

Test Report

Product	Simulated Stethoscope
Name and address of the applicant	Laerdal Medical AS P.O. Box 377, Tanke Svilandsgate 30, 4002 Stavanger, Norway
Name and address of the manufacturer	Laerdal Medical AS P.O. Box 377, Tanke Svilandsgate 30, 4002 Stavanger, Norway
Model	Stethoscope by Laerdal (401-01050)
Rating	Internal battery 3.7 V
Trademark	
Additional information	Bluetooth Low Energy transceiver 2402-2480 MHz
Tested according to	FCC Part 15.247 Frequency Hopping Transmitters / Digital Transmission Systems 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	PRJ0079937
Tested in period	2025-10-06 - 2025-11-07
Issue date	2026-06-08
Name and address of the testing laboratory	 Nemko Scandinavia AS Instituttveien 6 2007 Kjeller, Norway www.nemko.com CAB Number: FCC: NO0001 ISED: NO0470 ISED No: 2040D-1   An accredited technical test executed under the Norwegian accreditation scheme
Prepared by [Jan G Eriksen] Approved by [Frode Sveinsen]	
This report was originally distributed electronically with digital signatures. For more information, please contact Nemko Scandinavia AS.	

Revision history

Revision	Date	Comment	Sign
A	2026-05-11	First edition	JGER
B	2026-06-08	Editorial	JGER

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 which a third party makes of this report, or any reliance on or decisions to be made 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	Power Line Conducted Emissions	7
3.2	Occupied Bandwidth (99% BW)	8
3.3	DTS Bandwidth	10
3.4	Peak Power Output	12
3.5	Conducted Emissions at Antenna Connector	15
3.6	Restricted Bands of operation	19
3.7	Radiated Emissions, Band Edge	20
3.8	Radiated Emissions, 30 – 1000 MHz	23
3.9	Radiated Emissions, 1 – 26 GHz	26
3.10	Power Spectral Density (PSD)	30
4	Measurement Uncertainty	32
5	LIST OF TEST EQUIPMENT	33
6	BLOCK DIAGRAMS	34
6.1	Power Line Conducted Emission	34
6.2	Conducted Tests	34
6.3	Test Site Radiated Emission	35

1 INFORMATION

1.1 Test Item

Name	Simulated Stethoscope
Manufacturer	Laerdal Medical AS
Model/version	Stethoscope by Laerdal (401-01050)
FCC ID	QHQ-STETH1
ISED ID	20263-STETH1
Serial number	/
Hardware identity and/or version	50-03190 rev A
Software identity and/or version	V1.0.0
Frequency Range	2402 – 2480 MHz
Number of Channels	40
Operating Modes	Bluetooth Low Energy ☒ 1Mb ☒ 2Mb
Type of Modulation	GFSK
Conducted Output Power	+3 dBm (2 mW)
Antenna Connector	None (Integral Antenna)
Number of Antennas	1
Diversity or Smart Antennas	No
Power Supply	Internal battery 3.7 V
Desktop Charger	USB-charger with USB-C connector

Description of Test Item

The tested device is a simulated stethoscope used for training of healthcare professionals.
The EUT uses Bluetooth Low Energy and supports 1Mbps and 2Mbps modes.

1.2 Normal test conditions

Temperature:	20 - 24 °C
Relative humidity:	30 - 50 %
Normal test voltage:	3.7 V DC (Internal battery)

The values are the limit registered during the test period.

1.3 Test Engineers

Jan G Eriksen

1.4 Antenna Requirement

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

Requirement: FCC 15.203, 15.204

1.5 EUT Operating Modes

Description of operating modes	Radiated Emissions with the EUT set to transmit at 2402, 2440, and 2480 MHz. Power line conducted emissions with the EUT to transmit at the frequency with highest radiated power – which was considered a worst case.
Additional information	/

1.6 Comments

All radiated measurements were done with the EUT powered by a fully charged battery. Conducted measurements with EUT powered from regulated power supply.

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)	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	Pass
Antenna Requirement	15.203	6.8 (RSS-GEN)	5.8	Pass
Power Line Conducted Emission	15.107(a) 15.207(a)	7.2 / 8.8 (RSS-GEN)	6.2	Pass
Occupied Bandwidth (99% BW)	N/A	6.7 (RSS-GEN)	6.9.3	Pass
DTS Bandwidth	15.247(a)(2)	6.3 (RSS-247)	11.8 Option 2	Pass
Peak Power Output	15.247(b)	6.3.2 (RSS-247)	11.9.1.1	Pass
Power Spectral Density	15.247(d)	6.3.1 (RSS-247)	11.10.2 PKPSD (DTS)	Pass
Spurious Emissions (Antenna Conducted)	15.247(c)	6.6 (RSS-247)	6.7 11.11 (DTS)	Pass
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)	Pass

3 TEST RESULTS

3.1 Power Line Conducted Emissions

FCC Part 15.207

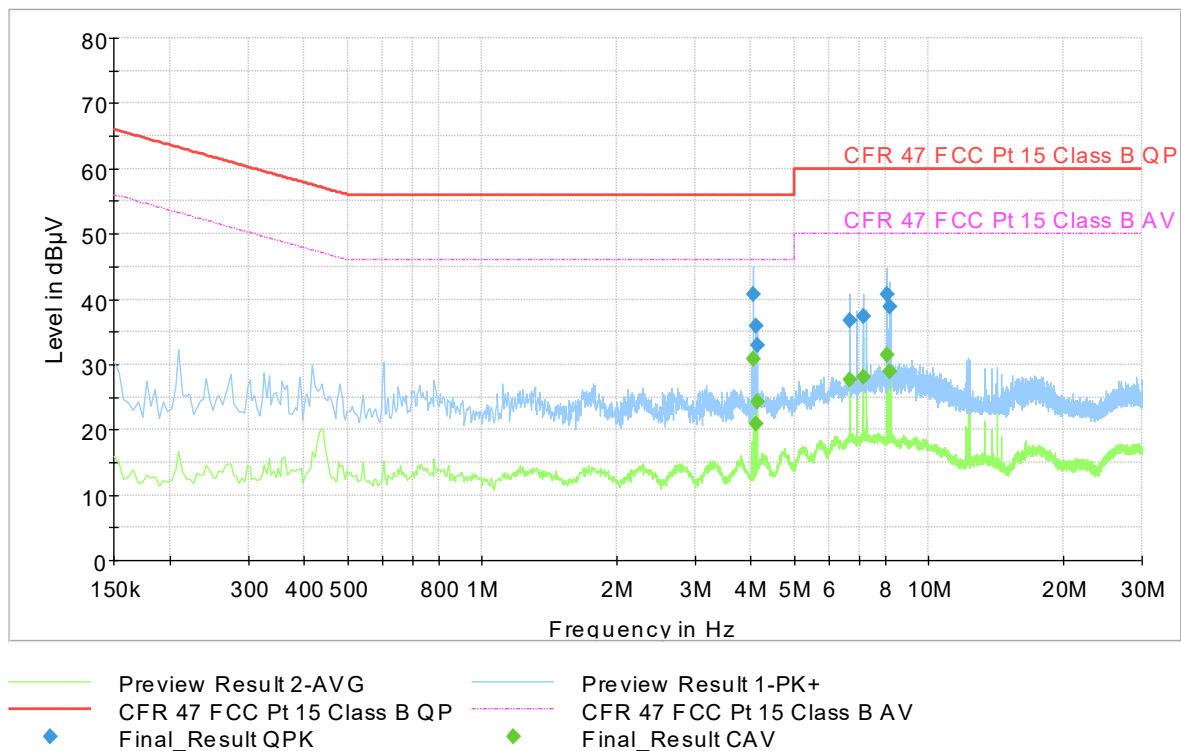
ISED RSS-GEN Issue 5, Clause 7.2 / 8.8

Measurement procedure: ANSI C63.4-2014 using 50 μ H/50 ohms LISN

Test Results: Complies

Measurement Data: See attached plots

Full Spectrum



Note that the blue (Peak) and green (Average) lines represent the maximum measured spurious levels of both lines.

Highest measured value (L1 and N):

Frequency (MHz)	QuasiPeak (dB μ V)	CAverage (dB μ V)	Limit (dB μ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
4.042000	---	30.73	46.00	15.27	15000.0	9.000	L1	OFF	9.8
4.042000	40.76	---	56.00	15.24	15000.0	9.000	L1	OFF	9.8
4.102000	35.93	---	56.00	20.07	15000.0	9.000	L1	OFF	9.8
4.106000	---	20.83	46.00	25.17	15000.0	9.000	N	OFF	9.9
4.126000	---	24.26	46.00	21.74	15000.0	9.000	N	OFF	9.9
4.126000	32.86	---	56.00	23.14	15000.0	9.000	L1	OFF	9.8
6.670000	36.81	---	60.00	23.19	15000.0	9.000	L1	OFF	9.9
6.670000	---	27.57	50.00	22.43	15000.0	9.000	N	OFF	9.9
7.122000	37.46	---	60.00	22.54	15000.0	9.000	L1	OFF	9.9
7.122000	---	28.10	50.00	21.90	15000.0	9.000	N	OFF	9.9
8.078000	---	31.36	50.00	18.64	15000.0	9.000	N	OFF	9.9
8.082000	40.74	---	60.00	19.26	15000.0	9.000	L1	OFF	9.9
8.202000	---	28.92	50.00	21.08	15000.0	9.000	N	OFF	9.9
8.202000	38.85	---	60.00	21.15	15000.0	9.000	L1	OFF	9.9

3.2 Occupied Bandwidth (99% BW)

ISED Canada RSS-GEN Issue 5, Clause 6.7

Measurement procedure: ANSI C63.10-2020 Clause 6.9.2

Test Results: Complies

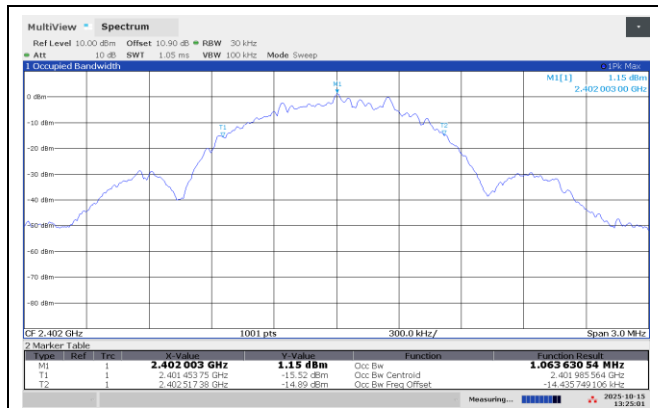
Measurement Data:

Carrier Frequency, MHz	Occupied Bandwidth (99% BW) kHz	
	1M	2M
2402	1063.63	2126.53
2440	1070.97	2131.02
2480	1069.69	2108.71

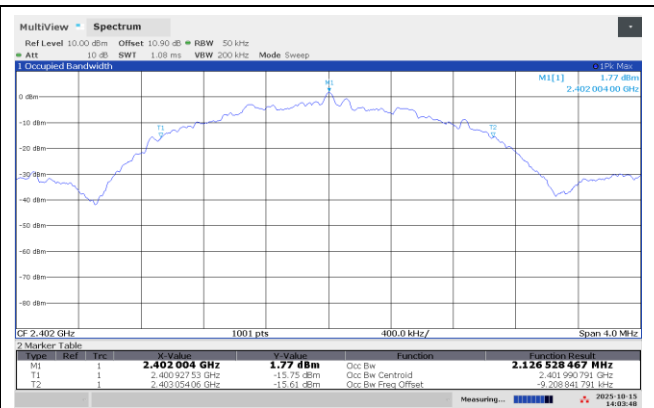
See attached plots

Requirements:

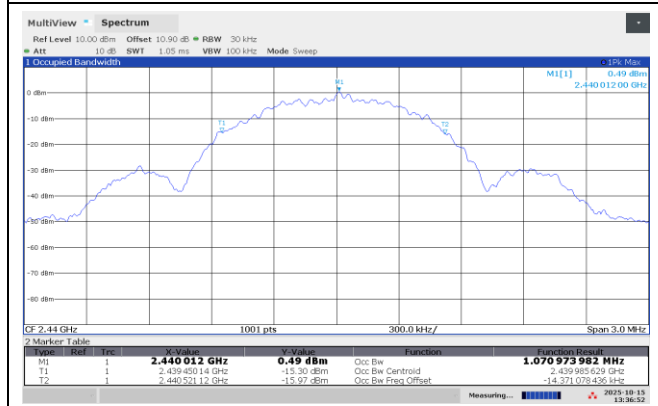
No requirement for 99% BW, reported for information only.



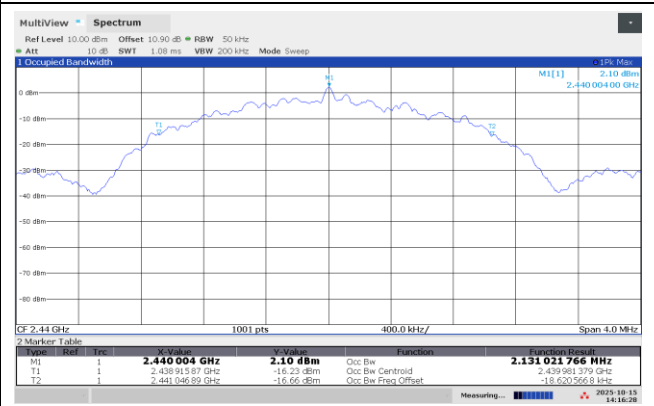
99% Occupied BW, 2402 MHz, 1Mb



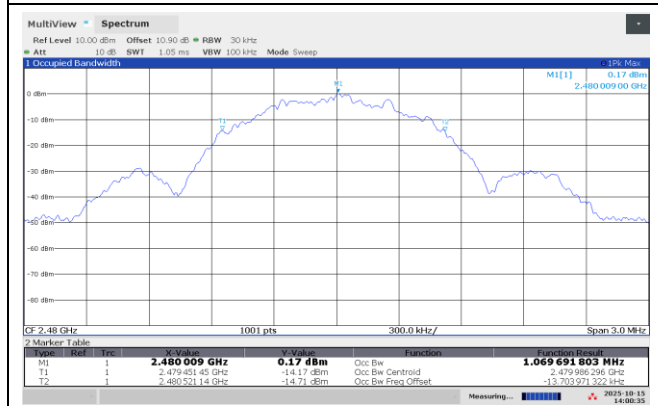
99% Occupied BW, 2402 MHz, 2Mb



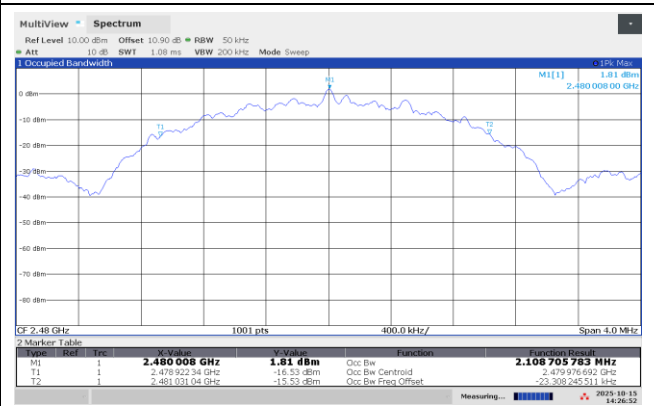
99% Occupied BW, 2440 MHz, 1Mb



99% Occupied BW, 2440 MHz, 2Mb



99% Occupied BW, 2480 MHz, 1Mb



99% Occupied BW, 2480 MHz, 2Mb

3.3 DTS Bandwidth

FCC Part 15.247 (a)(2)

ISED Canada RSS-247 Issue 4, Clause 6.3

Measurement procedure: ANSI C63.10-2020 Clause 11.8

Test Results: **Complies**

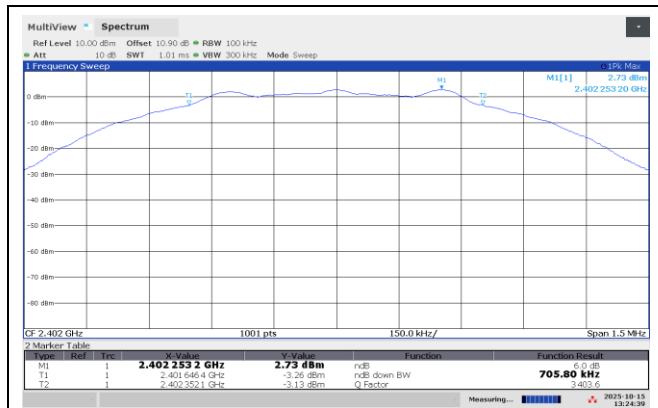
Measurement Data:

Modulation type and bitrate	Measured DTS Bandwidth (kHz)		
	2402 MHz	2440 MHz	2480 MHz
GFSK 1 Mbps	705.8	714.8	698.3
GFSK 2 Mbps	1150	1140	1140

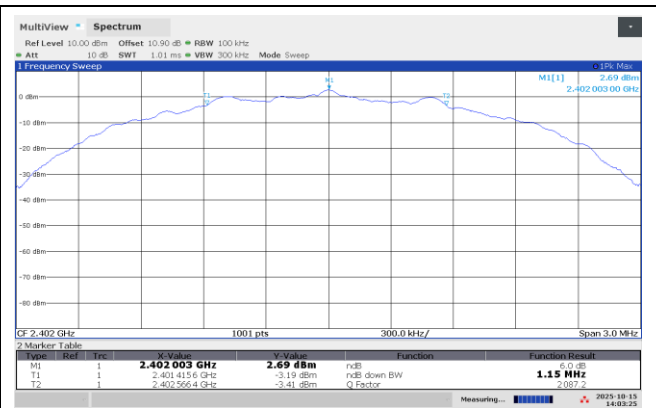
Power supply variation within 85 % to 115% of nominal value has no influence on measured value.

Frequency Band	Requirement for systems using Digital Modulation
902-928 MHz	The minimum 6 dB bandwidth shall be at least 500 kHz.
2400-2483.5 MHz	
5725-5850 MHz	

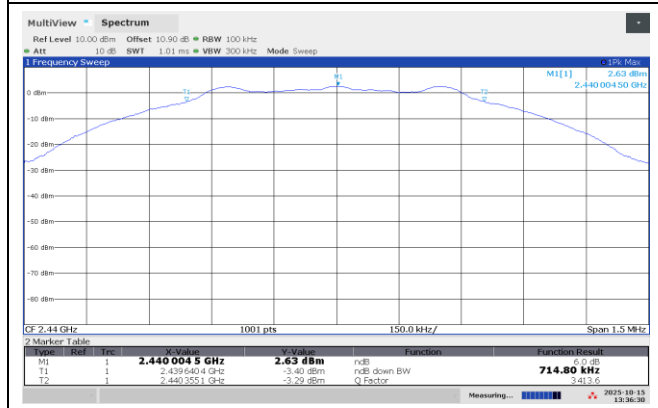
No requirements for Frequency Hopping Systems.



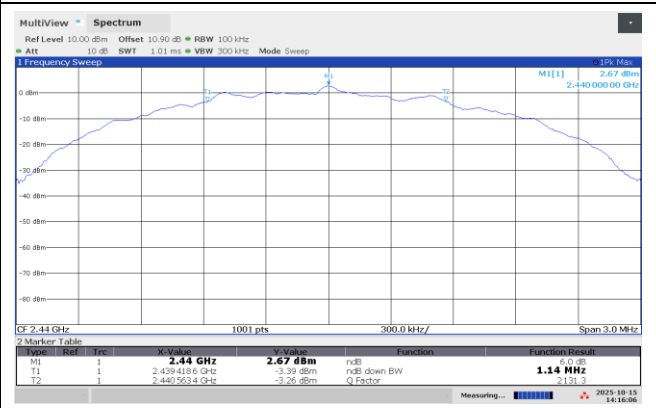
DTS BW, 2402 MHz, 1Mb



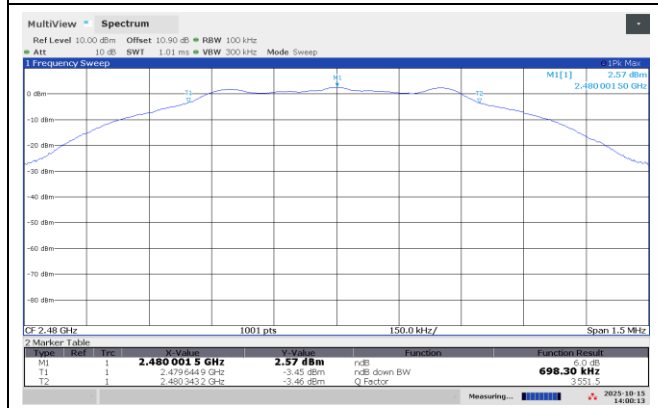
DTS BW, 2402 MHz, 2Mb



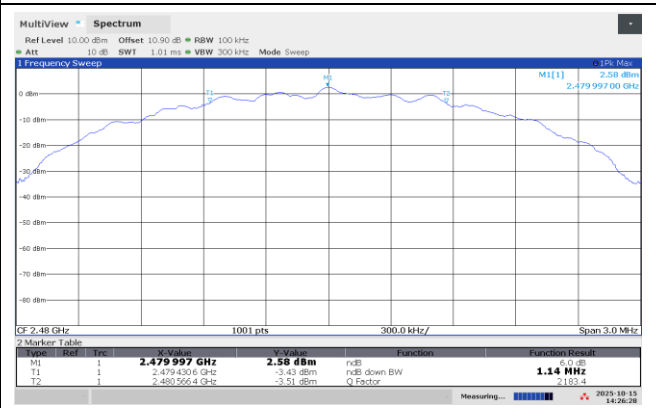
DTS BW, 2440 MHz, 1Mb



DTS BW, 2440 MHz, 2Mb



DTS BW, 2480 MHz, 1Mb



DTS BW, 2480 MHz, 2Mb

3.4 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	Peak Conducted Power, dBm		Peak Field, dBuV/m		Peak EIRP, dBm *)	
	GFSK 1Mb	GFSK 2Mb	GFSK 1Mb	GFSK 2Mb	GFSK 1Mb	GFSK 2Mb
2402 MHz	2.86	2.85	97.63	97.71	2.40	2.48
2440 MHz	2.80	2.79	96.22	96.43	0.99	1.20
2480 MHz	2.73	2.73	95.33	95.21	0.10	-0.02

Note: *) Radiated Power was calculated from measured Field Strength using the method described in ANSI C63.10-2020 Annex G.

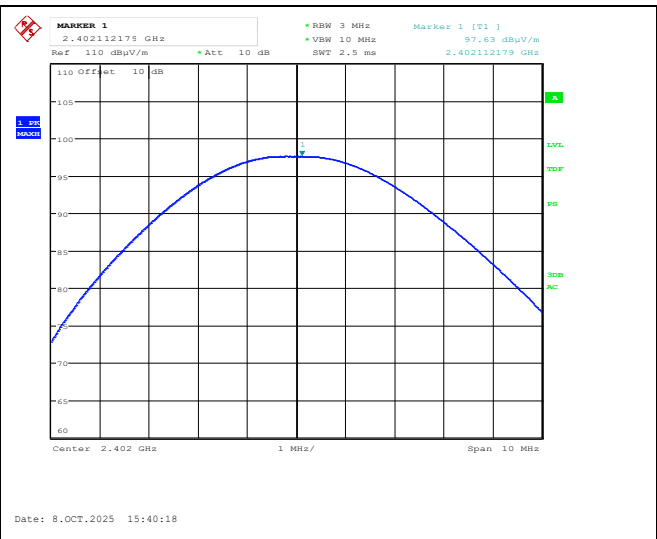
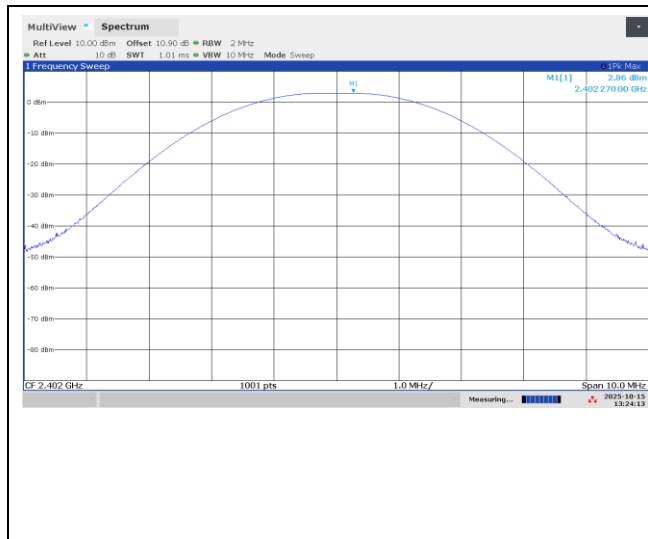
Output Power reported is Maximum Peak Power.

The Integrated Band Power Method was used to measure Output Power

Antenna Gain is less than 6 dBi.

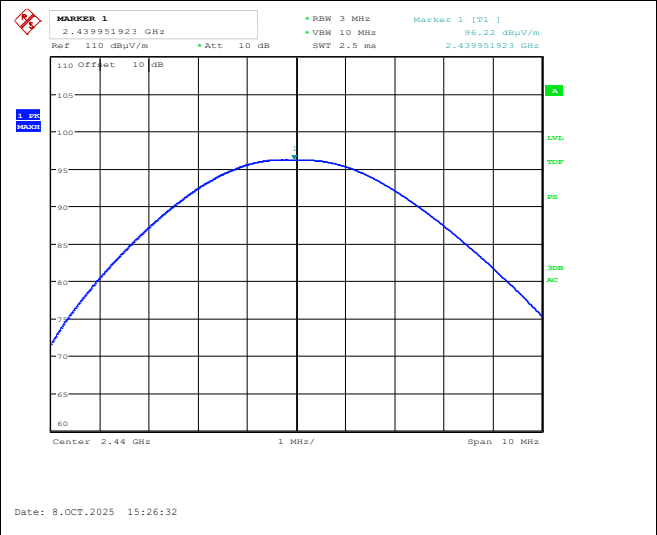
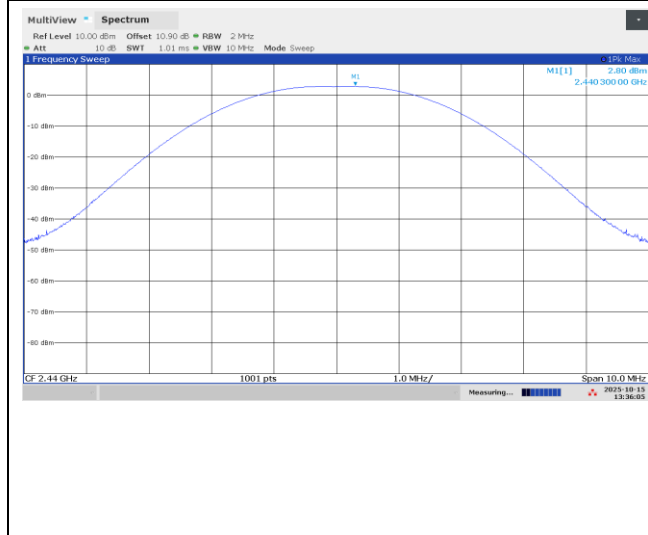
See attached plots.

Frequency Band	Requirements for Frequency Hopping systems
902-928 MHz	For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels
2400-2483.5 MHz	For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels: 1 watt For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts
5725-5850 MHz	For all frequency hopping systems in the 5725-5850 MHz band: 1 watt
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.	



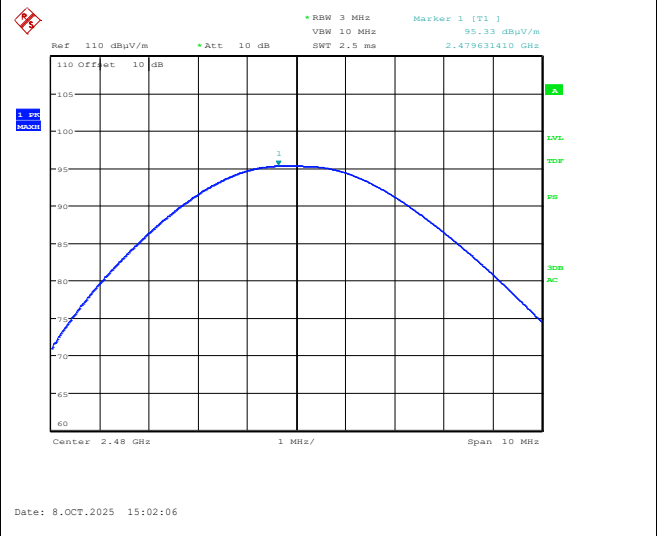
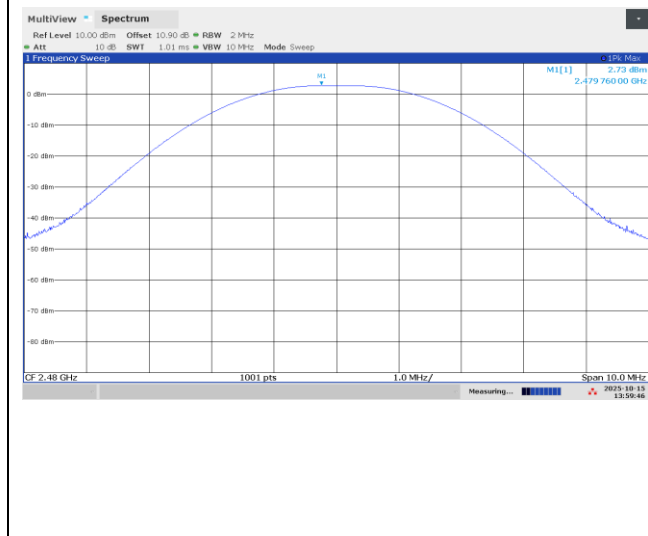
Peak Power, 2402 MHz, 1Mb

Peak EIRP, 2402 MHz, 1Mb



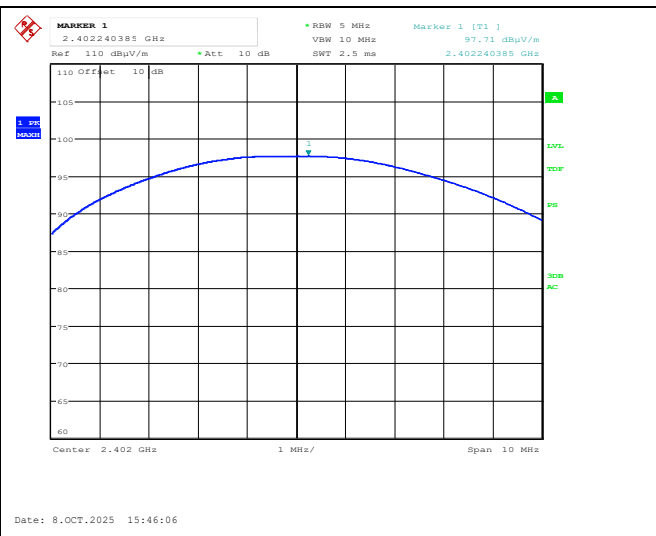
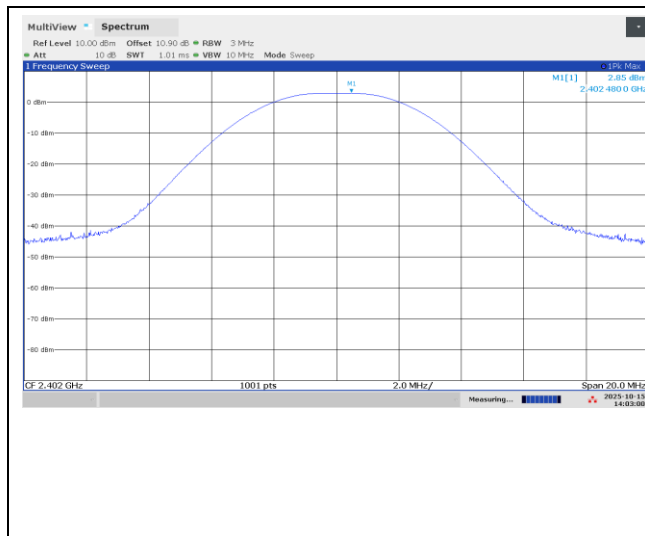
Peak Power, 2440 MHz, 1Mb

Peak EIRP, 2440 MHz, 1Mb



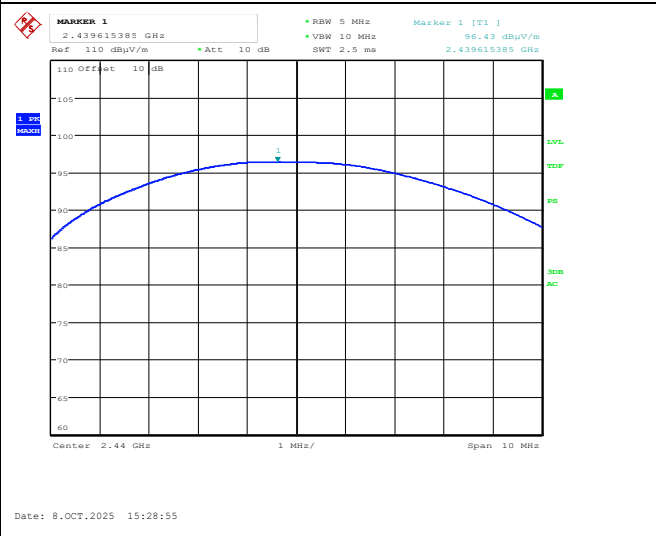
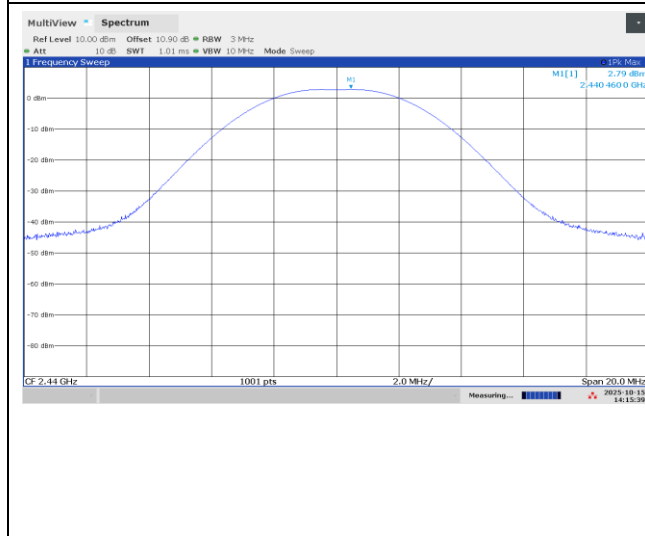
Peak Power, 2480 MHz, 1Mb

Peak EIRP, 2480 MHz, 1Mb



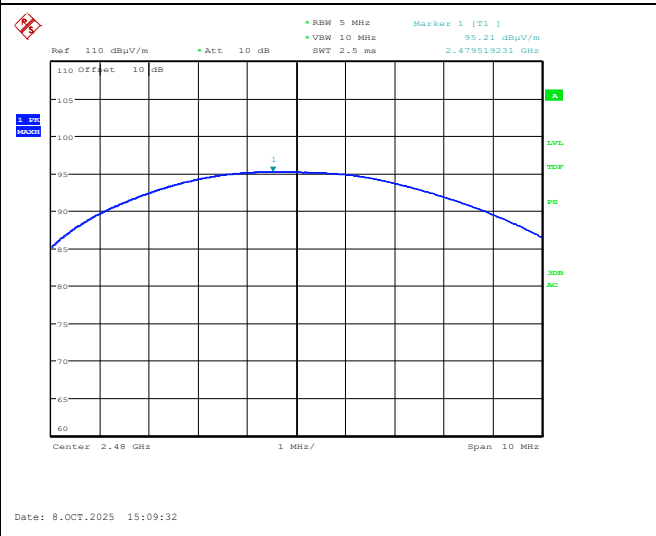
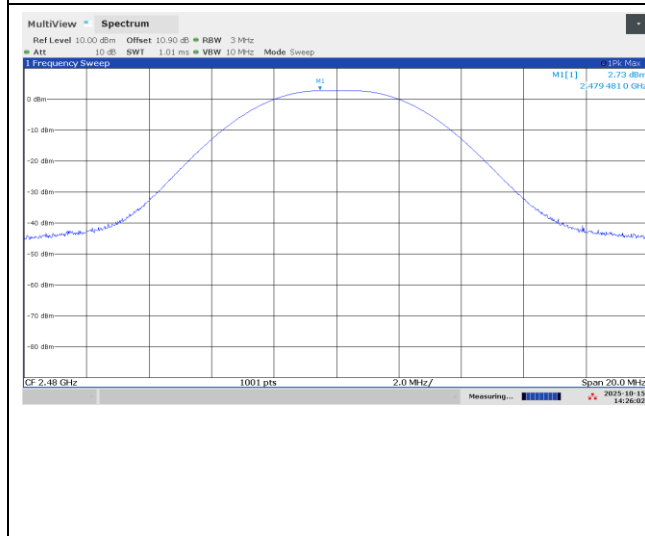
Peak Power, 2402 MHz, 2Mb

Peak EIRP, 2402 MHz, 2Mb



Peak Power, 2440 MHz, 2Mb

Peak EIRP, 2440 MHz, 2Mb



Peak Power, 2480 MHz, 2Mb

Peak EIRP, 2480 MHz, 2Mb

3.5 Conducted Emissions at Antenna Connector

FCC Part 15.247 (d)

ISED Canada RSS-247 Issue 4, Clause 6.6

Measurement procedure: ANSI C63.10-2020 Clause 11.11

Test Results: Complies

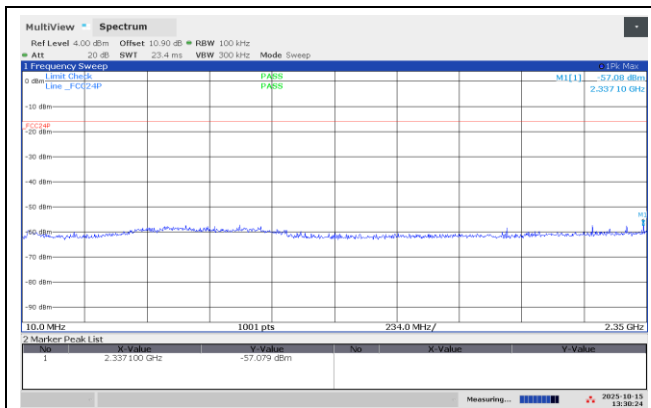
Measurement Data:

Carrier Frequency	Inband peak (dBm)	Highest Value		Margin (dB)	Verdict
		(@ MHz)	(dBm)		
2402 MHz @ 1M	2.61	4801.4	-42.46	25.07	Pass
2402 MHz @ 2M	2.50	4875.8	-43.86	26.36	Pass
2440 MHz @ 1M	2.34	4957.7	-44.89	27.23	Pass
2440 MHz @ 2M	2.57	4801.4	-42.94	25.51	Pass
2480 MHz @ 1M	2.46	4883.2	-43.69	26.15	Pass
2480 MHz @ 2M	2.35	4957.7	-45.14	27.49	Pass

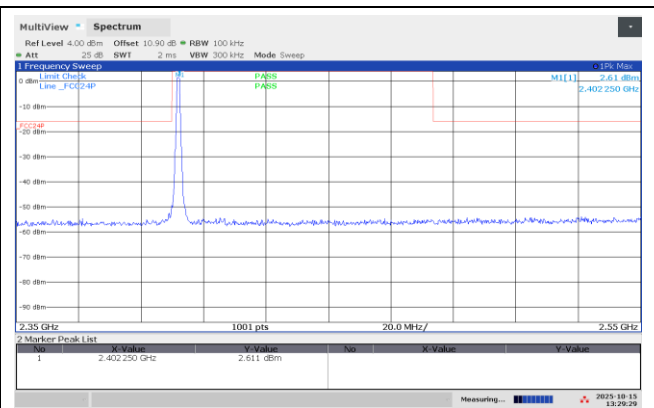
Measured with Peak Detector

RF conducted power to 26 GHz: see attached plots.

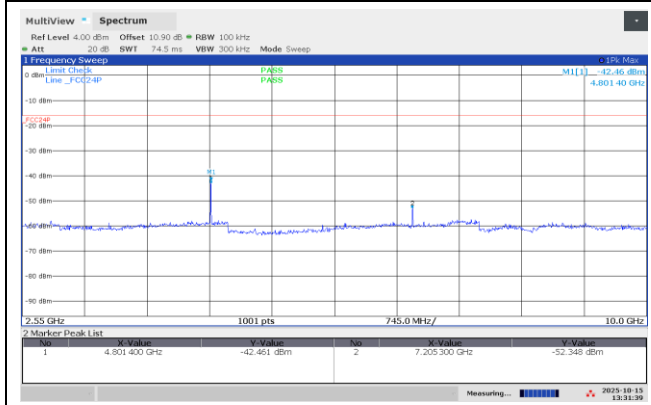
Requirements for all systems	
Peak measurement	RMS averaging (alternative measurement)
20 dB or more below carrier measured in 100 kHz bandwidth	30 dB or more below carrier measured in 100 kHz bandwidth
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required.	



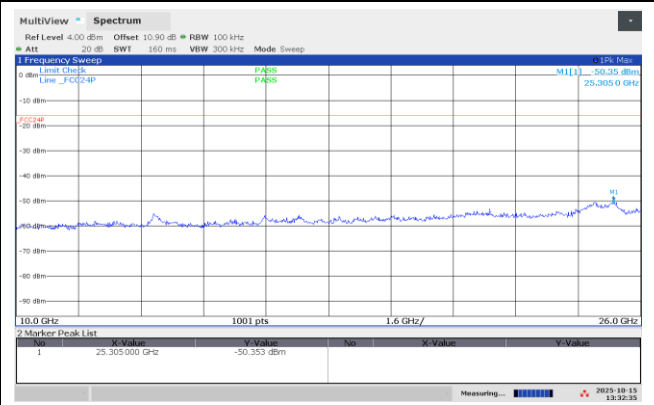
Conducted Emissions 10-2350 MHz, 2402 MHz, 1Mb



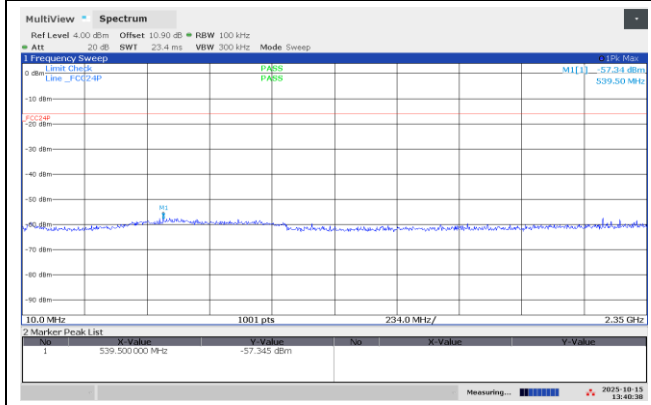
Conducted Emissions 2350-2550 MHz, 2402 MHz, 1Mb



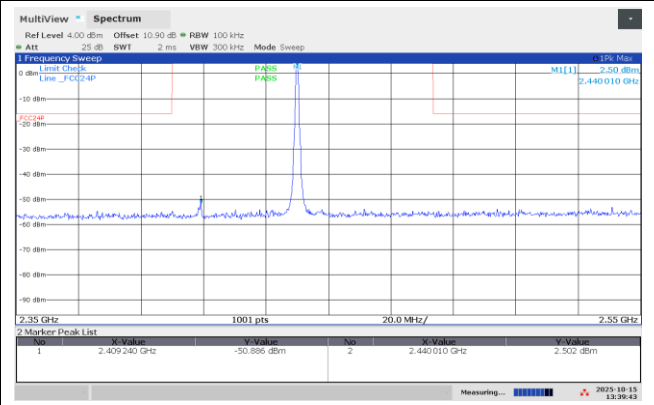
Conducted Emissions 2550-10000 MHz, 2402 MHz, 1Mb



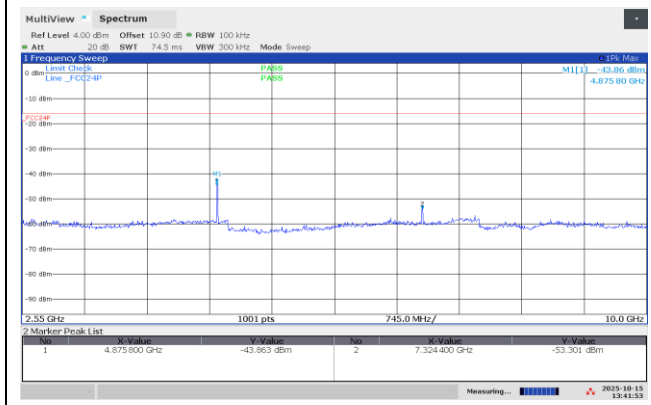
Conducted Emissions 10000-26000 MHz, 2402 MHz, 1Mb



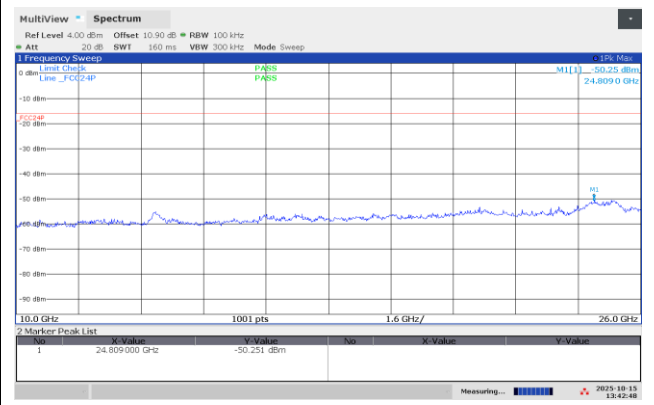
Conducted Emissions 10-2350 MHz, 2440 MHz, 1Mb



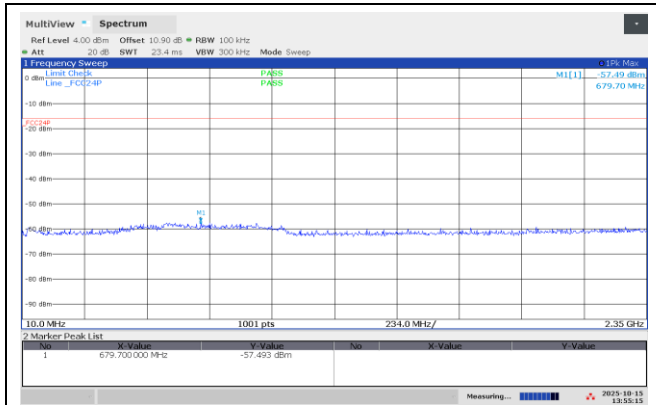
Conducted Emissions 2350-2550 MHz, 2440 MHz, 1Mb



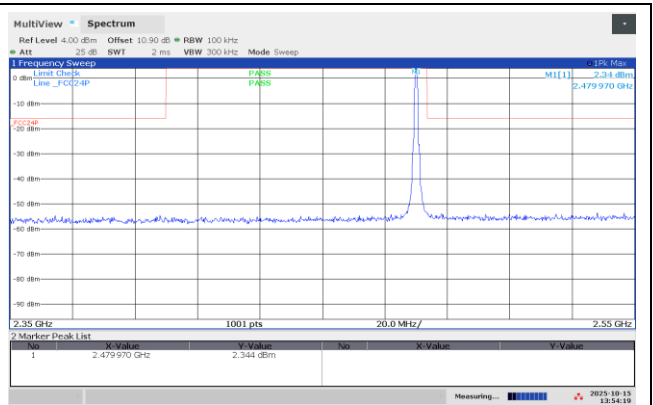
Conducted Emissions 2550-10000 MHz, 2440 MHz, 1Mb



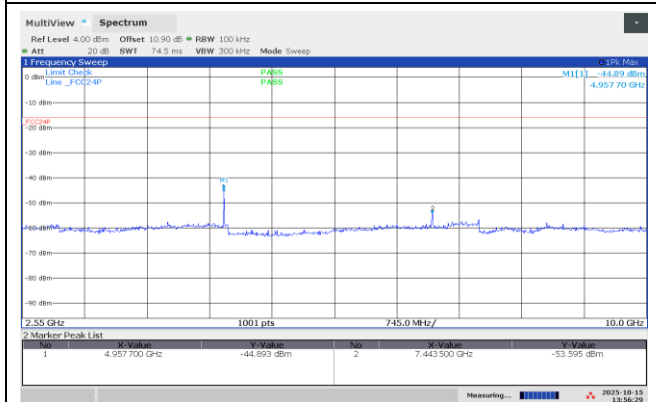
Conducted Emissions 10000-26000 MHz, 2440 MHz, 1Mb



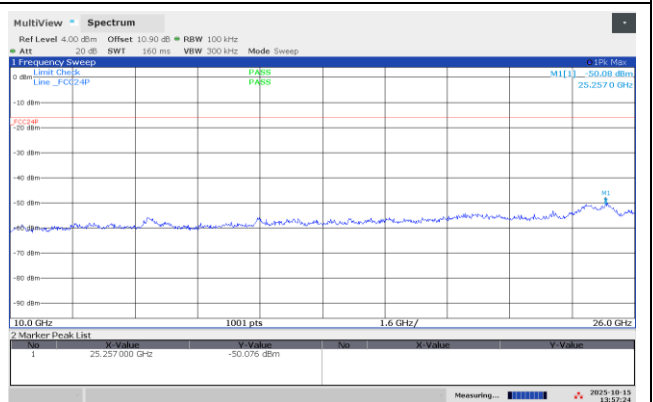
Conducted Emissions 10-2350 MHz, 2480 MHz, 1Mb



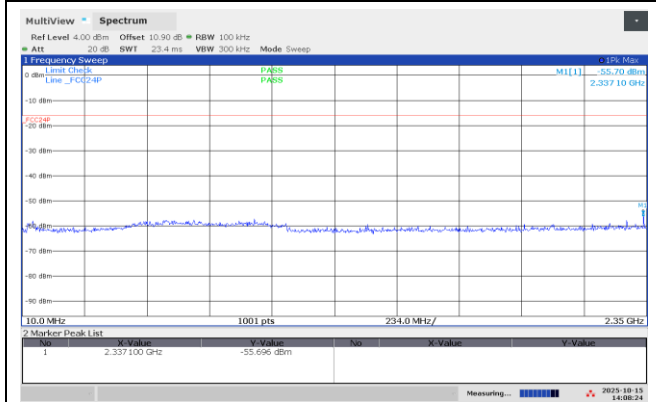
Conducted Emissions 2350-2550 MHz, 2480 MHz, 1Mb



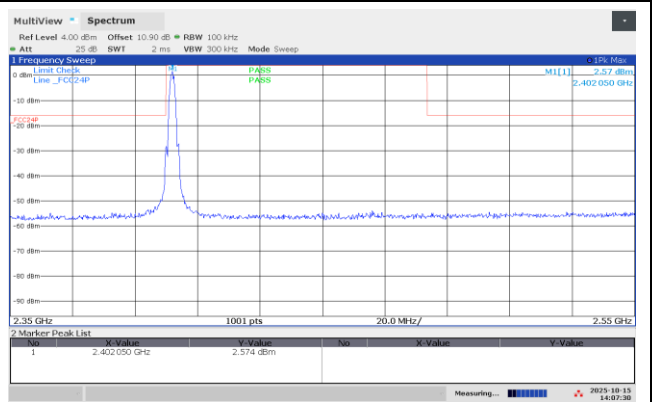
Conducted Emissions 2550-10000 MHz, 2480 MHz, 1Mb



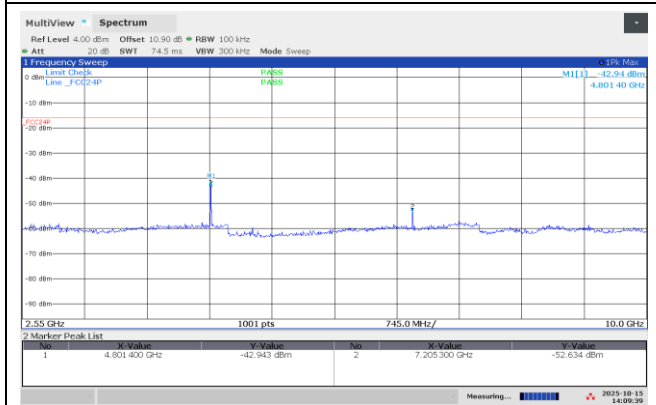
Conducted Emissions 10000-26000 MHz, 2480 MHz, 1Mb



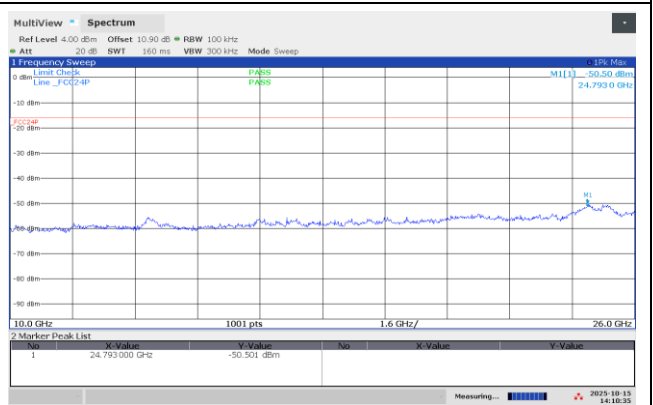
Conducted Emissions 10-2350 MHz, 2402 MHz, 2Mb



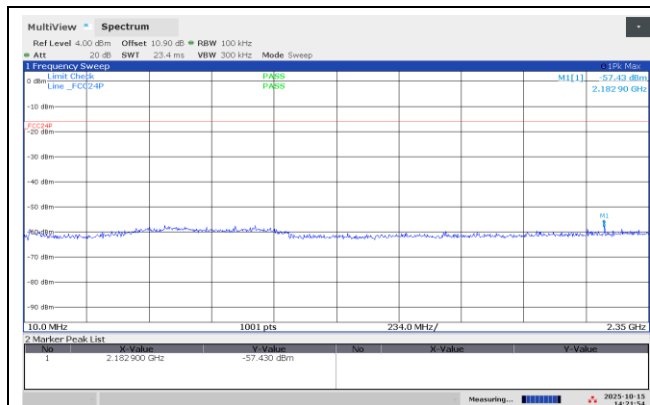
Conducted Emissions 2350-2550 MHz, 2402 MHz, 2Mb



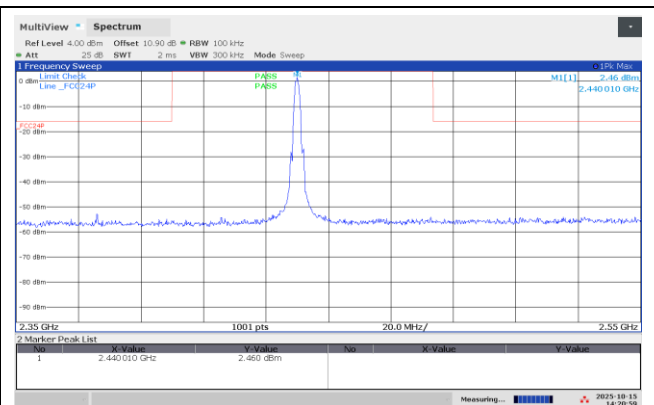
Conducted Emissions 2550-10000 MHz, 2402 MHz, 2Mb



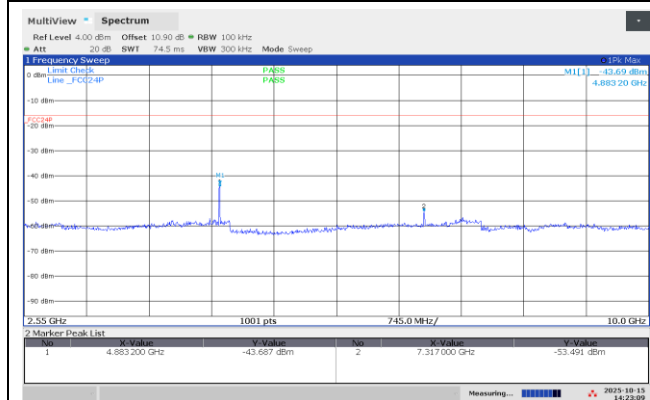
Conducted Emissions 10000-26000 MHz, 2402 MHz, 2Mb



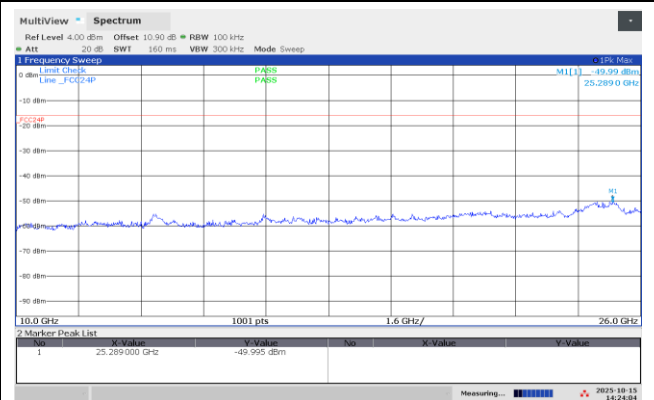
Conducted Emissions 10-2350 MHz, 2440 MHz, 2Mb



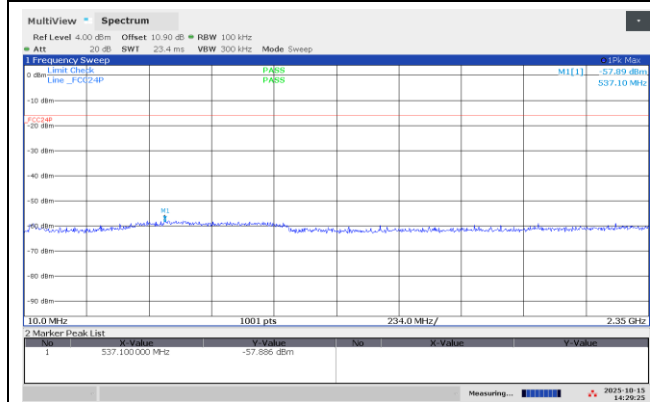
Conducted Emissions 2350-2550 MHz, 2440 MHz, 2Mb



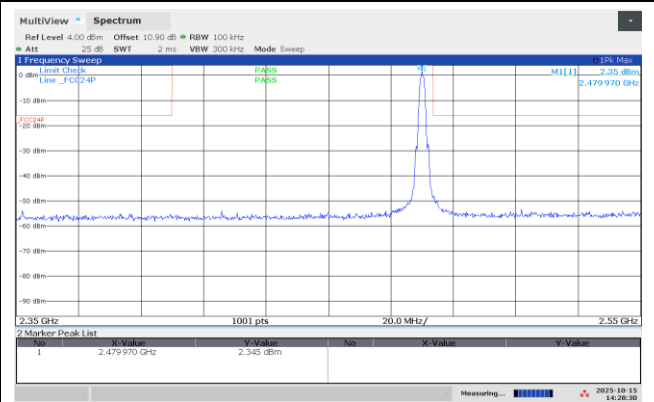
Conducted Emissions 2550-10000 MHz, 2440 MHz, 2Mb



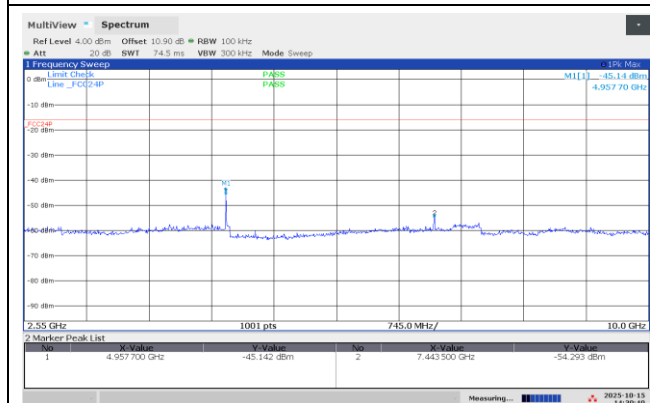
Conducted Emissions 10000-26000 MHz, 2440 MHz, 2Mb



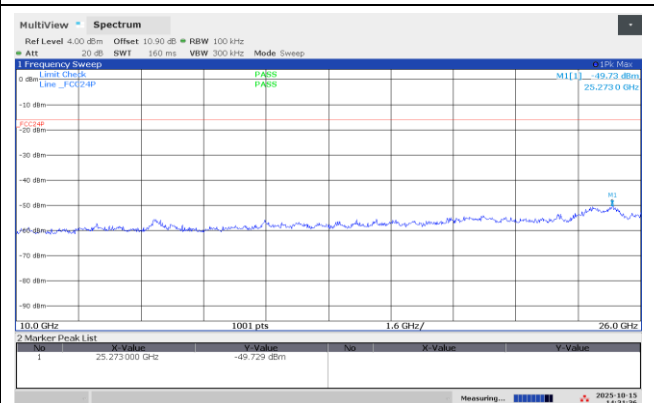
Conducted Emissions 10-2350 MHz, 2480 MHz, 2Mb



Conducted Emissions 2350-2550 MHz, 2480 MHz, 2Mb



Conducted Emissions 2550-10000 MHz, 2480 MHz, 2Mb



Conducted Emissions 10000-26000 MHz, 2480 MHz, 2Mb

3.6 Restricted Bands of operation

Restricted Bands of operation for FCC and ISSED are defined in FCC Part 15.205 and ISSED RSS-GEN, Issue 5 clause 8.10.

Generally, no fundamentals are allowed in the restricted bands and all emissions must comply with the limits in FCC 15.209 or RSS-GEN, Issue 5, clause 8.9.

FCC (MHz)	ISSED (MHz)	FCC (GHz)	ISSED (GHz)
0.090-0.110		0.96-1.24 1.3-1.427	0.96-1.427
0.495-0.505		1.435-1.6265	
2.1735-2.1905		1.6455-1.6465	
	3.020-3.026	1.660-1.710	
4.125-4.128		1.7188-1.7222	
4.17725-4.17775		2.2-2.3	
4.20725-4.20775		2.31-2.39	
	5.677-5.683	2.4835-2.5	
6.215-6.218		2.69-2.9	2.655-2.9
6.26775-6.26825		3.26-3.267	
6.31175-6.31225		3.332-3.339	
8.291-8.294		3.3458-3.358	
8.362-8.366		3.6-4.4	3.5-4.4
8.37625-8.38675		4.5-5.15	
8.41425-8.41475		5.35-5.46	
12.29-12.293		7.25-7.75	
12.51975-12.52025		8.025-8.5	
12.57675-12.57725		9.0-9.2	
13.36-13.41		9.3-9.5	
16.42-16.423		10.6-12.7	
16.69475-16.69525		13.25-13.4	
16.80425-16.80475		14.47-14.5	
25.5-25.67		15.35-16.2	
37.5-38.25		17.7-21.4	
73-74.6		22.01-23.12	
74.8-75.2		23.6-24.0	
108-121.94 123-138	108-138	31.2-31.8	
149.9-150.05		36.43-36.5	
156.52475-156.52525		Above 38.6	
156.7-156.9			
162.0125-167.17			
167.72-173.2			
240-285			
322-335.4			
399.9-410			
608-614			

Frequencies in **Bold** text are specific for FCC or ISSED, all other frequencies are common.

3.7 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

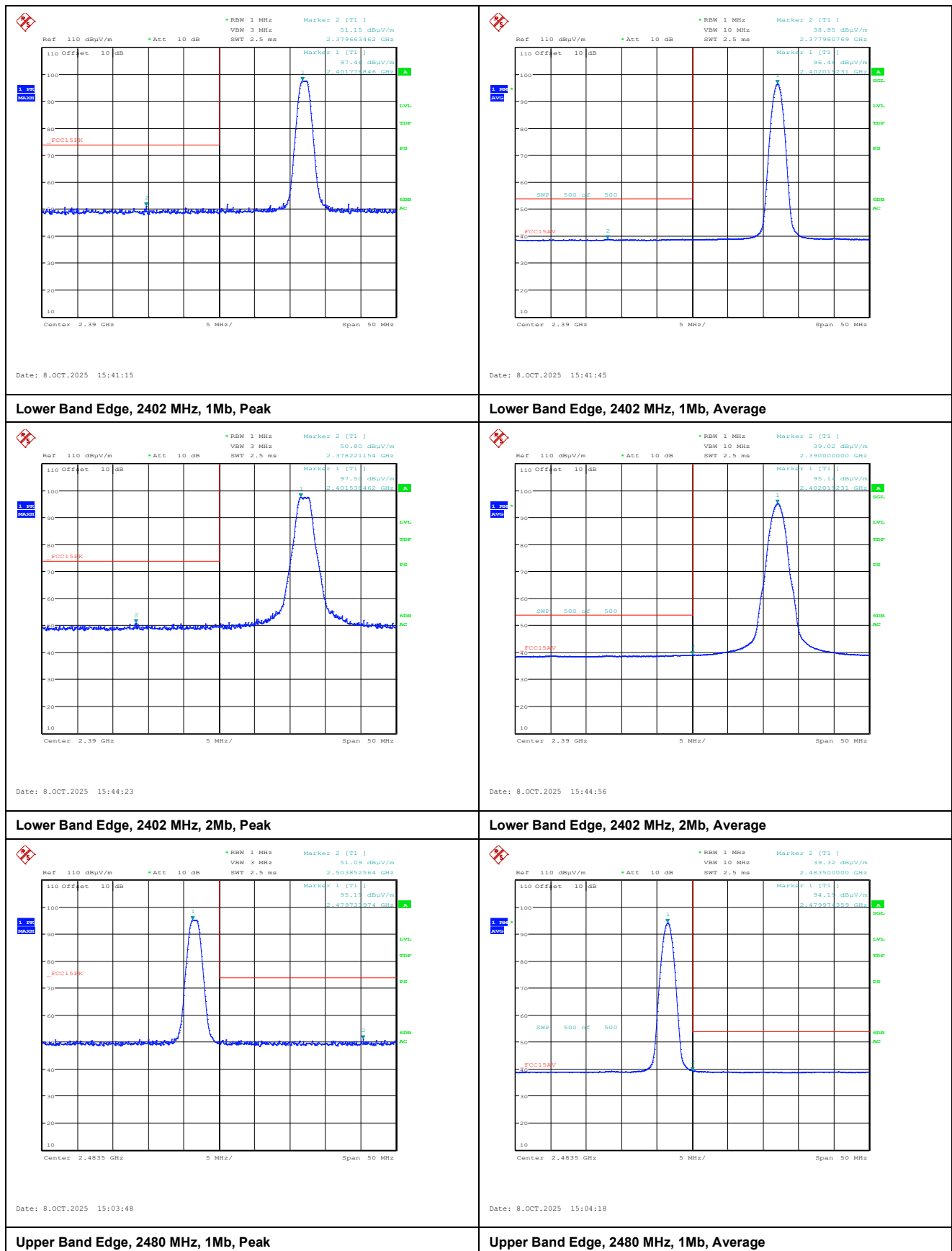
Measurement Data:

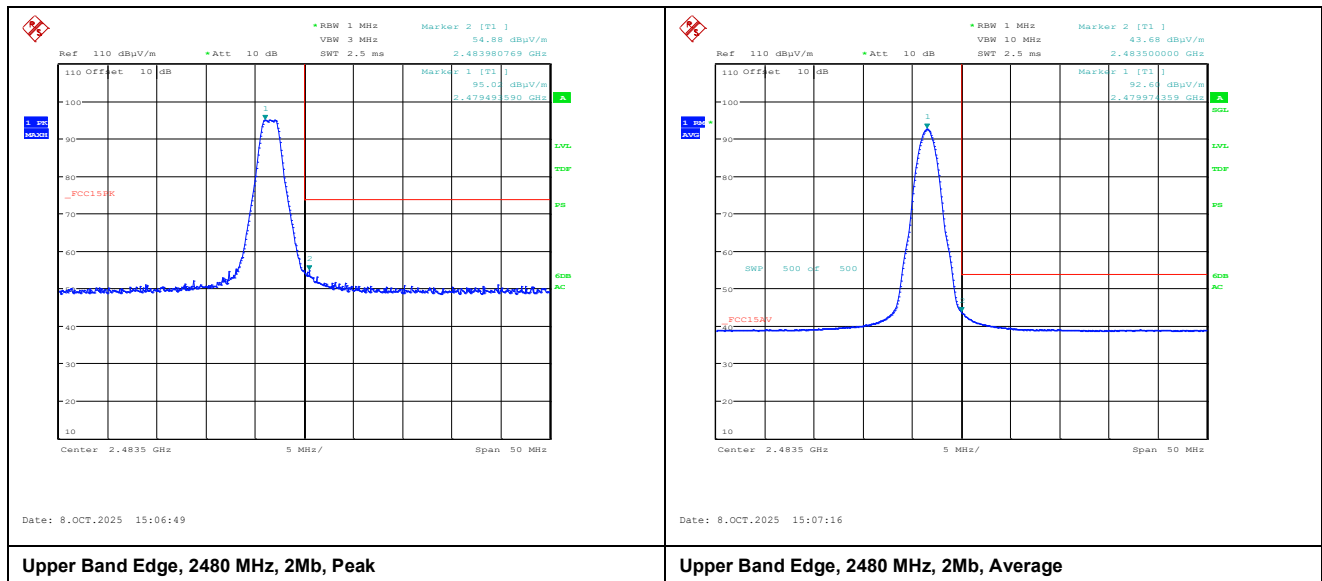
Peak Detector					
Modulation and Bitrate	Measured field strength (dB μ V/m)		Limit	Margin	
	2390 MHz	2483.5 MHz	dB	dB	
GFSK, 1Mb	51.15	51.09	74	22.85	22.91
GFSK, 2Mb	50.80	54.88	74	23.20	19.12

Average Detector					
Modulation and Bitrate	Measured field strength (dB μ V/m)		Limit	Margin	
	2390 MHz	2483.5 MHz	dB	dB	
GFSK, 1Mb	38.85	39.32	54	15.15	14.68
GFSK, 2Mb	39.02	43.68	54	14.98	10.32

Average values were measured using trace averaging as described in ANSI C63.10-2013 clause 11.12.2.5.1 (Duty Cycle = 100%).

See attached plots.





3.8 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

Measuring distance 3 m

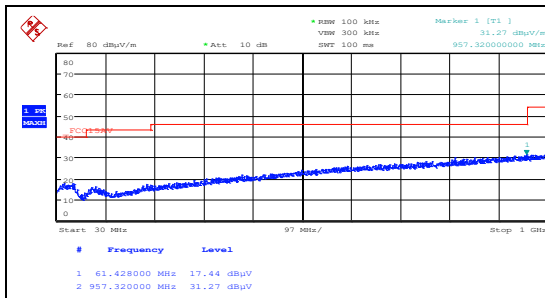
Tested in test mode with EUT transmitting on 2402, 2440, and 2480 MHz – denoted as L, M, and H respectively in table below.

Measured Frequency (MHz)	Carrier Frequency (MHz)	Modulation (1 or 2 Mbps)	Measured Emission (dBµV/m)	Limit (dBµV/m)	Margin (dB)
30 – 88	L / M / H	1 / 2	< 25	40.0	> 15.0
88 – 216	L / M / H	1 / 2	< 30	43.5	> 13.5
216 – 960	L / M / H	1 / 2	< 35	46.0	> 11.0
960 – 1000	L / M / H	1 / 2	< 35	54.0	> 19.0

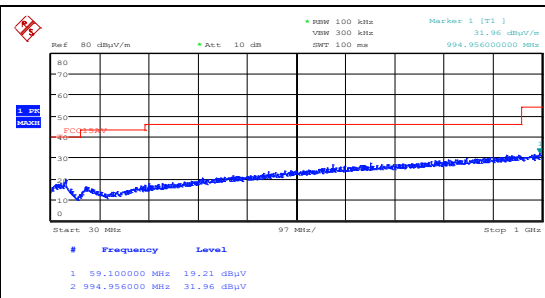
See attached plots

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	



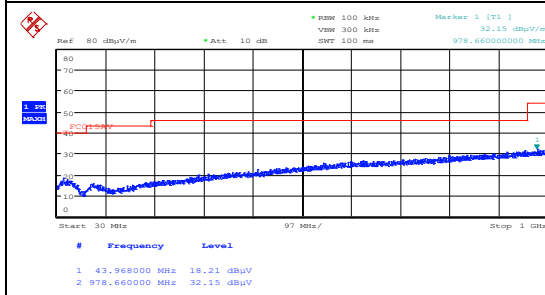
Date: 9.OCT.2025 13:13:38



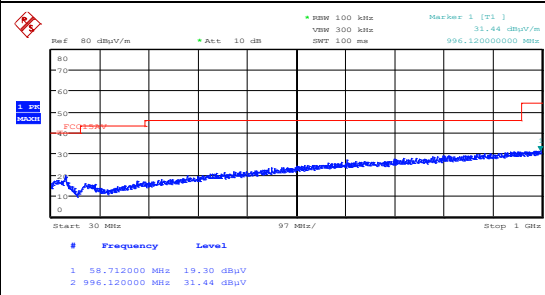
Date: 9.OCT.2025 13:11:41

Radiated Emissions 30 - 1000 MHz, 2402 MHz, 1Mb, HP

, VP



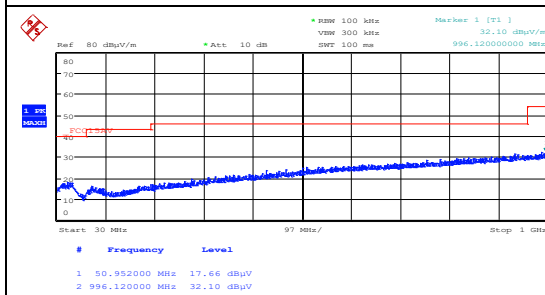
Date: 9.OCT.2025 13:20:52



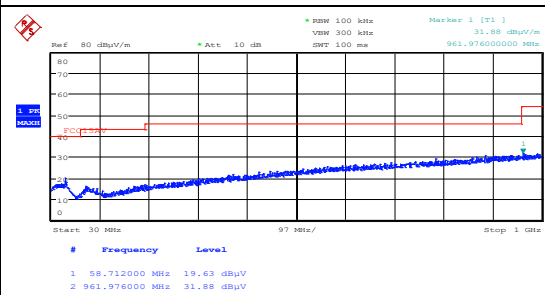
Date: 9.OCT.2025 13:18:55

Radiated Emissions 30 - 1000 MHz, 2440 MHz, 1Mb, HP

, VP



Date: 9.OCT.2025 13:34:34



Date: 9.OCT.2025 13:32:37

Radiated Emissions 30 - 1000 MHz, 2480 MHz, 1Mb, HP

, VP

Ref 80 dBuV/m * Att 10 dB RBW 100 kHz VSW 300 kHz SMT 100 ms Marker 1 [T1] 29.73 dBuV/m 993.016000000 MHz 80 70 60 50 40 30 20 10 0 80 70 60 50 40 30
--

3.9 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.

In the table carrier frequencies 2402, 2440, and 2480 MHz are denoted as L, M, and H respectively.

RBW=1 MHz

Carrier Frequency (MHz)	Measured Frequency (GHz)	Mode (1M / 2M)	Measured Emissions (dBμV/m)		Limit (dBμV/m)		Margin (dB)	
			Peak	Average	Pk	Av	Pk	Av
L / M / H	1-9 GHz	1 / 2	< 50	< 40	74	54	> 24	> 24
L / M / H	9-18 GHz	1 / 2	< 54	< 45	74	54	> 20	> 19
L / M / H	18-26 GHz	1 / 2	< 54	< 45	74	54	> 20	> 19

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".

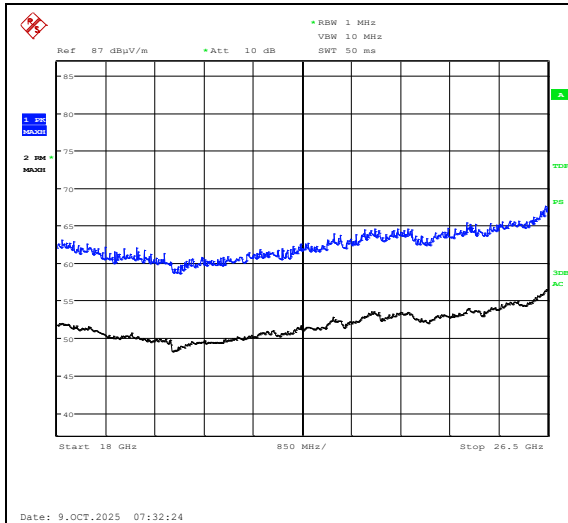
See plots.

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

Ref: 75 dBuV/m Att: 10 dB SMT 100 ms Marker 1 [T1] 51.18 dBuV/m 17.02080000 GHz Start: 1 GHz 1.7 GHz/ Stop: 18 GHz 1. 2.400800 GHz 44.85 dBuV 2. 7.205000 GHz 48.28 dBuV 3. 13.484800 GHz 49.34 dBuV 4. 17.020800 GHz 51.18 dBuV	Ref: 75 dBuV/m Att: 10 dB SMT 100 ms Marker 1 [T1] 51.61 dBuV/m 17.59880000 GHz Start: 1 GHz 1.7 GHz/ Stop: 18 GHz 1. 7.205000 GHz 47.00 dBuV 2. 13.491600 GHz 49.40 dBuV 3. 17.598800 GHz 51.61 dBuV
Ref: 75 dBuV/m Att: 10 dB SMT 100 ms Marker 1 [T1] 51.22 dBuV/m 17.07860000 GHz Start: 1 GHz 1.7 GHz/ Stop: 18 GHz 1. 9.901200 GHz 47.19 dBuV 2. 13.029200 GHz 49.45 dBuV 3. 17.078600 GHz 51.22 dBuV	Ref: 75 dBuV/m Att: 10 dB SMT 100 ms Marker 1 [T1] 51.10 dBuV/m 17.07860000 GHz Start: 1 GHz 1.7 GHz/ Stop: 18 GHz 1. 13.491600 GHz 49.21 dBuV 2. 17.078600 GHz 51.10 dBuV
Ref: 75 dBuV/m Att: 10 dB SMT 100 ms Marker 1 [T1] 50.93 dBuV/m 17.14320000 GHz Start: 1 GHz 1.7 GHz/ Stop: 18 GHz 1. 9.874000 GHz 47.67 dBuV 2. 13.430400 GHz 49.45 dBuV 3. 17.143200 GHz 50.93 dBuV	Ref: 75 dBuV/m Att: 10 dB SMT 100 ms Marker 1 [T1] 50.96 dBuV/m 17.09560000 GHz Start: 1 GHz 1.7 GHz/ Stop: 18 GHz 1. 9.115800 GHz 46.77 dBuV 2. 17.095600 GHz 50.96 dBuV
Ref: 75 dBuV/m Att: 10 dB SMT 100 ms Marker 1 [T1] 50.96 dBuV/m 17.09560000 GHz Start: 1 GHz 1.7 GHz/ Stop: 18 GHz 1. 9.115800 GHz 46.77 dBuV 2. 17.095600 GHz 50.96 dBuV	

Ref 75 dBuV/m * Att 10 dB RMS 1 MHz VSW 10 MHz SWR 100 ma Marker 1 [T1] 51.09 dBuV/m 17.06160000 GHz 1.75 MHz MAX 2.00 MHz MIN Start 1 GHz 1.7 GHz/ Stop 18 GHz 70 65 60 55 50 45 40 35 30 70 65 60 55 50 45 40 35
--



Radiated emissions 18-26.5 GHz for 2402, 2440, and 2480 MHz, 1/2 Mbps - vertical and horizontal polarization, 0-360 deg turntable.

Peak-detector (blue) and RMS detector (black).

The measurement was performed at 1 meter distance so the limits of 74 and 54 dBuV/m should be increased with 9.5 dB

3.10 Power Spectral Density (PSD)

FCC part 15.247(d)

ISED Canada RSS-247 Issue 4, Clause 6.3.1

Measurement procedure: ANSI C63.10-2020 Clause 11.10

Test Results: Complies

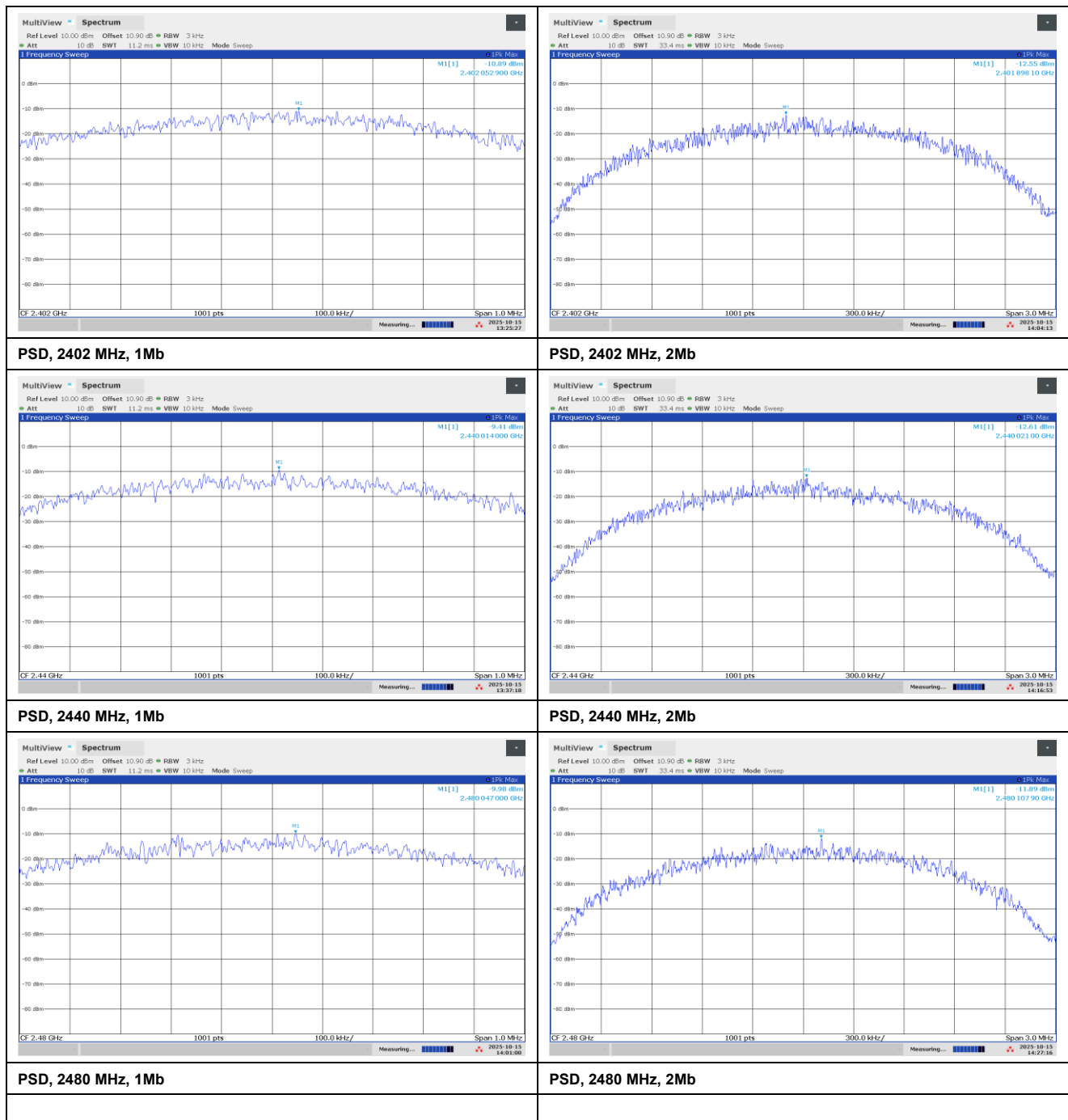
Measurement Data:

The measurement procedure PKPSD described in ANSI C63.10-2013 was used.

Modulation Type and Bitrate	Measured Power Spectral Density (dBm/3kHz)		
	2402 MHz	2440 MHz	2480 MHz
GFSK 1Mb	-10.89	-9.41	-9.98
GFSK 2Mb	-12.55	-12.61	-11.89

Requirement for systems using Digital Modulation

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.



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.

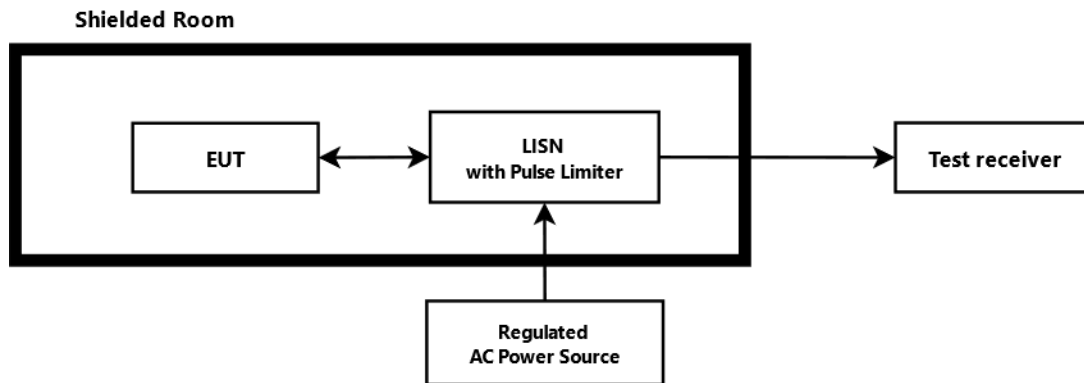
No.	Model number	Description	Manufacturer	Ref. no.	Cal. date	Cal. Due
1	FSW43	Spectrum Analyzer	Rohde & Schwarz	LR 1690	2026-01	2028-01
2	ESU40	Measuring Receiver	Rohde & Schwarz	LR 1639	2026-01	2028-01
3	6810.17B	Attenuator	Suhner	LR 1669	COU	
4	NO324415	Band Reject Filter (2.4 GHz)	Microwave Circuits	LR 1760	COU	
5	JB3	BiLog Antenna	Sunol	N-4525	2025-03	2027-03
6	310	Preamplifier	Sonoma Inst.	LR 1686	2025-08	2027-08
7	3115	Horn Antenna	EMCO	LR 1330	2022-11	2027-11
8	3117-PA	Horn Antenna +PreAmp	EMCO	LR 1717	2025-02	2027-02
9	8449A	Pre-amplifier	Hewlett Packard	LR 1322	2026-03	2028-03
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	ST18/SMA/N/36	RF Cable	Suhner	LR 1627	COU	

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

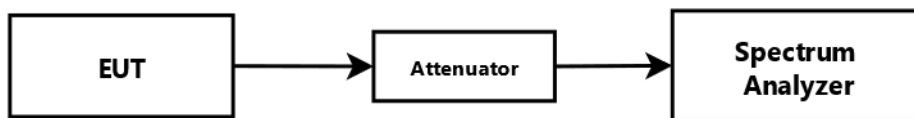
No.	Manufacturer	Name	Version	Comment
1	Rohde & Schwarz	EMC32	10.50.40	EMC test software
2	Nemko	RSPlot	1.0.8.0	Screenshots from R&S Spectrum Analyzers

6 BLOCK DIAGRAMS

6.1 Power Line Conducted Emission

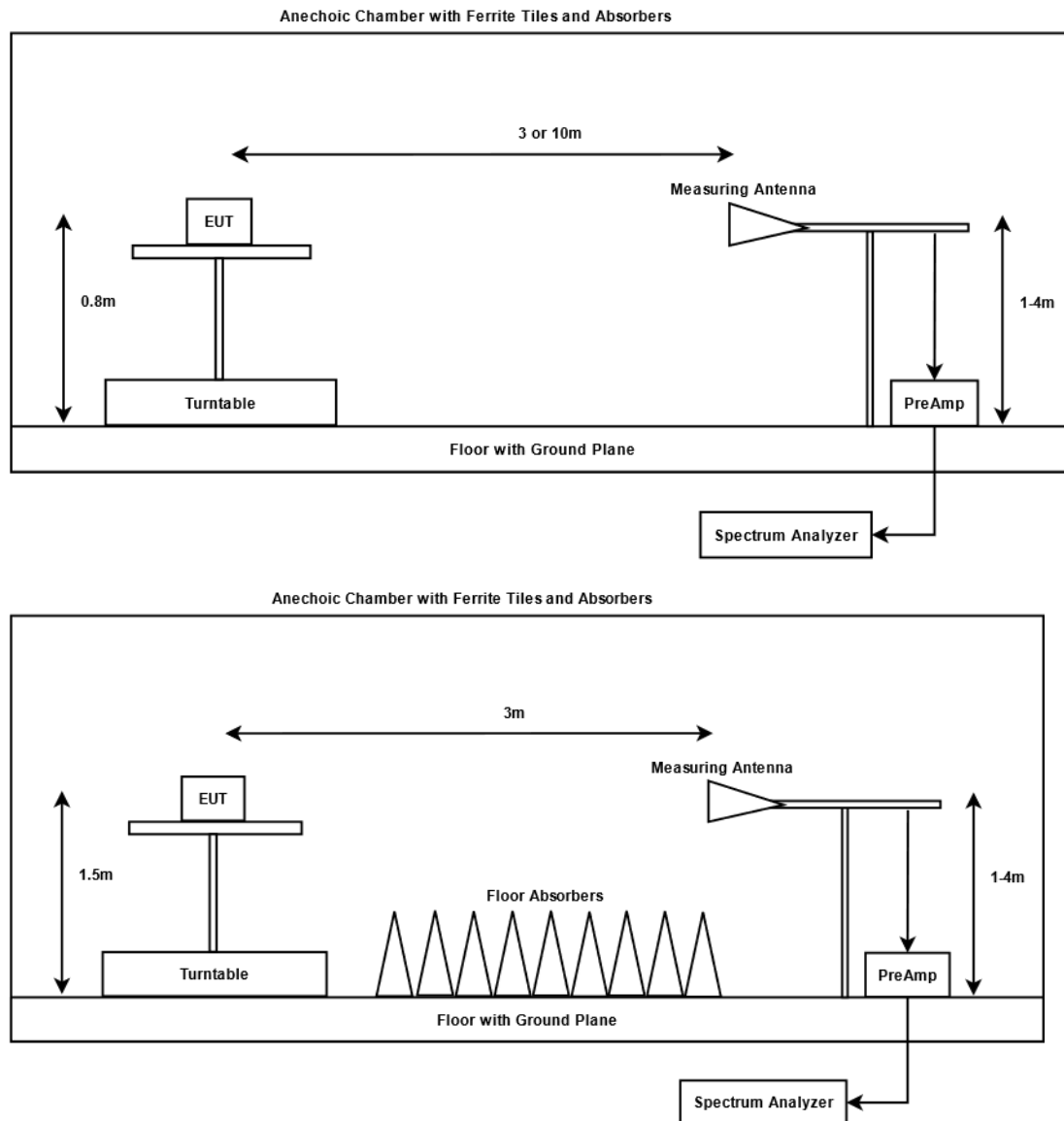


6.2 Conducted Tests



This test set-up is used for all Conducted tests.
For Frequency Stability test the EUT was placed in a climatic chamber.

6.3 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.