Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

Telephone: +86-755-26648640
Fax: +86-755-26648637
Website: www.cqa-cert.com

Report Template Version: V05
Report Template Revision Date: 2021-11-03

Test Report

Report No. :	CQASZ20241202544E
Applicant:	Shenzhen Hollyland Technology Co., Ltd.
Address of Applicant:	8F, Building 5D, Skyworth Innovation Valley, Tangtou Road, Shiyan Street, Baoan District, Shenzhen, 518055 China

Equipment Under Test (EUT):

Product:	Wireless Microphone
Model No.:	M71R1
Test Model No.:	M71R1
Brand Name:	HOLLYLAND
FCC ID:	2ADZC-M71R1
Standards:	47 CFR Part 15, Subpart C KDB558074 D01 15.247 Meas Guidance v05r02 ANSI C63.10:2013
Date of Receipt:	2024-12-4
Date of Test:	2024-12-4 to 2025-3-5
Date of Issue:	2025-3-5
Test Result :	**PASS***

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

Tested By: lewis zhou
(Lewis Zhou)

Reviewed By: Timo Lei
(Timo Lei)

Approved By:
(Jack Ai)

1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20241202544E	Rev.01	Initial report	2025-3-5

2 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15.203	/	PASS
AC Power Line Conducted Emission	47 CFR Part 15, Subpart C Section 15.207	ANSI C63.10-2013	PASS
Conducted Peak Output Power	47 CFR Part 15.247	ANSI C63.10-2013	PASS
20dB Occupied Bandwidth	47 CFR Part 15.247	ANSI C63.10-2013	PASS
Carrier Frequencies Separation	47 CFR Part 15.247	ANSI C63.10-2013	PASS
Hopping Channel Number	47 CFR Part 15.247	ANSI C63.10-2013	PASS
Dwell Time	47 CFR Part 15.247	ANSI C63.10-2013	PASS
Pseudorandom Frequency Hopping Sequence	47 CFR Part 15.247	ANSI C63.10-2013	PASS
Band-edge for RF Conducted Emissions	47 CFR Part 15.247	ANSI C63.10-2013	PASS
RF Conducted Spurious Emissions	47 CFR Part 15.247	ANSI C63.10-2013	PASS
Radiated Spurious emissions	47 CFR Part 15.209	ANSI C63.10-2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15.205/15.209	ANSI C63.10-2013	PASS

Remark:

The tested sample(s) and the sample information are provided by the client.

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radiated Frequency.

CH: In this whole report CH means channel.

Volt: In this whole report Volt means Voltage.

Temp: In this whole report Temp means Temperature.

Humid: In this whole report Humid means humidity.

Press: In this whole report Press means Pressure.

N/A: In this whole report not application

3 Contents

4 General Information

4.1 Client Information

Applicant:	Shenzhen Hollyland Technology Co., Ltd.
Address of Applicant:	8F, Building 5D, Skyworth Innovation Valley, Tangtou Road, Shiyan Street, Baoan District, Shenzhen, 518055 China
Manufacturer:	Shenzhen Hollyland Technology Co., Ltd.
Address of Manufacturer:	8F, Building 5D, Skyworth Innovation Valley, Tangtou Road, Shiyan Street, Baoan District, Shenzhen, 518055 China
Factory:	Shenzhen Hollyland Technology Co., Ltd.
Address of Factory:	8F, Building 5D, Skyworth Innovation Valley, Tangtou Road, Shiyan Street, Baoan District, Shenzhen, 518055 China

4.2 General Description of EUT

Product Name:	Wireless Microphone
Model No.:	M71R1
Test Model No.:	M71R1
Trade Mark:	HOLLYLAND
Software Version:	HLD_A6701_H048_S1.0.0.29_BurnFiles_Common_20250118_RX
Hardware Version:	V38
Operation Frequency:	2404MHz~2478MHz
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Modulation Type:	GFSK
Transfer Rate:	2Mbps
Number of Channel:	38
Hopping Channel Type:	Adaptive Frequency Hopping systems
Product Type:	☐ Mobile ☒ Portable
Test Software of EUT:	FCC_Tool_V3.01
Antenna Type:	LDS antenna
Antenna Gain:	Ant1:1.65dBi Ant2:3.9dBi
Power Supply:	Power by DC 5V for adapter
Simultaneous Transmission	☒ Simultaneous TX is supported and evaluated in this report. ☐ Simultaneous TX is not supported.

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2404MHz	11	2424MHz	21	2444MHz	31	2464MHz
2	2406MHz	12	2426MHz	22	2446MHz	32	2466MHz
3	2408MHz	13	2428MHz	23	2448MHz	33	2468MHz
4	2410MHz	14	2430MHz	24	2450MHz	34	2470MHz
5	2412MHz	15	2432MHz	25	2452MHz	35	2472MHz
6	2414MHz	16	2434MHz	26	2454MHz	36	2474MHz
7	2416MHz	17	2436MHz	27	2456MHz	37	2476MHz
8	2418MHz	18	2438MHz	28	2458MHz	38	2478MHz
9	2420MHz	19	2440MHz	29	2460MHz	39	
10	2422MHz	20	2442MHz	30	2462MHz	40	

Note:
In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Channel	Frequency
The Lowest channel	2404MHz
The Middle channel	2440MHz
The Highest channel	2478MHz

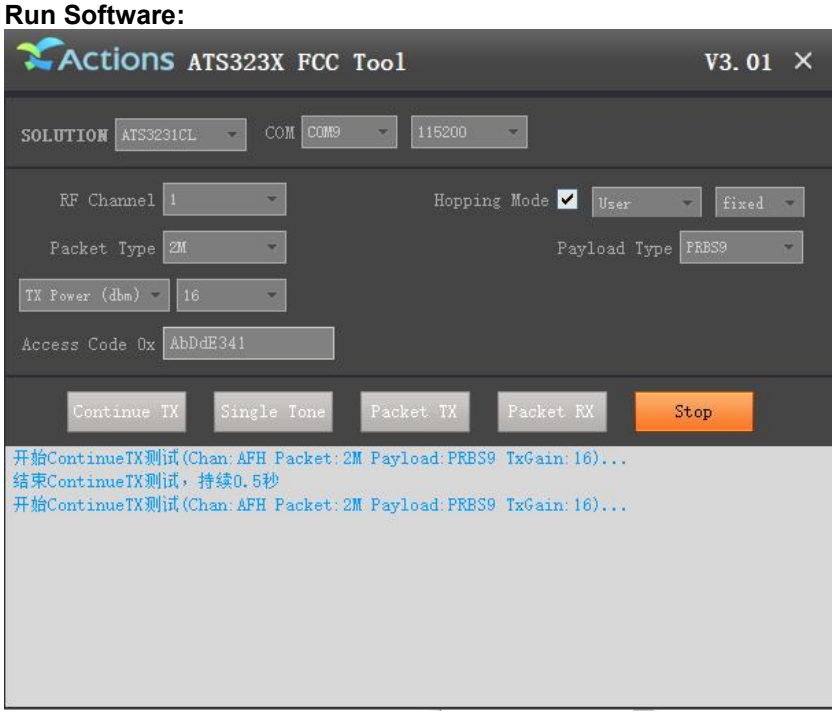
4.3 Additional Instructions

EUT Test Software Settings:	
Mode:	☒ Special software is used. ☐ Through engineering command into the engineering mode. engineering command: *#*#3646633#*#*
EUT Power level:	(Power level is built-in set parameters and cannot be changed and selected)

Use test software to set the lowest frequency, the middle frequency and the highest frequency keep transmitting of the EUT.

Mode	Channel	Frequency(MHz)
GFSK	CH1	2404
	CH19	2440
	CH38	2478

Run Software:



4.4 Test Environment

Operating Environment:	
Temperature:	25 °C
Humidity:	54% RH
Atmospheric Pressure:	1009mbar
Test Mode:	Use test software to set the lowest frequency, the middle frequency and the highest frequency keep transmitting of the EUT.

4.5 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.	Remark	Supplied
Adapter	MI	/	/	CQA

4.6 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate.

The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities.

The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the **Shenzhen Huaxia Testing Technology Co., Ltd.** quality system acc. to DIN EN ISO/IEC 17025.

Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CQA laboratory is reported:

No.	Item	Uncertainty
1	Radiated Emission (Below 1GHz)	5.12dB
2	Radiated Emission (Above 1GHz)	4.60dB
3	Conducted Disturbance (0.15~30MHz)	3.34dB
4	Radio Frequency	3×10^{-8}
5	Duty cycle	0.6 %
6	Occupied Bandwidth	1.1%
7	RF conducted power	0.86dB
8	RF power density	0.74
9	Conducted Spurious emissions	0.86dB
10	Temperature test	0.8℃
11	Humidity test	2.0%
12	Supply voltages	0.5 %
13	Frequency Error	5.5 Hz

4.7 Test Location

All tests were performed at:

Shenzhen Huaxia Testing Technology Co., Ltd.

1F., Block A of Tongsheng Technology Building, Huahui Road, Dalang Street, Longhua District, Shenzhen, China

4.8 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:
IC Registration No.: 22984-1
The 3m Semi-anechoic chamber of Shenzhen Huaxia Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

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

- **CNAS (No. CNAS L5785)**

CNAS has accredited Shenzhen Huaxia Testing Technology Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 4742.01)**

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 4742.01.

- **FCC Registration No.: 522263**

Shenzhen Huaxia Testing Technology Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.:522263

4.9 Abnormalities from Standard Conditions

None.

4.10 Other Information Requested by the Customer

None.

4.11 Equipment List

Test Equipment	Manufacturer	Model No.	Instrument No.	Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESR7	CQA-005	2024/9/2	2025/9/1
Spectrum analyzer	R&S	FSU26	CQA-038	2024/9/2	2025/9/1
Spectrum analyzer	R&S	FSU40	CQA-075	2024/9/2	2025/9/1
Preamplifier	MITEQ	AFS4-00010300-18-10P-4	CQA-035	2024/9/2	2025/9/1
Preamplifier	MITEQ	AMF-6D-02001800-29-20P	CQA-036	2024/9/2	2025/9/1
Preamplifier	EMCI	EMC184055SE	CQA-089	2024/9/2	2025/9/1
Loop antenna	Schwarzbeck	FMZB1516	CQA-060	2023/9/8	2026/9/7
Bilog Antenna	R&S	HL562	CQA-011	2023/11/01	2026/10/31
Horn Antenna	R&S	HF906	CQA-012	2023/11/01	2026/10/31
Horn Antenna	Schwarzbeck	BBHA 9170	CQA-088	2023/9/7	2026/9/6
Coaxial Cable (Above 1GHz)	CQA	N/A	C007	2024/9/2	2025/9/1
Coaxial Cable (Below 1GHz)	CQA	N/A	C013	2024/9/2	2025/9/1
Antenna Connector	CQA	RFC-01	CQA-080	2024/9/2	2025/9/1
RF cable(9KHz~40GHz)	CQA	RF-01	CQA-079	2024/9/2	2025/9/1
Power meter	R&S	NRVD	CQA-029	2024/9/2	2025/9/1
Power divider	MIDWEST	PWD-2533-02-SMA-79	CQA-067	2024/9/2	2025/9/1
EMI Test Receiver	R&S	ESR7	CQA-005	2024/9/2	2025/9/1
LISN	R&S	ENV216	CQA-003	2024/9/2	2025/9/1
Coaxial cable	CQA	N/A	CQA-C009	2024/9/2	2025/9/1
DC power	KEYSIGHT	E3631A	CQA-028	2024/9/2	2025/9/1

Test software:

	Manufacturer	Software brand	Software version
Radiated Emissions test software	Tonscend	JS1120-3	Version:8
Conducted Emissions test software	Audix	e3	Version:9
RF Conducted test software	Audix	e3	V3.5.39

Note:

The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

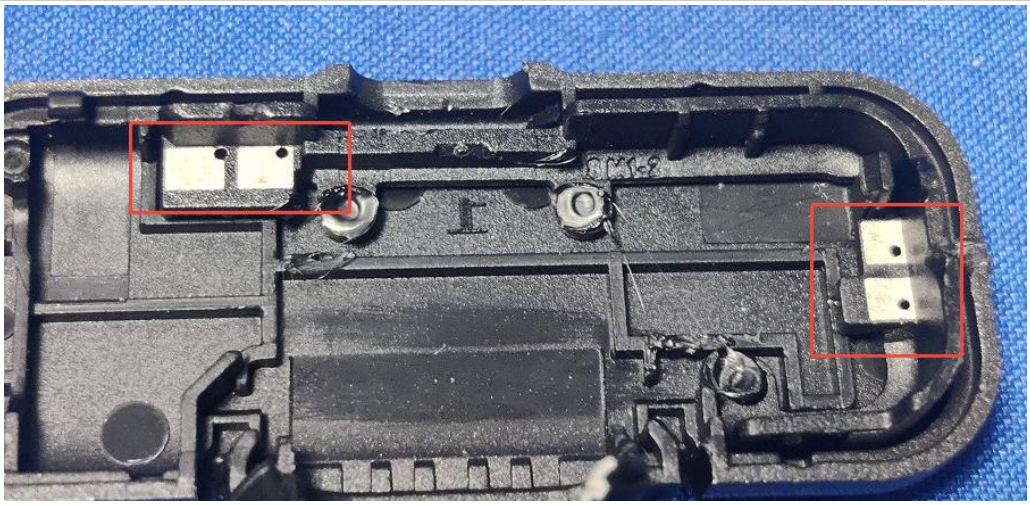
5 Test results and Measurement Data

5.1 Antenna Requirement

Standard requirement:	47 CFR Part 15C Section 15.203 /247(c)

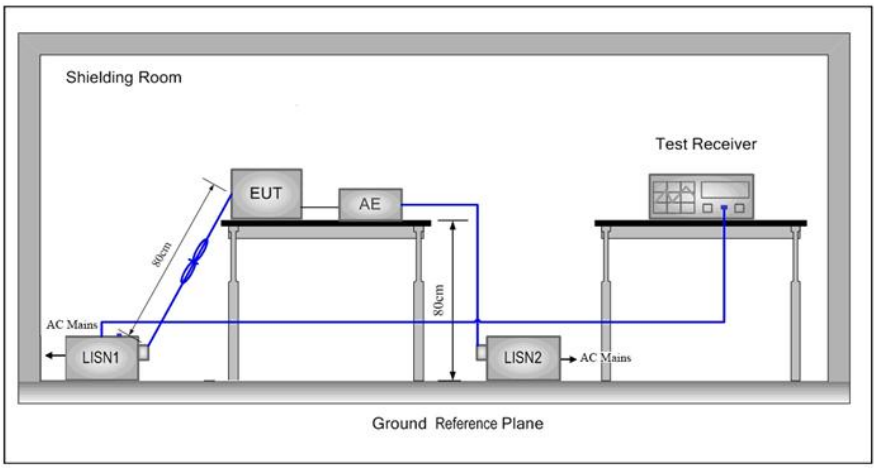
15.203 requirement:
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.
15.247(b) (4) requirement:
The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:



The antenna is LDS antenna.
The connection/connection type between the antenna to the EUT's antenna port is: unique coupling
This is either permanently attachment or a unique coupling that satisfies the requirement.

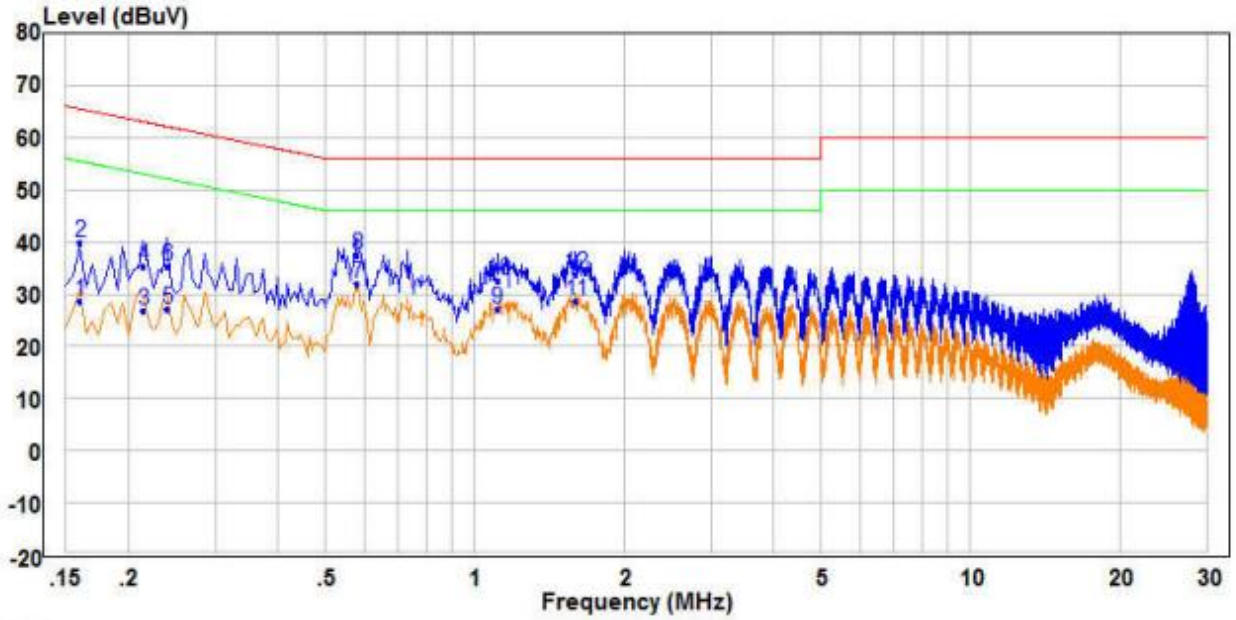
5.2 Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.207
Test Method:	ANSI C63.10: 2013
Test Frequency Range:	150kHz to 30MHz
Limit:	Frequency range (MHz) / Limit (dBuV): Quasi-peak / Average 0.15-0.5: 66 to 56* / 56 to 46* 0.5-5: 56 / 46 5-30: 60 / 50 * Decreases with the logarithm of the frequency.
Test Procedure:	1) The mains terminal disturbance voltage test was conducted in a shielded room. 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.
Test Setup:	

Exploratory Test Mode:	Non-hopping transmitting mode with all kind of modulation and all kind of data type at the lowest, middle, high channel.
Final Test Mode:	Through Pre-scan, find the GFSK modulation at the lowest channel is the worst case. Only the worst case is recorded in the report.
Test Voltage:	AC 120V/60Hz
Test Results:	Pass

Measurement Data

Live line:

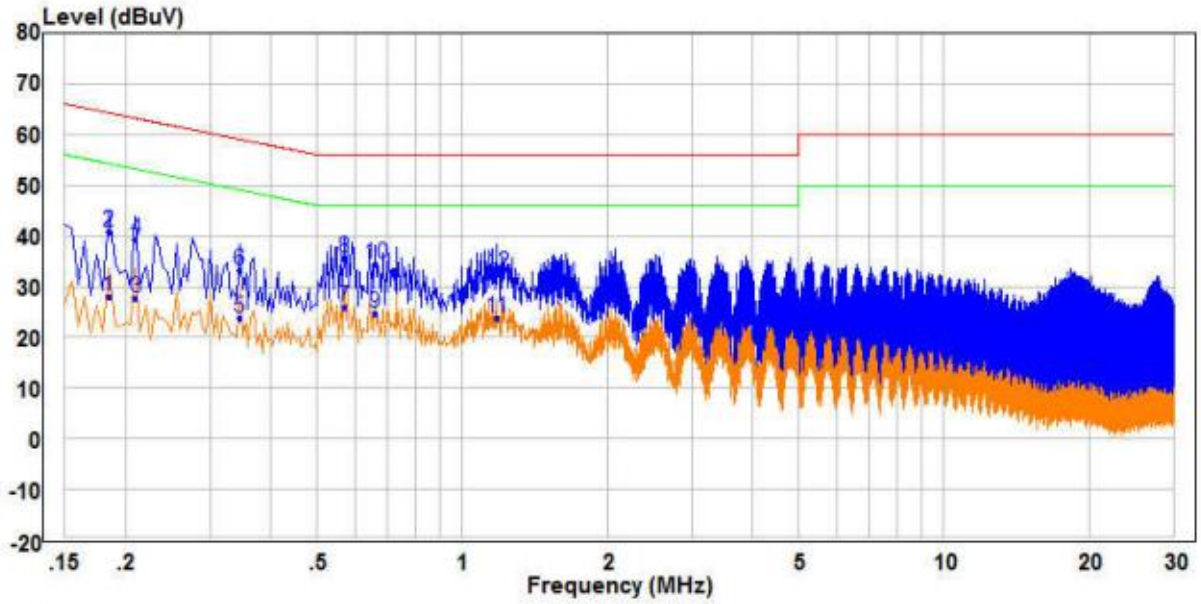


		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.160	18.85	9.68	28.53	55.46	-26.93	Average	Line
2		0.160	30.34	9.68	40.02	65.46	-25.44	QP	Line
3		0.215	17.19	9.59	26.78	53.01	-26.23	Average	Line
4		0.215	25.72	9.59	35.31	63.01	-27.70	QP	Line
5		0.240	17.54	9.56	27.10	52.10	-25.00	Average	Line
6		0.240	25.85	9.56	35.41	62.10	-26.69	QP	Line
7	PP	0.580	22.28	9.78	32.06	46.00	-13.94	Average	Line
8	QP	0.580	27.82	9.78	37.60	56.00	-18.40	QP	Line
9		1.110	17.05	10.00	27.05	46.00	-18.95	Average	Line
10		1.110	22.50	10.00	32.50	56.00	-23.50	QP	Line
11		1.600	17.55	11.02	28.57	46.00	-17.43	Average	Line
12		1.600	22.72	11.02	33.74	56.00	-22.26	QP	Line

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

Neutral line:

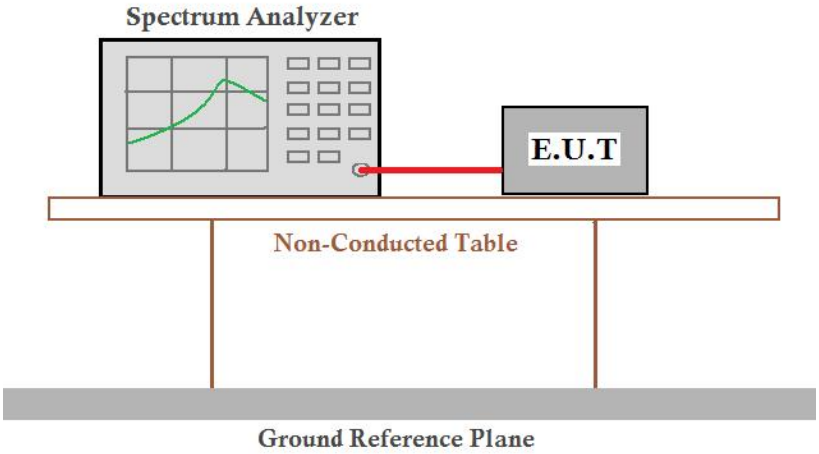


		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.185	18.33	9.63	27.96	54.26	-26.30	Average	Neutral
2		0.185	31.26	9.63	40.89	64.26	-23.37	QP	Neutral
3		0.210	18.10	9.59	27.69	53.21	-25.52	Average	Neutral
4		0.210	29.79	9.59	39.38	63.21	-23.83	QP	Neutral
5		0.345	14.15	9.54	23.69	49.08	-25.39	Average	Neutral
6		0.345	23.52	9.54	33.06	59.08	-26.02	QP	Neutral
7	PP	0.570	16.14	9.77	25.91	46.00	-20.09	Average	Neutral
8	QP	0.570	25.74	9.77	35.51	56.00	-20.49	QP	Neutral
9		0.660	14.90	9.86	24.76	46.00	-21.24	Average	Neutral
10		0.660	24.61	9.86	34.47	56.00	-21.53	QP	Neutral
11		1.180	14.09	9.71	23.80	46.00	-22.20	Average	Neutral
12		1.180	23.00	9.71	32.71	56.00	-23.29	QP	Neutral

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

5.3 Conducted Peak Output Power

Test Requirement:	47 CFR Part 15C Section 15.247 (b)(1)
Test Method:	ANSI C63.10:2013
Test Setup:	***Setup for Power meter measurement method***  ***Setup for Spectrum analyser measurement method***  *Remark: Offset=Cable loss+ attenuation factor.*
Limit:	21dBm
Exploratory Test Mode:	Non-hopping transmitting with all kind of modulation and all kind of data type
Final Test Mode:	Only the worst case is recorded in the report.
Test Results:	Pass

Measurement Data

Ant1:

Test Mode	Antenna	Freq (MHz)	Conducted Peak Powert [dBm]	Conducted Limit [dBm]
GFSK	Ant1	2404	12.94	≤21
		2440	14.94	≤21
		2478	15.49	≤21

Ant2:

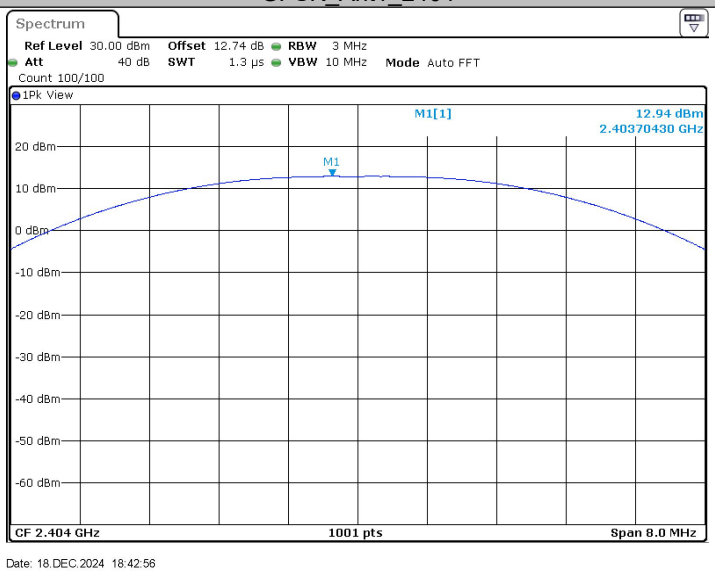
Test Mode	Antenna	Freq (MHz)	Conducted Peak Powert [dBm]	Conducted Limit [dBm]
GFSK	Ant2	2404	13.32	≤21
		2440	15.27	≤21
		2478	15.81	≤21

Ant1+Ant2:

Test Mode	Antenna	Freq (MHz)	Conducted Peak Powert [dBm]	Conducted Limit [dBm]
GFSK	Ant1+Ant2	2404	16.14	≤21
		2440	18.12	≤21
		2478	18.66	≤21

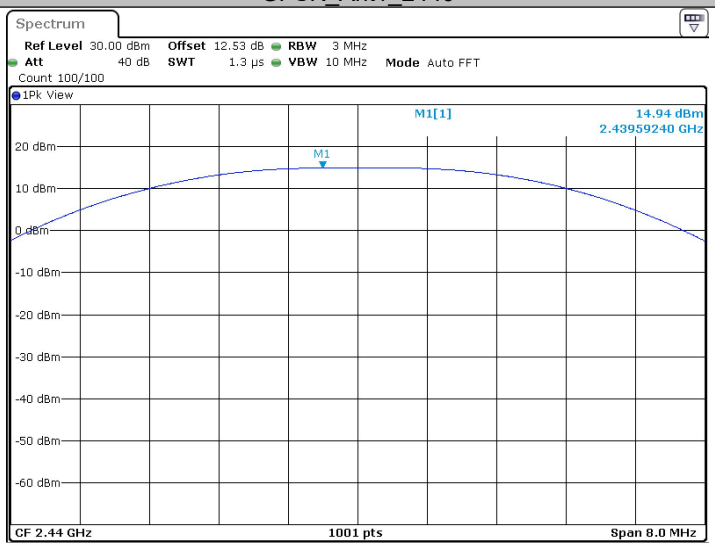
Test plot as follows:

GFSK_Ant1_2404



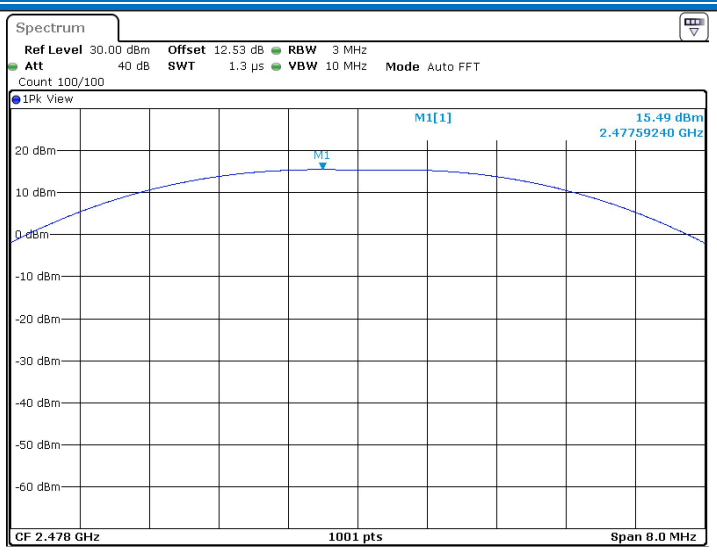
Date: 18.DEC.2024 18:42:56

GFSK_Ant1_2440



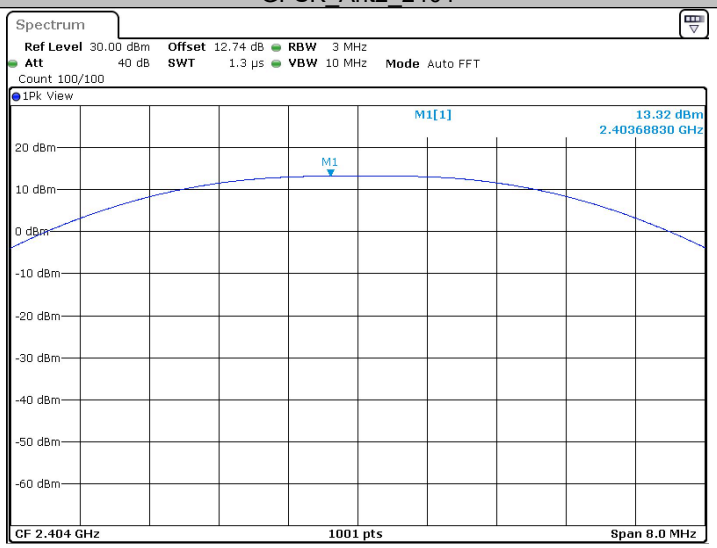
Date: 18.DEC.2024 18:43:21

GFSK_Ant1_2478



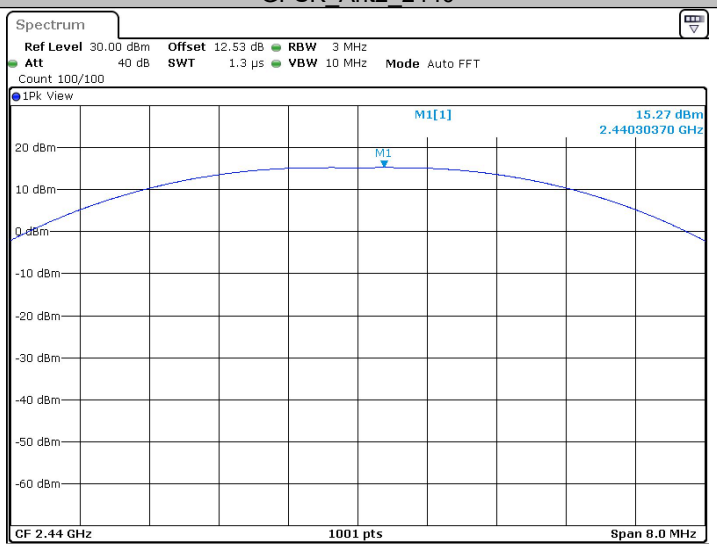
Date: 18.DEC.2024 18:43:40

GFSK_Ant2_2404



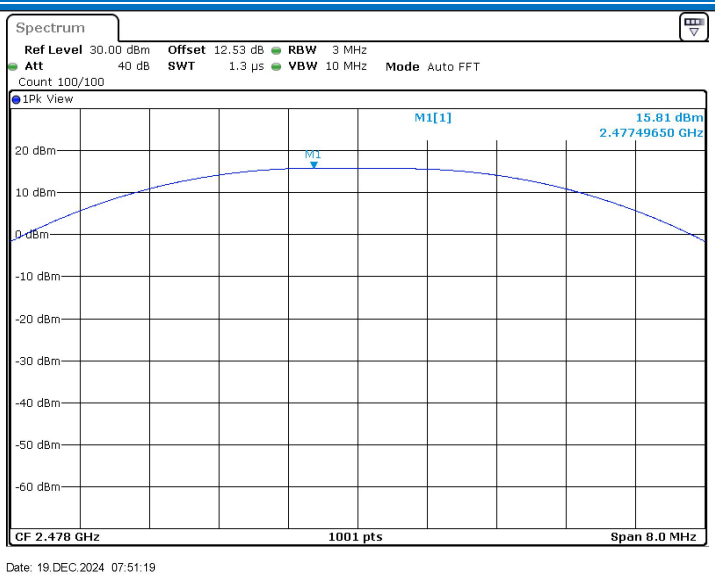
Date: 19.DEC.2024 07:50:50

GFSK_Ant2_2440

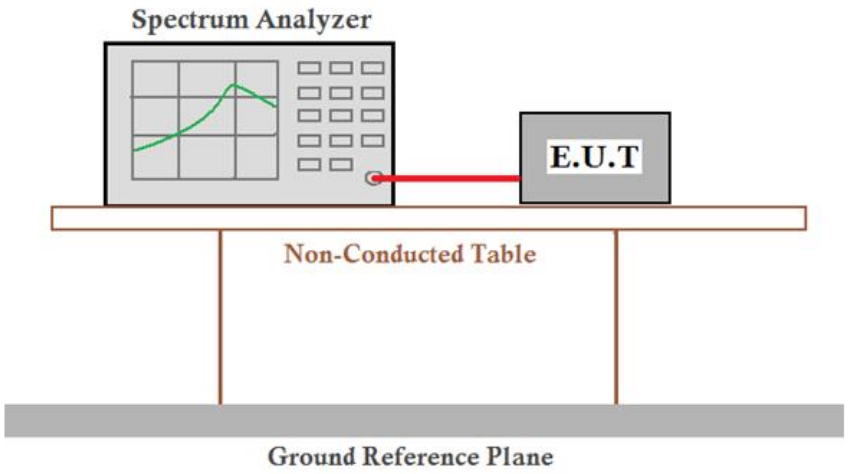


Date: 19.DEC.2024 07:51:07

GFSK_Ant2_2478


Spectrum
Ref Level 30.00 dBm Offset 12.53 dB RBW 3 MHz
Att 40 dB SWT 1.3 µs VBW 10 MHz Mode Auto FFT
Count 100/100
1Pk View
M1[1] 15.81 dBm
2.47749650 GHz
M1
20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
CF 2.478 GHz
1001 pts
Span 8.0 MHz
Date: 19.DEC.2024 07:51:19

5.4 20dB Occupied Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Limit:	NA
Exploratory Test Mode:	Non-hopping transmitting with all kind of modulation and all kind of data type
Final Test Mode:	Only the worst case is recorded in the report.
Test Results:	Pass

Measurement Data

Ant1:

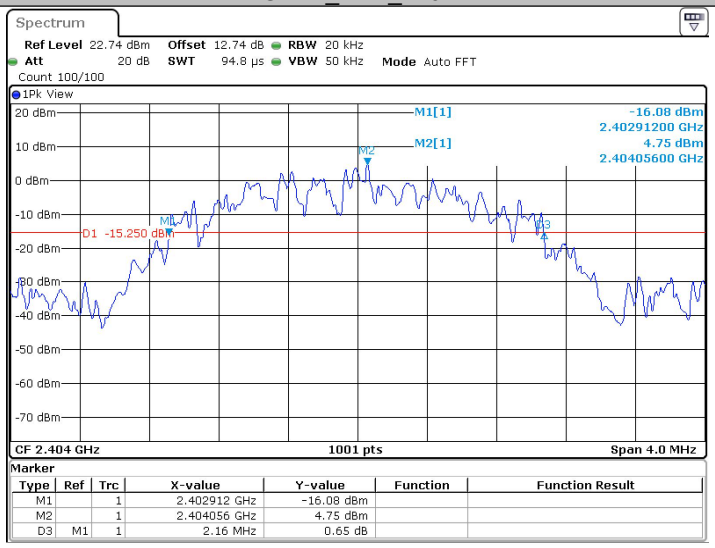
Test channel	20dB Occupy Bandwidth (MHz)
	GFSK
Lowest	2.16
Middle	2.16
Highest	2.16

Ant2:

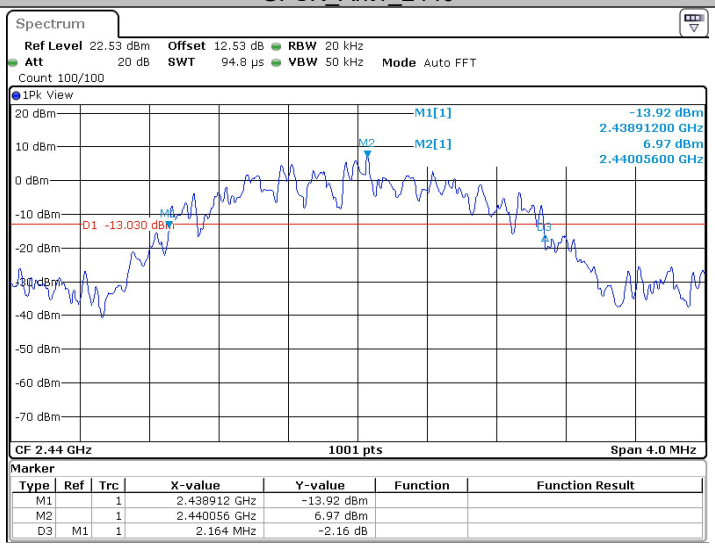
Test channel	20dB Occupy Bandwidth (MHz)
	GFSK
Lowest	2.16
Middle	2.16
Highest	2.16

Test plot as follows:

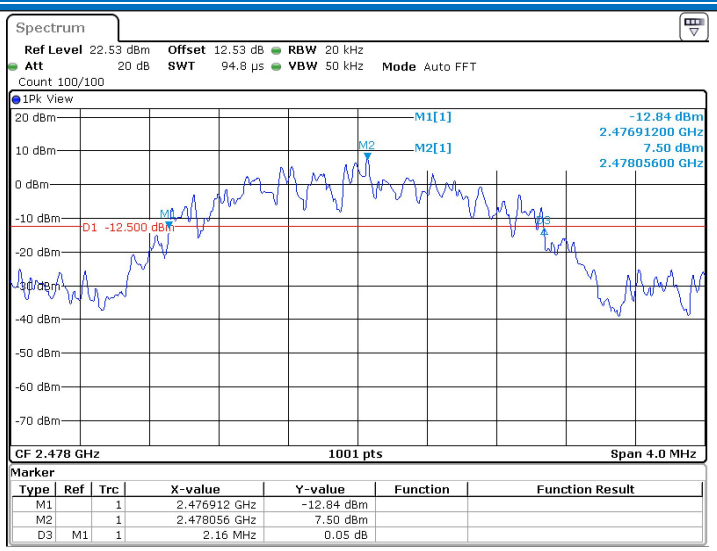
GFSK_Ant1_2404



GFSK_Ant1_2440

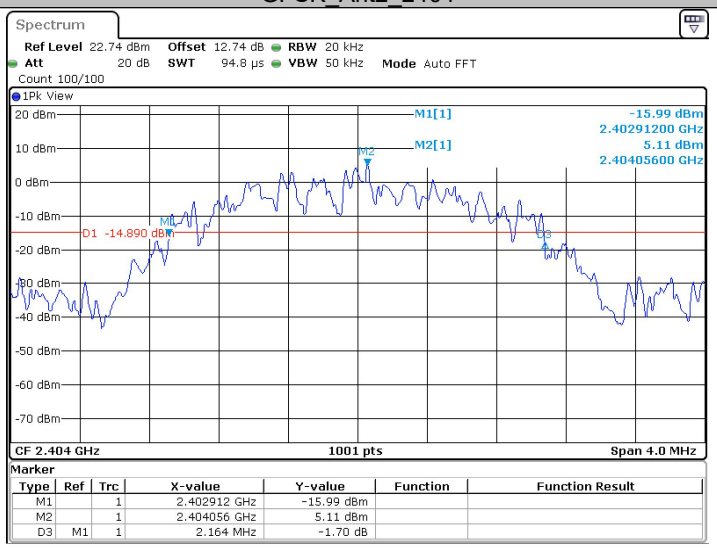


GFSK_Ant1_2478



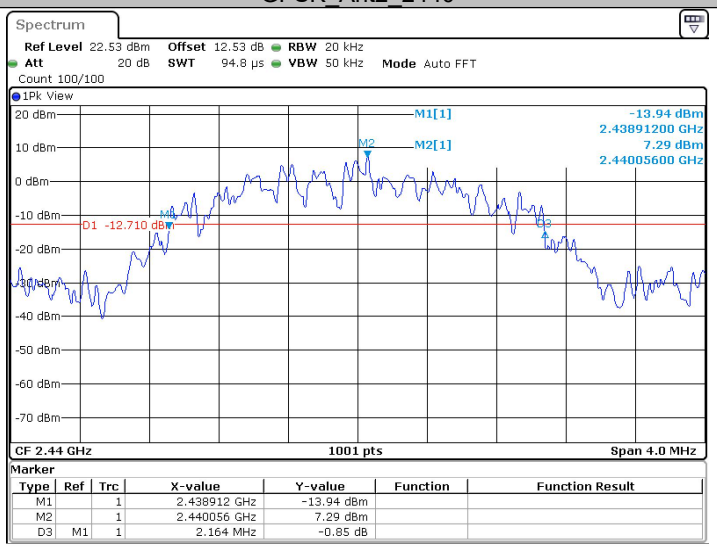
Date: 18.DEC.2024 18:47:46

GFSK_Ant2_2404



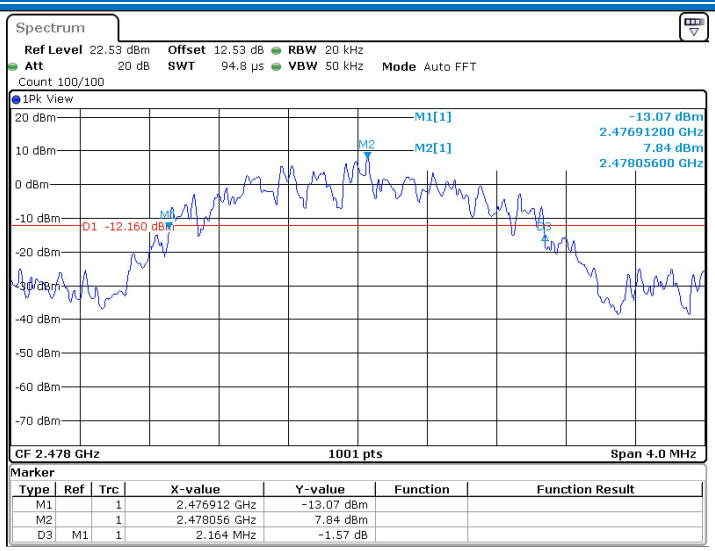
Date: 19.DEC.2024 07:51:43

GFSK_Ant2_2440

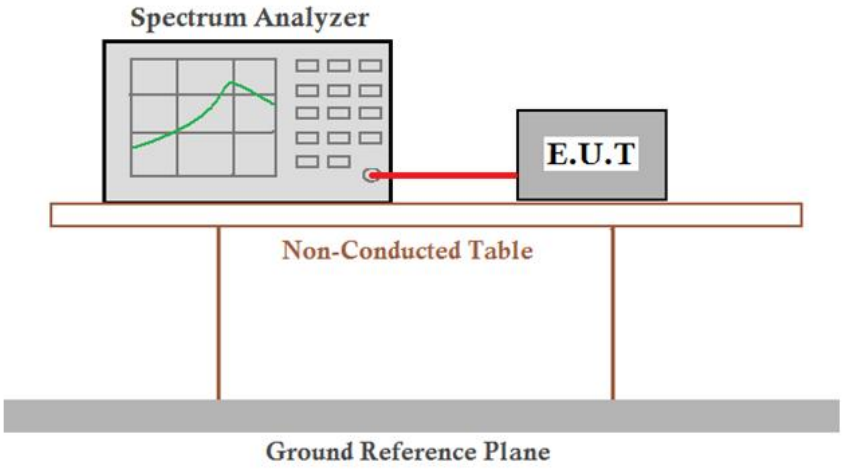


Date: 19.DEC.2024 07:53:16

GFSK_Ant2_2478


Spectrum
Ref Level 22.53 dBm Offset 12.53 dB RBW 20 kHz
Att 20 dB SWT 94.8 µs VBW 50 kHz Mode Auto FFT
Count 100/100
1Pk View
M1[1] -13.07 dBm
2.47691200 GHz
M2[1] 7.84 dBm
2.47805600 GHz
D1 -12.160 dBm
CF 2.478 GHz
1001 pts
Span 4.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.476912 GHz -13.07 dBm
M2 1 2.478056 GHz 7.84 dBm
D3 M1 1 2.164 MHz -1.57 dB
Date: 19.DEC.2024 07:53:41

5.5 Carrier Frequencies Separation

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Test Setup:	 Remark: Offset=Cable loss+ attenuation factor.
Limit:	2/3 of the 20dB bandwidth
	Remark: the transmission power is less than 0.125W.
Exploratory Test Mode:	Hopping transmitting with all kind of modulation and all kind of data type
Final Test Mode:	Only the worst case is recorded in the report.
Test Results:	Pass

Measurement Data

Ant1:

TestMode	Freq(MHz)	Result[MHz]	Limit[MHz]	Verdict
GFSK	Hop	1.999	≥1.44	PASS

Mode	20dB bandwidth (MHz) (worse case)	Limit (MHz) (Carrier Frequencies Separation)
GFSK	2.16	≥1.44

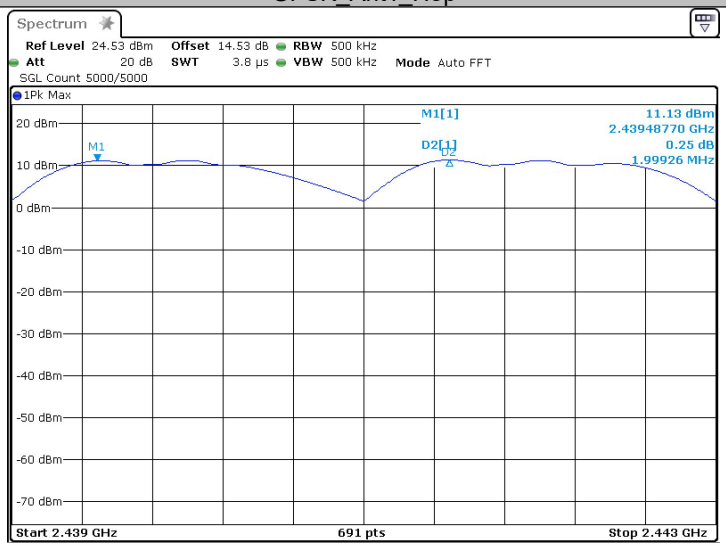
Ant2:

TestMode	Freq(MHz)	Result[MHz]	Limit[MHz]	Verdict
GFSK	Hop	2.005	≥1.44	PASS

Mode	20dB bandwidth (MHz) (worse case)	Limit (MHz) (Carrier Frequencies Separation)
GFSK	2.16	≥1.44

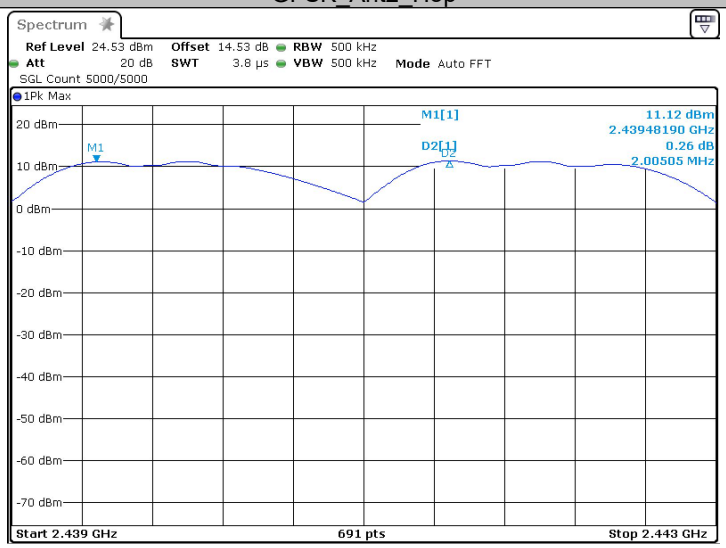
Test plot as follows:

GFSK_Ant1_Hop



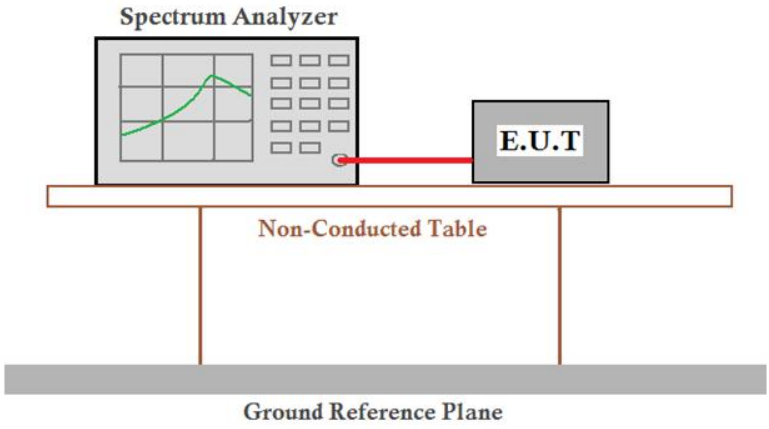
Date: 30.DEC.2024 14:10:39

GFSK_Ant2_Hop



Date: 30.DEC.2024 14:11:12

5.6 Hopping Channel Number

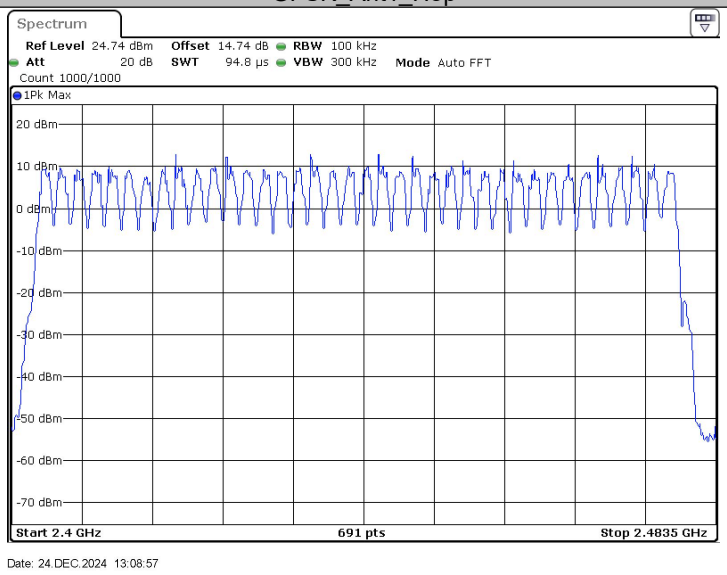
Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Test Setup:	 *Remark: Offset=Cable loss+ attenuation factor.*
Limit:	At least 15 channels
Exploratory Test Mode:	hopping transmitting with all kind of modulation and all kind of data type
Final Test Mode:	Only the worst case is recorded in the report.
Test Results:	Pass

Measurement Data

Mode	Hopping channel numbers	Limit
GFSK	38	≥15

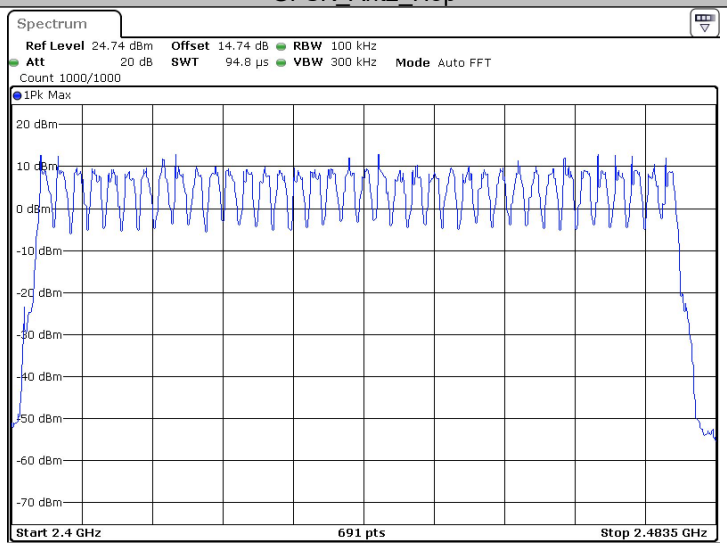
Test plot as follows:

GFSK_Ant1_Hop



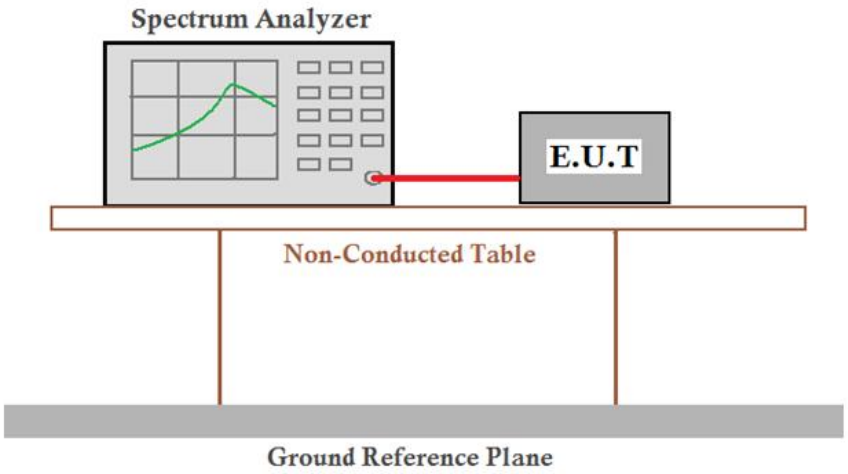
Date: 24.DEC.2024 13:08:57

GFSK_Ant2_Hop



Date: 24.DEC.2024 13:09:10

5.7 Dwell Time

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Test Setup:	 *Remark: Offset=Cable loss+ attenuation factor.*
Test Mode:	Hopping transmitting with all kind of modulation and all kind of data type.
Limit:	0.4 Second
Test Results:	Pass

Measurement Data

Ant1:

TestMode	Freq(MHz)	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
GFSK	Hop	1.074	260	0.279	≤0.4	PASS

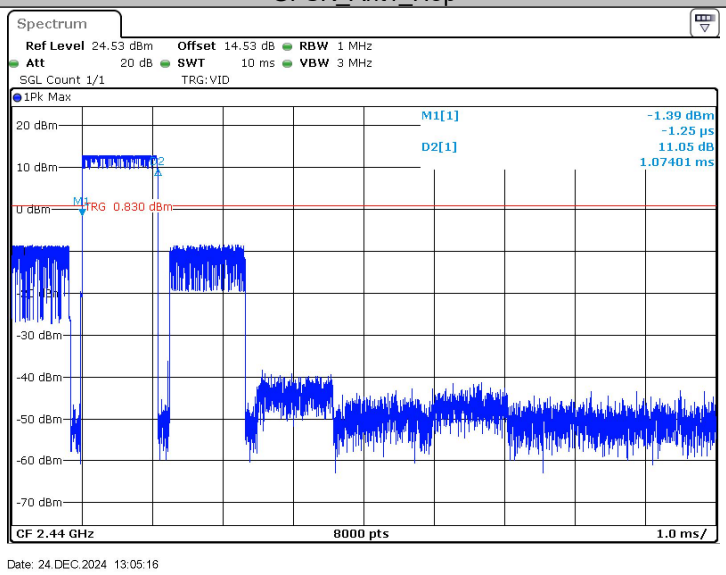
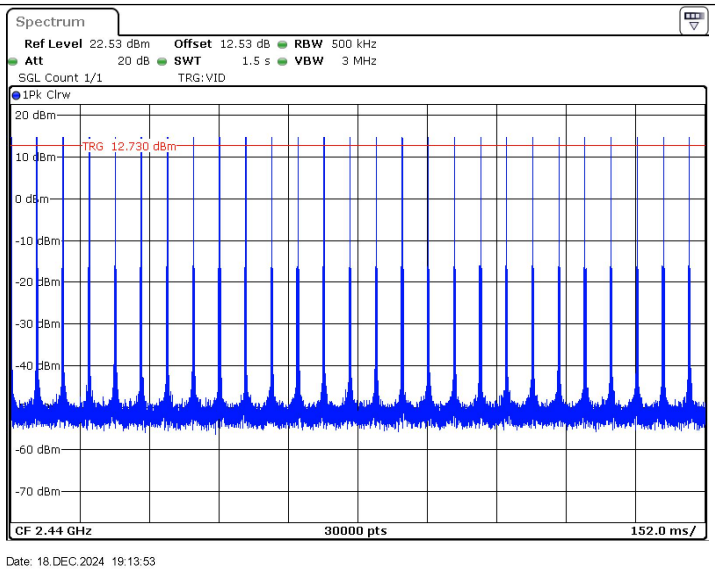
Ant2:

TestMode	Freq(MHz)	BurstWidth [ms]	TotalHops [Num]	Result[s]	Limit[s]	Verdict
GFSK	Hop	1.074	300	0.322	≤0.4	PASS

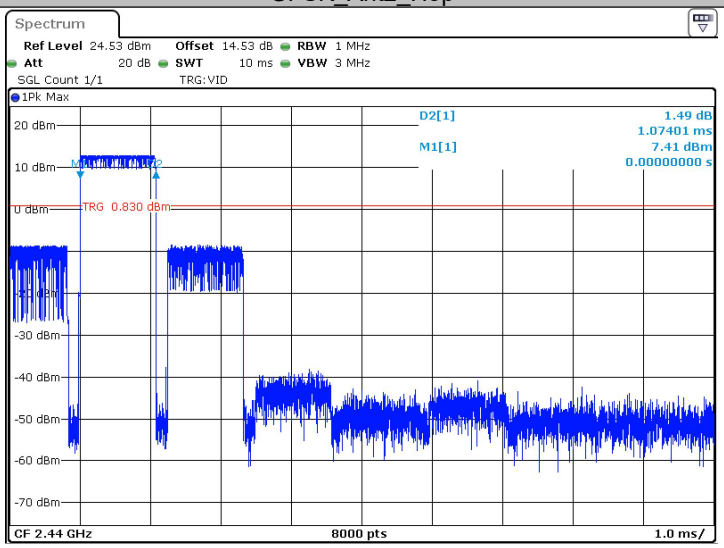
Remark:

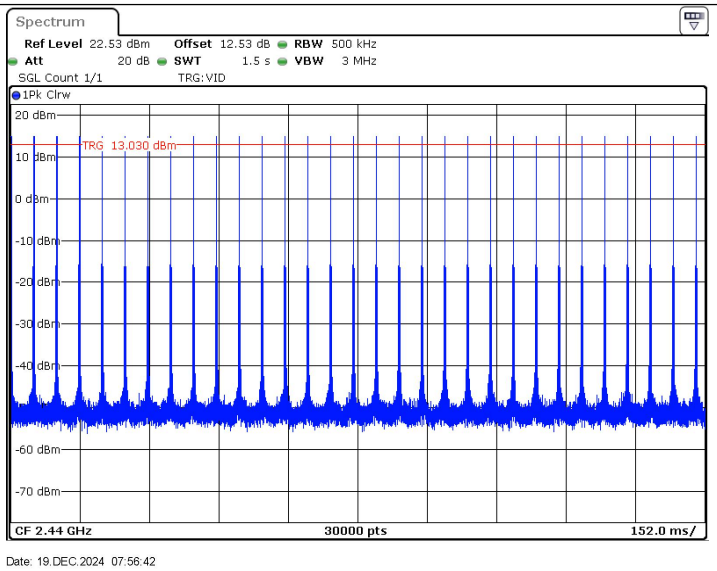
The test period: T= 0.4 Second/Channel x 38 Channel = 15.2 s

Test plot as follows:

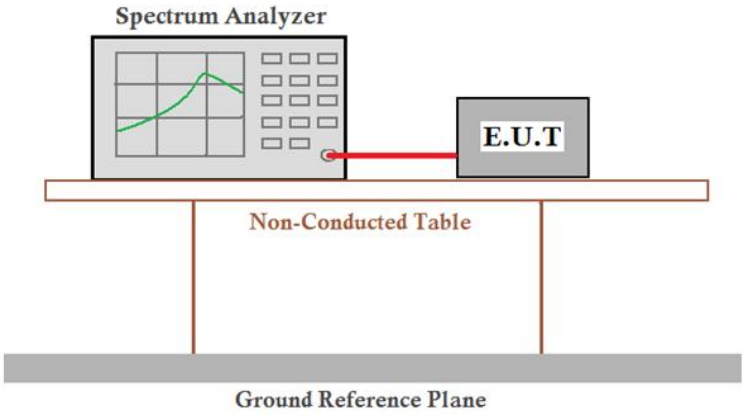
GFSK_Ant1_Hop



GFSK_Ant2_Hop





5.8 Band-edge for RF Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10:2013
Test Setup:	 *Remark: Offset=cable loss+ attenuation factor.*
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Exploratory Test Mode:	Hopping and Non-hopping transmitting with all kind of modulation and all kind of data type
Final Test Mode:	Only the worst case is recorded in the report.
Test Results:	Pass

Measurement Data

Ant1:

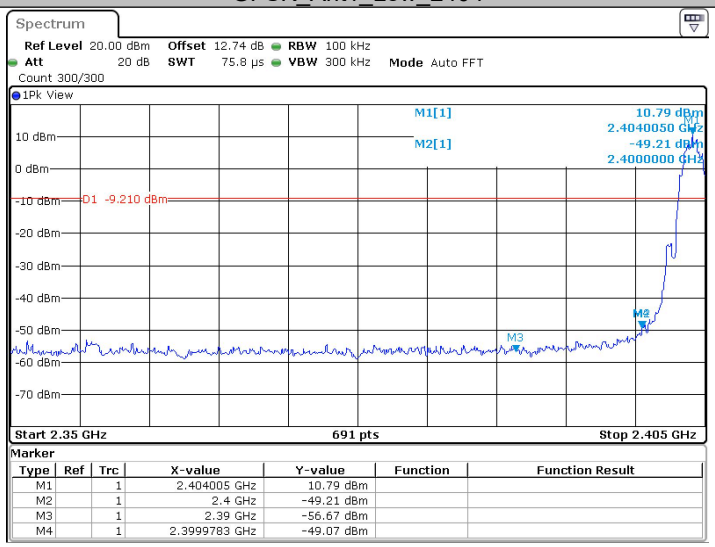
TestMode	ChName	Freq(MHz)	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
GFSK	Low	2404	10.79	-49.07	≤-9.21	PASS
	High	2478	12.72	-52.34	≤-7.28	PASS
	Low	HOP_2404	8.13	-26.84	≤-11.87	PASS
	High	Hop_2478	11.19	-50.79	≤-8.81	PASS

Ant2:

TestMode	ChName	Freq(MHz)	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
GFSK	Low	2404	14.41	-42.31	≤-5.59	PASS
	High	2478	14.72	-49.86	≤-5.28	PASS
	Low	HOP_2404	8.54	-26.7	≤-11.46	PASS
	High	Hop_2478	13.09	-50.68	≤-6.91	PASS

Test plot as follows:

GFSK_Ant1_Low_2404

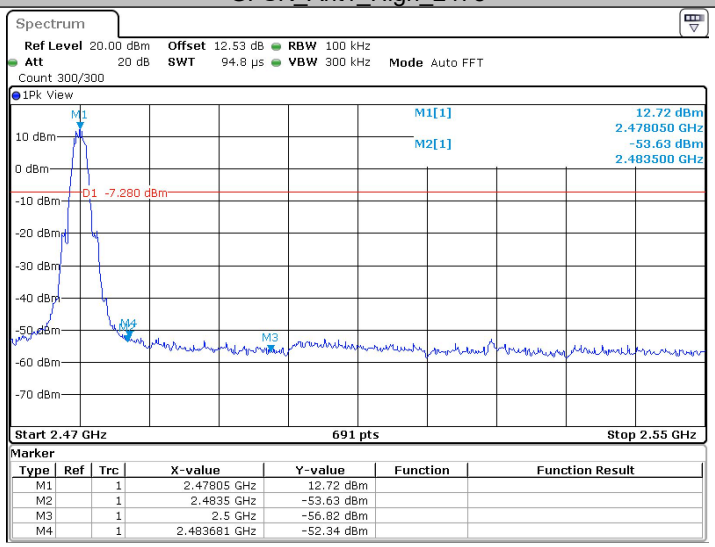


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.404005 GHz	10.79 dBm		
M2		1	2.4 GHz	-49.21 dBm		
M3		1	2.39 GHz	-56.67 dBm		
M4		1	2.3999783 GHz	-49.07 dBm		

Date: 19.DEC.2024 08:04:10

GFSK_Ant1_High_2478

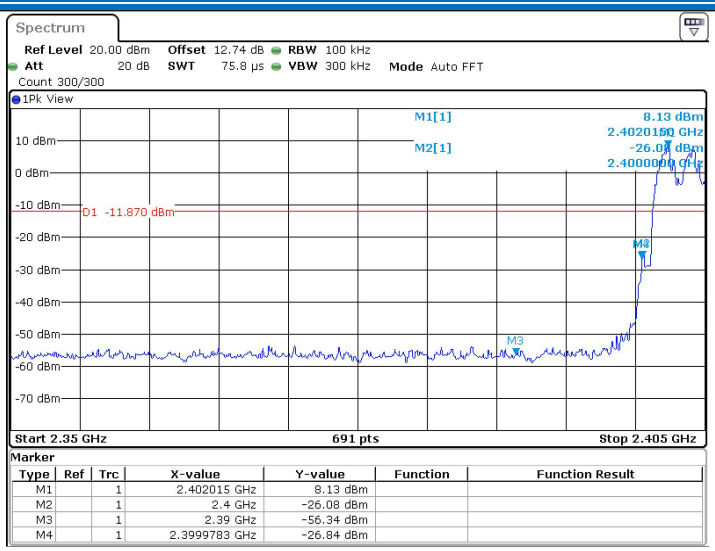


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47805 GHz	12.72 dBm		
M2		1	2.4835 GHz	-53.63 dBm		
M3		1	2.5 GHz	-56.82 dBm		
M4		1	2.483681 GHz	-52.34 dBm		

Date: 19.DEC.2024 08:04:48

GFSK_Ant1_Low_HOP_2404

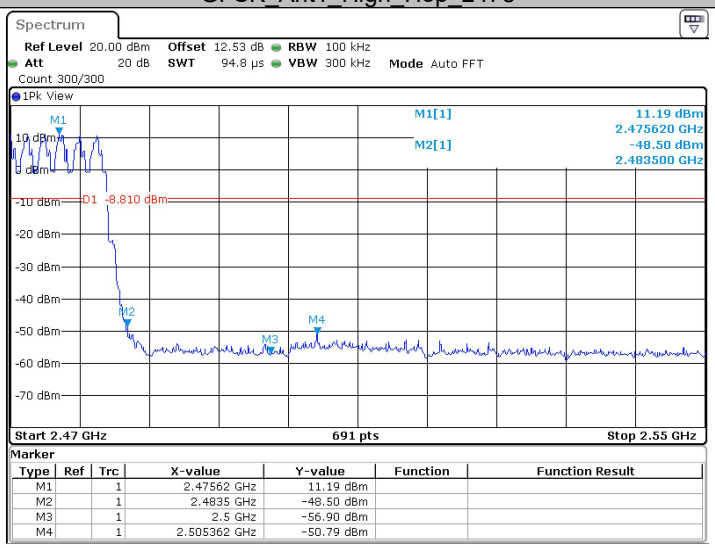


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.402015 GHz	8.13 dBm		
M2		1	2.4 GHz	-26.08 dBm		
M3		1	2.39 GHz	-56.34 dBm		
M4		1	2.3999783 GHz	-26.84 dBm		

Date: 19.DEC.2024 08:05:09

GFSK_Ant1_High_Hop_2478

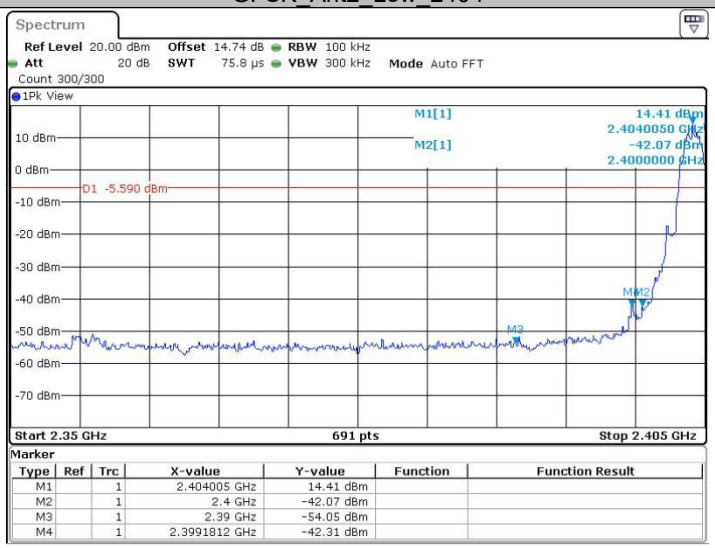


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47562 GHz	11.19 dBm		
M2		1	2.4835 GHz	-48.50 dBm		
M3		1	2.5 GHz	-56.90 dBm		
M4		1	2.505362 GHz	-50.79 dBm		

Date: 18.DEC.2024 18:50:20

GFSK_Ant2_Low_2404

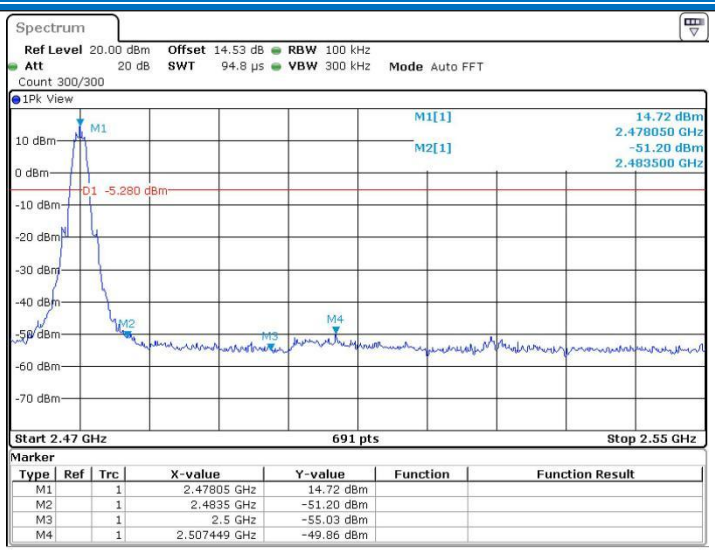


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.404005 GHz	14.41 dBm		
M2		1	2.4 GHz	-42.07 dBm		
M3		1	2.39 GHz	-54.05 dBm		
M4		1	2.3991812 GHz	-42.31 dBm		

Date: 7.DEC.2024 15:02:27

GFSK_Ant2_High_2478

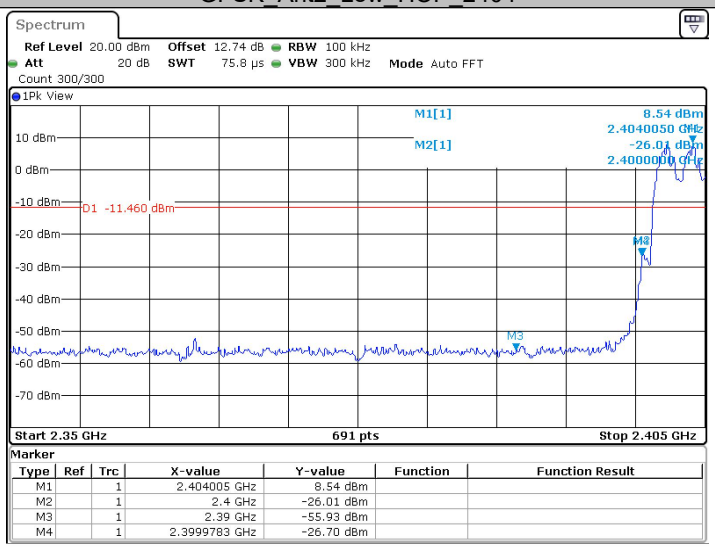


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47805 GHz	14.72 dBm		
M2		1	2.4835 GHz	-51.20 dBm		
M3		1	2.5 GHz	-55.03 dBm		
M4		1	2.507449 GHz	-49.86 dBm		

Date: 7.DEC.2024 15:05:14

GFSK_Ant2_Low_HOP_2404

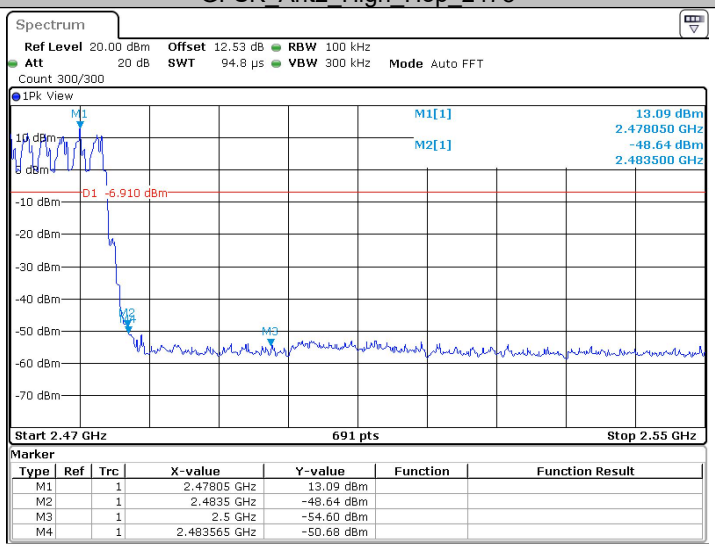


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.404005 GHz	8.54 dBm		
M2		1	2.4 GHz	-26.01 dBm		
M3		1	2.39 GHz	-55.93 dBm		
M4		1	2.3999783 GHz	-26.70 dBm		

Date: 19.DEC.2024 07:54:22

GFSK_Ant2_High_Hop_2478

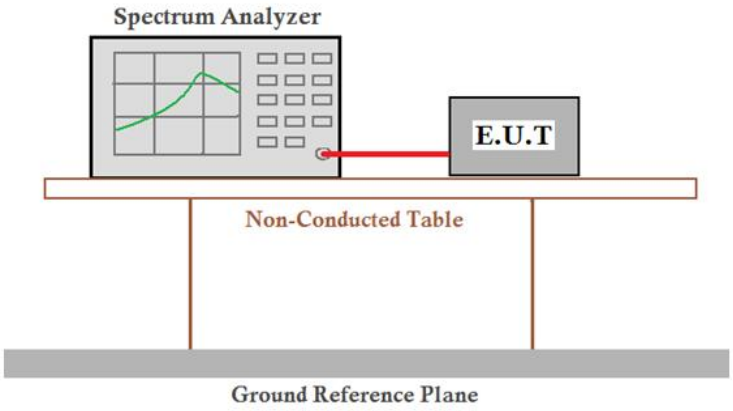


Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	2.47805 GHz	13.09 dBm		
M2		1	2.4835 GHz	-48.64 dBm		
M3		1	2.5 GHz	-54.60 dBm		
M4		1	2.483565 GHz	-50.68 dBm		

Date: 19.DEC.2024 07:56:55

5.9 Spurious RF Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10:2013
Test Setup:	 *Remark: Offset=cable loss+ attenuation factor.*
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Exploratory Test Mode:	Non-hopping transmitting with all kind of modulation and all kind of data type
Test Results:	Pass