

## **CTC** Laboratories, Inc.

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TEST REPORT				
Report No. ·····:	CTC20231796E03			
FCC ID:	2AY3N-HYL50W			
Applicant:	InfiRay Technology Co., Ltd.	InfiRay Technology Co., Ltd.		
Address:	Building C3, A1, Innovation Industrial Pa	ark Hefei Anhui, P.R.China		
Manufacturer:	InfiRay Technologies Co., Ltd.			
Address:	Building C3, A1, Innovation Industrial Pa	ark Hefei Anhui, P.R.China		
Product Name······:	Thermal Scope			
Trade Mark······:	InfiRay			
Model/Type reference······:	Hybrid HYL50W			
Listed Model(s) ······:	/			
Standard:	FCC CFR Title 47 Part 15 Subpart C Section 15.247			
Date of receipt of test sample:	Sept. 04, 2023			
Date of testing	Sept. 05, 2023 ~ Oct. 12, 2023			
Date of issue:	Oct. 13, 2023			
Result:	PASS			
Compiled by:				
(Printed name+signature)	Terry Su	Jerry Su		
Supervised by:	_	Zi shang		
(Printed name+signature)	Eric Zhang	Tenny Su Zic zhang Jenas		
Approved by:		1 mas		
(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. <u>RSS-Gen Issue 5</u>: General Requirements for Compliance of Radio Apparatus.

# 1.2. Report version

Revised No.	Date of issue	Description
01	Oct. 13, 2023	Original

# **1.3. Test Description**

FCC Part 15 Subpart C (15.247)/ RSS 247 Issue 2					
Test Item	Standard	Section	Result	Test Fusiness	
iest item	FCC	FCC IC		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	RSS 247 5.5& RSS-Gen 8.9	Pass	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:

## 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.



±0.0196% ±1.9%	(1)
±1.9%	(1)
±1.9%	(1)
±0.028%	(1)
±0.743 dB	(1)
±1.328 dB	(1)
9kHz-1GHz: ±0.746dB 1GHz-26GHz: ±1.328dB	(1)
±3.08 dB	(1)
±4.51 dB	(1)
±5.84 dB	(1)
±6.12 dB	(1)
	±0.028% ±0.743 dB ±1.328 dB 9kHz-1GHz: ±0.746dB 1GHz-26GHz: ±1.328dB ±3.08 dB ±4.51 dB ±5.84 dB

Note (1): This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

# 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:	InfiRay Technologies Co., Ltd.
Address:	Building C3, A1, Innovation Industrial Park Hefei Anhui, P.R.China
Manufacturer:	InfiRay Technologies Co., Ltd.
Address:	Building C3, A1, Innovation Industrial Park Hefei Anhui, P.R.China

# 2.2. General Description of EUT

Product Name:	Thermal Scope
Trade Mark:	InfiRay
Model/Type reference:	Hybrid HYL50W
Listed Model(s):	/
Power supply:	5Vdc from USB Cable 3.6Vdc from 4400mAh Li-ion Battery
Adapter Model:	SK22G-0500200Z Input: 100-240V~ 50/60Hz 0.35A Max Output: 5Vdc/2A
Hardware version:	V1_0
Software version:	V1.04
Samples No.:	CTC230829-002-S002
Bluetooth 4.1/ BR+EDR	
Modulation:	GFSK, π/4-DQPSK, 8-DPSK
Operation frequency:	2402MHz~2480MHz
Channel number:	79
Channel separation:	1MHz
Antenna type:	FPC Antenna
Antenna gain:	0.5dBi Max



# 2.3. Accessory Equipment information

Equipment Information					
Name	Model	S/N	Manufacturer		
Notebook	ThinkBook 14G3 ACL	MP246QDR	Lenovo		
/	/	/	/		
Cable Information					
Name	Shielded Type	Ferrite Core	Length		
/	/	/	/		
Test Software Information					
Name	Versions	/	/		
cloner	2.5.0	/	/		



## 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

RF Test System					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until
1	Spectrum Analyzer	R&S	FSV40-N	101331	Mar. 14, 2024
2	Spectrum Analyzer	R&S	FSV40-N	101654	Aug. 07, 2024
3	Spectrum Analyzer	R&S	FSU26	100105	Dec. 16, 2023
4	MXA Signal Analyzer	Keysight	N9020A	MY46471737	Dec. 16, 2023
5	MXA Signal Analyzer	Keysight	N9020A	MY52091402	Aug. 22, 2024
6	MXG Vector Signal Generator	Agilent	N5182A	MY47420864	Dec. 16, 2023
7	PSG Analog Signal Generator	Agilent	E8257D	MY46521908	Dec. 16, 2023
8	EXG Analog Signal Generator	Keysight	N5173B	MY59100842	Dec. 16, 2023
9	MXG Vector Signal Generator	Keysight	N5182B	MY59100212	Dec. 16, 2023
10	Wideband Radio Com- munication Tester	R&S	CMW500	102257	May 25, 2024
11	Wideband Radio Com- munication Tester	R&S	CMW500	102414	Dec. 16, 2023
12	High and low tempera- ture test chamber	ESPEC	MT3035	/	Mar. 24, 2024
13	RF Control Unit	Tonscend	JS0806-2	/	Aug. 22, 2024
14	Test Software	Tonscend	JS1120-3	V3.3.38	/

Radiated Emission (3m chamber 2)					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until
1	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-1013	Dec. 07, 2024
2	Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-648	Dec. 07, 2024
3	Spectrum Analyzer	R&S	FSU26	100105	Dec. 16, 2023
4	Spectrum Analyzer	R&S	FSV40-N	101331	Mar. 14 2024
5	Pre-Amplifier	SONOMA	310	186194	Dec. 16, 2023
6	Low Noise Pre-Amplifier	EMCI	EMC051835	980075	Dec. 16, 2023
7	Test Receiver	R&S	ESCI7	100967	Dec. 16, 2023
8	3m chamber 2	Frankonia	EE025	/	Oct. 23, 2024
9	Test Software	FARA	EZ-EMC	FA-03A2	/

Radiate	d Emission (3m chamber 3	3)			
Item	Test Equipment	Manufacturer Model No.		Serial No.	Calibrated Until
1	Trilog-Broadband Antenna	Schwarzbeck	VULB 9163	01026	Dec. 18, 2024
2	Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-647	Dec. 01, 2024
3	Test Receiver	Keysight	N9038A	MY56400071	Dec. 16, 2023
4	Broadband Amplifier	SCHWARZBECK	BBV9743B	259	Dec. 16, 2023
5	Mirowave Broadband Amplifier	SCHWARZBECK	BBV9718C	111	Dec. 16, 2023

CTC Laboratories, Inc.

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1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China Tel.: (86)755-27521059 Fax: (86)755-27521011 Http://www.sz-ctc.org.cn 证认可监督管理委员会 For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : yz.cnca.cn



6	3m chamber 3	YIHENG	EE106	/	Aug. 28, 2026
7	Test Software	FARA	EZ-EMC	FA-03A2	/

Conduc	Conducted Emission									
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until					
1	LISN	R&S	ENV216	101112	Dec. 16, 2023					
2	LISN	R&S	ENV216	101113	Dec. 16, 2023					
3	EMI Test Receiver	R&S	ESCS30	100353	Dec. 16, 2023					
4	ISN CAT6	Schwarzbeck	NTFM 8158	CAT6-8158-0046	Dec. 16, 2023					
5	ISN CAT5	Schwarzbeck	NTFM 8158	CAT5-8158-0046	Dec. 16, 2023					
6	Test Software	R&S	EMC32	6.10.10	/					

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

2. The Cal. Interval was three year of the chamber

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





# 3.1. Conducted Emission

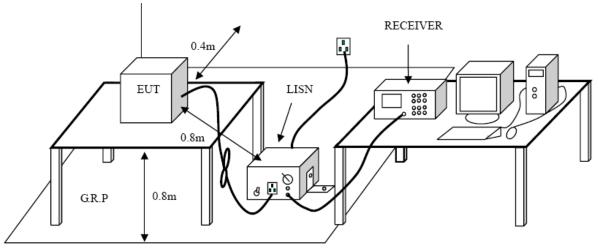
## <u>Limit</u>

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

	Limit (dBuV)					
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**



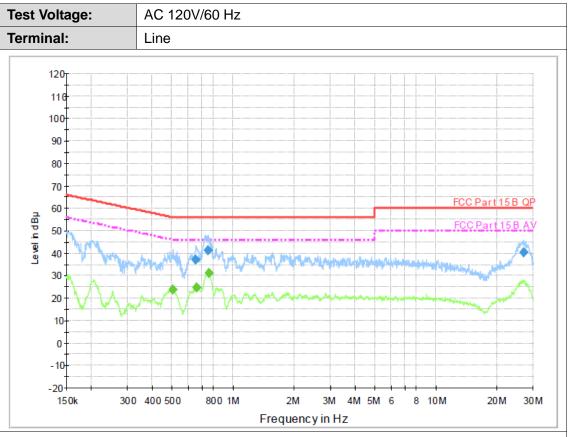
## Test Procedure

- 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.





## **Final Measurement Detector 1**

Frequency (MHz)	QuasiPeak (dBµ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
0.654380	36.9	1000.00	9.000	On	L1	9.5	19.1	56.0	
0.752510	41.3	1000.00	9.000	On	L1	9.5	14.7	56.0	
27.017920	40.2	1000.00	9.000	On	L1	9.7	19.8	60.0	

## Final Measurement Detector 2

F	Frequency (MHz)	Average (dBµ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
	0.504820	23.9	1000.00	9.000	On	L1	9.5	22.1	46.0	
	0.662270	24.6	1000.00	9.000	On	L1	9.5	21.4	46.0	
	0.758540	31.1	1000.00	9.000	On	L1	9.5	14.9	46.0	

Emission Level= Read Level+ Correct Factor



est Voltag	e:	AC 120V	/60 Hz						
erminal:		Neutral							
120r									
+									
110			<u>                                      </u>						
100									
90									
80									
+									
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150k	300	400 500	800 1M	2M	3M	4M 5M	6 8 1	0 M	20M 30M
			F	requer	ncy in H	z			
Final Me	easuren	nent D	etector	1					
Frequency	QuasiPeak	Meas.	Bandwidth		er Lin			Limit	Comment
(MHz)	(dBµ V)	Time (ms)	(kHz)			(dB	) (dB)	(dBµ V)	
0.155490	44.8		9.000	) On	N	9.	3 20.9		
0.746520	38.2				N	9.	4 17.8	3 56.0	
0.868810	32.8			) On	Ν	9.	4 23.2	2 56.0	
Final Me				-					
Frequency (MHz)	Average (dBµ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
0.506840	21.4	1000.00	9.000	On	N	9.4	24.6	46.0	
	22.4	1000.00	9.000	On	N	9.4	23.6	46.0	
0.670250	28.5	1000.00	9.000	On	N	9.4	17.5	46.0	1

Emission Level= Read Level+ Correct Factor



## 3.2. Radiated Emission

<u>Limit</u>

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

Frequency	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(meters)
0.009~0.490	2400/F (kHz)	300
0.490~1.705	24000/F (kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

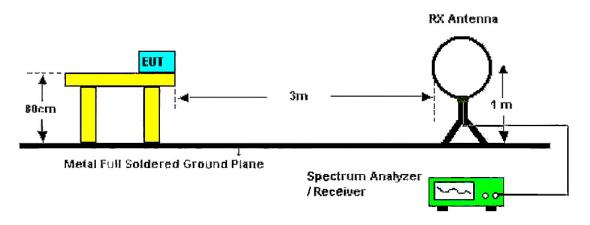
Frequency Range (MHz)	dBµV/m (at 3 meters)				
Frequency Range (MHZ)	Peak	Average			
Above 1000	74	54			

Note:

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

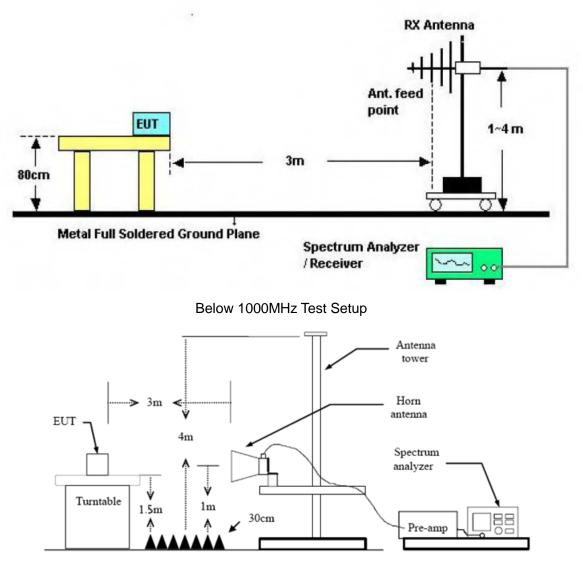
(2) Emission Level (dBuV/m)=20log Emission Level (uV/m).

## **Test Configuration**



Below 30MHz Test Setup





## Test Procedure

Above 1GHz Test Setup

- 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
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Below 30 MHz:

9kHz - 150kHz, RBW=200Hz, VBW  $\geq$  RBW, Sweep=auto, Detector function=peak, Trace=max hold; 150kHz - 30MHz, RBW=9kHz, VBW  $\geq$  RBW, 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) 30 MHz - 1 GHz:

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.

(4) From 1 GHz to 10<sup>th</sup> harmonic:

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

RBW=1MHz, VBW $\geq$ 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.



nt	. Pol		Hori	zontal											
es	t Mo	de:	ТХ (	TX GFSK Mode 2402MHz											
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30															
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60			_						FCC Par	115 C					
50									Margin -	вав [					
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-10 3	0.000		60.00			(MHz)		00.00		1000.0					
			00.00			()		50.00							
Ν	lo.	Freque (MHz	-		ding uV)	Factor (dB/m)	Level (dBuV/m	) (dBuV/m	Margin (dB)	Detecto					
	1	50.94	19	27	.59	-18.00	9.59	40.00	-30.41	QP					
	2	161.47	'40	29	.36	-18.47	10.89	43.50	-32.61	QP					
	3	198.58	879	32	.10	-20.87	11.23	43.50	-32.27	QP					
	4	256.52	210	30	.74	-19.06	11.68	46.00	-34.32	QP					
	5	369.40	47	32	.93	-15.51	17.42	46.00	-28.58	QP					
_	3 *	547.09	76	34	.69	-10.99	23.70	46.00	-22.30	QP					



Ant	. Pol		Vert	ical						
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70					_					
60										
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-10 30	).000		60.00			(MHz)	300	0.00		1000.000
	Vo.	Freque		Read	-	Factor	Level	Limit	Margin	Detector
<b>'</b>	NO.	(MHz	:)	dBu	ıV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Delector
	1	37.945	50	34.0	08	-18.35	15.73	40.00	-24.27	QP
	2	45.375	54	33.0	66	-18.22	15.44	40.00	-24.56	QP
	3	68.390	)8	33.	51	-20.19	13.32	40.00	-26.68	QP
	4	89.904	17	32.	77	-22.41	10.36	43.50	-33.14	QP
	5 *	547.09	77	45.	52	-10.99	34.53	46.00	-11.47	QP
	6	590.97	37	33.	81	-9.87	23.94	46.00	-22.06	QP





nt. Pol	•	Hori	zontal					
est Mo	de:		GFSK Mode					
emark	:		eport for the	emission v	vhich more t	han 10 dB b	pelow the	e pre-
10.0 dBu\	//m							
						FCC Part 15C 3M A	bove-16 Peak	
	2					FCC Part 15C 3M A	bove-1G AV	
	2 X							
	1 X							
).0								
1000.000	3500.00 6	000.00	8500.00 11	000.00 (MHz)	16000.00 1	8500.00 21000	.00 23500.	00 26000.
No.	Freque		Reading	Factor	Level	Limit	Margin	Detector
	(MHz	·	(dBuV) 43.77	(dB/m) -3.21	(dBuV/m) 40.56	(dBuV/m) 54.00	(dB) -13.44	AVG
1 *	1803 0	31				04.00	-10.44	
1 *	4803.9		52.74	-3.21	49.53	74.00	-24.47	peak





Ant	. Pol.		Vertica						
	t Moc	le:			2402MHz				
	nark:			ort for the		which more	than 10 dB I	pelow the	e pre-
110.0	) dBuV.	/m							
100									
90									
80							FCC Part 15C 3M A	hous 16 Past	
70									<u> </u>
60									
50		1					FCC Part 15C 3M A	bove-16 AV	
40		X							
30		2 X							
20									
10.0	00.000	3500.00 6	000.00 8	500.00 11	000.00 (MHz)	16000.00	18500.00 21000	.00 23500.	00 26000.00
					(				
1	No.	Freque (MHz		eading dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	1	4803.7	'07	47.90	-3.21	44.69	74.00	-29.31	peak
	2 *	4804.0	09	36.49	-3.21	33.28	54.00	-20.72	AVG
Rer	narks					·	-		· · · ·



ANT.	. Pol.														
Test	t Mode	e:	тх с	GFSł	< Mode	2441MF	١z								
Ren	nark:		No r scrit			e emissic	n v	which	more	than 10 dB	0 dB below the pre-				
110.0	) dBuV/ı	m	0011												
100															
90															
80										FCC Part 15C 3M	Above-1G Pea	ık 👘			
70							-								
60										FCC Part 15C 3M	Above-1G AV				
50		2					-								
40		2 X													
30		1×													
20															
10.0	00.000 3	3500.00 6	000.00		0.00 11	1000.00 (M	Hz)		00.00	18500.00 2100	0.00 23500	.00 26000			
		Freque		Po	ading	Facto	r			Limit	Margin				
N	lo.	Freque (MHz			ading BuV)	Facto (dB/m			vel V/m)	Limit (dBuV/m)		Detector			
N 1	10.		)	(dl			)	(dBu				Detector AVG			



nt. Po	l.	Vertical TX GFSK Mode 2441MHz												
est Mo	ode:													
emarl	<b>(</b> :		eport fo		emissi	on v	vhich	more t	han 1	10 dB below the pre-				
0.0 dB	i¥7m													
						_								
									CC 8-4	EC 244 41	ove-1G Peak			
									LL Part	IDU JM AL	ove-tu reak			
								F	CC Part	15C 3M AL	ove-1G AV			
	1 X													
	2 X													
	×					_			_					
•														
.0														
1000.000	) 3500.00 (	6000.00	8500.00	110	100.00 (N	(Hz)	1600	00.00 1	8500.00	21000.	00 23500.0	0 26000.0		
No.	Freque (MH:		Read (dBu	-	Fact (dB/r			evel JV/m)		nit V/m)	Margin (dB)	Detecto		
1	4881.7	768	46.3	6	-3.0	2	43	3.34	74	.00	-30.66	peak		
2 *	4882.2	232	33.6	3	-3.0	2	30	). <mark>61</mark>	54	.00	-23.39	AVG		
2	4002.2		00.0	5	-5.0	۷	0		- 04	.00	-20.00	1 400		





		Horiz	ontal					
est Mo	de:	TX G	FSK Mode	2480MHz				
emark	:		eport for the ed limit.	emission w	hich more t	han 10 dB t	pelow the	e pre-
0.0 dBu\	//m							
0								
						FCC Part 15C 3M A	bove-16 Peak	
						CC Part 15C 3M A	bove-1G AV	
	1 X							
	2 X							
1.0								
	I							
No.	Freque (MHz		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	4960.3	30	46.39	-2.82	43.57	74.00	-30.43	peak
1	4960.3				30.16	54.00	-23.84	AVG





nt. Po	Ι.	Verti	cal					
est Mo	de:	TX G	GFSK Mode	2480MHz				
emark	:		eport for the bed limit.	emission w	hich more t	han 10 dB b	elow the	pre-
0.0 dBu	i¥/m		<u> </u>					
0								
						FCC Part 15C 3M A	bove-1G Peak	
						FCC Part 15C 3M A	bove-1G AV	
	1 X							
	2							
	x							
.0 1000.000	3500.00 6	000.00	8500.00 110	)00.00 (MHz)	16000.00 1	8500.00 21000	.00 23500.1	00 26000.
No.	Freque (MHz		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4959.6	15	46.15	-2.82	43.33	74.00	-30.67	peak
2 *	4959.8	06	33.00	-2.82	30.18	54.00	-23.82	AVG
	4959.6	, 15	46.15	-2.82	43.33	74.00	-30.67	



nt. Po	l.	Hori	zontal					
est Mo	ode:	TX 1	π/4-DQPSł	K Mode 2402	2MHz			
emark	<b>c</b> :		eport for th bed limit.	e emission v	vhich more t	than 10 dB I	pelow the	e pre-
10.0 dB	uV/m							
_								
00								
)								
)						FCC Part 15C 3M /	10.0	
, ⊨						FLU Part TSU 3M /	Above-Iu Pea	IK.
						FCC Part 15C 3M /	Above-1G AV	
0	1 X							
)	2 X							
0.0								
1000.00	0 3500.00	6000.00	8500.00 1	1000.00 (MHz)	16000.00	18500.00 21000	).00 23500	.00 26000
No.	Freque (MHz		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4803.5	65	52.68	-3.21	49.47	74.00	-24.53	peak
2 *	4803.9	61	43.84	-3.21	40.63	54.00	-13.37	AVG



Ant.	Pol.		Verti	cal											
Test	Mod	le:	TX 1	τ/4-D	QPSK	Mode	e 2402	2MHz							
Rema	ark:		No re scrib		for the nit.	emis	sion v	vhich	more t	than 1	0 dB l	below	the	pre-	
110.0	dBuV	/m													
100															
90 -															
80 -										FCC Part <sup>-</sup>	15C 3M A	Above-1G F	Peak		
70															
60 -															
50										FCC Part	15C 3M 4	Above-1G /			
40		1 X													
30		2 X													
20															
10.0															
1000	).000	3500.00 6	000.00	8500.	.00 11	000.00	(MHz)	160	00.00 1	8500.00	21000	0.00 235	500.0	0 2600	0.00
<u> </u>															
No	<b>b</b> .	Frequer (MHz			ading Bu∨)		ctor 8/m)		vel IV/m)	Lin (dBu)		Marg (dB)		Detect	or
1		4803.6	28	48	3.03	-3.	.21	44	.82	74.	00	-29.1	8	peal	<
2	*	4804.0	39	36	6.42	-3.	.21	33	.21	54.	00	-20.7	9	AVG	;

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Remarks:



Ant. Po	I.	Horizo	ontal					
Test Mo	de:	ΤΧ π	:/4-DQPSK	Mode 2441	MHz			
Remark			port for the	emission v	vhich more t	han 10 dB t	below the	) pre-
110.0 dBu	V/m							
100								
90								
80						FCC Part 15C 3M A	bove-1G Pea	k
70								
60						FCC Part 15C 3M A	bove-16 AV	
50	1 X							
40	×							
30	2 X							
20								
10.0	3500.00 6	000.00	8500.00 11	000.00 (MHz)	16000.00	18500.00 21000	.00 23500.	.00 26000.00
No.	Frequer (MHz		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	4881.6	53	46.91	-3.02	43.89	74.00	-30.11	peak
2 *	4882.1	64	33.72	-3.02	30.70	54.00	-23.30	AVG

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Remarks:



Ant. I	Pol.		Verti	Vertical TX π/4-DQPSK Mode 2441MHz									
Test I	Mode:		TX 1	τ/4-[	DQPSK	Mode 2	2441	MHz					
Rema			No re scrib			emissi	on v	vhich	more t	han 10 (	dB k	pelow the	e pre-
110.0	dBuV/m												
100													
90 -													
80										FCC Part 150	314 4	bove-16 Peal	
70													<u> </u>
60										FCC Part 1FC	214.4	have 10 AV	
50		2		FCC Part 15C 3M Above-16 A								DOAG-LO WA	
40		2 X											
30		1 X											
20							_						
10.0 1000.	.000 3500	.00 6	00.00	8500	.00 11	000.00 fl	Hz)	160	00.00 1	8500.00	21000	.00 23500.	00 26000.00
No	b. Fr	eque (MHz			ading BuV)	Fact (dB/r			evel uV/m)	Limi (dBuV/		Margin (dB)	Detector
1	* 4	881.7	61	3	3.67	-3.0	2	30	.65	54.0	D	-23.35	AVG
2	4	882.1	35	4	6.68	-3.0	2	43	.66	74.0	0	-30.34	peak
Rema													



nt. Po	l.	Horiz	zontal					
est Mo	ode:	TX 1	π/4-DQPSI	K Mode 2480	OMHz			
emarl	<b>c</b> :		eport for th ed limit.	e emission v	which more	than 10 dB l	below the	e pre-
10.0 dB	uV/m							
00								
)								
,								
,						FCC Part 15C 3M A	Above-1G Pea	k
)		_						
						FCC Part 15C 3M A	bove-16 AV	
	2 X							
)	×							
	1 ×							
0.0	) 3500.00 6	000.00	8500.00 1	1000.00 (MHz)	16000.00	18500.00 21000	.00 23500.	.00 26000.0
No.	Frequer		Reading	Factor	Level	Limit	Margin	Detector
	(MHz	)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
No. 1 * 2		) 59		1	1			Detector AVG peak



Ant.	Pol.	Verti	cal					
Test	Mode:	TX 1	τ/4-DQPSK	Mode 2480	)MHz			
Rem	ark:		eport for the ed limit.	emission v	vhich more t	han 10 dB t	pelow the	e pre-
110.0	dBuV/m							
100								
90 -								
80						FCC Part 15C 3M A	bove-16 Peal	<u> </u>
70								
60 -								
50						FCC Part 15C 3M A	DOVE-TG AV	
40	*							
30	2							
20								
10.0	.000 3500.00 (	5000.00	8500.00 11	000.00 (MHz)	16000.00 1	18500.00 21000	.00 23500.	00 26000.00
1000	.000 3500.00	000.00	000.00	000.00 (MH2)	16000.00		.00 23300.	00 20000.00
No	Freque		Reading	Factor	Level	Limit	Margin	Detector
	,. (MHz	z)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Detector
1	4959.9		46.23	-2.82	43.41	74.00	-30.59	peak
2	* 4960.4	50	32.92	-2.82	30.10	54.00	-23.90	AVG
Rema	arks:							

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Remarks:



	l		zontal						
Fest Mo		_	B-DPSK Moo						
Remark	:		eport for the bed limit.	emission v	which more	than 10 dB l	below the	e pre-	
110.0 dBu	V/m								
100									
90									
						FCC Part 15C 3M /	Above-1G Pea	ık	
·o									
50									
50	×					FCC Part 15C 3M /	Above-1G AV		
	2								
10	×								
30									
20									
10.0									
1000.000	3500.00 6	000.00	8500.00 11	000.00 (MHz)	16000.00	18500.00 21000	).00 23500	.00 26000.	
No.	Freque (MHz		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	
	4803.5	02	53.30	-3.21	50.09	74.00	-23.91	peak	
1		09	43.79	-3.21	40.58	54.00	-13.42	AVG	





nt. Po	Ι.	Verti	cal						
est Mode: emark:		TX 8-DPSK Mode 2402MHz No report for the emission which more than 10 dB below the pre- scribed limit.							
·									
ı						FCC Part 15C 3M A	bove-1G Peak		
)									
						FCC Part 15C 3M A	bove-1G AV		
)	1 X								
)	2 X	_							
)	~	_							
) ).0									
1000.000	3500.00 6	000.00	8500.00 11	000.00 (MHz)	16000.00 1	8500.00 21000.	.00 23500.	00 26000.0	
No.	Freque (MHz		Reading (dBu∀)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	
	4803.7	68	48.11	-3.21	44.90	74.00	-29.10	peak	
1			36.41	-3.21	33.20	54.00	-20.80	AVG	



Ant. Pol.		Horizontal							
Fest Mode: Remark:		TX 8-DPSK Mode 2441MHz							
		No report for the emission which more than 10 dB below the pre- scribed limit.							
10.0 dBu	V/m								
00									
o 📃									
0									
					F	CC Part 15C 3M Ab	ove-16 Peak		
0									
0					F	CC Part 15C 3M Ab	ove-16 AV		
0	2								
0	×								
o	1 X								
0									
0.0	3500.00 6	000.00	8500.00 110	00.00 (MHz)	16000.00 1	3500.00 21000.0	0 23500.0	0 26000.0	
No	Freque		Reading	Factor	Level	Limit	Margin	Detecto	
No.	(MHz	:)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Detecto	
No.		65	-					Detecto AVG peak	



nt. Pol	•	Verti	cal						
est Mo	de:	TX 8-DPSK Mode 2441MHz							
emark:		No report for the emission which more than 10 dB below the pre-							
0.0 dBu	V/m	SCLID	ed limit.						
0.0									
0									
,									
, <u> </u>									
۱						FCC Part 15C 3M A	bove-16 Pea	k	
)						FCC Part 15C 3M A	bove-16 AV		
)									
, .	2 X								
<b>`</b>	1								
)	X								
,									
).0									
1000.000	3500.00 6	5000.00	8500.00 11	000.00 (MHz)	16000.00 1	18500.00 21000	.00 23500.	.00 26000.	
	Freque	ency	Reading	Factor	Level	Limit	Margin		
No.	(MHz		(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Detector	
1 *	4881.5	505	33.69	-3.02	30.67	54.00	-23.33	AVG	
2	4881.7	703	46.40	-3.02	43.38	74.00	-30.62	peak	
2									



Ant. Pol.		Horiz							
est Mode: Remark:		TX 8-DPSK Mode 2480MHz No report for the emission which more than 10 dB below the pre- scribed limit.							
0									
						FCC Part 15C 3M A	Above-1G Peak		
					I	FCC Part 15C 3M A	bove-1G AV		
	2								
	2 X								
	1×								
.0	3500.00 6	00.00	8500.00 110	00.00 (MHz)	16000.00 1	8500.00 21000.	00 23500.0	0 26000.0	
No.	Freque (MHz		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	
1 *	4960.0	11	33.08	-2.82	30.26	54.00	-23.74	AVG	
2	4960.1	60	45.87	-2.82	43.05	74.00	-30.95	peak	



est Mo emark	day							
omork	ue:	TX 8	-DPSK Moo	de 2480MH	z			
emark	:		eport for the bed limit.	emission v	vhich more t	han 10 dB t	pelow the	e pre-
10.0 dBu	V/m							
00								
0								
:0						FCC Part 15C 3M A	have 10 Basel	
·0						FLL Part ISL 3M A	bove-IG Pear	<u> </u>
;0						FCC Part 15C 3M A	have 1C AV	
io								
0	1 X							
0	2 X							
:0								
0.0	3500.00 6	000.00	8500.00 11	000.00 (MHz)	16000.00 1	8500.00 21000	.00 23500.	00 26000.0
No.	Frequer		Reading	Factor	Level	Limit	Margin	Detector
	(MHz		(dBuV)	(dB/m)	(dBuV/m)	· · ·	(dB)	Detector
1	4959.7		45.47	-2.82	42.65	74.00	-31.35	peak
2 *	4960.1	09	32.92	-2.82	30.10	54.00	-23.90	AVG

Remarks:



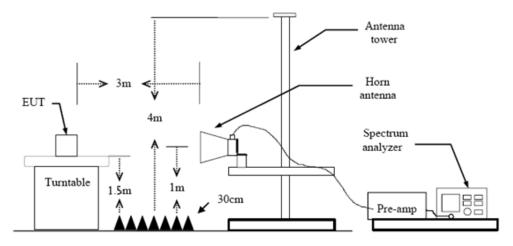
# 3.3. Band Edge Emissions (Radiated)

<u>Limit</u>

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

Restricted Frequency Band	(dBuV/n	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.
- 4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated 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.



# Test Results

nt. Po			zontal					
est Mo		GFS	SK Mode 24	02MHz				
10.0 dBu	₩/m							
00								
o								
o						FOD D		A
0						FCC Part 15C 3M #	Above-16 Pea	K
o 📃								
						FCC Part 15C 3M A	Above-16 AV	+++
0							2	
U				1949-949-9	hannan an a	7		~~~
0								
0								
0.0 2306.000	2316.00	2326.00	2336.00 23	346.00 (MHz)	2366.00	2376.00 2386.0	00 2396.0	0 2406.0
							1	
No.	Frequ (MH		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390	.000	19.25	31.08	50.33	74.00	-23.67	peak
2 *	2390	.000	9.02	31.08	40.10	54.00	-13.90	AVG

Remarks:



nt. Pol		Verti											
est Mo		GFS	K Mode	24(	D2MHz								
0.0 dBu\	//m												
,													
,										150 04			
,									FLL Part	TSL 3M	Above-1G P	eak	$\mathbb{H}$
,													Ш
									FCC Part	15C 3M	Above-1G A	v	HH.
)											X		
)					~~~~		- market				2 X		4
)						_							
D													
).0 2305.000	2315.00	2325.00	2335.00		145.00 (M	Hz)		5.00	2375.00	2385		5.00	2405
No.	Frequ (MF	-	Readi (dBu\	-	Facto (dB/m			vel V/m)	Lin (dBu <sup>v</sup>		Margir (dB)	l De	tector
1	2390.	000	18.0	2	31.08	3	49	.10	74.	00	-24.90	) p	eak
2 *	2390.	000	8.24	1	31.08	}	39	.32	54.	00	-14.68	A	VG

2.Margin value = Level -Limit value



•	Hori	zontal						
	GFS	K Mode 248	30 MHz					
/m								
					FCC Part 15C 3M	Above-1G Pea	ak	
1 X					FCC Part 15C 3M	Above-1G AV		
2								
Xmmont	and and a second	and an		an a	*****	and Marine and South		
2486.00	2496.00	2506.00 25	16.00 (MHz)	2536.00	2546.00 2556.	.00 2566.	00 2576.0	
		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	
2483.	500	19.60	31.43	51.03	74.00	-22.97	peak	
			31.43	40.88	54.00	-13.12	AVG	
	de: //m  1  2486.00  Freque	de: GFS	de: GFSK Mode 248	de:       GFSK Mode 2480 MHz         //m       Image: State of the state	GFSK Mode 2480 MHz         Vm       Image: Colspan="2">Image: Colspan="2"         Vm       Image: Colspan="2">Image: Colspan="2"         Image: Colspan="2"       Image: Colspan="2	GFSK Mode 2480 MHz         //m         //m       FCC Part 15C 3M         //m       FCC Part 15C 3M         /m       Score (MHz)         2486.00       2496.00       2506.00       2516.00       (MHz)       2536.00       2546.00       2536.00       2546.00       2536.00       2546.00       2536.00       2546.00       2536.00       2546.00       2536.00       2546.00       2536.00       2546.00       2536.00       2546.00       2536.00       2546.00       2536.00       2546.00       2536.00       2546.00       2536.00       2546.00       2536.00       2546.00       2546.00       2546.00       2546.00       2546.00       2546.00       2546.	GFSK Mode 2480 MHz         //n         //n        //n       //n         //n       //n         //n       //n         //n       //n         //n       //n         //n       //n         //n       //n         //n       //n         //n       //n         //n       //n         //n       //n         //n       //n         //n       //n       //n         //n       //n       //n       //n         //n       //n       //n       //n         //n       //n <th n<="" th="">       //</th>	//

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	1	2483	.500	18.99	31.43	50.42	74.00	-23.58	peak
2	2 *	2483	.500	9.28	31.43	40.71	54.00	-13.29	AVG
-	nark	-			dB/m)+Cabl	<u> </u>			-



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110.0 dBu	√/m							
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No.	Freque (MH	-	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.	000	19.81	31.08	50.89	74.00	-23.11	peak
2 *	2390.	000	8.87	31.08	39.95	54.00	-14.05	AVG
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No.	Freque (MH:		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.0	000	18.98	31.08	50.06	74.00	-23.94	peak
2 *	2390.0	000	8.45	31.08	39.53	54.00	-14.47	AVG
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2	*	24	183.	500	)	ç	9.63		31	.43		41	.06	T	54	.00	-	12.9	94	AV	'G
Rem	narks	<u>.</u>																			



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<b>Fest</b>	Mod	le:		π/4-	DQP	SK M	ode	248	0MH	z								
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80 -	-1-											FCC	Part 150	: 3M /	Above-16	i Pea	k	
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1		248	3.50	0	18	8.74	1	31.4	13	50	.17	7	74.00	)	-23.8	33	peal	<
2	*	248	3.50	0	8	.87		31.4	13	40	.30		54.00	)	-13.	70	AVG	;

#### Remarks:



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est M	ode:	8-DI	PSK Mo	de 2	402MHz	<u>z</u>							
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2305.00	0 2315.00	2325.00	2335.00		45.00 (M	Hz)		5.00	2375.00	2385.	00 2395.1		405.0
No.	Freque (MF		Readi (dBu\	-	Facto (dB/m			evel iV/m)	Lin (dBu\		Margin (dB)	Deteo	cto
1	2390.	000	19.1	5	31.08	3	50	.23	74.	00	-23.77	pea	ak
2 *	2390.	000	8.29	)	31.08	3	39	.37	54.	00	-14.63	AV	G
2 *		000	8.29	) or (c	31.08	3	39	.37	54.	00	-14.63	AV	

2.Margin value = Level -Limit value



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est Mo		8-DF	SK Mode 2	402MHz				
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2305.000	2315.00	2325.00	2335.00 23	45.00 (MHz)	2365.00	2375.00 2385.	00 2395.0	00 2405.0
No.	Freque (MH	-	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.		19.15	31.08	50.23	74.00	-23.77	peak
2 *	2390.		8.29	31.08	39.37	54.00	-14.63	AVG
					1	1	1	1



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Test Mode: 8-DI			-DPSK Mode 2480MHz						
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2476.000	2486.00	2496.00	2506.00 25	i16.00 (MHz)	2536.00	2546.00 2556	.00 2566.	00 2576.	
No.		uency Hz)	Reading (dBu∀)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	
1		3.500	19.30	31.43	50.73	74.00	-23.27	peak	
2 *		3.500	9.13	31.43	40.56	54.00	-13.44	AVG	
					1	1	1	1	



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			8-DPSK Mode 2480MHz					
0.0 dBuV	7m							
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2476.000	2486.00	2496.00	2506.00 251	6.00 (MHz)	2536.00 2	546.00 2556.0	0 2566.00	) 2576.00
No.		uency	Reading	Factor		Limit	Margin	Detector
4		Hz)	(dBuV)	(dB/m)		(dBuV/m)	(dB)	
1		3.500	18.87	31.43	50.30	74.00	-23.70	peak
2 *	248	3.500	9.08	31.43	40.51	54.00	-13.49	AVG

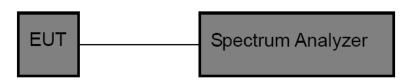


# 3.4. Band edge and Spurious Emissions (Conducted)

# <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
- 3. Use the following spectrum analyzer settings: PPW = 100 kHz VPW > PPW scop up through  $10^{10}$ 
  - RBW = 100 kHz, VBW  $\geq$  RBW, scan up through 10<sup>th</sup> harmonic.
- Sweep = auto, Detector function = peak, Trace = max hold
- 4. Measure and record the results in the test report.

#### Test Mode

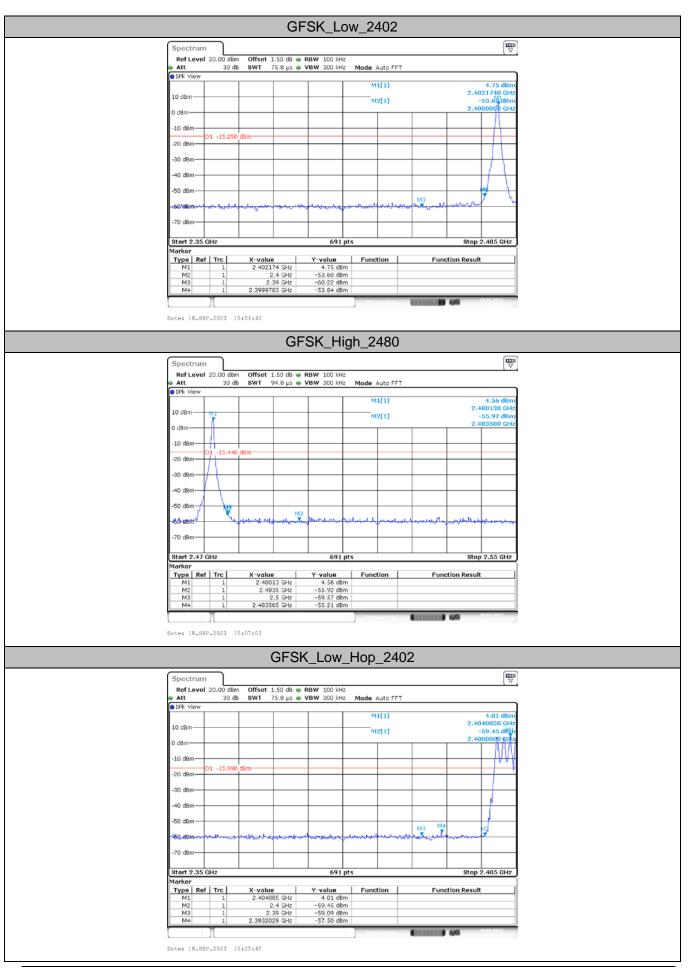
Please refer to the clause 2.4.

#### Test Results

#### (1) Band edge Conducted Test

Test Mode	Frequency[MHz]	Ref Level[dBm]	Result[dBm]	Limit[dBm]	Verdict
	2402	4.75	-53.84	≤-15.25	PASS
GFSK	2480	4.56	-55.21	≤-15.44	PASS
GFSK	Hop_2402	4.01	-57.5	≤-15.99	PASS
	Hop_2480	3.50	-55.26	≤-16.5	PASS
	2402	0.07	-54.36	≤-19.93	PASS
	2480	0.94	-56.93	≤-19.06	PASS
π/4-DQPSK	Hop_2402	-3.02	-57.39	≤-23.02	PASS
	Hop_2480	0.21	-57.12	≤-19.79	PASS
	2402	0.43	-54.56	≤-19.57	PASS
8-DPSK	2480	1.22	-56.69	≤-18.78	PASS
0-0-31	Hop_2402	-2.32	-57.74	≤-22.32	PASS
	Hop_2480	-0.70	-56.69	≤-20.7	PASS



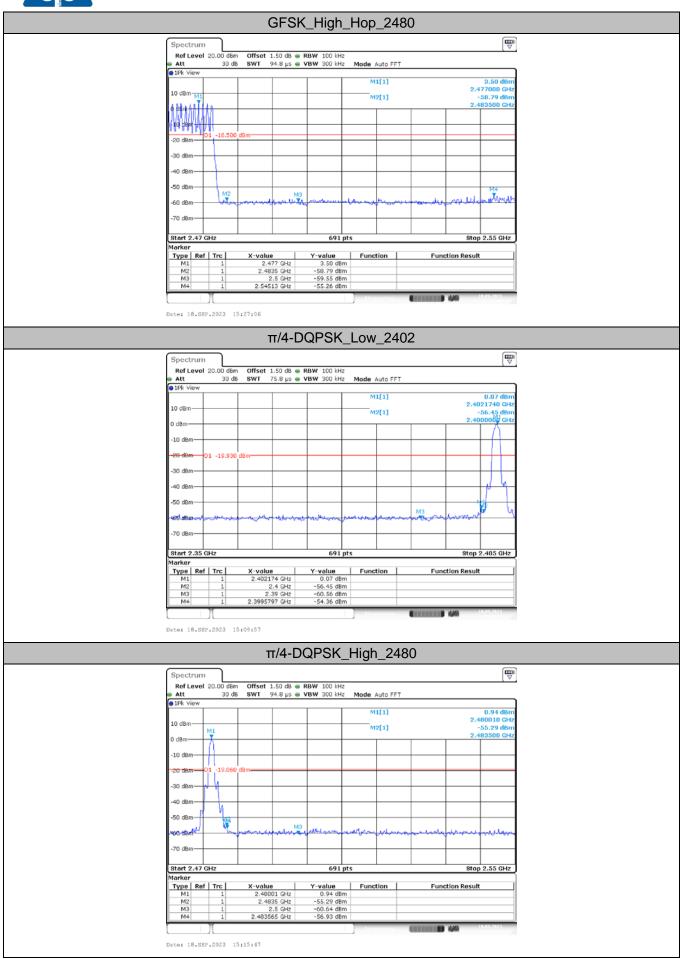




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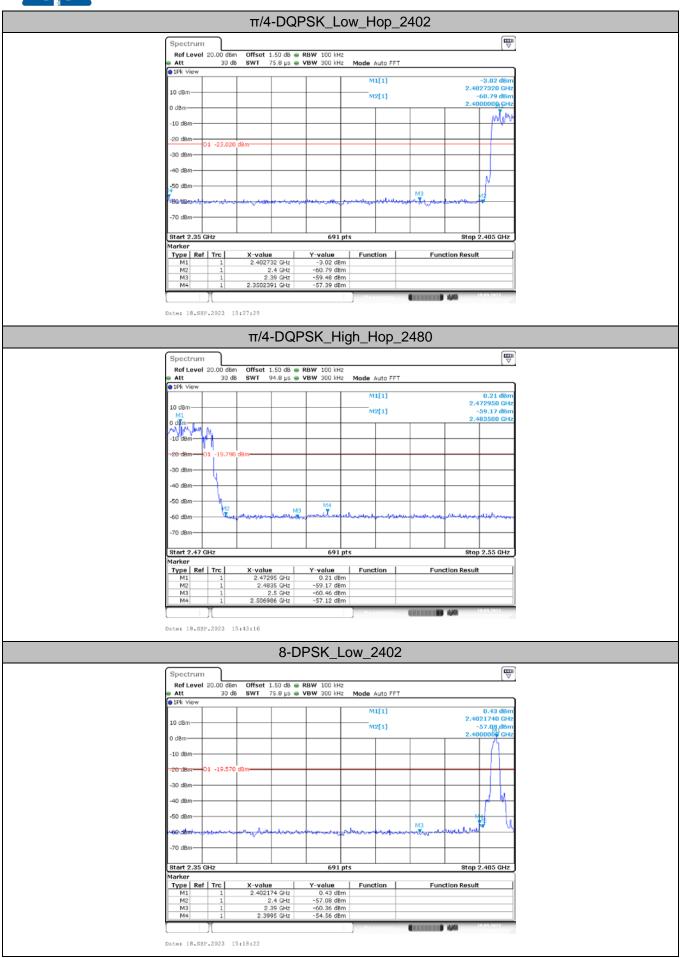
1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China Fax: (86)755-27521011 Http://www.sz-ctc.org.cn For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : yz.cnca.cn





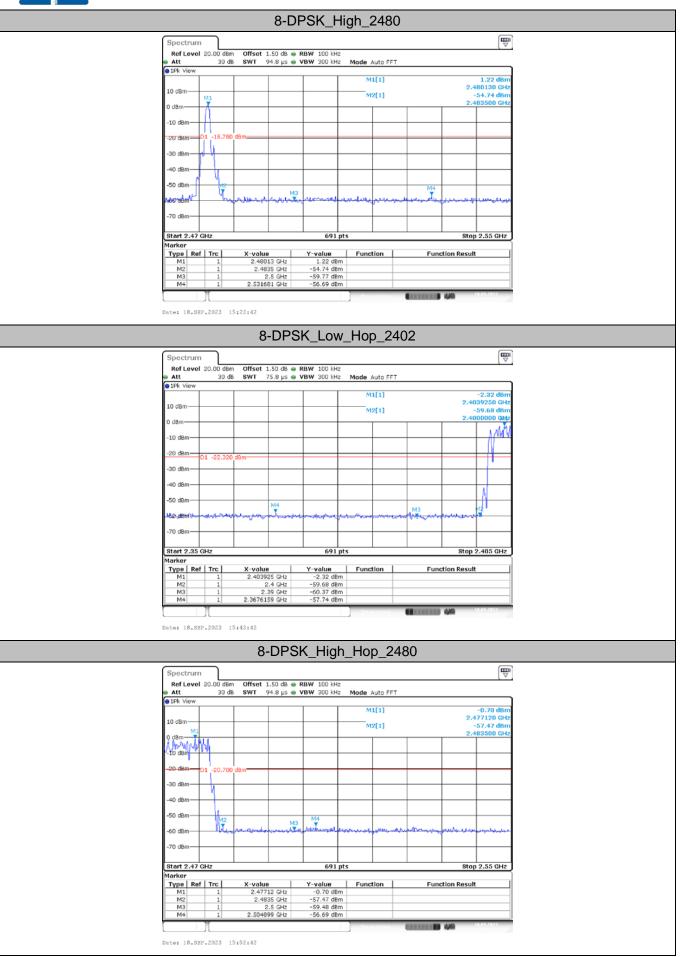














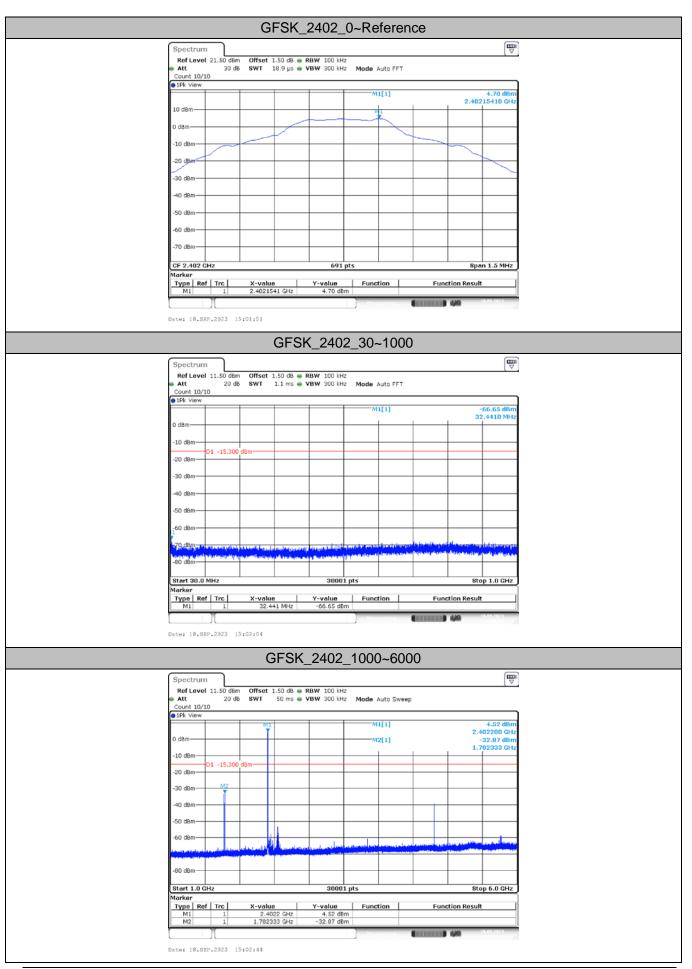
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(2) Conducted Spurious Emissions Test

Test Mode	Freq(MHz)	Freq Range [MHz]	Ref Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
		Reference	4.70	4.70		PASS
	2402	30~1000	4.70	-66.65	≤-15.3	PASS
	2402	1000~6000	4.70	-32.87	≤-15.3	PASS
		6000~26500	4.70	-54.39	≤-15.3	PASS
		Reference	4.42	4.42		PASS
GFSK	0444	30~1000	4.42	-66.67	≤-15.58	PASS
GFSK	2441	1000~6000	4.42	-33.29	≤-15.58	PASS
		6000~26500	4.42	-51.91	≤-15.58	PASS
		Reference	4.55	4.55		PASS
	2480	30~1000	4.55	-65.38	≤-15.45	PASS
	2400	1000~6000	4.55	-32.18	≤-15.45	PASS
		6000~26500	4.55	-59.71	≤-15.45	PASS
		Reference	0.08	0.08		PASS
	2402	30~1000	0.08	-67.01	≤-19.92	PASS
		1000~6000	0.08	-47.65	≤-19.92	PASS
		6000~26500	0.08	-60.81	≤-19.92	PASS
	2441	Reference	0.34	0.34		PASS
π/4-DQPSK		30~1000	0.34	-67.5	≤-19.66	PASS
11/4-DQPSK		1000~6000	0.34	-41.05	≤-19.66	PASS
		6000~26500	0.34	-60.38	≤-19.66	PASS
		Reference	1.21	1.21		PASS
	2480	30~1000	1.21	-67.84	≤-18.79	PASS
		1000~6000	1.21	-48.88	≤-18.79	PASS
		6000~26500	1.21	-59.79	≤-18.79	PASS
	2402	Reference	0.39	0.39		PASS
		30~1000	0.39	-67.42	≤-19.61	PASS
		1000~6000	0.39	-46.58	≤-19.61	PASS
		6000~26500	0.39	-61.53	≤-19.61	PASS
	2441	Reference	0.49	0.49		PASS
		30~1000	0.49	-66.67	≤-19.51	PASS
8-DPSK		1000~6000	0.49	-48.95	≤-19.51	PASS
		6000~26500	0.49	-60.77	≤-19.51	PASS
	2480	Reference	1.31	1.31		PASS
		30~1000	1.31	-66.89	≤-18.69	PASS
		1000~6000	1.31	-41.07	≤-18.69	PASS
		6000~26500	1.31	-61.51	≤-18.69	PASS



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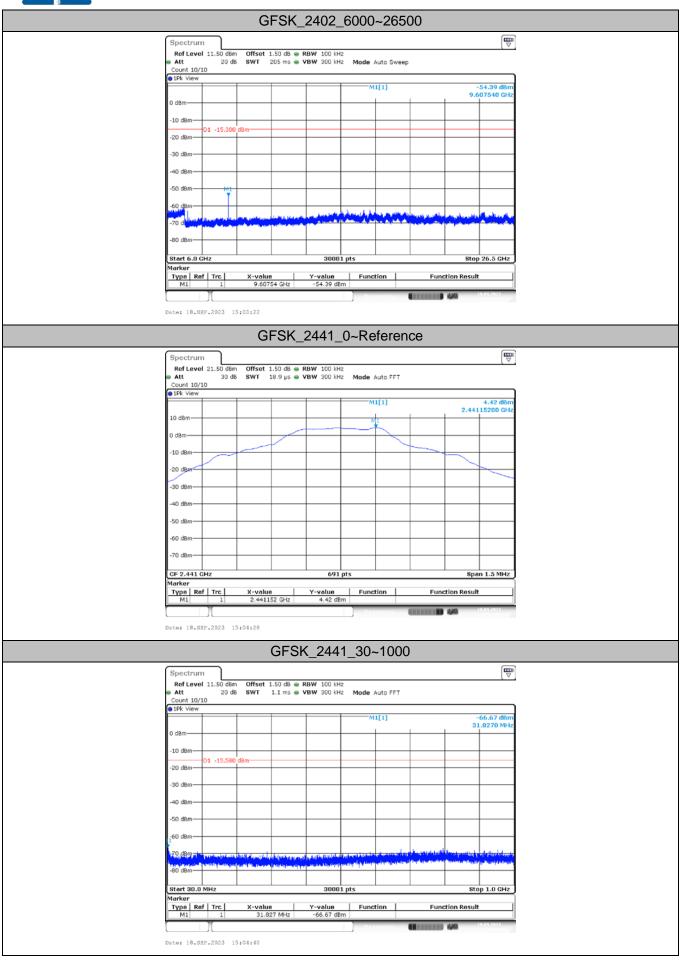
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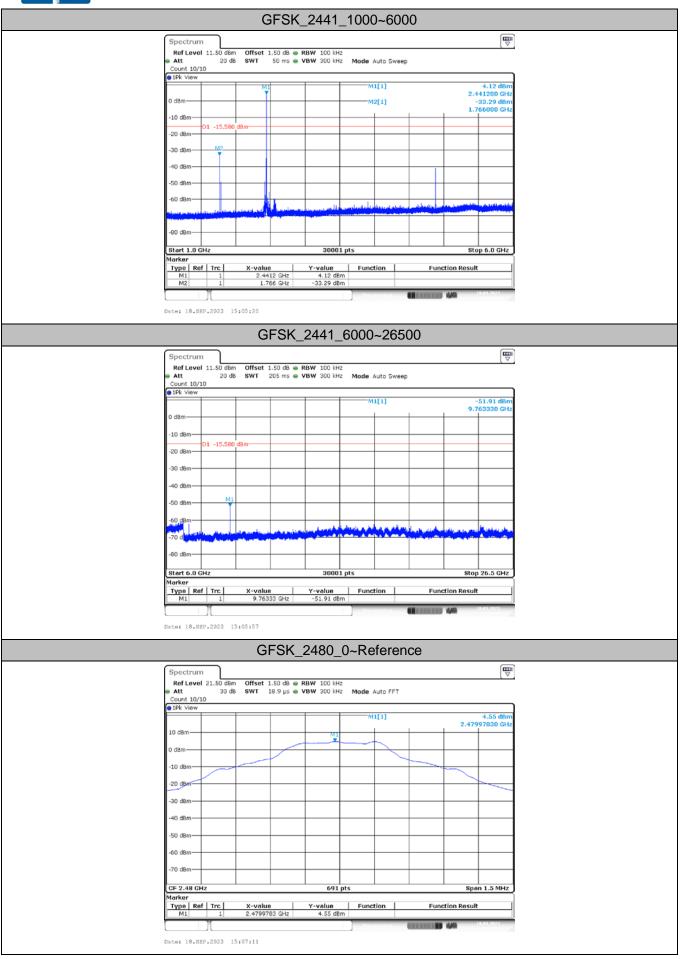
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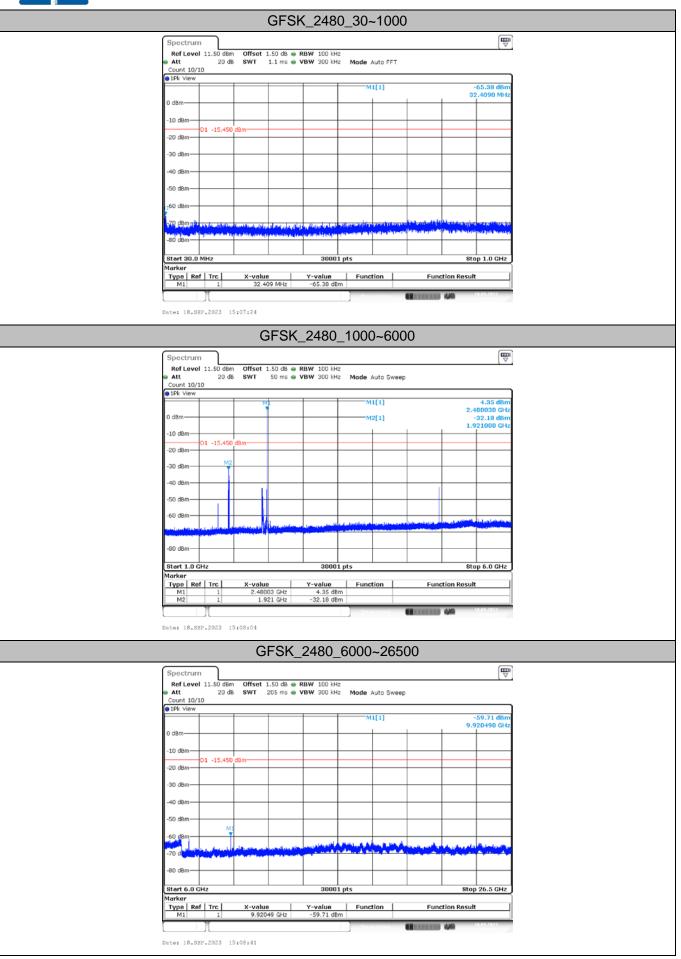






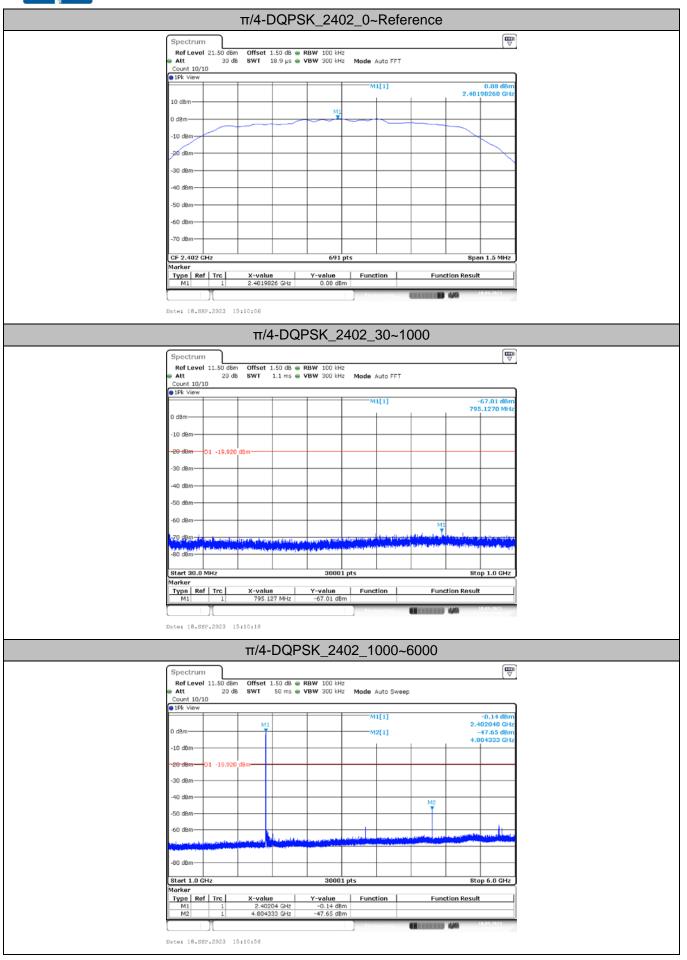


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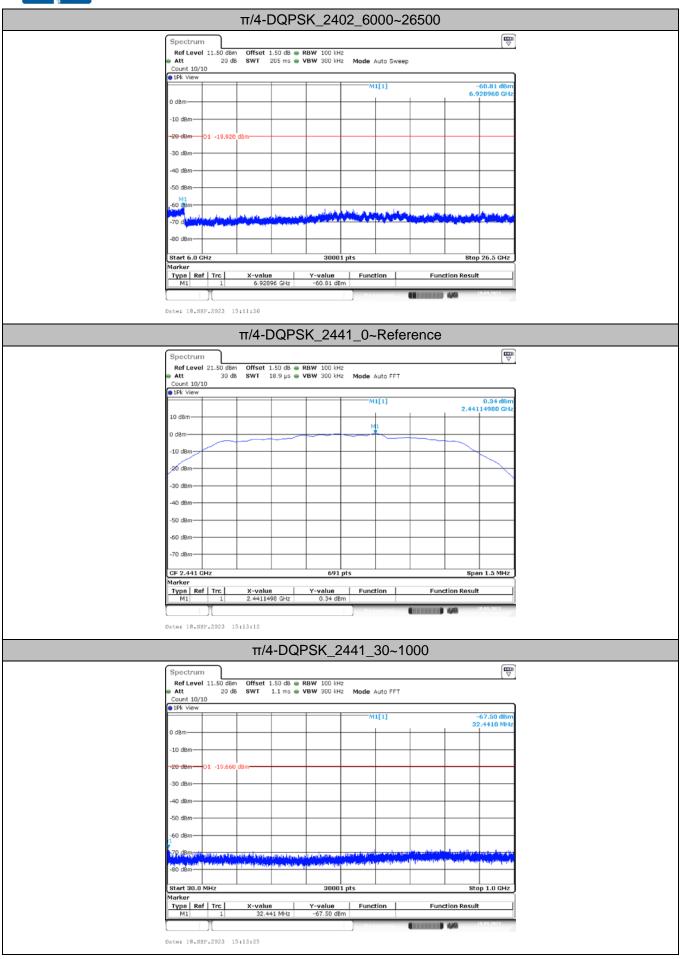






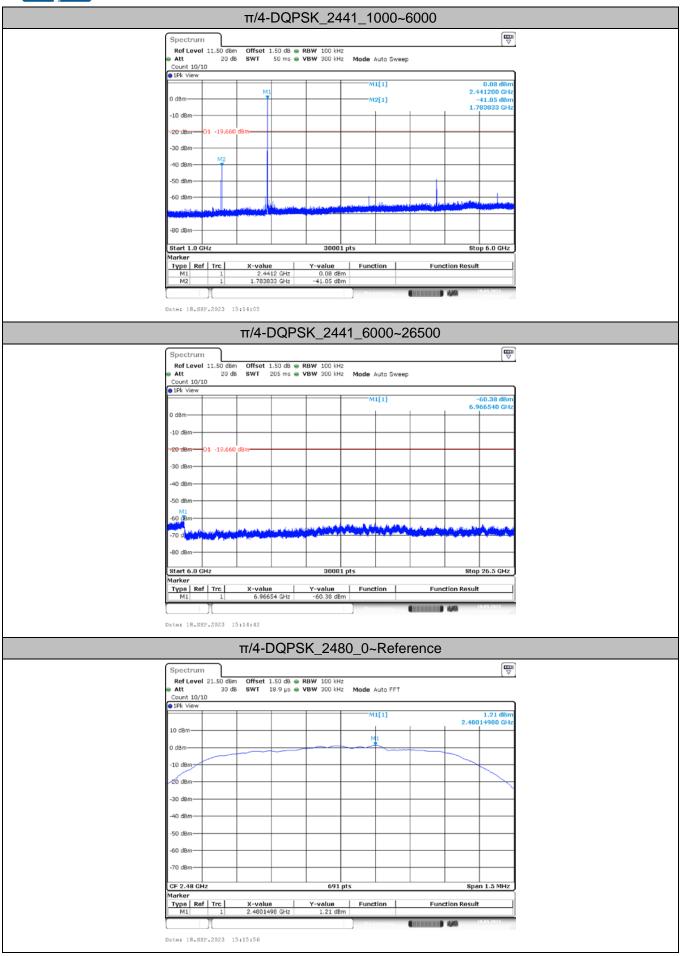






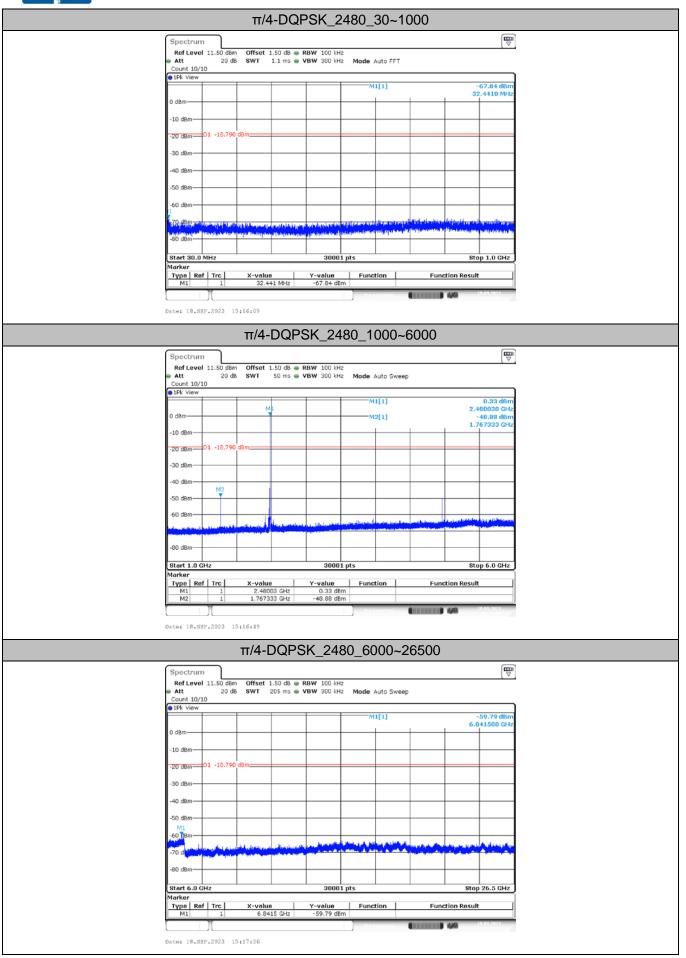








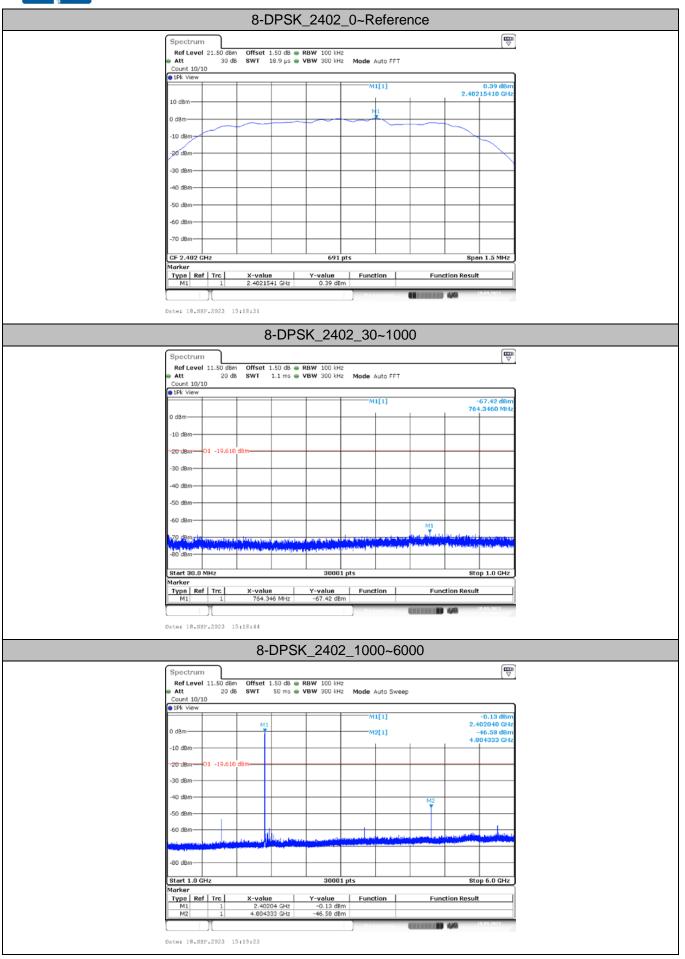






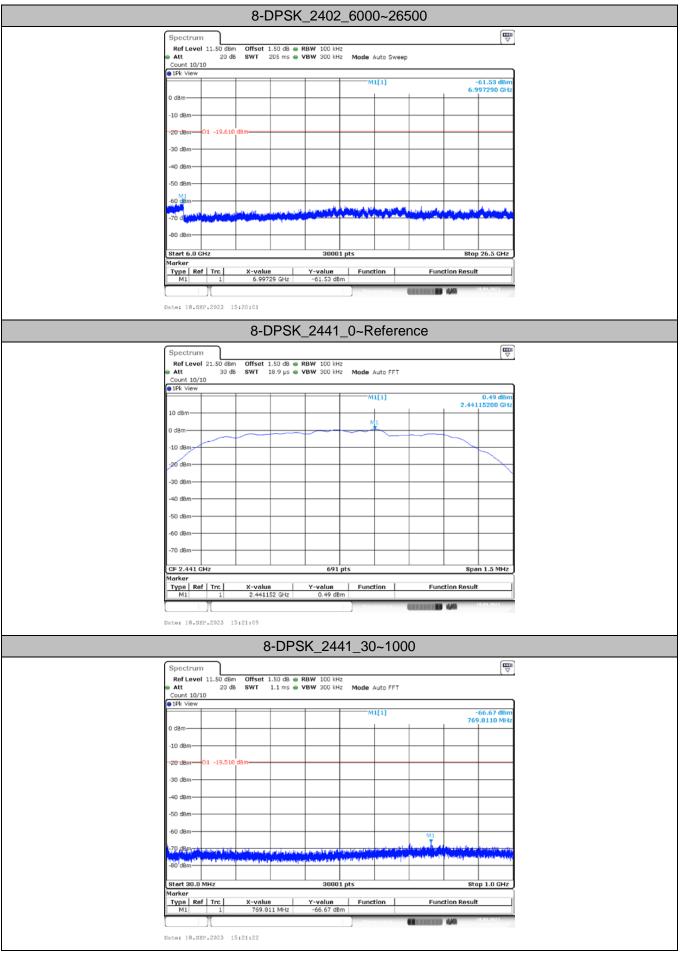


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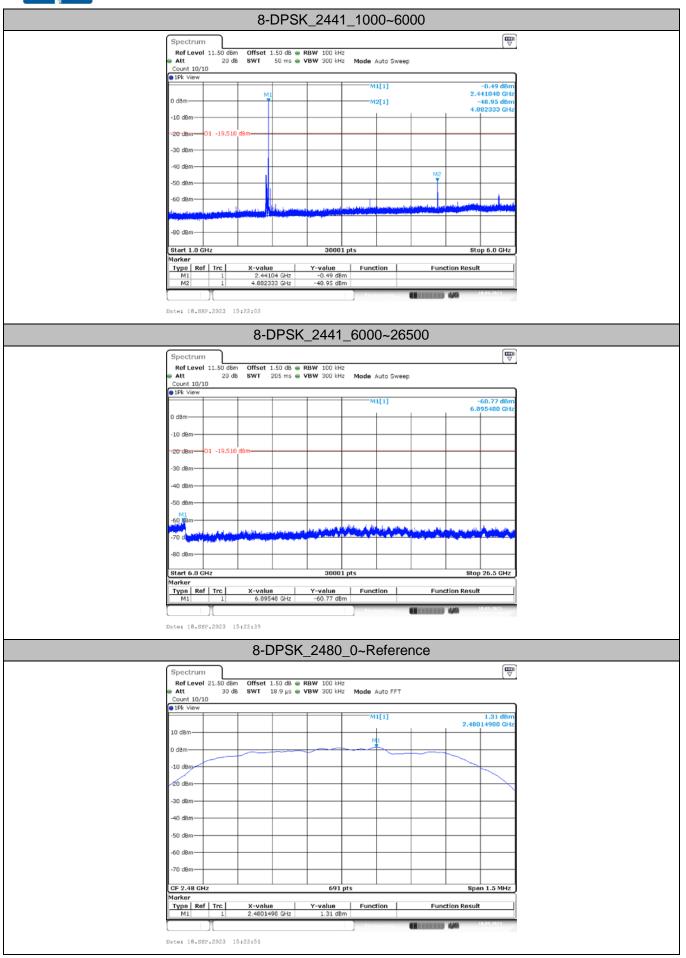




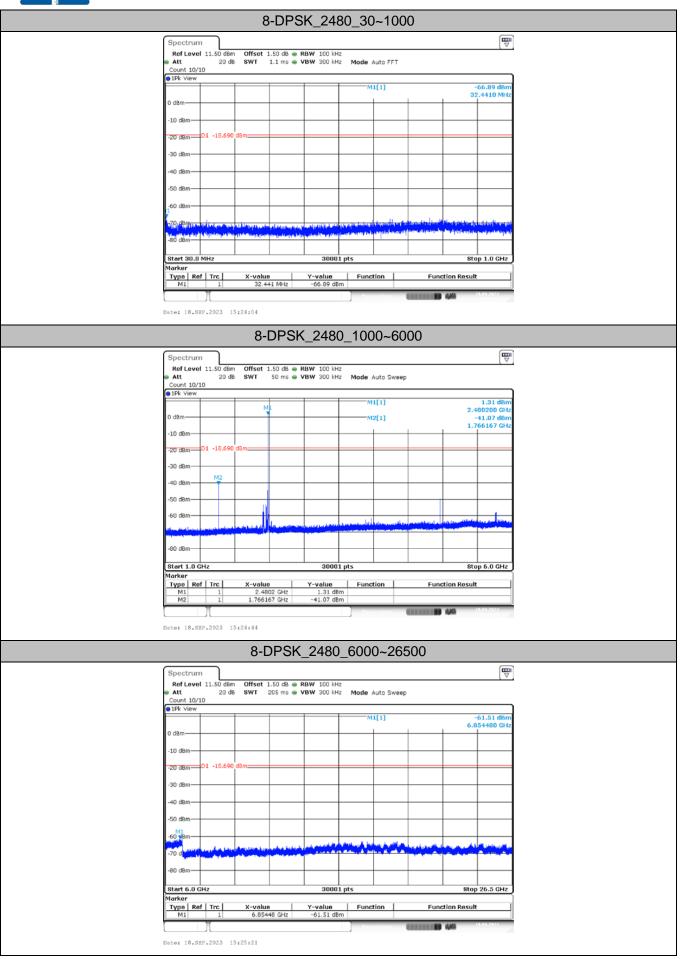














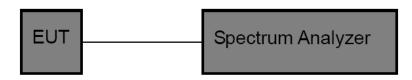


# 3.5. 20DB Bandwidth

<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

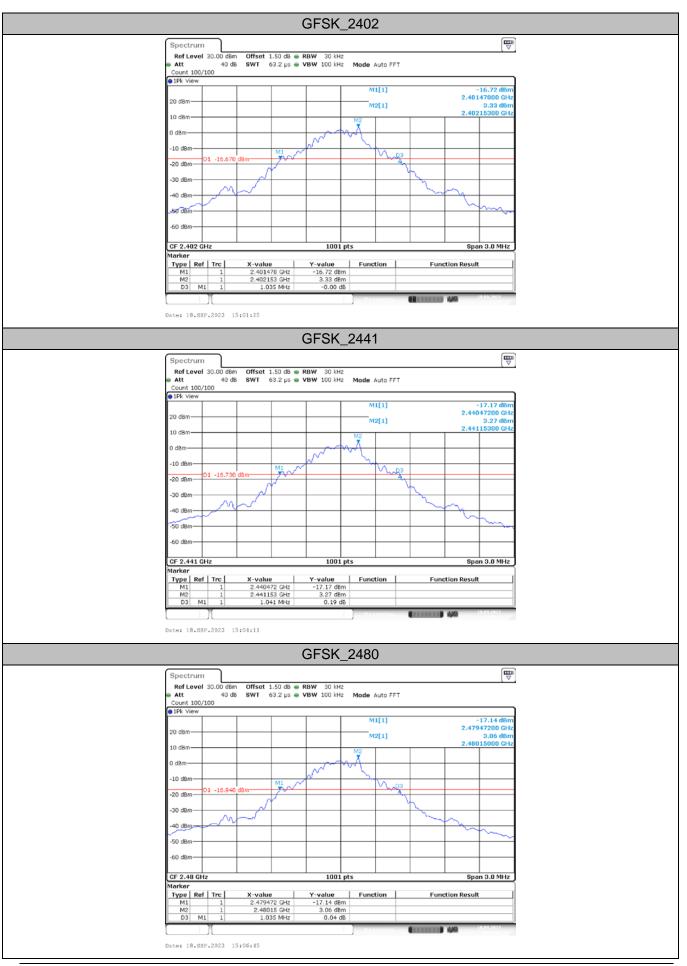
Please refer to the clause 2.4.

#### Test Results

Test Mode	Frequency[MHz]	20db EBW[MHz]	20dB Bandwidth *2/3 (kHz)	Verdict
	2402	1.035	690	PASS
GFSK	2441	1.041	694	PASS
	2480	1.035	690	PASS
	2402	1.353	902	PASS
π/4-DQPSK	2441	1.356	904	PASS
	2480	1.359	906	PASS
	2402	1.311	874	PASS
8-DPSK	2441	1.311	874	PASS
	2480	1.308	872	PASS



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