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Т	EST REPORT			
Report No. ·····:	CTC20220136E02			
FCC ID······:	2APPZ-V64			
Applicant······	Fanvil Technology Co., LTD.			
Address······	10/F Block A, Dualshine Global Science Innovation Center, Honglang North 2nd Road, Bao'an District, Shenzhen, China			
Manufacturer	Fanvil Technology Co., LTD.			
Address	10/F Block A, Dualshine Global Scient Honglang North 2nd Road, Bao'an Dis	-		
Product Name·····:	Prime Business Phone			
Trade Mark······:	Fanvil			
Model/Type reference······:	V64			
Listed Model(s) ······:	/			
Standard·····:	FCC CFR Title 47 Part 15 Subpart C Section 15.247			
Date of receipt of test sample:	Jan. 18, 2022			
Date of testing	Jan. 19, 2022 ~ Feb. 15, 2022			
Date of issue	Feb. 16, 2022			
Result:	PASS			
Compiled by:		Tanne Su		
(Printed name+signature)	Terry Su	Tenny Su Miller Ma		
Supervised by:		niller Ma		
(Printed name+signature)				
Approved by:		Jemas		
(Printed name+signature)	Totti Zhao			
Testing Laboratory Name:	CTC Laboratories, Inc.			
Address	: 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park,			
	Shenzhen, Guangdong, China			
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1. TEST SUMMARY

1.1. Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.247: Operation within the bands of 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz.

<u>RSS 247 Issue 2:</u> Standard Specifications for Frequency Hopping Systems (FHSs) and Digital Transmission Systems (DTSs) Operating in the Bands 902-928MHz, 2400-2483.5MHz and 5725-5850MHz. <u>ANSI C63.10-2013</u>: American National Standard for Testing Unlicensed Wireless Devices.

1.2. Report version

Revised No.	Date of issue	Description
01	Feb. 16, 2022	Original

1.3. Test Description

FCC Part 15 Subpart C (15.247)/ RSS 247 Issue 2					
Test liter	Standard	I Section	Decult		
Test Item	FCC IC		Result	Test Engineer	
Antenna Requirement	15.203	/	Pass	Alicia Liu	
Conducted Emission	15.207	RSS-Gen 8.8	Pass	Eva Feng	
Restricted Bands	15.205	RSS-Gen 8.10	Pass	Alicia Liu	
Hopping Channel Separation	15.247(a)(1)	RSS 247 5.1 (b)	Pass	Alicia Liu	
Dwell Time	15.247(a)(iii)	RSS 247 5.1 (d)	Pass	Alicia Liu	
Peak Output Power	15.247(b)(1)	RSS 247 5.4 (b)	Pass	Alicia Liu	
Number of Hopping Frequency	15.247(a)(iii)	RSS 247 5.1 (d)	Pass	Alicia Liu	
Conducted Band Edge and Spu- rious Emissions	15.247(d)	RSS 247 5.5	Pass	Alicia Liu	
Radiated Band Edge and Spurious Emissions	15.205&15.209& 15.247(d)	RSS 247 5.5	Pass	Alicia Liu	
Radiated Spurious Emission	15.247(d)&15.20 9			Alicia Liu	
20dB Bandwidth	15.247(a)	RSS 247 5.1 (b)	Pass	Alicia Liu	

Note: The measurement uncertainty is not included in the test result.





CTC Laboratories, Inc.

Add: 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China

Laboratory accreditation

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

CNAS-Lab Code: L5365

CTC Laboratories, Inc. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation. Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 4340.01

CTC Laboratories, Inc. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

Industry Canada (Registration No.: 9783A, CAB Identifier: CN0029)

CTC Laboratories, Inc. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 9783A on Jan, 2016.

FCC (Registration No.: 951311, Designation Number CN1208)

CTC Laboratories, Inc. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained inour files. Registration 951311, Aug 26, 2017.

1.5. Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties radio equipment characteristics; Part 2" and is documented in the CTC Laboratories, Inc. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Below is the best measurement capability for CTC Laboratories, Inc.

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.42 dB	(1)
Transmitter power Radiated	2.14 dB	(1)
Conducted spurious emissions 9kHz~40GHz	1.60 dB	(1)
Radiated spurious emissions 9kHz~40GHz	2.20 dB	(1)
Conducted Emissions 9kHz~30MHz	3.08 dB	(1)
Radiated Emissions 30~1000MHz	4.51 dB	(1)
Radiated Emissions 1~18GHz	5.84 dB	(1)
Radiated Emissions 18~40GHz	6.12 dB	(1)
Occupied Bandwidth		(1)

Note (1): This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

1.6. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	21°C ~ 27°C
Relative Humidity:	40% ~ 60%
Air Pressure:	101kPa



2. GENERAL INFORMATION

2.1. Client Information

Applicant:	Fanvil Technology Co., LTD.	
Address:	10/F Block A, Dualshine Global Science Innovation Center, Honglang North 2nd Road, Bao'an District, Shenzhen, China	
Manufacturer:	Fanvil Technology Co., LTD.	
Address:	10/F Block A, Dualshine Global Science Innovation Center, Honglang North 2nd Road, Bao'an District, Shenzhen, China	

2.2. General Description of EUT

Product Name:	Prime Business Phone
Trade Mark:	Fanvil
Model/Type reference:	V64
Listed Model(s):	1
Power supply:	5Vdc/2A from AC/DC Adapter 48Vdc/0.3A from POE
Adapter model:	F12W8-050200SPAU Input: 100-240V~ 50/60Hz 0.3A Output: 5Vdc/2A
Hardware version:	V1.0
Software version:	T0.0.9.5.1
Bluetooth 5.0/EDR	
Modulation:	GFSK, π/4-DQPSK, 8-DPSK
Operation frequency:	2402MHz~2480MHz
Channel number:	79
Channel separation:	1MHz
Antenna type:	FPC Antenna
Antenna gain:	5dBi



2.3. Accessory Equipment information

Equipment Information						
Name	Model	S/N	Manufacturer			
Notebook	ThinkBook 14G3 ACL	MP246QDR	Lenovo			
1	1	1	1			
Cable Information	Cable Information					
Name	Shielded Type	Ferrite Core	Length			
1	1	1	1			
Test Software Information						
Name	1	1	1			
SecureCRT.exe	8.7.1	1	1			



2.4. Operation state

Operation Frequency List: The EUT has been tested under typical operating condition. The Applicant provides communication tools software to control the EUT for staying in continuous transmitting and receiving mode for testing. BT EDR, 79 channels are provided to the EUT. Channels 00/39/78 were selected for testing.

Operation Frequency List:

Channel	Frequency (MHz)
00	2402
01	2403
:	:
38	2440
39	2441
40	2442
:	:
77	2479
78	2480

Note: The display in grey were the channel selected for testing.

Test mode

For RF test items:

The engineering test program was provided and enabled to make EUT continuous transmit

For AC power line conducted emissions:

The EUT was set to connect with the Bluetooth instrument under large package sizes transmission.

For Radiated spurious emissions test item:

The engineering test program was provided and enabled to make EUT continuous transmit. The EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.



2.5. Measurement Instruments List

Tonsce	Tonscend JS0806-2 Test system					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until	
1	Spectrum Analyzer	Rohde & Schwarz	FSU26	100105	Dec. 23, 2022	
2	Spectrum Analyzer	Rohde & Schwarz	FUV40-N	101331	Mar. 15, 2022	
3	MXG Vector Signal Generator	Agilent	N5182A	MY47420864	Dec. 23, 2022	
4	Signal Generator	Agilent	E8257D	MY46521908	Dec. 23, 2022	
5	Power Sensor	Agilent	U2021XA	MY5365004	Mar. 15, 2022	
6	Power Sensor	Agilent	U2021XA	MY5365006	Mar. 15, 2022	
7	High and low tempera- ture box	ESPEC	MT3035	N/A	Mar. 24, 2022	
8	Wideband Radio Com- munication Tester	Rohde & Schwarz	CMW500	102414	Dec. 23, 2022	
9	300328 v2.2.2 test sys- tem	TONSCEND	v2.6	/	/	

Radiat	Radiated emission(3m chamber 2)					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until	
1	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-1013	Jan. 12, 2023	
2	Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-647	Dec. 23, 2022	
3	Spectrum Analyzer	R&S	FSU26	100105	Dec. 23, 2022	
4	Spectrum Analyzer	R&S	FSV40-N	101331	Mar. 15, 2022	
5	Pre-Amplifier	SONOMA	310	186194	Dec. 23, 2022	
6	Low Noise Pre-Amplifier	EMCI	EMC051835	980075	Dec. 23, 2022	
7	Test Receiver	R&S	ESCI7	100967	Dec. 23, 2022	

Radiate	d emission(3m chamber 3))			
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until
1	Trilog-Broadband Anten- na	Schwarzbeck	VULB 9168	9168-759	Nov. 09, 2022
2	Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-647	Dec. 23, 2022
3	Test Receiver	Keysight	N9038A	MY56400071	Dec. 23, 2022
4	Broadband Premplifier	SCHWARZBECK	BBV9743B	259	Dec. 23, 2022
5	Mirowave Broadband Amplifier	SCHWARZBECK	BBV9718C	111	Dec. 23, 2022

Condu	Conducted Emission										
Item	Test EquipmentManufacturerModel No.Serial No.Calibrated until										
1	LISN	R&S	ENV216	101112	Dec. 23, 2022						
2	LISN	R&S	ENV216	101113	Dec. 23, 2022						
3	EMI Test Receiver	R&S	ESCS30	100353	Dec. 23, 2022						

Note:1. The Cal. Interval was one year.

2. The cable loss has calculated in test result which connection between each test instruments.



3.1. Conducted Emission

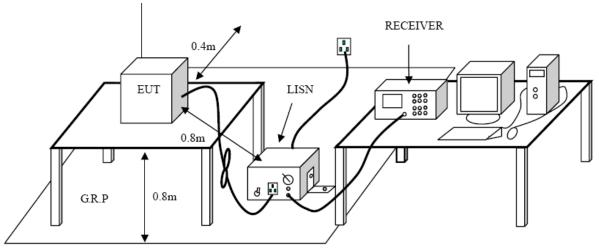
<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.207/ RSS - Gen 8.8

	Limit (d	BuV)
Frequency range (MHz)	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 Configuration



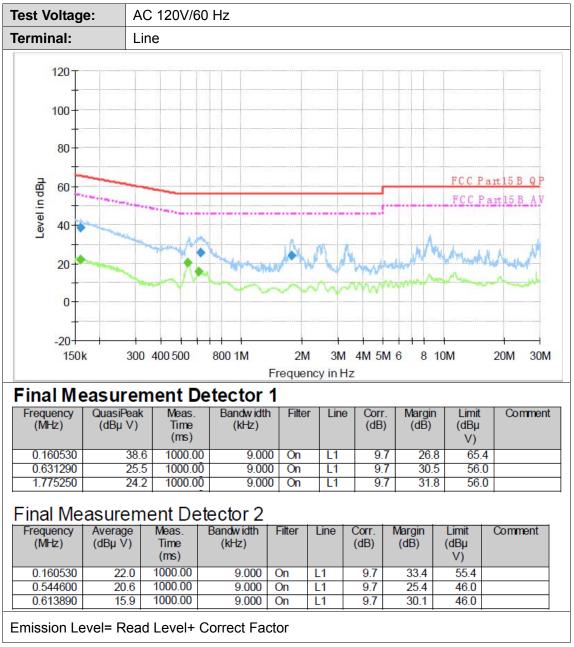
Test Procedure

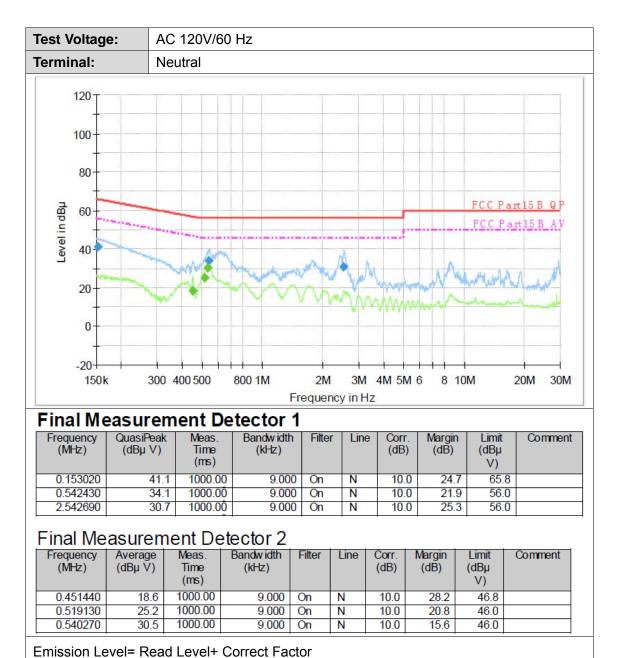
- 1. The EUT was setup according to ANSI C63.10:2013 requirements.
- 2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
- The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
- 4. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
- 5. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
- 6. Conducted Emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
- 7. During the above scans, the emissions were maximized by cable manipulation.

Test Mode

Please refer to the clause 2.4.









3.2. Radiated Emission

<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.209/ RSS – Gen 8.9

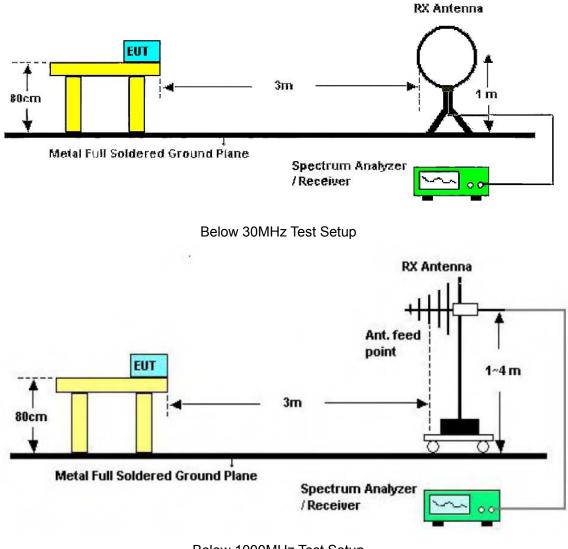
Frequency	Limit (dBuV/m @3m)	Value
30 MHz ~ 88 MHz	40.00	Quasi-peak
88 MHz ~ 216 MHz	43.50	Quasi-peak
216 MHz ~ 960 MHz	46.00	Quasi-peak
960 MHz ~ 1 GHz	54.00	Quasi-peak
Above 1 GHz	54.00	Average
	74.00	Peak

Note:

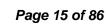
(1) The tighter limit applies at the band edges.

(2) Emission Level (dBuV/m)=20log Emission Level (uV/m).

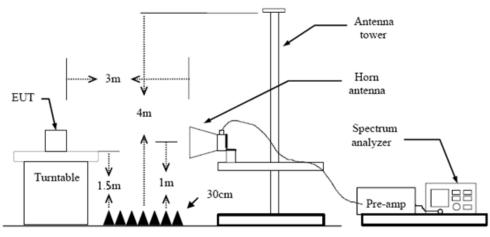
Test Configuration



Below 1000MHz Test Setup







Above 1GHz Test Setup

Test Procedure

- 1. The EUT was setup and tested according to ANSI C63.10:2013
- 2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
- 3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.
- 4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
- 5. Set to the maximum power setting and enable the EUT transmit continuously.
- 6. Use the following spectrum analyzer settings
 - Span shall wide enough to fully capture the emission being measured; (1)
 - Below 1 GHz: (2)

RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold;

If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

(3) From 1 GHz to 10th harmonic:

RBW=1MHz, VBW=3MHz Peak detector for Peak value.

RBW=1MHz, VBW \ge 1/T Peak detector for Average value.

Note 1: For the 1/T& Duty Cycle please refer to clause 3.10 Duty Cycle.

Test Mode

Please refer to the clause 2.4.

Test Result

9 KHz~30 MHz

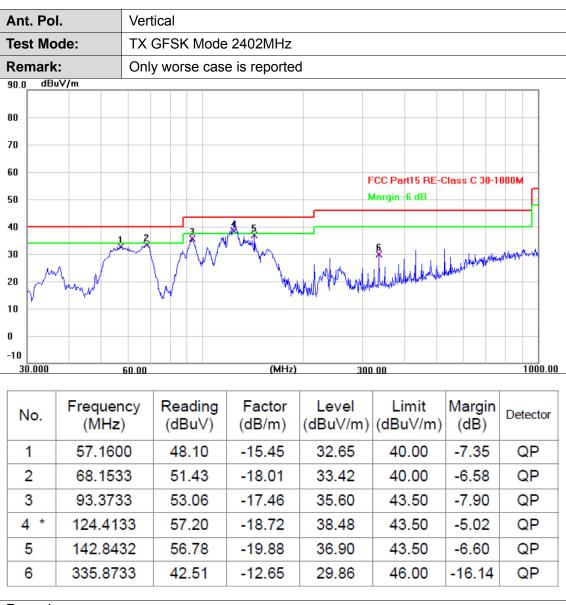
From 9 KHz to 30 MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



Int. PC	t. Pol. Horizontal								
est M	ode:	ТХ	GFSK Mode	e 2402MHz					
Remar	k:	Onl	y worse cas	e is reporte	d				
90.0 dE	3uV/m								
80		_							
70									
60						FCC Part15 RE-0	Class C 30-1	000M	
50						Margin -6 dB			
40				2		<u>4</u> X		ê X	
30		_		2			1 shimiles	which	
20		~ <u>}</u>		Maringham	MM	MMMMM	har and the second		
10	www.	and the second sec	Mun many	i with	Mary				
10			NO DA						
		60.00		(MHz)	30	0.00		1000.	
-10				(MHz)				1000.	
-10	Frequer (MHz	ncy	Reading (dBuV)		30 Level (dBuV/m)	Limit	Margin (dB)	1000. Detecto	
-10 30.000		ncy :)	Reading	(мн _{г)} Factor	Level	Limit	-		
No.	(MHz	ncy :) 00	Reading (dBuV)	(мнг) Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	(dB)	Detecto	
-10 30.000 No.	(MHz 67.830	ncy :) 00 767	Reading (dBuV) 40.70	(мнг) Factor (dB/m) -17.93	Level (dBuV/m) 22.77	Limit (dBuV/m) 40.00	(dB) -17.23	Detecto QP	
-10 30.000 No. 1 2	(MHz 67.830 126.67	ncy :) 00 :67 :32	Reading (dBu∨) 40.70 47.38	(MHz) Factor (dB/m) -17.93 -19.05	Level (dBuV/m) 22.77 28.33	Limit (dBuV/m) 40.00 43.50	(dB) -17.23 -15.17	Detecto QP QP	
-10 30.000 No. 1 2 3	(MHz 67.830 126.67 142.84	ncy 2) 200 767 -32 -000	Reading (dBuV) 40.70 47.38 52.47	(MHz) Factor (dB/m) -17.93 -19.05 -19.88	Level (dBuV/m) 22.77 28.33 32.59	Limit (dBuV/m) 40.00 43.50 43.50	(dB) -17.23 -15.17 -10.91	Detecto QP QP QP	





Remarks:



.			Pol. Horizontal Mode: TX GFSK Mode 2402MHz										
Remark: No report for the emission which more than 10 dB below the pre- scribed limit. 110.0 dBuV/m													
m													
					FCC Part15	C - Above 1	gin 3) Detector 67 AVG						
0													
60					ECC Part15	C - Above 1	3 AV						
50													
40 &													
500.00 6	000.00	8500.00 11	000.00 (MHz)	16000.00	8500.00 2100	0.00 23500	.00 26000						
	-	Reading	Factor	Level (dBu\//m)	Limit (dBu\//m)	Margin	Detector						
·	·			. ,	. ,	· · ·	AVG						
4803.9		37.93	2.16	40.09	74.00	-33.91							
	500.00 6 Frequer (MHz 4803.4	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Image: second	Reading (MHz) Frequency (MHz) Reading (dBuV) Factor (dB/m) 4803.462 27.17 2.16	Reading (MHz) Factor (dBuV) Level (dB/m) 4803.462 27.17 2.16 29.33	Image: Second	Frequency (MHz) Reading (dBuV) Factor (dBMW) Level (dBuV/m) Limit (dBuV/m) Margin (dB) 4803.462 27.17 2.16 29.33 54.00 -24.67						

Remarks:



Ant.	Pol	_	Vert	ical								
Test	-			GFSK Mod	de 2402M	IHz						
Ren	nark	:	No r				hich mor	e th	nan 10 dB b	pelow the	pre-	
110.0) dBu	V/m	ĺ									
100												
90												
80			_						FCC Part15	C - Ahove 1	G PK	
70	70								Toorans	0 7.00001		
60			_						500 D	<u> </u>		
50									FCC Part15	C - Above T	GAV	
40		È										
30												
20												
10												
0												
-10	00.000	3500.00 6	000.00	0500.00	11000.00	<u>a 11 1 1</u>	10000.00		0500.00.0100	0.00 00500		
10	00.000	1 3500.00 6	000.00	8500.00	11000.00	(MHz)	16000.00	0 1	8500.00 2100	0.00 23500	.00 26000.	u
N	o.	Frequer (MHz	-	Reading (dBuV)			Level (dBuV/n	n)	Limit (dBuV/m)	Margin (dB)	Detector	
1	*	4803.3	42	27.24	2.1	3	29.40		54.00	-24.60	AVG	Ť
2	2	4803.7	24	37.98	2.1	6	40.14		74.00	-33.86	peak	Ť
				I	1							1

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Remarks:



Ant. F	Pol.	Horizo	Horizontal									
Test I	Node:	TX G	FSK Mode	2441MHz								
Rema			port for the	emission v	vhich more t	han 10 dB t	pelow the	pre-				
110.0	dBuV/m											
100												
90												
80						FCC Part15	C - Above 1	G PK				
70						TCCFatts	C-ADOVE I					
60												
50						FCC Part15	C - Above 1	GAV				
40												
30	- Z											
20												
10												
0												
-10												
1000.	000 3500.00 @	000.00	8500.00 11	000.00 (MHz)	16000.00	8500.00 2100	0.00 23500	.00 26000.0				
1					1							
No	Freque (MHz		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector				
1	4881.4	74	37.47	2.31	39.78	74.00	-34.22	peak				
2	* 4881.6	16	27.03	2.31	29.34	54.00	-24.66	AVG				
L			1		1		1	L				

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Remarks:



Ant	. Pol		Verti	cal									
	t Mo				K Mode	2441MF	łz						
Ren	nark:	;	No re scrib			e emissio	n w	/hich I	nore t	han 10 dE	below th	e pre-	
110.0) dBu	V/m											
100													
90													
80										ECC Dout1	5 C - Above	10.04	
70										FUC Parti	5 C - ADOVE	IGPK	
60													
50										FCC Part1	5 C - Above	<u>1G AV</u>	
40		Š											
30		1											
20													
10													
0													
-10	00 000	3500.00 6	000.00	950	0.00 11	000.00 (M	Hz)	160	00.00 1	8500.00 21	000.00 2350	0.00 26000.	п
10	00.000	5500.00 0	000.00	030	0.00 11	000.00 (14	112)	100	00.00 1	0300.00 210	00.00 2350	0.00 20000.	u
N	lo.	Frequer (MHz			ading BuV)	Facto (dB/m			vel V/m)	Limit (dBuV/m	Margir (dB)	Detector	
1	*	4880.1	36	20	6.98	2.31		29	.29	54.00	-24.71	AVG	1
1	2	4881.5	30	3	7.96	2.31		40	.27	74.00	-33.73	b peak	1
Ĺ						I		1		I	1	1	-
1	*	4880.1 4881.5	36	20	6.98	2.31		29	.29	54.00	-24.71	AVG	-

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Remarks:



Ant. Pol		Horiz	Horizontal								
Test Mo	de:	TX C	FSK Mode	2480MHz							
Remark	:		eport for the ed limit.	emission v	vhich more t	han 10 dB b	elow the	pre-			
10.0 dBu	V/m										
100											
0											
0											
						FCC Part15 (C - Above 1	G PK			
-											
60						FCC Part15	C - Above 1	GAV			
0	ş										
0	*										
20											
0											
)											
10 1000.000	3500.00 6	000.00	8500.00 11	000.00 (MHz)	16000.00 1	8500.00 21000	0.00 23500	.00 26000.			
	1										
No.	Freque (MHz		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector			
1 *	4959.1	64	26.90	2.48	29.38	54.00	-24.62	AVG			
2	4959.5	512	38.40	2.48	40.88	74.00	-33.12	peak			
Remarks	3.										

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Ant	t. Pol		Vertical												
Tes	st Mo	de:	тх (GFSł	< Mo	de	2480M	Hz							
Rei	mark			epor bed li		the	emissi	on v	vhich	more f	than 10) dB k	pelow the	e pre-	
110.	0 dBu	V/m													
100															
90								_							
80											FCC	Dort1 E	C - Above 1	C PK	
70											ree	anis	C-ADUVE I		
60															
50								_			FCC	Part15	C - Above 1	GAV	
40		ş													
30															
20		^													
10															
0															
-10															
10	00.000	3500.00 6	000.00	850	0.00	110	000.00 (N	/Hz)	160	00.00	18500.00	2100	0.00 23500	.00 260	0.0
N	l o.	Frequer (MHz			ading BuV)		Facto (dB/n			vel iV/m)	Lin (dBu\		Margin (dB)	Detect	or
1	1 *	4959.0	18	26	6.86		2.48	3	29	.34	54.	00	-24.66	AVG	;
	2	4959.0	58	38	8.31		2.48	}	40	.79	74.	00	-33.21	peak	(
	Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor														

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Ant. Pol		Horiz	Horizontal										
Test Mo	de:	TX 1	τ/4-DQPSK	Mode 2402	2MHz								
Remark	:		eport for the ed limit.	emission v	hich more t	han 10 dB b	elow the	pre-					
110.0 dBu	V/m				1								
100													
90													
80													
						FCC Part15 (C-Above 1	G PK					
70													
60						FCC Part15 (C-Above 1	GAV					
50	1												
40	1 ×												
30	ş												
20													
10													
0													
-10	3500.00 6	000.00	8500.00 11	000.00 (MHz)	16000.00 1	8500.00 21000	.00 23500	.00 26000.0					
<u>.</u>													
No.	Frequer (MHz	-	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector					
1	4803.4	20	38.07	2.16	40.23	74.00	-33.77	peak					
2 *	4804.8	74	27.13	2.16	29.29	54.00	-24.71	AVG					
Remarks	<u>.</u>				1	1		L					

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Remarks:



Ant.	Pol.		Verti	′ertical X π/4-DQPSK Mode 2402MHz											
Test	Мос	le:	TX 1	τ/4-C	QPSK	Mode 2	2402	2MHz							
Rem			No ro			e emissi	on v	vhich	more t	han 10	dB b	pelow the	e pre-		
110.0	dBu∖	//m													
100											_				
90 -															
80										FCC P	art15	C - Above 1	G PK		
70															
60										FCC P	art15	C - Above 1	G AV		
50															
40		Š													
30		×	_				_								
20															
10															
0 - -10															
100	0.000	3500.00 6	00.00	8500).00 11	000.00 (MHz)	160	100.00	8500.00	2100	0.00 23500	.00 26000.0		
		Frequer		Re	ading	Fact	or		vel	Lim	it	Margin			
No	0.	(MHz			BuV)	(dB/r				(dBu∨			Detector		
1	*	4803.1	50	27	7.05	2.16	6	29	.21	54.0	0	-24.79	AVG		
2		4804.4	10	37	7.83	2.16	6	39	.99	74.0	0	-34.01	peak		
Dam															

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Remarks:



Ant. Pol.	Horizon	ital					
Test Mode:	TX π/4	-DQPSK	Mode 244	IMHz			
Remark:	No repo		emission v	vhich more t	han 10 dB t	pelow the	pre-
110.0 dBuV/m	-						
100							
90							
80					FCC Part15	C - Above 1	
70					recraitis	C-ADOVE I	
60							
50					FCC Part15	C - Above 1	GAV
40 1							
30							
20							
10							
0							
-10							
1000.000 3500.00	6000.00 85	00.00 11	000.00 (MHz)	16000.00 1	8500.00 2100	D.OO 23500	.00 26000.0
No. Freque (MH:		eading dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 4881.5	542 3	37.65	2.31	39.96	74.00	-34.04	peak
2 * 4881.6	614 2	26.92	2.31	29.23	54.00	-24.77	AVG
· !	I						I.

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Remarks:



Ant	t. Pol		Verti	ertical X π/4-DQPSK Mode 2441MHz											
Tes	st Mo	de:	TX	π/4-	DQPSK	Mode 2	2441	IMHz							
Rer	nark	:	No r scrib			e emissi	on v	vhich	more t	han 10 dE	3 b	elow the	e pre-		
110.) dBu	V/m	SCIIL			1	_							1	
100															
90															
80										ECC Part		C-Above 1	C PK		
70											15 0	- ADOVE I			
60										500 D			0.114		
50							-			FCC Part	150	C-Above 1	GAV		
40		Š													
30		1×					-				-				
20							-								
10							-				-				
0											-				
-10	100.000	3500.00 6	000.00	850	0.00 11	000.00 (N	(Hz)	160	00.00 1	8500.00 21	000	.00 23500	0.00 260	00.0	
						· · · · ·	,								
<u>.</u>															
N	lo.	Frequer (MHz			ading BuV)	Facto (dB/m			vel iV/m)	Limit (dBuV/n	n)	Margin (dB)	Detec	tor	
1	*	4881.7	96	2	6.86	2.31		29	.17	54.00		-24.83	AV	G	
2	2	4882.1	90	3	8.10	2.31		40	.41	74.00		-33.59	pea	k	
L						1		1				1			

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Remarks:



Ant. Pol	I.	Horiz	zontal					
est Mo	de:	TX 1	π/4-DQPSK	Mode 2480)MHz			
Remark			eport for the ed limit.	emission v	vhich more t	han 10 dB b	pelow the	pre-
10.0 dBu	uV/m							
00								
0						FCC Part15	C - Abovo 1	
'0 						recrants	C-ADOVE I	
io								
:0						FCC Part15	C - Above 1	GAV
	1							
	2							
20	^							
0								
10								
	0 3500.00 6	000.00	8500.00 11	000.00 (MHz)	16000.00	18500.00 2100	D.OO 23500	.00 26000.0
No.	Frequer (MHz		Reading (dBuV)	Factor (dB/m)		Limit (dBuV/m)	Margin (dB)	Detector
1					. ,			a se a la
	4959.3 4960.1		37.80	2.48	40.28	74.00	-33.72	peak
2 *		00	26.85	2.48	29.33	54.00	-24.67	AVG

Remarks:



An	t. Pol		Vertical TX π/4-DQPSK Mode 2480MHz											
Tes	st Mo	de:	TX 1	π/4-	DQPSK	Mode 2	2480)MHz						
	mark		No r scrib			e emissi	on v	vhich	more t	han 10 d	Вb	elow the	e pre-	
110.	0 dBu	V/m			-									1
100														
90														
80														
										FCC Part	15 C	- Above 1	g PK	
70														
60										FCC Part	15 C	- Above 1	G AV	
50		ş												
40														
30		×												
20											-			
10											-			
0											-			
-10	100 000	3500.00 6	000.00	850	0.00 11	000.00 (N	/Hz)	160	00.00 1	8500.00 21	000.	.00 23500	00 260)00.a
	100.000	0000.00 0	000.00	000	0.00 11	000.00 (1		100	00.00	0000.00 21	000.	.00 20000	.00 200	700.u
1	۱o.	Frequer (MHz			ading BuV)	Fact (dB/n	-		evel uV/m)	Limit (dBuV/n		Margin (dB)	Detec	tor:
	1 *	4959.2	70	2	6.68	2.48	3	29	.16	54.00		-24.84	AV	G
	2	4959.6	66	3	8.41	2.48	3	40	.89	74.00		-33.11	pea	ık
Rei	marks	S:					_							

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Ant	. Pol	I.	Horizontal TX 8-DPSK Mode 2402MHz											
Tes	t Mo	de:	TX 8	B-DP	SK Moo	de 2402	MH:	z						
	nark		No r scrit			e emissi	on v	vhich r	nore t	han 10	dB b	pelow the	e pre-	
110.	o dBu	IV/m												
100														
90														
80										ECC P	ort15	C - Above 1	C PK	
70			_									C - ABOVE		
60			_											
50			_							FCC Pa	art15	C - Above 1	<u>G AV</u>	
40		1 X												
30		ž	_											
20		^												
10														
0														
-10														
10	00.000	3500.00 6	000.00	850	0.00 11	000.00 ()	vHz)	160	00.00 1	8500.00	2100	D.OO 2350	D.00 26000.0	
I														
N	lo.	Frequer (MHz	-		ading BuV)	Fact (dB/n		Lev (dBu		Limi (dBuV		Margin (dB)	Detector	
	1	4804.0	16	3	8.61	2.16	3	40.	77	74.0	0	-33.23	peak	
2	*	4804.2	84	2	7.34	2.16	5	29.	50	54.0	0	-24.50		
								1				1		

Remarks:



Test Mode: TX 8-DPSK Mode 2402MHz Remark: No report for the emission which more than 10 dB below the pre- scribed limit. 110.0 dBuV/m 00 90 90 90 90 90 90 90 90 90 90 90 90 90 90 90 90 90 90 90 90 90 90 90 90 90 90	Ant.	Pol.		Verti	cal										
scribed limit. 100 dBuV/m 90 FCC Part15 C - Above 1G PK 70 FCC Part15 C - Above 1G AV 60 FCC Part15 C - Above 1G AV 90 FCC Part15 C - Above 1G AV <td< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></td<>															
100 90	Rem	ark:					e emissi	on v	vhich	more t	han 10 di	Βb	elow the	e pre-	
No. Frequency (MHz) Reading (dBuV) Factor (dBm) Level (dBuV/m) Limit (dBuV/m) Margin (dBuV/m) Detector	110.0	dBu∖	//m												
No. Frequency (MHz) Reading (dBuV) Factor (dBm) Level (dBuV/m) Limit (dBuV/m) Margin (dBuV/m) Detector	100											-			
No. Frequency (MHz) Reading (dBuV) Factor (dB/m) Level (dBuV/m) Limit (dBuV/m) Margin (dBuV/m) Detector 1 4803.094 38.32 2.16 40.48 74.00 -33.52 peak	90 -											-			
70 60 FCC Part15 C - Above 1G AV 50	80 -							-			FCC Part	15 C	- Above 10	G PK	
Image: Solution of the second secon	70 -							-							
50 1	60 -														
No. Frequency (MHz) Reading (dBuV) Factor (dB/m) Level (dBuV/m) Limit (dBuV/m) Margin (dB) Detector 1 4803.094 38.32 2.16 40.48 74.00 -33.52 peak	50										FCC Part	150	2-Above T		
20	40 -		Å.												
In In<	30 -		Ş									_			
No. Frequency (MHz) Reading (dBuV) Factor (dB/m) Level (dBuV/m) Limit (dBuV/m) Margin (dB) Detector 1 4803.094 38.32 2.16 40.48 74.00 -33.52 peak	20														
Image: No. Frequency (MHz) Reading (dBuV) Factor (dB/m) Level (dBuV/m) Limit (dBuV/m) Margin (dB) Detector 1 4803.094 38.32 2.16 40.48 74.00 -33.52 peak	10											_			
No. Frequency (MHz) Reading (dBuV) Factor (dB/m) Level (dBuV/m) Limit (dBuV/m) Margin (dB) Detector 1 4803.094 38.32 2.16 40.48 74.00 -33.52 peak	0			_				_							
No.Frequency (MHz)Reading (dBuV)Factor (dB/m)Level (dBuV/m)Limit (dBuV/m)Margin (dB)Detector14803.09438.322.1640.4874.00-33.52peak															
NO. (MHz) (dBuV) (dB/m) (dBuV/m) (dBuV/m) (dB) Detector 1 4803.094 38.32 2.16 40.48 74.00 -33.52 peak	100	0.000	3500.00 60	00.00	850	0.00 11	000.00 (N	IHz)	160	00.00 1	8500.00 21	000	.00 23500	.00 260	00.0
NO. (MHz) (dBuV) (dB/m) (dBuV/m) (dBuV/m) (dB) Detector 1 4803.094 38.32 2.16 40.48 74.00 -33.52 peak															
NO. (MHz) (dBuV) (dB/m) (dBuV/m) (dBuV/m) (dB) Detector 1 4803.094 38.32 2.16 40.48 74.00 -33.52 peak	<u>.</u>								-					-	
	N	0.										n)		Detec	tor
2 * 4803.904 27.34 2.16 29.50 54.00 -24.50 AVG	1		4803.0	94	3	8.32	2.16	;	40	.48	74.00		-33.52	pea	k
	2	*	4803.9	04	2	7.34	2.16	;	29	.50	54.00		-24.50	AVG	G
	L						1							1	

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Remarks:



An	t. Pol	I .	Horiz	zonta	al							
Tes	st Mo	de:	TX 8	B-DP	SK Mo	de 2441	MH:	z				
	mark		No r scrib			e emissi	on v	vhich	more t	han 10 dB	below the	e pre-
110.	0 dBu	V/m										
100							_					
90												
80										ECC DottlE	C - Above 1	C PK
70										FCC Partis	C - ADUVE I	GPK
60												
50										FCC Part15	C - Above 1	GAV
40		Ę										
30		1										
20		×										
10												
0 -10												
	000.000	3500.00 6	000.00	8500).00 11	000.00 (√Hz)	160	00.00 1	8500.00 2100	0.00 23500	.00 26000.0
						1						
1	No.	Freque (MHz	-		ading BuV)	Fact (dB/r			evel iV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	1 *	4881.3	38	26	6.79	2.3	1	29	.10	54.00	-24.90	AVG
	2	4882.9	52	37	7.79	2.32	2	40	.11	74.00	-33.89	peak
-	Remarks: 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor											

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Ant	. Pol		Vert	ertical X 8-DPSK Mode 2441MHz											
Tes	t Mo	de:	TX 8	B-DP	SK Mo	de 2441	MH	z							
Rer	nark	:	No r scrit			e emissi	on v	vhich	more t	han 10 dl	3 b	elow the	e pre-		
110.0) dBu	V/m													
100							_								
90															
80										FCC Part	15.0	- Above 1			
70							-			Teeran		Aboven			
60															
50							-			FCC Part	15 C	- Above 1	GAV		
40		* *													
30		Z													
20															
10															
0															
-10								100							
10	100.000	3500.00 6	000.00	850	0.00 11	000.00 (N	(Hz)	160	00.00 1	8500.00 21	000	.00 23500	.00 260	00.0	
N	lo.	Frequer (MHz	-		ading BuV)	Facto (dB/m			vel V/m)	Limit (dBuV/n		Margin (dB)	Detect	or	
	1	4881.5	62	3	9.57	2.31		41	.88	74.00		-32.12	pea	k	
2	*	4881.7	84	2	6.97	2.31		29	.28	54.00		-24.72	AVG	3	
L						1				1	1				

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Remarks:



Ant. Pol		Hori	zontal					
Test Mo	de:	TX 8	B-DPSK M	ode 2480MH	Z			
Remark	:		eport for tl bed limit.	ne emission v	which more t	han 10 dB t	elow the	pre-
110.0 dBu	V/m							
100								
90								
80								
						FCC Part15	C - Above 1	G PK
70								
60						FCC Part15	C - Above 1	G AV
50	1							
40	*							
30	Š							
20								
10								
0								
-10	2500.00		0500.00	11000.00 (111)	10000.00	0500.00.0100	0.00 00500	
1000.000	3500.00 6	DOO.OO	8500.00	<u>11000.00 (MHz)</u>	16000.00 1	18500.00 2100	0.00 23500	.00 26000.0
No.	Frequer (MHz	-	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4959.1	44	38.33	2.48	40.81	74.00	-33.19	peak
2 *	4960.5	34	26.90	2.48	29.38	54.00	-24.62	AVG
Remarks	3:				·			h

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Ant	. Pol		Vertical TX 8-DPSK Mode 2480MHz											
Tes	t Mo	de:	тх в	B-DP	SK Moo	de 2480	ИНz	Z						
Rer	nark	:	No r scrib			e emissio	on v	vhich	more t	han 10 dB t	pelow the	e pre-		
110.0) dBu	V/m			-									
100														
90														
80										FCC Part15	C - Above 1			
70										TOCPartis	C-ADOVE I			
60														
50										FCC Part15	C - Above 1	GAV		
40		1×												
30		ž												
20			_											
10			_											
0			_											
-10														
10	00.000	3500.00 6	000.00	850	0.00 11	000.00 (M	Hz)	160	00.00 1	8500.00 2100	0.00 23500	.00 26000.0		
I (
N	lo.	Frequer (MHz			ading BuV)	Facto (dB/m			vel IV/m)	Limit (dBuV/m)	Margin (dB)	Detector		
	1	4959.5	50	3	8.90	2.48		41	.38	74.00	-32.62	peak		
2	2 *	4959.7	02	2	6.88	2.48		29	.36	54.00	-24.64	AVG		
	norka											<u>'</u>		

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Remarks:



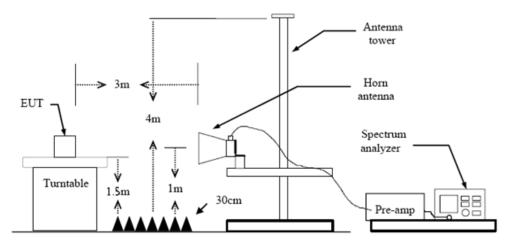
3.3. Band Edge Emissions (Radiated)

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d):

Restricted Frequency Band	(dBuV/m	n)(at 3m)
(MHz)	Peak	Average
2310 ~ 2390	74	54
2483.5 ~ 2500	74	54

Test Configuration



Test Procedure

- 1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
- 2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
- 3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
- The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is re-4. peated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
- 5. The receiver set as follow:

RBW=1MHz, VBW=3MHz Peak detector for Peak value.

RBW=1MHz, VBW see note 1 with Peak Detector for Average Value.

Note 1: For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 3.10 Duty Cycle.

Test Mode

Please refer to the clause 2.4.

国家认证



Test Results

le: //m	GFS	K Mode 24	02MHz				
//m							
					FCC Part15 (C-Above 10) PK
					FCC Part15 (C- <u>Above 10</u>	AV
						2	
n and the second second	man	unnam	man man man	mater and here and	provenence when when	motorion	m
2314.50	2324.50	2334.50 23	44.50 (MHz)	2364.50 2	374.50 2384.	50 2394.5	0 2404.5
		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
2390.	000	22.30	30.84	53.14	74.00	-20.86	peak
2390.	000	6.80	30.84	37.64	54.00	-16.36	AVG
	Freque (MH 2390.	2314.50 2324.50 Frequency (MHz) 2390.000 2390.000	Frequency (MHz) Reading (dBuV) 2390.000 22.30	Frequency (MHz)Reading (dBuV)Factor (dB/m)2390.00022.3030.84	Frequency (MHz) Reading (dBuV) Factor (dB/m) Level (dBuV/m) 2390.000 22.30 30.84 53.14	Frequency (MHz) Reading (dBuV) Factor (dB/m) Level (dBuV/m) Limit (dBuV/m) 2390.000 22.30 30.84 53.14 74.00	Frequency (MHz) Reading (dBuV) Factor (dB/m) Level (dBuV/m) Limit (dBuV/m) Margin (dB) 2390.000 22.30 30.84 53.14 74.00 -20.86

Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value



nt. Po	ol.	Vert	ical					
est Mo	ode:	GFS	K Mode 240	02MHz				
10. <u>0</u> dE	3uV/m							
00								
0								
0						500 D . 115	<u> </u>	
0						FCC Part15	C-Above I	GPK
0								-11
						FCC Part15	C - Above 1	GAV
10							2	
0	harana prilanativisha	1.02760935400400400400	and the second and the second of the second	and a second	arthursey and some from the second	Andred and a conservation of the second s	alenta a Caranter an Inda	~~
0								
o								
.								
10								
No.	Frequ		Reading	Factor		Limit	Margin	Detector
	(MF	1Z)	(dBuV)	(dB/m)	(aBuv/m)	(dBuV/m)	(dB)	
1	2390.	000	23.86	30.84	54.70	74.00	-19.30	peak
2 *	2390.	.000	7.36	30.84	38.20	54.00	-15.80	AVG
	r (dB/m) :		na Factor (c Limit value	lB/m)+Cabl	e Factor (dE	3)-Pre-ampli	ifier Facto	or



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	Мос		GFS	SK Mode 24	80 MHz				
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10		2487.00	2497.00	2507.00 2	517.00 (MHz)	2537.00 2	547.00 2557.	00 2567.0	0 2577.0
No	0.	Frequ (MI	iency Hz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	*	2483	.500	34.67	31.24	65.91	74.00	-8.09	peak
2		2483	.500	7.99	31.24	39.23	54.00	-14.77	AVG

Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value



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Test Mod				ode 24	80 M	H7						
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2476.500	2486.50 24	196.50	2506	6.50 2	516.50	(MHz)	25	36.50 2	2546.50	2556	50 2566	.50 2576.50
No.	Frequer (MHz	-		ading BuV)		actor B/m)		evel uV/m)	Lin (dBu)		Margin (dB)	Detector
1	2483.5	00	22	2.64	31	.24	53	3.88	74.	00	-20.12	peak
2 *	2483.5	00	7	.12	31	.24	38	3.36	54.	00	-15.64	AVG
L					1		1		1		1	<u> </u>
	: (dB/m) = / value = L				dB/m)+Cab	le Fac	ctor (dE	8)-Pre-	ampli	fier Fact	or

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	00.000		525.00	200	5.00 20	13.00	(11112)	200	55.50			200		100.00
Ν	lo.	Frequer (MHz	-		ading BuV)		ictor 3/m)		evel uV/m)	Limit (dBuV/n	n)	Margin (dB)	Det	ector
	1	2390.0	00	2	1.52	30	.84	52	2.36	74.00		-21.64	pe	eak
2	2 *	2390.0	00	5	5.91	30	.84	36	6.75	54.00		-17.25	A	√G
	narks												·	<u>_</u>
		(dB/m) = /			•	lB/m)	+Cabl	e Fac	tor (dB)-Pre-am	pli	fier Fact	or	
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No.	Frequ (Mł	-	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detecto
1	2390	.000	22.90	30.84	53.74	74.00	-20.26	peak
2 *	2390	.000	6.51	30.84	37.35	54.00	-16.65	AVG
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2.Margin value = Level -Limit value



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2476.000	2486.00	2496.00	2506.00 2	516.00 (MHz)	2536.00 2	546.00 2556.	00 2566.0	0 2576.0
No.	Frequ (MF		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	2483.	.500	36.99	31.24	68.23	74.00	-5.77	peak
2	2483.	.500	8.15	31.24	39.39	54.00	-14.61	AVG
2	2403.		0.10	J1.24	33.38	54.00	-14.01	700

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value



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2476.500	2486.50	2496.50	2506.50 25	16.50 (MHz)	2536.50 2	546.50 2556.	50 2566.9	50 2576.5
No.		iency	Reading	Factor	Level	Limit	Margin	Detector
	(M)	· ·	(dBuV)	(dB/m)		(dBuV/m)	(dB)	
•	2479		53.74	31.22	84.96	74.00	10.96	peak
2	2483	.500	7.69	31.24	38.93	54.00	-15.07	AVG

Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value



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2304	1.500	2314.50 2	324.50	233	4.50 23	44.50	(MHz)	236	64.50 2	374.50	2384.	50 2394.	50 2404.50
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No		Freque	-		ading		ctor		evel	Lim		Margin	Detector
		(MHz	:)	(d	BuV)	(dB	/m)	(dBı	uV/m)	(dBu∖	//m)	(dB)	Detector
1		2390.0	00	2	1.88	30	.84	52	2.72	74.0	00	-21.28	peak
2	*	2390.0	00	7	7.26	30	.84	38	3.10	54.0	00	-15.90	AVG
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		(dB/m) = /	Anten	na F	actor (c	B/m)-	+Cable	e Fac	tor (dB)-Pre-a	ampli	fier Fact	or
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0 2305.000	2315.00 2	325.00	2335.0	0 23	45.00 (MHz)	230	65.00 2	2375.00	2385.	00 239	35.00	2405.0
No.	Freque (MHz	-	Read (dBu		Fac (dB/			evel uV/m)	Lin (dBu		Marg (dB))etector
1	2390.0	000	22.	12	30.8	34	52	2.96	74.	00	-21.0	4	peak
2 *	2390.0	000	6.5	5	30.8	34	37	7.39	54.	00	-16.6	1	AVG
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2476.50	0 2486.50	2496.50	2506.50 29	516.50 (MHz)	2536.50	2546.50 2556	.50 2566.	50 2576.
No.		uency	Reading	Factor		Limit	Margin	Detector
4 *		Hz)	(dBuV)	(dB/m)		(dBuV/m)	(dB)	
1 *		3.500	37.04	31.24	68.28	74.00	-5.72	peak
2	2483	3.500	7.72	31.24	38.96	54.00	-15.04	AVG

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value



Ant. Pol	•	Vert	ical					
est Mo		8-DF	PSK Mode 2	2480MHz				
10.0 dBu	V/m							
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o								
						500 D+15	0.41	
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2476.000	2486.00	2496.00	2506.00 2	516.00 (MHz)	2536.00	2546.00 2556.	.00 2566.0	00 2576.0
	Freque	encv	Reading	Factor	Level	Limit	Margin	
No.	(MH	z)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Detector
1	2483.	500	25.92	31.24	57.16	74.00	-16.84	peak
2 *	2483.	500	6.68	31.24	37.92	54.00	-16.08	AVG

Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value

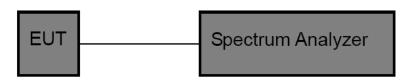


3.4. Band edge and Spurious Emissions (Conducted)

<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d):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 Configuration



Test Procedure

- 1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
- 2. Set to the maximum power setting and enable the EUT transmit continuously
- Use the following spectrum analyzer settings: RBW = 100 kHz, VBW ≥ RBW, scan up through 10th harmonic. Sweep = auto, Detector function = peak, Trace = max hold
- Measure and record the results in the test report.

Test Mode

Please refer to the clause 2.4.

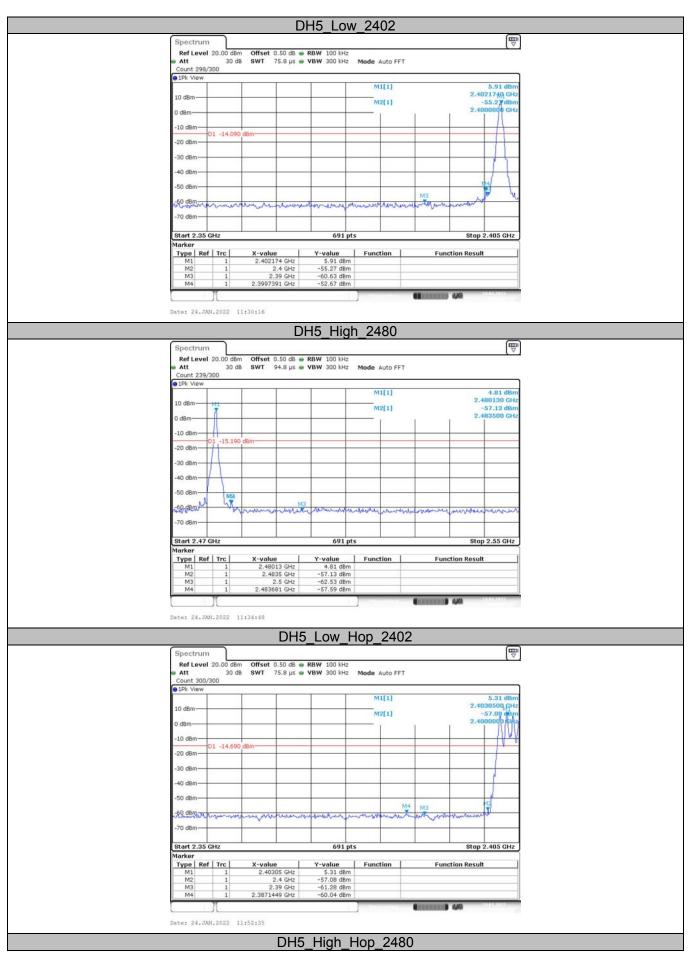
Test Results

(1) Band edge Conducted Test

Test Mode	Frequency[MHz]	Ref Level[dBm]	Result[dBm]	Limit[dBm]	Verdict
	2402	5.91	-52.67	<=-14.09	PASS
GFSK	2480	4.81	-57.59	<=-15.19	PASS
GFSK	Hop_2402	5.31	-60.04	<=-14.69	PASS
	Hop_2480	4.42	-59.44	<=-15.58	PASS
	2402	4.04	-52.73	<=-15.96	PASS
	2480	3.09	-58.80	<=-16.91	PASS
π/4-DQPSK	Hop_2402	1.37	-60.00	<=-18.63	PASS
	Hop_2480	2.99	-59.45	<=-17.01	PASS
	2402	4.37	-49.44	<=-15.63	PASS
8-DPSK	2480	2.62	-56.53	<=-17.38	PASS
	Hop_2402	3.96	-59.76	<=-16.04	PASS
	Hop_2480	2.14	-59.03	<=-17.86	PASS



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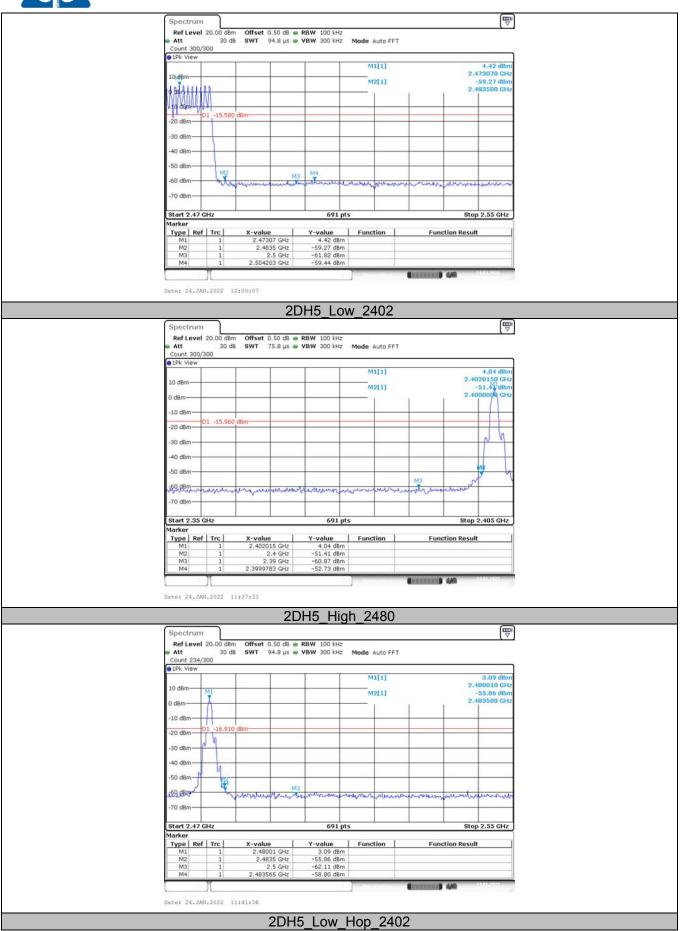


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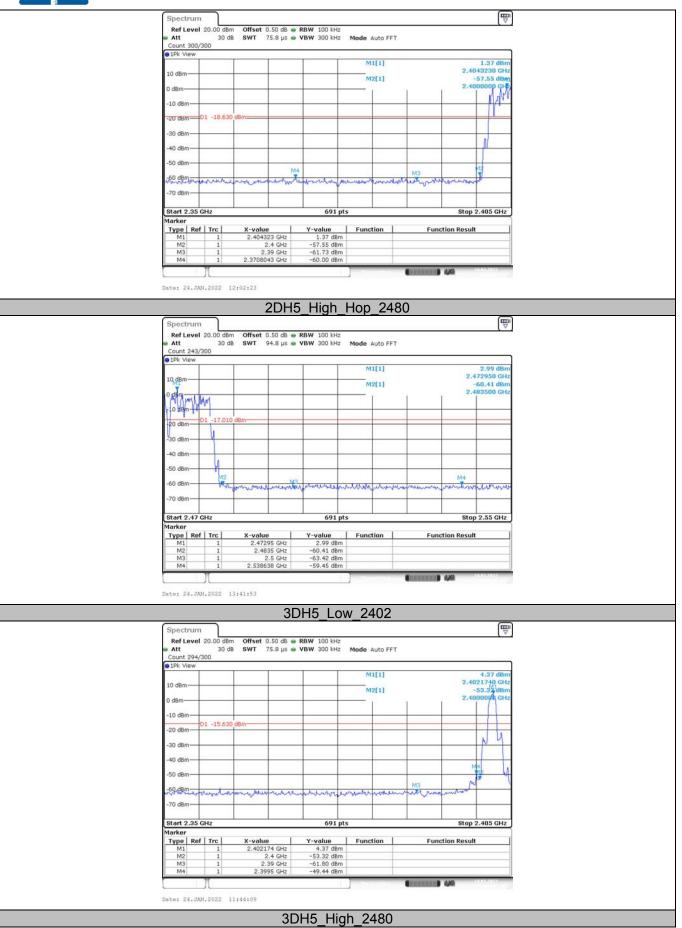




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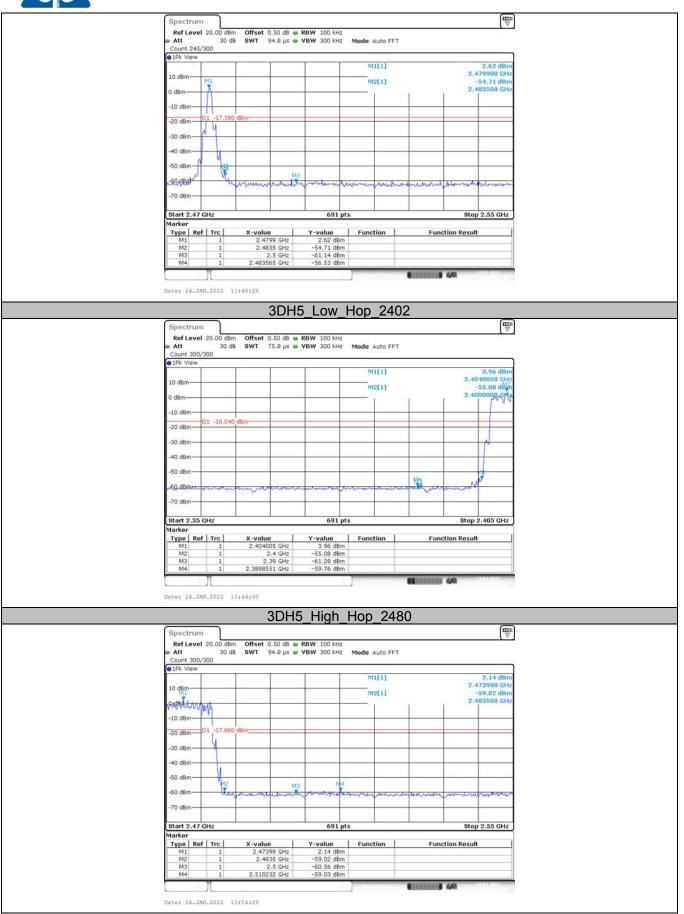


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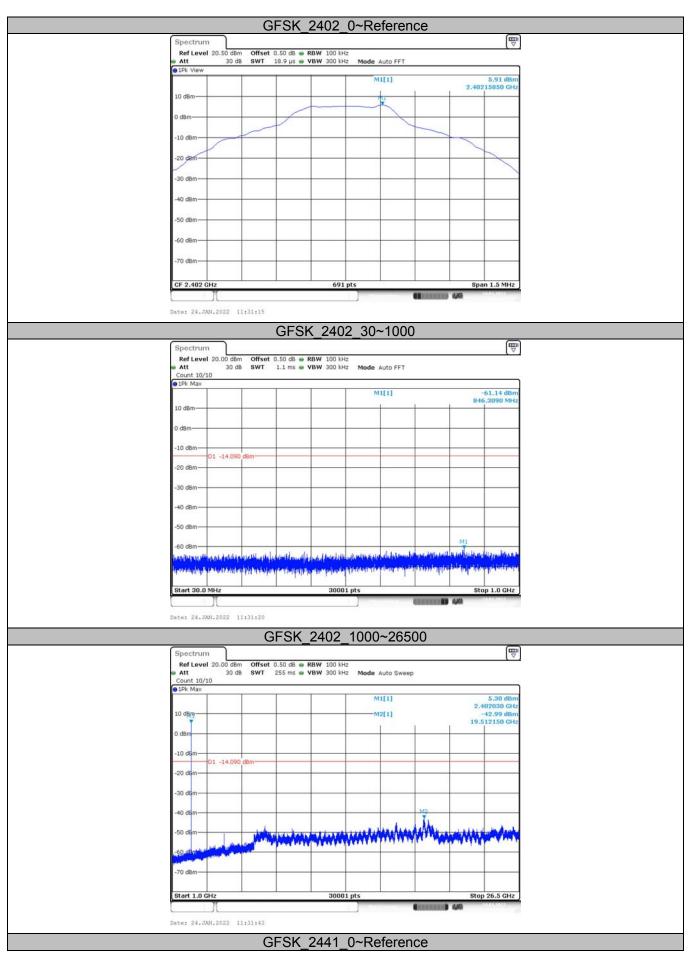


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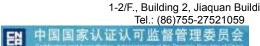
(2) Conducted Spurious Emissions Test

Test Mode	Frequency[MHz]	Freq Range [MHz]	Ref Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
	2402	Reference	5.91	5.91		PASS
		30~1000	5.91	-61.14	<=-14.09	PASS
		1000~26500	5.91	-42.99	<=-14.09	PASS
		Reference	5.90	5.90		PASS
GFSK	2441	30~1000	5.90	-61.18	<=-14.10	PASS
		1000~26500	5.90	-43.77	<=-14.10	PASS
		Reference	4.84	4.84		PASS
	2480	30~1000	4.84	-60.88	<=-15.16	PASS
		1000~26500	4.84	-42.79	<=-15.16	PASS
		Reference	4.04	4.04		PASS
	2402	30~1000	4.04	-60.53	<=-15.96	PASS
		1000~26500	4.04	-43.48	<=-15.96	PASS
		Reference	4.07	4.07		PASS PASS PASS PASS PASS PASS PASS
π/4-DQPSK	2441	30~1000	4.07	-61.26	<=-15.93	
		1000~26500	4.07	-43.74	<=-15.93	PASS
		Reference	3.20	3.20		PASS
	2480	30~1000	3.20	-60.74	<=-16.80	PASS
		1000~26500	3.20	-42.51	<=-16.80	PASS
		Reference	4.35	4.35		PASS
	2402	30~1000	4.35	-61.51	<=-15.65	PASS
8-DPSK		1000~26500	4.35	-42.97	<=-15.65	PASS
		Reference	4.31	4.31		PASS
	2441	30~1000	4.31	-59.89	<=-15.69	PASS
		1000~26500	4.31	-42.51	<=-15.69	PASS PASS PASS PASS PASS PASS PASS PASS
		Reference	3.39	3.39		PASS
	2480	30~1000	3.39	-61.24	<=-16.61	PASS
		1000~26500	3.39	-43.92	<=-16.61	PASS



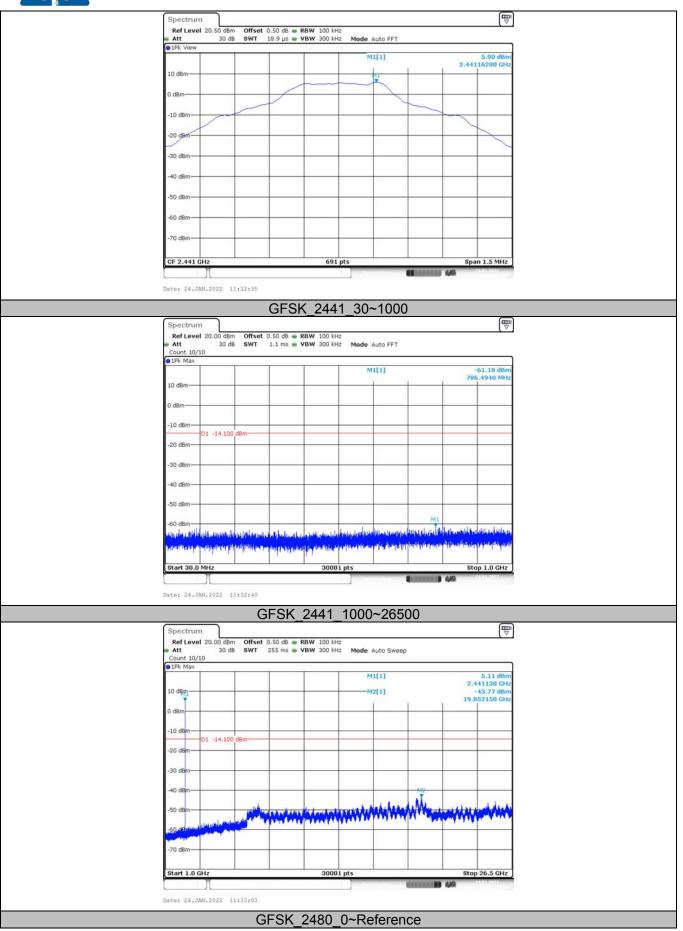


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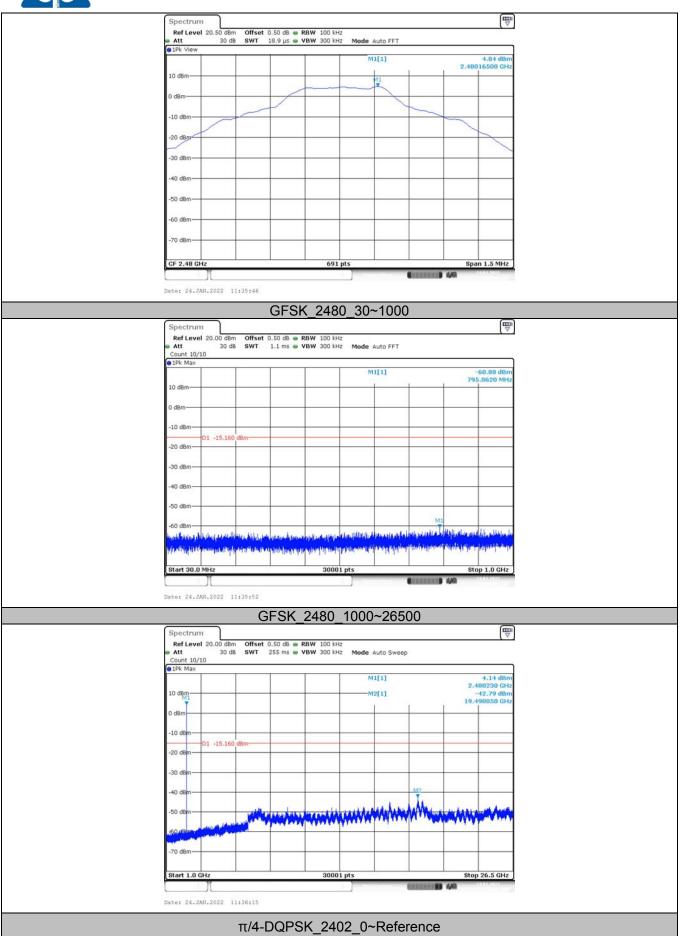


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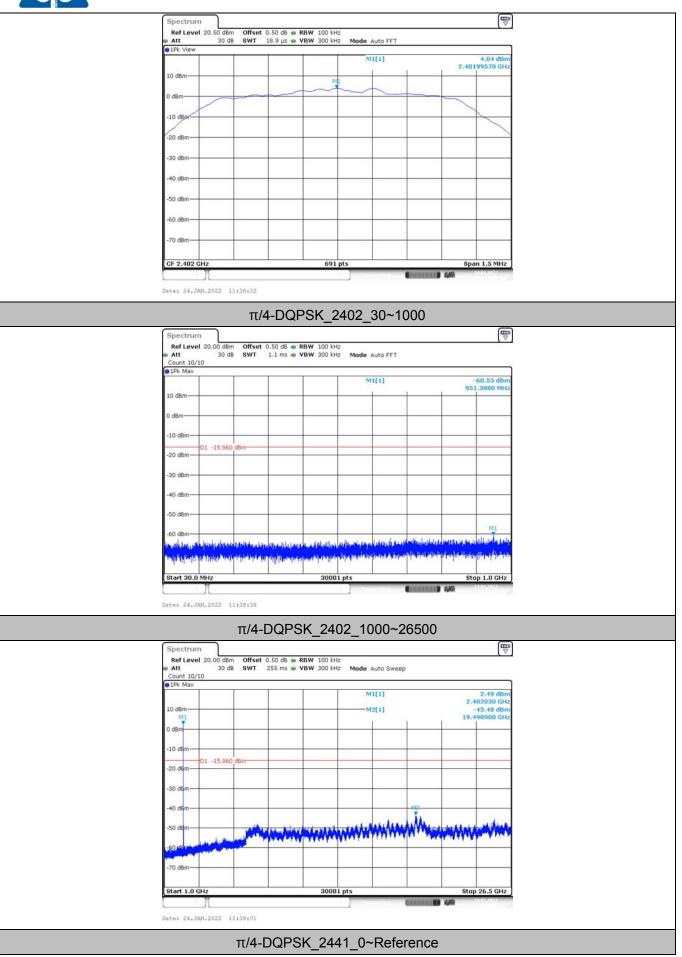






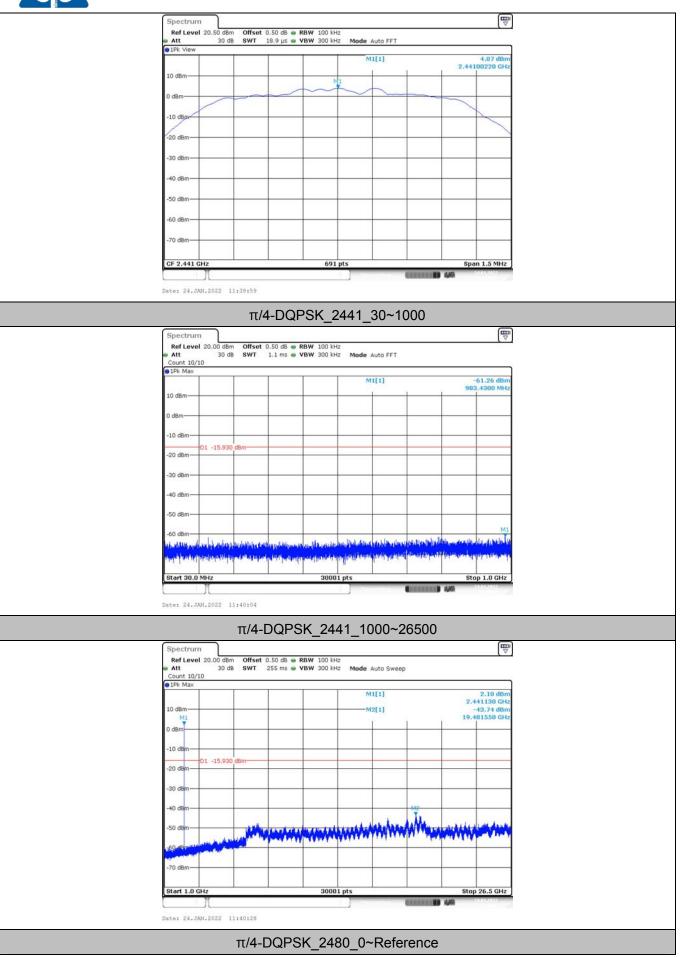
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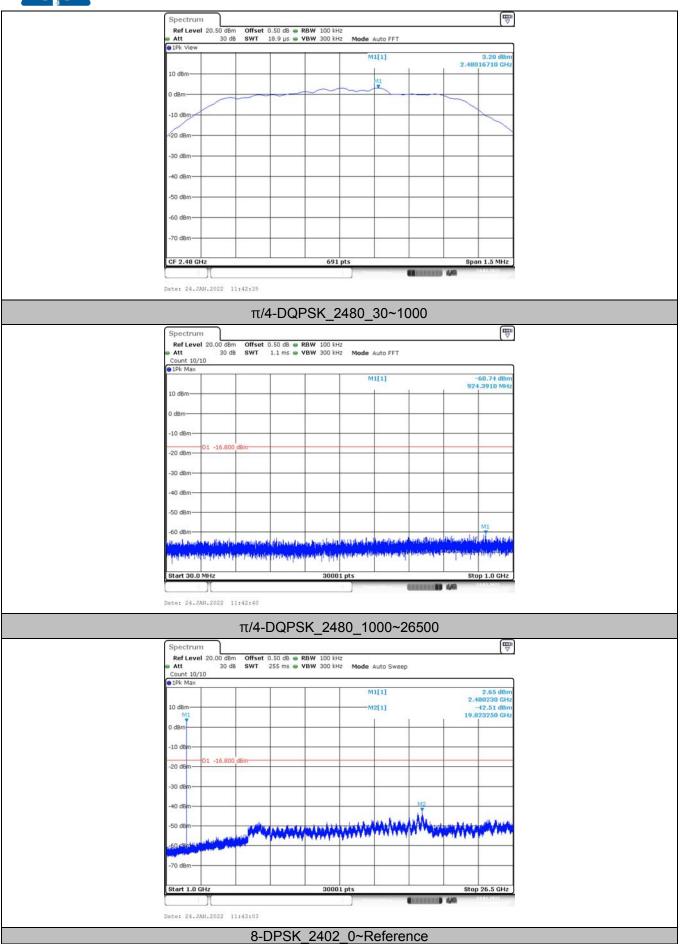
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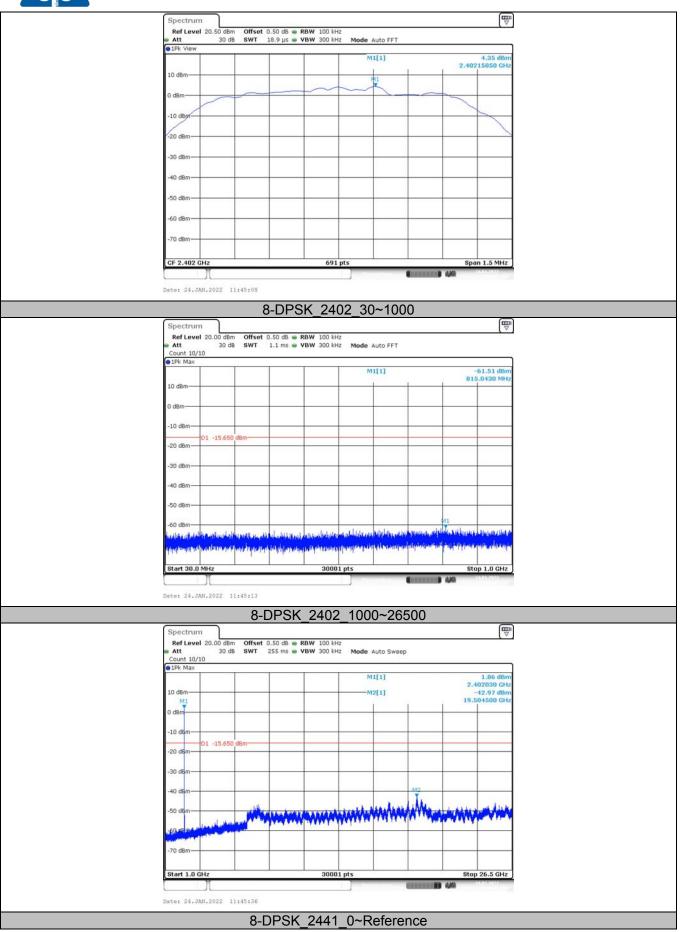
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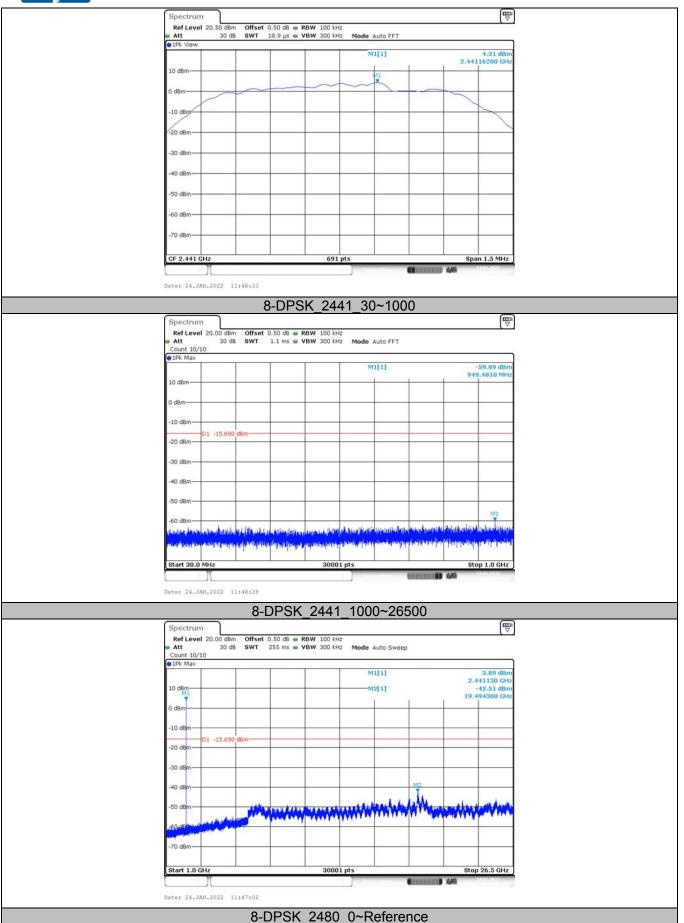


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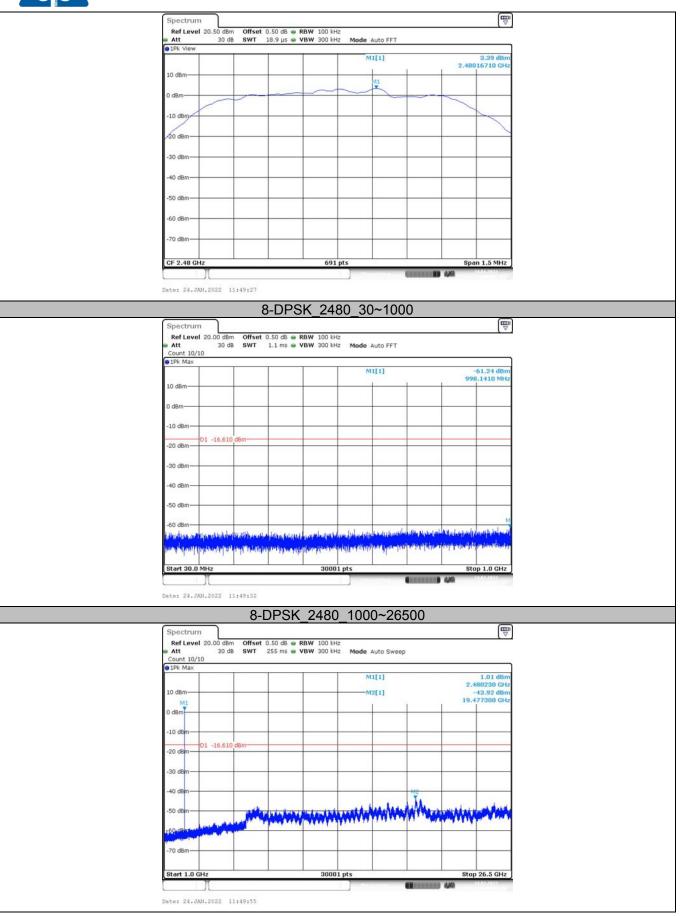






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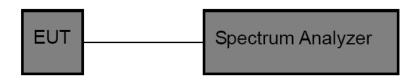


3.5. 20DB Bandwidth

<u>Limit</u>

N/A

Test Configuration



Test Procedure

- 5. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- 6. OCB and 20dB Spectrum Setting:
 - (1) Set RBW = $1\% \sim 5\%$ occupied bandwidth.
 - (2) Set the video bandwidth (VBW) \geq 3 RBW.
 - (3) Detector = Peak.
 - (4) Trace mode = Max hold.
 - (5) Sweep = Auto couple.

Note: The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

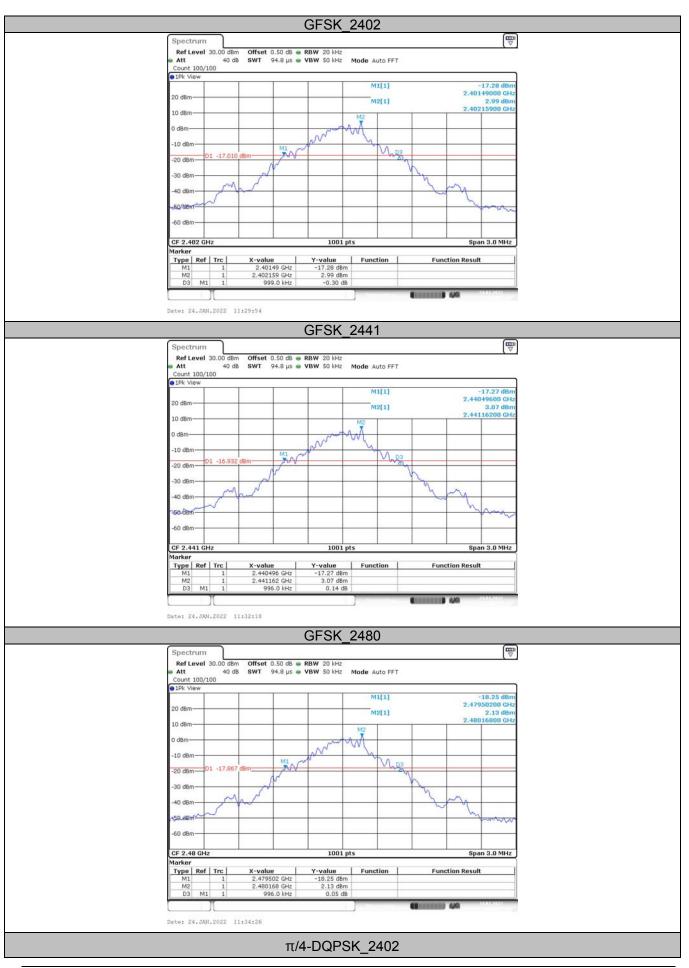
Test Mode

Please refer to the clause 2.4.

Test Results

Test Mode	Frequency[MHz]	20db EBW[MHz]	20dB Bandwidth *2/3 (kHz)	Verdict
	2402	0.999	666.00	PASS
GFSK	2441	0.996	664.00	PASS
	2480	0.996	664.00	PASS
	2402	1.350	900.00	PASS
π/4-DQPSK	2441	1.350	900.00	PASS
	2480	1.353	902.00	PASS
	2402	1.314	876.00	PASS
8-DPSK	2441	1.317	878.00	PASS
	2480	1.335	890.00	PASS





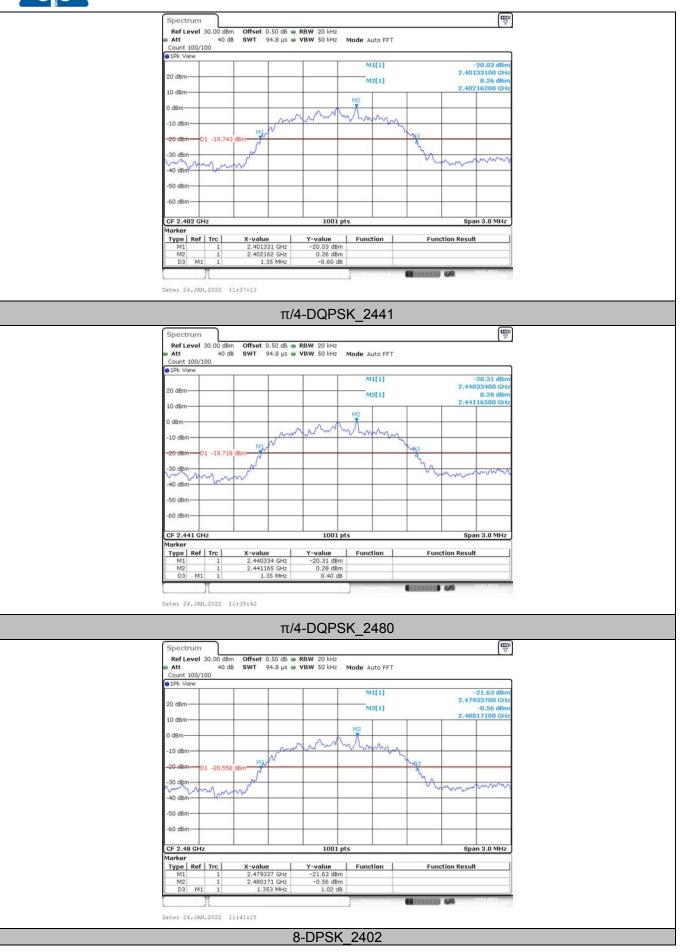
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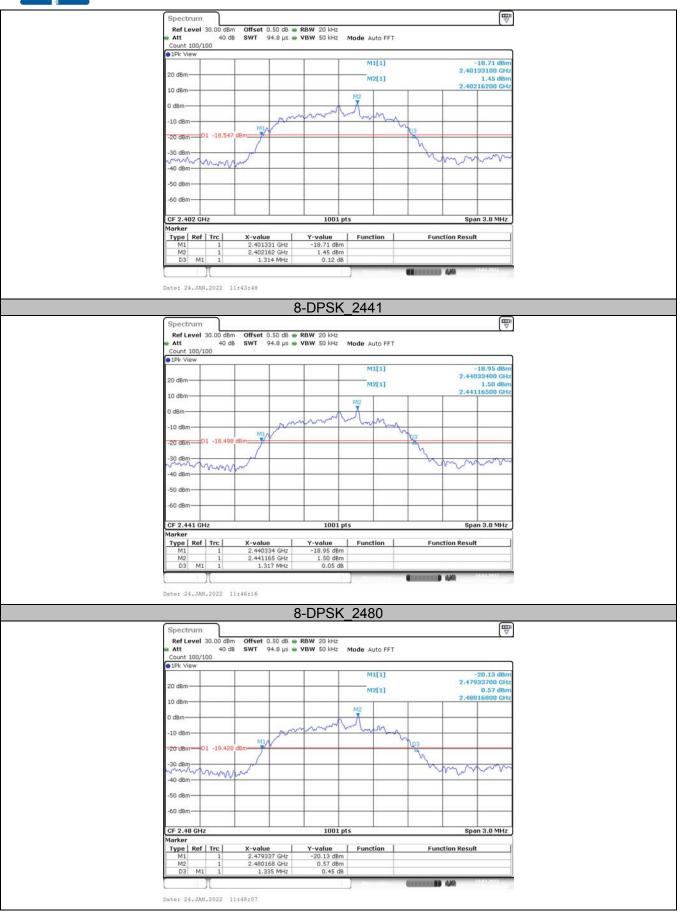
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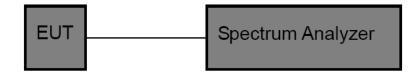
3.6. Channel Separation

<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(1)/ RSS-247 5.1 b :

Test Item	Limit	Frequency Range(MHz)
Channel Separation	>25KHz or >two-thirds of the 20 dB bandwidth Which is greater	2400~2483.5

Test Configuration



Test Procedure

- 7. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- 8. Spectrum Setting:
 - (1) Set RBW = 100 kHz.
 - (2) Set the video bandwidth (VBW) \geq 3 RBW.
 - (3) Detector = Peak.
 - (4) Trace mode = Max hold.
 - (5) Sweep = Auto couple.

Test Mode

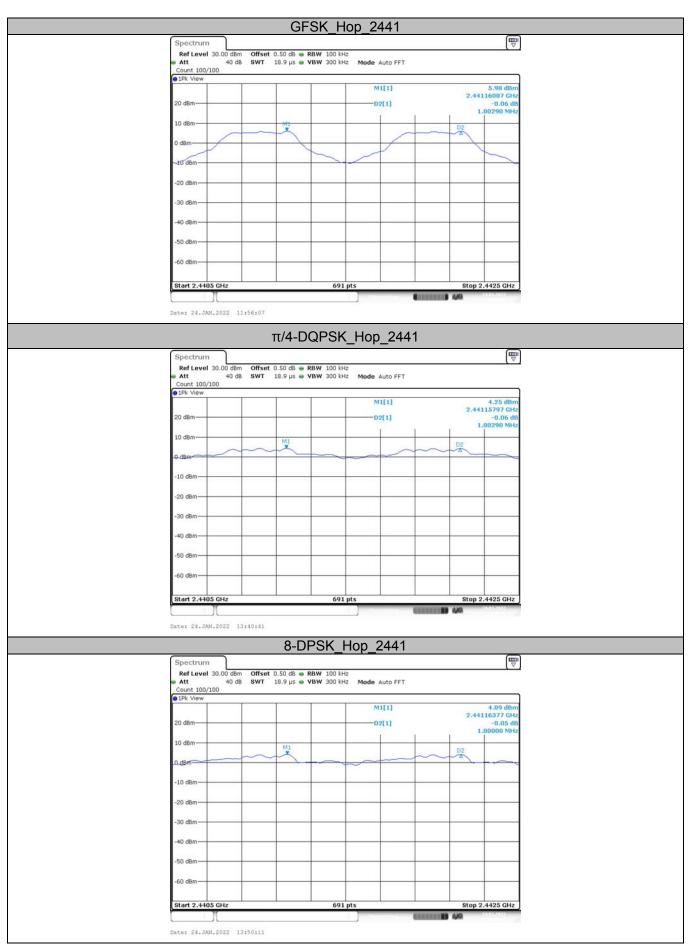
Please refer to the clause 2.4.



Test Results

Test Mode	Frequency[MHz]	Result[MHz]	Limit[kHz]	Verdict
GFSK	Hop_2441	1.003	>664.00	PASS
π/4-DQPSK	Hop_2441	1.003	>900.00	PASS
8-DPSK	Hop_2441	1.000	>878.00	PASS





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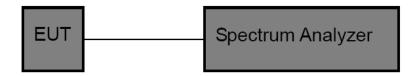
3.7. Number of Hopping Channel

<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(iii)/ RSS-247 5.1 d:

Section	Test Item	Limit
15.247 (a)(iii)/ RSS-247 5.1 d:	Number of Hopping Channel	>15

Test Configuration



Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.

- 2. Spectrum Setting:
 - (1) Peak Detector: RBW=100 kHz, VBW≥RBW, Sweep time= Auto.

Test Mode

Please refer to the clause 2.4.

Test Result

Modulation type	Channel number	Limit	Result
GFSK	79		
π/4-DQPSK	79	≥15.00	Pass
8DPSK	79		



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	Spectrum Ref Level 30.00 dBm Offset 0.50 dB ⊕ RBW 100 kHz
	Att 40 dB SWT 94.8 μs • VBW 300 kHz Mode Auto FFT Ptk View
	20 dBm
	10 dBm
	o back and the second stand as the second stand a s
	-10 dgm
OFOK	
GFSK	-20 d8m-
	-00 d8m
	-40 d8m
	-50 d8m-
	-60 dBm-
	Start 2.4 GHz 691 pts Stop 2.4835 GHz
	Date: 24.JAN.2022 11:58:23
	Spectrum (100) Ref Level 30.00 dBm Offset 0.50 dB ⊕ RBW 100 kHz
	Att 40 dB SWT 94.8 µs
	20 dBm
	10 dBm
	application of the second of t
	-10 dBm
π/4-DQPSK	-20 dam-
	\$30 dBm
	-40 d8m
	-50 dam-
	-60 dBm
	Start 2.4 GHz 691 pts Stop 2.4835 GHz
	Date: 24.JAN.2022 13:41:18
	Spectrum 🕎
	Ref Level 30.00 dBm Offset 0.50 dB RBW 100 kHz
	Att 40 dB SWT 94.8 µs → VBW 300 kHz Mode Auto FFT IPk View
	20 dBm-
	10 dBm
	open and a second as
	-10 dam-
8-DPSK	-20 dBm-
	\$30 dBm
	-40 dBm
	-50 dBm
	-60 d8m
	Start 2.4 GHz 691 pts Stop 2.4835 GHz
	Date: 24.JNN.2022 13:53:38

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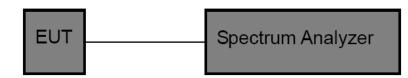


3.8. Dwell Time

<u>Limit</u>

Section Test Item		Limit
15.247(a)(iii)/ RSS-247 5.1 d	Average Time of Occupancy	0.4 sec

Test Configuration



Test Procedure

- 1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- 2. Spectrum Setting:
 - (1) Spectrum Setting: RBW=1MHz, VBW≥RBW.
 - (2) Use video trigger with the trigger level set to enable triggering only on full pulses.
 - (3) Sweep Time is more than once pulse time.
- (4) Set the center frequency on any frequency would be measure and set the frequency span to zero.
 - (5) Measure the maximum time duration of one single pulse.
 - (6) Set the EUT for packet transmitting.

Test Mode

Please refer to the clause 2.4.



Test Result

Modulation type	Channel	Frequency [MHz]	Pulse Time (ms)	Total of Dwell (ms)	Period Time (ms)	Limit (Second)	Result
	DH1	2441	0.38	121.60	31.60		
GFSK	DH3	2441	1.63	260.80	31.60	≤ 0.40	Pass
	DH5	2441	2.87	306.13	31.60		
	2DH1	2441	0.39	124.80	31.60		
π/4-DQPSK	2DH3	2441	1.63	260.80	31.60	≤ 0.40	Pass
	2DH5	2441	2.87	306.13	31.60		
	3DH1	2441	0.39	124.80	31.60		
8-DPSK	3DH3	2441	1.63	260.80	31.60	≤ 0.40	Pass
	3DH5	2441	2.87	306.13	31.60		

Note: 1DH1/2DH1/3DH1Total of Dwell= Pulse Time*(1600/2)*31.6/79 1DH3/2DH3/3DH3 Total of Dwell= Pulse Time*(1600/4)*31.6/79 1DH5/2DH5/3DH5 Total of Dwell= Pulse Time*(1600/6)*31.6/79



Modulation Type:	GFSK
	Spectrum Image: Construction of the sector of
	SGL TRG: YID
	10 dBm D2 0 dBm 0
DH1	-10 dBm
	-60 dBm CF 2.441 GHz 8000 pts 1.0 ms/
	Date: 24.JAN.2022 13:57:29 Spectrum Ref Level 30.00 dBm Offset 0.50 dB RBW 1 MHz
	Att 40 d8 ● SWT 10 ms ● VBW 3 MHz SGL TRG:VID ●1Pk Clrw M1[1] 3.66 dBm 250 ns
	20 dBm D2[1] 2.27 dB 10 dBm D2 0 dBm TRG 3.000 dBm D2 0 dBm
DH3	-10 d8m
	CF 2.441 CHz 8000 pts 1.0 ms/
	Spectrum Image: Constraint of the sector of th
DH5	10 dBm D2 TRG 3.000 dBm D2 -10 dBm
	-20 dBm
	10 pp. 11. 10 aliterative constrained and a second and a se
	-60 dBm CF 2.441 GHz 8000 pts 1.0 ms/
	Dato: 24.JAN.2022 11:58:36



odulation Type:		π/4-DQPSK				
	Spectrum Ref Level 30.00 dBm Offs		(IIII) ⊽			
		et 0.50 dB e RBW 1 MHz 10 ms e VBW 3 MHz				
	• 1Pk Clrw	M1[1]	3.04 dBm 250 ns			
	20 dBm					
	10 dBm	+ + + + +	385.05 µs			
	0 dBm- TRG 2.300 dBm					
	-10 dBm					
2DH1	-20 dBm					
	-30 dBm					
	-40 dBm					
	the applitude to the pilitude and	an a bana gantan ka kalan kaharik sarahipada kahari kanga tani paga dan pada sarahi kata yant	mentational letter pille to			
	-60 dBm	add and the state of	ubi a da se di Li hau			
	-00 08m					
	CF 2.441 GHz	8000 pts	1.0 ms/			
	Date: 24.JAN.2022 13:59:20		-			
	Spectrum					
	Att 40 dB SW	et 0.50 dB RBW 1 MHz 10 ms VBW 3 MHz				
	SGL TRG: VID Pk Cirw					
	20 dBm-	M1[1]	-2.89 dBm -1.00 µs 7.86 dB			
	~ ~	D2[1]	1.63020 ms			
	10 dBm TRG 2.300 dBm	D2 Band Hallware ity.				
	0 UBM					
מווספ	-10 dBm					
2DH3	-20 d8m					
	-30 dBm					
	-40 dBm	الطريقة أستقد المستعد المتناب والتنقيل والمستقد والمتناف والمتناف والمتنافية	Hundeline det mes ane			
	nin na militar da hain	tin an				
	-60 dBm		1 1 1 1 1			
	CF 2.441 GHz	8000 pts	1.0 ms/			
			4,40			
	Date: 24.JAN.2022 13:59:55		m			
		et 0.50 dB 🖷 RBW 1 MHz				
	SGL TRG: VID	10 ms 🖷 VBW 3 MHz	,			
	1Pk Clrw	M1[1]	-11.80 dBm -1.00 µs			
	20 dBm	02[1]	16.20 dB 2.87161 ms			
	10 dBm-	02				
	0 dBm TRG 2.300 dBm					
	-10 dBm					
2DH5	-20 d8m					
	-30 dBm					
	-40 dBm		La Dana a da			
	a financia di financia di secondo	A point in the interview of the intervie	na de la constante de la const La constante de la constante de			
	-60 dBm	a be the attend to be a be	the all the state of the first			
	-60 dBm	B000 pts	1.0 ms/			



Iodulation Type:		8-DPSK	
	Spectrum		Ē
		et 0.50 dB RBW 1 MHz 10 ms VBW 3 MHz	
	IPk Cirw	M1[1]	-1.17 dBm
	20 d8m	D2[1]	-1.00 μs 5.90 dB
	10 dBm D2		386.30 µs
	0 dBm		
	-10 dBm		
3DH1	-20 dBm		
	-30 dBm		
	-40 dBm		
		a lander of the state of the st	ndle allete selledally easily days
	-60 dBm	a shall ha a shale of a fit with share and being a fit of the	all the bill a billion of the
	CF 2.441 GHz	8000 pts	1.0 ms/
	Date: 24.JAN.2022 14:00:40		
	Spectrum		
	Att 40 dB SW	tet 0.50 dB RBW 1 MHz 10 ms VBW 3 MHz	
	SGL TRG: VID PIPk Cirw	M1[1]	1.94 dBm
	20 dBm	D2[1]	-1.00 µs 3.17 dB
	10 dBm		1.62895 ms
	0 dBm TRG 2,700 WBm		
	-10 dBm		
3DH3	-20 dBm		
	-30 dBm		
	-40 dBm		
	and show you also be successed.	n an the new straight and a state of the state	
	-60 dBm	ing the second	illinging the line of the second second
	CF 2.441 GHz	8000 pts	1.0 ms/
	Date: 24.JAN.2022 14:01:15		
	Spectrum		m ⊽
		tet 0.50 dB RBW 1 MHz 10 ms VBW 3 MHz	
	SGL TRG: VID P1Pk Cirw	M1[1]	3.62 dBm
	20 dBm	D2[1]	250 ns 0.85 dE
	10 dBm		2.87161 ms
	0 dBm TRG 2.700 dBm		
	-10 dBm		
3DH5	-20 dBm		
	-30 dBm		
	-40 dBm	A break stiple topical and a break and	
	a na hito di sultano dan ante ante ante ante ante ante ante an	a the second	e dispeter augene in the factor
	-60 dBm		
	CF 2.441 GHz	8000 pts	1.0 ms/
	GF 2.111 GH2		4,40



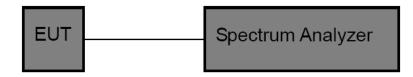
3.9. Peak Output Power

<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (b)(1) / RSS-247 5.4 b:

Test Item	Limit	Frequency Range(MHz)	
Peak Output Power	Hopping Channels>75 Pow- er<1W(30dBm) Other <125mW(21dBm)	2400~2483.5	

Test Configuration



Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.

- 2. Spectrum Setting:
 - (1) Set RBW> 20DB Bandwidth.
 - (2) Set the video bandwidth (VBW) \ge RBW.
 - (3) Detector = Peak.
 - (4) Trace mode = Max hold.
 - (5) Sweep = Auto couple.

Test Mode

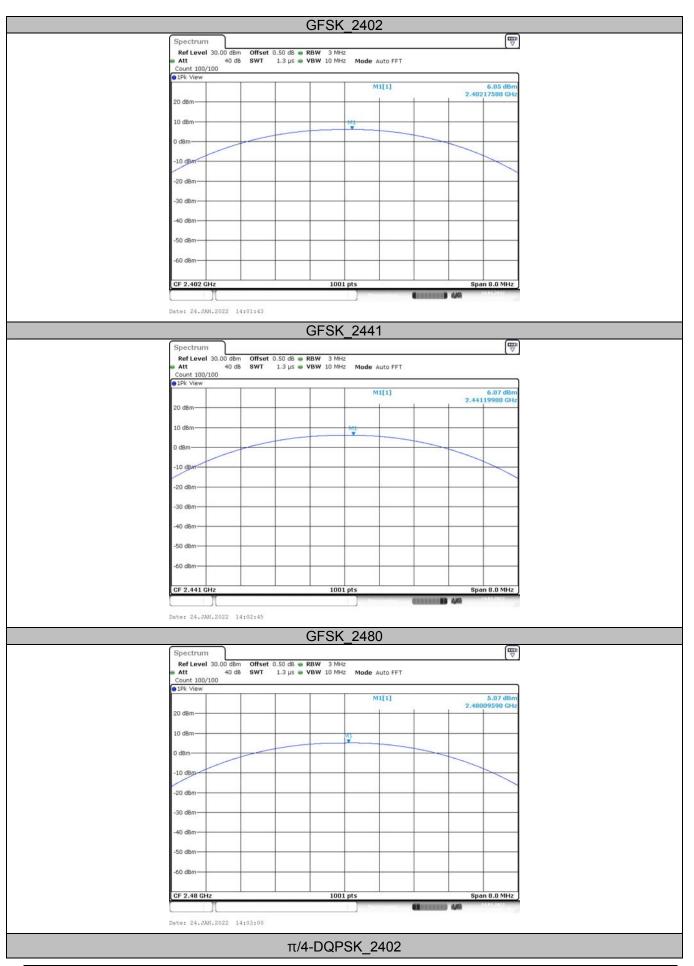
Please refer to the clause 2.4.

Test Result

Test Mode	Frequency[MHz]	Result[dBm]	Limit[dBm]	Verdict
	2402	6.05	<=30	PASS
GFSK	2441	6.07	<=30	PASS
	2480	5.07	<=30	PASS
π/4-DQPSK	2402	5.61	<=30	PASS
	2441	5.61	<=30	PASS
	2480	4.46	<=30	PASS
8-DPSK	2402	5.90	<=30	PASS
	2441	5.68	<=30	PASS
	2480	4.65	<=30	PASS



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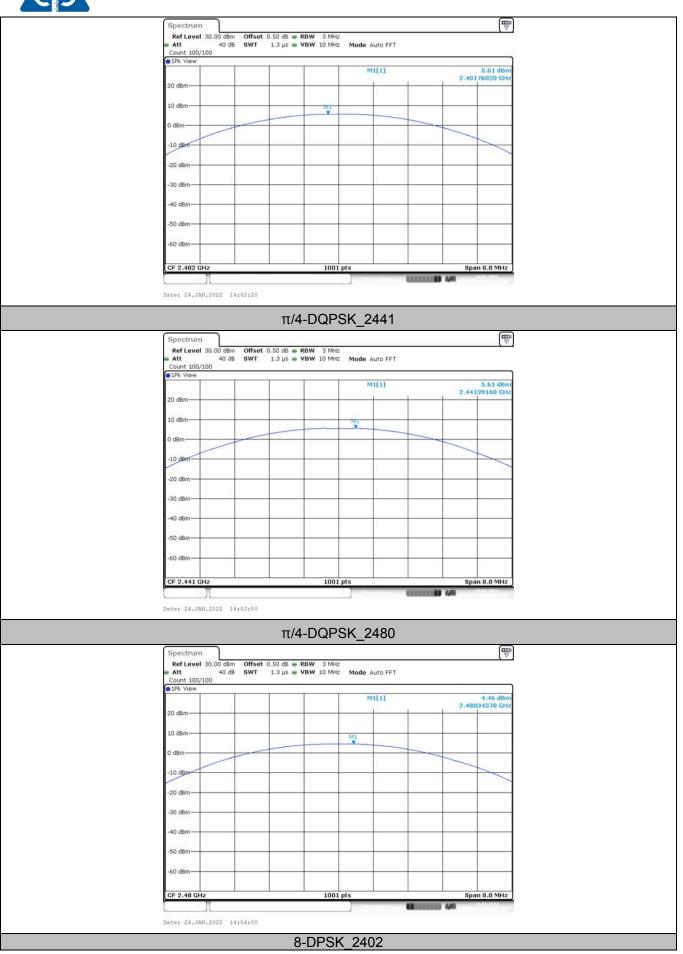


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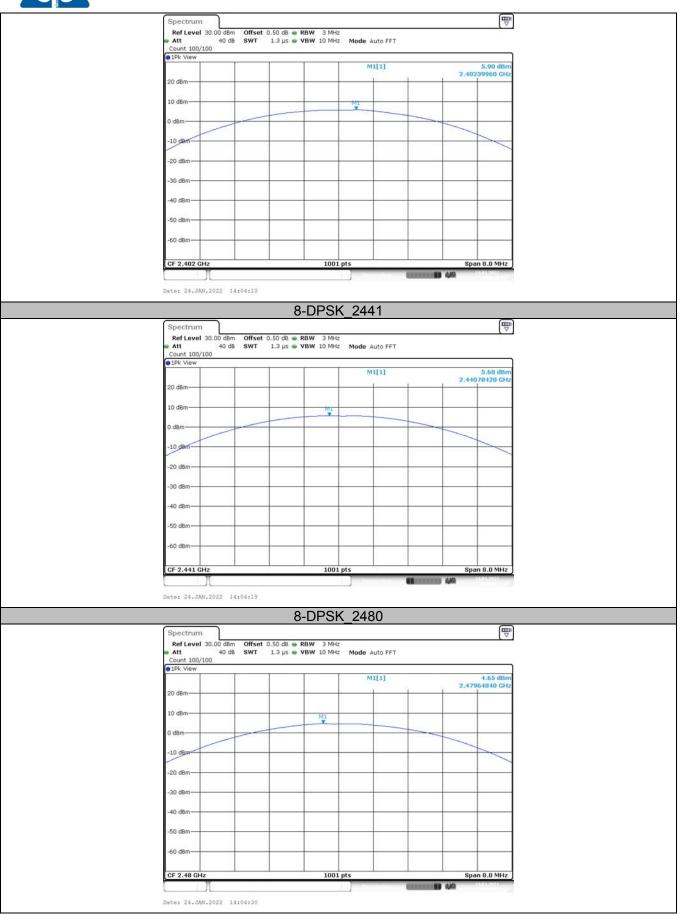




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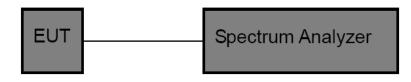


3.10. Duty Cycle

Limit

None, for report purposes only.

Test Configuration



Test Procedure

- 1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- 2. The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v05r02.

Spectrum Setting: 3.

Set analyzer center frequency to test channel center frequency. Set the span to 0Hz Set the RBW to 10MHz Set the VBW to 10MHz Detector: Peak Sweep time: Auto

Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

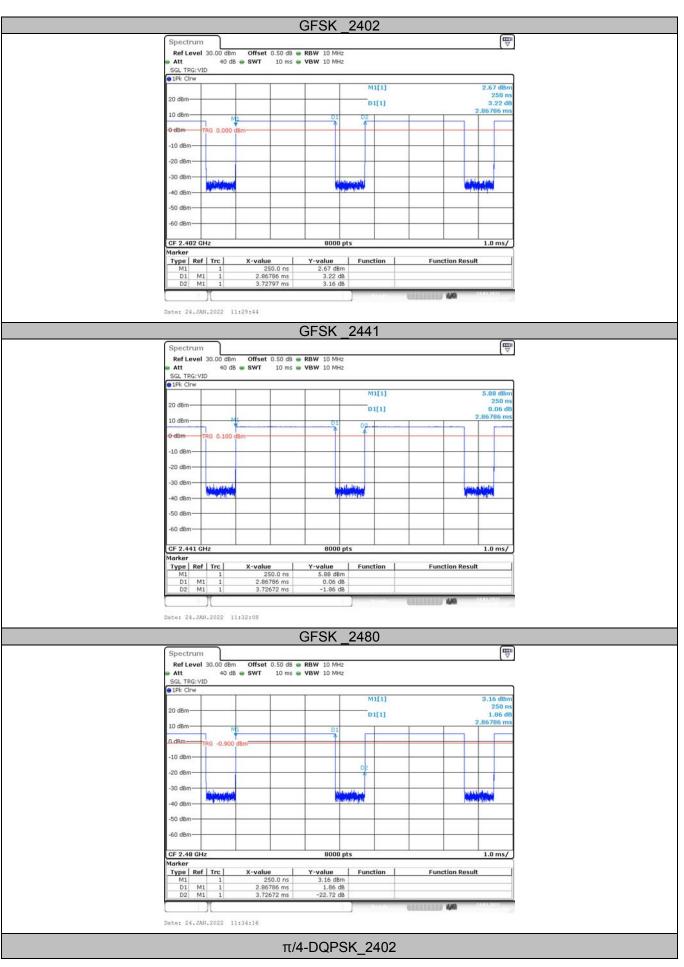
Test Mode

Please refer to the clause 2.4.

Test Result

Test Mode	Frequency [MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	1/T Minimum VBW (kHz)	Final setting For VBW (kHz)
	2402	2.87	3.73	76.94	0.35	1
GFSK	2441	2.87	3.73	76.94	0.35	1
	2480	2.87	3.73	76.94	0.35	1
	2402	2.87	3.73	76.94	0.35	1
π/4-DQPSK	2441	2.87	3.73	76.94	0.35	1
	2480	2.87	3.73	76.94	0.35	1
	2402	2.87	3.73	76.94	0.35	1
8-DPSK	2441	2.87	3.73	76.94	0.35	1
	2480	2.87	3.73	76.94	0.35	1





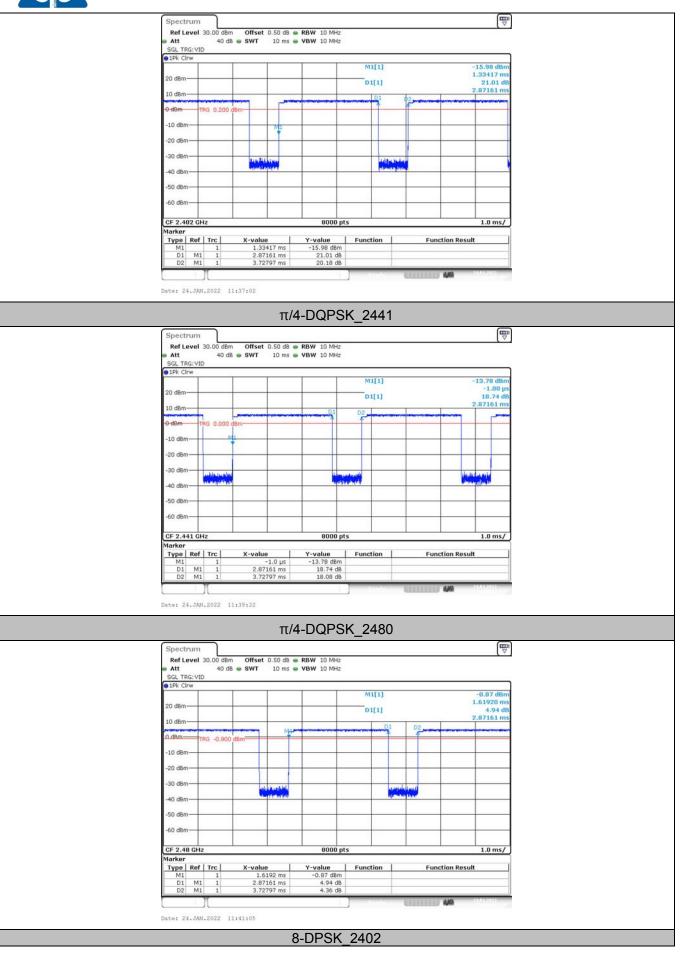
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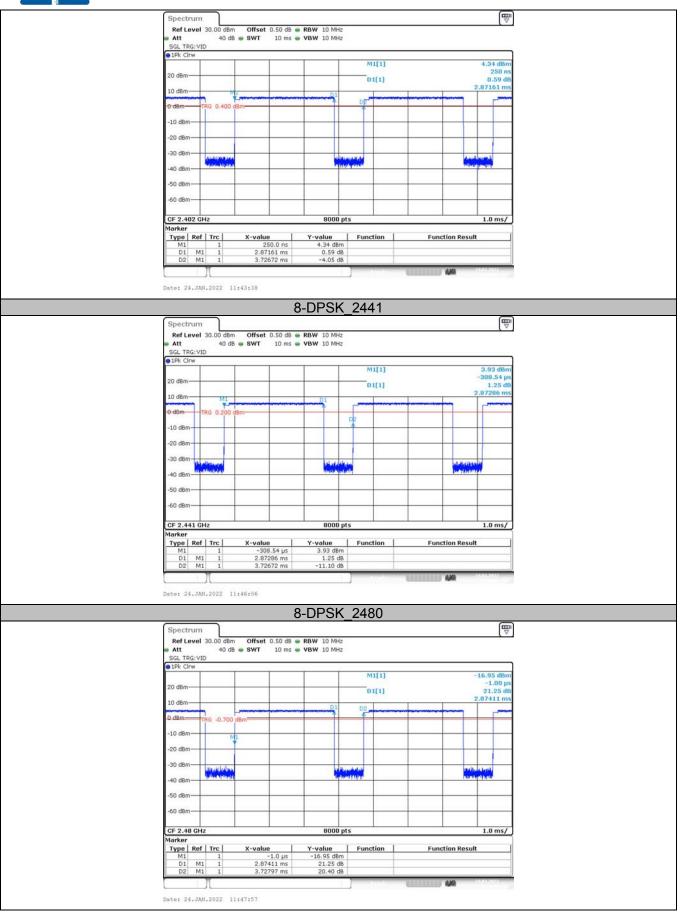


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3.11. Antenna requirement

Requirement

FCC CFR Title 47 Part 15 Subpart C Section 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 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.

FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1)(i):

(i) Systems operating in the 2400~2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

<u>Test Result</u>

The directional gain of the antenna less than 6dBi, please refer to the EUT internal photographs antenna photo.