
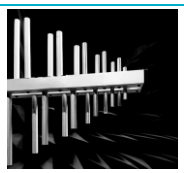
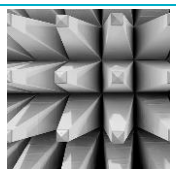

TEST REPORT

Test report no.: 1-7623-24-02-03_TR1-R03

DAkkS Deutsche Akkreditierungsstelle D-PL-12047-01-00

Testing laboratory

cetecom advanced GmbH
Untertuerkheimer Strasse 6 – 10
66117 Saarbruecken / Germany
Phone: + 49 681 5 98 - 0
Fax: + 49 681 5 98 - 9075
Internet: https://cetecomadvanced.com
e-mail: mail@cetecomadvanced.com

Accredited Testing Laboratory:
The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2018-03) by the Deutsche Akkreditierungsstelle GmbH (DAkkS).
The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate with the registration number:
D-PL-12047-01-00.
ISED Testing Laboratory Recognized Listing Number: DE0001
FCC designation number: DE0002

Applicant

DPA Microphones A/S
Kokkedal Industripark 101
DK-2980 Kokkedal / Denmark
Phone: +45 29310841
Contact: Niels Schou Frederiksen
e-mail: nsf@dpamicrophones.com

Manufacturer

Pasgao Electronics Co., Ltd.
V1 2nd District, Industrial Transfer Park
Enping City, Guangdon / China

Test standard/s

FCC - Title 47 CFR Part 74	FCC - Title 47 of the Code of Federal Regulations; Chapter I; Part 74 - Experimental radio, auxiliary, special broadcast and other program distributional services
RSS - 210 Issue 11	Spectrum Management and Telecommunications Radio Standards Specification - Licence-Exempt Radio Apparatus: Category I Equipment

For further applied test standards please refer to section 3 of this test report.

Test Item

Kind of test item:	**Bodypack Transmitter**
Model name:	**N-BP1**
FCC ID:	**2A3FT-NBP1**
ISED certification number:	**28129-NBP1**
Frequency:	470 MHz – 608 MHz
Technology tested:	proprietary
Antenna:	external Stylus (MonoPol) (Omni-directional) antenna
Power supply:	2.4 V to 4.2 V DC, by internal battery
Temperature range:	-20°C to +55°C

This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

Test report authorized:

On behalf of

cn=Andreas Luckenbill, o=cetecom advanced GmbH, ou=LUC-230601, email=andreas.luckenbill@cetecomadvanced.com, c=DE
2025.07.22 10:57:55 +02'00'

Christoph Schneider
Lab Manager
Radio Labs

Test performed:

On behalf of

cn=Michael Dorongovski, o=cetecom advanced GmbH, ou=DOR-230601, email=michael.dorongovski@cetecomadvanced.com, c=DE
2025.07.22 10:05:33 +02'00'

Hans-Joachim Wolsdorfer
Lab Manager
Radio Labs

1 Table of contents

2 General information

2.1 Notes and disclaimer

The test results of this test report relate exclusively to the test item specified in this test report. cetecom advanced GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item.
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This test report replaces the test report with the number 1-7623-24-02-03_TR1-R02 and dated 2025-07-11.

2.2 Application details

Date of receipt of order:	2025-03-27
Date of receipt of test item:	2024-11-18
Start of test:*	2025-04-14
End of test:*	2025-04-17
Person(s) present during the test:	-/-

*Date of each measurement, if not shown in the plot, can be requested. Dates are stored in the measurement software.

2.3 Test laboratories sub-contracted

None

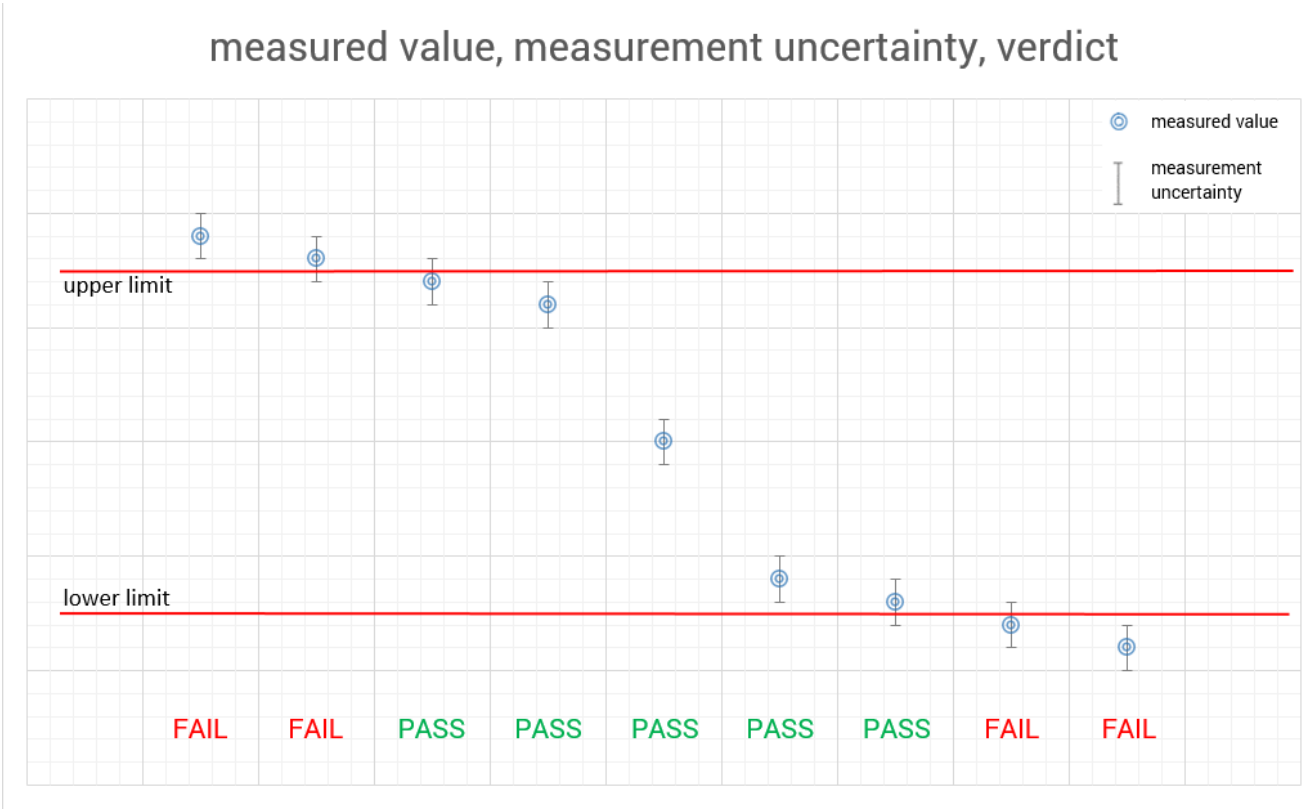
3 Test standard/s, references and accreditations

Test standard	Date	Description
FCC - Title 47 CFR Part 74		FCC - Title 47 of the Code of Federal Regulations; Chapter I; Part 74 - Experimental radio, auxiliary, special broadcast and other program distributional services
RSS - 210 Issue 11	25.06.2024	Spectrum Management and Telecommunications Radio Standards Specification - Licence-Exempt Radio Apparatus: Category I Equipment
ETSI EN 300 422-1 V2.2.1	2021-11	Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless microphones in the 25 MHz to 3 GHz frequency range; Part 1: Technical characteristics and methods of measurement

Guidance	Version	Description
ANSI C63.10-2020	2020	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
ANSI C63.4a-2017	-/-	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
ANSI C23.26-2015	2015-12	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

4 Reporting statements of conformity – decision rule

Only the measured values related to their corresponding limits will be used to decide whether the equipment under test meets the requirements of the test standards listed in chapter 3.
The measurement uncertainty is mentioned in this test report, see chapter 9, but is not taken into account - neither to the limits nor to the measurement results. Measurement results with a smaller margin to the corresponding limits than the measurement uncertainty have a potential risk of more than 5% that the decision might be wrong."



5 Test environment

Temperature	:	T_{nom} T_{max} T_{min}	+22 °C during room temperature tests +55 °C during high temperature tests -20 °C during low temperature tests
Relative humidity content	:		65 %
Barometric pressure	:		1006 hpa
Power supply	:	V_{nom} V_{max} V_{min}	3.0 V DC, by internal battery 4.2 V 2.4 V

6 Test item

6.1 General description

Kind of test item	:	Bodypack Transmitter
Model name	:	N-BP1
HMN	:	-/-
PMN	:	N-BP1
HVIN	:	N-BP1
FVIN	:	1.0
S/N serial number	:	-/-
Hardware status	:	1
Software status	:	0.38 (or successive)
Firmware status	:	-/-
Frequency band	:	470 MHz – 608 MHz
Type of radio transmission Use of frequency spectrum	: :	modulated carrier
Type of modulation	:	4FSK
Number of channels	:	690
Antenna	:	external Stylus (MonoPol) (Omni-directional) antenna
Power supply	:	2.4 V to 4.2 V DC, by internal battery
Temperature range	:	-20°C to +55°C

6.2 Additional information

The content of the following annexes is defined in the QA. It may be that not all of the listed annexes are necessary for this report, thus some values in between may be missing.

Test setup and EUT photos are included in test report: 1-7623-24-02-03_TR1-A101-R01
1-7623-24-02-03_TR1-A102-R01
1-7623-24-02-03_TR1-A103-R01

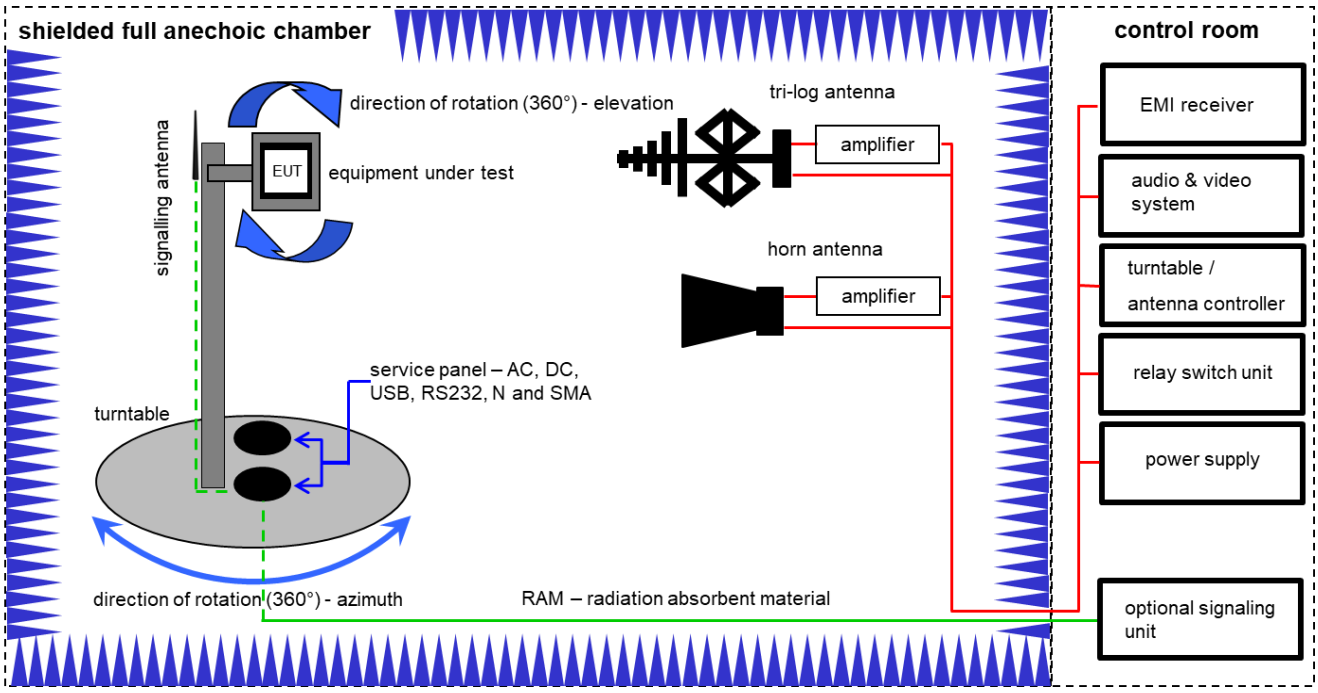
7 Description of the test setup

Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, RF generating and signaling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Lab/Item).

Each block diagram listed can contain several test setup configurations. All devices belonging to a test setup are identified with the same letter syntax. For example: Column Setup and all devices with an A.

7.1 Shielded fully anechoic chamber



Measurement distance: tri-log antenna and horn antenna 3 meter

OP = AV + D - G + CA
(OP-radiated output power; AV-analyzer value; D-free field attenuation of measurement distance; G-antenna gain+amplifier gain; CA-loss signal path)

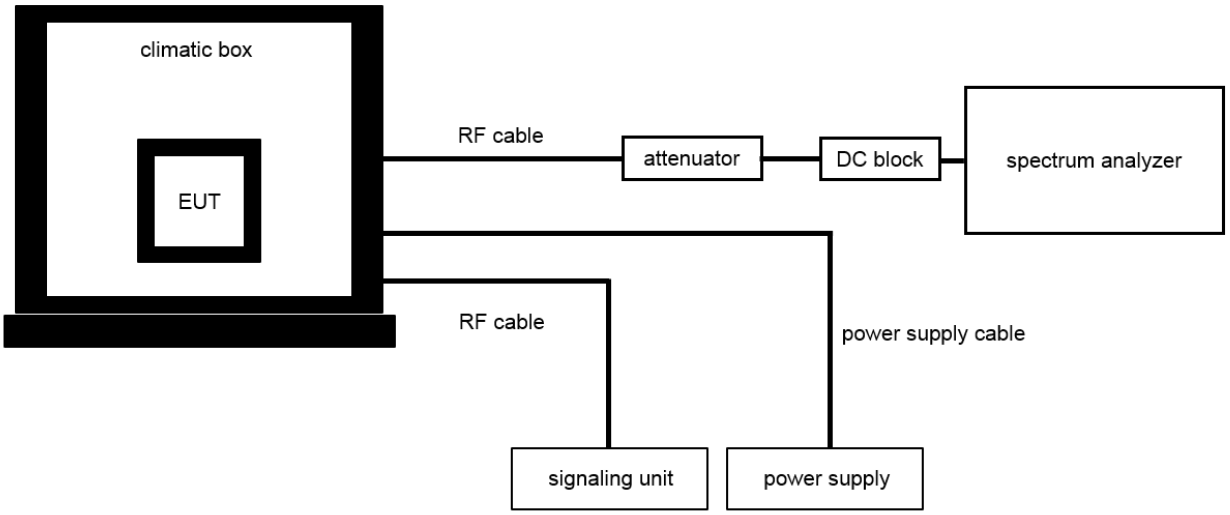
Example calculation:
OP [dBm] = -65.0 [dBm] + 50 [dB] - 20 [dBi] + 5 [dB] = -30 [dBm] (1 µW)

Equipment table:

No.	Setup	Equipment	Type	Manufacturer	Serial No.	INV. No.	Kind of Calibration	Last Calibration	Next Calibration
1	A,B	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996	ev	-/-	-/-
2	A,B	EMI Test Receiver 20Hz- 26,5GHz	ESU26	R&S	100037	300003555	k	11.12.2024	31.12.2025
3	A,B	4U RF Switch Platform	L4491A	Agilent Technologies	MY50000037	300004509	ne	-/-	-/-
4	A,B	NEXIO EMV-Software	BAT EMC V2022.0.32.0	Nexio		300004682	ne	-/-	-/-
5	B	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vlKl!	10.10.2023	31.10.2025
6	B	Highpass Filter	WHK1.1/15G-10SS	Wainwright	3	300003255	ev	-/-	-/-
7	B	Broadband Amplifier 0.5-18 GHz	CBLU5184540	CERNEX	22049	300004481	ev	-/-	-/-
8	A	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck Mess - Elektronik	01029	300005379	vlKl!	09.10.2023	31.10.2025

7.2 Conducted measurements normal and extreme conditions

Conducted measurements normal & extreme conditions



OP = AV + CA
(OP-output power; AV-analyzer value; CA-loss signal path)

Example calculation:
OP [dBm] = 6.0 [dBm] + 11.7 [dB] = 17.7 [dBm] (58.88 mW)

Equipment table:

No.	Setup	Equipment	Type	Manufacturer	Serial No.	INV. No.	Kind of Calibration	Last Calibration	Next Calibration
1	A,B	Power Supply	HMP2020	Rohde & Schwarz	101961	300006102	k	05.12.2024	31.12.2025
2	B	Temperature Test Chamber	VT 4002	Heraeus Voetsch	521/83761	300002326	ev	18.09.2024	30.09.2026
3	A,B	Signal analyzer	FSW26	Rohde & Schwarz	101455	300004528	k	09.12.2024	31.12.2025

8 Sequence of testing

8.1 Sequence of testing radiated spurious 30 MHz to 1 GHz

Setup

- The equipment is set up to simulate normal operation mode as described in the user manual or defined by the manufacturer.
- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables are positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- Measurement distance is 10 m or 3 m (see ANSI C 63.4) – see test details.
- EUT is set into operation.

Premeasurement

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height changes from 1 m to 3 m.
- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement

- The final measurement is performed for at least six highest peaks according to the requirements of the ANSI C63.4.
- Based on antenna and turntable positions at which the peak values are measured the software maximize the peaks by changing turntable position ± 45° and antenna height between 1 and 4 m.
- The final measurement is done with quasi-peak detector (as described in ANSI C 63.4).
- Final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit are recorded. A plot with the graph of the premeasurement with marked maximum final results and the limit is stored.

8.2 Sequence of testing radiated spurious 1 GHz to 18 GHz

Setup

- The equipment is set up to simulate normal operation mode as described in the user manual or defined by the manufacturer.
- If the EUT is a tabletop system, a 2-axis positioner with 1.5 m height is used.
- If the EUT is a floor standing device, it is placed directly on the turn table.
- Auxiliary equipment and cables are positioned to simulate normal operation conditions as described in ANSI C 63.4.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- Measurement distance is 3 m (see ANSI C 63.4) – see test details.
- EUT is set into operation.

Premeasurement

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height is 1.5 m.
- At each turntable position and antenna polarization the analyzer sweeps with positive peak detector to find the maximum of all emissions.

Final measurement

- The final measurement is performed for at least six highest peaks according to the requirements of the ANSI C63.4.
- Based on antenna and turntable positions at which the peak values are measured the software maximizes the peaks by rotating the turntable from 0° to 360°. This measurement is repeated for different EUT-table positions (0° to 150° in 30°-steps) and for both antenna polarizations.
- The final measurement is done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and RMS detector (as described in ANSI C 63.4).
- Final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit are recorded. A plot with the graph of the premeasurement with marked maximum final results and the limit is stored.

9 Measurement uncertainty

Measurement uncertainty	
Test case	**Uncertainty**
Transmitter output power	± 3 dB
Occupied bandwidth	± 3 kHz to 10 kHz (depends on the used RBW)
Transmitter frequency stability	± 1 Hz to 1 kHz (depends on the used RBW)
Transmitter unwanted emissions (radiated or conducted)	Radiated: ± 3 dB Conducted: ± 0.5 dB
Modulation characteristics	-/-
Necessary bandwidth (BN) for analogue systems	± 1 kHz (depends on the used RBW)
Frequency modulation	± 3 kHz (depends on the used RBW)
Spurious emissions conducted below 30 MHz (AC conducted)	± 2.6 dB

10 Summary of measurement results

☒	No deviations from the technical specifications were ascertained
☐	There were deviations from the technical specifications ascertained
☐	This test report is only a partial test report. The content and verdict of the performed test cases are listed below.

TC Identifier	Description	Verdict	Date	Remark
RF-Testing	FCC Part 74 RSS - 210, Issue 11 RSS-Gen Issue 5	See table!	2025-07-21	-/-

Test specification clause	Test case	Temperature conditions	Voltage conditions	C	NC	NA	NP	Remark
FCC Part 74.861 (e)(1)(ii) FCC Part 2.1046) RSS-210 – G.2 RSS-Gen – 6.12	Transmitter output power	Nominal	Nominal	☒	☐	☐	☐	-/-
FCC Part 74.861 (e)(5) FCC Part 2.1049 RSS-210 – G.3 RSS-Gen – 6.6	Occupied bandwidth	Nominal	Nominal	☒	☐	☐	☐	-/-
FCC Part 74.861 (e)(4) FCC Part 2.1055 RSS-210 – G.4 RSS-Gen – 6.11	Transmitter frequency stability	Nominal	Nominal	☒	☐	☐	☐	-/-
		Extreme	Extreme	☒	☐	☐	☐	
FCC Part 74.861 (e)(6) FCC Part 74.861 (e)(7) RSS-210 – G.5 ETSI EN 300 422-1 V2.2.1(2021-11)	Transmitter unwanted emissions (radiated and conducted)	Nominal	Nominal	☒	☐	☐	☐	-/-
FCC Part 2.1047	Modulation characteristics	Nominal	Nominal	-/-				digital modulation
FCC Part 74.861 (e)(7) ETSI EN 300 422-1 V2.2.1(2021-11)	Transmitter Emission Mask in the out of band domain for digital systems	Nominal	Nominal	☒	☐	☐	☐	-/-
FCC Part 74.861 (e)(3) RSS-210 – G.6	Frequency modulation	Nominal	Nominal	☐	☐	☒	☐	digital modulation
FCC Part 15.107(a) FCC Part 15.207	Conducted emissions < 30 MHz	Nominal	Nominal	☐	☐	☒	☐	battery powered

Note: C = Compliant; NC = Not compliant; NA = Not applicable; NP = Not performed

11 Additional comments

Reference documents: Customer_Questionnaire_1-7623_24-01_Belt-pack

Special test descriptions: None

Configuration descriptions: power setting 50mW

Test mode:

☒ No test mode available.
Test signal is applied to the transmitter.

☐ Special software is used.
EUT is transmitting pseudo random data by itself

Antennas and transmit operating modes:

☒ Operating mode 1 (single antenna)

- *Equipment with 1 antenna,*
- *Equipment with 2 diversity antennas operating in switched diversity mode by which at any moment in time only 1 antenna is used,*
- *Smart antenna system with 2 or more transmit/receive chains, but operating in a mode where only 1 transmit/receive chain is used)*

☐ Operating mode 2 (multiple antennas, no beamforming)

- *Equipment operating in this mode contains a smart antenna system using two or more transmit/receive chains simultaneously but without beamforming.*

☐ Operating mode 3 (multiple antennas, with beamforming)

- *Equipment operating in this mode contains a smart antenna system using two or more transmit/receive chains simultaneously with beamforming.*
  In addition to the antenna assembly gain (G), the beamforming gain (Y) may have to be taken into account when performing the measurements.

12 Measurement results

12.1 Transmitter output power

Measurement:

Measurement parameter	
Detector:	Peak (worst case) / Average (RMS)
Sweep time:	Auto / 20s
Resolution bandwidth:	> emission bandwidth
Video bandwidth:	> resolution bandwidth
Span:	> 2 times emissions bandwidth
Trace mode:	Max. hold
EUT configuration:	Peak: Unmodulated carrier RMS: Modulate the transmitter with a 2.5 kHz tone at a level 16 dB higher than that required to produce a frequency deviation of ± 75 kHz, or to produce 50% of the manufacturer's rated deviation, whichever is less.
Test setup:	See sub clause 7.1A, 7.2A
Measurement uncertainty:	See sub clause 9

Limits:

FCC (conducted)	
470 MHz to 608 MHz	250 mW (average) / 24 dBm (average)
IC (e.i.r.p.)	
470 MHz to 608 MHz	250 mW (average) / 24 dBm (average)

Result:

Frequencies	Transmitter output power conducted	
	Peak	Average
470.3 MHz	18.29 dBm	18.27 dBm
539.0 MHz	17.45 dBm	17.43 dBm
607.7 MHz	17.55 dBm	17.54 dBm

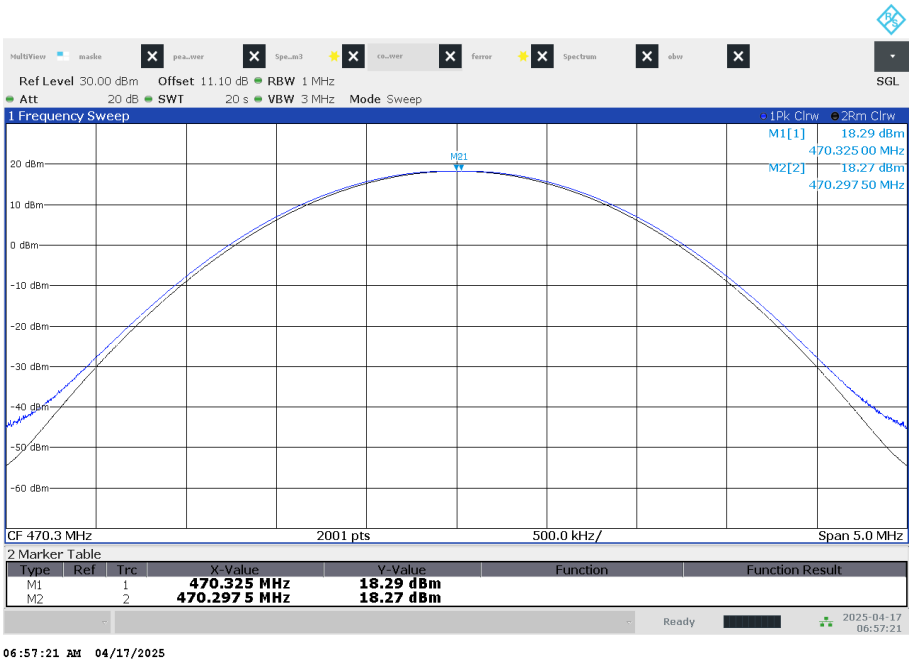
Frequencies	Transmitter output power e.i.r.p.	
	Peak	Average
470.3 MHz	17.11 dBm	17.03 dBm
539.0 MHz	17.77 dBm	17.69 dBm
607.7 MHz	18.36 dBm	18.30 dBm

Antenna gain:

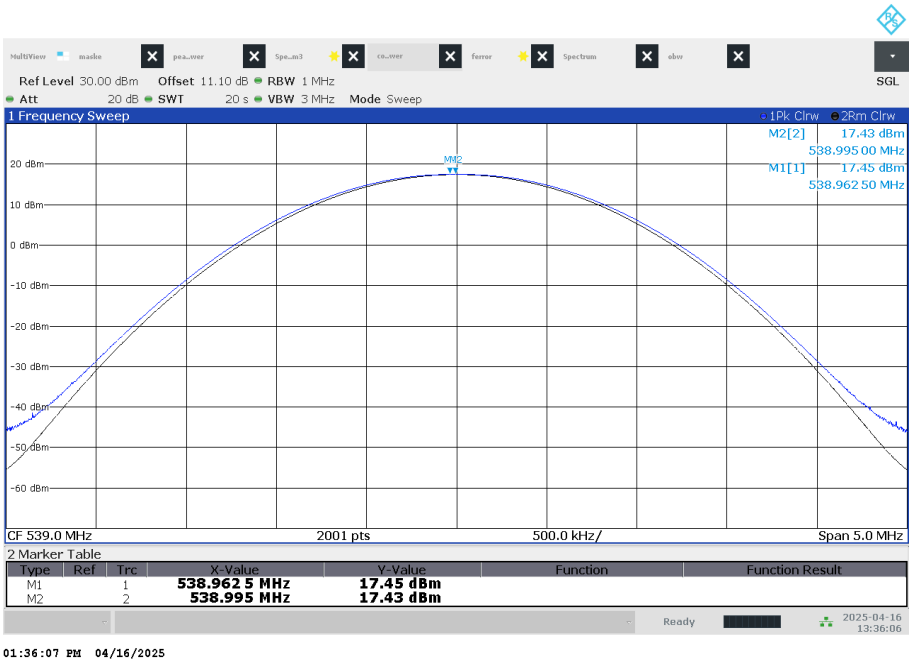
Frequencies	Antenna gain		
	output power conducted	output power radiated (e.i.r.p.)	antenna gain
470.3 MHz	18.29 dBm	17.11 dBm	-1.18 dBi
539.0 MHz	17.45 dBm	17.77 dBm	0.32 dBi
607.7 MHz	17.55 dBm	18.36 dBm	0.81 dBi

Plots:

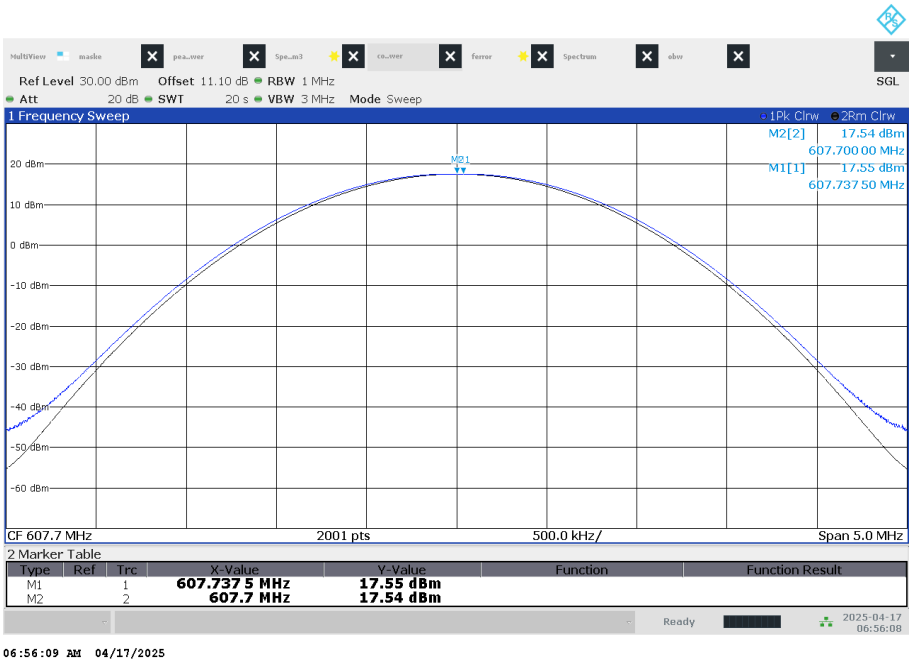
Plot 1: 470.3 MHz, average (modulated carrier)



Plot 2: 539 MHz, average (modulated carrier)



Plot 3: 607.7 MHz, average (modulated carrier)



12.2 Occupied bandwidth

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	1 % to 5 % of the occupied bandwidth
Video bandwidth:	3 x resolution bandwidth
Span:	2 x emission bandwidth
Trace mode:	Max. hold
Analyzer function:	99% power occupied bandwidth function
EUT:	Modulated signal with max. frequency deviation
Test setup:	See sub clause 7.2 - A
Measurement uncertainty:	See sub clause 9

Limits:

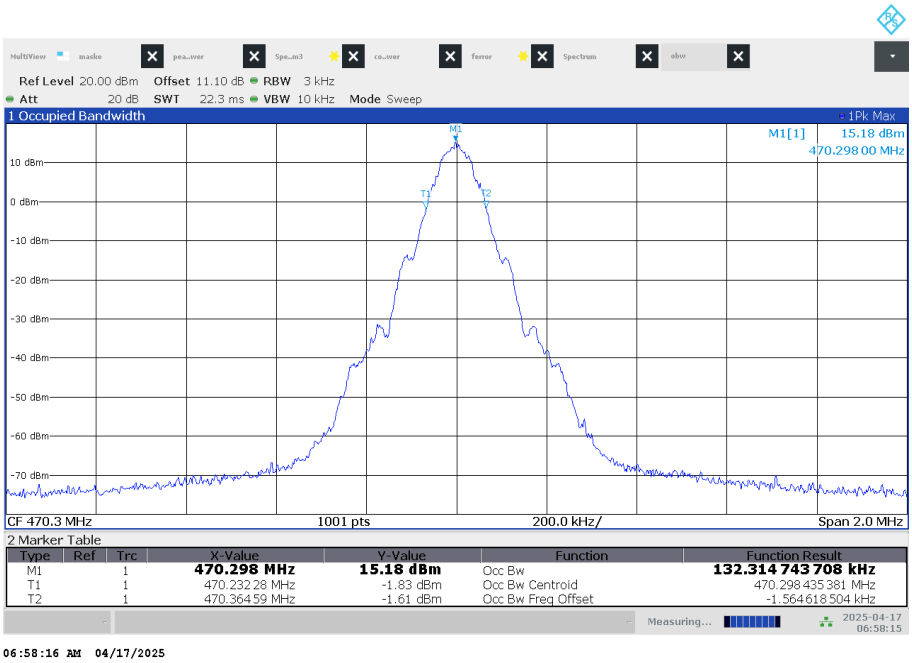
FCC & IC
470 MHz to 608 MHz 200 kHz
Occupied bandwidth 99%. Other than single sideband or independent sideband transmitters - when modulated by a 2500 Hz tone at an input level 16 dB greater than that necessary to produce 50 percent modulation. The input level shall be established at the frequency of maximum response of the audio modulating circuit.

Result:

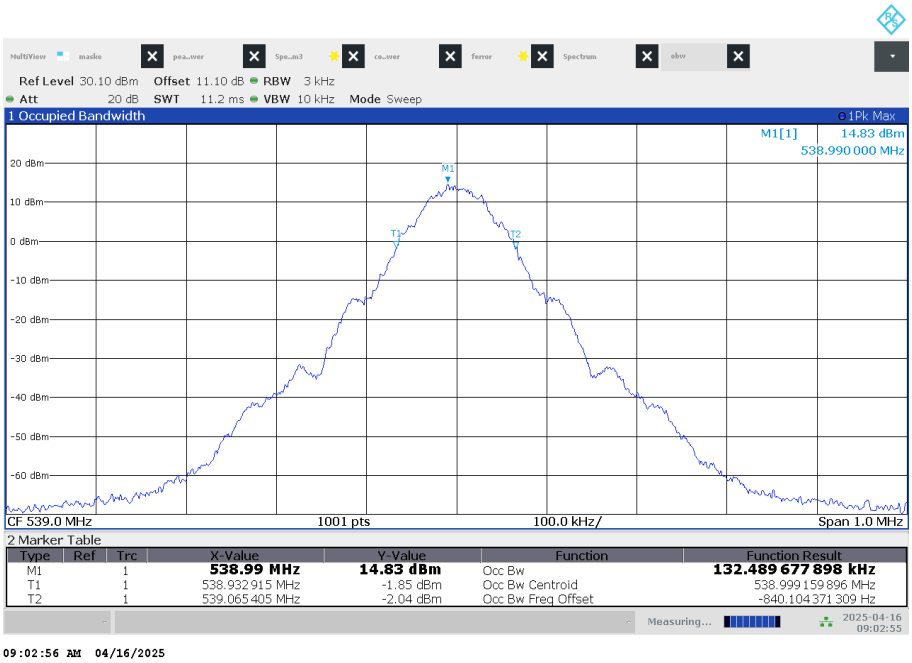
Channels	Occupied bandwidth
470.3 MHz	132.31 kHz
539.0 MHz	132.48 kHz
607.7 MHz	132.43 kHz

Plots:

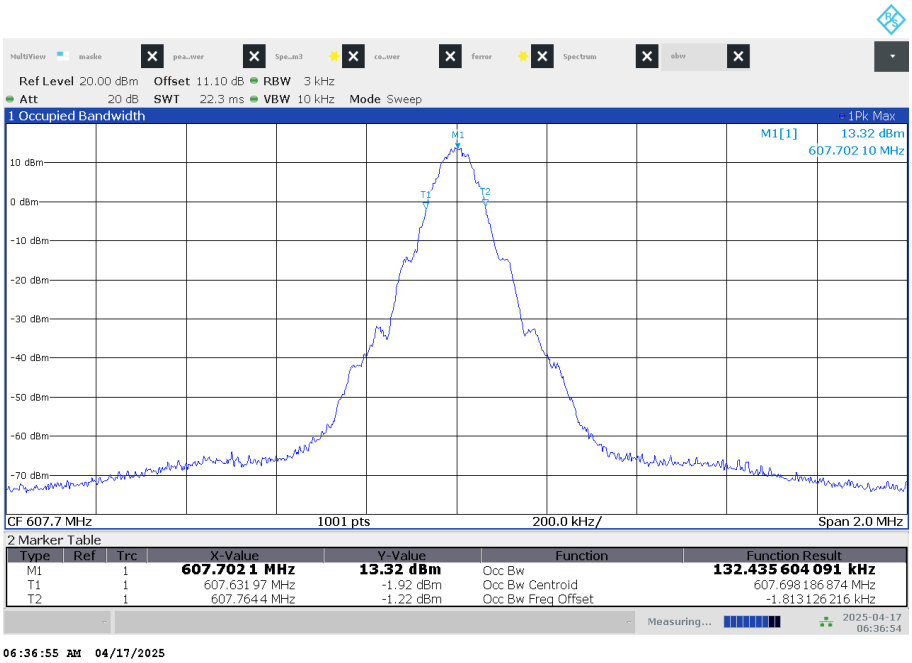
Plot 1: 470.3 MHz



Plot 2: 539.0 MHz



Plot 3: 607.7 MHz



12.3 Transmitter frequency stability

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	30 Hz
Video bandwidth:	3 x resolution bandwidth
Span:	wide enough to follow the frequency drift
Trace mode:	clear/write/view
EUT:	MC with measurement method description
Test setup:	See sub clause 7.2 - B
Measurement uncertainty:	See sub clause 9

Limits:

FCC & IC
470 MHz to 608 MHz ± 50 ppm

Results: 470.3 MHz

Temperature / Voltage	Frequency / MHz	Deviation (kHz / ppm)
-30 °C / V_{nom}	470.299832	-0.168 / 0.36
-20 °C / V_{nom}	470.299837	-0.163 / 0.35
-10 °C / V_{nom}	470.299340	-0.660 / 1.40
0 °C / V_{nom}	470.299572	-0.428 / 0.91
+10 °C / V_{nom}	470.298788	-1.212 / 2.58
+30 °C / V_{nom}	470.299356	-0.644 / 1.37
+40 °C / V_{nom}	470.298872	-1.128 / 2.40
+50 °C / V_{nom}	470.298952	-1.048 / 2.23
+20 °C / V_{nom} - 15%	470.299015	-0.985 / 2.10
+20 °C / V_{nom}	470.299373	-0.627 / 1.33
+20 °C / V_{nom} + 15%	470.299089	-0.911 / 1.94

Results: 539.0 MHz

Temperature / Voltage	Frequency / MHz	Deviation (kHz / ppm)
-30 °C / V_{nom}	538.999860	-0.140 / 0.26
-20 °C / V_{nom}	538.999514	-0.486 / 0.90
-10 °C / V_{nom}	538.998859	-1.141 / 2.12
0 °C / V_{nom}	538.999256	-0.744 / 1.38
+10 °C / V_{nom}	538.998987	-1.013 / 1.88
+30 °C / V_{nom}	538.999195	-0.805 / 1.49
+40 °C / V_{nom}	538.998920	-1.080 / 2.00
+50 °C / V_{nom}	538.999470	-0.530 / 0.98
+20 °C / V_{nom} - 15%	538.999050	-0.950 / 1.76
+20 °C / V_{nom}	538.998926	-1.074 / 1.99
+20 °C / V_{nom} + 15%	538.999489	-0.511 / 0.95

Results: 607.7 MHz

Temperature / Voltage	Frequency / MHz	Deviation (kHz / ppm)
-30 °C / V_{nom}	607.699411	-0.589 / 0.97
-20 °C / V_{nom}	607.699232	-0.768 / 1.26
-10 °C / V_{nom}	607.698881	-1.119 / 1.84
0 °C / V_{nom}	607.699032	-0.968 / 1.59
+10 °C / V_{nom}	607.698981	-1.019 / 1.68
+30 °C / V_{nom}	607.698476	-1.524 / 2.51
+40 °C / V_{nom}	607.699047	-0.953 / 1.57
+50 °C / V_{nom}	607.698779	-1.221 / 2.01
+20 °C / V_{nom} - 15%	607.698964	-1.036 / 1.70
+20 °C / V_{nom}	607.698798	-1.202 / 1.98
+20 °C / V_{nom} + 15%	607.699067	-0.933 / 1.54

12.4 Transmitter unwanted emissions (radiated)

Measurement:

Measurement parameter	
Detector:	Peak (prescan) / RMS
Sweep time:	Auto
Resolution bandwidth:	See table below!
Video bandwidth:	See table below!
Span:	100 MHz steps!
Trace-Mode:	Max. hold
EUT:	MC with max frequency deviation
Used equipment:	See chapter 7.1- A / B
Measurement uncertainty:	See chapter 9

Limits:

FCC	IC
FCC 47 CFR § 2.1053 47 CFR 74.861 (e)(6) On any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB; On any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: at least 35 dB; On any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth: at least 43 + 10log10 (mean output power in watts) dB.	RSS 210 G.5
ETSI EN 300422 V2.2.1 (2021-11), section 4.2.4.1.2	

Limit: according to ETSI EN 300422 V2.2.1 section 4.2.4.1.2

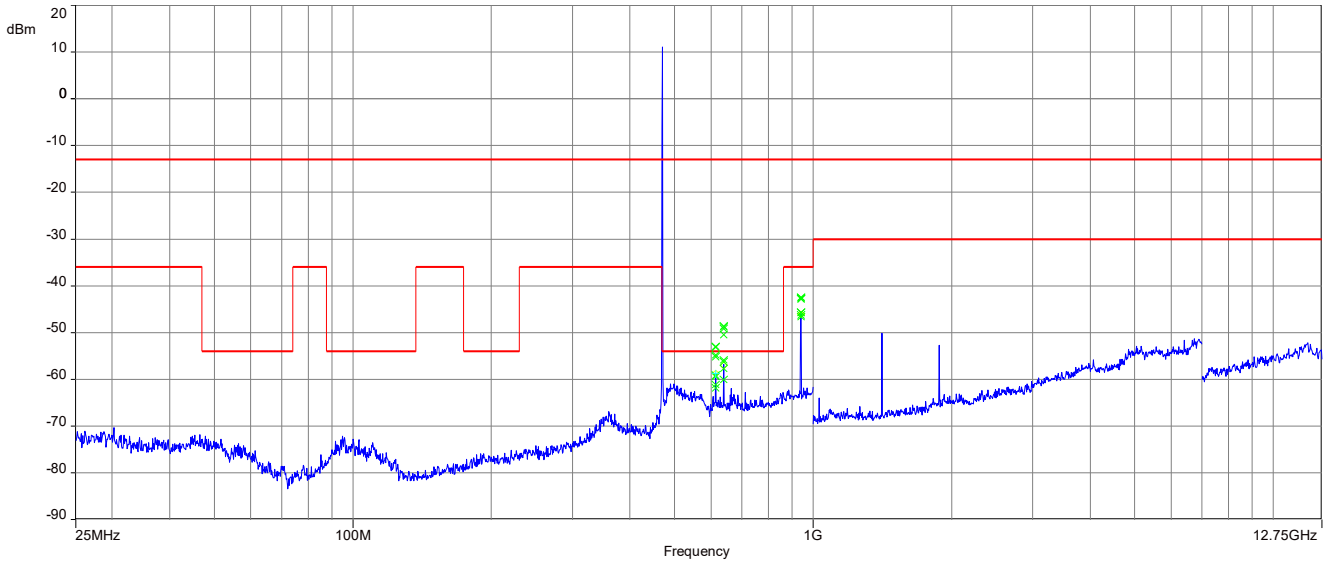
Frequency range	Maximum power	RBW
9 kHz - 150 kHz	-36 dBm	1 kHz
150 kHz - 30 MHz	-36 dBm	10 kHz
30 MHz - 1 GHz	-36 dBm	F_c + 2,5 B ≤ f ≤ f_c + 4 B: 1 kHz F_c + 4 B < f ≤ f_c + 10 B: 10 kHz f > f_c + 10 B: 100 kHz f < f_c - 10 B: 100 kHz f_c - 10 B ≤ f < f_c - 4 B: 10 kHz f_c - 4 B ≤ f ≤ f_c - 2,5 B: 1 kHz
except:		
47 MHz - 74 MHz 87,5 MHz - 118 MHz	-54 dBm	100 kHz
174 MHz - 230 MHz 470 MHz - 862 MHz	-54 dBm	F_c + 2,5 B ≤ f ≤ f_c + 4 B: 1 kHz F_c + 4 B < f ≤ f_c + 10 B: 10 kHz f > f_c + 10 B: 100 kHz f < f_c - 10 B: 100 kHz f_c - 10 B ≤ f < f_c - 4 B: 10 kHz f_c - 4 B ≤ f ≤ f_c - 2,5 B: 1 kHz
1 GHz < f ≤ F_{upper}	-30 dBm	F_c + 2,5 B ≤ f ≤ f_c + 10 B: 30 kHz F_c + 10 B < f ≤ f_c + 12 B: 300 kHz f > f_c + 12 B: 1 MHz f < f_c - 12 B: 1 MHz f_c - 12 B ≤ f < f_c - 10 B: 300 kHz f_c - 10 B ≤ f ≤ f_c - 2,5 B: 30 kHz

Results:

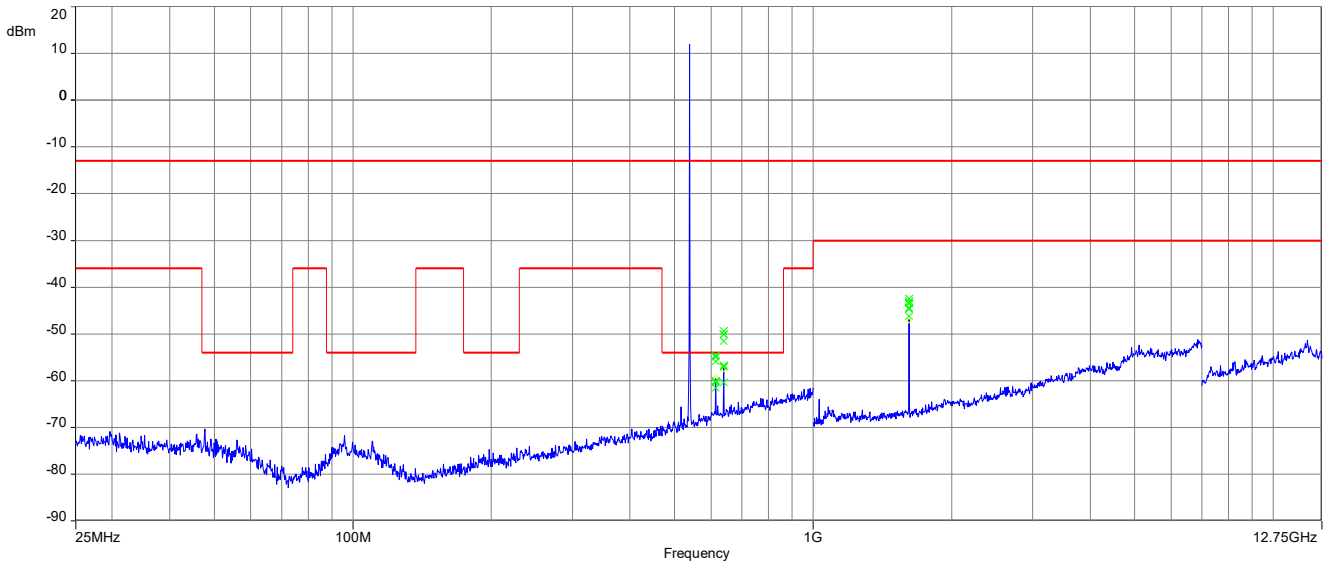
carrier frequency (MHz)	unwanted emission frequency (MHz)	Limit (dBm RMS)	level (dB) / (dBm) or remark
470.3	614.38	-54	-59.15
	639.05	-54	-55.87
	940.42	-36	-45.65
539.0	614.38	-54	-60.03
	638.95	-54	-56.64
	1616.8	-30	-43.52
607.7	516.10	-54	-64.40
	638.95	-54	-58.91

Plots: radiated

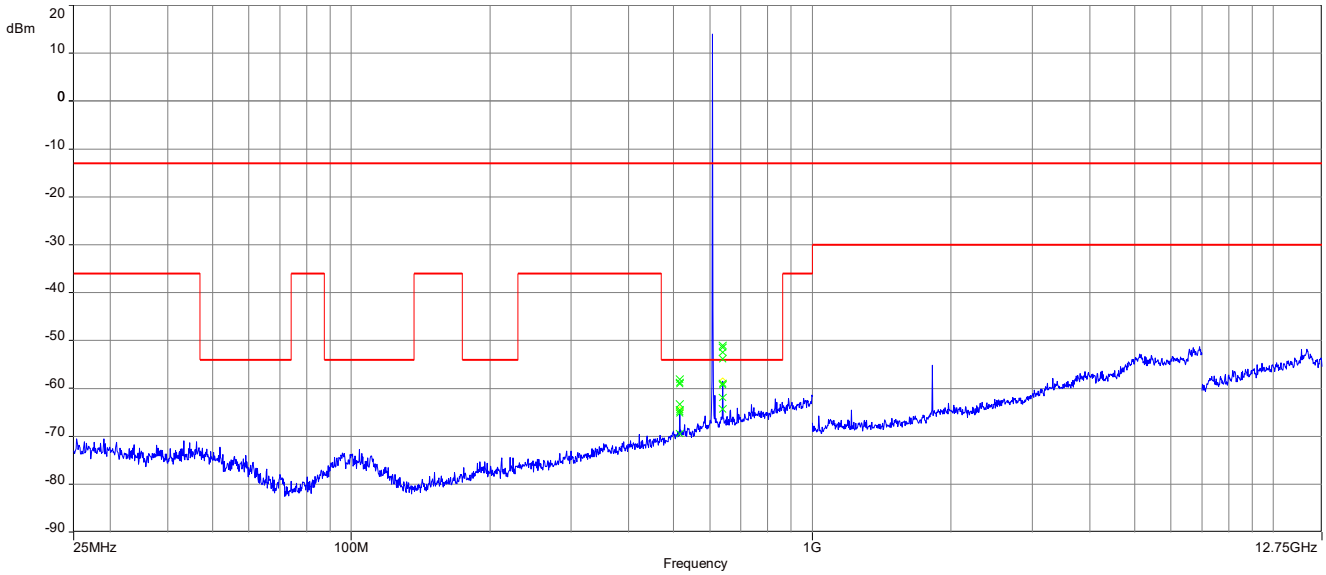
Plot 1: 470.3 MHz, spurious emissions, 25 MHz – 12.75 GHz



Plot 2: 539.0 MHz, spurious emissions, 25 MHz – 12.75 GHz



Plot 3: 607.7 MHz, spurious emissions, 25 MHz – 12.75 GHz



12.5 Transmitter unwanted emissions (conducted)

Measurement:

Measurement parameter	
Detector:	Peak
Sweep time:	See plots
Resolution bandwidth:	30MHz – 1GHz: 100 kHz 1GHz – 5GHz: 1MHz
Video bandwidth:	30MHz – 1GHz: 1MHz 1GHz – 5GHz: 3MHz
Span:	See plots
Trace-Mode:	Max. hold
Used equipment:	See chapter 7.2 A
Measurement uncertainty:	See chapter 9

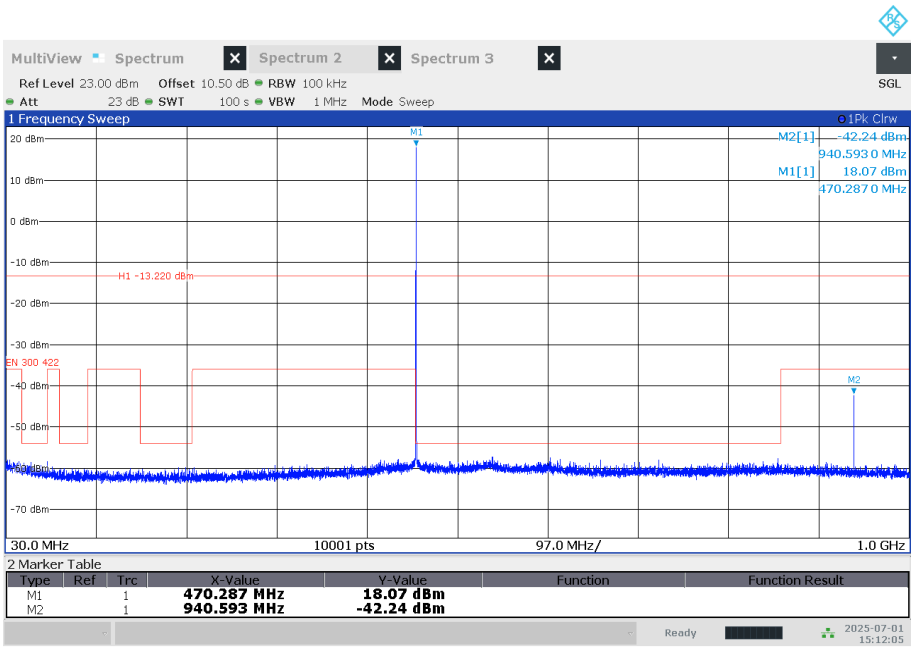
Limits:

FCC	IC
FCC 47 CFR § 2.1051 47 CFR 74.861 (e)(6) On any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB; On any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: at least 35 dB; On any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth: at least 43 + 10log10 (mean output power in watts) dB.	RSS 210 G.5
ETSI EN 300422 V2.2.1 (2021-11), section 4.2.4.1.2	

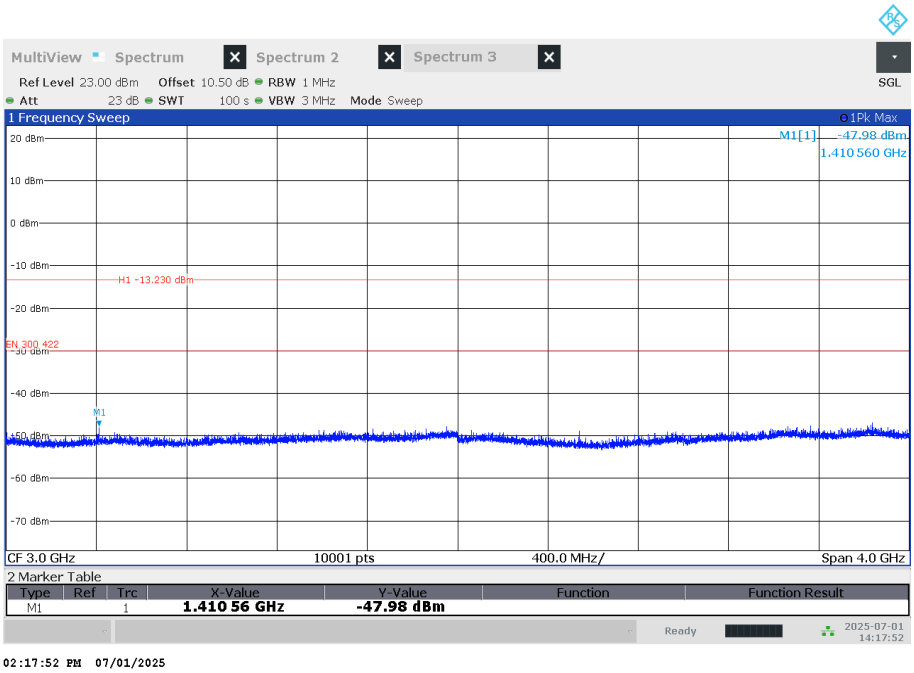
Results: see plots

Plots:

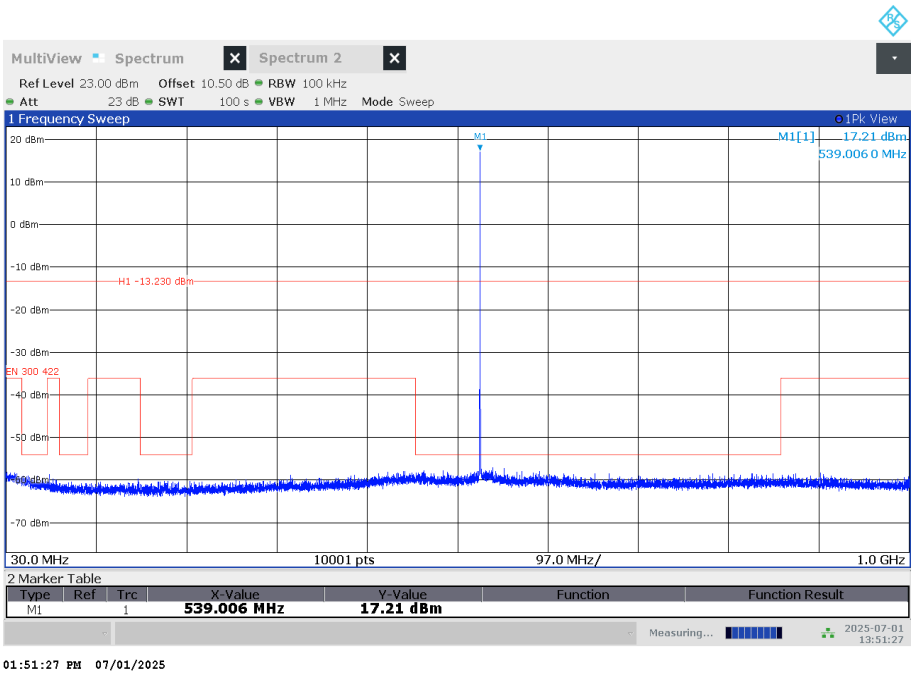
Plot 1: 470.3 MHz, 30MHz – 1GHz



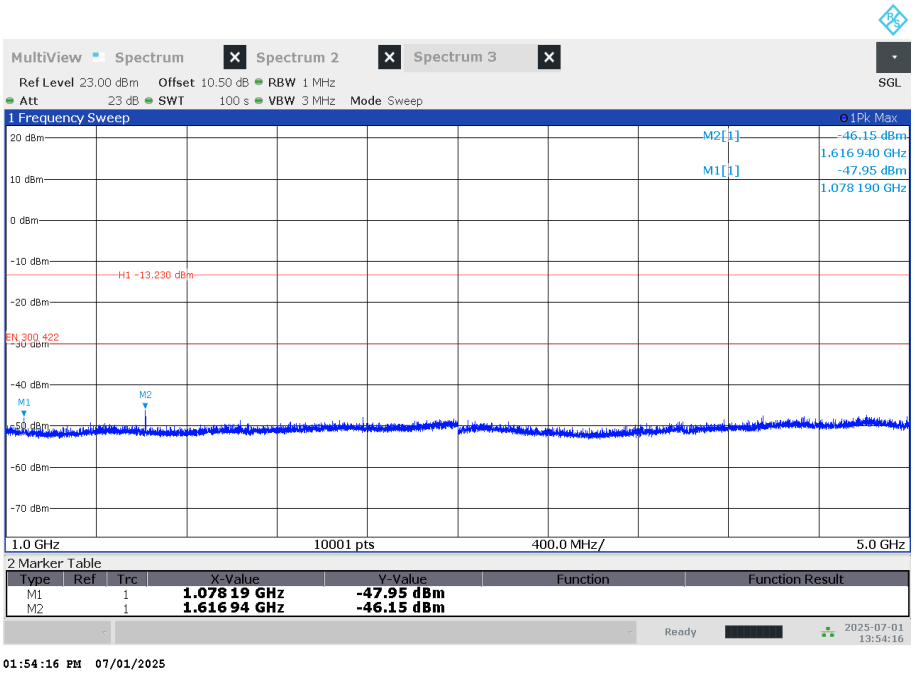
Plot 2: 470.3 MHz, 1GHz – 5 GHz



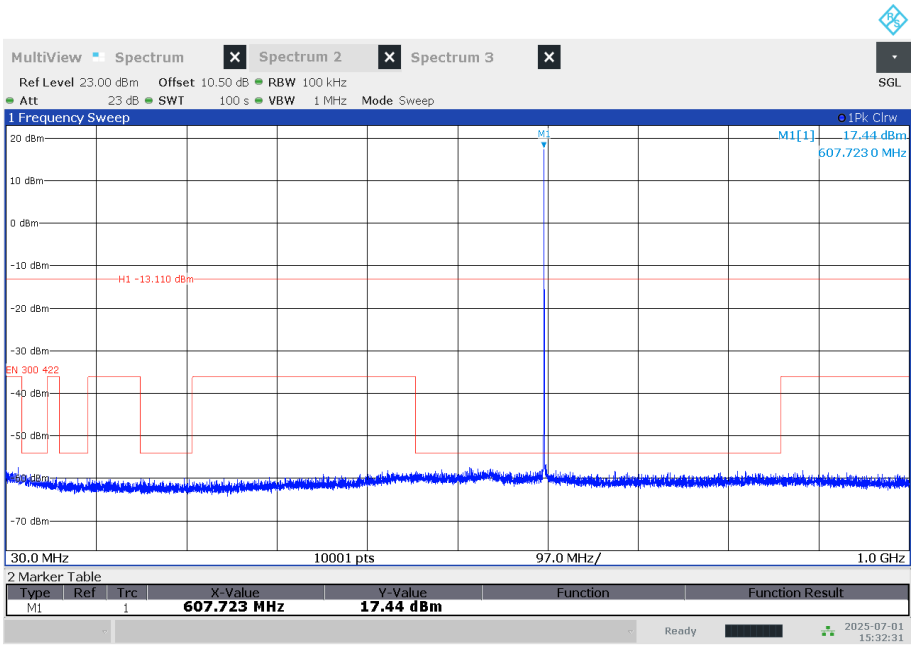
Plot 3: 539.0 MHz, 30 MHz – 1GHz



Plot 4: 539.0 MHz, 1GHz – 4GHz



Plot 5: 607.7 MHz, 30 MHz – 1 GHz



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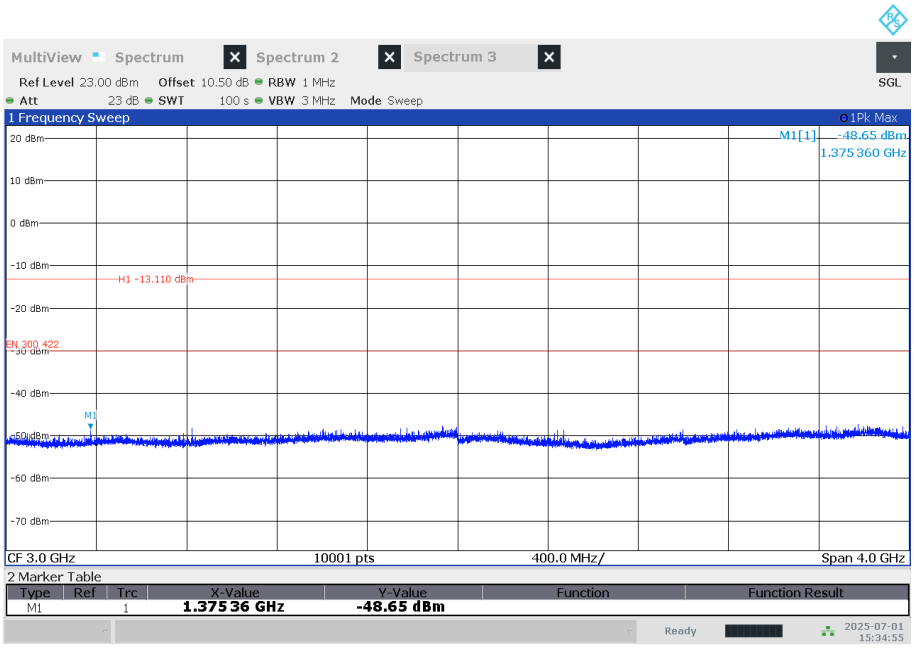
Plot 6: 607.7 MHz, 1 GHz – 5GHz



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12.6 Transmitter Emission Mask in the out of band domain for digital systems

Measurement:

Measurement parameter	
Detector:	Peak / Average (-90 dBc point only)
Sweep time:	Auto
Resolution bandwidth:	1 kHz
Video bandwidth:	1 kHz
Span:	fc - 1 MHz to fc + 1 MHz (2 MHz)
Trace mode:	Max hold/view
EUT:	MC
Test setup:	See sub clause 7.2 A
Measurement uncertainty:	See sub clause 9

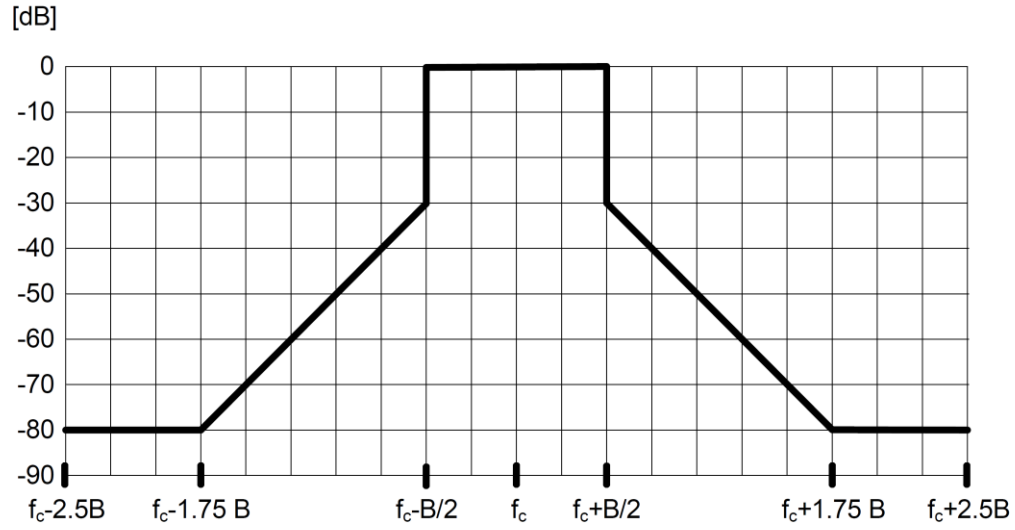
channel bandwidth (customer declaration): 200 kHz

Limits:

FCC	IC
47 CFR 74.861 (e)(7) ETSI EN 300 422-1 V 2.2.1, section 4.2.4.2.2	RSS 210 G.5 ETSI EN 300 422-1 V 2.2.1, section 4.2.4.2.2

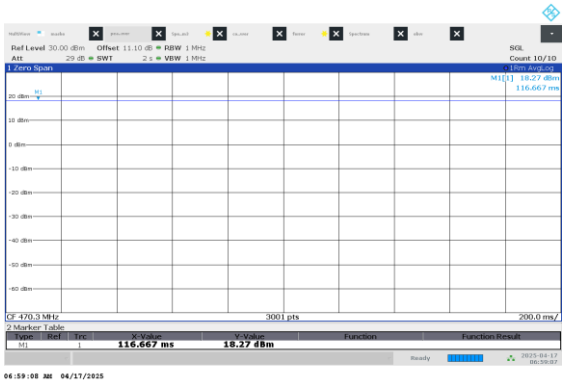
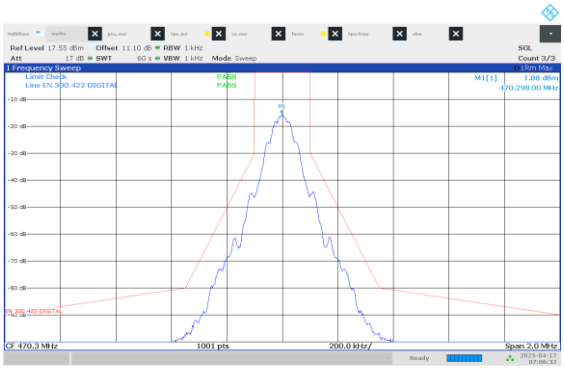
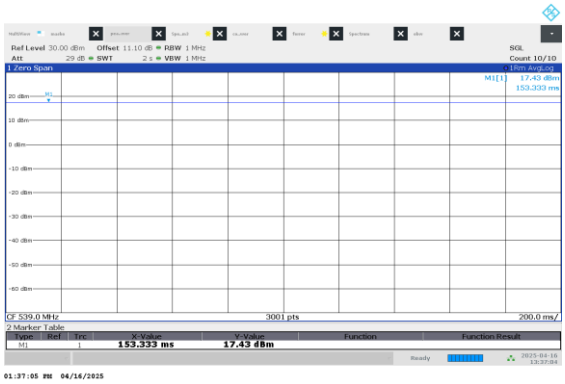
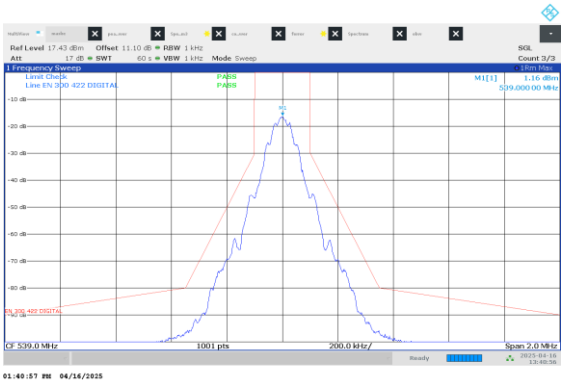
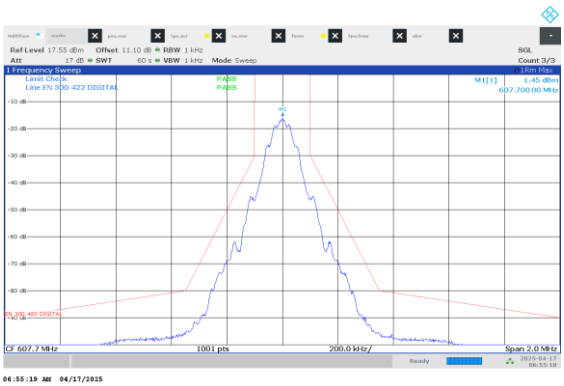
FCC & IC

Signal within the spectrum mask:



Plots:

Mask in the plots is more stringent compared to section 4.2.4.2.2 but results demonstrate compliance to both masks

Frequency	Carrier power	Spectrum mask for digital systems
470.3 MHz		
539.0 MHz		
607.7 MHz		

13 Glossary

AVG	Average
C	Compliant
C/N_0	Carrier to noise-density ratio, expressed in dB-Hz
CAC	Channel availability check
CW	Clean wave
DC	Duty cycle
DFS	Dynamic frequency selection
DSSS	Dynamic sequence spread spectrum
DUT	Device under test
EN	European Standard
ETSI	European Telecommunications Standards Institute
EMC	Electromagnetic Compatibility
EUT	Equipment under test
FCC	Federal Communications Commission
FCC ID	Company Identifier at FCC
FHSS	Frequency hopping spread spectrum
FVIN	Firmware version identification number
GNSS	Global Navigation Satellite System
GUE	GNSS User Equipment
HMN	Host marketing name
HVIN	Hardware version identification number
HW	Hardware
IC	Industry Canada
Inv. No.	Inventory number
MC	Modulated carrier
NA	Not applicable
NC	Not compliant
NOP	Non occupancy period
NP	Not performed
OBW	Occupied bandwidth
OC	Operating channel
OCW	Operating channel bandwidth
OFDM	Orthogonal frequency division multiplexing
OOB	Out of band
OP	Occupancy period
PER	Packet error rate
PMN	Product marketing name
PP	Positive peak
QP	Quasi peak
RLAN	Radio local area network
S/N or SN	Serial number
SW	Software
UUT	Unit under test
WLAN	Wireless local area network

14 Document history

Version	Applied changes	Date of release
R01	Initial release	2025-04-30
R02	conducted emission results added, update references to ETSI EN 300422-1 V2.2.1	2025-07-11
R03	Editorial changes	2025-07-21

################################ END OF TEST REPORT ################################