

RADIO TEST REPORT

Report No.: M2405032-11

TESTED FOR:

Minelab Electronics Pty Ltd
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ISSUED BY:

EMC Technologies Pty. Ltd.

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Product Name: Metal Detector
Model: D40060
FCC ID: Z4C-0060
IC: 24927-0060
Test Date(s): 10th, 17th, 19th and 20th of September 2024
Issue Date: 19 January 2026

Standard: **FCC PART 15, SUBPART C, SECTION 15.247**
ISED RSS-247, Issue 4, SECTION 5.0

Result: *The test sample, complies with the standard/s listed above, provided the modifications mentioned in this test report are implemented.*

Test Engineers:



Ashish Nath



Ian Paul Ng

Authorized Signatory:



Ian Paul Ng

Senior Test Engineer

Radio and Wireless

Revision History

Version	Issue Date	Reason / Comments
1	19 January 2026	Initial issue

General Remarks

EMC Technologies Pty Ltd hereby certify that the device(s) described herein were tested as described in this report and that the data included is that which was obtained during such testing.

EMC Technologies Pty Ltd reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. EMC Technologies Pty Ltd shall have no liability for any deductions, inferences or generalisations drawn by the customer or others from EMC Technologies Pty Ltd issued reports. This report shall not be used to claim, constitute, or imply product endorsement by EMC Technologies Pty Ltd.

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1 Project Overview

1.1 Test Facility

Measurements were performed at the following location:

- ☒ Melbourne Laboratory 176 Harrick Road, Keilor Park, VIC 3042, Australia
- ☐ Sydney Laboratory Unit 3, 87 Station Road, Seven Hills, NSW 2147, Australia

EMC Technologies Pty. Ltd. is an independently owned Australian company that is NATA accredited to ISO 17025 for both testing and calibration and ISO 17020 for Inspection. – **Accreditation Number 5292.**

Country	Assessment Body	Lab Code / Member No.
Australia	NATA	Accreditation Number: 5292
Europe	European Union	Notified Body Number: 0819
USA	FCC	Designation Number: AU0001/AU0002
Canada	ISED Canada	CAB Identifier Number: AU0001/AU0002
Japan	VCCI	Company Number: 785
Taiwan	BSMI	Lab Code SL2-IN-E-5001R

1.2 Standards Applied

FCC PART 15, SUBPART C, SECTION 15.247

Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

ISED RSS-247, Issue 4, SECTION 5.0

Standard specifications for frequency hopping systems and digital transmission systems operating in the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz

ANSI C63.10 - 2020

American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

ANSI C63.4 - 2014

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.

FCC KDB – 558074 D01 15.247 Meas Guidance v05r02

Guidance for compliance measurements on digital transmission system, frequency hopping spread spectrum system, and hybrid system devices operating under section 15.247 of the FCC rules

1.3 Results Summary

The test sample was provided by the customer. All results herein apply only to the test sample.

Sec.	Description	FCC	ISED	Results
3.1	Antenna Requirement	§15.203	RSS-Gen 6.8	Complied
3.2	Restricted Bands of Operation	§15.205	RSS-Gen 8.10	Complied
3.3	Conducted Limits	§15.207	RSS-Gen 8.8	Not Applicable
3.4	Radiated emission limits; general requirements	§15.209	RSS-Gen 8.9	Complied
3.5	6 dB Bandwidth	§15.247(a)(2)	RSS-247 5.2(a)	Complied
3.6	Peak Output Power	§15.247(b)(3)	RSS-247 5.4(d)	Complied
3.7	Out-of-Band/Spurious Emissions	§15.247(d)	RSS-247 5.5	Complied
3.8	Band-Edge Emission Measurements	§15.247(d)	RSS-247 5.5	Complied
3.9	Power spectral density	§15.247(e)	RSS-247 5.2(b)	Complied
3.10	Maximum Permissible Exposure	§15.247(i)	RSS-102	Complied
3.11	Occupied Bandwidth – 99%	§15.215	RSS-Gen 6.7	Complied

1.4 Measurement Uncertainty

EMC Technologies has evaluated the equipment and the methods used to perform the EMC testing. The estimated measurement uncertainties for the various tests shown within this report are as follows:

EMC Testing	Range	Value
Conducted Emission		
• Mains Port	9kHz to 30 MHz	± 3.2 dB
Radiated Emission	9 kHz to 30 MHz	± 4.1 dB
	30 MHz to 300 MHz	± 5.1 dB
	300 MHz to 1000 MHz	± 4.7 dB
	1 GHz to 18 GHz	± 4.6 dB
	18 GHz to 40 GHz	± 4.6 dB
Peak Output Power		± 1.5 dB

The above expanded uncertainties are based on standard uncertainties multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

Application of measurement uncertainty for this report:

The referenced uncertainty standard specifies that determination of compliance shall be based on measurements without taking into account measurement uncertainty. However, the measurement uncertainty shall appear in the test report.

1.5 Test Equipment

Measurement instrumentation and transducers were calibrated in accordance with the applicable standards by a NATA accredited laboratory or the National Measurement Institute (NMI).

Conducted Emission						
Manufacturer	Model	Serial No.	Asset No.	Description	Cal. Date	Cal. Due
Huber+Suhner	Sucoflex 118	800175/118	C-537	RF Cable	03/06/2024	03/06/2025
Teseq	NNB 51	47439	L-077	LISN	04/09/2024	04/09/2025
Rohde & Schwarz	ESCI	101306	R-028	EMC Receiver	19/03/2024	19/03/2025

Radiated Emission						
Manufacturer	Model	Serial No.	Asset No.	Description	Cal. Date	Cal. Due
Frankonia	SAC-3-2	-	R-144	Room 13 3m SAC	25/03/2024	25/03/2027
Rohde & Schwarz	ESW26	101306	R-143	EMI Receiver	06/08/2024	06/08/2025
EMCO	6502	9311-2801	A-231	Active Loop Antenna	28/02/2023	28/02/2025
EMCO	6502	2021	A-310	Active Loop Antenna	19/09/2024	19/09/2026
SunAR	JB1	A052518	A-434	Broadband Hybrid Antenna	14/03/2023	14/03/2025
EMCO	3115	9501-4398	A-406	Horn Antenna	10/01/2022	10/01/2025
ETS-Lindgren	3160-09	66032	A-307	Horn Antenna	18/01/2024	18/01/2027
ETS-Lindgren	3160-10	64179	A-306	Horn Antenna	18/01/2024	18/01/2027
Huber+Suhner	Sucoflex 104A	503061/4A	CL131124	RF Cable	01/11/2024	01/11/2025
Huber+Suhner	Sucoflex 102	27319/2	C-273	RF Cable	22/01/2024	22/01/2025

2 Equipment Under Test

2.1 EUT Details

(EUT details are supplied by the customer)

EUT Transmitter Details	
Radio:	Nordic Semiconductor nRF5340
Type:	Bluetooth Low Energy (BLE)
Frequency Band:	2400 – 2483.5 MHz
Number of Channels:	40
Operating Frequency:	Low Channel: 2402 MHz Middle Channel: 2440 MHz High Channel: 2480 MHz
Nominal Bandwidth:	2 MHz
Modulation:	GFSK
Data Rate:	2Mbps
Antenna Manufacturer:	N/A
Antenna Model/Type:	Texas Instrument Design Note DN0007
	2.4 GHz Inverted F Antenna
Antenna Peak Gain:	3.3 dBi

EUT Host Details	
Product Name:	Metal Detector
Model:	D40060
Part Number:	3301-0101
Serial No / Identification:	POD_3 (conducted); POD_1 (radiated)
Power Rating:	7.2VDC, ≤ 2A (Battery powered only – 1x removable, rechargeable Li-Ion)
Description:	Metal Detector intended for operating in an open field, detecting metal targets of various sizes at different depths.

2.2 Test Configuration

Testing was performed with the EUT's Transceiver set to transmit continuously at Low Channel (2402 MHz), Middle Channel (2440 MHz) and High Channel (2480 MHz). A conducted and radiated sample was provided by the manufacturer. The output power was set to **+3 dBm** according to customer's test plan.

Test Mode	Channel	Frequency	RF Power Settings
1	Low	2402	+3 dBm
2	Middle	2440	+3 dBm
3	High	2480	+3 dBm

2.3 Modifications

The following modifications were performed by the customer to achieve compliance with the requirements of FCC15.205/RSS-Gen 8.10/RSS-247 3.3:

Addition of a Pi filter to the 2.4GHz radio section. The modification involved the addition of an inductor (in lieu of the resistor R502 designator) and capacitors with the values as indicated on the existing PCB layout. This modification will be added to the product design for production.

EMC Technologies takes no responsibility for any modifications made to the EUT specifically to achieve EMC compliance and hence these modifications may only be satisfactory for that purpose under the stated EUT test conditions. The customer must check that the proposed modifications meet all product design, functional, safety or other compliance requirements.

2.4 Additions to, Deviations and Exclusions from the Method/Standard

No additions to, deviations or exclusions from the method/standard were performed.

2.5 Reference Document

No.	Document Title	Issue No.
-	-	-

3 Evaluation of Test Results

3.1 §15.203/ RSS-Gen 6.8 Antenna Requirement

The test sample's transceiver incorporates a PCB Trace Antenna and cannot be replaced by another type.

Antenna Manufacturer: N/A

Antenna Model/Type: 2.4 GHz Inverted F Antenna (Texas Instrument Design Note DN0007)

Antenna Peak Gain: 3.3 dBi

Connector: Not Applicable

The above installation will prevent any unauthorized switching of antennas.

3.2 §15.205/ RSS-Gen 8.10/ RSS-247 3.3 Restricted Bands of Operation

The provisions of the §15.205/ RSS-Gen 8.10/ RSS-247 3.3 restricted bands of operation and §15.209 radiated emissions limits have been met, refer to section 3.7.

3.3 §15.207/ RSS-Gen 8.8 Conducted Limits

The device is battery/DC powered and does not connect directly or indirectly to the AC mains network. Test was not applicable.

3.4 §15.209/ RSS-Gen 8.9 Radiated Emission Limits; General Requirements

The provisions of the §15.205/ RSS-Gen 8.10/ RSS-247 3.3 restricted bands of operation and §15.209/ RSS-Gen 8.9 radiated emissions limits have been met, refer to section 3.7.

3.5 §15.247(a)(2)/ RSS-247 5.2(a) 6 dB bandwidth

3.5.1 Test Procedure

The tests were performed in accordance with ANSI C63.10: 2020 clause 11.8 DTS bandwidth.

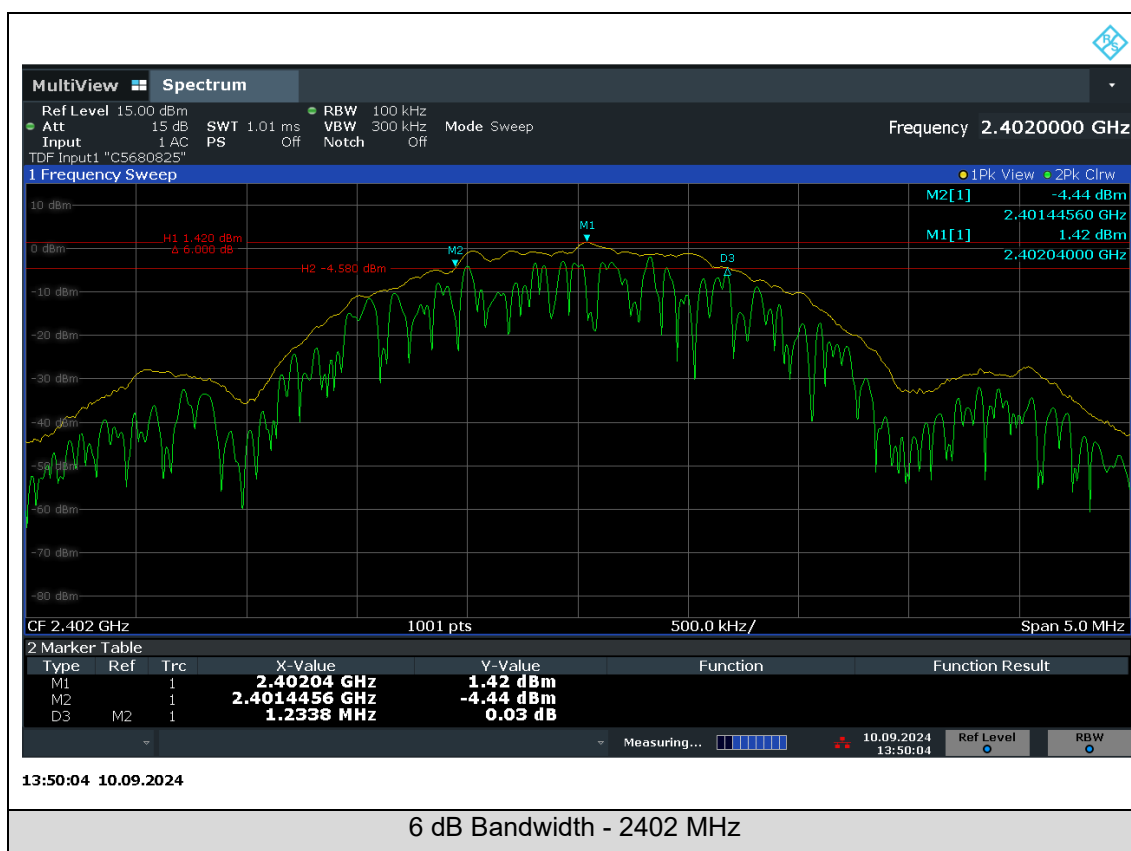
The 6 dB bandwidth was measured while the device was transmitting with typical modulation applied. The resolution bandwidth of 100 kHz and the video bandwidth of 300 kHz were utilized when measuring the bandwidth.

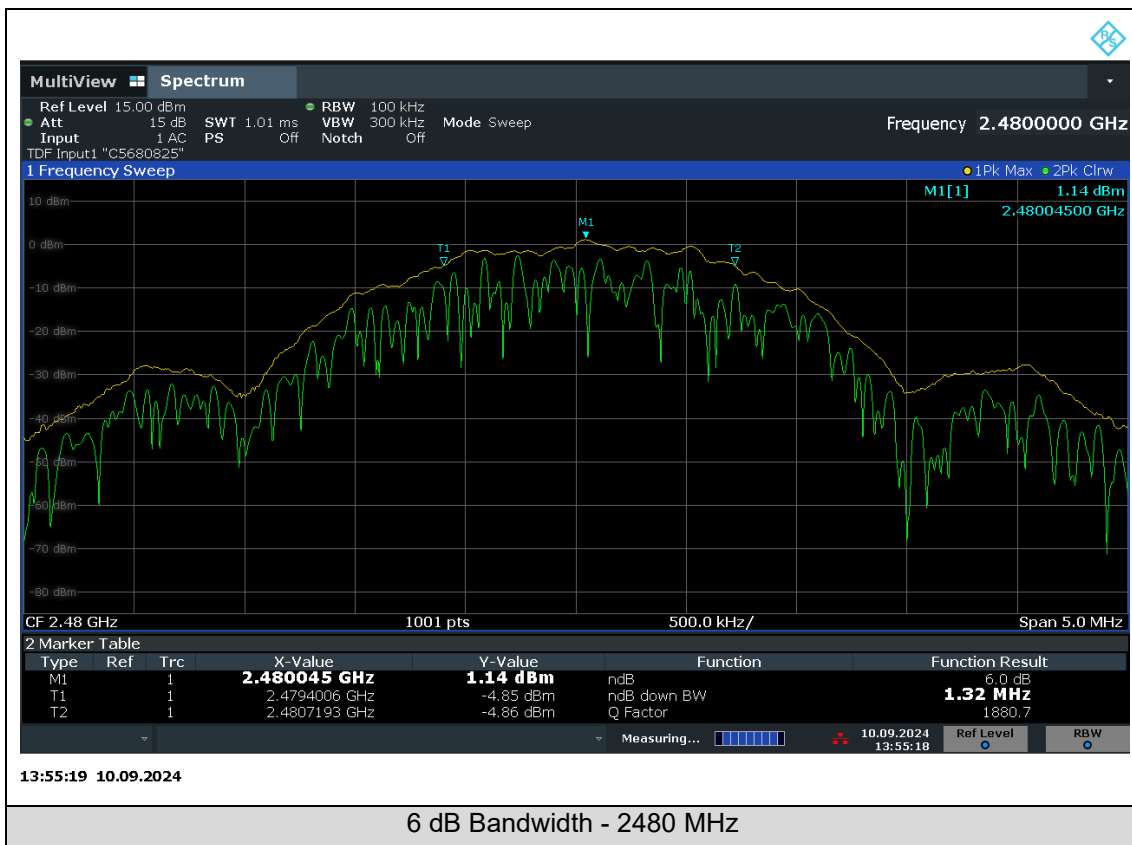
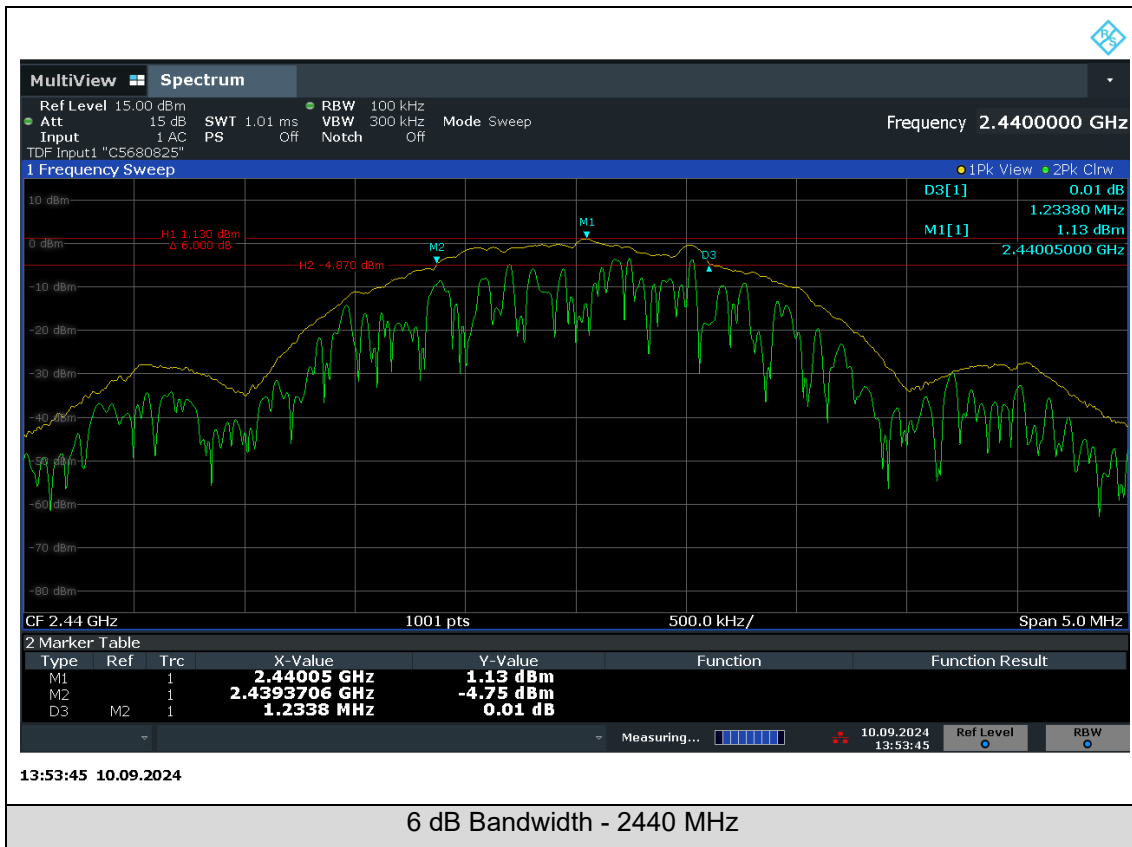
3.5.2 Limits

In the band 2400-2483.5 MHz, the minimum 6 dB bandwidth shall be at least 500 kHz.

3.5.3 Results

Channel	Frequency [MHz]	6 dB Bandwidth [kHz]	Limit
Low	2402	1233.8	≥ 500
Middle	2440	1233.8	≥ 500
High	2480	1320.0	≥ 500





3.6 §15.247(b)(3)/ RSS-247 5.4(d) Peak Output Power

3.6.1 Test Procedure

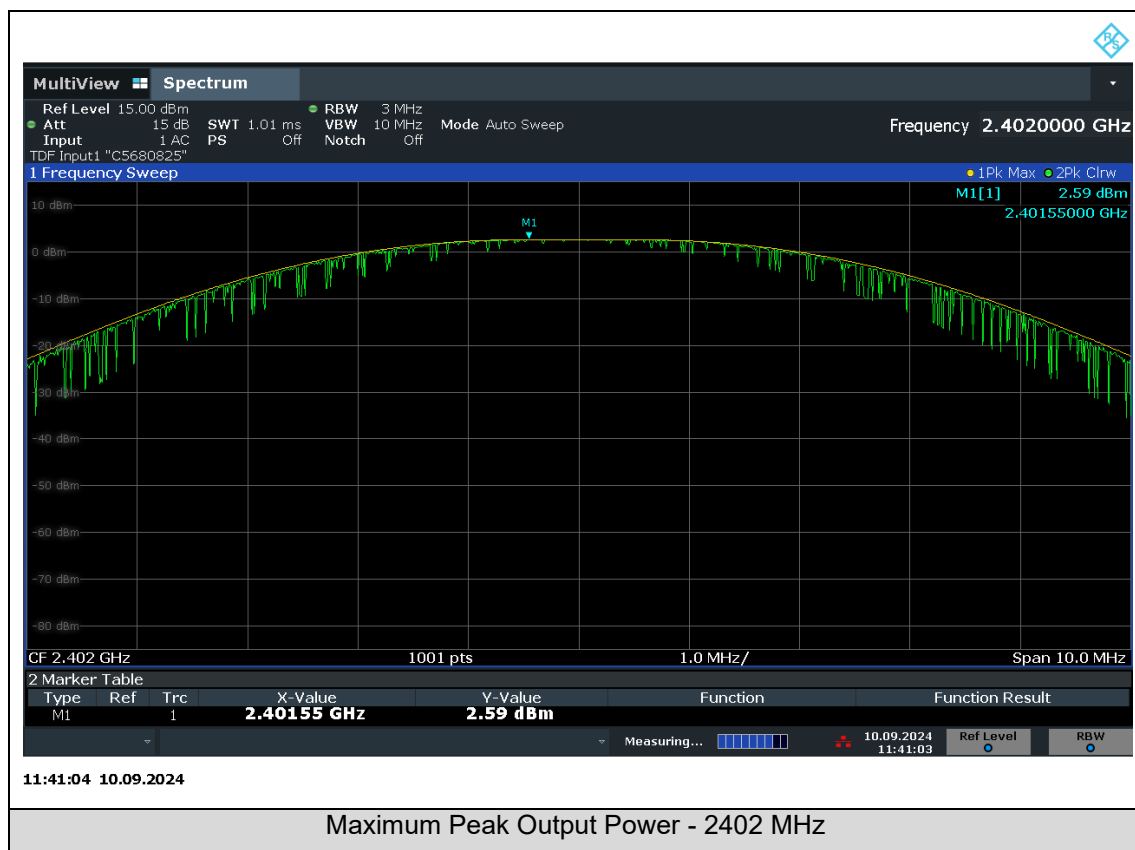
The maximum peak conducted output power was measured in accordance with ANSI C63.10: 2020 clause 11.9.1.1.

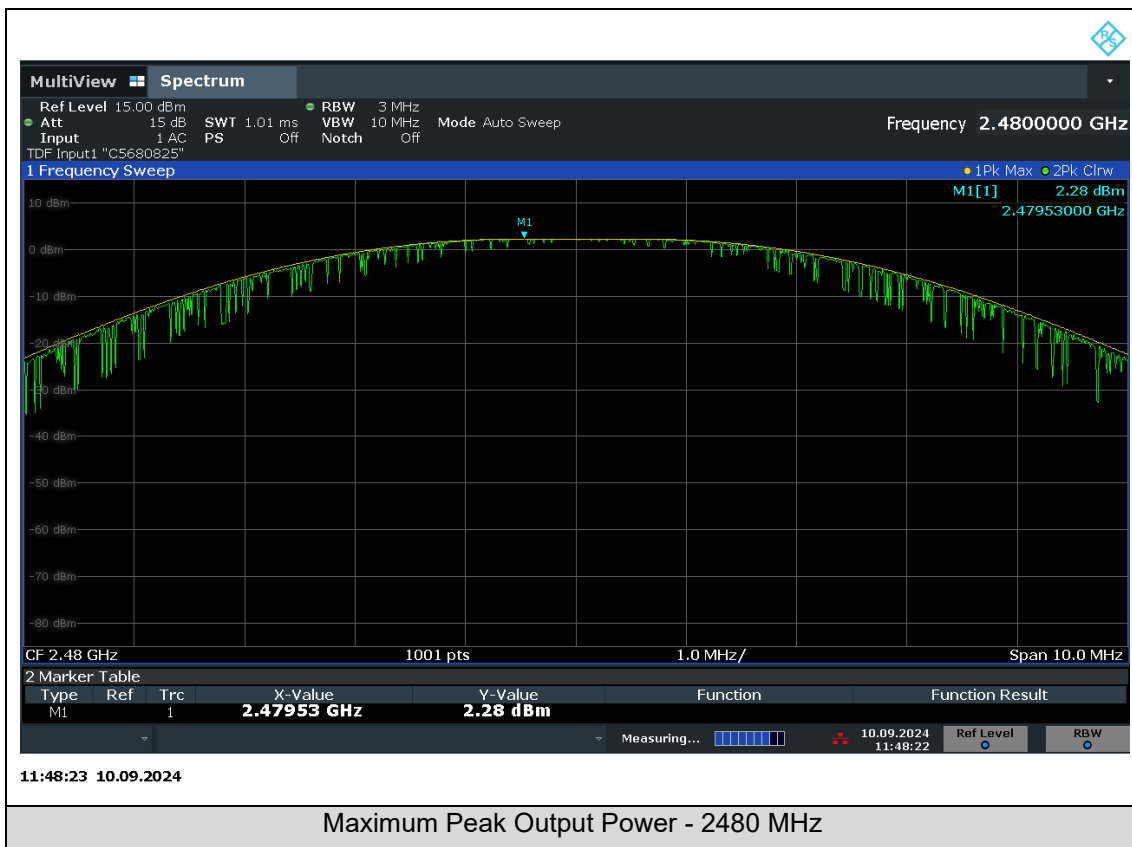
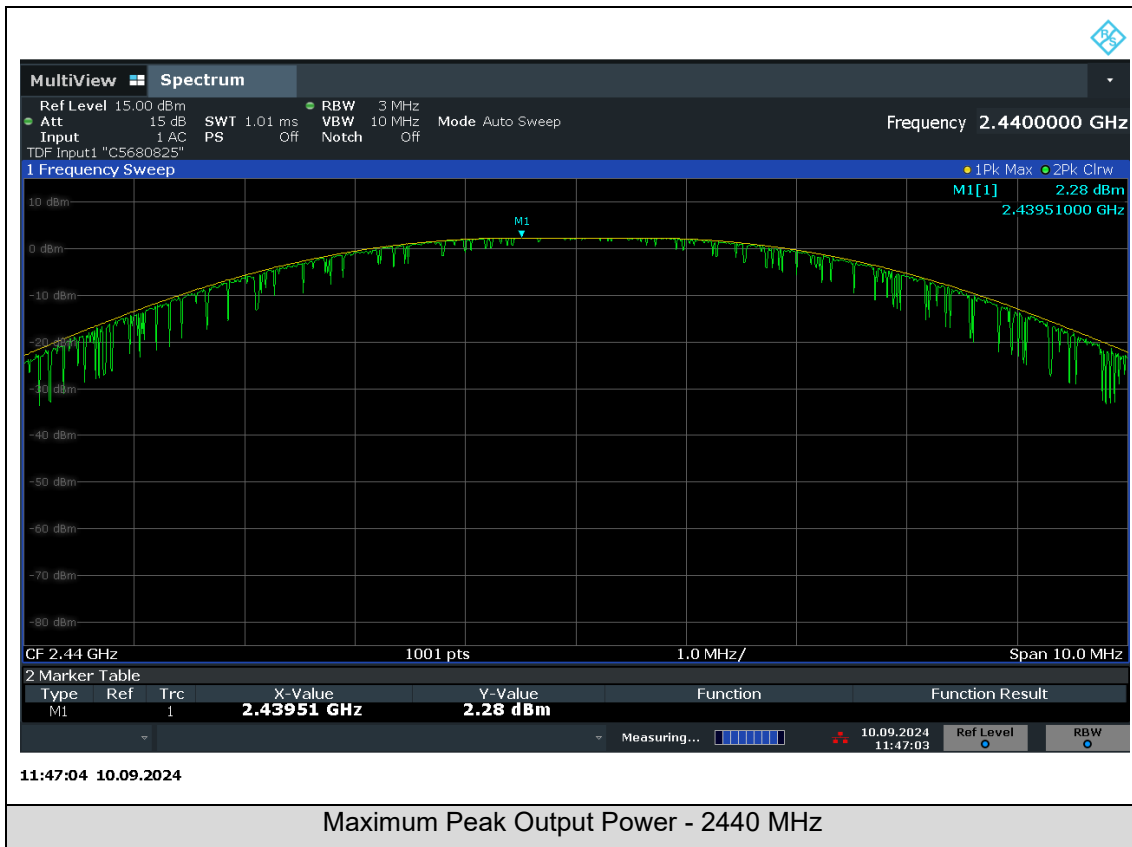
3.6.2 Limits

The maximum peak conducted output power at 2400 – 2483.5 MHz is 1 Watt or 30 dBm.

3.6.3 Results

Channel	Frequency [MHz]	Conducted Output Power [dBm]	Limit [dBm]	Results
Low	2402	2.59	30	Complied
Middle	2440	2.28	30	Complied
High	2480	2.28	30	Complied





3.7 §15.247(d)/ RSS-247 5.5 Out-of-Band/Spurious Emissions

3.7.1 Test Procedure

Radiated out-of-band/spurious emissions measurements were performed in a semi-anechoic chamber compliant with ANSI C63.4: 2014.

The test frequency range was sub-divided into smaller bands with the defined resolution bandwidths to permit reliable display and identification of emissions.

Frequency range [MHz]	Measurement Bandwidth [kHz]	Measurement Distance [m]	Antenna
0.009 to 0.150	0.2	3	0.6 metre Loop antenna
0.150 to 30	9	3	
30 to 1000	120	3	Biconilog antenna
1000 to 18 000	1000	3	Standard gain or Broadband horn
18 000 to 40 000	1000	1	

EUT was set at a height of 0.8 m for measurements below 1000 MHz and set at a height of 1.5 m for measurements above 1000 MHz.

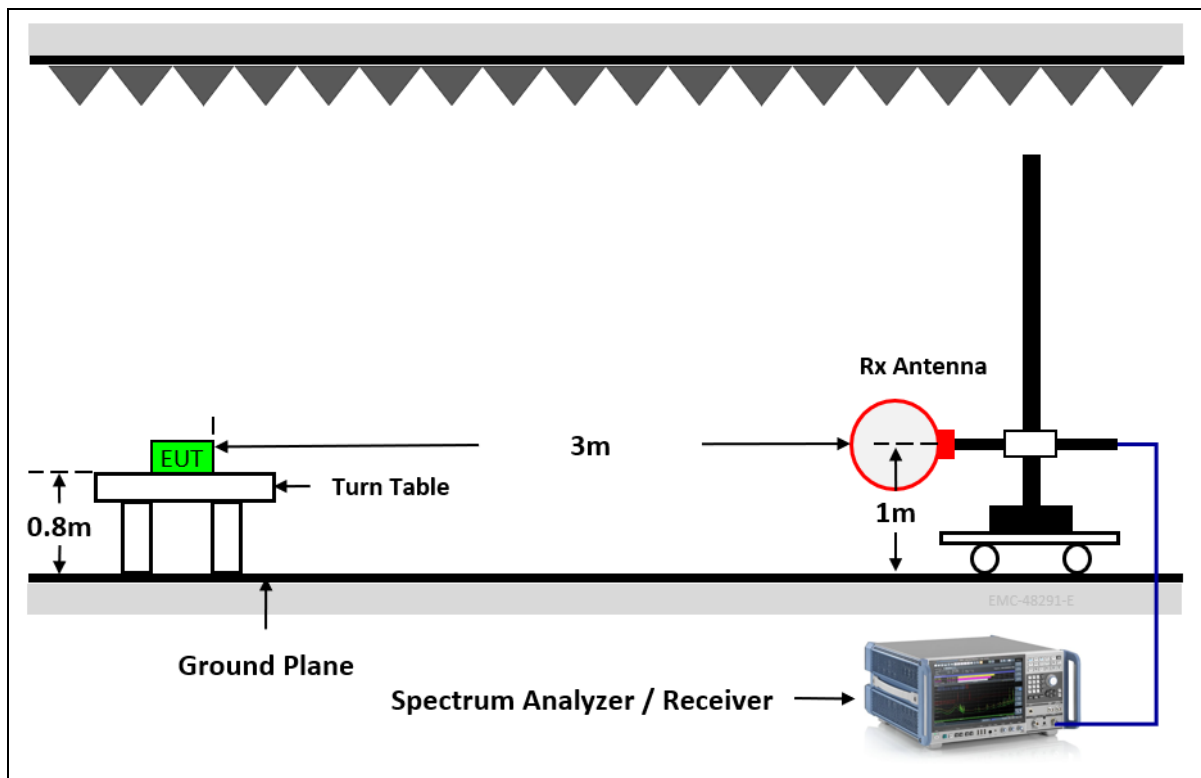
The EUT was slowly rotated with the Peak Detector set to Max-Hold. This was performed for at least two antenna heights. Each significant peak was then investigated and maximized with the Quasi-Peak detector for measurements below 1 GHz. Above 1 GHz, Average and Peak measurements were taken using linearly polarized horn antennas.

Measurements on the worst axis are presented.

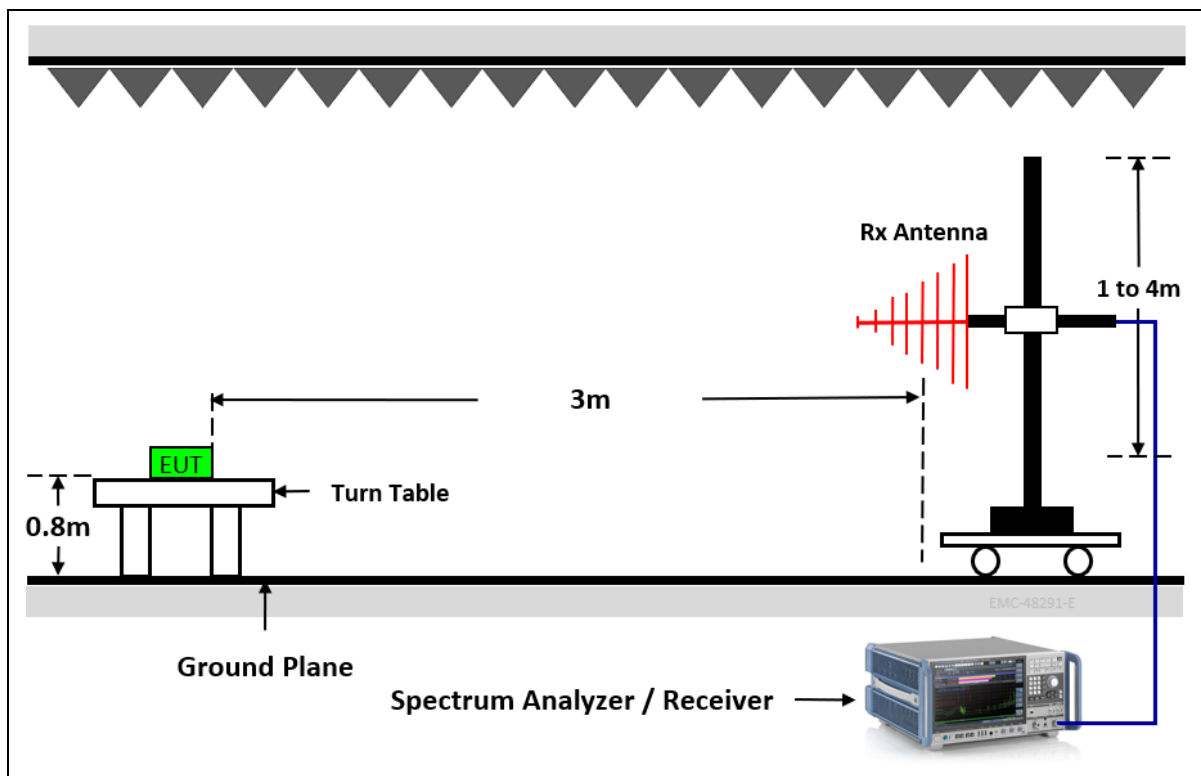
The measurement data for each frequency range was corrected for cable losses, antenna factors and preamplifier gain. This process was performed for both horizontal and vertical polarisations of the measurement antenna.

3.7.2 Test Setup

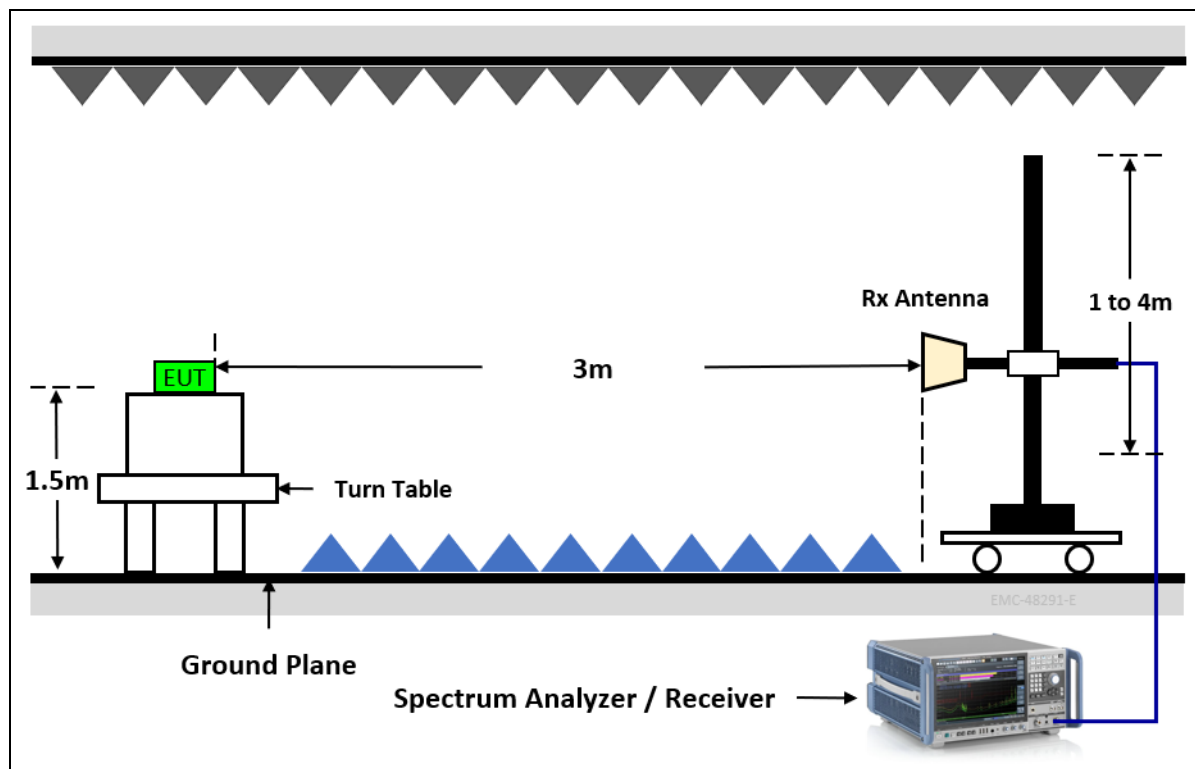
9 kHz to 30 MHz:



30 - 1000 MHz:



Above 1000 MHz:



3.7.3 Evaluation of field strength

Field strengths were calculated automatically by the software using pre-stored calibration data. The method of calculation is shown below:

$$E = V + AF - G + L$$

Where: E = Radiated Field Strength in dB μ V/m

V = EMI Receiver Voltage in dB μ V

AF = Antenna Factor in dB/m (stored as a data array)

G = Preamplifier Gain in dB (stored as a data array)

L = Cable loss in dB (stored as a data array of Insertion Loss versus frequency)

3.7.4 Limits

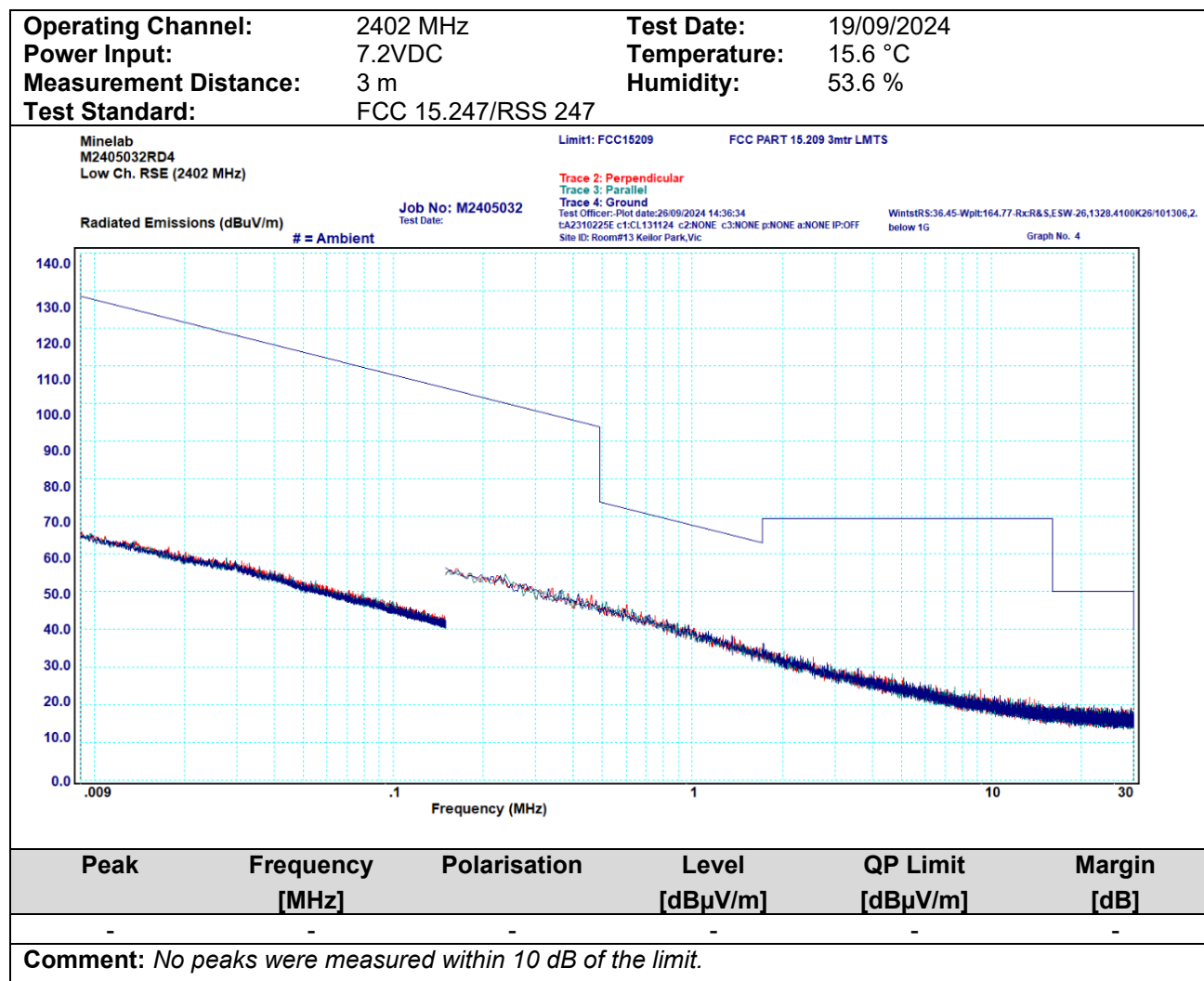
The limit applied is in accordance with the out-of-band/spurious emissions limit defined in §15.247(d).

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.

The in-band peak PSD in 100 kHz bandwidth were measured on all three channels. The maximum PSD level was used to establish the limit. However, the general limits of §15.209 apply for the restricted bands of operation defined in §15.205.

Frequency [MHz]	Peak at 3 m [dB μ V/m]	Established Limit @ 3 m [dB μ V/m]
2402	97.69	77.69

3.7.5 Transmitter Spurious Emissions – 9 kHz to 30 MHz



Operating Channel:	2440 MHz	Test Date:	19/09/2024
Power Input:	7.2VDC	Temperature:	15.6 °C
Measurement Distance:	3 m	Humidity:	53.6 %
Test Standard:	FCC 15.247/RSS 247		

Minelab
M2405032RD4
Mid Ch. RSE (2440 MHz)

Limit1: FCC15209

FCC PART 15.209 3mtr LMTS

Job No: M2405032
Test Date:

Trace 2: Perpendicular

Trace 3: Parallel

Trace 4: Ground

Test Officer: Plot date: 26/09/2024 14:37:56

LA231022SE c1:CL131124 c2:NONE c3:NONE p:NONE a:NONE IP:OFF

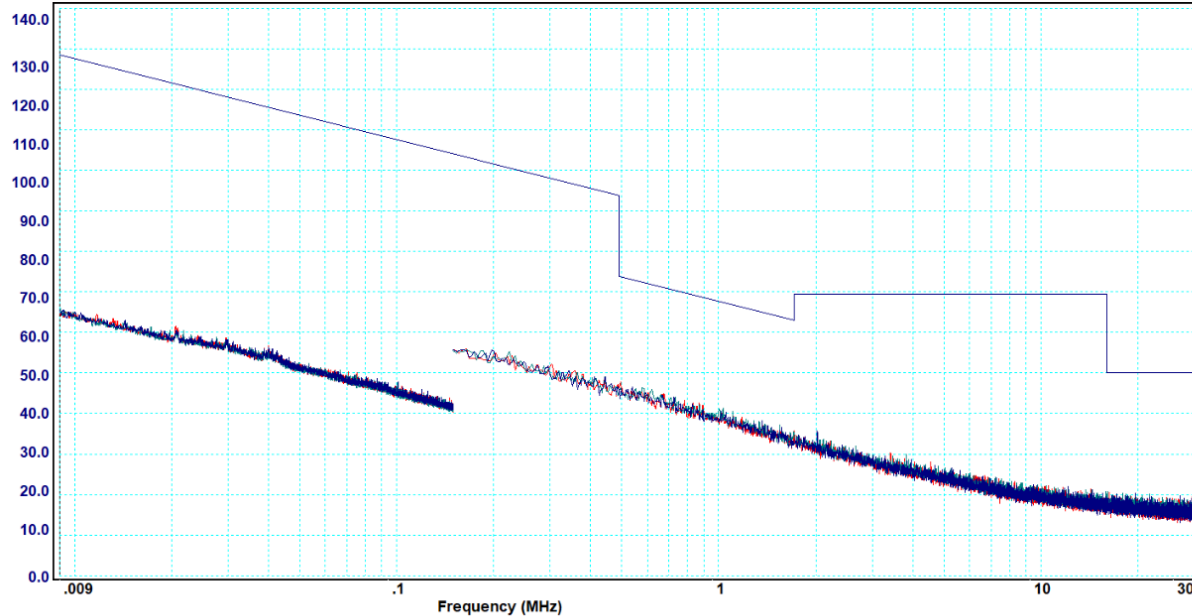
Site ID: Room#13 Kellor Park, Vic

WintstRS:36.45-WpIt:164.77-Rc:R&S:ESW-26,1328.4100K26/101306.2,
below 1G

Graph No. 5

Radiated Emissions (dBuV/m)

= Ambient



Peak	Frequency [MHz]	Polarisation	Level [dBuV/m]	QP Limit [dBuV/m]	Margin [dB]
-	-	-	-	-	-

Comment: No peaks were measured within 10 dB of the limit.

Operating Channel:	2480 MHz	Test Date:	19/09/2024
Power Input:	7.2VDC	Temperature:	15.6 °C
Measurement Distance:	3 m	Humidity:	53.6 %
Test Standard:	FCC 15.247/RSS 247		

Minelab
M2405032RD4
High Ch. RSE (2480 MHz)

Limit1: FCC15209

FCC PART 15.209 3mtr LMTS

Job No: M2405032
Test Date:

Trace 2: Perpendicular

Trace 3: Parallel

Trace 4: Ground

Test Officer: Plot date: 26/09/2024 14:39:32

tA2310225E c1:CL131124 c2:NONE c3:NONE p:NONE a:NONE IP:OFF

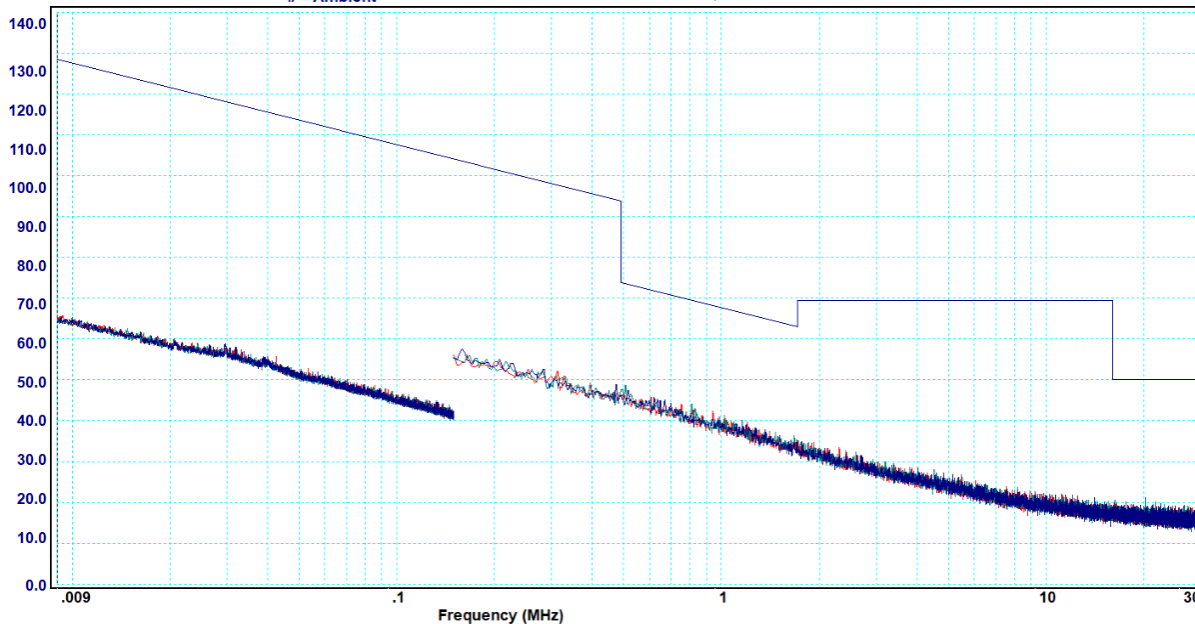
Site ID: Room#13 Keilor Park, Vic

WintSTRS:36.45-WpIt:164.77-Rx:R&S,ESW-26,1328.4100K26/101306.2,
below 1G

Graph No. 6

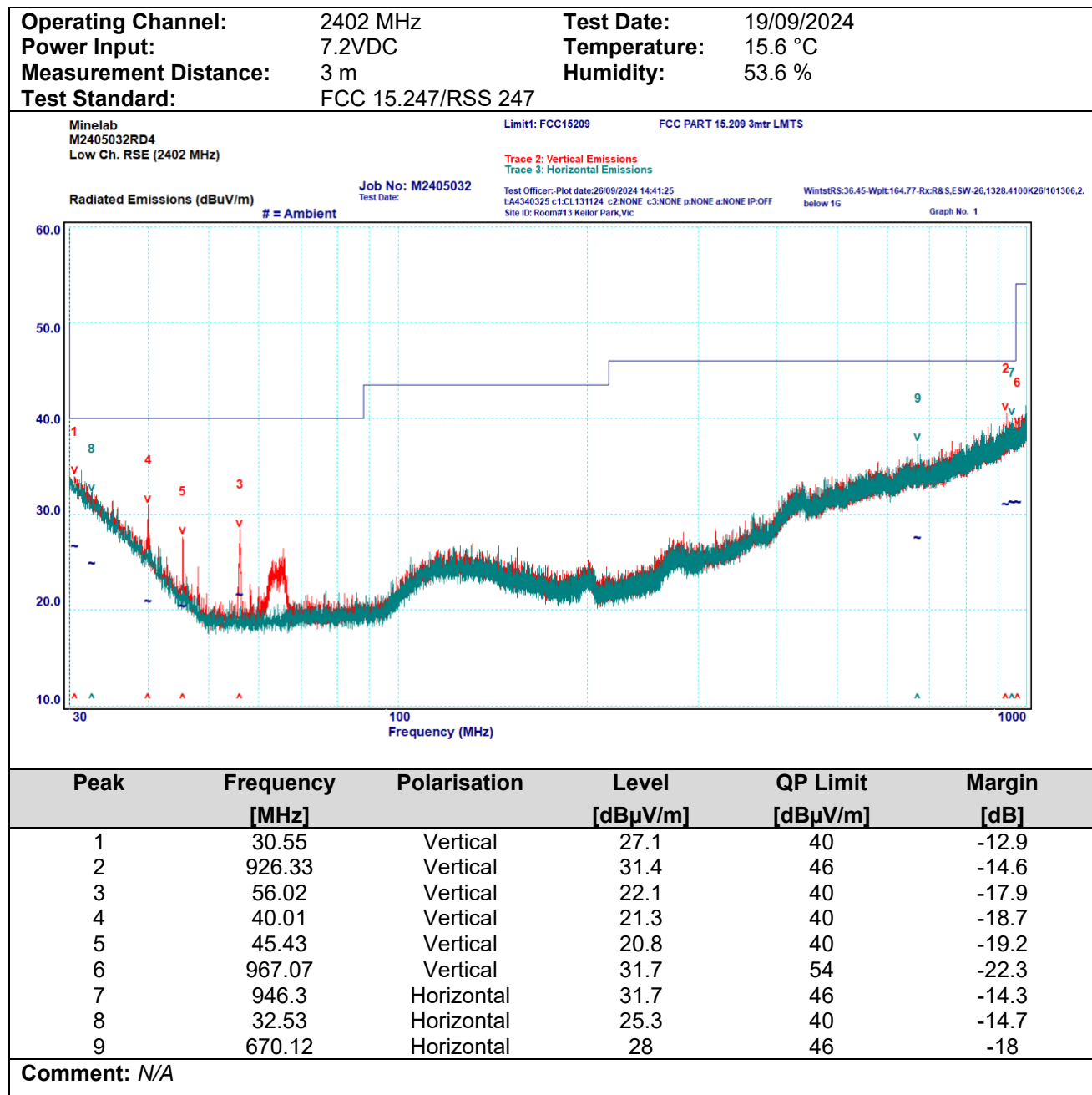
Radiated Emissions (dBuV/m)

= Ambient



Peak	Frequency [MHz]	Polarisation	Level [dBuV/m]	QP Limit [dBuV/m]	Margin [dB]
-	-	-	-	-	-
Comment: No peaks were measured within 10 dB of the limit.					

3.7.6 Transmitter Spurious Emissions – 30 MHz to 1000 MHz



Operating Channel: 2440 MHz
Power Input: 7.2VDC
Measurement Distance: 3 m
Test Standard: FCC 15.247/RSS 247
Test Date: 19/09/2024
Temperature: 15.6 °C
Humidity: 53.6 %

Minelab
 M2405032RD4
 Mid Ch. RSE (2440 MHz)

Limit1: FCC15209

FCC PART 15.209 3mtr LMTS

Trace 2: Vertical Emissions
 Trace 3: Horizontal Emissions

Job No: M2405032

Test Date:

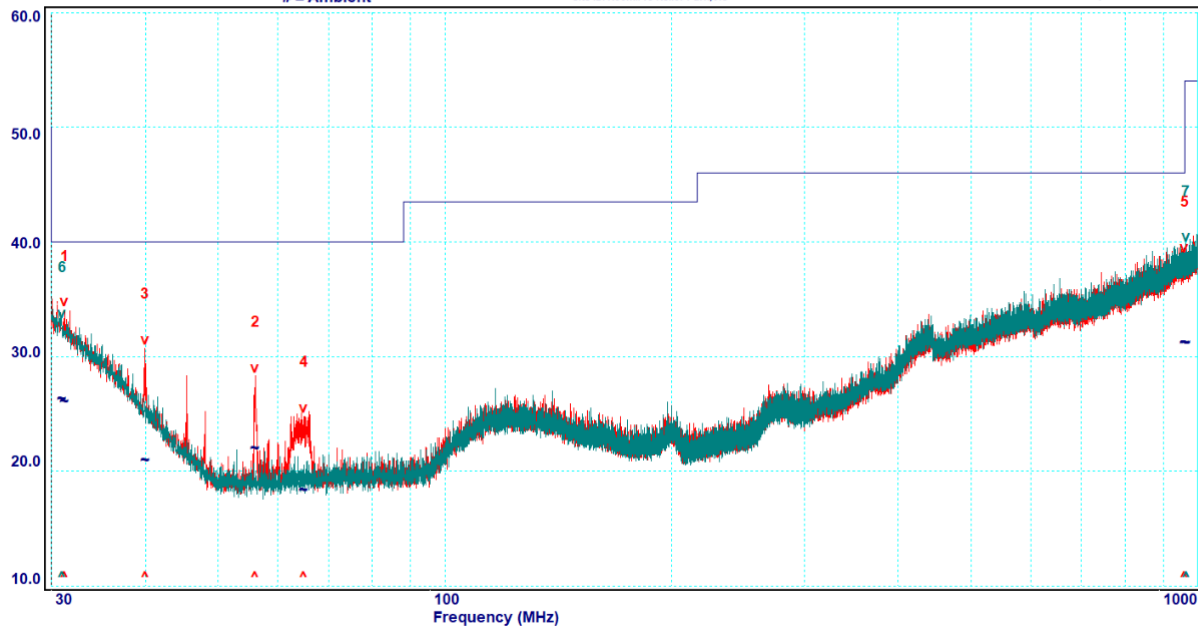
Test Officer: Plot date: 26/09/2024 14:46:17
 t: A4340325 c1: CL131124 c2: NONE c3: NONE p: NONE a: NONE IP: OFF
 Site ID: Room#13 Kellor Park, Vic

WintstRS: 36.45-WpIt: 164.77-Rx: R&S, ESW-26, 1328.4100K26/101306.2,
 below 1G

Graph No. 2

Radiated Emissions (dBuV/m)

= Ambient



Peak	Frequency [MHz]	Polarisation	Level [dBuV/m]	QP Limit [dBuV/m]	Margin [dB]
1	31.24	Vertical	26.6	40	-13.4
2	56.02	Vertical	22.4	40	-17.6
3	39.98	Vertical	21.4	40	-18.6
4	64.92	Vertical	18.9	40	-21.1
5	960.17	Vertical	31.7	54	-22.3
6	31	Horizontal	26.8	40	-13.2
7	963.85	Horizontal	31.7	54	-22.3

Comment: N/A

Operating Channel:	2480 MHz	Test Date:	19/09/2024
Power Input:	7.2VDC	Temperature:	15.6 °C
Measurement Distance:	3 m	Humidity:	53.6 %
Test Standard:	FCC 15.247/RSS 247		

Minelab
M2405032RD4
High Ch. RSE (2480 MHz)

Limit1: FCC15209

FCC PART 15.209 3mtr LMTS

Trace 2: Vertical Emissions
Trace 3: Horizontal Emissions

Job No: M2405032

Test Date:

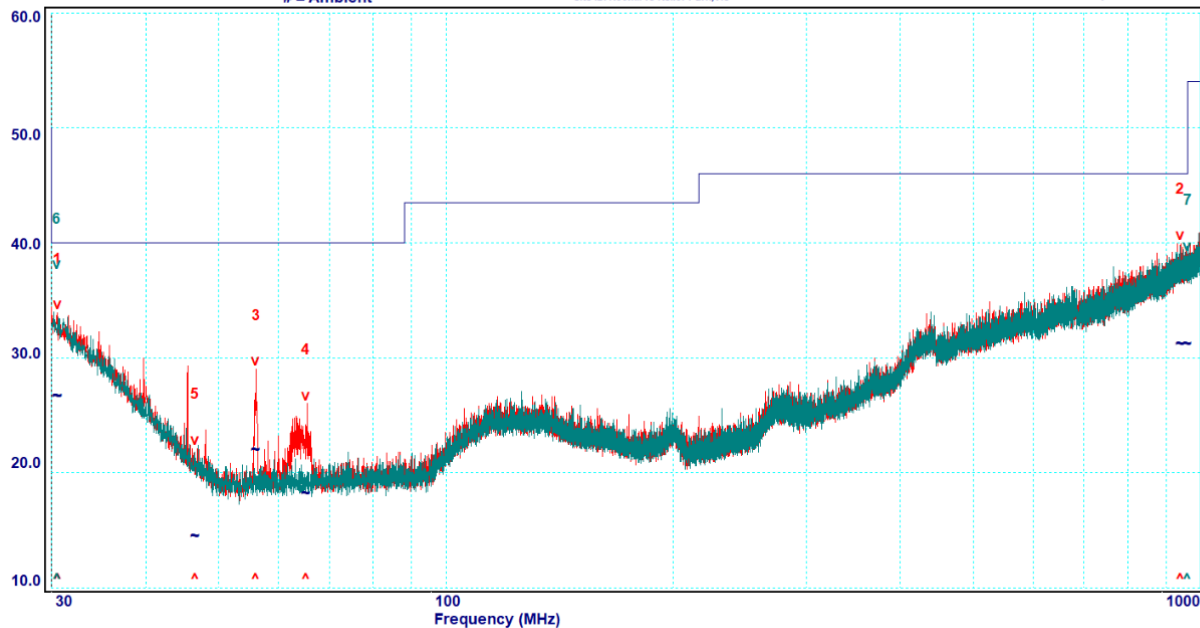
Test Officer: Plot date: 26/09/2024 14:50:18
t: A4340325 c1: CL131124 c2: NONE c3: NONE p: NONE a: NONE IP: OFF
Site ID: Room#13 Kellor Park, Vic

WintstRS: 36.45-Wpt: 164.77-RxR&S, ESW-26, 1328.4100K26/101306.2
below 1G

Graph No. 3

Radiated Emissions (dBuV/m)

= Ambient



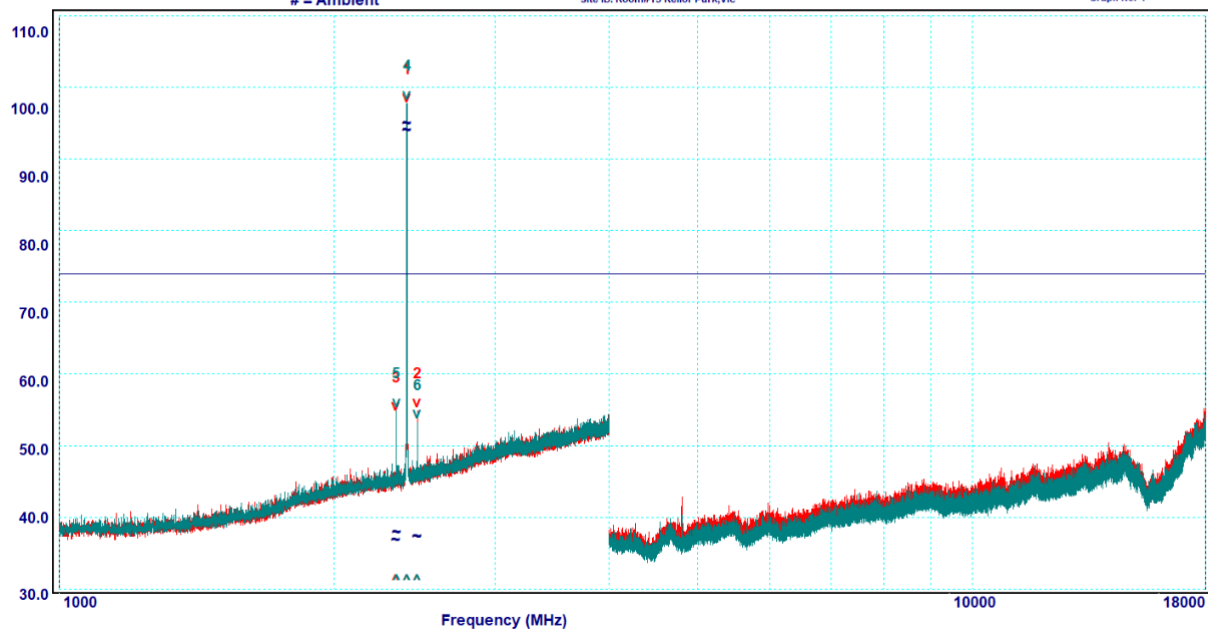
Peak	Frequency [MHz]	Polarisation	Level [dBuV/m]	QP Limit [dBuV/m]	Margin [dB]
1	30.55	Vertical	27.2	40	-12.8
2	939.61	Vertical	31.7	46	-14.3
3	55.98	Vertical	22.5	40	-17.5
4	65.19	Vertical	18.7	40	-21.3
5	46.45	Vertical	15	40	-25
6	30.5	Horizontal	27.2	40	-12.8
7	960.09	Horizontal	31.7	54	-22.3

Comment: N/A

3.7.7 Transmitter Spurious Emissions – 1 to 18 GHz

Operating Channel:	2402 MHz	Test Date:	20/09/2024
Power Input:	7.2VDC	Temperature:	15.4 °C
Measurement Distance:	3 m	Humidity:	54 %
Test Standard:	FCC 15.247/RSS 247		

Minelab M2405032RD4 Low Ch. RSE (2402 MHz) Detector -Peak	Limit1: FCC15209Pk FCC PART 15.209, 1-18GHz@3mtr, 18-40GHz@1mtr
Job No: M2405032 Test Date:	Trace 2: Vertical Emissions Trace 3: Horizontal Emissions
Radiated Emissions (dBuV/m) # = Ambient	Test Officer: Plot date: 20/09/2024 14:56:56 t: A4060125 c: CL131124 c2: NONE c3: NONE p: A2881124 a: f0310125 IP: OFFICE102 Site ID: Room#113 Kellor Park, Vic WintstRS: 36.45-Wpilt: 164.77-RxR&S: ESW-26,1328.4100K26/101306.2 Graph No. 7



Peak	Frequency [MHz]	Polarisation	Level [dBuV/m]	PEAK Limit [dBuV/m]	Margin [dB]
1*	2402	Vertical	N/A	N/A	N/A
2*	2465.62	Vertical	N/A	N/A	N/A
3	2337.5	Vertical	37.3	74	-36.7
4*	2402	Horizontal	N/A	N/A	N/A
5	2338.4	Horizontal	38.4	74	-35.6
6*	2465.92	Horizontal	N/A	N/A	N/A

Comment:

*Peaks 1, 2, 4 and 6 are the fundamental transmission and not subject to the spurious emissions limit of the standard.

Operating Channel: 2402 MHz Test Date: 20/09/2024
Power Input: 7.2VDC Temperature: 15.4 °C
Measurement Distance: 3 m Humidity: 54 %
Test Standard: FCC 15.247/RSS 247

Minelab
M2405032RD4
Low Ch. RSE (2402 MHz)
Detector -Avg

Limit1: FCC15209Av

FCC PART 15.209, 1-18GHz@3mtr, 18-40GHz@1mtr

Trace 2: Vertical Emissions
Trace 3: Horizontal Emissions

Job No: M2405032

Test Date:

Test Officer: Plot date: 26/09/2024 15:13:59

WintSTRS:36.45-WpIt:164.77-Rx:R&S,ESW-26,1328.4100K26/101306.2.

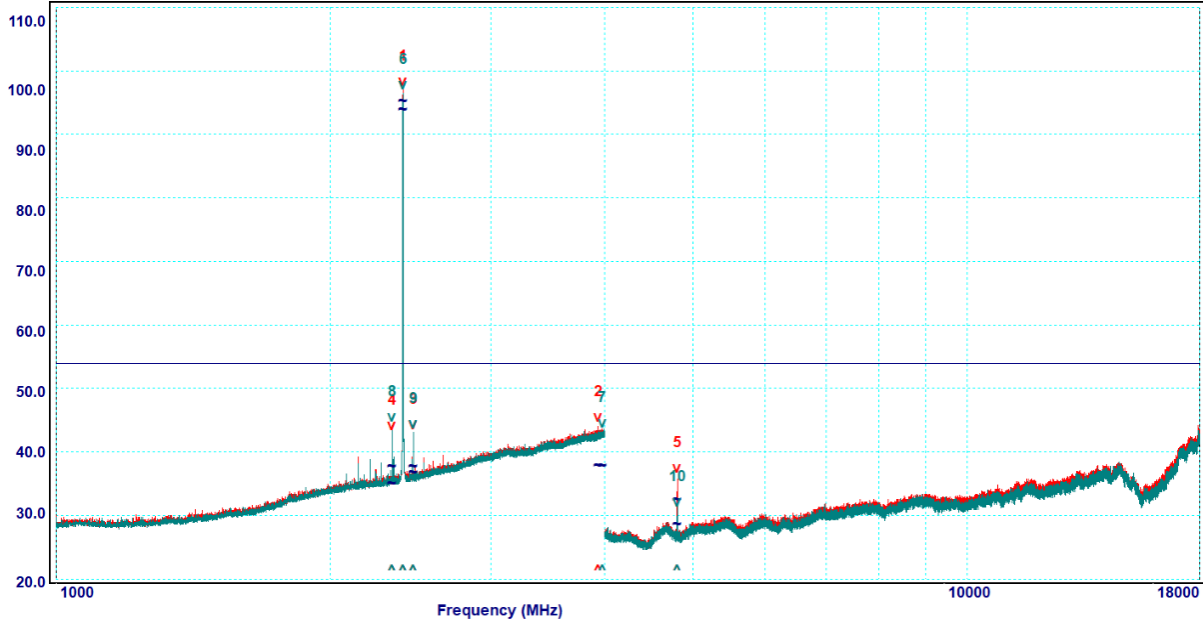
t:A4060125 c:1,CL131124 c2:NONE c3:NONE p:A2881124 a:F0310125 IP:OFFC:E102

Site ID: Room#13 Kellor Park,Vic

Graph No. 8

Radiated Emissions (dBuV/m)

= Ambient



Peak	Frequency [MHz]	Polarisation	Level [dBuV/m]	AVE Limit [dBuV/m]	Margin [dB]
1*	2402	Vertical	N/A	N/A	N/A
2	3934.14	Vertical	38.3	54	-15.7
3*	2466.22	Vertical	N/A	N/A	N/A
4	2337.5	Vertical	35.5	54	-18.5
5	4805.06	Vertical	33	54	-21
6*	2402.01	Horizontal	N/A	N/A	N/A
7	3974.65	Horizontal	38.3	54	-15.7
8	2338.11	Horizontal	38.2	54	-15.8
9*	2466.14	Horizontal	N/A	N/A	N/A
10	4804.99	Horizontal	29.2	54	-24.8

Comment:

*Peaks 1, 3, 6 and 9 are the fundamental transmission and not subject to the spurious emissions limit of the standard.

Operating Channel: 2440 MHz Test Date: 20/09/2024
Power Input: 7.2VDC Temperature: 15.4 °C
Measurement Distance: 3 m Humidity: 54 %
Test Standard: FCC 15.247/RSS 247

Minelab
M2405032RD4
Mid Ch. RSE (2440 MHz)
Detector -Peak

Limit1: FCC15209Pk

FCC PART 15.209, 1-18GHz@3mtr, 18-40GHz@1mtr

Trace 2: Vertical Emissions
Trace 3: Horizontal Emissions

Job No: M2405032

Test Date:

Test Officer: Plot date: 26/09/2024 15:04:12

Wintstrs: 36.45-Wp1t: 164.77-Rx: R&S, ESW-26, 1328.4100K26/101306.2.

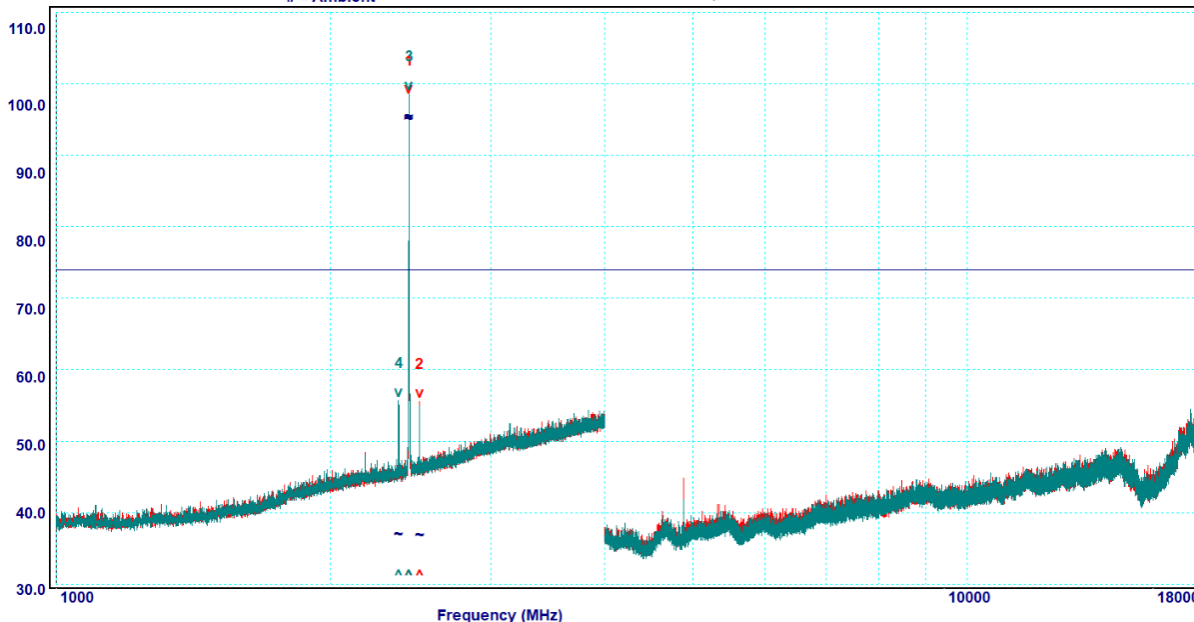
t: A4060125 c1: CL131124 c2: NONE c3: NONE p: A2881124 a: F0310125 IP: OFCE102

Site ID: Room#13 Keilor Park, Vic

Graph No. 10

Radiated Emissions (dBuV/m)

= Ambient



Peak	Frequency [MHz]	Polarisation	Level [dBuV/m]	PEAK Limit [dBuV/m]	Margin [dB]
1*	2440	Vertical	N/A	N/A	N/A
2**	2504.62	Vertical	37.3	77.69	-40.39
3*	2440	Horizontal	N/A	N/A	N/A
4	2376.45	Horizontal	37.4	74	-36.6

Comment:

*Peaks above the limit are the fundamental transmission and not subject to the spurious emissions limit of the standard.

** -20 dBc Peak limit applies for nonrestricted bands.

Operating Channel: 2440 MHz Test Date: 20/09/2024
Power Input: 7.2VDC Temperature: 15.4 °C
Measurement Distance: 3 m Humidity: 54 %
Test Standard: FCC 15.247/RSS 247

Minelab
M2405032RD4
Mid Ch. RSE (2440 MHz)
Detector -Avg

Limit1: FCC15209Av

FCC PART 15.209, 1-18GHz@3mtr, 18-40GHz@1mtr

Trace 2: Vertical Emissions
Trace 3: Horizontal Emissions

Job No: M2405032

Test Date:

Test Officer: Plot date: 26/09/2024 15:34:58
t:A4060125 c1:CL131124 c2:NONE c3:NONE p:A2881124 af:0310125 IP:OFFICE102

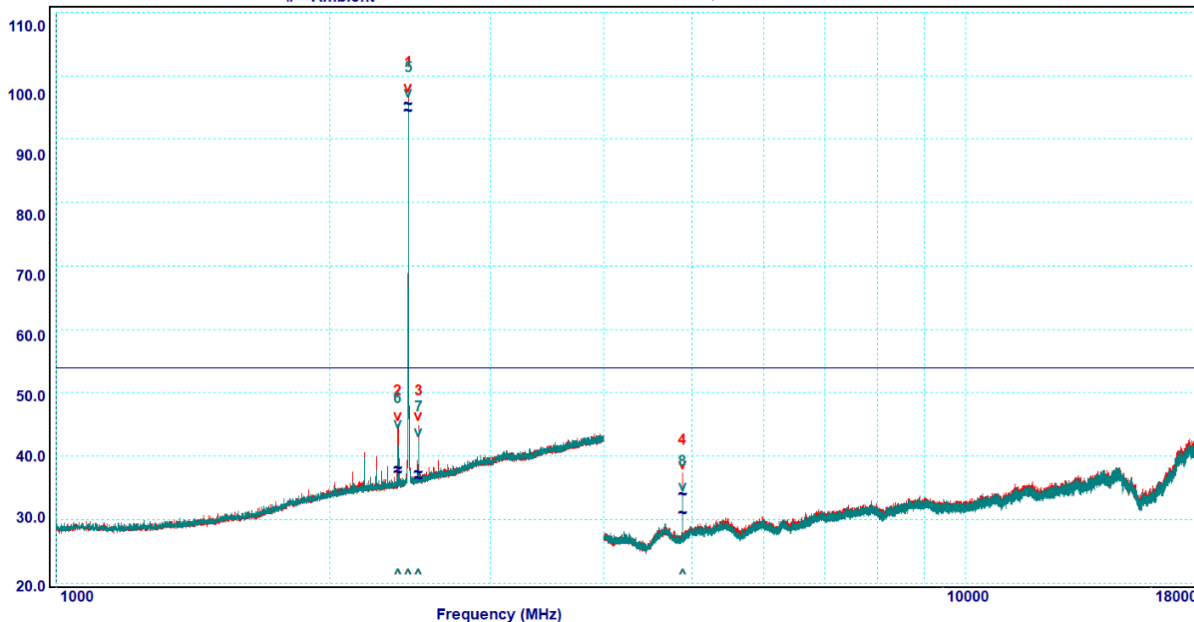
WintRS:36.45-WpIt:164.77-Rc:R&S,ESW-26,1328.4100K26/101306.2

Site ID: Room#13 Kellor Park,Vic

Graph No. 9

Radiated Emissions (dBuV/m)

= Ambient



Peak	Frequency [MHz]	Polarisation	Level [dBuV/m]	AVE Limit [dBuV/m]	Margin [dB]
1*	2440.11	Vertical	N/A	N/A	N/A
2	2376.02	Vertical	38.6	54	-15.4
3**	2504.07	Vertical	N/A	N/A	N/A
4	4881.14	Vertical	34.4	54	-19.6
5*	2440	Horizontal	N/A	N/A	N/A
6	2376	Horizontal	38	54	-16
7**	2504.1	Horizontal	N/A	N/A	N/A
8	4881.1	Horizontal	31.6	54	-22.4

Comment:

*Peaks above the limit are the fundamental transmission and not subject to the spurious emissions limit of the standard.

** -20 dBc Peak limit applies for nonrestricted bands.

Operating Channel:	2480 MHz	Test Date:	20/09/2024
Power Input:	7.2VDC	Temperature:	15.4 °C
Measurement Distance:	3 m	Humidity:	54 %
Test Standard:	FCC 15.247/RSS 247		

Minelab
M2405032RD4
High Ch. RSE (2480 MHz)
Detector -Peak

Limit1: FCC15209Pk

FCC PART 15.209, 1-18GHz@3mtr, 18-40GHz@1mtr

Trace 2: Vertical Emissions
Trace 3: Horizontal Emissions

Job No: M2405032

Test Date:

Test Officer: Plot date: 26/09/2024 15:09:02

WintRS:36.45-Wp1t:164.77-Rx:R&S,ESW-26,1328.4100K26/101306.2.

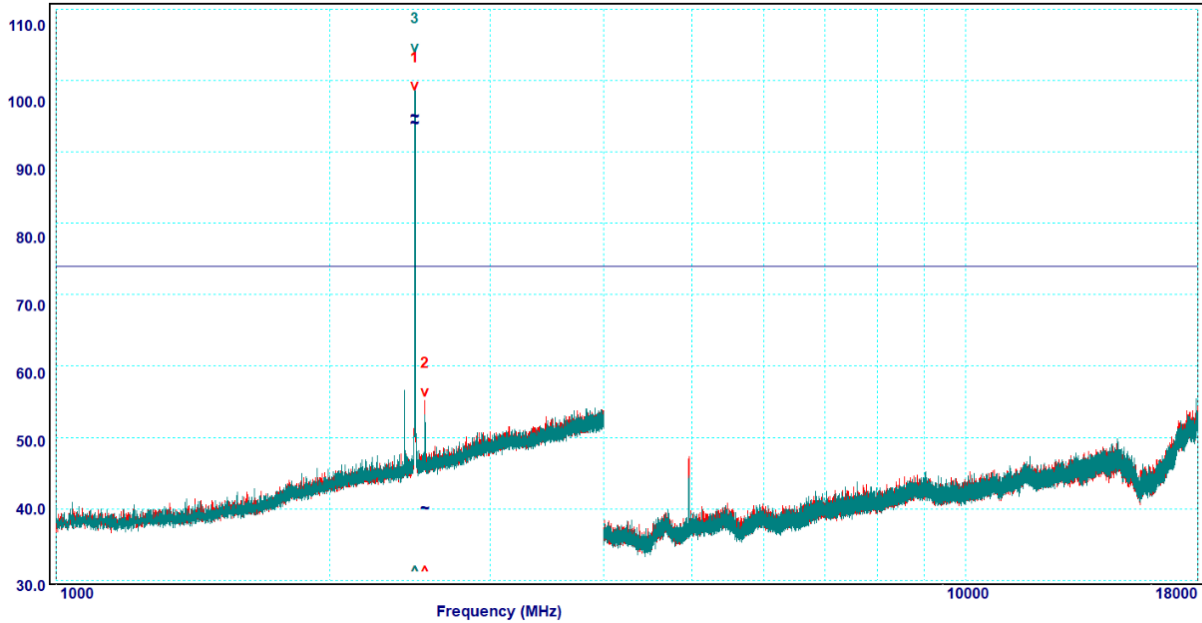
c:A4060125 c1:CL131124 c2:NONE c3:NONE p:A2881124 af:F0310125 IP:OFFICE102

Site ID: Room#13 Kellor Park,Vic

Graph No. 11

Radiated Emissions (dBuV/m)

= Ambient



Peak	Frequency [MHz]	Polarisation	Level [dBuV/m]	PEAK Limit [dBuV/m]	Margin [dB]
1*	2480.32	Vertical	N/A	N/A	N/A
2**	2543.91	Vertical	40.5	77.69	-37.19
3*	2479.6	Horizontal	N/A	N/A	N/A

Comment:

*Peaks above the limit are the fundamental transmission and not subject to the spurious emissions limit of the standard.

** -20 dBc Peak limit applies for nonrestricted bands.

Operating Channel: 2480 MHz Test Date: 20/09/2024
Power Input: 7.2VDC Temperature: 15.4 °C
Measurement Distance: 3 m Humidity: 54 %
Test Standard: FCC 15.247/RSS 247

Minelab
M2405032RD4
High Ch. RSE (2480 MHz)
Detector -Average

Limit1: FCC15209Av

FCC PART 15.209, 1-18GHz@3mtr, 18-40GHz@1mtr

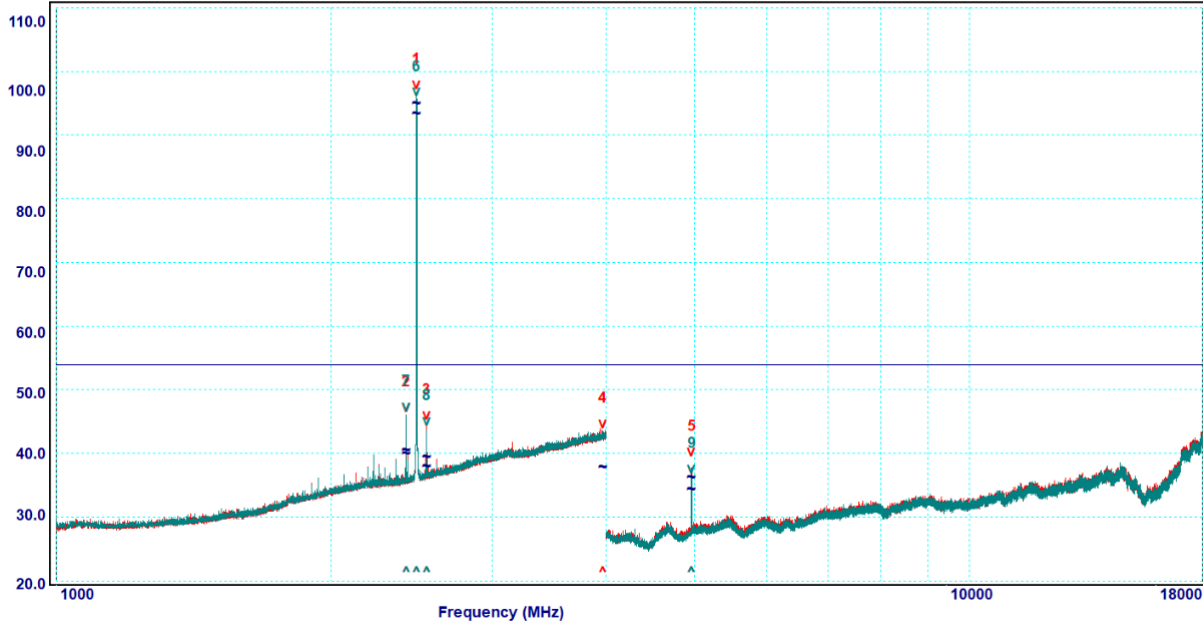
Trace 2: Vertical Emissions
Trace 3: Horizontal Emissions

Job No: M2405032
Test Date:

Test Officer: Plot date: 20/09/2024 15:53:21 WintstRS:36.45-WpIt:164.77-RxR&S,ESW-26,1328.4100K26/101306.2.
tA4060125 c1:CL131124 c2:NONE c3:NONE pA2881124 af0310125 IP:OFFC:E102
Site ID: Room#13 Kellor Park,Vic Graph No. 12

Radiated Emissions (dBuV/m)

= Ambient



Peak	Frequency [MHz]	Polarisation	Level [dBuV/m]	AVE Limit [dBuV/m]	Margin [dB]
1*	2480.1	Vertical	N/A	N/A	N/A
2*	2415.98	Vertical	N/A	N/A	N/A
3**	2544.06	Vertical	N/A	N/A	N/A
4	3966.91	Vertical	38.3	54	-15.7
5	4961.06	Vertical	36.7	54	-17.3
6*	2480.1	Horizontal	N/A	N/A	N/A
7*	2415.88	Horizontal	N/A	N/A	N/A
8**	2544.12	Horizontal	N/A	N/A	N/A
9	4960.93	Horizontal	34.8	54	-19.2

Comment:

*Peaks above the limit are the fundamental transmission and not subject to the spurious emissions limit of the standard.

** -20 dBc Peak limit applies for nonrestricted bands.

3.7.8 Transmitter Spurious Emissions – 18 to 26 GHz

Operating Channel: 2402 MHz		Test Date: 20/09/2024			
Power Input: 7.2VDC		Temperature: 15.4 °C			
Measurement Distance: 1 m		Humidity: 54 %			
Test Standard: FCC 15.247/RSS 247					
Minelab M2405032RD4 Low Ch. RSE (2402 MHz) Detector -Peak Limit1: FCC15209Pk FCC PART 15.209, 1-18GHz@3mtr, 18-40GHz@1mtr Job No: M2405032 Test Date: Trace 2: Vertical Emissions Trace 3: Horizontal Emissions Test Officer:-Plot date:28/09/2024 16:06:15 tA3070127-H c1:C2730125 c2:NONE c3:NONE p:NONE a:NONE IP:ON2 Site ID: Room#13 Kailor Park,Vic WintelRS:36.46-WpIt:164.77-Rx:R&S,ESW-26,1328.4100K26/101306.2 CE102 Radiated Emissions (dBuV/m) # = Ambient Graph No. 14					
Peak	Frequency [MHz]	Polarisation	Level [dBuV/m]	PEAK Limit [dBuV/m]	Margin [dB]
-	-	-	-	-	-
Comment: No peaks were measured within 10 dB of the limit.					

Operating Channel:	2402 MHz	Test Date:	20/09/2024
Power Input:	7.2VDC	Temperature:	15.4 °C
Measurement Distance:	1 m	Humidity:	54 %
Test Standard:	FCC 15.247/RSS 247		

Minelab
M2405032RD4
Low Ch. RSE (2402 MHz)
Detector - Ave

Limit1: FCC15209Av

FCC PART 15.209, 1-18GHz@3mtr, 18-40GHz@1mtr

Trace 2: Vertical Emissions
Trace 3: Horizontal Emissions

Job No: M2405032

Test Date:

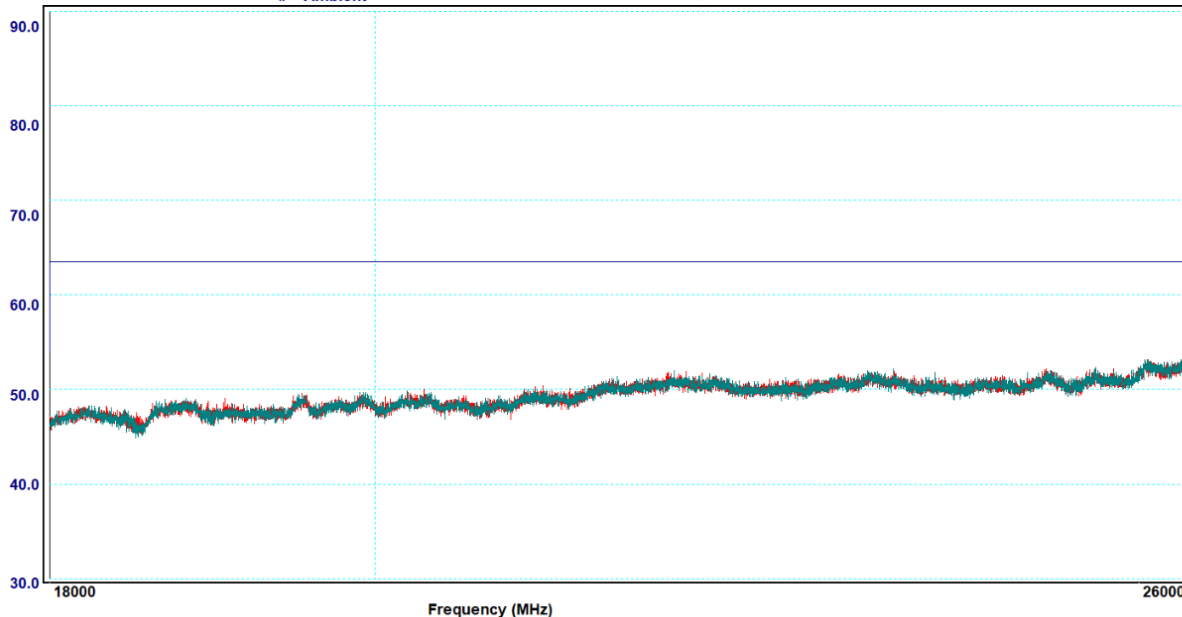
Test Officer: Plot date: 20/09/2024 16:11:50
tA3070127-H c1:C2730125 c2:NONE c3:NONE p:NONE a:NONE IP:ON2

WintstRS:36.46-Wp1t:164.77-Rx:R&S,ESW-26,1328.4100K26/101306.2
CE102

Graph No. 15

Radiated Emissions (dBuV/m)

= Ambient



Peak	Frequency [MHz]	Polarisation	Level [dBuV/m]	AVE Limit [dBuV/m]	Margin [dB]
-	-	-	-	-	-

Comment: No peaks were measured within 10 dB of the limit.

Operating Channel:	2440 MHz	Test Date:	20/09/2024
Power Input:	7.2VDC	Temperature:	15.4 °C
Measurement Distance:	1 m	Humidity:	54 %
Test Standard:	FCC 15.247/RSS 247		

Minelab
M2405032RD4
Mid Ch. RSE (2440 MHz)
Detector -Peak

Limit1: FCC15209Pk

FCC PART 15.209, 1-18GHz@3mtr, 18-40GHz@1mtr

Trace 2: Vertical Emissions
Trace 3: Horizontal Emissions

Job No: M2405032

Test Date:

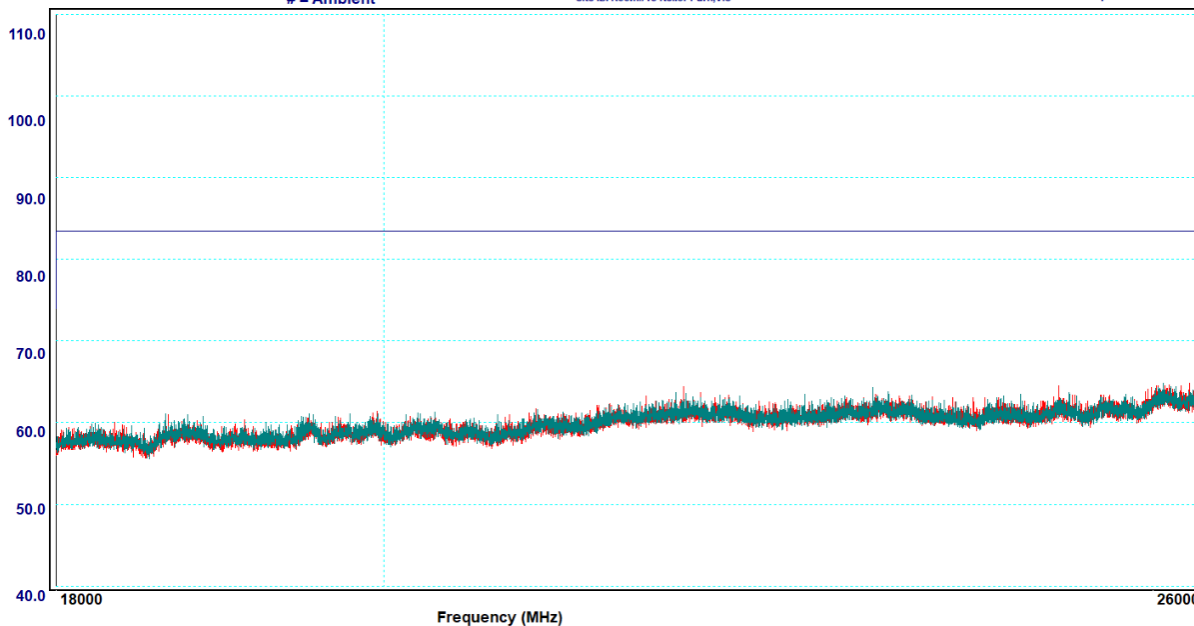
Test Officer:-Plot date:26/09/2024 16:12:32
t:A3070127-H c1:C2730125 c2:NONE c3:NONE p:NONE a:NONE IP:ON2
Site ID: Room#13 Kellor Park,Vic

Wintstrs:36.46-Wpilt:164.77-Rx:R&S,ESW-26,1328.4100K26/101306.2,
CE102

Graph No. 16

Radiated Emissions (dBuV/m)

= Ambient



Peak	Frequency [MHz]	Polarisation	Level [dBuV/m]	PEAK Limit [dBuV/m]	Margin [dB]
-	-	-	-	-	-
Comment: No peaks were measured within 10 dB of the limit.					

Operating Channel:	2440 MHz	Test Date:	20/09/2024
Power Input:	7.2VDC	Temperature:	15.4 °C
Measurement Distance:	1 m	Humidity:	54 %
Test Standard:	FCC 15.247/RSS 247		

Minelab
M2405032RD4
Mid Ch. RSE (2440 MHz)
Detector -Average

Limit1: FCC15209Av

FCC PART 15.209, 1-18GHz@3mtr, 18-40GHz@1mtr

Trace 2: Vertical Emissions
Trace 3: Horizontal Emissions

Job No: M2405032

Test Date:

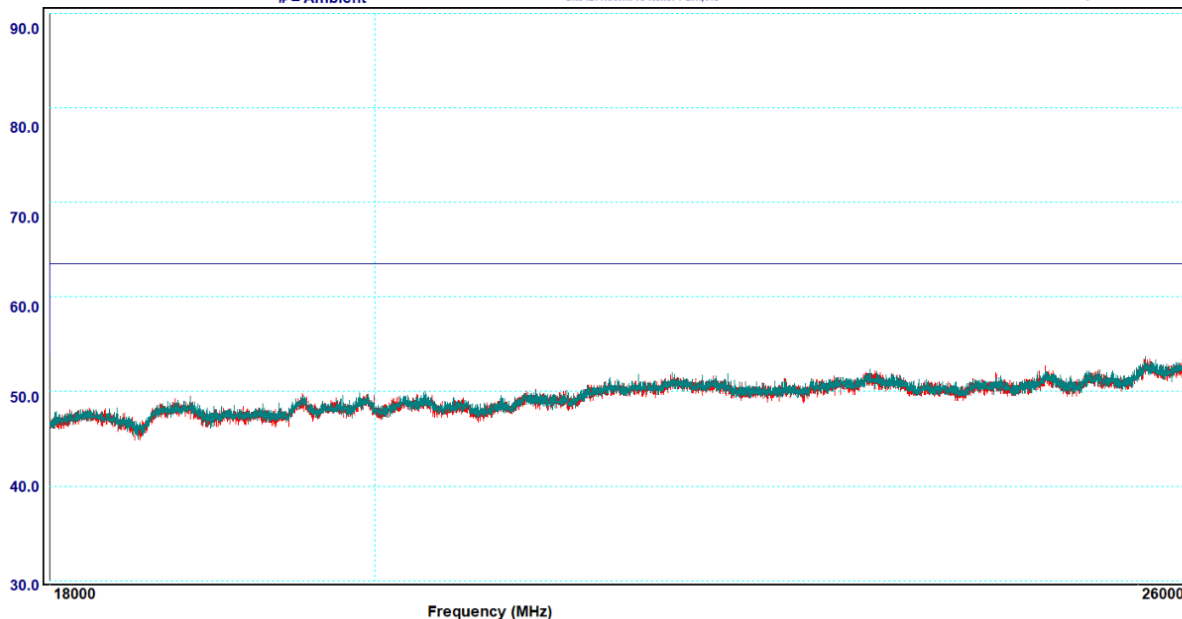
Test Officer:-Plot date:26/09/2024 16:13:08
tA3070127-H c1:C2730125 c2:NONE c3:NONE p:NONE a:NONE IP:ON2
Site ID: Room#13 Kellor Park,Vic

WintstRS:36.46-WpIt:164.77-Rc:R&S,ESW-26,1328.4100K26/101306.2
CE102

Graph No. 17

Radiated Emissions (dBuV/m)

= Ambient



Peak	Frequency [MHz]	Polarisation	Level [dBuV/m]	AVE Limit [dBuV/m]	Margin [dB]
-	-	-	-	-	-

Comment: No peaks were measured within 10 dB of the limit.

Operating Channel:	2480 MHz	Test Date:	20/09/2024
Power Input:	7.2VDC	Temperature:	15.4 °C
Measurement Distance:	1 m	Humidity:	54 %
Test Standard:	FCC 15.247/RSS 247		

Minelab
M2405032RD4
High Ch. RSE (2480 MHz)
Detector -Peak

Limit1: FCC15209Pk

FCC PART 15.209, 1-18GHz@3mtr, 18-40GHz@1mtr

Trace 2: Vertical Emissions
Trace 3: Horizontal Emissions

Job No: M2405032

Test Date:

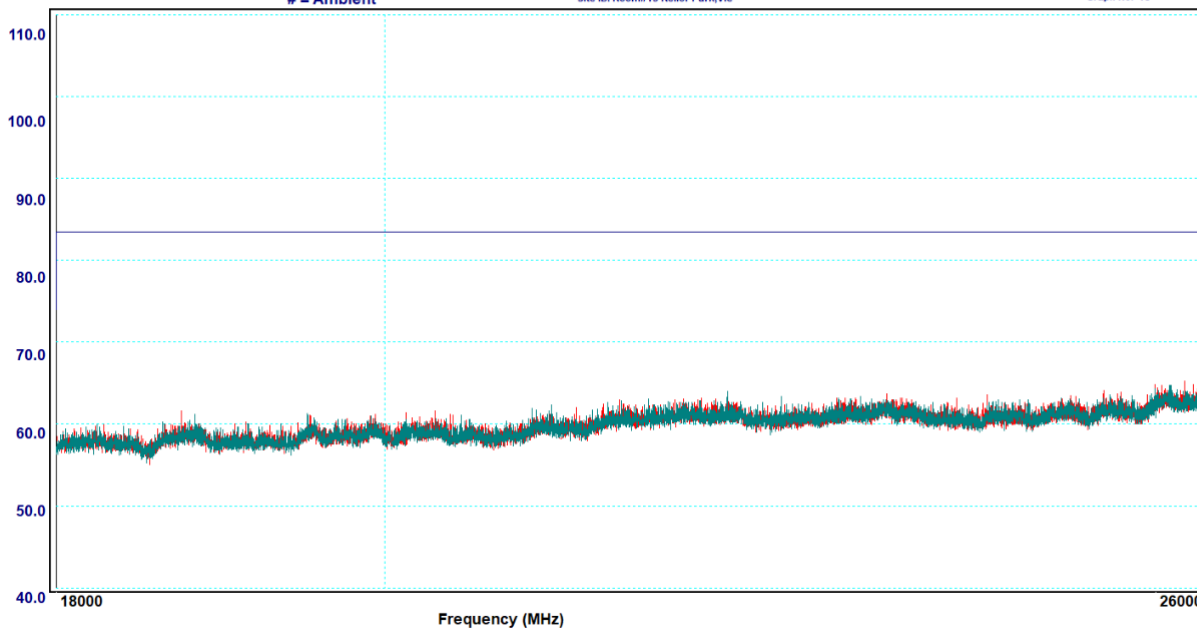
Test Officer: Plot date: 20/09/2024 16:14:07
tA3070127-H c1:C2730125 c2:NONE c3:NONE p:NONE a:NONE IP:ON2
Site ID: Room#113 Kellor Park, Vic

WintstRS:36.46-WpIt:164.77-RxR&S,ESW-26,1328.4100K26/101306.2,
CE102

Graph No. 18

Radiated Emissions (dBuV/m)

= Ambient



Peak	Frequency [MHz]	Polarisation	Level [dBuV/m]	PEAK Limit [dBuV/m]	Margin [dB]
-	-	-	-	-	-
Comment: No peaks were measured within 10 dB of the limit.					

Operating Channel:	2480 MHz	Test Date:	20/09/2024
Power Input:	7.2VDC	Temperature:	15.4 °C
Measurement Distance:	1 m	Humidity:	54 %
Test Standard:	FCC 15.247/RSS 247		

Minelab
M2405032RD4
High Ch. RSE (2480 MHz)
Detector -Average

Limit1: FCC15209Av

FCC PART 15.209, 1-18GHz@3mtr, 18-40GHz@1mtr

Trace 2: Vertical Emissions
Trace 3: Horizontal Emissions

Job No: M2405032

Test Date:

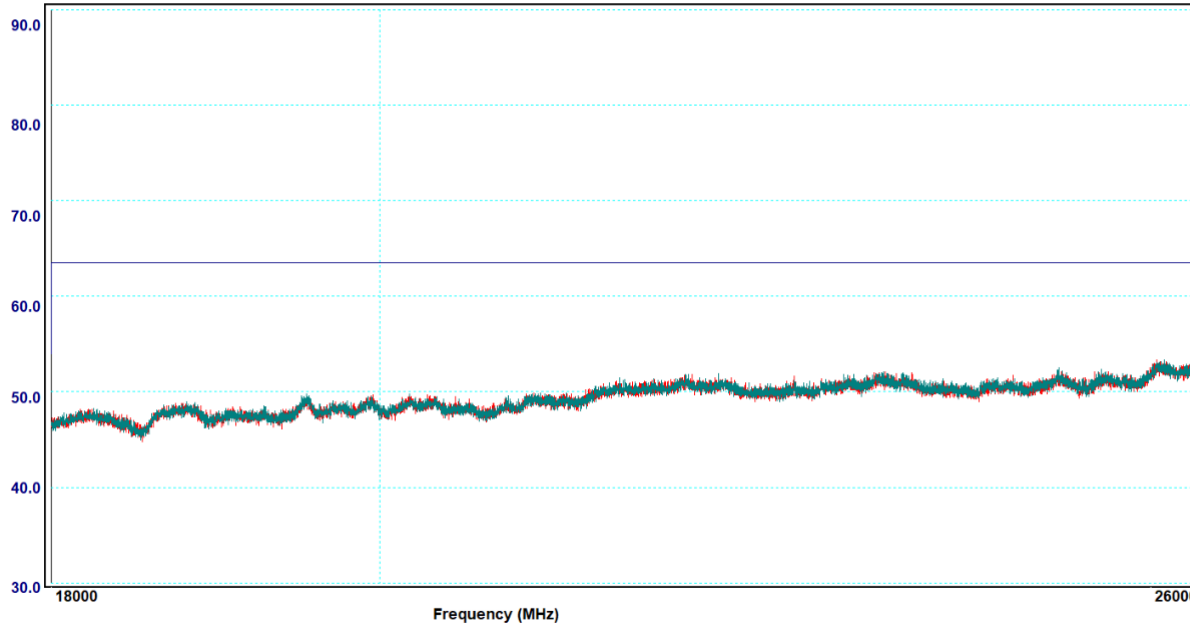
Test Officer: Plot date: 20/09/2024 16:15:14
tA3070127-H c1:C2730125 c2:NONE c3:NONE p:NONE a:NONE IP:ON2
Site ID: Room#113 Kellor Park, Vic

WintstRS:36.46-Wpilt:164.77-RxR&S,ESW-26,1328.4100K26/101306,2.
CE102

Graph No. 19

Radiated Emissions (dBuV/m)

= Ambient



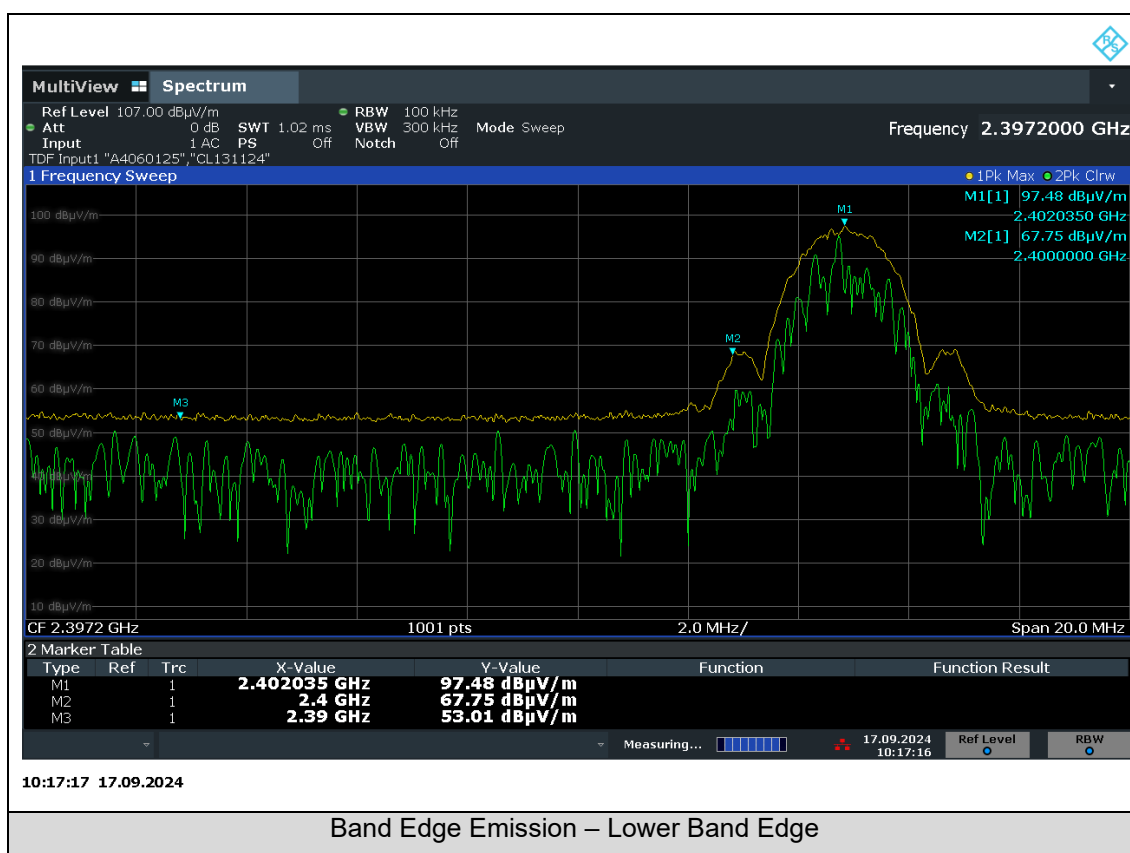
Peak	Frequency [MHz]	Polarisation	Level [dBuV/m]	AVE Limit [dBuV/m]	Margin [dB]
-	-	-	-	-	-
Comment: No peaks were measured within 10 dB of the limit.					

3.8 §15.247(d)/ RSS-247 5.5 Band Edge Emission Measurements

Band-edge radiated measurements were done in accordance with ANSI C63.10: 2020 clause 6.10. All emissions measured near the lower and higher band edge complied with the requirements of §15.247 / RSS-247.

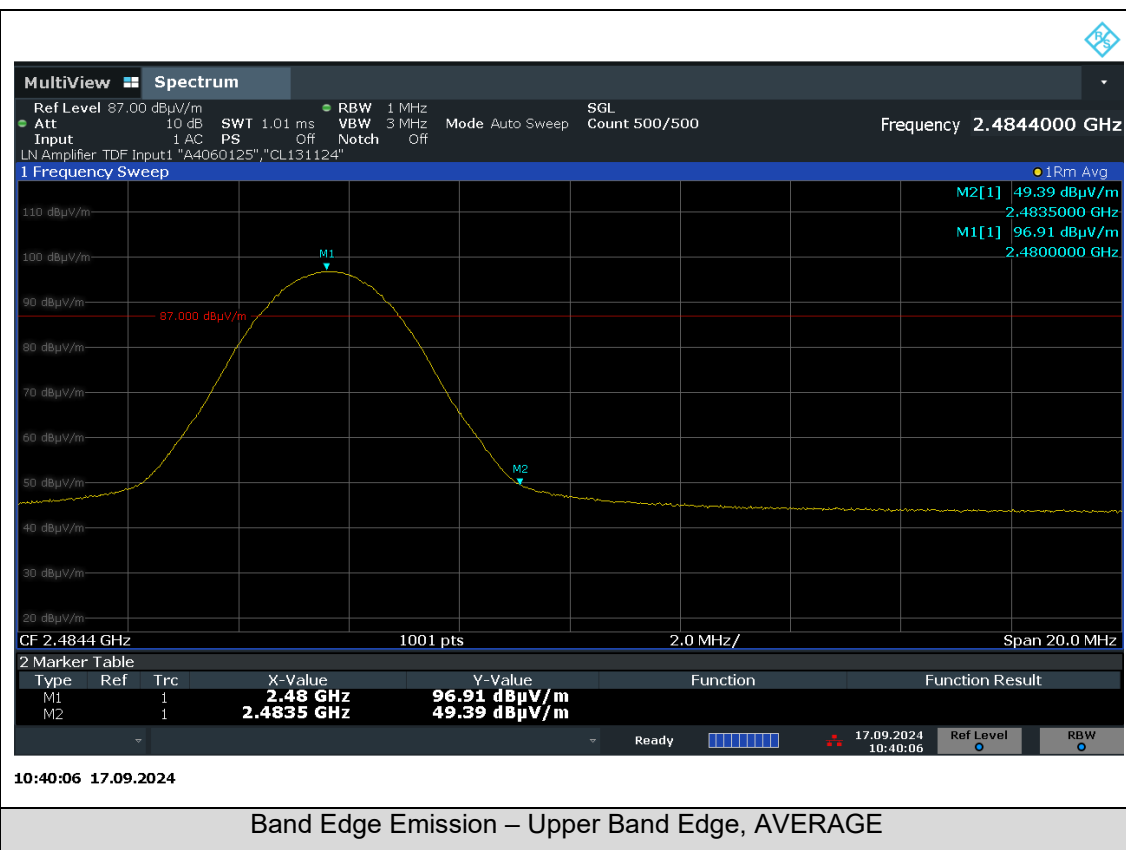
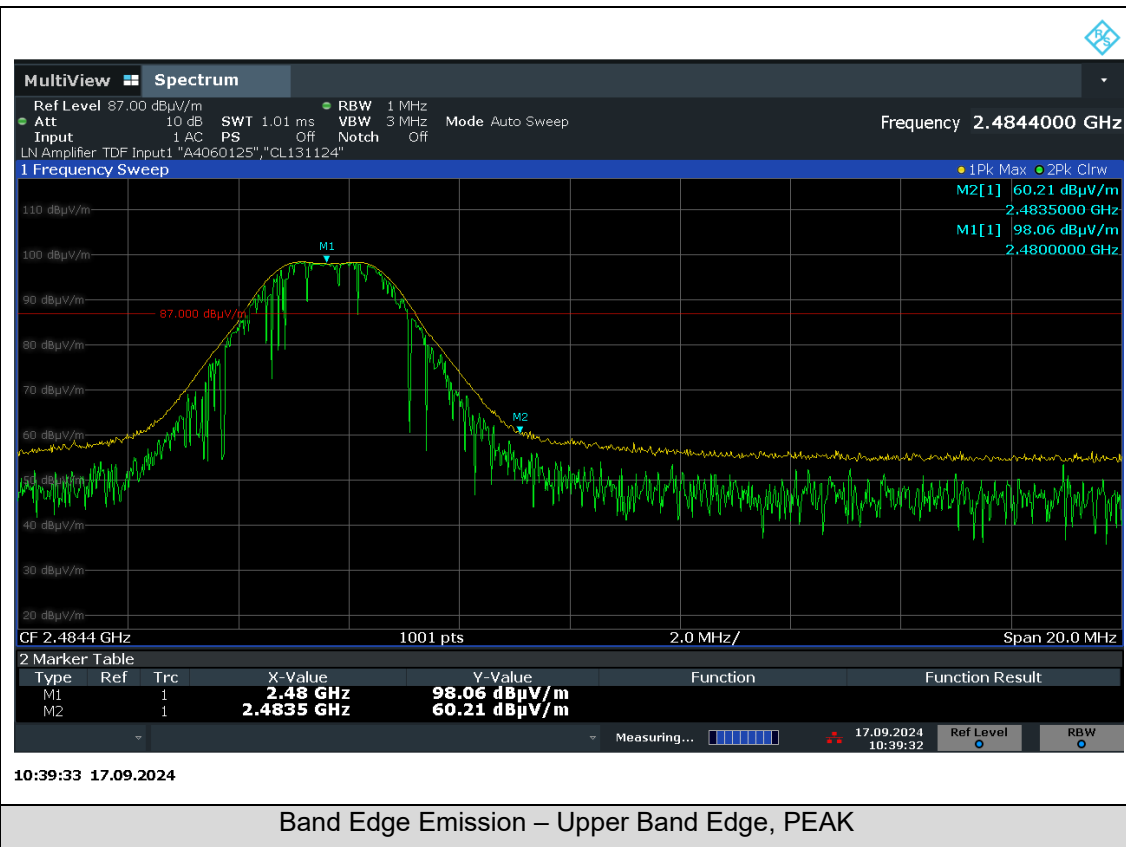
Lower Band Edge:

Marker	Measurement Type	Frequency [MHz]	Measurement [dBμV/m]	Limit [dBμV/m]	Result
M2	Peak	2400	67.75	77.69	Complied



Upper Band Edge:

Measurement Type	Frequency [MHz]	Measurement [dBμV/m]	Limit [dBμV/m]	Result
Peak	2483.5	60.21	74	Complied
Average	2483.5	49.39	54	Complied



3.9 §15.247(e)/ RSS-247 5.2(b) Power Spectral Density

3.9.1 Test Procedure

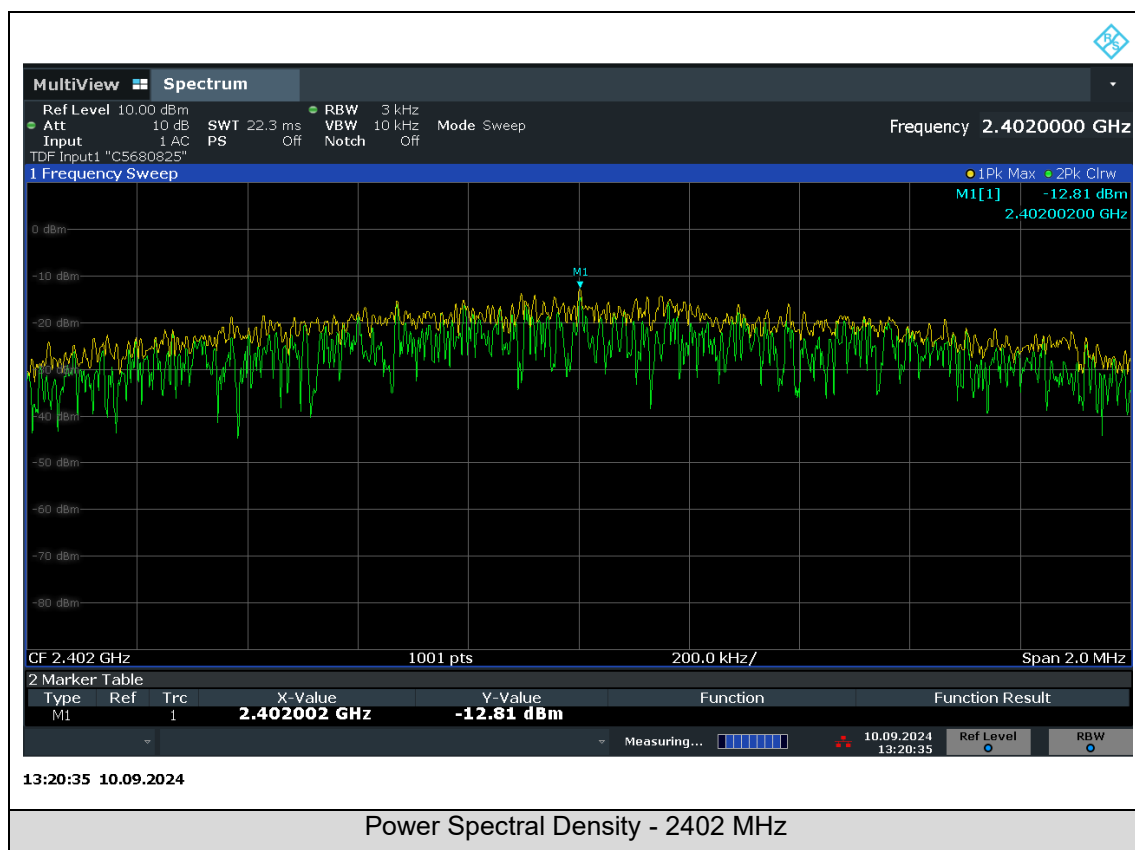
The maximum power spectral density in the fundamental emission was measured in accordance with ANSI C63.10: 2020 clause 11.10.

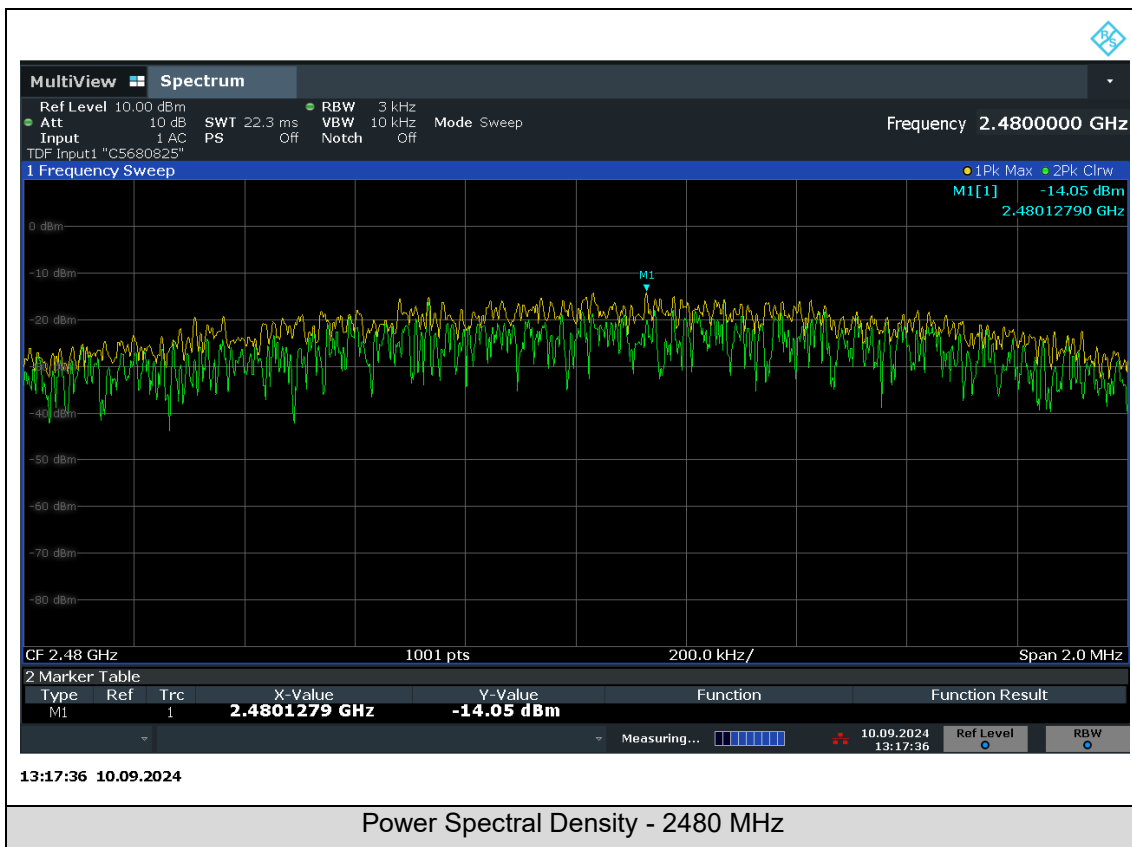
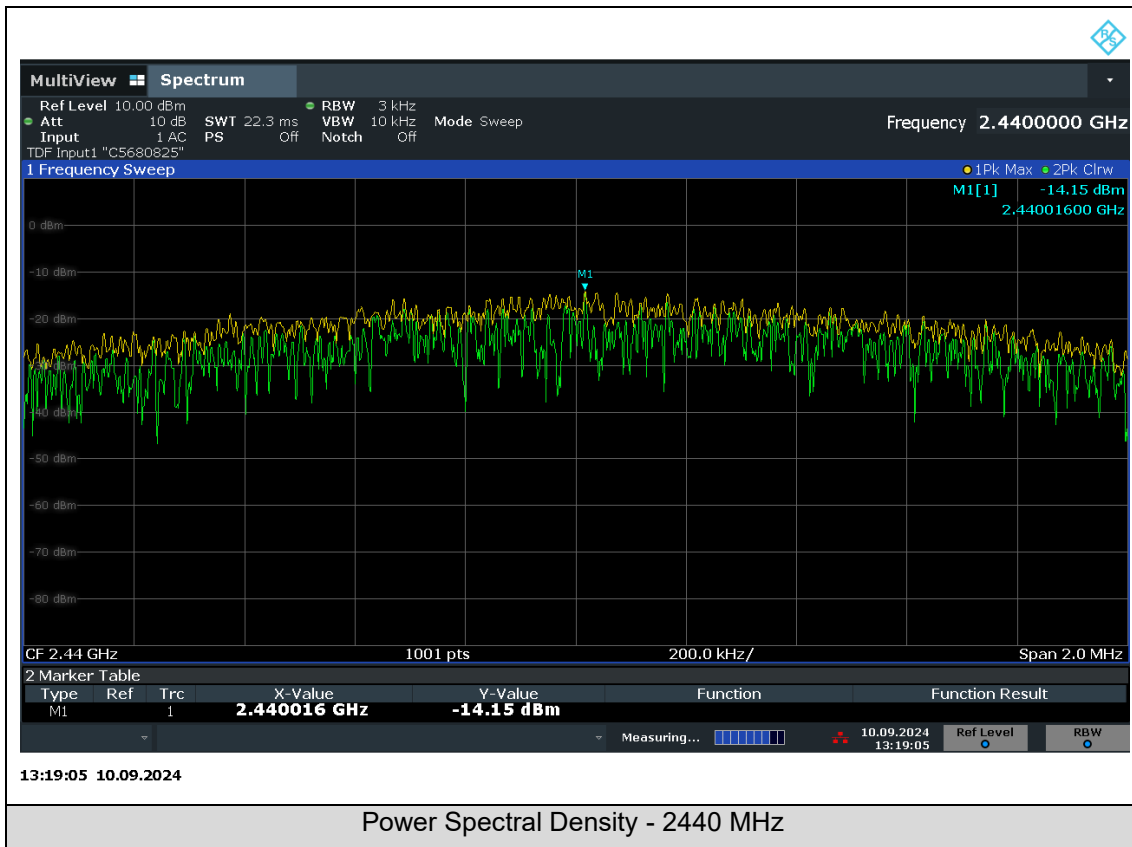
3.9.2 Limits

The maximum peak conducted power spectral density (PSD) is 8 dBm per 3 kHz.

3.9.3 Results

Channel	Frequency [MHz]	Conducted Output PSD [dBm]	Limit [dBm]	Results
Low	2402	-12.81	8	Complied
Middle	2440	-14.15	8	Complied
High	2480	-14.05	8	Complied





3.10 §15.247(i)/ RSS-Gen 3.4/RSS-102 Maximum Permissible Exposure

The EUT complied with the applicable maximum permissible exposure levels. Refer to EMC Technologies report M2405032-4 and M2405032-5.

3.11 §15.215/ RSS-Gen 6.7 Occupied Bandwidth – 99%

3.11.1 Test Procedure

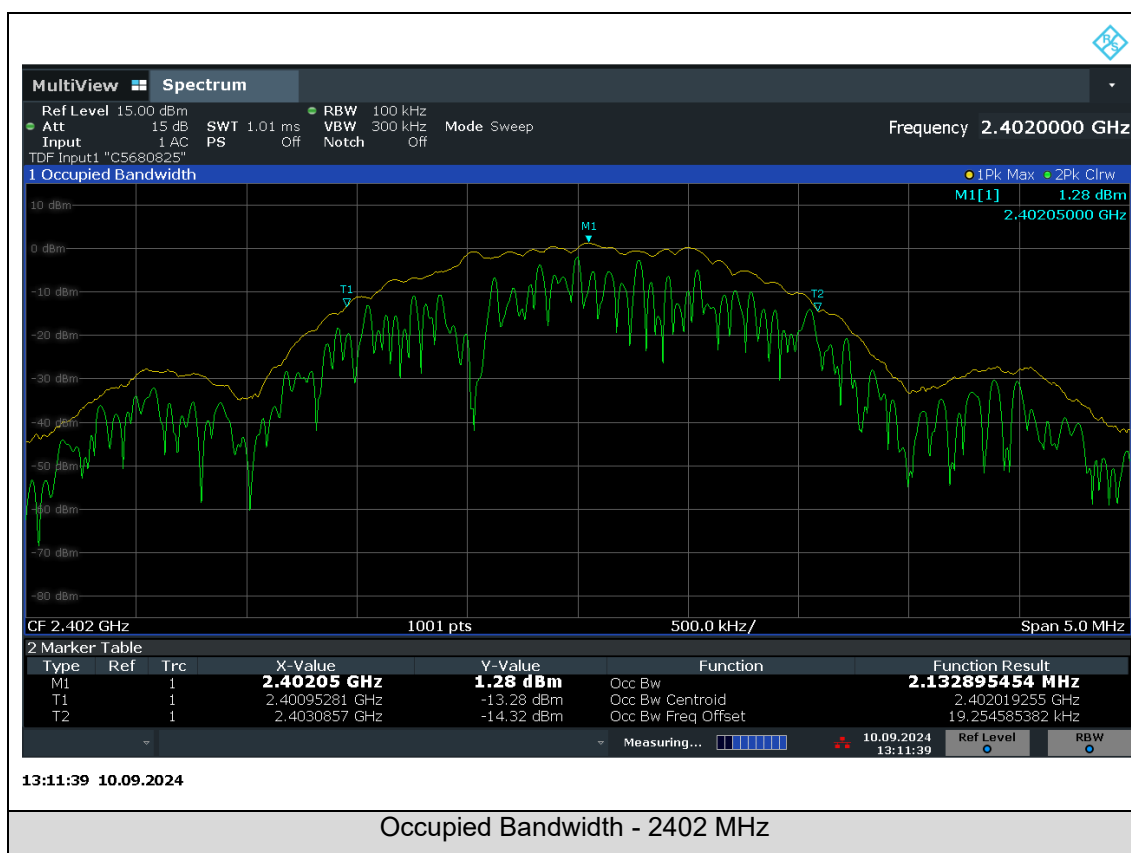
The bandwidth containing 99% of the total transmitted power of the fundamental emission was measured in accordance with ANSI C63.10: 2020 clause 6.9.

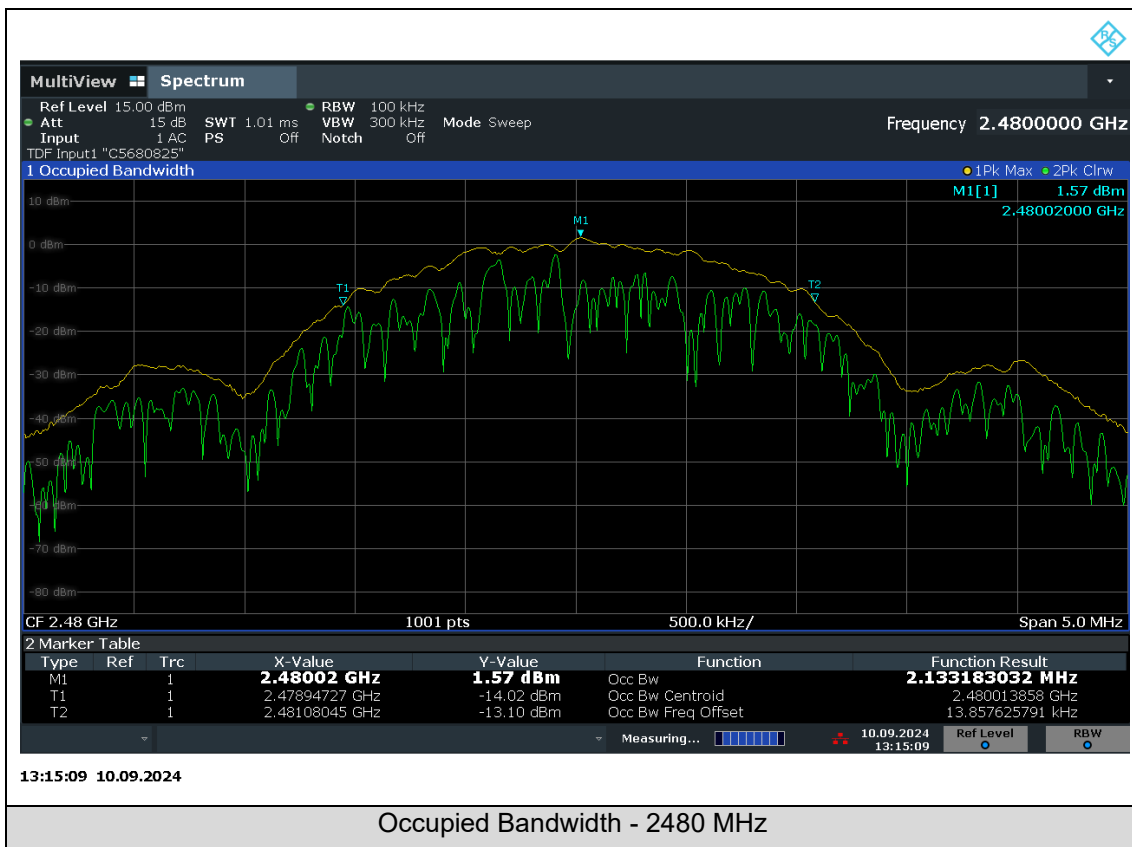
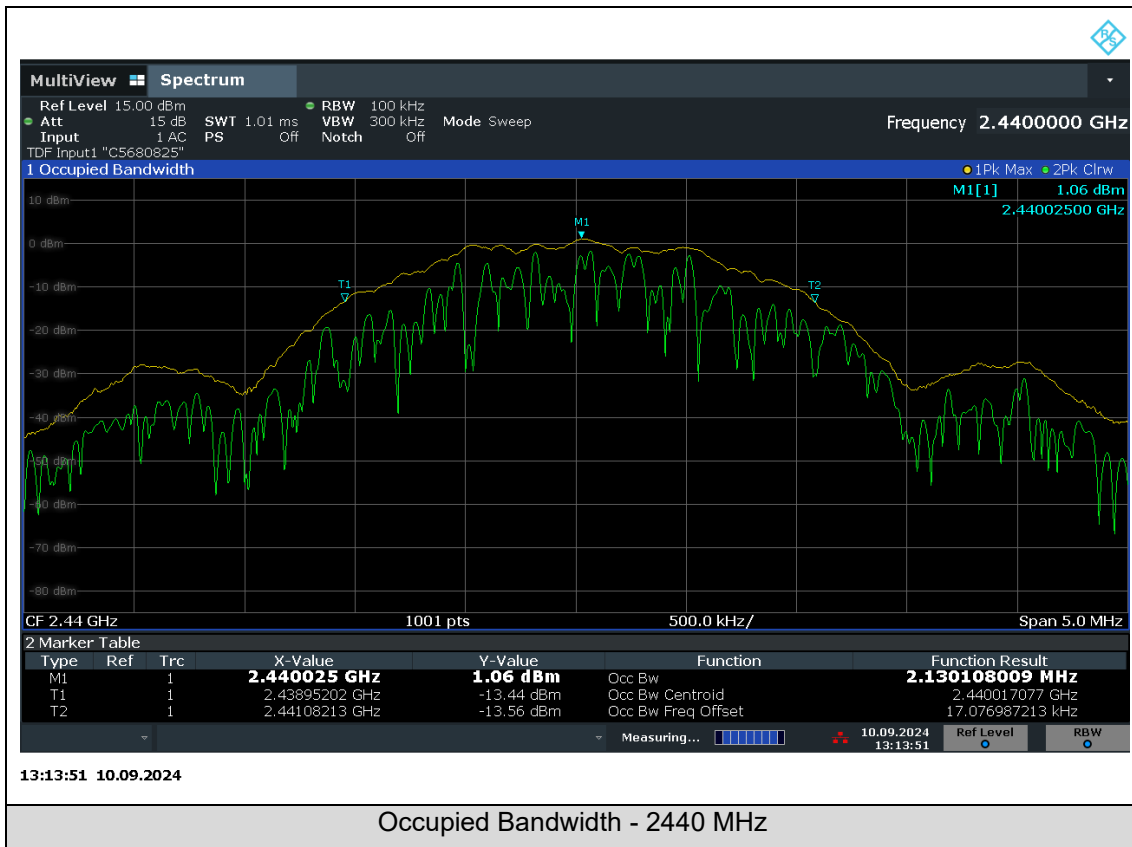
3.11.2 Limits

The 99% emission bandwidth should be contained within the frequency band 2400 – 2483.5 MHz.

3.11.3 Results

Frequency [MHz]	99% Bandwidth [MHz]	Lower Frequency [MHz]	Upper Frequency [MHz]	Result
2402	2.132	2400.95	2403.08	Complied
2440	2.130	2438.95	2441.08	Complied
2480	2.133	2478.94	2481.08	Complied





-- End of Report --