TEST REPORT

No. I17D00023-SRD01

For

Client : Lenovo(Shanghai) Electronics Technology Co., Ltd

Production : Portable Tablet Computer

Model Name : Lenovo TB-8504F

FCC ID: O57TB8504F

IC ID: 10407A-TB8504F

Standard: FCC Part 15 Subpart C §15.247/ RSS-247/ ANSI C63.10

Hardware Version: Lenovo Tablet TB-8504F

Software Version: TB-8504F_RF01_170208

Issued date: 2017-04-27

Note:

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

Test Laboratory:

ECIT Shanghai, East China Institute of Telecommunications

Add: 7-8F, G Area, No.668, Beijing East Road, Huangpu District, Shanghai, P. R. China

Tel: (+86)-021-63843300, E-Mail: welcome@ecit.org.cn

About EUT

EUT Description	Portable Tablet Computer
Model name	Lenovo TB-8504F
Bluetooth Frequency	2402MHz-2483.5MHz
BLE Frequency	2402MHz-2480MHz
WLAN Frequency	2.4G: 2412MHz-2462MHz;
GPS Frequency Band	1575.42MHz(L1)
Nominal Voltage	3.85V
Extreme High Voltage	4.4V
Extreme Low Voltage	3.65V

Revision Version

Report Number	Revision	Date	Memo
I17D00023-SRD01	00	2017-04-10	Initial creation of test report
I17D00023-SRD01	01	2017-04-27	Second creation of test report

CONTENTS

1. Test Laboratory

1.1. Testing Location

Company Name:	ECIT Shanghai, East China Institute of Telecommunications
Address:	7-8F, G Area, No. 668, Beijing East Road, Huangpu District, Shanghai, P. R. China
Postal Code:	200001
Telephone:	(+86)-021-63843300
Fax:	(+86)-021-63843301
IC OAT'S Test Site Registration Number	10766A-1

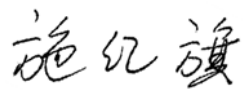
1.2. Testing Environment

Normal Temperature:	15-35℃
Extreme Temperature:	-10/+55℃
Relative Humidity:	20-75%

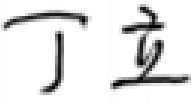
1.3. Project data

Project Leader:	Xu Yuting
Testing Start Date:	2017-02-23
Testing End Date:	2017-04-04

1.4. Signature



Shi Hongqi
(Prepared this test report)



Ding Li
(Reviewed this test report)

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

2. Client Information

2.1. Applicant Information

Company Name:	Lenovo(Shanghai) Electronics Technology Co., Ltd.
Address:	NO.68 BUILDING, 199 FENJU RD, China (Shanghai) Pilot Free Trade Zone, 200131, CHINA
Telephone:	18116117205
Email:	Jiazz1@lenovo.com

2.2. Manufacturer Information

Company Name:	Lenovo PC HK Limited
Address:	23/F, Lincoln House, Taikoo Place 979 King's Road, Quarry Bay, Hong Kong
Telephone:	18116117205
Email:	Jiazz1@lenovo.com

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

3.1. About EUT

EUT Description	Portable Tablet Computer
Model name	Lenovo TB-8504F
Bluetooth Frequency	2402MHz-2483.5Mhz
Bluetooth Channel	Channel0-Channel78
Bluetooth Modulation	GMSK;π/4 DQPSK;8DPSK
Extreme Temperature	-10/+55 ℃
Nominal Voltage	3.85
Extreme High Voltage	4.4
Extreme Low Voltage	3.65

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

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
N03 (Main Supply 3+32G)	HGAD85M2	Lenovo Tablet TB-8504F	TB-8504F_RF01_170208	2017-03-24
N13 (Main Supply 3+32G)	HGAD85JG	Lenovo Tablet TB-8504F	TB-8504F_RF01_170208	2017-02-22
N19 (Main Supply 3+32G)	HGAD85JY	Lenovo Tablet TB-8504F	TB-8504F_RF01_170208	2017-02-22
N47 (Main Supply 2+16G)	HGAD85C5	Lenovo Tablet TB-8504F	TB-8504F_RF01_170208	2017-02-22
N32 (second Supply 3+32G)	HGAD85NP	Lenovo Tablet TB-8504F	TB-8504F_RF01_170208	2017-02-22
N47 (second Supply 2+16G)	HGAD85JY	Lenovo Tablet TB-8504F	TB-8504F_RF01_170208	2017-02-22

*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	SN
AE1	RF cable	---
AE2	---	---

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

3.4. The difference between two provide EUT

Main Supply 3+32G

Part Name	Model Name	supplier	Remark
LCD+TP	8“ WXGA On-cell +0.7mm sodalime cover glass,White	AUO	White
	8“ WXGA On-cell +0.7mm sodalime cover glass,Black	AUO	Black
Flash	KMRX1000BM-B614	SAMSUNG	
Speaker	QS171219AW00	KEYSOUND	
Front Camera	PC0KE0039A	Sunrise	
Back Camera	CCM F5695AV 5M OV5695 COB 30PIN BtoB	Qtech	
Battery	L16D1P34	Suwnoda	
USB Cable	DL1_MICRO5_1M2A_BLK_HL1	Saibao	
Earphone	N/A	N/A	
Charger	C-P56	Acbel	US
	C-P60	Huntkey	Argentina

Main Supply 2+16G

Part Name	Model Name	supplier	Remark
LCD+TP	8“ WXGA On-cell +0.7mm sodalime cover glass,White	AUO	White
	8“ WXGA On-cell +0.7mm sodalime cover glass,Black	AUO	Black
Flash	KMQE10013M-B318	Samsung	
Speaker	QS171219AW00	KEYSOUND	
Front Camera	PC0KE0039A	Sunrise	
Back Camera	CCM F5695AV 5M OV5695 COB 30PIN BtoB	Qtech	

Battery	L16D1P34	Suwnoda	
USB Cable	DL1_MICRO5_1M2A_BLK_HL1	Saibao	
Charger	C-P56	Acbel	US
	C-P60	Huntkey	Argentina

Secondary Supply 3+32G

Part Name	Model Name	supplier	Remark
LCD+TP	8“ WXGA In-cell +0.7mm sodalime cover glass,White	INX	White
	8“ WXGA In-cell +0.7mm sodalime cover glass,Black	INX	Black
Flash	H9TQ26ADFTBCUR-KUM	Hynix	
Speaker	QS171219AW00	KEYSOUND	
Front Camera	H7P2-P3588FHQ	Kingcome	
Back Camera	CCM F5V08B 5M OV5695 COB 30PIN BtoB	Sunny	
Battery	L16D1P34	SCUD	
USB Cable	DL1_MICRO5_0.7M_BLK_HL1	Jieye	
Charger	C-P56	Huntkey	US

Secondary Supply2+16G

Part Name	Model Name	supplier	Remark
LCD+TP	8“ WXGA In-cell +0.7mm sodalime cover glass,White	INX	White
	8“ WXGA In-cell +0.7mm sodalime cover glass,Black	INX	Black
Flash	H9TQ17ABJTBCUR-KUM	Hynix	
Speaker	QS171219AW00	KEYSOUND	
Front Camera	H7P2-P3588FHQ	Kingcome	
Back Camera	CCM F5V08B 5M OV5695 COB 30PIN BtoB	Sunny	
Battery	L16D1P34	SCUD	
USB Cable	DL1_MICRO5_0.7M_BLK_HL1	Jieye	
Charger	C-P56	Huntkey	US

4. Reference Documents

4.1. Reference Documents for testing

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

Reference	Title	Version
FCC Part15	FCC CFR 47, Part 15,Subpart C: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.247 Operation within the bands 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz.	Oct,2009 Edition
ANSI C63.10	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices	2013
RSS-247	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices	2015

5. Summary of Test Results

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

Measurement Items	Sub-clause of Part15C	Sub-clause of IC	Verdict
Maximum Peak Output Power	15.247(b)	RSS-247 5.4	P
Peak Power Spectral Density	15.247(d)	RSS-247 5.2	NA
20dB Occupied Bandwidth	15.247(a)	RSS-247 5.2	P
Band Edges Compliance	15.247(b)	RSS-247 5.5	P
Transmitter Spurious Emission-Conducted	15.247	RSS-247 5.5	P
Transmitter Spurious Emission-Radiated	15.247,15.209,	RSS-247 5.5	P
AC Powerline Conducted Emission	15.107,15.207	RSS-247 Gen 3.2	P

Please refer to part 5 for detail.

The measurements are according to RSS-247and ANSI C63.10.

Terms used in Verdict column

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

Test Conditions

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

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

Temperature	Tnom	22℃
Voltage	Vnom	3.8V
Humidity	Hnom	32%
Air Pressure	Anom	1010hPa

Note:

a. All the test data for each data were verified, but only the worst case was reported.

b.The GFSK, π/4 DQPSK and 8DPSK were set in DH1 for GFSK, 2-DH1 for π/4 DQPSK, 3-DH1 for 8DPSK.

c.The DC and low frequency voltages' measurement uncertainty is ±2%.

5.1. Notes

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

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

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

5.2. Statements

The product name Lenovo TB-8504F, supporting BT/BLE/WLAN/GPS/FM, manufactured by Lenovo PC HK Limited is a new product for testing.

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

6. Test result

6.1. Peak Output Power-Conducted

6.1.1 Measurement Limit

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

6.1.2 Test Condition:

Hopping Mode	RBW	VBW	Span	Sweeptime
Hopping OFF	3MHz	10MHz	9MHz	Auto

6.1.3 Test procedure

The measurement is according to ANSI C63.10 clause 7.8.5.

1. The output power of EUT was connected to the spectrum analyzer and CBT32 by cable and divide. The path loss was compensated to the results for each measurement.
2. Enable EUT transmitter maximum power continuously.
3. Measure the conducted output power and record the results it.

6.1.4 Measurement Results:

For GFSK

Channel	Ch0 2402 MHz	Ch39 2441 MHz	CH78 2480 MHz	Conclusion
Peak Conducted Output Power (dBm)	4.046	4.168	4.016	P
	Fig.1	Fig.2	Fig.3	

For π/4 DQPSK

Channel	Ch0 2402 MHz	Ch39 2441 MHz	CH78 2480 MHz	Conclusion
Peak Conducted Output Power (dBm)	4.336	4.412	4.229	P
	Fig.4	Fig.5	Fig.6	

For 8DPSK

Channel	Ch0 2402 MHz	Ch39 2441 MHz	CH78 2480 MHz	Conclusion

Peak Conducted Output Power (dBm)	4.313	4.412	4.252	P
	Fig.7	Fig.8	Fig.9	

Conclusion: PASS

Test graphs an below

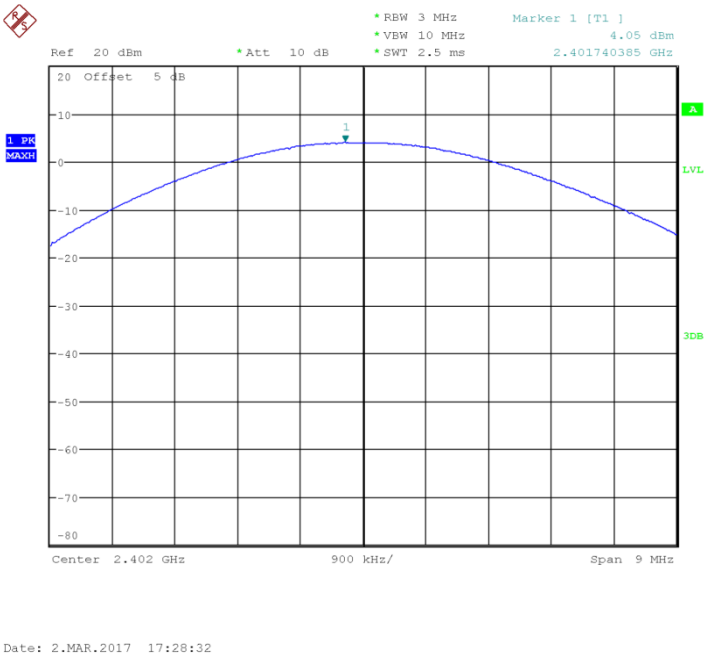


Fig.1 Peak Conducted Output Power CH0, DH1

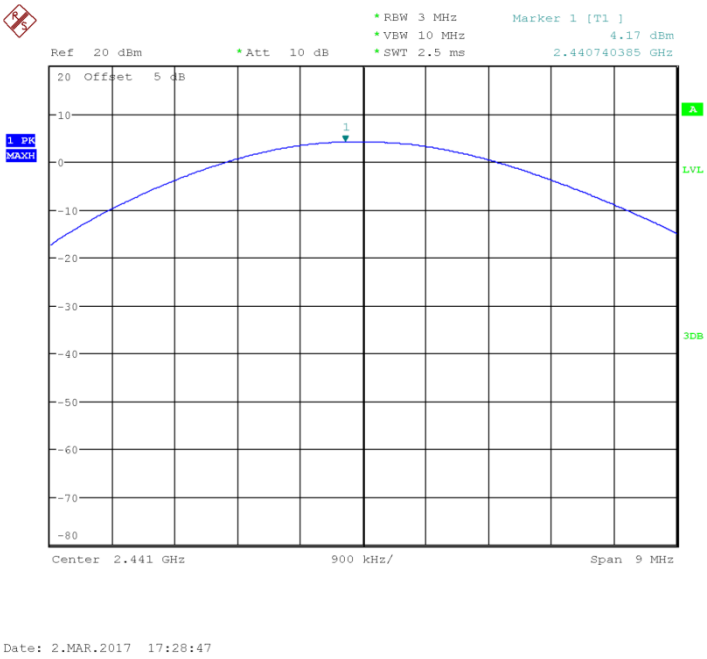


Fig.2 Peak Conducted Output Power CH39, DH1

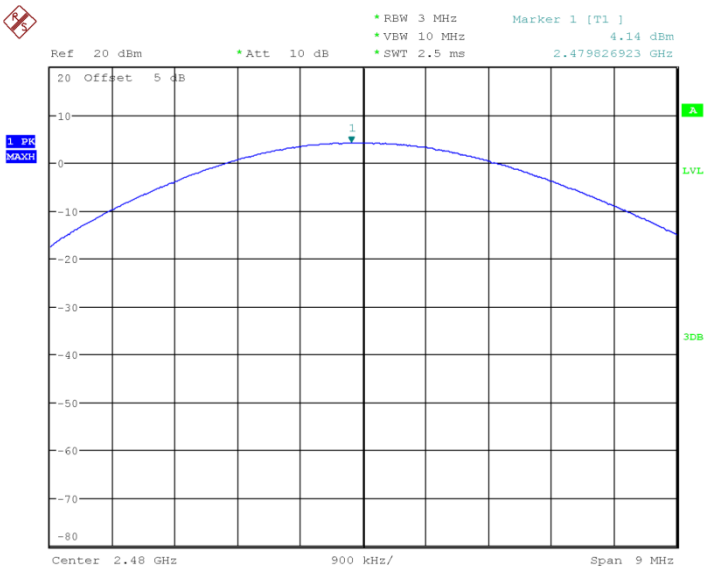


Fig.3 Peak Conducted Output Power CH78, DH1

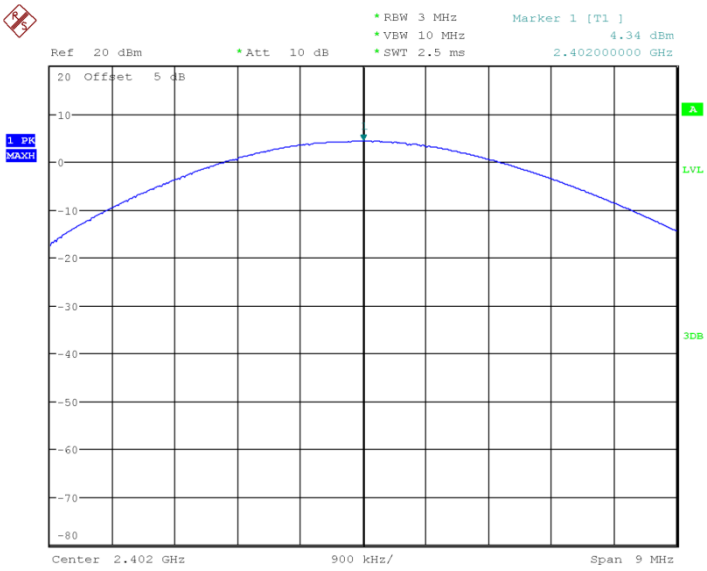


Fig.4 Peak Conducted Output Power CH0, 2DH1

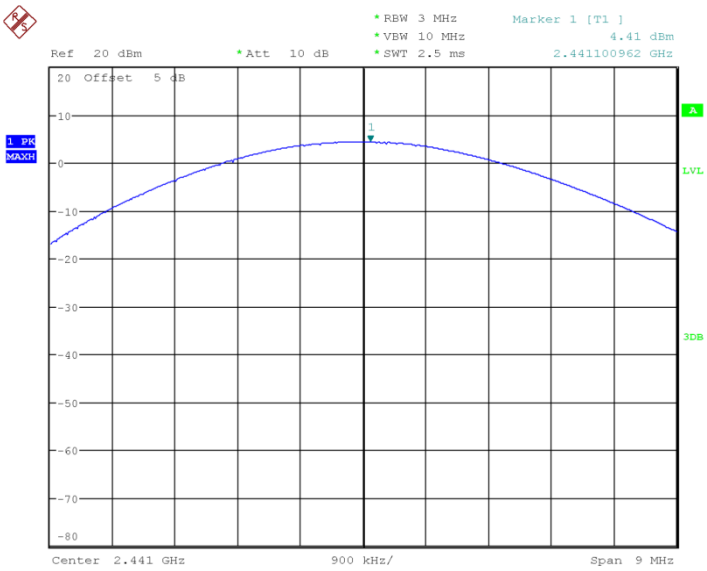


Fig.5 Peak Conducted Output Power CH39, 2DH1

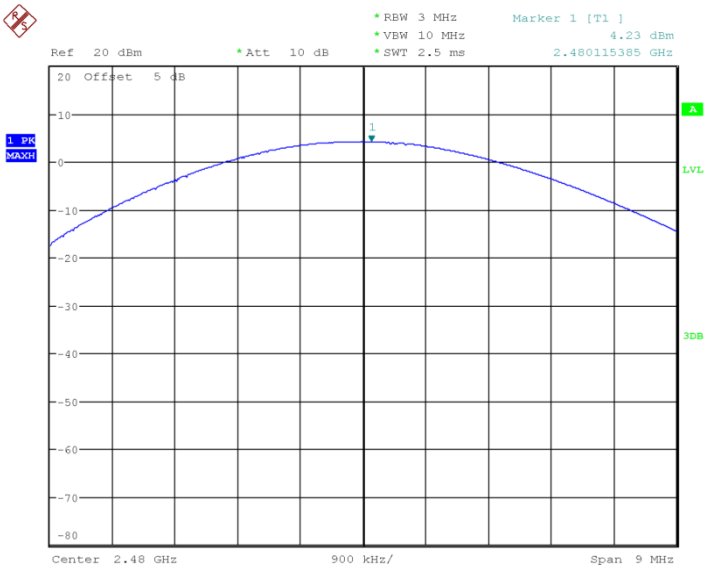


Fig.6 Peak Conducted Output Power CH78, 2DH1

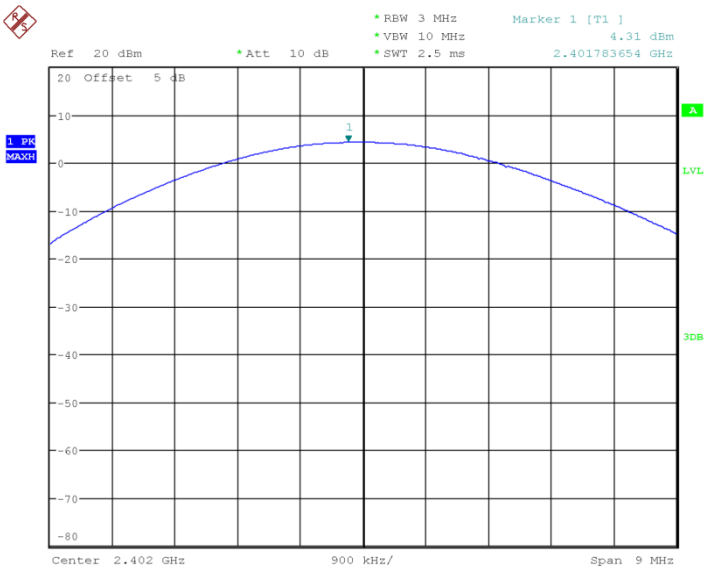


Fig.7 Peak Conducted Output Power CH0, 3DH1

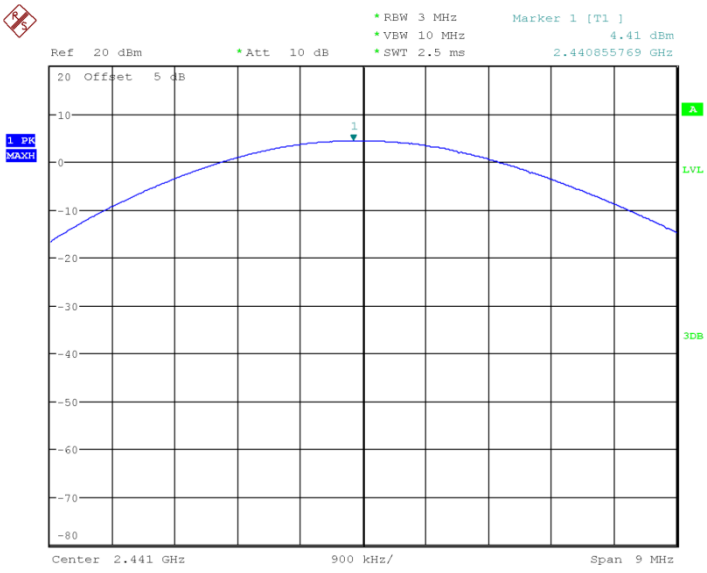


Fig.8 Peak Conducted Output Power CH39, 3DH1

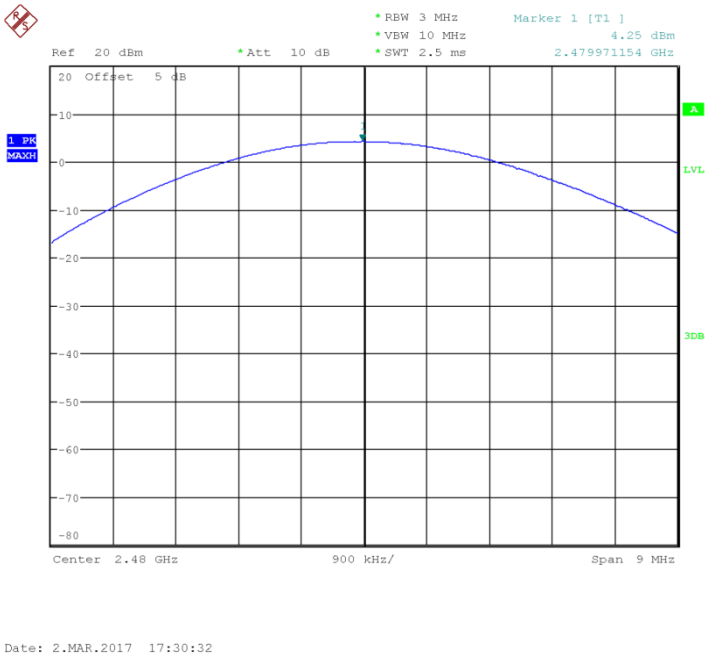


Fig.9 Peak Conducted Output Power CH78, 3DH1

6.2. Frequency Band Edges-Conducted

6.2.1 Measurement Limit:

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

6.2.2 Test procedure

The measurement is according to ANSI C63.10 clause 7.8.6.

1. Connect the EUT to spectrum analyzer.
2. Set RBW=100KHz, VBW=300KHz, span more than 1.5 times channel bandwidth (2MHz).
3. Detector =peak, sweep time=auto couple, trace mode=max hold.
4. Allow sweep to continue until the trace stabilizes.

6.2.3 Measurement results

For GFSK

Channel	Hopping	Band Edge Power (dBc)	Conclusion
0	Hopping OFF	Fig.10	P
	Hopping ON	Fig.11	P

78	Hopping OFF	Fig.12	P
	Hopping ON	Fig.13	P

For π/4 DQPSK

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

For 8DPSK

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

Conclusion: PASS

Test graphs an below

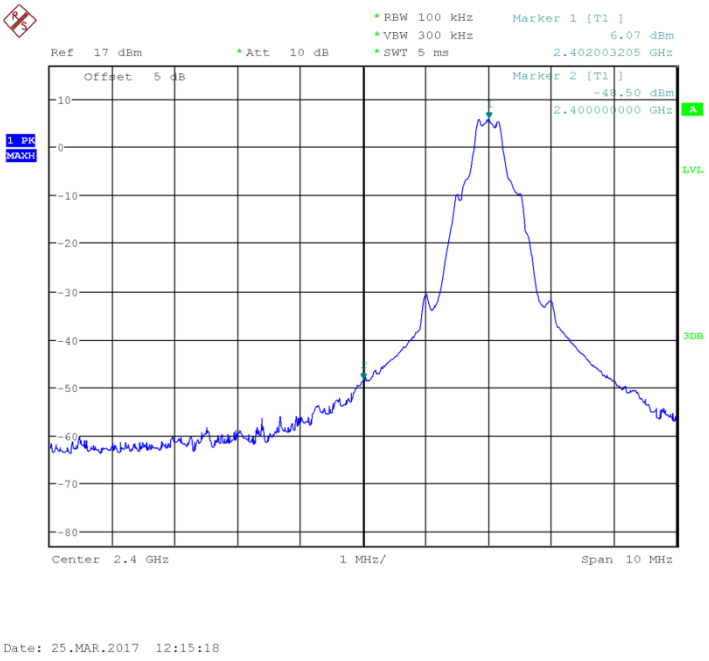


Fig.10 Frequency Band Edge: GFSK, Ch0, Hopping OFF

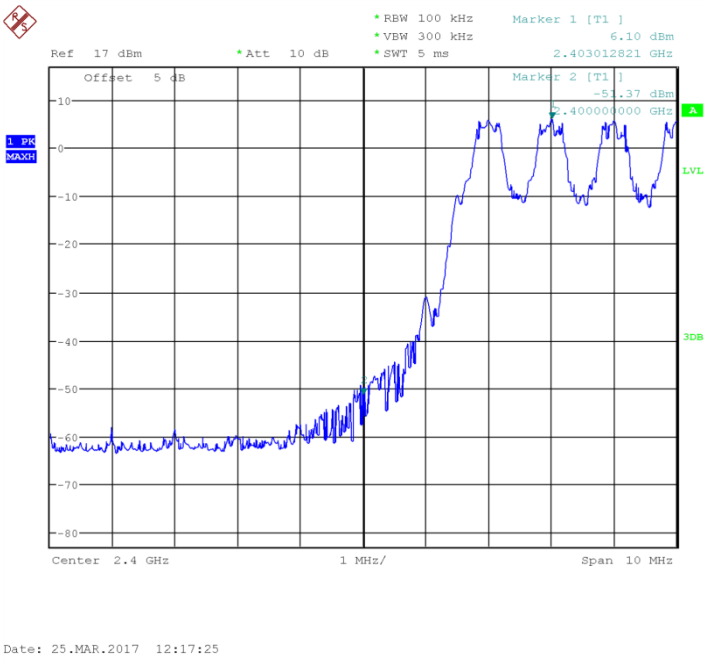


Fig.11 Frequency Band Edge: GFSK, Ch0, Hopping ON

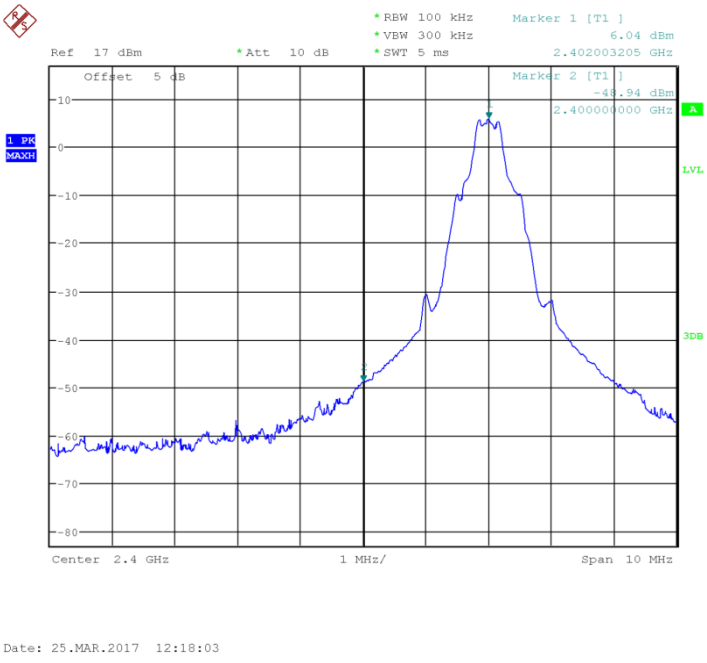


Fig.12 Frequency Band Edge: GFSK, Ch78, Hopping OFF

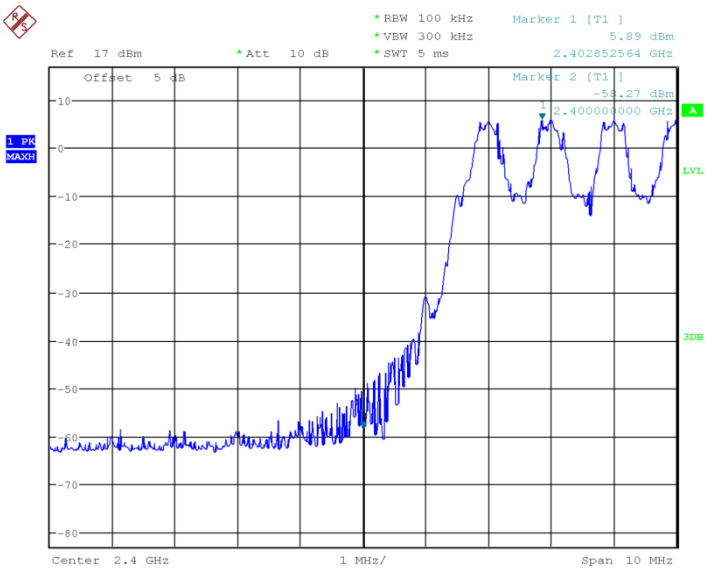


Fig.13 Frequency Band Edge: GFSK, Ch78, Hopping ON

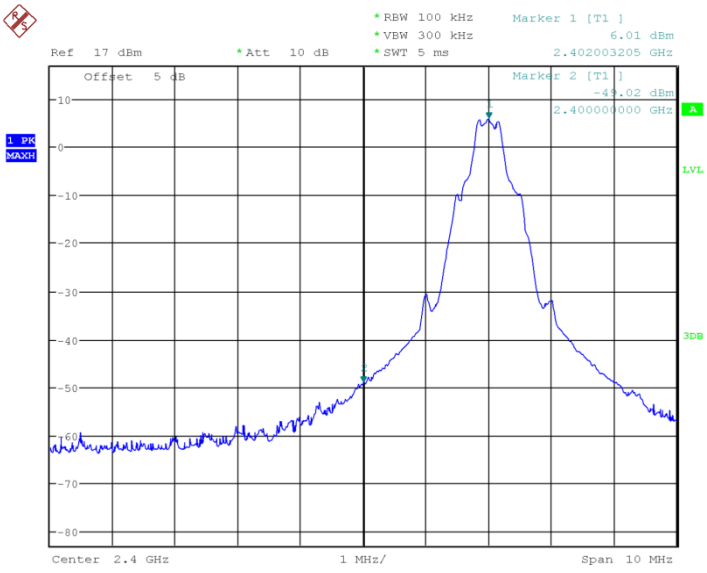


Fig.14 Frequency Band Edge: π/4 DQPSK, Ch0, Hopping OFF

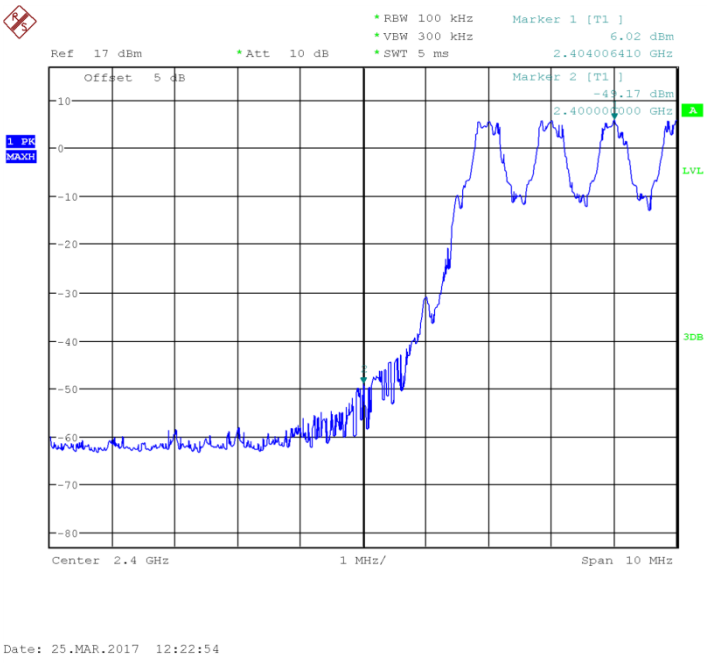


Fig.15 Frequency Band Edge: π/4 DQPSK, Ch0, Hopping ON

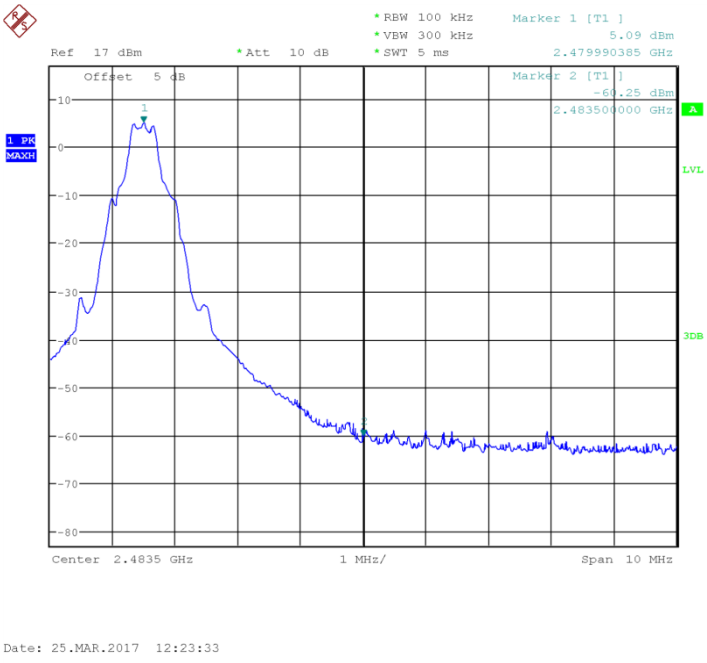


Fig.16 Frequency Band Edge: π/4 DQPSK, Ch78, Hopping OFF

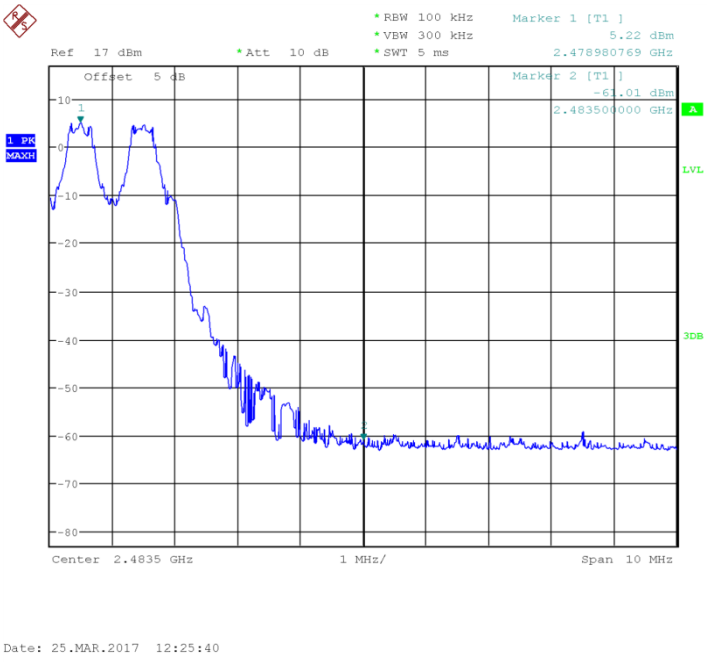


Fig.17 Frequency Band Edge: π/4 DQPSK, Ch78, Hopping ON

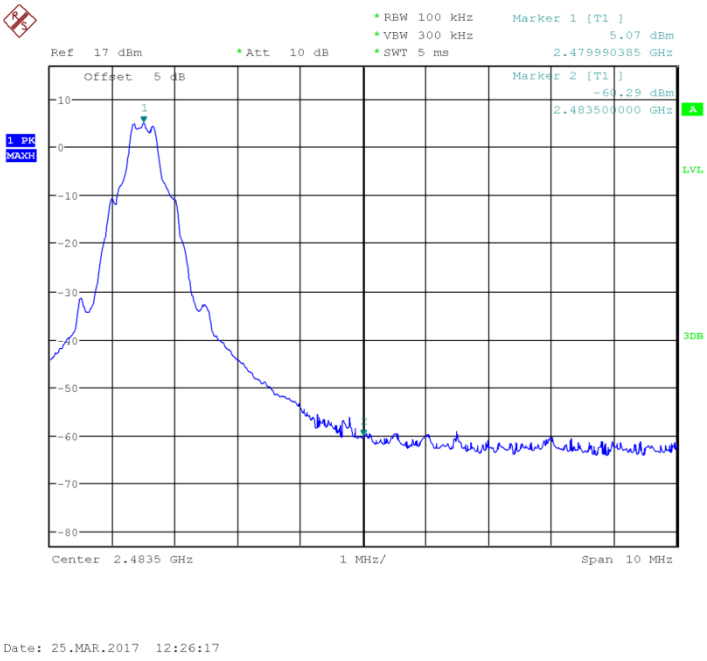


Fig.18 Frequency Band Edge: 8DPSK, Ch0, Hopping OFF

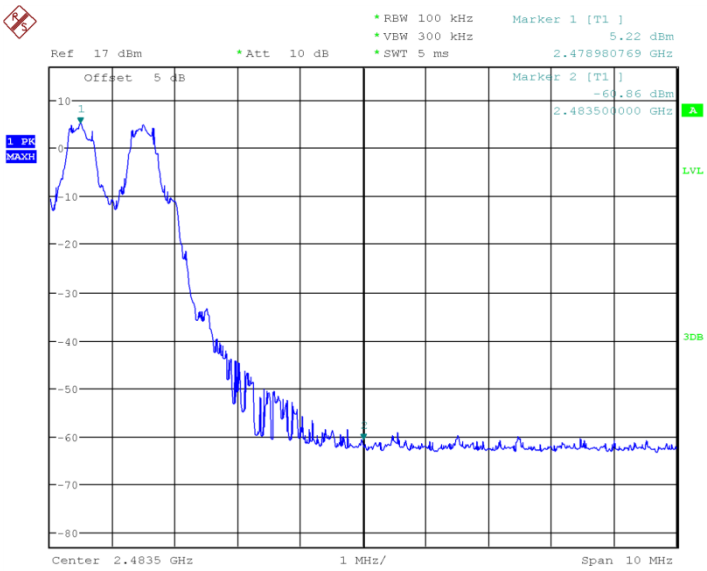


Fig.19 Frequency Band Edge: 8DPSK, Ch0, Hopping ON

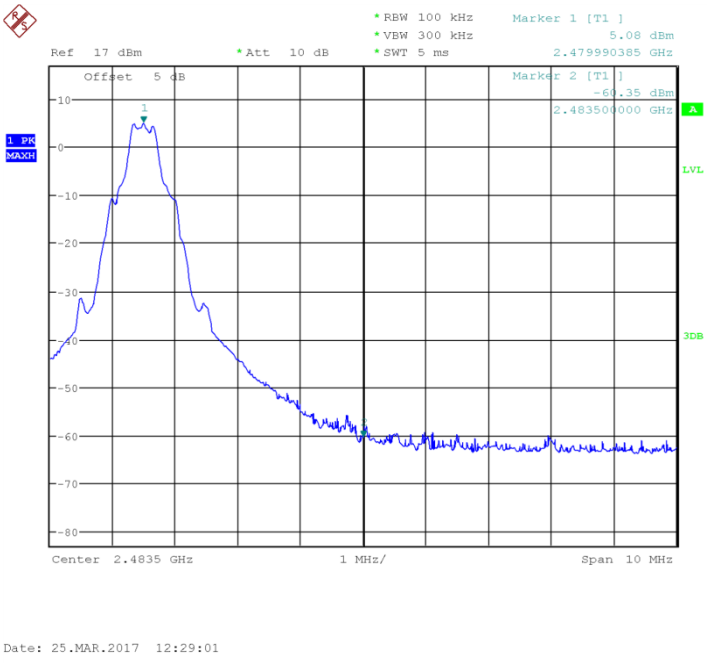


Fig.20 Frequency Band Edge: 8DPSK, Ch78, Hopping OFF

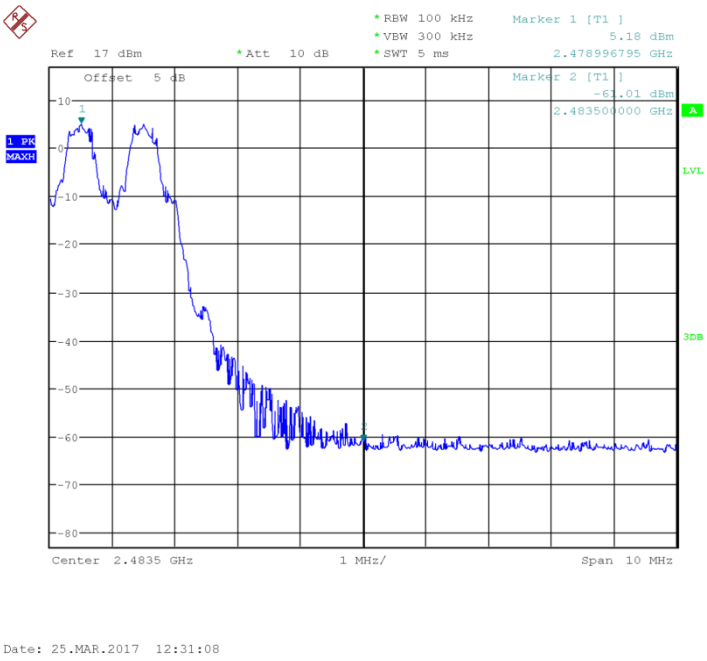


Fig.21 Frequency Band Edge: 8DPSK, Ch78, Hopping ON

6.3. Conducted Emission

6.3.1 Measurement Limit:

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

6.3.2 Test procedures

The measurement is according to ANSI C63.10 clause 7.8.8.

1. Connect the EUT to spectrum analyzer.
2. Set RBW=100KHz, VBW=100KHz.
3. Detector =peak, sweep time=auto couple, trace mode=max hold.

6.3.3 Measurement Results:

For GFSK

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

Ch78 2480MHz	Center Freq.	Fig.26	P
	30MHz~26GHz	Fig.27	P

For π/4 DQPSK

Channel	Frequency Range	Test Results	Conclusion
Ch0 2402MHz	Center Freq.	Fig.28	P
	30MHz~26GHz	Fig.29	P
Ch39 2441MHz	Center Freq.	Fig.30	P
	30MHz~26GHz	Fig.31	P
Ch78 2480MHz	Center Freq.	Fig.32	P
	30MHz~26GHz	Fig.33	P

For 8DPSK

Channel	Frequency Range	Test Results	Conclusion
Ch0 2402MHz	Center Freq.	Fig.34	P
	30MHz~26GHz	Fig.35	P
Ch39 2441MHz	Center Freq.	Fig.36	P
	30MHz~26GHz	Fig.37	P
Ch78 2480MHz	Center Freq.	Fig.38	P
	30MHz~26GHz	Fig.39	P

Conclusion: PASS

Test graphs as below

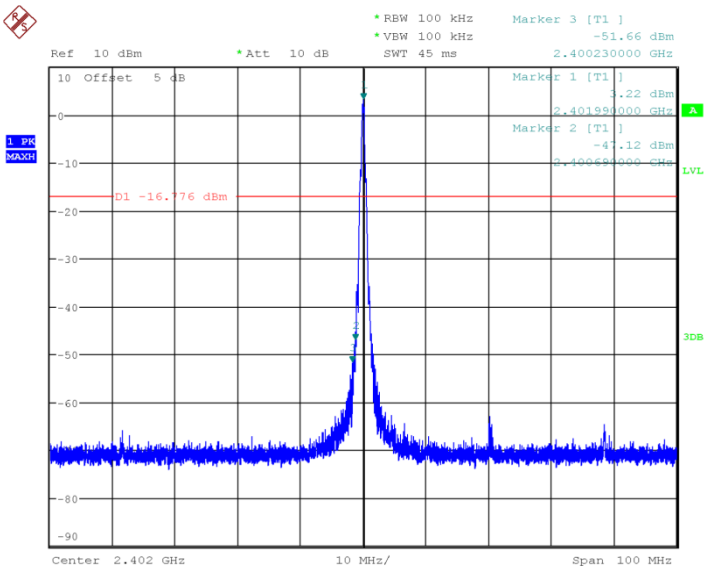


Fig.22 Conducted spurious emission: GFSK, Ch0, 2402MHz

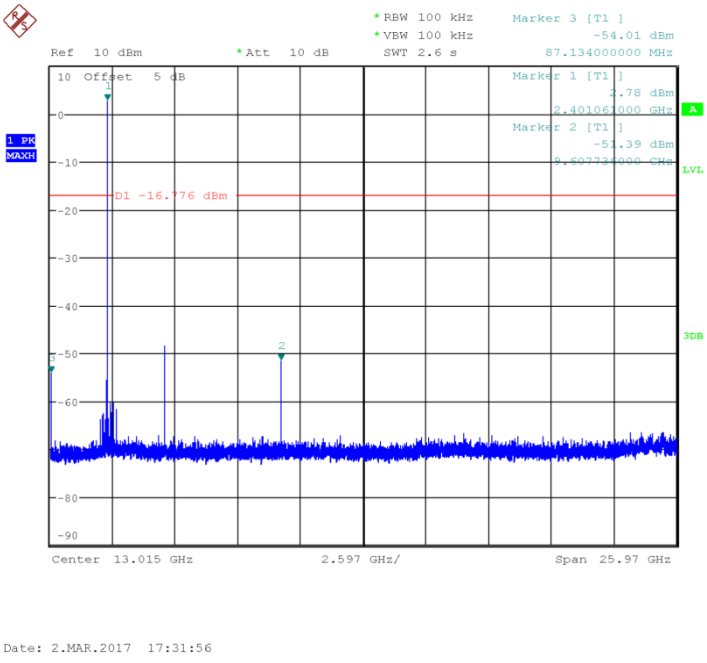


Fig.23 Conducted spurious emission: GFSK, Ch0, 30MHz~26GHz

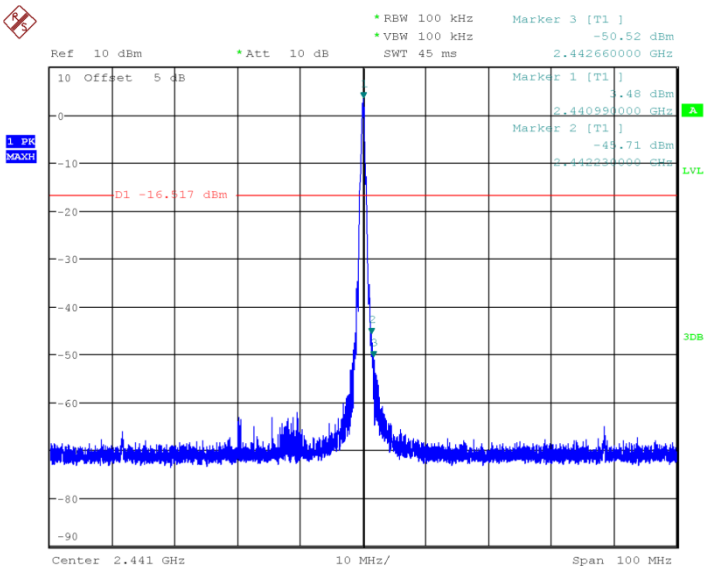


Fig.24 Conducted spurious emission: GFSK, Ch39, 2441MHz

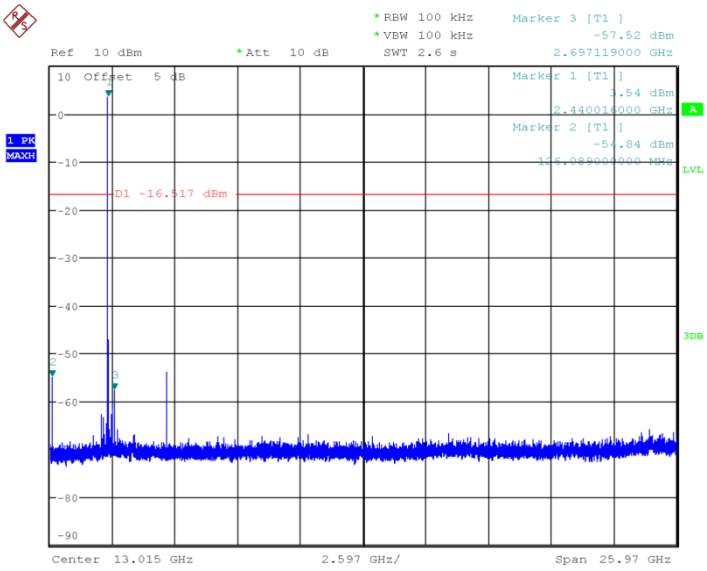


Fig.25 Conducted spurious emission: GFSK, Ch39, 30MHz~26GHz

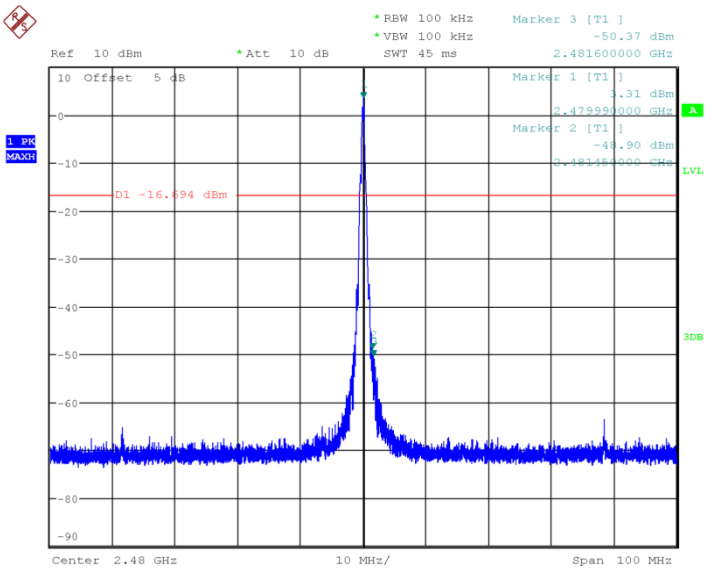


Fig.26 Conducted spurious emission: GFSK, Ch78, 2480MHz

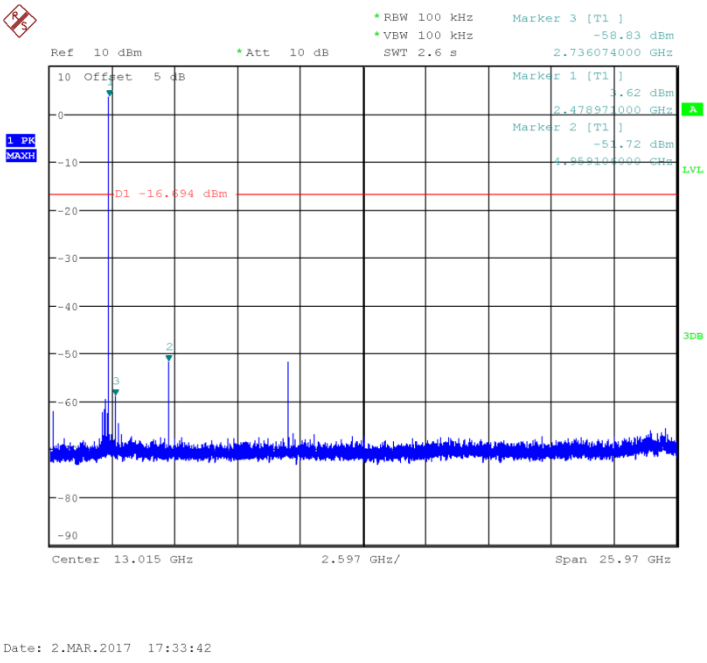


Fig.27 Conducted spurious emission: GFSK, Ch78, 30MHz~26GHz

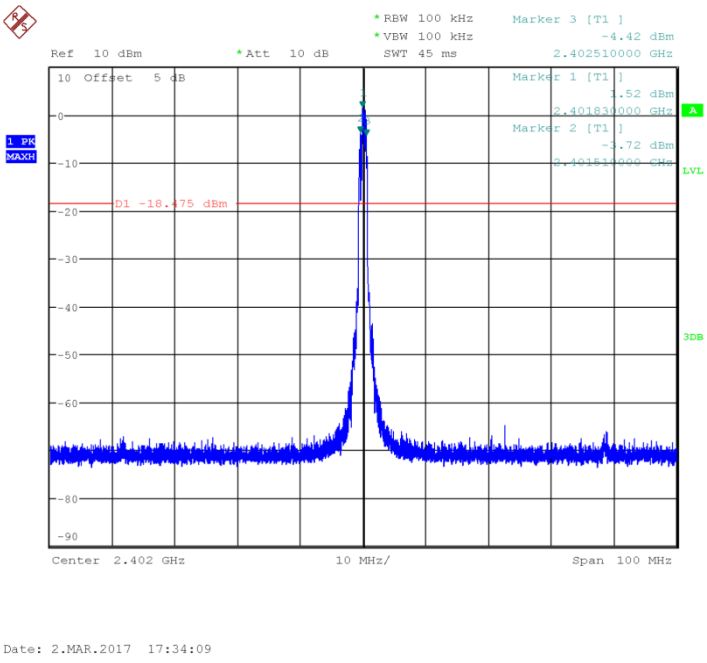


Fig.28 Conducted spurious emission: π/4 DQPSK, Ch0, 2402MHz

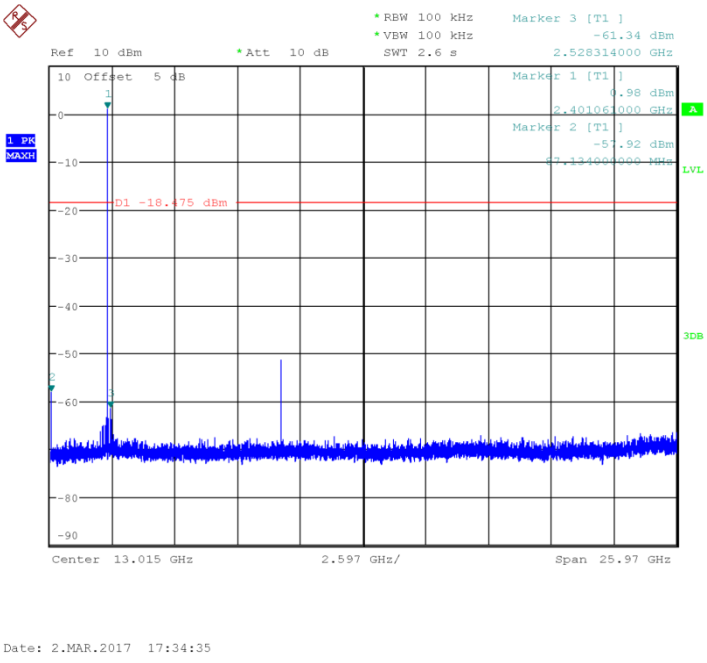


Fig.29 Conducted spurious emission: π/4 DQPSK, Ch0, 30MHz~26GHz

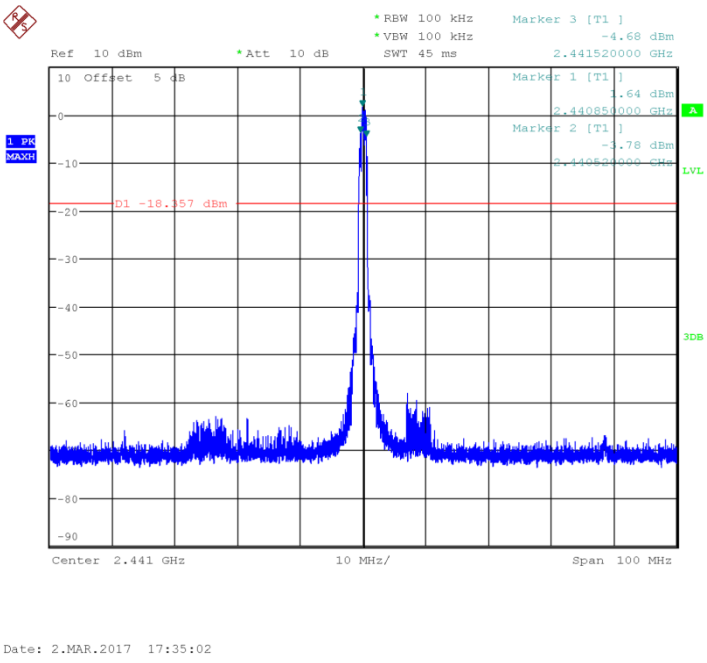


Fig.30 Conducted spurious emission: π/4 DQPSK, Ch39, 2441MHz

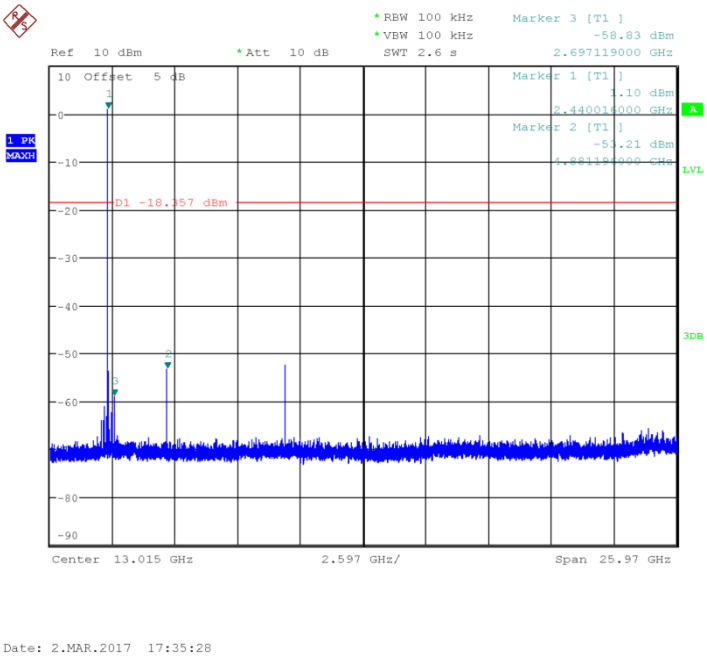


Fig.31 Conducted spurious emission: π/4 DQPSK, Ch39, 30MHz~26GHz

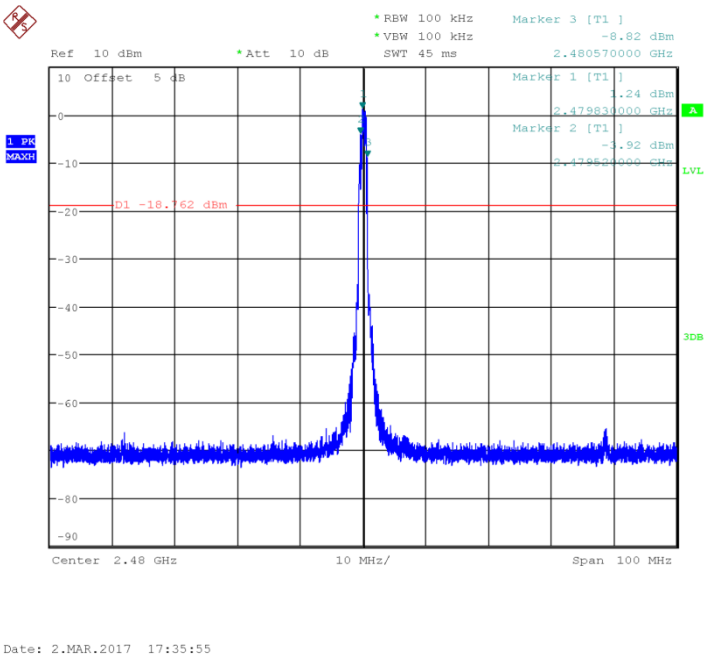


Fig.32 Conducted spurious emission: π/4 DQPSK, Ch78, 2480MHz

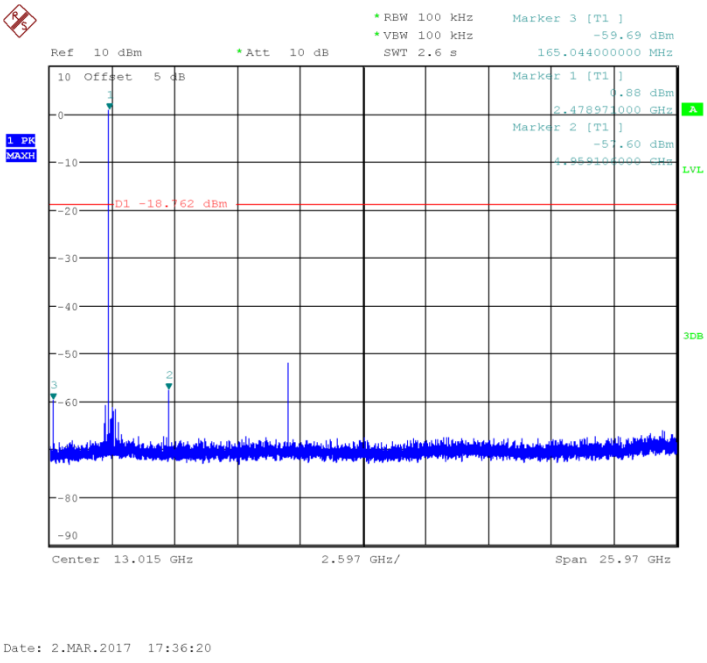


Fig.33 Conducted spurious emission: π/4 DQPSK, Ch78, 30MHz~26GHz

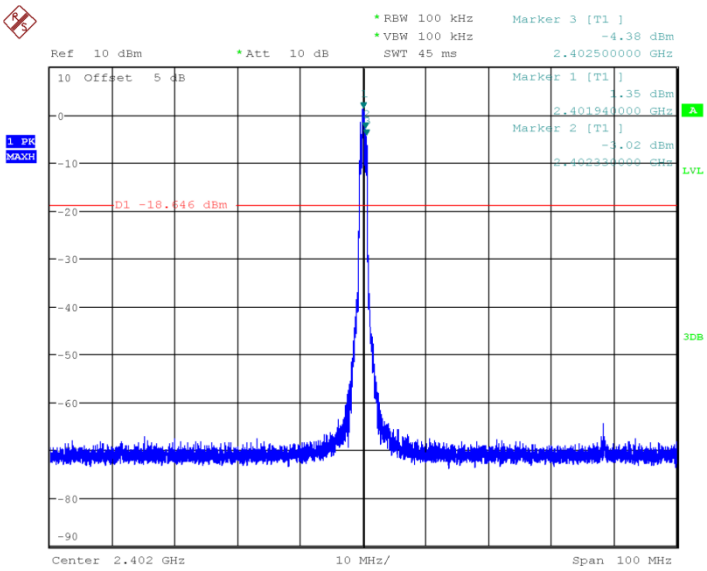


Fig.34 Conducted spurious emission: 8DPSK, Ch0, 2402MHz

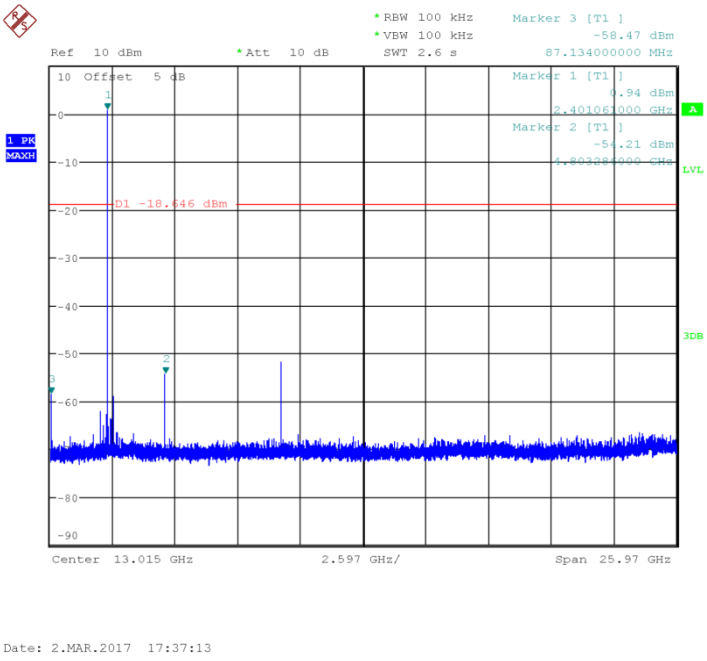


Fig.35 Conducted spurious emission: 8DPSK, Ch0, 30MHz~26GHz

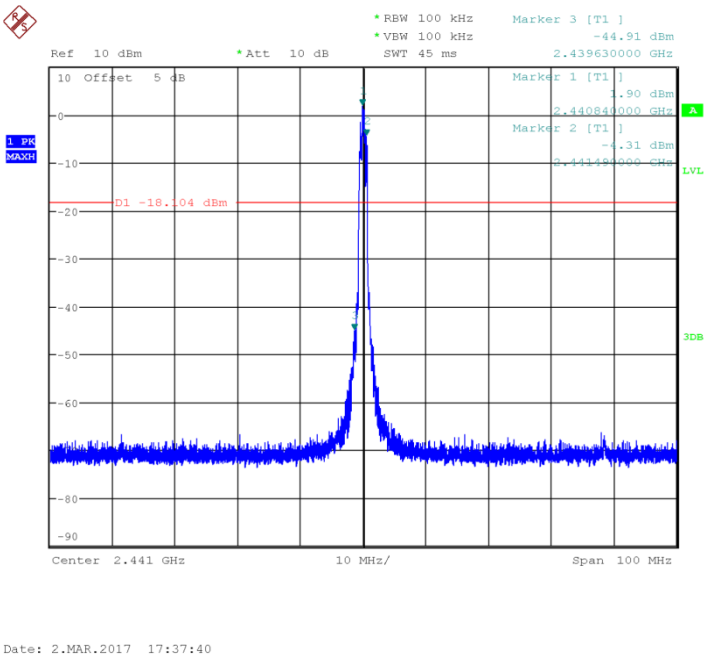


Fig.36 Conducted spurious emission: 8DPSK, Ch39, 2441MHz

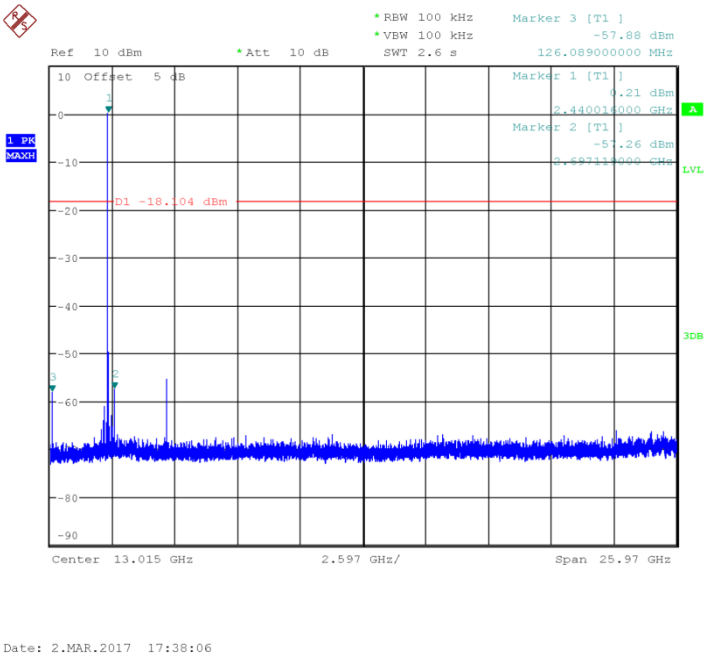


Fig.37 Conducted spurious emission: 8DPSK, Ch39, 30MHz~26GHz

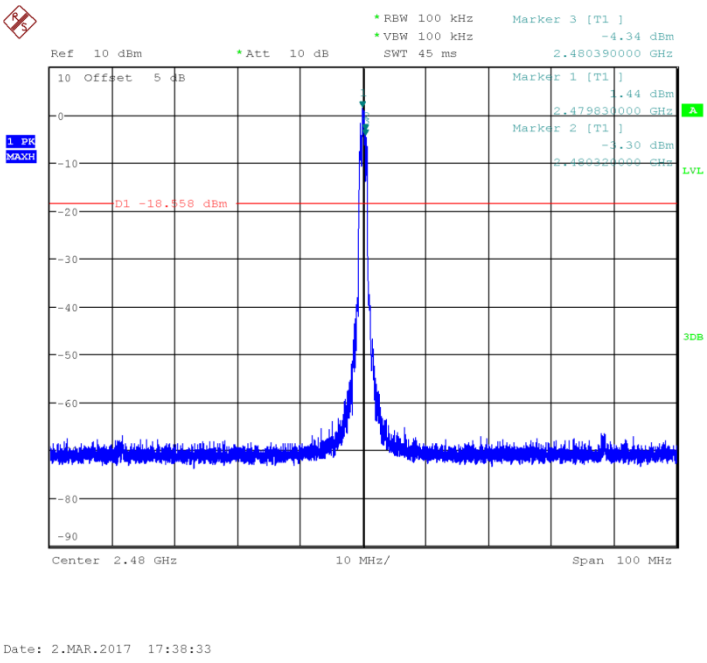


Fig.38 Conducted spurious emission: 8DPSK, Ch78, 2480MHz

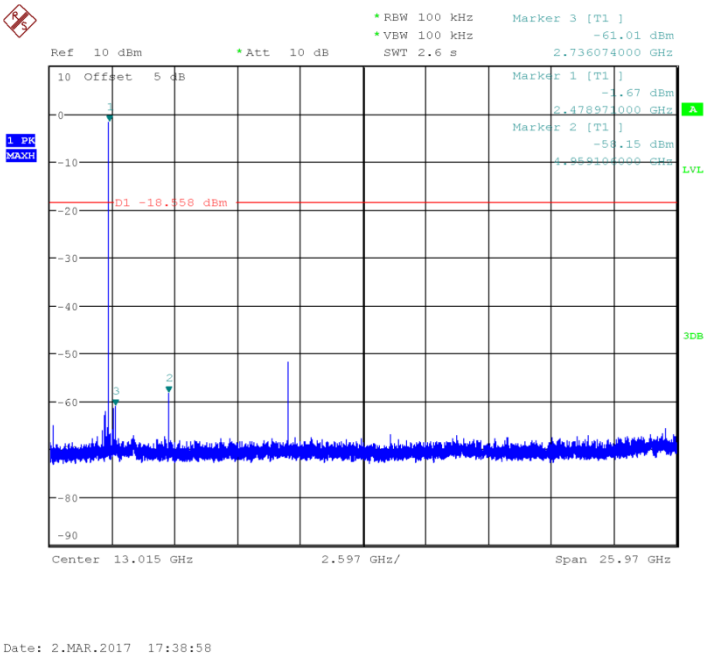


Fig.39 Conducted spurious emission: 8DPSK, Ch78, 30MHz~26GHz

6.4. Radiated Emission

6.4.1 Measurement Limit:

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

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

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

6.4.2 Test Method

Portable, small, lightweight, or modular devices that may be handheld, worn on the body, or placed on a table during operation shall be positioned on a non-conducting platform, the top of which is 80 cm above the reference ground plane. The preferred area occupied by the EUT arrangement is 1 m by 1.5 m, but it may be larger or smaller to accommodate various sized EUTs. For testing purposes, ceiling- and wall-mounted devices also shall be positioned on a tabletop (see also ANSI C63.10-2009 section 6.3.4 and 6.3.5). In making any tests involving handheld, body-worn, or ceiling-mounted equipment, it is essential to recognize that the measured levels may be dependent on the orientation (attitude) of the three orthogonal axes of the EUT. Thus, exploratory tests as specified in 8.3.1 shall be carried out for various axes orientations to determine the attitude having maximum or near-maximum emission level.

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

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

6.4.3 Measurement Results:

A “reference path loss” is established and A_{Rpi} is the attenuation of “reference path loss”, and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

The measurement results are obtained as described below:

A_{Rpi} = Cable loss + Antenna Gain-Preamplifier gain

Result=P_{Mea} + A_{Rpi}

Main Supply(3G+32G)

For GFSK

Channel	Frequency Range	Test Results	Conclusion
Ch0 2402MHz	30MH~1GHz	Fig.40	P
	1GHz~3GHz	Fig.41	P
	3GHz~18GHz	Fig.42	P
Power	2.38GHz~2.4GHz	Fig.43	P
Power	2.45GHz~2.5GHz	Fig.44	P

For π/4 DQPSK

Channel	Frequency Range	Test Results	Conclusion
Ch0 2402MHz	30MH~1GHz	Fig.45	P
	1GHz~3GHz	Fig.46	P
	3GHz~18GHz	Fig.47	P
Power	2.38GHz~2.4GHz	Fig.48	P
Power	2.45GHz~2.5GHz	Fig.49	P

For 8DPSK

Channel	Frequency Range	Test Results	Conclusion
Ch0 2402MHz	30MH~1GHz	Fig.50	P
	1GHz~3GHz	Fig.51	P
	3GHz~18GHz	Fig.52	P
Power	2.38GHz~2.4GHz	Fig.53	P
Power	2.45GHz~2.5GHz	Fig.54	P

Main Supply(2G+16G)

For GFSK

Channel	Frequency Range	Test Results	Conclusion
Ch0 2402MHz	30MH~1GHz	Fig.55	P
	1GHz~3GHz	Fig.56	P
	3GHz~18GHz	Fig.57	P
Power	2.38GHz~2.4GHz	Fig.58	P
Power	2.45GHz~2.5GHz	Fig.59	P

Second Supply(3G+32G)

For GFSK

Channel	Frequency Range	Test Results	Conclusion
Ch0 2402MHz	30MH~1GHz	Fig.60	P
	1GHz~3GHz	Fig.61	P
	3GHz~18GHz	Fig.62	P
Power	2.38GHz~2.4GHz	Fig.63	P
Power	2.45GHz~2.5GHz	Fig.64	P

Second Supply(2G+16G)

For GFSK

Channel	Frequency Range	Test Results	Conclusion
Ch0 2402MHz	30MH~1GHz	Fig.65	P
	1GHz~3GHz	Fig.66	P
	3GHz~18GHz	Fig.67	P
Power	2.38GHz~2.4GHz	Fig.68	P
Power	2.45GHz~2.5GHz	Fig.69	P

Main Supply(3G+32G)

GFSK Ch0 30MHz-1GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity

34.56558	10.09	-26.7	36.79	V
35.903124	8.67	-26.2	34.87	V
41.0175	10.96	-23.6	34.56	V
45.21702	10.34	-23.5	33.84	V
847.220564	18.63	-10.3	28.93	H
943.435628	20.12	-8.7	28.82	V

GFSK Ch0 1GHz-3GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
2754.781346	52.34	9.4	42.94	V
2822.788654	54.04	10.2	43.84	H
2886.510962	54.51	10.7	43.81	H
2902.750385	53.19	10.6	42.59	H
2942.373846	53.97	10.5	43.47	H
2950.964231	54.05	10.5	43.55	H

Average:

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
2822.788654	40.22	10.2	30.02	H
2886.510962	41.38	10.7	30.68	H
2950.964231	41.43	10.5	30.93	H

GFSK Ch0 3GHz-18GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
9608.0524	57.53	8.3	49.23	V
15380.69293	56.92	22.9	34.02	V
16143.3924	58.49	25.1	33.39	H
16437.44413	58.64	26.1	32.54	H
16823.7716	60.06	27.3	32.76	V

17559.99707	61.86	29.4	32.46	H

Average:

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
9608.0524	46.08	8.3	37.78	V
15380.69293	44.35	22.9	21.45	V
16143.3924	46.59	25.1	21.49	H
16437.44413	46.46	26.1	20.36	H
16823.7716	48.12	27.3	20.82	V
17559.99707	49.88	29.4	20.48	H

π/4 DQPSK Ch0 30MHz-1GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
33.168536	17.54	-26.4	43.94	V
34.099592	13.11	-26.6	39.71	V
37.434232	11	-25.2	36.2	V
41.078312	10.98	-23.6	34.58	V
816.85946	18.35	-10.7	29.05	H
913.325468	19.92	-9	28.92	H

π/4 DQPSK Ch0 1GHz-3GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
2672.937884	52.87	9.4	43.47	V
2796.102308	52.16	9.7	42.46	V
2826.598462	53.18	10.3	42.88	V
2900.535577	53.23	10.6	42.63	H
2953.524423	52.84	10.5	42.34	H
2994.732692	53.89	11.1	42.79	H

π/4 DQPSK Ch0 3GHz-18GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
9608.033667	56.9	8.3	48.6	V
12784.50407	52.05	16.7	35.35	V
13842.26367	54.73	18.2	36.53	H
15434.69887	56.86	23.3	33.56	H
16991.95893	60.3	27.1	33.2	V
17543.5366	61.74	29.3	32.44	H

Average:

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
9608.033667	48.18	8.3	39.88	V
12784.50407	39.88	16.7	23.18	V
13842.26367	41.98	18.2	23.78	H
15434.69887	43.01	23.3	19.71	H
16991.95893	48.48	27.1	21.38	V
17543.5366	48.83	29.3	19.53	H

8DPSK Ch0 30MHz-1GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
33.169524	14.42	-26.4	40.82	V
34.08868	12.56	-26.6	39.16	V
42.517256	7.86	-23.6	31.46	V
607.401152	15.57	-13.6	29.17	V
685.2127	16.26	-12.8	29.06	H
847.805208	18.79	-10.3	29.09	H

8DPSK Ch0 1GHz-3GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
2669.38	52.58	9.4	43.18	H

2745.931154	53.09	9.4	43.69	V
2810.970769	53.15	10	43.15	H
2849.122884	53.58	10.8	42.78	H
2873.467116	53.34	10.7	42.64	V
2937.380769	53.54	10.5	43.04	V

8DPSK Ch0 3GHz-18GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
9919.924733	59.74	8.7	51.04	V
13057.6412	52.39	16.8	35.59	H
14285.52427	55.32	20.6	34.72	H
15843.5384	58.47	24.7	33.77	V
16820.216	59.76	27.3	32.46	V
17543.7792	61.95	29.3	32.65	V

Average:

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
9919.924733	48.88	8.7	40.18	V
13057.6412	40.07	16.8	23.27	H
14285.52427	42.74	20.6	22.14	H
15843.5384	48.18	24.7	23.48	V
16820.216	47.78	27.3	20.48	V
17543.7792	49.79	29.3	20.49	V

Main Supply(2G+16G)

GFSK Ch0 30MHz-1GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
34.01364	10.16	-26.6	36.76	V
48.060664	9.18	-23.4	32.58	V

56.109408	7.81	-23.9	31.71	V
100.699664	5.91	-23.7	29.61	H
321.376056	8.97	-20.3	29.27	V
931.107016	20.45	-8.6	29.05	V

GFSK Ch0 1GHz-3GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
2357.9624	50.51	8	42.51	V
2584.995962	52.1	8.6	43.5	H
2671.631923	52.32	9.4	42.92	V
2752.527885	52.53	9.4	43.13	V
2880.7525	53.6	10.7	42.9	H
2930.7625	52.58	10.6	41.98	V

GFSK Ch0 3GHz-18GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
9608.122533	57.3	8.3	49	V
13249.76907	53.07	17.2	35.87	V
14289.91693	55.64	20.6	35.04	V
15784.0742	57.93	24.6	33.33	H
16463.3912	58.65	26.4	32.25	H
17520.2268	61.85	29.2	32.65	H

Average:

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
9608.122533	46.74	8.3	38.44	V
13249.76907	40.48	17.2	23.28	V
14289.91693	42.88	20.6	22.28	V
15784.0742	46.60	24.6	22	H

16463.3912	48.82	26.4	22.42	H
17520.2268	48.84	29.2	19.64	H

Second Supply(3G+32G)

GFSK Ch0 30MHz-1GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
34.476312	8.23	-26.7	34.93	V
35.787512	7	-26.3	33.3	H
48.580784	9.96	-23.3	33.26	V
50.76724	6.51	-23.4	29.91	V
66.363868	5.31	-26.3	31.61	V
878.447304	19.32	-9.5	28.82	V

GFSK Ch0 1GHz-3GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
2610.816154	51.8	8.9	42.9	V
2796.811346	52.53	9.7	42.83	V
2817.980192	53.39	10.1	43.29	V
2849.655769	53.51	10.8	42.71	H
2877.944808	52.78	10.7	42.08	V
2930.7625	52.58	10.6	41.98	V

GFSK Ch0 3GHz-18GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
9608.001667	58.23	8.3	49.93	H
13497.98167	53.69	18.7	34.99	H
14900.24967	56.48	22.2	34.28	H
15364.53087	56.46	22.7	33.76	V
16499.38607	60.44	26.9	33.54	V

17599.1202	62.07	29.6	32.47	V

Average:

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
9608.001667	48.37	8.3	40.07	H
13497.98167	41.73	18.7	23.03	H
14900.24967	44.42	22.2	22.22	H
15364.53087	44.20	22.7	21.5	V
16499.38607	47.366	26.9	20.466	V
17599.1202	49.89	29.6	20.29	V

Second Supply(2G+16G)

GFSK Ch0 30MHz-1GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
34.01364	10.16	-26.6	36.76	V
48.060664	9.18	-23.4	32.58	V
56.109408	7.81	-23.9	31.71	V
100.699664	5.91	-23.7	29.61	H
321.376056	8.97	-20.3	29.27	V
931.107016	20.45	-8.6	29.05	V

GFSK Ch0 1GHz-3GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
2357.9624	50.51	8	42.51	V
2584.995962	52.1	8.6	43.5	H
2671.631923	52.32	9.4	42.92	V
2752.527885	52.53	9.4	43.13	V
2880.7525	53.6	10.7	42.9	H
2954.231923	53.16	10.6	42.56	V

GFSK Ch0 3GHz-18GHz

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
9608.122533	57.3	8.3	49	V
13249.76907	53.07	17.2	35.87	V
14289.91693	55.64	20.6	35.04	V
15784.0742	57.93	24.6	33.33	H
16463.3912	58.65	26.4	32.25	H
17520.2268	61.85	29.2	32.65	H

Average:

Frequency(MHz)	Result(dBuV/m)	ARpl (dB)	PMea(dBuV/m)	Polarity
9608.122533	46.74	8.3	38.44	V
13249.76907	40.80	17.2	23.6	V
14289.91693	42.88	20.6	22.28	V
15784.0742	46.60	24.6	22	H
16463.3912	48.82	26.4	22.42	H
17520.2268	448.8	29.2	419.6	H

Note: all the test data shown was peak detected.

Conclusion: PASS

Main Supply(3+32G)

Test graphs as below:

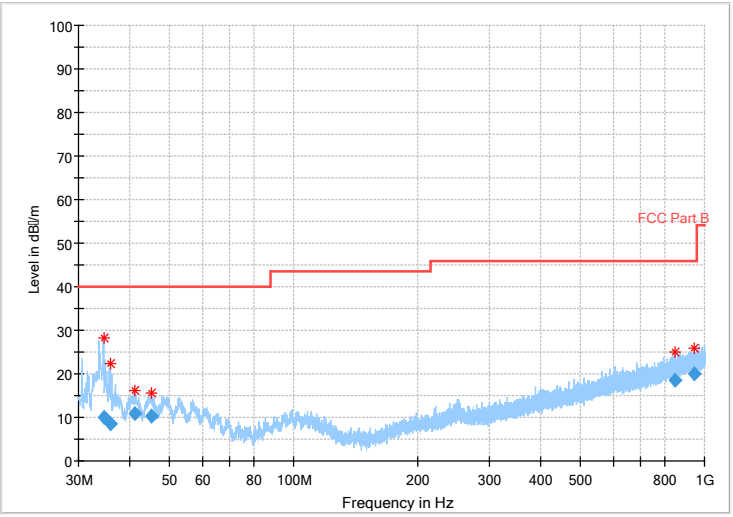


Fig.40 Radiated emission: GFSK, Ch0, 30MHz~1GHz

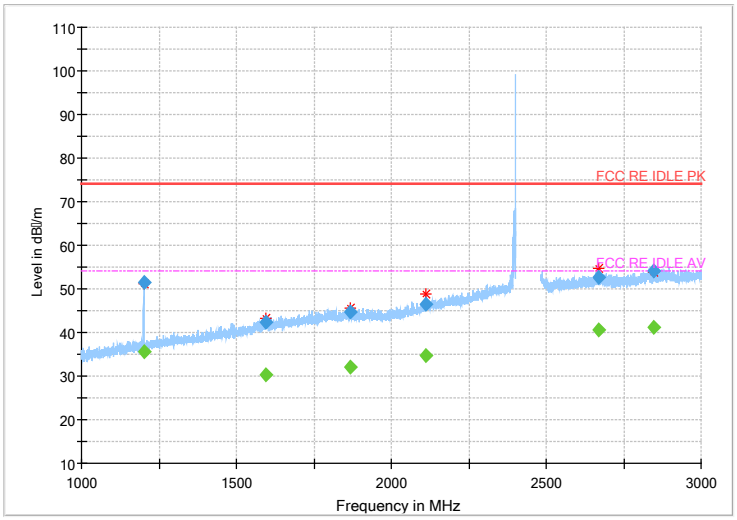


Fig.41 Radiated emission: GFSK, Ch0, 1GHz~3GHz

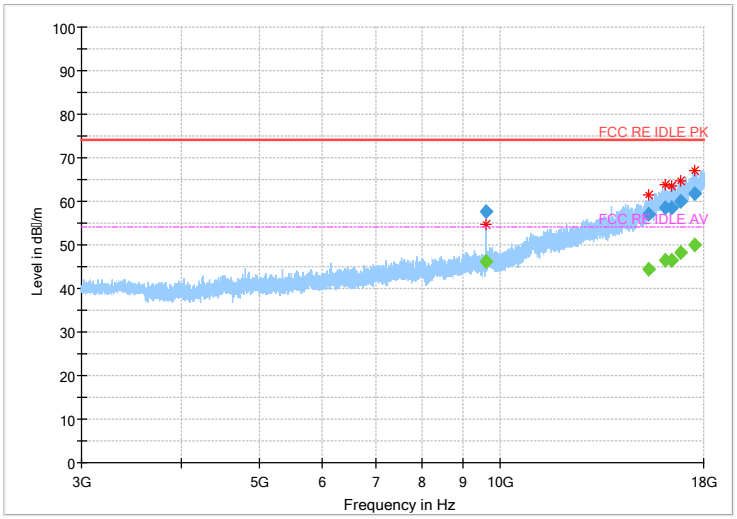


Fig.42 Radiated emission: GFSK, Ch0, 3GHz~18GHz

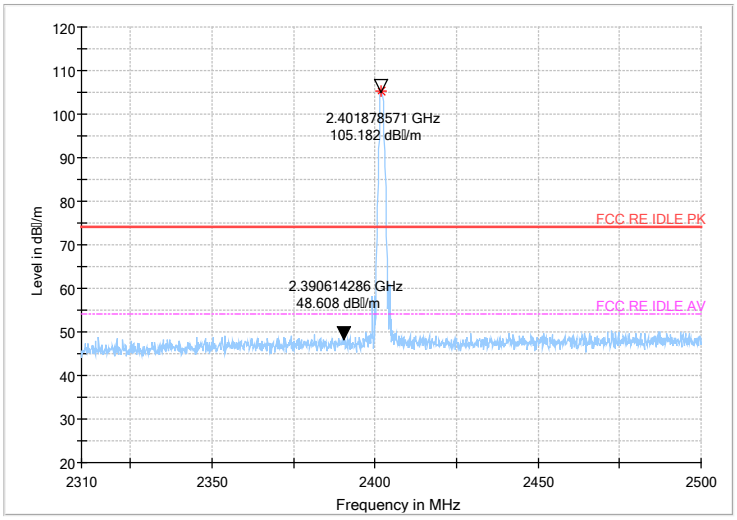


Fig.43 Radiated emission (Power): GFSK, low channel

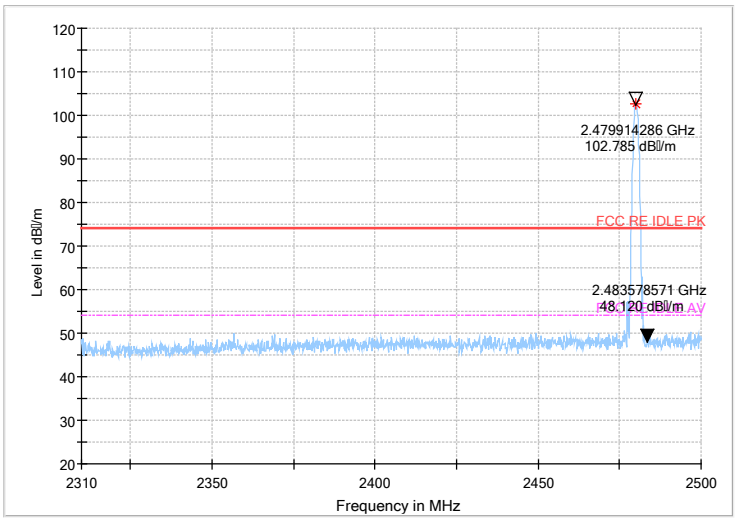


Fig.44 Radiated emission (Power): GFSK, high channel

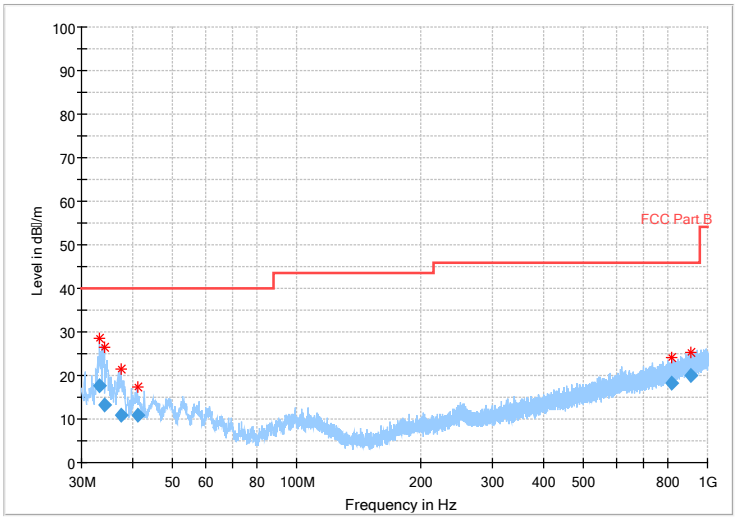


Fig.45 Radiated emission: π/4 DQPSK, Ch0, 30MHz~1GHz

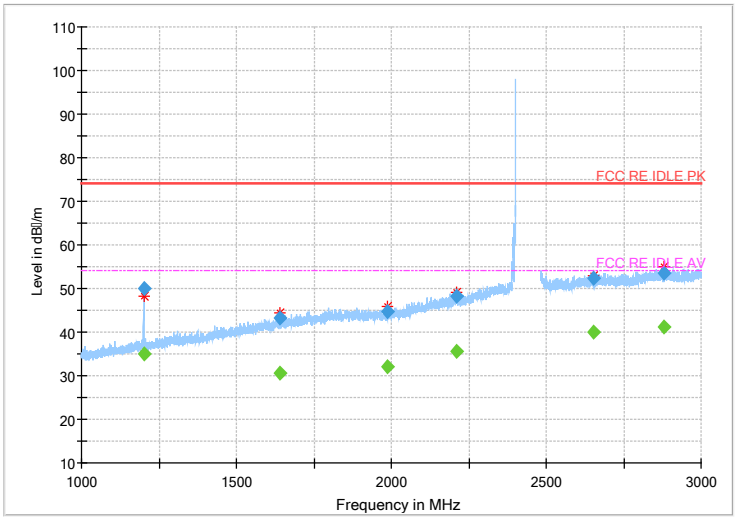


Fig.46 Radiated emission: π/4 DQPSK, Ch0, 1GHz~3GHz

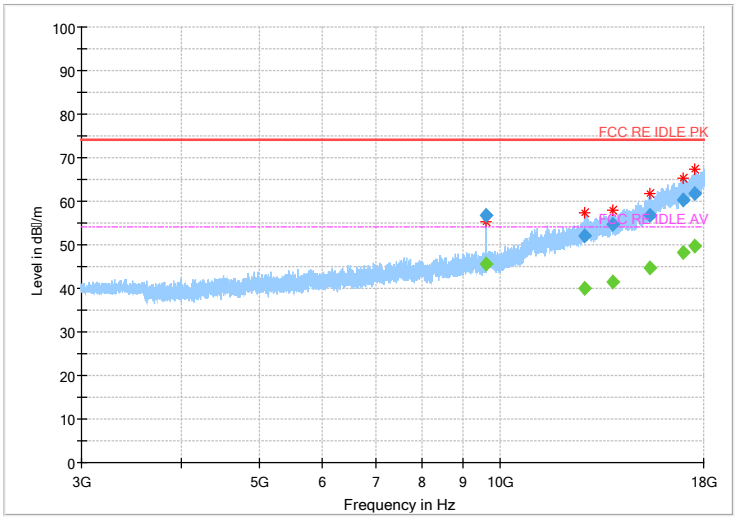


Fig.47 Radiated emission: π/4 DQPSK, Ch0, 3GHz~18GHz

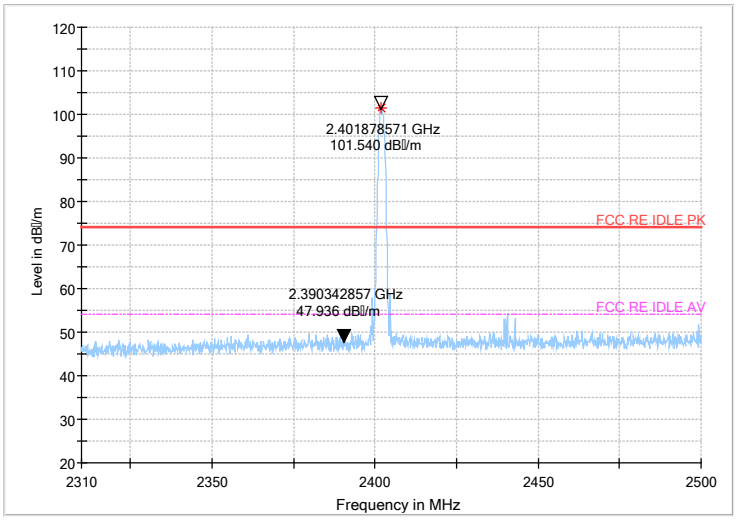


Fig.48 Radiated emission (Power): π/4 DQPSK, low channel

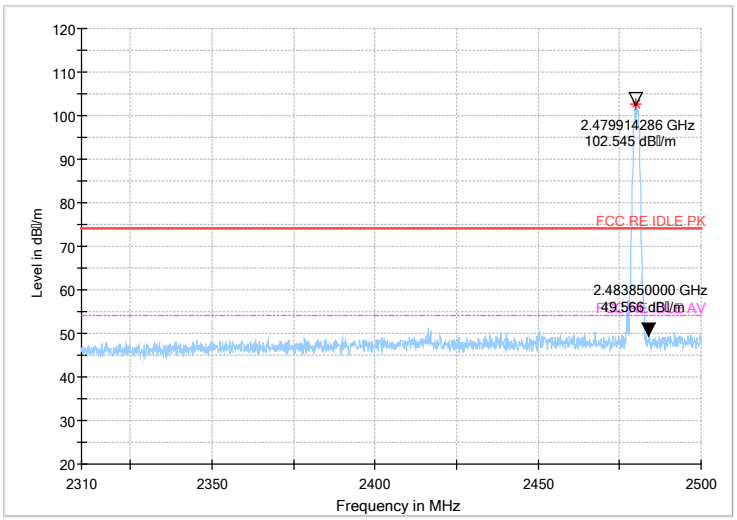


Fig.49 Radiated emission (Power): π/4 DQPSK, high channel

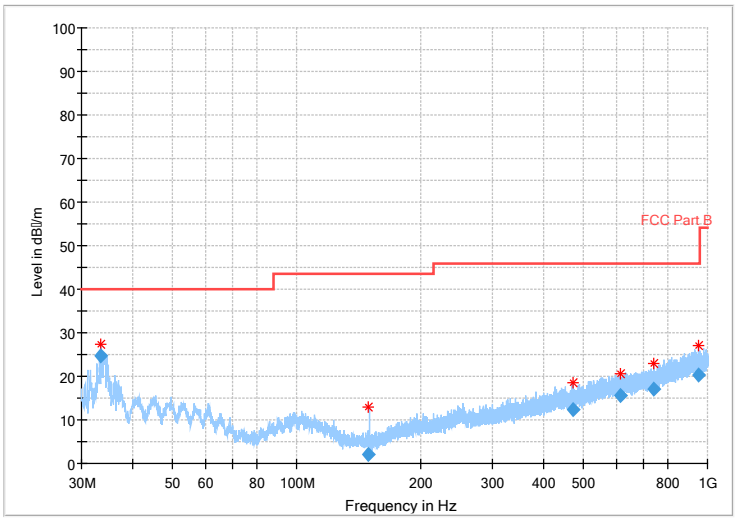


Fig.50 Radiated emission: 8DPSK, Ch0, 30MHz~1GHz

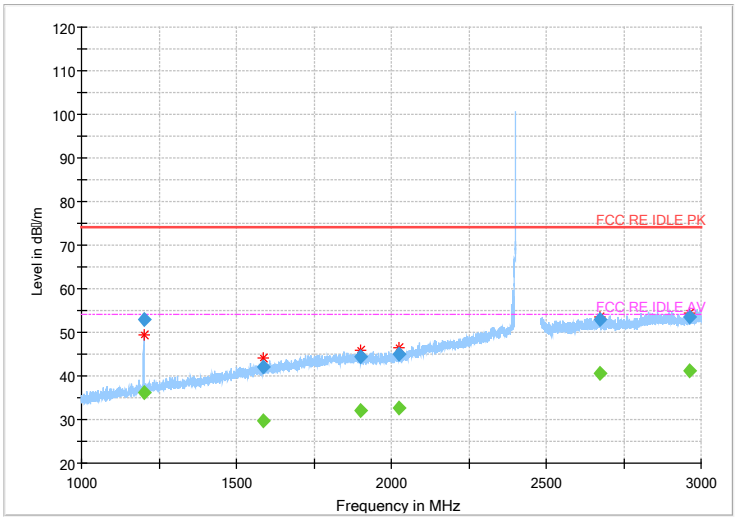


Fig.51 Radiated emission: 8DPSK, Ch0, 1GHz~3GHz

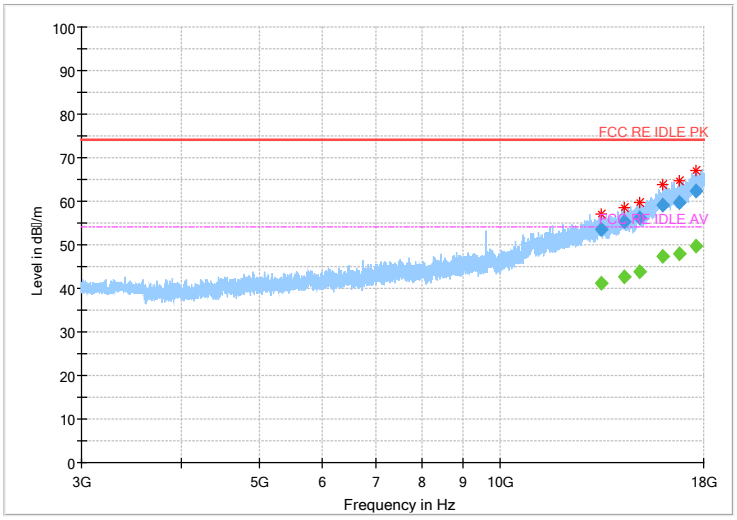


Fig.52 Radiated emission: 8DPSK, Ch0, 3GHz~18GHz

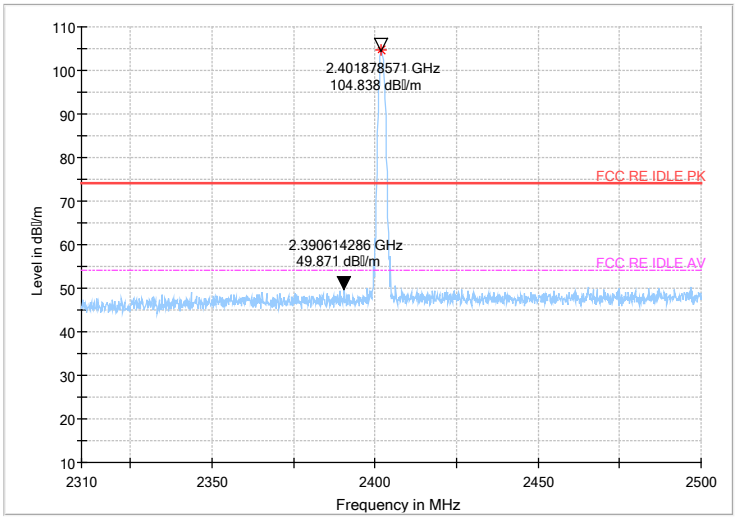


Fig.53 Radiated emission (Power): 8DPSK, low channel

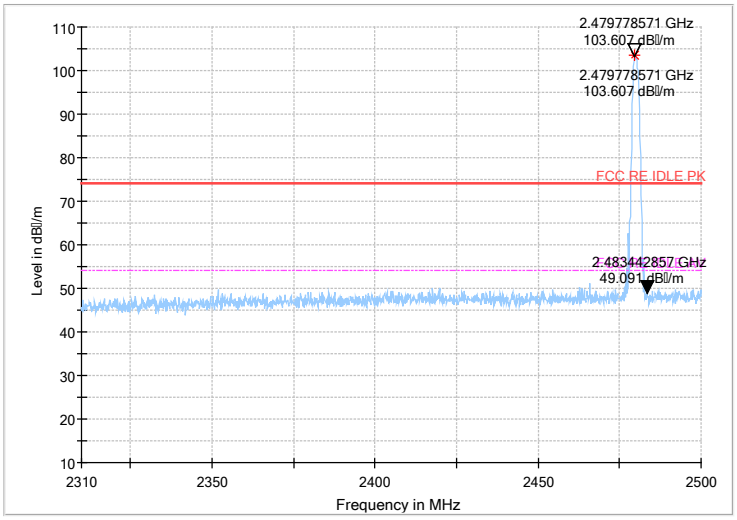


Fig.54 Radiated emission (Power): 8DPSK, high channel

Main Supply(2G+16G)

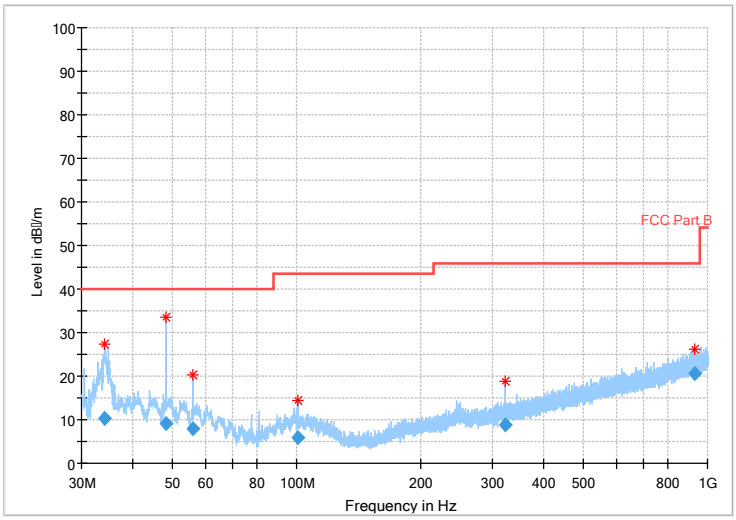


Fig.55 Radiated emission: 8DPSK, Ch0, 30MHz~1GHz

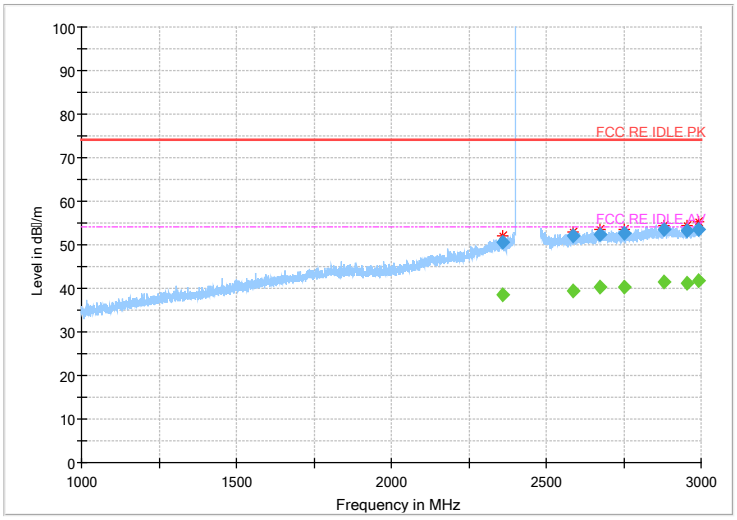


Fig.56 Radiated emission: 8DPSK, Ch0, 1GHz~3GHz

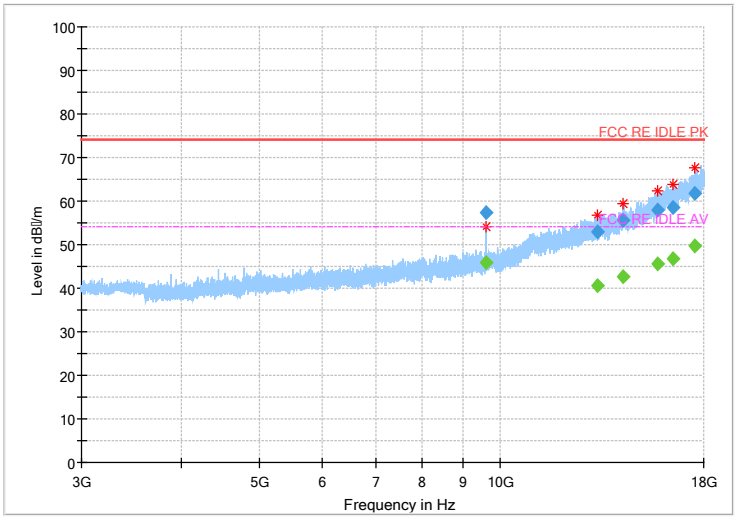


Fig.57 Radiated emission: 8DPSK, Ch0, 3GHz~18GHz

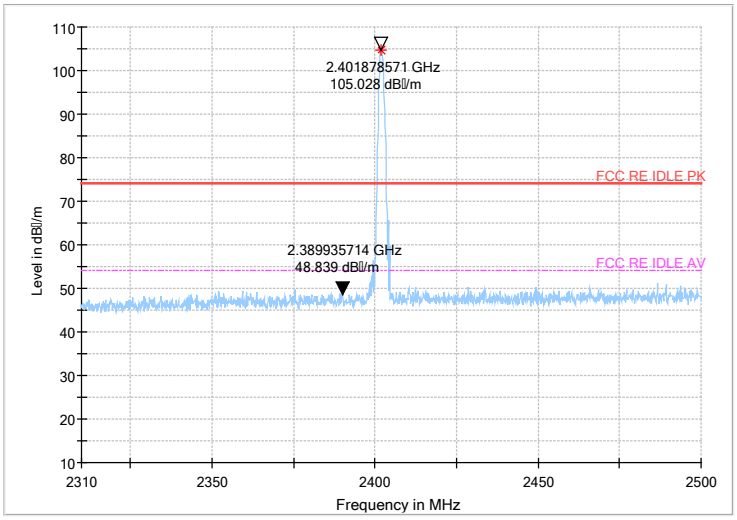
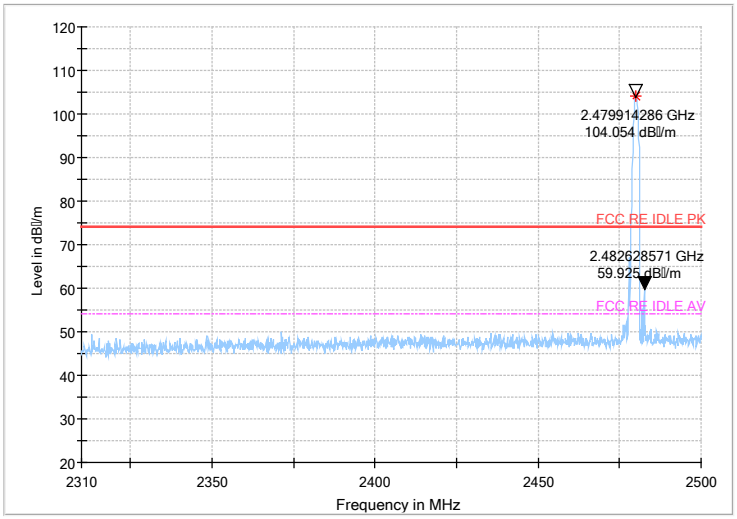


Fig.58 Radiated emission (Power): 8DPSK, low channel



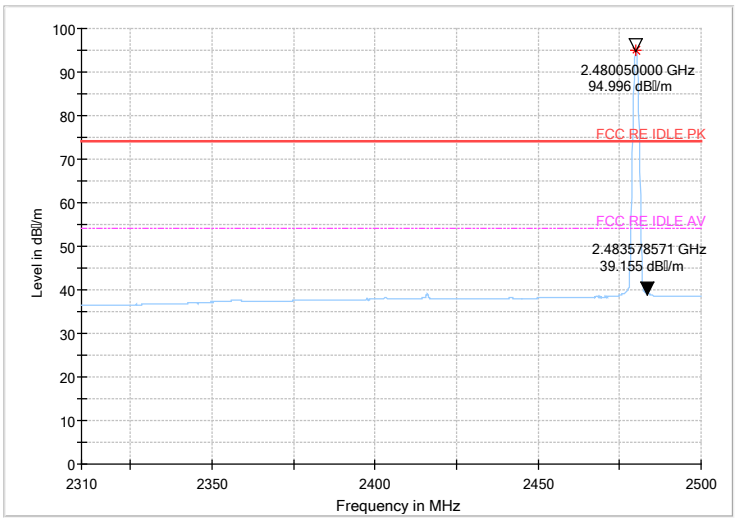


Fig.59 Radiated emission (Power): 8DPSK, high channel

Second Supply(3G+32G)

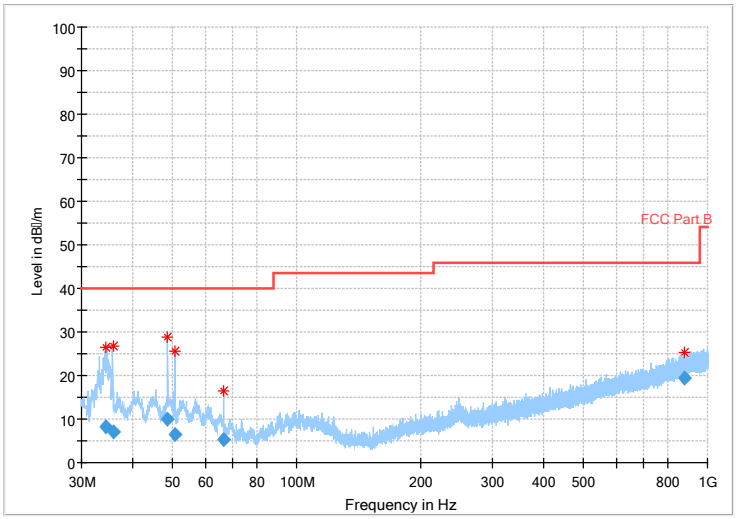


Fig.60 Radiated emission: 8DPSK, Ch0, 30MHz~1GHz

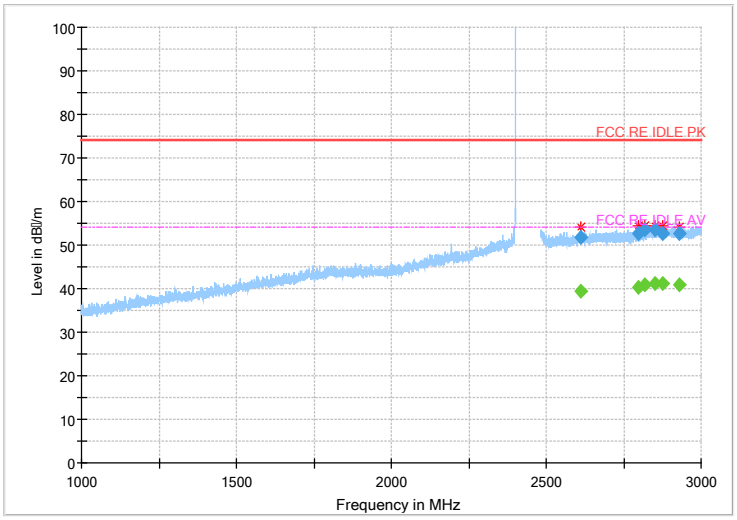


Fig.61 Radiated emission: 8DPSK, Ch0, 1GHz~3GHz

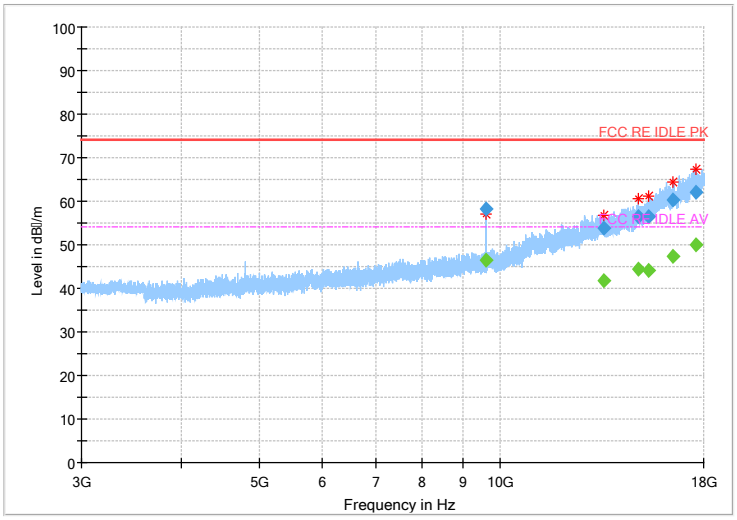


Fig.62 Radiated emission: 8DPSK, Ch0, 3GHz~18GHz

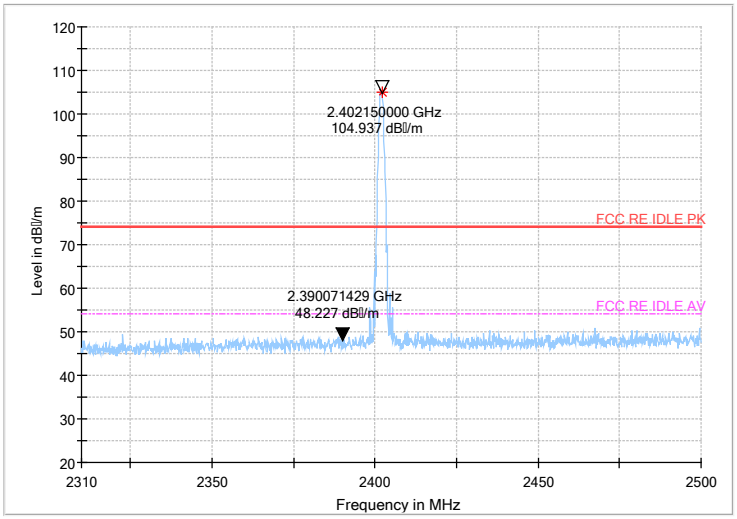


Fig.63 Radiated emission (Power): 8DPSK, low channel

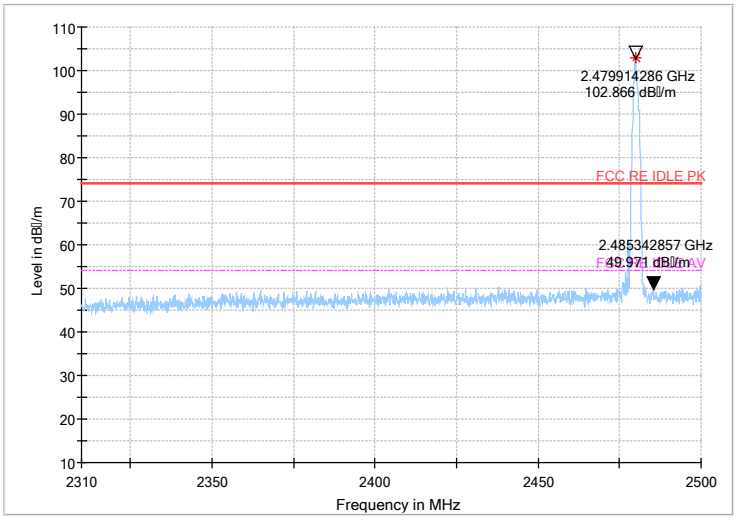


Fig.64 Radiated emission (Power): 8DPSK, high channel

Second Supply(2G+16G)

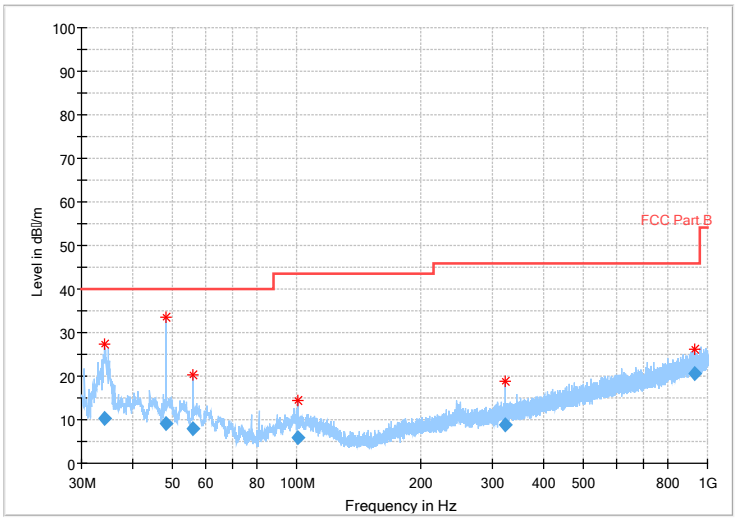


Fig.65 Radiated emission: 8DPSK, Ch0, 30MHz~1GHz

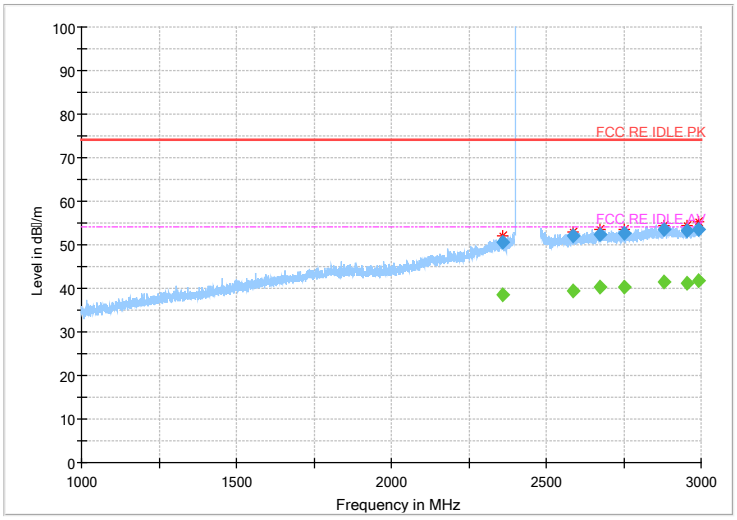


Fig.66 Radiated emission: 8DPSK, Ch0, 1GHz~3GHz

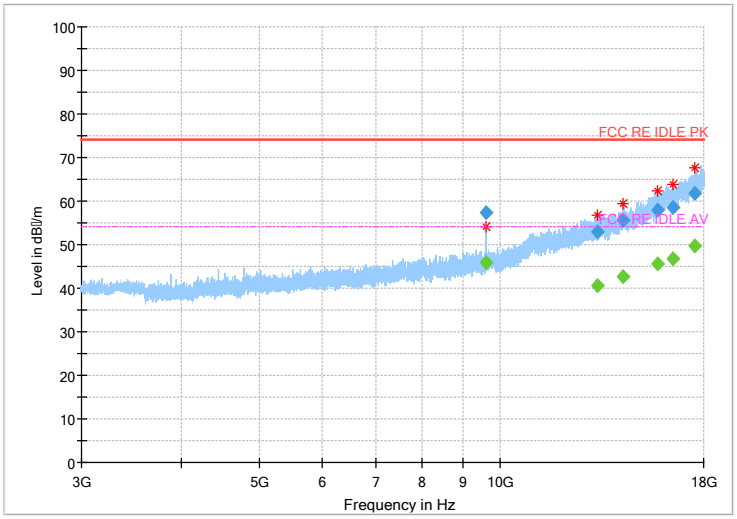


Fig.67 Radiated emission: 8DPSK, Ch0, 3GHz~18GHz

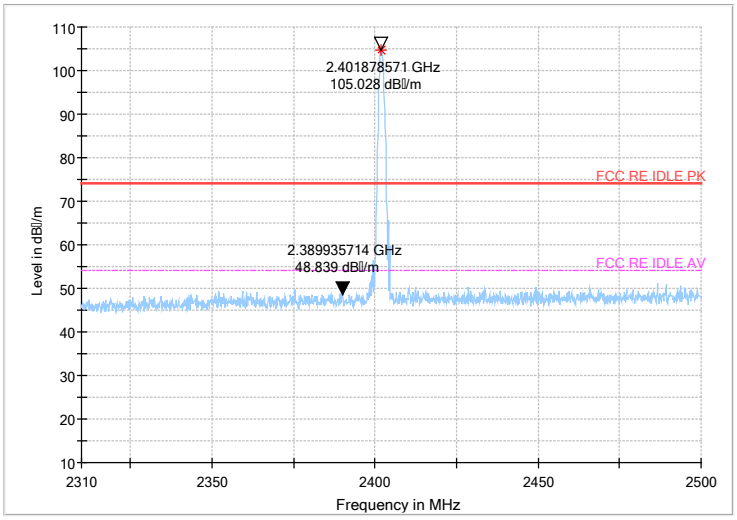
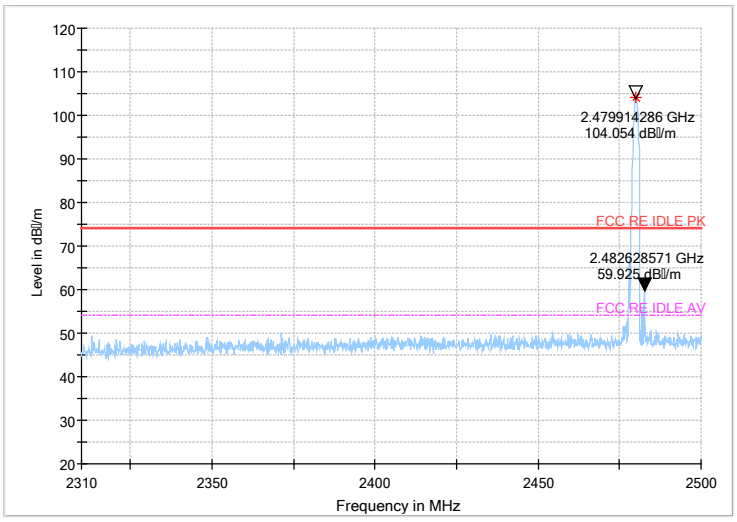


Fig.68 Radiated emission (Power): 8DPSK, low channel



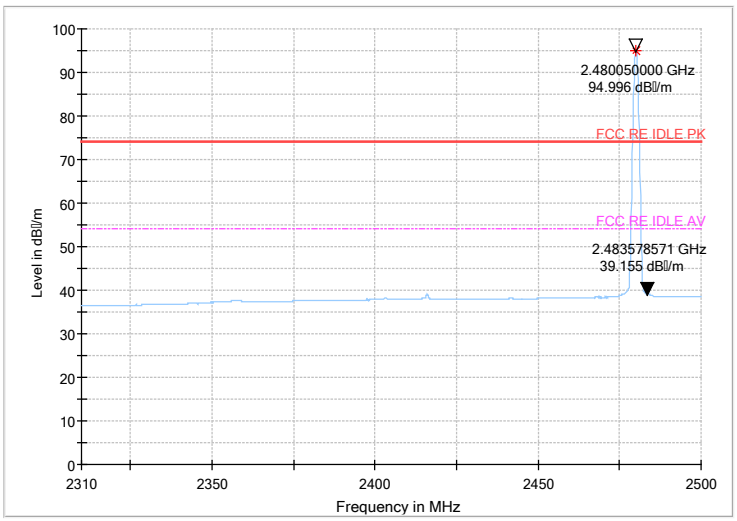


Fig.69 Radiated emission (Power): 8DPSK, high channel

6.5. Time Of Occupancy (Dwell Time)

6.5.1 Measurement Limit:

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

6.5.2 Test procedures

The measurement is according to ANSI C63.10 clause 7.8.4

1. Connect the EUT through cable and divide with CBT32 and spectrum analyzer.
2. Enable the EUT transmit maximum power.
3. Set the spectrum analyzer as step 4 to step 8.
4. Span: Zero span, centered on a hopping channel.
5. RBW shall be ≤ channel spacing and where possible RBW should be set >> 1 / T, where T is the expected dwell time per channel.
6. Sweep: As necessary to capture the entire dwell time per hopping channel; where possible use a video trigger and trigger delay so that the transmitted signal starts a little to the right of the start of the plot. The trigger level might need slight adjustment to prevent triggering when the system hops on an adjacent channel; a second plot might be needed with a longer sweep time to showtwo successive hops on a channel.
7. Detector function: Peak.
8. Trace: Max hold.
9. Use the marker-delta function, and record it.

6.5.3 Measurement Result

For GFSK

Channel	Packet	Dwell Time (ms)		Conclusion
39	DH1	Fig 70.	120.08	P
		Fig 71.		
	DH3	Fig 72.	298.29	P
		Fig 73.		
	DH5	Fig 74.	290.88	P
		Fig 75.		

For π/4 DQPSK

Channel	Packet	Dwell Time (ms)		Conclusion
39	2DH1	Fig 76.	120.08	P

		Fig 77.		
	2DH3	Fig 78.	257.54	P
		Fig 79.		
	2DH5	Fig 80.	308.16	P
		Fig 81.		

For 8DPSK

Channel	Packet	Dwell Time (ms)		Conclusion
39	3DH1	Fig 82.	117.42	P
		Fig 83.		
	3DH3	Fig 84.	286.88	P
		Fig 85.		
	3DH5	Fig 86.	270.72	P
		Fig 87.		

Conclusion: PASS

Test graphs as below:

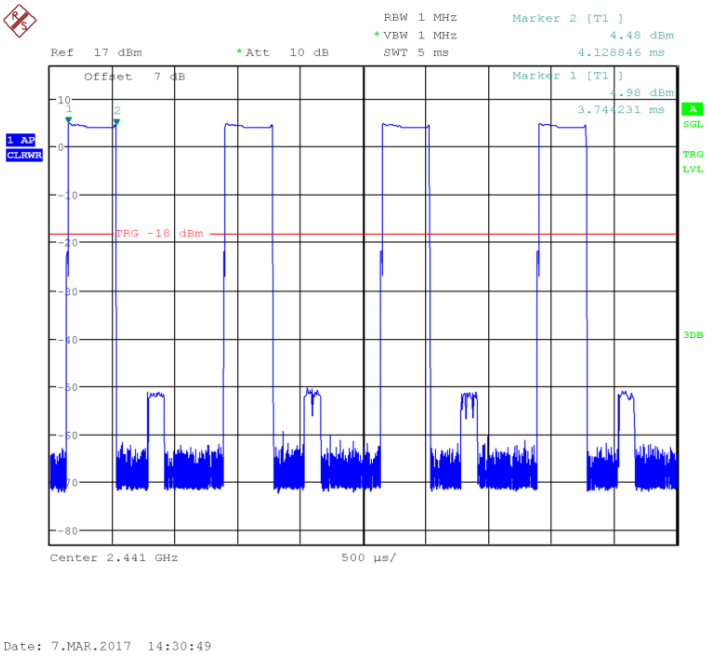


Fig 70. Time of occupancy (Dwell Time): Ch39, Packet DH1

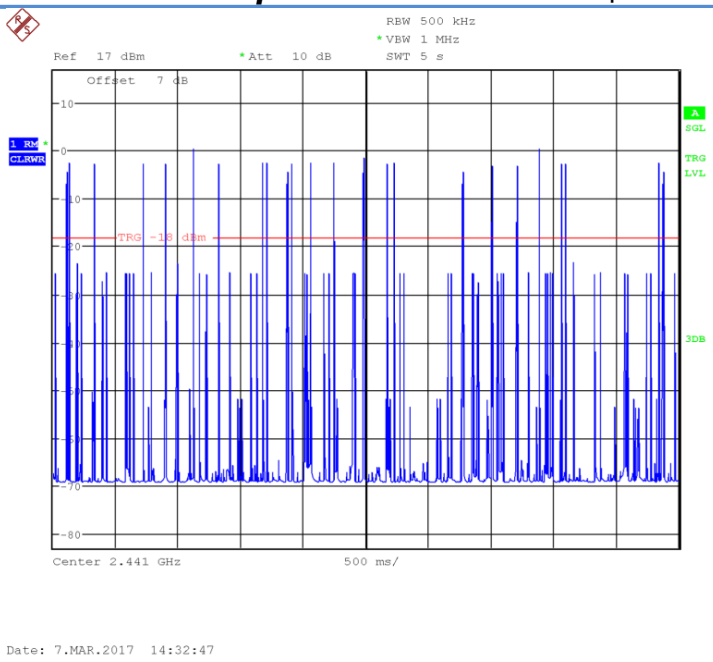


Fig 71. Number of Transmissions Measurement: Ch39, Packet DH1

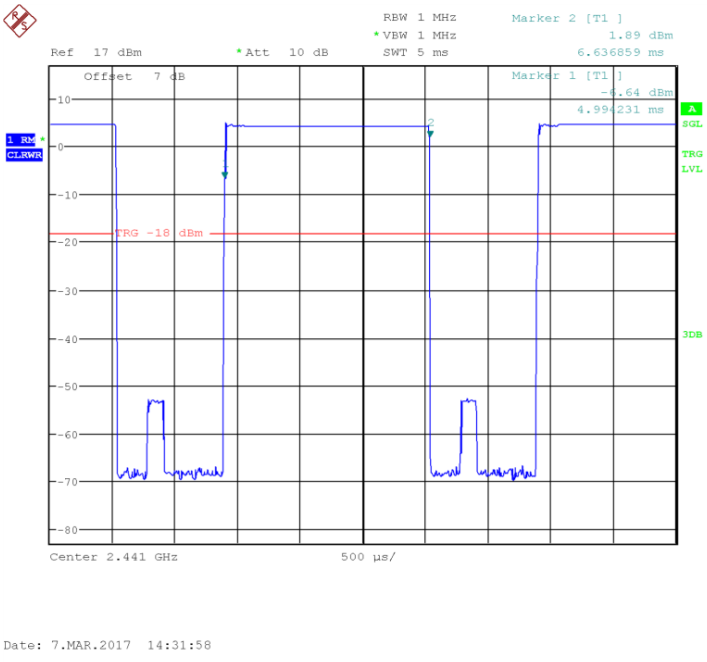


Fig 72. Time of occupancy (Dwell Time): Ch39, Packet DH3

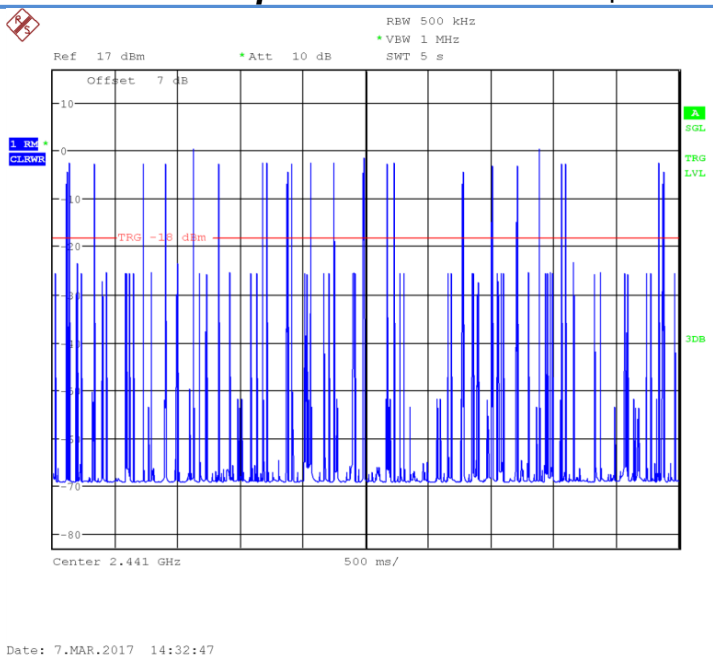


Fig 73. Number of Transmissions Measurement: Ch39, Packet DH3

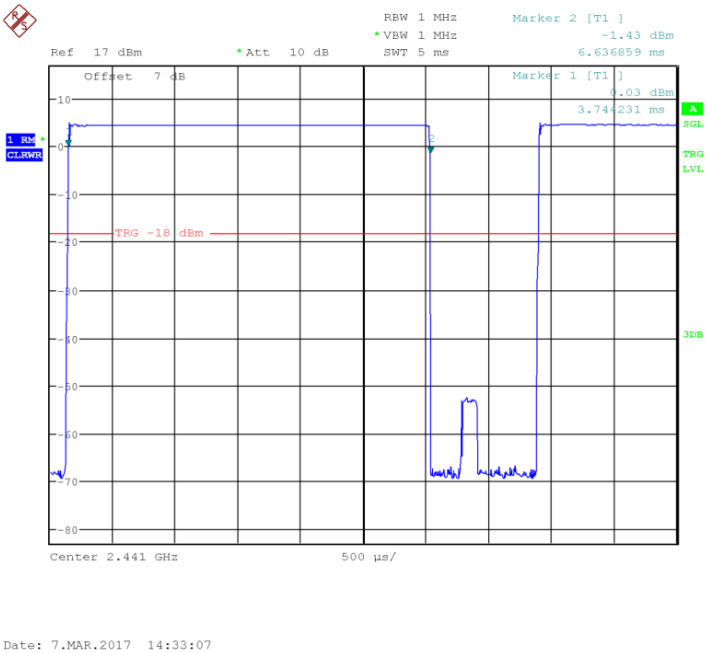


Fig 74. Time of occupancy (Dwell Time): Ch39,Packet DH5

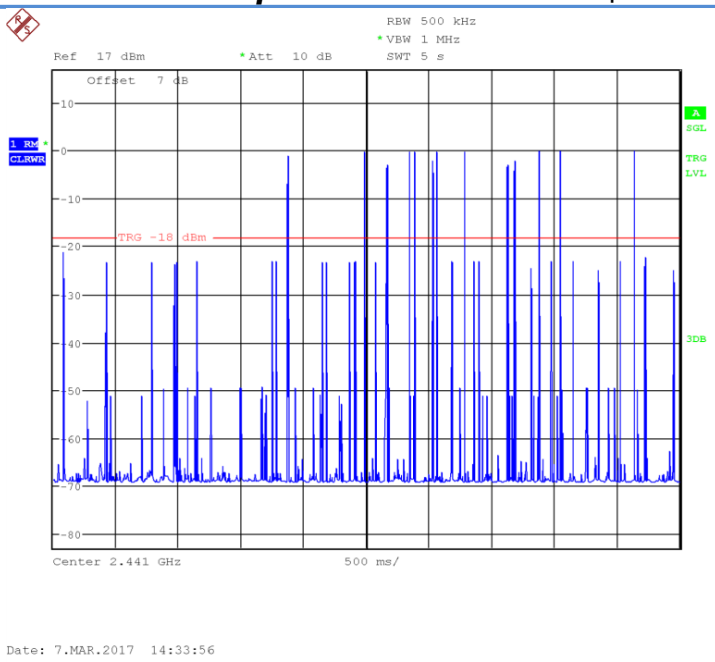


Fig 75. Number of Transmissions Measurement: Ch39, Packet DH5

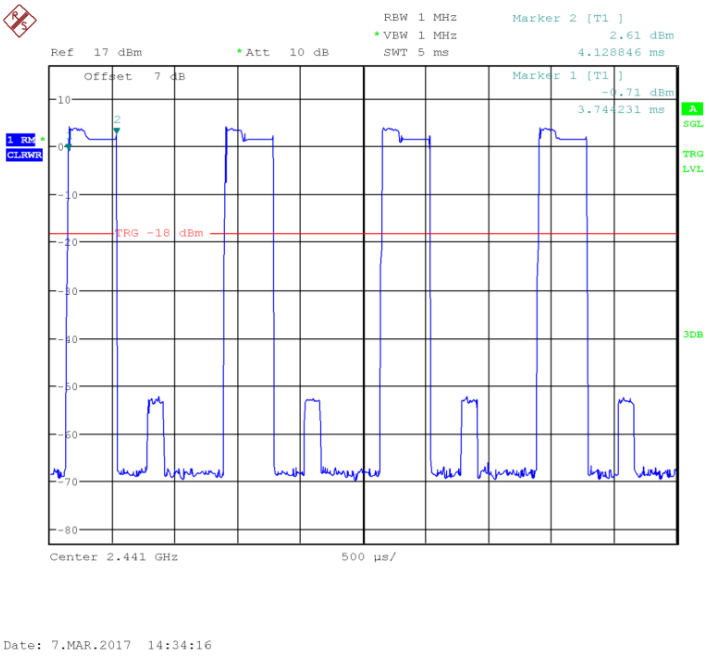


Fig 76. Time of occupancy (Dwell Time): Ch39, Packet 2-DH1

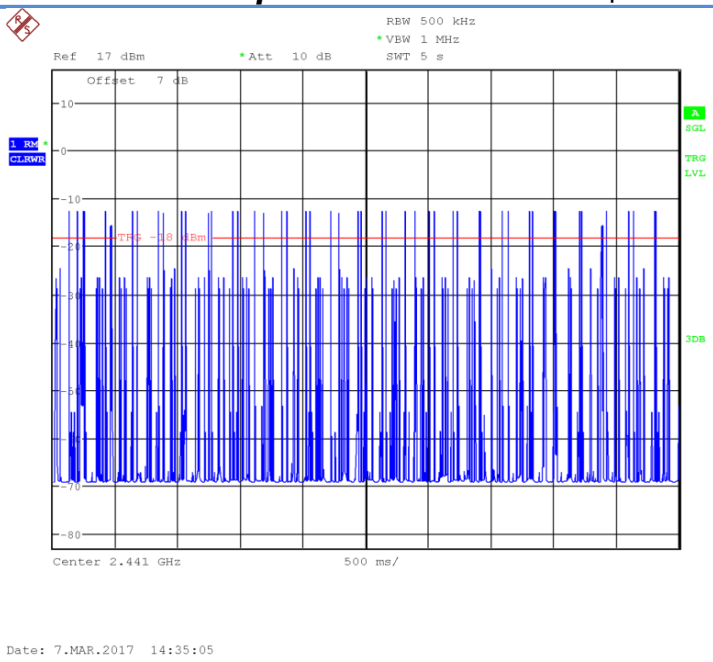


Fig 77. Number of Transmissions Measurement: Ch39, Packet 2-DH1

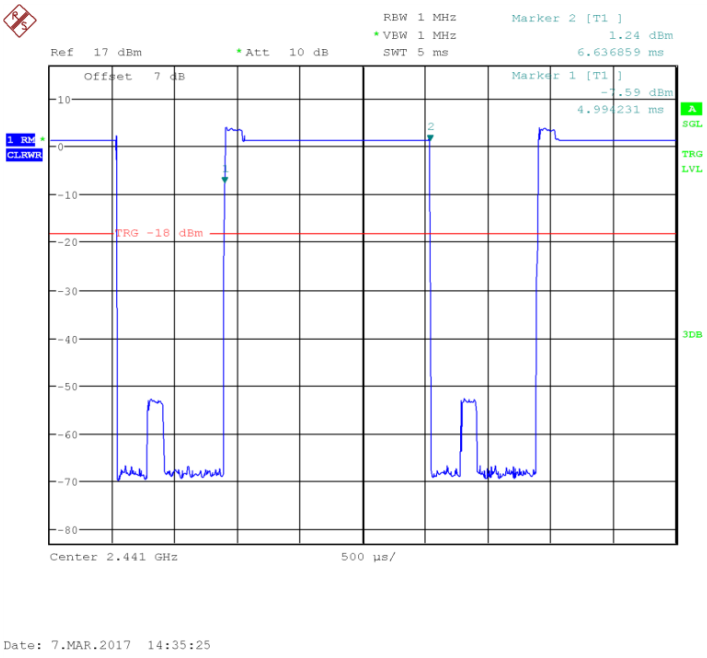


Fig 78. Time of occupancy (Dwell Time): Ch39,Packet 2-DH3

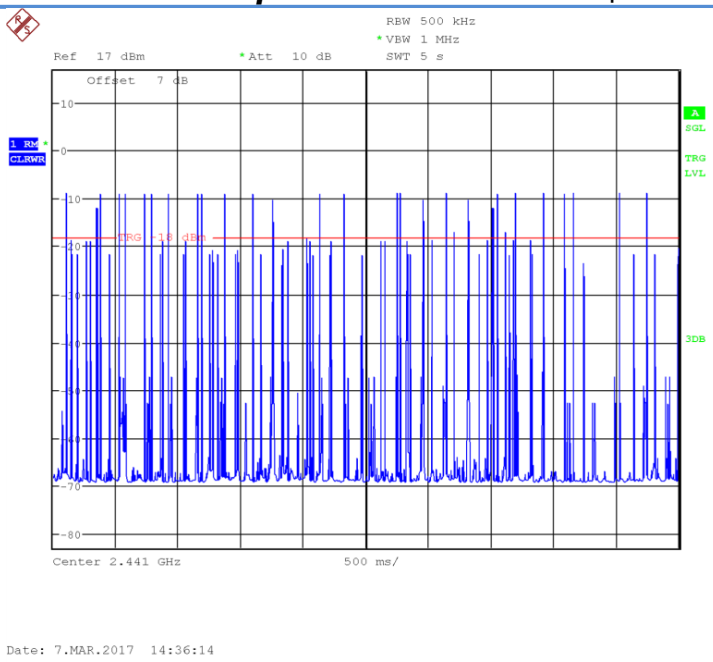


Fig 79. Number of Transmissions Measurement: Ch39, Packet 2-DH3

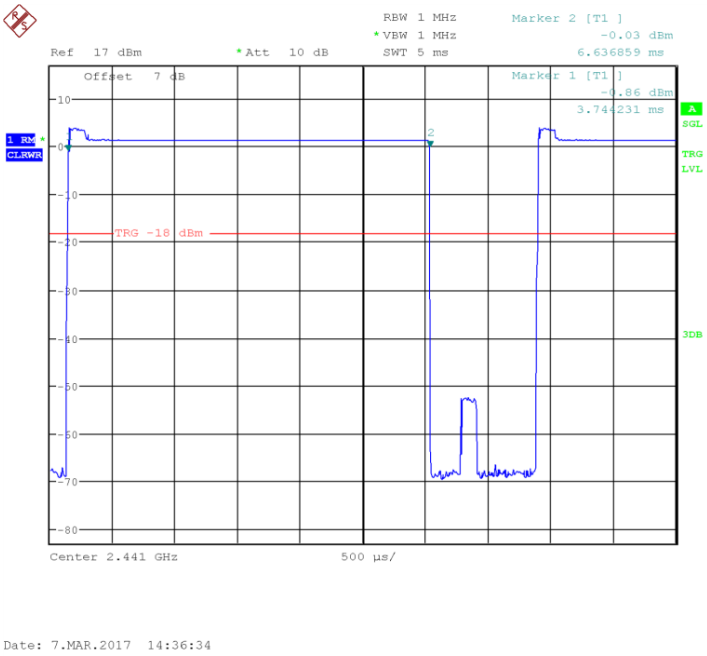


Fig 80. Time of occupancy (Dwell Time): Ch39, Packet 2-DH5

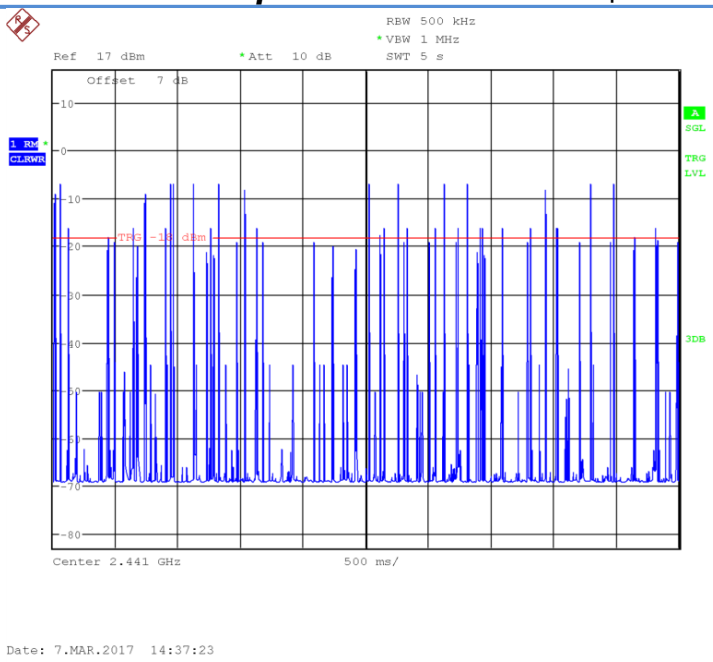


Fig 81. Number of Transmissions Measurement: Ch39, Packet 2-DH5

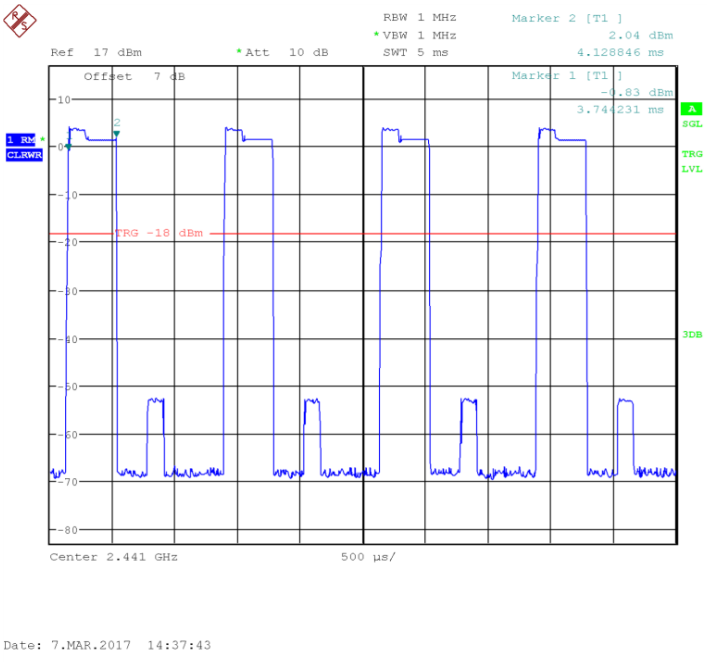


Fig 82. Time of occupancy (Dwell Time): Ch39,Packet 3-DH1

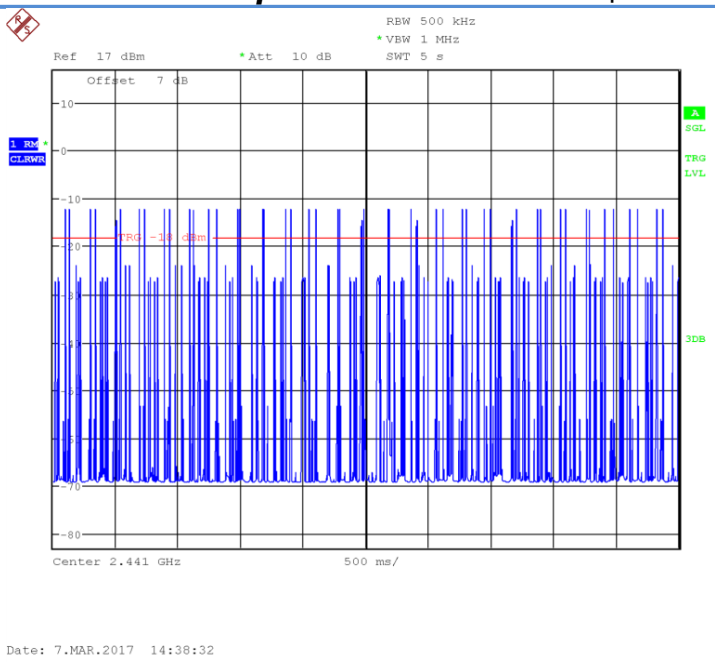


Fig 83. Number of Transmissions Measurement: Ch39, Packet 3-DH1

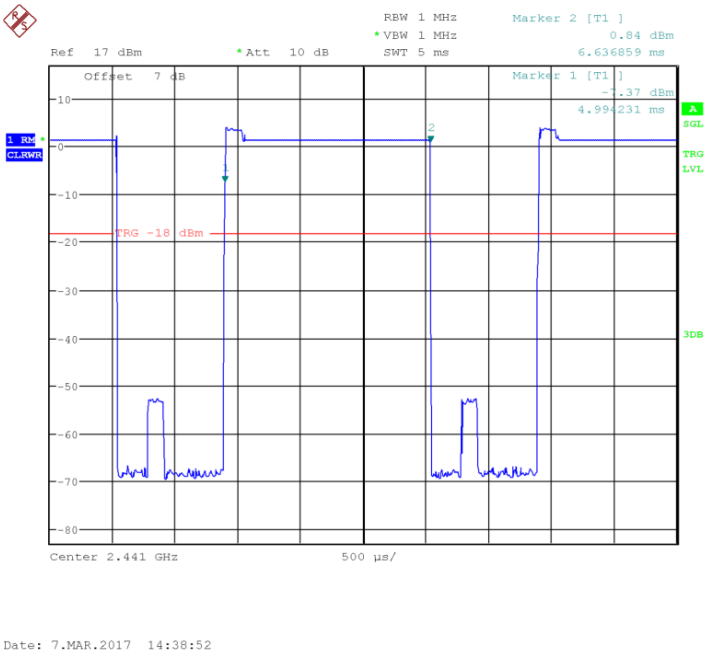


Fig 84. Time of occupancy (Dwell Time): Ch39,Packet 3-DH3

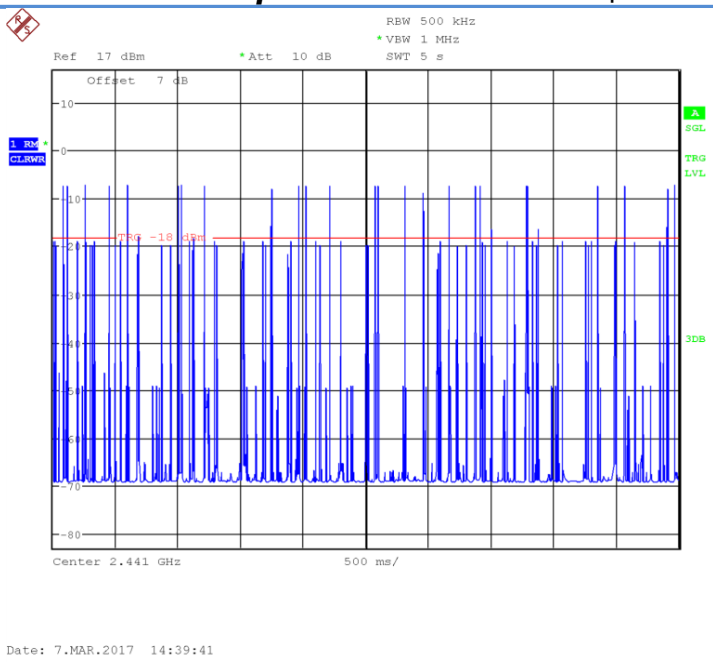


Fig 85. Number of Transmissions Measurement: Ch39, Packet 3-DH3

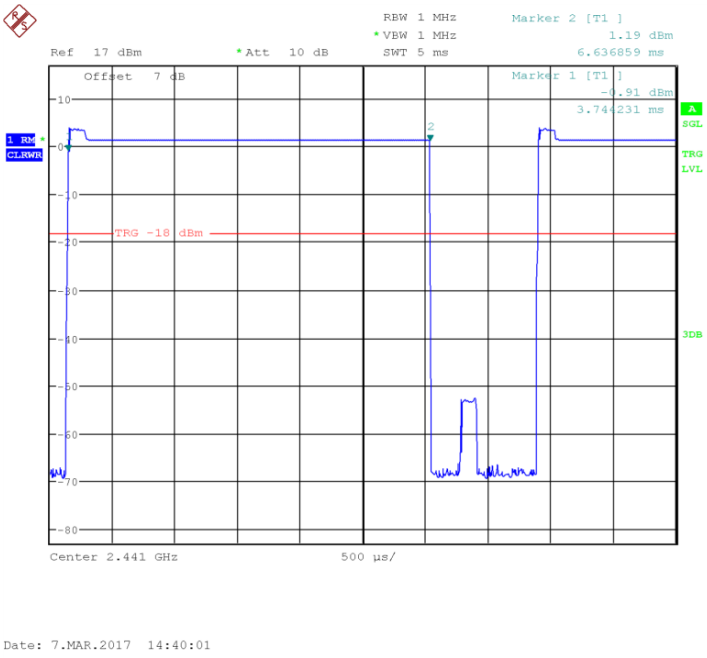


Fig 86. Time of occupancy (Dwell Time): Ch39,Packet 3-DH5

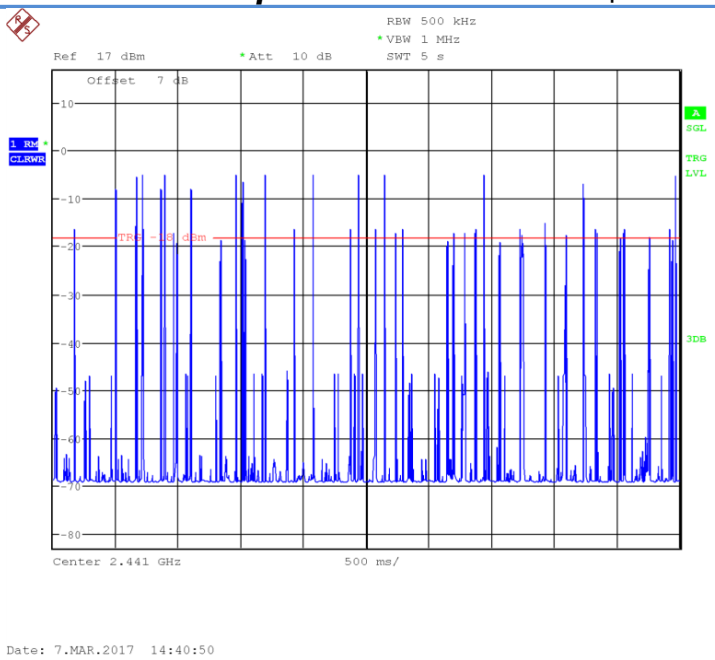


Fig 87. Number of Transmissions Measurement: Ch39, Packet 3-DH5

6.6. 20dB Bandwidth

6.6.1 Measurement Limit:

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

6.6.2 Test procedures

The measurement is according to ANSI C63.10 clause 7.8.7

1. Connect the EUT through cable and divide with CBT32 and spectrum analyzer.
2. Enable the EUT transmit maximum power.
3. Set the spectrum analyzer as step 4 to step 7.
4. Span: two or five times of OBW
5. RBW= 1% to 5% of the OBW; VBW≥3RBW; Max Hold.
6. Select the max peak, and N DB DOWN=20dB.
7. Record the results.

Measurement Result:

For GFSK

Channel	20dB Bandwidth (MHz)		Conclusion
0	Fig 88.	1.029	P
39	Fig 89.	1.029	P

78	Fig 90.	1.029	P

For π/4 DQPSK

Channel	20dB Bandwidth (MHz)		Conclusion
0	Fig 91.	1.096	P
39	Fig 92.	1.096	P
78	Fig 93.	1.096	P

For 8DPSK

Channel	20dB Bandwidth (MHz)		Conclusion
0	Fig 94.	1.173	P
39	Fig 95.	1.173	P
78	Fig 96.	1.173	P

Conclusion: PASS

Test graphs as below:

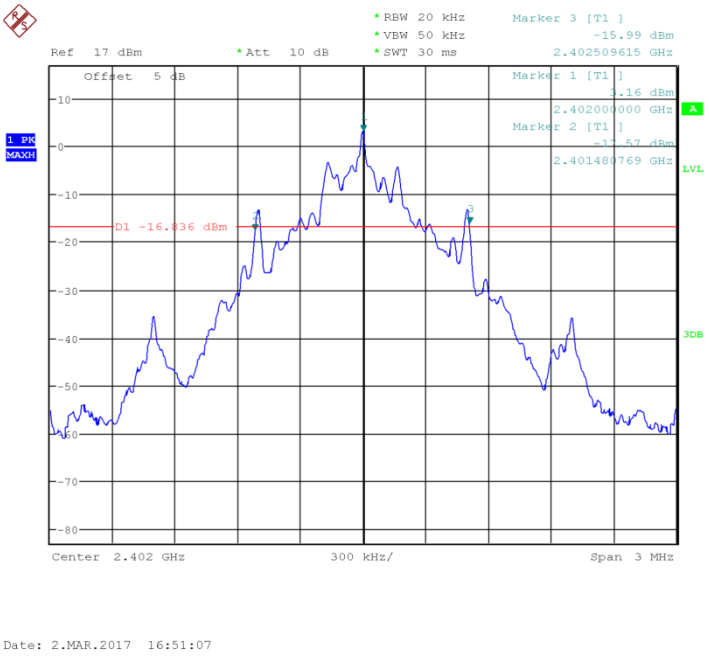


Fig 88. 20dB Bandwidth: GFSK, Ch0

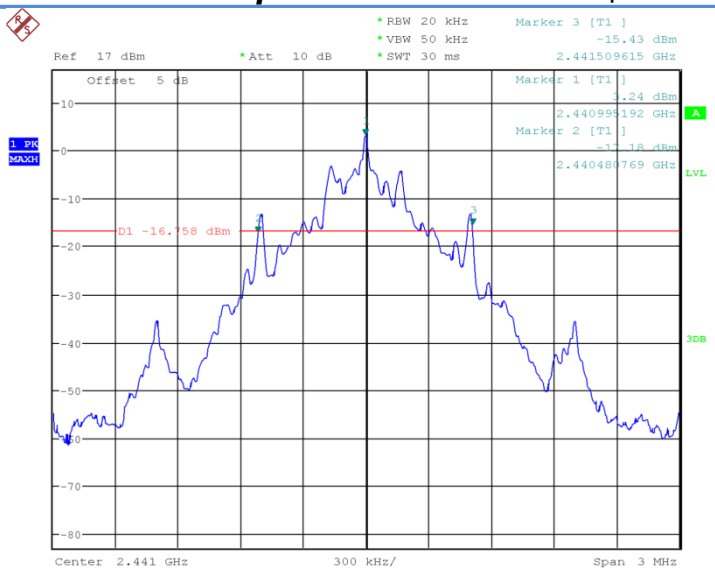


Fig 89. 20dB Bandwidth: GFSK, Ch39

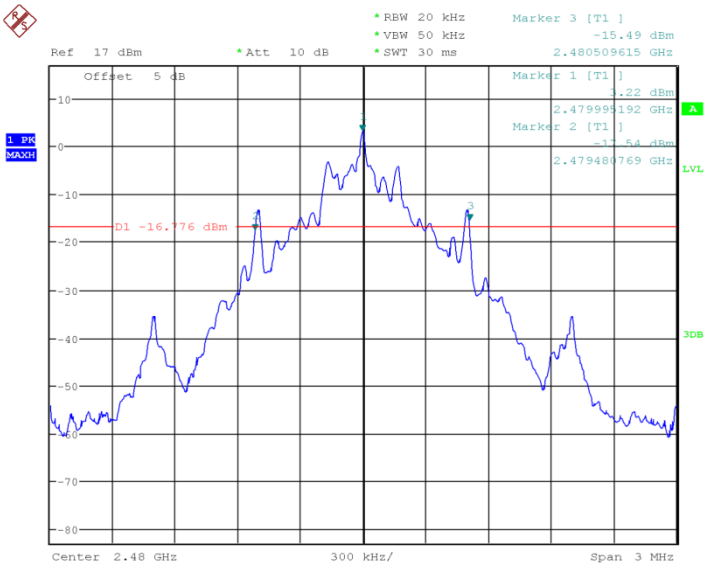


Fig 90. 20dB Bandwidth: GFSK, Ch78

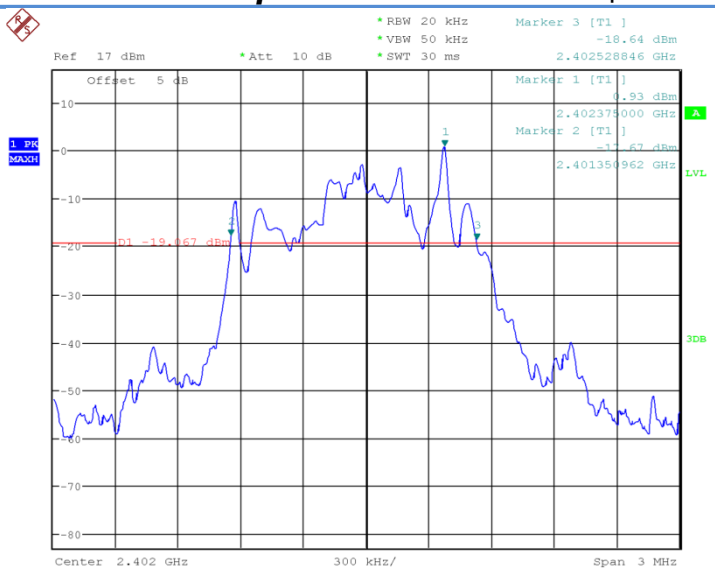


Fig 91. 20dB Bandwidth: π/4 DQPSK, Ch0

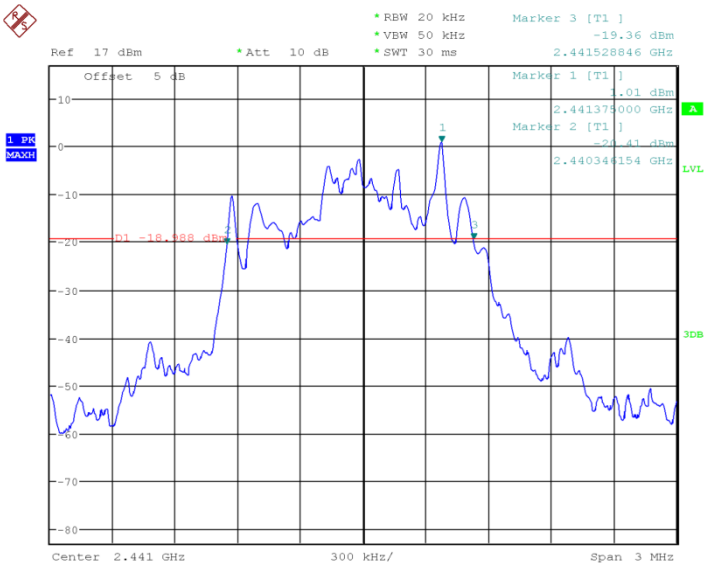


Fig 92. 20dB Bandwidth: π/4 DQPSK, Ch39

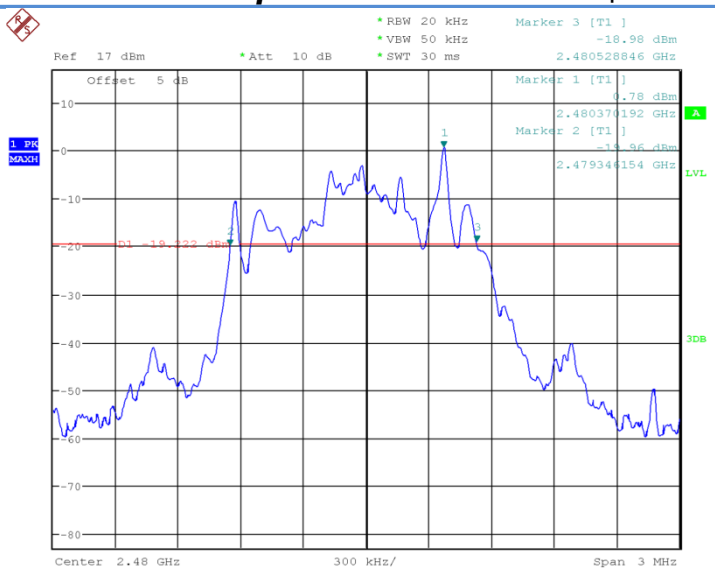


Fig 93. 20dB Bandwidth: π/4 DQPSK, Ch78

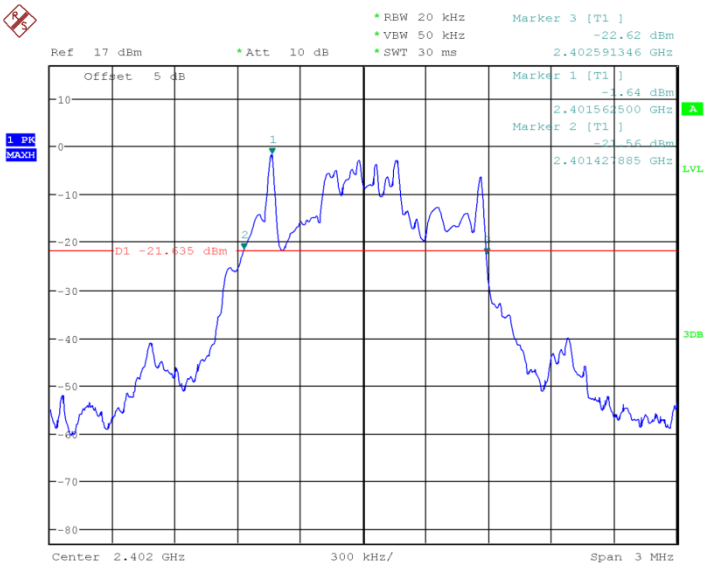


Fig 94. 20dB Bandwidth: 8DPSK, Ch0

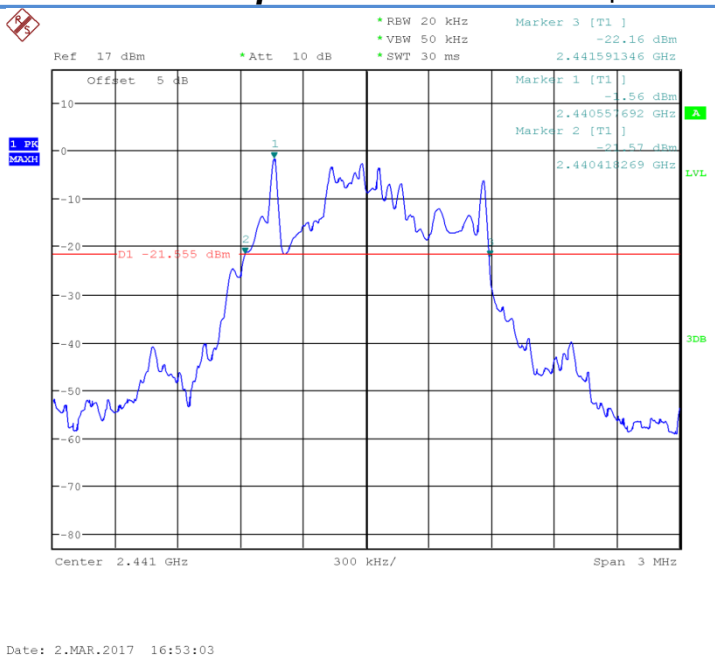


Fig 95. 20dB Bandwidth: 8DPSK, Ch39

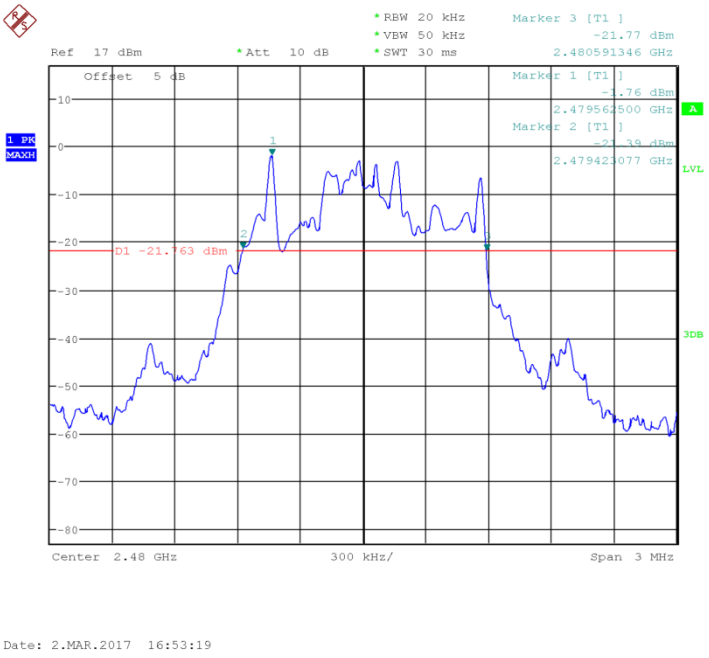


Fig 96. 20dB Bandwidth: 8DPSK, Ch78

6.7. Carrier Frequency Separation

6.7.1 Measurement Limit:

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

6.7.2 Test procedures

The measurement is according to ANSI C63.10 clause 7.8.2.

1. Connect the EUT through cable and divide with CBT32 and spectrum analyzer.
2. Enable the EUT transmit in hopping mode.
3. Span: Wide enough to capture the peaks of two adjacent channels.
4. RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel.
5. Video (or average) bandwidth (VBW) ≥ RBW.
6. Sweep: Auto.
7. Detector function: Peak.
8. Trace: Max hold.
9. Allow the trace to stabilize.

6.7.3 Measurement Result:

For GFSK

Channel	Carrier separation (KHz)		Conclusion
39	Fig 97.	1014.4231	P

For π/4 DQPSK

Channel	Carrier separation (KHz)		Conclusion
39	Fig 98.	1014.4231	P

For 8DPSK

Channel	Carrier separation (KHz)		Conclusion
39	Fig 99.	1000	P

Conclusion: PASS

Test graphs as below:

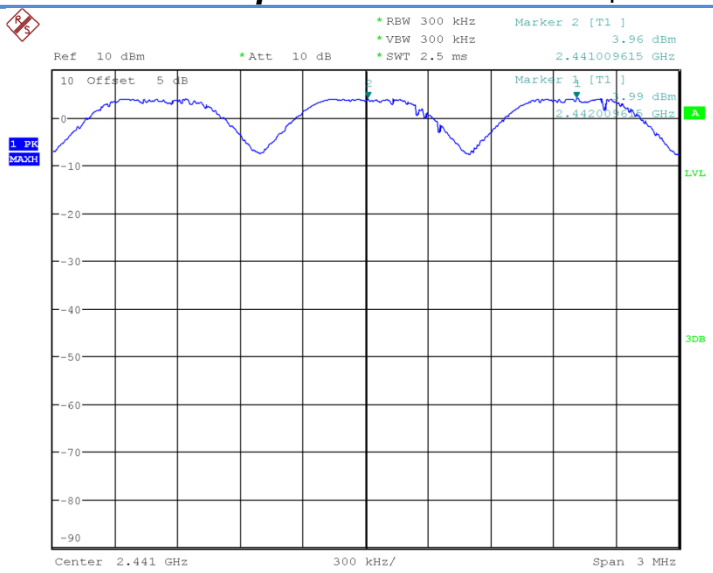


Fig 97. Carrier separation measurement: GFSK, Ch39

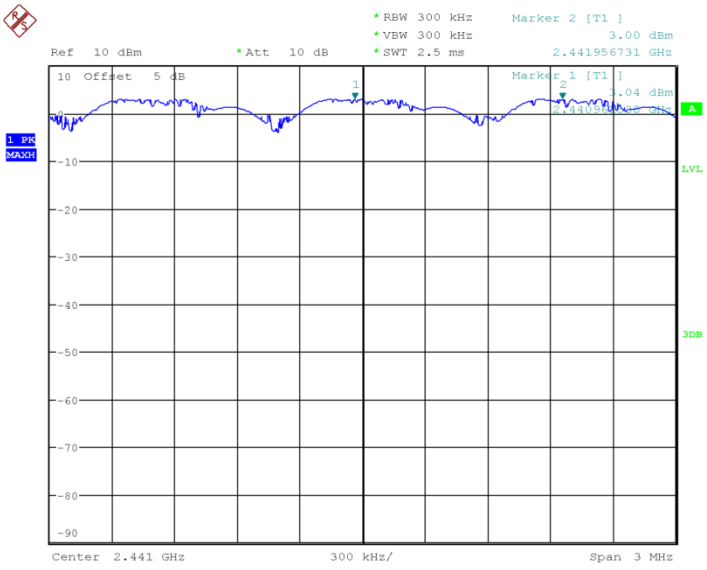


Fig 98. Carrier separation measurement: π/4 DQPSK, Ch39

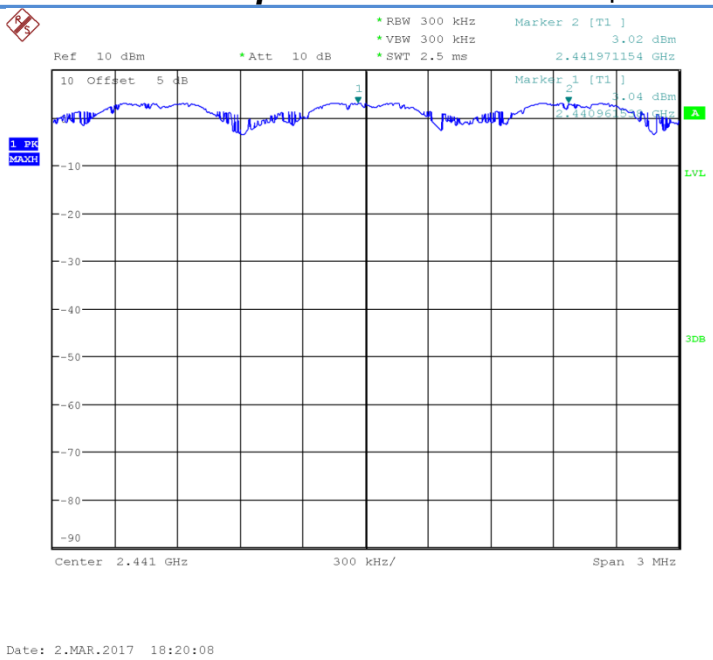


Fig 99. Carrier separation measurement: 8DPSK, Ch39

6.8. Number Of Hopping Channels

6.8.1 Measurement Limit:

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

6.8.2 Test procedure

The measurement is according to ANSI C63.10 clause 7.8.3.

1. Connect the EUT through cable and divide with CBT32 and spectrum analyzer.
2. Enable the EUT transmit in hopping mode.
3. Span: The frequency band of operation. Depending on the number of channels the device supports, it may be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
4. RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
5. VBW ⩾ RBW.
6. Sweep: Auto.
7. Detector function: Peak.
8. Trace: Max hold.
9. Allow the trace to stabilize.
10. Record the test rsults.

6.8.3 Measurement Result:

For GFSK

Channel	Number of hopping channels		Conclusion
0~39	Fig 100.	79	P
40~78	Fig 101.		P

For π/4 DQPSK

Channel	Number of hopping channels		Conclusion
0~39	Fig 102.	79	P
40~78	Fig 103.		P

For 8DPSK

Channel	Number of hopping channels		Conclusion
0~39	Fig 104.	79	P
40~78	Fig 105.		P

Conclusion: PASS

Test graphs as below:

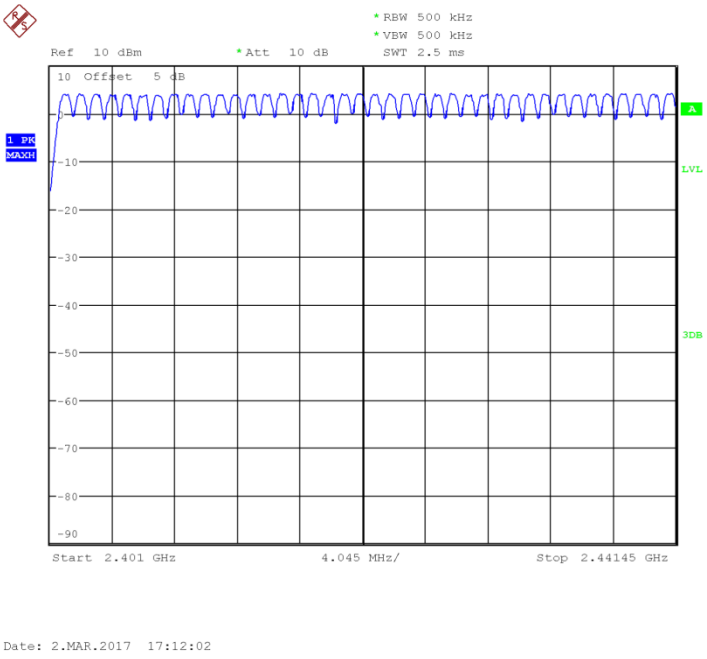


Fig 100. Number of hopping frequency: GFSK, Ch0~39

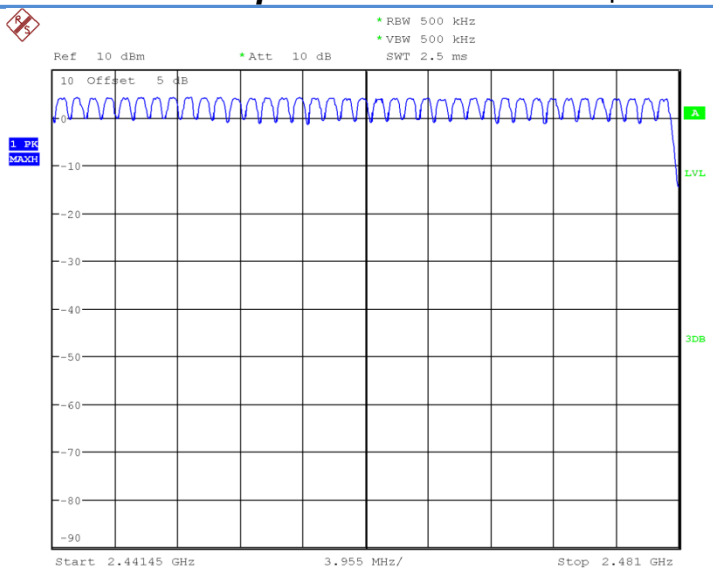


Fig 101. Number of hopping frequency: GFSK, Ch40~78

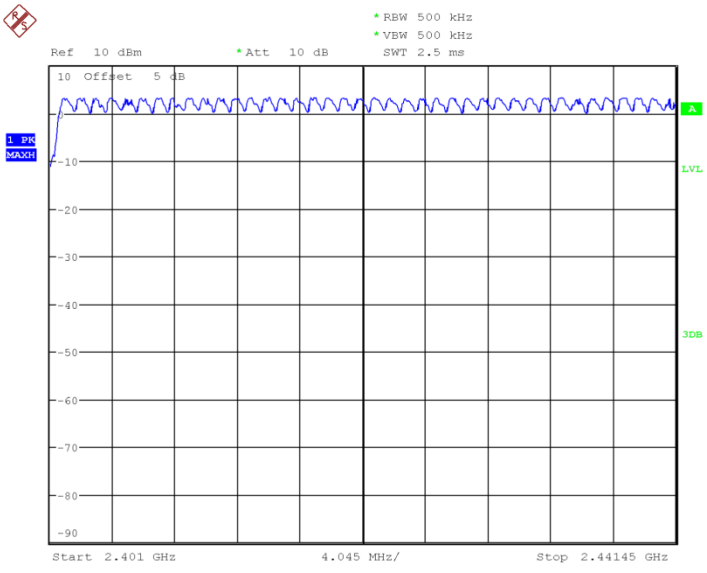


Fig 102. Number of hopping frequency: π/4 DQPSK, Ch0~39

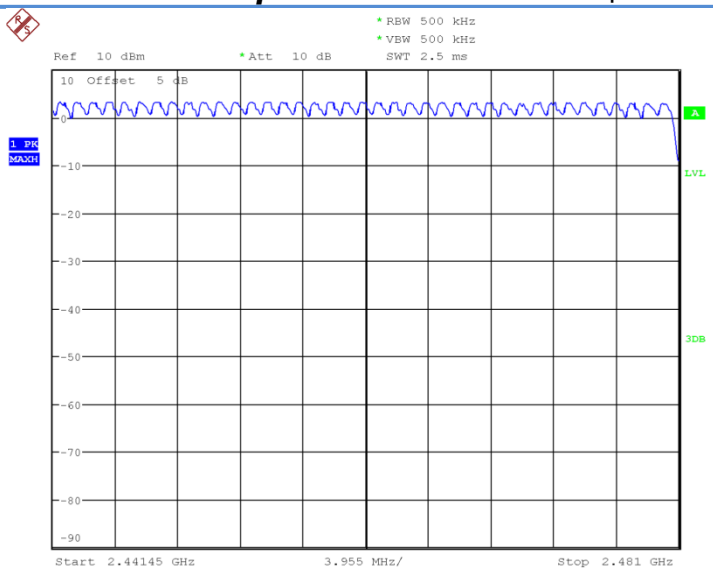


Fig 103. Number of hopping frequency: π/4 DQPSK, Ch40~78

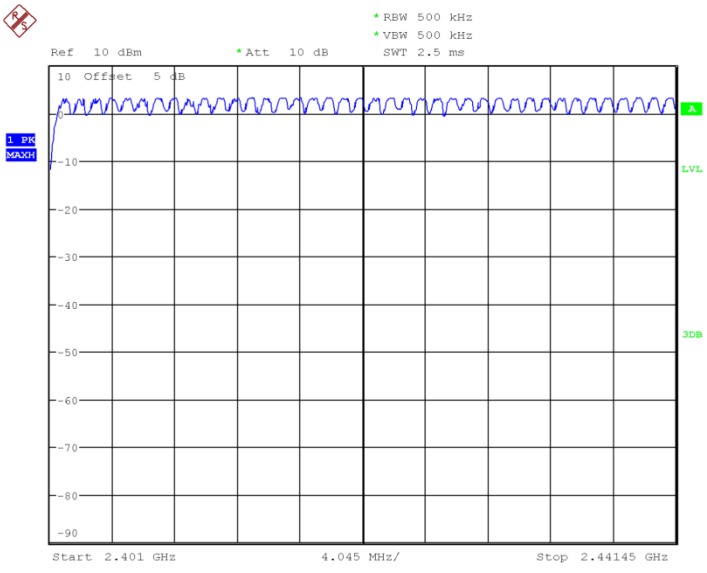


Fig 104. Number of hopping frequency: 8DPSK, Ch0~39

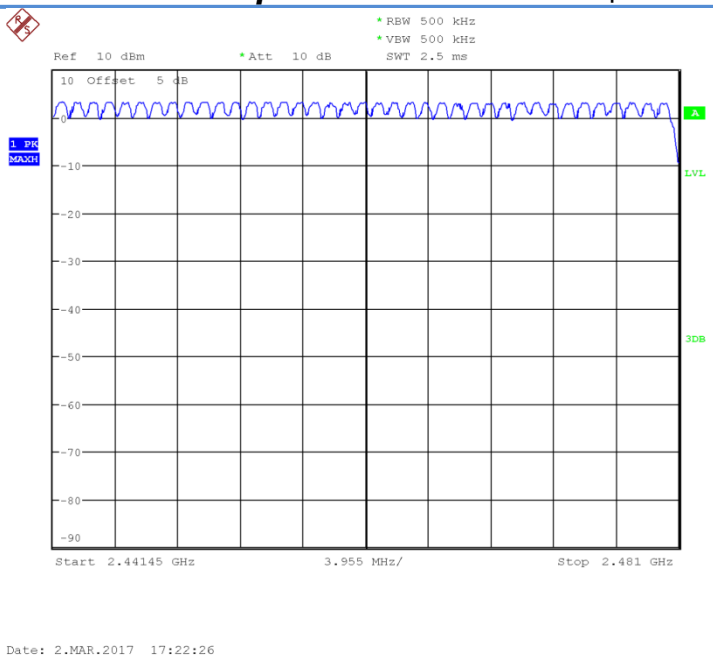


Fig 105. Number of hopping frequency: 8DPSK, Ch40~78

6.9. AC Powerline Conducted Emission

Method of Measurement: See ANSI C63.10-2013-clause 6.2

1 The one EUT cable configuration and arrangement and mode of operation that produced the emission with the highest amplitude relative to the limit is selected for the final measurement, while applying the appropriate modulating signal to the EUT.

2 If the EUT is relocated from an exploratory test site to a final test site, the highest emissions shall be remaximized at the final test location before final ac power-line conducted emission measurements are performed.

3 The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment in the system) is then performed for the full frequency range for which the EUT is being tested for compliance without further variation of the EUT arrangement, cable positions, or EUT mode of operation.

4 If the EUT is comprised of equipment units that have their own separate ac power connections, e.g., floor-standing equipment with independent power cords for each shelf that are able to connect directly to the ac power network, each current-carrying conductor of one unit is measured while the other units are connected to a second (or more) LISN(s). All units shall be separately measured. If a power strip is provided by the manufacturer, to supply all of the units making up the EUT, only the conductors in the power cord of the power strip shall be measured.

If the EUT uses a detachable antenna, these measurements shall be made with a suitable dummy load connected to the antenna output terminals; otherwise, the tests shall be made with the antenna connected and, if adjustable, fully extended. When measuring the ac conducted emissions from a device that operates between 150 kHz and 30 MHz a non-detachable antenna may be replaced with a dummy load for the measurements

within the fundamental emission band of the transmitter, but only for those measurements.36 Record the six highest EUT emissions relative to the limit of each of the current-carrying conductors of the power cords of the equipment that comprises the EUT over the frequency range specified by the procuring or regulatory agency. Diagram or photograph the test setup that was used. See Clause 8 for full reporting requirements.

Test Condition:

Voltage（V）	Frequency（Hz）
120	60

Measurement Result and limit:

(Quasi-peak-average Limit)

First Supply

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Average Limit (dBμV)	Result (dBμV) With charger BT	Conclusion
0.15 to 0.5	66 to 56	56 to 46	Fig.106	P
0.5 to 5	56	46		
5 to 30	60	50		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

Conclusion: Pass

Main Supply(3+32G)

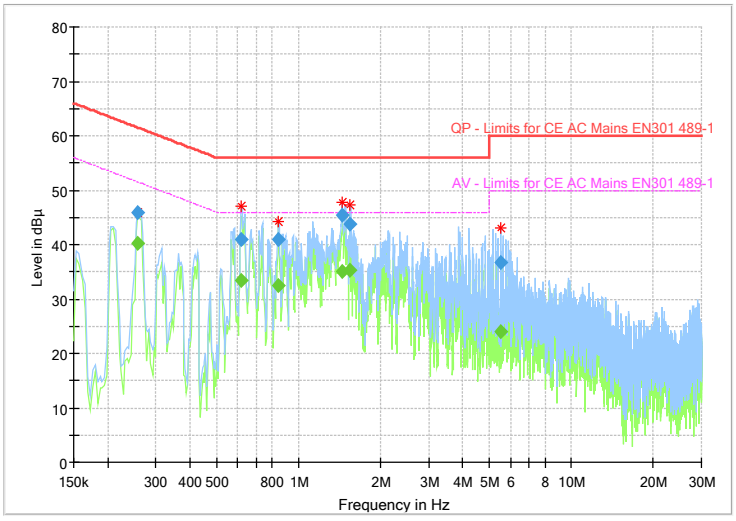


Fig.62 AC Powerline Conducted Emission

Frequency (MHz)	QuasiPeak (dB µ V)	Average (dB µ V)	Limit (dB µ	Margin (dB)	Meas. Time	Bandwidth (kHz)	Line	Filter	Corr. (dB)

0.258206	45.77	---	61.49	15.72	1000.0	9.000	N	ON	9.7
0.258206	---	40.25	51.49	11.24	1000.0	9.000	N	ON	9.7
0.616406	---	33.33	46.00	12.67	1000.0	9.000	N	ON	9.7
0.616406	40.83	---	56.00	15.17	1000.0	9.000	N	ON	9.7
0.844012	---	32.52	46.00	13.48	1000.0	9.000	L1	ON	9.7
0.844012	41.04	---	56.00	14.96	1000.0	9.000	L1	ON	9.7
1.448475	45.44	---	56.00	10.56	1000.0	9.000	L1	ON	9.7
1.448475	---	34.95	46.00	11.05	1000.0	9.000	L1	ON	9.7
1.549219	---	35.24	46.00	10.76	1000.0	9.000	L1	ON	9.7
1.549219	43.78	---	56.00	12.22	1000.0	9.000	L1	ON	9.7
5.504344	---	24.02	50.00	25.98	1000.0	9.000	L1	ON	9.7
5.504344	36.80	---	60.00	23.20	1000.0	9.000	L1	ON	9.7

Main Supply(2+16G)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Average Limit (dBμV)	Result (dBμV) With charger BT	Conclusion
0.15 to 0.5	67 to 56	56 to 46	Fig.63	P
0.5 to 5	56	46		
5 to 30	60	50		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

Conclusion: Pass

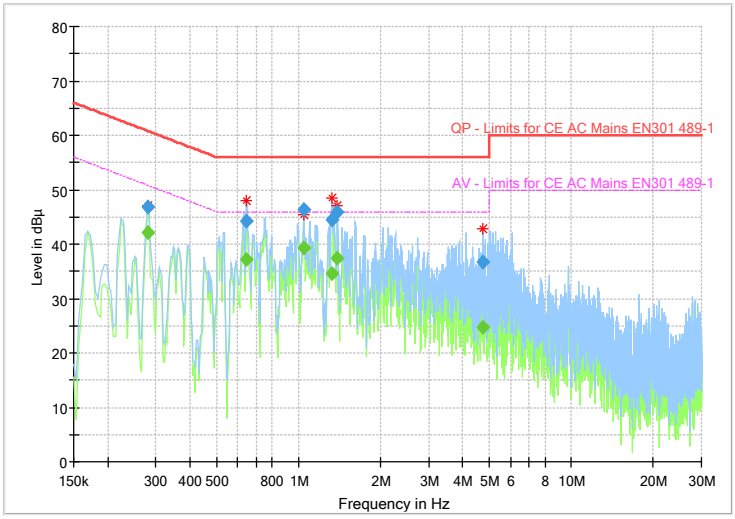


Fig.63 AC Powerline Conducted Emission

Frequency (MHz)	QuasiPeak (dB μ V)	Average (dB μ V)	Limit (dB μ	Margin (dB)	Meas. Time	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.280594	---	42.10	50.80	8.70	1000.0	9.000	N	ON	9.7
0.280594	46.76	---	60.80	14.04	1000.0	9.000	N	ON	9.7
0.646256	---	37.10	46.00	8.90	1000.0	9.000	N	ON	9.7

0.646256	44.26	---	56.00	11.74	1000.0	9.000	N	ON	9.7
1.045500	46.25	---	56.00	9.75	1000.0	9.000	N	ON	9.7
1.045500	---	39.26	46.00	6.74	1000.0	9.000	N	ON	9.7
1.325344	---	34.58	46.00	11.42	1000.0	9.000	L1	ON	9.7
1.325344	44.55	---	56.00	11.45	1000.0	9.000	L1	ON	9.7
1.388775	---	37.33	46.00	8.67	1000.0	9.000	L1	ON	9.7
1.388775	45.80	---	56.00	10.20	1000.0	9.000	L1	ON	9.7
4.724512	36.71	---	56.00	19.29	1000.0	9.000	L1	ON	9.7
4.724512	---	24.76	46.00	21.24	1000.0	9.000	L1	ON	9.7

Second Supply (3+32G)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Average Limit (dBμV)	Result (dBμV) With charger BT	Conclusion
0.15 to 0.5	68 to 56	56 to 46	Fig.63	P
0.5 to 5	56	46		
5 to 30	60	50		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

Conclusion: Pass

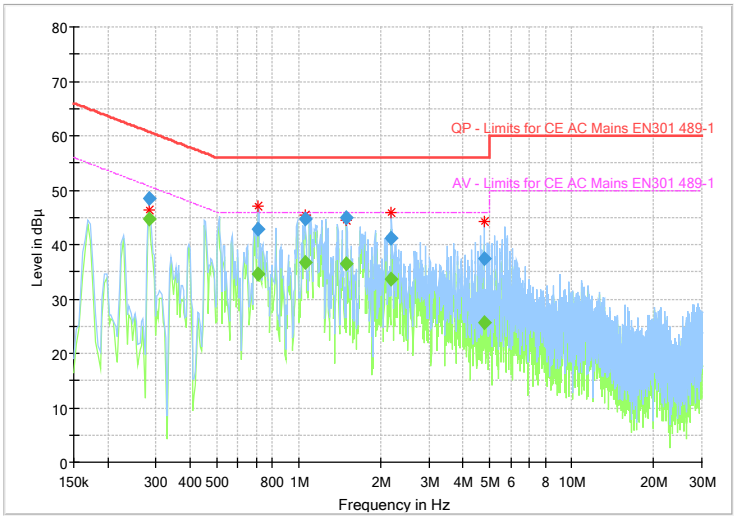


Fig.63 AC Powerline Conducted Emission

Frequency (MHz)	QuasiPeak (dB μ V)	Average (dB μ V)	Limit (dB μ	Margin (dB)	Meas. Time	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.284325	48.39	---	60.69	12.30	1000.0	9.000	N	ON	9.7
0.284325	---	44.78	50.69	5.91	1000.0	9.000	N	ON	9.7
0.709688	42.93	---	56.00	13.07	1000.0	9.000	L1	ON	9.7
0.709688	---	34.65	46.00	11.35	1000.0	9.000	L1	ON	9.7
1.056694	44.66	---	56.00	11.34	1000.0	9.000	N	ON	9.7
1.056694	---	36.63	46.00	9.37	1000.0	9.000	N	ON	9.7

1.500712	44.91	---	56.00	11.09	1000.0	9.000	L1	ON	9.7
1.500712	---	36.43	46.00	9.57	1000.0	9.000	L1	ON	9.7
2.190994	---	33.66	46.00	12.34	1000.0	9.000	L1	ON	9.7
2.190994	41.13	---	56.00	14.87	1000.0	9.000	L1	ON	9.7
4.784212	---	25.56	46.00	20.44	1000.0	9.000	L1	ON	9.7
4.784212	37.43	---	56.00	18.57	1000.0	9.000	L1	ON	9.7

Second Supply (2+16G)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Average Limit (dBμV)	Result (dBμV) With charger BT	Conclusion
0.15 to 0.5	69 to 56	56 to 46	Fig.63	P
0.5 to 5	56	46		
5 to 30	60	50		
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

Conclusion: Pass

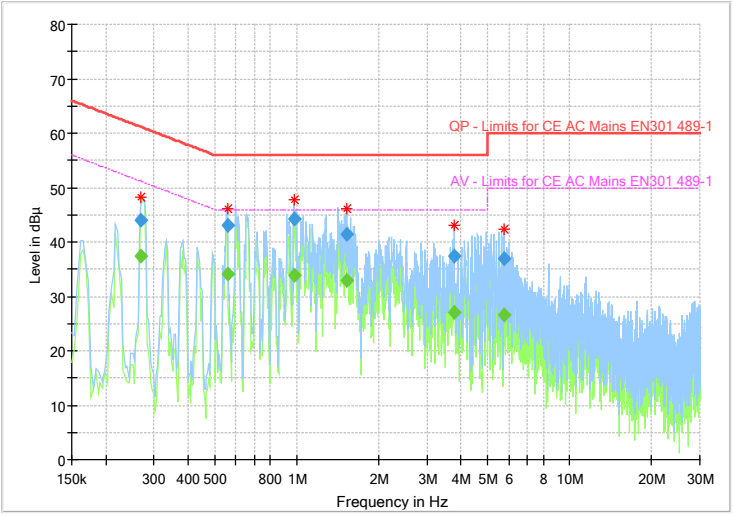


Fig.63 AC Powerline Conducted Emission

Frequency (MHz)	QuasiPeak (dB μ V)	Average (dB μ V)	Limit (dB μ	Margin (dB)	Meas. Time	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.269400	44.10	---	61.14	17.04	1000.0	9.000	N	ON	9.7
0.269400	---	37.45	51.14	13.69	1000.0	9.000	N	ON	9.7
0.556706	43.03	---	56.00	12.97	1000.0	9.000	L1	ON	9.6
0.556706	---	34.11	46.00	11.89	1000.0	9.000	L1	ON	9.6
0.978338	44.32	---	56.00	11.68	1000.0	9.000	L1	ON	9.7
0.978338	---	33.88	46.00	12.12	1000.0	9.000	L1	ON	9.7
1.519369	---	32.88	46.00	13.12	1000.0	9.000	L1	ON	9.7
1.519369	41.36	---	56.00	14.64	1000.0	9.000	L1	ON	9.7
3.776775	37.47	---	56.00	18.53	1000.0	9.000	L1	ON	9.7

3.776775	**---**	**27.00**	**46.00**	**19.00**	**1000.0**	**9.000**	**L1**	**ON**	**9.7**
5.754338	**---**	**26.49**	**50.00**	**23.51**	**1000.0**	**9.000**	**N**	**ON**	**9.7**
5.754338	**36.94**	**---**	**60.00**	**23.06**	**1000.0**	**9.000**	**N**	**ON**	**9.7**

7. Test Equipments and Ancillaries Used For Tests

The test equipments and ancillaries used are as follows.

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Cal.interval
1	Vector Signal	FSQ26	101096	Rohde&Schwarz	2016-05-12	1 Year
2	DC Power Supply	ZUP60-14	LOC-220Z006	TDL-Lambda	2016-05-12	1 Year
3	Bluetooth Tester	CBT32	100785	Rohde&Schwarz	2016-05-12	1 Year

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Cal.interval
1	Universal Radio Communication Tester	CMU200	123101	R&S	2016-05-12	1 Year
3	Test Receiver	ESU40	100307	R&S	2016-05-12	1 Year
4	Trilog Antenna	VULB9163	VULB9163-515	Schwarzbeck	2014-11-05	3 Year
5	Double Ridged Guide Antenna	ETS-3117	135885	ETS	2014-05-06	3 Year
8	2-Line V-Network	ENV216	101380	R&S	2016-05-12	1 Year

Anechoic chamber

Fully anechoic chamber by Frankonia German.

8. Test 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 ℃, Max. = 35 ℃
Relative humidity	Min. = 25 %, Max. = 75 %
Shielding effectiveness	> 110 dB
Ground system resistance	< 0.5 Ω

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

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

Fully-anechoic chamber1 (6.9 meters×10.9 meters×5.4 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 35 ℃
Relative humidity	Min. = 25 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 kΩ
Ground system resistance	< 0.5 Ω
VSWR	Between 0 and 6 dB, from 1GHz to 18GHz
Site Attenuation Deviation	Between -4 and 4 dB,30MHz to 1GHz
Uniformity of field strength	Between 0 and 6 dB, from 80MHz to 3000 MHz

ANNEX A. Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

ANNEX B. Accreditation Certificate

Accredited Laboratory

A2LA has accredited

EAST CHINA INSTITUTE OF TELECOMMUNICATIONS

Shanghai, People's Republic of China

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 *General requirements for the competence of testing and calibration laboratories*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).

Presented this 15th day of March 2017.

President and CEO
For the Accreditation Council
Certificate Number 3682.01
Valid to February 28, 2019

For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.

************End The Report************