RADIO TEST REPORT

FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS-247

Test Standard	**FCC Part 15.247** **IC RSS-247 issue 2 and IC RSS-GEN issue 5**
Product name	**Medical Computer**
Brand Name	**ADVANTECH**
FCC Model No.	**DMS-SA47, DMS-SA47XXXXXXXXXXXXXXX (where "X" may be any alphanumeric character , "-" or blank)**
IC Model No.	**DMS-SA47**
Test Result	**Pass**
Statements of Conformity	**Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.**

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.
The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc.(Wugu Laboratory)

Approved by:

Shawn Wu
Supervisor

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	February 8, 2023	Initial Issue	ALL	Allison Chen

Table of contents

1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	Advantech Co., Ltd. No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 114 Taiwan
Manufacturer	Advantech Co., Ltd. No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 114 Taiwan
Equipment	Medical Computer
FCC Model No.	DMS-SA47, DMS-SA47XXXXXXXXXXXXXXX (where “X” may be any alphanumeric character , “-” or blank)
IC Model No.	DMS-SA47
Model Discrepancy	All the above models are identical except for the designation of model numbers. The suffix of (where “X” may be any alphanumeric character , “-” or blank) on model number is just for marketing purpose only.
Trade Name	ADVANTECH
Received Date	January 13, 2021
Date of Test	April 15 ~ June 28, 2021
Power Operation	EUT Power from adapter. FSP / FSP065-DBCM1 Input: 100-240VAC, 2.0-1.0A, 50-60Hz Output: 19.0VDC, 3.43A, 65.0W
HW Version	A01
SW Version	A01
EUT Serial #	01
Module	Qualcomm / QCNFA364A

Remark:

1. For more details, refer to the User’s manual of the EUT.
2. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.
3. Disclaimer: Variant information between/among model numbers / trademarks is provided by the applicant, test results of this report are applicable to the sample EUT received of main test model name.

1.2 INFORMATION ABOUT THE FHSS CHARACTERISTICS

1.2.1 Pseudorandom Frequency Hopping Sequence

The channel is represented by a pseudo-random hopping sequence hopping through the 79 RF channels. The hopping sequence is unique for the piconet and is determined by the Bluetooth device address of the master; the phase in the hopping sequence is determined by the Bluetooth clock of the master. The channel is divided into time slots where each slot corresponds to an RF hop frequency. Consecutive hops correspond to different RF hop frequencies. The nominal hop rate is 1 600 hops/s.

1.2.2 Equal Hopping Frequency Use

The channels of this system will be used equally over the long-term distribution of the hopsets.

1.2.3 Example of a 79 hopping sequence in data mode:

02, 05, 31, 24, 20, 10, 43, 36, 30, 23, 40, 06, 21, 50, 44, 09, 71, 78, 01, 13, 73, 07, 70, 72, 35, 62, 42, 11, 41, 08, 16, 29, 60, 15, 34, 61, 58, 04, 67, 12, 22, 53, 57, 18, 27, 76, 39, 32, 17, 77, 52, 33, 56, 46, 37, 47, 64, 49, 45, 38, 69, 14, 51, 26, 79, 19, 28, 65, 75, 54, 48, 03, 25, 66, 05, 16, 68, 74, 59, 63, 55

1.2.4 System Receiver Input Bandwidth

Each channel bandwidth is 1MHz.
The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

1.2.5 Equipment Description

RSS-247, 5.1 (a): The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

1.3 EUT CHANNEL INFORMATION

Frequency Range	2402MHz-2480MHz
Modulation Type	1. GFSK for BDR-1Mbps 2. π/4-DQPSK for EDR-2Mbps 3. 8DPSK for EDR-3Mbps
Number of channel	79 Channels

Remark:
Refer as ANSI C63.10: 2013 clause 5.6.1 Table 4 and RSS-GEN Table 1 for test channels

Number of frequencies to be tested		
Frequency range in which device operates	**Number of frequencies**	**Location in frequency range of operation**
☐ 1 MHz or less	1	Middle
☐ 1 MHz to 10 MHz	2	1 near top and 1 near bottom
☒ More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

1.4 ANTENNA INFORMATION

Antenna Type	☒ PIFA ☐ PCB ☐ Dipole ☐ Coils
Antenna Gain	2.97 dBi
Antenna Connector	IPEX

Remark:
1.The antenna(s) of the EUT are permanently attached and there are no provisions for connection to an external antenna. So the EUT complies with the requirements of §15.203.

1.5 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 0.0014
RF output power, conducted	+/- 1.14
Power density, conducted	+/- 1.40
3M Semi Anechoic Chamber / 30M~200M	+/- 4.12
3M Semi Anechoic Chamber / 200M~1000M	+/- 4.68
3M Semi Anechoic Chamber / 1G~8G	+/- 5.18
3M Semi Anechoic Chamber / 8G~18G	+/- 5.47
3M Semi Anechoic Chamber / 18G~26G	+/- 3.81
3M Semi Anechoic Chamber / 26G~40G	+/- 3.87

Remark:

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

2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

1.6 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City, Taiwan.

☐ No. 12, Ln. 116, Wugong 3rd Rd., Wugu Dist., New Taipei City, Taiwan.

CAB identifier: TW1309

Test site	Test Engineer	Remark
AC Conduction Room	Jack Chen	-
Radiation	Ray Li	-
RF Conducted	Jack Chen	-

Remark: The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

1.7 INSTRUMENT CALIBRATION

3M 966 Chamber Test Site					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal Date**	**Cal Due**
Band Reject Filters	MICRO TRONICS	BRM 50702	120	02/08/2021	02/07/2022
Bilog Antenna	Sunol Sciences	JB3	A030105	07/24/2020	07/23/2021
Coaxial Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	02/24/2021	02/23/2022
Coaxial Cable	EMCI	EMC105	190914+327109/4	09/19/2020	09/18/2021
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	01/06/2021	01/05/2022
double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M02003	09/30/2020	09/29/2021
Loop Ant	COM-POWER	AL-130	121051	04/07/2021	04/06/2022
Pre-Amplifier	EMEC	EM330	060609	02/24/2021	02/23/2022
Pre-Amplifier	HP	8449B	3008A00965	12/25/2020	12/24/2021
PSA Series Spectrum Analyzer	Agilent	E4446A	MY46180323	07/24/2020	07/23/2021
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Software	e3 6.11-20180419c				

Remark:
1. Each piece of equipment is scheduled for calibration once a year.
2. N.C.R. = No Calibration Required.

RF Conducted Test Site					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
EXA Signal Analyzer	KEYSIGHT	N9010B	MY55460167	09/07/2020	09/06/2021
Coaxial Cable	Woken	WC12	CC003	06/29/2020	06/28/2021
Coaxial Cable	Woken	WC12	CC003	06/28/2021	06/27/2022
Coaxial Cable	Woken	WC12	CC001	06/29/2020	06/28/2021
Coaxial Cable	Woken	WC12	CC001	06/28/2021	06/27/2022
Power Meter	Anritsu	ML2495A	1149001	05/24/2021	05/23/2022
Power Seneor	Anritsu	MA2491A	030982	05/24/2021	05/23/2022
Software	Radio Test Software				

AC Power Line Conducted Emission Test Room					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
CABLE	EMCI	CFD300-NL	CERF	06/29/2020	06/28/2021
EMI Test Receiver	R&S	ESCI	100064	07/17/2020	07/16/2021
LISN	SCHAFFNER	NNB 41	03/10013	02/02/2021	02/01/2022
Software	EZ-EMC(CCS-3A1-CE)				

Remark:
1. Each piece of equipment is scheduled for calibration once a year.
2. N.C.R. = No Calibration Required.

1.8 SUPPORT AND EUT ACCESSORIES EQUIPMENT

EUT Accessories Equipment					
No.	**Equipment**	**Brand**	**Model**	**Series No.**	**FCC ID**
	N/A				

Support Equipment					
No.	**Equipment**	**Brand**	**Model**	**Series No.**	**FCC ID**
	N/A				

1.9 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 2, FCC Part 15.247, RSS-247 Issue 2 and RSS-GEN Issue 5.

2. TEST SUMMARY

FCC Standard Section	IC Standard Section	Report Section	Test Item	Result
15.203	RSS-GEN 6.8	1.3	Antenna Requirement	Pass
15.207(a)	RSS-GEN 8.8	4.1	AC Conducted Emission	Pass
15.247(a)(1)	RSS-247(5.1)(a)	4.2	20 dB Bandwidth	Pass
-	RSS-GEN 6.7	4.2	Occupied Bandwidth (99%)	Pass
15.247(b)(1)	RSS-247(5.4)(b)	4.3	Output Power Measurement	Pass
15.247(a)(1)	RSS-247(5.1)(b)	4.4	Frequency Separation	Pass
15.247(a)(1)(iii)	RSS-247(5.1)(d)	4.5	Number of Hopping	Pass
15.247(d)	RSS-247(5.5)	4.6	Conducted Band Edge	Pass
15.247(d)	RSS-247(5.5)	4.6	Conducted Spurious Emission	Pass
15.247(a)(1)(iii)	RSS-247(5.1)(d)	4.7	Time of Occupancy	Pass
15.247(d)	RSS-GEN 8.9, 8.10	4.8	Radiation Band Edge	Pass
15.247(d)	RSS-GEN 8.9, 8.10	4.8	Radiation Spurious Emission	Pass

3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	GFSK for BDR-1Mbps (DH5) π/4-DQPSK for EDR-2Mbps (2DH5) 8DPSK for EDR-3Mbps (3DH5)
Test Channel Frequencies	**GFSK for BDR-1Mbps:** 1.Lowest Channel: 2402MHz 2.Middle Channel: 2441MHz 3.Highest Channel: 2480MHz **π/4-DQPSK for EDR-2Mbps:** 1.Lowest Channel: 2402MHz 2.Middle Channel: 2441MHz 3.Highest Channel: 2480MHz **8DPSK for EDR-3Mbps:** 1.Lowest Channel: 2402MHz 2.Middle Channel: 2441MHz 3.Highest Channel: 2480MHz

Remark:
1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.

3.2 THE WORST MODE OF MEASUREMENT

AC Power Line Conducted Emission	
Test Condition	**AC Power line conducted emission for line and neutral**
Power supply Mode	**Mode 1: EUT power by Adapter**
Worst Mode	**☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4**

Remark:
1. The worst mode was record in this test report.
2. AC power line conducted emission and for below 1G radiation emission were performed the EUT transmit at the highest output power channel as worse case.

Radiated Emission Measurement Above 1G	
Test Condition	**Radiated Emission Above 1G**
Power supply Mode	**Mode 1: EUT power by adapter. (120V)**
Worst Mode	**☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4**
Worst Position	**☐ Placed in fixed position.** **☐ Placed in fixed position at X-Plane (E2-Plane)** **☒ Placed in fixed position at Y-Plane (E1-Plane)** **☐ Placed in fixed position at Z-Plane (H-Plane)**

Radiated Emission Measurement Below 1G	
Test Condition	**Radiated Emission Below 1G**
Power supply Mode	**Mode 1: EUT power by adapter. (120V)**
Worst Mode	**☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4**

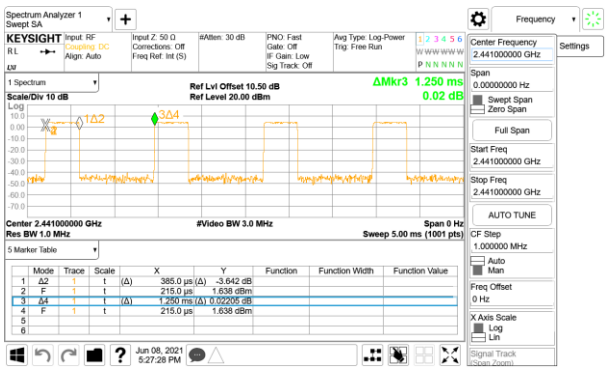
Remark:
1. The worst mode was record in this test report.
2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, for radiated measurement. The worst case(Y-Plane) were recorded in this report

3.3 EUT DUTY CYCLE

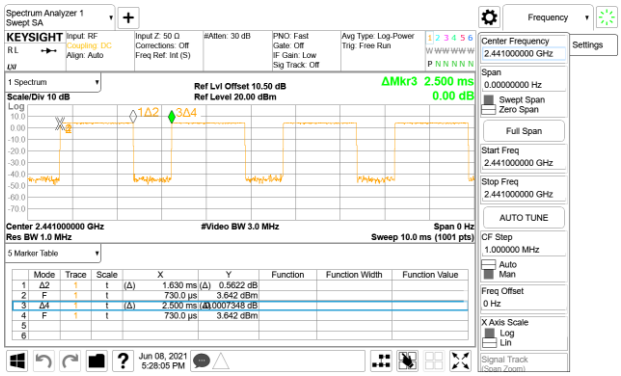
Temperature:	25.8℃	**Test date:**	June 8, 2021
Humidity:	46.3% RH	**Tested by:**	Jack Chen

Duty Cycle				
Configuration	Duty Cycle (%)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
BDR-1Mbps-DH1	30.80	5.11	2.597	3.00
BDR-1Mbps-DH3	65.20	1.86	0.613	1.00
BDR-1Mbps-DH5	76.80	1.15	0.347	1.00

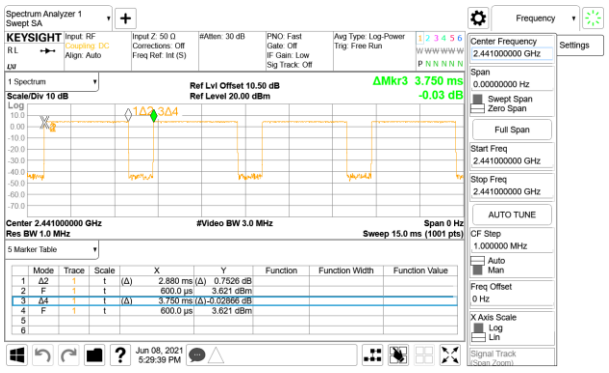
BDR-1Mbps-DH1



BDR-1Mbps-DH3

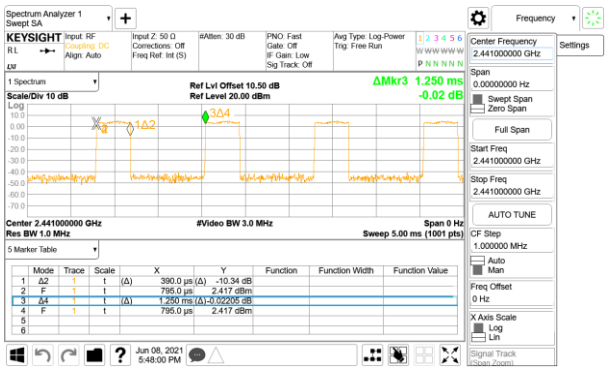


BDR-1Mbps-DH5

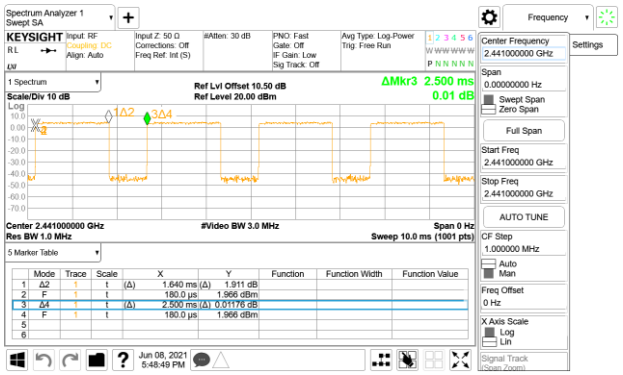


Duty Cycle				
Configuration	Duty Cycle (%)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
2Mbps-2DH1	31.20	5.06	2.564	3.00
2Mbps-2DH3	65.60	1.83	0.610	1.00
2Mbps-2DH5	77.20	1.12	0.345	1.00

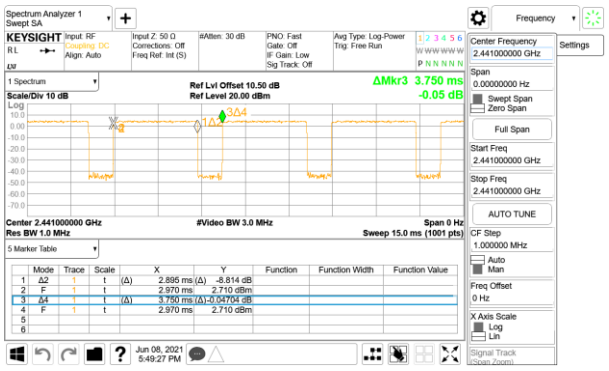
π /4 DQPSK (2Mbps)-2DH1



π /4 DQPSK (2Mbps)-2DH3

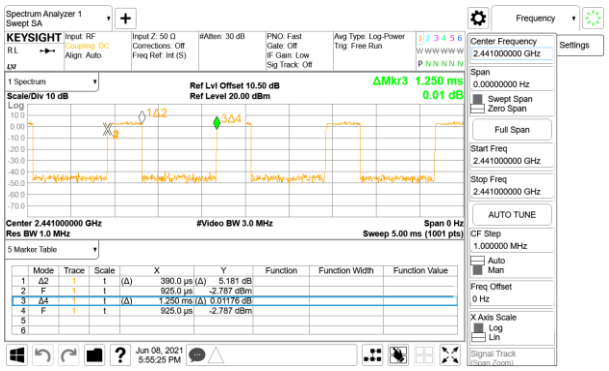


π /4 DQPSK (2Mbps)-2DH5

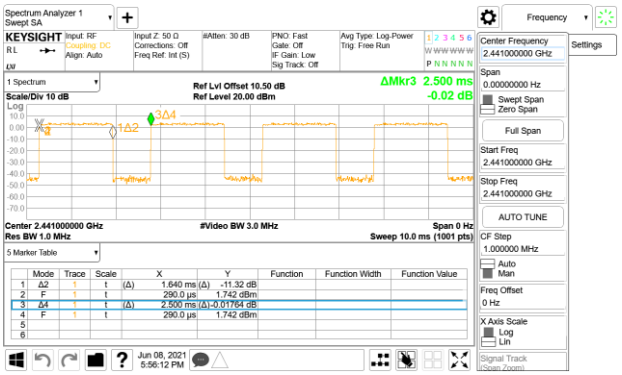


Duty Cycle				
Configuration	Duty Cycle (%)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
EDR-3Mbps-DH1	31.20	5.06	2.564	3.00
EDR-3Mbps-DH3	65.60	1.83	0.610	1.00
EDR-3Mbps-DH5	77.20	1.12	0.345	1.00

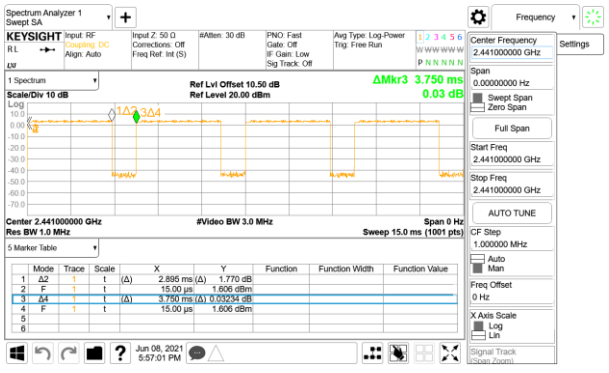
EDR-3Mbps-DH1



EDR-3Mbps-DH3



EDR-3Mbps-DH5



4. TEST RESULT

4.1 AC POWER LINE CONDUCTED EMISSION

4.1.1 Test Limit

According to §15.207(a) and RSS-GEN section 8.8,

Frequency Range (MHz)	Limits(dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

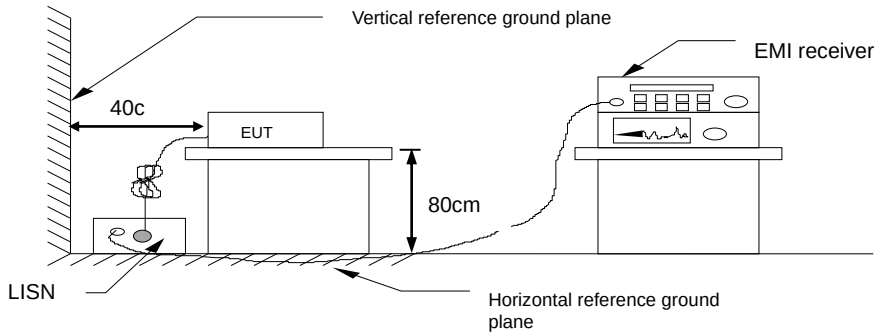
* Decreases with the logarithm of the frequency.

4.1.2 Test Procedure

Test method Refer as ANSI C63.10: 2013 clause 6.2,

1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
2. EUT connected to the line impedance stabilization network (LISN)
3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. Recorded Line for Neutral and Line.

4.1.3 Test Setup

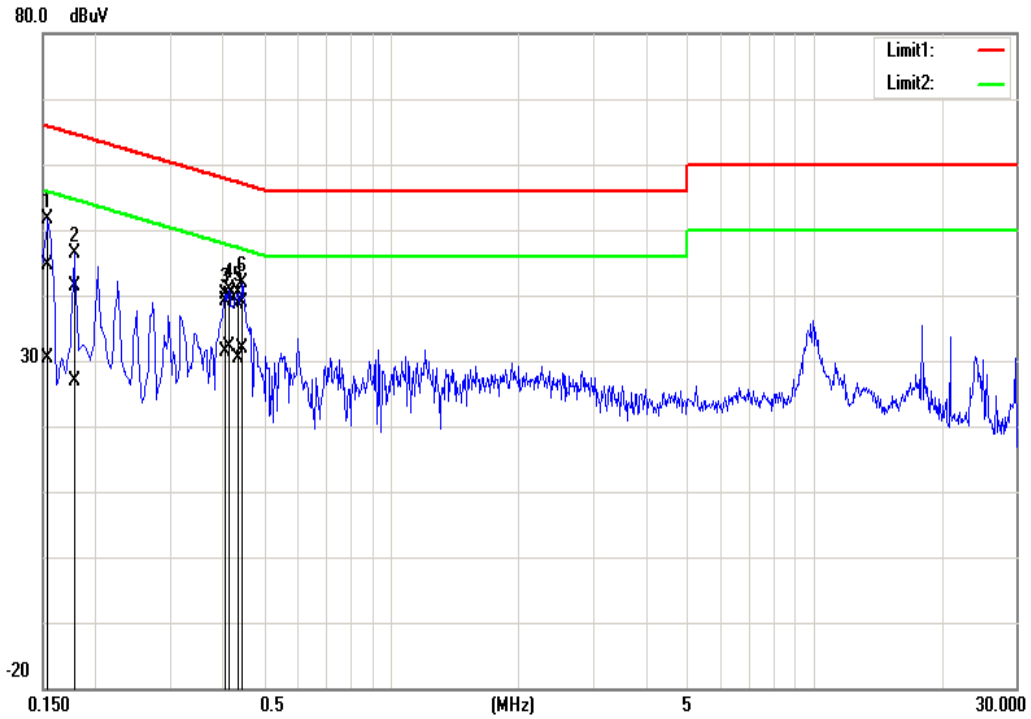


4.1.4 Test Result

PASS.

Test Data

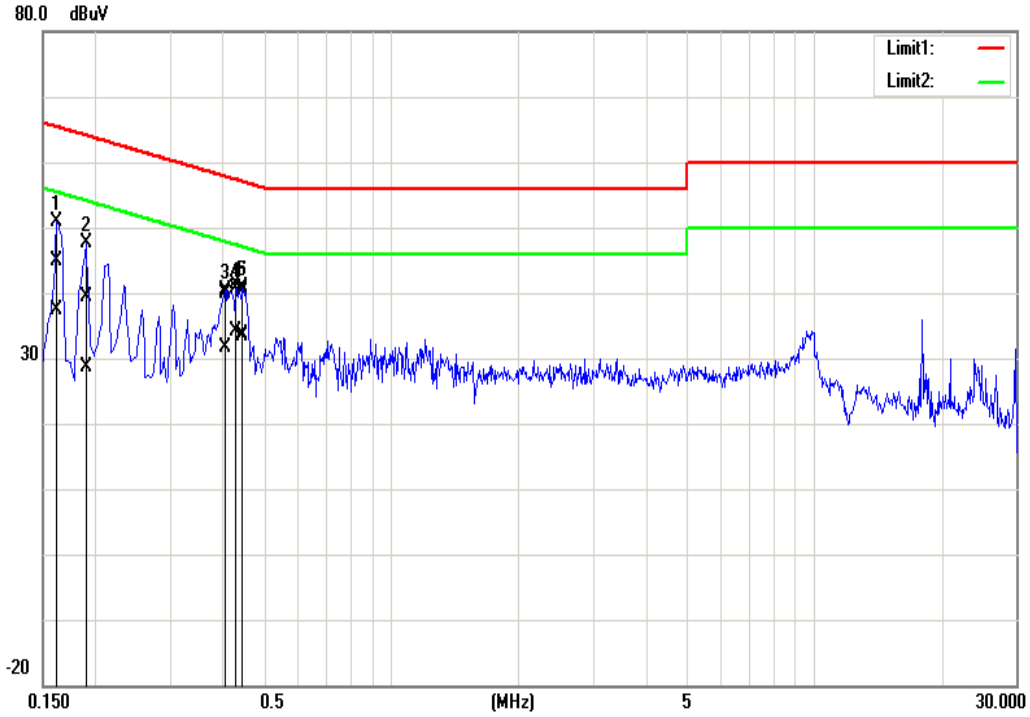
Test Mode:	Mode 1	Temp/Hum	24.9(℃)/ 46.7%RH
Phase:	Line	Test Date	June 11, 2021
		Test Engineer	Jack Chen



Frequency (MHz)	Quasi Peak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.1540	34.27	19.97	10.29	44.56	30.26	65.78	55.78	-21.22	-25.52	Pass
0.1780	30.99	16.70	10.29	41.28	26.99	64.58	54.58	-23.30	-27.59	Pass
0.4060	28.93	21.18	10.29	39.22	31.47	57.73	47.73	-18.51	-16.26	Pass
0.4140	29.67	21.72	10.29	39.96	32.01	57.57	47.57	-17.61	-15.56	Pass
0.4340	28.43	20.19	10.29	38.72	30.48	57.18	47.18	-18.46	-16.70	Pass
0.4460	28.53	21.66	10.29	38.82	31.95	56.95	46.95	-18.13	-15.00	Pass

Note: Correction factor = LISN loss + Cable loss.

Test Mode:	Mode 1	Temp/Hum	24.9(℃)/ 46.7%RH
Phase:	Neutral	Test Date	June 11, 2021
		Test Engineer	Jack Chen



Frequency (MHz)	Quasi Peak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.1620	34.52	27.12	10.29	44.81	37.41	65.36	55.36	-20.55	-17.95	Pass
0.1900	29.14	18.39	10.29	39.43	28.68	64.04	54.04	-24.61	-25.36	Pass
0.4060	29.61	21.42	10.29	39.90	31.71	57.73	47.73	-17.83	-16.02	Pass
0.4300	31.20	23.91	10.29	41.49	34.20	57.25	47.25	-15.76	-13.05	Pass
0.4380	30.24	23.04	10.29	40.53	33.33	57.10	47.10	-16.57	-13.77	Pass
0.4460	29.86	23.37	10.29	40.15	33.66	56.95	46.95	-16.80	-13.29	Pass

Note: Correction factor = LISN loss + Cable loss.

4.2 20dB BANDWIDTH AND OCCUPIED BANDWIDTH (99%)

4.2.1 Test Limit

According to §15.247(a) (1), RSS-247 section 5.1(a) and RSS-GEN 6.7,

20 dB Bandwidth ：For reporting purposes only.

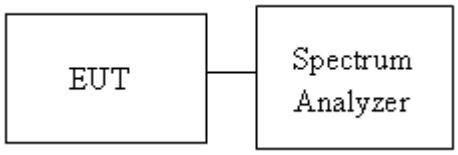
Occupied Bandwidth(99%) ：For reporting purposes only.

4.2.2 Test Procedure

Test method Refer as ANSI C63.10: 2013 clause 7.8.7,

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW = 30kHz, VBW = 100kHz and Detector = Peak, to measurement 20 dB Bandwidth.
4. SA set RBW = 1% ~ 5% OBW, VBW = three times the RBW and Detector = Peak, to measurement 99% Bandwidth
5. Measure and record the result of 20 dB Bandwidth and 99% Bandwidth. in the test report.

4.2.3 Test Setup



4.2.4 Test Result

Temperature:	25.8℃	**Tested by:**	Jack Chen
Humidity:	46.3% RH	**Test date:**	June 8, 2021

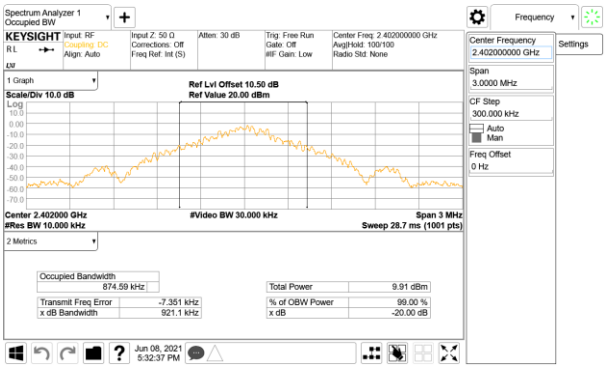
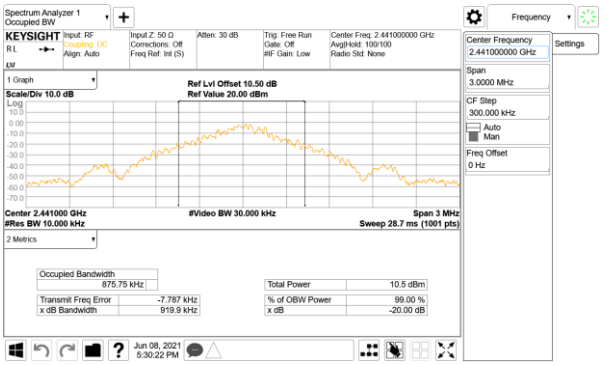
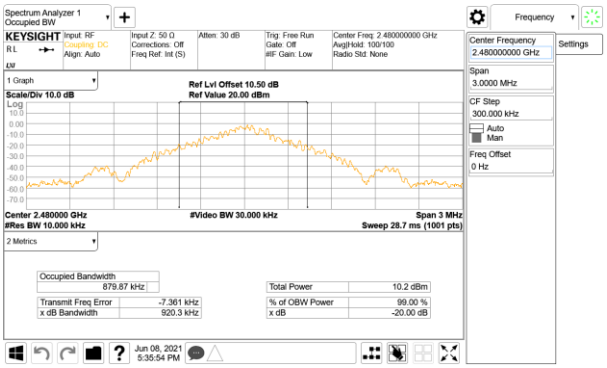
Test mode: GFSK_BDR-1Mbps mode / 2402-2480 MHz				
Channel	**Frequency (MHz)**	**OBW(99%) (MHz)**	**20 dB BW (MHz)**	**2/3 BW (MHz)**
Low	2402	0.87342	0.9211	0.61
Mid	2441	0.87471	0.9199	0.61
High	2480	0.88033	0.9203	0.61

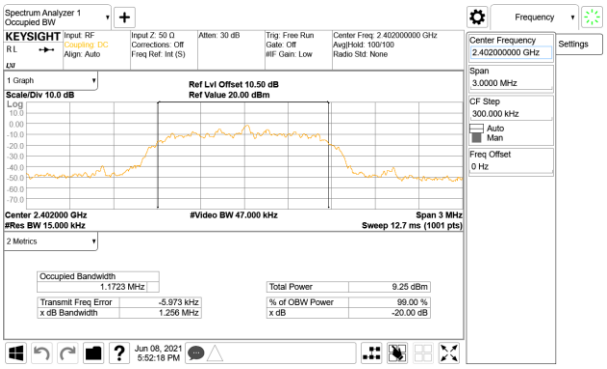
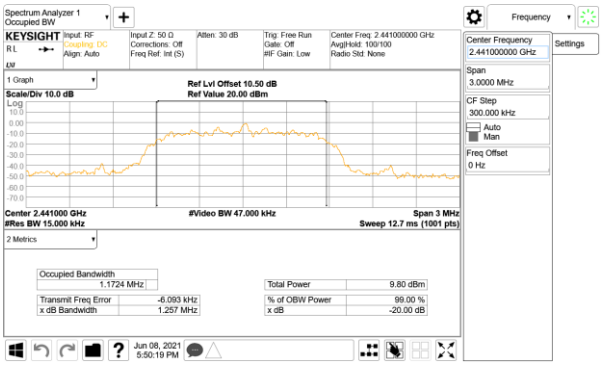
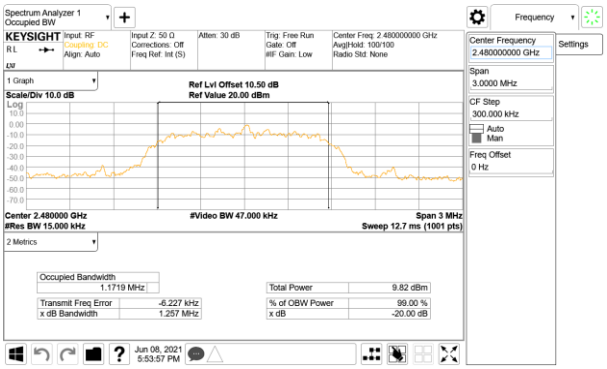
Test mode: π/4-DQPSK-2Mbps mode / 2402-2480 MHz				
Channel	**Frequency (MHz)**	**OBW(99%) (MHz)**	**20 dB BW (MHz)**	**2/3 BW (MHz)**
Low	2402	1.1733	1.256	0.84
Mid	2441	1.1732	1.257	0.84
High	2480	1.1729	1.257	0.84

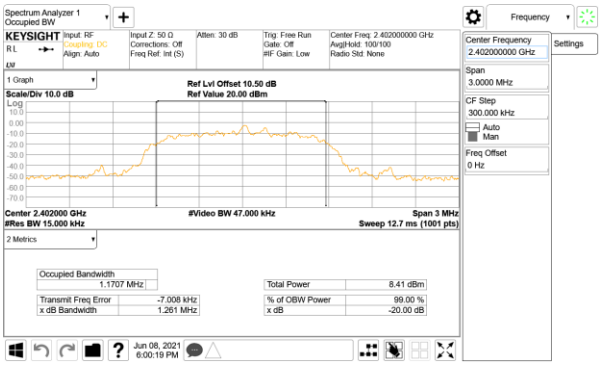
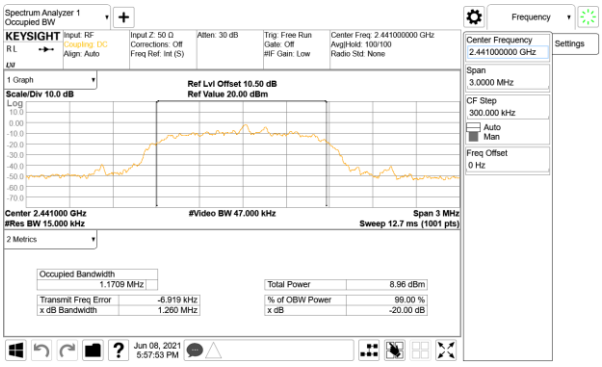
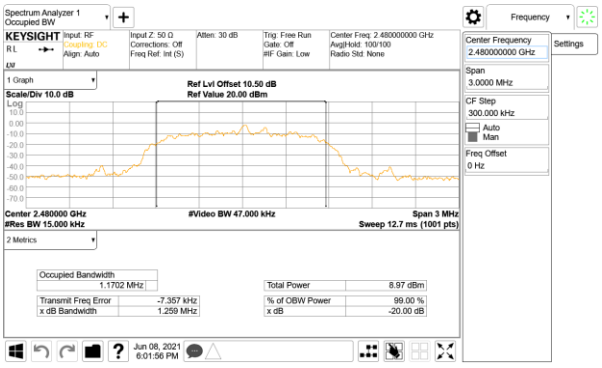
Test mode: 8DPSK_EDR-3Mbps mode / 2402-2480 MHz				
Channel	**Frequency (MHz)**	**OBW(99%) (MHz)**	**20 dB BW (MHz)**	**2/3 BW (MHz)**
Low	2402	1.1727	1.261	0.84
Mid	2441	1.1728	1.260	0.84
High	2480	1.1727	1.259	0.84

Test Data

20dB BANDWIDTH

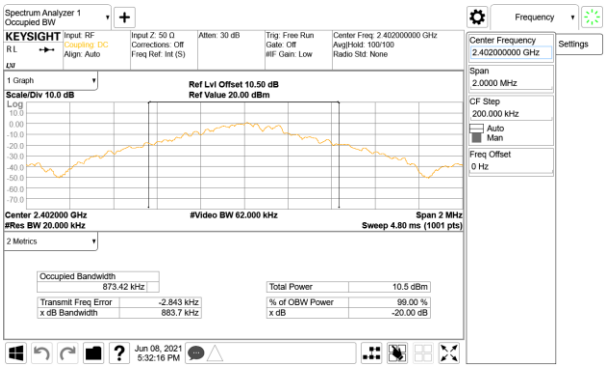
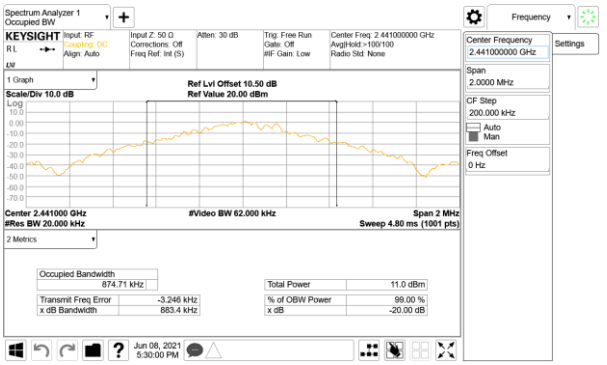
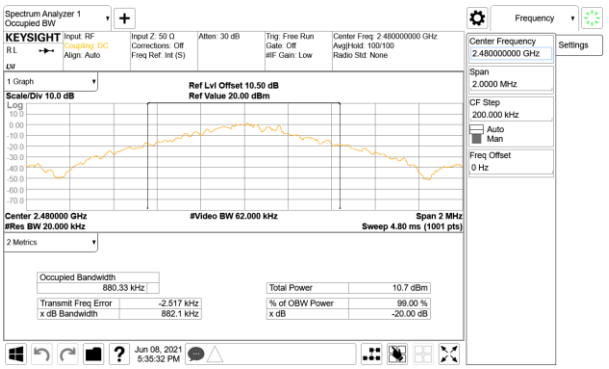
GFSK_BDR-1Mbps mode	
Low CH	**Mid CH**
	
High CH	
	

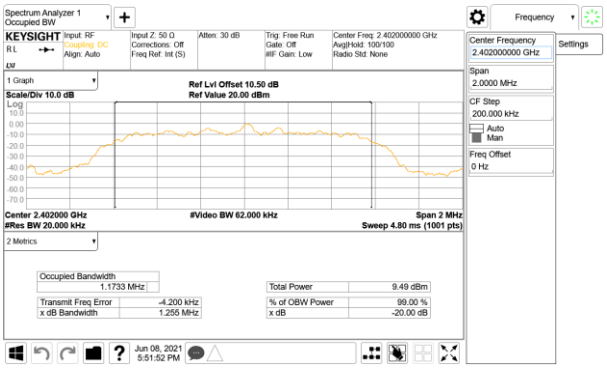
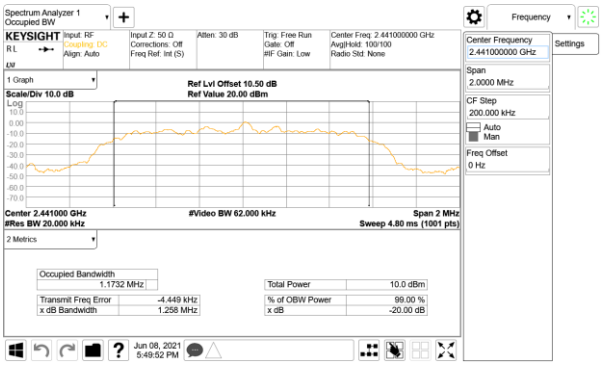
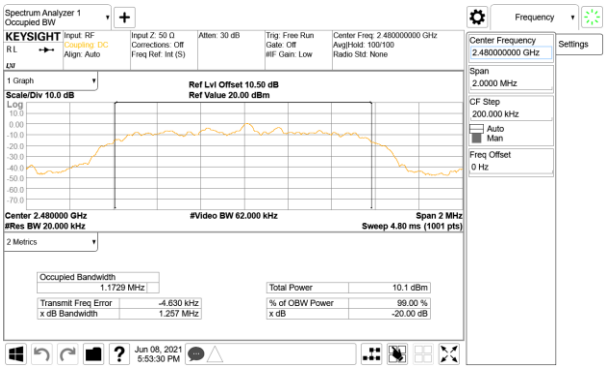
π/4-DQPSK-2Mbps mode	
Low CH	**Mid CH**
	
High CH	
	

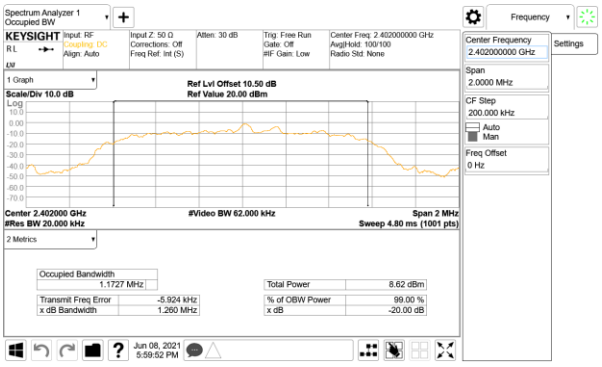
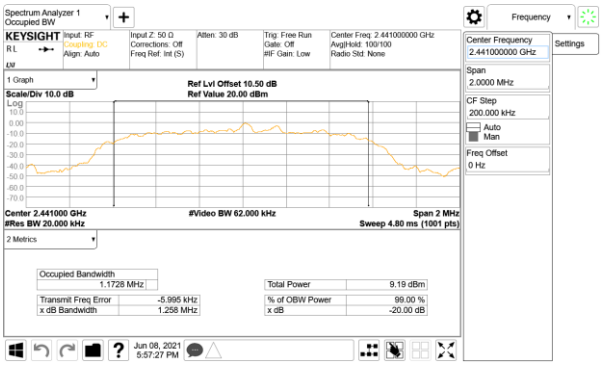
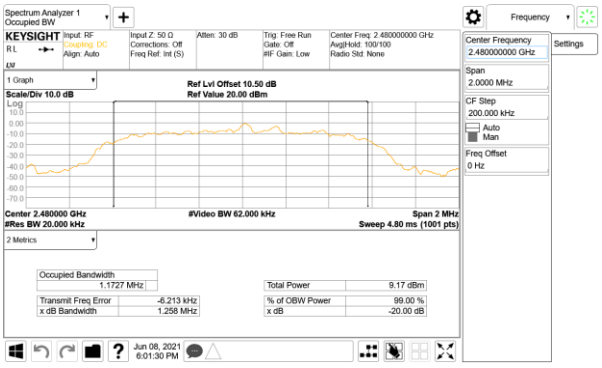
8DPSK_EDR-3Mbps mode	
Low CH	**Mid CH**
	
High CH	
	

Test Data

BANDWIDTH 99%

GFSK_BDR-1Mbps mode	
Low CH	**Mid CH**
	
High CH	
	

π/4-DQPSK-2Mbps mode	
Low CH	**Mid CH**
	
High CH	
	

8DPSK_EDR-3Mbps mode	
Low CH	**Mid CH**
	
High CH	
	

4.3 OUTPUT POWER MEASUREMENT

4.3.1 Test Limit

According to §15.247(a)(1) and RSS-247 section 5.4(b)

Peak output power：

FCC

Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

IC

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

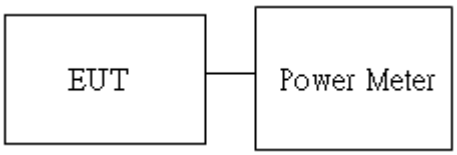
Limit	☒ Antenna not exceed 6 dBi：21dBm ☐ Antenna with DG greater than 6 dBi：21dBm [Limit = 30 – (DG – 6)]

Average output power：For reporting purposes only.

4.3.2 Test Procedure

1. The EUT RF output connected to the power meter by RF cable.
2. Setting maximum power transmit of EUT.
3. The path loss was compensated to the results for each measurement.
4. Measure and record the result of Peak output power and Average output power. in the test report.

4.3.3 Test Setup



4.3.4 Test Result

Temperature:	25.8℃	**Tested by:**	Jack Chen
Humidity:	46.3% RH	**Test date:**	June 8, 2021

Peak output power：

1M BR mode (Peak):

CH	Freq. (MHz)	Power set	Peak Output Power (dBm)	Output Power (mW)	Limit (mW)
Low	2402	default	4.96	3.133	125
Mid	2441	default	5.33	3.412	125
High	2480	default	**5.49**	3.540	125

2M EDR mode (Peak):

CH	Freq. (MHz)	Power set	Peak Output Power (dBm)	Output Power (mW)	Limit (mW)
Low	2402	default	5.61	3.639	125
Mid	2441	default	6.03	4.009	125
High	2480	default	**6.05**	4.027	125

3M EDR mode (Peak):

CH	Freq. (MHz)	Power set	Peak Output Power (dBm)	Output Power (mW)	Limit (mW)
Low	2402	default	6.03	4.009	125
Mid	2441	default	**6.46**	4.426	125
High	2480	default	6.40	4.365	125

Average output power：

1M BR mode (Average):

CH	Freq. (MHz)	Power set	Max. Avg. Output Power (dBm)	Output Power (mW)	Limit (mW)
Low	2402	default	3.31	2.143	125
Mid	2441	default	3.70	2.344	125
High	2480	default	3.69	2.339	125

2M EDR mode (Average):

CH	Freq. (MHz)	Power set	Max. Avg. Output Power (dBm)	Output Power (mW)	Limit (mW)
Low	2402	default	0.95	1.245	125
Mid	2441	default	1.33	1.358	125
High	2480	default	1.32	1.355	125

3M EDR mode (Average):

CH	Freq. (MHz)	Power set	Max. Avg. Output Power (dBm)	Output Power (mW)	Limit (mW)
Low	2402	default	1.92	1.556	125
Mid	2441	default	2.30	1.698	125
High	2480	default	2.26	1.683	125

Note: Max. Output include tune up tolerance Power measured by using average detector.

EIRP power：

1M BR mode EIRP

Channel	Frequency (MHz)	Power set	Max. Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (mW)	Limit (mW)
Low	2402	default	3.31	2.97	4.246	4000
Mid	2441	default	3.70	2.97	4.645	4000
High	2480	default	3.69	2.97	4.634	4000

2M EDR mode EIRP

Channel	Frequency (MHz)	Power set	Max. Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (mW)	Limit (mW)
Low	2402	default	0.95	2.97	2.466	4000
Mid	2441	default	1.33	2.97	2.692	4000
High	2480	default	1.32	2.97	2.685	4000

3M EDR mode EIRP

Channel	Frequency (MHz)	Power set	Max. Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (mW)	Limit (mW)
Low	2402	default	1.92	2.97	3.083	4000
Mid	2441	default	2.30	2.97	3.365	4000
High	2480	default	2.26	2.97	3.334	4000

**** Note:*** EIRP = Average Power + Gain

4.4 FREQUENCY SEPARATION

4.4.1 Test Limit

According to §15.247(a)(1) and RSS-247 section 5.1(b)

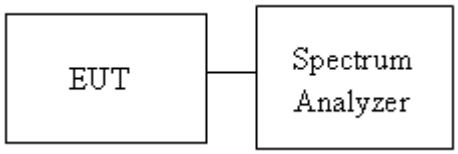
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Limit	> two-thirds of the 20 dB bandwidth

4.4.2 Test Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. EUT RF output port connected to the SA by RF cable.
3. Set the spectrum analyzer as RBW = 100kHz, VBW = 300kHz, Sweep = auto. Max hold, mark 3 peaks of hopping channel and record the 3 peaks frequency

4.4.3 Test Setup



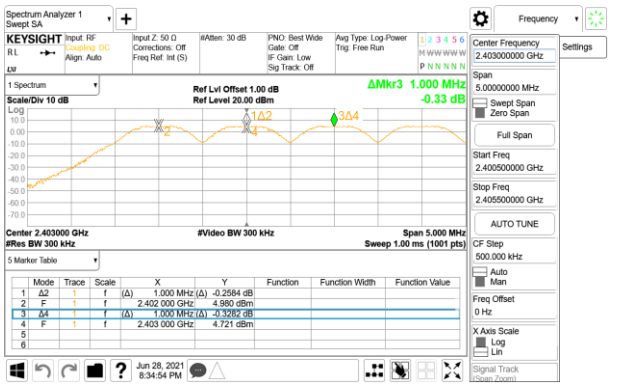
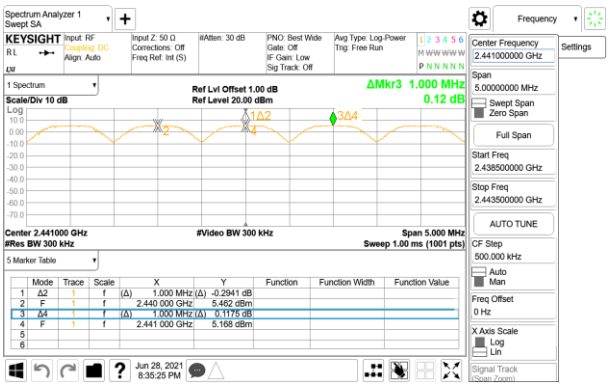
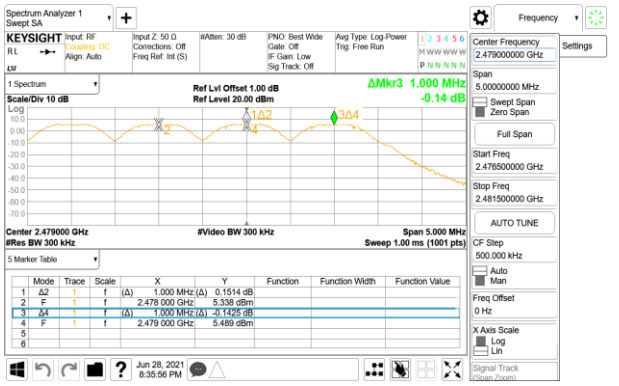
4.4.4 Test Result

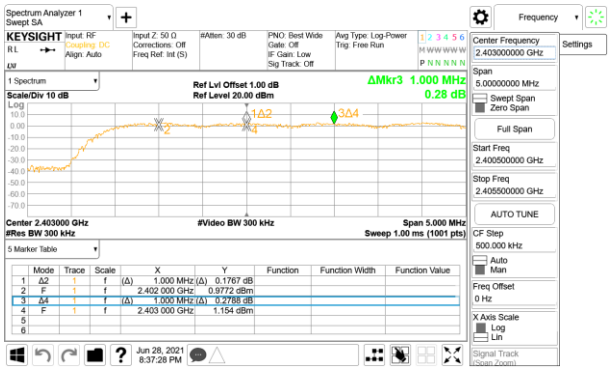
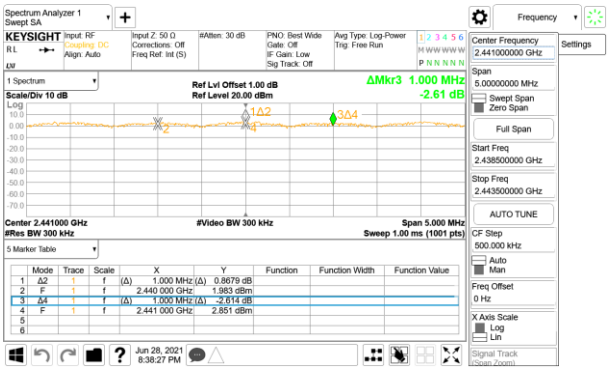
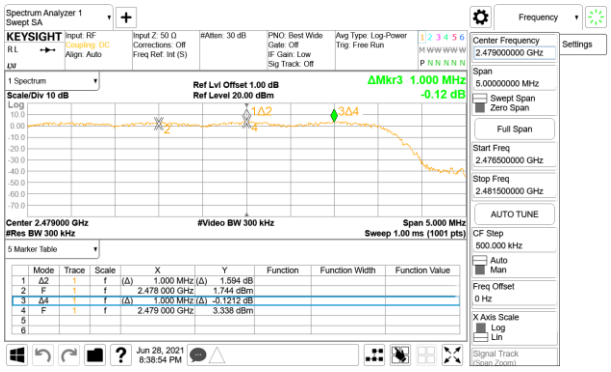
Temperature:	25.8℃	**Tested by:**	Jack Chen
Humidity:	46.3% RH	**Test date:**	June 9 ~ 28, 2021

Test mode: GFSK_BDR-1Mbps mode / 2402-2480 MHz					
Mode	**Frequency (MHz)**	**20dB Bandwidth (MHz)**	**Channel Separation (MHz)**	**Channel Separation Limits (MHz)**	**Result**
DH5	2402	0.9211	1.0000	0.61	PASS
	2441	0.9199	1.0000	0.61	PASS
	2480	0.9203	1.0000	0.61	PASS

Test mode: 8DPSK_EDR-3Mbps mode / 2402-2480 MHz					
Mode	**Frequency (MHz)**	**20dB Bandwidth (MHz)**	**Channel Separation (MHz)**	**Channel Separation Limits (MHz)**	**Result**
3DH5	2402	1.261	1.0000	0.84	PASS
	2441	1.260	1.0000	0.84	PASS
	2480	1.260	1.0000	0.84	PASS

Test Data

GFSK_BDR-1Mbps mode-DH5	
Low CH	**Mid CH**
	
High CH	
	

8DPSK_EDR-3Mbps mode-3DH5	
Low CH	**Mid CH**
	
High CH	
	

4.5 NUMBER OF HOPPING

4.5.1 Test Limit

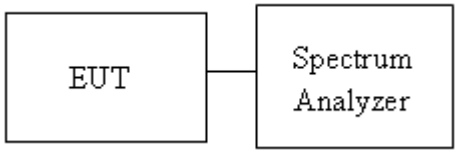
According to §15.247(a)(1)(iii) and RSS-247 section 5.1(d)

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

4.5.2 Test Procedure

Test method Refer as ANSI C63.10: 2013 clause 7.8.3
1. Place the EUT on the table and set it in transmitting mode.
2. EUT RF output port connected to the SA by RF cable.
3. Set spectrum analyzer Start Freq. = 2400 MHz, Stop Freq. = 2483.5 MHz, RBW =100KHz, VBW = 300KHz.
4. Max hold, view and count how many channel in the band.

4.5.3 Test Setup

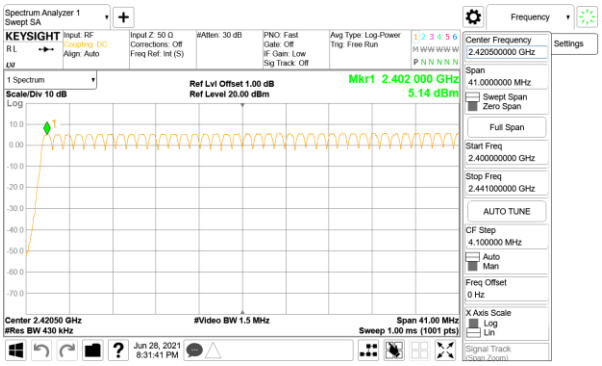
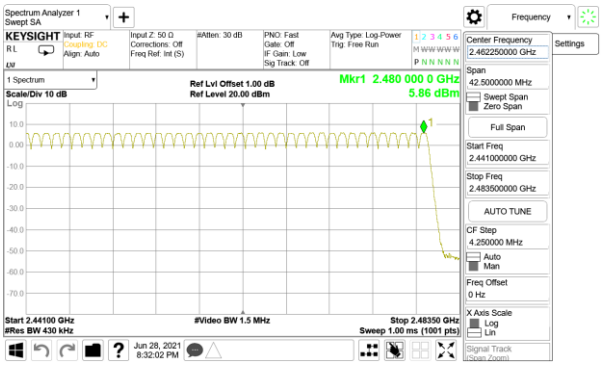
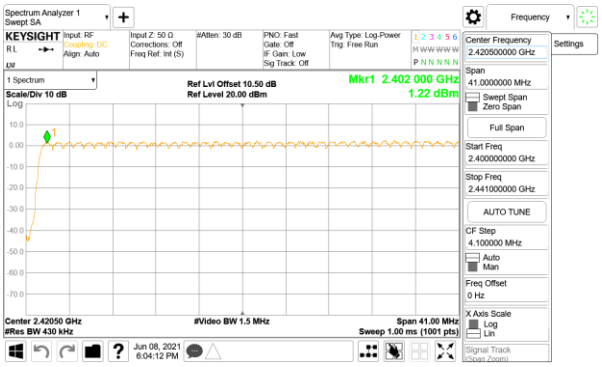
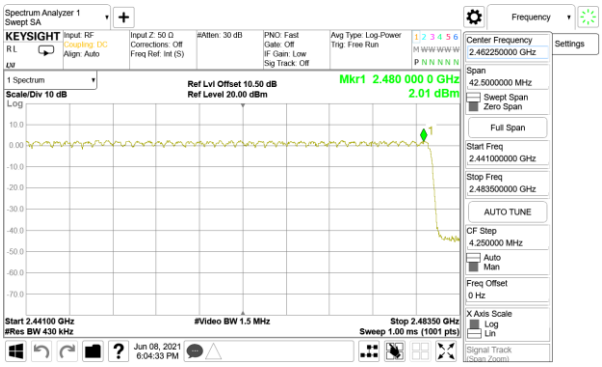


4.5.4 Test Result

Temperature:	25.8℃	**Tested by:**	Jack Chen
Humidity:	46.3% RH	**Test date:**	June 8 ~ 28, 2021

Number of Hopping				
Mode	**Frequency (MHz)**	**Hopping Channel Number**	**Hopping Channel Number Limits**	**Result**
BDR-1Mbps	2402-2480	79	15	Pass
EDR-3Mbps	2402-2480	79	15	

Test Data

Number of Hopping	
GFSK_BDR-1Mbps mode-DH5	
Low	High
	
8DPSK_EDR-3Mbps mode-3DH5	
Low	High
	

4.6 CONDUCTED BANDEDGE AND SPURIOUS EMISSION

4.6.1 Test Limit

According to §15.247(d) and RSS-247 section 5.5

Limit	-20 dBc

.

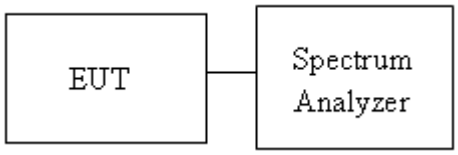
4.6.2 Test Procedure

1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.

2. SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.

3. The Band Edge at 2.4GHz and 2.4835GHz are investigated with both hopping “ON” and “OFF” modes “.

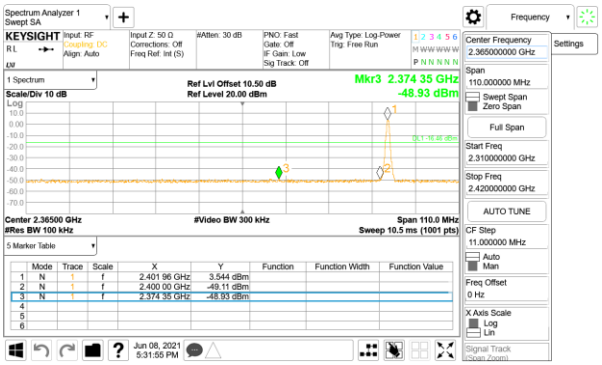
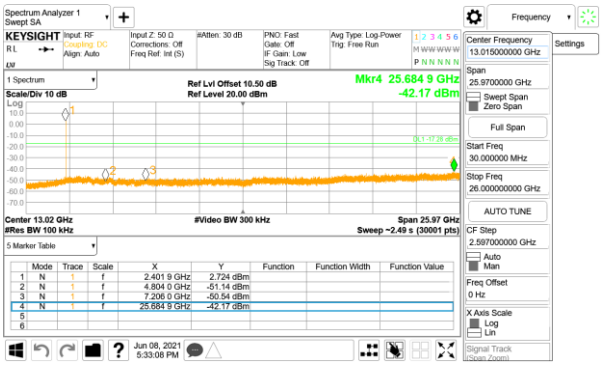
4.6.3 Test Setup

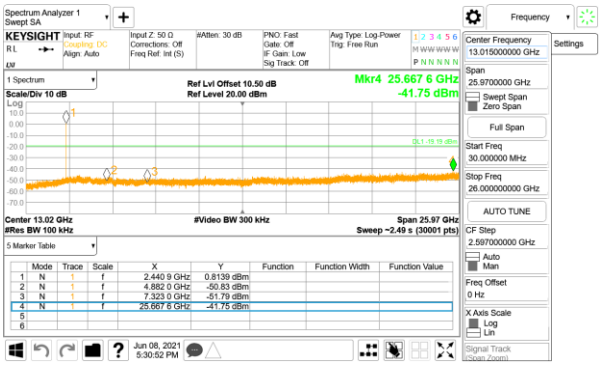


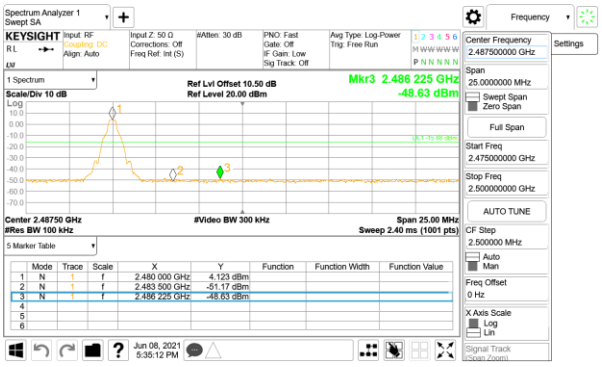
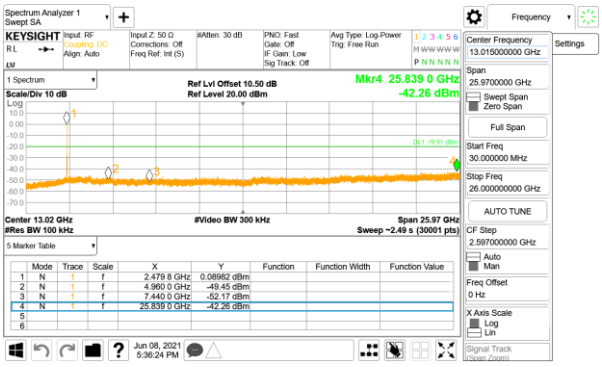
4.6.4 Test Result

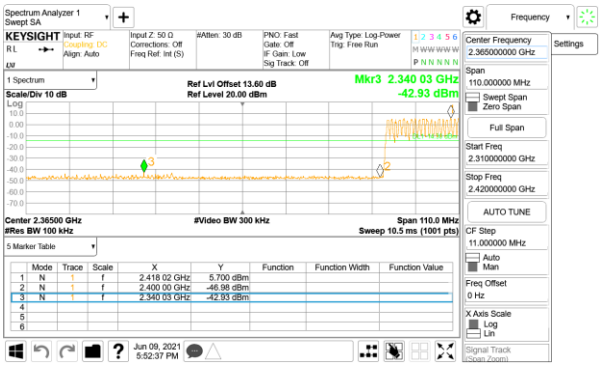
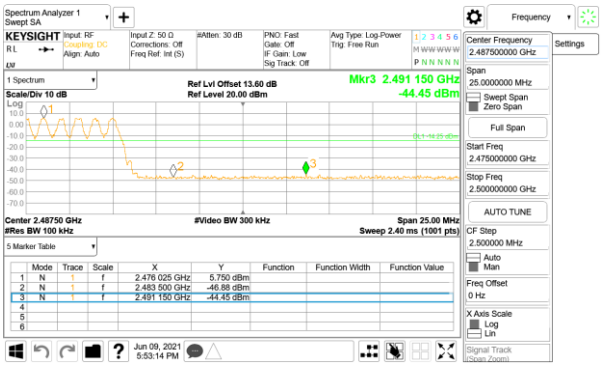
Temperature:	25.8℃	**Tested by:**	Jack Chen
Humidity:	46.3% RH	**Test date:**	June 8 ~ 28, 2021

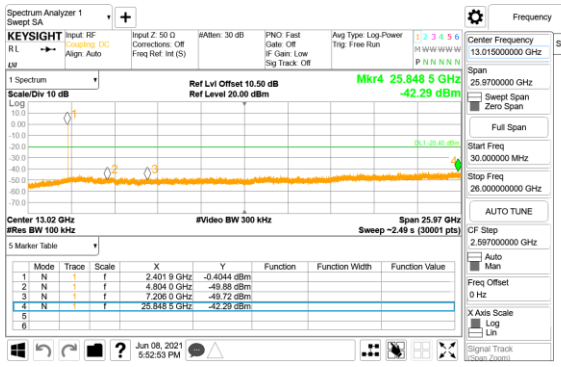
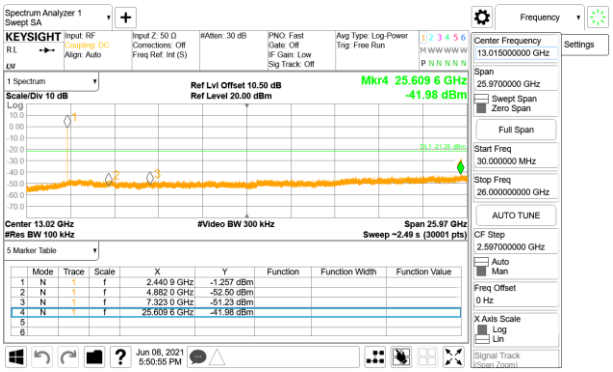
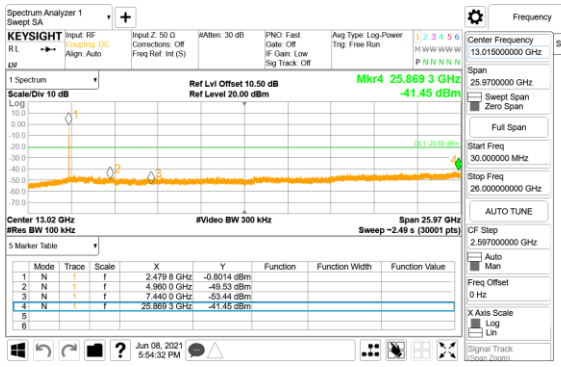
Test Data

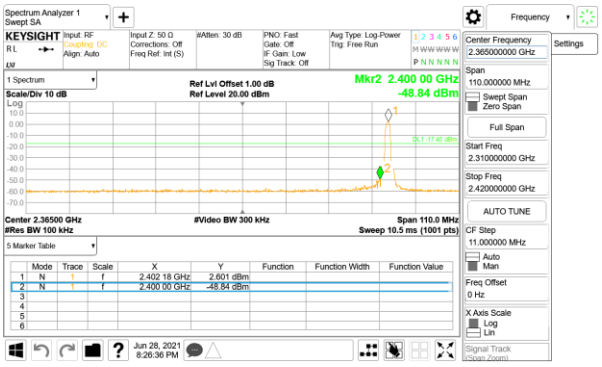
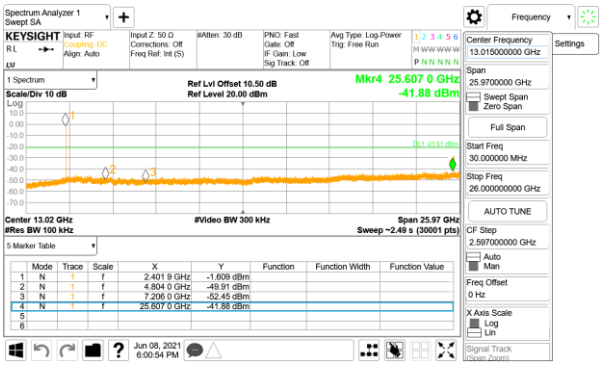
GFSK_BDR-1Mbps mode Low CH	
Band Edge	**Spurious Emission 30MHz-25GHz**
	

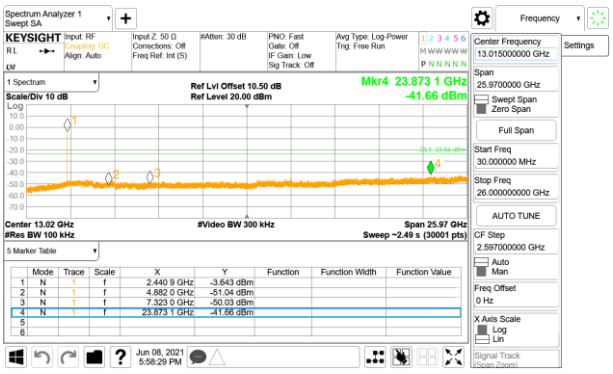
GFSK_BDR-1Mbps mode Mid CH	
Spurious Emission 30MHz-25GHz	
	

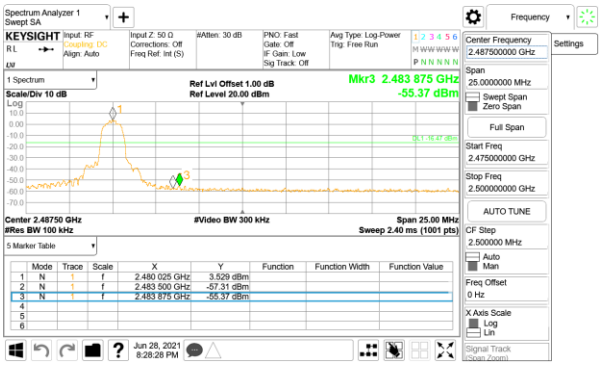
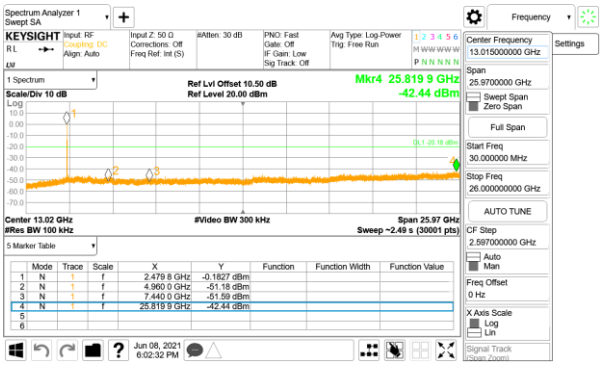
GFSK_BDR-1Mbps mode High CH	
Band Edge	**Spurious Emission 30MHz-25GHz**
	

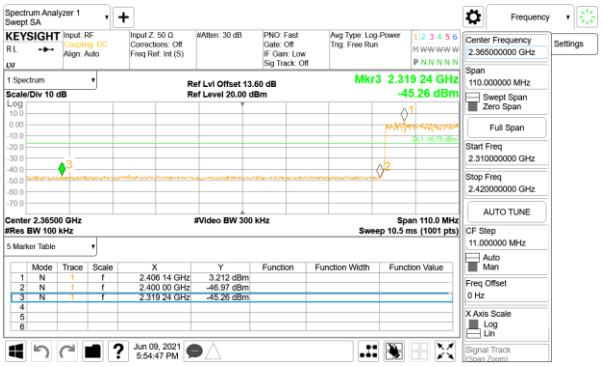
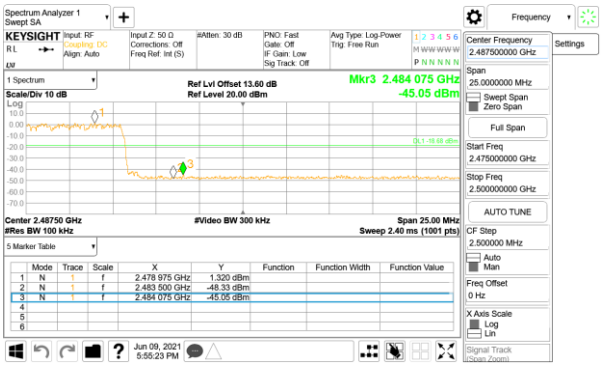
GFSK_BDR-1Mbps Hopping mode	
Low Band Edge	**High Band Edge**
	

π /4 DQPSK (2Mbps) mode	
Spurious Emission 30MHz-25GHz	**Spurious Emission 30MHz-25GHz**
Low CH	**Mid CH**
	
Spurious Emission 30MHz-25GHz	
High CH	
	

8DPSK_EDR-3Mbps mode Low CH	
Band Edge	**Spurious Emission 30MHz-25GHz**
	

8DPSK_EDR-3Mbps mode Mid CH
Spurious Emission 30MHz-25GHz


8DPSK_EDR-3Mbps mode High CH	
Band Edge	**Spurious Emission 30MHz-25GHz**
	

8DPSK_EDR-3Mbps Hopping mode	
Low Band Edge	**High Band Edge**
	

4.7 TIME OF OCCUPANCY (DWELL TIME)

4.7.1 Test Limit

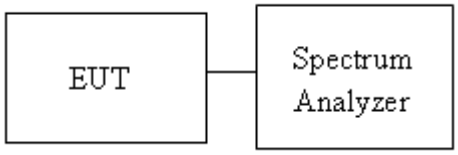
According to §15.247(a)(1)(iii)and RSS-247 section 5.1(d)

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

4.7.2 Test Procedure

1. EUT RF output port connected to the SA by RF cable.
2. Set center frequency of spectrum analyzer = operating frequency.
3. Set the spectrum analyzer as RBW, VBW=1MHz, Sweep = 1 ms

4.7.3 Test Setup



4.7.4 Test Result

Temperature:	25.8℃	**Tested by:**	Jack Chen
Humidity:	46.3% RH	**Test date:**	June 8, 2021

GFSK (1Mbps)

Channel	PACKET TYPE	Measurement Result (ms)	Limit (ms)	1/T (kHz)	VBW setting (kHz)
Mid	DH1	123.20	400ms	2.597	3.00
	DH3	260.80	400ms	0.613	1.00
	DH5	307.20	400ms	0.347	1.00

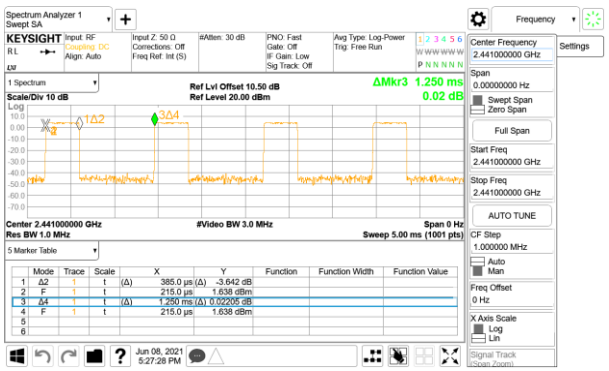
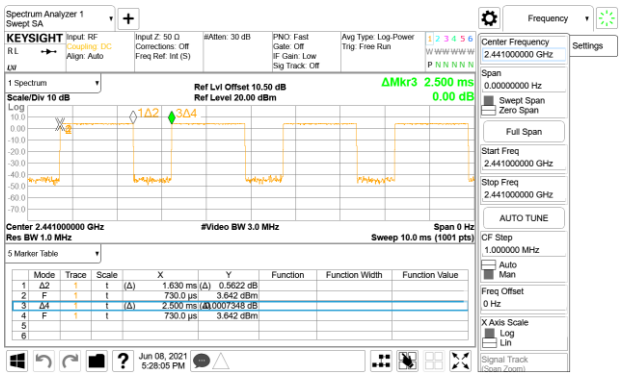
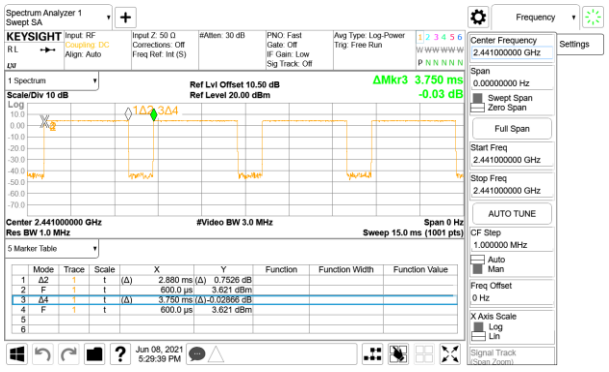
π/4 DQPSK (2Mbps)

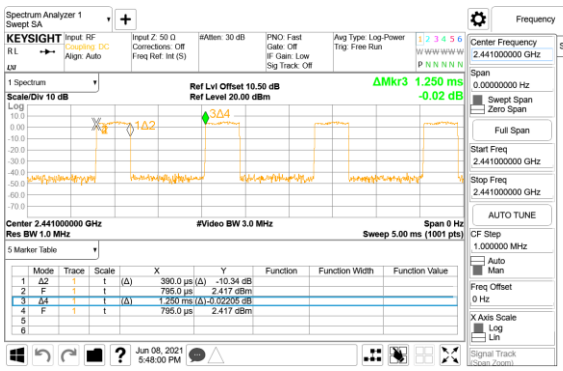
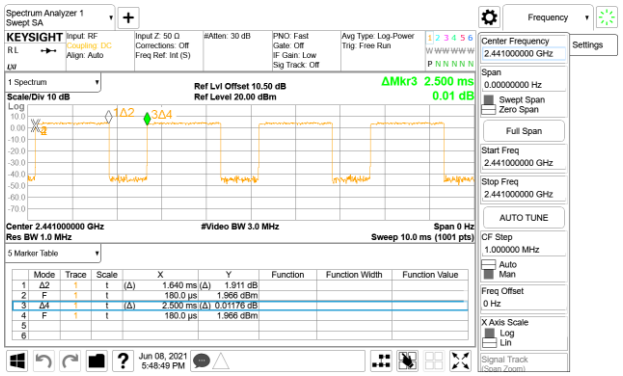
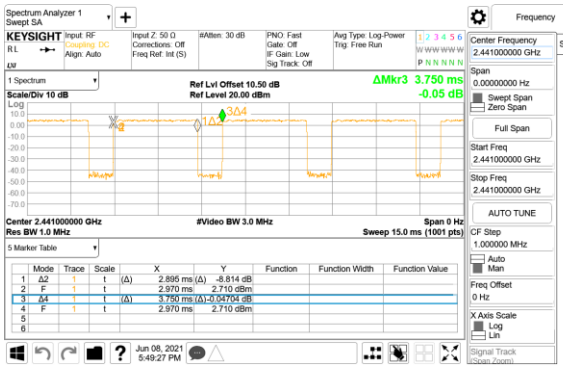
Channel	PACKET TYPE	Measurement Result (ms)	Limit (ms)	1/T (kHz)	VBW setting (kHz)
Mid	2DH1	124.80	400ms	2.564	3.00
	2DH3	262.40	400ms	0.610	1.00
	2DH5	308.80	400ms	0.345	1.00

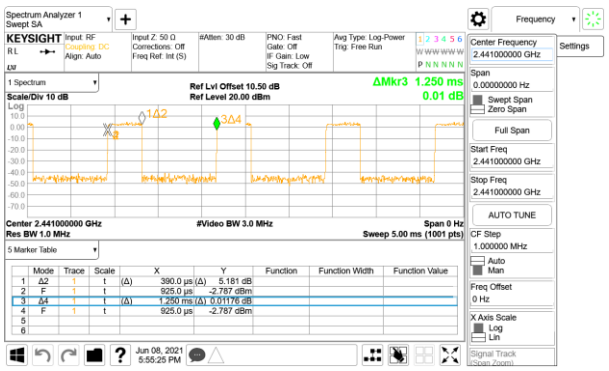
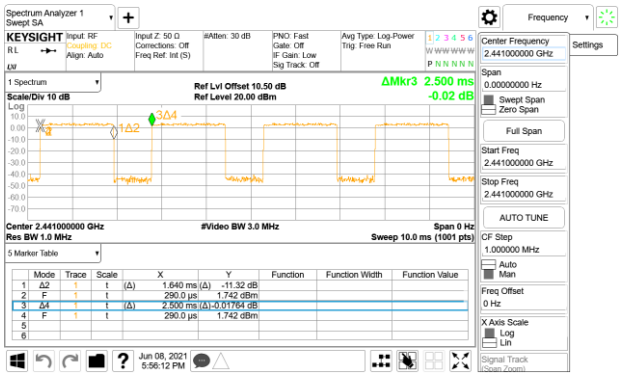
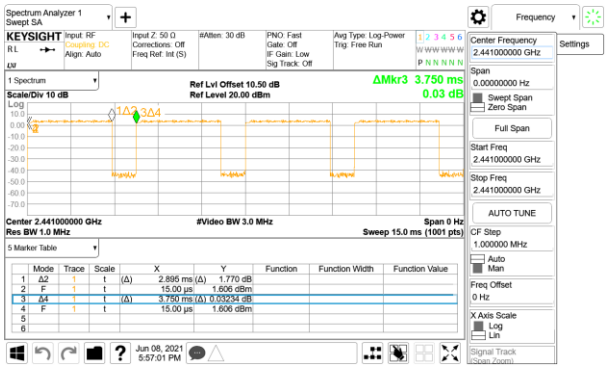
8-DPSK (3Mbps)

Channel	PACKET TYPE	Measurement Result (ms)	Limit (ms)	1/T (kHz)	VBW setting (kHz)
Mid	3DH1	124.80	400ms	2.564	3.00
	3DH3	262.40	400ms	0.610	1.00
	3DH5	308.80	400ms	0.345	1.00

Test Data

Time of Occupancy (Dwell Time)	
BDR-1Mbps-DH1	**BDR-1Mbps-DH3**
	
BDR-1Mbps-DH5	
	

π /4 DQPSK (2Mbps)-2DH1	π /4 DQPSK (2Mbps)-2DH3
	
π /4 DQPSK (2Mbps)-2DH5	
	

EDR-3Mbps-DH1	EDR-3Mbps-DH3
	
EDR-3Mbps-DH5	
	

4.8 RADIATION BANDEDGE AND SPURIOUS EMISSION

4.8.1 Test Limit

FCC according to §15.247(d), §15.209 and §15.205,

In any 100 kHz bandwidth outside the authorized frequency band, all harmonic and spurious must be least 20 dB below the highest emission level with the authorized frequency band. Radiation emission which fall in the restricted bands must also follow the FCC section 15.209 as below limit in table.

Below 30 MHz

Frequency	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/F (F in kHz)	300
490-1,705 kHz	24,000/F (F in kHz)	24,000/F (F in kHz)	30
1.705-30 MHz	30	N/A	30

Above 30 MHz

Frequency (MHz)	Field Strength microvolts/m at 3 metres (watts, e.i.r.p.)	
	Transmitters	Receivers
30-88	100 (3 nW)	100 (3 nW)
88-216	150 (6.8 nW)	150 (6.8 nW)
216-960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

Remark:
Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

IC according to RSS-247 section 5.5, RSS-Gen, Section 8.9 and 8.10

RSS-Gen Table 3 and Table 5 – General Field Strength Limits for Transmitters and Receivers at Frequencies Above 30 MHz (Note)

Frequency (MHz)	Field Strength microvolts/m at 3 metres (watts, e.i.r.p.)	
	Transmitters	Receivers
30-88	100 (3 nW)	100 (3 nW)
88-216	150 (6.8 nW)	150 (6.8 nW)
216-960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

Note: Measurements for compliance with the limits in table 3 may be performed at distances other than 3 metres, in accordance with Section 6.6.

RSS-Gen Table 6: General Field Strength Limits for Transmitters at Frequencies Below 30 MHz (Transmit)

Frequency	Magnetic field strength (H-Field) (μA/m)	Measurement Distance (m)
9-490 kHz Note	6.37/F (F in kHz)	300
490-1,705 kHz	63.7/F (F in kHz)	30
1.705-30 MHz	0.08	30

Note: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

4.8.2 Test Procedure

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10: 2013, and the EUT set in a continuous mode.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.

3. Span shall wide enough to full capture the emission measured. The SA from 9kHz to 26.5GHz set to the low, Mid and High channels with the EUT transmit.

Note: No emission found between lowest internal used/generated frequency to 30MHz(9KHz~30MHz)

4. For harmonic, the worst case of output power was BDR-1Mbps. Therefore only BDR-1Mbps record in the report.

5. The SA setting following：

(1) Below 1G：RBW = 100kHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.

(2) Above 1G：

(2.1) For Peak measurement：RBW = 1MHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.

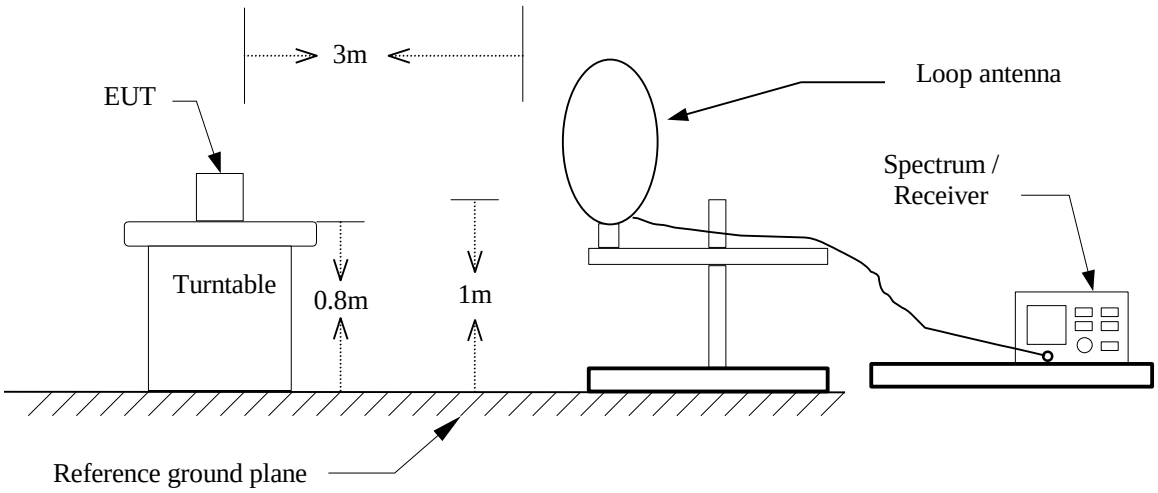
(2.2) For Average measurement：RBW = 1MHz, VBW

˙If Duty Cycle ≥ 98%, VBW=10Hz.

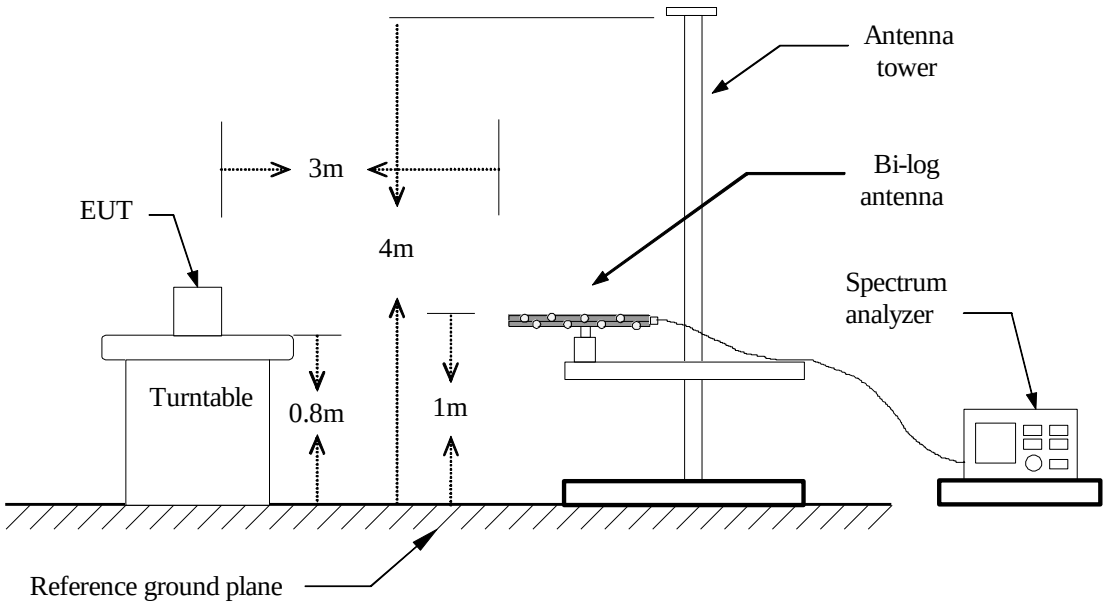
˙If Duty Cycle < 98%, VBW≥1/T.

4.8.3 Test Setup

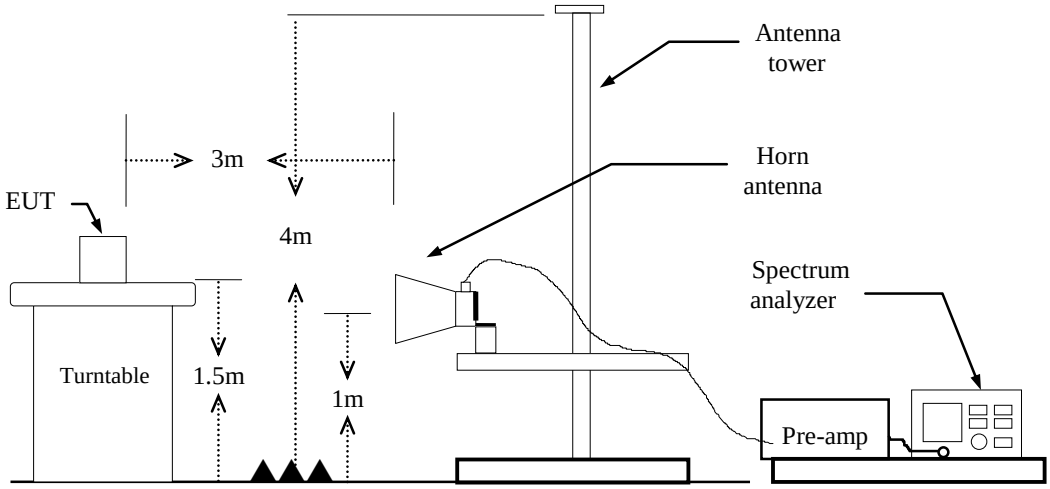
9kHz ~ 30MHz



30MHz ~ 1GHz



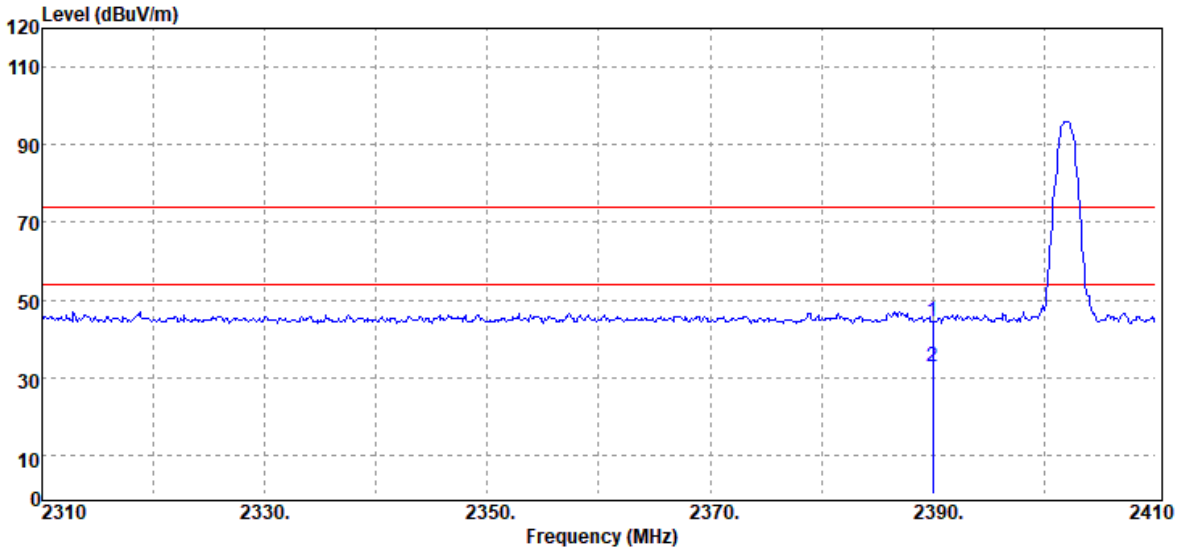
Above 1 GHz



4.8.4 Test Result

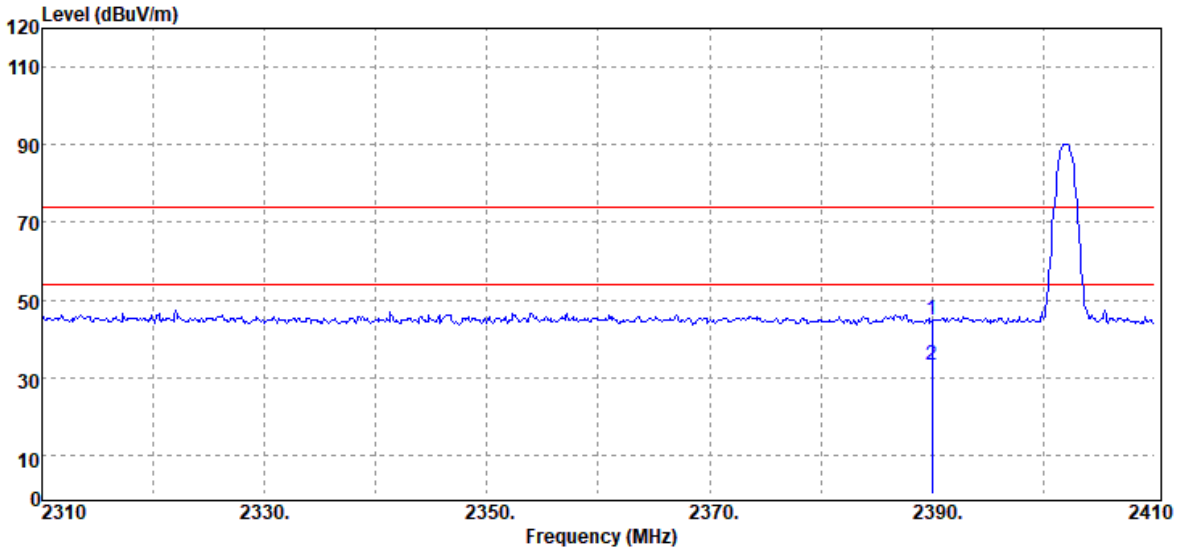
Band Edge Test Data

Test Mode:	GFSK_BDR-1Mbps Low CH	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Band Edge	Test Date	April 15, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak / Average		



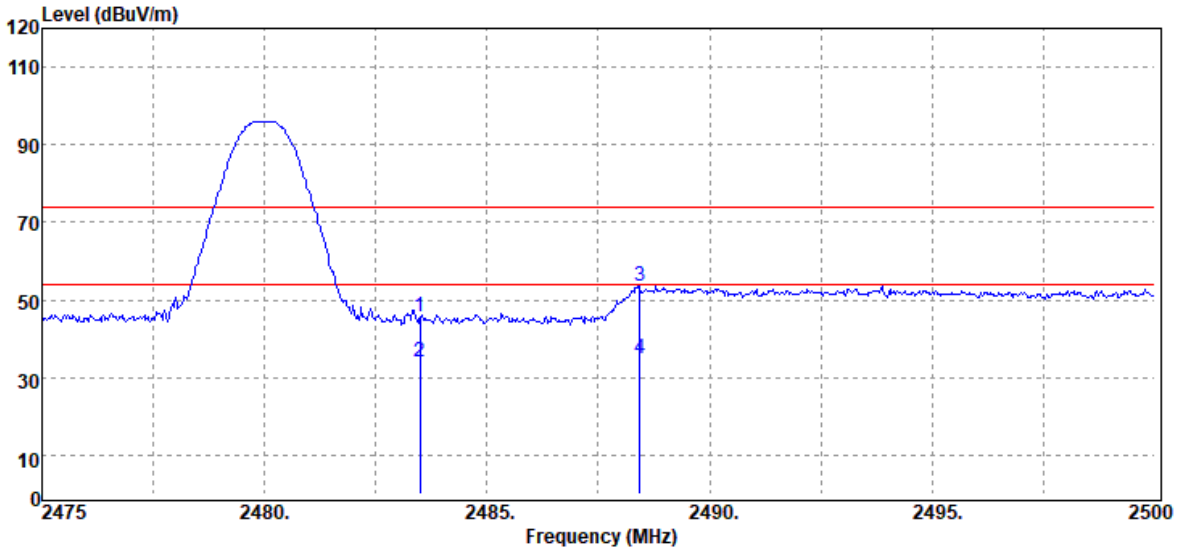
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2390.00	Peak	45.52	-1.00	44.52	74.00	-29.48
2390.00	Average	33.85	-1.00	32.85	54.00	-21.15

Test Mode:	GFSK_BDR-1Mbps Low CH	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Band Edge	Test Date	April 15, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak / Average		



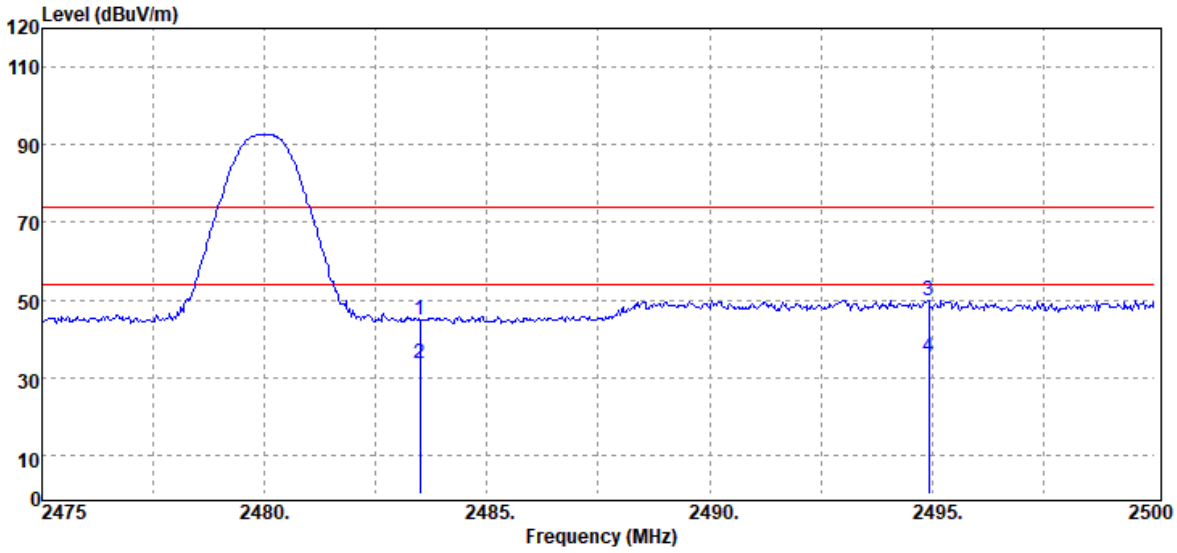
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2390.00	Peak	45.69	-1.00	44.69	74.00	-29.31
2390.00	Average	34.21	-1.00	33.21	54.00	-20.79

Test Mode:	GFSK_BDR-1Mbps High CH	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Band Edge	Test Date	April 15, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak / Average		



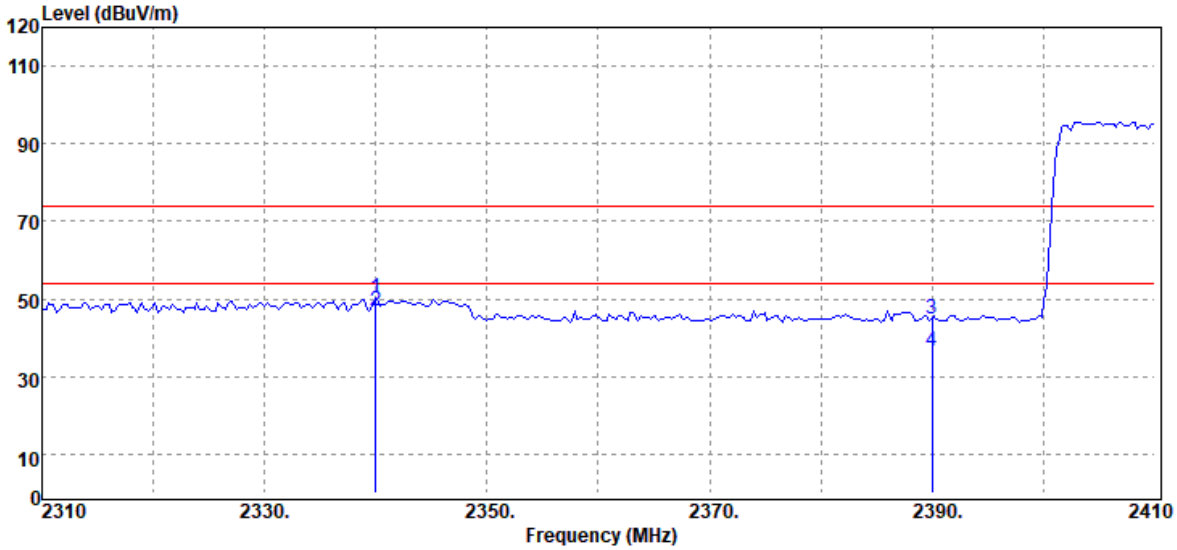
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2483.50	Peak	46.32	-0.66	45.66	74.00	-28.34
2483.50	Average	34.72	-0.66	34.06	54.00	-19.94
2488.43	Peak	54.29	-0.63	53.66	74.00	-20.34
2488.43	Average	35.66	-0.63	35.03	54.00	-18.97

Test Mode:	GFSK_BDR-1Mbps High CH	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Band Edge	Test Date	April 15, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak / Average		



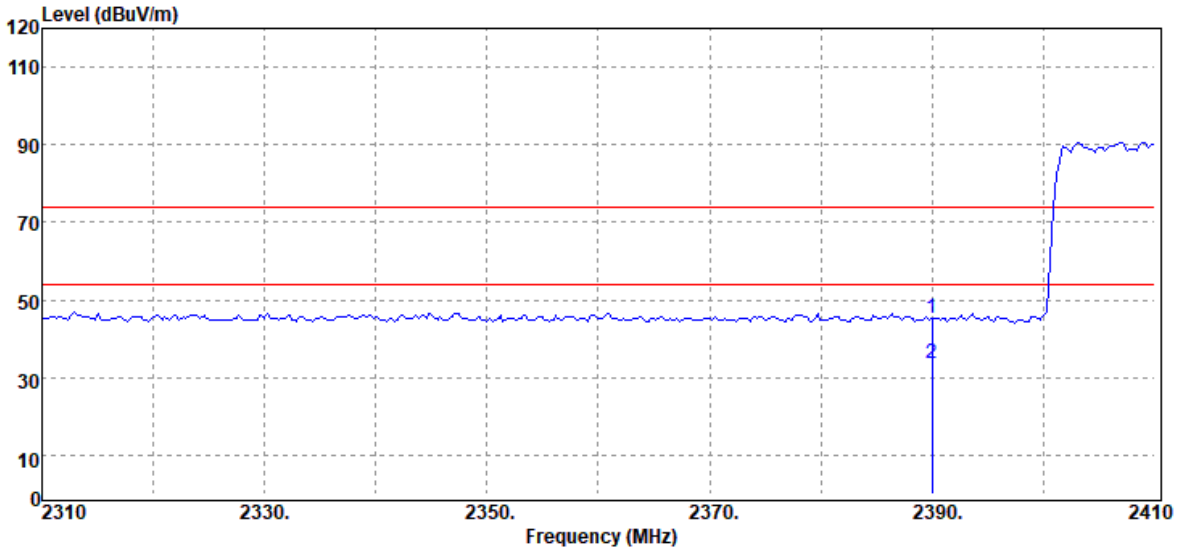
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2483.50	Peak	45.35	-0.66	44.69	74.00	-29.31
2483.50	Average	34.28	-0.66	33.62	54.00	-20.38
2494.93	Peak	50.55	-0.59	49.96	74.00	-24.04
2494.93	Average	35.85	-0.59	35.26	54.00	-18.74

Test Mode:	GFSK_BDR-1Mbps Low CH Hopping	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Band Edge	Test Date	April 15, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak / Average		



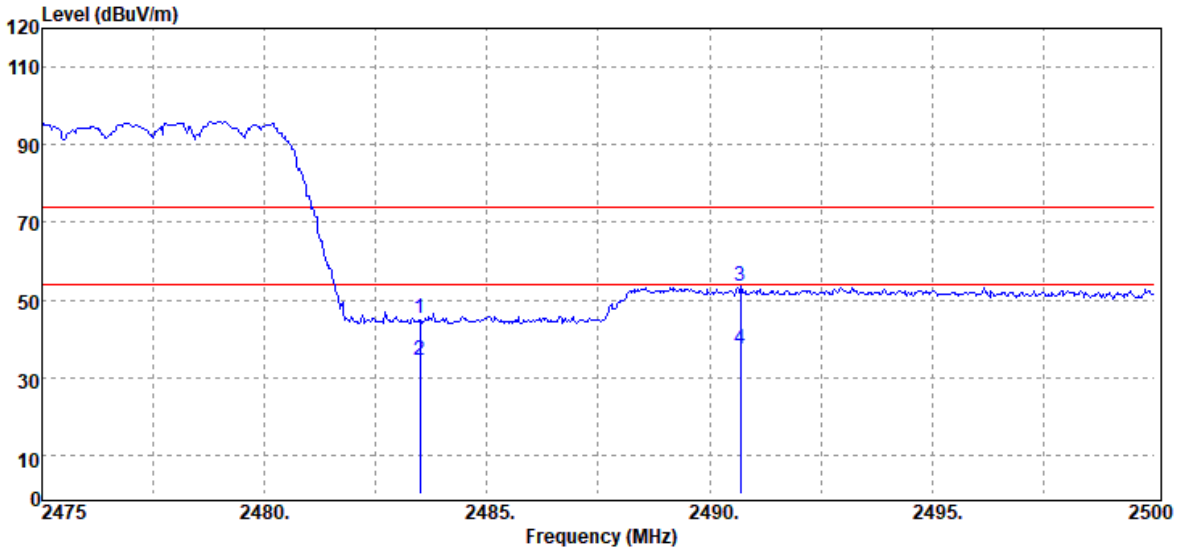
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2340.02	Peak	51.19	-1.05	50.14	74.00	-23.86
2340.02	Average	47.87	-1.05	46.82	54.00	-7.18
2390.00	Peak	45.92	-1.00	44.92	74.00	-29.08
2390.00	Average	37.35	-1.00	36.35	54.00	-17.65

Test Mode:	GFSK_BDR-1Mbps Low CH Hopping	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Band Edge	Test Date	April 15, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak / Average		



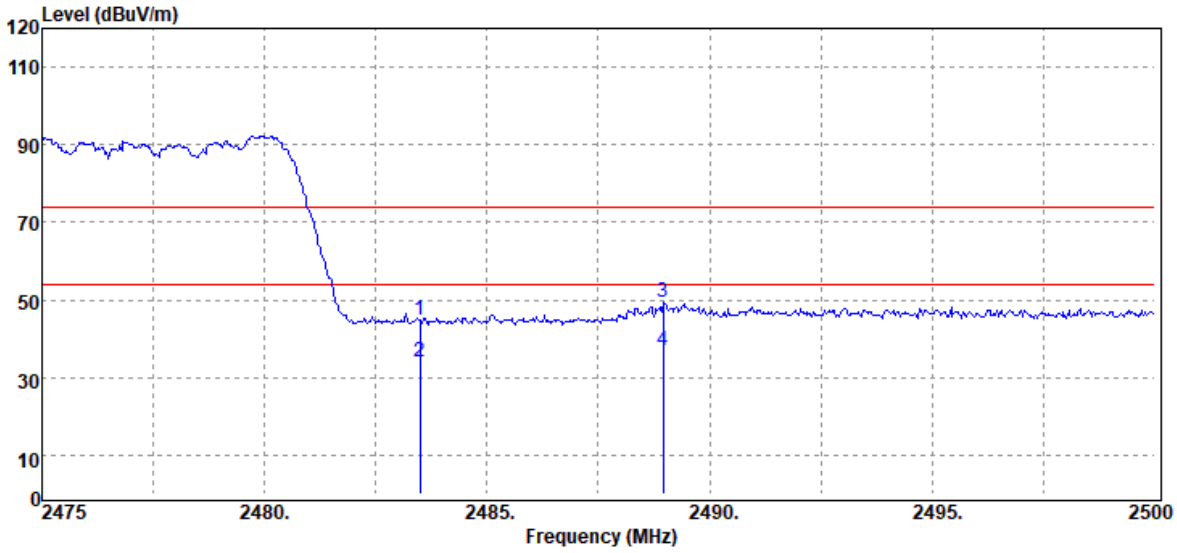
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2390.00	Peak	46.14	-1.00	45.14	74.00	-28.86
2390.00	Average	34.61	-1.00	33.61	54.00	-20.39

Test Mode:	GFSK_BDR-1Mbps High CH Hopping	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Band Edge	Test Date	April 15, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak / Average		



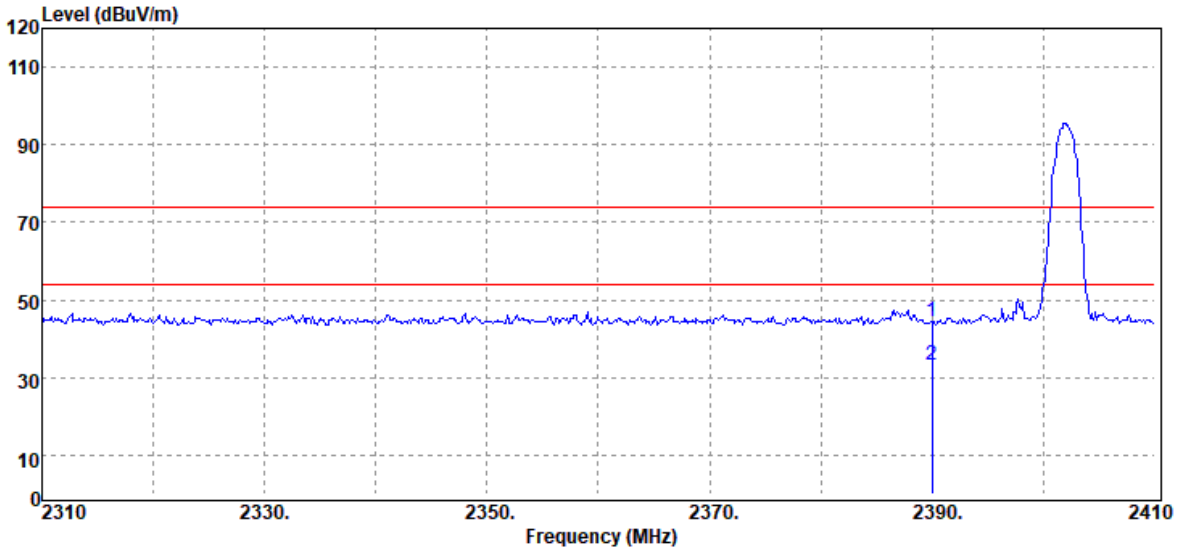
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2483.50	Peak	45.86	-0.66	45.20	74.00	-28.80
2483.50	Average	34.98	-0.66	34.32	54.00	-19.68
2490.70	Peak	54.02	-0.61	53.41	74.00	-20.59
2490.70	Average	38.10	-0.61	37.49	54.00	-16.51

Test Mode:	GFSK_BDR-1Mbps High CH Hopping	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Band Edge	Test Date	April 15, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak / Average		



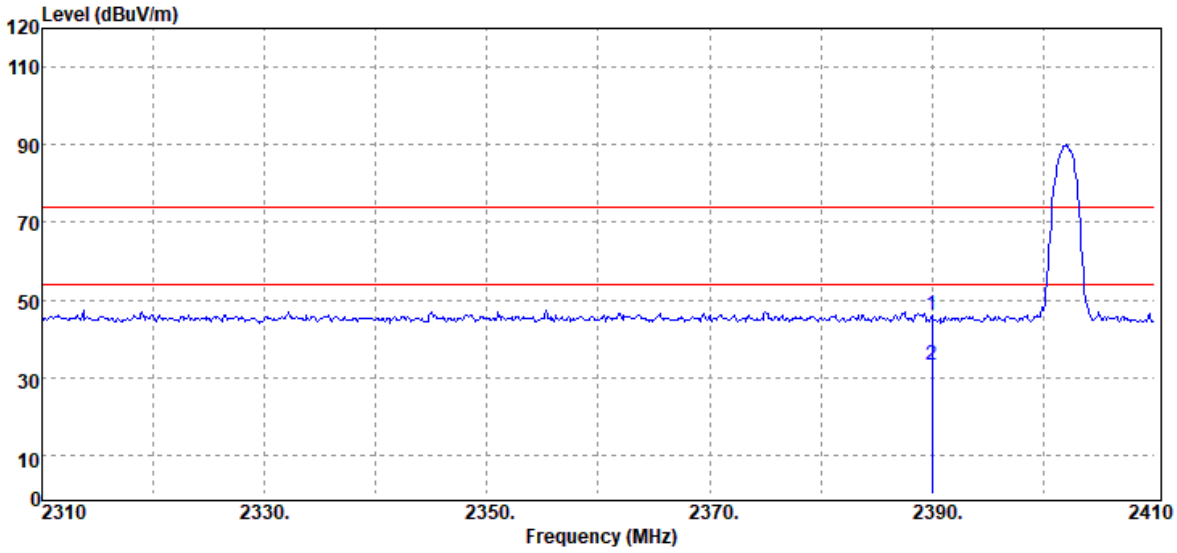
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2483.50	Peak	45.37	-0.66	44.71	74.00	-29.29
2483.50	Average	34.75	-0.66	34.09	54.00	-19.91
2488.95	Peak	50.13	-0.62	49.51	74.00	-24.49
2488.95	Average	37.57	-0.62	36.95	54.00	-17.05

Test Mode:	8DPSK_EDR-3Mbps Low CH	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Band Edge	Test Date	April 15, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak / Average		



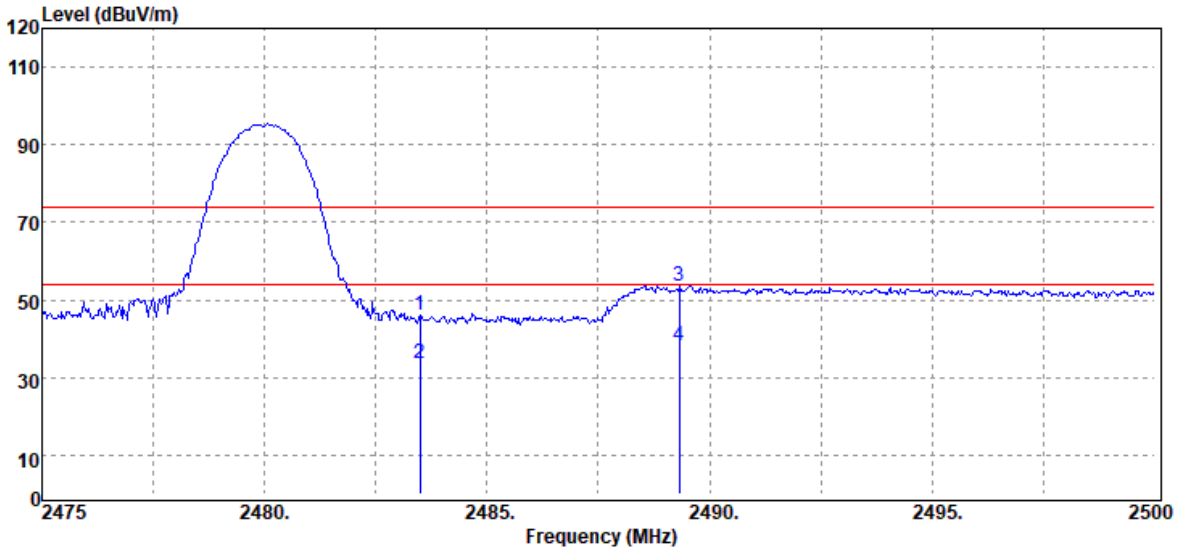
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2390.00	Peak	45.46	-1.00	44.46	74.00	-29.54
2390.00	Average	34.37	-1.00	33.37	54.00	-20.63

Test Mode:	8DPSK_EDR-3Mbps Low CH	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Band Edge	Test Date	April 15, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak / Average		



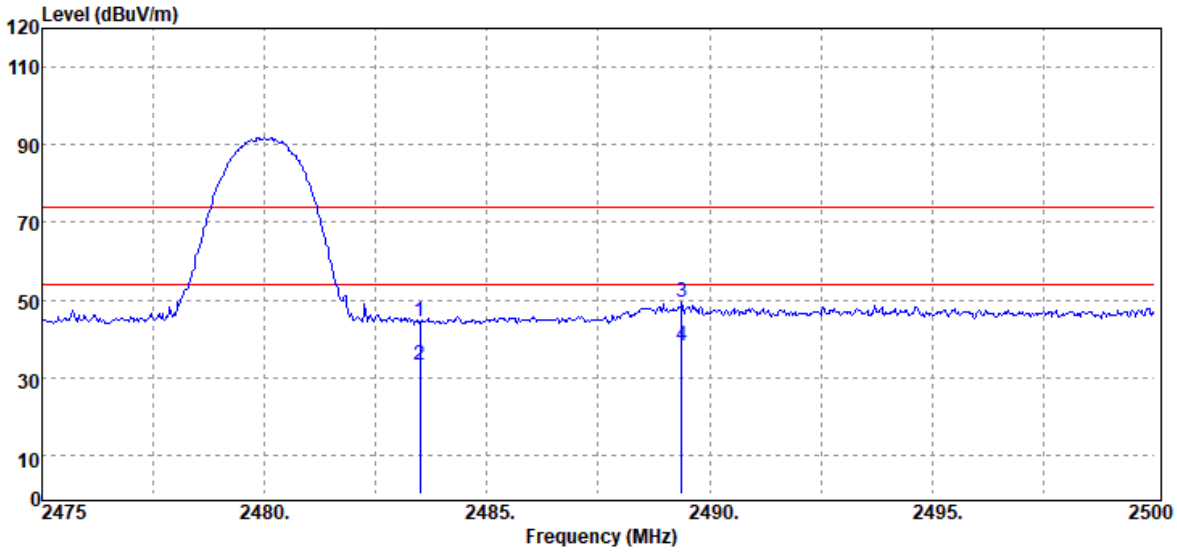
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2390.00	Peak	46.98	-1.00	45.98	74.00	-28.02
2390.00	Average	34.12	-1.00	33.12	54.00	-20.88

Test Mode:	8DPSK_EDR-3Mbps High CH	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Band Edge	Test Date	April 15, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak / Average		



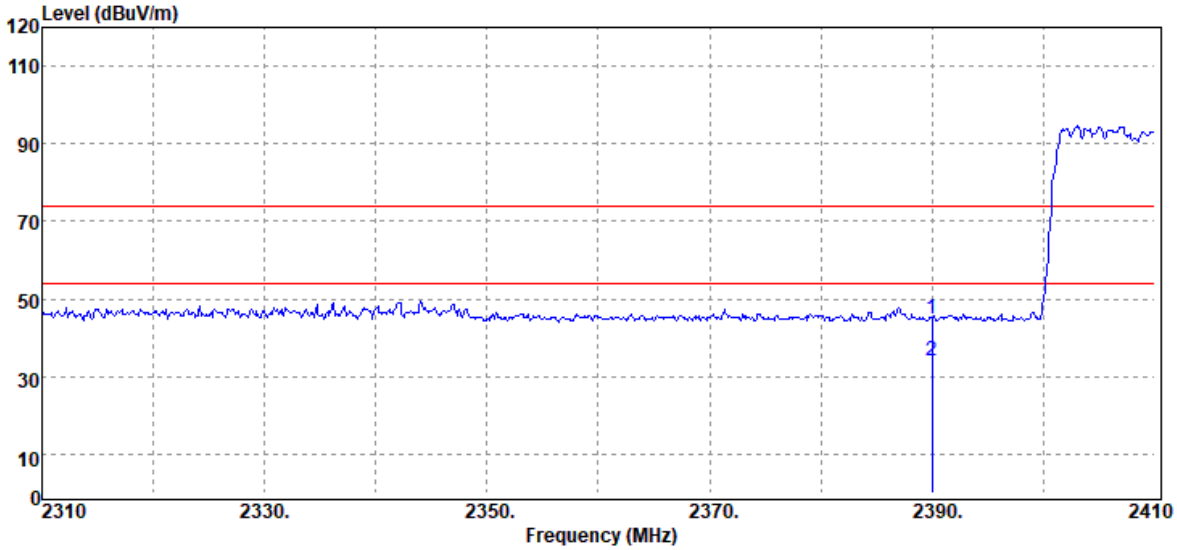
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2483.50	Peak	46.71	-0.66	46.05	74.00	-27.95
2483.50	Average	34.26	-0.66	33.60	54.00	-20.40
2489.33	Peak	54.34	-0.61	53.73	74.00	-20.27
2489.33	Average	38.71	-0.61	38.10	54.00	-15.90

Test Mode:	8DPSK_EDR-3Mbps High CH	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Band Edge	Test Date	April 15, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak / Average		



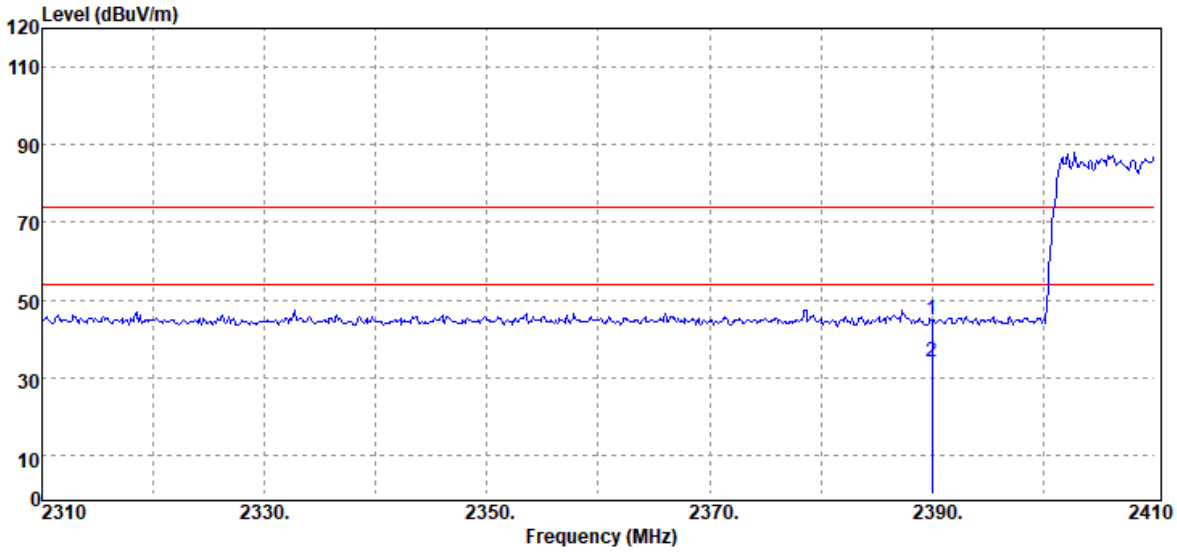
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2483.50	Peak	45.10	-0.66	44.44	74.00	-29.56
2483.50	Average	34.08	-0.66	33.42	54.00	-20.58
2489.38	Peak	49.96	-0.61	49.35	74.00	-24.65
2489.38	Average	38.81	-0.61	38.20	54.00	-15.80

Test Mode:	8DPSK_EDR-3Mbps Low CH Hopping	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Band Edge	Test Date	April 15, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak / Average		



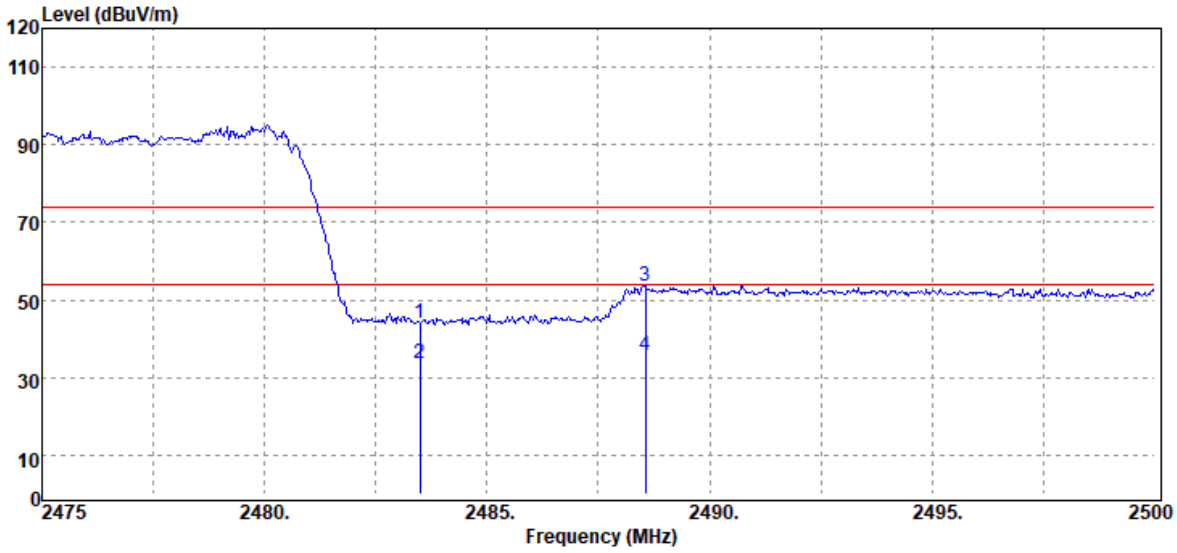
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2390.00	Peak	45.95	-1.00	44.95	74.00	-29.05
2390.00	Average	35.24	-1.00	34.24	54.00	-19.76

Test Mode:	8DPSK_EDR-3Mbps Low CH Hopping	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Band Edge	Test Date	April 15, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak / Average		



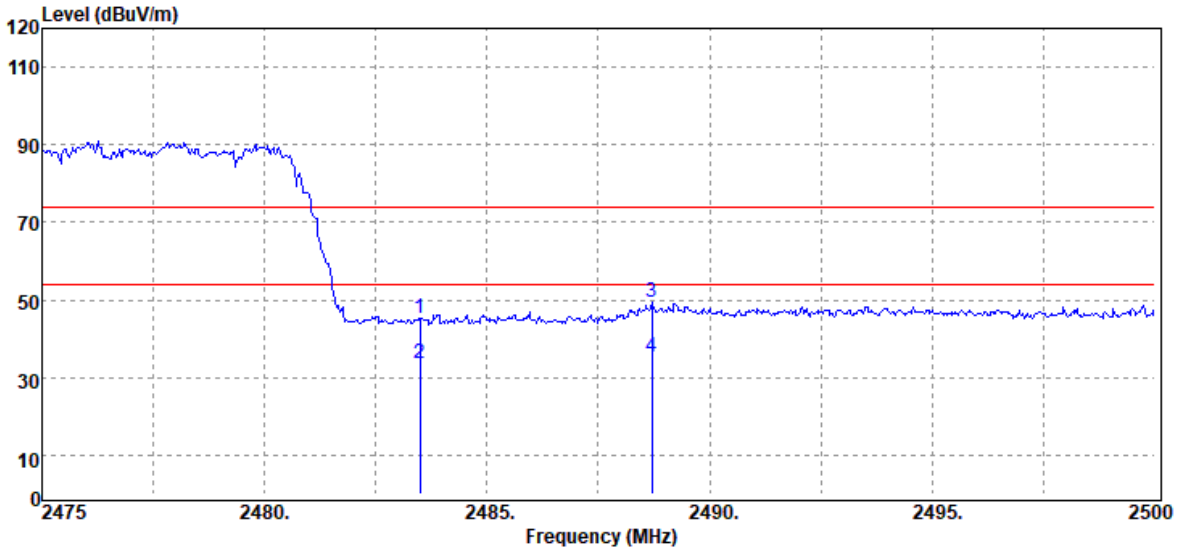
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2390.00	Peak	45.80	-1.00	44.80	74.00	-29.20
2390.00	Average	34.86	-1.00	33.86	54.00	-20.14

Test Mode:	8DPSK_EDR-3Mbps High CH Hopping	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Band Edge	Test Date	April 15, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak / Average		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2483.50	Peak	44.81	-0.66	44.15	74.00	-29.85
2483.50	Average	34.27	-0.66	33.61	54.00	-20.39
2488.55	Peak	54.32	-0.63	53.69	74.00	-20.31
2488.55	Average	36.14	-0.63	35.51	54.00	-18.49

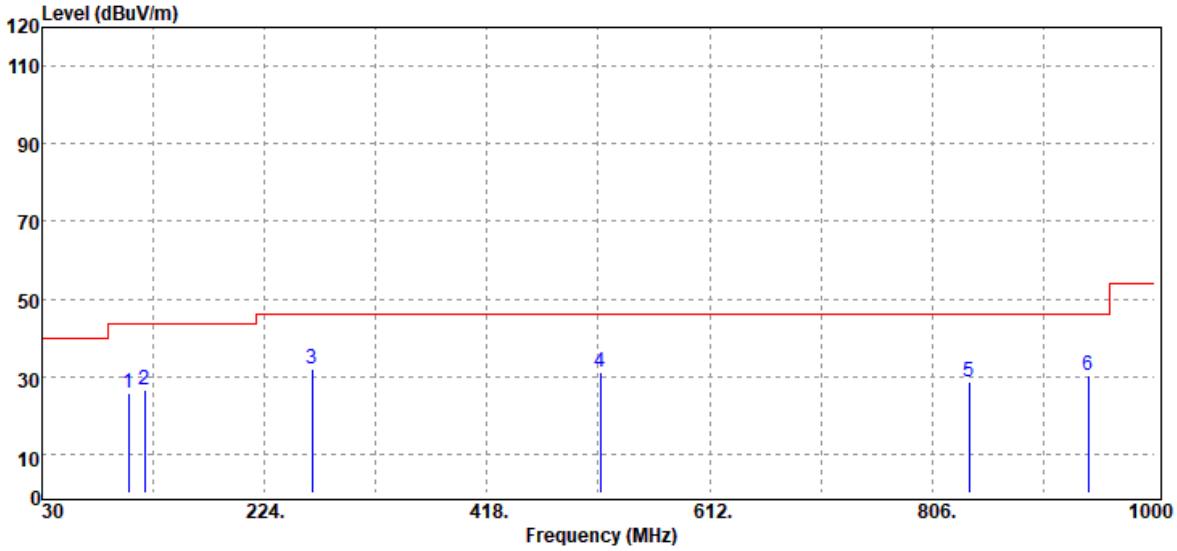
Test Mode:	8DPSK_EDR-3Mbps High CH Hopping	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Band Edge	Test Date	April 15, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak / Average		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
2483.50	Peak	45.81	-0.66	45.15	74.00	-28.85
2483.50	Average	34.34	-0.66	33.68	54.00	-20.32
2488.70	Peak	49.89	-0.63	49.26	74.00	-24.74
2488.70	Average	36.01	-0.63	35.38	54.00	-18.62

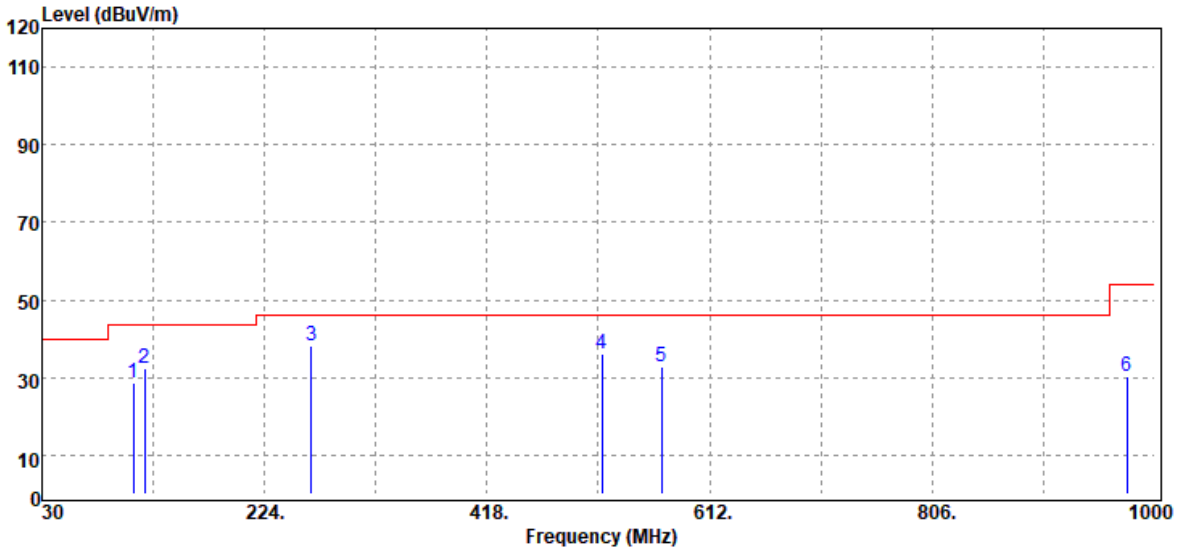
Below 1G Test Data

Test Mode:	BT Mode	Temp/Hum	22.4(℃)/ 62%RH
Test Item	30MHz-1GHz	Test Date	April 15, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
105.66	Peak	37.01	-11.23	25.78	43.50	-17.72
119.24	Peak	35.89	-9.23	26.66	43.50	-16.84
265.71	Peak	41.40	-9.33	32.07	46.00	-13.93
516.94	Peak	34.09	-3.14	30.95	46.00	-15.05
838.01	Peak	26.28	2.23	28.51	46.00	-17.49
941.80	Peak	26.59	3.66	30.25	46.00	-15.75

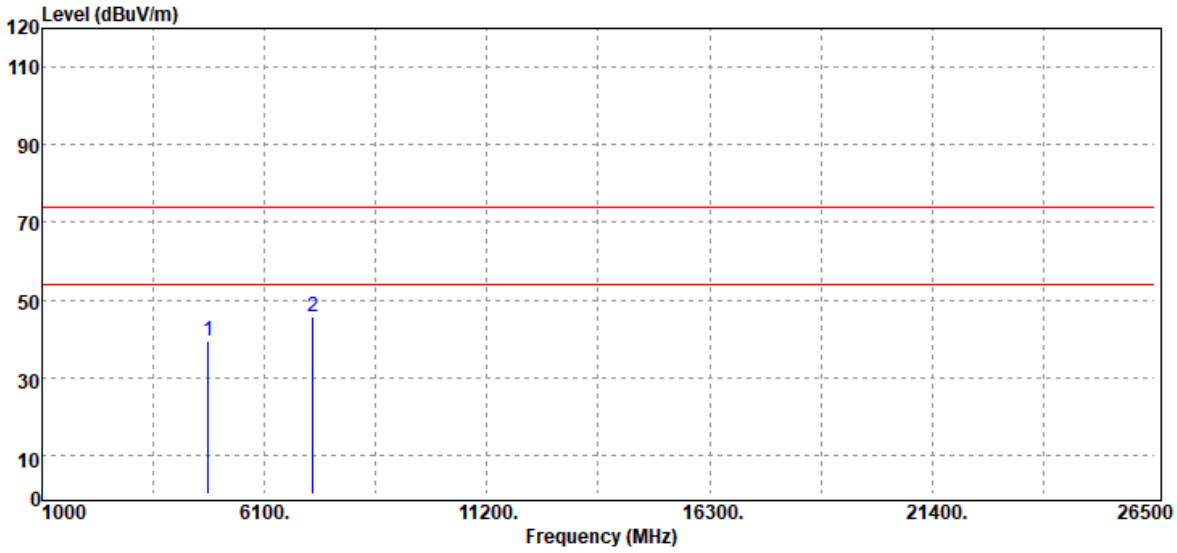
Test Mode:	BT Mode	Temp/Hum	22.4(℃)/ 62%RH
Test Item	30MHz-1GHz	Test Date	April 15, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
109.54	Peak	39.14	-10.52	28.62	43.50	-14.88
119.24	Peak	41.43	-9.23	32.20	43.50	-11.30
264.74	Peak	47.73	-9.43	38.30	46.00	-7.70
517.91	Peak	39.32	-3.11	36.21	46.00	-9.79
570.29	Peak	34.67	-2.05	32.62	46.00	-13.38
975.75	Peak	26.14	4.21	30.35	54.00	-23.65

Above 1G Test Data

Test Mode:	GFSK_BDR-1Mbps Low CH	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Harmonic	Test Date	April 15, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak		

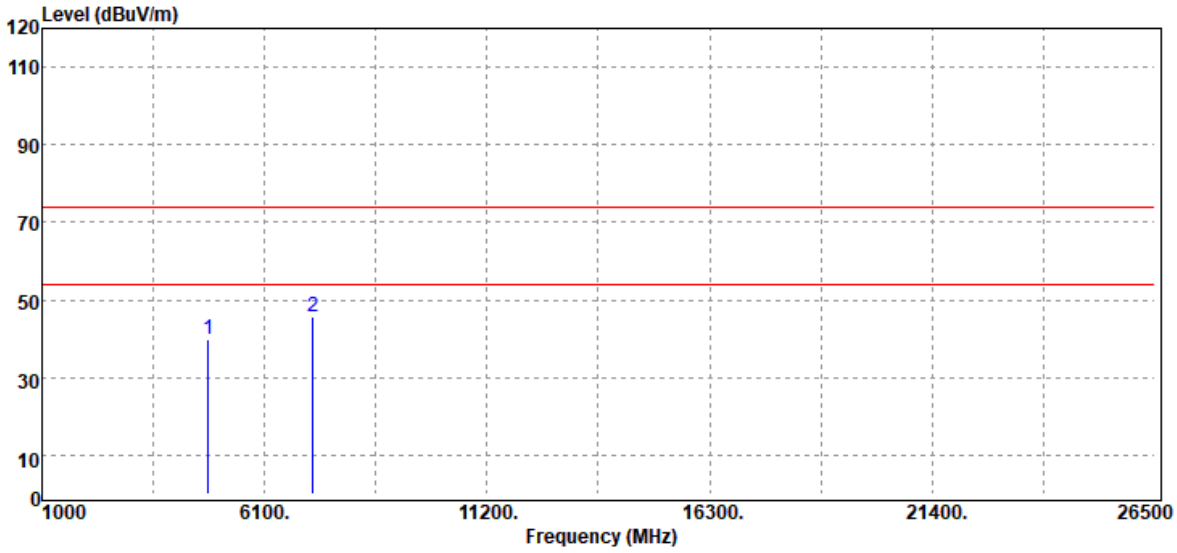


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4804.00	Peak	33.82	5.62	39.44	74.00	-34.56
7206.00	Peak	32.70	13.13	45.83	74.00	-28.17
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode:	GFSK_BDR-1Mbps Low CH	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Harmonic	Test Date	April 15, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak		

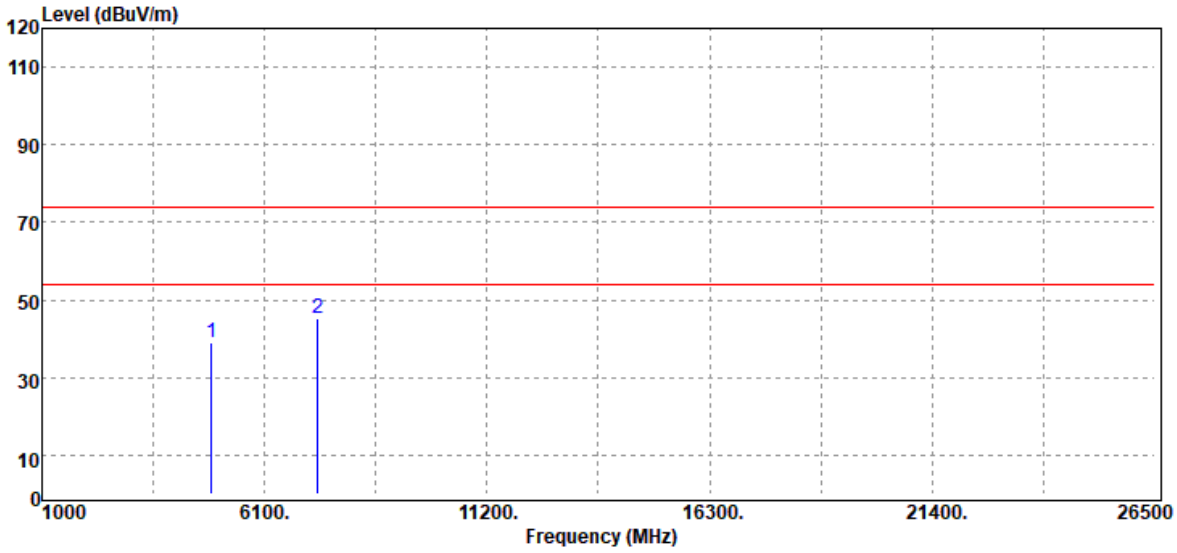


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4804.00	Peak	34.27	5.62	39.89	74.00	-34.11
7206.00	Peak	32.36	13.13	45.49	74.00	-28.51
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode:	GFSK_BDR-1Mbps Mid CH	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Harmonic	Test Date	April 15, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak		

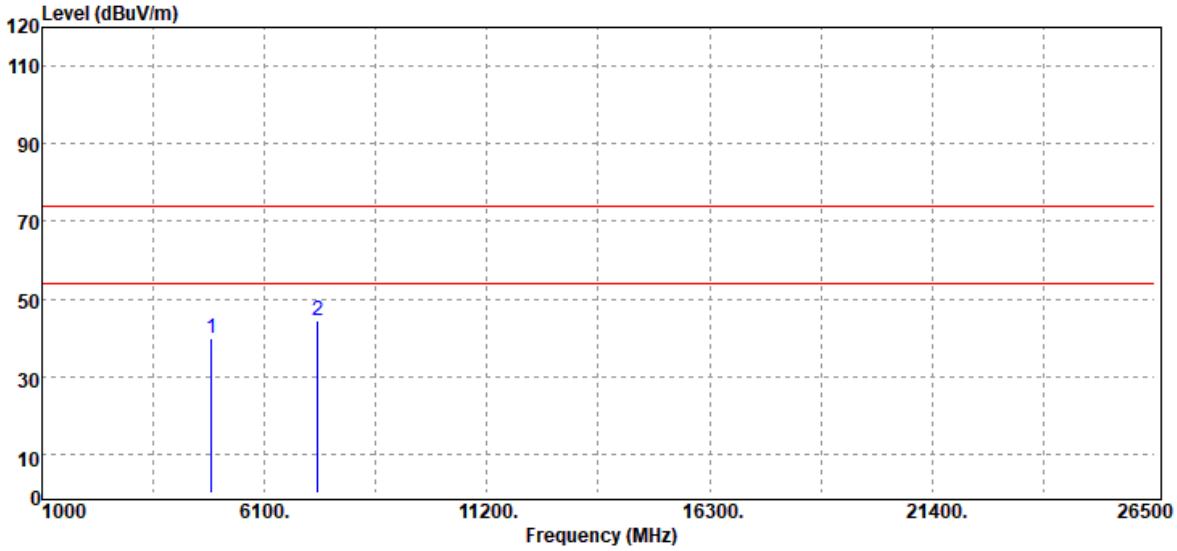


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4882.00	Peak	33.09	5.99	39.08	74.00	-34.92
7323.00	Peak	31.88	13.20	45.08	74.00	-28.92
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode:	GFSK_BDR-1Mbps Mid CH	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Harmonic	Test Date	April 15, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak		

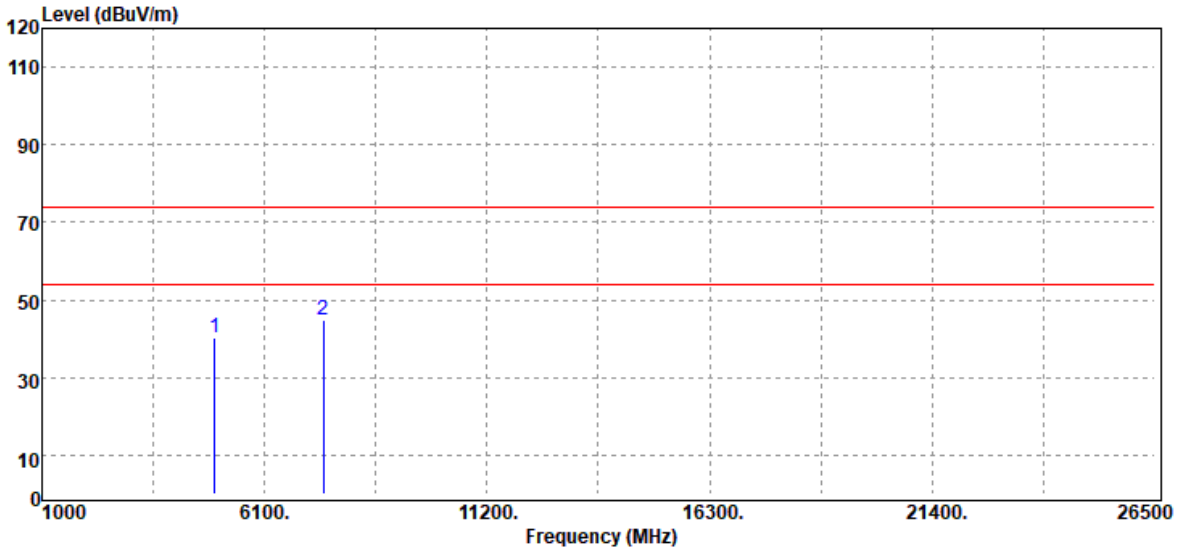


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4882.00	Peak	33.95	5.99	39.94	74.00	-34.06
7323.00	Peak	31.37	13.20	44.57	74.00	-29.43
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode:	GFSK_BDR-1Mbps High CH	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Harmonic	Test Date	April 15, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak		

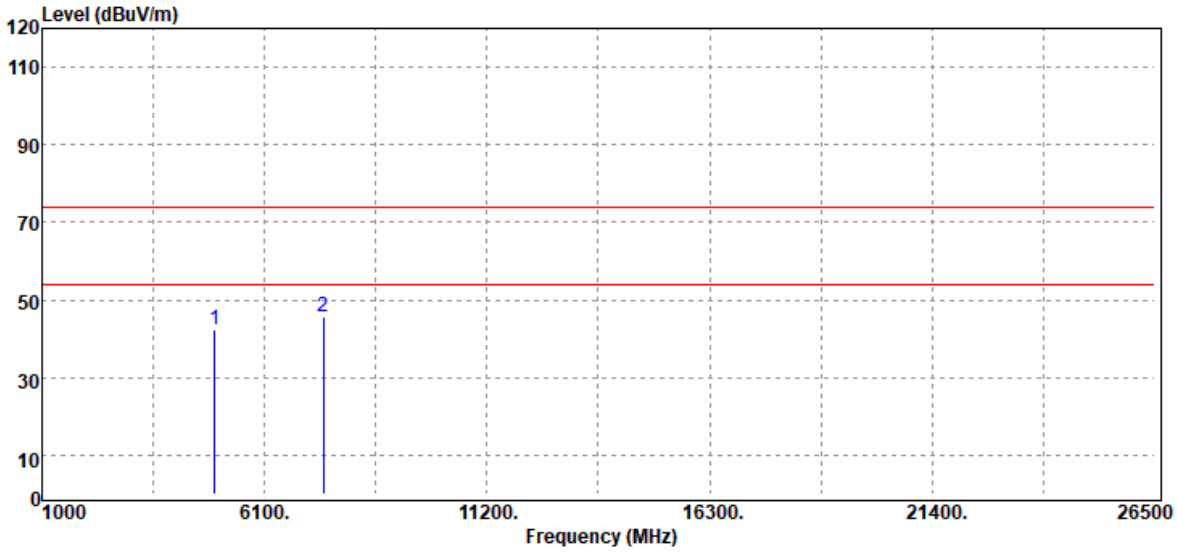


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4960.00	Peak	33.37	6.73	40.10	74.00	-33.90
7440.00	Peak	31.64	13.13	44.77	74.00	-29.23
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode:	GFSK_BDR-1Mbps High CH	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Harmonic	Test Date	April 15, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak		

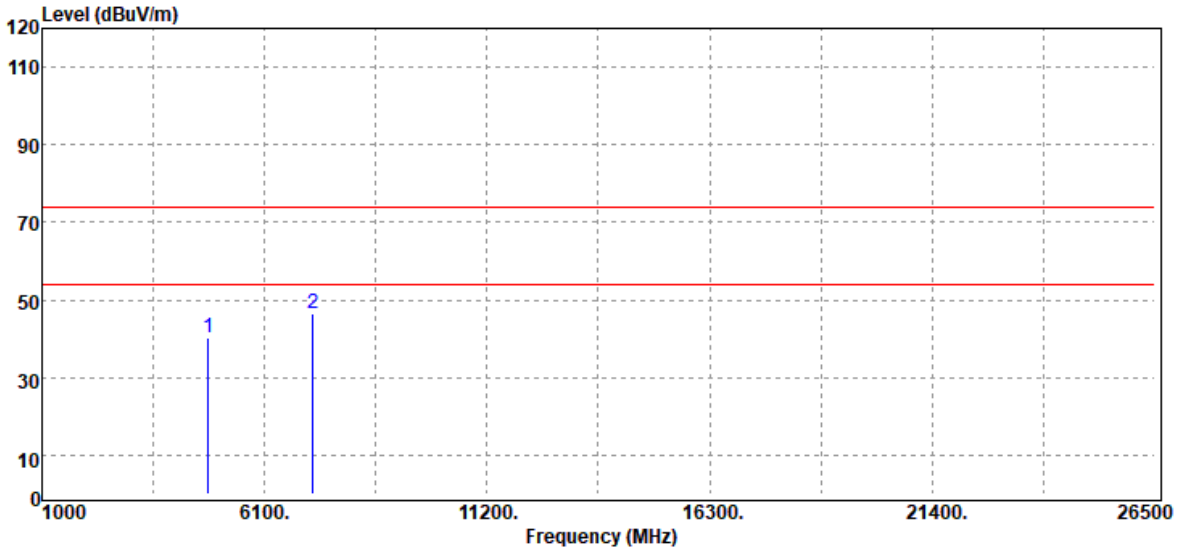


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4960.00	Peak	35.53	6.73	42.26	74.00	-31.74
7440.00	Peak	32.35	13.13	45.48	74.00	-28.52
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	8DPSK_EDR-3Mbps Low CH	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Harmonic	Test Date	April 15, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak		

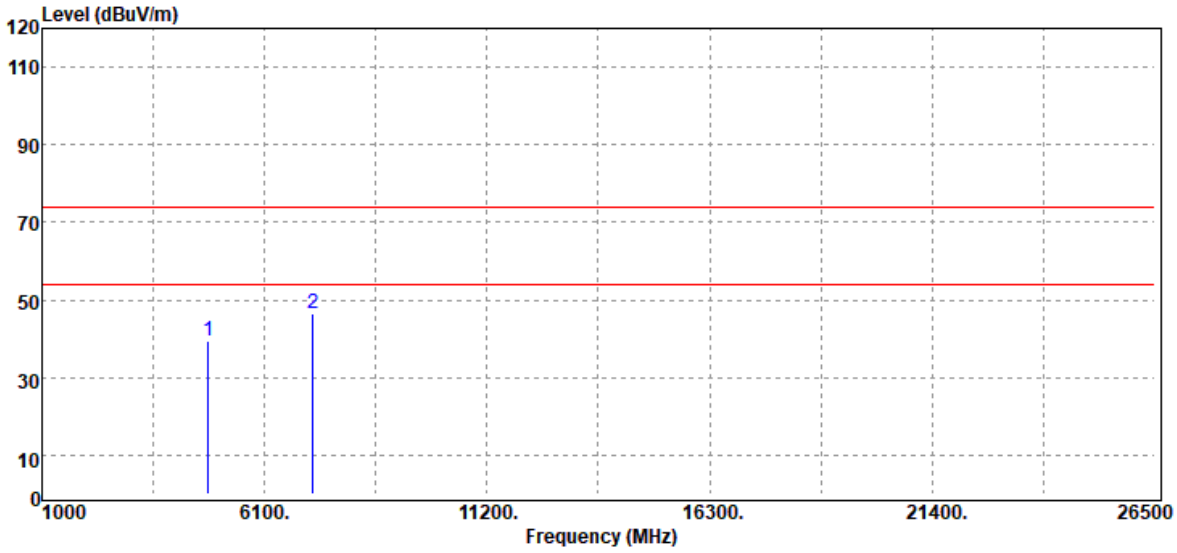


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4804.00	Peak	34.48	5.62	40.10	74.00	-33.90
7206.00	Peak	33.32	13.13	46.45	74.00	-27.55
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	8DPSK_EDR-3Mbps Low CH	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Harmonic	Test Date	April 15, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak		

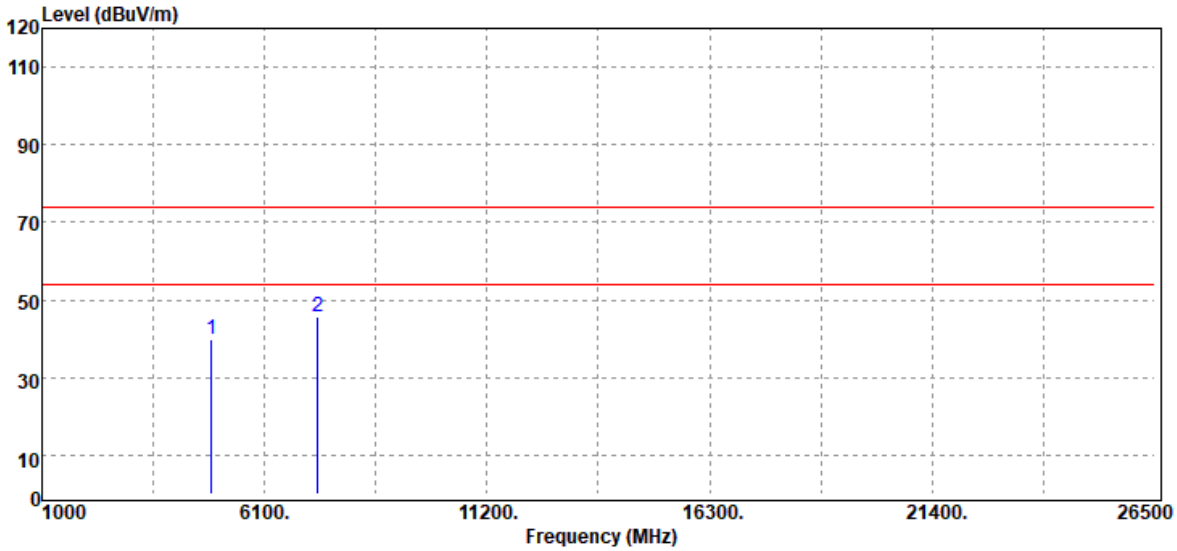


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4804.00	Peak	33.70	5.62	39.32	74.00	-34.68
7206.00	Peak	33.23	13.13	46.36	74.00	-27.64
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	8DPSK_EDR-3Mbps Mid CH	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Harmonic	Test Date	April 15, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak		

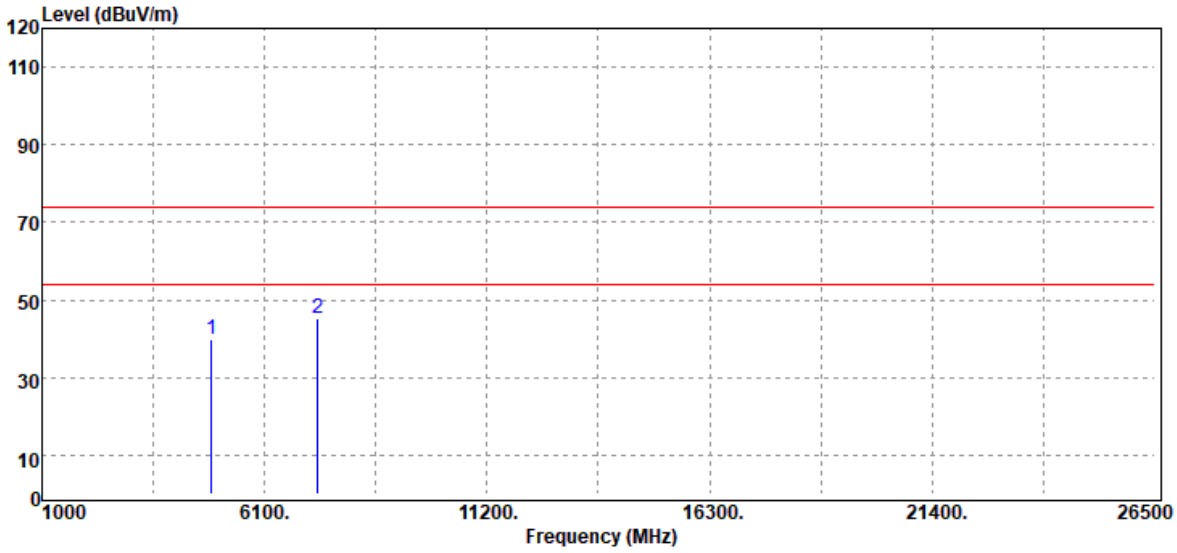


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4882.00	Peak	33.79	5.99	39.78	74.00	-34.22
7323.00	Peak	32.63	13.20	45.83	74.00	-28.17
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	8DPSK_EDR-3Mbps Mid CH	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Harmonic	Test Date	April 15, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak		

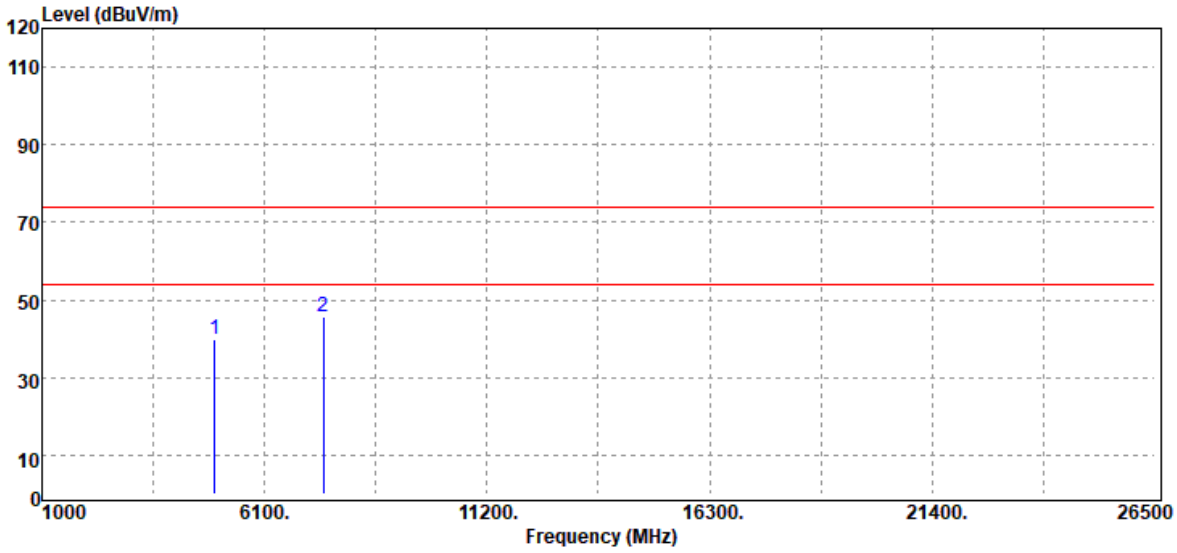


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4882.00	Peak	33.71	5.99	39.70	74.00	-34.30
7323.00	Peak	32.26	13.20	45.46	74.00	-28.54
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	8DPSK_EDR-3Mbps High CH	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Harmonic	Test Date	April 15, 2021
Polarize	Vertical	Test Engineer	Ray Li
Detector	Peak		

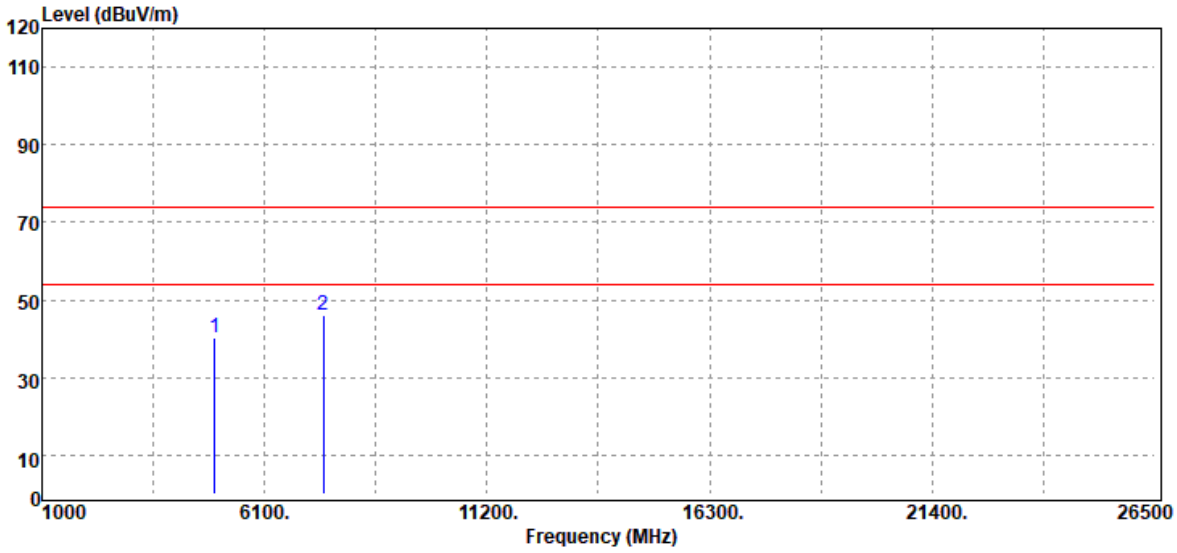


Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4960.00	Peak	32.97	6.73	39.70	74.00	-34.30
7440.00	Peak	32.51	13.13	45.64	74.00	-28.36
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit

Test Mode	8DPSK_EDR-3Mbps High CH	Temp/Hum	22.4(℃)/ 62%RH
Test Item	Harmonic	Test Date	April 15, 2021
Polarize	Horizontal	Test Engineer	Ray Li
Detector	Peak		



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
4960.00	Peak	33.68	6.73	40.41	74.00	-33.59
7440.00	Peak	32.80	13.13	45.93	74.00	-28.07
N/A						

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz,the EUT peak value was under average limit, therefore the Average value compliance with the average limit

- End of Test Report -