

Project No.: TM-2305000172P  
Report No.: TMWK2305001499KR

FCC ID: 2AKZA-IW416  
IC: 22364-IW416

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Rev.: 01

# 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	WiFi+Bluetooth 5.2 System on Module
Brand Name	TechNexion
Model No.	PIXI-IW416
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:



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Shawn Wu  
Supervisor

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.  
除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部份複製。

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**Revision History**

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	August 7, 2023	Initial Issue	ALL	Allison Chen
01	September 13, 2023	See the following Note Rev.(01)	P.53	Allison Chen

**Note:****Rev.(01)**

1. Modify test data in section 4.7.4.

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## 1. GENERAL INFORMATION

### 1.1 EUT INFORMATION

<b>Applicant</b>	TechNexion Ltd. 16F-5, No. 736, Zhongzheng Road, ZhongHe District, 23511, New Taipei City, Taiwan
<b>Manufacturer</b>	TechNexion Ltd. 16F-5, No. 736, Zhongzheng Road, ZhongHe District, 23511, New Taipei City, Taiwan
<b>Equipment</b>	WiFi+Bluetooth 5.2 System on Module
<b>Model Name</b>	PIXI-IW416
<b>Model Discrepancy</b>	N/A
<b>Brand Name</b>	TechNexion
<b>Received Date</b>	May 16, 2023
<b>Date of Test</b>	May 19 ~ June 27, 2023
<b>Power Supply</b>	Power from host system. (DC 3.3V)
<b>HW Version</b>	A1
<b>SW Version</b>	1.0

**Remark:**

1. For more details, please 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.

## 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

15.247(a)(1) that the Rx input bandwidths shift frequencies in synchronization with the transmitted signals.

15.247(g): In accordance with the Bluetooth Industry Standard, the system is designed to comply with all of the regulations in Section 15.247 when the transmitter is presented with a continuous data (or information) system.

15.247(h): In accordance with the Bluetooth Industry Standard, the system does not coordinate its channels selection/ hopping sequence with other frequency hopping systems for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters.

### 1.3 EUT CHANNEL INFORMATION

Frequency Range	2402MHz-2480MHz
Modulation Type	1. GFSK for BDR-1Mbps 2. $\pi/4$ -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 for test channels

Number of frequencies to be tested		
Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
<input type="checkbox"/> 1 MHz or less	1	Middle
<input type="checkbox"/> 1 MHz to 10 MHz	2	1 near top and 1 near bottom
<input checked="" type="checkbox"/> More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

### 1.4 ANTENNA INFORMATION

Antenna Specification	<input type="checkbox"/> PCB <input checked="" type="checkbox"/> PIFA <input checked="" type="checkbox"/> Dipole <input type="checkbox"/> Coils
Antenna Gain	1. PIFA Antenna Gain: 2.5 dBi 2. Dipole Antenna Gain: 4 dBi
Brand / Model	1. PIFA Antenna: TechNexion / VM2450-25523-OOX-180 2. Dipole Antenna: TechNexion / VM2450-ASSY1005
Antenna connector	MHF

**Notes:**

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 and RSS-Gen §6.8.

## 1.5 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	$\pm 2.213$ dB
Channel Bandwidth	$\pm 2.7$ %
RF output power (Power Meter + Power sensor)	$\pm 0.243$ dB
Power Spectral density	$\pm 2.739$ dB
Conducted Bandedge	$\pm 2.739$ dB
Conducted Spurious Emission	$\pm 2.742$ dB
Radiated Emission_9kHz-30MHz	$\pm 3.115$ dB
Radiated Emission_30MHz-200MHz	$\pm 4.071$ dB
Radiated Emission_200MHz-1GHz	$\pm 4.419$ dB
Radiated Emission_1GHz-6GHz	$\pm 5.023$ dB
Radiated Emission_6GHz-18GHz	$\pm 5.068$ dB
Radiated Emission_18GHz-26GHz	$\pm 3.349$ dB
Radiated Emission_26GHz-40GHz	$\pm 3.229$ dB

### 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.

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## 1.6 FACILITIES AND TEST LOCATION

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

AC Powerline Conducted Emission and Conducted:

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

Radiated emission 9kHz to 40GHz:

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

☒ No. 12, Ln. 116, Wugong 3rd Rd., Wugu Dist., New Taipei City, Taiwan 24803

CAB identifier: TW1309

Test site	Test Engineer	Remark
AC Conduction Room	Tony Chao	-
Radiation	Czerny Lin	-
RF Conducted	David Li	-

**Remark:** The lab has been recognized as the FCC accredited lab. under the KDB 974614 D01 and is listed in the FCC pubic Access Link (PAL) database, FCC Registration No. :444940, the FCC Designation No.:TW1309.

## 1.7 INSTRUMENT CALIBRATION

RF Conducted Test Site					
Name of Equipment	Manufacturer	Model	Serial Number	Cal Date	Cal Due
Power Sensor	Anritsu	MA2411B	1911386	2022-08-08	2023-08-07
Power Sensor	Anritsu	MA2411B	1911387	2022-08-08	2023-08-07
EXA Signal Analyzer	Keysight	N9010B	MY60242460	2023-02-20	2024-02-01
Power Meter	Anritsu	ML2496A	2136002	2022-11-24	2023-11-23
Software	Radio Test Software Ver. 21 & E3-Ver: 6.11-20180413				

**Remark:**

- Each piece of equipment is scheduled for calibration once a year.
- N.C.R. = No Calibration Required.



3M 966 Chamber Test Site (966D_Radiated)					
Name of Equipment	Manufacturer	Model	Serial Number	Cal Date	Cal Due
Antenna	SHWARZBECK	VULB 9168	1277	2023-01-13	2024-01-12
Pre-Amplifier	EMCI	EMC118A45SE	980820	2022-12-23	2023-12-22
Pre-Amplifier	EMCI	EMC330N	980853	2022-12-23	2023-12-22
Coaxial Cable	EMC	EMC101G-KM-K M-9000	220407+211228+ 230205	2023-03-21	2024-03-20
Signal Generator	Agilent	N9010A	MY52220817	2023-03-09	2024-03-08
Coaxial Cable	EMC	EMCCFD400	211212+211222+ 211020	2023-03-21	2024-03-20
High Pass Filter	TITAN	T04H300018000 70S01	211215-7-1	2023-02-02	2024-02-01
Thermo-Hygro Meter	EDSDS	EDS-A49	966D1	2023-05-11	2024-05-10
Pre-Amplifier	EMCI	EMC184045SE	980872	2023-01-03	2024-01-02
Horn Antenna	RF SPIN	DRH18-E	210301A18ES	2023-02-03	2024-02-02
Horn Antenna	SHWARZBECK	BBHA 9170	1134	2022-12-30	2023-12-29
Loop Antenna	SCHWARZBECK	FMZB 1513-60	1513-60-028	2022-12-27	2023-12-26
Software	e3 V9-210616c				

AC Conducted Emissions Test Site					
Name of Equipment	Manufacturer	Model	Serial Number	Cal Date	Cal Due
EMI Test Receiver	R&S	ESCI	100064	2023-06-07	2024-06-06
Cable	EMCI	CFD300-NL	CERF	2023-06-26	2024-06-25
LISN	TESEQ	LN2-16N	22012	2023-03-08	2024-03-07
Software	EZ-EMC(CCS-3A1-CE-wugu)				

**Remark:**

- Each piece of equipment is scheduled for calibration once a year.
- N.C.R. = No Calibration Required.

## 1.8 SUPPORT AND EUT ACCESSORIES EQUIPMENT

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

Support Equipment						
No.	Equipment	Brand	Model	Series No.	FCC ID	IC
1	NB(E)	Lenovo	T460	N/A	N/A	N/A
	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, KDB 558074, 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	-	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) $\pi/4$ -DQPSK for 2Mbps (2DH5) 8DPSK for EDR-3Mbps (3DH5)
Test Channel Frequencies	<b>GFSK for BDR-1Mbps:</b> 1.Lowest Channel: 2402MHz 2.Middle Channel: 2441MHz 3.Highest Channel: 2480MHz  <b><math>\pi/4</math>-DQPSK for 2Mbps:</b> 1.Lowest Channel: 2402MHz 2.Middle Channel: 2441MHz 3.Highest Channel: 2480MHz  <b>8DPSK for EDR-3Mbps:</b> 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.
- 2.The system support GFSK , $\pi/4$  DQPSK ,8DPSK , the  $\pi/4$  DQPSK were reduced since the identical parameters with 8dpsk. In the following test items, frequency hopping, Conducted band edge, radiated band edge and spurious emissions.

### 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 NB. (Dipole Antenna) Mode 2: EUT power by NB. (PIFA Antenna)
Worst Mode	<input checked="" type="checkbox"/> Mode 1 <input checked="" type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4

Radiated Emission Measurement Above 1G	
Test Condition	Radiated Emission Above 1G
Power supply Mode	Mode 1: EUT power by System. (Dipole Antenna) Mode 2: EUT power by System. (PIFA Antenna)
Worst Mode	<input checked="" type="checkbox"/> Mode 1 <input checked="" type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> Mode 4
Worst Position	<input type="checkbox"/> Placed in fixed position. <input type="checkbox"/> Placed in fixed position at X-Plane (E2-Plane) <input type="checkbox"/> Placed in fixed position at Y-Plane (E1-Plane) <input checked="" type="checkbox"/> 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 System. (Dipole Antenna) Mode 2: EUT power by System. (PIFA Antenna)
Worst Mode	<input checked="" type="checkbox"/> Mode 1 <input checked="" type="checkbox"/> Mode 2 <input type="checkbox"/> Mode 3 <input type="checkbox"/> 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(Z-Plane) were recorded in this report
3. 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.

### 3.3 EUT DUTY CYCLE

**Temperature:** 25.2°C

**Test date:** May 19, 2023

**Humidity:** 58% RH

**Tested by:** David Li

Duty Cycle				
Configuration	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log ( 1/Duty Cycle )	1/T (kHz)	VBW setting (kHz)
DH1	30.80	5.11	2.60	3.00
DH3	66.00	1.80	0.61	1.00
DH5	77.20	1.12	0.35	1.00
2DH1	31.20	5.06	2.56	3.00
2DH3	65.20	1.86	0.61	1.00
2DH5	76.80	1.15	0.35	1.00
3DH1	30.80	5.11	2.60	3.00
3DH3	65.60	1.83	0.61	1.00
3DH5	76.80	1.15	0.35	1.00

## For GFSK (1Mbps)



## For $\pi/4$ -DQPSK (2Mbps)

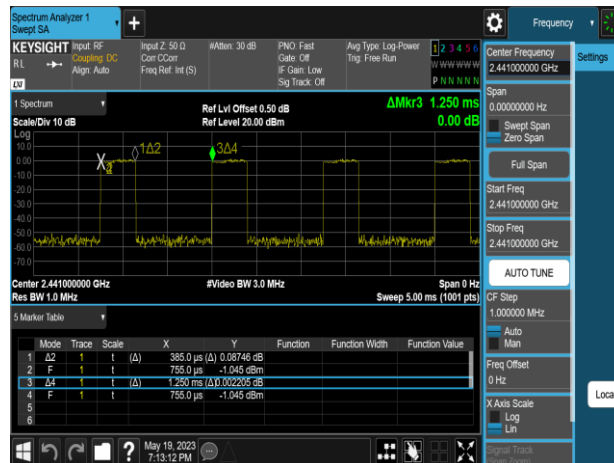




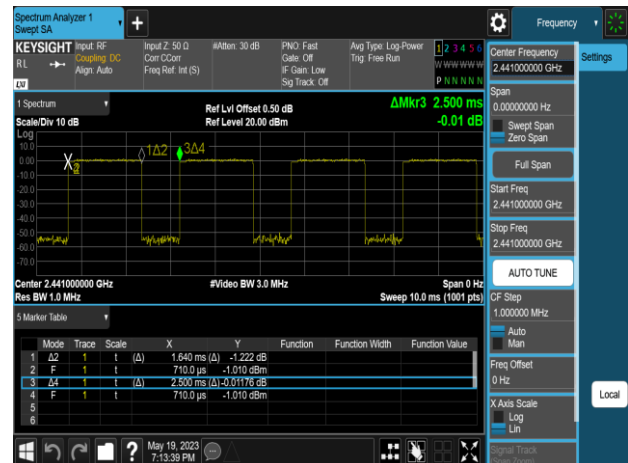
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## For 8-DPSK (3Mbps)

### 3DH1



### 3DH3



### 3DH5



## 4. TEST RESULT

### 4.1 AC POWER LINE CONDUCTED EMISSION

#### 4.1.1 Test Limit

According to §15.207(a)(2), 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

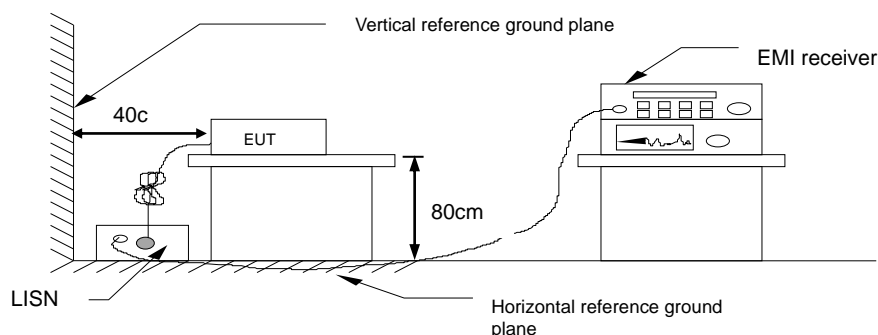
\* Decreases with the logarithm of the frequency.

#### 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

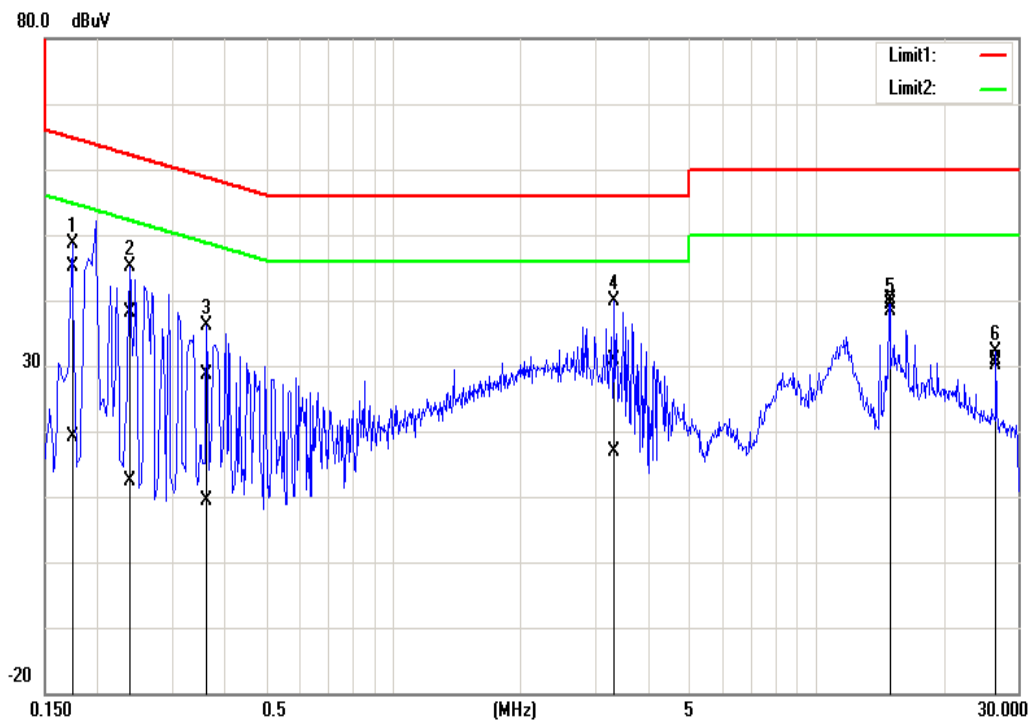


#### 4.1.4 Test Result

Pass.

## Test Data

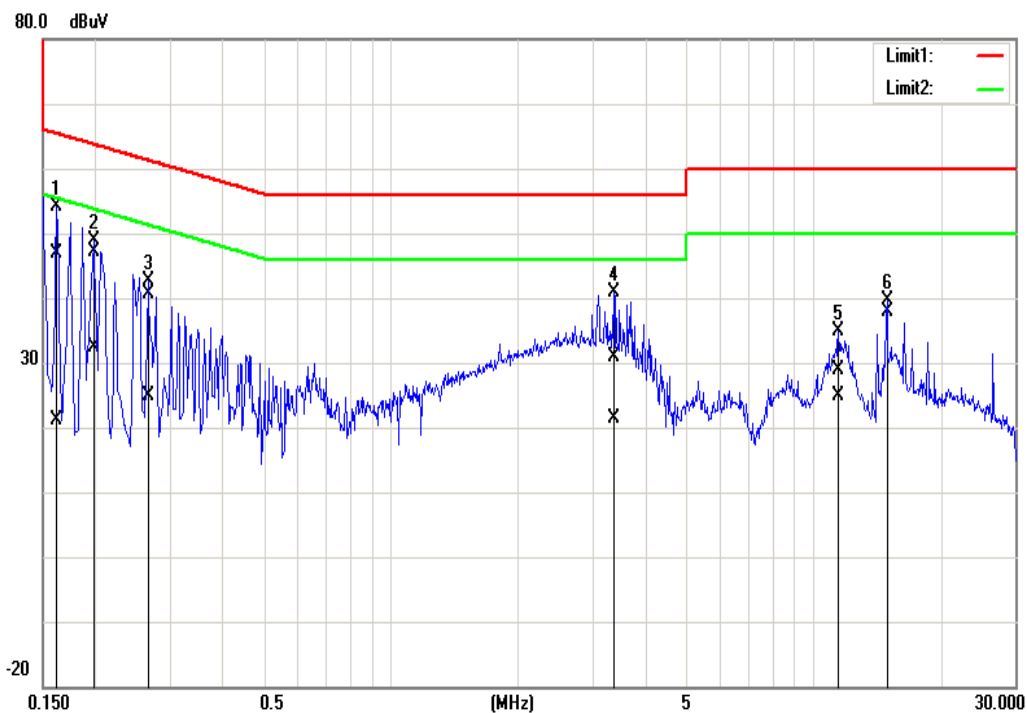
Test Mode:	Mode 1	Temp/Hum	24.3(°C)/ 61%RH
Phase:	Line	Test Date	June 27, 2023
Test Voltage:	120Vac, 60Hz	Test Engineer	Tony Chao



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
0.1740	44.87	18.87	0.15	45.02	19.02	64.77	54.77	-19.75	-35.75	Pass
0.2380	37.93	12.30	0.15	38.08	12.45	62.17	52.17	-24.09	-39.72	Pass
0.3620	28.58	9.18	0.15	28.73	9.33	58.68	48.68	-29.95	-39.35	Pass
3.3420	30.76	16.59	0.24	31.00	16.83	56.00	46.00	-25.00	-29.17	Pass
14.9100	39.62	37.95	0.43	40.05	38.38	60.00	50.00	-19.95	-11.62	Pass
26.6220	30.19	29.56	0.61	30.80	30.17	60.00	50.00	-29.20	-19.83	Pass

**Note:** 1. Correction factor = LISN loss + Cable loss.

Test Mode:	Mode 1	Temp/Hum	24.3(°C)/ 61%RH
Phase:	Neutral	Test Date	June 27, 2023
Test Voltage:	120Vac, 60Hz	Test Engineer	Tony Chao

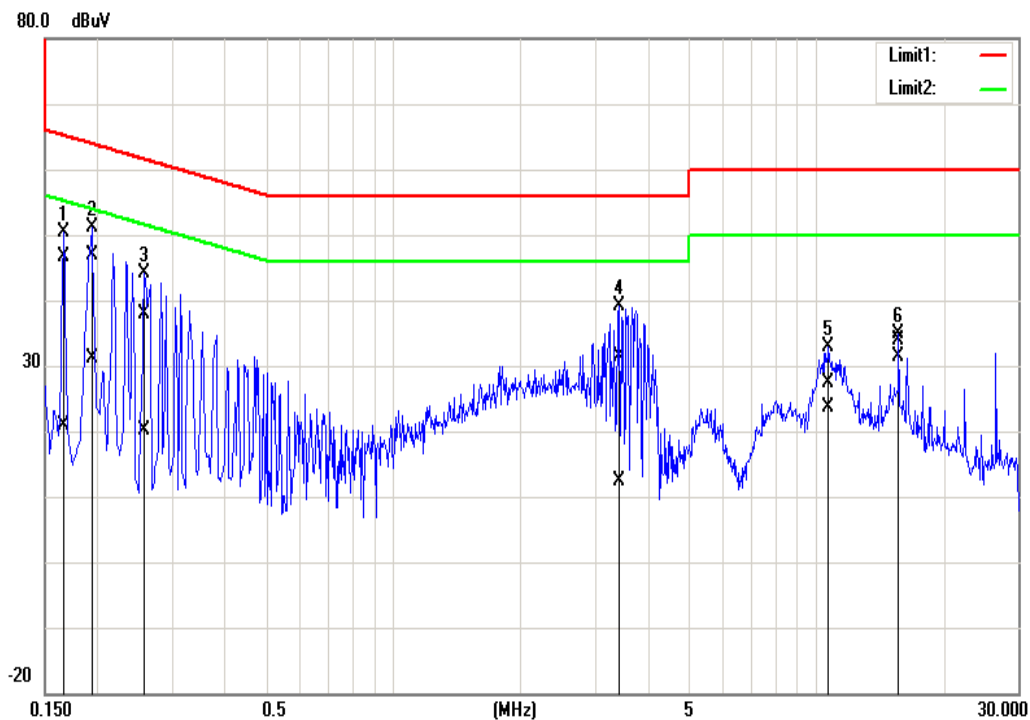


Frequency (MHz)	Quasi Peak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.1620	46.57	20.81	0.20	46.77	21.01	65.36	55.36	-18.59	-34.35	Pass
0.1980	46.82	32.10	0.19	47.01	32.29	63.69	53.69	-16.68	-21.40	Pass
0.2660	40.48	24.69	0.19	40.67	24.88	61.24	51.24	-20.57	-26.36	Pass
3.3780	30.68	21.05	0.29	30.97	21.34	56.00	46.00	-25.03	-24.66	Pass
11.4860	28.54	24.49	0.41	28.95	24.90	60.00	50.00	-31.05	-25.10	Pass
14.9100	39.29	37.44	0.45	39.74	37.89	60.00	50.00	-20.26	-12.11	Pass

**Note:** 1. Correction factor = LISN loss + Cable loss.

## Test Data

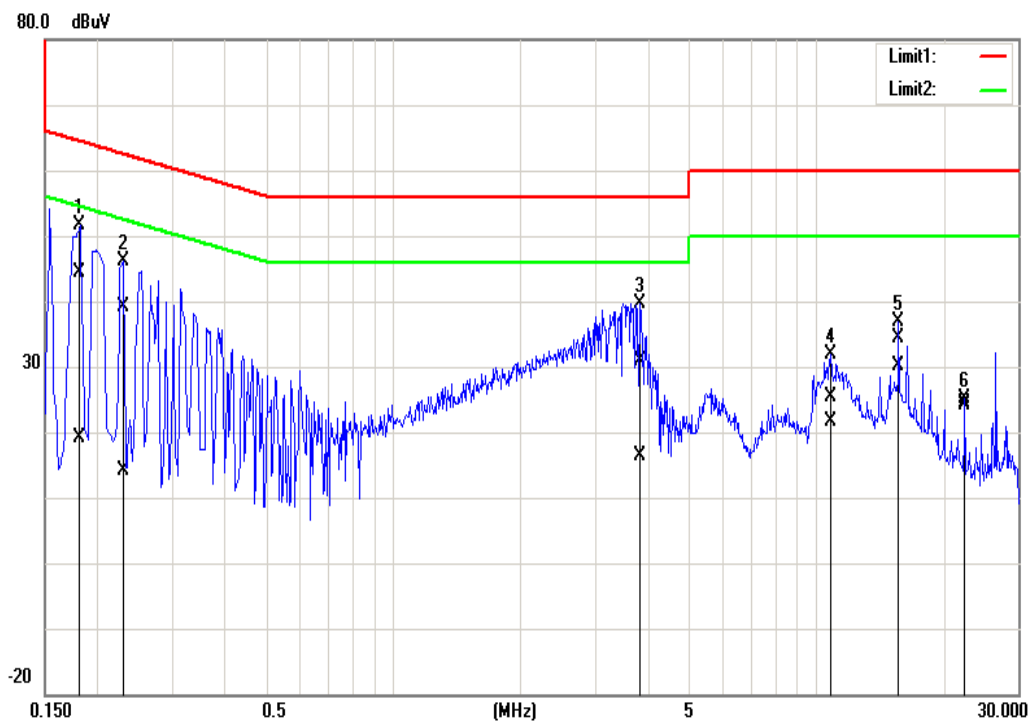
Test Mode:	Mode 2	Temp/Hum	24.3(°C)/ 61%RH
Phase:	Line	Test Date	June 27, 2023
Test Voltage:	120Vac, 60Hz	Test Engineer	Tony Chao



Frequency (MHz)	Quasi Peak reading (dBuV)	Average reading (d uV)	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
0.1660	46.39	20.70	0.15	46.54	20.85	65.16	55.16	-18.62	-34.31	Pass
0.1940	46.71	31.07	0.15	46.86	31.22	63.86	53.86	-17.00	-22.64	Pass
0.2580	37.79	19.94	0.15	37.94	20.09	61.50	51.50	-23.56	-31.41	Pass
3.4260	31.17	12.13	0.24	31.41	12.37	56.00	46.00	-24.59	-33.63	Pass
10.7180	27.11	23.19	0.38	27.49	23.57	60.00	50.00	-32.51	-26.43	Pass
15.6620	33.38	31.02	0.45	33.83	31.47	60.00	50.00	-26.17	-18.53	Pass

**Note:** 1. Correction factor = LISN loss + Cable loss.

Test Mode:	Mode 2	Temp/Hum	24.3(°C)/ 61%RH
Phase:	Neutral	Test Date	June 27, 2023
Test Voltage:	120Vac, 60Hz	Test Engineer	Tony Chao



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
0.1820	44.09	19.04	0.20	44.29	19.24	64.39	54.39	-20.10	-35.15	Pass
0.2300	38.90	13.99	0.19	39.09	14.18	62.45	52.45	-23.36	-38.27	Pass
3.8300	30.48	15.97	0.31	30.79	16.28	56.00	46.00	-25.21	-29.72	Pass
10.8380	25.07	21.15	0.40	25.47	21.55	60.00	50.00	-34.53	-28.45	Pass
15.6660	33.80	29.57	0.47	34.27	30.04	60.00	50.00	-25.73	-19.96	Pass
22.5260	23.92	23.48	0.54	24.46	24.02	60.00	50.00	-35.54	-25.98	Pass

**Note:** 1. Correction factor = LISN loss + Cable loss.

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## 4.2 20dB BANDWIDTH AND OCCUPIED BANDWIDTH (99%)

### 4.2.1 Test Limit

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

**20 dB Bandwidth** : For reporting purposes only.

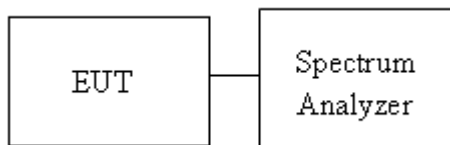
**Occupied Bandwidth(99%)** : For reporting purposes only.

### 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 = 1% ~ 5% OBW, VBW  $\geq 3 \times$  RBW and Detector = Peak, to measurement 20 dB Bandwidth.
4. SA set RBW = 1% ~ 5% OBW, VBW  $\geq$  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: 25.2°C

Test date: May 19, 2023

Humidity: 58% RH

Tested by: David Li

Test mode: GFSK_BDR-1Mbps mode / 2402-2480 MHz			
Channel	Frequency (MHz)	OBW(99%) (MHz)	20dB BW (MHz)
Low	2402	0.85970	0.9640
Mid	2441	0.86014	0.9638
High	2480	0.86080	0.9638

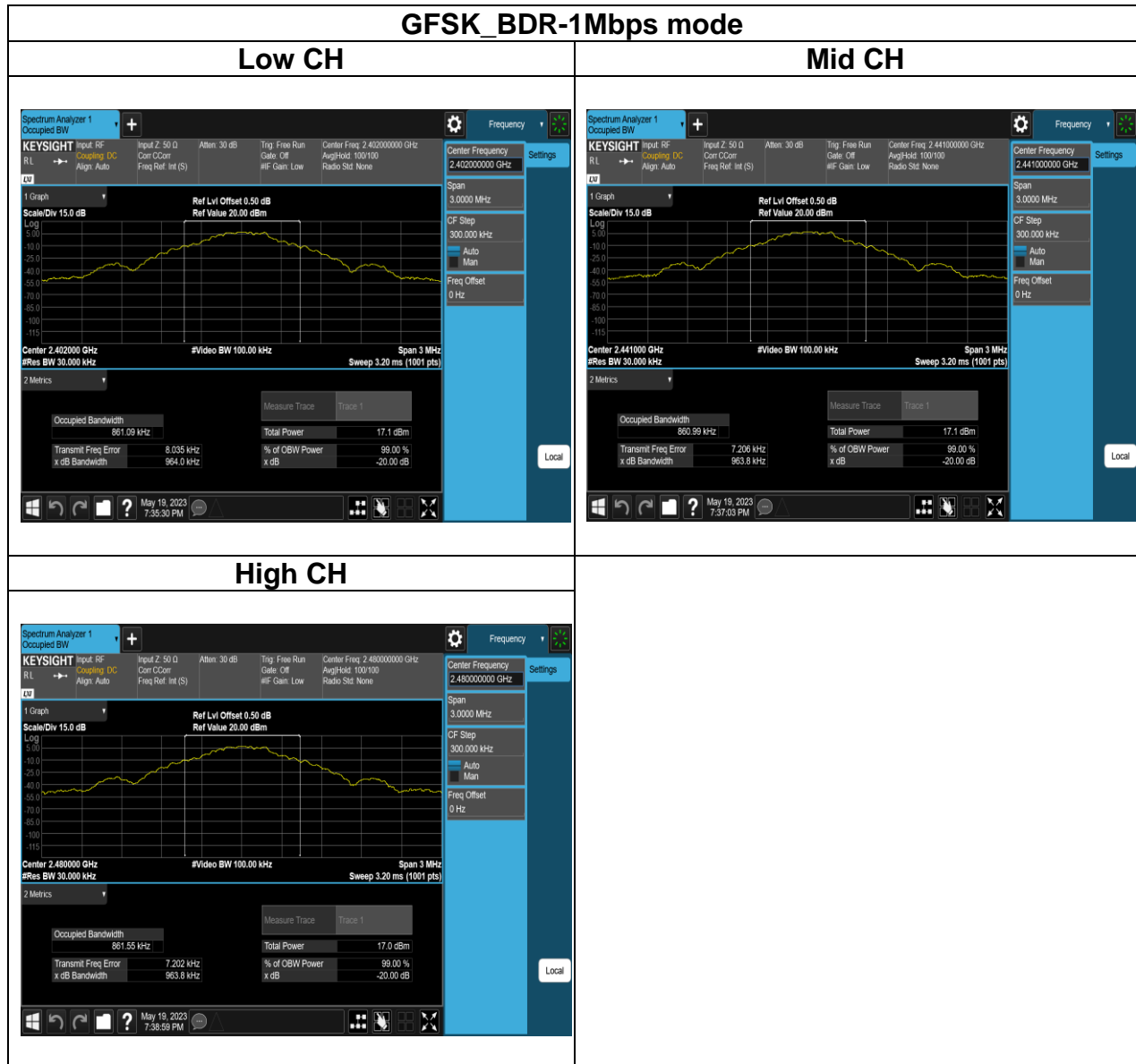
Test mode: $\pi/4$ -DQPSK_2Mbps mode / 2402-2480 MHz			
Channel	Frequency (MHz)	OBW(99%) (MHz)	20dB BW (MHz)
Low	2402	1.1764	1.328
Mid	2441	1.1765	1.334
High	2480	1.1724	1.325

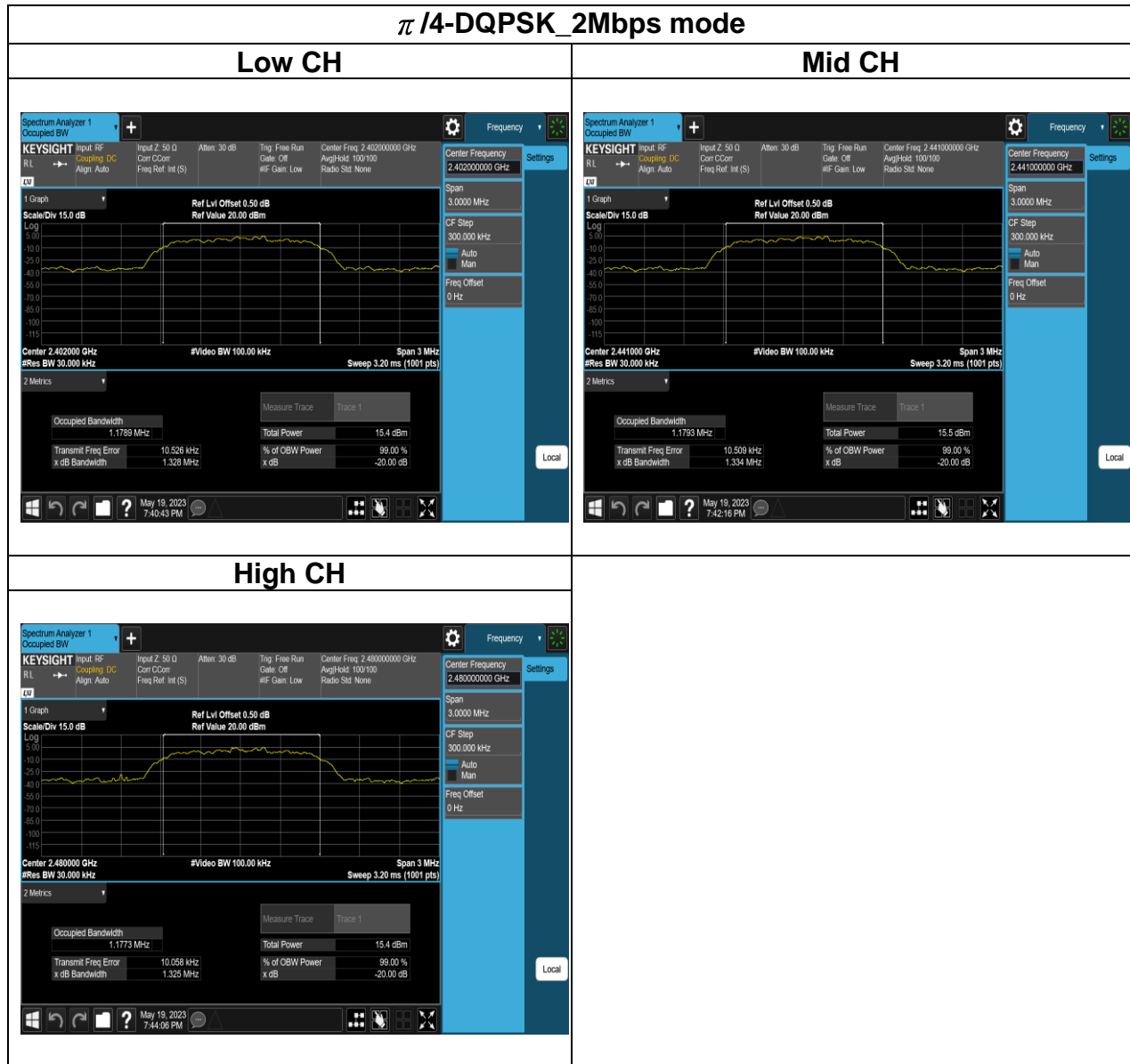
Test mode: 8DPSK_EDR-3Mbps mode / 2402-2480 MHz			
Channel	Frequency (MHz)	OBW(99%) (MHz)	20dB BW (MHz)
Low	2402	1.1790	1.314
Mid	2441	1.1795	1.314
High	2480	1.1795	1.314

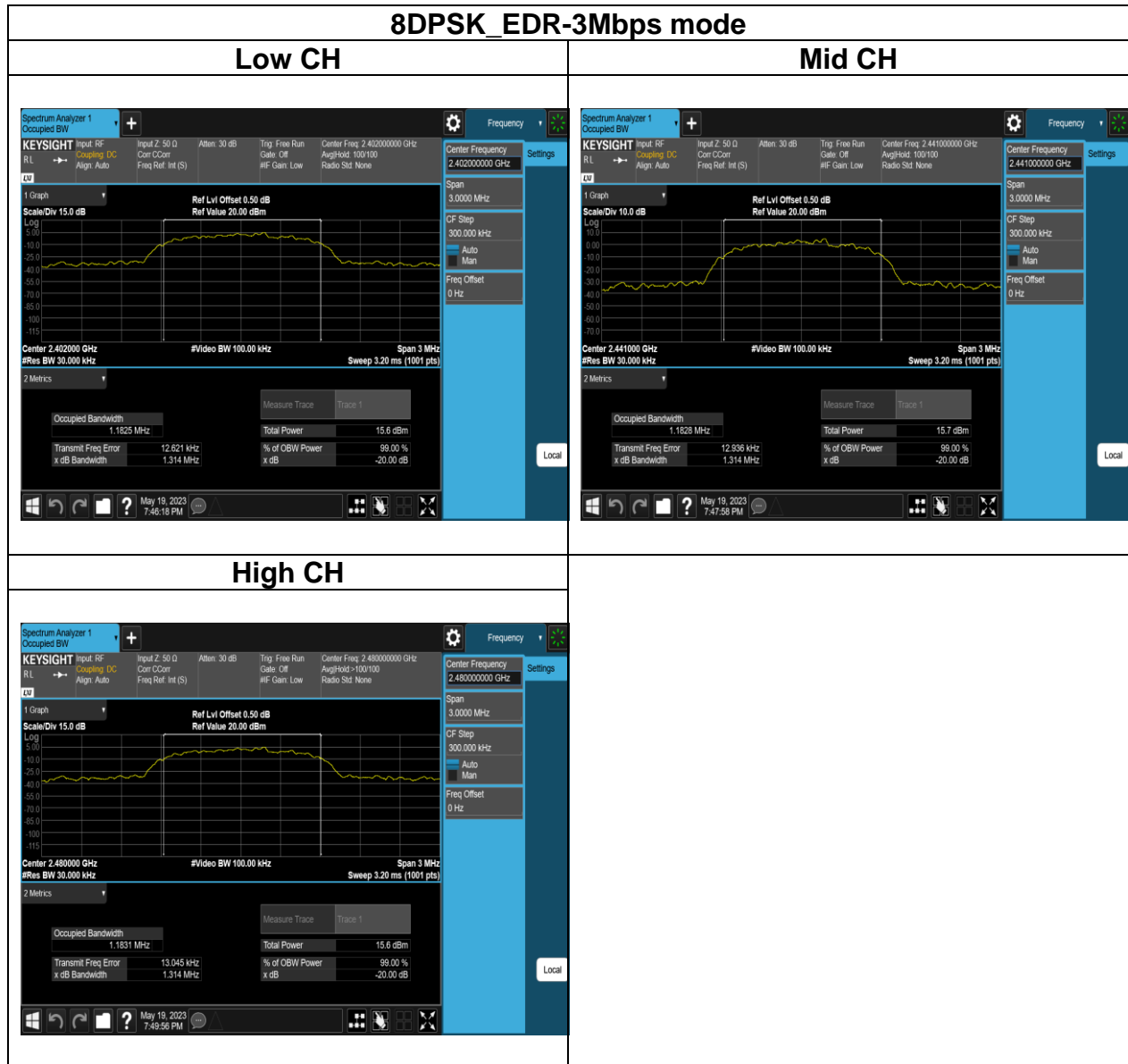


Report No.: TMWK2305001499KR

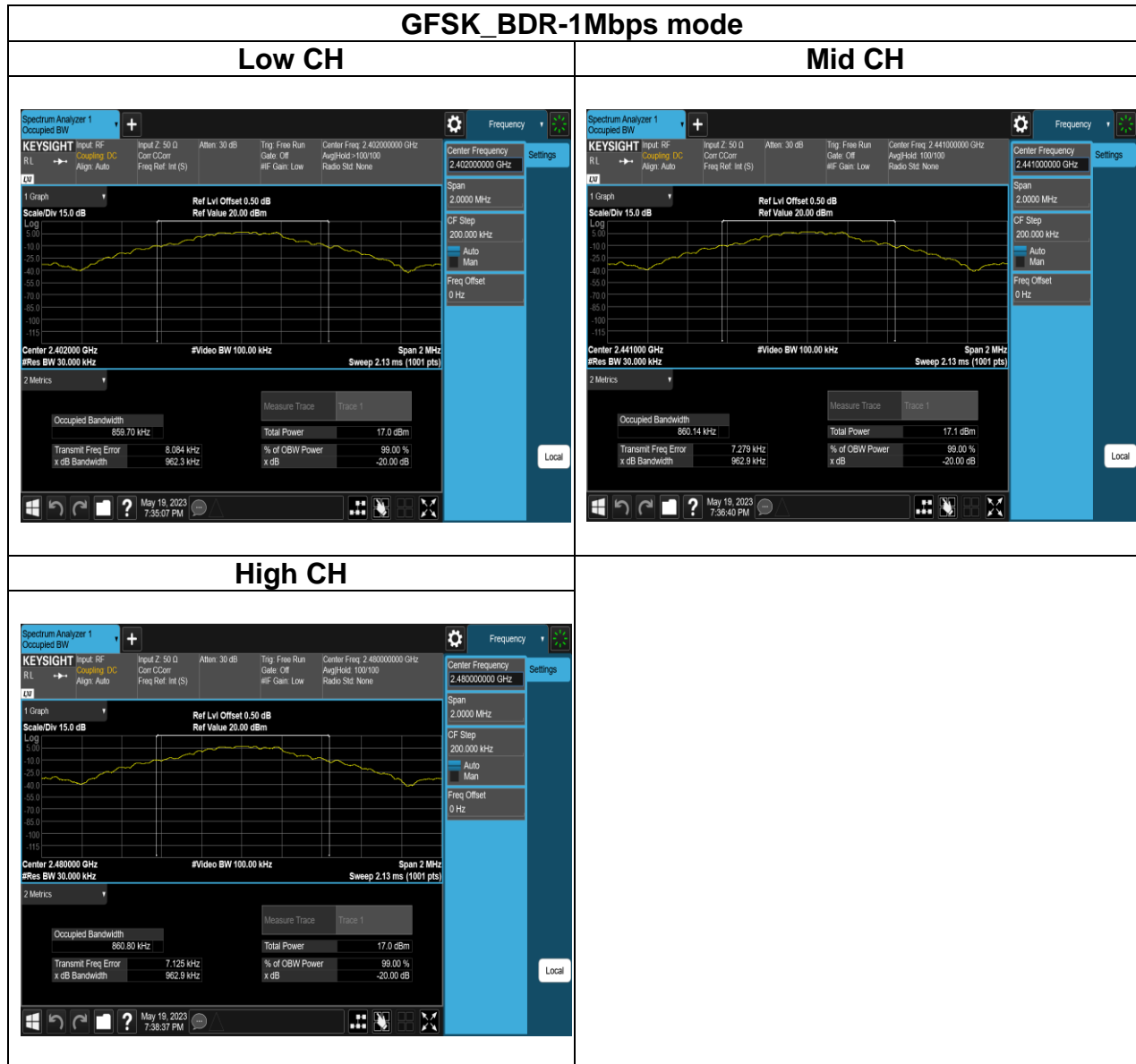
## Test Data (20dB BANDWIDTH)

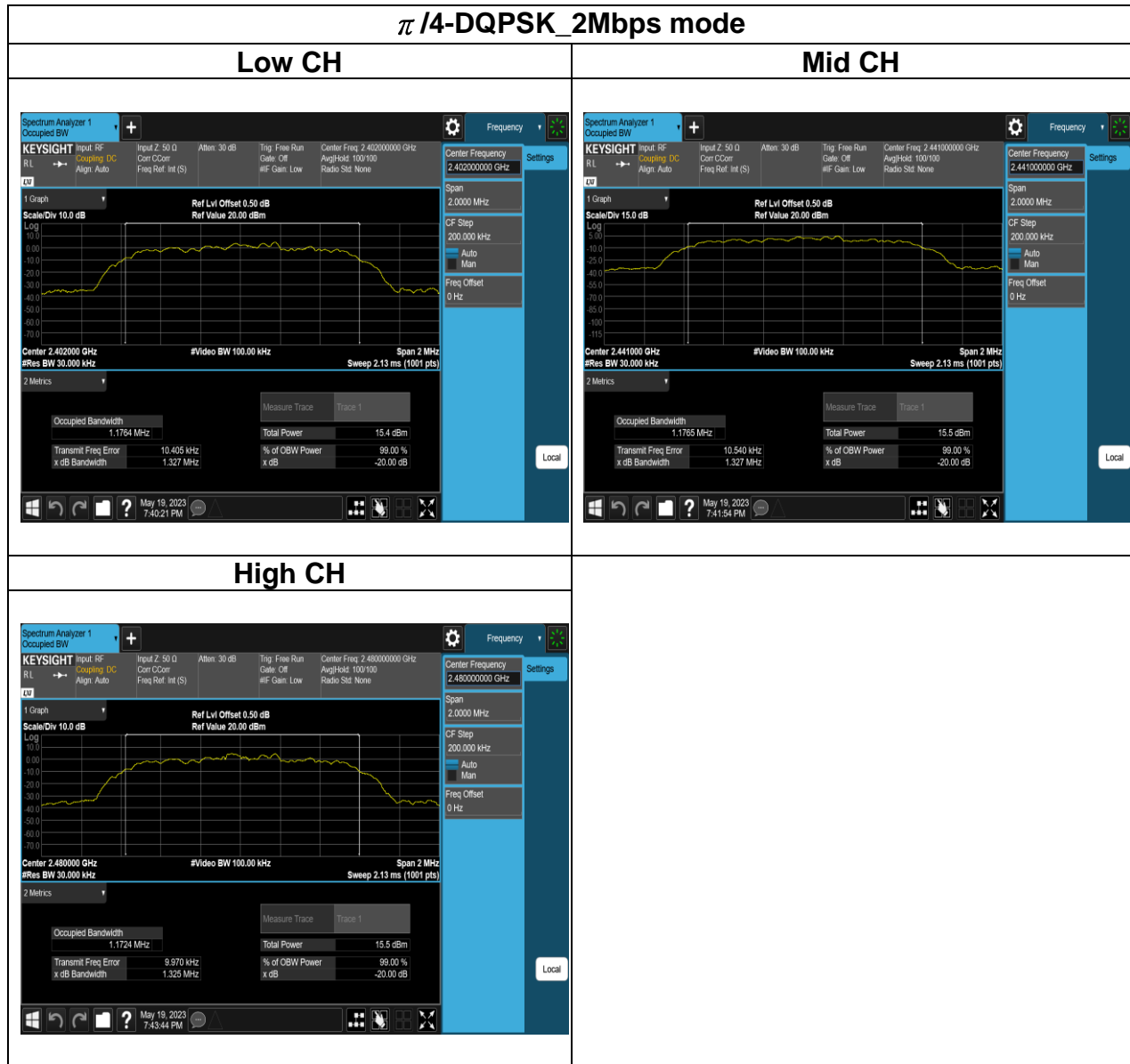


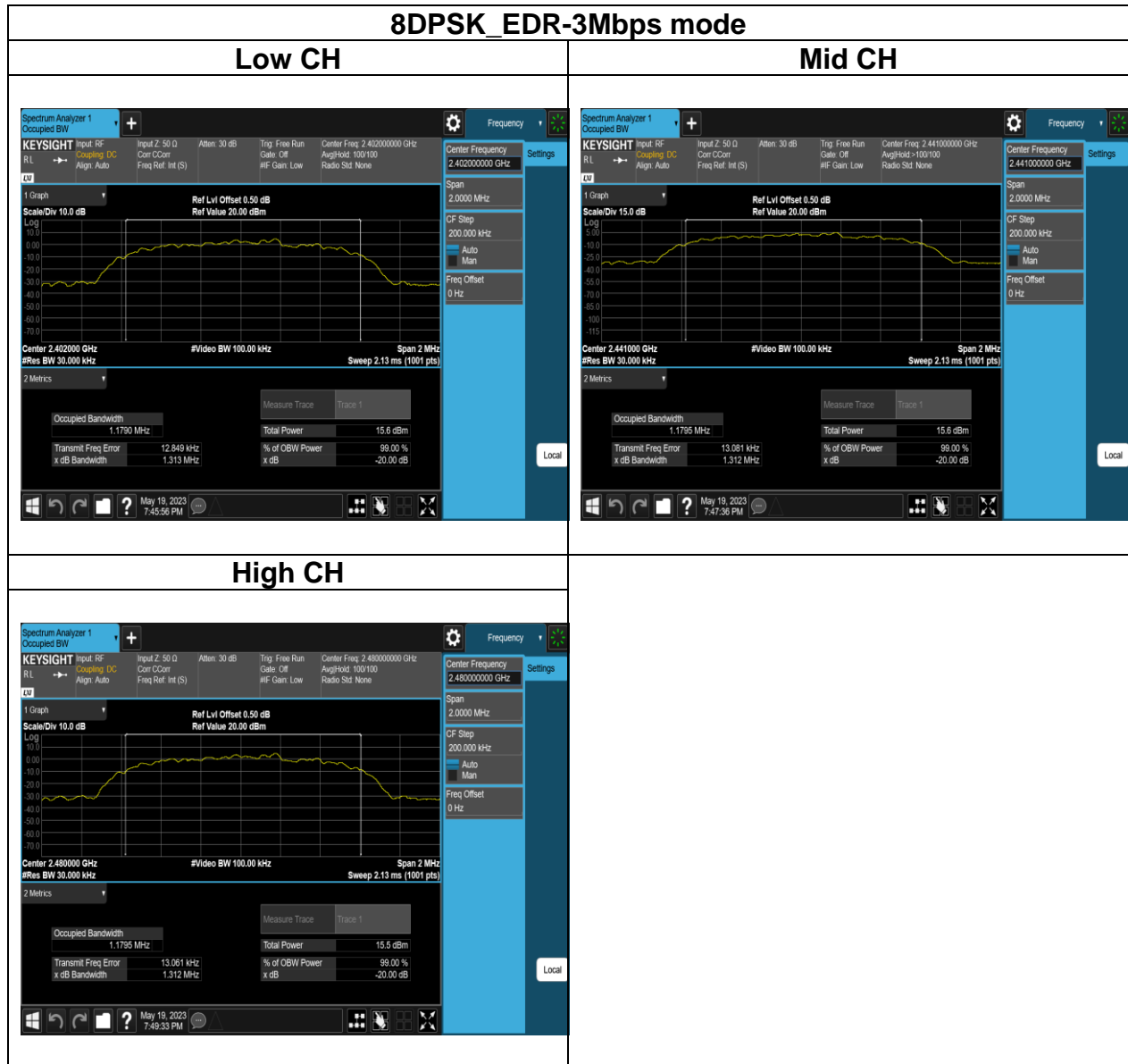




## Test Data (BANDWIDTH 99%)







Report No.: TMWK2305001499KR

## 4.3 OUTPUT POWER MEASUREMENT

### 4.3.1 Test Limit

According to §15.247(a)(1), 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).

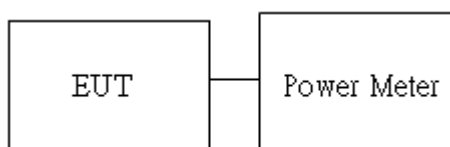
Limit	<input checked="" type="checkbox"/> Antenna not exceed 6 dBi : 21dBm <input type="checkbox"/> Antenna with DG greater than 6 dBi : 21dBm [ Limit = 30 – (DG – 6)]
-------	--

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: 25.2°C

Test date: May 19, 2023

Humidity: 58% RH

Tested by: David Li

##### Peak output power :

###### 1M BR mode (Peak):

CH	Freq. (MHz)	Power set	Peak Output Power (dBm)	Output Power (mW)	Limit (mW)
Low	2402	11	9.29	8.492	125
Mid	2441	11	9.25	8.414	125
High	2480	11	9.12	8.166	125

###### 2M EDR mode (Peak):

CH	Freq. (MHz)	Power set	Peak Output Power (dBm)	Output Power (mW)	Limit (mW)
Low	2402	12	9.50	8.913	125
Mid	2441	12	9.46	8.831	125
High	2480	12	9.32	8.551	125

###### 3M EDR mode (Peak):

CH	Freq. (MHz)	Power set	Peak Output Power (dBm)	Output Power (mW)	Limit (mW)
Low	2402	12	9.74	9.419	125
Mid	2441	12	9.71	9.354	125
High	2480	12	9.57	9.057	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	11	9.26	8.441	125
Mid	2441	11	9.16	8.249	125
High	2480	11	9.07	8.079	125

#### **2M EDR mode (Average):**

CH	Freq. (MHz)	Power set	Max. Avg. Output Power (dBm)	Output Power (mW)	Limit (mW)
Low	2402	12	7.48	5.593	125
Mid	2441	12	7.46	5.567	125
High	2480	12	7.32	5.391	125

#### **3M EDR mode (Average):**

CH	Freq. (MHz)	Power set	Max. Avg. Output Power (dBm)	Output Power (mW)	Limit (mW)
Low	2402	12	7.51	5.632	125
Mid	2441	12	7.50	5.619	125
High	2480	12	7.36	5.440	125

### EIRP :

#### 1M BR mode EIRP

Channel	Frequency (MHz)	Power set	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (mW)	Limit (mW)
Low	2402	11	9.26	4.00	21.202	4000
Mid	2441	11	9.16	4.00	20.720	4000
High	2480	11	9.07	4.00	20.295	4000

#### 2M EDR mode EIRP

Channel	Frequency (MHz)	Power set	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (mW)	Limit (mW)
Low	2402	12	7.48	4.00	14.049	4000
Mid	2441	12	7.46	4.00	13.984	4000
High	2480	12	7.32	4.00	13.541	4000

#### 3M EDR mode EIRP

Channel	Frequency (MHz)	Power set	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (mW)	Limit (mW)
Low	2402	12	7.51	4.00	14.146	4000
Mid	2441	12	7.50	4.00	14.114	4000
High	2480	12	7.36	4.00	13.666	4000

## 4.4 FREQUENCY SEPARATION

### 4.4.1 Test Limit

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

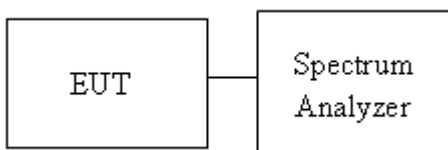
Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than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

Limit	> two-thirds of the 20 dB bandwidth
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### 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 = 300kHz, VBW = 300kHz, Sweep = auto.  
Max hold, mark 3 peaks of hopping channel and record the 3 peaks frequency

### 4.4.3 Test Setup



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#### 4.4.4 Test Result

Temperature: 25.2°C

Test date: May 19, 2023

Humidity: 58% RH

Tested by: David Li

Test mode: GFSK_BDR-1Mbps mode / 2402-2480 MHz				
Channel	Frequency (MHz)	Channel Separation (MHz)	Channel Separation Limits (MHz)	Result
Low	2402	0.9640	0.64	PASS
Mid	2441	0.9638	0.64	PASS
High	2480	0.9638	0.64	PASS

Test mode: $\pi/4$ -DQPSK_2Mbps mode / 2402-2480 MHz				
Channel	Frequency (MHz)	Channel Separation (MHz)	Channel Separation Limits (MHz)	Result
Low	2402	1.328	0.89	PASS
Mid	2441	1.334	0.89	PASS
High	2480	1.325	0.88	PASS

Test mode: 8DPSK_EDR-3Mbps mode / 2402-2480 MHz				
Channel	Frequency (MHz)	Channel Separation (MHz)	Channel Separation Limits (MHz)	Result
Low	2402	1.314	0.88	PASS
Mid	2441	1.314	0.88	PASS
High	2480	1.314	0.88	PASS

## Test Data



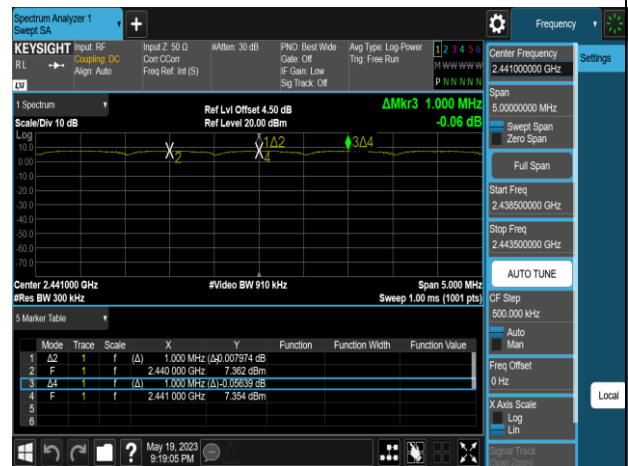


## 8DPSK\_EDR-3Mbps mode

### 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)

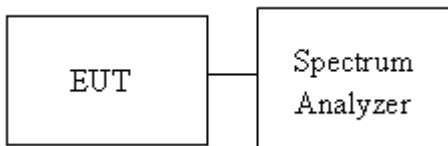
Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

### 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. = 2441 MHz for Low range, Start Freq. = 2441 MHz, Stop Freq. = 2483.5 MHz for High range ; RBW=430KHz, VBW = 1.5MHz.
4. Max hold, view and count how many channel in the band.

### 4.5.3 Test Setup





#### 4.5.4 Test Result

**Temperature:** 25.2°C

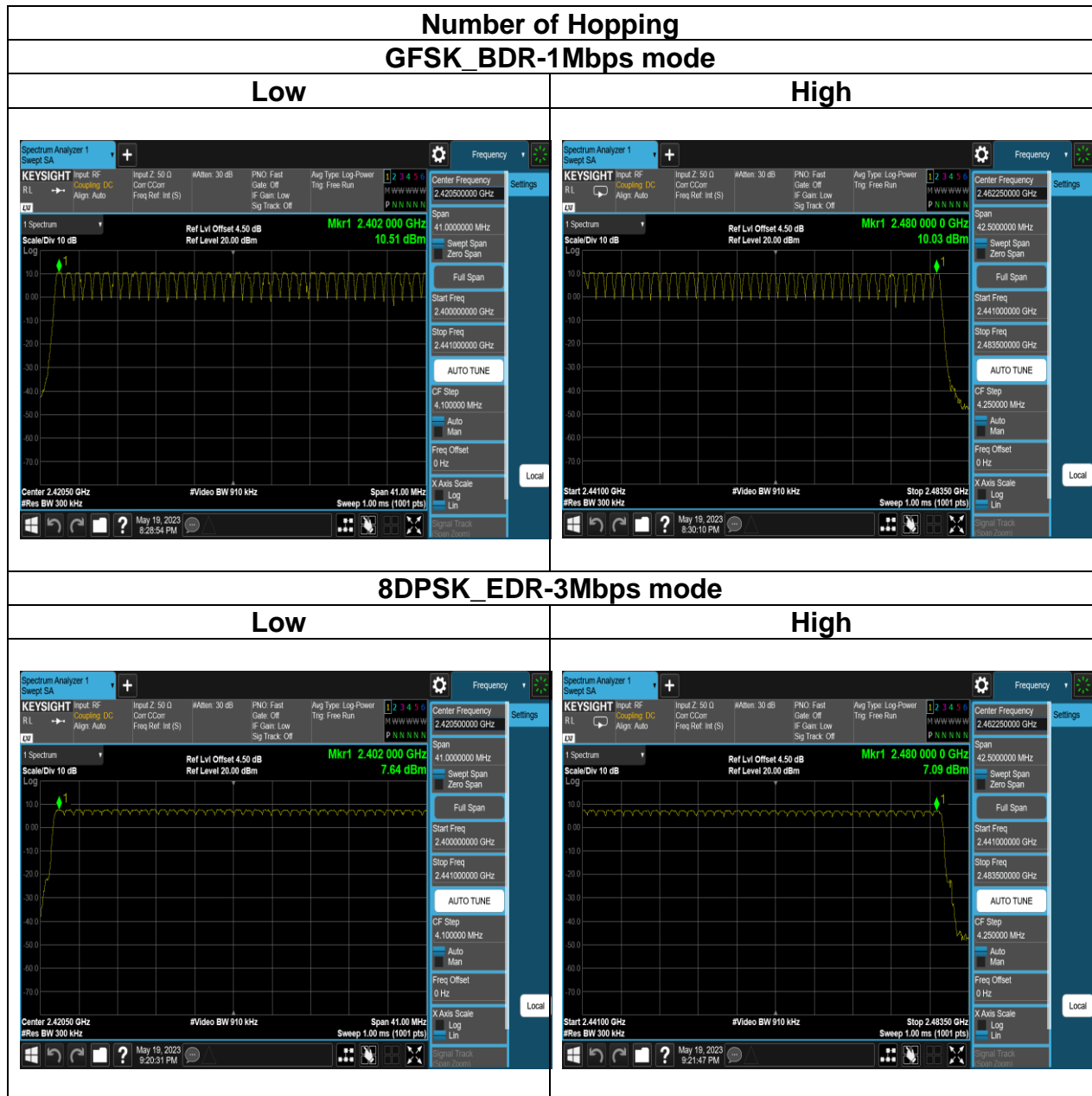
**Test date:** May 19, 2023

**Humidity:** 58% RH

**Tested by:** David Li

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



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## 4.6 CONDUCTED BANDEDGE AND SPURIOUS EMISSION

### 4.6.1 Test Limit

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

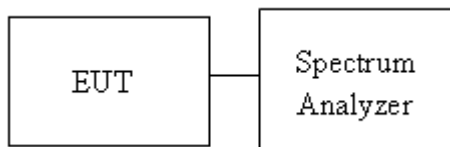
Limit	-20 dBc
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### 4.6.2 Test Procedure

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

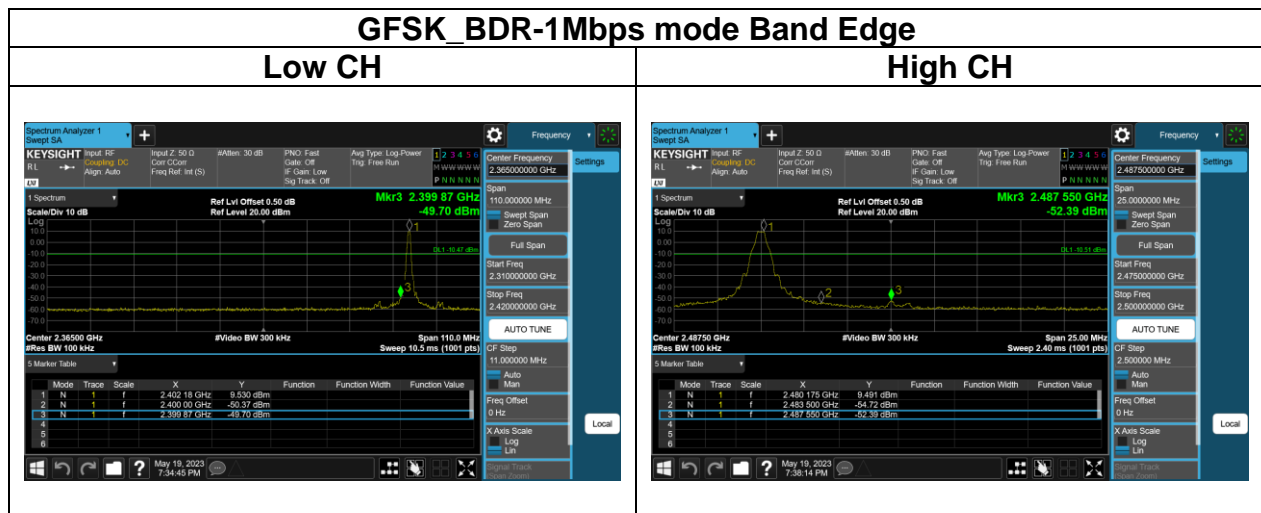
Temperature: 25.2°C

Test date: May 19, 2023

Humidity: 58% RH

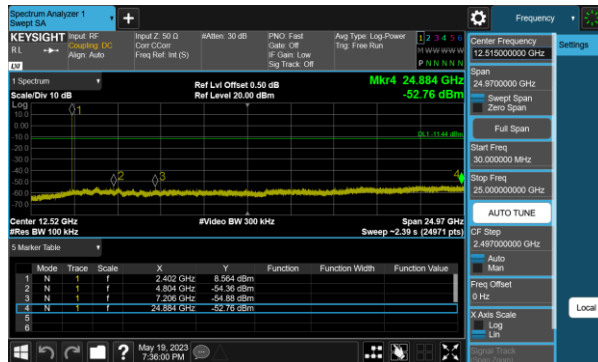
Tested by: David Li

## Test Data

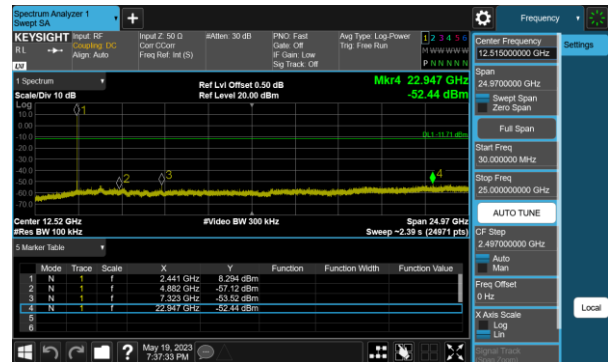


## GFSK\_BDR-1Mbps mode Spurious Emission 30MHz-25GHz

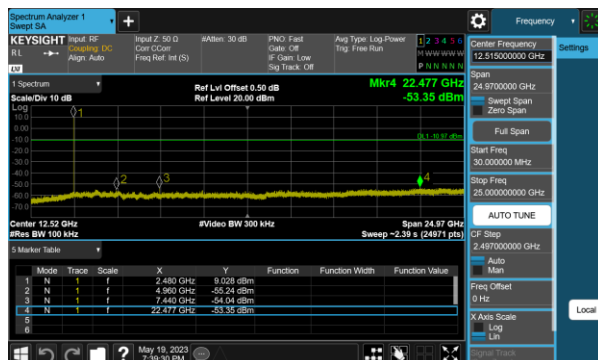
### Low CH



### Mid CH

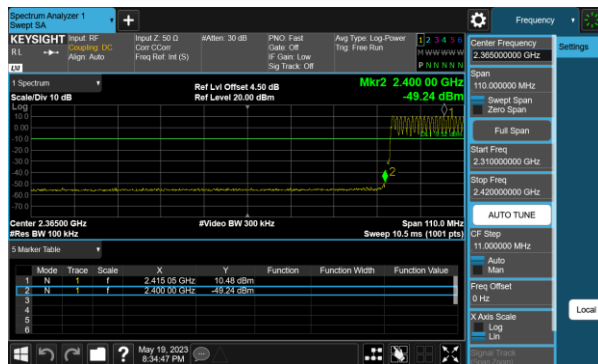


### High CH



## GFSK\_BDR-1Mbps Hopping mode

### Low Band Edge

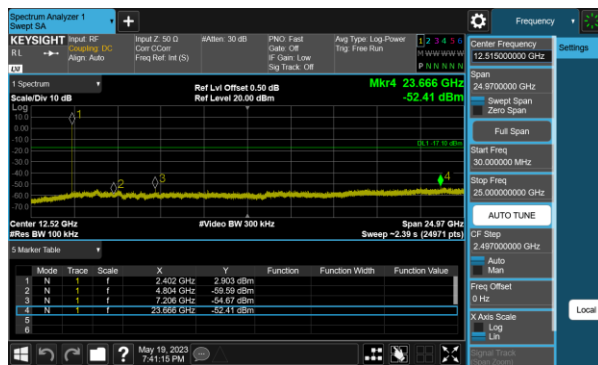


### High Band Edge

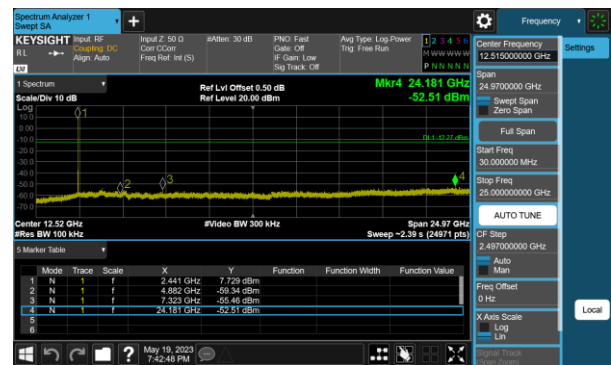


## $\pi$ /4-DQPSK\_2Mbps mode Spurious Emission 30MHz-25GHz

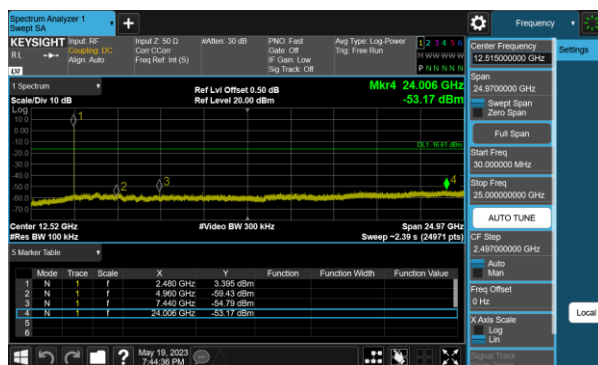
### Low CH



### Mid CH

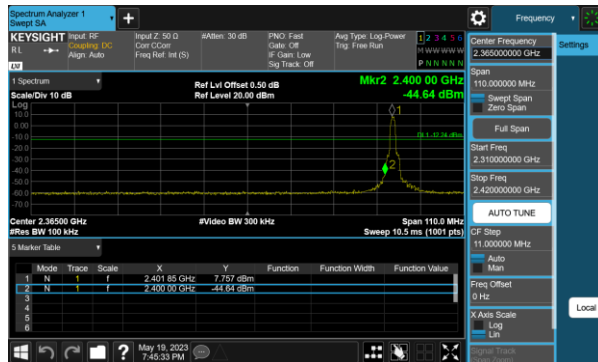


### High CH



## 8DPSK\_EDR-3Mbps mode Band Edge

### Low CH



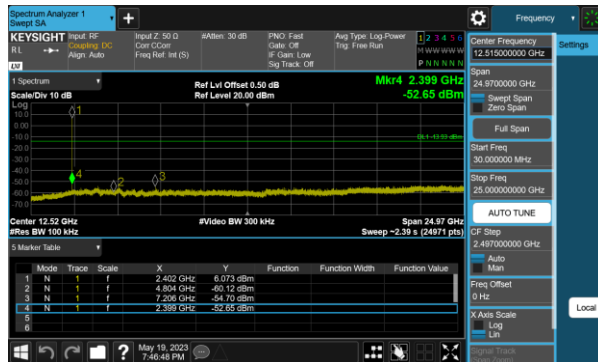
### High CH



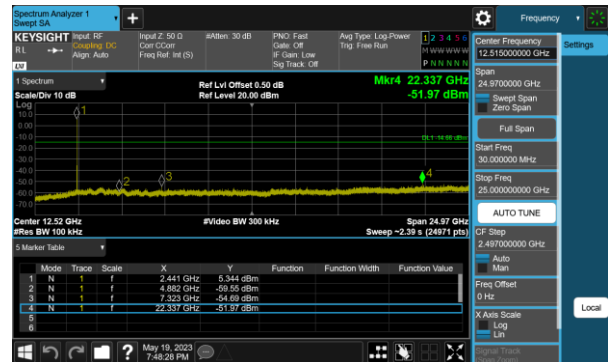


## 8DPSK\_EDR-3Mbps mode Spurious Emission 30MHz-25GHz

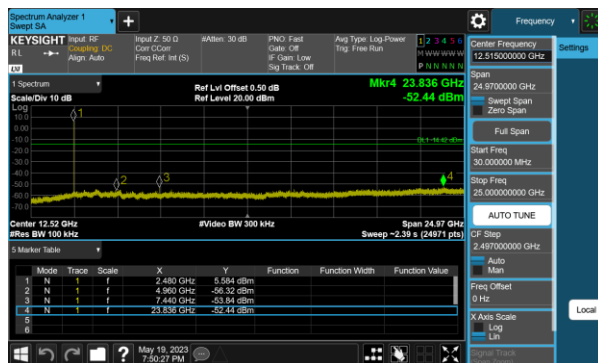
### Low CH

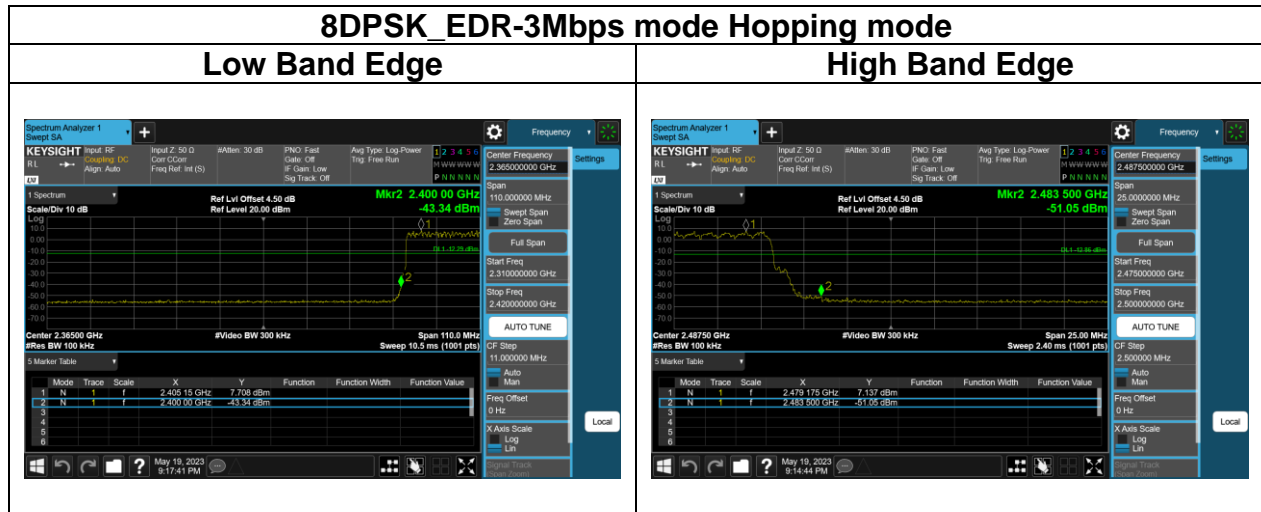


### Mid CH



### High CH





## 4.7 TIME OF OCCUPANCY (DWELL TIME)

### 4.7.1 Test Limit

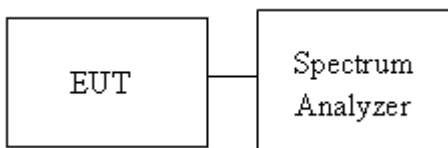
According to §15.247(a)(1)(iii)

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=3MHz, Sweep > one cycle.

### 4.7.3 Test Setup



#### 4.7.4 Test Result

Temperature: 25.2°C

Test date: May 19, 2023

Humidity: 58% RH

Tested by: David Li

##### For GFSK (1Mbps)

Channel	PACKET TYPE	Measurement Result (ms)	Limit (ms)
Mid	DH1	123.20	400ms
	DH3	264.00	400ms
	DH5	308.80	400ms

CH Mid      DH1 time slot      =      0.385 \*      (1600/2/79)      \*      31.6      =      123.20 (ms)  
                  DH3 time slot      =      1.650 \*      (1600/4/79)      \*      31.6      =      264.00 (ms)  
                  DH5 time slot      =      2.895 \*      (1600/6/79)      \*      31.6      =      308.80 (ms)

##### For $\pi/4$ -DQPSK (2Mbps):

Channel	PACKET TYPE	Measurement Result (ms)	Limit (ms)
Mid	2DH1	124.80	400ms
	2DH3	260.80	400ms
	2DH5	307.20	400ms

CH Mid      2DH1 time slot      =      0.390 \*      (1600/2/79)      \*      31.6      =      124.80 (ms)  
                  2DH3 time slot      =      1.630 \*      (1600/4/79)      \*      31.6      =      260.80 (ms)  
                  2DH5 time slot      =      2.880 \*      (1600/6/79)      \*      31.6      =      307.20 (ms)

##### For 8-DPSK (3Mbps)

Channel	PACKET TYPE	Measurement Result (ms)	Limit (ms)
Mid	3DH1	123.20	400ms
	3DH3	262.40	400ms
	3DH5	307.20	400ms

CH Mid      3DH1 time slot      =      0.385 \*      (1600/2/79)      \*      31.6      =      123.20 (ms)  
                  3DH3 time slot      =      1.640 \*      (1600/4/79)      \*      31.6      =      262.40 (ms)  
                  3DH5 time slot      =      2.880 \*      (1600/6/79)      \*      31.6      =      307.20 (ms)

GFSK (1Mbps) for AFH Mode			
Hopping Channel Number	PACKET TYPE	Measurement Result (ms)	Limit (ms)
20	DH5	154.40	400
$\pi/4$ DQPSK (2Mbps) for AFH Mode			
Hopping Channel Number	PACKET TYPE	Measurement Result (ms)	Limit (ms)
20	2DH5	153.60	400
8-DPSK (3Mbps) for AFH Mode			
Hopping Channel Number	PACKET TYPE	Measurement Result (ms)	Limit (ms)
20	3DH5	153.60	400

## For GFSK (1Mbps)



## For $\pi/4$ -DQPSK (2Mbps)



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## For 8-DPSK (3Mbps)





## 4.8 RADIATION BANDEDGE AND SPURIOUS EMISSION

### 4.8.1 Test Limit

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

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

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 area 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.

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

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) ( $\mu\text{A/m}$ )	Measurement Distance (m)
9-490 kHz <sup>Note</sup>	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. The SA setting following :

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

(2) Above 1G :

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

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

·If Duty Cycle  $\geq$  98%, VBW=10Hz.

·If Duty Cycle < 98%, VBW $\geq$ 1/T.

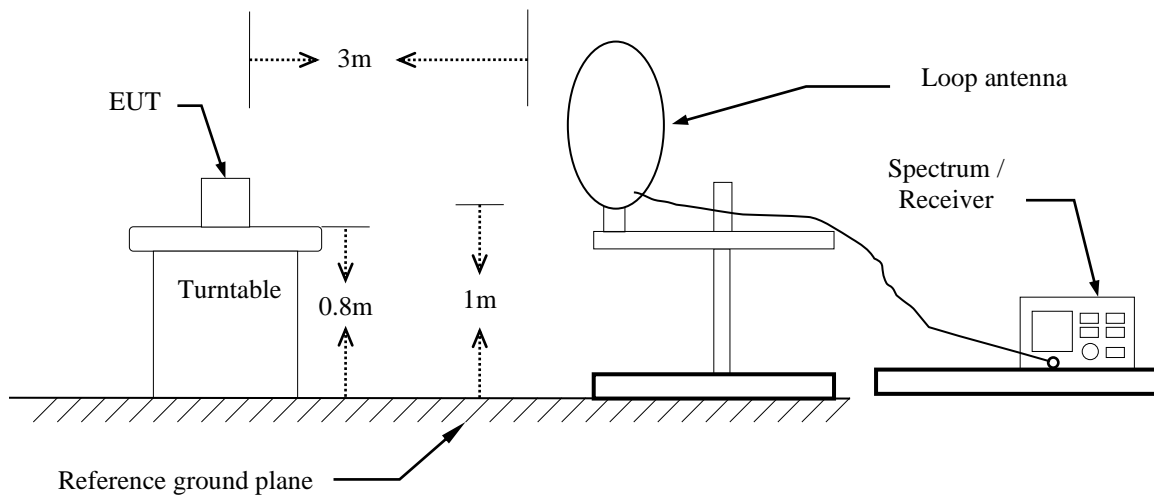
5. Data result

Actual FS=Spectrum Reading Level + Factor

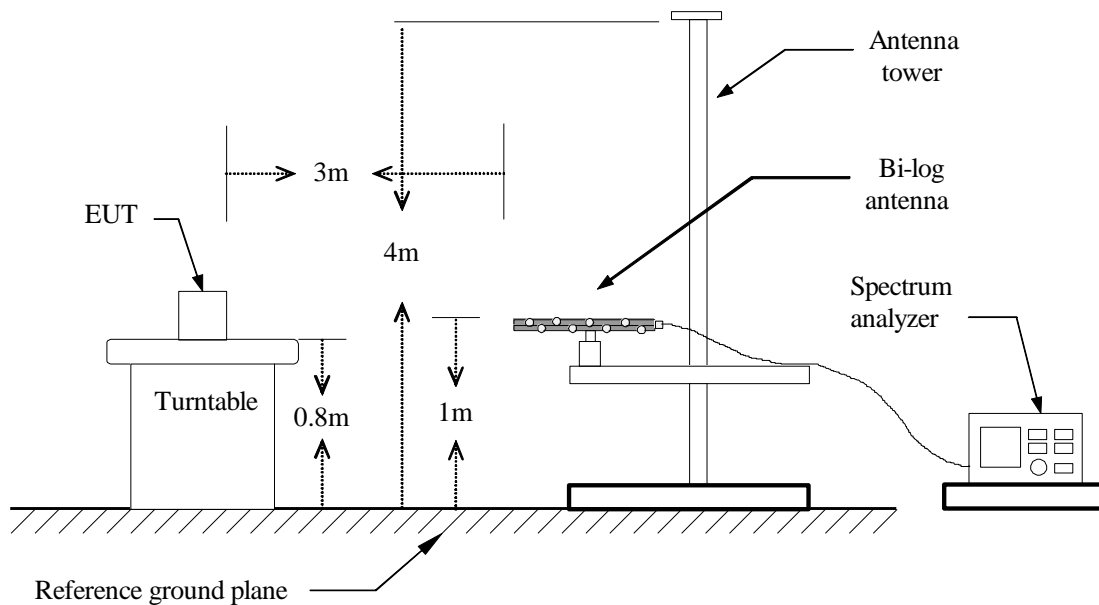
Margin=Actual FS- Limit

## 4.8.3 Test Setup

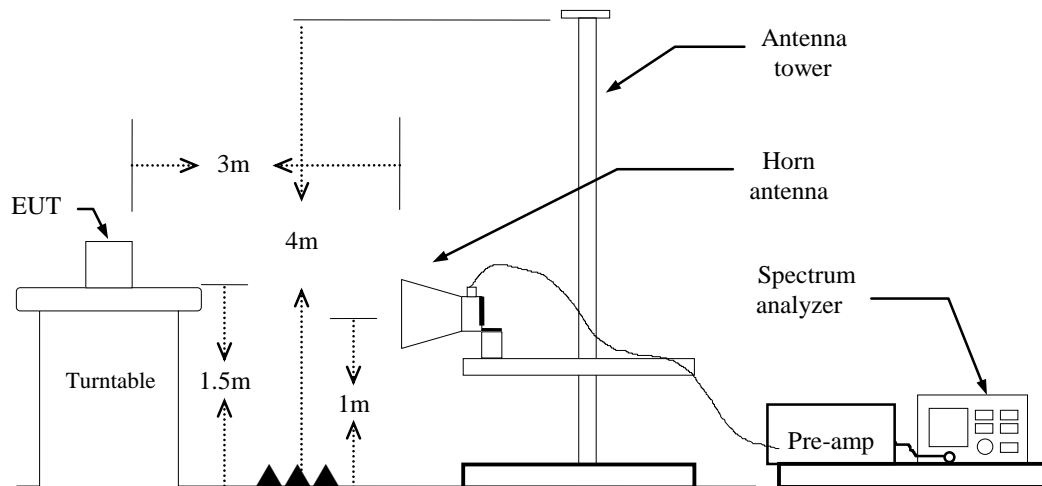
### 9kHz ~ 30MHz



### 30MHz ~ 1GHz



## Above 1 GHz



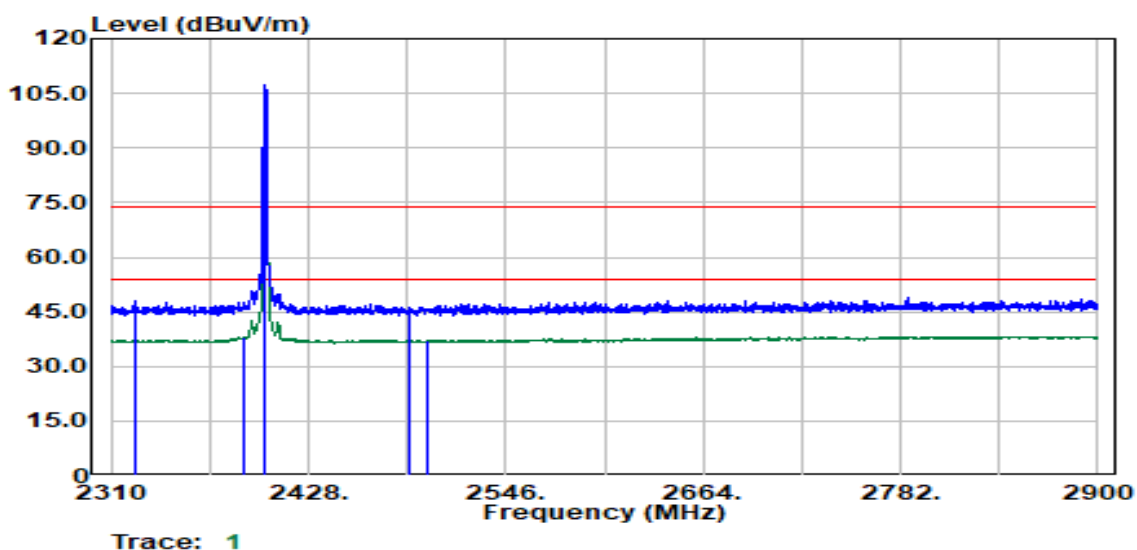
Report No.: TMWK2305001499KR

## 4.8.4 Test Result

### Band Edge Test Data

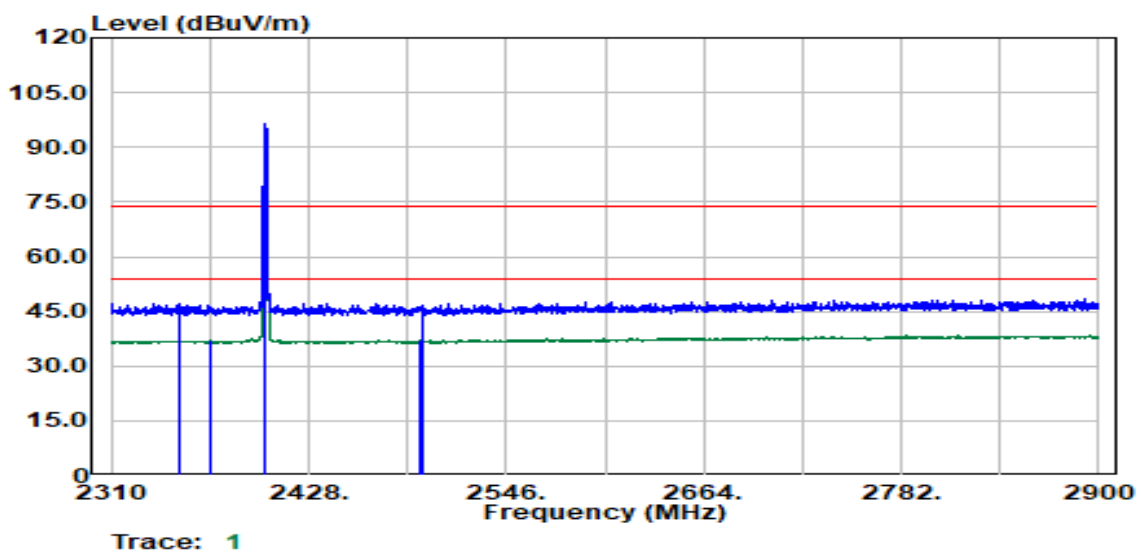
Test Mode: Mode 1 (Dipole Antenna)

Test Mode:	GFSK_BDR-1Mbps Low CH	Temp/Hum	22.5(°C)/ 59%RH
Test Item	Band Edge	Test Date	May 29, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		



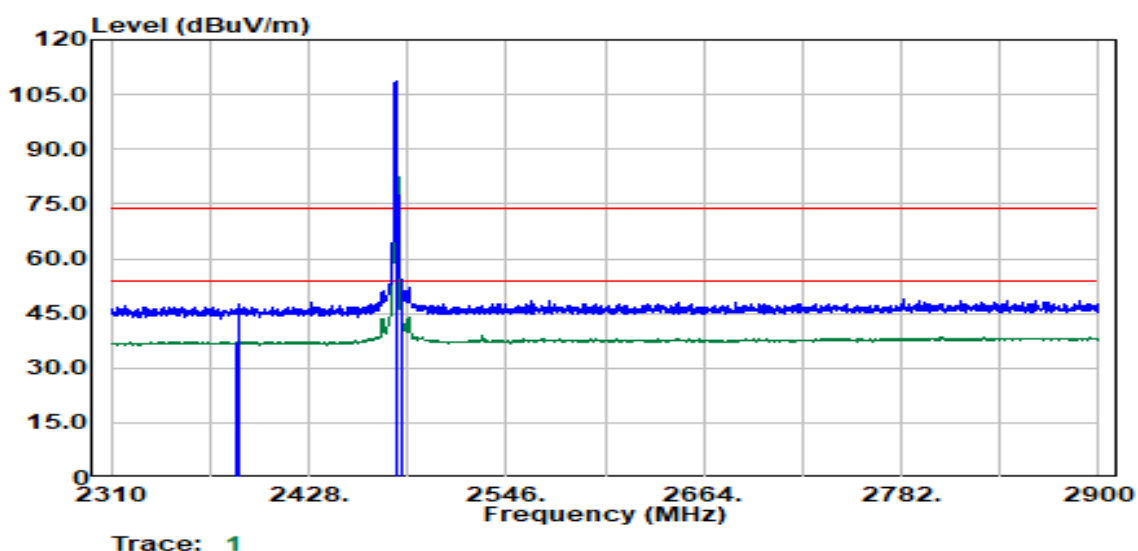
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2323.76	Peak	43.40	4.66	48.06	74.00	-25.94
2389.78	Average	33.18	4.80	37.99	54.00	-16.01
2402.00	Peak	102.75	4.51	107.27	--	--
2402.00	Average	--	-25.18	82.09	--	--
2489.08	Peak	41.75	4.56	46.31	74.00	-27.69
2499.33	Average	32.64	4.64	37.29	54.00	-16.71

Test Mode:	GFSK_BDR-1Mbps Low CH	Temp/Hum	22.5(°C)/ 59%RH
Test Item	Band Edge	Test Date	May 29, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
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)
2351.52	Peak	42.42	4.87	47.28	74.00	-26.72
2368.53	Average	32.26	4.71	36.96	54.00	-17.04
2402.00	Peak	91.87	4.51	96.38	--	--
2402.00	Average		-25.18	71.2	--	--
2495.08	Average	32.34	4.60	36.94	54.00	-17.06
2495.58	Peak	41.90	4.60	46.51	74.00	-27.49

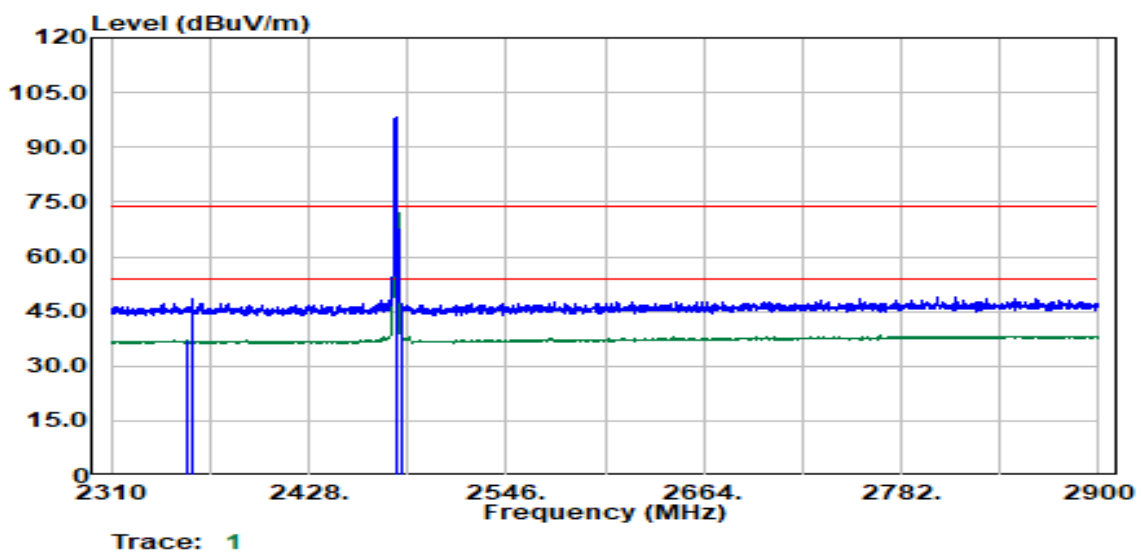
Test Mode:	GFSK_BDR-1Mbps High CH	Temp/Hum	22.5(°C)/ 59%RH
Test Item	Band Edge	Test Date	May 29, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2384.03	Average	32.36	4.80	37.16	54.00	-16.84
2386.28	Peak	42.68	4.80	47.48	74.00	-26.52
2480.00	Peak	104.23	4.65	108.87	--	--
2480.00	Average		-25.18	83.69	--	--
2483.57	Peak	48.91	4.61	53.52	74.00	-20.48
2483.57	Average	39.52	4.61	44.13	54.00	-9.87

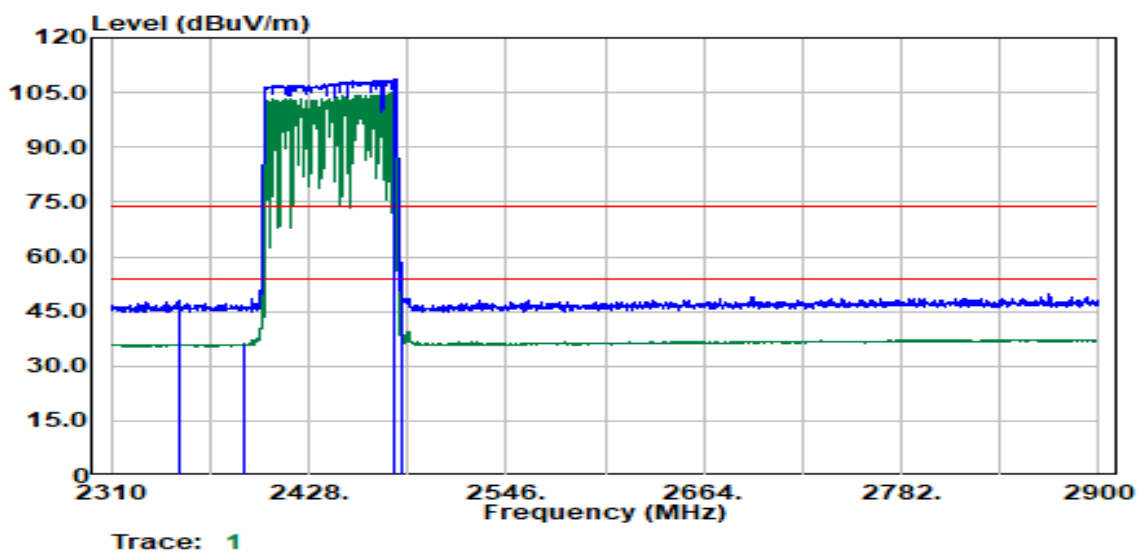


Test Mode:	GFSK_BDR-1Mbps High CH	Temp/Hum	22.5(°C)/ 59%RH
Test Item	Band Edge	Test Date	May 29, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak / Average		



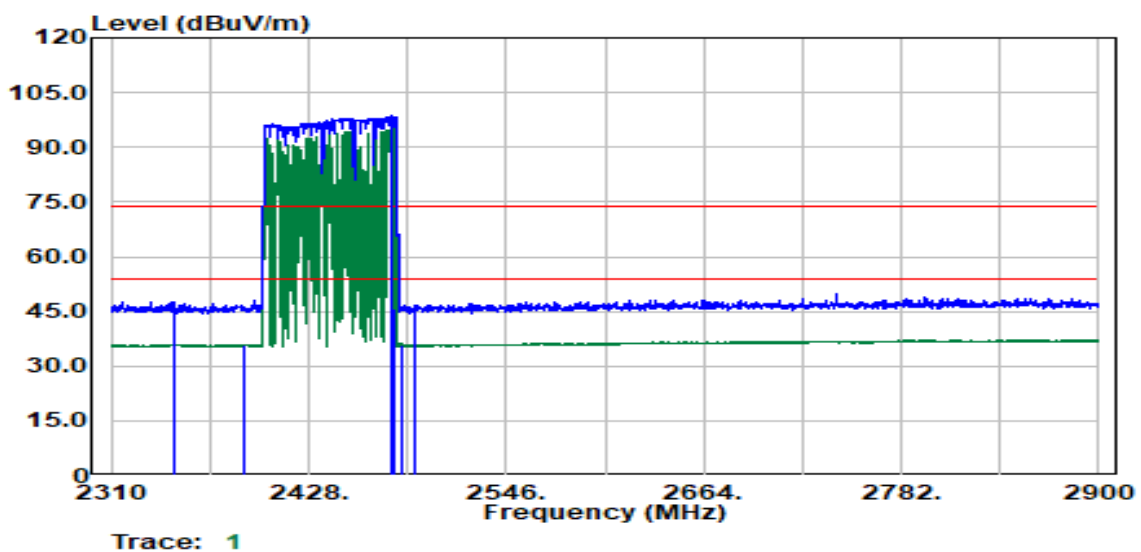
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2355.52	Average	32.25	4.83	37.07	54.00	-16.93
2358.02	Peak	43.47	4.80	48.27	74.00	-25.73
2480.00	Peak	93.77	4.65	98.41	--	--
2480.00	Average		-25.18	73.23	--	--
2483.82	Peak	42.02	4.61	46.63	74.00	-27.37
2483.82	Average	33.35	4.61	37.96	54.00	-16.04

Test Mode:	GFSK_BDR-1Mbps Hopping	Temp/Hum	24.3(°C)/ 60%RH
Test Item	Band Edge	Test Date	May 30, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		



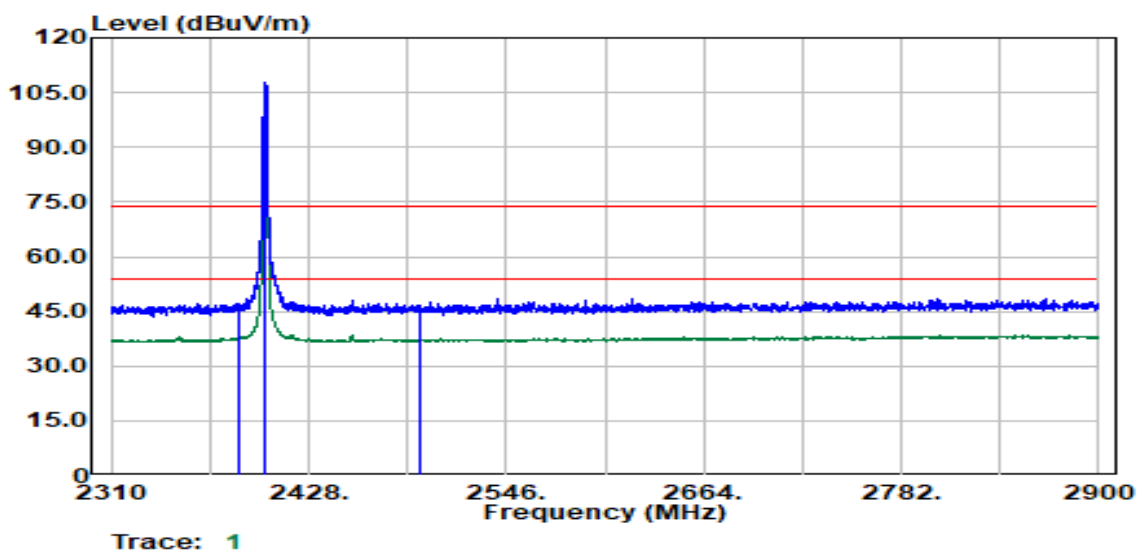
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2350.77	Peak	43.01	4.87	47.88	74.00	-26.12
2389.53	Average	31.31	4.80	36.11	54.00	-17.89
2479.07	Peak	104.20	4.66	108.85	--	--
2479.07	Average		-25.18	83.67	--	--
2483.57	Peak	53.78	4.61	58.39	74.00	-15.61
2483.57	Average	35.49	4.61	40.10	54.00	-13.90

Test Mode:	GFSK_BDR-1Mbps Hopping	Temp/Hum	24.3(°C)/ 60%RH
Test Item	Band Edge	Test Date	May 30, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak / Average		



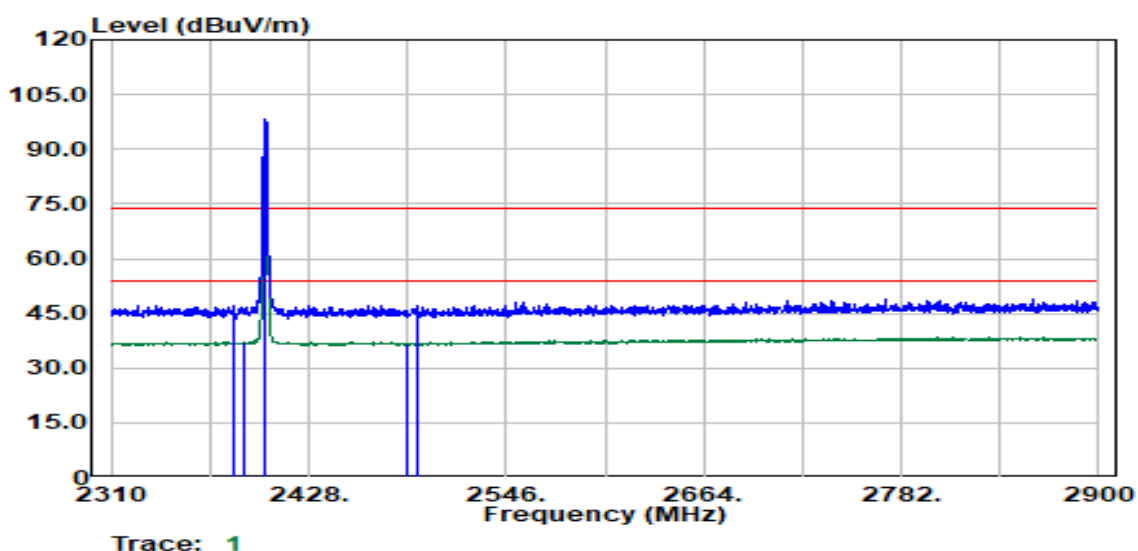
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBPμV)	Factor (dB)	Actual FS (dBPμV/m)	Limit @3m (dBPμV/m)	Margin (dB)
2347.02	Peak	42.77	4.85	47.62	74.00	-26.38
2388.78	Average	31.07	4.80	35.87	54.00	-18.13
2477.32	Peak	93.95	4.67	98.62	--	--
2479.07	Average		-25.18	73.44	--	--
2483.82	Average	31.20	4.61	35.81	54.00	-18.19
2492.08	Peak	42.16	4.57	46.73	74.00	-27.27

Test Mode:	8DPSK_EDR-3Mbps Low CH	Temp/Hum	24.3(°C)/ 60%RH
Test Item	Band Edge	Test Date	May 30, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		



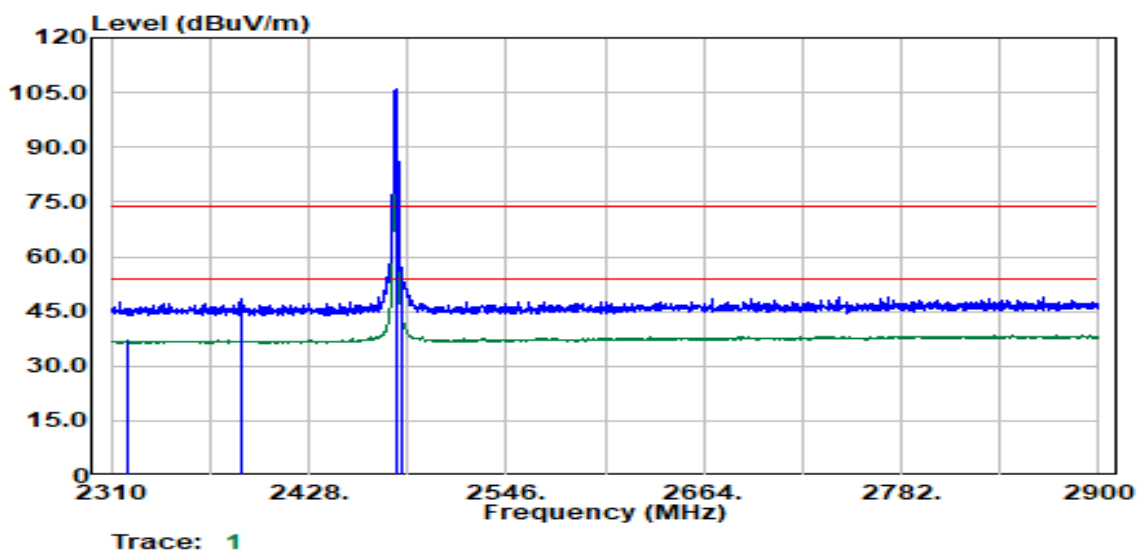
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2386.03	Peak	42.45	4.80	47.25	74.00	-26.75
2386.53	Average	34.11	4.80	38.91	54.00	-15.09
2402.00	Peak	103.44	4.51	107.95	--	--
2402.00	Average	--	-24.87	83.08	--	--
2494.83	Peak	42.19	4.60	46.78	74.00	-27.22
2494.83	Average	32.73	4.60	37.32	54.00	-16.68

Test Mode:	8DPSK_EDR-3Mbps Low CH	Temp/Hum	24.3(°C)/ 60%RH
Test Item	Band Edge	Test Date	May 30, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak / Average		



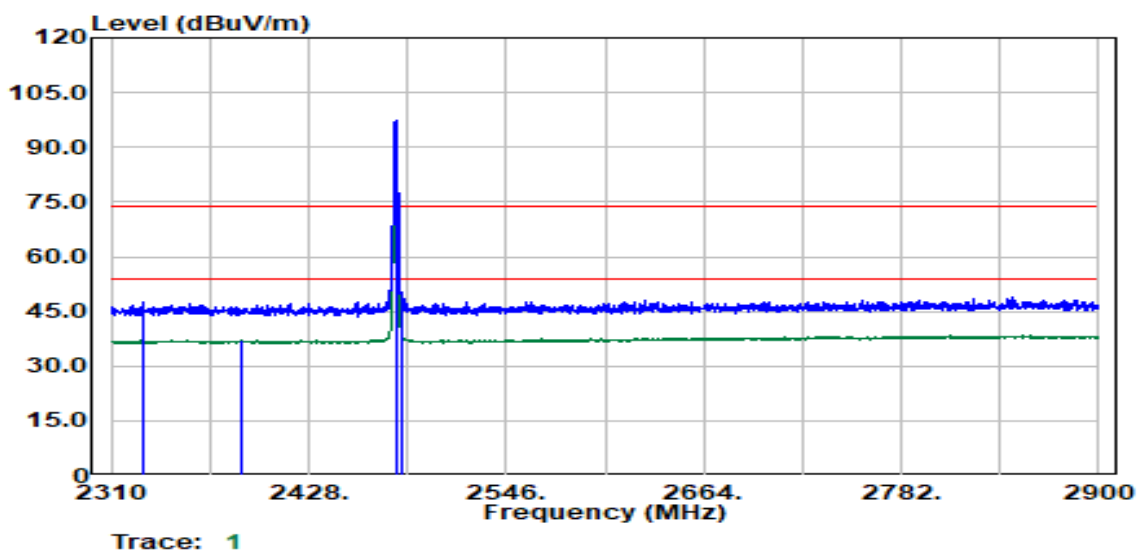
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBUV)	Factor (dB)	Actual FS (dBUV/m)	Limit @3m (dBUV/m)	Margin (dB)
2383.03	Peak	42.40	4.80	47.20	74.00	-26.80
2389.03	Average	32.31	4.80	37.12	54.00	-16.88
2402.00	Peak	93.68	4.51	98.19	--	--
2402.00	Average	--	-24.87	73.32	--	--
2486.33	Average	32.26	4.58	36.85	54.00	-17.15
2493.08	Peak	42.53	4.58	47.11	74.00	-26.89

Test Mode:	8DPSK_EDR-3Mbps High CH	Temp/Hum	22.5(°C)/ 59%RH
Test Item	Band Edge	Test Date	May 29, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		



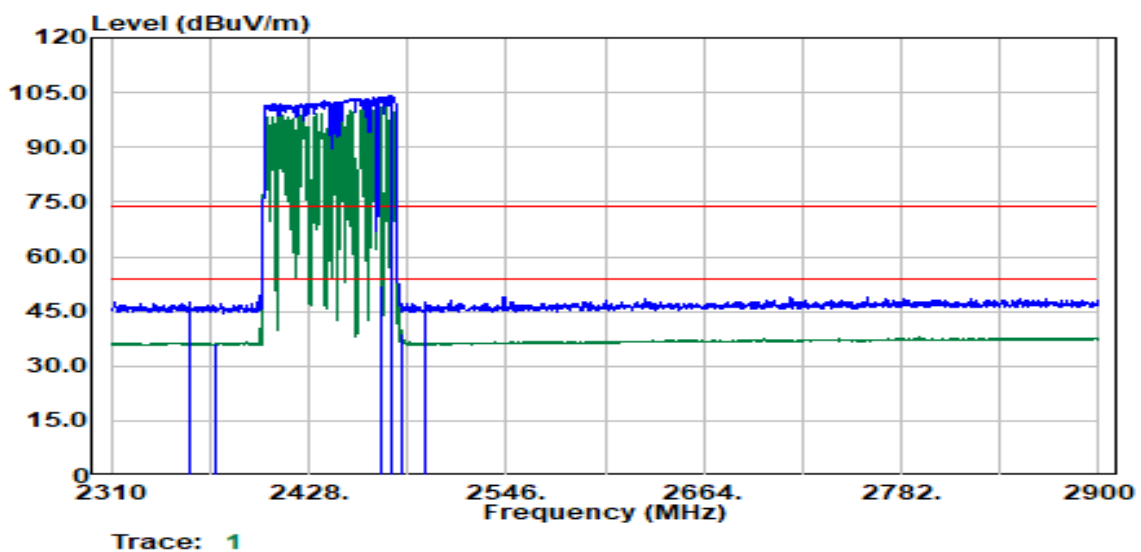
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2320.50	Average	32.35	4.66	37.01	54.00	-16.99
2388.53	Peak	43.58	4.80	48.38	74.00	-25.62
2480.00	Peak	101.25	4.65	105.89	--	--
2480.00	Average	--	-24.87	81.02	--	--
2483.57	Average	39.92	4.61	44.54	54.00	-9.46
2484.07	Peak	51.41	4.61	56.01	74.00	-17.99

Test Mode:	8DPSK_EDR-3Mbps High CH	Temp/Hum	22.5(°C)/ 59%RH
Test Item	Band Edge	Test Date	May 29, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
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)
2329.51	Peak	42.67	4.66	47.33	74.00	-26.67
2388.28	Average	32.28	4.80	37.09	54.00	-16.91
2480.00	Peak	92.92	4.65	97.56	--	--
2480.00	Average	--	-24.87	72.69	--	--
2483.57	Peak	43.85	4.61	48.46	74.00	-25.54
2483.57	Average	34.36	4.61	38.97	54.00	-15.03

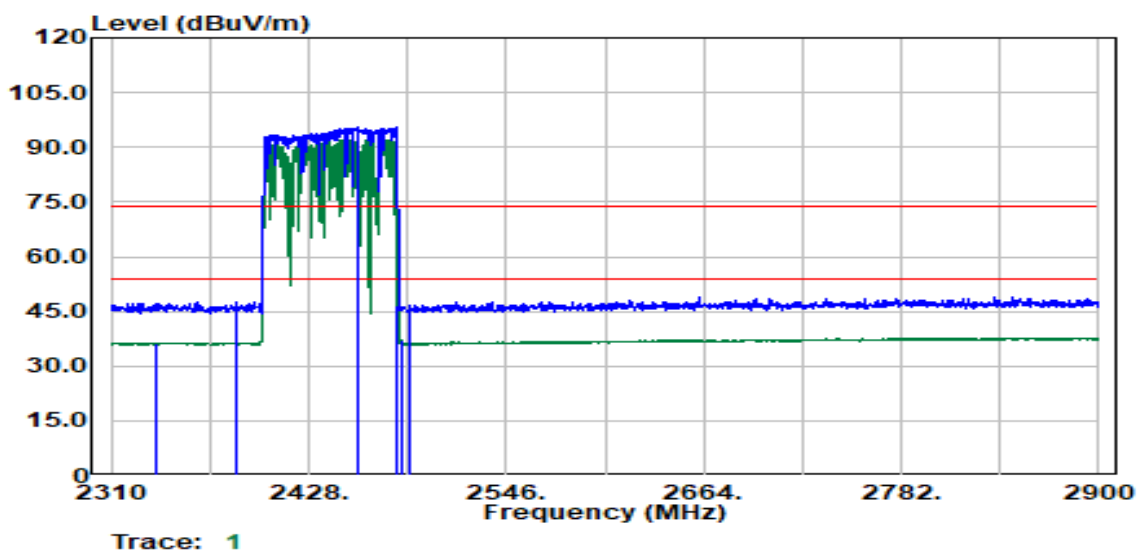
Test Mode:	8DPSK_EDR-3Mbps Hopping	Temp/Hum	24.3(°C)/ 60%RH
Test Item	Band Edge	Test Date	May 30, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2356.77	Peak	42.86	4.82	47.68	74.00	-26.32
2373.03	Average	31.68	4.72	36.40	54.00	-17.60
2471.07	Average	--	-24.87	79.45	--	--
2477.07	Peak	99.65	4.67	104.32	--	--
2484.07	Average	34.31	4.61	38.92	54.00	-15.08
2498.33	Peak	42.70	4.63	47.34	74.00	-26.66



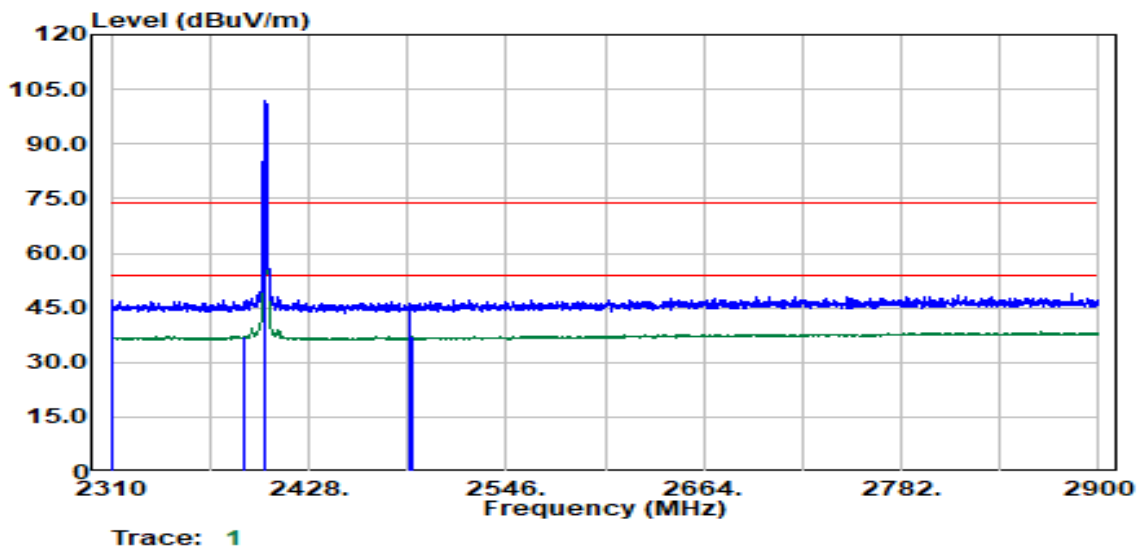
Test Mode:	8DPSK_EDR-3Mbps Hopping	Temp/Hum	24.3(°C)/ 60%RH
Test Item	Band Edge	Test Date	May 30, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak / Average		



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2337.26	Average	31.70	4.74	36.44	54.00	-17.56
2384.78	Peak	42.71	4.80	47.51	74.00	-26.49
2457.31	Peak	90.96	4.61	95.58	--	--
2480.00	Average	--	-24.87	70.71	--	--
2484.07	Average	32.39	4.61	37.00	54.00	-17.00
2487.83	Peak	42.00	4.57	46.56	74.00	-27.44

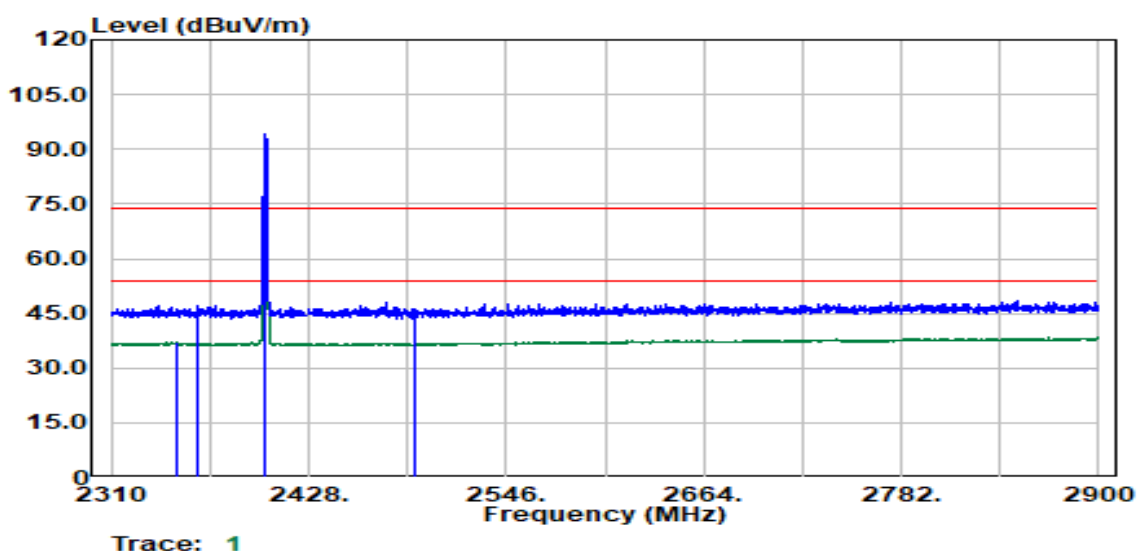
**Test Mode: Mode 2 (PIFA Antenna)**

Test Mode:	GFSK_BDR-1Mbps Low CH	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Band Edge	Test Date	June 5, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		



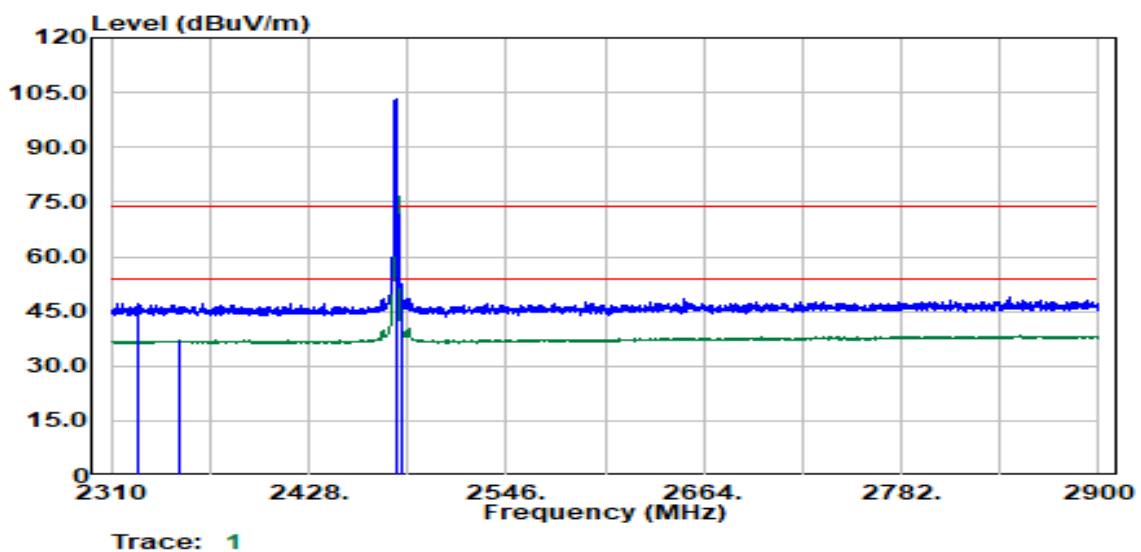
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2311.25	Peak	42.47	4.74	47.21	74.00	-26.79
2389.28	Average	32.36	4.80	37.16	54.00	-16.84
2402.00	Peak	97.57	4.51	102.08	--	--
2402.00	Average	--	-25.18	76.9	--	--
2488.83	Peak	41.69	4.56	46.25	74.00	-27.75
2490.58	Average	32.38	4.55	36.93	54.00	-17.07

Test Mode:	GFSK_BDR-1Mbps Low CH	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Band Edge	Test Date	June 5, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak / Average		



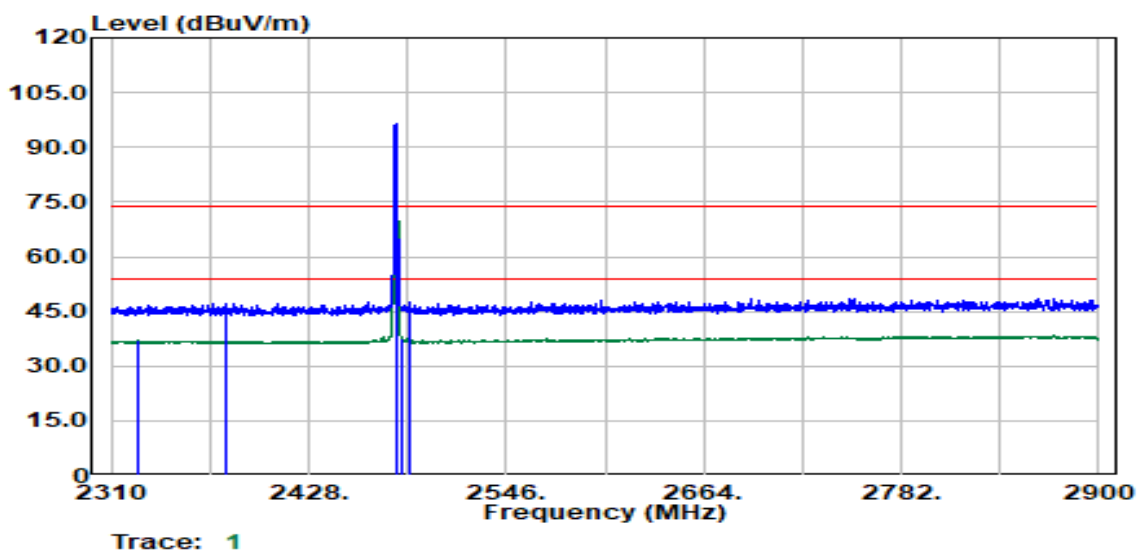
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2349.27	Average	32.12	4.87	36.99	54.00	-17.01
2361.52	Peak	42.14	4.77	46.91	74.00	-27.09
2402.00	Peak	89.53	4.51	94.04	--	--
2402.00	Average	--	-25.18	68.86	--	--
2491.08	Peak	41.72	4.56	46.28	74.00	-27.72
2491.58	Average	32.31	4.56	36.87	54.00	-17.13

Test Mode:	GFSK_BDR-1Mbps High CH	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Band Edge	Test Date	June 5, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		



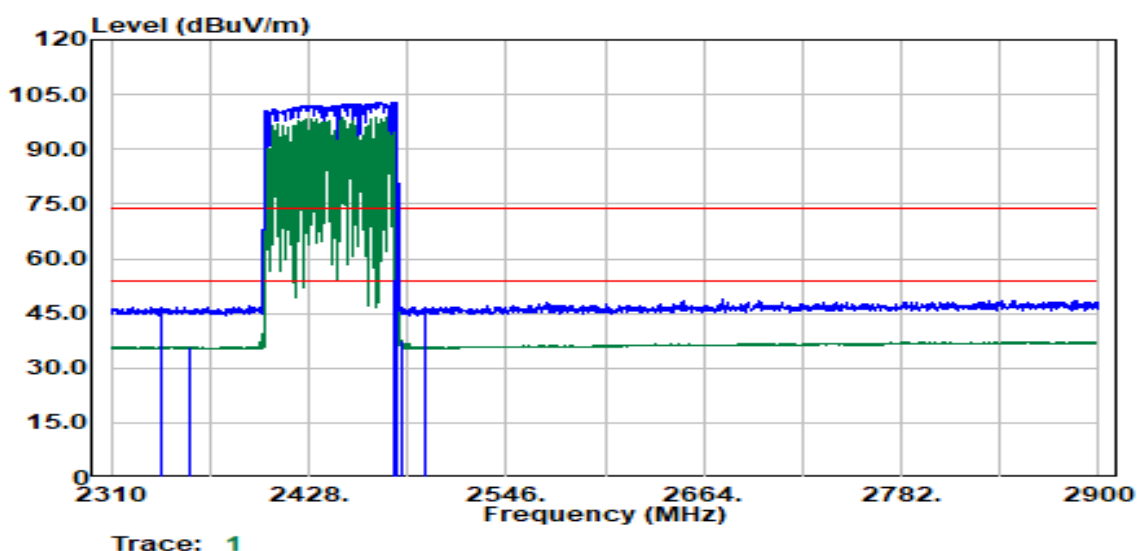
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2326.51	Peak	42.58	4.66	47.24	74.00	-26.76
2350.27	Average	32.08	4.88	36.96	54.00	-17.04
2480.00	Peak	98.42	4.65	103.07	--	--
2480.00	Average	--	-25.18	77.89	--	--
2483.57	Average	35.91	4.61	40.52	54.00	-13.48
2484.07	Peak	44.76	4.61	49.37	74.00	-24.63

Test Mode:	GFSK_BDR-1Mbps High CH	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Band Edge	Test Date	June 5, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak / Average		



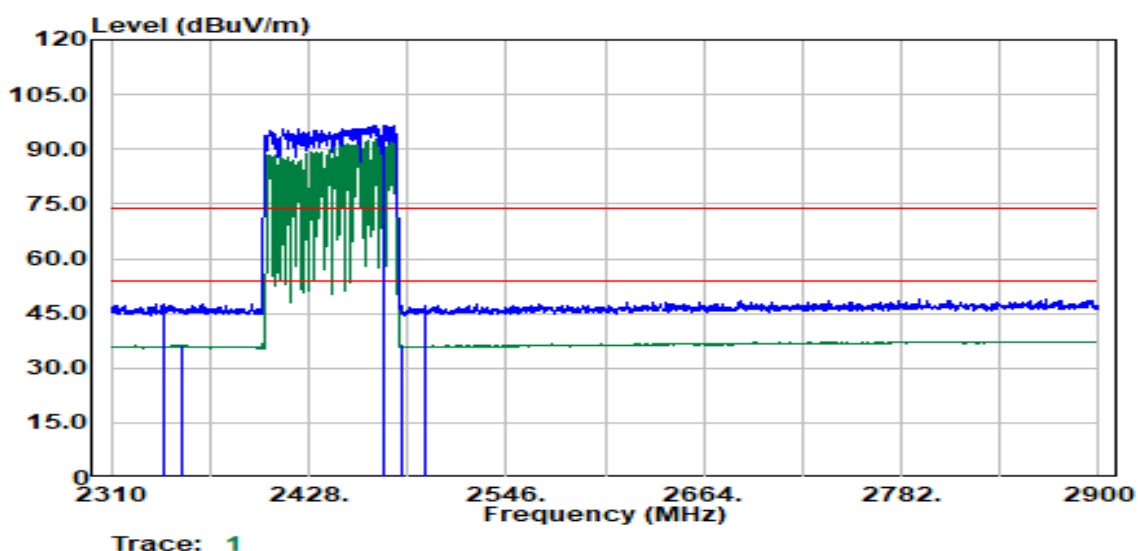
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2326.76	Average	32.35	4.66	37.01	54.00	-16.99
2378.03	Peak	42.43	4.78	47.21	74.00	-26.79
2480.00	Peak	91.63	4.65	96.27	--	--
2480.00	Average	--	-25.18	71.09	--	--
2483.82	Average	32.99	4.61	37.59	54.00	-16.41
2488.08	Peak	43.04	4.57	47.60	74.00	-26.40

Test Mode:	GFSK_BDR-1Mbps Hopping	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Band Edge	Test Date	June 5, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		



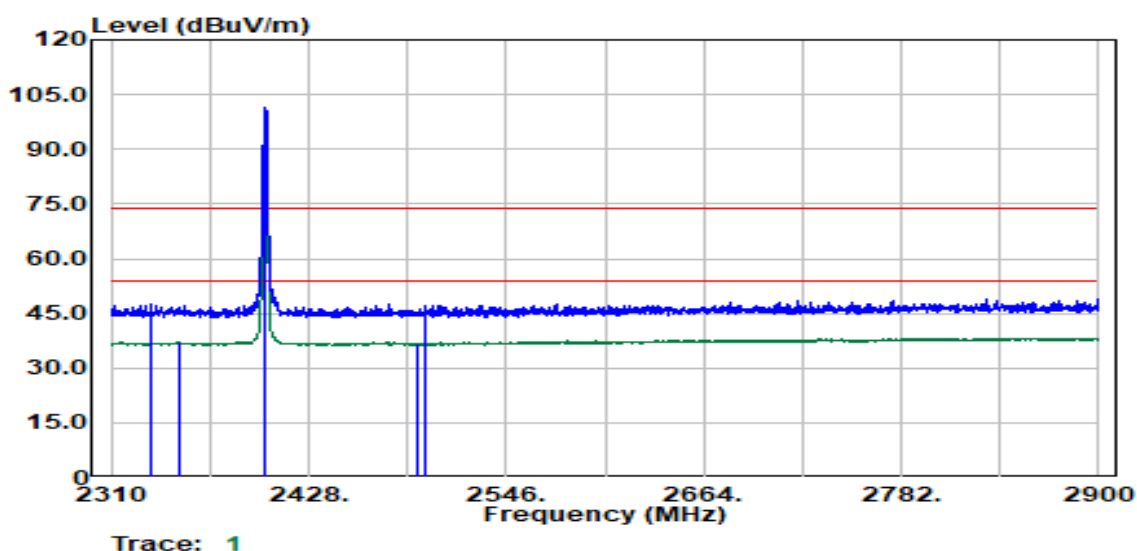
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2340.01	Peak	42.05	4.77	46.82	74.00	-27.18
2357.02	Average	31.02	4.81	35.83	54.00	-18.17
2478.82	Average	--	-25.18	77.83	--	--
2480.00	Peak	98.37	4.65	103.01	--	--
2483.57	Average	32.87	4.61	37.48	54.00	-16.52
2497.83	Peak	42.08	4.63	46.70	74.00	-27.30

Test Mode:	GFSK_BDR-1Mbps Hopping	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Band Edge	Test Date	June 5, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak / Average		



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBUV/m)	Limit @3m (dBUV/m)	Margin (dB)
2340.76	Peak	42.85	4.78	47.63	74.00	-26.37
2353.02	Average	31.33	4.85	36.18	54.00	-17.82
2473.07	Peak	91.78	4.71	96.50	--	--
2473.07	Average	--	-25.18	71.32	--	--
2483.82	Average	31.57	4.61	36.18	54.00	-17.82
2497.83	Peak	42.25	4.63	46.87	74.00	-27.13

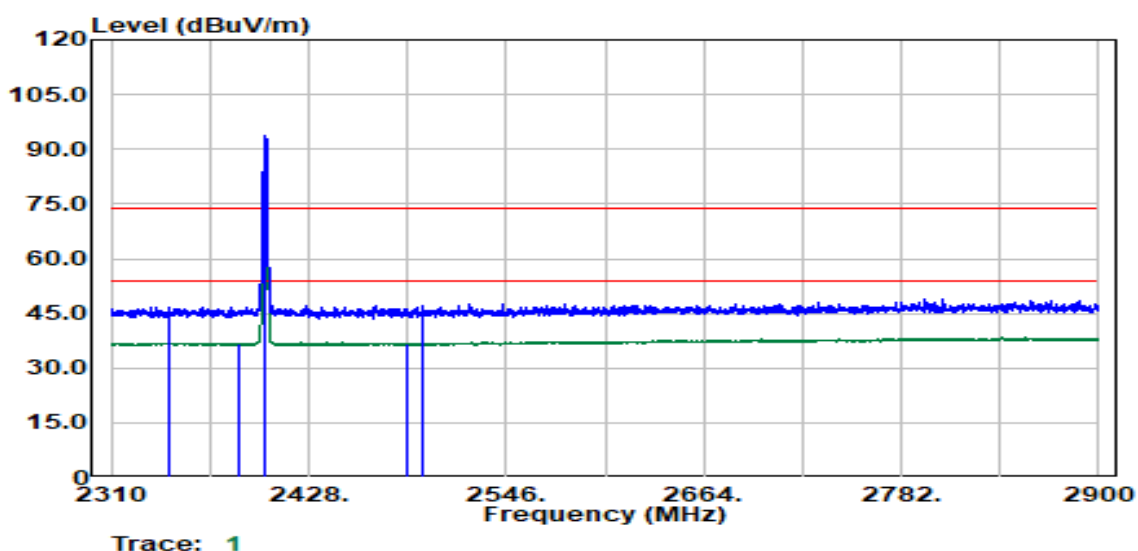
Test Mode:	8DPSK_EDR-3Mbps Low CH	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Band Edge	Test Date	June 5, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2334.01	Peak	42.97	4.71	47.67	74.00	-26.33
2350.27	Average	32.23	4.88	37.11	54.00	-16.89
2402.00	Peak	96.85	4.51	101.36	--	--
2402.00	Average	--	-24.87	76.49	--	--
2492.58	Average	32.26	4.57	36.83	54.00	-17.17
2497.83	Peak	42.30	4.63	46.92	74.00	-27.08

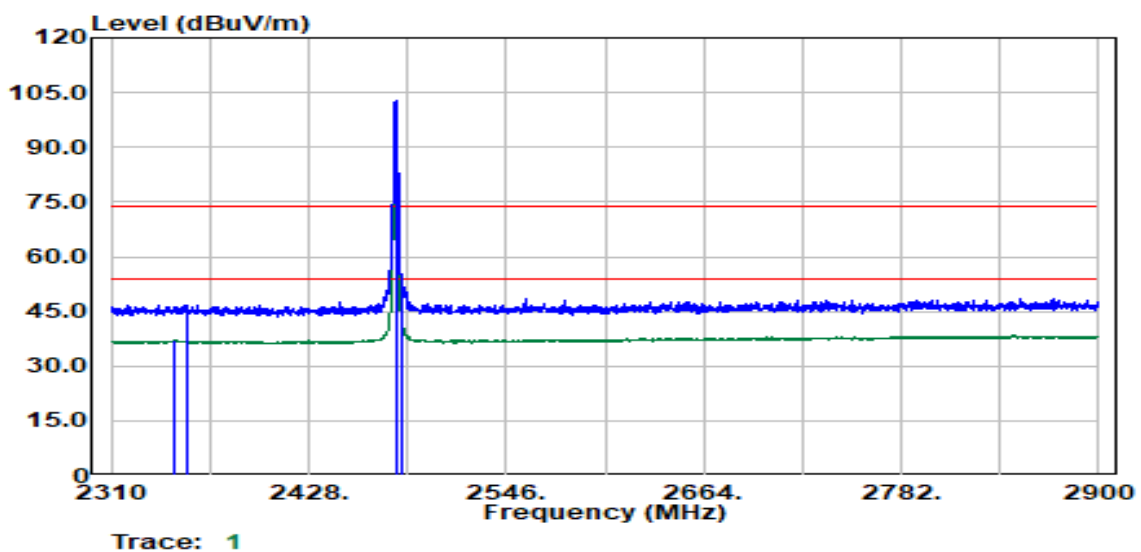


Test Mode:	8DPSK_EDR-3Mbps Low CH	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Band Edge	Test Date	June 5, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak / Average		



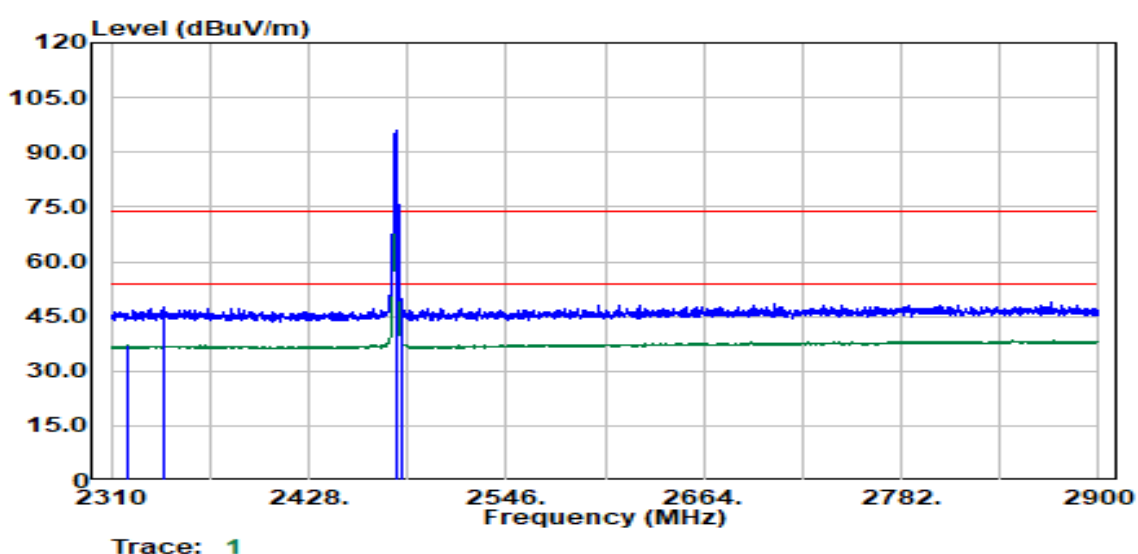
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2344.77	Peak	41.77	4.82	46.60	74.00	-27.40
2385.78	Average	32.10	4.80	36.90	54.00	-17.10
2402.00	Peak	89.35	4.51	93.87	--	--
2402.00	Average	--	-24.87	69.00	--	--
2486.33	Average	32.25	4.58	36.83	54.00	-17.17
2496.58	Peak	42.36	4.62	46.98	74.00	-27.02

Test Mode:	8DPSK_EDR-3Mbps High CH	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Band Edge	Test Date	June 5, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		



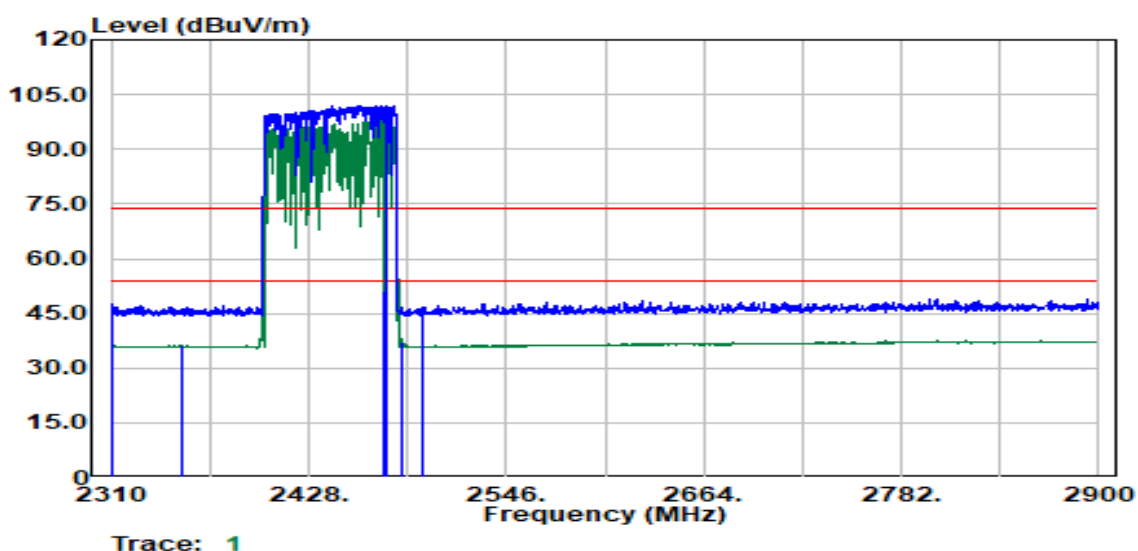
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2347.77	Average	32.23	4.86	37.09	54.00	-16.91
2355.27	Peak	41.88	4.83	46.71	74.00	-27.29
2480.00	Peak	98.29	4.65	102.94	--	--
2480.00	Average	--	-24.87	78.07	--	--
2483.57	Peak	50.47	4.61	55.08	74.00	-18.92
2483.57	Average	38.09	4.61	42.70	54.00	-11.30

Test Mode:	8DPSK_EDR-3Mbps High CH	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Band Edge	Test Date	June 5, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak / Average		



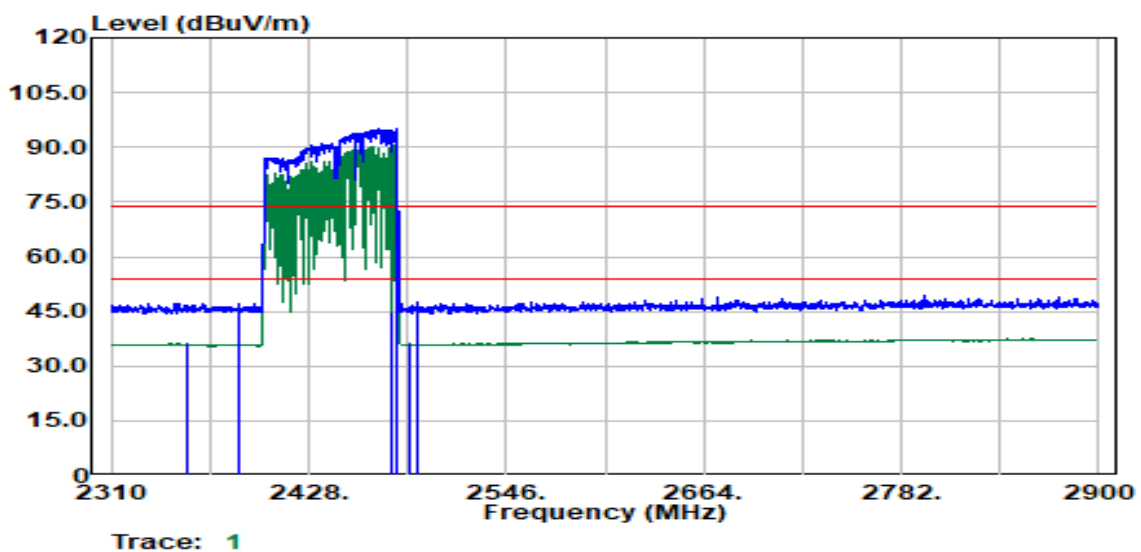
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2319.50	Average	32.30	4.66	36.96	54.00	-17.04
2341.01	Peak	42.66	4.78	47.45	74.00	-26.55
2480.00	Peak	91.20	4.65	95.85	--	--
2480.00	Average	--	-24.87	70.98	--	--
2483.57	Peak	44.53	4.61	49.14	74.00	-24.86
2483.82	Average	33.63	4.61	38.24	54.00	-15.76

Test Mode:	8DPSK_EDR-3Mbps Hopping	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Band Edge	Test Date	June 5, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBPV)	Factor (dB)	Actual FS (dBPV/m)	Limit @3m (dBPV/m)	Margin (dB)
2311.25	Peak	42.90	4.74	47.64	74.00	-26.36
2352.02	Average	31.33	4.86	36.19	54.00	-17.81
2473.07	Average	--	-24.87	77.01	--	--
2474.32	Peak	97.18	4.70	101.88	--	--
2484.07	Average	32.74	4.61	37.35	54.00	-16.65
2496.58	Peak	42.12	4.62	46.74	74.00	-27.26

Test Mode:	8DPSK_EDR-3Mbps Hopping	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Band Edge	Test Date	June 5, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak / Average		



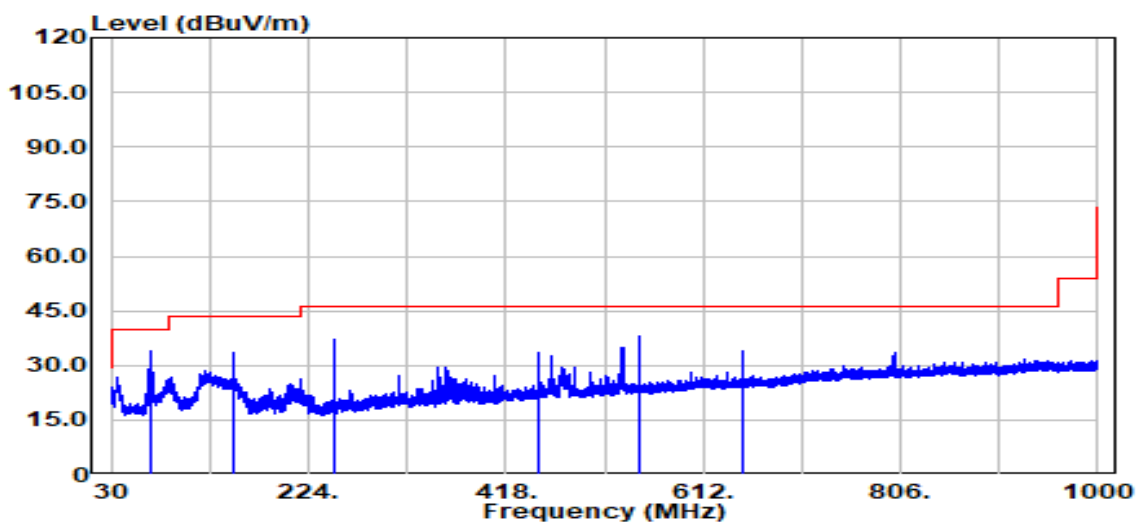
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
2354.77	Average	31.29	4.84	36.13	54.00	-17.87
2386.78	Peak	42.43	4.80	47.23	74.00	-26.77
2477.07	Average	--	-24.87	70.25	--	--
2480.07	Peak	90.48	4.65	95.12	--	--
2488.33	Average	31.59	4.56	36.15	54.00	-17.85
2492.83	Peak	43.03	4.58	47.61	74.00	-26.39

Report No.: TMWK2305001499KR

### Below 1G Test Data

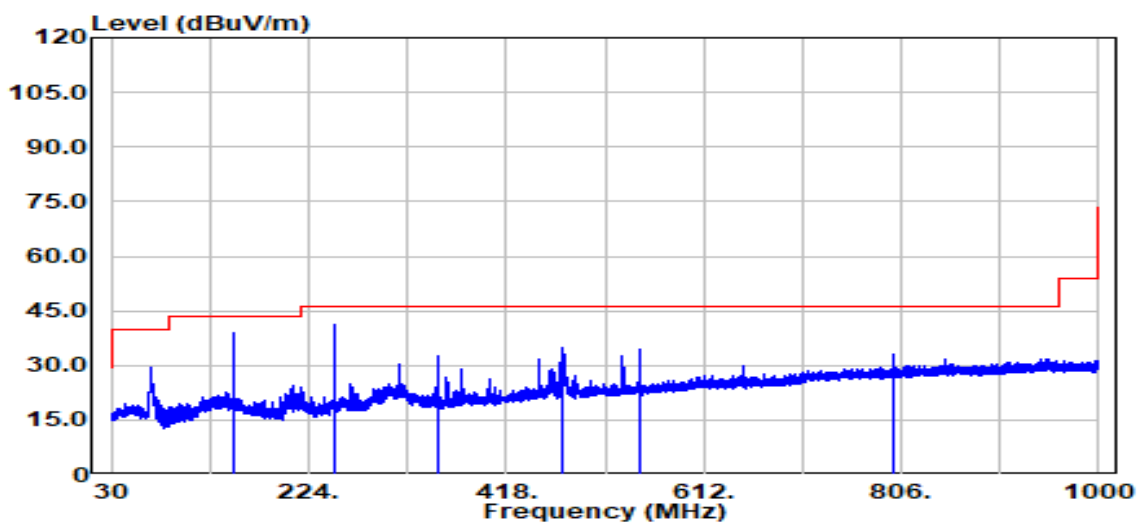
#### Test Mode: Mode 1 (Dipole Antenna)

Test Mode:	GFSK_BDR-1Mbps High CH	Temp/Hum	24.5(°C)/ 62%RH
Test Item	30MHz-1GHz	Test Date	May 31, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
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)
69.19	Peak	49.14	-15.07	34.07	40.00	-5.93
149.99	Peak	46.39	-12.86	33.53	43.50	-9.97
250.00	Peak	51.14	-14.00	37.14	46.00	-8.86
450.01	Peak	41.70	-8.31	33.39	46.00	-12.61
550.02	Peak	44.90	-6.69	38.21	46.00	-7.79
650.02	Peak	38.33	-4.30	34.03	46.00	-11.97

Test Mode:	GFSK_BDR-1Mbps High CH	Temp/Hum	24.5(°C)/ 62%RH
Test Item	30MHz-1GHz	Test Date	May 31, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak		

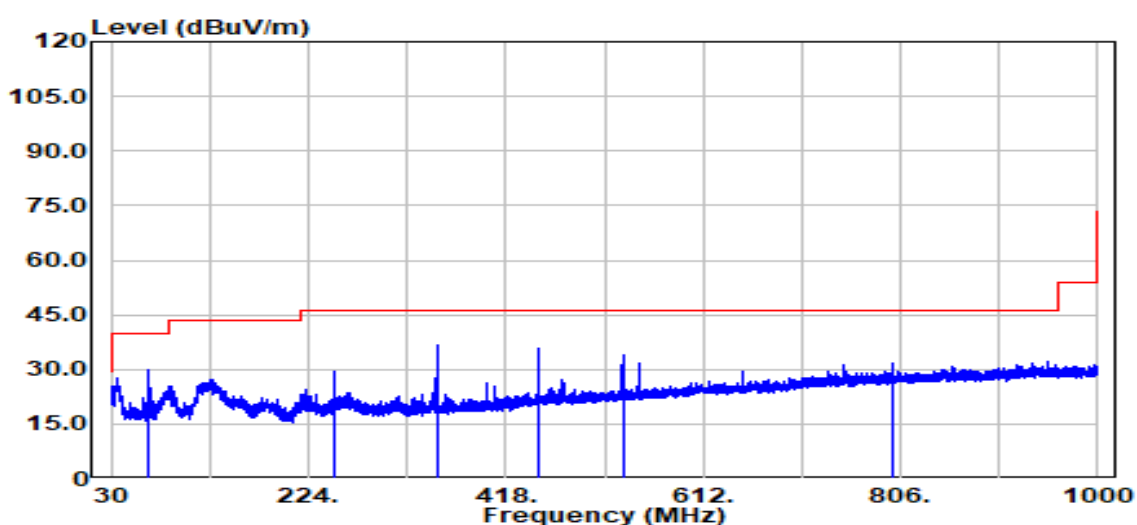


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBUV/m)	Limit @3m (dBUV/m)	Margin (dB)
149.99	Peak	51.63	-12.86	38.77	43.50	-4.73
250.00	Peak	55.36	-14.00	41.36	46.00	-4.64
350.00	Peak	43.92	-11.18	32.74	46.00	-13.26
474.26	Peak	42.72	-7.94	34.77	46.00	-11.23
550.02	Peak	40.90	-6.69	34.21	46.00	-11.79
797.56	Peak	35.13	-2.04	33.09	46.00	-12.91

Report No.: TMWK2305001499KR

**Test Mode: Mode 2 (PIFA Antenna)**

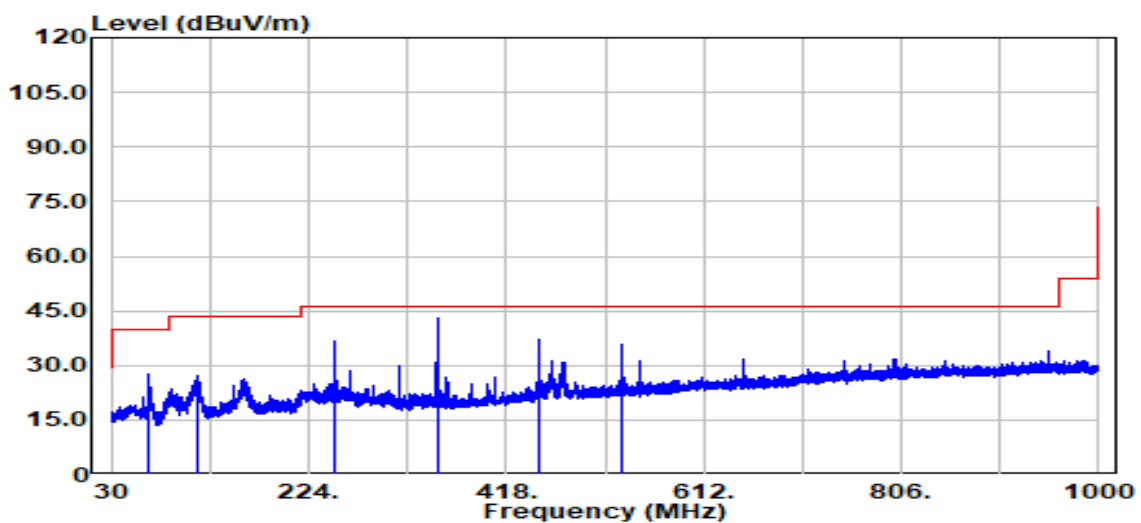
Test Mode:	GFSK_EDR-1Mbps High CH	Temp/Hum	25.4 (°C)/ 57%RH
Test Item	30MHz-1GHz	Test Date	June 6, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak		



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
67.05	Peak	44.19	-14.43	29.77	40.00	-10.23
250.00	Peak	43.57	-14.00	29.57	46.00	-16.43
350.00	Peak	47.90	-11.18	36.72	46.00	-9.28
450.01	Peak	44.06	-8.31	35.75	46.00	-10.25
533.33	Peak	40.63	-6.84	33.79	46.00	-12.21
799.21	Peak	33.85	-2.04	31.81	46.00	-14.19



Test Mode:	GFSK_EDR-1Mbps High CH	Temp/Hum	25.4 (°C)/ 57%RH
Test Item	30MHz-1GHz	Test Date	June 6, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak		



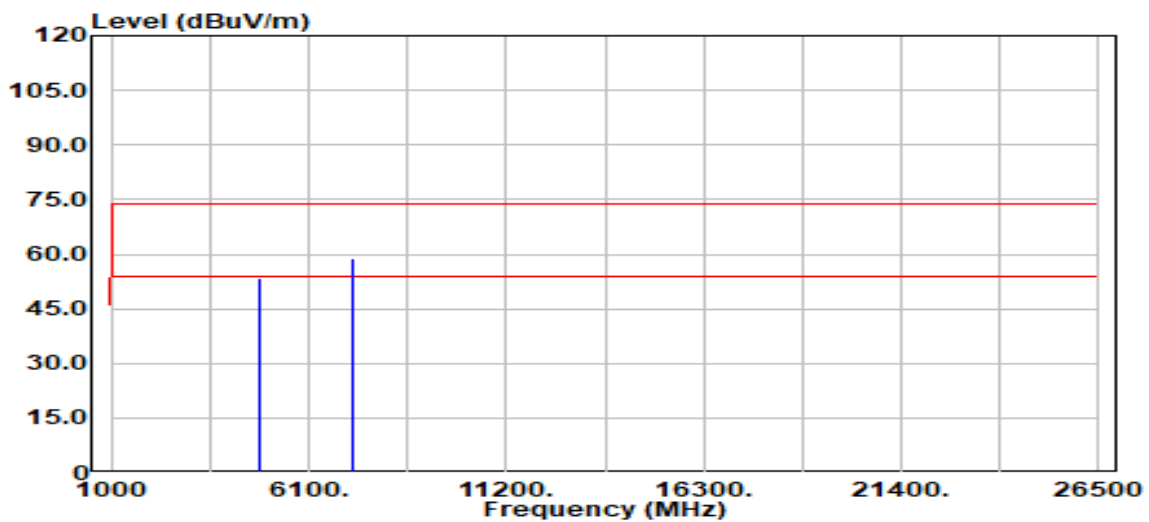
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBUV)	Factor (dB)	Actual FS (dBUV/m)	Limit @3m (dBUV/m)	Margin (dB)
66.38	Peak	42.06	-14.49	27.57	40.00	-12.43
113.91	Peak	43.01	-15.88	27.13	43.50	-16.37
250.00	Peak	50.85	-14.00	36.85	46.00	-9.15
350.00	Peak	54.04	-11.18	42.86	46.00	-3.14
450.01	Peak	45.58	-8.31	37.27	46.00	-8.73
531.10	Peak	42.48	-6.89	35.60	46.00	-10.40

Report No.: TMWK2305001499KR

### Above 1G Test Data

Test Mode: Mode 1 (Dipole Antenna)

Test Mode:	GFSK_BDR-1Mbps Low CH	Temp/Hum	24.5(°C)/ 62%RH
Test Item	Harmonic	Test Date	May 31, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		

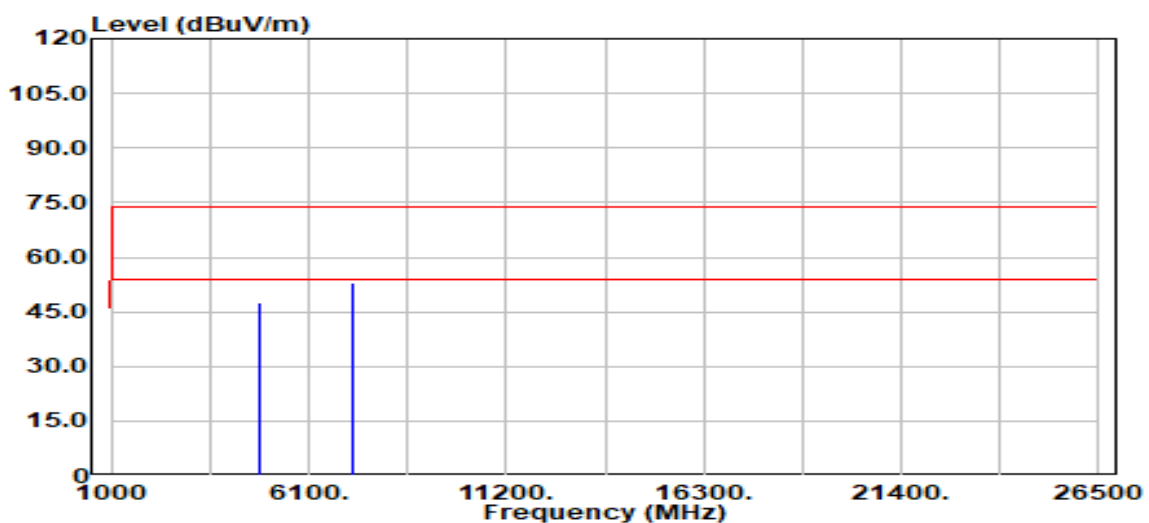


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4804.00	Peak	52.92	0.38	53.31	74.00	-20.69
4804.00	Average	--	-25.18	28.13	54.00	-25.87
7206.00	Peak	53.57	5.33	58.89	74.00	-15.11
7206.00	Average	--	-25.18	33.71	54.00	-20.29
N/A						

### Remark:

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	GFSK_BDR-1Mbps Low CH	Temp/Hum	24.5(°C)/ 62%RH
Test Item	Harmonic	Test Date	May 31, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak / Average		

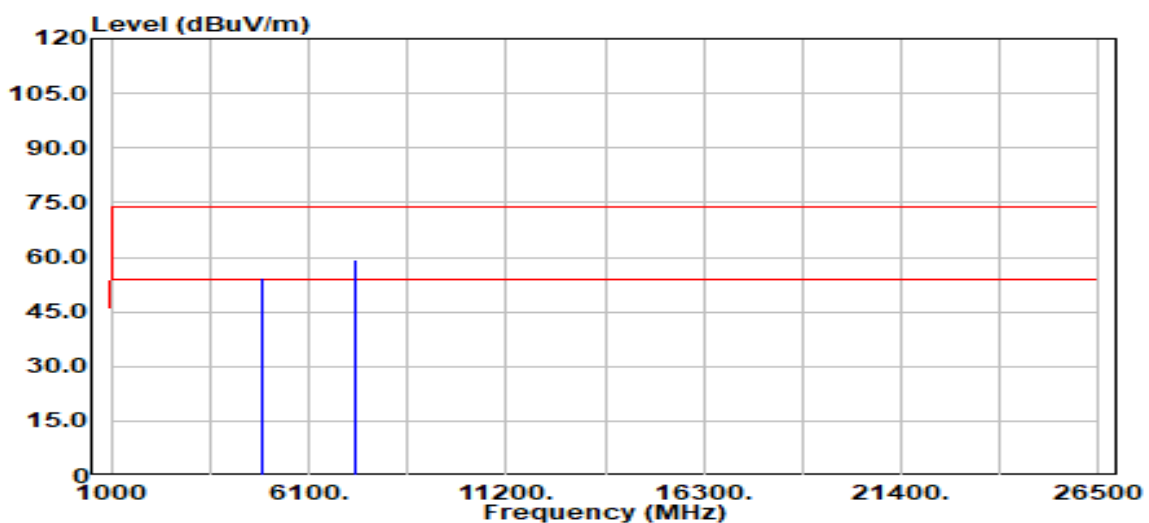


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4804.00	Peak	47.14	0.38	47.52	74.00	-26.48
4804.00	Average	--	-25.18	22.34	54.00	-31.66
7206.00	Peak	47.69	5.33	53.02	74.00	-20.98
7206.00	Average	--	-25.18	27.84	54.00	-26.16
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	GFSK_BDR-1Mbps Mid CH	Temp/Hum	24.5(°C)/ 62%RH
Test Item	Harmonic	Test Date	May 31, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		

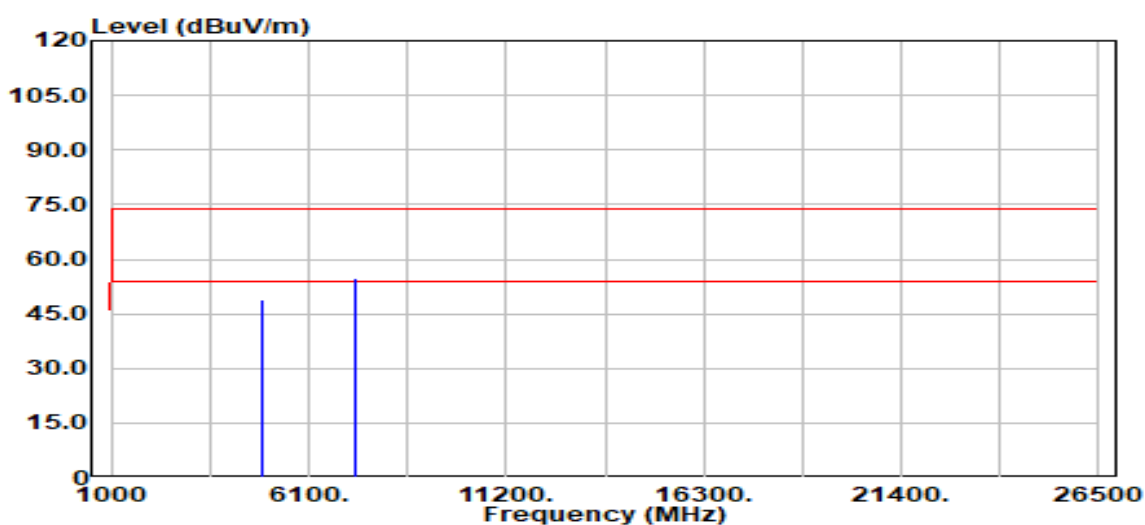


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4882.00	Peak	53.95	0.49	54.44	74.00	-19.56
4882.00	Average	--	-25.18	29.26	54.00	-24.74
7323.00	Peak	53.81	5.48	59.29	74.00	-14.71
7323.00	Average	--	-25.18	34.11	54.00	-19.89
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	GFSK_BDR-1Mbps Mid CH	Temp/Hum	24.5(°C)/ 62%RH
Test Item	Harmonic	Test Date	May 31, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak / Average		

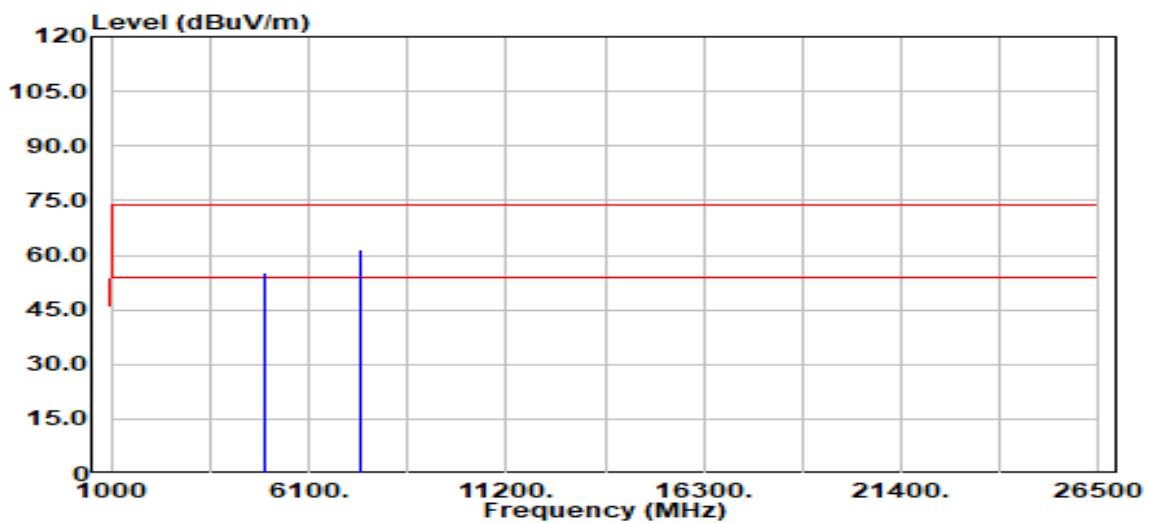


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4882.00	Peak	48.23	0.49	48.71	74.00	-25.29
4882.00	Average	--	-25.18	23.53	54.00	-30.47
7323.00	Peak	49.35	5.48	54.83	74.00	-19.17
7323.00	Average	--	-25.18	29.65	54.00	-24.35
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	GFSK_BDR-1Mbps High CH	Temp/Hum	24.5(°C)/ 62%RH
Test Item	Harmonic	Test Date	May 31, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		

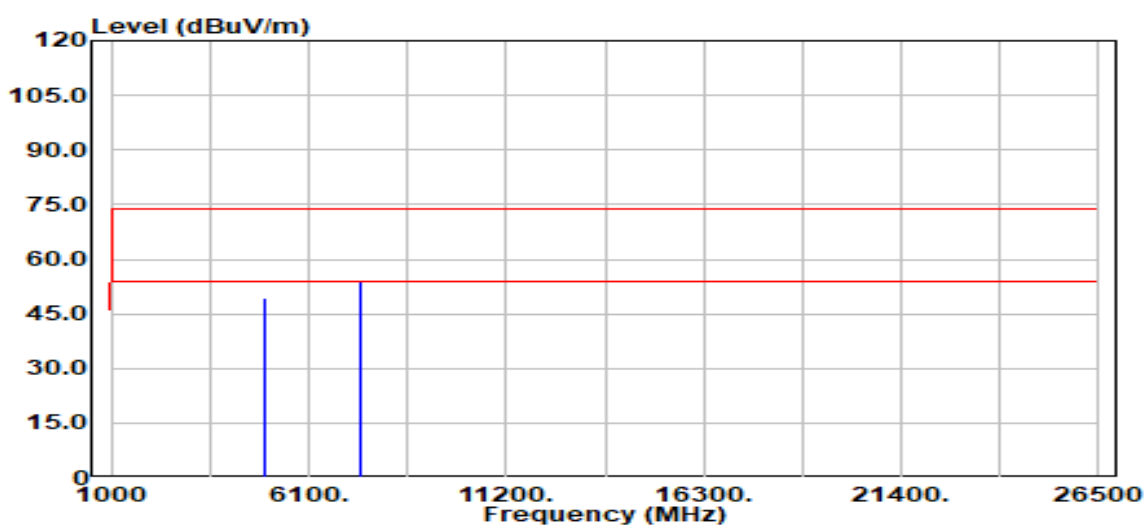


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4960.00	Peak	54.74	0.65	55.39	74.00	-18.61
4960.00	Average	--	-25.18	30.21	54.00	-23.79
7440.00	Peak	56.02	5.56	61.58	74.00	-12.42
7440.00	Average	--	-25.18	36.4	54.00	-17.6
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	GFSK_BDR-1Mbps High CH	Temp/Hum	24.5(°C)/ 62%RH
Test Item	Harmonic	Test Date	May 31, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak / Average		

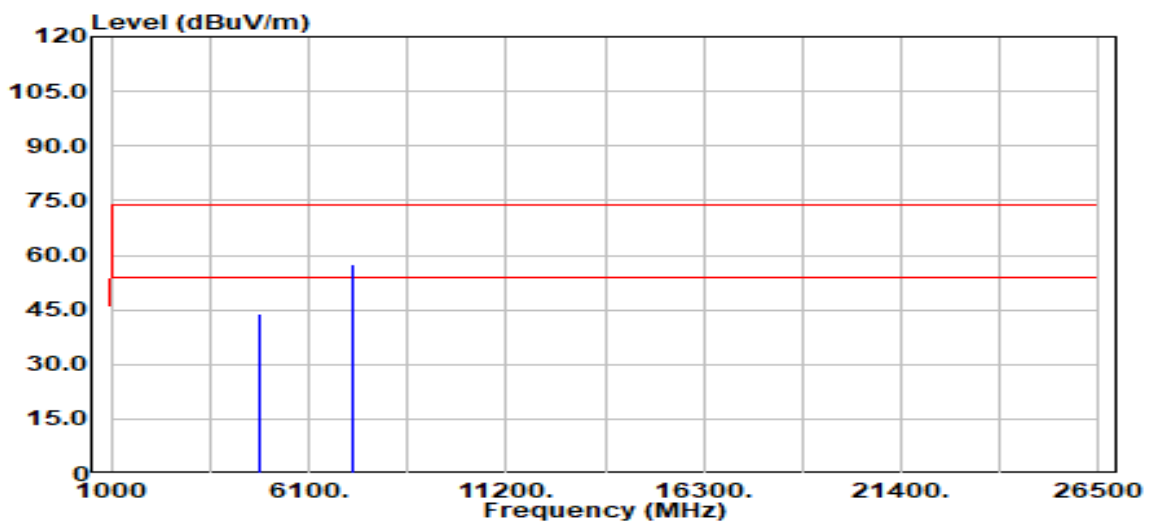


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4960.00	Peak	48.67	0.65	49.32	74.00	-24.69
4960.00	Average	--	-25.18	24.14	54.00	-29.86
7440.00	Peak	48.47	5.56	54.03	74.00	-19.97
7440.00	Average	--	-25.18	28.85	54.00	-25.15
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	8DPSK_EDR-3Mbps Low CH	Temp/Hum	24.5(°C)/ 62%RH
Test Item	Harmonic	Test Date	May 31, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		



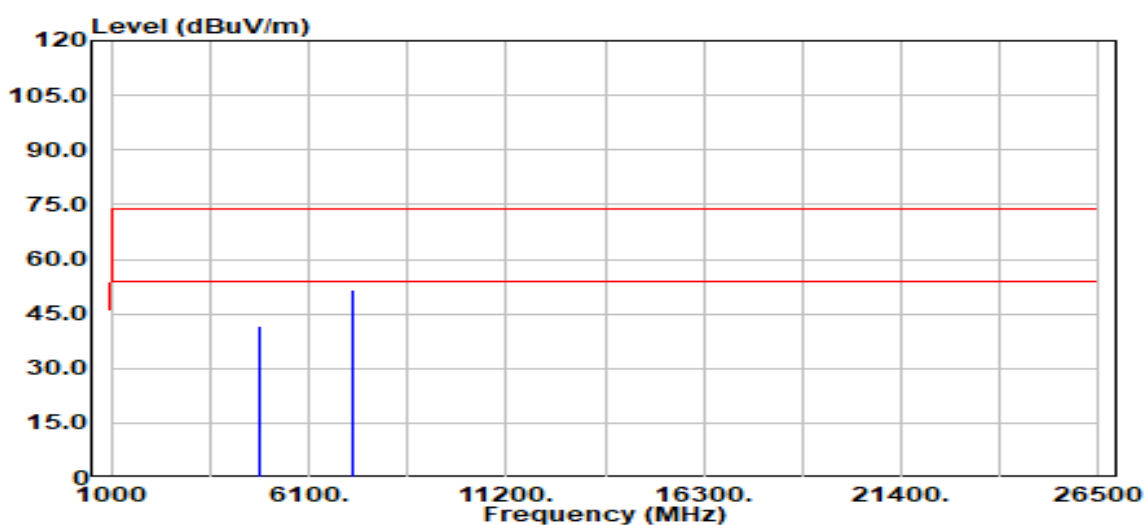
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4804.00	Peak	43.57	0.38	43.95	74.00	-30.05
4804.00	Average	--	-24.87	19.11	54.00	-34.89
7206.00	Peak	52.35	5.33	57.68	74.00	-16.32
7206.00	Average	--	-24.87	32.81	54.00	-21.19
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Test Mode:	8DPSK_EDR-3Mbps Low CH	Temp/Hum	24.5(°C)/ 62%RH
Test Item	Harmonic	Test Date	May 31, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak / Average		

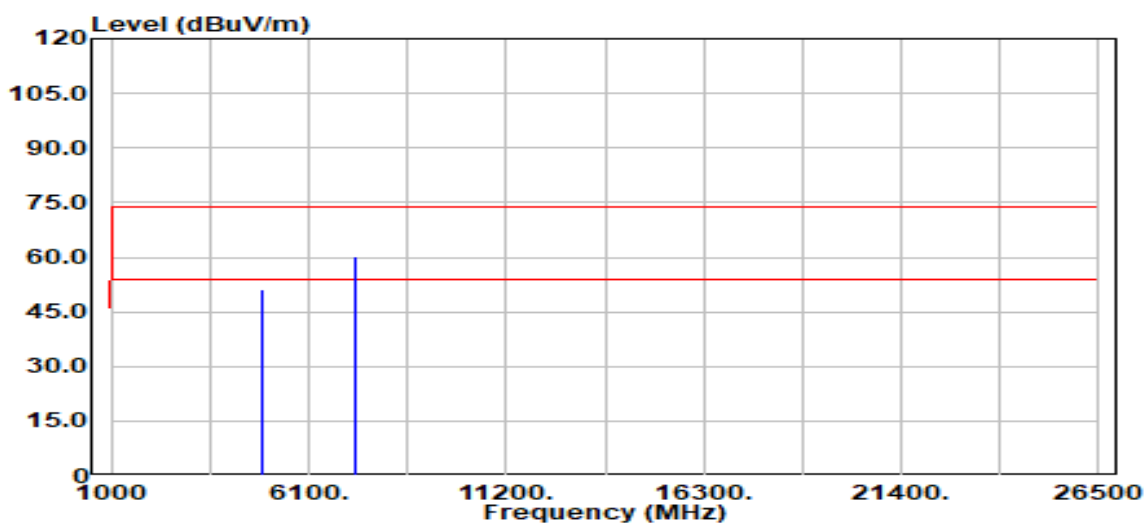


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4804.00	Peak	41.10	0.38	41.48	74.00	-32.52
4804.00	Average	--	-24.87	16.61	54.00	-37.39
7206.00	Peak	46.47	5.33	51.80	74.00	-22.20
7206.00	Average	--	-24.87	26.93	54.00	-27.07
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	8DPSK_EDR-3Mbps Mid CH	Temp/Hum	24.5(°C)/ 62%RH
Test Item	Harmonic	Test Date	May 31, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		

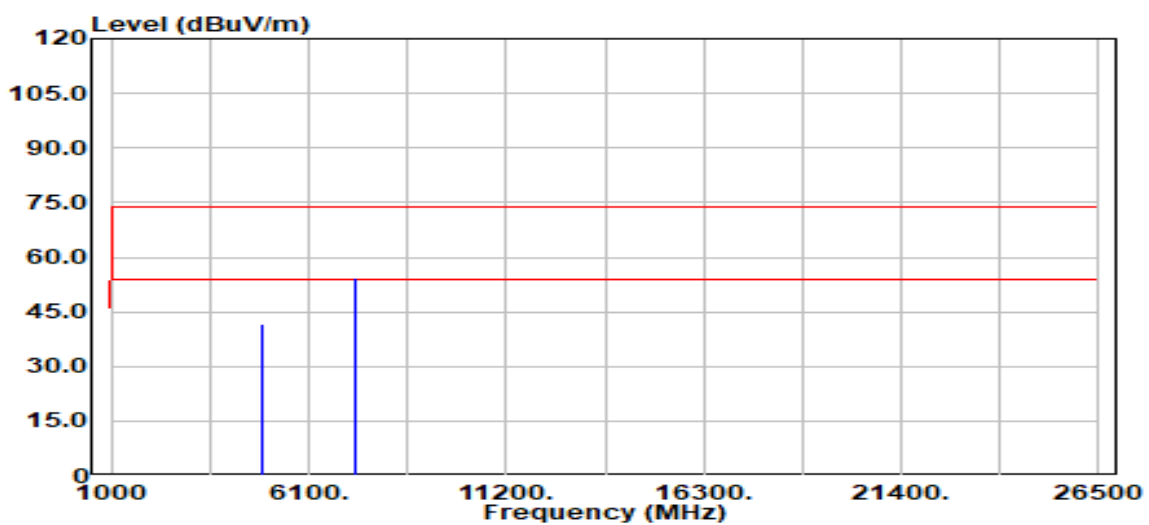


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4882.00	Peak	50.62	0.49	51.10	74.00	-22.90
4882.00	Average	--	-24.87	26.23	54.00	-27.77
7323.00	Peak	54.74	5.48	60.22	74.00	-13.78
7323.00	Average	--	-24.87	35.35	54.00	-18.65
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	8DPSK_EDR-3Mbps Mid CH	Temp/Hum	24.5(°C)/ 62%RH
Test Item	Harmonic	Test Date	May 31, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak / Average		

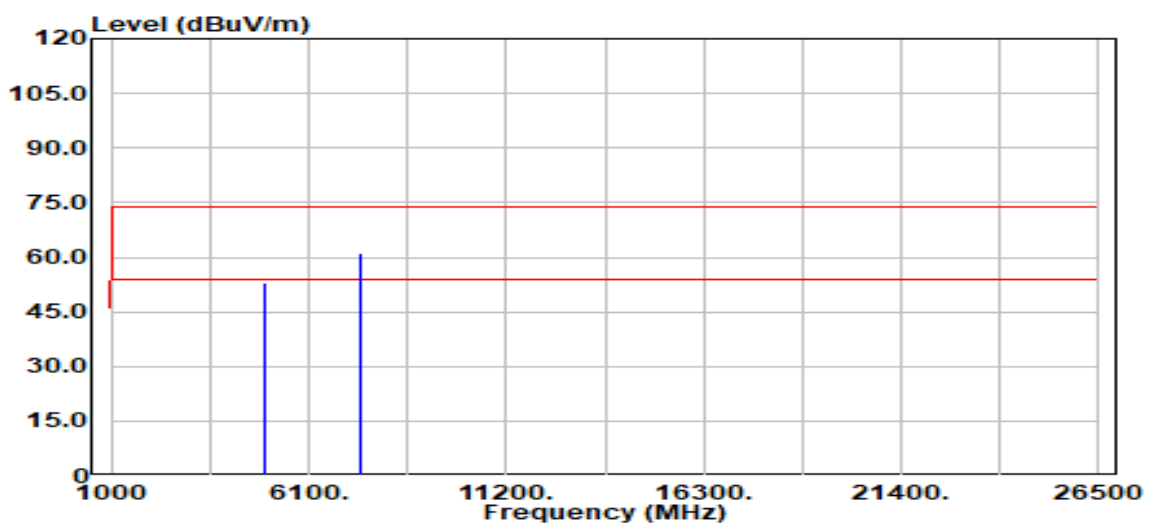


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4882.00	Peak	40.99	0.49	41.48	74.00	-32.52
4882.00	Average	--	-24.87	16.61	54.00	-37.39
7323.00	Peak	48.69	5.48	54.17	74.00	-19.83
7323.00	Average	--	-24.87	29.33	54.00	-24.67
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	8DPSK_EDR-3Mbps High CH	Temp/Hum	24.5(°C)/ 62%RH
Test Item	Harmonic	Test Date	May 31, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		

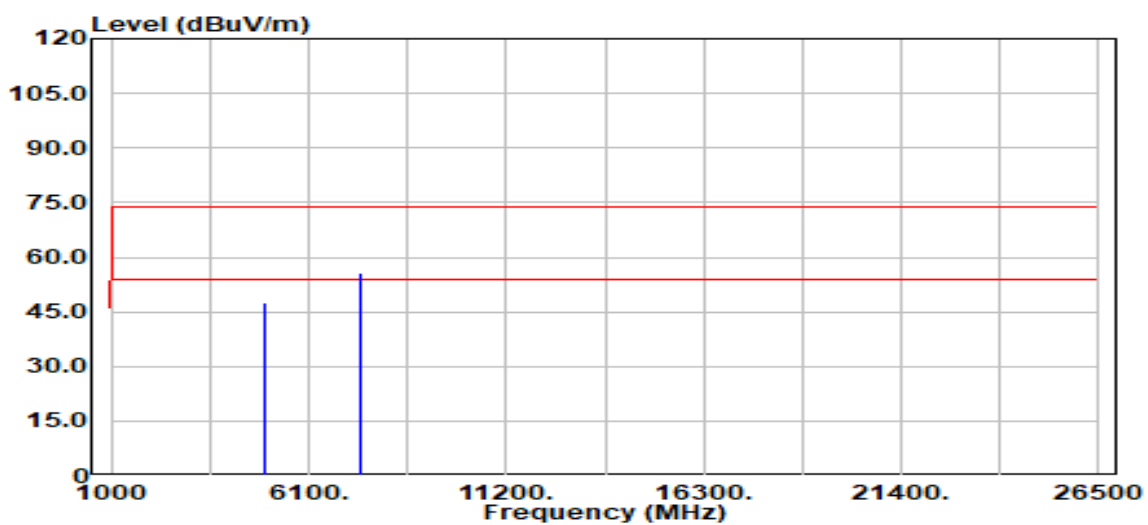


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4960.00	Peak	52.30	0.65	52.95	74.00	-21.05
4960.00	Average	--	-24.87	28.08	54.00	-25.92
7440.00	Peak	55.42	5.56	60.99	74.00	-13.02
7440.00	Average	--	-24.87	36.12	54.00	-17.88
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	8DPSK_EDR-3Mbps High CH	Temp/Hum	24.5(°C)/ 62%RH
Test Item	Harmonic	Test Date	May 31, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak / Average		



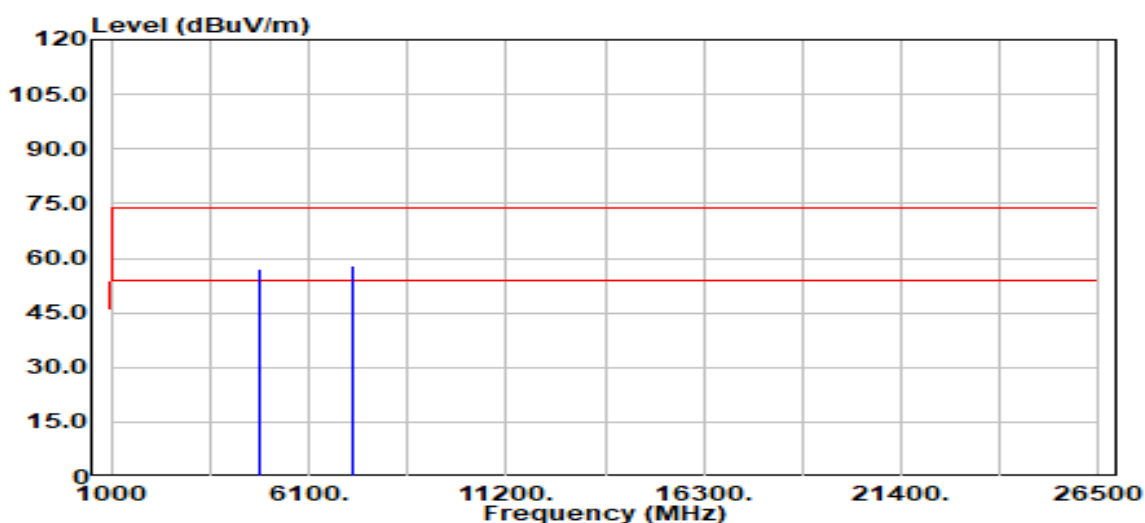
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4960.00	Peak	46.69	0.65	47.33	74.00	-26.67
4960.00	Average	--	-24.87	22.49	54.00	-31.54
7440.00	Peak	50.02	5.56	55.58	74.00	-18.42
7440.00	Average	--	-24.87	30.71	54.00	-23.29
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

**Test Mode: Mode 2 (PIFA Antenna)**

Test Mode:	GFSK_BDR-1Mbps Low CH	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Harmonic	Test Date	June 5, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		

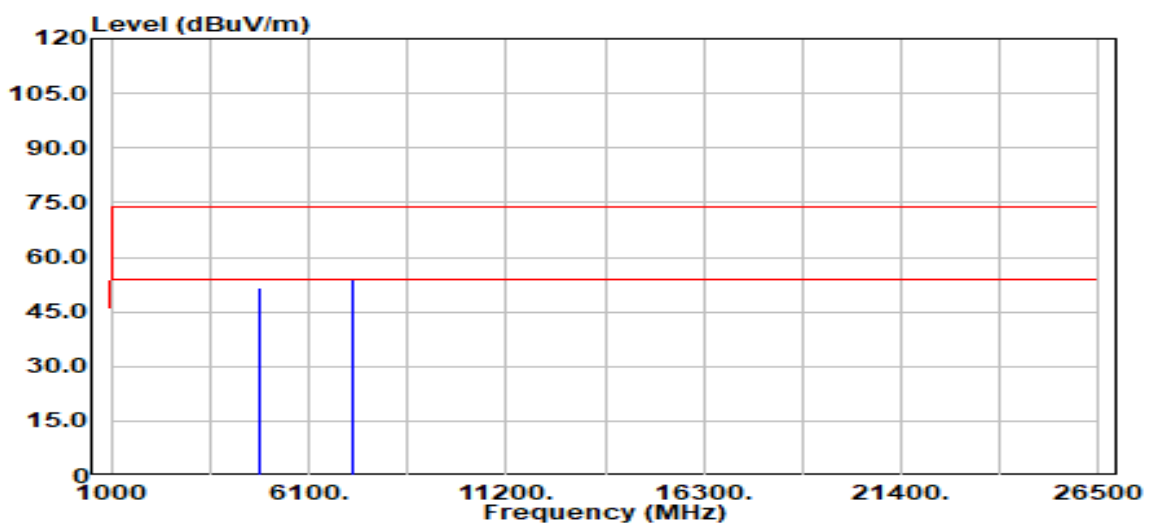


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4804.00	Peak	56.90	0.38	57.28	74.00	-16.72
4804.00	Average	--	-25.18	32.10	54.00	-21.90
7206.00	Peak	52.72	5.33	58.05	74.00	-15.95
7206.00	Average	--	-25.18	32.87	54.00	-21.13
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	GFSK_BDR-1Mbps Low CH	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Harmonic	Test Date	June 5, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak / Average		

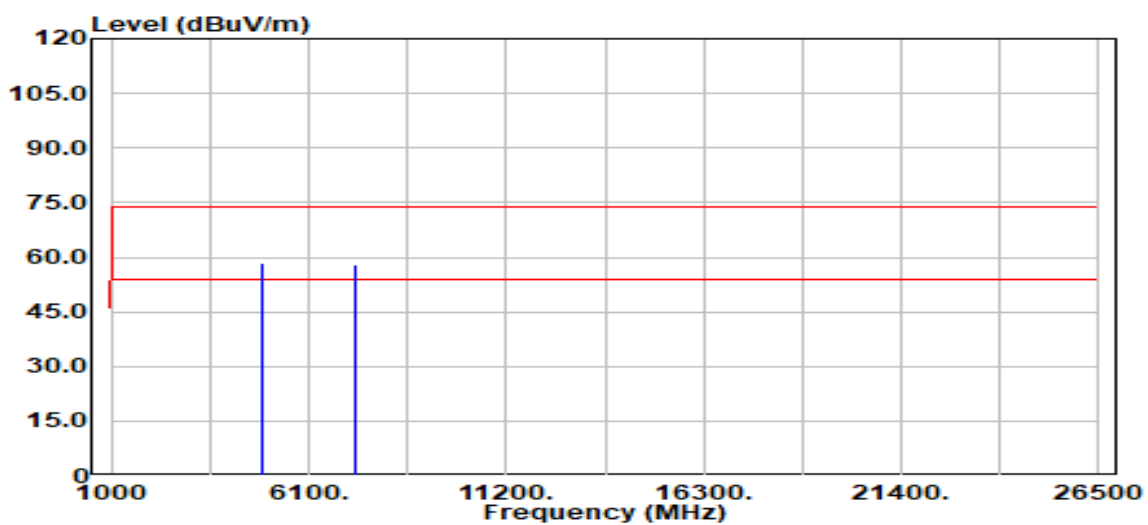


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4804.00	Peak	51.08	0.38	51.46	74.00	-22.54
4804.00	Average	--	-25.18	26.28	54.00	-27.72
7206.00	Peak	48.41	5.33	53.74	74.00	-20.26
7206.00	Average	--	-25.18	28.56	54.00	-25.44
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	GFSK_BDR-1Mbps Mid CH	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Harmonic	Test Date	June 5, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		



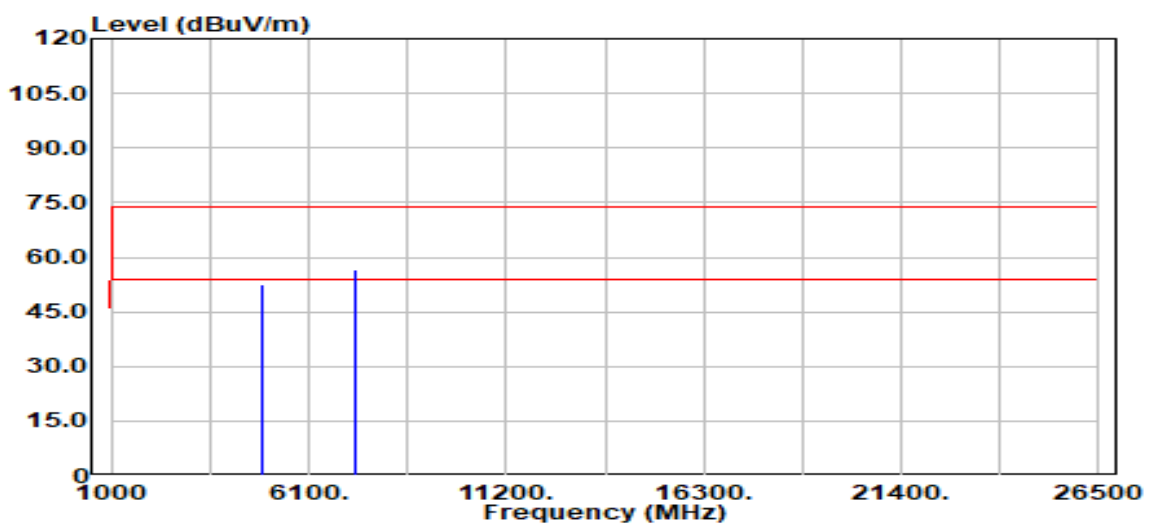
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4882.00	Peak	57.76	0.49	58.24	74.00	-15.76
4882.00	Average	--	-25.18	33.06	54.00	-20.94
7323.00	Peak	52.58	5.48	58.06	74.00	-15.94
7323.00	Average	--	-25.18	32.88	54.00	-21.12
N/A						

**Remark:**

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Test Mode:	GFSK_BDR-1Mbps Mid CH	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Harmonic	Test Date	June 5, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak / Average		

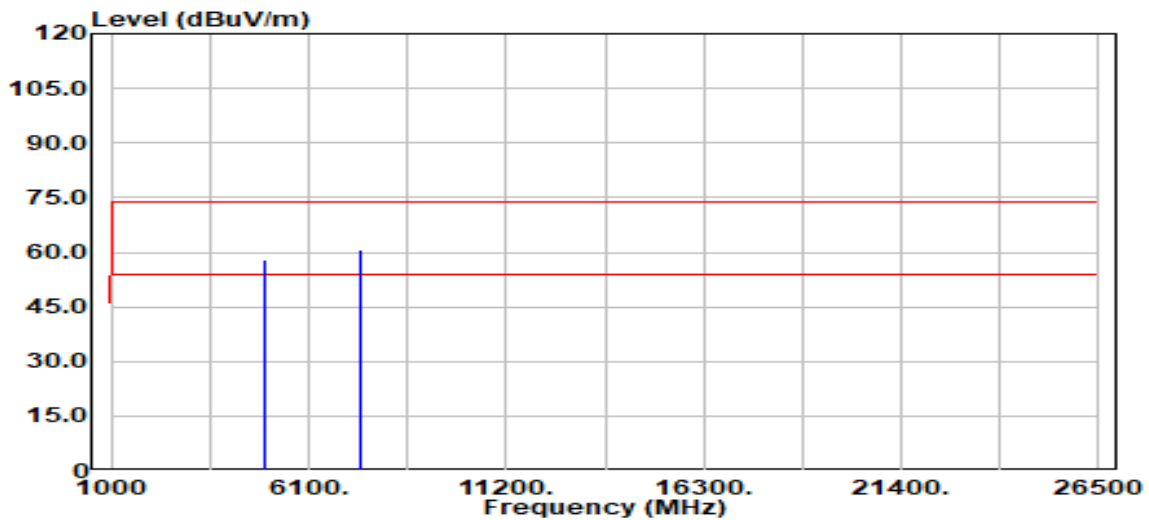


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4882.00	Peak	52.00	0.49	52.49	74.00	-21.51
4882.00	Average	--	-25.18	27.31	54.00	-26.69
7323.00	Peak	51.21	5.48	56.69	74.00	-17.31
7323.00	Average	--	-25.18	31.51	54.00	-22.49
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	GFSK_BDR-1Mbps High CH	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Harmonic	Test Date	June 5, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		

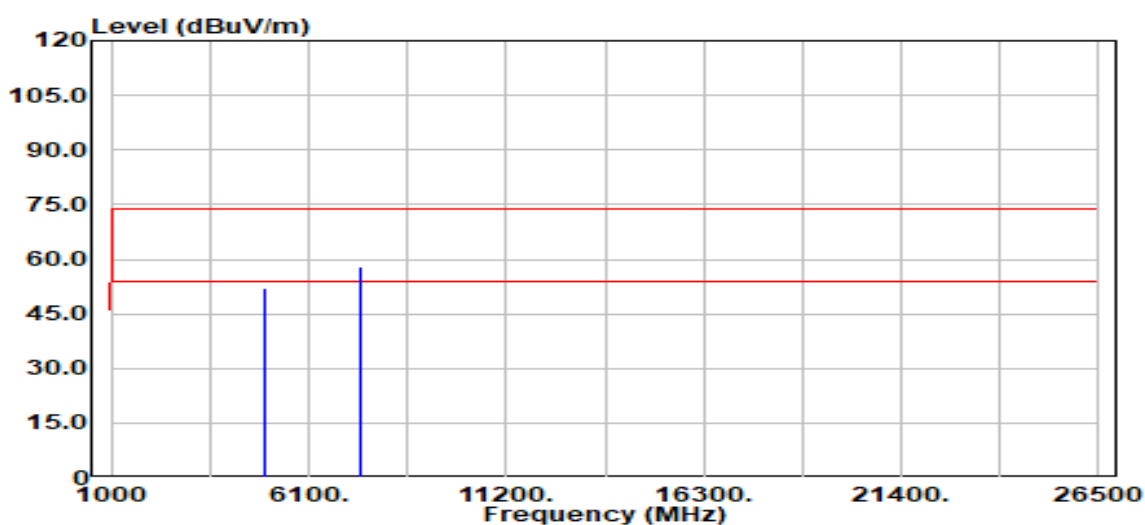


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4960.00	Peak	57.38	0.65	58.03	74.00	-15.97
4960.00	Average	--	-25.18	32.85	54.00	-21.15
7440.00	Peak	54.91	5.56	60.47	74.00	-13.53
7440.00	Average	--	-25.18	35.29	54.00	-18.71
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	GFSK_BDR-1Mbps High CH	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Harmonic	Test Date	June 5, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak / Average		

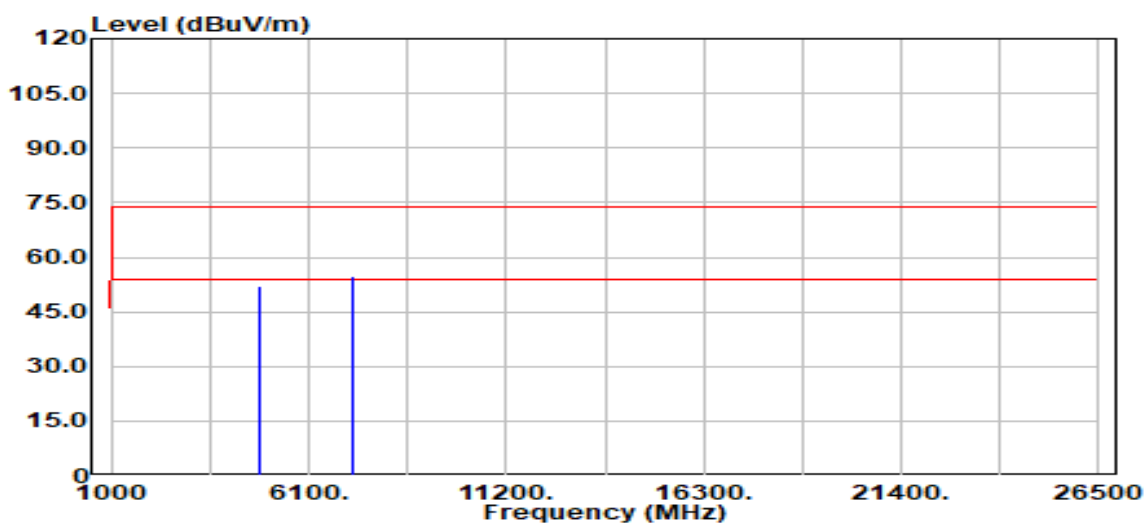


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4960.00	Peak	51.45	0.65	52.10	74.00	-21.90
4960.00	Average	--	-25.18	26.92	54.00	-27.08
7440.00	Peak	52.50	5.56	58.06	74.00	-15.94
7440.00	Average	--	-25.18	32.88	54.00	-21.12
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	8DPSK_EDR-3Mbps Low CH	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Harmonic	Test Date	June 5, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		

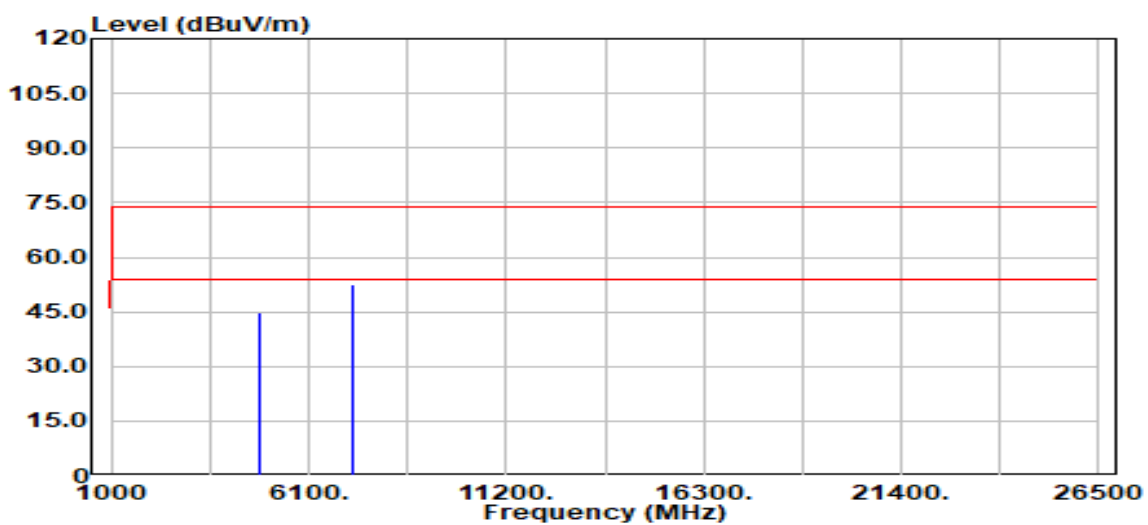


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBUV)	Factor (dB)	Actual FS (dBUV/m)	Limit @3m (dBUV/m)	Margin (dB)
4804.00	Peak	51.86	0.38	52.24	74.00	-21.76
4804.00	Average	--	-24.87	27.37	54.00	-26.63
7206.00	Peak	49.31	5.33	54.64	74.00	-19.36
7206.00	Average	--	-24.87	59.77	54.00	-24.23
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	8DPSK_EDR-3Mbps Low CH	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Harmonic	Test Date	June 5, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak / Average		

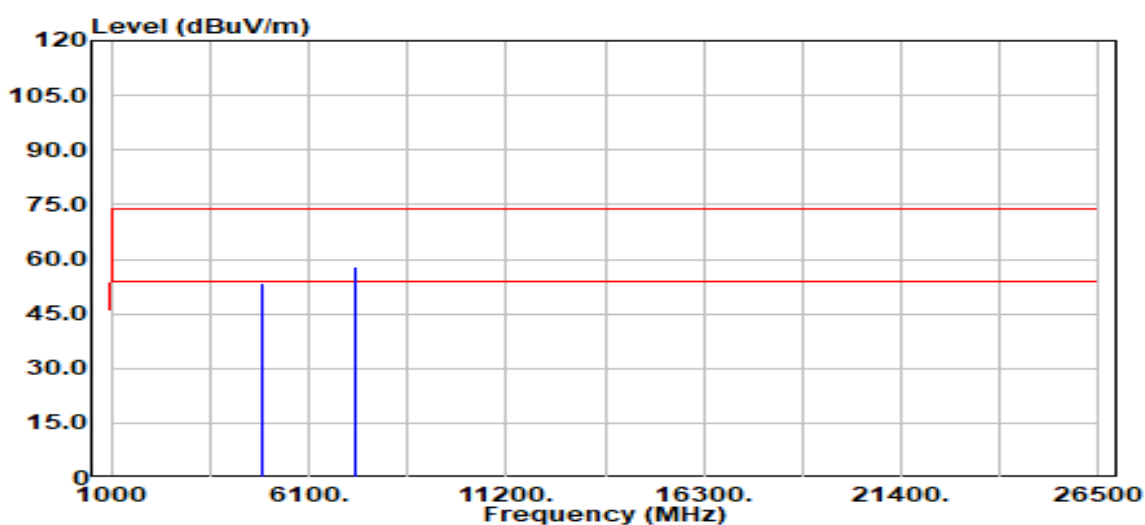


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4804.00	Peak	44.53	0.38	44.92	74.00	-29.08
4804.00	Average	--	-24.87	20.05	54.00	-33.95
7206.00	Peak	47.31	5.33	52.63	74.00	-21.37
7206.00	Average	--	-24.87	27.76	54.00	-26.24
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	8DPSK_EDR-3Mbps Mid CH	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Harmonic	Test Date	June 5, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		

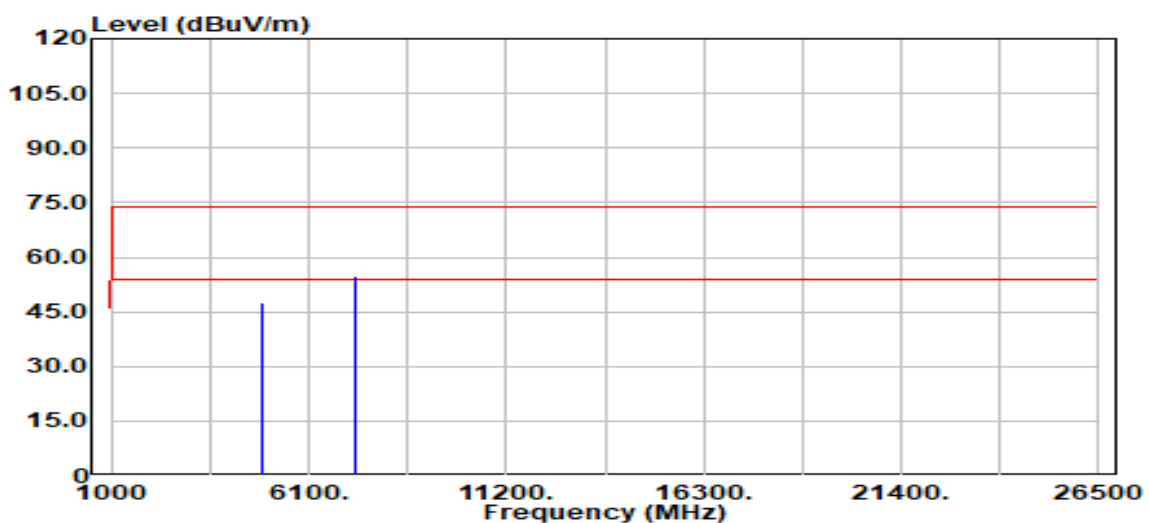


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4882.00	Peak	53.12	0.49	53.61	74.00	-20.39
4882.00	Average	--	-24.87	28.74	54.00	-25.26
7323.00	Peak	52.49	5.48	57.97	74.00	-16.03
7323.00	Average	--	-24.87	33.10	54.00	-20.90
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	8DPSK_EDR-3Mbps Mid CH	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Harmonic	Test Date	June 5, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
Detector	Peak / Average		

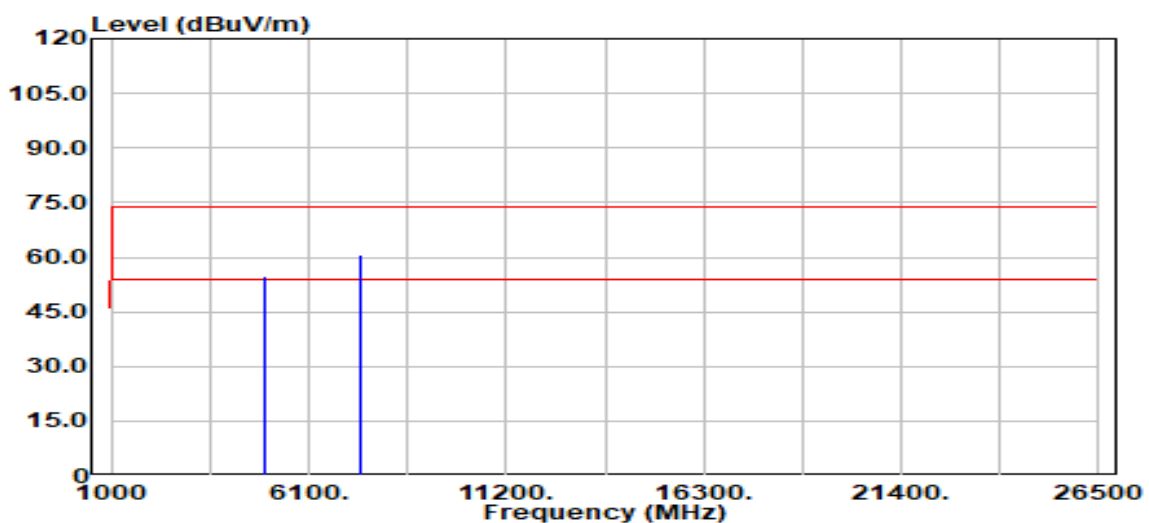


Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4882.00	Peak	47.24	0.49	47.73	74.00	-26.27
4882.00	Average	--	-24.87	22.86	54.00	-31.14
7323.00	Peak	49.28	5.48	54.76	74.00	-19.24
7323.00	Average	--	-24.87	29.89	54.00	-24.11
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode:	8DPSK_EDR-3Mbps High CH	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Harmonic	Test Date	June 5, 2023
Polarize	Vertical	Test Engineer	Czerny Lin
Detector	Peak / Average		



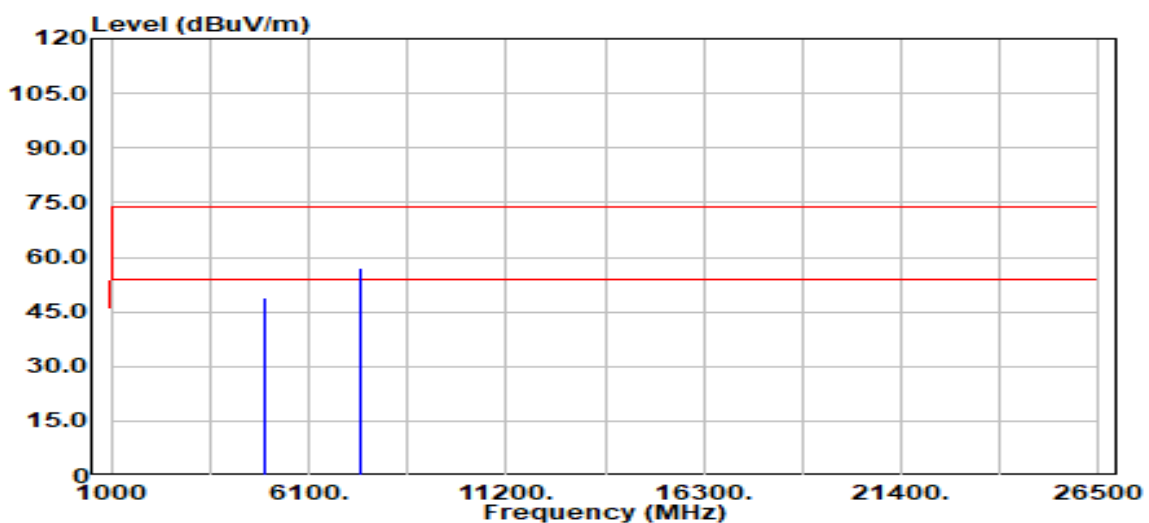
Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)
4960.00	Peak	54.27	0.65	54.92	74.00	-19.08
4960.00	Average	--	-24.87	30.05	54.00	-23.95
7440.00	Peak	55.34	5.56	60.90	74.00	-13.10
7440.00	Average	--	-24.87	36.03	54.00	-17.97
N/A						

**Remark:**

- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



Test Mode:	8DPSK_EDR-3Mbps High CH	Temp/Hum	24.4(°C)/ 59%RH
Test Item	Harmonic	Test Date	June 5, 2023
Polarize	Horizontal	Test Engineer	Czerny Lin
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)
4960.00	Peak	48.36	0.65	49.01	74.00	-24.99
4960.00	Average	--	-24.87	24.14	54.00	-29.86
7440.00	Peak	51.70	5.56	57.26	74.00	-16.74
7440.00	Average	--	-24.87	32.39	54.00	-21.61
N/A						

**Remark:**

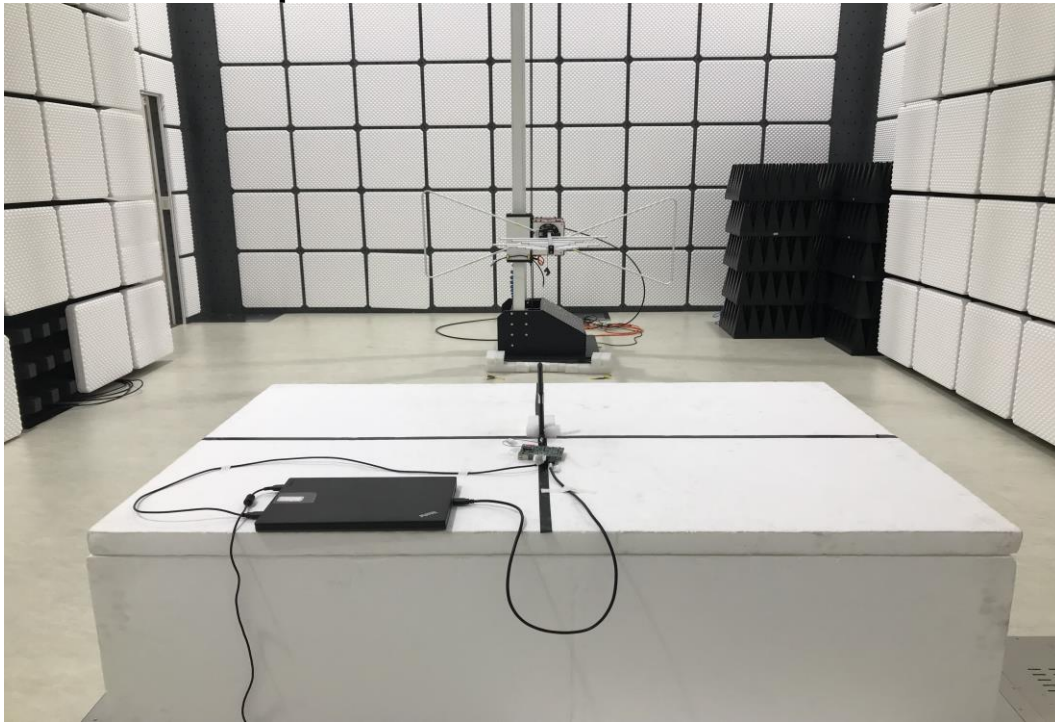
- Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

**- End of Test Report -**

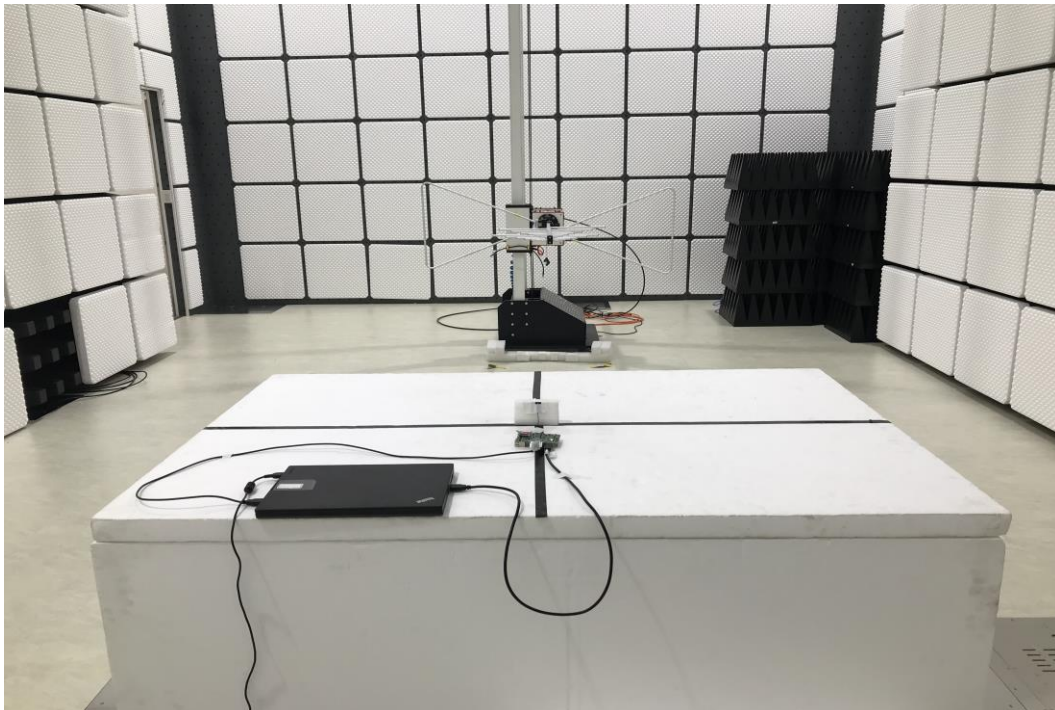
## APPENDIX-A Test Photo

### Radiation (Below 1GHz)

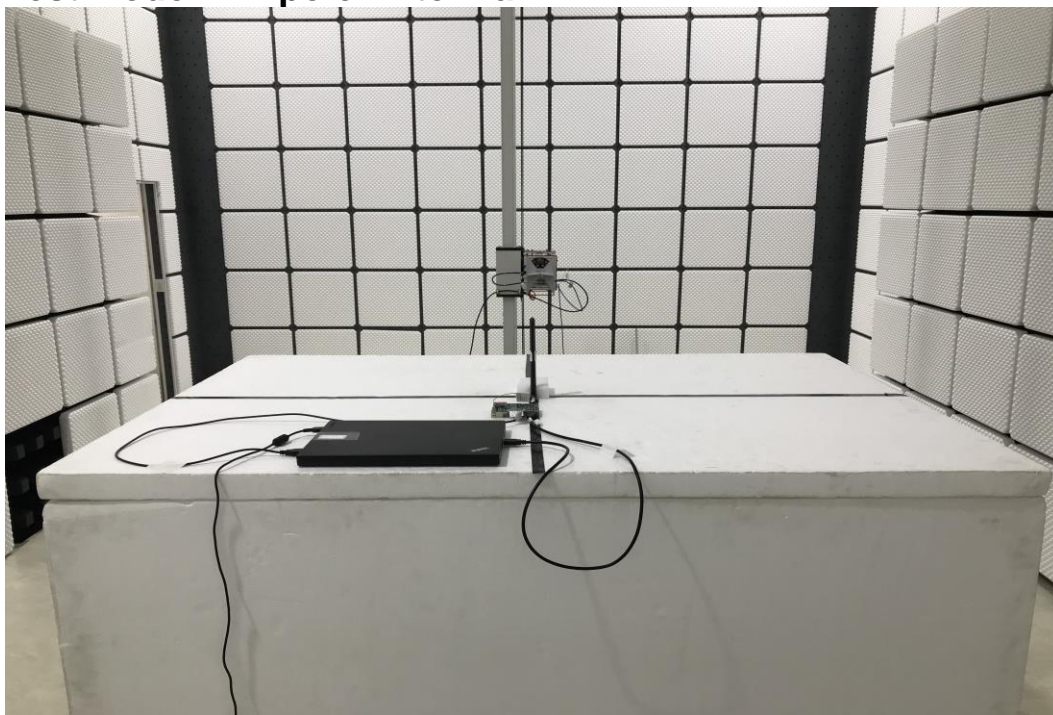
#### Test Mode 1: Dipole Antenna



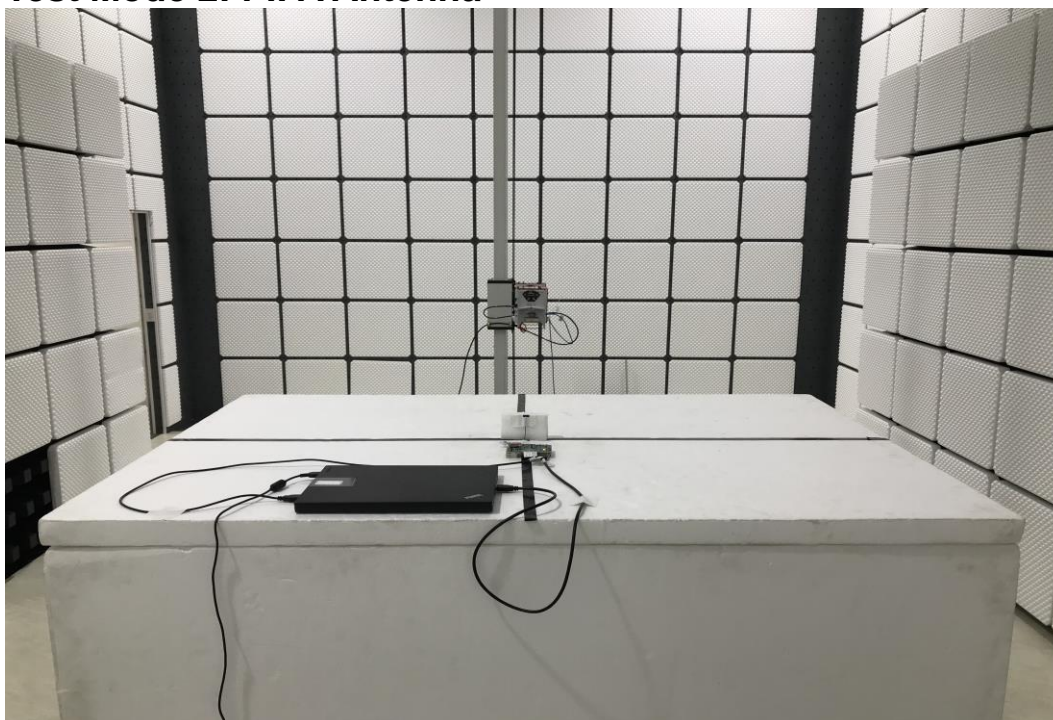
#### Test Mode 2: PIFA Antenna



## Radiation (Above 1GHz) Test Mode 1: Dipole Antenna

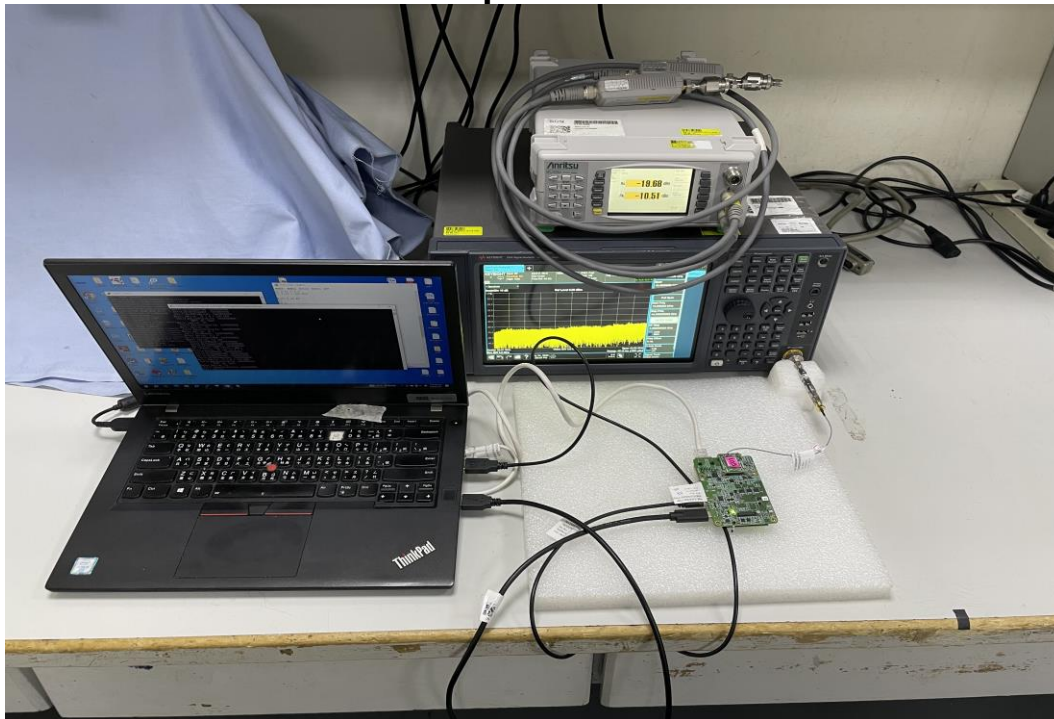


## Test Mode 2: PIFA Antenna

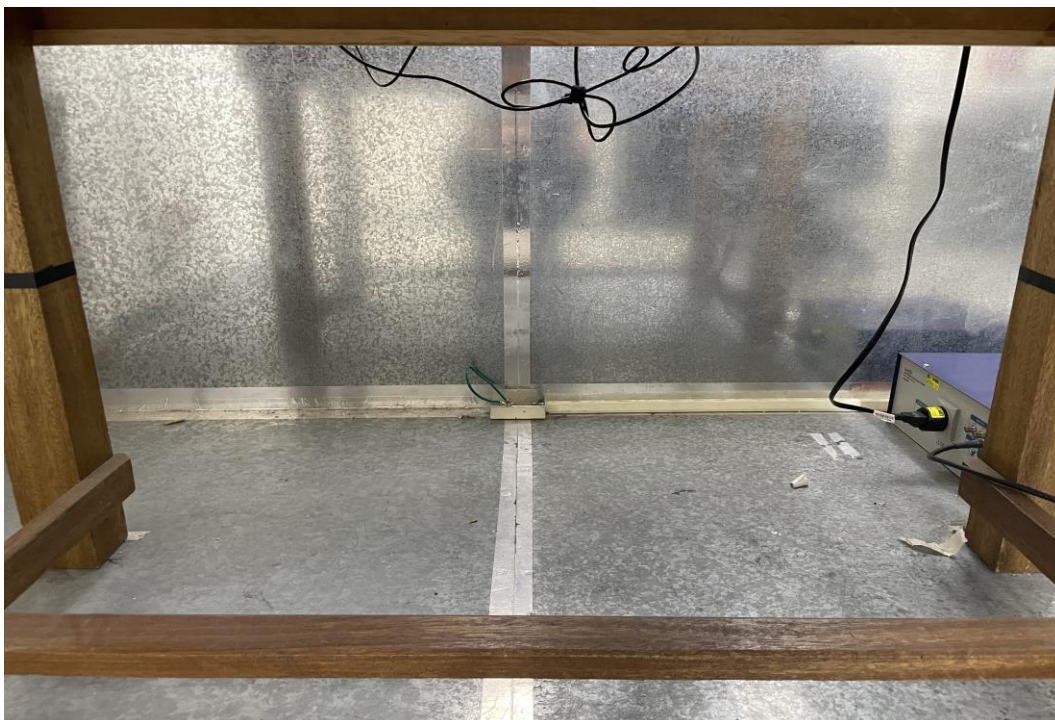


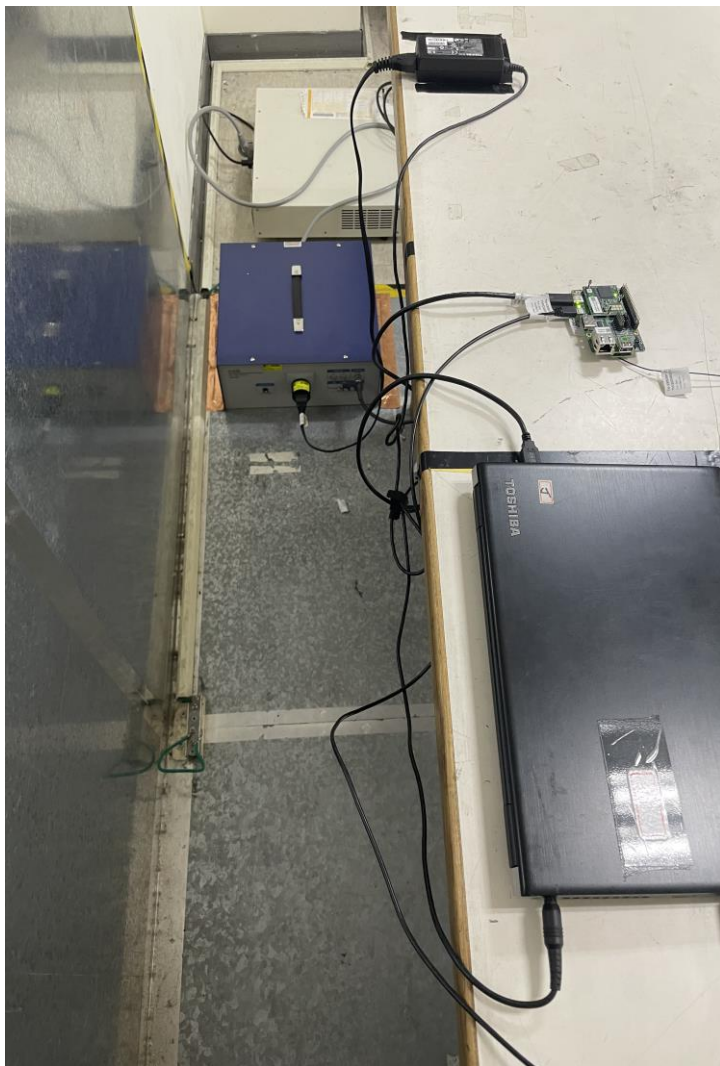


## Conducted Emission Set Up Photo



## Conduction Test Mode 1: Dipole Antenna







## Test Mode 2: PIFA Antenna

