TEST REPORT

Applicant:	Xiamen Paperang Technology Co.,Ltd.
Address of Applicant:	Room 3124,Xuanye Building,Pioneer Park,Xiamen Torch High-tech Zone,Fujian,China

Equipment Under Test (EUT)

Product Name:	Thermal Printer
Model No.:	P3,P3L,P3S,PAPERANG P3,PAPERANG-P3,P3B2,P3Y2,P3A2,P3Z2,P3N2,P3S2,P3C2,P3W2,P3X2
Trade mark:	PAPERANG
FCC ID:	2APWO-P3W2
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247
Date of sample receipt:	30 Mar., 2022
Date of Test:	14 Apr., 2022~30 May, 2022
Date of report issued:	30 May, 2022
Test Result:	PASS *

* In the configuration tested, the EUT complied with the standards specified above.

1 Modified information

Version No.	Date	Description
00	*30 May, 2022*	*Original*

Tested by: Leo Zhang **Date:** 30 May, 2022

Leo Zhang/ Engineer

Reviewed by: **Date:** 30 May, 2022

Louis Ye/Manager

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3 Test Summary

Test Items	Section in CFR 47	Result
Antenna Requirement	15.203&15.247 (b)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.247 (b)(1)	Pass
20dB Occupied Bandwidth	15.247 (a)(1)	Pass
Carrier Frequencies Separation	15.247 (a)(1)	Pass
Hopping Channel Number	15.247 (a)(1)	Pass
Dwell Time	15.247 (a)(1)	Pass
Spurious Emission	15.205&15.209	Pass
Band Edge	15.247(d)	Pass

Remark:

1. *Pass: The EUT complies with the essential requirements in the standard.*
2. *N/A:Not Applicable.*
3. *The cable insertion loss used by "RF Output Power" and other conduction measurement items is 1dB (provided by the customer).*

Test Method:	*ANSI C63.10-2013* *KDB 558074 D01 15.247 Meas Guidance v05r02*

4 General Information

4.1 Client Information

Applicant:	Xiamen Paperang Technology Co.,Ltd.
Address:	Room 3124,Xuanye Building,Pioneer Park,Xiamen Torch High-tech Zone, Fujian,China
Manufacturer:	Xiamen Paperang Technology Co.,Ltd.
Address:	Room 3124,Xuanye Building,Pioneer Park,Xiamen Torch High-tech Zone, Fujian,China

4.2 General Description of E.U.T.

Product Name:	Thermal Printer
Model No.:	P3,P3L,P3S,PAPERANG P3,PAPERANG-P3,P3B2,P3Y2,P3A2,P3Z2,P3N2, P3S2,P3C2,P3W2,P3X2
Operation Frequency:	2402MHz~2480MHz
Transfer rate:	1/2/3 Mbits/s
Number of channel:	79
Modulation type:	GFSK, π/4-DQPSK, 8DPSK
Modulation technology:	FHSS
Antenna Type:	PCB Antenna
Antenna gain:	0dBi
Power supply:	Battery
AC adapter:	N/A
Differences of series model:	Only the model name and appearance color are different between each model, others are the same, the difference does not affect the safety and electromagnetic compatibility performance of the product, so full tests were performed on the model P3W2.

Operation Frequency each of channel for GFSK, π/4-DQPSK, 8DPSK							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	2402MHz	20	2422MHz	40	2442MHz	60	2462MHz
1	2403MHz	21	2423MHz	41	2443MHz	61	2463MHz
2	2404MHz	22	2424MHz	42	2444MHz	62	2464MHz
3	2405MHz	23	2425MHz	43	2445MHz	63	2465MHz
4	2406MHz	24	2426MHz	44	2446MHz	64	2466MHz
5	2407MHz	25	2427MHz	45	2447MHz	65	2467MHz
…	…	…	…	…	…	…	…
15	2417MHz	35	2437MHz	55	2457MHz	75	2477MHz
16	2418MHz	36	2438MHz	56	2458MHz	76	2478MHz
17	2419MHz	37	2439MHz	57	2459MHz	77	2479MHz
18	2420MHz	38	2440MHz	58	2460MHz	78	2480MHz
19	2421MHz	39	2441MHz	59	2461MHz		
Remark: Channel 0, 39 &78 selected for GFSK, π/4-DQPSK and 8DPSK.							

4.3 Test environment and test mode

Operating Environment:	
Temperature:	22.5°C
Humidity:	55 % RH
Atmospheric Pressure:	1010 mbar
Test Modes:	
Non-hopping mode:	Keep the EUT in continuous transmitting mode with worst case data rate.
Hopping mode:	Keep the EUT in hopping mode.
Remark	GFSK (1 Mbps) is the worst case mode.
The sample was placed 0.8m (below 1GHz)/1.5m (above 1GHz) above the ground plane of 3m chamber*. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.	

4.4 Description of Support Units

The EUT has been tested as an independent unit.

4.5 Measurement Uncertainty

Parameters	Expanded Uncertainty
Conducted Output Power	±1.7 dB (k=2)
Occupied Bandwidth	1.3%
Conducted Spurious Emission	±1.9 dB (k=2)
Conducted Emission (150kHz ~ 30MHz)	±2.8 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	±2.5 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	±4.1 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	±5.6 dB (k=2)
Radiated Emission (18GHz ~ 40GHz)	±4.8 dB (k=2)

4.6 Additions to, deviations, or exclusions from the method

No

4.7 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

●FCC - Designation No.: CN1279

Jianyan Testing Group Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 892155.

●ISED – CAB identifier.: CN0102

Jianyan Testing Group Co., Ltd. has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements with ISED#:26114.

● A2LA - Registration No.: 5568.01

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/5568-01.pdf

4.8 Laboratory Location

JianYan Testing Group Co.,Ltd.
Address: No.760, Fengling Road, Tong'an District, Xiamen, Fujian, China
Tel: +86-592-2273071, Fax:+86-592-2273700
Email: info-JYTee@lets.com, Website: http://www.lets.com/

4.9 Test Instruments list

Conducted Emission:					
Test Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
EMI Test Receiver	Rohde & Schwarz	ESR 3	102330	2021-07-29	2022-07-28
LISN	Rohde & Schwarz	ENV 216	102240	2021-07-29	2022-07-28
LISN	AFJ/Italy	LS16C\10	16012020470	2021-06-22	2022-06-21
EMI Test Software	Farad	EZ-EMC	Version: V.EMCE-3A1		

Radiated Emission:					
Test Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
EMI Test Receiver	Rohde & Schwarz	ESR 3	102329	2021-07-29	2022-07-28
SpectrumAnalyzer	Rohde & Schwarz	FSV40-N	102175	2022-03-01	2023-02-28
Loop Antenna	ETS	6502	00235114	2022-03-05	2023-03-04
BiConiLog Antenna	SCHWARZBECK	VULB 9163	1105	2021-12-05	2022-12-04
BiConiLog Antenna	SCHWARZBECK	VULB 9168	1066	2022-03-05	2023-03-04
Horn Antenna	SCHWARZBECK	BBHA 9120 D	911	2022-03-05	2023-03-04
Pre-amplifier	SCHWARZBECK	BBV9743	00009	2021-07-29	2022-07-28
Pre-amplifier	SCHWARZBECK	BBV9718C	00014	2022-03-01	2023-02-28
EMI Test Software	Farad	EZ-EMC	Version: V.EMCE-3A1		

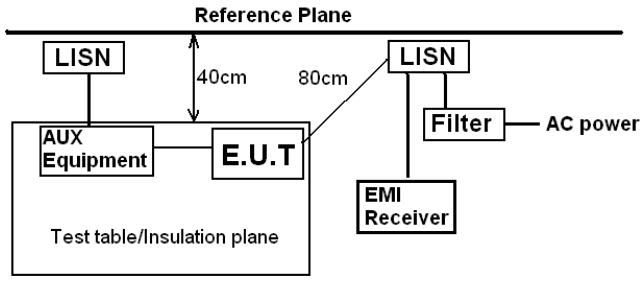
Conducted method For EN 300 328 Test System:					
Test Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
Signal Generator	Agilent	N5181	MY49060122	2022-03-01	2023-02-28
Specture Analyzer	R&S	FSV40-N	102175	2022-03-01	2023-02-28
Wideband Radio Communication Tester	R&S	CMW500	145852	2022-03-01	2023-02-28
Signal Generator	Agilent	N5182A	MY51004823	2022-03-01	2023-02-28
Power Sensor	Keysight	U2021XA	MY54320004	2022-03-01	2023-02-28
Test Software	MWRFTEST	MTS 8310	Version: 2.0.0.0		

5 Test results and measurement data

5.1 Antenna Requirement

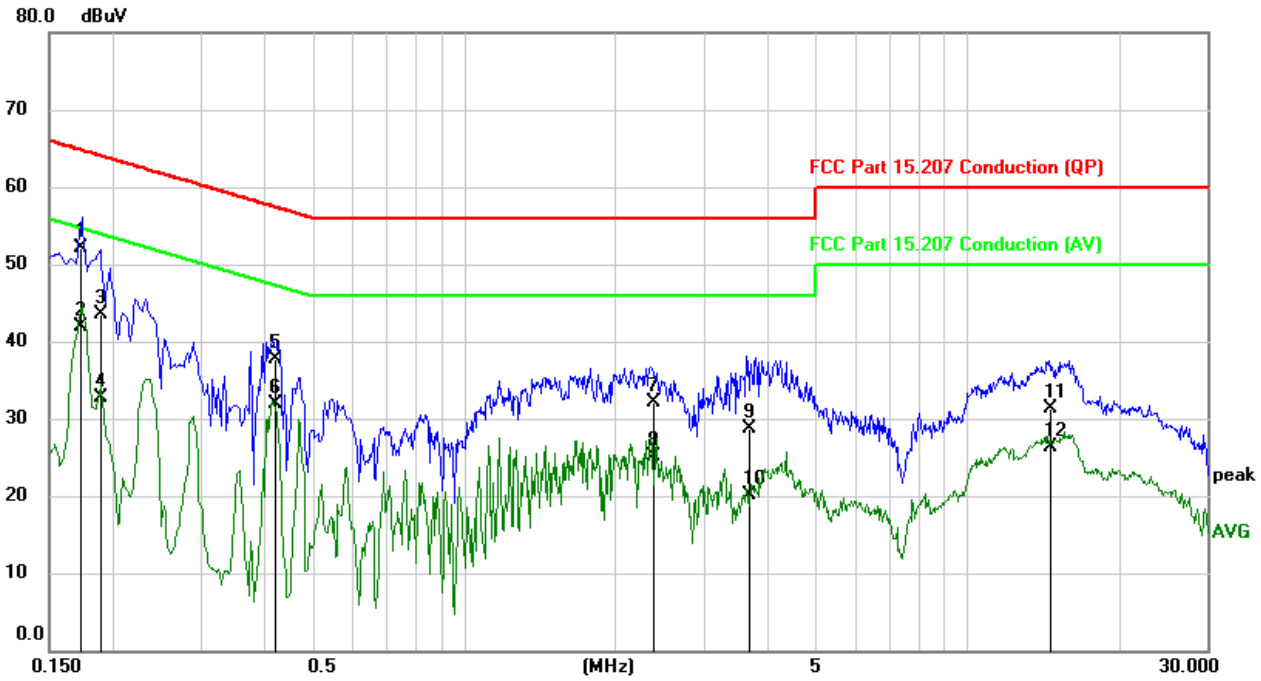
Standard requirement:	FCC Part15 C Section 15.203 &247(b)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, 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. 15.247(b) (4) requirement: (4) The 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.	
E.U.T Antenna:	
The Bluetooth antenna is an Internal antenna which permanently attached, and the best case gain of the antenna is0dBi.	

5.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207		
Test Frequency Range:	150kHz to 30MHz		
Class / Severity:	Class B		
Receiver setup:	RBW=9kHz, VBW=30kHz, Sweep time=auto		
Limit:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
	* Decreases with the logarithm of the frequency.		
Test setup:	 *Remark:* *E.U.T: Equipment Under Test* *LISN: Line Impedence Stabilization Network* *Test table height=0.8m*		
Test procedure:	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network(L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10(latest version) on conducted measurement.		
Test Instruments:	Refer to section 4.9 for details		
Test mode:	Charging + BT Link.		
Test results:	Pass		

Measurement Data:

Product model:	P3W2	Test result:	pass
Test by:	Leo Zhang	Test mode:	Charging + BT Link.
Test voltage:	120Vac, 60 Hz	Phase:	Line (N)
Environment:	Temp.: 23.9℃	Humi.: 55%	



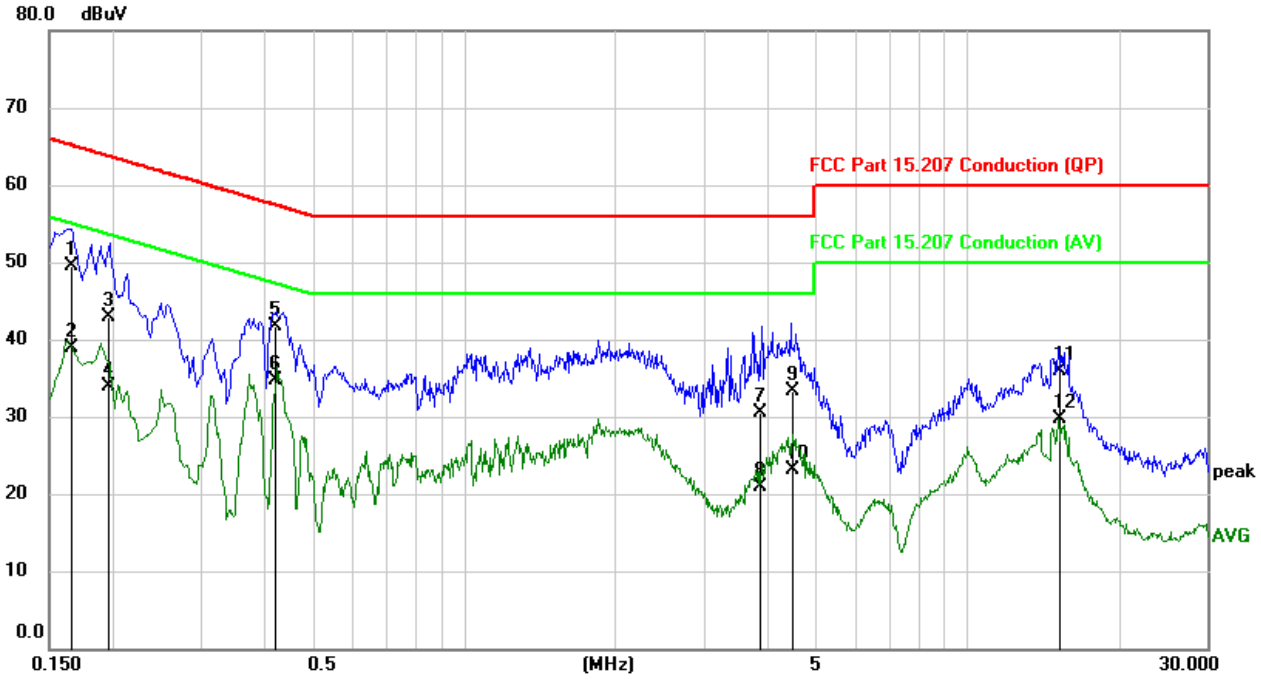
(Plot A:N Phase)

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.1723	42.41	9.79	52.20	64.85	-12.65	QP
2		0.1723	32.11	9.79	41.90	54.85	-12.95	AVG
3		0.1888	33.63	9.80	43.43	64.09	-20.66	QP
4		0.1888	22.92	9.80	32.72	54.09	-21.37	AVG
5		0.4194	27.76	9.86	37.62	57.46	-19.84	QP
6		0.4194	22.10	9.86	31.96	47.46	-15.50	AVG
7		2.3715	22.17	9.87	32.04	56.00	-23.96	QP
8		2.3715	15.18	9.87	25.05	46.00	-20.95	AVG
9		3.6767	18.84	9.90	28.74	56.00	-27.26	QP
10		3.6767	10.19	9.90	20.09	46.00	-25.91	AVG
11		14.5248	21.32	10.05	31.37	60.00	-28.63	QP
12		14.5248	16.21	10.05	26.26	50.00	-23.74	AVG

Notes:

1. *An initial pre-scan was performed on the line and neutral lines with peak detector.*
2. *Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.*
3. *Final Level =Receiver Read level + LISN Factor + Cable Loss.*

Product model:	P3W2	Test result:	pass
Test by:	Leo Zhang	Test mode:	Charging + BT Link.
Test voltage:	120Vac, 60 Hz	Phase:	Line (L)
Environment:	Temp.: 23.9℃ Humi.: 55%		



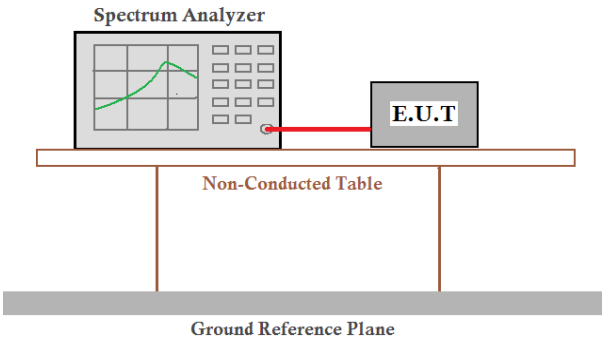
(Plot B:L Phase)

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1654	39.78	9.79	49.57	65.19	-15.62	QP
2		0.1654	29.12	9.79	38.91	55.19	-16.28	AVG
3		0.1962	33.20	9.80	43.00	63.77	-20.77	QP
4		0.1962	24.01	9.80	33.81	53.77	-19.96	AVG
5		0.4203	31.81	9.86	41.67	57.44	-15.77	QP
6	*	0.4203	24.88	9.86	34.74	47.44	-12.70	AVG
7		3.8680	20.64	9.89	30.53	56.00	-25.47	QP
8		3.8680	11.02	9.89	20.91	46.00	-25.09	AVG
9		4.4787	23.47	9.88	33.35	56.00	-22.65	QP
10		4.4787	13.22	9.88	23.10	46.00	-22.90	AVG
11		15.1539	25.83	10.05	35.88	60.00	-24.12	QP
12		15.1539	19.58	10.05	29.63	50.00	-20.37	AVG

Notes:

1. *An initial pre-scan was performed on the line and neutral lines with peak detector.*
2. *Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.*
3. *Final Level =Receiver Read level + LISN Factor + Cable Loss.*

5.3 Conducted Output Power

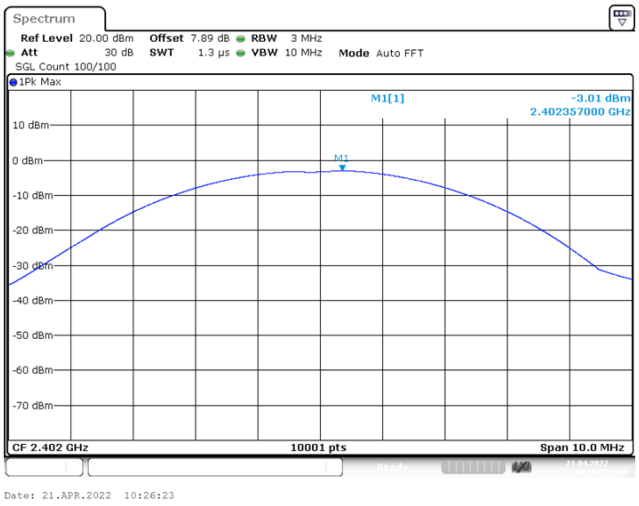
Test Requirement:	FCC Part15 C Section 15.247 (b)(1)
Receiver setup:	RBW=3MHz, VBW=10MHz, span=10MHz,Sweep time=auto couple. Detector=Peak ,Trace mode=max hold,Allow trace to fully stabilize.
Limit:	For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.
Test setup:	
Test Instruments:	Refer to section 4.9 for details
Test mode:	Non-hopping mode
Test results:	Pass

Measurement Data:

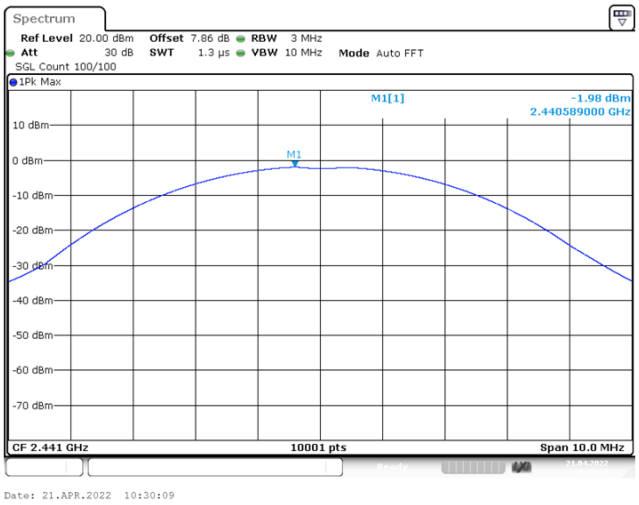
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result
GFSK mode			
Lowest channel	-3.009	21.00	Pass
Middle channel	-1.983	21.00	Pass
Highest channel	-1.718	21.00	Pass
π/4-DQPSK mode			
Lowest channel	-3.382	21.00	Pass
Middle channel	-2.203	21.00	Pass
Highest channel	-1.945	21.00	Pass
8DPSK mode			
Lowest channel	-3.392	21.00	Pass
Middle channel	-2.323	21.00	Pass
Highest channel	-2.278	21.00	Pass

Test plot as follows:

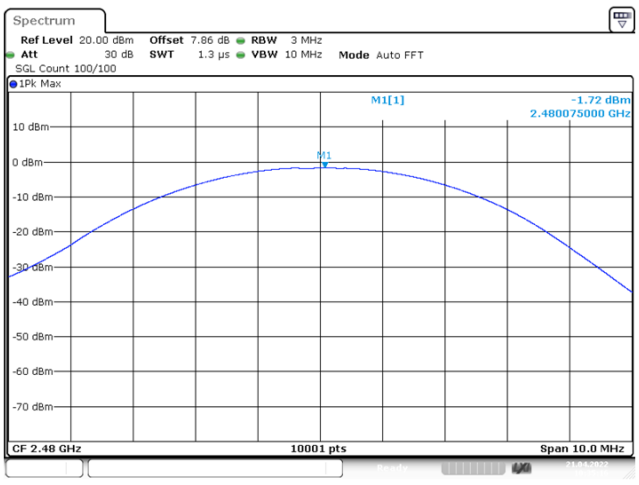
Modulation mode:GFSK



Lowest channel

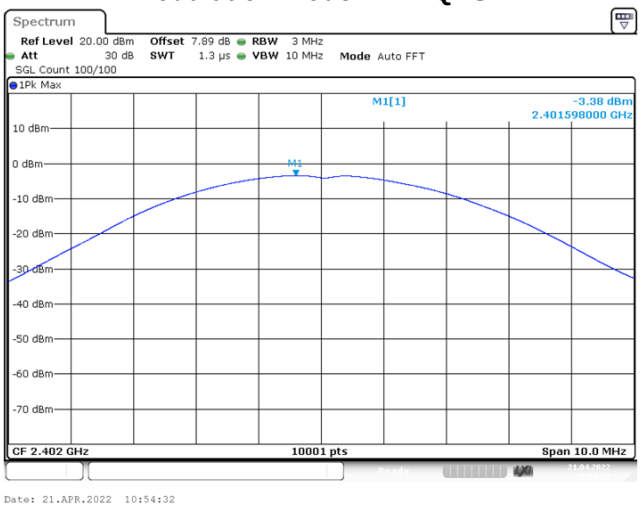


Middle channel

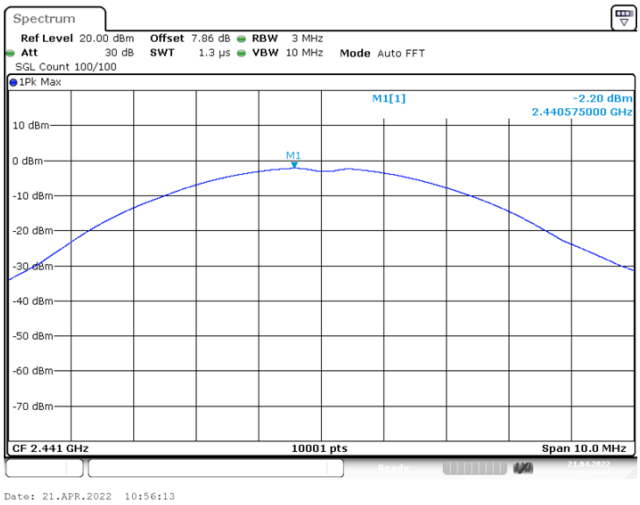


Highest channel

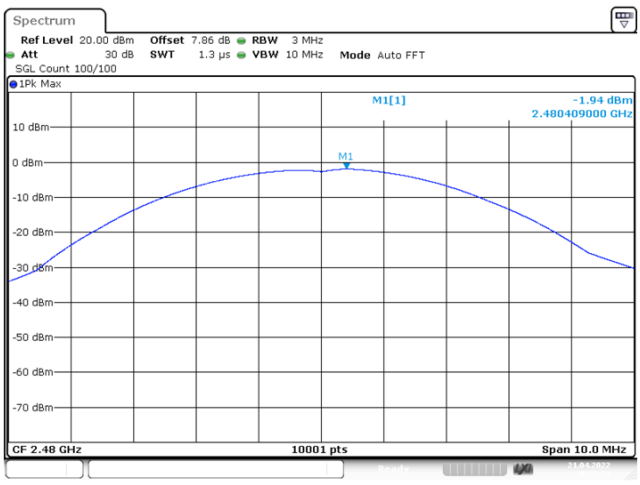
Modulation mode:π/4-DQPSK



Lowest channel

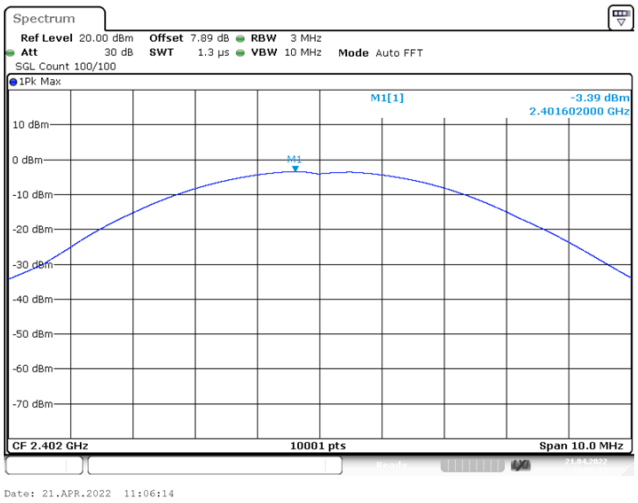


Middle channel

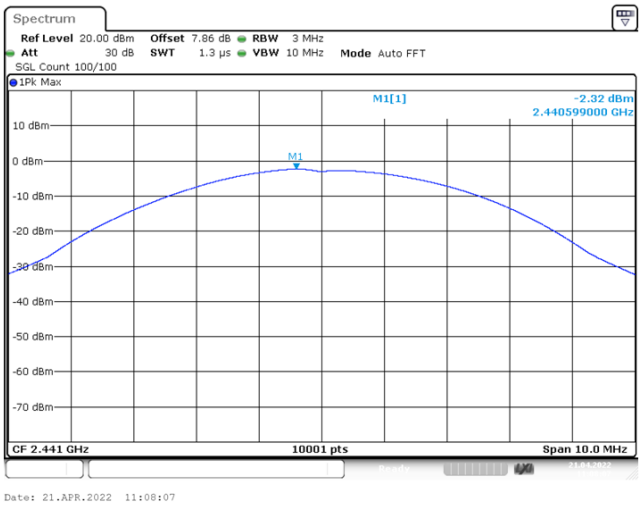


Highest channel

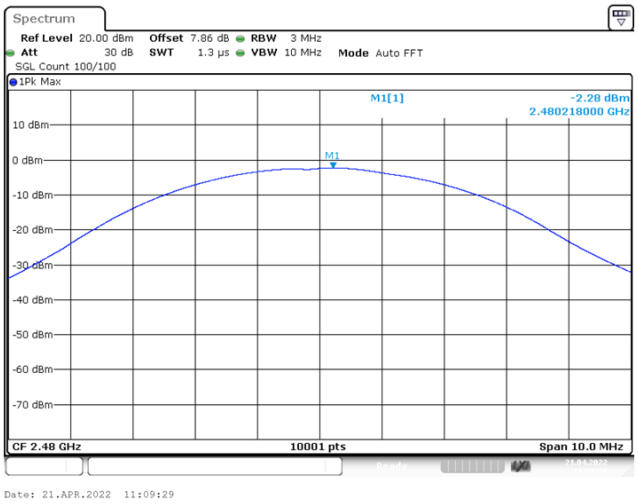
Modulation mode:8DPSK



Lowest channel



Middle channel



Highest channel

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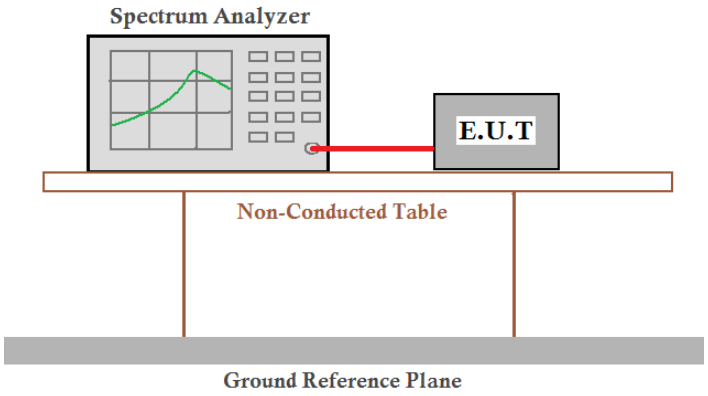
5.4 20dB Occupy Bandwidth

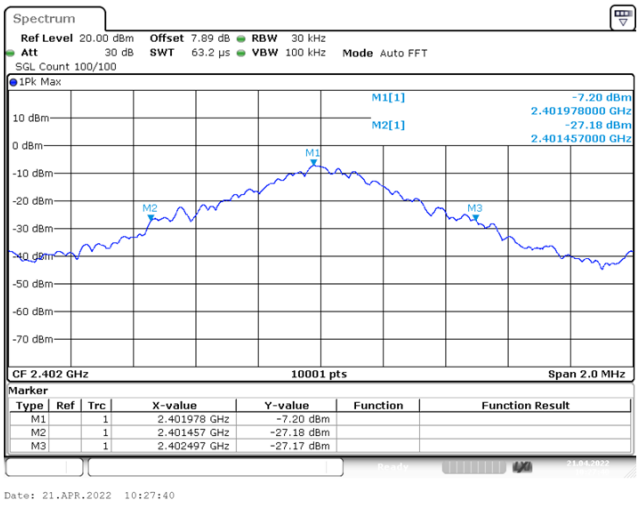
Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Receiver setup:	RBW=30kHz, VBW=100kHz, detector=Peak
Limit:	N/A
Test setup:	
Test Instruments:	Refer to section 4.9 for details
Test mode:	Non-hopping mode
Test results:	Pass

Measurement Data:

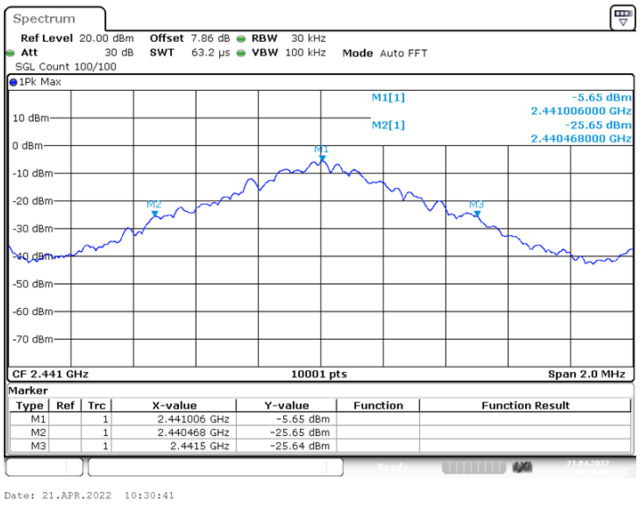
Test channel	20dB Occupy Bandwidth (MHz)		
	GFSK	π/4-DQPSK	8DPSK
Lowest	1.04	1.312	1.285
Middle	1.032	1.284	1.291
Highest	1.039	1.314	1.312

Test plot as follows:

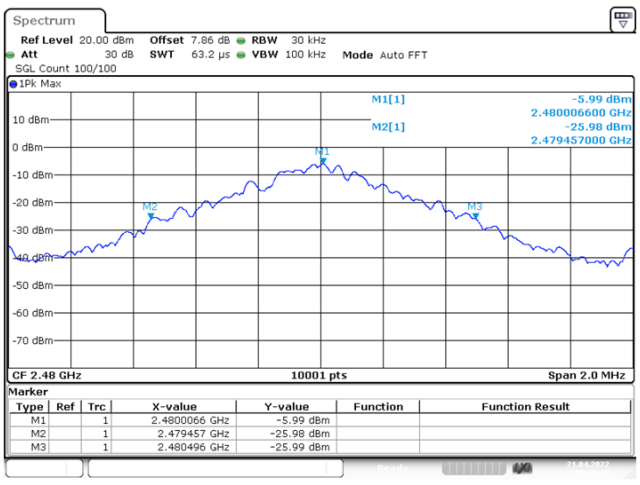
Modulation mode:GFSK



Lowest channel

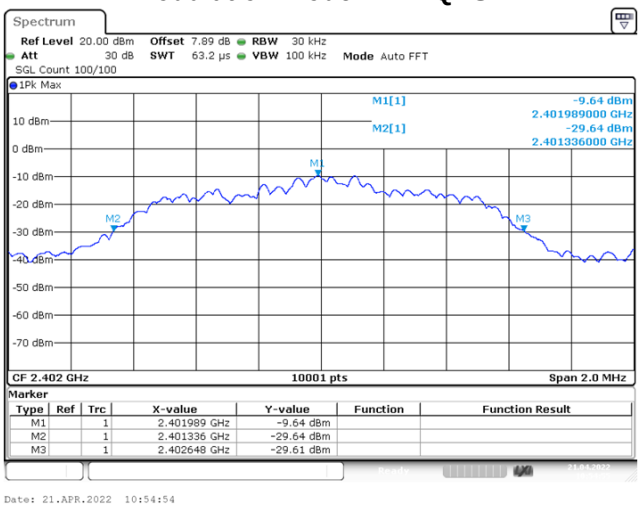


Middle channel

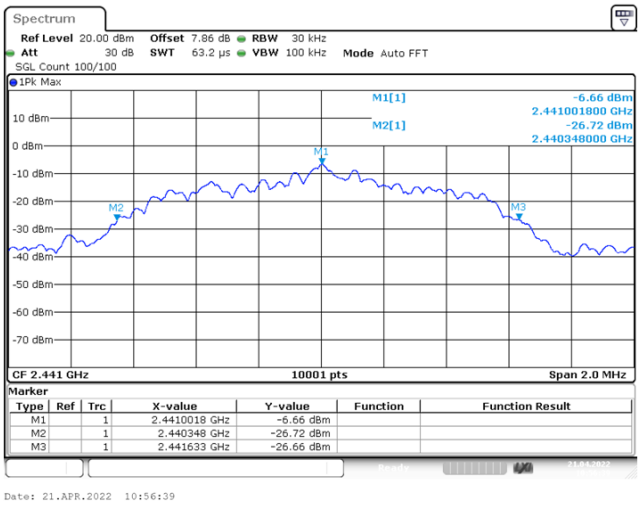


Highest channel

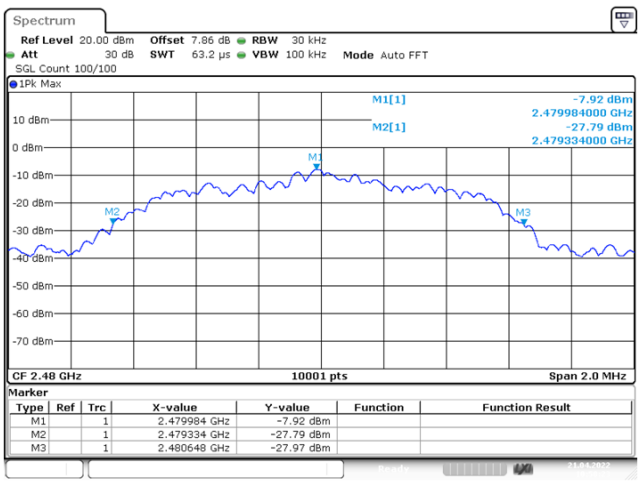
Modulation mode:π/4-DQPSK



Lowest channel

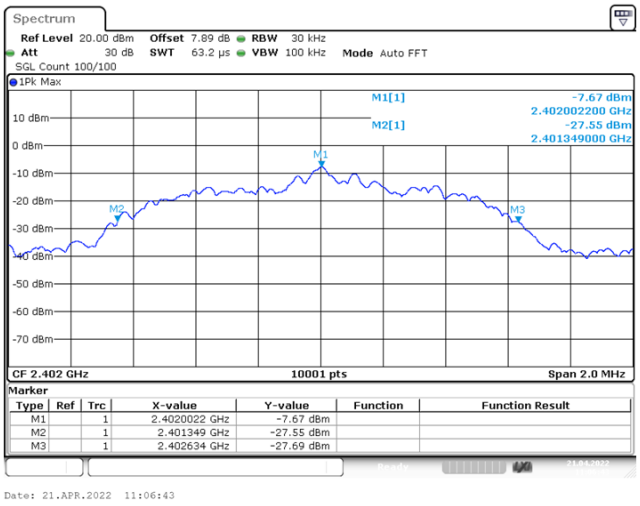


Middle channel

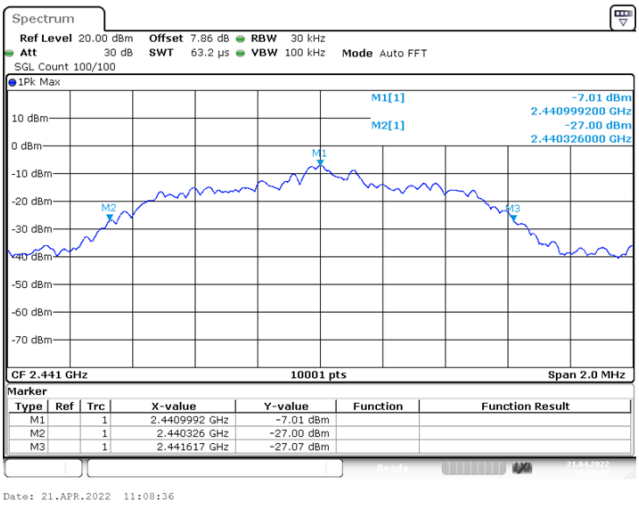


Highest channel

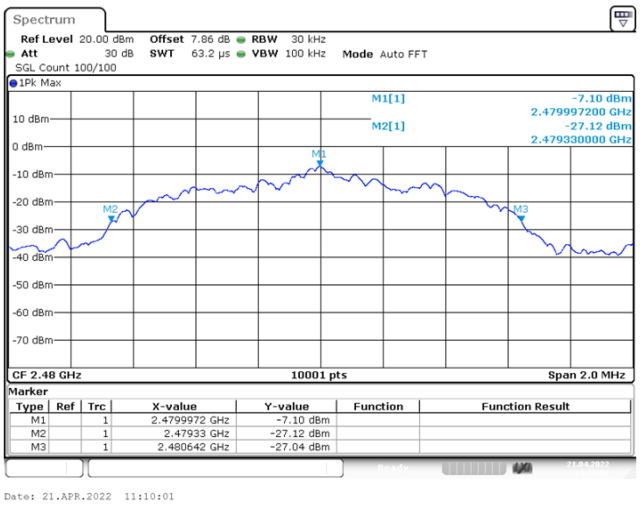
Modulation mode:8DPSK



Lowest channel

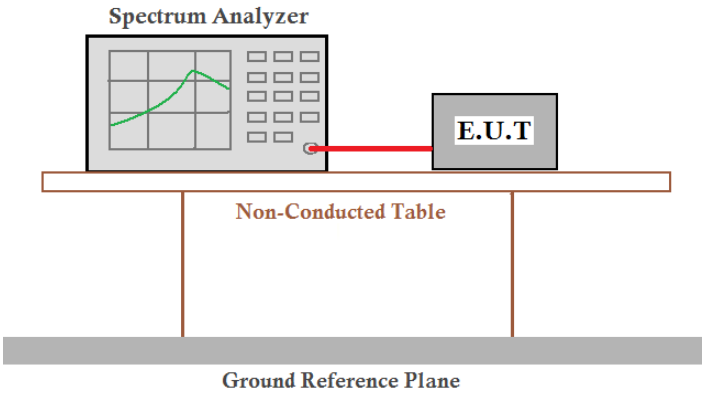


Middle channel



Highest channel

5.5 Carrier Frequencies Separation

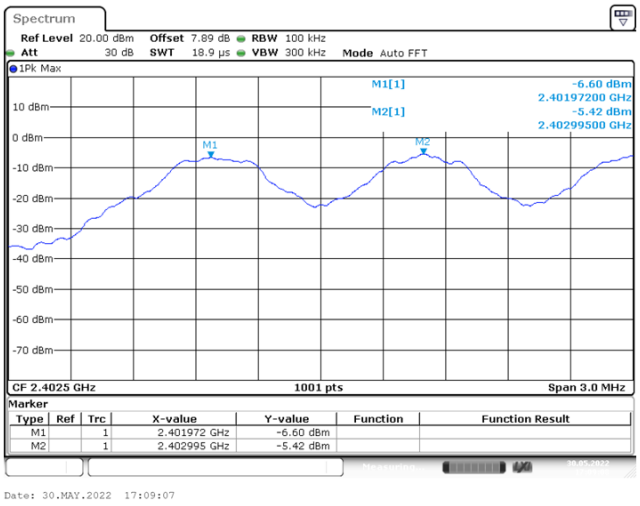
Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Receiver setup:	RBW=100kHz, VBW=300kHz, detector=Peak
Limit:	0.025MHz or two-thirds of the 20dB bandwidth (whichever is greater)
Test setup:	
Test Instruments:	Refer to section 4.9 for details
Test mode:	Hopping mode
Test results:	Pass

Measurement Data:

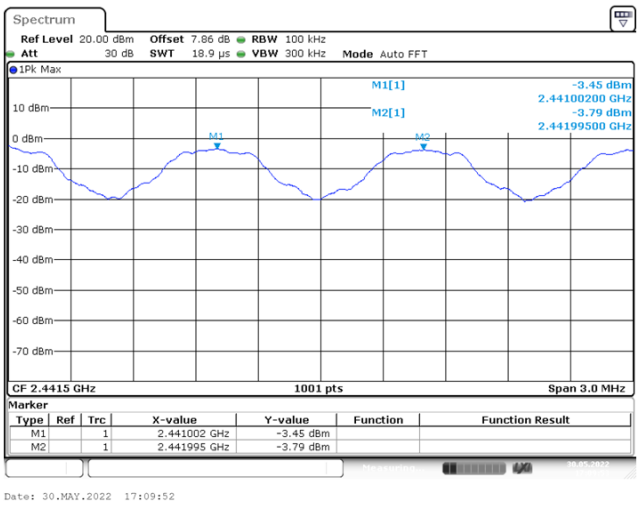
Measured Channel Numbers	Carrier Frequencies Separation (MHz)	20dB bandwidth (MHz)	Limit (MHz)	Result
GFSK				
0 and 1	1.023	1.040	0.693	Pass
39 and 40	0.993	1.032	0.688	Pass
77 and 78	1.008	1.039	0.693	Pass
π/4-DQPSK mode				
0 and 1	0.975	1.312	0.875	Pass
39 and 40	0.978	1.284	0.856	Pass
77 and 78	1.008	1.314	0.876	Pass
8DPSK mode				
0 and 1	0.954	1.285	0.857	Pass
39 and 40	0.966	1.291	0.861	Pass
77 and 78	1.008	1.312	0.875	Pass
Note 1:Min. Limit is equal to the two-thirds of the 20dB bandwidth				

Test plot as follows:

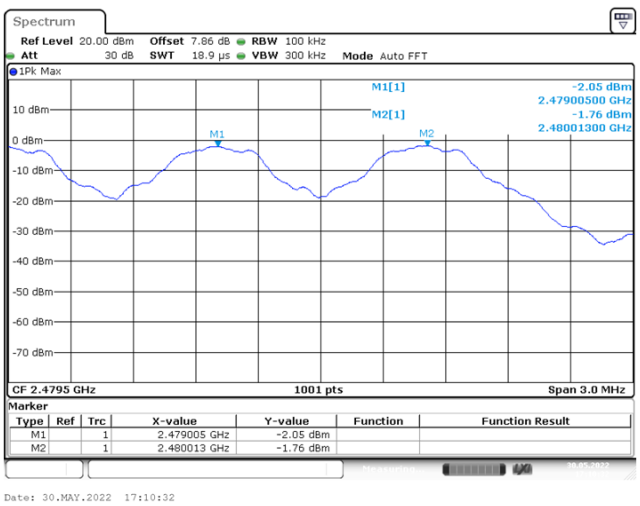
Modulation mode:GFSK



Lowest channel

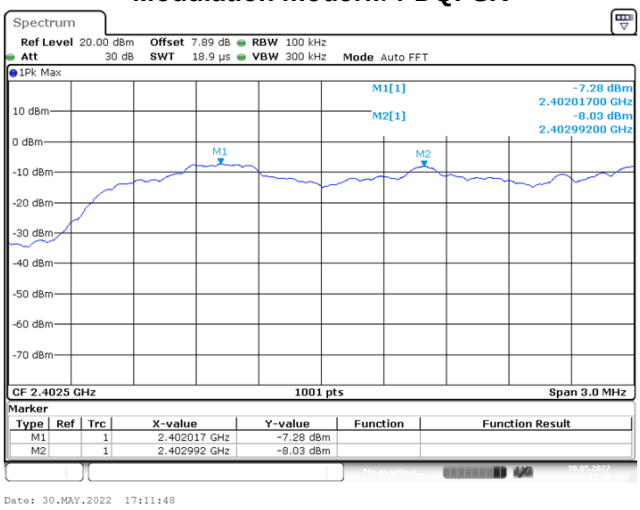


Middle channel

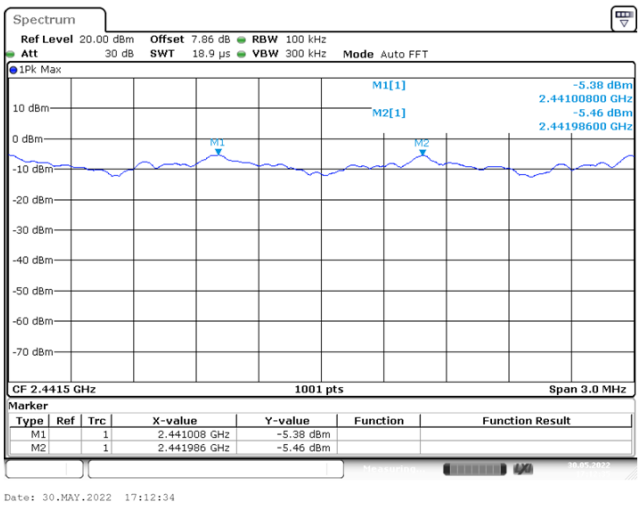


Highest channel

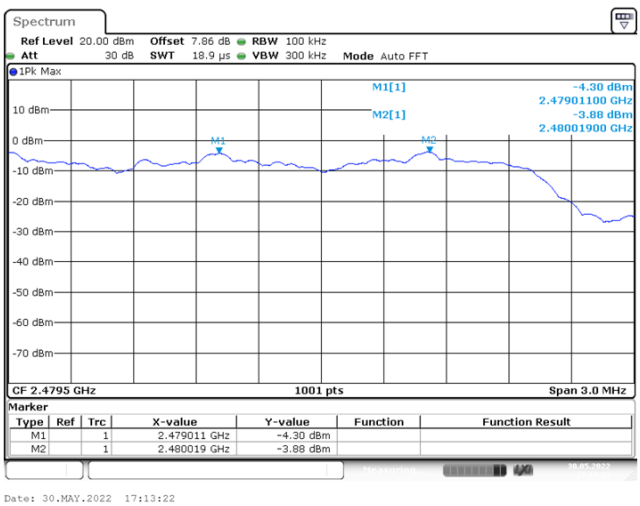
Modulation mode:π/4-DQPSK



Lowest channel

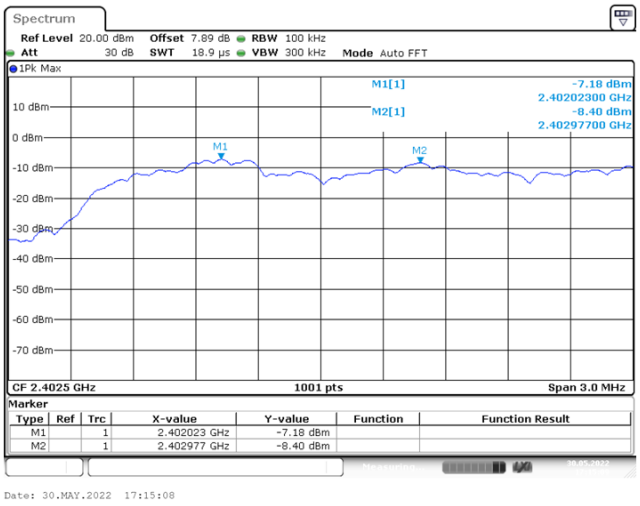


Middle channel

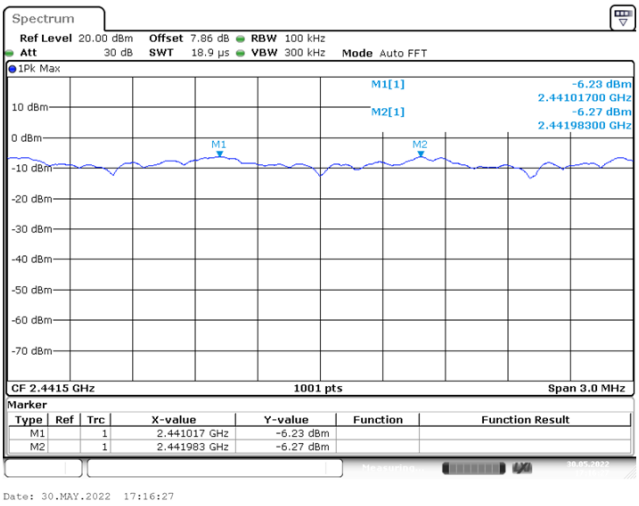


Highest channel

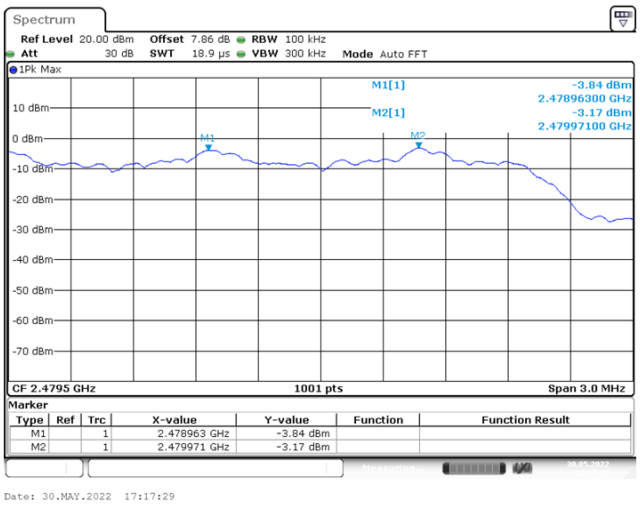
Modulation mode:8DPSK



Lowest channel



Middle channel



Highest channel

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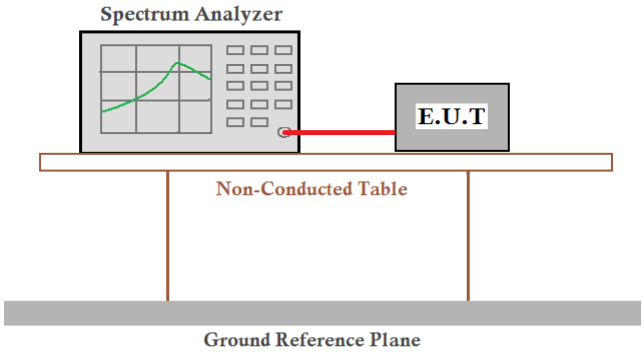
5.6 Hopping Channel Number

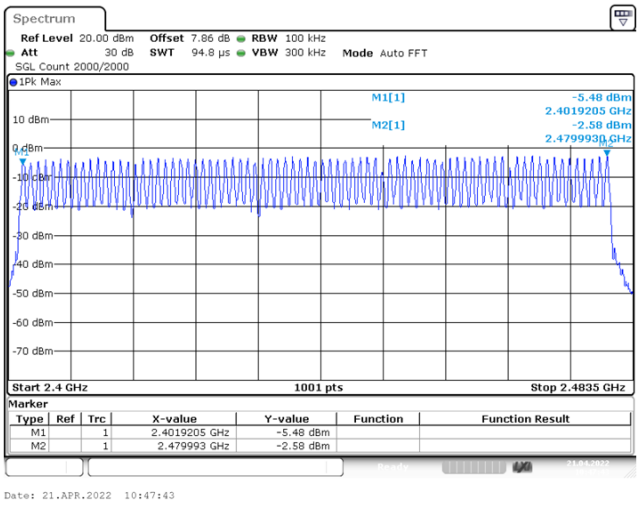
Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Receiver setup:	RBW=100kHz, VBW=300kHz, Frequency range=2400MHz to 2483.5MHz, Detector=Peak
Limit:	15 channels
Test setup:	
Test Instruments:	Refer to section 4.9 for details
Test mode:	Hopping mode
Test results:	Pass

Measurement Data:

Mode	Hopping channel numbers	Limit	Result
GFSK, π/4-DQPSK, 8DPSK	79	15	Pass

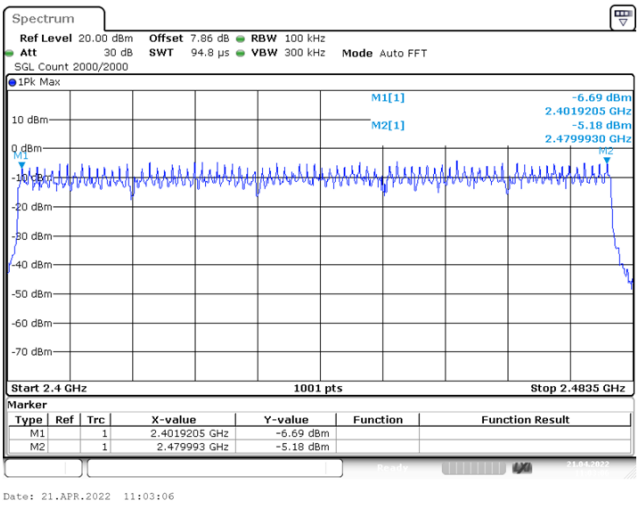
Test plot as follows:

GFSK



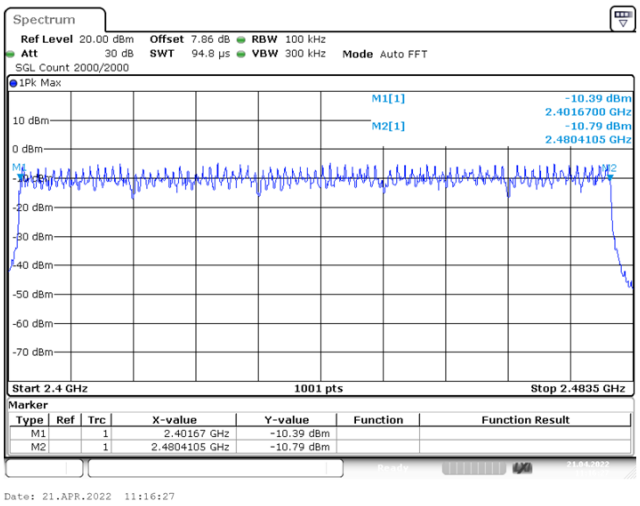
Date: 21.APR.2022 10:47:43

π/4-DQPSK



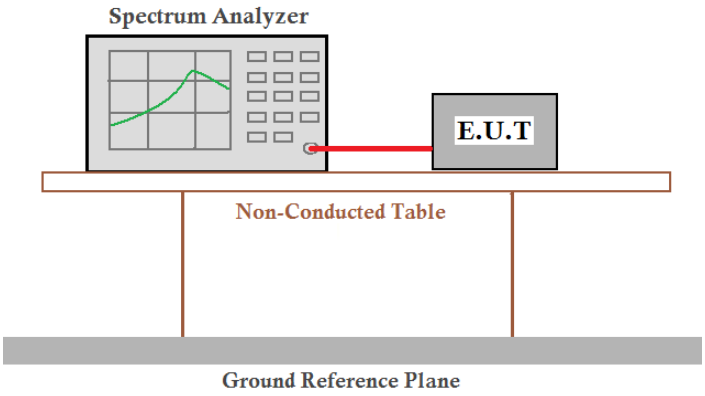
Date: 21.APR.2022 11:03:06

8DPSK



Date: 21.APR.2022 11:16:27

5.7 Dwell Time

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Receiver setup:	RBW=1MHz, VBW=3MHz, Span=0Hz, Detector=Peak
Limit:	0.4 Second
Test setup:	
Test Instruments:	Refer to section 4.9 for details
Test mode:	Hopping mode
Test results:	Pass

Measurement Data (Worse case):

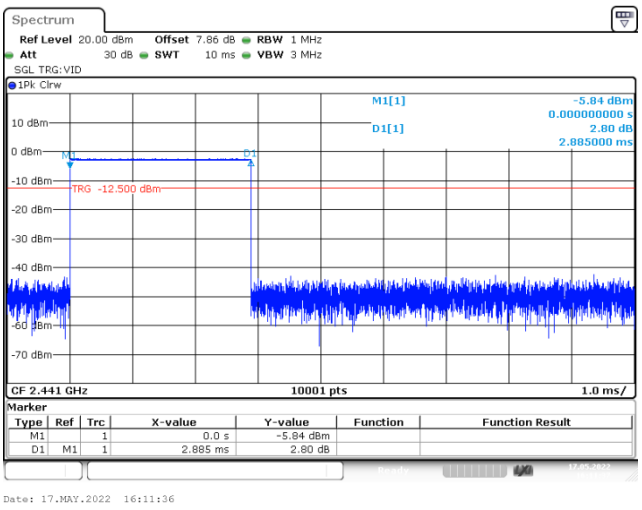
For time of occupancy, all of mode were tested separately, we only recorded the worst test result(DH5/2 DH5/

3DH5) in this report.

Mode	Packet	PulseWidth (ms)	Dwell time (ms)	Limit (second)	Result
GFSK	DH5	2.885	307.73	0.4	Pass
π/4-DQPSK	2DH5	2.892	308.48		
8DPSK	3DH5	2.892	308.48		
Note: The test period= 0.4 Second/Channel x 79 Channel = 31.6 s CalculationFormula: Dwell time = Ton time per hop * Hopping numbers * Period					

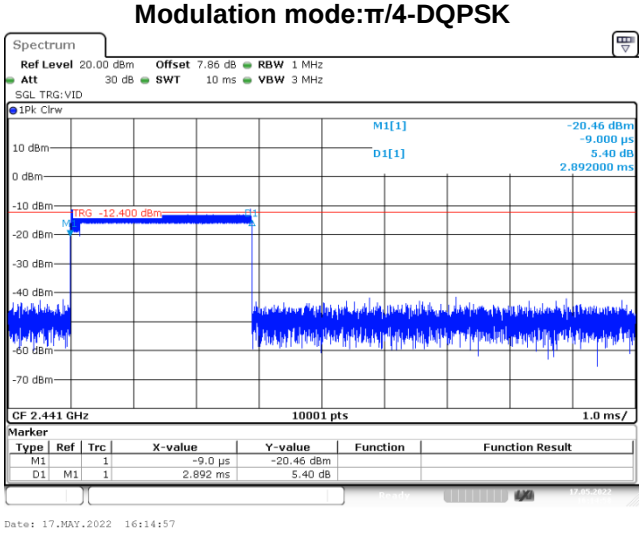
Test plot as follows:

Modulation mode:GFSK



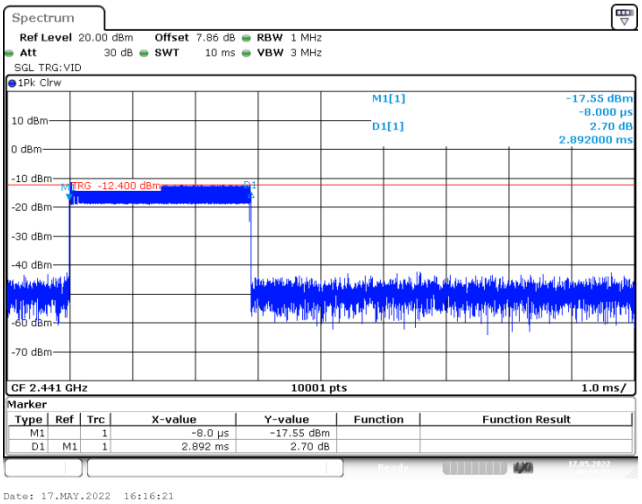
DH5

Modulation mode:π/4-DQPSK



2-DH5

Modulation mode:8DPSK



3-DH5

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5.8 Pseudorandom Frequency Hopping Sequence

Test Requirement:	FCC Part15 C Section 15.247 (a)(1) requirement:

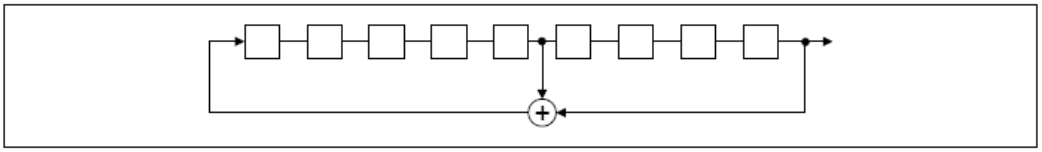
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

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. The system shall hop to channel frequencies that are selected at the system hopping rate from a Pseudorandom ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

EUT Pseudorandom Frequency Hopping Sequence

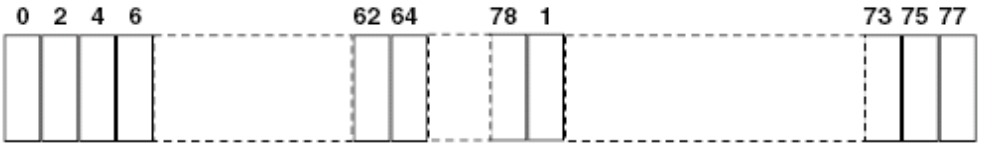
The pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONEs; i.e. the shift register is initialized with nine ones.

• Number of shift register stages: 9
• Length of pseudo-random sequence: 2^9 -1 = 511 bits
• Longest sequence of zeros: 8 (non-inverted signal)



Linear Feedback Shift Register for Generation of the PRBS sequence

An example of Pseudorandom Frequency Hopping Sequence as follow:

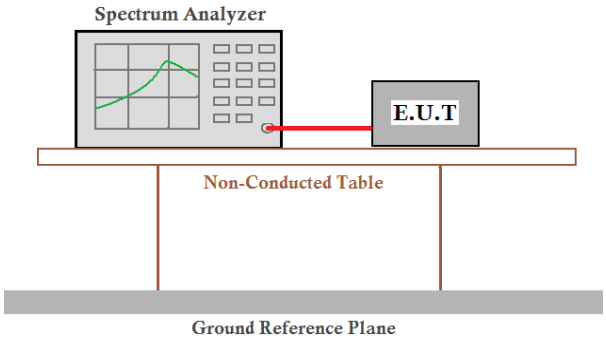


Each frequency used equally on the average by each transmitter.

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

5.9 Band Edge

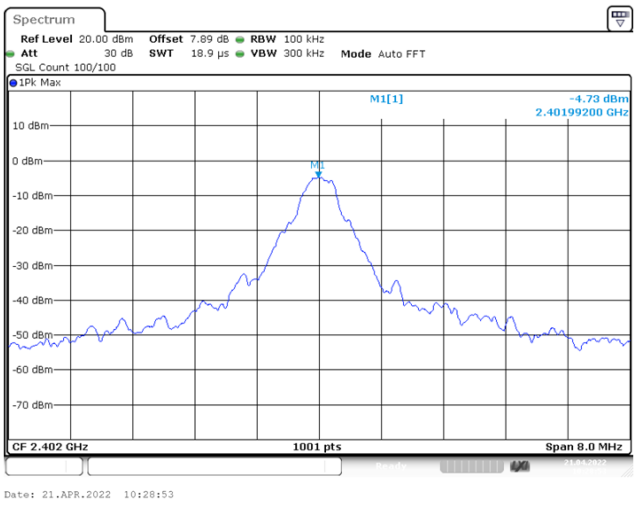
5.9.1 Conducted Emission Method

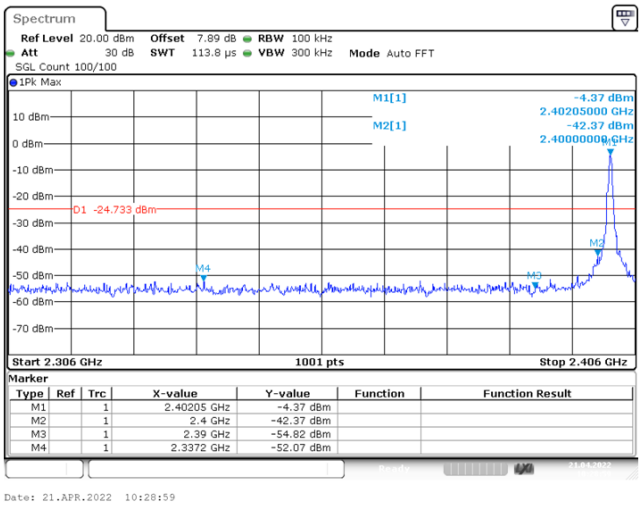
Test Requirement:	FCC Part15 C Section 15.247 (d)
Receiver setup:	RBW=100kHz, VBW=300kHz, Detector=Peak
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test setup:	
Test Instruments:	Refer to section 4.9 for details
Test mode:	Non-hopping mode and hopping mode
Test results:	Pass

Test plot as follows:

GFSK

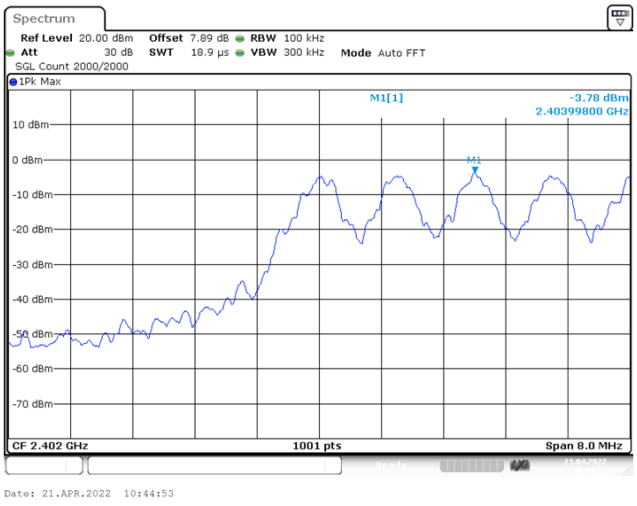
Lowest Channel

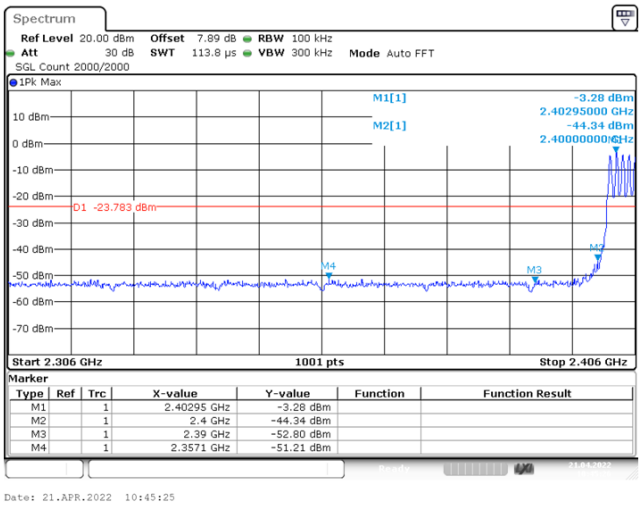




No-hopping mode

Lowest Channel

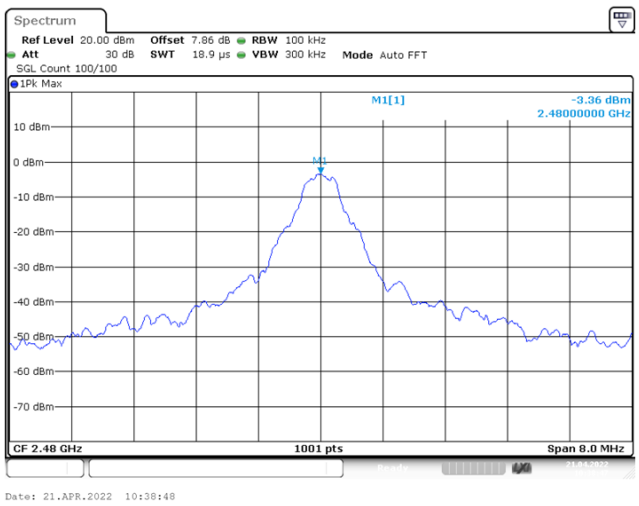


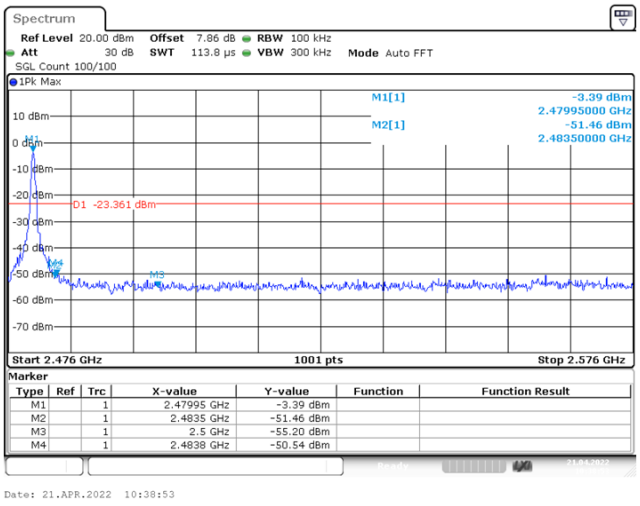


Hopping mode

GFSK

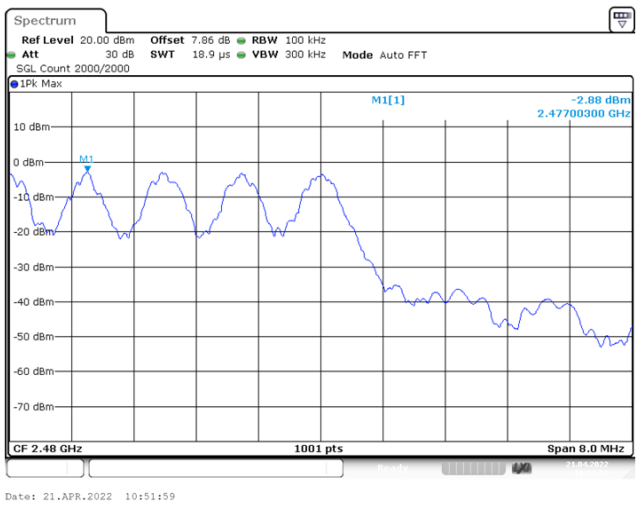
Highest Channel

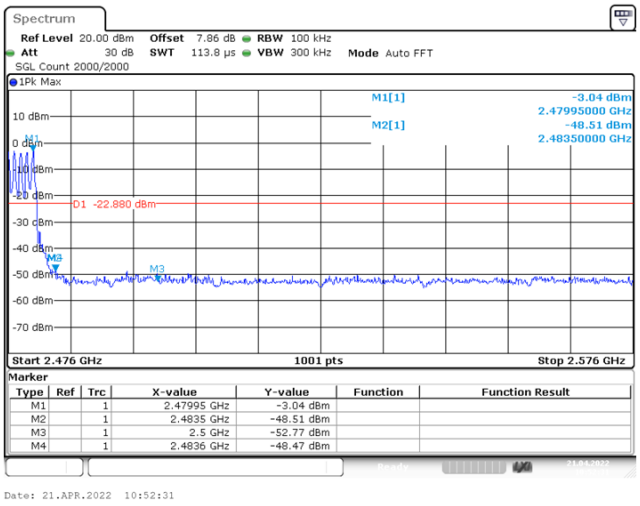




No-hopping mode

Highest Channel

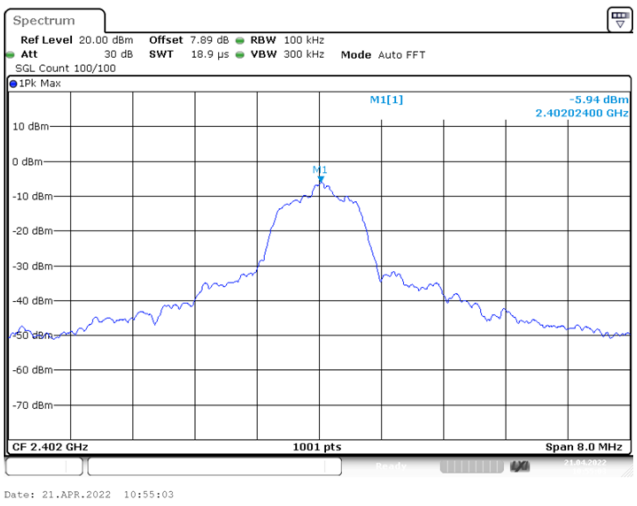


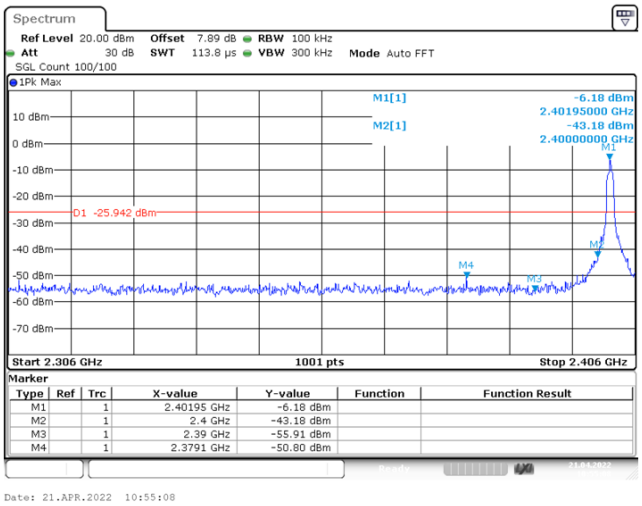


Hopping mode

π/4-DQPSK

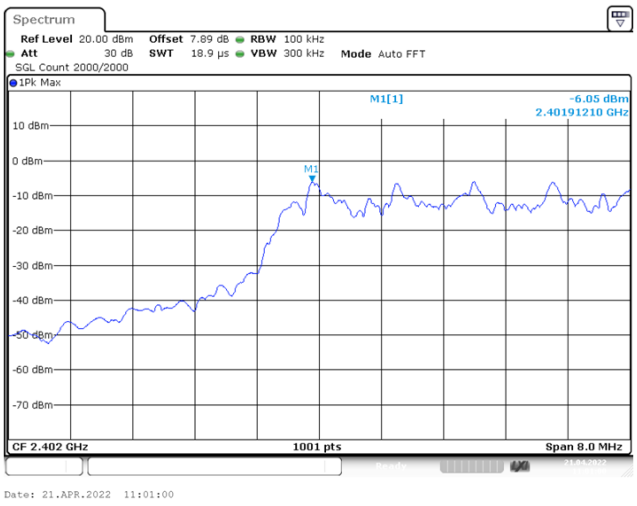
Lowest Channel

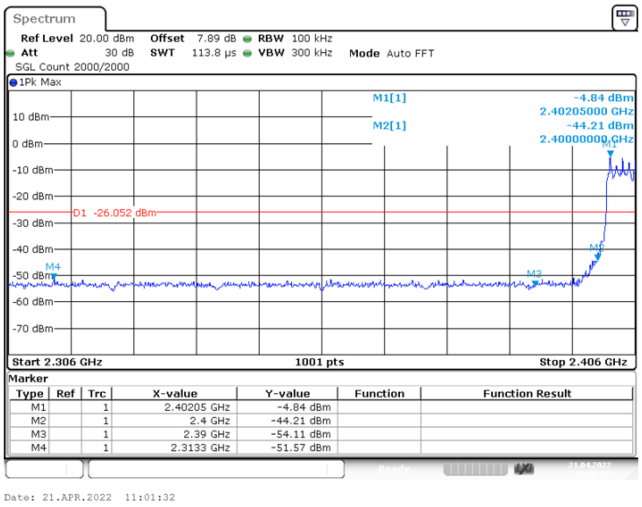




No-hopping mode

Lowest Channel





Hopping mode