

Test report No: 6267415.51

US FCC & Canada ISED TEST REPORT

Radio Spectrum Matters (RSM)

Identification of item tested	LED luminaire
Trademark	PHILIPS, hue, SIGNIFY
Model and /or type reference	9290043458, 9290043459
Ratings	120 Vac, 60 Hz;
Other identification of the product	FCC ID: 2AGBW9290043458X IC ID: 20812-43458X
Applicant's name / address	Signify (China) Investment Co., Ltd. Building no.9, Lane 888, Tianlin Road, Minhang District, Shanghai, 200233, China.
Test method requested, standard	FCC Rules and Regulations Title 47 CFR Chapter I – Part 15 – Subpart C Section 15.247 (10-1-24 Edition) ANSI C63.10-2020 RSS-Gen Issue 5 Amendment 2: February 2021 RSS-247 Issue 4: July 2025 ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024
Verdict Summary	IN COMPLIANCE
Prepared by (name / position & signature)	Kayuan Dai Project Manager 
Approved by (name / position & signature)	Zuyao Fan Project Manager 
Date of issue	2026-06-10
Report template No	TRF_FCC Part 15C & RSS-247_RF01 V1.0

INDEX

	page
Competences and Guarantees.....	4
General conditions.....	4
Uncertainty.....	5
Environmental conditions.....	5
Possible test case verdicts.....	6
Definition of symbols used in this test report.....	6
Abbreviations.....	6
Document History.....	7
Data provided by the applicant.....	7
Conclusion, Remarks and Comments.....	7
1 General Information.....	8
1.1 General Description of the Item(s).....	8
1.2 Test date.....	9
1.3 Channel List.....	9
1.4 Transmitter: RF Output Power Setting.....	10
2 Description of Test Setup.....	10
2.1 Operating mode(s) used for tests.....	10
3 Measurement procedure.....	11
3.1 Conducted measurement.....	11
3.2 Radiated measurement.....	13
3.3 AC power line conducted emission measurement.....	16
4 Verdict summary section.....	18
4.1 Standards.....	18
4.2 Deviation(s) from the Standard(s) / Test Specification(s).....	18
4.3 Overview of results.....	19
5 Test Results.....	22
5.1 6dB bandwidth / DTS bandwidth.....	22
5.2 99% Emission bandwidth.....	26
5.3 Maximum conducted output power.....	30
5.4 Maximum power spectral density.....	36
5.5 Radiated restricted-band edge emission.....	40
5.6 Conducted spurious emissions.....	54
5.7 Duty cycle.....	62
5.8 Emissions in restricted bands.....	66

5.9 AC Power Line Conducted Emission..... 84

5.10 Antenna Requirement..... 89

6 Annex 1 – Measurement Uncertainties..... 90

7 Annex 2 – Used Equipment..... 91

8 Identification of the Equipment Under Test..... 92

COMPETENCES AND GUARANTEES

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In order to assure the traceability to other national and international laboratories, DEKRA has a calibration and maintenance program for its measurement equipment.

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GENERAL CONDITIONS

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or Competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Testing and Certification (Shanghai) Ltd.
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5. The information provided by the customer in this report may affect the validity of the results, the test lab is not responsible for it.
6. The test results presented in this report relate only to the object tested.
7. Samples undergoing test have been selected by: The client.

UNCERTAINTY

For all measurements where guidance for the calculation of the instrumentation uncertainty of a measurement is specified in the product standard, the measurement instrumentation uncertainty has been calculated and applied in accordance with these standards.

Uncertainties have been calculated according to the Dekra internal document. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%. Refer to the Annex 1 for further information.

The measurement result is considered to be in conformance with the requirement if it is within the prescribed limit, it is not necessary to calculate the uncertainty associated with the measurement result unless the specification, standard or customer has special requirements.

ENVIRONMENTAL CONDITIONS

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment. The climatic conditions during the tests were within the following limits:

Ambient temperature	15 °C – 35 °C
Relative Humidity air	30% - 60%
Atmospheric pressure	86 kPa – 106 kPa

If explicitly required in the basic standard or applied product / product family standard the climatic values are recorded and documented separately in this test report.

POSSIBLE TEST CASE VERDICTS

Test case does not apply to test object	N/A
Test object does meet requirement	P (Pass) / PASS
Test object does not meet requirement	F (Fail) / FAIL
Not measured	N/M

DEFINITION OF SYMBOLS USED IN THIS TEST REPORT

☒ Indicates that the listed condition, standard or equipment is applicable for this report/test/EUT.			
☐ Indicates that the listed condition, standard or equipment is not applicable for this report/test/EUT.			
Decimal separator used in this report	☐	Comma (,)	☒ Point (.)

ABBREVIATIONS

For the purposes of the present document, the following abbreviations apply:

EUT	: Equipment Under Test
QP	: Quasi-Peak
AV	: Average
SAC	: Semi-Anechoic Chamber
OATS	: Open Area Test Site
CCA	: Clear Channel Assessment
CW	: Continuous Wave
DAA	: Detect And Avoid
DSSS	: Direct Sequence Spread Spectrum
OFDM	: Orthogonal Frequency Division Multiplexing
E.I.R.P.	: Equivalent Isotropically Radiated Power
E.R.P.	: Effective Radiated Power
FHSS	: Frequency Hopping Spread Spectrum
LBT	: Listen Before Talk
MCS	: Modulation and Coding Scheme
BW	: Bandwidth
Cat	: Receiver Category
DC	: Duty Cycle
MU	: Medium Utilization Factor
PER	: Packet Error Rate
PSD	: Power Spectral Density
RMS	: Root Mean Square
U_N	: Nominal voltage
N/A	: Not Applicable
N/M	: Not Measured

DOCUMENT HISTORY

Report nr.	Date	Description
6267415.51	2026-06-10	First release.

DATA PROVIDED BY THE APPLICANT

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested", "Applicant's name / address", "Ratings" and "Derived model(s)", "Antenna Gain").
2. Derived model not tested. These models have been declared by the applicant as being the same as the model under test.

DEKRA declines any responsibility with respect to the information provided by the applicant and that may affect the validity of results.

CONCLUSION, REMARKS AND COMMENTS

The equipment under test (EUT) does meet the requirements of the stated standard(s)/test(s).

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The tests described in this report do not result in the right to use any approval mark as conferred by DEKRA. As far as the tests were based on certain specifications, these are mentioned in the report.

According to the declaration from the manufacturer, these products are LED luminaire. Model 9290043458 and 9290043459 share the same RF module and LED driver except for different dimensions, rated power and antenna gain. They utilize both IEEE 802.15.4 and Bluetooth protocols for connectivity.

After review, all tests were carried out on model 9290043459. Additional maximum conducted output power, radiated restricted-band edge emission, emissions in restricted bands and AC power line conducted emission tests for model 9290043458 were considered necessary.

The report covers only the Bluetooth LE function of the EUT. The IEEE 802.15.4 function is not covered by this report.

1 GENERAL INFORMATION

1.1 General Description of the Item(s)

Description of the item..... :	LED luminaire
Test model number 1..... :	9290043459
Test model number 2..... :	9290043458
Trademark..... :	PHILIPS, hue, SIGNIFY
Manufacturer..... :	Signify (China) Investment Co., Ltd. Building no.9, Lane 888, Tianlin Road, Minhang District, Shanghai, 200233, China.
Factory..... :	Signify (China) Investment Co., Ltd. Building no.9, Lane 888, Tianlin Road, Minhang District, Shanghai, 200233, China.

Mode of Operation.....:	IEEE 802.15.4								
Data Rate.....:	250 kbps								
Operating frequency range(s) – Tx.:	2400 – 2483.5 MHz								
Operating frequency range(s) – Rx.:	2400 – 2483.5 MHz								
Type of Modulation.....:	DSSS, O-QPSK								
Antenna Type.....:	PIFA antenna								
Antenna Gain.....:	2.6 dBi (Model: 9290043459) 2.0 dBi (Model: 9290043458)								
Number of channels.....:	16								
Max RF Output power.....:	9.9 dBm (Model: 9290043459) 9.99 dBm (Model: 9290043458)								
Normal Operating Temperature.....:	Nominal				25°C				
Extreme Operating Temperature.....:	Low		-25°C		High 40°C				
Geo-location capability.....:	Not Supported								
Rated power supply.....:	Voltage and Frequency				Reference poles				
					L1	L2	L3	N	PE
	☐	AC: 220 – 240 V, 50/60 Hz			☐	☐	☐	☐	☐
	☒	AC: 120 V, 60 Hz			☒	☐	☐	☒	☒
	☐	DC: 12 V, 24 V, 12 / 24 V							
	☐	Battery:							
Software version.....:	Not provided								
Hardware version.....:	Not provided								

1.2 Test date

Test Location	DEKRA Testing and Certification (Shanghai) Ltd.
Address	No.1050, Xingxian Road, Jiading District, Shanghai City, People's Republic of China
FCC Designation number	CN1358
FCC Test Firm Registration number	988331
IC Designation number	CN0155
IC Test Firm Registration number	31268
Date of receipt of test item	2026-04-29
Date(s) of performance of tests	2026-04-29 to 2026-06-10

1.3 Channel List

IEEE 802.15.4

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
11	2405 MHz	12	2410 MHz	13	2415 MHz	14	2420 MHz
15	2425 MHz	16	2430 MHz	17	2435 MHz	18	2440 MHz
19	2445 MHz	20	2450 MHz	21	2455 MHz	22	2460 MHz
23	2465 MHz	24	2470 MHz	25	2475 MHz	26	2480 MHz

1.4 Transmitter: RF Output Power Setting

During transmitter test the EUT was controlled by a USB control tool provided by the client to operate in a continuous transmit mode on the modulation schemes and test channels as required.

Operating Mode	Frequency (MHz)	Power Setting (Level)
IEEE 802.15.4	2405	10
	2440	10
	2480	10
Supplemental information: ---		

2 DESCRIPTION OF TEST SETUP

2.1 Operating mode(s) used for tests

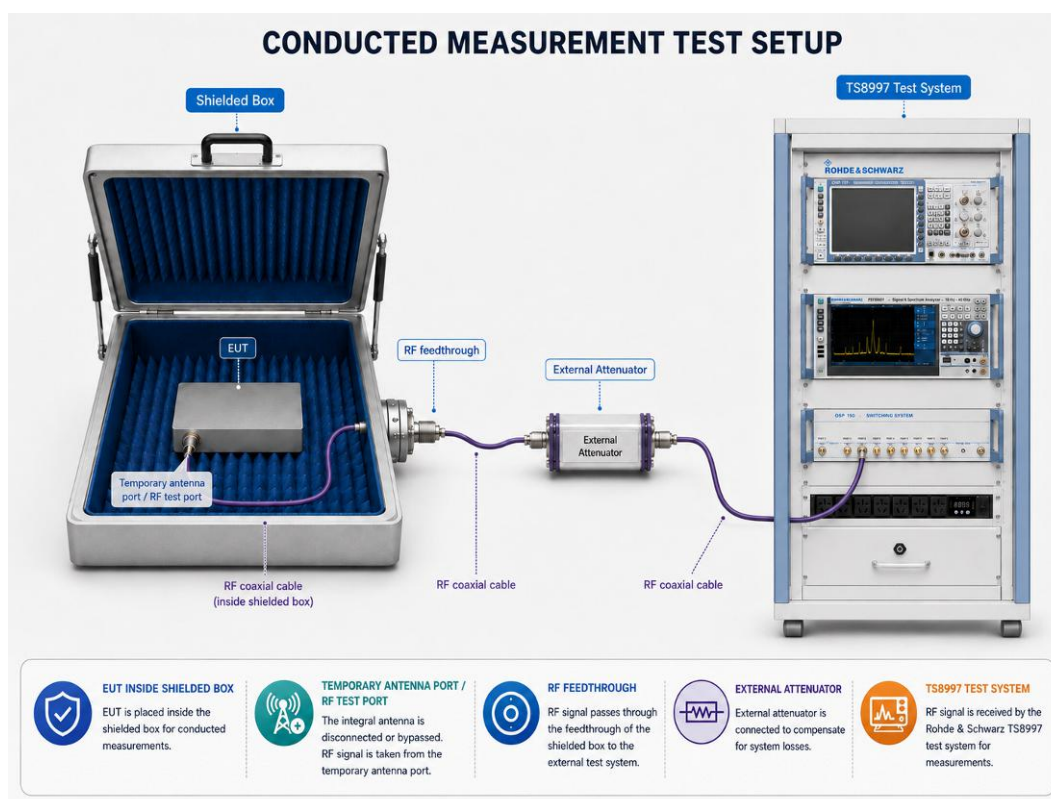
During the tests the following operating mode(s) has(have) been used.

Operating mode	Operating mode description
1	Transmitting: IEEE 802.15.4
Supplemental information: ---	

3 MEASUREMENT PROCEDURE

3.1 Conducted measurement

The equipment under test was placed inside a shielded box during conducted measurements and connected to the test system TS8997 through a temporary antenna port / RF test port provided by the applicant. The RF connection was made via the RF feedthrough of the shielded box. The integral antenna was disconnected or bypassed during conducted measurements. Cable loss and external attenuator loss were compensated in the test software. The spectrum analyzer readings were corrected for cable loss and external attenuator loss.



Operating Mode	Modulation	Frequency (MHz)	Cable loss (dB)	Attenuator loss (dB)
IEEE 802.15.4	DSSS, O-QPSK	2405	0.5	0
		2440	0.5	0
		2480	0.5	0
<u>Supplemental information:</u> ---				

3.2 Radiated measurement

All radiated spurious emission measurements were conducted in a semi-anechoic chamber.

The equipment under test was placed on a non-conductive platform above the ground plane.

For emissions testing at or below 1 GHz, the table height shall be 80 cm above the reference ground plane.

For emission measurements from 1 GHz up to the required upper frequency, the table height shall be 1.5 m.

The test configuration and orientation of the EUT were varied to maximize the radiated emissions. The receiving Trilog broadband antenna for 30 MHz to 1 GHz and horn antenna for 1 GHz to 26 GHz were positioned at the specified measurement distance from the EUT. For measurements above 1 GHz, RF absorbing material was placed on the ground plane between the EUT and the receiving antenna. Measurements were made with the antenna positioned in both horizontal and vertical polarisations. The EUT was also rotated through 360°, and the measurement antenna height was varied from 1 m to 4 m, where applicable, to obtain the maximum signal strength.

A quasi-peak detector with CISPR bandwidth of 120 kHz was used for frequencies below 1 GHz, and resolution bandwidth/video bandwidth of 1 MHz / 3 MHz was used for frequencies above 1 GHz.

For radiated emissions in the frequency range of 17 GHz to 26 GHz, if measurements were performed at a distance closer than the specified measurement distance, an inverse-distance extrapolation factor of 20 dB per decade was applied to normalize the measured data for compliance determination.

The field strength (FS) is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor (CF) includes antenna factor (AF), cable loss (L_{CABLE}) and pre-amplifier gain (PA_{GAIN}). Final measurements are made with the Azimuth, Polarisation, Height, and EUT Cables positioned for maximum radiation.

$$CF (dB) = AF(dB/m) + L_{CABLE} (dB) - PA_{GAIN} (dB)$$

$$FS (dB\mu V/m) = V_{RX} (dB\mu V) + CF (dB)$$

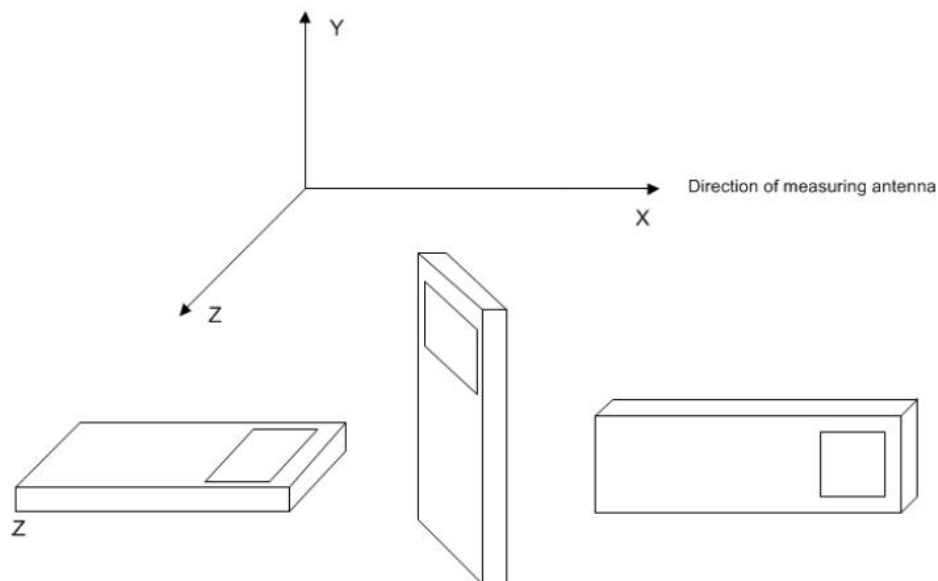
Sample Calculation:

$$CF (dB) : 11.8 (dB/m) + 2.3 (dB) - 20.8 (dB) = - 6.7 dB$$

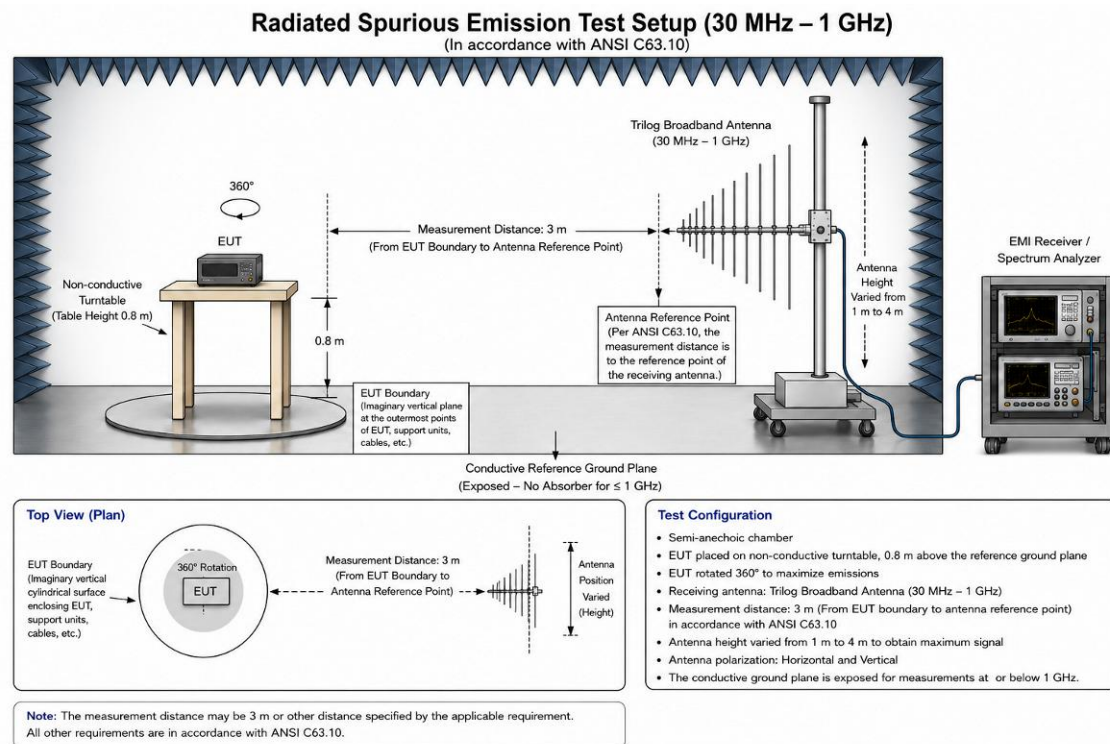
$$FS (dB\mu V/m) : 39.8 (dB\mu V) - 6.7 (dB) = 33.1 dB\mu V/m.$$

Important Note: This is a sample calculation only for the purpose of demonstration, and does not reflect data in this report.

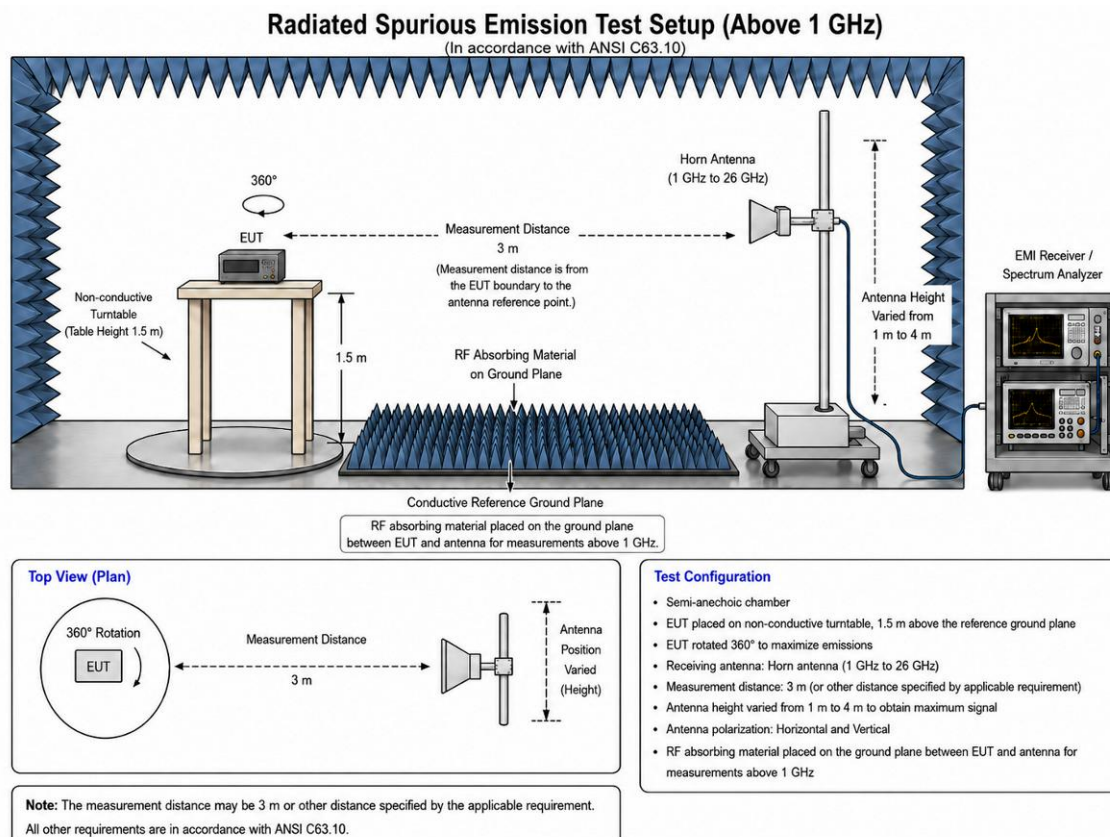
The EUT was placed and evaluated in three orthogonal orientations, i.e. X-axis, Y-axis and Z-axis positions, during the radiated measurement. The worst-case orientation, which produced the highest emission level, was selected for final measurement and reporting.



Test setup for radiated emission measurements at frequency range 30 MHz-1000 MHz is shown below:



Test setup for radiated emission measurements above 1 GHz is shown below:



3.3 AC power line conducted emission measurement

The AC power line conducted emissions test was performed with the EUT and associated peripherals placed on a non-conductive table 80 cm above the reference ground plane. The rear of the EUT and peripherals was aligned flush with the rear edge of the table, and the table was positioned 40 cm from the vertical conducting plane bonded to the reference ground plane.

The EUT power cord was connected to one LISN, which was bonded to the reference ground plane and positioned at least 80 cm from the nearest part of the EUT chassis. Unused LISN measuring port connectors were terminated with 50 Ω loads. Interconnecting cables that hung closer than 40 cm to the ground plane were folded back and forth at the center to form a cable bundle.

The EUT, support equipment, power cords and interconnecting cables were arranged to represent typical operation and to produce the maximum emission level. Where support equipment required multiple power cords, a multiple-outlet strip was used as appropriate. If the EUT was provided with a detachable antenna, the antenna was attached during the test.

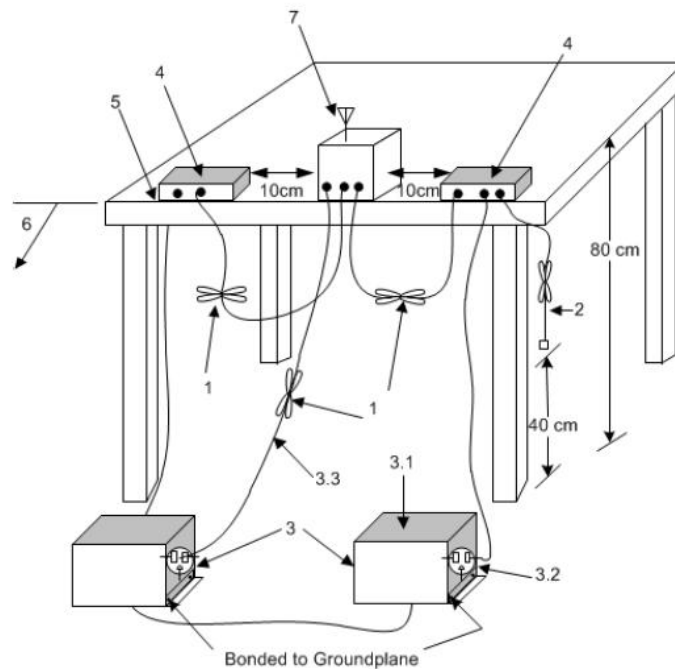
The measurement result/emission level (V_m) is calculated by adding correction factor (CF) to the measured level (V_{RX}) from the receiver. This correction factor includes cable loss (L_{CABLE}) and the insertion loss (IL) of the LISN.

$$CF (dB) = L_{CABLE} (dB) + IL (dB)$$
$$V_m (dB\mu V) = V_{RX} (dB\mu V) + CF (dB)$$

Sample Calculation:

$$CF (dB) : 1.2 \text{ dB} + 0.8 \text{ dB} = 2.0 \text{ dB}$$
$$V_m (dB\mu V) : 43.4 \text{ dB}\mu V + 2.0 \text{ dB} = 45.4 \text{ dB}\mu V.$$

Important Note: This is a sample calculation only for the purpose of demonstration, and does not reflect data in this report.



Note:

- 1— Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long.
- 2—The I/O cables that are not connected to an accessory shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- 3—EUT connected to one LISN. Unused LISN measuring port connectors shall be terminated in 50 Ω loads. LISN may be placed on top of, or immediately beneath, reference ground plane.
- 3.1—All other equipment powered from additional LISN(s).
- 3.2—A multiple outlet strip may be used for multiple power cords of non EUT equipment.
- 3.3—LISN at least 80 cm from nearest part of EUT chassis.
- 4—Non EUT components of EUT system being tested.
- 5—Rear of EUT, including peripherals, shall all be aligned and flush with edge of tabletop.
- 6—Edge of tabletop shall be 40 cm removed from a vertical conducting plane that is bonded to the ground plane.
- 7—Antenna can be integral or detachable. If detachable, then the antenna shall be attached for this test.

4 VERDICT SUMMARY SECTION

This chapter presents an overview of standards and results. Refer to the next chapters for details of measured test results and applied test levels.

4.1 Standards

Standard	Year	Description
FCC Rules and Regulations Title 47 CFR Chapter I – Part 15 – Subpart C Section 15.247	10-1-24 Edition	Intentional Radiators – Operation within the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz.
FCC Part 15 – Subpart C Section 15.209	10-1-24 Edition	Intentional Radiators – Radiated emission limits; General requirements.
FCC Part 15 – Subpart C Section 15.205	10-1-24 Edition	Intentional Radiators – Restricted bands of operation
FCC Part 15 – Subpart C Section 15.203	10-1-24 Edition	Intentional Radiators – Antenna requirement
FCC Part 15 – Subpart C Section 15.207	10-1-24 Edition	Intentional Radiators – Conducted limits
ANSI C63.10	2020	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
ANSI C63.10 + Corrigendum 1 +ANSI C63.10a + Errata to C63.10a	2020 2023 2024 2024	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
RSS-247 Issue 4	2025	Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices
RSS-Gen Issue 5 Amendment 2	2021	General Requirements for Compliance of Radio Apparatus
KDB 558074 D01V05 r02	2019	Guidance for compliance measurements on digital transmission system, frequency hopping spread spectrum system, and hybrid system devices operating under section 15.247 of the FCC Rules

4.2 Deviation(s) from the Standard(s) / Test Specification(s)

The following deviation(s) was / were made from the published requirements of the listed standards:

No deviation(s)

4.3 Overview of results

Requirement – FCC Part 15.247			
Requirement – Test case	Basic Standard(s)	Verdict	Remark
6dB bandwidth / DTS bandwidth	FCC Part 15.247(a)(2)	PASS	---
Maximum conducted output power	FCC Part 15.247(b)(3)	PASS	---
Maximum power spectral density	FCC Part 15.247(e)	PASS	---
Radiated restricted-band edge emission	FCC Part 15.247(d) / FCC Part 15.205 / FCC Part 15.209	PASS	---
Conducted spurious emission	FCC Part 15.247(d)	PASS	---
Duty cycle	ANSI C63.10-2020	PASS	---
Emissions in restricted bands	FCC Part 15.247(d) / FCC Part 15.205 / FCC Part 15.209	PASS	---
AC power line conducted emission	FCC Part 15.207	PASS	---
Antenna requirement	FCC Part 15.247(b) / FCC Part 15.203	PASS	---
<u>Supplemental information:</u> ---			

Requirement – RSS-247 Issue 4, RSS-Gen Issue 5 Amendment 2			
Requirement – Test case	Basic Standard(s)	Verdict	Remark
6dB bandwidth / DTS bandwidth	RSS-247 Issue 4 Clause 6.3.1(a)	PASS	---
99% Emission Bandwidth	RSS-Gen Issue 5 Amendment 2 Clause 6.7	PASS	---
Maximum conducted output power	RSS-247 Issue 4 Clause 6.3.2	PASS	---
Maximum power spectral density	RSS-247 Issue 4 Clause 6.3.1(b)	PASS	---
Radiated restricted-band edge emission	RSS-Gen Issue 5 Amendment 2 Clause 8.9, Clause 8.10	PASS	---
Conducted spurious emission	RSS-247 Issue 4 Clause 6.6	PASS	---
Duty cycle	ANSI C63.10-2020+Cor.1-2023+ C63.10a-2024+Errata to C63.10a-2024	PASS	---
Emissions in Restricted Bands	RSS-Gen Issue 5 Amendment 2 Clause 8.9, Clause 8.10	PASS	---
AC power line conducted emission	RSS-Gen Issue 5 Amendment 2 Clause 8.8	PASS	---
Antenna requirement	RSS-Gen Issue 5 Amendment 2 Clause 6.8	PASS	---
<u>Supplemental information:</u> ---			

4.4 Test Matrix

Test model: 9290043459

Requirement – FCC Part 15.247	Test Channel		
	Low (2405 MHz)	Middle (2440 MHz)	High (2480 MHz)
6dB bandwidth / DTS bandwidth	☒	☒	☒
Maximum conducted output power	☒	☒	☒
Maximum power spectral density	☒	☒	☒
Radiated restricted-band edge emission	☒	☒	☒
Conducted spurious emission	☒	☒	☒
Duty cycle	☒	☒	☒
Emissions in restricted bands	☒	☒	☒
AC power line conducted emission	☒	☐	☐
Antenna requirement	☐	☐	☐
<u>Supplemental information:</u> ---			

Requirement – RSS-247 Issue 4, RSS-Gen Issue 5 Amendment 2	Test Channel		
	Low (2405 MHz)	Middle (2440 MHz)	High (2480 MHz)
6dB bandwidth / DTS bandwidth	☒	☒	☒
99% Emission bandwidth	☒	☒	☒
Maximum conducted output power	☒	☒	☒
Maximum power spectral density	☒	☒	☒
Radiated restricted-band edge emission	☒	☒	☒
Conducted spurious emission	☒	☒	☒
Duty cycle	☒	☒	☒
Emissions in restricted bands	☒	☒	☒
AC power line conducted emission	☒	☐	☐
Antenna requirement	☐	☐	☐
<u>Supplemental information:</u> ---			

Test model: 9290043458

Requirement – FCC Part 15.247	Test Channel		
	Low (2405 MHz)	Middle (2440 MHz)	High (2480 MHz)
6dB bandwidth / DTS bandwidth	☐	☐	☐
Maximum conducted output power	☒	☒	☒
Maximum power spectral density	☐	☐	☐
Radiated restricted-band edge emission	☒	☒	☒
Conducted spurious emission	☐	☐	☐
Duty cycle	☐	☐	☐
Emissions in restricted bands	☒	☒	☒
AC power line conducted emission	☒	☐	☐
Antenna requirement	☐	☐	☐
Supplemental information: ---			

Requirement – RSS-247 Issue 4, RSS-Gen Issue 5 Amendment 2	Test Channel		
	Low (2405 MHz)	Middle (2440 MHz)	High (2480 MHz)
6dB bandwidth / DTS bandwidth	☐	☐	☐
99% Emission bandwidth	☐	☐	☐
Maximum conducted output power	☒	☒	☒
Maximum power spectral density	☐	☐	☐
Radiated restricted-band edge emission	☒	☒	☒
Conducted spurious emission	☐	☐	☐
Duty cycle	☐	☐	☐
Emissions in restricted bands	☒	☒	☒
AC power line conducted emission	☒	☐	☐
Antenna requirement	☐	☐	☐
Supplemental information: ---			

5 TEST RESULTS

5.1	6dB bandwidth / DTS bandwidth	VERDICT: PASS
-----	-------------------------------	---------------

Standard	FCC Part 15.247(a)(2); RSS-247 Issue 4 Clause 6.3.1(a)
Limits:	
Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.	

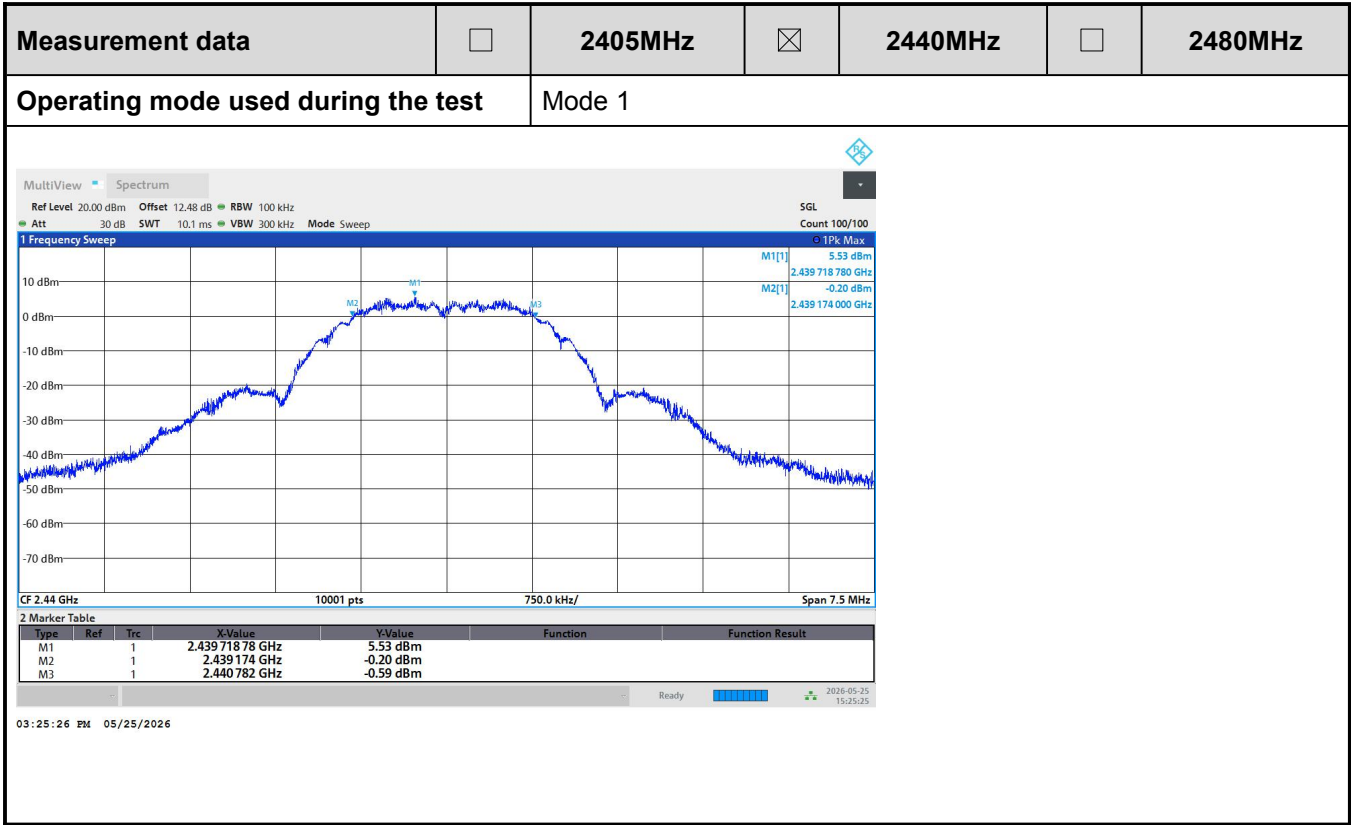
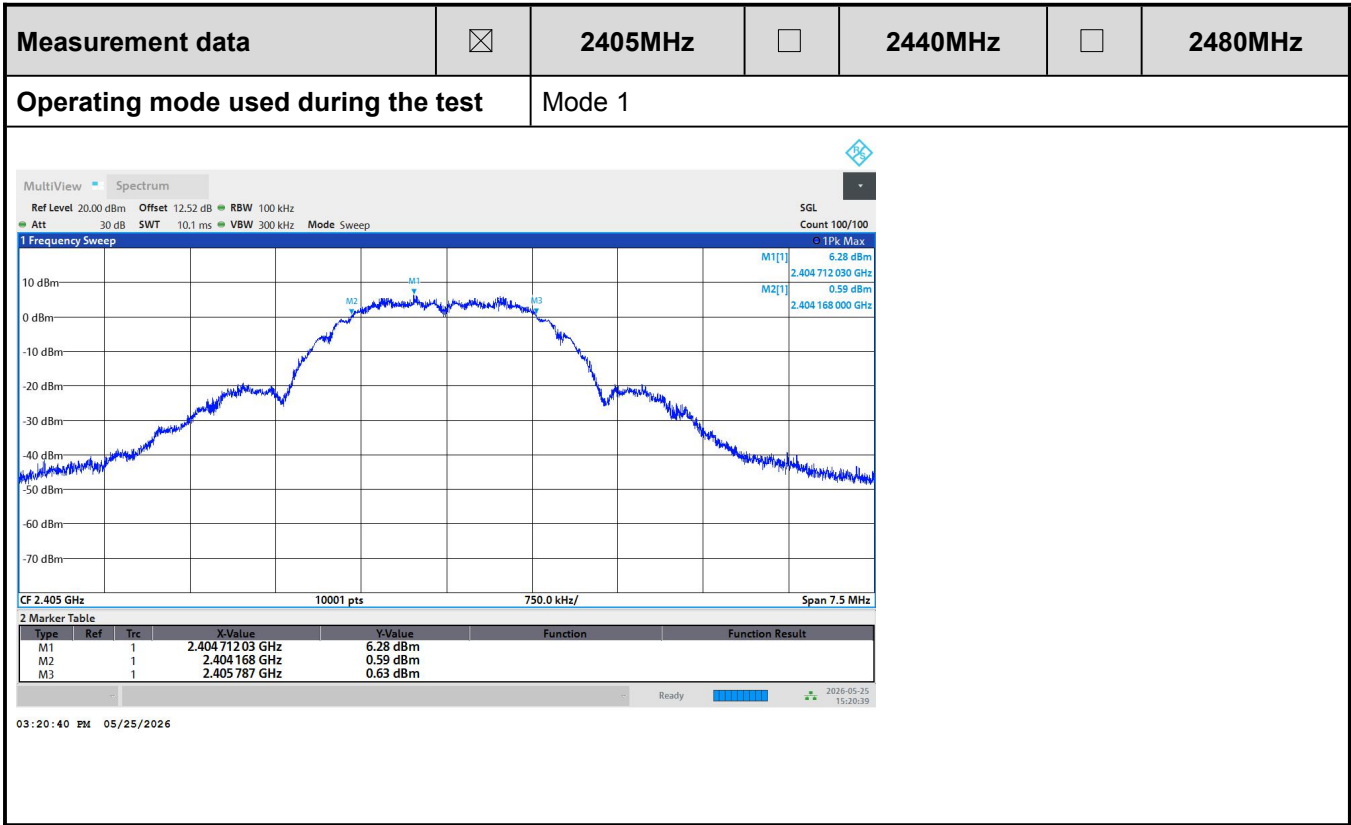
Basic Standard	ANSI C63.10-2020 ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024	
One of the following procedures may be used to determine the modulated DTS bandwidth:	☒	Clause 11.8.1 Option 1 The steps for the first option are as follows: 1) Set RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz. 2) Set the VBW $\geq [3 \times \text{RBW}]$. 3) Detector = peak. 4) Trace mode = max-hold. 5) Sweep = No faster than coupled (auto) time. 6) Allow the trace to stabilize. 7) Measure the maximum width of the emission by placing 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 “-6 dB down amplitude”. If a marker is below this “-6 dB down amplitude” value, then it shall be as close as possible to this value.
	☐	Clause 11.8.2 Option 2 The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described in 11.8.1 (i.e., RBW = 100 kHz, VBW $\geq 3 \times \text{RBW}$, and peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥ 6 dB.

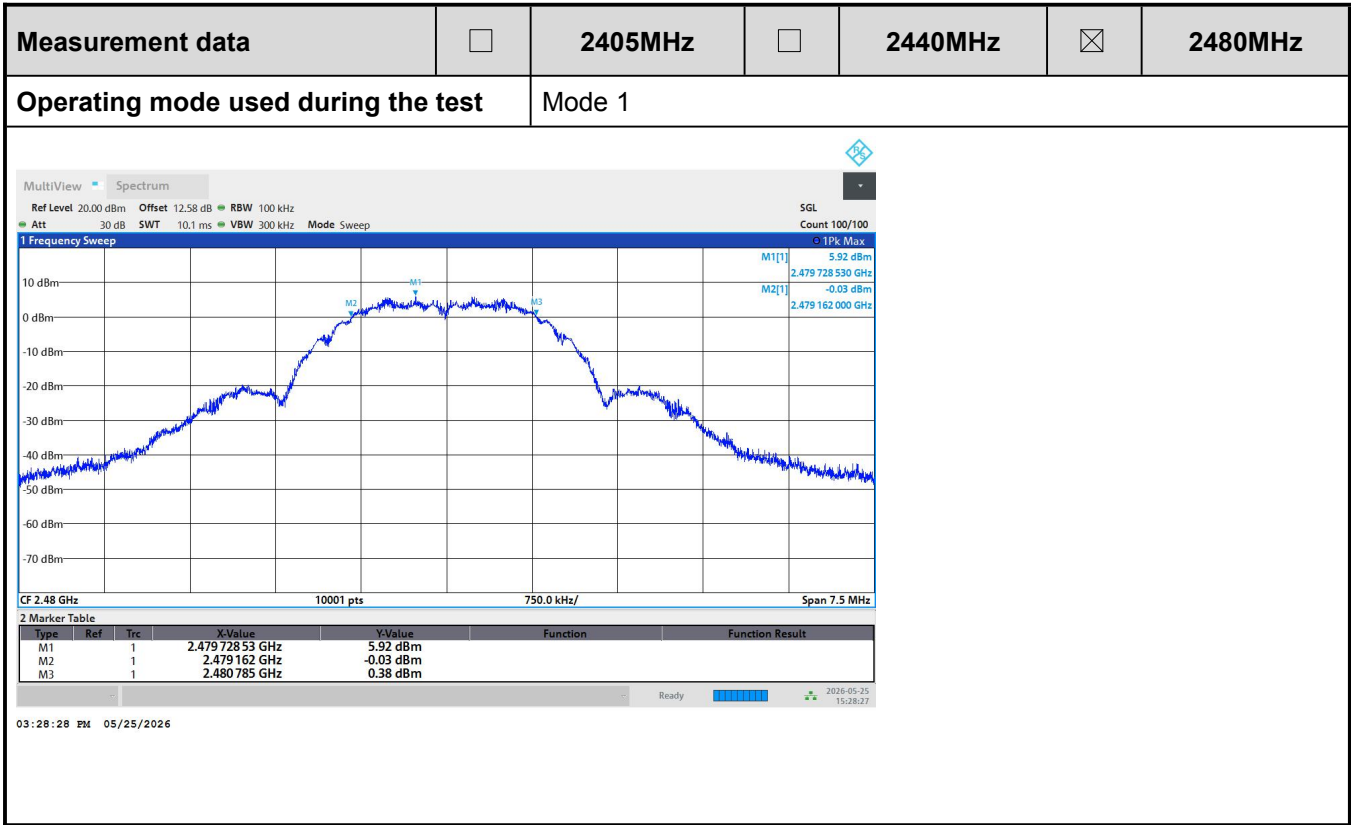
Performed measurements

Test method applied	☒	Section 3.1 Conducted measurement
	☐	Section 3.2 Radiated measurement
Test setup	Refer to Appendix test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

Results:

Operating Mode	Frequency (MHz)	-6dB Bandwidth (kHz)	Limit (kHz)
Mode 1	2405	1619	500
	2440	1608	500
	2480	1623	500





5.2	99% Emission bandwidth	VERDICT: PASS
-----	------------------------	---------------

Standard	RSS-Gen Issue 5 Amendment 2 Clause 6.7
Requirement: The occupied bandwidth or the "99% emission bandwidth" is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.	

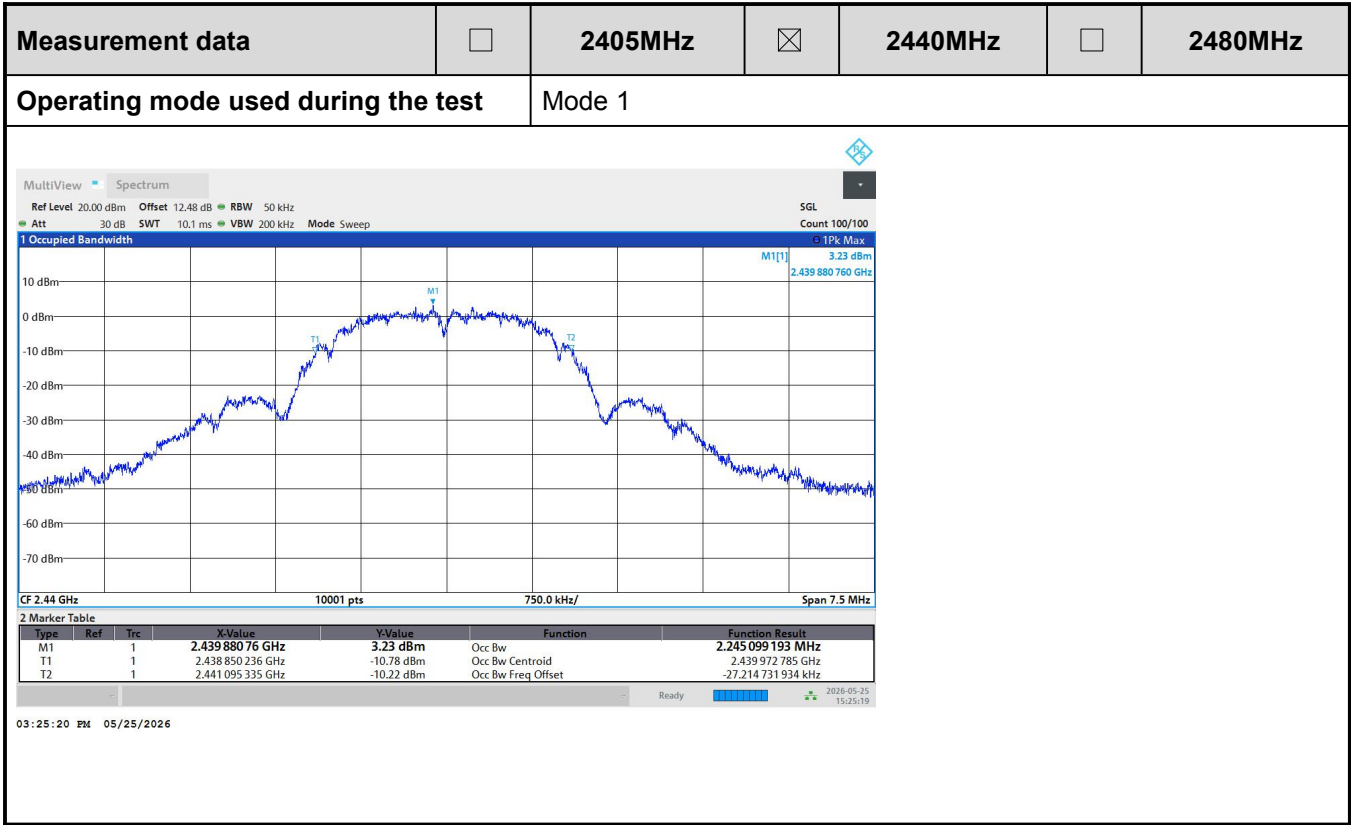
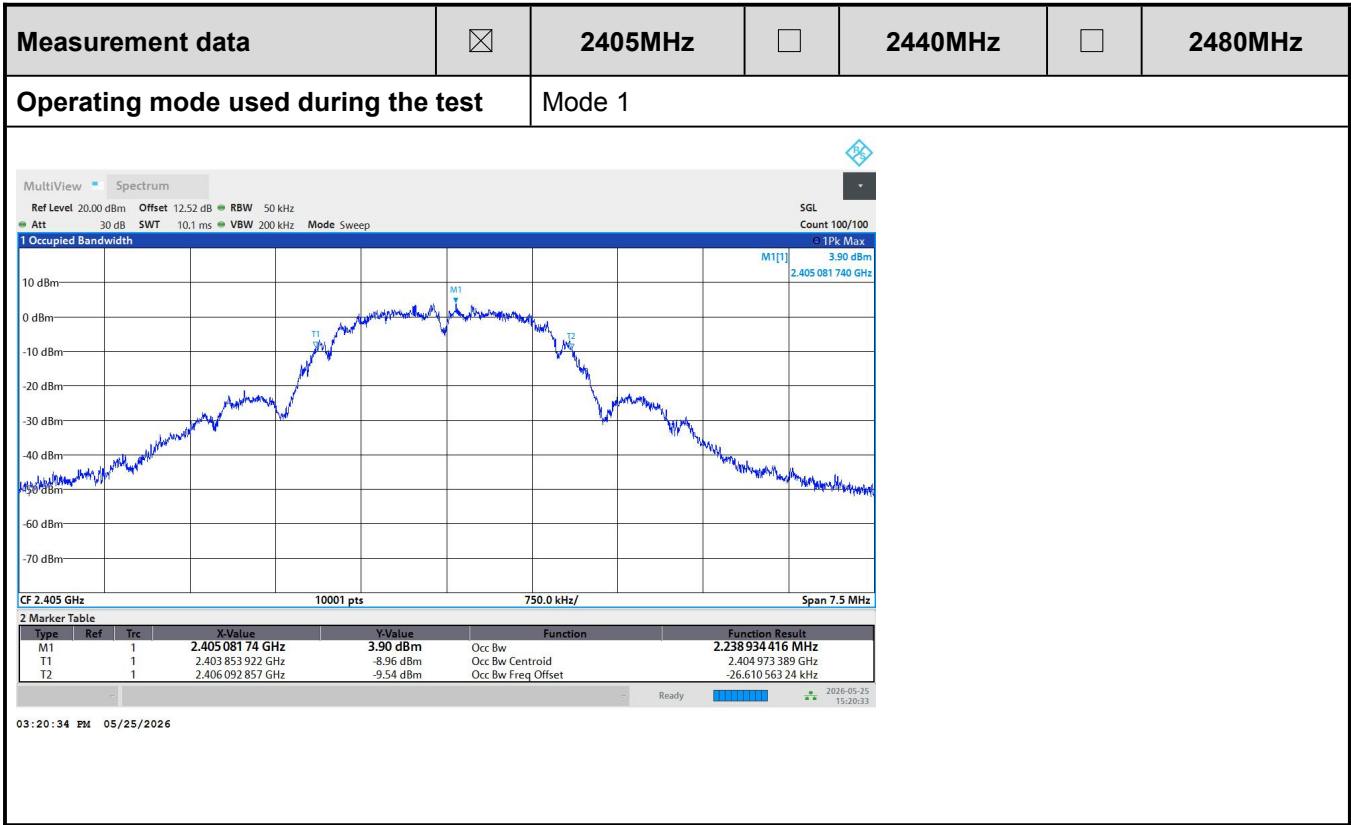
Basic Standard	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024
The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth: - 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. - 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. - 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. - Step a) through step c) might require iteration to adjust within the specified range. - 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. - Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth. - 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. - 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).	

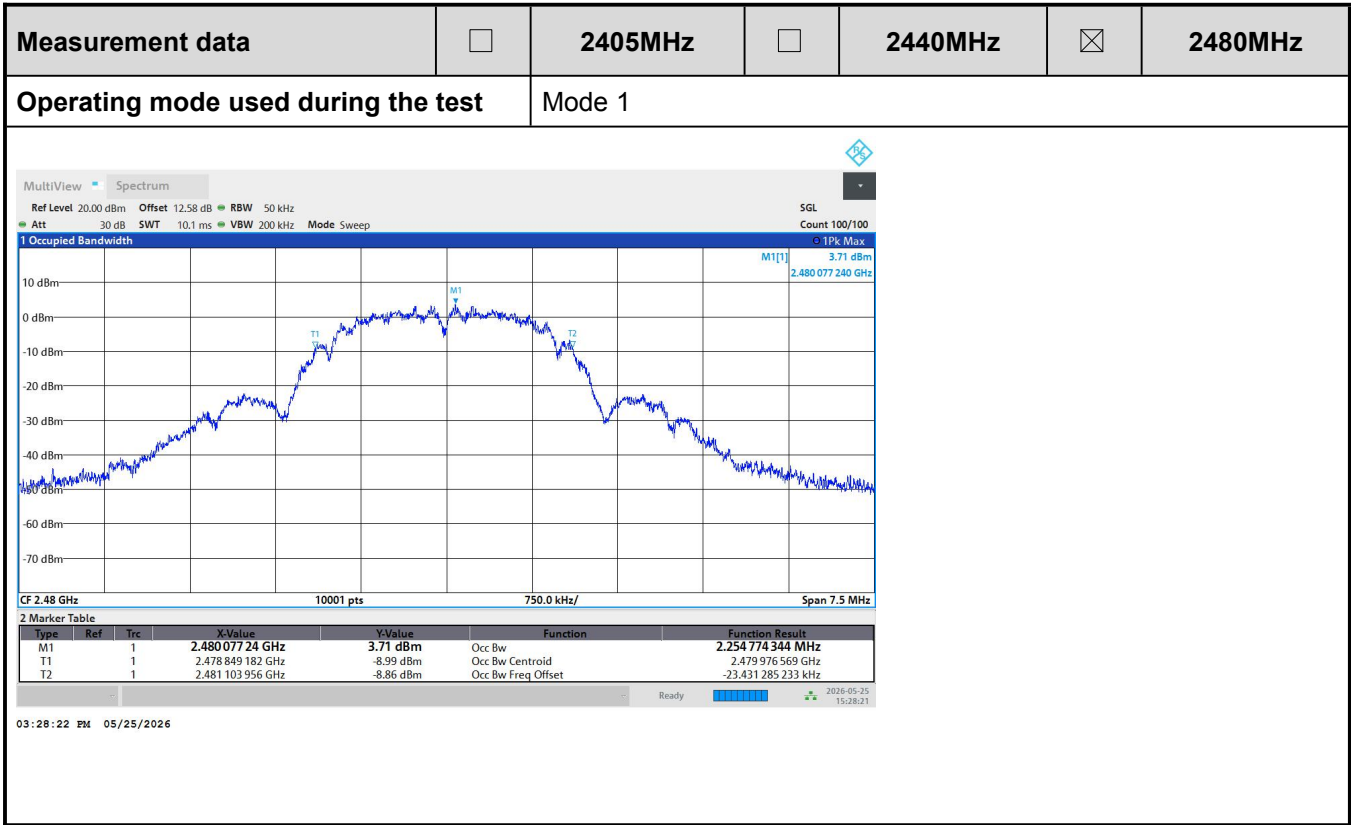
Performed measurements

Test method applied	☒	Section 3.1 Conducted measurement
	☐	Section 3.2 Radiated measurement
Test setup	Refer to Appendix test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

Results:

Operating Mode	Frequency (MHz)	Bandwidth (MHz)	Limit (MHz)
Mode 1	2405	2.239	No Limit has been set to this test case
	2440	2.245	
	2480	2.255	





5.3	Maximum conducted output power	VERDICT: PASS
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Standard	FCC Part 15.247(b)(3); RSS-247 Issue 4 Clause 6.3.2
FCC Part 15.247(b)(3): The maximum peak conducted output power of the intentional radiator shall not exceed the following: For systems using digital modulation in the 2400-2483.5 MHz bands: 1 Watt. (30 dBm). If transmitting antenna of directional gain greater than 6dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi. RSS-247 Issue 4 Clause 6.3.2 For DTS operating in the band 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1W, and the e.i.r.p. shall not exceed 4 W. Note: As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.	

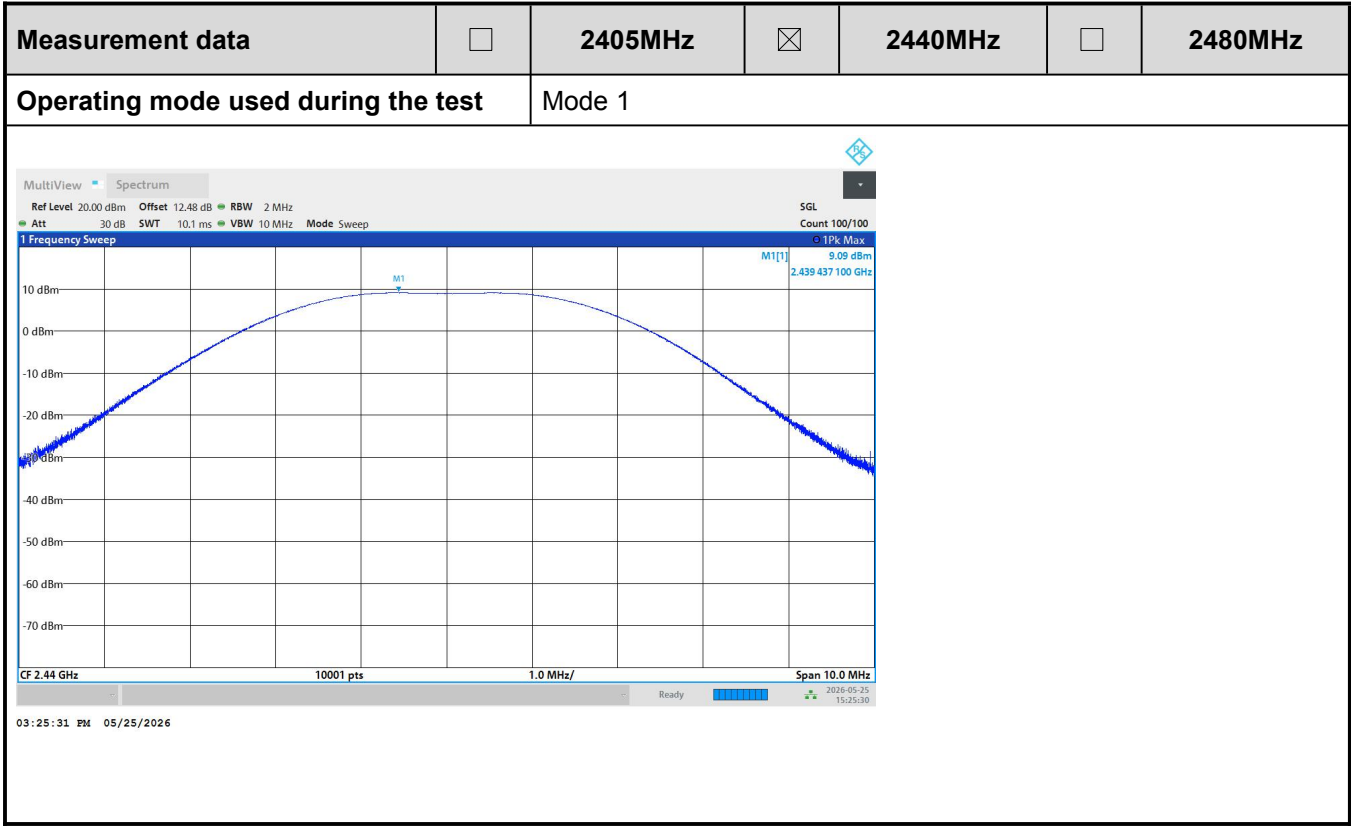
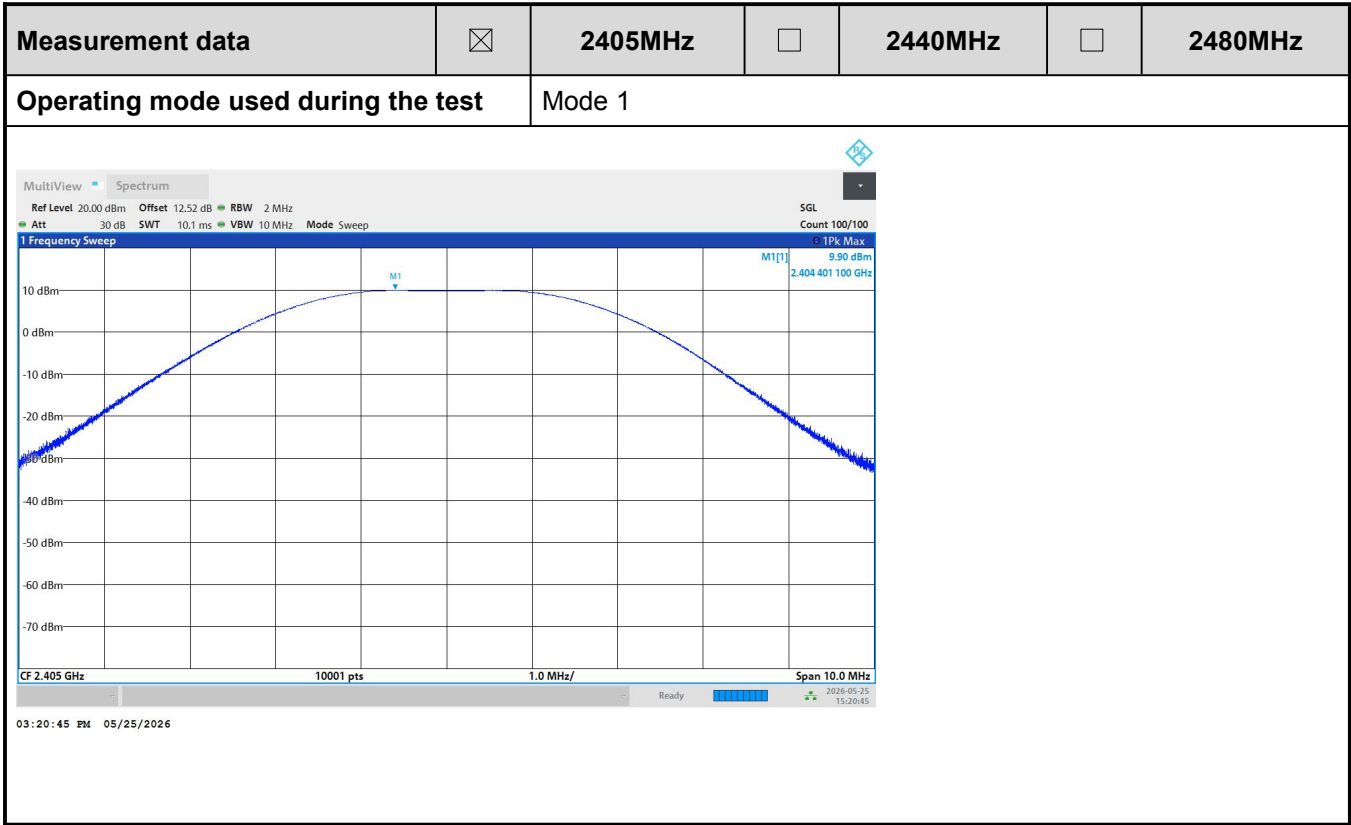
Basic Standard	ANSI C63.10-2020 ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024	
One of the following procedures may be used to determine the maximum peak conducted output power:	☒	Clause 11.9.1 Maximum peak conducted output power
	☒	Clause 11.9.1.1 Instrument measurement (RBW > DTS bandwidth)
	☐	Clause 11.9.1.2 PKPM1 Peak power meter method
	☐	Clause 11.9.2 Maximum conducted (average) output power
	☐	Clause 11.9.2.2 Measurement using a spectrum analyzer (SA)
	☐	Clause 11.9.2.2.2 Method AVGSA-1 (Duty cycle ≥ 98%)
	☐	Clause 11.9.2.2.3 Method AVGSA-1A (Duty cycle ≥ 98%)
	☐	Clause 11.9.2.2.4 Method AVGSA-2 (Duty cycle < 98%)
	☐	Clause 11.9.2.2.5 Method AVGSA-2A (Duty cycle < 98%)
	☐	Clause 11.9.2.2.6 Method AVGSA-3
	☐	Clause 11.9.2.2.7 Method AVGSA-3A
	☐	Clause 11.9.2.3 Measurement using a power meter (PM)
	☐	Clause 11.9.2.3.1 Method AVGPM
	☐	Clause 11.9.2.3.2 Method AVGPM-G

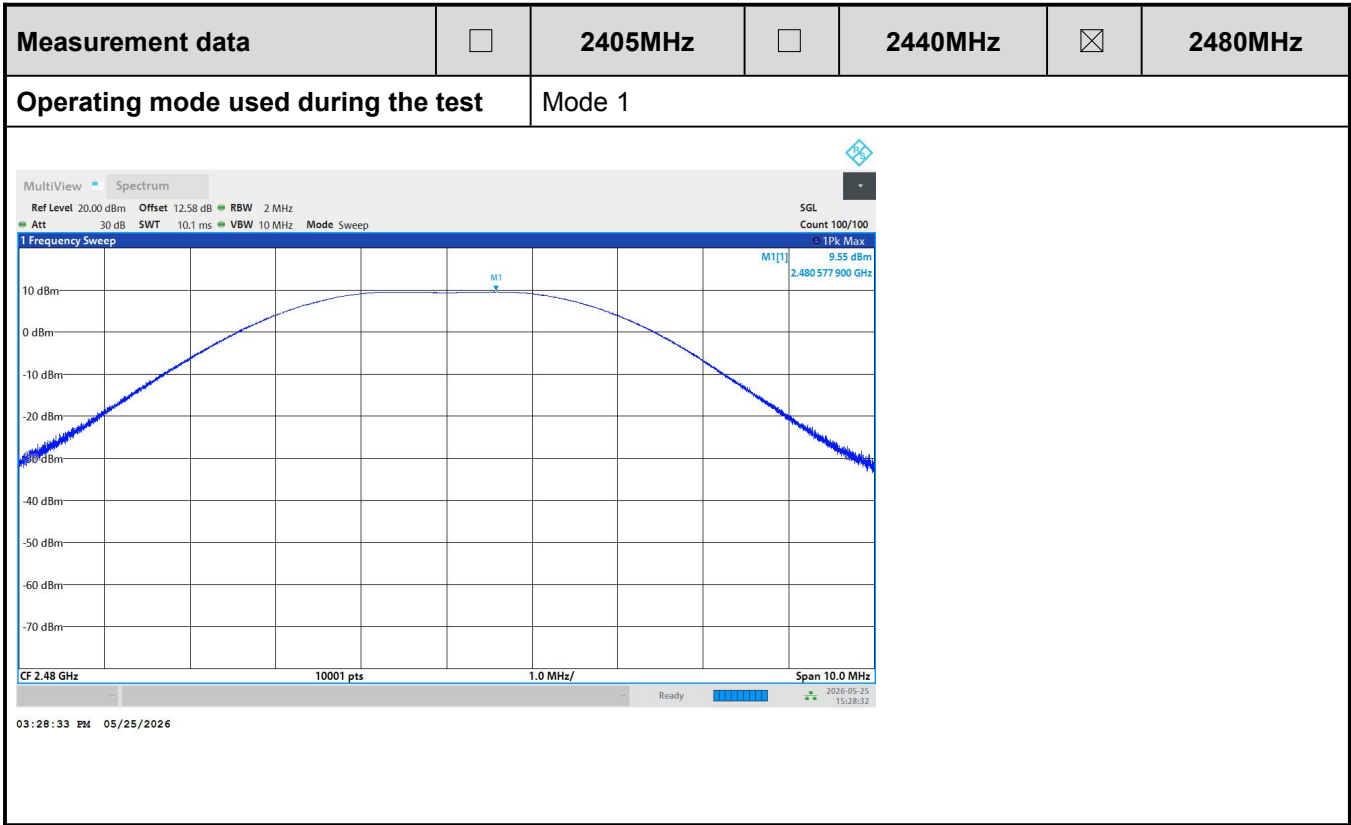
Performed measurements

Test method applied	☒	Section 3.1 Conducted measurement
	☐	Section 3.2 Radiated measurement
Test setup	Refer to Appendix test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	Although model 9290043458 showed slightly higher conducted output power in some modes, the difference was less than 0.1 dB and does not affect the compliance conclusion. The RF circuitry and power setting are identical.	

Result of model 9290043459:

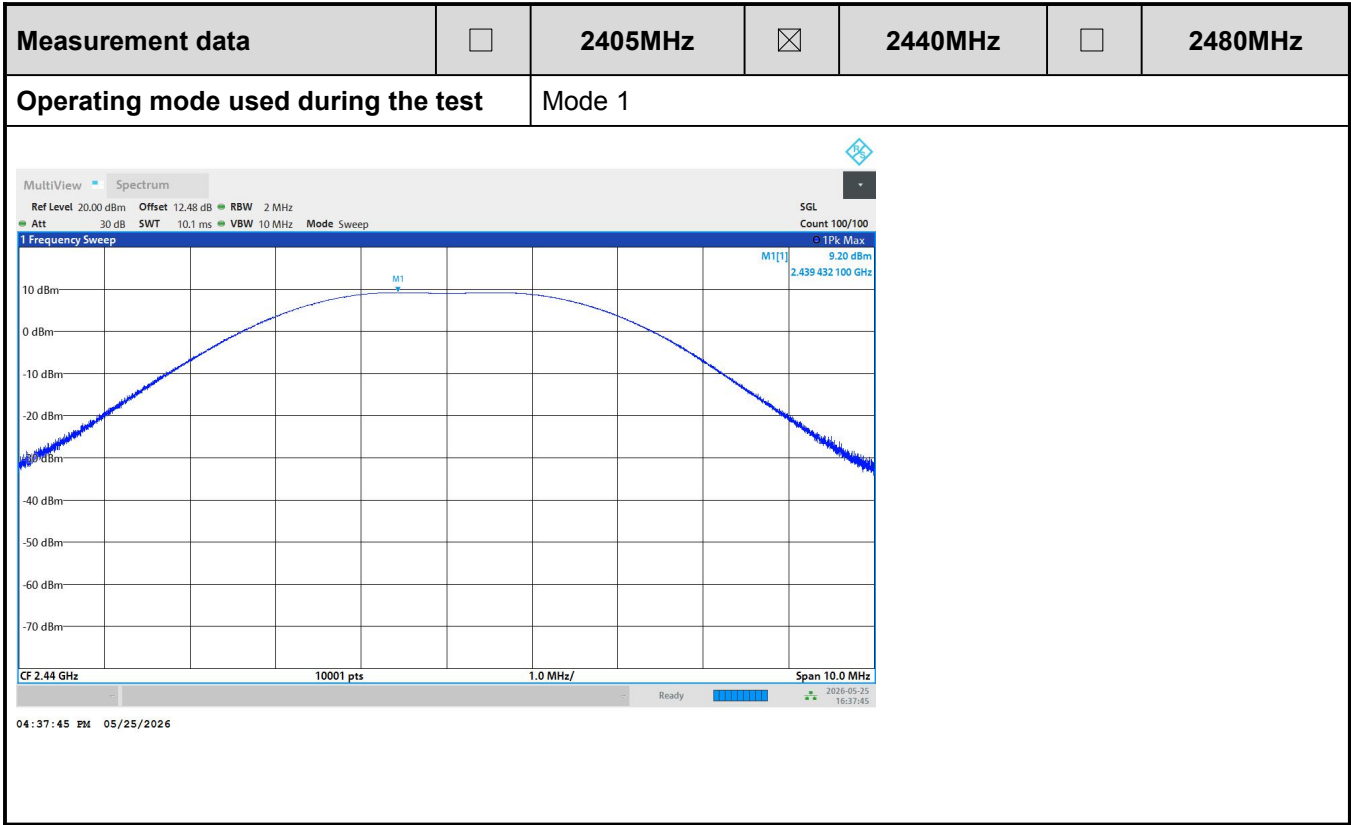
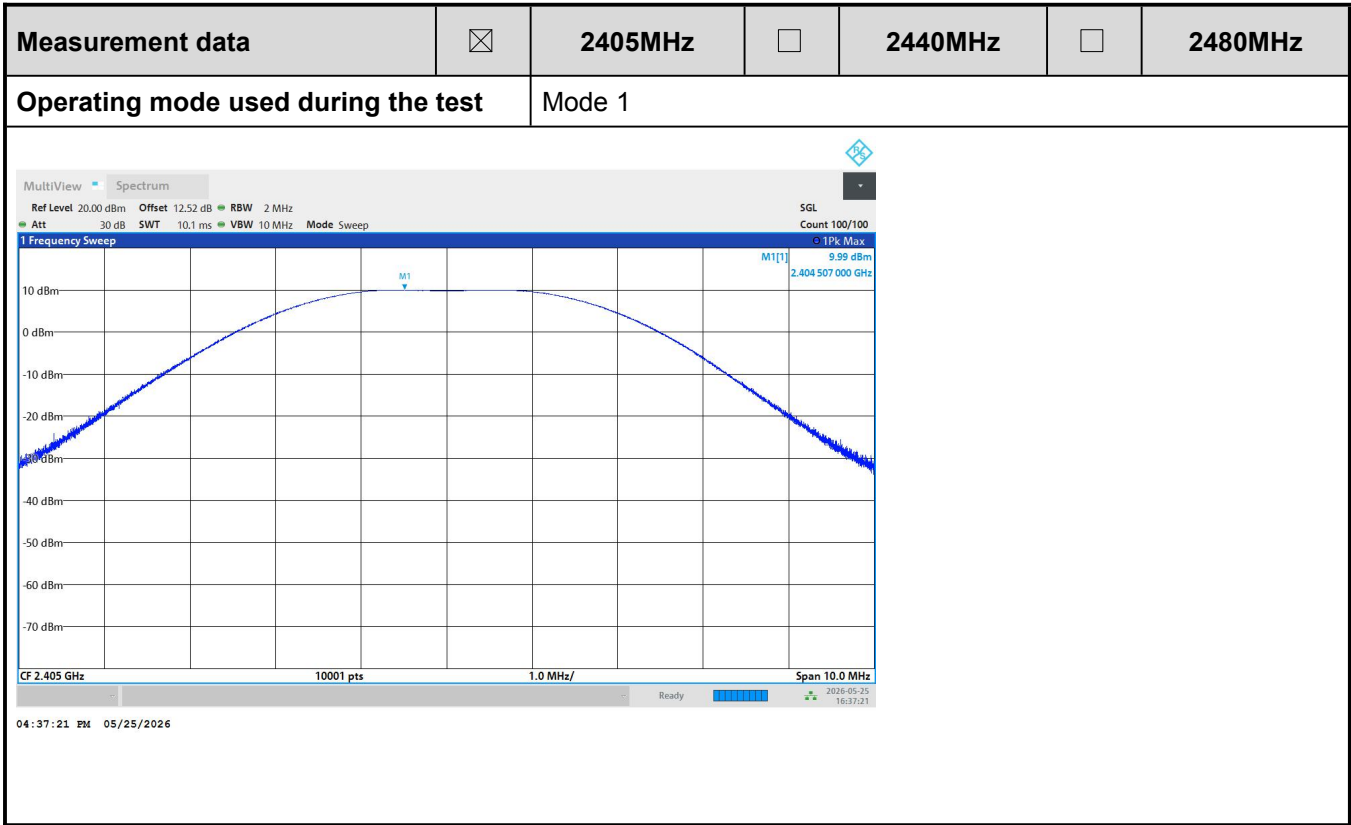
Operating Mode	Frequency (MHz)	Max Output Power (dBm)	Limit (dBm)	Antenna Gain (dBi)	Max E.I.R.P. (dBm)	E.I.R.P. Limit (dBm)
Mode 1	2405	9.9	30	2.6	12.5	36
	2440	9.09	30	2.6	11.69	36
	2480	9.55	30	2.6	12.15	36

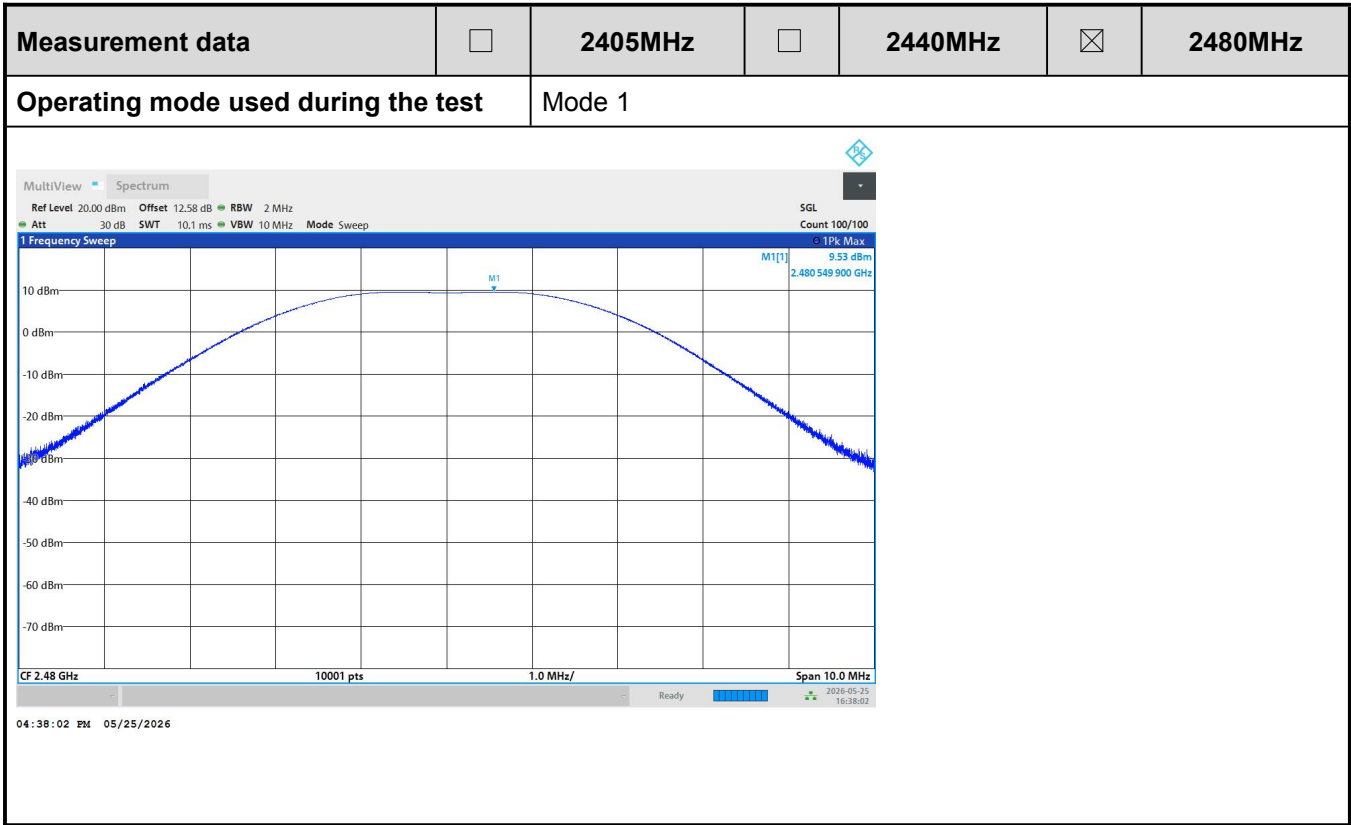




Result of model 9290043458:

Operating Mode	Frequency (MHz)	Max Output Power (dBm)	Limit (dBm)	Antenna Gain (dBi)	Max E.I.R.P. (dBm)	E.I.R.P. Limit (dBm)
Mode 1	2405	9.99	30	2.0	11.99	36
	2440	9.2	30	2.0	11.2	36
	2480	9.53	30	2.0	11.53	36





5.4	Maximum power spectral density	VERDICT: PASS
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Standard	FCC Part 15.247(e); RSS-247 Issue 4 Clause 6.3.1(b)
Limits:	
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.	

Such specifications require that the same method as used to determine the conducted output power shall be used to determine the power spectral density:

☒	Option 1	Maximum peak conducted output power was measured, then the peak PSD procedure shall be used.
☐	Option 2	Maximum conducted output power was measured, then one of the average PSD procedures shall be used. the peak PSD procedure is also an acceptable option

Basic Standard	ANSI C63.10-2020 ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024	
Selection of applicable test method:	☒	Clause 11.10.2 Method PKPSD (peak PSD)
	☐	Clause 11.10.1 Average PSD procedures
	☐	Clause 11.10.3 Method AVGPSD-1 (Duty cycle $\geq$ 98%)
	☐	Clause 11.10.4 Method AVGPSD-1A (Duty cycle $\geq$ 98%)
	☐	Clause 11.10.5 Method AVGPSD-2 (Duty cycle < 98%)
	☐	Clause 11.10.6 Method AVGPSD-2A (Duty cycle < 98%)
	☐	Clause 11.10.7 Method AVGPSD-3
	☐	Clause 11.10.8 Method AVGPSD-3A

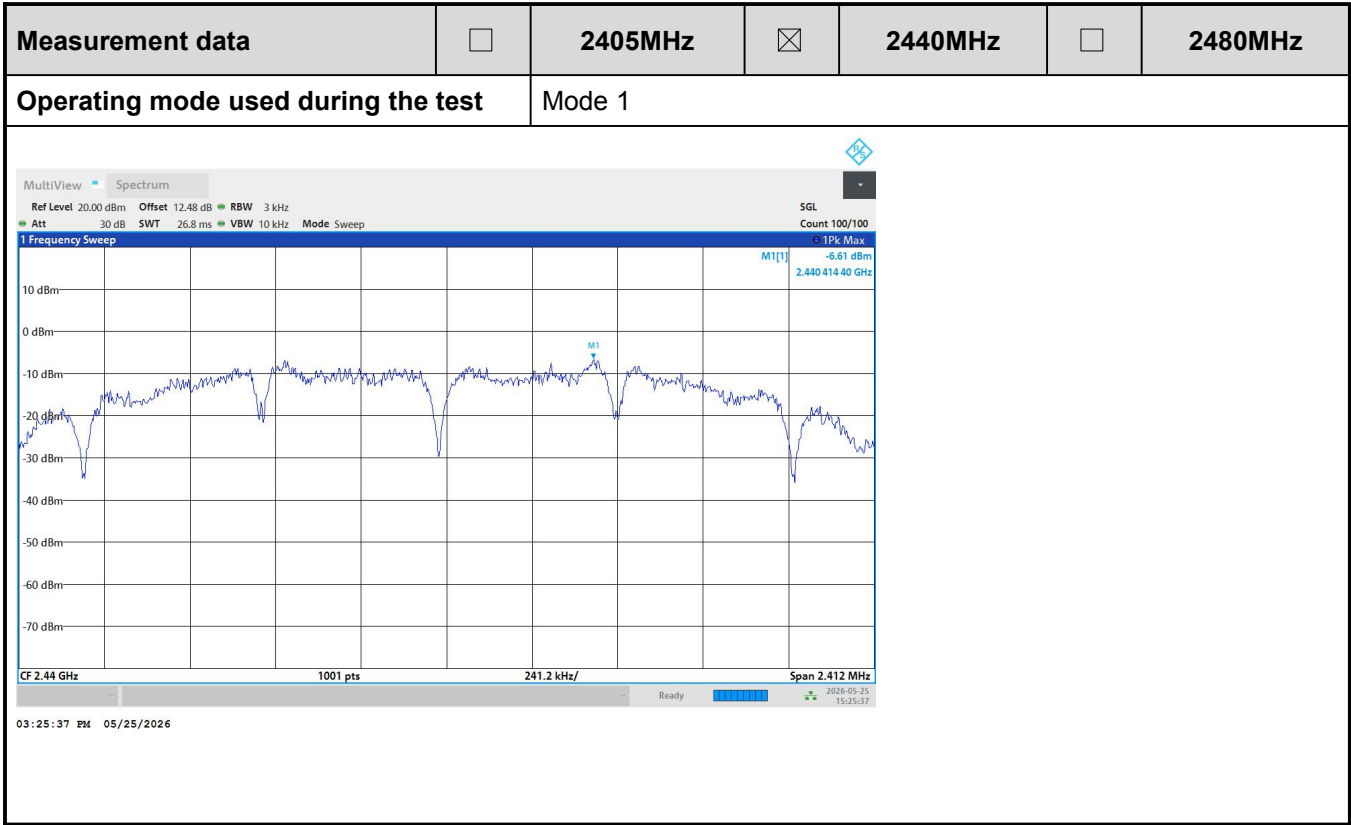
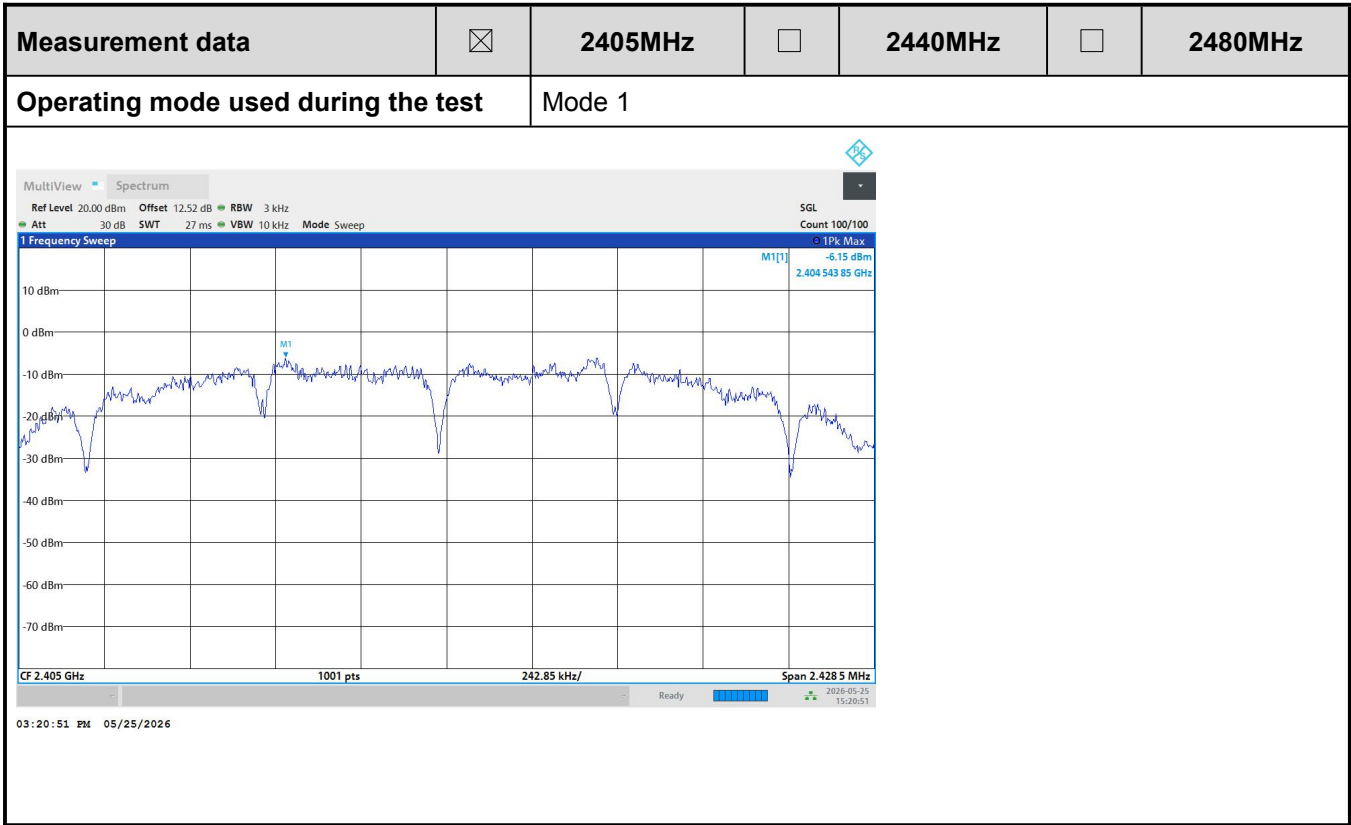
Performed measurements

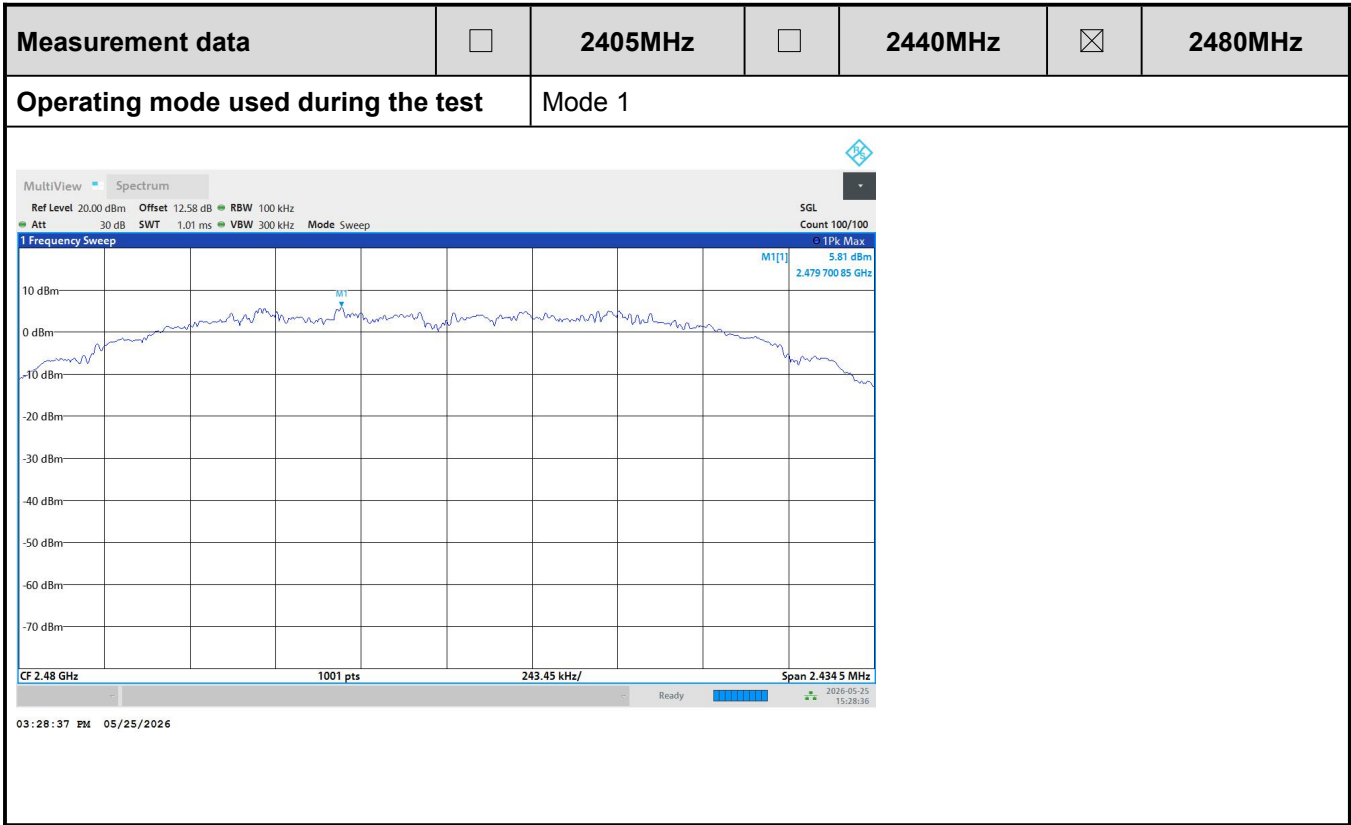
Test method applied	☒	Section 3.1 Conducted measurement
	☐	Section 3.2 Radiated measurement
Test setup	Refer to Appendix test setup photo(s).	
Operating mode(s) used	Mode 1, 2, 3, 4	
Remark	---	

See next page

Results

Operating Mode	Frequency (MHz)	PSD (dBm / 3 kHz)	Limit (dBm / 3 kHz)
Mode 1	2405	-6.15	8
	2440	-6.61	8
	2480	5.81	8





5.5	Radiated restricted-band edge emission	VERDICT: PASS
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Standard	FCC Part 15.247 (d), FCC Part 15.209, FCC Part 15.205																										
Limits:																											
Radiated emissions which fall in the restricted bands, as defined in FCC Part 15.205(a), must also comply with the radiated emission limits specified in FCC Part 15.209(a):																											
For any intentional radiator, the field strength of emissions appearing within these frequency bands shall not exceed the values given in the next table:																											
<table><tr><th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr><tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr><tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr><tr><td>1.705-30.0</td><td>30</td><td>30</td></tr><tr><td>30-88</td><td>100</td><td>3</td></tr><tr><td>88-216</td><td>150</td><td>3</td></tr><tr><td>216-960</td><td>200</td><td>3</td></tr><tr><td>Above 960</td><td>500</td><td>3</td></tr></table>				Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)	0.009-0.490	2400/F(kHz)	300	0.490-1.705	24000/F(kHz)	30	1.705-30.0	30	30	30-88	100	3	88-216	150	3	216-960	200	3	Above 960	500	3
Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)																									
0.009-0.490	2400/F(kHz)	300																									
0.490-1.705	24000/F(kHz)	30																									
1.705-30.0	30	30																									
30-88	100	3																									
88-216	150	3																									
216-960	200	3																									
Above 960	500	3																									
<table><tr><th>Frequency range [MHz]</th><th>Limit: PK [dB(μV/m)]</th><th>Limit: AV [dB(μV/m)]</th><th>RBW</th></tr><tr><td>2310 - 2390</td><td>74</td><td>54</td><td>1 MHz</td></tr><tr><td>2483.5 - 2500</td><td>74</td><td>54</td><td>1 MHz</td></tr></table>				Frequency range [MHz]	Limit: PK [dB(μV/m)]	Limit: AV [dB(μV/m)]	RBW	2310 - 2390	74	54	1 MHz	2483.5 - 2500	74	54	1 MHz												
Frequency range [MHz]	Limit: PK [dB(μV/m)]	Limit: AV [dB(μV/m)]	RBW																								
2310 - 2390	74	54	1 MHz																								
2483.5 - 2500	74	54	1 MHz																								

Standard	RSS-Gen Issue 5 Amendment 2 Clause 8.9, Clause 8.10		
Limits:			
Unwanted emissions that fall into restricted frequency bands listed in RSS-Gen Issue 5 Amendment 2 Clause 8.10 shall comply with the applicable field strength limits.			
Frequency (MHz)	Field strength	Field strength (dBµV/m)	Measurement distance (meters)
0.009-0.490	6.37/F(kHz) µA/m	48.5 – 13.8	300
0.490-1.705	63.7/F(kHz) µA/m	33.8 - 23	30
1.705-30.0	30 µV/m	29.5	30
30-88	100 µV/m	40	3
88-216	150 µV/m	43.5	3
216-960	200 µV/m	46	3
Above 960	500 µV/m	54	3

Frequency range [MHz]	Limit: PK [dB(µV/m)]	Limit: AV [dB(µV/m)]	RBW
2310 - 2390	74	54	1 MHz
2483.5 - 2500	74	54	1 MHz

FCC Part 15.205(a):

Restricted bands of operation:

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	
13.36-13.41			

RSS-Gen Issue 5 Amendment 2 Clause 8.10:

Restricted bands of operation:

Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090-0.110	13.36-13.41	960-1427	9.0-9.2
0.495-0.505	16.42-16.423	1435-1626.5	9.3-9.5
2.1735-2.1905	16.69475-16.69525	1645.5-1646.5	10.6-12.7
3.020-3.026	16.80425-16.80475	1660-1710	13.25-13.4
4.125-4.128	25.5-25.67	1718.8-1722.2	14.47-14.5
4.17725-4.17775	37.5-38.25	2200-2300	15.35-16.2
4.20725-4.20775	73-74.6	2310-2390	17.7-21.4
5.677-5.683	74.8-75.2	2483.5-2500	22.01-23.12
6.215-6.218	108-138	2655-2900	23.6-24.0
6.26775-6.26825	149.9-150.05	3260-3267	31.2-31.8
6.31175-6.31225	156.52475-156.52525	3332-3339	36.43-36.5
8.291-8.294	156.7-156.9	3345.8-3358	Above 38.6
8.362-8.366	162.0125-167.17	3500-4400	
8.37625-8.38675	167.72-173.2	4500-5150	
8.41425-8.41475	240-285	5350-5460	
12.29-12.293	322-335.4	7250-7750	
12.51975-12.52025	399.9-410	8025-8500	
12.57675-12.57725	608-614		

Basic Standard	ANSI C63.10-2020+Cor.1-2023+C63.10a-2024+Errata to C63.10a-2024 Clause 6.10.5.2
These procedures are applicable for determining compliance when restricted-bands are adjacent to the authorized band-edges: a) For frequency hopping systems, the hopping shall be turned OFF during this test. b) Configure the spectrum analyzer settings as described in step e) (be sure to enter all losses between the unlicensed wireless device output and the spectrum analyzer). c) Set the unlicensed wireless device to the lowest frequency channel. d) Set the unlicensed wireless device to operate at maximum output power and duty cycle. e) Perform the test as follows: ● 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 that fall outside of the authorized band of operation. ● Reference level offset: Adjusted for gains and losses of measurement antenna factor, preamp gain and cable loss, so as to indicate field strength, in units of dBμV/m at 3 m, directly on the instrument display. Alternatively, the reference level offset may be set to zero and calculations shall be provided showing the conversion of raw measured data to the field strength in dBμV/m at 3 m. ● Reference level: As required to keep the signal from exceeding the maximum spectrum analyzer 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. ● Attenuation: Auto (at least 10 dB preferred). ● Sweep time: No faster than coupled (auto) time. ● Resolution bandwidth: ✓ Below 150 kHz: 300 Hz or CISPR 200 Hz (CISPR 200 Hz required if using QP detector) ✓ 150 kHz to 30 MHz: 10 kHz or CISPR 9 kHz, (CISPR 9 kHz required if using QP detector) ✓ 30 MHz to 1000 MHz: 100 kHz or CISPR 120 kHz, (CISPR 120 kHz required if using QP detector) ✓ Above 1 GHz: 1 MHz ● Video bandwidth: ✓ VBW for Peak, Quasi-peak, or Average Detector Function: $3 \times \text{RBW}$ ● Detector (unless specified otherwise): ✓ QP below 1 GHz (however, peak detector measurements may be used to determine compliance with QP requirements). ✓ Peak and average above 1 GHz ● Trace: Max-hold for final measurement; a combination of two traces, clear-write and maxhold, is recommended for maximizing the emission. f) Orient the EUT and measurement antenna positions to produce the highest emission level. g) Set the marker on the emission at the restricted band-edge, or on the highest modulation product within the restricted-band, if this level is greater than that at the band-edge. h) Repeat step d) through step g) for every applicable modulation. i) Repeat step d) through step h) for the highest gain of each type of antenna to be used with the EUT.	

Performed measurements

Test method applied	☐	Section 3.1 Conducted measurement
	☒	Section 3.2 Radiated measurement
Test setup	Refer to Appendix test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	The reported frequencies represent the highest emissions observed within the applicable restricted band near the band edge.	

See next page