

Test report No: 6199394.50

TEST REPORT

Radio Spectrum Matters (RF)

Identification of item tested	AquaPrecise
Trademark	GARDENA
Model and /or type reference	16000
Features	5 Vdc
FCC ID	2BPOQ-16000
Applicant's name / address	Gardena Germany AB PO Box 16089, SE-103 92 Stockholm, Sweden
Test method requested, standard	FCC CFR Title 47 Part 15 Subpart C Section 15.247 ANSI C63.10: 2013
Verdict Summary	IN COMPLIANCE
Prepared by (name / position & signature)	Lei Chen Senior Project Manager 
Approved by (name / position & signature)	Adrian Shi Technical Supervisor 
Date of issue	2025-06-12
Report template No	TRF_Part15C_247_RF03 V1.0

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COMPETENCES AND GUARANTEES

DEKRA is a testing laboratory competent to carry out the tests described in this report.

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

DEKRA guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated in the report and it is based on the knowledge and technical facilities available at DEKRA at the time of performance of the test.

DEKRA is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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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.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA.
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. This report will not be used for social proof function in China market.

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 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 have 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
CAV	: CISPR Average
AV	: Average
CDN	: Coupling Decoupling Network
SAC	: Semi-Anechoic Chamber
OATS	: Open Area Test Site
BW	: Bandwidth
AM	: Amplitude Modulation
PM	: Pulse Modulation
HCP	: Horizontal Coupling Plane
VCP	: Vertical Coupling Plane
U_N	: Nominal voltage
T_x	: Transmitter
R_x	: Receiver
N/A	: Not Applicable

N/M : Not Measured

DOCUMENT HISTORY

Report nr.	Date	Description
6199394.50	2025-06-12	First release.

REMARKS AND COMMENTS

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

The test results relate only to the samples tested.

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1 GENERAL INFORMATION

1.1 General Description of the Item(s)

Description of the item	AquaPrecise
Model / Type number	16000
Trademark.....	GARDENA
FCC ID	2BPOQ-16000
Test Sample Number	6199394-1, 6199394-2
Manufacturer	Gardena Germany AB PO Box 16089, SE-103 92 Stockholm, Sweden

Mode of Operation	Bluetooth BLE					
Operating frequency range(s).....	2402~2480 MHz					
Type of Modulation	GFSK					
PHYs	☒	LE 1M	☒	LE 2M	☒	LE Coded S=2/8
Data Rate	☒	1 Mbps	☒	2 Mbps	☒	500/125 Kbps
Antenna type	PCB Antenna					
Antenna gain	3.3 dBi					
Number of channel	40					
Operating Temperature Range	5 ~ 60℃					

Note:

1. The antenna gain is provided by the manufacturer

Rated power supply	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	☐	AC:	☐	☐	☐	☐	☐
	☒	DC: 5 Vdc					
	☐	Battery:					
Mounting position.....	☒	Table top equipment					
	☐	Wall/Ceiling mounted equipment					
	☒	Floor standing equipment					
	☐	Hand-held equipment					
	☐	Other					

Intended use of the Equipment Under Test (EUT)
The product is AquaPrecise which supports BLE function.

1.2 **Test date**

Test Location	DEKRA Testing and Certification (Shanghai) Ltd. No.250, Jiangchangsan Road, Shanghai, 200436 P.R. China
Date of receipt of test item	2024-08-01
Date (s) of performance of tests	2024-08-26 to 2025-02-27

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	Used for methods	
		Conducted	Radiated
1	Transmitting	☒	☒
2	---	☐	☐
<u>Supplemental information:</u> We had tested for all four data rate for BLE, but only show worst results for 1Mbps & 2Mbps in this report.			

2.2 Support / Auxiliary equipment / unit / software for the EUT

The EUT has been tested with the following auxiliary equipment / unit / software:

Auxiliary equipment / unit / software	Type / Version	Serial number	Manufacturer	Supplied by
Realterm	2.0.0.70	N/A	Nordic	Applicant
Laptop	Latitude 3430	7XB4DS3	DELL	DEKRA
<u>Supplemental information:</u> ---				

2.3 Test Configuration / Block diagram used for tests

Refer to Annex 3.

3 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.

3.1 Standards

Standard	Year	Description
FCC CFR Title 47 Part 15 Subpart C Section 15.247	2022	Operation within the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz.
ANSI C63.10	2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

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

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

3.3 Overview of results

FCC measurement			
Requirement – Test case	Basic standard(s)	Verdict	Remark
AC Power Line Conducted Emission	FCC 15.207	PASS	---
Emissions in restricted frequency bands	FCC 15.247(d), 15.209, 15.205	PASS	---
Duty cycle	ANSI C63.10:2013	PASS	---
Emissions in non-restricted frequency bands	FCC 15.247(d)	PASS	---
Radiated Emission Band Edge	FCC 15.247(d), 15.209, 15.205	PASS	---
Fundamental emission output power	FCC 15.247(b)(3)	PASS	---
DTS Bandwidth	FCC 15.247(a)(2)	PASS	---
Power Spectral Density	FCC 15.247(e)	PASS	---
Antenna Requirement	FCC 15.203	PASS	---
Supplementary information: ---			

3.4 Test Facility

FCC Designation Number	:	CN1358
ISED CAB identifier Number	:	CN0155

3.5 Measurement procedure

The EUT was controlled by USB-TTL provided by applicant which connected to laptop. After connected, run the software “Realterm” supplied by manufacturer to control the EUT work in required test mode as below table.

Mode	Modulation	Data Rate	Channel Number	Frequency (MHz)	Power Setting
BLE	GFSK	1Mbps	00	2402	8
			19	2440	8
			39	2480	8
BLE	GFSK	2Mbps	00	2402	8
			19	2440	8
			39	2480	8

4 TEST RESULTS

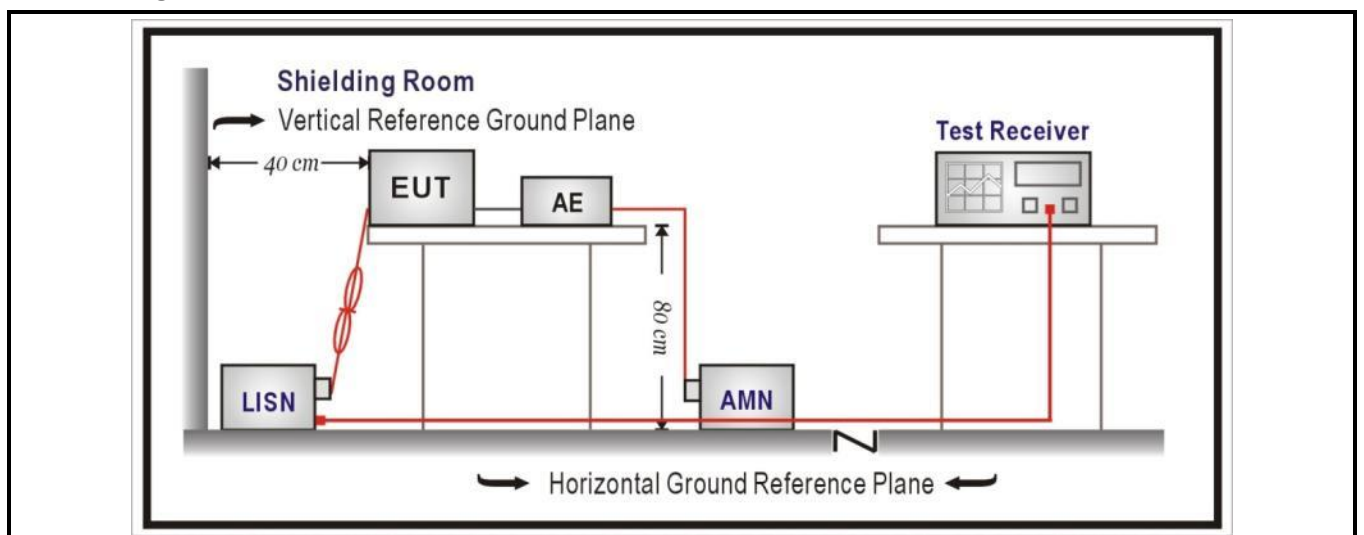
4.1	AC Power Line Conducted Emission	VERDICT: PASS
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Limit

FCC Part 15 Subpart C Paragraph 15.207				
Frequency range [MHz]	Limit: QP [dB(μV) ¹⁾	Limit: AV [dB(μV) ¹⁾	IF BW	Detector(s)
0,15 - 0,50	66 - 56 ²⁾	56 - 46 ²⁾	9 KHz	QP, AV
0,50 - 5,0	56	46	9 KHz	QP, AV
5,0 - 30	60	50	9 KHz	QP, AV

¹⁾ At the transition frequency, the lower limit applies.
²⁾ The limit decreases linearly with the logarithm of the frequency.

Test Configuration



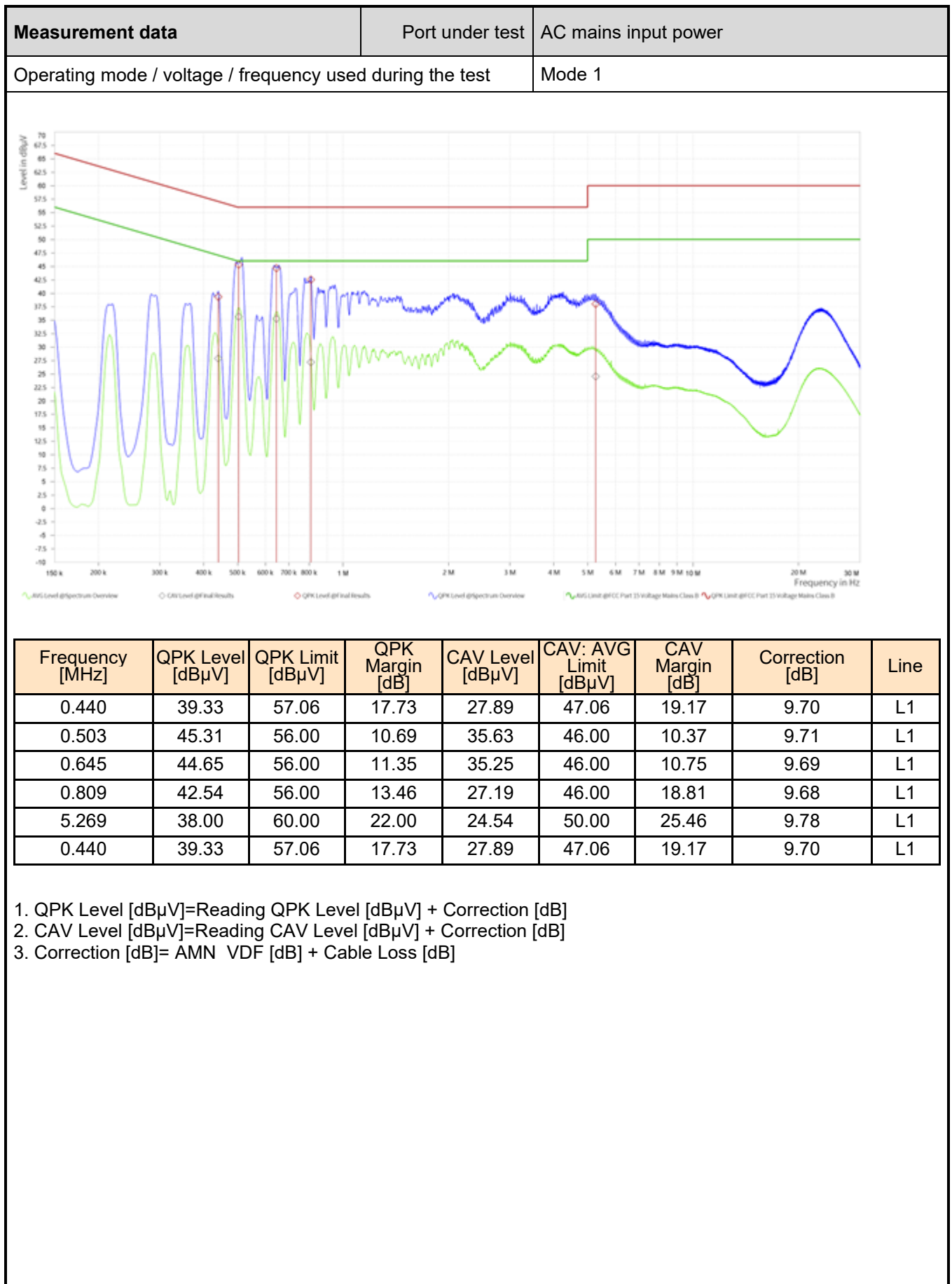
Performed measurements

Port under test		Terminal							
☒	AC mains input power	☒	N	☒	L1	☐	L2	☐	L3
☐	DC input power	☐	Positive (+)			☐	Negative (-)		
Voltage – Mains [V]		120 Vac							
Frequency – Mains [Hz]		60 Hz							
Test method applied		☒	Artificial mains network						
		☐	Voltage probe						
Test setup		☒	Table top	☐	Artificial hand applied				
		☐	Floor standing	☐	Other:				
		Refer to the Annex 2 for test setup photo(s).							



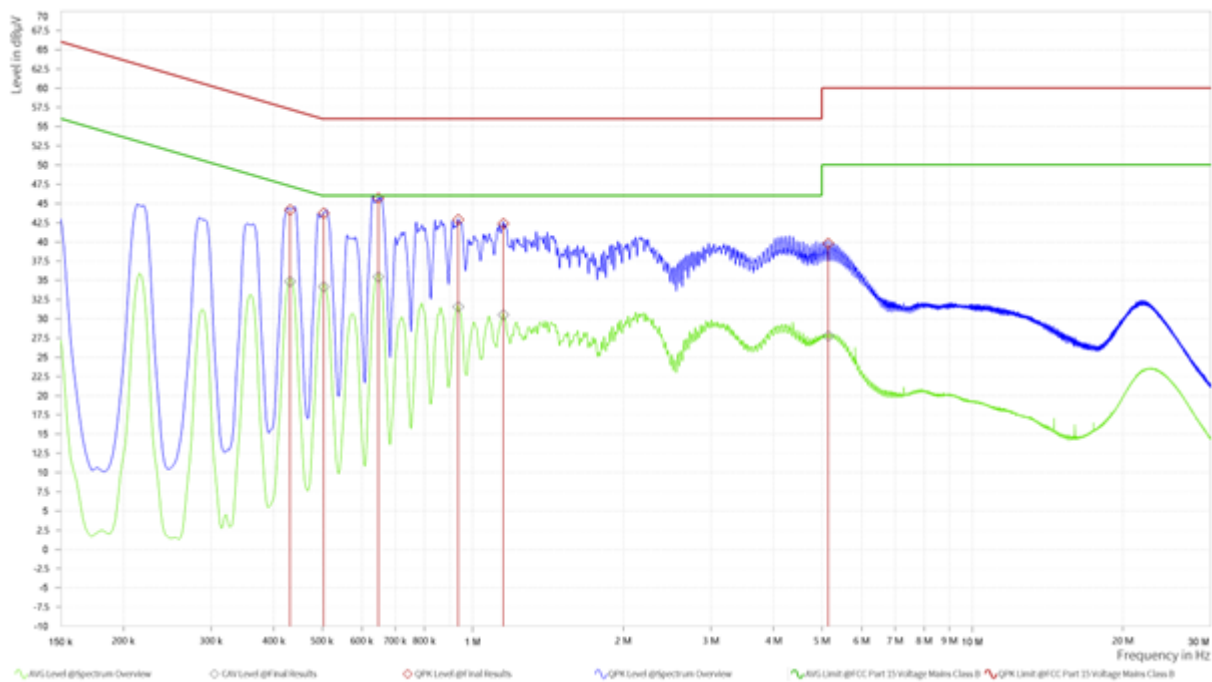
Operating mode(s) used	Mode 1
Remark	Powered by USB C power supply.

See next page.



Measurement data

Port under test AC mains input power



Frequency [MHz]	QPK Level [dBµV]	QPK Limit [dBµV]	QPK Margin [dB]	CAV Level [dBµV]	CAV: AVG Limit [dBµV]	CAV Margin [dB]	Correction [dB]	Line
0.431	44.12	57.23	13.10	34.85	47.23	12.38	9.73	N
0.503	43.71	56.00	12.29	34.15	46.00	11.85	9.74	N
0.647	45.67	56.00	10.33	35.42	46.00	10.58	9.61	N
0.935	42.86	56.00	13.14	31.53	46.00	14.47	9.65	N
1.151	42.36	56.00	13.64	30.49	46.00	15.51	9.66	N
5.147	39.77	60.00	20.23	27.75	50.00	22.25	9.71	N

1. QPK Level [dBµV]=Reading QPK Level [dBµV] + Correction [dB]
2. CAV Level [dBµV]=Reading CAV Level [dBµV] + Correction [dB]
3. Correction [dB]= AMN VDF [dB] + Cable Loss [dB]

Remark ---

4.2	Emissions in restricted frequency bands	VERDICT: PASS
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Limit

Standard		FCC Part 15 Subpart C Paragraph 15.247(d), 15.205, 15.209	
Restricted Bands of operation for FCC			
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
8.81425 - 8.81475	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	Above 38.6
13.36 - 13.41	--	--	--

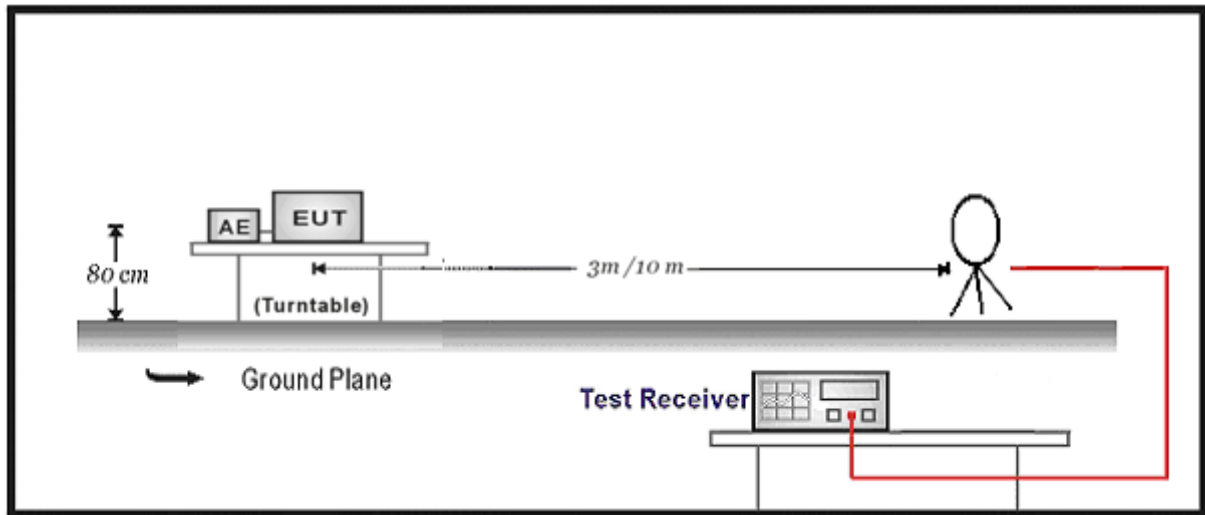
Restricted Band Emissions Limit			
Frequency (MHz)	Field strength (μ V/m)	Field strength (dB μ V/m)	Measurement distance (m)
0.009 - 0.49	2400/F(kHz)	48.5 - 13.8	300 _(Note 1)
0.49 - 1.705	24000/F(kHz)	33.8 - 23	30 _(Note 1)
1.705 - 30	30	29.5	30 _(Note 1)
30 - 88	100	40	3 _(Note 2)
88 - 216	150	43.5	3 _(Note 2)
216 - 960	200	46	3 _(Note 2)
Above 960	500	54	3 _(Note 2)

Note 1: At frequencies below 30 MHz, measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field. Pending the development of an appropriate measurement procedure for measurements performed below 30 MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

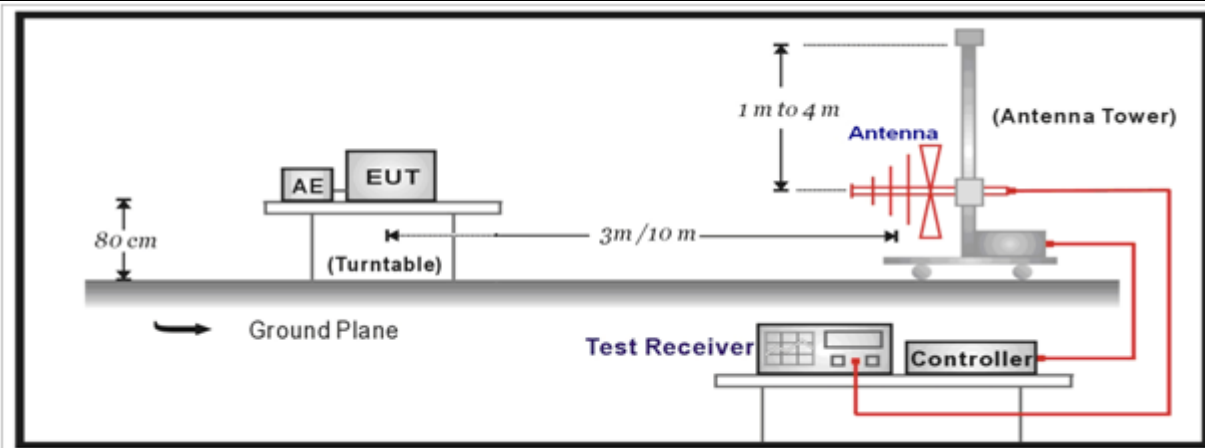
Note 2: At frequencies at or above 30 MHz, measurements may be performed at a distance other than what is specified provided: measurements are not made in the near field except where it can be shown that near field measurements are appropriate due to the characteristics of the device; and it can be demonstrated that the signal levels needed to be measured at the distance employed can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 meters unless it can be further demonstrated that measurements at a distance of 30 meters or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

Test Configuration

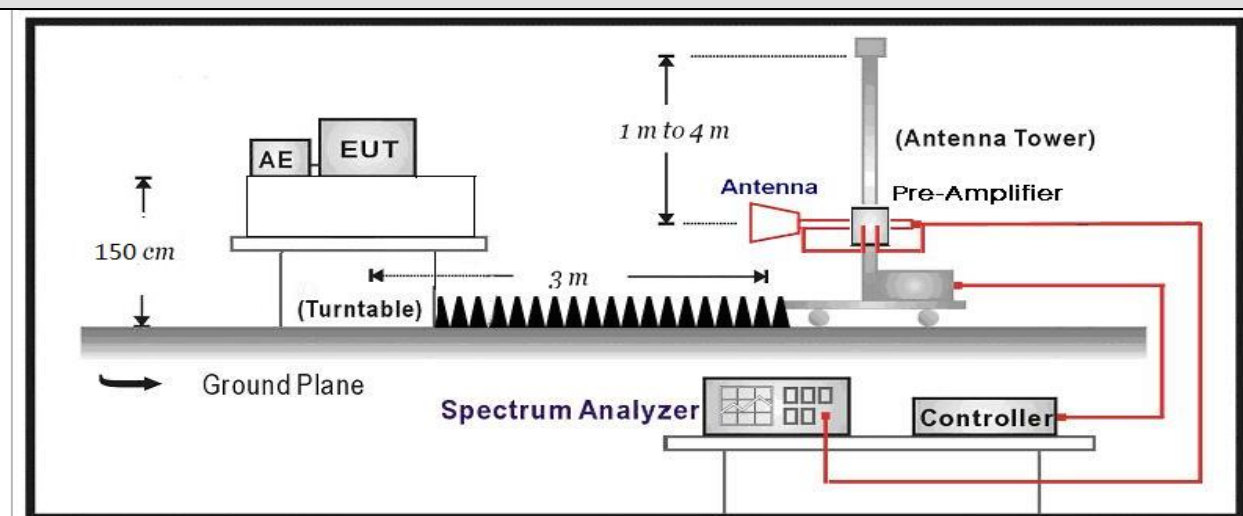
Below 30MHz Test Setup:



30MHz-1GHz Test Setup:



Above 1GHz Test Setup:



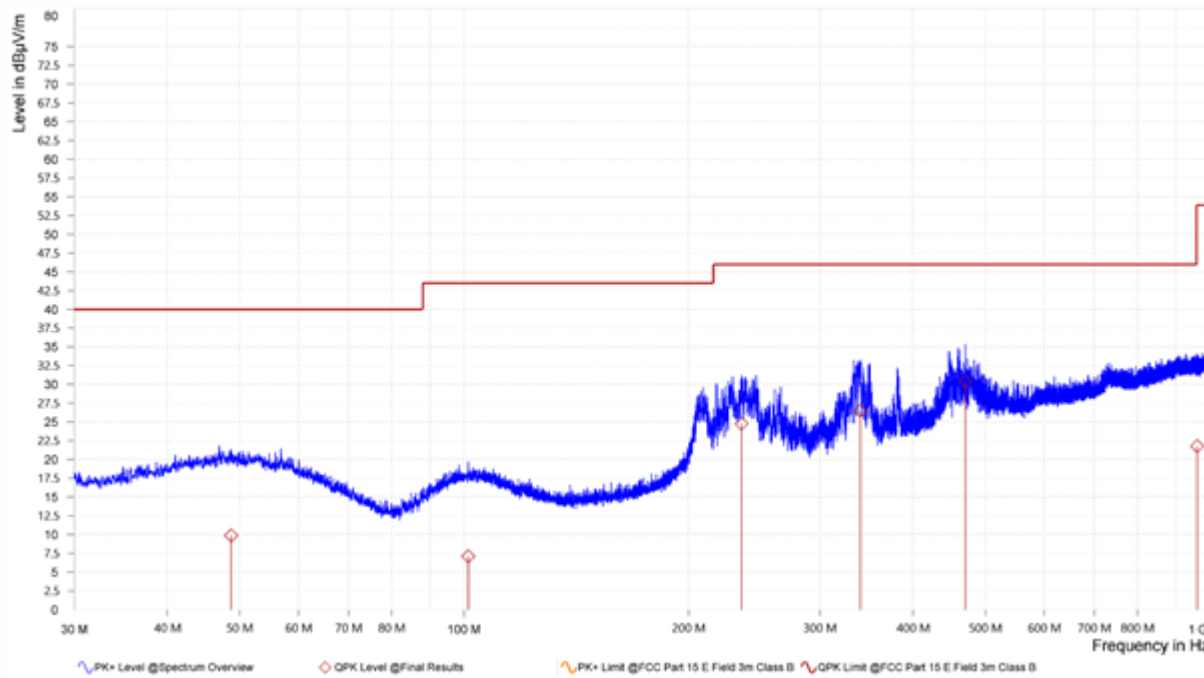
Performed measurements

Port under test	Enclosure port	
Test method applied	☐	Conducted measurement
	☒	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	1. The test frequency range, 9kHz~30MHz, 18GHz~26GHz, both of the worst case are at least 20dB below the limits, therefore no data appear in the report. 2. The EUT is working in the Normal link mode below 1 GHz.	

Results

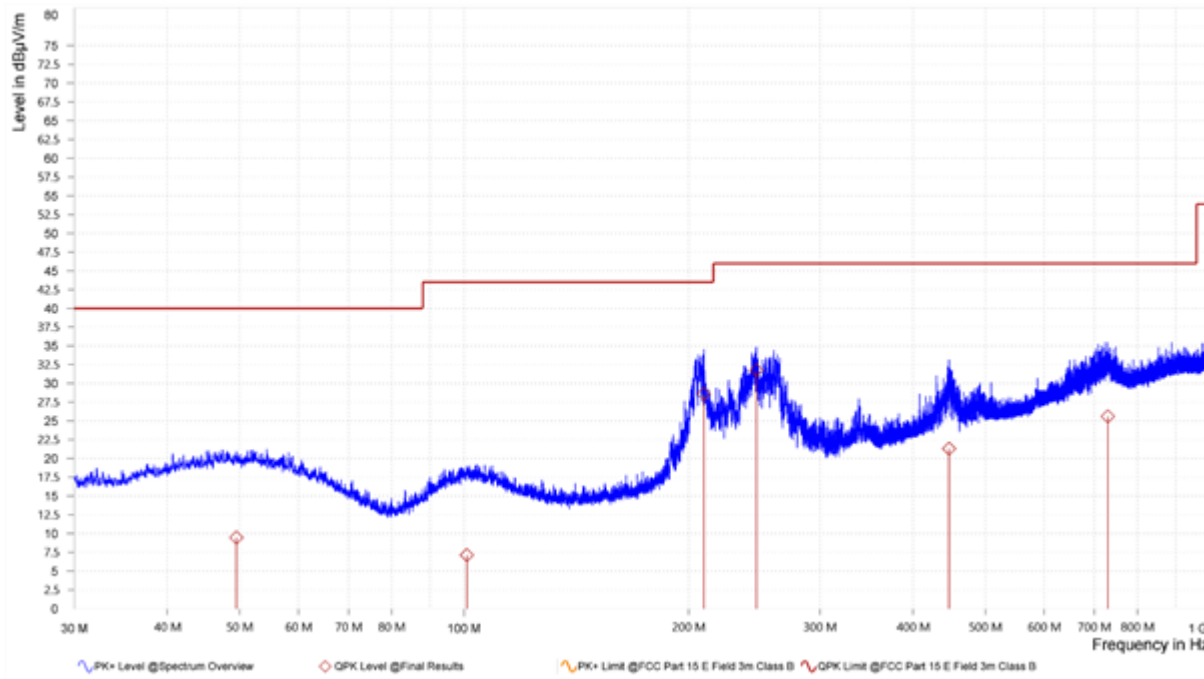
Emissions in restricted frequency bands

30MHz – 1GHz, Normal Mode



Rg	Frequency [MHz]	QPK Level [dBμV/m]	QPK Limit [dBμV/m]	QPK Margin [dB]	Correction [dB]	Polarization
1	48.720	9.87	40.00	30.13	21.19	V
1	101.310	7.09	43.50	36.41	19.18	V
1	235.530	24.78	46.00	21.22	20.23	V
1	339.960	26.46	46.00	19.54	22.83	V
1	470.190	30.37	46.00	15.63	24.91	V
1	962.160	21.79	53.90	32.11	31.79	V

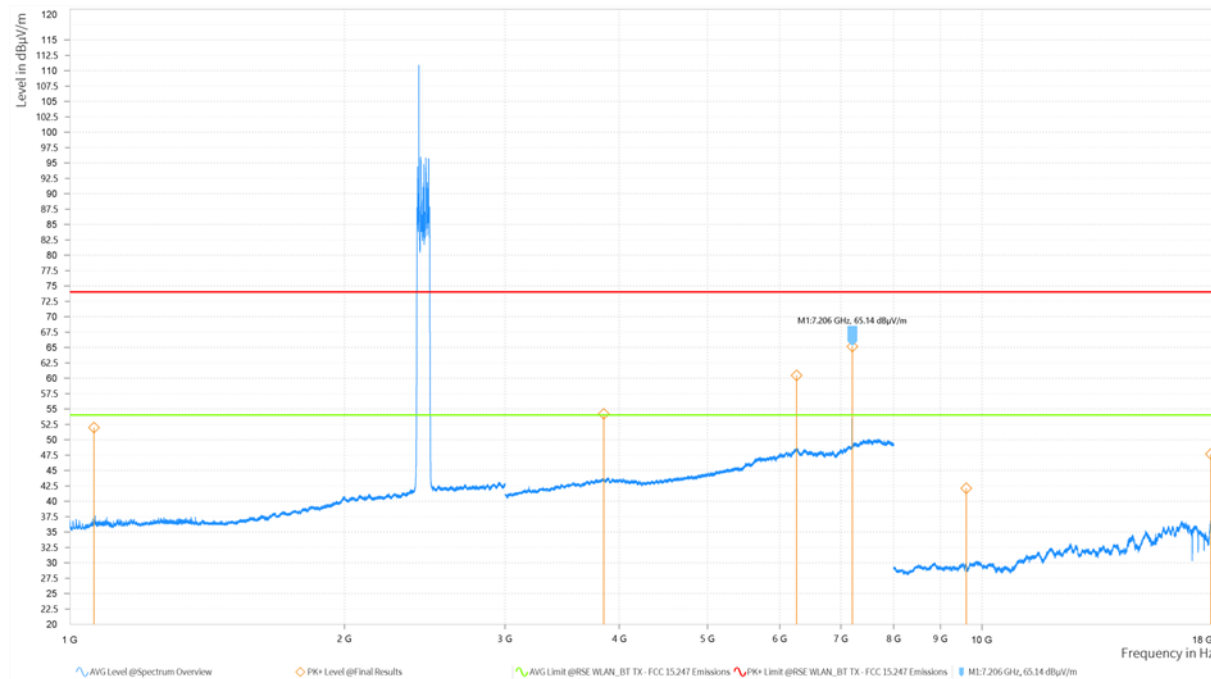
1. QPK Level [dBμV/m]=Reading QPK Level [dBμV/m] + Correction [dB/m]
2. Correction [dB/m]=Antenna Factor [dB/m] + Cable Loss [dB]



Rg	Frequency [MHz]	QPK Level [dBμV/m]	QPK Limit [dBμV/m]	QPK Margin [dB]	Correction [dB]	Polarization
1	49.500	9.49	40.00	30.51	21.09	H
1	100.830	7.14	43.50	36.36	19.16	H
1	209.760	28.60	43.50	14.90	18.71	H
1	246.630	31.78	46.00	14.22	20.62	H
1	446.970	21.30	46.00	24.70	24.62	H
1	730.170	25.61	46.00	20.39	29.66	H

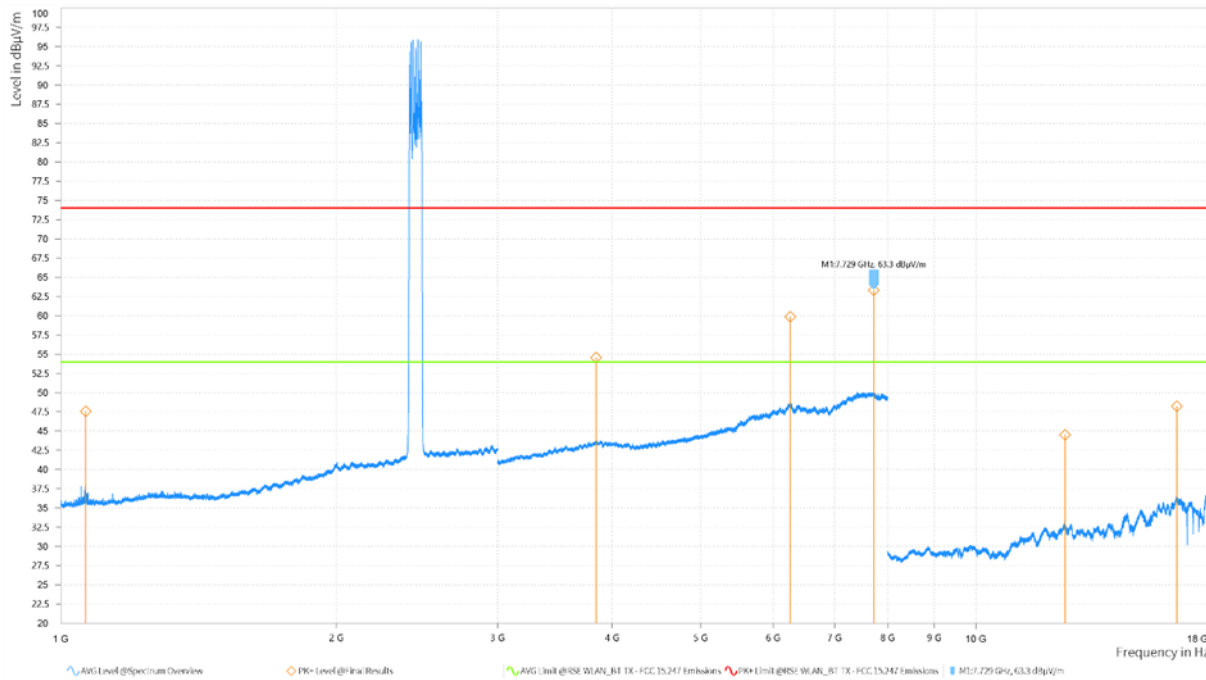
1. QPK Level [dBμV/m]=Reading QPK Level [dBμV/m] + Correction [dB/m]
2. Correction [dB/m]=Antenna Factor [dB/m] + Cable Loss [dB]

1GHz – 10th Harmonic
2402MHz, 1Mbps



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization
1	1,062.600	38.35	54.00	15.65	-1.05	V
2	3,848.750	43.89	54.00	10.11	9.05	V
2	6,261.250	48.69	54.00	5.31	15.04	V
2	7,205.750	53.73	54.00	0.27	15.25	V
3	9,607.000	30.06	54.00	23.94	5.53	V
3	17,814.500	36.81	54.00	17.19	16.02	V

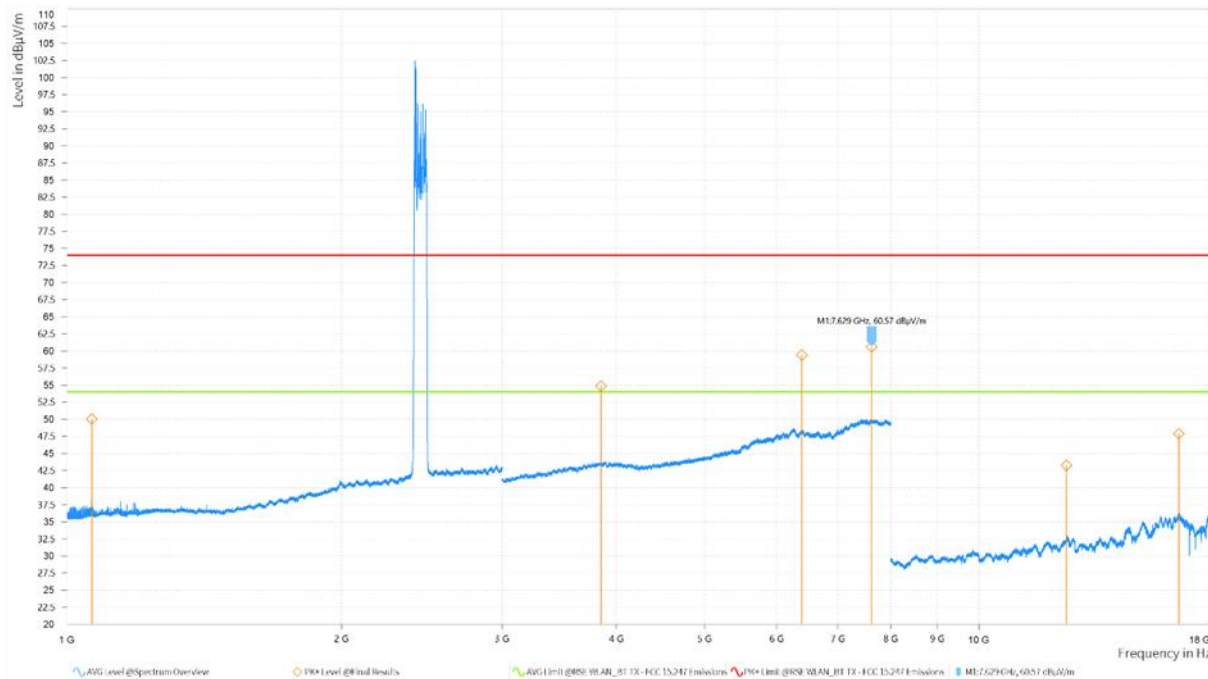
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization
1	1,062.600	51.95	74.00	22.05	-1.05	V
2	3,848.750	54.17	74.00	19.83	9.05	V
2	6,261.250	60.41	74.00	13.59	15.04	V
2	7,205.750	65.14	74.00	8.86	15.25	V
3	9,607.000	42.07	74.00	31.93	5.53	V
3	17,814.500	47.66	74.00	26.34	16.02	V



Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization
1	1,064.500	39.30	54.00	14.70	-1.03	H
2	3,844.000	43.91	54.00	10.09	9.03	H
2	6,263.500	48.74	54.00	5.26	15.05	H
2	7,729.250	50.04	54.00	3.96	15.95	H
3	12,499.000	33.14	54.00	20.86	8.89	H
3	16,566.000	36.68	54.00	17.32	13.59	H

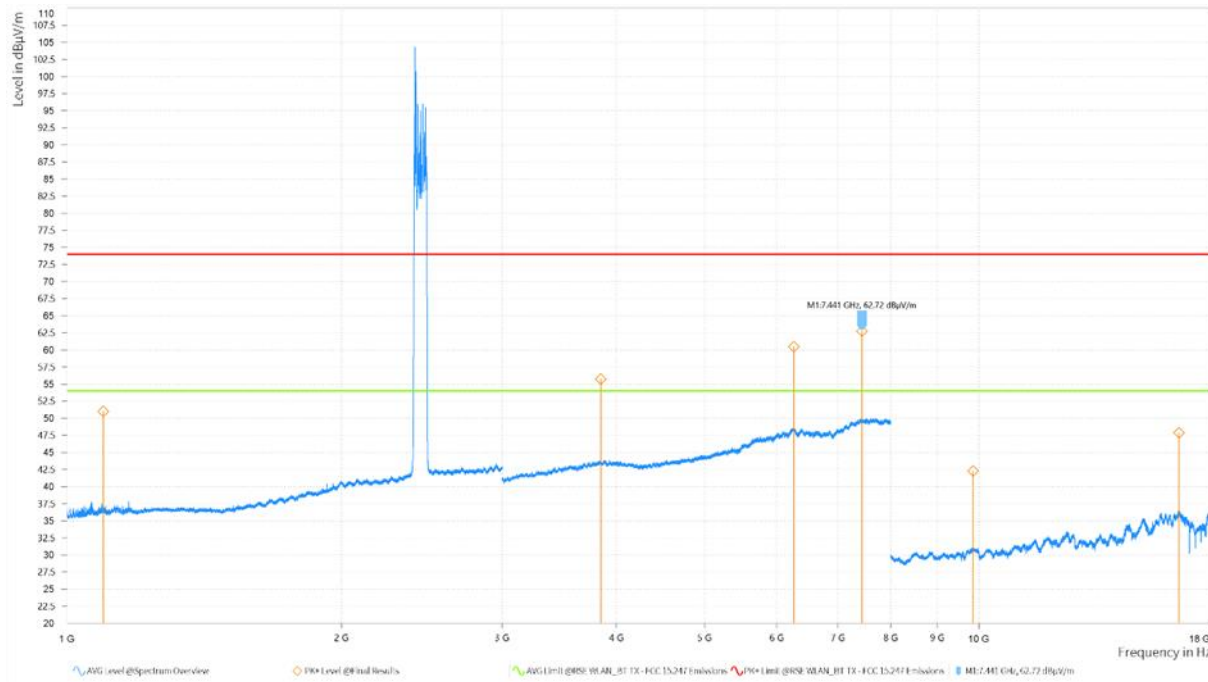
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization
1	1,064.500	47.55	74.00	26.45	-1.03	H
2	3,844.000	54.54	74.00	19.46	9.03	H
2	6,263.500	59.86	74.00	14.14	15.05	H
2	7,729.250	63.30	74.00	10.70	15.95	H
3	12,499.000	44.49	74.00	29.51	8.89	H
3	16,566.000	48.20	74.00	25.80	13.59	H

2480MHz, 1Mbps



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization
1	1,064.600	38.52	54.00	15.48	-1.03	V
2	3,849.250	43.99	54.00	10.01	9.05	V
2	6,393.250	48.82	54.00	5.18	14.88	V
2	7,628.500	50.20	54.00	3.80	16.05	V
3	12,469.500	32.89	54.00	21.11	8.79	V
3	16,562.000	36.32	54.00	17.68	13.58	V

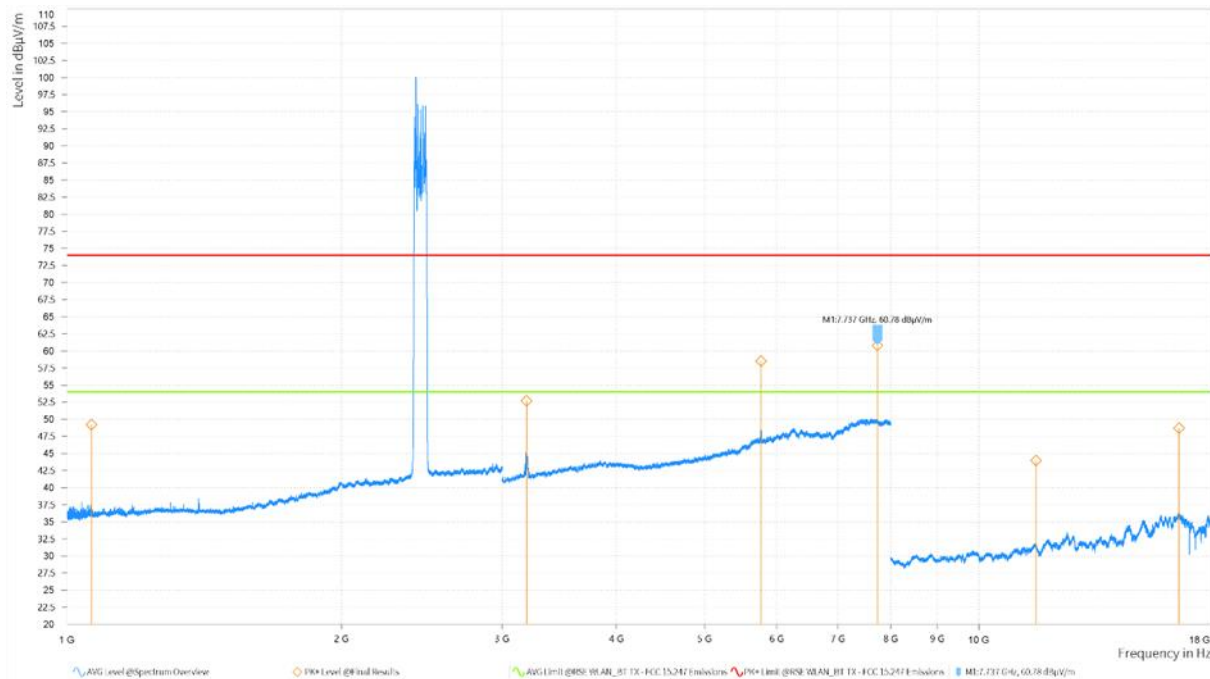
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization
1	1,064.600	50.03	74.00	23.97	-1.03	V
2	3,849.250	54.81	74.00	19.19	9.05	V
2	6,393.250	59.36	74.00	14.64	14.88	V
2	7,628.500	60.57	74.00	13.43	16.05	V
3	12,469.500	43.26	74.00	30.74	8.79	V
3	16,562.000	47.87	74.00	26.13	13.58	V



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization
1	1,095.700	38.21	54.00	15.79	-1.01	H
2	3,848.750	43.92	54.00	10.08	9.05	H
2	6,266.250	48.75	54.00	5.25	15.06	H
2	7,441.250	50.05	54.00	3.95	15.87	H
3	9,850.500	31.15	54.00	22.85	6.37	H
3	16,564.500	36.52	54.00	17.48	13.59	H

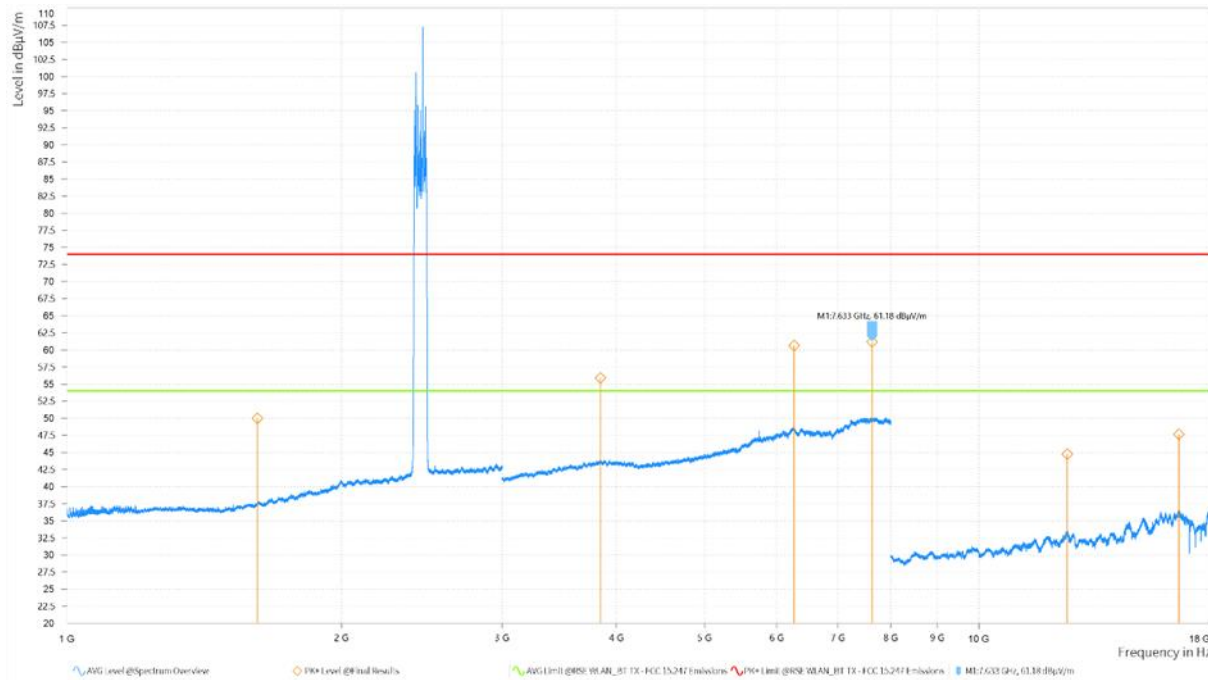
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization
1	1,095.700	51.00	74.00	23.00	-1.01	H
2	3,848.750	55.71	74.00	18.29	9.05	H
2	6,266.250	60.47	74.00	13.53	15.06	H
2	7,441.250	62.72	74.00	11.28	15.87	H
3	9,850.500	42.25	74.00	31.75	6.37	H
3	16,564.500	47.85	74.00	26.15	13.59	H

2402MHz, 2Mbps



Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization
1	1,064.200	38.50	54.00	15.50	-1.03	V
2	3,191.750	45.29	54.00	8.71	7.05	V
2	5,767.750	49.47	54.00	4.53	13.61	V
2	7,737.000	50.10	54.00	3.90	15.95	V
3	11,545.500	31.98	54.00	22.02	7.36	V
3	16,569.000	36.58	54.00	17.42	13.60	V

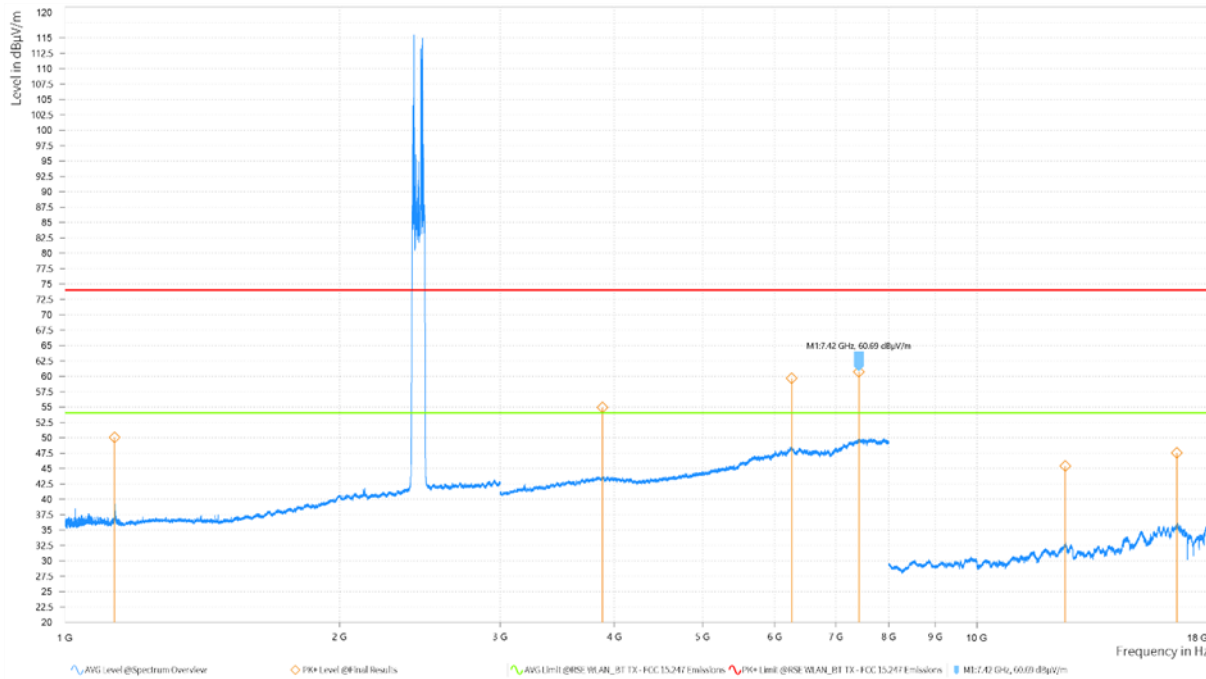
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization
1	1,064.200	49.19	74.00	24.81	-1.03	V
2	3,191.750	52.67	74.00	21.33	7.05	V
2	5,767.750	58.50	74.00	15.50	13.61	V
2	7,737.000	60.78	74.00	13.22	15.95	V
3	11,545.500	43.93	74.00	30.07	7.36	V
3	16,569.000	48.70	74.00	25.30	13.60	V



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization
1	1,616.900	37.76	54.00	16.24	1.72	H
2	3,845.250	43.94	54.00	10.06	9.04	H
2	6,269.750	48.90	54.00	5.10	15.07	H
2	7,632.500	50.24	54.00	3.76	16.05	H
3	12,498.500	33.40	54.00	20.60	8.88	H
3	16,562.000	36.73	54.00	17.27	13.58	H

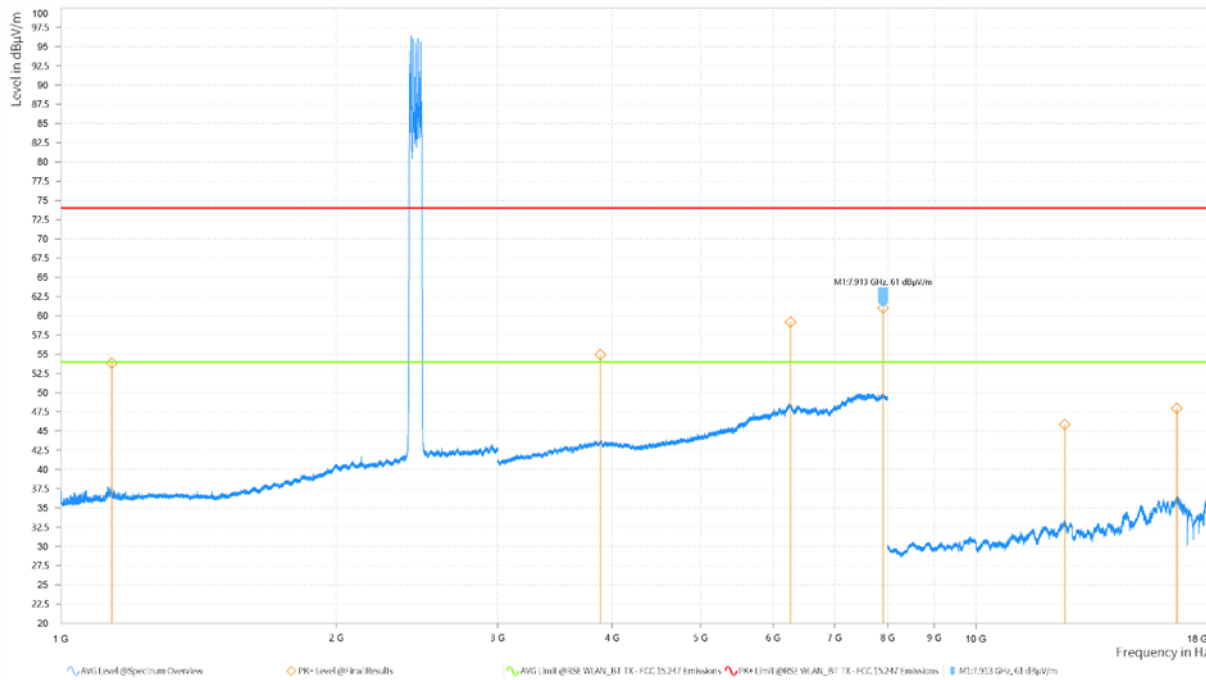
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization
1	1,616.900	49.98	74.00	24.02	1.72	H
2	3,845.250	55.89	74.00	18.11	9.04	H
2	6,269.750	60.62	74.00	13.38	15.07	H
2	7,632.500	61.18	74.00	12.82	16.05	H
3	12,498.500	44.74	74.00	29.26	8.88	H
3	16,562.000	47.62	74.00	26.38	13.58	H

2480MHz, 2Mbps



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization
1	1,133.800	39.62	54.00	14.38	-0.87	V
2	3,884.500	43.78	54.00	10.22	9.05	V
2	6,260.000	48.57	54.00	5.43	15.04	V
2	7,420.000	49.89	54.00	4.11	15.82	V
3	12,496.500	32.86	54.00	21.14	8.88	V
3	16,562.500	36.32	54.00	17.68	13.58	V

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization
1	1,133.800	50.06	74.00	23.94	-0.87	V
2	3,884.500	54.92	74.00	19.08	9.05	V
2	6,260.000	59.67	74.00	14.33	15.04	V
2	7,420.000	60.69	74.00	13.31	15.82	V
3	12,496.500	45.40	74.00	28.60	8.88	V
3	16,562.500	47.54	74.00	26.46	13.58	V



Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization
1	1,136.100	37.97	54.00	16.03	-0.85	H
2	3,883.250	43.88	54.00	10.12	9.05	H
2	6,266.000	48.68	54.00	5.32	15.06	H
2	7,913.250	49.92	54.00	4.08	15.77	H
3	12,498.500	33.53	54.00	20.47	8.88	H
3	16,567.000	36.67	54.00	17.33	13.59	H

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization
1	1,136.100	53.80	74.00	20.20	-0.85	H
2	3,883.250	54.91	74.00	19.09	9.05	H
2	6,266.000	59.18	74.00	14.82	15.06	H
2	7,913.250	61.00	74.00	13.00	15.77	H
3	12,498.500	45.86	74.00	28.14	8.88	H
3	16,567.000	47.93	74.00	26.07	13.59	H

4.3	Emissions in non-restricted frequency band	VERDICT: PASS
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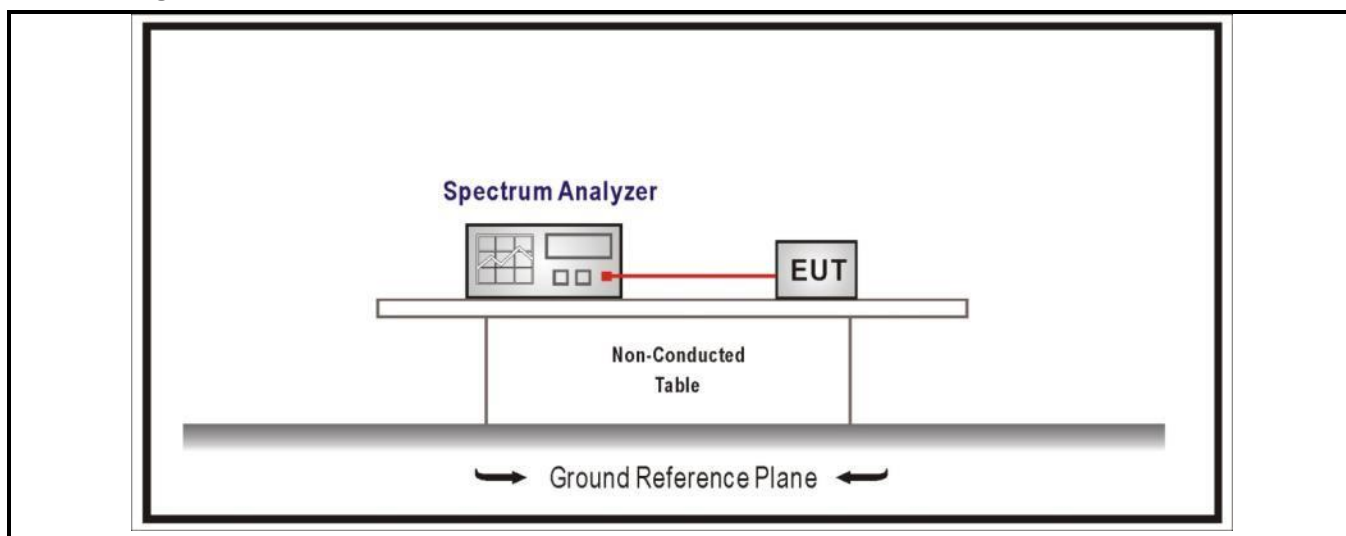
Limit

Standard	FCC Part 15 Subpart C Paragraph 15.247(d)	
RF Output power (Detection methods)	Limit(dB)	
RF Output power(Average detector)	30dBc(Note1)	
RF Output power(PK detector)	20dBc(Note2)	

Note 1: If maximum conducted (average) output power was used to demonstrate compliance as described in 9.2, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD by Level in 100 kHz (i.e., 30 dBc).

Note 2: If the maximum peak conducted output power procedure was used, then the peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD by Level in 100 kHz (i.e., 20 dBc).

Test Configuration



Performed measurements

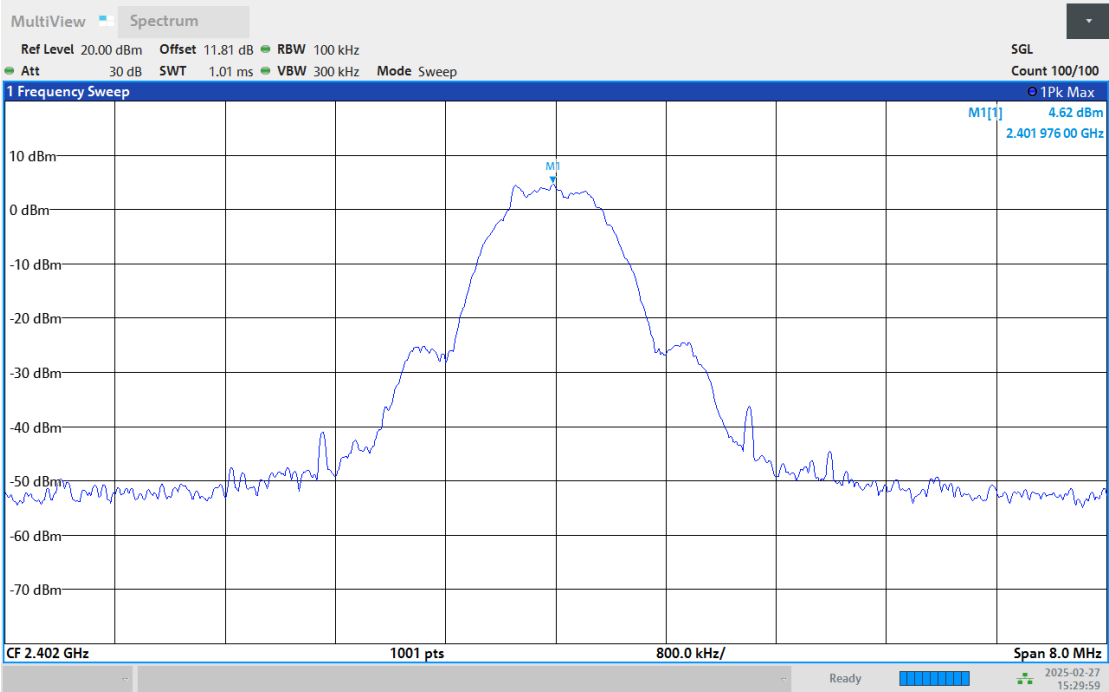
Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

See next page

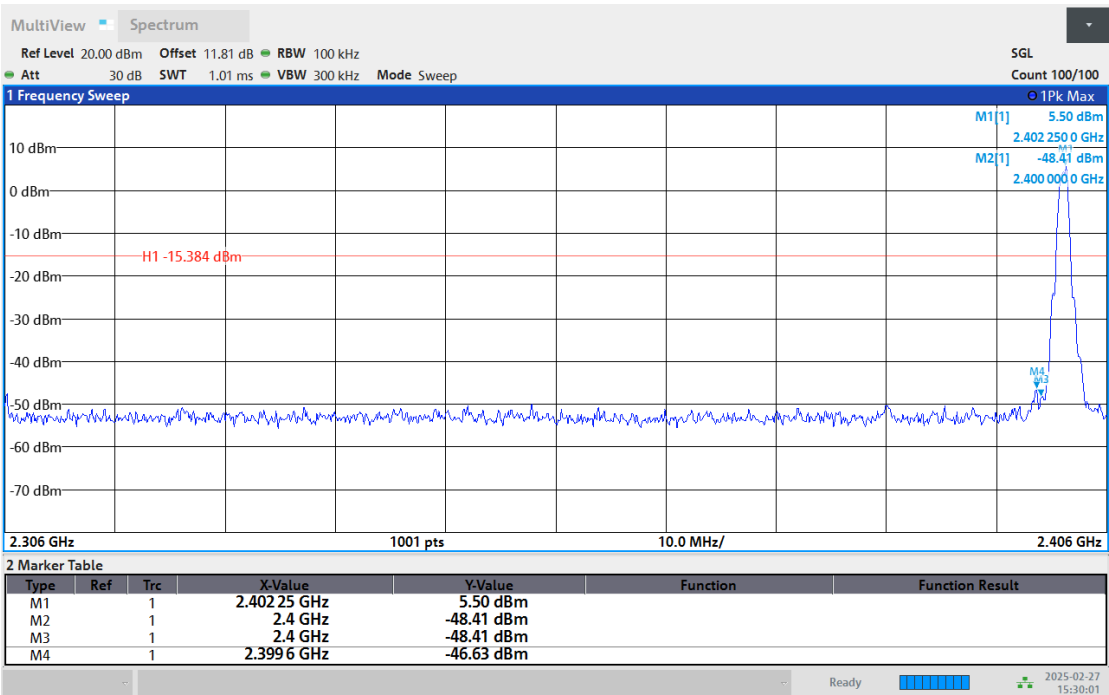
Results

Emissions in non-restricted frequency band

2402MHz, 1Mbps

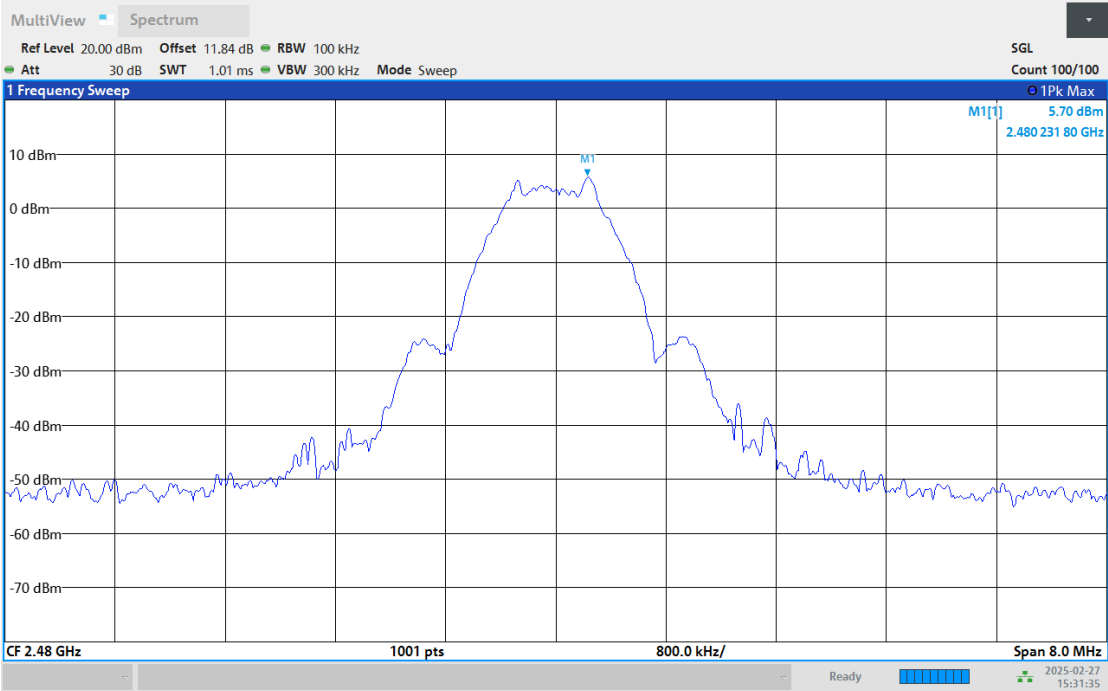


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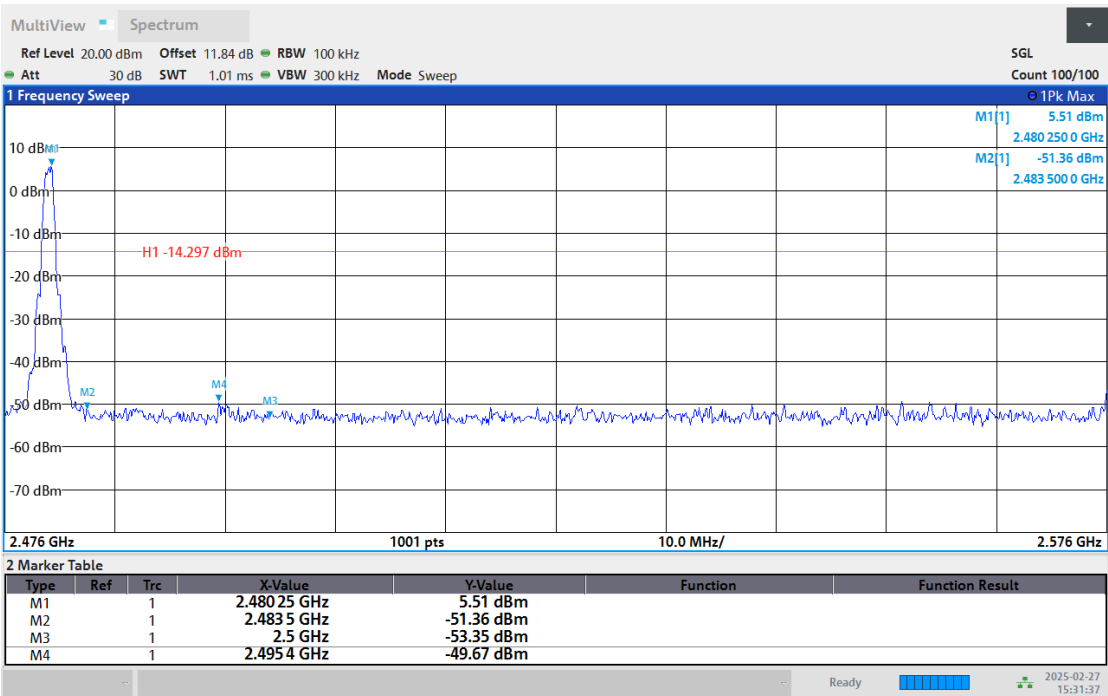


03:30:01 PM 02/27/2025

2480MHz, 1Mbps

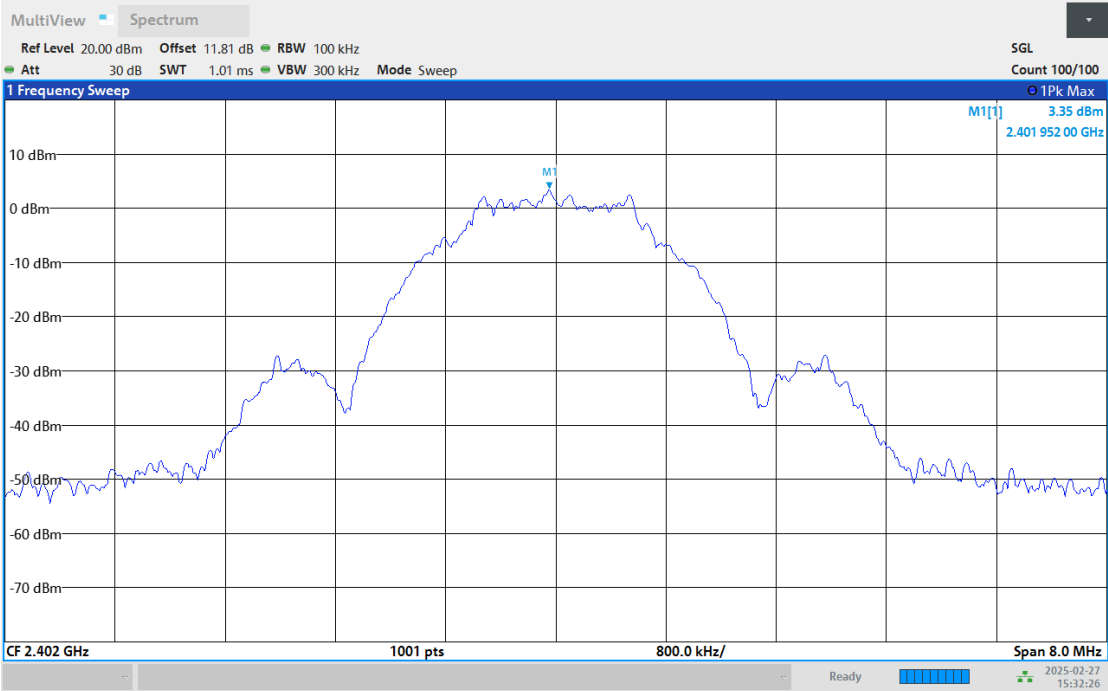


03:31:35 PM 02/27/2025

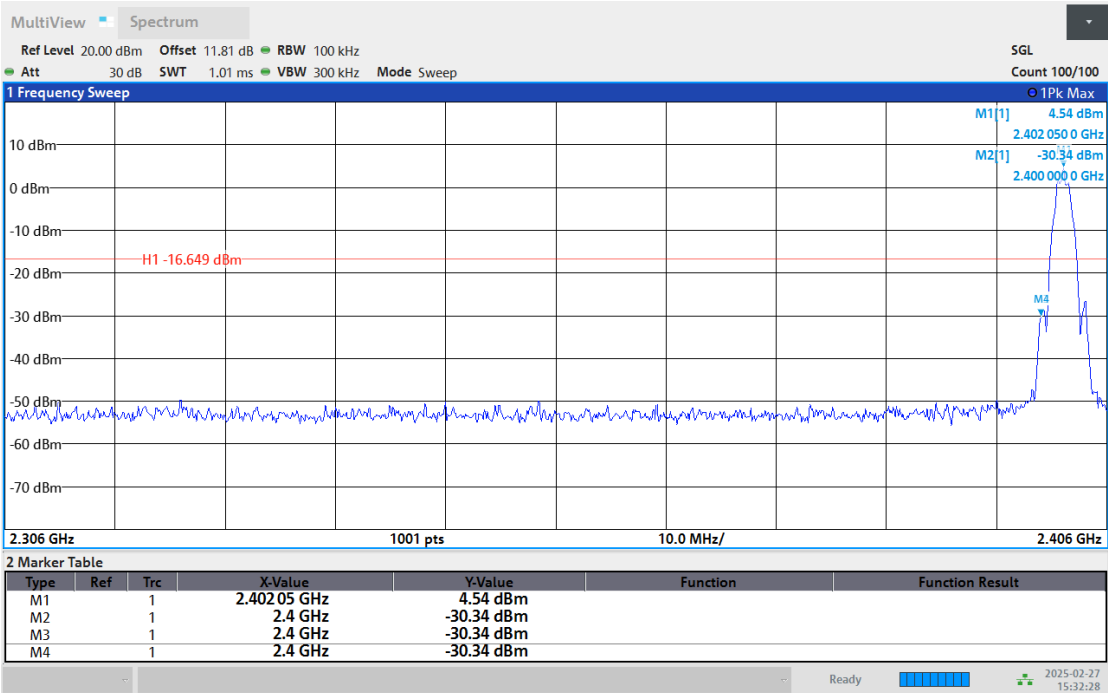


03:31:37 PM 02/27/2025

2402MHz, 2Mbps

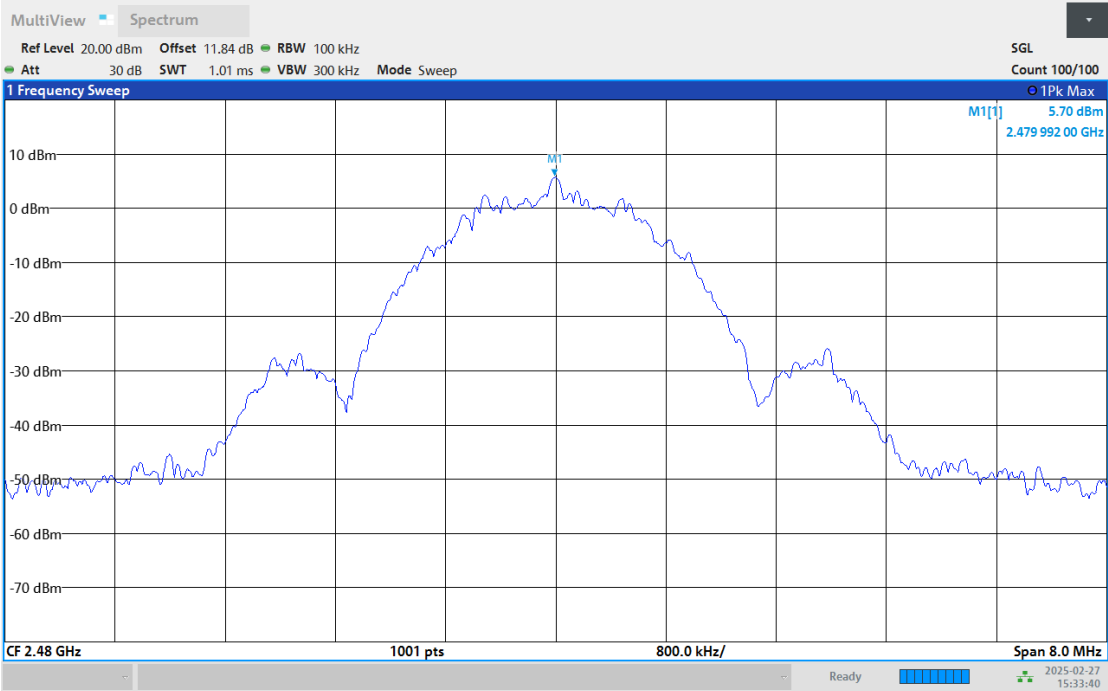


03:32:27 PM 02/27/2025

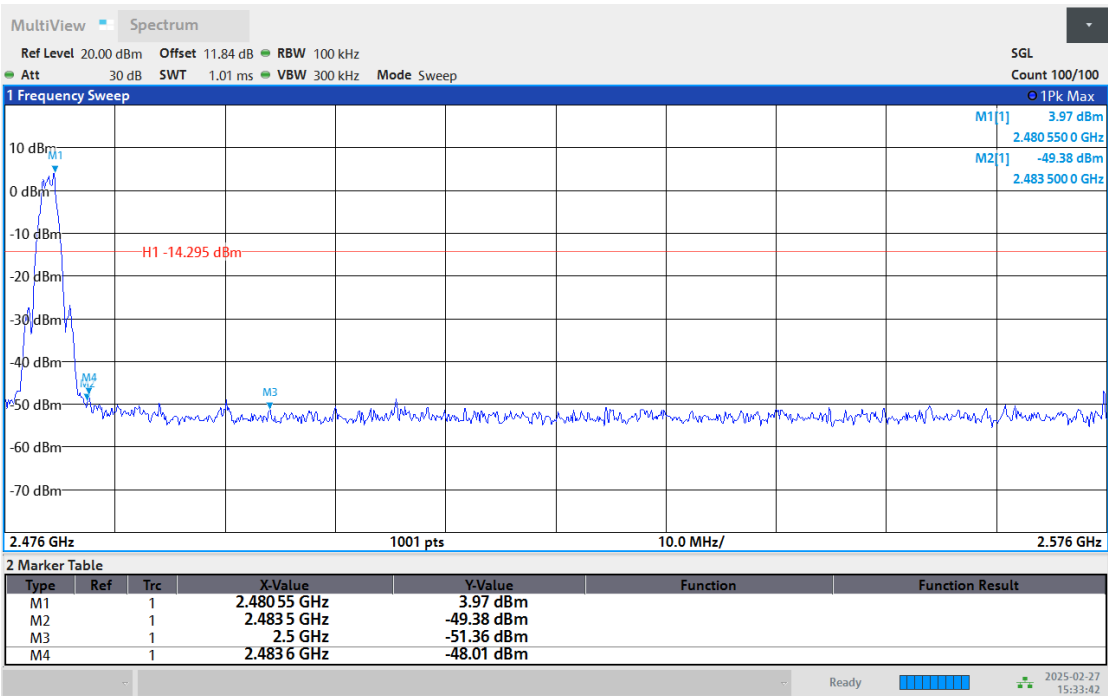


03:32:29 PM 02/27/2025

2480MHz, 2Mbps



03:33:41 PM 02/27/2025



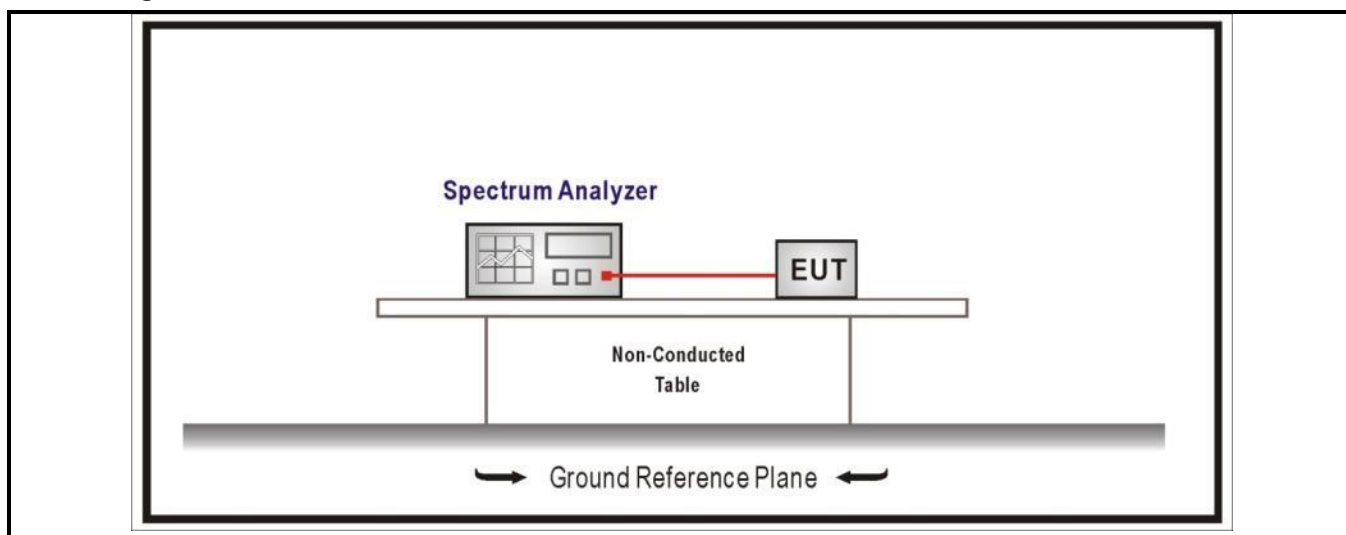
03:33:43 PM 02/27/2025

4.4	Duty Cycle	VERDICT: PASS
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Limit

N/A

Test Configuration



Performed measurements

Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	For reporting purpose only	

Results

Mode	CH.	Test Freq. (MHz)	Duty Cycle (%)	Correction Factor (dB)	1/T (kHz)
BLE 1Mbps	00	2402	85.52	0.68	0.47
	19	2440	85.52	0.68	0.47
	39	2480	85.52	0.68	0.47
BLE 2Mbps	00	2402	57.58	2.40	0.93
	19	2440	57.60	2.40	0.93
	39	2480	57.61	2.40	0.93

Note:

According to KDB 558074, when test for Radiated Emission Band Edge and Radiated Emission, for average detector set: VBW $\geq$ 1/T will be used.

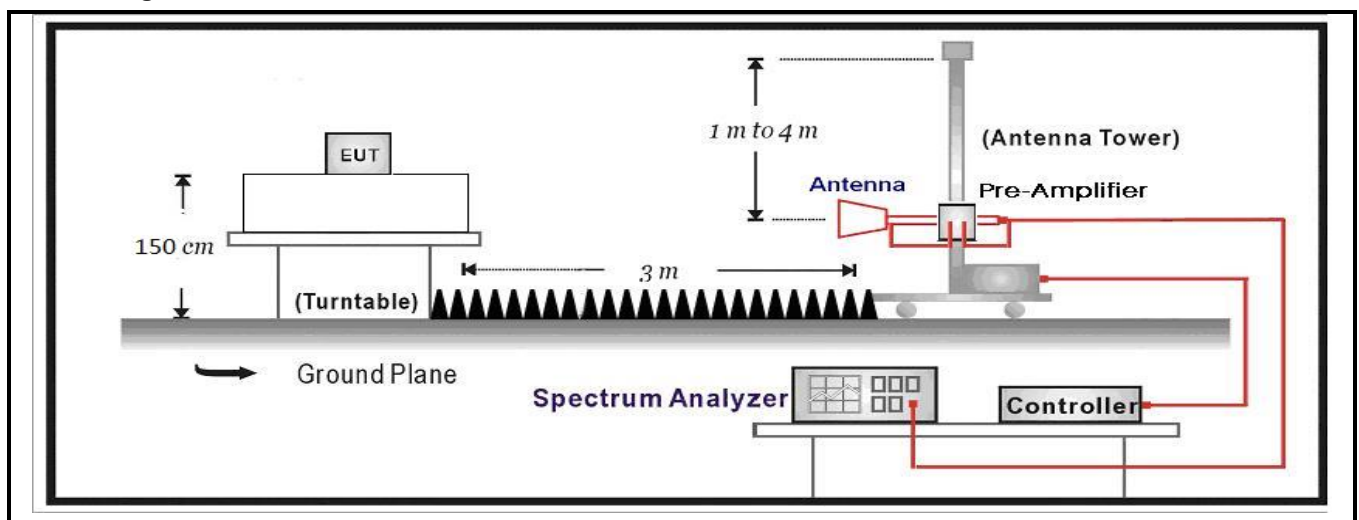
4.5	Radiated Emission Band Edge	VERDICT: PASS
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Limit

Standard	FCC Part 15 Subpart C Paragraph 15.247(d), 15.205, 15.209			
Frequency bands (MHz)	Detector	Limit (dB μ V/m)	RBW (MHz)	Distance (m)
2310-2390	PK	74	1	3
2483.5-2500	AV	54	1	3

Note: The field strength of emissions appearing within these frequency bands shall not exceed the limits.

Test Configuration



Performed measurements

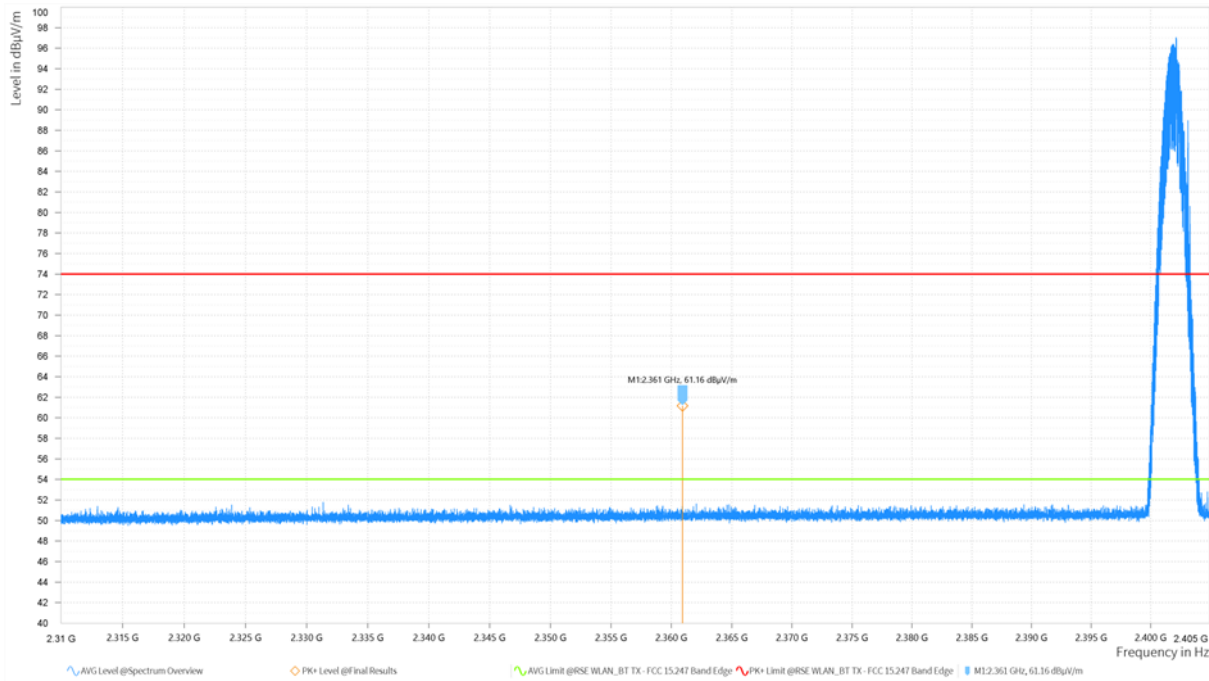
Port under test	Enclosure port	
Test method applied	☐	Conducted measurement
	☒	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

See next page

Results

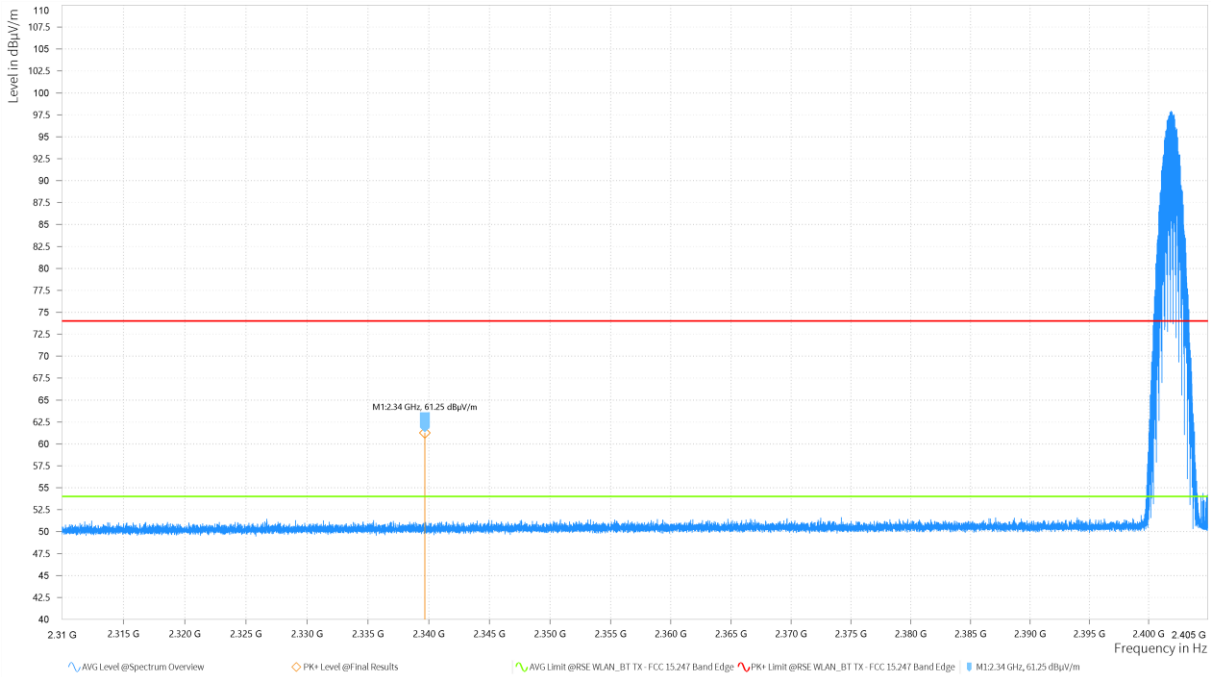
Radiated Emission Band Edge

2402MHz, 1Mbps



Rg	Frequency [MHz]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization
1	2,360.907	49.79	54.00	4.21	5.43	V

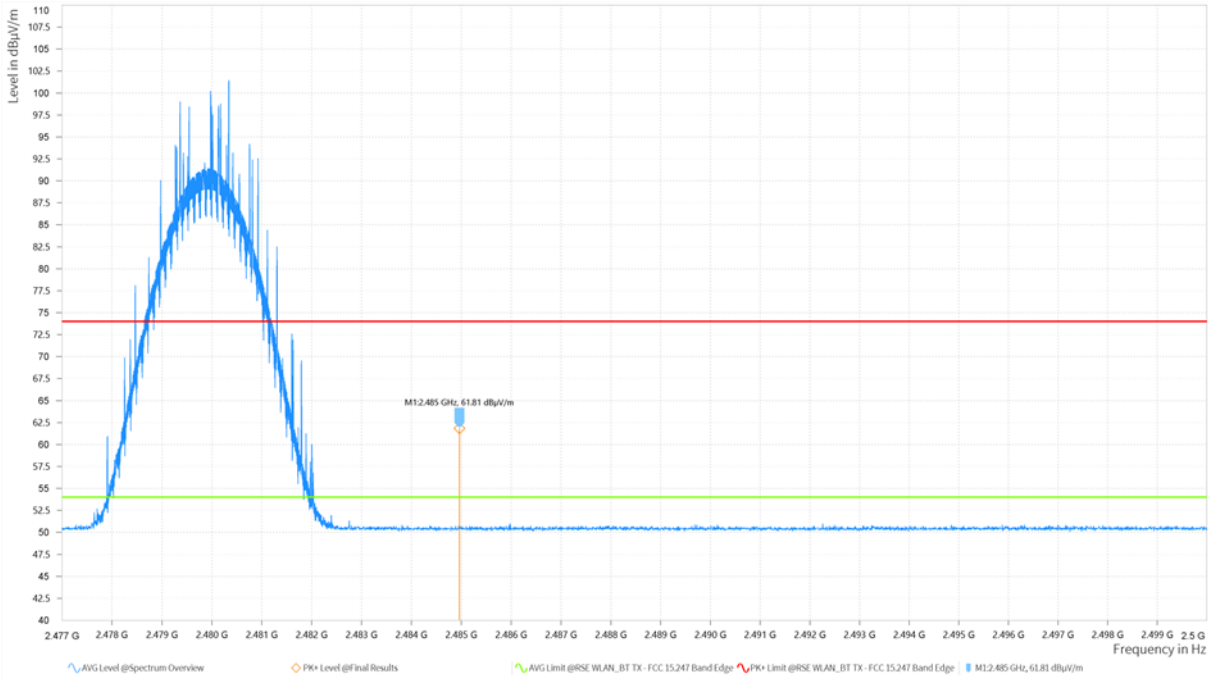
Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	Correction [dB]	Polarization
1	2,360.907	61.16	74.00	12.84	5.43	V



Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization
1	2,339.666	49.42	54.00	4.58	5.31	H

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization
1	2,339.666	61.25	74.00	12.75	5.31	H

2480MHz, 1Mbps



Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization
1	2,484.960	49.69	54.00	4.31	5.82	V

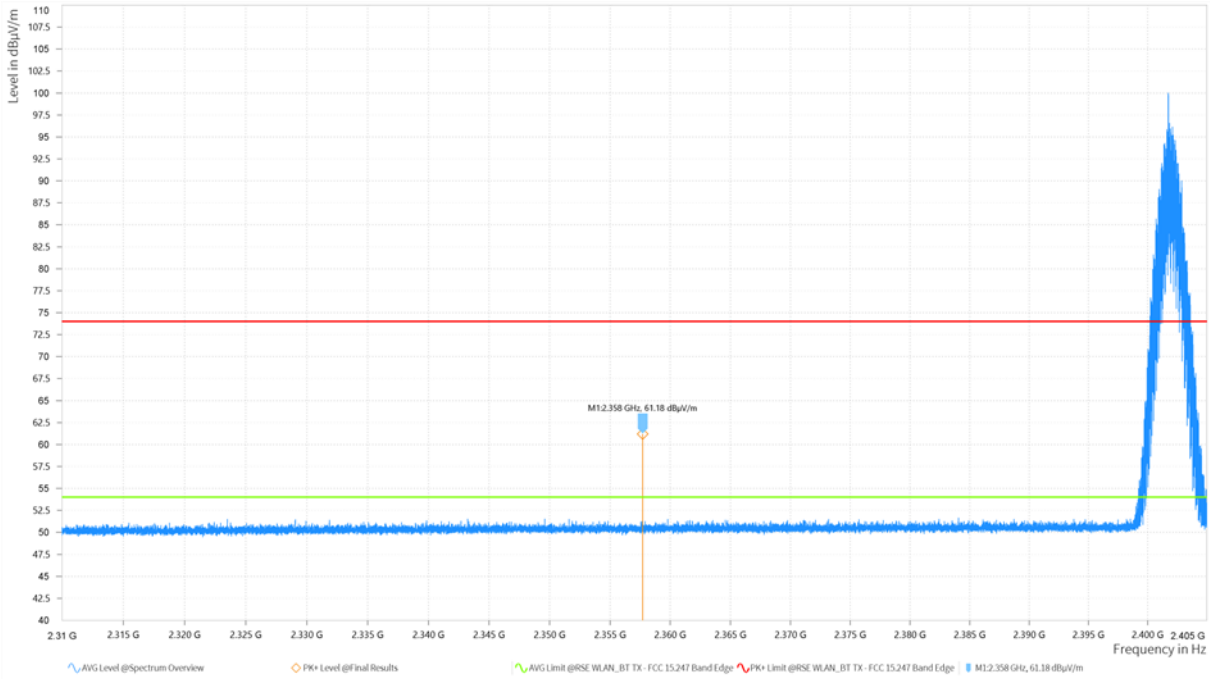
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization
1	2,484.960	61.81	74.00	12.19	5.82	V



Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization
1	2,489.350	50.25	54.00	3.75	5.84	H

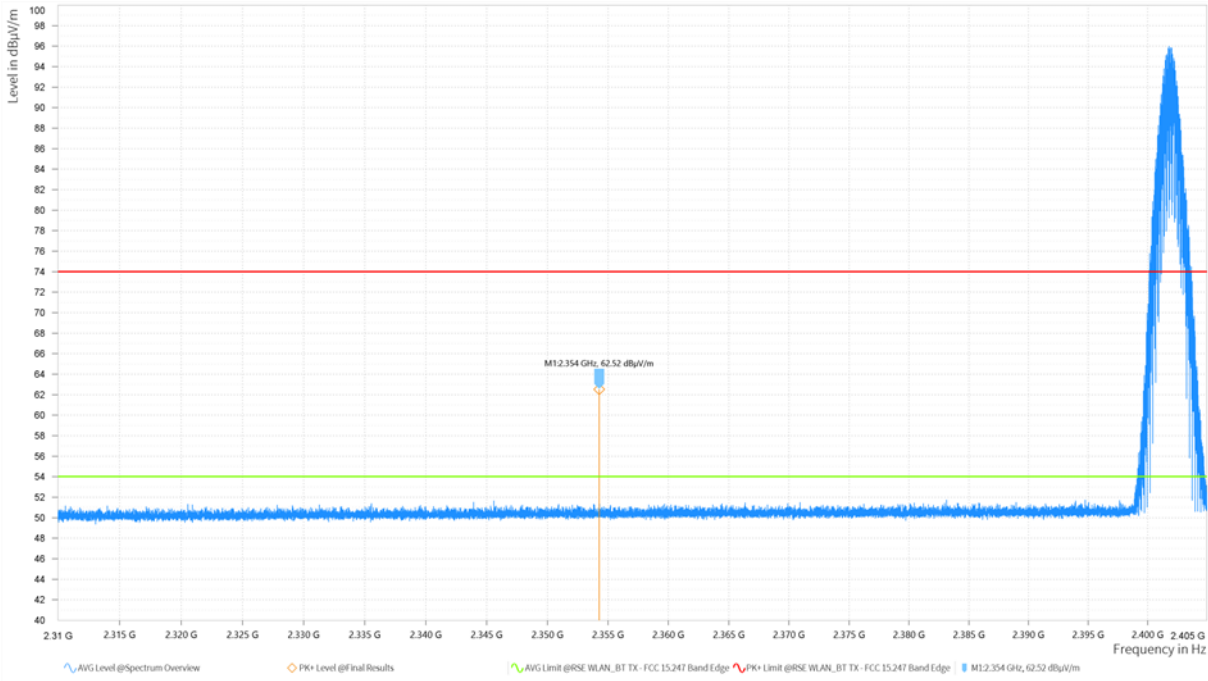
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization
1	2,489.350	60.63	74.00	13.37	5.84	H

2402MHz, 2Mbps



Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization
1	2,357.703	49.42	54.00	4.58	5.42	V

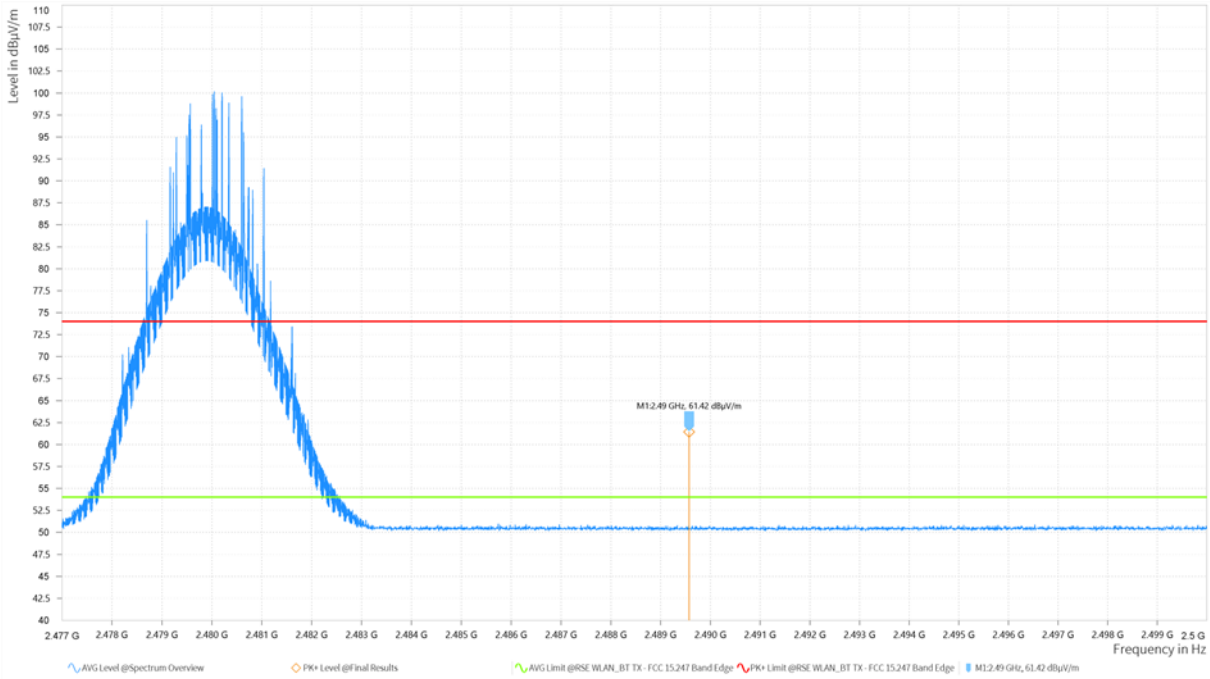
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization
1	2,357.703	61.18	74.00	12.82	5.42	V



Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization
1	2,354.287	49.86	54.00	4.14	5.40	H

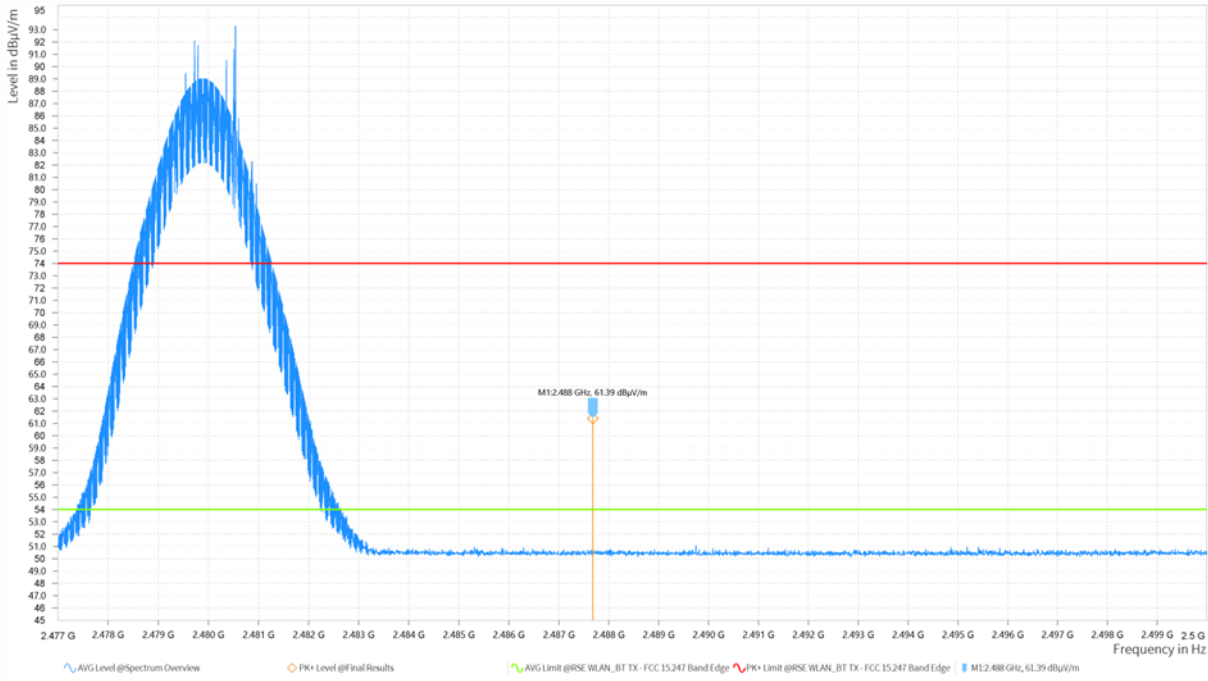
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization
1	2,354.287	62.52	74.00	11.48	5.40	H

2480MHz, 2Mbps



Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization
1	2,489.570	49.59	54.00	4.41	5.84	V

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization
1	2,489.570	61.42	74.00	12.58	5.84	V



Rg	Frequency [MHz]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization
1	2,487.680	50.61	54.00	3.39	5.83	H

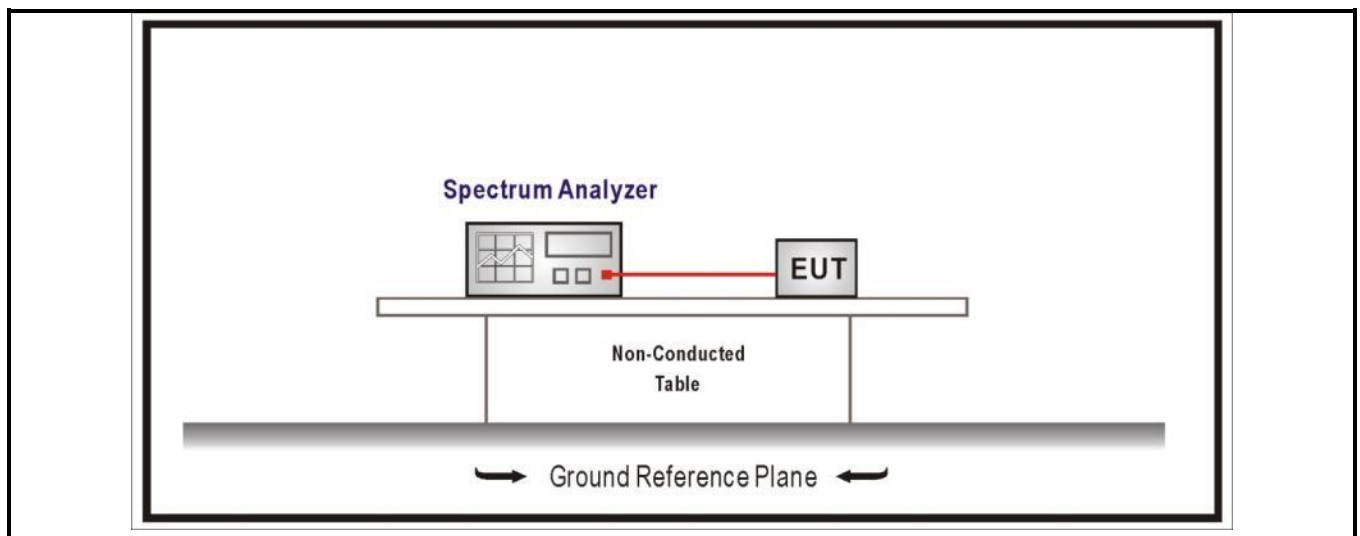
Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	Correction [dB]	Polarization
1	2,487.680	61.39	74.00	12.61	5.83	H

4.6	DTS Bandwidth	VERDICT: PASS
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Limit

Standard	FCC Part 15 Subpart C Paragraph 15.247 (a)(2)
Systems using digital modulation techniques operate in the 2400-2483.5 MHz .The minimum 6 dB bandwidth shall be at least 500 kHz	

Test Configuration



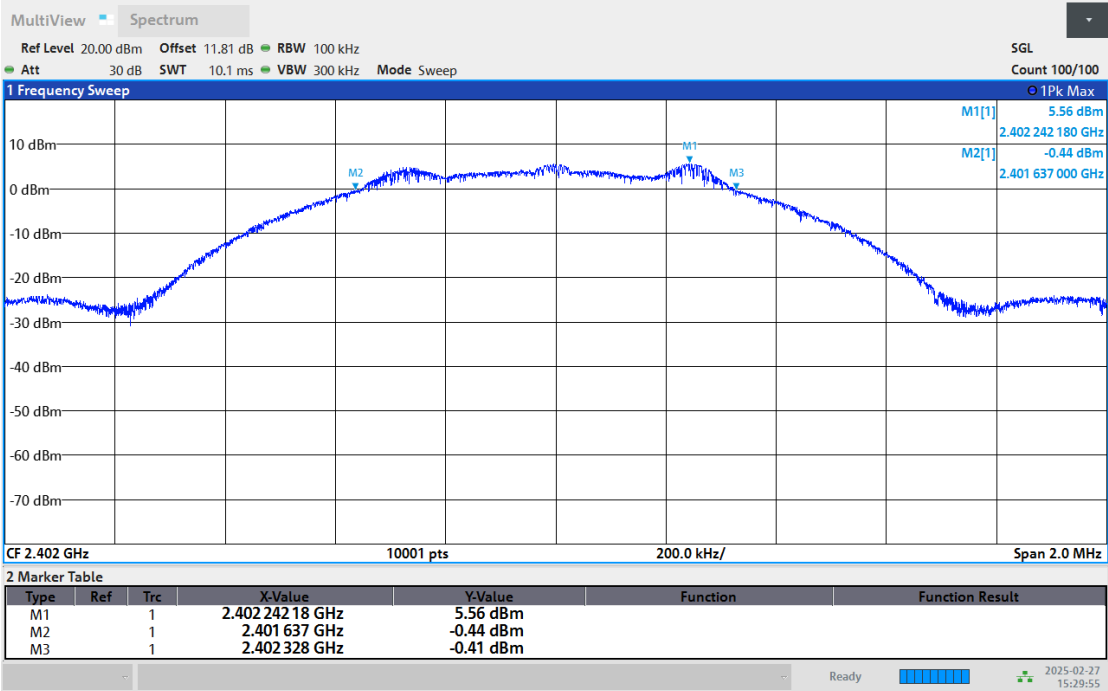
Performed measurements

Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

Results

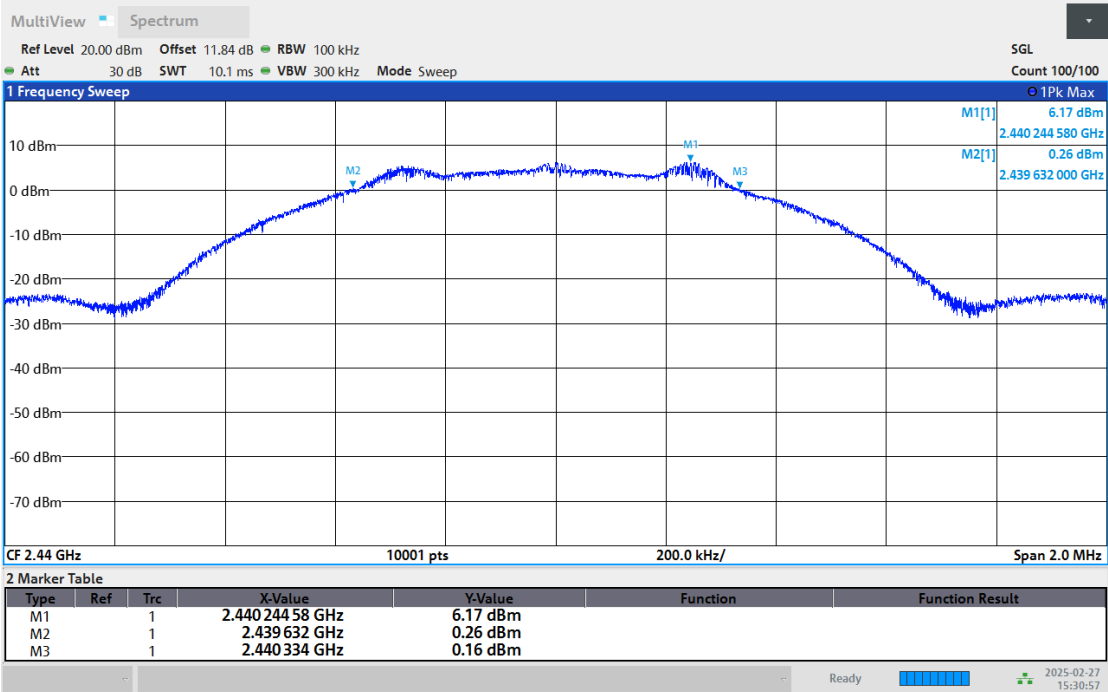
Mode	CH.	Test Freq. (MHz)	6dB Occupied Bandwidth (MHz)	Limit (MHz)	Result
BLE 1Mbps	00	2402	0.691	>0.5	Pass
	19	2440	0.702	>0.5	Pass
	39	2480	0.692	>0.5	Pass
BLE 2Mbps	00	2402	1.151	>0.5	Pass
	19	2440	1.140	>0.5	Pass
	39	2480	1.149	>0.5	Pass

DTS Bandwidth
2402MHz, 1Mbps



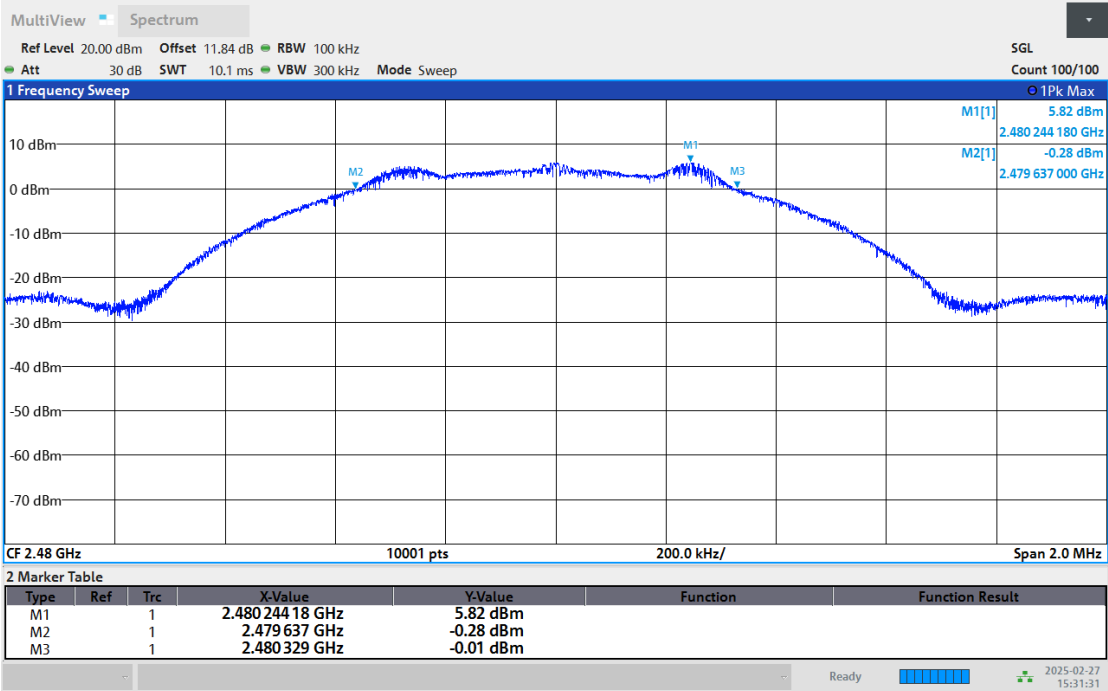
03:29:56 PM 02/27/2025

2440MHz, 1Mbps



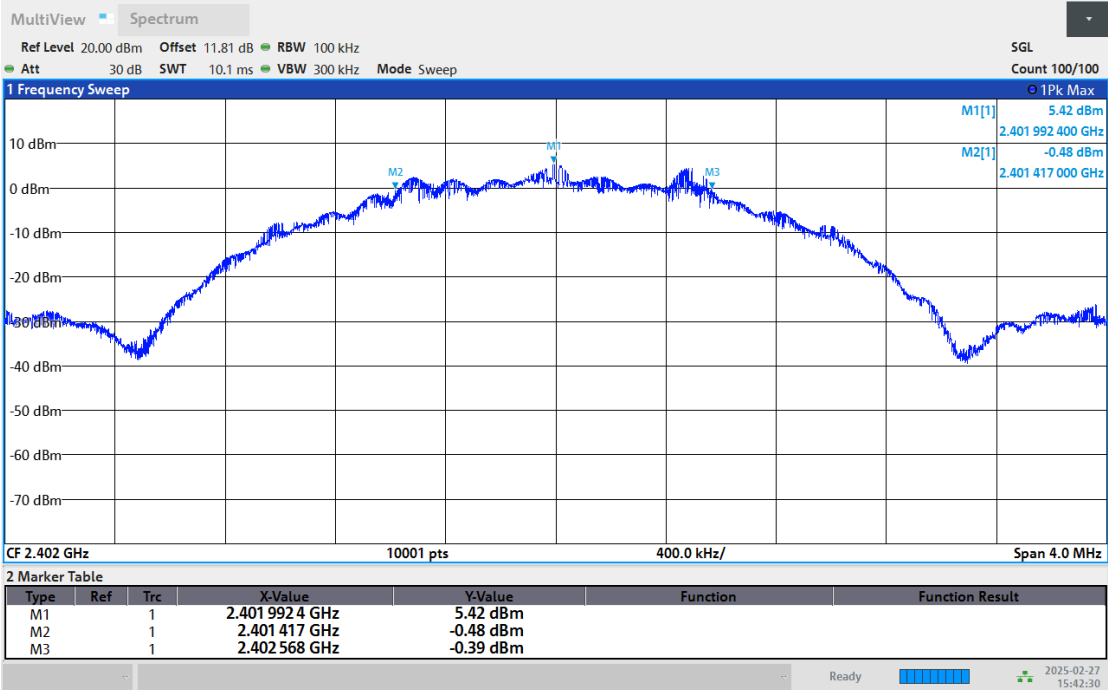
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2480MHz, 1Mbps



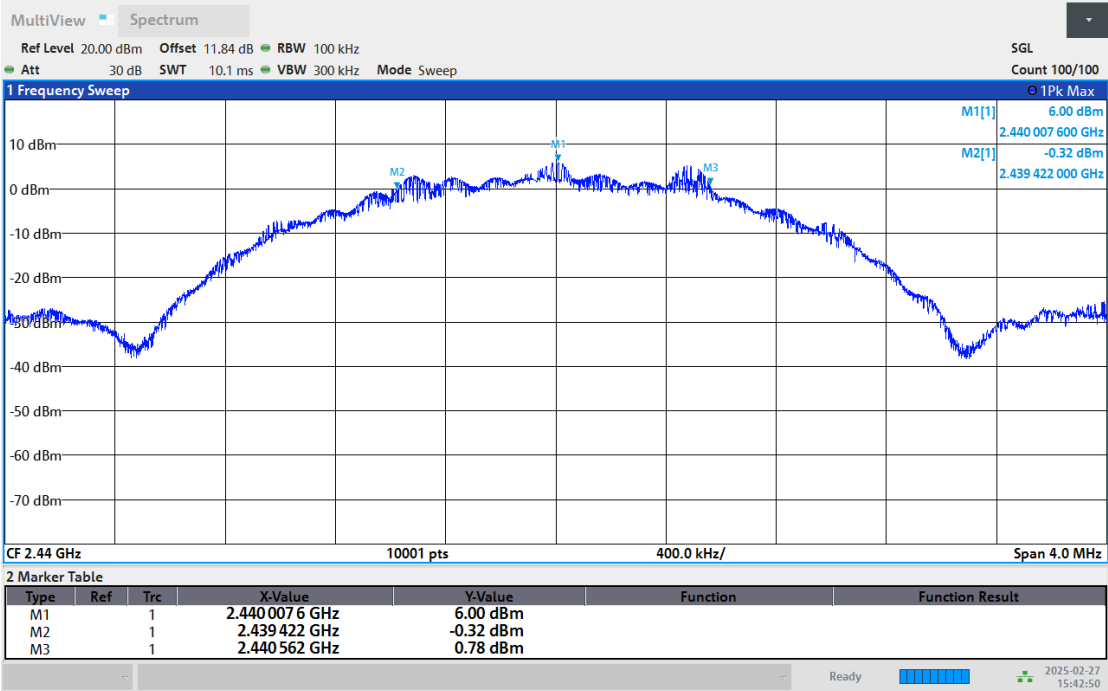
03:31:32 PM 02/27/2025

2402MHz, 2Mbps



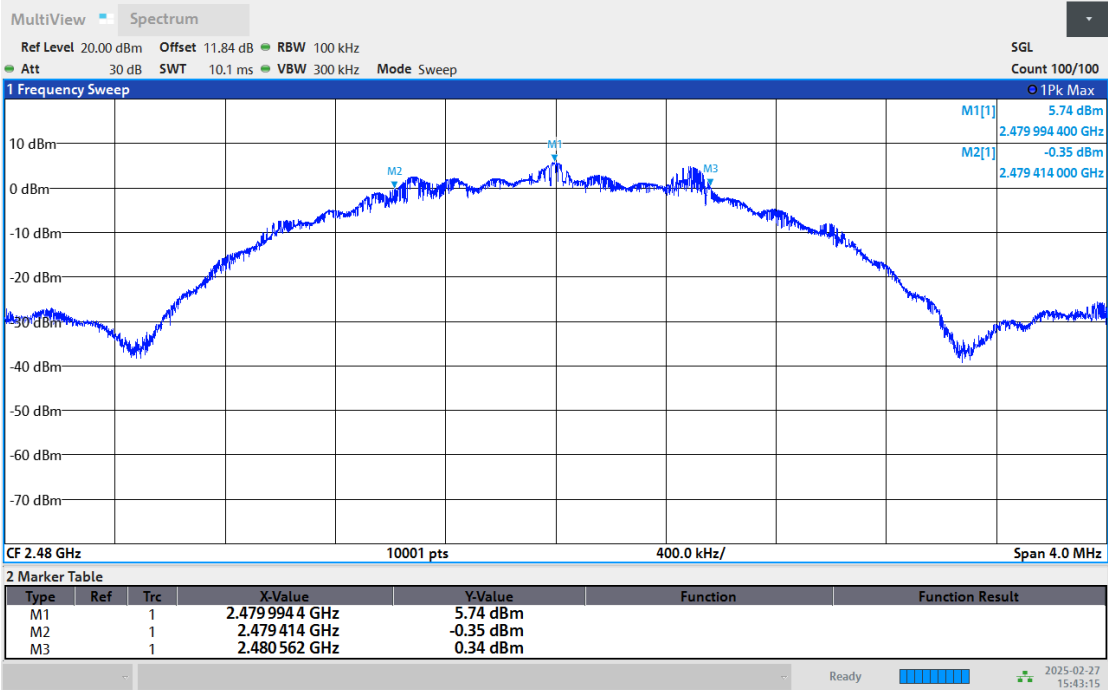
03:42:30 PM 02/27/2025

2440MHz, 2Mbps



03:42:51 PM 02/27/2025

2480MHz, 2Mbps



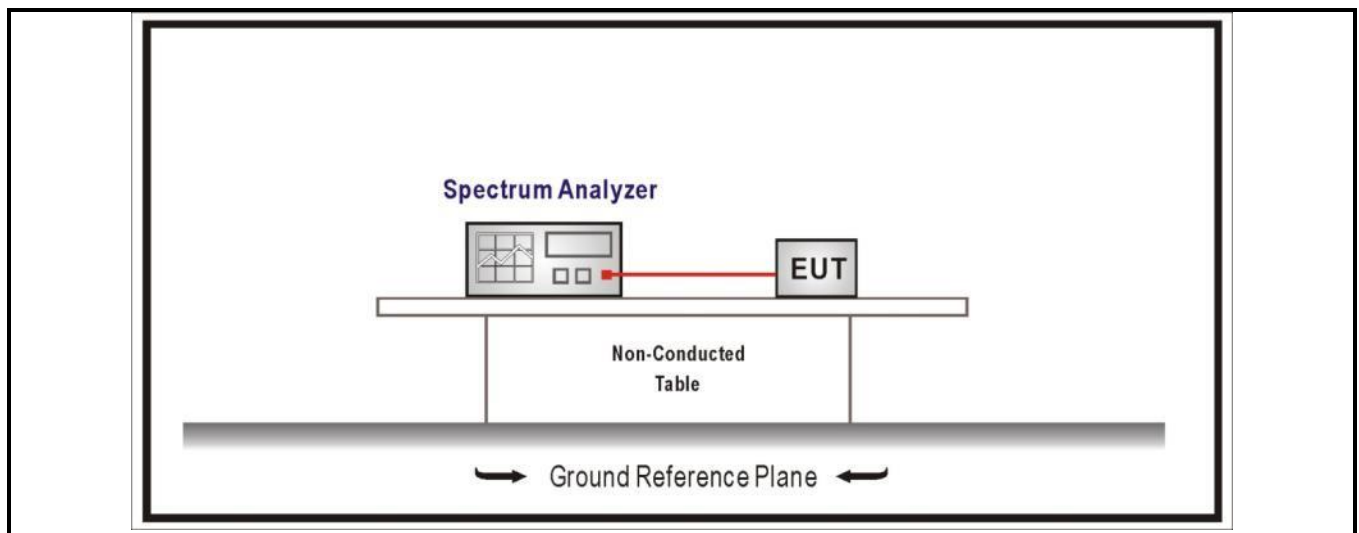
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4.7	Fundamental emission output power	VERDICT: PASS
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Limit

Standard		FCC Part 15 Subpart C Paragraph 15.247 (b)(3)
☒	GTX <6dBi	Pout≤30dBm, EIRP≤36dBm
☐	GTX >6dBi	
☐	Non-Fix point-point	Pout≤30-(GTX -6), EIRP≤36dBm
☐	Fix point-point	Pout≤30-[(GTX-6)]/3, EIRP≤36dBm
☐	Point-to-multipoint	Pout≤30-(GTX-6) , EIRP≤36dBm
☐	Overlap Beams	Pout≤30-[(GTX-6)]/3, EIRP≤36dBm
☐	Aggregate power transmitted simultaneously on all beams	Pout≤30-[(GTX-6)]/3, EIRP≤36dBm
☐	single LE directional beam	Pout≤30-[(GTX-6)]/3+8dB, EIRP≤36dBm
Note 1 : GTX directional gain of transmitting antennas. Note 2 : Pout is maximum peak conducted output power . Note 3 : EIRP is equivalent isotropically radiated power.		

Test Configuration



Performed measurements

Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

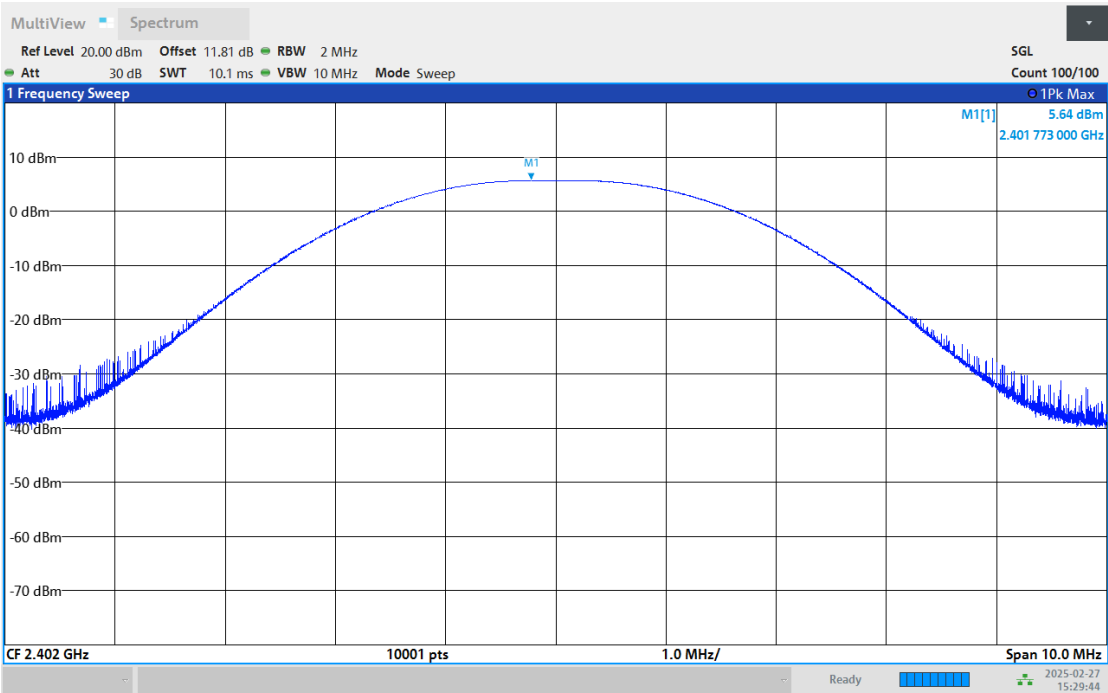
See next page.

Results

Mode	Channel	Test Frequency (MHz)	Output Power (dBm)	Output Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)	Result
BLE 1Mbps	00	2402	5.64	≤30	8.94	≤36	Pass
	19	2440	6.25	≤30	9.55	≤36	Pass
	39	2480	5.91	≤30	9.21	≤36	Pass
BLE 2Mbps	00	2402	5.62	≤30	8.92	≤36	Pass
	19	2440	6.24	≤30	9.54	≤36	Pass
	39	2480	5.90	≤30	9.20	≤36	Pass

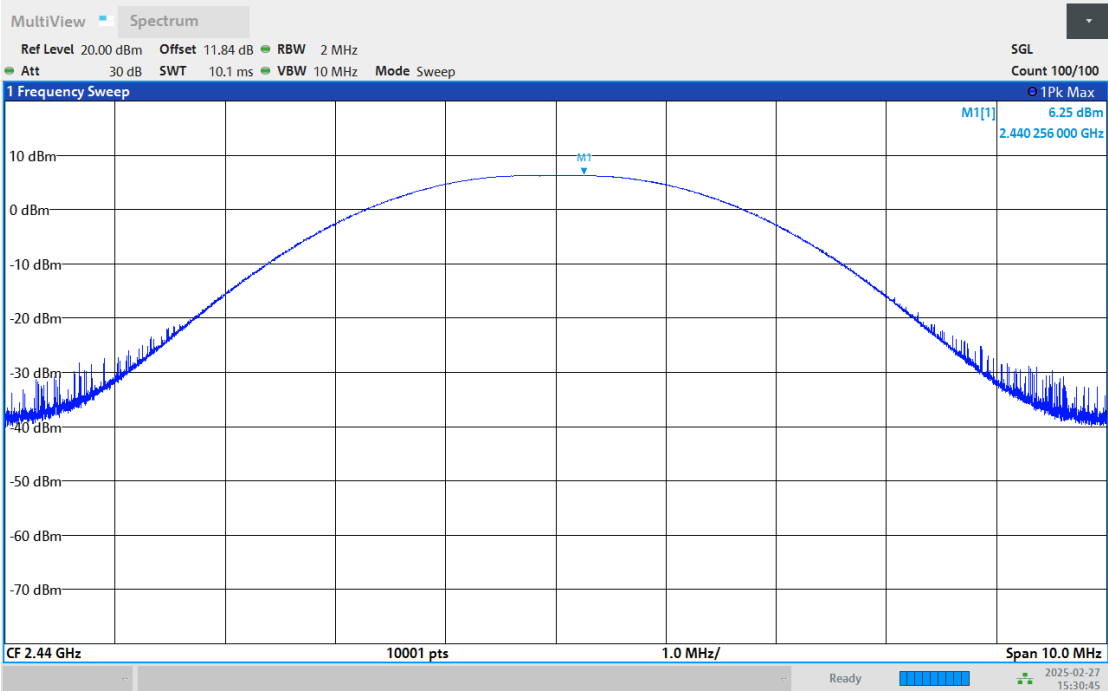
Note: EIRP = Output Power + Antenna Gain

Fundamental emission output power
2402MHz, 1Mbps



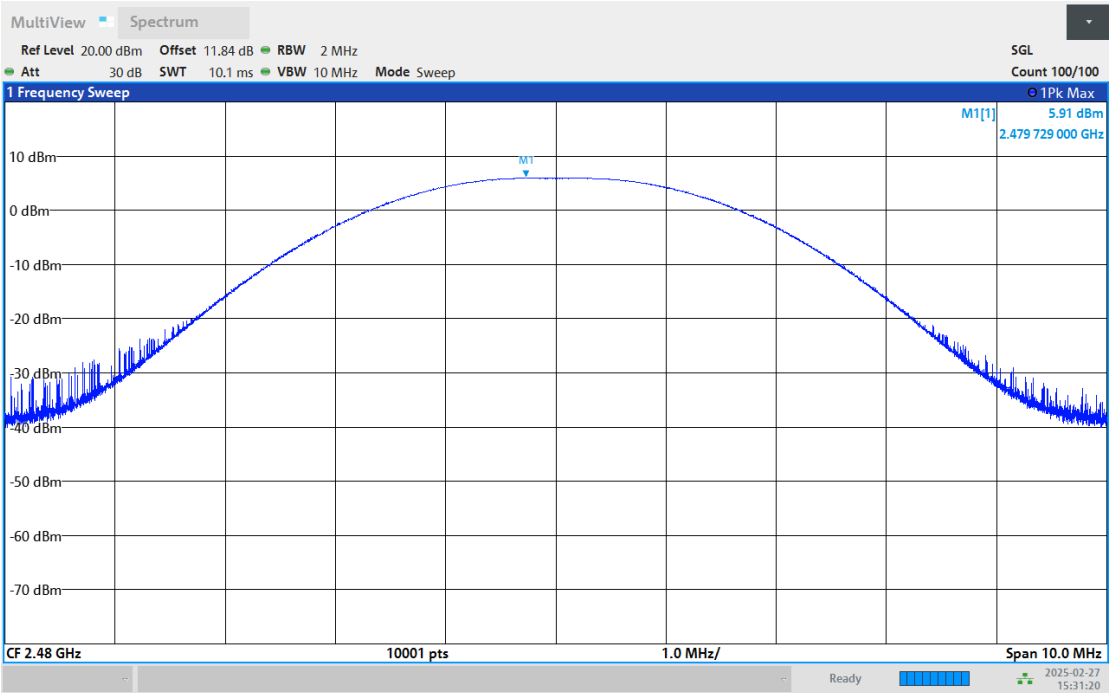
03:29:44 PM 02/27/2025

2440MHz, 1Mbps



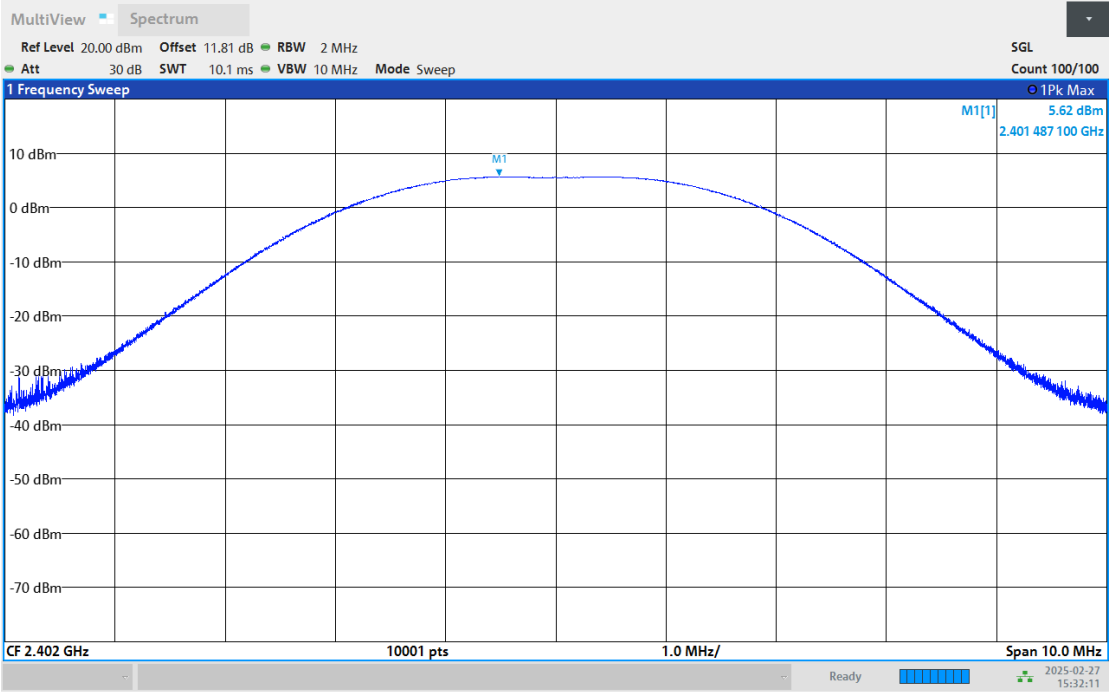
03:30:46 PM 02/27/2025

2480MHz, 1Mbps



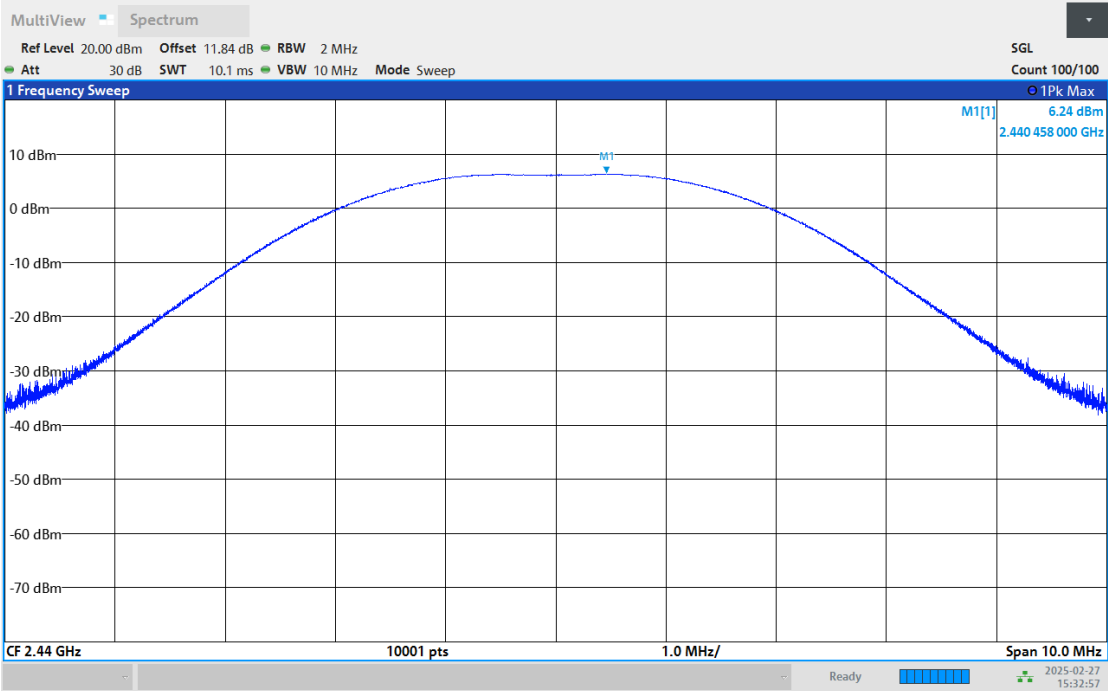
03:31:20 PM 02/27/2025

2402MHz, 2Mbps



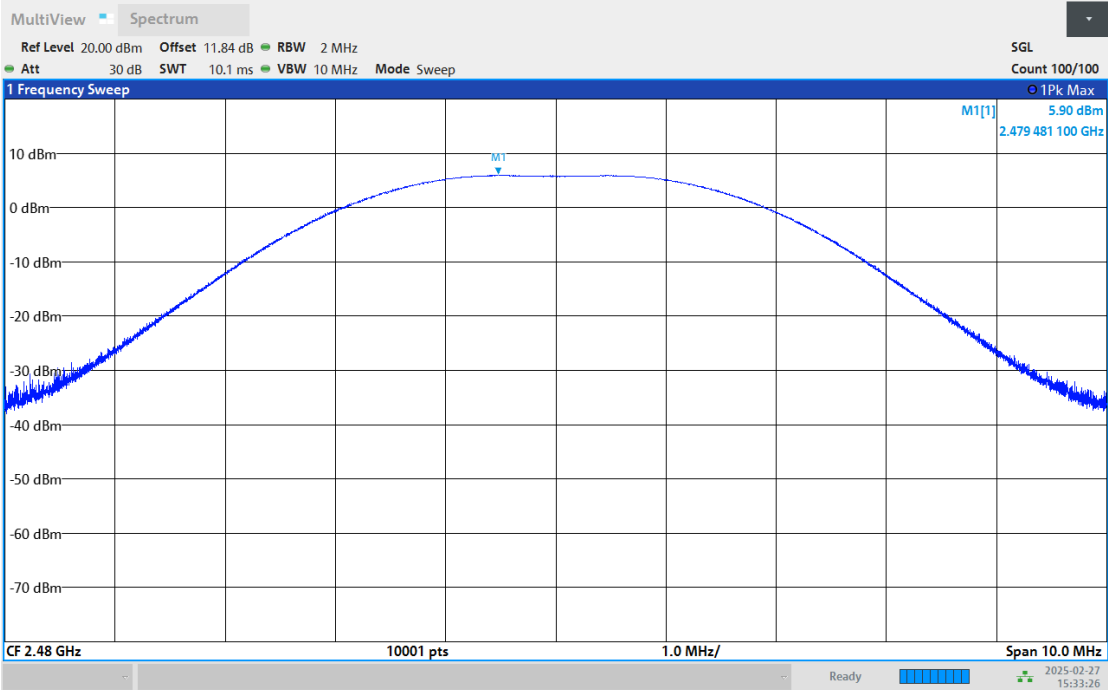
03:32:12 PM 02/27/2025

2440MHz, 2Mbps



03:32:58 PM 02/27/2025

2480MHz, 2Mbps



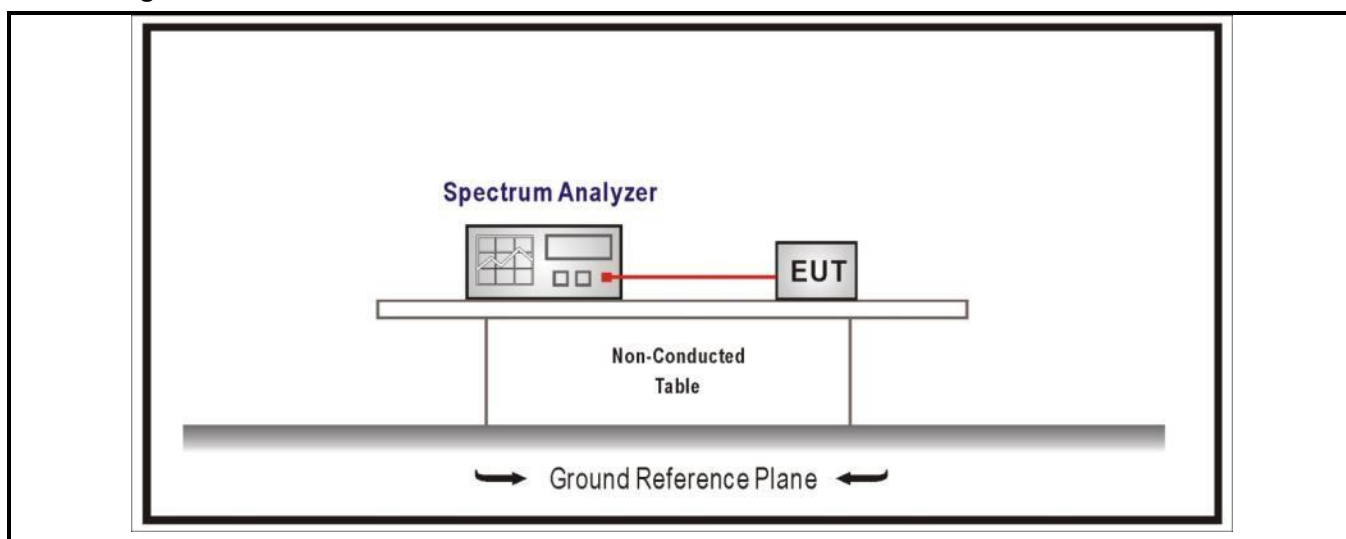
03:33:26 PM 02/27/2025

4.8	Power Spectral Density	VERDICT: PASS
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Limit

Standard	FCC Part 15 Subpart C Paragraph 15.247 (e)
Power Spectral Density $\leq 8\text{dBm}/3\text{kHz}$	

Test Configuration



Performed measurements

Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

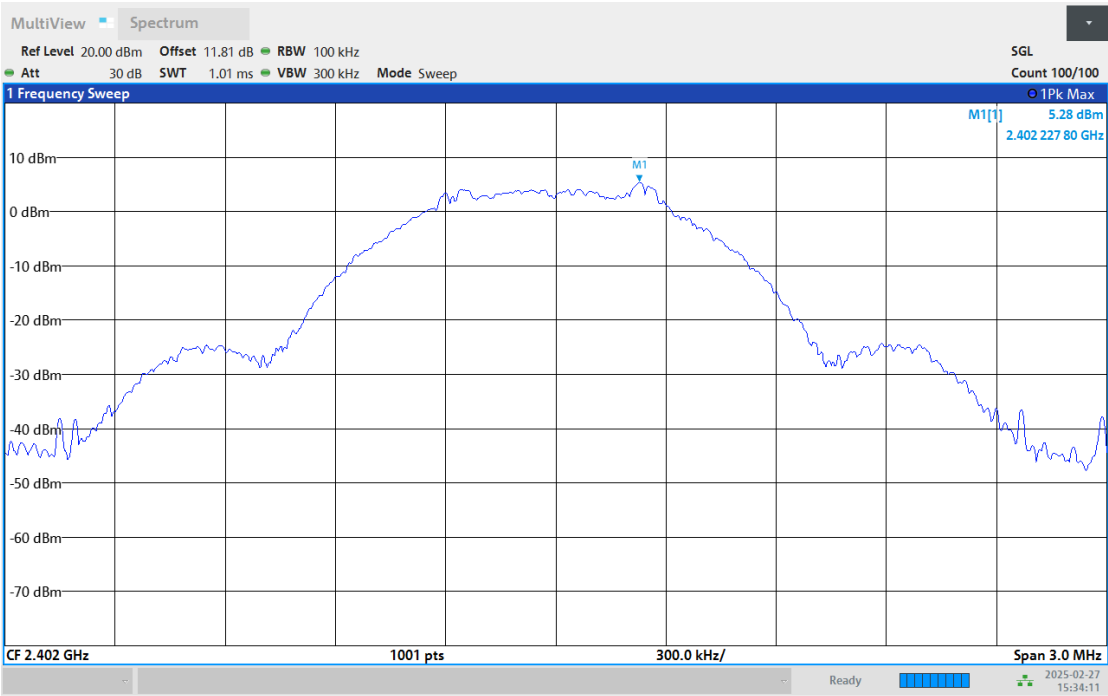
See next page.

Results

Mode	Channel	Test Frequency (MHz)	Power Spectral Density (dBm)	Limit (dBm/3kHz)	Result
BLE 1Mbps	00	2402	5.28	≤ 8	Pass
	19	2440	5.38	≤ 8	Pass
	39	2480	5.69	≤ 8	Pass
BLE 2Mbps	00	2402	5.32	≤ 8	Pass
	19	2440	6.05	≤ 8	Pass
	39	2480	4.61	≤ 8	Pass

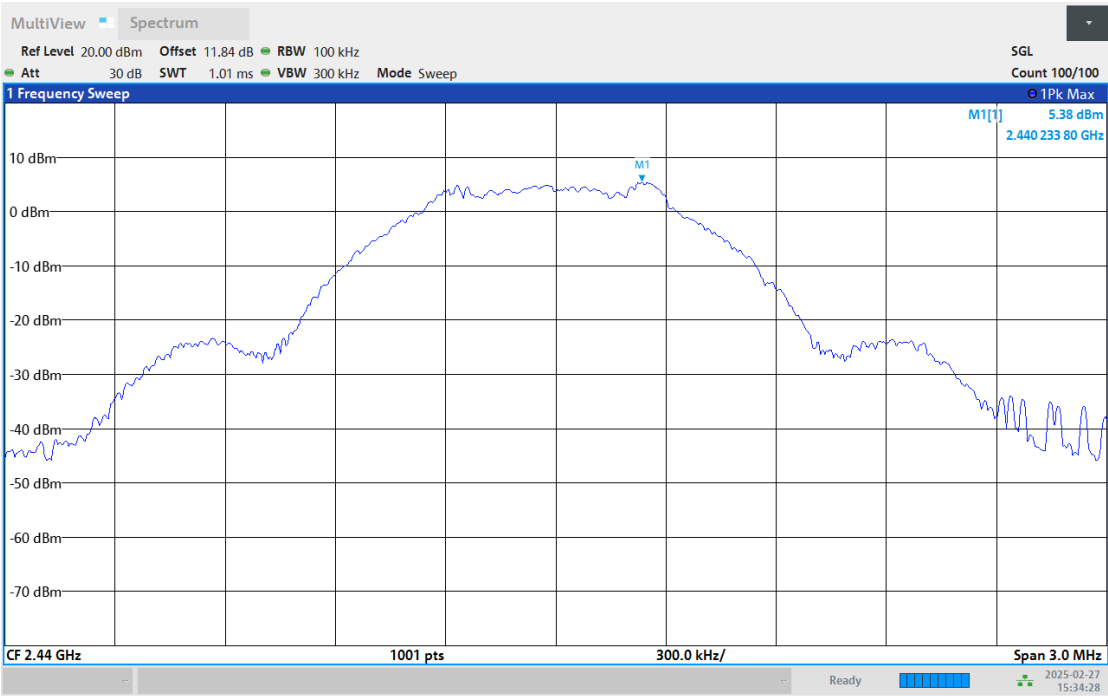
Power Spectral Density

2402MHz, 1Mbps



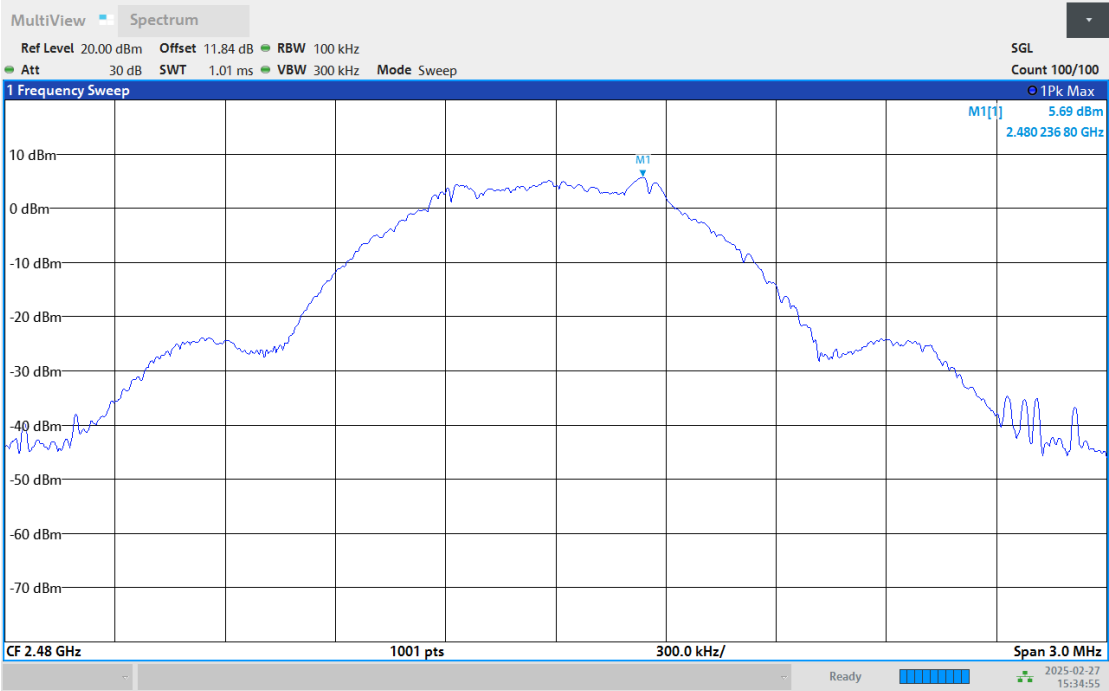
03:34:12 PM 02/27/2025

2440MHz, 1Mbps



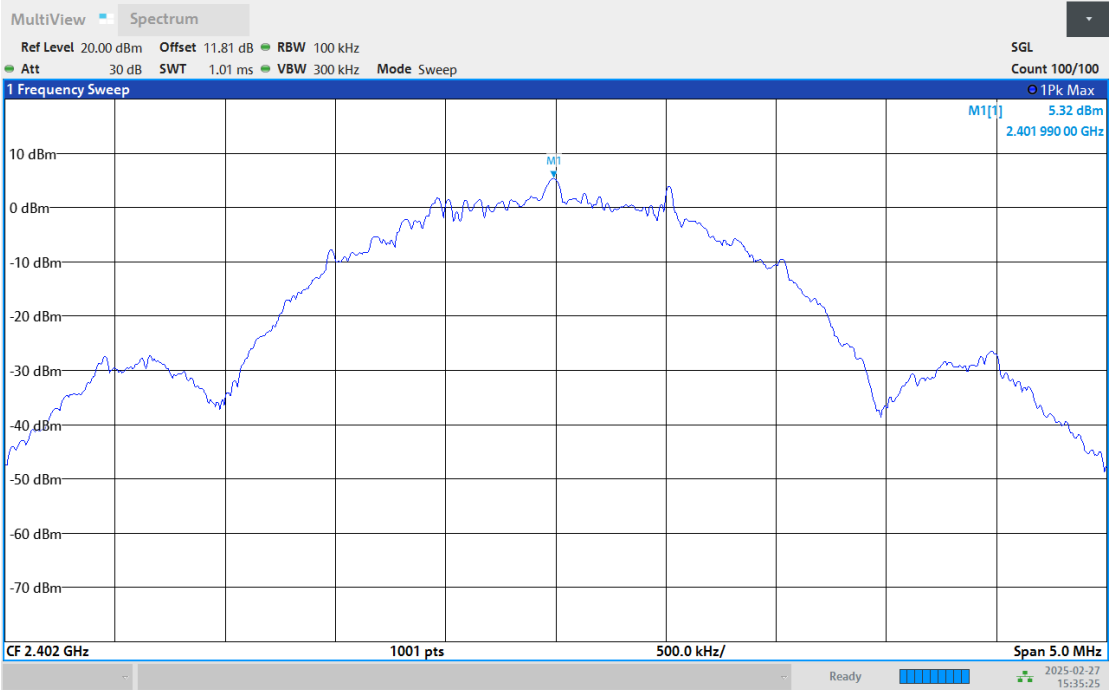
03:34:29 PM 02/27/2025

2480MHz, 1Mbps



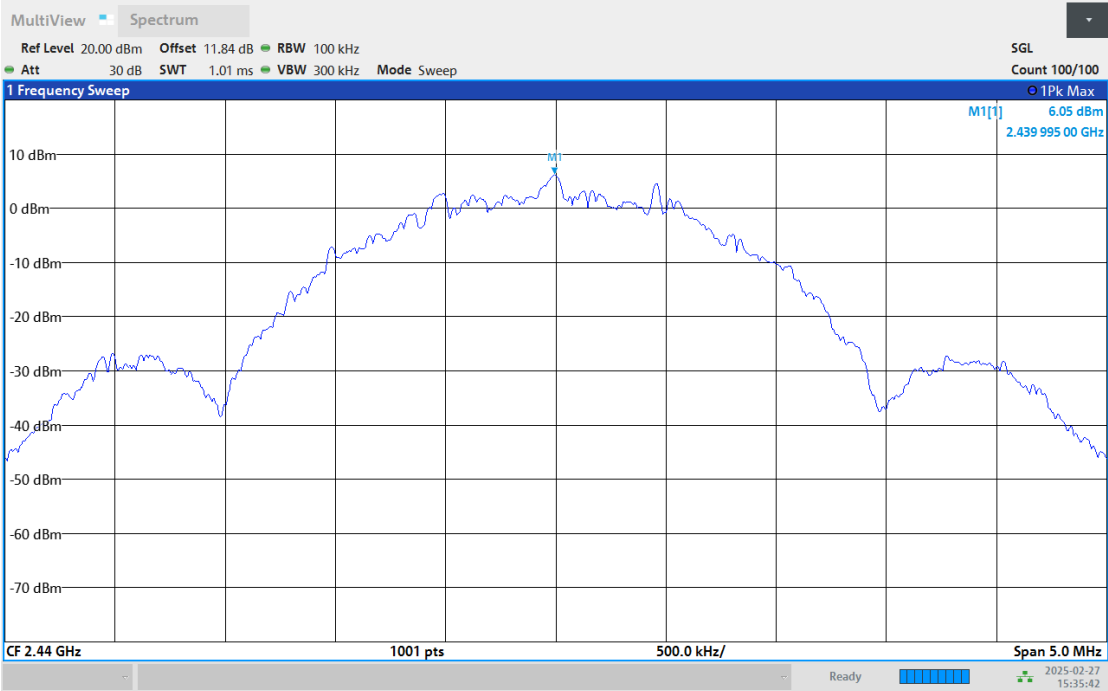
03:34:56 PM 02/27/2025

2402MHz, 2Mbps



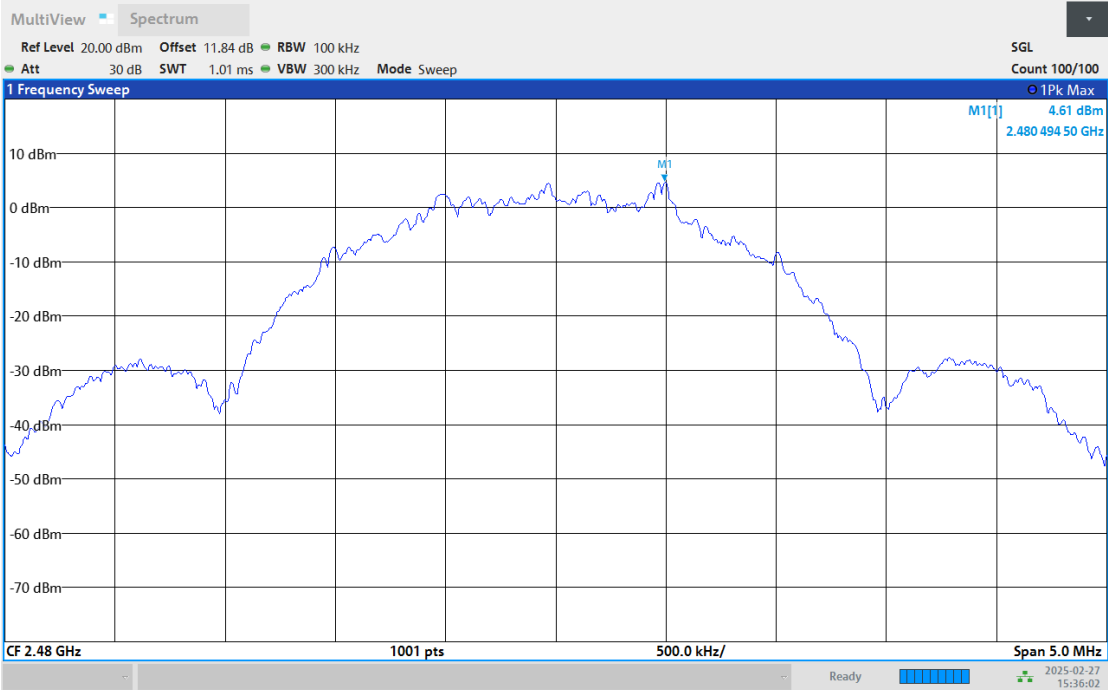
03:35:26 PM 02/27/2025

2440MHz, 2Mbps



03:35:43 PM 02/27/2025

2480MHz, 2Mbps



03:36:03 PM 02/27/2025

4.9	Antenna Requirement	VERDICT: PASS
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Limit

Standard	FCC Part 15 Subpart C Paragraph 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.	

Antenna Connector Construction

☒	The use of a permanently attached antenna
☐	The antenna use of a unique coupling to the intentional radiator
☐	The use of a nonstandard antenna jack or electrical connector
Please refer to the attached document 'Internal Photograph' to show the antenna connector.	

5 IDENTIFICATION OF THE EQUIPMENT UNDER TEST

Remark: The test setup photo and EUT Photo please see appendix.

ANNEX 1 – MEASUREMENT UNCERTAINTY

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%.

Test Item	Uncertainty	
AC Power Line Conducted Emission	2.6 dB	
Radio frequency & Bandwidth	2 ppm	
RF power, conducted	0.16 dB	
Dwell Time	2.02 ms	
Spurious emissions, radiated	(9KHz~30MHz)	2.26 dB
	(30MHz~1GHz)	Horizontal: 4.80 dB
		Vertical: 5.40 dB
	(1GHz~8GHz)	Horizontal: 4.39 dB
		Vertical: 4.14 dB
	(8GHz~12.75GHz)	Horizontal: 4.27 dB
		Vertical: 4.19 dB
	(12.75GHz~18GHz)	Horizontal: 4.70 dB
		Vertical: 4.04 dB
	(18GHz~40GHz)	Horizontal: 4.01 dB
		Vertical: 4.03 dB
Humidity	1.4 %	
Temperature	0.5 °C	

ANNEX 2 – USED EQUIPMENT

For AC Power Line Conducted Emission

Equipment Name	Manufacturer	Type/Model	Serial Number	Last Cal Date	Cal Due date
EMI test receiver	R&S	ESR3	102958	2024/06/14	2025/06/13
Artificial Mains Network	R&S	ENV216	102772	2024/06/14	2025/06/13
Software	R&S	ELEKTRA	4.32.0	N/A	N/A

For Radiated Emission (30 MHz to 1000 MHz) - Anechoic Chamber No.1

Equipment Name	Manufacturer	Type/Model	Serial Number	Last Cal Date	Cal Due date
EMI Test Receiver	ROHDE & SCHWARZ	ESR7	102433	2024/11/20	2025/11/19
Trilog Broadband Antenna+Attenuator	SCHWARZBECK	VULB9163/6dB	01514	2024/02/29	2025/02/28
Open Switch and Control Unit	ROHDE & SCHWARZ	OSP220	102232	N/A	N/A
Software	ROHDE & SCHWARZ	ELEKTRA	4.20.2	N/A	N/A

For Spurious Emissions Test (Above 1 GHz)- Anechoic Chamber No.2

Equipment Name	Manufacturer	Type/Model	Serial Number	Last Cal Date	Cal Due date
Wideband Radio Communication Tester	ROHDE & SCHWARZ	CMW500	171082	2025/01/21	2026/01/20
Signal & Spectrum Analyzer	ROHDE & SCHWARZ	FSV3044	101286	2025/01/21	2026/01/20
FILTERBANK	ROHDE & SCHWARZ	N/A	100778	N/A	N/A
Open Switch and Control Unit	ROHDE & SCHWARZ	OSP220	102454	N/A	N/A
System Controller Interface	ROHDE & SCHWARZ	SCI-200	520020123	N/A	N/A
Wave Guide Antenna	Schwarzbeck	3117	00240298	2024/03/01	2025/02/28
Antenna	Schwarzbeck	QMS-00208	27745	2024/03/01	2025/02/28
Antenna	Schwarzbeck	QMS-00880	27646	2024/03/01	2025/02/28
Pre-Amplifie	ROHDE & SCHWARZ	SCU08F1	101136	2025/01/21	2026/01/20
Pre-Amplifie	ROHDE & SCHWARZ	SCU18F	100971	2025/02/24	2026/02/23
Pre-Amplifie	ROHDE & SCHWARZ	SCU18F	100970	2025/02/24	2026/02/23
Pre-Amplifie	ROHDE & SCHWARZ	SCU40F1	100631	2025/02/24	2026/02/23
Software	ROHDE & SCHWARZ	ELEKTRA	4.52.1	N/A	N/A

For other test items - Shielded Room (RF)

Equipment Name	Manufacturer	Type/Model	Serial Number	Last Cal Date	Cal Due date
Vector signal generator	ROHDE & SCHWARZ	SMM100A	101780	2025/01/21	2026/01/20
Open switch and control platform	ROHDE & SCHWARZ	OSP150	100856	2024/11/22	2025/11/21
Signal & Spectrum Analyzer	ROHDE & SCHWARZ	FSV3044	101287	2025/02/24	2026/02/23
Wireless Connectivity Tester	ROHDE & SCHWARZ	CMW270	102651	2025/01/21	2026/01/20
Signal Generator	ROHDE & SCHWARZ	SMB100A	183222	2025/01/21	2026/01/20
DC Power Supply	apc	ADC-0800100-15	D222120022	2024/11/22	2025/11/21
AC Power Supply	apc	KDF-11005GS	F322120041	2025/01/21	2026/01/20
Temperature & Humidity Chamber	HESON	HS-225B	CDW230301-01	2025/02/18	2026/02/17
Software	MWRFTtest	MTS 8310	2.0.0.0	N/A	N/A

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