TEST REPORT

100, Jangjateo-ro, Hobeop-myeon,
Icheon-si, Gyeonggi-do, 17396, Korea
Tel: 031-637-8898 / Fax: 0505-116-8895

1. Client
   - Name ..... : Sena Technologies Co., Ltd.
   - Address ..... : 19, Heolleung-ro 569-gil, Gangnam-gu, Seoul, Korea

2. Use of Report ..... : FCC Approval

3. Sample Description
   - Product Name : Wireless Communication Systems
   - Model Name : SRL3+

4. Date of Receipt ..... : 2025-06-12

5. Date of Test ..... : 2025-07-08 ~ 2025-07-10

6. Test Method ..... : FCC Part 15 Subpart C 15.247

7. Test Results ..... : Refer to the test results

※ The results shown in this test report are the results of testing the samples provided.
※ This test report is prepared according to the requirements of ISO / IEC 17025.

Affirmation	Tested by Jong-Myoung, Shin (Sign)	Technical Manager Kyung-Taek, Lee (Sign)

Jul 24, 2025

EMC Labs Co., Ltd. (stamp)

Contents

Version

TEST REPORT NO.	DATE	DESCRIPTION
KR0140-RF2507-004	Jul 24, 2025	Initial Issue

1. Applicant & Manufacturer & Test Laboratory Information

1.1 Applicant Information

Applicant	Sena Technologies Co., Ltd.
Applicant Address	19, Heolleung-ro 569-gil, Gangnam-gu, Seoul, Korea
Contact Person	Seunghyun Kim
Telephone No.	+82-2-573-7772
Fax No.	+82-2-573-7710
E-mail	shkim77@sena.com

1.2. Manufacturer Information

Manufacturer	Sena Technologies Co., Ltd.
Manufacturer Address	19, Heolleung-ro 569-gil, Gangnam-gu, Seoul, Korea

1.3 Test Laboratory Information

Laboratory	EMC Labs Co., Ltd.
Laboratory Address	100, Jangjateo-ro, Hobeop-myeon, Icheon-si, Gyeonggi-do, Republic of Korea
Contact Person	Jong-Myoung, Shin
Telephone No.	+82-31-637-8895
Fax No.	+82-505-116-8895
FCC Designation No.	KR0140
FCC Registration No.	580000
IC Site Registration No.	28751

2. Equipment under Test(EUT) Information

2.1 General Information

Product Name	Wireless Communication Systems
Model Name	SRL3+
FCC ID	S7A-SP186
Rated Voltage	DC 3.8 V

2.2 Additional Information

Operating Frequency	2 402 MHz ~ 2 480 MHz
Number of channel	79
Modulation Type	BDR Mode(GFSK), EDR Mode(Pi/4 DQPSK, 8DPSK)
Antenna Type & Gain	PCB Antenna for BT1(with Max gain: 0.59 dBi) / PCB Pattern Antenna for BT2(with Max gain: 0.21 dBi)
Firmware Version	1.0
Hardware Version	1.0
Test software	BlueTest3 V3.5.4.2 for BT1 Lab Test Tool V2.9.1 for BT2

2.3 Test Frequency

Test mode	Test Frequency (MHz)		
	Low Frequency	Middle Frequency	High Frequency
GFSK (BT1)	2 402	2 441	2 480
Pi/4 DQPSK (BT1)	2 402	2 441	2 480
8DPSK (BT1)	2 402	2 441	2 480
GFSK (BT2)	2 402	2 441	2 480
Pi/4 DQPSK (BT2)	2 402	2 441	2 480
8DPSK (BT2)	2 402	2 441	2 480

2.4 Worst-Case

BDR	GFSK (DH5)
EDR	8DPSK (3-DH5)

Note: The power measurement has been conducted to determine the worst-case mode from all possible Combinations between available modulations, data rates.

2.5 Mode of operation during the test

- The EUT continuous transmission mode during the test with set at Low Channel, Middle Channel, and High Channel. To get a maximum radiated emission levels from the EUT, the EUT was moved throughout the XY, YZ, XZ planes.

2.6 Modifications of EUT

- None

3. Test Summary

Applied	FCC Rule	IC Rule	Test Items	Test Condition	Result
☒	15.203	-	Antenna Requirement	Conducted	C
☒	15.247(a)	-	20 dB Bandwidth		C
☒	-	RSS GEN (6.7)	Occupied Bandwidth (99%)		C
☒	15.247(a)	RSS-247 (5.1)	Number of Hopping Frequencies		C
☒	15.247(a)	RSS-247 (5.1)	Time of Occupancy (Dwell Time)		C
☒	15.247(a)	RSS-247 (5.1)	Carrier Frequencies Separation		C
☒	15.247(b)	RSS-247 (5.4)	Peak Output Power		C
☒	15.247(d)	RSS-247 (5.5)	Conducted Spurious Emission		C
☒	15.247(d) 15.205 & 15.209	RSS-247 (5.5) RSS-GEN (8.9 & 8.10)	Radiated Spurious Emission	Radiated	C
☒	15.207	RSS-GEN (8.8)	Conducted Emissions	AC Line Conducted	C

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

The sample was tested according to the following specification: ANSI C63.10:2013.
Compliance was determined by specification limits of the applicable standard according to customer requirements.

4. Used equipment on test

	Description	Manufacturer	Model Name	Serial Name	Next Cal.
☐	TEMP & HUMID CHAMBER	JFM	JFMA-001	20200929-01	2025.11.06
☐	CONTROLLER	AMWON TECHNOLOGY	TEMI2500	S7800VK191 0707	2025.11.06
☐	PSA SERIES SPECTRUM ANALYZER	AGILENT	E4440A	MY45304057	2025.11.07
■	MXG ANALOG SIGNAL GENERATOR	AGILENT	N5183A	MY50141890	2025.11.07
☐	SYSTEM DC POWER SUPPLY	AGILENT	6674A	MY53000118	2025.11.07
☐	VECTOR SIGNAL GENERATOR	ROHDE & SCHWARZ	SMBV100A	257524	2025.11.07
☐	DIRECTIONAL COUPLER	AGILENT	773D	2839A01855	2025.11.07
☐	ATTENUATOR	AGILENT	8493C	73193	2025.11.07
☐	TERMINATION	HEWLETT PACKARD	909D	07492	2025.11.07
☐	POWER DIVIDER	HEWLETT PACKARD	11636A	06916	2025.11.07
☐	SLIDE-AC	DAEKWANG TECH	SV-1023	NONE	2025.11.07
■	DIGITAL MULTIMETER	HUMANTECHSTORE	15B+	50561541WS	2025.11.07
■	ATTENUATOR	ACE RF COMM	ATT SMA 20W 20dB 8GHz	A-0820.SM20.2	2026.04.04
■	DC POWER SUPPLY	AGILENT	E3634A	MY40012120	2026.02.13
☐	USB Peak Power Sensor	Anritsu	MA24408A	12321	2025.11.08
☐	High Pass Filter	WT Microwave INC.	WT-A3314-HS	WT22111804-1	2025.11.07
■	High Pass Filter	WT Microwave INC.	WT-A1935-HS	WT22111804-2	2025.12.06
■	SPECTRUM ANALYZER	ROHDE & SCHWARZ	FSU26	200444	2026.02.13
■	ATTENUATOR	Mini-Circuits	BW-K3-2W44+	2318-1	2026.02.13
☐	ATTENUATOR	Mini-Circuits	BW-K3-2W44+	2318-2	2026.05.08
■	Balanced Temperature and Humidity Control System	ESPEC CORP.	SH-241	92004650	2026.05.07
■	ACTIVE LOOP ANTENNA	TESEQ	HLA 6121	55685	2026.12.20
■	Biconilog ANT	Schwarzbeck	VULB 9160	3260	2026.04.01
☐	Biconilog ANT	Schwarzbeck	VULB9168	902	2026.08.28
■	Horn ANT	Schwarzbeck	BBHA9120D	974	2025.11.29
☐	Horn ANT	Schwarzbeck	BBHA9120D	1497	2026.01.03
■	Amplifier	TESTEK	TK-PA18H	200104-L	2026.05.23
■	Horn ANT	Schwarzbeck	BBHA9170	01188	2026.03.20
☐	Horn ANT	Schwarzbeck	BBHA9170	01189	2026.03.20
■	AMPLIFIER	TESTEK	TK-PA1840H	220105-L	2026.03.17
■	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESW44	101952	2026.03.17
■	Test Receiver	ROHDE & SCHWARZ	ESR7	101616	2026.06.25
■	TWO LINE V-NETWORK	ROHDE & SCHWARZ	ENV216	102596	2025.08.20
■	PULSE LIMITER	lignex1	EPL-30	NONE	2026.01.04

5. Antenna Requirement

According to §15.203 An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

According to §15.247(b)(4) e conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.1 Result

Complies
(The transmitter has a PCB Antenna with directional peak gain of the antenna is 0.59 dBi, and PCB Pattern Antenna with directional peak gain of the antenna is 0.21 dBi.)

6. 20 dB Bandwidth & Occupied Bandwidth (99%)

6.1 Test Setup

Refer to the APPENDIX I.

6.2 Limit

Limit : Not Applicable

6.3 Test Procedure

1. The 20 dB bandwidth & Occupied bandwidth were measured with a spectrum analyzer connected to RF antenna Connector (conducted measurement) while EUT was operating in transmit mode. The analyzer center frequency was set to the EUT carrier frequency, using the analyzer.

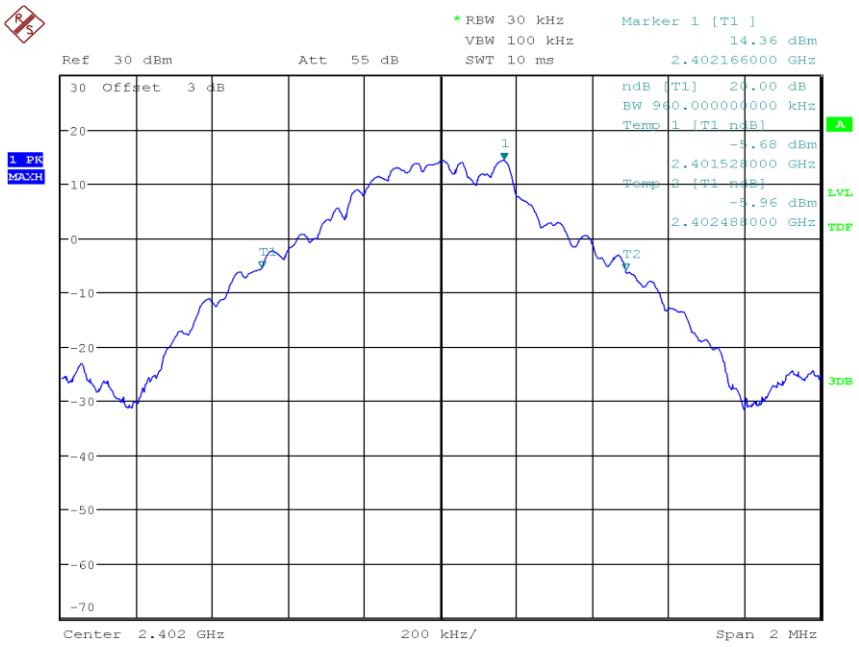
2. The bandwidth of the fundamental frequency was measured with the spectrum analyzer using below setting:
   RBW = 1% to 5% of the 20 dB Bandwidth & Occupied Bandwidth
   VBW ≥ 3 × RBW
   Span = between two times and five times the 20 dB Bandwidth & Occupied Bandwidth
   Sweep = Auto
   Detector function = Peak
   Trace = Max Hold

6.4 Test Result

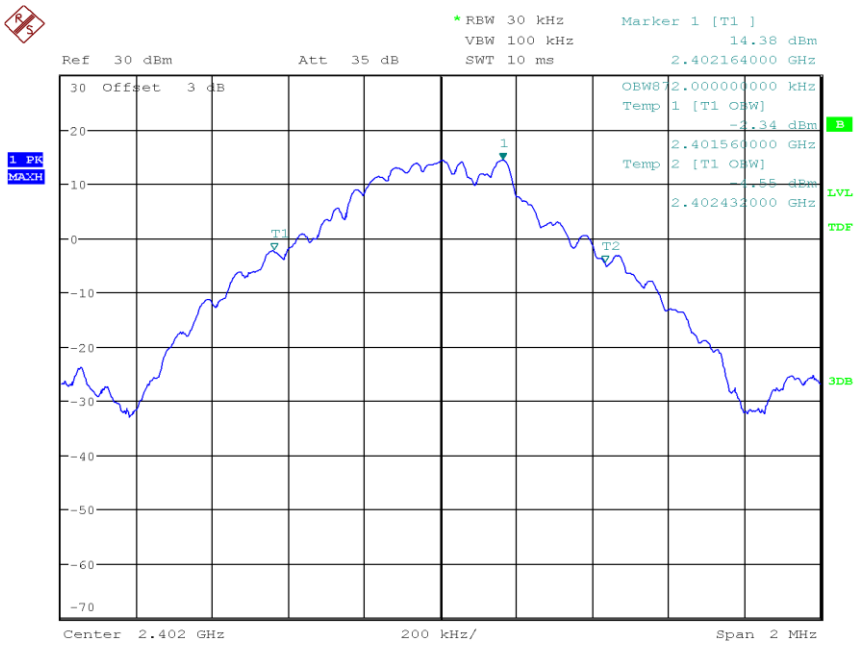
Test Mode	Test Frequency	20 dB Bandwidth (MHz)	Occupied Bandwidth (MHz)
GFSK (BT1)	Low	0.960	0.872
	Middle	0.958	0.868
	High	0.956	0.866
8DPSK (BT1)	Low	1.302	1.204
	Middle	1.302	1.208
	High	1.302	1.208
GFSK (BT2)	Low	0.964	0.886
	Middle	0.960	0.886
	High	0.960	0.886
8DPSK (BT2)	Low	1.278	1.156
	Middle	1.278	1.156
	High	1.278	1.156

6.5 Test Plot

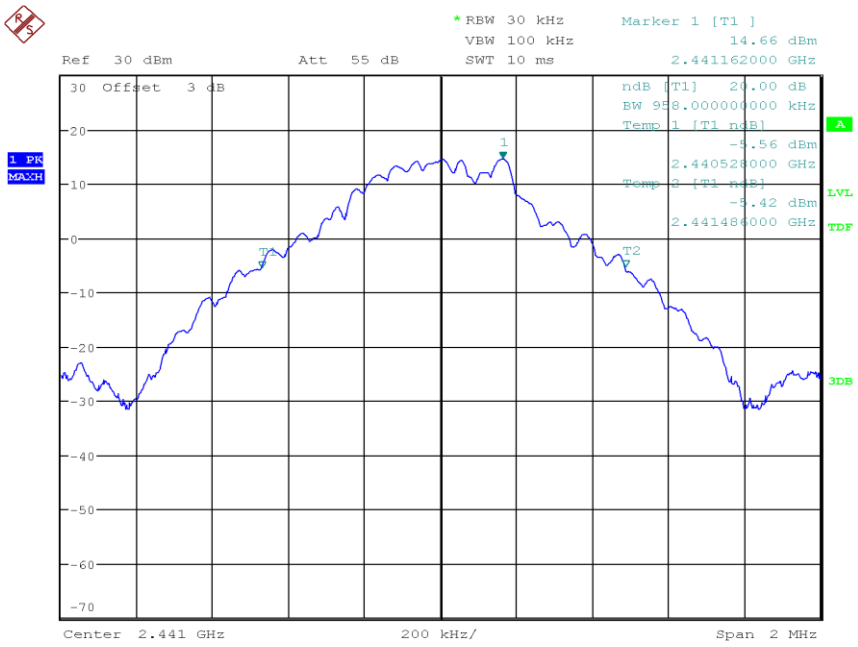
GFSK (BT1) _ Low frequency	20 dB Bandwidth



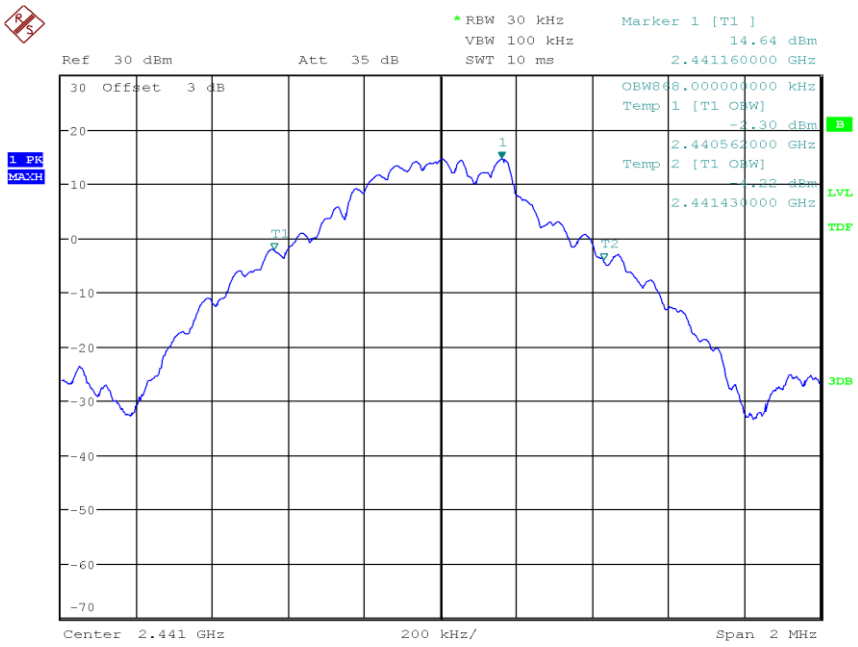
GFSK (BT1) _ Low frequency	Occupied Bandwidth



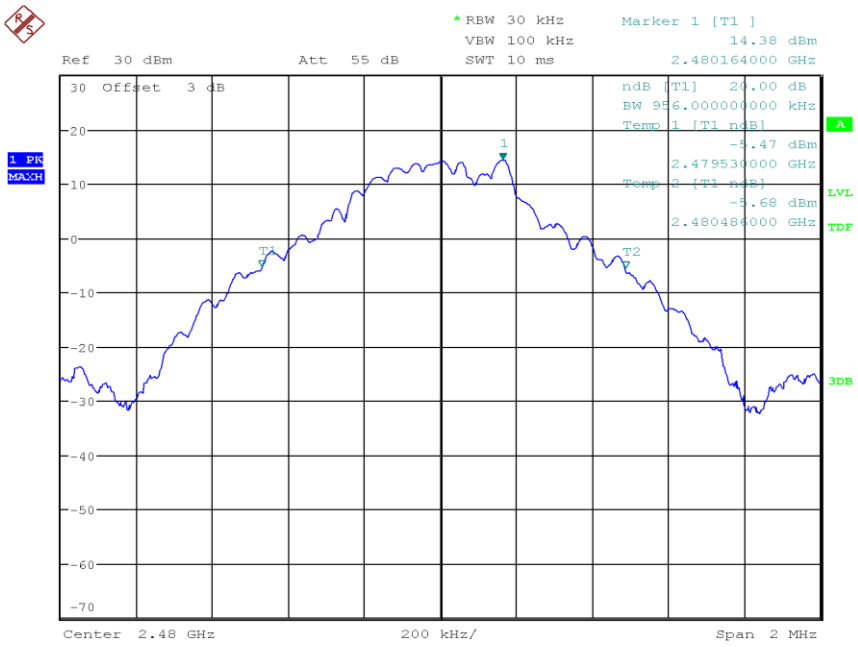
GFSK (BT1) _ Middle frequency	20 dB Bandwidth



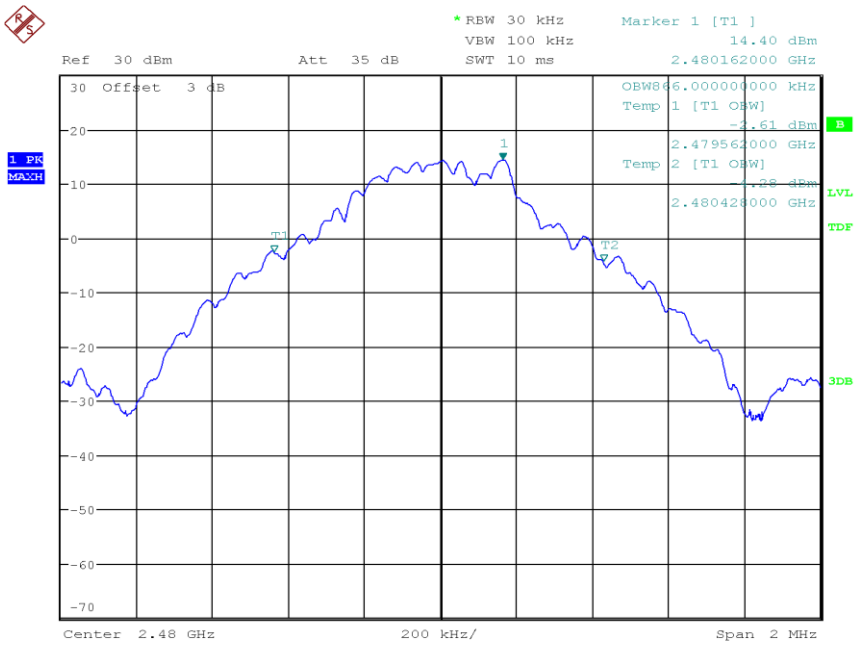
GFSK (BT1) _ Middle frequency	Occupied Bandwidth



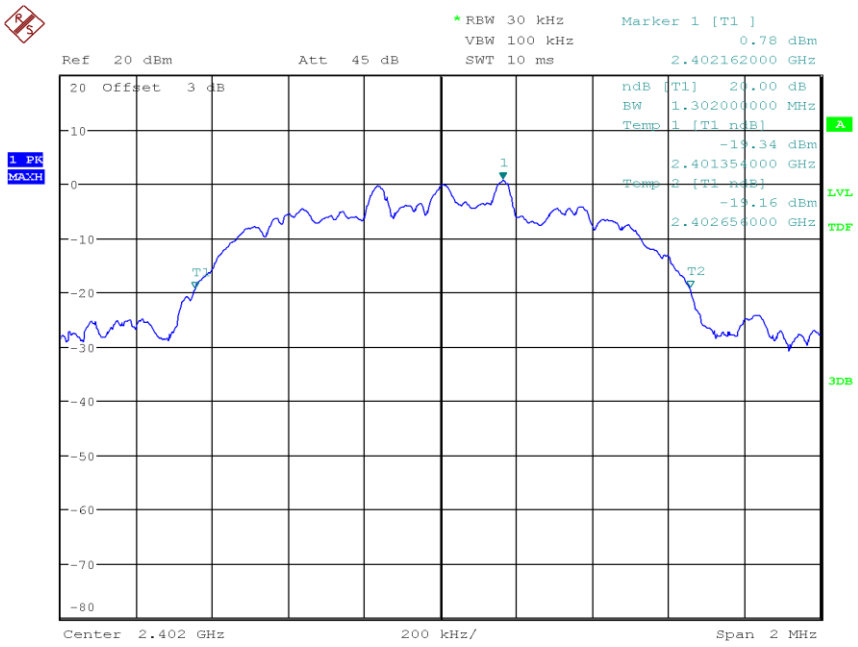
GFSK (BT1) _ High frequency	20 dB Bandwidth



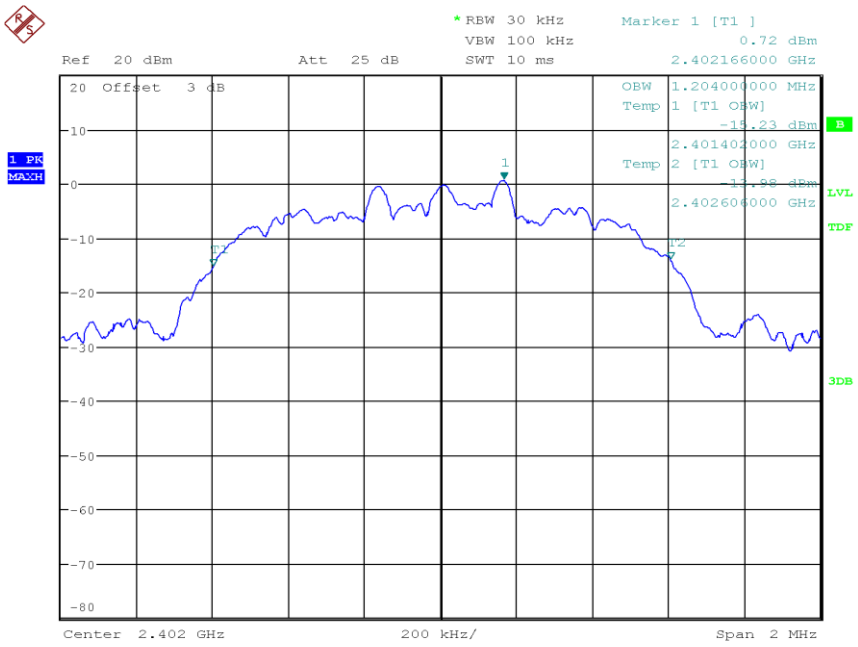
GFSK (BT1) _ High frequency	Occupied Bandwidth



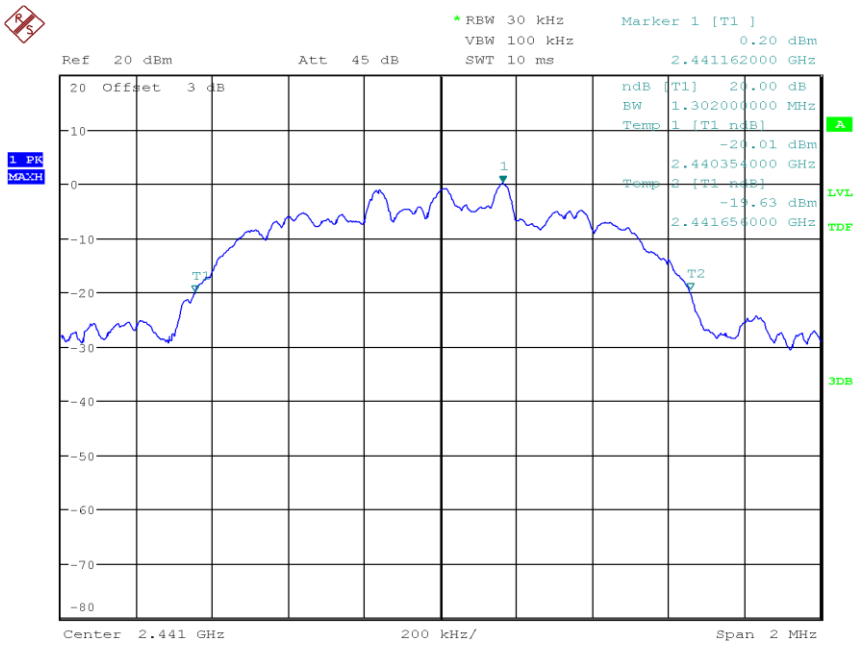
8DPSK (BT1) _ Low frequency	20 dB Bandwidth



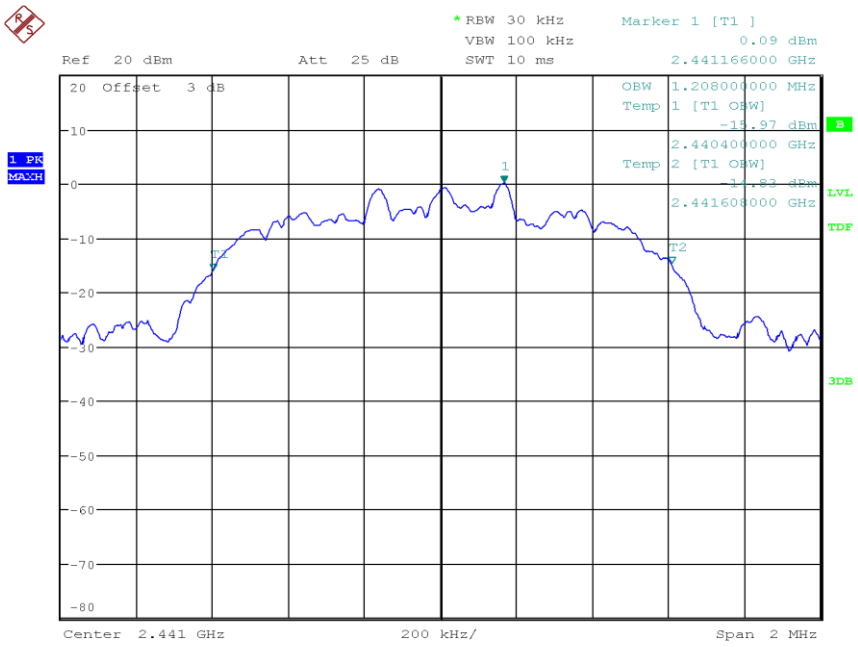
8DPSK (BT1) _ Low frequency	Occupied Bandwidth



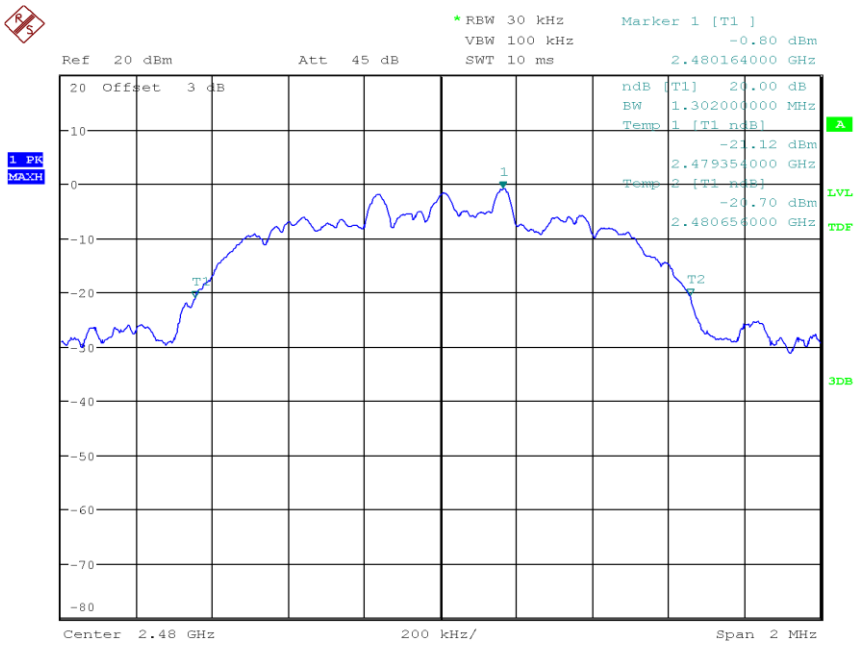
8DPSK (BT1) _ Middle frequency	20 dB Bandwidth



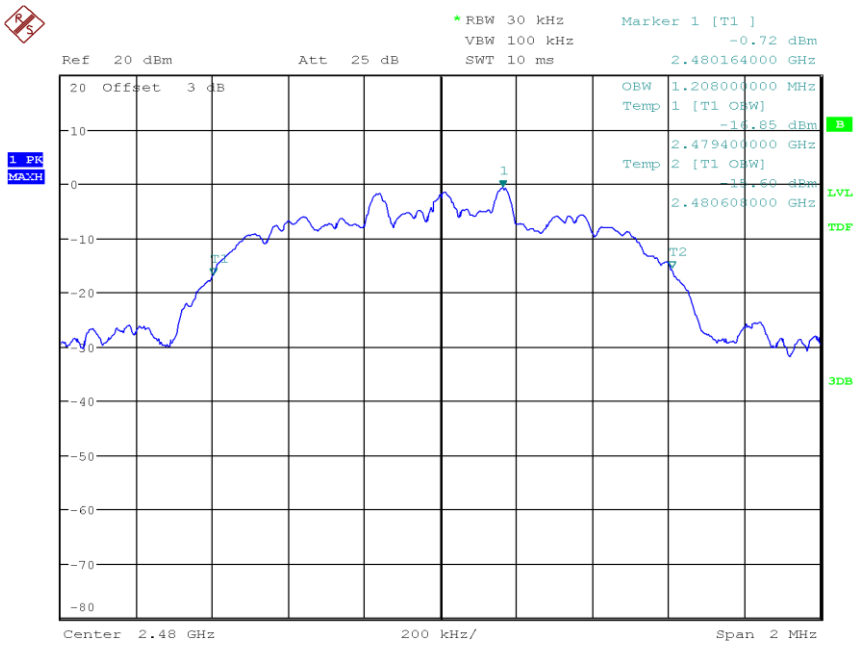
8DPSK (BT1) _ Middle frequency	Occupied Bandwidth



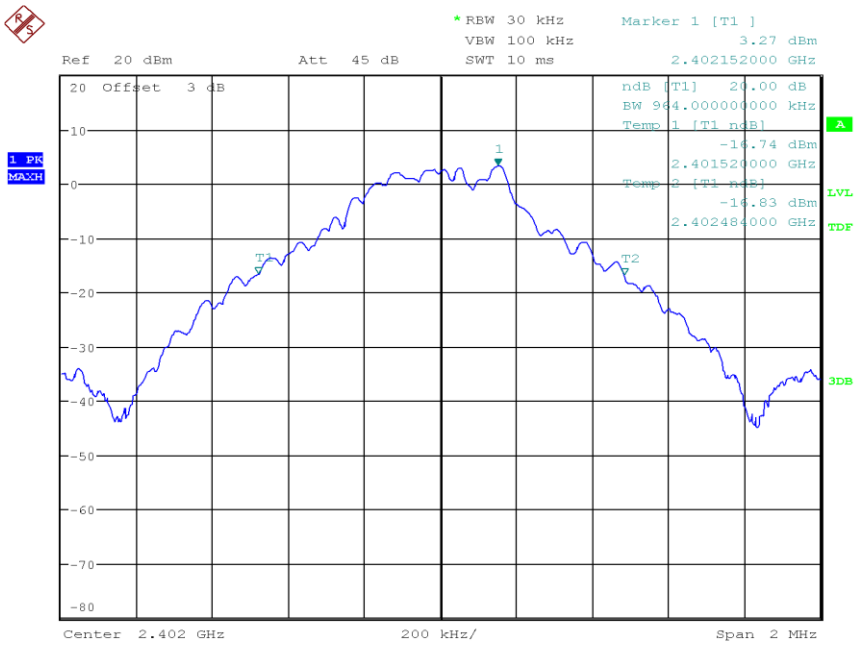
8DPSK (BT1) _ High frequency	20 dB Bandwidth



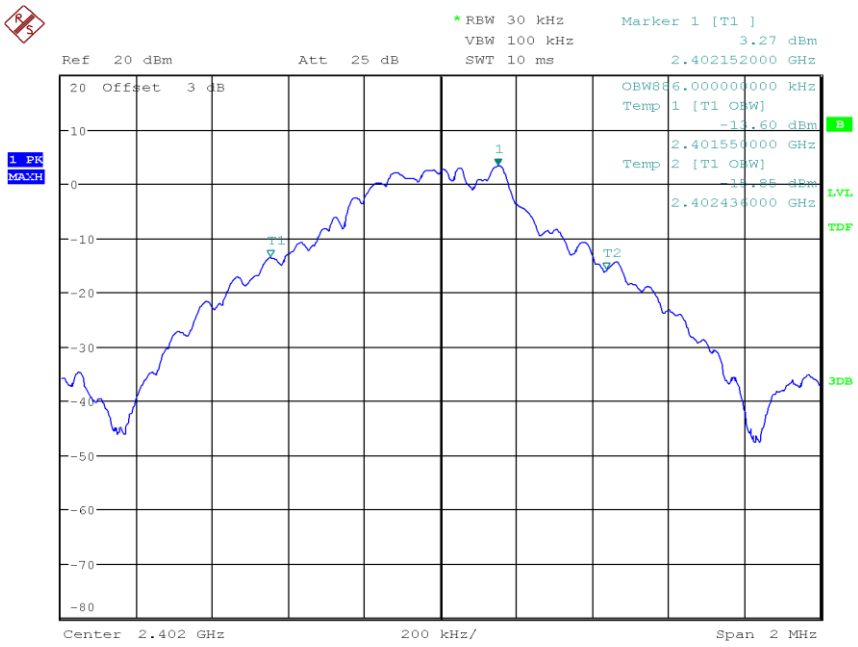
8DPSK (BT1) _ High frequency	Occupied Bandwidth



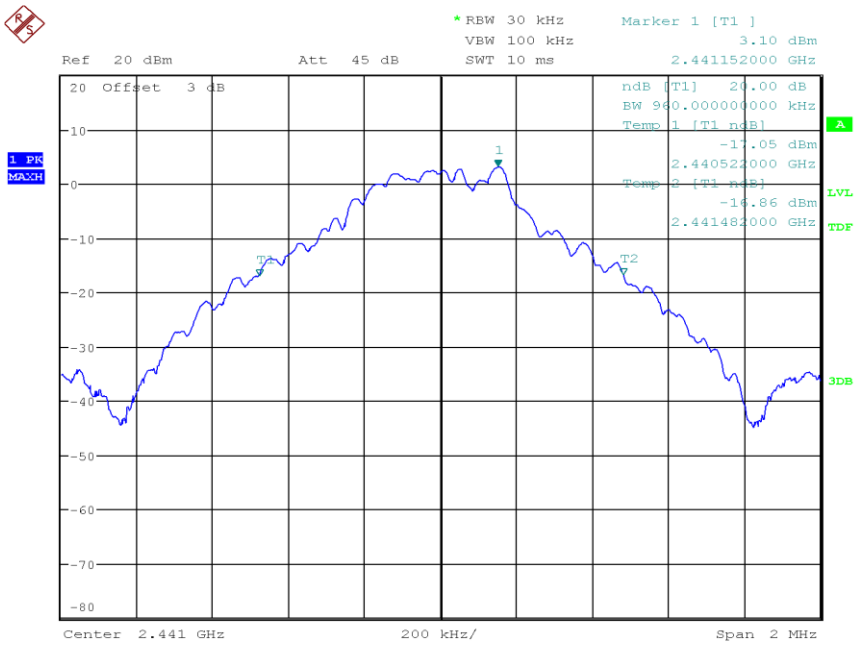
GFSK (BT2) _ Low frequency	20 dB Bandwidth



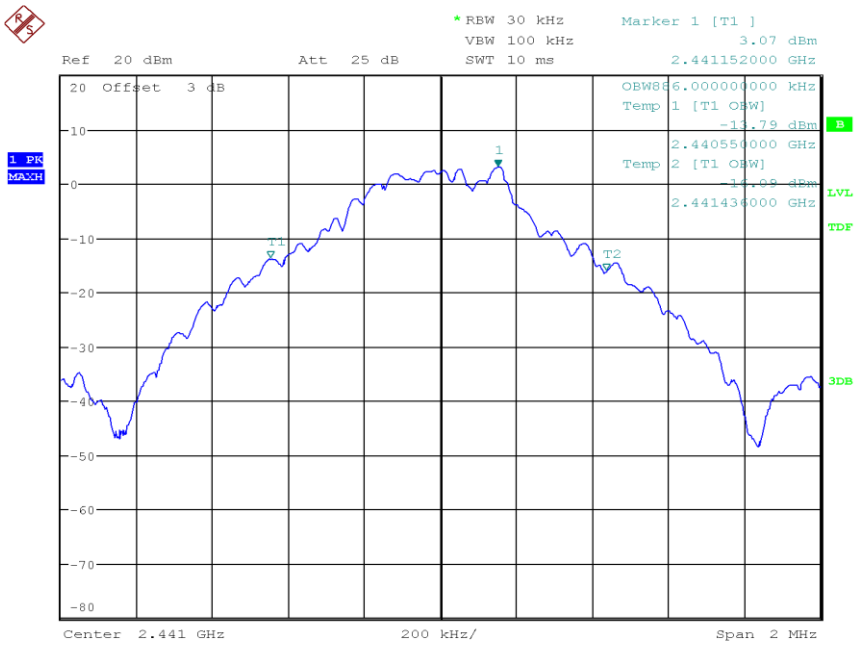
GFSK (BT2) _ Low frequency	Occupied Bandwidth



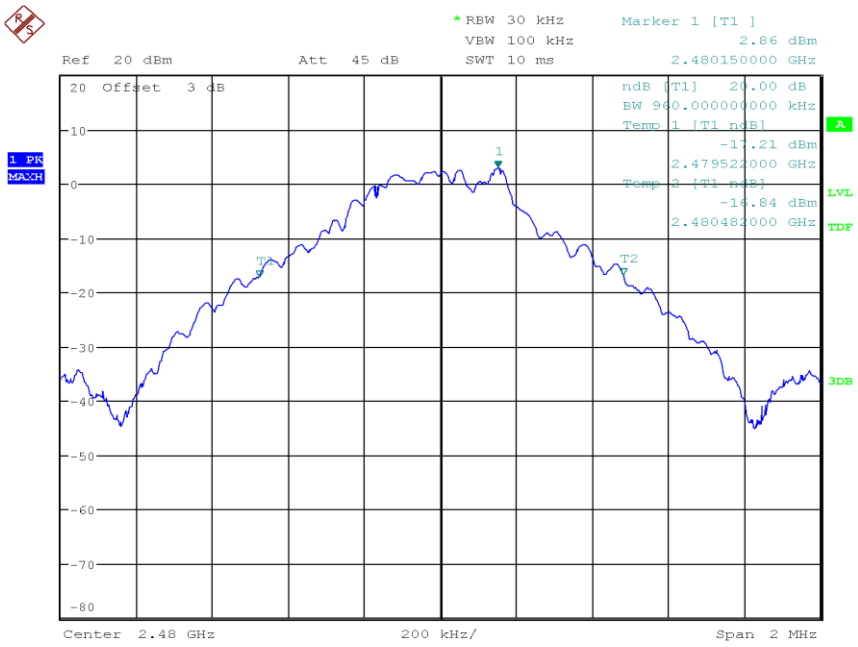
GFSK (BT2) _ Middle frequency	20 dB Bandwidth



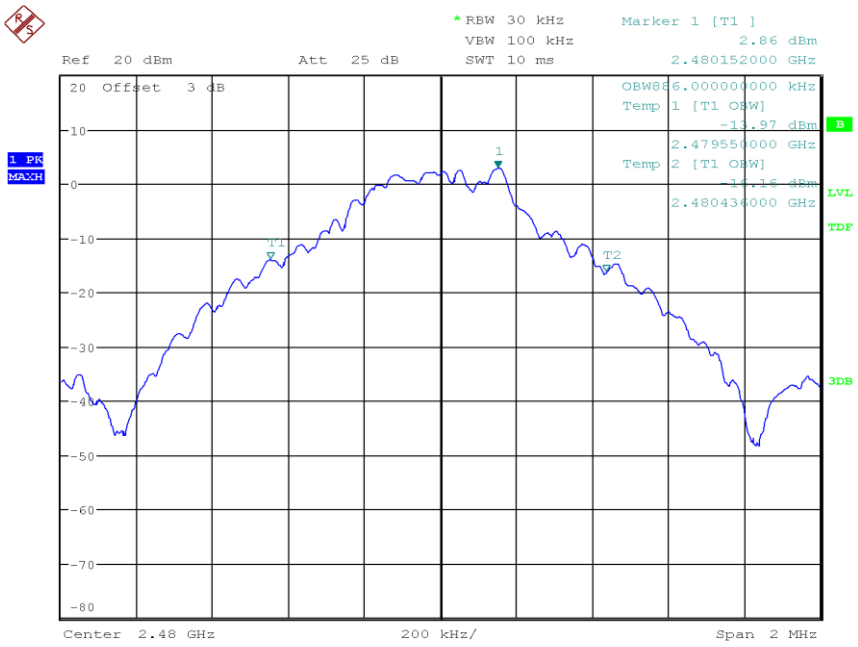
GFSK (BT2) _ Middle frequency	Occupied Bandwidth



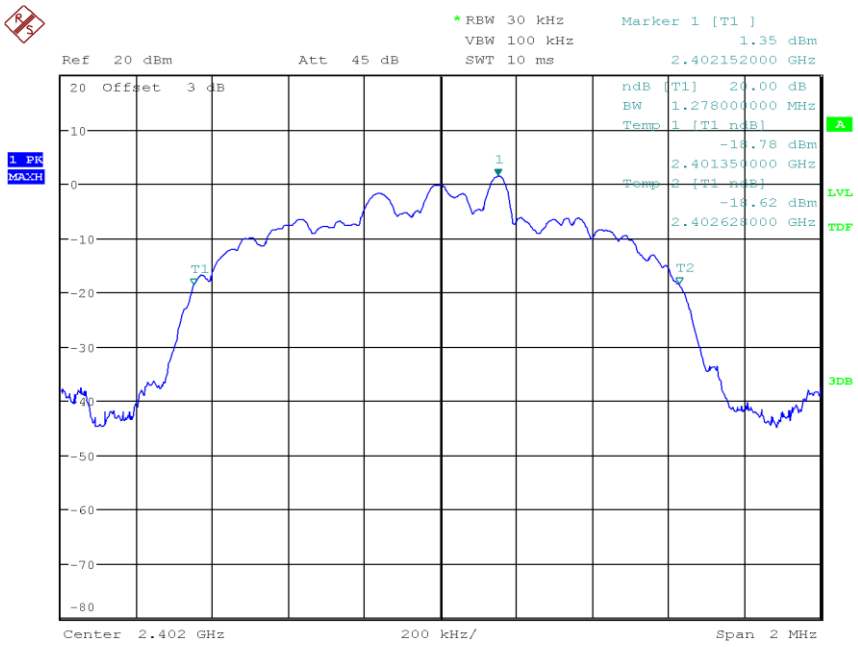
GFSK (BT2) _ High frequency	20 dB Bandwidth



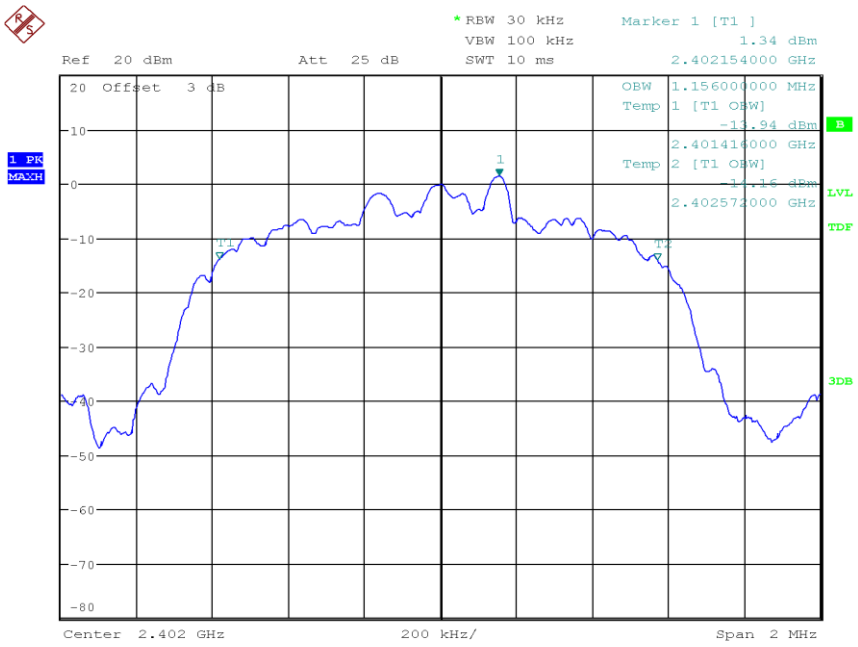
GFSK (BT2) _ High frequency	Occupied Bandwidth



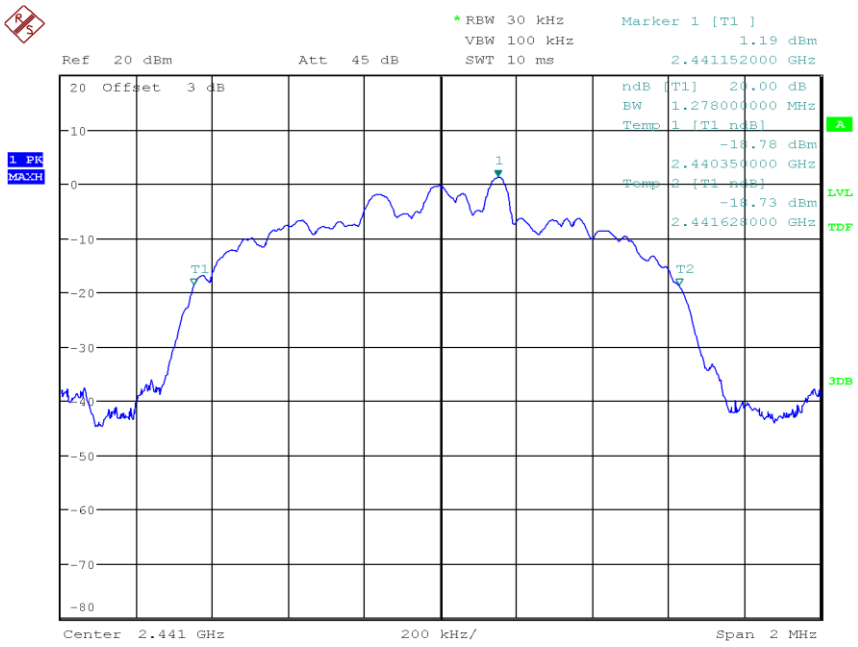
8DPSK (BT2) _ Low frequency	20 dB Bandwidth



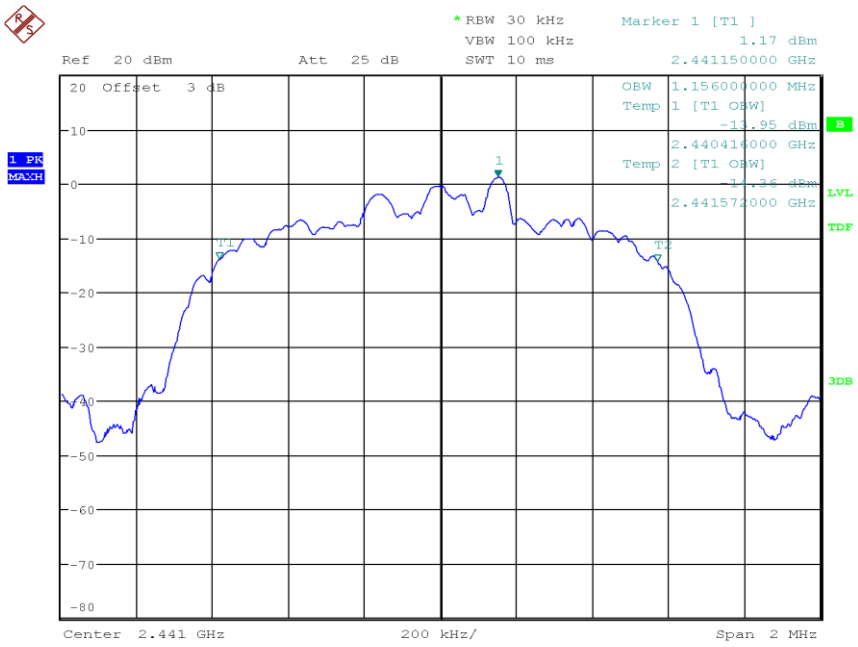
8DPSK (BT2) _ Low frequency	Occupied Bandwidth



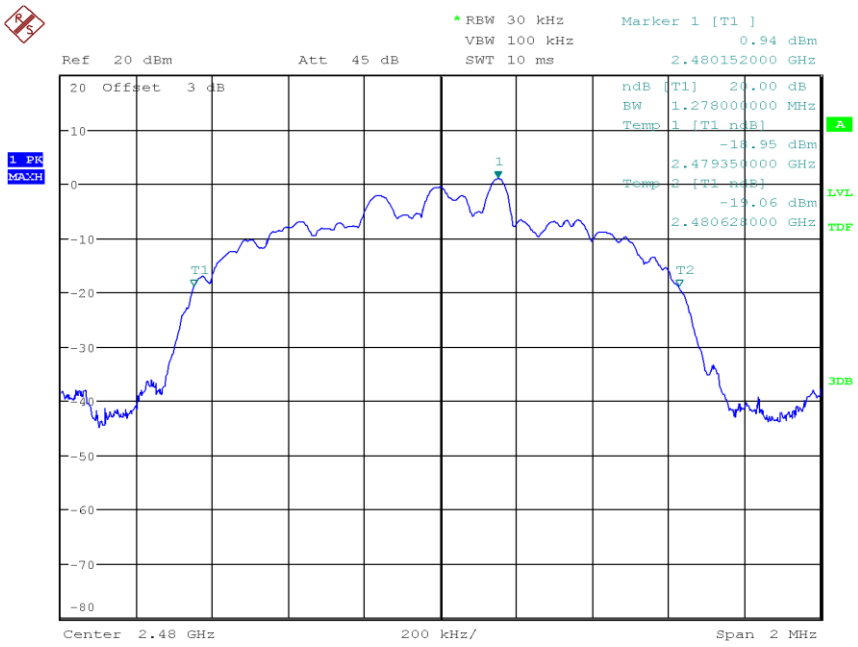
8DPSK (BT2) _ Middle frequency	20 dB Bandwidth



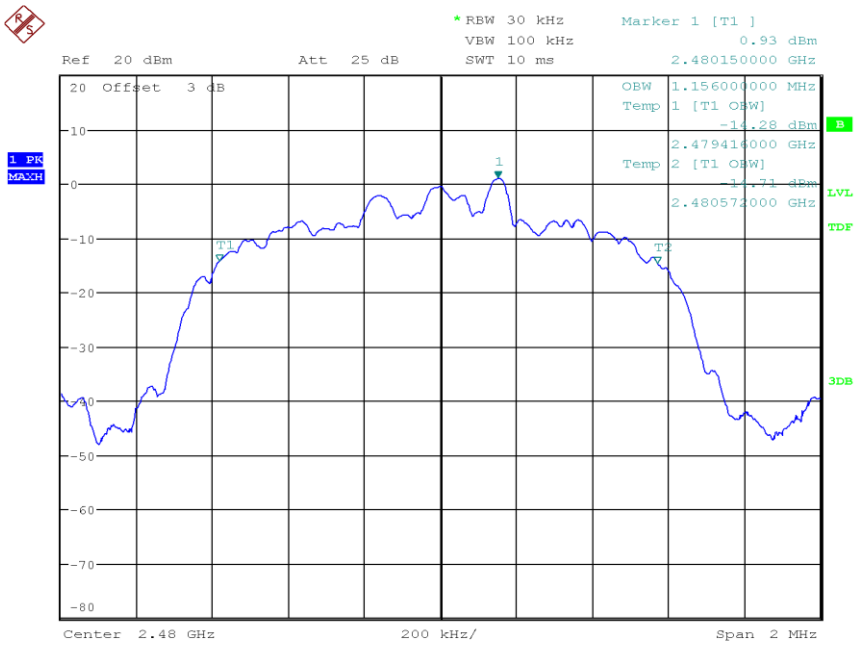
8DPSK (BT2) _ Middle frequency	Occupied Bandwidth



8DPSK (BT2) _ High frequency	20 dB Bandwidth



8DPSK (BT2) _ High frequency	Occupied Bandwidth



7. Number of Hopping Frequencies

7.1 Test Setup

Refer to the APPENDIX I.

7.2 Limit

Limit : >= 15 hops

7.3 Test Procedure

The number of hopping frequencies was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.
To get higher resolution, two frequency ranges for FH mode within the 2400 ~ 2483.5 MHz were examined.

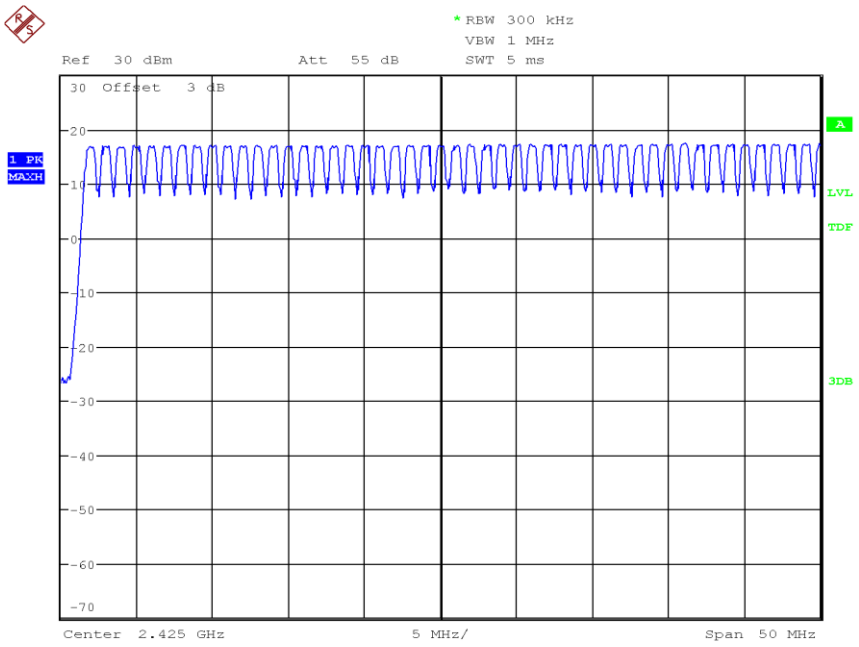
The spectrum analyzer is set to:
Span = 50 MHz
RBW = To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
VBW ≥ RBW Sweep = Auto
Detector = Peak Trace = Max hold

7.4 Test Result

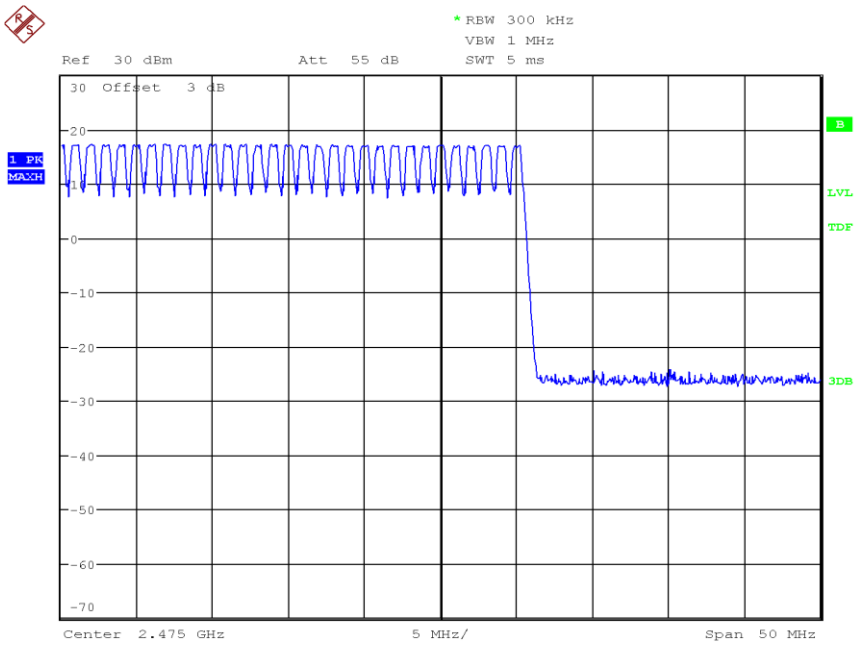
Test Mode	Number of Hopping Channels
GFSK (BT1)	79
8DPSK (BT1)	79
GFSK (BT2)	79
8DPSK (BT2)	79

7.5 Test Plot

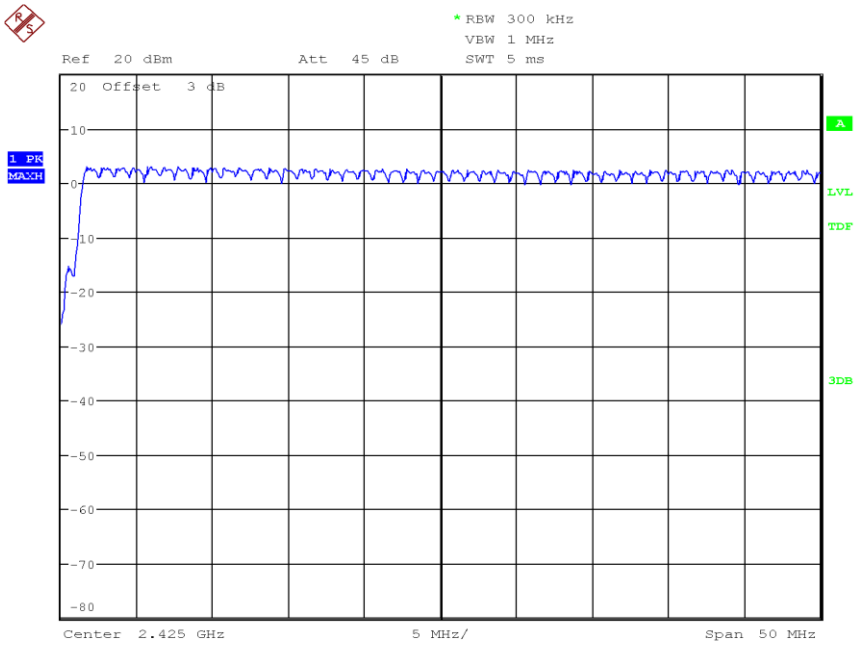
GFSK (BT1) _ Hopping Mode	Number of Hopping Frequencies



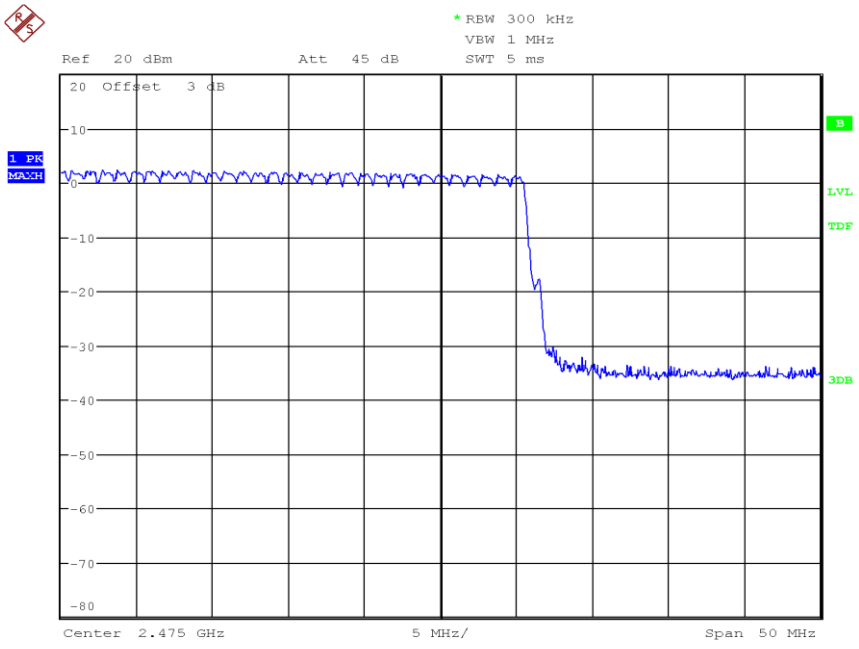
GFSK (BT1) _ Hopping Mode	Number of Hopping Frequencies



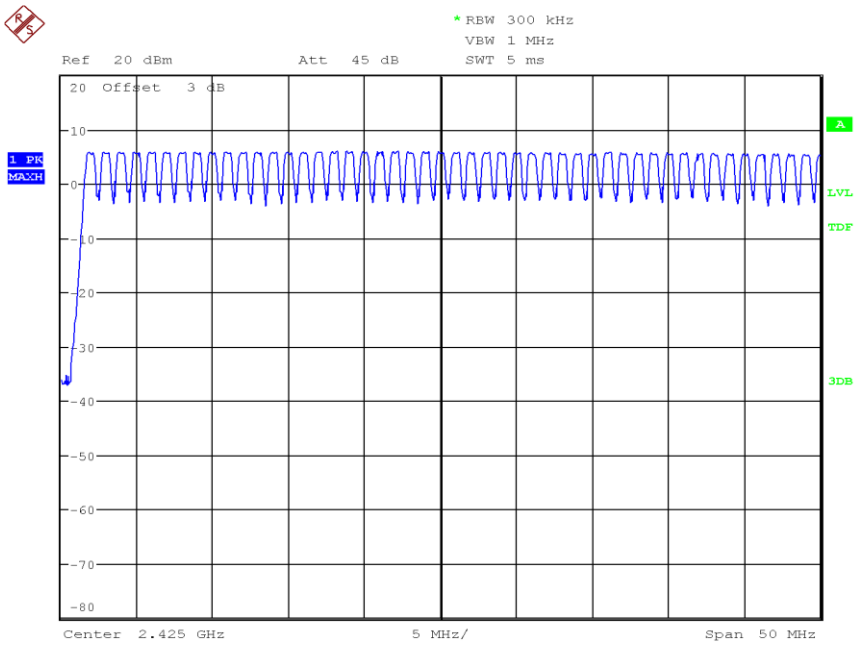
8DPSK (BT1) _ Hopping Mode	Number of Hopping Frequencies



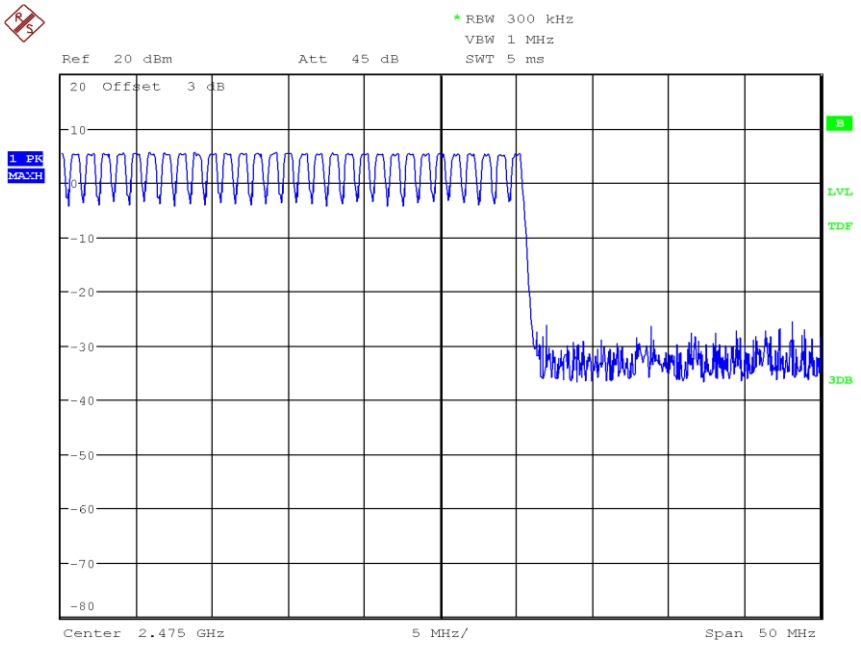
8DPSK (BT1) _ Hopping Mode	Number of Hopping Frequencies



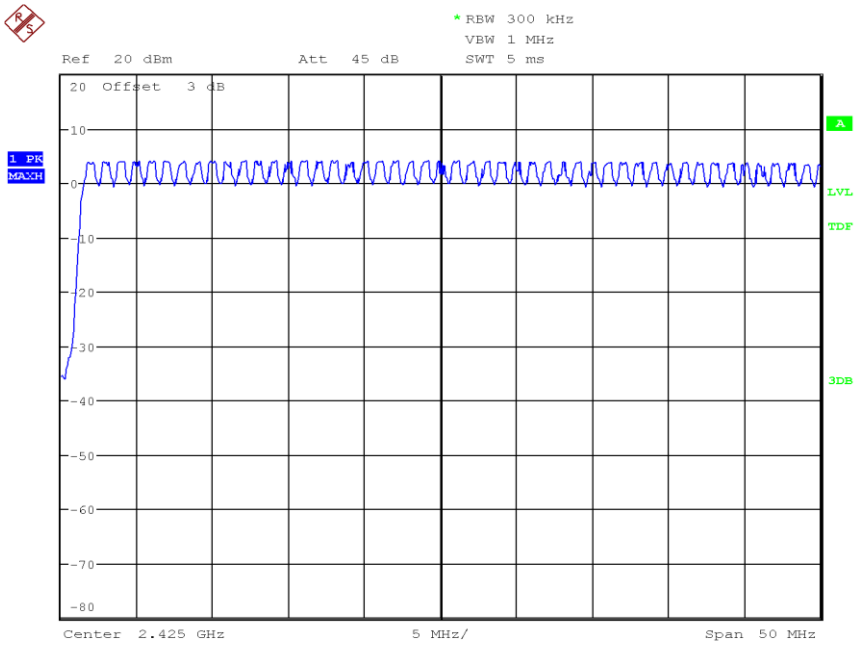
GFSK (BT2) _ Hopping Mode	Number of Hopping Frequencies



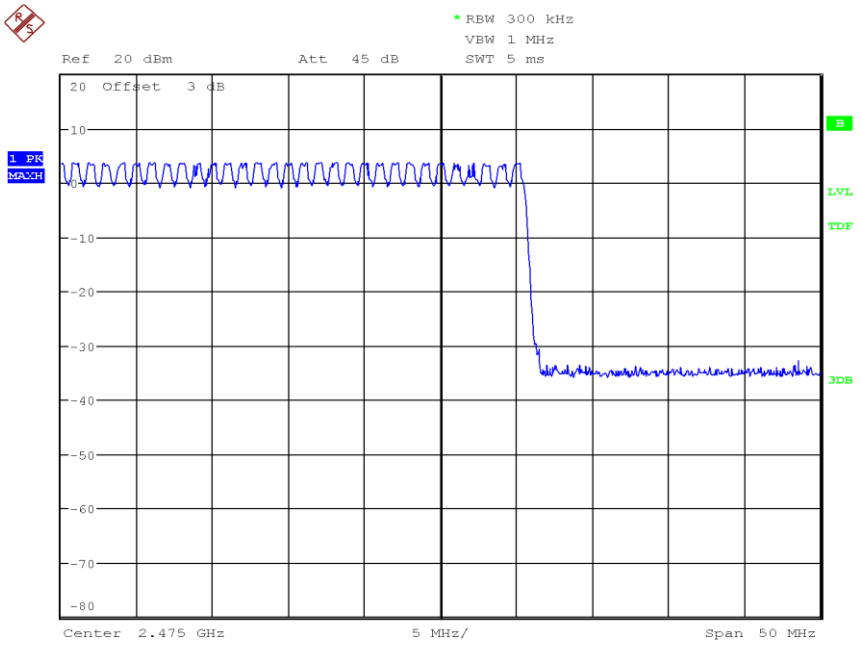
GFSK (BT2) _ Hopping Mode	Number of Hopping Frequencies



8DPSK (BT2) _ Hopping Mode	Number of Hopping Frequencies



8DPSK (BT2) _ Hopping Mode	Number of Hopping Frequencies



8. Time of Occupancy (Dwell Time)

8.1 Test Setup

Refer to the APPENDIX I.

8.2 Limit

The maximum permissible time of occupancy is 400 ms within a period of 400 ms multiplied by the number of hopping channels employed.

8.3 Test Procedure

The dwell time was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

The spectrum analyzer is set to:
Center frequency = 2441 MHz Span = Zero
RBW = 1 MHz (RBW shall be ≤ channel spacing and where possible RBW should be set >> 1 / T, where T is the expected dwell time per channel)
VBW ≥ RBW Detector = Peak
Trace = Max hold

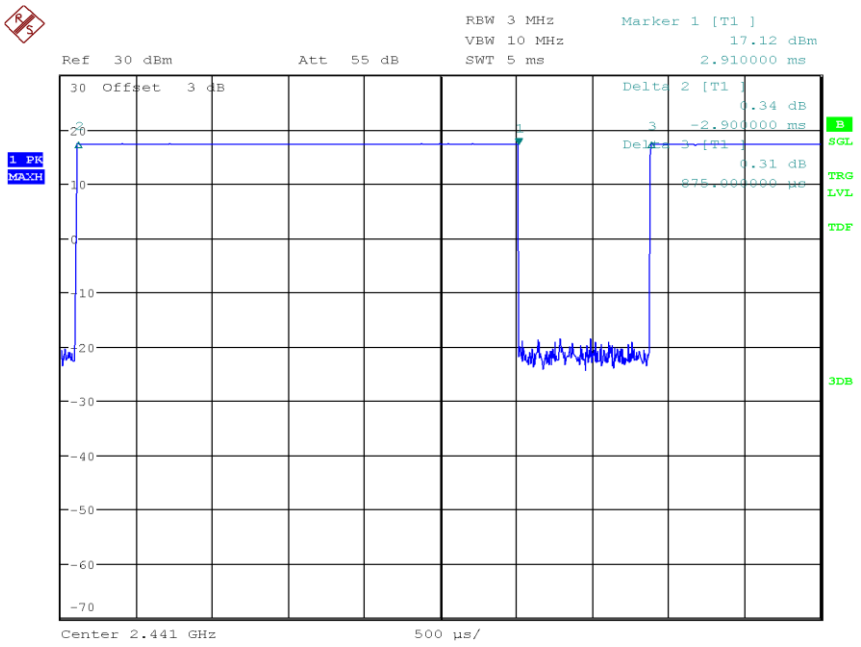
8.4 Test Result

Test Mode	Number of Hopping Channels	Burst On Time (ms)	Result (sec)	Limit (sec)
GFSK (BT1) (non-AFH)	79	2.900	0.31	0.40
GFSK (BT1) (AFH)	20	2.900	0.15	0.40
8DPSK (BT1) (non-AFH)	79	2.905	0.31	0.40
8DPSK (BT1) (AFH)	20	2.905	0.15	0.40
GFSK (BT2) (non-AFH)	79	2.895	0.31	0.40
GFSK (BT2) (AFH)	20	2.895	0.15	0.40
8DPSK (BT2) (non-AFH)	79	2.895	0.31	0.40
8DPSK (BT2) (AFH)	20	2.895	0.15	0.40

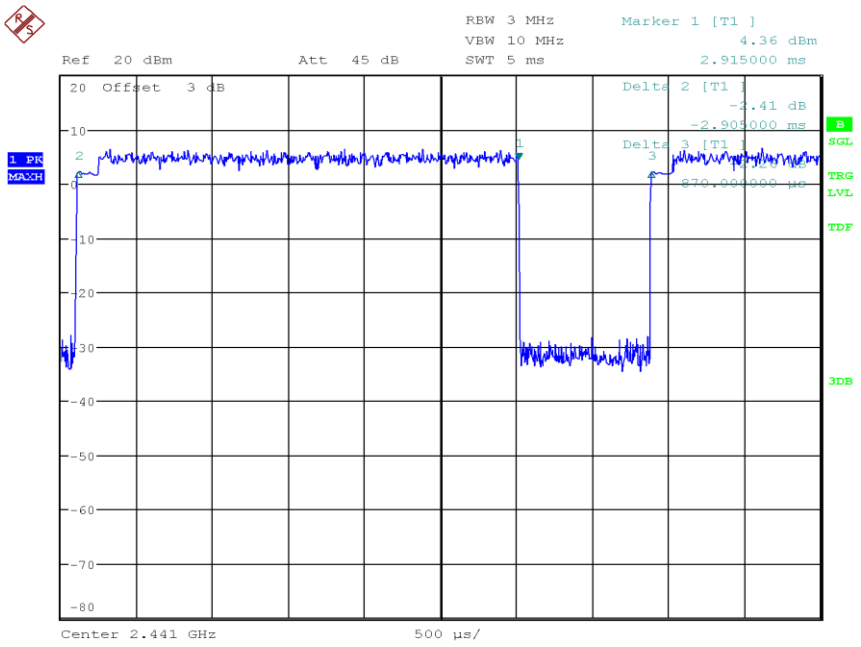
Note: Dwell Time = 0.4 x Hopping channel x Burst On Time x ((Hopping rate / Time slots) / Hopping channel)
- Time slots for DH5 = 6 slots (TX = 5 slot / RX = 1 slot)
- Hopping Rate = 1600 for FH mode & 800 for AFH mode

8.5 Test Plot

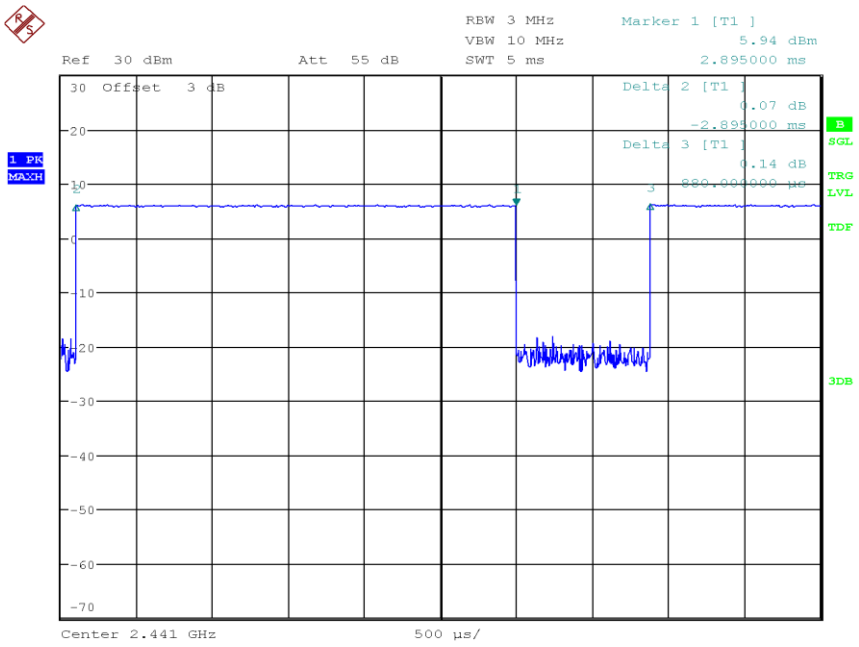
GFSK (BT1)	Time of Occupancy



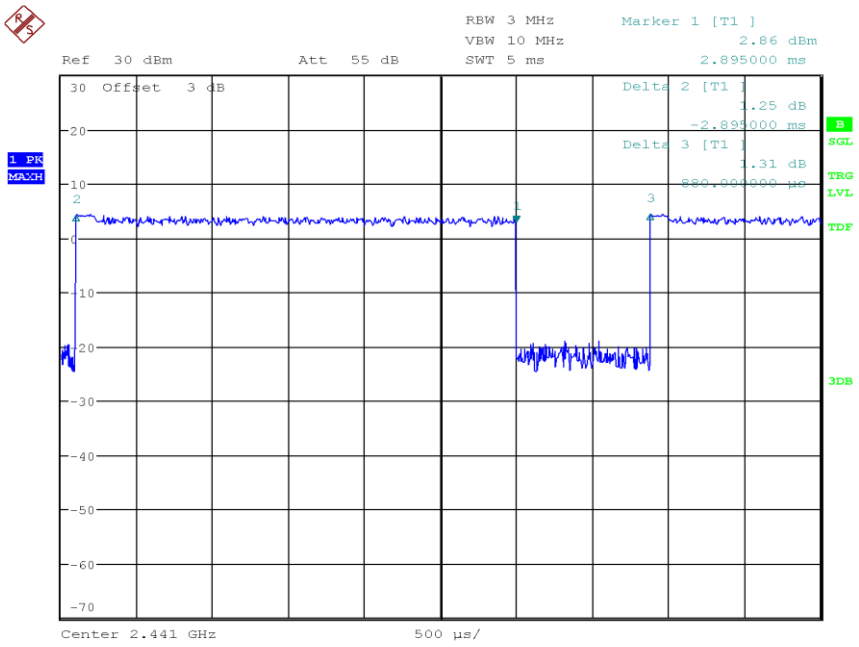
8DPSK (BT1)	Time of Occupancy



GFSK (BT2)	Time of Occupancy



8DPSK (BT2)	Time of Occupancy



9. Carrier Frequencies Separation

9.1 Test Setup

Refer to the APPENDIX I.

9.2 Limit

Limit : ≥ 25 kHz or ≥ Two-Thirds of the 20 dB Bandwidth whichever is greater.

9.3 Test Procedure

The carrier frequency separation was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.
After the trace being stable, the reading value between the peaks of the adjacent channels using the marker delta function was recorded as the measurement results.

The spectrum analyzer is set to:
Span = wide enough to capture the peaks of two adjacent channels
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.
VBW ≥ RBW Sweep = Auto
Detector = Peak Trace = Max hold

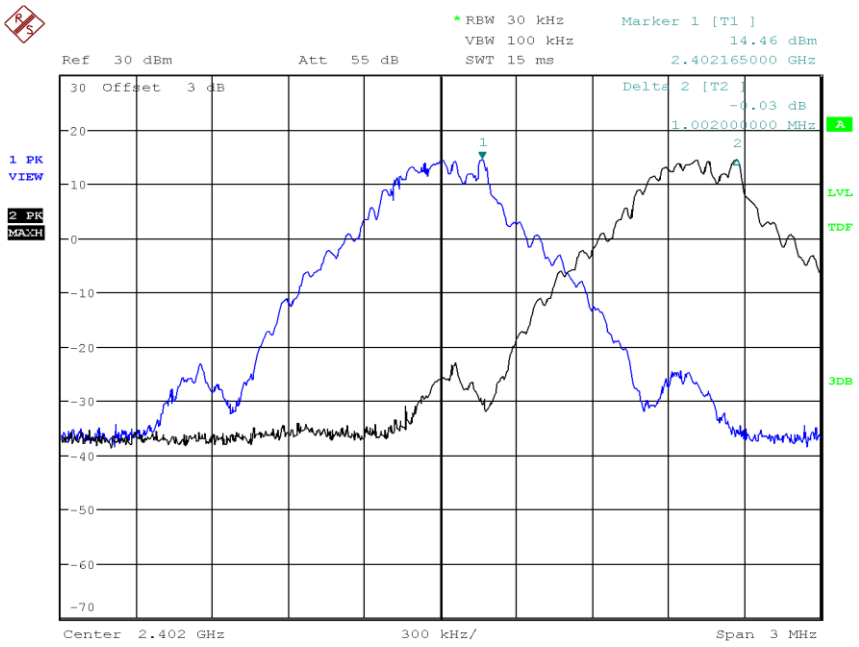
9.4 Test Result

Test Mode	Test Frequency	Carrier Frequencies Separation (MHz)	Min. Limit (MHz)
GFSK (BT1)	Low	1.002	0.640
	Middle	1.005	0.639
	High	1.002	0.637
8DPSK (BT1)	Low	0.999	0.868
	Middle	1.005	0.868
	High	0.999	0.868
GFSK (BT2)	Low	1.002	0.643
	Middle	1.002	0.640
	High	0.999	0.640
8DPSK (BT2)	Low	1.002	0.852
	Middle	1.002	0.852
	High	1.002	0.852

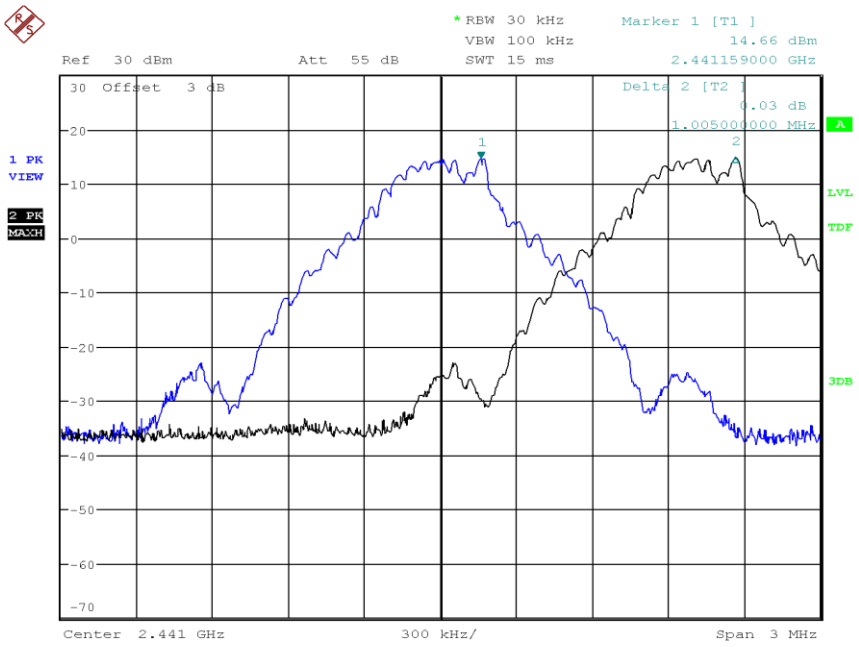
Note: Limit(kHz) = Test Result of 20 dB BW * 2/3

9.5 Test Plot

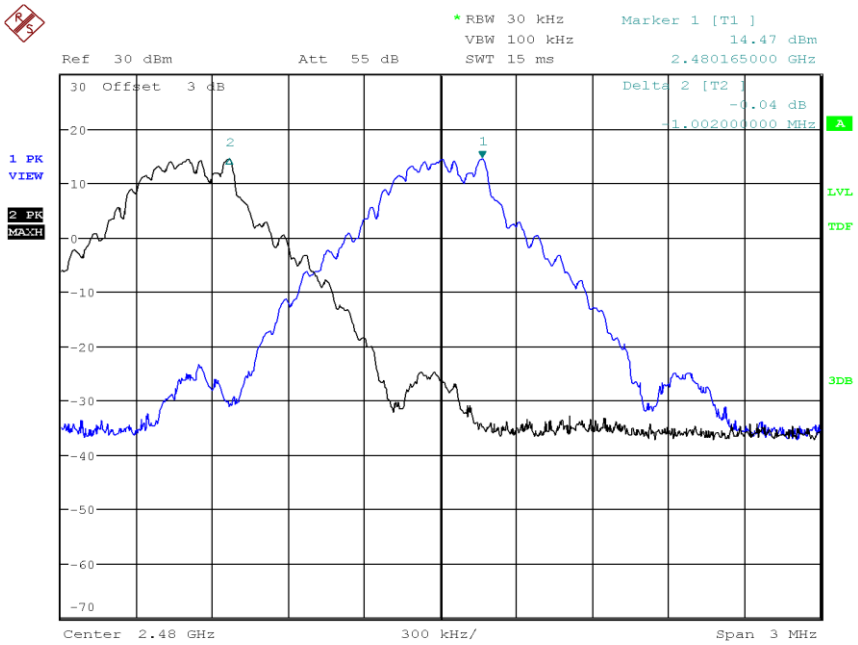
GFSK (BT1) _ Low frequency	Carrier Frequency Separation



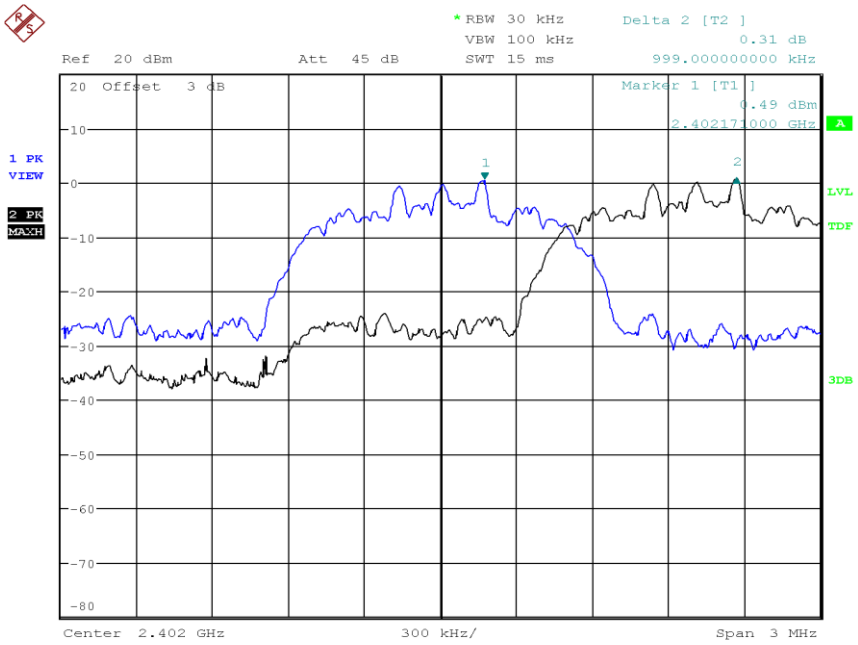
GFSK (BT1) _ Middle frequency	Carrier Frequency Separation



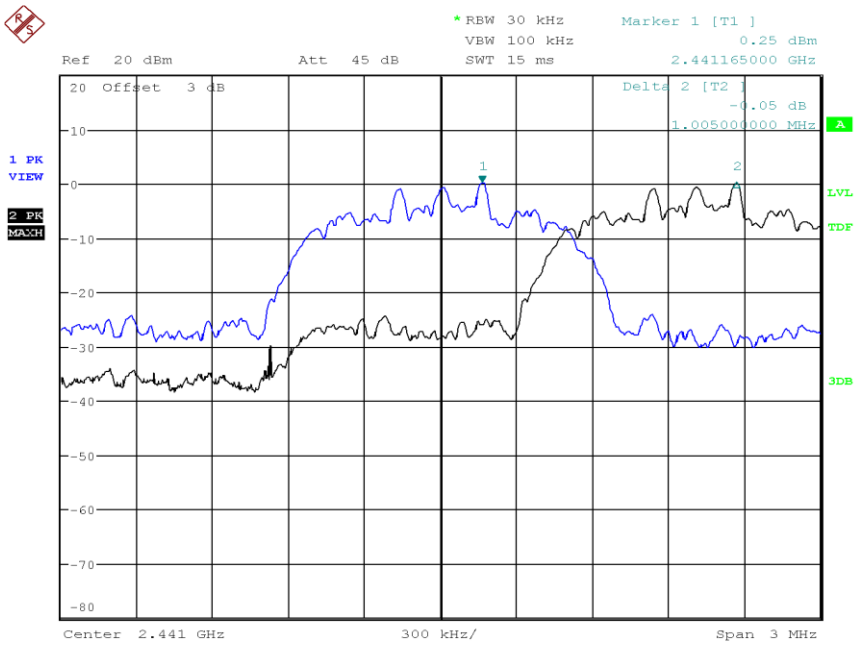
GFSK (BT1) _ High frequency	Carrier Frequency Separation



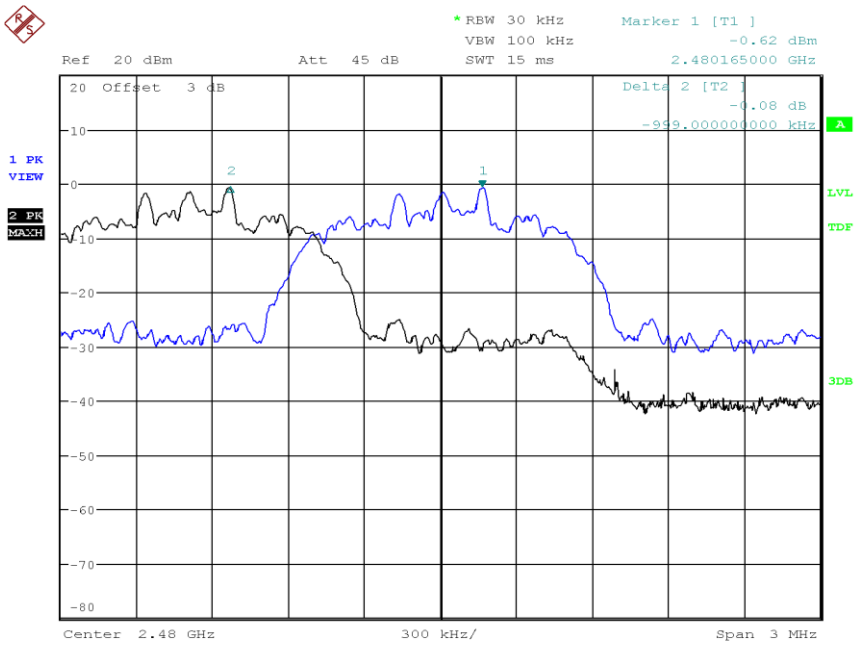
8DPSK (BT1) _ Low frequency	Carrier Frequency Separation



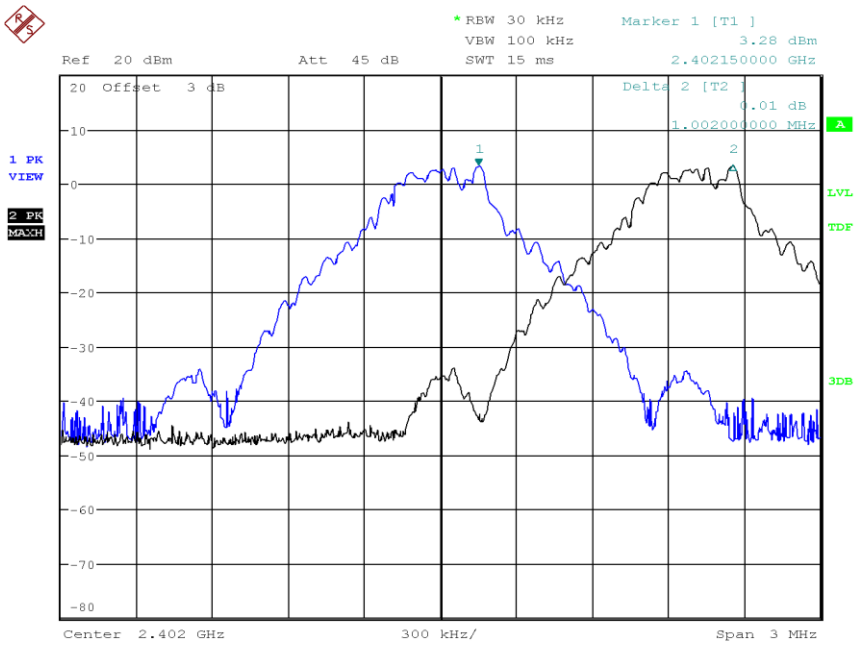
8DPSK (BT1) _ Middle frequency	Carrier Frequency Separation



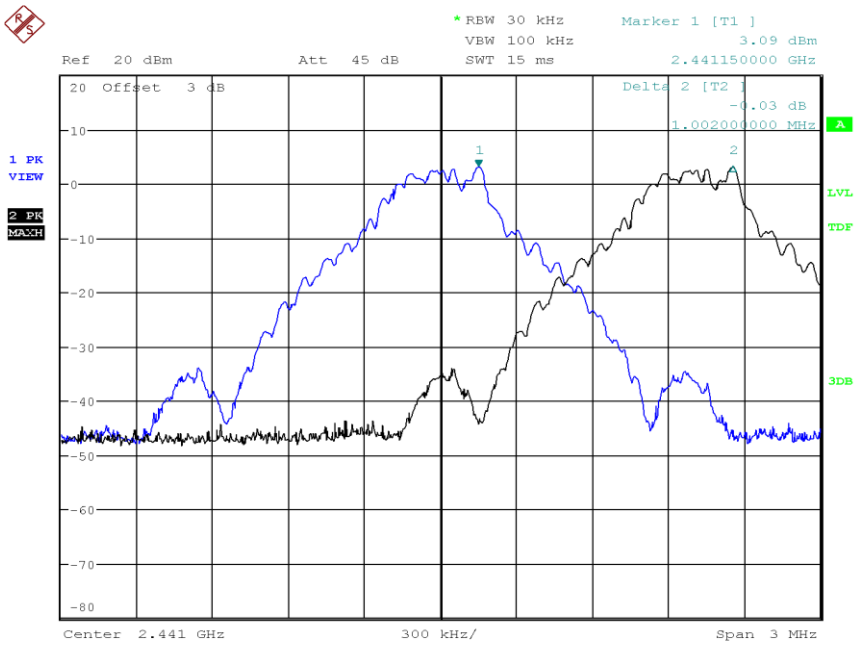
8DPSK (BT1) _ High frequency	Carrier Frequency Separation



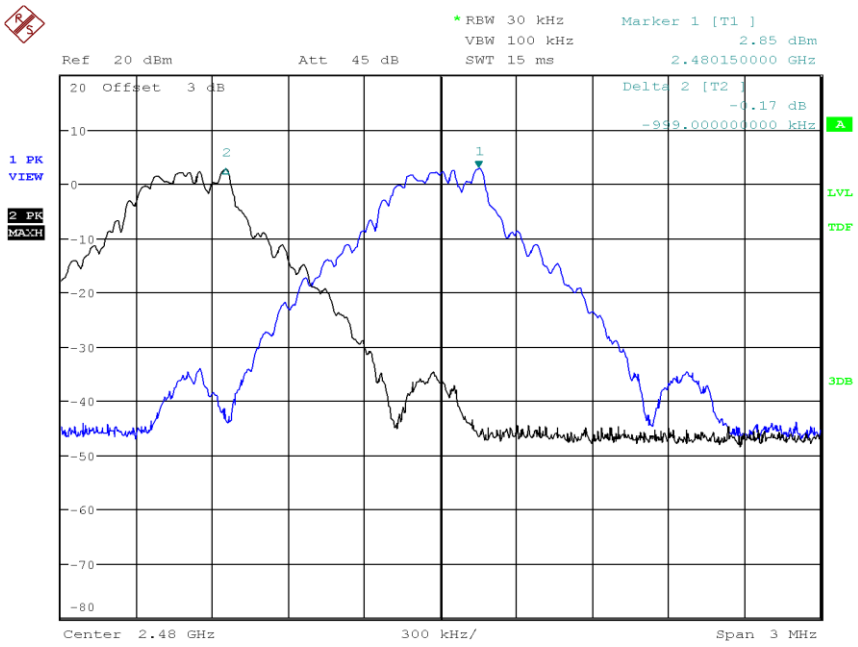
GFSK (BT2) _ Low frequency	Carrier Frequency Separation



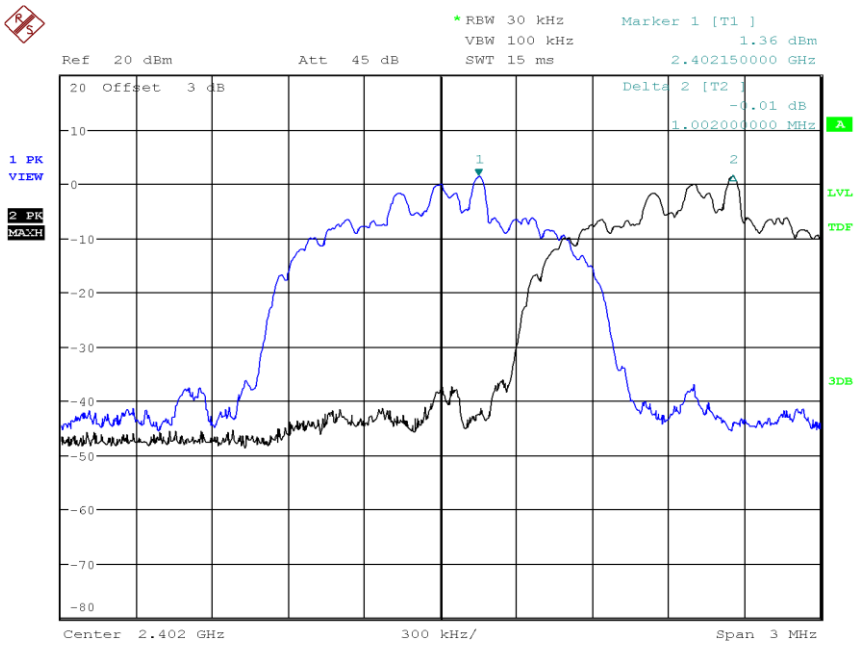
GFSK (BT2) _ Middle frequency	Carrier Frequency Separation



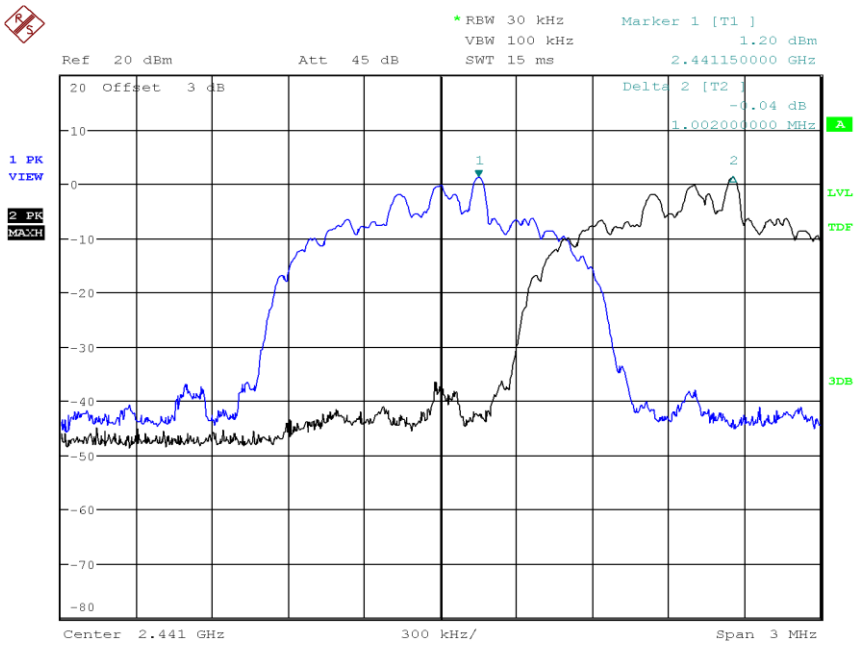
GFSK (BT2) _ High frequency	Carrier Frequency Separation



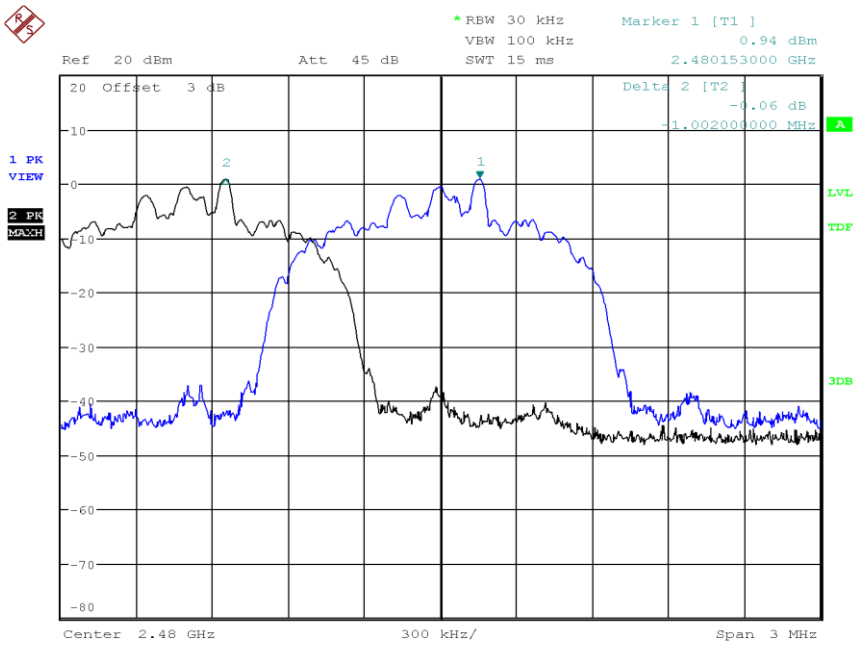
8DPSK (BT2) _ Low frequency	Carrier Frequency Separation



8DPSK (BT2) _ Middle frequency	Carrier Frequency Separation



8DPSK (BT2) _ High frequency	Carrier Frequency Separation



10. Peak Output Power

10.1 Test Setup

Refer to the APPENDIX I.

10.2 Limit

■ FCC Requirements

The maximum peak output power of the intentional radiator shall not exceed the following:

1. §15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.
2. §15.247(b)(1), For frequency hopping systems operating in the 2400 – 2483.5 MHz employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725 – 5805 MHz band: 1 Watt. For all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 watts.

■ IC Requirements

1. RSS-247(5.4) (b), For FHSS operating in the band 2400 – 2483.5 MHz, the maximum peak conducted output power shall not exceed 1.0 W if the hopset uses 75 or more hopping channels, the maximum peak conducted output power shall not exceed 0.125 W if the hopset uses less than 75 hopping channels. The e.i.r.p shall not exceed 4 W, except as provided in section 5.4(e)

10.3 Test Procedure

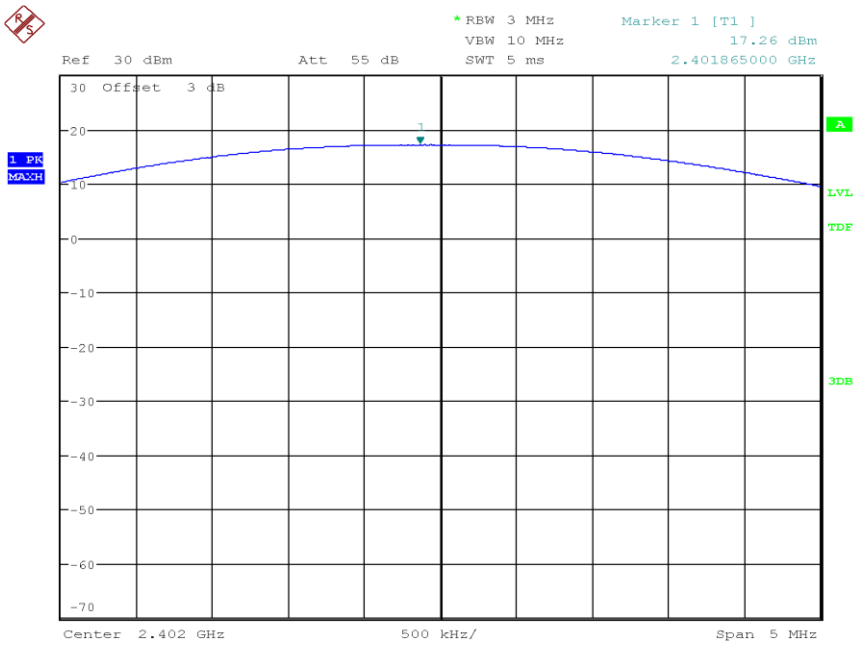
1. The RF output power was measured with a spectrum analyzer connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate center frequency, a spectrum analyzer was used to record the shape of the transmit signal.
2. The peak output power of the fundamental frequency was measured with the spectrum analyzer using;
   Span = approximately 5 times of the 20 dB bandwidth, centered on a hopping channel
   RBW ≥ 20 dB Bandwidth
   VBW ≥ RBW
   Sweep = Auto
   Detector function = Peak
   Trace = Max Hold

10.4 Test Result

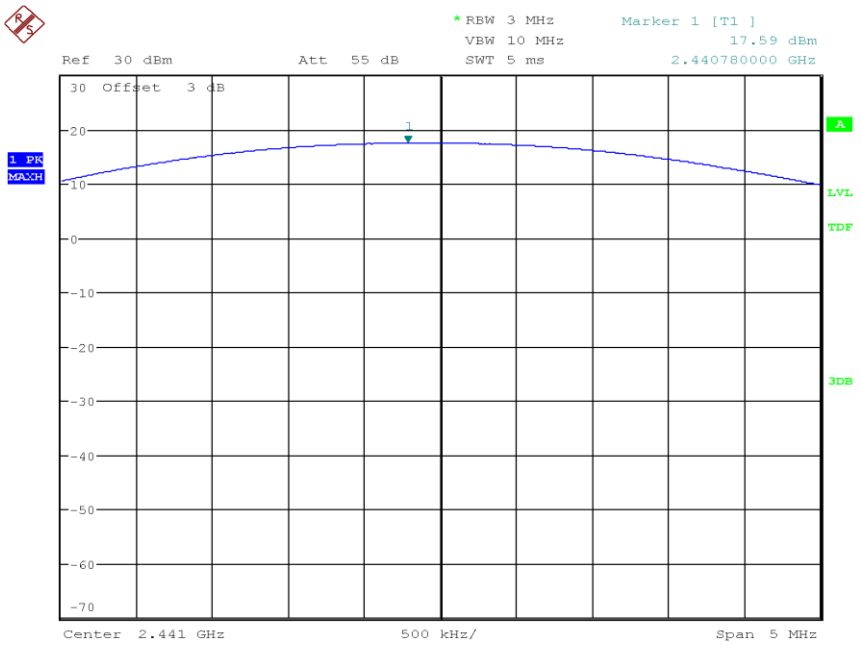
Test Mode	Test Frequency	Peak Output Power	
		dBm	mW
GFSK (BT1)	Low	17.26	53.21
	Middle	17.59	57.41
	High	17.34	54.20
Pi/4 DQPSK (BT1)	Low	6.53	4.50
	Middle	6.01	3.99
	High	5.23	3.33
8DPSK (BT1)	Low	7.69	5.87
	Middle	7.05	5.07
	High	6.02	4.00
GFSK (BT2)	Low	6.18	4.15
	Middle	5.99	3.97
	High	5.82	3.82
Pi/4 DQPSK (BT2)	Low	4.31	2.70
	Middle	4.14	2.59
	High	3.89	2.45
8DPSK (BT2)	Low	4.32	2.70
	Middle	4.16	2.61
	High	3.94	2.48

10.5 Test Plot

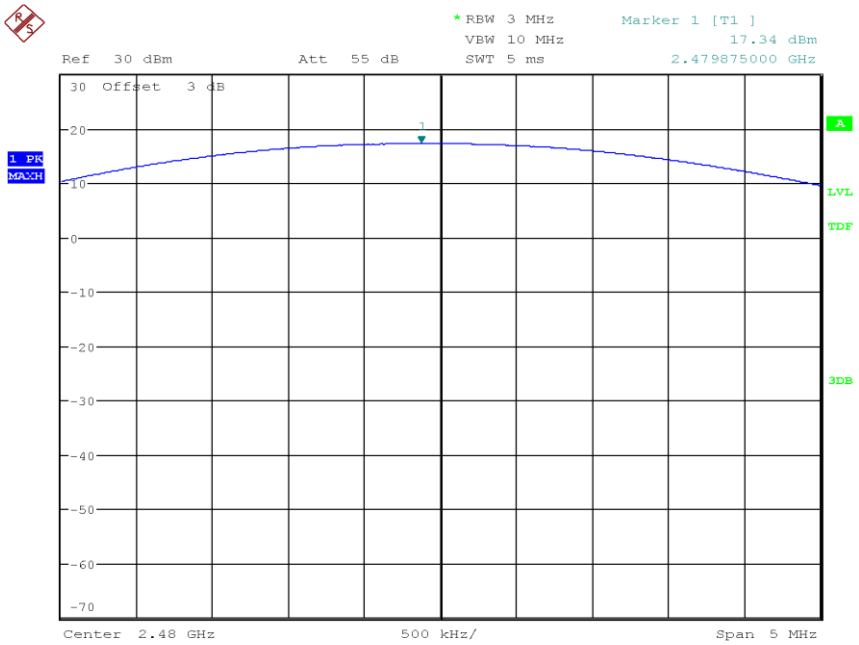
GFSK (BT1) _ Low frequency	Peak Output Power



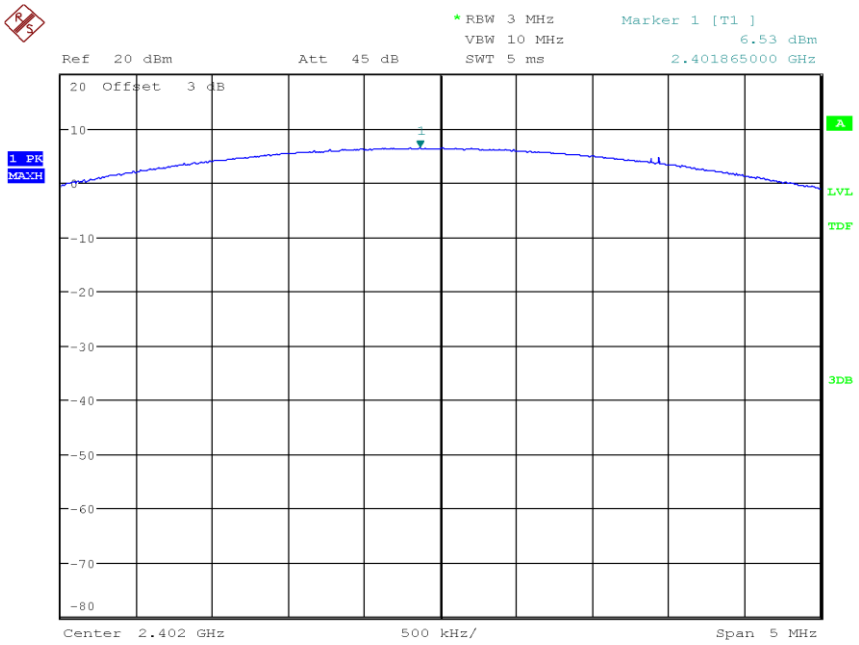
GFSK (BT1) _ Middle frequency	Peak Output Power



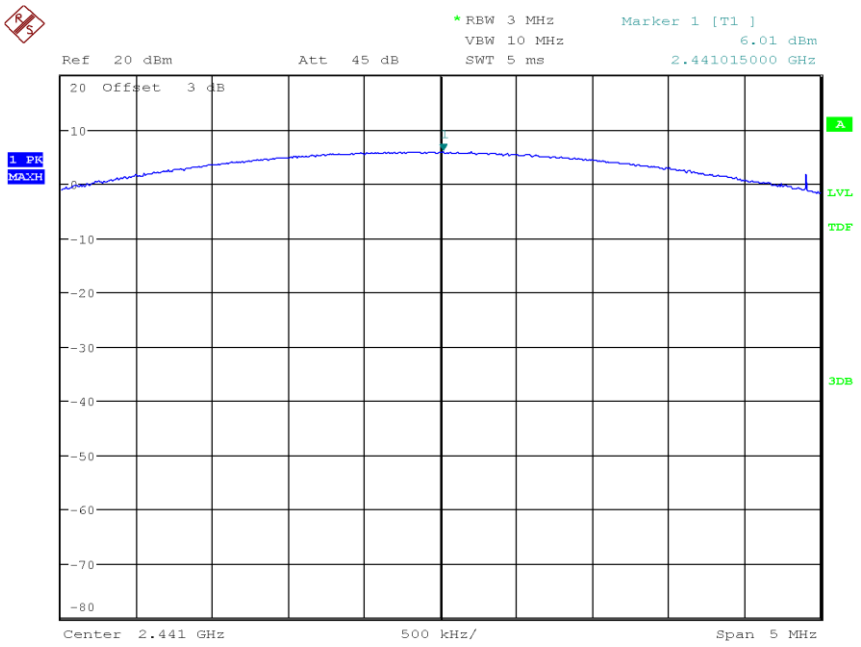
GFSK (BT1) _ High frequency	Peak Output Power



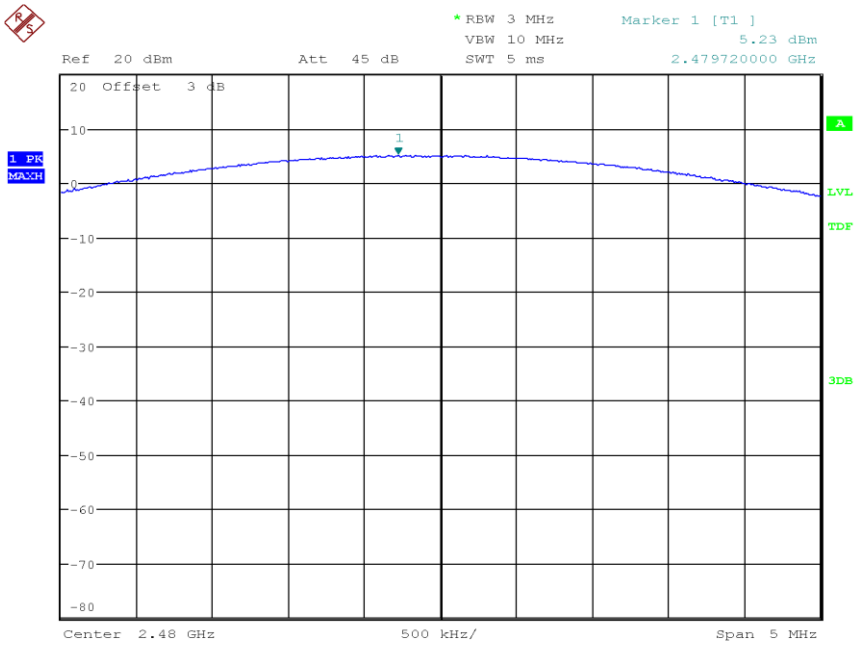
Pi/4 DQPSK (BT1) _ Low frequency	Peak Output Power



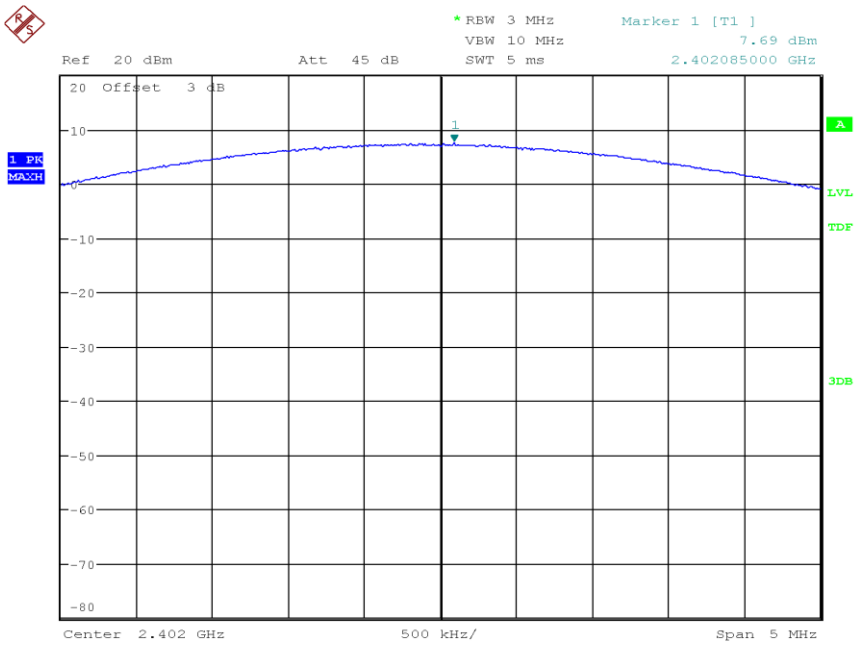
Pi/4 DQPSK (BT1) _ Middle frequency	Peak Output Power



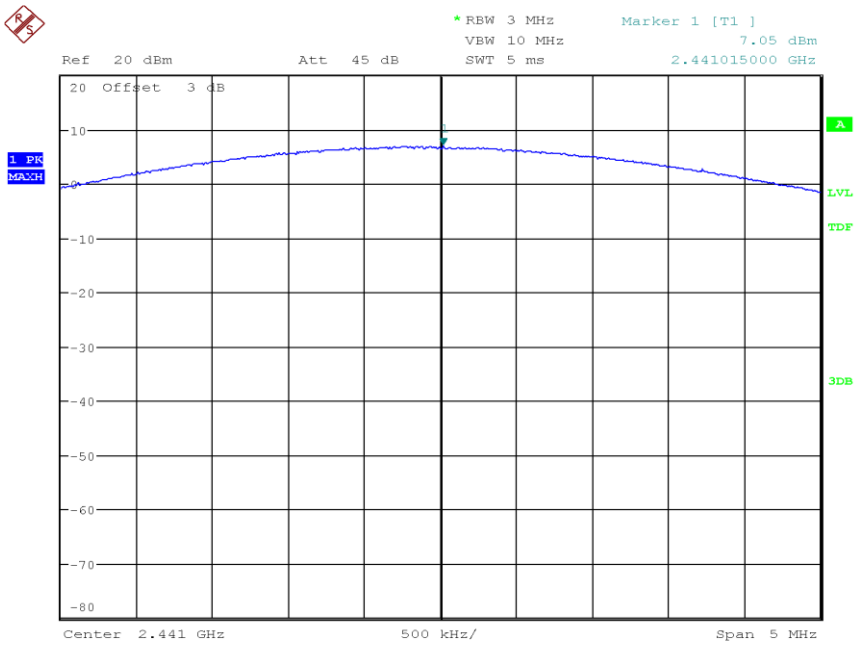
Pi/4 DQPSK (BT1) _ High frequency	Peak Output Power



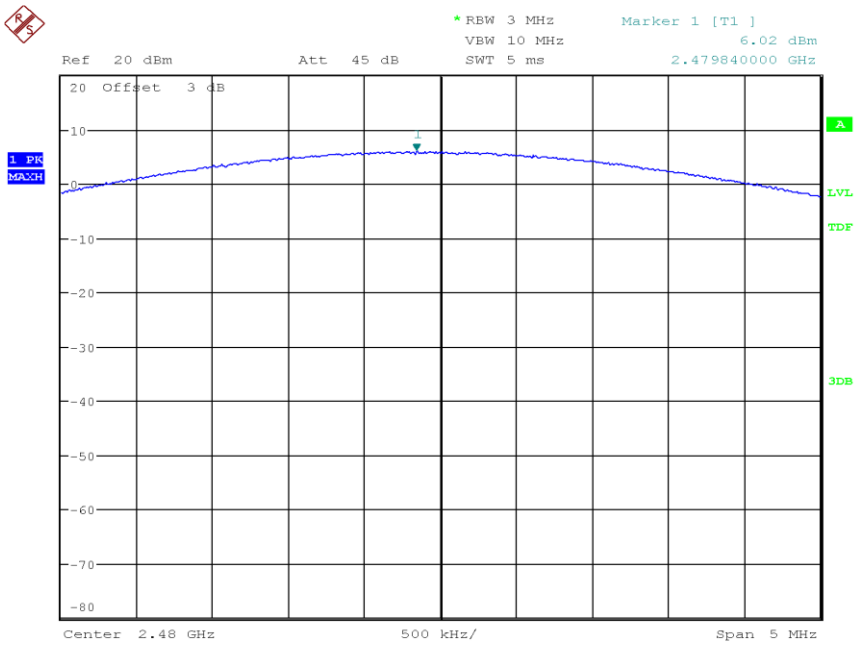
8DPSK (BT1) _ Low frequency	Peak Output Power



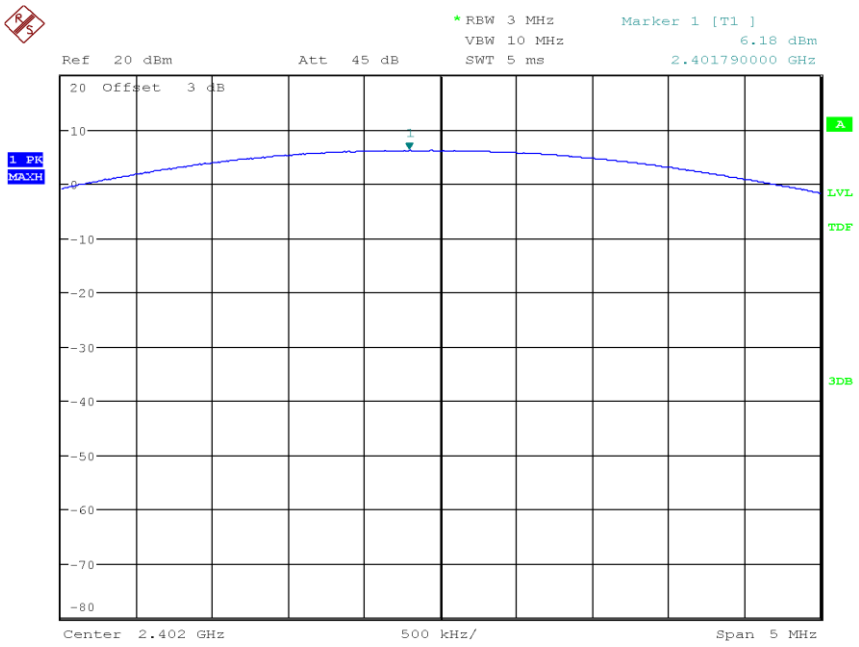
8DPSK (BT1) _ Middle frequency	Peak Output Power



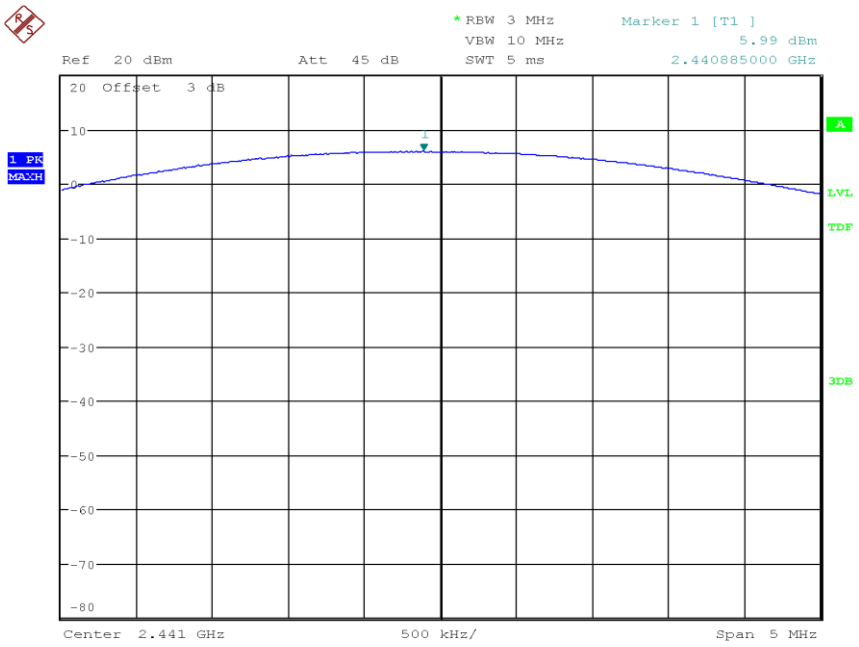
8DPSK (BT1) _ High frequency	Peak Output Power



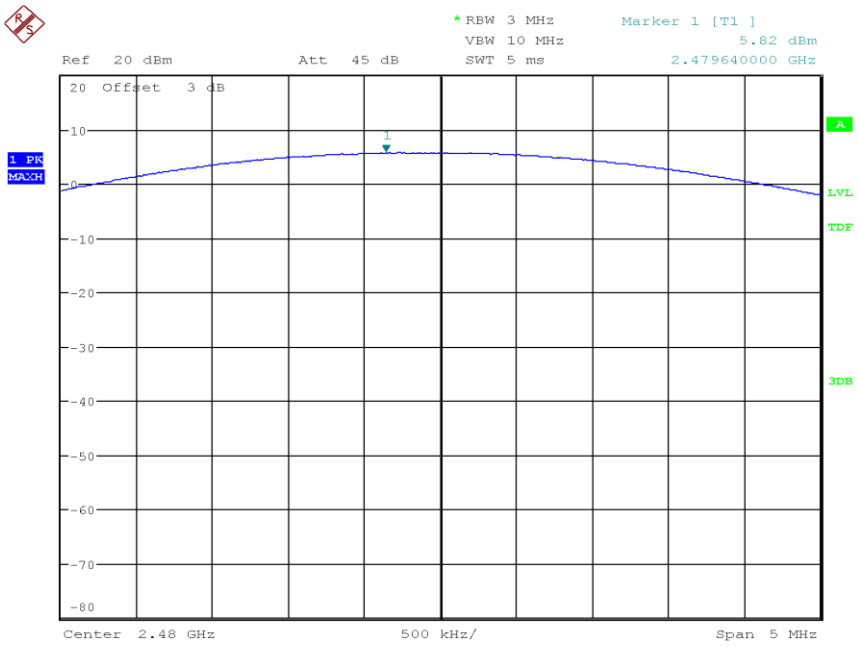
GFSK (BT2) _ Low frequency	Peak Output Power



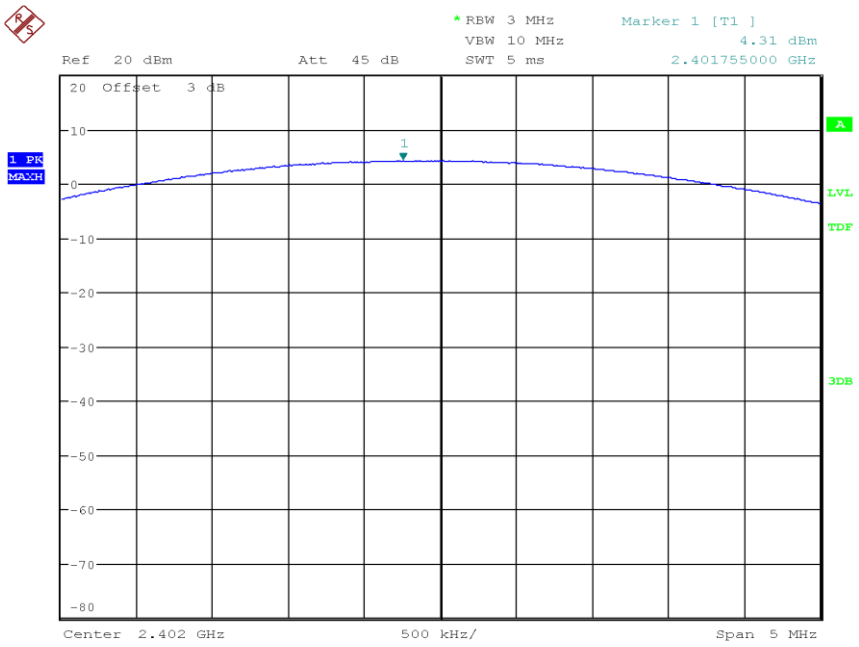
GFSK (BT2) _ Middle frequency	Peak Output Power



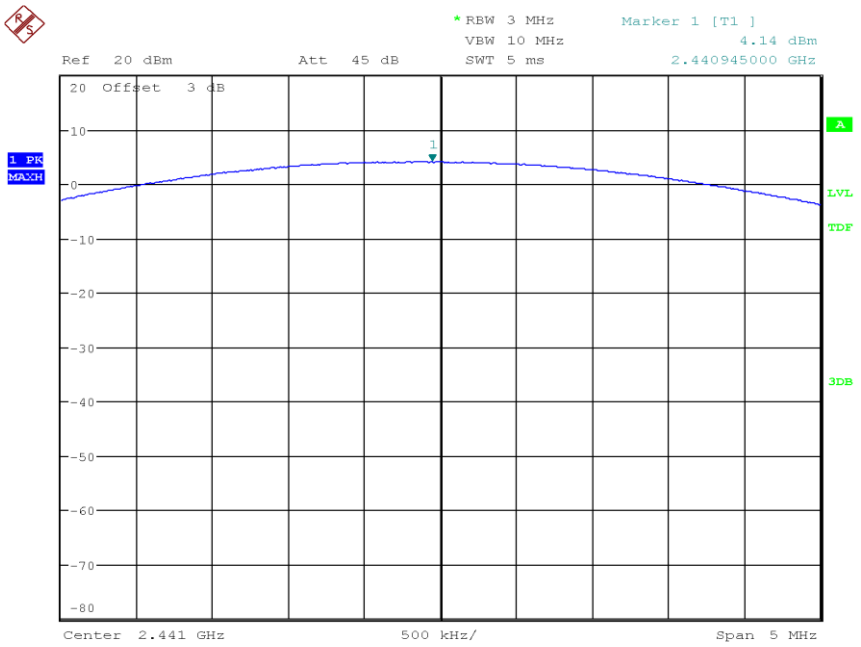
GFSK (BT2) _ High frequency	Peak Output Power



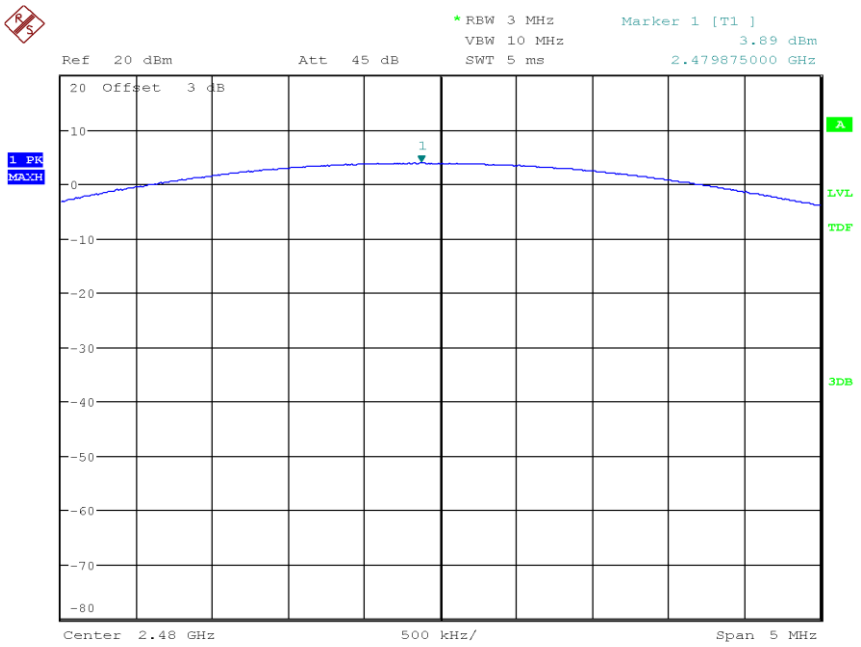
Pi/4 DQPSK (BT2) _ Low frequency	Peak Output Power



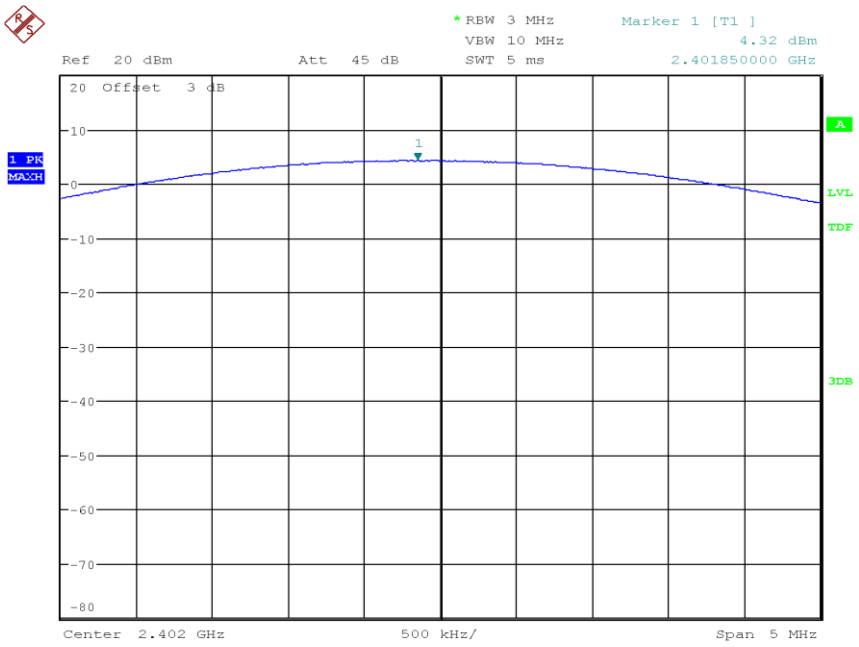
Pi/4 DQPSK (BT2) _ Middle frequency	Peak Output Power



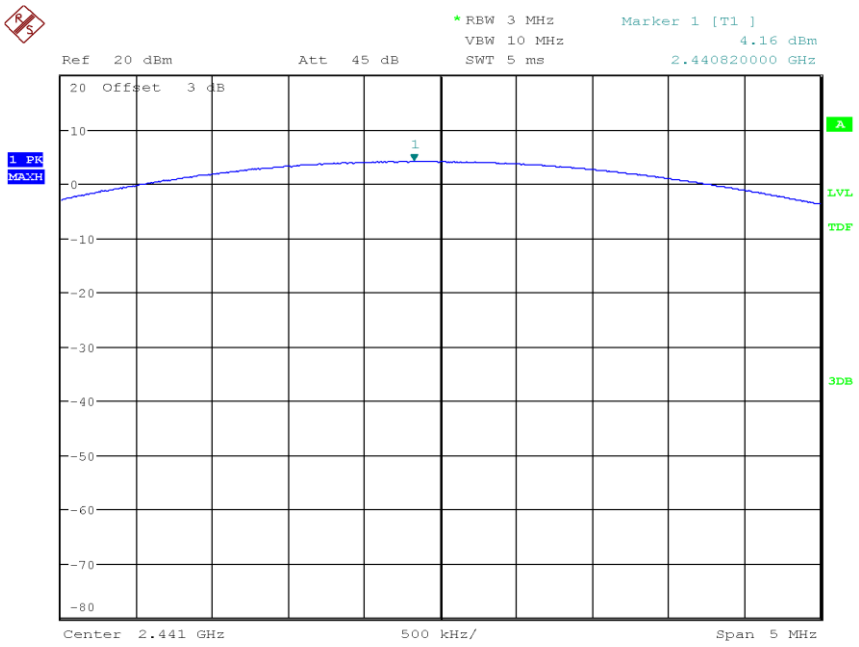
Pi/4 DQPSK (BT2) _ High frequency	Peak Output Power



8DPSK (BT2) _ Low frequency	Peak Output Power



8DPSK (BT2) _ Middle frequency	Peak Output Power



8DPSK (BT2) _ High frequency	Peak Output Power