

TEST REPORT

Test report no.: 1-0499-25-02-02_TR1-R01



Deutsche
Akkreditierungsstelle
D-PL-12047-01-00

Testing laboratory

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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

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Manufacturer

Axis Communications AB

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Test standard/s

FCC - Title 47 CFR Part 96

FCC - Title 47 of the Code of Federal Regulations; Chapter I; Part 96 – Citizens Broadband Radio Service

RSS-192, Issue 5

Flexible Use Broadband Equipment Operating in the Band 3450-3900 MHz

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

Test Item

Kind of test item:

Cellular Back Box

Model name:

AXIS TP3604-E Cellular Back Box

FCC ID:

Contains FCC ID: PNB-FN990A28

ISED certification number:

Contains IC ID: 3919A-FN990A28

Frequency:

Band 48, 3550 MHz to 3700 MHz

Technology tested:

LTE, NR

Antenna:

2 Integrated antennas

Power supply:

230 V AC by mains

Temperature range:

-40°C to +50°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:



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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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2.2 Application details

Date of receipt of order:	2025-11-21
Date of receipt of test item:	2025-12-11
Start of test:*	2025-12-11
End of test:*	2026-03-20
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

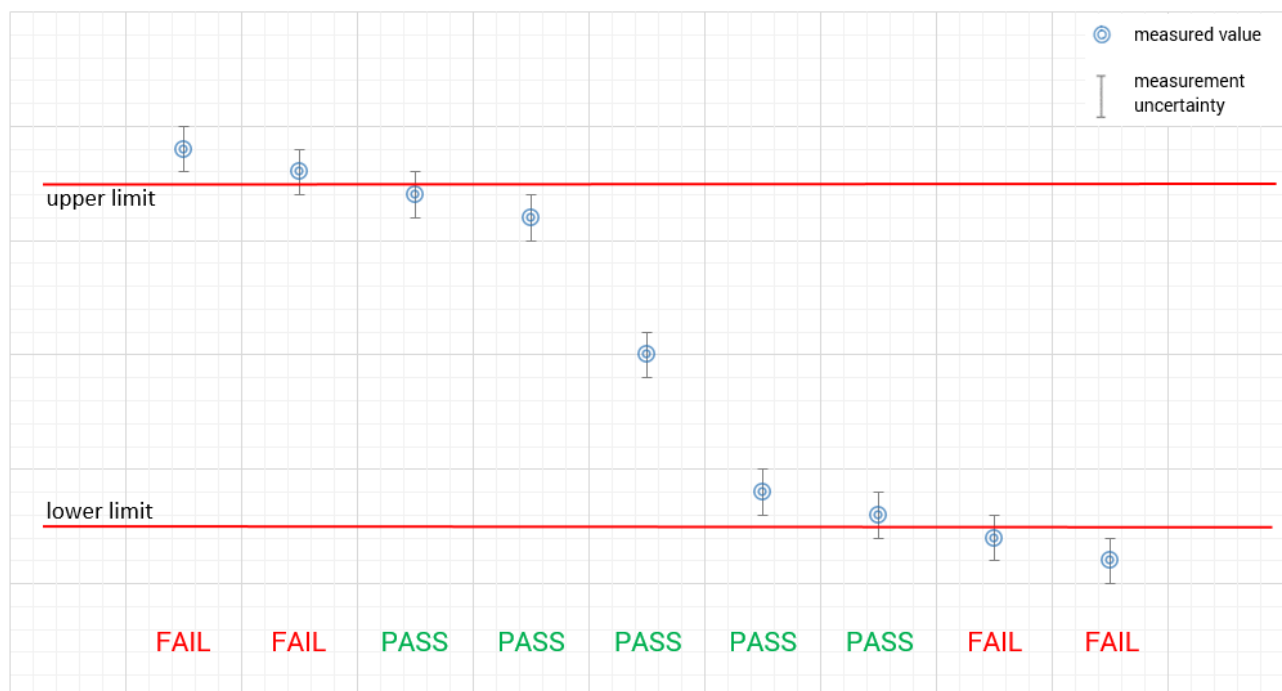
Test standard	Date	Description
FCC - Title 47 CFR Part 96	-/-	FCC - Title 47 of the Code of Federal Regulations; Chapter I; Part 96 – Citizens Broadband Radio Service
RSS-192, Issue 5	July, 2023	Flexible Use Broadband Equipment Operating in the Band 3450-3900 MHz
RSS - Gen Issue 5 incl. Amendment 1 & 2	February 2021	Spectrum Management and Telecommunications Radio Standards Specification - General Requirements for Compliance of Radio Apparatus
Guidance	Version	Description
ANSI C63.4a-2017	13.10.2017	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 C63.26-2015	-/-	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
KDB 662911 D01	v02r01	Emissions Testing of Transmitters with Multiple Outputs in the Same Band
Power Meas License Systems: KDB 971168 D01	v03r01	Measurement Guidance for Certification of Licensed Digital Transmitters

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.

measured value, measurement uncertainty, verdict



5 Test environment

Temperature	:	T_{nom}	+24 °C during room temperature tests
Relative humidity content	:		44 %
Barometric pressure	:		1021 hpa
Power supply	:	V_{nom}	230 V AC by mains

6 Test item

6.1 General description

Kind of test item	:	Cellular Back Box
Model name	:	AXIS TP3604-E Cellular Back Box
HMN	:	AXIS TP3604-E Cellular Back Box
PMN	:	FN990A28
HVIN	:	FN990A28
FVIN	:	45.00.106
S/N serial number	:	Rad./Cond. (Sample ITB 15 - #69681
IMEI	:	Rad./Cond. 359918926305731
Hardware status	:	ETB3
Software status	:	12.9.6-3
Firmware status	:	-/-
Frequency band	:	Band 48, 3550 MHz to 3700 MHz
Type of radio transmission : Use of frequency spectrum :		Modulated carrier
Type of modulation	:	BPSK, QPSK, 16 – QAM, 64 – QAM, 256 – QAM
Antenna	:	2 Integrated antennas
Power supply	:	230 V AC by mains
Temperature range	:	-40°C to +50°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:

1-0499-25-02-01_TR1-A101-R01
1-0499-25-02-01_TR1-A102-R01
1-0499-25-02-01_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).

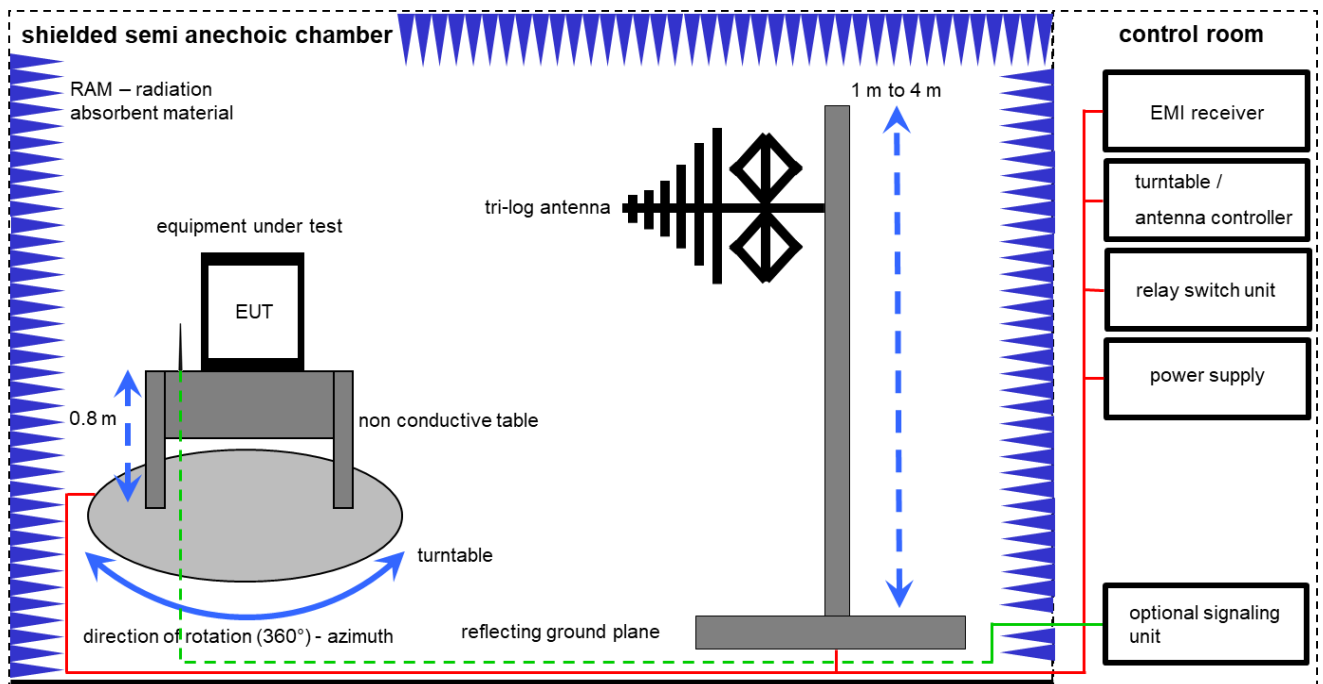
Each block diagram listed can contain several test setup configurations. All devices belonging to a test setup are identified with the same letter syntax. For example: Column Setup and all devices with an A.

Agenda: Kind of Calibration

k/cal	calibration / calibrated	EK	limited calibration
Ne/cnn	not required (k, ev, izw, zw not required)	zw	cyclical maintenance (external cyclical maintenance)
Ev/chk	periodic self verification	izw	internal cyclical maintenance
Ve	long-term stability recognized	g	blocked for accredited testing
vlk!	Attention: extended calibration interval		
NK!	Attention: not calibrated	*)	next calibration ordered / currently in progress
cpu	check prior usage		

7.1 Shielded semi anechoic chamber

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 30 MHz to 1 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas are conform to specifications ANSI C63. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test setups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received. The wanted and unwanted emissions are received by spectrum analyzers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63.



Measurement distance: tri-log antenna 10 meter, EMC32 software version: 10.59.00

FS = UR + CL + AF

(FS-field strength; UR-voltage at the receiver; CL-loss of the cable; AF-antenna factor)

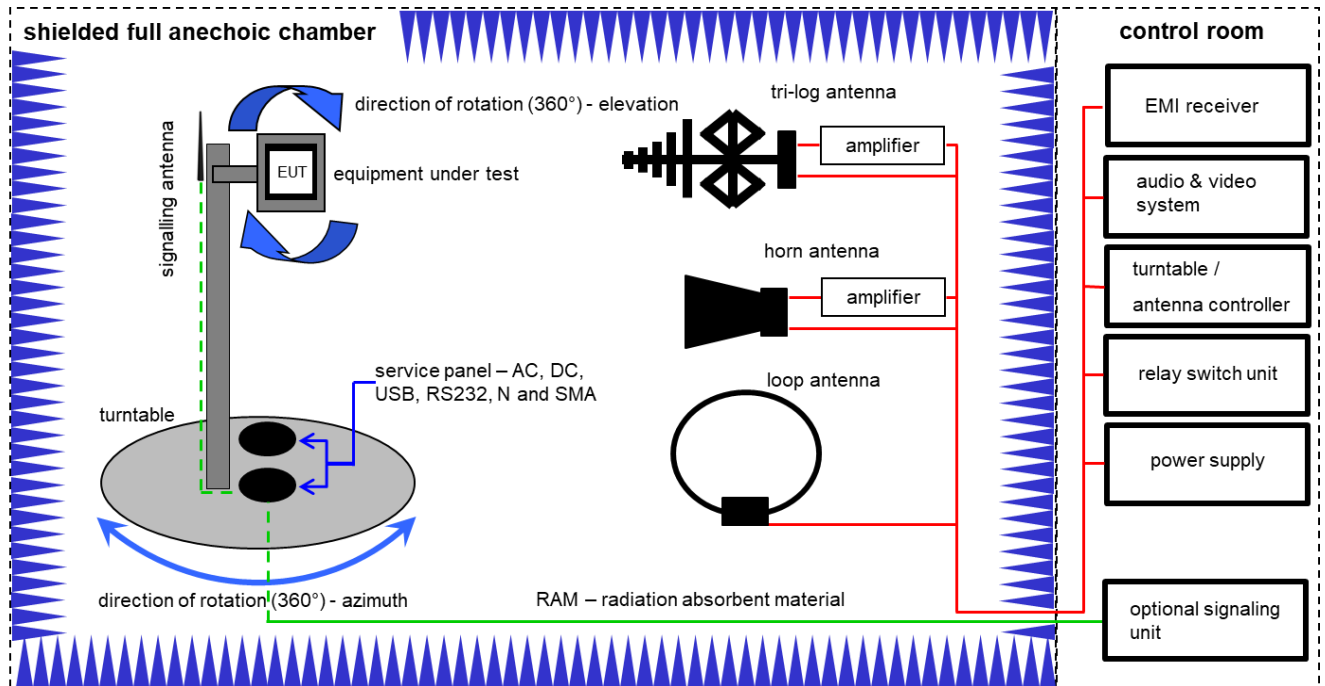
Example calculation:

FS [dB μ V/m] = 12.35 [dB μ V] + 1.90 [dB] + 16.80 [dB/m] = 31.05 [dB μ V/m] (35.69 μ V/m) @ distance

Equipment table:

No.	Setup	Equipment	Type	Manufacturer	Serial No.	INV. No.	Kind of Calibration	Last Calibration	Next Calibration
1	A	Semi anechoic chamber	Semi anechoic chamber 3000023	MEC Import: MWB AG	-/-	40797	cnn	-/-	-/-
2	A	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz VULB9163	Schwarzbeck Mess-Elektronik OHG / Schönaun	371	40798	cal	11.07.2024	11.07.2026
3	A	Turntable	Turntable 2089-4.0	EMCO Elektronik GmbH / Gilching	-/-	40799	cnn	-/-	-/-
4	A	Switch-Unit	Switch-Unit 3488A	Hewlett Packard	2719A14505	50160	cpu	-/-	-/-
5	A	Antenna Tower	Antenna Tower 2175	ETS-Lindgren GmbH / Taufkirchen	64762	50279	cnn	-/-	-/-
6	A	Positioning Controller	Positioning Controller 2090	ETS-Lindgren GmbH / Taufkirchen	64672	50280	cnn	-/-	-/-
7	A	EMI Test Receiver	EMI Test Receiver ESR3	Rohde & Schwarz Messgerätebau GmbH / Memmingen	102587	50417	cal	08.12.2025	21.12.2026
8	A	Wideband Radio Communication Tester	Wideband Radio Communication Tester CMW500	Rohde & Schwarz Messgerätebau GmbH / Memmingen	170615	40220	cal	04.12.2025	31.12.2027

7.2 Shielded fully anechoic chamber



Measurement distance: tri-log antenna and horn antenna 3 meter; loop antenna 1 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:

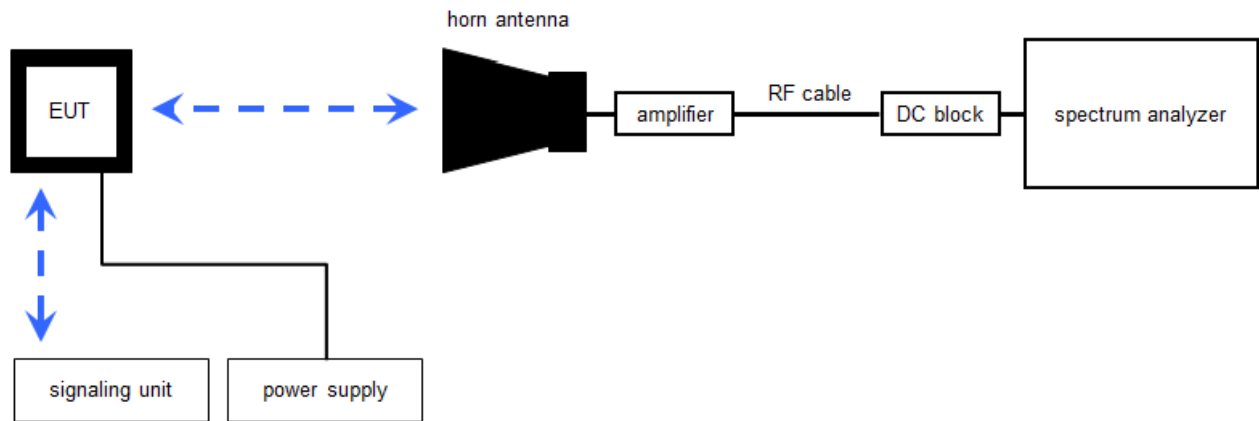
OP [dBm] = -65.0 [dBm] + 50 [dB] - 20 [dBi] + 5 [dB] = -30 [dBm] (1 μ W)

Equipment table:

No.	Setup	Equipment	Type	Manufacturer	Serial No.	INV. No.	Kind of Calibration	Last Calibration	Next Calibration
1	A, B, C, D	Signal analyzer	Signal analyzer FSW26	Rohde & Schwarz Messgerätebau GmbH Memmingen	101455	300004528-0000	cal	08.12.2025	31.12.2026
2	A, B, C, D	Double-Ridged Waveguide Horn Antenna	Double-Ridged Waveguide Horn Antenna 3115	EMCO Elektronik GmbH Gilching	8812-3089	300000307	cal	09.07.2024	09.07.2026
3	A, D	Highpass Filter	Highpass Filter WHKX7.0/18G-8SS	Wainwright Instruments GmbH Andechs	18	300003789-0000	cpu	-/-	-/-
4	A, D	High Pass Filter	High Pass Filter VHF-3500+	Mini-Circuits / Brooklyn	-/-	40369	cnn	-/-	-/-
5	A, B, C, D	Broadband Amplifier 0.5-18 GHz	Broadband Amplifier 0.5-18 GHz CBLU5184540	MEC Import: CERNEX	22050	300004482-0000	cpu	-/-	-/-
6	A, B, C, D	4U RF Switch Platform	4U RF Switch Platform L4491A	Agilent Technologies Deutschland GmbH Böblingen	MY50000032	300004510-0000	cnn	-/-	-/-
7	A, B, C, D	NEXIO EMV-Software	NEXIO EMV-Software BAT EMC V2022.0.32.0	MEC Import: Nexio		300004682-0000	cnn	-/-	-/-
8	A, B, C, D	Anechoic chamber	Anechoic chamber	MEC Import: TDK		300003726-0000	cnn	-/-	-/-
9	A, D	Active Loop Antenna	Active Loop Antenna 6502	EMCO Elektronik GmbH Gilching	2210	300001015	cal	07.07.2025	07.07.2027
10	A, D	TRILOG Broadband Antenna	TRILOG Broadband Antenna VULB9163	Schwarzbeck Mess-Elektronik OHG Schönaun	318	300003696	cal	31.01.2024	31.01.2026
11	A, B,	Wideband radio communication tester	Wideband radio communication tester CMW500	Rohde & Schwarz Messgerätebau GmbH Memmingen	170615	300006252-0000	cal	04.12.2025	31.12.2027
12	C, D	5G Signalling Unit	MT8000A	Anritsu	6262186399	300006321	cal	17.09.2024	17.09.2026

7.3 Radiated measurements > 18 GHz

Radiated measurements > 18 GHz



Measurement distance: horn antenna 50 cm

$$OP = AV + D - G + CA$$

(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:

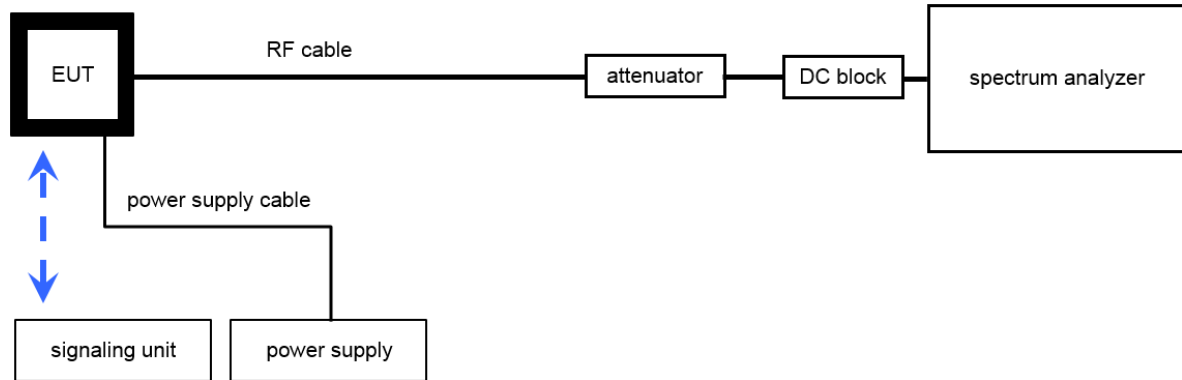
$$OP \text{ [dBm]} = -59.0 \text{ [dBm]} + 44.0 \text{ [dB]} - 20.0 \text{ [dBi]} + 5.0 \text{ [dB]} = -30 \text{ [dBm]} (1 \mu\text{W})$$

Equipment table:

No.	Setup	Equipment	Type	Manufacturer	Serial No.	INV. No.	Kind of Calibration	Last Calibration	Next Calibration
1	A, B	Std. Gain Horn Antenna 18.0-26.5 GHz	638	Narda	8205	300002442-0000	cal	16.01.2026	31.01.2028
2	A, B	Std. Gain Horn Antenna 26.5-40.0 GHz	V637	Narda	8216	300000510-0000	cal	16.01.2026	31.01.2028
3	A, B	Broadband Low Noise Amplifier 2-40 GHz				300004541	ev	-/-	-/-
4	A, B	Signal analyzer	Signal analyzer FSV40	Rohde & Schwarz Messgerätebau GmbH / Memmingen	101042	300004517-0000	cal	08.01.2026	31.01.2027
5	A, B	RF-Cable	ST18/SMAM/SMAM /48	Huber & Suhner	Batch no. 600918	400001182	ev	-/-	-/-
6	A, B	DC-Blocker 0.1-40 GHz	8141A	Inmet	-/-	400001185	ev	-/-	-/-
7	A	Wideband radio communication tester	Wideband radio communication tester CMW500	Rohde & Schwarz Messgerätebau GmbH Memmingen	170615	300006252-0000	cal	04.12.2025	31.12.2027
8	B	5G Signalling Unit	MT8000A	Anritsu	6262186399	300006321	cal	17.09.2024	17.09.2026

7.4 Conducted measurements

Conducted measurements normal 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	Wideband radio communication tester	Wideband radio communication tester CMW500	Rohde & Schwarz Messgerätebau GmbH Memmingen	166977	300005718-0000	cal	13.12.2023	31.12.2025
2	B	5G Signalling Unit	MT8000A	Anritsu	6262186399	300006321	cal	17.09.2024	17.09.2026
3	A, B	Relais Matrix	Switch Matrix USM	cetecom advanced GmbH Saarbrücken	C001	-/-	cnn	-/-	-/-
4	A, B	RF-Cable	RF-Cable ST18/SMAM/SMAM /60	Huber & Suhner GmbH Unterhaching	Batch no. 606844	400001181-0000	cpu	-/-	-/-
5	A, B	RF-Cable	RF-Cable ST18/SMAM/SMAM /72	Huber & Suhner GmbH Unterhaching	Batch no. 699714	400001184-0000	cpu	-/-	-/-

8 Sequence of testing

8.1 Sequence of testing radiated spurious 9 kHz to 30 MHz

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, it is placed on a table with 0.8 m height.
- 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 63.26.
- 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 63.26) – see test details.
- EUT is set into operation.

Premeasurement*

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna height is 1 m.
- At each turntable position the analyzer sweeps with positive-peak detector to find the maximum of all emissions.

Final measurement

- Identified emissions during the pre-measurement are maximized by the software by rotating the turntable from 0° to 360°.
- Loop antenna is rotated about its vertical axis for maximum response at each azimuth about the EUT. (For certain applications, the loop antenna plane may also need to be positioned horizontally at the specified distance from the EUT)
- The final measurement is done in the position (turntable and elevation) causing the highest emissions with quasi-peak (as described in ANSI C 63.26).
- Final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. A plot with the graph of the premeasurement and the limit is stored.

*)Note: The sequence will be repeated three times with different EUT orientations.

8.2 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 63.26.
- 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 63.26) – 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 $\pm 45^\circ$ and antenna height between 1 and 4 m.
- The final measurement is done with quasi-peak detector (as described in ANSI C 63.26).
- 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.

8.3 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 63.26.
- 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 63.26) – 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 C63.26.
- 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 63.26).
- 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.

8.4 Sequence of testing radiated spurious above 18 GHz

Setup

- The equipment is set up to simulate normal operation mode as described in the user manual or defined by the manufacturer.
- Auxiliary equipment and cables are positioned to simulate normal operation conditions as described in ANSI C 63.26.
- The AC power port of the EUT (if available) is connected to a power outlet.
- The measurement distance is as appropriate (e.g. 0.5 m).
- The EUT is set into operation.

Premeasurement

- The test antenna is handheld and moved carefully over the EUT to cover the EUT's whole sphere and different polarizations of the antenna.

Final measurement

- The final measurement is performed at the position and antenna orientation causing the highest emissions with Peak and RMS detector (as described in ANSI C 63.26).
- Final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit are recorded. A plot with the graph of the premeasurement and the limit is stored.

9 Measurement uncertainty

Measurement uncertainty		
Test case	Uncertainty	
Antenna gain	± 3 dB	
99 % bandwidth	$\pm$ RBW	
-26 dB bandwidth	$\pm$ RBW	
Frequency stability	10^{-6}	
Maximum output power conducted	± 1.56 dB	
Block edge compliance	± 1.56 dB	
Spurious emissions conducted	> 3.6 GHz	± 1.56 dB
	> 7 GHz	± 1.56 dB
	> 18 GHz	± 2.31 dB
	≥ 40 GHz	± 2.97 dB
Spurious emissions radiated below 30 MHz	± 3 dB	
Spurious emissions radiated 30 MHz to 1 GHz	± 3 dB	
Spurious emissions radiated 1 GHz to 12.75 GHz	± 3.7 dB	
Spurious emissions radiated above 12.75 GHz	± 4.5 dB	

10 Additional information and comments

Reference documents: None

Co-applicable documents: 1-0499-25-02-02_TR1-A201-R01
1-0499-25-02-02_TR1-A202-R01
1-0499-25-02-02_TR1-A203-R01

Special test descriptions: None

Configuration descriptions: As in the modular certification of the module which is installed in the EUT, the following approach for MIMO gain was used: The MIMO mode is completely **uncorrelated**, so the directional gain is selected the maximum gain among all antennas.

EUT selection:

- ☒ Only one device available
- ☐ Devices selected by the customer
- ☐ Devices selected by the laboratory (Randomly)

11 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: CFR Part 2 & Part 96 RSS-192, Issue 5	See table!	2026-06-08	Test according to customer demand

11.1 Part 96, LTE band 48

Test Case	temperature conditions	power source voltages	C	NC	NA	NP	Remark
Conducted Output Power	Nominal	Nominal	☒	☐	☐	☐	SISO
Radiated output power	Nominal	Nominal	☐	☐	☐	☒	-/-
Occupied Bandwidth	Nominal	Nominal	☐	☐	☐	☒	-/-
Conducted band edge	Nominal	Nominal	☐	☐	☐	☒	-/-
Conducted spurious emissions	Nominal	Nominal	☐	☐	☐	☒	-/-
Radiated spurious emissions	Nominal	Nominal	☒	☐	☐	☐	-/-
PAPR	Nominal	Nominal	☐	☐	☐	☒	-/-

11.2 Part 96, NR band n48

Test Case	temperature conditions	power source voltages	C	NC	NA	NP	Remark
Conducted Output Power	Nominal	Nominal	☒	☐	☐	☐	SISO and MIMO
Radiated output power	Nominal	Nominal	☐	☐	☐	☒	-/-
Occupied Bandwidth	Nominal	Nominal	☐	☐	☐	☒	-/-
Conducted band edge	Nominal	Nominal	☐	☐	☐	☒	-/-
Conducted spurious emissions	Nominal	Nominal	☐	☐	☐	☒	-/-
Radiated spurious emissions	Nominal	Nominal	☒	☐	☐	☐	-/-
PAPR	Nominal	Nominal	☐	☐	☐	☒	-/-

Notes:

C	Compliant	NC	Not compliant	NA	Not applicable	NP	Not performed
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12 RF measurements

12.1 Description of test setup

12.2 Results LTE band 48

12.2.1 Conducted output power

Measurement:

The mobile was set up for the maximum output power with pseudo random data modulation.

Measurement parameters	
Detector:	Sample
Resolution bandwidth:	10 MHz
Used equipment:	See chapter 7.3 setup A
Measurement uncertainty:	see chapter 9

Limits:

FCC	ISED
§ 96.41 (b) + (g)	Chapter 5.5
E.I.R.P. output power: 23 dBm / 10 MHz	30 dBm e.i.r.p./channel bandwidth

Output Power (conducted) ANT1 (SISO)						
Bandwidth (MHz)	Channel No. Frequency (MHz)	Resource block allocation	Average Output Power (dBm) QPSK	Average Output Power (dBm) 16-QAM	Average Output Power (dBm) 64-QAM	Average Output Power (dBm) 256-QAM
5	55265 / 3552.5	1 RB low	16.68	17.06	16.98	16.31
		1 RB mid	16.72	17.18	16.93	16.52
		1 RB high	16.74	17.13	16.94	16.40
		50% RB low	16.78	16.87	16.83	16.40
		50% RB mid	16.79	16.86	16.86	16.40
		50% RB high	16.79	16.91	16.81	16.33
		100% RB	16.79	16.80	16.83	16.37
	55990 / 3625.0	1 RB low	16.84	17.18	17.01	16.41
		1 RB mid	16.94	17.28	17.37	16.44
		1 RB high	16.87	17.15	17.08	16.69
		50% RB low	16.92	16.93	16.92	16.43
		50% RB mid	16.95	17.01	16.99	16.46
		50% RB high	16.90	16.99	16.99	16.45
		100% RB	16.93	16.96	16.83	16.46
	56715 / 3697.5	1 RB low	17.00	17.40	17.39	16.64
		1 RB mid	17.09	17.59	17.41	16.89
		1 RB high	17.13	17.57	17.34	16.79
		50% RB low	17.09	17.17	17.19	16.66
		50% RB mid	17.15	17.22	17.21	16.65
		50% RB high	17.20	17.25	17.17	16.73
		100% RB	17.08	17.09	17.12	16.71
10	55290 / 3555.0	1 RB low	16.81	17.05	17.20	16.42
		1 RB mid	16.65	17.04	17.06	16.42
		1 RB high	16.64	16.97	17.20	16.35
		50% RB low	16.87	16.90	16.87	16.36
		50% RB mid	16.84	16.90	16.86	16.35
		50% RB high	16.71	16.68	16.70	16.21
		100% RB	16.74	16.78	16.74	16.25
	55990 / 3625.0	1 RB low	16.85	17.22	17.00	16.50
		1 RB mid	16.90	17.17	17.07	16.50
		1 RB high	16.88	17.15	17.22	16.58
		50% RB low	16.98	16.95	16.91	16.44
		50% RB mid	16.97	16.96	16.98	16.41
		50% RB high	16.90	16.91	16.94	16.47
		100% RB	16.97	16.93	16.93	16.46
	56690 / 3695.0	1 RB low	17.00	17.31	17.35	16.77
		1 RB mid	17.07	17.42	17.42	16.77
		1 RB high	17.13	17.49	17.36	16.80
		50% RB low	17.05	17.10	17.14	16.63
		50% RB mid	17.17	17.23	17.11	16.70
		50% RB high	17.17	17.17	17.17	16.71
		100% RB	17.08	17.18	17.17	16.66

Output Power (conducted) ANT1 (SISO)						
Bandwidth (MHz)	Channel No. Frequency (MHz)	Resource block allocation	Average Output Power (dBm) QPSK	Average Output Power (dBm) 16-QAM	Average Output Power (dBm) 64-QAM	Average Output Power (dBm) 256-QAM
15	55315 / 3557.5	1 RB low	16.96	16.85	16.87	16.36
		1 RB mid	16.46	17.04	16.46	16.17
		1 RB high	16.53	16.79	16.55	16.18
		50% RB low	16.69	16.74	16.70	16.21
		50% RB mid	16.55	16.60	16.59	16.10
		50% RB high	16.52	16.58	16.55	16.01
		100% RB	16.57	16.60	16.56	16.11
	55990 / 3625.0	1 RB low	16.79	17.00	16.73	16.50
		1 RB mid	16.72	17.05	16.82	16.36
		1 RB high	16.99	16.82	16.75	16.20
		50% RB low	16.81	16.87	16.88	16.3.5
		50% RB mid	16.78	16.87	16.76	16.30
		50% RB high	16.81	16.79	16.82	16.32
		100% RB	16.79	16.82	16.77	16.29
	56665 / 3692.5	1 RB low	16.72	17.01	17.32	16.30
		1 RB mid	16.79	17.35	16.84	16.37
		1 RB high	17.22	17.19	17.01	16.78
		50% RB low	16.91	16.96	16.96	16.42
		50% RB mid	16.92	16.95	16.94	16.48
		50% RB high	16.99	17.01	16.93	16.50
		100% RB	16.91	16.99	16.98	16.46
20	55340 / 3560.0	1 RB low	16.97	16.91	16.95	16.28
		1 RB mid	16.36	16.99	16.48	16.09
		1 RB high	16.85	16.79	16.79	16.33
		50% RB low	16.69	16.69	16.66	16.24
		50% RB mid	16.63	16.68	16.66	16.19
		50% RB high	16.57	16.58	16.55	16.06
		100% RB	16.66	16.70	16.68	16.24
	55990 / 3625.0	1 RB low	17.05	17.09	16.82	16.34
		1 RB mid	16.77	17.18	16.95	16.21
		1 RB high	16.97	17.15	17.15	16.43
		50% RB low	16.85	16.90	16.85	16.35
		50% RB mid	16.85	16.81	16.81	16.32
		50% RB high	16.81	16.85	16.84	16.36
		100% RB	16.84	16.85	16.80	16.31
	56640 / 3690.0	1 RB low	16.93	17.17	17.09	16.42
		1 RB mid	16.72	17.13	16.89	16.48
		1 RB high	16.92	17.19	17.03	16.70
		50% RB low	16.89	16.89	16.94	16.41
		50% RB mid	16.98	17.00	16.99	16.49
		50% RB high	17.02	17.04	17.03	16.50
		100% RB	16.98	16.99	17.00	16.46

Calculated EIRP:

ANT1 on →	3552.5 MHz	3625 MHz	3697.5 MHz
Max. conducted [dBm]	17.18	17.37	17.59
Gain [dBi] per antenna Declared by applicant	3.53	3.2	3.68
Max EIRP [dBm]	20.71	20.57	21.27

The 23 dBm EIRP power limit is fulfilled.

12.2.2 Spurious emissions radiated

Measurement parameters	
Detector:	Peak
Sweep time:	2ms/MHz
Resolution bandwidth:	1 MHz
Video bandwidth:	3 MHz
Trace mode:	Max Hold
Used equipment:	See chapter 7.1 setup A & 7.2 setup A & 7.3 setup A
Measurement uncertainty:	See chapter 9

Limits:

FCC	ISED
§ 2.1053, §96.41(e)	Chapter 5.6.3
-40 dBm/MHz	Subscriber equipment shall have the TRP or conducted power (per antenna), where applicable, of unwanted emission not exceeding the following: a. the limits in table 6 b. a limit of -30 dBm/MHz in the frequency range greater than (B+5) MHz from the edge of the frequency band

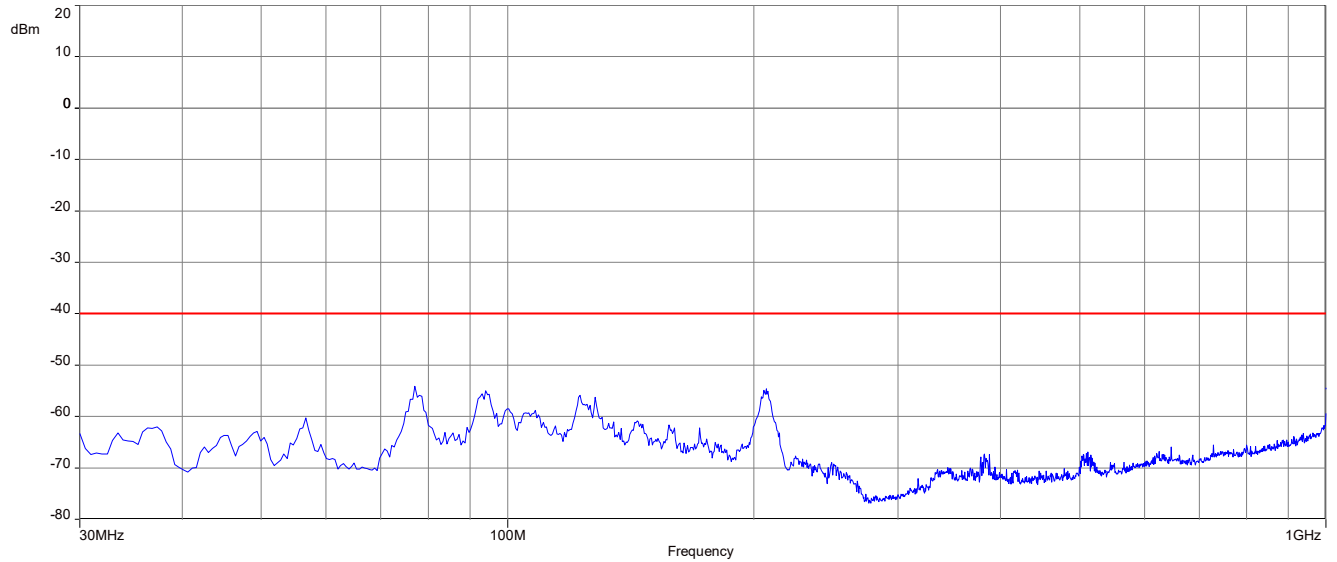
Results:**QPSK:**

Spurious Emission Level					
Lowest channel		Middle channel		Highest channel	
Spurious emissions	Level [dBm]	Spurious emissions	Level [dBm]	Spurious emissions	Level [dBm]
NP		-/-		NP	

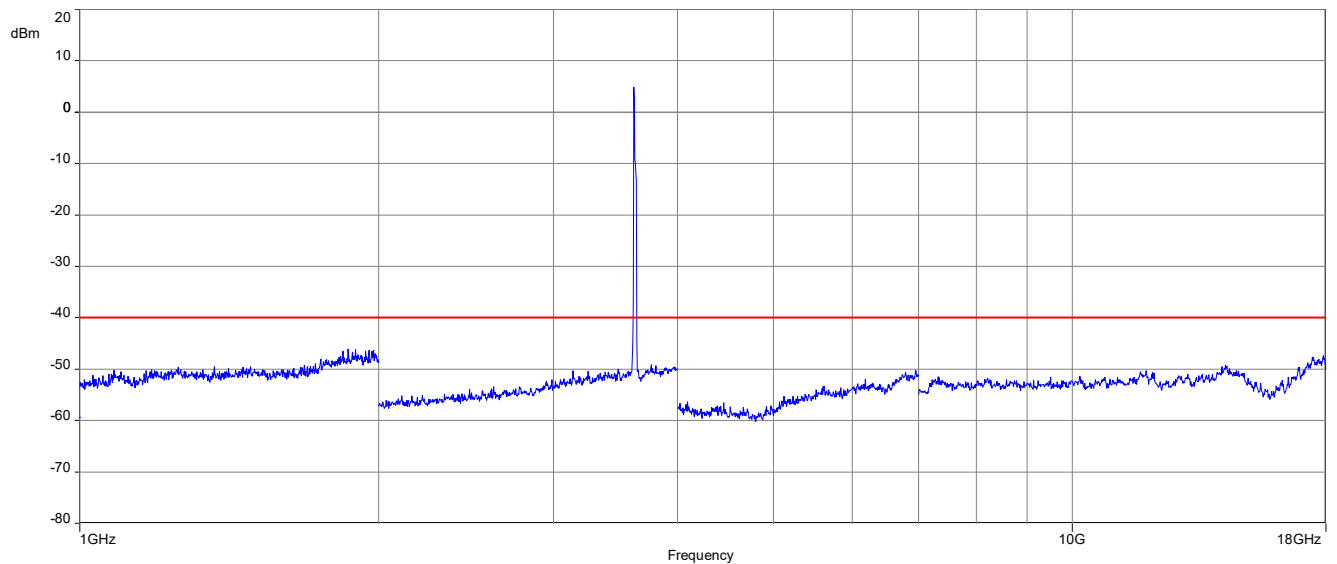
NOTE: The emissions below 30 MHz were all > 20 dB below the limit.

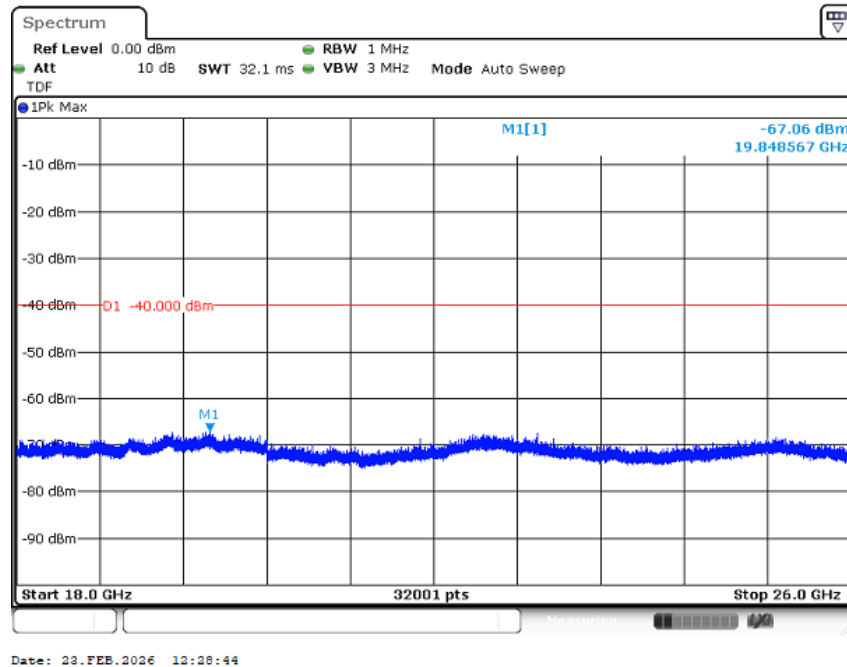
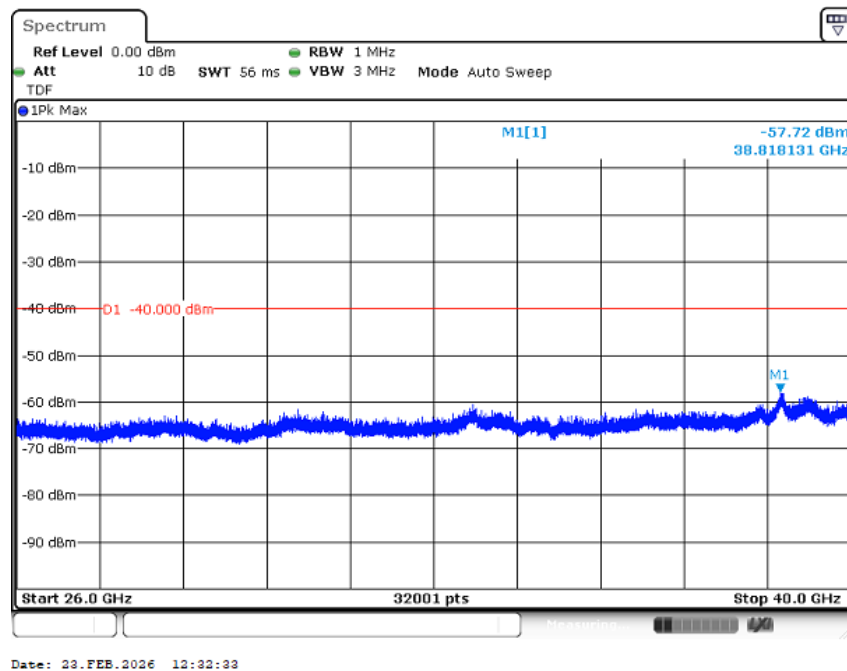
Plots: QPSK

Plot 1: QPSK – Middle channel (30 MHz – 1 GHz)



Plot 2: QPSK – Middle channel (1 GHz – 18 GHz)



Plot 3: QPSK – Middle channel (18 GHz – 26 GHz)**Plot 4:** QPSK – Middle channel (26 GHz – 40 GHz)

12.3 Results NR band n48

12.3.1 Conducted output power

Measurement:

The mobile was set up for the maximum output power with pseudo random data modulation.

Measurement parameters	
Detector:	Sample
Resolution bandwidth:	10 MHz
Used equipment:	See chapter 7.3 setup B
Measurement uncertainty:	see chapter 9

Limits:

FCC	ISED
§ 96.41 (b) + (g)	Chapter 5.5
E.I.R.P. output power: 23 dBm / 10 MHz	30 dBm e.i.r.p./channel bandwidth

SISO:

Output Power (conducted) ANT1 (SISO)							
Bandwidth (MHz)	Channel-No. Frequency (MHz)	Resource block allocation	Average Output Power (dBm) BPSK	Average Output Power (dBm) QPSK	Average Output Power (dBm) 16-QAM	Average Output Power (dBm) 64-QAM	Average Output Power (dBm) 256-QAM
20	637334 / 3560.0	1 RB low	17.11	17.13	17.20	17.07	17.18
		RB_1_lowPlus1	17.13	17.12	16.96	17.02	17.36
		RB_1_highMinus1	17.21	17.31	17.25	17.23	17.04
		RB_1_high	17.24	17.30	17.16	17.27	17.07
		RB_50PCT_mid	16.99	16.97	16.98	16.93	17.01
		RB_100PCT	17.10	17.03	17.03	17.06	16.97
	641666 / 3625.0	1 RB low	17.35	17.36	17.23	17.31	17.08
		RB_1_lowPlus1	17.33	17.32	17.26	17.23	17.06
		RB_1_highMinus1	17.29	17.30	17.02	17.02	17.33
		RB_1_high	17.11	17.15	17.16	17.12	16.88
		RB_50PCT_mid	17.43	17.42	17.52	17.44	17.48
		RB_100PCT	17.38	17.43	17.39	17.33	17.37
	646000 / 3690.0	1 RB low	17.58	17.29	17.23	17.23	16.99
		RB_1_lowPlus1	17.33	17.32	17.33	17.35	17.40
		RB_1_highMinus1	17.87	17.89	17.79	17.78	17.72
		RB_1_high	17.92	17.96	17.67	17.84	18.04
		RB_50PCT_mid	17.56	17.58	17.45	17.31	17.60
		RB_100PCT	17.64	17.64	17.58	17.54	17.60
40	638000 / 3570.0	1 RB low	17.29	17.34	17.29	17.21	17.50
		RB_1_lowPlus1	17.31	17.27	17.26	17.27	17.38
		RB_1_highMinus1	17.33	17.31	17.36	17.26	17.22
		RB_1_high	17.31	17.35	17.30	17.27	17.13
		RB_50PCT_mid	17.36	17.27	17.32	17.31	17.27
		RB_100PCT	17.29	17.23	17.20	17.28	17.18
	641666 / 3625.0	1 RB low	17.44	17.27	17.33	17.28	17.12
		RB_1_lowPlus1	17.32	17.33	17.21	17.22	17.04
		RB_1_highMinus1	17.63	17.59	17.60	17.55	17.48
		RB_1_high	17.63	17.70	17.62	17.55	17.68
		RB_50PCT_mid	17.48	17.46	17.43	17.50	17.51
		RB_100PCT	17.44	17.48	17.35	17.34	17.39
	645332 / 3680.0	1 RB low	17.58	17.55	17.51	17.47	17.40
		RB_1_lowPlus1	17.50	17.56	17.40	17.53	17.46
		RB_1_highMinus1	17.98	18.11	17.93	18.01	18.19
		RB_1_high	18.01	18.05	17.87	17.95	18.17
		RB_50PCT_mid	17.56	17.61	17.54	17.48	17.51
		RB_100PCT	17.67	17.63	17.59	17.58	17.64

Calculated EIRP:

ANT1 on →	3570 MHz	3625 MHz	3680 MHz
Max. conducted [dBm]	17.50	17.70	18.19
Gain [dBi] per antenna Declared by applicant	3.53	3.20	3.68
Max EIRP [dBm]	21.03	20.90	21.87

The 23 dBm EIRP power limit is fulfilled.

MIMO:

Output Power (conducted) ANT1+2 (MIMO)							
Bandwidth (MHz)	Channel-No. Frequency (MHz)	Resource block allocation	Average Output Power (dBm) BPSK	Average Output Power (dBm) QPSK	Average Output Power (dBm) 16-QAM	Average Output Power (dBm) 64-QAM	Average Output Power (dBm) 256-QAM
20	637334 / 3560.0	1 RB low	17.73	17.77	17.86	17.88	15.67
		RB_1_lowPlus1	18.02	18.02	17.95	17.65	15.65
		RB_1_highMinus1	17.63	17.58	17.55	17.50	15.30
		RB_1_high	17.72	17.52	17.64	17.53	15.33
		RB_50PCT_mid	17.71	17.79	17.89	17.67	15.78
		RB_100PCT	17.64	17.66	17.69	17.69	15.76
	641666 / 3625.0	1 RB low	18.13	17.81	17.95	17.74	15.64
		RB_1_lowPlus1	17.85	17.80	18.01	17.63	15.67
		RB_1_highMinus1	18.31	18.02	18.18	17.98	15.88
		RB_1_high	18.20	18.17	18.22	17.91	15.85
		RB_50PCT_mid	18.12	18.19	18.22	18.10	16.26
		RB_100PCT	18.08	18.14	18.07	18.17	16.10
	646000 / 3690.0	1 RB low	17.95	17.95	18.10	17.77	15.74
		RB_1_lowPlus1	18.17	17.91	18.14	17.99	15.79
		RB_1_highMinus1	18.27	18.21	18.39	18.10	16.03
		RB_1_high	18.35	18.01	18.37	18.09	16.21
		RB_50PCT_mid	17.87	17.87	17.90	17.82	15.91
		RB_100PCT	17.86	17.92	17.94	17.96	15.94
40	638000 / 3570.0	1 RB low	18.00	17.84	18.10	17.80	15.82
		RB_1_lowPlus1	18.27	17.99	18.08	17.83	15.82
		RB_1_highMinus1	17.87	17.96	17.95	17.78	15.74
		RB_1_high	17.89	17.77	17.92	17.65	15.68
		RB_50PCT_mid	17.75	17.70	17.76	17.73	15.80
		RB_100PCT	17.94	17.91	17.85	17.88	15.90
	641666 / 3625.0	1 RB low	18.18	18.40	18.25	18.07	15.99
		RB_1_lowPlus1	18.43	18.13	18.46	18.17	16.05
		RB_1_highMinus1	18.05	17.98	18.02	17.83	15.77
		RB_1_high	18.21	18.01	18.06	17.79	15.85
		RB_50PCT_mid	18.13	18.15	18.16	18.21	16.18
		RB_100PCT	18.12	18.12	18.09	18.11	16.12
	645332 / 3680.0	1 RB low	18.03	17.99	18.01	17.87	16.02
		RB_1_lowPlus1	18.08	18.01	18.06	17.77	15.80
		RB_1_highMinus1	18.42	18.25	18.19	18.12	16.10
		RB_1_high	18.38	18.20	18.36	18.16	16.09
		RB_50PCT_mid	18.09	18.09	18.01	18.11	16.08
		RB_100PCT	18.04	17.98	17.99	18.00	16.04

Calculated EIRP:

ANT1+2 on →	3570 MHz	3625 MHz	3680 MHz
Max. conducted [dBm]	18.27	18.46	18.42
Gain [dBi] per antenna Declared by applicant	3.53	3.20	3.68
Max EIRP [dBm]	21.80	21.66	22.10

The 23 dBm EIRP power limit is fulfilled.

12.3.2 Spurious emissions radiated

Measurement:

Measurement parameters	
Detector:	Peak
Sweep time:	2ms/MHz
Resolution bandwidth:	1 MHz
Video bandwidth:	3 MHz
Trace mode:	Max Hold
Used equipment:	See chapter 7.1 setup A & 7.2 setup D & 7.3 setup B
Measurement uncertainty:	See chapter 9

Limits:

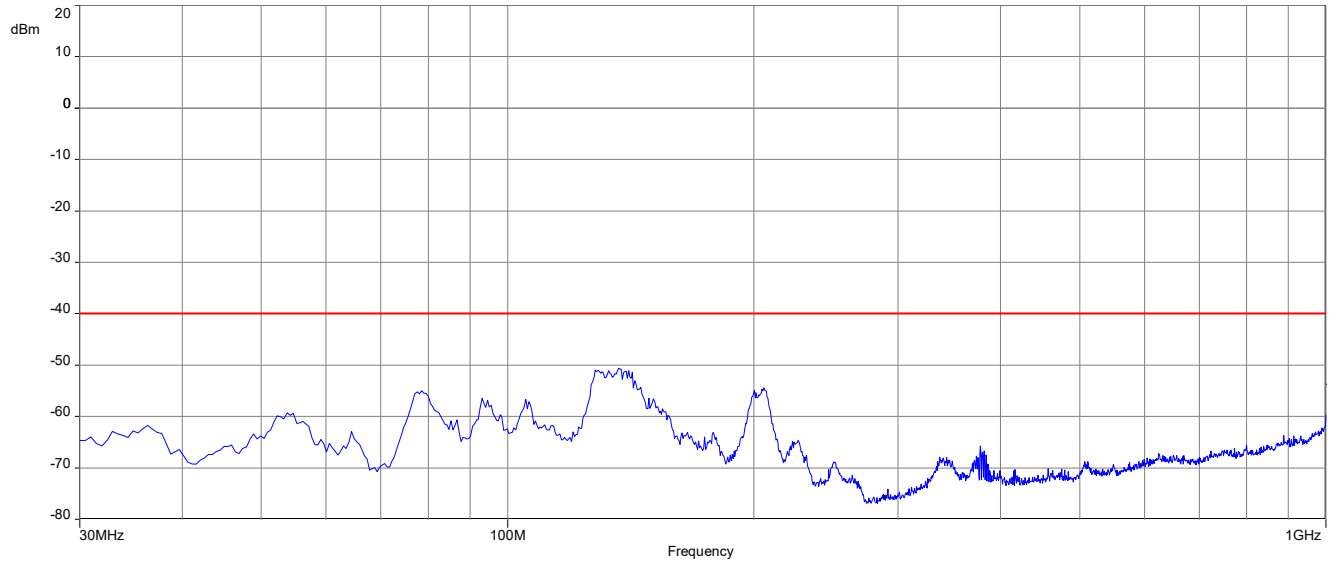
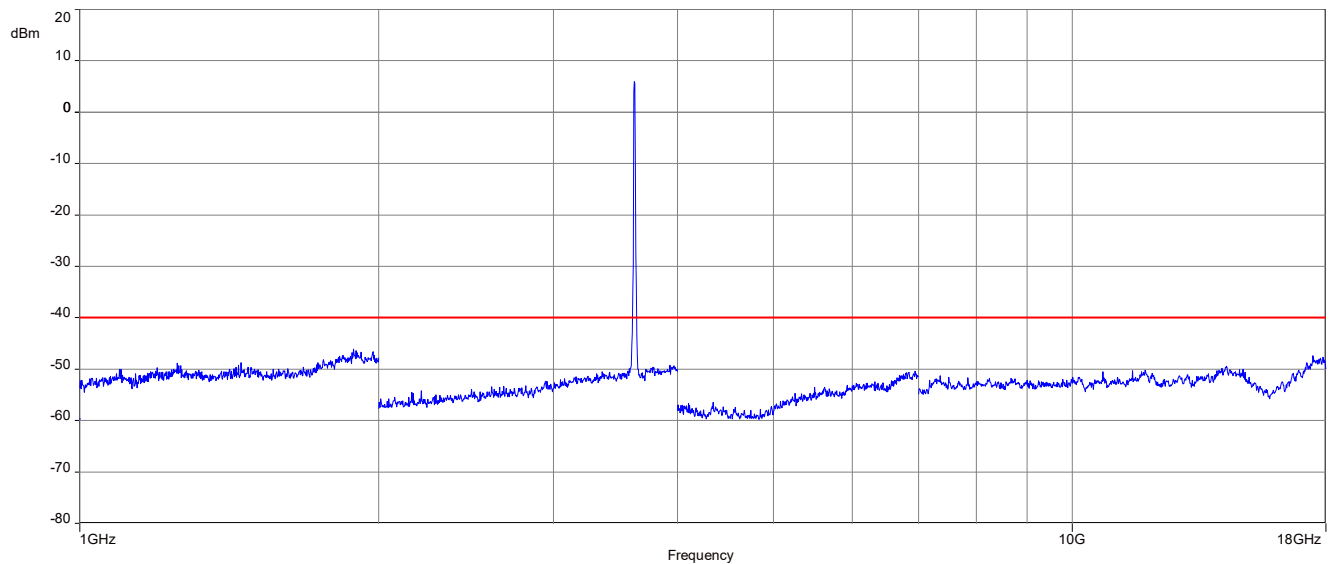
FCC	ISED
§ 2.1053, §96.41(e)	Chapter 5.6.3
-40 dBm/MHz	Subscriber equipment shall have the TRP or conducted power (per antenna), where applicable, of unwanted emission not exceeding the following: a. the limits in table 6 b. a limit of -30 dBm/MHz in the frequency range greater than (B+5) MHz from the edge of the frequency band

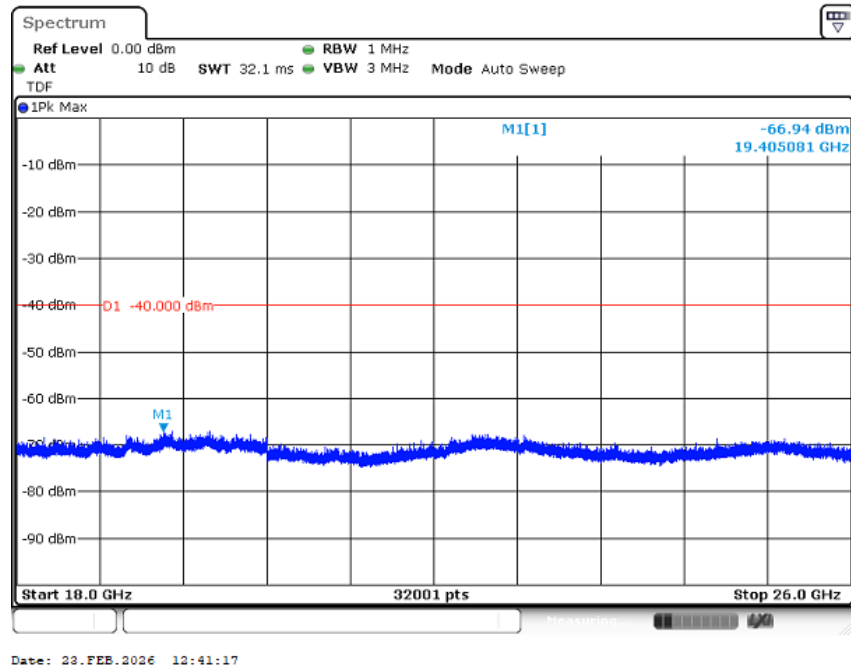
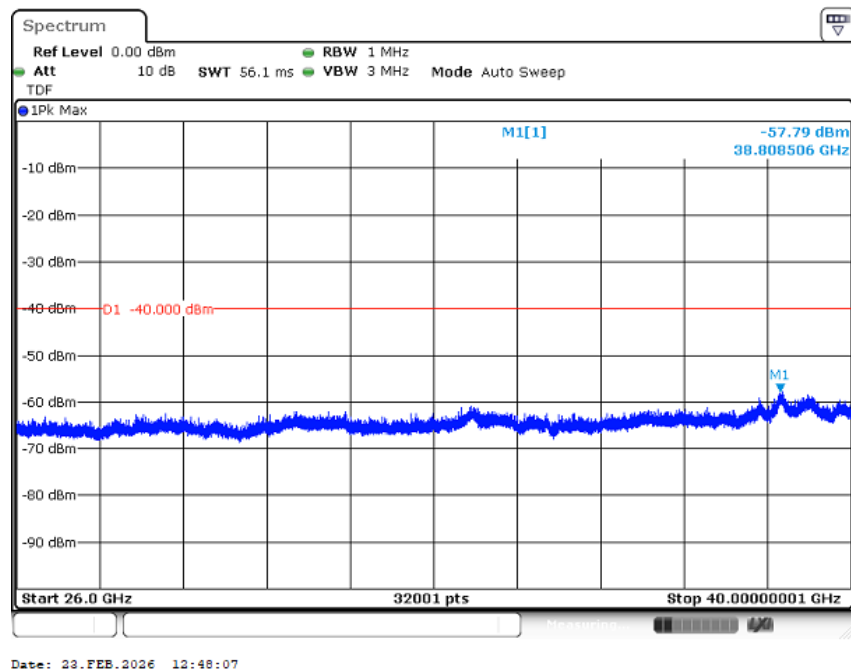
Results:

QPSK:

Spurious Emission Level					
Lowest channel		Middle channel		Highest channel	
Spurious emissions	Level [dBm]	Spurious emissions	Level [dBm]	Spurious emissions	Level [dBm]
-/-		-/-		-/-	

NOTE: The emissions below 30 MHz were all > 20 dB below the limit.

Plots: QPSK**Plot 1:** QPSK – Middle channel (30 MHz – 1 GHz)**Plot 2:** QPSK – Middle channel (1 GHz – 18 GHz)

Plot 3: QPSK – Middle channel (18 GHz – 26 GHz)**Plot 4:** QPSK – Middle channel (26 GHz – 40 GHz)

12.4 Observations

No observations except those reported with the single test cases have been made.

13 Glossary

AVG	Average
C	Compliant
C/N₀	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	Combination of Grantee Code and Equipment Product Code
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
ISED	Innovation, Science and Economic Development 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	2026-06-08

END OF TEST REPORT