EMC Technologies Pty. Ltd.
ABN 82 057 105 549

Melbourne
176 Harrick Road
Keilor Park, Vic 3042
Tel: +61 3 9365 1000

Sydney
Unit 3/87 Station Road
Seven Hills, NSW 2147
Tel: +61 2 9624 2777

Email: sales@emctech.com.au
Web: www.emctech.com.au

RADIO REPORT FOR CERTIFICATION

47 CFR PART 15 SUBPART C (SECTION 15.247)

Client: Minelab Electronics Pty. Ltd.
Device Under Test / PMN: Platypus Metal Detector
Model Number / HVIN: EQX 800
FCC ID: Z4C-0022

Report Number: M170635-2R1
(This Report Supersedes M170635-2)
Date of Issue: 16 November 2017

TABLE OF CONTENTS

RADIO REPORT
CERTIFICATE OF COMPLIANCE

Device / PMN:	Platypus Metal Detector
Model Number / HVIN:	EQX 800
Manufacturer:	Minelab Electronics Pty. Ltd.
Tested for:	Minelab Electronics Pty. Ltd.
Address:	2 Second Avenue, Mawson Lakes, South Australia 5095, AUSTRALIA
Phone:	+61 (0)8 8238 0851
Contact:	Shan Wang
Email:	shan.wang@minelab.com.au
Standards:	**47 CFR Part 15 –** Radio Frequency Devices **Subpart C –** Intentional Radiators **Section 15.247 –** Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz
Result:	The EQX 800 complied with the applicable requirements of 47 CFR Part 15 Subpart C for a Digital Transmission System.
Test Dates:	10 August to 27 September, 2017
Issue Date:	16 November 2017
Issued by:	**EMC TECHNOLOGIES PTY. LTD.,** 176 Harrick Road, Keilor Park, VIC 3042, Australia. Phone: +61 3 9365 1000, Web: www.emctech.com.au
Test Officer:	William Alam Test Engineer
Authorised Signatory:	Rob Weir Wireless Certification Manager
Attestation:	I 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.

RADIO REPORT FOR CERTIFICATION
to
47 CFR Part 15 Subpart C (section 15.247)

1.0 INTRODUCTION

Radio tests were performed on the EQX 800 Platypus Metal Detector in accordance with the applicable requirements of 47 CFR, Part 15 Subpart C – Section 15.247 for a Digital Transmission System (DTS) operating within the band: 2400 MHz to 2483.5 MHz.

1.1 Test Procedure

Radio measurements were performed in accordance with the appropriate procedures of ANSI C63.10: 2013 and KDB 558074 v03r05 - Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247.

The measurement instrumentation conformed to the requirements of ANSI C63.2: 2009.

1.2 Summary of 47 CFR Part 15 Subpart C Results

FCC	Test Performed	Results
15.203	Antenna requirement	**Complied**
15.205	Restricted bands of operation	**Complied**
15.207	Conducted limits	**Complied**
15.209	Radiated emissions limits; general requirements	**Complied**
15.247 (a)	DTS Bandwidth	**Complied**
15.247 (b)	Peak Output Power	**Complied**
15.247 (c)	Antenna Gain > 6 dBi	**Not Applicable**
15.247 (d)	Out of Band Emissions	**Complied**
15.247 (e)	Peak Power Spectral Density	**Complied**
15.247 (f)	Hybrid Systems	**Not Applicable**
15.247 (g)	FHS with continuous data streams and short bursts	**Not Applicable**
15.247 (h)	Adaptivity	**Not Applicable**
15.247 (i)	Radio Frequency Hazard	**Complied**
2.1049	Occupied Bandwidth	**Complied**

2.0 GENERAL INFORMATION
(Information supplied by the Client)

2.1 EUT (Transmitter) Details

Radio:	Digital Transmission System (DTS)
Frequency Band:	2400-2483.5 MHz
Frequency Range:	2406 to 2474 MHz Ch. Low: 2406 MHz Ch. Mid: 2438 MHz Ch. High: 2474 MHz
Modulation:	FSK
Emission Designator:	4M79F1D
Antenna type and gain:	Inverted S, PCB track with 3 dBi gain

2.2 EUT (Host) Details

Device under Test / PMN:	Platypus Metal Detector
Model Number / HVIN:	EQX 800
Manufacturer:	Minelab Electronics Pty. Ltd.
Power Supply:	Internal Battery Charger tested: Redot Technology Co., Ltd. Model 4UTR2069

The EQX 800 Metal Detector was intended for operating in an open field, detecting metal targets of various sizes at different depths.

2.3 Test Configuration

Engineering software was provided to enable configuration of the radio such as selection of transmit channel.

2.4 Modifications by EMC Technologies

No modifications were performed.

2.5 Test Facility

2.5.1 General

EMC Technologies Pty Ltd has also been accredited as a Conformity Assessment Body (CAB) by Australian Communications and Media Authority (ACMA) under the APECTEL MRA and is designated to perform compliance testing on equipment subject to Declaration of Conformity (DoC) and Certification under Parts 15 and 18 of the FCC Commission's rules – **Registration Number 494713 & Designation number AU0001.**

EMC Technologies indoor open are test site (iOATS) have been accepted by Industry Canada for the performance of radiated measurements in accordance with RSS-Gen, Issue 8 - **Industry Canada iOATS number - IC 3569B**

Measurements in this report were performed at EMC Technologies' laboratory in Keilor Park, Victoria Australia.

2.5.2 NATA Accreditation

EMC Technologies is accredited in Australia by the National Association of Testing Authorities (NATA). All testing in this report has been conducted in accordance with EMC Technologies' scope of NATA accreditation.

NATA is the Australian National laboratory accreditation body and has accredited EMC Technologies to IEC/ISO17025. A major requirement for accreditation is the assessment of the company and its personnel as being technically competent in testing to the standards. This requires documented test procedures, continued calibration of measurement equipment, traceable to the National Standard at the National Measurements Institute (NMI) and an internal quality system to ISO 9002. NATA has mutual recognition agreements with the National Voluntary Laboratory Accreditation Program (NVLAP) and the American Association for Laboratory Accreditation (A^2LA).

The current full scope of accreditation can be found on the NATA website: www.nata.com.au

2.6 Test Equipment Calibration

Measurement instrumentation and transducers were calibrated in accordance with the applicable standards by an independent NATA registered laboratory such as Agilent Technologies (Australia) Pty Ltd or the National Measurement Institute (NMI) or in-house. All equipment calibration is traceable to Australian national standards at the National Measurements Institute.

Equipment Type	Make/Model/Serial Number	Last Cal. dd/mm/yyyy	Due Date dd/mm/yyyy	Cal. Interval
Chamber	Frankonia SAC-10-2 (R-139)	22/03/2017	22/03/2018	1 Year, *1
EMI Receiver	R&S ESW26, 2 Hz – 26.5 GHz Sn: 101306 (R-143)	31/03/2017	31/03/2018	1 Year, *2
Antennas	EMCO 6502 Active Loop 9 kHz – 30 MHz Sn. 9311-2801 (A-231)	20/07/2015	20/07/2018	3 Year, *2
	SUNOL JB6 Biconilog 30 – 6000 MHz Sn. A012312 (A-363)	26/05/2016	26/05/2018	2 Year, *2
	EMCO 3115 Double Ridge Horn 1 – 18 GHz Sn: 8908-3282 (A-004)	15/07/2016	15/07/2019	3 Year, *1
	ETS-Lindgren 3160-09 Horn 18 – 26.5 GHz Sn: 66032 (A-307)	31/05/2016	31/05/2019	3 Year, *1
Cables	Room 12 inbuilt cable Panel 1 to 10 m (C-422)	31/05/2017	31/05/2018	1 Year, *1
	Room 12 inbuilt cable Panel 1 to 3 m (C-421)	31/05/2017	31/05/2018	1 Year, *1
	Room 12 Antenna cable (C-437)	31/05/2017	31/05/2018	1 Year, *1
	Sucoflex 104 Huber & Suhner 18 GHz, 5 m cable (C-337)	03/01/2017	03/01/2018	1 Year, *1
	Sucoflex 102 Huber & Suhner 40 GHz, 3 m cable (C-273)	04/01/2017	04/01/2018	1 Year, *1

Note *1. Internal NATA calibration.
Note *2. External NATA / A2LA calibration

3.0 TEST RESULTS

3.1 §15.203 Antenna Requirement

The antenna was internal to the device ensuring that it could not be replaced.

3.2 §15.207 Conducted Limits

3.2.1 Test Procedure

The arrangement specified in ANSI C63.10: 2013 was adhered to for the conducted EMI measurements. The EUT was placed in the RF screened enclosure and a CISPR EMI Receiver as defined in ANSI C63.2: 2009 was used to perform the measurements.

The EMI Receiver was operated under program control using the Max-Hold function and automatic frequency scanning, measurement and data logging techniques. The specified 0.15 MHz to 30 MHz frequency range was sub-divided into sub-ranges to ensure that all short duration peaks were captured.

3.2.2 Peak Maximising Procedure

The various operating modes of the system were investigated. For each of the sub-ranges, the EMI receiver was set to continuous scan with the Peak detector set to Max-Hold mode. The Quasi-Peak detector and the Average detector were then invoked to measure the actual Quasi-Peak and Average level of the most significant peaks, which were detected.

3.2.3 Calculation of Voltage Levels

The voltage levels were automatically measured in software and compared to the test limit. The method of calculation was as follows:

$$V_{EMI} = V_{Rx} + L$$

Where:
V_{EMI}= The Measured EMI voltage in dBµV to be compared to the limit.
V_{Rx} = The Voltage in dBµV read directly at the EMI receiver.
L = The insertion loss in dB of the LISN, cables and transient Limiter.

3.2.4 Plotting of Conducted Emission Measurement Data

The measurement data pertaining to each frequency sub-range were concatenated to form a single graph of (peak) amplitude versus frequency. This was performed for both Active and Neutral lines and the composite graph was subsequently plotted. A list of the highest relevant peaks and the respective Quasi-Peak and Average values were also plotted on the graph.

3.2.5 Test Climatic Conditions

Shielded Room Temperature: 25°C

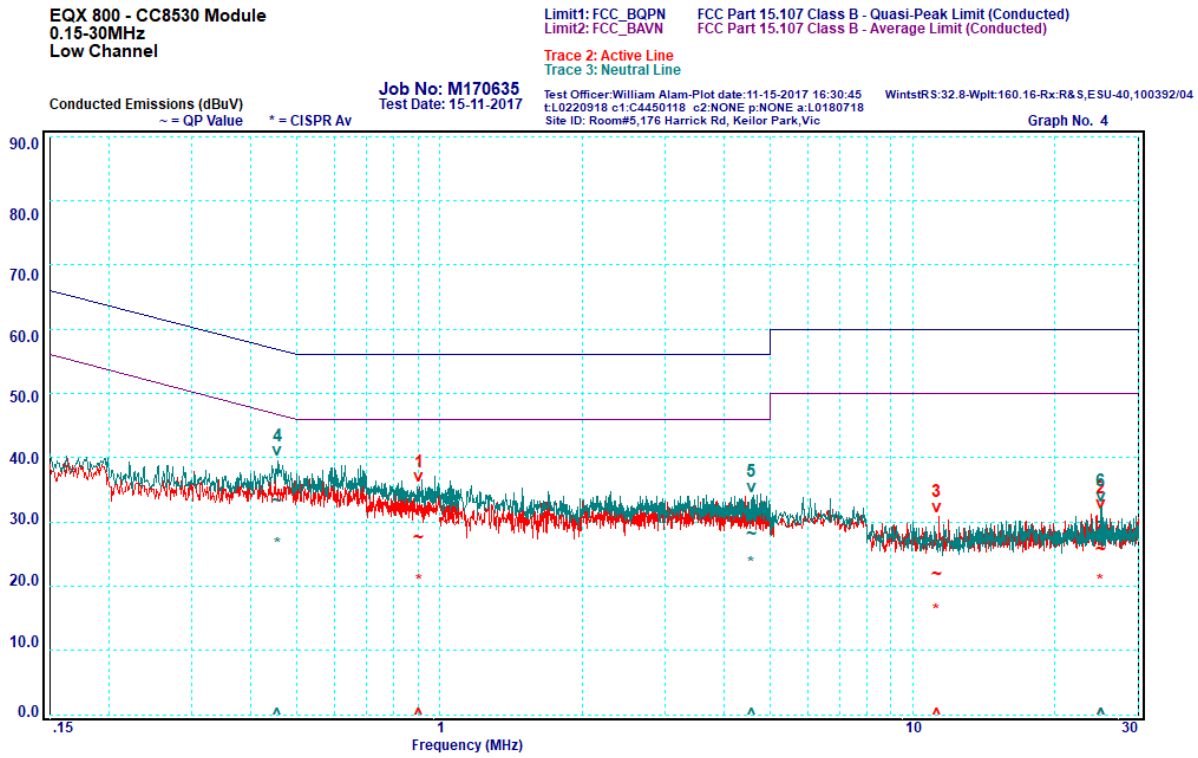
Relative Humidity: 46%

3.2.6 Conclusion

The sample complied with the applicable spurious emissions of §15.207. Refer to the following graphs for the results.

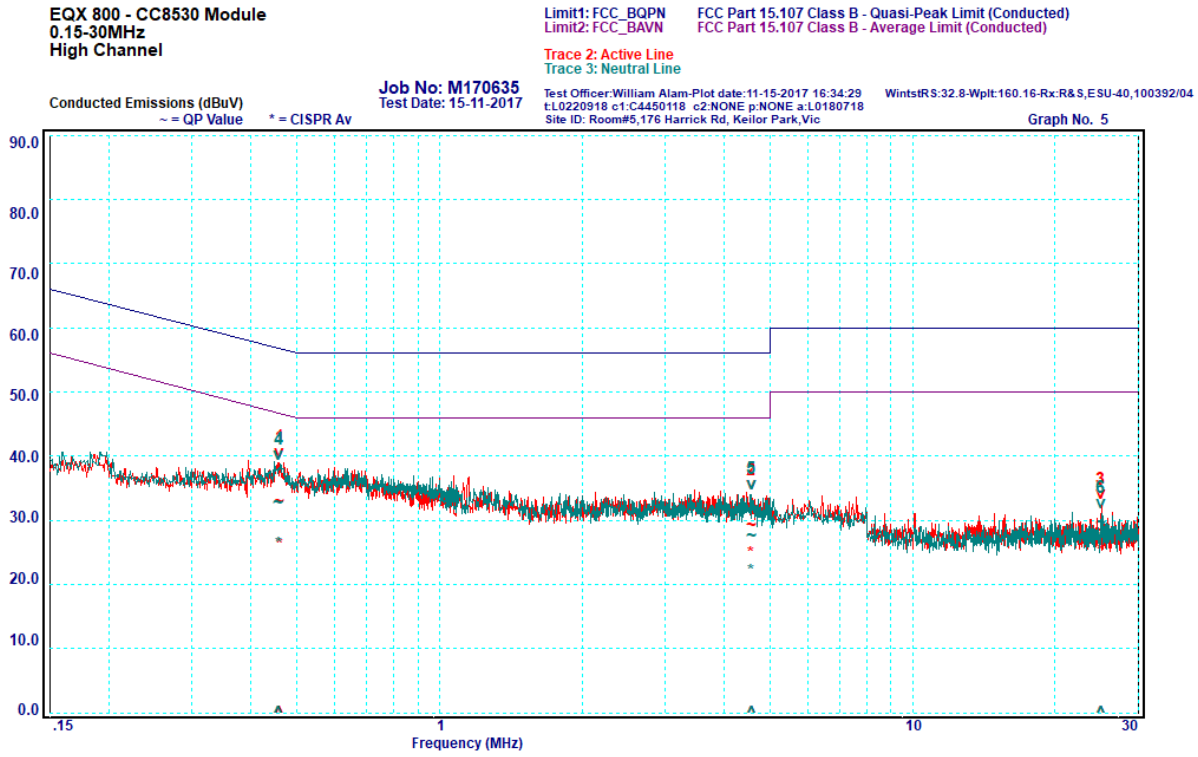
3.2.7 Results of Conducted Emission Measurements

Active and Neutral Line, Channel 2406MHz, 0.15-30MHz



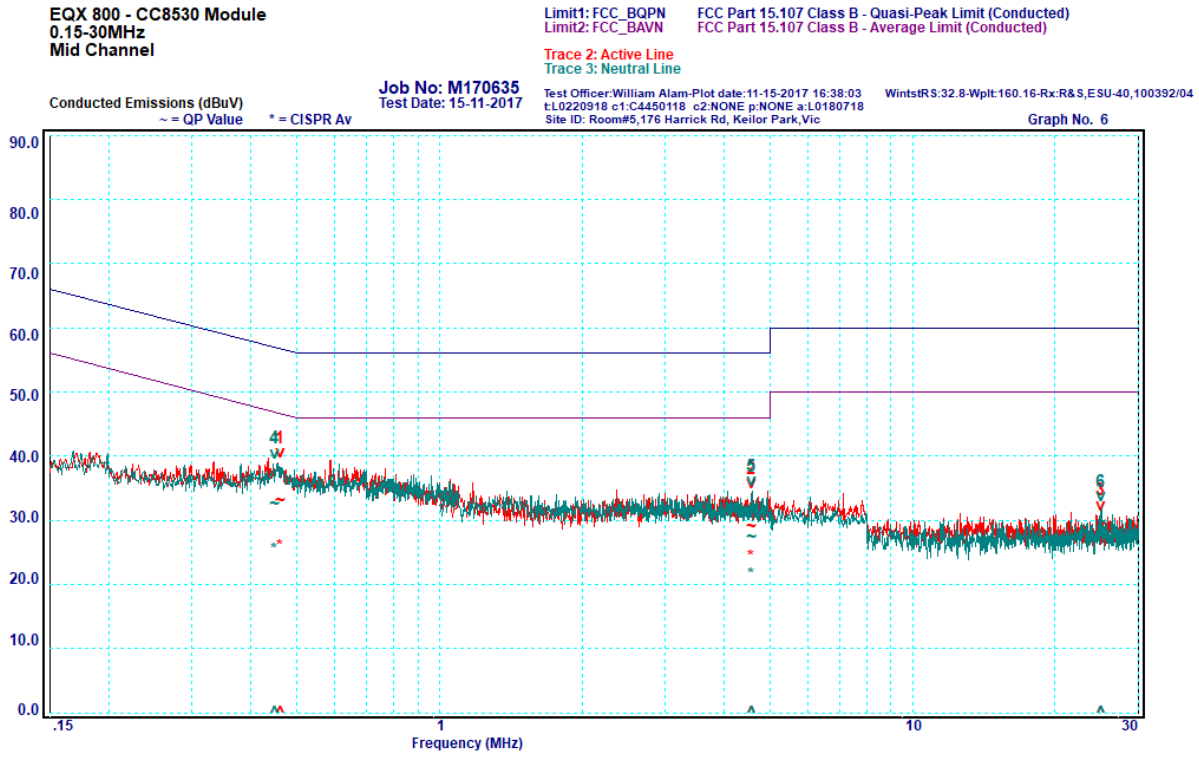
Peak	Frequency [MHz]	Line	Quasi-Peak			Average		
			Level [dBµV]	Limit [dBµV]	Margin [±dB]	Level [dBµV]	Limit [dBµV]	Margin [±dB]
1	0.907	Active	27.6	56	-28.4	20.8	46	-25.2
2	25.00	Active	25.6	60	-34.4	20.7	50	-29.3
3	11.23	Active	21.8	60	-38.2	16.1	50	-33.9
4	0.455	Neutral	33.3	56.8	-23.5	26.5	46.8	-20.3
5	4.568	Neutral	28.1	56	-27.9	23.5	46	-22.5
6	25.00	Neutral	29.8	60	-30.2	27.1	50	-22.9

Active and Neutral Line, Channel 2474MHz, 0.15-30MHz



Peak	Frequency [MHz]	Line	Quasi-Peak			Average		
			Level [dBµV]	Limit [dBµV]	Margin [±dB]	Level [dBµV]	Limit [dBµV]	Margin [±dB]
1	0.461	Active	32.9	56.7	-23.8	26	46.7	-20.7
2	4.565	Active	29.1	56	-26.9	24.8	46	-21.2
3	25	Active	28.3	60	-31.7	25.2	50	-24.8
4	0.458	Neutral	32.8	56.7	-23.9	26.2	46.7	-20.5
5	4.568	Neutral	27.6	56	-28.4	22.1	46	-23.9
6	25	Neutral	29.6	60	-30.4	27	50	-23

Active and Neutral Line, Channel 2438MHz, 0.15-30MHz



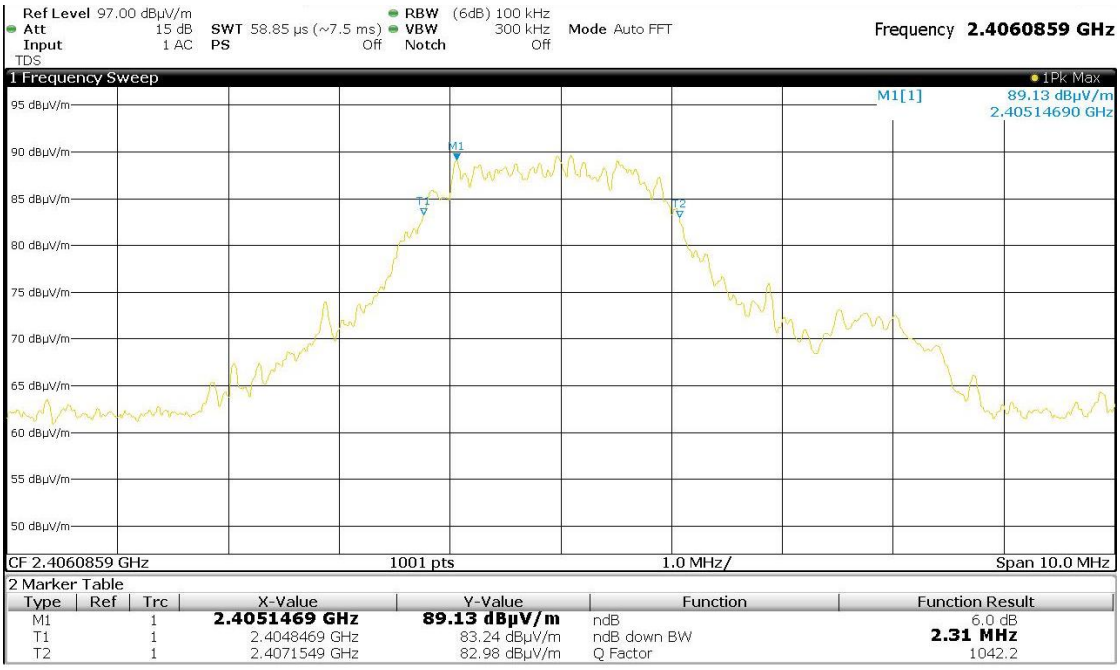
Peak	Frequency [MHz]	Line	Quasi-Peak			Average		
			Level [dBµV]	Limit [dBµV]	Margin [±dB]	Level [dBµV]	Limit [dBµV]	Margin [±dB]
1	0.461	Active	33	56.7	-23.7	25.9	46.7	-20.8
2	4.566	Active	29.1	56	-26.9	24.3	46	-21.7
3	25.00	Active	29.5	60	-30.5	26.6	50	-23.4
4	0.448	Neutral	32.4	56.9	-24.5	25.3	46.9	-21.6
5	4.56	Neutral	27.4	56	-28.6	21.4	46	-24.6
6	25.00	Neutral	29.7	60	-30.3	27.0	50	-23.0

3.3 §15.247(a2) DTS Bandwidth

In the band 2400.0 – 2483.5 MHz, the minimum 6 dB bandwidth is to be at least 500 kHz. 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 utilised when measuring the bandwidth.

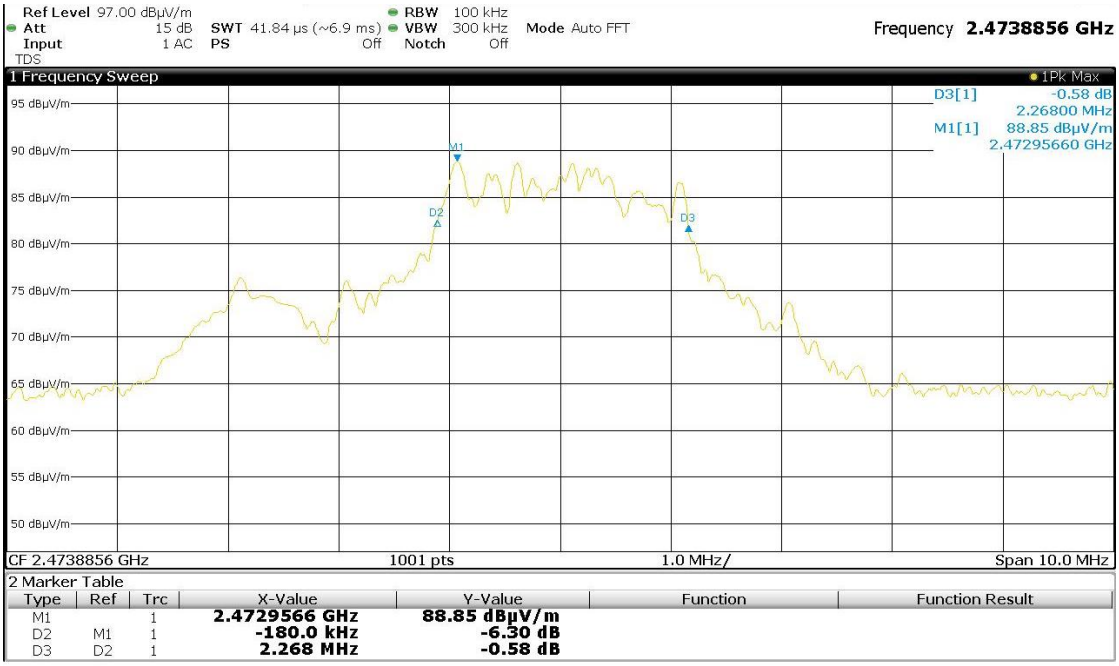
Results:

Centre Frequency [MHz]	Measured 6 dB Bandwidth [kHz]	Limit [kHz]	Result
2406	2310	> 500	Complied
2438	2288	> 500	Complied
2474	2268	> 500	Complied



Channel 2406 MHz

Channel 2438 MHz



Channel 2474 MHz

3.4 §15.247(b3) Peak Output power

Testing was performed in a semi-anechoic chamber at a distance of 3 metres. Different configurations of EUT and antenna polarization were investigated to produce highest emission EIRP and the EUT was set to transmit in continuous transmission mode.

Results:

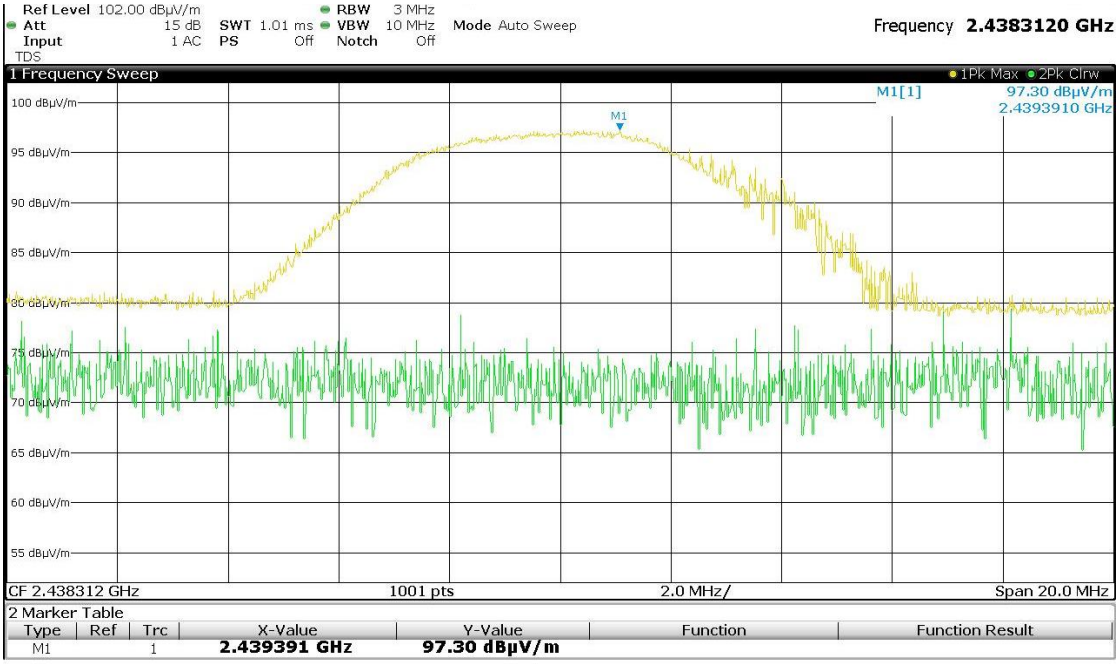
Freq. (MHz)	3 m Field (dBµV/m)	EIRP		Limit	Ant. Gain (dBi)	Conducted power		Limit	Margin
		(dBm)	(W)	(W)		(dBm)	(W)	(W)	(W)
2406	96.9	1.7	0.002	4	3.0	-1.3	0.001	1	0.999
2438	97.3	2.1	0.002	4	3.0	-0.9	0.001	1	0.999
2474	96.8	1.5	0.002	4	3.0	-1.5	0.001	1	0.999

dBµV/m to dBm conversion:

$$E = 20.log\left(\frac{\sqrt{30.P}}{d}\right) + 120$$

Where: E = electric field strength (dBµV/m)
P = EIRP in Watts
d = measurement distance in metres

Channel 2406 MHz



Channel 2438 MHz

Channel 2474 MHz

3.5 §15.205 Restricted Bands of Operation

The restricted band limits were applied.

3.6 §15.209 Radiated emission limits; general requirements

The limits given in §15.247 applied, however attenuation below the general levels was not required.

3.7 §15.247(d) Out of Band Emissions

3.7.1 RADIATED SPURIOUS MEASUREMENTS

Radiated spurious emission 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 sufficient frequency resolution 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	10	0.6 metre loop antenna
0.150 to 30	9	10	
30 to 1000	120	10	Biconilog hybrid
1000 to 18 000	1000	3	Standard gain or broad band horns
18 000 to 40 000	1000	1	

The sample was slowly rotated with the spectrum analyser set to Max-Hold. This was performed for at least two antenna heights. When an emission was located, it was positively identified and its maximum level found by rotating the automated turntable and by varying the antenna height. Devices design for a fixed position were tested in that position, portable devices were tested in three orthogonal orientations.

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 antenna polarisations.

Calculation of field strength

The field strength was calculated automatically by the software using the pre-stored calibration data. The method of calculation is shown below:

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

Where: E = Radiated Field Strength in dBµV/m.
V = EMI Receiver Voltage in dBµV/m.
AF = Antenna Factor in dB. (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)

Field strength conversion over distance

To convert a limit given at a certain distance to a limit at the measurement distance or vice-versa the following equation was applied:

$$E_x = 20 \times \log\left(\frac{d_y \times 10^{E_y/20}}{d_x}\right)$$

Where: E_x = Electric field at x metres (dBµV/m)
E_y = Electric field at y metres (dBµV/m)
d_x = Measurement distance of x metres
d_y = Measurement distance of y metres

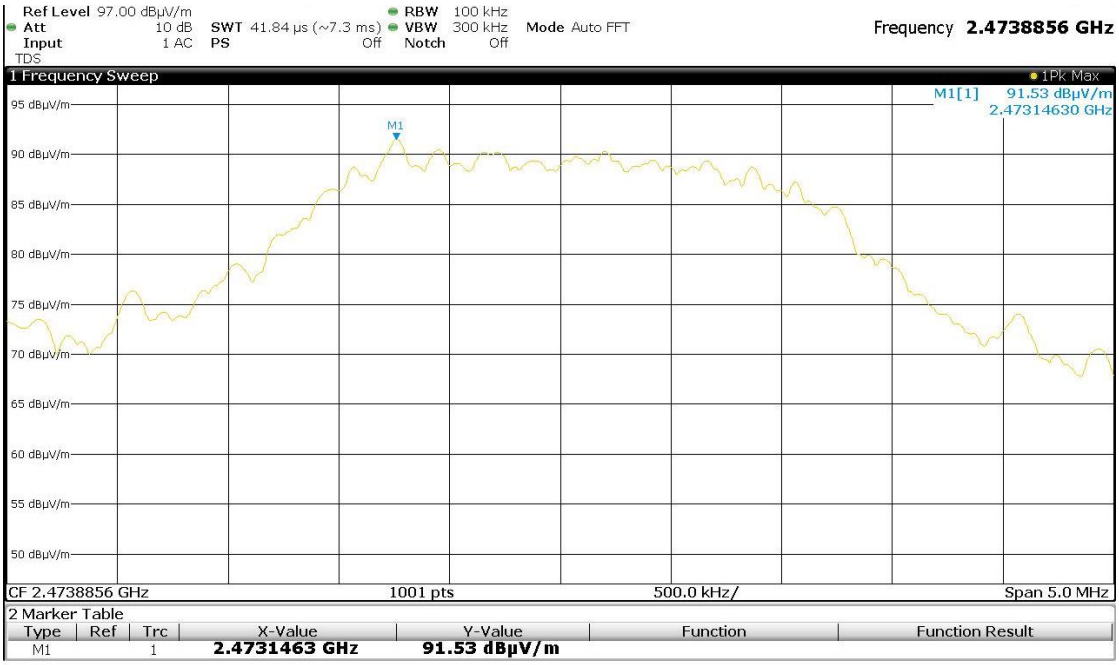
3.7.2 Spurious Emission Limit

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.

Channel [MHz]	100 kHz BW Power at 3 m [dBµV/m]	Limit		
		10 m [dBµV/m]	3 m [dBµV/m]	1 m [dBµV/m]
2406	91.6	61.2	71.6	81.2
2438	89.8	59.5	69.8	79.5
2474	91.5	61.1	71.5	81.1

Channel 2406 MHz

Channel 2438 MHz



Channel 2474 MHz

3.7.3 Radiated Spurious Emission Tabulated Results

Frequency Band: 9 kHz - 30 MHz

No emissions detected above the measurement system noise floor. Limit 15.209 was applied over the full range, 9 kHz to 30 MHz.

Frequency Band: 30 - 1000 MHz

Limit 15.209 was applied over the full range, 30 MHz to 1000 MHz.

Channel [MHz]	Polarity	Frequency [MHz]	Quasi-Peak [dBµV/m]		Limit [dBµV/m]	Margin [dB]
			10 m (Meas.)	3 m (Calc.)		
2406	Vertical	921.51	24.1	34.6	46.0	-11.4
	Horizontal	590.67	17.2	27.7	46.0	-18.3
2438	Vertical	31.44	19.6	30.1	40.0	-9.9
	Horizontal	436.29	17.3	27.8	46.0	-18.2
2474	Vertical	866.07	20.5	31.0	46.0	-15.0
		37.35	13.9	24.4	40.0	-15.6
		30.00	20.3	30.8	40.0	-9.2
	Horizontal	30.12	20.2	30.7	40.0	-9.3

Frequency Band: 1 000 – 18 000 MHz

Average Detector Results:

Channel [MHz]	Polarity	Frequency [GHz]	3 m Average [dBµV/m]	Limit [dBµV/m]	Margin [dB]
2406	Vertical	2.397	25.6	71.6	-46.0
		4.846	33.4	54.0	-20.6
		17.984	**46.2**	**54.0**	**-7.8**
	Horizontal	4.846	32.6	54.0	-21.4
		10.789	33.5	54.0	-20.5
2438	Vertical	4.862	33.4	54.0	-20.6
		13.362	36.7	54.0	-17.3
	Horizontal	4.862	34.6	54.0	-19.4
		13.351	36.9	54.0	-17.1
2474	Vertical	4.928	34.0	54.0	-20.0
	Horizontal	4.937	36.2	54.0	-17.8
		17.922	**46.2**	**54.0**	**-7.8**

Peak Detector Results:

Channel [MHz]	Polarity	Frequency [GHz]	3 m Peak [dBµV/m]	Limit [dBµV/m]	Margin [dB]
2406	Vertical	2.397	42.5	91.6	-49.1
		4.846	48.9	74.0	-25.1
		17.984	60.6	74.0	-13.4
	Horizontal	4.846	51.0	74.0	-23.0
		10.789	47.2	74.0	-26.8
2438	Vertical	4.862	47.4	74.0	-26.6
		13.362	51.3	74.0	-22.7
	Horizontal	4.862	52.6	74.0	-21.4
		13.351	51.2	74.0	-22.8
2474	Vertical	4.928	48.2	74.0	-25.8
	Horizontal	4.937	54.5	74.0	-19.5
		17.922	60.4	74.0	-13.6

Frequency Band: 18 000 – 25 000 MHz

Average Detector Results:

Channel [MHz]	Frequency [GHz]	Average [dBµV/m]		Limit [dBµV/m]	Margin [dB]
		1 m (Meas.)	3 m (Calc.)		
2406	22.106	51.0	41.5	63.5	-22.0
2438	23.569	51.9	42.4	71.6	-29.2
2474	24.853	51.7	42.2	71.6	-29.4

Peak Detector Results:

Channel [MHz]	Frequency [GHz]	Peak [dBµV/m]		Limit [dBµV/m]	Margin [dB]
		1 m (Meas.)	3 m (Calc.)		
2406	22.106	65.2	55.7	83.5	-27.8
2438	23.569	65.0	55.5	91.6	-36.1
2474	24.853	65.5	56.0	91.6	-35.6

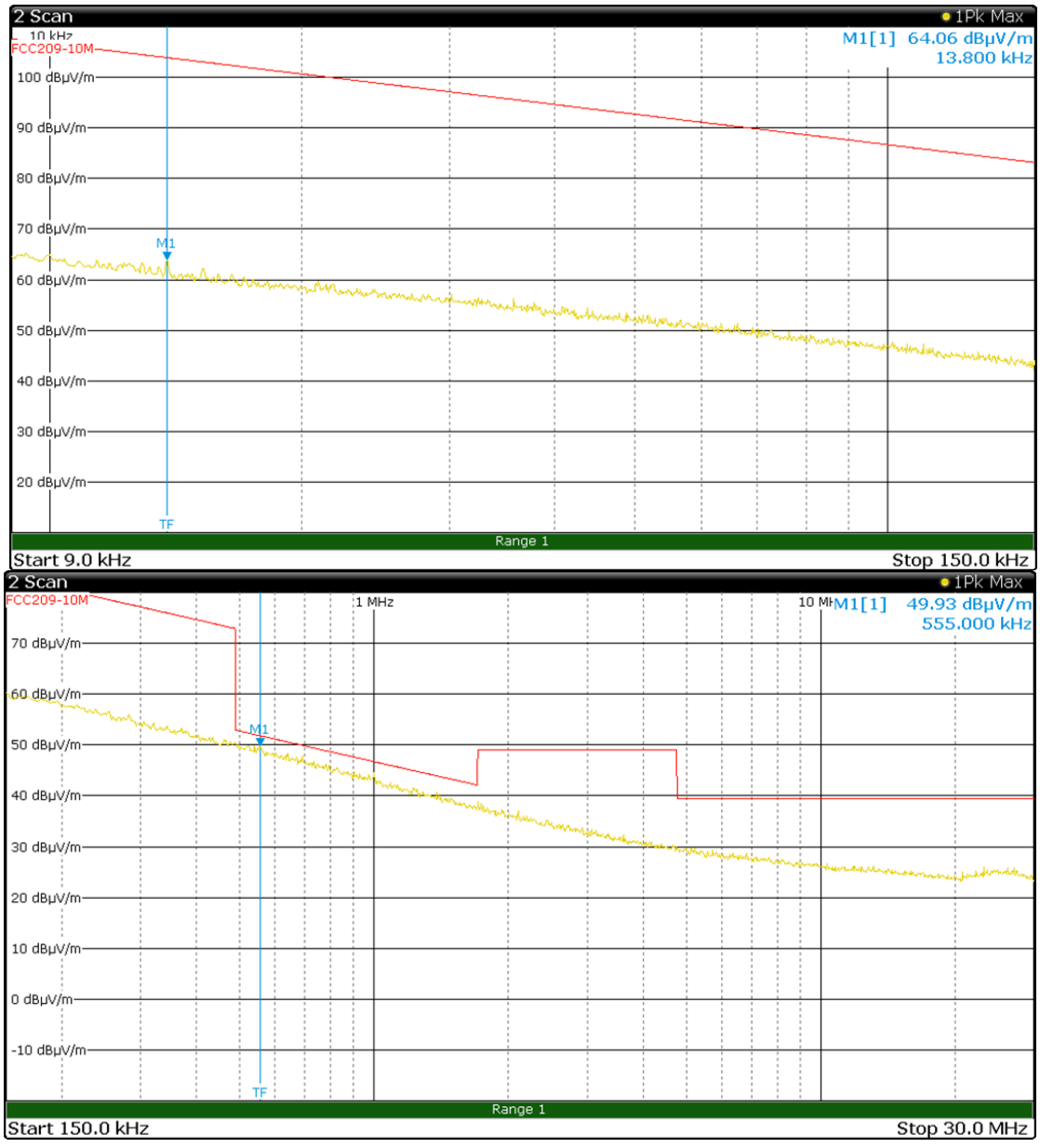
Band-edge measurement results:

Channel [MHz]	Frequency [GHz]	3 m Average [dBµV/m]	Limit [dBµV/m]	Margin [dB]
2406	2.400	40.3	71.6	-31.3
2474	2.4835	40.5	54.0	-13.5

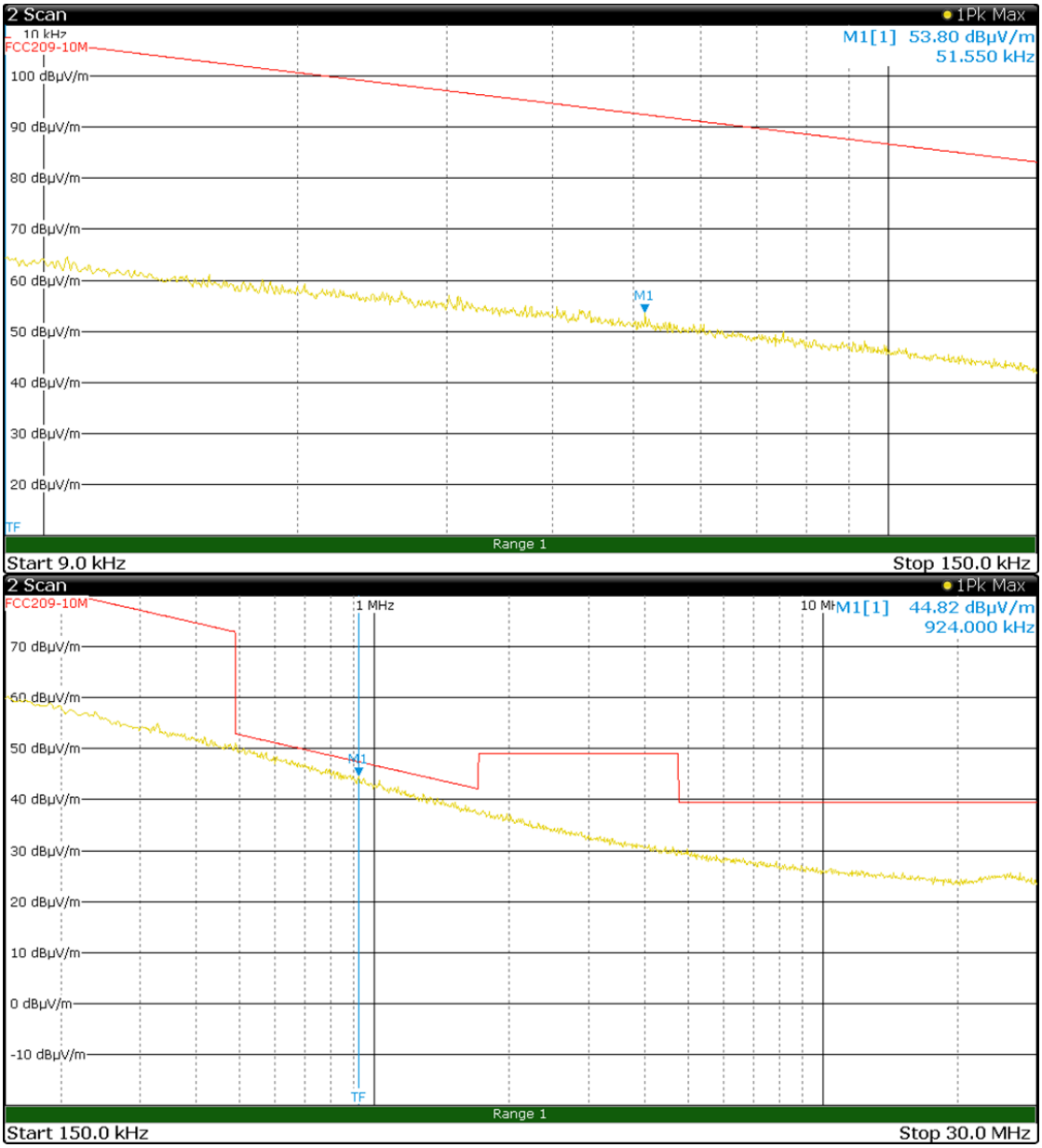
Channel [MHz]	Frequency [GHz]	3 m Peak [dBµV/m]	Limit [dBµV/m]	Margin [dB]
2406	2.400	42.4	91.6	-49.2
2474	2.4835	41.9	74.0	-32.1

3.7.4 Frequency Band: 9 kHz - 30 MHz

Measurements were made at a distance of 10 metres. The measurement of emissions between 9 kHz – 150 kHz were made with a resolution bandwidth (RBW) of 200 Hz and the video bandwidth (VBW) of 3 kHz, 150 kHz – 30 MHz were measured with the resolution bandwidth (RBW) of 9 kHz and the video bandwidth (VBW) of 30 kHz. Measurements were made with the loop antenna oriented perpendicular, parallel and ground-parallel with respect to the sample. Only the maximum graphs have been reported.



Channel 2406 MHz

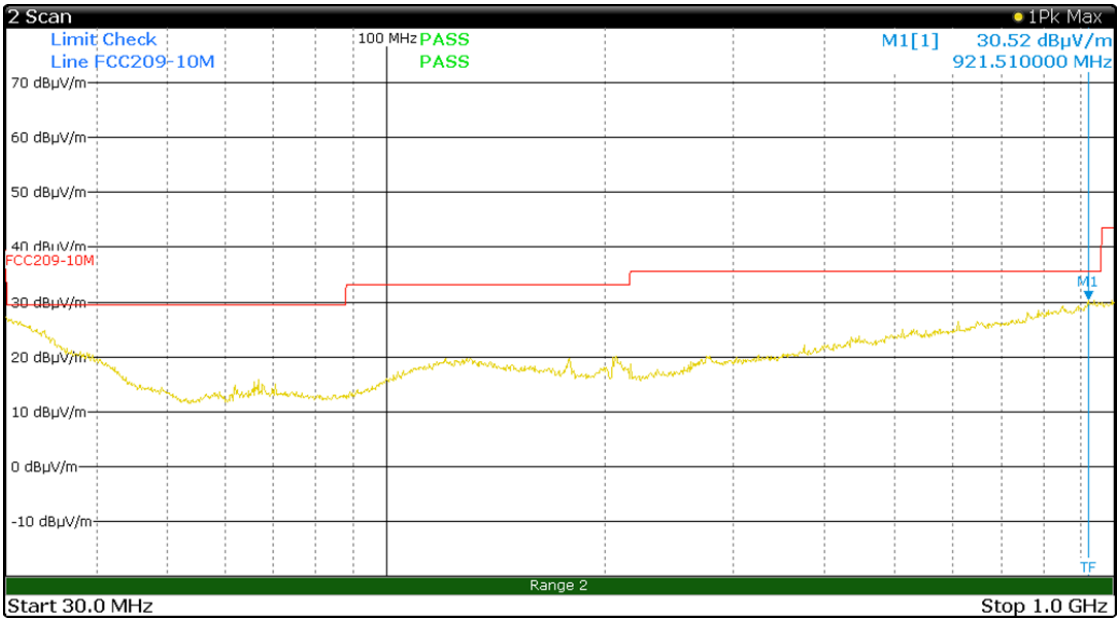


Channel 2438 MHz

Channel 2474 MHz

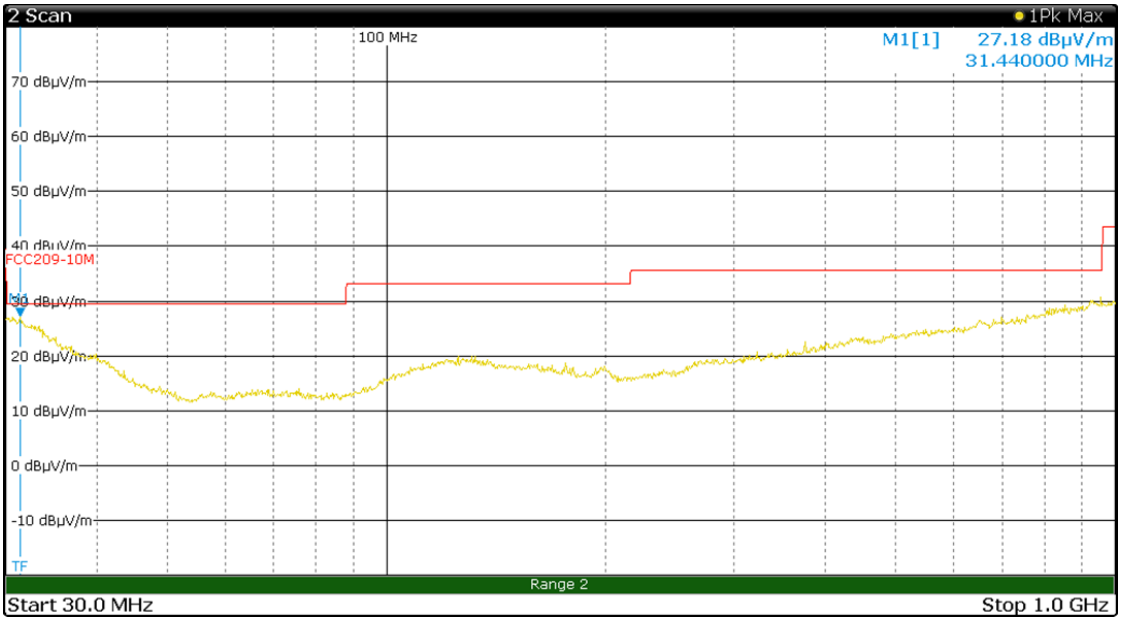
3.7.5 Frequency Band: 30 - 1000 MHz

Measurements were made at a distance of 10 metres. The measurement of emissions between 30 - 1000 MHz were made with a resolution bandwidth (RBW) of 120 kHz and the video bandwidth (VBW) of 300 kHz.

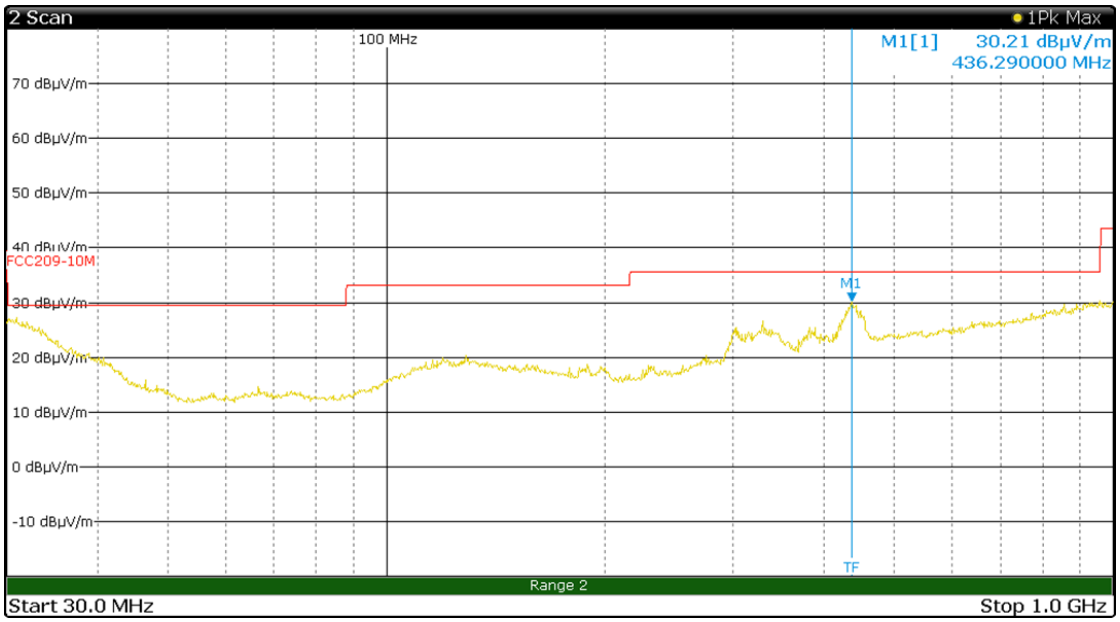


Channel 2406 MHz - Vertical

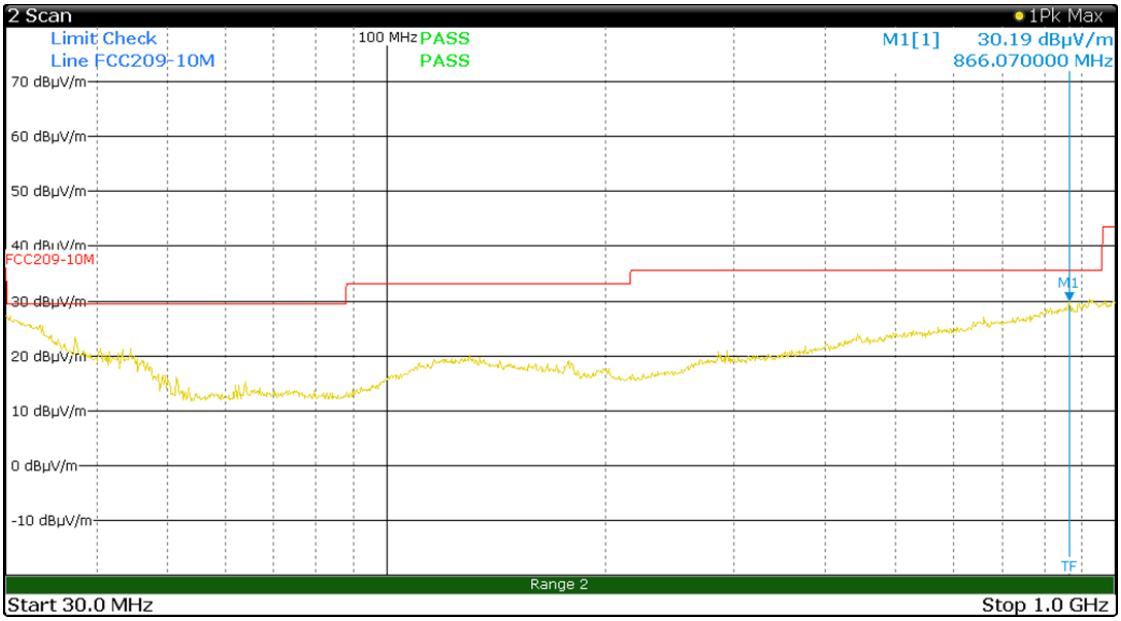
Channel 2406 MHz - Horizontal



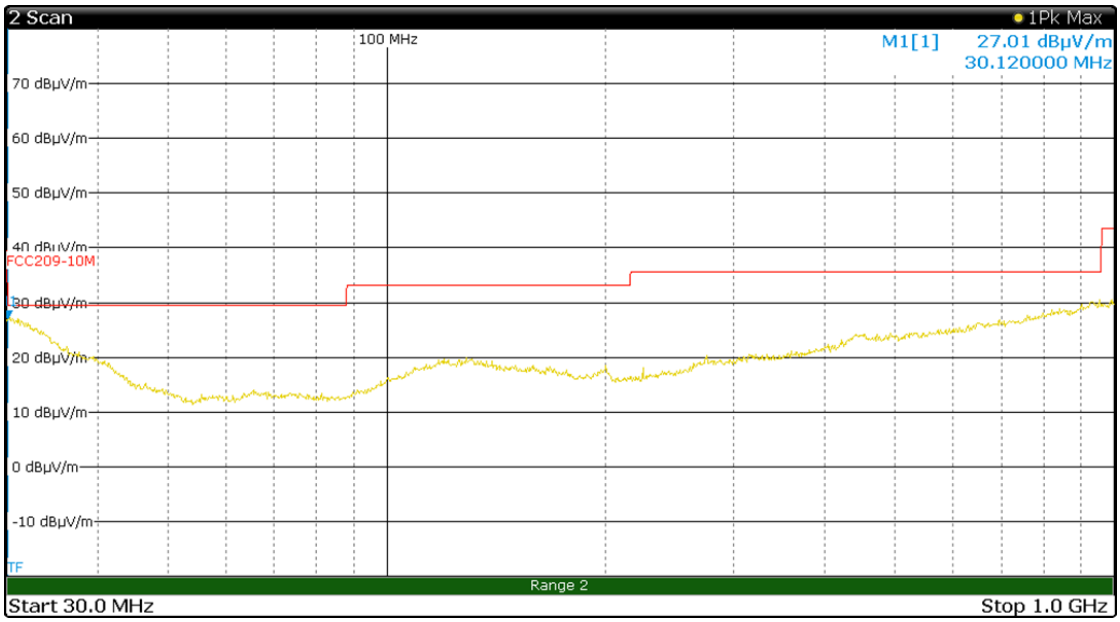
Channel 2438 MHz - Vertical



Channel 2438 MHz - Horizontal



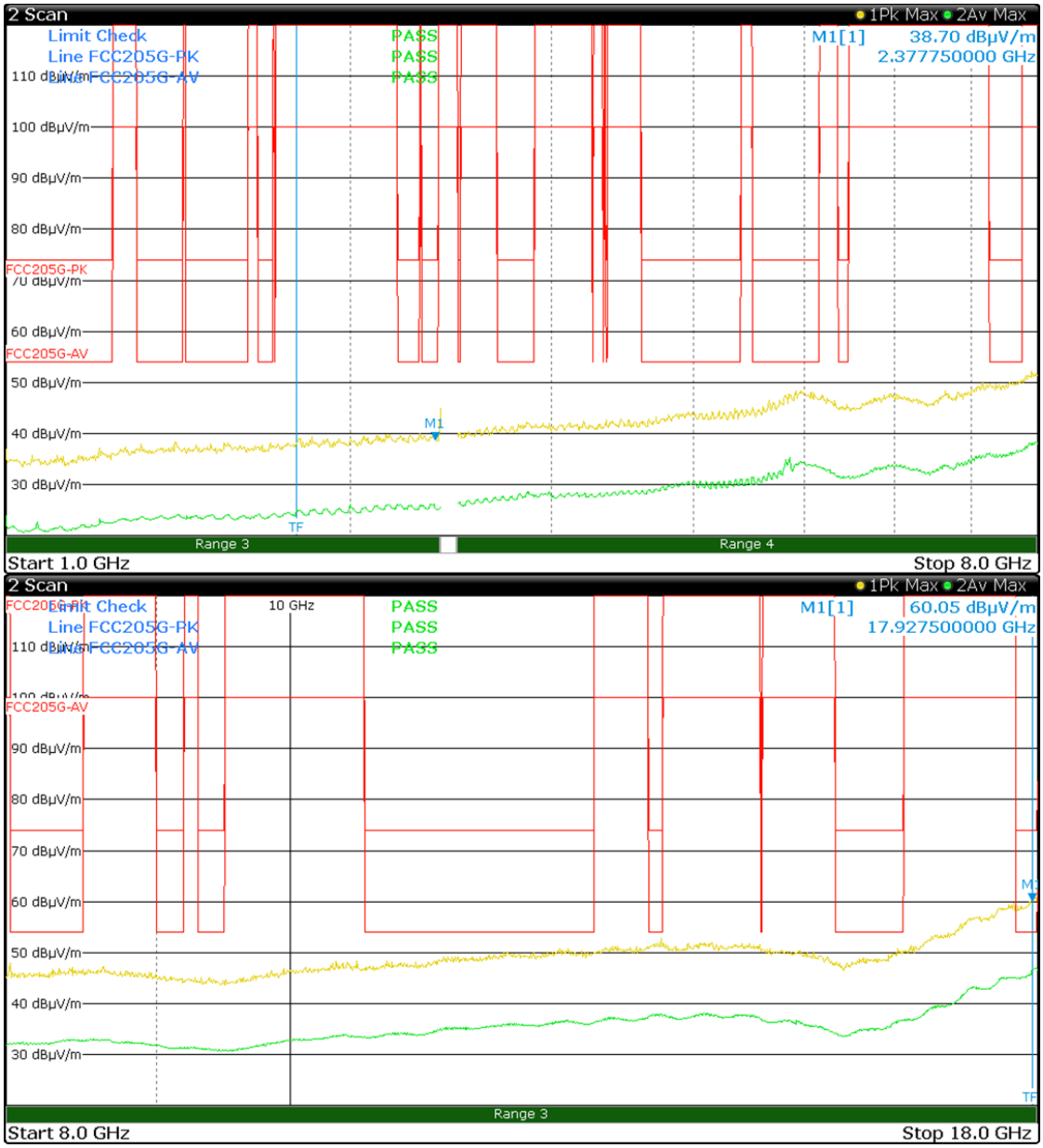
Channel 2474 MHz - Vertical



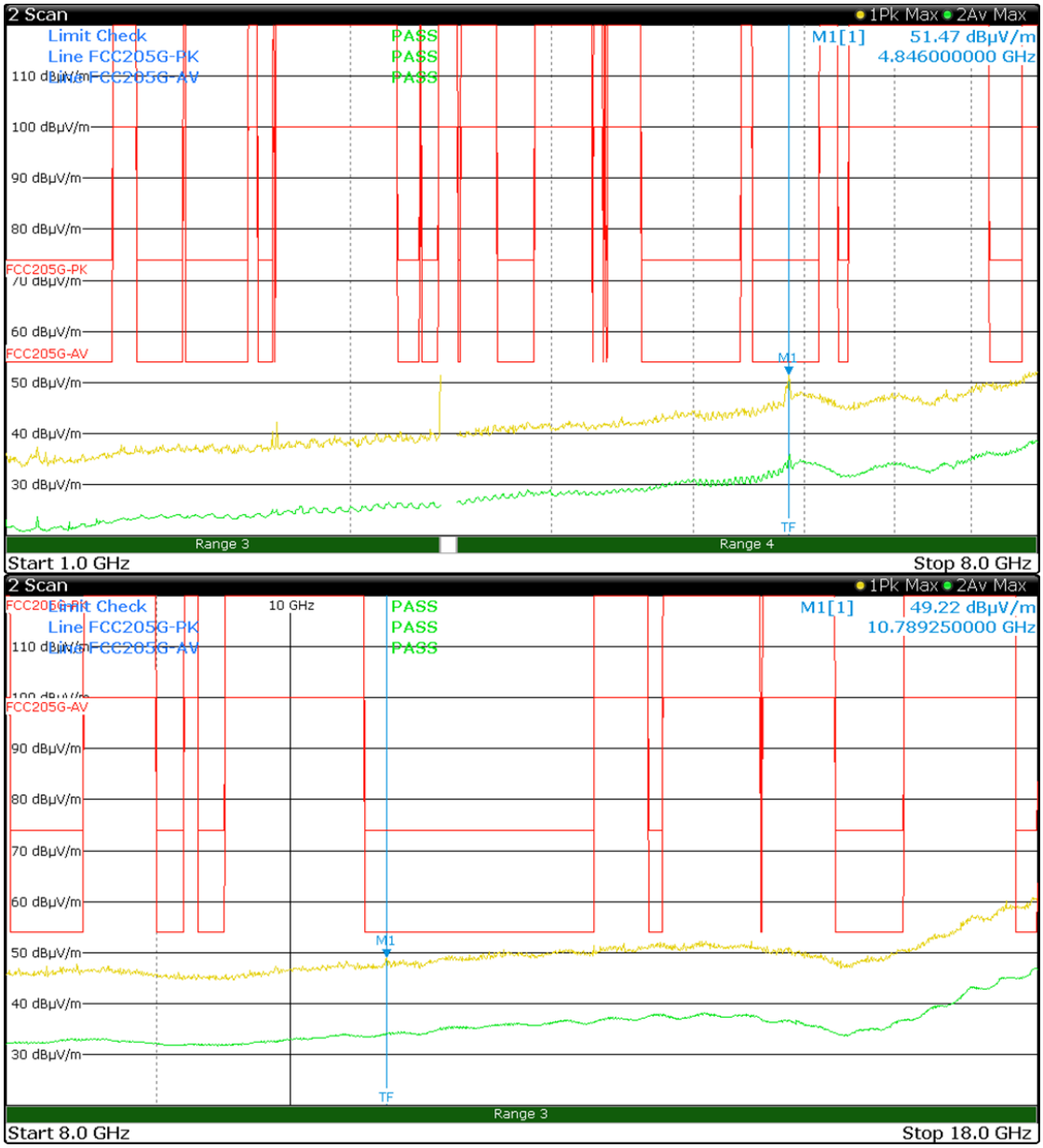
Channel 2474 MHz - Horizontal

3.7.6 Frequency Band: 1 000 – 18 000 MHz

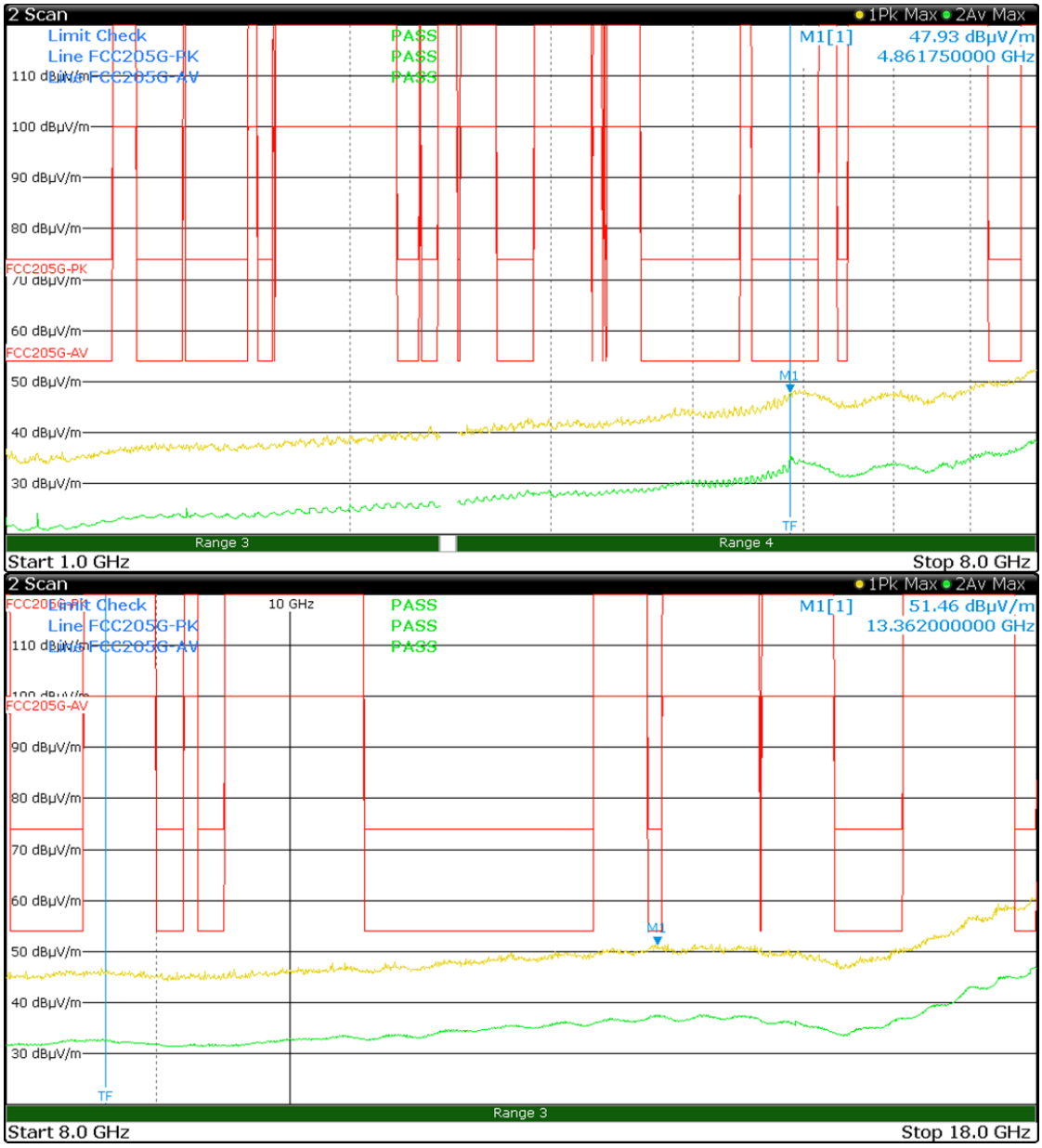
Measurements to 18 GHz were made at a distance of 3 metres. The measurements were made with a resolution bandwidth (RBW) of 1000 kHz and the video bandwidth (VBW) of 1000 kHz.



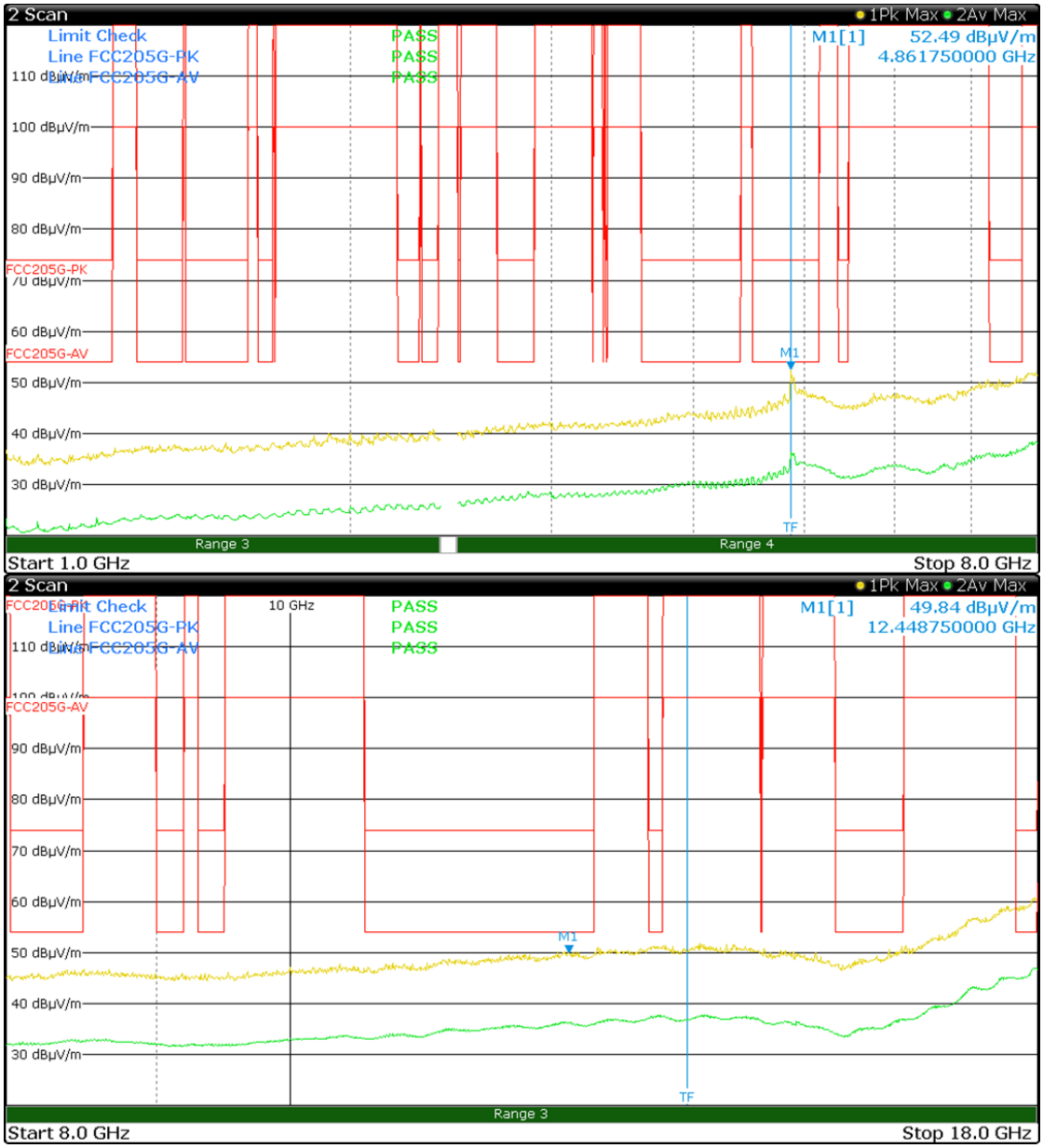
Channel 2406 MHz - Vertical



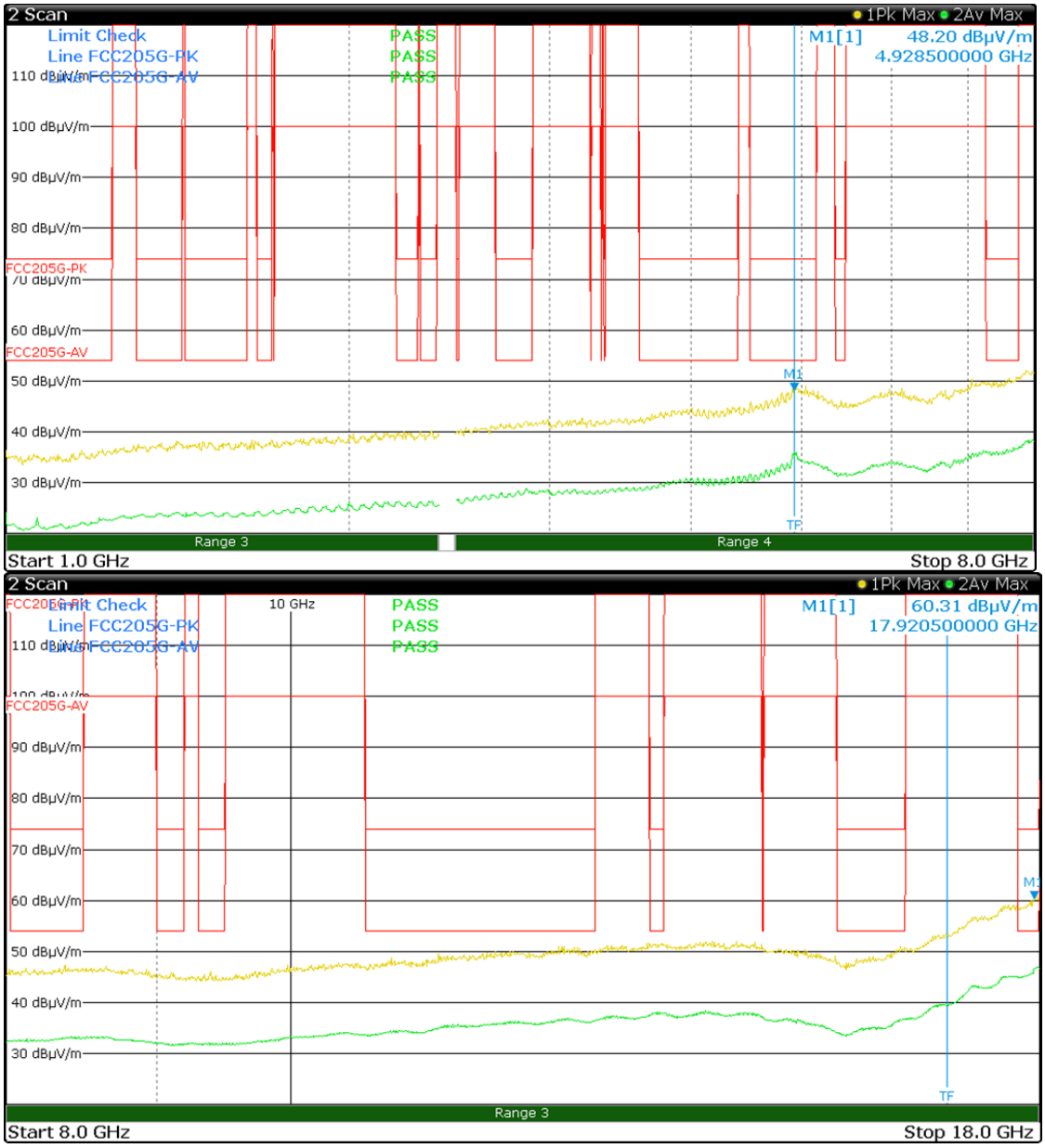
Channel 2406 MHz - Horizontal



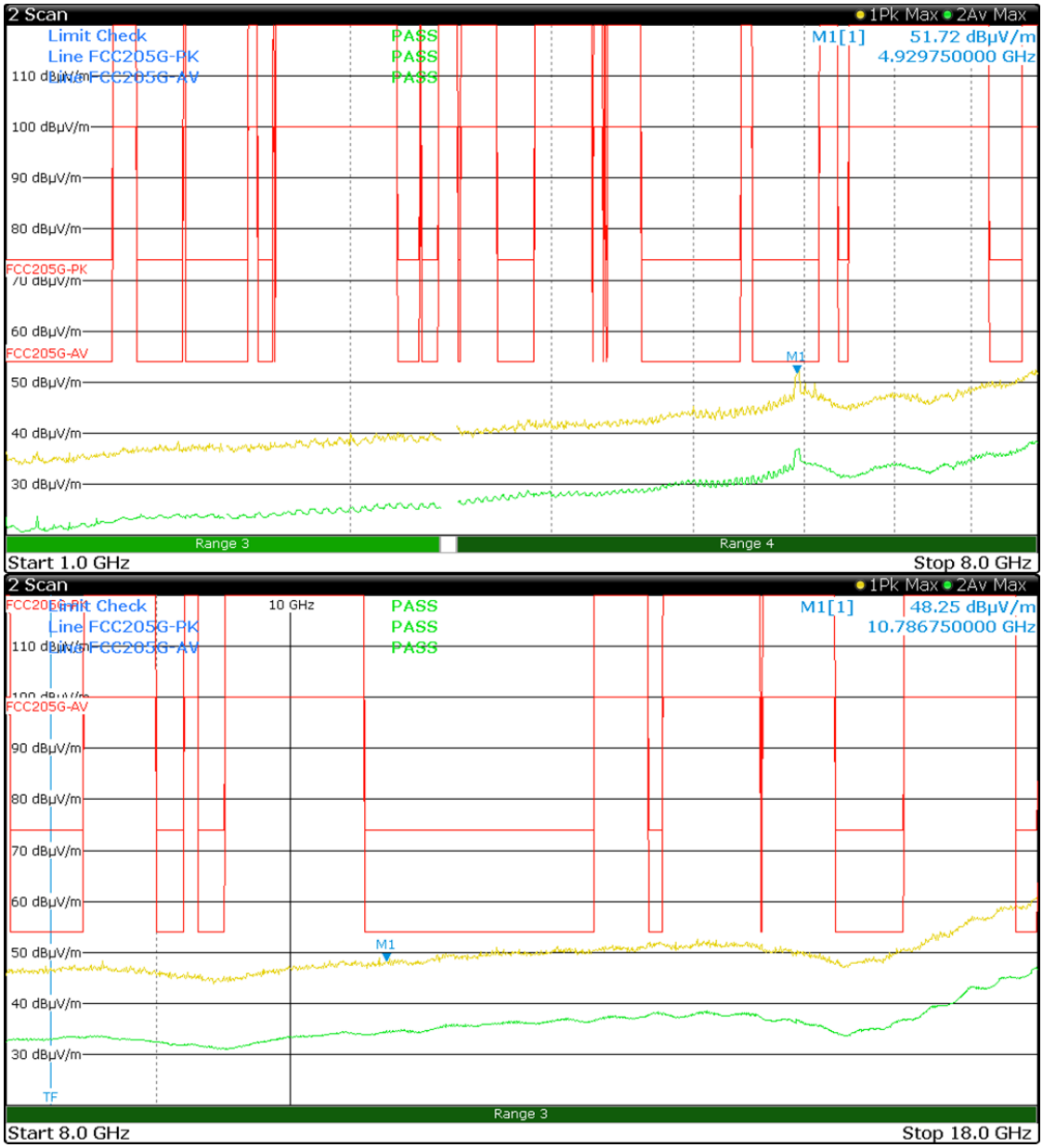
Channel 2438 MHz - Vertical



Channel 2438 MHz - Horizontal



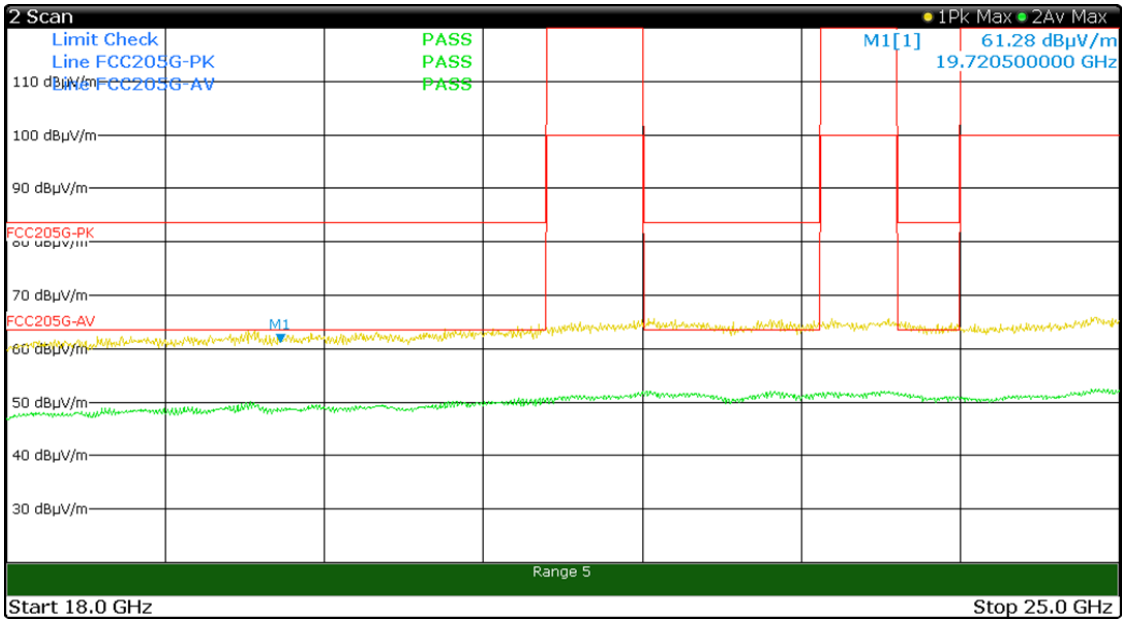
Channel 2474 MHz - Vertical



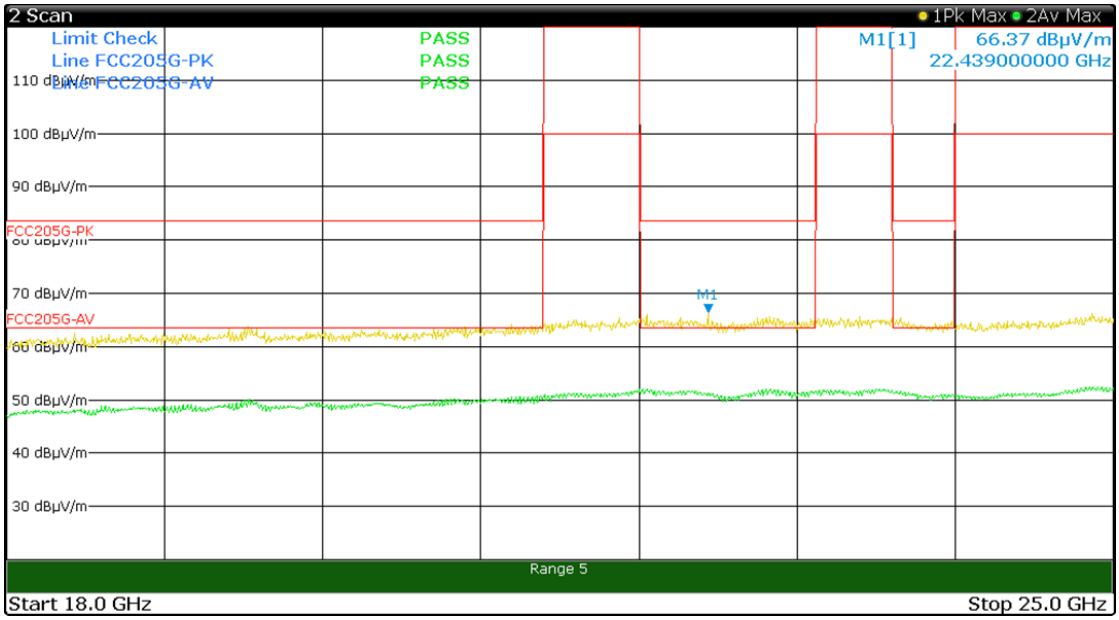
Channel 2474 MHz - Horizontal

3.7.7 Frequency Band: 18 000 – 25 000 MHz

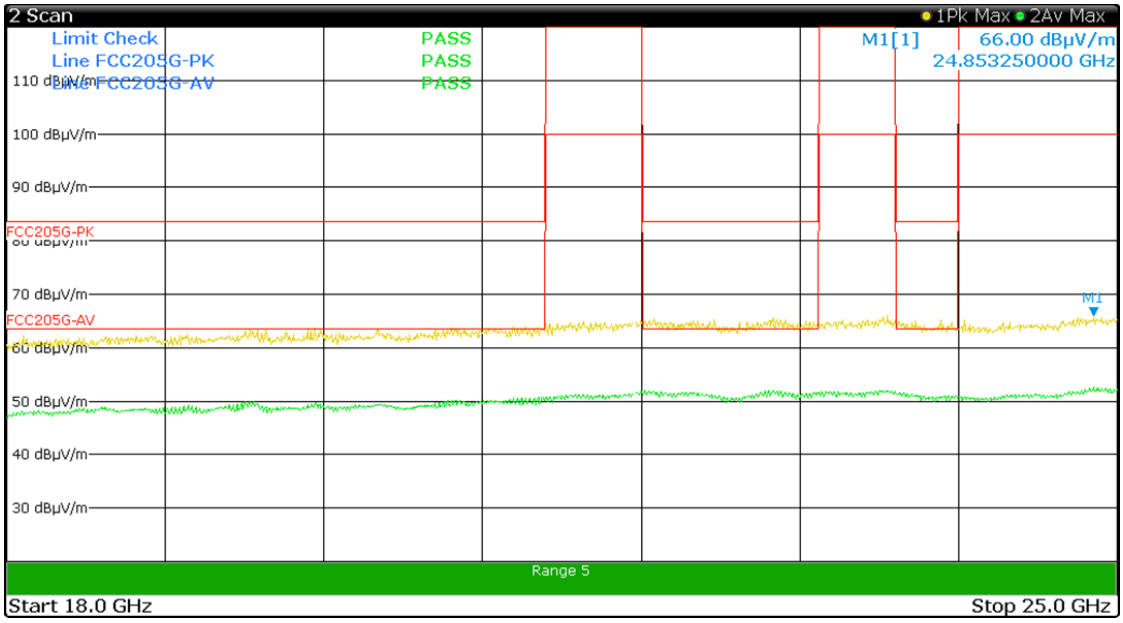
Measurements above 18 GHz were made at a distance of 1 metre. The measurements were made with a resolution bandwidth (RBW) of 1000 kHz and the video bandwidth (VBW) of 1000 kHz. Both receive antenna polarities combined.



Channel 2406 MHz



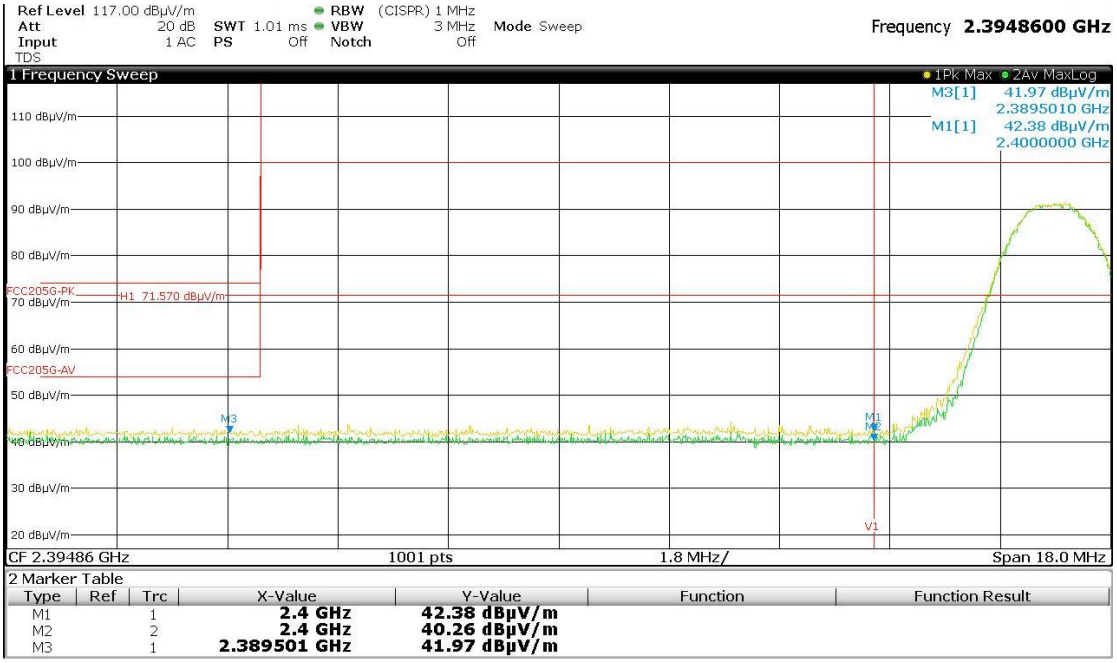
Channel 2438 MHz



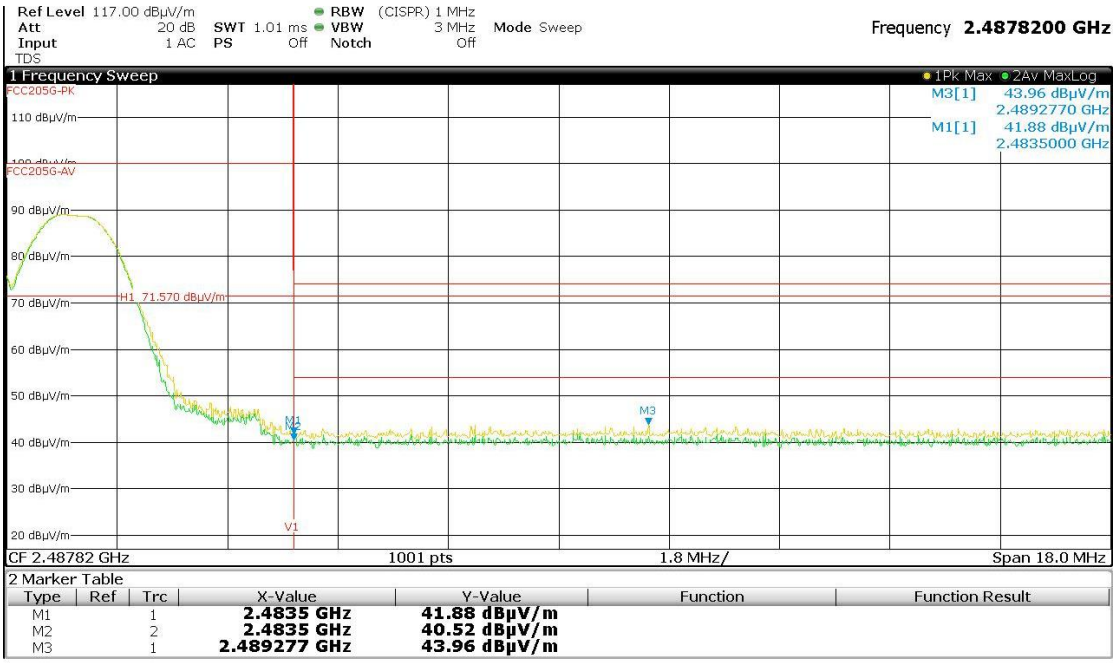
Channel 2474 MHz

3.7.8 Band-Edge Emission Measurements

Emissions within 5 MHz of an authorised band edge were measured. The measurements were made with the sample and antenna orientated for maximum power level.



Channel 2406 MHz



Channel 2474 MHz

3.8 §15.247(e) Power Spectral Density

Power spectral density measurements were made at 3 metres. Different configurations of EUT and antenna polarization were investigated to produce highest emission and the EUT was set to transmit in continuous transmission mode. Power spectral density is shown below, the resolution bandwidth was 3 kHz.

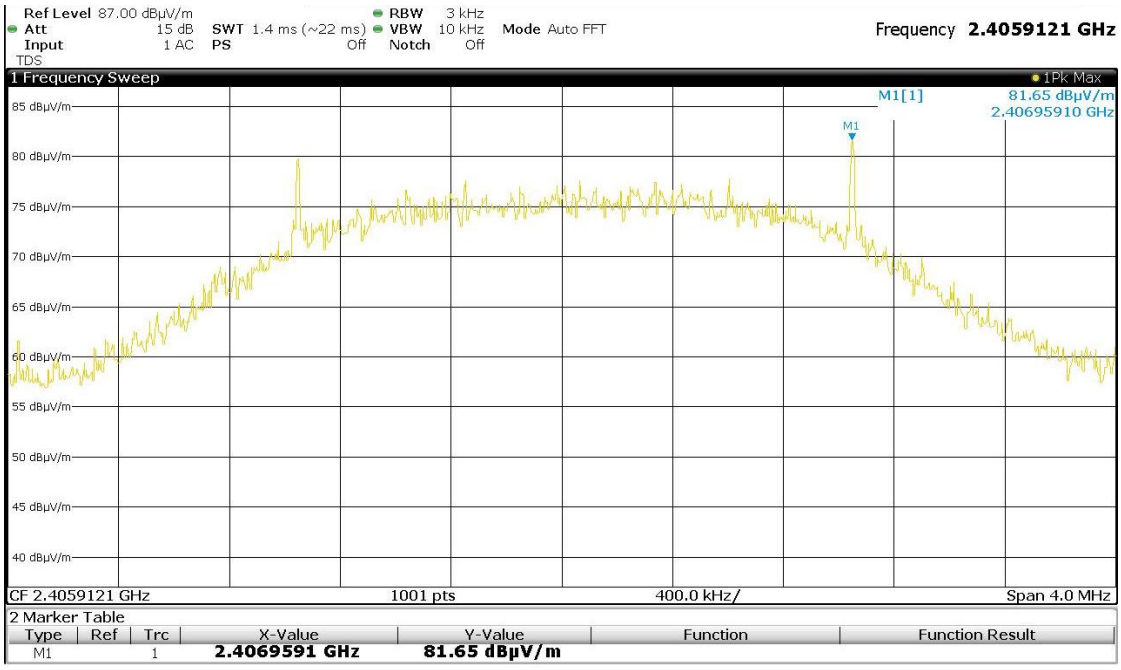
Results:

Channel (MHz)	PSD at 3 m (dBµV/m)	PSD (dBm)	Limit (dBm)	Margin (dB)	Result
2406	81.7	-15.7	8	-23.7	Complied
2438	79.3	-15.9	8	-23.9	Complied
2474	79.5	-13.6	8	-21.6	Complied

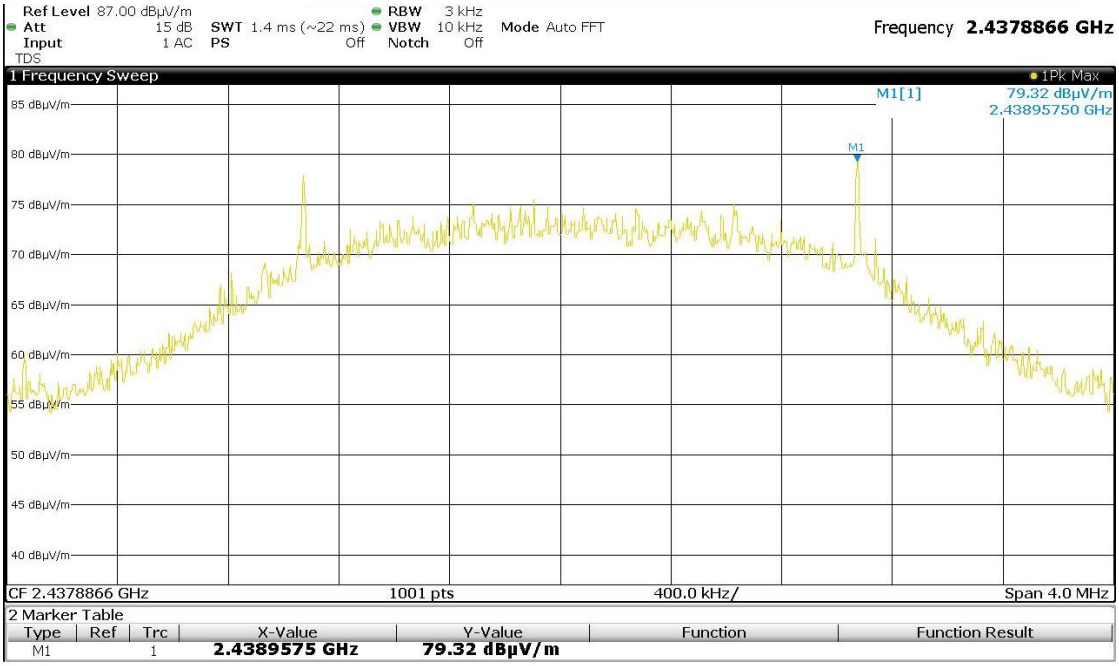
dBµV/m to dBm conversion:

$$\boldsymbol{E = 20log\left(\frac{\sqrt{30P}}{d}\right) + 120}$$

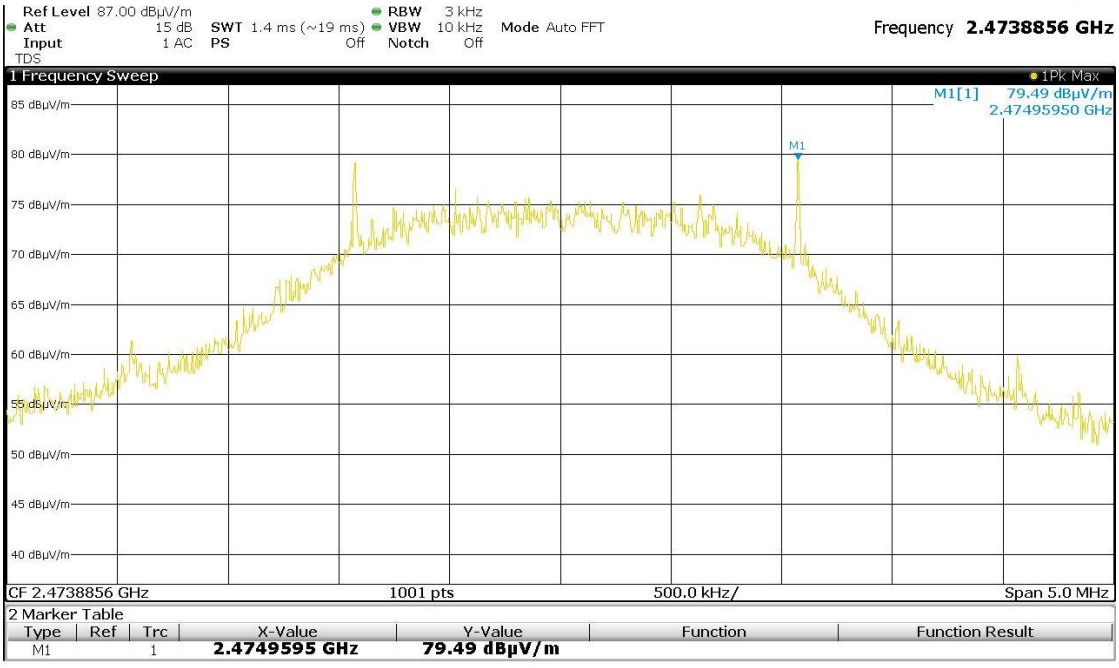
Where: E = electric field strength in dBµV/m
P = EIRP in Watts
d = measurement distance in metres



Channel 2406 MHz



Channel 2438 MHz



Channel 2474 MHz

3.9 §15.247(i) Maximum Permissible Exposure

The EQX 800 was considered a portable device without containing other radios transmitting simultaneously and could be operated within 50 mm of the extremity of a user or nearby person. SAR measurement exclusion requirements of KDB 447498 D01 General RF Exposure Guidance v06 were applied. The following equation was applicable:

10-g Extremity SAR:

$$\left(\frac{max.channel\ power, mW}{min.separation\ distance, mm}\right) \times \sqrt{f(GHz)} \leq 7.5$$

Maximum measured power, E.I.R.P. = 2 mW
Minimum separation distance = 5 mm
Highest frequency = 2.474 GHz

$$\left({}^{2\ mW}/_{5\ mm}\right) \times \sqrt{2.474\ GHz} = 0.6$$

The EQX800 complied with the RF exposure requirements of FCC 1.1307.

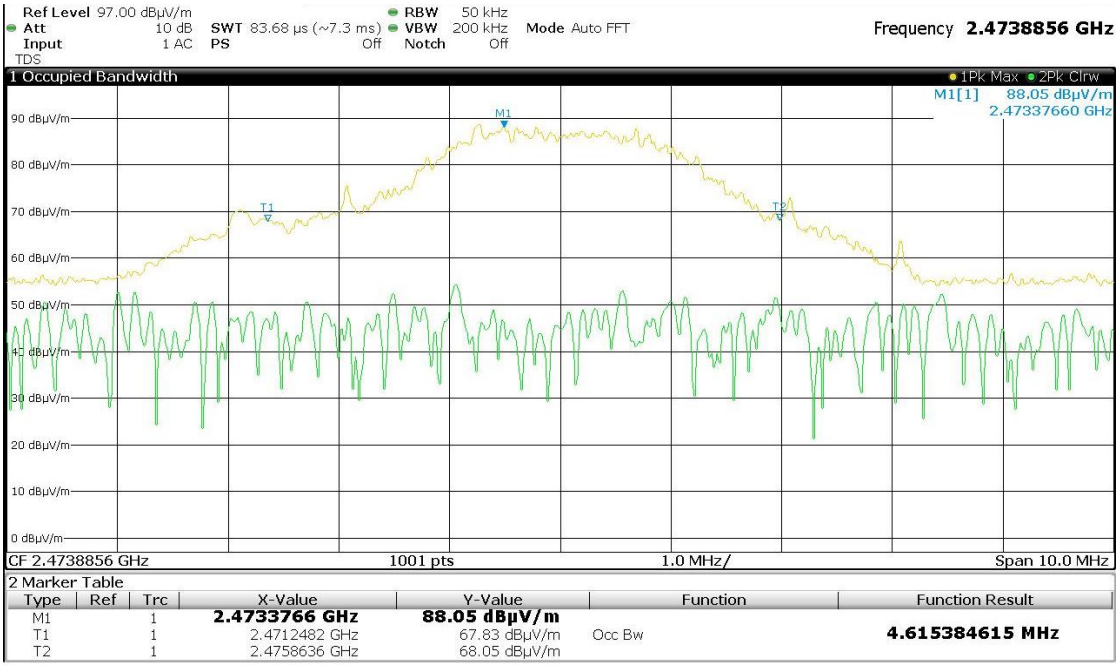
3.10 §2.1049 Occupied bandwidth – 99% power

The bandwidth containing 99% power of the transmitted signal was measured using the procedure from ANSI C63.10 section 6.9.

Channel [MHz]	99% Bandwidth [MHz]	Low Frequency [MHz]	High Frequency [MHz]
2406	4.654	2404	2409
2438	4.785	2436	2441
2474	4.615	2471	2476

Channel 2406 MHz

Channel 2438 MHz



Channel 2474 MHz

4.0 COMPLIANCE STATEMENT

The EQX 800 Platypus Metal Detector tested on behalf of Minelab Electronics Pty. Ltd. **complied** with the requirements of 47 CFR, Part 15 Subpart C - Rules for Radio Frequency Devices (intentional radiators) for a Digital Transmission System (DTS) operating within the band: 2400 MHz to 2483.5 MHz.

5.0 MEASUREMENT UNCERTAINTY

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

Conducted Emissions:	9 kHz to 30 MHz	±3.2 dB
Radiated Emissions:	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
Peak Output Power:		±1.5 dB
Peak Power Spectral Density:		±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%.