



# FCC PART 15C TEST REPORT No. 2011TAR629

for

**TCT Mobile Limited**

**UMTS TriBand / GSM Quadband mobile phone**

**Model Name: Cocktail A**

**Marketing Name: one touch 995A**

**FCC ID: RAD214**

**IC ID:9238A-0007**

With

**Hardware Version: PIO4**

**Software Version: 21S**

**Issued Date: 2012-01-17**



**No. DGA-PL-114/01-02**

*DAR accreditation (DIN EN ISO/IEC 17025): No. DGA-PL-114/01-02*

*FCC 2.948 Listed: No.733176*

*IC O.A.T.S listed: No.6629A-1*

**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 TMC Beijing.

**Test Laboratory:**

TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology  
Shouxiang Science Building, No 51, Xueyuan Road, Haidian District, Beijing, P.R.China 100191

Tel:+86(0)10-62304633-2678, Fax:+86(0)10-62304793 Email:welcme@emcrite.com. www.emcrite.com

©Copyright. All rights reserved by TMC Beijing.

## **CONTENTS**

<b>CONTENTS .....</b>	<b>2</b>
<b>1. TEST LABORATORY .....</b>	<b>3</b>
1.1. TESTING LOCATION .....	3
1.2. TESTING ENVIRONMENT.....	3
1.3. PROJECT DATA .....	3
1.4. 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. LABORATORY ENVIRONMENT.....</b>	<b>8</b>
<b>6. SUMMARY OF TEST RESULTS .....</b>	<b>9</b>
6.1. SUMMARY OF TEST RESULTS.....	9
6.2. STATEMENTS.....	9
<b>7. TEST EQUIPMENTS UTILIZED .....</b>	<b>10</b>
<b>ANNEX A: MEASUREMENT RESULTS.....</b>	<b>11</b>
A.1. MEASUREMENT METHOD .....	11
A.2. PEAK OUTPUT POWER - CONDUCTED .....	13
A.3. FREQUENCY BAND EDGES - CONDUCTED.....	14
A.4. CONDUCTED EMISSION.....	21
A.5. RADIATED EMISSION.....	45
A.6. TIME OF OCCUPANCY (DWELL TIME) .....	67
A.7. 20dB BANDWIDTH.....	77
A.8. CARRIER FREQUENCY SEPARATION .....	82
A.9. NUMBER OF HOPPING CHANNELS.....	84
A.10. AC POWERLINE CONDUCTED EMISSION .....	88
A.11. OCCUPIED BANDWIDTH (IC 20dB).....	91

## 1. Test Laboratory

### 1.1. Testing Location

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT  
Address: Shouxiang Science Building, No 51, Xueyuan Road, Haidian District,  
Beijing, P.R.China  
Postal Code: 100191  
Telephone: 00861062304633  
Fax: 00861062304793

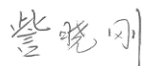
### 1.2. Testing Environment

Normal Temperature: 15-35°C  
Extreme Temperature: -20/+55°C  
Relative Humidity: 20-75%

### 1.3. Project data

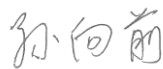
Project Leader: Zi Xiaogang  
Testing Start Date: 2011-12-05  
Testing End Date: 2012-01-17

### 1.4. Signature



---

**Zi Xiaogang**  
**(Prepared this test report)**



---

**Sun Xiangqian**  
**(Reviewed this test report)**



---

**Lu Bingsong**  
**Deputy Director of the laboratory**  
**(Approved this test report)**

## **2. Client Information**

### **2.1. Applicant Information**

Company Name: TCT Mobile Limited  
Address /Post: 5F, E building, No. 232, Liang Jing Road ZhangJiang High-Tech Park,  
Pudong Area Shanghai, P.R. China. 201203  
City: Shanghai  
Country: China  
Telephone: 0086 21 68897541  
Fax: 0086 21 50801070

### **2.2. Manufacturer Information**

Company Name: TCT Mobile Limited  
Address /Post: 5F, E building, No. 232, Liang Jing Road ZhangJiang High-Tech Park,  
Pudong Area Shanghai, P.R. China. 201203  
City: Shanghai  
Country: China  
Telephone: 0086-21-61460890  
Fax: 0086-21-61460602

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

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

Description	UMTS TriBand / GSM Quadband mobile phone
Model Name	Cocktail A
Marketing Name	one touch 995A
FCC ID	RAD214
IC ID	9238A-0007
Frequency Band	ISM 2400MHz~2483.5MHz
Type of Modulation	GFSK/ $\pi/4$ DQPSK/8DPSK
Number of Channels	79
Power Supply	3.7V DC by Battery

#### **3.2. Internal Identification of EUT used during the test**

<b>EUT ID*</b>	<b>SN or IMEI</b>	<b>HW Version</b>	<b>SW Version</b>
N04	012906000000332	PIO4	21S
N05	012906000000334	PIO4	21S

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

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

<b>AE ID*</b>	<b>Description</b>
AE1	Battery
AE2	Charger

##### **AE1**

Model	CAB31Y0006C1
Manufacturer	BYD
Capacitance	1500 mAh
Nominal Voltage	3.7V

##### **AE2**

Model	CBA3002AG0C1
Manufacturer	BYD
Length of DC line	120cm

\*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 UMTS TriBand / GSM Quandband mobile phone with integrated antenna. It consists of normal options: lithium battery, charger Manual and specifications of the EUT were provided to fulfil the test. Samples undergoing test were selected by the Client.

## 4. Reference Documents

### 4.1. Documents supplied by applicant

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

### 4.2. Reference Documents for testing

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

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.	July 10, 2008 Edition
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2003
FCC Public Notice DA 00-705	Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems	March 2000
RSS - Gen Issue 2	Spectrum Management and Telecommunications - Radio Standards Specification General Requirements and Information for the Certification of Radiocommunication Equipment	2007-06
RSS - 210 Issue 7	Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment	2007-06

## 5. LABORATORY ENVIRONMENT

**Shielding Room1** (6.0 meters×3.0 meters×2.7 meters) did not exceed following limits along the conducted RF performance testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Ground system resistance	< 0.5 Ω
Uniformity of field strength	Between 0 and 6 dB, from 80MHz to 3000 MHz

**Control room** did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. =30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω

**Semi-anechoic chamber** (23 meters×17meters×10meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 30 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
Normalised site attenuation (NSA)	< ±3.2 dB, 10 m distance, from 30 to 1000 MHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 2000 MHz



## 6. SUMMARY OF TEST RESULTS

### 6.1. 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 TMC

SUMMARY OF MEASUREMENT RESULTS	Sub-clause		Verdict
Peak Output Power - Conducted	15.247 (b)(1)	RSS-210 A8.4 (2)	<b>P</b>
Frequency Band Edges	15.247 (d)	RSS-210 A8.5	<b>P</b>
Conducted Emission	15.247 (d)	RSS-210 A8.5	<b>P</b>
Radiated Emission	15.247, 15.205, 15.209	RSS-210 A8.5	<b>P</b>
Time of Occupancy (Dwell Time)	15.247 (a) (1)(iii)	RSS-210 A8.1 (4)	<b>P</b>
20dB Bandwidth	15.247 (a)(1)	RSS-210 A8.1 (1)	<b>P</b>
Carrier Frequency Separation	15.247 (a)(1)	RSS-210 A8.1 (2)	<b>P</b>
Number of hopping channels	15.247 (a)(b)(iii)	RSS-210 A8.1 (4)	<b>P</b>
AC Powerline Conducted Emission	15.107, 15.207	RSS-Gen 7.2.2	<b>P</b>
Occupied Bandwidth	N/A	RSS-Gen 4.1	<b>P</b>

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

The measurement is made according to Public notice DA 00-705 and ANSI C63.4.

### 6.2. Statements

TMC has evaluated the test cases requested by the applicant /manufacturer as listed in section 6.1 of this report for the EUT specified in section 3 according to the standards or reference documents listed in section 4.2

## 7. Test Equipments Utilized

### Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date
1	Vector Signal Analyzer	FSU26	200030	Rohde & Schwarz	2012-12-18
2	Bluetooth Tester	CBT32	100649	Rohde & Schwarz	2012-12-23

### Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date
1	Test Receiver	ESI40	831564/002	Rohde & Schwarz	2012-12-21
2	EMI Antenna	VULB 9163	9163 301	Schwarzbeck	2012-12-29
3	EMI Antenna	3117	00034610	EMCO	2012-12-30
4	Dual-Ridge Waveguide Horn Antenna	3116	2663	EMCO	2012-12-01
5	Dual-Ridge Waveguide Horn Antenna	3116	2661	EMCO	2012-12-21
6	Universal Radio Communication Tester	CMU200	105948	Rohde & Schwarz	2012-12-23
7	LISN	ESH2-Z5	829991/012	Rohde & Schwarz	2012-12-22
8	Pre-amplifier(18GHz)	/	1005277	Rohde & Schwarz	/
9	Pre-amplifier(26.5GHz)	/	1005277	Rohde & Schwarz	/

### Anechoic chamber

Fully anechoic chamber by Frankonia German.

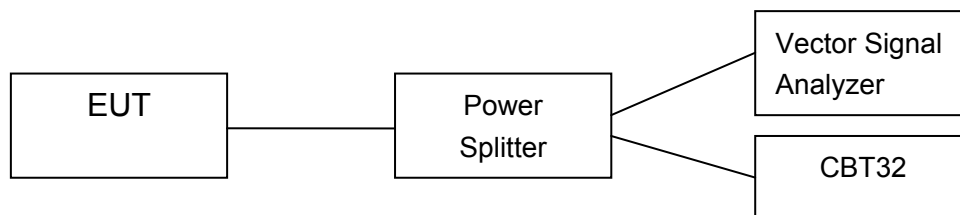
## ANNEX A: MEASUREMENT RESULTS

### A.1. Measurement Method

#### A.1.1. Conducted Measurements

The measurement is made according to Public notice DA 00-705 and ANSI C63.4.

- 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

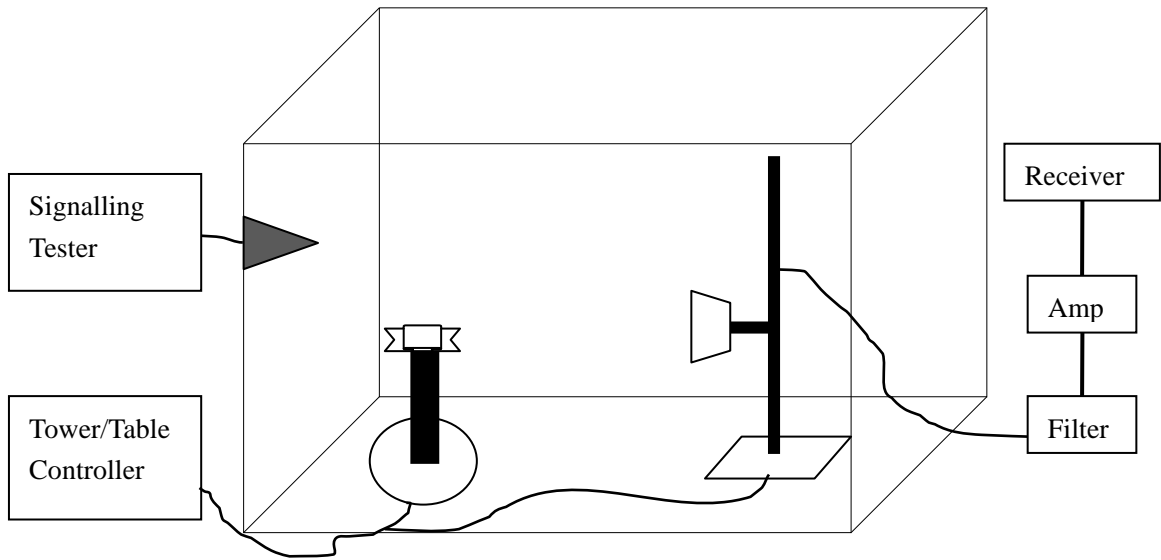
The measurement is made according to Public notice DA 00-705 and ANSI C63.4

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

### Measurement Limit:

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

The measurement is made according to Public notice DA 00-705 and ANSI C63.4.

### Test Condition

Hopping Mode	RBW	VBW	Span	Sweeptime
Hopping OFF	1MHz	1MHz	5MHz	2.5ms

### Measurement Results:

#### For GFSK

Channel	Ch 0 2402 MHz	Ch 39 2441 MHz	Ch 78 2480 MHz	Conclusion
Peak Conducted Output Power (dBm)	4.40	3.78	4.18	P

#### For $\pi/4$ DQPSK

Channel	Ch 0 2402 MHz	Ch 39 2441 MHz	Ch 78 2480 MHz	Conclusion
Peak Conducted Output Power (dBm)	4.45	3.83	4.23	P

#### For 8DPSK

Channel	Ch 0 2402 MHz	Ch 39 2441 MHz	Ch 78 2480 MHz	Conclusion
Peak Conducted Output Power (dBm)	5.07	4.43	4.88	P

**Conclusion: PASS**

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

#### Measurement Limit:

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

The measurement is made according to Public notice DA 00-705 and ANSI C63.4.

#### Measurement Result:

##### For GFSK

Channel	Hopping	Band Edge Power ( dBc)		Conclusion
0	Hopping OFF	Fig.1	-61.50	P
	Hopping ON	Fig.2	-61.69	P
78	Hopping OFF	Fig.3	-61.89	P
	Hopping ON	Fig.4	-62.45	P

##### For $\pi/4$ DQPSK

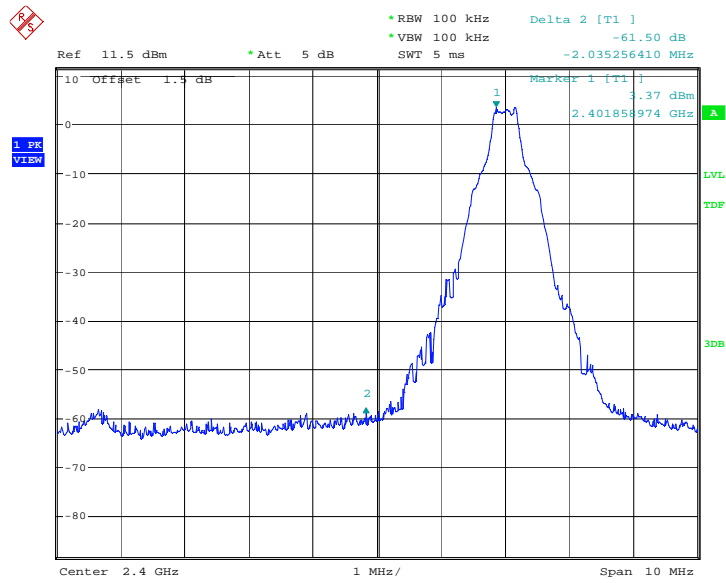
Channel	Hopping	Band Edge Power ( dBc)		Conclusion
0	Hopping OFF	Fig.5	-58.32	P
	Hopping ON	Fig.6	-59.27	P
78	Hopping OFF	Fig.7	-60.49	P
	Hopping ON	Fig.8	-59.81	P

##### For 8DPSK

Channel	Hopping	Band Edge Power ( dBc)		Conclusion
0	Hopping OFF	Fig.9	-56.40	P
	Hopping ON	Fig.10	-58.36	P
78	Hopping OFF	Fig.11	-60.69	P
	Hopping ON	Fig.12	-59.97	P

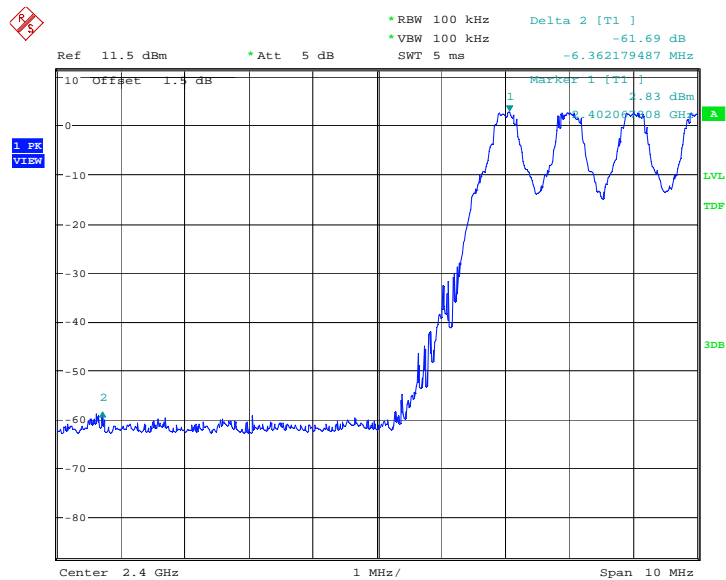
**Conclusion: PASS**

Test graphs as below



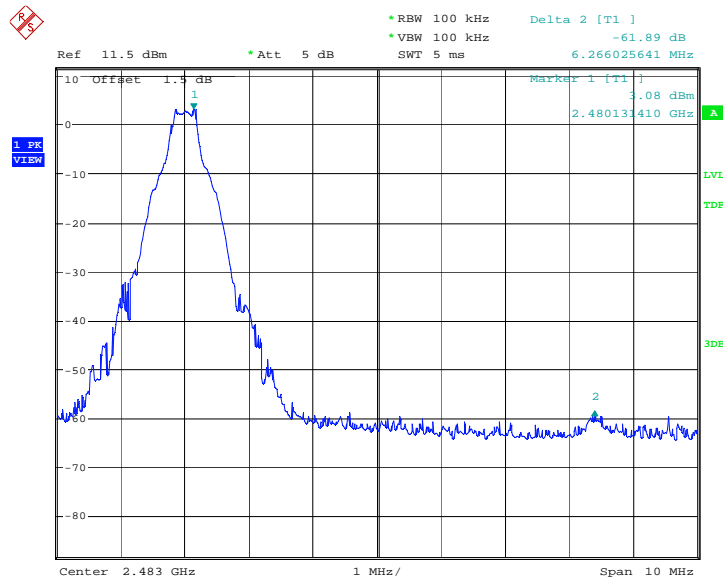
Date: 5.DEC.2011 23:54:23

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



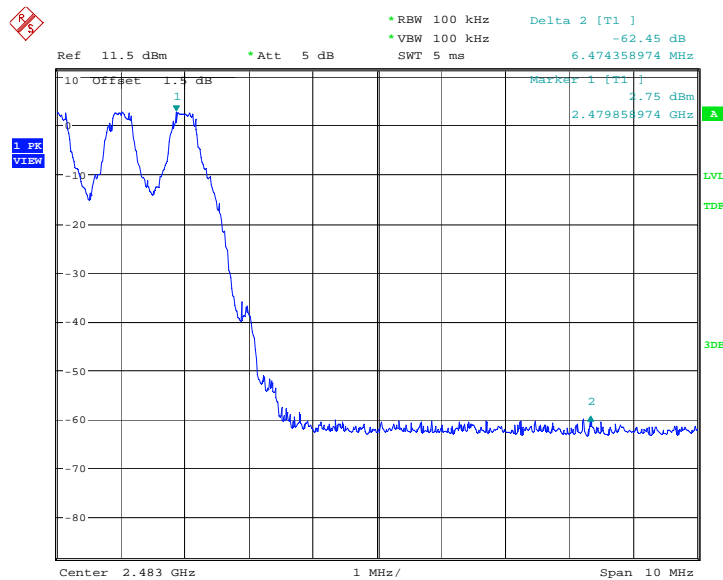
Date: 5.DEC.2011 23:56:44

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



Date: 5.DEC.2011 23:54:41

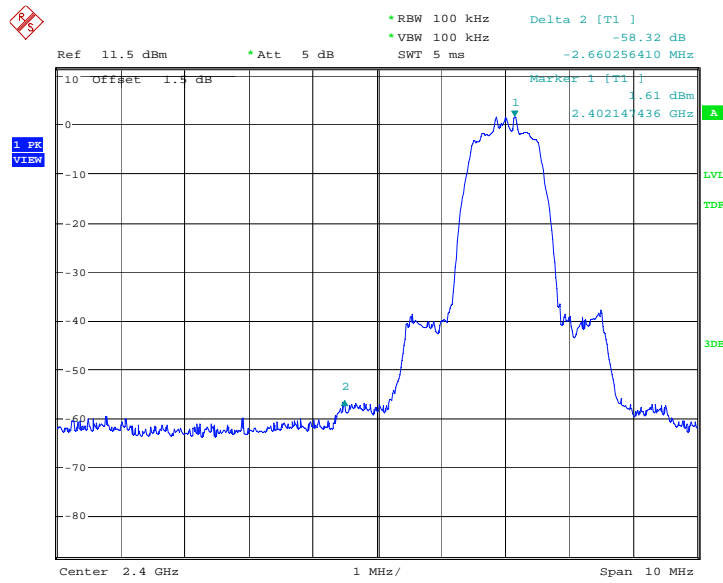
Fig.3. Frequency Band Edges: GFSK, Channel 78, Hopping Off



Date: 5.DEC.2011 23:58:47

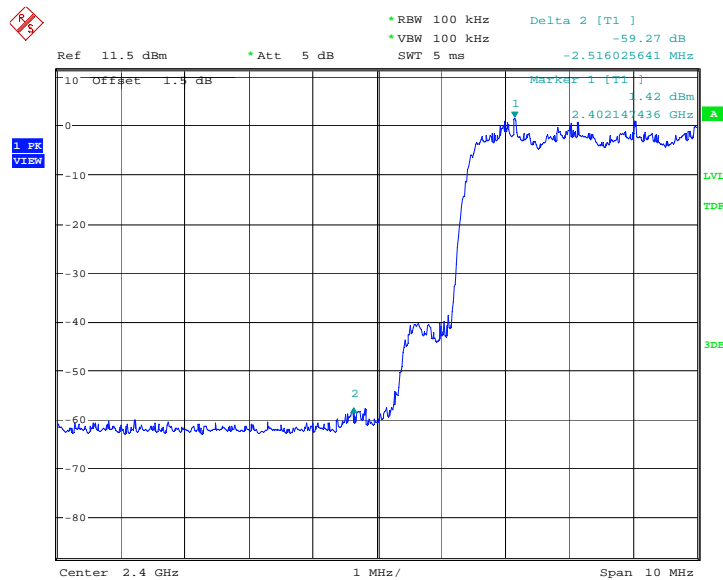
Fig.4. Frequency Band Edges: GFSK, Channel 78, Hopping On





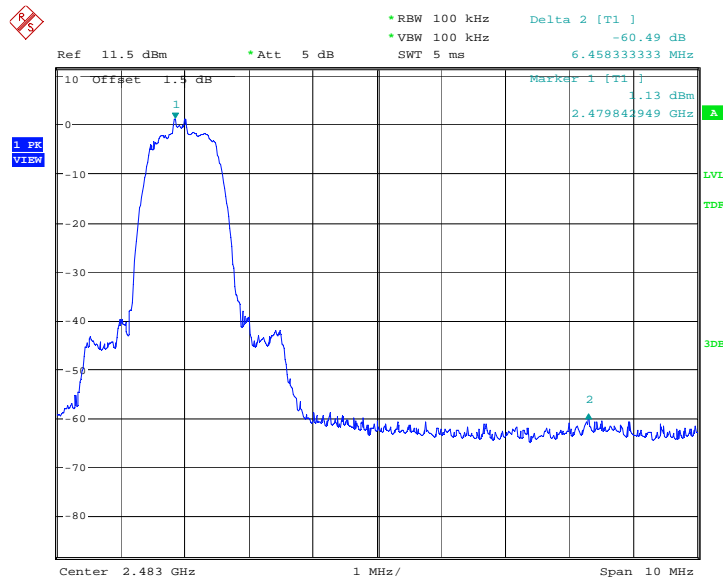
Date: 6.DEC.2011 00:16:34

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



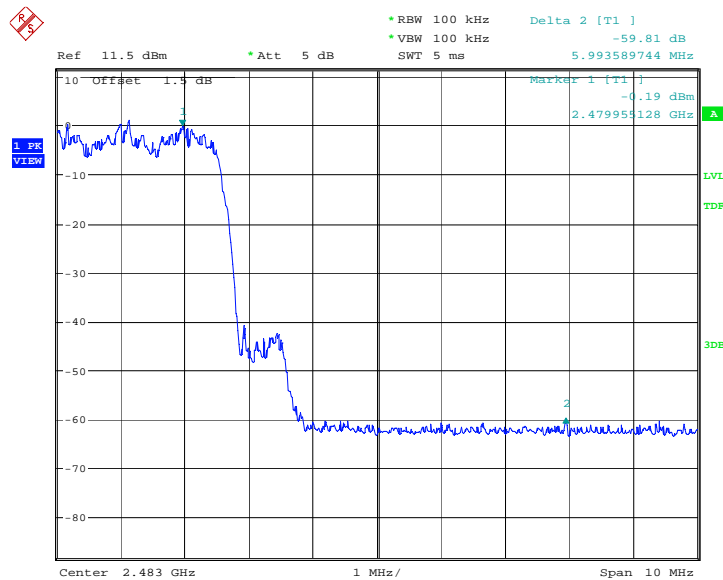
Date: 6.DEC.2011 00:18:54

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



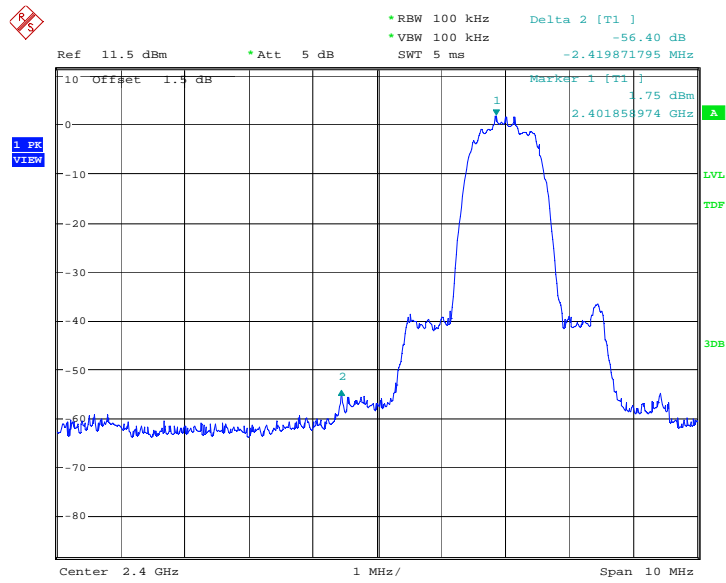
Date: 6.DEC.2011 00:16:51

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



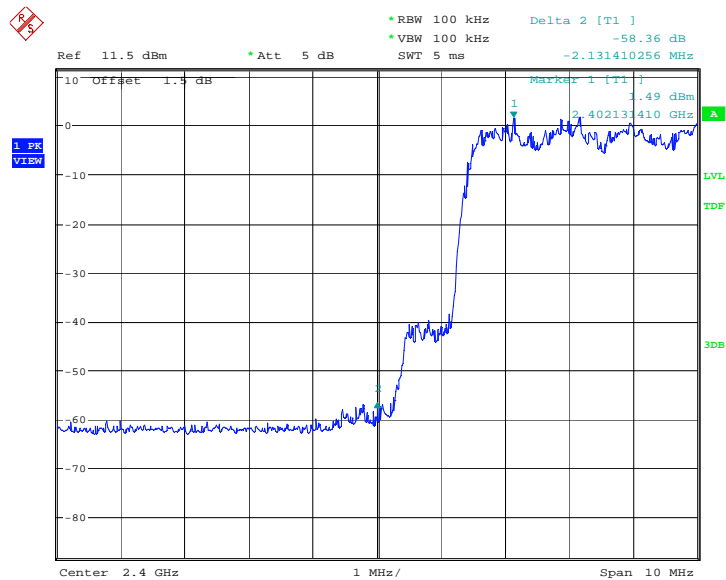
Date: 6.DEC.2011 00:20:56

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



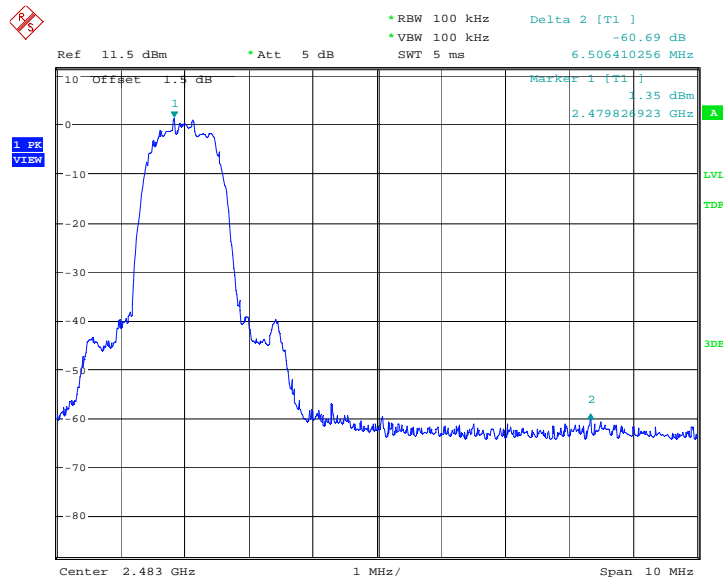
Date: 6.DEC.2011 00:38:45

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



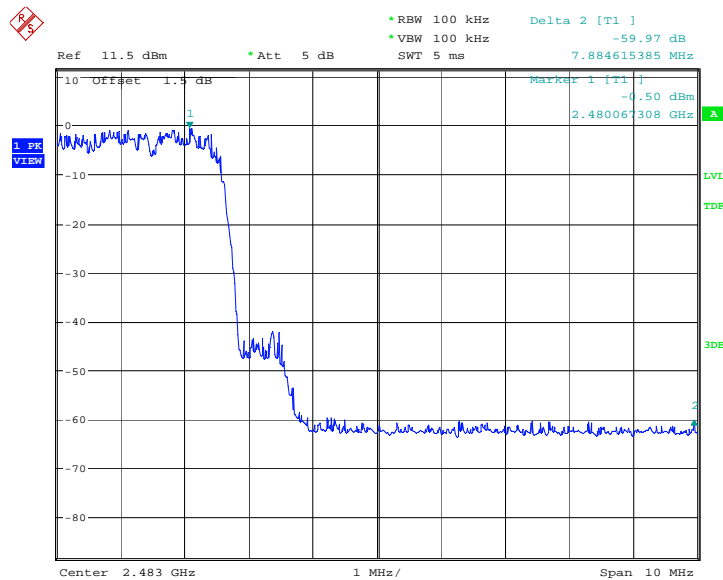
Date: 6.DEC.2011 00:41:05

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



Date: 6.DEC.2011 00:39:02

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



Date: 6.DEC.2011 00:43:08

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

#### A.4. Conducted Emission

##### Measurement Limit:

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

The measurement is made according to Public notice DA 00-705 and ANSI C63.4

##### 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

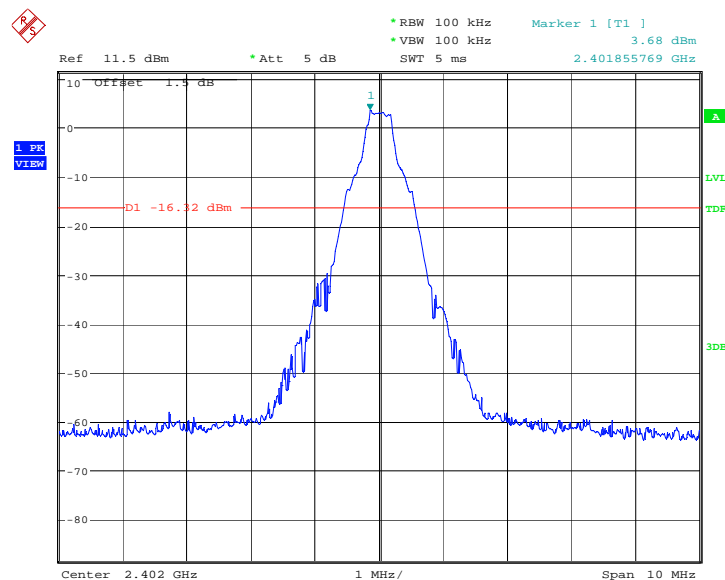
	1 GHz ~ 3 GHz	Fig.40	P
	3 GHz ~ 10 GHz	Fig.41	P
	10 GHz ~ 26 GHz	Fig.42	P

**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

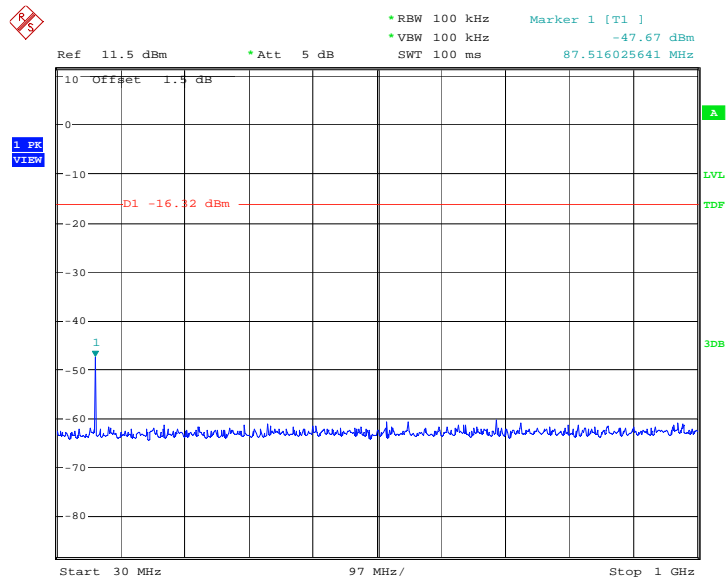
**Conclusion: PASS**

**Test graphs as below**



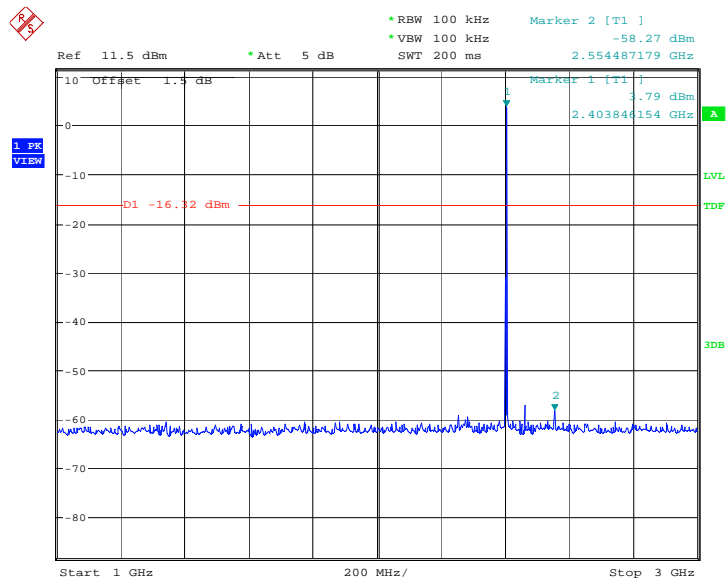
Date: 5.DEC.2011 23:59:07

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



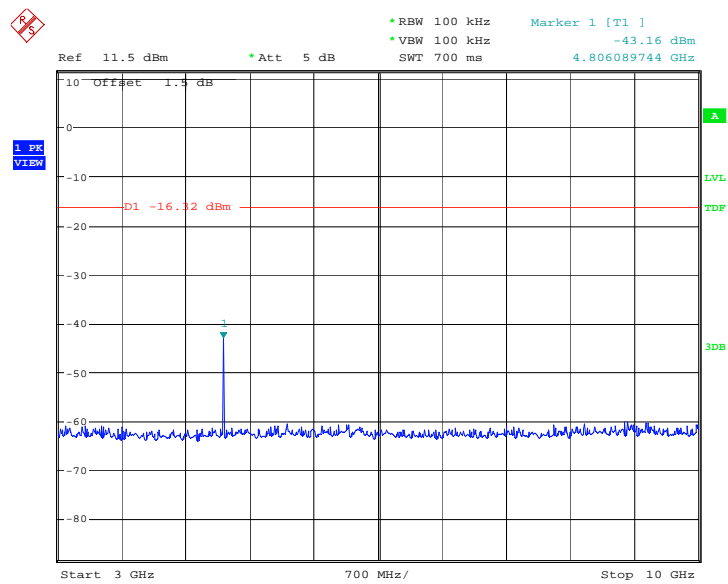
Date: 5.DEC.2011 23:59:23

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



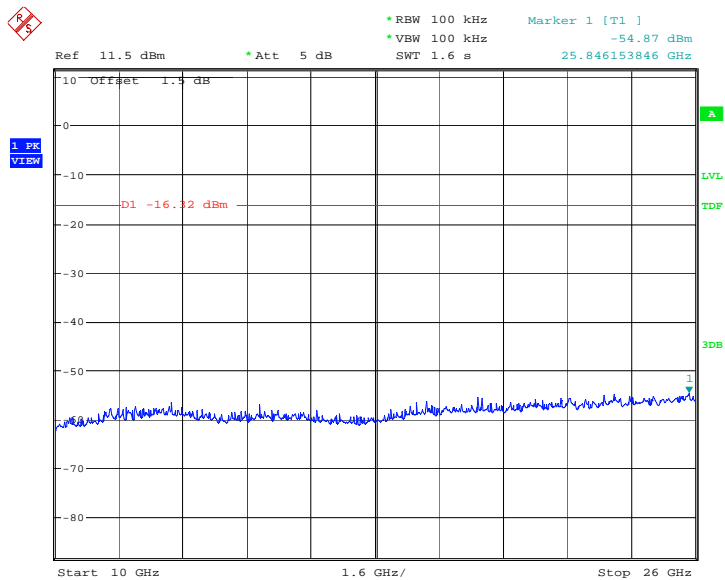
Date: 5.DEC.2011 23:59:55

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



Date: 6.DEC.2011 00:00:11

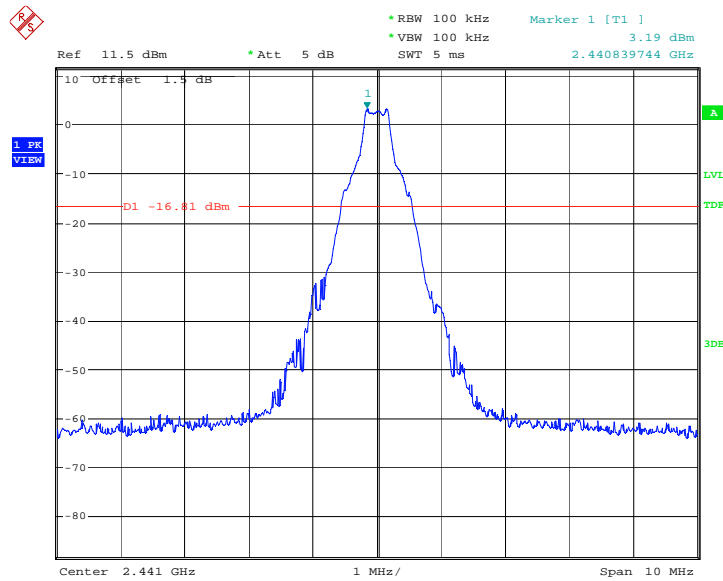
Fig.16. Conducted spurious emission: GFSK, Channel 0, 3GHz - 10GHz



Date: 6.DEC.2011 00:00:28

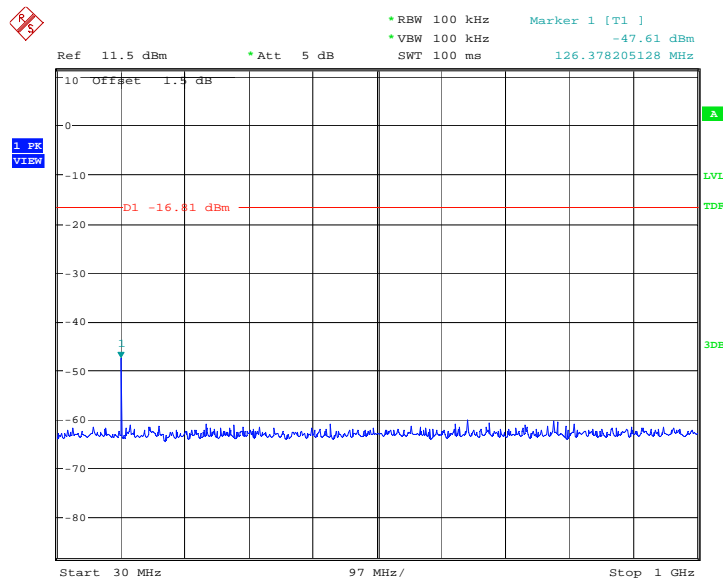
Fig.17. Conducted spurious emission: GFSK, Channel 0, 10GHz - 26GHz





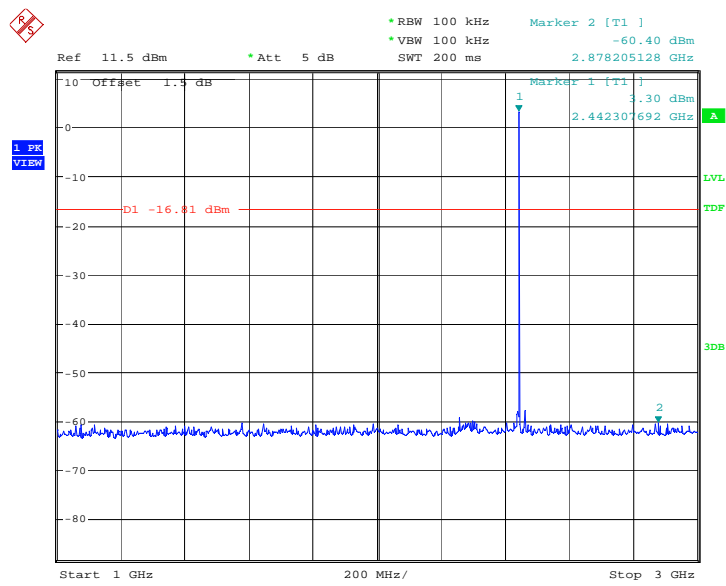
Date: 6.DEC.2011 00:00:45

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



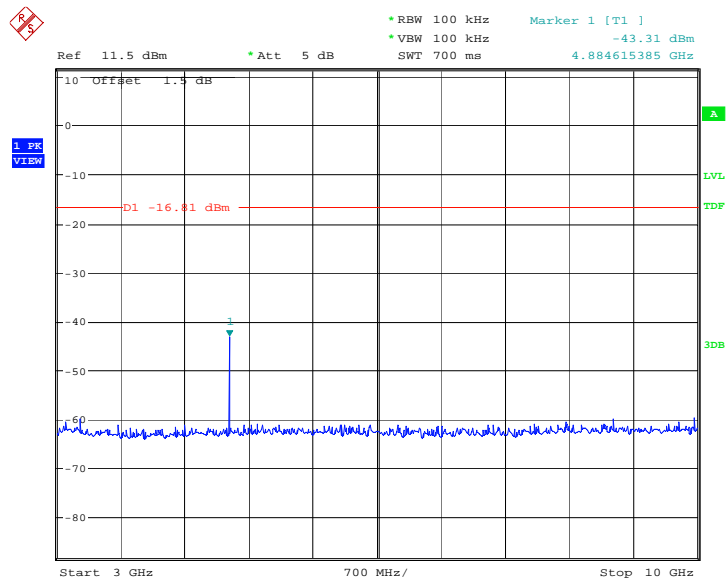
Date: 6.DEC.2011 00:01:02

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



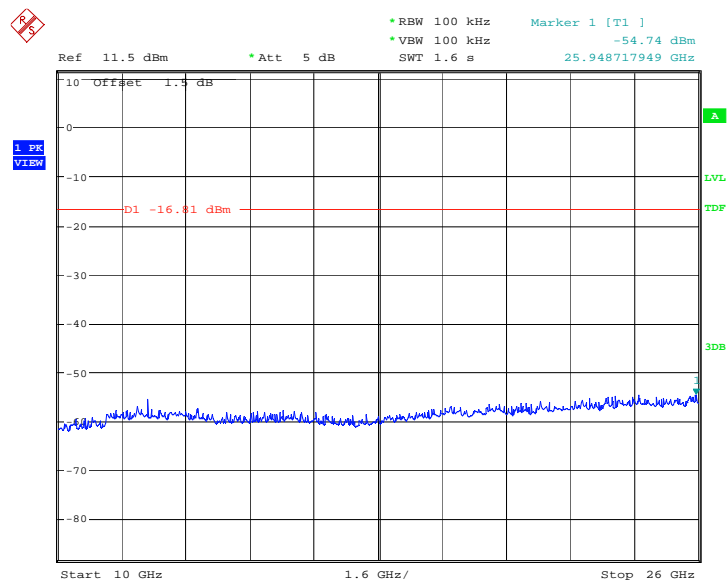
Date: 6.DEC.2011 00:01:33

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



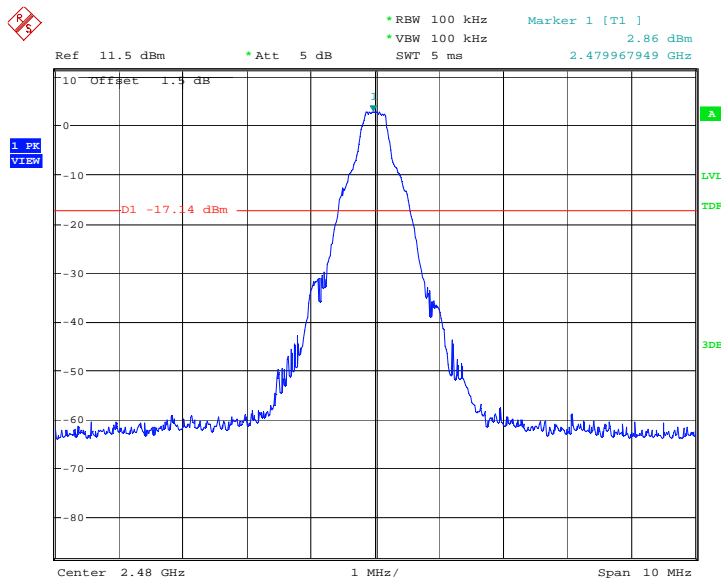
Date: 6.DEC.2011 00:01:50

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



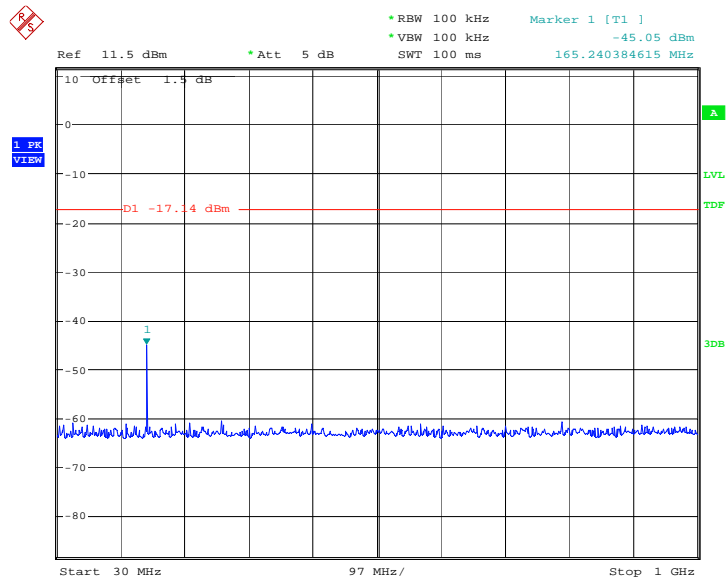
Date: 6.DEC.2011 00:02:07

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



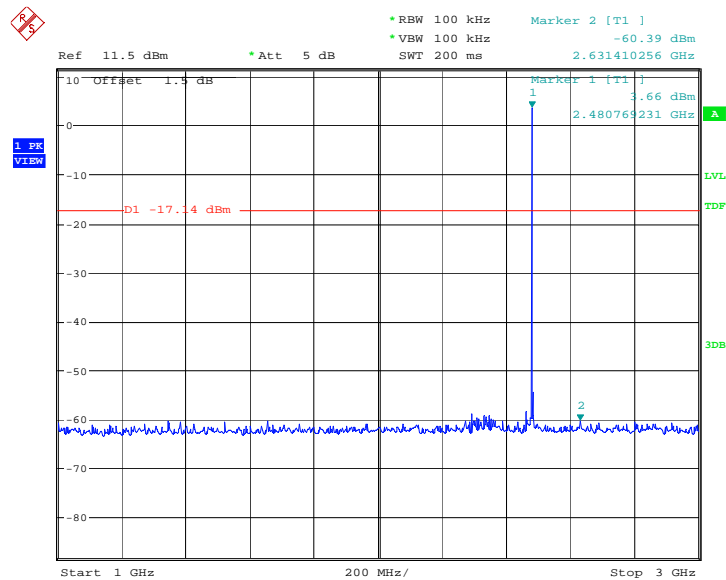
Date: 6.DEC.2011 00:02:24

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



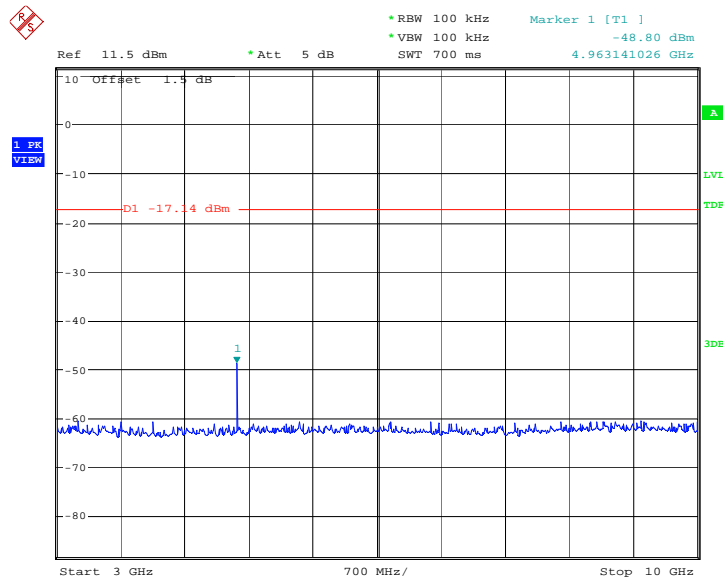
Date: 6.DEC.2011 00:02:40

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



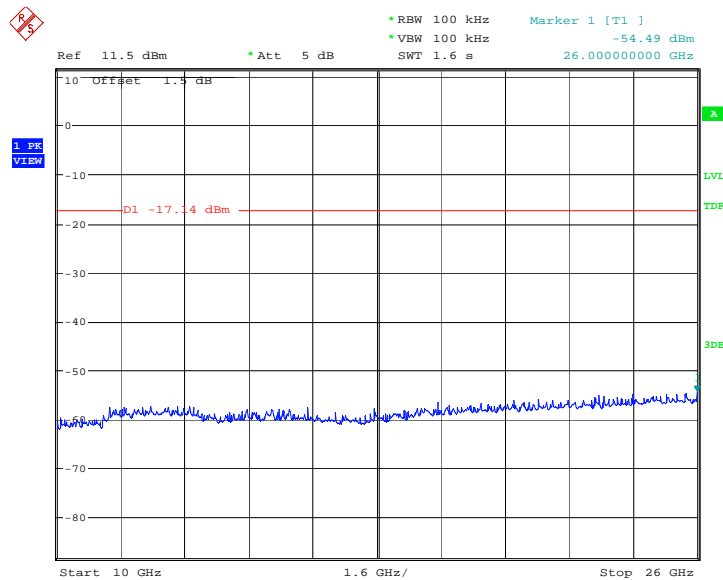
Date: 6.DEC.2011 00:03:12

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



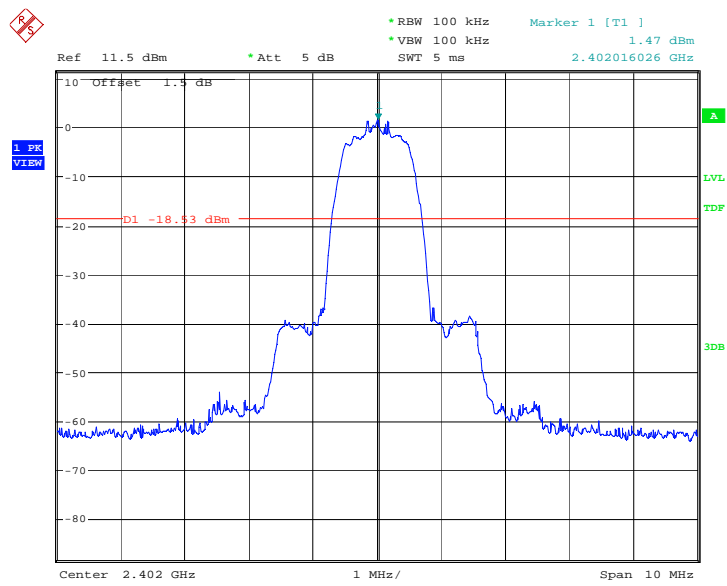
Date: 6.DEC.2011 00:03:28

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



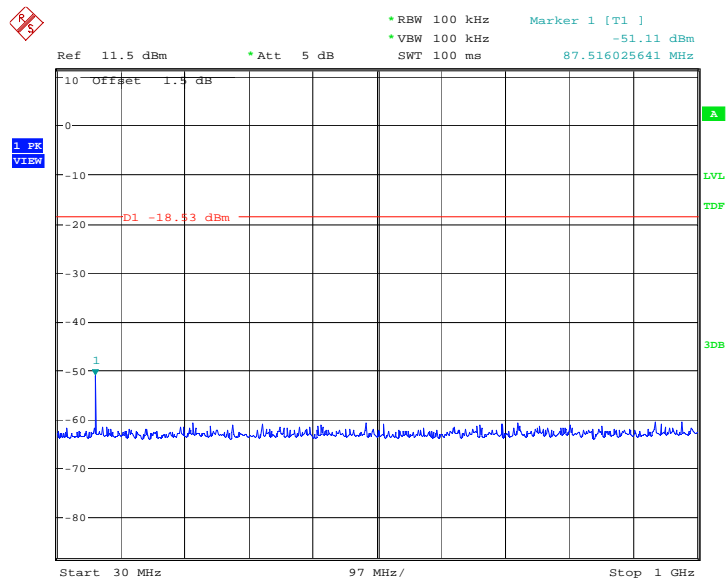
Date: 6.DEC.2011 00:03:45

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



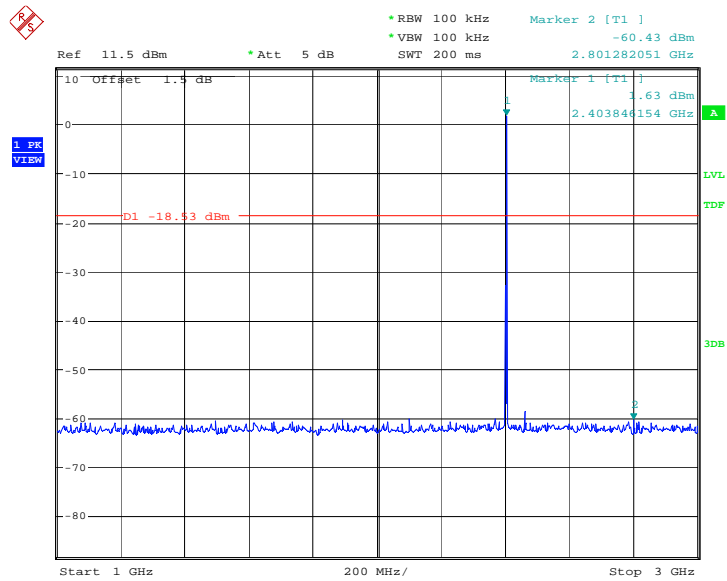
Date: 6.DEC.2011 00:21:16

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



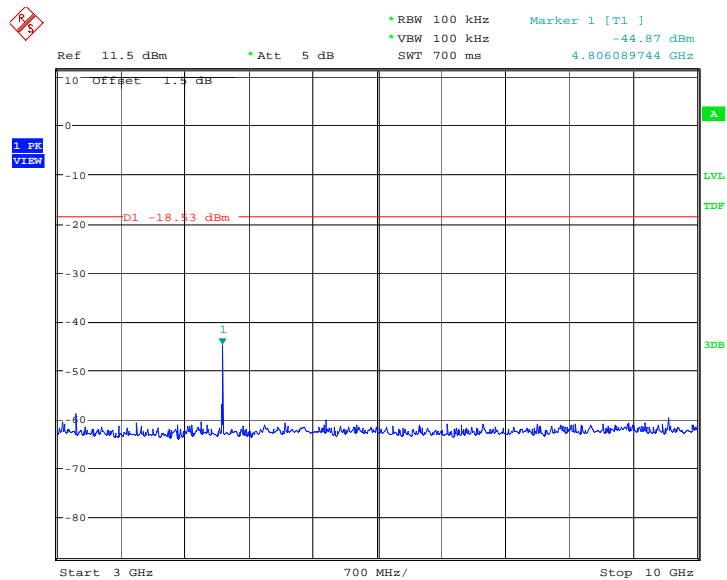
Date: 6.DEC.2011 00:21:33

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



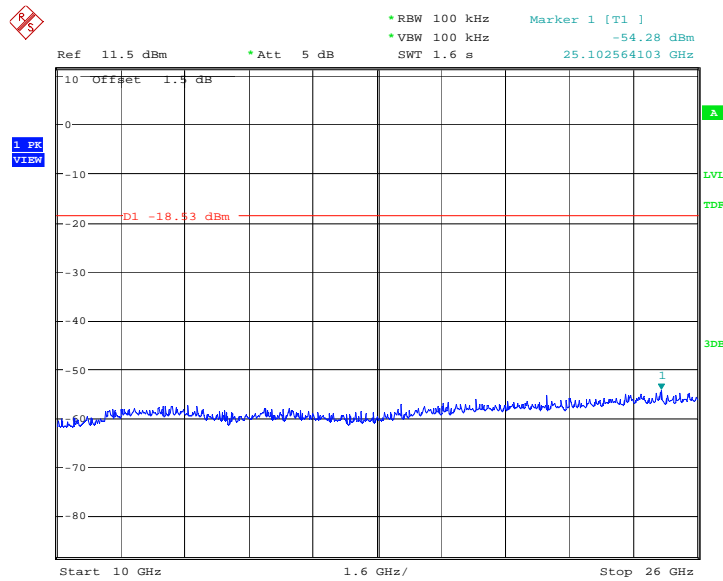
Date: 6.DEC.2011 00:22:04

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



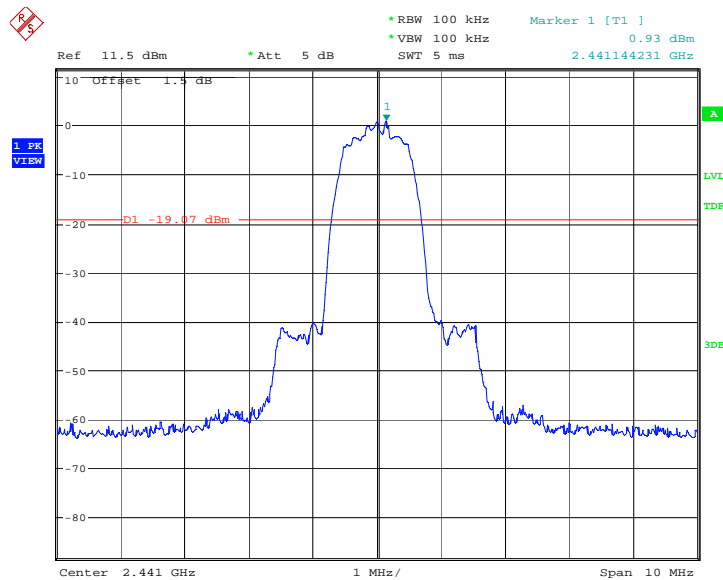
Date: 6.DEC.2011 00:22:21

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



Date: 6.DEC.2011 00:22:37

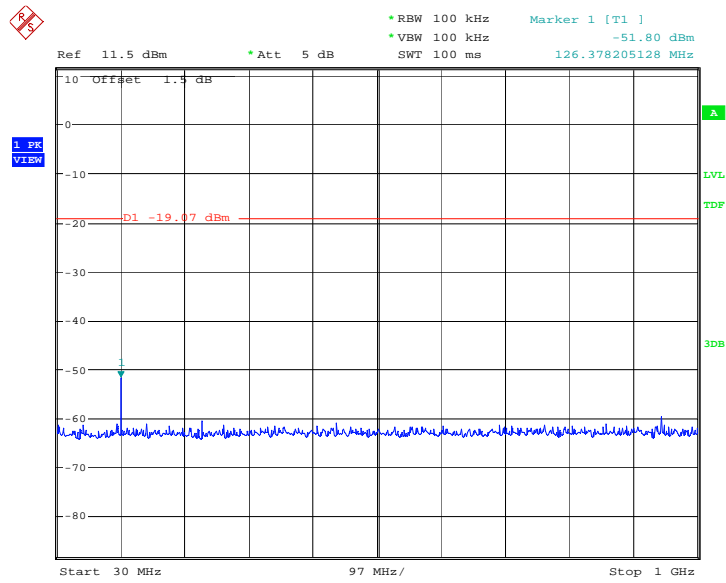
Fig.32. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 0, 10GHz - 26GHz



Date: 6.DEC.2011 00:22:54

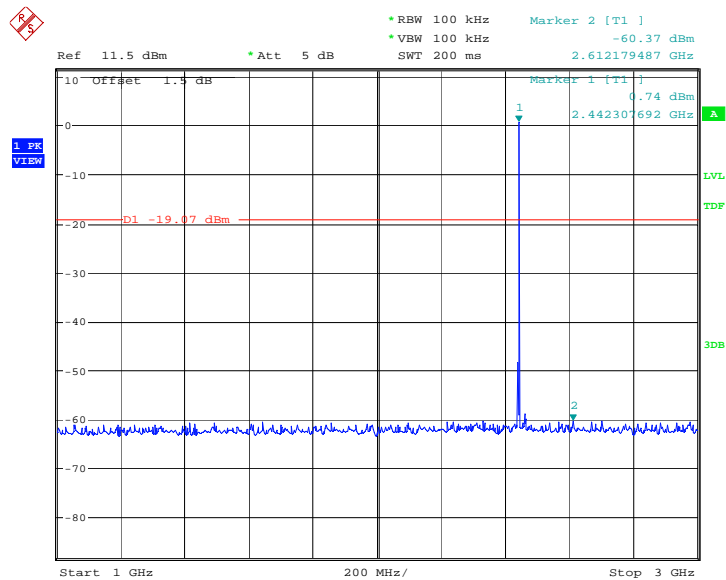
Fig.33. Conducted spurious emission:  $\pi/4$  DQPSK, Channel 39, 2441MHz





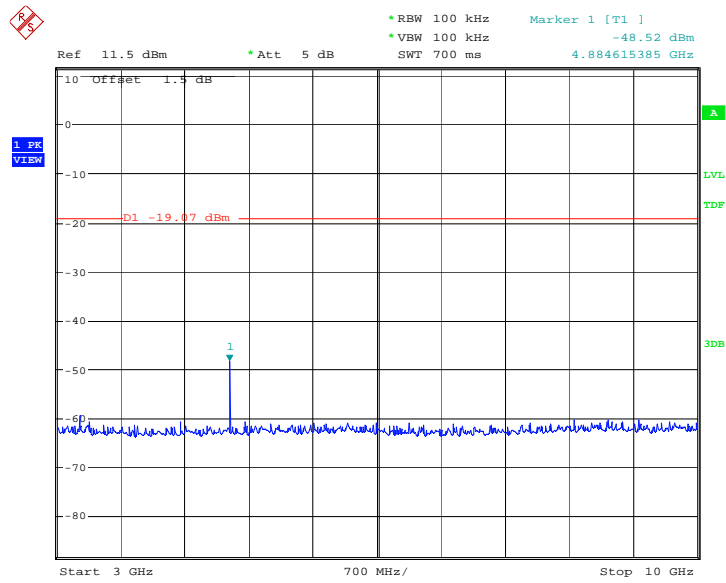
Date: 6.DEC.2011 00:23:11

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



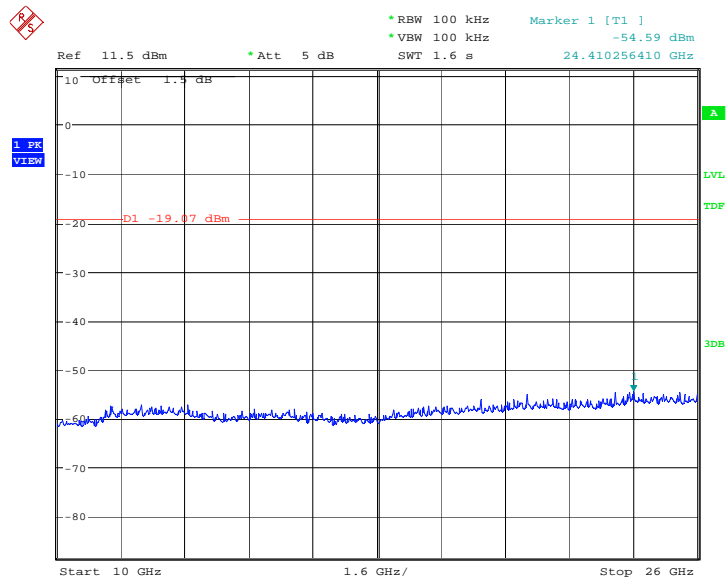
Date: 6.DEC.2011 00:23:42

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



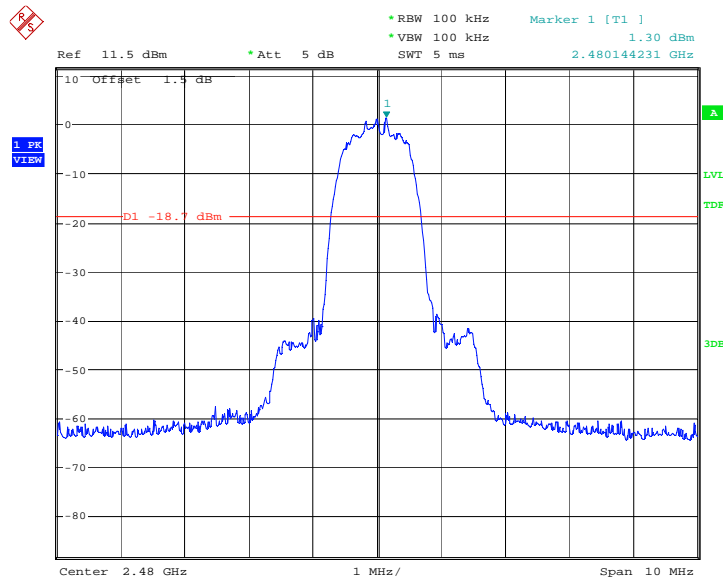
Date: 6.DEC.2011 00:23:59

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



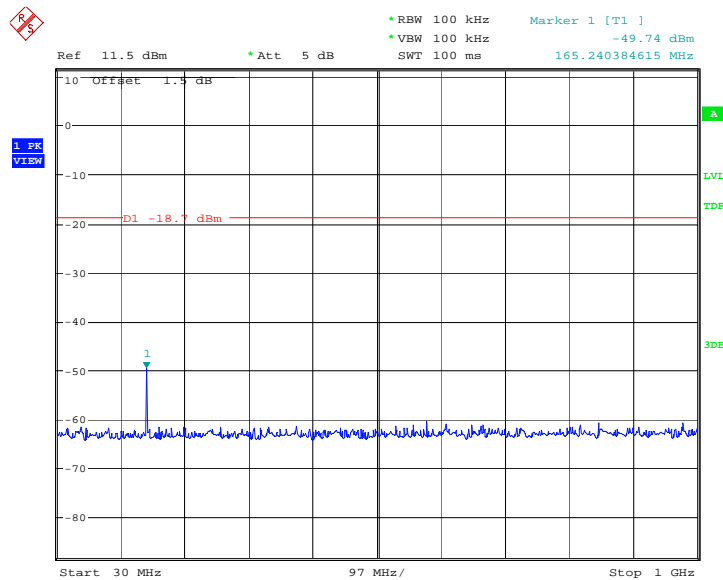
Date: 6.DEC.2011 00:24:16

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



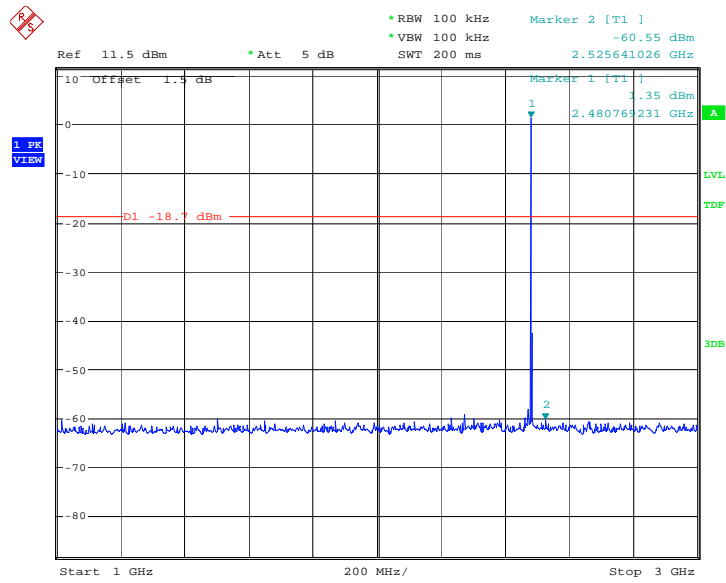
Date: 6.DEC.2011 00:24:32

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



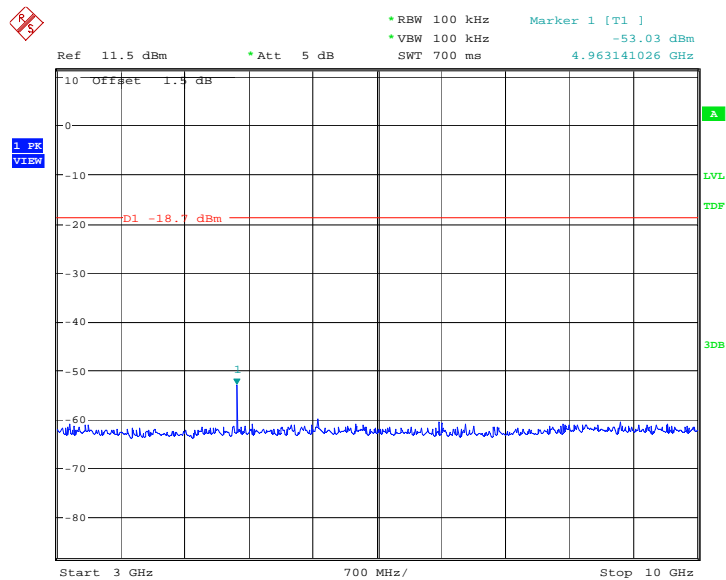
Date: 6.DEC.2011 00:24:49

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



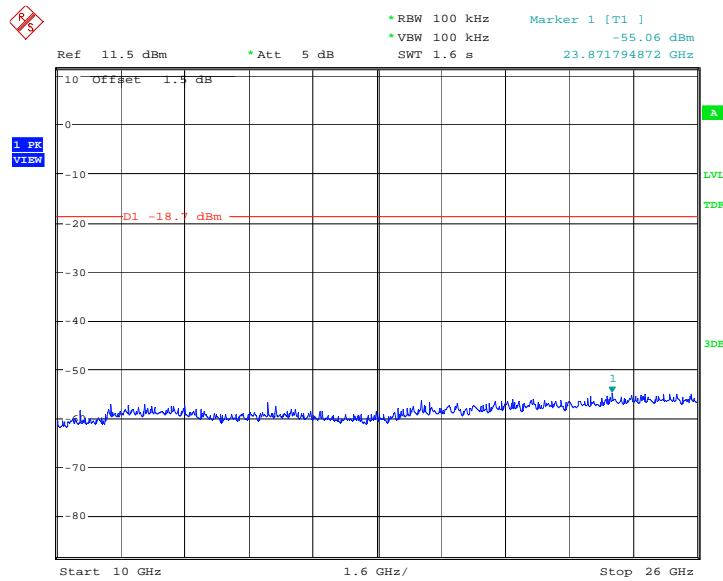
Date: 6.DEC.2011 00:25:21

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



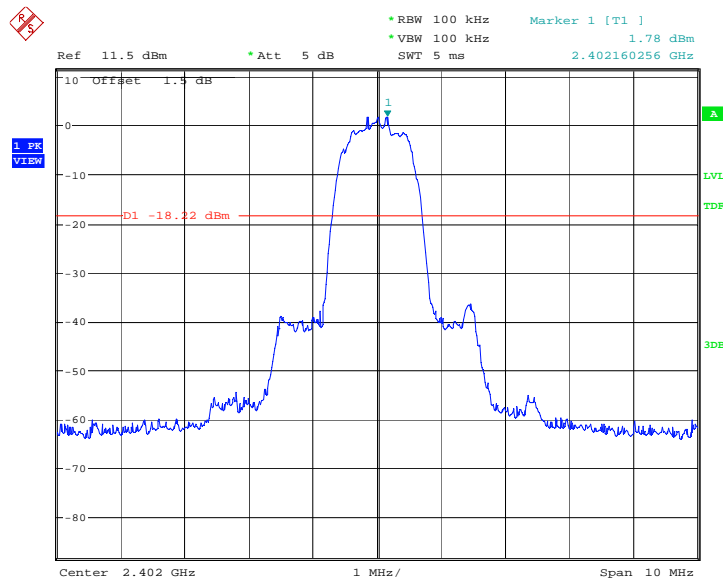
Date: 6.DEC.2011 00:25:37

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



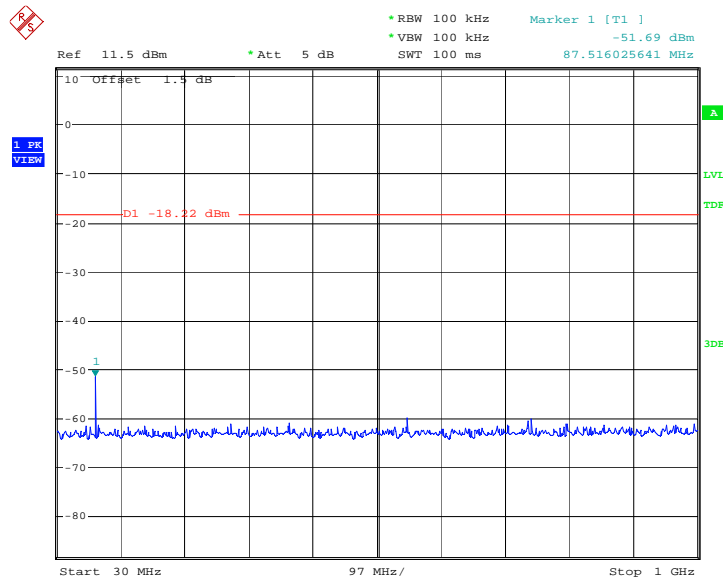
Date: 6.DEC.2011 00:25:54

Fig.42. Fig.30 Conducted spurious emission:  $\pi/4$  DQPSK, Channel 78, 10GHz - 26GHz



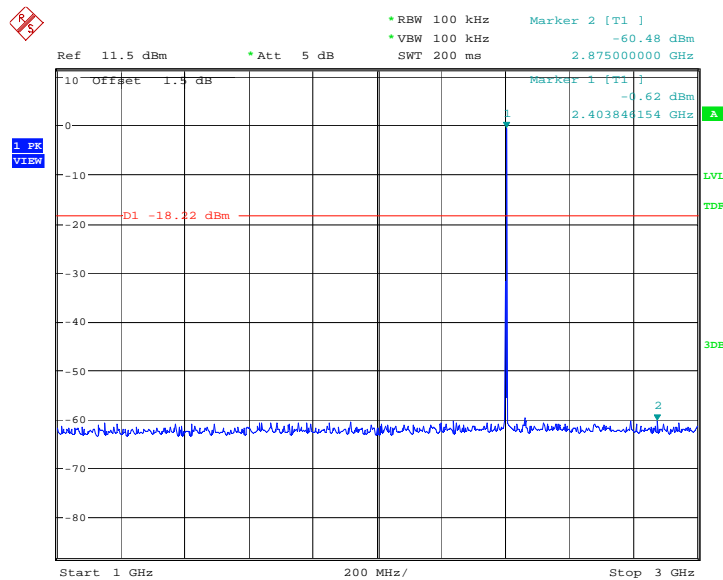
Date: 6.DEC.2011 00:43:27

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



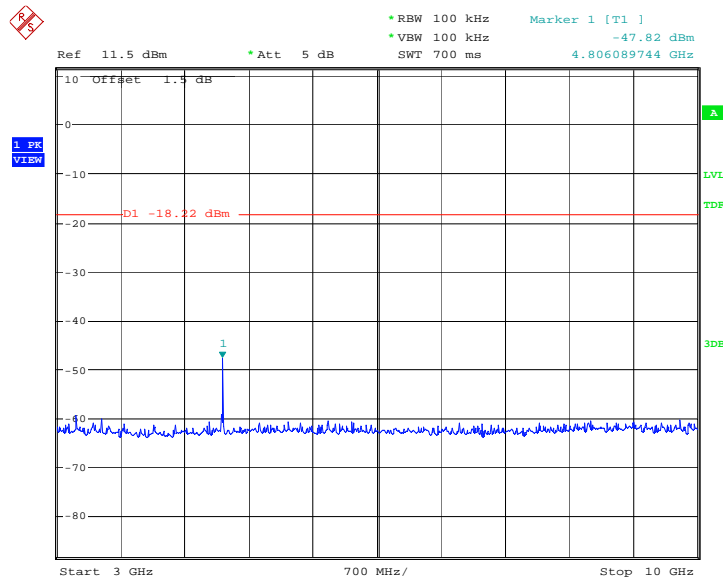
Date: 6.DEC.2011 00:43:44

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



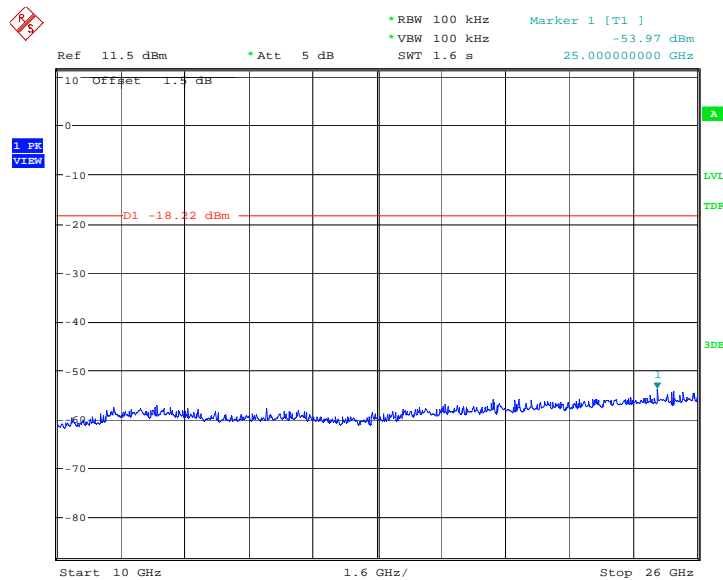
Date: 6.DEC.2011 00:44:15

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



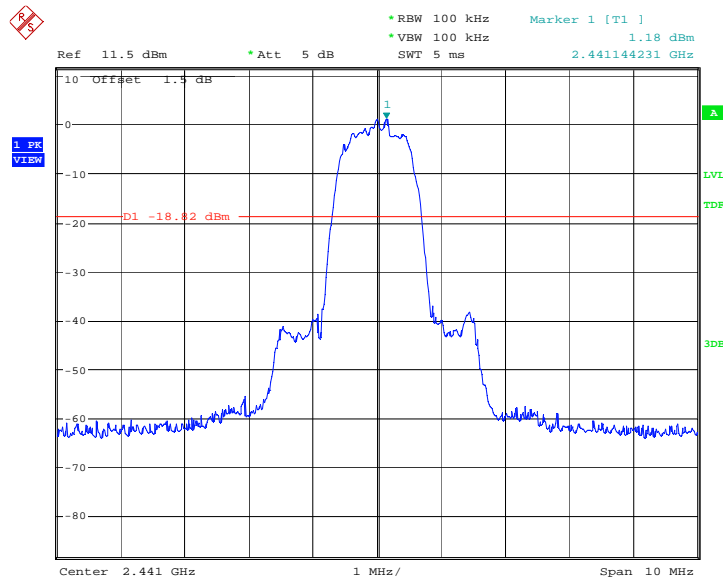
Date: 6.DEC.2011 00:44:32

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



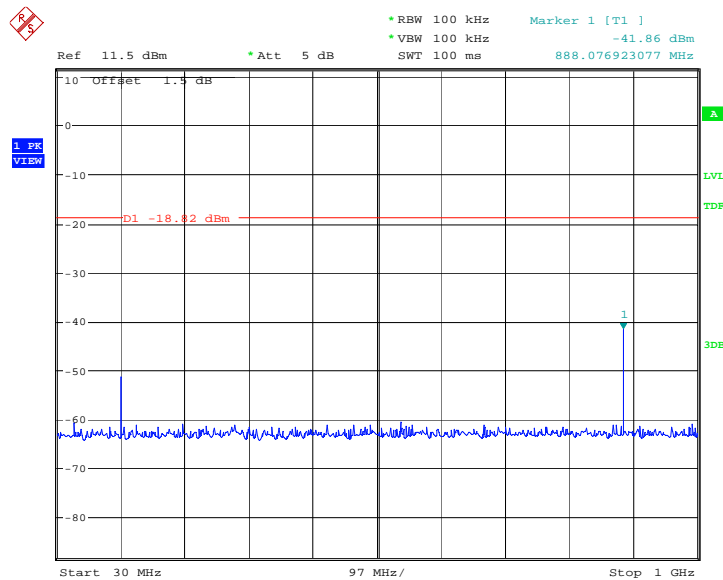
Date: 6.DEC.2011 00:44:48

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



Date: 6.DEC.2011 00:45:05

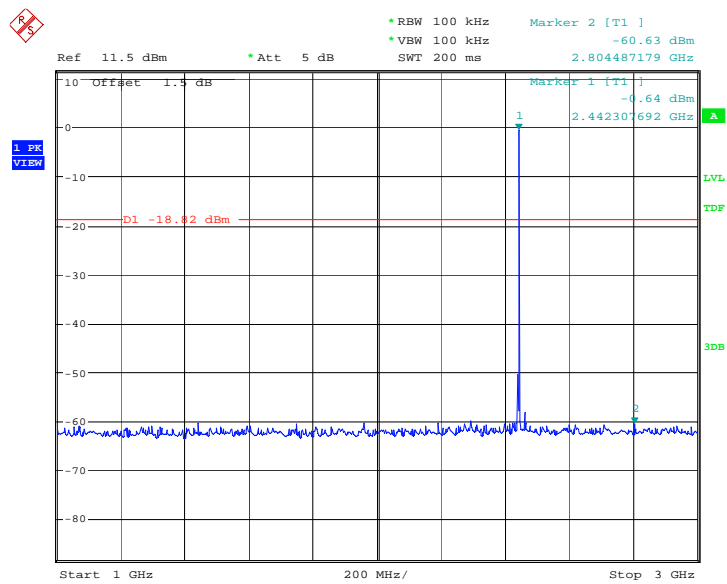
Fig.48. Conducted spurious emission: 8DPSK, Channel 39, 2441MHz



Date: 6.DEC.2011 00:45:22

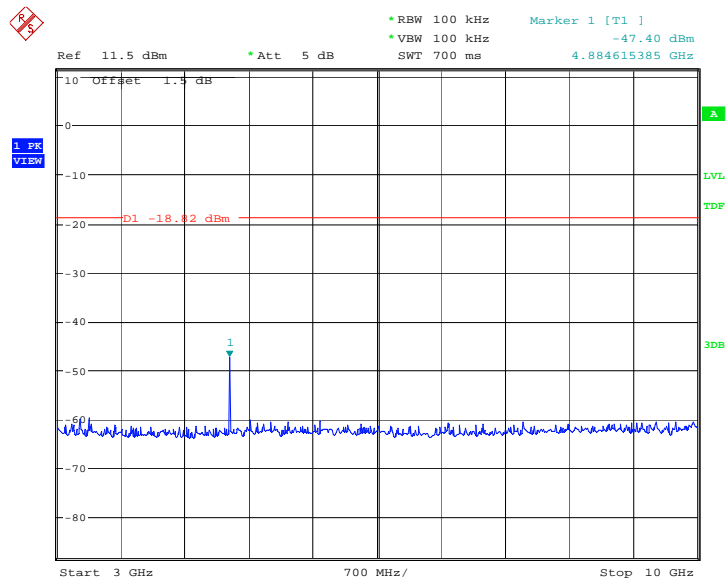
Fig.49. Conducted spurious emission: 8DPSK, Channel 39, 30MHz - 1GHz





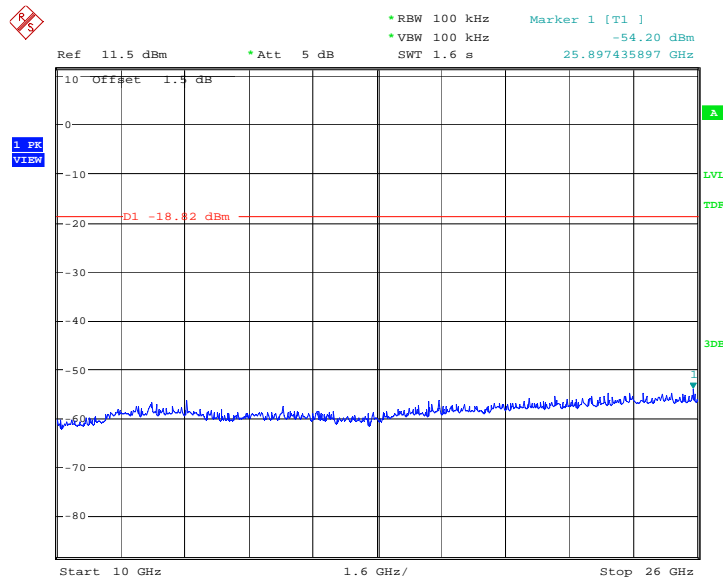
Date: 6.DEC.2011 00:45:53

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



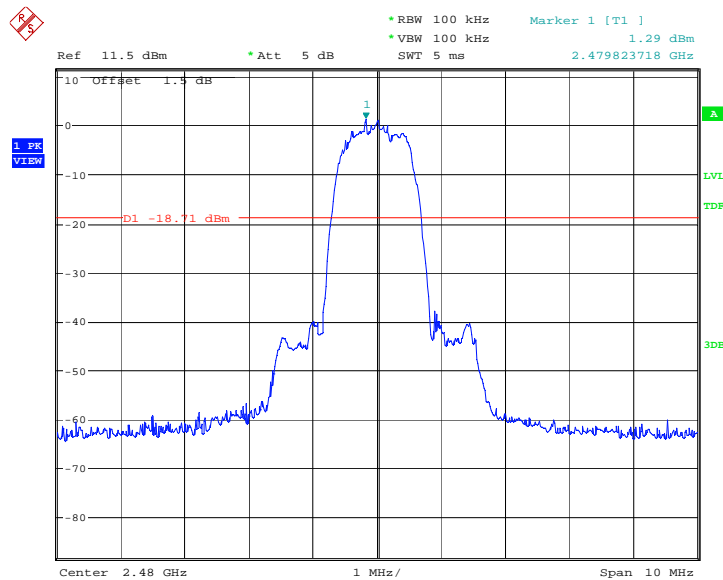
Date: 6.DEC.2011 00:46:10

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



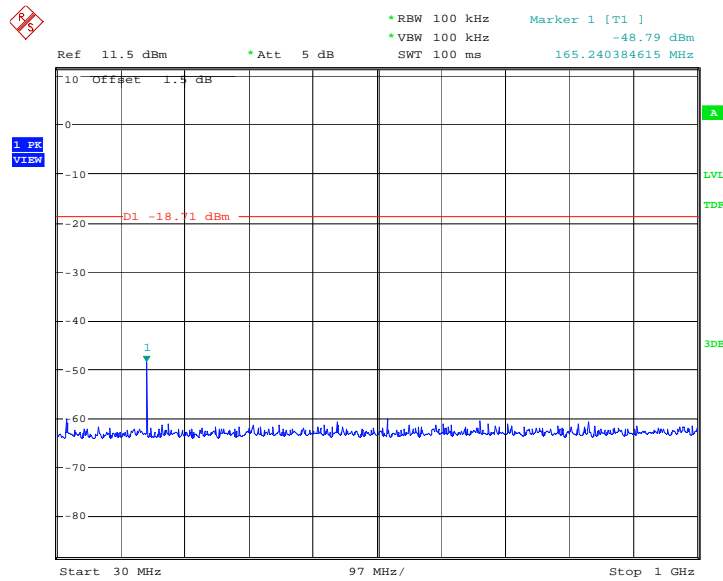
Date: 6.DEC.2011 00:46:27

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



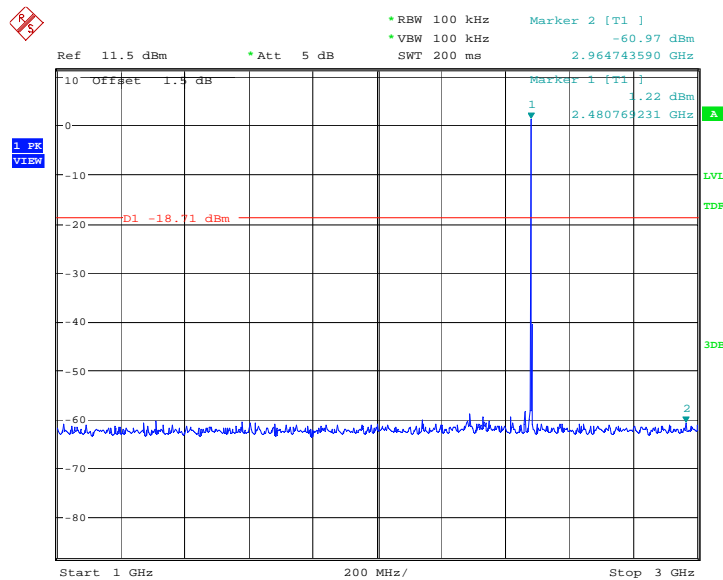
Date: 6.DEC.2011 00:46:43

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



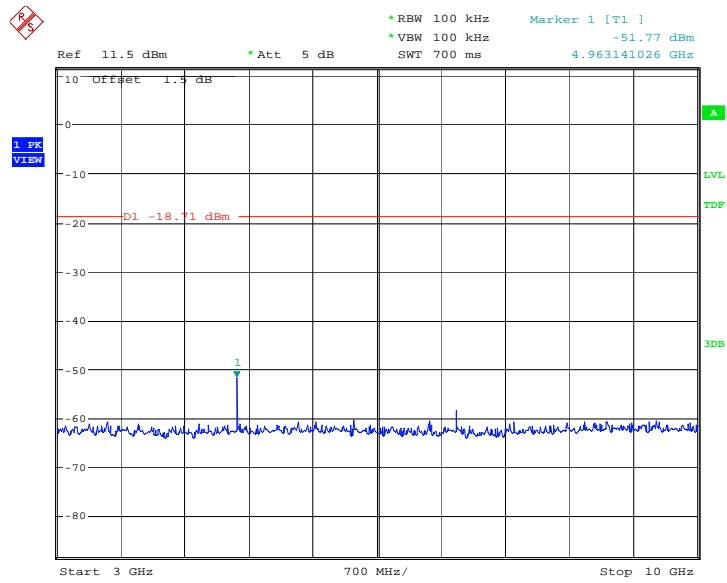
Date: 6.DEC.2011 00:47:00

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



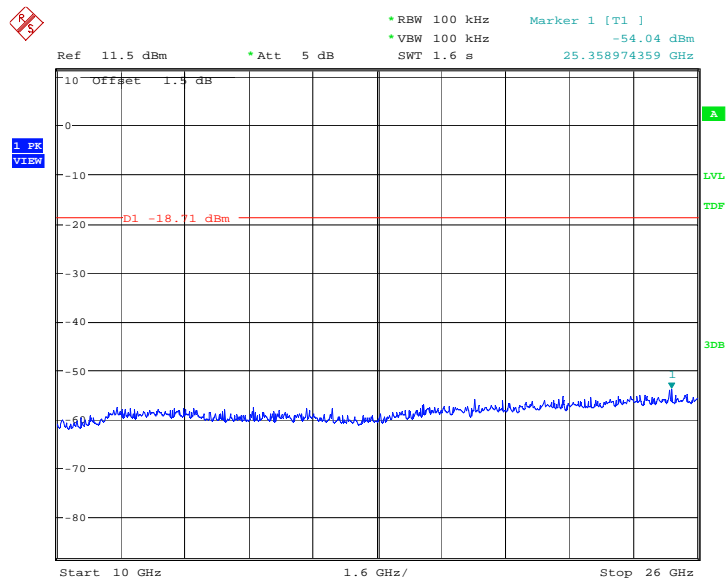
Date: 6.DEC.2011 00:47:32

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



Date: 6.DEC.2011 00:47:48

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



Date: 6.DEC.2011 00:48:05

Fig.57. Conducted spurious emission: 8DPSK, Channel 78, 1GHz - 26GHz

### A.5. Radiated Emission

#### Measurement Limit:

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

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

The measurement is made according to Public notice DA 00-705 and ANSI C63.4

#### 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:

A "reference path loss" is established and the  $A_{Rpl}$  is the attenuation of "reference path loss", and including the gain of receive antenna, the gain of the preamplifier, the cable los.

The measurement results are obtained as described below:

$$\text{Result} = P_{\text{Mea}} + A_{\text{Rpl}}$$

#### For GFSK

Channel	Frequency Range	Test Results	Conclusion
Ch 0 2402 MHz	30 MHz ~ 1 GHz	Fig.58	P
	1 GHz ~ 4 GHz	Fig.59	P
	4 GHz ~ 18 GHz	Fig.60	P
Ch 39 2441 MHz	30 MHz ~ 1 GHz	Fig.61	P
	1 GHz ~ 4 GHz	Fig.62	P
	4 GHz ~ 18 GHz	Fig.63	P

Ch 78 2480 MHz	30 MHz ~ 1 GHz	Fig.64	P
	1 GHz ~ 4 GHz	Fig.65	P
	4 GHz ~ 18 GHz	Fig.66	P
Power	2.38GHz~2.4GHz---L	Fig.67	P
Power	2.45GHz~2.5GHz---H	Fig.68	P
For all channels	18 GHz ~ 26 GHz	Fig.69	P

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

Channel	Frequency Range	Test Results	Conclusion
Ch 0 2402 MHz	30 MHz ~ 1 GHz	Fig.70	P
	1 GHz ~ 4 GHz	Fig.71	P
	4 GHz ~ 18 GHz	Fig.72	P
Ch 39 2441 MHz	30 MHz ~ 1 GHz	Fig.73	P
	1 GHz ~ 4 GHz	Fig.74	P
	4 GHz ~ 18 GHz	Fig.75	P
Ch 78 2480 MHz	30 MHz ~ 1 GHz	Fig.76	P
	1 GHz ~ 4 GHz	Fig.77	P
	4 GHz ~ 18 GHz	Fig.78	P
Power	2.38GHz~2.4GHz---L	Fig.79	P
Power	2.45GHz~2.5GHz---H	Fig.80	P
For all channels	18 GHz ~ 26 GHz	Fig.81	P

**For 8DPSK**

Channel	Frequency Range	Test Results	Conclusion
Ch 0 2402 MHz	30 MHz ~ 1 GHz	Fig.82	P
	1 GHz ~ 4 GHz	Fig.83	P
	4 GHz ~ 18 GHz	Fig.84	P
Ch 39 2441 MHz	30 MHz ~ 1 GHz	Fig.85	P
	1 GHz ~ 4 GHz	Fig.86	P
	4 GHz ~ 18 GHz	Fig.87	P
Ch 78 2480 MHz	30 MHz ~ 1 GHz	Fig.88	P
	1 GHz ~ 4 GHz	Fig.89	P
	4 GHz ~ 18 GHz	Fig.90	P
Power	2.38GHz~2.4GHz---L	Fig.91	P
Power	2.45GHz~2.5GHz---H	Fig.92	P
For all channels	18 GHz ~ 26 GHz	Fig.93	P

**GFSK Ch 0**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
3699.399	38.70	14.2	24.50	HORIZONTAL
3701.403	38.69	14.3	24.39	HORIZONTAL
3697.395	38.68	14.2	24.48	HORIZONTAL
3695.391	38.63	14.2	24.43	HORIZONTAL
3703.407	38.63	14.3	24.33	HORIZONTAL
3693.387	38.62	14.2	24.42	HORIZONTAL

**GFSK Ch 39**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
3699.399	38.70	14.2	24.50	HORIZONTAL
3697.395	38.68	14.2	24.48	HORIZONTAL
3701.403	38.66	14.3	24.36	HORIZONTAL
3695.391	38.63	14.2	24.43	HORIZONTAL
3703.407	38.60	14.3	24.30	HORIZONTAL
3709.419	38.57	14.3	24.27	HORIZONTAL

**GFSK Ch 78**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
3699.399	38.70	14.2	24.50	HORIZONTAL
3701.403	38.66	14.3	24.36	HORIZONTAL
3697.395	38.65	14.2	24.45	HORIZONTAL
3703.407	38.63	14.3	24.33	HORIZONTAL
3695.391	38.60	14.2	24.40	HORIZONTAL
3693.387	38.58	14.2	24.38	HORIZONTAL

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

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
3699.399	38.70	14.2	24.50	HORIZONTAL
3697.395	38.68	14.2	24.48	HORIZONTAL
3701.403	38.66	14.3	24.36	HORIZONTAL
3693.387	38.62	14.2	24.42	HORIZONTAL
3695.391	38.60	14.2	24.40	HORIZONTAL
3703.407	38.60	14.3	24.30	HORIZONTAL

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

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
3699.399	38.70	14.2	24.50	HORIZONTAL
3697.395	38.68	14.2	24.48	HORIZONTAL
3701.403	38.66	14.3	24.36	HORIZONTAL
3695.391	38.60	14.2	24.40	HORIZONTAL
3703.407	38.60	14.3	24.30	HORIZONTAL
3709.419	38.60	14.3	24.30	HORIZONTAL

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

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
3699.399	38.70	14.2	24.50	HORIZONTAL
3701.403	38.66	14.3	24.36	HORIZONTAL
3697.395	38.65	14.2	24.45	HORIZONTAL
3703.407	38.63	14.3	24.33	HORIZONTAL
3695.391	38.60	14.2	24.40	HORIZONTAL
3709.419	38.60	14.3	24.30	HORIZONTAL

**8DPSK Ch 0**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
3699.399	38.70	14.2	24.50	HORIZONTAL
3701.403	38.66	14.3	24.36	HORIZONTAL
3697.395	38.65	14.2	24.45	HORIZONTAL
3695.391	38.63	14.2	24.43	HORIZONTAL
3703.407	38.60	14.3	24.30	HORIZONTAL
3711.423	38.58	14.5	24.08	HORIZONTAL

**8DPSK Ch 39**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
3697.395	38.68	14.2	24.48	HORIZONTAL
3699.399	38.67	14.2	24.47	HORIZONTAL
3701.403	38.66	14.3	24.36	HORIZONTAL
3703.407	38.63	14.3	24.33	HORIZONTAL
3705.411	38.61	14.3	24.31	HORIZONTAL
3695.391	38.60	14.2	24.40	HORIZONTAL

**8DPSK Ch 78**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
3699.399	38.70	14.2	24.50	HORIZONTAL
3697.395	38.65	14.2	24.45	HORIZONTAL
3701.403	38.62	14.3	24.32	HORIZONTAL
3695.391	38.60	14.2	24.40	HORIZONTAL
3703.407	38.60	14.3	24.30	HORIZONTAL
3709.419	38.60	14.3	24.30	HORIZONTAL

**Conclusion: PASS**

**Test graphs as below:**



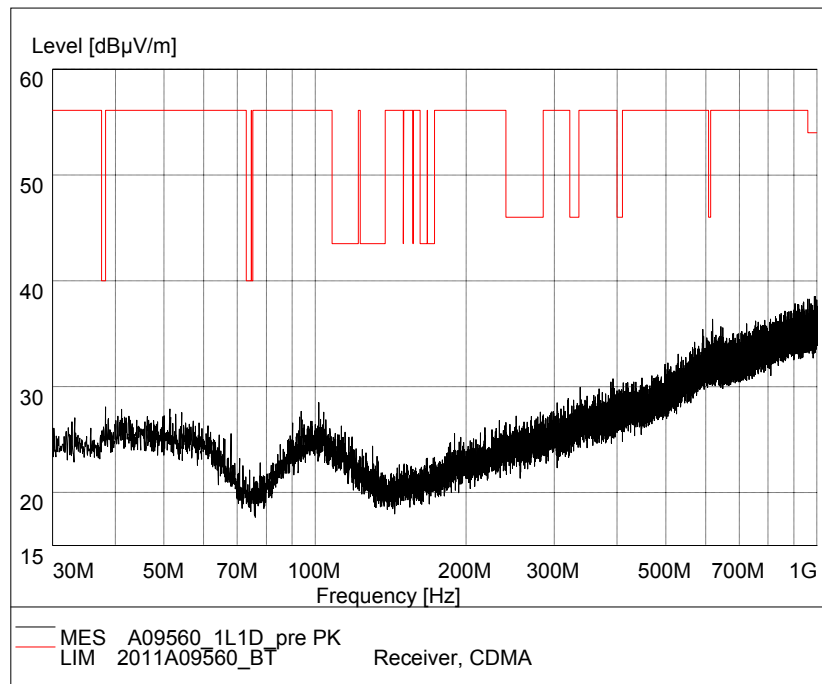


Fig.58. Radiated emission: GFSK, Channel 0, 30 MHz - 1 GHz

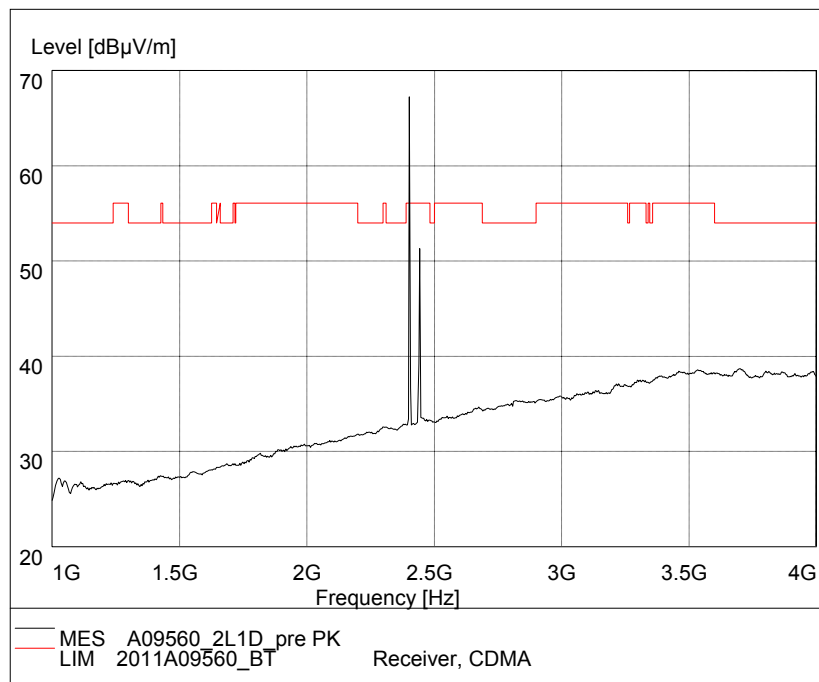


Fig.59. Radiated emission: GFSK, Channel 0, 1 GHz - 4 GHz

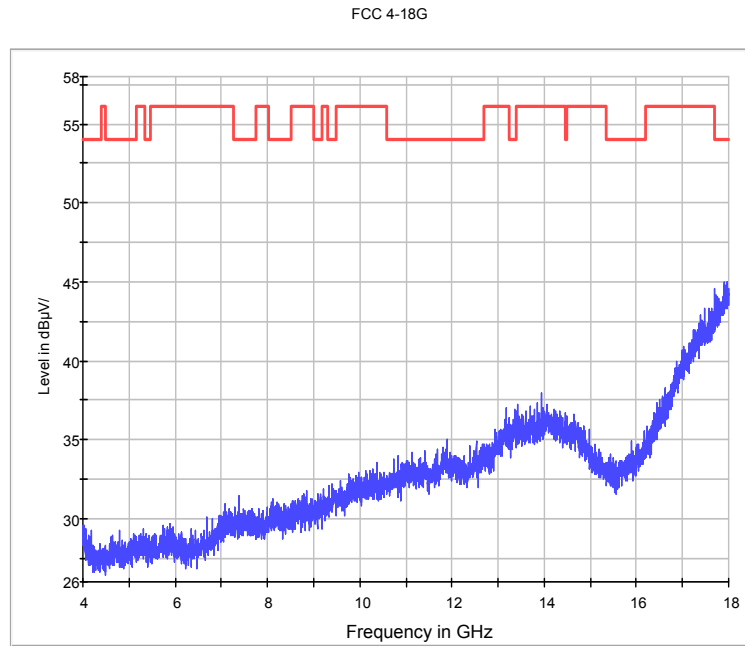


Fig.60. Radiated emission: GFSK, Channel 0, 4 GHz - 18 GHz

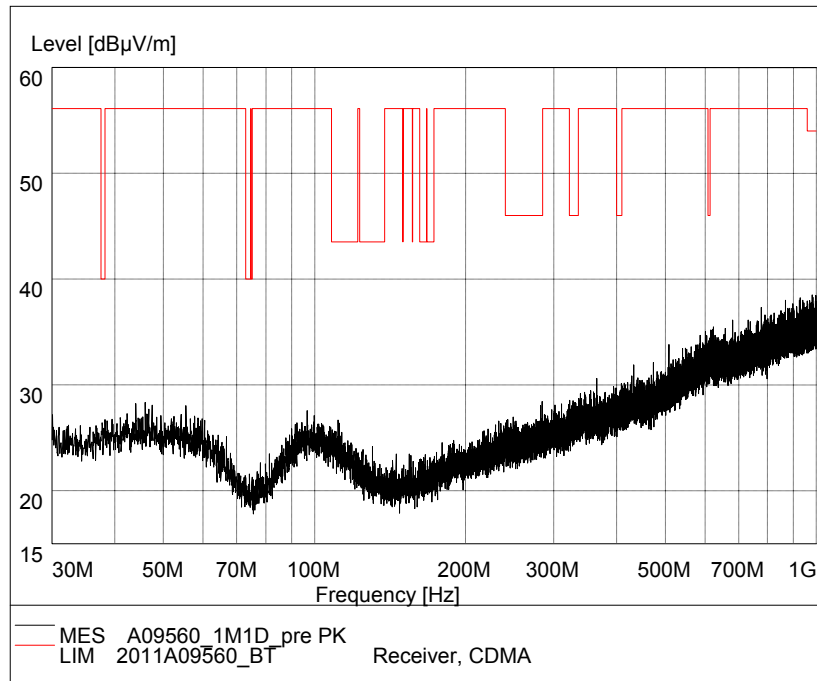


Fig.61. Radiated emission: GFSK, Channel 39, 30 MHz - 1 GHz

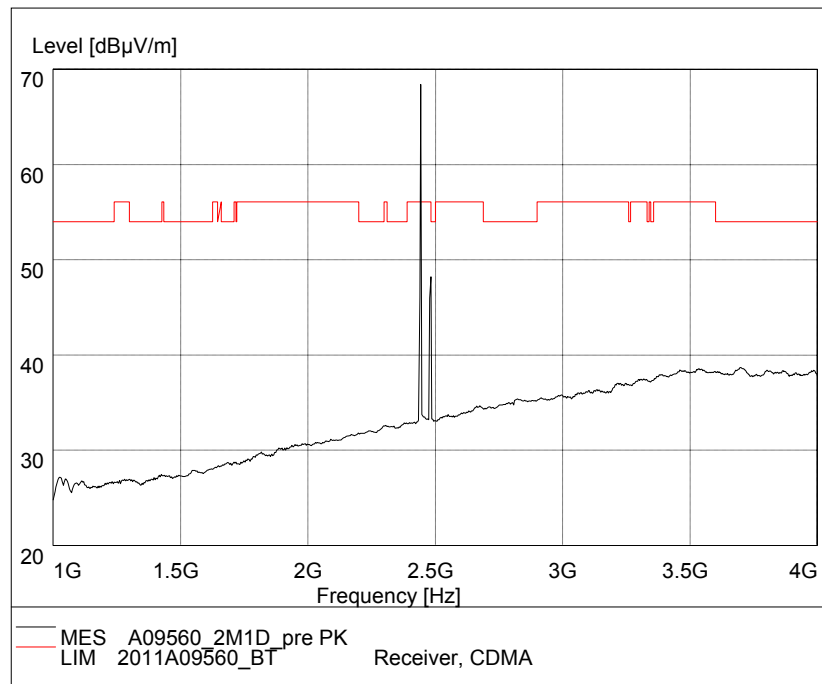


Fig.62. Radiated emission: GFSK, Channel 39, 1 GHz - 4 GHz

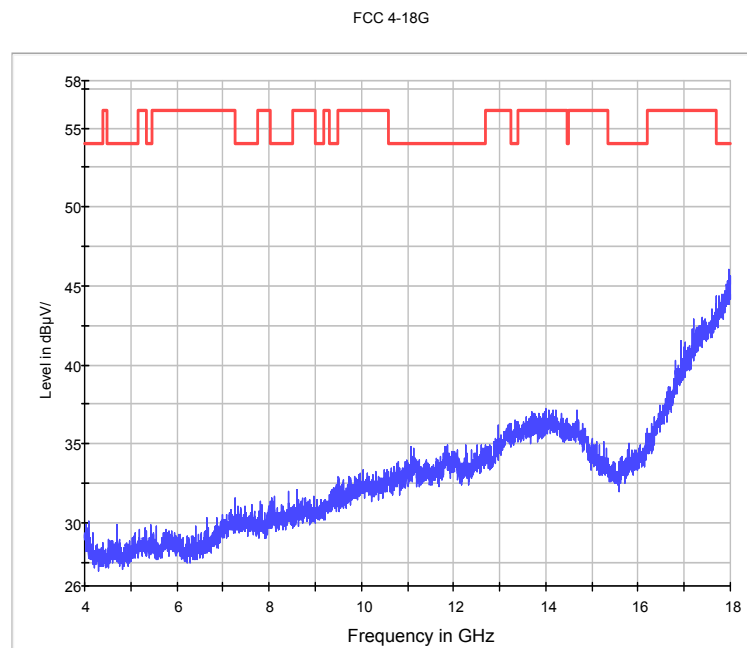


Fig.63. Radiated emission: GFSK, Channel 39, 4 GHz - 18 GHz

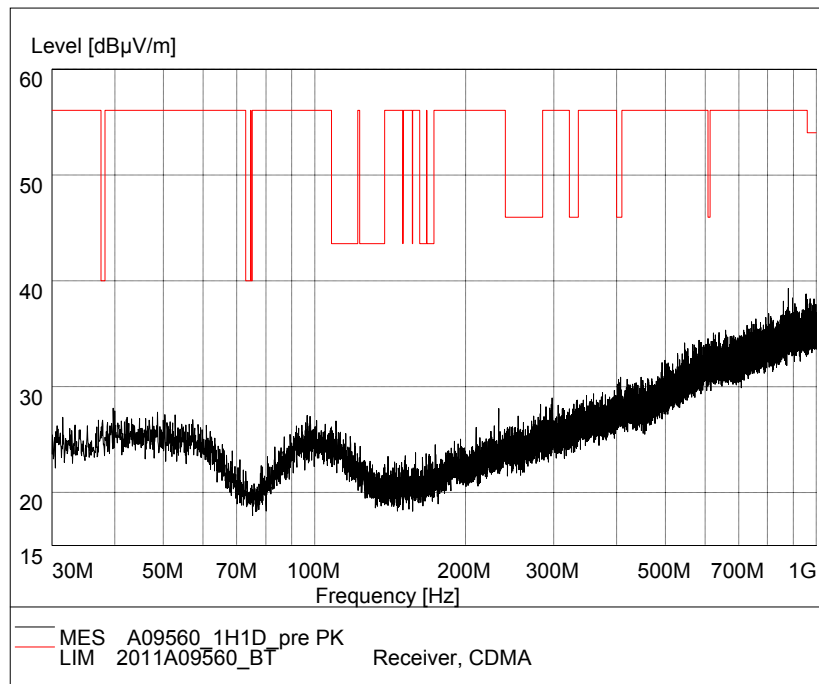


Fig.64. Radiated emission: GFSK, Channel 78, 30 MHz - 1 GHz

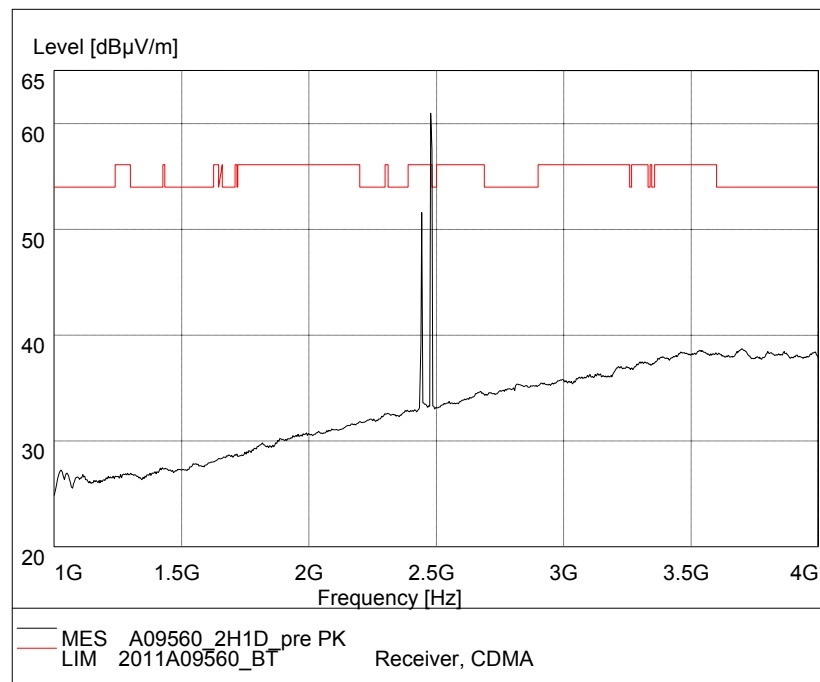


Fig.65. Fig.47 Radiated emission: GFSK, Channel 78, 1 GHz - 4 GHz

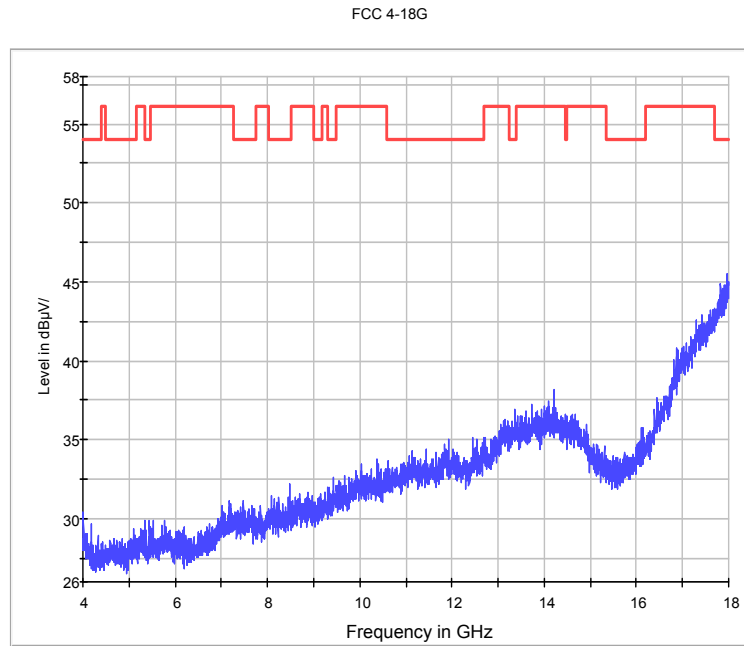


Fig.66. Radiated emission: GFSK, Channel 78, 4 GHz - 18 GHz

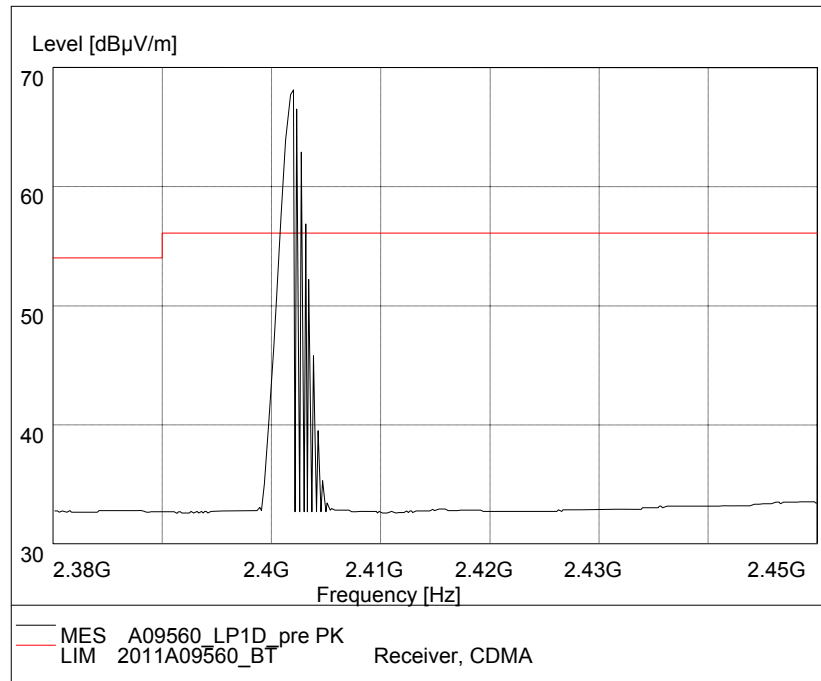


Fig.67. Radiated emission (Power): GFSK, low channel

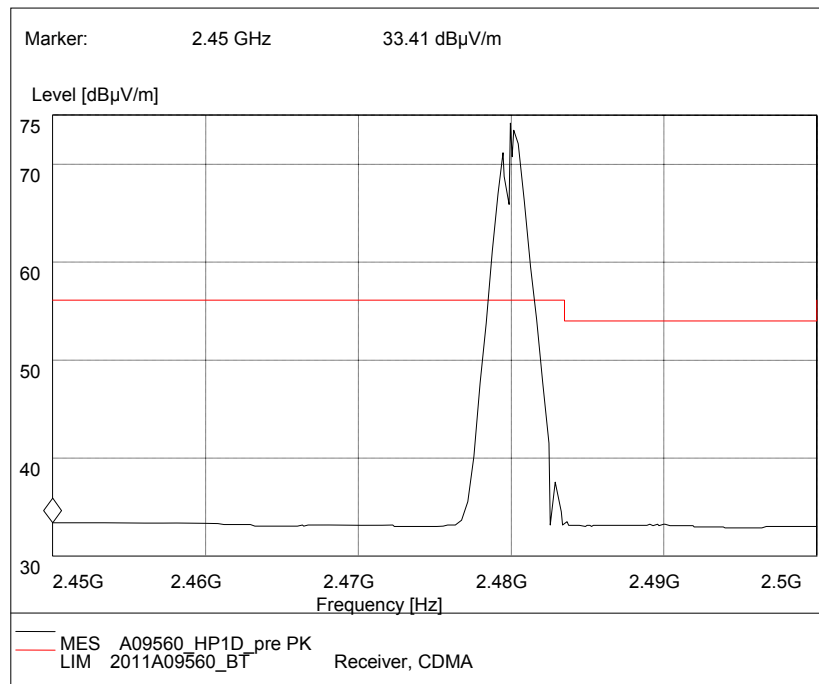


Fig.68. Radiated emission (Power) GFSK, high channel

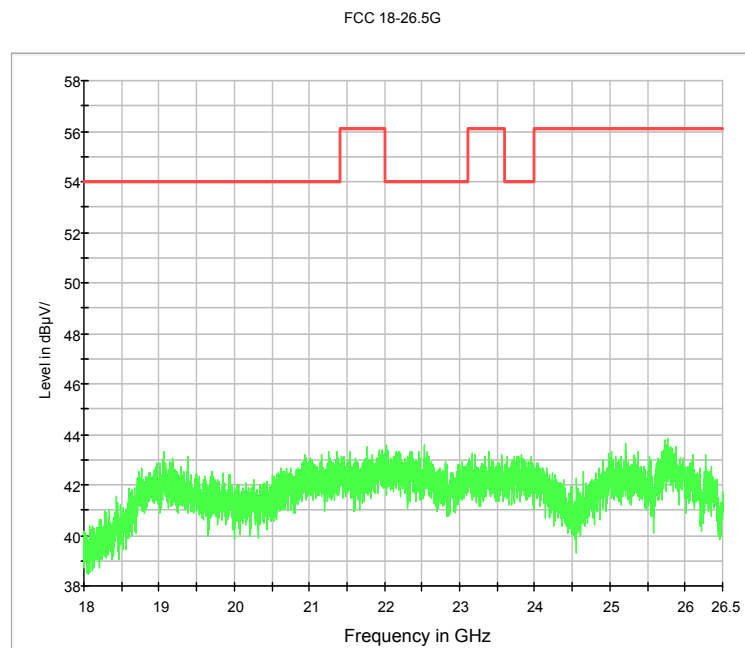


Fig.69. Radiated emission: GFSK, 18 GHz - 26 GHz

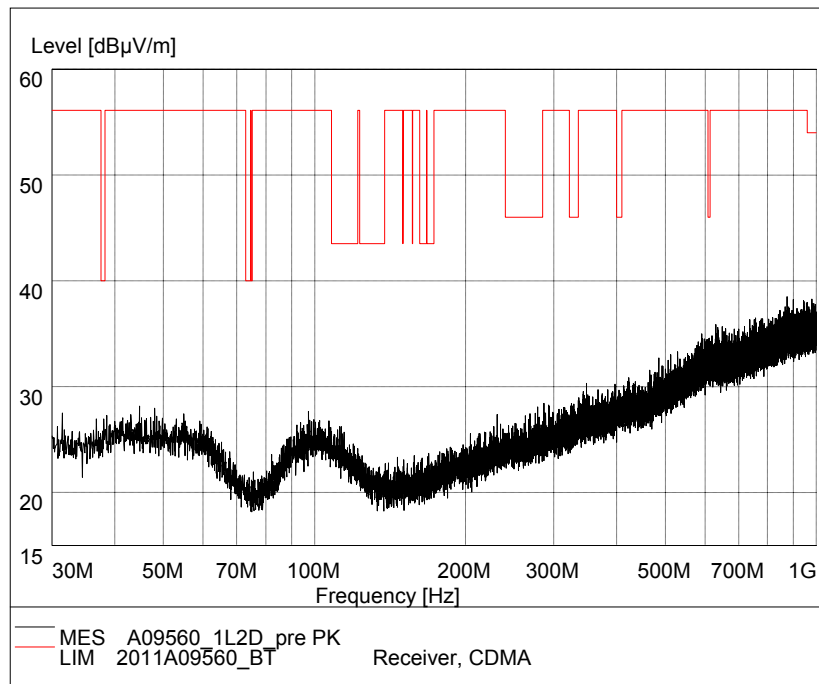


Fig.70. Radiated emission:  $\pi/4$  DQPSK, Channel 0, 30 MHz - 1 GHz

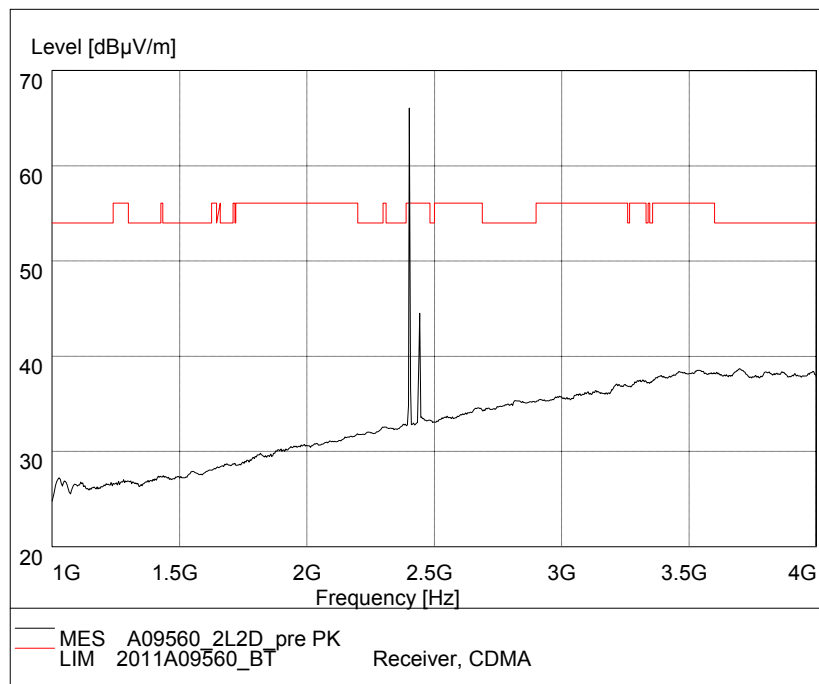


Fig.71. Radiated emission:  $\pi/4$  DQPSK, Channel 0, 1 GHz - 4 GHz

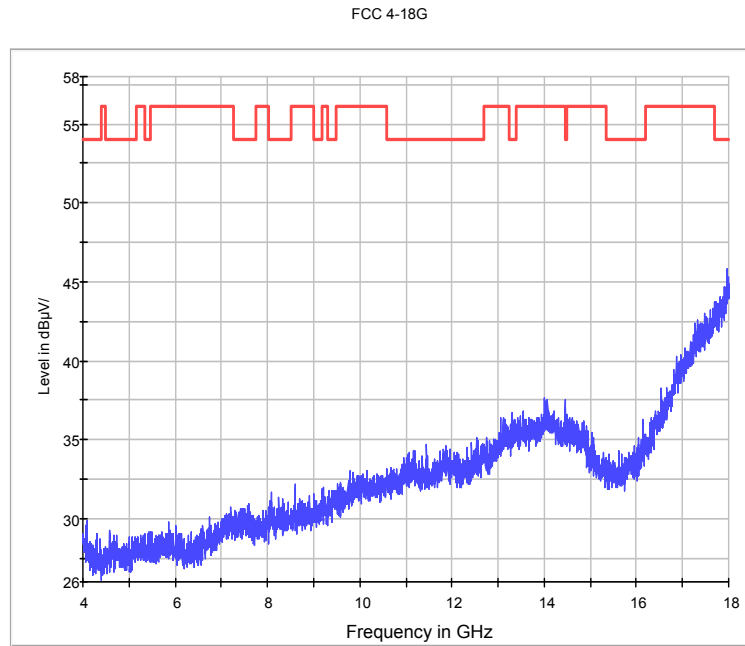


Fig.72. Radiated emission:  $\pi/4$  DQPSK, Channel 0, 4 GHz - 18 GHz

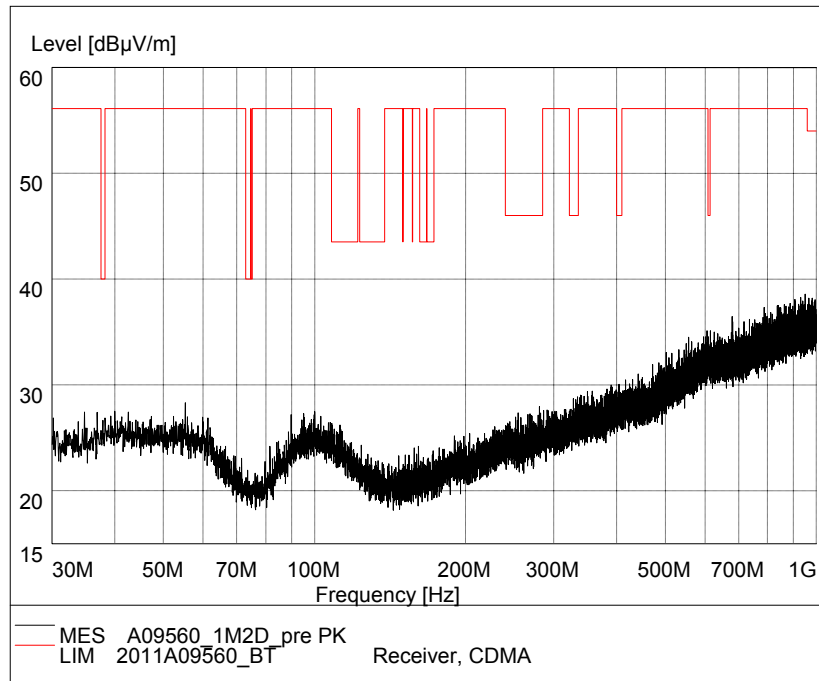


Fig.73. Radiated emission:  $\pi/4$  DQPSK, Channel 39, 30 MHz - 1 GHz



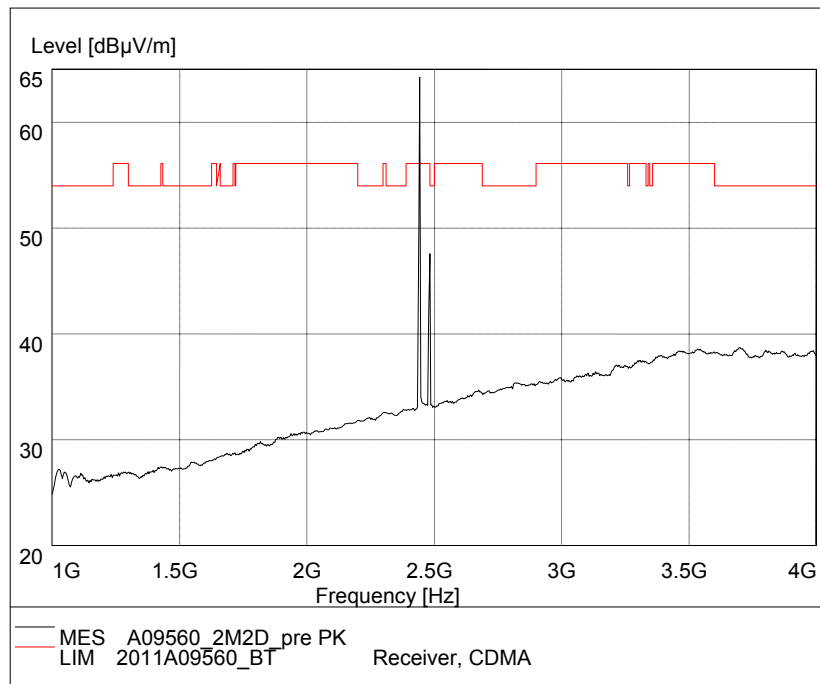


Fig.74. Radiated emission:  $\pi/4$  DQPSK, Channel 39, 1 GHz - 4 GHz

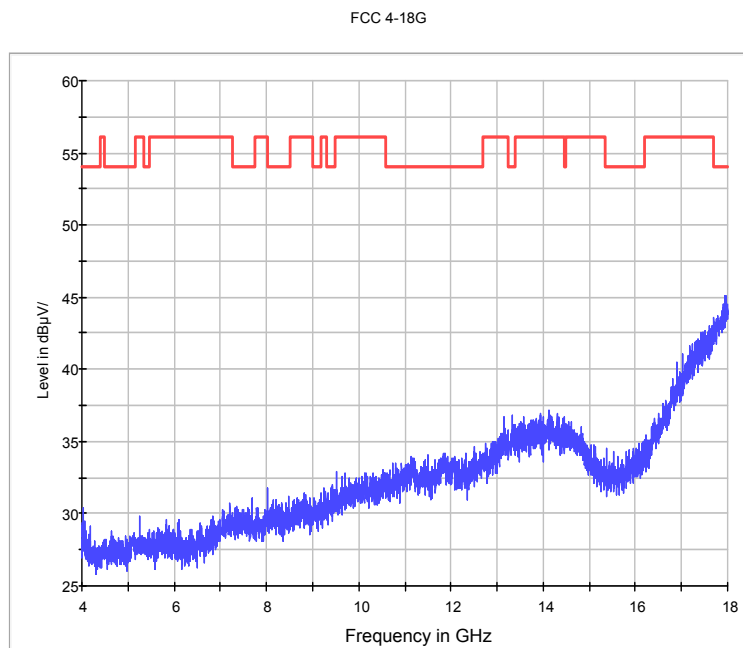


Fig.75. Radiated emission:  $\pi/4$  DQPSK, Channel 39, 4 GHz - 18 GHz

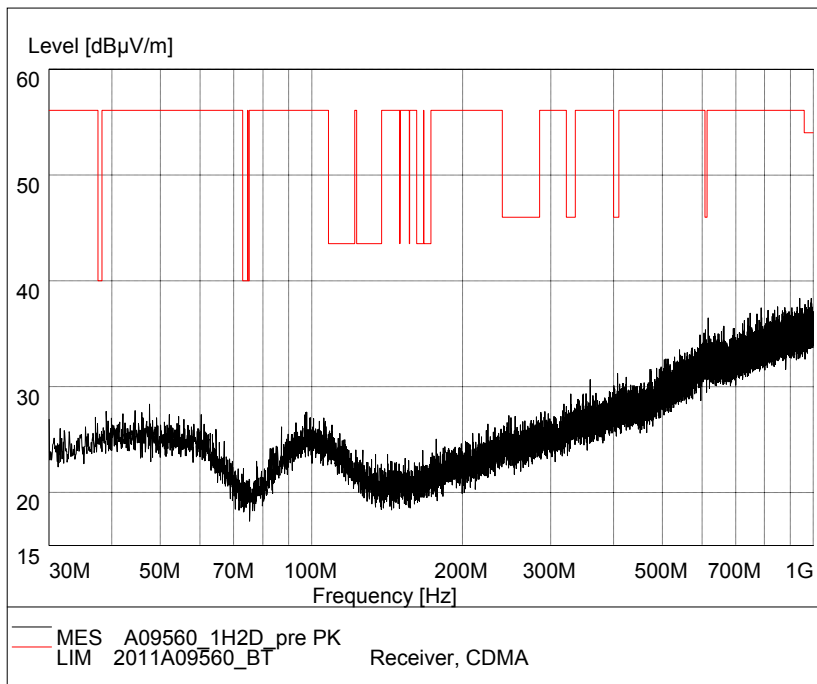


Fig.76. Radiated emission:  $\pi/4$  DQPSK, Channel 78, 30 MHz - 1 GHz

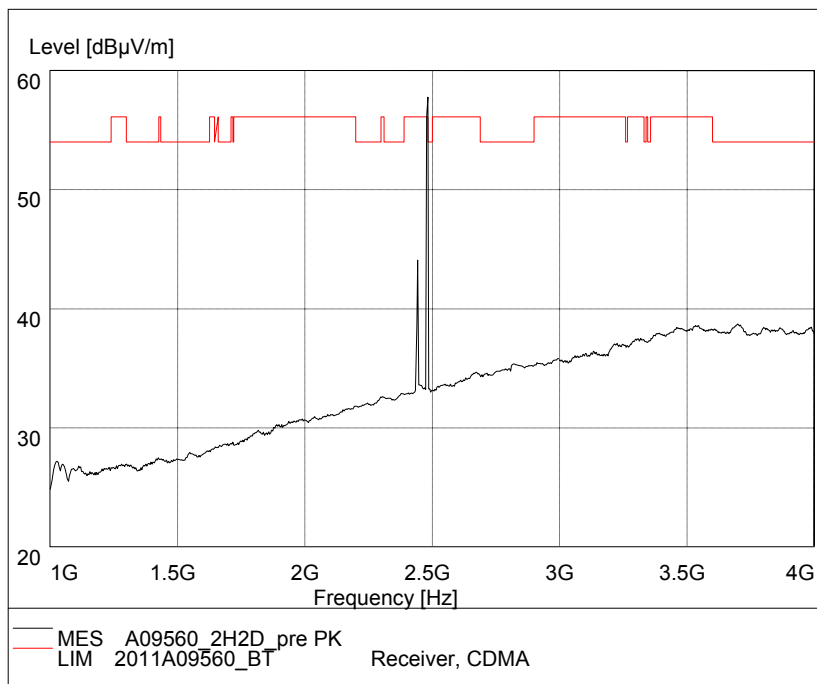


Fig.77. Radiated emission:  $\pi/4$  DQPSK, Channel 78, 1 GHz - 4 GHz

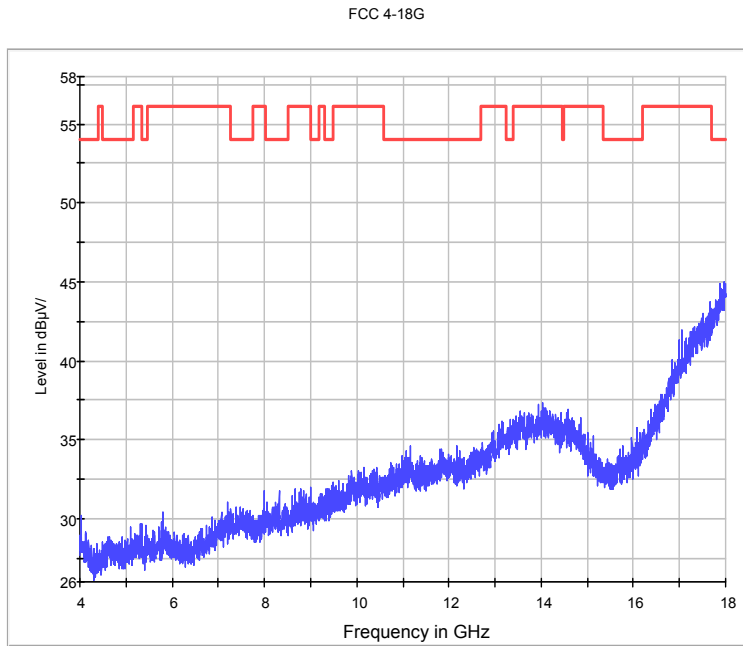


Fig.78. Radiated emission:  $\pi/4$  DQPSK, Channel 78, 4 GHz - 18 GHz

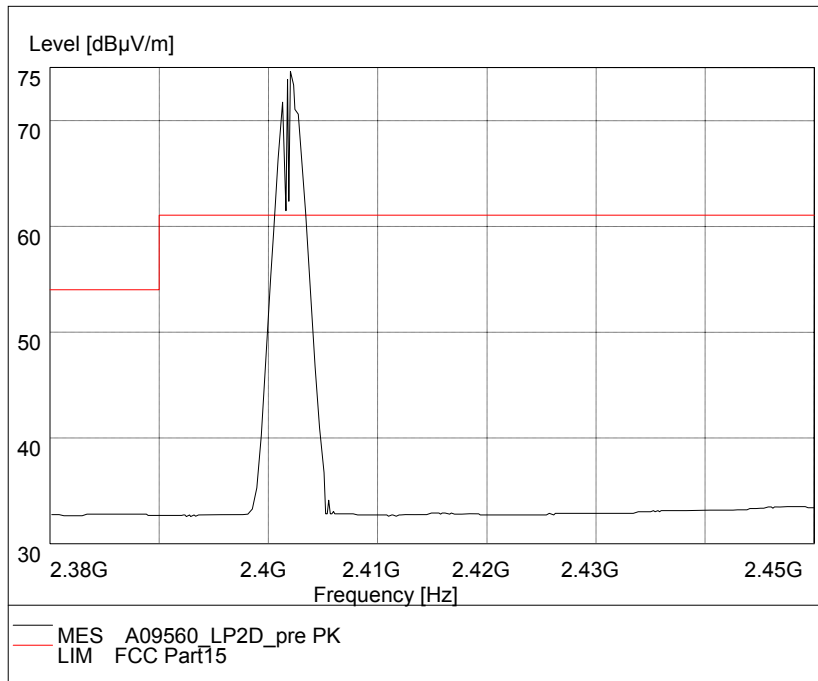


Fig.79. Radiated emission (Power):  $\pi/4$  DQPSK, low channel

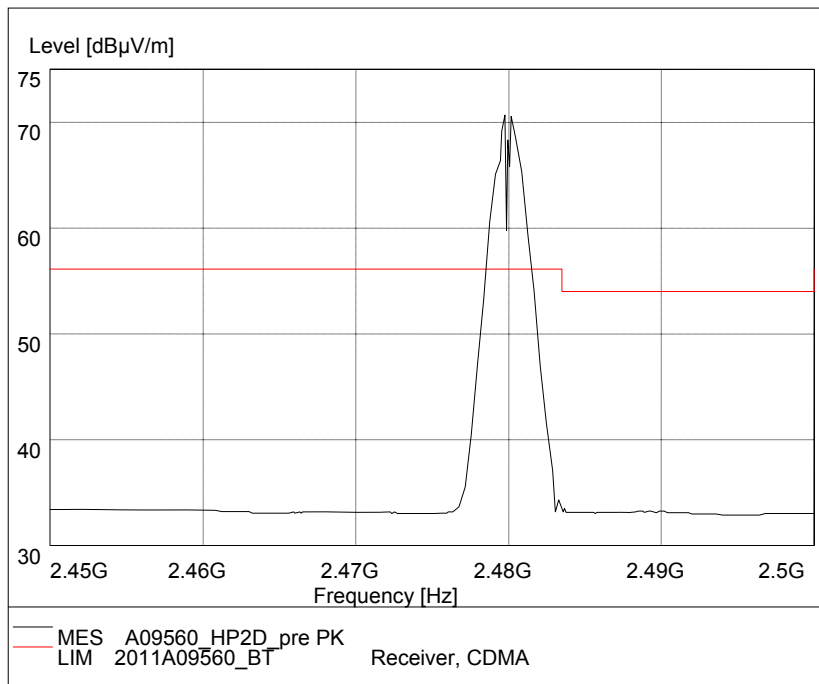


Fig.80. Radiated emission (Power):  $\pi/4$  DQPSK, high channel

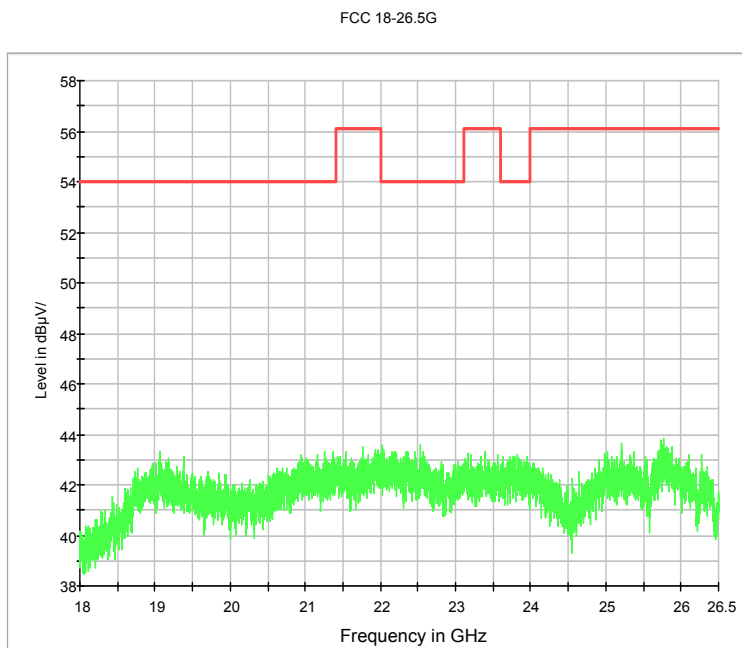


Fig.81. Radiated emission:  $\pi/4$  DQPSK, 18 GHz - 26 GHz

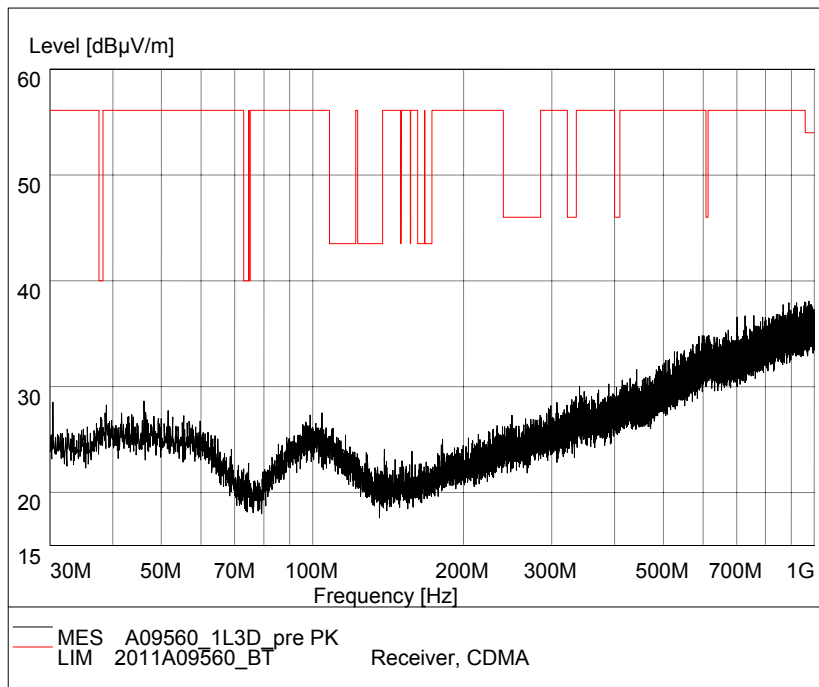


Fig.82. Radiated emission: 8DPSK, Channel 0, 30 MHz - 1 GHz

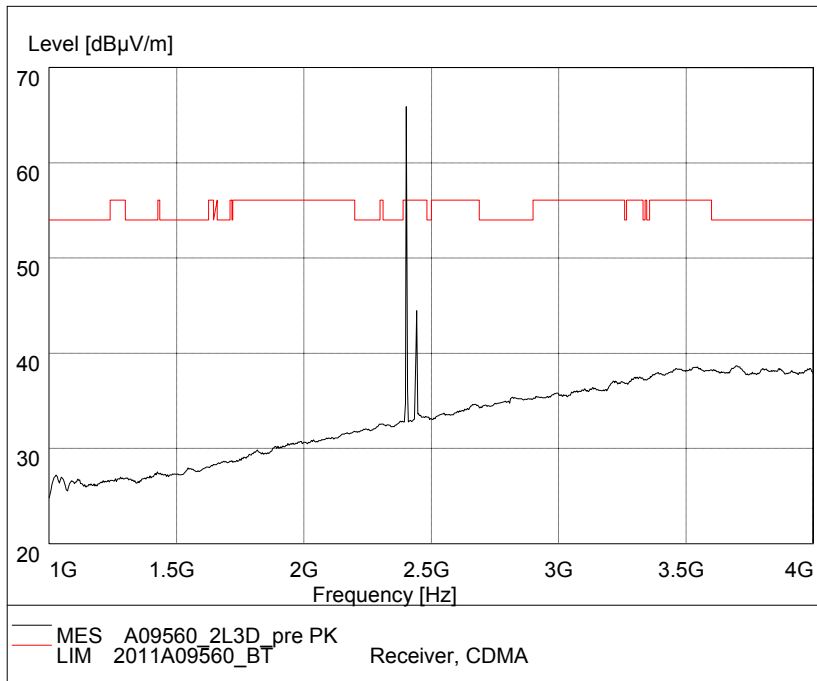


Fig.83. Radiated emission: 8DPSK, Channel 0, 1 GHz - 4 GHz

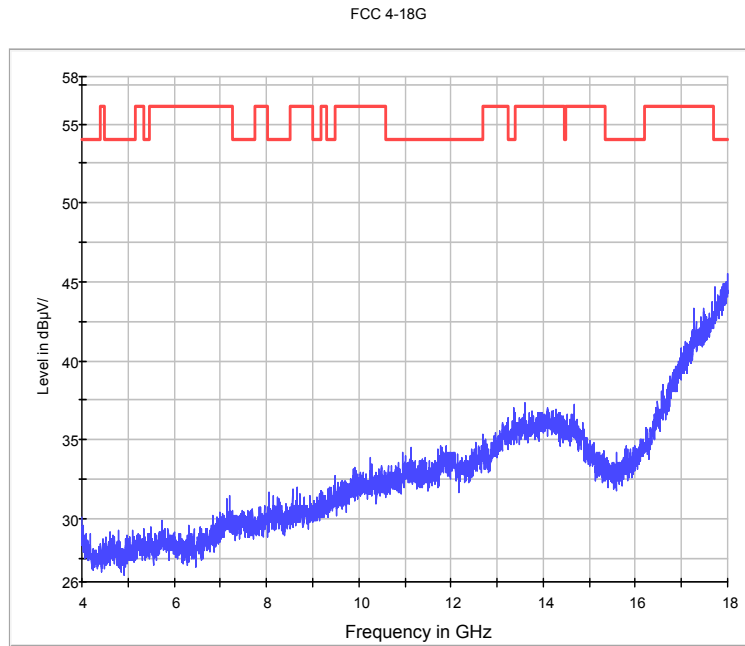


Fig.84. Radiated emission: 8DPSK, Channel 0, 4 GHz - 18 GHz

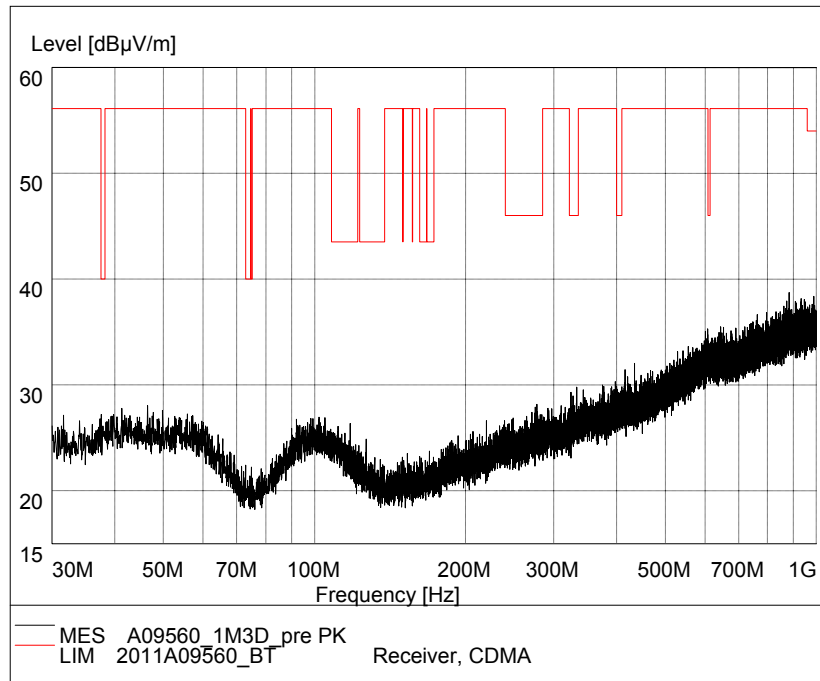


Fig.85. Radiated emission: 8DPSK, Channel 39, 30 MHz - 1 GHz

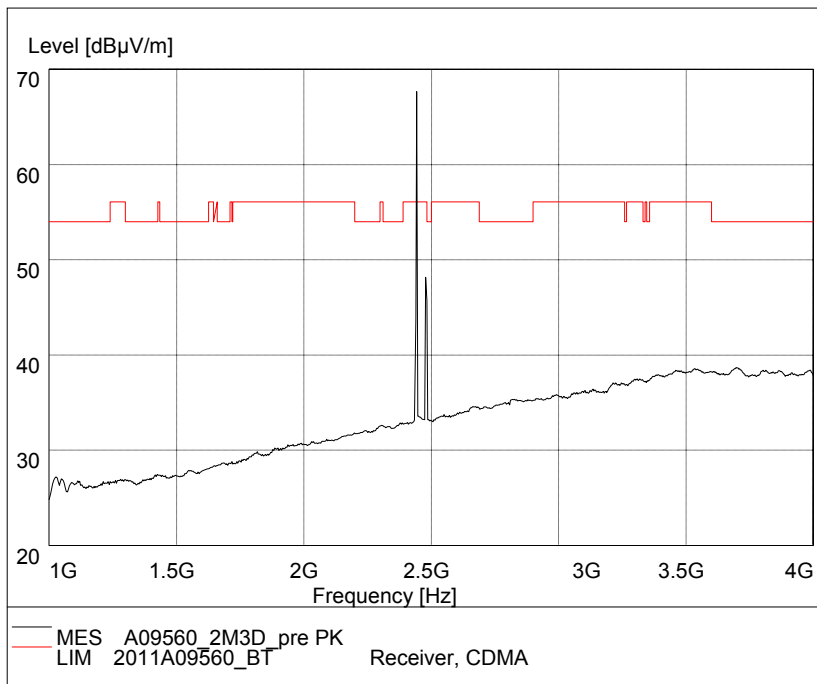


Fig.86. Radiated emission: 8DPSK, Channel 39, 1 GHz - 4 GHz

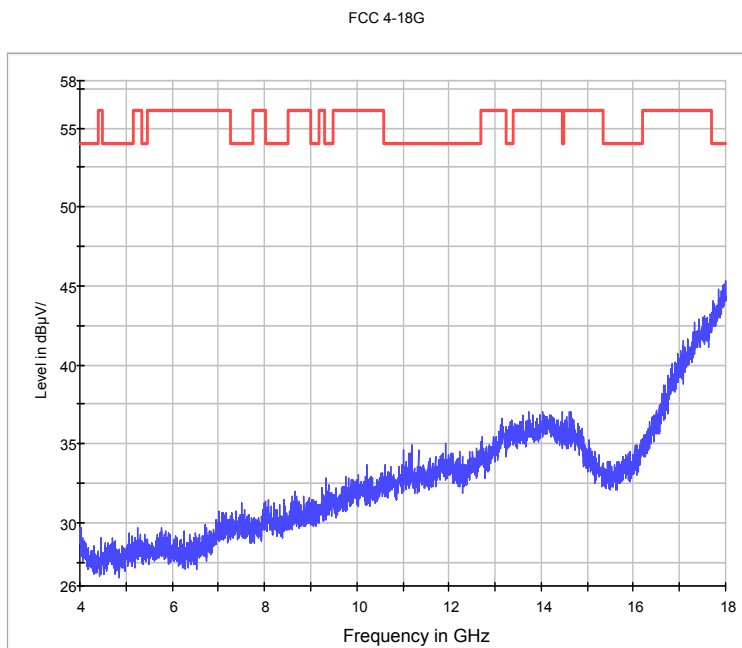


Fig.87. Radiated emission: 8DPSK, Channel 39, 4 GHz - 18 GHz

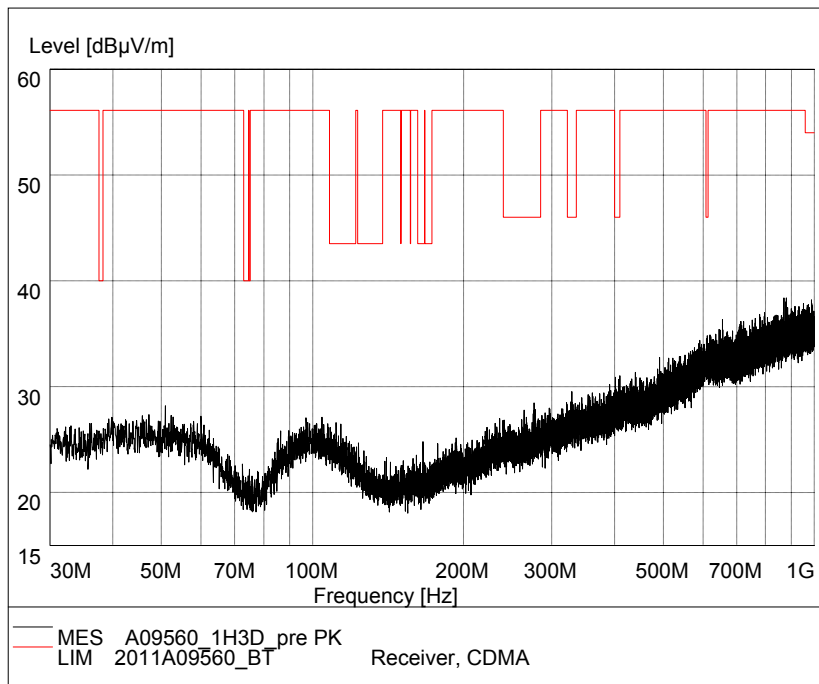


Fig.88. Radiated emission: 8DPSK, Channel 78, 30 MHz - 1 GHz

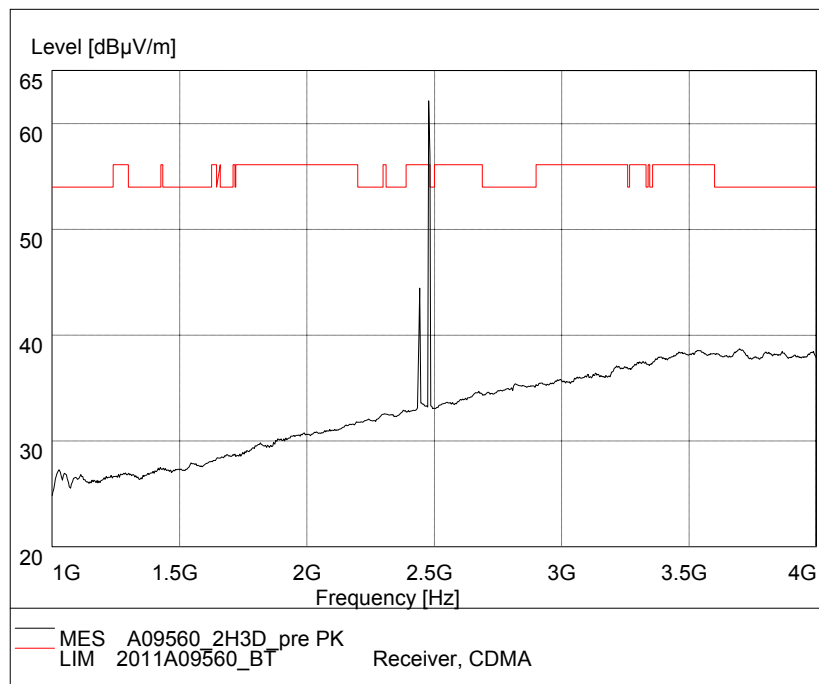


Fig.89. Radiated emission: 8DPSK, Channel 78, 1 GHz - 4 GHz



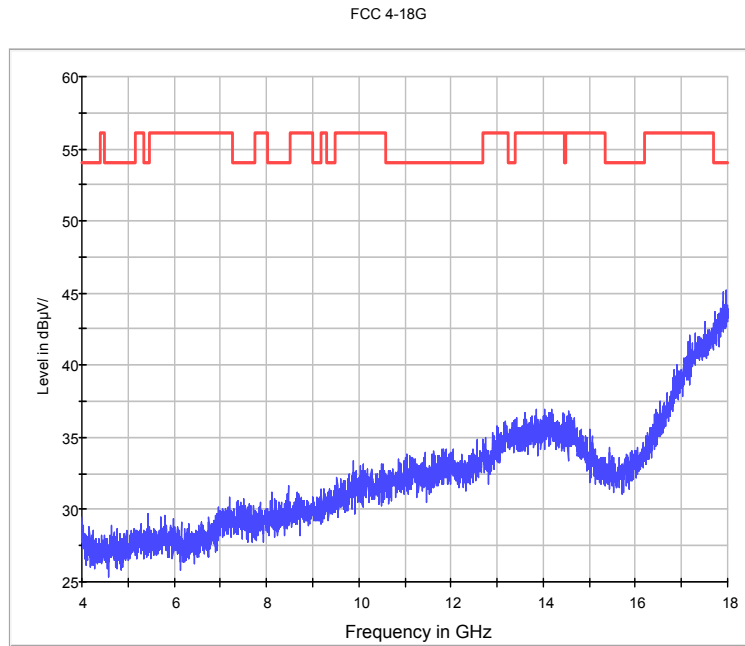


Fig.90. Radiated emission: 8DPSK, Channel 78, 4 GHz - 18 GHz

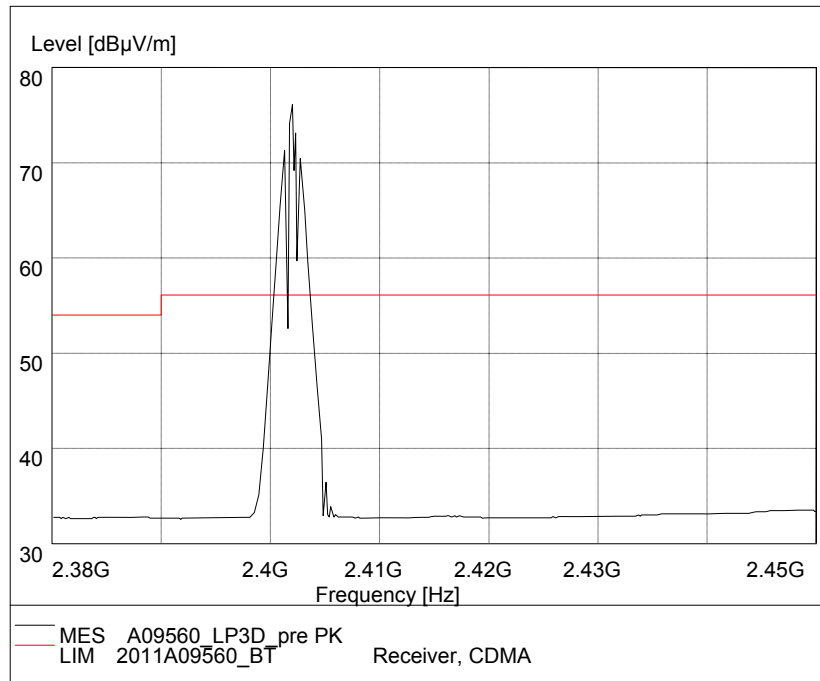


Fig.91. Radiated emission (Power): 8DPSK, low channel

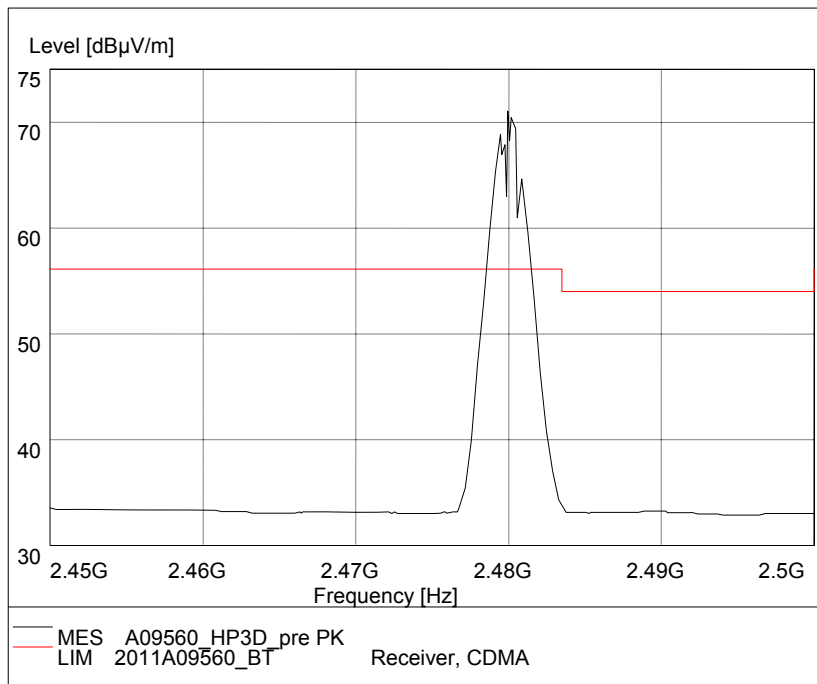


Fig.92. Radiated emission (Power): 8DPSK, high channel

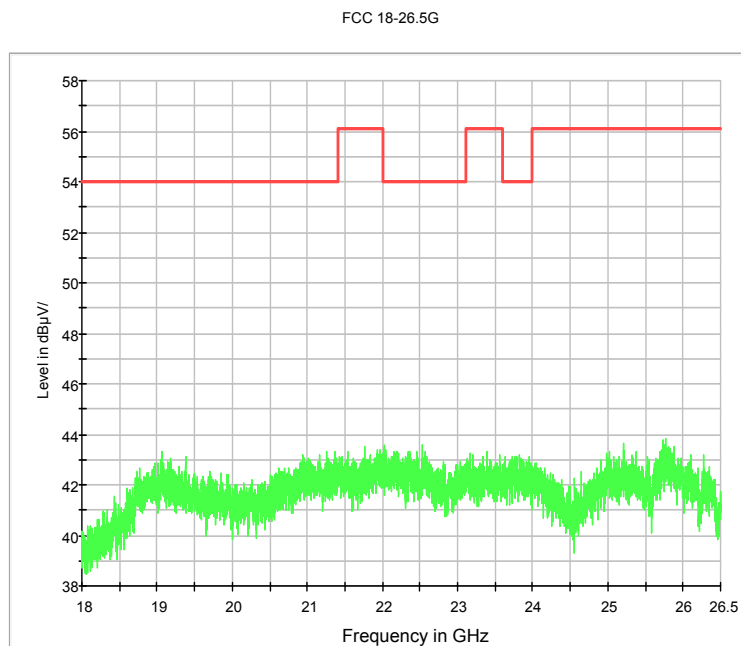


Fig.93. Radiated emission: 8DPSK, 18 GHz - 26 GHz

### A.6. Time of Occupancy (Dwell Time)

**Measurement Limit:**

Standard	Limit (ms)
FCC 47 CFR Part 15.247(a) (1)(iii)	< 400

The measurement is made according to Public notice DA 00-705 and ANSI C63.4

**Measurement Result:**

**For GFSK**

Channel	Packet	Dwell Time (ms)		Conclusion
39	DH1	Fig.94	110.41	P
		Fig.95		
	DH3	Fig.96	188.10	P
		Fig.97		
	DH5	Fig.98	223.97	P
		Fig.99		

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

Channel	Packet	Dwell Time (ms)		Conclusion
39	DH1	Fig.100	109.58	P
		Fig.101		
	DH3	Fig.102	183.15	P
		Fig.103		
	DH5	Fig.104	218.15	P
		Fig.105		

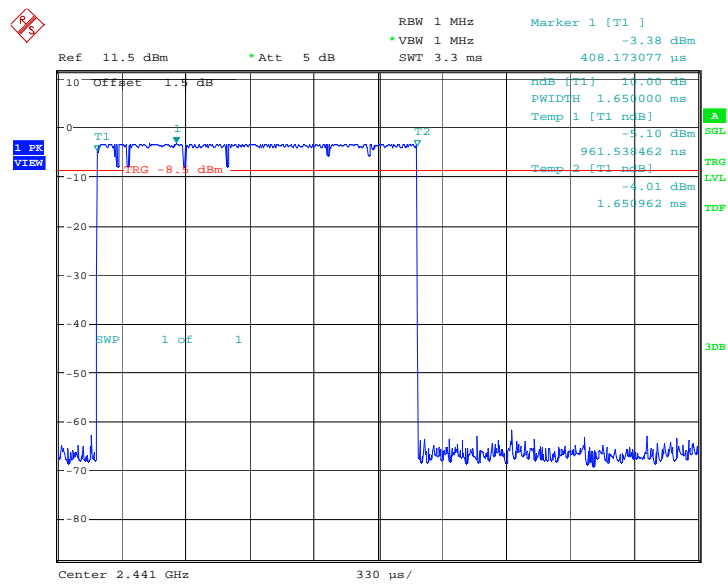
**For 8DPSK**

Channel	Packet	Dwell Time (ms)		Conclusion
39	DH1	Fig.106	111.53	P
		Fig.107		
	DH3	Fig.108	153.94	P
		Fig.109		
	DH5	Fig.110	227.29	P
		Fig.111		

**Conclusion: PASS**

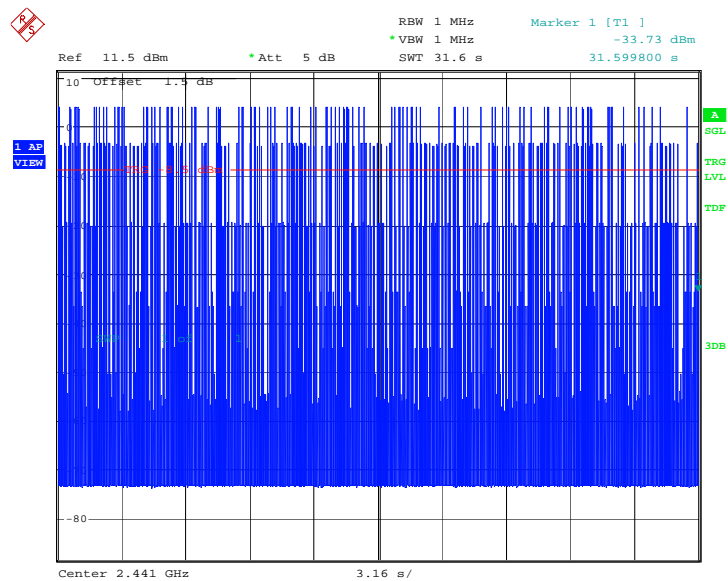
**Test graphs as below:**





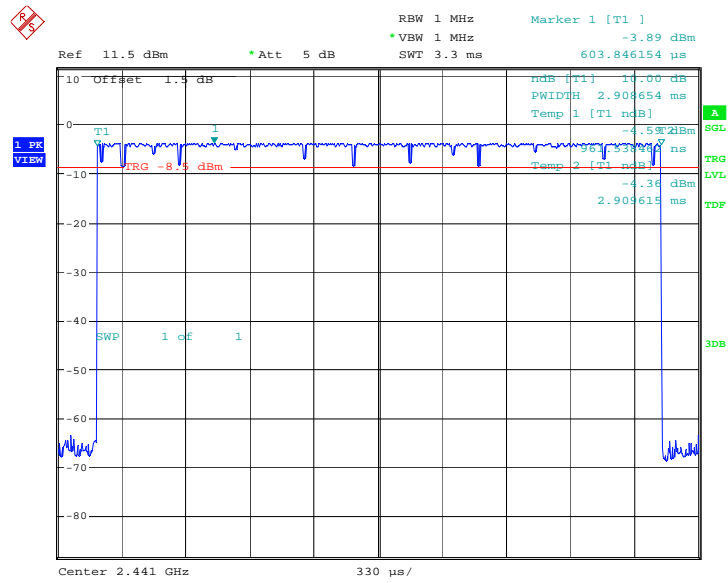
Date: 6.DEC.2011 00:06:27

Fig.96. Time of occupancy (Dwell Time): Channel 39, Packet DH3



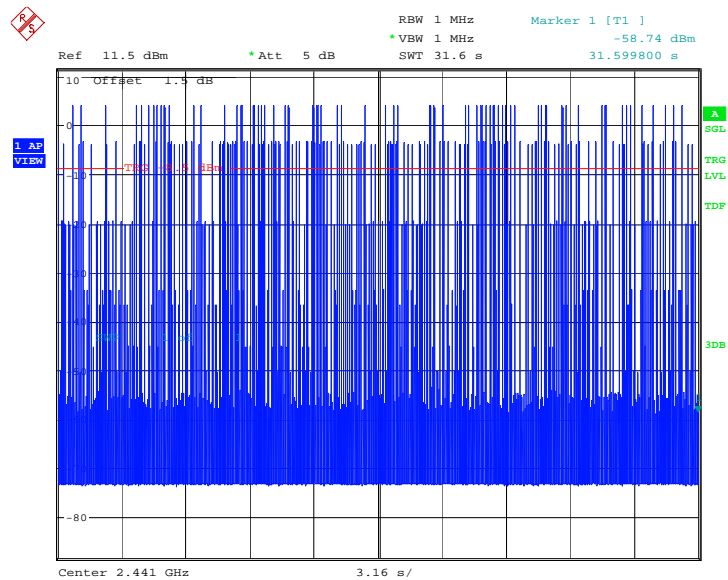
Date: 6.DEC.2011 00:06:15

Fig.97. Number of Transmissions Measurement:Channel 39,Packet DH3



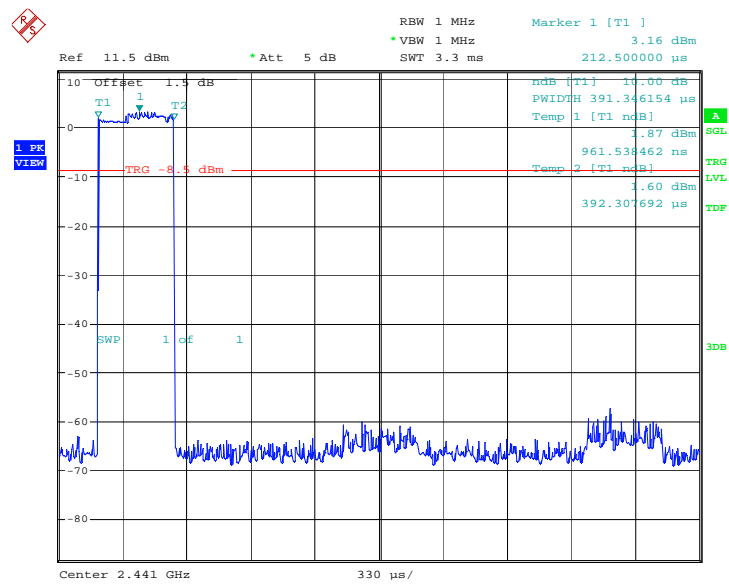
Date: 6.DEC.2011 00:07:46

Fig.98. Time of occupancy (Dwell Time): Channel 39, Packet DH5



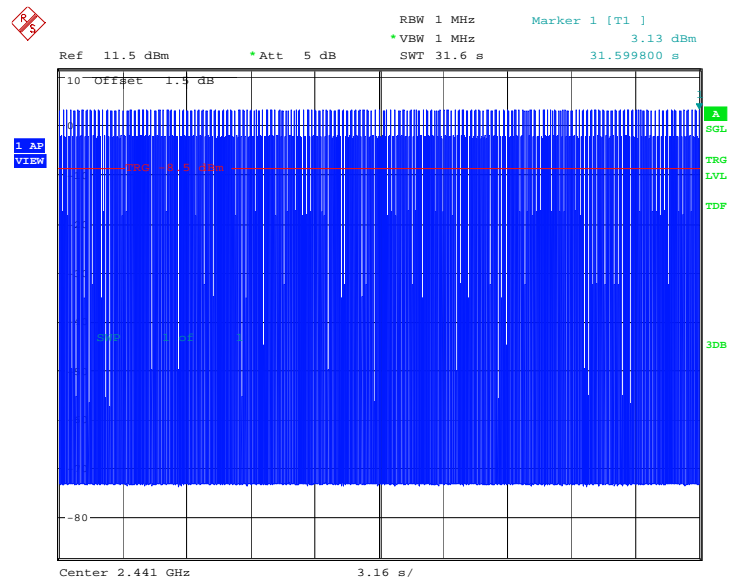
Date: 6.DEC.2011 00:07:34

Fig.99. Number of Transmissions Measurement: Channel 39, Packet DH5



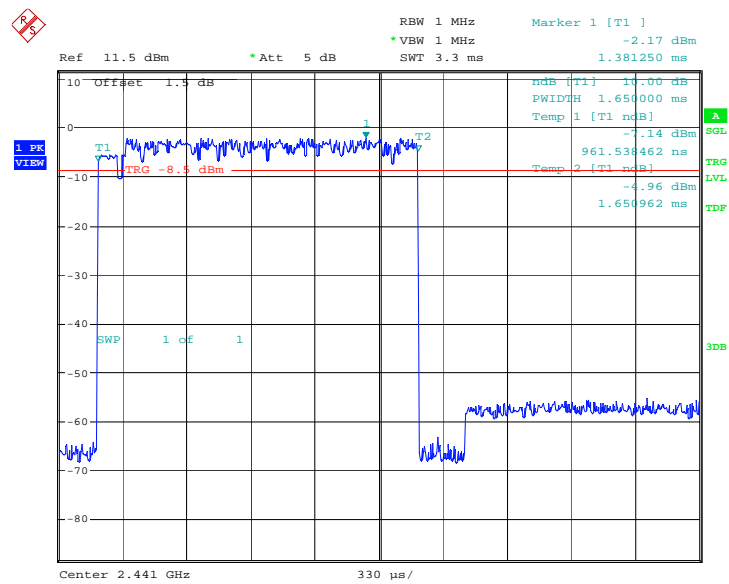
Date: 6.DEC.2011 00:27:20

Fig.100. Time of occupancy (Dwell Time): Channel 39, Packet 2-DH1



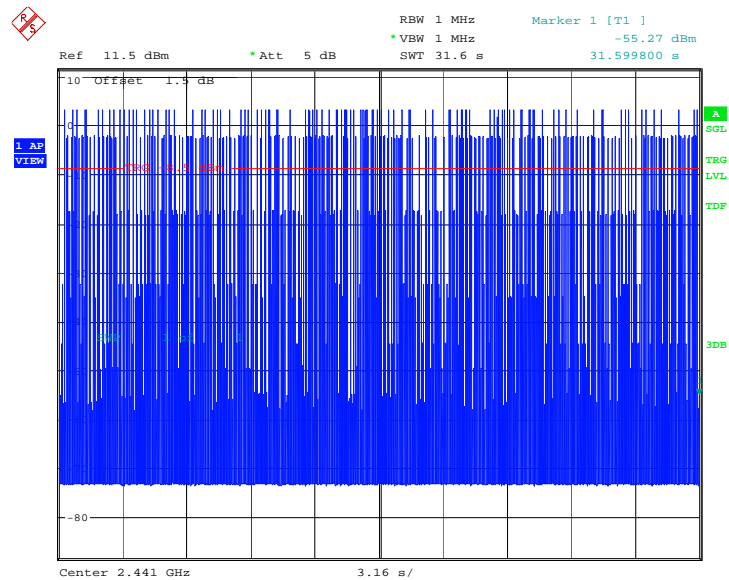
Date: 6.DEC.2011 00:27:08

Fig.101. Number of Transmissions Measurement:Channel 39,Packet 2-DH1



Date: 6.DEC.2011 00:28:39

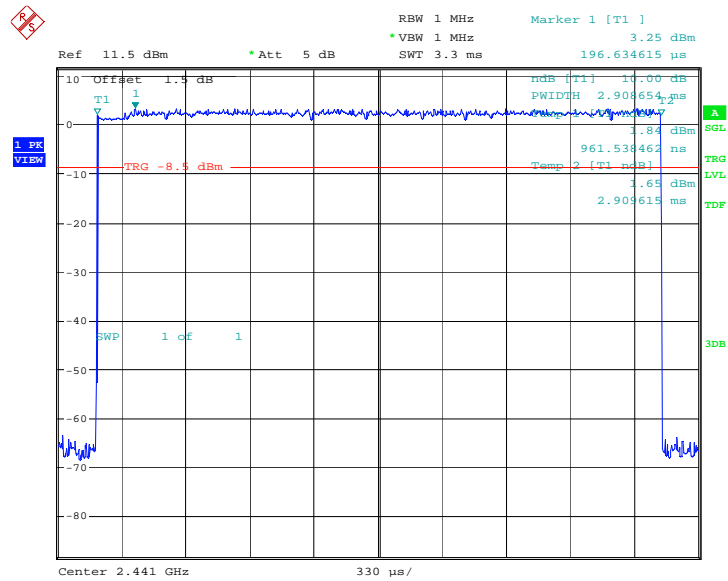
Fig.102. Time of occupancy (Dwell Time): Channel 39, Packet 2-DH3



Date: 6.DEC.2011 00:28:28

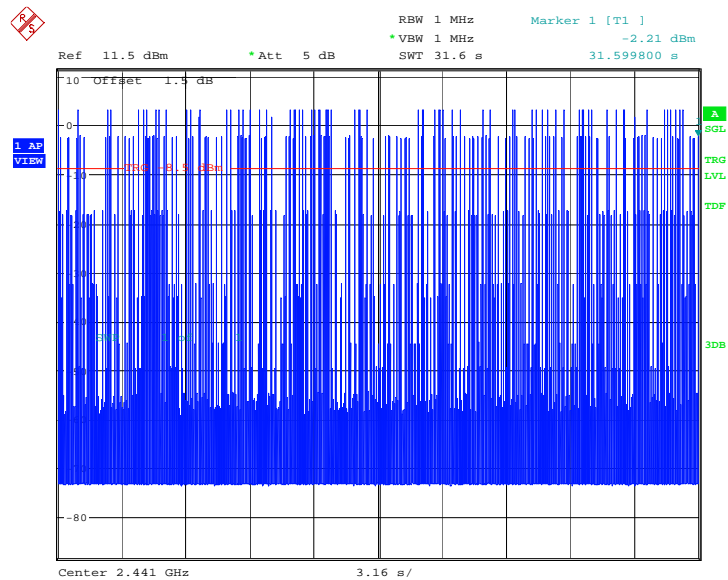
Fig.103. Number of Transmissions Measurement:Channel 39,Packet 2-DH3





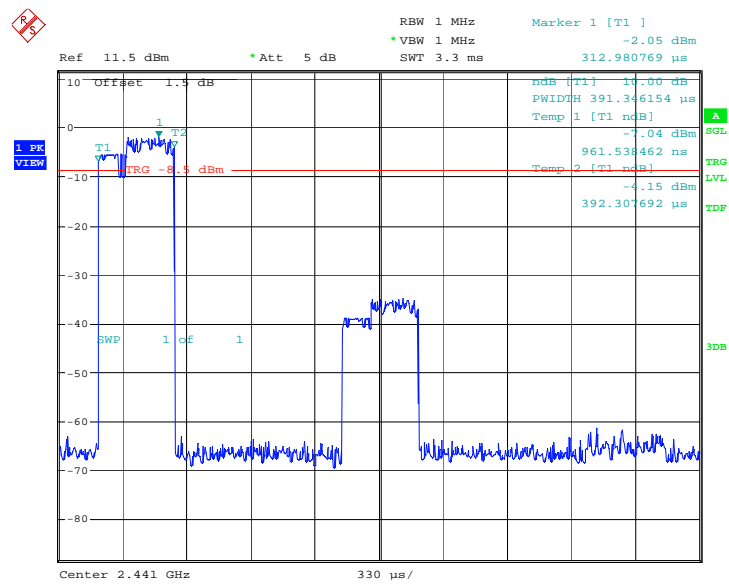
Date: 6.DEC.2011 00:29:57

Fig.104. Time of occupancy (Dwell Time): Channel 39, Packet 2-DH5



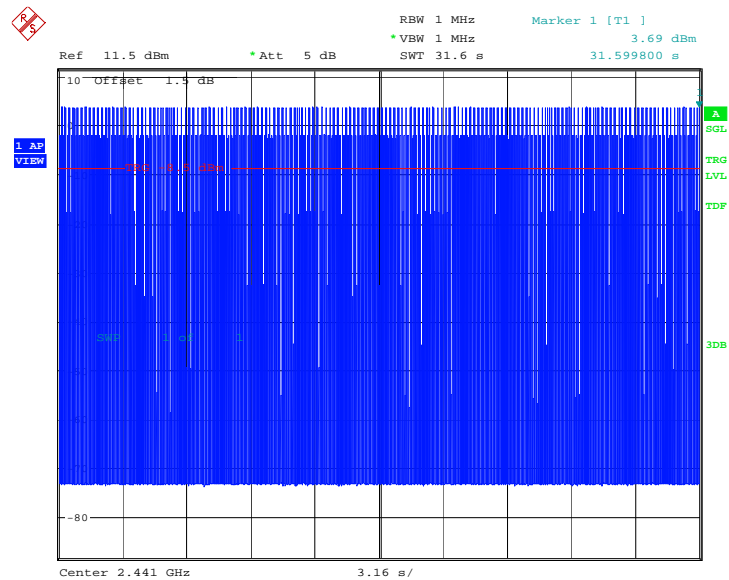
Date: 6.DEC.2011 00:29:45

Fig.105. Number of Transmissions Measurement:Channel 39,Packet 2-DH5



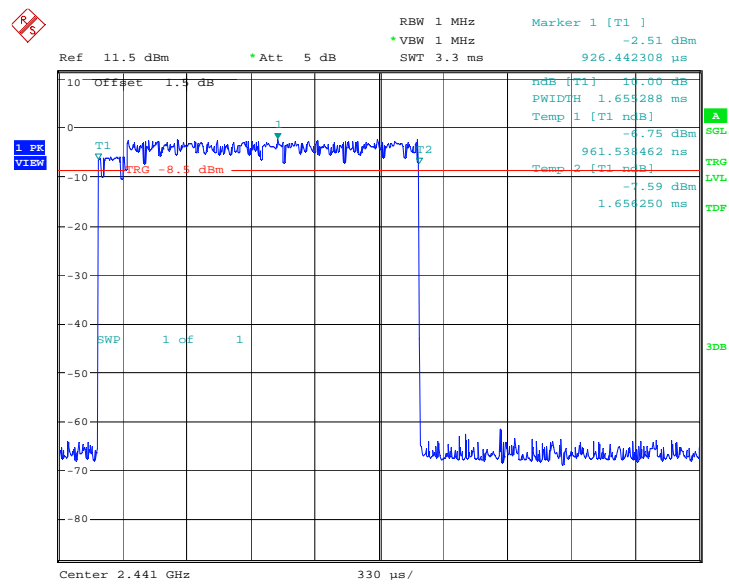
Date: 6.DEC.2011 00:49:31

Fig.106. Time of occupancy (Dwell Time): Channel 39, Packet 3-DH1



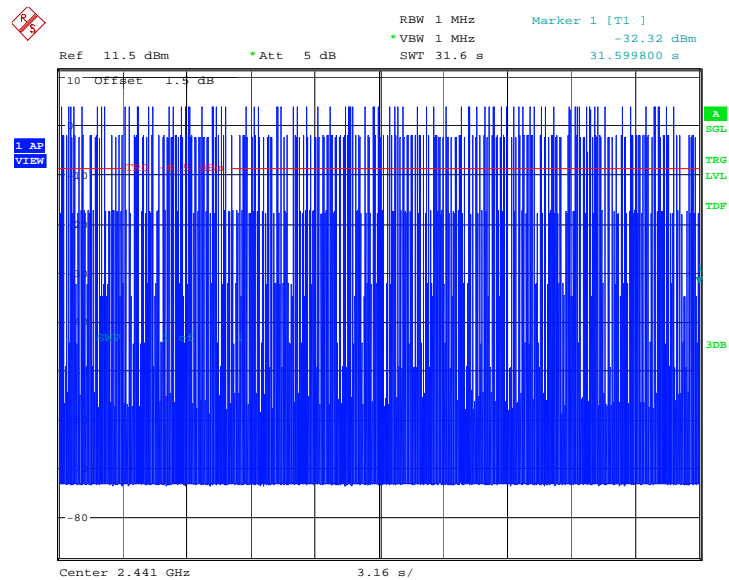
Date: 6.DEC.2011 00:49:19

Fig.107. Number of Transmissions Measurement:Channel 39,Packet 3-DH1



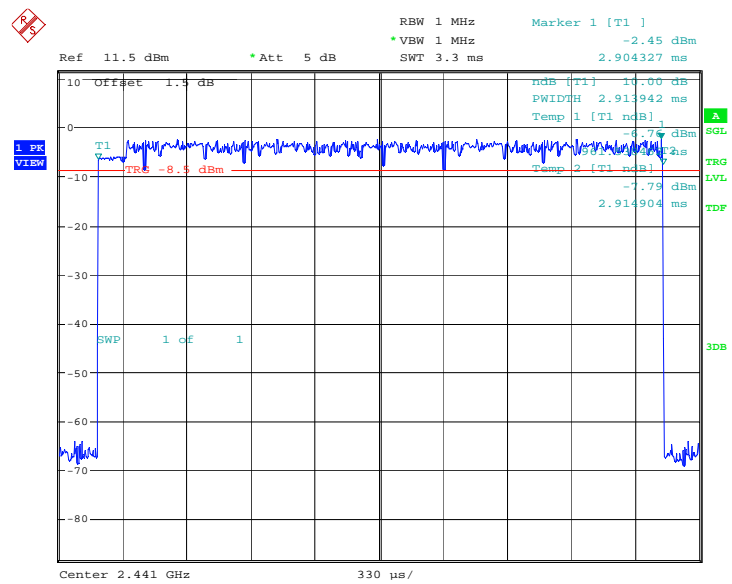
Date: 6.DEC.2011 00:50:48

Fig.108. Time of occupancy (Dwell Time): Channel 39, Packet 3-DH3



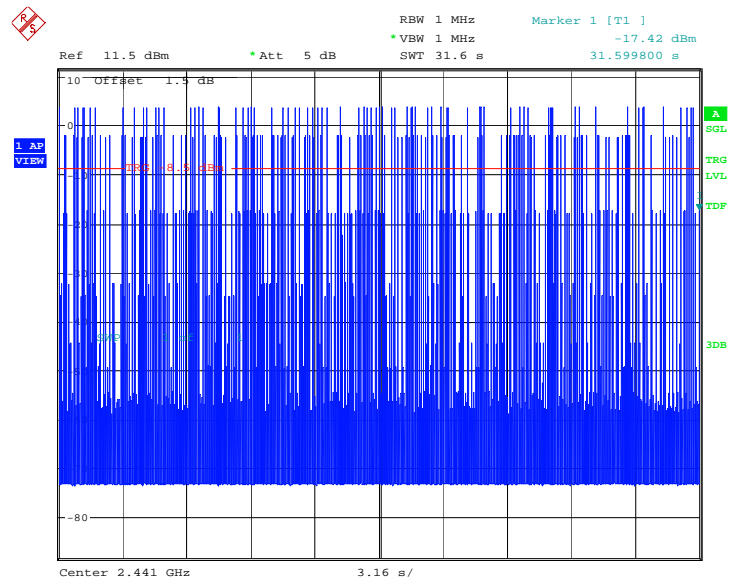
Date: 6.DEC.2011 00:50:37

Fig.109. Number of Transmissions Measurement:Channel 39,Packet 3-DH3



Date: 6.DEC.2011 00:52:07

Fig.110. Time of occupancy (Dwell Time): Channel 39, Packet 3-DH5



Date: 6.DEC.2011 00:51:55

Fig.111. Number of Transmissions Measurement:Channel 39,Packet 3-DH5

### A.7. 20dB Bandwidth

#### Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247(a)(1)	NA *

The measurement is made according to Public notice DA 00-705 and ANSI C63.4

\* Comment: This test case is not required according to the latest FCC 47 CFR Part 15.247. But the test results are necessary for “carrier frequency separation” test case, in Annex A.8.

#### Measurement Results:

##### For GFSK

Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig.112	865.38	NA
39	Fig.113	865.38	NA
78	Fig.114	865.38	NA

##### For $\pi/4$ DQPSK

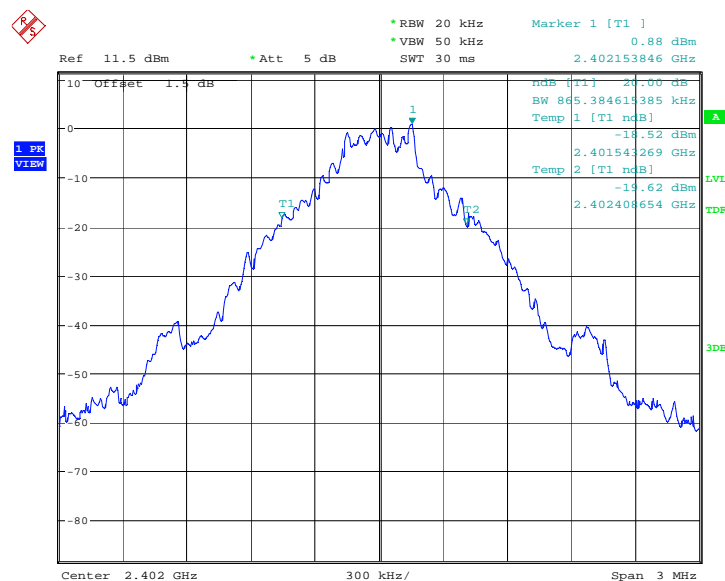
Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig.115	1336.54	NA
39	Fig.116	1341.35	NA
78	Fig.117	1336.54	NA

##### For 8DPSK

Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig.118	1302.88	NA
39	Fig.119	1307.69	NA
78	Fig.120	1302.88	NA

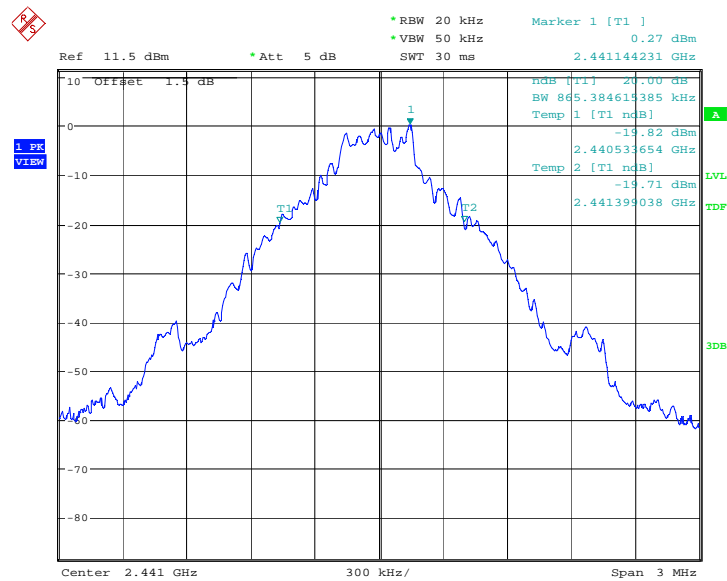
**Conclusion: NA**

Test graphs as below:



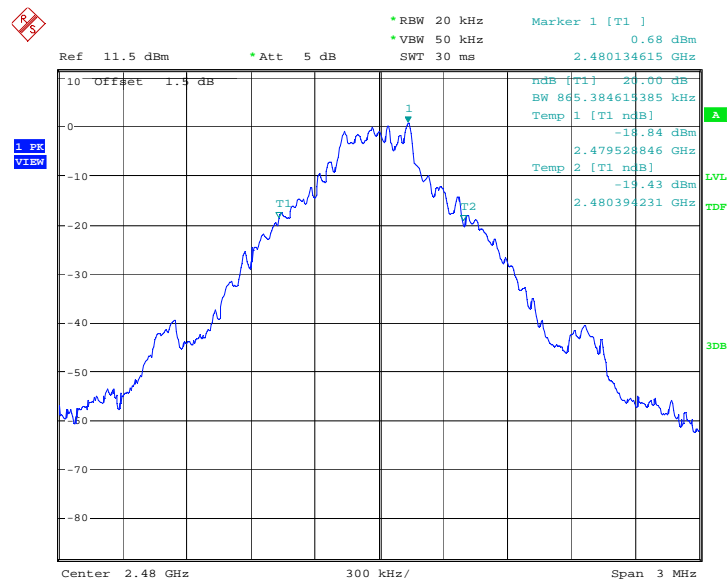
Date: 6.DEC.2011 00:08:20

Fig.112. 20dB Bandwidth: GFSK, Channel 0



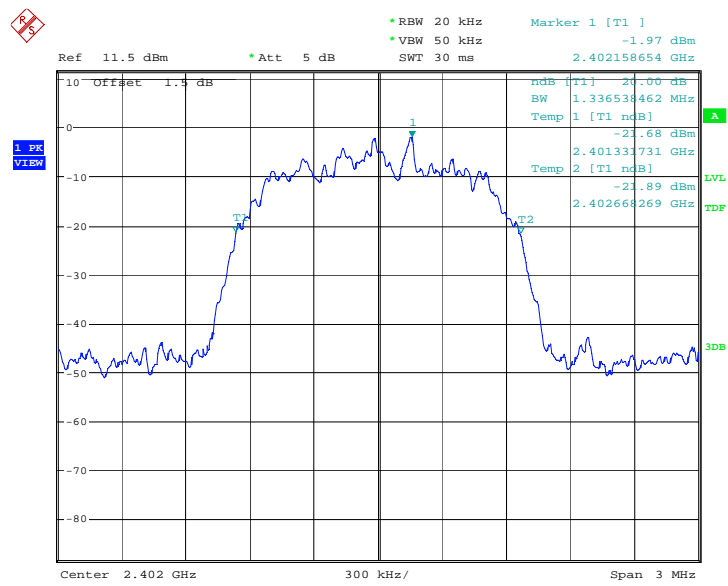
Date: 6.DEC.2011 00:08:52

Fig.113. 20dB Bandwidth: GFSK, Channel 39



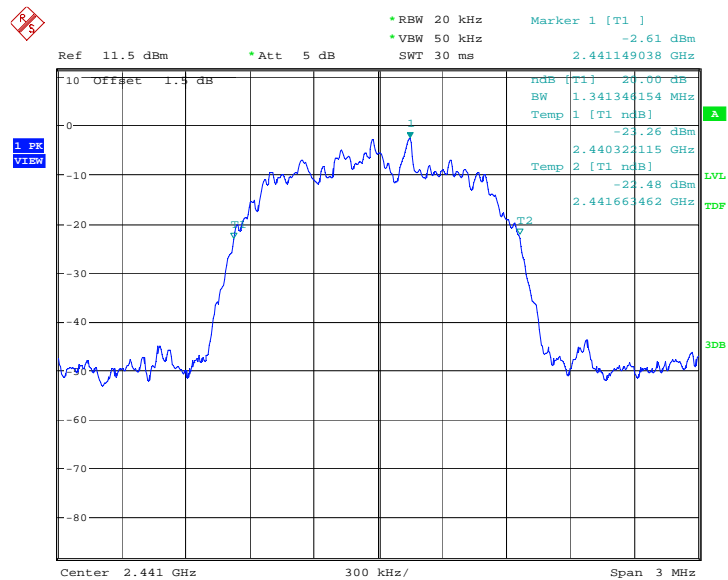
Date: 6.DEC.2011 00:09:24

Fig.114. 20dB Bandwidth: GFSK, Channel 78



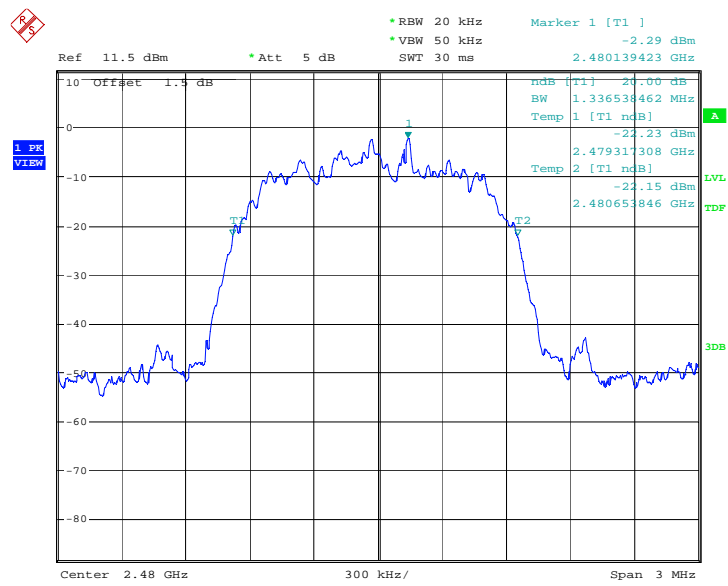
Date: 6.DEC.2011 00:30:32

Fig.115. 20dB Bandwidth:  $\pi/4$  DQPSK, Channel 0



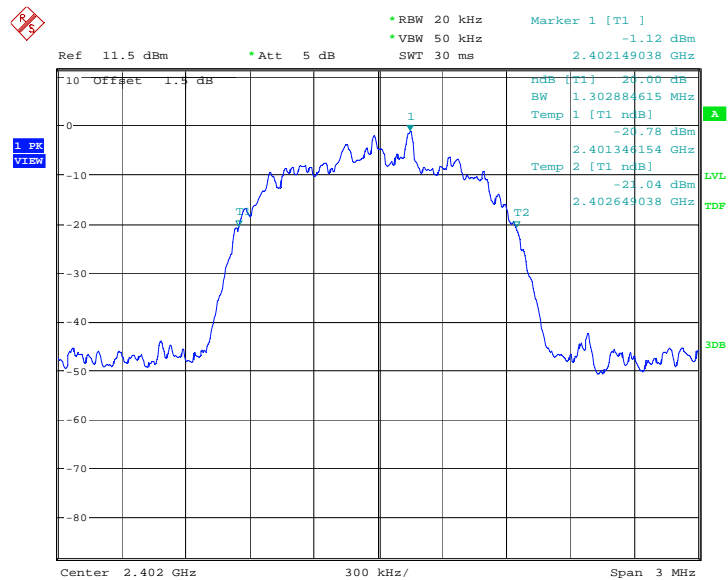
Date: 6.DEC.2011 00:31:04

Fig.116. 20dB Bandwidth:  $\pi/4$  DQPSK, Channel 39



Date: 6.DEC.2011 00:31:36

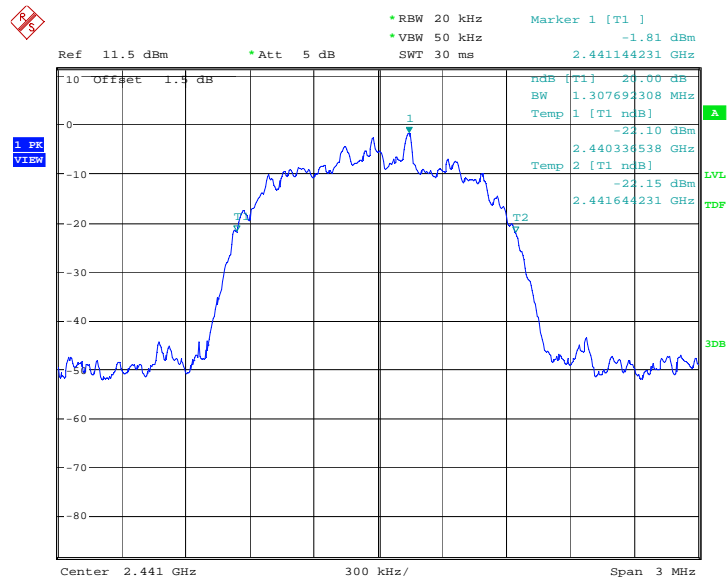
Fig.117. 20dB Bandwidth:  $\pi/4$  DQPSK, Channel 78



Date: 6.DEC.2011 00:52:41

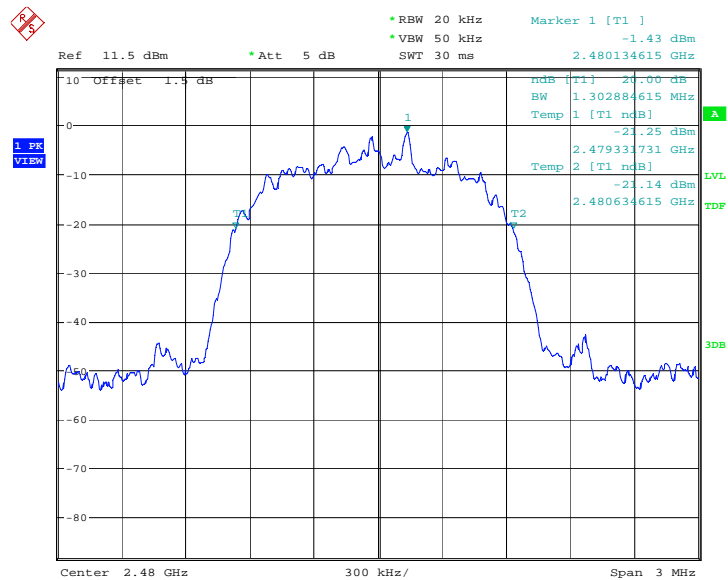
Fig.118. 20dB Bandwidth: 8DPSK, Channel 0





Date: 6.DEC.2011 00:53:13

Fig.119. 20dB Bandwidth: 8DPSK, Channel 39



Date: 6.DEC.2011 00:53:45

Fig.120. 20dB Bandwidth: 8DPSK, Channel 78

### A.8. Carrier Frequency Separation

**Measurement Limit:**

Standard	Limit(kHz)
FCC 47 CFR Part 15.247(a)(1)	over 25 kHz or $(2/3) * 20\text{dB bandwidth}$

The measurement is made according to Public notice DA 00-705 and ANSI C63.4

\* Comment: This limit should be over 25 kHz or  $(2/3) * 20\text{dB bandwidth}$ , whichever is greater.

**Measurement Result:**

**For GFSK**

Channel	Carrier frequency separation (kHz)	Conclusion
39	Fig.121	P

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

Channel	Carrier frequency separation (kHz)	Conclusion
39	Fig.122	P

**For 8DPSK**

Channel	Carrier frequency separation (kHz)	Conclusion
39	Fig.123	P

**Conclusion: PASS**

**Test graphs as below:**

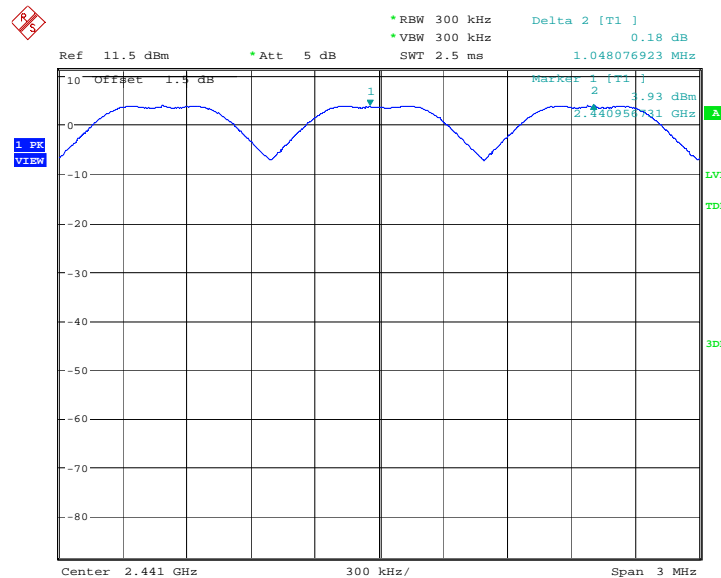
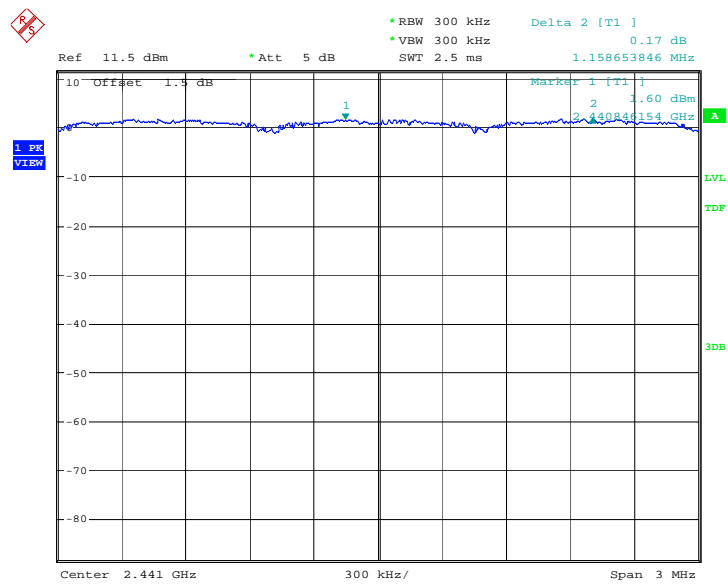
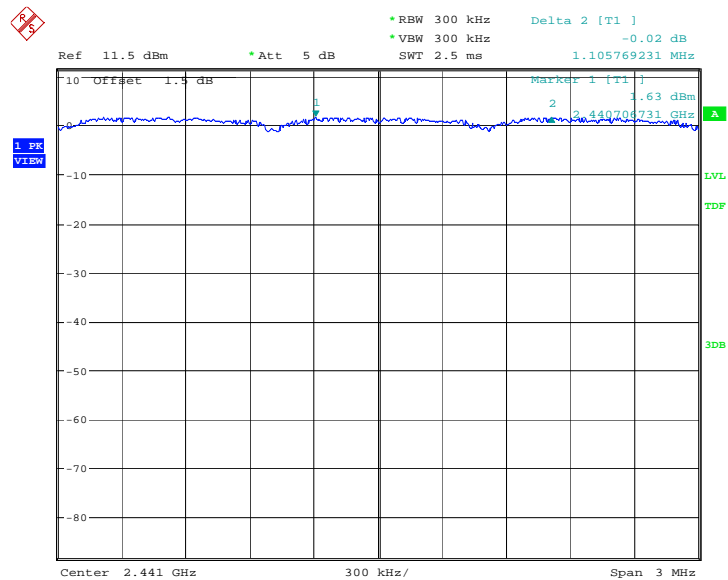


Fig.121. Carrier frequency separation measurement: GFSK, Channel 39



Date: 6.DEC.2011 01:25:39

Fig.122. Carrier frequency separation measurement:  $\pi/4$  DQPSK, Channel 39



Date: 6.DEC.2011 01:21:04

Fig.123. Carrier frequency separation measurement: 8DPSK, Channel 39

### A.9. Number of Hopping Channels

**Measurement Limit:**

Standard	Limit
FCC 47 CFR Part 15.247(a) (1)(iii)	At least 15 non-overlapping channels

The measurement is made according to Public notice DA 00-705 and ANSI C63.4

**Measurement Result:**

**For GFSK**

Channel	Number of hopping channels	Conclusion
0~39	Fig.124	79 P
40~78	Fig.125	

**Forπ/4 DQPSK**

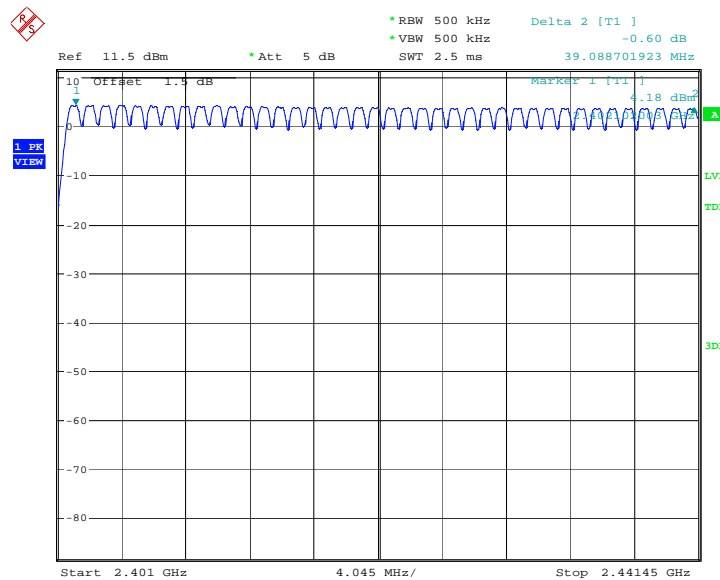
Channel	Number of hopping channels	Conclusion
0~39	Fig.126	79 P
40~78	Fig.127	

**For 8DPSK**

Channel	Number of hopping channels	Conclusion
0~39	Fig.128	79 P
40~78	Fig.129	

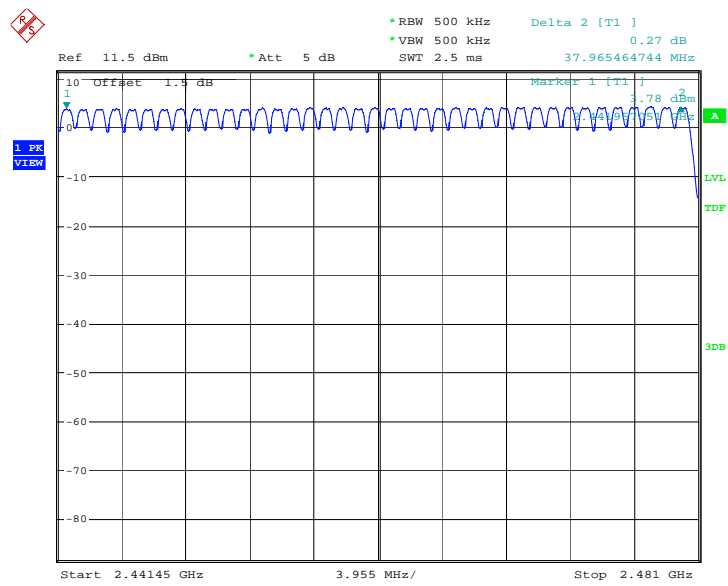
**Conclusion: PASS**

**Test graphs as below:**



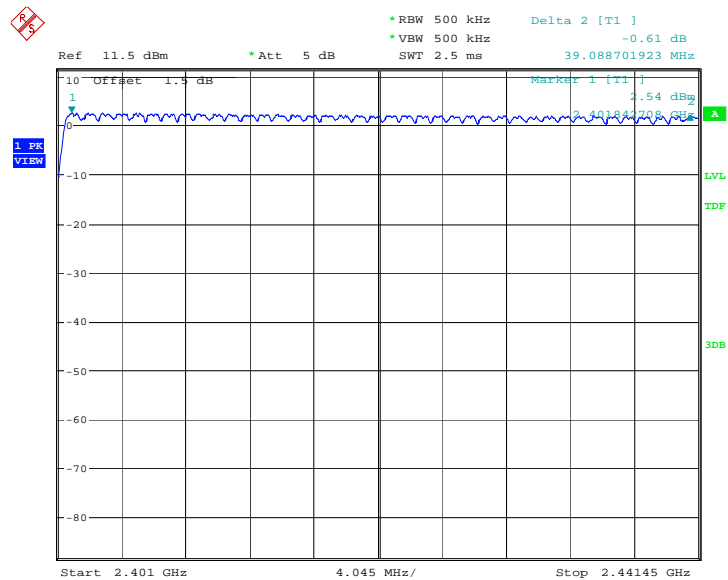
Date: 6.DEC.2011 00:13:34

Fig.124. Number of hopping frequencies: GFSK, Channel 0 - 39



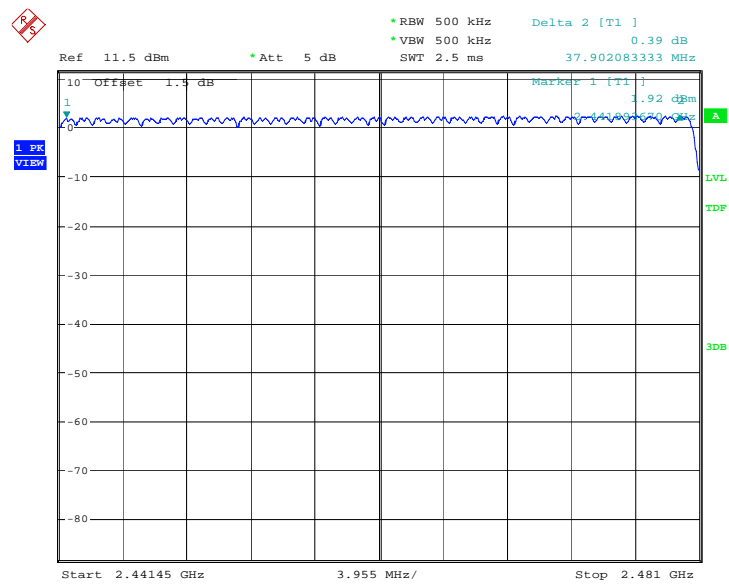
Date: 6.DEC.2011 00:15:36

Fig.125. Number of hopping frequencies: GFSK, Channel 40 - 78



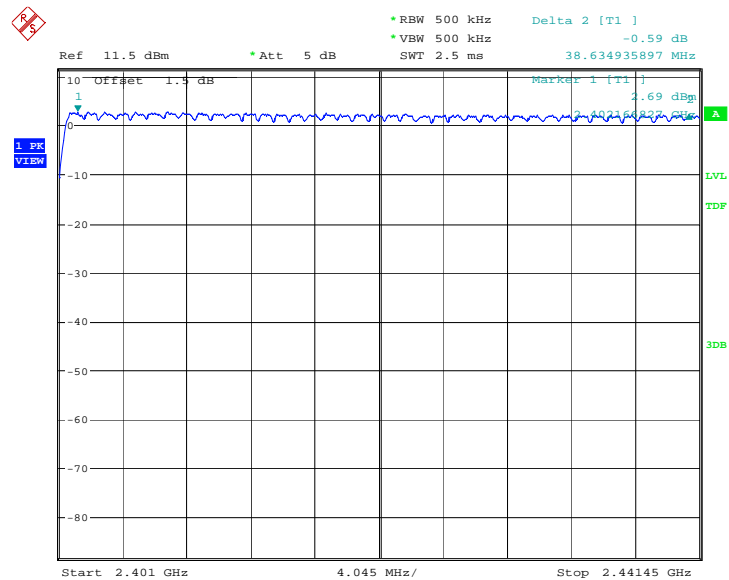
Date: 6.DEC.2011 00:35:45

Fig.126. Number of hopping frequencies:  $\pi/4$  DQPSK, Channel 0 - 39



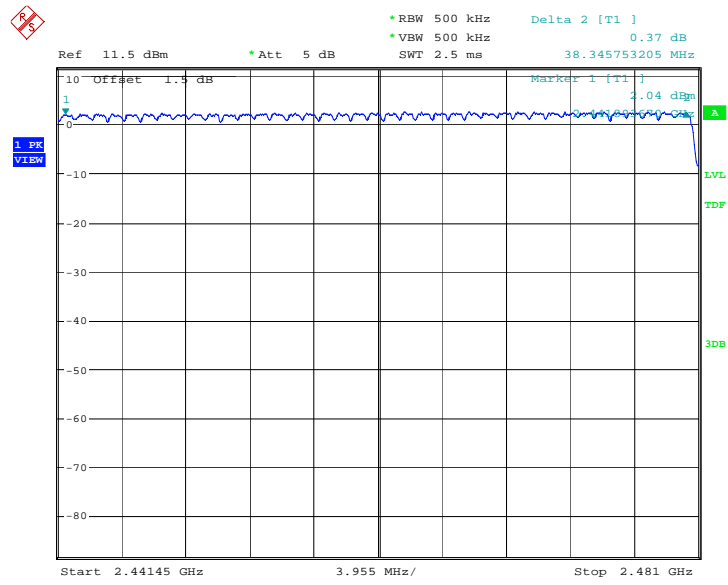
Date: 6.DEC.2011 00:37:47

Fig.127. Number of hopping frequencies:  $\pi/4$  DQPSK, Channel 40 - 78



Date: 6.DEC.2011 00:57:55

Fig.128. Number of hopping frequencies: 8DPSK, Channel 0 - 39



Date: 6.DEC.2011 00:59:57

Fig.129. Number of hopping frequencies: 8DPSK, Channel 40 - 78

### A.10. AC Powerline Conducted Emission

#### Test Condition

Voltage (V)	Frequency (Hz)
120	60

#### Measurement Result and limit:

##### Bluetooth (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)	Conclusion
		With Charger	
0.15 to 0.5	66 o 56	Fig.130	P
0.5 to 5	56		
5 to 30	60		

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

##### Bluetooth (Average Limit)

Frequency range (MHz)	Average Limit (dB $\mu$ V)	Result (dB $\mu$ V)	Conclusion
		With Charger	
0.15 to 0.5	56 to 46	Fig.130	P
0.5 to 5	46		
5 to 30	50		

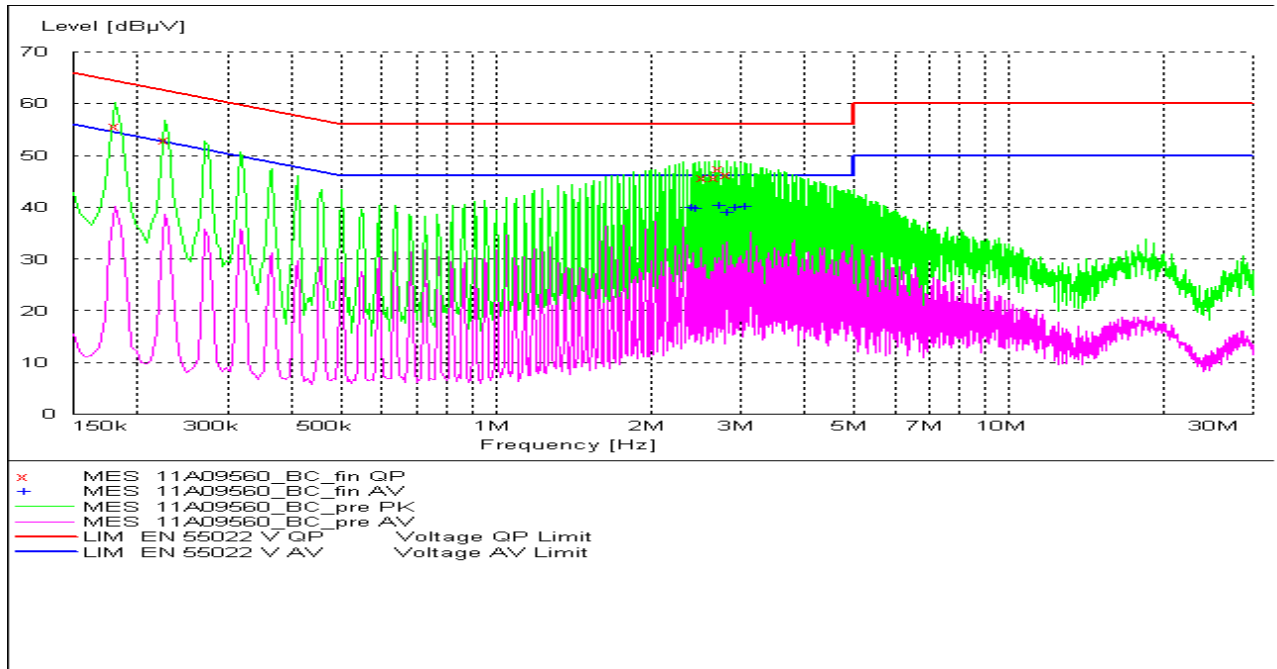
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

The measurement is made according to Public notice DA 00-705 and ANSI C63.4

**Conclusion: PASS**



Test graphs as below:

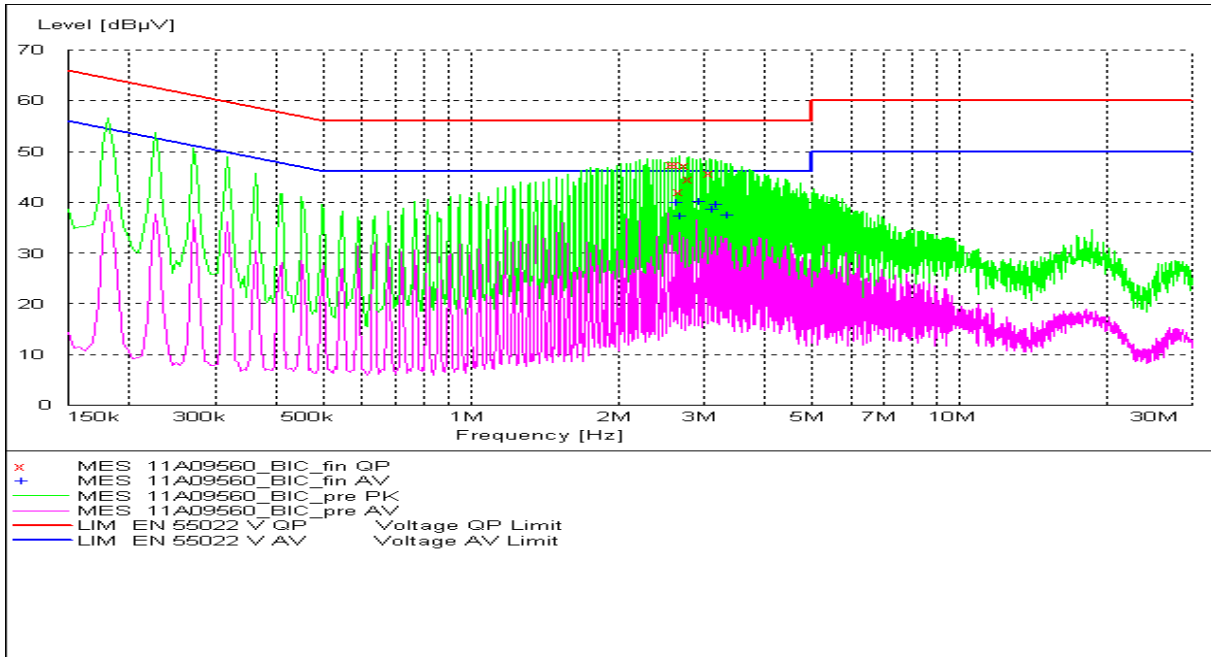


**MEASUREMENT RESULT: "11A09560\_BC\_fin QP"**

Frequency MHz	Level dBµV	Transd	Limit dB	Margin dBµV	Line dB	PE
0.181500	55.70	10.1	64	8.7	L1	GND
0.226500	53.00	10.1	63	9.6	L1	GND
2.546973	45.80	10.1	56	10.2	N	GND
2.682780	45.70	10.1	56	10.3	N	GND
2.731458	47.50	10.1	56	8.5	L1	GND
2.820188	46.30	10.1	56	9.7	L1	GND

**MEASUREMENT RESULT: "11A09560\_BC\_fin AV"**

Frequency MHz	Level dBµV	Transd	Limit dB	Margin dBµV	Line dB	PE
2.413214	40.00	10.1	46	6.0	L1	GND
2.457001	39.80	10.1	46	6.2	L1	GND
2.731458	40.40	10.1	46	5.6	L1	GND
2.820188	39.00	10.1	46	7.0	L1	GND
2.911801	40.00	10.1	46	6.0	L1	GND
3.048732	40.20	10.1	46	5.8	L1	GND



**MEASUREMENT RESULT: "11A09560\_BIC\_fin QP"**

Frequency MHz	Level dBµV	Transd	Limit dB	Margin dBµV	Line dB	PE
2.577690	47.40	10.1	56	8.6	L1	GND
2.624461	47.50	10.1	56	8.5	L1	GND
2.672081	42.20	10.1	56	13.8	N	GND
2.758882	47.30	10.1	56	8.7	L1	GND
2.808941	44.60	10.1	56	11.4	L1	GND
3.079341	45.80	10.1	56	10.2	L1	GND

**MEASUREMENT RESULT: "11A09560\_BIC\_fin AV"**

Frequency MHz	Level dBµV	Transd	Limit dB	Margin dBµV	Line dB	PE
2.624461	40.10	10.1	46	5.9	L1	GND
2.672081	37.30	10.1	46	8.7	L1	GND
2.941035	40.20	10.1	46	5.8	L1	GND
3.122712	38.70	10.1	46	7.3	L1	GND
3.166693	39.60	10.1	46	6.4	L1	GND
3.348900	37.50	10.1	46	8.5	L1	GND

### A.11. Occupied Bandwidth (IC 20dB)

#### Measurement Limit:

Standard	Limit
RSS-Gen 4.1	NA *

The measurement is made according to Public notice DA 00-705 and ANSI C63.4

\* Comment: This test case is not required according to the latest FCC 47 CFR Part 15.247. But the test results are necessary for “carrier frequency separation” test case, in Annex A.8.

#### Measurement Results:

##### For GFSK

Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig 130/131	1033.65	NA
39	Fig 132/133	1041.66	NA
78	Fig 134/135	1049.67	NA

##### For $\pi/4$ DQPSK

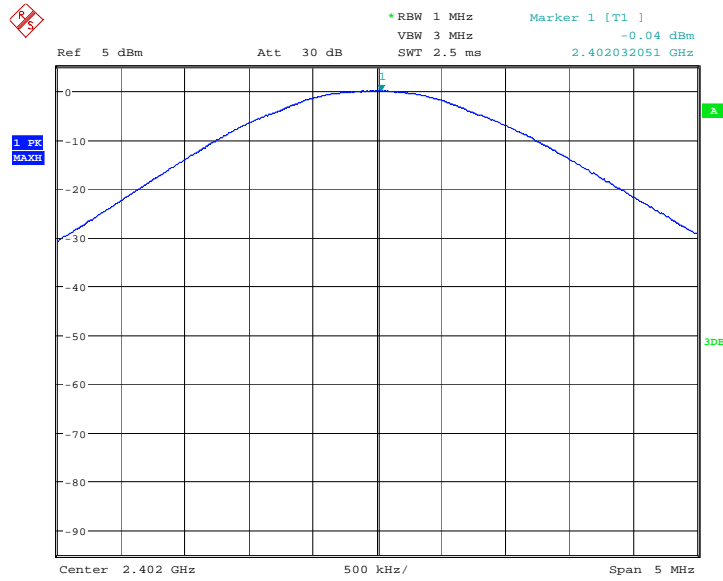
Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig 136/137	1113.78	NA
39	Fig 138/139	1113.78	NA
78	Fig 140/141	1113.78	NA

##### For 8DPSK

Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig 142/143	1185.89	NA
39	Fig 144/145	1185.89	NA
78	Fig 146/147	1193.91	NA

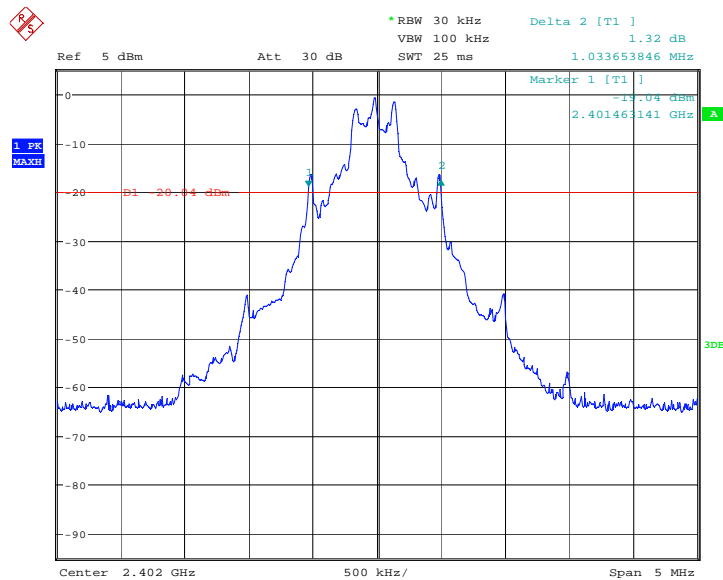
**Conclusion: NA**

**Test graphs as below:**



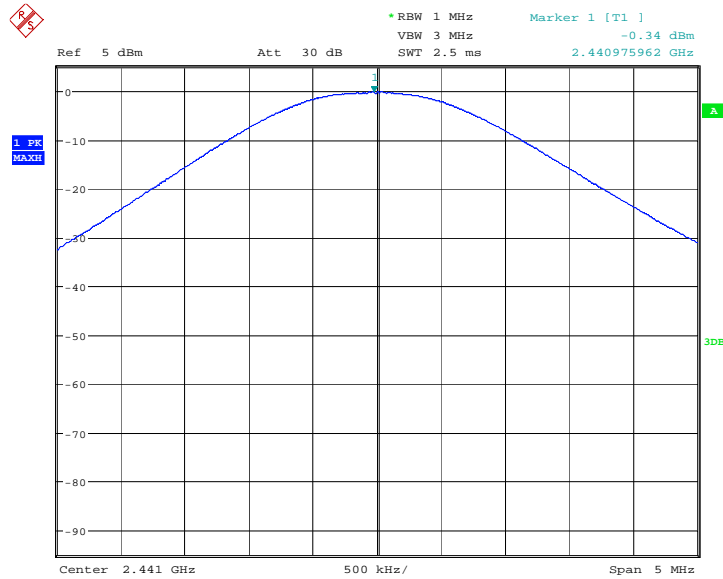
Date: 7.DEC.2011 07:22:10

Fig.130. Occupied Bandwidth 20dB IC Ref: GFSK, Channel 0



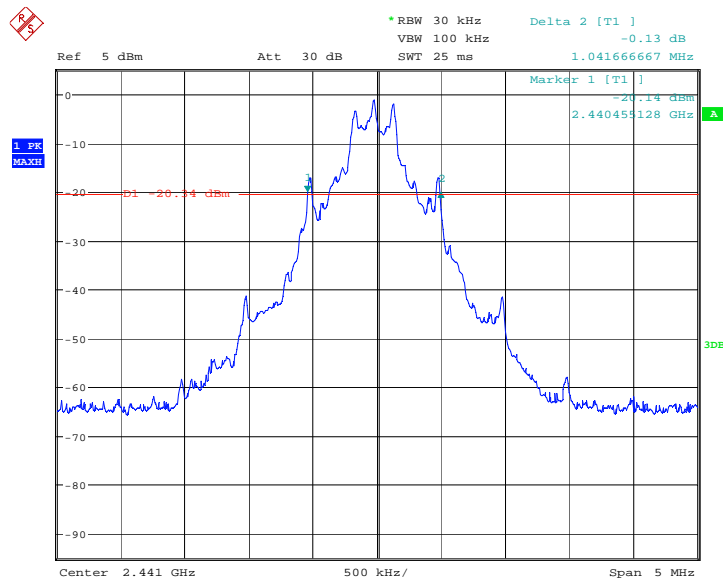
Date: 7.DEC.2011 07:25:16

Fig.131. Occupied Bandwidth 20dB IC BW: GFSK, Channel 0



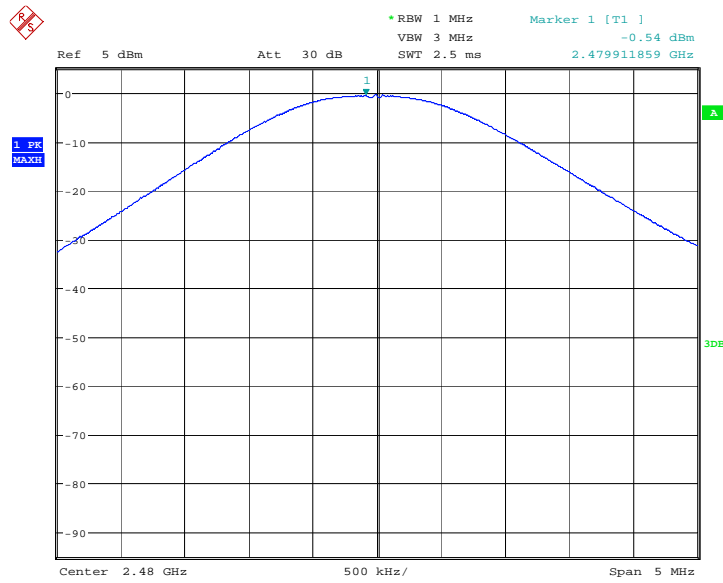
Date: 7.DEC.2011 07:26:39

Fig.132. Occupied Bandwidth 20dB IC Ref: GFSK, Channel 39



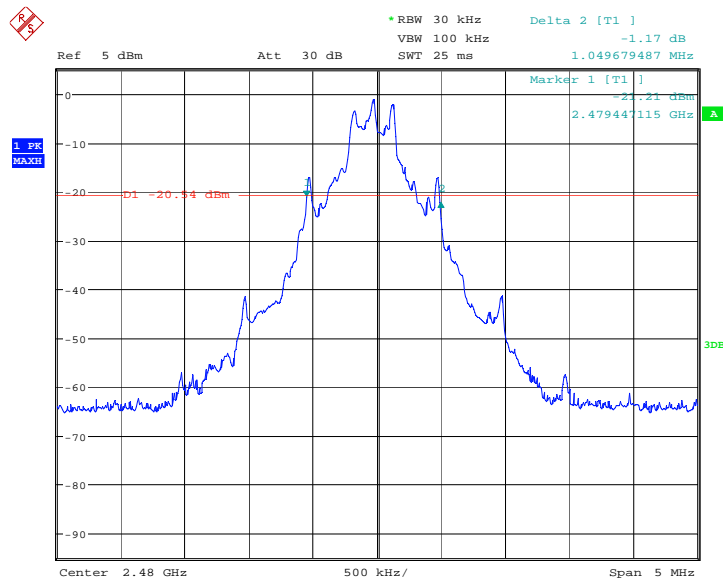
Date: 7.DEC.2011 07:27:45

Fig.133. Occupied Bandwidth 20dB IC BW: GFSK, Channel 39



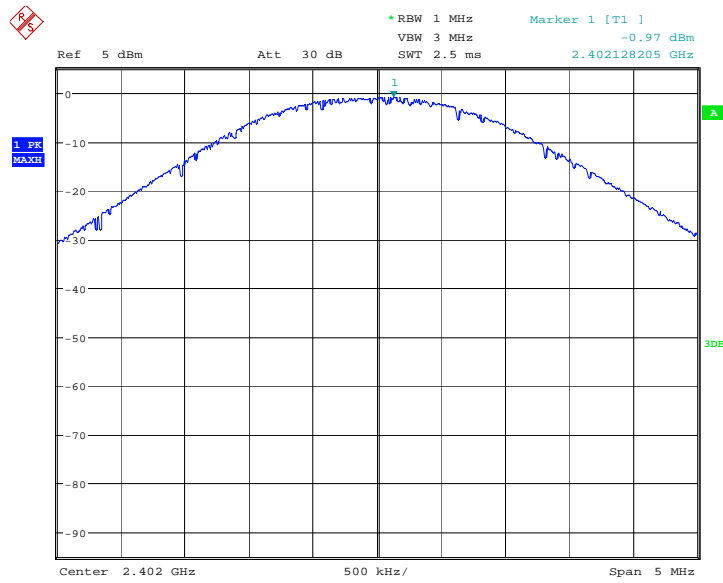
Date: 7.DEC.2011 07:28:35

Fig.134. Occupied Bandwidth 20dB IC Ref: GFSK, Channel 78



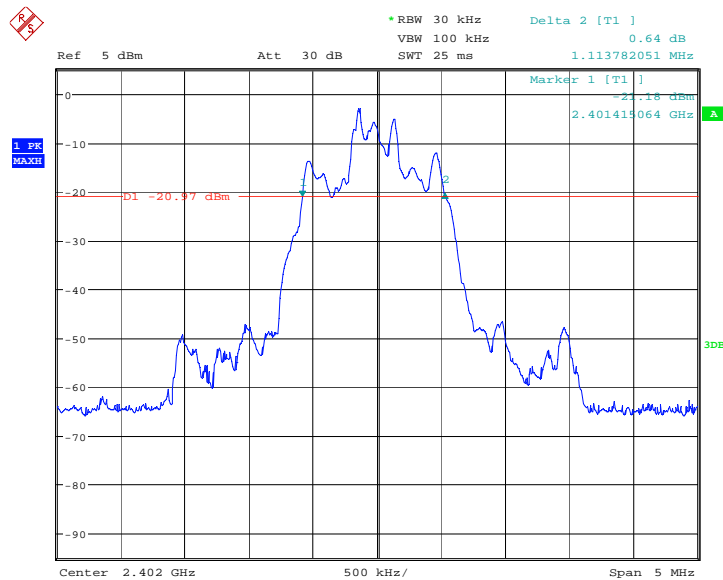
Date: 7.DEC.2011 07:30:02

Fig.135. Occupied Bandwidth 20dB IC BW: GFSK, Channel 78



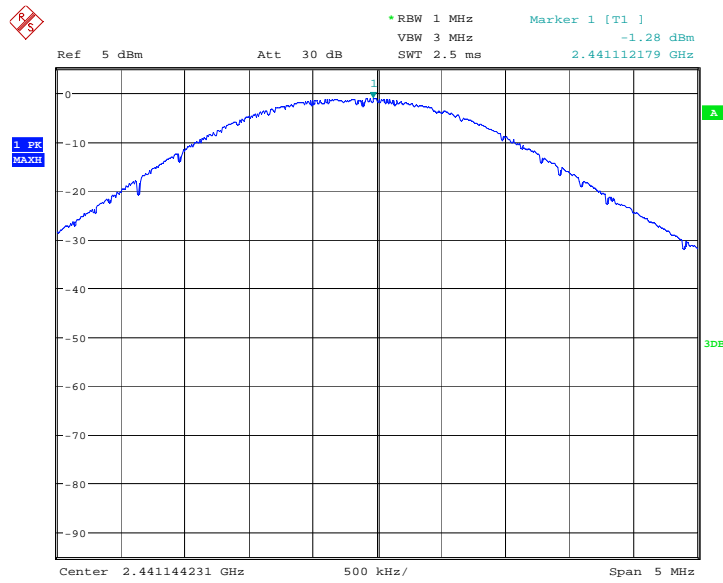
Date: 7.DEC.2011 07:31:16

Fig.136. Occupied Bandwidth 20dB IC Ref:  $\pi/4$  DQPSK , Channel 0



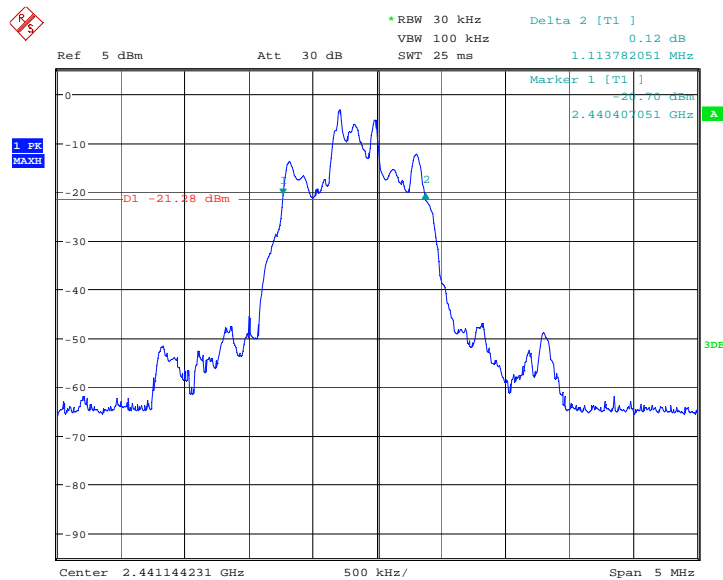
Date: 7.DEC.2011 07:32:19

Fig.137. Occupied Bandwidth 20dB IC BW:  $\pi/4$  DQPSK, Channel 0



Date: 7.DEC.2011 07:33:26

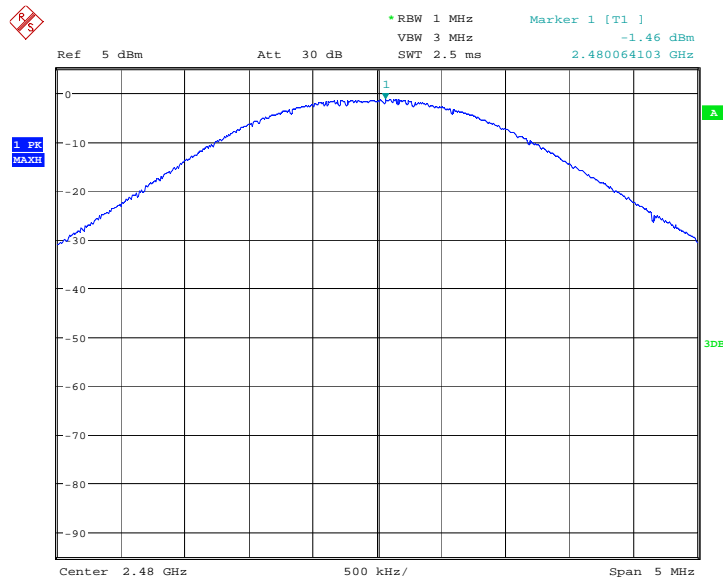
Fig.138. Occupied Bandwidth 20dB IC Ref:  $\pi/4$  DQPSK , Channel 39



Date: 7.DEC.2011 07:34:23

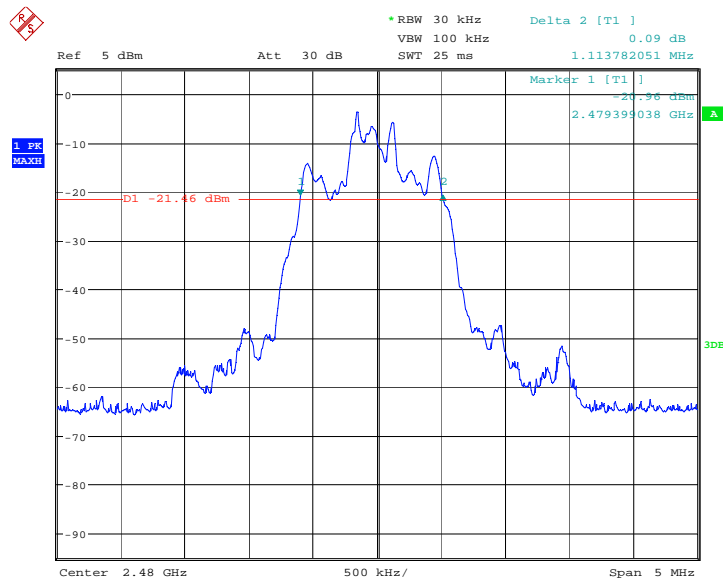
Fig.139. Occupied Bandwidth 20dB IC BW:  $\pi/4$  DQPSK, Channel 39





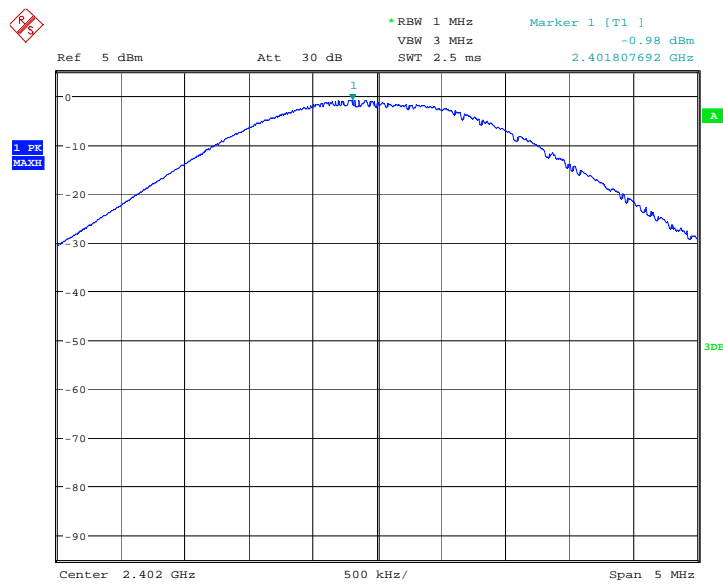
Date: 7.DEC.2011 07:35:50

Fig.140. Occupied Bandwidth 20dB IC Ref:  $\pi/4$  DQPSK , Channel 78



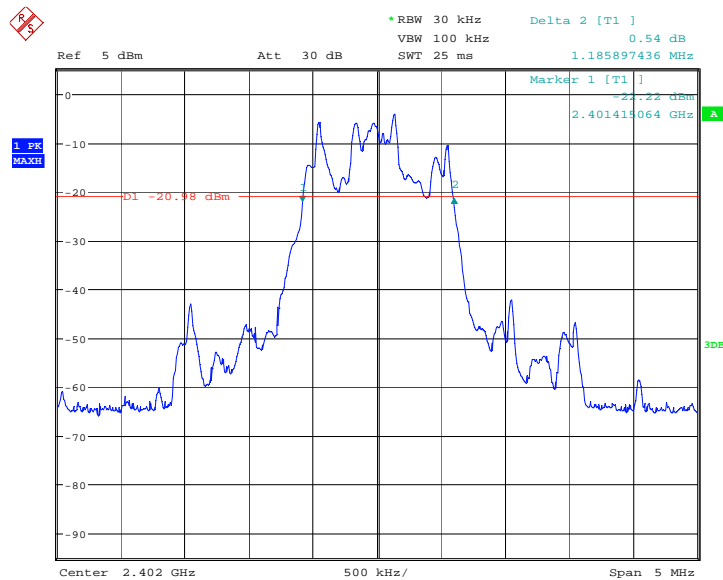
Date: 7.DEC.2011 07:37:04

Fig.141. Occupied Bandwidth 20dB IC BW:  $\pi/4$  DQPSK, Channel 78



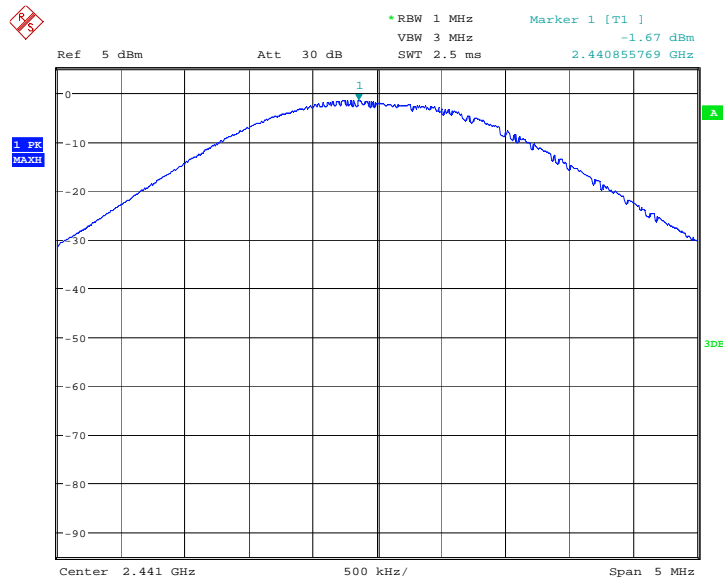
Date: 7.DEC.2011 07:38:02

Fig.142. Occupied Bandwidth 20dB IC Ref: 8DDPSK , Channel 0



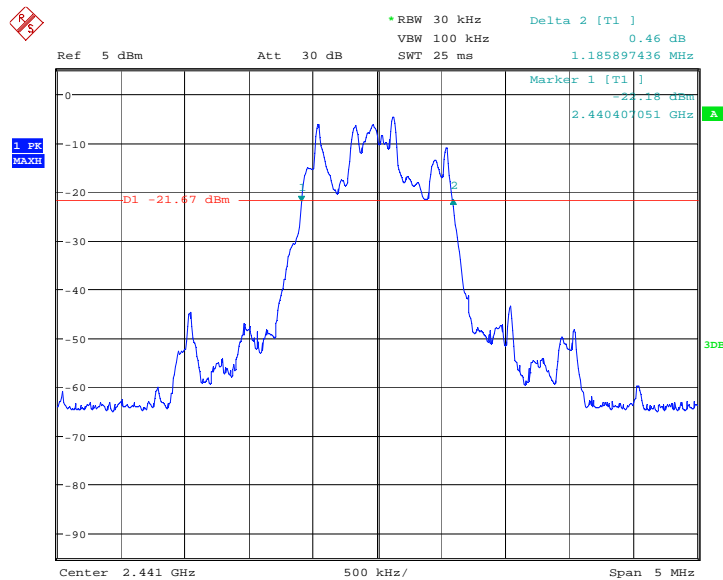
Date: 7.DEC.2011 07:39:17

Fig.143. Occupied Bandwidth 20dB IC BW: 8DPSK, Channel 0



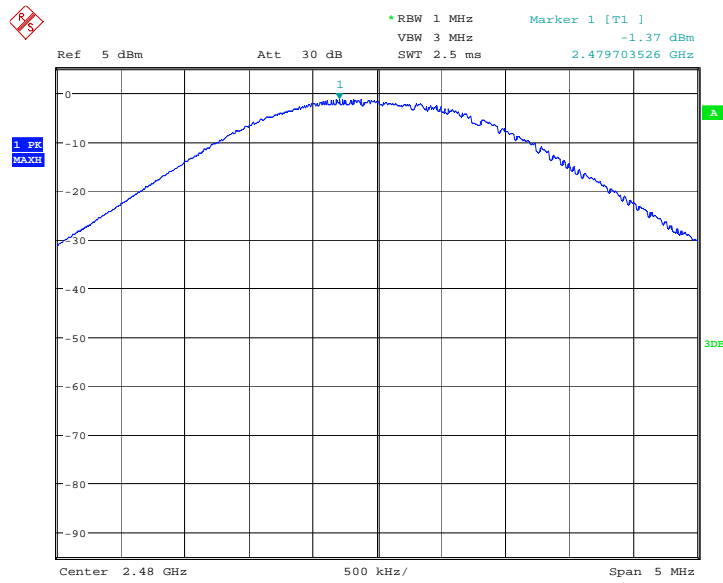
Date: 7.DEC.2011 07:40:36

Fig.144. Occupied Bandwidth 20dB IC Ref: 8DDPSK , Channel 39



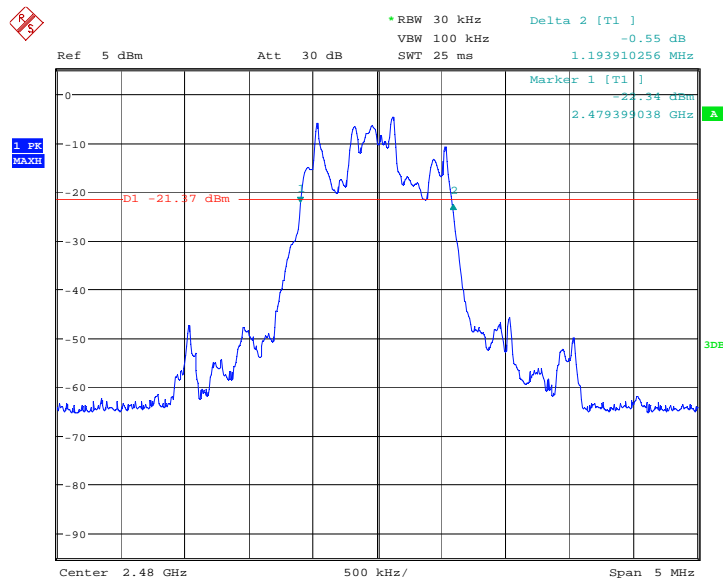
Date: 7.DEC.2011 07:42:30

Fig.145. Occupied Bandwidth 20dB IC BW: 8DPSK, Channel 39



Date: 7.DEC.2011 07:43:41

Fig.146. Occupied Bandwidth 20dB IC Ref: 8DDPSK , Channel 78



Date: 7.DEC.2011 07:45:50

Fig.147. Occupied Bandwidth 20dB IC BW: 8DPSK, Channel 78

\*\*\* END OF REPORT BODY \*\*\*