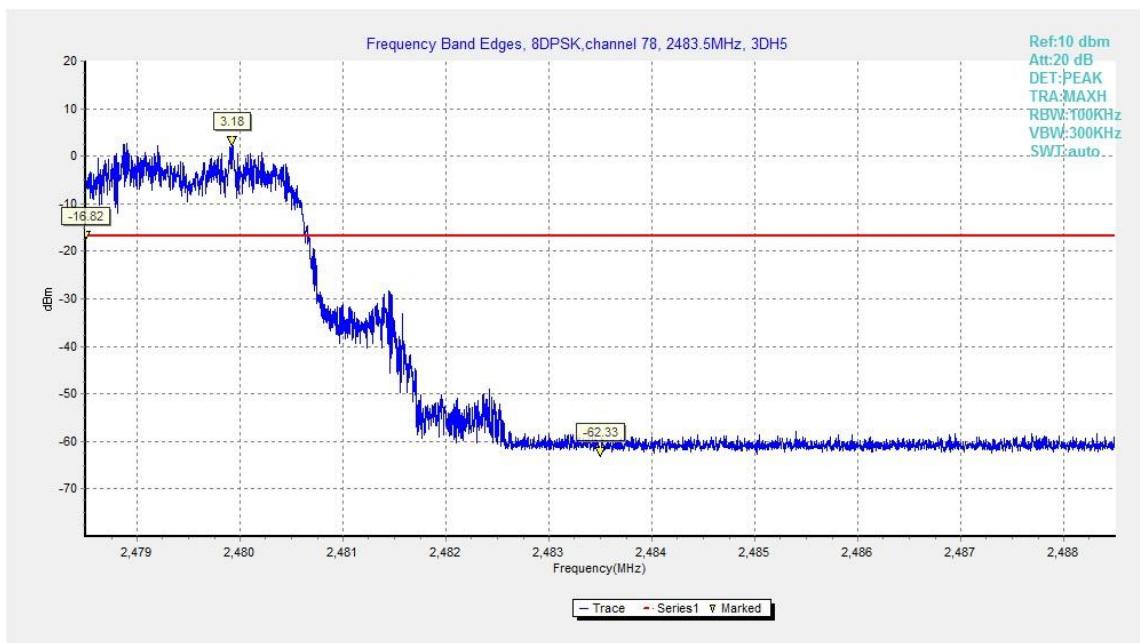


Fig.12. Frequency Band Edges: 8DPSK, Channel 78, Hopping On

#### A.4. Transmitter Spurious Emission - Conducted

##### **Method of Measurement: See ANSI C63.10-clause 7.8.8**

Measurement Procedure – Reference Level

1. Set the RBW = 100 kHz.
2. Set the VBW = 300 kHz.
3. Set the span to 5-30 % greater than the EBW.
4. Detector = peak.
5. Sweep time = auto couple.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW. Next, determine the power in 100 kHz band segments outside of the authorized frequency band using the following measurement:

Measurement Procedure - Unwanted Emissions

1. Set RBW = 100 kHz.
2. Set VBW = 300 kHz.
3. Set span to encompass the spectrum to be examined.
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize (this may take some time, depending on the extent of the span).

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified above.

##### **Measurement Limit:**

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

**Measurement Results:**
**For GFSK**

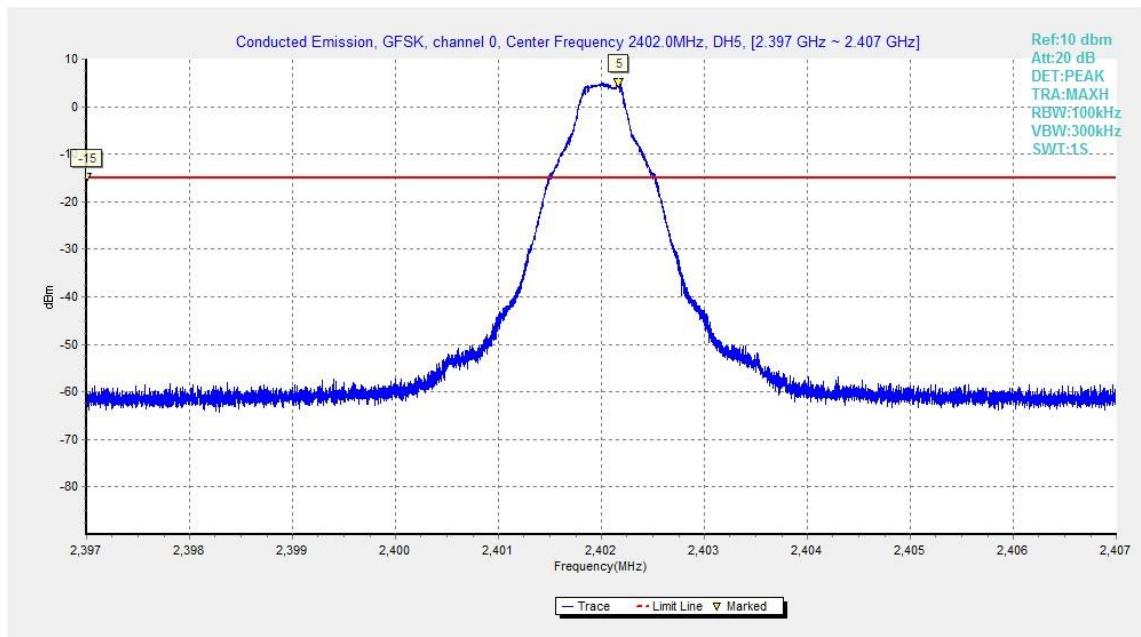
Channel	Frequency Range	Test Results	Conclusion
Ch 0 2402 MHz	Center Frequency	Fig.13	P
	30 MHz ~ 1 GHz	Fig.14	P
	1 GHz ~ 3 GHz	Fig.15	P
	3 GHz ~ 10 GHz	Fig.16	P
	10 GHz ~ 26 GHz	Fig.17	P
Ch 39 2441 MHz	Center Frequency	Fig.18	P
	30 MHz ~ 1 GHz	Fig.19	P
	1 GHz ~ 3 GHz	Fig.20	P
	3 GHz ~ 10 GHz	Fig.21	P
	10 GHz ~ 26 GHz	Fig.22	P
Ch 78 2480 MHz	Center Frequency	Fig.23	P
	30 MHz ~ 1 GHz	Fig.24	P
	1 GHz ~ 3 GHz	Fig.25	P
	3 GHz ~ 10 GHz	Fig.26	P
	10 GHz ~ 26 GHz	Fig.27	P

**For  $\pi/4$  DQPSK**

Channel	Frequency Range	Test Results	Conclusion
Ch 0 2402 MHz	Center Frequency	Fig.28	P
	30 MHz ~ 1 GHz	Fig.29	P
	1 GHz ~ 3 GHz	Fig.30	P
	3 GHz ~ 10 GHz	Fig.31	P
	10 GHz ~ 26 GHz	Fig.32	P
Ch 39 2441 MHz	Center Frequency	Fig.33	P
	30 MHz ~ 1 GHz	Fig.34	P
	1 GHz ~ 3 GHz	Fig.35	P
	3 GHz ~ 10 GHz	Fig.36	P
	10 GHz ~ 26 GHz	Fig.37	P
Ch 78 2480 MHz	Center Frequency	Fig.38	P
	30 MHz ~ 1 GHz	Fig.39	P
	1 GHz ~ 3 GHz	Fig.40	P
	3 GHz ~ 10 GHz	Fig.41	P
	10 GHz ~ 26 GHz	Fig.42	P

**For 8DPSK**

Channel	Frequency Range	Test Results	Conclusion
Ch 0 2402 MHz	Center Frequency	Fig.43	P
	30 MHz ~ 1 GHz	Fig.44	P
	1 GHz ~ 3 GHz	Fig.45	P
	3 GHz ~ 10 GHz	Fig.46	P
	10 GHz ~ 26 GHz	Fig.47	P
Ch 39 2441 MHz	Center Frequency	Fig.48	P
	30 MHz ~ 1 GHz	Fig.49	P
	1 GHz ~ 3 GHz	Fig.50	P
	3 GHz ~ 10 GHz	Fig.51	P
	10 GHz ~ 26 GHz	Fig.52	P
Ch 78 2480 MHz	Center Frequency	Fig.53	P
	30 MHz ~ 1 GHz	Fig.54	P
	1 GHz ~ 3 GHz	Fig.55	P
	3 GHz ~ 10 GHz	Fig.56	P
	10 GHz ~ 26 GHz	Fig.57	P

**Conclusion: PASS**
**Test graphs as below**

**Fig.13. Conducted spurious emission: GFSK, Channel 0,2402MHz**

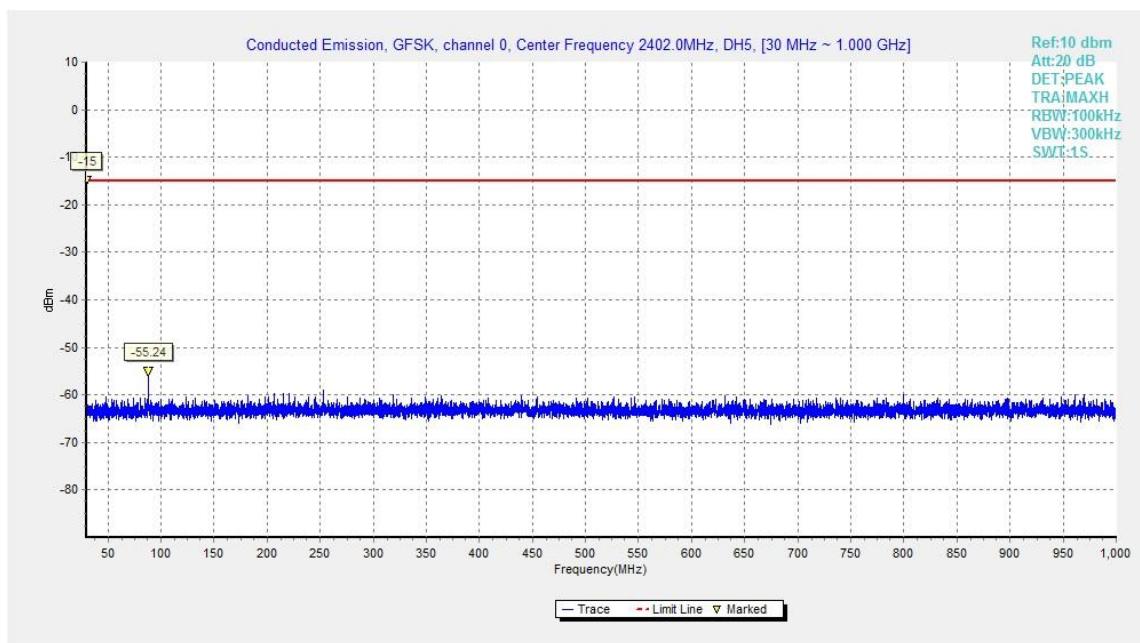


Fig.14. Conducted spurious emission: GFSK, Channel 0, 30MHz - 1GHz

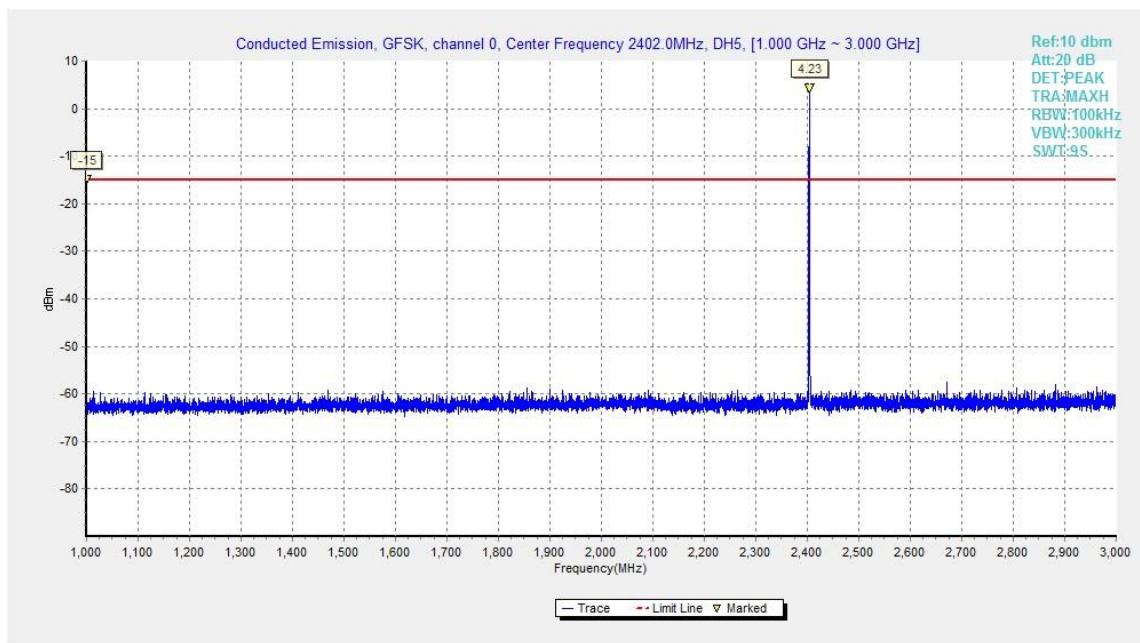


Fig.15. Conducted spurious emission: GFSK, Channel 0, 1GHz - 3GHz

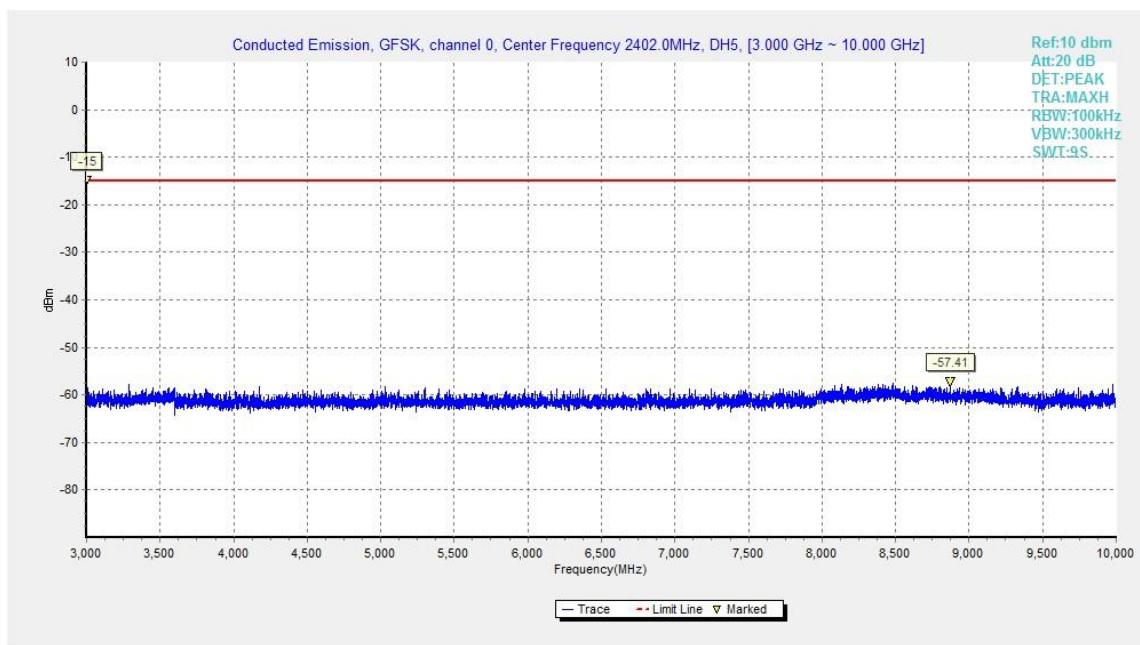


Fig.16. Conducted spurious emission: GFSK, Channel 0, 3GHz - 10GHz

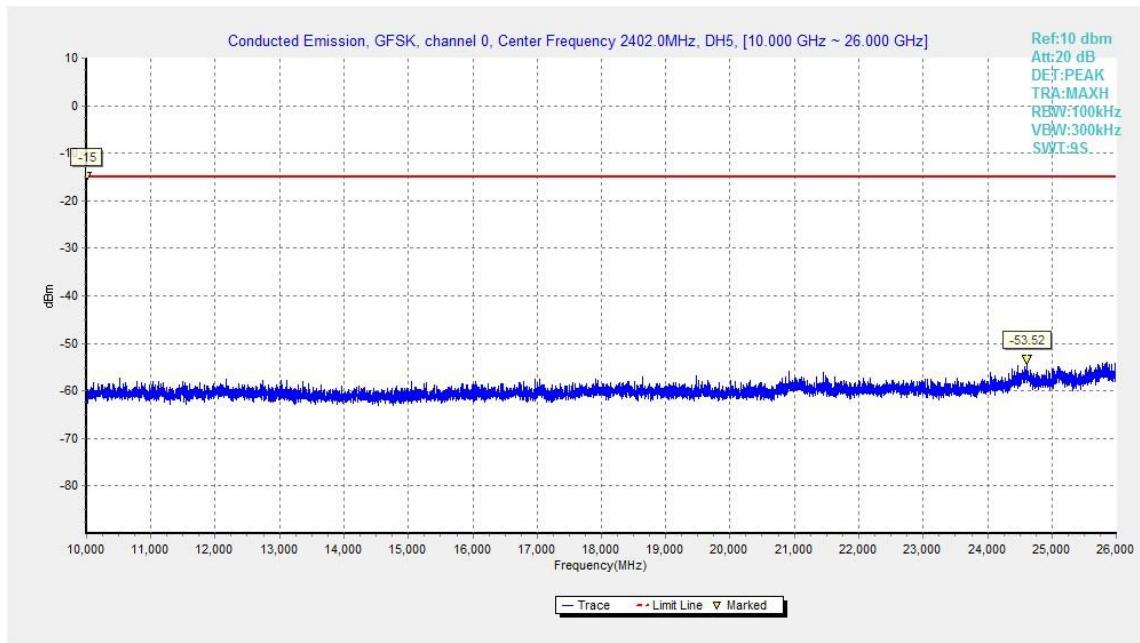


Fig.17. Conducted spurious emission: GFSK, Channel 0, 10GHz - 26GHz

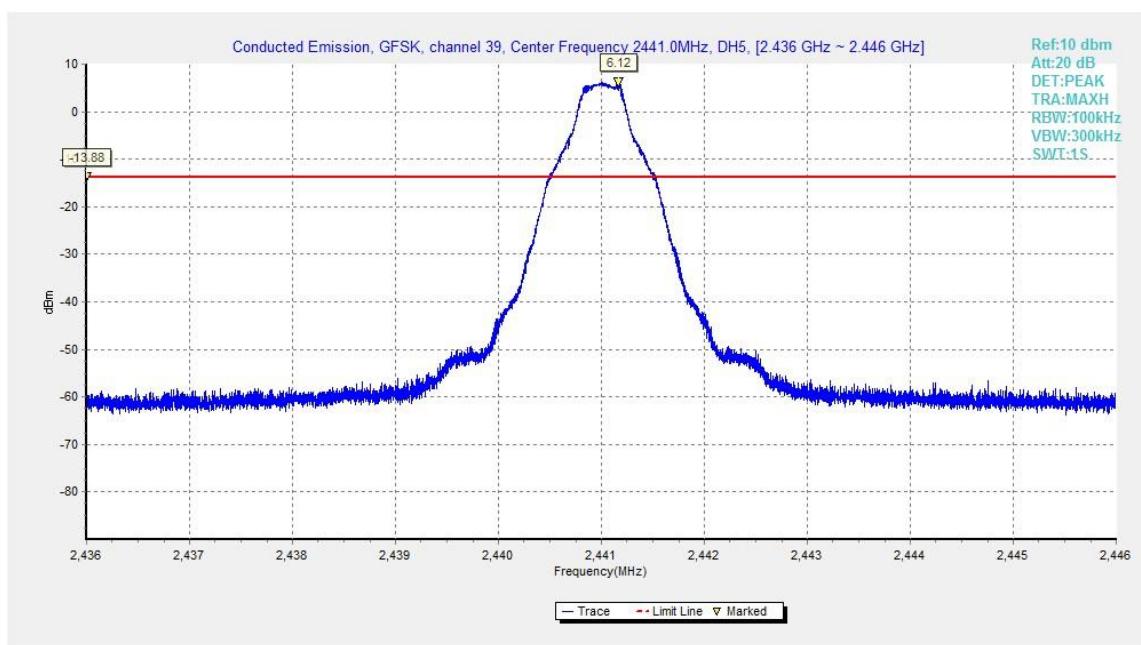


Fig.18. Conducted spurious emission: GFSK, Channel 39, 2441MHz

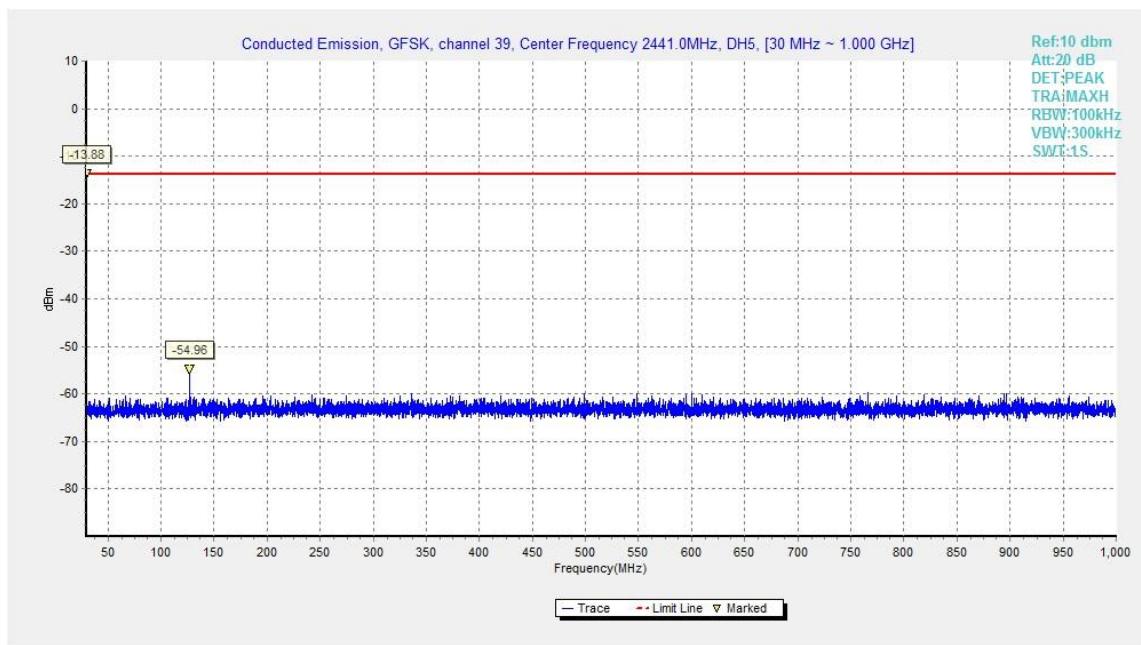


Fig.19. Conducted spurious emission: GFSK, Channel 39, 30MHz - 1GHz

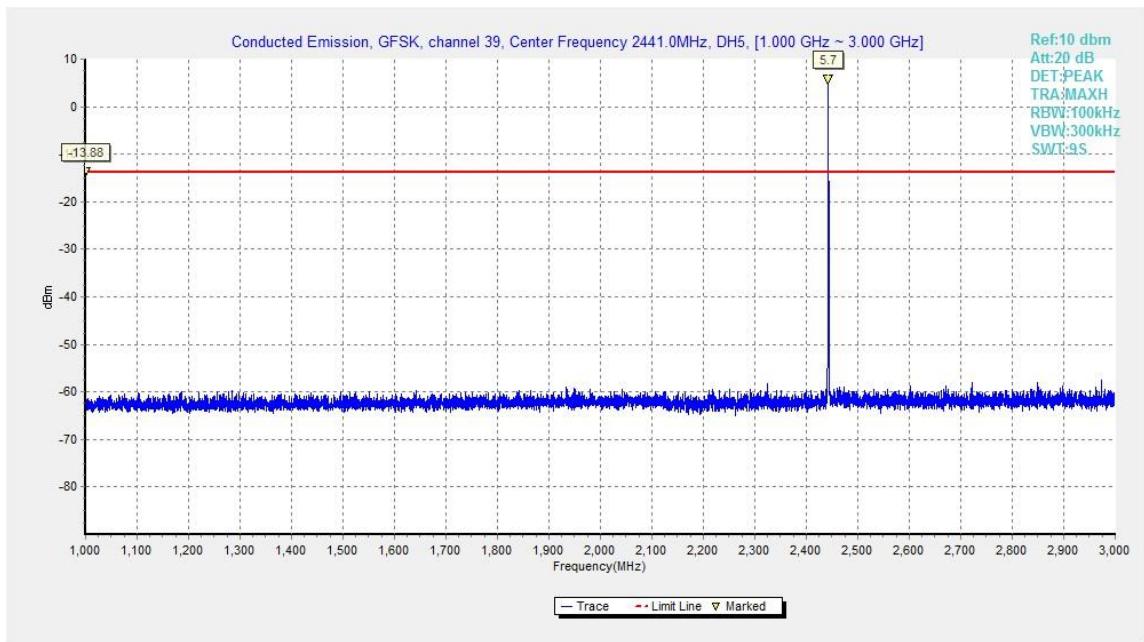


Fig.20. Conducted spurious emission: GFSK, Channel 39, 1GHz – 3GHz

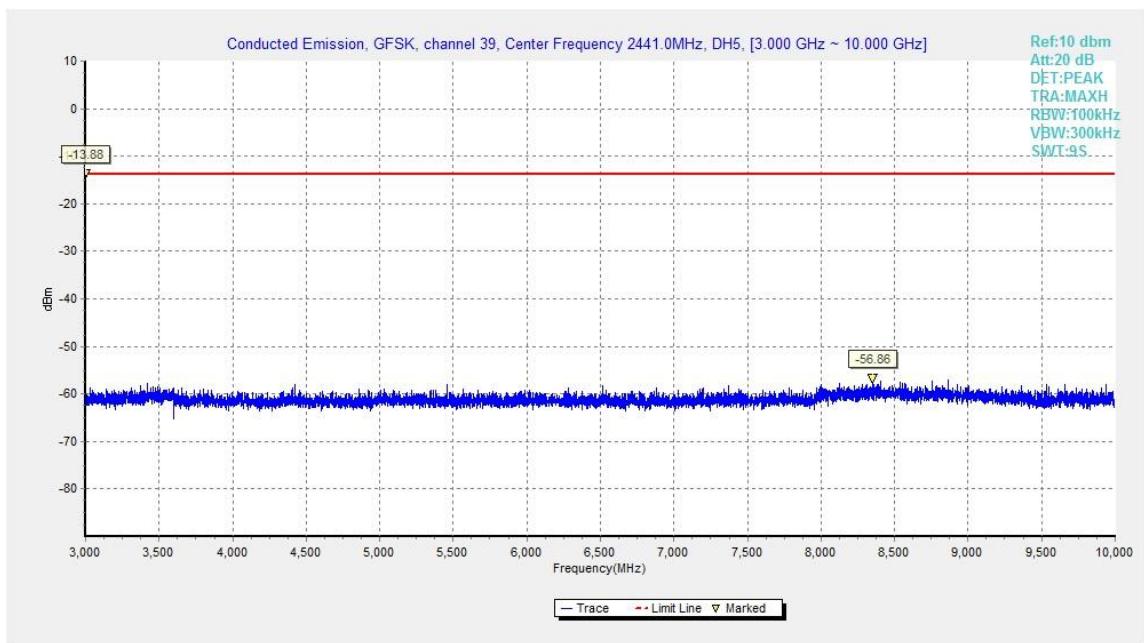


Fig.21. Conducted spurious emission: GFSK, Channel 39, 3GHz – 10GHz

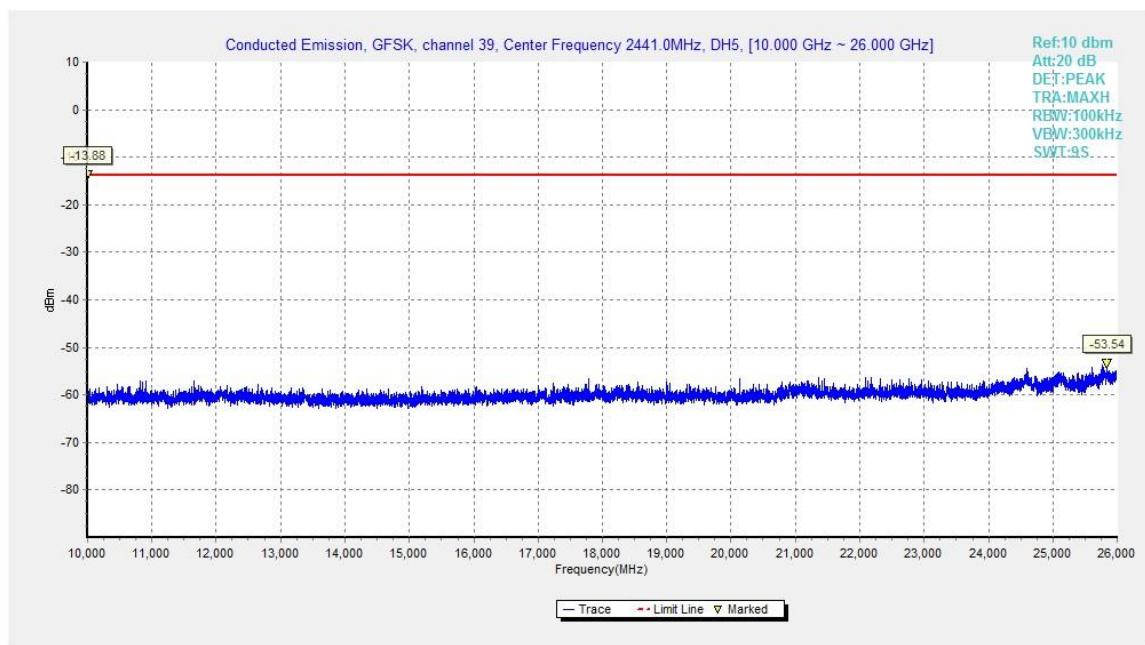


Fig.22. Conducted spurious emission: GFSK, Channel 39, 10GHz – 26GHz

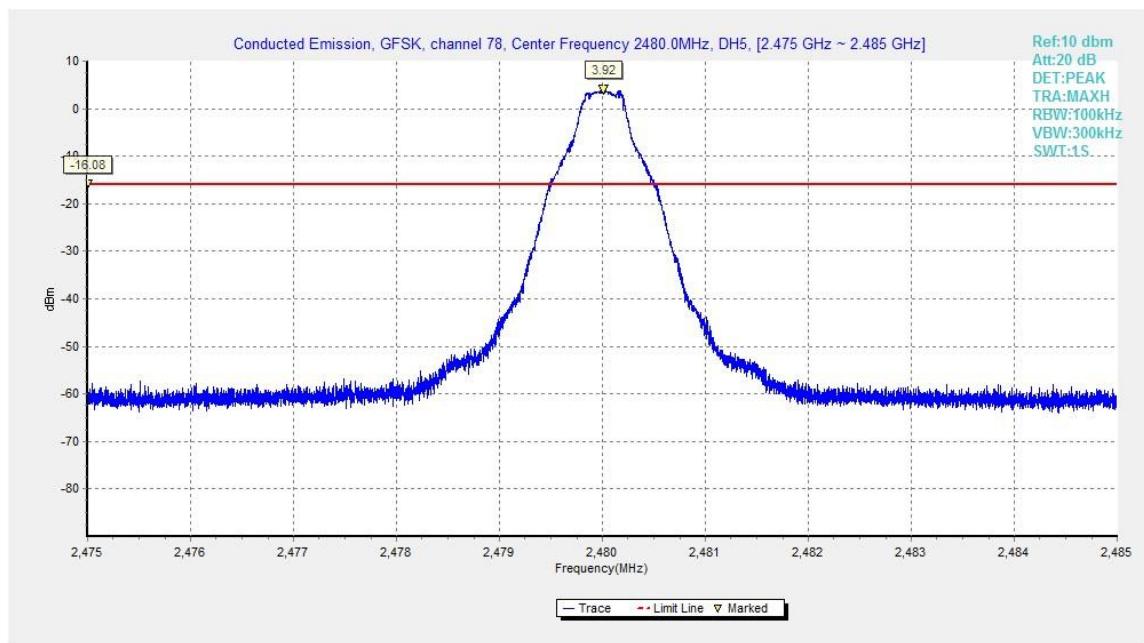


Fig.23. Conducted spurious emission: GFSK, Channel 78, 2480MHz

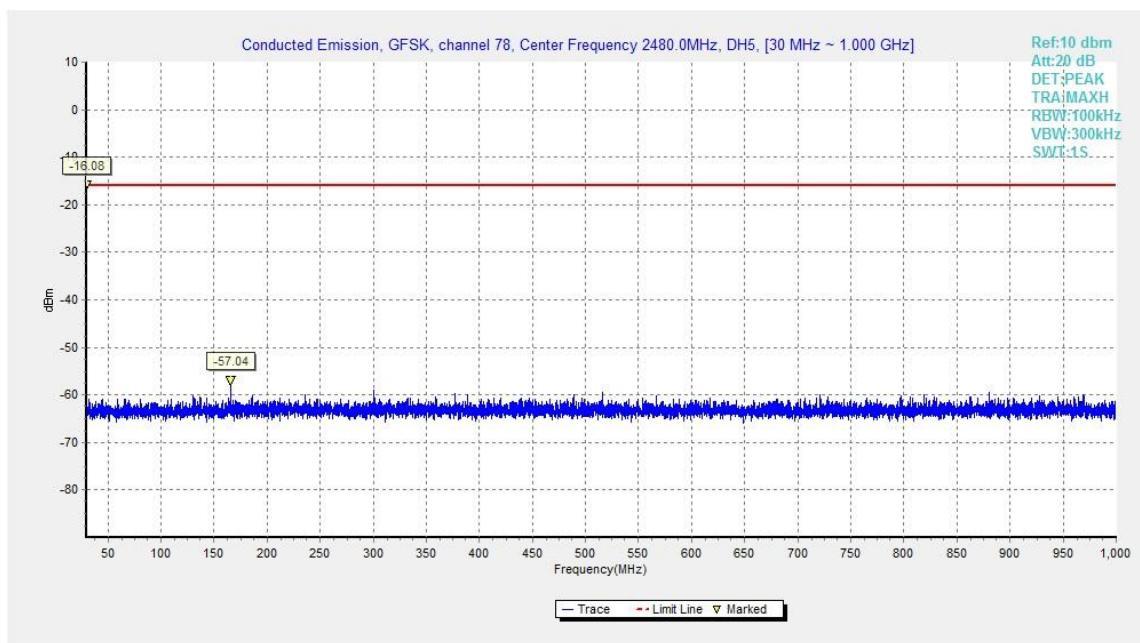


Fig.24. Conducted spurious emission: GFSK, Channel 78, 30MHz - 1GHz

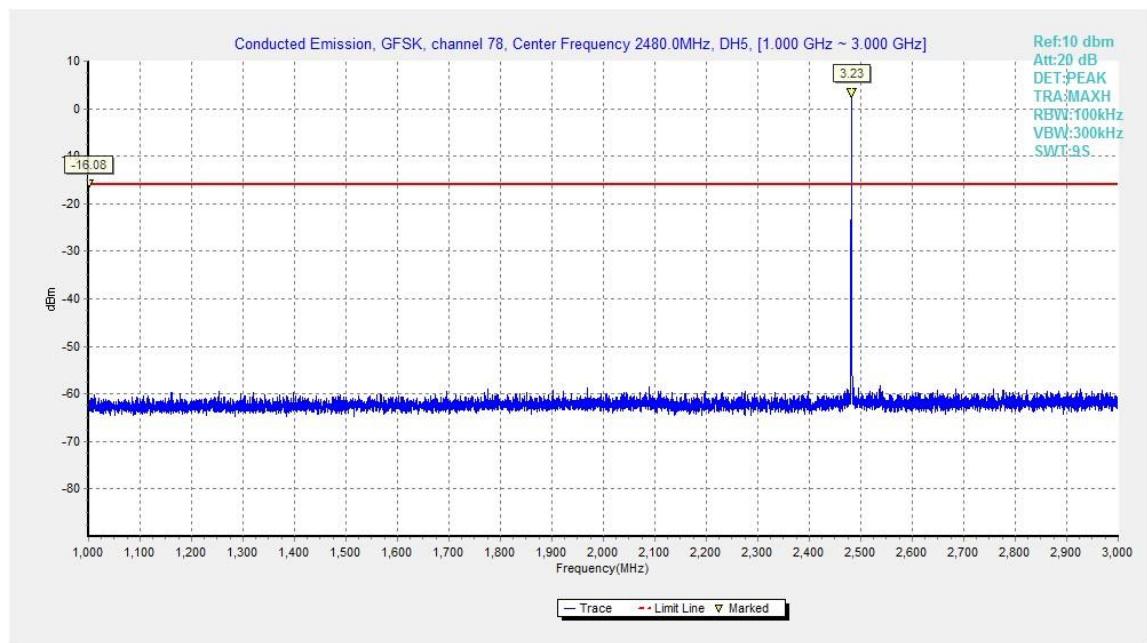


Fig.25. Conducted spurious emission: GFSK, Channel 78, 1GHz - 3GHz

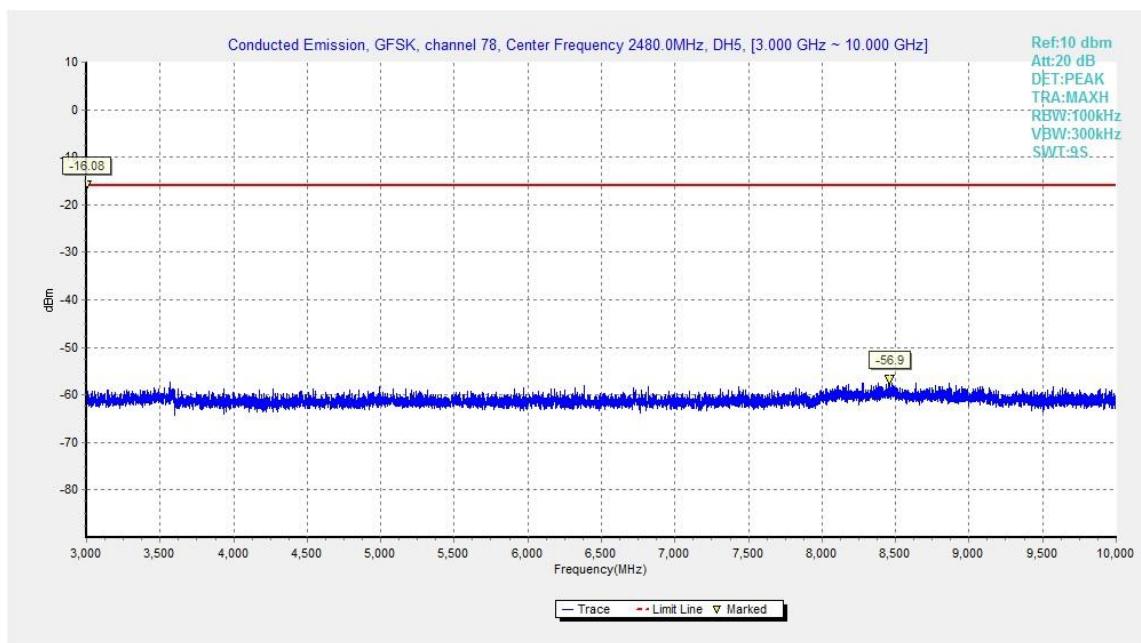


Fig.26. Conducted spurious emission: GFSK, Channel 78, 3GHz - 10GHz

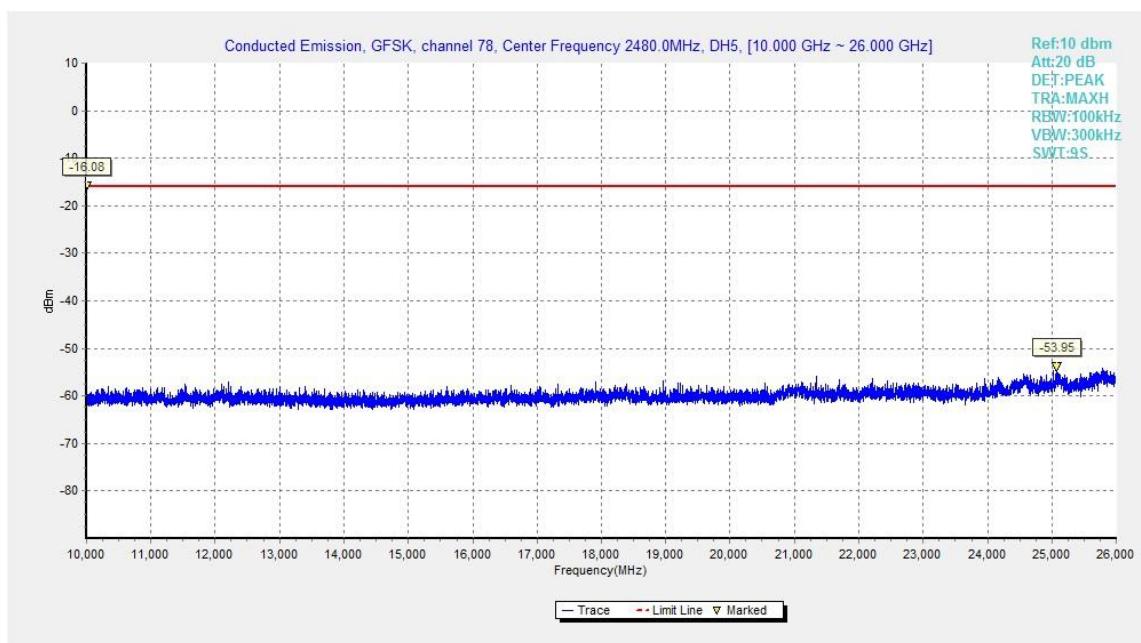


Fig.27. Conducted spurious emission: GFSK, Channel 78, 10GHz - 26GHz

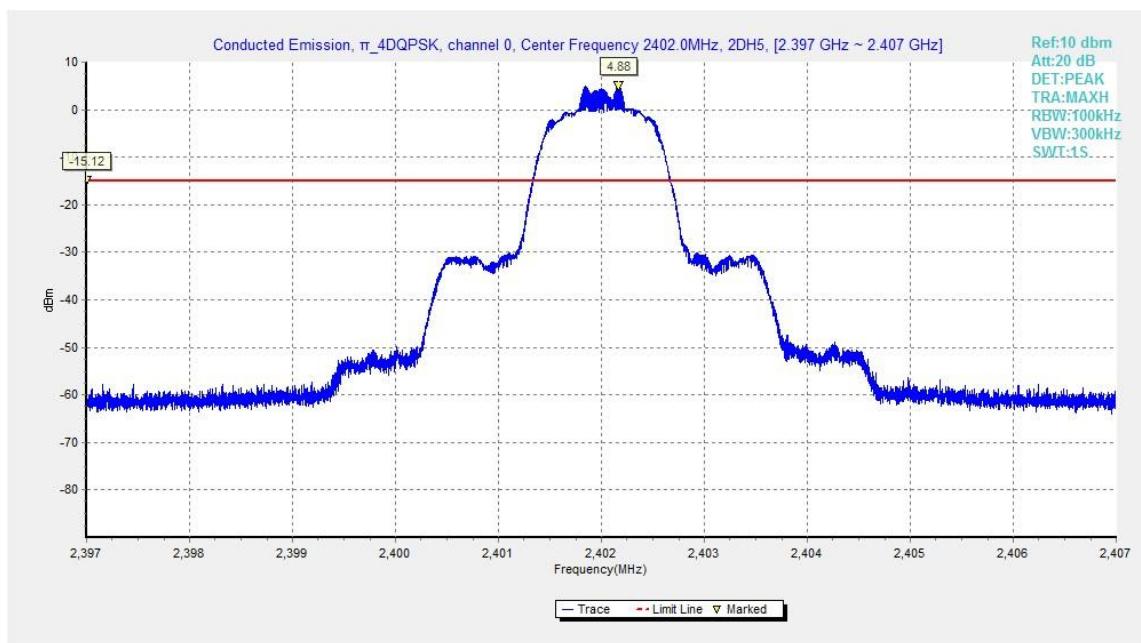


Fig.28. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 0, 2402MHz

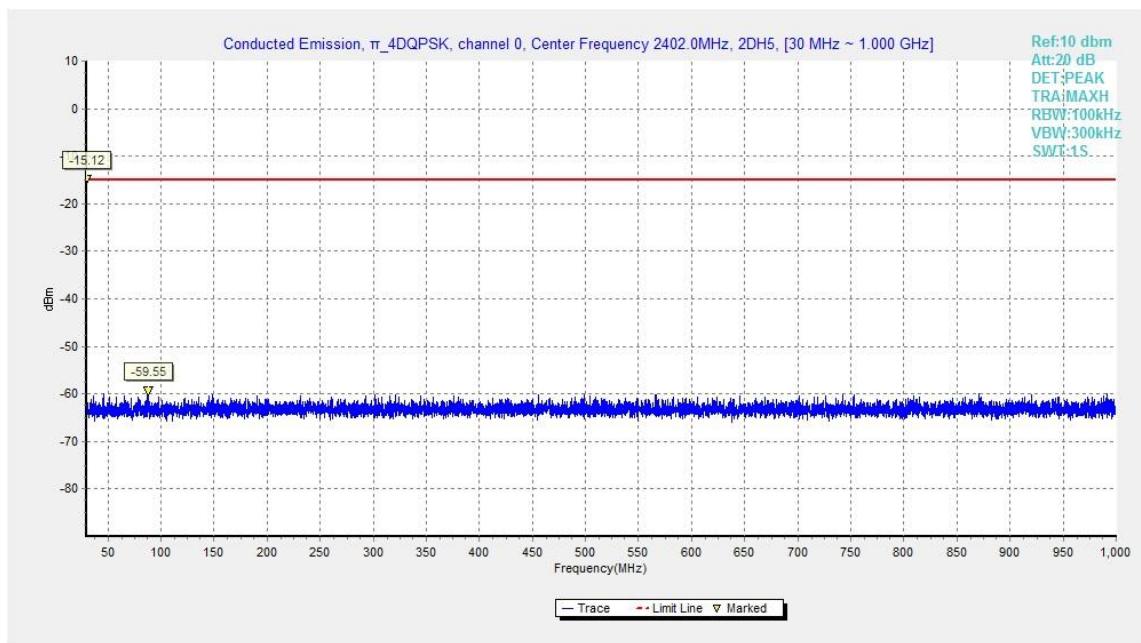


Fig.29. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 0, 30MHz - 1GHz

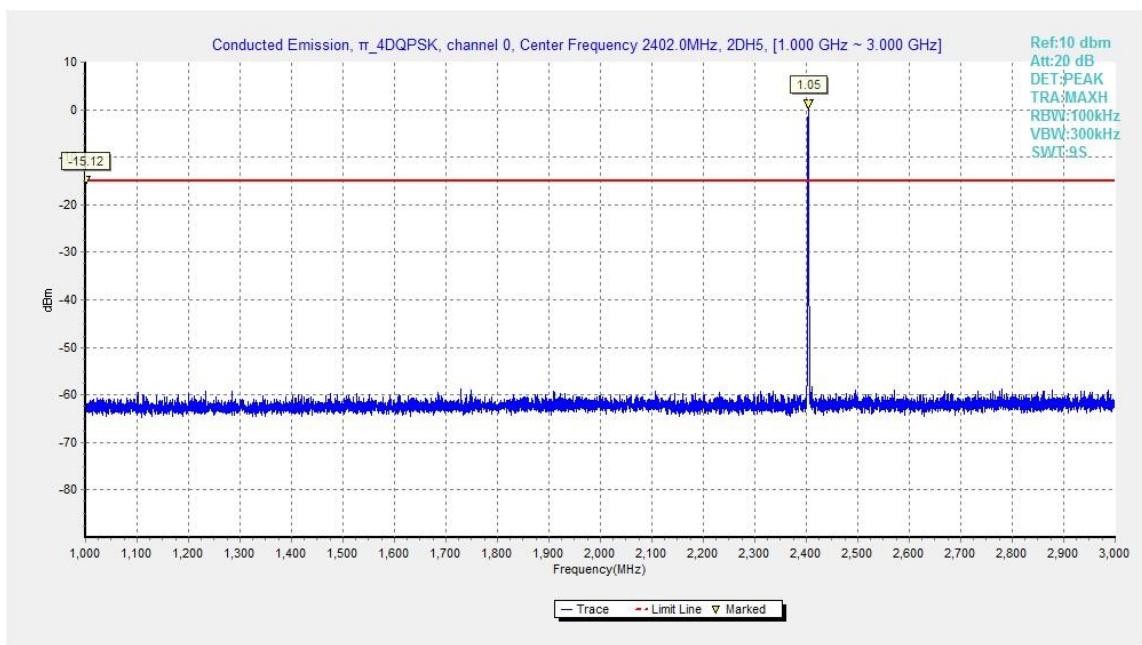


Fig.30. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 0, 1GHz - 3GHz

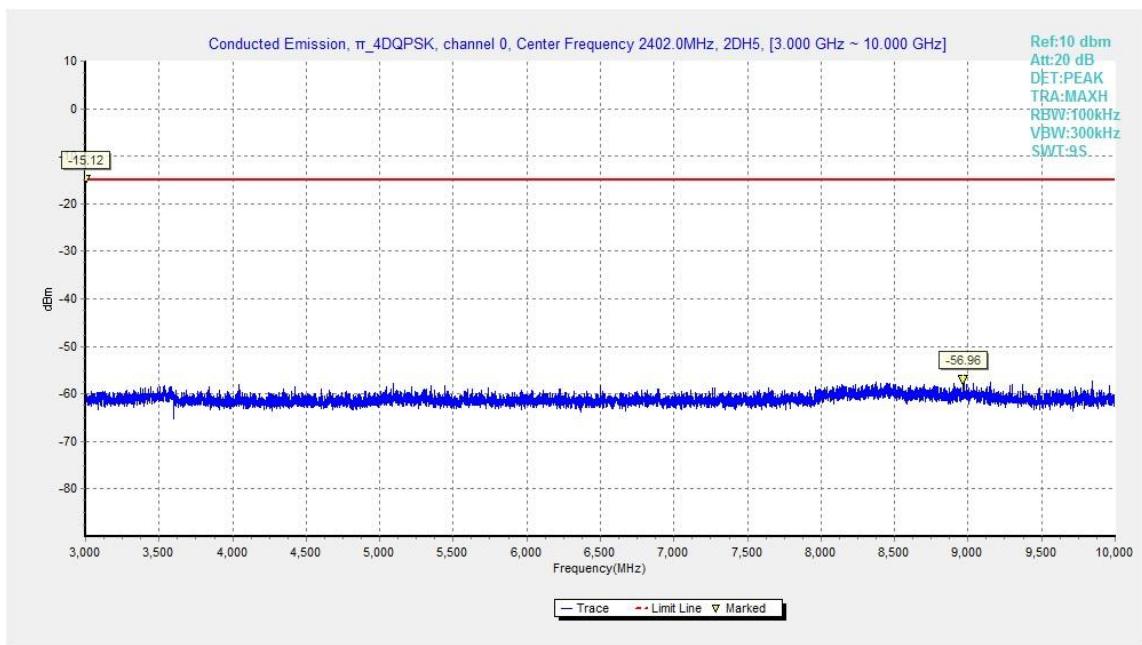


Fig.31. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 0, 3GHz - 10GHz

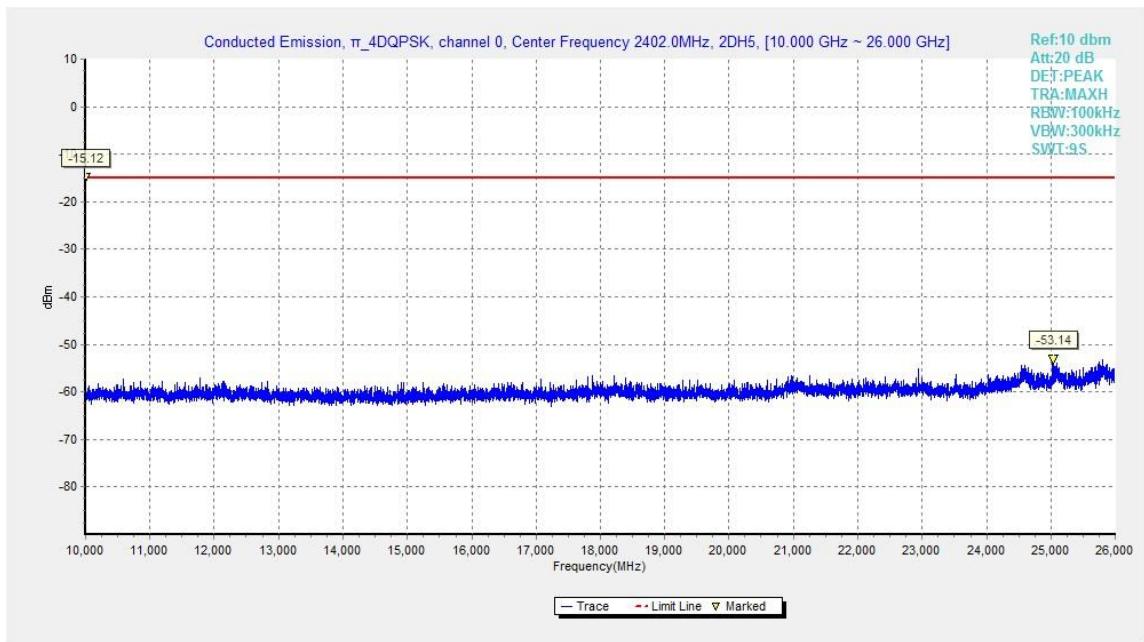


Fig.32. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 0, 10GHz - 26GHz

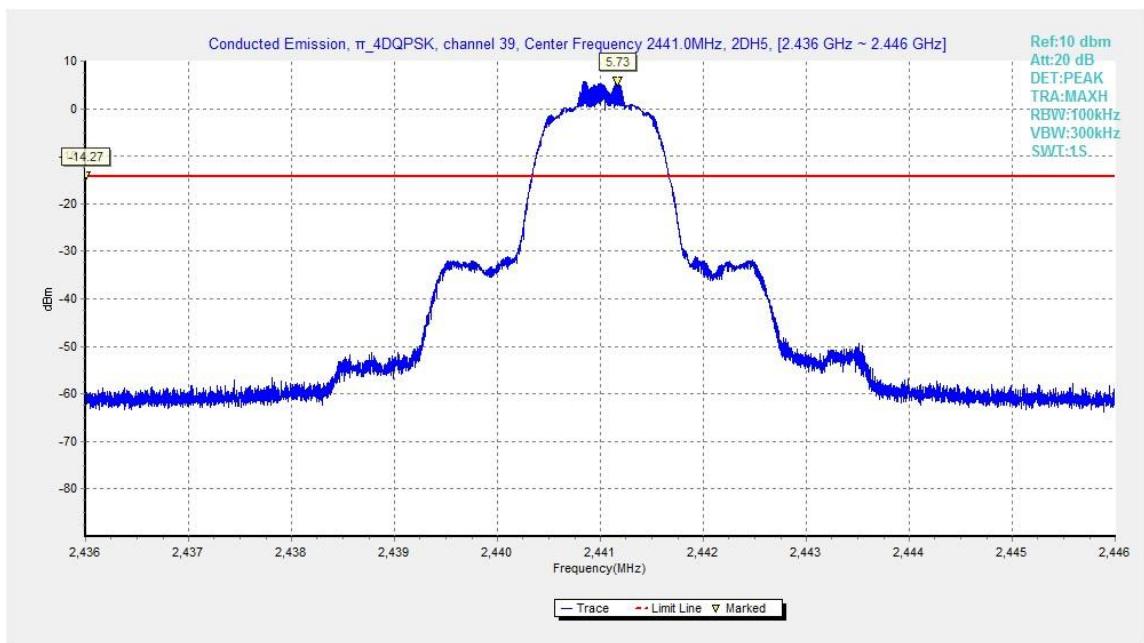


Fig.33. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 39, 2441MHz

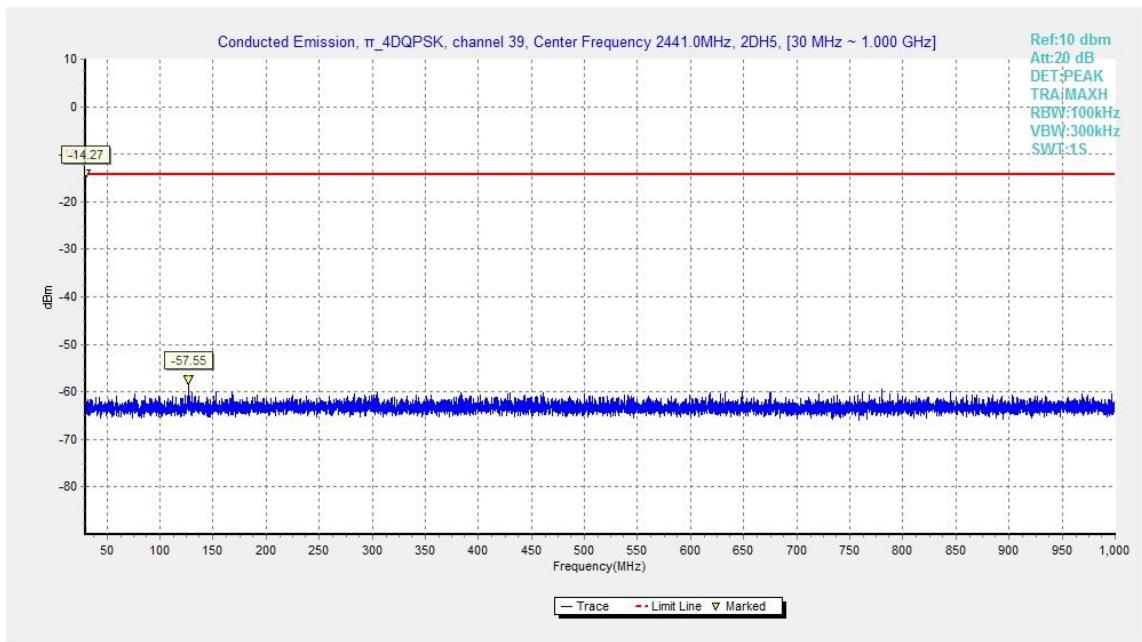


Fig.34. Conducted spurious emission: π/4 DQPSK, Channel 39, 30MHz - 1GHz

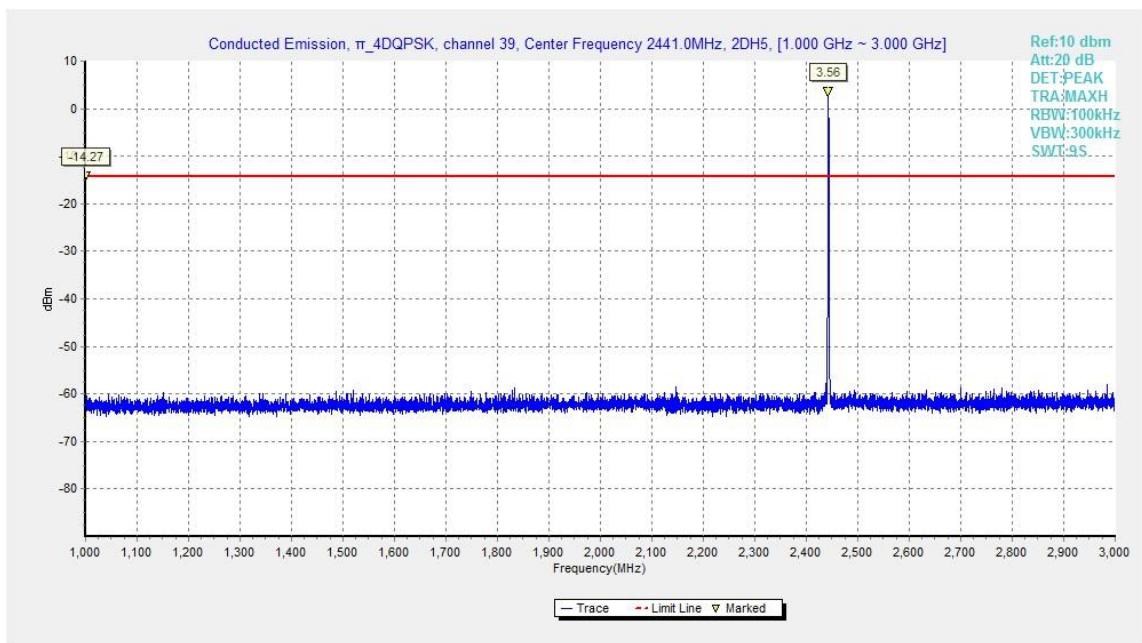


Fig.35. Conducted spurious emission: π/4 DQPSK, Channel 39, 1GHz - 3GHz

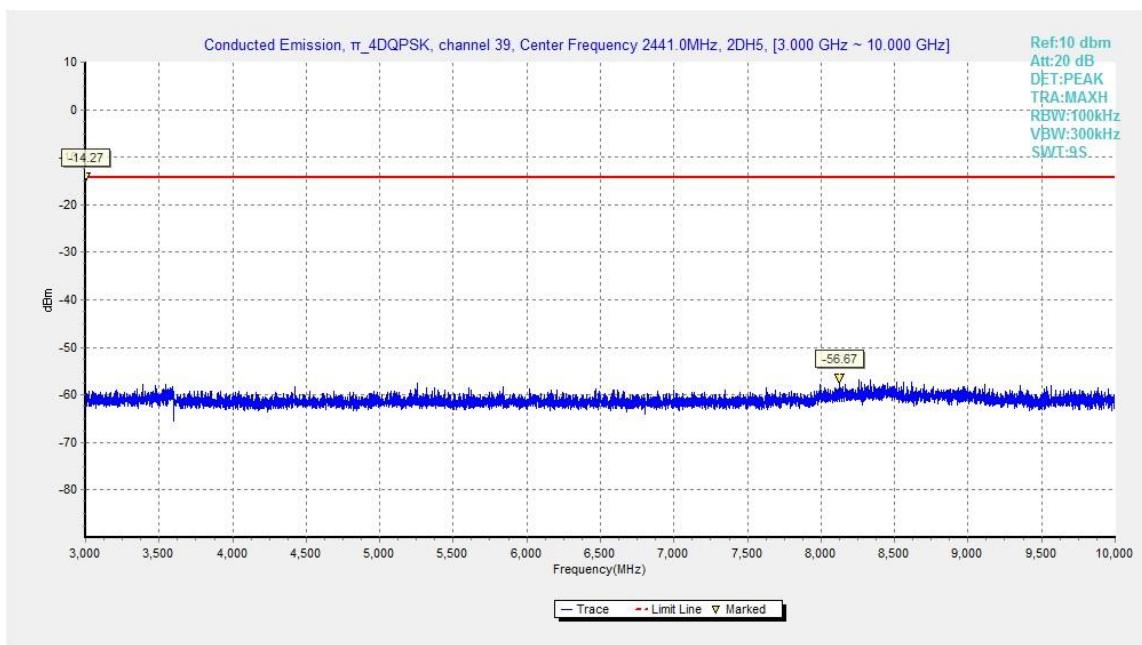


Fig.36. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 39, 3GHz - 10GHz

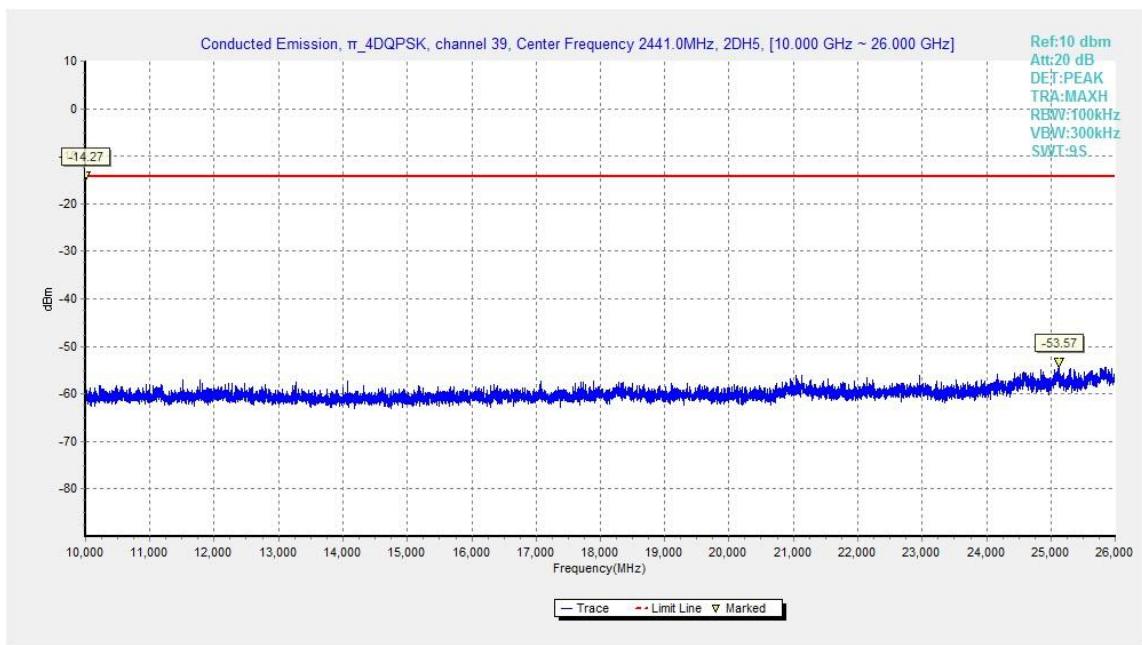


Fig.37. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 39, 10GHz – 26GHz

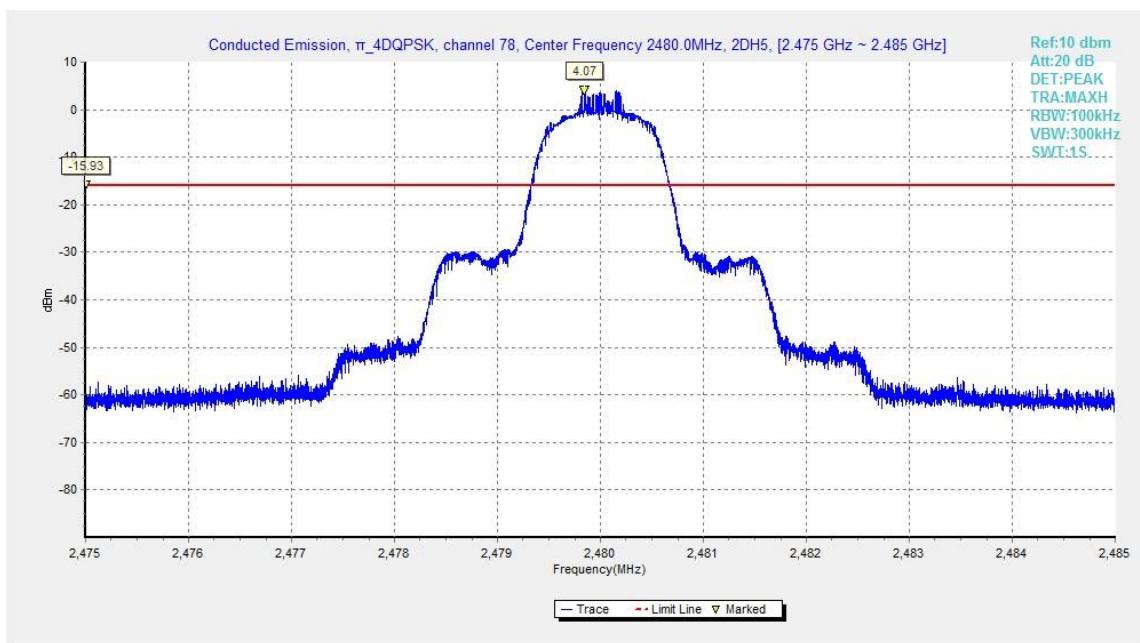


Fig.38. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 78, 2480MHz

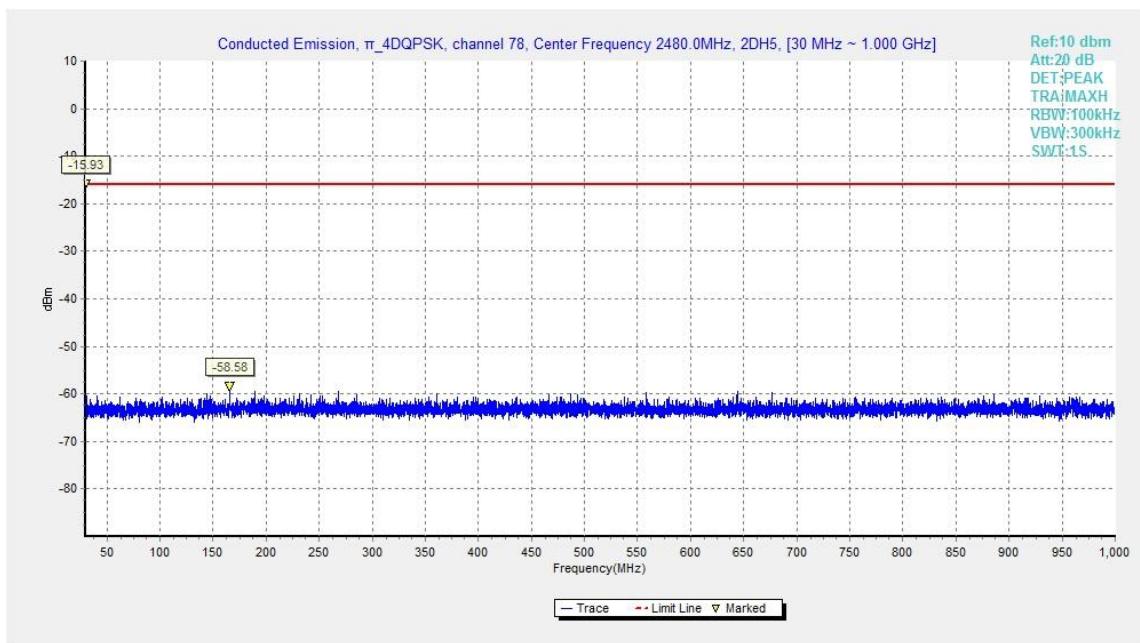


Fig.39. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 78, 30MHz - 1GHz

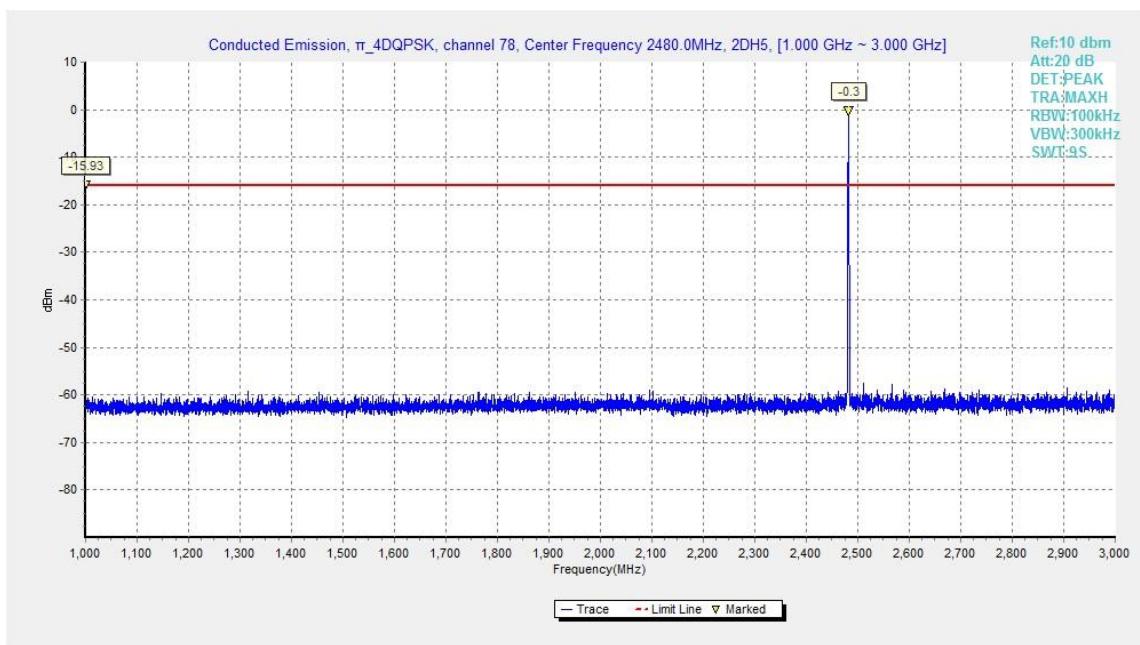


Fig.40. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 78, 1GHz - 3GHz

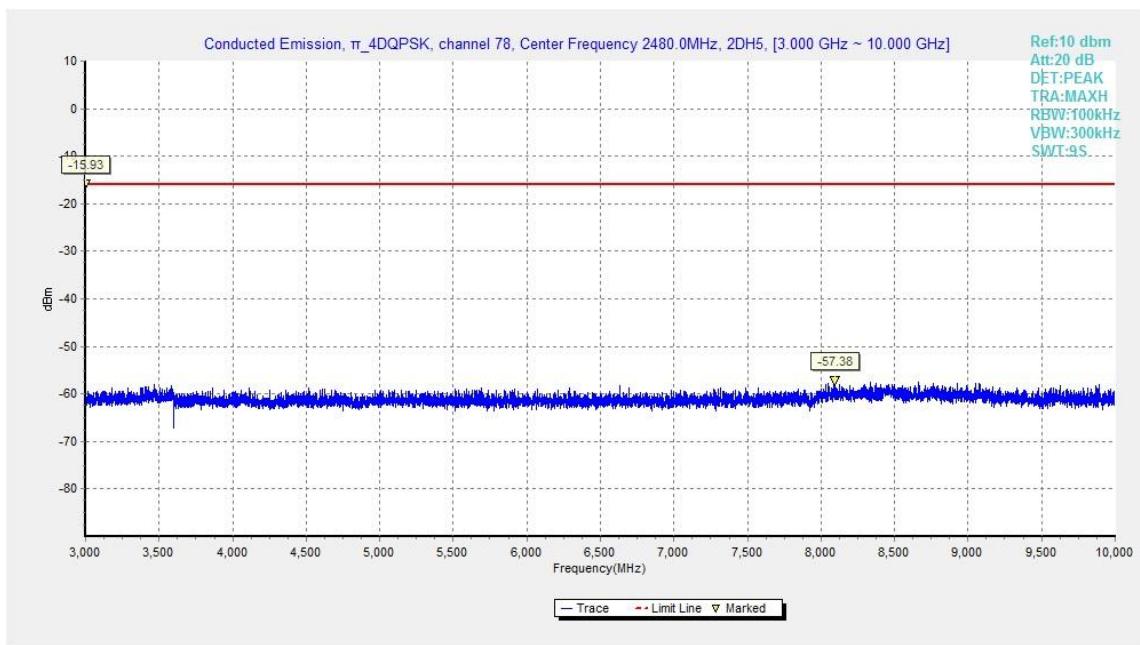


Fig.41. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 78, 3GHz - 10GHz

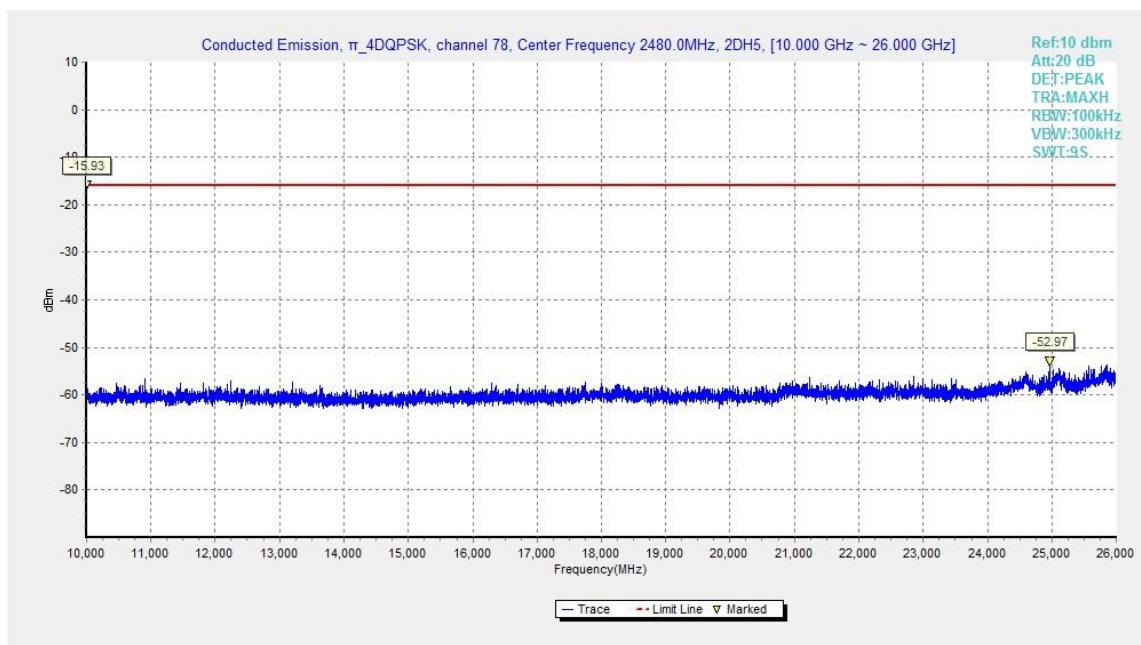


Fig.42. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 78, 10GHz - 26GHz

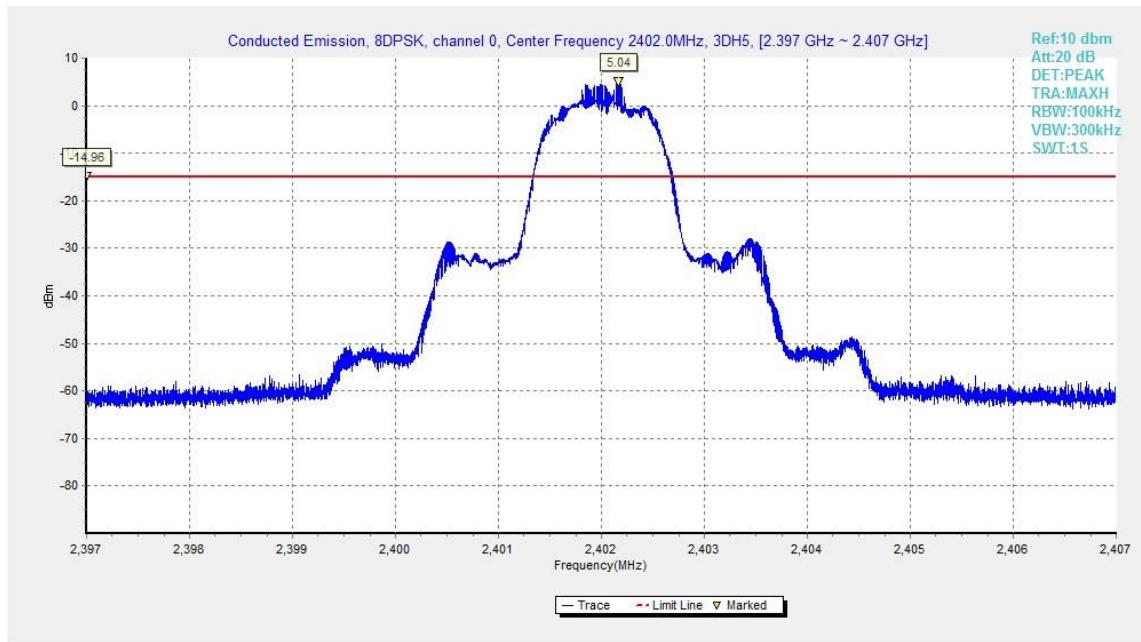


Fig.43. Conducted spurious emission: 8DPSK, Channel 0,2402MHz

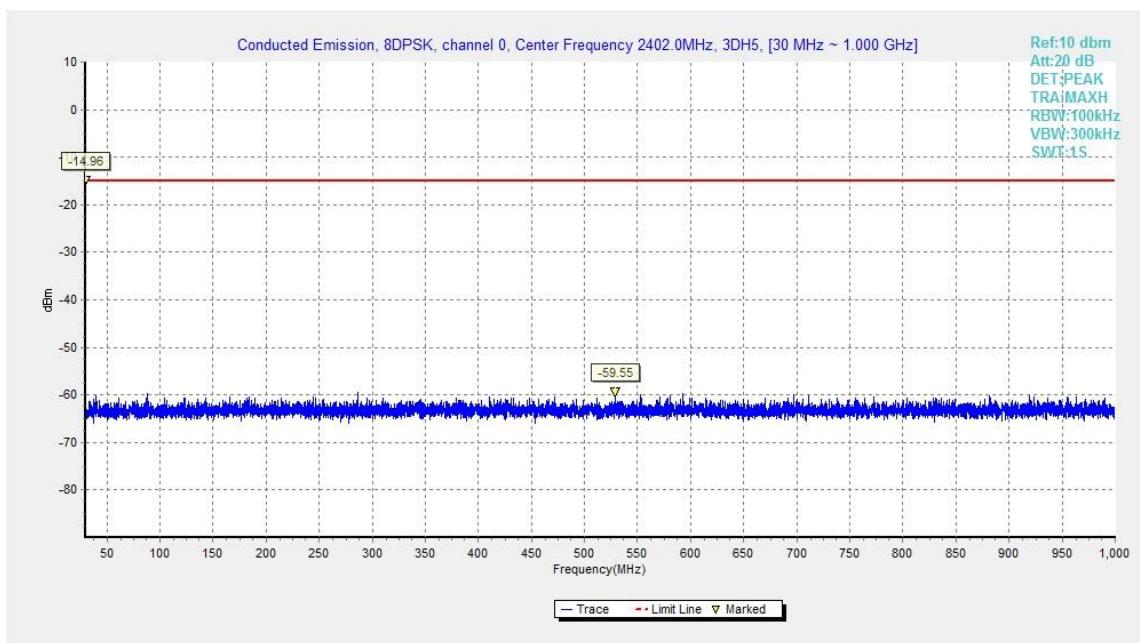


Fig.44. Conducted spurious emission: 8DPSK, Channel 0, 30MHz - 1GHz

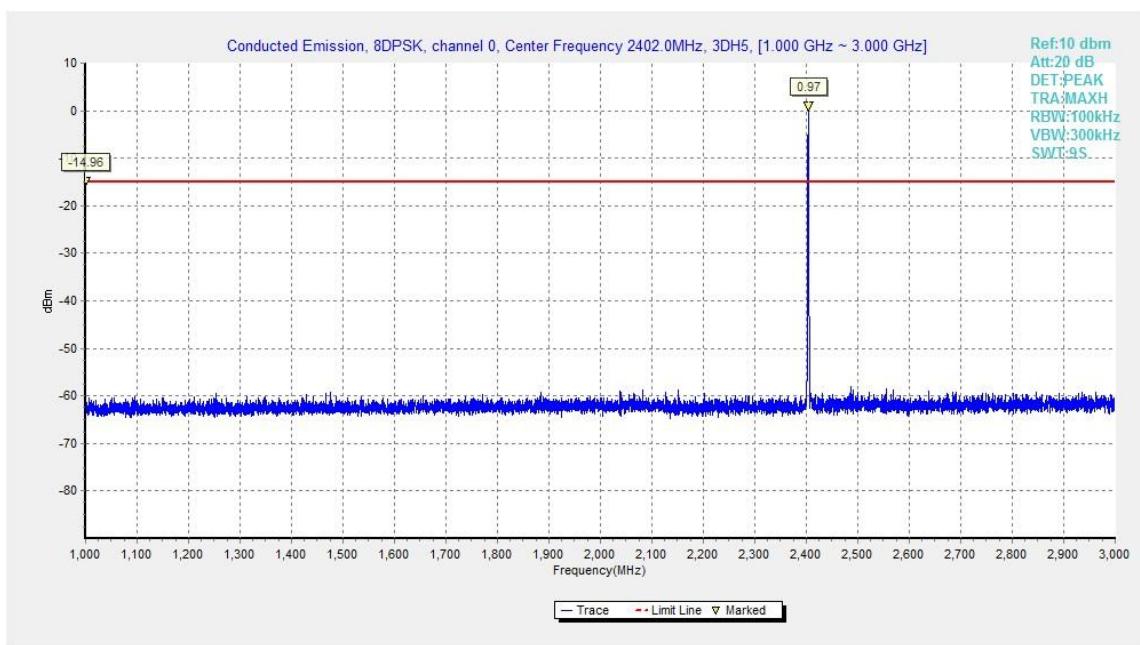


Fig.45. Conducted spurious emission: 8DPSK, Channel 0, 1GHz - 3GHz

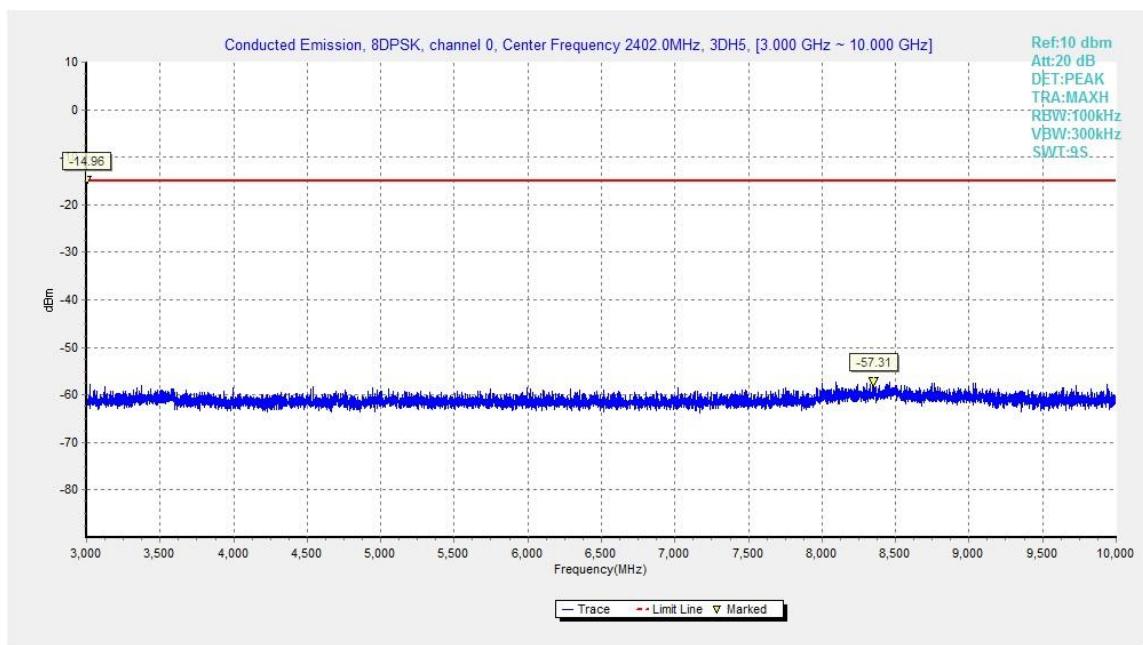


Fig.46. Conducted spurious emission: 8DPSK, Channel 0, 3GHz - 10GHz

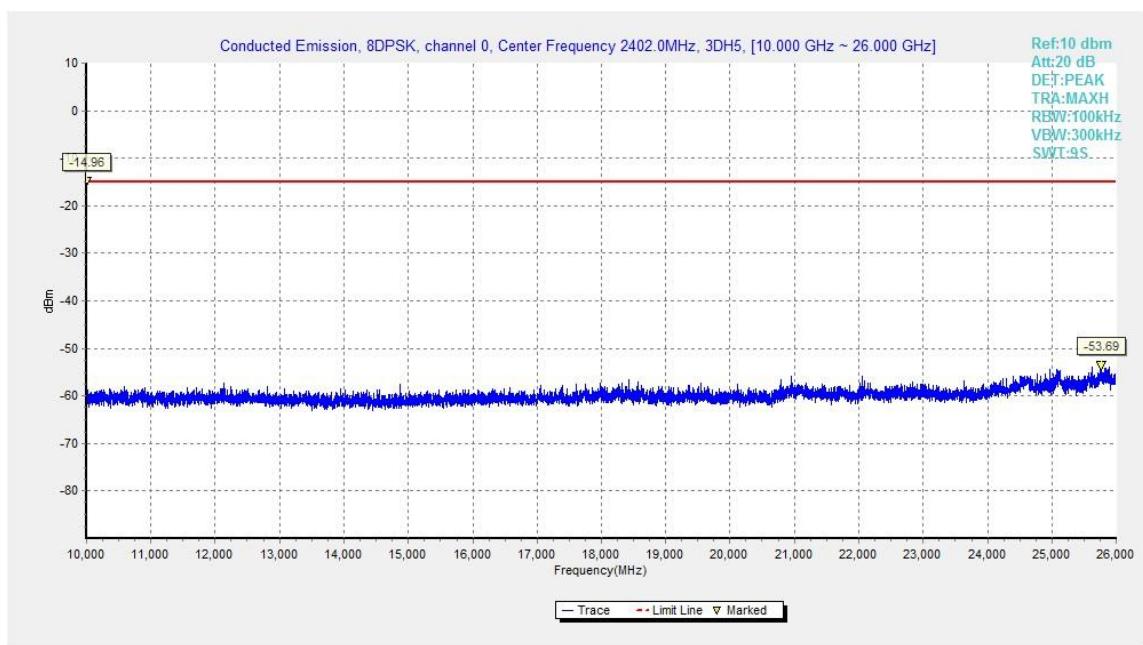


Fig.47. Conducted spurious emission: 8DPSK, Channel 0, 10GHz - 26GHz

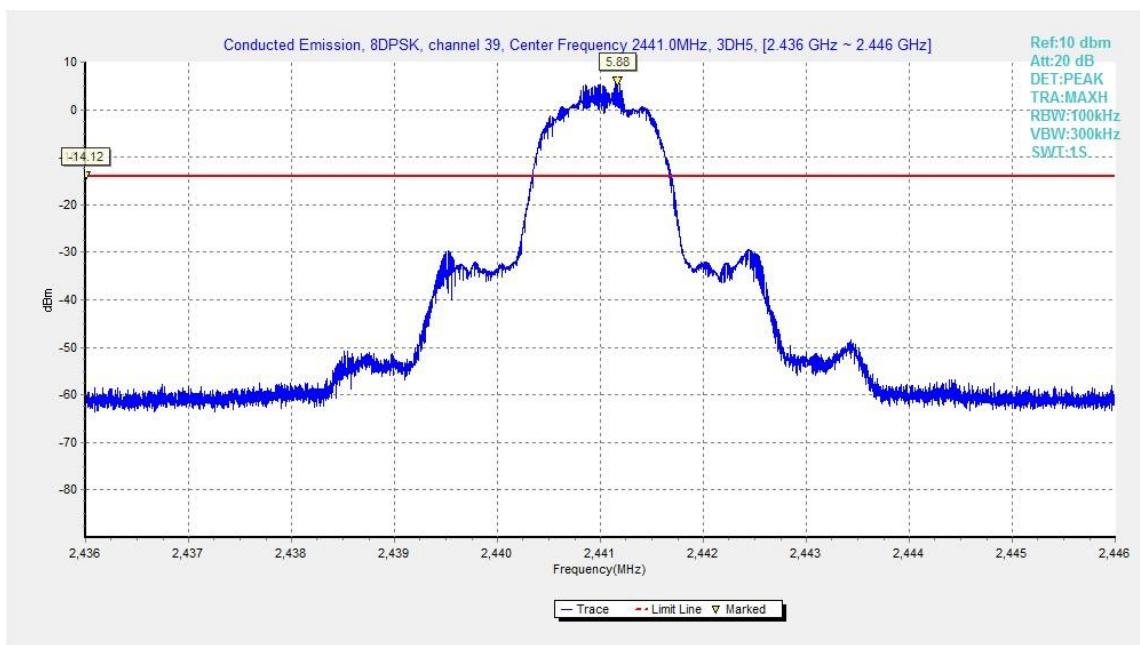


Fig.48. Conducted spurious emission: 8DPSK, Channel 39, 2441MHz

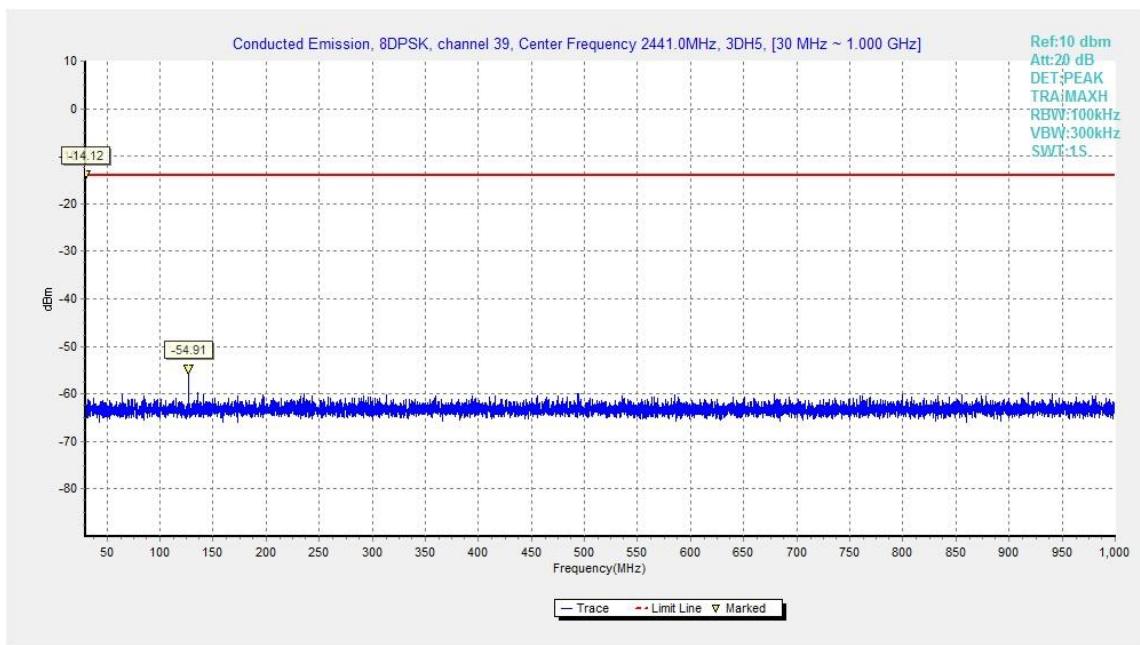


Fig.49. Conducted spurious emission: 8DPSK, Channel 39, 30MHz - 1GHz

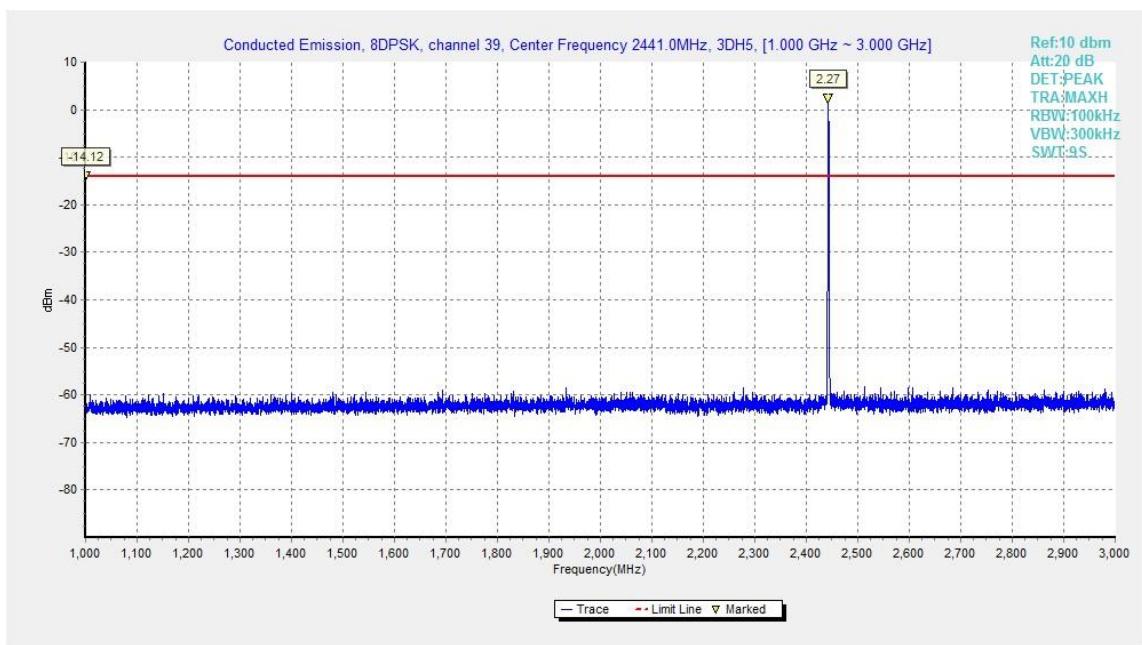


Fig.50. Conducted spurious emission: 8DPSK, Channel 39, 1GHz - 3GHz

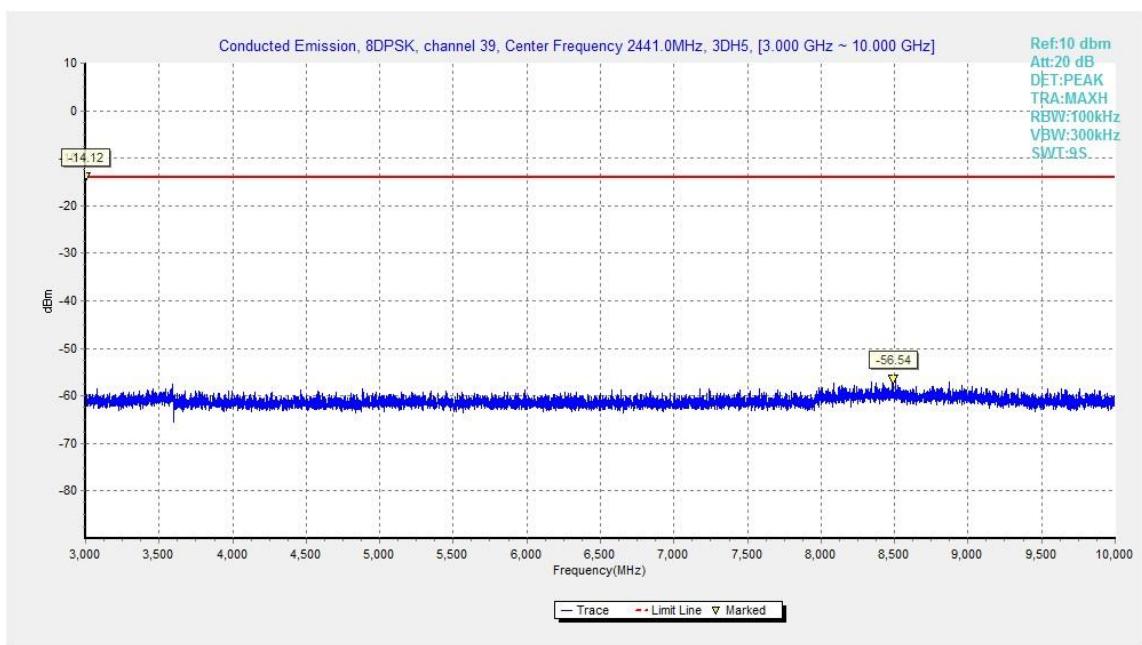


Fig.51. Conducted spurious emission: 8DPSK, Channel 39, 3GHz - 10GHz

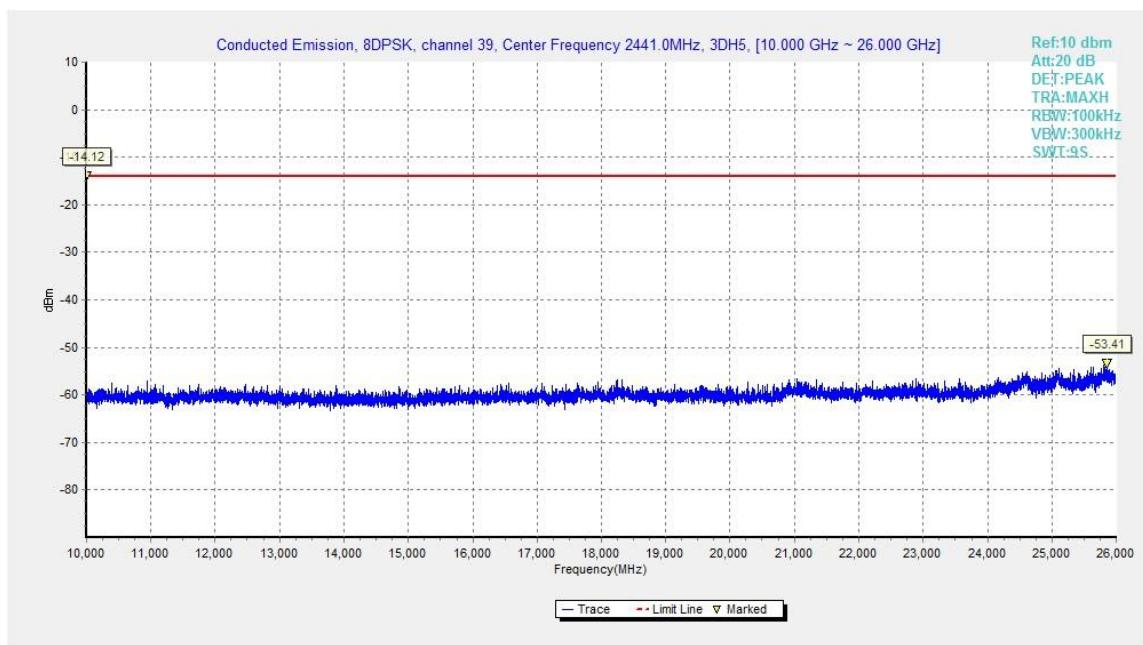


Fig.52. Conducted spurious emission: 8DPSK, Channel 39, 10GHz – 26GHz

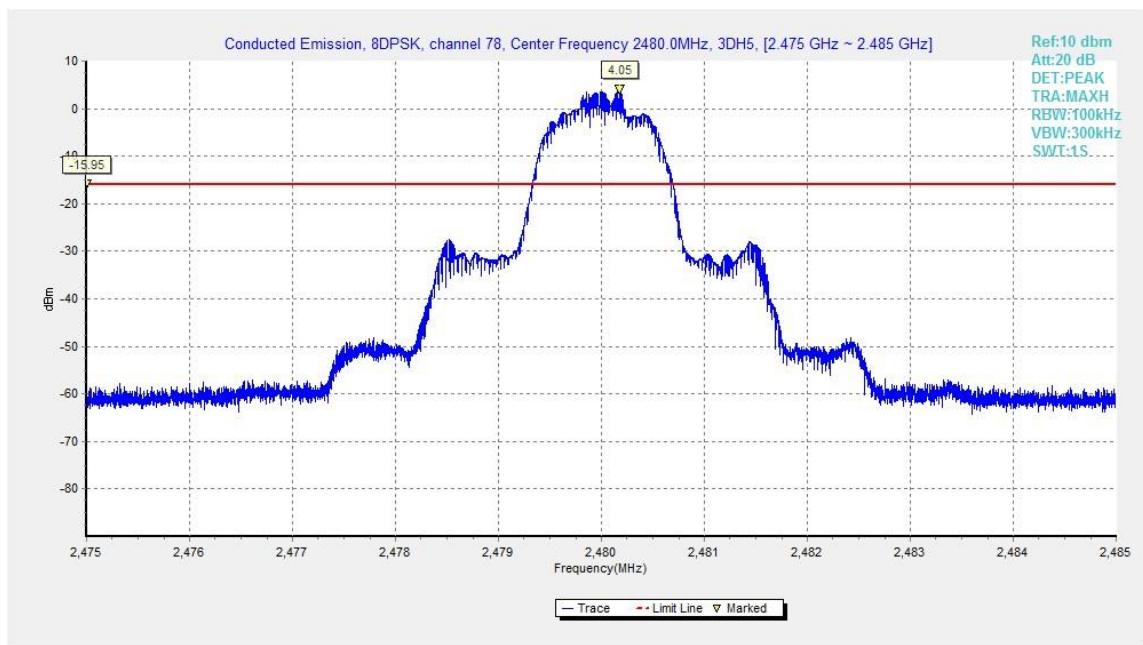


Fig.53. Conducted spurious emission: 8DPSK, Channel 78, 2480MHz

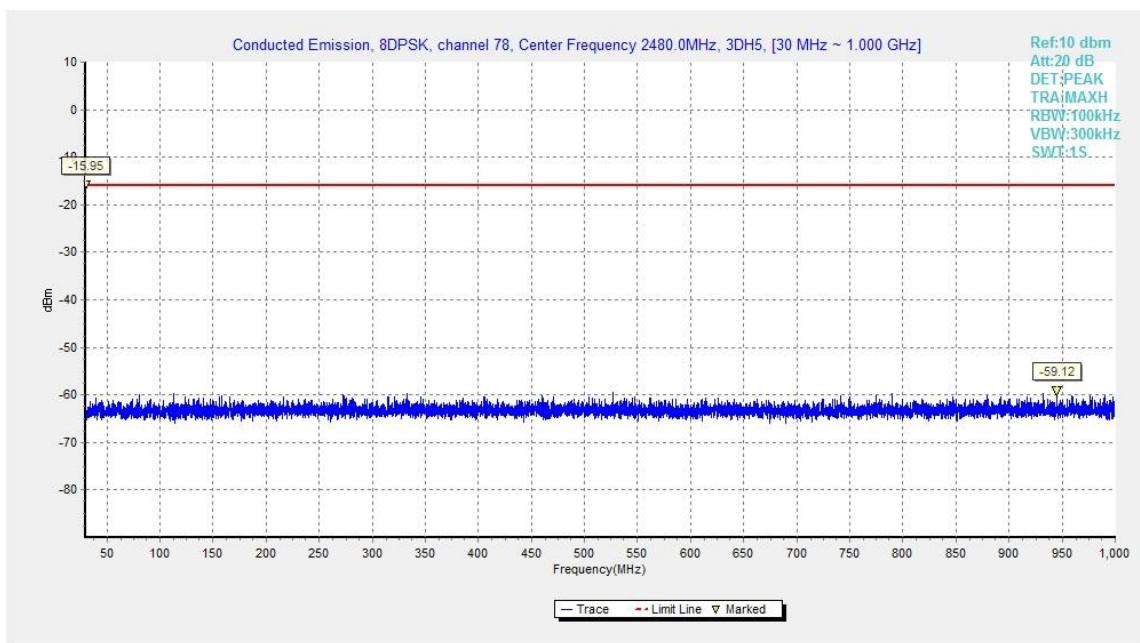


Fig.54. Conducted spurious emission: 8DPSK, Channel 78, 30MHz - 1GHz

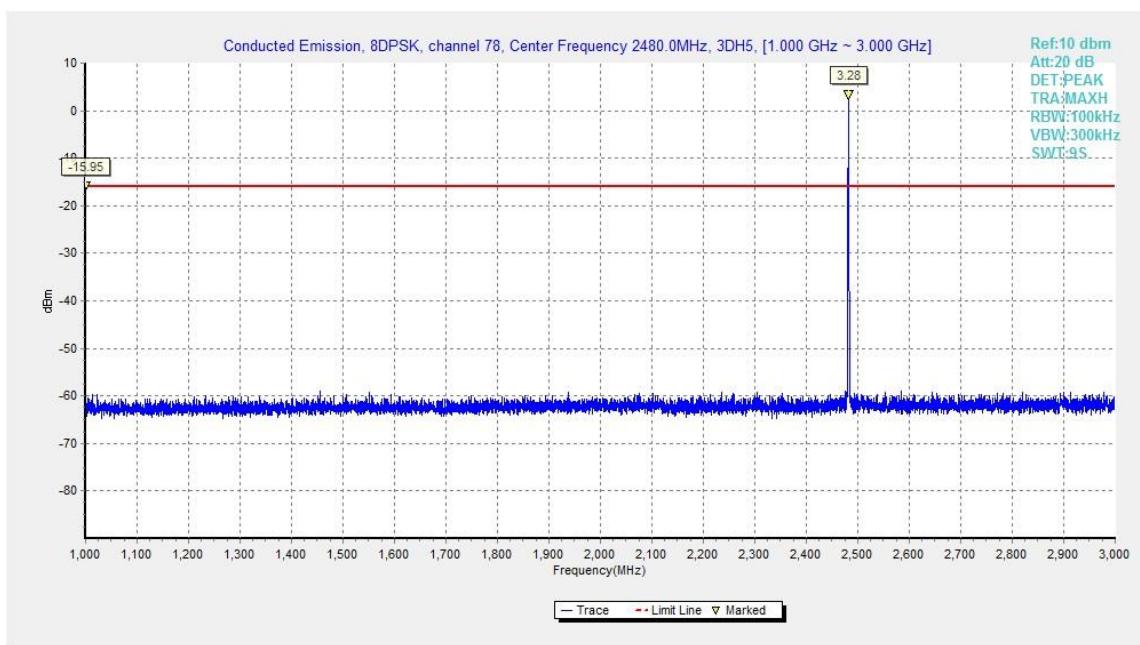


Fig.55. Conducted spurious emission: 8DPSK, Channel 78, 1GHz - 3GHz

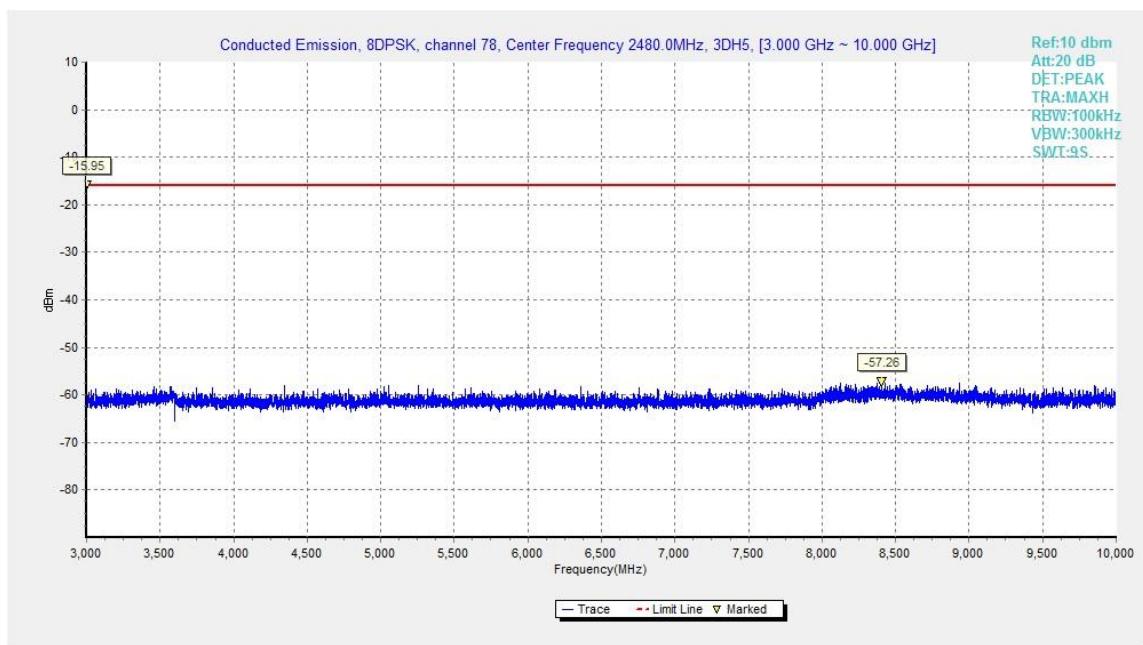


Fig.56. Conducted spurious emission: 8DPSK, Channel 78, 3GHz - 10GHz

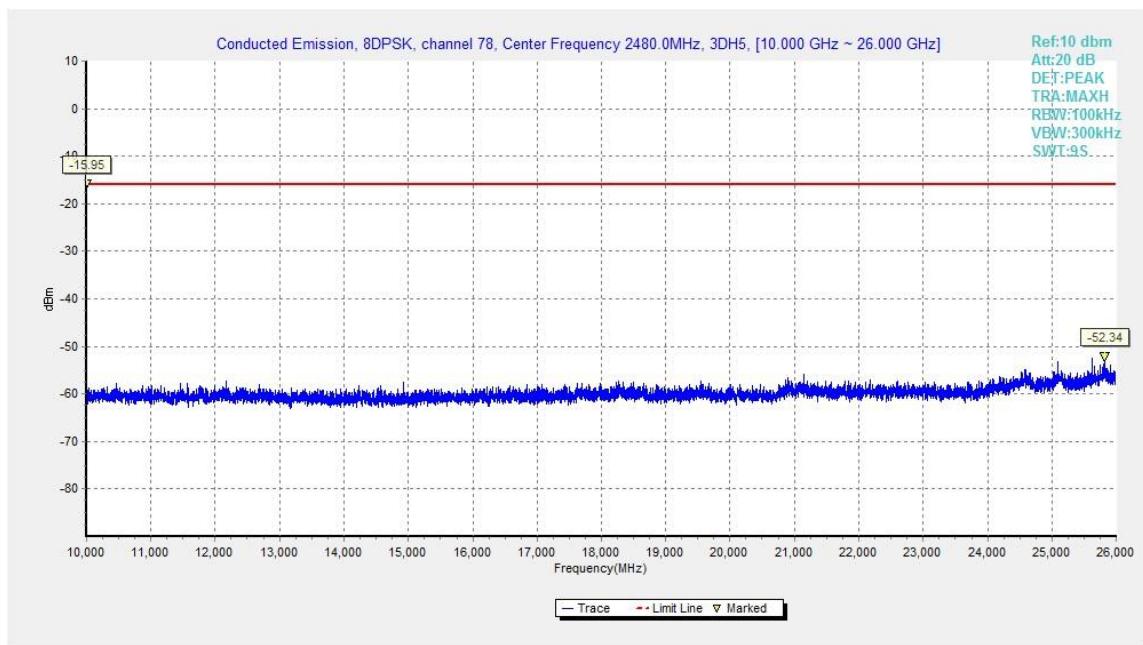


Fig.57. Conducted spurious emission: 8DPSK, Channel 78, 10GHz - 26GHz

### A.5. Transmitter Spurious Emission - Radiated

#### 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)).

The measurement is made according to ANSI C63.10

#### Limit in restricted band:

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

#### 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	100KHz/300KHz	5
1000-4000	1MHz/1MHz	15
4000-18000	1MHz/1MHz	40
18000-26500	1MHz/1MHz	20

#### Measurement Results:

$$\text{Result} = P_{\text{Mea}} + \text{ARPL}$$

#### For GFSK

Channel	Frequency Range	Test Results	Conclusion
Power	2.38GHz~2.4GHz---L	Fig.58	P
Power	2.45GHz~2.5GHz---H	Fig.59	P

#### For 4 DQPSK

Channel	Frequency Range	Test Results	Conclusion
Power	2.38GHz~2.4GHz---L	Fig.60	P
Power	2.45GHz~2.5GHz---H	Fig.61	P

#### For 8DPSK

Channel	Frequency Range	Test Results	Conclusion
Power	2.38GHz~2.4GHz---L	Fig.62	P
Power	2.45GHz~2.5GHz---H	Fig.63	P

**GFSK Ch 0 - Average**

Frequency (MHz)	Result (dBuv/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Polarization
17902.5	35.2	-25.5	43.4	17.3	V
17914.5	35.2	-25.5	43.4	17.3	V
17934	35.2	-25.5	43.4	17.3	H
17988	35.2	-25.5	43.4	17.3	H
17997	35.2	-25.5	43.4	17.3	V
2326.1	39.3	-14.5	27.2	26.6	H

**GFSK Ch 39 - Average**

Frequency (MHz)	Result (dBuv/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Polarization
17991	35.4	-25.5	43.4	17.5	V
17899.5	35.3	-25.5	43.4	17.4	H
17878.5	35.2	-25.5	43.4	17.3	H
17889	35.2	-25.5	43.4	17.3	V
17893.5	35.2	-25.5	43.4	17.3	H
17956.5	35.2	-25.5	43.4	17.3	H

**GFSK Ch 78 - Average**

Frequency (MHz)	Result (dBuv/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Polarization
17988	35.3	-25.5	43.4	17.4	H
17875.5	35.2	-25.5	43.4	17.3	H
17985	35.2	-25.5	43.4	17.3	H
17986.5	35.2	-25.5	43.4	17.3	H
17997	35.2	-25.5	43.4	17.3	H
2490.4	39.3	-14.2	27.2	26.3	V

**$\pi/4$  DQPSK Ch 0 - Average**

Frequency (MHz)	Result (dBuv/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Polarization
17995.5	35.5	-25.5	43.4	17.6	H
17980.5	35.4	-25.5	43.4	17.5	V
17983.5	35.4	-25.5	43.4	17.5	V
17991	35.4	-25.5	43.4	17.5	V
17997	35.4	-25.5	43.4	17.5	H
2315.1	39.6	-14.5	27.2	26.9	H

 **$\pi/4$  DQPSK Ch 39 - Average**

Frequency (MHz)	Result (dBuv/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Polarization
17902.5	35.4	-25.5	43.4	17.5	V
17979	35.4	-25.5	43.4	17.5	H
17896.5	35.3	-25.5	43.4	17.4	V
17899.5	35.3	-25.5	43.4	17.4	H
17977.5	35.3	-25.5	43.4	17.4	V
17782.5	35.2	-25.5	43.4	17.3	V

 **$\pi/4$  DQPSK Ch 78 - Average**

Frequency (MHz)	Result (dBuv/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dB $\mu$ V)	Polarization
17997	35.4	-25.5	43.4	17.5	H
17958	35.3	-25.5	43.4	17.4	V
17973	35.3	-25.5	43.4	17.4	V
17989.5	35.3	-25.5	43.4	17.4	V
17995.5	35.3	-25.5	43.4	17.4	V
2487.8	39.2	-14.2	27.2	26.2	H

**8DPSK Ch 0 - Average**

Frequency (MHz)	Result (dBuv/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Polarization
17985	35.4	-25.5	43.4	17.5	H
17989.5	35.4	-25.5	43.4	17.5	H
17986.5	35.3	-25.5	43.4	17.4	V
17992.5	35.3	-25.5	43.4	17.4	H
17890.5	35.2	-25.5	43.4	17.3	H
2384.1	39.6	-14.2	27.2	26.6	H

**8DPSK Ch 39 - Average**

Frequency (MHz)	Result (dBuv/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Polarization
17985	35.4	-25.5	43.4	17.5	H
17986.5	35.4	-25.5	43.4	17.5	H
17989.5	35.4	-25.5	43.4	17.5	H
17991	35.4	-25.5	43.4	17.5	V
17881.5	35.3	-25.5	43.4	17.4	V
17974.5	35.3	-25.5	43.4	17.4	H

**8DPSK Ch 78 - Average**

Frequency (MHz)	Result (dBuv/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Polarization
17995.5	35.6	-25.5	43.4	17.7	V
17877	35.4	-25.5	43.4	17.5	V
17962.5	35.4	-25.5	43.4	17.5	V
17982	35.4	-25.5	43.4	17.5	V
17983.5	35.4	-25.5	43.4	17.5	H
2489.8	39.6	-14.2	27.2	26.6	H