

Test Report

Product	Impedance plethysmography sensor
Name and address of the applicant	Mode Sensors AS Professor Brochs Gate 2 7030 Trondheim, Norway
Name and address of the manufacturer	Mode Sensors AS Professor Brochs Gate 2 7030 Trondheim, Norway
Model	PCT0010A
Rating	3.0V Primary Battery
Trademark	Re:Balans®
Additional information	Bluetooth Low energy
Tested according to	Parts of FCC Part 15.247 Frequency Hopping Transmitters / Digital Transmission Systems Parts of Industry Canada RSS-247, Issue 4 Digital Transmission Systems, Frequency Hopping Systems and Licence-Exempt Local Area Network Devices in 902-928 MHz, 2400-2483.5 MHz, 5150-5350 MHz and 5470-5875 MHz bands
Order number	PRJ0098829
Tested in period	2026-04-15 and 2026-10-07
Issue date	2026-10-19
Name and address of the testing laboratory	<div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="text-align: center;">  Nemko Scandinavia AS Instituttveien 6 2007 Kjeller, Norway www.nemko.com </div> <div style="text-align: center;"> CAB Number: FCC: NO0001 ISED: NO0470 ISED No: 2040D-1 </div> <div style="text-align: center;">   </div> </div> <p style="text-align: center; color: red;">An accredited technical test executed under the Norwegian accreditation scheme</p>
<div style="display: flex; justify-content: space-between; align-items: flex-end;"> <div style="width: 45%; text-align: center;">  Digitally signed by Frode Sveinsen DN: C=NO, OU=ETM, CN=Frode Sveinsen, O=Nemko Scandinavia AS, E=frode.sveinsen@nemko.com Location: Kjeller Date: 2026.10.21 10:03:45 +02'00' </div> <div style="width: 45%; text-align: center;">  Jan G Eriksen C=NO, CN=Jan G Eriksen, OU=Senior Engineer, O=Nemko Scandinavia AS, E=jangunnar.eriksen@nemko.com Nemko ETM, Kjeller 2026.10.21 10:47:52 +02'00' </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div>Prepared by [Frode Sveinsen]</div> <div>Approved by [Jan G. Eriksen]</div> </div>	
This report was originally distributed electronically with digital signatures. For more information, please contact Nemko Scandinavia AS.	

Revision history

Revision	Date	Comment	Sign
A	2026-05-08	First edition	FS
B	2026-05-22	Updated with Antenna Gain values	FS
C	2026-10-08	Added Output Power measurement	FS
D	2026-10-19	Change of FCC ID	FS

GENERAL REMARKS

This report applies only to the sample(s) tested. It is the manufacturer's responsibility to ensure the additional production units of this product are manufactured with identical electrical and mechanical components. The manufacturer is solely responsible for any modifications to the product that could result in non-compliance with the relevant regulations.

This report shall not be reproduced, except in full, without the written approval of Nemko.

Any use that a third party makes of this report or any decisions based on it are the responsibility of such third parties. Nemko Group accepts no responsibility for damage suffered by any third party because of decisions made or actions based on this report.

Opinions expressed within this report regarding general assessments and qualifications for PASS or FAIL to the standards limits and requirements are not part of the current accreditation. Neither are opinions expressed regarding model variants covered by the testing of this report.

CALIBRATION

All instruments used in the tests given in this test report are calibrated and traceable to national or international standards. Between calibrations all test set-ups are controlled and verified on a regular basis by periodic checks to ensure, with 95% confidence, that the instruments remain within the calibrated levels.

MEASUREMENT UNCERTAINTY

Measurement uncertainties are calculated or considered for all instruments and instrument set-ups used during these tests. Uncertainty figures are found in a separate clause in this report.

CONTENTS

1	INFORMATION	4
1.1	Test Item	4
1.2	Normal test conditions	4
1.3	Test Engineers	5
1.4	Antenna Requirement.....	5
1.5	EUT Operating Modes.....	5
1.6	Comments.....	5
2	TEST REPORT SUMMARY	6
2.1	General	6
2.2	Test Summary	6
3	TEST RESULTS.....	7
3.1	Peak Power Output	7
3.2	Radiated Emissions, Band Edge.....	10
3.3	Radiated Emissions, 30 – 1000 MHz	12
3.4	Radiated Emissions, 1 – 26 GHz	14
4	Measurement Uncertainty	19
5	LIST OF TEST EQUIPMENT.....	20
6	BLOCK DIAGRAMS	21
6.1	Test Site Radiated Emission.....	21

1 INFORMATION

1.1 Test Item

Product	Impedance Plethysmography
Manufacturer	Mode Sensors AS
Model	PCT0010A
FCC ID	2A6Z8-PCT0010
ISED ID	/
Serial number	/
Hardware version	BRD008F-A01
Software version	PFW102B
Frequency Range	2402 – 2480 MHz
Number of Channels	40
Operating Modes	Bluetooth Low Energy ☒ 1Mb ☒ 2Mb
Type of Modulation	GFSK
Conducted Output Power	0.61 mW
Antenna Connector	None
Number of Antennas	1
Diversity or Smart Antennas	No
Power Supply	Primary Battery (3.0V Lithium Battery)

Description of Test Item

The EUT is an impedance plethysmography sensor with Bluetooth Low Energy.

1.2 Normal test conditions

Temperature:	20 - 24 °C
Relative humidity:	20 - 50 %
Normal test voltage:	5.0 V _{DC} (USB Voltage)

The values are the limit registered during the test period.

The EUT was powered from the USB Interface on the Radio Communications tester R&S CMW500 during all tests.
In normal use the EUT will be powered from a primary battery.

1.3 Test Engineers

Frode Sveinsen

1.4 Antenna Requirement

Does the EUT have detachable antennas?	☐ YES	☒ NO
If detachable, are the antenna connectors non-standard?	☐ YES	☐ NO
The tested equipment has only integral antennas. Conducted tests were performed with a temporary antenna connector.		

Requirements: FCC 15.203, 15.204

1.5 EUT Operating Modes

Description of operating modes	All tests were performed with the EUT in BQB Direct Test Mode and controlled by the CMW500. The EUT was connected to the CMW500 through an FTDI USB to UART interface.
Additional information	The EUT was programmed to transmit continuously with maximum duty cycle. Output Power: Maximum Bit rate: 1 Mbit and 2 Mbit Modulation: GFSK

1.6 Comments

Only Field Strength and Radiated Emissions were measured.

2 TEST REPORT SUMMARY

2.1 General

The tests were conducted on a sample of the equipment for demonstrating compliance with one or more of the following standards.

Standard	Description
FCC CFR 47 Part 15.247	Operation within the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz
ISED RSS-247, Issue 4	Digital Transmission Systems, Frequency Hopping Systems and Licence-Exempt Local Area Network Devices in 902-928 MHz, 2400-2483.5 MHz, 5150-5350 MHz and 5470-5875 MHz bands
ISED RSS-GEN Issue 5	General Requirements for Compliance of Radio Apparatus

The following standards and documents were used for one or more measurements:

Standard	Description
ANSI C63.4-2014	Unintentional Radiators
ANSI C63.10-2020 (FCC) +cor.1-2023	Procedures for Compliance Testing of Unlicensed Wireless Devices
ANSI C63.10-2020 (ISED Canada) +cor.1-2023 +ANSI C63.10a-2024 +Errata to C63.10a-2024	Procedures for Compliance Testing of Unlicensed Wireless Devices +Corrigendum 1 +Amendment 1 +Errata to Amendment 1
FCC KDB 558074 D01	15.247 Measurement Guidance for DTS and Frequency Hopping Systems

All measurements are traceable to national standards.

A description of the test facility is on file with FCC and ISED Canada.

☒ New Submission	☒ Production Unit
☐ Class II Permissive Change	☐ Pre-production Unit
DTS Equipment Class	☐ Family Listing

2.2 Test Summary

Name of test	FCC Part 15 reference	RSS-247 Issue 4, RSS-GEN Issue 5 reference	ANSI C63.10-2020 Reference	Result
Supply Voltage Variations	15.31(e)	6.11 (RSS-GEN)	5.13	N/A
Antenna Requirement	15.203	6.8 (RSS-GEN)	5.8	Complies
Power Line Conducted Emission	15.107(a) 15.207(a)	7.2 / 8.8 (RSS-GEN)	6.2	N/A
Occupied Bandwidth (99% BW)	N/A	6.7 (RSS-GEN)	6.9.3	N/T
DTS Bandwidth	15.247(a)(2)	6.3 (RSS-247)	11.8 Option 2	N/T
Peak Power Output	15.247(b)	6.3.2 (RSS-247)	11.9.1.1	Complies ¹
Power Spectral Density	15.247(d)	6.3.1 (RSS-247)	11.10.2 PKPSD (DTS)	N/T
Spurious Emissions (Antenna Conducted)	15.247(c)	6.6 (RSS-247)	6.7 11.11 (DTS)	N/T
Spurious Emissions (Radiated)	15.247(c) 15.109(a) 15.209(a)	7.3 (RSS-GEN) 8.9 (RSS-GEN)	6.3, 6.5, 6.6, 6.10 11.12, 11.13 (DTS)	Complies

¹ Only radiated test

N/A = Not Applicable

N/T = Not Tested

3 TEST RESULTS

3.1 Peak Power Output

FCC Part 15.247 (b)

ISED Canada RSS-247 Issue 4, Clause 6.3.2

Measurement procedure: ANSI C63.10-2020 Clause 11.9.1.2

Test Results: Complies

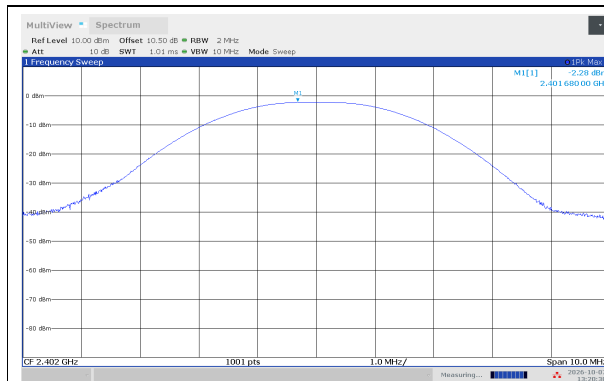
Measurement Data:

Carrier Frequency	Measured Field Strength (dBµV/m @3m)		Calculated EIRP (dBm)		Output Power (dBm)		Output Power (mW)	
	GFSK 1Mb	GFSK 2Mb	GFSK 1Mb	GFSK 2Mb	GFSK 1Mb	GFSK 2Mb	GFSK 1Mb	GFSK 2Mb
2402 MHz	91.43	91.13	-3.8	-4.1	-2.28	-2.17	0.59	0.61
2440 MHz	91.30	91.09	-3.9	-4.1	-2.74	-2.73	0.53	0.53
2480 MHz	90.10	90.00	-5.1	-5.2	-2.63	-2.61	0.55	0.55

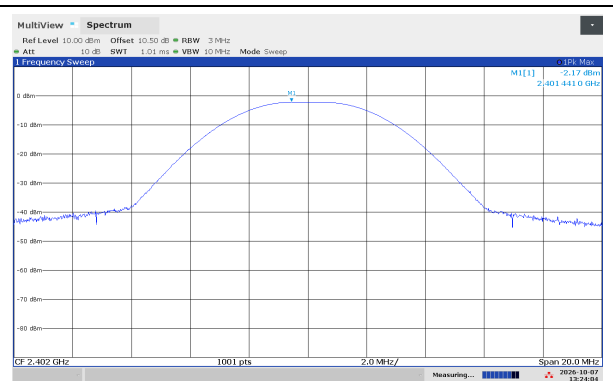
EIRP was calculated from measured Field Strength using the method described in ANSI C63.10-2020 Annex G.

See attached plots.

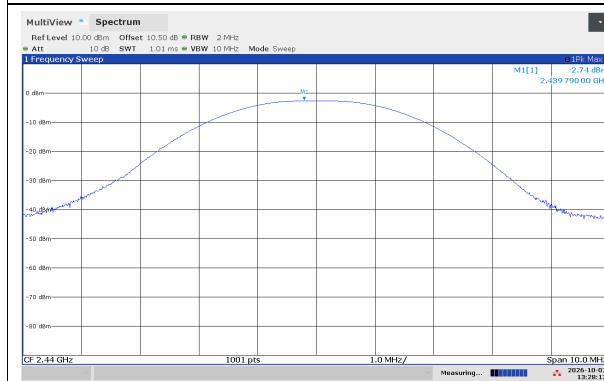
Requirements for Digital Modulation systems
For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt.
As an alternative to a peak power measurement, compliance with the 1 Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the <i>maximum conducted output power</i> is the highest total transmit power occurring in any mode.
Maximum allowed Antenna Gain
If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power from the intentional radiator shall be reduced below the stated value above by the amount in dB that the directional gain of the antenna exceeds 6 dBi.



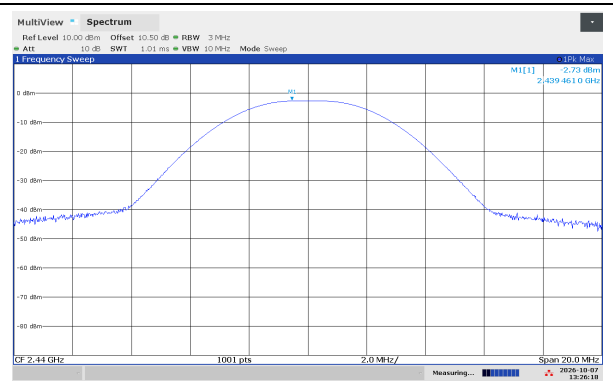
Output Power, 2402 MHz, 1Mb



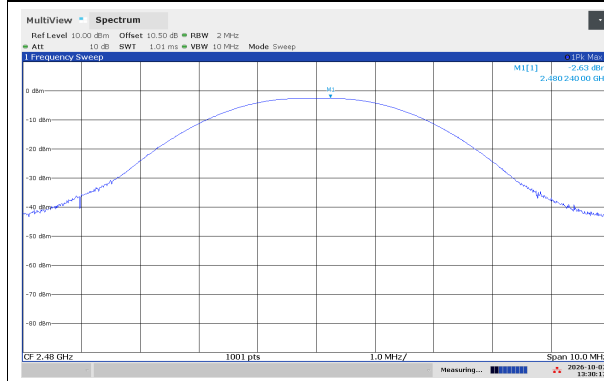
Output Power, 2402 MHz, 2Mb



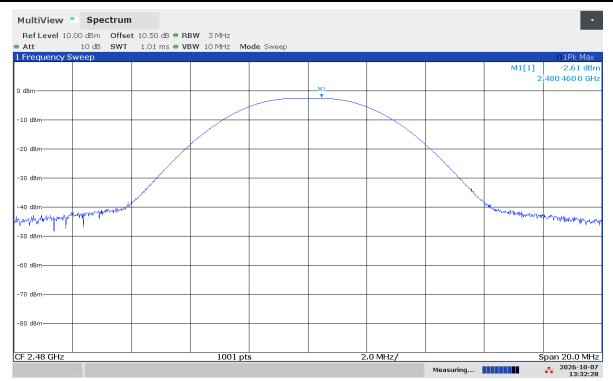
Output Power, 2440 MHz, 1Mb



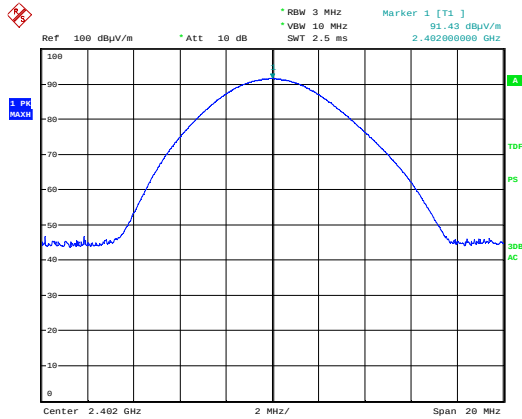
Output Power, 2440 MHz, 2Mb



Output Power, 2480 MHz, 1Mb

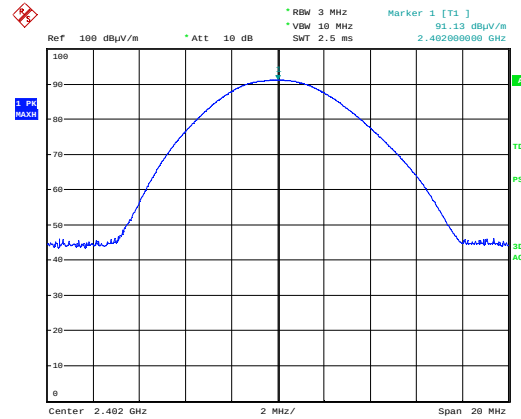


Output Power, 2480 MHz, 2Mb



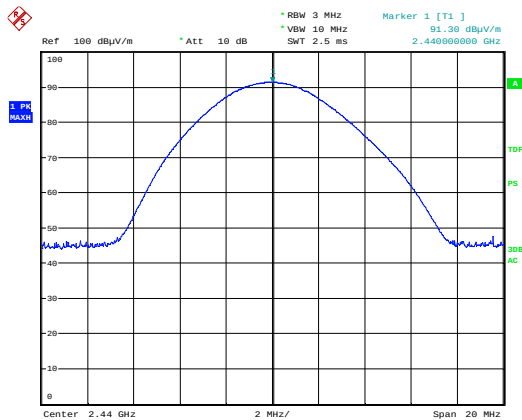
Date: 15.APR.2026 14:12:29

Field Strength, 2402 MHz, 1Mb



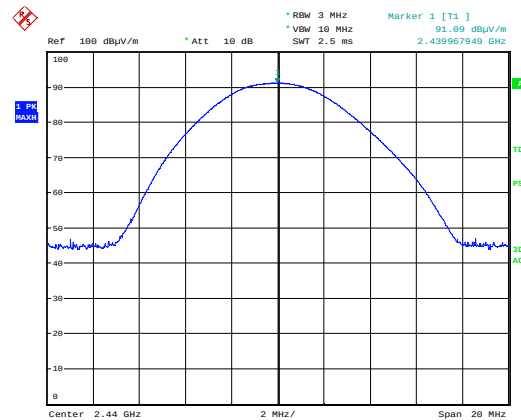
Date: 15.APR.2026 15:29:18

Field Strength, 2402 MHz, 2Mb



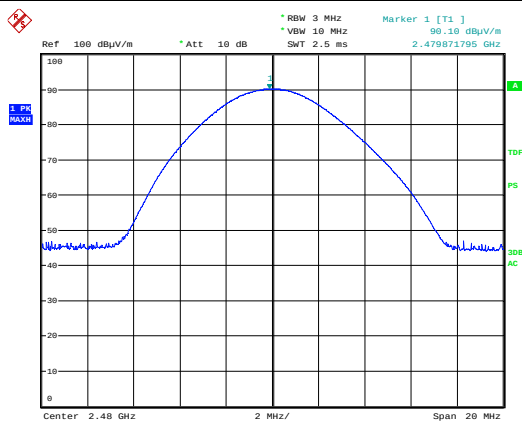
Date: 15.APR.2026 13:57:57

Field Strength, 2440 MHz, 1Mb



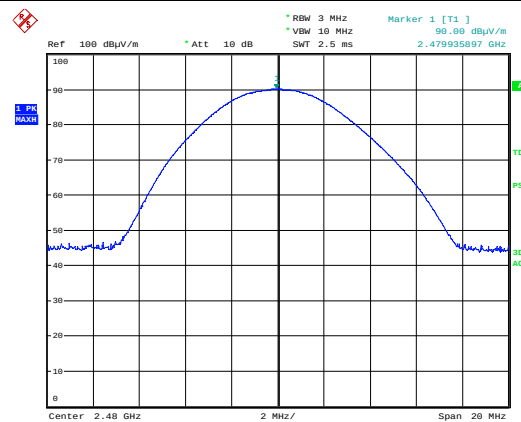
Date: 15.APR.2026 15:22:06

Field Strength, 2440 MHz, 2Mb



Date: 15.APR.2026 14:06:12

Field Strength, 2480 MHz, 1Mb



Date: 15.APR.2026 14:55:34

Field Strength, 2480 MHz, 2Mb

3.2 Radiated Emissions, Band Edge

FCC Part 15.209 (a)

ISED Canada RSS-GEN Issue 5, Clause 7.3 / 8.9

Measurement procedure: ANSI C63.10-2020 Clause 11.12

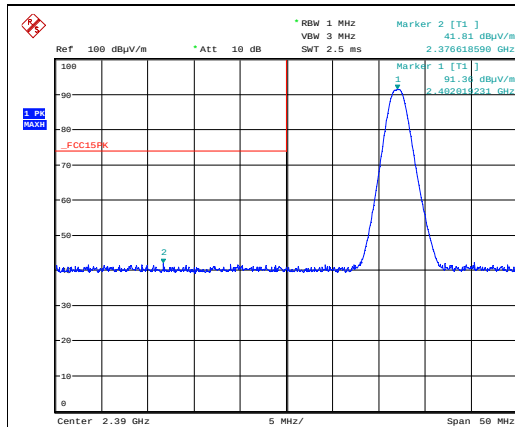
Test Results: Complies

Measurement Data:

Peak Detector					
Modulation and Bitrate	Measured field strength (dB μ V/m)		Limit dB	Margin dB	
	2390 MHz	2483.5 MHz			
GFSK, 1Mb	41.8	48.7	74	32.2	25.3
GFSK, 2Mb	42.1	51.6	74	31.9	22.4

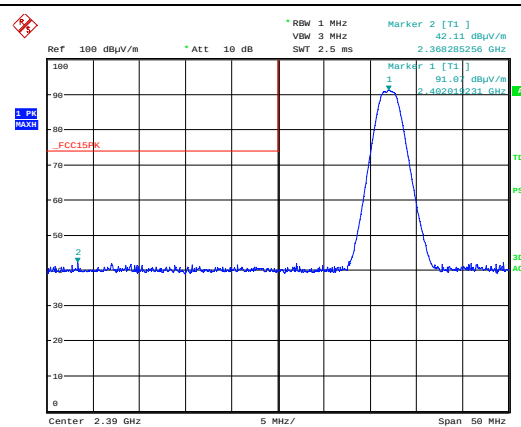
Peak values are below the Average Limit.

See attached plots.



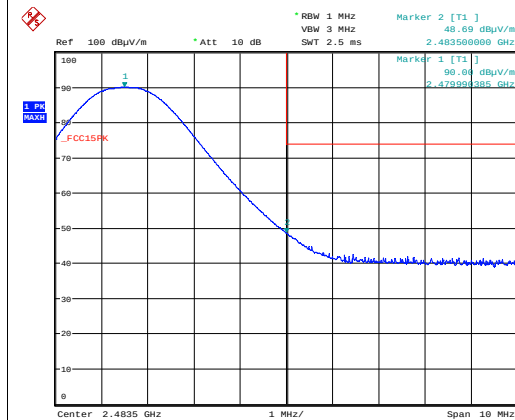
Date: 15.APR.2026 14:13:18

Lower Band Edge, 2402 MHz, 1Mb, Peak



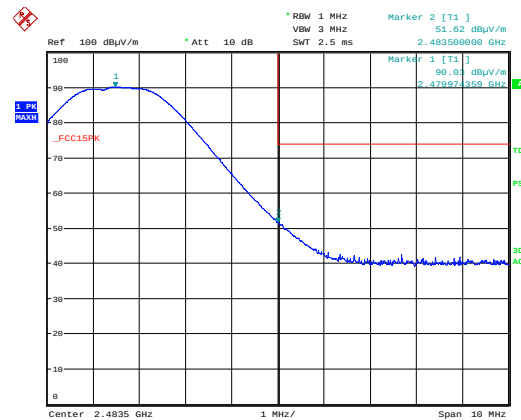
Date: 15.APR.2026 14:33:11

Lower Band Edge, 2402 MHz, 2Mb, Peak



Date: 15.APR.2026 14:08:17

Upper Band Edge, 2480 MHz, 1Mb, Peak



Date: 15.APR.2026 14:40:10

Upper Band Edge, 2480 MHz, 2Mb, Peak

3.3 Radiated Emissions, 30 – 1000 MHz

FCC Part 15.209 (a)

ISED Canada RSS-GEN Issue 5, Clause 7.3/8.9

Measurement procedure: ANSI C63.10-2020 Clause 11.12

Test Results: Complies

Measurement Data:

Detector: Quasi-Peak (Pre-Scan with Peak Detector)

Measuring distance: 3 m

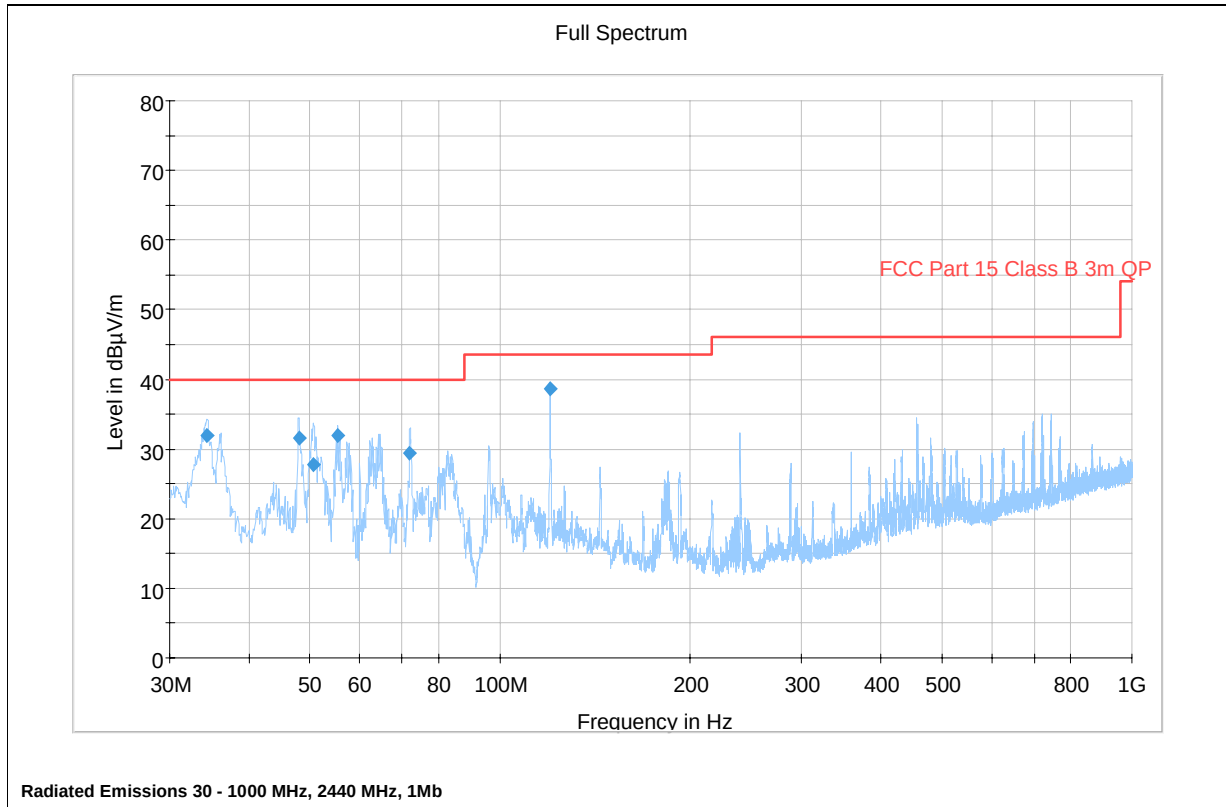
Tested in test mode with EUT transmitting on ch19

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
34.424274	31.93	40.00	8.07	15000.0	120.000	104.0	V	301.0	-7.6
48.033830	31.56	40.00	8.44	15000.0	120.000	109.0	V	24.0	-17.0
50.649068	27.72	40.00	12.28	15000.0	120.000	100.0	V	220.0	-17.9
55.385436	31.93	40.00	8.07	15000.0	120.000	102.0	V	19.0	-18.4
71.980894	29.39	40.00	10.61	15000.0	120.000	203.0	V	179.0	-17.1
120.012040	38.57	43.50	4.93	15000.0	120.000	100.0	V	238.0	-11.1

See attached plots

Requirements/Limit

FCC	Part 15.209 @ frequencies defined in §15.205	
ISED	RSS-GEN Issue 5, Clause 8.9 @ frequencies defined in clause 8.10	
Frequency	Radiated emission limit @3 meters	
30 – 88 MHz	100 µV/m	40.0 dBµV/m
88 – 216 MHz	150 µV/m	43.5 dBµV/m
216 – 960 MHz	200 µV/m	46.0 dBµV/m
960 – 1000 MHz	500 µV/m	54.0 dBµV/m
	Limits above are with Quasi Peak Detector	



3.4 Radiated Emissions, 1 – 26 GHz

FCC Part 15.209 (a)

ISED Canada RSS-GEN Issue 5, Clause 7.3/8.9

Measurement procedure: ANSI C63.10-2020 Clause 11.12

Test Results: Complies

Measurement Data:

Measuring distance: 3m (1 – 18 GHz)

A pre-scan was performed above 18 GHz, and no spurious emissions were detected.

RBW=1 MHz

Carrier Frequency (MHz)	Measured Frequency (GHz)	Mode	Measured Emissions (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
			Peak	Average	Pk	Av	Pk	Av
2402	4804	1Mb	55.7	51.1	74	54	18.3	2.9
		2Mb	54.8	48.5	74	54	19.2	5.5
2440	4880	1Mb	56.4	51.9	74	54	17.6	2.1
		2Mb	56.3	50.0	74	54	17.7	4.0
2480	4960	1Mb	57.2	53.1	74	54	16.8	0.9
		2Mb	56.2	50.3	74	54	17.8	3.7

A Band Reject Filter was used for measurements from 1 GHz to 18 GHz

Antenna factor, amplifier gain and cable loss are included in spectrum analyzer "Transducer factor".

Average Values are corrected for Duty Cycle.

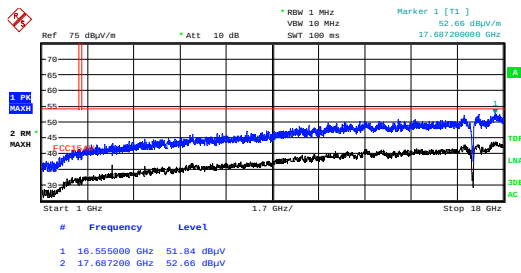
DC Correction Factor 1M = $-10 \times \log(388/628) = 2.1$ dB

DC Correction Factor 2M = $-10 \times \log(203/628) = 4.9$ dB

See plots.

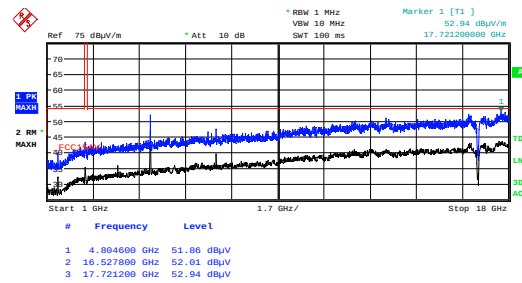
Requirements/Limit

FCC	Part 15.209 @ frequencies defined in §15.205	
ISED	RSS-GEN Issue 5, clause 8.9 @ frequencies defined in clause 8.10	
	Radiated emission limit @3 meters	
Frequency	Average Detector	Peak Detector
1 – 26 GHz	54.0 dBμV/m	74.0 dBμV/m



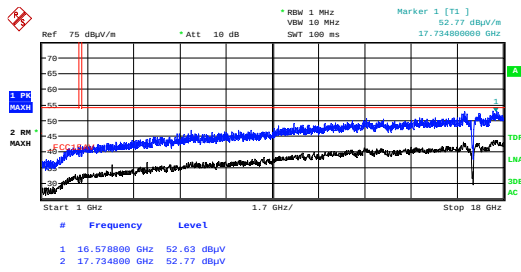
Date: 15.APR.2026 16:54:16

Radiated Emissions 1 - 18 GHz, 2402 MHz, 1M, HP



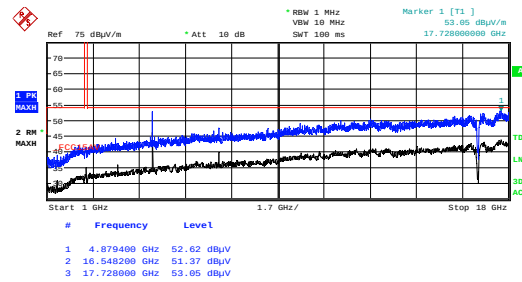
Date: 15.APR.2026 16:52:29

VP



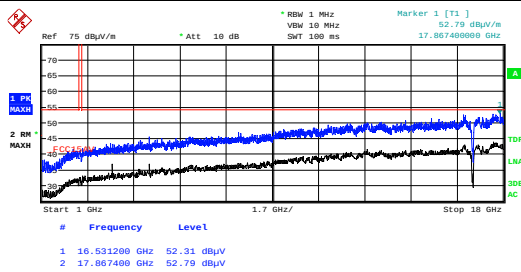
Date: 15.APR.2026 16:08:02

Radiated Emissions 1 - 18 GHz, 2440 MHz, 1M, HP



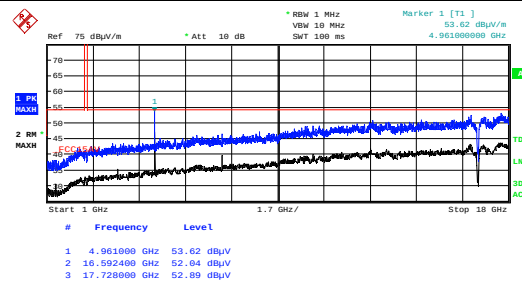
Date: 15.APR.2026 16:06:06

VP



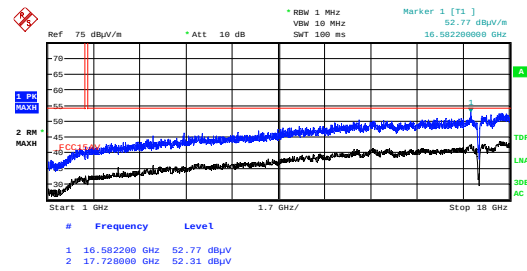
Date: 15.APR.2026 16:49:39

Radiated Emissions 1 - 18 GHz, 2480 MHz, 1M, HP

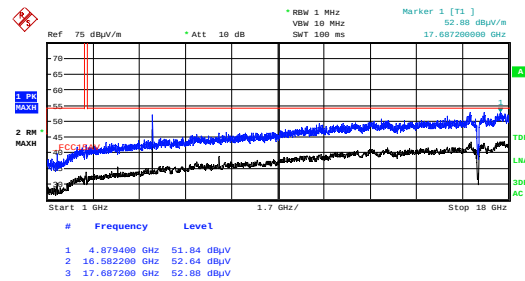


Date: 15.APR.2026 16:47:43

VP



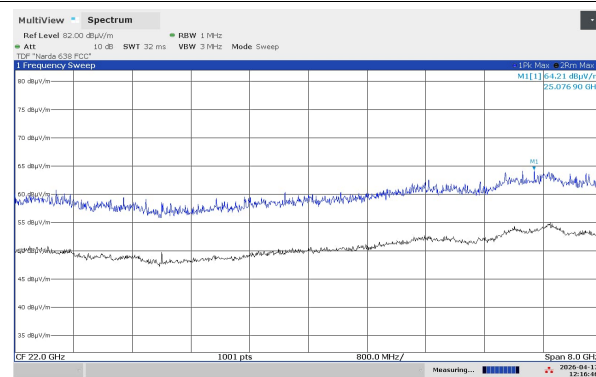
Date: 15.APR.2026 17:03:51



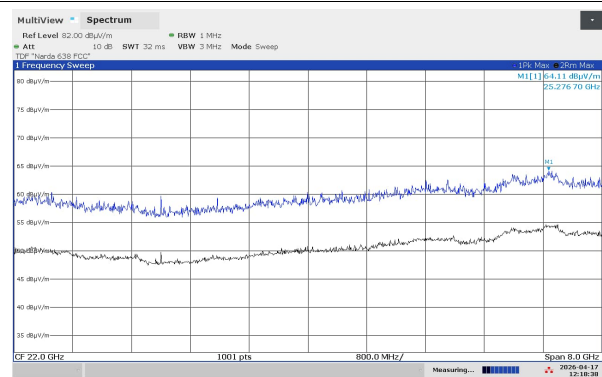
Date: 15.APR.2026 17:01:55

Radiated Emissions 1 - 18 GHz, 2440 MHz, 2M, HP

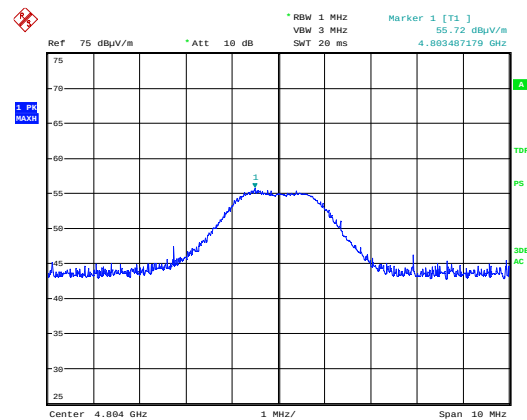
VP



Pre-scan 18 - 26 GHz, 2440 MHz, 1M, @ approx. 10cm

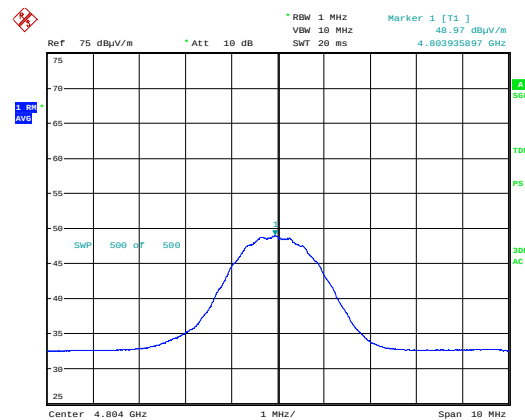


Pre-scan 18 - 26 GHz, 2440 MHz, 2M, @approx. 10cm



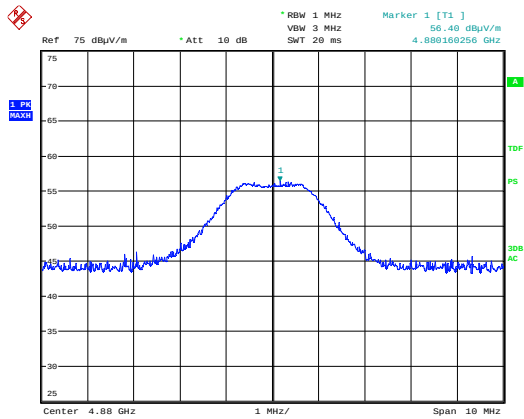
Date: 15.APR.2026 16:38:56

Spurious 4804 MHz, 2402, MHz, 1M, Max: VP, Peak



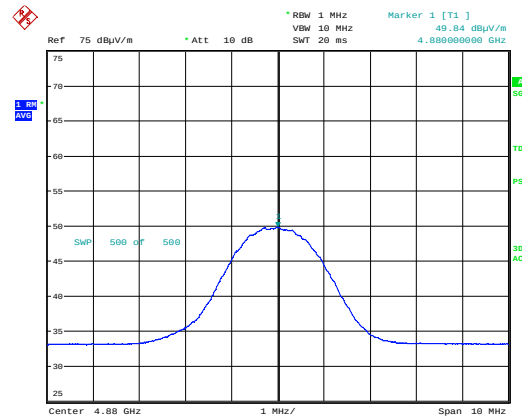
Date: 15.APR.2026 16:39:26

Av



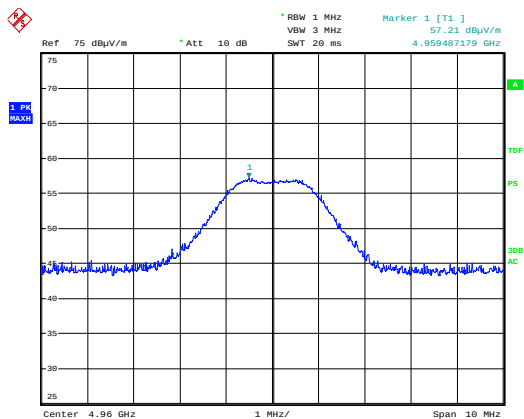
Date: 15.APR.2026 18:00:00

Spurious 4880 MHz, 2440, MHz, 1M, Max: VP, Peak



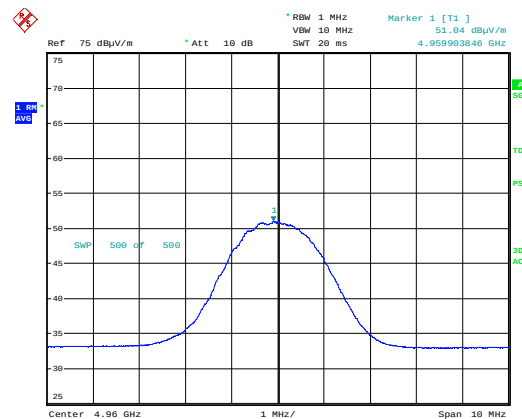
Date: 15.APR.2026 16:27:26

Av



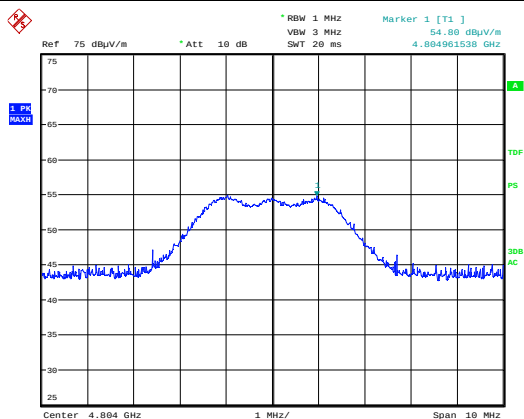
Date: 15.APR.2026 16:44:28

Spurious 4960 MHz, 2480, MHz, 1M, Max: VP, Peak



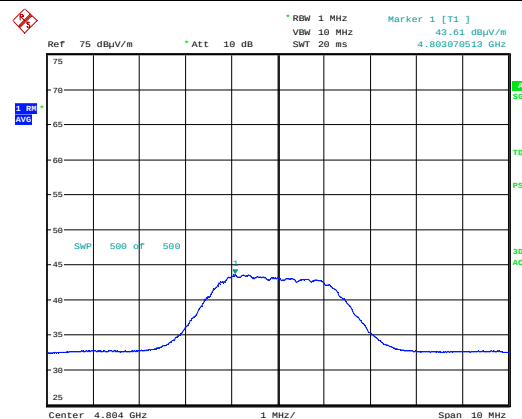
Date: 15.APR.2026 16:44:58

Av



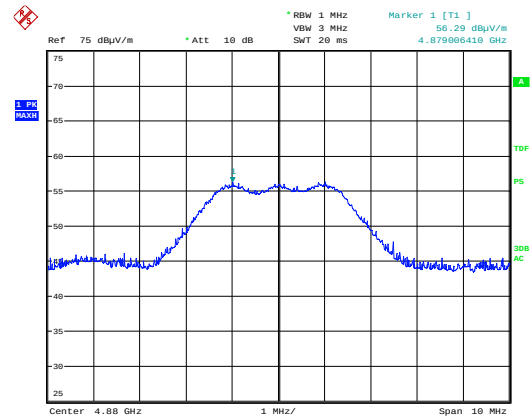
Date: 15.APR.2026 17:28:58

Spurious 4804 MHz, 2402, MHz, 2M, Max: VP, Peak



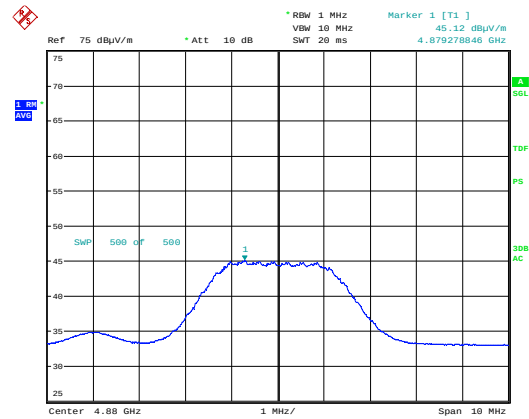
Date: 15.APR.2026 17:29:27

Av



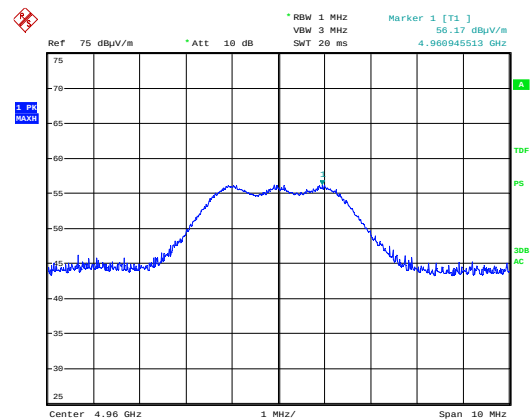
Date: 15.APR.2026 18:02:31

Spurious 4880 MHz, 2440, MHz, 2M, Max: VP, Peak



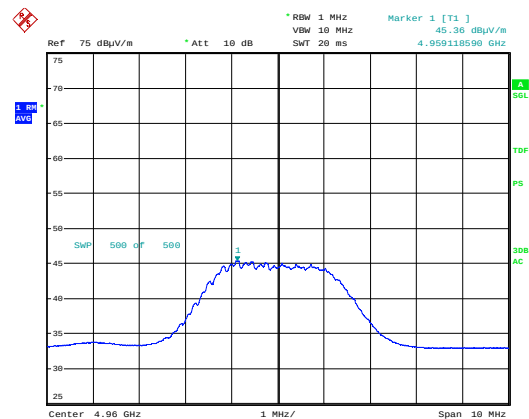
Date: 15.APR.2026 18:03:00

Av



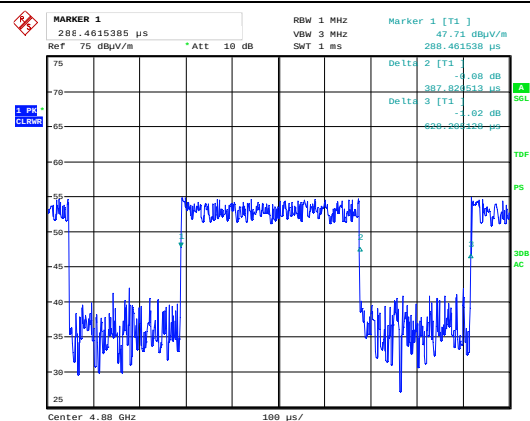
Date: 15.APR.2026 17:41:58

Spurious 4960 MHz, 2480, MHz, 2M, Max: VP, Peak



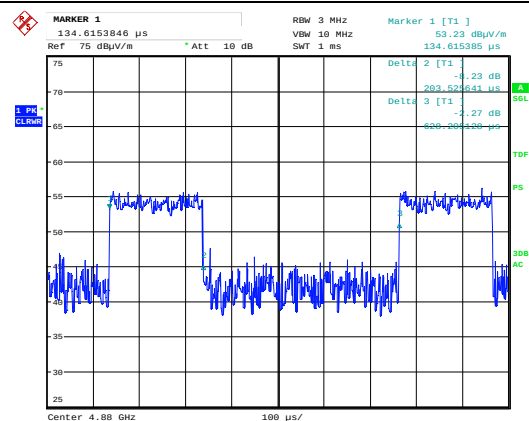
Date: 15.APR.2026 17:42:28

Av



Date: 15.APR.2026 16:29:28

Duty Cycle, 1M



Date: 15.APR.2026 17:21:21

Duty Cycle, 2M

4 Measurement Uncertainty

Measurement Uncertainty Values		
Test Item		Uncertainty
Output Power		±0.5 dB
Power Spectral Density		±0.5 dB
Out of Band Emissions, Conducted	< 3.6 GHz	±0.6 dB
	> 3.6 GHz	±0.9 dB
Spurious Emissions, Radiated	< 1 GHz	±2.5 dB
	> 1 GHz	±2.2 dB
Emission Bandwidth		±4 %
Power Line Conducted Emissions		+2.9 / -4.1 dB
Spectrum Mask Measurements	Frequency	±5 %
	Amplitude	±1.0 dB
Frequency Error		±0.6 ppm
Temperature Uncertainty		±1 °C

All uncertainty values are expanded standard uncertainty to give a confidence level of 95%, based on coverage factor k=2

5 LIST OF TEST EQUIPMENT

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment and ancillaries are identified (numbered) by the testhouse.

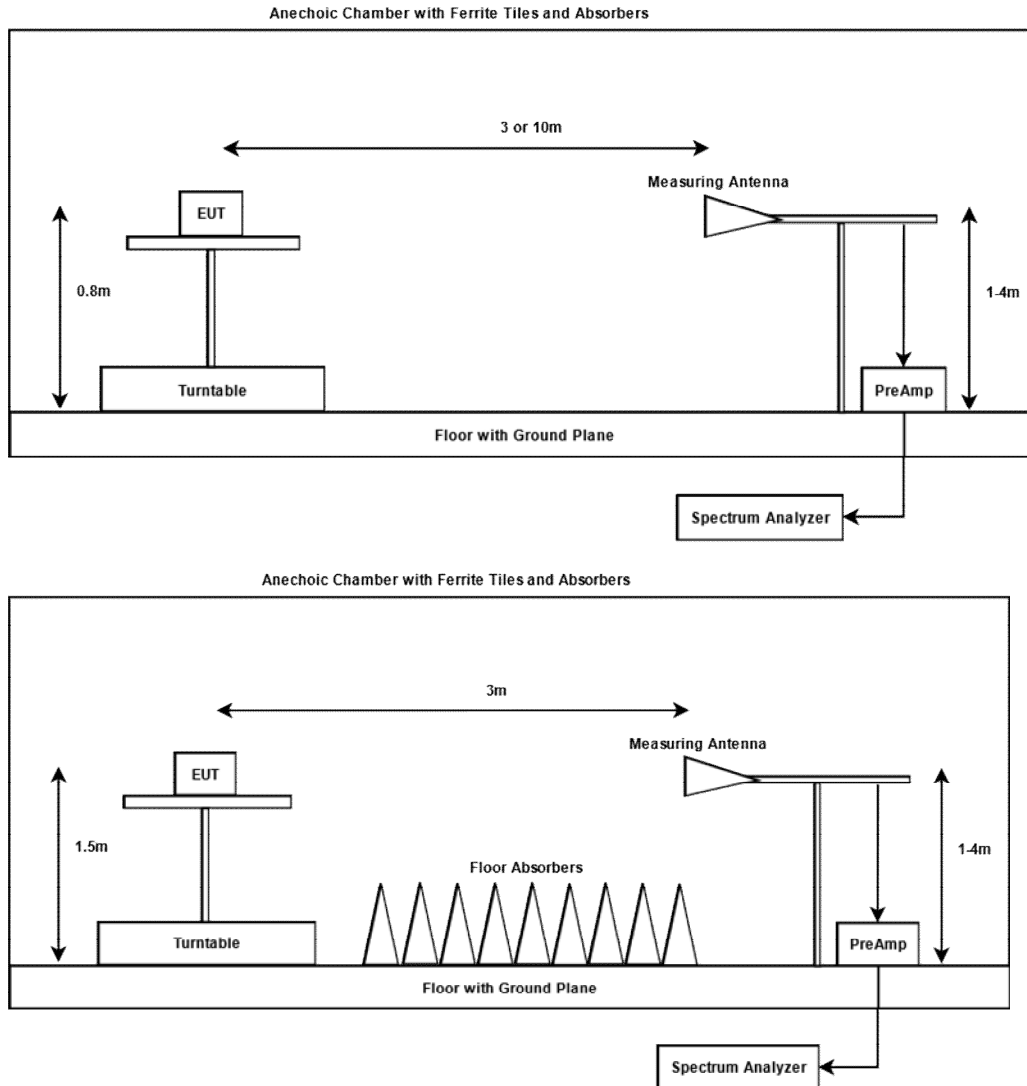
No.	Model number	Description	Manufacturer	Ref. no.	Cal. date	Cal. Due
1	FSW43	Spectrum Analyzer	Rohde & Schwarz	LR 1690	2026-01	2027-01
2	ESU40	Measuring Receiver	Rohde & Schwarz	LR 1639	2026-01	2027-01
4	NO324415	Band Reject Filter (2.4 GHz)	Microwave Circuits	LR 1760	COU	
5	JB1	BiLog Antenna	SunAR	LR 1734	2025-04	2028-04
6	310	Preamplifier	Sonoma Inst.	LR 1686	2025-08	2026-08
7	3115	Horn Antenna	EMCO	LR 1330	2022-11	2027-11
8	3117-PA	Horn Antenna +PreAmp	EMCO	LR 1717	2026-03	2027-03
9	8449A	Pre-amplifier	Hewlett Packard	LR 1322	2025-08	2026-08
10	WLK5-1100-1485-7000-40SS	Low Pass Filter (1 GHz)	Wainwright Inst.	LR 1761	COU	
11	638	Antenna Horn	Narda	LR 1480	N/A	
12	5910_N-50-010	Attenuator	Suhner	LR 1822	COU	

The software listed below has been used for one or more tests.

No.	Manufacturer	Name	Version	Comment
1	Rohde & Schwarz	EMC32	10.60.20	EMC test software
2	Nemko	RSPlot	1.0.8.0	Screenshots from R&S Spectrum Analyzers

6 BLOCK DIAGRAMS

6.1 Test Site Radiated Emission

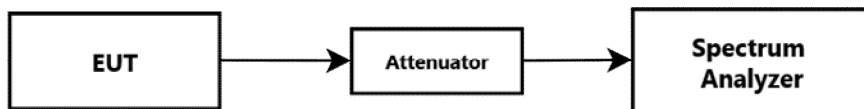


This test setup is used for all radiated emissions tests. Measuring distance is 3m. Emissions above 1 GHz are measured with a Spectrum Analyzer and Horn Antenna.

All measurements at 1GHz and above were performed with turntable height 1.5m and with the ground plane covered by absorbers. A pre-amplifier is used for all measurements. A Band-Stop filter is used for all measurements from 1 to 18 GHz and a Low-Pass filter is used below 1 GHz.

For measurements above 18 GHz the test receiver is moved inside the anechoic chamber and located next to the antenna to minimize the cable loss. Measurements above 18 GHz are performed at 1m measuring distance.

6.2 Conducted Measurements



Measurements at Antenna Connector with Spectrum Analyzer