FCC and ISED Test Report
Silicon Laboratories Finland Oy

Main Model: SiW917Y1GA
Series Model: SiW917Y1GN
In accordance with FCC 47 CFR Part 15C, ISED RSS-247 and ISED RSS-GEN (2.4 GHz Bluetooth Low Energy)

Prepared for: Silicon Laboratories Finland Oy
Bertel Jungin Aukio 3
Alberga Business Park
02600 Espoo
Finland

FCC ID: QOQ-917AC IC: 5123A-917AC

COMMERCIAL-IN-CONFIDENCE

Document 75960833-05 Issue 02

SIGNATURE			
NAME	JOB TITLE	RESPONSIBLE FOR	ISSUE DATE
Steve Marshall	Senior Engineer	Authorised Signatory	05 September 2024

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD document control rules.

ENGINEERING STATEMENT
The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 15C, ISED RSS-247 and ISED RSS-GEN. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Ahmad Javid	05 September 2024	
	Pier-Angelo Lorusso	05 September 2024	
	Thomas Biddlecombe	05 September 2024	

FCC Accreditation
492497/UK2010 Octagon House, Fareham Test Laboratory

ISED Accreditation
12669A Octagon House, Fareham Test Laboratory

EXECUTIVE SUMMARY
A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15C: 2022, ISED RSS-247: Issue 3 (08-2023) and ISED RSS-GEN: Issue 5 (04-2018) + A2 (02-2021) for the tests detailed in section 1.3.

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Phone: +44 (0) 1489 558100
Fax: +44 (0) 1489 558101
www.tuvsud.com/en

TÜV SÜD
Octagon House
Concorde Way
Fareham
Hampshire PO15 5RL
United Kingdom

Contents

1 Report Summary

1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Issue	Description of Change	Date of Issue
1	First Issue	02-Sept-2024
2	Duty Cycle figure amendment	05-Sept-2024

Table 1

1.2 Introduction

Applicant	Silicon Laboratories Finland Oy
Manufacturer	Silicon Laboratories Finland Oy
Model Number(s)	Main Model: SiW917Y1GA Series Model: SiW917Y1GN
Serial Number(s)	BLE MAC address: D4:48:67:DD:D7:30 BLE MAC address: D4:48:67:DD:D6:87
Hardware Version(s)	1.0
Software Version(s)	Stack's "Connectivity Firmware" version 2.12.1.0.0.1
Number of Samples Tested	2
Test Specification/Issue/Date	FCC 47 CFR Part 15C: 2022 ISED RSS-247: Issue 3 (08-2023 ISED RSS-GEN: Issue 5 (04-2018) + A2 (02-2021)
Order Number	PTP ~ 6000530772
Date	08-March-2024
Date of Receipt of EUT	20-May-2024
Start of Test	22-May-2024
Finish of Test	05-June-2024
Name of Engineer(s)	Ahmad Javid, Pier-Angelo Lorusso and Thomas Biddlecombe
Related Document(s)	ANSI C63.10 (2020) ANSI C63.10 (2013)

1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15C, ISED RSS-247 and ISED RSS-GEN is shown below.

Section	Specification Clause			Test Description	Result	Comments/Base Standard
	Part 15C	RSS-247	RSS-GEN			
Configuration and Mode: 2.4 GHz Bluetooth Low Energy - PCB Trace Antenna (SiW917Y1GA)						
2.1	15.209 & 15.247 (d)	3.3 & 5.5	6.13 & 8.9	Spurious Radiated Emissions	Pass	
2.5	15.205	3.3	8.10	Restricted Band Edges	Pass	
2.6	15.247 (d)	5.5	-	Authorised Band Edges	Pass	
	15.203	-	-	Antenna Requirement	N/T	The device complies with the provisions of this section, as it uses permanently attached integral antennas.
Configuration and Mode: 2.4 GHz Bluetooth Low Energy - ANT-2.4-CW-CT-SMA//RPS Antenna (SiW917Y1GN)						
2.1	15.209 & 15.247 (d)	3.3 & 5.5	6.13 & 8.9	Spurious Radiated Emissions	Pass	
2.5	15.205	3.3	8.10	Restricted Band Edges	Pass	
2.6	15.247 (d)	5.5	-	Authorised Band Edges	Pass	
	15.203	-	-	Antenna Requirement	N/T	The device complies with the provisions of this section, as it comes with an unique connector in the form of an RF pad
Configuration and Mode: 2.4 GHz Bluetooth Low Energy - Conducted Tests (SiW917Y1GN)						
2.2	15.247 (a)(2)	5.2	6.7	Emission Bandwidth	Pass	
2.3	15.247 (b)	5.4	6.12	Maximum Conducted Output Power	Pass	
2.4	15.247 (e)	5.2	6.12	Power Spectral Density	Pass	

Table 2

Note: For conducted testing, antenna gain was taken as 2.80 dBi as per the ANT-2.4-CW-CT-SMA/RPS Antenna as this is the highest gain antenna.

1.4 Application Form

Equipment Description

Technical Description: *(Please provide a brief description of the intended use of the equipment including the technologies the product supports)*	Bluetooth Low Energy (LE), and Wi-Fi 802.11b/g/n/ax wireless radio module		
Legal Manufacturer (Technology Owner):	Silicon Laboratories Finland Oy		
Model name(s):	Main Model: SiW917Y1GA (with integral antenna) Series Model: SiW917Y1GN (with no integral antenna but RF pin)		
Brand Name:	SILICON LABS		
Hardware Version:	1.0		
Software Version:	Connectivity Firmware (runs the wireless stacks): 2.12.1.0.0.1		
FCC ID of the product under test – see guidance here		QOQ-917AC	
IC ID of the product under test – see guidance here		5123A-917AC	
Device Category	Mobile ☒	Portable ☒	Fixed ☐
Equipment is fitted with an Audio Low Pass Filter		Yes ☐	No ☒

Table 3

Intentional Radiators

Technology	Bluetooth Low Energy	Wi-Fi 802.11b	Wi-Fi 802.11g	Wi-Fi 802.11n	Wi-Fi 802.11ax
Frequency Range (MHz to MHz)	2402-2480 MHz	2412-2462 MHz			
Conducted Declared Output Power (dBm)	Max: 16	Max: 20			Max: 18
Antenna Gain (dBi)	Integral Antenna: 2.26 External Reference Dipole Antenna (1/2 Wave Whip 2.4GHz RPS): 2.80				
Supported Bandwidth(s) (MHz) (e.g. 1 MHz, 20 MHz, 40 MHz)	1MBaud PHYs: 1 2MBaud PHY: 2	20			
Modulation Scheme(s) (e.g. GFSK, QPSK etc)	GFSK	DSSS / CCK	OFDM (Orthogonal Frequency Division Multiplexing) / Subcarriers: BPSK, QPSK, 16-QAM or 64-QAM / Up to MCS7		OFDMA (Orthogonal frequency-division multiple access) / Subcarriers: BPSK, QPSK, 16-QAM or 64-QAM / Up to MCS7
ITU Emission Designator (see guidance here) (not mandatory for Part 15 devices)					
Bottom Frequency (MHz)	Adv mode: 2402 Data mode: 2404	2412			
Middle Frequency (MHz)	Data mode: 2440	2437			
Top Frequency (MHz)	Adv mode: 2480 Data mode: 2478	2462			

Table 4

Un-intentional Radiators

Highest frequency generated or used in the device or on which the device operates or tunes	180 MHz (embedded MCU clock, for ARM® Cortex® M4 core) 40 MHz (module's on-board crystal, for radio portion)
Lowest frequency generated or used in the device or on which the device operates or tunes	
Class A Digital Device (Use in commercial, industrial or business environment) ☒ Class B Digital Device (Use in residential environment only) ☒	

Table 5

AC Power Source

AC supply frequency:		Hz
Voltage		V
Max current:		A
Single Phase ☐ Three Phase ☐		

Table 6

DC Power Source

Nominal voltage:	3.3	V
Extreme upper voltage:	3.63	V
Extreme lower voltage:	3.0	V
Max current:	400	mA

Table 7

Battery Power Source

Voltage:		V
End-point voltage:		V *(Point at which the battery will terminate)*
Alkaline ☐ Leclanche ☐ Lithium ☐ Nickel Cadmium ☐ Lead Acid* ☐ **(Vehicle regulated)*		
Other ☐ Please detail:		

Table 8

Charging

Can the EUT transmit whilst being charged	Yes ☐ No ☐

Table 9

Temperature

Minimum temperature:	-40	°C
Maximum temperature:	+85	°C

Table 10

Cable Loss

Adapter Cable Loss (Conducted sample)	0.5 (u.FL and SMA connectors, plus coax cable, for external reference dipole antenna)	dB

Table 11

Antenna Characteristics

Antenna connector ☐			State impedance		Ohm
Temporary antenna connector ☐			State impedance		Ohm
Integral antenna ☒	Type:	PCB Trace	Gain	2.26	dBi
External antenna ☒	Type:	Dipole, 1/2 Wave Whip, 2.4GHz, RPS (reference only, not sold with module)	Gain	2.80	dBi
For external antenna only: Standard Antenna Jack ☐ If yes, describe how user is prohibited from changing antenna (if not professional installed): Equipment is only ever professionally installed ☐ Non-standard Antenna Jack / RF Pin ☒ All part 15 applications will need to show how the antenna gain was derived either from a manufacturer data sheet or a measurement. Where the gain of the antenna is inherently accounted for as a result of the measurement, such as field strength measurements on a part 15.249 or 15.231 device, so the gain does not necessarily need to be verified. However, enough information regarding the construction of the antenna shall be provided. Such information maybe photographs, length of wire antenna etc.					

Table 12

Ancillaries (if applicable)

Legal Manufacturer (Technology Owner):	Silicon Laboratories Finland Oy	Brand Name:	SILICON LABS
Model(s):	Main Model: SiW917Y1GA (with integral antenna) Series Model: SiW917Y1GN (with no integral antenna but RF pin)	Country of Origin:	China

Table 13

Data in the tables above is provided by the Manufacturer

1.5 Product Information

1.5.1 Technical Description

Bluetooth Low Energy (LE), and Wi-Fi 802.11b/g/n/ax wireless radio module.

1.6 Deviations from the Standard

No deviations from the applicable test standard were made during testing.

1.7 EUT Modification Record

The table below details modifications made to the EUT during the test programme.

The modifications incorporated during each test are recorded on the appropriate test pages.

Modification State	Description of Modification still fitted to EUT	Modification Fitted By	Date Modification Fitted
Model: SiW917Y1GA, Serial Number: BLE MAC address: D4:48:67:DD:D6:87			
0	As supplied by the customer	Not Applicable	Not Applicable
Model: SiW917Y1GN, Serial Number: BLE MAC address: D4:48:67:DD:D7:30			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 14

Note: The serial numbers used throughout this report are the MAC address of the equipment under test.

1.8 Test Location

TÜV SÜD conducted the following tests at our Octagon House Test Laboratory.

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: 2.4 GHz Bluetooth Low Energy - PCB Trace Antenna		
Spurious Radiated Emissions	Ahmad Javid	UKAS
Restricted Band Edges	Ahmad Javid	UKAS
Authorised Band Edges	Ahmad Javid	UKAS
Configuration and Mode: 2.4 GHz Bluetooth Low Energy - ANT-2.4-CW-CT-SMA//RPS Antenna		
Spurious Radiated Emissions	Pier-Angelo Lorusso	UKAS
Restricted Band Edges	Pier-Angelo Lorusso	UKAS
Authorised Band Edges	Pier-Angelo Lorusso	UKAS
Configuration and Mode: 2.4 GHz Bluetooth Low Energy - Conducted Tests		
Emission Bandwidth	Thomas Biddlecombe	UKAS
Maximum Conducted Output Power	Thomas Biddlecombe	UKAS
Power Spectral Density	Thomas Biddlecombe	UKAS

Table 15

Office Address:

TÜV SÜD
Octagon House
Concorde Way
Fareham
Hampshire
PO15 5RL
United Kingdom

2 Test Details

2.1 Spurious Radiated Emissions

2.1.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.209 and 15.247 (d)
ISED RSS-247, Clause 3.3 and 5.5
ISED RSS-GEN, Clause 6.13 and 8.9

2.1.2 Equipment Under Test and Modification State

SiW917Y1GN, S/N: BLE MAC address: D4:48:67:DD:D7:30 - Modification State 0
SiW917Y1GA, S/N: BLE MAC address: D4:48:67:DD:D6:87 - Modification State 0

2.1.3 Date of Test

24-May-2024 to 05-June-2024

2.1.4 Test Method

This test was performed in accordance with ANSI C63.10, clause 6.3, 6.5 and 6.6.

For frequencies > 1 GHz, plots for average measurements were taken in accordance with ANSI C63.10, clause 11.12.2.5.2.

The EUT was placed on the non-conducting platform in a manner typical of a normal installation. As the EUT was considered mobile/portable and therefore reasonable to be used in multiple planes, pre-scans were performed with the EUT orientated in X, Y and Z planes with reference to the ground plane.

The plots shown are the characterisation of the EUT. The limits on the plots represent the most stringent case for restricted bands, (74/54 dBuV/m) when compared to 20 dBc outside restricted bands. The limits shown have been used as a threshold to determine where further measurements are necessary. Where results are within 10 dB of the limits shown on the plots, further investigation was carried out and reported in results tables.

The following conversion can be applied to convert from dBµV/m to µV/m:
10^(Field Strength in dBµV/m/20).

Above 18 GHz, the measurement distance was reduced to 1 m. The limit line was increased by 20*LOG(3/1) = 9.54 dB.

At a measurement distance of 1 meter the limit line was increased by 20*LOG(3/1) = 9.54 dB.

Where formal measurements have been necessary, the results have been presented in the emissions table.

The EUT was supplied with 3.3 VDC by means of a regulator residing in the host certification board, which was in turn being powered over the host certification board’s USB connector.

2.1.5 Example Test Setup Diagram

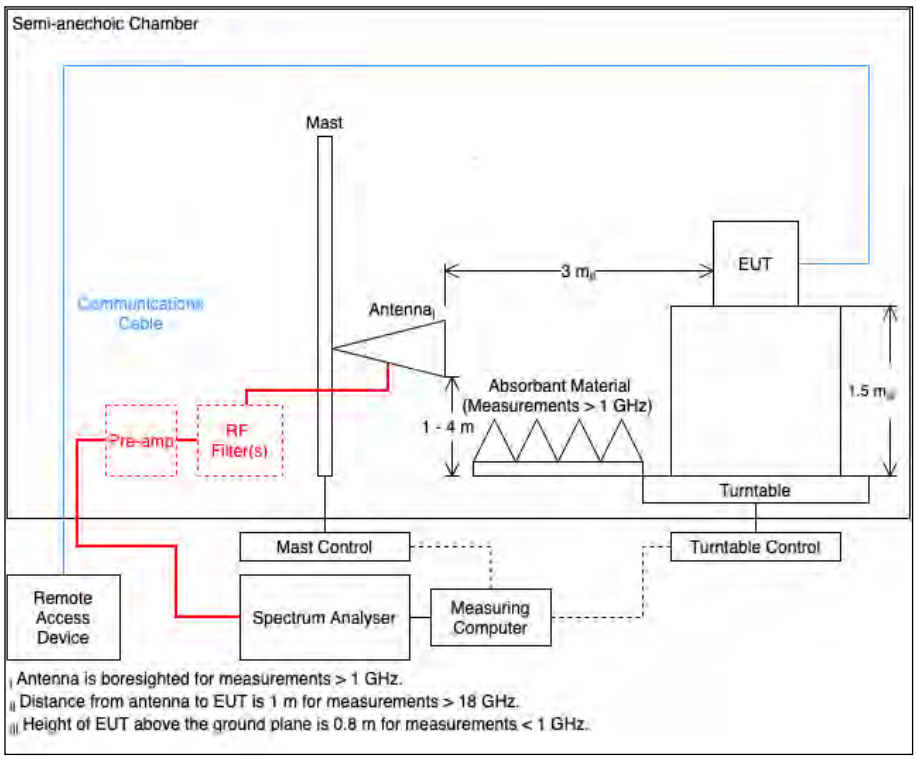

Figure 1

2.1.6 Environmental Conditions

Ambient Temperature	19.3 - 23.0 °C
Relative Humidity	45.8 - 54.2 %

2.1.7 Test Results

2.4 GHz Bluetooth Low Energy - PCB Trace Antenna

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation	Orientation
*									

Table 16 – Bottom_BLE_LE1M - 2404 MHz, 30 MHz to 25 GHz X Orientation

*No emissions found within 10 dB of the limit.

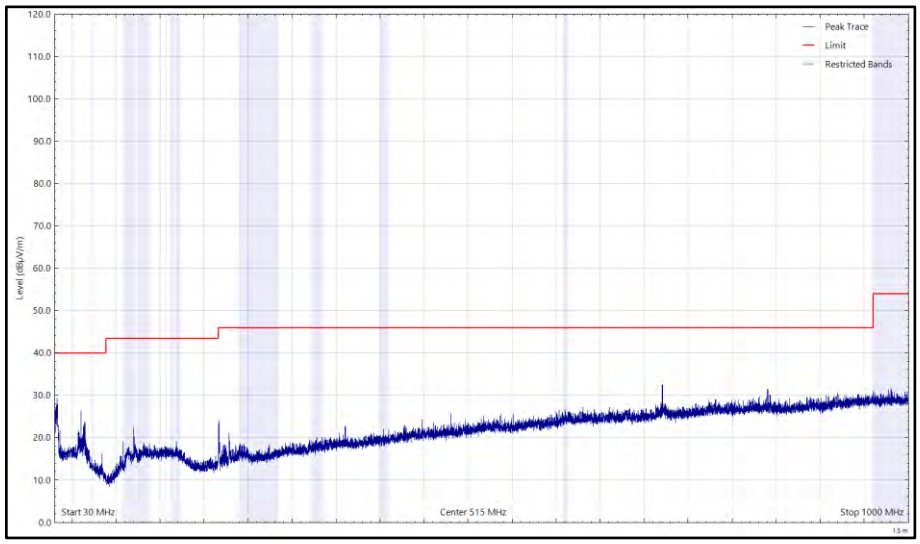

Figure 2 – Bottom_BLE_LE1M - 2404 MHz, 30 MHz to 1 GHz, Horizontal (Peak) X Orientation

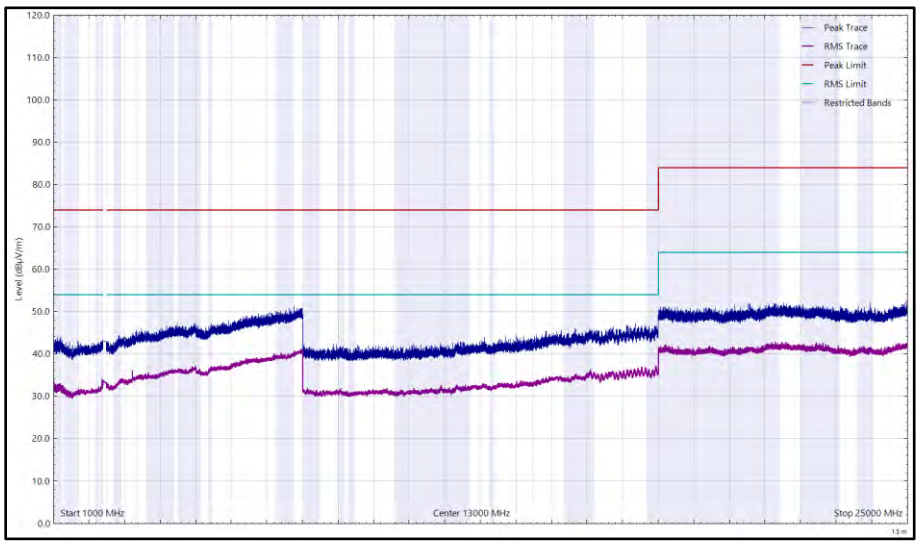

Figure 3 – Bottom_BLE_LE1M - 2402 MHz, 1 GHz to 25 GHz, Horizontal X Orientation

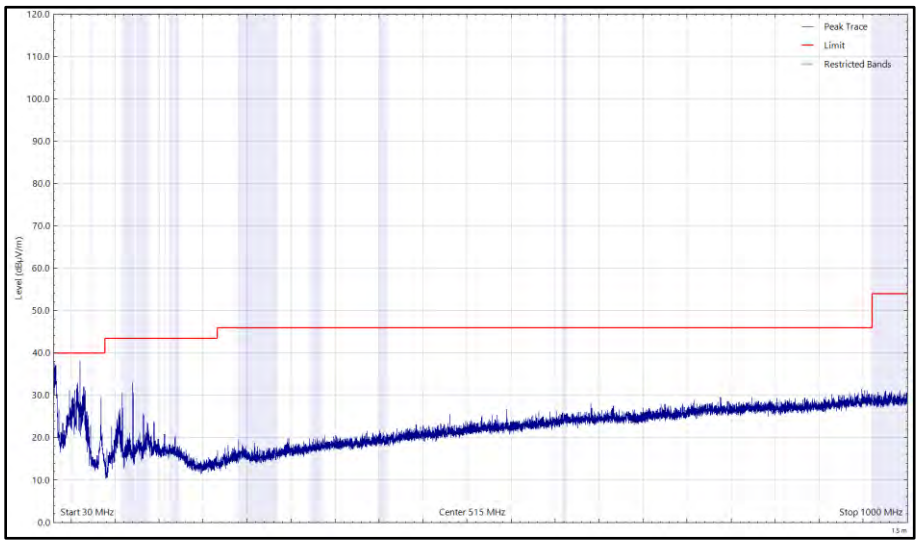

Figure 4 – Bottom_BLE_LE1M - 2404 MHz, 30 MHz to 1 GHz, Vertical (Peak) X Orientation

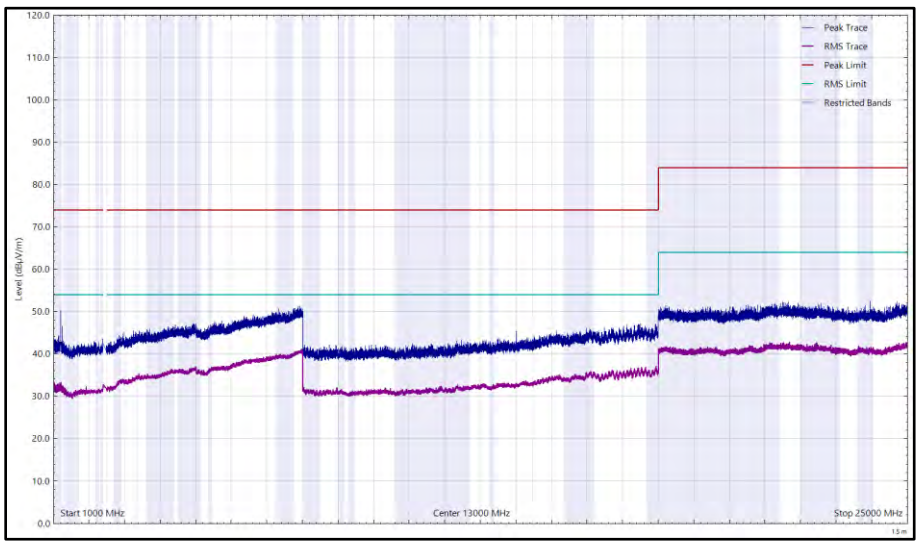

Figure 5 – Bottom_BLE_LE1M - 2404 MHz, 1 GHz to 25 GHz, Vertical X Orientation

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation	Orientation
*									

Table 17 - Middle_BLE_LE1M - 2440 MHz, 30 MHz to 25 GHz X Orientation

*No emissions found within 10 dB of the limit.

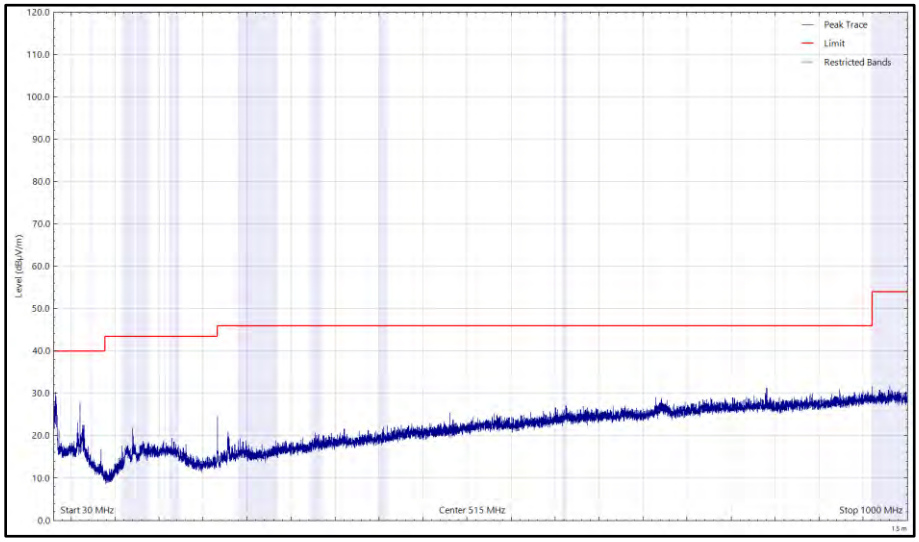

Figure 6 - Middle_BLE_LE1M - 2440 MHz, 30 MHz to 1 GHz, Horizontal (Peak) X Orientation

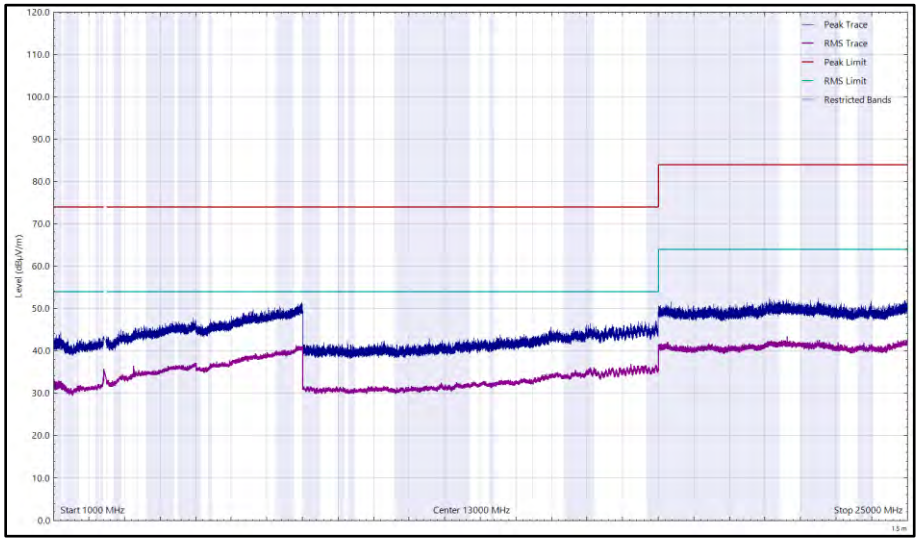

Figure 7 - Middle_BLE_LE1M - 2440 MHz, 1 GHz to 25 GHz, Horizontal X Orientation

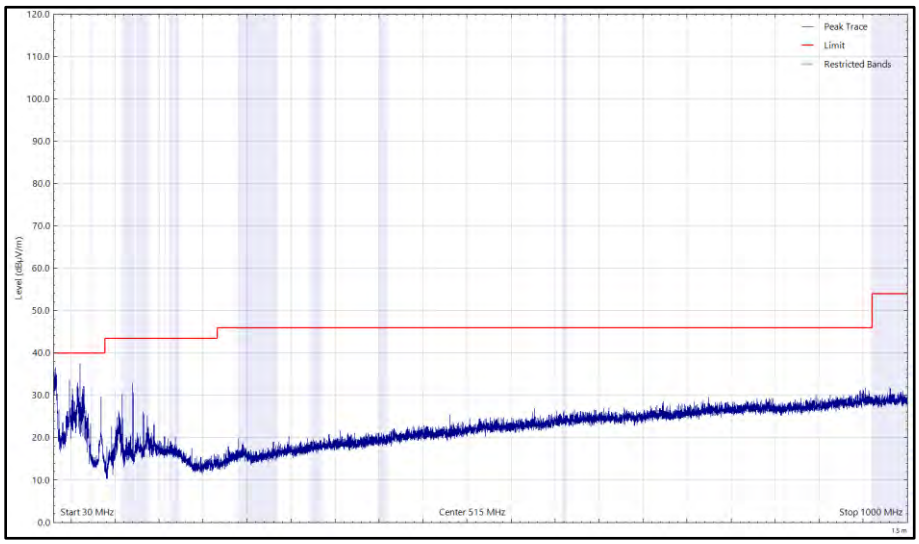

Figure 8 - Middle_BLE_LE1M - 2440 MHz, 30 MHz to 1 GHz, Vertical (Peak) X Orientation

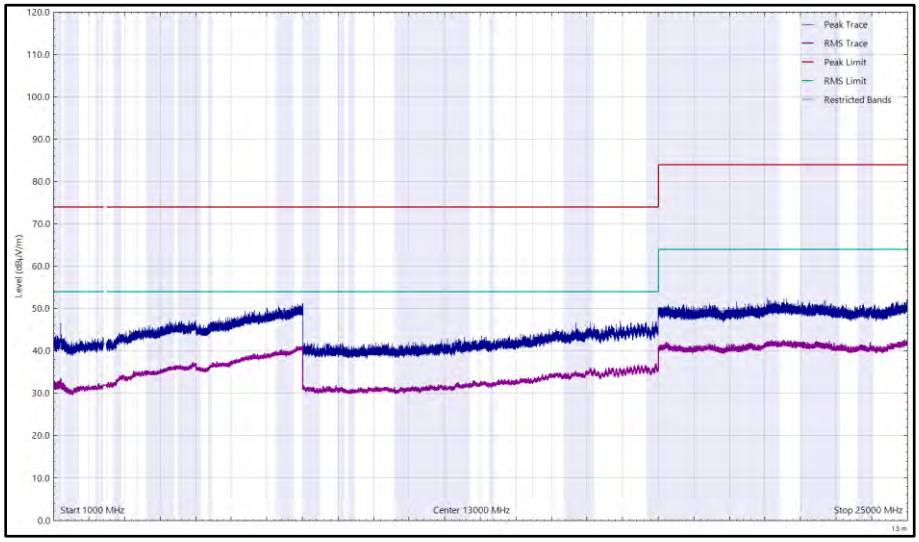

Figure 9 - Middle_BLE_LE1M - 2440 MHz, 1 GHz to 25 GHz, Vertical X Orientation

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation	Orientation
*									

Table 18 - Top_BLE_LE1M - 2478 MHz, 30 MHz to 25 GHz X Orientation

*No emissions found within 10 dB of the limit.

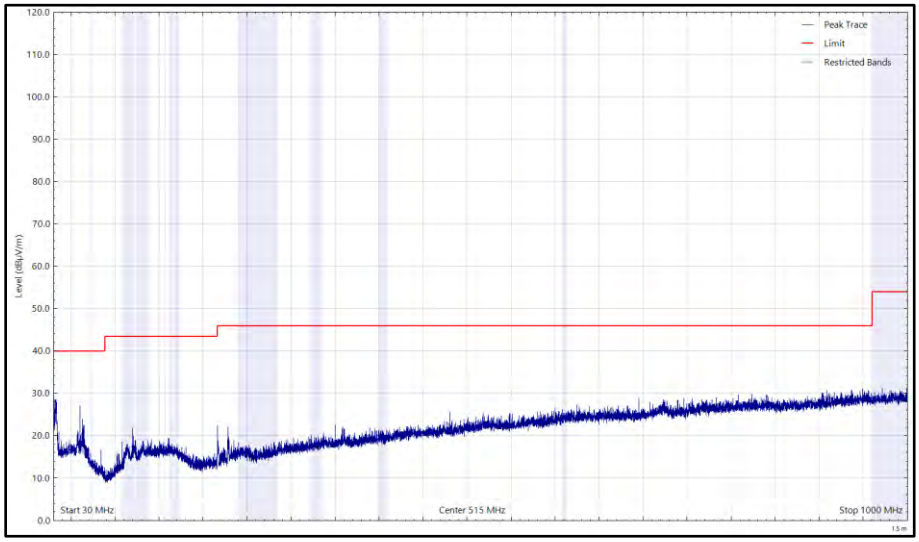

Figure 10 - Top_BLE_LE1M - 2478 MHz, 30 MHz to 1 GHz, Horizontal (Peak) X Orientation

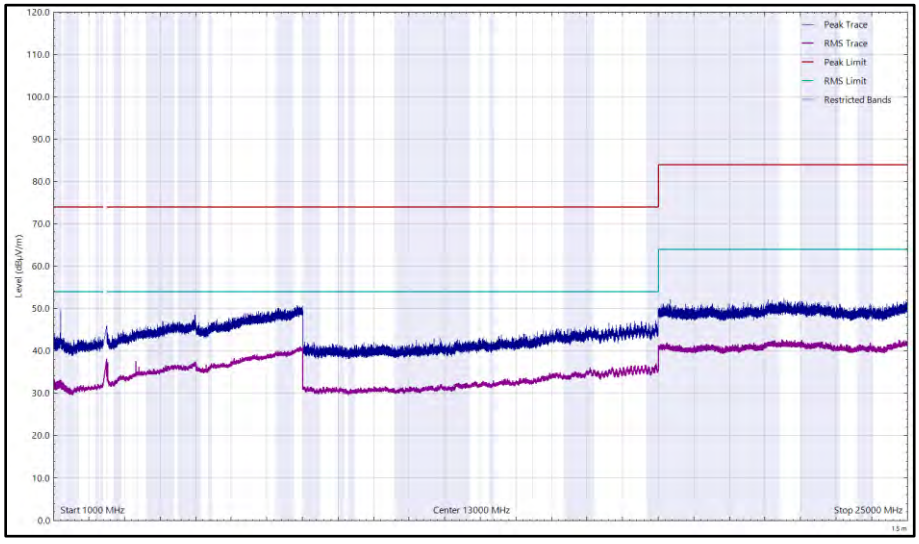

Figure 11 - Top_BLE_LE1M - 2478 MHz, 1 GHz to 25 GHz, Horizontal X Orientation

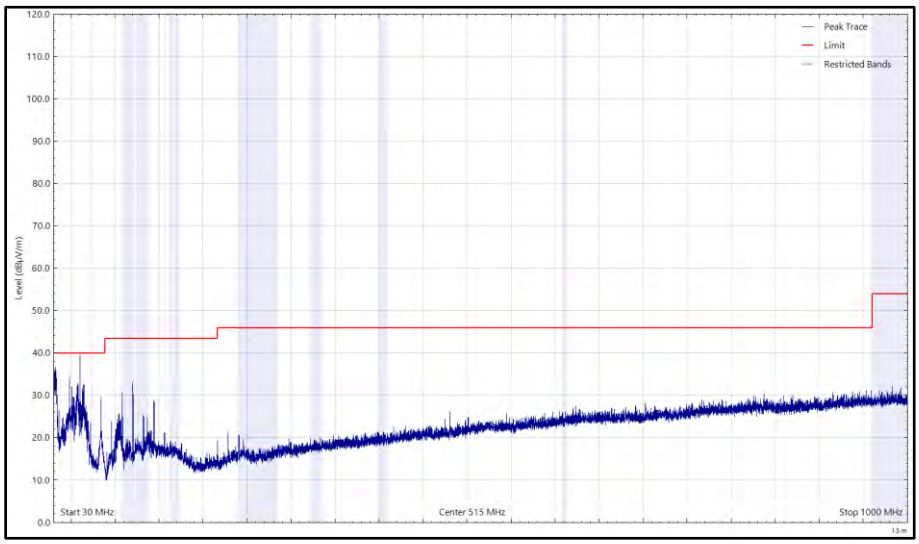

Figure 12 - Top_BLE_LE1M - 2478 MHz, 30 MHz to 1 GHz, Vertical (Peak) X Orientation

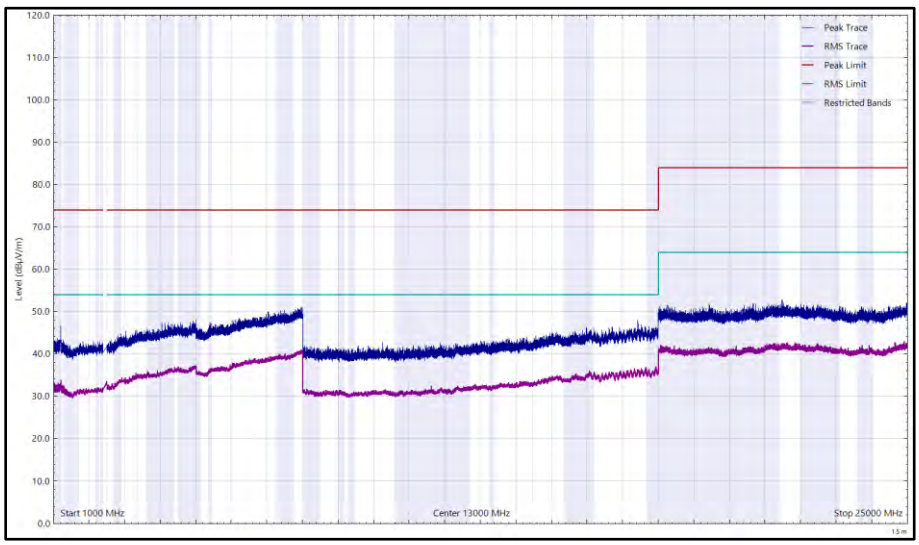

Figure 13 - Top_BLE_LE1M - 2478 MHz, 1 GHz to 25 GHz, Vertical X Orientation

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation	Orientation
*									

Table 19 - Bottom_BLE_LE1M - 2404 MHz, 30 MHz to 25 GHz Y Orientation

*No emissions found within 10 dB of the limit.

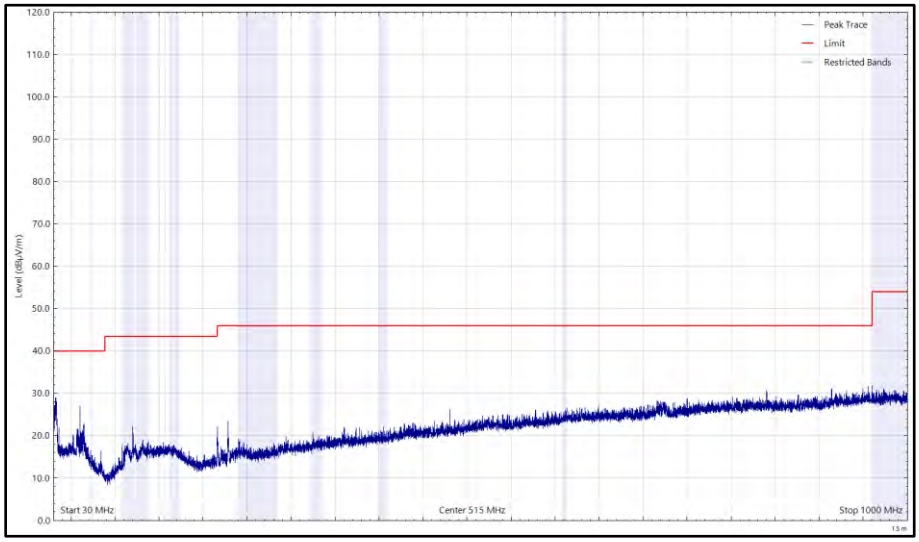

Figure 14 - Bottom_BLE_LE1M - 2404 MHz, 30 MHz to 1 GHz, Horizontal (Peak) Y Orientation

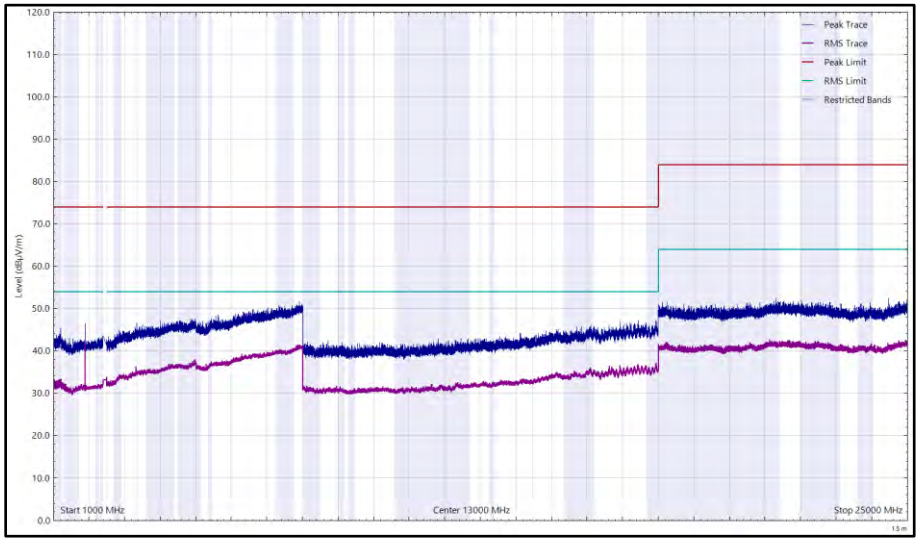

Figure 15 - Bottom_BLE_LE1M - 2404 MHz, 1 GHz to 25 GHz, Horizontal Y Orientation

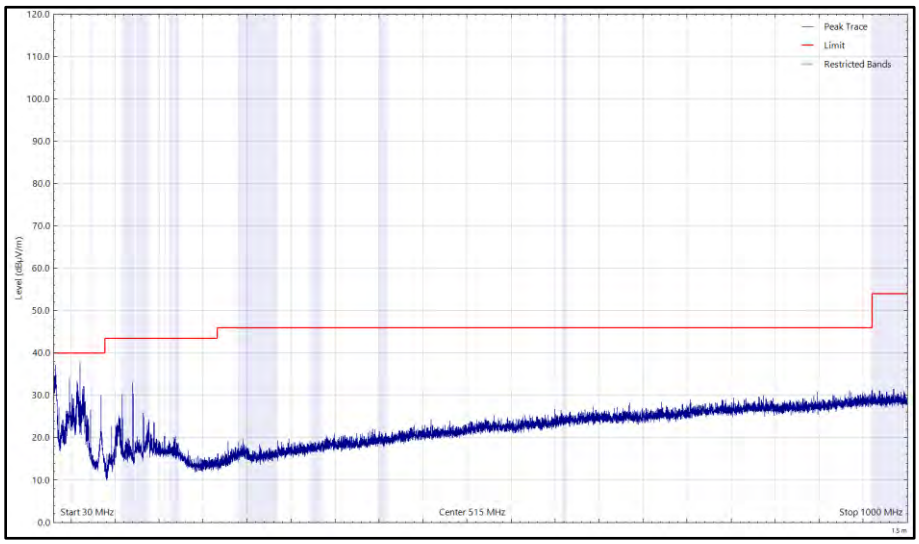

Figure 16 - Bottom_BLE_LE1M - 2404 MHz, 30 MHz to 1 GHz, Vertical (Peak) Y Orientation

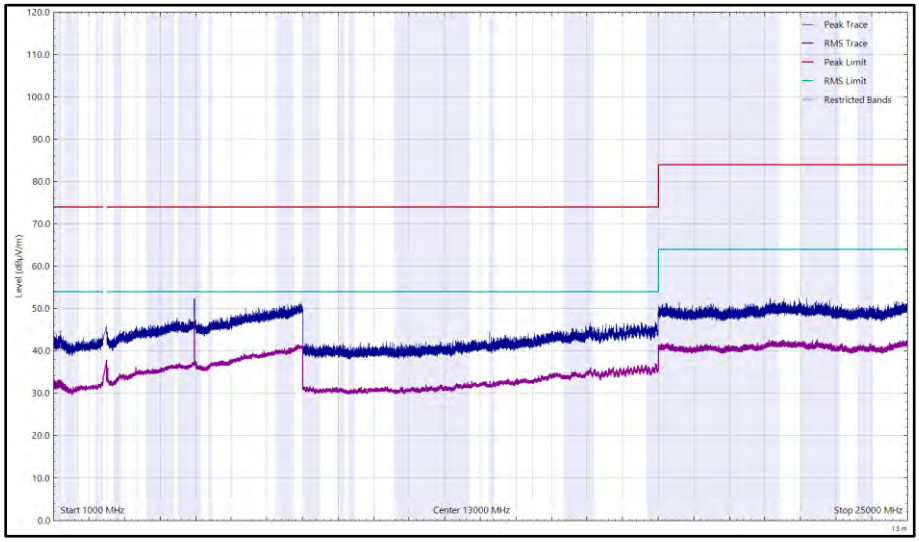

Figure 17 - Bottom_BLE_LE1M - 2404 MHz, 1 GHz to 25 GHz, Vertical Y Orientation

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation	Orientation
*									

Table 20 - Middle_BLE_LE1M - 2440 MHz, 30 MHz to 25 GHz Y Orientation

*No emissions found within 10 dB of the limit.

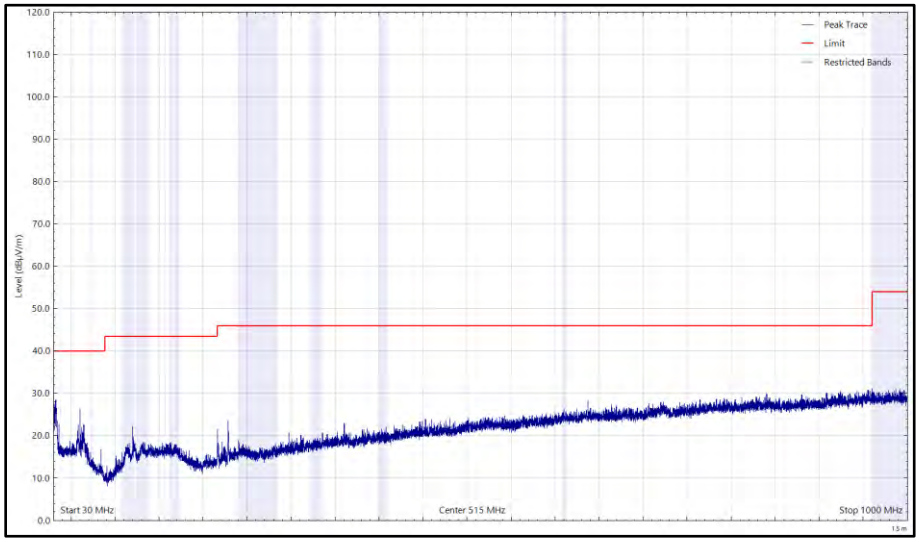

Figure 18 - Middle_BLE_LE1M - 2440 MHz, 30 MHz to 1 GHz, Horizontal (Peak) Y Orientation

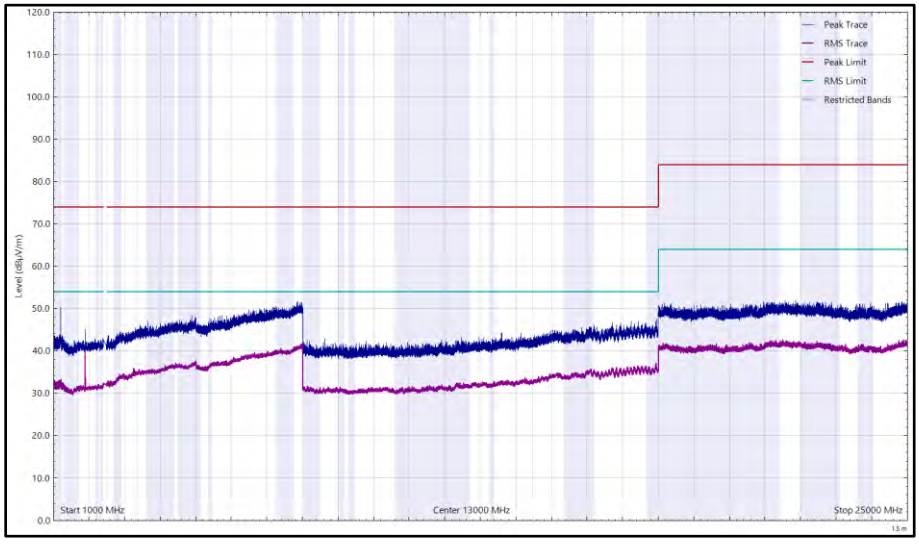

Figure 19 - Middle_BLE_LE1M - 2440 MHz, 1 GHz to 25 GHz, Horizontal Y Orientation

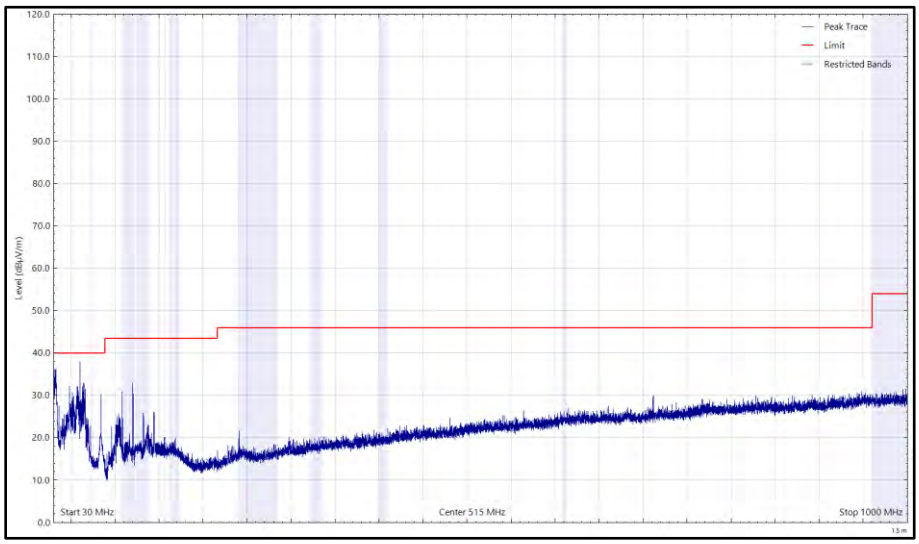

Figure 20 - Middle_BLE_LE1M - 2440 MHz, 30 MHz to 1 GHz, Vertical (Peak) Y Orientation

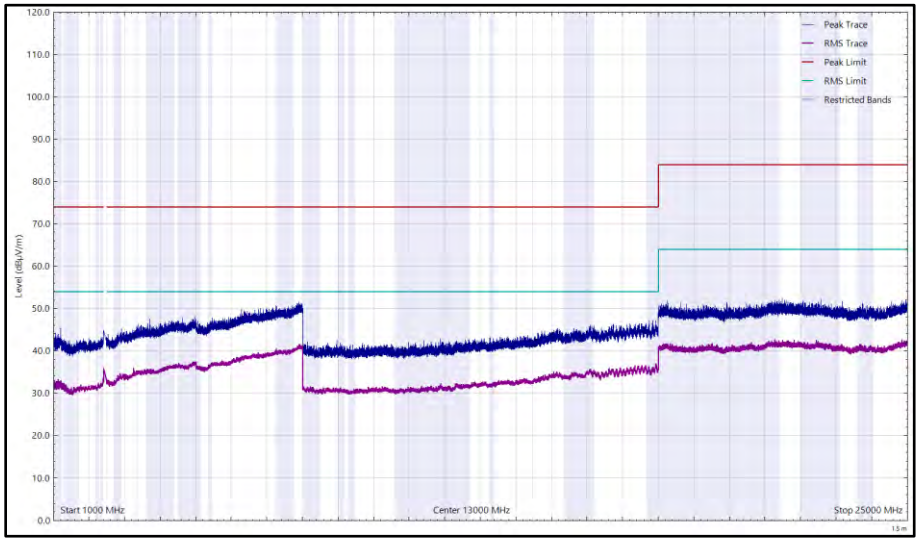

Figure 21 - Middle_BLE_LE1M - 2440 MHz, 1 GHz to 25 GHz, Vertical Y Orientation

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation	Orientation
*									

Table 21 - Top_BLE_LE1M - 2478 MHz, 30 MHz to 25 GHz Y Orientation

*No emissions found within 10 dB of the limit.

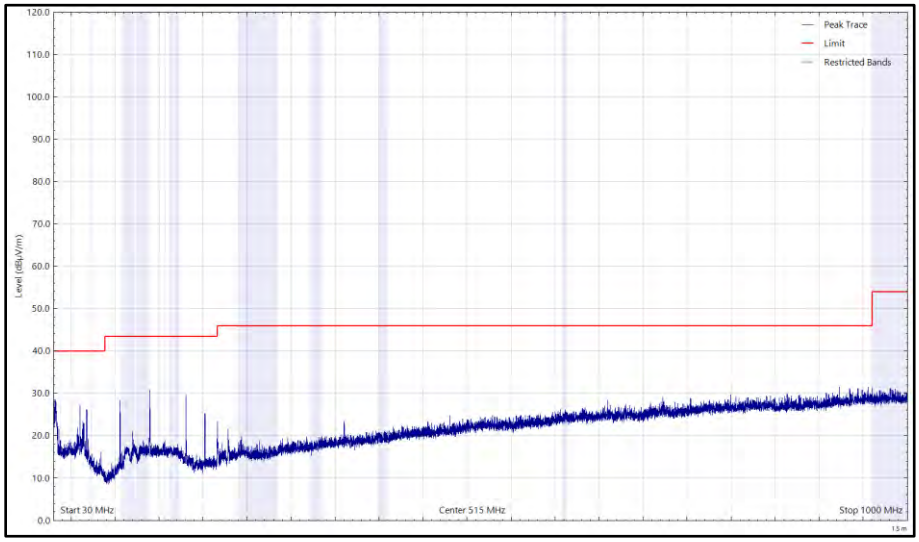

Figure 22 - Top_BLE_LE1M - 2478 MHz, 30 MHz to 1 GHz, Horizontal (Peak) Y Orientation

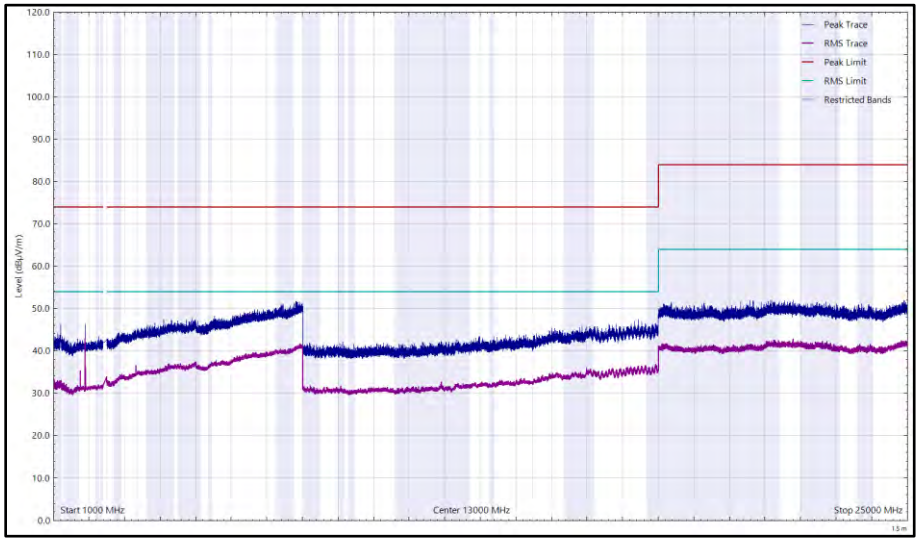

Figure 23 - Top_BLE_LE1M - 2478 MHz, 1 GHz to 25 GHz, Horizontal Y Orientation

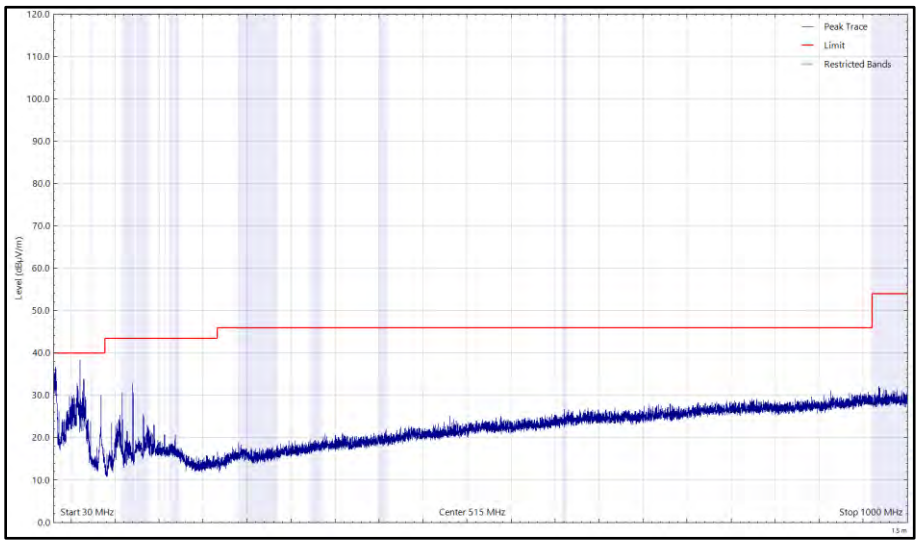

Figure 24 - Top_BLE_LE1M - 2478 MHz, 30 MHz to 1 GHz, Vertical (Peak) Y Orientation

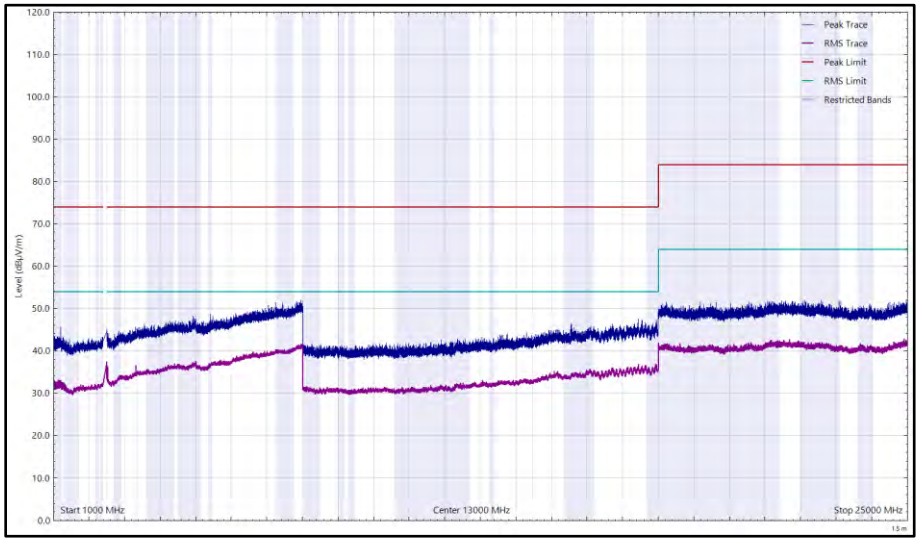

Figure 25 - Top_BLE_LE1M - 2478 MHz, 1 GHz to 25 GHz, Vertical Y Orientation

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation	Orientation
*									

Table 22 - Bottom_BLE_LE1M - 2404 MHz, 30 MHz to 25 GHz Z Orientation

*No emissions found within 10 dB of the limit.

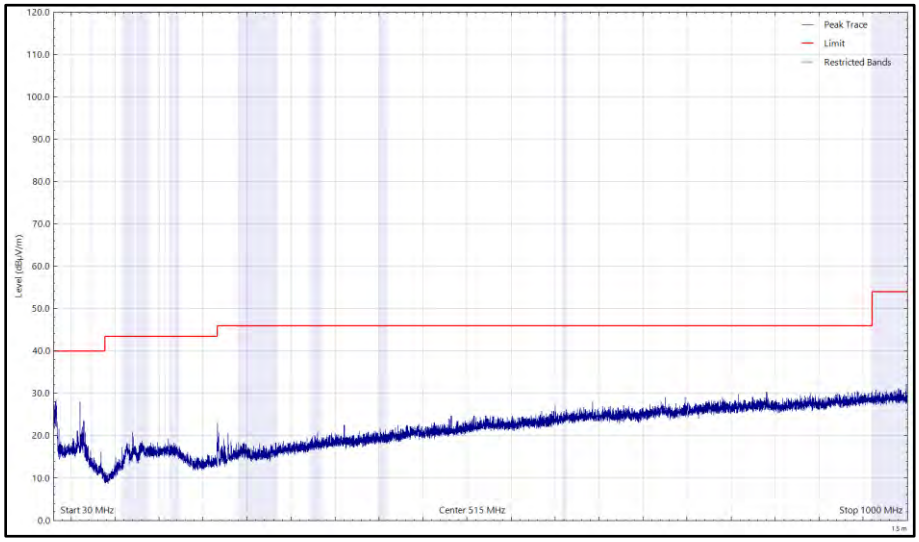

Figure 26 - Bottom_BLE_LE1M - 2404 MHz, 30 MHz to 1 GHz, Horizontal (Peak) Z Orientation

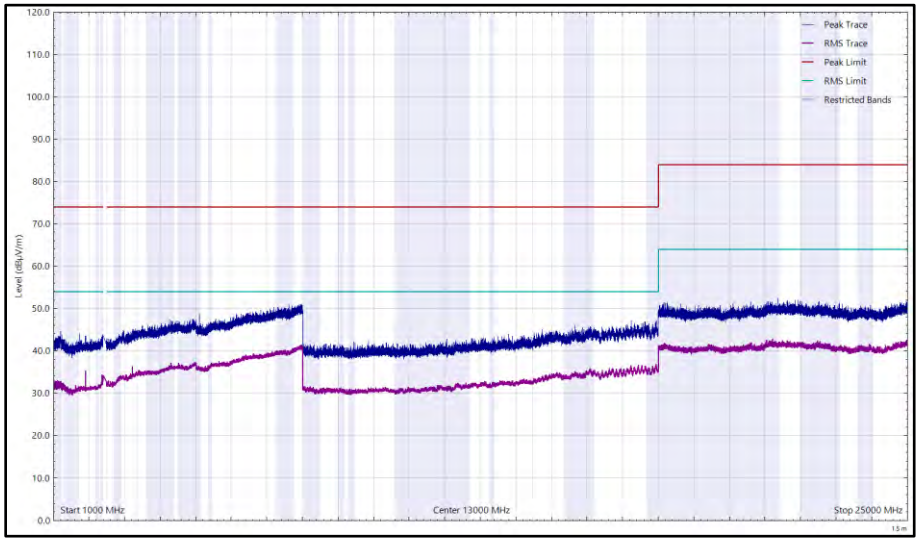

Figure 27 - Bottom_BLE_LE1M - 2404 MHz, 1 GHz to 25 GHz, Horizontal Z Orientation

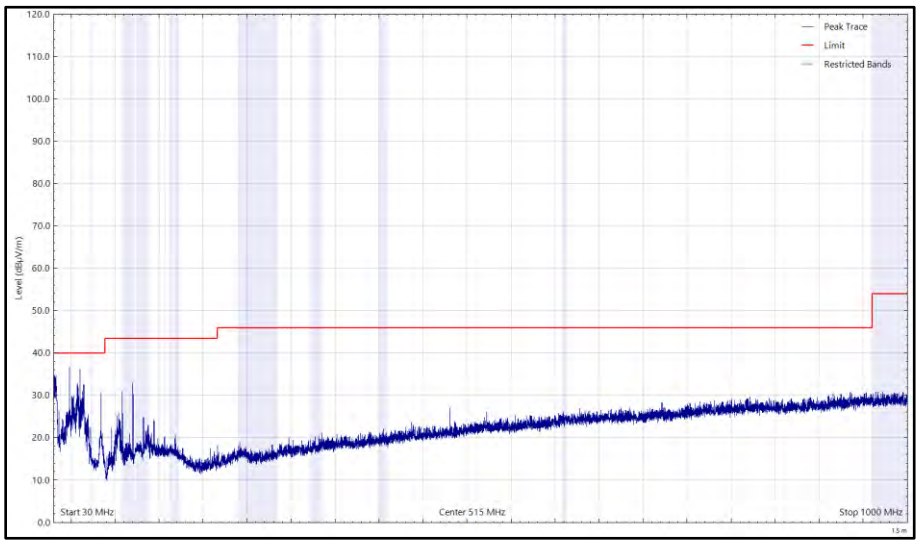

Figure 28 - Bottom_BLE_LE1M - 2404 MHz, 30 MHz to 1 GHz, Vertical (Peak) Z Orientation

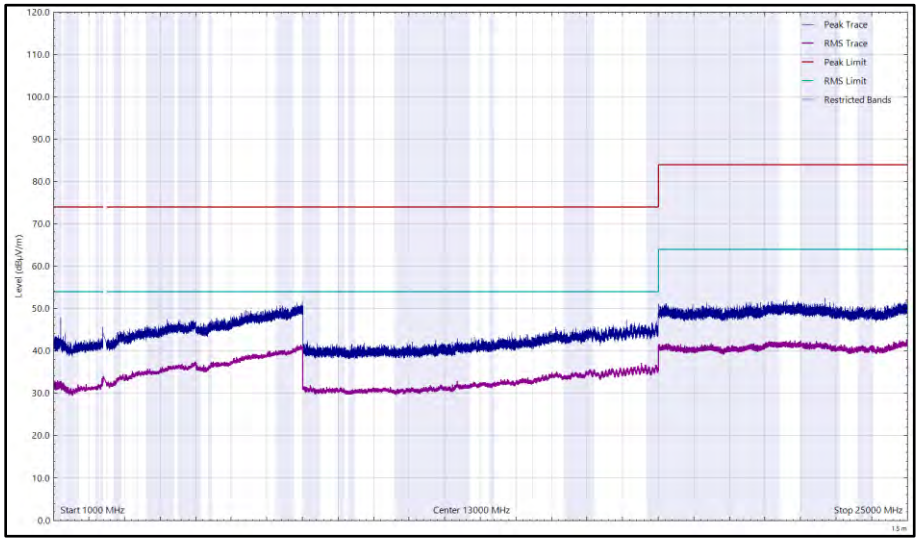

Figure 29 - Bottom_BLE_LE1M - 2404 MHz, 1 GHz to 25 GHz, Vertical Z Orientation

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation	Orientation
*									

Table 23 - Middle_BLE_LE1M - 2440 MHz, 30 MHz to 25 GHz Z Orientation

*No emissions found within 10 dB of the limit.

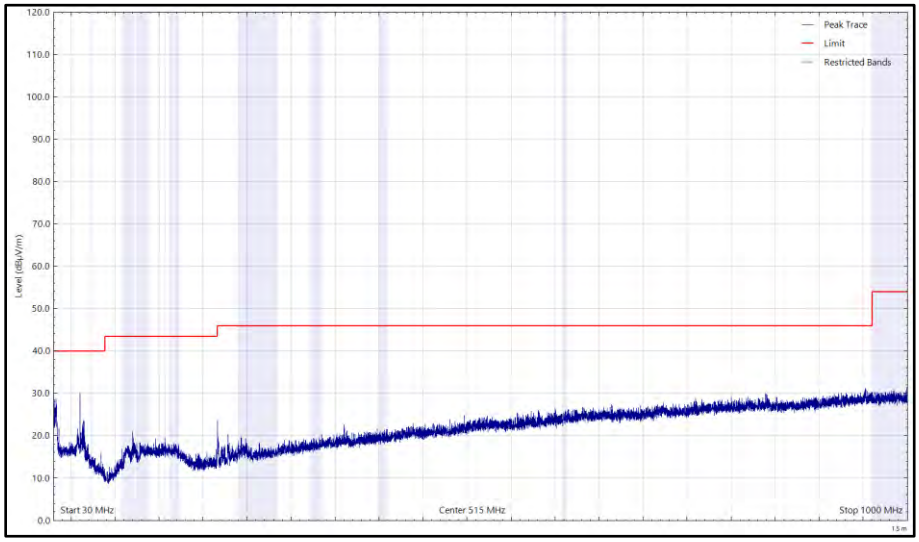

Figure 30 - Middle_BLE_LE1M - 2440 MHz, 30 MHz to 1 GHz, Horizontal (Peak) Z Orientation

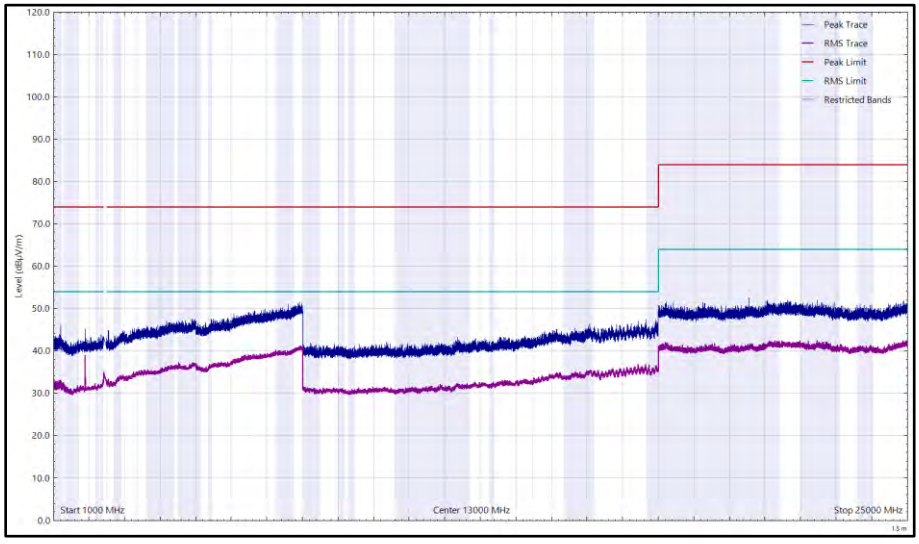

Figure 31 - Middle_BLE_LE1M - 2440 MHz, 1 GHz to 25 GHz, Horizontal Z Orientation

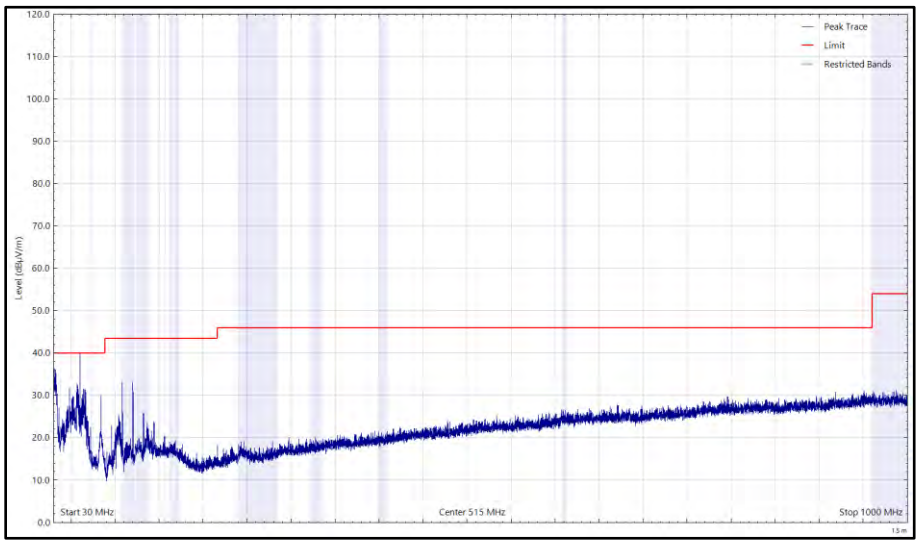

Figure 32 - Middle_BLE_LE1M - 2440 MHz, 30 MHz to 1 GHz, Vertical (Peak) Z Orientation

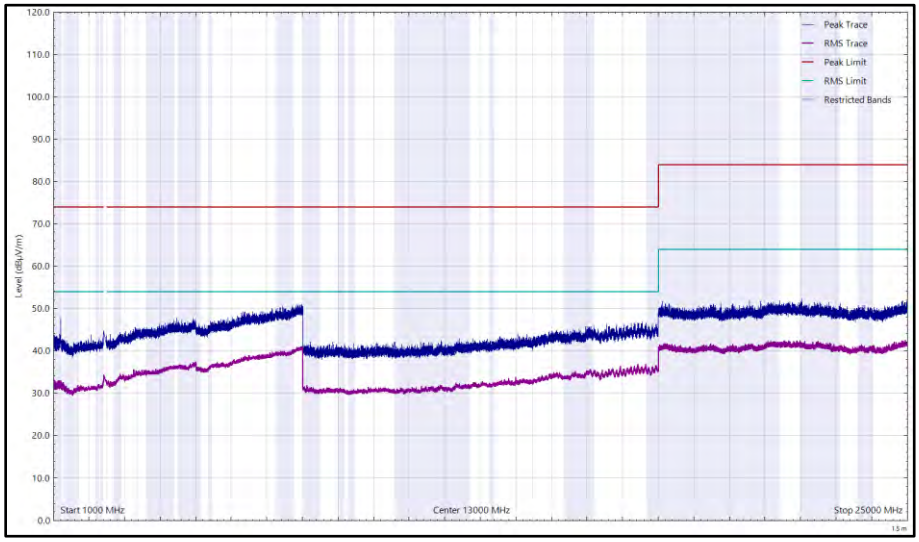

Figure 33 - Middle_BLE_LE1M - 2440 MHz, 1 GHz to 25 GHz, Vertical Z Orientation

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation	Orientation
*									

Table 24 - Top_BLE_LE1M - 2478 MHz, 30 MHz to 25 GHz Z Orientation

*No emissions found within 10 dB of the limit.

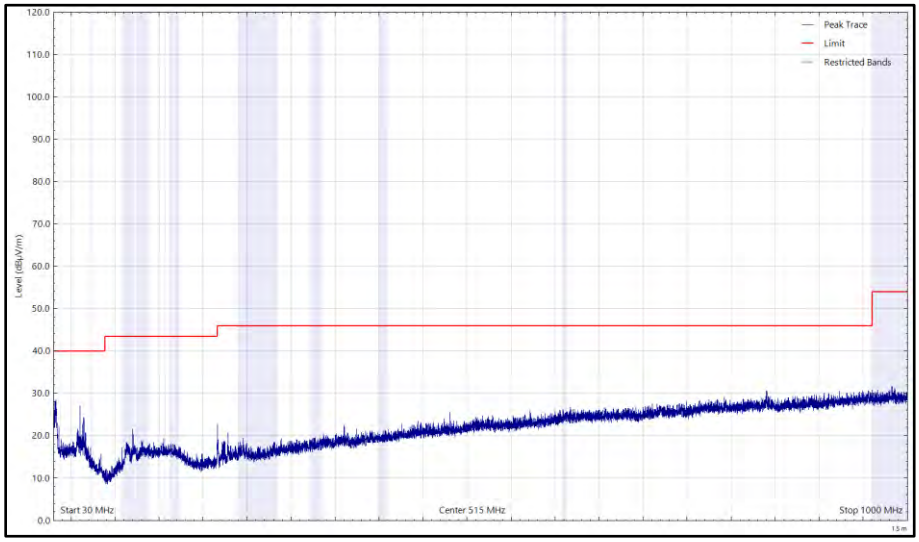

Figure 34 - Top_BLE_LE1M - 2478 MHz, 30 MHz to 1 GHz, Horizontal (Peak) Z Orientation

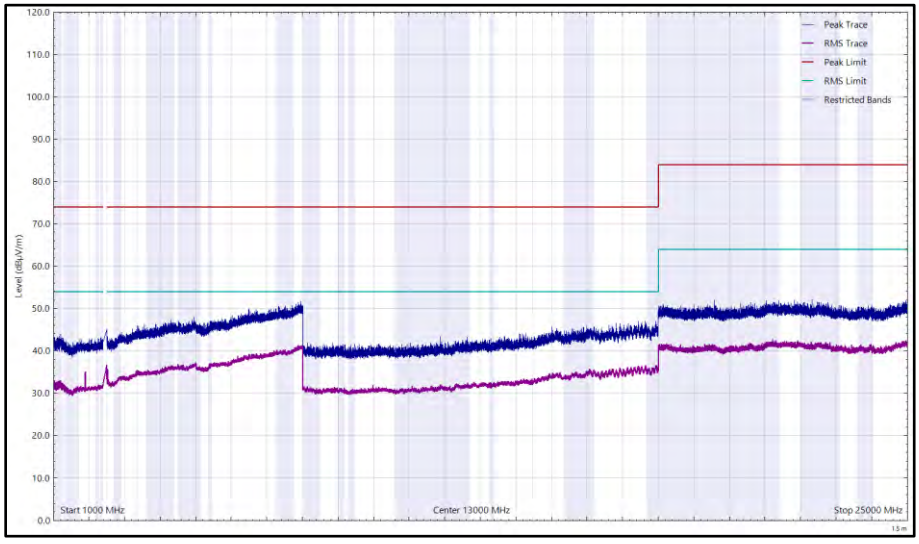

Figure 35 - Top_BLE_LE1M - 2478 MHz, 1 GHz to 25 GHz, Horizontal Z Orientation

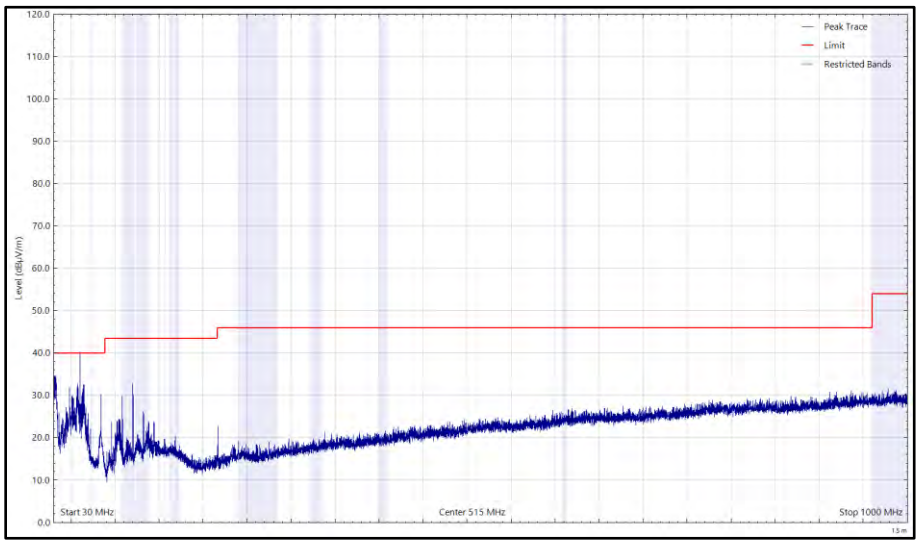

Figure 36 - Top_BLE_LE1M - 2478 MHz, 30 MHz to 1 GHz, Vertical (Peak) Z Orientation

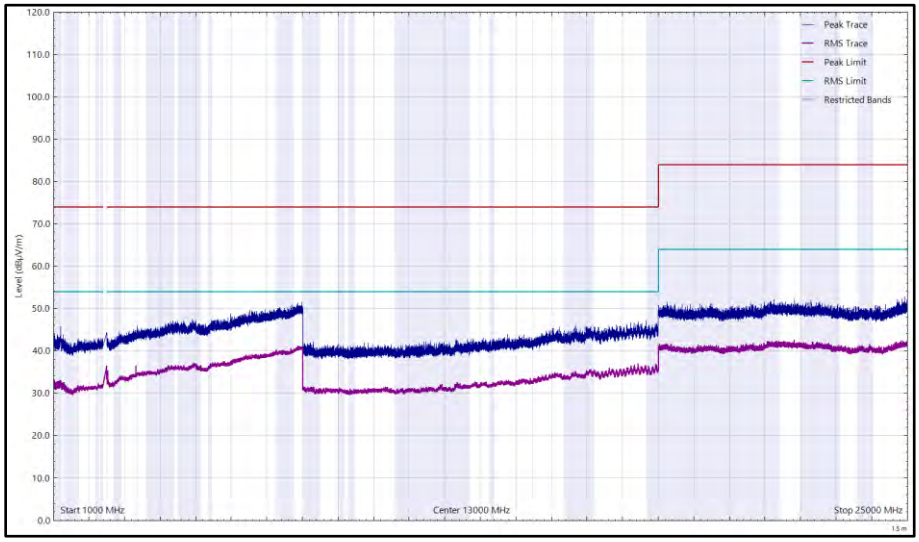

Figure 37 - Top_BLE_LE1M - 2478 MHz, 1 GHz to 25 GHz, Vertical Z Orientation

2.4 GHz Bluetooth Low Energy - ANT-2.4-CW-CT-SMA/RPS Antenna

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation
35.980	30.86	40.00	-9.14	Q-Peak	dBuV/m	108	380	Horizontal
59.991	38.00	40.00	-2.00	Q-Peak	dBuV/m	119	106	Vertical

Table 25 - Ch1_BLE_LE1M – 2404 MHz, 30 MHz to 25 GHz X Orientation

No other emissions found within 10 dB of the limit.

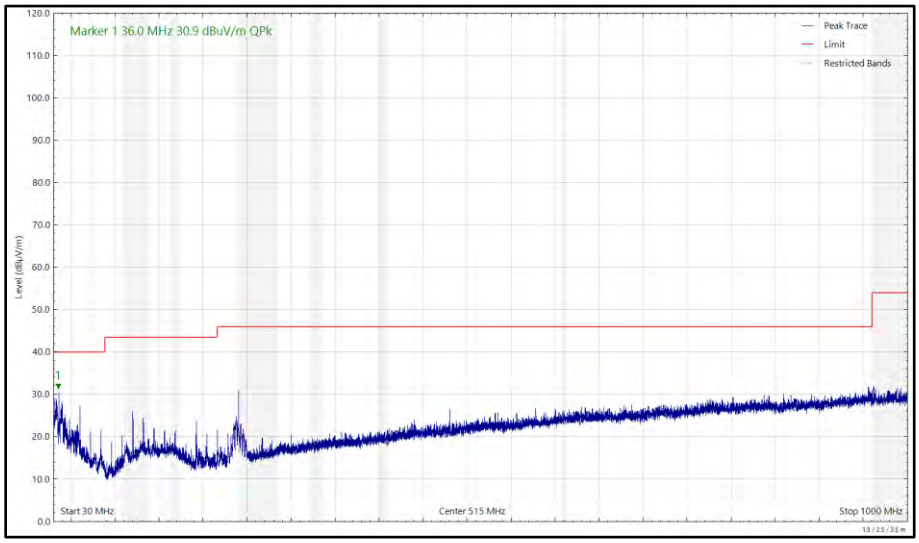

Figure 38 - Ch1_BLE_LE1M - 2404 MHz, 30 MHz to 1 GHz, Horizontal (Peak) X Orientation

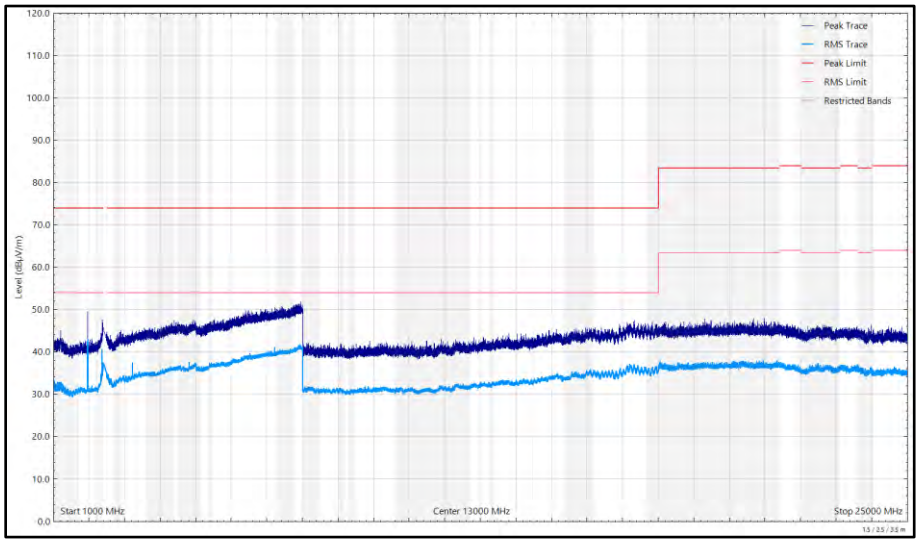

Figure 39 - Ch1_BLE_LE1M - 2404 MHz, 1 GHz to 25 GHz, Horizontal X Orientation

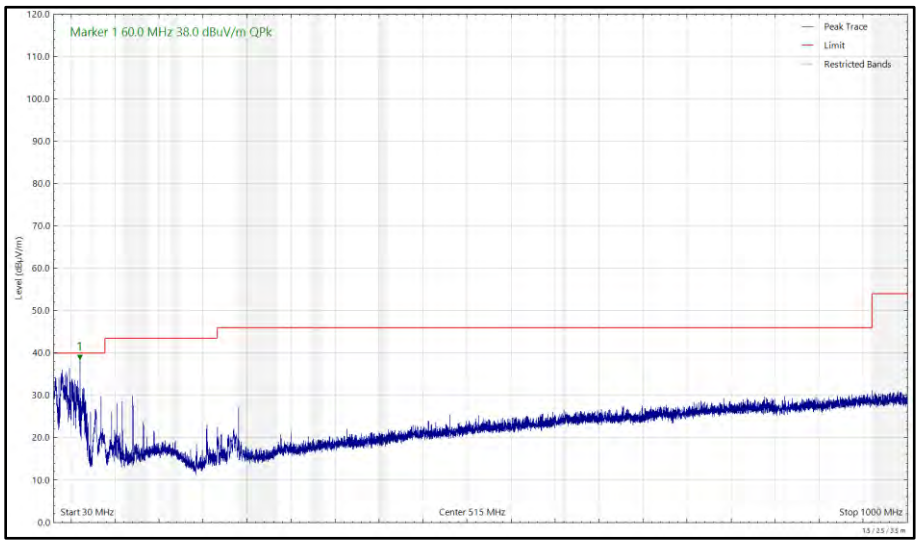

Figure 40 - Ch1_BLE_LE1M - 2404 MHz, 30 MHz to 1 GHz, Vertical (Peak) X Orientation

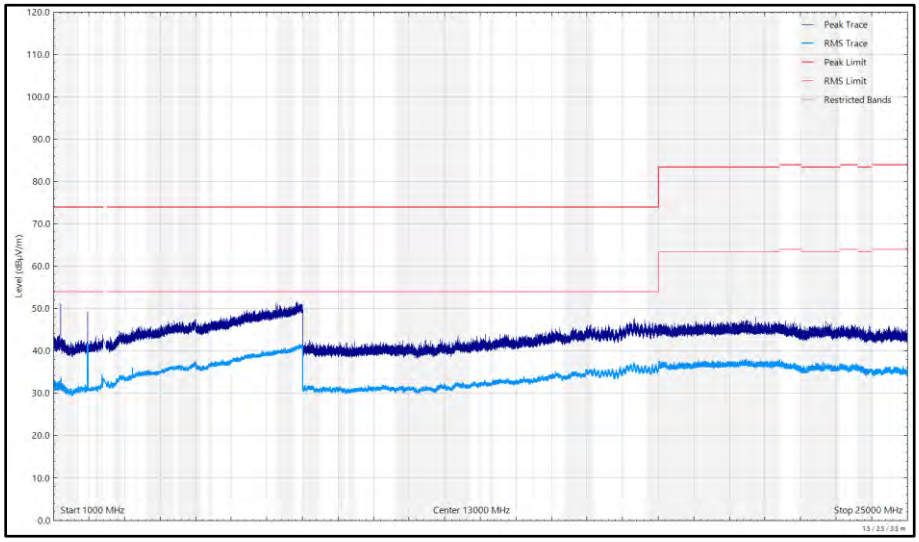

Figure 41 - Ch1_BLE_LE1M - 2404 MHz, 1 GHz to 25 GHz, Vertical X Orientation

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation
59.977	34.73	40.00	-5.27	Q-Peak	dBuV/m	48	101	Vertical
854.575	18.47	46.00	-27.53	Q-Peak	dBuV/m	0	100	Vertical

Table 26 - Ch19_BLE_LE1M - 2440 MHz, 30 MHz to 25 GHz X Orientation

No other emissions found within 10 dB of the limit.

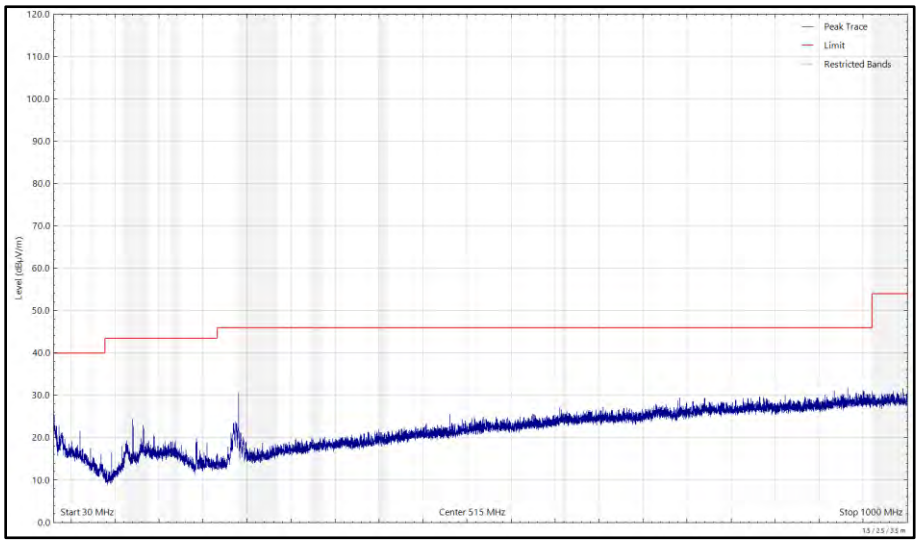

Figure 42 - Ch19_BLE_LE1M - 2440 MHz, 30 MHz to 1 GHz, Horizontal (Peak) X Orientation

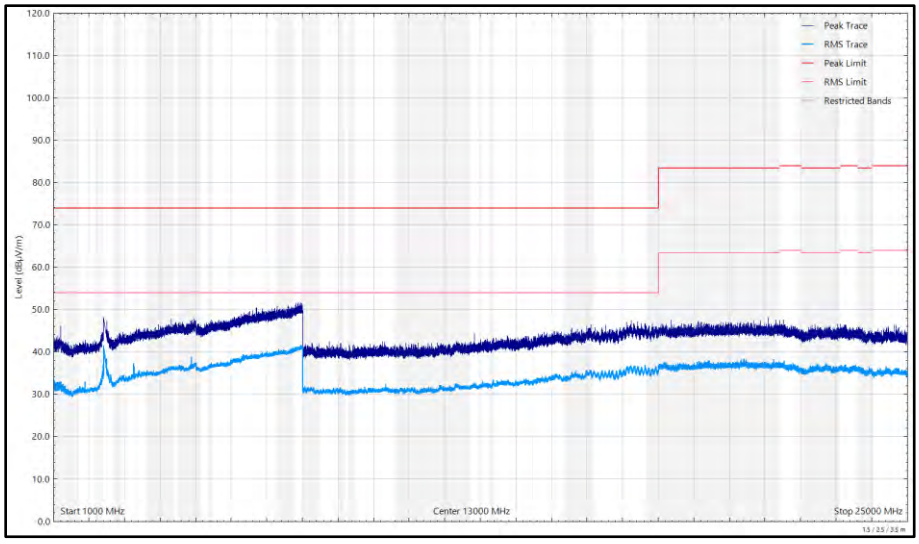

Figure 43 - Ch19_BLE_LE1M - 2440 MHz, 1 GHz to 25 GHz, Horizontal X Orientation

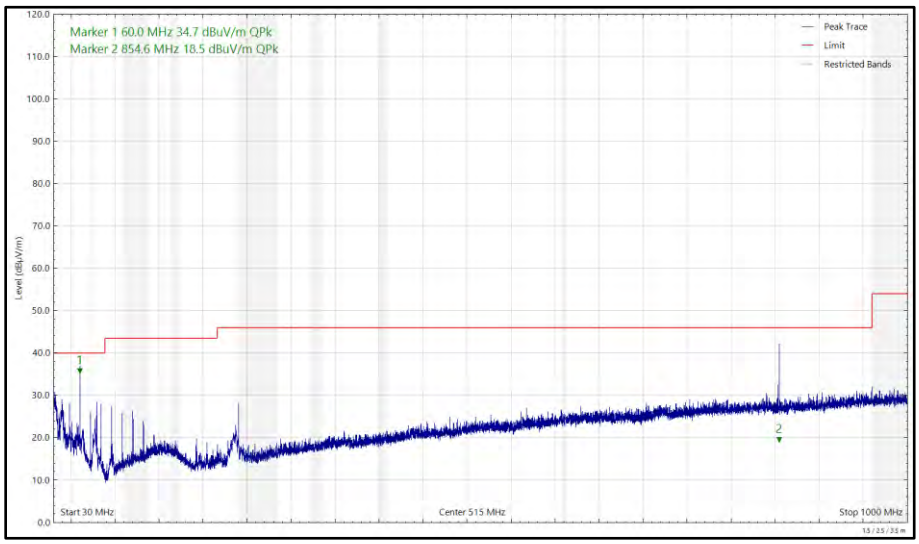

Figure 44 - Ch19_BLE_LE1M - 2440 MHz, 30 MHz to 1 GHz, Vertical (Peak) X Orientation

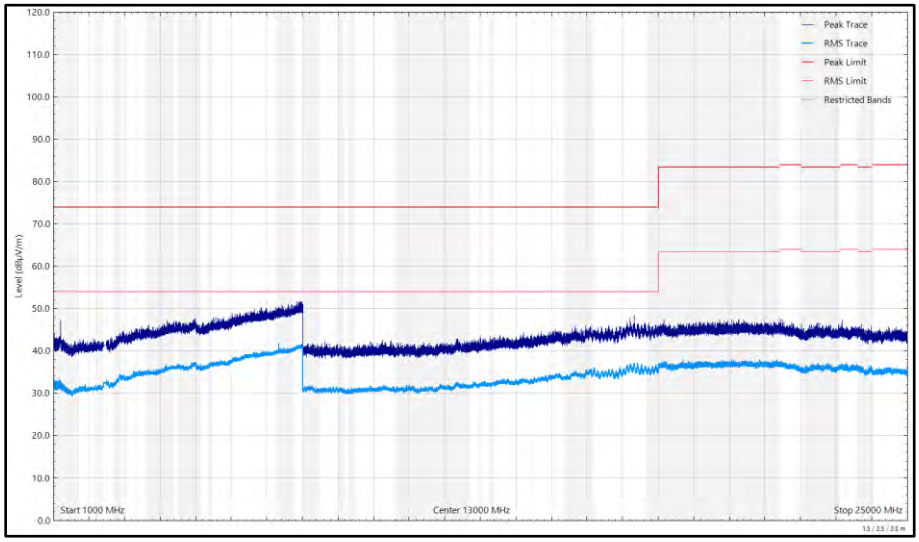

Figure 45 - Ch19_BLE_LE1M - 2440 MHz, 1 GHz to 25 GHz, Vertical X Orientation

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation
60.028	32.28	40.00	-7.72	Q-Peak	dBuV/m	67	137	Vertical

Table 27 - Ch38_BLE_LE1M - 2478 MHz, 30 MHz to 25 GHz X Orientation

No other emissions found within 10 dB of the limit.

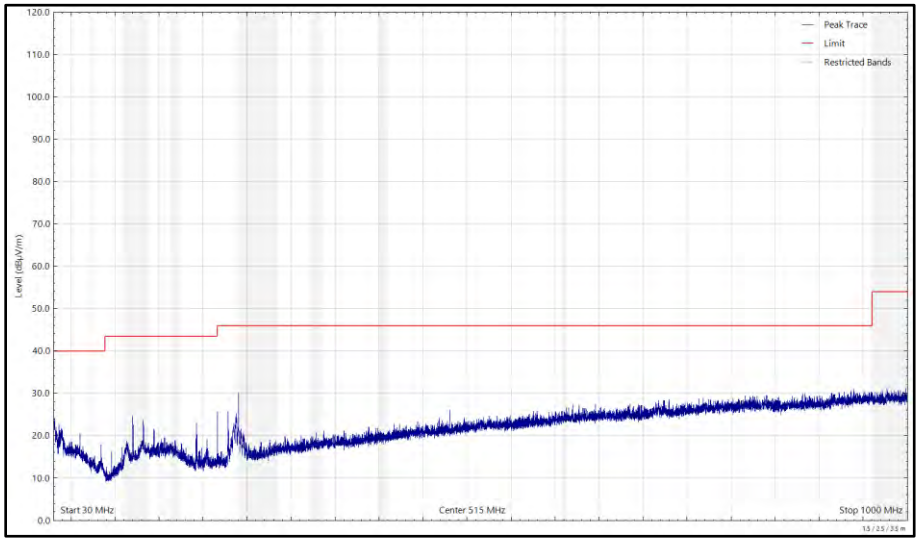

Figure 46 - Ch38_BLE_LE1M - 2478 MHz, 30 MHz to 1 GHz, Horizontal (Peak) X Orientation

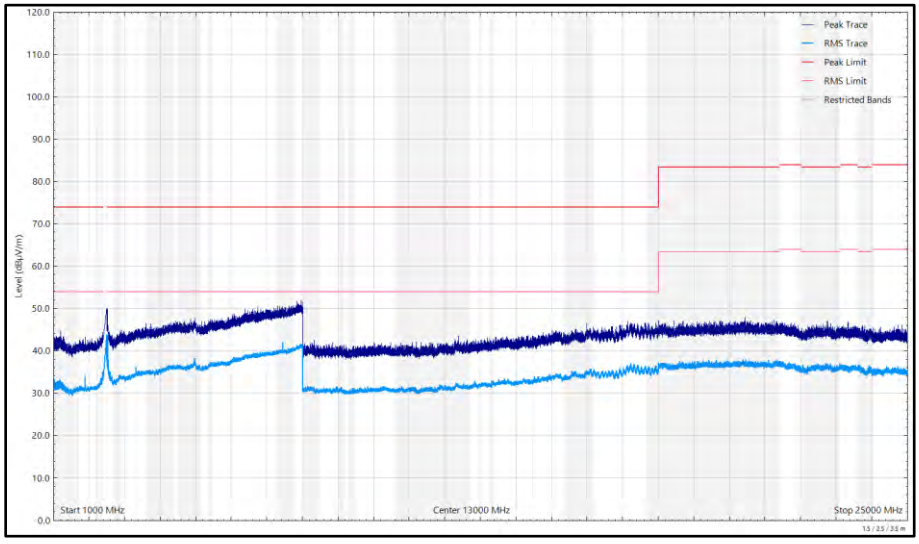

Figure 47 - Ch38_BLE_LE1M - 2478 MHz, 1 GHz to 25 GHz, Horizontal X Orientation

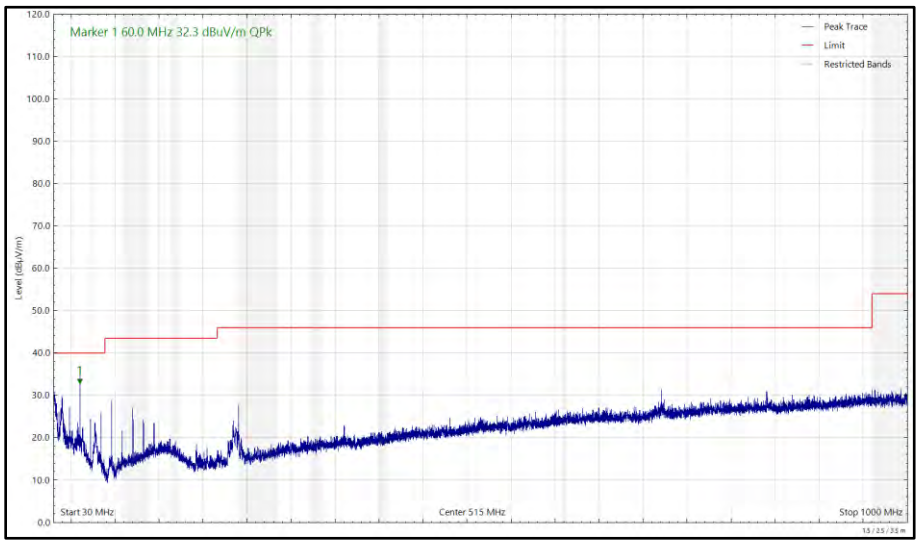

Figure 48 - Ch38_BLE_LE1M - 2478 MHz, 30 MHz to 1 GHz, Vertical (Peak) X Orientation

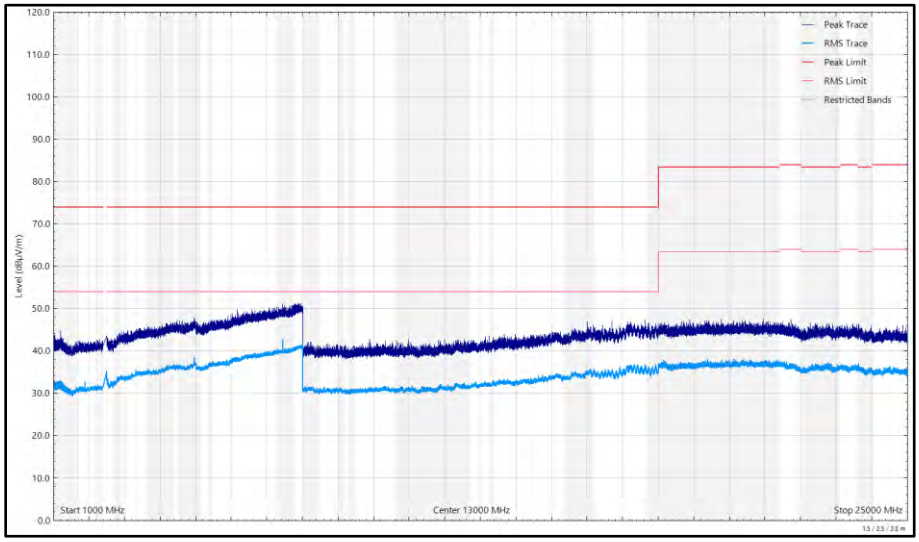

Figure 49 - Ch38_BLE_LE1M - 2478 MHz, 1 GHz to 25 GHz, Vertical X Orientation

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation
84.003	28.45	40.00	-11.55	Q-Peak	dBuV/m	107	140	Vertical
1950.686	30.49	54.00	-23.51	RMS	dBuv/m	143	288	Horizontal

Table 28 - Ch1_BLE_LE1M - 2404 MHz, 30 MHz to 25 GHz Y Orientation

No other emissions found within 10 dB of the limit.

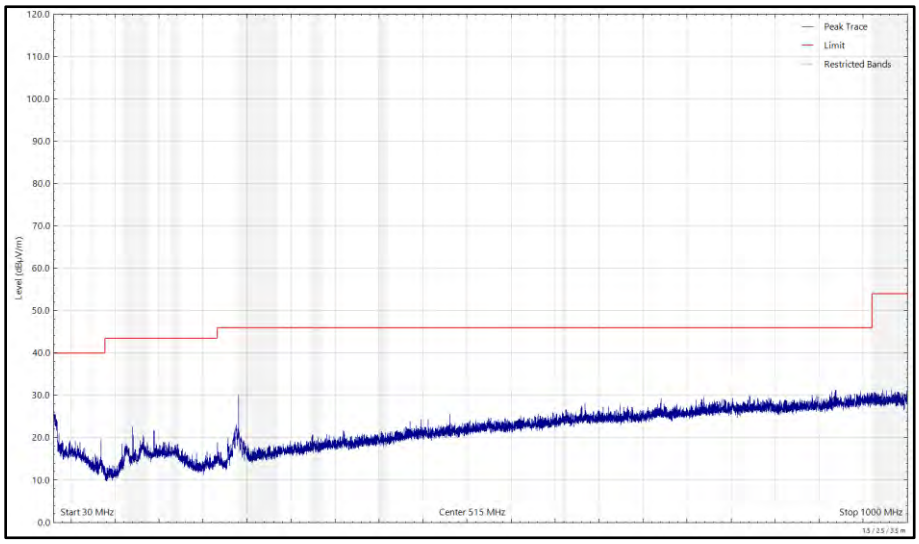

Figure 50 - Ch1_BLE_LE1M - 2404 MHz, 30 MHz to 1 GHz, Horizontal (Peak) Y Orientation

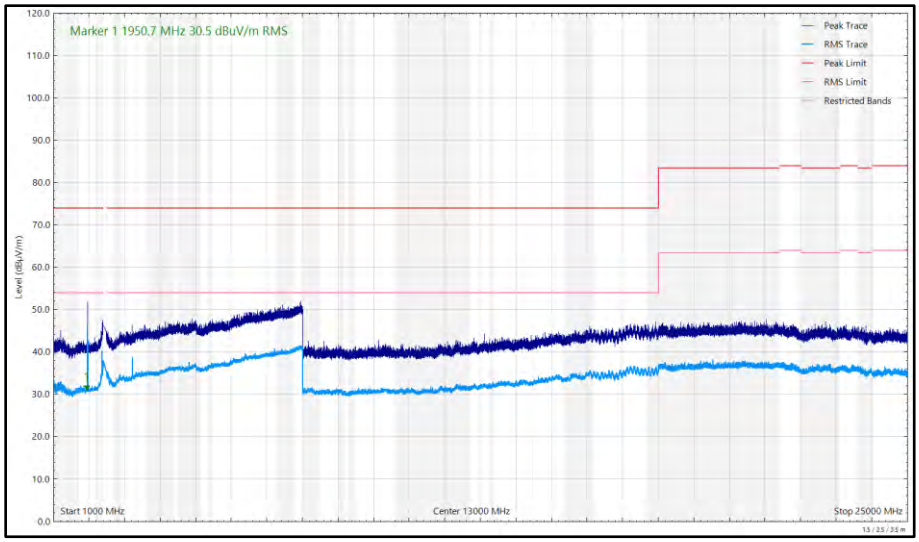

Figure 51 - Ch1_BLE_LE1M - 2404 MHz, 1 GHz to 25 GHz, Horizontal Y Orientation

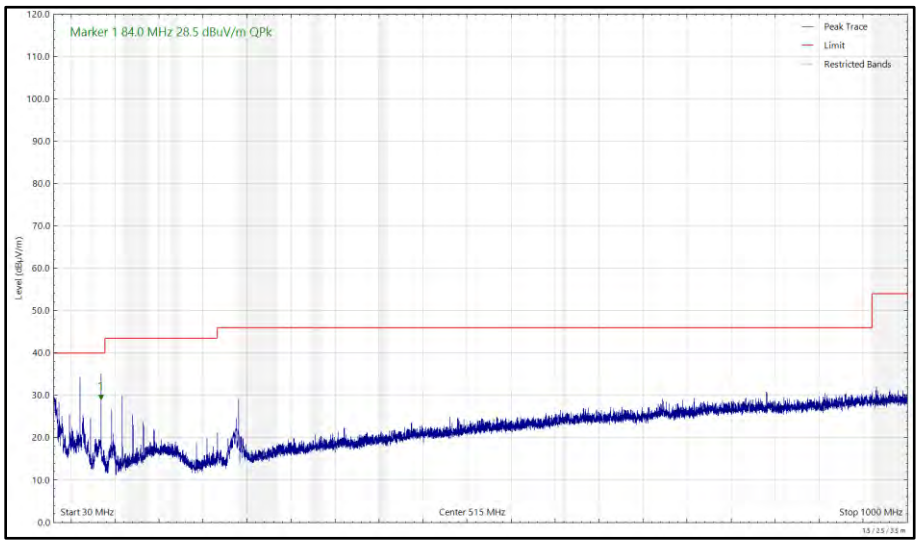

Figure 52 - Ch1_BLE_LE1M - 2404 MHz, 30 MHz to 1 GHz, Vertical (Peak) Y Orientation

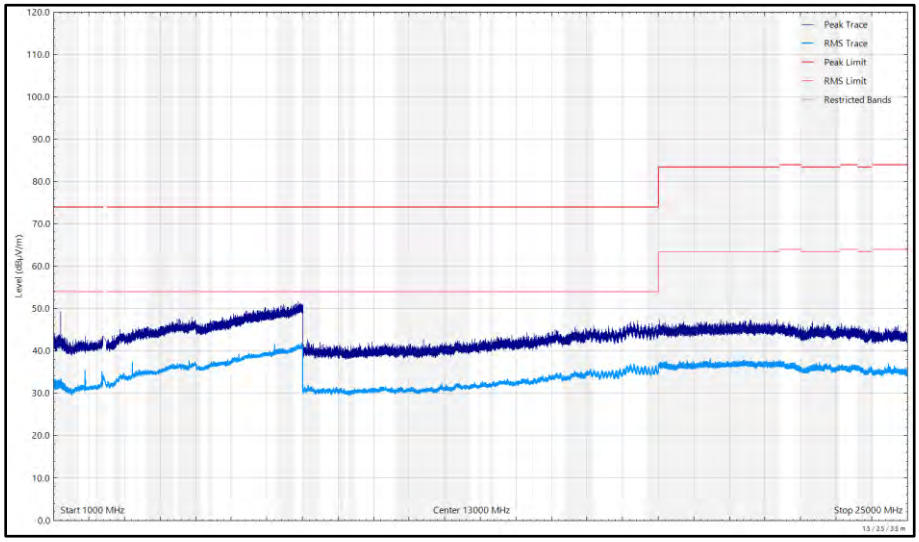

Figure 53 - Ch1_BLE_LE1M - 2404 MHz, 1 GHz to 25 GHz, Vertical Y Orientation

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation
30.782	28.45	40.00	-11.55	Q-Peak	dBuV/m	290	149	Vertical

Table 29 - Ch19_BLE_LE1M - 2440 MHz, 30 MHz to 25 GHz Y Orientation

No other emissions found within 10 dB of the limit.

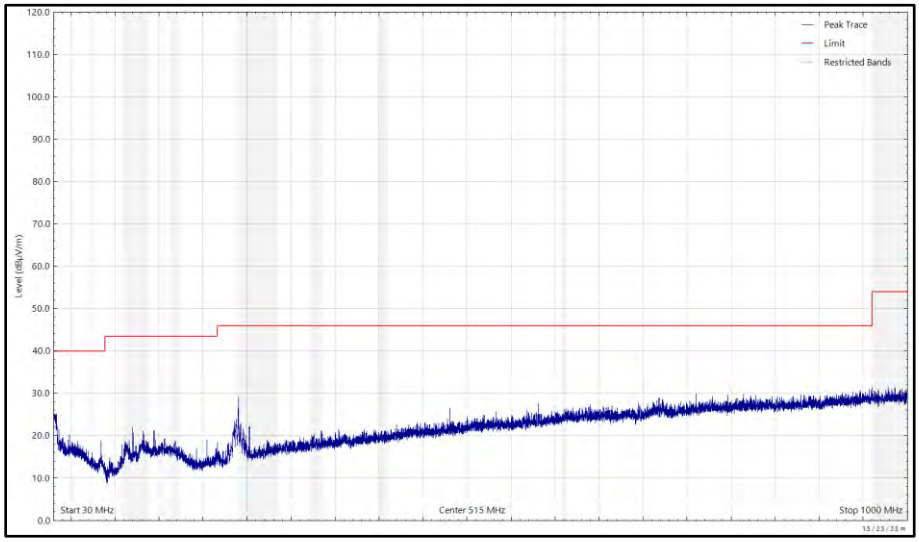

Figure 54 - Ch19_BLE_LE1M - 2440 MHz, 30 MHz to 1 GHz, Horizontal (Peak) Y Orientation

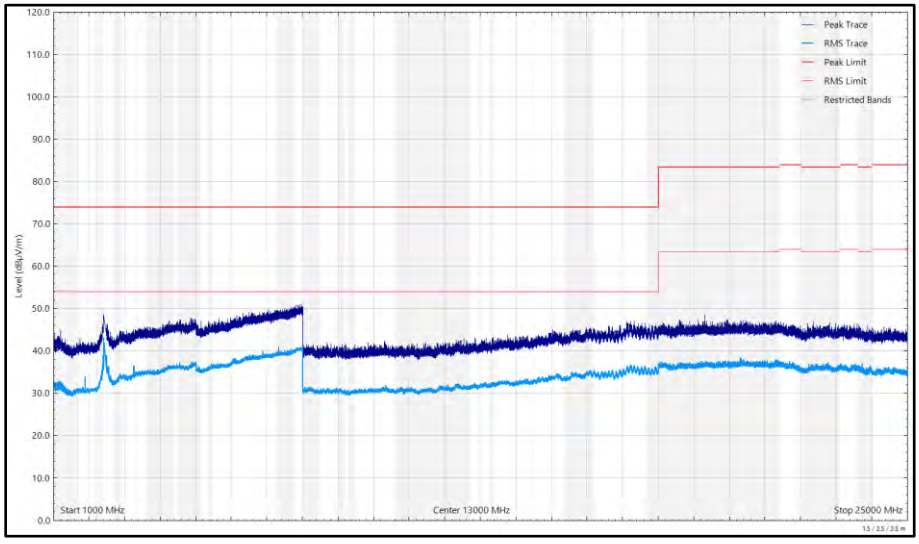

Figure 55 - Ch19_BLE_LE1M - 2440 MHz, 1 GHz to 25 GHz, Horizontal Y Orientation

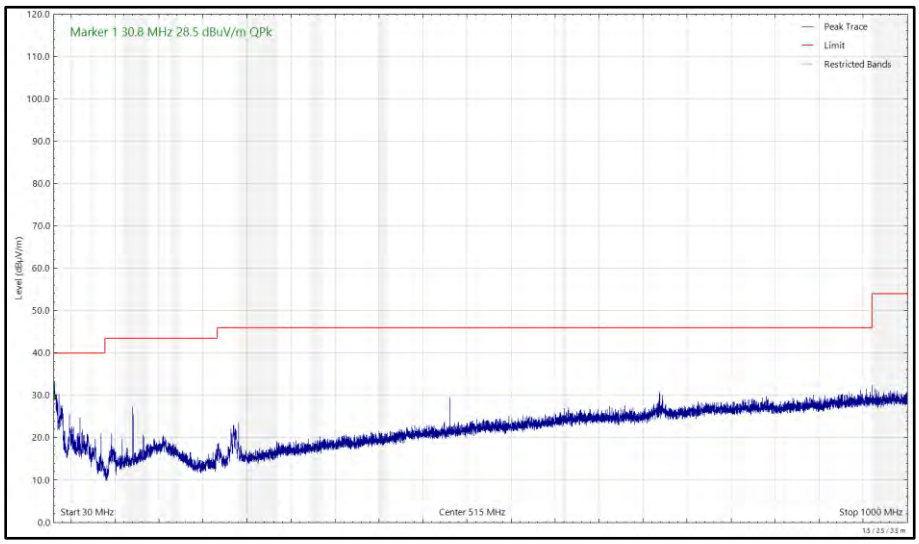

Figure 56 - Ch19_BLE_LE1M - 2440 MHz, 30 MHz to 1 GHz, Vertical (Peak) Y Orientation

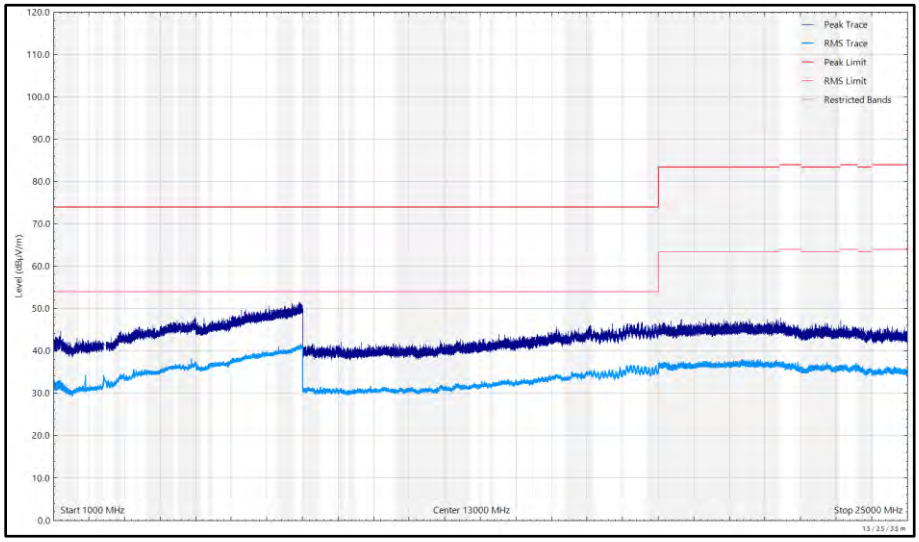

Figure 57 - Ch19_BLE_LE1M - 2440 MHz, 1 GHz to 25 GHz, Vertical Y Orientation

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation
34.570	22.12	40.00	-17.88	Q-Peak	dBuV/m	275	107	Vertical
2493.946	44.37	54.00	-9.63	RMS	dBuv/m	15	100	Horizontal

Table 30 - Ch38_BLE_LE1M - 2478 MHz, 30 MHz to 25 GHz Y Orientation

No other emissions found within 10 dB of the limit.

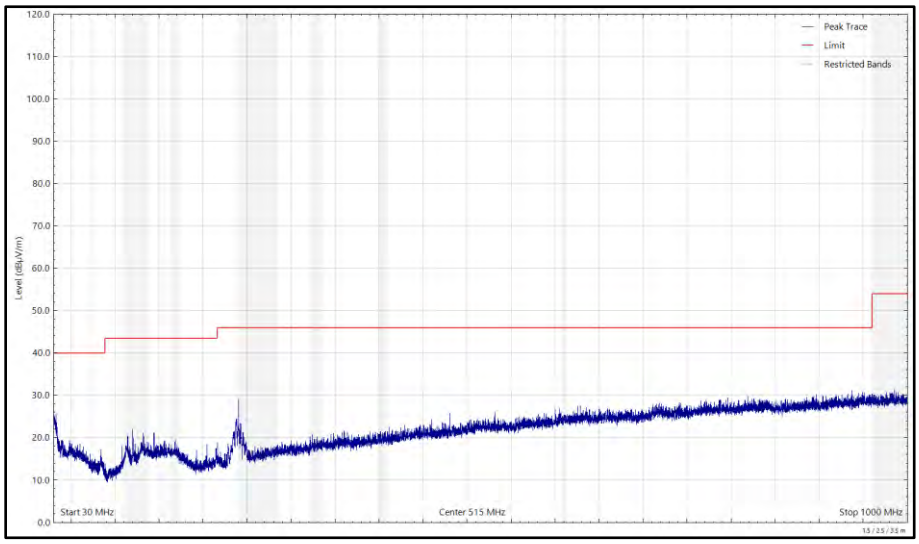

Figure 58 - Ch38_BLE_LE1M - 2478 MHz, 30 MHz to 1 GHz, Horizontal (Peak) Y Orientation

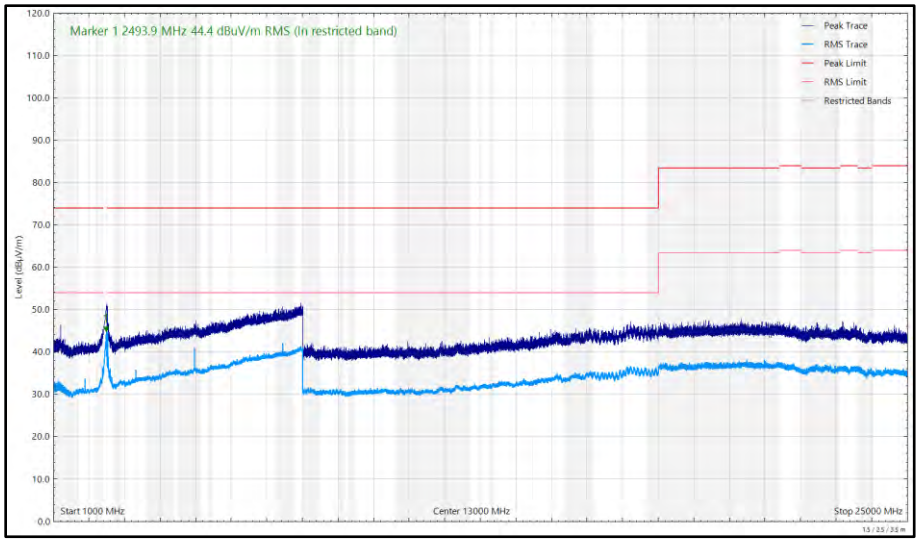

Figure 59 - Ch38_BLE_LE1M - 2478 MHz, 1 GHz to 25 GHz, Horizontal Y Orientation

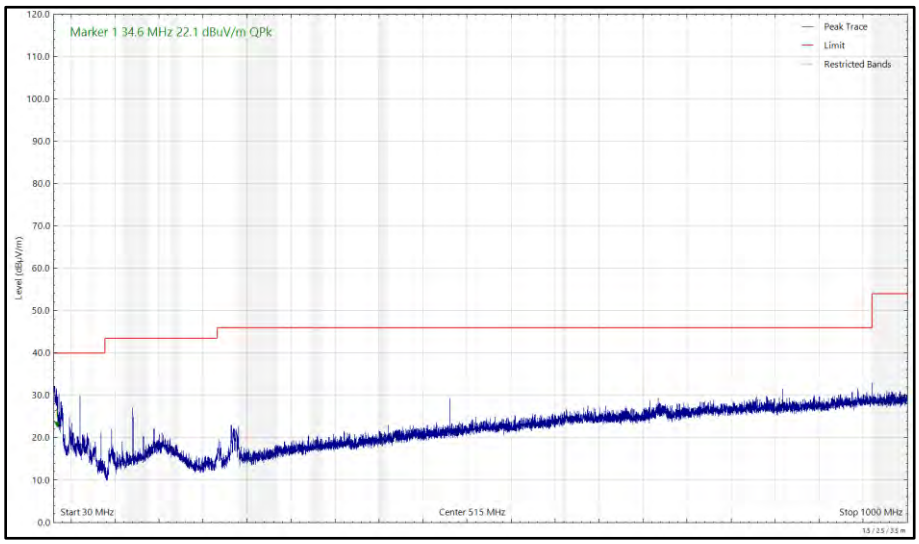

Figure 60 - Ch38_BLE_LE1M - 2478 MHz, 30 MHz to 1 GHz, Vertical (Peak) Y Orientation

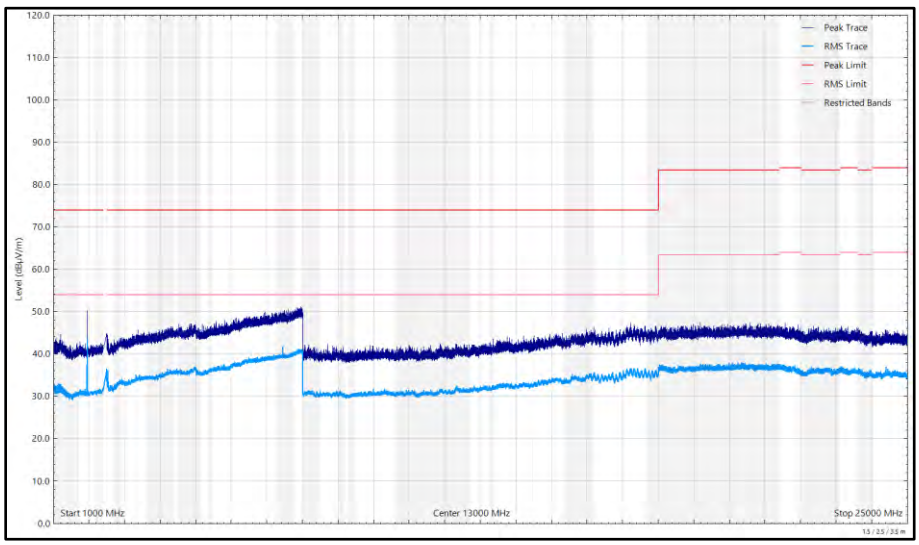

Figure 61 - Ch38_BLE_LE1M - 2478 MHz, 1 GHz to 25 GHz, Vertical Y Orientation

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation
36.004	28.99	40.00	-11.01	Q-Peak	dBuV/m	0	108	Vertical

Table 31 - Ch1_BLE_LE1M - 2404 MHz, 30 MHz to 25 GHz Z Orientation

No other emissions found within 10 dB of the limit.

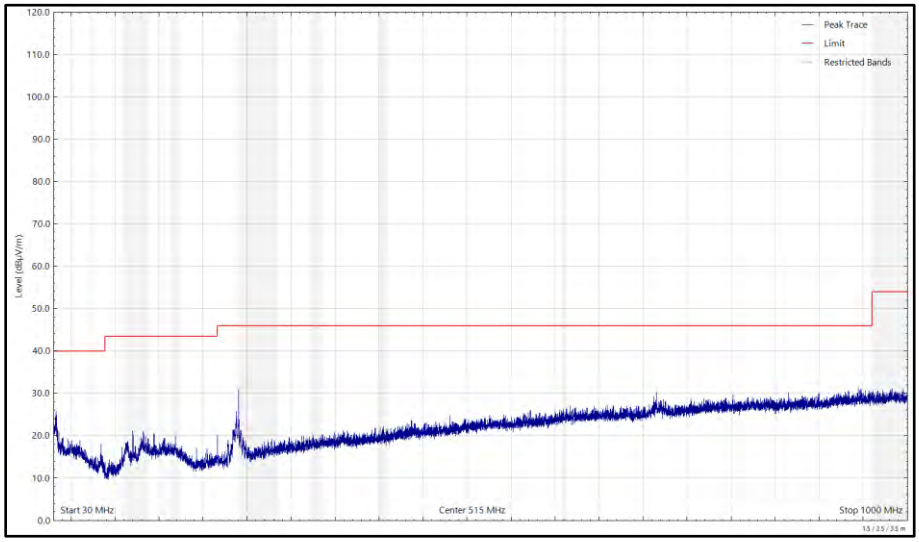

Figure 62 - Ch1_BLE_LE1M - 2404 MHz, 30 MHz to 1 GHz, Horizontal (Peak) Z Orientation

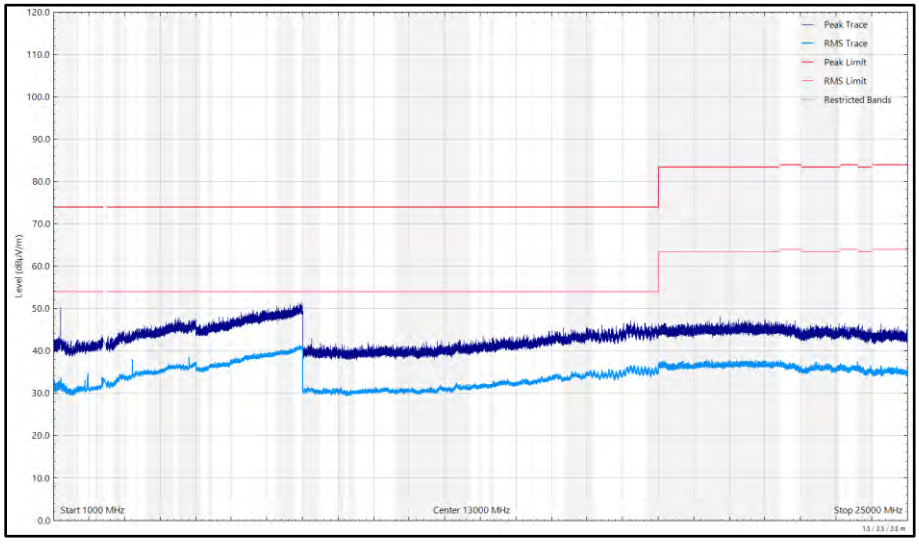

Figure 63 - Ch1_BLE_LE1M - 2404 MHz, 1 GHz to 25 GHz, Horizontal Z Orientation

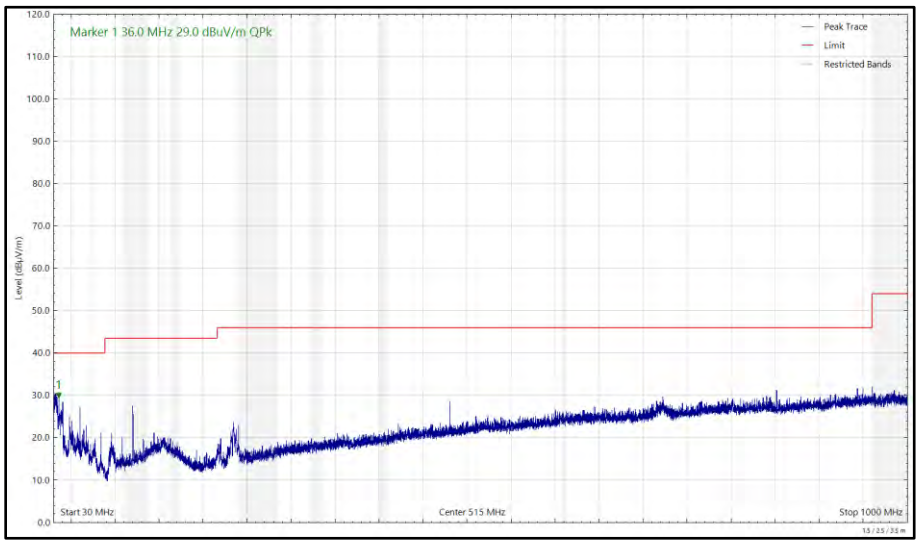

Figure 64 - Ch1_BLE_LE1M - 2404 MHz, 30 MHz to 1 GHz, Vertical (Peak) Z Orientation

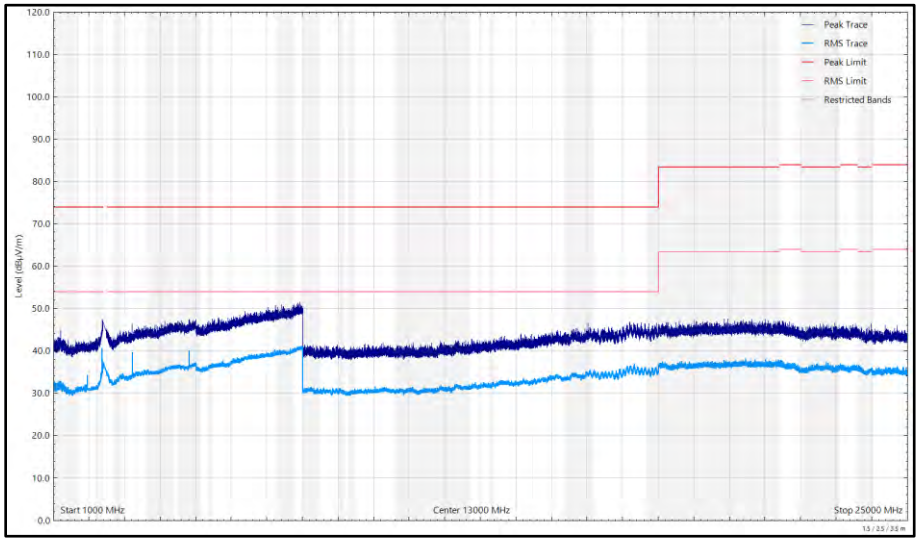

Figure 65 - Ch1_BLE_LE1M - 2404 MHz, 1 GHz to 25 GHz, Vertical Z Orientation

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation
36.003	28.72	40.00	-11.28	Q-Peak	dBuV/m	5	103	Vertical

Table 32 - Ch19_BLE_LE1M - 2440 MHz, 30 MHz to 25 GHz Z Orientation

No other emissions found within 10 dB of the limit.

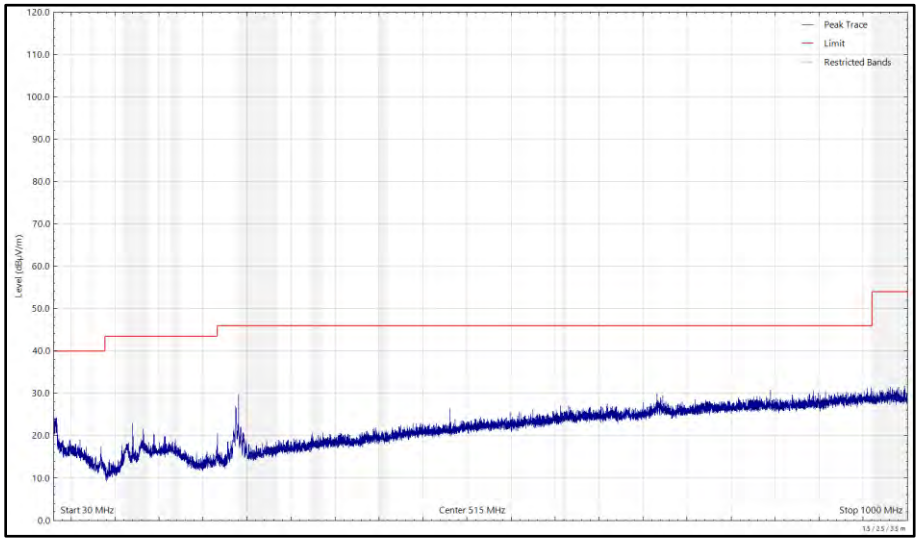

Figure 66 - Ch19_BLE_LE1M - 2440 MHz, 30 MHz to 1 GHz, Horizontal (Peak) Z Orientation

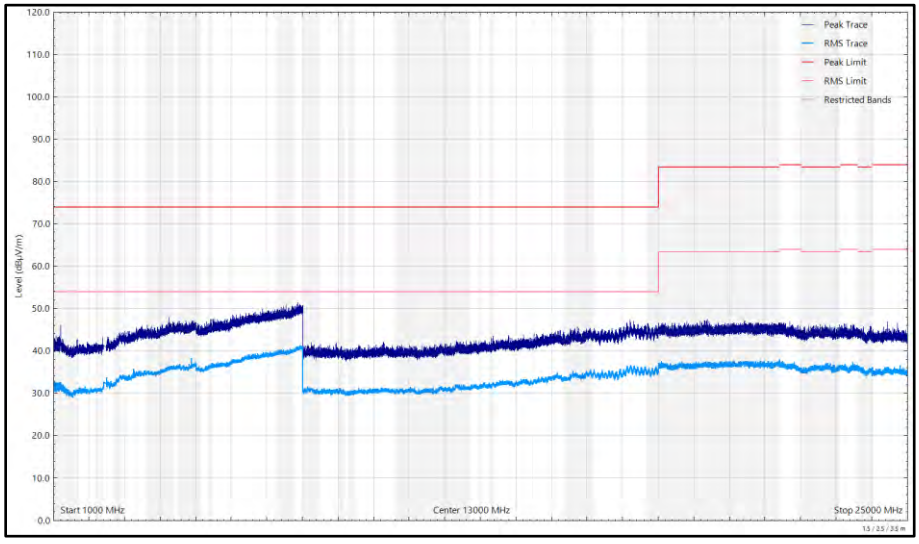

Figure 67 - Ch19_BLE_LE1M - 2440 MHz, 1 GHz to 25 GHz, Horizontal Z Orientation

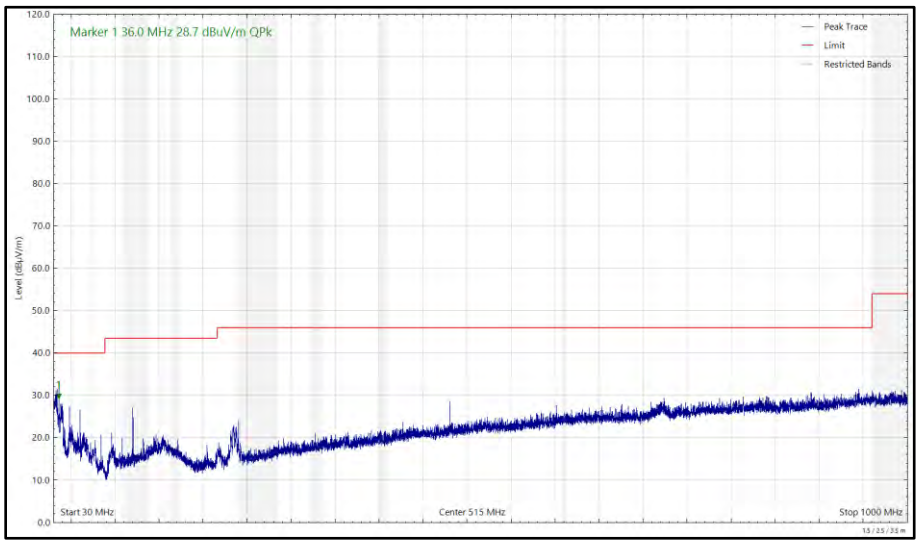

Figure 68 - Ch19_BLE_LE1M - 2440 MHz, 30 MHz to 1 GHz, Vertical (Peak) Z Orientation

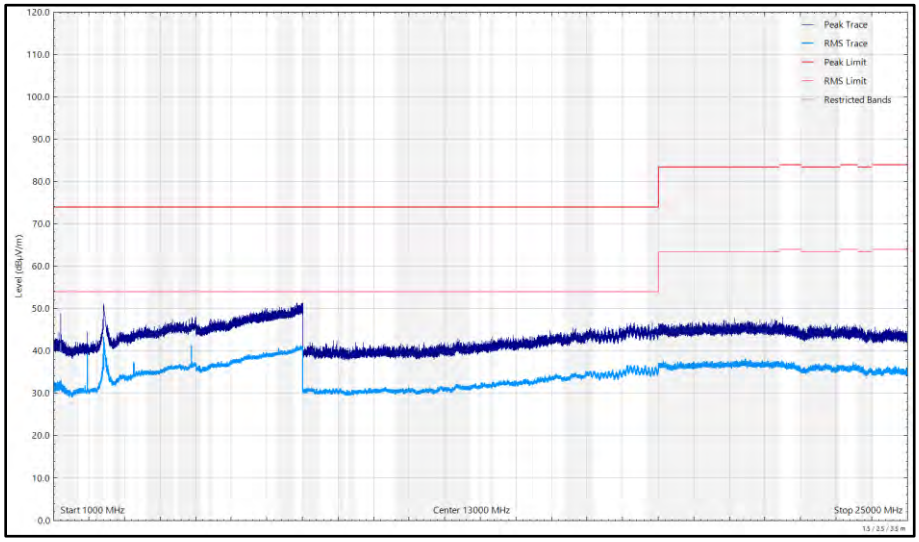

Figure 69 - Ch19_BLE_LE1M - 2440 MHz, 1 GHz to 25 GHz, Vertical Z Orientation

Frequency (MHz)	Level	Limit	Margin (dB)	Detector	Unit	Angle (°)	Height (cm)	Polarisation
36.021	29.55	40.00	-10.45	Q-Peak	dBuV/m	217	100	Vertical
2493.984	44.11	54.00	-9.89	RMS	dBuv/m	358	100	Vertical

Table 33 - Ch38_BLE_LE1M - 2478 MHz, 30 MHz to 25 GHz Z Orientation

No other emissions found within 10 dB of the limit.

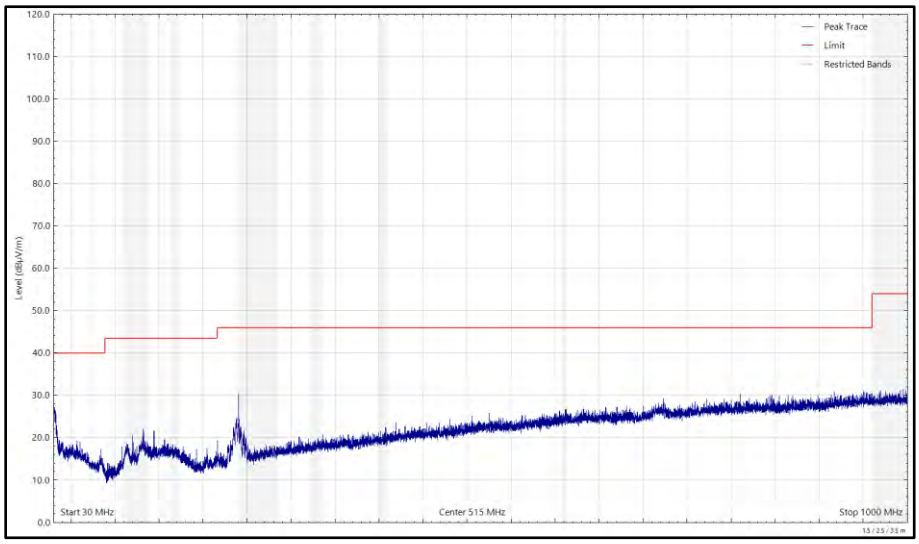

Figure 70 - Ch38_BLE_LE1M - 2478 MHz, 30 MHz to 1 GHz, Horizontal (Peak) Z Orientation

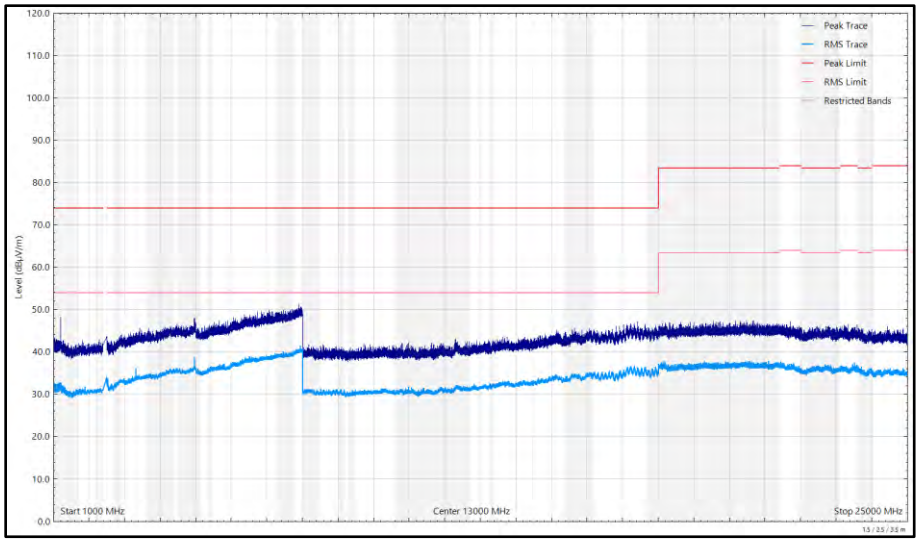

Figure 71 - Ch38_BLE_LE1M - 2478 MHz, 1 GHz to 25 GHz, Horizontal Z Orientation