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Test report No: 4907809.51

TEST REPORT
Radio Spectrum Matters (RF)

Identification of item tested	Refrigerator
Trademark	BLUETTI
Model and /or type reference	F045D
FCC ID	2AYT3-F045D
Features	Adaptor input: 100-240VAC 50/60Hz， Refrigerator input: 12/24VDC, Rated power(Fridge): 65W, Rated power(Making ice): 140W
Applicant´s name / address	SHENZHEN POWEROAK NEWENER CO., LTD F19, BLD No.1, Kaidaer Tongsha Rd No.168, Xili Street, Nanshan Shenzhen China
Test method requested, standard	FCC CFR Title 47 Part15 Subpart C Section 15.247; KDB558074 D01v05r02
Verdict Summary	COMPLIANCE
Tested by (name & signature)	Kenny Liang
Approved by (name & signature)	Tim Yan
Date of issue	2024-11-13
Report template No	TRF_EMC 2017-06- FCC_Part15C_247

INDEX

page

General conditions 4
Uncertainty 4
Environmental conditions 4
Possible test case verdicts 4
Definition of symbols used in this test report 5
Abbreviations 5
Document History 5
Remarks and Comments 5
1 General Information 6
1.1 General Description of the Item(s) 6
1.2 Test data 7
1.3 The environment(s) in which the EUT is intended to be used 7
1.4 Channel List 7
2 Description of Test Setup 8
2.1 Operating mode(s) used for tests 8
2.2 Support / Auxiliary equipment / unit / software for the EUT 8
2.3 Test Configuration / Block diagram used for tests 8
3 Verdict summary section 9
3.1 Standards 9
3.2 Deviation(s) from the Standard(s) / Test Specification(s) 9
3.3 Overview of results 9
3.4 Measurement procedure 10
4 Transmitter Test Results 11
4.1 AC Power Line Conducted Emission 11
4.2 Emissions in non-restricted frequency bands 14
4.3 Emissions in restricted frequency bands 23
4.4 Band Edge 30
4.5 Duty cycle 33
4.6 DTS Bandwidth 37
4.7 Fundamental emission output power 40
4.8 Power Density 43
5 Identification of the Equipment Under Test 46
Annex 1 – Measurement Uncertainty 47
Annex 2 - Used Equipment 48

Annex 3 - Test Photos..... 49

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. 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 EN 55016-4-2 (CISPR 16-4-2), EN/IEC 61000-4 series or a 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%.

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
4907809.51	2024-11-13	First release.

REMARKS AND COMMENTS

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

1 GENERAL INFORMATION

1.1 General Description of the Item(s)

Description of the item ..... :	Refrigerator
Trademark ..... :	BLUETTI
Model / Type number ..... :	F045D
FCC ID ..... :	2AYT3-F045D
Ratings ..... :	Adaptor input: 100-240VAC 50/60Hz， Refrigerator input: 12/24VDC, Rated power(Fridge): 65W, Rated power(Making ice): 140W
Manufacturer..... :	Same as applicant
Factory ..... :	Same as applicant

Based on customer's declaration, the product contains wireless RF module and the characteristics of radio module are:

Operating frequency range(s) – Tx :	2402-2480 MHz
Operating frequency range(s) – Rx :	2402-2480 MHz
Maximum RF output power (conducted) ..... :	7.1 dBm
E.I.R.P. ..... :	-0.1 dBm
Type of Modulation ..... :	GFSK
PHYs ..... :	LE 1M
Data Rate ..... :	1 Mbit/s
Antenna type..... :	Integral Antenna
Antenna gain..... :	-7.2 dBi
Number of channel..... :	40
Operating Temperature Range..... :	-5 - +55 ℃

Rated power supply .....:	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	☒	AC: 100–240 V, 50/60 Hz	☒	☐	☐	☒	☐
	☒	DC: 12/24 V					
	☐	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 apparatus as supplied for the test is refrigerator which intended for residential use, the product contains electronic control circuitry. Hence, model F045D was chosen for full test.

Copy of marking plate:
No provide.

1.2 Test data

Test Location	DEKRA Testing and Certification (Shanghai) Ltd. Guangzhou Branch Block 5, No.3, Qiyun Road, Huangpu District, Guangzhou, Guangdong, China FCC Designation Number: CN1324; ISED CAB identifier: CN0130
Date of receipt of test item	2024-04-11
Date (s) of performance of tests	2024-04-11 to 2024-08-23

1.3 The environment(s) in which the EUT is intended to be used

The equipment under test (EUT) is intended to be used in the following environment(s):

☒	Residential (domestic) environment.
☒	Commercial and light-industrial environment.
☐	Industrial environment.

1.4 Channel List

Bluetooth Working Frequency of Each Channel:							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
37	2402 MHz	00	2404 MHz	01	2406 MHz	02	2408 MHz
03	2410 MHz	04	2412 MHz	05	2414 MHz	06	2416 MHz
07	2418 MHz	08	2420 MHz	09	2422 MHz	10	2424 MHz
38	2426 MHz	11	2428 MHz	12	2430 MHz	13	2432 MHz
14	2434 MHz	15	2436 MHz	16	2438 MHz	17	2440 MHz
18	2442 MHz	19	2444 MHz	20	2446 MHz	21	2448 MHz
22	2450 MHz	23	2452 MHz	24	2454 MHz	25	2456 MHz
26	2458 MHz	27	2460 MHz	28	2462 MHz	29	2464 MHz
30	2466 MHz	31	2468 MHz	32	2470 MHz	33	2472 MHz
34	2474 MHz	35	2476 MHz	36	2478 MHz	39	2480 MHz

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 methos	
		Conducted	Radiated
1	Transmitting at 1 Mbit/s	☒	☒
2		☐	☐
3		☐	☐
4		☐	☐
Supplemental information: ---			

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	Manufacturer	Supplied by
---	---	---	---
Supplemental information: ---			

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	2024	Operation within the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz.
KDB 558074 D01 v05r02	2019	Guidance for performing compliance measurements on Digital Transmission System (DTS) operating under section 15.247
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 non-restricted frequency bands	FCC 15.247(d), FCC 15.209	PASS	---
Emissions in restricted frequency bands	FCC 15.247(b)(3)	PASS	---
Duty cycle	ANSI C63.10:2013	PASS	---
Band Edge	FCC 15.247(d)	PASS	---
Fundamental emission output power	FCC 15.247(d), FCC 15.209	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: ---			

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.

3.4 Measurement procedure

The EUT was controlled by a serial PCB which provided by manufacturer which connected to laptop through the com port. After connected, run the software “FCC Assist” supplied by manufacturer to control the EUT work in required test mode as below table.

Mode	Frequency (MHz)
BLE	2402
	2440
	2480

4 TRANSMITTER TEST RESULTS

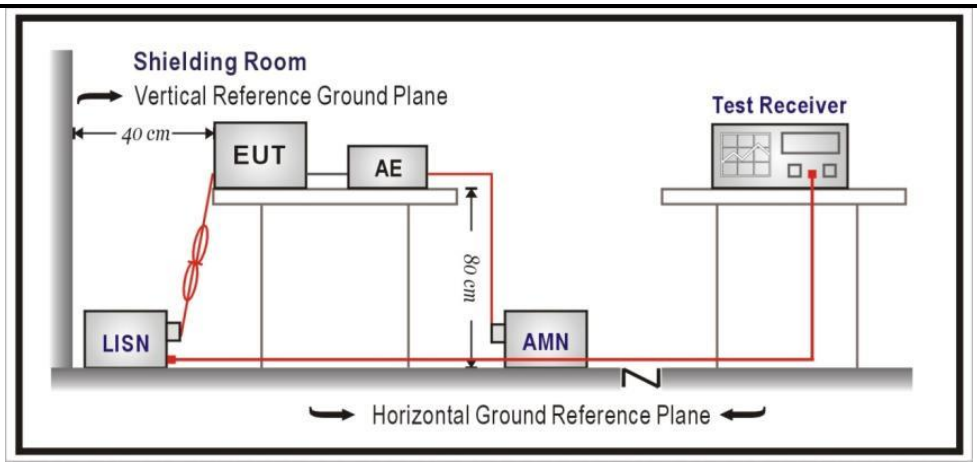
4.1 AC Power Line Conducted Emission	VERDICT: PASS

Limits

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

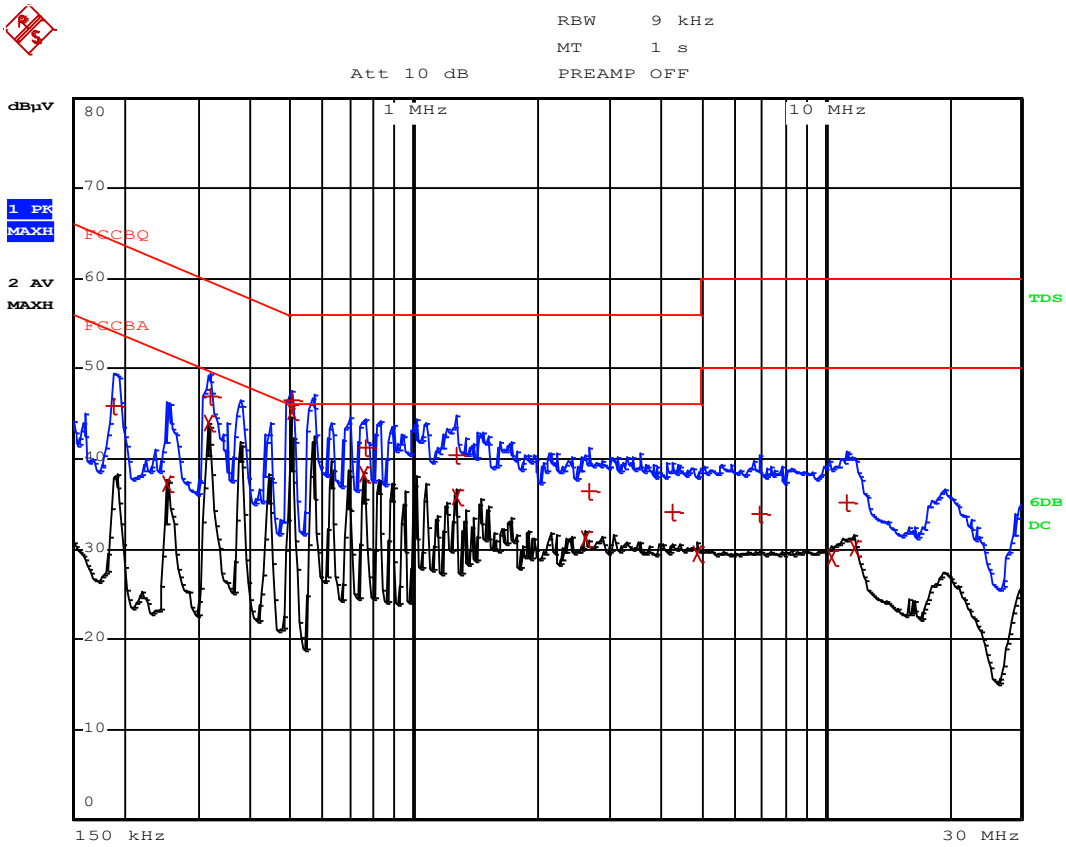
Port under test			Terminal							
☒	AC mains input power		☒	N	☒	L1	☐	L2	☐	L3
☐	DC input power		☐	Positive (+)			☐	Negative (-)		

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			
Envirment condition (temperature; humidiry)	23.0 °C; 45.0 %			
Remark	---			

Model	F045D
Operation Mode	Mode 1
Test voltage	120 Vac, 60 Hz

Results

Live



EDIT PEAK LIST (Final Measurement Results)

Trace1: FCCBQ
Trace2: FCCBA
Trace3: ---

TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
2 Average	506 kHz	45.24	-0.75
2 Average	314 kHz	44.04	-5.81
2 Average	758 kHz	38.38	-7.61
1 Quasi Peak	506 kHz	46.49	-9.50
2 Average	1.274 MHz	35.81	-10.18
1 Quasi Peak	318 kHz	46.82	-12.93
2 Average	250 kHz	37.17	-14.58
1 Quasi Peak	766 kHz	41.23	-14.77
2 Average	2.618 MHz	31.19	-14.80
1 Quasi Peak	1.274 MHz	40.44	-15.55
2 Average	4.914 MHz	29.51	-16.48
1 Quasi Peak	190 kHz	45.88	-18.15
1 Quasi Peak	2.682 MHz	36.42	-19.57
2 Average	11.842 MHz	30.21	-19.78

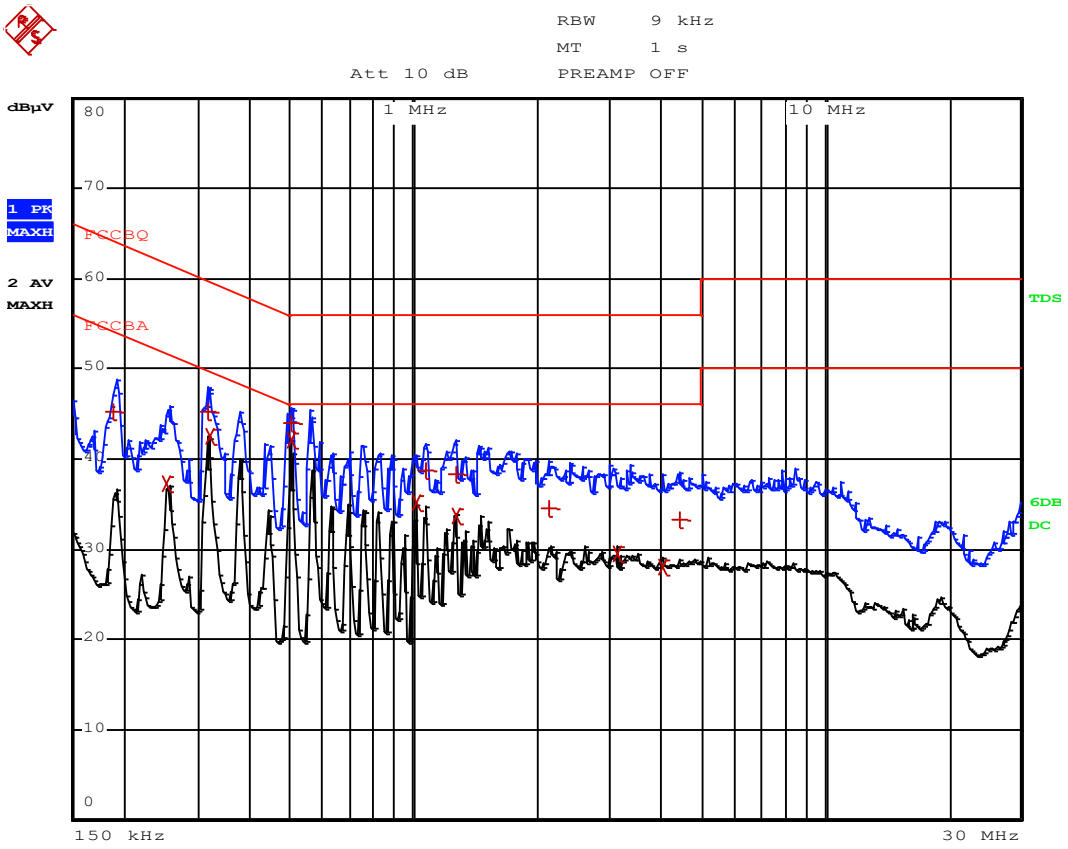
Remarks:

1) Level (final measurement) = received value + transducer (Lisn+cable)

2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

Neutral



EDIT PEAK LIST (Final Measurement Results)

Trace1:	FCCBQ
Trace2:	FCCBA
Trace3:	---

TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
2 Average	506 kHz	42.04	-3.95
2 Average	318 kHz	42.59	-7.16
2 Average	1.014 MHz	35.15	-10.84
1 Quasi Peak	506 kHz	43.92	-12.07
2 Average	1.274 MHz	33.65	-12.34
2 Average	254 kHz	37.31	-14.30
1 Quasi Peak	314 kHz	45.24	-14.61
2 Average	3.122 MHz	29.46	-16.53
1 Quasi Peak	1.078 MHz	38.75	-17.24
1 Quasi Peak	1.27 MHz	38.29	-17.70
2 Average	4.026 MHz	27.95	-18.04
1 Quasi Peak	190 kHz	45.25	-18.78
1 Quasi Peak	2.15 MHz	34.59	-21.40
1 Quasi Peak	4.462 MHz	33.26	-22.73

Remarks:

1) Level (final measurement) = received value + transducer (Lisn+cable)
2) Delta = Level – Limit

No other significant emissions were measured at the frequency range of interest employing both the QP and AV detectors.

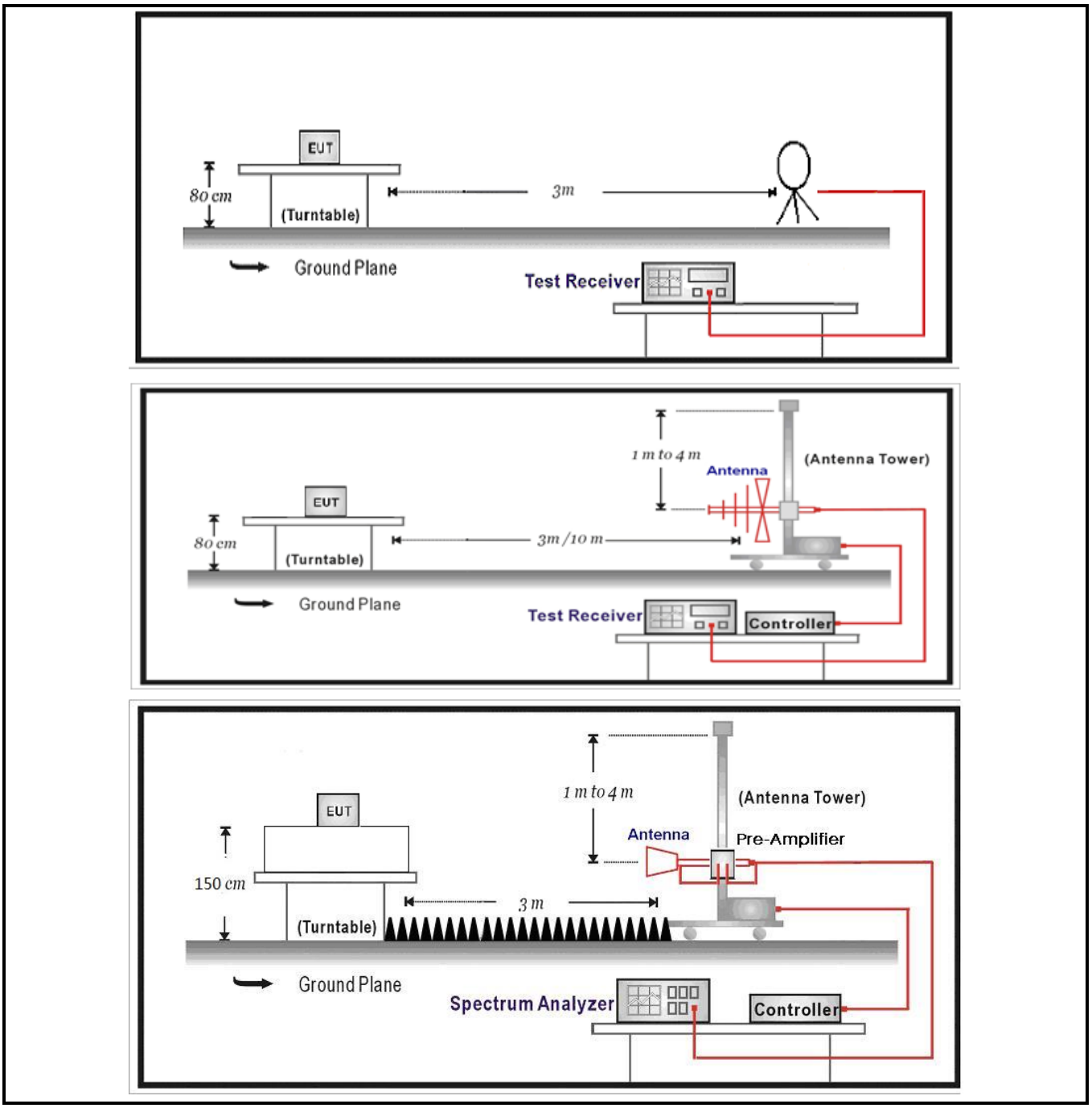
4.2 Emissions in non-restricted frequency bands — VERDICT: PASS

Emissions Limit 15.209(a)			
Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/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



Performed measurements

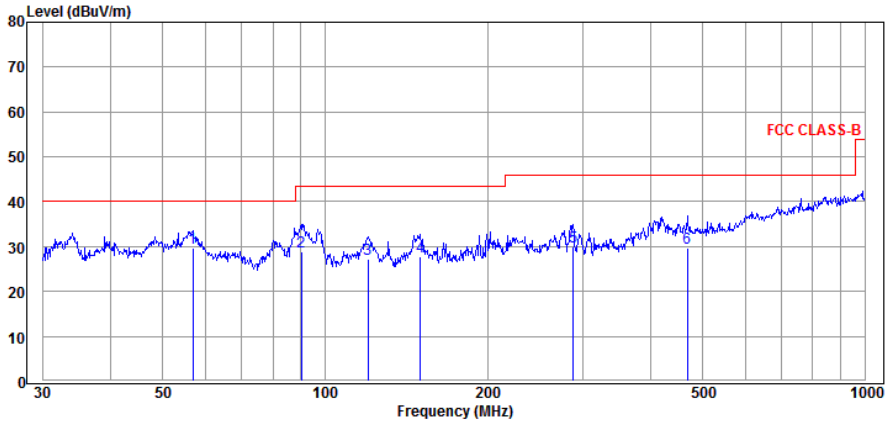
Port under test	Enclosure port	
Test method applied	☐	Conducted measurement
	☒	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	The test frequency range, 9kHz~30MHz, 18GHz~26GHz, both of the worst case are at least 20dB below the limits,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

Results of 30 – 1000 MHz

Model	F045D
Operation Mode	Mode 1 @2402MHz
Test voltage	---

Results

Horizontal



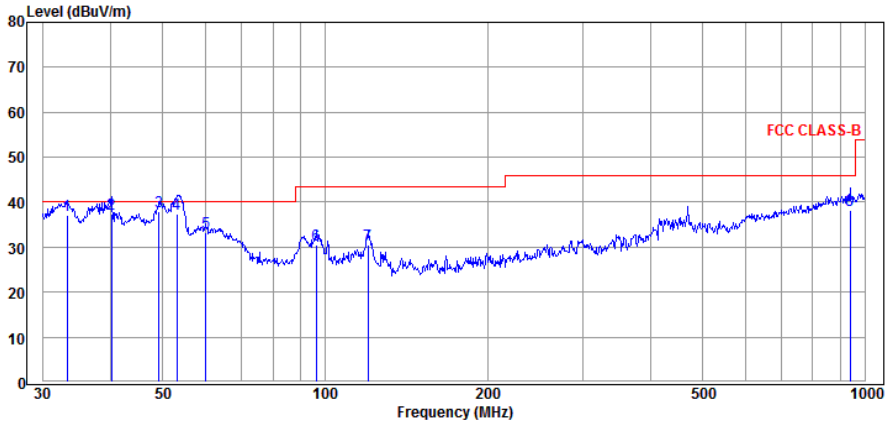
Freq (MHz)	Reading (dBuV)	C.F (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin=limit-result (dB)
56.79	15.40	14.17	29.57	40.00	10.43
90.22	17.63	11.27	28.90	43.50	14.60
119.86	16.11	11.13	27.24	43.50	16.26
150.01	18.25	9.44	27.69	43.50	15.81
287.99	15.00	15.04	30.04	46.00	15.96
468.88	10.55	19.15	29.70	46.00	16.30

Remarks:

1) C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
2) Result = Reading + C.F (Correction Factor)

No other significant emissions were measured at the frequency range of interest employing the QP detectors.

Vertical



Freq (MHz)	Reading (dBuV)	C.F (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin=limit-result (dB)
33.21	24.37	12.78	37.15	40.00	2.85
40.14	23.11	14.17	37.28	40.00	2.72
49.19	23.08	14.84	37.92	40.00	2.08
53.13	22.70	14.64	37.34	40.00	2.66
60.07	19.73	13.50	33.23	40.00	6.77
96.10	18.06	12.48	30.54	43.50	12.96
119.86	19.49	11.13	30.62	43.50	12.88

Remarks:

1) C.F (Correction Factor) = Antenna factor + Cable loss - Preamp gain
2) Result = Reading + C.F (Correction Factor)

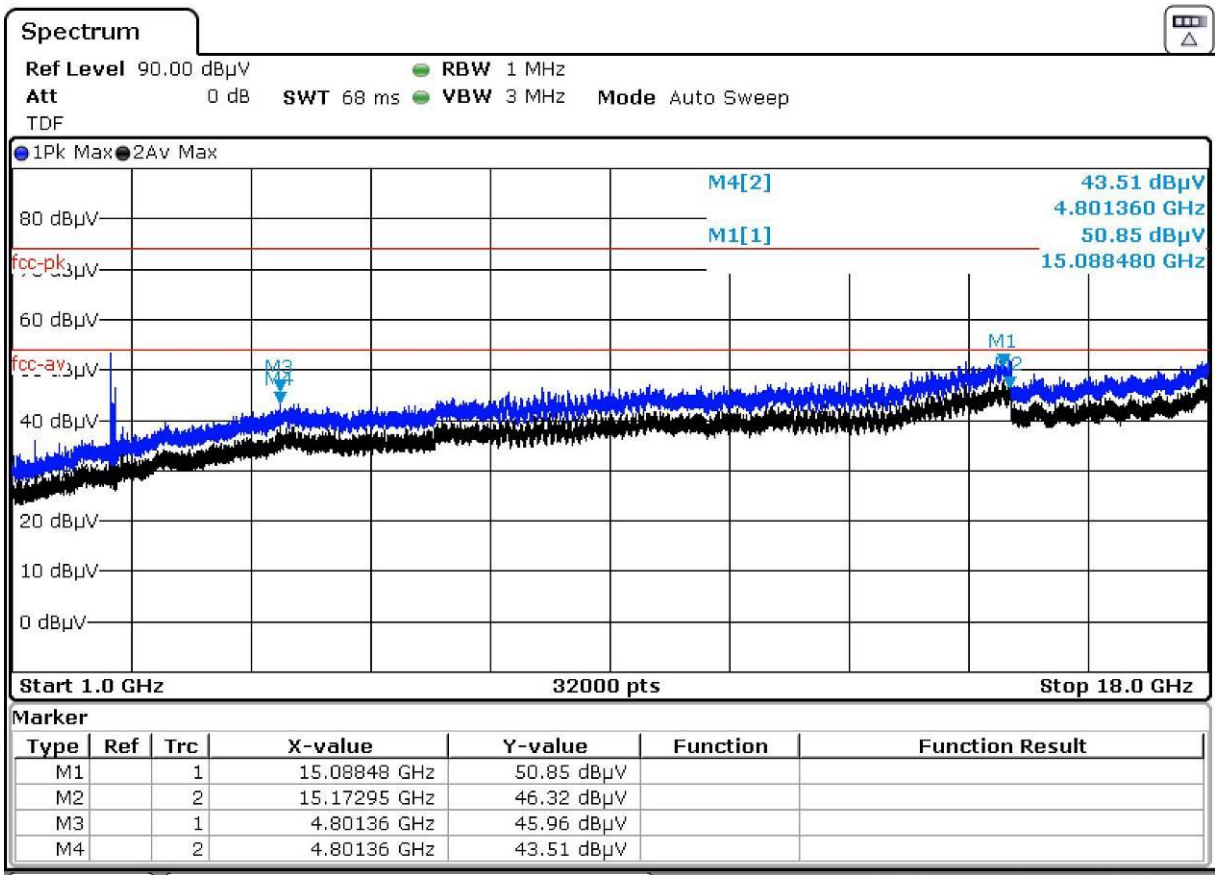
No other significant emissions were measured at the frequency range of interest employing the QP detectors.

Results of 1 – 18 GHz

Model	F045D
Operation Mode	Mode 1 @2402 MHz
Test voltage	---

Results

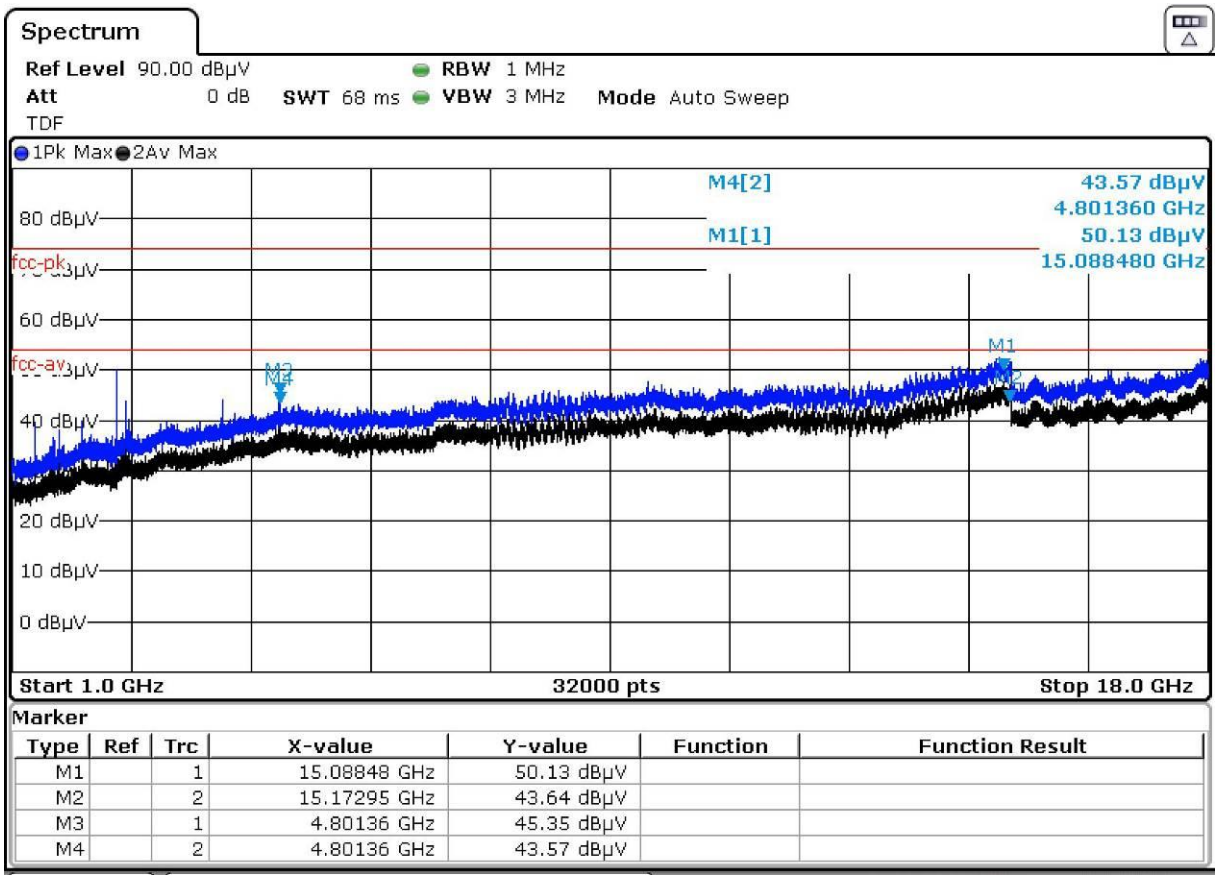
Horizontal



Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Vertical



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	15.08848 GHz	50.13 dBµV		
M2		2	15.17295 GHz	43.64 dBµV		
M3		1	4.80136 GHz	45.35 dBµV		
M4		2	4.80136 GHz	43.57 dBµV		

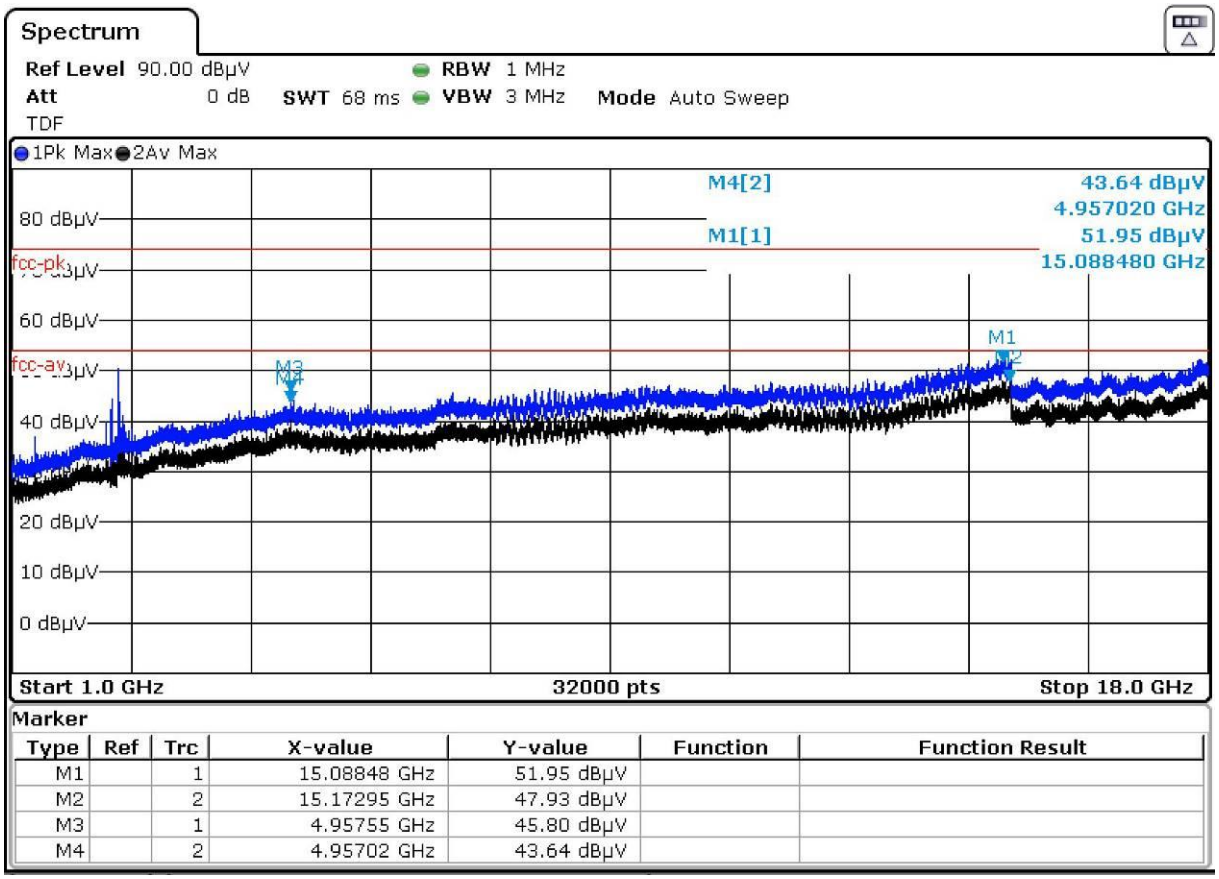
Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Model	F045D
Operation Mode	Mode 1 @2480 MHz
Test voltage	---

Results

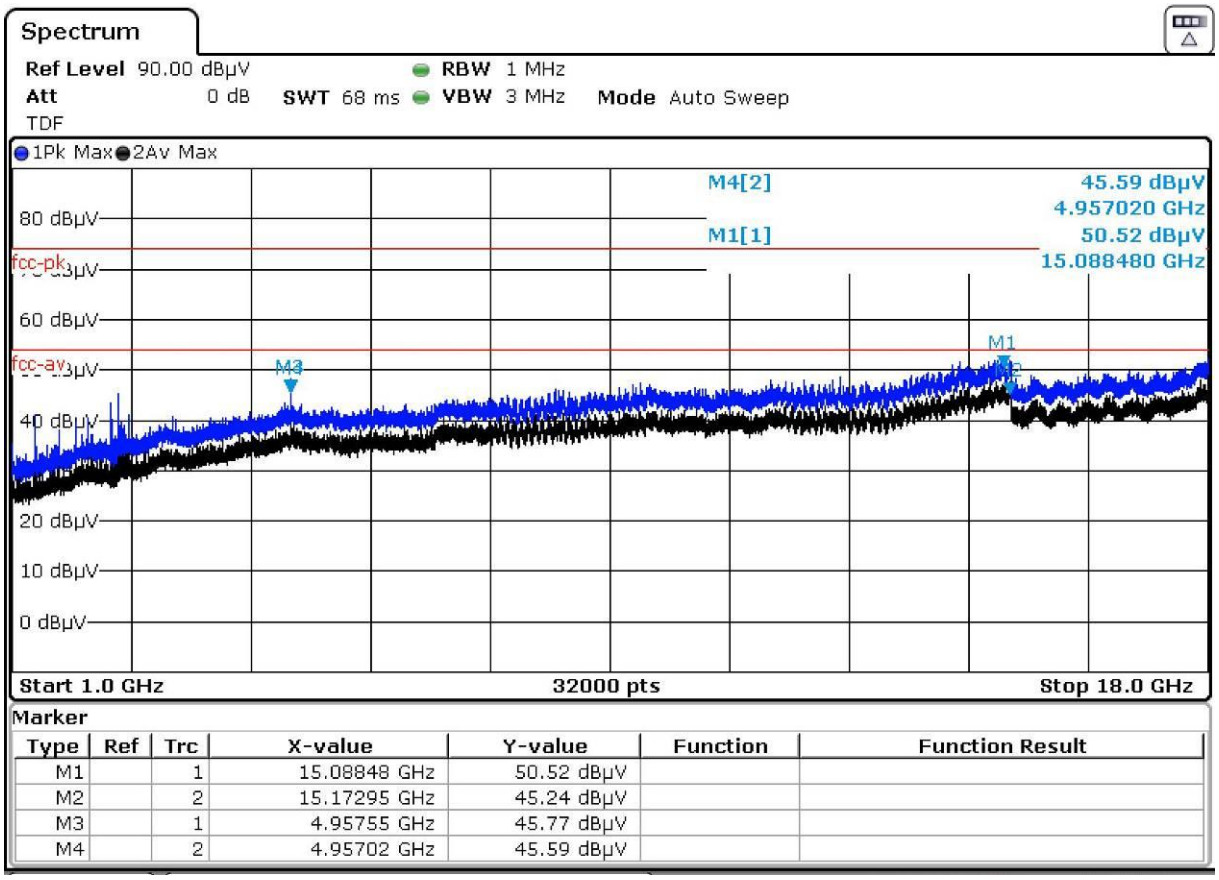
Horizontal



Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Vertical



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	15.08848 GHz	50.52 dBµV		
M2		2	15.17295 GHz	45.24 dBµV		
M3		1	4.95755 GHz	45.77 dBµV		
M4		2	4.95702 GHz	45.59 dBµV		

Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

4.3 Emissions in restricted frequency bands — VERDICT: PASS

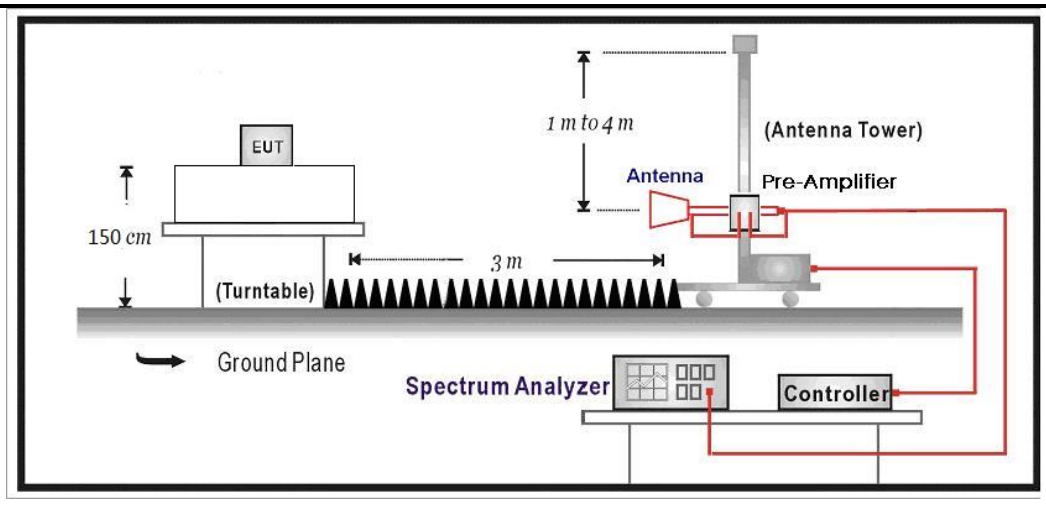
Restricted Bands of operation			
Frequency (MHz)	Frequency (MHz)	Frequency (MHz)	Frequency (GHz)
0.090 – 0.110	16.42 – 16.423	399.9 – 410	4.5 – 5.15
0.495 – 0.505	16.69475 –16.69525	608 – 614	5.35 – 5.46
2.1735 – 2.1905	16.80425 – 16.80475	960 – 1240	7.25 – 7.75
4.125 – 4.128	25.5 – 25.67	1300 – 1427	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
8.81425 – 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	
13.36 – 13.41			

Restricted Band Emissions Limit			
Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/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



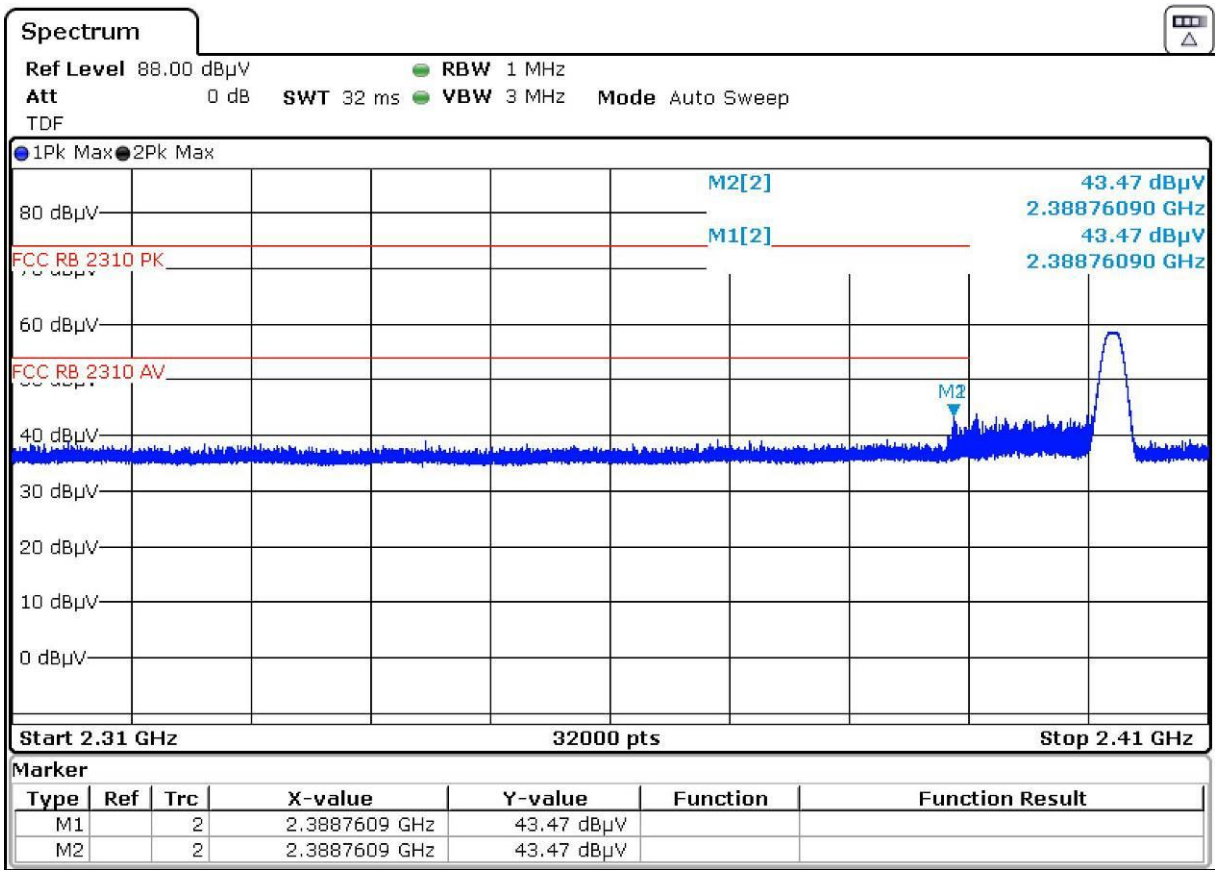
Performed measurements

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	---	

Model	F045D
Operation Mode	Mode 1 @2402 MHz
Test voltage	---

Results

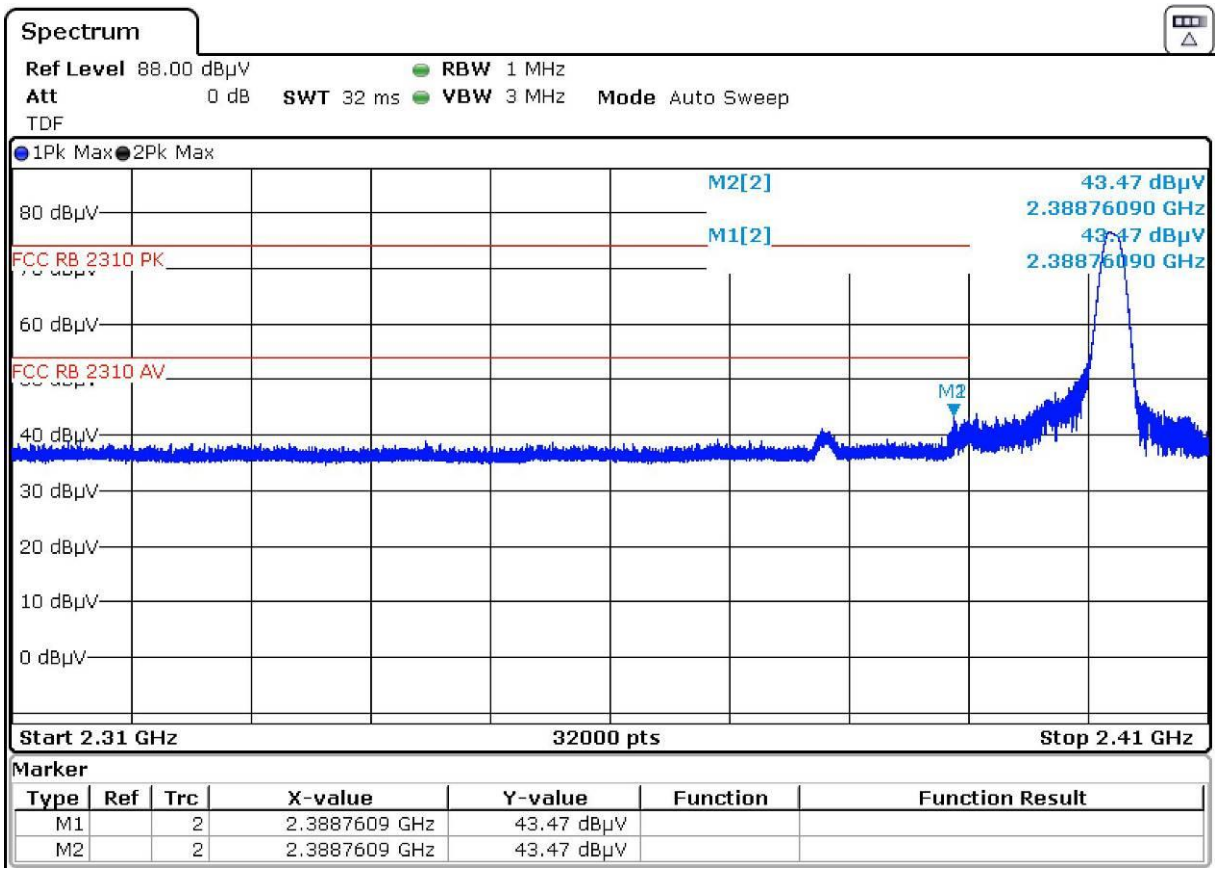
Horizontal



Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Vertical



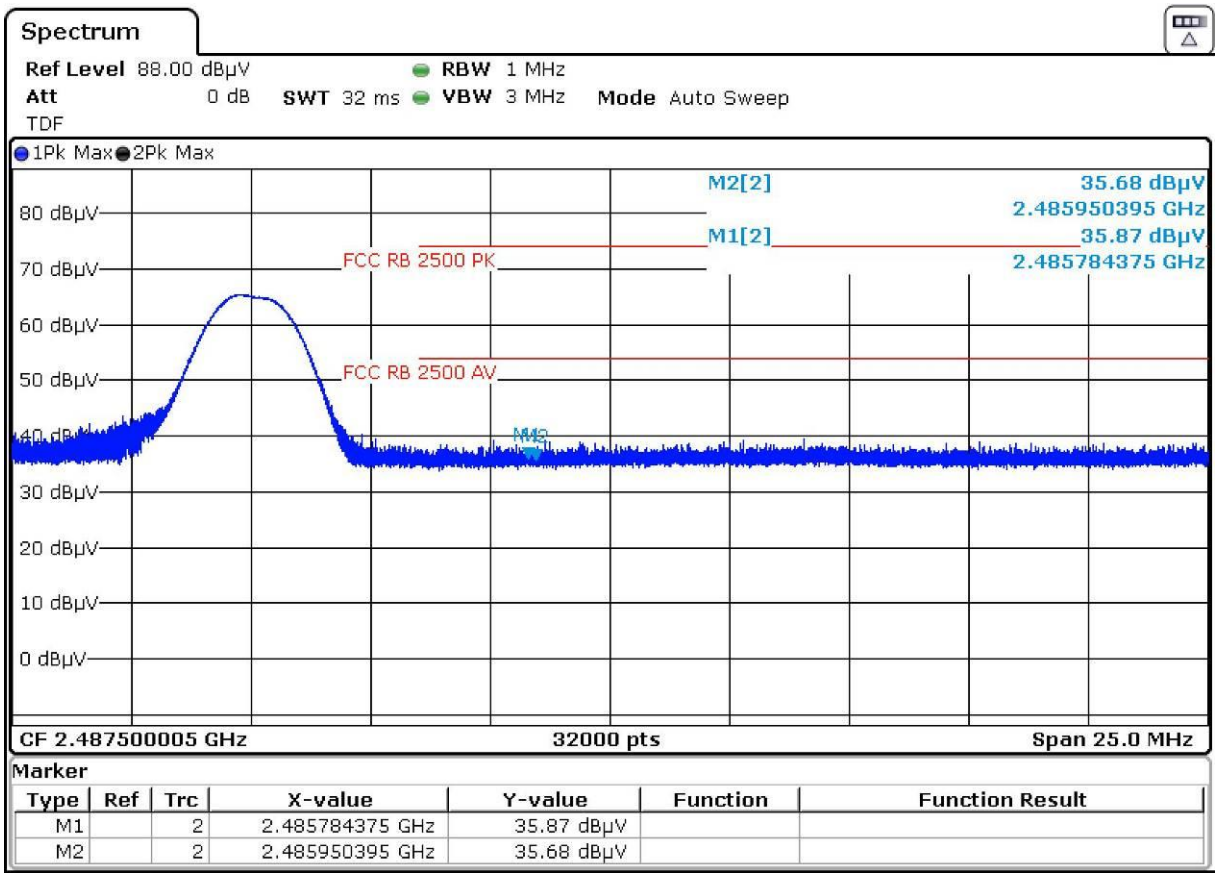
Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Model	F045D
Operation Mode	Mode 1 @2480 MHz
Test voltage	---

Results

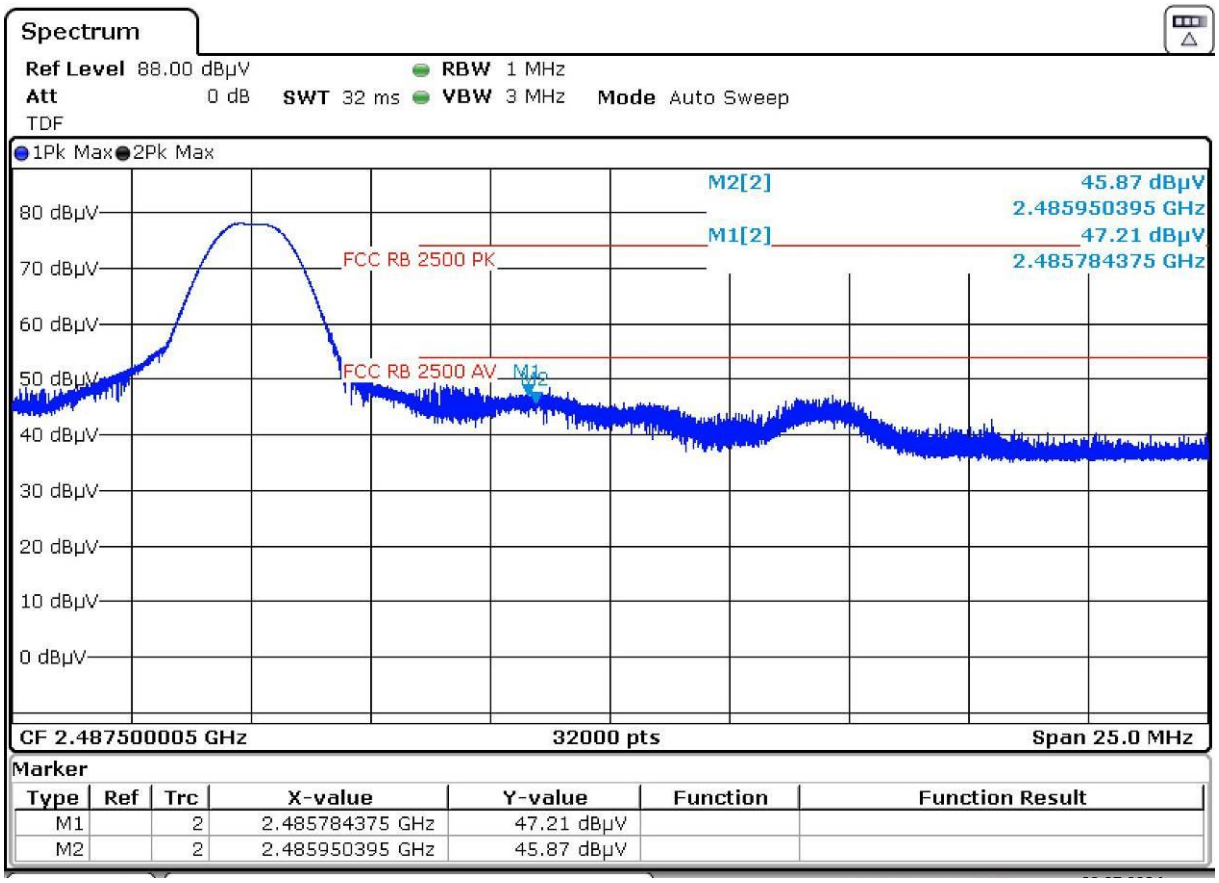
Horizontal



Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

Vertical



Remarks: Y-Value = received value + Correction Factor (Antenna factor + Cable loss - Preamp gain)

No other significant emissions were measured at the frequency range of interest employing the PK and AV detectors.

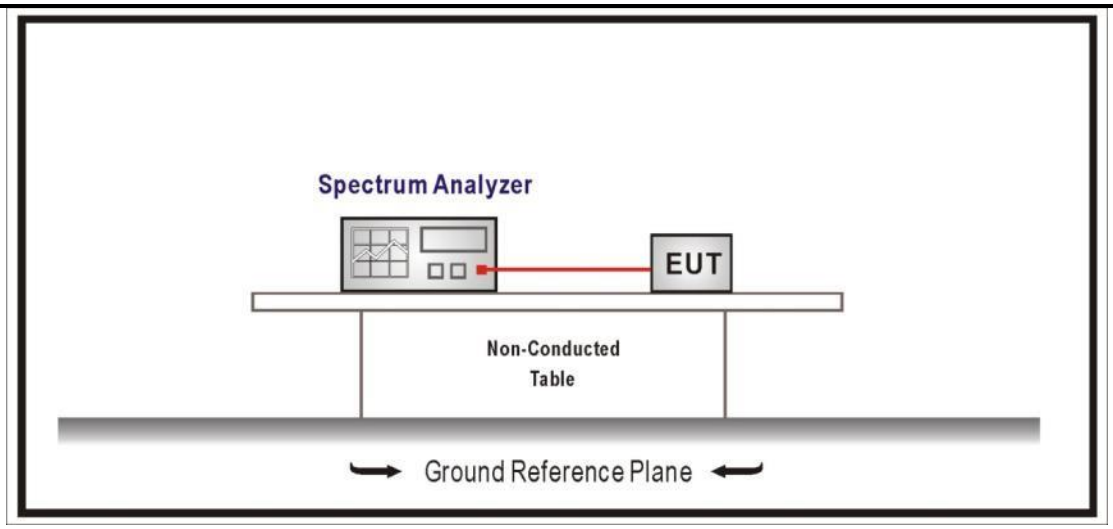
4.4 Band Edge	VERDICT: PASS

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 by 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 by least 20 dB relative to the maximum in-band peak PSD by level in 100 kHz (i.e., 20 dBc).

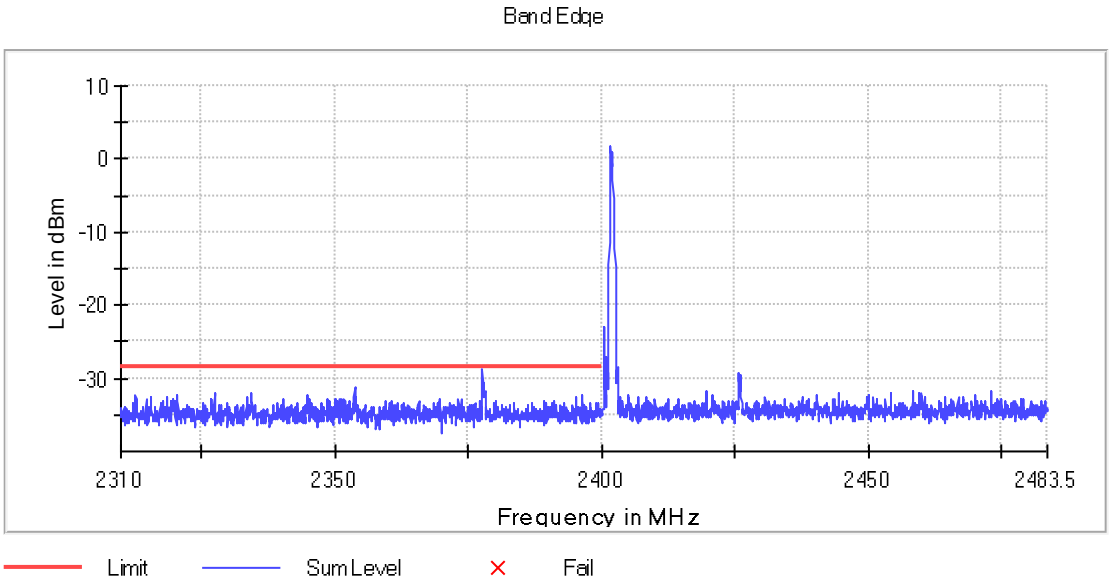
Test Configuration



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	---	

Results of mode 1 @2402 MHz



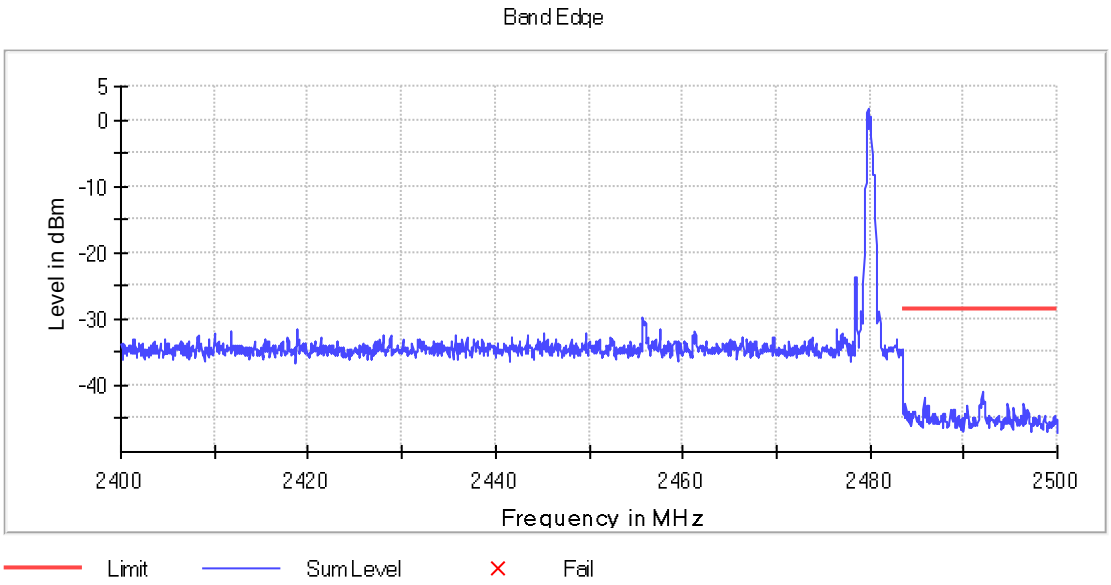
Inband

Frequency (MHz)	Level (dBm)
2402.0000	1.7

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2377.775000	-28.8	0.4	-28.3	PASS
2377.725000	-29.0	0.6	-28.3	PASS
2377.975000	-30.7	2.3	-28.3	PASS
2377.925000	-30.8	2.5	-28.3	PASS
2377.825000	-31.2	2.8	-28.3	PASS
2353.775000	-31.3	3.0	-28.3	PASS
2378.175000	-31.7	3.3	-28.3	PASS
2378.025000	-31.8	3.4	-28.3	PASS
2378.075000	-31.8	3.5	-28.3	PASS
2378.125000	-31.9	3.6	-28.3	PASS
2327.525000	-32.0	3.7	-28.3	PASS
2334.525000	-32.1	3.7	-28.3	PASS
2353.825000	-32.2	3.8	-28.3	PASS
2320.625000	-32.2	3.9	-28.3	PASS
2396.475000	-32.2	3.9	-28.3	PASS

Results of mode 1 @2480 MHz



Inband

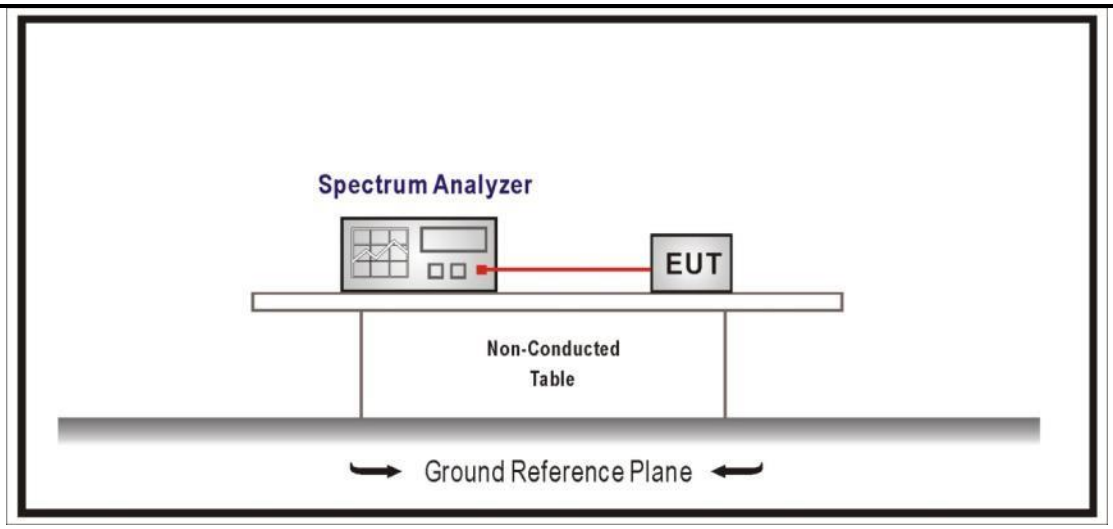
Frequency (MHz)	Level (dBm)
2480.0000	1.5

Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)	Result
2491.975000	-40.8	12.4	-28.5	PASS
2492.025000	-41.1	12.6	-28.5	PASS
2485.775000	-41.9	13.5	-28.5	PASS
2485.825000	-42.0	13.6	-28.5	PASS
2491.925000	-42.1	13.6	-28.5	PASS
2492.125000	-42.2	13.7	-28.5	PASS
2492.225000	-42.4	13.9	-28.5	PASS
2494.725000	-42.6	14.2	-28.5	PASS
2492.175000	-42.6	14.2	-28.5	PASS
2483.825000	-42.8	14.3	-28.5	PASS
2494.675000	-42.8	14.3	-28.5	PASS
2492.075000	-42.8	14.4	-28.5	PASS
2496.425000	-42.9	14.4	-28.5	PASS
2491.775000	-42.9	14.4	-28.5	PASS
2483.775000	-42.9	14.4	-28.5	PASS

4.5 Duty cycle	VERDICT: PASS

Test Configuration



Performed measurements

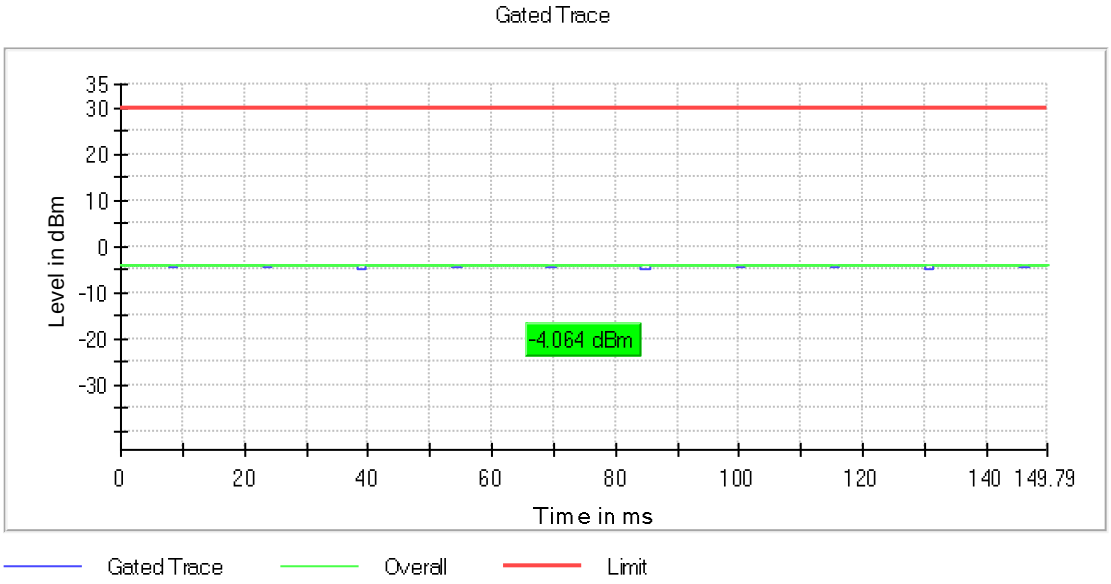
Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

Results @ 2402MHz

Test Mode	Tx On (ms)	Tx On + Tx Off (ms)	Duty Cycle
Mode 1	---	---	15.148 %

Note 1: T means the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control Level for the tested mode of operation.

Note 2: According to KDB 558074, when test for Radiated Emission Band Edge and Radiated Emission, for average detector set: VBW ≥ 1/T will be used.

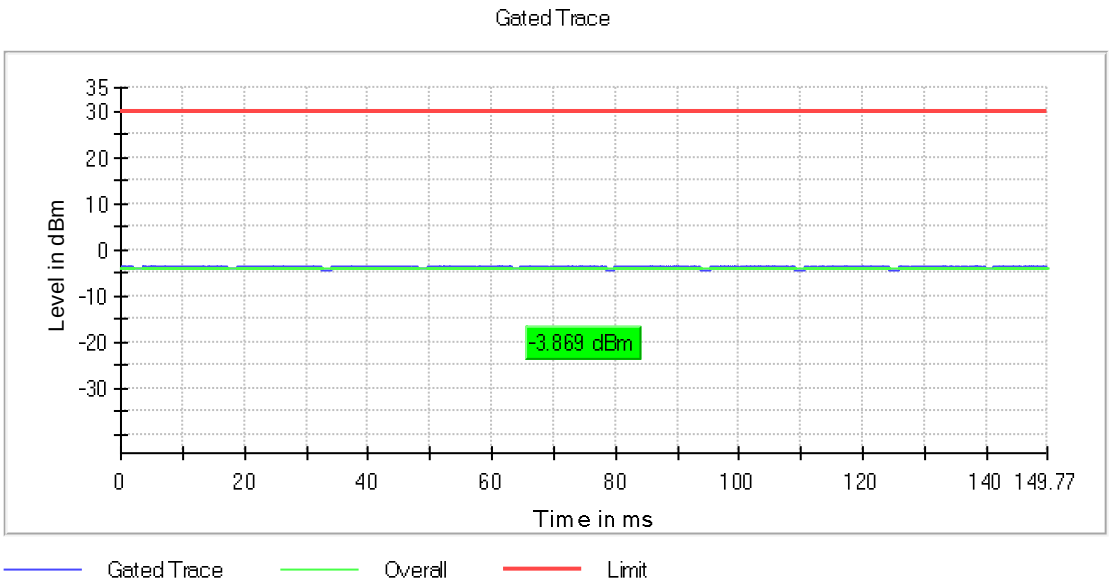


Results @ 2440MHz

Test Mode	Tx On (ms)	Tx On + Tx Off (ms)	Duty Cycle
Mode 1	---	---	15.145%

Note 1: T means the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control Level for the tested mode of operation.

Note 2: According to KDB 558074, when test for Radiated Emission Band Edge and Radiated Emission, for average detector set: VBW ≥ 1/T will be used.

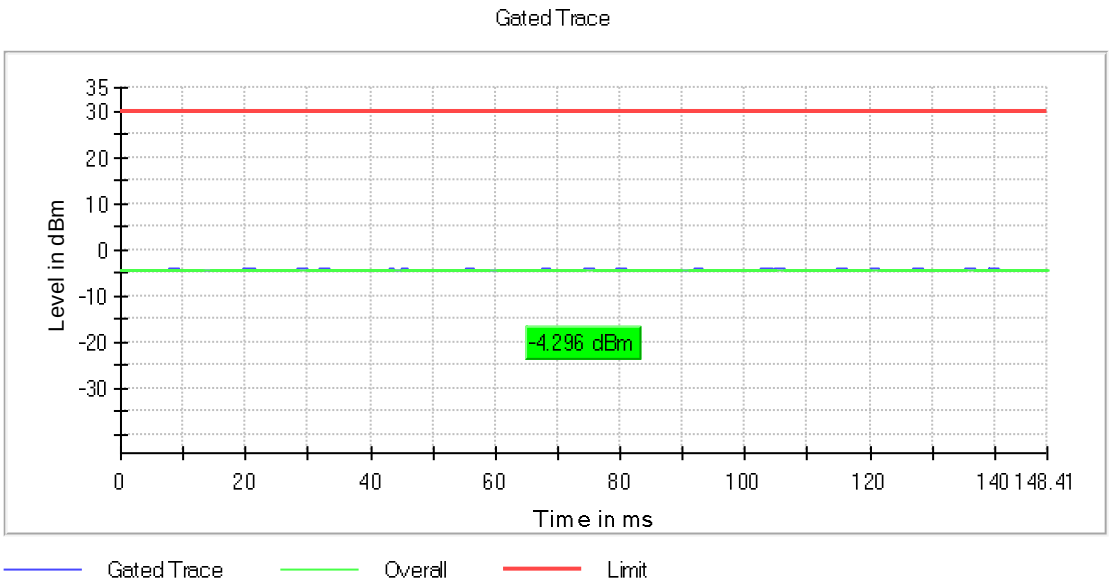


Results @ 2480MHz

Test Mode	Tx On (ms)	Tx On + Tx Off (ms)	Duty Cycle
Mode 1	---	---	15.009 %

Note 1: T means the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control Level for the tested mode of operation.

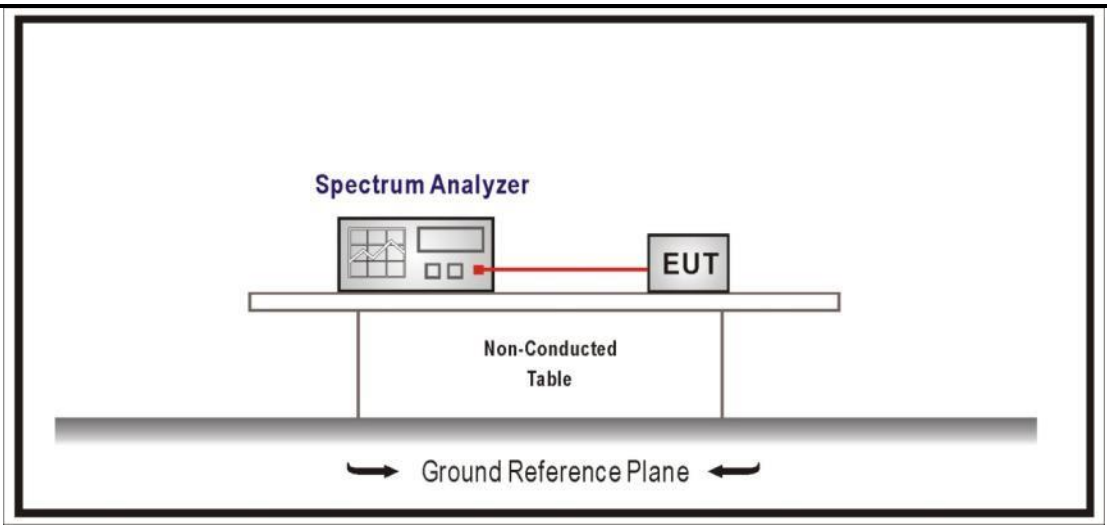
Note 2: According to KDB 558074, when test for Radiated Emission Band Edge and Radiated Emission, for average detector set: VBW ≥ 1/T will be used.



4.6 DTS Bandwidth	VERDICT: PASS

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 by least 500 kHz	

Test Configuration



Performed measurements

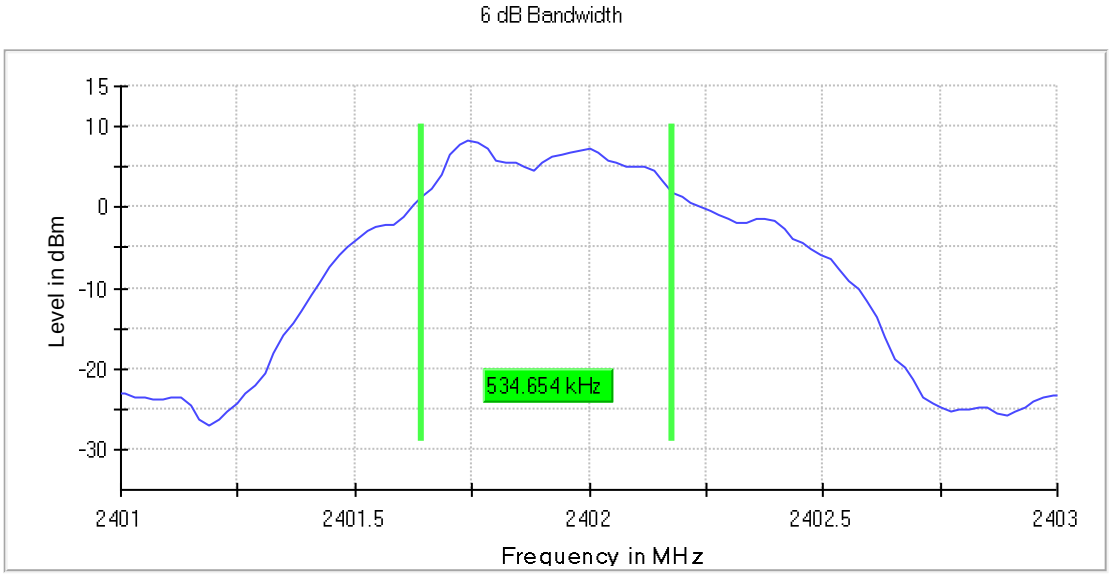
Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	---	

Results

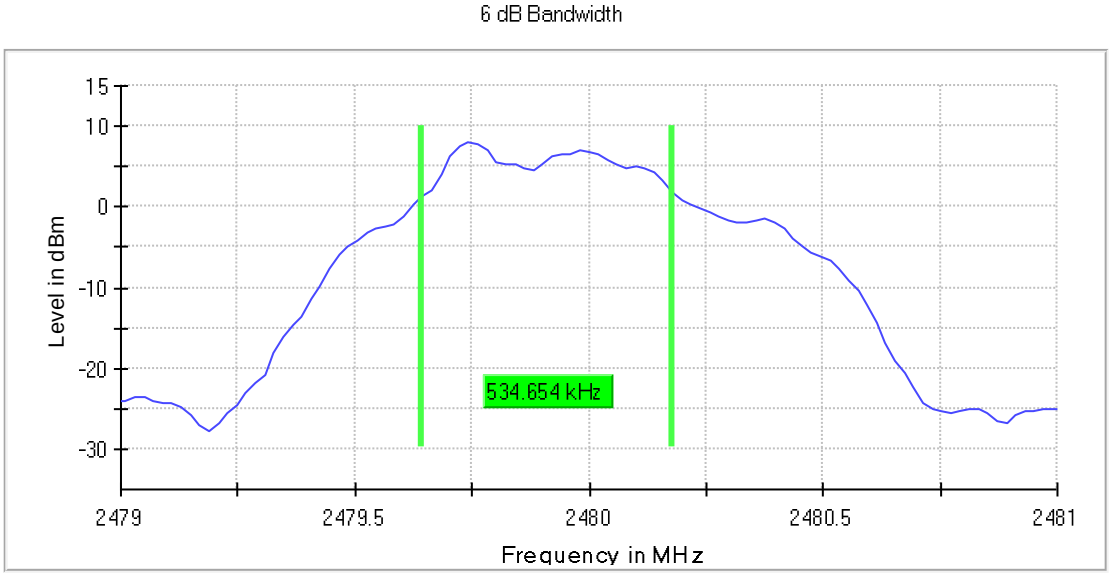
Mode	CH.	Test Freq. (MHz)	6dB Occupied Bandwidth (kHz)	Limit (kHz)	Result
1	37	2402	534.654	>500	Pass
	39	2480	534.654	>500	Pass

6dB Occupied Bandwidth

CH37 (2402MHz)



CH39 (2480MHz)

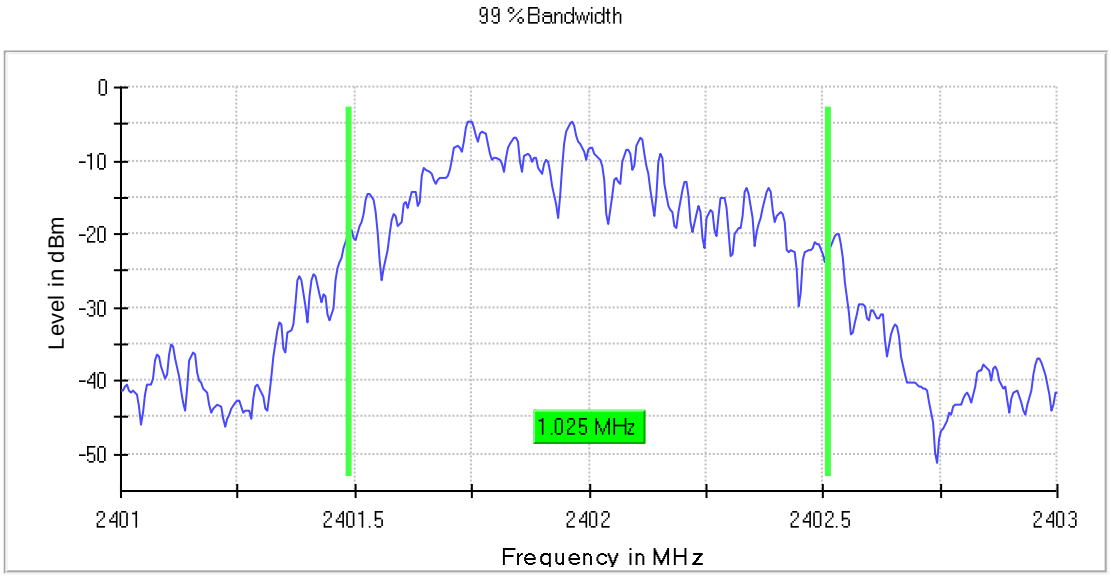


Supplementary information: RBW=100 kHz, VBW=300 kHz

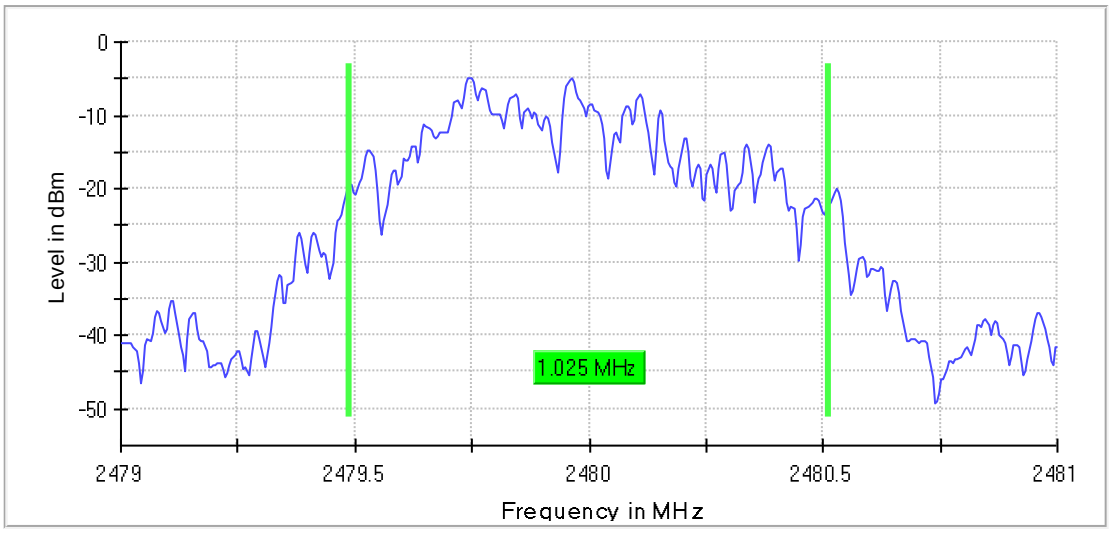
Mode	CH.	Test Freq. (MHz)	99% Occupied Bandwidth (MHz)	Limit	Result
1	37	2402	1.025	Within frequency range	Pass
	39	2480	1.025	Within frequency range	Pass

99% Occupied Bandwidth

CH37 (2402 MHz)



CH39 (2480 MHz)

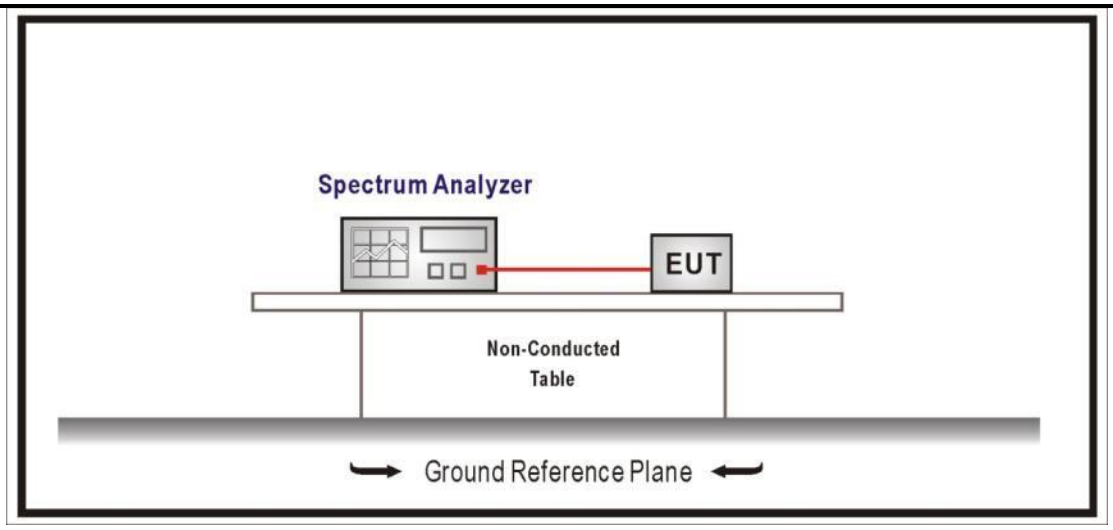


Supplementary information: RBW=30 kHz, VBW=100 kHz

4.7	Fundamental emission output power	VERDICT: PASS

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

Test Configuration



Performed measurements

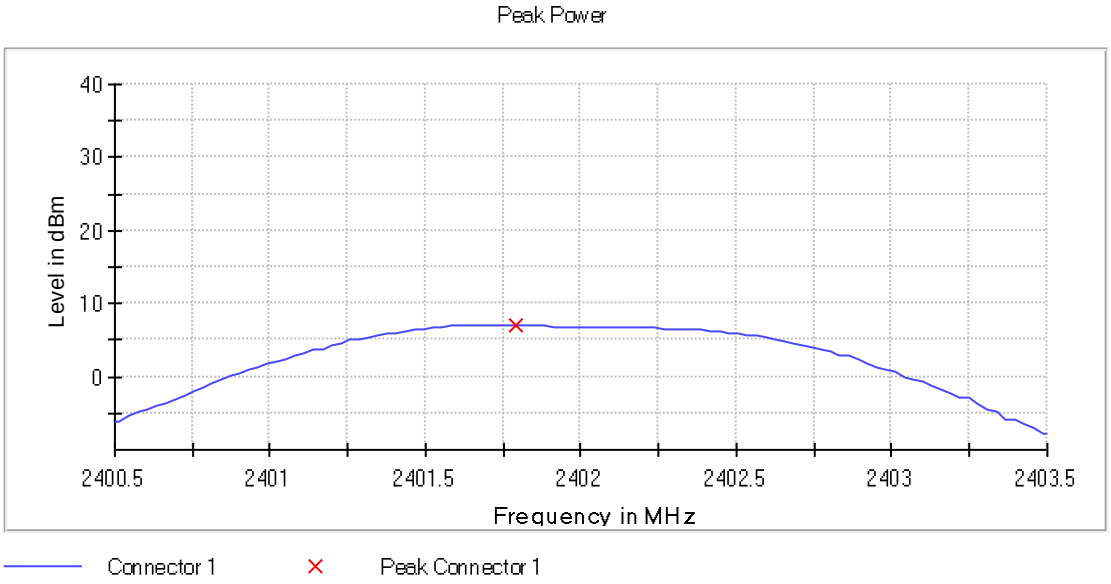
Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	RBW=2 MHz, VBW=10 MHz	

Results

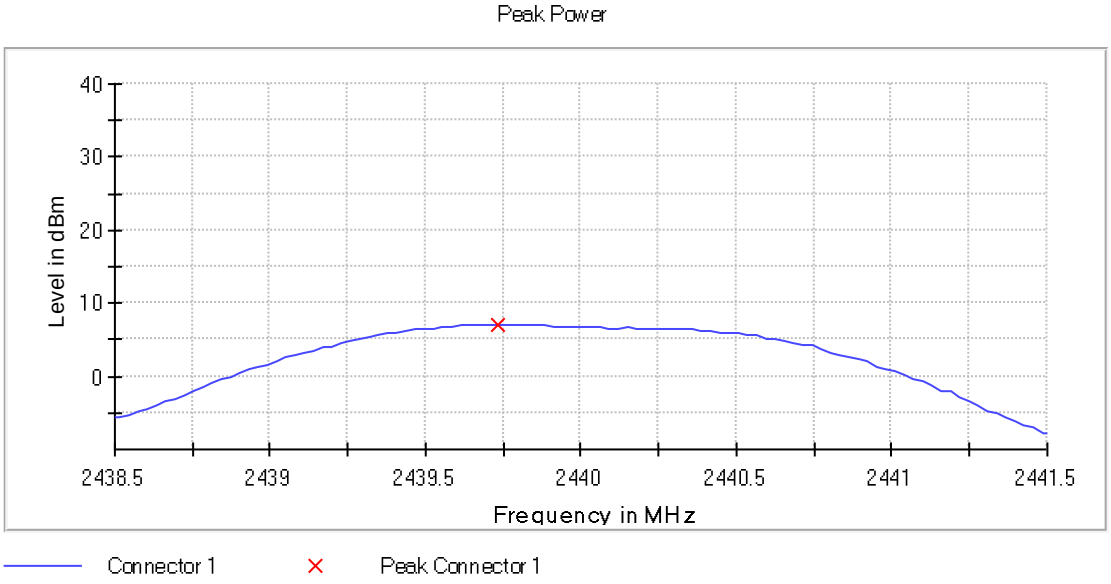
Mode	Channel	Test Frequency (MHz)	Conducted Power Output (dBm)	EIRP (dBm)	Limit (dBm)	Result
Mode 1	37	2402	7.1	-0.1	≤30	Pass
	17	2440	7.0	-0.2	≤30	Pass
	39	2480	6.8	-0.4	≤30	Pass

Test figure

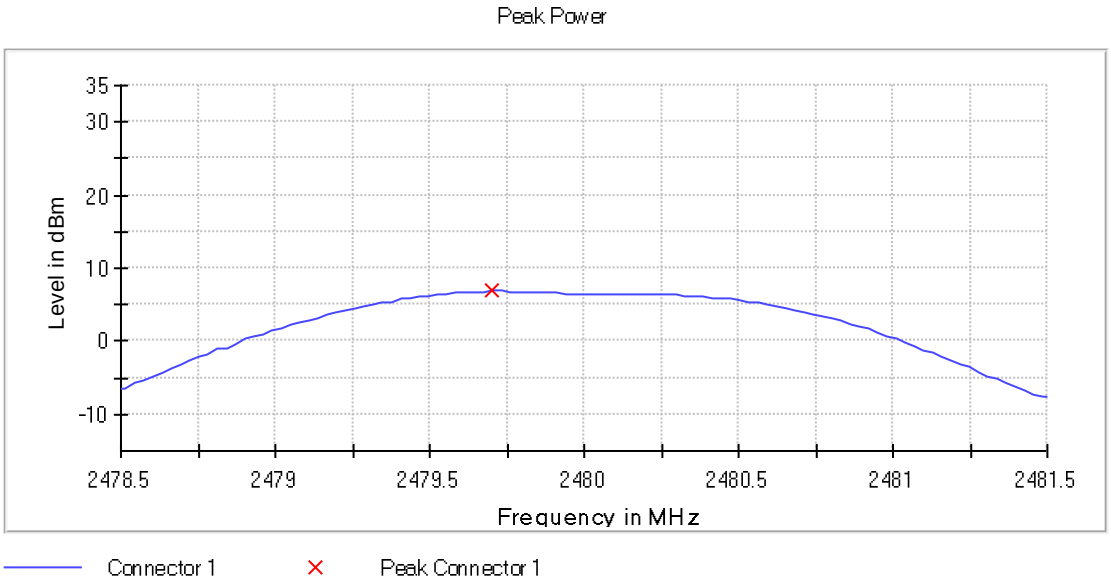
Mode 1, Channel 37



Mode 1, Channel 17



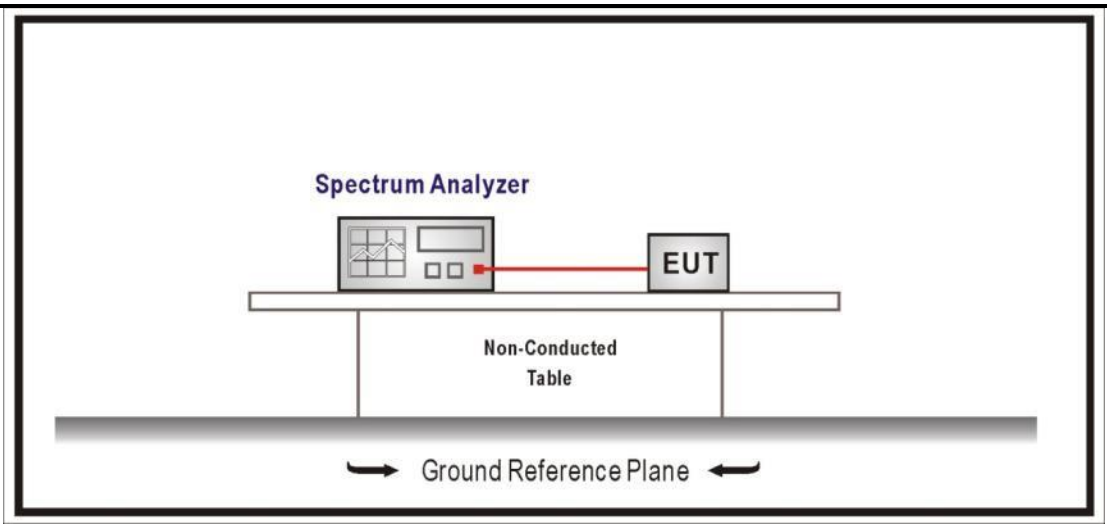
Mode 1, Channel 39



4.8 Power Density	VERDICT: PASS

Standard	FCC Part 15 Subpart C Paragraph 15.247 (b)(3)
Power Spectral Density≤8dBm/3kHz	

Test Configuration



Performed measurements

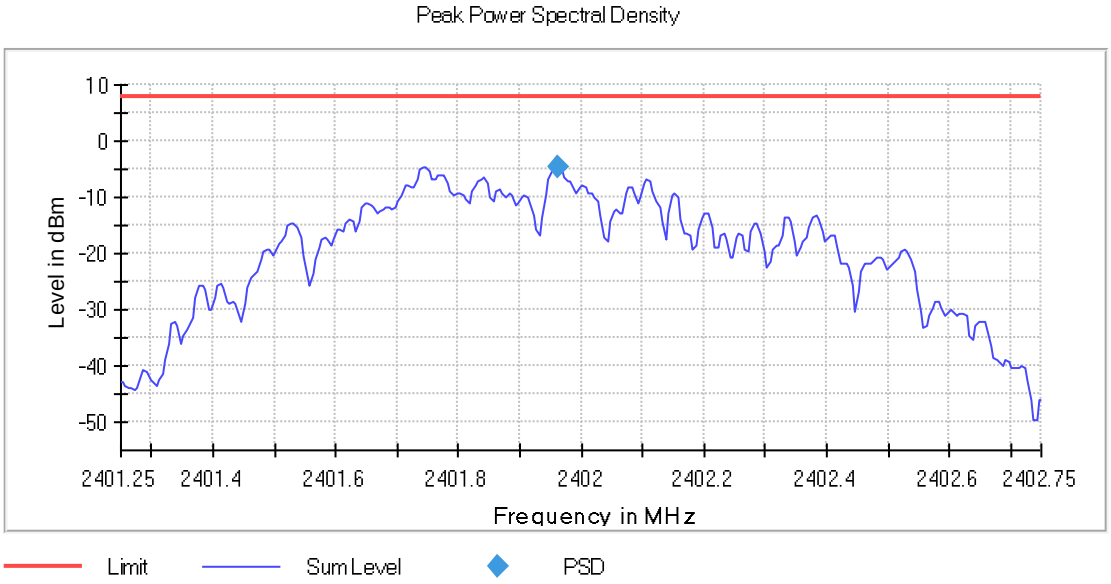
Port under test	Antenna port	
Test method applied	☒	Conducted measurement
	☐	Radiated measurement
Test setup	Refer to the Annex 3 for test setup photo(s).	
Operating mode(s) used	Mode 1	
Remark	RBW=10 kHz, VBW=30 kHz	

Results

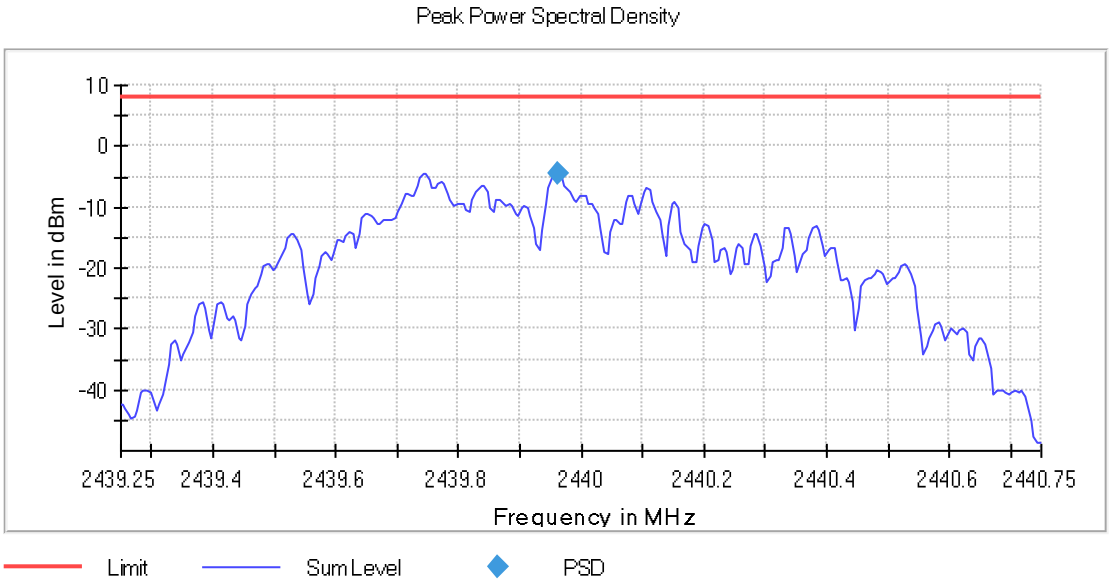
Mode	Channel	Test Frequency (MHz)	Power Output (dBm)	Limit (dBm/3kHz)	Result
Mode 1	37	2402	-4.490	≤8	Pass
	17	2440	-4.466	≤8	Pass
	39	2480	-4.753	≤8	Pass

Test figure

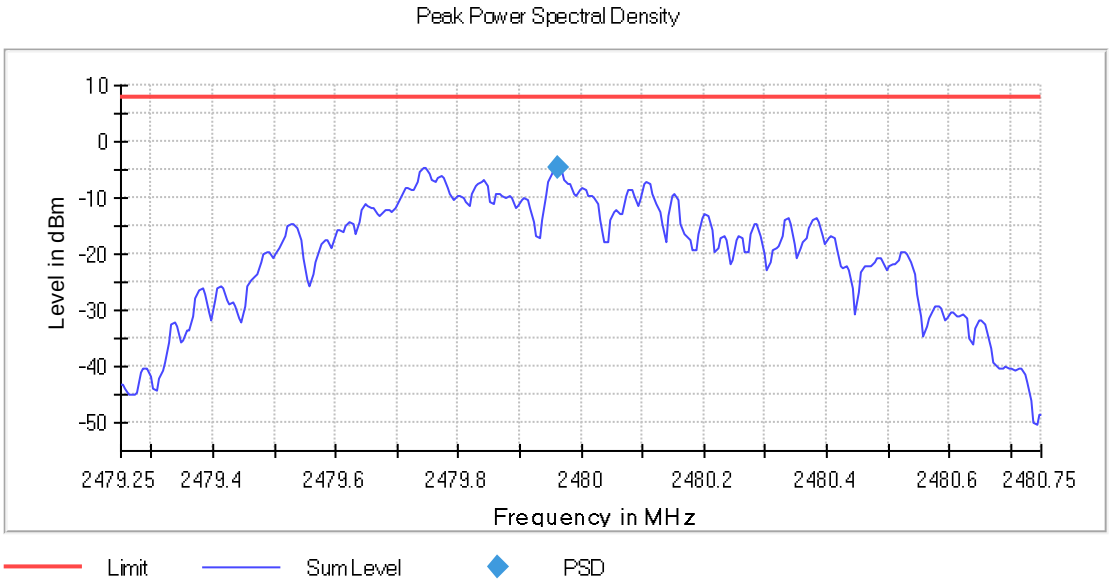
Mode 1, Channel 37



Mode 1, Channel 17



Mode 1, Channel 39



5 IDENTIFICATION OF THE EQUIPMENT UNDER TEST

The photographs show the tested device.

Refer to documents 4907809_ External photo and 4907809_Internal photo.

ANNEX 1 – MEASUREMENT UNCERTAINTY

Test Item	Uncertainty
Occupied Channel Bandwidth	±0.7%
RF Output power, conducted	±0.6dB
Power Spectral Density, Conducted	±0.6dB
Unwanted Emissions, Conducted	±0.7dB
Spurious (30-1000MHz)	±4.4dB
Spurious (1-12,75GHz)	±4.4dB

ANNEX 2 - USED EQUIPMENT

Emissions in non-restricted frequency bands/ Emissions in restricted frequency bands

Instrumentation	Manufacturer	Model No.	Serial No.	DEKRA No.	Cal. Due date
3m Chamber	ETS	FACT3-2.0	CT000344-1100	G/L856	2025/03/25
EMI receiver	R&S	ESCI	101205	G/L858	2025/06/23
Antenna (30MHz-2GHz)	SCHWARZBECK	VULB9168	01229	GZ2018	2025/03/19
Antenna (1GHz-18GHz)	R&S	HF907	102306	G/L1236	2025/02/03
Horn antenna preamplifier	Schwarzbeek	SCU-18	102234	G/L1236-1	2025/02/03
Spectrum analyzer	R&S	FSV	SN101012	G/L1235	2025/03/07
Test software	AUDIX	e3	Version 6.130520	---	---

Duty cycle/Band Edge/Fundamental emission output power/DTS Bandwidth/Power Spectral Density

Item	Instrumentation	Manufacturer	Model	Serial no.	DEKRA No.	Cal Due date
1	Spectrum analyzer	R&S	FSV	SN101012	G/L1235	2025/03/07
2	Chamber	ETS	/	/	G/L856	2025/03/25
3	OSP	R&S	OSP 150	101907	GZ1894	2025/02/01

ANNEX 3 - TEST PHOTOS

Refer to document 4907809_Test setup.

--- END ---