TEST REPORT

Eurofins KCTL Co.,Ltd. 65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea TEL: 82-70-5008-1021 FAX: 82-505-299-8311 www.kctl.co.kr	Report No.: KR25-SRF0029-A Page(1) of (68)	eurofins | KCTL

1. Client

- Name : Samsung Electronics Co., Ltd.
- Address : 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
- Date of Receipt : 2025-02-10

2. Use of Report : Certification

3. Name of Product / Model : Tablet PC / SM-X350

4. Manufacturer / Country of Origin : Samsung Electronics Co., Ltd. / Vietnam

5. FCC ID : A3LSMX350

6. Date of Test : 2025-02-19 to 2025-03-07

7. Location of Test : ■ Permanent Testing Lab ☐ On Site Testing
(Address:65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea)

8. Test method used : FCC Part 15 Subpart C, 15.247

9. Test Result : Refer to the test result in the test report

	Tested by	Technical Manager
Affirmation	Name : Kwonse Kim (Signature)	Name : Harim Lee (Signature)

2025-03-24

Eurofins KCTL Co.,Ltd.

REPORT REVISION HISTORY

Date	Revision	Page No
2025-03-18	Originally issued	-
2025-03-24	Revised the note	8

Note. The report No. KR25-SRF0029 is superseded by the report No. KR25-SRF0029-A.

General remarks for test reports

Statement concerning the uncertainty of the measurement systems used for the tests

(may be required by the product standard or client)

☐ **Internal procedure used for type testing through which traceability of the measuring uncertainty has been established:**

Procedure number, issue date and title:

Calculations leading to the reported values are on file with the testing laboratory that conducted the testing.

☒ **Statement not required by the standard or client used for type testing**

CONTENTS

1. General information

Client	:	Samsung Electronics Co., Ltd.
Address	:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
Manufacturer	:	Samsung Electronics Co., Ltd.
Address	:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
Factory	:	Samsung Electronics Vietnam Thai Nguyen Co., Ltd
Address	:	Yen Binh Industrial Park, Dong Tien Ward, Pho Yen Town, Thai Nguyen Province, Vietnam
Laboratory	:	Eurofins KCTL Co.,Ltd.
Address	:	65, Sinwon-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea
Accreditations	:	FCC Site Designation No: KR0040, FCC Site Registration No: 687132 VCCI Registration No. : R-20080, G-20078, C-20059, T-20056 CAB Identifier: KR0040 ISED Number: 8035A KOLAS No.: KT231

2. Device information

Equipment under test	:	Tablet PC		
Model	:	SM-X350		
Modulation technique	:	Bluetooth(BDR/EDR)	:	GFSK, π/4DQPSK, 8DPSK
Number of channels	:	79 ch		
Power source	:	DC 3.85 V		
Antenna specification	:	Antenna 1	:	LDS Antenna
		Antenna 2	:	LDS Antenna
Antenna gain	:	Antenna 1	:	-4.50 dBi
		Antenna 2	:	-4.00 dBi
Frequency range	:	2 402 ㎒ ~ 2 480 ㎒		
Software version	:	X350.001		
Hardware version	:	REV1.0		
Test device serial No.	:	Conducted	:	R32XC01B5QD
		Radiated	:	R32XC01BJCK, R32XC01BDGK
Operation temperature	:	0 ℃ ~ 35 ℃		

2.1. Frequency/channel operations

This device contains the following capabilities:
Bluetooth (BDR/EDR)

Ch.	Frequency (㎒)
00	2 402
. .	. .
39	2 441
. .	. .
78	2 480

Table 2.1-1. Bluetooth(BDR/EDR)

15.247 Requirements for Bluetooth transmitter:

- This Bluetooth module has been tested by a Bluetooth Qualification Lab, and we confirm the following:
  1) This system is hopping pseudo-randomly.
  2) Each frequency is used equally on the average by each transmitter.
  3) The receiver input bandwidths that match the hopping channel bandwidths of their corresponding transmitters
  4) The receiver shifts frequencies in synchronization with the transmitted signals.
- 15.247(g): The system, consisting of both the transmitter and the receiver, must be designed to comply with all of the regulations in this Section 15.247 should the transmitter be presented with a continuous data (or information) stream.
- 15.247(h): The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

3. Antenna requirement

Requirement of FCC part 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 transmitter has permanently attached LDS Antenna (Internal antenna) on board.
- The EUT Complies with the requirement of §15.203, §15.247.

4. Introduction

This report referenced from the FCC ID: A3LSMX356B
Based on their similarity, the FCC Part 15C (equipment class: DSS) reuse the original model's result and do spot-check, following the FCC KDB 484596 D01 v02r03.
And the applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID.

4.1 Difference

The FCC ID: A3LSMX350 share the same enclosure and circuit board as FCC ID: A3LSMX356B. The WIFI/BT/BLE antenna and surrounding circuitry and layout are identical between these two units.
As for all bands, they have been verified and the parent model test results under FCC ID : A3LSMX356B shall remain representative of FCC ID: A3LSMX350.

Note. The difference between the parent and variant is that the RF circuit for GSM/WCDMA/LTE/NR bands in the parent model SM-X356B is removed from the variant model SM-X350.

4.2 Deviation Criteria

The spot-check measurements, while being always compliant with the applicable rule part(s) for the test under consideration, may show a deviation d_{dB} from the reference data no larger than 3 dB.

- $d_{dB} = | V_{dB} – R_{dB} | \leq 3$ dB

V_{dB} : The variant spot check level in dB
R_{dB} : The reference model level in dB

Spot check may be considered acceptable when the deviation d_{dB} from the reference data satisfies the following condition:

- $d_{dB} = | V_{dB} – R_{dB} | \leq (3 + M_{dB} /20)$ dB , for $0 \leq M_{dB} \leq 60$ dB
- $d_{dB} = | V_{dB} – R_{dB} | = 6$ dB , for $M_{dB} > 60$ dB

C_{dB} : the compliance threshold in dB

4.3 Spot check verification data

Band	Rule Part	Test mode	Test mode	Test Frequency (㎒)	Reference model	Variant model	Deviation	Deviation limit	Remark
					SM-X356B	SM-X350	(dB)	(dB)	
DSS	15.247(b)(1),(4)	Output power	BDR GFSK ANT1	2 402	20.23 dBm	19.27 dBm	-0.96	±3	-
	15.205(a), 15.209(a)	Band-edge	BDR GFSK ANT1	2 480	64.08 dBuV/m	65.48 dBuV/m	1.40	±3	-
		Spurious	BDR GFSK ANT2	2 441	47.54 dBuV/m	48.43 dBuV/m	0.89	±3	-

Notes:

1. FCC ID: A3LSMX350 have been verified the performance as for Bluetooth identical with the FCC ID: A3LSMX356B.
2. The test procedure(s) in this report were performed in accordance as following.
   - KDB 484596 D01 v02r03

4.4 Reference Detail

Reference application that contains the reused reference data in the individual test reports.

Equipment Class	Reference FCC ID	Application Type	Reference Test report Number	Exhibit Type	Variant Test Report Number	Data Re-used
DTS	A3LSMX356B	Original	KR25-SRF0022 (802.11b/g/n)	Test report	KR25-SRF0031	All
			KR25-SRF0023 (802.11ax)	Test report	KR25-SRF0032	All
			KR25-SRF0021-A (Bluetooth LE)	Test report	KR25-SRF0030	All
DSS	A3LSMX356B	Original	KR25-SRF0020 (Bluetooth)	Test report	KR25-SRF0029	All
NII	A3LSMX356B	Original	KR25-SRF0024 (802.11a/n/ac)	Test report	KR25-SRF0033	Partial[1)]
			KR25-SRF0025 (802.11ax)	Test report	KR25-SRF0034	All
6CD, 6VL	A3LSMX356B	Original	KR25-SRF0028-A (802.11a/ax)	Test report	KR25-SRF0035	Partial[2)]

Notes:

1. The DFS (Dynamic Frequency Selection) test item was additionally investigated.
2. Contention-based protocol (CBP), dual client testing, standard power access points, and Transmitter power control (TPC) test items were also investigated.

5. Summary of tests

FCC Part section(s)	Parameter	Test Condition	Test results
15.247(b)(1),(4)	Maximum peak output power	Conducted	Pass
15.247(a)(1)	Carrier frequency separation		Pass
15.247(a)(1)	20 dB channel bandwidth		Pass
15.247(a)(iii) 15.247(b)(1)	Number of hopping channel		Pass
15.247(a)(iii)	Time of occupancy(dwell time)		Pass
15.207(a)	AC Conducted Emissions		Pass
15.247(d)	Conducted Spurious Emissions		Pass
15.205(a), 15.209(a)	Spurious emission	Radiated	Pass
	Band-edge, restricted band		Pass

Notes:

1. All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
2. According to exploratory test no any obvious emission were detected from 9 ㎑ to 30 ㎒. Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30 m open field site. Therefore, sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.
3. EUT was investigated in three orthogonal orientations X, Y and Z. it was determined that **X** orientation was worst-case orientation. Therefore, all final radiated testing was performed with the EUT in **X** orientation.
4. All configurations have been performed (Stand-alone, Stand-alone with TA, With accessories).
   - Accessory type: S-pen, TA, DLC, Protective cover
   - Worst case: Stand-alone
5. The test procedure(s) in this report were performed in accordance as following.
   - ANSI C63.10-2013
   - KDB 558074 D01 v05r02
6. The worst-case data rate were (ANT1/ANT2):
   - BDR Packet type DH-1
   - EDR Packet type 3DH-1

6. Measurement uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013.

All measurement uncertainty values are shown with a coverage factor of k=2 to indicated a 95 % level of confidence. The measurement data shown herein meets of exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (±)	
Conducted RF Power	0.9 dB	
Conducted spurious emission	2.0 dB	
Radiated Emissions	Below 30 ㎒	2.3 dB
	30 ㎒ to 1 000 ㎒	2.6 dB
	1 000 ㎒ to 18 000 ㎒	4.8 dB
	Above 18 000 ㎒	4.8 dB
Conducted Emissions	150 ㎑ to 30 ㎒	2.9 dB

7. Measurement results explanation example

The offset level is set in the spectrum analyzer to compensate the RF cable loss factor between EUT conducted output port and spectrum analyzer.
With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

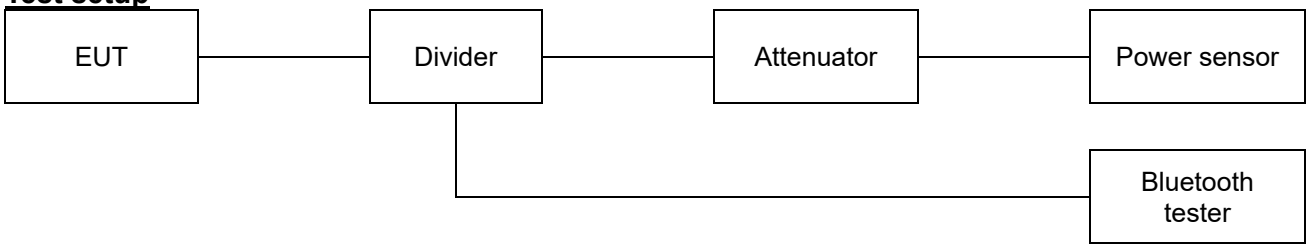
Frequency (㎒)	Factor(㏈)	Frequency (㎒)	Factor(㏈)
30	6.24	9 000	9.02
50	6.27	10 000	9.31
100	6.28	11 000	9.53
200	6.30	12 000	9.49
300	6.54	13 000	9.58
400	6.48	14 000	9.54
500	6.52	15 000	9.67
600	6.39	16 000	10.41
700	6.52	17 000	9.83
800	6.43	18 000	9.84
900	6.80	19 000	10.37
1 000	6.78	20 000	9.97
2 000	7.13	21 000	10.19
3 000	7.38	22 000	10.12
4 000	7.80	23 000	10.42
5 000	8.15	24 000	9.90
6 000	8.33	25 000	10.35
7 000	8.53	26 000	10.23
8 000	8.63	26 500	10.23

Note.
Offset(㏈) = RF cable loss(㏈) + Power Divider(㏈)

8. Test results

8.1. Maximum peak output power

Test setup



Limit

According to §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 ㎽.

According to §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.

According to §15.247(b)(4),
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 ㏈i. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 ㏈i 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 ㏈ that the directional gain of the antenna exceeds 6 ㏈i.

Test procedure
ANSI C63.10-2013 - Section 7.8.5

Test settings
The test follows ANSI C63.10-2013 – Section 7.8.5. Using the power sensor instead of a spectrum analyzer.

Notes:
A peak responding power sensor is used, where the power sensor system video bandwidth is greater than the occupied bandwidth of the EUT.

Test results

ANT1

Frequency(㎒)	Data rate (Mbps)	Measured output power(dBm)		Limit (dBm)
		Peak	Average	
2 402	1	20.23	19.82	20.97
2 441	1	20.09	19.68	
2 480	1	19.66	19.26	
2 402	2	19.41	16.78	
2 441	2	19.21	16.58	
2 480	2	18.94	16.38	
2 402	3	19.89	16.81	
2 441	3	19.69	16.61	
2 480	3	19.36	16.48	

ANT2

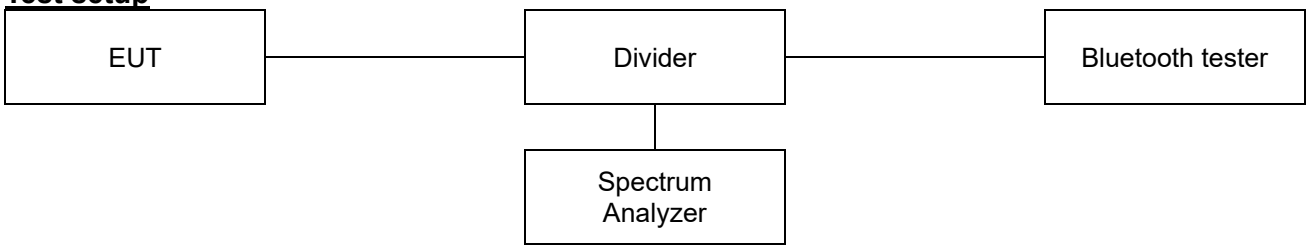
Frequency(㎒)	Data rate (Mbps)	Measured output power(dBm)		Limit (dBm)
		Peak	Average	
2 402	1	19.66	19.28	20.97
2 441	1	18.74	18.37	
2 480	1	18.75	18.41	
2 402	2	18.77	16.40	
2 441	2	17.89	15.47	
2 480	2	17.94	15.65	
2 402	3	19.31	16.42	
2 441	3	18.35	15.48	
2 480	3	18.36	15.69	

Notes:

1. Conducted output power (Average) = Reading value of average power + D.C.F

8.2. Carrier frequency separation

Test setup



Limit

According to §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 ㎽.

Test procedure

ANSI C63.10-2013 - Section 7.8.2

Test settings

a) Span: Wide enough to capture the peaks of two adjacent channels.
b) 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.
c) Video (or average) bandwidth (VBW) ≥ RBW.
d) Sweep: Auto.
e) Detector function: Peak.
f) Trace: Max hold.
g) 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 plot of the data shall be included in the test report.

Test results

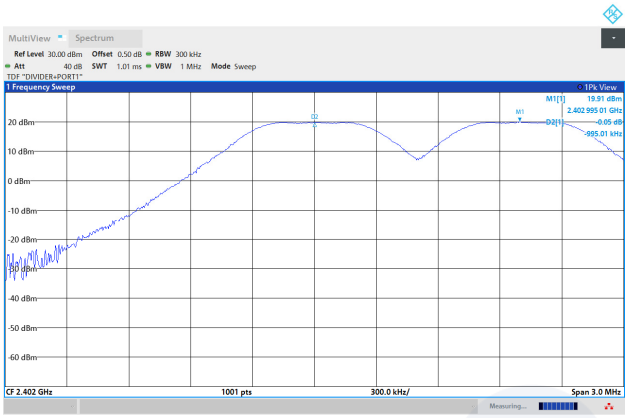
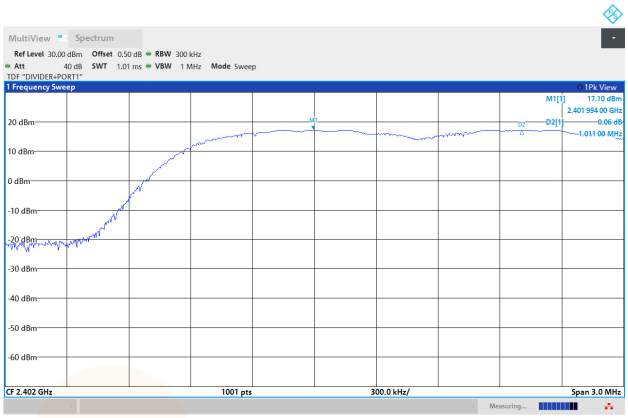
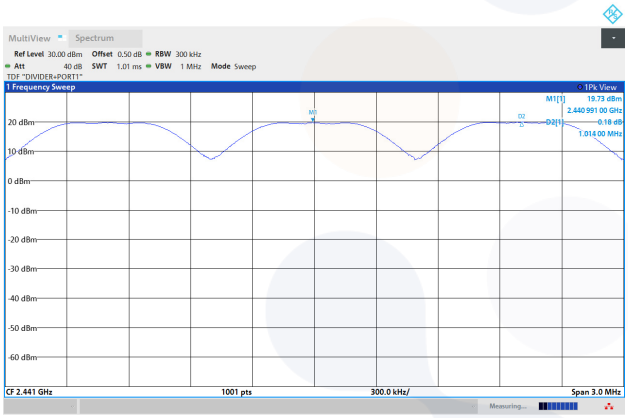
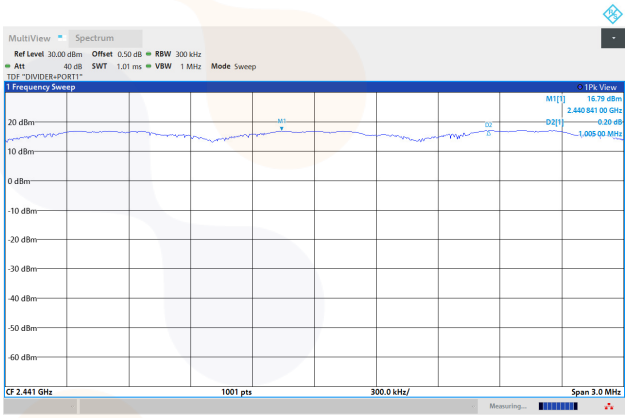
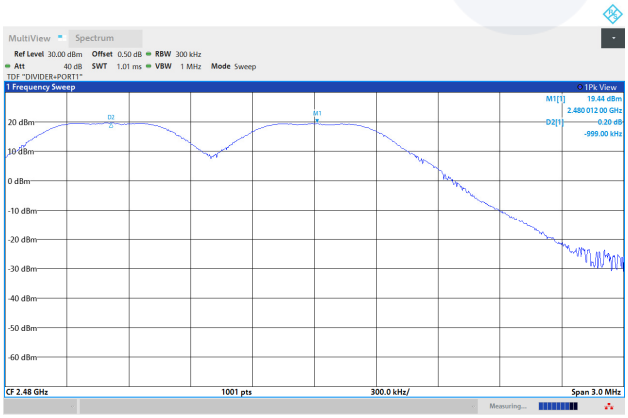
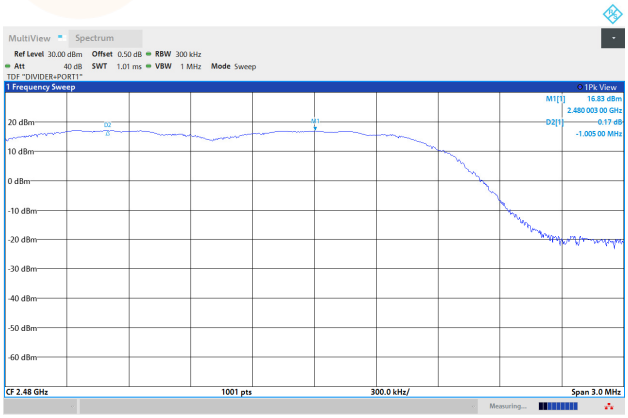
ANT1

Frequency(㎒)	Data rate(Mbps)	Carrier frequency separation(㎒)	Limit(㎒)
2 402	1	0.995	0.620
2 441	1	1.014	0.620
2 480	1	0.999	0.638
2 402	3	1.011	0.854
2 441	3	1.005	0.854
2 480	3	1.005	0.852

ANT2

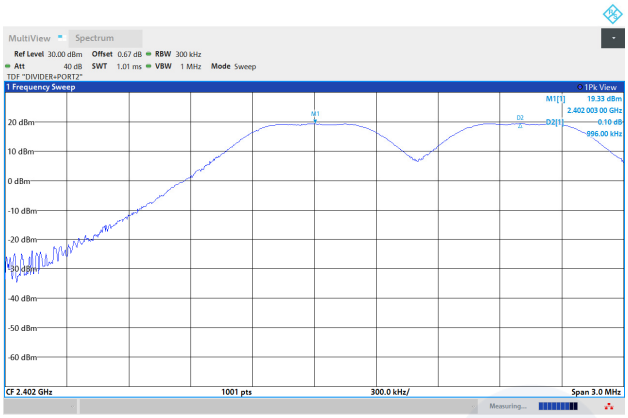
Frequency(㎒)	Data rate(Mbps)	Carrier frequency separation(㎒)	Limit(㎒)
2 402	1	0.996	0.620
2 441	1	1.143	0.622
2 480	1	0.840	0.632
2 402	3	0.993	0.852
2 441	3	1.005	0.852
2 480	3	0.993	0.852

ANT1

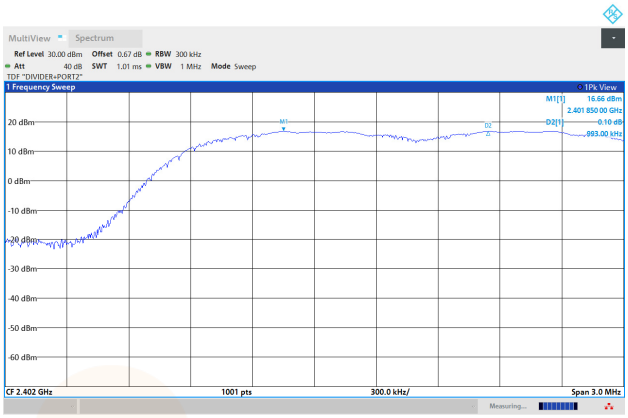
GFSK / Low ch.	8DPSK / Low ch.
	
GFSK / Mid ch.	**8DPSK / Mid ch.**
	
GFSK / High ch.	**8DPSK / High ch.**
	

ANT2

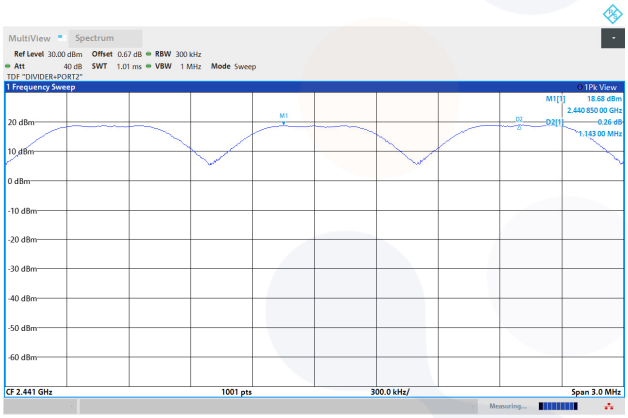
GFSK / Low ch.



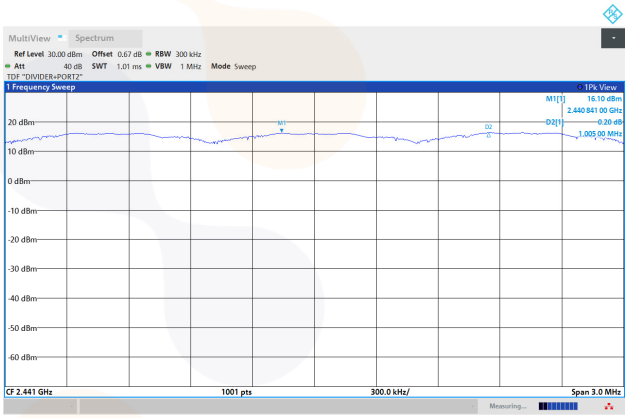
8DPSK / Low ch.



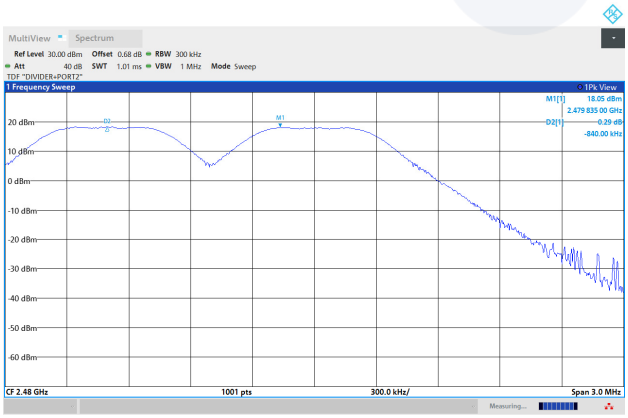
GFSK / Mid ch.



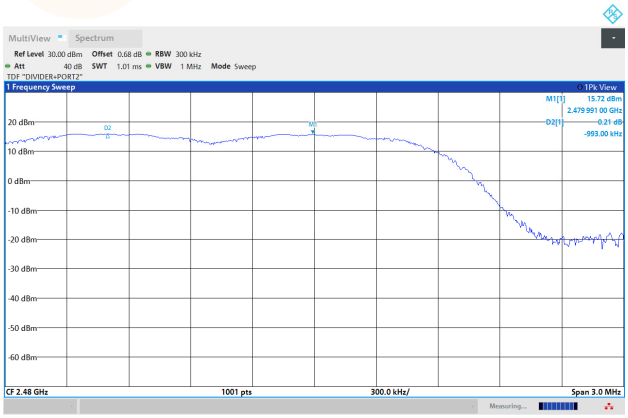
8DPSK / Mid ch.



GFSK / High ch.

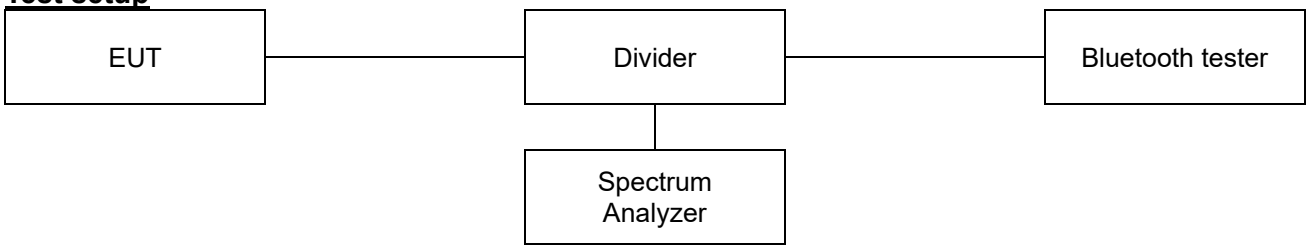


8DPSK / High ch.



8.3. 20 dB channel bandwidth

Test setup



Limit

According to §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 ㎽.

Test procedure

ANSI C63.10-2013 - Section 6.9.2

Test settings

20dB channel bandwidth and Occupied bandwidth

The occupied bandwidth is measured as the width of the spectral envelope of the modulated signal, at an amplitude level reduced from a reference value by a specified ratio (or in decibels, a specified number of ㏈ down from the reference value). Typical ratios, expressed in dB, are −6 ㏈, −20 ㏈, and −26 ㏈, corresponding to 6 ㏈ BW, 20 ㏈ BW, and 26 ㏈ BW, respectively. In this subclause, the ratio is designated by "−xx ㏈." The reference value is either the level of the unmodulated carrier or the highest level of the spectral envelope of the modulated signal, as stated by the applicable requirement. Some requirements might specify a specific maximum or minimum value for the "−xx ㏈" bandwidth; other requirements might specify that the "−xx ㏈" bandwidth be entirely contained within the authorized or designated frequency band.

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency.
b) Span: Two times and five times the OBW.
c) RBW = 1 % to 5 % of the OBW and VBW ≥ 3 x RBW
d) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation.
e) The dynamic range of the instrument at the selected RBW shall be more than 10 ㏈ below the target "−xx ㏈ down" requirement; that is, if the requirement calls for measuring the −20 ㏈ OBW, the instrument noise floor at the selected RBW shall be at least 30 ㏈ below the reference value.
f) Detector: peak
g) Trace mode: max hold.
h) Allow the trace to stabilize.
i) Determine the "−xx ㏈ down amplitude" using ((reference value) − xx). Alternatively, this calculation may be made by using the marker-delta function of the instrument.
j) If the reference value is determined by an unmodulated carrier, then turn the EUT modulation ON, and either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise, the trace from step g) shall be used for step j).

k) Place two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the "−xx dB down amplitude" determined in step h). If a marker is below this "−xx dB down amplitude" value, then it shall be as close as possible to this value. The occupied bandwidth is the frequency difference between the two markers. Alternatively, set a marker at the lowest frequency of the envelope of the spectral display, such that the marker is at or slightly below the "−xx dB down amplitude" determined in step h). Reset the marker-delta function and move the marker to the other side of the emission until the delta marker amplitude is at the same level as the reference marker amplitude. The marker-delta frequency reading at this point is the specified emission bandwidth.

Test results

ANT1

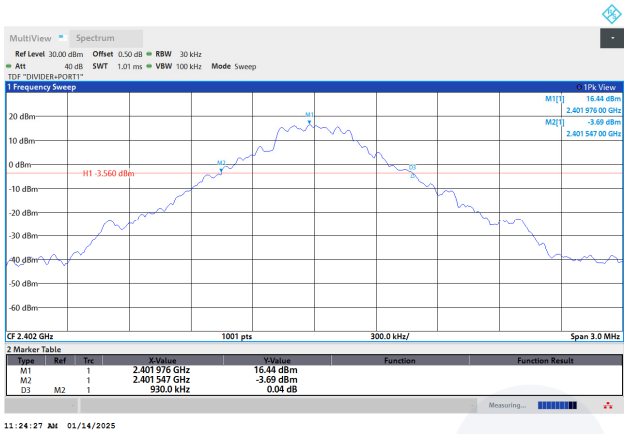
Frequency(㎒)	Data rate (Mbps)	20 dB Bandwidth (㎒)
2 402	1	0.930
2 441	1	0.930
2 480	1	0.957
2 402	3	1.281
2 441	3	1.281
2 480	3	1.278

ANT2

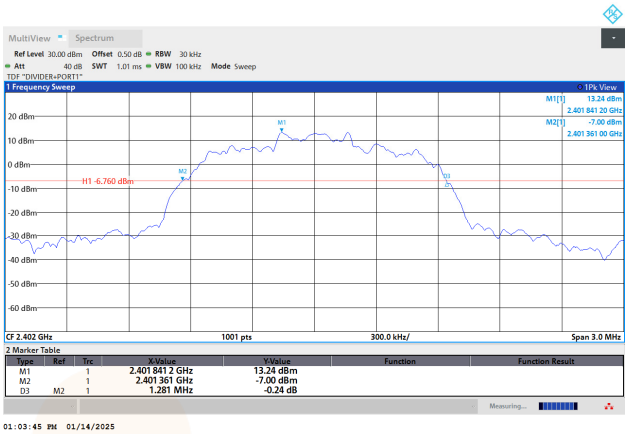
Frequency(㎒)	Data rate (Mbps)	20 dB Bandwidth (㎒)
2 402	1	0.930
2 441	1	0.933
2 480	1	0.948
2 402	3	1.278
2 441	3	1.278
2 480	3	1.278

ANT1

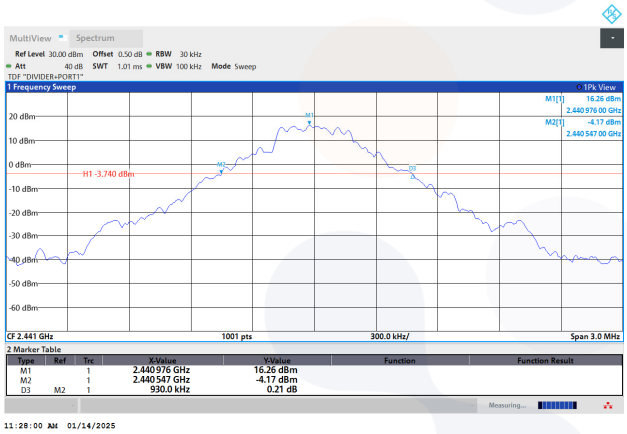
GFSK / Low ch.



8DPSK / Low ch.



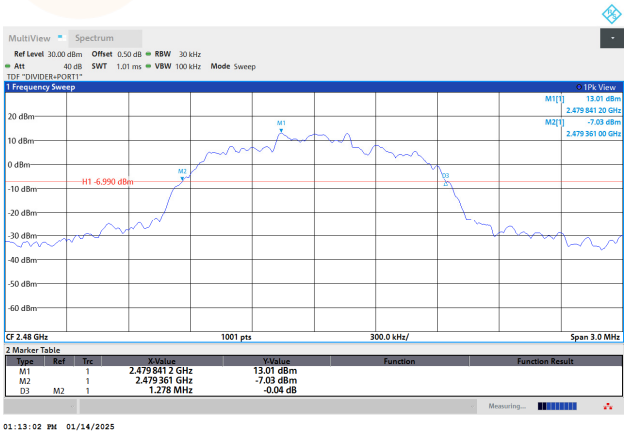
GFSK / Mid ch.



8DPSK / Mid ch.

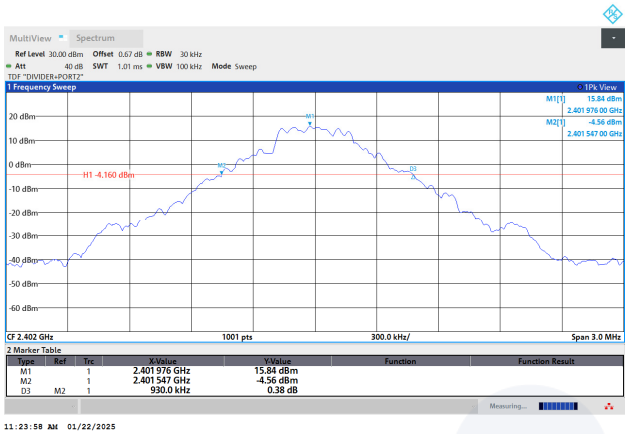
GFSK / High ch.

8DPSK / High ch.

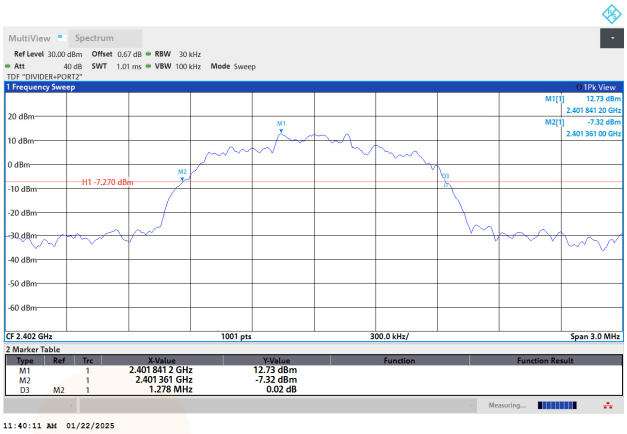


ANT2

GFSK / Low ch.



8DPSK / Low ch.

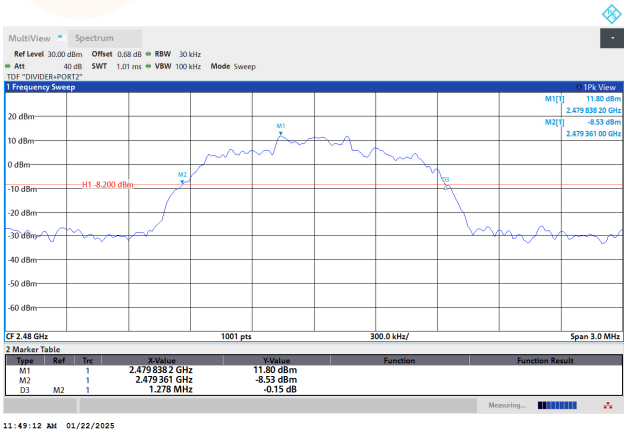


GFSK / Mid ch.

8DPSK / Mid ch.

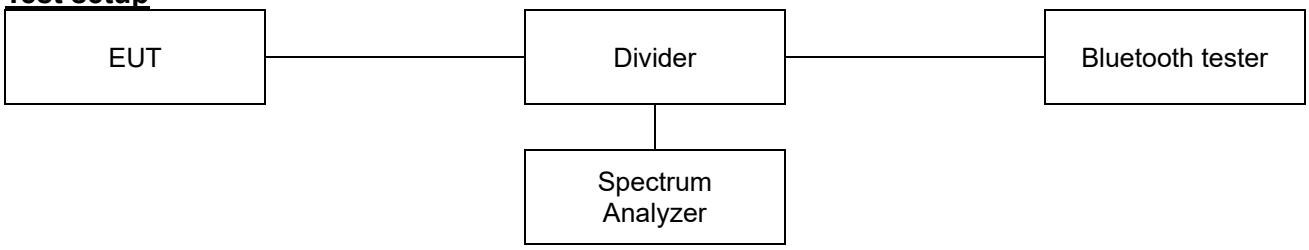
GFSK / High ch.

8DPSK / High ch.



8.4. Number of hopping channels

Test setup



Limit

According to §15.247(a)(1)(iii),

Frequency hopping systems in the 2 400-2 483.5 ㎒ band shall use at least 15 channels.

Test procedure

ANSI C63.10-2013 - Section 7.8.3

Test settings

a) Span: The frequency band of operation. Depending on the number of channels the device supports, it may be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
b) 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.
c) VBW ≥ RBW.
d) Sweep: Auto.
e) Detector function: Peak.
f) Trace: Max hold.
g) 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 plot of the data shall be included in the test report.

Test results

ANT1

Mode	Number of hopping channel	Limit
GFSK	79	≥15
π/4DQPSK	79	≥15
8DPSK	79	≥15

ANT2

Mode	Number of hopping channel	Limit
GFSK	79	≥15
π/4DQPSK	79	≥15
8DPSK	79	≥15

Notes:

In case of AFH mode, minimum number of hopping channels is 20.