



# FCC PART 15C TEST REPORT

**No. 2012EEB00057-BT**

**For**

**GSM/WCDMA Mobile Phone**

**Model Name: V32-3G**

**With**

**Hardware Version: G362-MB-V0.2**

**Software Version: V4.5**

**FCC ID: ZVP-V32-3G**

**IC ID: 10262A-V32-3G**

**Issued Date: Mar 23<sup>th</sup>, 2012**

**Test Laboratory:**

**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.

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## 1. Test Laboratory

### 1.1. Testing Location

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT  
Address: No 52 Hua Yuanbei Road, Haidian District, Beijing, P.R.China  
Postal Code: 100191  
Telephone: 00861062304633  
Fax: 00861062304793

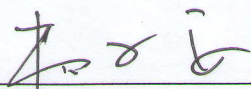
### 1.2. Testing Environment

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

### 1.3. Project data

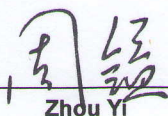
Project Leader: Zhou Yi  
Test Engineer: Yang Zi'an  
Testing Start Date: 2012-2-27  
Testing End Date: 2012-3-23

### 1.4. Signature



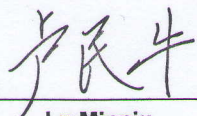
Yang Zi'an

(Prepared this test report)



Zhou Yi

(Reviewed this test report)



Lu Minniu

Deputy Director of the laboratory

(Approved this test report)

## **2. Client Information**

### **2.1. Applicant Information**

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Fax: 0755-23910530

### **2.2. Manufacturer Information**

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City: Ridgewood  
Postal Code: 07450  
Country: United States  
Contact Clayton Wu  
Email clayton.wu@emporia.at  
Telephone: 13480677599  
Fax: 0755-23910530



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

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

Description	GSM/WCDMA Mobile phone		
Model Name	V32-3G		
Marketing Name	V32-3G		
Frequency Band	ISM 2400MHz~2480MHz		
Transmitter Frequency range:	GSM850: 824.2-848.8 MHz, PCS1900: 1850.2-1909.8MHz WCDMA Band II: 1852.4-1907.6MHz, WCDMA Band V: 826.4-846.6MHz		
Receiver Frequency Range:	GSM850:	869.2-893.8 MHz,	PCS1900: 1930.2-1989.8MHz WCDMA Band II: 1932.4-1987.6MHz, WCDMA Band V: 871.4-891.6MHz
Type of Modulation	GFSK/ $\pi/4$ DQPSK/8DPSK		
Number of Channels	79		
Extreme Temperature	-20/+55°C		
Normal Voltage	3.7V		
Extreme Low Voltage	3.6V		
Extreme High Voltage	4.2V		

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

Note: high and low voltage values in extreme condition test are given by manufacturer

#### **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>
N01	353801003601740	G362-MB-V0.2	V4.5

\*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>	<b>Type</b>	<b>SN</b>
AE1	Charger	RL-V170-US	/
AE2	Li-ion Battery	Li-ion	/

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

## 4. Reference Documents

### 4.1. Documents supplied by applicant

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

### 4.2. Reference Documents for testing

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

Reference	Title	Version
FCC 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.	Oct, 2009 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
KDB558074	Measurement of Digital Transmission Systems Operating under Section 15.247	March 23, 2005
IC RSS-210	RSS-210 Spectrum Management and Telecommunications Radio Standards Specification - Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment	Issue 8 Dec 2010



## 5. LABORATORY ENVIRONMENT

**Semi-anechoic chamber** (11.20 meters×6.10meters×5.60meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 70 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 1 Ω
Normalised site attenuation (NSA)	< ±3.5 dB, 3 m distance, from 30 to 1000 MHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

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

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. =35 %, Max. = 80 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 1 Ω

**Conducted chamber** did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. =35 %, Max. = 80 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 1 Ω

**Fully-anechoic chamber** (11.20 meters×6.10 meters×6.60 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 30 °C
Relative humidity	Min. = 35 %, Max. = 70 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 1 Ω
Voltage Standing Wave Ratio (VSWR)	≤ 6 dB, from 1 to 6 GHz, 3 m distance

## 6. SUMMARY OF TEST RESULTS

### 6.1. Summary of Test Results

No	Test cases	Sub-clause of Part15C	Sub-clause of IC	Verdict
1	Maximum Peak Output Power	15.247 (a)	RSS-210 Issue8 A8.4	P
2	Band Edges Compliance	15.247 (d)	RSS-210 Issue8 A8.5	P
3	Conducted Spurious Emission	15.247	RSS-210 Issue8 A8.5	P
4	Radiated Spurious Emission	15.247,15.205,15.209	RSS-210 Issue8 A8.5	P
5	Occupied 20dB bandwidth	15.247(a)	RSS-210 Issue8 A8.1	P
6	Time of Occupancy(Dwell Time)	15.247(a)	RSS-210 Issue8 A8.1	P
7	Number of Hopping Channel	15.247(a)	RSS-210 Issue8 A8.1	P
8	Carrier Frequency Separation	15.247(a)	RSS-210 Issue8 A8.1	P
9	AC Powerline Conducted Emission	15.107,15.207	RSS-Gen Issue3 7.2.4	P
10	Occupied bandwidth	/	RSS-Gen Issue3 4.6.1	/

### 6.2. Statements

TMC has evaluated the test cases requested by the applicant/matrix 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

### 6.3. Terms used in the result table

Terms used in Condition column

T nom	Normal Temperature
T min	Low Temperature
T max	High Temperature
V nom	Normal Voltage
V min	Low Voltage
V max	High voltage

Terms used in Verdict column

P	Pass
NA	Not Available
F	Fail

## Abbreviations

AC	Alternating Current
AFH	Adaptive Frequency Hopping
BW	Band Width
E.I.R.P.	equivalent isotropical radiated power
ISM	Industrial, Scientific and Medical
R&TTE	Radio and Telecommunications Terminal Equipment
RF	Radio Frequency
Tx	Transmitter

## 7. Test Equipments Utilized

### Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date
1	Vector Signal Analyzer	FSV	100903	Rohde & Schwarz	2013-01-26
2	Bluetooth Tester	CBT32	100584	Rohde & Schwarz	2013-01-12

### Climate chamber

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date
1	Climate chamber	FACT5-2.0	4166	ETS-Lindgren	2012-04-17

### Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date
1	Test Receiver	ESCI	100701	Rohde & Schwarz	2012-08-04
2	BiLog Antenna	VULB9163	9163-330	Schwarzbeck	2014-02-24
3	Dual-Ridge Waveguide Horn Antenna	3164-05	00085724	ETS-Lindgren	2014-02-17
4	Universal Radio Communication Tester	CMU200	114545	Rohde & Schwarz	2012-03-24

### Anechoic chamber

Fully anechoic chamber by ETS-Lindgren.

**ANNEX A: EUT photograph**



**Pic A-1 Mobile phone**

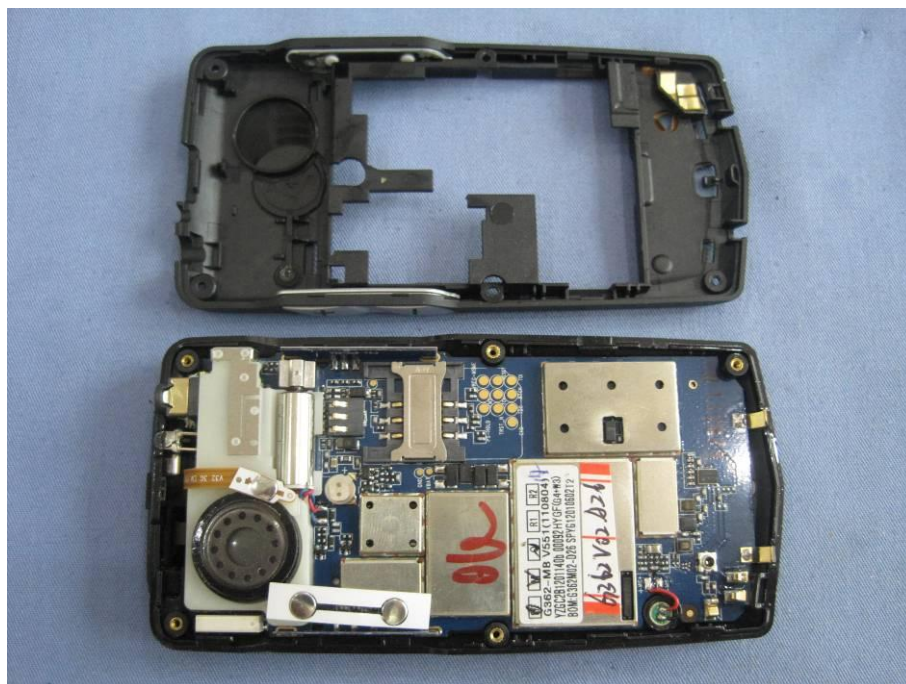


**Pic A-2 Mobile phone**





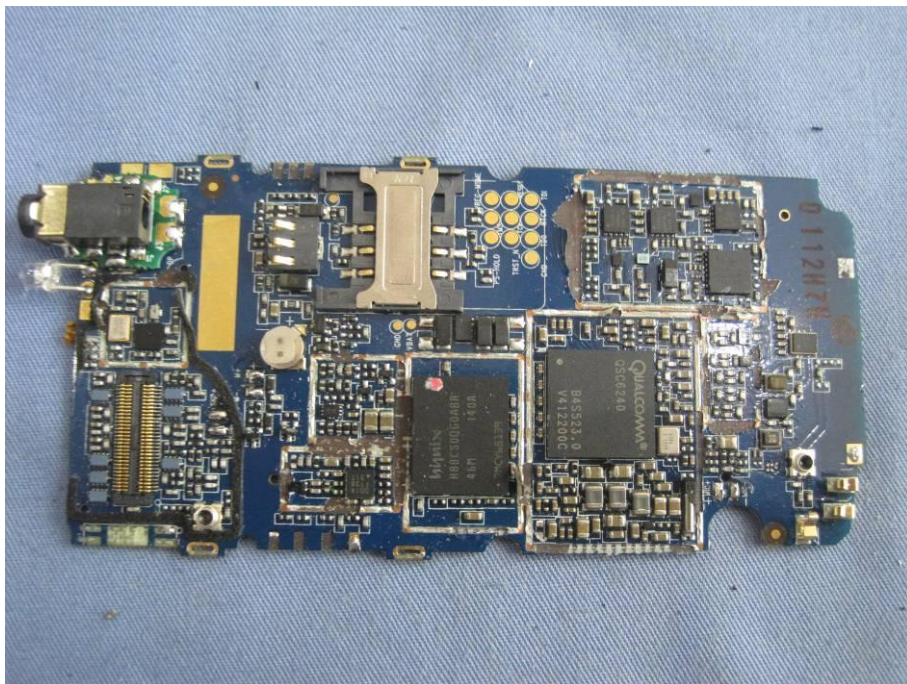
Pic A-3 Battery AE1



Pic A-4 Mobile phone Disassembly



**Pic A-5 Mobile phone Disassembly**



**Pic A-6 Mobile phone Disassembly**



## ANNEX B: MEASUREMENT RESULTS

### B.1 Maximum Peak Output Power

#### Measurement Limit and Method:

Standard	Limit (dBm)
FCC CRF Part 15.247(b) RSS-210 Issue8 A8.4	< 30

The measurement is made according to ANSI C63.4 and KDB558074, and power output option 1 (RBW=20MHz) in KDB558074 is used for the test. EUT is operating in continuous transmitting mode

#### Measurement Uncertainty:

Measurement Uncertainty	0.75dB
-------------------------	--------

#### Measurement Results:

Mode	Test Result (dBm)		
	2402MHz (Ch0)	2441MHz (Ch39)	2480 MHz (Ch78)
GFSK	1.16	3.18	3.17
$\pi/4$ DQPSK	3.38	5.37	5.48
8DPSK	3.24	5.17	5.26

**Conclusion: PASS**

### B.2 Band Edges Compliance

#### Measurement Limit:

Standard	Limit (dBc)
FCC 47 CFR Part 15.247 (d) RSS-210 Issue8 A8.5	> 20

The measurement is made according to ANSI C63.4 and KDB558074

#### Measurement Uncertainty:

Measurement Uncertainty	0.75dB
-------------------------	--------

#### Measurement Result:

Mode	Channel	Hopping	Test Results	Conclusion
GFSK	0	ON	Fig.1	P
	78	ON	Fig.2	P
$\pi/4$ DQPSK	0	ON	Fig.3	P
	78	ON	Fig.4	P
8DPSK	0	ON	Fig.5	P

	78	ON	Fig.6	P
--	----	----	-------	---

See ANNEX C for test graphs.

Conclusion: Pass

### B.3 Conducted Emission

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247 (d) RSS-210 Issue8 A8.5	20dB below peak output power in 100 kHz bandwidth

The measurement is made according to ANSI C63.4 and KDB558074

Measurement Uncertainty:

Frequency Range	Uncertainty
30MHz ≤ f ≤ 2GHz	0.63
2GHz ≤ f ≤ 3.6GHz	0.82
3.6GHz ≤ f ≤ 8GHz	1.55
8GHz ≤ f ≤ 20GHz	1.86
20GHz ≤ f ≤ 22GHz	1.90
22GHz ≤ f ≤ 26GHz	2.20

Measurement Results:

MODE	Channel	Frequency Range	Test Results	Conclusion
GFSK	0	2.402 GHz	Fig.7	P
		30 MHz-3 GHz	Fig.8	P
		3GHz-12Ghz	Fig.9	P
	78	2.480 GHz	Fig.10	P
		30 MHz-3 GHz	Fig.11	P
		3GHz-12Ghz	Fig.12	P
$\pi/4$ DQPSK	0	2.402 GHz	Fig.13	P
		30 MHz-3 GHz	Fig.14	P
		3GHz-12Ghz	Fig.15	P
	78	2.480 GHz	Fig.16	P
		30 MHz-3 GHz	Fig.17	P
		3GHz-12Ghz	Fig.18	P
8DPSK	0	2.402 GHz	Fig.19	P
		30 MHz-3 GHz	Fig.20	P
		3GHz-12Ghz	Fig.21	P
	78	2.480 GHz	Fig.22	P
		30 MHz-3 GHz	Fig.23	P

		3GHz-12GHz	Fig.24	P
/	All channel	12GHz-26GHz	Fig.25	P

See ANNEX C for test graphs.

**Conclusion: Pass**

## B.4 Radiated Emission

### Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247, 15.205, 15.209 RSS-210 Issue8 A8.5	20dB below peak output power

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

The measurement is made according to ANSI C63.4 and KDB558074.

### 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:

Mode	Channel	Frequency Range	Test Results	Conclusion
GFSK	0	30 MHz ~1 GHz	Fig.26	P
		1 GHz ~ 3 GHz	Fig.27	P
		3 GHz ~ 18 GHz	Fig.28	P
	78	30 MHz ~1 GHz	Fig.29	P
		1 GHz ~ 3 GHz	Fig.30	P

		3 GHz ~ 18 GHz	Fig.31	P
$\pi/4$ DQPSK	0	30 MHz ~1 GHz	Fig.32	P
		1 GHz ~ 3 GHz	Fig.33	P
		3 GHz ~ 18 GHz	Fig.34	P
	78	30 MHz ~1 GHz	Fig.35	P
		1 GHz ~ 3 GHz	Fig.36	P
		3 GHz ~ 18 GHz	Fig.37	P
8DPSK	0	30 MHz ~1 GHz	Fig.38	P
		1 GHz ~ 3 GHz	Fig.39	P
		3 GHz ~ 18 GHz	Fig.40	P
	78	30 MHz ~1 GHz	Fig.41	P
		1 GHz ~ 3 GHz	Fig.42	P
		3 GHz ~ 18 GHz	Fig.43	P
/	All channels	18 GHz~ 26.5 GHz	Fig.44	P

See ANNEX C for test graphs.

Conclusion: Pass

### B.5 Occupied 20dB Bandwidth

Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.247 (a) RSS-210 Issue8 A8.1	/

The measurement is made according to ANSI C63.4 and KDB558074

Measurement Uncertainty:

Measurement Uncertainty	60.80Hz
-------------------------	---------

Measurement Result:

Mode	Channel	Occupied 20dB Bandwidth ( MHz)		conclusion
GFSK	39	Fig.45	1.158	/
$\pi/4$ DQPSK	39	Fig.46	1.331	/
8DPSK	39	Fig.47	1.360	/

See ANNEX C for test graphs.

Conclusion: Pass

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

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247(a) RSS-210 Issue8 A8.1	< 400 ms

**Measurement Uncertainty:**

Measurement Uncertainty	±0.088ms
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**Measurement Results:**

Mode	Channel	Packet	Dwell Time(ms)		Conclusion
GFSK	39	DH5	Fig.48	162.8	<b>P</b>
			Fig.49		
$\pi/4$ DQPSK	39	2-DH5	Fig.50	144.7	<b>P</b>
			Fig.51		
8DPSK	39	3-DH5	Fig.52	271.3	<b>P</b>
			Fig.53		

See ANNEX C for test graphs.

Conclusion: Pass

### B.7 Number of Hopping Channels

**Measurement Limit:**

Standard	Limit
FCC 47 CFR Part 15.247(a) RSS-210 Issue8 A8.1	At least 15 non-overlapping channels

**Measurement Results:**

Mode	Channel	Packet	Number of hopping channels		Test result	Conclusion
GFSK	39	DH5	Fig.54	Fig.55	79	<b>P</b>
$\pi/4$ DQPSK	39	2-DH5	Fig.56	Fig.57	79	<b>P</b>
8DPSK	39	3-DH5	Fig.58	Fig.59	79	<b>P</b>

See ANNEX C for test graphs.

Conclusion: Pass

### B.8 Carrier Frequency Separation

**Measurement Limit:**

Standard	Limit
FCC 47 CFR Part 15.247(a) RSS-210 Issue8 A8.1	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

**Measurement Results:**

Mode	Channe	Packet	Separation of hopping	Test	Conclusion
GFSK	39	DH5	Fig.60	1005.80	<b>P</b>
$\pi/4$ DQPSK	39	2-DH5	Fig.61	1020.30	<b>P</b>
8DPSK	39	3-DH5	Fig.62	1020.30	<b>P</b>

See ANNEX C for test graphs.

Conclusion: Pass

**B.9 AC Power line Conducted Emission**

**Test Condition:**

Voltage (V)	Frequency (Hz)
120	60

**Measurement Result and limit:**

BT (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Result (dB $\mu$ V)			Conclusion
		With charger			
		GFSK	$\pi/4$ DQPSK	8DPSK	
0.15 to 0.5	66 o 56	Fig.63	Fig.64	Fig.65	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.

BT (Average Limit)

Frequency range (MHz)	Average Limit (dB $\mu$ V)	Result (dB $\mu$ V)			Conclusion
		With charger			
		GFSK	$\pi/4$ DQPSK	8DPSK	
0.15 to 0.5	56 to 46	Fig.63	Fig.64	Fig.65	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 ANSI C63.4 and KDB558074

See ANNEX C for test graphs.

Conclusion: Pass

### B.10 Occupied Bandwidth

Measurement Limit:

Standard	Limit
RSS-Gen Issue3 4.6.1	/

The measurement is made according to ANSI C63.4 and KDB558074

Measurement Uncertainty:

Measurement Uncertainty	60.80Hz
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Measurement Result:

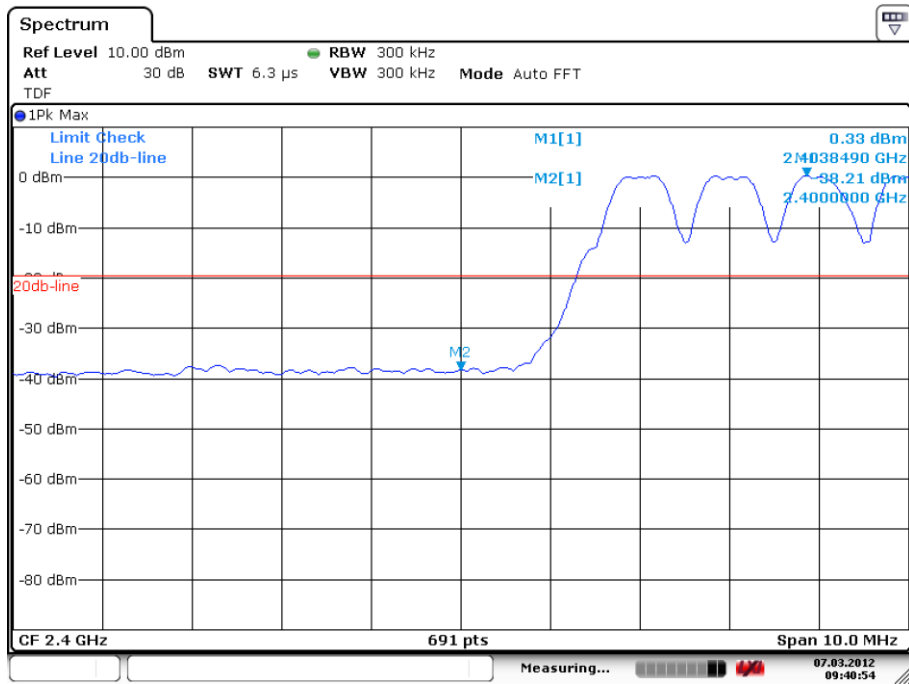
Mode	Channel	Occupied Bandwidth ( MHz)		conclusion
GFSK	0	Fig.66	0.955	/
	39	Fig.67	1.041	/
	78	Fig.68	1.056	/
$\pi$ /4 DQPSK	0	Fig.69	1.143	/
	39	Fig.70	1.201	/
	78	Fig.71	1.201	/
8DPSK	0	Fig.72	1.157	/
	39	Fig.73	1.215	/
	78	Fig.74	1.230	/

Conclusion: PASS

Test graphs as below:

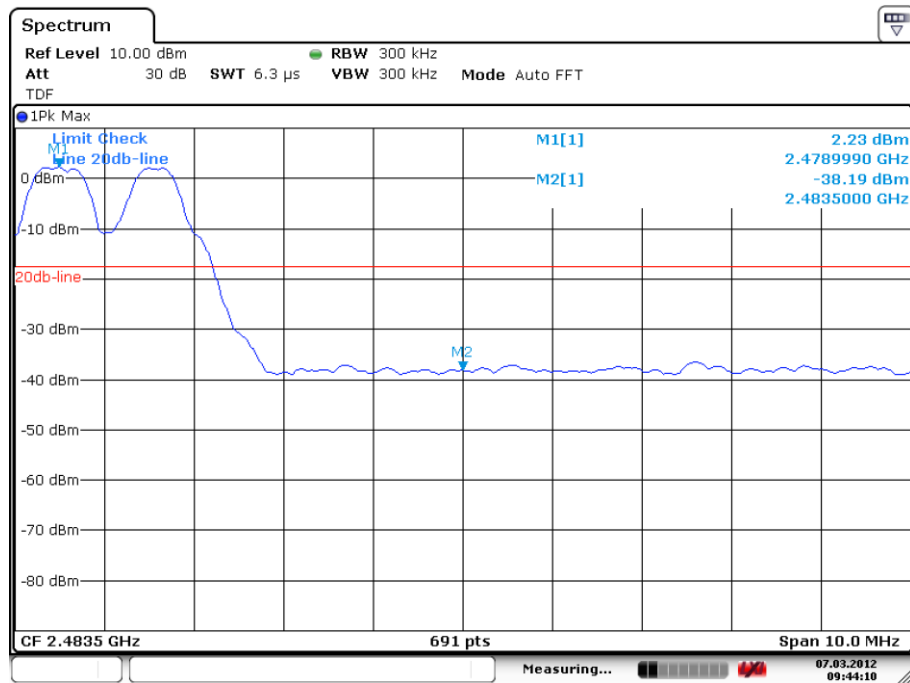


### ANNEX C: TEST FIGURE LIST



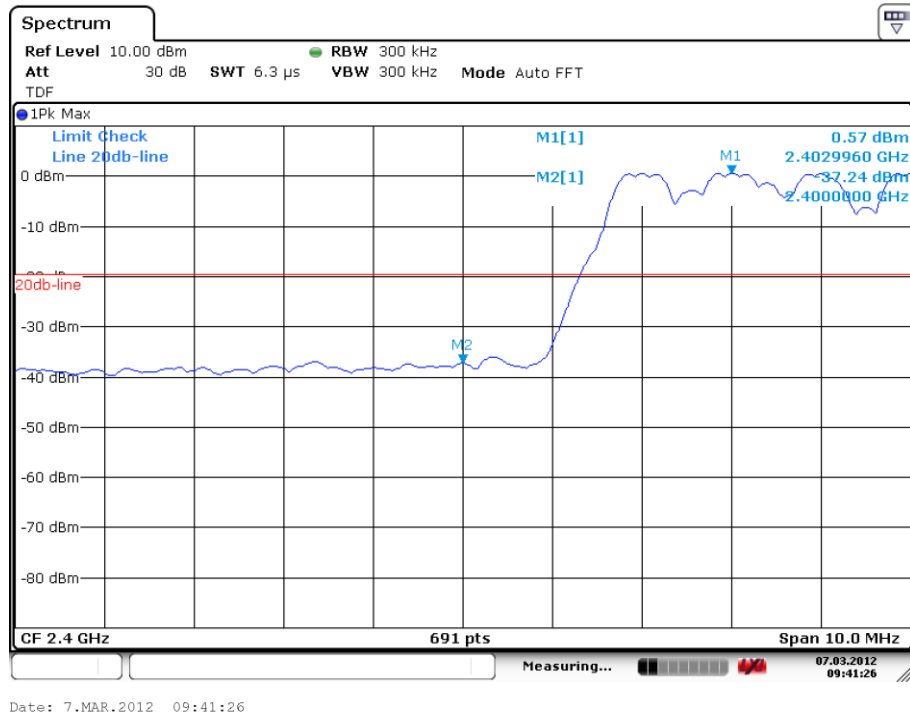
Date: 7.MAR.2012 09:40:54

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

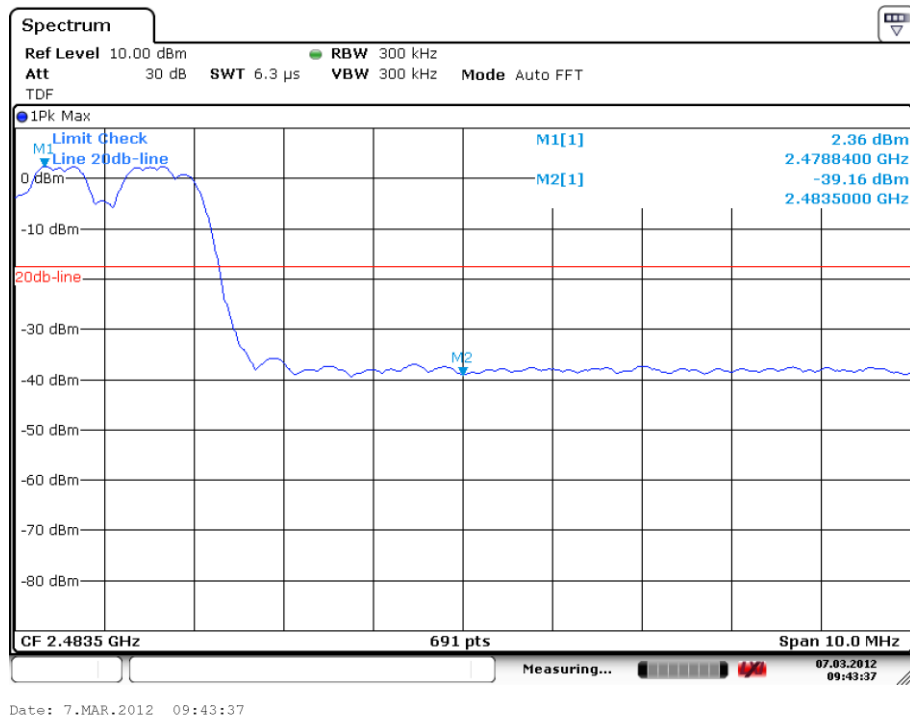


Date: 7.MAR.2012 09:44:10

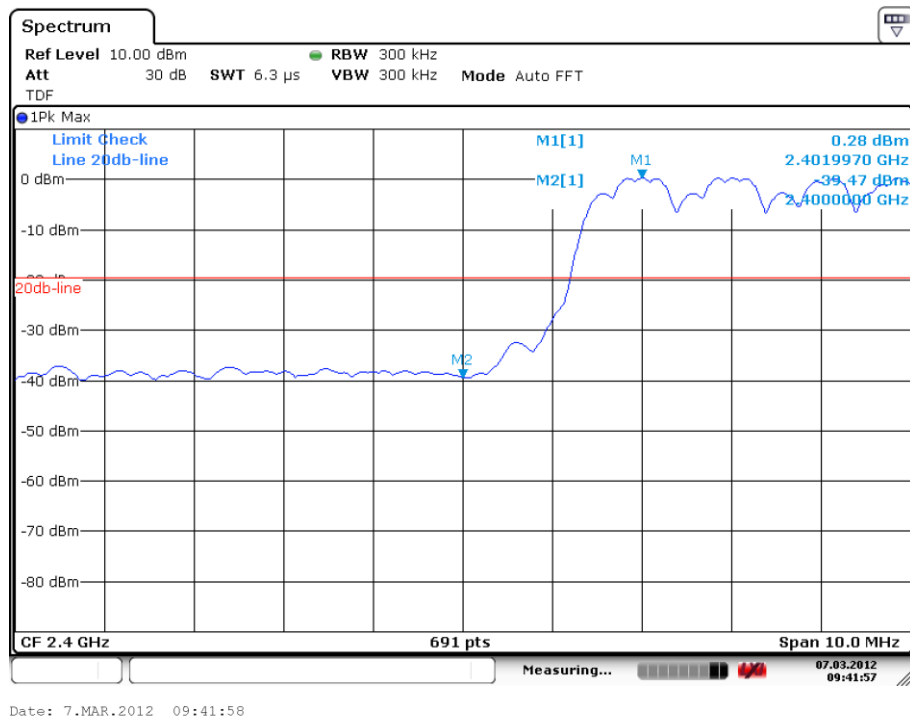
**Fig. 2 Band Edges (GFSK, Ch 78, Hopping ON)**



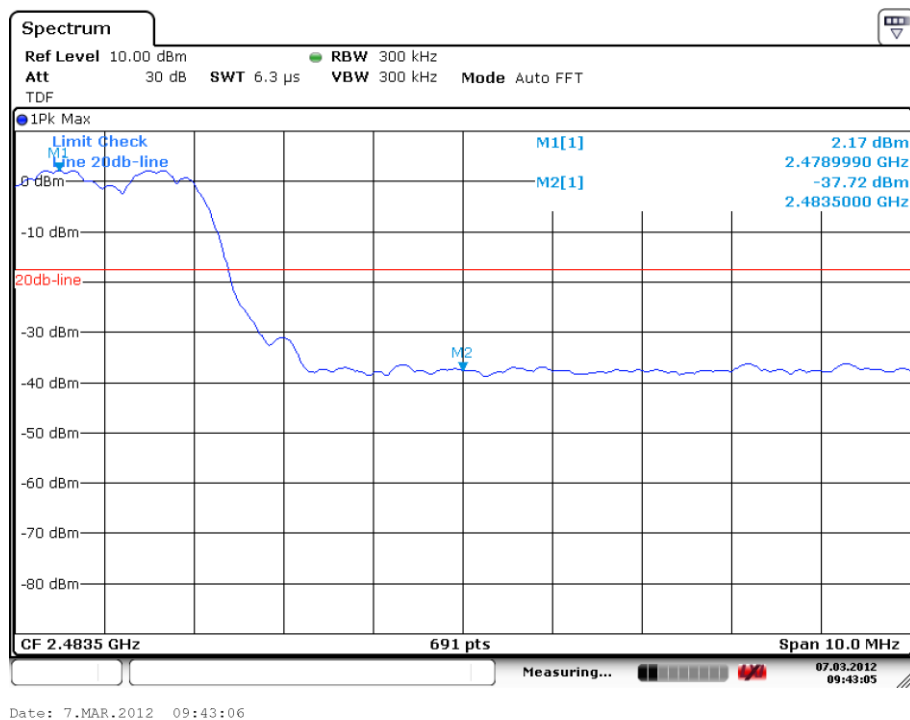
**Fig. 3 Band Edges ( $\pi/4$  DQPSK, Ch 0, Hopping ON)**



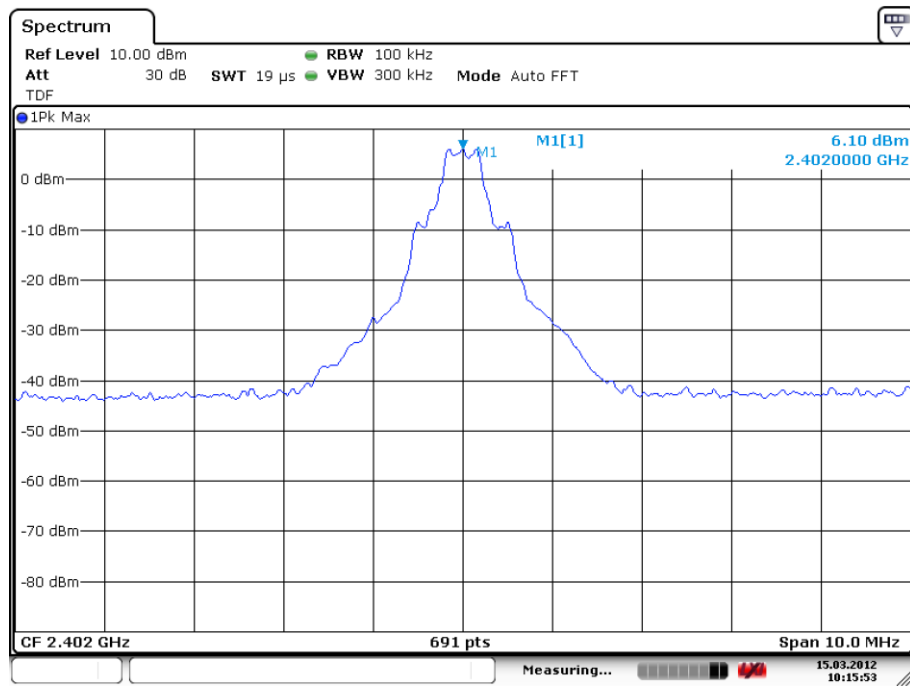
**Fig. 4 Band Edges ( $\pi/4$  DQPSK, Ch 78, Hopping ON)**



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

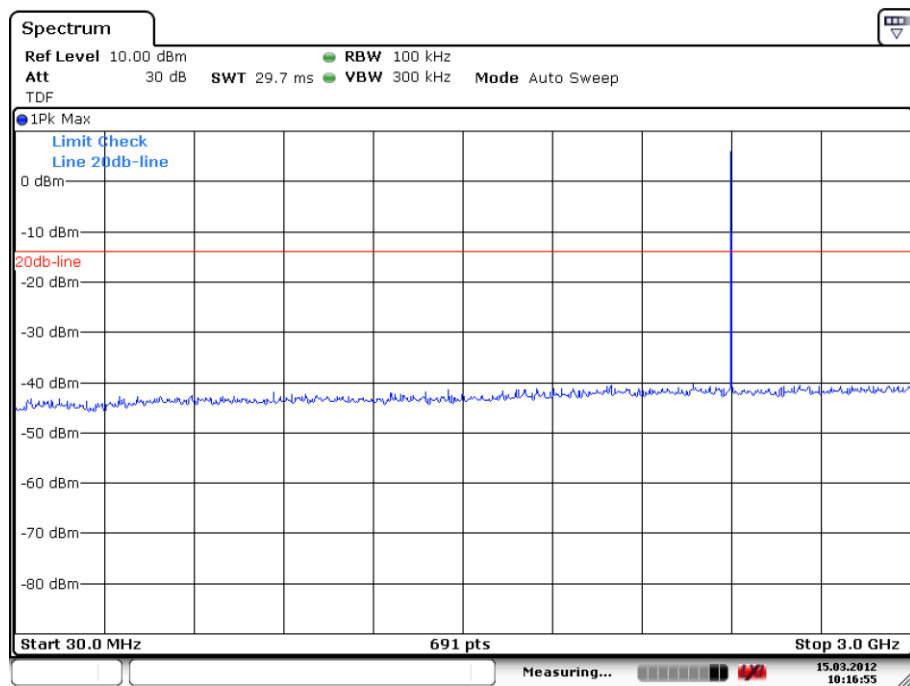


**Fig. 6 Band Edges (8DPSK, Ch 78, Hopping ON)**



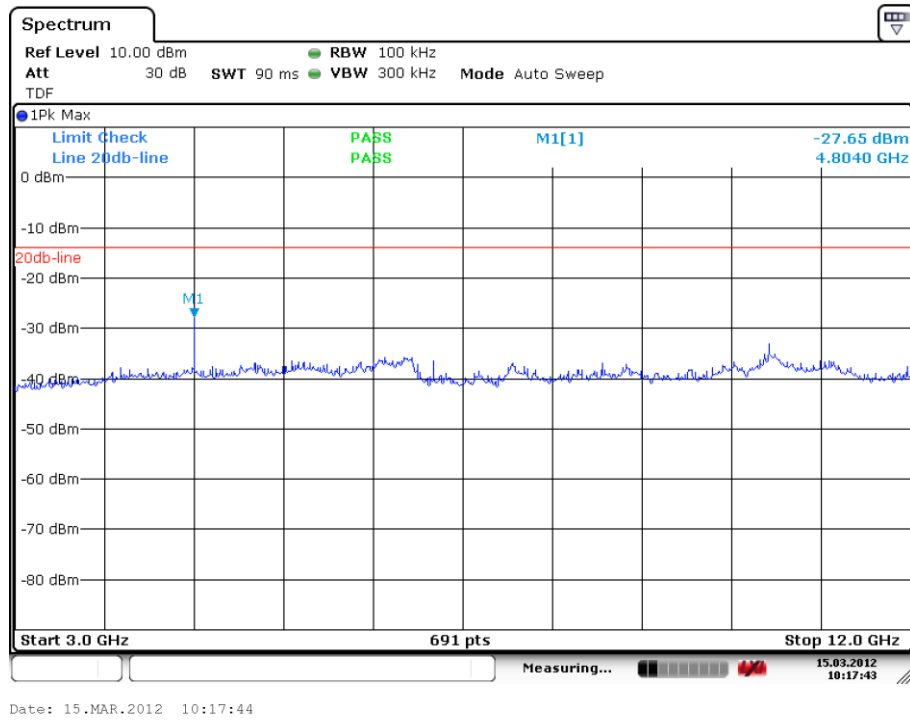
Date: 15.MAR.2012 10:15:54

**Fig. 7 Conducted Spurious Emission (GFSK, Ch0, 2.402GHz)**

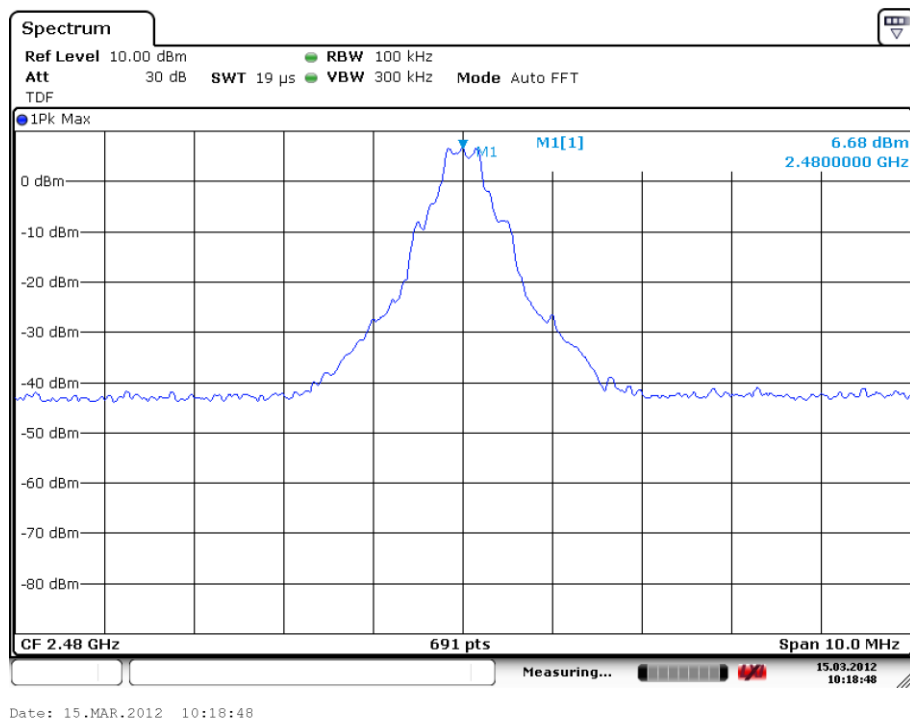


Date: 15.MAR.2012 10:16:55

**Fig. 8 Conducted Spurious Emission (GFSK, Ch0, 30 MHz-3 GHz)**



**Fig. 9 Conducted Spurious Emission (GFSK, Ch0, 3GHz-12 GHz)**



**Fig. 10 Conducted Spurious Emission (GFSK, Ch78, 2.480GHz)**

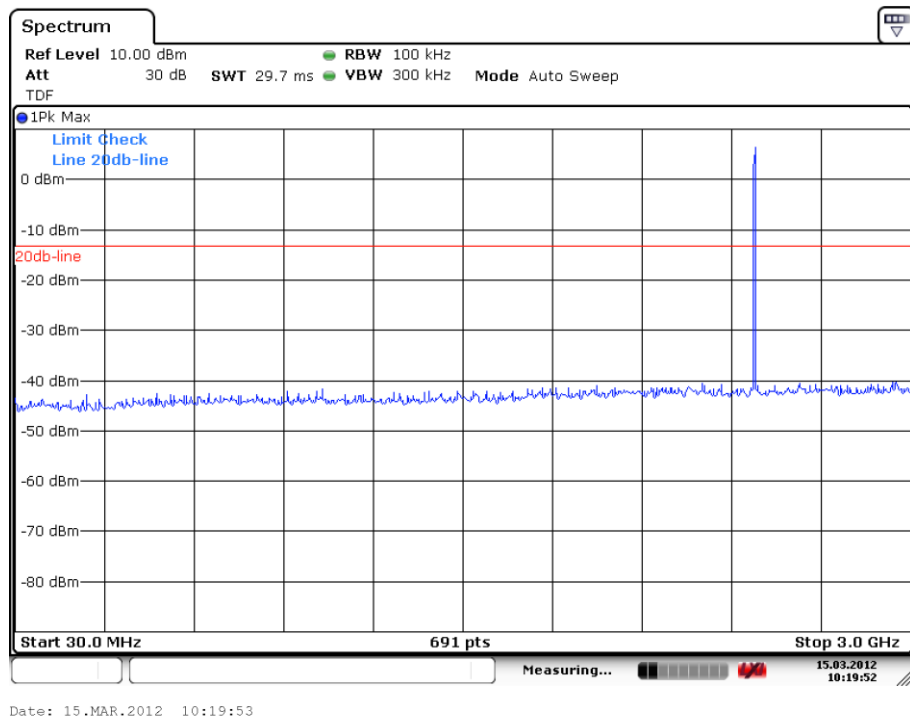


Fig. 11 Conducted Spurious Emission (GFSK, Ch78, 30 MHz-3 GHz)

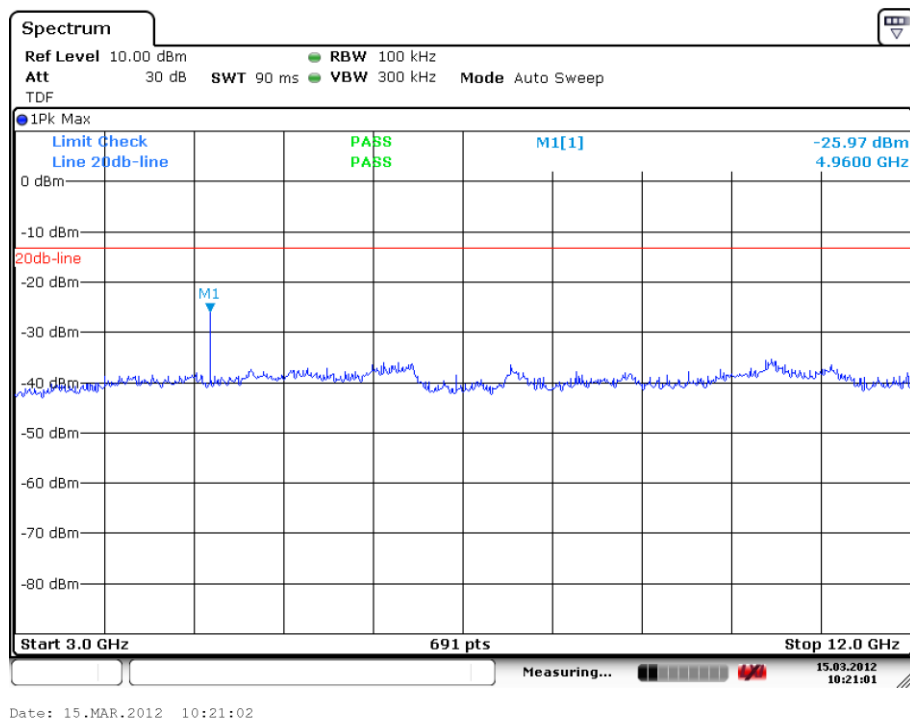


Fig. 12 Conducted Spurious Emission (GFSK, Ch78, 3GHz-12 GHz)

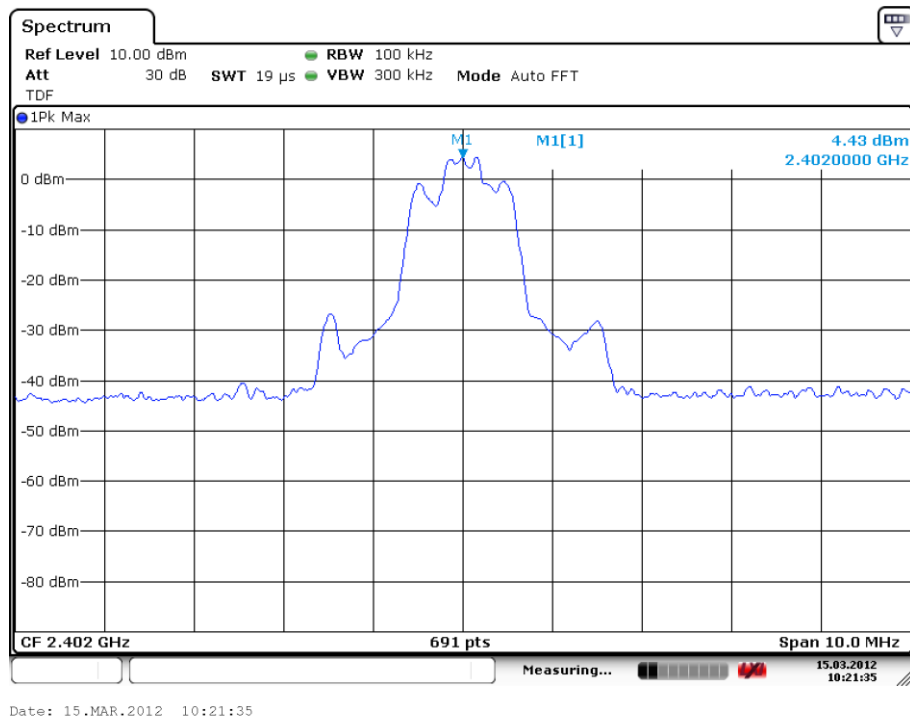


Fig. 13 Conducted Spurious Emission ( $\pi/4$  DQPSK, Ch0, 2.402GHz)

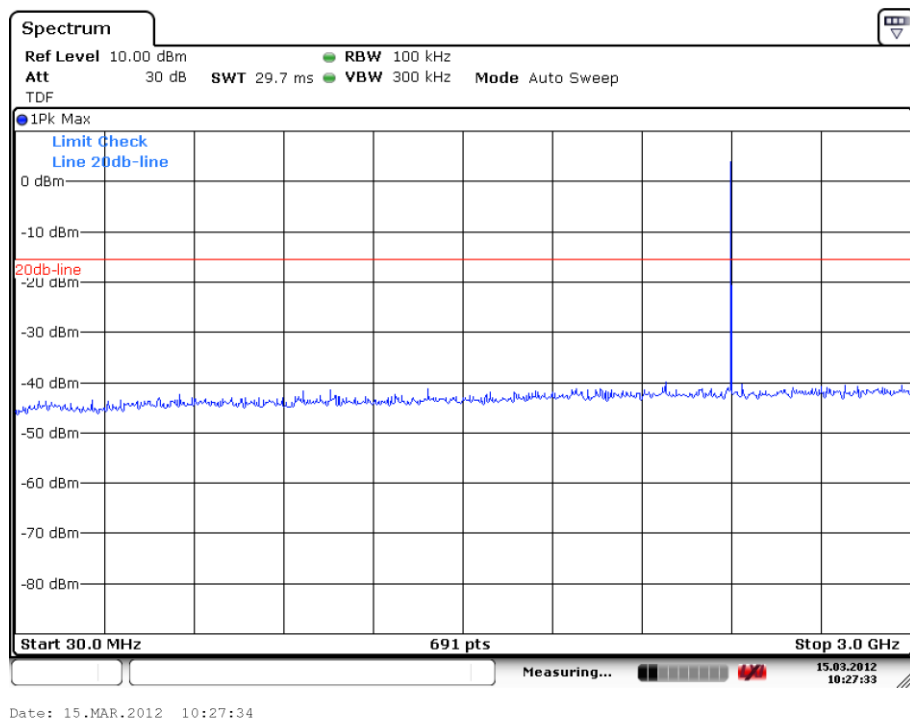


Fig. 14 Conducted Spurious Emission ( $\pi/4$  DQPSK, Ch0, 30 MHz-3 GHz)



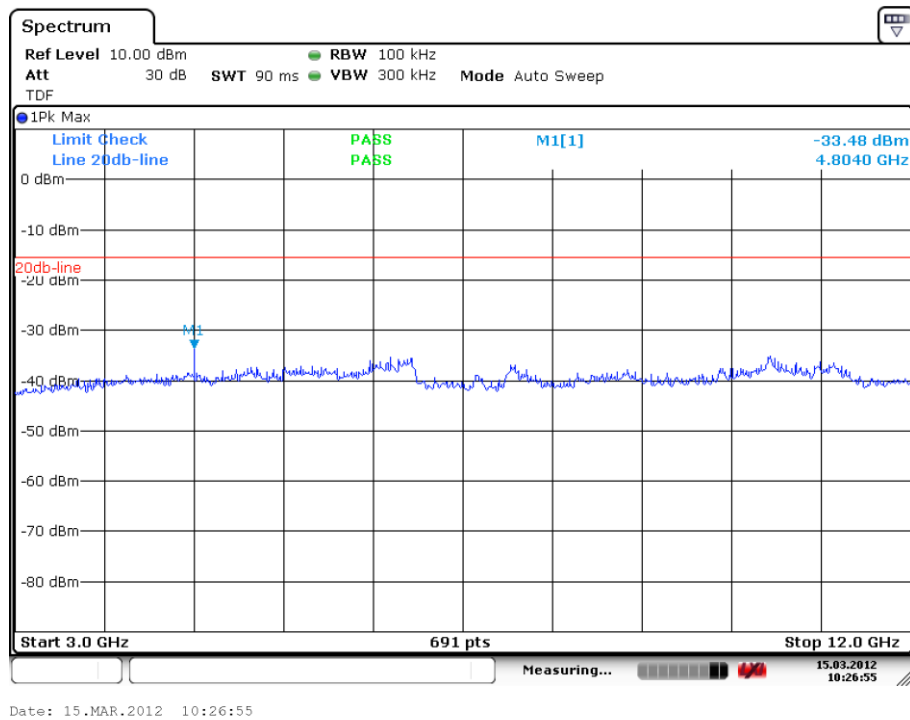


Fig. 15 Conducted Spurious Emission ( $\pi/4$  DQPSK, Ch0, 3GHz-12 GHz)

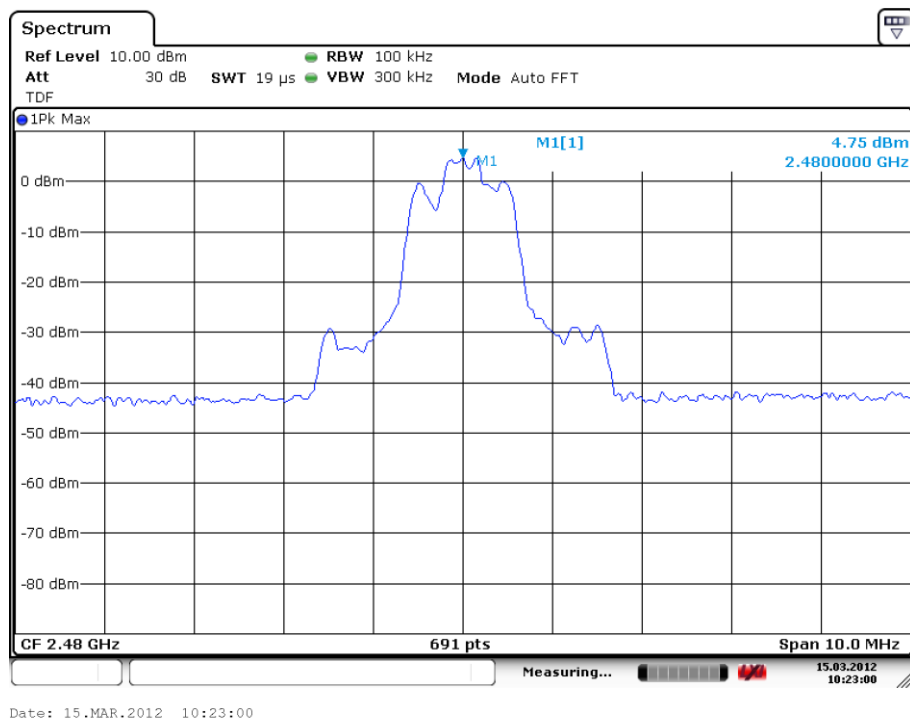


Fig. 16 Conducted Spurious Emission ( $\pi/4$  DQPSK, Ch78, 2.480GHz)

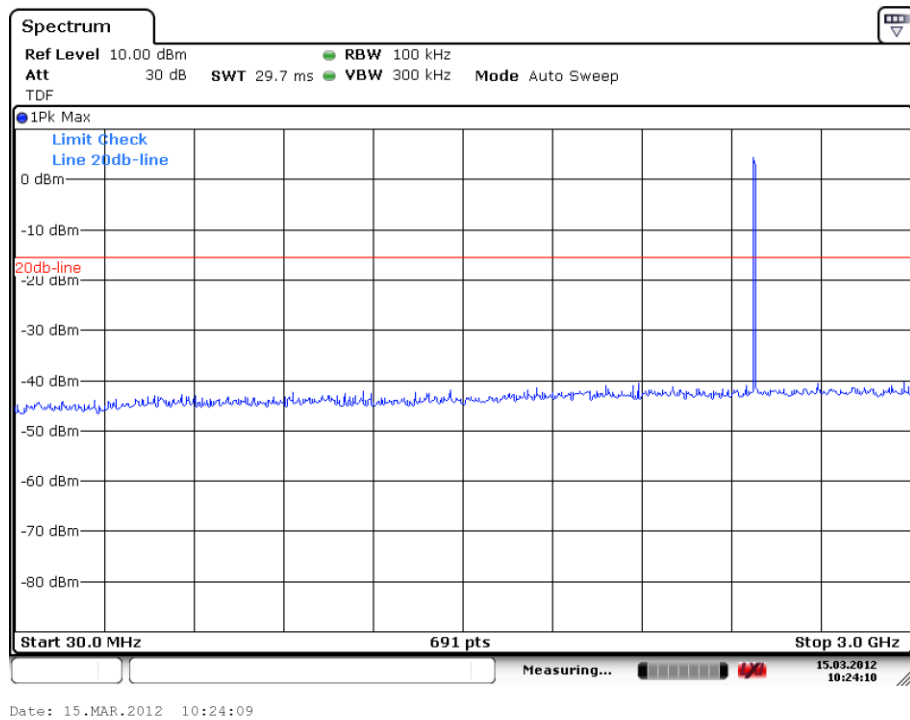


Fig. 17 Conducted Spurious Emission ( $\pi/4$  DQPSK, Ch78, 30 MHz-3 GHz)

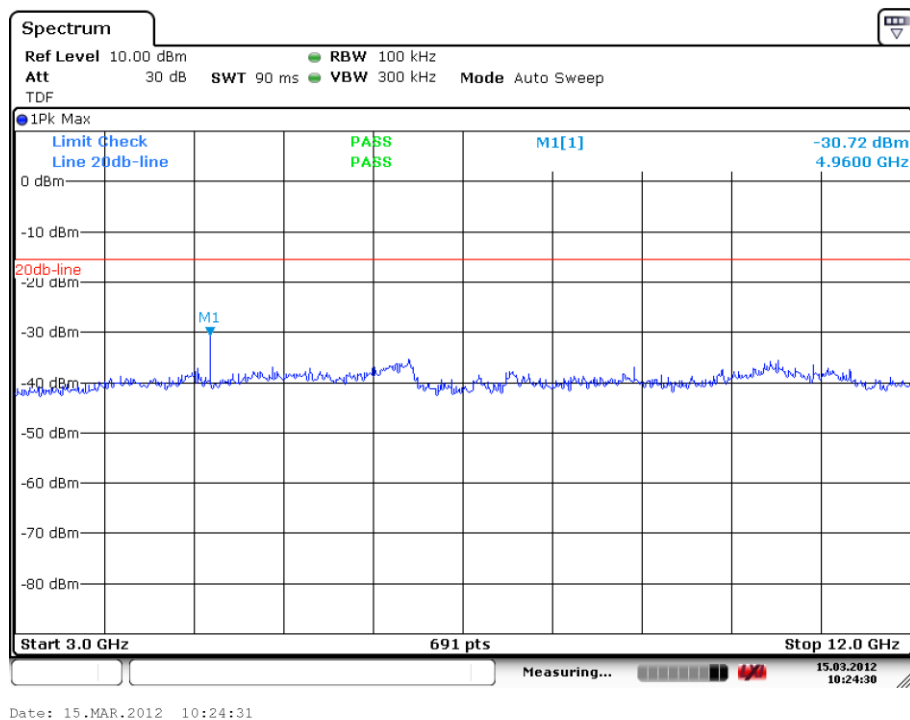
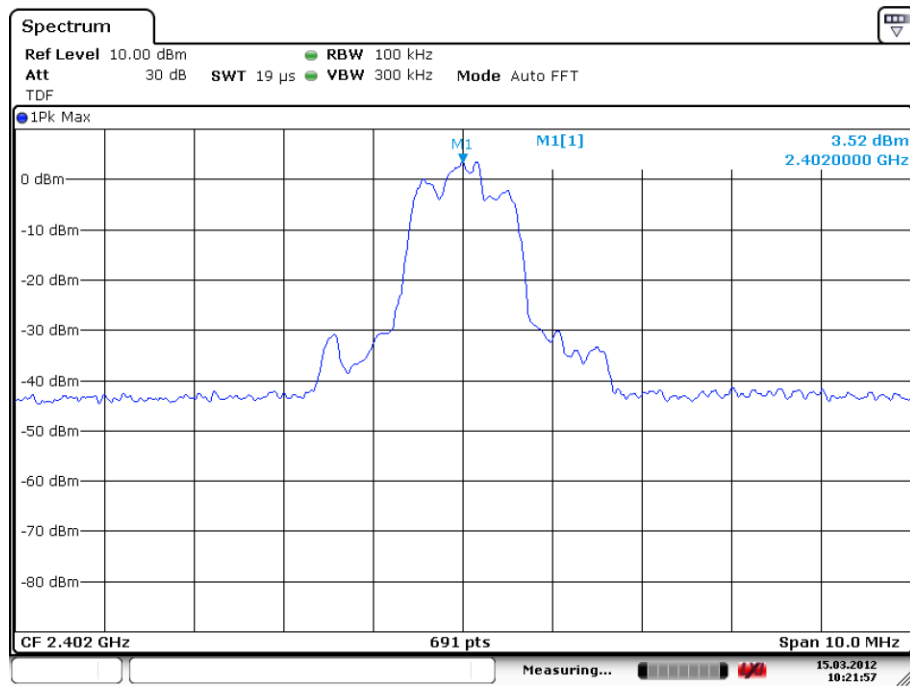
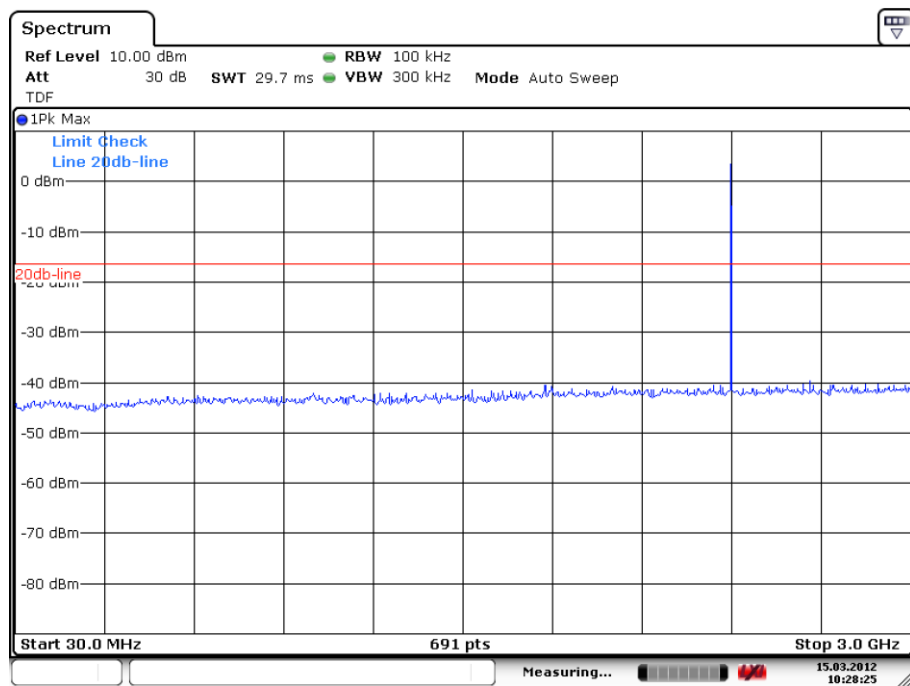


Fig. 18 Conducted Spurious Emission ( $\pi/4$  DQPSK, Ch78, 3GHz-12 GHz)



Date: 15.MAR.2012 10:21:58

**Fig. 19 Conducted Spurious Emission (8DPSK, Ch0, 2.402GHz)**



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**Fig. 20 Conducted Spurious Emission (8DPSK, Ch0, 30 MHz-3 GHz)**

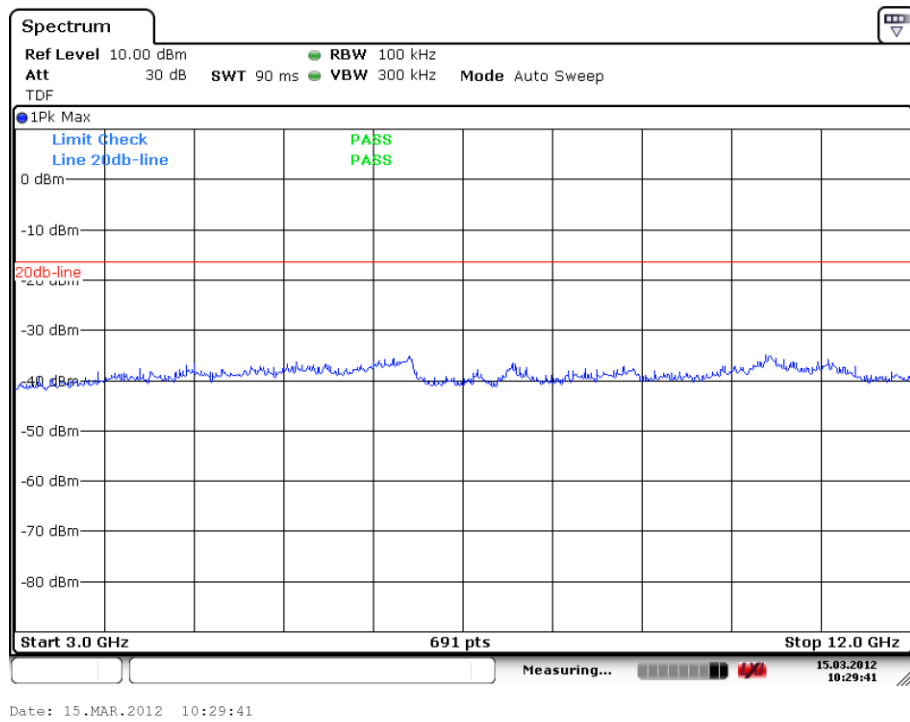


Fig. 21 Conducted Spurious Emission (8DPSK, Ch0, 3GHz-12 GHz)

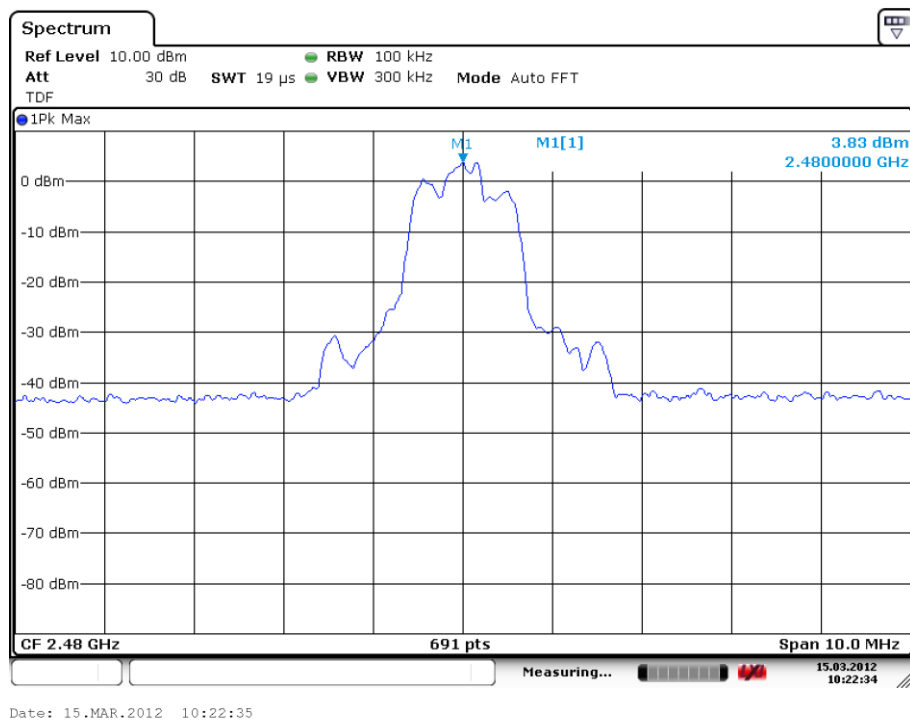
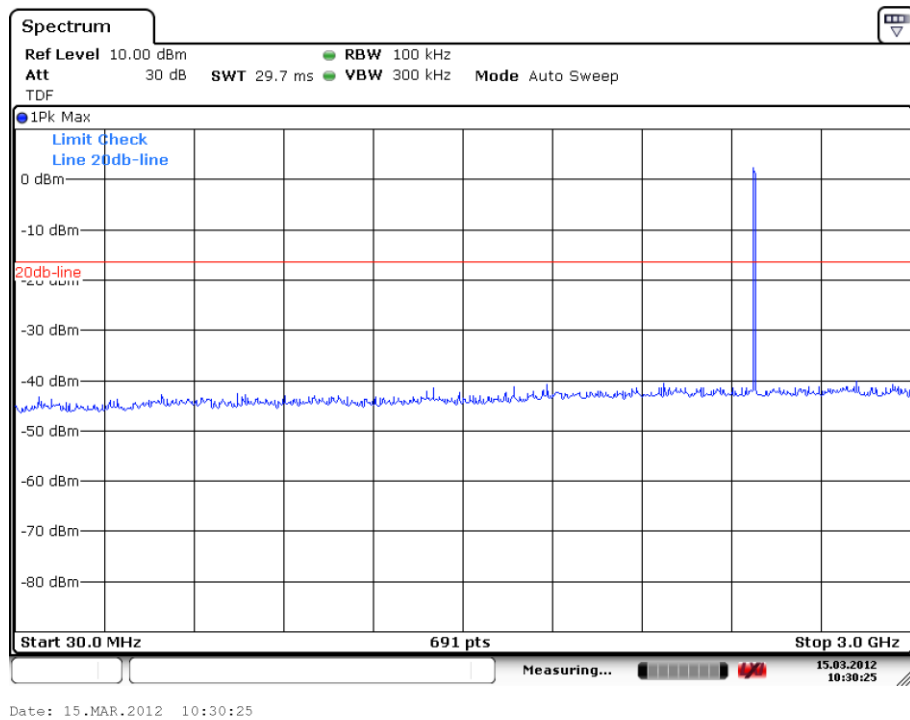
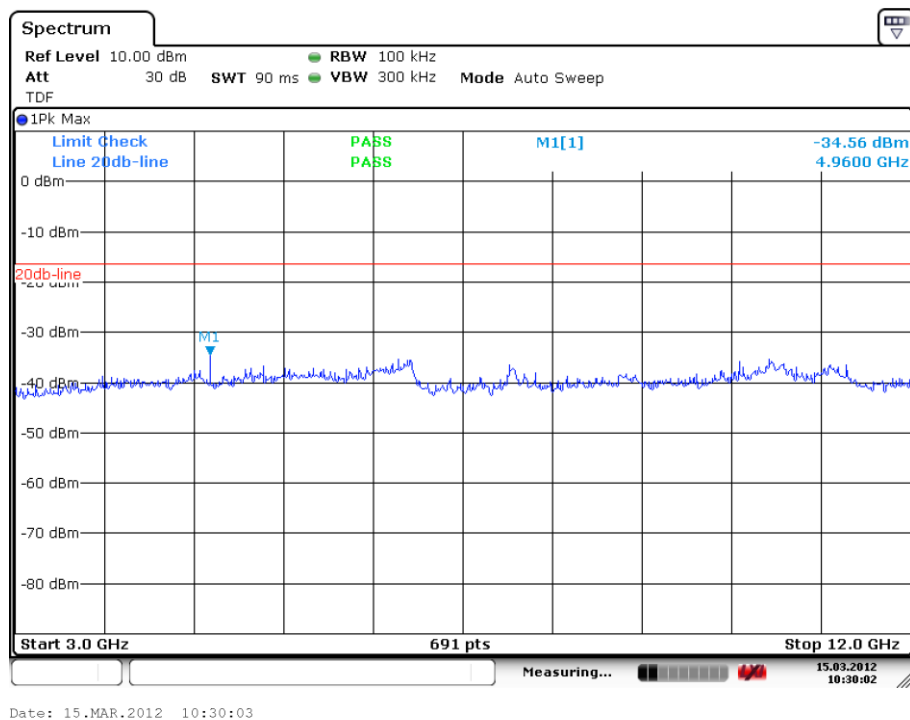


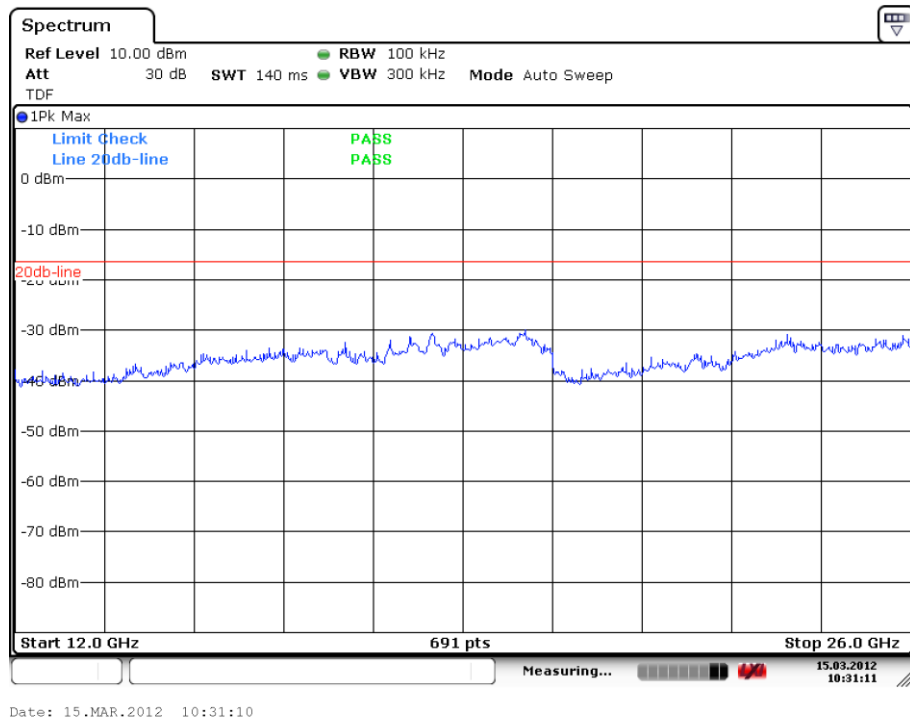
Fig. 22 Conducted Spurious Emission (8DPSK, Ch78, 2.480GHz)



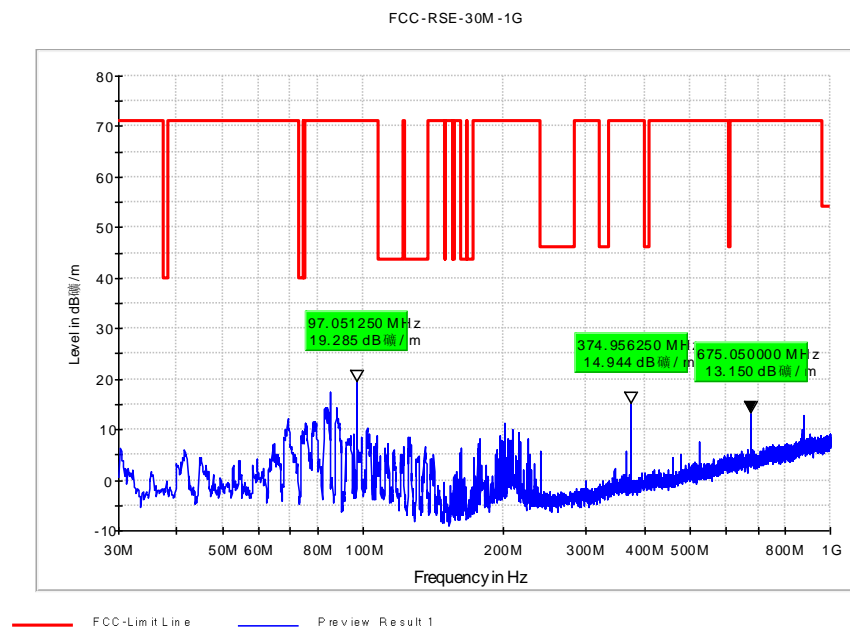
**Fig. 23 Conducted Spurious Emission (8DPSK, Ch78, 30 MHz-3 GHz)**



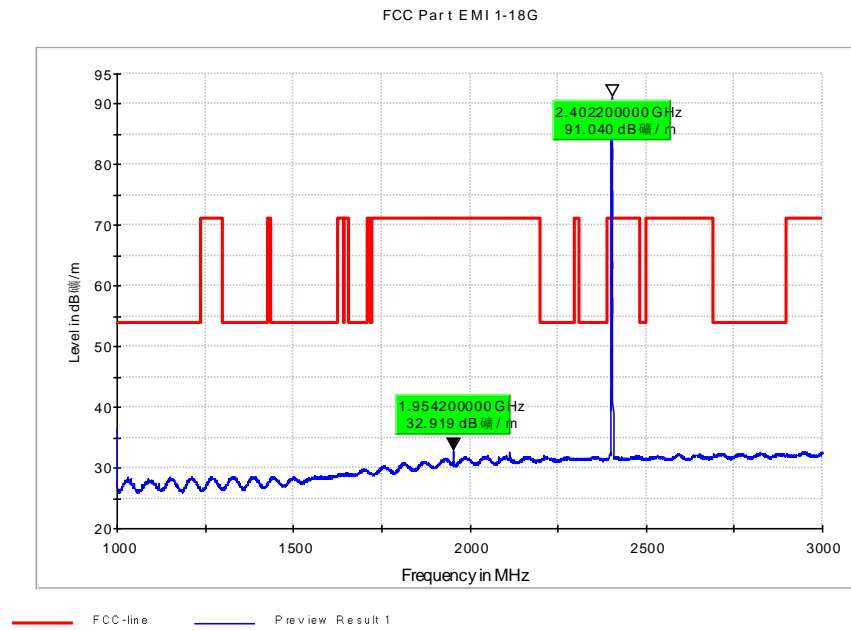
**Fig. 24 Conducted Spurious Emission (8DPSK, Ch78, 3GHz-12 GHz)**



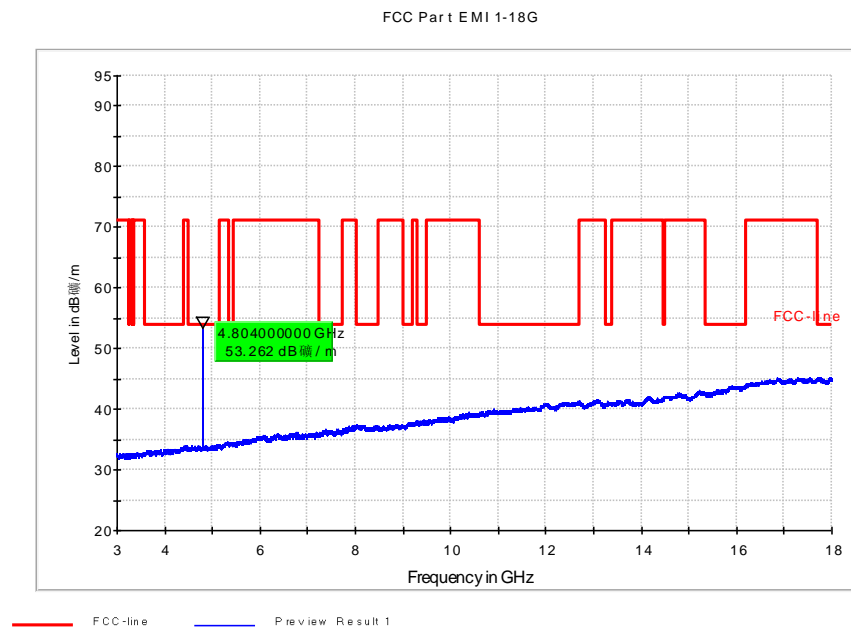
**Fig. 25 Conducted Spurious Emission (All channel, 12 GHz-26 GHz)**



**Fig. 26 Radiated Spurious Emission (GFSK, Ch0, 30 MHz ~1 GHz)**

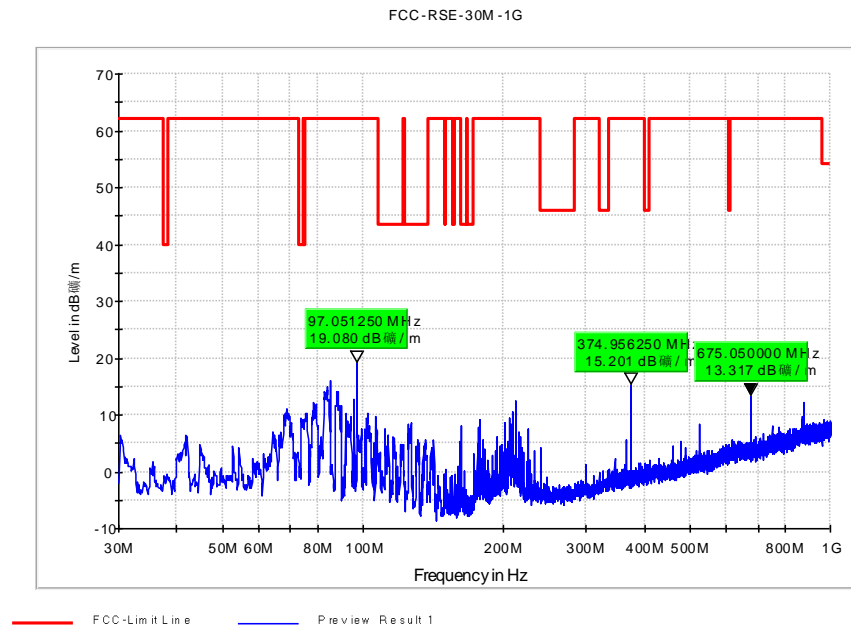


**Fig. 27 Radiated Spurious Emission (GFSK, Ch0, 1 GHz ~3 GHz)**

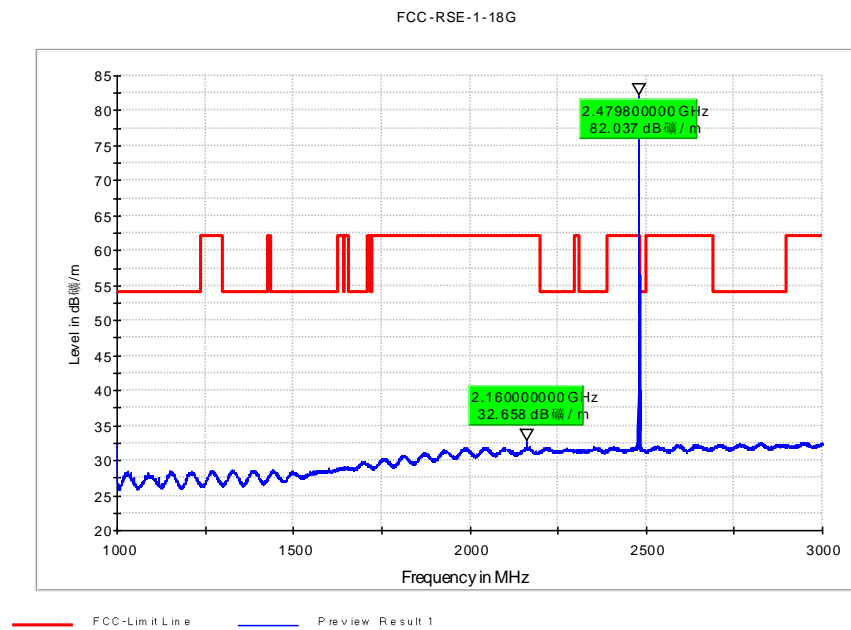


**Fig. 28 Radiated Spurious Emission (GFSK, Ch0, 3 GHz ~18 GHz)**

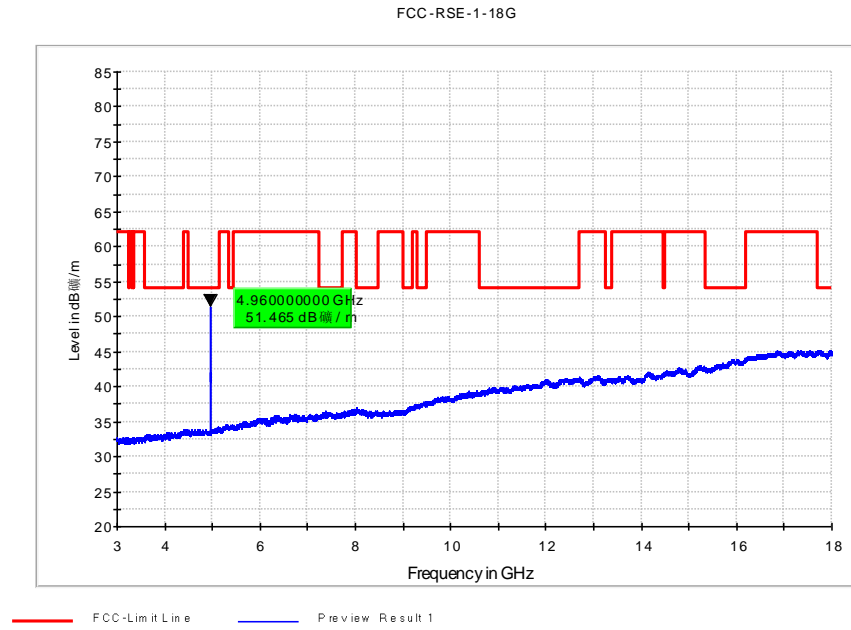




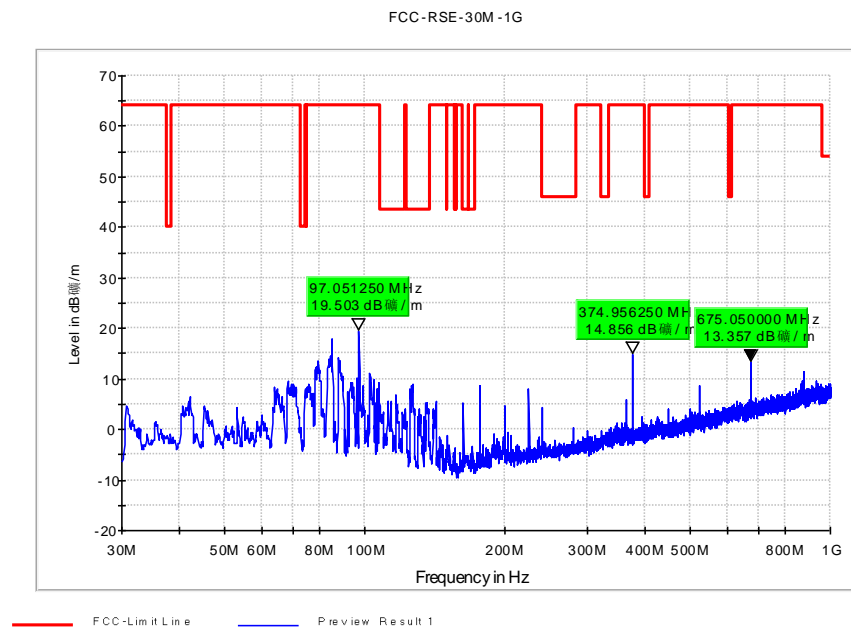
**Fig. 29 Radiated Spurious Emission (GFSK, Ch78, 30 MHz ~1 GHz)**



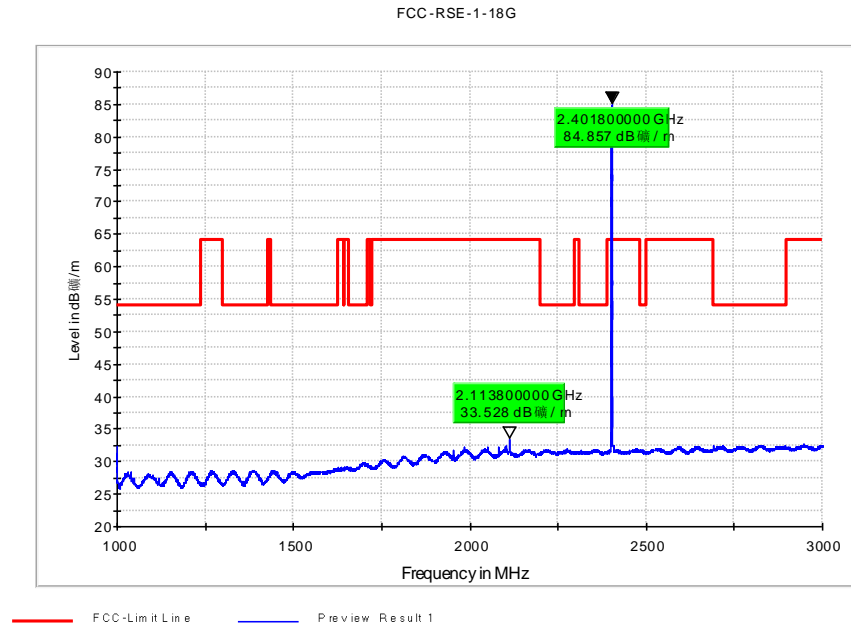
**Fig. 30 Radiated Spurious Emission (GFSK, Ch78, 1 GHz ~3 GHz)**



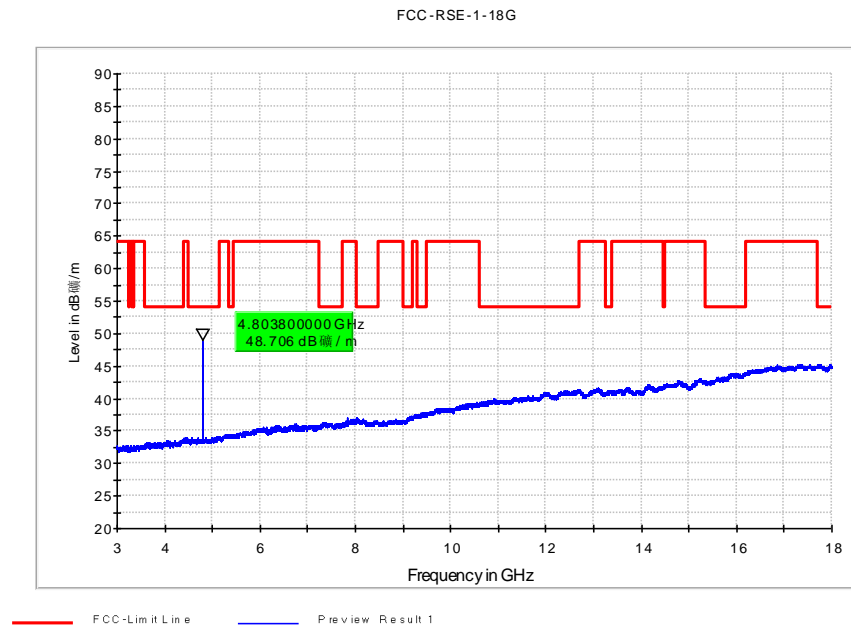
**Fig. 31 Radiated Spurious Emission (GFSK, Ch78, 3 GHz ~18 GHz)**



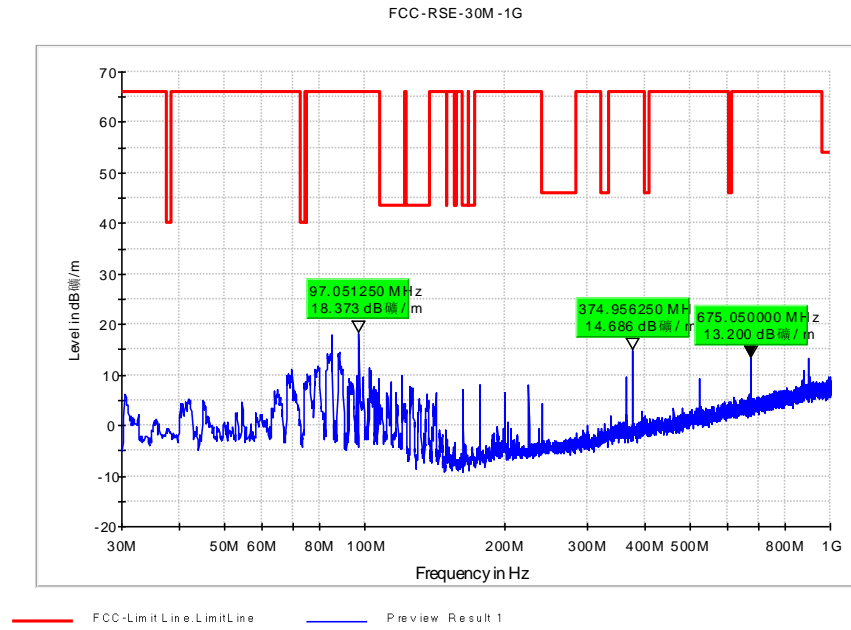
**Fig. 32 Radiated Spurious Emission ( $\pi/4$  DQPSK, Ch0, 30 MHz ~1 GHz)**



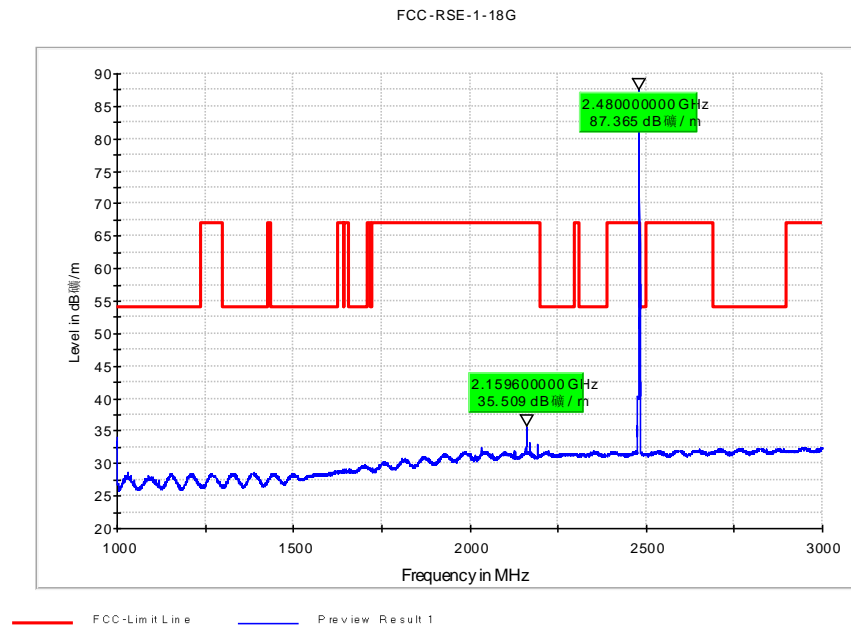
**Fig. 33 Radiated Spurious Emission ( $\pi/4$  DQPSK, Ch0, 1 GHz ~3 GHz)**



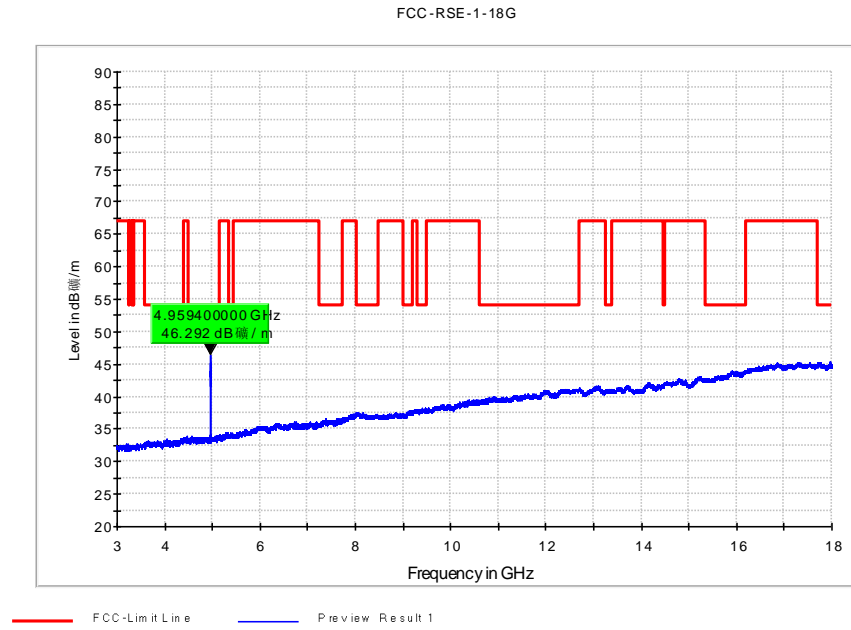
**Fig. 34 Radiated Spurious Emission ( $\pi/4$  DQPSK, Ch0, 3 GHz ~18 GHz)**



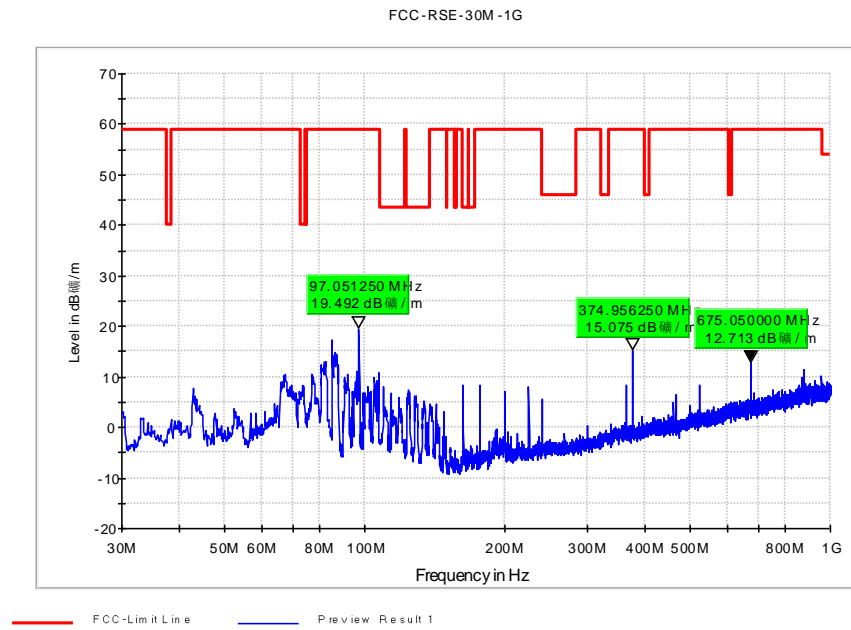
**Fig. 35 Radiated Spurious Emission ( $\pi/4$  DQPSK, Ch78, 30 MHz ~1 GHz)**



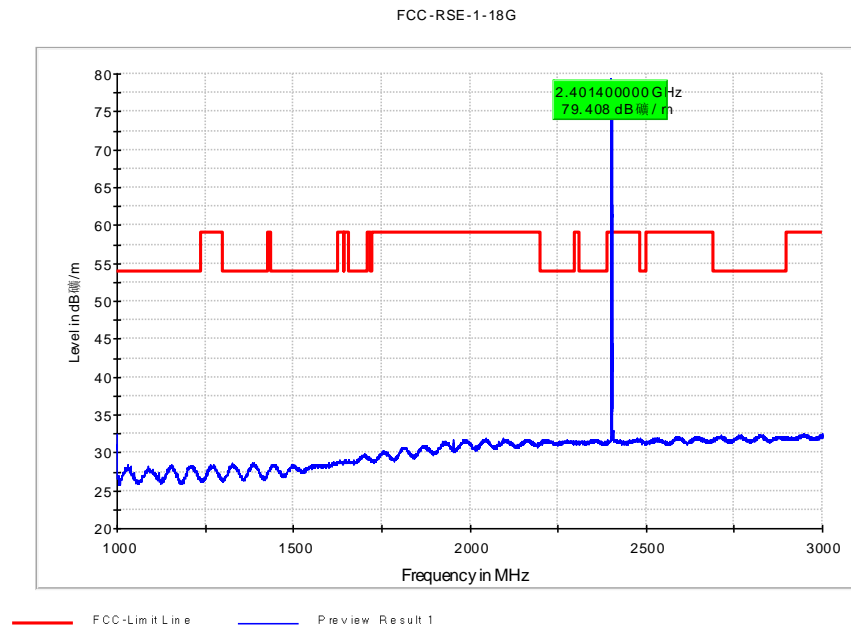
**Fig. 36 Radiated Spurious Emission ( $\pi/4$  DQPSK, Ch78, 1 GHz ~3 GHz)**



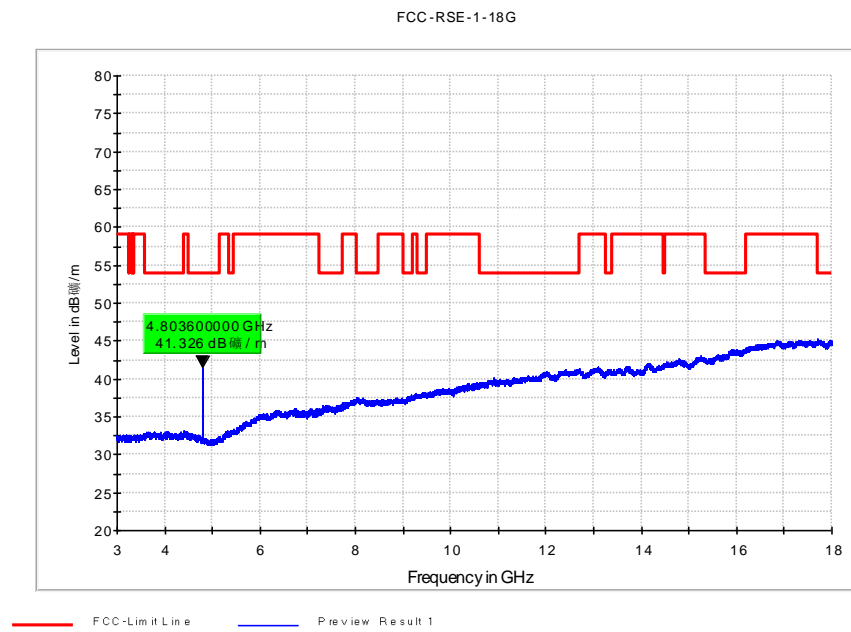
**Fig. 37 Radiated Spurious Emission ( $\pi/4$  DQPSK, Ch78, 3 GHz ~18 GHz)**



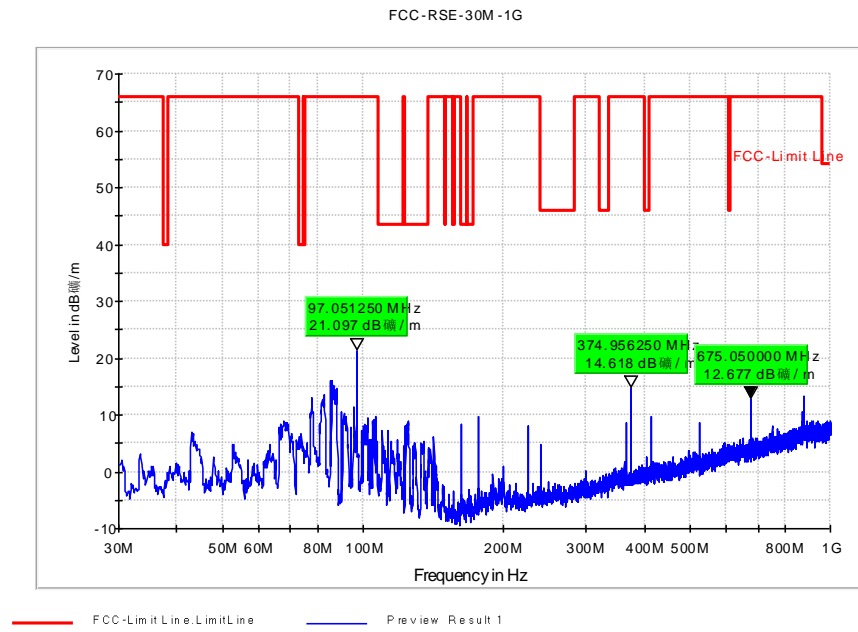
**Fig. 38 Radiated Spurious Emission (8DPSK, Ch0, 30 MHz ~1 GHz)**



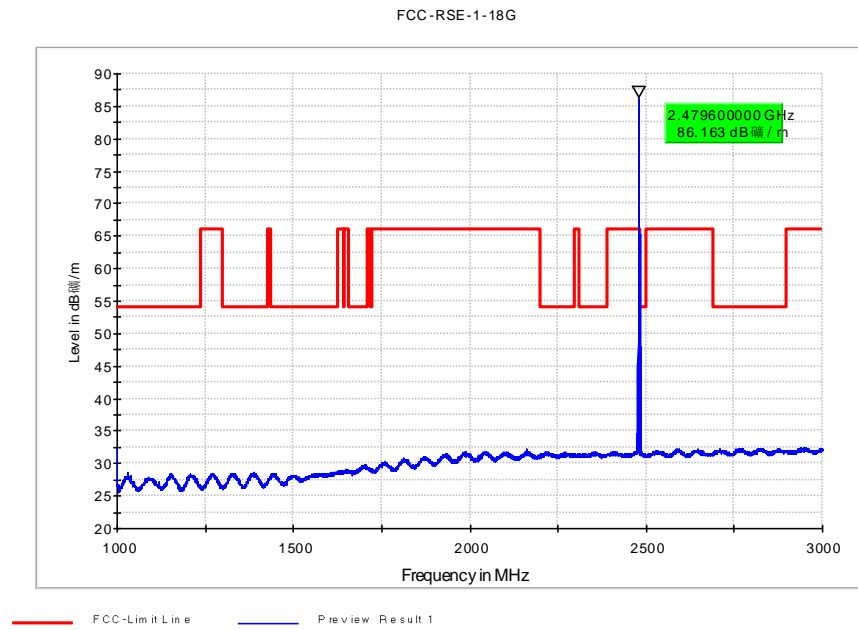
**Fig. 39 Radiated Spurious Emission (8DPSK, Ch0, 1 GHz ~3 GHz)**



**Fig. 40 Radiated Spurious Emission (8DPSK, Ch0, 3 GHz ~18 GHz)**

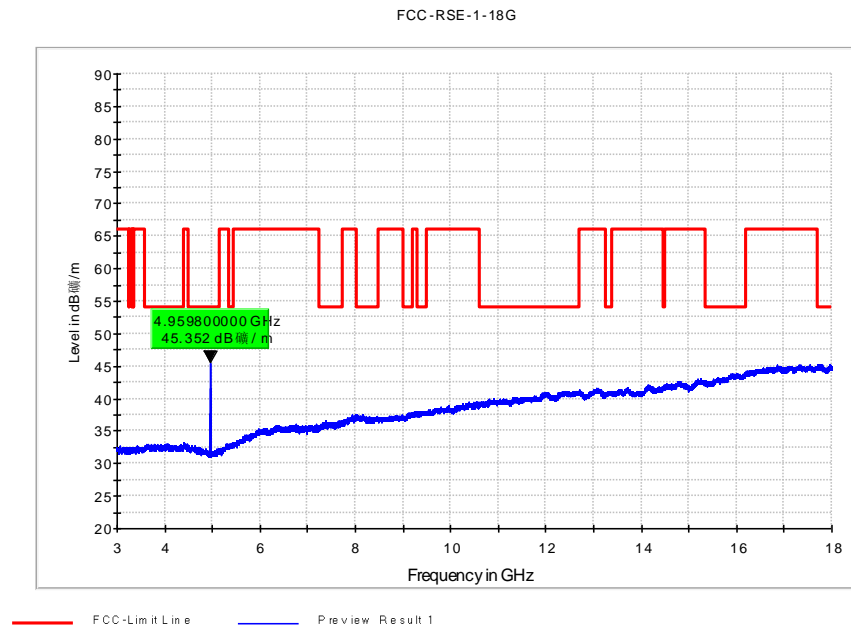


**Fig. 41 Radiated Spurious Emission (8DPSK, Ch78, 30 MHz ~1 GHz)**

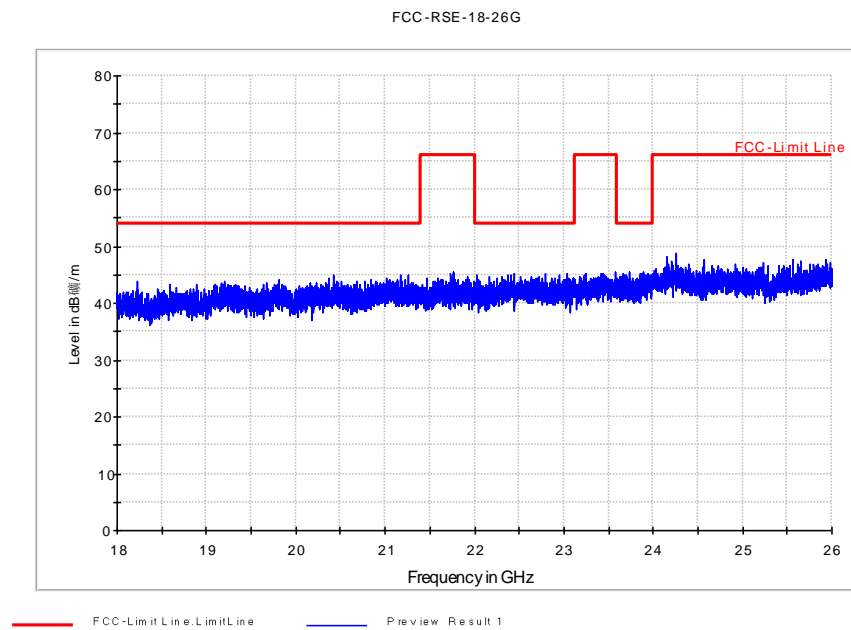


**Fig. 42 Radiated Spurious Emission (8DPSK, Ch78, 1 GHz ~3 GHz)**





**Fig. 43 Radiated Spurious Emission (8DPSK, Ch78, 3 GHz ~18 GHz)**



**Fig. 44 Radiated Spurious Emission (All channel, 18 GHz ~26 GHz)**

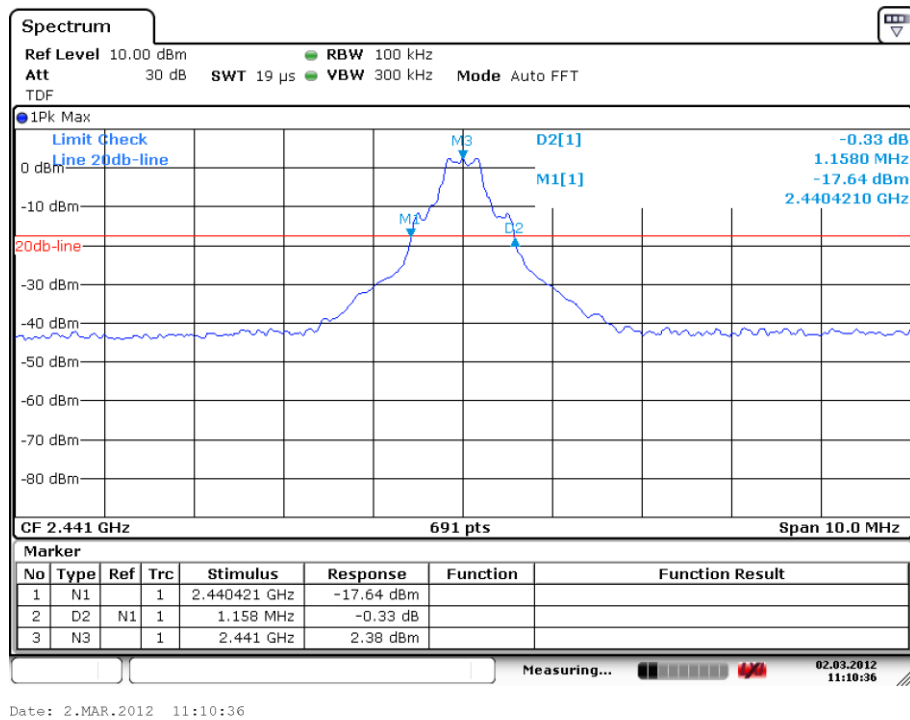


Fig. 45 Occupied 20dB Bandwidth (GFSK, Ch 39)

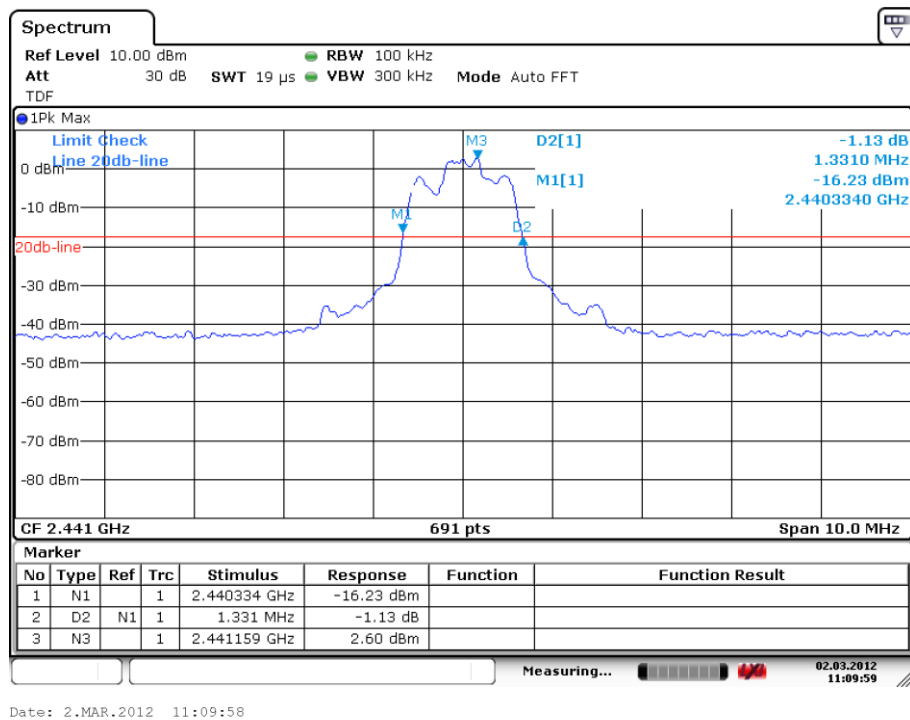
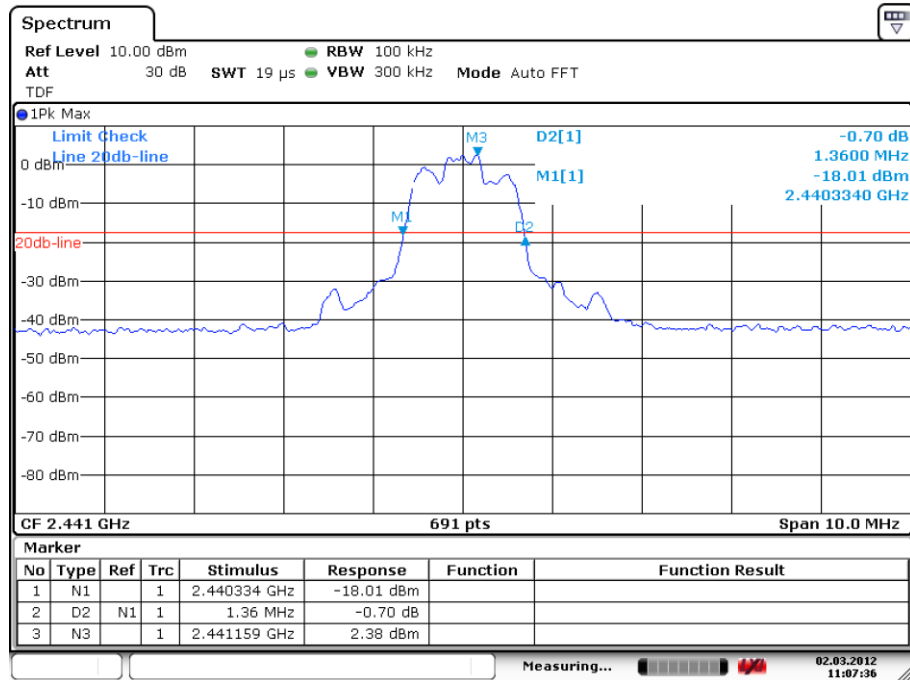
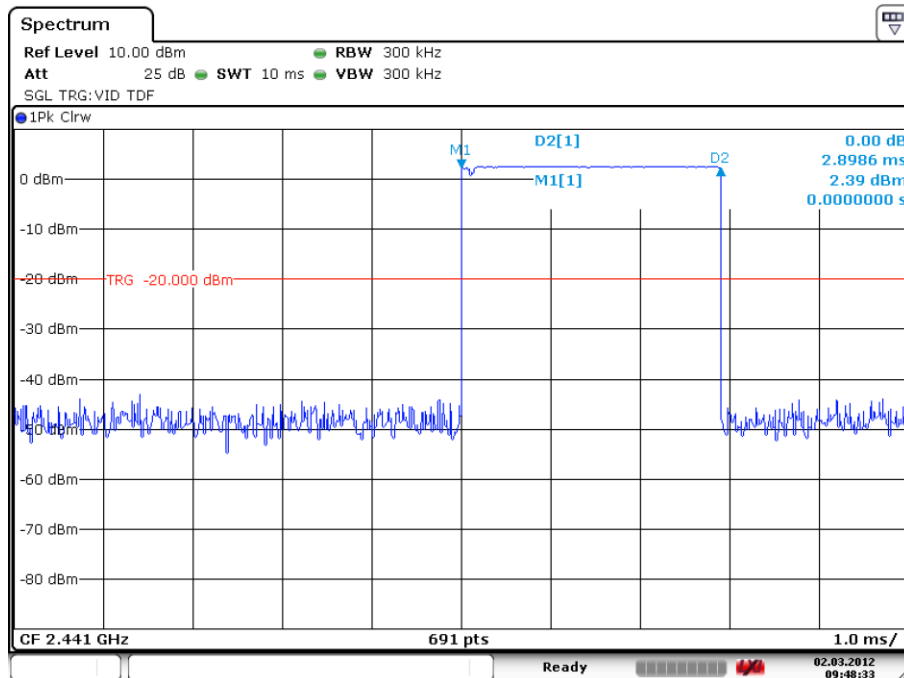


Fig. 46 Occupied 20dB Bandwidth ( $\pi/4$  DQPSK, Ch 39)



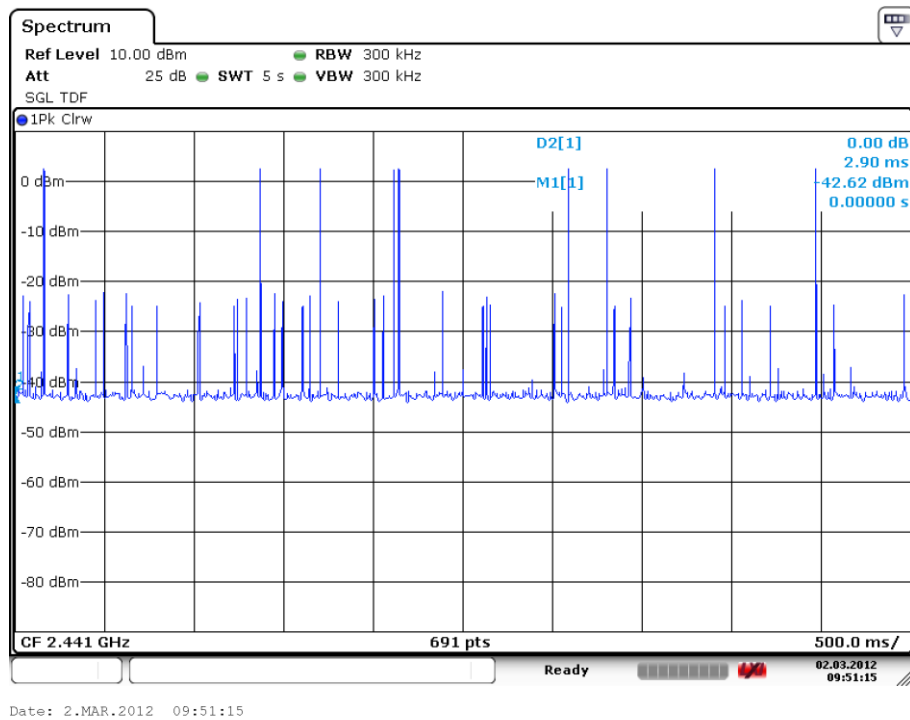
Date: 2.MAR.2012 11:07:36

Fig. 47 Occupied 20dB Bandwidth (8DPSK, Ch 39)

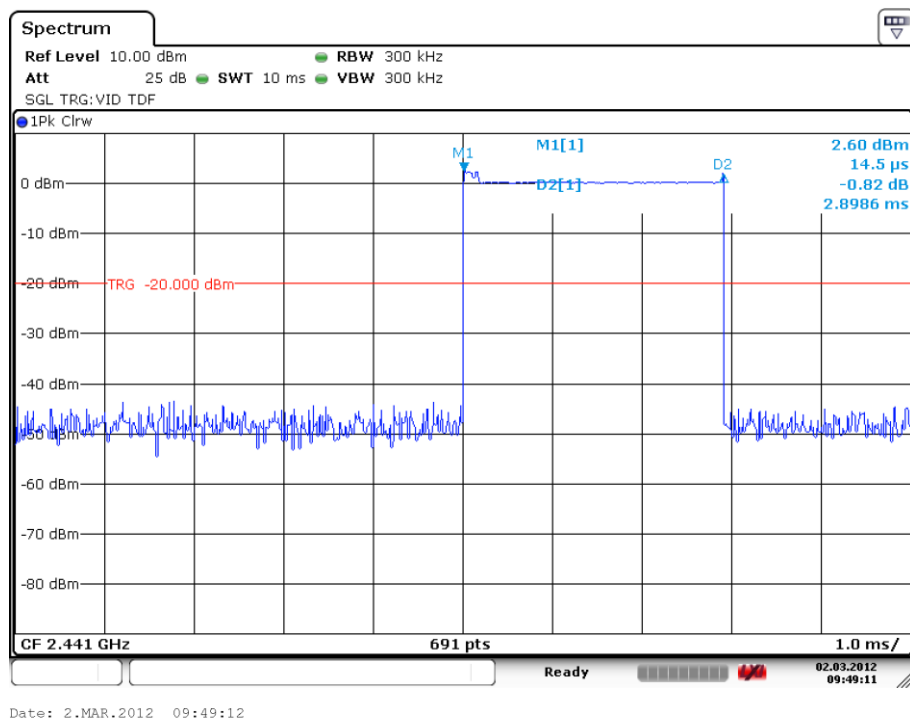


Date: 2.MAR.2012 09:48:33

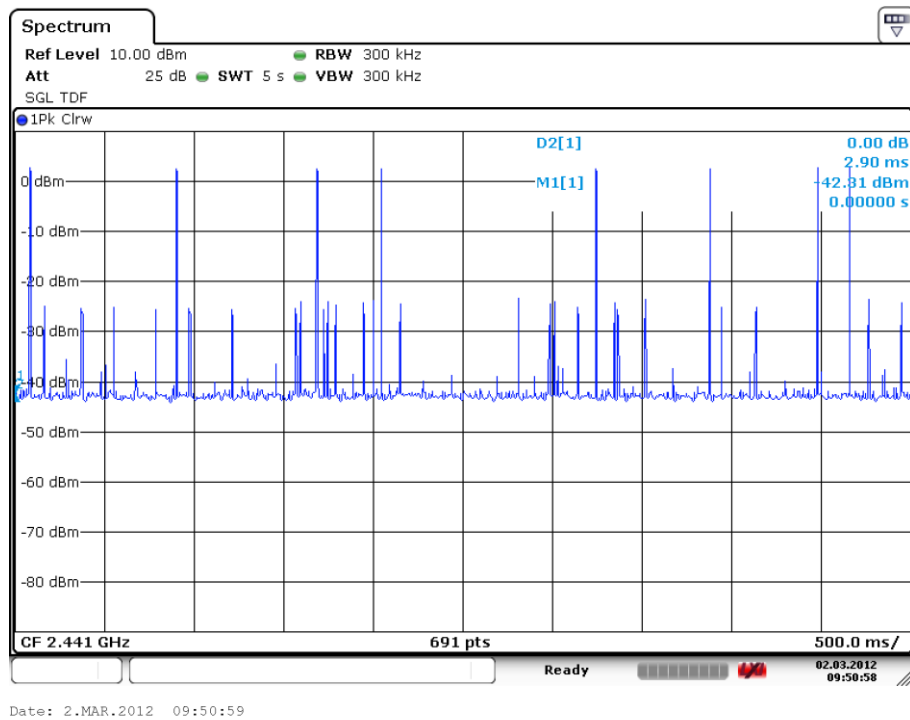
Fig. 48 Time of Occupancy(Dwell Time) (GFSK, Ch39)



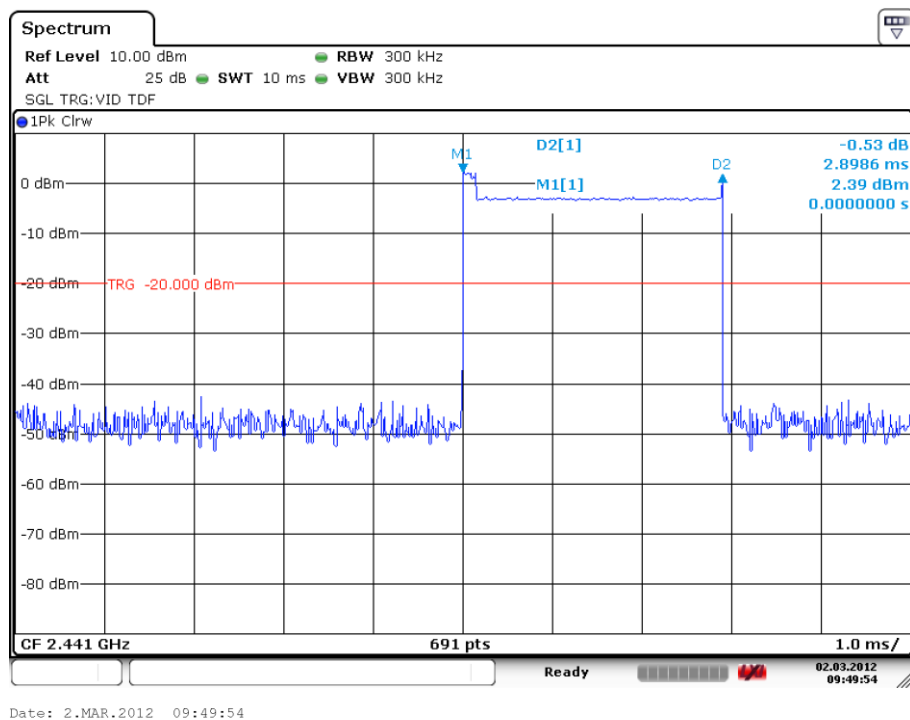
**Fig. 49 Number of Transmissions (GFSK, Ch39)**



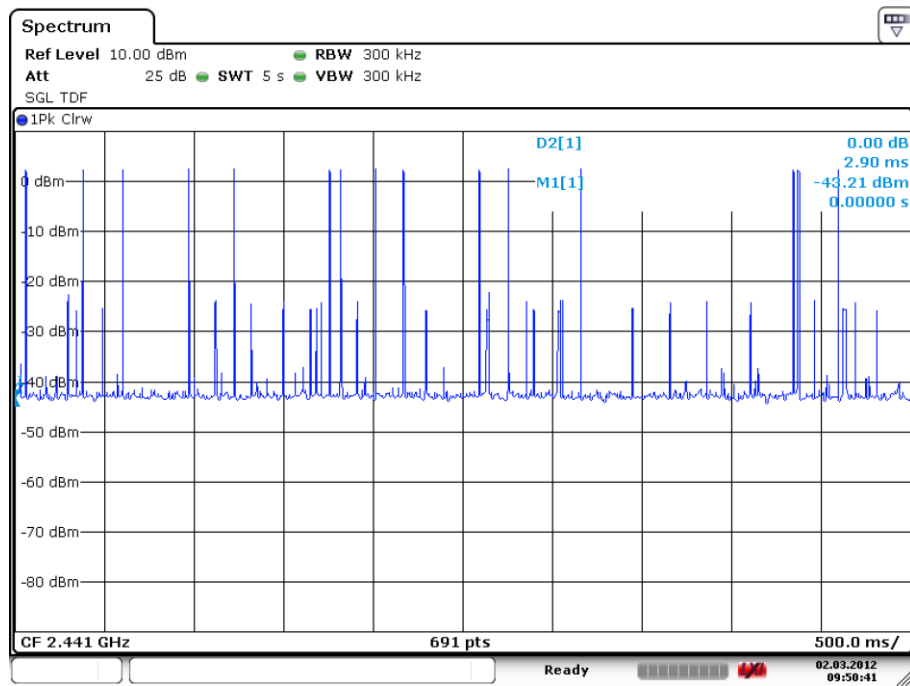
**Fig. 50 Time of Occupancy(Dwell Time) ( $\pi/4$  DQPSK, Ch39)**



**Fig. 51 Number of Transmissions ( $\pi/4$  DQPSK, Ch39)**

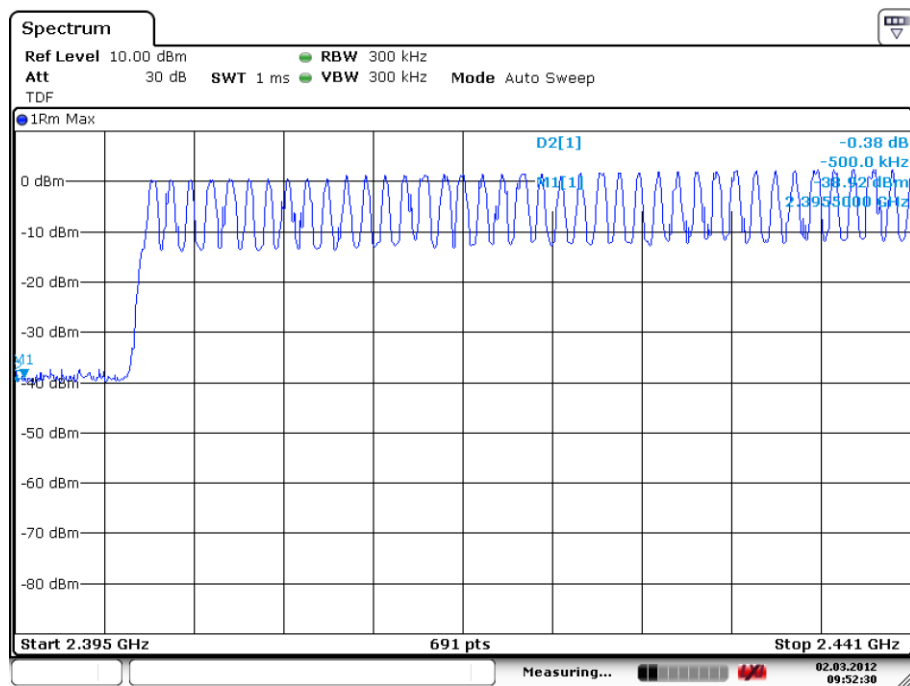


**Fig. 52 Time of Occupancy(Dwell Time) (8DPSK, Ch39)**



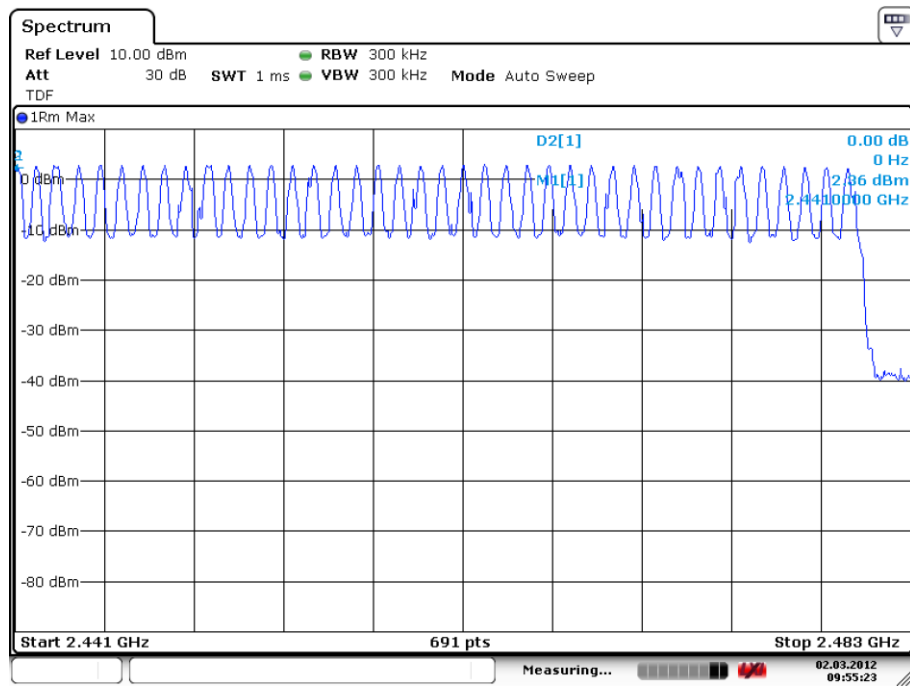
Date: 2.MAR.2012 09:50:41

**Fig. 53 Number of Transmissions (8DPSK, Ch39)**



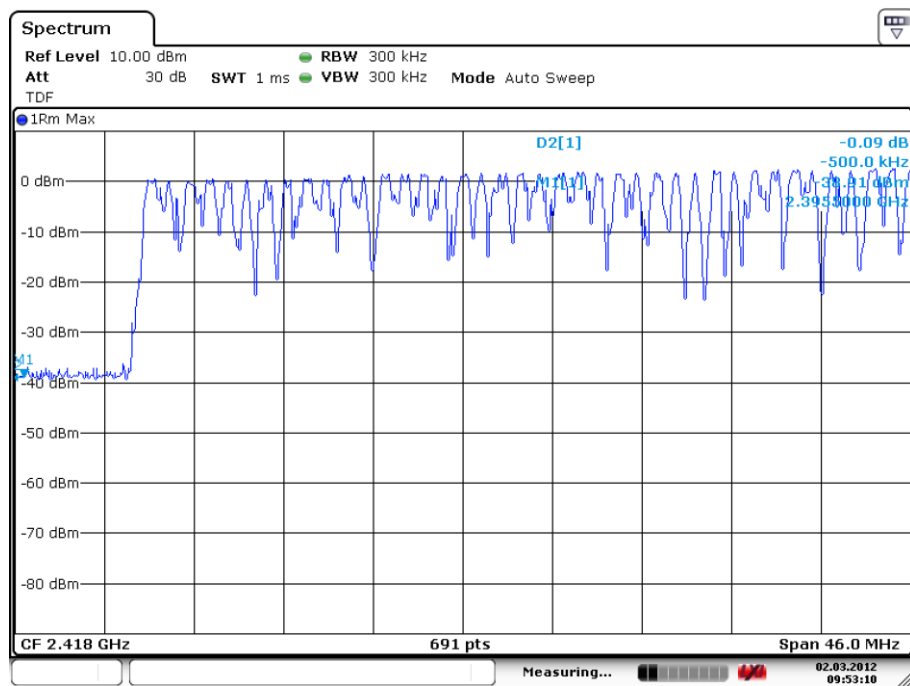
Date: 2.MAR.2012 09:52:31

**Fig. 54 Hopping channel ch0~39 (GFSK, Ch39)**



Date: 2.MAR.2012 09:55:24

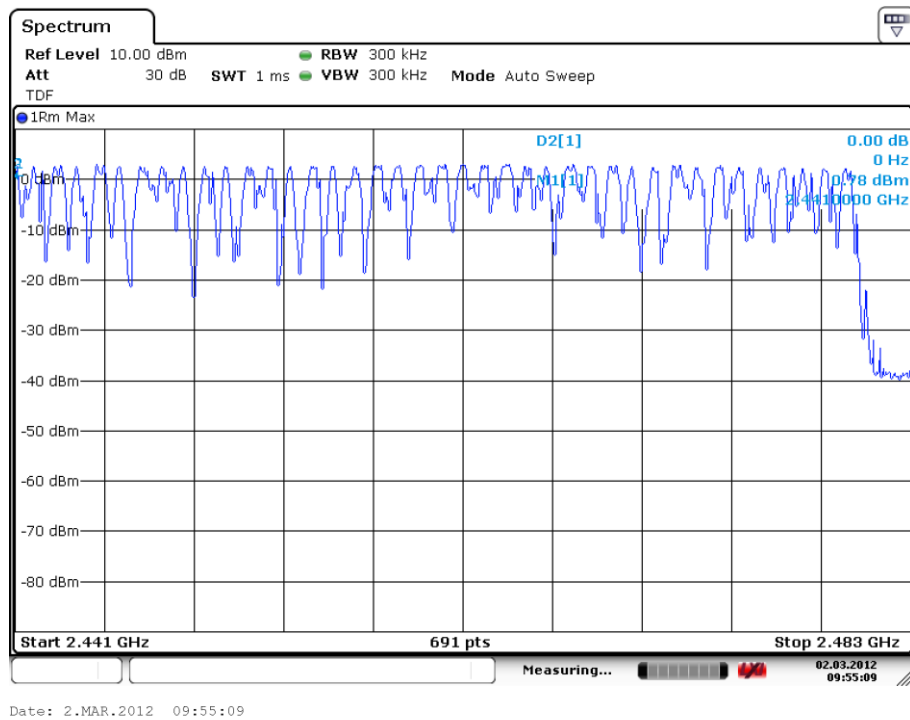
**Fig. 55 Hopping channel ch39~78 (GFSK, Ch39)**



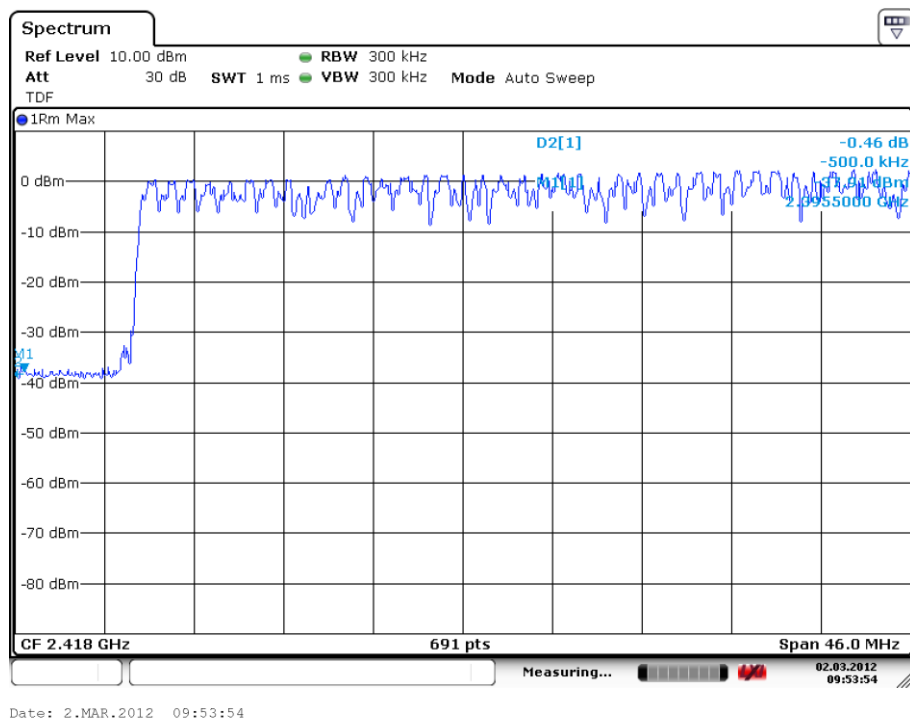
Date: 2.MAR.2012 09:53:10

**Fig. 56 Hopping channel ch0~39 ( $\pi/4$  DQPSK, Ch39)**

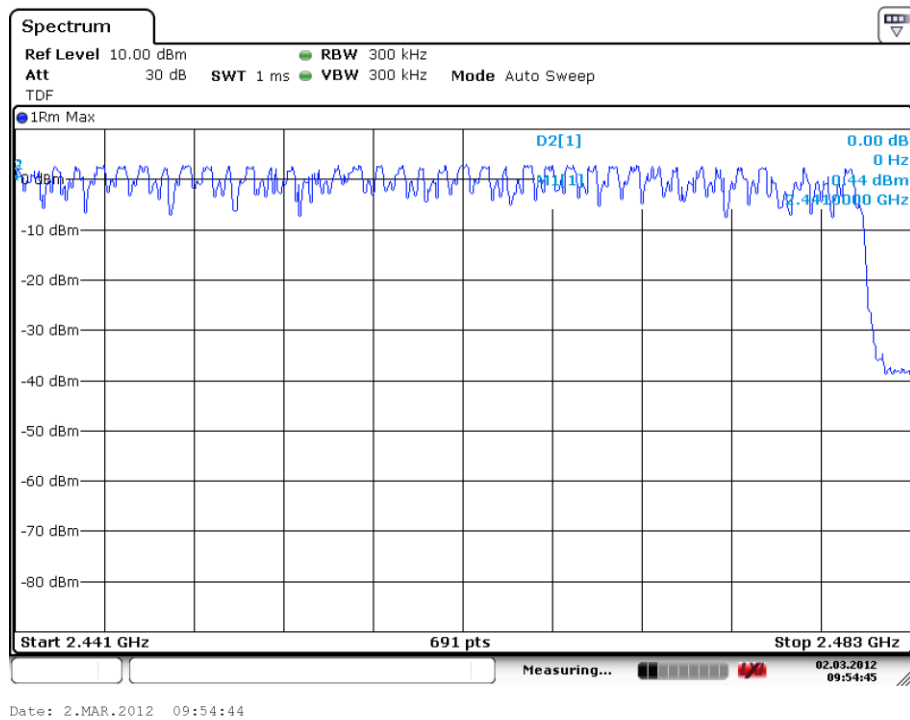




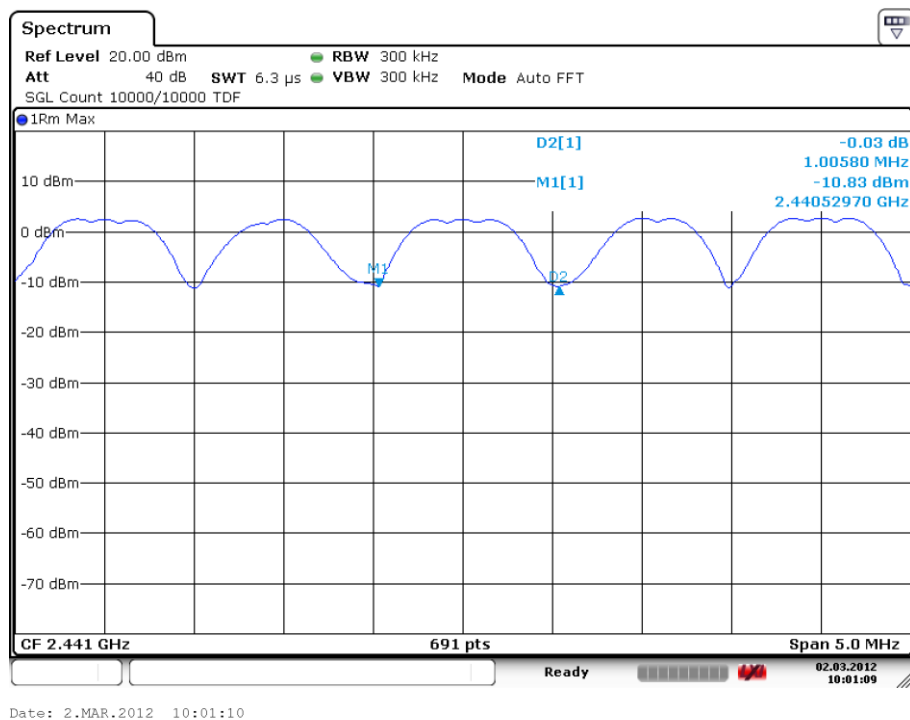
**Fig. 57 Hopping channel ch39~78 ( $\pi/4$  DQPSK, Ch39)**



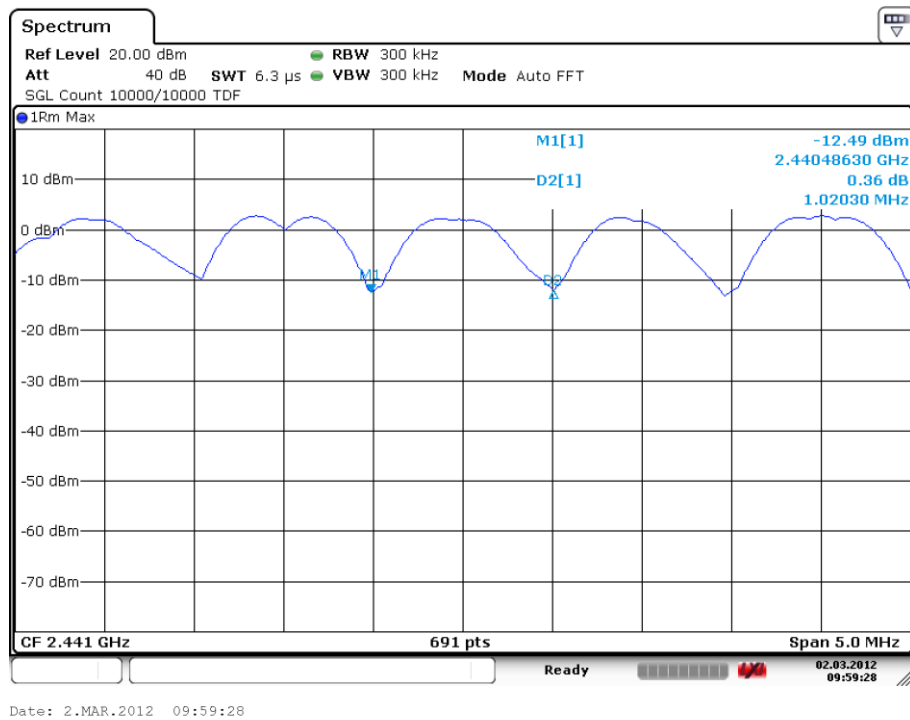
**Fig. 58 Hopping channel ch0~39 (8DPSK, Ch39)**



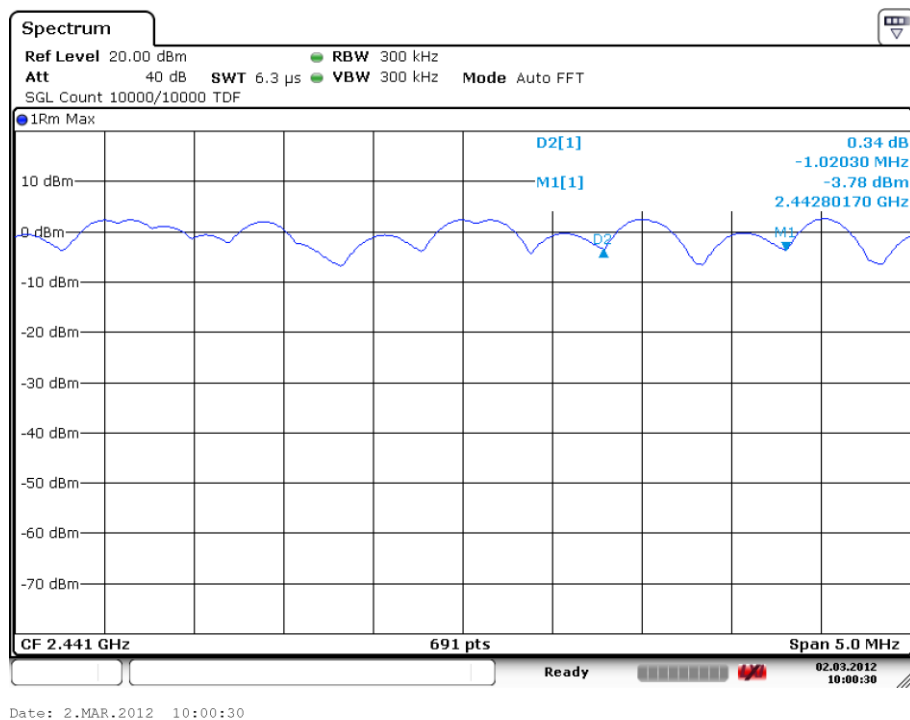
**Fig. 59 Hopping channel ch39~78 (8DPSK, Ch39)**



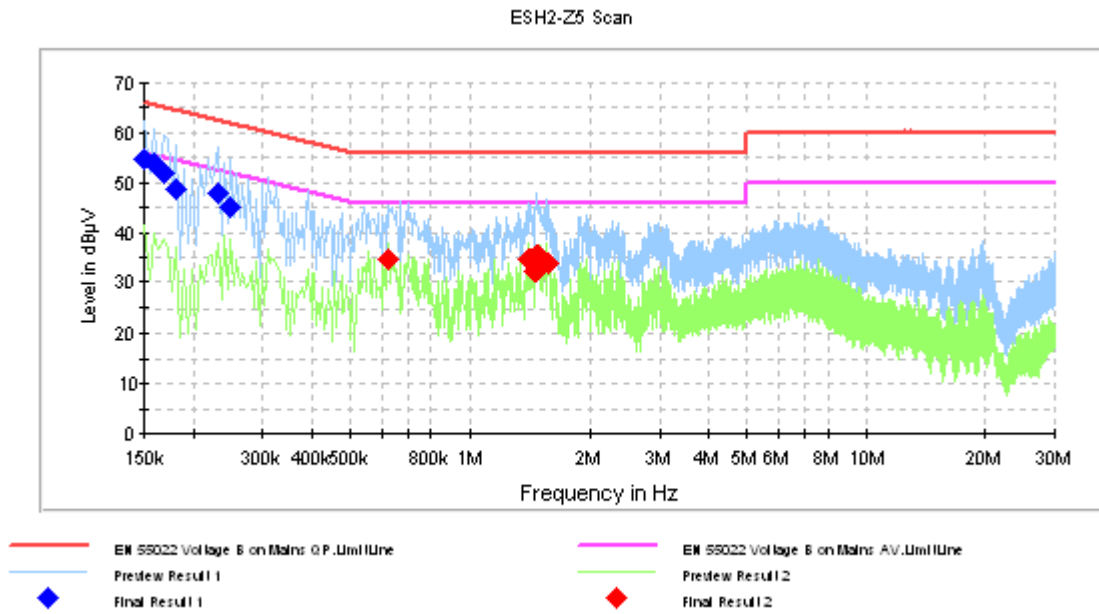
**Fig. 60 Carrier Frequency Separation (GFSK, Ch39)**



**Fig. 61 Carrier Frequency Separation ( $\pi/4$  DQPSK, Ch39)**



**Fig. 62 Carrier Frequency Separation (8DPSK, Ch39)**



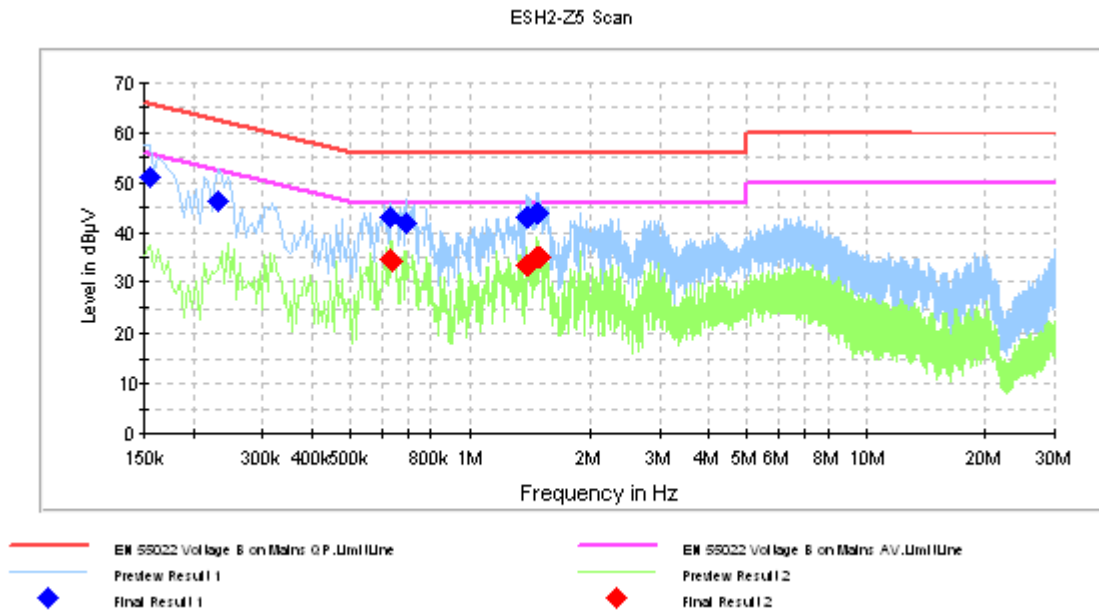
**Fig. 63 AC Power line Conducted Emission (GFSK, Ch39)**

MEASUREMENT RESULT: " QuasiPeak "

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	54.8	FLO	N	10.1	11.2	66.0
0.159000	53.7	FLO	N	10.1	11.8	65.5
0.168000	51.8	FLO	N	10.1	13.3	65.1
0.181500	48.8	FLO	L1	10.0	15.6	64.4
0.231000	47.8	FLO	L1	10.0	14.6	62.4
0.249000	45.1	FLO	N	10.1	16.7	61.8

MEASUREMENT RESULT: " Average "

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.622500	34.4	FLO	L1	10.0	11.6	46.0
1.414500	34.5	FLO	L1	10.1	11.5	46.0
1.464000	32.2	FLO	L1	10.1	13.8	46.0
1.482000	35.3	FLO	L1	10.1	10.7	46.0
1.513500	33.9	FLO	L1	10.1	12.1	46.0
1.563000	33.7	FLO	L1	10.1	12.3	46.0



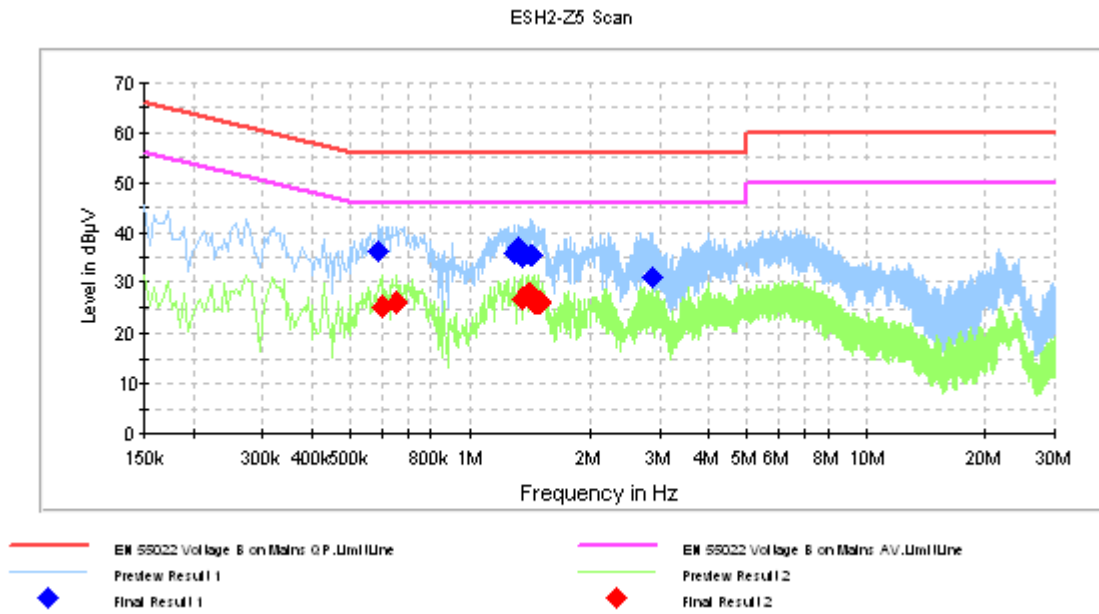
**Fig. 64 AC Power line Conducted Emission ( $\pi/4$  DQPSK, Ch39)**

MEASUREMENT RESULT: " QuasiPeak "

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.154500	51.2	FLO	L1	10.0	14.6	65.8
0.231000	46.4	FLO	L1	10.0	16.0	62.4
0.627000	42.9	FLO	L1	10.0	13.1	56.0
0.690000	42.0	FLO	L1	10.0	14.0	56.0
1.401000	43.1	FLO	L1	10.1	12.9	56.0
1.482000	44.0	FLO	L1	10.1	12.0	56.0

MEASUREMENT RESULT: " Average "

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.627000	34.6	FLO	L1	10.0	11.4	46.0
0.636000	34.3	FLO	L1	10.0	11.7	46.0
1.401000	33.5	FLO	L1	10.1	12.5	46.0
1.482000	35.1	FLO	L1	10.1	10.9	46.0
1.491000	34.9	FLO	L1	10.1	11.1	46.0
1.500000	34.9	FLO	L1	10.1	11.1	46.0



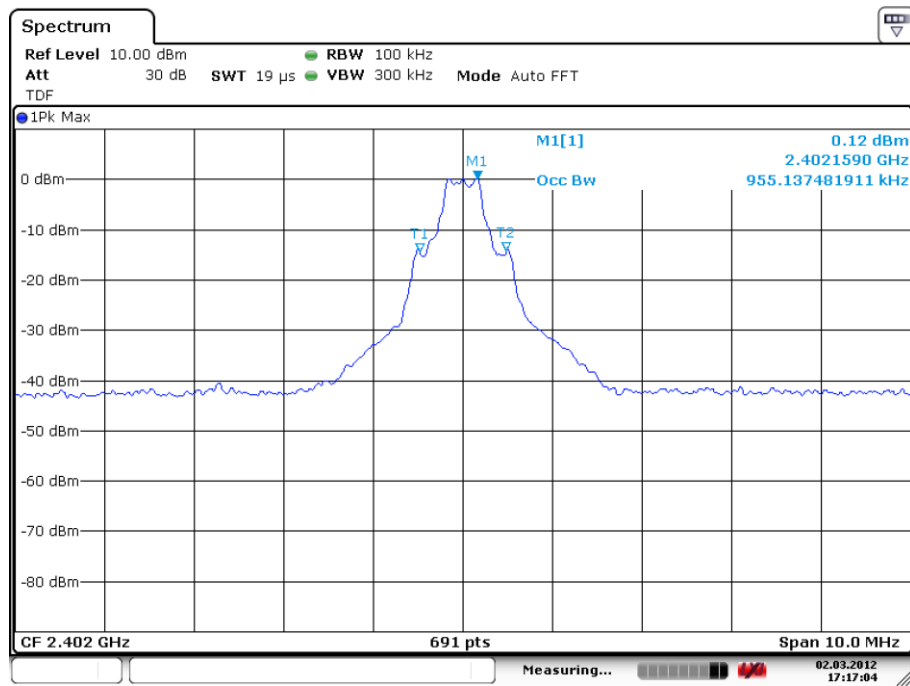
**Fig. 65 AC Power line Conducted Emission (8DPSK, Ch39)**

MEASUREMENT RESULT: " QuasiPeak "

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.591000	36.1	FLO	L1	10.1	19.9	56.0
1.302000	35.8	FLO	L1	10.1	20.2	56.0
1.324500	37.0	FLO	L1	10.1	19.0	56.0
1.360500	34.9	FLO	N	10.1	21.1	56.0
1.432500	35.3	FLO	N	10.1	20.7	56.0
2.859000	31.0	FLO	N	10.1	25.0	56.0

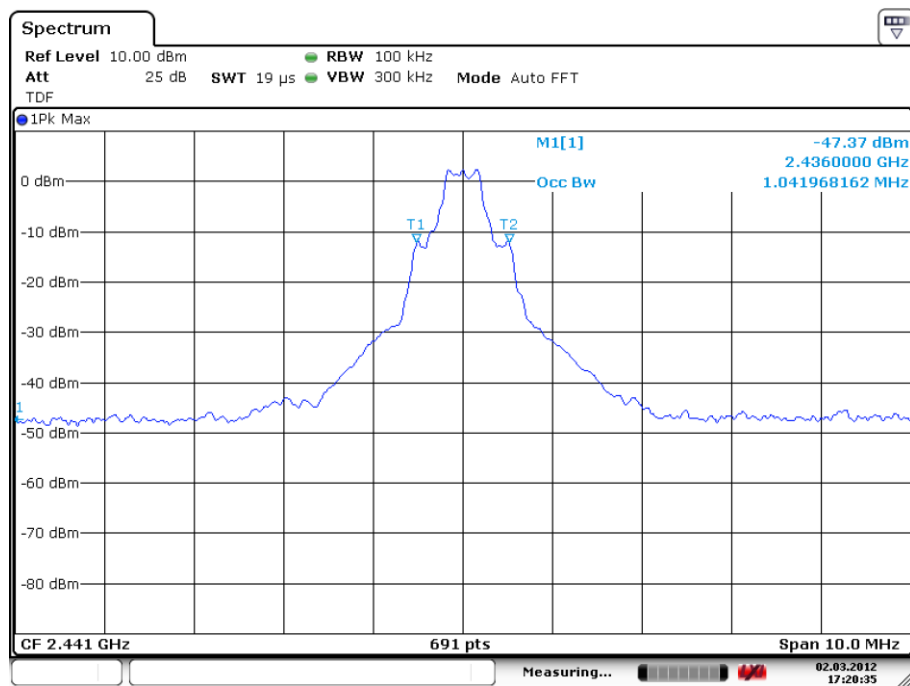
MEASUREMENT RESULT: " Average "

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.604500	25.3	FLO	N	10.1	20.7	46.0
0.654000	26.3	FLO	L1	10.0	19.7	46.0
1.360500	27.0	FLO	L1	10.1	19.0	46.0
1.405500	27.6	FLO	L1	10.1	18.4	46.0
1.455000	26.3	FLO	N	10.1	19.7	46.0
1.486500	26.0	FLO	N	10.1	20.0	46.0



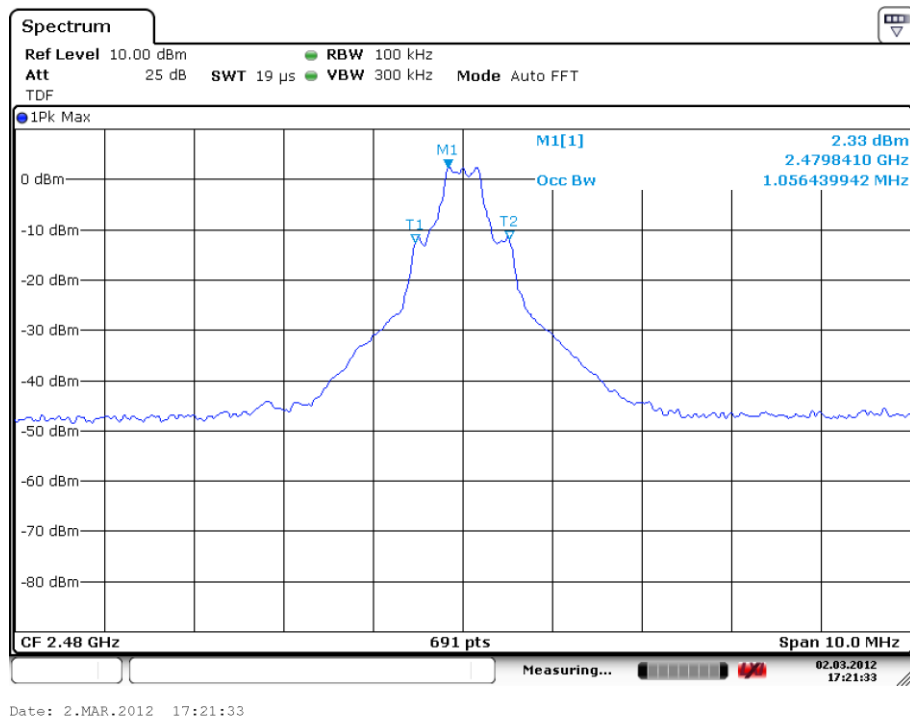
Date: 2.MAR.2012 17:17:04

**Fig. 66 Occupied Bandwidth (GFSK, Ch0)**

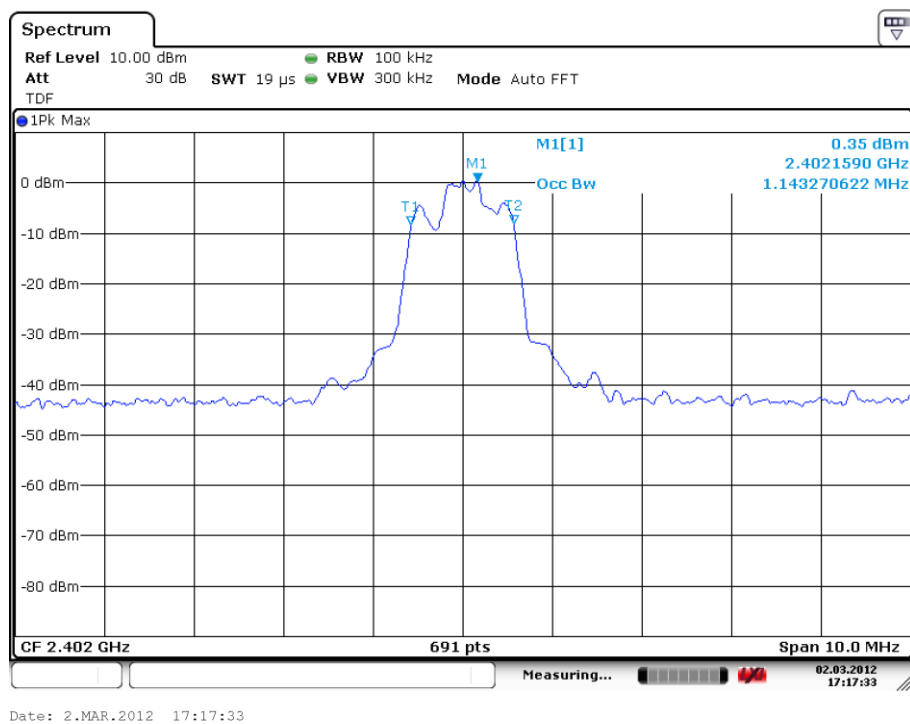


Date: 2.MAR.2012 17:20:35

**Fig. 67 Occupied Bandwidth (GFSK, Ch39)**



**Fig. 68 Occupied Bandwidth (GFSK, Ch78)**



**Fig. 69 Occupied Bandwidth ( $\pi/4$  DQPSK, Ch0)**



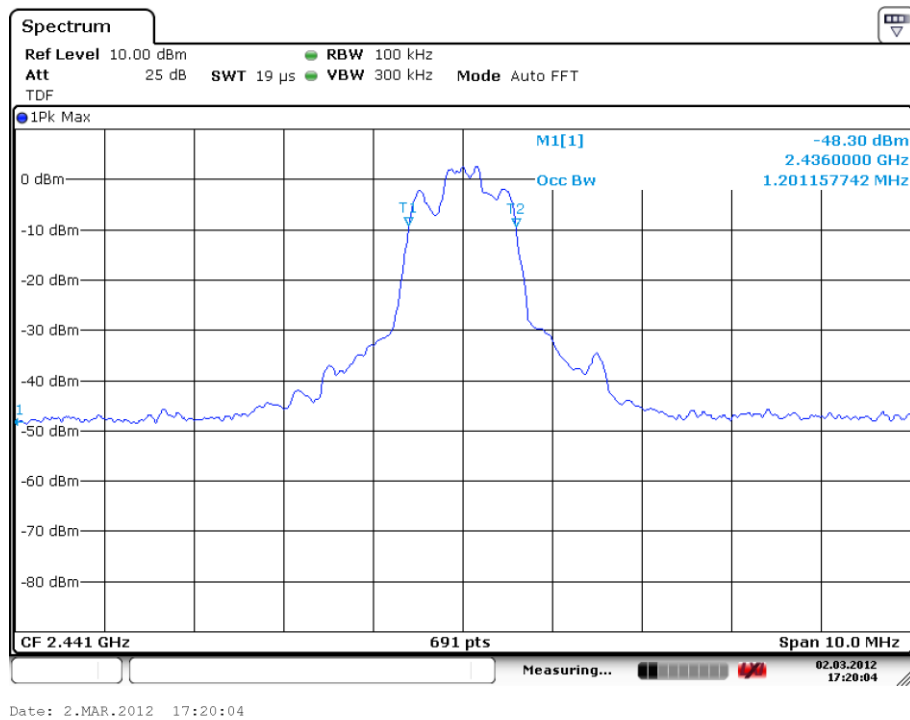


Fig. 70 Occupied Bandwidth ( $\pi/4$  DQPSK, Ch39)

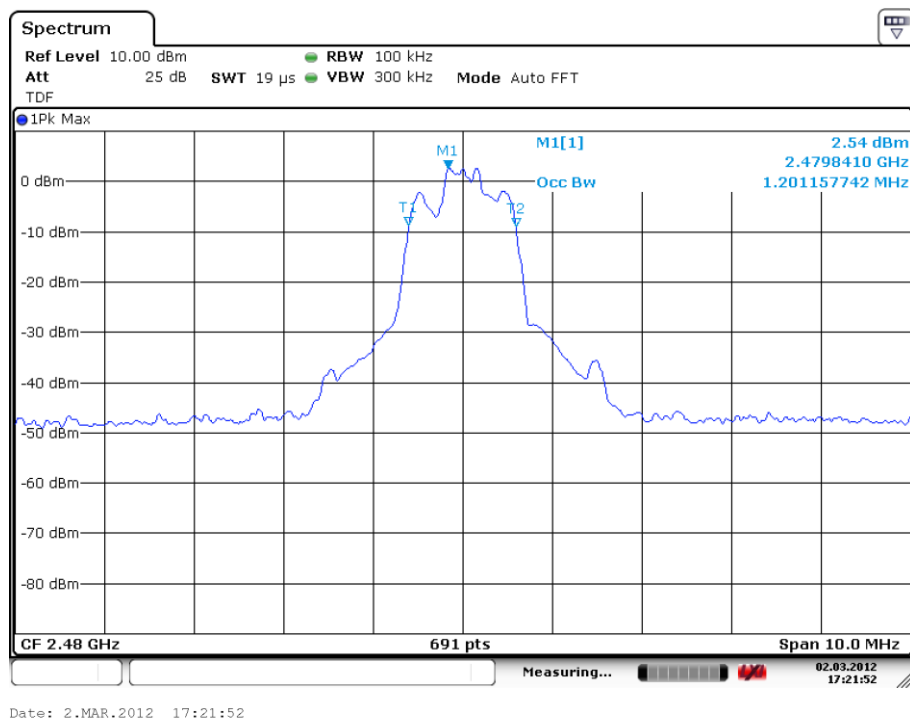
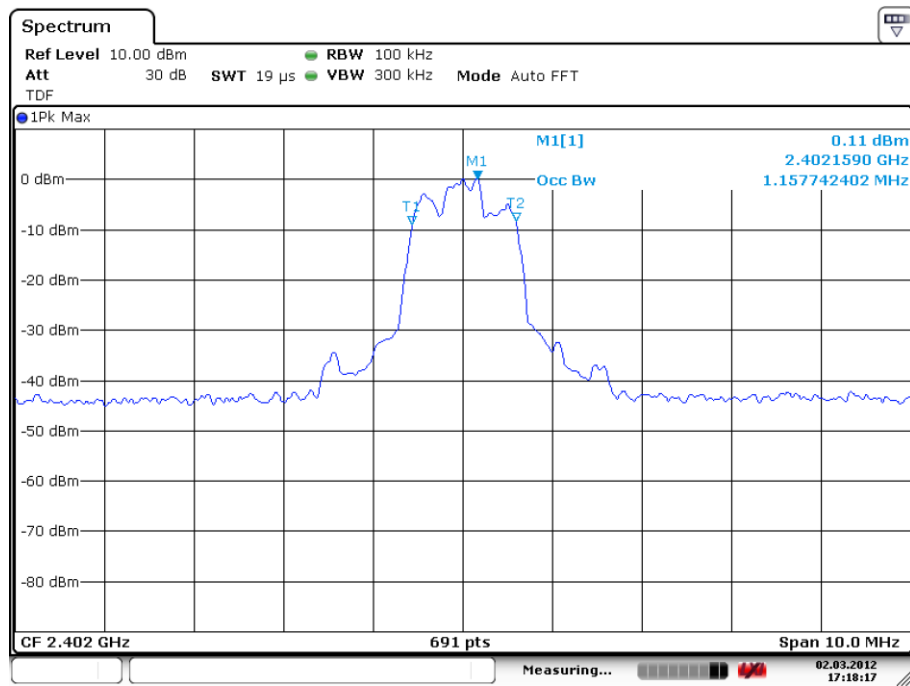
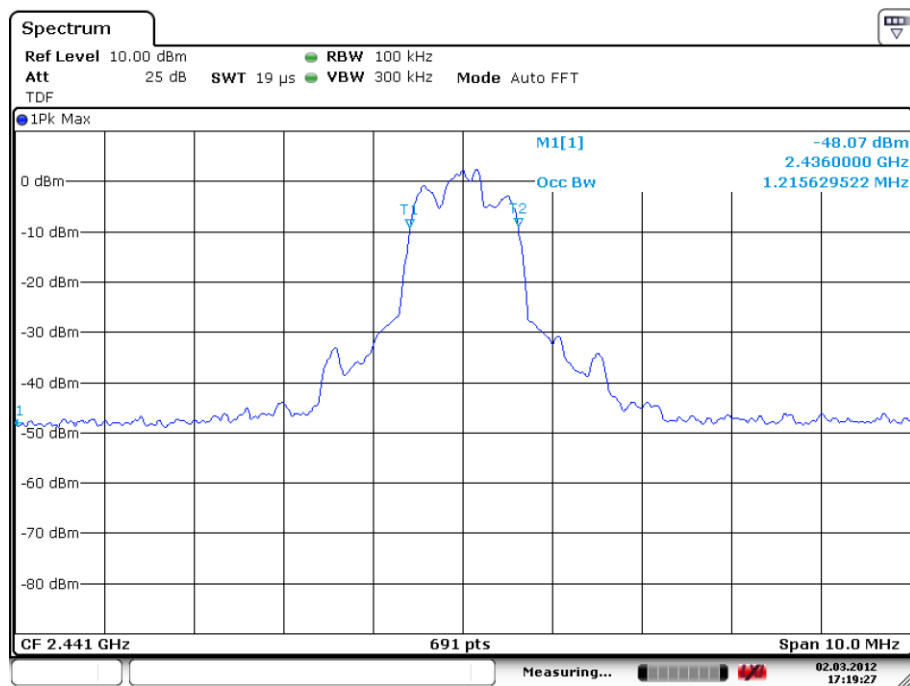


Fig. 71 Occupied Bandwidth ( $\pi/4$  DQPSK, Ch78)



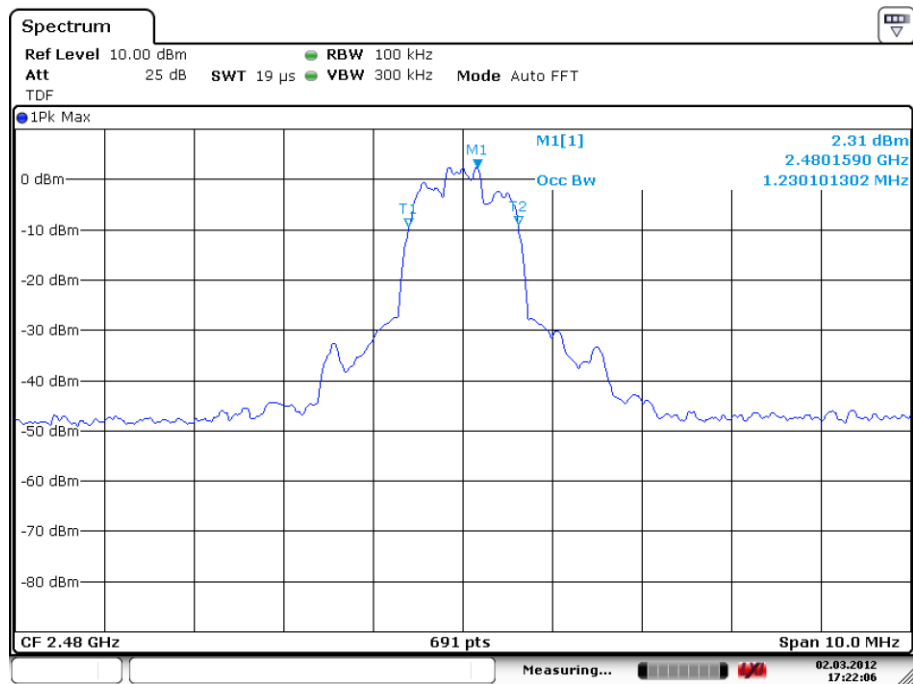
Date: 2.MAR.2012 17:18:17

**Fig. 72 Occupied Bandwidth (8DPSK, Ch0)**



Date: 2.MAR.2012 17:19:27

**Fig. 73 Occupied Bandwidth (8DPSK, Ch39)**



Date: 2.MAR.2012 17:22:06

**Fig. 74 Occupied Bandwidth (8DPSK, Ch78)**

**ANNEX D: TEST LAYOUT****Layout of Radiated Spurious Emission Test**

**Radiated spurious emission**

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