



*Full*

# TEST REPORT

**No. ECIT-2013-0139-RF-BT**

*For*

**Client : ZTE Corporation**

**Production : CDMA Digital Mobile Phone**

**Model Name : ZTE N880G**

**FCC ID: SRQZTEN880G**

**Hardware Version: cy1B**

**Software Version: MOVILNET\_VE\_N880GV1.0.0B03**

**Issued date: 2013-09-03**

**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 ECIT Shanghai.

Test Laboratory:

ECIT Shanghai, East China Institute of Telecommunications

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## **1. General Information**

### **1.1 Notes**

All reported tests were carried out on a sample equipment to demonstrate limited compliance with the section 3.

The test results of this test report relate exclusively to the item(s) tested as specified in section 5.

The following deviation from, additions to, or exclusions from the test specifications have been made. See section 3.

### **1.2 Statements**

The product name ZTE N880G, supporting BT, manufactured by ZTE Corporation is a new product for testing.

ECIT has verified that the compliance of the tested device specified in section 5 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 5 of this test report.



### 1.3 Testing Laboratory information

#### 1.3.1. Testing Location

Company Name: ECIT Shanghai, East China Institute of Telecommunications  
Address: 7F, G Area, No. 668, Beijing East Road, Huangpu District, Shanghai, P. R. China  
Postal Code: 200001  
Telephone: 00862163843300  
Fax: 00862163843301  
FCC Registration NO.: 489729

#### 1.3.2. Testing Environment

Normal Temperature: 15-35°C  
Extreme Temperature: N/A  
Relative Humidity: 20-75%

#### 1.3.3. Project data

Project Leader: Liu Jianquan  
Testing Start Date: 08,09,2013  
Testing End Date: 09,03,2013

#### 1.3.4. Signature

Wang daming  
(Testing Engineer)

Yu naiping  
(Reviewed this test report)

Zheng Zhongbin  
Director of the laboratory  
(Approved this test report)



### 1.4 Details of applicant or manufacturer

#### 1.4.1. Applicant Information

Company Name: ZTE Corporation  
 Address /Post: ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park,  
 Nanshan District, Shenzhen, Guangdong, 518057, P.R.China  
 Country: China

#### 1.4.2. Manufacturer Information

Company Name: ZTE Corporation  
 Address /Post: ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park,  
 Nanshan District, Shenzhen, Guangdong, 518057, P.R.China  
 Country: China

### 2. Equipment Under Test (EUT) and Ancillary Equipment (AE)

#### 2.1. About EUT

EUT Description	CDMA Digital Mobile Phone
Model name	ZTE N880G
Bluetooth Frequency	2402MHz-2480MHz
Bluetooth Channel	Channel0-Channel78
Bluetooth Modulation	GMSK; $\pi/4$ DQPSK;8DPSK
Extreme Temperature	N/A
Nominal Voltage	3.7V
Extreme High Voltage	4.2V
Extreme Low Voltage	3.5V

Note: Photographs of EUT are shown in ANNEX A of this test report.

#### 2.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
N09	A0000038365E18	cy1B	MOVILNET_VE_N88 0GV1.0.0B03	2013-08-09

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

#### 2.3. Internal Identification of AE used during the test

AE ID*	Description	SN
AE1	RF cable	---
AE2	---	---



### 3. Reference Documents

#### 3.1. 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, 2400-2483.5MHz, and 5725-5850MHz.	Oct,2009 Edition
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9KHz to 40GHz	2009
DA 00-705	Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems	March 30,2000



#### 4. Summary of Test Results

A brief summary of the tests carried out is shown as following.

Measurement Items	Sub-clause of Part15C	Sub-clause of IC	Verdict
Maximum Peak Output Power	15.247(a)	/	P
Peak Power Spectral Density	15.247(d)	/	P
Occupied 6dB Bandwidth	15.247(d)	/	P
Band Edges Compliance	15.247(b)	/	P
Transmitter Spurious Emission-Conducted	15.247	/	P
Transmitter Spurious Emission-Radiated	15.247,15.209,	/	P
AC Powerline Conducted Emission	15.107,15.207	/	P

Please refer to part 5 for detail.

The measurements are according to Public notice DA 00-705 and ANSI C63.4.

Terms used in Verdict column

P	Pass, the EUT complies with the essential requirements in the standard.
NP	Not Perform, the test was not performed by ECIT.
NA	Not Applicable, the test was not applicable.
F	Fail, the EUT does not comply with the essential requirements in the standard.

Test Conditions

Tnom	Normal temperature
Tmin	Low Temperature
Tmax	High Temperature
Vnom	Normal Voltage
Vmin	Low Voltage
Vmax	High Voltage
Hnom	Norm Humidity
Anom	Norm Air Pressure



For this report, all the test case listed above are tested under Normal Temperature and Normal Voltage, and also under norm humidity, the specific conditions as following:

Temperature	Tnom	22°C
Voltage	Vnom	3.7V
Humidity	Hnom	32%
Air Pressure	Anom	1010hPa

**Note:**

- a. All the test data for each data were verified, but only the worst case was reported.
- b. The GFSK,  $\pi/4$  DQPSK and 8DPSK were set in DH1 for GFSK, 2-DH1 for  $\pi/4$  DQPSK, 3-DH1 for 8DPSK.
- c. The DC and low frequency voltages' measurement uncertainty is  $\pm 2\%$ .



### 5. Test result

#### 5.1. Peak Output Power-Conducted

##### Measurement Limit

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

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

##### Test Condition:

Hopping Mode	RBW	VBW	Span	Sweeptime
Hopping OFF	3MHz	10MHz	5MHz	2.5ms

##### Measurement Results:

##### For GFSK

Channel	Ch0 2402 MHz	Ch39 2441 MHz	CH78 2480 MHz	Conclusion
Peak Conducted Output Power (dBm)	3.22	3.47	3.64	P
	Fig.1	Fig.2	Fig.3	

##### For π/4 DQPSK

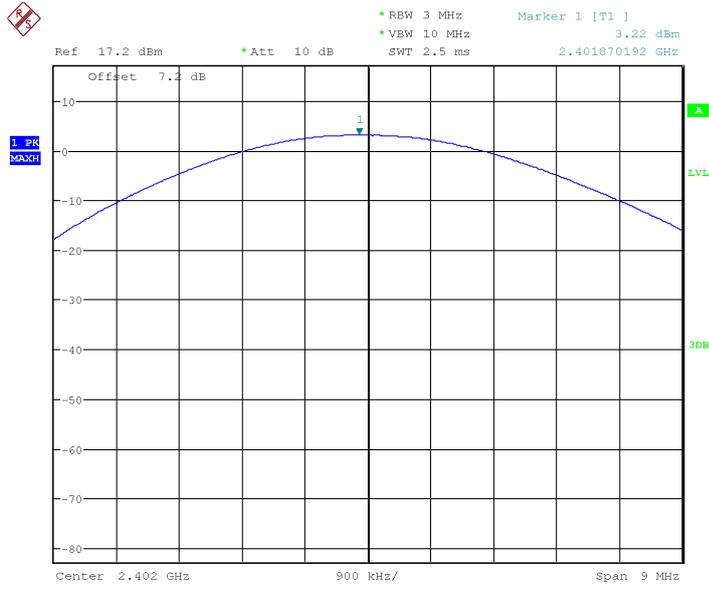
Channel	Ch0 2402 MHz	Ch39 2441 MHz	CH78 2480 MHz	Conclusion
Peak Conducted Output Power (dBm)	3.91	4.16	4.28	P
	Fig.4	Fig.5	Fig.6	

##### For 8DPSK

Channel	Ch0 2402 MHz	Ch39 2441 MHz	CH78 2480 MHz	Conclusion
Peak Conducted Output Power (dBm)	4.11	4.34	4.47	P
	Fig.7	Fig.8	Fig.9	

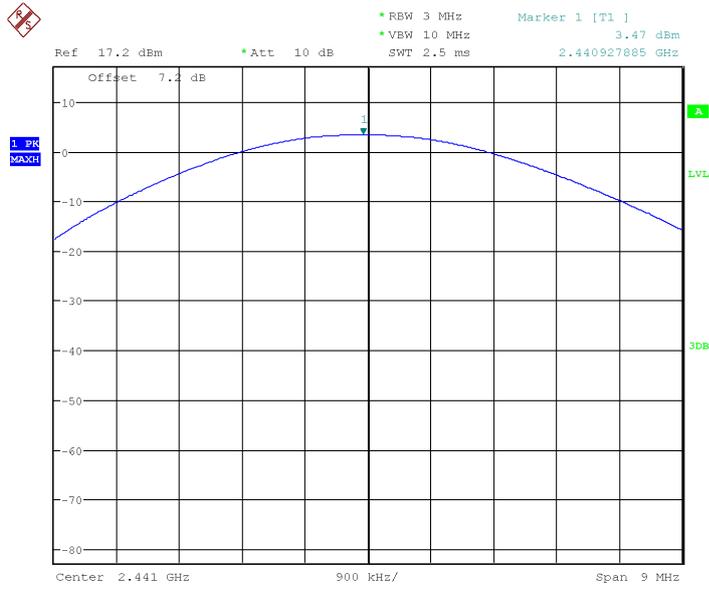
Conclusion: PASS

Test graphs an below



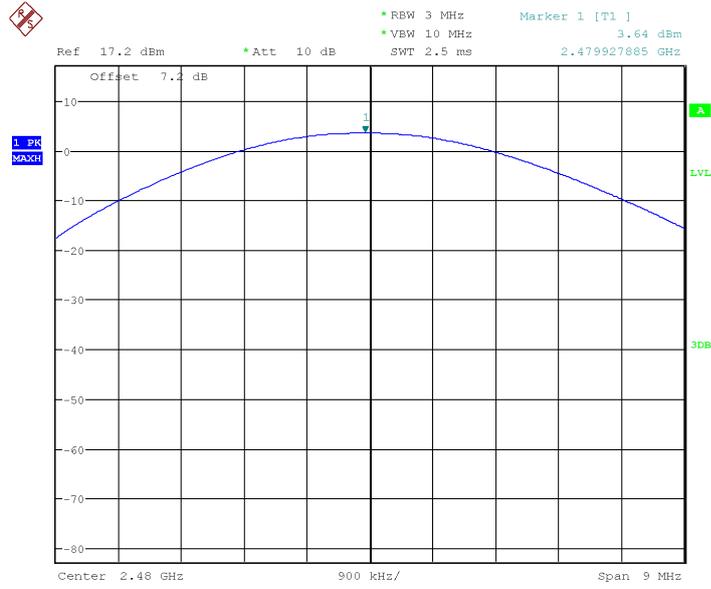
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Fig.1 Peak Conducted Output Power CH0, DH1



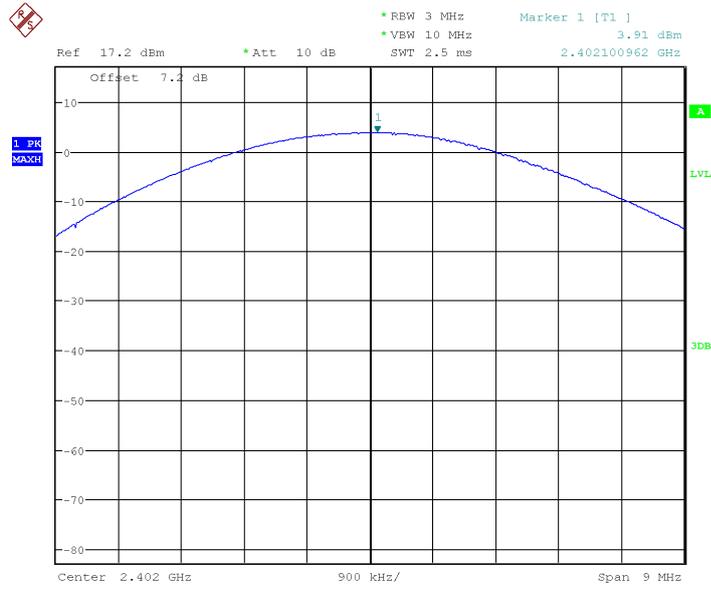
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Fig.2 Peak Conducted Output Power CH39, DH1



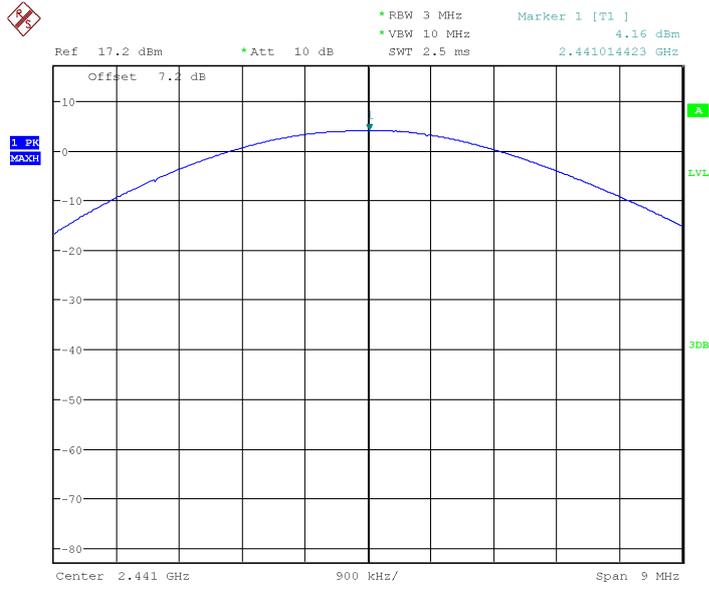
Date: 22.AUG.2013 17:39:24

Fig.3 Peak Conducted Output Power CH78, DH1



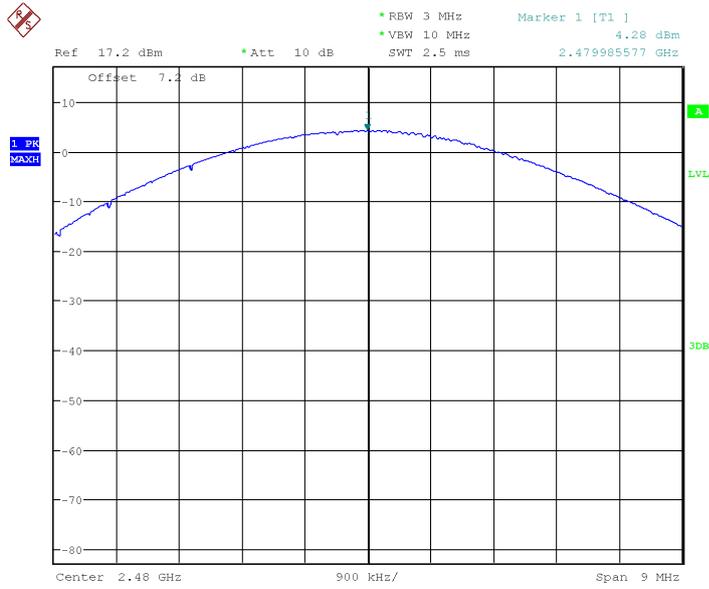
Date: 22.AUG.2013 17:51:56

Fig.4 Peak Conducted Output Power CH0, 2DH1



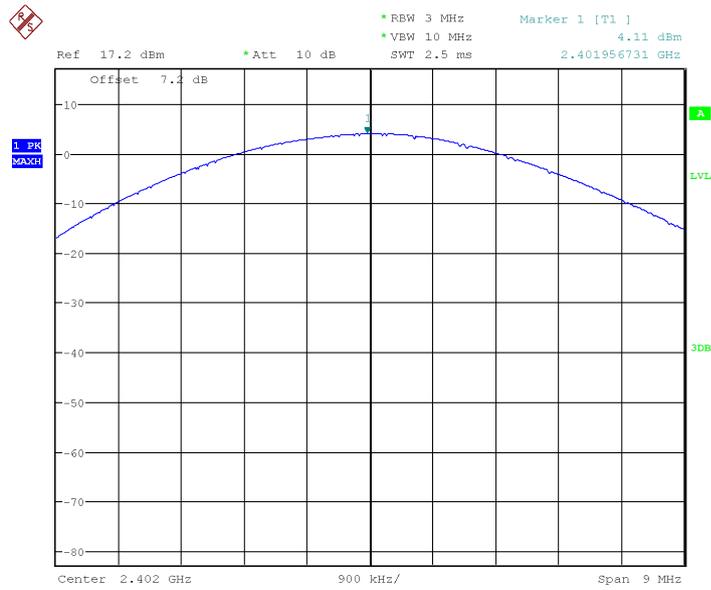
Date: 22.AUG.2013 17:51:38

Fig.5 Peak Conducted Output Power CH39, 2DH1



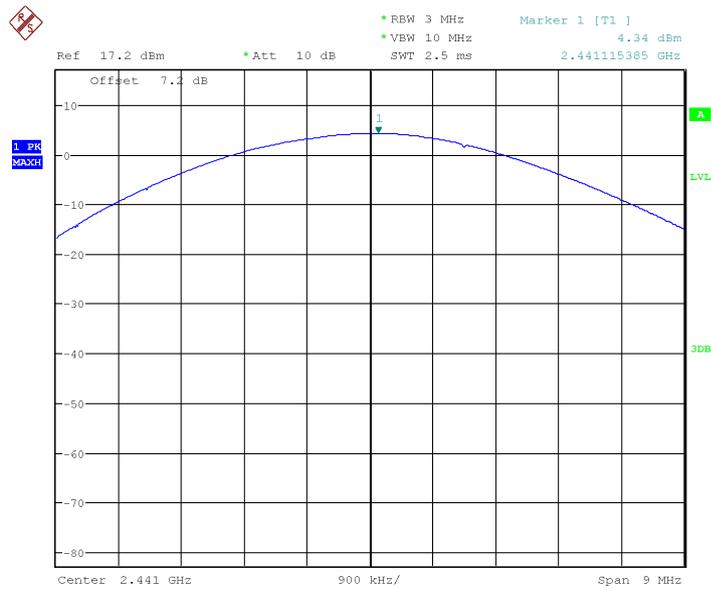
Date: 22.AUG.2013 17:52:15

Fig.6 Peak Conducted Output Power CH78, 2DH1



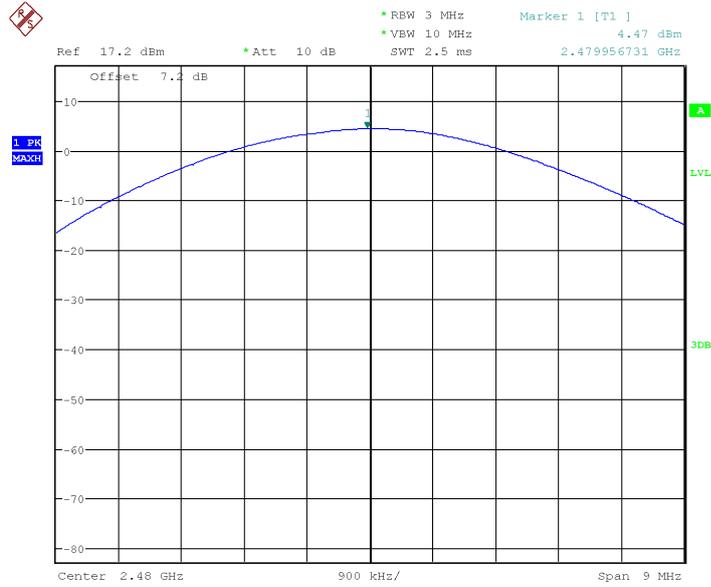
Date: 22.AUG.2013 17:52:55

Fig.7 Peak Conducted Output Power CH0, 3DH1



Date: 22.AUG.2013 17:53:27

Fig.8 Peak Conducted Output Power CH39, 3DH1



Date: 22.AUG.2013 17:54:39

Fig.9 Peak Conducted Output Power CH78, 3DH1

### 5.2. Frequency Band Edges-Conducted

Measurement result:

For GFSK

Channel	Hopping	Band Edge Power (dBc)	Conclusion
0	Hopping OFF	Fig.10 -55.76	P
	Hopping ON	Fig.11 -54.11	P
78	Hopping OFF	Fig.12 -64.83	P
	Hopping ON	Fig.13 -61.71	P

For  $\pi/4$  DQPSK

Channel	Hopping	Band Edge Power (dBc)	Conclusion
0	Hopping OFF	Fig.14 -55.93	P
	Hopping ON	Fig.15 -50.27	P
78	Hopping OFF	Fig.16 -61.95	P
	Hopping ON	Fig.17 -59.89	P

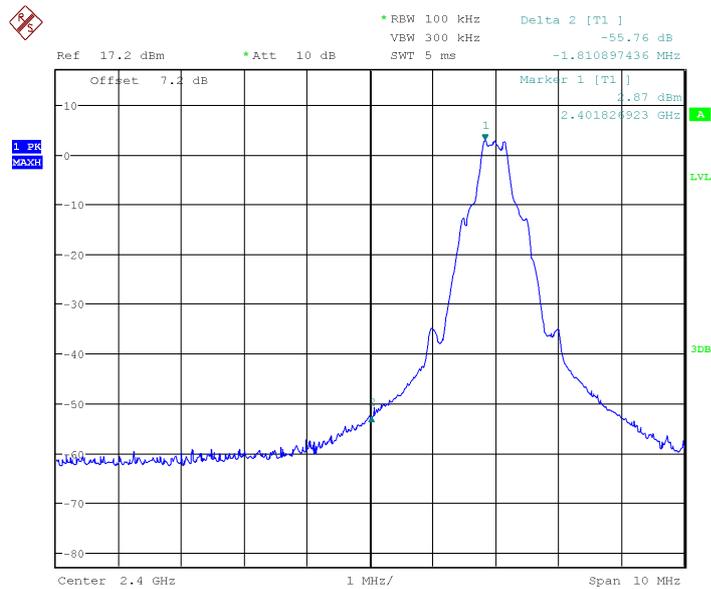
For 8DPSK



Channel	Hopping	Band Edge Power (dBc)		Conclusion
0	Hopping OFF	Fig.18	-56.03	P
	Hopping ON	Fig.19	-54.05	P
78	Hopping OFF	Fig.20	-62.28	P
	Hopping ON	Fig.21	-54.59	P

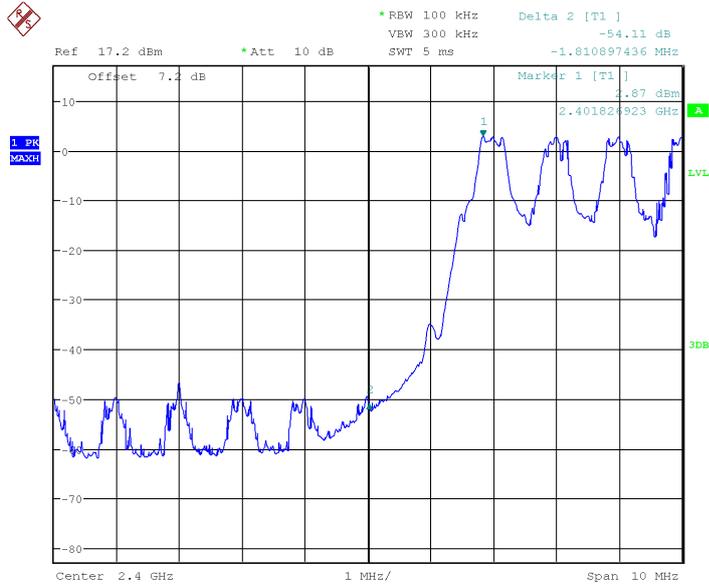
Conclusion: PASS

Test graphs an below



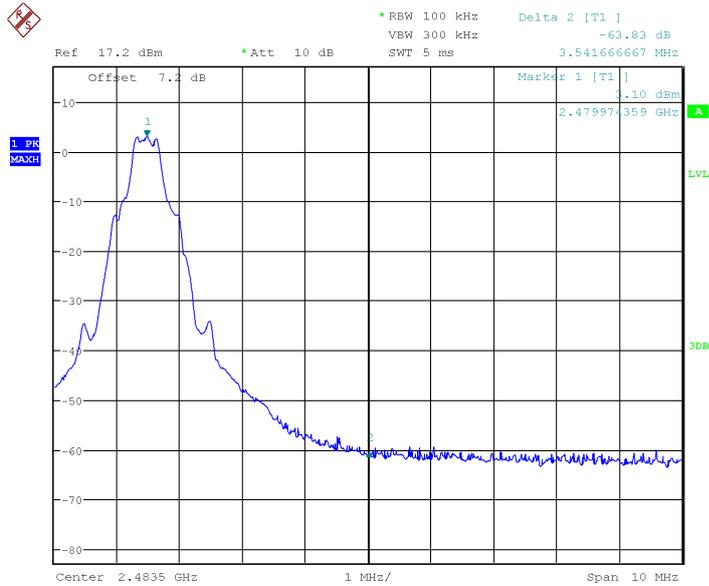
Date: 22.AUG.2013 17:57:14

Fig.10 Frequency Band Edge: GFSK, Ch0, Hopping OFF



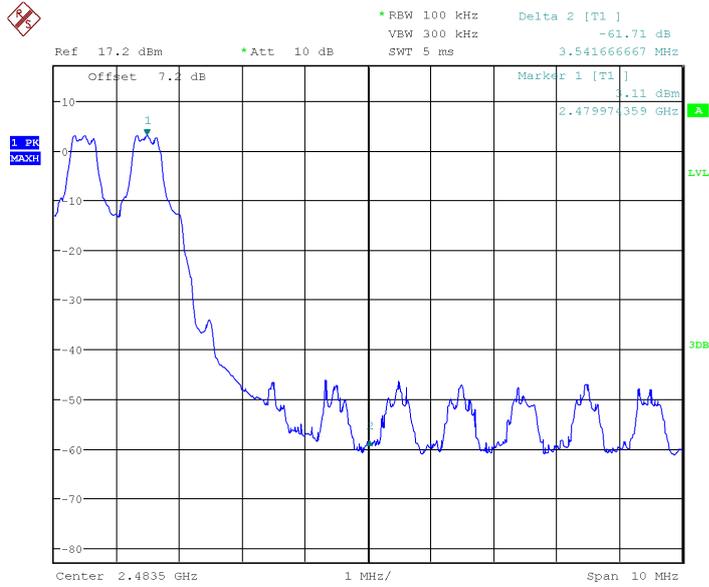
Date: 22.AUG.2013 17:58:37

Fig.11 Frequency Band Edge: GFSK, Ch0, Hopping ON



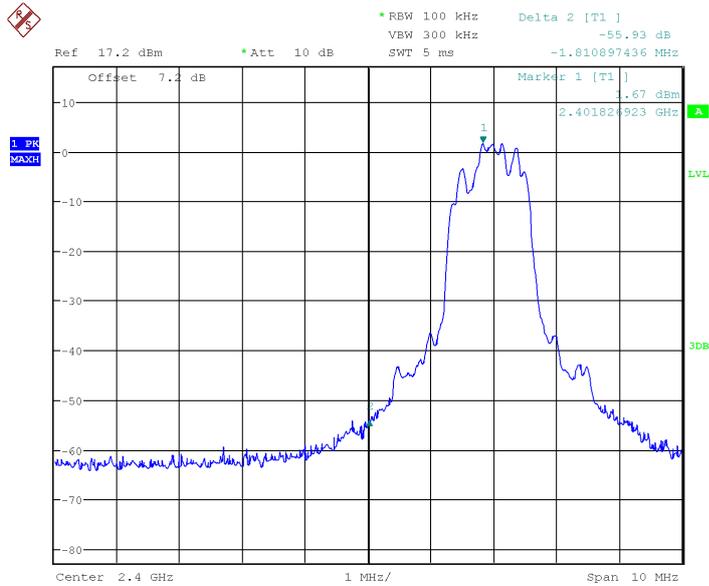
Date: 22.AUG.2013 17:59:55

Fig.12 Frequency Band Edge: GFSK, Ch78, Hopping OFF



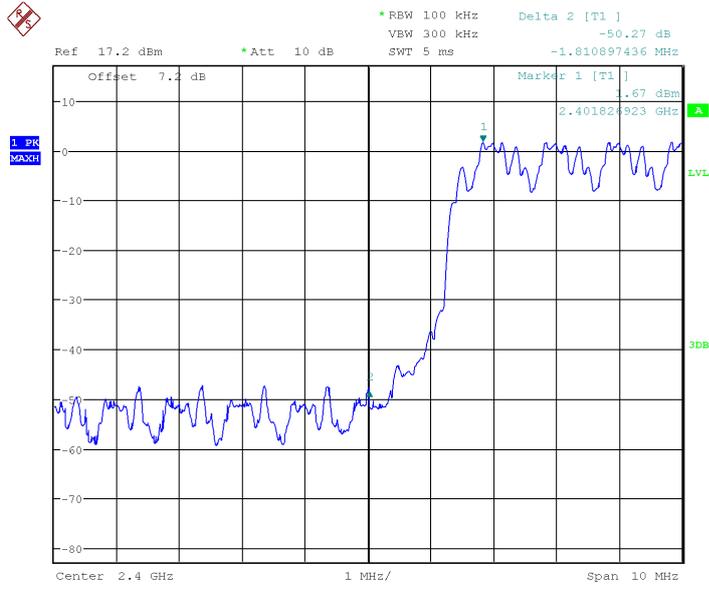
Date: 22.AUG.2013 18:09:55

Fig.13 Frequency Band Edge: GFSK, Ch78, Hopping ON



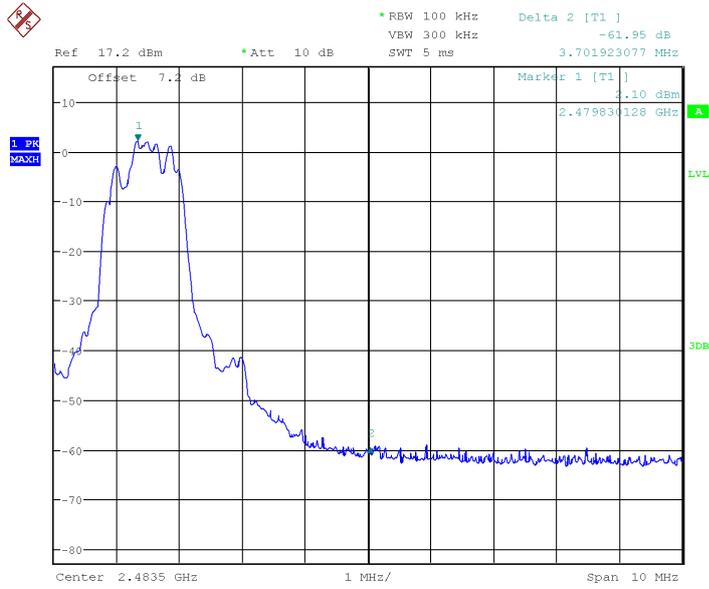
Date: 22.AUG.2013 18:10:38

Fig.14 Frequency Band Edge:  $\pi/4$  DQPSK, Ch0, Hopping OFF



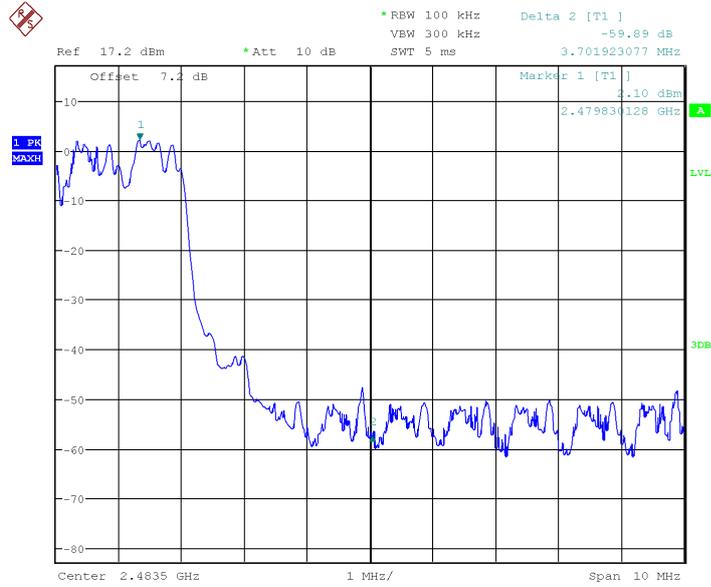
Date: 22.AUG.2013 18:27:54

Fig.15 Frequency Band Edge:  $\pi/4$  DQPSK, Ch0, Hopping ON



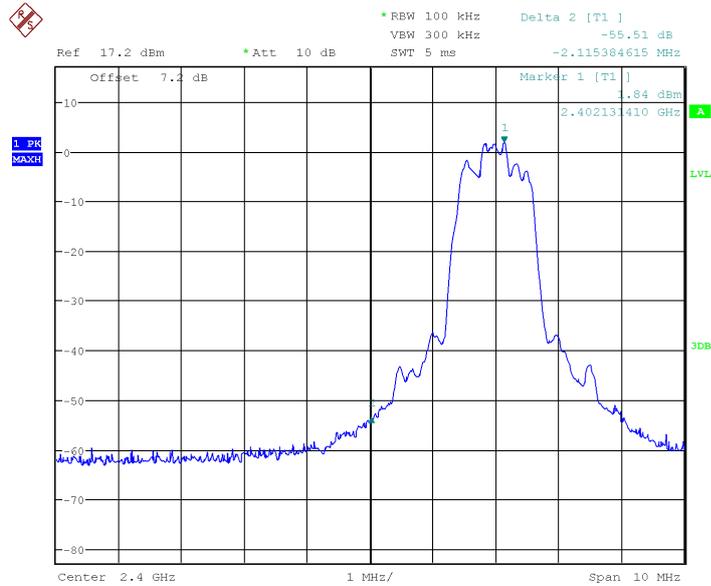
Date: 22.AUG.2013 18:28:55

Fig.16 Frequency Band Edge:  $\pi/4$  DQPSK, Ch78, Hopping OFF



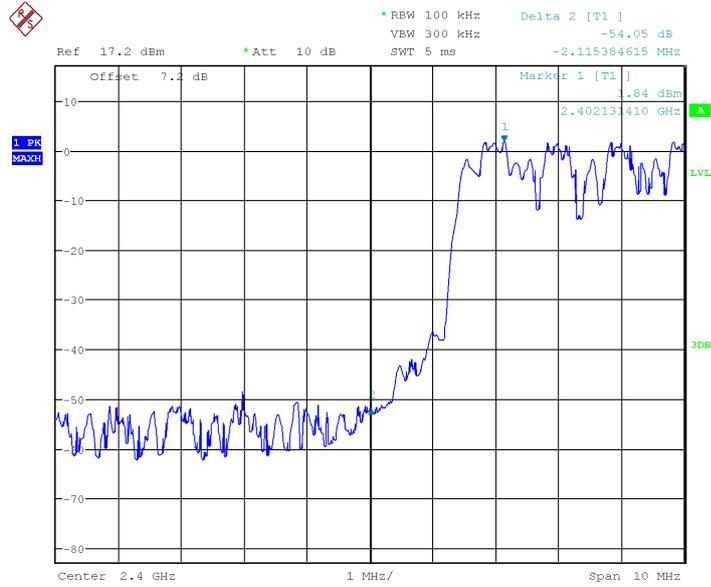
Date: 22.AUG.2013 18:31:19

Fig.17 Frequency Band Edge:  $\pi/4$  DQPSK, Ch78, Hopping ON



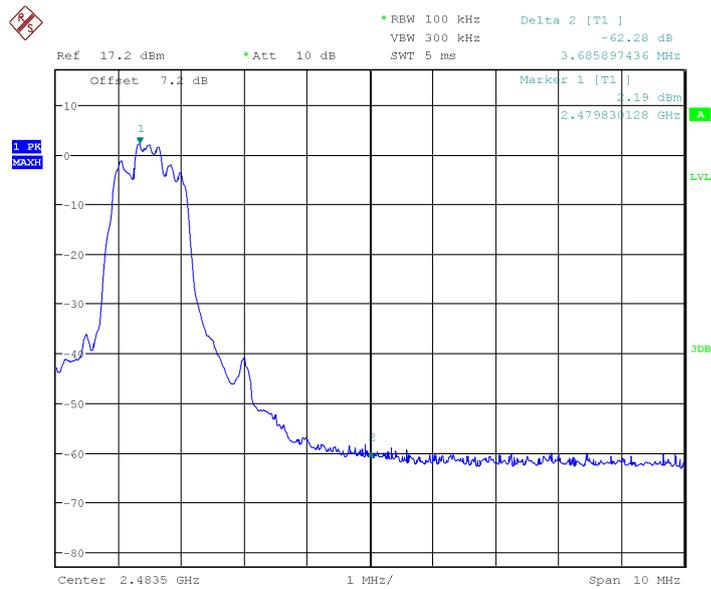
Date: 22.AUG.2013 18:32:54

Fig.18 Frequency Band Edge: 8DPSK, Ch0, Hopping OFF



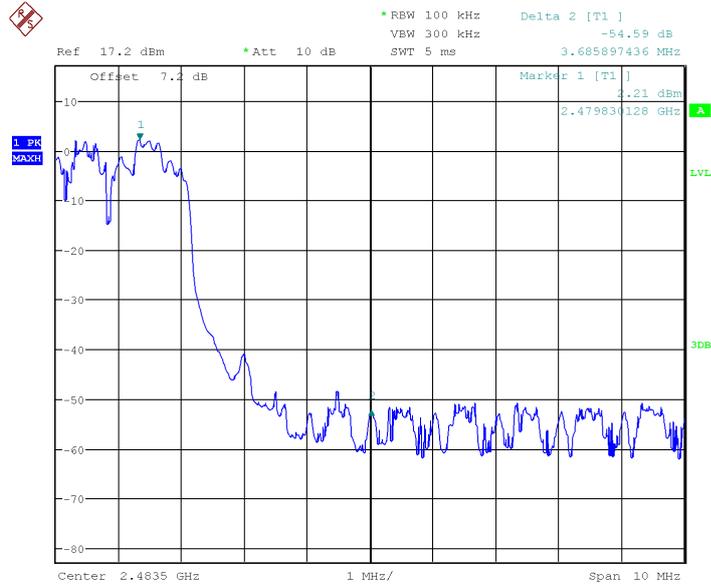
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Fig.19 Frequency Band Edge: 8DPSK, Ch0, Hopping ON



Date: 22.AUG.2013 18:36:07

Fig.20 Frequency Band Edge: 8DPSK, Ch78, Hopping OFF



Date: 22.AUG.2013 18:38:08

Fig.21 Frequency Band Edge: 8DPSK, Ch78, Hopping ON

### 5.3. Conducted Emission

#### Measurement Limit:

Standard	Limit
FCC 47 CFR Part15.247 (d)	20dB below peak output power in 100KHz bandwidth

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

#### Measurement Results:

##### For GFSK

Channel	Frequency Range	Test Results	Conclusion
Ch0 2402MHz	Center Freq.	Fig.22	P
	30MHz~1GHz	Fig.23	P
	1GHz~3GHz	Fig.24	P
	3GHz~10GHz	Fig.25	P
	10GHz~26GHz	Fig.26	P
Ch39 2441MHz	Center Freq.	Fig.27	P
	30MHz~1GHz	Fig.28	P
	1GHz~3GHz	Fig.29	P
	3GHz~10GHz	Fig.30	P



	10GHz~26GHz	Fig.31	P
<b>Ch78 2480MHz</b>	Center Freq.	Fig.32	P
	30MHz~1GHz	Fig.33	P
	1GHz~3GHz	Fig.34	P
	3GHz~10GHz	Fig.35	P
	10GHz~26GHz	Fig.36	P

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

<b>Channel</b>	<b>Frequency Range</b>	<b>Test Results</b>	<b>Conclusion</b>
<b>Ch0 2402MHz</b>	Center Freq.	Fig.37	P
	30MHz~1GHz	Fig.38	P
	1GHz~3GHz	Fig.39	P
	3GHz~10GHz	Fig.40	P
	10GHz~26GHz	Fig.41	P
<b>Ch39 2441MHz</b>	Center Freq.	Fig.42	P
	30MHz~1GHz	Fig.43	P
	1GHz~3GHz	Fig.44	P
	3GHz~10GHz	Fig.45	P
	10GHz~26GHz	Fig.46	P
<b>Ch78 2480MHz</b>	Center Freq.	Fig.47	P
	30MHz~1GHz	Fig.48	P
	1GHz~3GHz	Fig.49	P
	3GHz~10GHz	Fig.50	P
	10GHz~26GHz	Fig.51	P

**For 8DPSK**

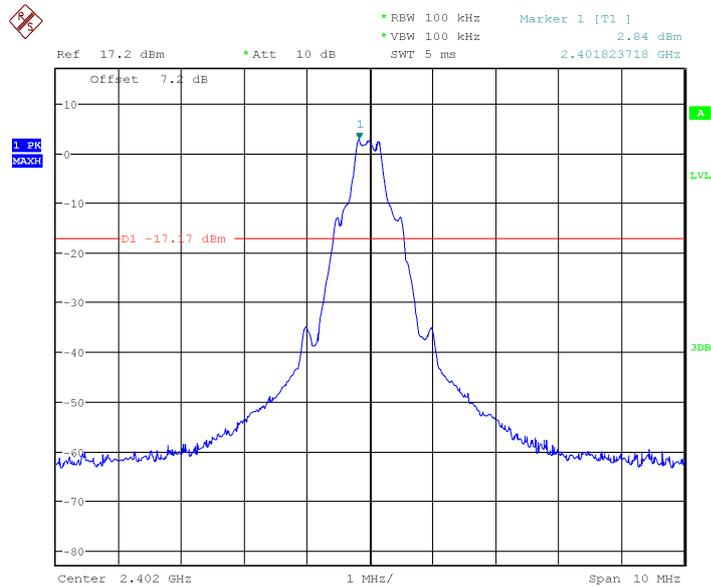
<b>Channel</b>	<b>Frequency Range</b>	<b>Test Results</b>	<b>Conclusion</b>
<b>Ch0 2402MHz</b>	Center Freq.	Fig.52	P
	30MHz~1GHz	Fig.53	P
	1GHz~3GHz	Fig.54	P



	3GHz~10GHz	Fig.55	P
	10GHz~26GHz	Fig.56	P
<b>Ch39 2441MHz</b>	Center Freq.	Fig.57	P
	30MHz~1GHz	Fig.58	P
	1GHz~3GHz	Fig.59	P
	3GHz~10GHz	Fig.60	P
	10GHz~26GHz	Fig.61	P
<b>Ch78 2480MHz</b>	Center Freq.	Fig.62	P
	30MHz~1GHz	Fig.63	P
	1GHz~3GHz	Fig.64	P
	3GHz~10GHz	Fig.65	P
	10GHz~26GHz	Fig.66	P

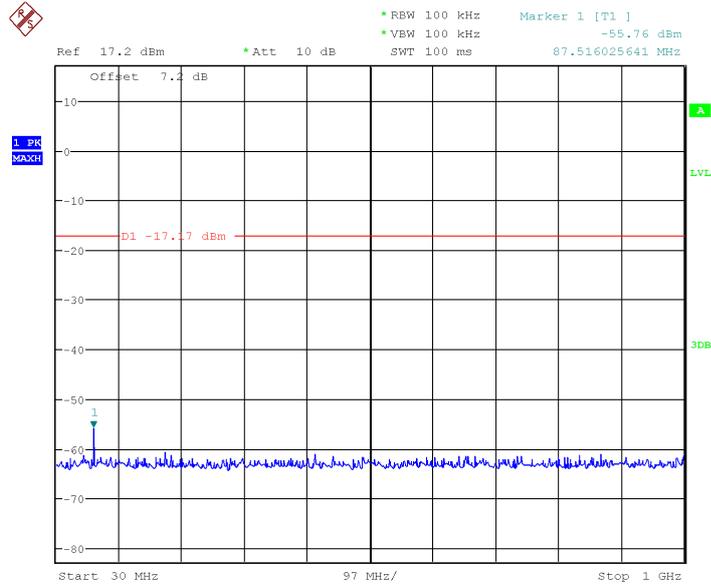
Conclusion: PASS

Test graphs as below



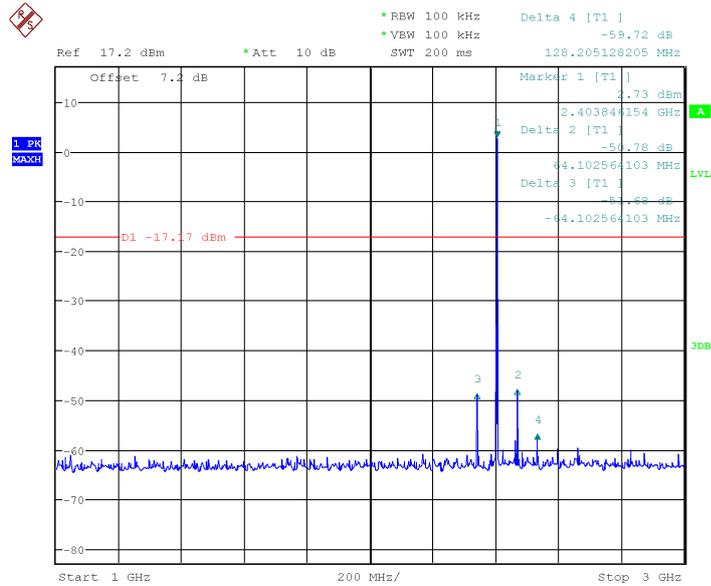
Date: 22.AUG.2013 18:41:18

Fig.22 Conducted spurious emission: GFSK, Ch0, 2402MHz



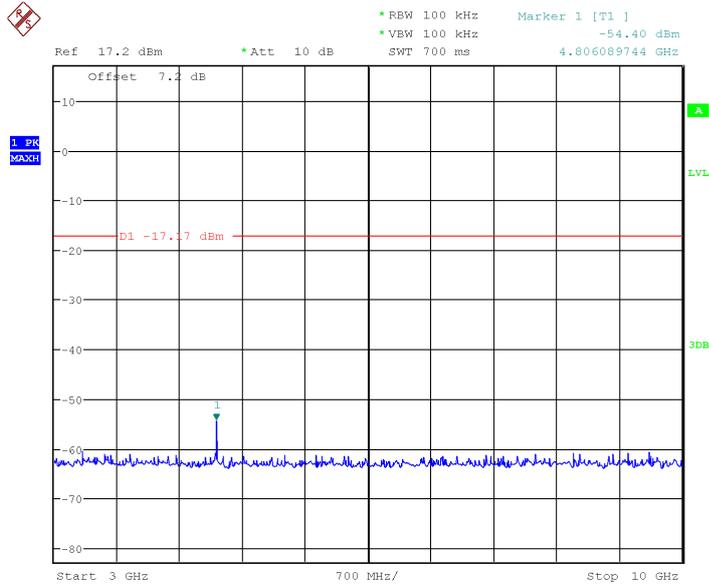
Date: 22.AUG.2013 18:41:53

Fig.23 Conducted spurious emission: GFSK, Ch0, 30MHz~1GHz



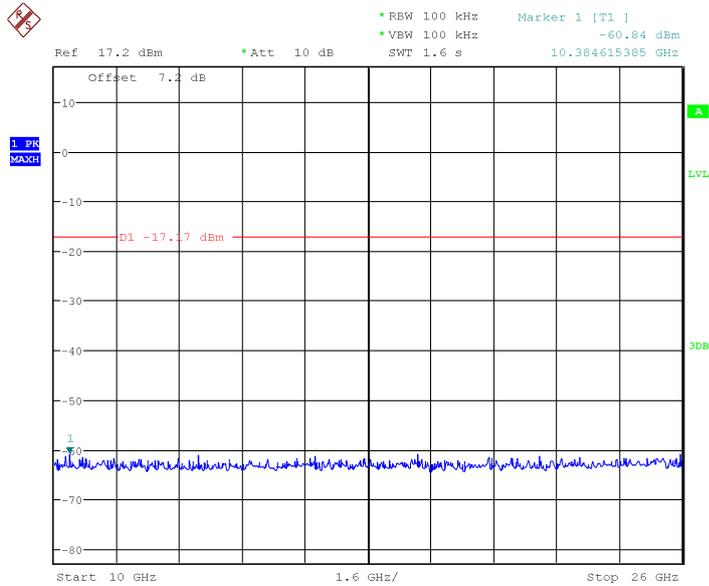
Date: 22.AUG.2013 18:42:15

Fig.24 Conducted spurious emission: GFSK, Ch0, 1GHz~3GHz



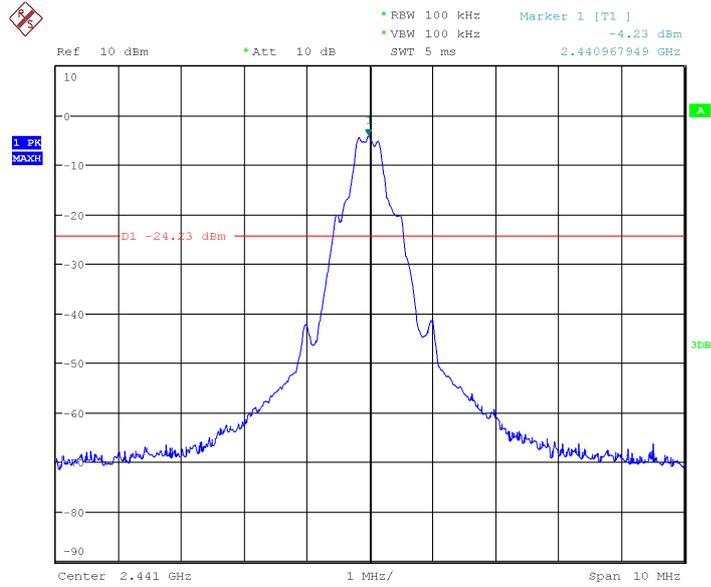
Date: 22.AUG.2013 18:42:47

Fig.25 Conducted spurious emission: GFSK, Ch0, 3GHz~10GHz



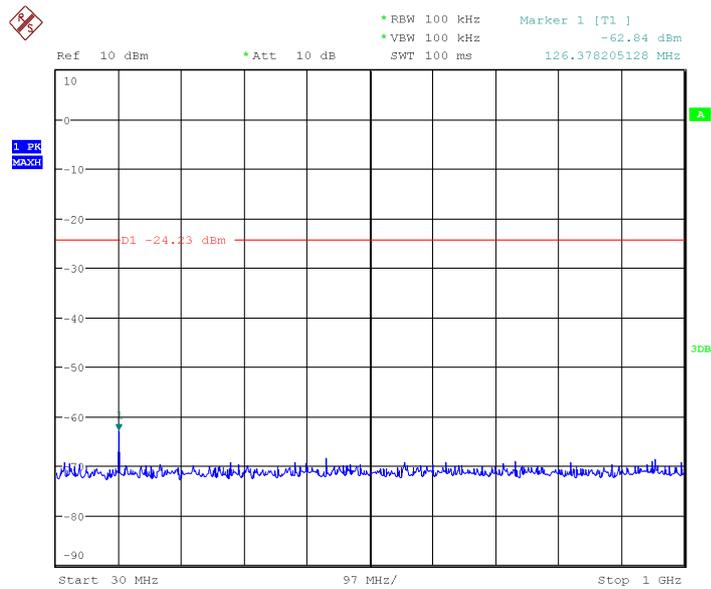
Date: 22.AUG.2013 18:43:04

Fig.26 Conducted spurious emission: GFSK, Ch0, 10GHz~26GHz



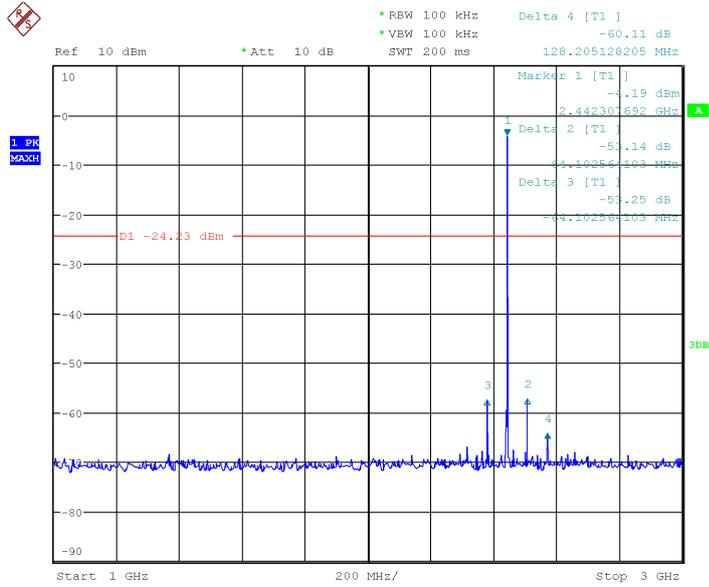
Date: 22.AUG.2013 18:43:53

Fig.27 Conducted spurious emission: GFSK, Ch39, 2441MHz



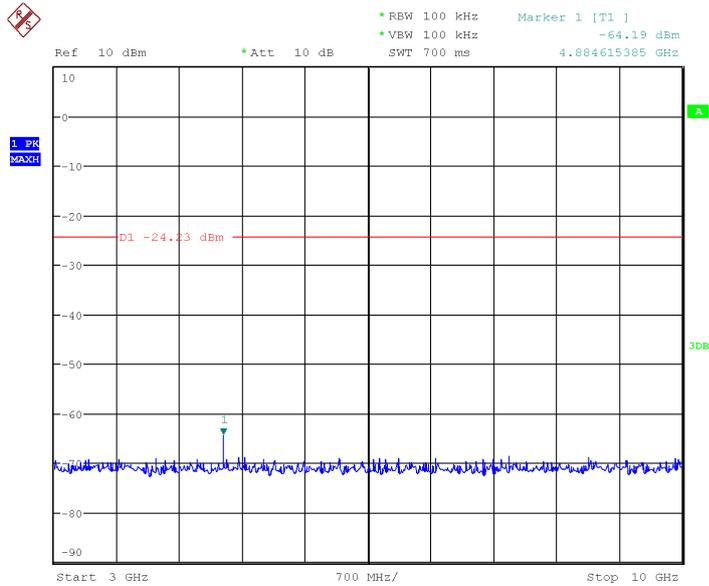
Date: 22.AUG.2013 18:44:03

Fig.28 Conducted spurious emission: GFSK, Ch39, 30MHz~1GHz



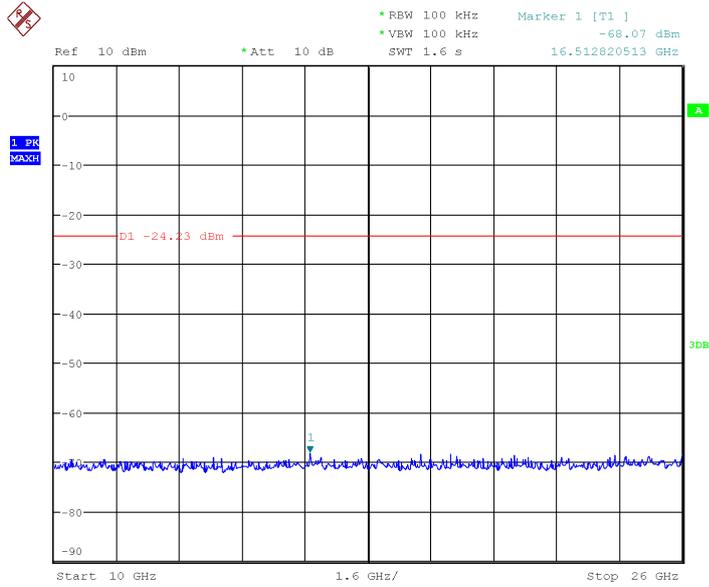
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Fig.29 Conducted spurious emission: GFSK, Ch39, 1GHz~3GHz



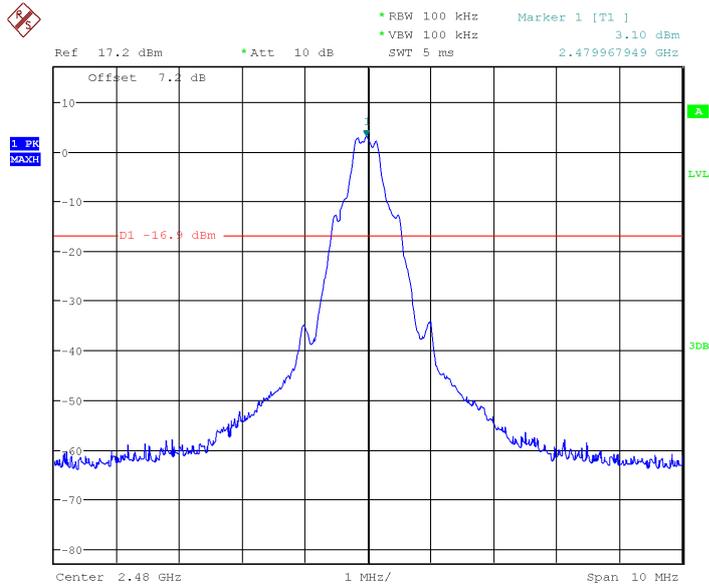
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Fig.30 Conducted spurious emission: GFSK, Ch39, 3GHz~10GHz



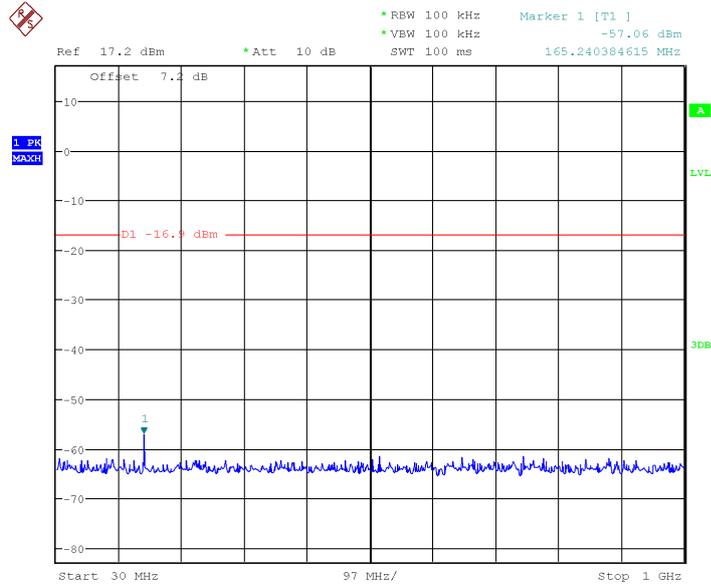
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Fig.31 Conducted spurious emission: GFSK, Ch39, 10GHz~26GHz



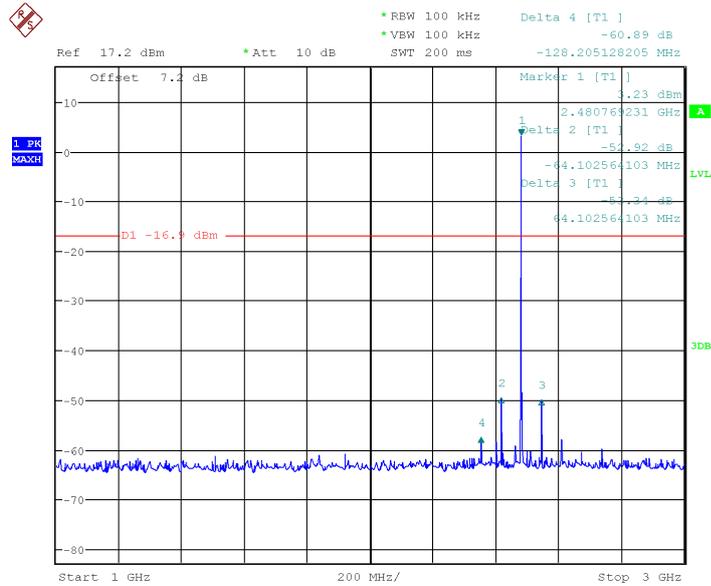
Date: 22.AUG.2013 18:46:10

Fig.32 Conducted spurious emission: GFSK, Ch78, 2480MHz



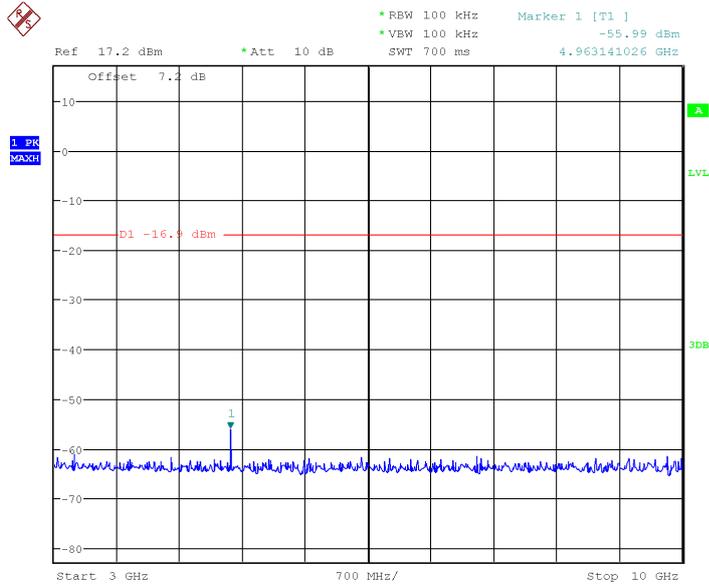
Date: 22.AUG.2013 18:46:20

Fig.33 Conducted spurious emission: GFSK, Ch78, 30MHz~1GHz



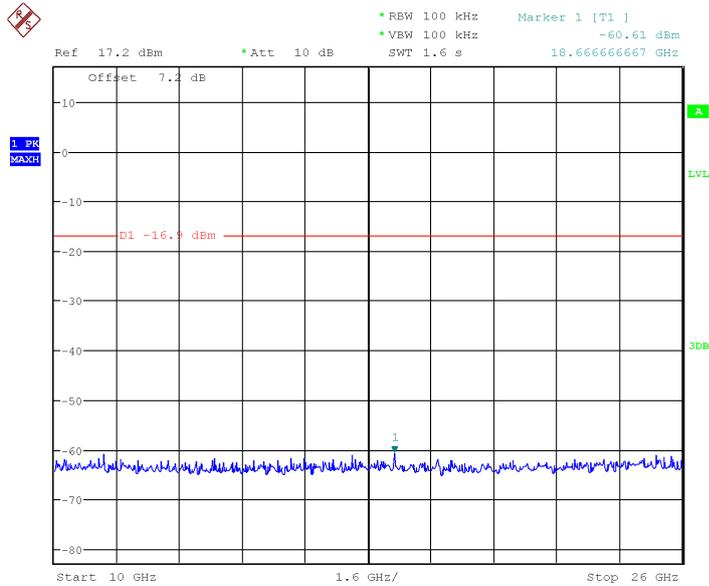
Date: 22.AUG.2013 18:46:36

Fig.34 Conducted spurious emission: GFSK, Ch78, 1GHz~3GHz



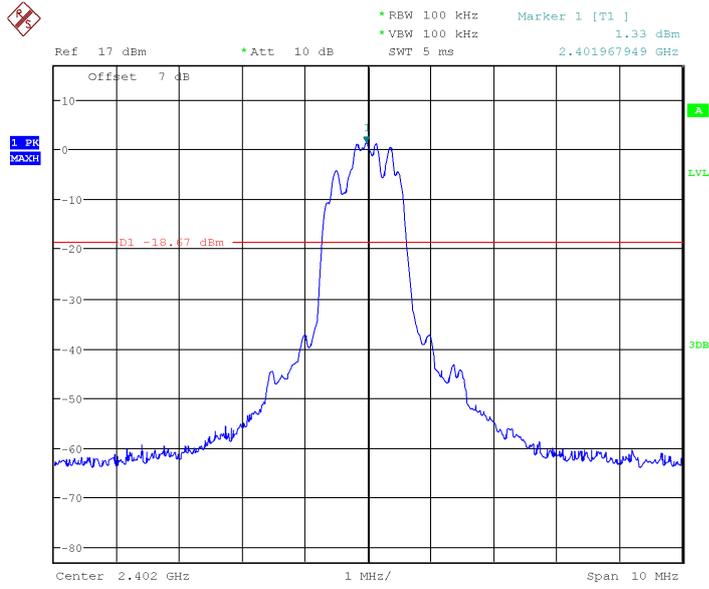
Date: 22.AUG.2013 18:46:49

Fig.35 Conducted spurious emission: GFSK, Ch78, 3GHz~10GHz



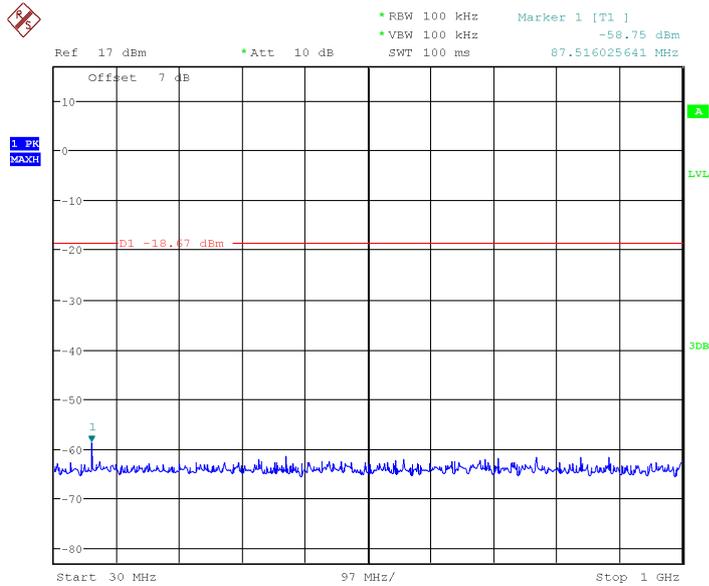
Date: 22.AUG.2013 18:46:59

Fig.36 Conducted spurious emission: GFSK, Ch78, 10GHz~26GHz



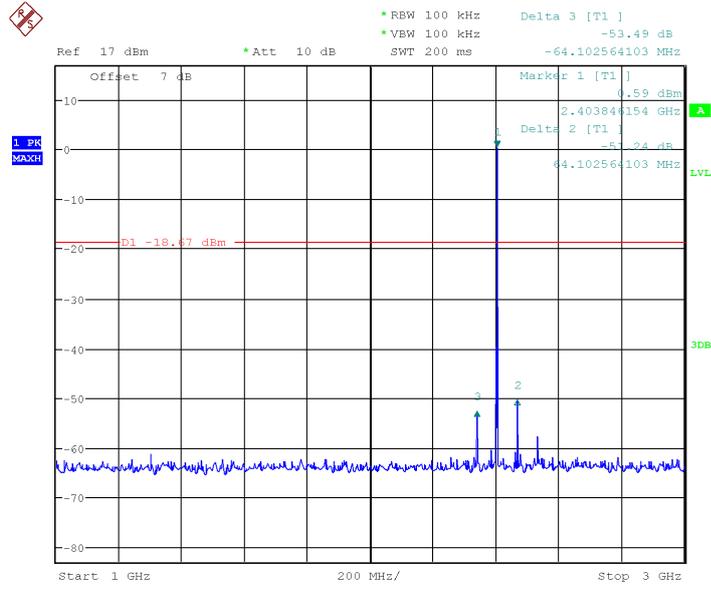
Date: 23.AUG.2013 09:47:29

Fig.37 Conducted spurious emission:  $\pi/4$  DQPSK, Ch0, 2402MHz



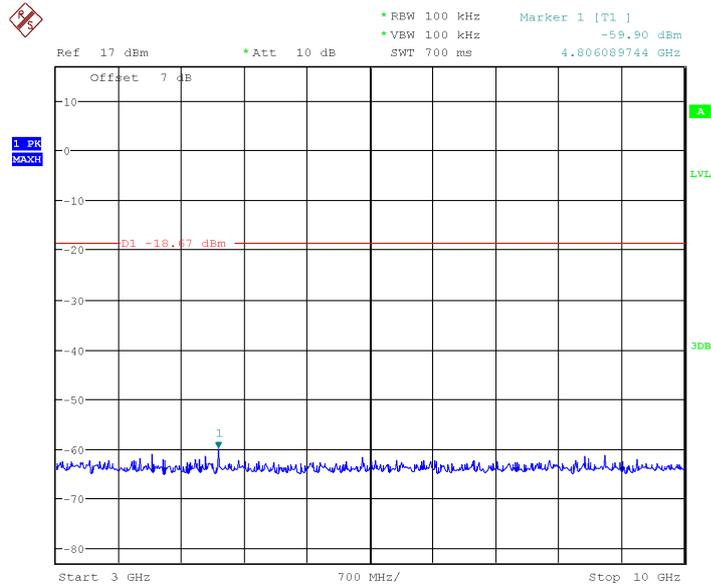
Date: 23.AUG.2013 09:47:39

Fig.38 Conducted spurious emission:  $\pi/4$  DQPSK, Ch0, 30MHz~1GHz



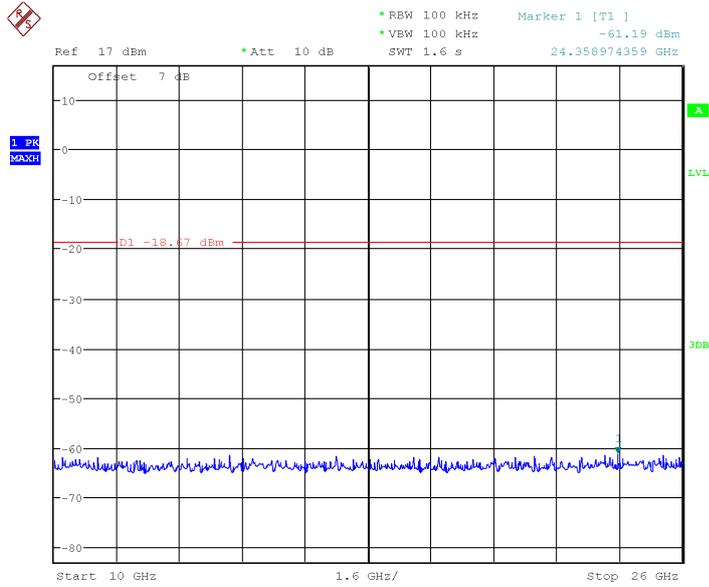
Date: 23.AUG.2013 09:47:49

Fig.39 Conducted spurious emission:  $\pi/4$  DQPSK, Ch0, 1GHz~3GHz



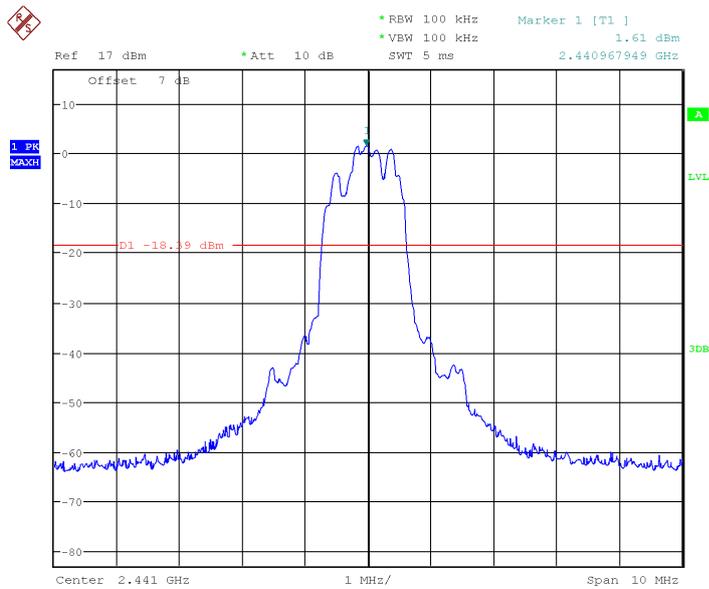
Date: 23.AUG.2013 09:48:00

Fig.40 Conducted spurious emission:  $\pi/4$  DQPSK, Ch0, 3GHz~10GHz



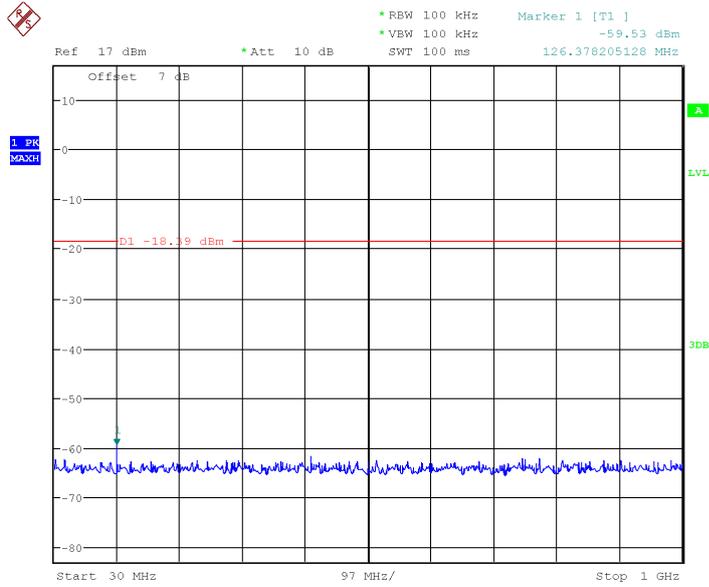
Date: 23.AUG.2013 09:48:11

Fig.41 Conducted spurious emission:  $\pi/4$  DQPSK, Ch0, 10GHz~26GHz



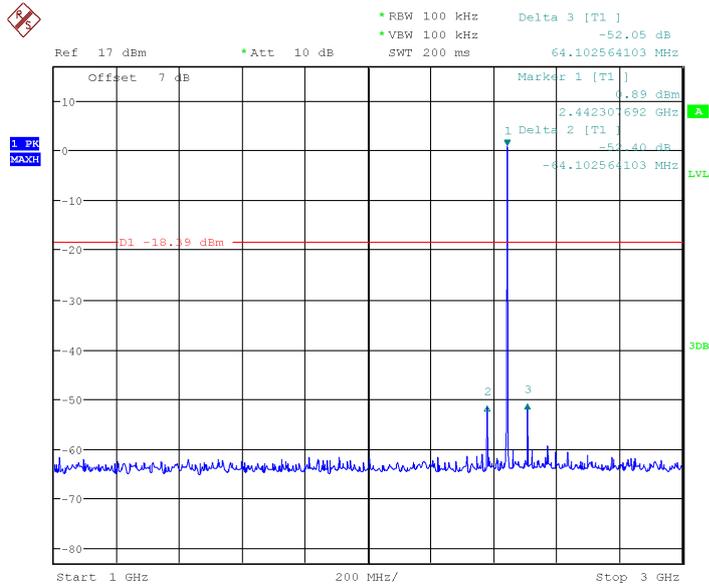
Date: 23.AUG.2013 09:49:12

Fig.42 Conducted spurious emission:  $\pi/4$  DQPSK, Ch39, 2441MHz



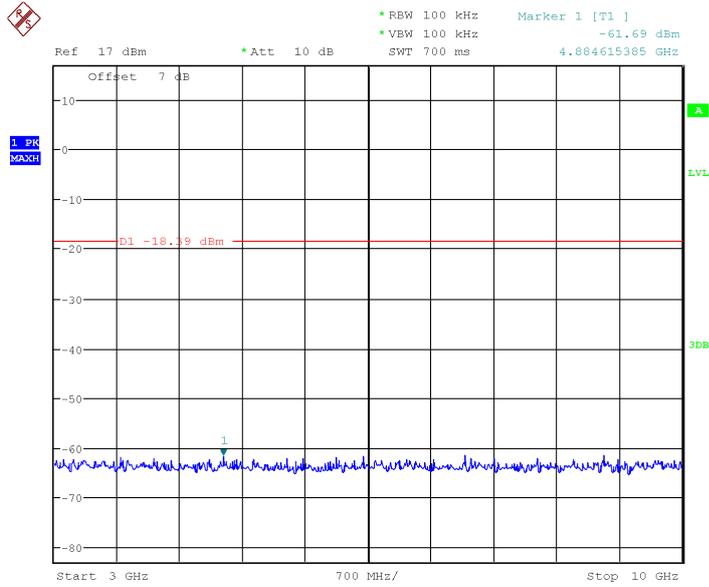
Date: 23.AUG.2013 09:49:23

Fig.43 Conducted spurious emission:  $\pi/4$  DQPSK, Ch39, 30MHz~1GHz



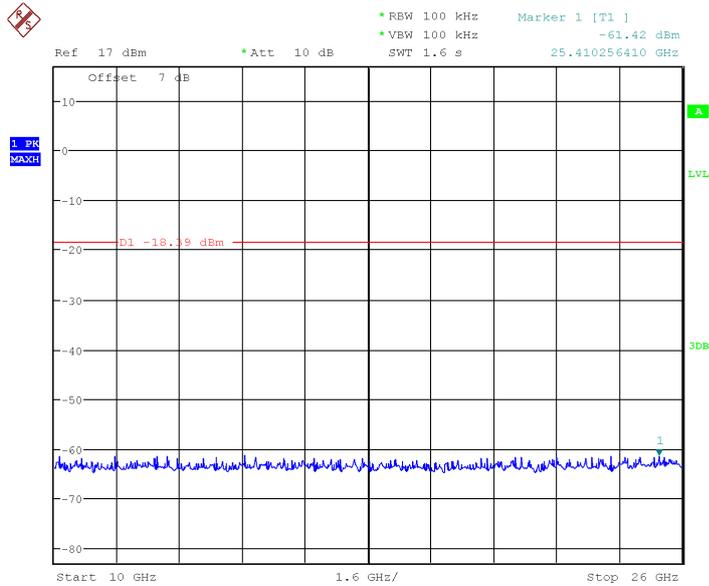
Date: 23.AUG.2013 09:49:37

Fig.44 Conducted spurious emission:  $\pi/4$  DQPSK, Ch39, 1GHz~3GHz



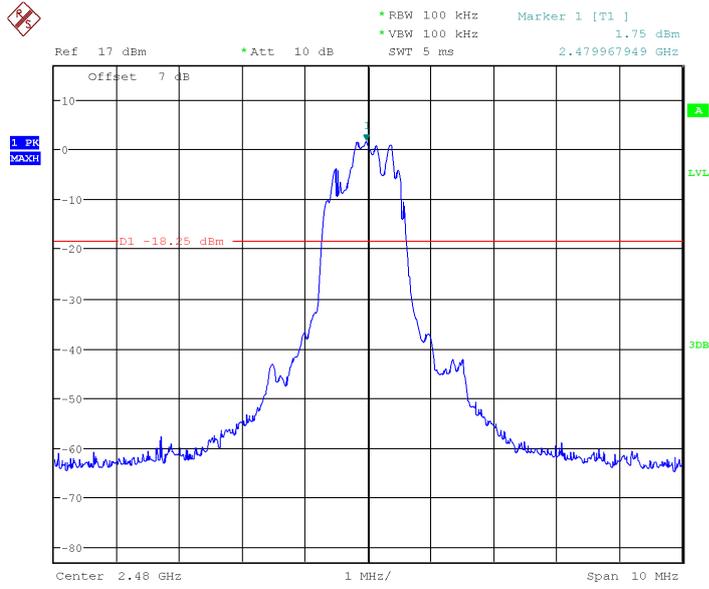
Date: 23.AUG.2013 09:49:49

Fig.45 Conducted spurious emission:  $\pi/4$  DQPSK, Ch39, 3GHz~10GHz



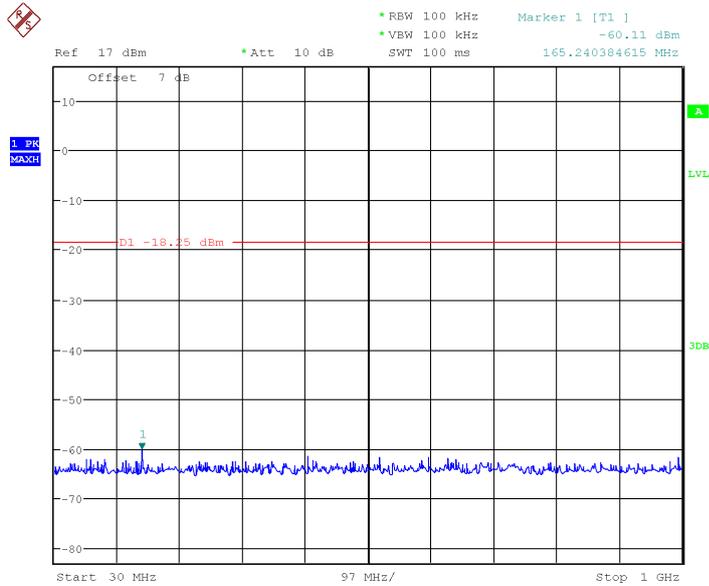
Date: 23.AUG.2013 09:50:02

Fig.46 Conducted spurious emission:  $\pi/4$  DQPSK, Ch39, 10GHz~26GHz



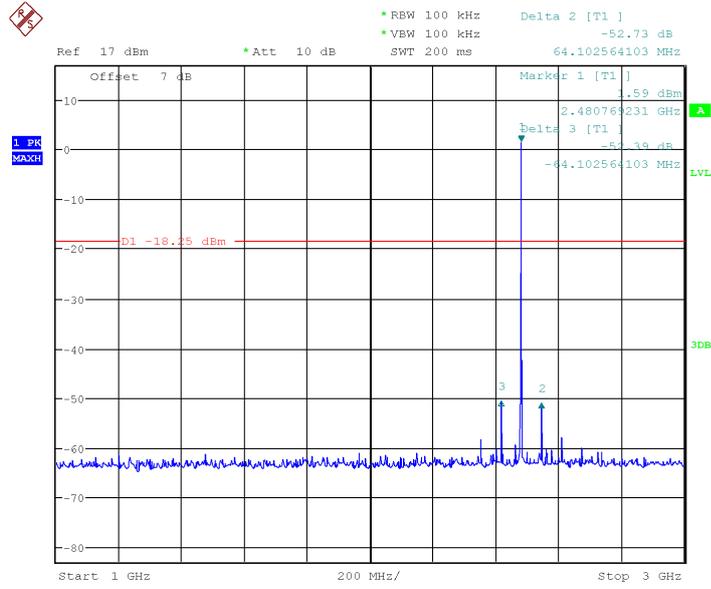
Date: 23.AUG.2013 09:50:47

Fig.47 Conducted spurious emission:  $\pi/4$  DQPSK, Ch78, 2480MHz



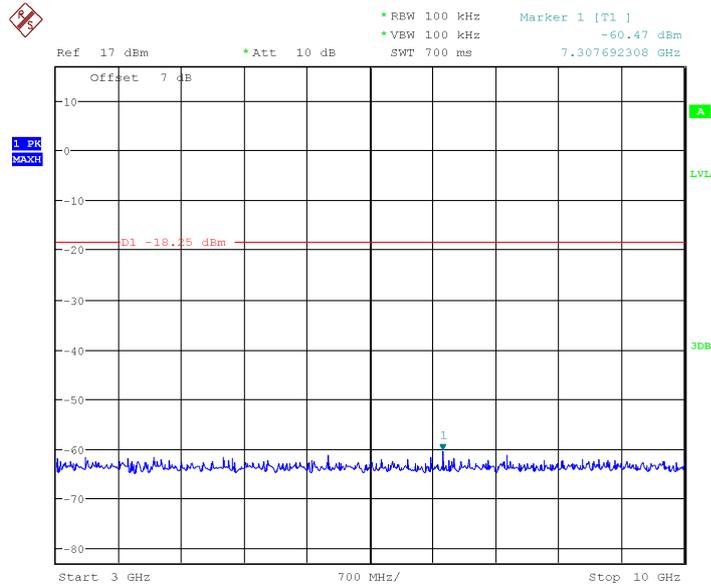
Date: 23.AUG.2013 09:50:57

Fig.48 Conducted spurious emission:  $\pi/4$  DQPSK, Ch78, 30MHz~1GHz



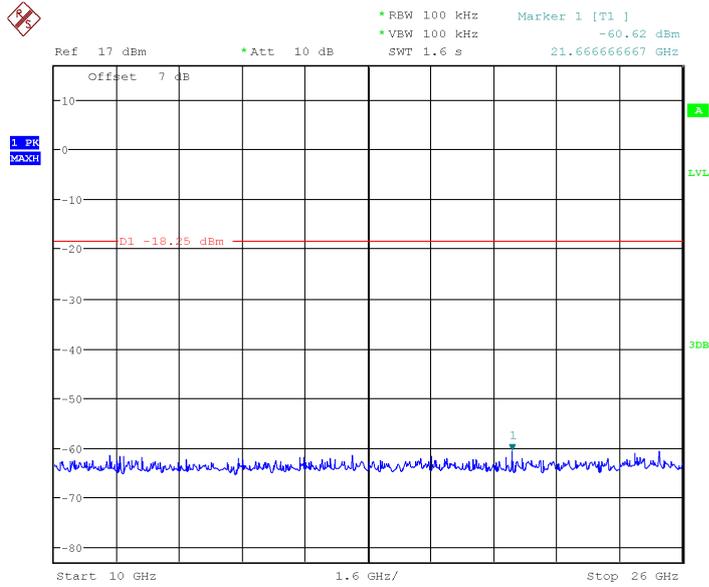
Date: 23.AUG.2013 09:51:45

Fig.49 Conducted spurious emission:  $\pi/4$  DQPSK, Ch78, 1GHz~3GHz



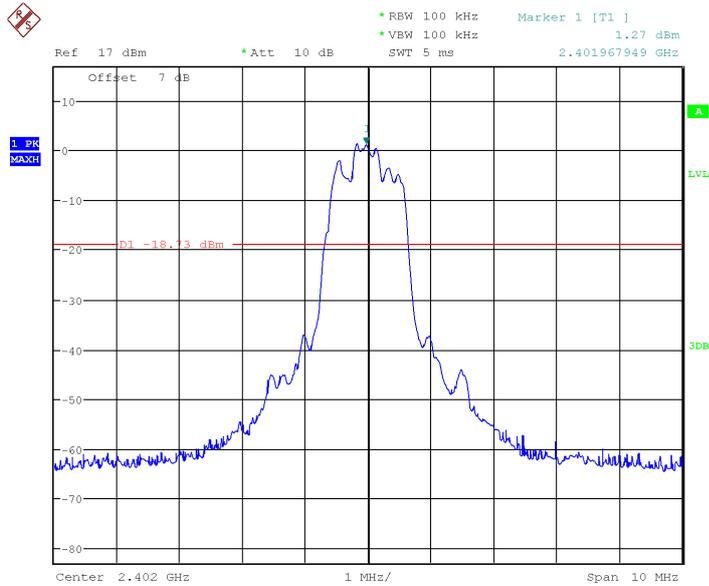
Date: 23.AUG.2013 09:52:01

Fig.50 Conducted spurious emission:  $\pi/4$  DQPSK, Ch78, 3GHz~10GHz



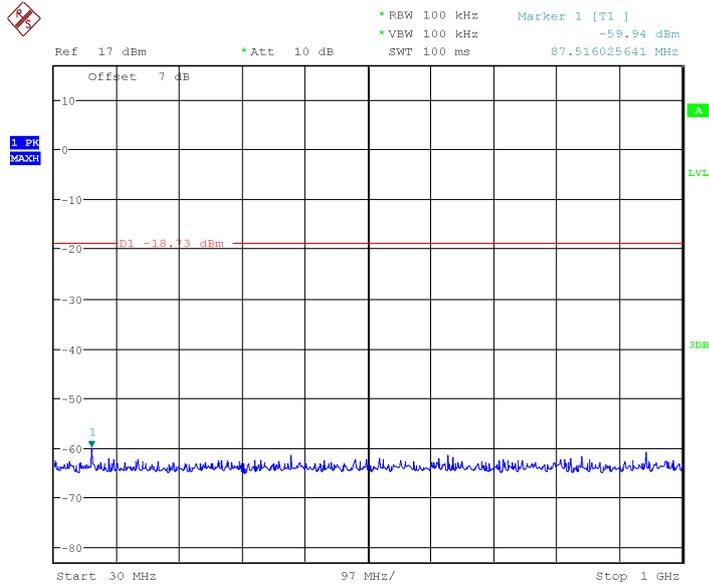
Date: 23.AUG.2013 09:52:11

Fig.51 Conducted spurious emission:  $\pi/4$  DQPSK, Ch78, 10GHz~26GHz



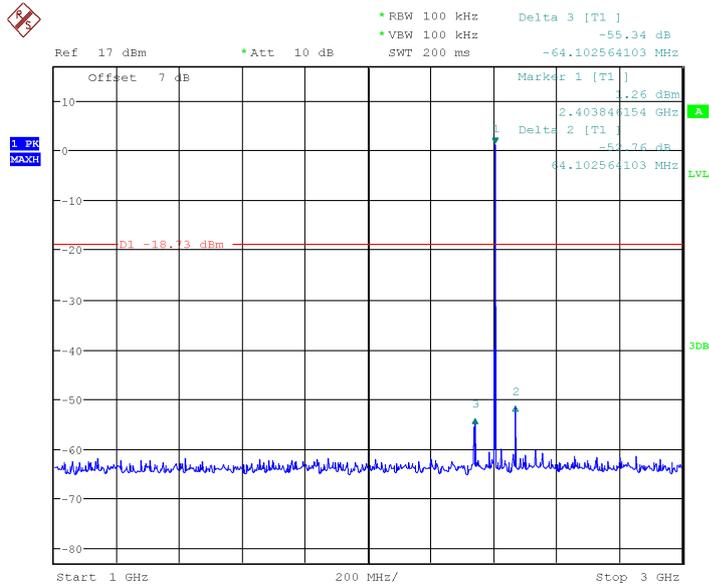
Date: 23.AUG.2013 09:53:22

Fig.52 Conducted spurious emission: 8DPSK, Ch0, 2402MHz



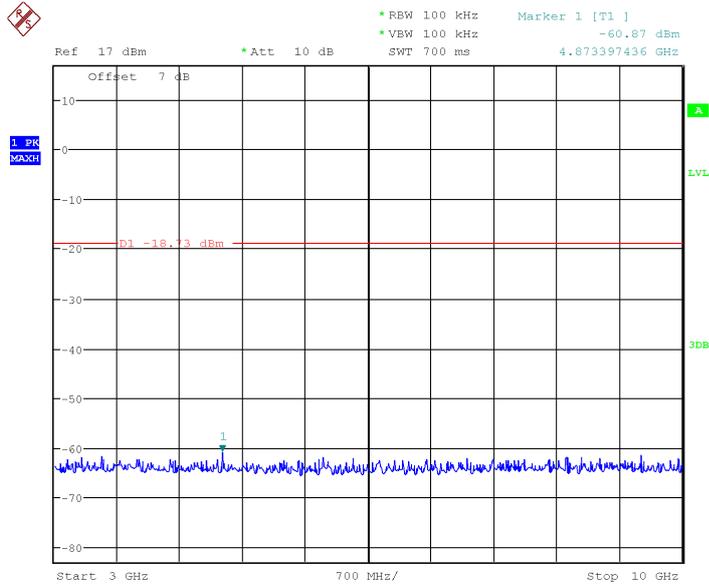
Date: 23.AUG.2013 09:53:34

Fig.53 Conducted spurious emission: 8DPSK, Ch0, 30MHz~1GHz



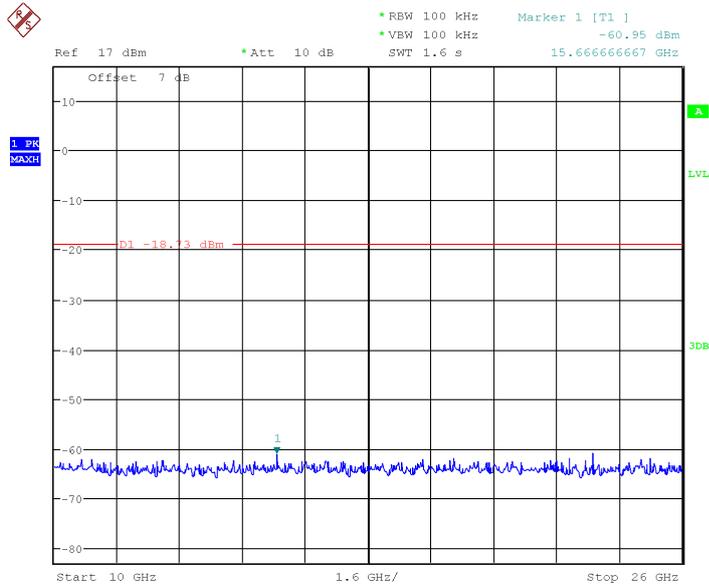
Date: 23.AUG.2013 09:53:48

Fig.54 Conducted spurious emission: 8DPSK, Ch0, 1GHz~3GHz



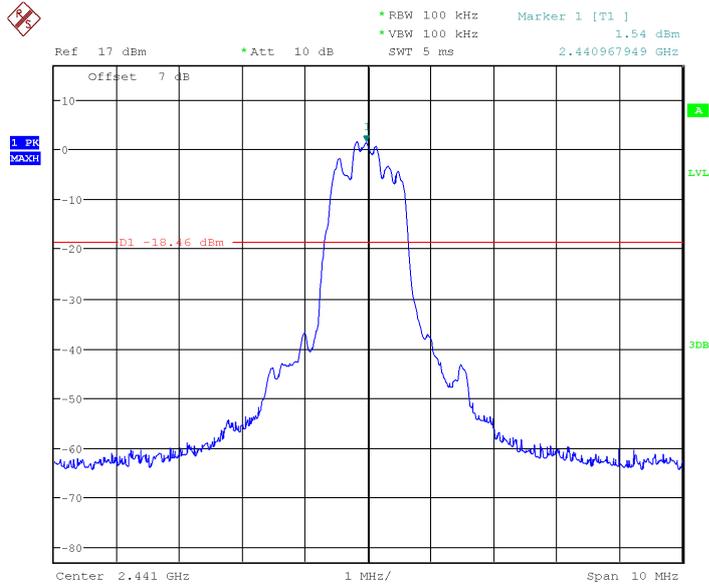
Date: 23.AUG.2013 09:53:59

Fig.55 Conducted spurious emission: 8DPSK, Ch0, 3GHz~10GHz



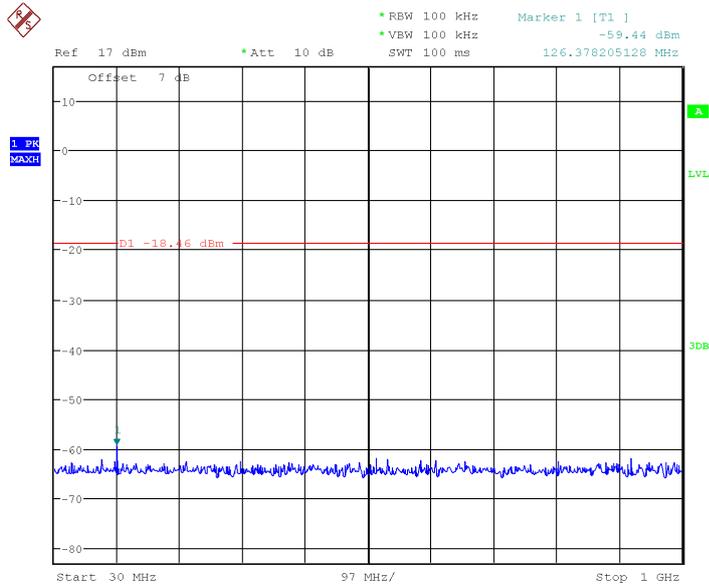
Date: 23.AUG.2013 09:54:08

Fig.56 Conducted spurious emission: 8DPSK, Ch0, 10GHz~26GHz



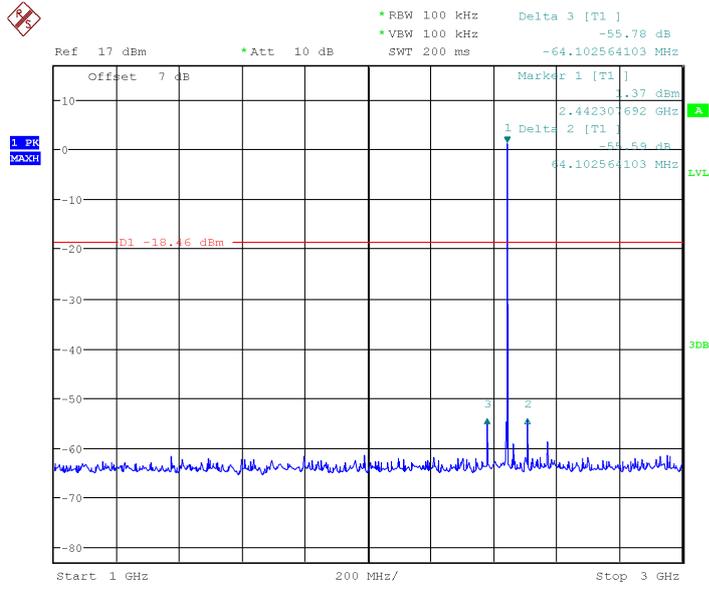
Date: 23.AUG.2013 09:55:48

Fig.57 Conducted spurious emission: 8DPSK, Ch39, 2441MHz



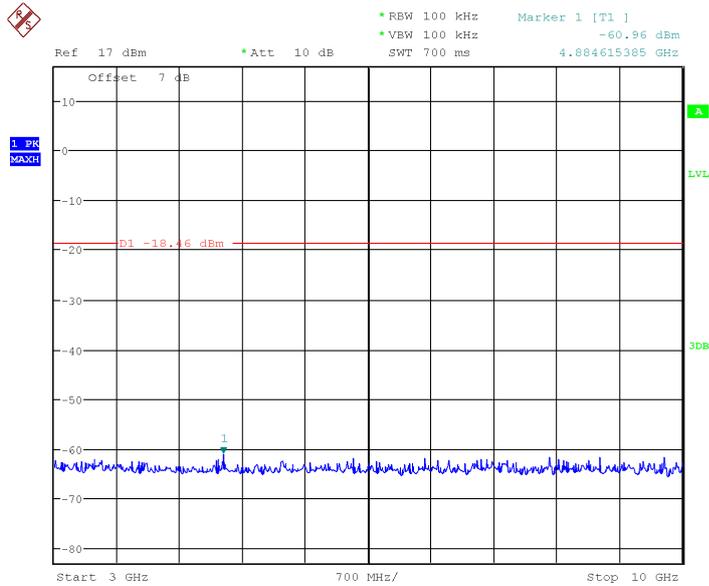
Date: 23.AUG.2013 09:55:56

Fig.58 Conducted spurious emission: 8DPSK, Ch39, 30MHz~1GHz



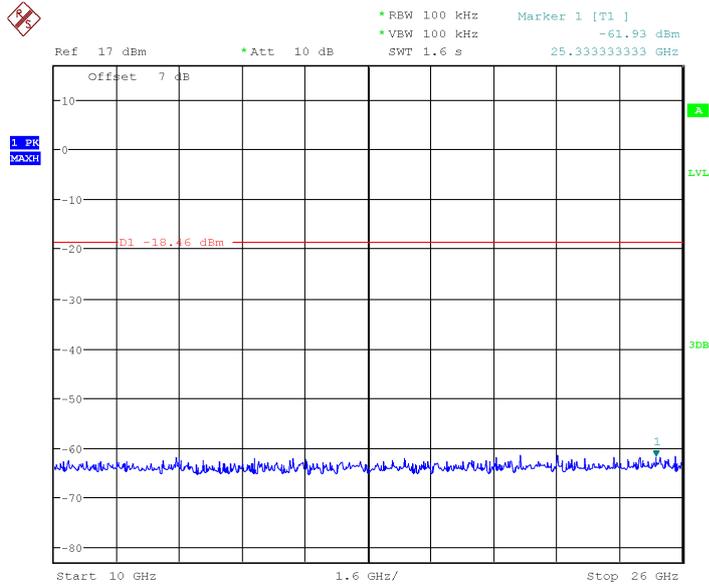
Date: 23.AUG.2013 09:56:05

Fig.59 Conducted spurious emission: 8DPSK, Ch39, 1GHz~3GHz



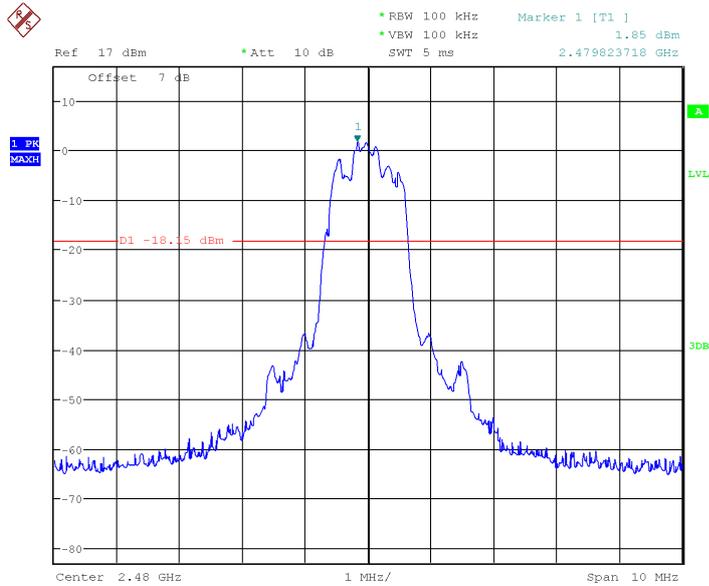
Date: 23.AUG.2013 09:56:16

Fig.60 Conducted spurious emission: 8DPSK, Ch39, 3GHz~10GHz



Date: 23.AUG.2013 09:56:25

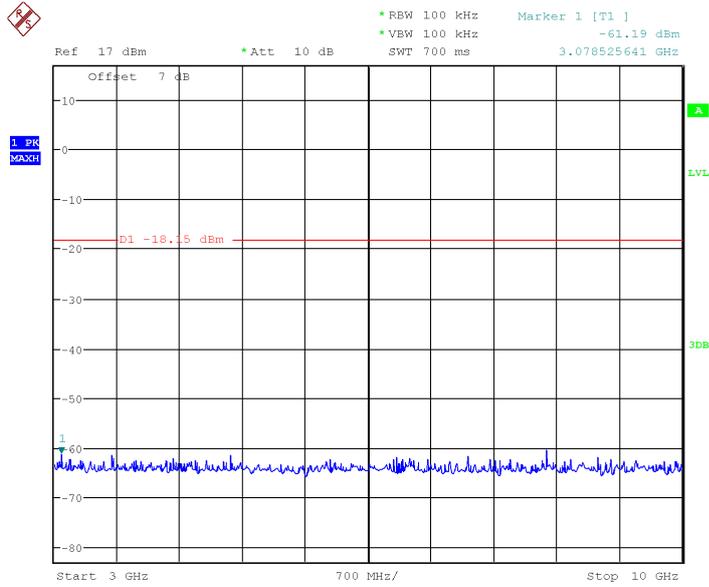
Fig.61 Conducted spurious emission: 8DPSK, Ch39, 10GHz~26GHz



Date: 23.AUG.2013 09:56:57

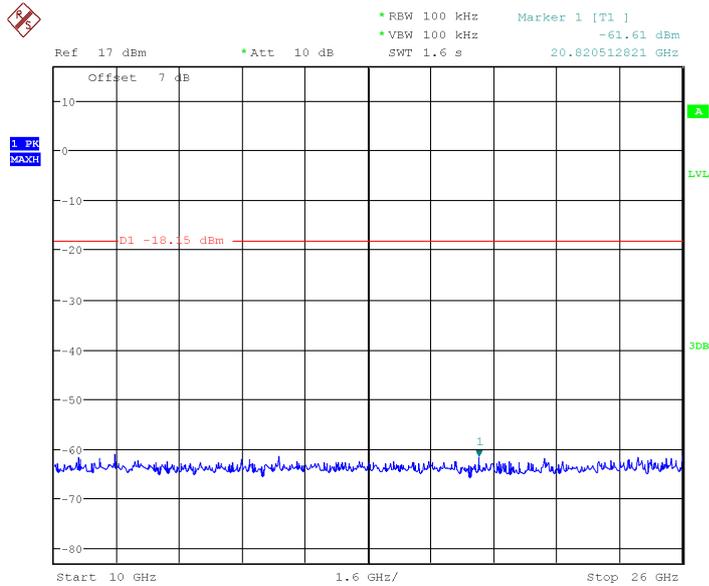
Fig.62 Conducted spurious emission: 8DPSK, Ch78, 2480MHz





Date: 23.AUG.2013 09:57:23

Fig.65 Conducted spurious emission: 8DPSK, Ch78, 3GHz~10GHz



Date: 23.AUG.2013 09:57:32

Fig.66 Conducted spurious emission: 8DPSK, Ch78, 10GHz~26GHz

### 5.4. 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 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:**

Portable, small, lightweight, or modular devices that may be handheld, worn on the body, or placed on a table during operation shall be positioned on a nonconducting platform, the top of which is 80 cm above the reference ground plane. The preferred area occupied by the EUT arrangement is 1 m by 1.5 m, but it may be larger or smaller to accommodate various sized EUTs. For testing purposes, ceiling- and wall-mounted devices also shall be positioned on a tabletop (see also ANSI C63.4-2009 section 6.3.4 and 6.3.5). In making any tests involving handheld, body-worn, or ceiling-mounted equipment, it is essential to recognize that the measured levels may be dependent on the orientation (attitude) of the three orthogonal axes of the EUT. Thus, exploratory tests as specified in 8.3.1 shall be carried out for various axes orientations to determine the attitude having maximum or near-maximum emission level.

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

The measurement results are obtained as described below:

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

**For GFSK**



Channel	Frequency Range	Test Results	Conclusion
Ch0 2402MHz	30MH~1GHz	Fig.67	P
	1GHz~3GHz	Fig.68	P
	3GHz~18GHz	Fig.69	P
Power	2.38GHz~2.4GHz	Fig.70	P
Power	2.45GHz~2.5GHz	Fig.71	P
All channels	18GHz~26GHz	Fig.72	P

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

Channel	Frequency Range	Test Results	Conclusion
Ch0 2402MHz	30MH~1GHz	Fig.73	P
	1GHz~3GHz	Fig.74	P
	3GHz~18GHz	Fig.75	P
Power	2.38GHz~2.4GHz	Fig.76	P
Power	2.45GHz~2.5GHz	Fig.77	P
All channels	18GHz~26GHz	Fig.78	P

**For 8DPSK**

Channel	Frequency Range	Test Results	Conclusion
Ch0 2402MHz	30MH~1GHz	Fig.79	P
	1GHz~3GHz	Fig.80	P
	3GHz~18GHz	Fig.81	P
Power	2.38GHz~2.4GHz	Fig.82	P
Power	2.45GHz~2.5GHz	Fig.83	P
All channels	18GHz~26GHz	Fig.84	P

**GFSK Ch0 30MHz-1GHz**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
34.365	30.2	0.61	29.59	V
39.991	22.5	0.86	21.64	V



111.771	15	1.91	13.09	V
199.9925	13.9	2.66	11.24	H
249.996	16.2	3.27	12.93	H
417.806	19.7	4.66	15.04	V

**GFSK Ch0 1GHz-3GHz**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
1507.8044	42.7	12.82	29.88	H
1708.5708	44.3	12.64	31.66	H
1868.6792	46.3	12.99	33.31	V
2128.3296	48.4	13.93	34.47	V
2649.813	53.4	15.82	37.58	H
2804.1432	53.8	16.66	37.14	H

**GFSK Ch0 3GHz-18GHz**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
5941.5	43.4	7.1	36.3	V
7074	43.2	8.72	34.48	V
10871.5	47.2	10.73	36.47	H
11103.5	48.5	11.93	36.57	V
15596.5	52.1	13.3	38.8	H
5941.5	43.4	7.1	36.3	V

**$\pi/4$  DQPSK Ch0 30MHz-1GHz**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
34.268	32	0.61	31.39	V
36.208	25.9	0.86	25.04	V
99.9855	15	1.91	13.09	V
110.607	14.9	2.66	12.24	V



249.996	16.5	3.27	13.23	V
200.041	13.1	4.66	8.44	V

 **$\pi/4$  DQPSK Ch0 1GHz-3GHz**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
1234.4144	39.3	12.82	26.48	H
1547.0604	42.4	12.64	29.76	H
1704.0844	44.9	12.99	31.91	H
1835.3116	45.6	13.93	31.67	H
2138.1436	49.1	15.82	33.28	H
2671.7126	53.9	16.66	37.24	V

 **$\pi/4$  DQPSK Ch0 3GHz-18GHz**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
3209.5	42	7.1	34.9	H
10449.5	45.8	8.72	37.08	H
11617	48.6	10.73	37.87	H
12364.5	49.7	11.93	37.77	V
14843	51.2	13.3	37.9	H

**8DPSK 30MHz-1GHz**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
34.462	32.8	0.61	32.19	V
98.288	15.5	0.86	14.64	V
82.5255	13.8	1.91	11.89	V
199.9925	13.9	2.66	11.24	V
417.7575	21.4	3.27	18.13	V
34.462	32.8	0.61	32.19	V

**8DPSK 1GHz-3GHz**



Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
1102.6264	37.7	12.82	24.88	V
1628.096	44.4	12.64	31.76	H
1888.0268	46	12.99	33.01	H
2149.64	48.8	13.93	34.87	V
2685.968	53.9	15.82	38.08	V
2329.9372	51.2	16.66	34.54	V

**8DPSK 3GHz-18GHz**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
3209.5	42.4	7.1	35.3	V
10449.5	43.5	8.72	34.78	V
11617	45.3	10.73	34.57	H
12364.5	45.4	11.93	33.47	H
14843	49.8	13.3	36.5	V

**All Ch 18GHz~26.5GHz**

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
19525.786000	49.0	6.97	42.03	V
20684.980000	47.7	6.97	40.73	H
22119.789000	45.3	3.05	42.05	V
23627.899000	43.8	3.05	40.75	H
24606.319000	43.4	3.05	40.35	V
25244.558000	43.6	3.05	40.55	H

**Conclusion: PASS**

**Test graphs as below:**

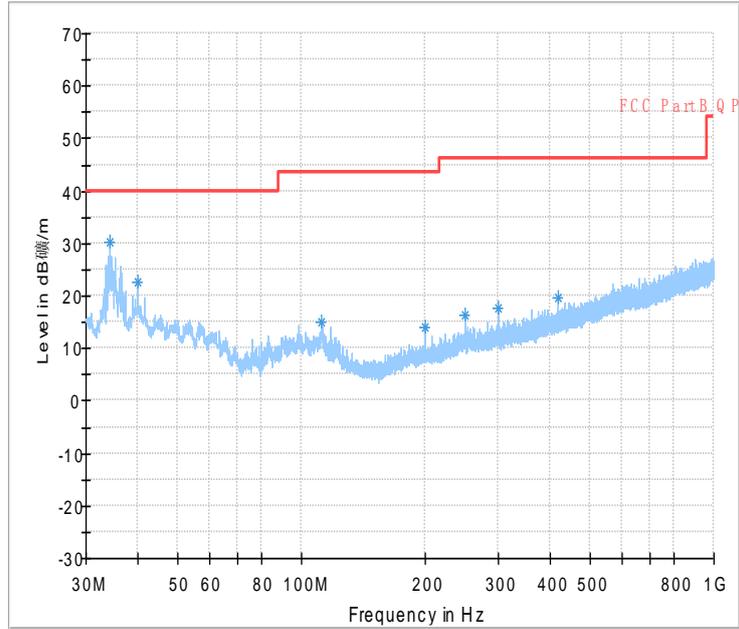


Fig.67 Radiated emission: GFSK, Ch0, 30MHz~1GHz

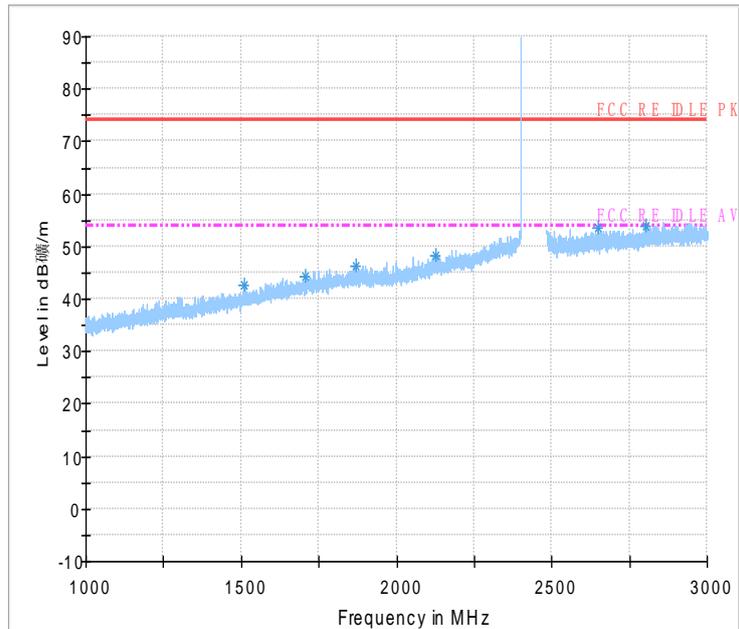


Fig.68 Radiated emission: GFSK, Ch0, 1GHz~3GHz

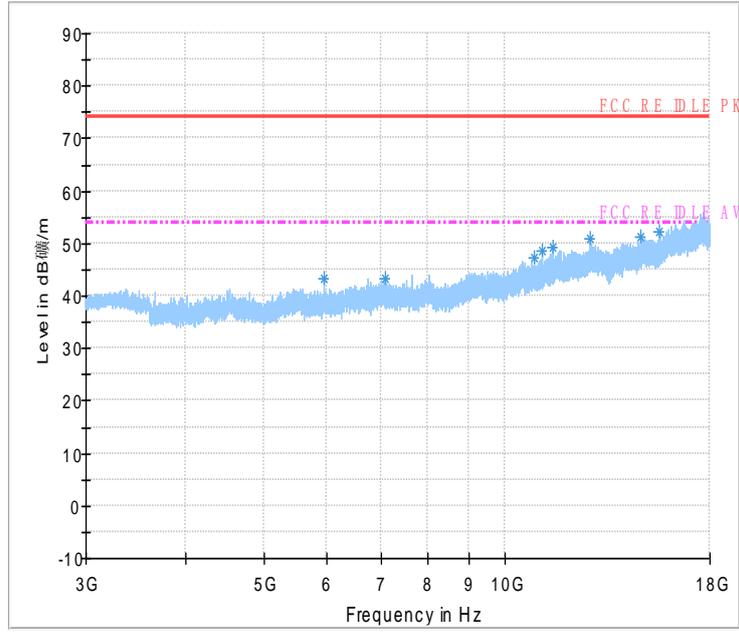
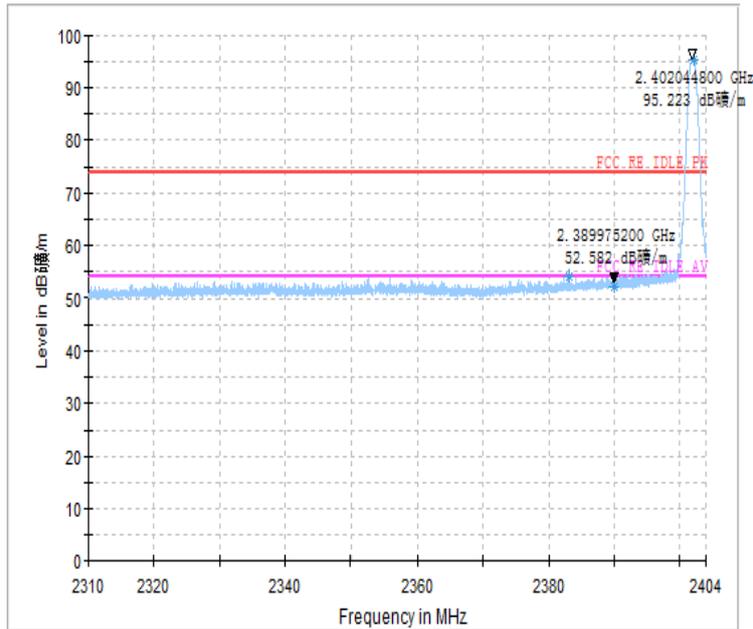


Fig.69 Radiated emission: GFSK, Ch0, 3GHz~18GHz



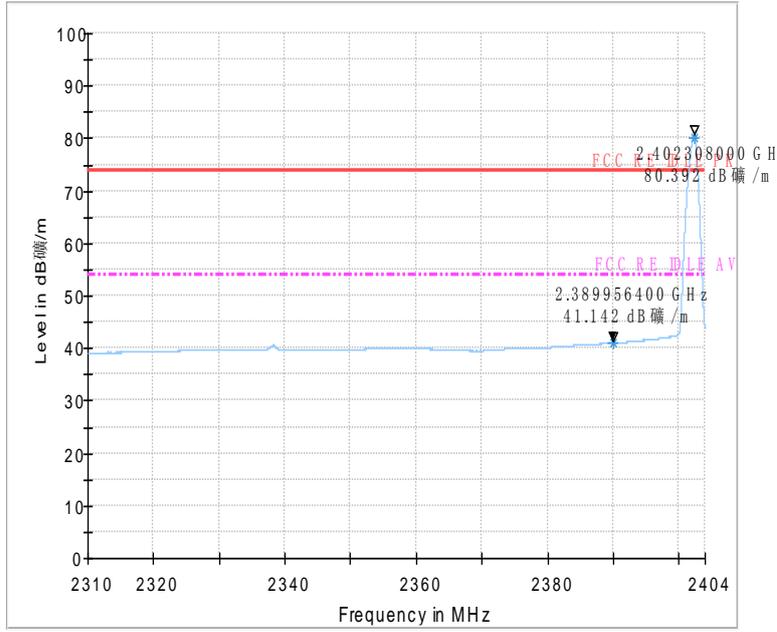


Fig.70 Radiated emission (Power): GFSK, low channel

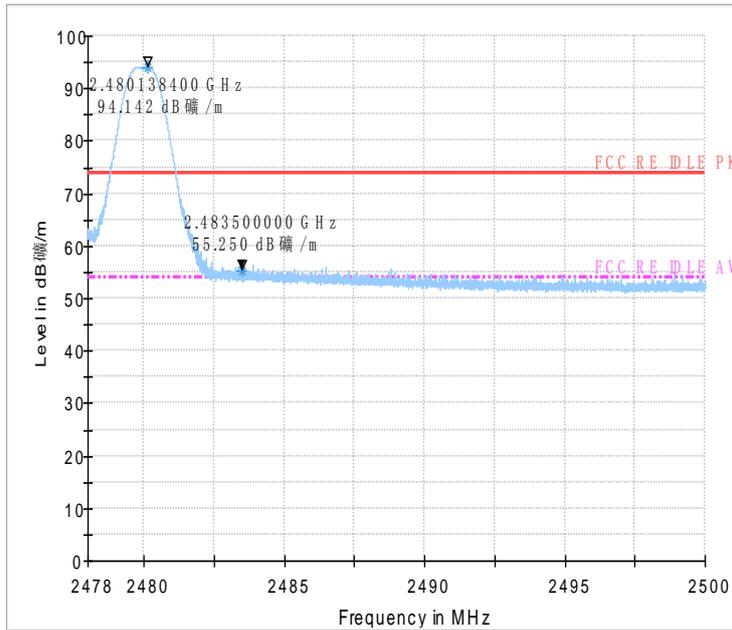


Fig.71 Radiated emission (Power): GFSK, high channel

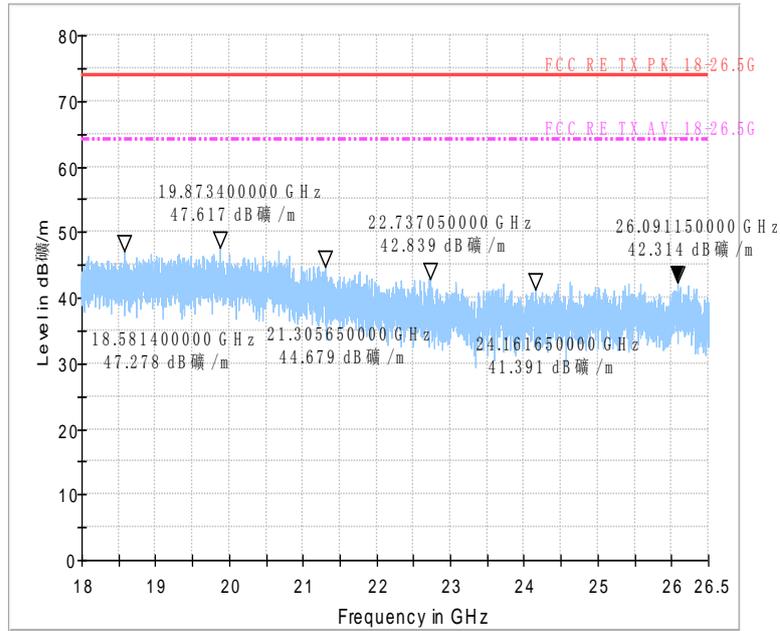


Fig.72 Radiated emission: GFSK, 18 GHz - 26 GHz

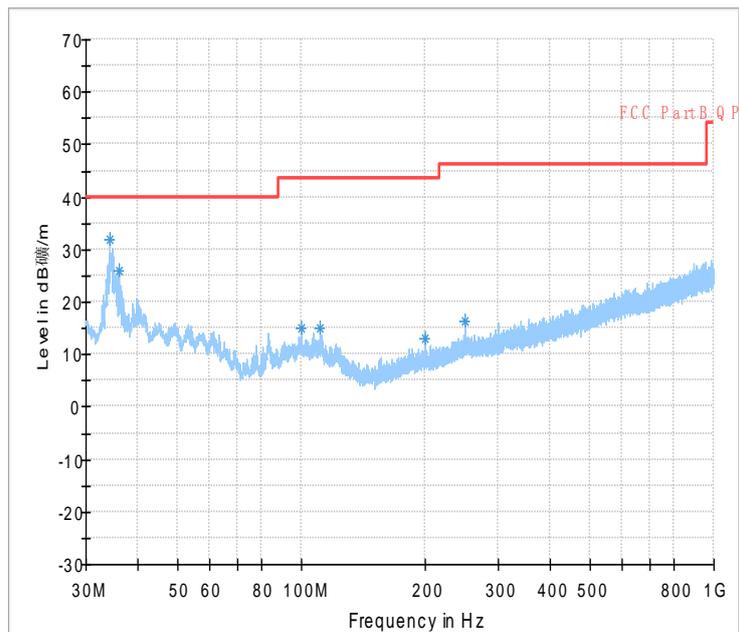


Fig.73 Radiated emission:  $\pi/4$  DQPSK, Ch0, 30MHz~1GHz

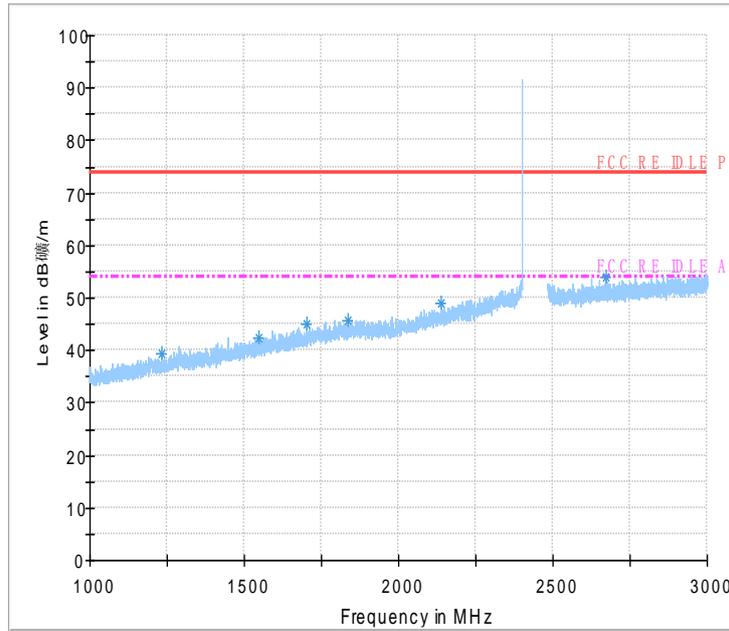


Fig.74 Radiated emission:  $\pi/4$  DQPSK, Ch0, 1GHz~3GHz

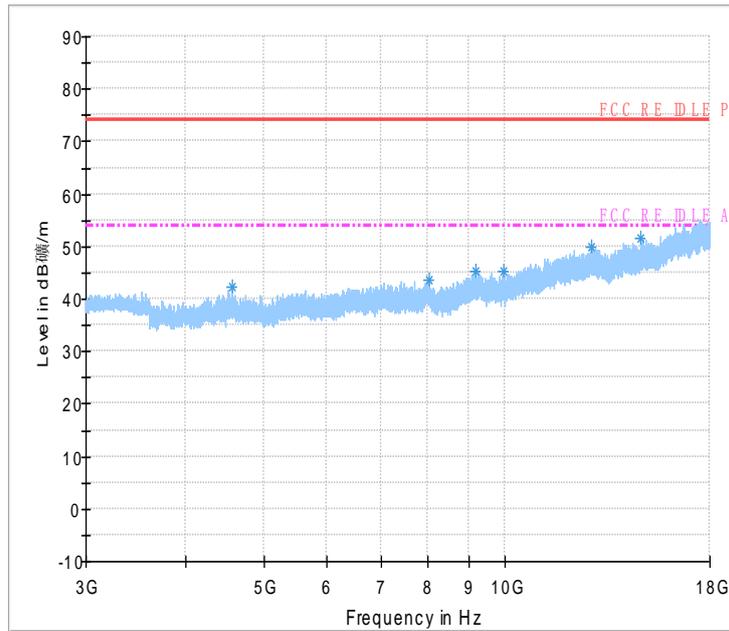


Fig.75 Radiated emission:  $\pi/4$  DQPSK, Ch0, 3GHz~18GHz

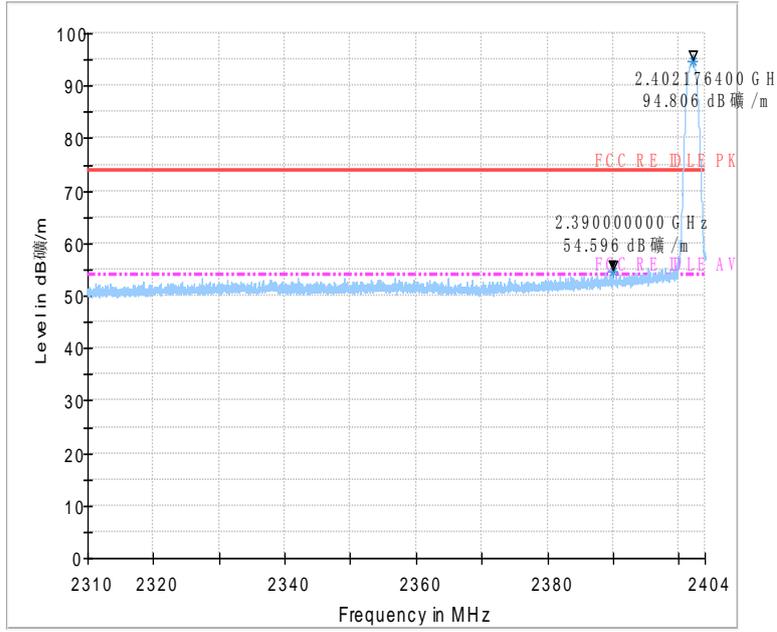
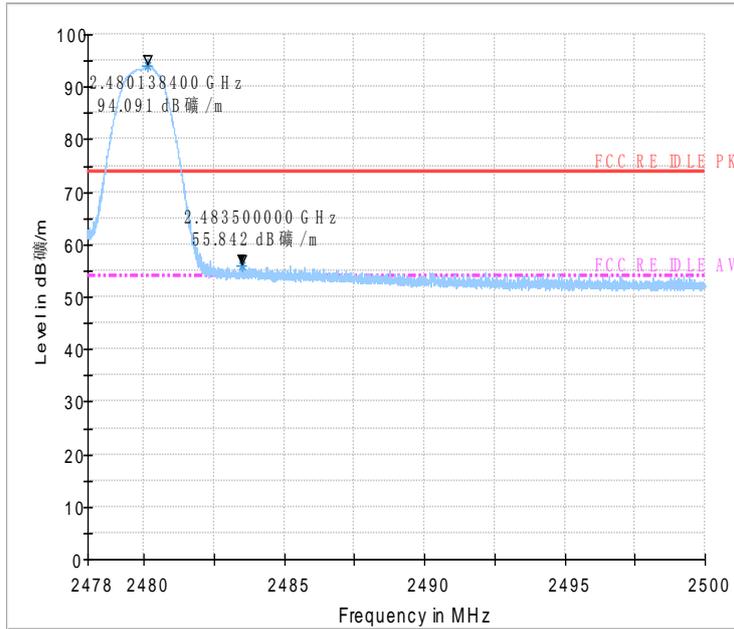


Fig.76 Radiated emission (Power): GFSK, low channel



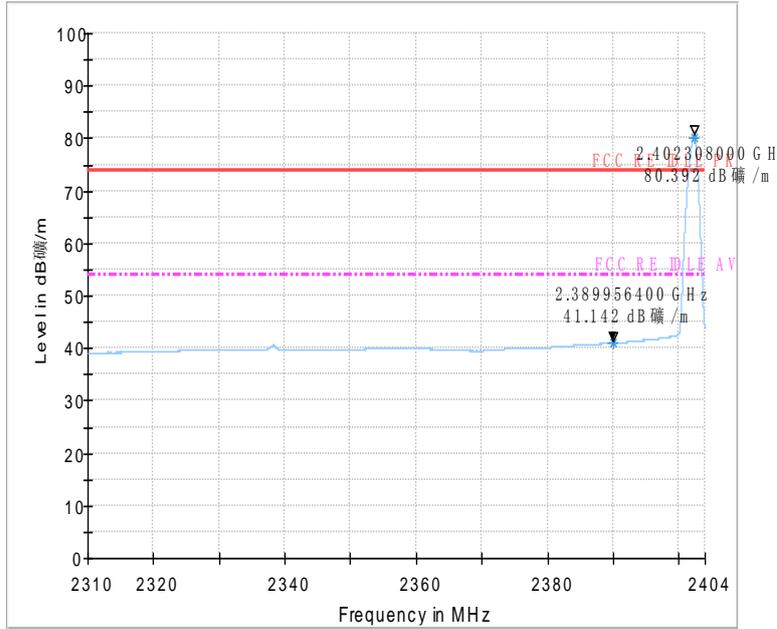


Fig.77 Radiated emission (Power): GFSK, high channel

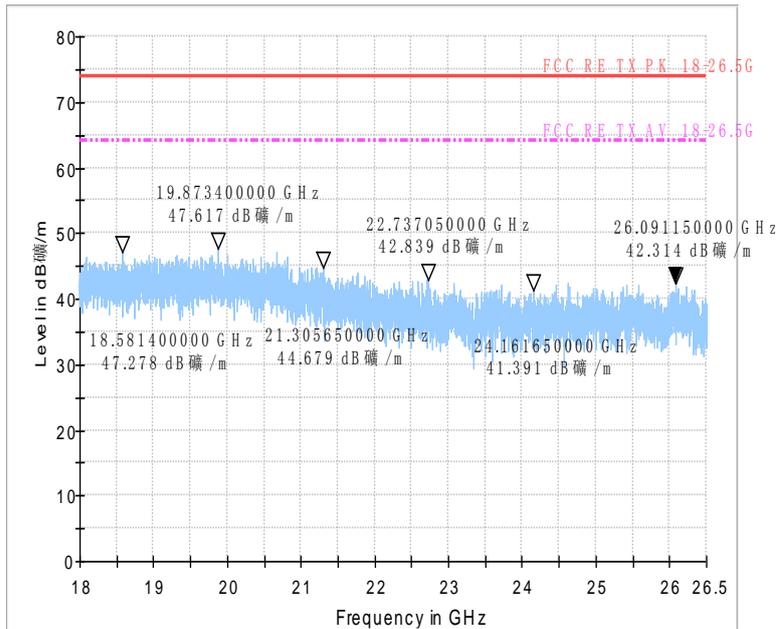


Fig.78 Radiated emission: GFSK, 18 GHz - 26 GHz

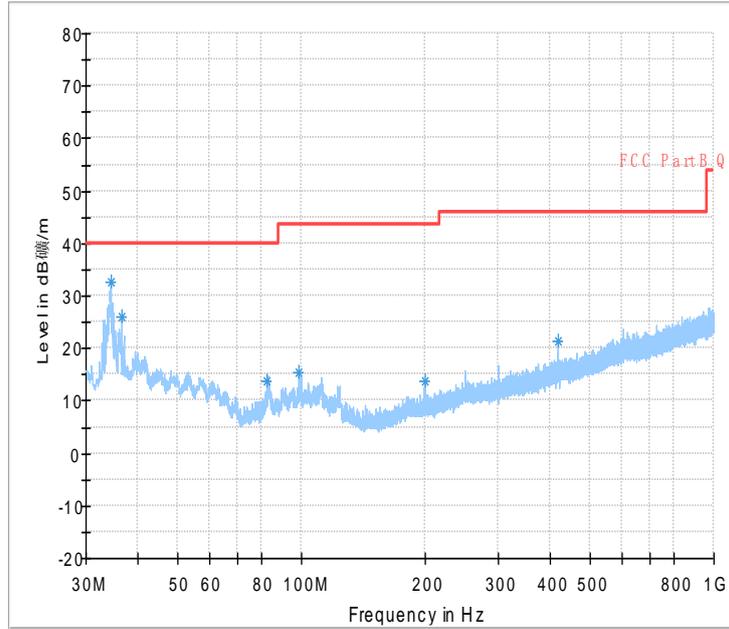


Fig.79 Radiated emission: 8DPSK, Ch0, 30MHz~1GHz

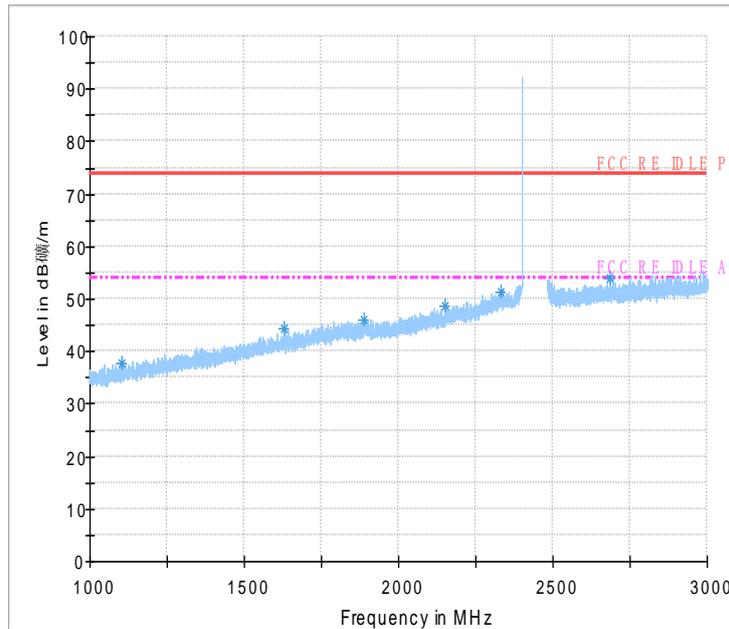


Fig.80 Radiated emission: 8DPSK, Ch0, 1GHz~3GHz

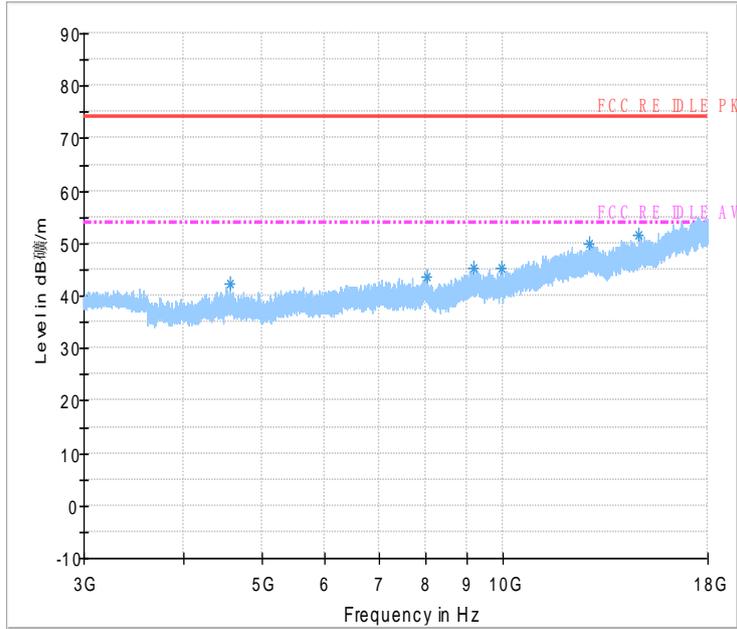


Fig.81 Radiated emission: 8DPSK, Ch0, 3GHz~18GHz

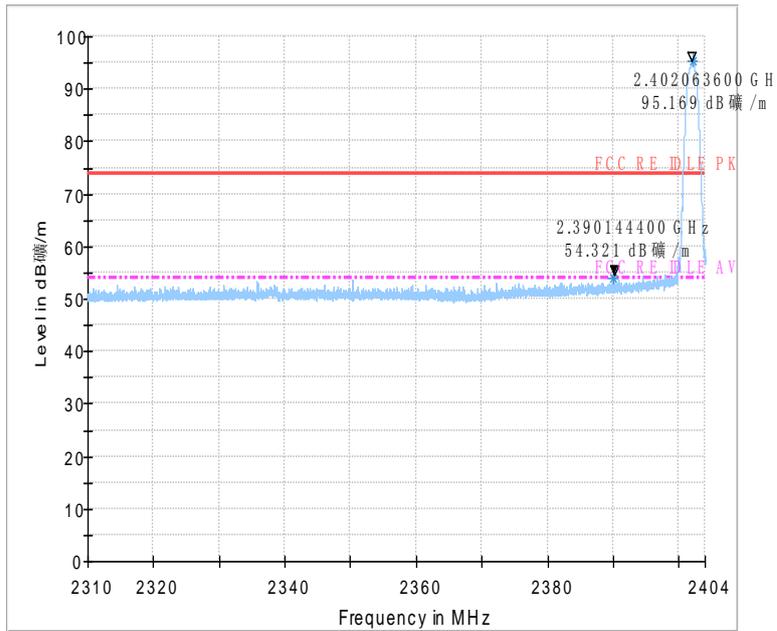


Fig.82 Radiated emission (Power): GFSK, low channel

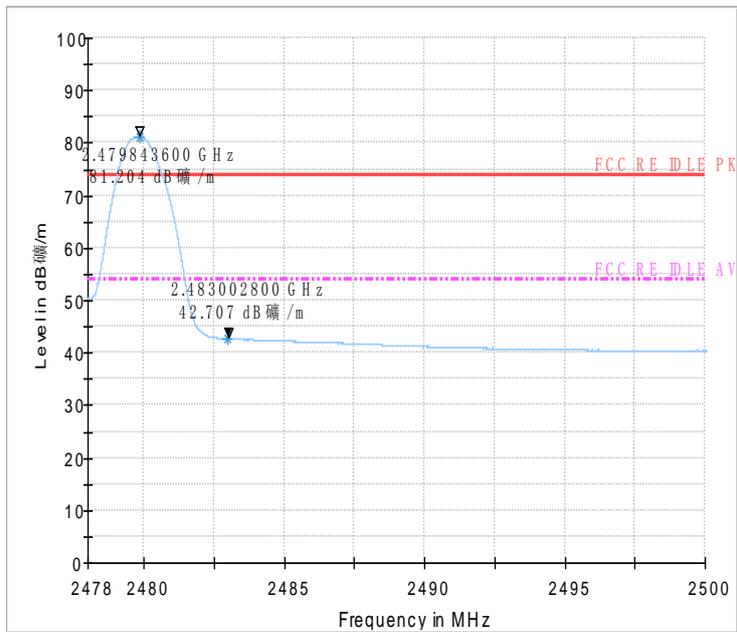
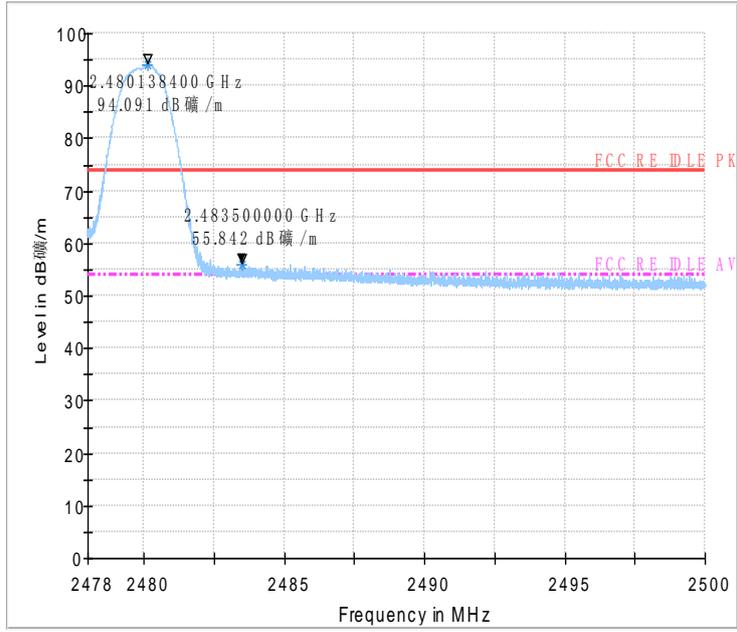


Fig.83 Radiated emission (Power): GFSK, high channel

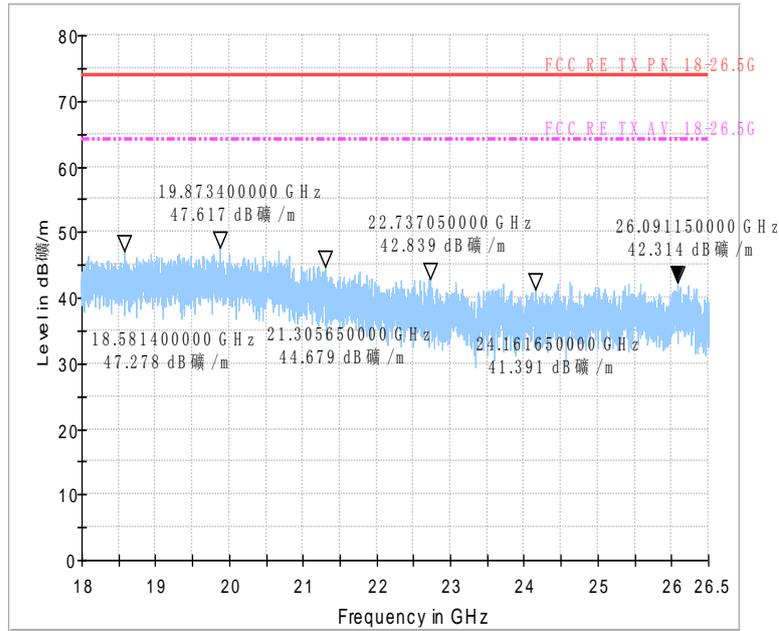


Fig.84 Radiated emission: GFSK, 18 GHz - 26 GHz

### 5.5. Time Of Occupancy (Dwell Time)

**Measurement Limit:**

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

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

**Measurement Result:**

**For GFSK**

Channel	Packet	Dwell Time (ms)		Conclusion
		Fig.	Value	
39	DH1	Fig.85	121.6	P
		Fig.86		
	DH3	Fig.87	264.1	P
		Fig.88		
	DH5	Fig.89	308.3	P
		Fig.90		

**For π/4 DQPSK**

Channel	Packet	Fig.	Dwell Time (ms)	Conclusion
39	2DH1	Fig.91	124.7	P



		Fig.92		
	2DH3	Fig.93	264.0	P
		Fig.94		
	2DH5	Fig.95	308.3	P
		Fig.96		

**For 8DPSK**

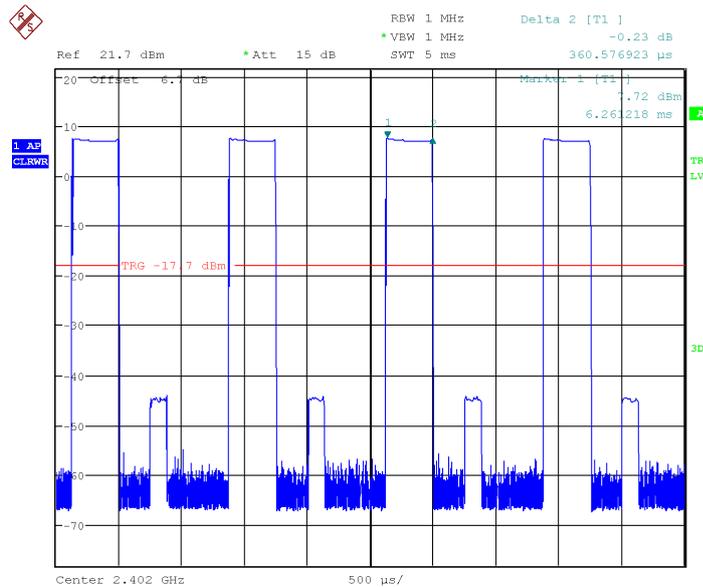
Channel	Packet	Dwell Time (ms)	Conclusion	
39	3DH1	Fig.97	125.2	P
		Fig.98		
	3DH3	Fig.99	264.2	P
		Fig.100		
	3DH5	Fig.101	308.4	P
		Fig.102		

**Note:** the dwell time is Calculated of the sum of test time about 31.5 seconds.  
**Equation:** dwell time = pusletime \*(1600/N)/79\*T . N is the number of timeslot; T is the time about 31.5s.

The time of DH5=2.9\*(1600/6)/79\*31.5=308.3ms.

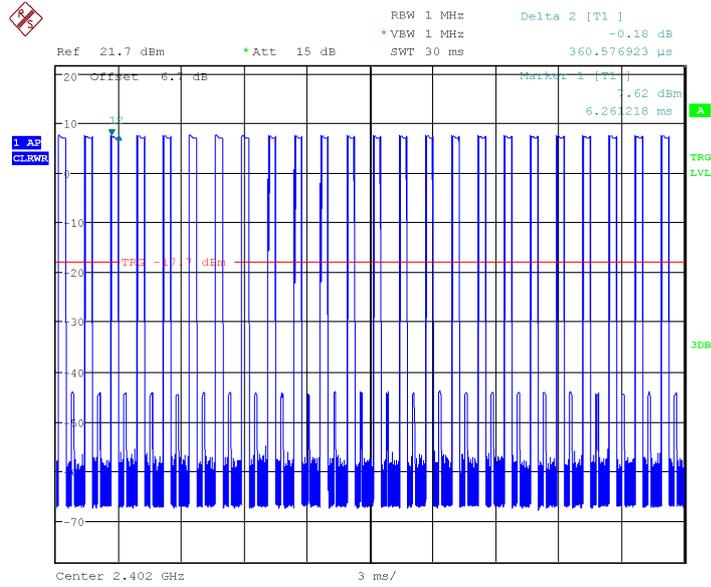
**Conclusion: PASS**

**Test graphs as below:**



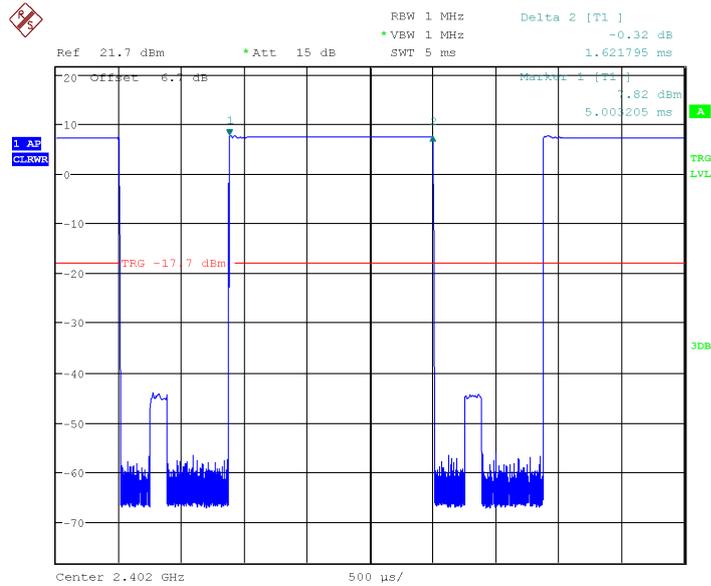
Date: 29.JUL.2013 14:38:36

Fig.85 Time of occupancy (Dwell Time): Ch39, Packet DH1



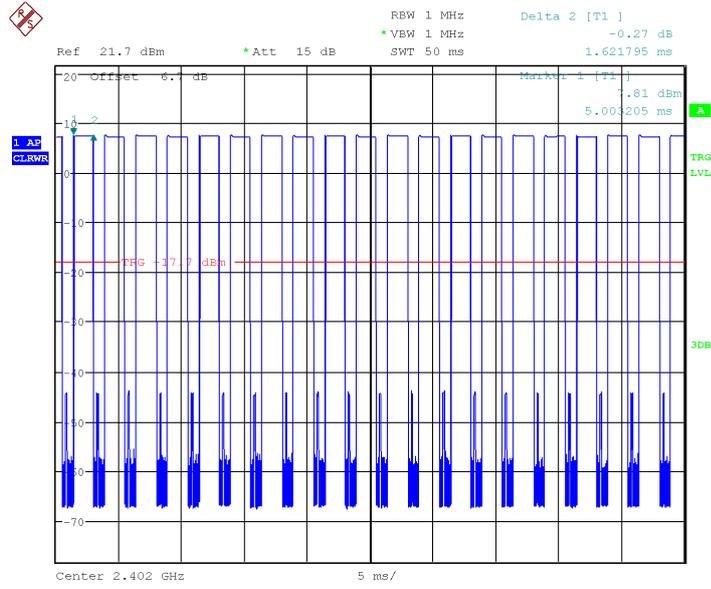
Date: 29.JUL.2013 14:39:16

Fig.86 Number of Transmissions Measurement: Ch39, Packet DH1



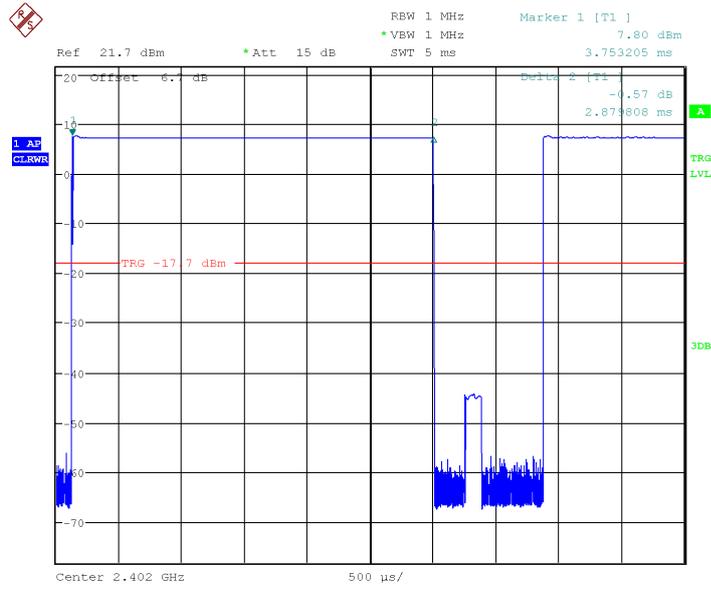
Date: 29.JUL.2013 14:40:27

Fig.87 Time of occupancy (Dwell Time): Ch39, Packet DH3



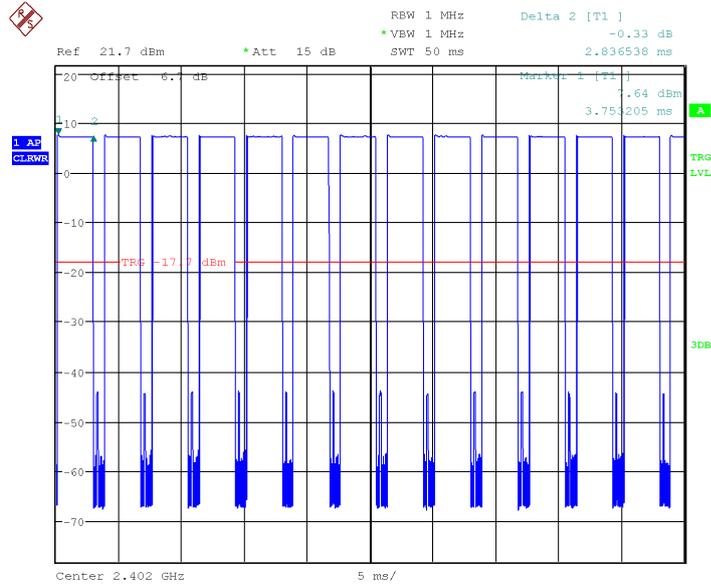
Date: 29.JUL.2013 14:40:38

Fig.88 Number of Transmissions Measurement: Ch39, Packet DH3



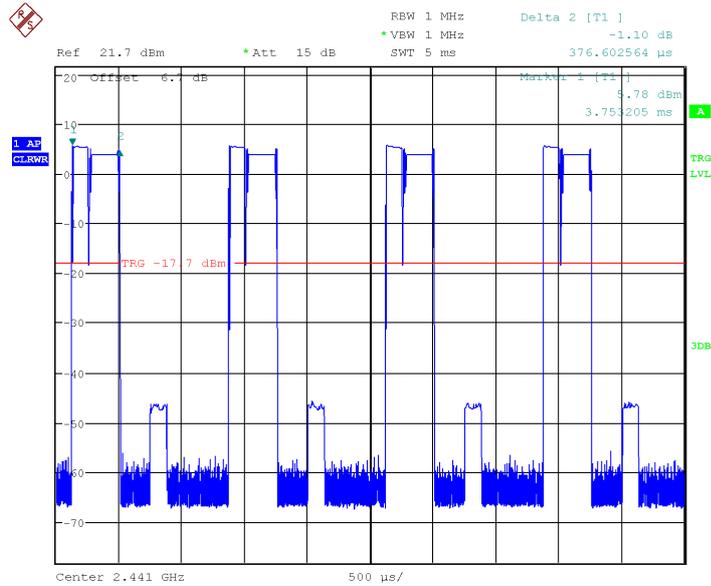
Date: 29.JUL.2013 14:41:12

Fig.89 Time of occupancy (Dwell Time): Ch39,Packet DH5



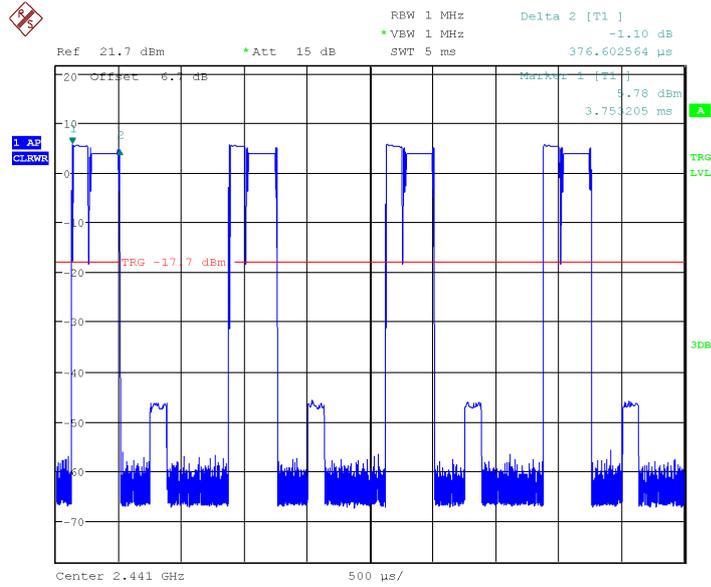
Date: 29.JUL.2013 14:41:40

Fig.90 Number of Transmissions Measurement: Ch39, Packet DH5



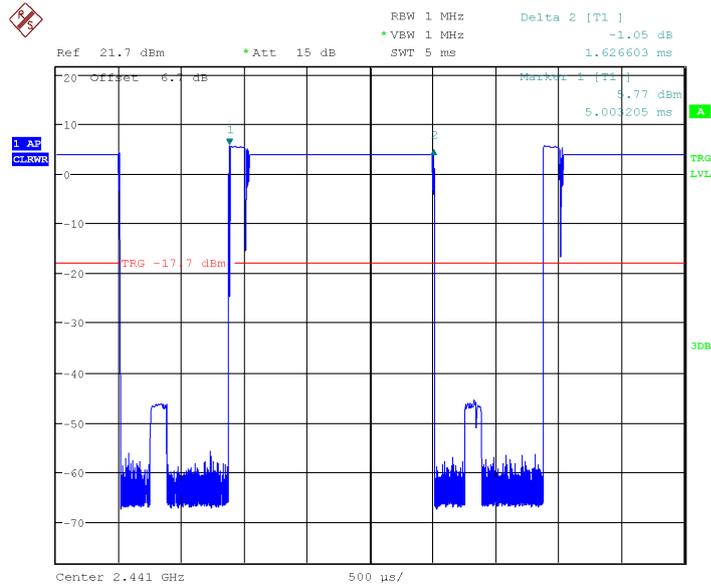
Date: 29.JUL.2013 14:47:05

Fig.91 Time of occupancy (Dwell Time): Ch39,Packet 2-DH1



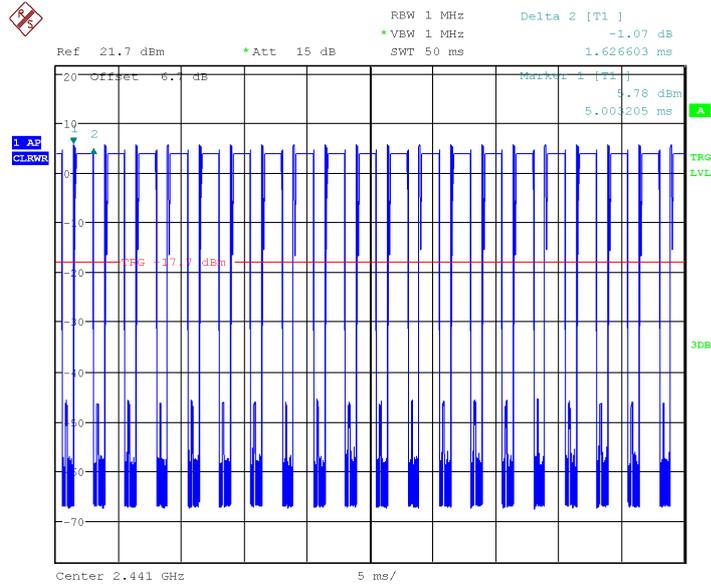
Date: 29.JUL.2013 14:47:05

Fig.92 Number of Transmissions Measurement: Ch39, Packet 2-DH1



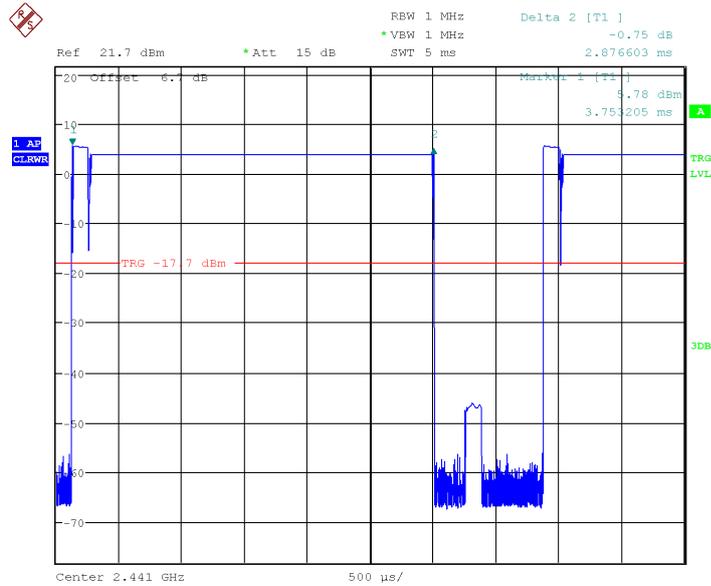
Date: 29.JUL.2013 14:47:57

Fig.93 Time of occupancy (Dwell Time): Ch39,Packet 2-DH3



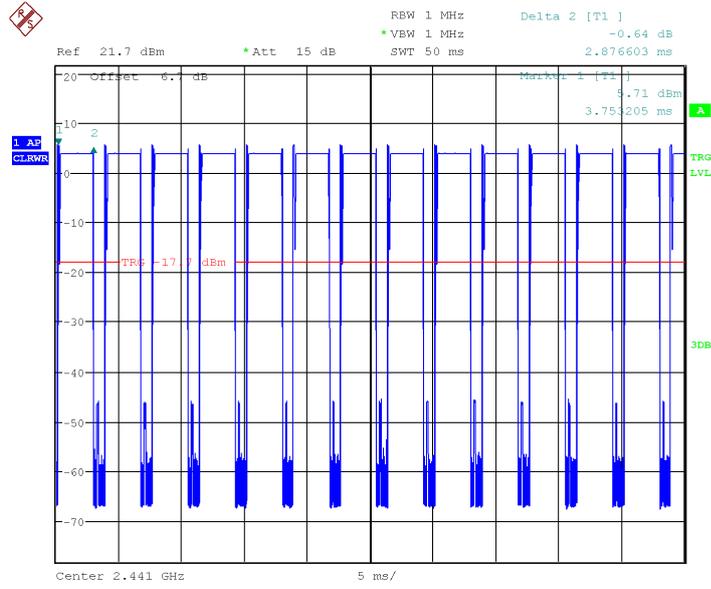
Date: 29.JUL.2013 14:48:10

Fig.94 Number of Transmissions Measurement: Ch39, Packet 2-DH3



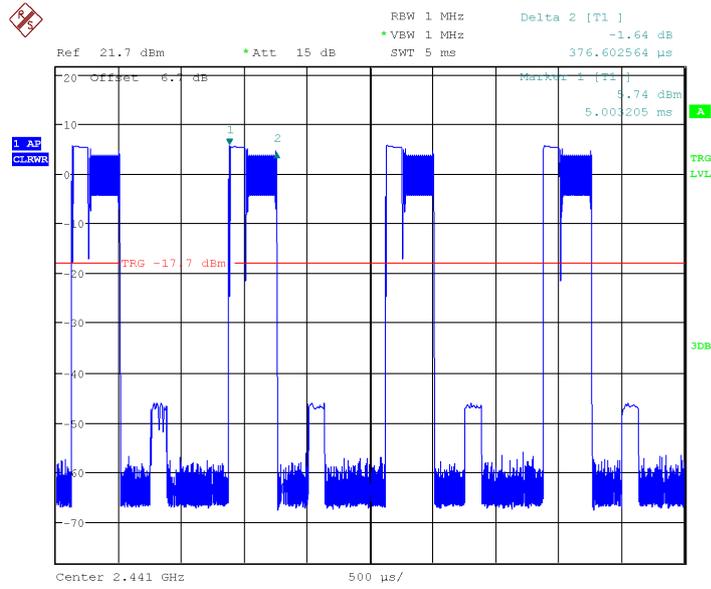
Date: 29.JUL.2013 14:48:35

Fig.95 Time of occupancy (Dwell Time): Ch39,Packet 2-DH5



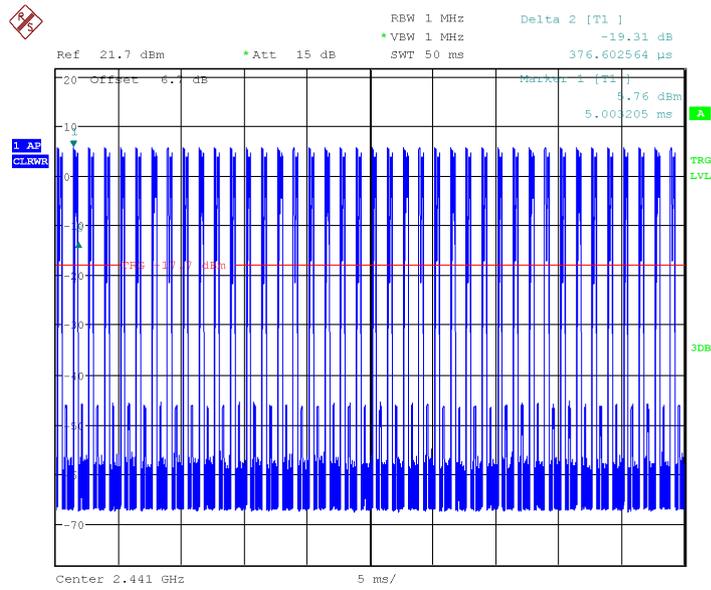
Date: 29.JUL.2013 14:48:44

Fig.96 Number of Transmissions Measurement: Ch39, Packet 2-DH5



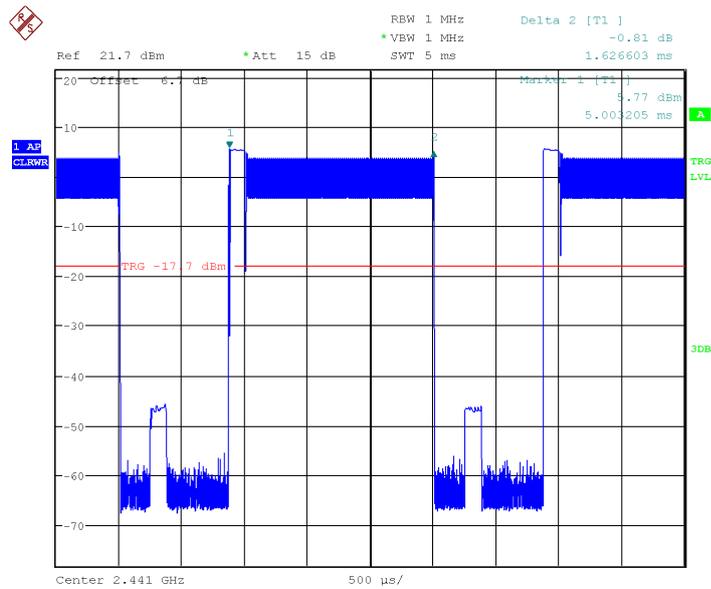
Date: 29.JUL.2013 14:49:40

Fig.97 Time of occupancy (Dwell Time): Ch39,Packet 3-DH1



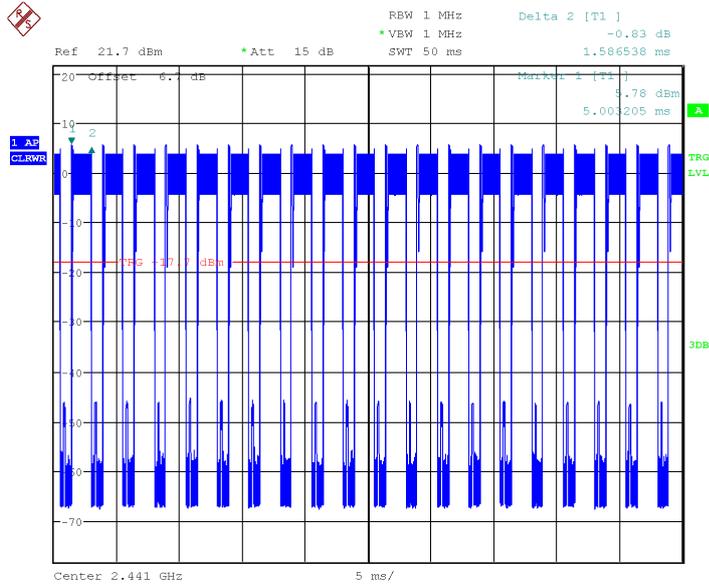
Date: 29.JUL.2013 14:49:49

Fig.98 Number of Transmissions Measurement: Ch39, Packet 3-DH1



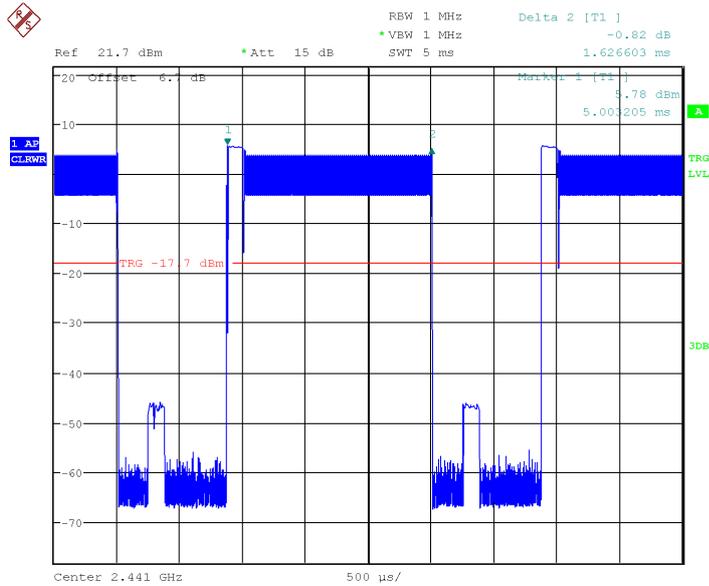
Date: 29.JUL.2013 14:50:12

Fig.99 Time of occupancy (Dwell Time): Ch39,Packet 3-DH3



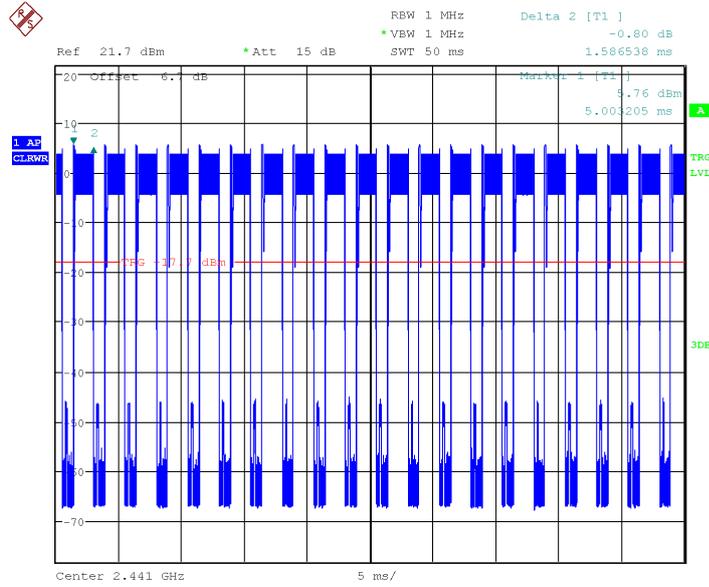
Date: 29.JUL.2013 14:50:29

Fig.100 Number of Transmissions Measurement: Ch39, Packet 3-DH3



Date: 29.JUL.2013 14:50:49

Fig.101 Time of occupancy (Dwell Time): Ch39,Packet 3-DH5



Date: 29.JUL.2013 14:51:05

Fig.102 Number of Transmissions Measurement: Ch39, Packet 3-DH5

### 5.6. 20dB Bandwidth

#### Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247 (a) (1)	N/A

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

#### Measurement Result:

##### For GFSK

Channel	20dB Bandwidth (KHz)		Conclusion
0	Fig.103	1033.654	P
39	Fig.104	1033.654	P
78	Fig.105	1033.654	P

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

Channel	20dB Bandwidth (KHz)		Conclusion
0	Fig.106	1182.692	P
39	Fig.107	1187.5	P
78	Fig.108	1187.5	P

##### For 8DPSK

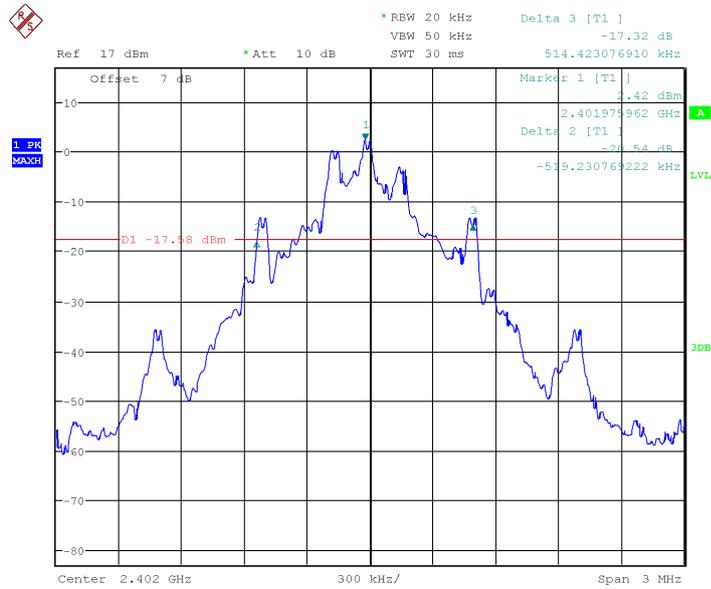
Channel	20dB Bandwidth (KHz)		Conclusion
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0	Fig.109	1182.692	P
39	Fig.110	1201.922	P
78	Fig.111	1173.076	P

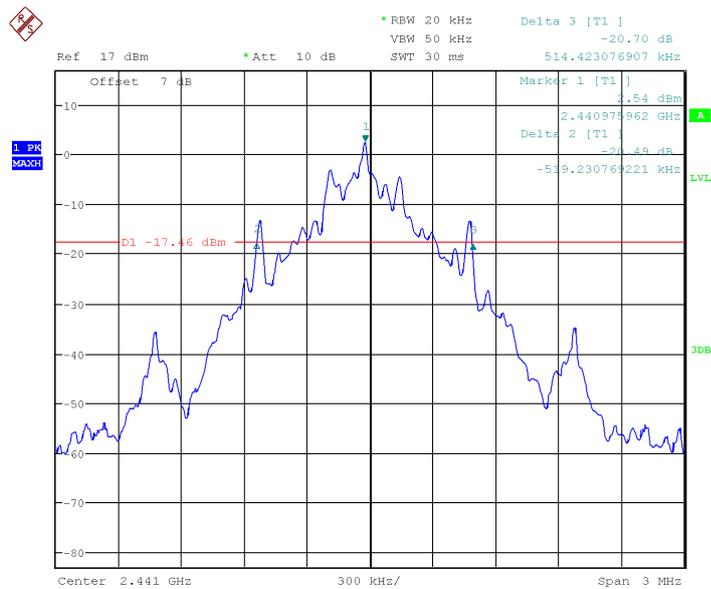
Conclusion: PASS

Test graphs as below:



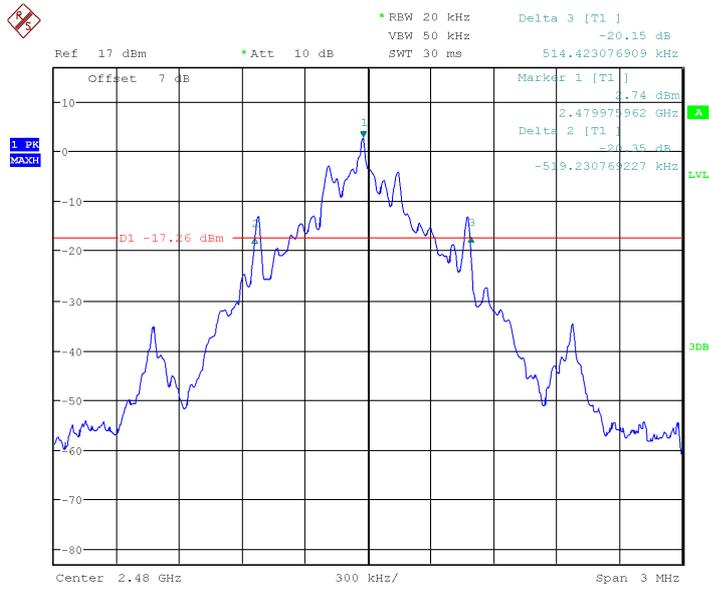
Date: 23.AUG.2013 10:01:26

Fig.103 20dB Bandwidth: GFSK, Ch0



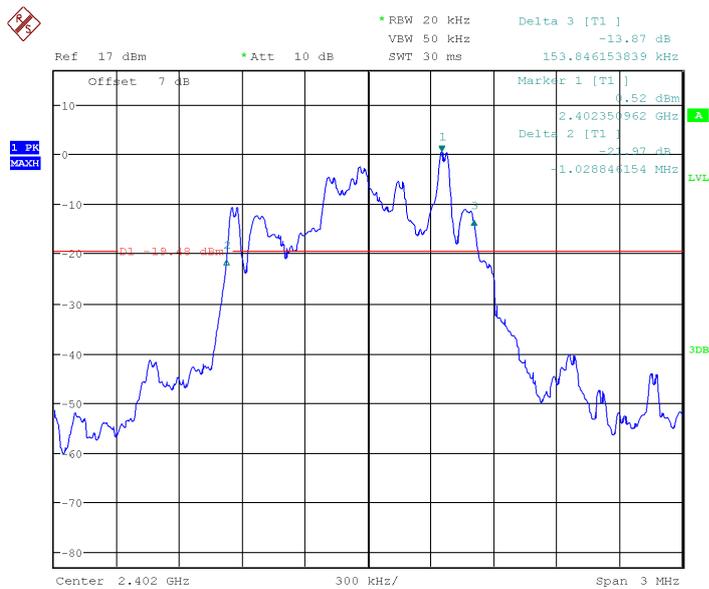
Date: 23.AUG.2013 10:02:16

Fig.104 20dB Bandwidth: GFSK, Ch39



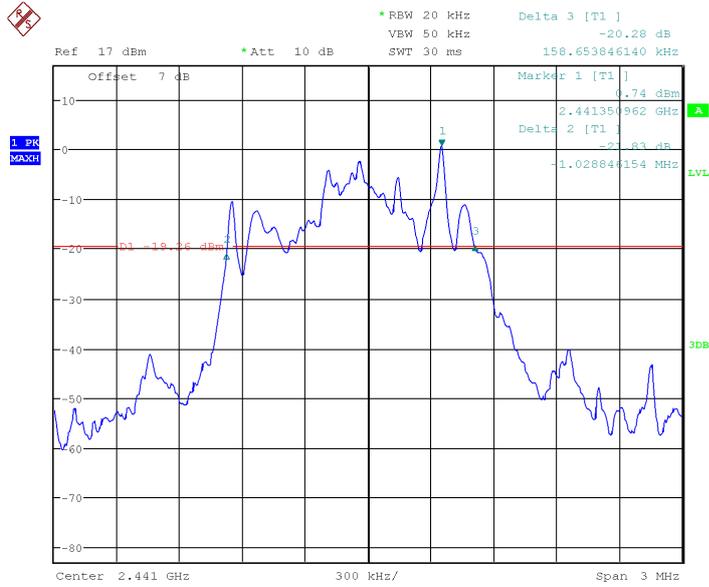
Date: 23.AUG.2013 10:03:17

Fig.105 20dB Bandwidth: GFSK, Ch78



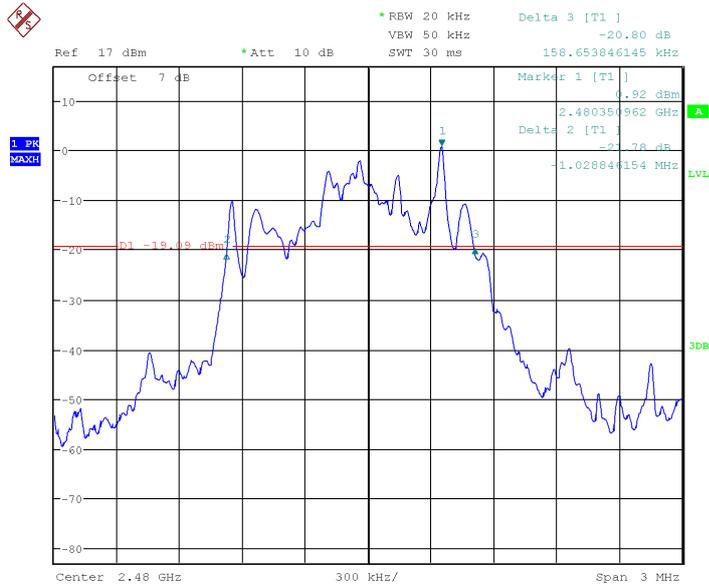
Date: 23.AUG.2013 10:04:28

Fig.106 20dB Bandwidth:  $\pi/4$  DQPSK, Ch0



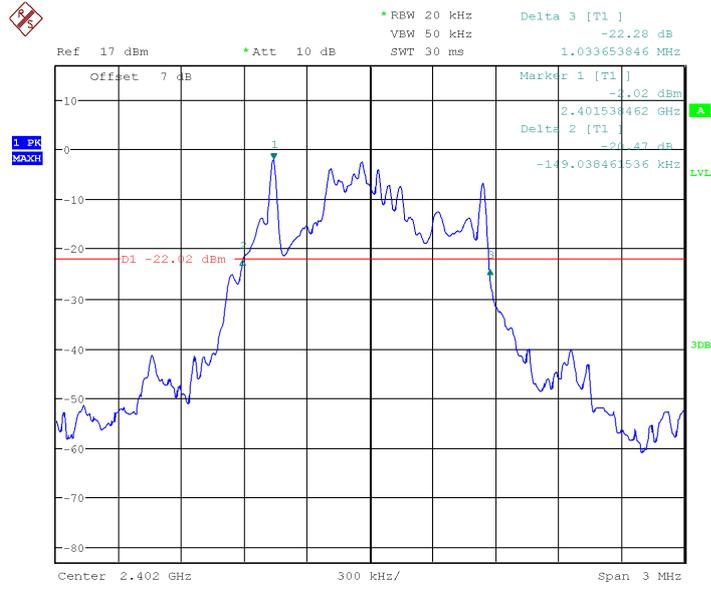
Date: 23.AUG.2013 10:05:19

Fig.107 20dB Bandwidth:  $\pi/4$  DQPSK, Ch39



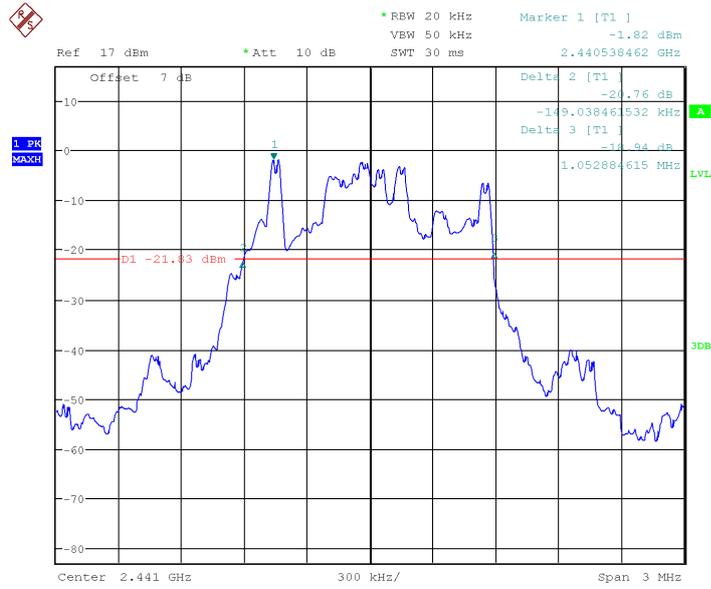
Date: 23.AUG.2013 10:05:59

Fig.108 20dB Bandwidth:  $\pi/4$  DQPSK, Ch78



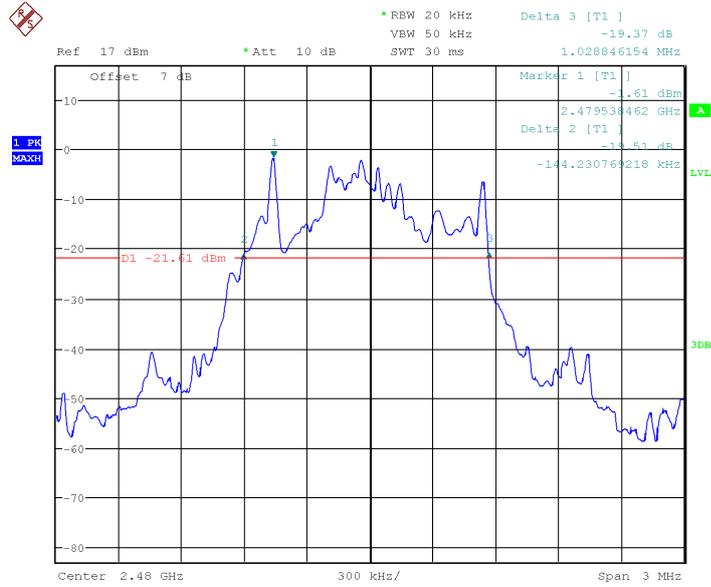
Date: 23.AUG.2013 10:06:57

Fig.109 20dB Bandwidth: 8DPSK, Ch0



Date: 23.AUG.2013 10:08:14

Fig.110 20dB Bandwidth: 8DPSK, Ch39



Date: 23.AUG.2013 10:09:07

Fig.111 20dB Bandwidth: 8DPSK, Ch78

### 5.7. Carrier Frequency Separation

#### Measurement Limit:

Standard	Limit (KHz)
FCC 47 CFR Part 15.247 (a) (1)	Over 25KHz or (2/3)*20dB bandwidth

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

#### Measurement Result:

##### For GFSK

Channel	Carrier separation (KHz)	Conclusion	
39	Fig.112	841.346	P

##### For π/4 DQPSK

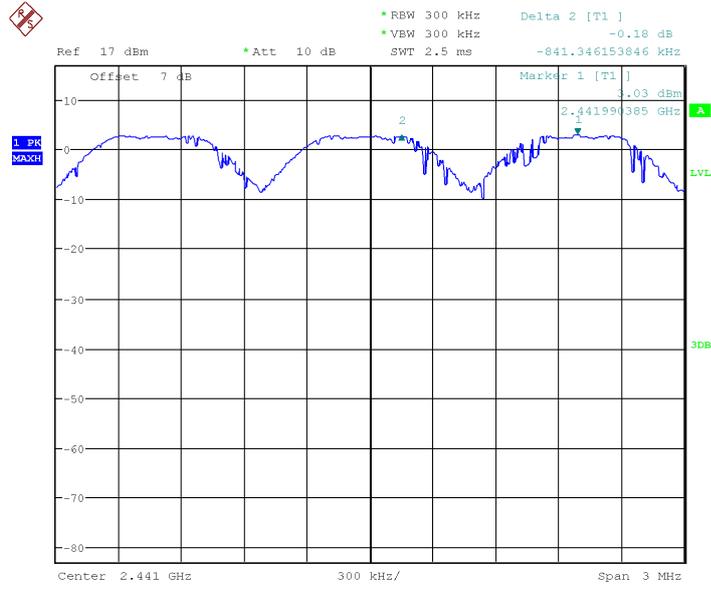
Channel	Carrier separation (KHz)	Conclusion	
39	Fig.113	1000	P

##### For 8DPSK

Channel	Carrier separation (KHz)	Conclusion	
39	Fig.114	1000	P

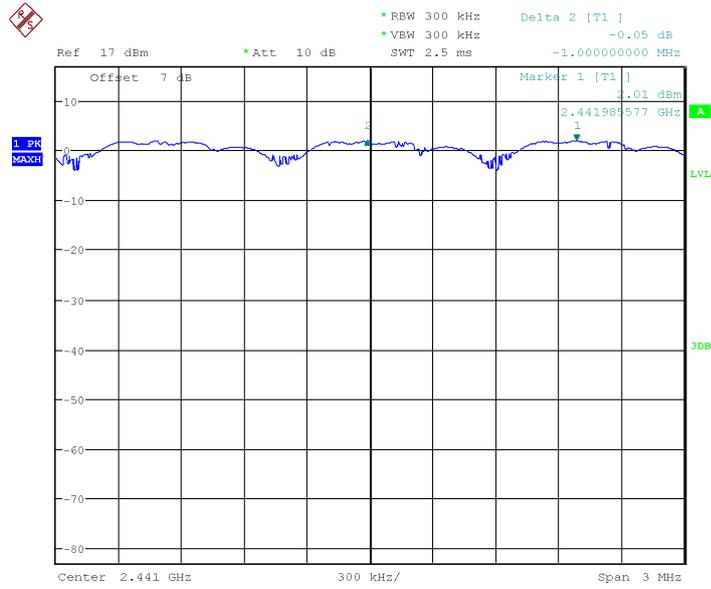
**Conclusion: PASS**

**Test graphs as below:**



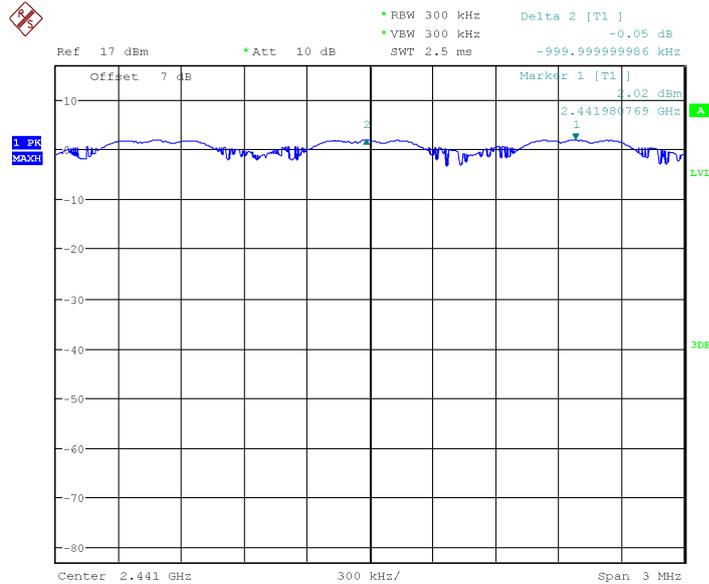
Date: 23.AUG.2013 10:15:35

Fig.112 Carrier separation measurement: GFSK, Ch39



Date: 23.AUG.2013 10:17:37

Fig.113 Carrier separation measurement:  $\pi/4$  DQPSK, Ch39



Date: 23.AUG.2013 10:21:45

Fig.114 Carrier separation measurement: 8DPSK, Ch39

### 5.8. 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 according to Public notice DA 00-705 and ANSI C63.4.

#### Measurement Result:

##### For GFSK

Channel	Number of hopping channels	Conclusion
0~39	Fig.115	79 P
40~78	Fig.116	

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

Channel	Number of hopping channels	Conclusion
0~39	Fig.117	79 P
40~78	Fig.118	

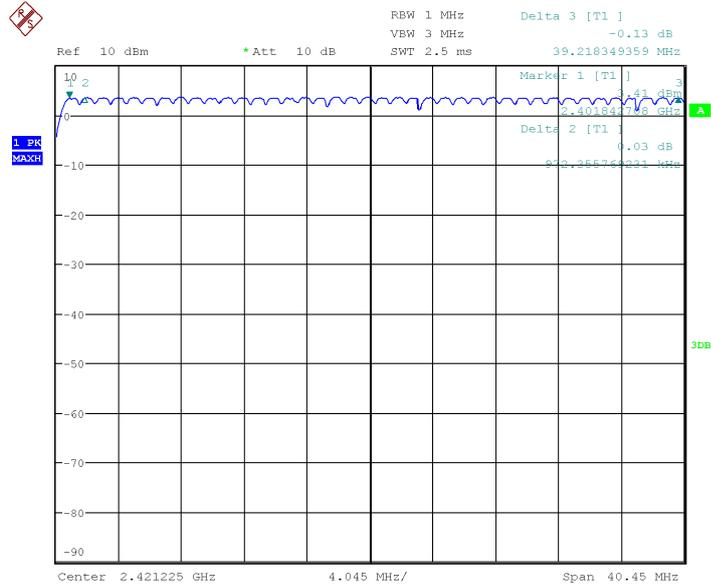
##### For 8DPSK

Channel	Number of hopping channels	Conclusion
0~39	Fig.119	79 P
40~78	Fig.120	



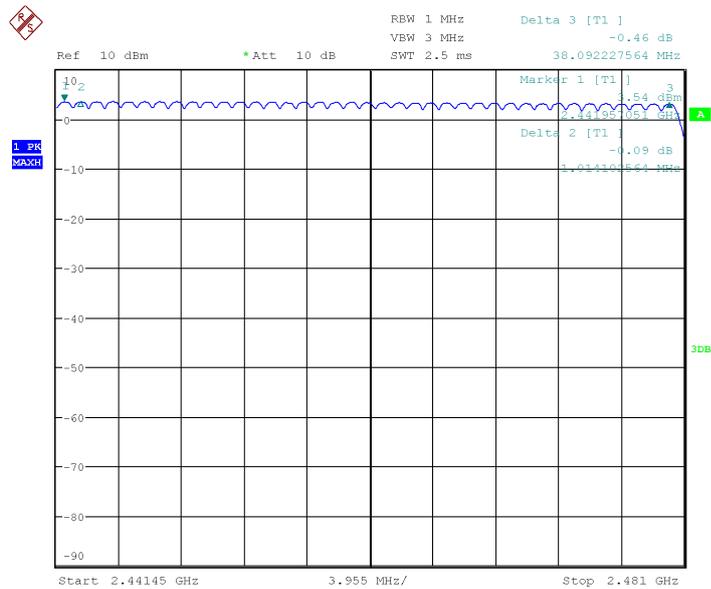
Conclusion: PASS

Test graphs as below:



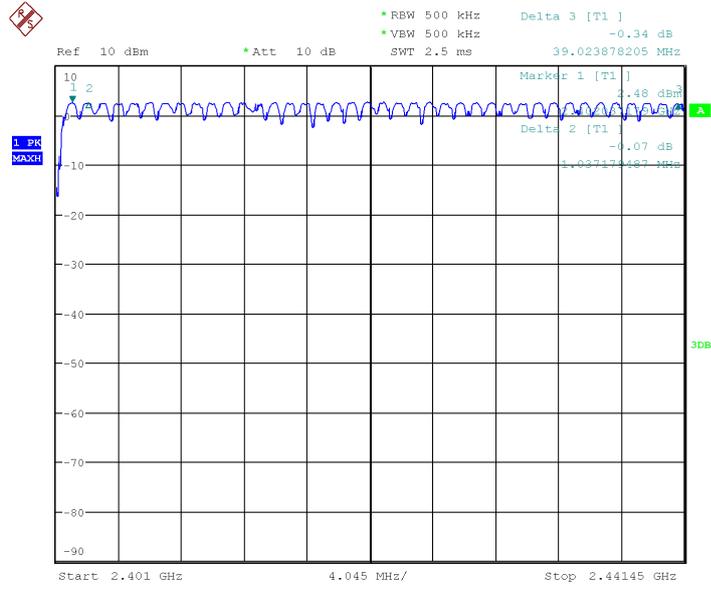
Date: 10.DEC.2012 17:03:51

Fig.115 Number of hopping frequency: GFSK, Ch0~39



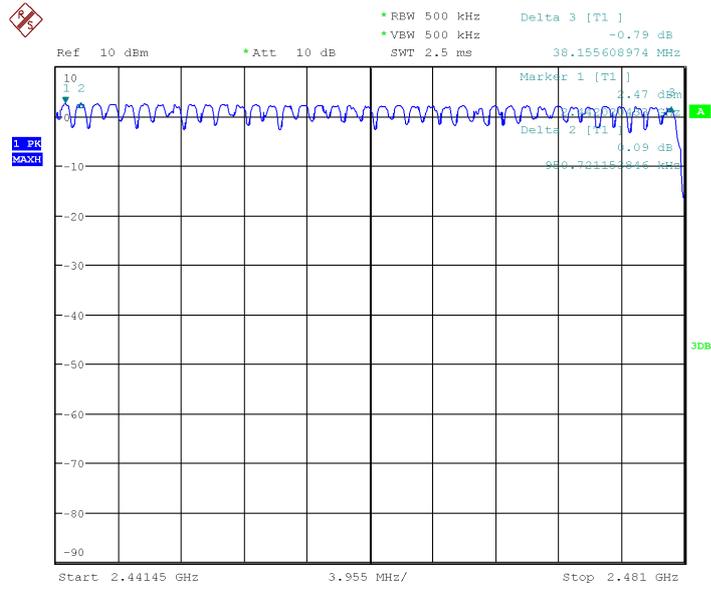
Date: 10.DEC.2012 17:11:14

Fig.116 Number of hopping frequency: GFSK, Ch40~78



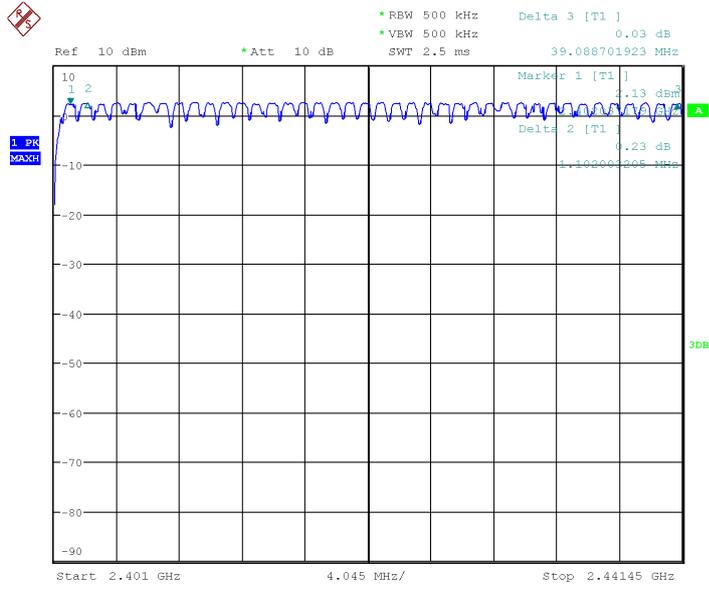
Date: 10.DEC.2012 17:17:58

Fig.117 Number of hopping frequency:  $\pi/4$  DQPSK, Ch0~39



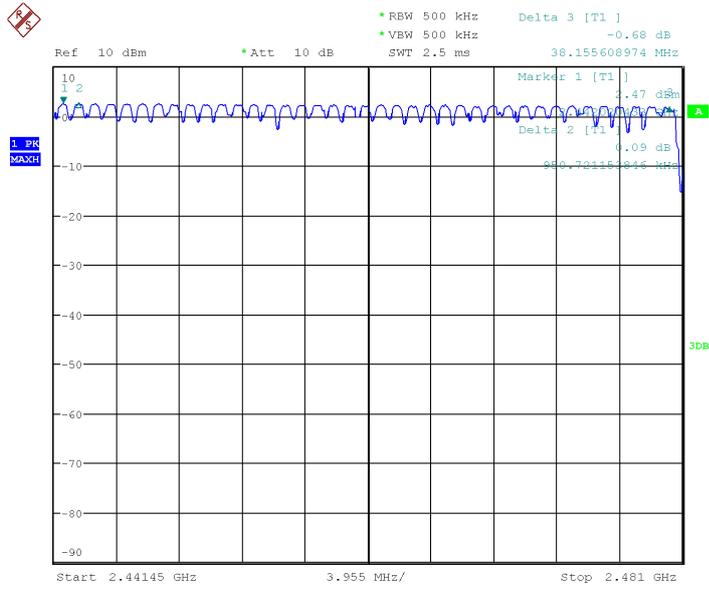
Date: 10.DEC.2012 17:19:11

Fig.118 Number of hopping frequency:  $\pi/4$  DQPSK, Ch40~78



Date: 10.DEC.2012 17:22:26

Fig.119 Number of hopping frequency: 8DPSK, Ch0~39



Date: 10.DEC.2012 17:20:24

Fig.120 Number of hopping frequency: 8DPSK, Ch40~78



## 6. Test Equipments and Ancillaries Used For Tests

The test equipments and ancillaries used are as follows.

### Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date
1	Vector Signal Analyzer	FSQ26	101096	Rohde&Schwarz	2013-10-17
2	DC Power Supply	ZUP60-14	LOC-220Z006	TDL-Lambda	2013-11-30
3	Bluetooth Tester	CBT32	100785	Rohde&Schwarz	2013-10-16

### Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date
1	Universal Radio Communication Tester	CMU200	123102	R&S	2013-09-10
2	Test Receiver	ESU40	100307	R&S	2013-11-07
3	Trilog Antenna	VULB9163	19-162515	Schwarzbeck	2014-11-11
4	Double Ridged Guide Antenna	ETS-3117	00135885	ETS	2014-04-29
5	Double Ridged Guide Antenna	ETS-3117	00135890	ETS	2014-04-28
6	Test receiver	ESCI	101235	R&S	2013-11-07



7	2-Line V-Network	ENV216	101380	R&S	2013-11-07
8	Biconical VHF-UHF broad band antenna	SWB-VUBA9 117	9117-266	SCHWARZBECK	2013/11/11
9	Horn antenna(18.0 -26.5GHz)	3160_09	LM6321	ETS-LINDGR EN	2013/11/22
10	Signal conditioning unit(0.1-18G Hz)	SCU18	10155	R/S	2013/11/03
11	Signal conditioning unit(0.1-18G Hz)	SCU18	10146	R/S	2013/11/03
12	Horn antenna(18.0 -26.5GHz)	3160_09	00086671	ETS-LINDGR EN	2014/06/14
13	Amplifier	AFS4-001026 50-42-8P-4	1405286	MITEQ	2014/06/08
14	Amplifier	SCV26	10025	R&S	2013/11/09

**Anechoic chamber**

Fully anechoic chamber by Frankonia German.

**7. Test Environment**

**Shielding Room1** (6.0 metersx3.0 metersx2.7 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 $\Omega$
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

**Fully-anechoic chamber1** (6.8 meters×3.08 meters×3.53 meters) 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
Uniformity of field strength	Between 0 and 6 dB, from 80MHz to 3000 MHz

**Fully-anechoic chamber2** (Tapered Section: 8.75 meters×3.66 meters×3.66 meters, Rectangular Section: 7.32 meters×3.97 meters×3.66 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
Uniformity of field strength	Between 0 and 6 dB, from 30MHz to 4000MHz



## **ANNEX A Deviations from Prescribed Test Methods**

No deviation from Prescribed Test Methods.

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