



FCC PART 15C TEST REPORT No. 2012TAR441

for

TCT Mobile Limited

UMTS Triband / GSM Quadband mobile phone

Model Name: ONE TOUCH 768T

FCC ID: RAD287

IC: 9238A-0012

with

Hardware Version: PIO01

Software Version: swC22

Issued Date: 2012-09-29



No. DGA-PL-114/01-02

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

FCC 2.948 Listed: No.733176

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

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of TMC Beijing.

Test Laboratory:

TMC Beijing, Telecommunication Metrology Center of Ministry of Industry and Information Technology

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1. Test Laboratory

1.1. Testing Location

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT
Address: Shouxiang Science Building, No 51, Xueyuan Road, Haidian District,
Beijing, P.R.China
Postal Code: 100191
Telephone: 0086-10-62304633
Fax: 0086-10-62304793

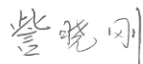
1.2. Testing Environment

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

1.3. Project data

Project Leader: Zi Xiaogang
Testing Start Date: 2012-08-21
Testing End Date: 2012-09-27

1.4. Signature



Zi Xiaogang
(Prepared this test report)



Sun Xiangqian
(Reviewed this test report)



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

2. Client Information

2.1. Applicant Information

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

2.2. Manufacturer Information

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

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

3.1. About EUT

Description	UMTS Triband / GSM Quadband mobile phone
Model Name	ONE TOUCH 768T
FCC ID	RAD287
IC	9238A-0012
Frequency Band	ISM 2400MHz~2483.5MHz
Type of Modulation	GFSK/ π /4 DQPSK/8DPSK
Number of Channels	79
Power Supply	3.8V DC by Battery

3.2. Internal Identification of EUT used during the test

EUT ID*	IMEI	HW Version	SW Version
N07	013303000051519	PIO01	swC22
N08	013303000050545	PIO01	swC22

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

3.3. Internal Identification of AE used during the test

AE ID*	Description	
AE1	Battery	B097155EA0A
AE2	Battery	B152153A1AA
AE3	Battery	B152153A1CA
AE4	Travel charger	/
AE5	Travel charger	/

AE1, AE2, AE3

Model	CAB3120000C1
Manufacturer	BYD
Capacitance	850mAh
Nominal voltage	3.8V

AE4

Model	CBA3002AG0C1
Manufacturer	BYD
Length of cable	121cm

AE5

Model	CBA3002AG0C3
Manufacturer	BYD

Length of cable 127cm

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

3.4. General Description

The Equipment Under Test (EUT) is a model of UMTS Triband / GSM Quadband mobile phone with integrated antenna. It consists of normal options: lithium battery, charger Manual and specifications of the EUT were provided to fulfil the test. Samples undergoing test were selected by the Client.

4. Reference Documents

4.1. Documents supplied by applicant

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

4.2. Reference Documents for testing

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

FCC Part15	FCC CFR 47, Part 15, Subpart C:	Oct, 10, 2009 Edition
	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.	
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	2009
FCC Public Notice DA 00-705	Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems	March 2000
	Spectrum Management and Telecommunications - Radio Standards Specification	
RSS - Gen Issue3	General Requirements and Information for the Certification of Radiocommunication Equipment	2010-12
RSS -210 Issue8	Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment	2010-12
FCC Part15	KDB Publication 412172	2010-11

5. LABORATORY ENVIRONMENT

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

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

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

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

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

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

6. SUMMARY OF TEST RESULTS

6.1. Summary of Test Results

Abbreviations used in this clause:

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

SUMMARY OF MEASUREMENT RESULTS	Sub-clause		Verdict
Peak Output Power - Conducted	15.247 (b)(1)	RSS-210 A8.4 (2)	P
Frequency Band Edges	15.247 (d)	RSS-210 A8.5	P
Conducted Emission	15.247 (d)	RSS-210 A8.5	P
Radiated Emission	15.247, 15.205, 15.209	RSS-210 A8.5	P
Time of Occupancy (Dwell Time)	15.247 (a) (1)(iii)	RSS-210 A8.1 (d)	P
20dB Bandwidth	15.247 (a)(1)	RSS-210 A8.1 (a) RSS-Gen 4.6.3	P
Carrier Frequency Separation	15.247 (a)(1)	RSS-210 A8.1 (b)	P
Number of hopping channels	15.247 (a)(b)(iii)	RSS-210 A8.1 (d)	P
AC Powerline Conducted Emission	15.107, 15.207	RSS-Gen 7.2.2	P
Receiver Radiation Emission	FCC: CFR Part 15.109, 2.1053	RSS-Gen 7.2.2	P

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

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

6.2. Statements

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

7. Test Equipments Utilized

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date
1	Vector Signal Analyzer	FSU26	200030	Rohde & Schwarz	2013-04-18
2	Bluetooth Tester	CBT32	100649	Rohde & Schwarz	2013-04-03

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date
1	Test Receiver	ESI40	831564/002	Rohde & Schwarz	2013-04-06
2	EMI Antenna	VULB 9163	9163 301	Schwarzbeck	2013-04-12
3	EMI Antenna	3117	00034610	EMCO	2013-04-05
4	Dual-Ridge Waveguide Horn Antenna	3116	2663	EMCO	2013-04-10
5	Dual-Ridge Waveguide Horn Antenna	3116	2661	EMCO	2013-04-05
6	Universal Radio Communication Tester	CMU200	105948	Rohde & Schwarz	2013-04-20
7	LISN	ESH2-Z5	829991/012	Rohde & Schwarz	2013-04-18
8	Pre-amplifier(18GHz)	/	1005277	Rohde & Schwarz	/
9	Pre-amplifier(26.5GHz)	/	1005277	Rohde & Schwarz	/

Anechoic chamber

Fully anechoic chamber by Frankonia German.

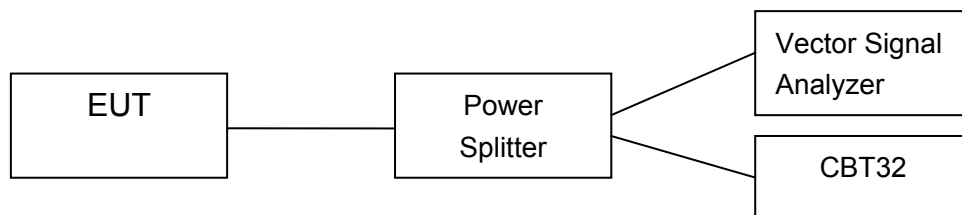
ANNEX A: MEASUREMENT RESULTS

A.1. Measurement Method

A.1.1. Conducted Measurements

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

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



A.1.2. Radiated Emission Measurements

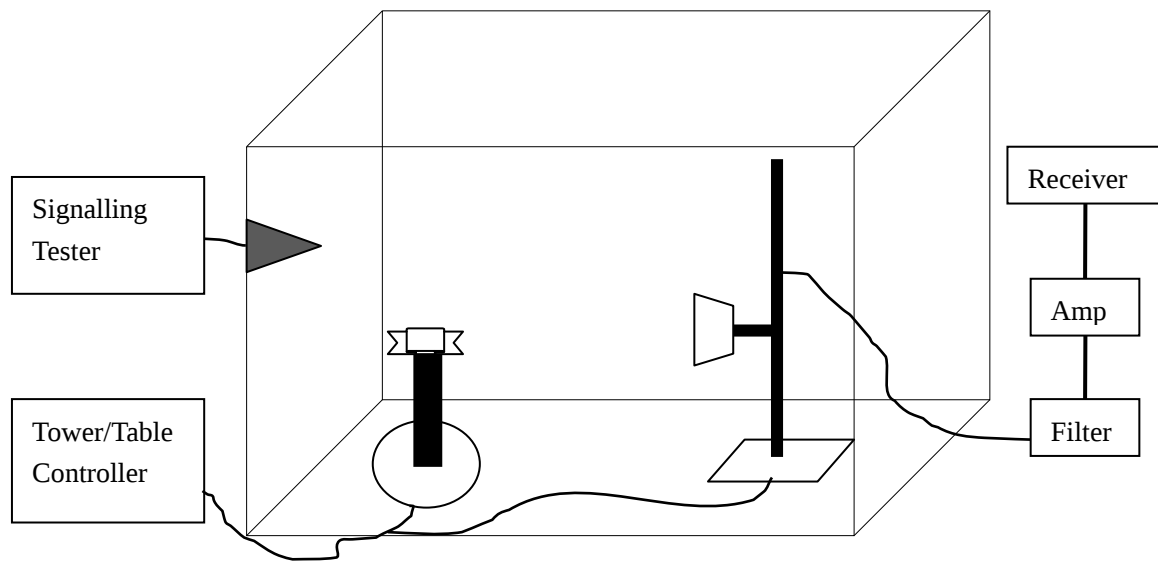
The measurement is made according to Public notice DA 00-705 and ANSI C63.4

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

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

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

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



A.2. Peak Output Power - Conducted

Measurement Limit:

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

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

Test Condition

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

Measurement Results:

For GFSK

Channel	Ch 0 2402 MHz	Ch 39 2441 MHz	Ch 78 2480 MHz	Conclusion
Peak Conducted Output Power (dBm)	4.40	4.82	6.95	P

For $\pi/4$ DQPSK

Channel	Ch 0 2402 MHz	Ch 39 2441 MHz	Ch 78 2480 MHz	Conclusion
Peak Conducted Output Power (dBm)	4.57	4.83	7.04	P

For 8DPSK

Channel	Ch 0 2402 MHz	Ch 39 2441 MHz	Ch 78 2480 MHz	Conclusion
Peak Conducted Output Power (dBm)	3.68	3.97	6.15	P

Conclusion: PASS

A.3. Frequency Band Edges - Conducted

Measurement Limit:

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

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

Measurement Result:

For GFSK

Channel	Hopping	Band Edge Power (dBc)		Conclusion
0	Hopping OFF	Fig.1	-58.68	P
	Hopping ON	Fig.2	-58.33	P
78	Hopping OFF	Fig.3	-62.03	P
	Hopping ON	Fig.4	-62.13	P

For $\pi/4$ DQPSK

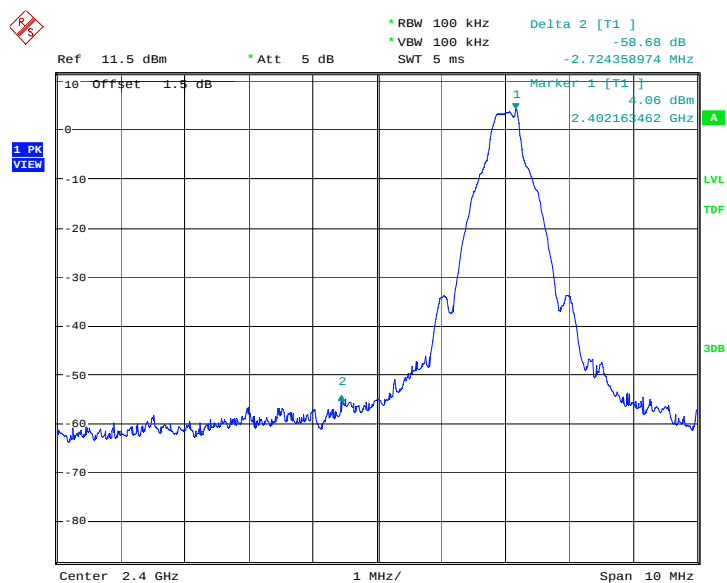
Channel	Hopping	Band Edge Power (dBc)		Conclusion
0	Hopping OFF	Fig.5	-57.47	P
	Hopping ON	Fig.6	-57.34	P
78	Hopping OFF	Fig.7	-61.47	P
	Hopping ON	Fig.8	-61.38	P

For 8DPSK

Channel	Hopping	Band Edge Power (dBc)		Conclusion
0	Hopping OFF	Fig.9	-57.96	P
	Hopping ON	Fig.10	-56.98	P
78	Hopping OFF	Fig.11	-61.46	P
	Hopping ON	Fig.12	-60.60	P

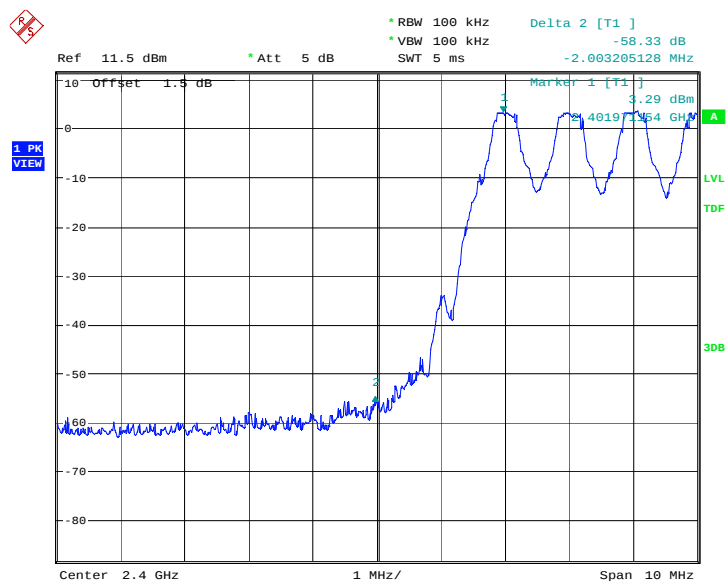
Conclusion: PASS

Test graphs as below



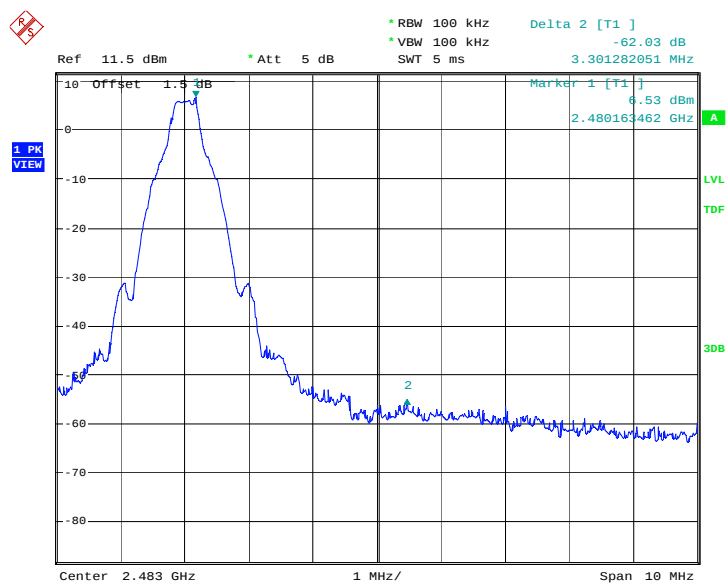
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Fig.1. Frequency Band Edges: GFSK, Channel 0, Hopping Off



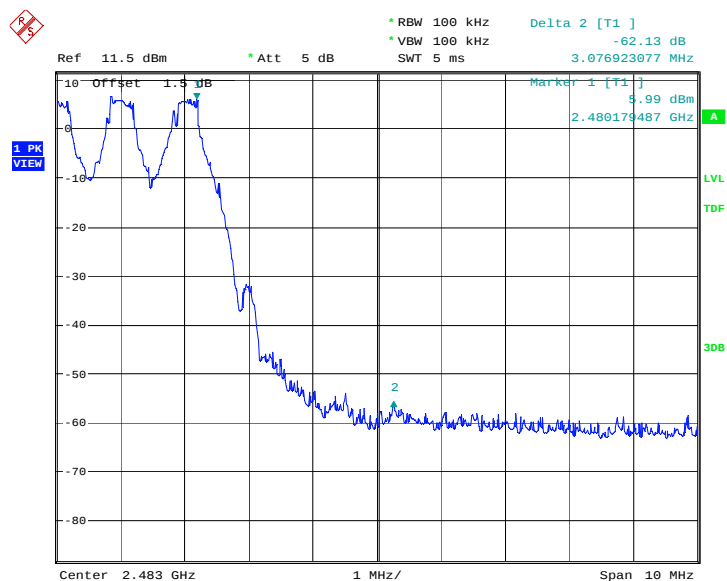
Date: 21.AUG.2012 08:07:51

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



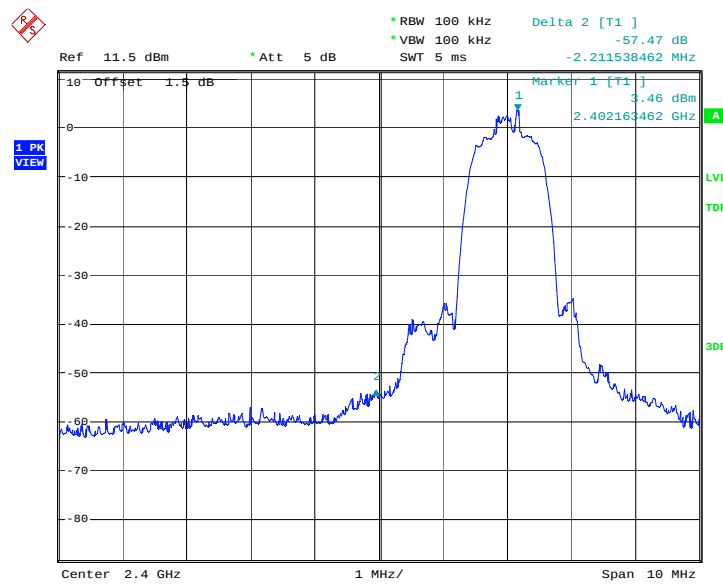
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Fig.3. Frequency Band Edges: GFSK, Channel 78, Hopping Off



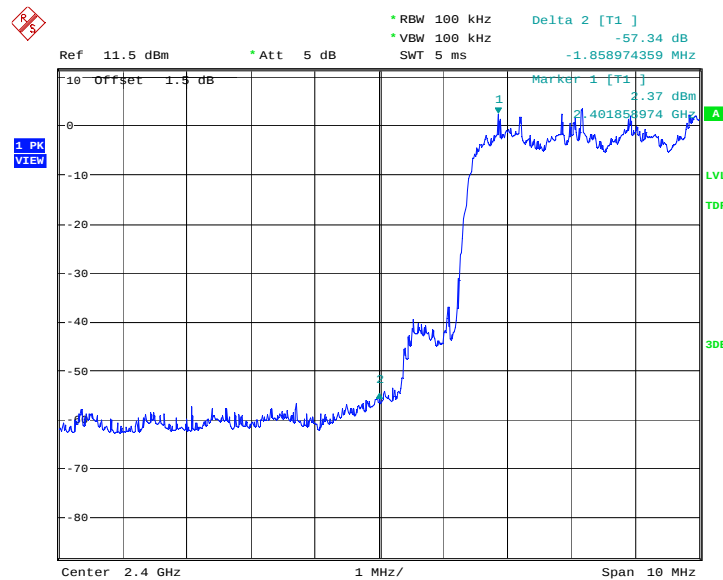
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Fig.4. Frequency Band Edges: GFSK, Channel 78, Hopping On



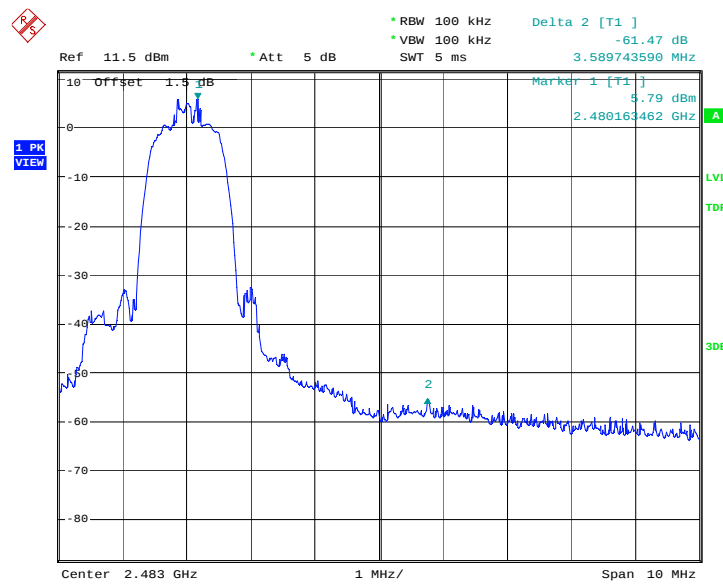
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Fig.5. Frequency Band Edges: $\pi/4$ DQPSK, Channel 0, Hopping Off



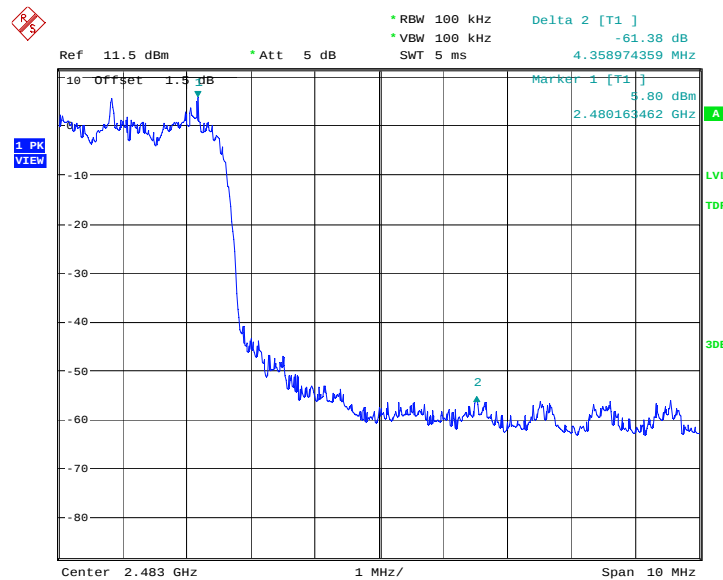
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Fig.6. Frequency Band Edges: $\pi/4$ DQPSK, Channel 0, Hopping On



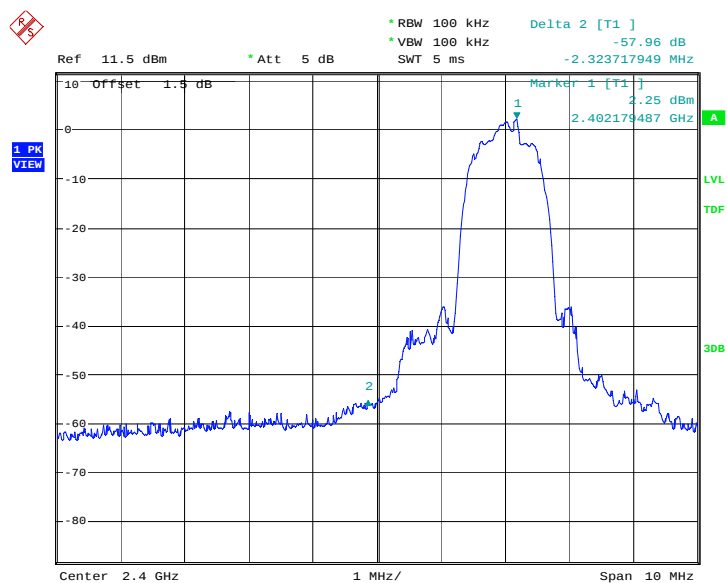
Date: 21.AUG.2012 08:27:57

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



Date: 21.AUG.2012 08:32:02

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



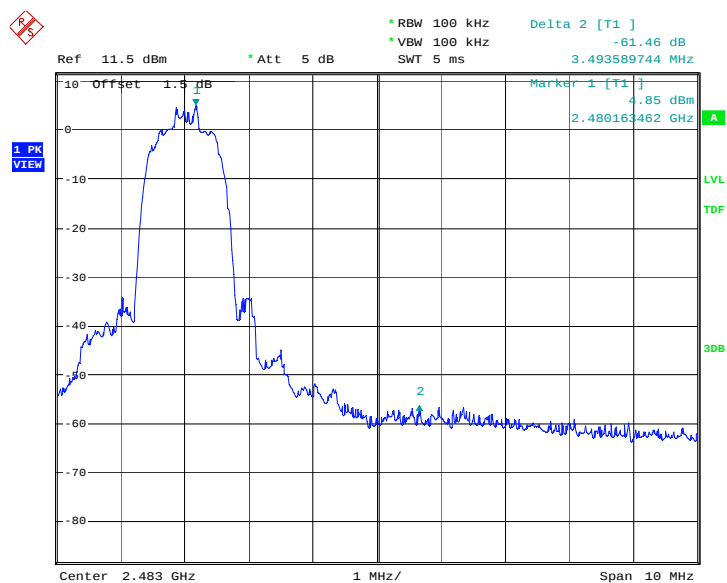
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Fig.9. Frequency Band Edges: 8DPSK, Channel 0, Hopping Off



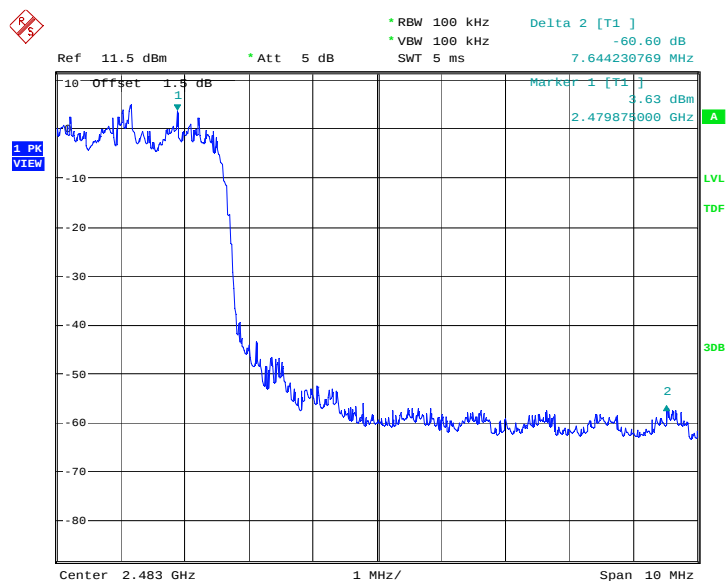
Date: 21.AUG.2012 08:52:08

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



Date: 21.AUG.2012 08:50:05

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



Date: 21.AUG.2012 08:54:10

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

A.4. Conducted Emission

Measurement Limit:

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

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

Measurement Results:

For GFSK

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

For $\pi/4$ DQPSK

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

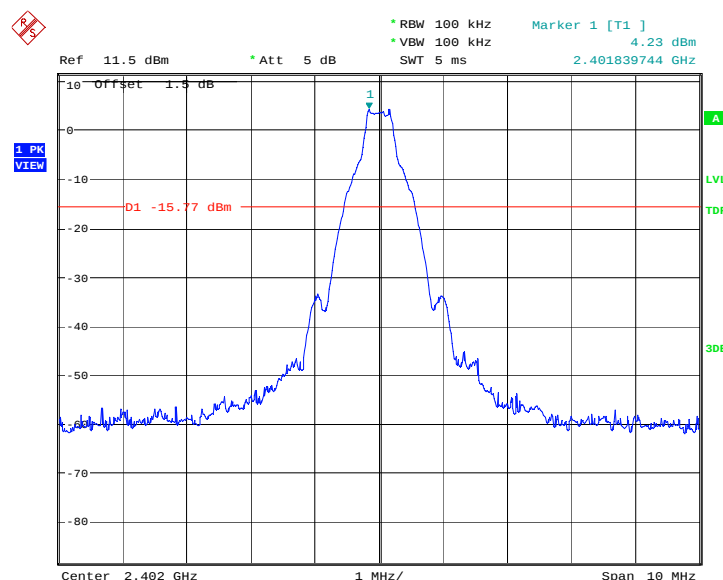
	1 GHz ~ 3 GHz	Fig.40	P
	3 GHz ~ 10 GHz	Fig.41	P
	10 GHz ~ 26 GHz	Fig.42	P

For 8DPSK

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

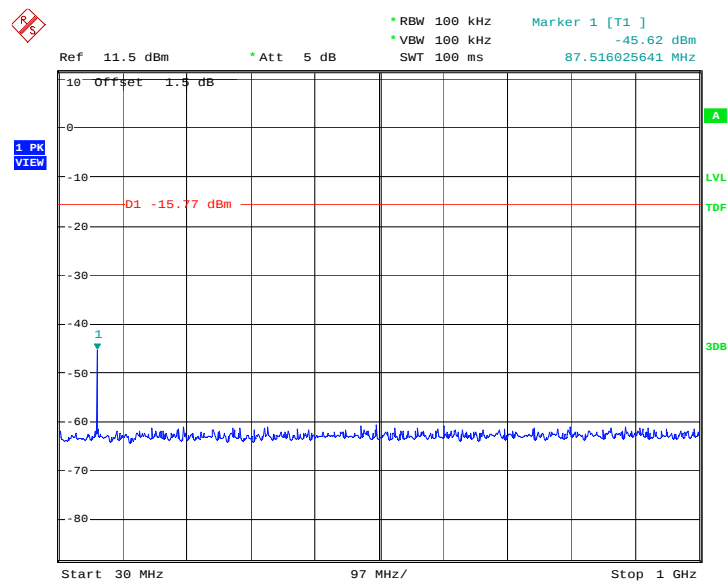
Conclusion: PASS

Test graphs as below



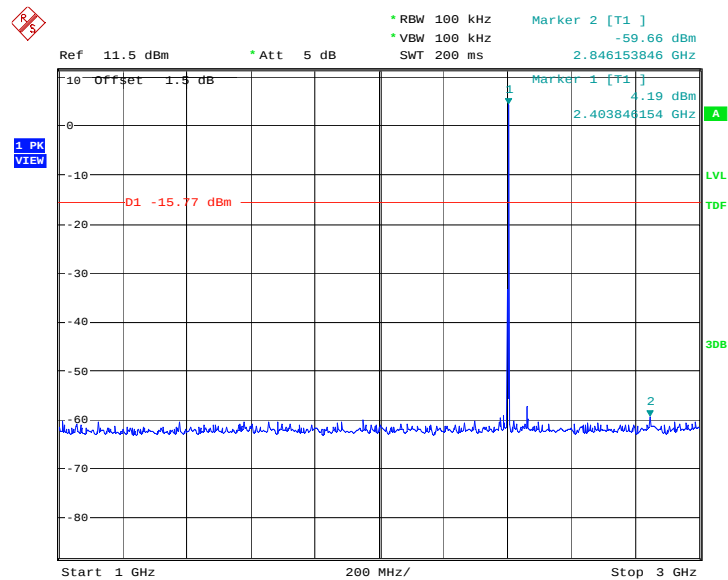
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Fig.13. Conducted spurious emission: GFSK, Channel 0,2402MHz



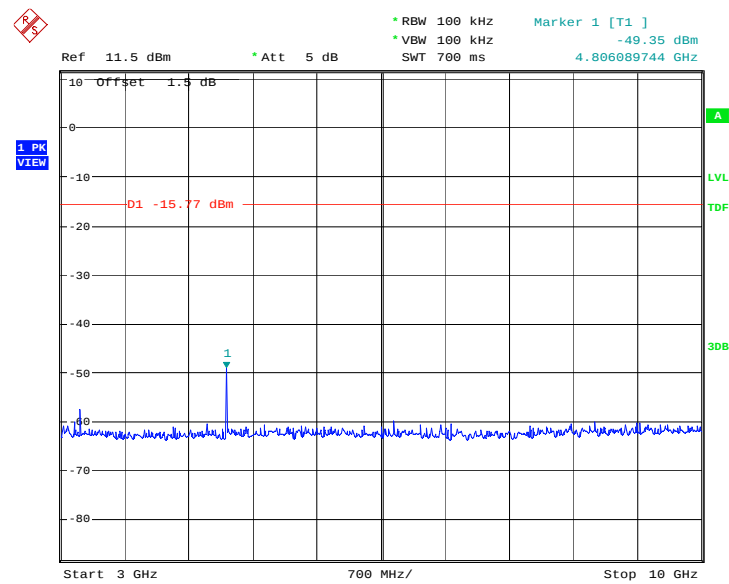
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Fig.14. Conducted spurious emission: GFSK, Channel 0, 30MHz - 1GHz



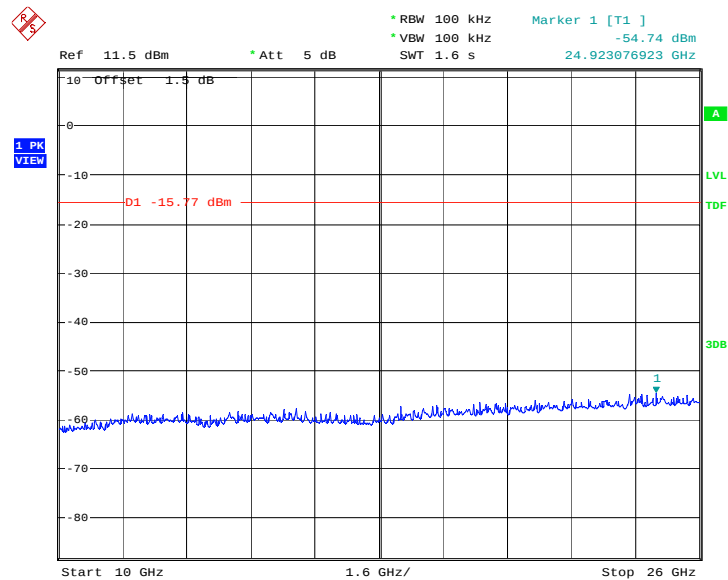
Date: 21.AUG.2012 08:11:01

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



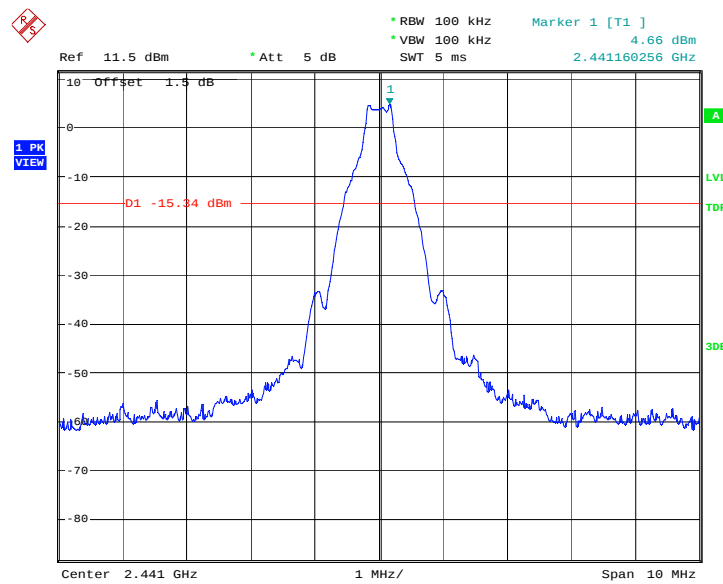
Date: 21.AUG.2012 08:11:17

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



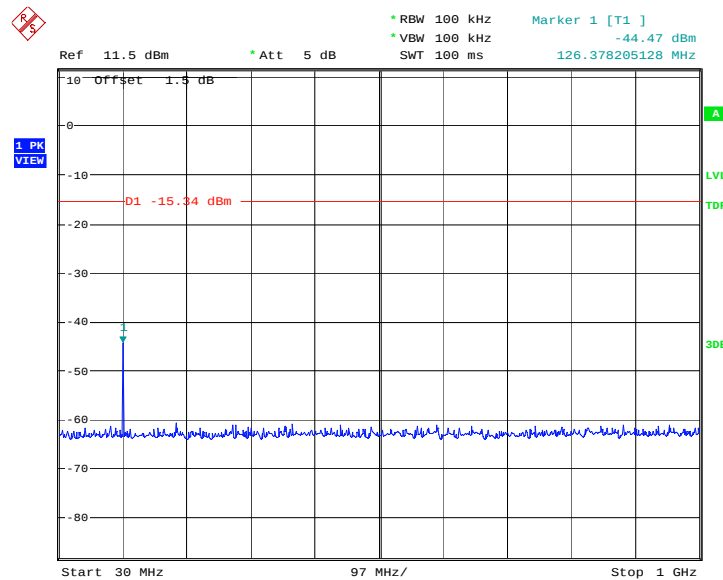
Date: 21.AUG.2012 08:11:34

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



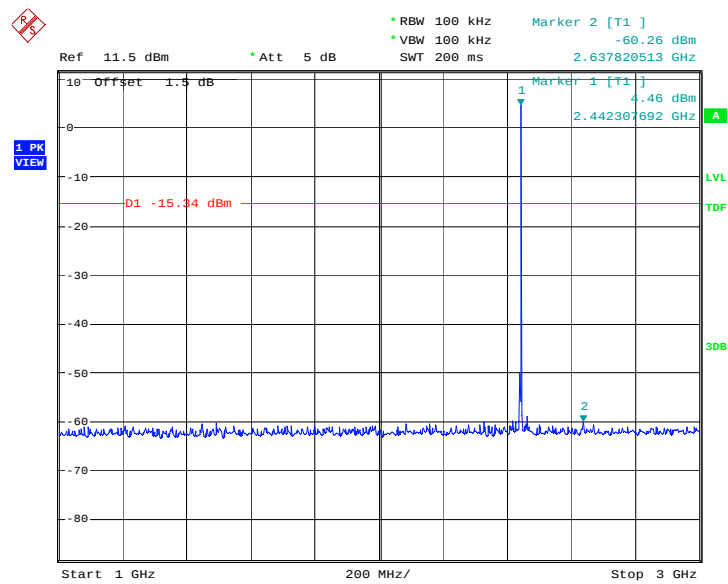
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Fig.18. Conducted spurious emission: GFSK, Channel 39, 2441MHz



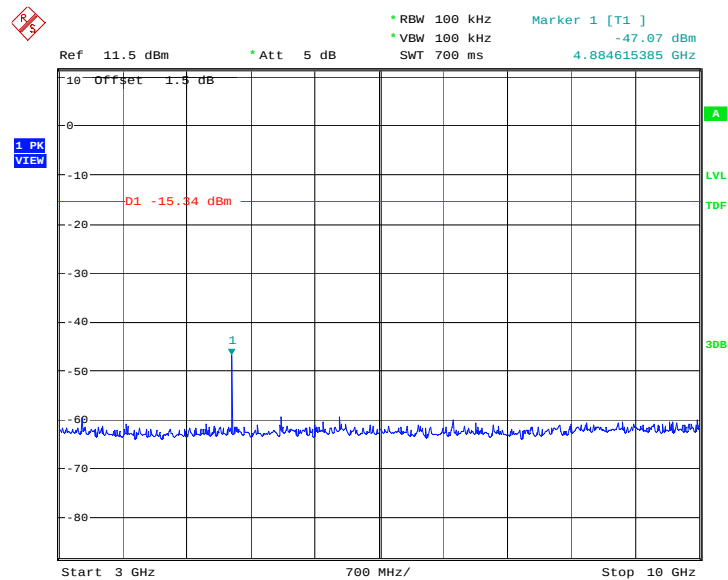
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Fig.19. Conducted spurious emission: GFSK, Channel 39, 30MHz - 1GHz



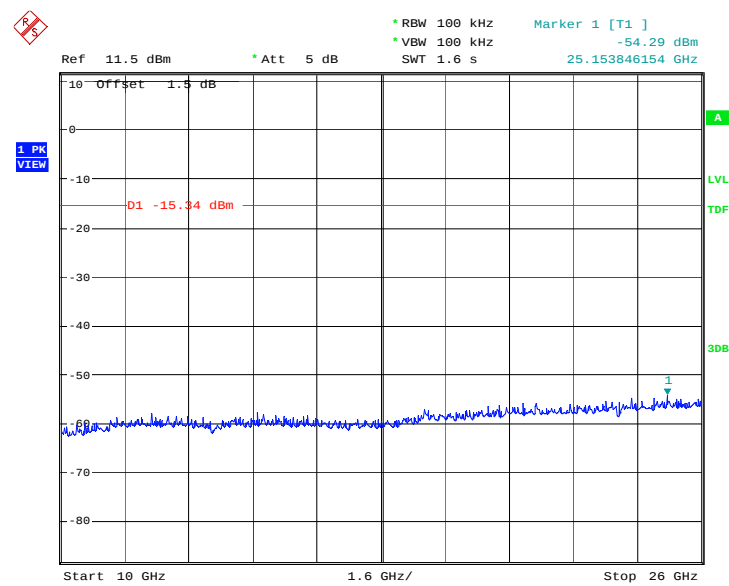
Date: 21.AUG.2012 08:12:39

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



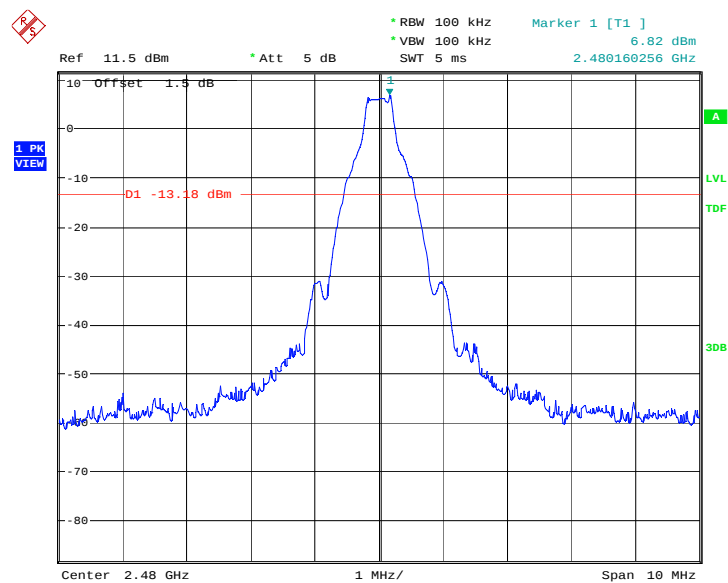
Date: 21.AUG.2012 08:12:56

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



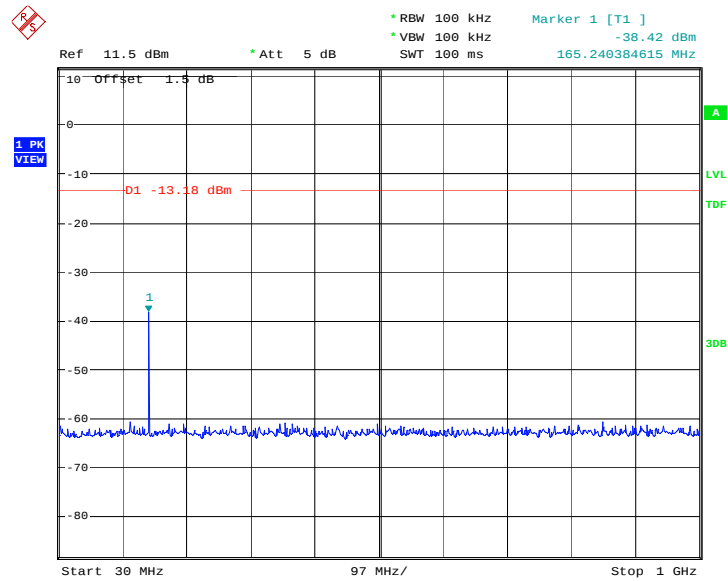
Date: 21.AUG.2012 08:13:12

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



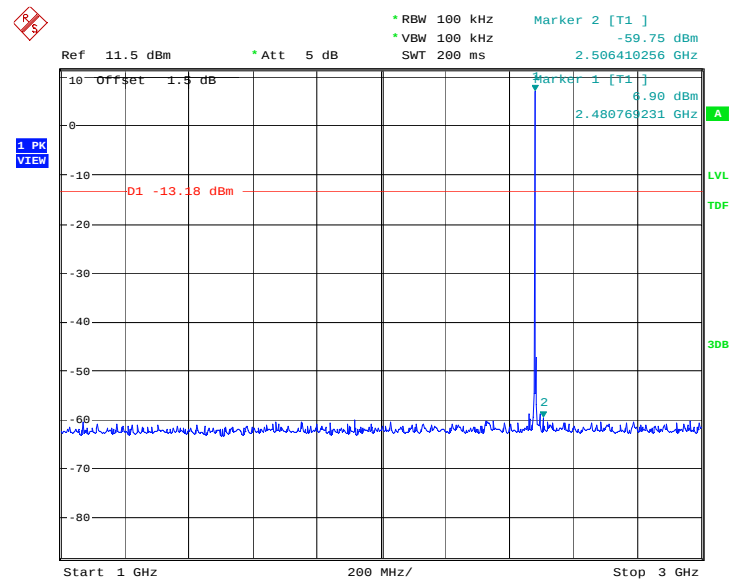
Date: 21.AUG.2012 08:13:29

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



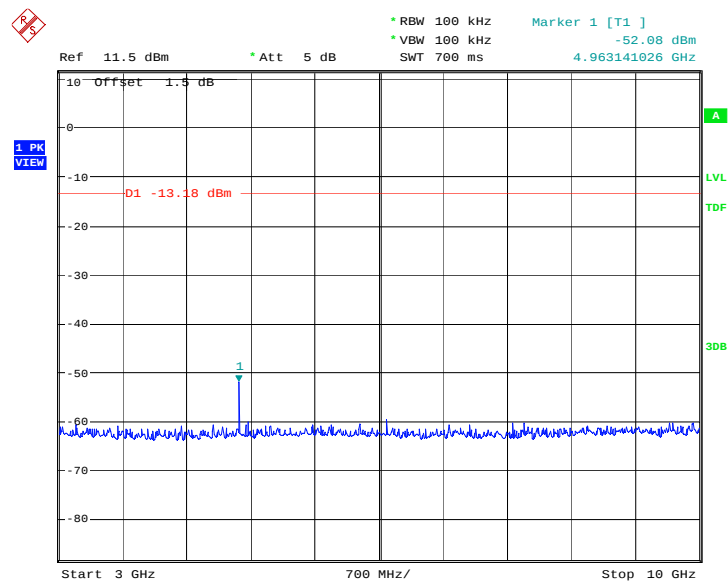
Date: 21.AUG.2012 08:13:45

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



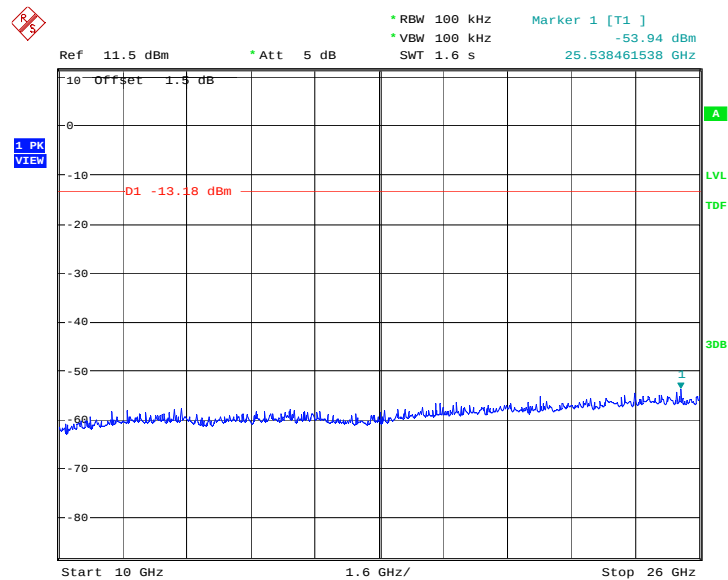
Date: 21.AUG.2012 08:14:17

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



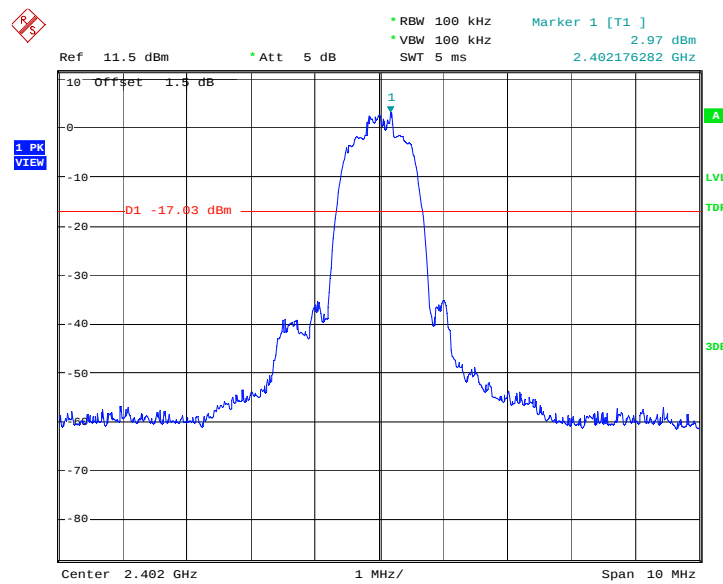
Date: 21.AUG.2012 08:14:34

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



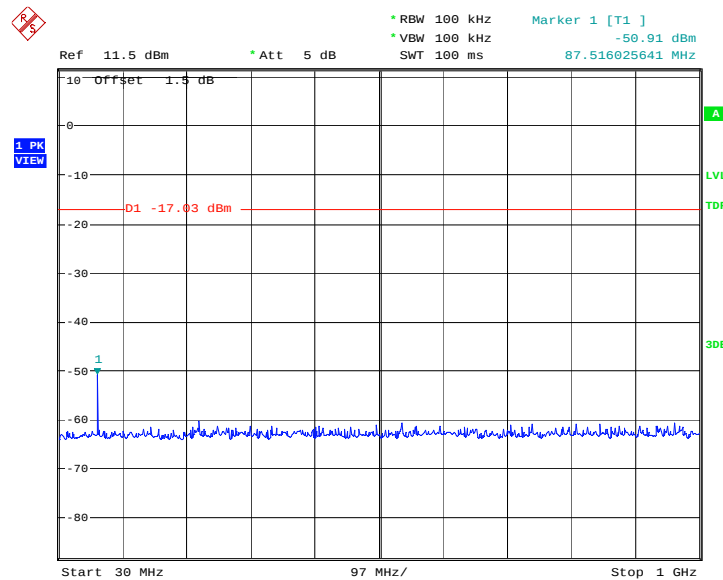
Date: 21.AUG.2012 08:14:50

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



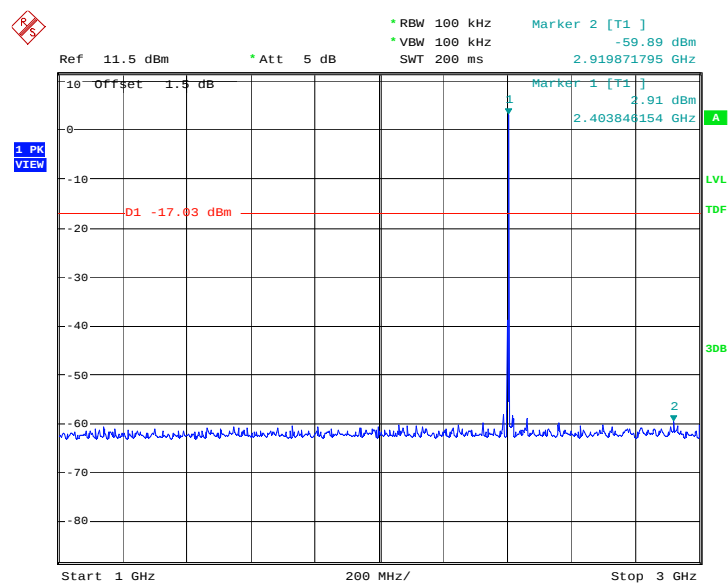
Date: 21.AUG.2012 08:32:21

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



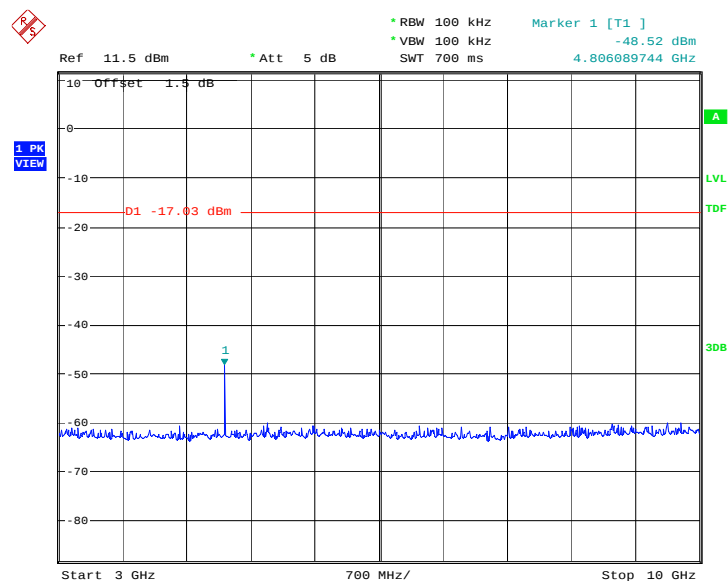
Date: 21.AUG.2012 08:32:37

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



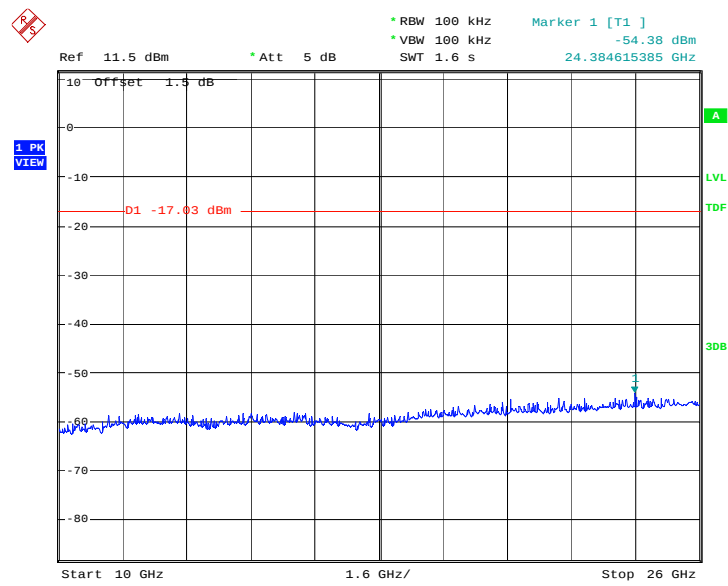
Date: 21.AUG.2012 08:33:09

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



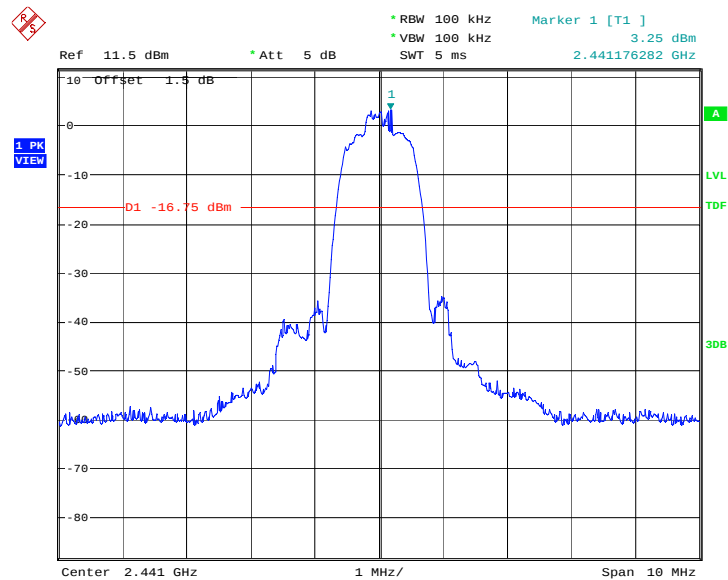
Date: 21.AUG.2012 08:33:25

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



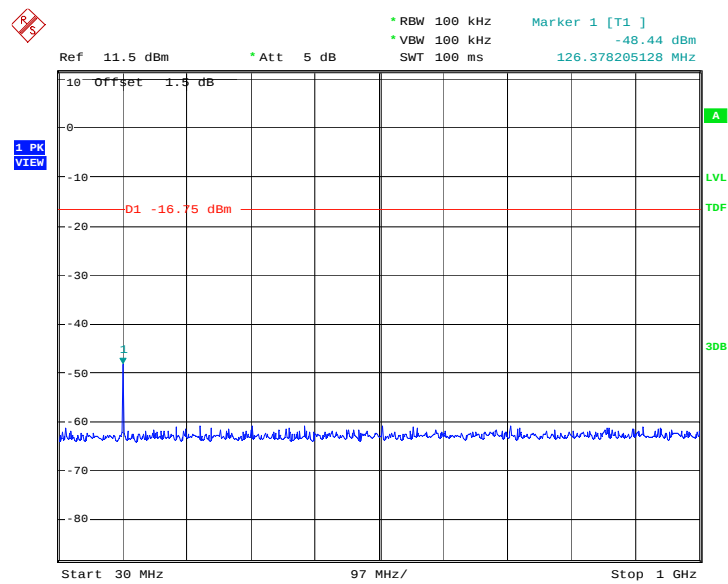
Date: 21.AUG.2012 08:33:42

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



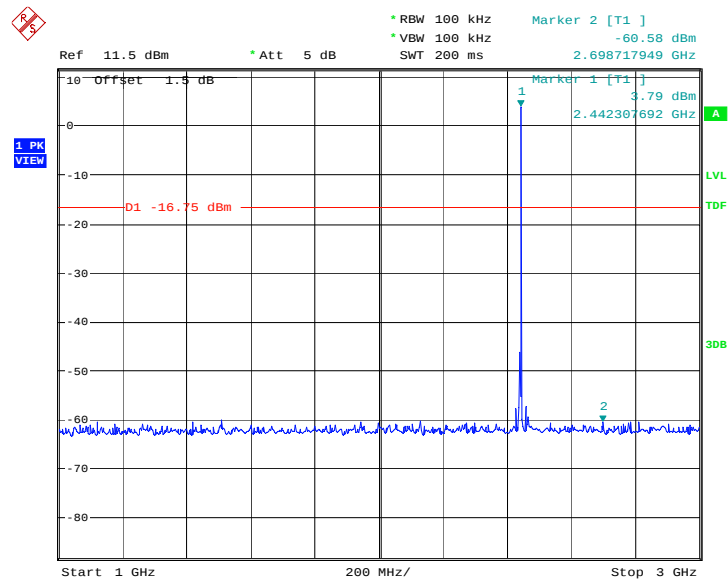
Date: 21.AUG.2012 08:33:59

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



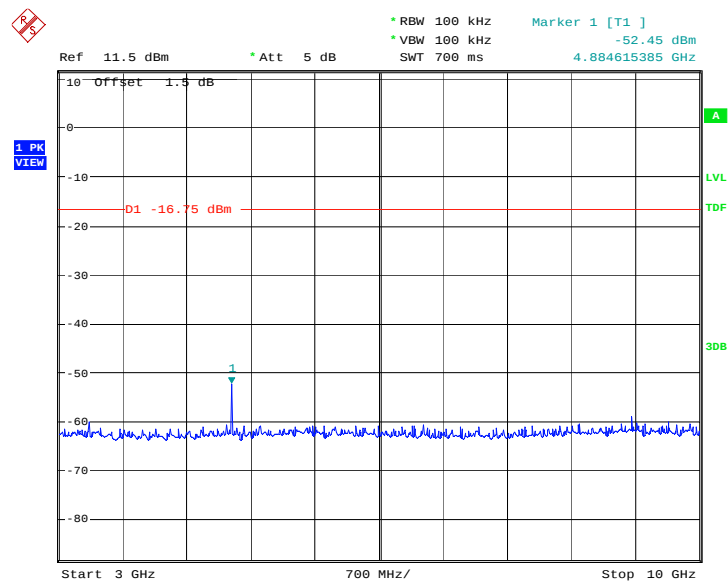
Date: 21.AUG.2012 08:34:15

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



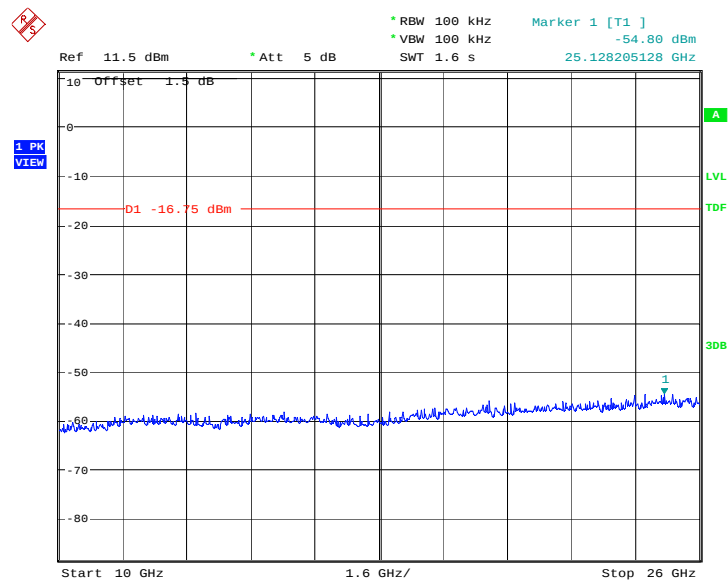
Date: 21.AUG.2012 08:34:47

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



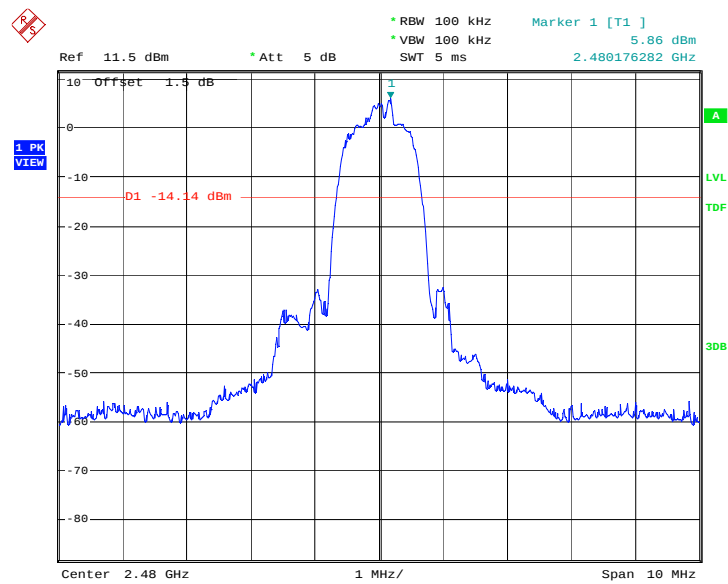
Date: 21.AUG.2012 08:35:04

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



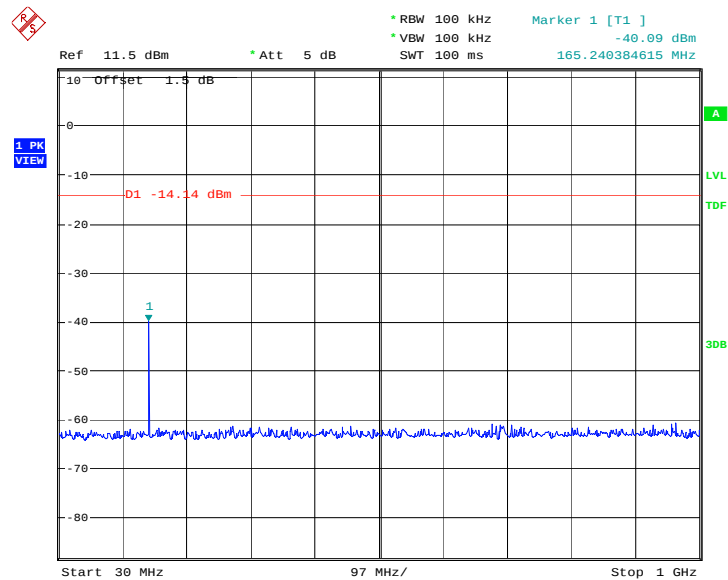
Date: 21.AUG.2012 08:35:20

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



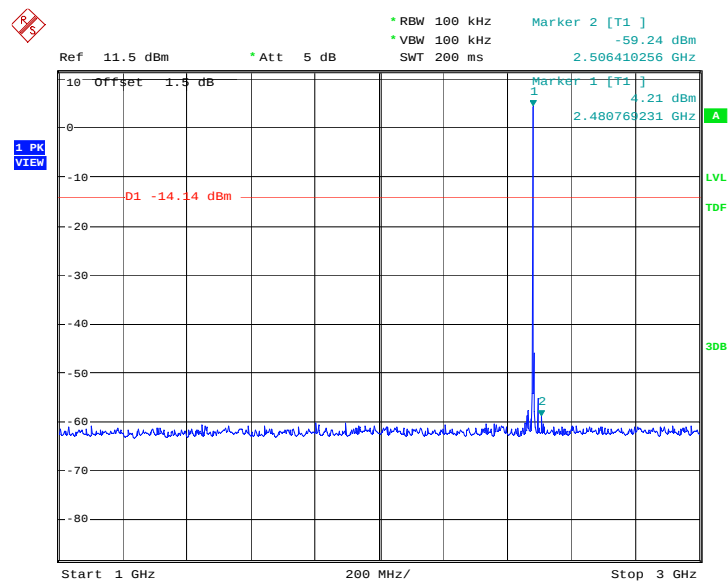
Date: 21.AUG.2012 08:35:37

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



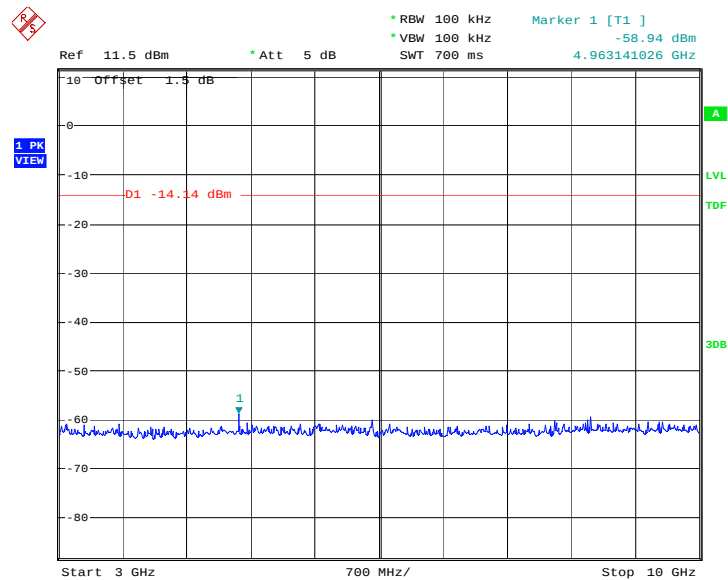
Date: 21.AUG.2012 08:35:53

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



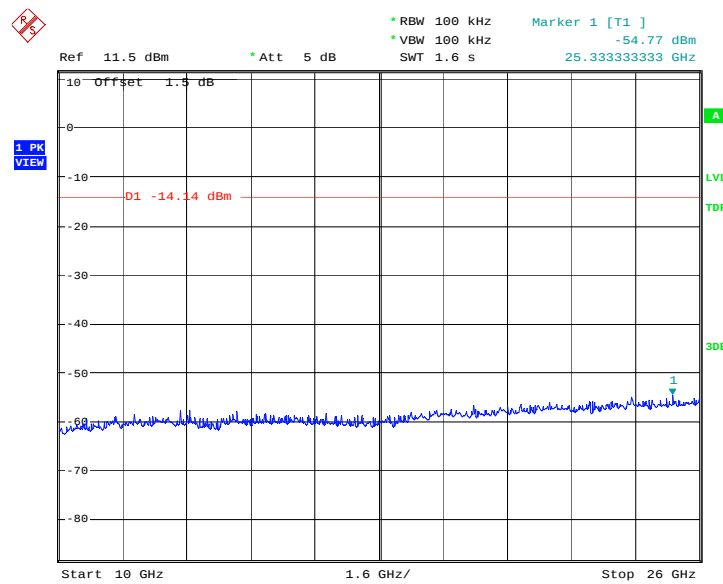
Date: 21.AUG.2012 08:36:25

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



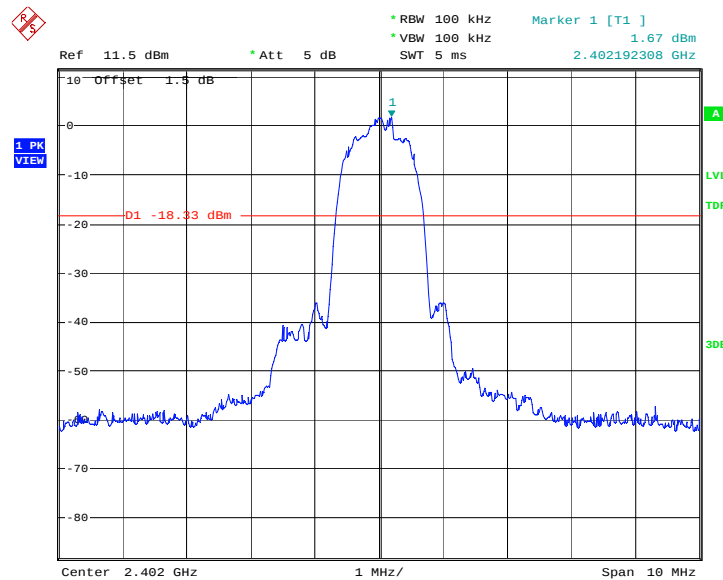
Date: 21.AUG.2012 08:36:42

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



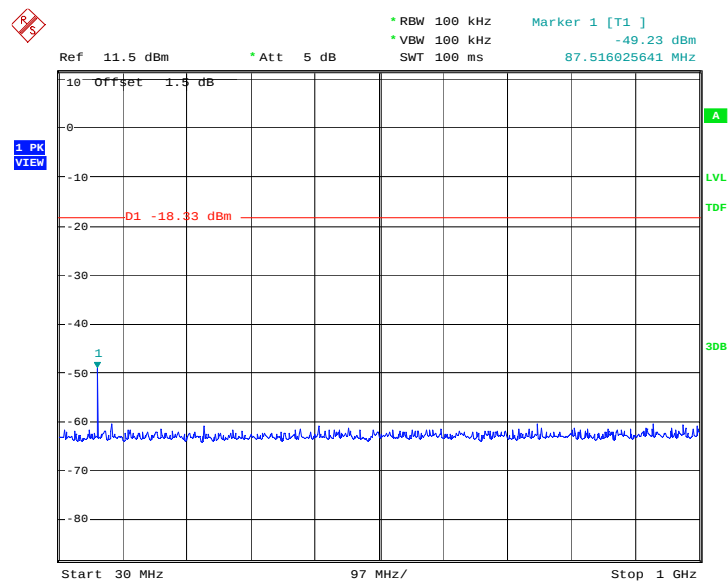
Date: 21.AUG.2012 08:36:58

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



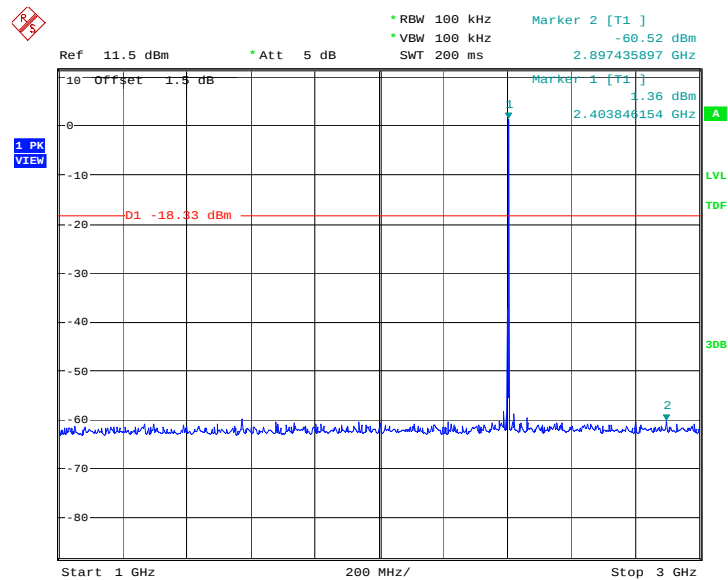
Date: 21.AUG.2012 08:54:29

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



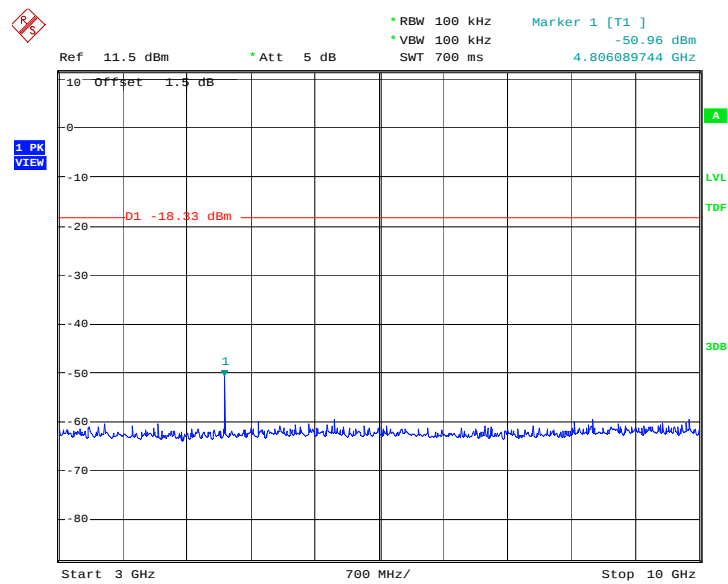
Date: 21.AUG.2012 08:54:45

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



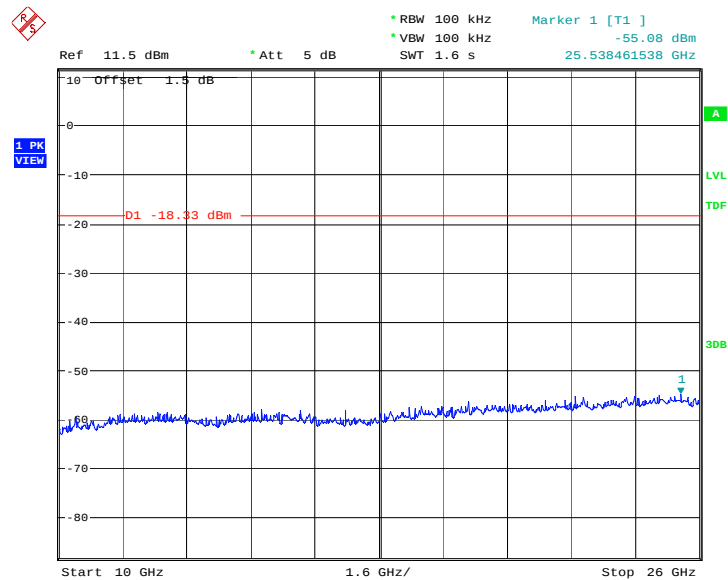
Date: 21.AUG.2012 08:55:17

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



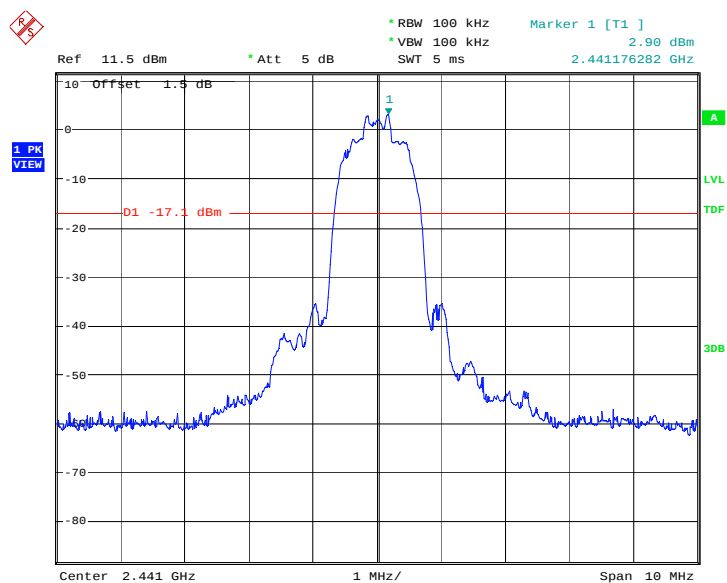
Date: 21.AUG.2012 08:55:33

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



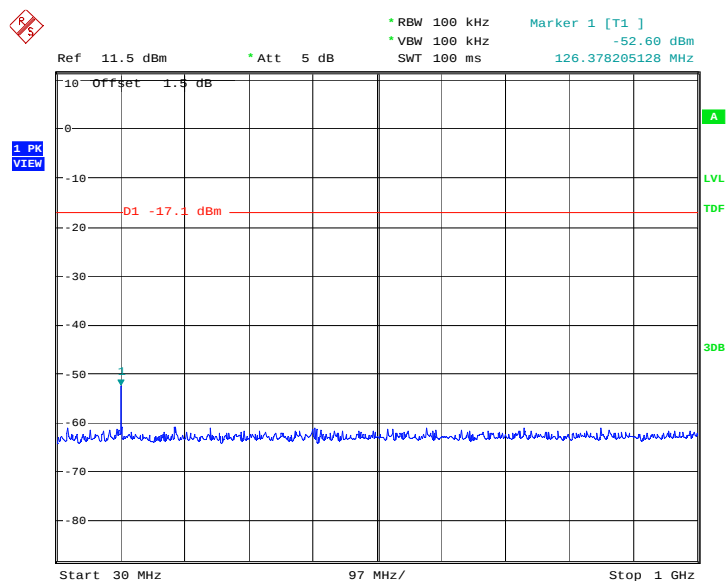
Date: 21.AUG.2012 08:55:50

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



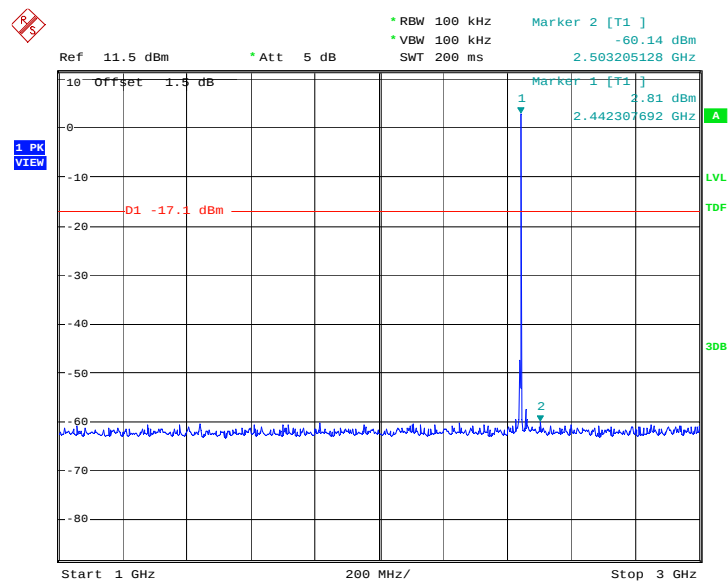
Date: 21.AUG.2012 08:56:07

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



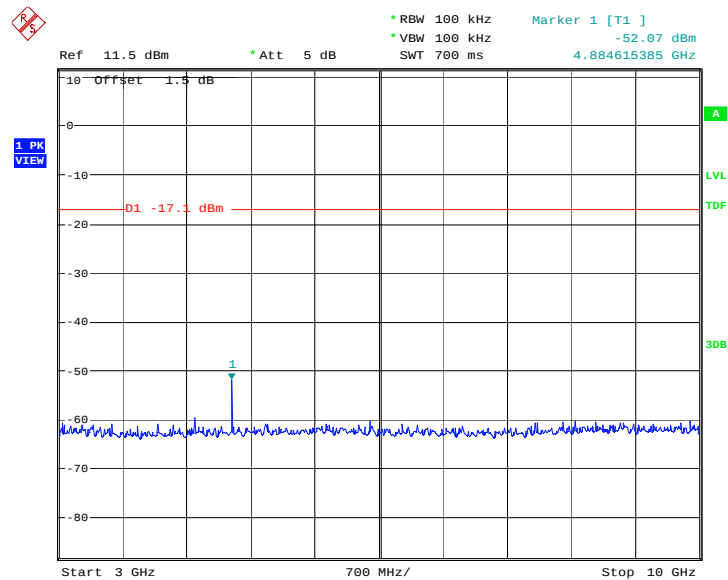
Date: 21.AUG.2012 08:56:23

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



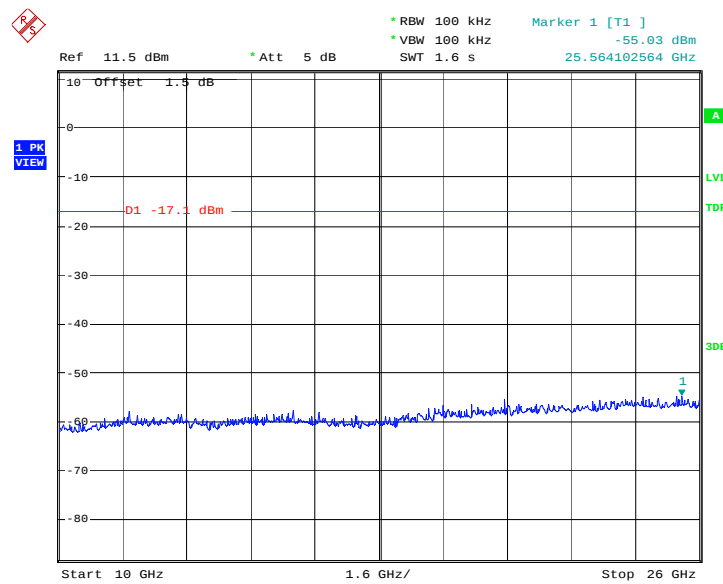
Date: 21.AUG.2012 08:56:55

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



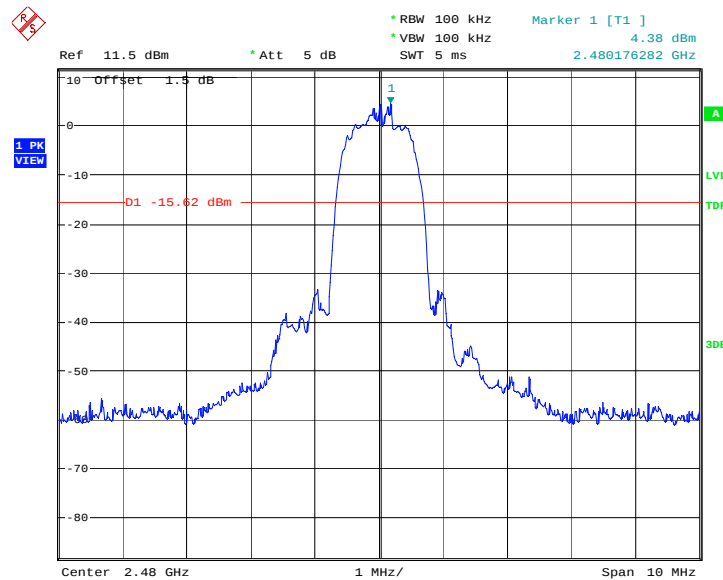
Date: 21.AUG.2012 08:57:12

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



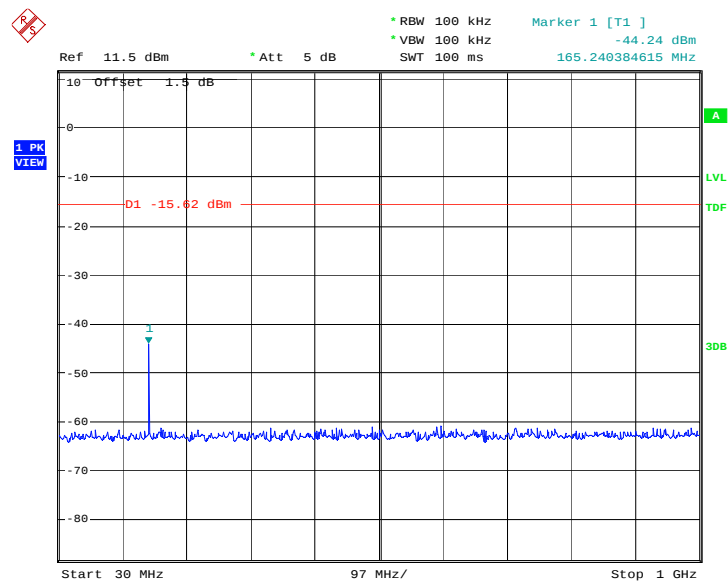
Date: 21.AUG.2012 08:57:28

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



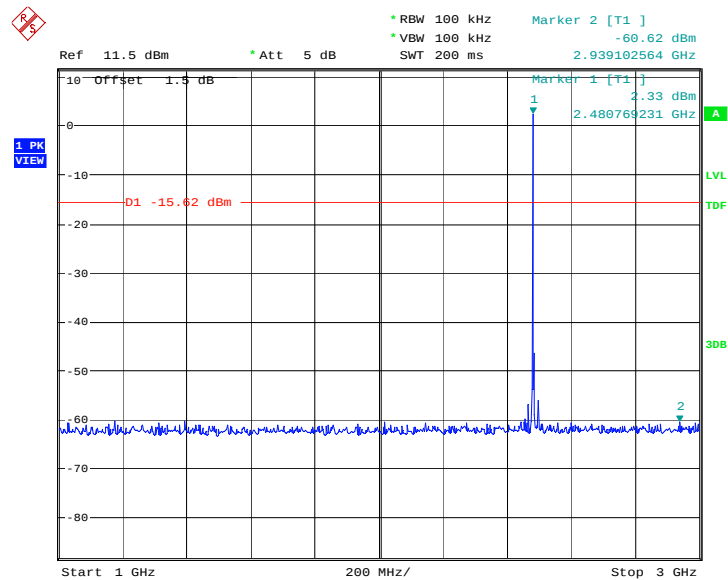
Date: 21.AUG.2012 08:57:45

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



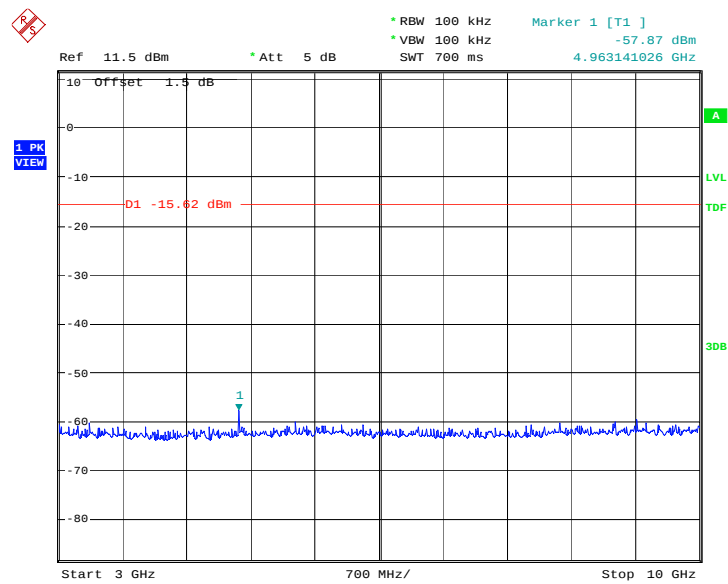
Date: 21.AUG.2012 08:58:02

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



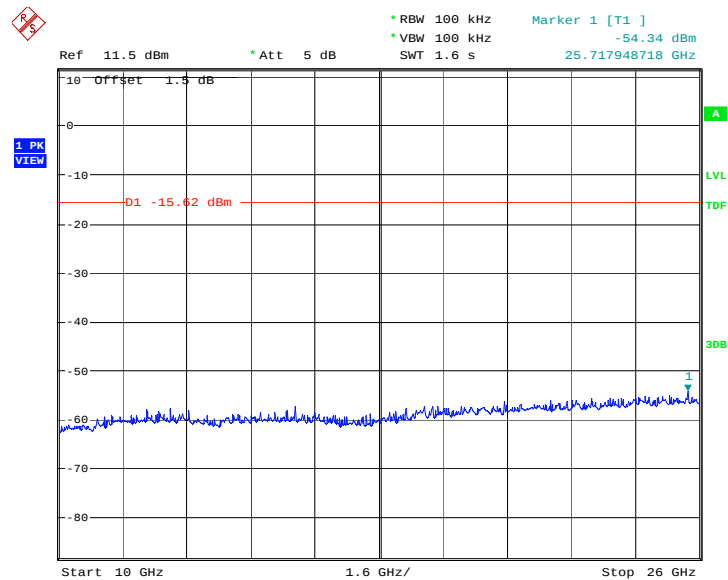
Date: 21.AUG.2012 08:58:33

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



Date: 21.AUG.2012 08:58:50

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



Date: 21.AUG.2012 08:59:06

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

A.5. Radiated Emission

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247, 15.205, 15.209	Listed as follows
RSS-210 A8.5	

Frequency (MHz) Field strength	Field strength (microvolts/meter)	Measurement distance (meters)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30
30–88	100	3
88–216	150	3
216–960	200	3
Above 960	500	3

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

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

Limit in restricted band:

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

Test Condition

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

Frequency of emission (MHz)	RBW/VBW	Sweep Time(s)
0.009-30	100KHz/300KHz	5
30-1000	100KHz/300KHz	5
1000-4000	1MHz/1MHz	15
4000-18000	1MHz/1MHz	40
18000-26500	1MHz/1MHz	20

Measurement Results:

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

The measurement results are obtained as described below:

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

For GFSK

Channel	Frequency Range	Test Results	Conclusion
Ch 0 2402 MHz	9KHz~ 30MHz	Fig.58	P
	30 MHz ~ 1 GHz	Fig.59	P
	1 GHz ~ 4 GHz	Fig.60	P
	4 GHz ~ 18 GHz	Fig.61	P
Ch 39 2441 MHz	9KHz~ 30MHz	Fig.62	P
	30 MHz ~ 1 GHz	Fig.63	P
	1 GHz ~ 4 GHz	Fig.64	P
	4 GHz ~ 18 GHz	Fig.65	P
Ch 78 2480 MHz	9KHz~ 30MHz	Fig.66	P
	30 MHz ~ 1 GHz	Fig.67	P
	1 GHz ~ 4 GHz	Fig.68	P
	4 GHz ~ 18 GHz	Fig.69	P
Power	2.38GHz~2.4GHz---L	Fig.70	P
Power	2.45GHz~2.5GHz---H	Fig.71	P
For all channels	18 GHz ~ 26 GHz	Fig.72	P

For $\pi/4$ DQPSK

Channel	Frequency Range	Test Results	Conclusion
Ch 0 2402 MHz	9KHz~ 30MHz	Fig.73	
	30 MHz ~ 1 GHz	Fig.74	P
	1 GHz ~ 4 GHz	Fig.75	P
	4 GHz ~ 18 GHz	Fig.76	P
Ch 39 2441 MHz	9KHz~ 30MHz	Fig.77	
	30 MHz ~ 1 GHz	Fig.78	P
	1 GHz ~ 4 GHz	Fig.79	P
	4 GHz ~ 18 GHz	Fig.80	P
Ch 78 2480 MHz	9KHz~ 30MHz	Fig.81	
	30 MHz ~ 1 GHz	Fig.82	P
	1 GHz ~ 4 GHz	Fig.83	P
	4 GHz ~ 18 GHz	Fig.84	P
Power	2.38GHz~2.4GHz---L	Fig.85	P
Power	2.45GHz~2.5GHz---H	Fig.86	P
For all channels	18 GHz ~ 26 GHz	Fig.87	P

For 8DPSK

Channel	Frequency Range	Test Results	Conclusion
Ch 0 2402 MHz	9KHz~ 30MHz	Fig.88	P
	30 MHz ~ 1 GHz	Fig.89	P
	1 GHz ~ 4 GHz	Fig.90	P
	4 GHz ~ 18 GHz	Fig.91	P
Ch 39 2441 MHz	9KHz~ 30MHz	Fig.92	P
	30 MHz ~ 1 GHz	Fig.93	P
	1 GHz ~ 4 GHz	Fig.94	P
	4 GHz ~ 18 GHz	Fig.95	P
Ch 78 2480 MHz	9KHz~ 30MHz	Fig.96	P
	30 MHz ~ 1 GHz	Fig.97	P
	1 GHz ~ 4 GHz	Fig.98	P
	4 GHz ~ 18 GHz	Fig.99	P
Power	2.38GHz~2.4GHz---L	Fig.100	P
Power	2.45GHz~2.5GHz---H	Fig.101	P
For all channels	18 GHz ~ 26 GHz	Fig.102	P

GFSK Ch 0

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
17927.250	43.1	17.2	25.894	V
17751.000	43.0	16.7	26.288	V
17523.000	43.0	17.5	25.546	H
17541.750	43.0	17.6	25.370	V
17496.000	42.9	17.7	25.183	H
17531.250	42.9	17.6	25.291	H

GFSK Ch 39

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
17531.250	43.1	17.6	25.514	H
17532.750	43.1	17.6	25.499	H
17534.250	43.1	17.6	25.451	V
17532.000	43.0	17.6	25.379	H
17529.750	43.0	17.6	25.374	H
17459.250	43.0	17.3	25.667	V

GFSK Ch 78

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
17485.500	43.2	17.7	25.509	V
17511.750	43.1	17.5	25.587	H
17517.750	43.1	17.5	25.582	H
17547.750	43.1	17.6	25.418	H
17494.500	43.0	17.7	25.302	V
17523.750	43.0	17.5	25.531	H

 $\pi/4$ DQPSK Ch 0

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
17536.500	43.1	17.6	25.462	V
17498.250	43.1	17.7	25.312	H
17550.000	43.0	17.0	26.067	H
17514.750	43.0	17.5	25.507	H
17511.750	43.0	17.5	25.505	V
17531.250	43.0	17.6	25.326	V

 $\pi/4$ DQPSK Ch 39

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
17526.750	43.1	17.6	25.477	V
17488.500	43.1	17.7	25.343	H
17517.750	43.1	17.5	25.591	V
17509.500	43.1	17.5	25.589	H
17512.500	43.0	17.5	25.544	H
17519.250	43.0	17.5	25.536	V

$\pi/4$ DQPSK Ch 78

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
17506.500	43.1	17.5	25.601	H
17541.000	43.1	17.6	25.434	V
17498.250	43.1	17.7	25.319	V
17522.250	43.0	17.5	25.532	V
17518.500	43.0	17.5	25.503	H
17499.750	43.0	17.7	25.211	V

8DPSK Ch 0

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
17952.750	43.0	17.5	25.567	V
17522.250	43.0	17.5	25.552	H
17515.500	43.0	17.5	25.540	H
17496.000	43.0	17.7	25.237	H
17520.750	43.0	17.5	25.498	H
17773.500	42.9	16.7	26.207	V

8DPSK Ch 39

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
17490.000	43.2	17.7	25.444	H
17520.750	43.1	17.5	25.610	H
17550.750	43.1	17.0	26.105	V
17523.750	43.0	17.5	25.576	H
17501.250	43.0	17.5	25.503	V
17512.500	42.9	17.5	25.461	V

8DPSK Ch 78

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
17954.250	43.5	17.5	26.075	H
17538.000	43.1	17.6	25.425	H
17523.750	43.0	17.5	25.573	H
17470.500	43.0	17.3	25.688	V
17523.000	42.9	17.5	25.476	V
17493.750	42.9	17.7	25.196	V

Conclusion: PASS

Test graphs as below:

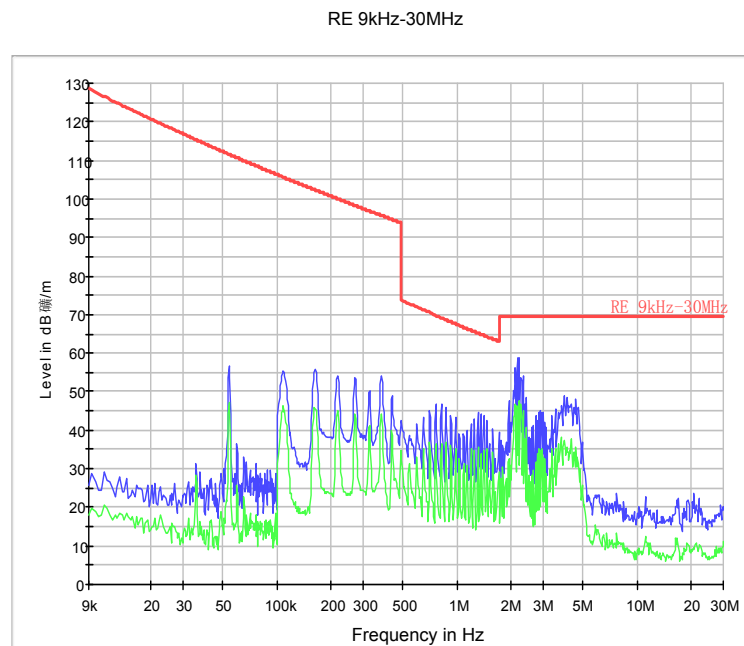


Fig.58. Radiated emission: GFSK, Channel 0, 9 KHz – 30MHz

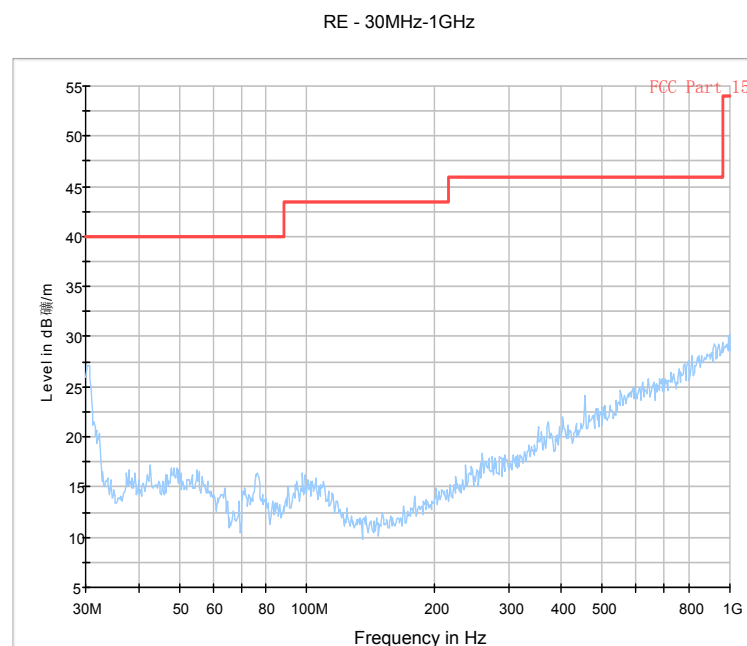


Fig.59. Radiated emission: GFSK, Channel 0, 30 MHz - 1 GHz

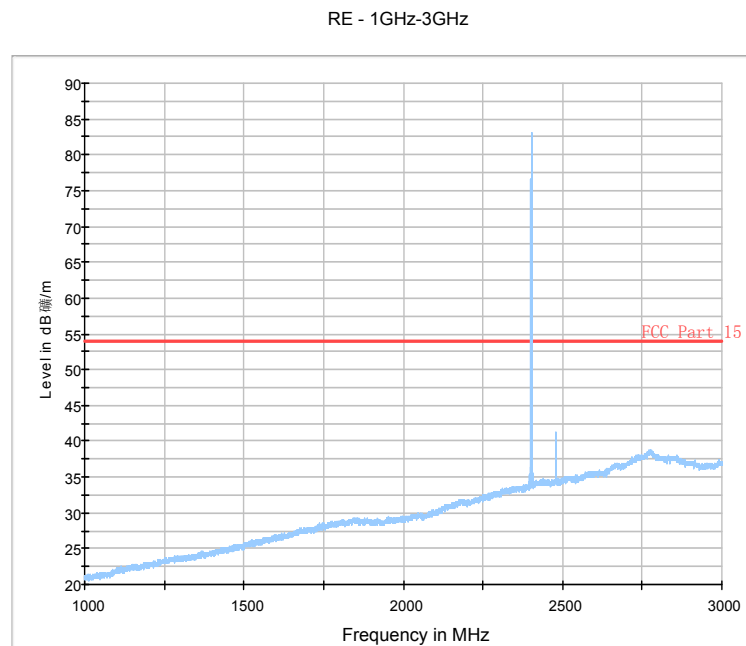


Fig.60. Radiated emission: GFSK, Channel 0, 1 GHz - 3 GHz

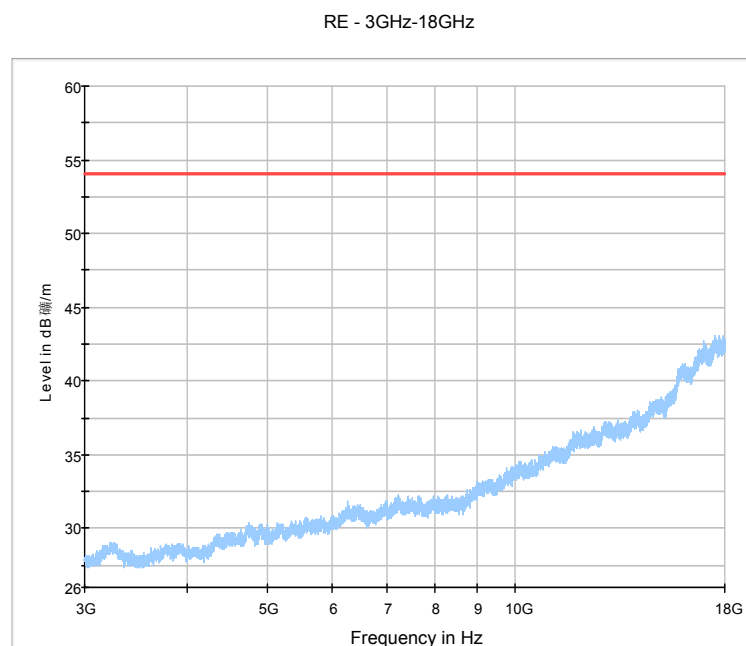


Fig.61. Radiated emission: GFSK, Channel 0, 3 GHz - 18 GHz

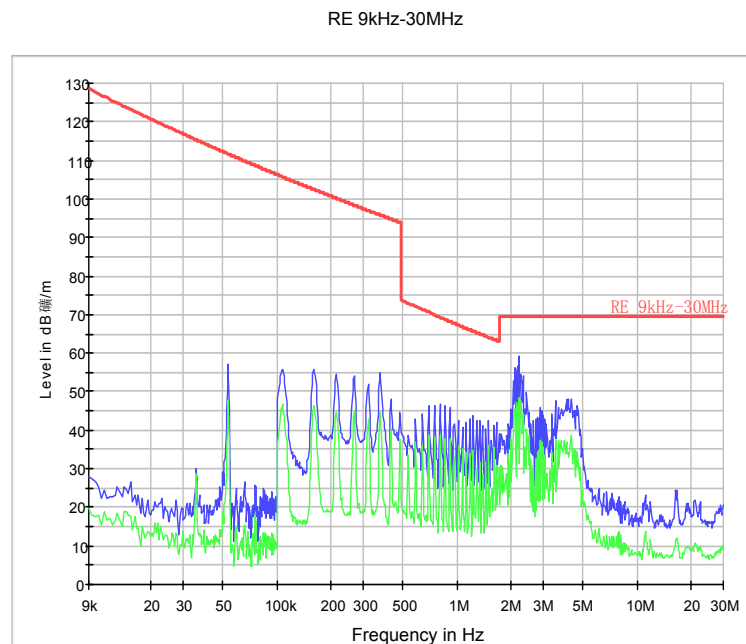


Fig.62. Radiated emission: GFSK, Channel 39, 9 KHz – 30MHz

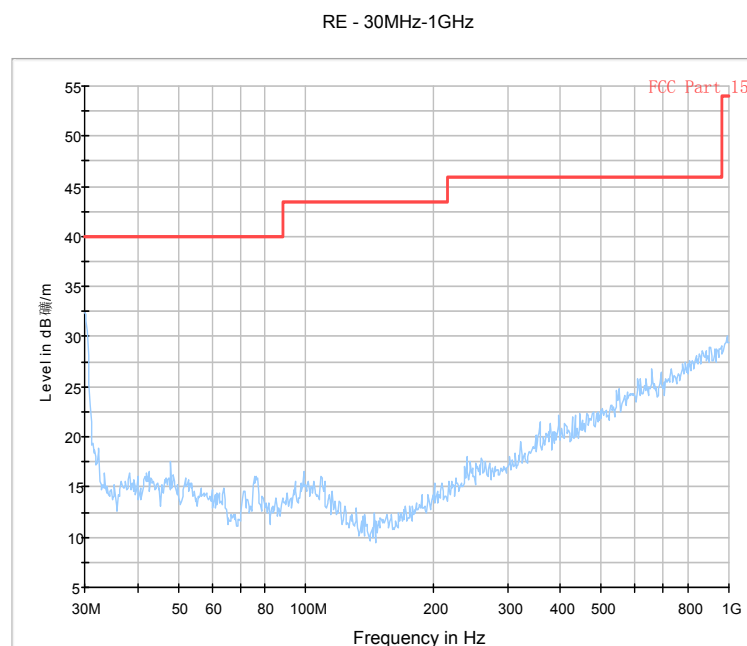


Fig.63. Radiated emission: GFSK, Channel 39, 30 MHz - 1 GHz

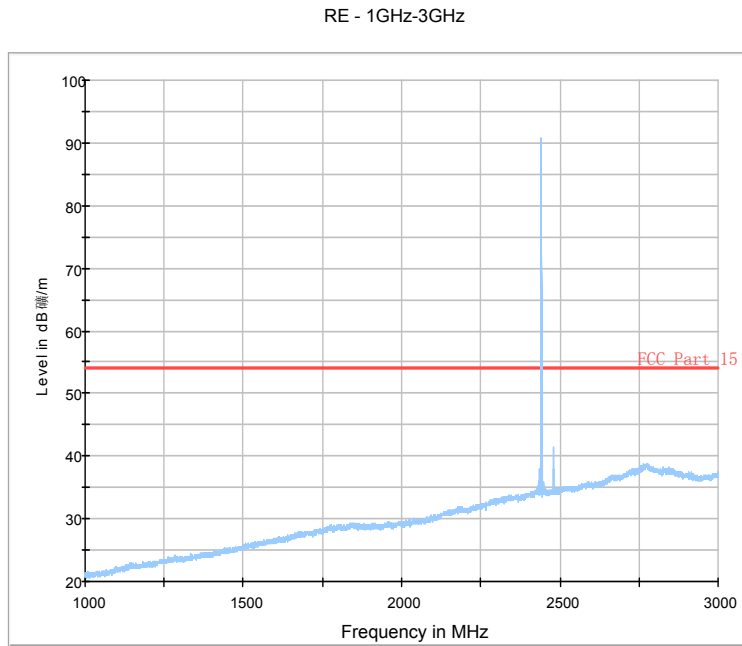


Fig.64. Radiated emission: GFSK, Channel 39, 1 GHz - 3 GHz

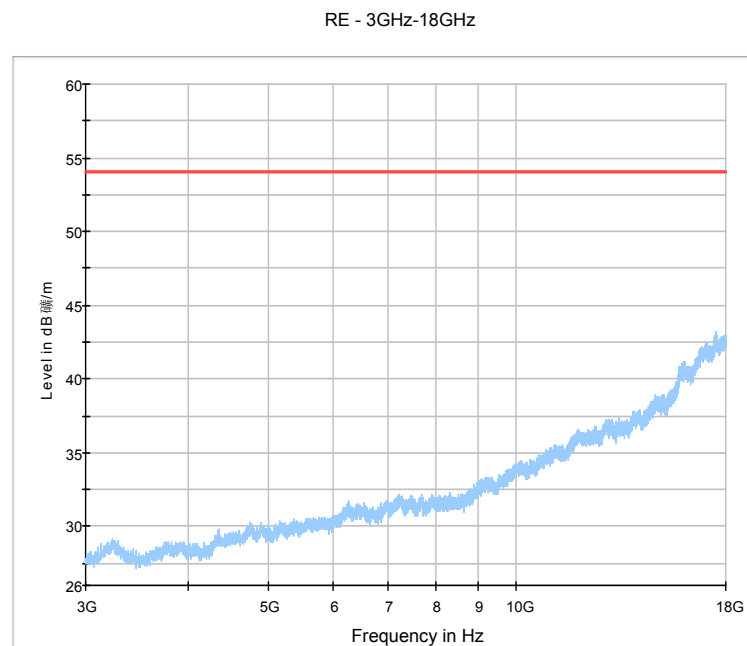


Fig.65. Radiated emission: GFSK, Channel 39, 3 GHz - 18 GHz

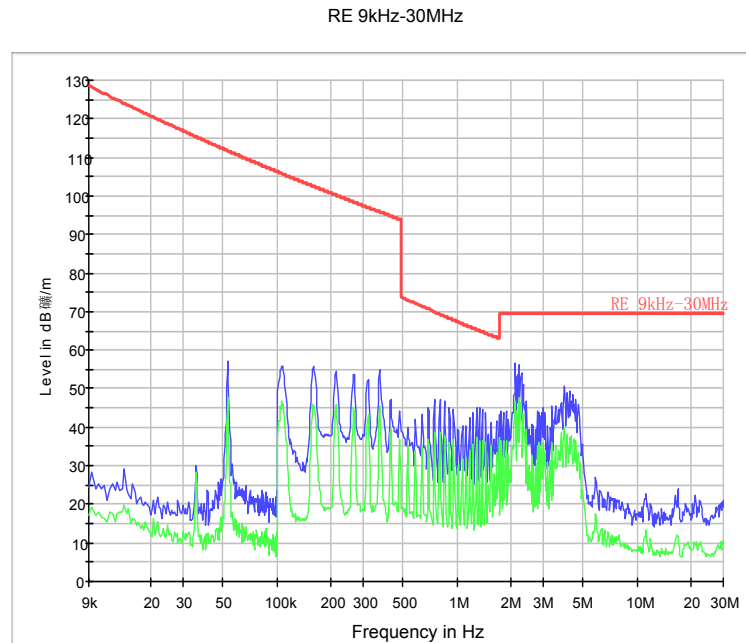


Fig.66. Radiated emission: GFSK, Channel 78, 9 KHz – 30MHz

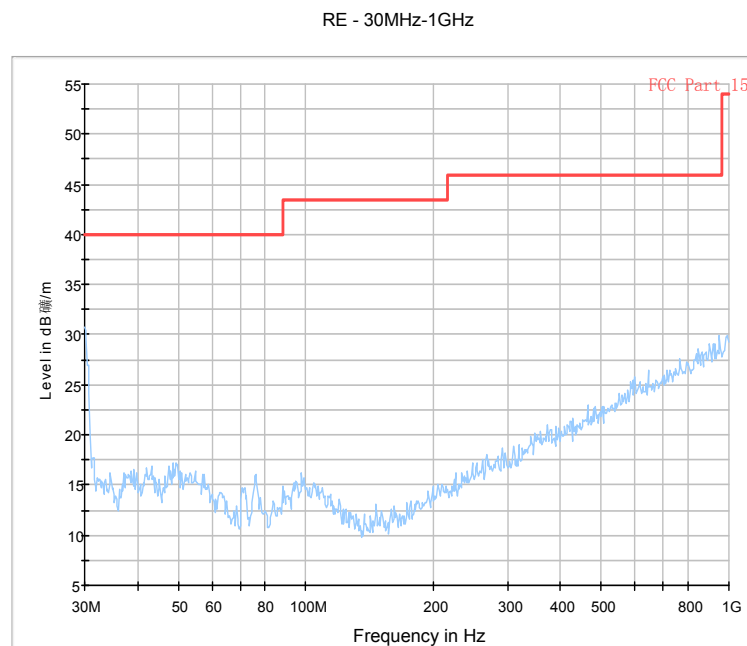


Fig.67. Radiated emission: GFSK, Channel 78, 30 MHz - 1 GHz

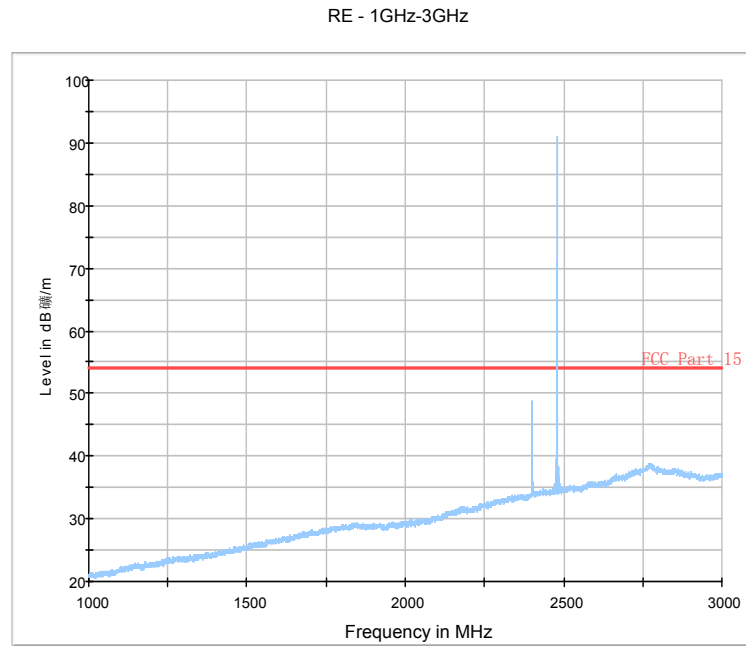


Fig.68. Fig.47 Radiated emission: GFSK, Channel 78, 1 GHz - 3 GHz

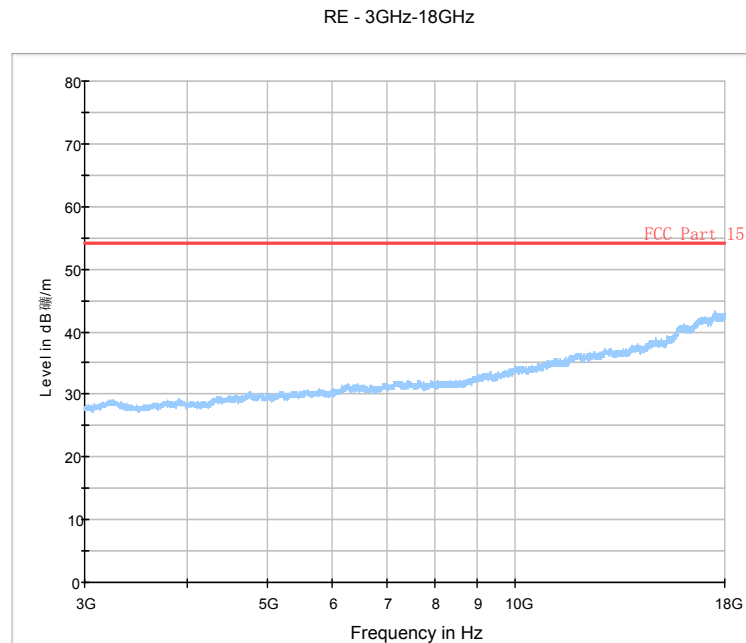


Fig.69. Radiated emission: GFSK, Channel 78, 3 GHz - 18 GHz

RE - Power-2.38GHz-2.45GHz

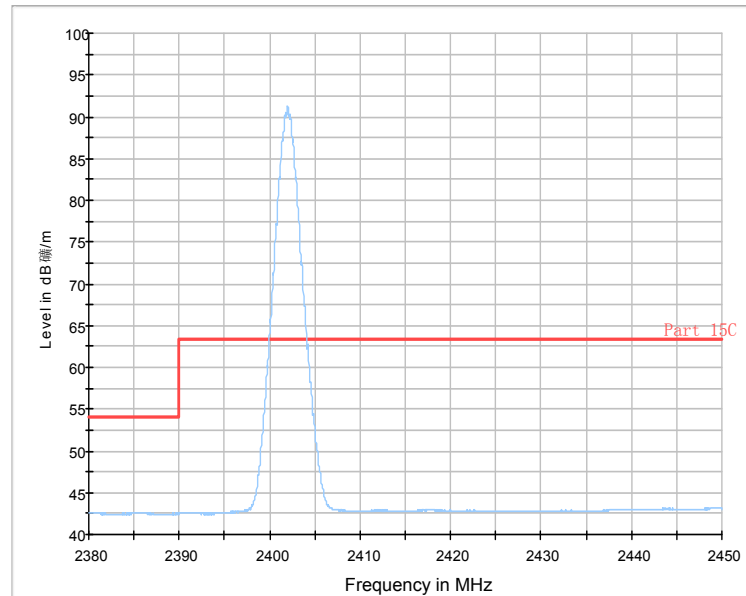


Fig.70. Radiated emission (Power): GFSK, low channel

RE - Power-2.45GHz-2.5GHz

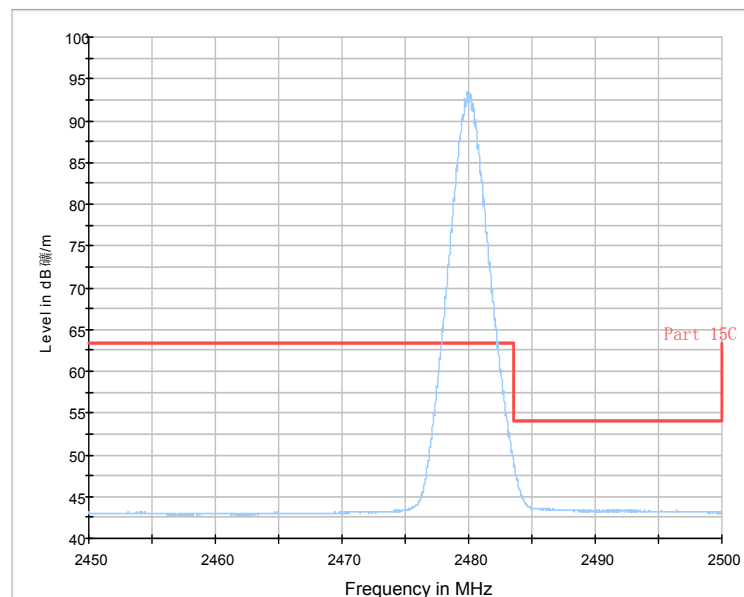


Fig.71. Radiated emission (Power) GFSK, high channel

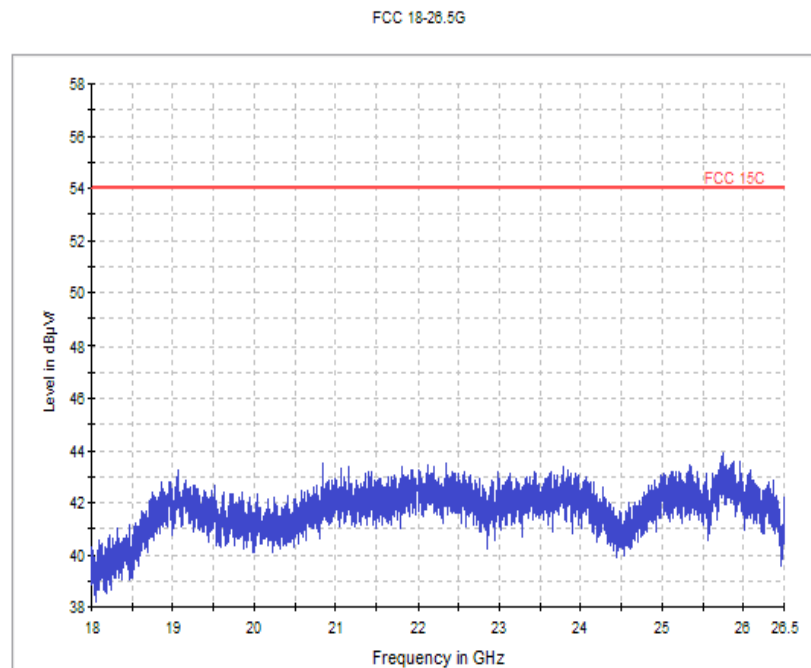


Fig.72. Radiated emission: GFSK, 18 GHz - 26 GHz

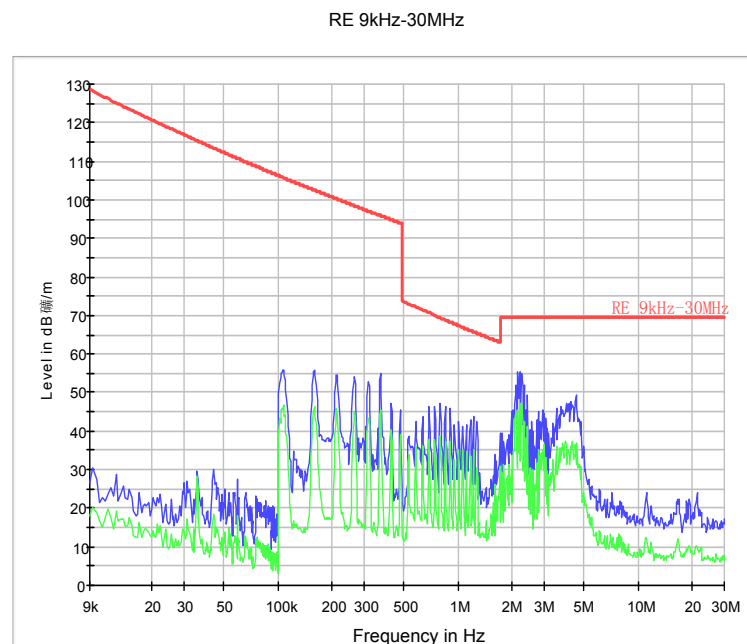


Fig.73. Radiated emission: $\pi/4$ DQPSK, Channel 0, 9 KHz – 30MHz

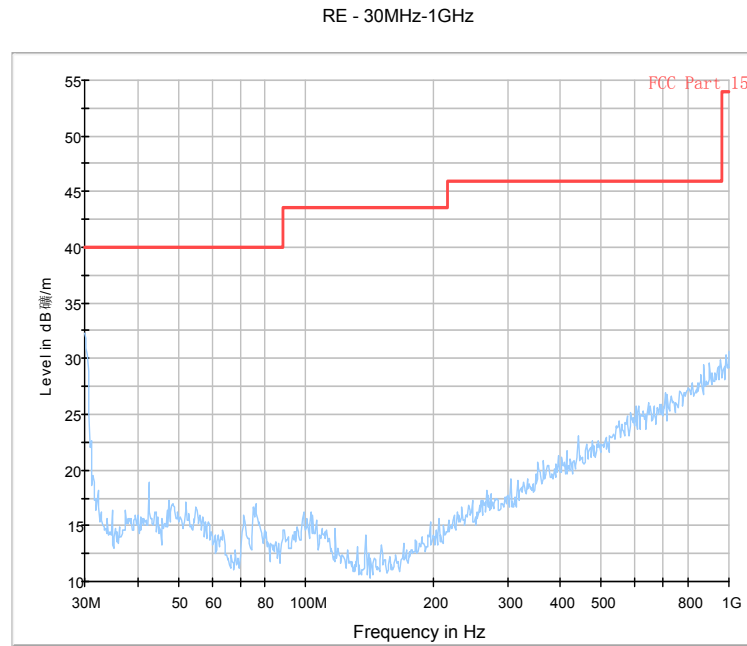


Fig.74. Radiated emission: $\pi/4$ DQPSK, Channel 0, 30 MHz - 1 GHz

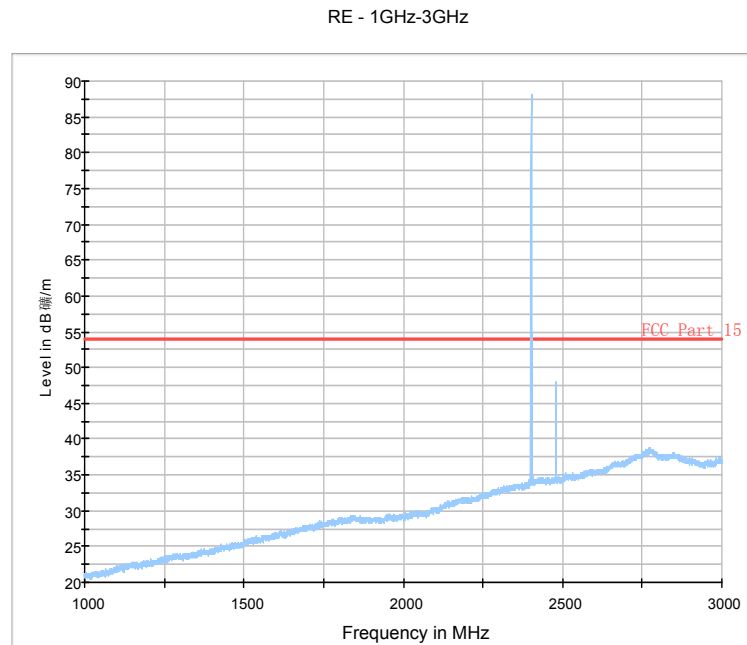


Fig.75. Radiated emission: $\pi/4$ DQPSK, Channel 0, 1 GHz - 3 GHz

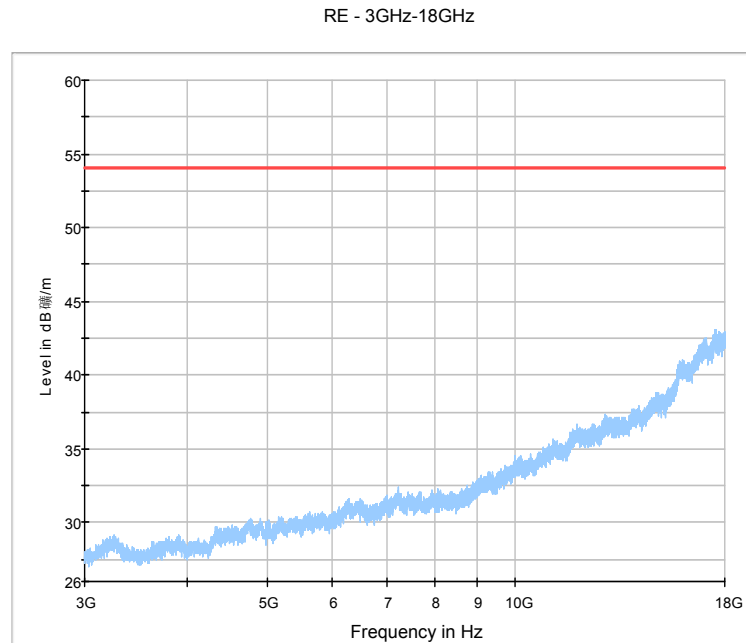


Fig.76. Radiated emission: $\pi/4$ DQPSK, Channel 0, 3 GHz - 18 GHz

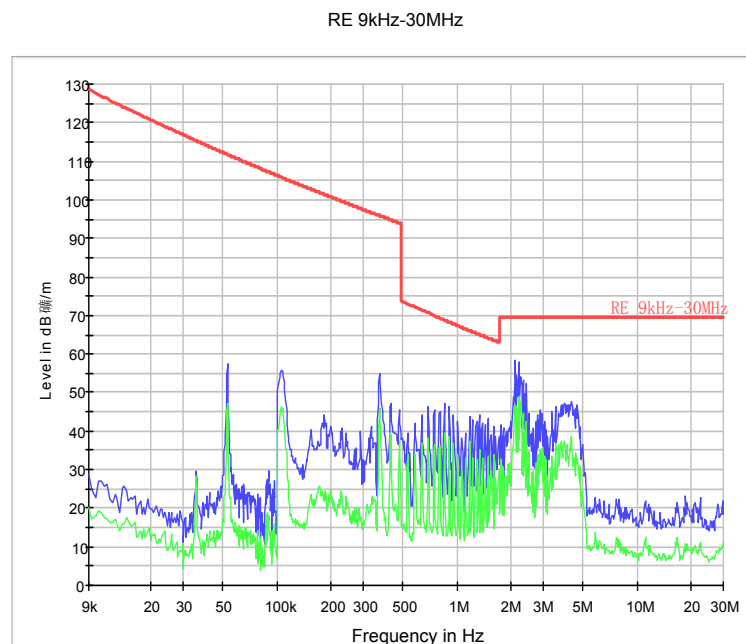


Fig.77. Radiated emission: $\pi/4$ DQPSK, Channel 39, 9 KHz – 30MHz

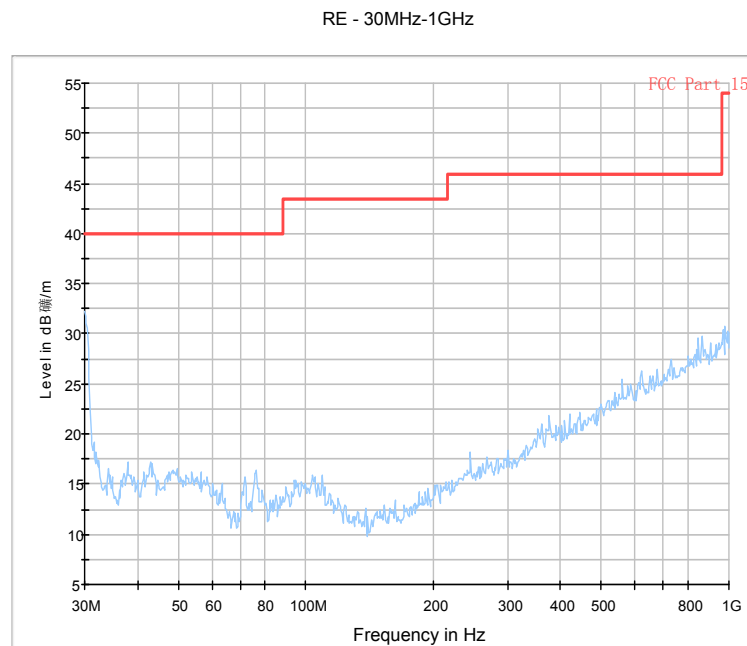


Fig.78. Radiated emission: $\pi/4$ DQPSK, Channel 39, 30 MHz - 1 GHz

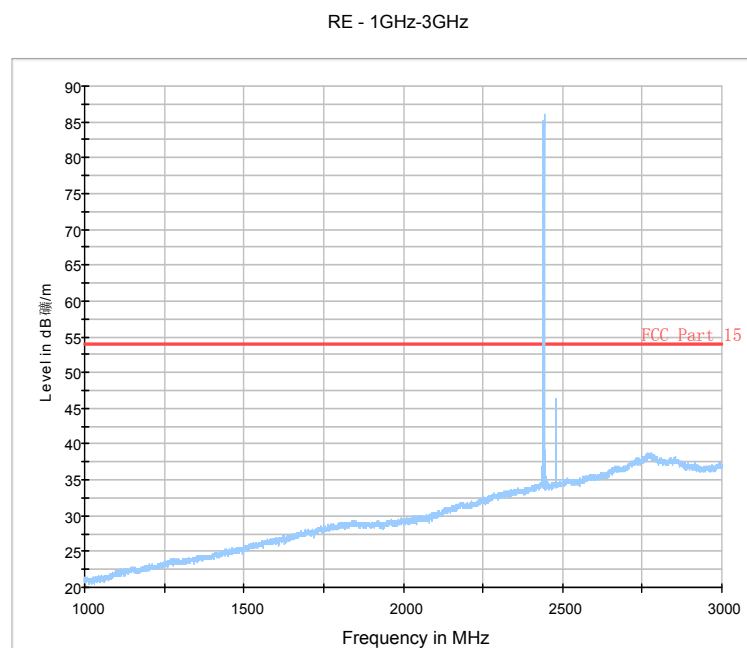


Fig.79. Radiated emission: $\pi/4$ DQPSK, Channel 39, 1 GHz - 3 GHz

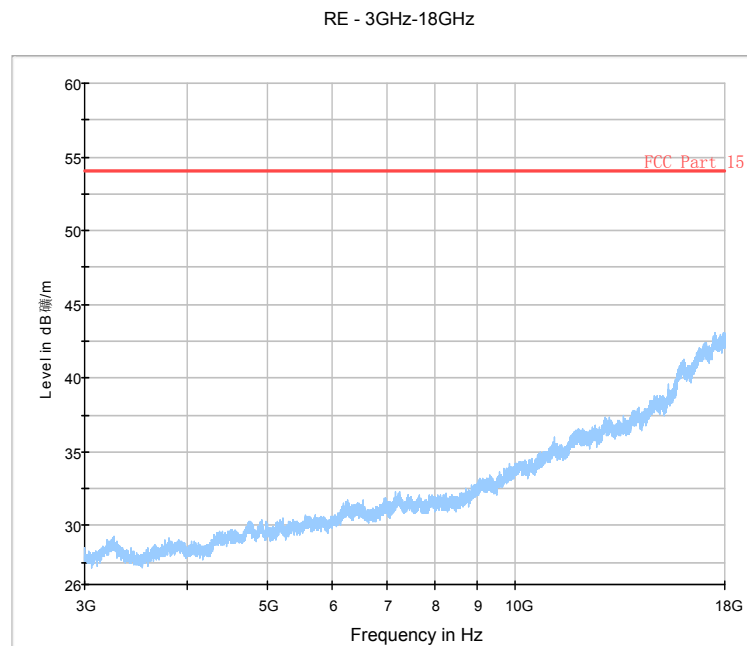


Fig.80. Radiated emission: $\pi/4$ DQPSK, Channel 39, 3 GHz - 18 GHz

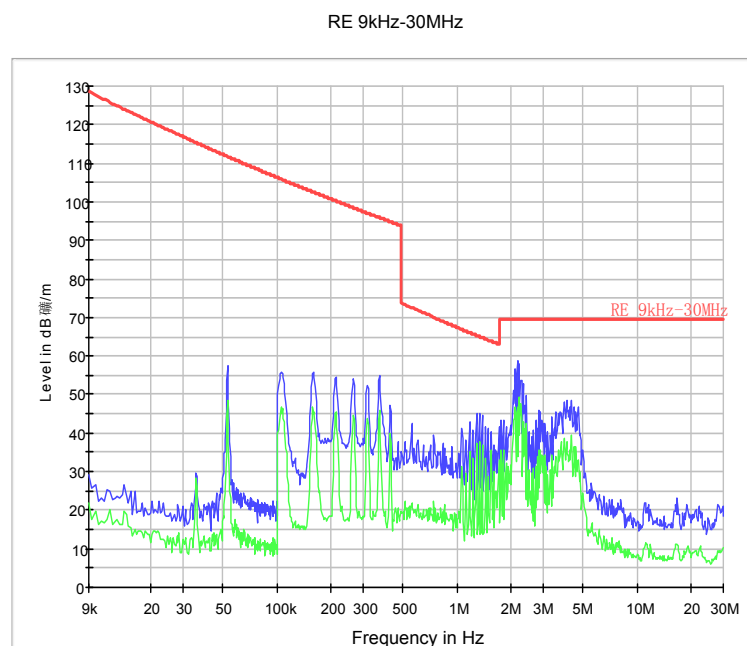


Fig.81. Radiated emission: $\pi/4$ DQPSK, Channel 78, 9 KHz – 30MHz

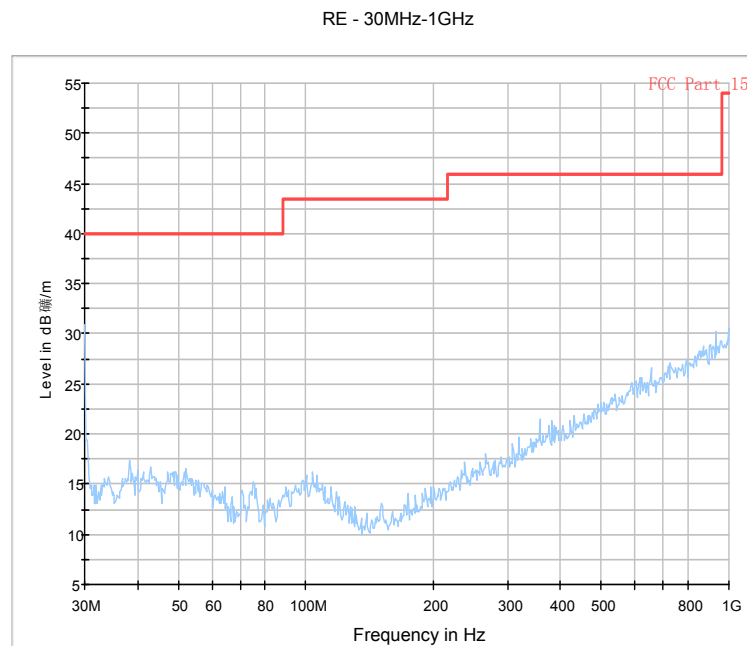


Fig.82. Radiated emission: $\pi/4$ DQPSK, Channel 78, 30 MHz - 1 GHz

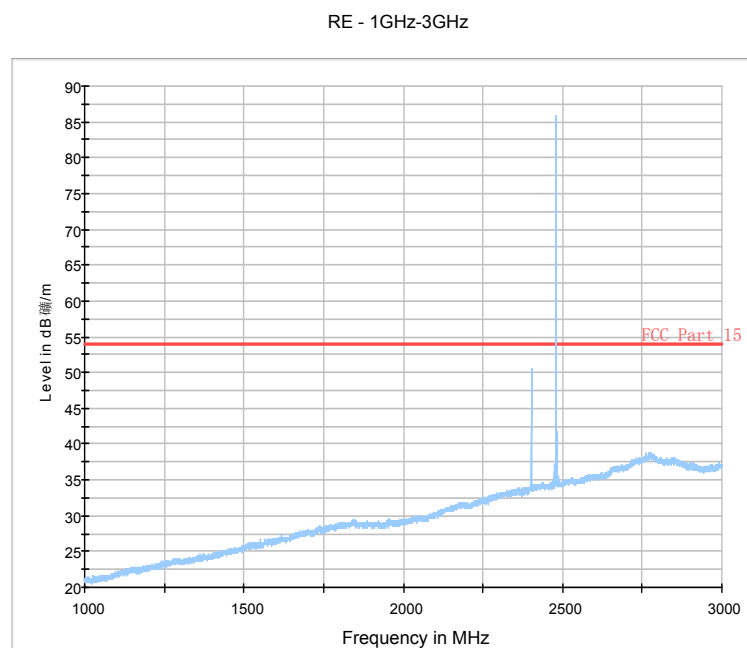


Fig.83. Radiated emission: $\pi/4$ DQPSK, Channel 78, 1 GHz - 3 GHz

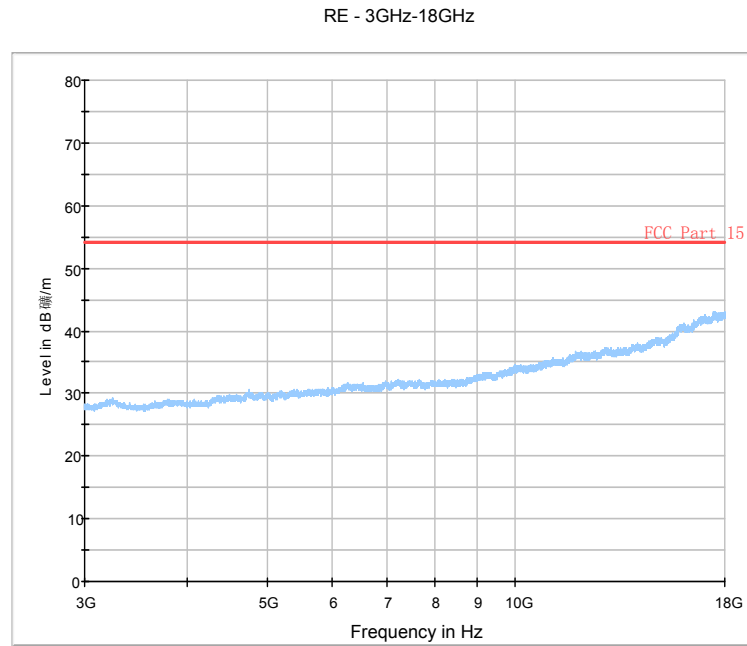


Fig.84. Radiated emission: $\pi/4$ DQPSK, Channel 78, 3 GHz - 18 GHz

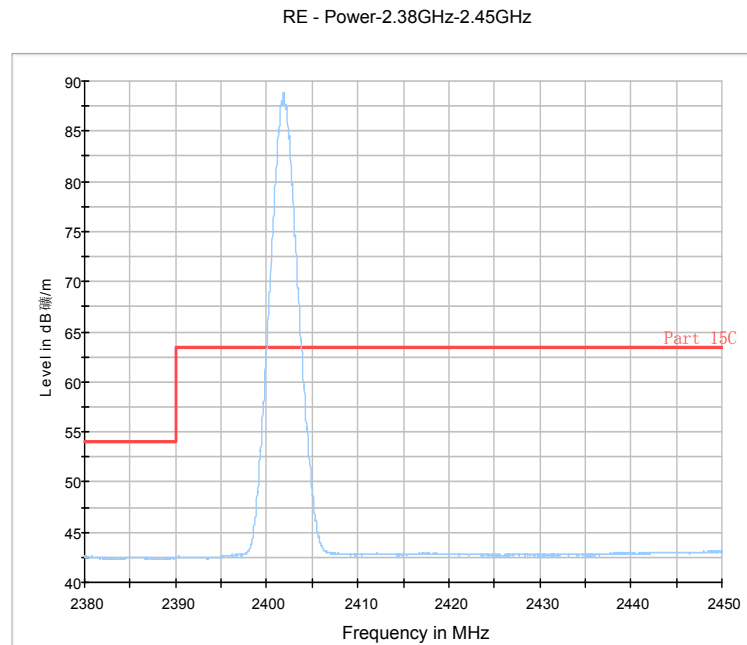


Fig.85. Radiated emission (Power): $\pi/4$ DQPSK, low channel

RE - Power-2.45GHz-2.5GHz

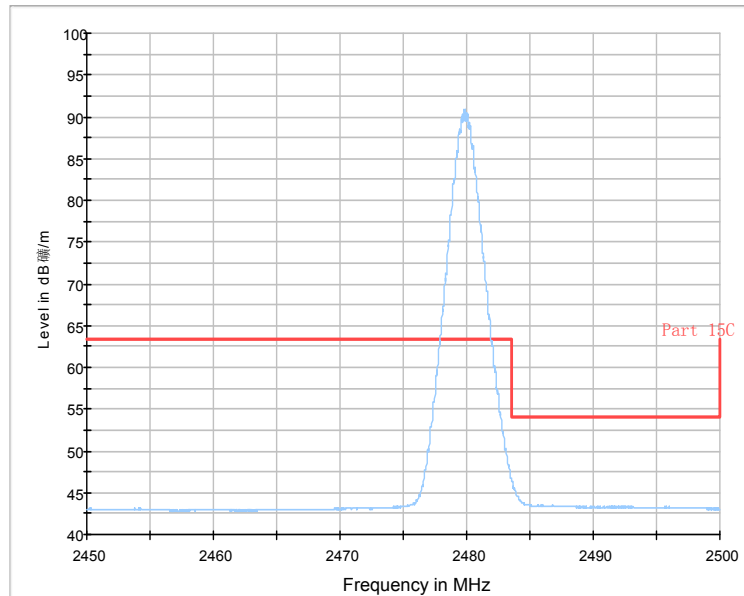


Fig.86. Radiated emission (Power): $\pi/4$ DQPSK, high channel

FCC 18-26.5G

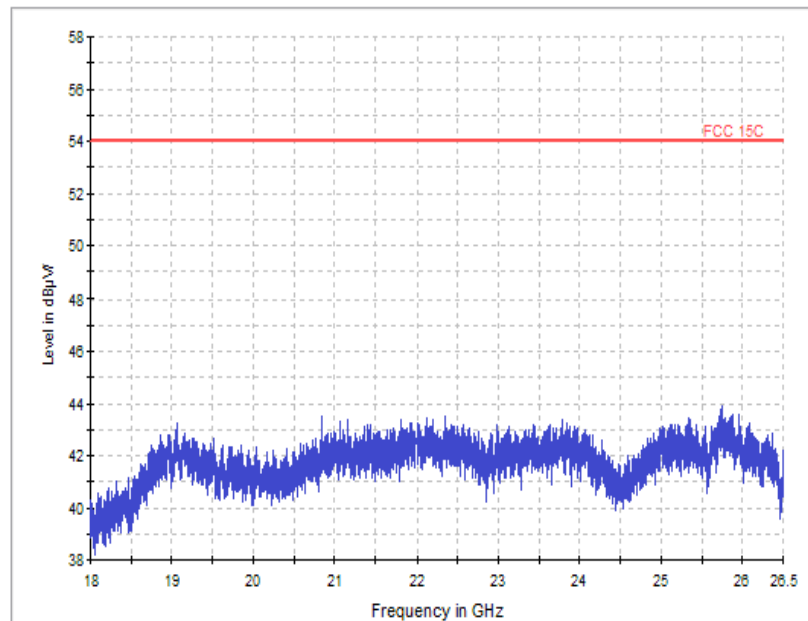


Fig.87. Radiated emission: $\pi/4$ DQPSK, 18 GHz – 26.5 GHz

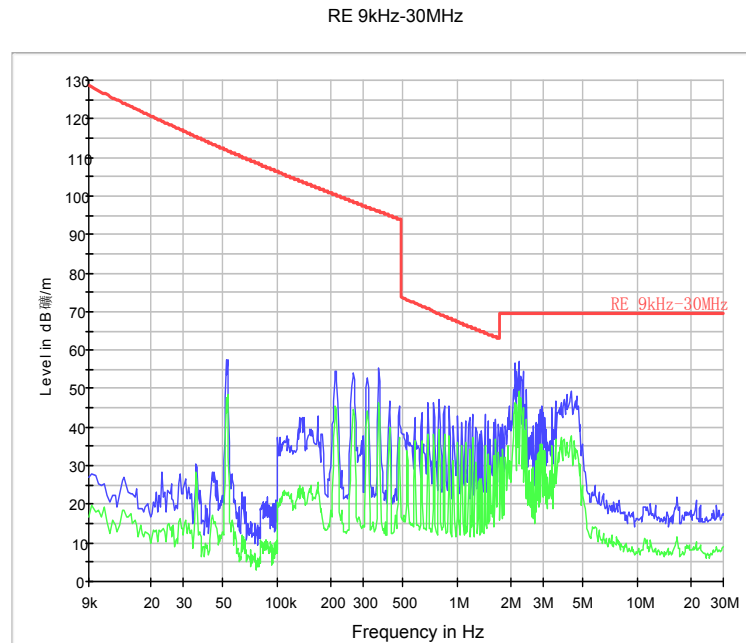


Fig.88. Radiated emission: 8DPSK, Channel 0, 9 KHz – 30MHz

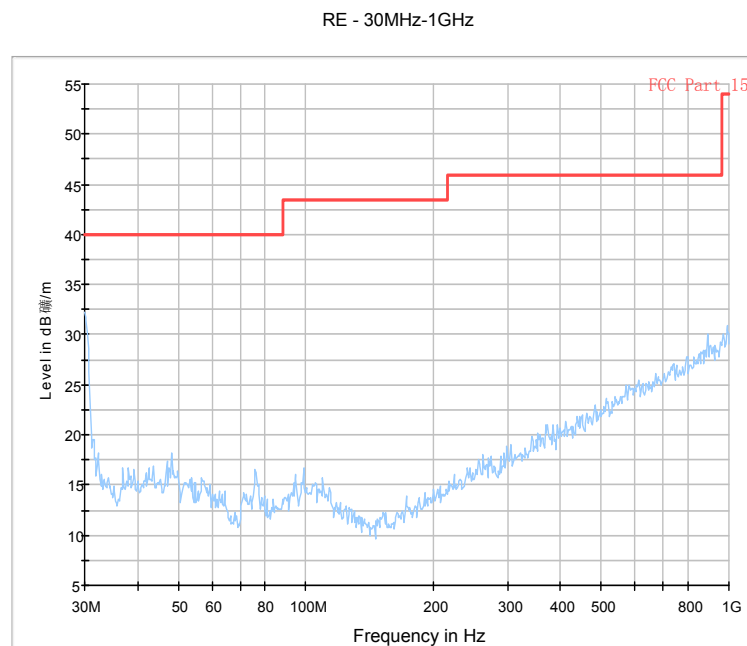


Fig.89. Radiated emission: 8DPSK, Channel 0, 30 MHz - 1 GHz

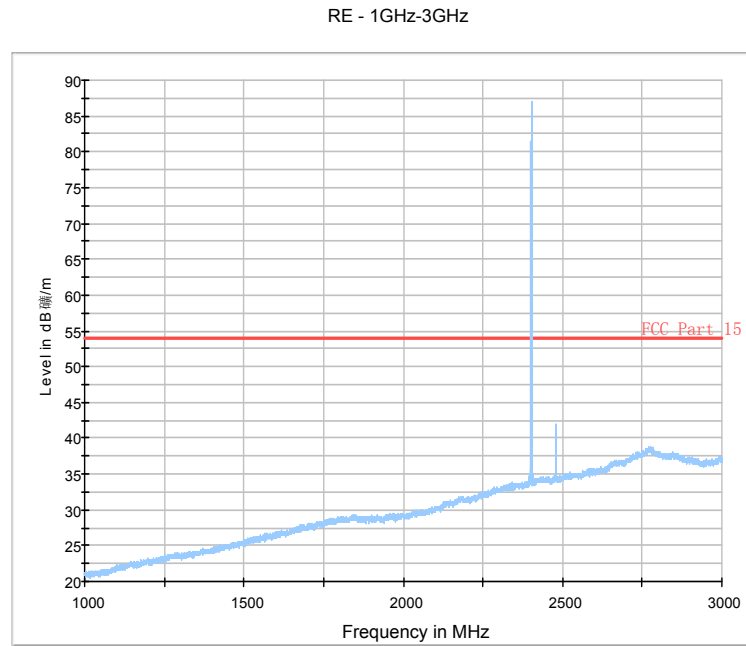


Fig.90. Radiated emission: 8DPSK, Channel 0, 1 GHz - 3 GHz

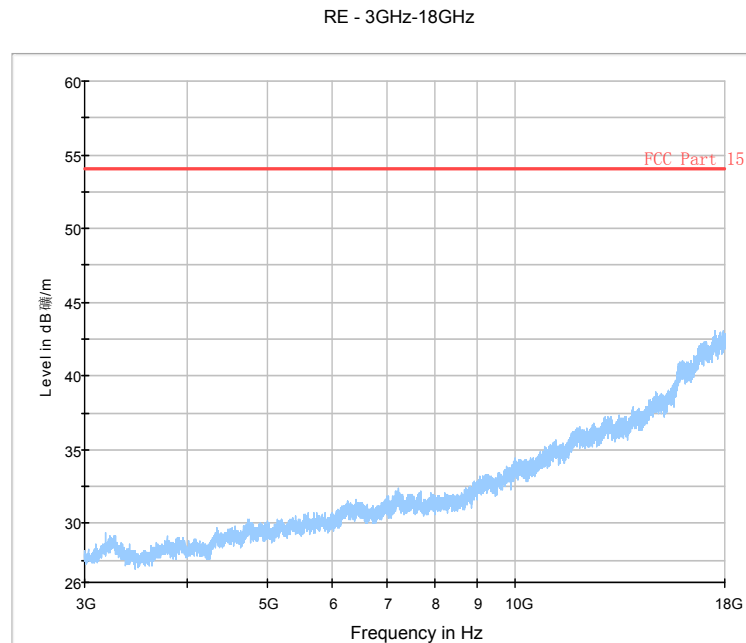


Fig.91. Radiated emission: 8DPSK, Channel 0, 3 GHz - 18 GHz

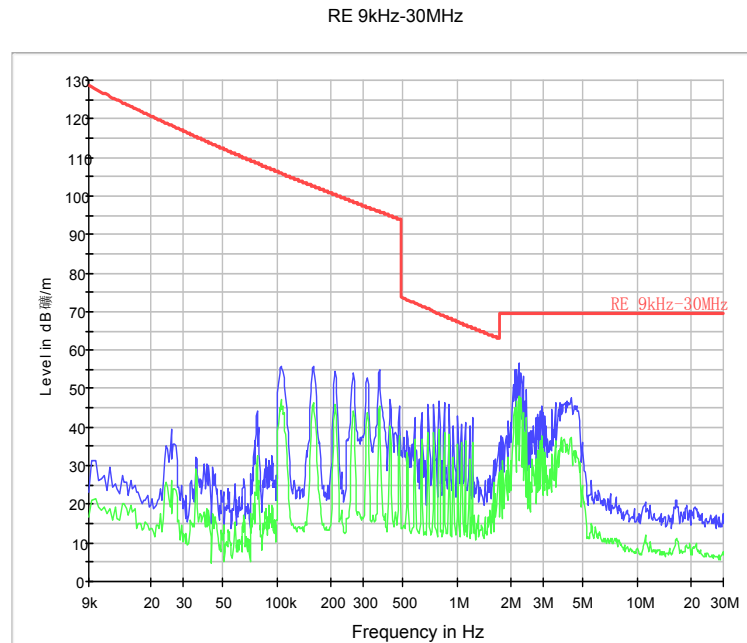


Fig.92. Radiated emission: 8DPSK, Channel 39, 9 KHz – 30MHz

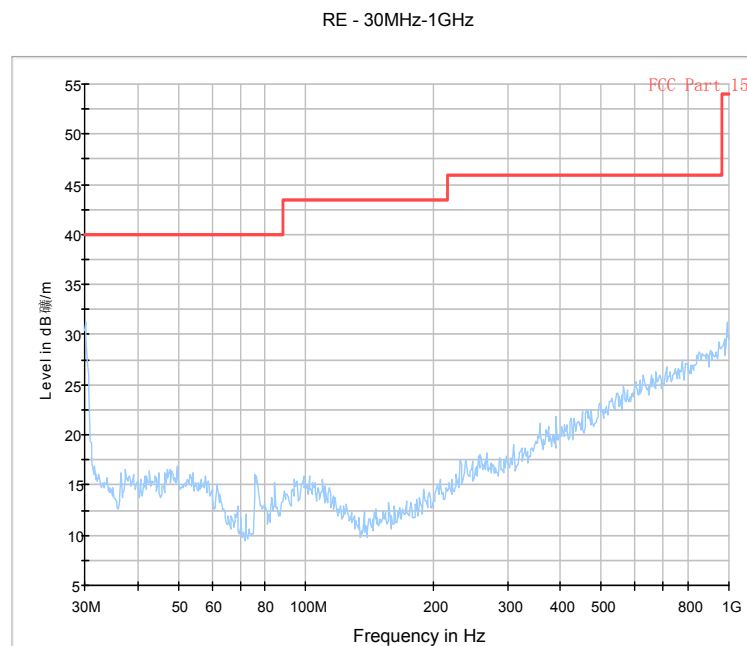


Fig.93. Radiated emission: 8DPSK, Channel 39, 30 MHz - 1 GHz

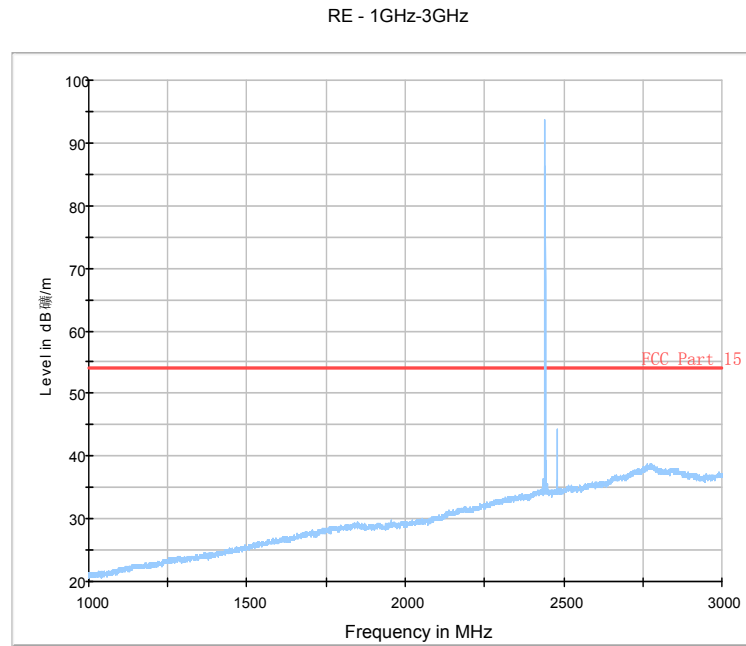


Fig.94. Radiated emission: 8DPSK, Channel 39, 1 GHz - 3 GHz

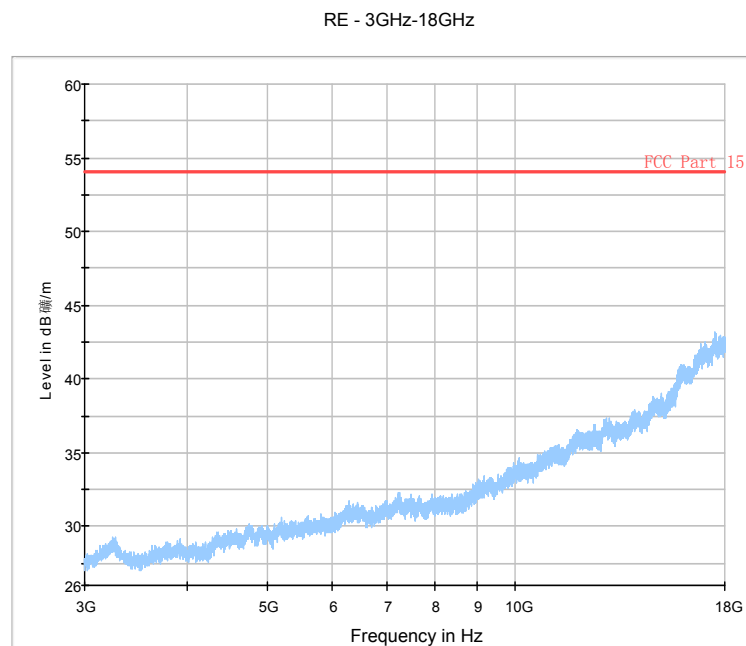


Fig.95. Radiated emission: 8DPSK, Channel 39, 3 GHz - 18 GHz

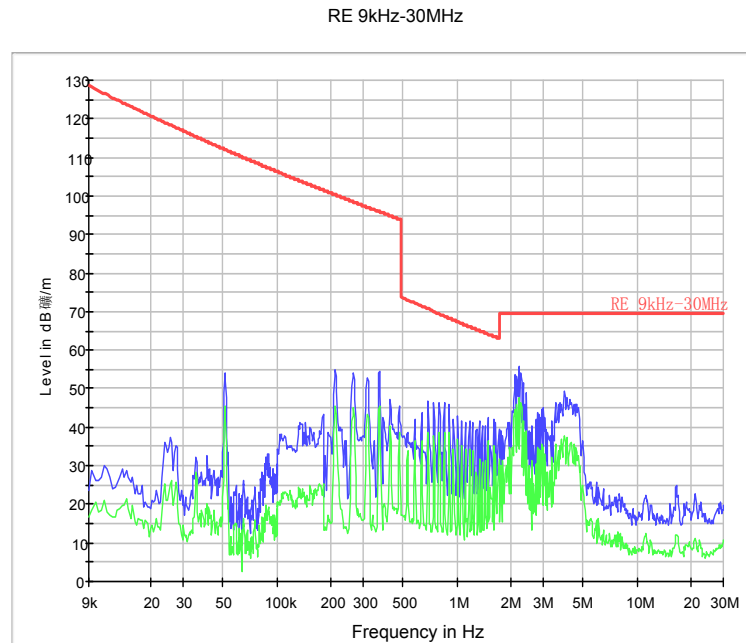


Fig.96. Radiated emission: 8DPSK, Channel 78, 9 KHz – 30MHz

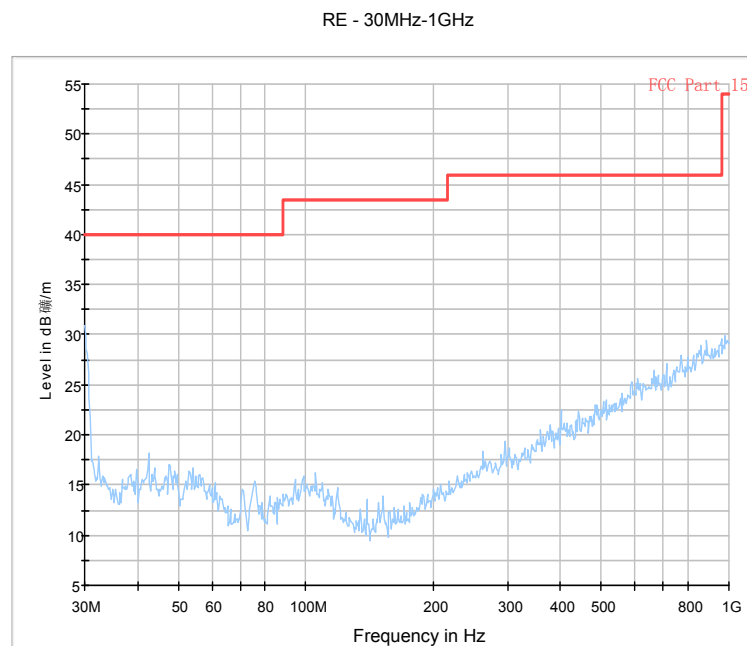


Fig.97. Radiated emission: 8DPSK, Channel 78, 30 MHz - 1 GHz

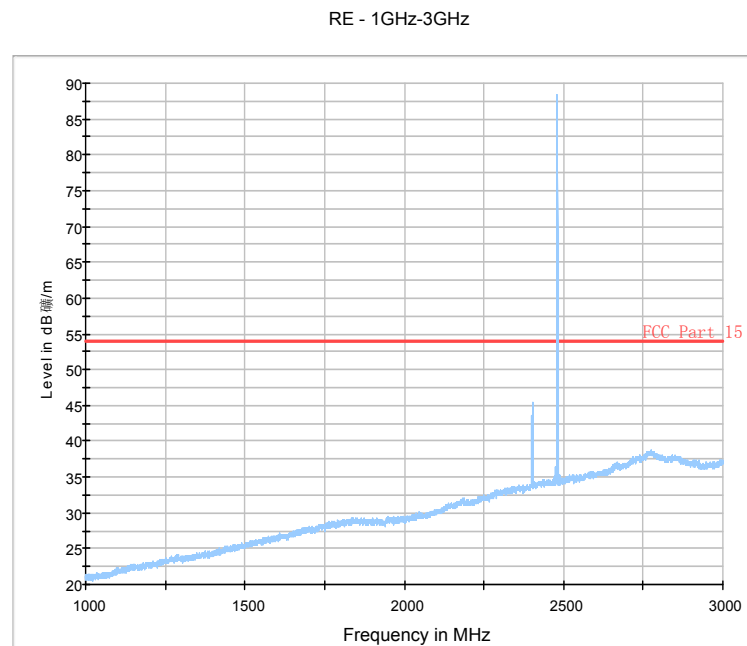


Fig.98. Radiated emission: 8DPSK, Channel 78, 1 GHz - 3 GHz

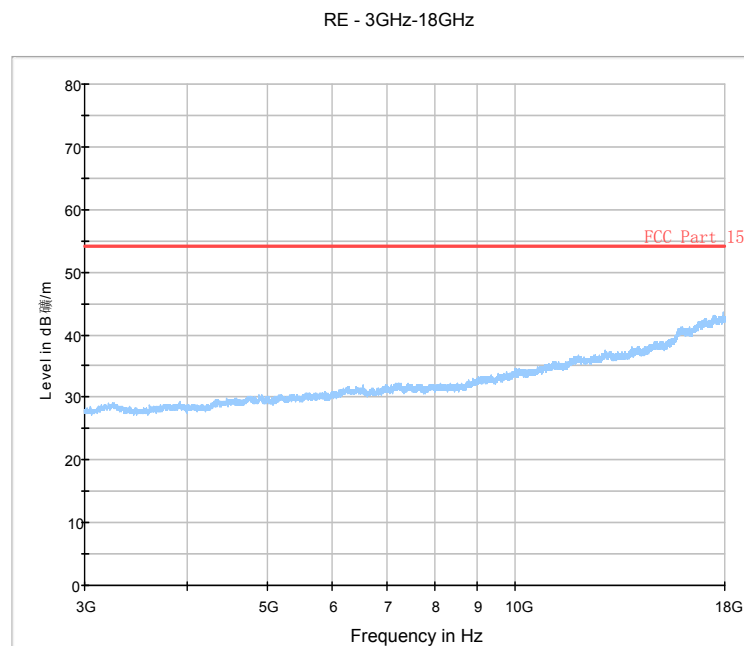


Fig.99. Radiated emission: 8DPSK, Channel 78, 3 GHz - 18 GHz

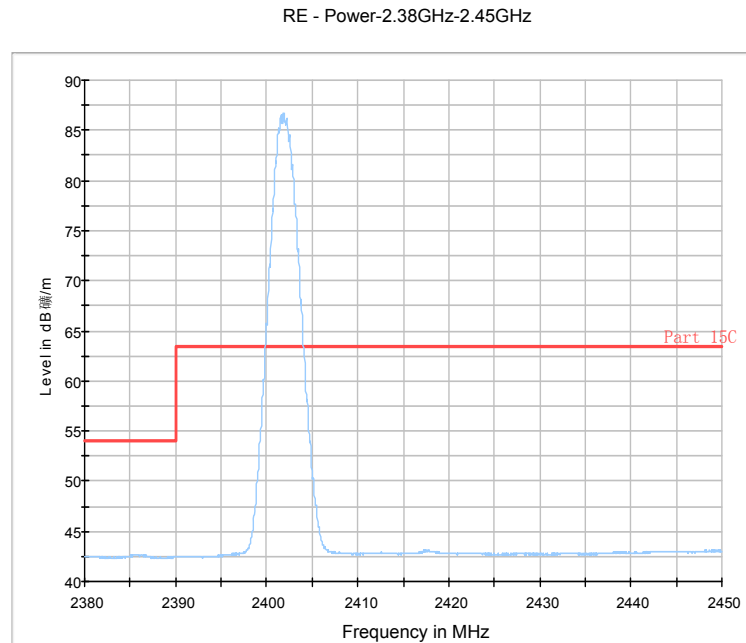


Fig.100. Radiated emission (Power): 8DPSK, low channel

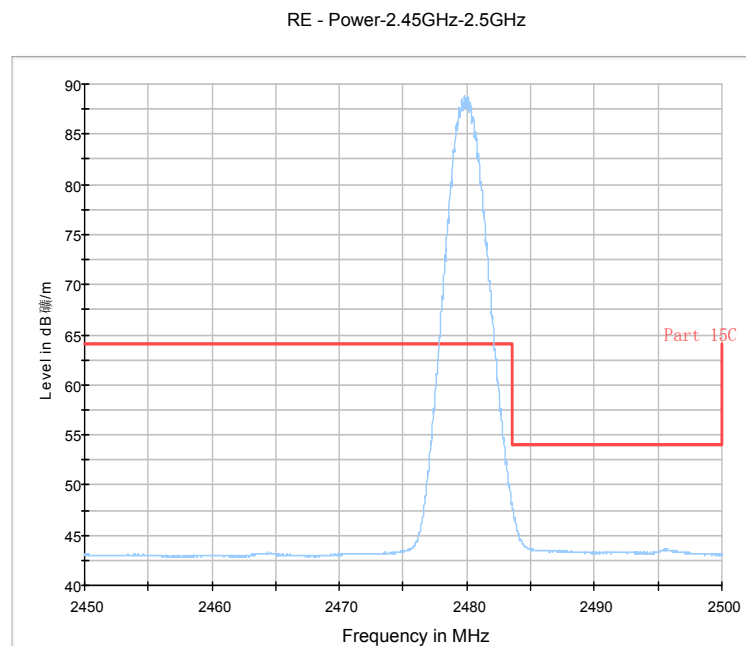


Fig.101. Radiated emission (Power): 8DPSK, high channel

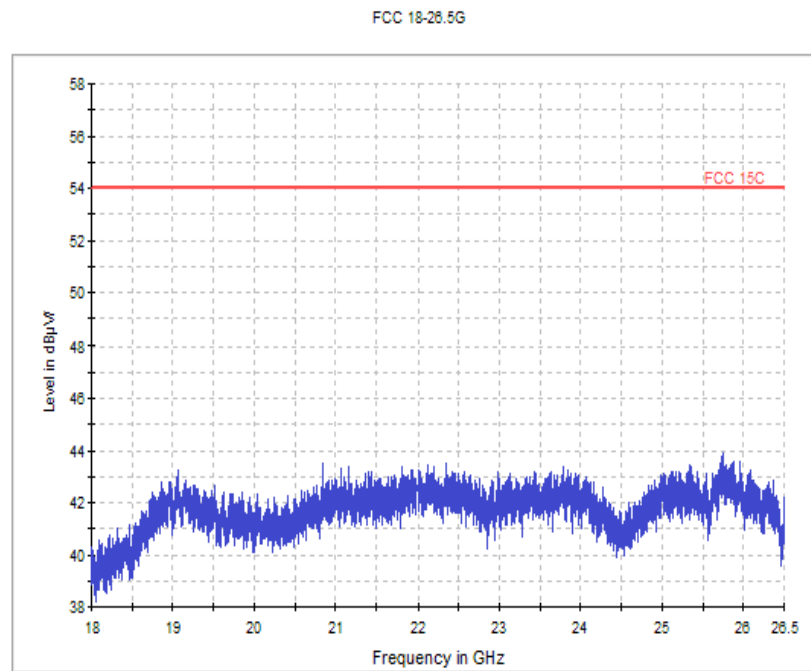


Fig.102. Radiated emission: 8DPSK, 18 GHz - 26 GHz

A.6. Time of Occupancy (Dwell Time)

Measurement Limit:

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

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

Measurement Result:

For GFSK

Channel	Packet	Dwell Time (ms)		Conclusion
39	DH1	Fig.103	106.64	P
		Fig.104		
	DH3	Fig.105	168.86	P
		Fig.106		
	DH5	Fig.107	208.28	P
		Fig.108		

For $\pi/4$ DQPSK

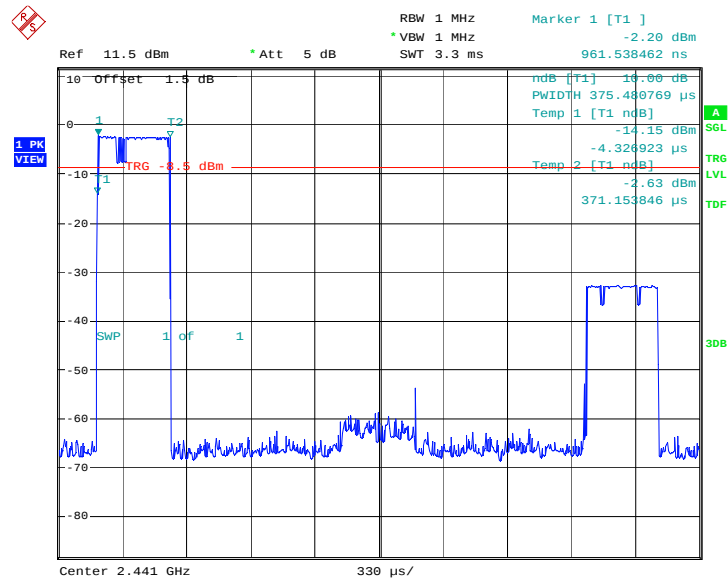
Channel	Packet	Dwell Time (ms)		Conclusion
39	DH1	Fig.109	111.56	P
		Fig.110		
	DH3	Fig.111	177.63	P
		Fig.112		
	DH5	Fig.113	208.66	P
		Fig.114		

For 8DPSK

Channel	Packet	Dwell Time (ms)		Conclusion
39	DH1	Fig.115	108.48	P
		Fig.116		
	DH3	Fig.117	148.02	P
		Fig.118		
	DH5	Fig.119	220.66	P
		Fig.120		

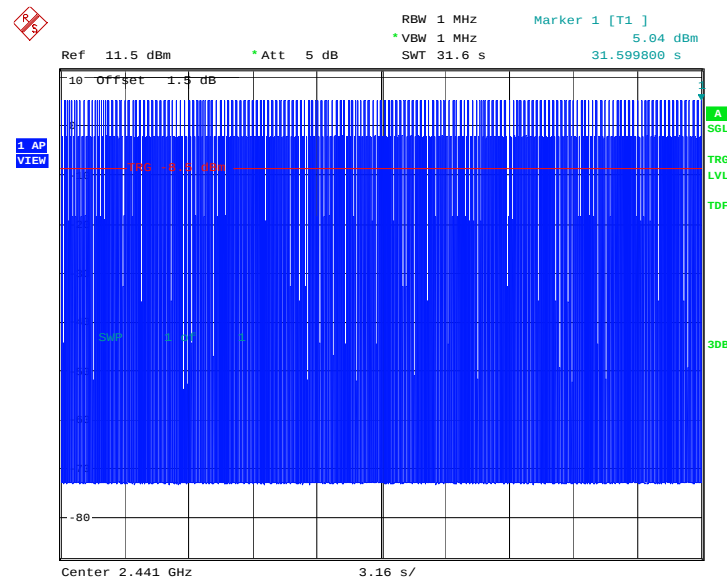
Conclusion: PASS

Test graphs as below:



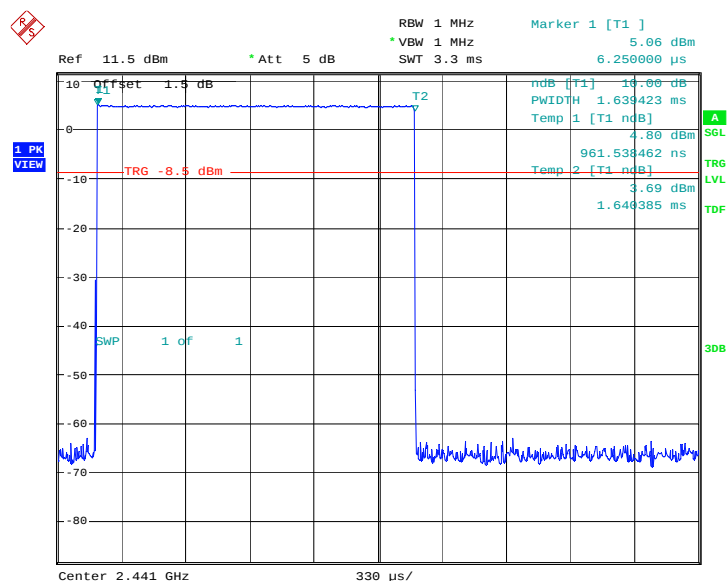
Date: 21.AUG.2012 08:16:16

Fig.103. Time of occupancy (Dwell Time): Channel 39, Packet DH1



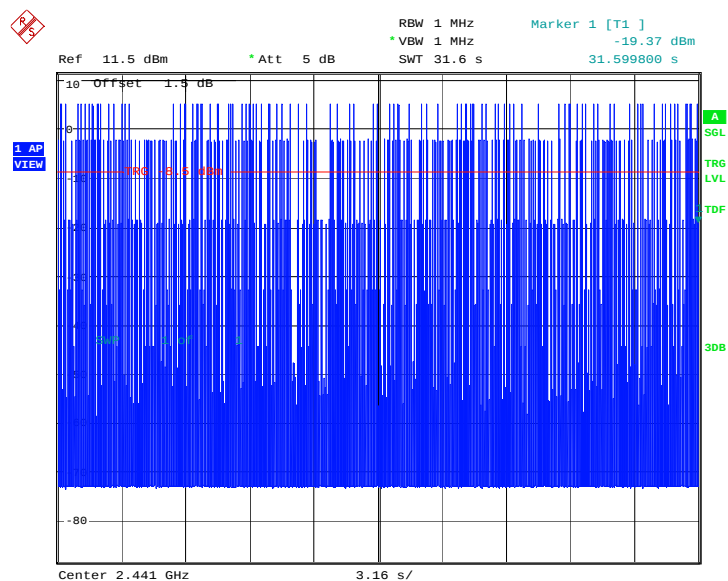
Date: 21.AUG.2012 08:16:04

Fig.104. Number of Transmissions Measurement:Channel 39,Packet DH1



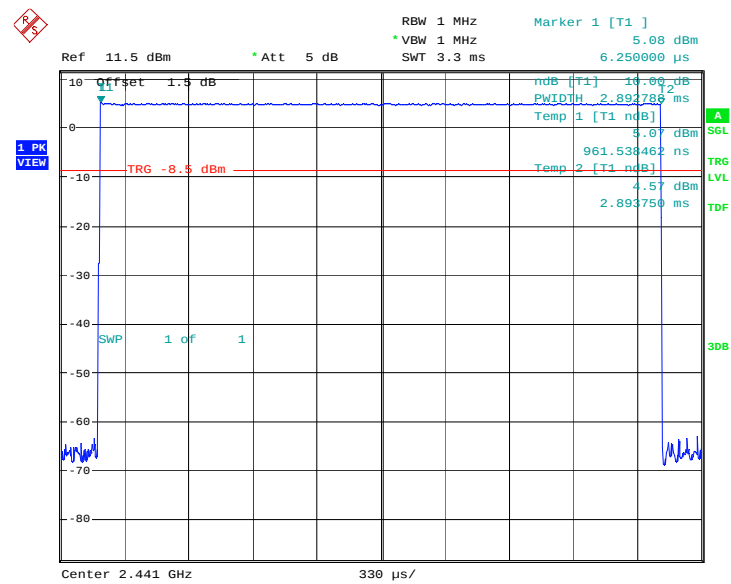
Date: 21.AUG.2012 08:17:36

Fig.105. Time of occupancy (Dwell Time): Channel 39, Packet DH3



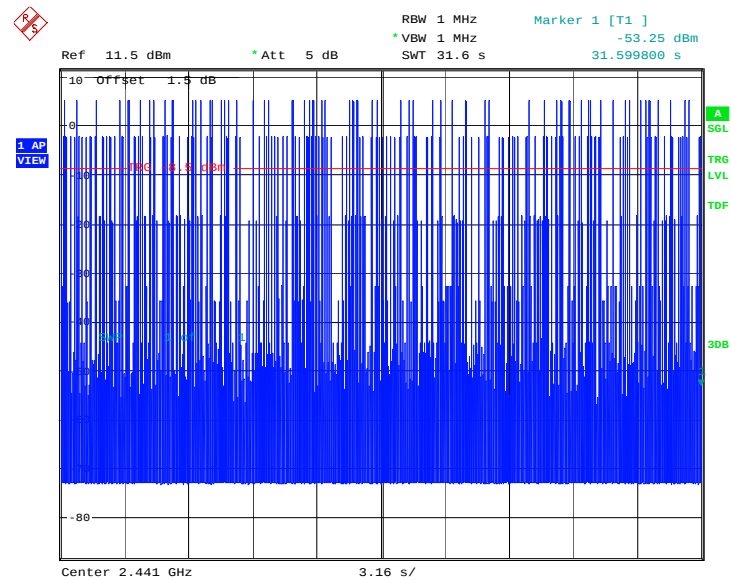
Date: 21.AUG.2012 08:17:24

Fig.106. Number of Transmissions Measurement:Channel 39,Packet DH3



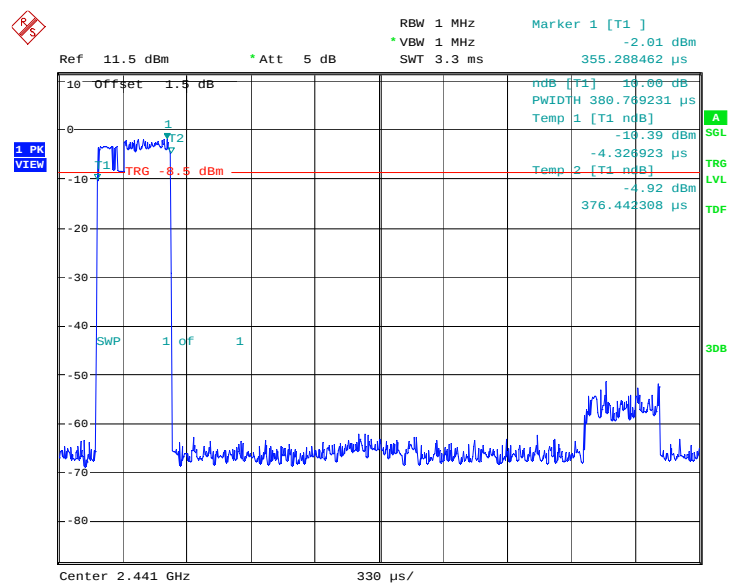
Date: 21.AUG.2012 08:18:55

Fig.107. Time of occupancy (Dwell Time): Channel 39, Packet DH5



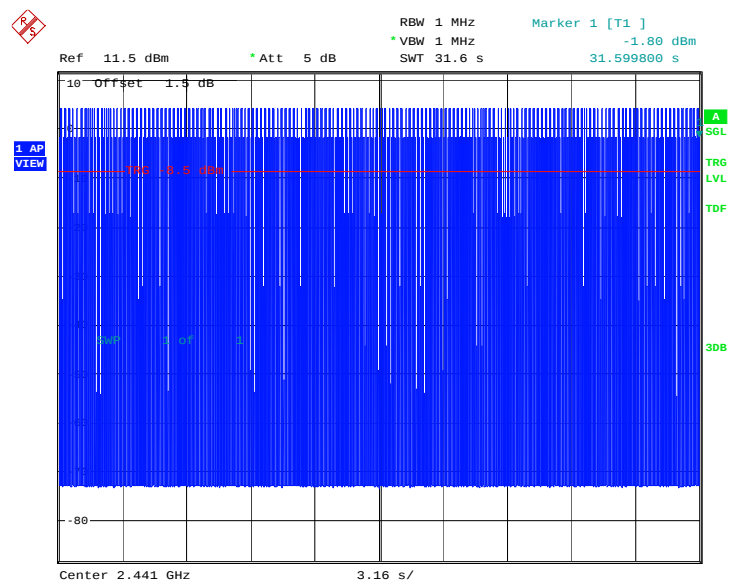
Date: 21.AUG.2012 08:18:43

Fig.108. Number of Transmissions Measurement:Channel 39,Packet DH5



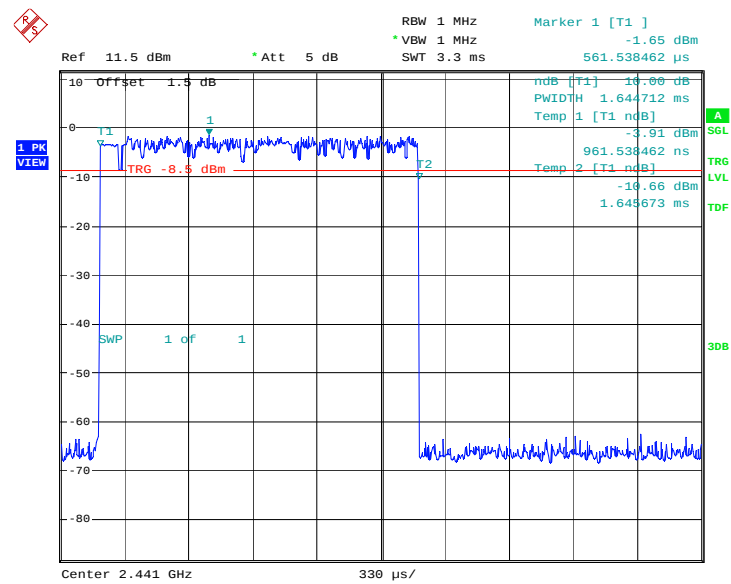
Date: 21.AUG.2012 08:38:24

Fig.109. Time of occupancy (Dwell Time): Channel 39, Packet 2-DH1



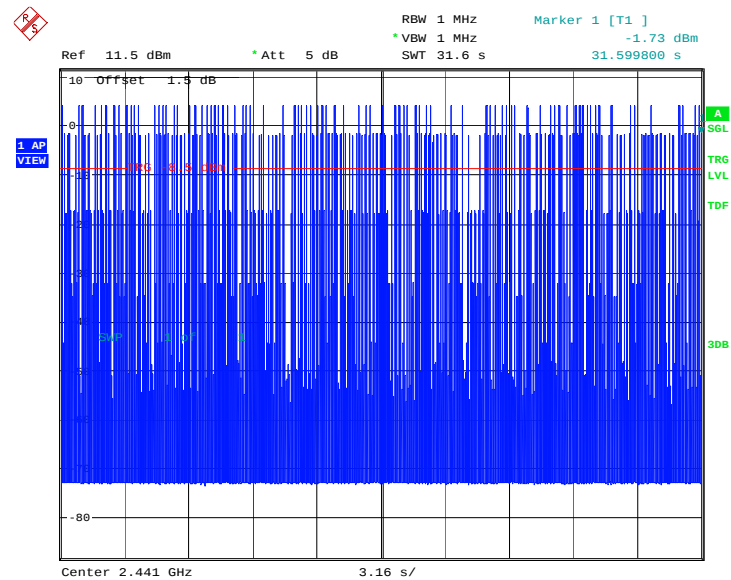
Date: 21.AUG.2012 08:38:12

Fig.110. Number of Transmissions Measurement:Channel 39,Packet 2-DH1



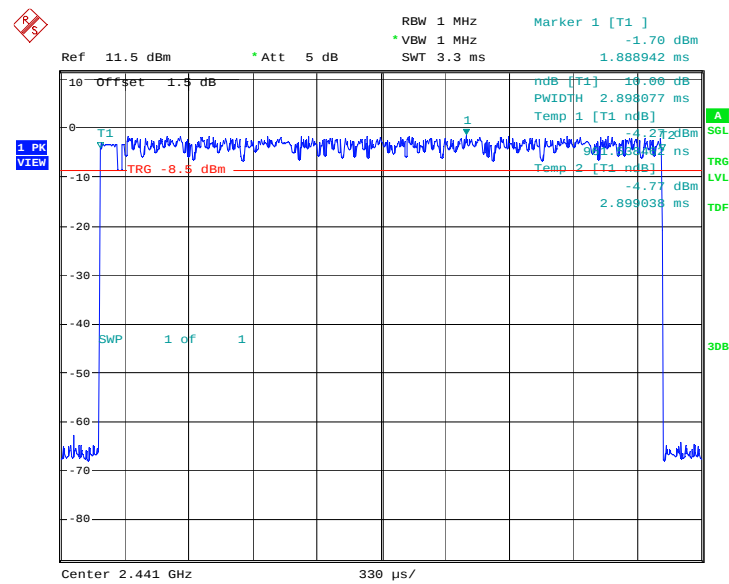
Date: 21.AUG.2012 08:39:44

Fig.111. Time of occupancy (Dwell Time): Channel 39, Packet 2-DH3



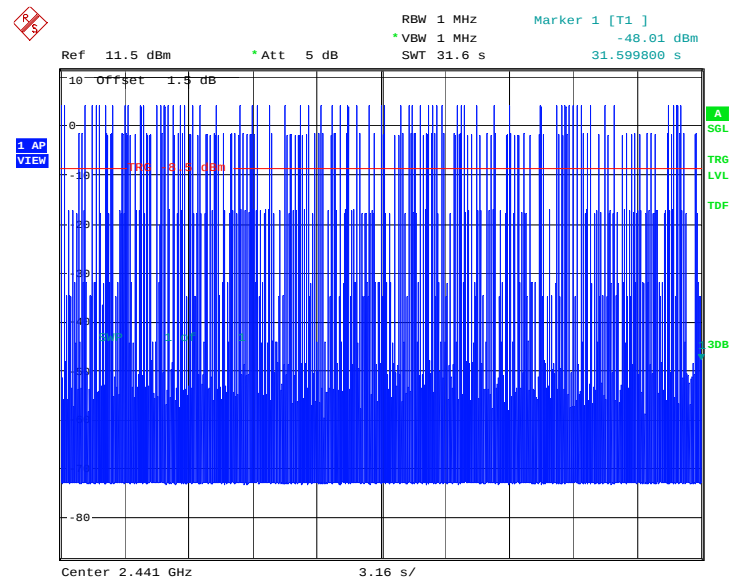
Date: 21.AUG.2012 08:39:32

Fig.112. Number of Transmissions Measurement: Channel 39, Packet 2-DH3



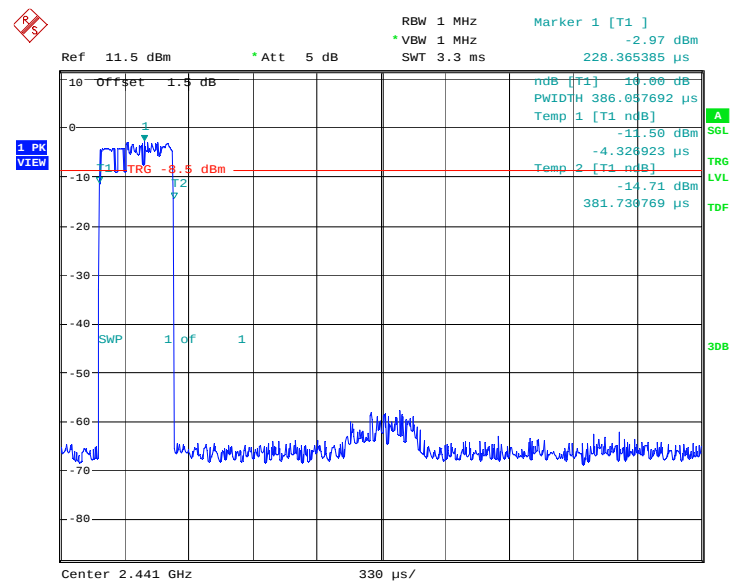
Date: 21.AUG.2012 08:41:02

Fig.113. Time of occupancy (Dwell Time): Channel 39, Packet 2-DH5



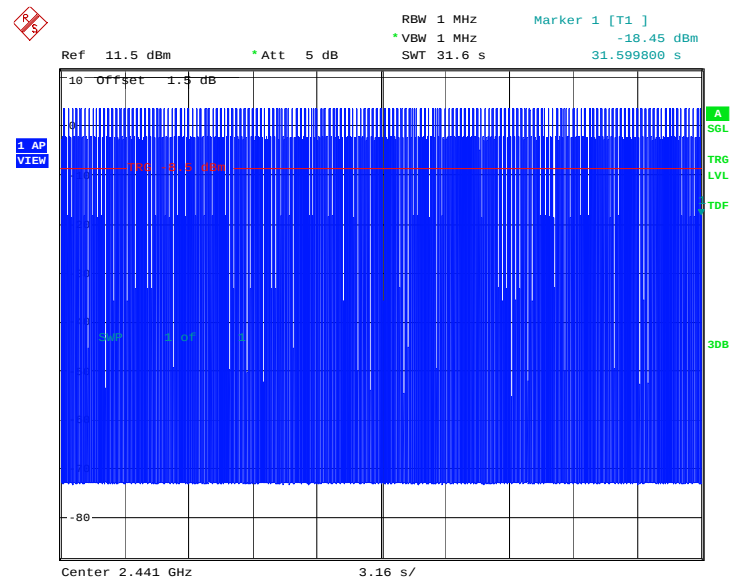
Date: 21.AUG.2012 08:40:50

Fig.114. Number of Transmissions Measurement:Channel 39,Packet 2-DH5



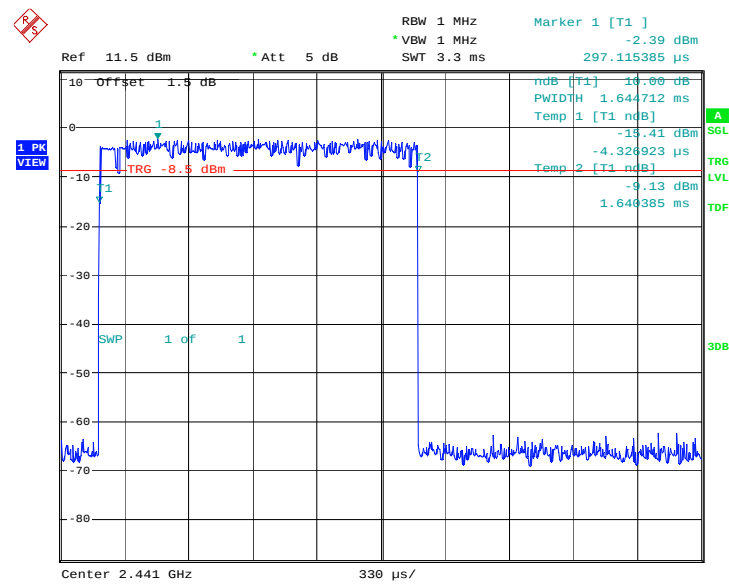
Date: 21.AUG.2012 09:00:30

Fig.115. Time of occupancy (Dwell Time): Channel 39, Packet 3-DH1



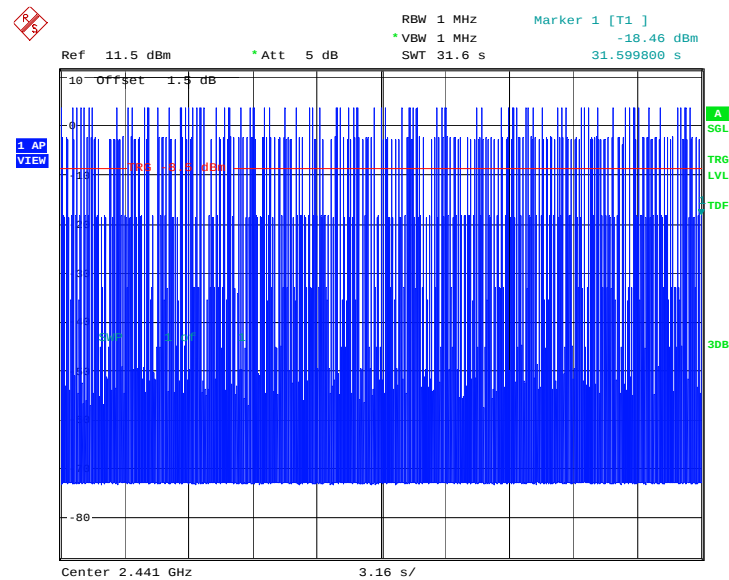
Date: 21.AUG.2012 09:00:18

Fig.116. Number of Transmissions Measurement:Channel 39,Packet 3-DH1



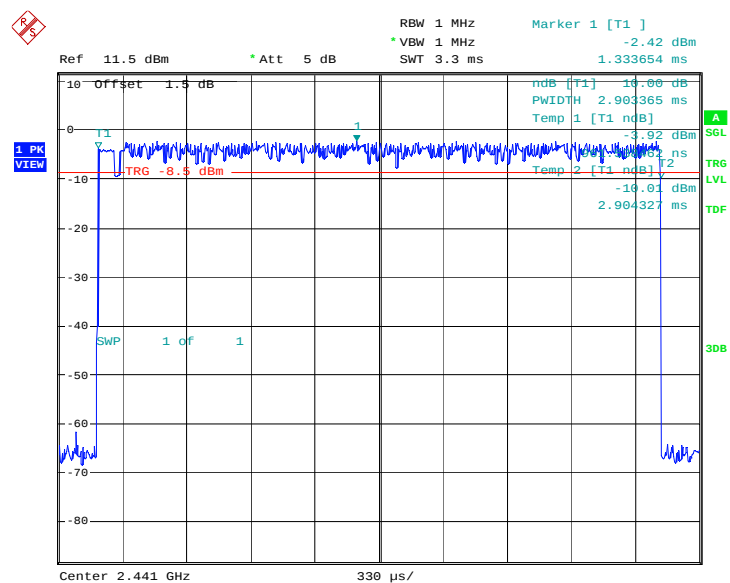
Date: 21.AUG.2012 09:01:46

Fig.117. Time of occupancy (Dwell Time): Channel 39, Packet 3-DH3



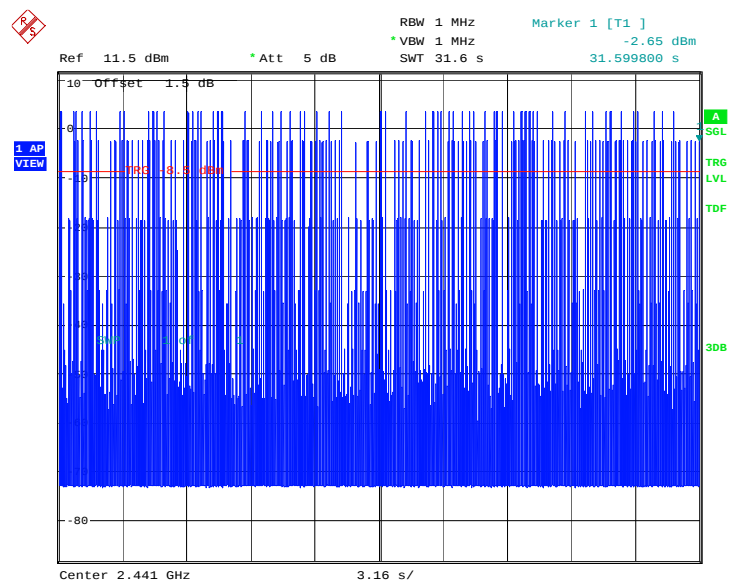
Date: 21.AUG.2012 09:01:35

Fig.118. Number of Transmissions Measurement:Channel 39,Packet 3-DH3



Date: 21.AUG.2012 09:03:04

Fig.119. Time of occupancy (Dwell Time): Channel 39, Packet 3-DH5



Date: 21.AUG.2012 09:02:53

Fig.120. Number of Transmissions Measurement:Channel 39,Packet 3-DH5

A.7. 20dB Bandwidth

Measurement Limit:

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

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

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

Measurement Results:

For GFSK

Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig.121	870.19	NA
39	Fig.122	870.19	NA
78	Fig.123	870.19	NA

For $\pi/4$ DQPSK

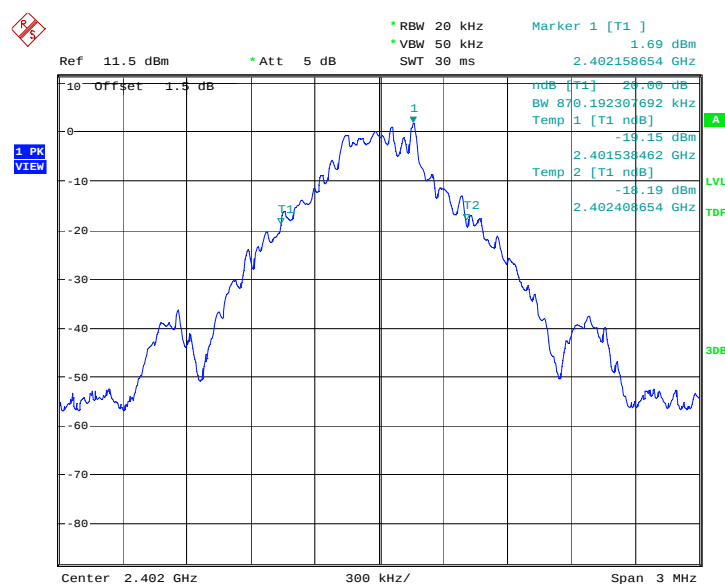
Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig.124	1269.23	NA
39	Fig.125	1250.00	NA
78	Fig.126	1269.23	NA

For 8DPSK

Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig.127	1269.23	NA
39	Fig.128	1211.54	NA
78	Fig.129	1269.23	NA

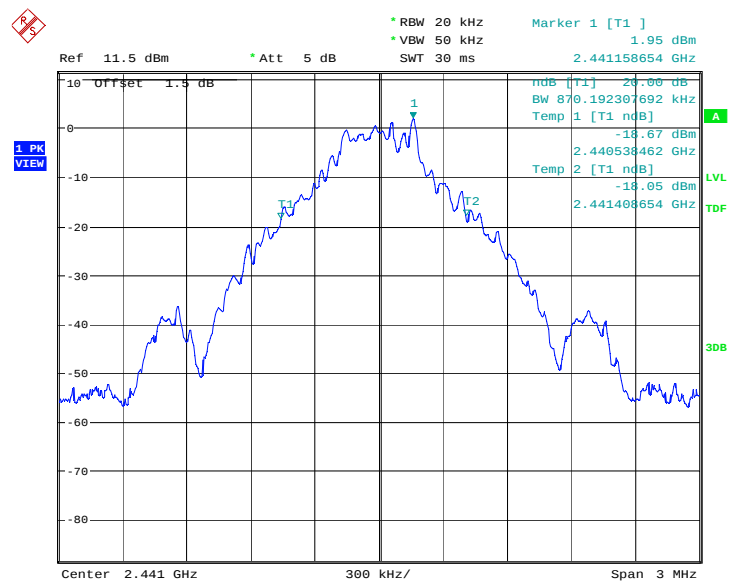
Conclusion: NA

Test graphs as below:



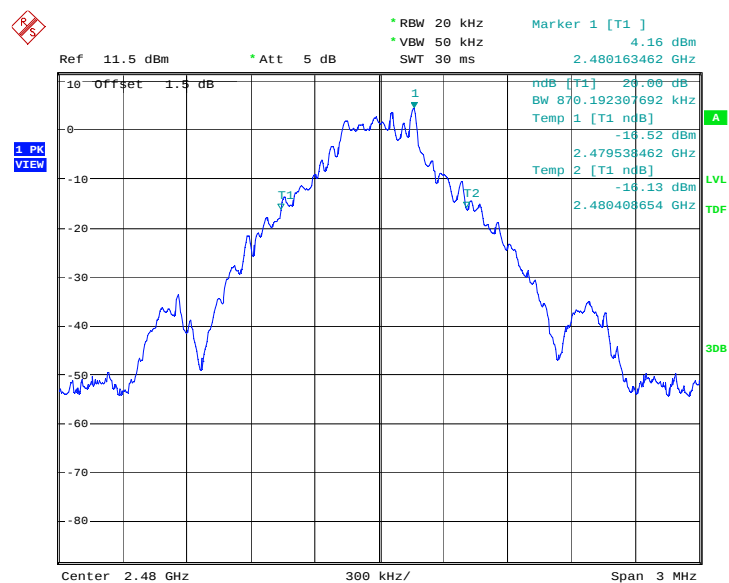
Date: 21.AUG.2012 08:19:28

Fig.121. 20dB Bandwidth: GFSK, Channel 0



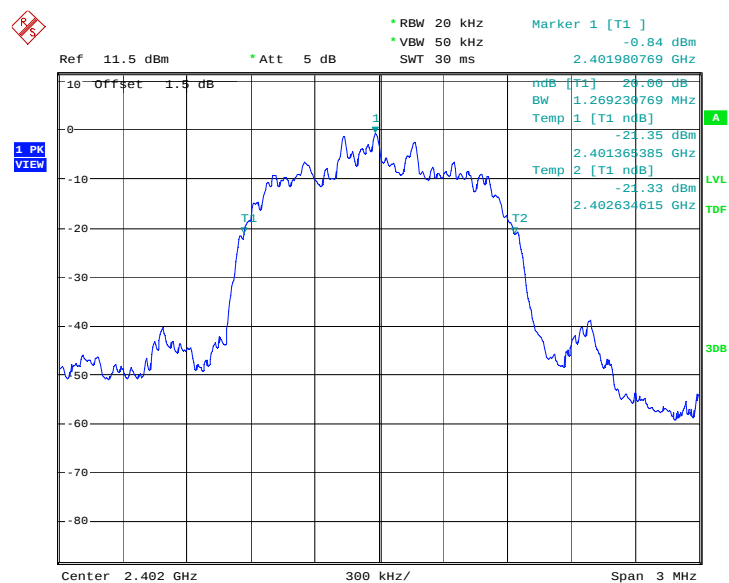
Date: 21.AUG.2012 08:20:00

Fig.122. 20dB Bandwidth: GFSK, Channel 39



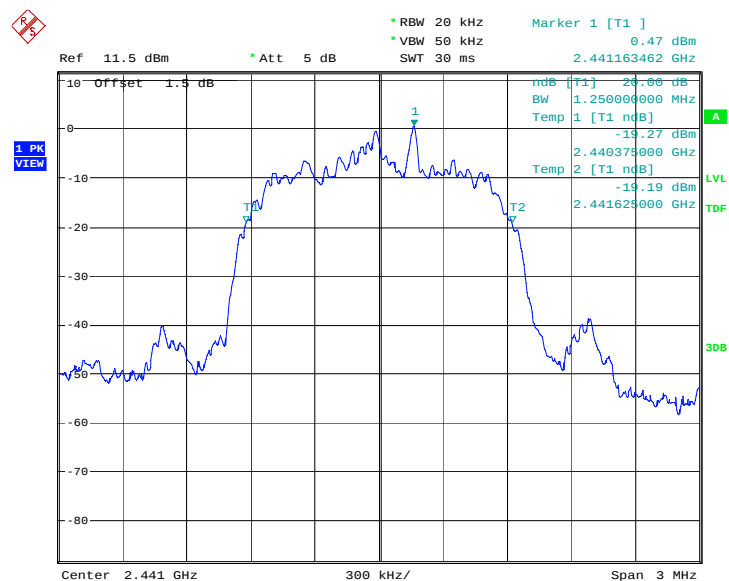
Date: 21.AUG.2012 08:20:32

Fig.123. 20dB Bandwidth: GFSK, Channel 78



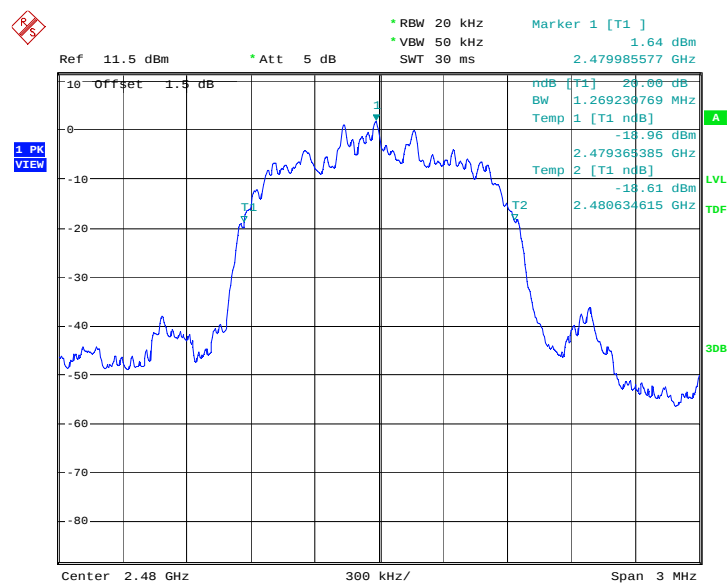
Date: 21.AUG.2012 08:41:36

Fig.124. 20dB Bandwidth: $\pi/4$ DQPSK, Channel 0



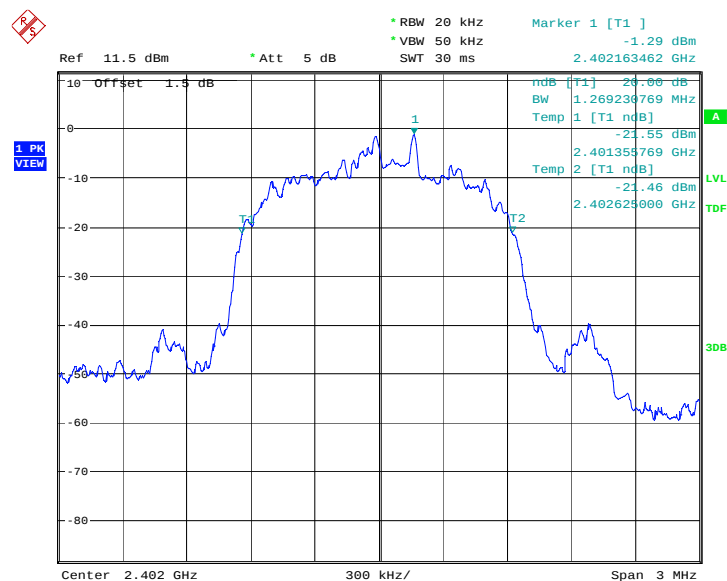
Date: 21.AUG.2012 08:42:08

Fig.125. 20dB Bandwidth: $\pi/4$ DQPSK, Channel 39



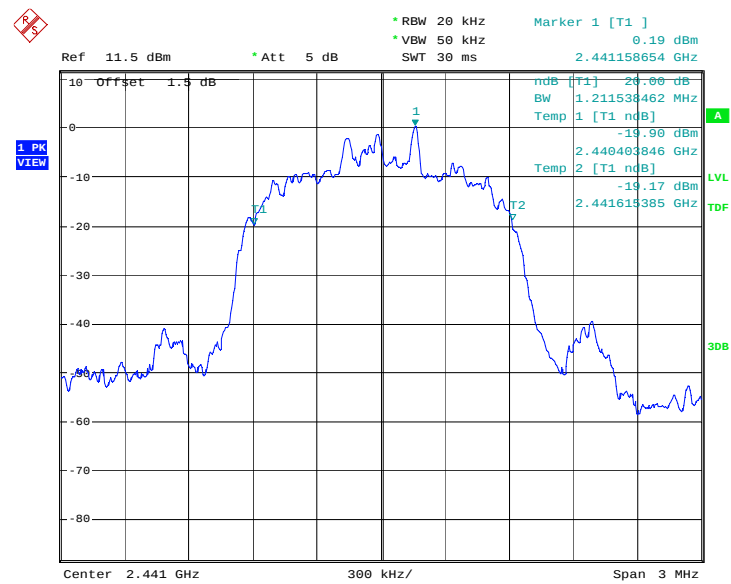
Date: 21.AUG.2012 08:42:40

Fig.126. 20dB Bandwidth: $\pi/4$ DQPSK, Channel 78



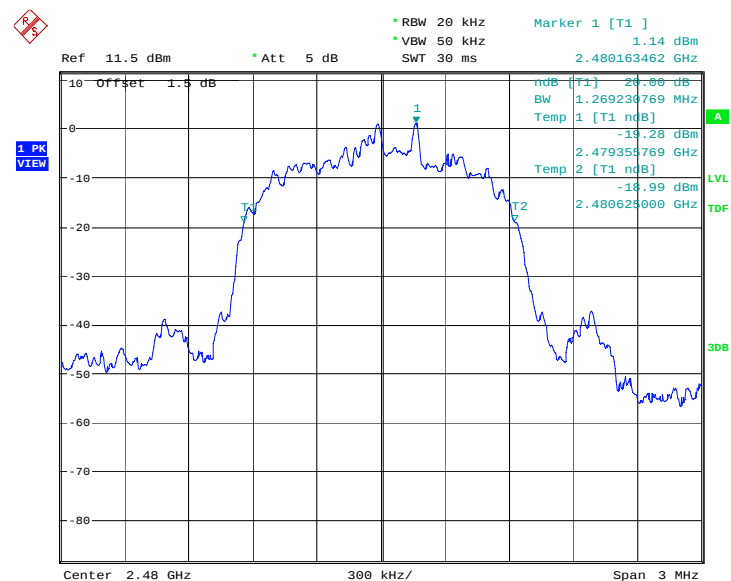
Date: 21.AUG.2012 09:03:37

Fig.127. 20dB Bandwidth: 8DPSK, Channel 0



Date: 21.AUG.2012 09:04:09

Fig.128. 20dB Bandwidth: 8DPSK, Channel 39



Date: 21.AUG.2012 09:04:41

Fig.129. 20dB Bandwidth: 8DPSK, Channel 78

A.8. Carrier Frequency Separation

Measurement Limit:

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

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

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

Measurement Result:

For GFSK

Channel	Carrier frequency separation (kHz)	Conclusion
39	Fig.130	1019.23
		P

For $\pi/4$ DQPSK

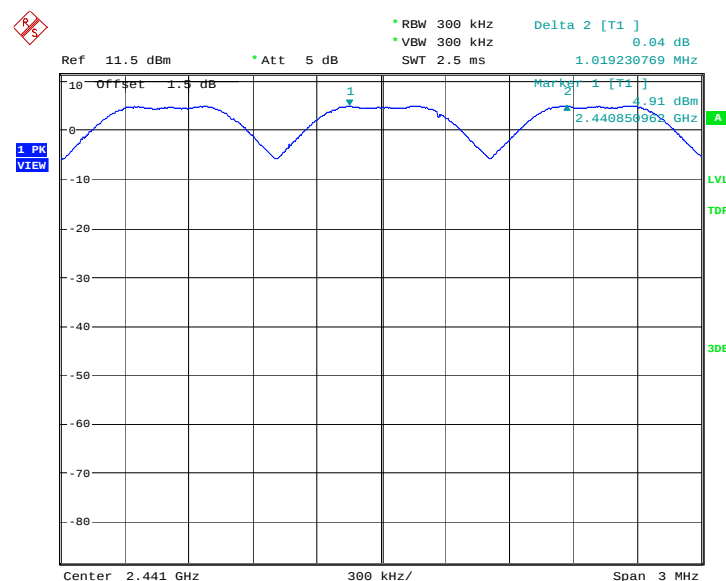
Channel	Carrier frequency separation (kHz)	Conclusion
39	Fig.131	1028.85
		P

For 8DPSK

Channel	Carrier frequency separation (kHz)	Conclusion
39	Fig.132	985.58
		P

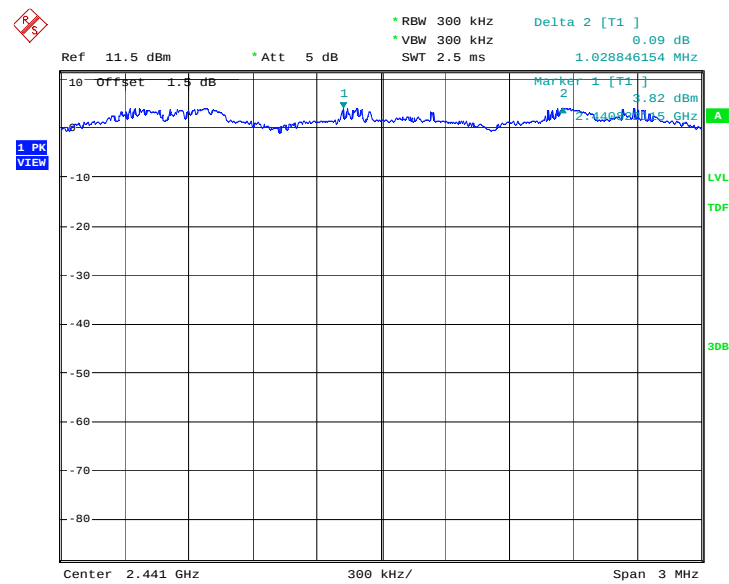
Conclusion: PASS

Test graphs as below:



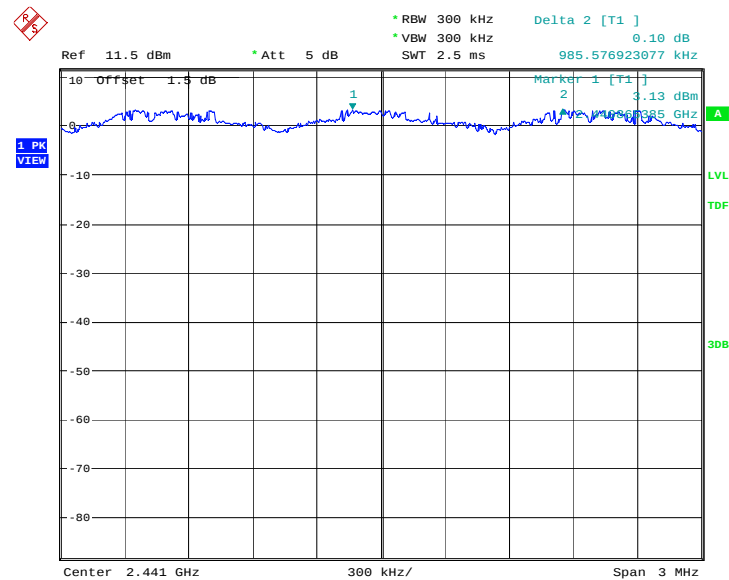
Date: 21.AUG.2012 08:22:36

Fig.130. Carrier frequency separation measurement: GFSK, Channel 39



Date: 21.AUG.2012 08:44:44

Fig.131. Carrier frequency separation measurement: $\pi/4$ DQPSK, Channel 39



Date: 21.AUG.2012 09:06:45

Fig.132. Carrier frequency separation measurement: 8DPSK, Channel 39

A.9. Number of Hopping Channels

Measurement Limit:

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

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

Measurement Result:

For GFSK

Channel	Number of hopping channels	Conclusion
0~39	Fig.133	P
40~78	Fig.134	

For $\pi/4$ DQPSK

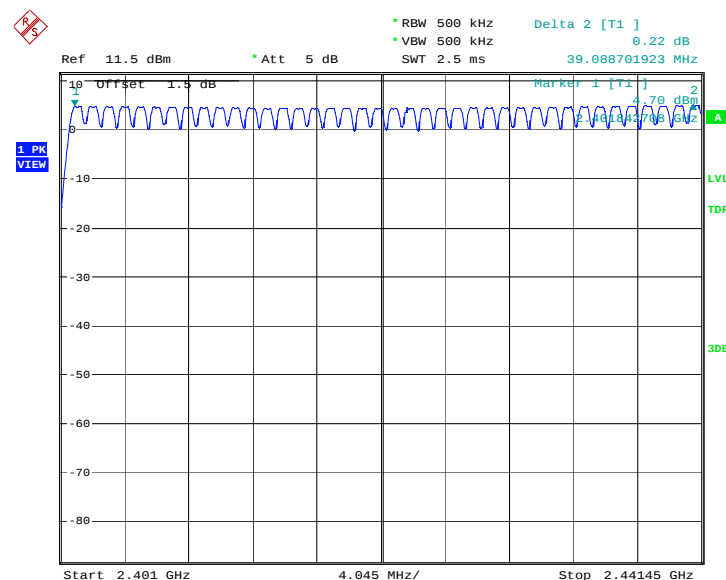
Channel	Number of hopping channels	Conclusion
0~39	Fig.135	P
40~78	Fig.136	

For 8DPSK

Channel	Number of hopping channels	Conclusion
0~39	Fig.137	P
40~78	Fig.138	

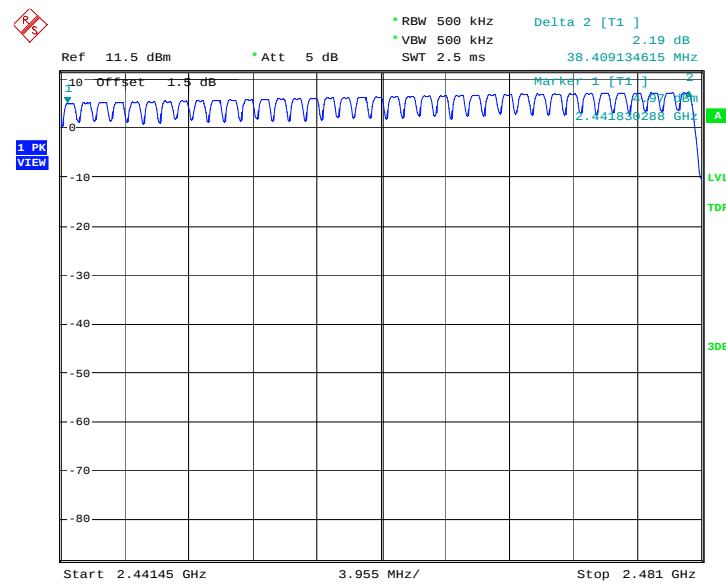
Conclusion: PASS

Test graphs as below:



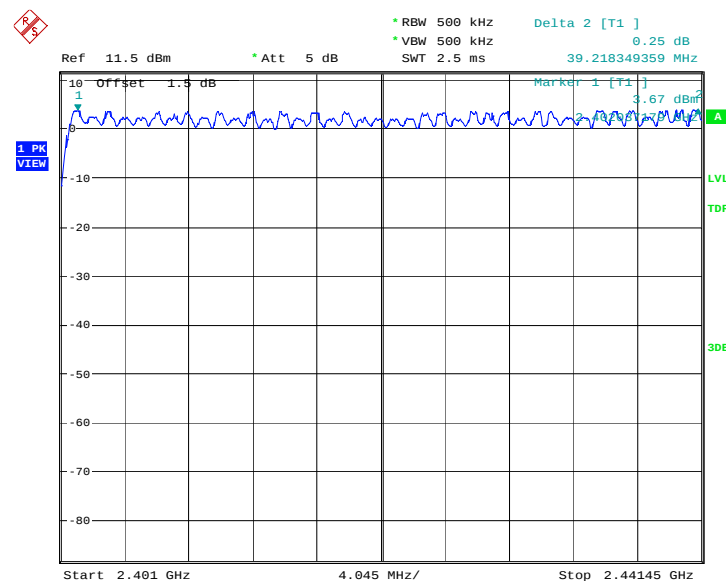
Date: 21.AUG.2012 08:24:40

Fig.133. Number of hopping frequencies: GFSK, Channel 0 - 39



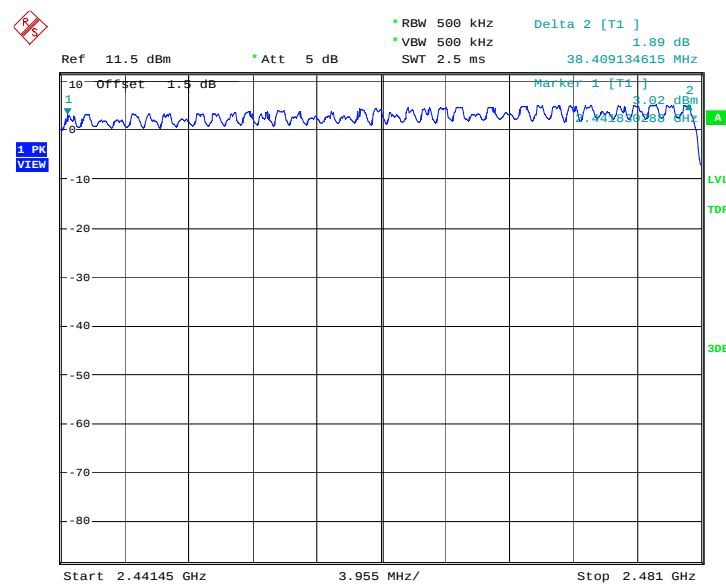
Date: 21.AUG.2012 08:26:43

Fig.134. Number of hopping frequencies: GFSK, Channel 40 - 78



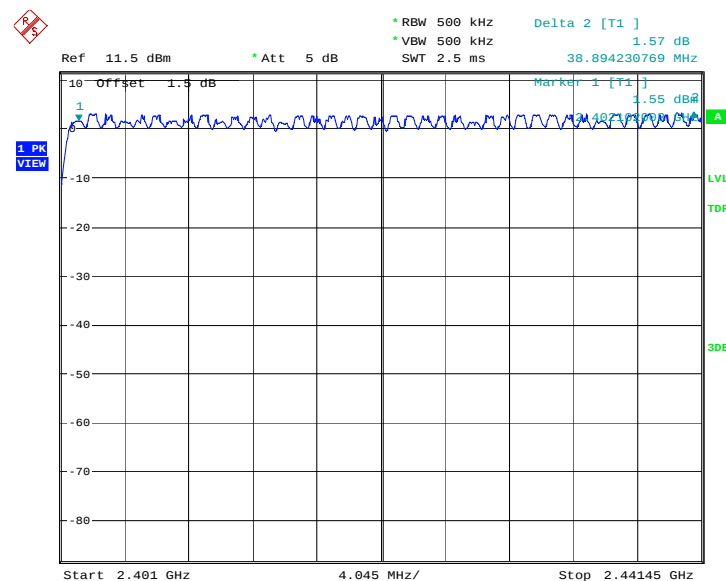
Date: 21.AUG.2012 08:46:48

Fig.135. Number of hopping frequencies: $\pi/4$ DQPSK, Channel 0 - 39



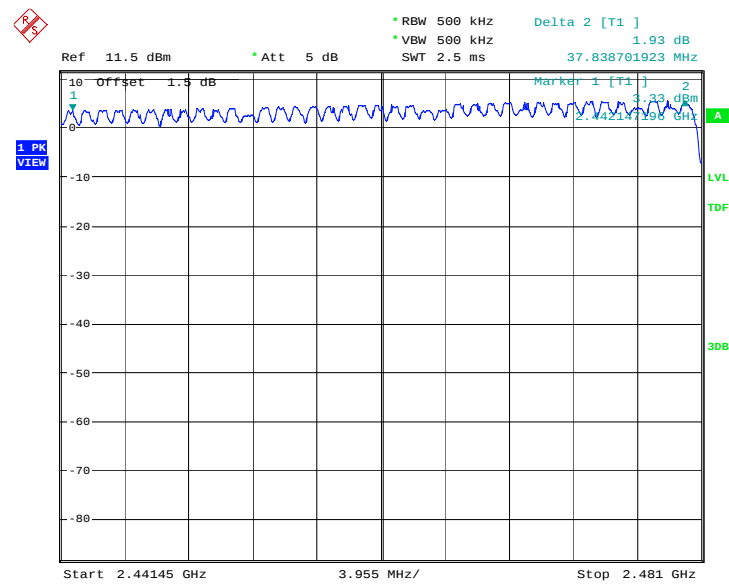
Date: 21.AUG.2012 08:48:51

Fig.136. Number of hopping frequencies: $\pi/4$ DQPSK, Channel 40 - 78



Date: 21.AUG.2012 09:08:49

Fig.137. Number of hopping frequencies: 8DPSK, Channel 0 - 39



Date: 21.AUG.2012 09:10:52

Fig.138. Number of hopping frequencies: 8DPSK, Channel 40 - 78

A.10. AC Powerline Conducted Emission

Test Condition

Voltage (V)	Frequency (Hz)
120	60

Measurement Result and limit:

Bluetooth (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)		Conclusion
		With Charger		
0.15 to 0.5	66 o 56	Fig.139 & Fig.141	Fig.140 & Fig.142	P
0.5 to 5	56			
5 to 30	60			

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

Bluetooth (Average Limit)

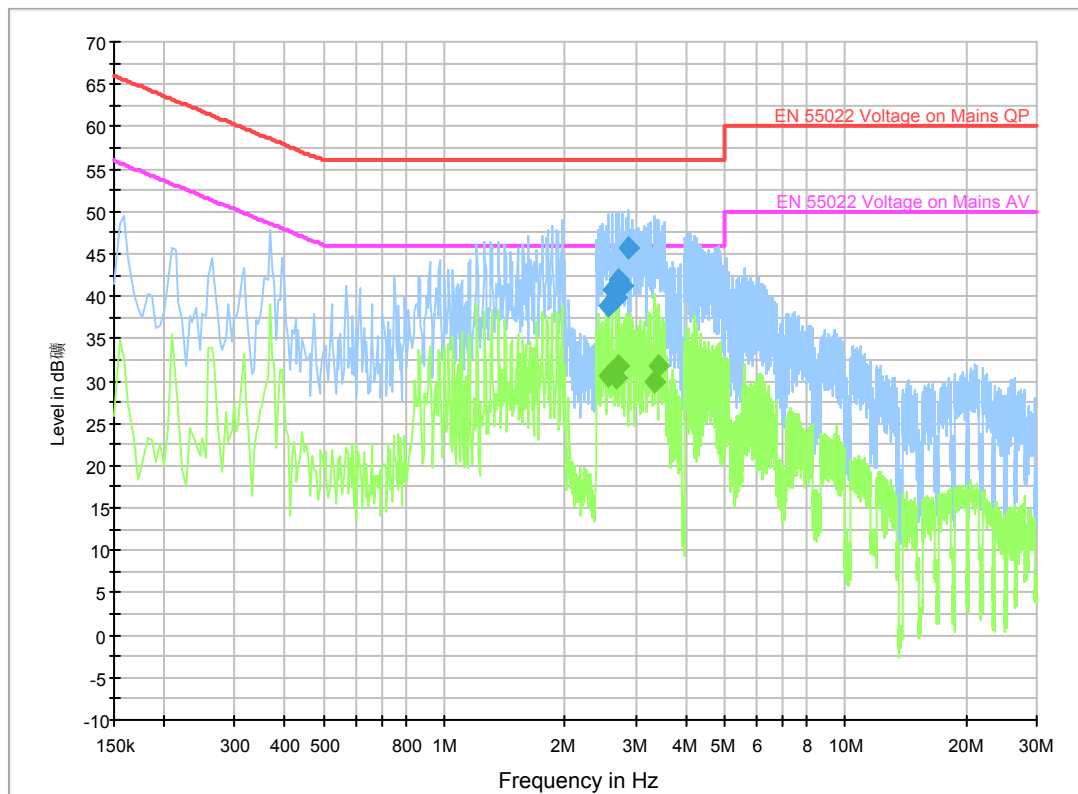
Frequency range (MHz)	Average Limit (dBμV)	Result (dBμV)		Conclusion
		With Charger		
0.15 to 0.5	56 to 46	Fig 139 & Fig.141	Fig 140 & Fig.142	P
0.5 to 5	46			
5 to 30	50			

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

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

Conclusion: PASS

Test graphs as below

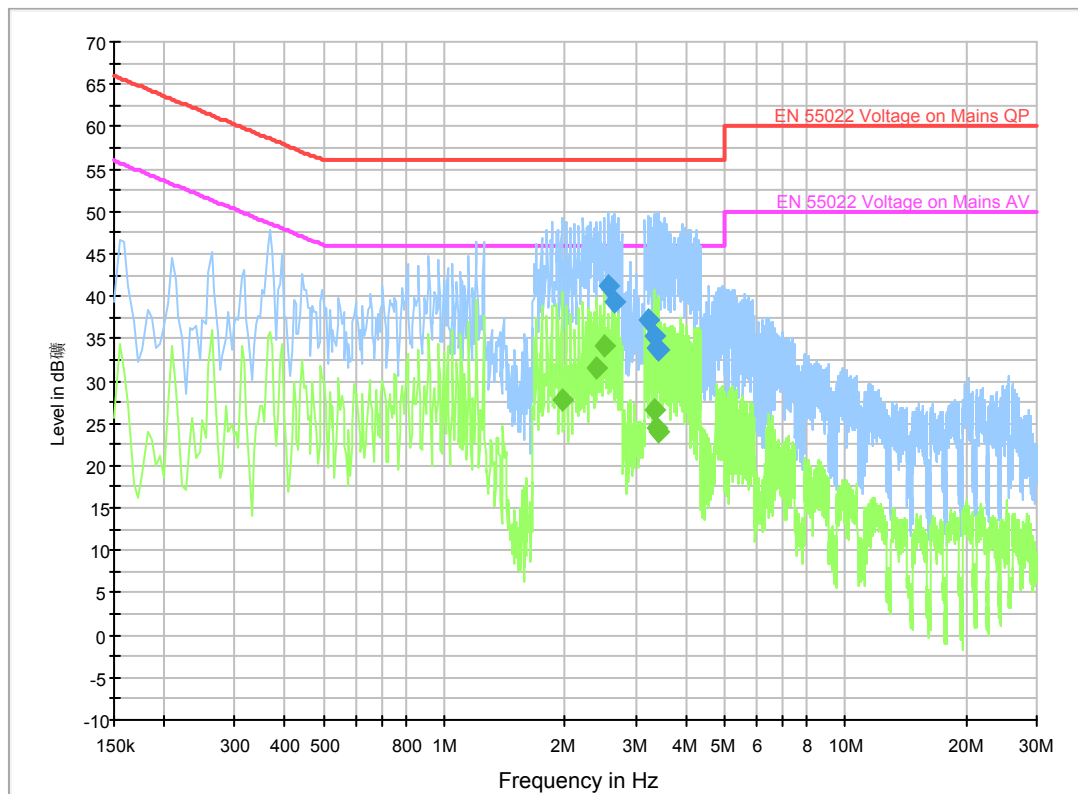


Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
2.575500	38.7	GND	L1	10.0	17.3	56.0
2.625000	40.8	GND	L1	10.0	15.2	56.0
2.679000	39.9	GND	L1	10.0	16.1	56.0
2.728500	41.9	GND	L1	10.0	14.1	56.0
2.773500	41.1	GND	L1	10.0	14.9	56.0
2.881500	45.8	GND	L1	10.0	10.2	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
2.575500	30.7	GND	L1	10.0	15.4	46.0
2.625000	31.1	GND	L1	10.0	14.9	46.0
2.679000	30.3	GND	L1	10.0	15.7	46.0
2.728500	31.7	GND	L1	10.0	14.3	46.0
3.331500	29.8	GND	L1	10.0	16.2	46.0
3.435000	31.7	GND	L1	10.0	14.3	46.0

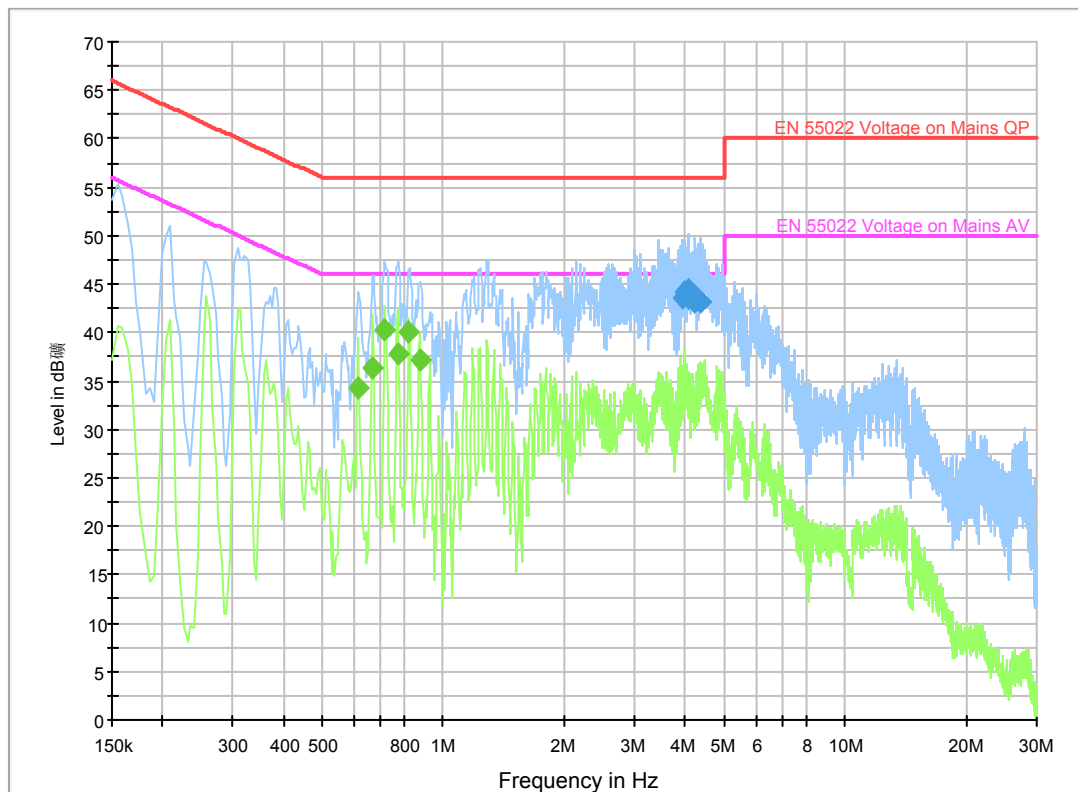


Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
2.557500	41.1	GND	L1	10.0	14.9	56.0
2.661000	39.3	GND	L1	10.0	16.7	56.0
3.219000	37.1	GND	L1	10.0	18.9	56.0
3.322500	35.3	GND	L1	10.0	20.7	56.0
3.376500	33.8	GND	L1	10.0	22.2	56.0
3.426000	33.5	GND	L1	10.0	22.5	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
1.963500	27.7	GND	L1	10.0	18.3	46.0
2.404500	31.6	GND	L1	10.0	14.4	46.0
2.508000	34.1	GND	L1	10.0	11.9	46.0
3.322500	26.6	GND	L1	10.0	19.4	46.0
3.376500	24.5	GND	L1	10.0	21.5	46.0
3.426000	24.1	GND	L1	10.0	21.9	46.0

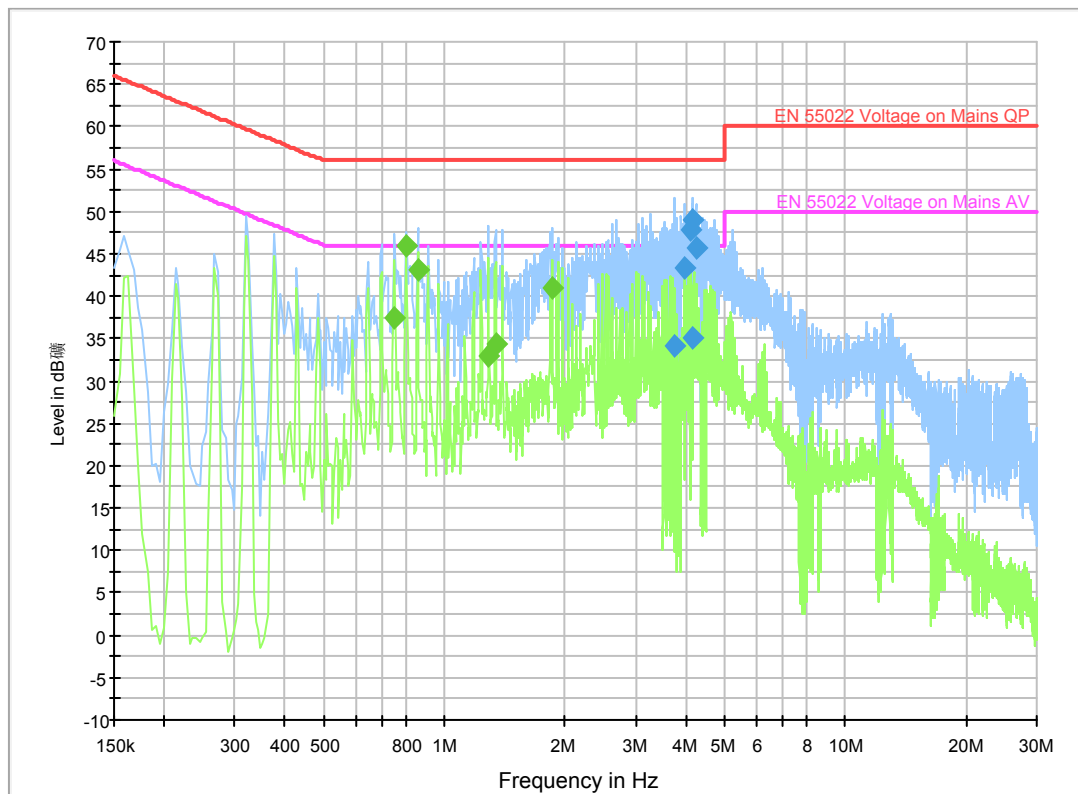


Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
3.930000	43.7	GND	L1	10.0	12.3	56.0
3.984000	44.3	GND	L1	10.0	11.7	56.0
4.056000	44.4	GND	L1	10.0	11.6	56.0
4.074000	43.6	GND	L1	10.0	12.4	56.0
4.245000	43.1	GND	L1	10.0	12.9	56.0
4.362000	43.1	GND	L1	10.0	12.9	56.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.613500	34.2	GND	N	10.0	11.8	46.0
0.667500	36.4	GND	N	10.0	9.6	46.0
0.717000	40.3	GND	N	10.0	5.7	46.0
0.771000	37.8	GND	N	10.0	8.2	46.0
0.820500	40.0	GND	N	10.0	6.0	46.0
0.874500	37.1	GND	N	10.0	8.9	46.0



Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
3.750000	34.2	GND	N	10.0	21.8	56.0
3.961500	43.4	GND	L1	10.0	12.6	56.0
4.105500	47.8	GND	L1	10.0	8.2	56.0
4.155000	49.1	GND	L1	10.0	6.9	56.0
4.177500	35.1	GND	N	10.0	20.9	56.0
4.231500	45.7	GND	N	10.0	10.3	56.0

Final Result 2

Frequency (MHz)	CAverage (dBμV)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.753000	37.5	GND	N	10.0	8.5	46.0
0.802500	45.9	GND	N	10.0	0.1	46.0
0.856500	43.0	GND	N	10.0	3.0	46.0
1.288500	33.0	GND	N	10.0	13.0	46.0
1.342500	34.5	GND	N	10.0	11.5	46.0
1.864500	40.9	GND	N	10.0	5.1	46.0

A.11 RECEIVER RADIATION EMISSION

Reference

FCC: CFR Part 15.109, 2.1053

A.11.1 Method of Measurement

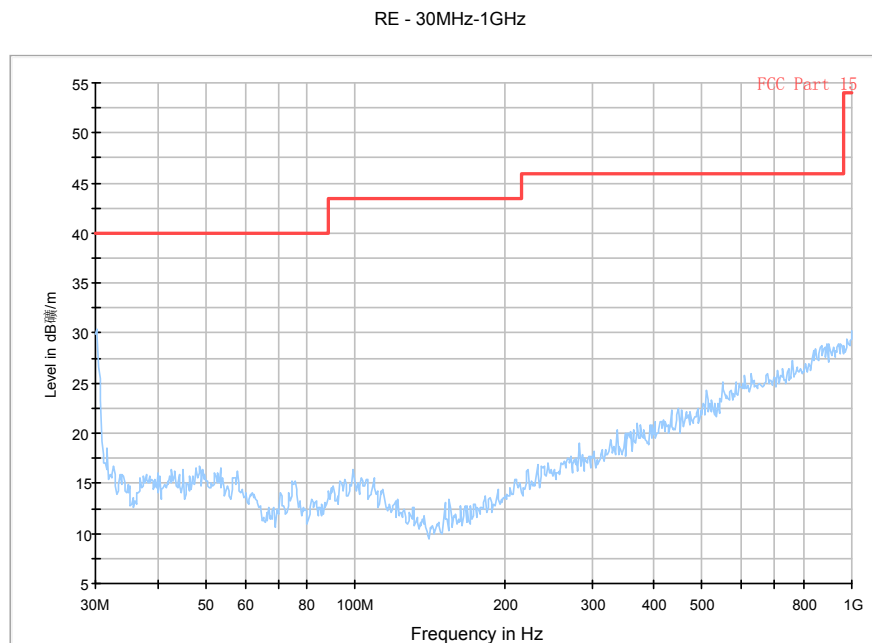
The measurement procedure in ANSI C64.4-2003 is used. The EUT is placed on a 80cm height non-conductive table locating on the center of turntable. From 30MHz-1GHz, the measurement distance is 10m. For frequency range above 1GHz, the measurement distance is 3m.

The EUT is measured with travel charger and the operating mode is idle without CMU200's signaling.

A.11.2 Method of Measurement

Frequency of Emission (MHz)	Limit (dB μ V/m)	Measurement Distance (m)
30-88	30	10
88-216	33.5	10
216-960	36	10
960-1000	44	10
>1000	54	3

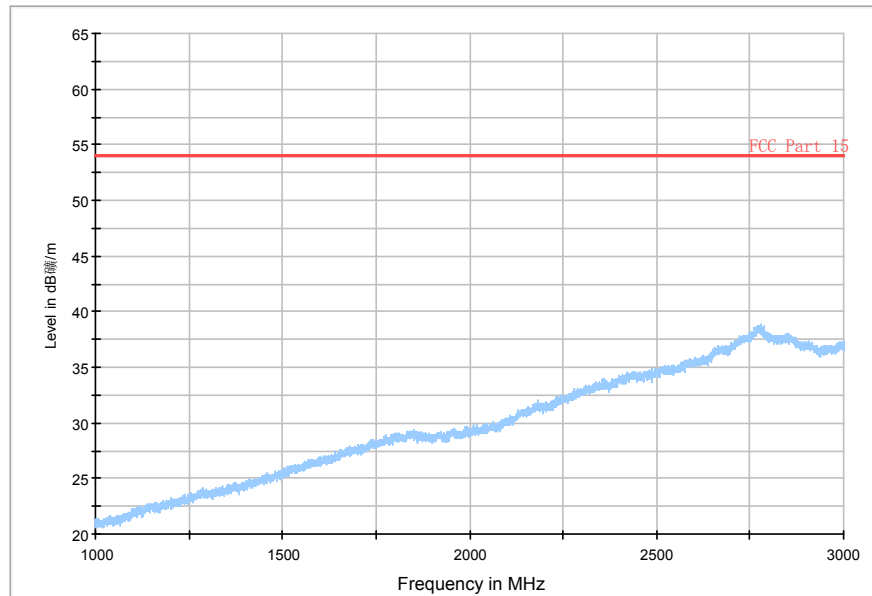
A. 11.3 Measurement results



IF bandwidth: 120 kHz

Idle Mode: 30MHz-1GHz

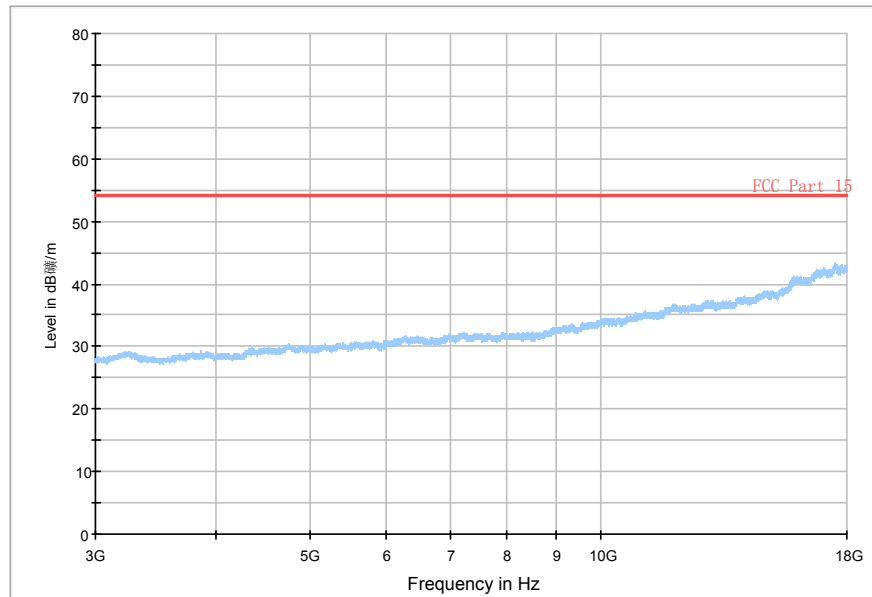
RE - 1GHz-3GHz



RBW / VBW 1 MHz

Idle Mode: 1GHz-3GHz

RE - 3GHz-18GHz



RBW / VBW 1 MHz

Idle Mode: 3GHz-18GHz

*** END OF REPORT BODY ***