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TEST REPORT

of

FCC Part 15 Subpart C §15.247
IC RSS-247 Issue 4 and RSS-Gen Issue 5

FCC ID: A3LSMR640R
IC Certification: 649E-SMR640R

Equipment Under Test	:	Bluetooth Headset
Model Name	:	SM-R640
Variant Model Name(s)	:	-
FCC Applicant	:	Samsung Electronics Co Ltd
IC Applicant	:	SAMSUNG ELECTRONICS CO. LTD.
Manufacturer	:	Samsung Electronics Co., Ltd.
Date of Receipt	:	2025.11.05
Date of Test(s)	:	2025.11.26 ~ 2025.12.16
Date of Issue	:	2025.12.19

In the configuration tested, the EUT complied with the standards specified above. This test report does not assure KOLAS accreditation.

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2) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.
3) This test report cannot be reproduced, except in full, without prior written permission of the Company.
4) The data marked ※ in this report was provided by the customer and may affect the validity of the test results.
We are responsible for all the information of this test report except for the data(※) provided by the customer.

Tested by: Finn Nam

Technical Manager: Jinhyoung Cho

SGS Korea Co., Ltd. Gunpo Laboratory

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1. General Information

1.1 Testing Laboratory

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- 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
- Designation number: KR0150

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1.2. Details of Applicant

FCC Applicant : Samsung Electronics Co Ltd
FCC Address : 19 Chapin Rd., Building D, Pine Brook, New Jersey, United States, 07058
IC Applicant : SAMSUNG ELECTRONICS CO. LTD.
IC Address : 129 Samsung-ro, Yeongtong-gu, Suwon-Si, Gyeonggi-do, Korea (Republic Of), 16677
Contact Person : Chun, Jenni
Phone No. : +1 973 808 6375

1.3. Details of Manufacturer

Company : Samsung Electronics Co., Ltd.
Address : 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, Republic of Korea, 16677

1.4. Description of EUT

Kind of Product	Bluetooth Headset
Model Name	SM-R640
HVIN	SM-R640R
Serial Number	Conducted: SM-R640_2 Radiated: SM-R640_4
Power Supply	DC 3.85 V
Frequency Range	2 402 ㎒ ~ 2 480 ㎒ (Bluetooth)
Modulation Technique	GFSK, π/4DQPSK, 8DPSK
Number of Channels	79 channels (Bluetooth)
Antenna Type	Metal Antenna
Antenna Gain※	-8.12 dBi
H/W Version	1.0
S/W Version	R640.001
FVIN	N/A

1.5. Information about the FHSS characteristics:

1.5.1. 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.

1.5.2. Equal Hopping Frequency Use

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

1.5.3. 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

1.5.4. System Receiver Input Bandwidth

Each channel bandwidth is 1 ㎒.
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.

1.5.5. Equipment Description

RSS-247 Issue 4, 6.2.1(a): The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

RSS-247 Issue 4, 3: Frequency hopping systems(FHS) employ a spread spectrum technology in which the carrier is modulated with coded information in a conventional manner, causing a conventional spreading of the radio frequency (RF) energy around the carrier frequency. The carrier frequency is not fixed, but changes at fixed intervals under the direction of a coded sequence.

FHS are not required to employ all available hopping frequencies during each transmission. However, the system comprising both the transmitter and the receiver, must be designed to comply with all of the requirements in this section in case the transmitter is presented with a continuous data or information stream. In addition, a system employing short transmission bursts must comply with the definition of frequency hopping equipment and must distribute its transmissions over the minimum number of hopping channels specified in this section.

Incorporation of intelligence into an FHS that enables it to recognize other users of the band and to avoid occupied frequencies is permitted, provided that the FHS chooses or adapts its hopset without having to synchronize with another or several other systems. The coordination of FHS in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

1.6. Test Equipment List

Equipment	Manufacturer	Model	S/N	Cal. Due	Cal. Interval
Signal Generator	R&S	SMA100B	106887	10/20/2026	Annual
Spectrum Analyzer	R&S	FSV30	103453	10/17/2026	Annual
Spectrum Analyzer	Agilent	N9020A	MY53421758	09/10/2026	Annual
Spectrum Analyzer	Agilent	N9030A	US51350132	12/03/2026	Annual
DC Power Supply	Agilent	U8002A	MY54110041	09/18/2026	Annual
Bluetooth Tester	TESCOM	TC-3000C	3000C000560	09/10/2026	Annual
Directional Coupler	KRYTAR	152613	122660	07/02/2026	Annual
Bridge Coupler	MARKI MICROWAVE INC	CBR16-0012	1542	05/15/2026	Annual
Power Sensor	R&S	NRP-Z81	100669	05/24/2026	Annual
Preamplifier	H.P.	8447F	2944A03909	08/07/2026	Annual
Preamplifier	TESTEK	TK-PA1840H	130016	03/13/2026	Annual
Signal Conditioning Unit	R&S	SCU-18F	101058	02/27/2026	Annual
EMI Test Receiver	R&S	ESU26	100109	01/13/2026	Annual
High Pass Filter	Wainwright Instrument GmbH	WHKX3.0/18G-10SS	21	06/17/2026	Annual
High Pass Filter	Wainwright Instrument GmbH	WHNX7.5/26.5G-6SS	15	06/09/2026	Annual
Low Pass Filter	Mini-Circuits	NLP-1200+	V8979400903-2	02/04/2026	Annual
Loop Antenna	Schwarzbeck Mess-Elektronik	FMZB 1519	1519-039	10/01/2027	Biennial
Bilog Antenna	Schwarzbeck Mess-Elektronik	VULB 9163	01126	03/05/2027	Biennial
Horn Antenna	R&S	HF906	100326	02/24/2026	Annual
Horn Antenna	Schwarzbeck Mess-Elektronik	BBHA 9170	9170-540	12/05/2026	Annual
Turn Table	Innco systems GmbH	DS 1200 S	N/A	N.C.R.	N/A
Controller	Innco systems GmbH	CONTROLLER CO3000-4P	CO3000/963/3833 0516/L	N.C.R.	N/A
Antenna Mast	Innco systems GmbH	MA4640-XP-ET	MA4640/536/3833 0516/L	N.C.R.	N/A
Anechoic Chamber	SY Corporation	L × W × H (9.6 m × 6.4 m × 6.6 m)	N/A	N.C.R.	N/A
Coaxial Cable	SENSORVIEW	NMST-13A26-NMST-5 m	TPC2402190004	04/13/2026	Semi-Annual
Coaxial Cable	SENSORVIEW	NMST-13A26-NMST-10 m	TPC2402190001	04/13/2026	Semi-Annual
Coaxial Cable	RFONE	PL360P-292M292M-1.5M-A	20200324002	04/10/2026	Semi-Annual
Coaxial Cable	RADIALL	TESTPRO 3	182287	04/10/2026	Semi-Annual
Coaxial Cable	RADIALL	TESTPRO 3	182284	04/10/2026	Semi-Annual

Note;

For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date

1.7. Declaration by the Manufacturer

- Adaptive Frequency Hopping is supported and use at least 20 channels.

1.8. Summary of Test Results

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part15 Subpart C, IC RSS-247 Issue 4 and RSS-Gen Issue 5			
Section in FCC	**Section in IC**	**Test Item(s)**	**Result**
15.205(a) 15.209 15.247(d)	RSS-247 Issue 4 6.6 RSS-Gen Issue 5 8.9	Transmitter Radiated Spurious Emissions and Conducted Spurious Emission	Pass
15.247(a)(1)	RSS-247 Issue 4 6.2.3.1(a) RSS-Gen Issue 5 6.7	20 dB Bandwidth and 99 % Bandwidth	Pass
15.247(a)(1) 15.247(b)(1)	RSS-247 Issue 4 6.2.3.1(a) 6.2.3.2(a)(b)(c)	Maximum Peak Conducted Output Power	Pass
15.247(a)(1)	RSS-247 Issue 4 6.2.3.1(a)	Carrier Frequency Separation	Pass
15.247(a)(1)(iii)	RSS-247 Issue 4 6.2.3.1(b)	Number of Hopping Frequencies	Pass
15.247(a)(1)(iii)	RSS-247 Issue 4 6.2.3.1(b)	Time of Occupancy (Dwell Time)	Pass
15.207	RSS-Gen Issue 5 8.8	AC Power Line Conducted Emission	N/A[1)]

Note;

1) The AC power line test was not performed because the EUT use battery power for operation and which do not operate from the AC power lines.

1.9. Test Procedure(s)

The measurement procedures described in the American National Standard of Procedure for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10-2020+Cor.1-2023) was used in the measurement of the DUT.

1.10. Sample Calculation

Where relevant, the following sample calculation is provided:

1.10.1. Conducted Test

Offset value (dB) = Directional coupler (dB) + Cable loss (dB)

1.10.2. Radiation Test

Field strength level (dBμV/m) = Measured level (dBμV) + Antenna factor (dB/m) + Cable loss (dB) - Amplifier gain (dB) + Duty factor (dB)

1.11. Information of software for test

- Using the software of BudsOdin2.0 to testing of EUT.

1.12. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty	
Maximum Peak Conducted Output Power	0.31 ㏈	
99 % Bandwidth	7.83 ㎑	
20 ㏈ Bandwidth	6.84 ㎑	
Conducted Spurious Emission	0.91 ㏈	
Time of Occupancy	0.01 ㎳	
Radiated Emission, 9 ㎑ to 30 ㎒	H	3.60 ㏈
	V	3.60 ㏈
Radiated Emission, below 1 ㎓	H	5.50 ㏈
	V	5.10 ㏈
Radiated Emission, above 1 ㎓	H	3.50 ㏈
	V	3.40 ㏈

All measurement uncertainty values are shown with a coverage factor k = 2 to indicate a 95 % level of confidence.

1.13. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL006613	2025.12.19	Initial

1.14. Descriptions of Test Mode

Preliminary tests were performed in different data rates and recorded the RF output power in the following table:

Mode	Data Rate (Mbps)	Channel	Frequency (㎒)	RF Peak Output Power (㏈ m)
GFSK	1	Low	2 402	10.72
		Middle	2 441	**11.29**
		High	2 480	11.08
π/4DQPSK	2	Low	2 402	10.29
		Middle	2 441	**10.75**
		High	2 480	10.47
8DPSK	3	Low	2 402	10.78
		Middle	2 441	**11.38**
		High	2 480	11.05

Note;

For transmitter radiated spurious emissions, conducted spurious emission, carrier frequency separation and number of hopping frequencies, GFSK / DH5 and 8DPSK / 3DH5 are tested as worst condition.

For 20 ㏈ bandwidth and maximum peak conducted output power, GFSK / DH5, π/4DQPSK / 2DH5 and 8DPSK / 3DH5 are tested as worst condition.

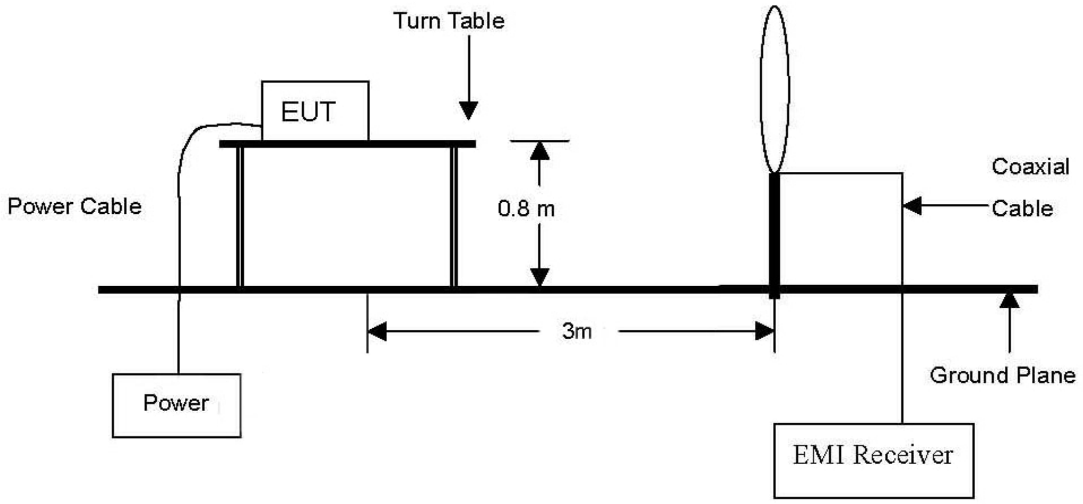
For Time of Occupancy, GFSK / DH1, DH3, DH5 and 8DPSK / 3DH1, 3DH3, 3DH5 are tested as worst condition.

2. Transmitter Radiated Spurious Emissions and Conducted Spurious Emissions

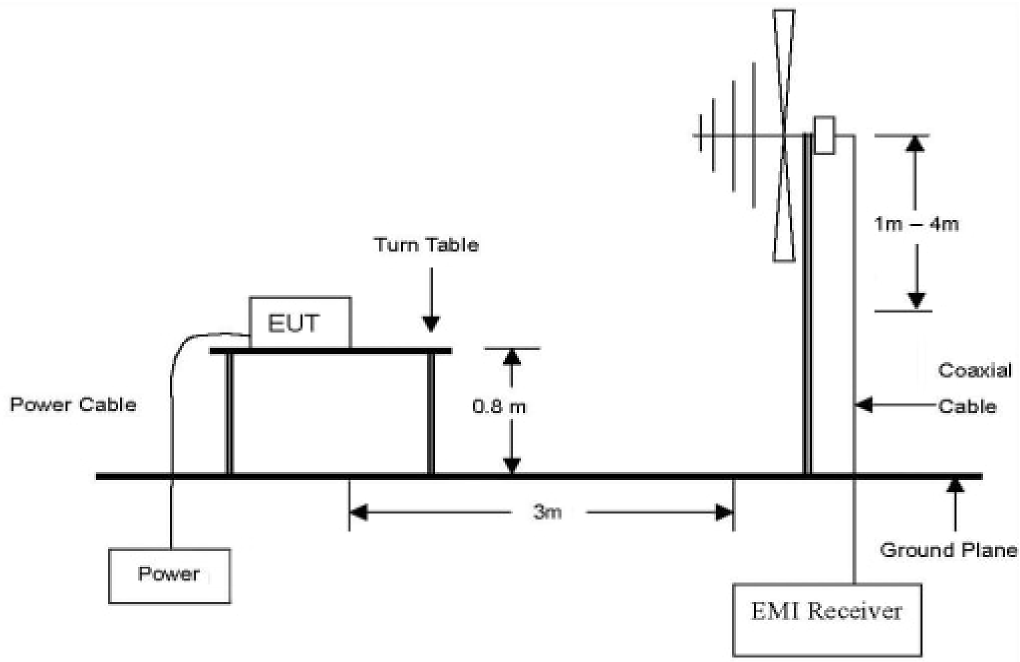
2.1. Test Setup

2.1.1. Transmitter Radiated Spurious Emissions

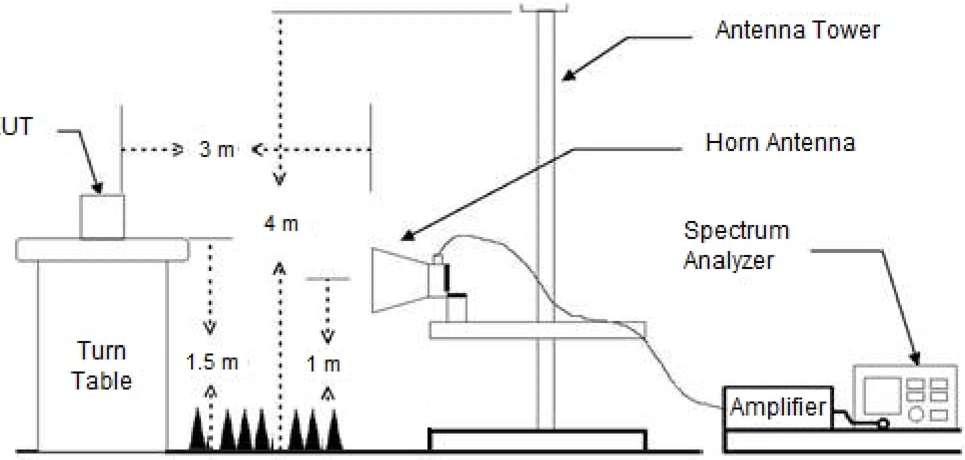
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 ㎑ to 30 ㎒.



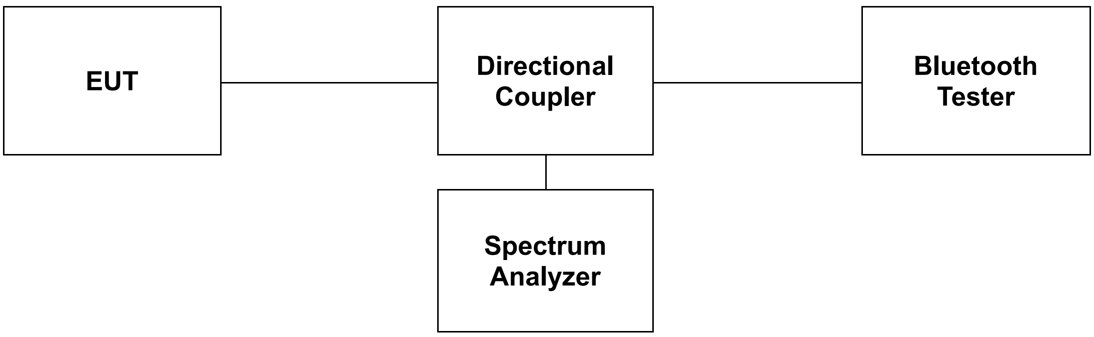
The diagram below shows the test setup that is utilized to make the measurements for emission from 30 ㎒ to 1 ㎓.



The diagram below shows the test setup that is utilized to make the measurements for emission. The spurious emissions were investigated from 1 ㎓ to the 10th harmonic of the highest fundamental frequency or 40 ㎓, whichever is lower.



2.1.2. Conducted Spurious Emissions



2.2. Limit

2.2.1. FCC

According to §15.247(d), in any 100 ㎑ bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 ㏈ below that in the 100 ㎑ bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 ㏈ instead of 20 ㏈. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emission which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

According to §15.209(a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (㎒)	Field Strength (㎶/m)	Measurement Distance (Meters)
0.009-0.490	2 400/F(㎑)	300
0.490-1.705	24 000/F(㎑)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 ㎒, 76-88 ㎒, 174-216 ㎒ or 470-806 ㎒. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

2.2.2. IC

According to RSS-247 Issue 4, 6.6, In any 100 ㎑ bandwidth outside the frequency band in which the spread spectrum device, digitally modulated device, or hybrid system is operating, the RF power that is produced shall be at least 20 ㏈ below that in the 100 ㎑ bandwidth within the band that contains the highest level of the desired power – based on either an RF conducted or a radiated measurement– provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted undersection 6.3.2, the attenuation required shall be 30 ㏈ instead of 20 ㏈. Attenuation below the general field strength limits specified in RSS-Gen is not required.

According to RSS-Gen Issue 5, 8.9, except where otherwise indicated in the applicable RSS, radiated emissions shall comply with the field strength limits shown in table 5 and table 6. Additionally, the level of any transmitter unwanted emission shall not exceed the level of the transmitter's fundamental emission.

Table 5 – General Field Strength Limits at frequencies above 30 ㎒

Frequency (㎒)	Field Strength (㎶/m at 3 m)
30-88	100
88-216	150
216-960	200
Above 960	500

Table 6 – General Field Strength Limits at frequencies below 30 ㎒

Frequency	Magnetic Field Strength (H-Field) (㎂/m)	Measurement Distance (meters)
9-490 ㎑ [1]	6.37/F (F in ㎑)	300
490-1 705 ㎑	63.7/F (F in ㎑)	30
1.705-30 ㎒	0.08	30

Note[1]: The emission limits for the ranges 9-90 ㎑ and 110-490 ㎑ are based on measurements employing a linear average detector.

2.3. Test Procedures

Radiated emissions from the EUT were measured according to the dictates in section 11.11 & 11.12 of ANSI C63.10-2020+Cor.1-2023

2.3.1. Test Procedures for emission below 30 ㎒

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
2. Then antenna is a loop antenna is fixed at one meter above the ground to determine the maximum value of the field strength. Both parallel and perpendicular of the antenna are set to make the measurement.
3. For each suspected emission, the EUT was arranged to its worst case and then the table was turned from 0 degrees to 360 degrees to find the maximum reading.
4. The test-receiver system was set to average or quasi peak detect function and Specified Bandwidth with Maximum Hold Mode.

2.3.2. Test Procedures for emission from above 30 ㎒

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site below 1 ㎓ and 1.5 meter above the ground at a 3 meter anechoic chamber test site above 1 ㎓. The table was rotated 360 degrees to determine the position of the highest radiation.
2. During performing radiated emission below 1 ㎓, the EUT was set 3 meters away from the interference receiving antenna, which was mounted on the top of a variable-height antenna tower. During performing radiated emission above 1 ㎓, the EUT was set 3 meter away from the interference-receiving antenna.
3. The antenna is a bi-log antenna, a horn antenna and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. For measurements below 1 ㎓ resolution bandwidth is set to 100 ㎑ for peak detection measurements or 120 ㎑ for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.
6. For measurements Above 1 ㎓ resolution bandwidth is set to 1 ㎒, the video bandwidth is set to 3 ㎒ for peak measurements.

2.3.3. Test Procedures for Average measurements

Radiated emissions for average measurements were according to section 7.8.8.2 of ANSI C63.10-2020+Cor.1-2023

Where average measurements of an emission are required it is permitted to determine the average value over 100 ㎳ after accounting for the maximum dwell time per 1 ㎒ in any 100 ㎳ period. The dwell time in any 100 ㎳ period can include multiple hops on that frequency for devices which have a short dwell time.

The maximum dwell time per 1 ㎒ does need to account for cases where the channel spacing is less than the 1 ㎒ measurement bandwidth and for cases where the occupied bandwidth exceeds the channel spacing and the channels overlap. The maximum dwell time per 1 ㎒ is determined as follows:

Maximum dwell time per 1 ㎒ = dwell time per 100 ㎳ per channel × (channel separation correction + overlapping channel correction) where:

- Channel separation correction = [1 / channel separation (㎒)] for channel separation < 1 ㎒, and = 1 for channel separation ≥ 1 ㎒, as determined using the procedures of 7.8.2. If the average measurements are performed on the Nth harmonic, the channel separation value is N times the separation at the fundamental frequency.

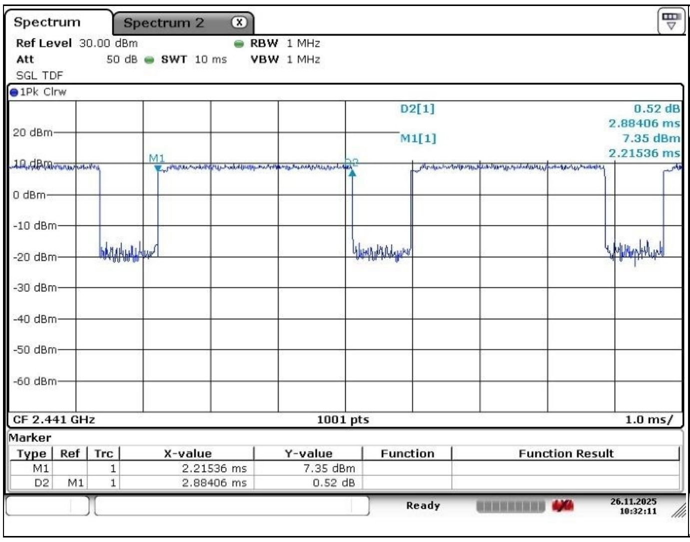
- Overlapping channel correction = 0 when the 20 ㏈ channel bandwidth < channel separation and 1 for when the 20 ㏈ channel bandwidth > channel separation.

The average value may be determined as follows:

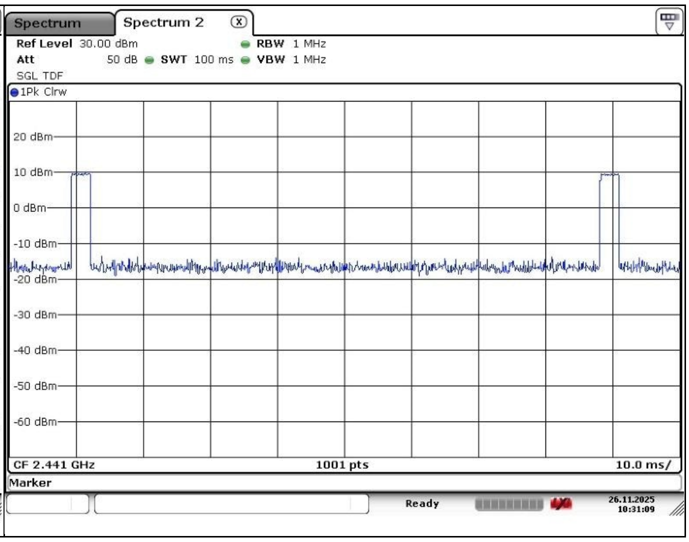
a) From the peak value of the emission: The measured peak value in ㏈㎶/m is corrected by 20 log(maximum dwell time in 100 ㎳ / 100).

b) From the average value of the emission: When the average value has been measured with the device continuously transmitting (100% duty cycle) the measured average value in ㏈㎶/m is corrected by Xlog(maximum dwell time in 100 ㎳ / 100) where X = 10 if using an rms-average power detector (with output data in power terms) and X = 20 if using a linear voltage average detector (with output data in voltage terms).

on time on Channel



dwell time per 100 ㎳ per channel



In AFH mode, the minimum hopping frequencies are 20, to get the longest dwell time 3DH5 packet is observed.
the period to have 3DH5 packet completing one hopping sequence is 2.88 ㎳ x 20 channels = 57.60 ㎳

There cannot be 2 complete hopping sequences within 100 ㎳ period, considering the random hopping behavior, maximum 2 hops can be possibly observed within the period. [100 ㎳ / 57.60 ㎳] = 2 hops

Thus, the possible dwell time per 100 ㎳ per channel:

2.88 ㎳ x 2 = 5.76 ㎳

For the 3DH5, the channel separation is 1 ㎒, Channel separation correction = 1

For the 3DH5, 20 dB channel bandwidth > channel separation, Overlapping channel correction = 1

Maximum dwell time in 100 ㎳ = dwell time per 100 ㎳ per channel × (channel separation correction + overlapping channel correction)

5.76 ㎳ x (1 + 1) = 11.52 ㎳

Correction factor for average value is follow:

20 x log (11.52 ㎳/100 ㎳) = -18.77 ㏈

2.3.4. Test Procedures for Conducted Spurious Emissions

2.3.4.1. Band-edge Compliance of RF Conducted Emissions

The transmitter output was connected to the spectrum analyzer.
Span = wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation.
RBW ≥ 100 ㎑
VBW = 300 ㎑
Sweep = auto
Detector function = peak
Trace = max hold

2.3.4.2. Spurious RF Conducted Emissions

The transmitter output was connected to the spectrum analyzer.
RBW = 1 ㎒
VBW = 3 ㎒
Sweep = auto
Detector function = peak
Trace = max hold

2.3.4.3. TDF function

- For plots showing conducted spurious emissions from 9 ㎑ to 25 ㎓, all path loss of wide frequency range was investigated and compensated to spectrum analyzer as TDF function.
So, the reading values shown in plots were final result.

2.4. Test Results

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 %

2.4.1. Radiated Spurious Emission below 1 000 ㎒

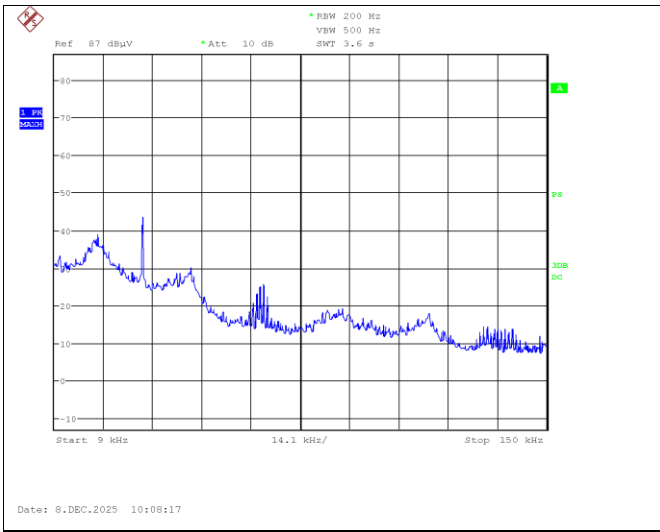
The frequency spectrum from 9 ㎑ to 1 000 ㎒ was investigated.

Radiated Emissions			Ant.	Correction Factors (dB/m)	Total	Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.		Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
950.80	26.53	Quasi Peak	H	4.89	31.42	46.00	14.58

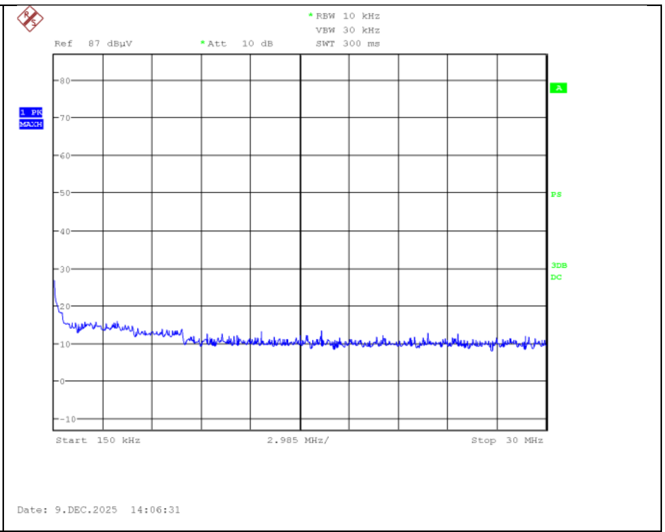
Remark;

1. Spurious emissions for all channels and modes were investigated and almost the same below 1 ㎓.
2. Test from 30 ㎒ to 1 000 ㎒ was performed using the software of ELEKTRAT(V5.02) from Rohde & Schwarz GmbH & Co. KG.
3. Reported spurious emissions are in **<u>EDR / 3DH5 / High channel</u>** as worst case among other modes.
4. Radiated spurious emission measurement as below.
   (Actual = Reading + Correction)
   (Correction = Antenna Factor + AMP Factor + Cable Loss)
5. According to §15.31(o), emission levels are not report much lower than the limits by over 20 dB.

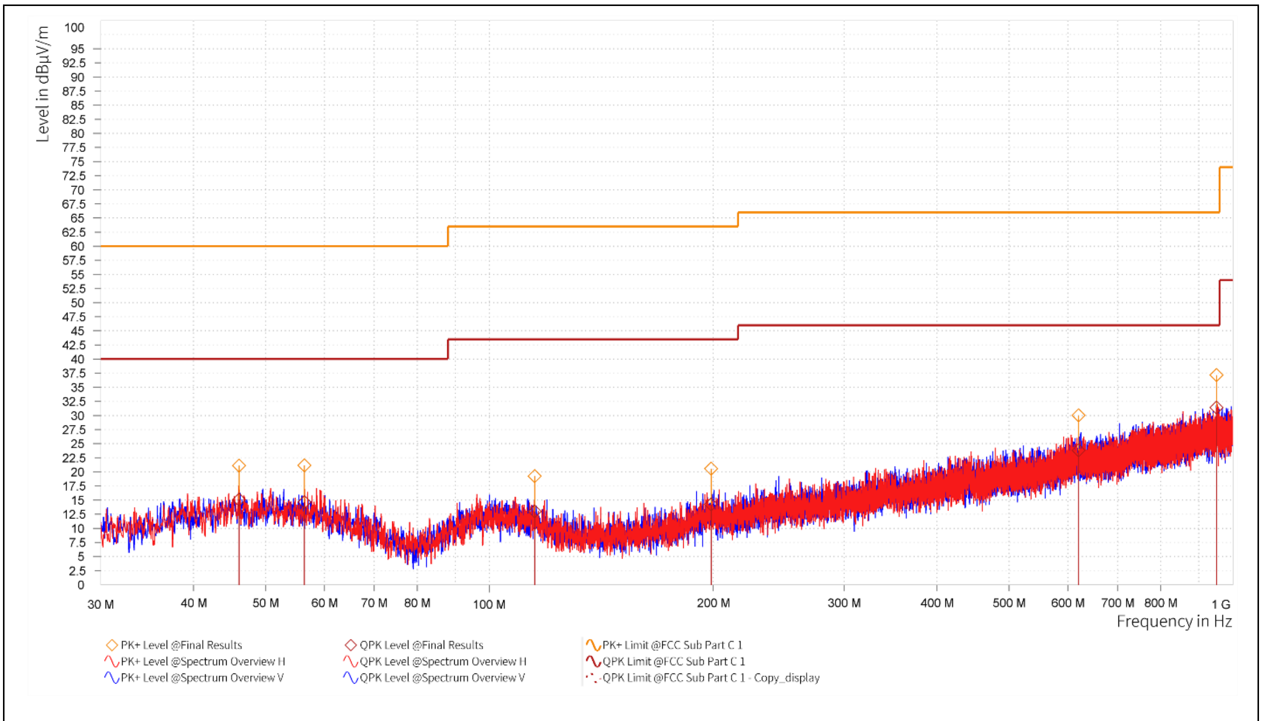
- Test plot



9 ㎑ ~ 150 ㎑



150 ㎑ ~ 30 ㎒



30 ㎒ ~ 1 ㎓

2.4.2. Radiated Spurious Emission above 1 000 ㎒

The frequency spectrum above 1 000 ㎒ was investigated. All reading values are peak values.

Operating Mode: GFSK

A. Low Channel (2 402 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	DF (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
*2 310.00	17.88	Peak	H	27.94	7.33	-	53.15	74.00	20.85
*2 310.00	-	Average	-	-	-	-18.77	34.38	54.00	19.62
*2 389.02	20.27	Peak	H	28.18	7.58	-	56.03	74.00	17.97
*2 389.02	-	Average	-	-	-	-18.77	37.26	54.00	16.74
*2 390.00	17.78	Peak	H	28.18	7.59	-	53.55	74.00	20.45
*2 390.00	-	Average	-	-	-	-18.77	34.78	54.00	19.22

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	DF (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

B. Middle Channel (2 441 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	DF (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
*7 322.90	40.88	Peak	H	36.15	-24.61	-	52.42	74.00	21.58
Above 7 400.00	Not detected	-	-	-	-	-	-	-	-

C. High Channel (2 480 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	DF (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
*2 483.50	22.34	Peak	H	28.34	7.58	-	58.26	74.00	15.74
*2 483.50	-	Average	-	-	-	-18.77	39.49	54.00	14.51
*2 483.56	23.01	Peak	H	28.34	7.58	-	58.93	74.00	15.07
*2 483.56	-	Average	-	-	-	-18.77	**40.25**	54.00	13.75
*2 500.00	19.04	Peak	H	28.50	7.74	-	55.28	74.00	18.72
*2 500.00	-	Average	-	-	-	-18.77	36.51	54.00	17.49

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	DF (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
*7 440.65	40.77	Peak	H	36.12	-25.33	-	51.56	74.00	22.44
Above 7 500.00	Not detected	-	-	-	-	-	-	-	-

Operating Mode: 8DPSK

A. Low Channel (2 402 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	DF (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
*2 310.00	18.15	Peak	H	27.94	7.33	-	53.42	74.00	20.58
*2 310.00	-	Average	-	-	-	-18.77	34.65	54.00	19.35
*2 385.43	20.59	Peak	H	28.17	7.55	-	56.31	74.00	17.69
*2 385.43	-	Average	-	-	-	-18.77	37.24	54.00	16.76
*2 390.00	18.55	Peak	H	28.18	7.59	-	54.32	74.00	19.68
*2 390.00	-	Average	-	-	-	-18.77	35.55	54.00	18.45

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	DF (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-	-

B. Middle Channel (2 441 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	DF (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
*7 323.16	38.43	Peak	H	36.15	-24.61	-	49.97	74.00	24.03
Above 7 400.00	Not detected	-	-	-	-	-	-	-	-

C. High Channel (2 480 ㎒)

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	DF (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
*2 483.50	21.05	Peak	H	28.34	7.58	-	56.97	74.00	17.03
*2 483.50	-	Average	-	-	-	-18.77	38.20	54.00	15.80
*2 483.69	22.64	Peak	H	28.34	7.58	-	58.56	74.00	15.44
*2 483.69	-	Average	-	-	-	-18.77	**39.79**	54.00	14.21
*2 500.00	18.59	Peak	H	28.50	7.74	-	54.83	74.00	19.17
*2 500.00	-	Average	-	-	-	-18.77	36.06	54.00	17.94

Radiated Emissions			Ant.	Correction Factors			Total	Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	DF (dB)	Actual (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
*7 439.93	39.21	Peak	H	36.12	-25.33	-	50.00	74.00	24.00
Above 7 500.00	Not detected	-	-	-	-	-	-	-	-

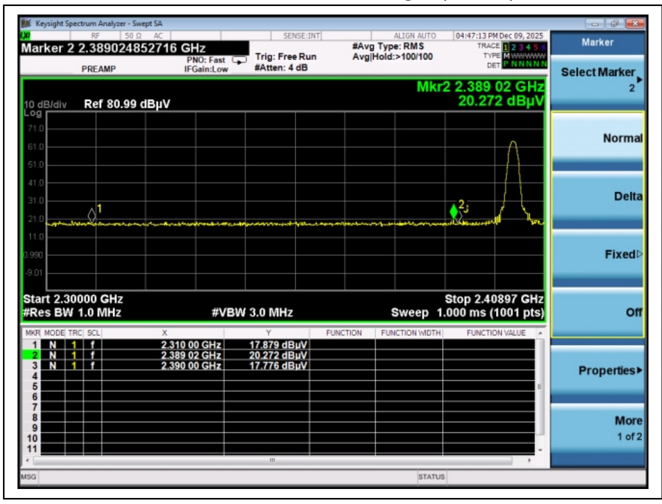
Remark;

1. "*" means the restricted band.
2. Measuring frequencies from 1 ㎓ to the 10th harmonic of highest fundamental frequency.
3. Radiated emissions measured in frequency above 1 000 ㎒ were made with an instrument using peak/average detector mode.
4. Actual = Reading + AF + CL + (DF) or Reading + AF + AMP + CL + (DF).
5. According to § 15.31(o), emission levels are not reported much lower than the limits by over 20 ㏈.
6. The maximized peak measured value complies with the average limit, to perform an average measurement is unnecessary.

- Test plots

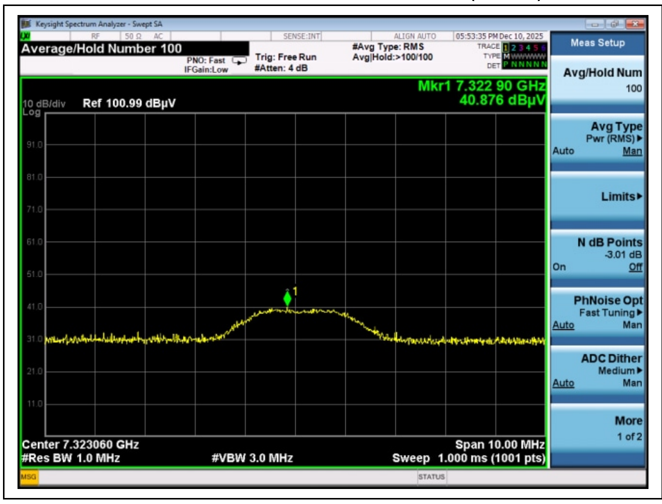
Mode: GFSK

Low channel band edge (Peak)

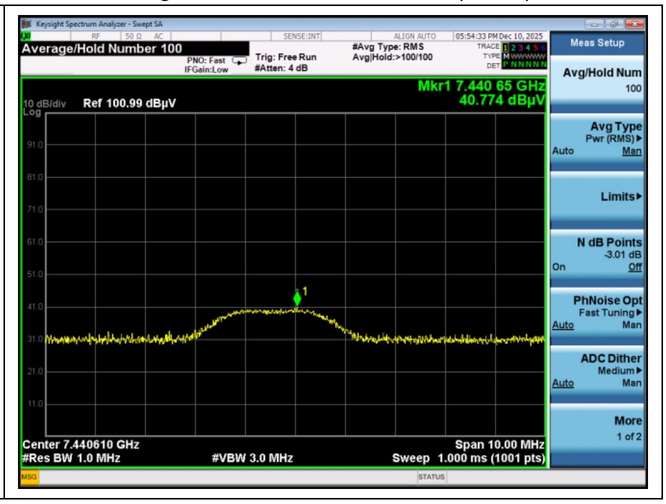


High channel band edge (Peak)

Middle channel 2nd harmonic (Peak)

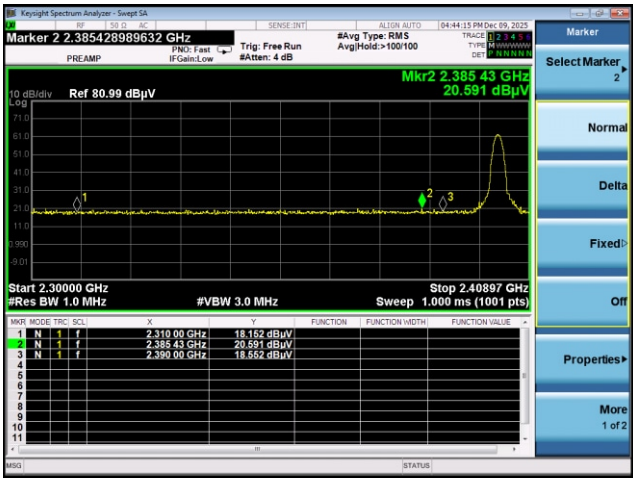


High channel 2nd harmonic (Peak)

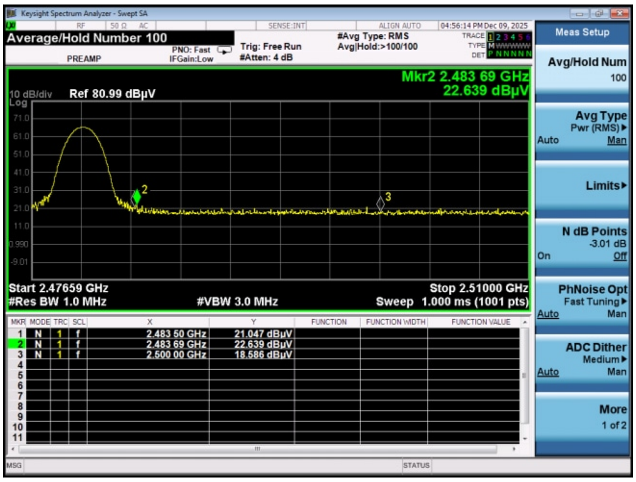


Mode: 8DPSK

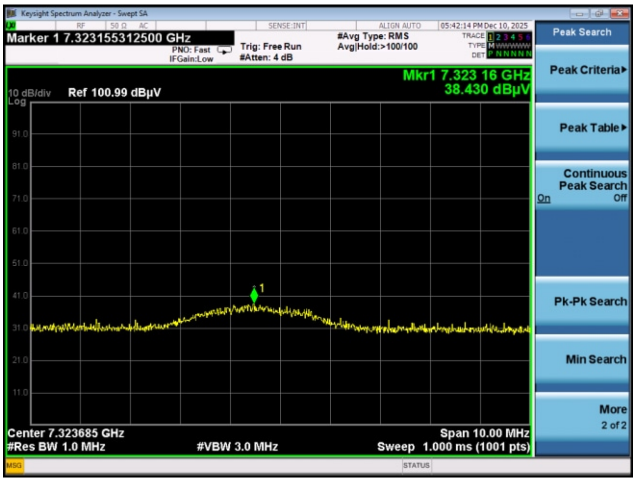
Low channel band edge (Peak)



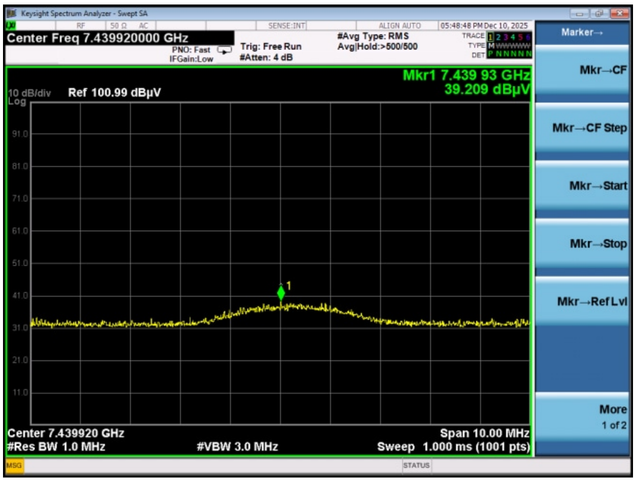
High channel band edge (Peak)



Middle channel 2nd harmonic (Peak)



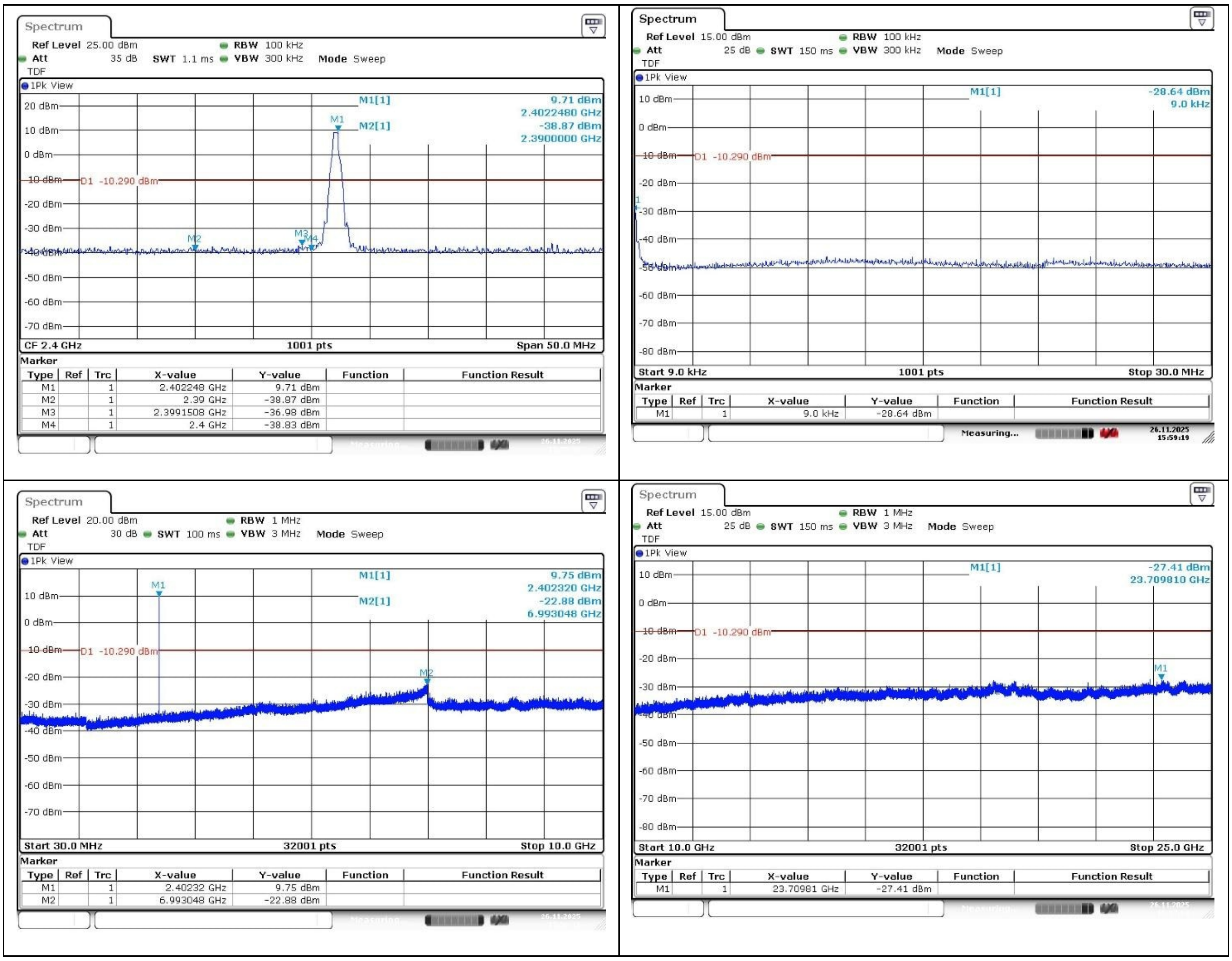
High channel 2nd harmonic (Peak)



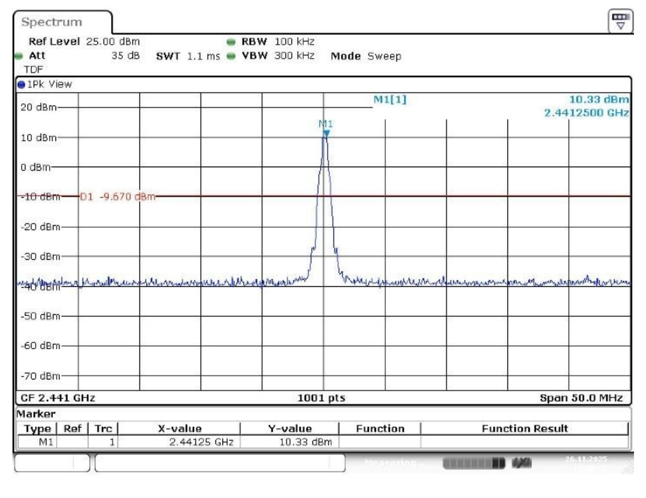
2.4.3. Plot of Conducted Spurious Emissions

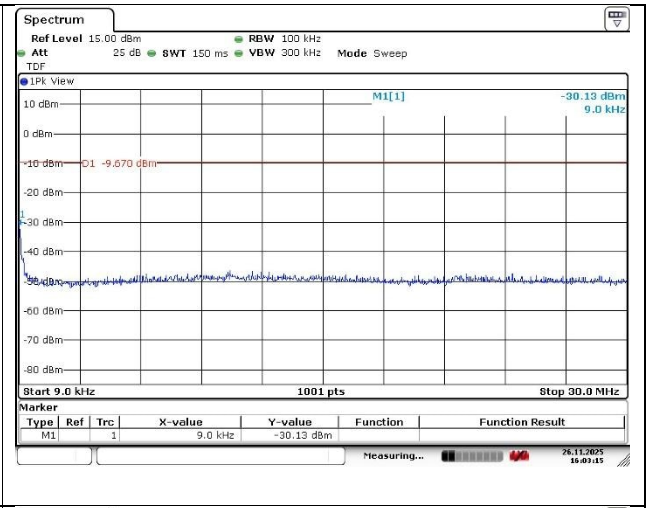
Mode: GFSK_hopping function turned off

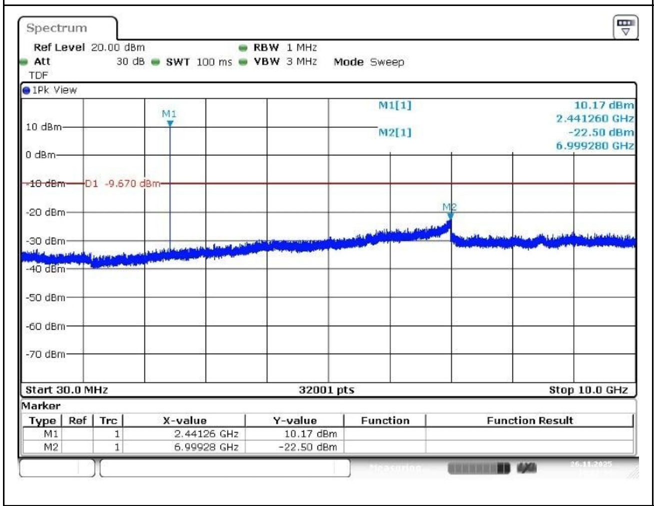
- Low Channel

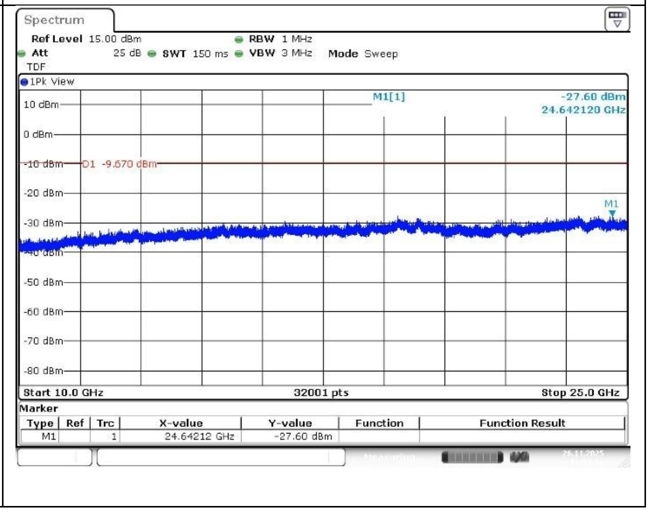


- Middle Channel

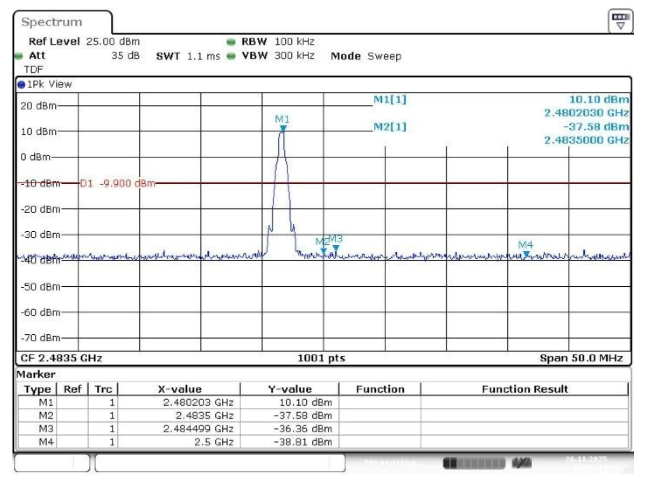


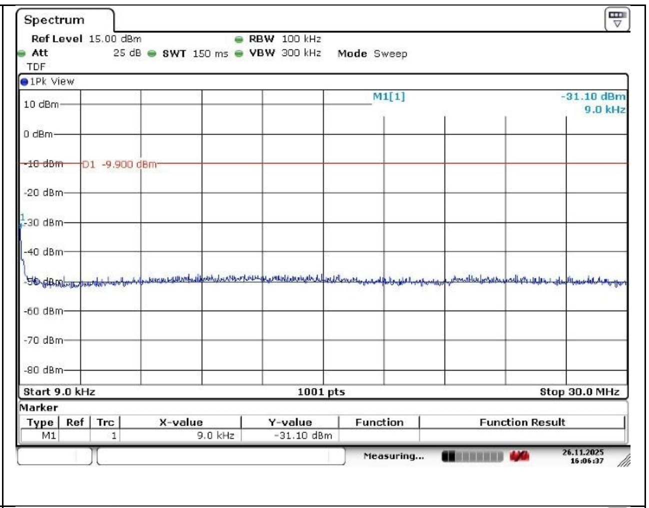


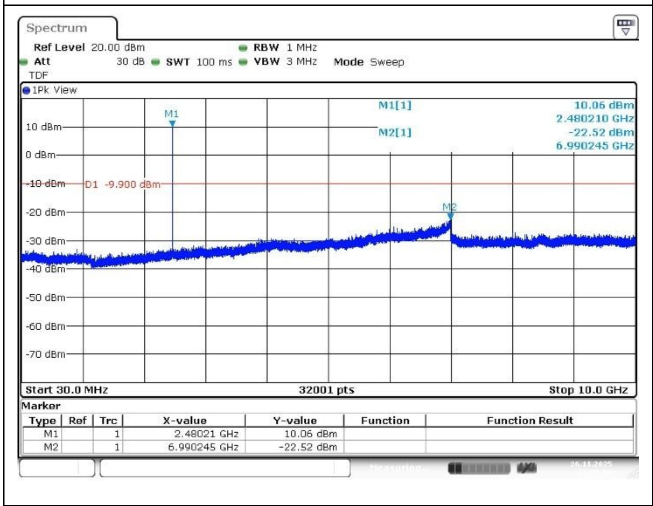


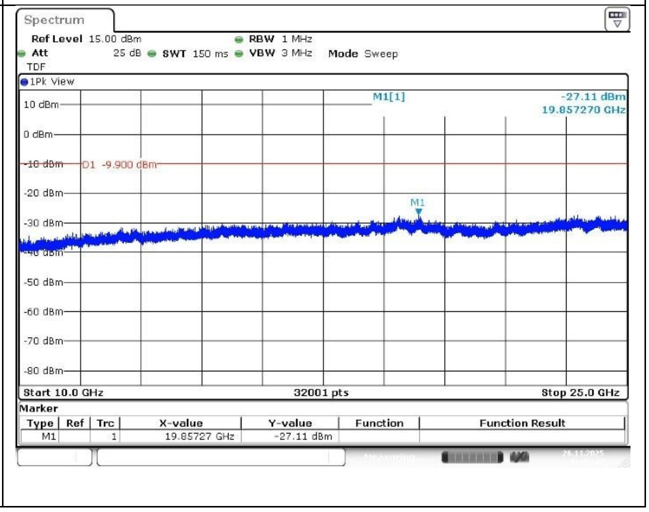


- High Channel





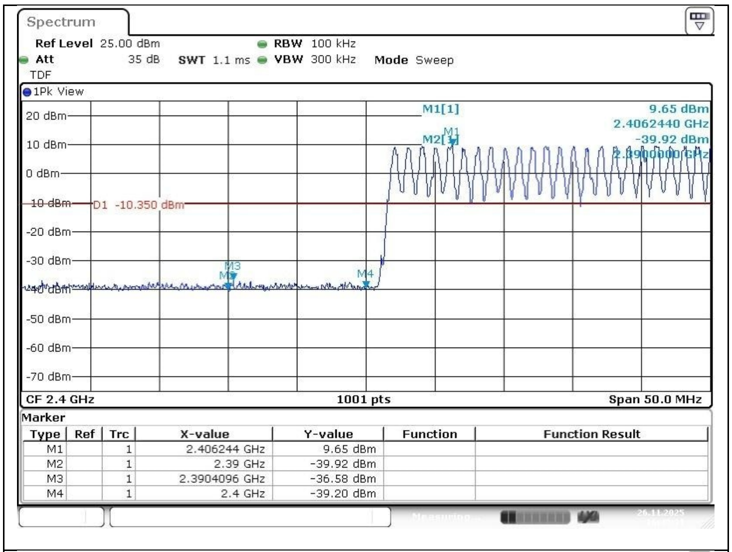




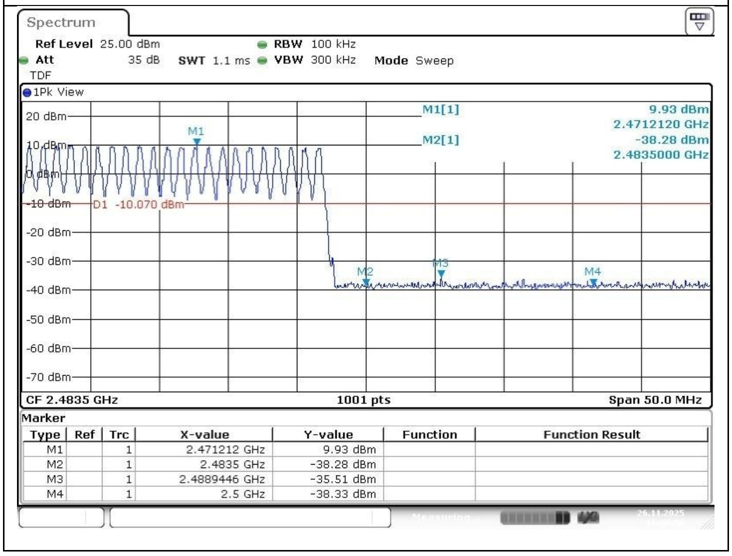
Mode: GFSK_hopping function turned on

Band edge compliance

Low Channel

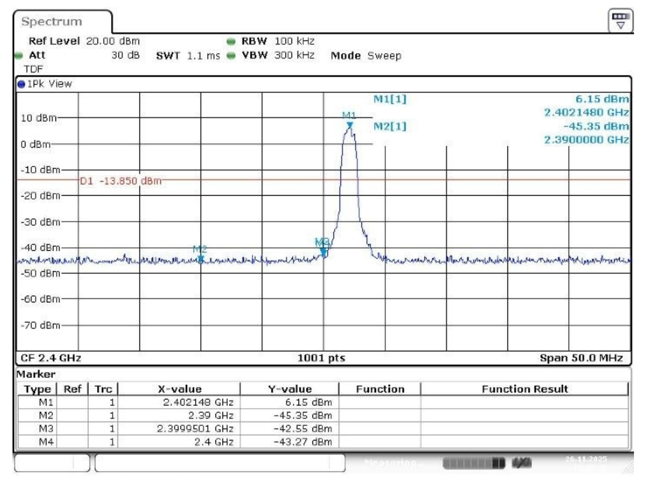


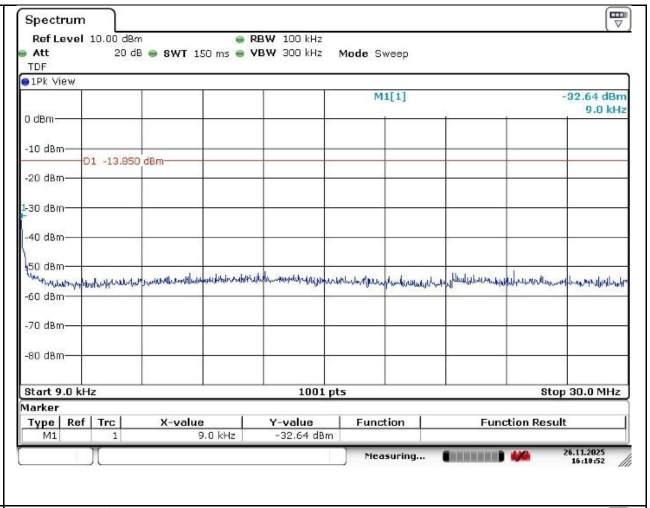
High Channel

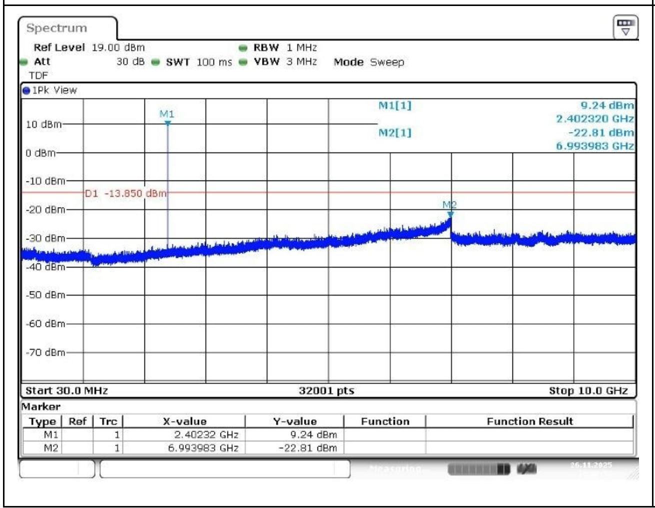


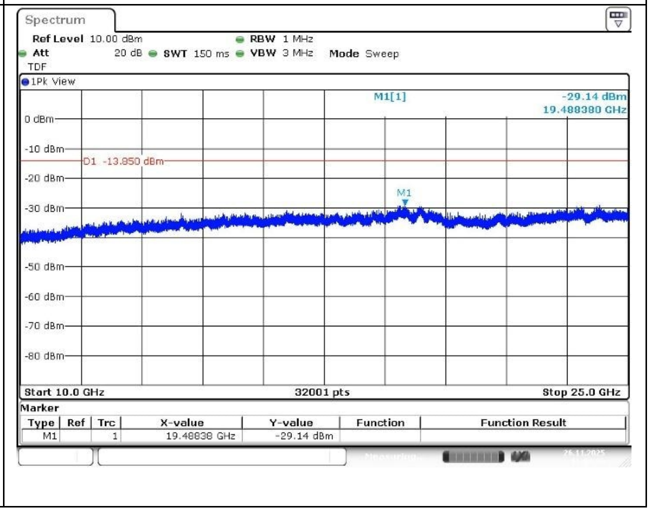
Mode: 8DPSK_hopping function turned off

- Low Channel

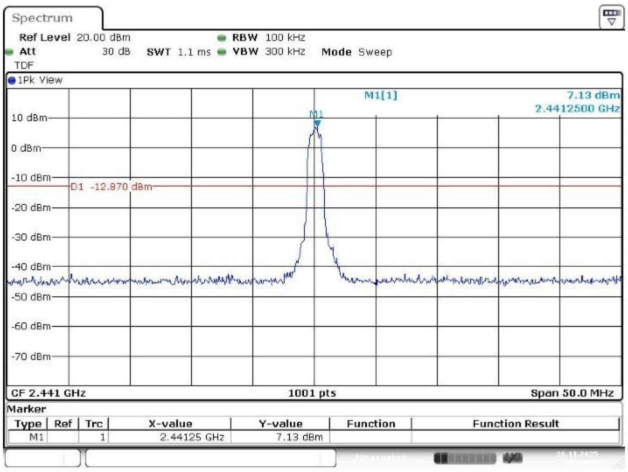


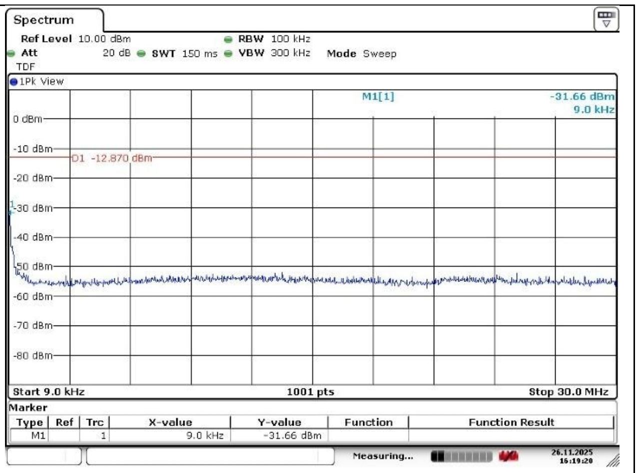


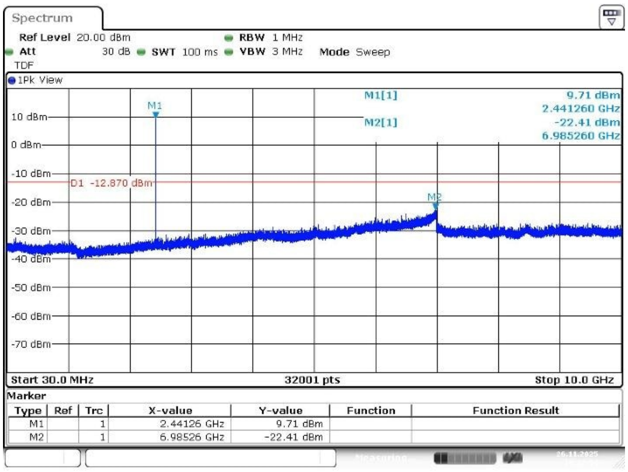


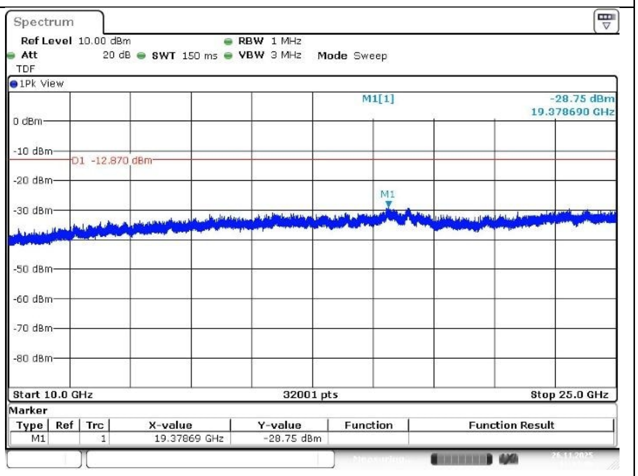


- Middle Channel

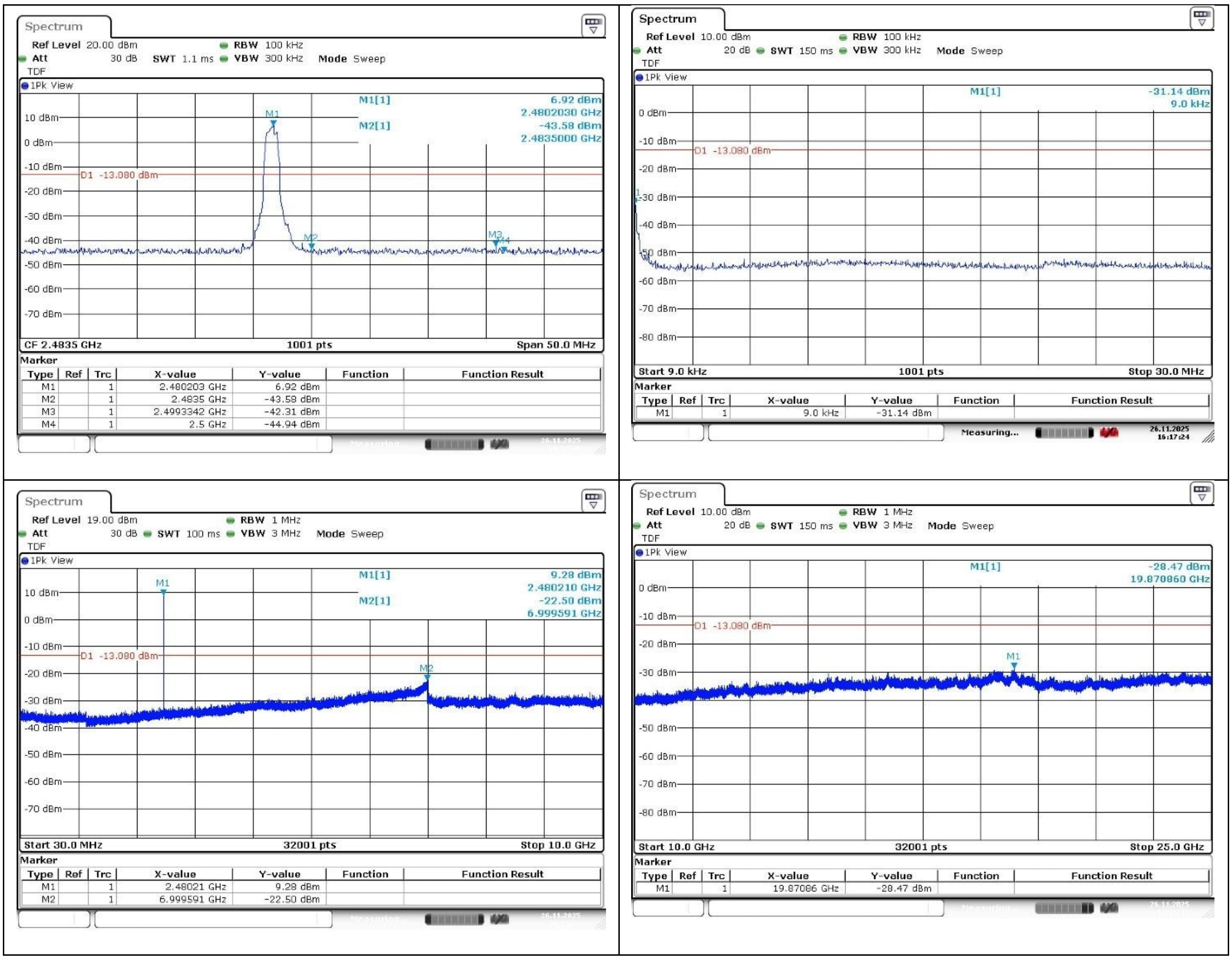








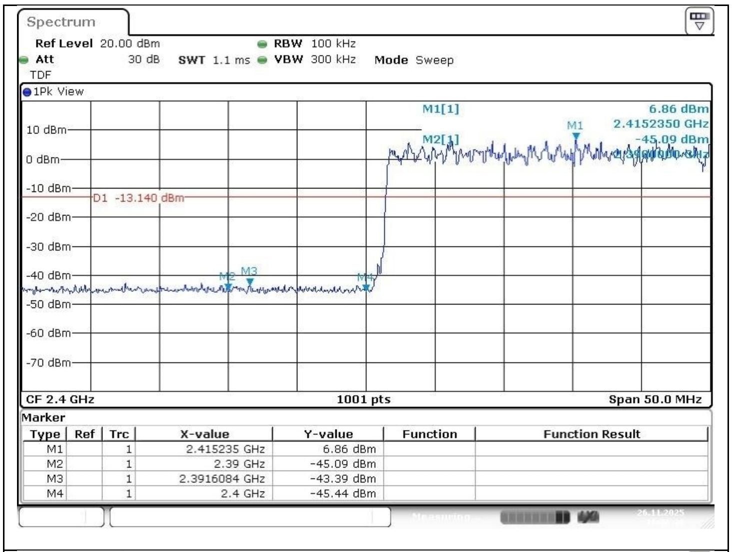
- High Channel



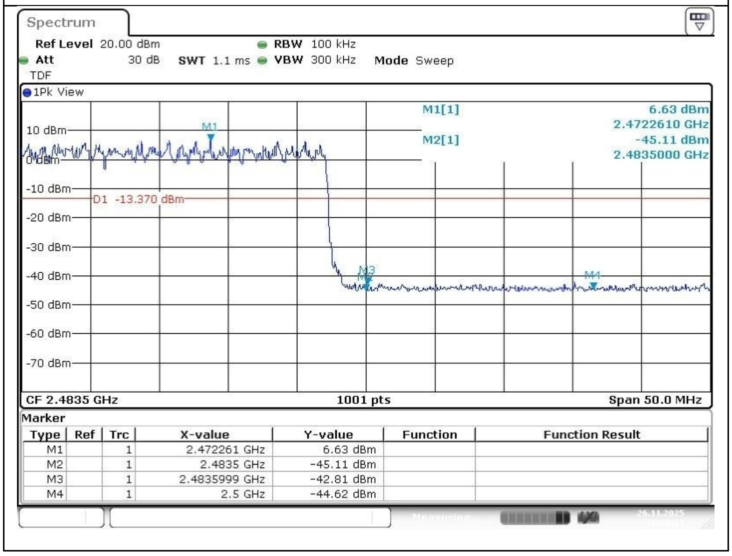
Mode: 8DPSK_hopping function turned on

Band edge compliance

Low channel

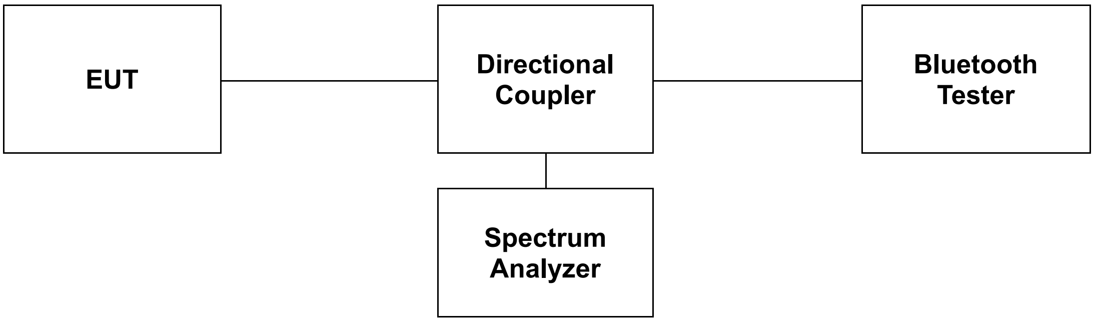


High channel



3. 20 dB Bandwidth and 99 % Bandwidth

3.1. Test Setup



3.2. Limit

Limit: Not Applicable

3.3. Test Procedure

3.3.1. 20 dB Bandwidth

The test follows ANSI C63.10-2020+Cor.1-2023.

The 20 dB bandwidth was measured with a spectrum analyzer connected to RF antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate center frequency.

Use the following spectrum analyzer setting:

1. Span = approximately 2 to 5 times the 20 dB bandwidth.
2. RBW ≥ 1 % to 5 % of the 20 dB bandwidth.
3. VBW ≥ 3 x RBW
4. Sweep = auto
5. Detector = peak
6. Trace = max hold

The marker-to-peak function to set the mark to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is 20 dB bandwidth of the emission.

3.3.2. 99 % Bandwidth

The test follows section 6.9.3 of ANSI C63.10-2020.

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth:

a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.

b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be at least three times the RBW, unless otherwise specified by the applicable requirement.

c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.6.2.

d) Step a) through step c) might require iteration to adjust within the specified range.

e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max-hold mode (until the trace stabilizes) shall be used.

f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.

h) The occupied bandwidth shall be reported by providing spectral plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

3.4. Test Results

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 %

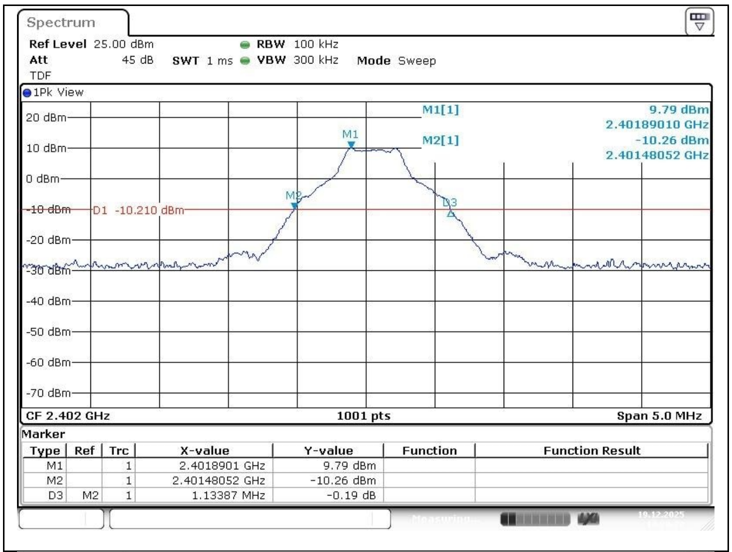
Mode	Data Rate (Mbps)	Channel	Frequency (㎒)	20 ㏈ Bandwidth (㎒)	99 % Bandwidth (㎒)
GFSK	1	Low	2 402	1.134	0.899
		Middle	2 441	1.144	0.920
		High	2 480	1.149	0.929
π/4DQPSK	2	Low	2 402	1.404	1.187
		Middle	2 441	1.404	1.187
		High	2 480	1.409	1.187
8DPSK	3	Low	2 402	1.399	1.187
		Middle	2 441	1.399	1.184
		High	2 480	1.399	1.187

- Test plots

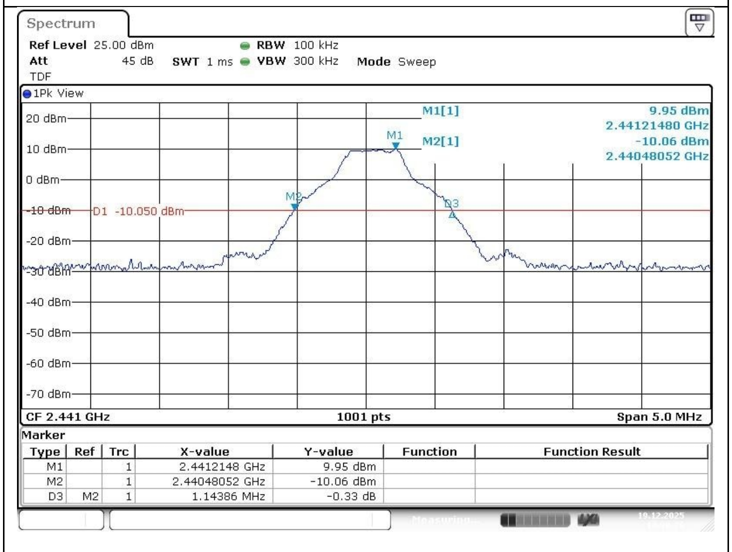
20 ㏈ Bandwidth

Mode: GFSK

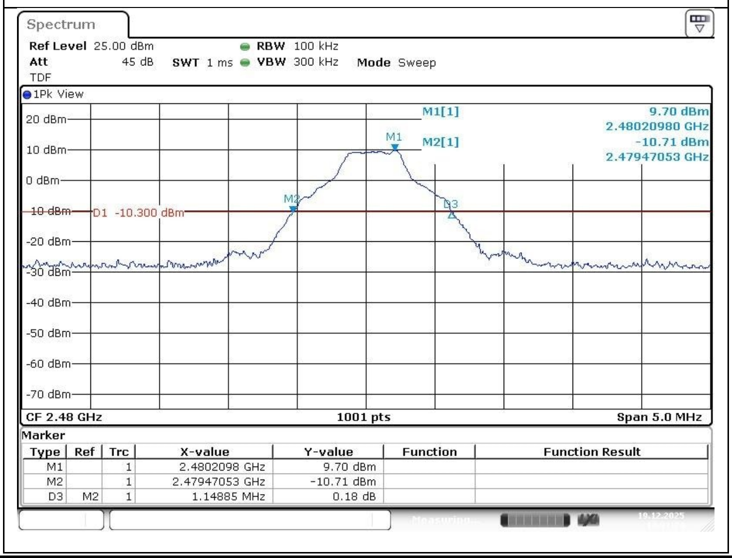
Low Channel



Middle Channel

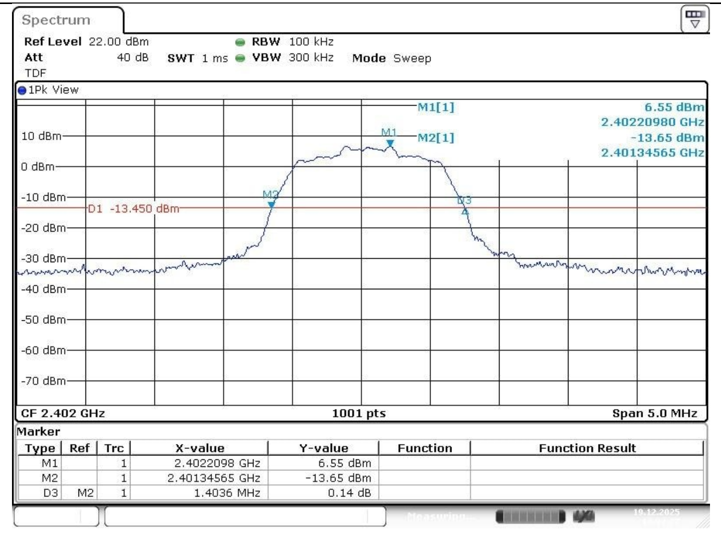


High Channel

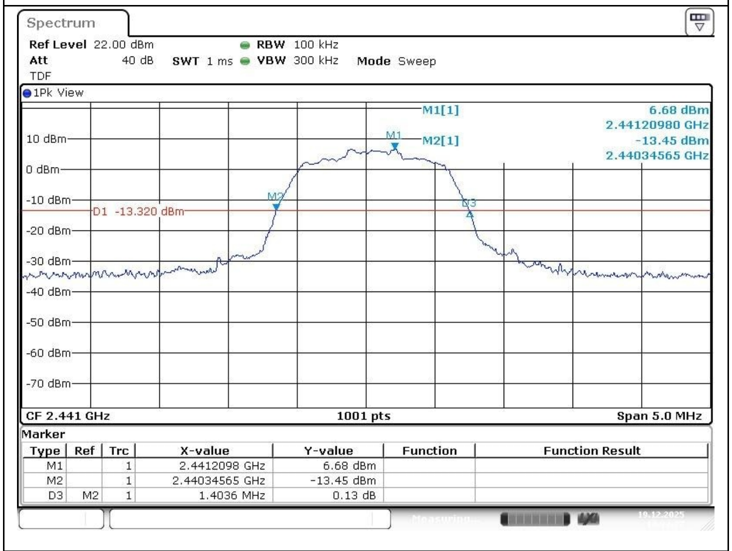


Mode: π/4DQPSK

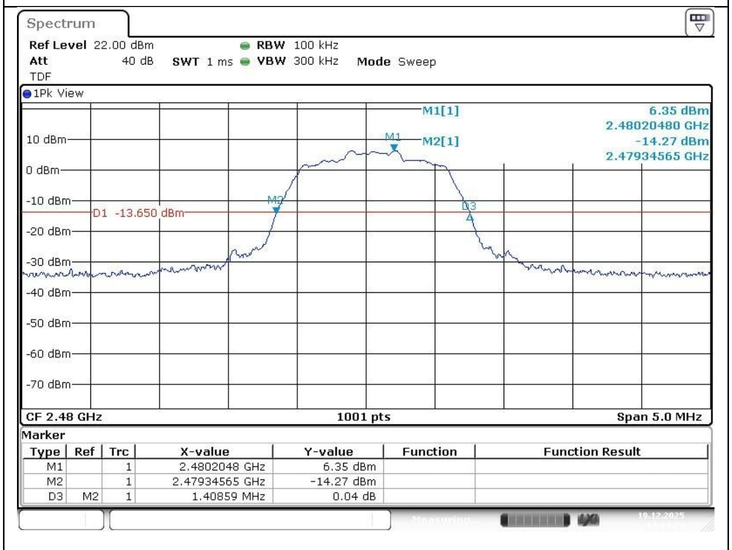
Low Channel



Middle Channel

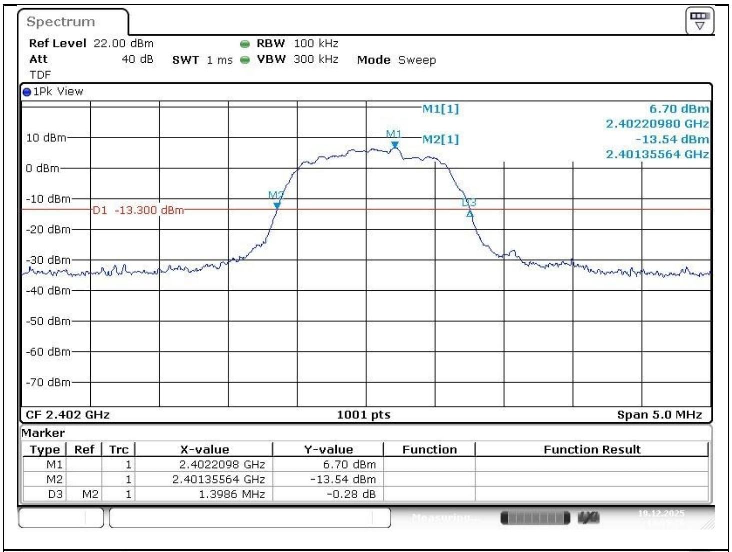


High Channel

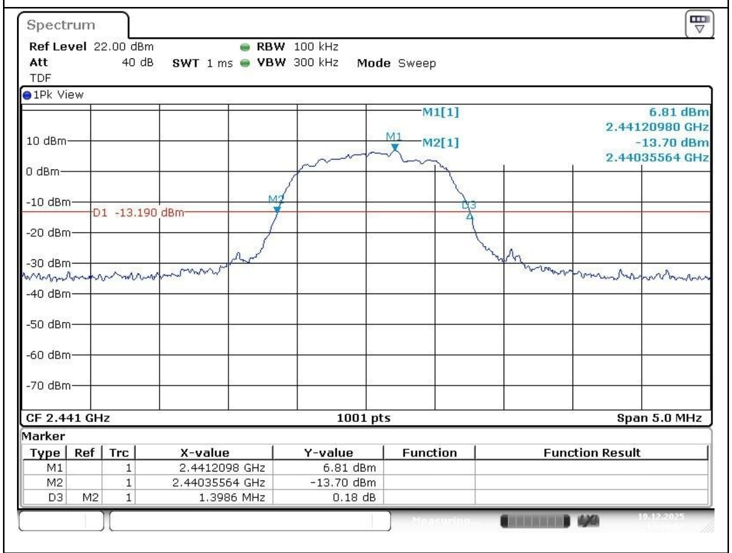


Mode: 8DPSK

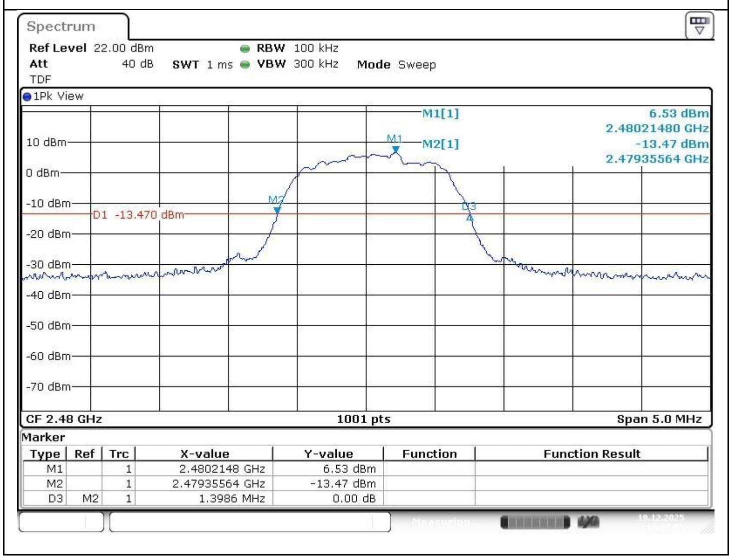
Low Channel



Middle Channel



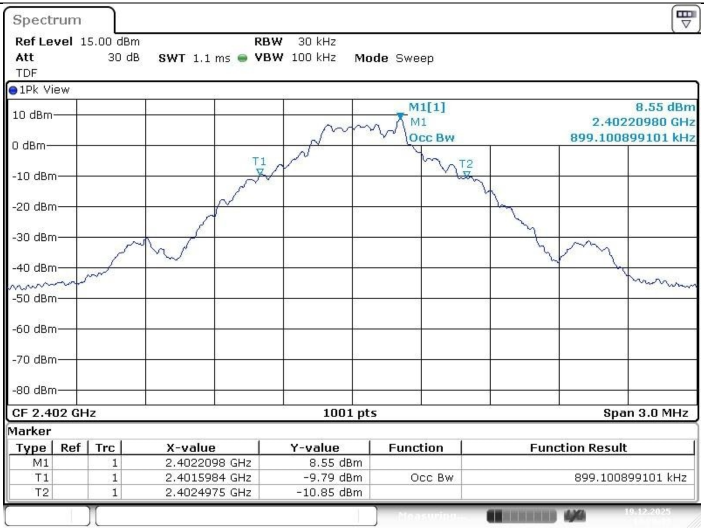
High Channel



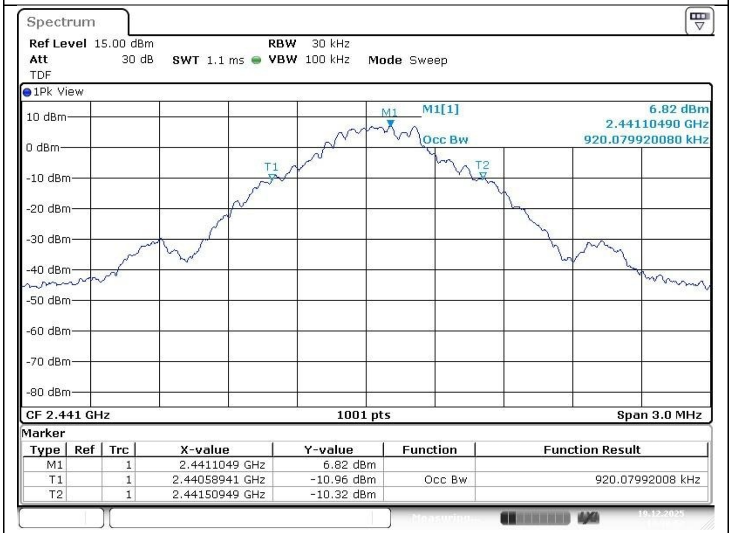
99 % Bandwidth

Mode: GFSK

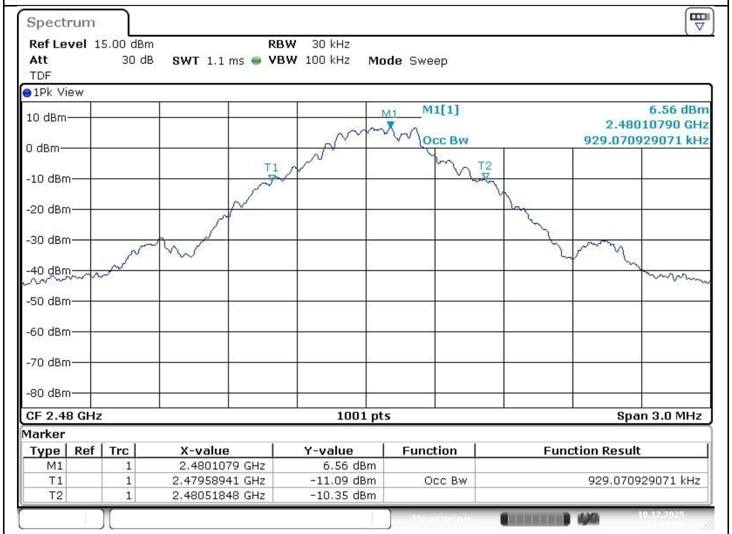
Low Channel



Middle Channel

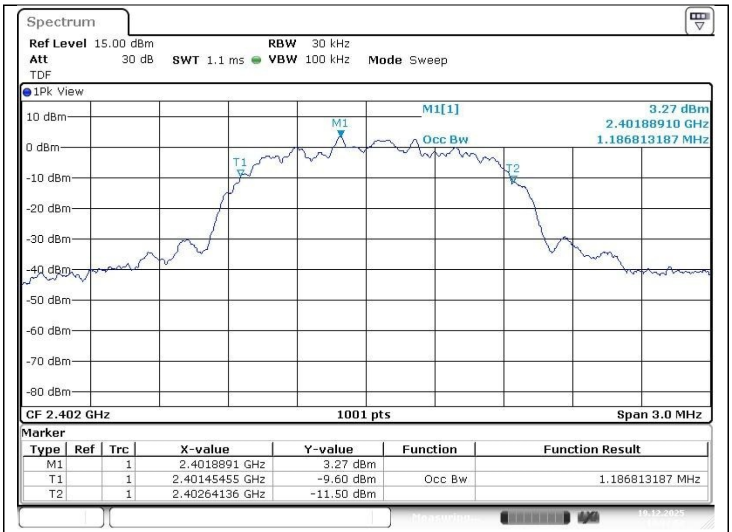


High Channel

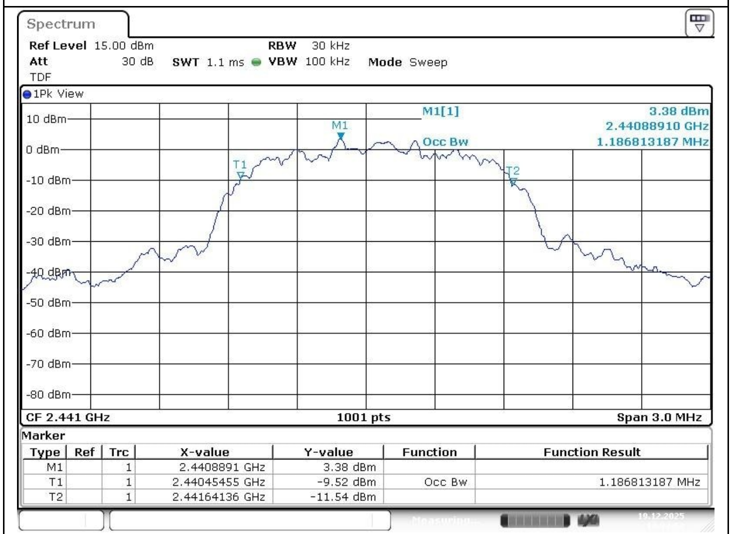


Mode: π/4DQPSK

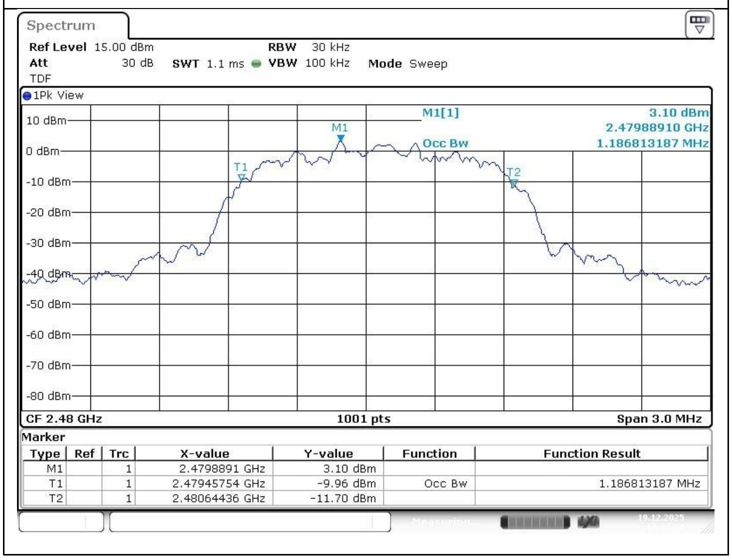
Low Channel



Middle Channel

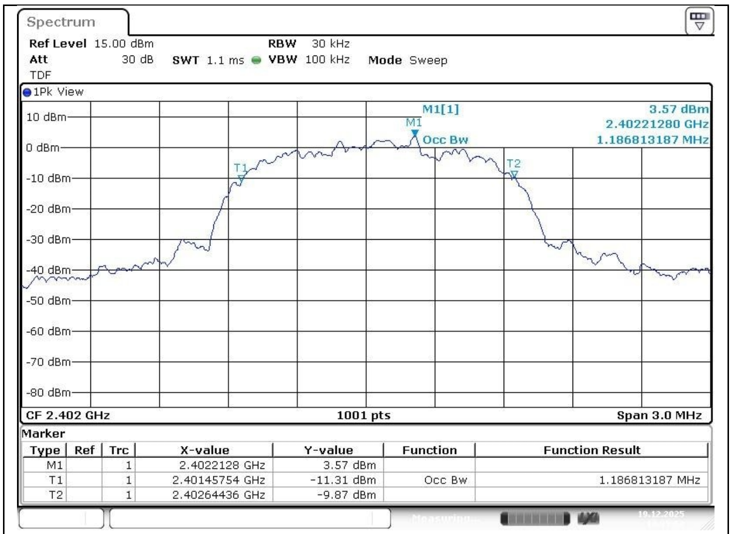


High Channel

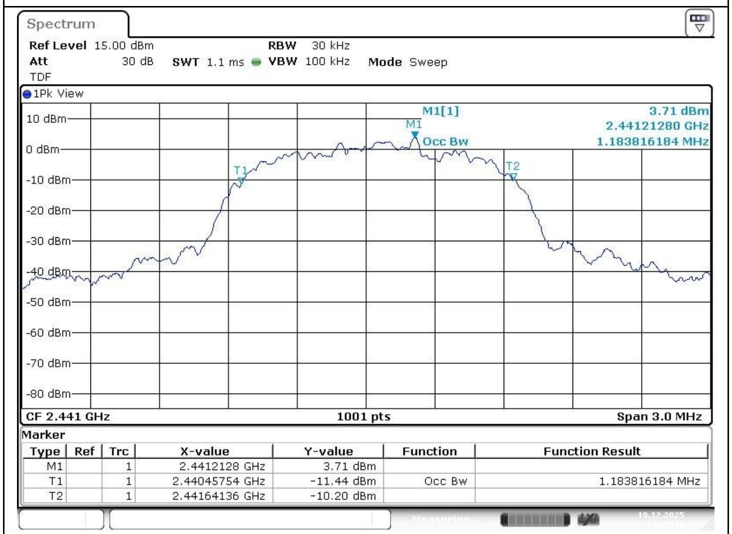


Mode: 8DPSK

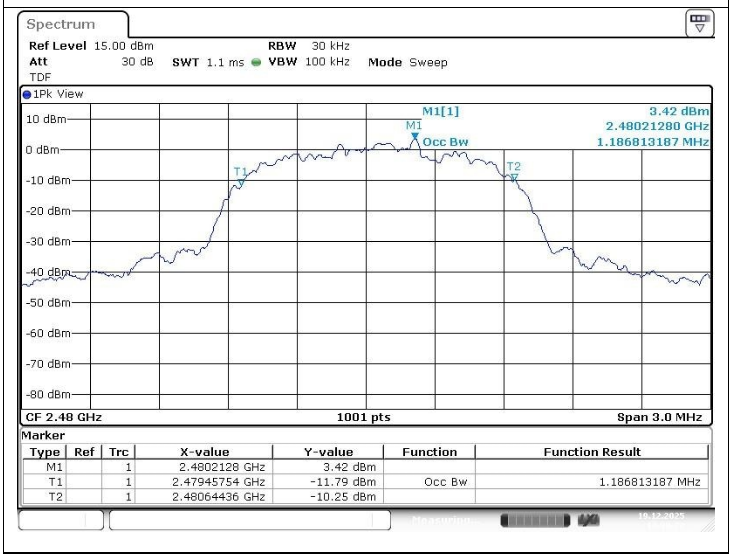
Low Channel



Middle Channel

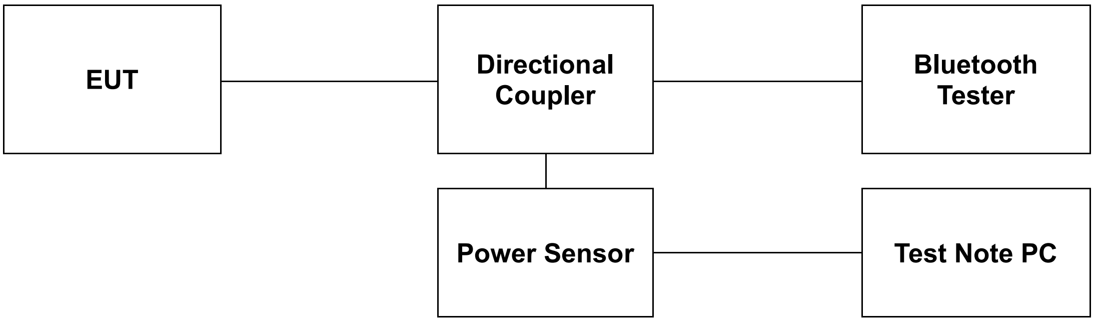


High Channel



4. Maximum Peak Conducted Output Power

4.1. Test Setup



4.2. Limit

4.2.1. FCC

1. §15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 ㎑ or the 20 ㏈ bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2 400-2 483.5 ㎒ band may have hopping channel carrier frequencies that are separated by 25 ㎑ or two-thirds of the 20 ㏈ bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 ㎽.
2. §15.247(b)(1), For frequency hopping systems operating in the 2 400-2 483.5 ㎒ band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5 725-5 850 ㎒ band: 1 watt. For all other frequency hopping systems in the 2 400-2 483.5 ㎒ band: 0.125 watts.

4.2.2. IC

1. According to RSS-247 Issue 4, 6.2.3.1(a), FHS operating in the band 2400-2483.5 ㎒ may have hopping channel carrier frequencies that are separated by 25 ㎑ or two-thirds of the 20 ㏈ bandwidth of the hopping channel, whichever is greater, provided that the systems operate with an output power no greater than 0.125 W.
2. According to RSS-247 Issue 4, 6.2.3.2, The following transmitter output power and e.i.r.p. requirements shall apply:
   a) If the hopset uses 75 or more hopping channels, the maximum peak conducted output power shall not exceed 1.0 W.
   b) If the hopset uses less than 75 hopping channels the maximum peak conducted output power shall not exceed 0.125 W.
   c) The e.i.r.p. shall not exceed 4 W, except as provided in sections 6.5 a) and b).

4.3. Test Procedure

The test follows ANSI C63.10-2020+Cor.1-2023. Using the power sensor instead of a spectrum analyzer.

1. Initially overall offset for directional coupler and cable loss is measured per frequencies.
2. Place the EUT on the table and set it in the transmitting mode.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Power sensor.
4. Test program: (S/W name: R&S Power Viewer, Version: 3.2.0)
5. Measure each channel.

Note;

A spectral plot of the test results and setup description shall be included in the test report.

4.4. Test Results

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 %

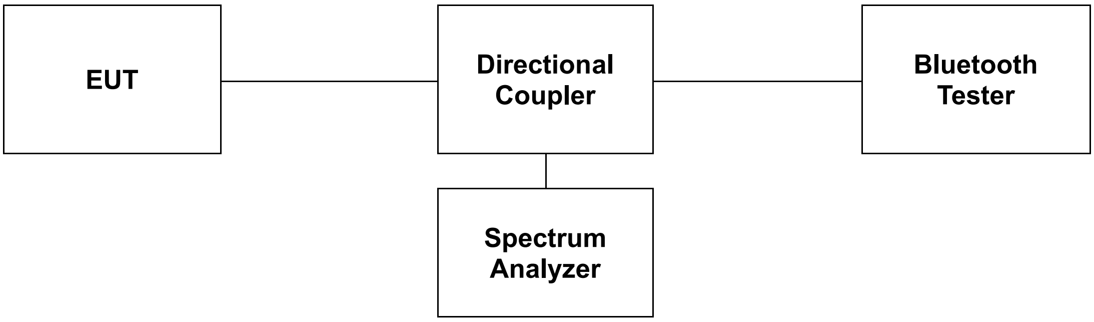
Mode	Data Rate (Mbps)	Channel	Frequency (㎒)	Average Power Result (㏈ m)	Peak Power Result (㏈ m)	Limit (㏈ m)
GFSK	1	Low	2 402	10.62	10.72	20.97
		Middle	2 441	**10.94**	**11.29**	
		High	2 480	10.82	11.08	
π/4DQPSK	2	Low	2 402	7.68	10.29	
		Middle	2 441	**7.95**	**10.75**	
		High	2 480	7.77	10.47	
8DPSK	3	Low	2 402	7.55	10.78	
		Middle	2 441	**8.03**	**11.38**	
		High	2 480	7.80	11.05	

Remark;

In the case of AFH, the limit for peak power is 0.125 W.

5. Carrier Frequency Separation

5.1. Test Setup



5.2. Limit

5.2.1. FCC

§15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 ㎑ or the 20 ㏈ bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2 400-2 483.5 ㎒ band may have hopping channel carrier frequencies that are separated by 25 ㎑ or two-thirds of the 20 ㏈ bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 ㎽.

5.2.2. IC

According to RSS-247 Issue 4, 6.2.3.1(a), FHS operating in the band 2400-2483.5 ㎒ may have hopping channel carrier frequencies that are separated by 25 ㎑ or two-thirds of the 20 ㏈ bandwidth of the hopping channel, whichever is greater, provided that the systems operate with an output power no greater than 0.125 W.

5.3. Test Procedure

The test follows ANSI C63.10-2020+Cor.1-2023.

The device is operating in hopping mode between 79 channels and also supporting Adaptive Frequency Hopping with hopping between 20 channels. As compared with each operating mode, 79 channels are chosen as a representative for test.

Use the following spectrum analyzer settings:

1. Span: Wide enough to capture the peaks of two adjacent channels
2. RBW: Start with the RBW set to approximately 30 % of the channel spacing; adjust as necessary to best identify the center of each individual channel.
3. VBW ≥ RBW
4. Sweep: No faster than coupled (auto) time
5. Detector: Peak
6. Trace: Max hold
7. Allow the trace to stabilize.

Use the marker-delta function to determine the separation between the peaks of the adjacent channels. Compliance of an EUT with the appropriate regulatory limit shall be determined. A spectral plot of the data shall be included in the test report.

Where the device shares the same channel plan (carrier frequencies and number of channels) across multiple data rates or modulation schemes then the carrier separation need only be measured for one of those modulation schemes or data rates.

5.4. Test Results

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 %

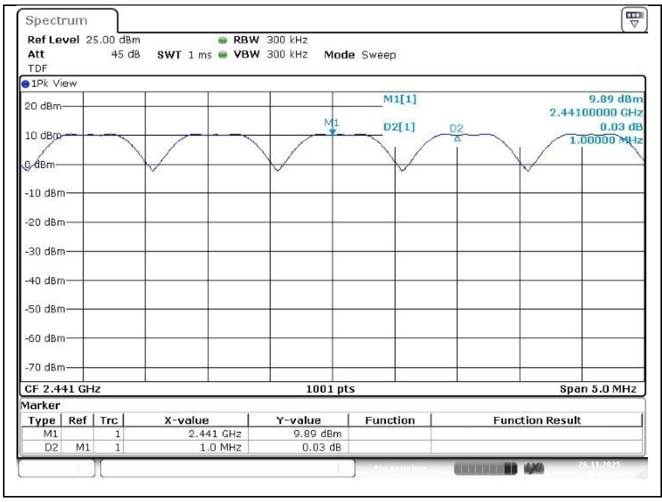
Mode	Frequency (㎒)	Adjacent Hopping Channel Separation (㎑)	Two-third of 20 ㏈ Bandwidth (㎒)
GFSK	2 441	1 000	0.763
8DPSK	2 441	1 000	0.933

Remark;

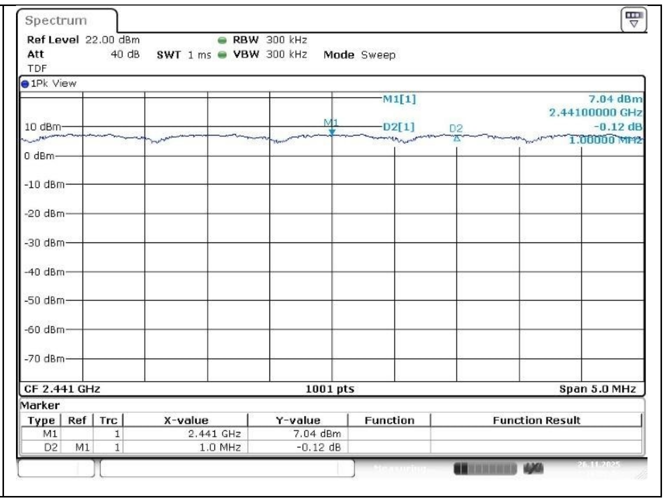
Measurement is made with EUT operating in hopping mode between 79 channels providing a worst case scenario as compared to AFH mode hopping between 20 channels.

- Test plots

GFSK

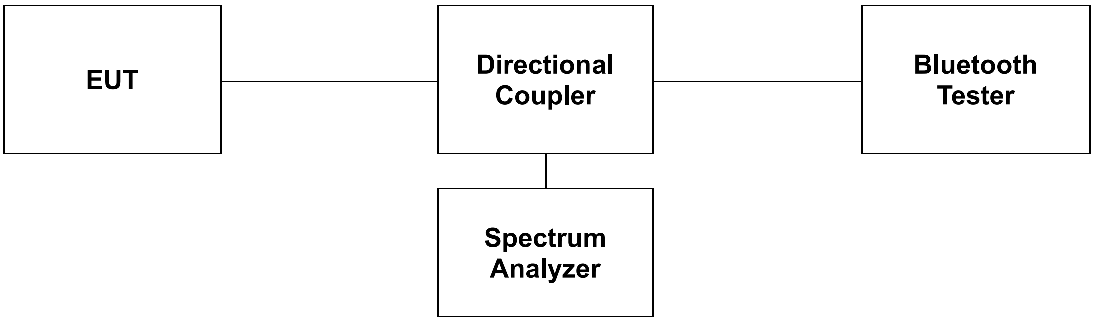


8DPSK



6. Number of Hopping Frequencies

6.1. Test Setup



6.2. Limit

6.2.1. FCC

§15.247(a)(1)(iii), Frequency hopping systems in the 2 400-2 483.5 ㎒ band shall use at least 15 channels. 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. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

6.2.2. IC

According to RSS-247 Issue 4, 6.2.3.1(b), FHS operating in the band 2 400-2 483.5 ㎒ shall use at least 15 hopping channels. The average time of occupancy on any channel shall not be greater than greater than 0.4 s within a period of 0.4 s, multiplied by the number of hopping channels employed. Transmissions on particular hopping frequencies may be avoided or suppressed provided that at least 15 hopping channels are used.

6.3. Test Procedure

The test follows ANSI C63.10-2020+Cor.1-2023.

The device supports Adaptive Frequency Hopping and will use a minimum of 20 channels of the 79 available channels.

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

1. Span: The frequency band of operation. Depending on the number of channels the device supports, it could be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
2. RBW: To identify clearly the individual channels, set the RBW to less than 30 % of the channel spacing or the 20 ㏈ bandwidth, whichever is smaller.
3. VBW ≥ RBW
4. Sweep: No faster than coupled (auto) time.
5. Detector function: Peak
6. Trace: Max hold
7. Allow the trace to stabilize.

It might prove necessary to break the span up into subranges to show clearly all of the hopping frequencies. Compliance of an EUT with the appropriate regulatory limit shall be determined for the number of hopping channels. A spectral plot of the data shall be included in the test report.

Where the device shares the same channel plan (carrier frequencies and number of channels) across multiple data rates or modulation schemes then the number of channels need only be measured for one of those modulation schemes or data rates.

6.4. Test Results

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 %

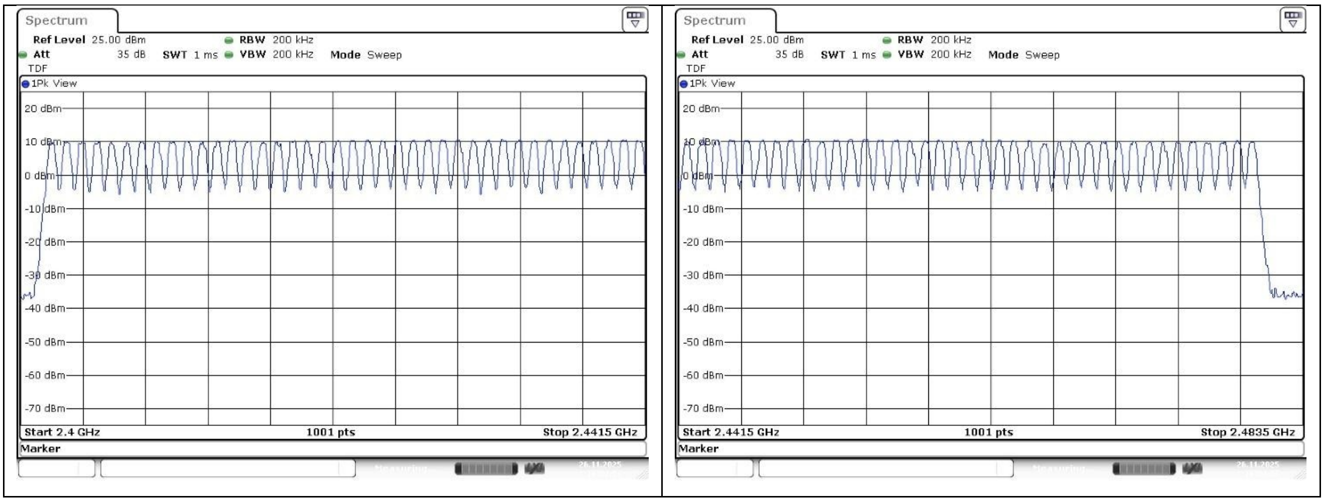
Mode	Number of Hopping Frequency	Limit
GFSK	79	≥ 15
8DPSK	79	≥ 15

Remark;

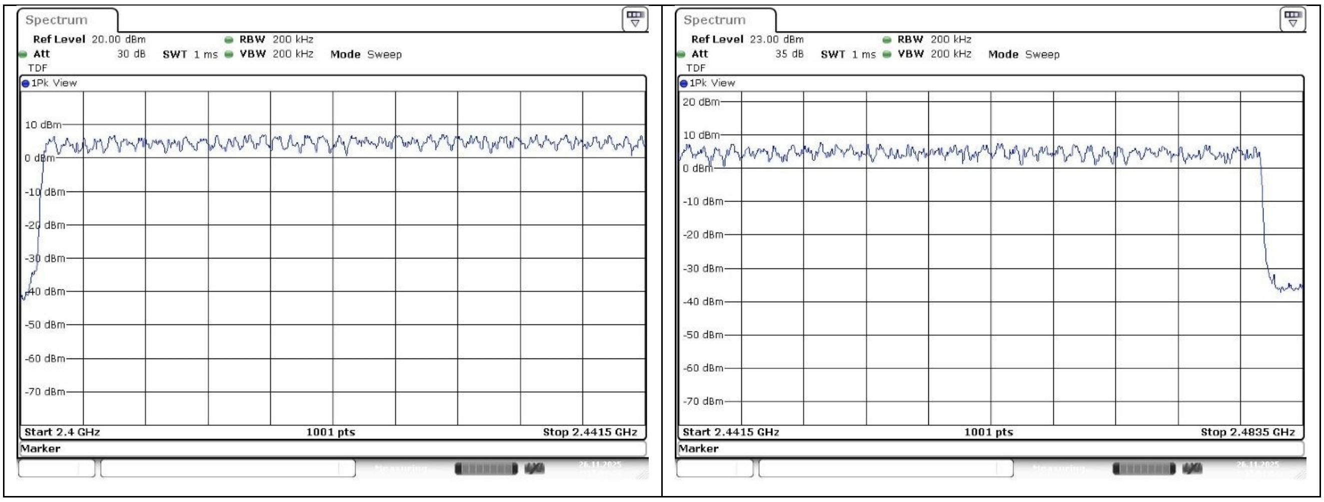
Measurement is made with EUT operating in hopping mode between 79 channels providing a worst case scenario as compared to AFH mode hopping between 20 channels.

- Test plots

GFSK

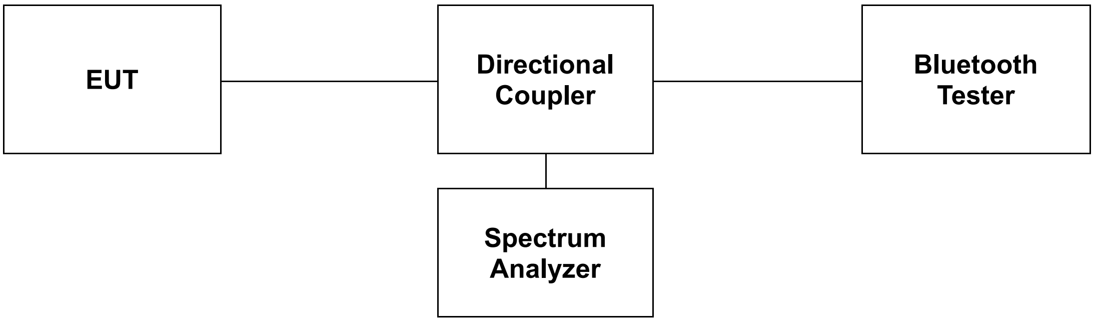


8DPSK



7. Time of Occupancy (Dwell Time)

7.1. Test Set up



7.2. Limit

7.2.1. FCC

§15.247(a)(1)(iii), Frequency hopping systems in the 2 400-2 483.5 ㎒ band, the average time of occupancy on any frequency shall not be greater than 0.4 second within a 31.6 second period.

7.2.2. IC

According to RSS-247 Issue 4, 6.2.3.1(b), FHS operating in the band 2 400-2 483.5 ㎒ shall use at least 15 hopping channels. The average time of occupancy on any channel shall not be greater than greater than 0.4 s within a period of 0.4 s, multiplied by the number of hopping channels employed. Transmissions on particular hopping frequencies may be avoided or suppressed provided that at least 15 hopping channels are used.

A period time = 0.4 (s) * 79 = 31.6 (s)

***Adaptive Frequency Hopping**

A period time = 0.4 (s) * 20 = 8 (s)

7.3. Test Procedure

The test follows ANSI C63.10-2020+Cor.1-2023.

1. The dwell time per hop on a channel is the time from the start of the first transmission to the end of the last transmission for that hop. If the device has a single transmission per hop then the dwell time is the duration of that transmission. If the device has a multiple transmissions per hop then the dwell time is measured from the start of the first transmission to the end of the last transmission.

2. The time of occupancy is the total time that the device dwells on a channel over an observation period specified in the regulatory requirement. To determine the time of occupancy the spectrum analyzer will be configured to measure both the dwell time per hop and the number of times the device transmits on a specific channel in a given period.

3. The EUT shall have its hopping function enabled. Compliance with the requirements shall be made with the minimum and with the maximum number of channels enabled. If the dwell time per channel does not vary with the number of channels than compliance with the requirements may be based on the minimum number of channels. If the device supports different dwell times per channel (example Bluetooth devices can dwell on a channel for 1, 3 or 5 time slots) then measurements can be limited to the longest dwell time with the minimum number of channels.

Use the following spectrum analyzer settings to determine the dwell time per hop

1. Span = Zero span, centered on a hopping channel.
2. RBW shall be ≤ channel spacing and where possible RBW should be set ≫ 1 / T, where T is the expected transmission time per hop.
3. Sweep = Set so that the start of the first transmission and end of the last transmission for the hop are clearly captured. Setting the sweep time to be slightly longer than the hopping period per channel (hopping period = 1/hopping rate) should achieve this.
4. Use a video trigger, where possible with a trigger delay, so that the start of the transmission is clearly observed. The trigger level might need adjustment to reduce the chance of triggering when the system hops on an adjacent channel.
5. Detector = Peak.
6. Trace = Clear-write, Single sweep
7. Place markers at the start of the first transmission on the channel and at the end of the last transmission. The dwell time per hop is the time between these two markers.

7.4. Test Results

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 %

7.4.1. Packet Type: DH5,3DH5

Mode	Frequency (㎒)	Dwell Time (㎳)	Time of occupancy on the Tx Channel in 31.6 sec (㎳)	Limit for time of occupancy on the Tx Channel in 31.6 sec (㎳)
GFSK	2 441	2.88	364.03	400
8DPSK	2 441	2.89	365.30	400

Remark;

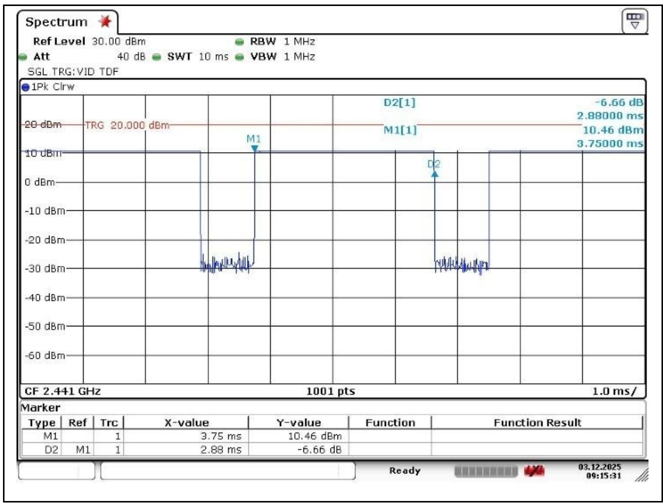
In case of GFSK:
The number of hops in 0.5 sec = 2
Time of occupancy on the Tx Channel in 31.6 sec = (2 / 0.5) × 31.6 x 2.88 ㎳ = 364.03 ㎳

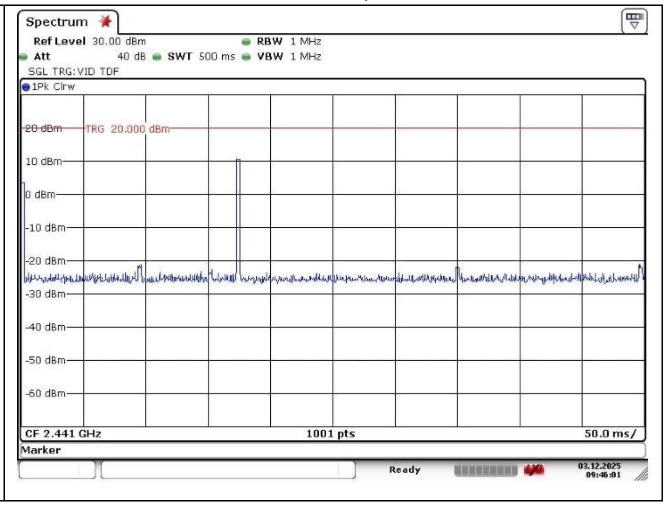
In case of 8DPSK:
The number of hops in 0.5 sec = 2
Time of occupancy on the Tx Channel in 31.6 sec = (2 / 0.5) × 31.6 x 2.89 ㎳ = 365.30 ㎳

- Test plots

Operation Mode: GFSK

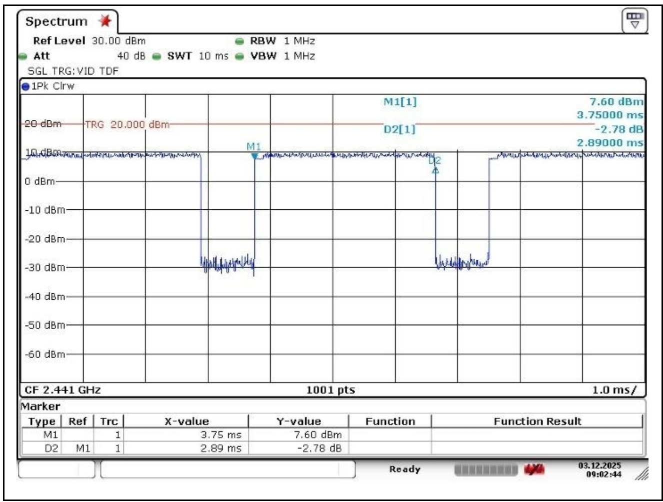
Dwell time	The number of hops in 0.5 sec

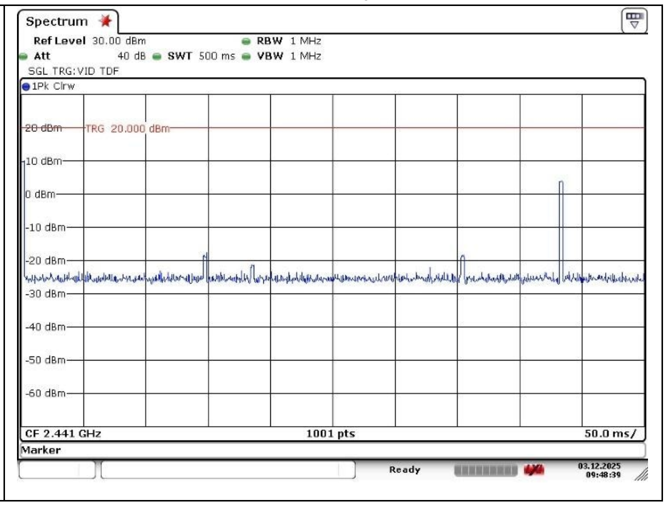




Operation Mode: 8DPSK

Dwell time	The number of hops in 0.5 sec





7.4.2. Packet Type: DH5, 3DH5 (Adaptive Frequency Hopping)

Operation Mode	Frequency (㎒)	Dwell Time (㎳)	Time of occupancy on the Tx Channel in 8 sec (㎳)	Limit for time of occupancy on the Tx Channel in 8 sec (㎳)
GFSK	2 441	2.88	368.64	400
8DPSK	2 441	2.89	323.68	400

Remark;

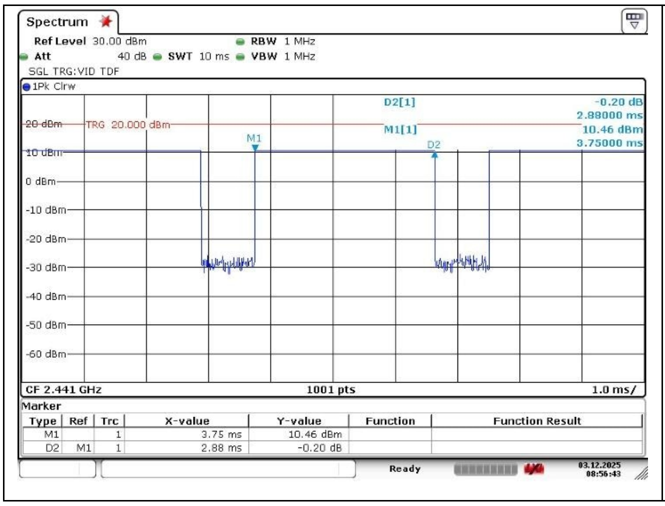
In case of GFSK:
The number of hops in 0.5 sec = 8
Time of occupancy on the Tx Channel in 8 sec = (8 / 0.5) × 8 x 2.88 ㎳ = 368.64 ㎳

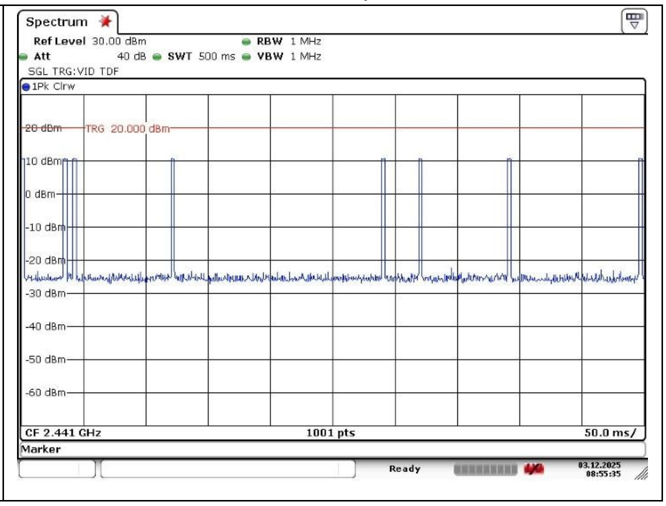
In case of 8DPSK:
The number of hops in 0.5 sec = 7
Time of occupancy on the Tx Channel in 8 sec = (7 / 0.5) × 8 x 2.89 ㎳ = 323.68 ㎳

- Test plots

Operation Mode: GFSK

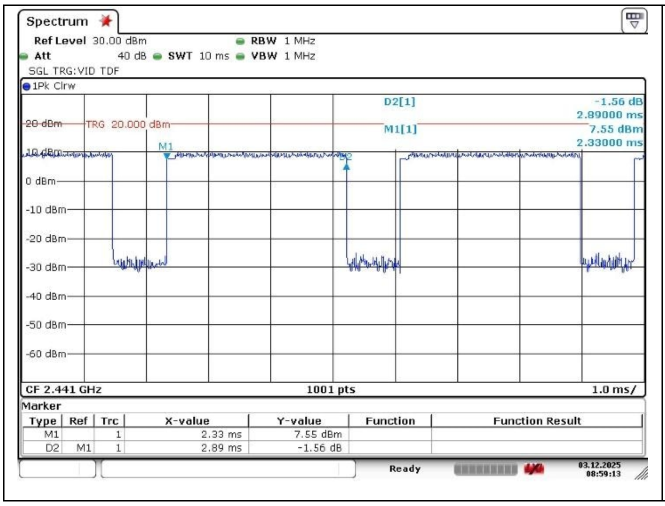
Dwell time	The number of hops in 0.5 sec

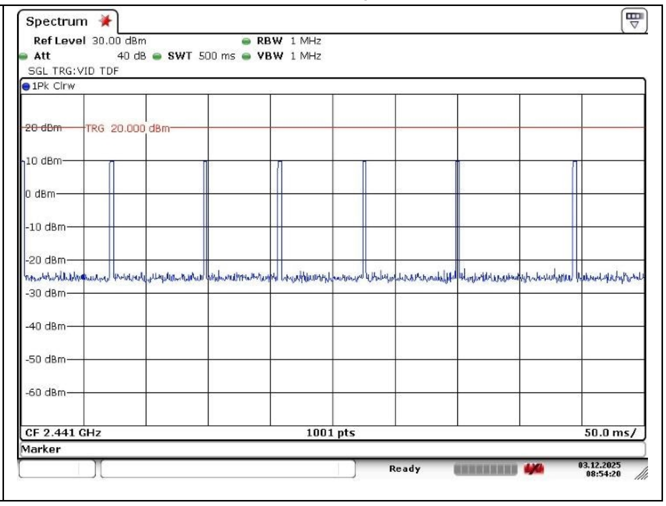




Operation Mode: 8DPSK

Dwell time	The number of hops in 0.5 sec





8. Antenna Requirement

8.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. 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. And according to FCC 47 CFR Section §15.247(b) if transmitting antennas of directional gain greater than 6 ㏈i are used, the conducted output power shall be reduced appropriate, by the amount in ㏈ that the directional gain of the antenna exceeds 6 ㏈i.

8.2. Antenna Connected Construction

Antenna used in this product is Metal antenna with gain of -8.12 ㏈i

- End of the Test Report -