

FCC and ISED Test Report

Silicon Laboratories Finland Oy

Main Model: MGM270S22A

Series Model: BGM270S22A



In accordance with FCC 47 CFR Part 15C and
ISED RSS-247 and ISED RSS-GEN

Technology: (2.4 GHz Bluetooth Low Energy)

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FCC ID: QOQ-GM270S IC: 5123A-GM270S

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Document 75965039-04 Issue 01

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RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Thomas Biddlecombe	08 September 2025	
	Mohiuddin Mohammed	08 September 2025	
FCC Accreditation: 492497/UK2010 Octagon House, Fareham Test Laboratory ISED Accreditation: 12669A/UK0003 Octagon House, Fareham Test Laboratory			
EXECUTIVE SUMMARY / ENGINEERING STATEMENT			
The measurements shown in this report were made in accordance with the procedures described on the test pages A sample of this product was tested to demonstrate limited compliance with FCC 47 CFR Part 15C: 2023, ISED RSS-247: Issue 3 (2023-08) and ISED RSS-GEN: Issue 5 (2018-04) + A2 (2021-02) for the tests detailed in section 1.3. The sample tested was found to comply with the requirements defined in the applied rules.			
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Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation. Results of tests not covered by our UKAS Accreditation Schedule are marked NUA (Not UKAS Accredited). Results of tests covered by our Flexible UKAS Accreditation Schedule are marked FS (Flexible Scope).			

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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
01	First version	08 September 2025

Table 1

1.2 Introduction

Applicant	Silicon Laboratories Finland Oy
Manufacturer	Silicon Laboratories Finland Oy
Model Number(s)	Main Model: MGM270S22A Series Model: BGM270S22A
Serial Number(s)*	xGM270S_S1; xGM270S_S2; xGM270S_S4. xGM270S_S7 & xGM270S_S8
Hardware Version(s)	1.0
Software Version(s)	Simplicity SDK Suite v2025.6.0
Number of Samples Tested	5
Test Specification/Issue/Date	FCC 47 CFR Part 15C: 2023 ISED RSS-247: Issue 3 (08-2023) ISED RSS-GEN: Issue 5 (04-2018) + A2 (02-2021)
Order Number	6000558262
Date	24-June-2025
Date of Receipt of EUT	26-June-2025
Start of Test	10-July-2025
Finish of Test	24-July-2025
Name of Engineer(s)	Thomas Biddlecombe and Mohiuddin Mohammed
Related Document(s)	ANSI C63.10 (2020)

* The devices supplied for test did not have serial numbers. The manufacturer supplied a "sample identifier" to allow identification for lab test purposes. This was conveyed as a label on the host carrier board. Across this document, "Serial Number", or the "S/N" notation, indicates such sample identification.



1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15C and 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 – Conducted Tests (xGM270S_S4)						
2.1	15.247 (a)(2)	5.2	6.7	Emission Bandwidth	Pass	ANSI C63.10 (2020)
2.2	15.247 (b)	5.4	6.12	Maximum Conducted Output Power	Pass	ANSI C63.10 (2020)
2.3	15.247 (e)	5.2	6.12	Power Spectral Density	Pass	ANSI C63.10 (2020)
Configuration and Mode: 2.4 GHz Bluetooth Low Energy - External dipole whip Antenna (xGM270S_S1 with ANT-2.4-CW-CT-RPS, xGM270S_S2 with ANT-2.4-CW-CT-RPS)						
2.4	15.203			Antenna Requirement	N/T	The device complies with the provisions of this section, as it uses a non-standard antenna jack.
2.5	15.205	3.3	8.10	Restricted Band Edges	Pass	ANSI C63.10 (2020)
2.6	15.247 (d)	5.5		Authorised Band Edges	Pass	ANSI C63.10 (2020)
2.7	15.247 (d) and 15.209	3.3 & 5.5	6.13 & 8.9	Spurious Radiated Emissions	Pass	ANSI C63.10 (2020)
Configuration and Mode: 2.4 GHz Bluetooth Low Energy – Module's Integral PCB Trace Antenna (xGM270S_S7, XGM270S_S8)						
2.4	15.203			Antenna Requirement	N/T	The device complies with the provisions of this section, as it uses permanently attached integral antennas.
2.5	15.205	3.3	8.10	Restricted Band Edges	Pass	ANSI C63.10 (2020)
2.6	15.247 (d)	5.5		Authorised Band Edges	Pass	ANSI C63.10 (2020)
2.7	15.247 (d) and 15.209	3.3 & 5.5	6.13 & 8.9	Spurious Radiated Emissions	Pass	ANSI C63.10 (2020)

Table 2

Note: For EIRP calculations based on conducted testing, the antenna gain was taken as 2.80 dBi as per the reference external antenna (ANT-2.4-CW-CT-RPS) as this is the highest gain antenna.

Note: Testing was carried out on the highest and lowest physical channels used by the device. In terms of the worst-case mode for the 1 Msym/s PHYs, as the device was operated at 100 % duty cycle and there is a single modulation scheme across all channels in use by each PHY (regardless of Data vs Primary Advertising channels), the completed testing is deemed as worst case.



1.4 Customer Supplied Form

Equipment Description

Technical Description: <i>(Please provide a brief description of the intended use of the equipment including the technologies the product supports)</i>	Bluetooth Low Energy (LE) and 802.15.4 wireless radio module		
Legal Manufacturer (Technology Owner):	Silicon Laboratories Finland Oy		
Model Name(s):	Main Model: MGM270S22A (supports both BLE and 802.15.4) Series Model: BGM270S22A (supports only BLE – 802.15.4 disabled)		
Brand Name:	SILICON LABS		
Hardware Version:	1.0		
Software Version:	Simplicity SDK Suite v2025.6.0		
FCC ID of the product under test – see guidance here	QOQ-GM270S		
IC ID of the product under test – see guidance here	5123A-GM270S		
Device Category	Mobile ☒	Portable ☒	Fixed ☐
Equipment is fitted with an Audio Low Pass Filter	Yes ☐	No ☒	

Table 3



Intentional Radiators

Technology	Bluetooth LE	IEEE 802.15.4
Frequency Range (MHz to MHz)	Advertising mode: 2402 – 2480 Data mode: 2404 – 2478	2405 - 2480
Conducted Declared Output Power (dBm)	6.3	6.3
Antenna Gain (dBi)	Integral antenna: 1.74 Reference external dipole antenna: 2.80	Integral antenna: 1.74 Reference external dipole antenna: 2.80
Supported Bandwidth(s) (MHz) (e.g. 1 MHz, 20 MHz, 40 MHz)	Nominal Channel Bandwidth for 1MBaud PHYs (1Mbps and Coded 125kbps / 500kbps): 1 Nominal Channel Bandwidth for 2MBaud PHY (2Mbps): 2	Nominal Channel Bandwidth: 3.5
Modulation Scheme(s) (e.g. GFSK, QPSK etc)	GFSK	O-QPSK
ITU Emission Designator (see guidance here) (not mandatory for Part 15 devices)		
Bottom Frequency (MHz)	2402 for Adv mode 2404 for Data mode	2405
Middle Frequency (MHz)	2440 for Data mode	2445
Top Frequency (MHz)	2402 for Adv mode 2404 for Data mode	2480

Table 4

Un-intentional Radiators

Highest frequency generated or used in the device or on which the device operates or tunes	
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:	3.0	V
Extreme upper voltage:	3.8	V
Extreme lower voltage:	1.8	V
Max current:	0.2	A

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:	+105	°C

Table 10

Cable Loss

Adapter Cable Loss (Conducted sample)	Semi-rigid coax cable with SMA connector: 0.2 Optional SMA adapter: add 0.1 when used	dB
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Table 11

Antenna Characteristics

Antenna connector (module's RF pin) ☒			State impedance	50	Ohm
Temporary antenna connector ☐			State impedance		Ohm
Integral antenna ☒	Type:	PCB trace	Gain	1.74	dBi
External antenna ☒	Type:	Reference Dipole	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 (module's 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

Data in the tables above is provided by the Manufacturer.



1.5 Product Information

1.5.1 Technical Description

Bluetooth Low Energy (LE) and 802.15.4 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: MGM270S22A, Serial Number: xGM270S_S1			
0	As supplied by the customer	Not Applicable	Not Applicable
Model: MGM270S22A, Serial Number: xGM270S_S2			
0	As supplied by the customer	Not Applicable	Not Applicable
Model: MGM270S22A, Serial Number: xGM270S_S4			
0	As supplied by the customer	Not Applicable	Not Applicable
Model: MGM270S22A, Serial Number: xGM270S_S7			
0	As supplied by the customer	Not Applicable	Not Applicable
Model: MGM270S22A, Serial Number: xGM270S_S8			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 13



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		
Emission Bandwidth	Thomas Biddlecombe	UKAS
Maximum Conducted Output Power	Thomas Biddlecombe	UKAS
Power Spectral Density	Thomas Biddlecombe	UKAS
Configuration and Mode: 2.4 GHz Bluetooth Low Energy - External dipole whip Antenna		
Restricted Band Edges	Mohiuddin Mohammed	UKAS
Authorised Band Edges	Mohiuddin Mohammed	UKAS
Spurious Radiated Emissions	Mohiuddin Mohammed	UKAS
Configuration and Mode: 2.4 GHz Bluetooth Low Energy – Module's Integral PCB Trace Antenna		
Restricted Band Edges	Mohiuddin Mohammed	UKAS
Authorised Band Edges	Mohiuddin Mohammed	UKAS
Spurious Radiated Emissions	Mohiuddin Mohammed	UKAS

Table 14

Laboratory Address: TÜV SÜD, Octagon House,
Concorde Way, Fareham, Hampshire,
PO15 5RL, United Kingdom



2 Test Details

2.1 Emission Bandwidth

2.1.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (a)(2),
ISED RSS-247, Clause 5.2
ISED RSS-GEN, Clause 6.7

2.1.2 Equipment Under Test and Modification State

Model: MGM270S22A, S/N: xGM270S_S4, - Modification State 0

2.1.3 Date of Test

10-July-2025

2.1.4 Test Method

This test was performed in accordance with ANSI C63.10, clause 6.9.2 for 6 dB BW and 6.9.3 for 99% occupied bandwidth measurements.

The EUT was supplied with 3 VDC directly with a DC Power Supply Unit (PSU).

2.1.5 Environmental Conditions

Ambient Temperature	22.2 °C
Relative Humidity	61.2 %



2.1.6 Test Results

2.4 GHz Bluetooth Low Energy

Test Configuration			
Service Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (a)(2) RSS-247 5.2 (a)	Test Method(s):	C63.10 6.9.3 C63.10 6.9.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	BLE GFSK (LE 1M)	Duty Cycle (%):	100.0
Antenna Configuration:	SISO	DCCF (dB):	-
Power Configuration:	63 deci-dBm	Peak Antenna Gain (dBi):	-
Supply Voltage:	3.00 VDC	Tx Mode:	Continuous PN9 Modulated Stream

Test Frequency (MHz)	6 dB Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
2402	0.680	-	-	-	≥500.0
2440	0.680	-	-	-	≥500.0
2480	0.680	-	-	-	≥500.0

Table 15 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
2402	1.020	-	-	-	-
2440	1.020	-	-	-	-
2480	1.024	-	-	-	-

Table 16 - 99% Bandwidth Results

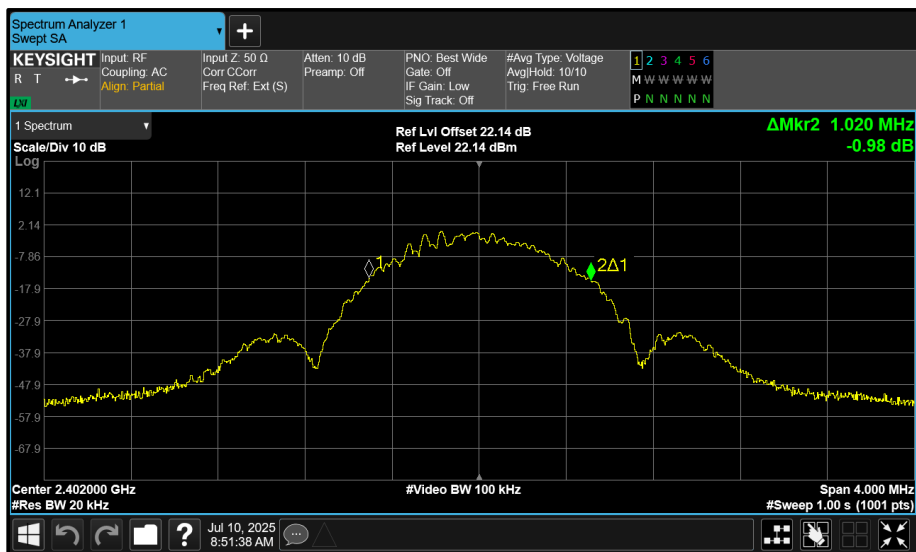


Figure 1 - 2402 MHz (CH37) 99% Bandwidth

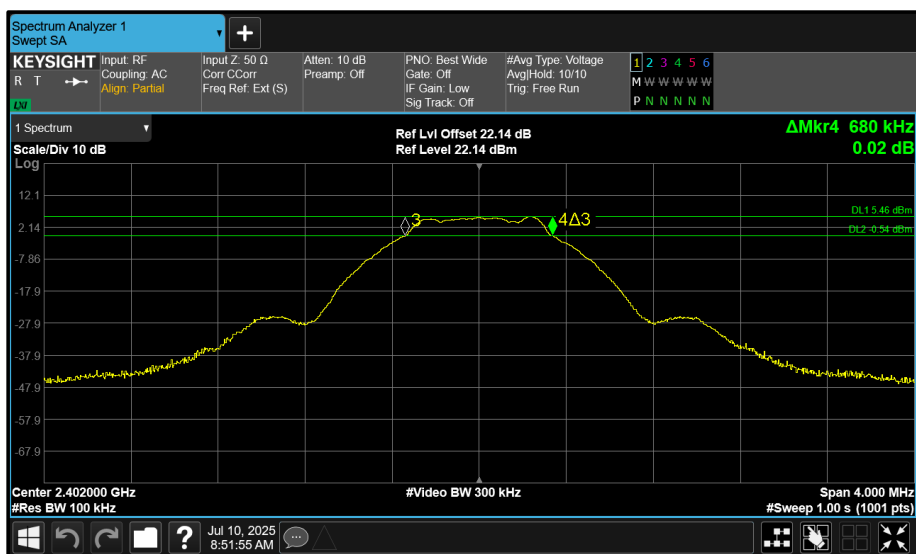


Figure 2 - 2402 MHz (CH37) 6 dB Bandwidth

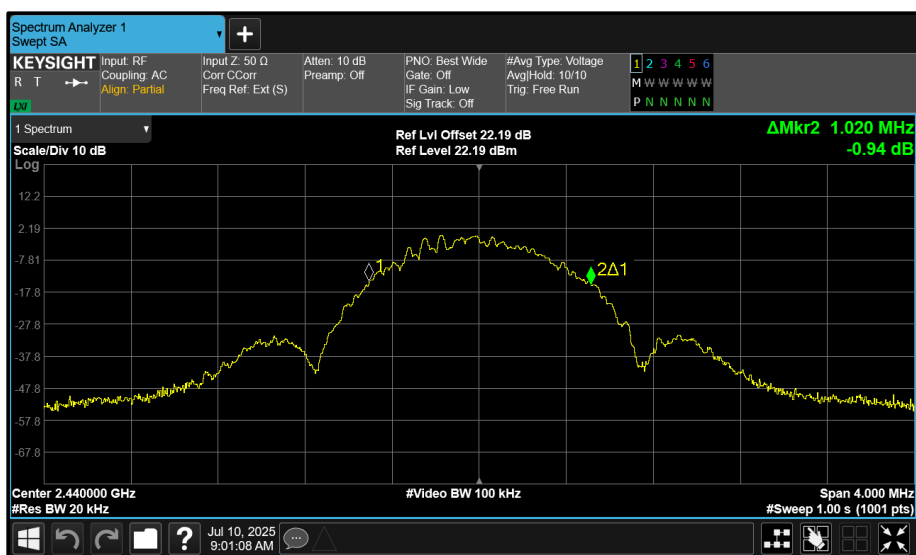


Figure 3 - 2440 MHz (CH 17) 99% Bandwidth

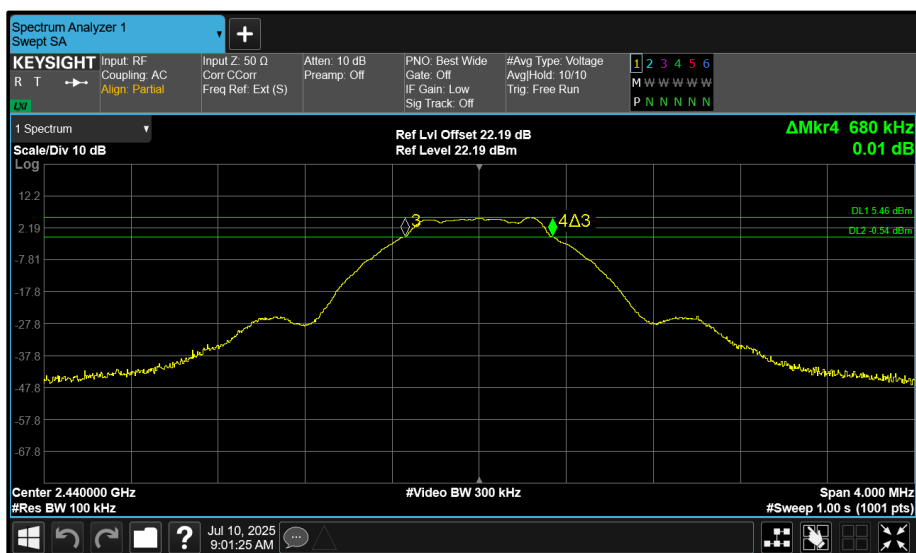


Figure 4 - 2440 MHz (CH17) 6 dB Bandwidth

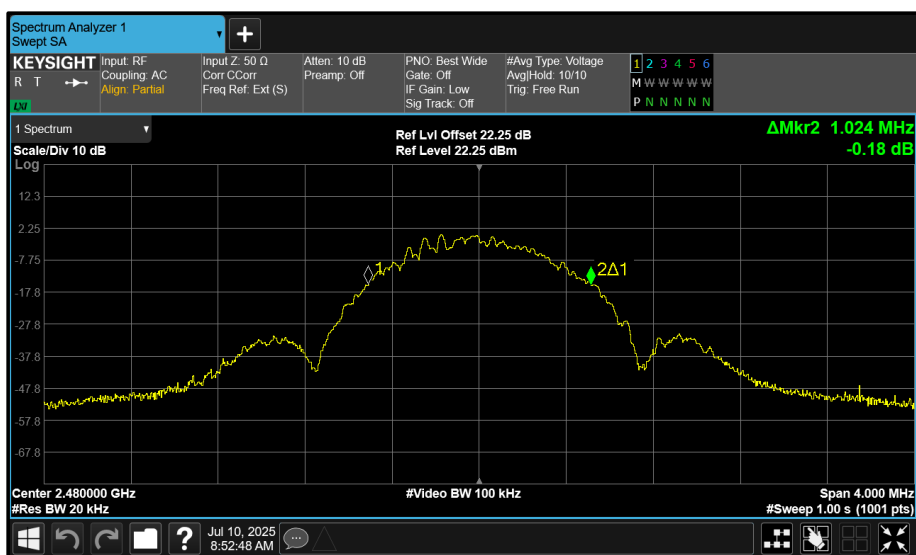


Figure 5 - 2480 MHz (CH39) 99% Bandwidth

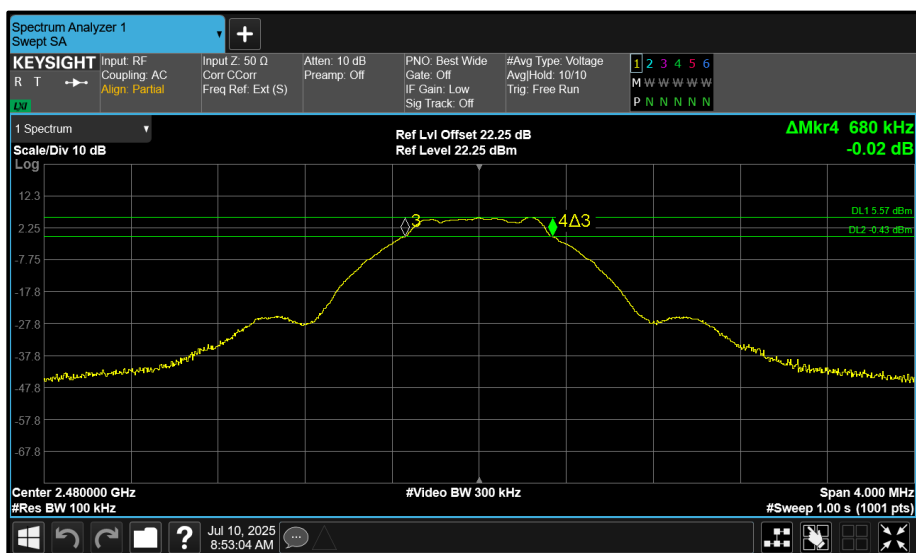


Figure 6 - 2480 MHz (CH39) 6 dB Bandwidth



Test Configuration			
Service Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (a)(2) RSS-247 5.2 (a)	Test Method(s):	C63.10 6.9.3 C63.10 6.9.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	BLE GFSK (LE 2M)	Duty Cycle (%):	100.0
Antenna Configuration:	SISO	DCCF (dB):	-
Power Configuration:	63 deci-dBm	Peak Antenna Gain (dBi):	-
Supply Voltage:	3.00 VDC	Tx Mode:	Continuous PN9 Modulated Stream

Test Frequency (MHz)	6 dB Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
2404	1.384	-	-	-	≥500.0
2440	1.384	-	-	-	≥500.0
2478	1.384	-	-	-	≥500.0

Table 17 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
2404	2.040	-	-	-	-
2440	2.040	-	-	-	-
2478	2.040	-	-	-	-

Table 18 - 99% Bandwidth Results

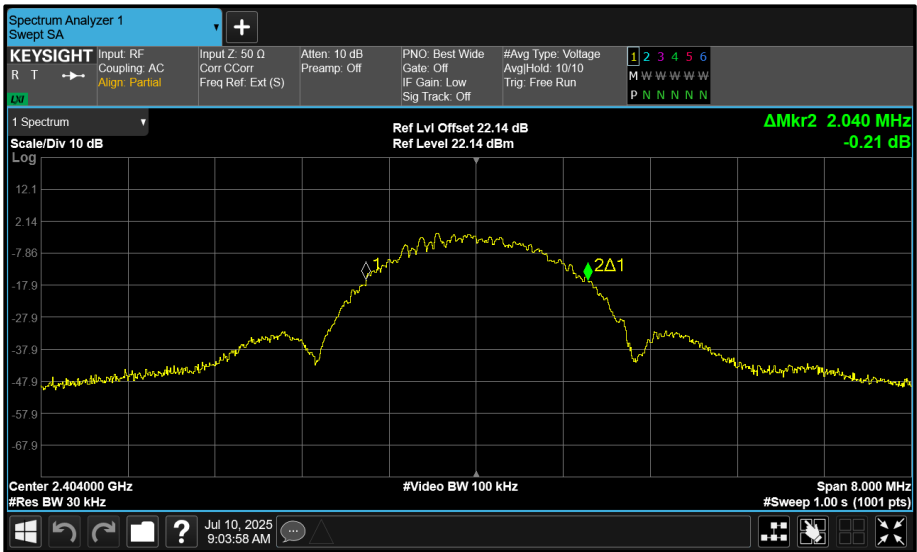


Figure 7 - 2404 MHz (CH37) 99% Bandwidth

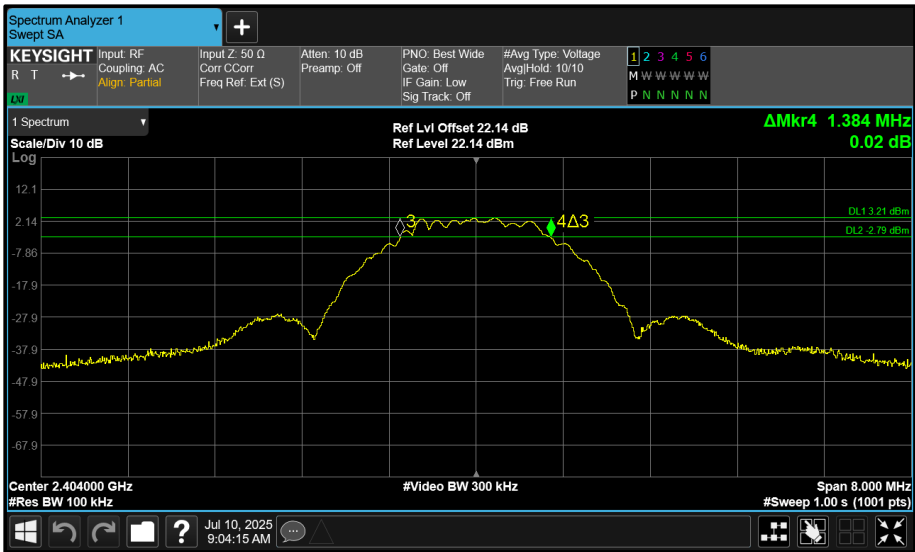


Figure 8 - 2404 MHz (CH37) 6 dB Bandwidth

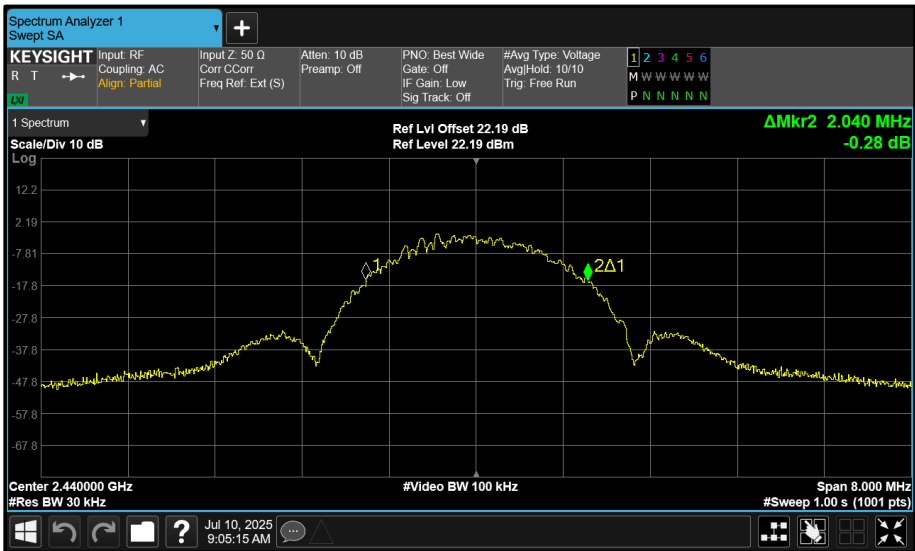


Figure 9 - 2440 MHz (CH39) 99% Bandwidth

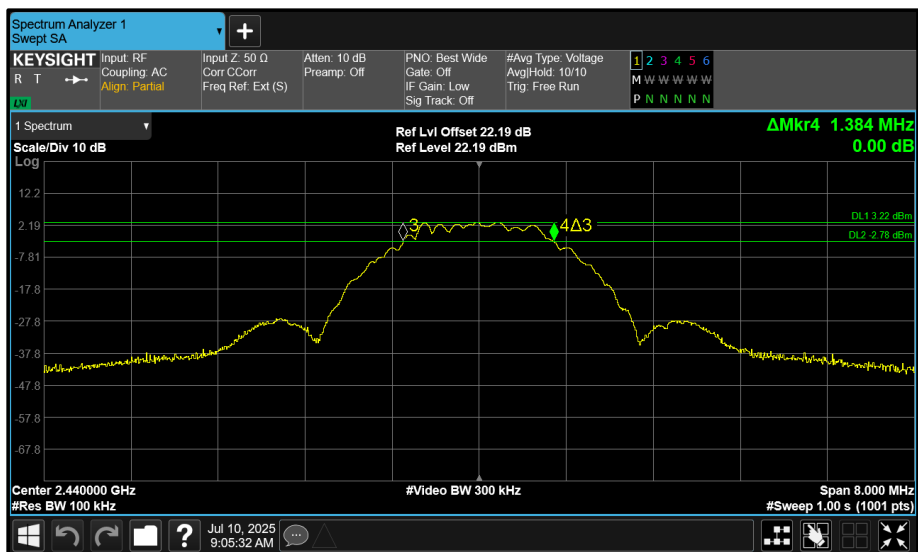


Figure 10 - 2440 MHz (CH17) 6 dB Bandwidth

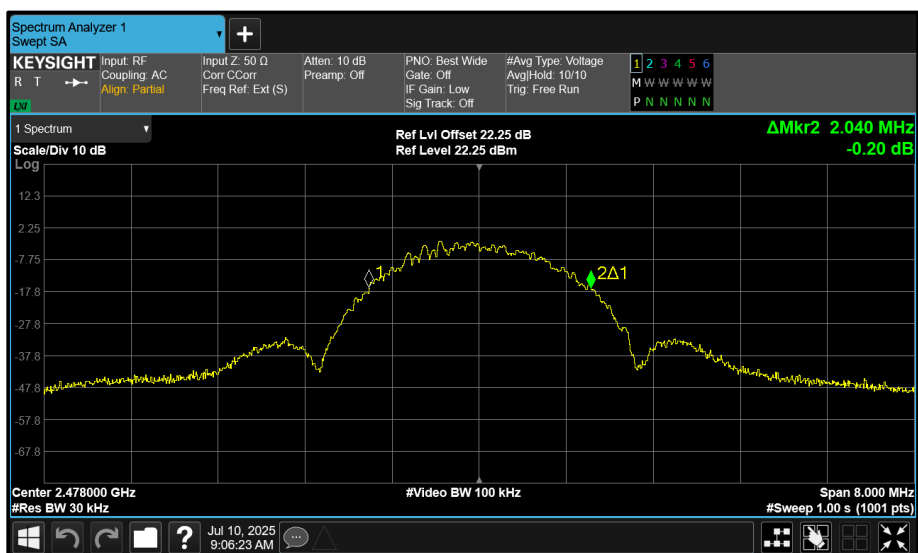


Figure 11 - 2478 MHz (CH39) 99% Bandwidth

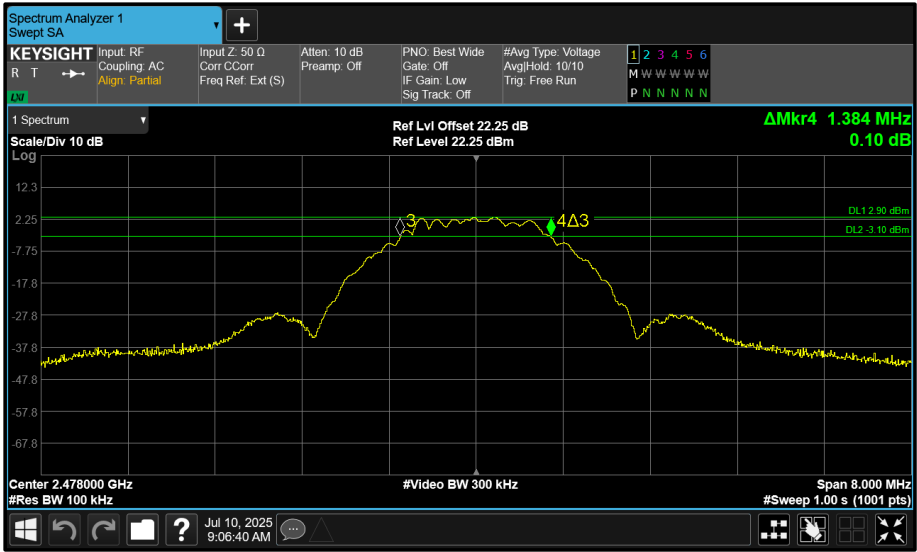


Figure 12 - 2478 MHz (CH39) 6 dB Bandwidth



Test Configuration			
Service Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (a)(2) RSS-247 5.2 (a)	Test Method(s):	C63.10 6.9.3 C63.10 6.9.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	BLE GFSK (LE 1M 2-Coding 500 kbps)	Duty Cycle (%):	100.0
Antenna Configuration:	SISO	DCCF (dB):	-
Power Configuration:	63 deci-dBm	Peak Antenna Gain (dBi):	-
Supply Voltage:	3.00 VDC	Tx Mode:	Continuous PN9 Modulated Stream

Test Frequency (MHz)	6 dB Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
2402	0.712	-	-	-	≥500.0
2440	0.712	-	-	-	≥500.0
2480	0.708	-	-	-	≥500.0

Table 19 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
2402	1.028	-	-	-	-
2440	1.028	-	-	-	-
2480	1.032	-	-	-	-

Table 20 - 99% Bandwidth Results

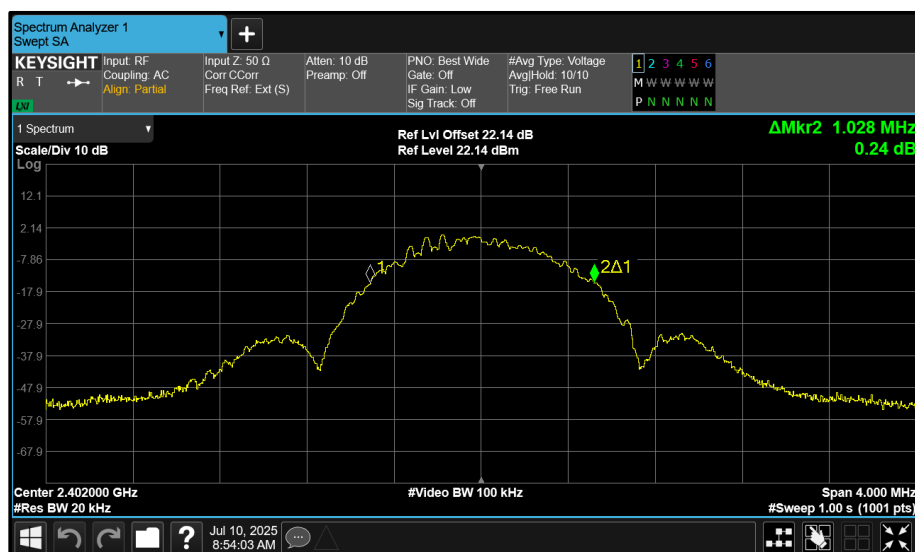


Figure 13 - 2402 MHz (CH37) 99% Bandwidth

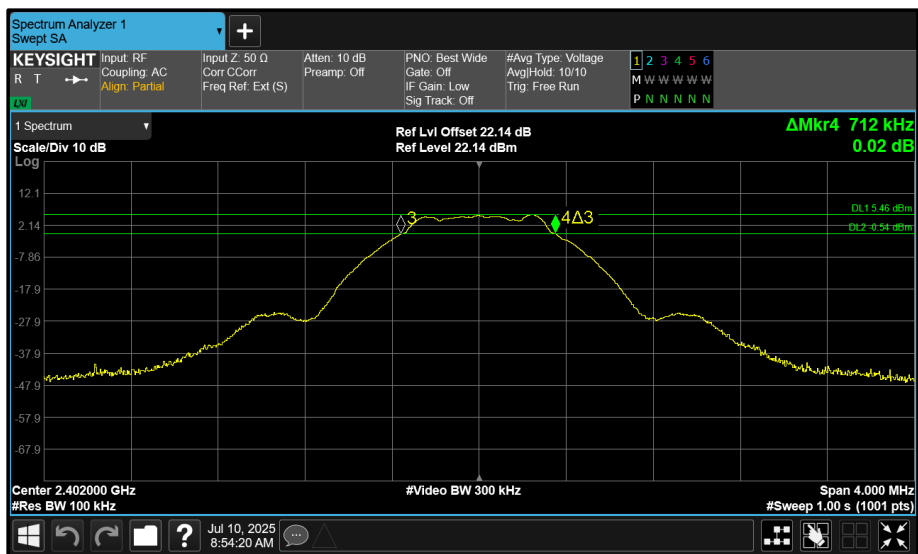


Figure 14 - 2402 MHz (CH37) 6 dB Bandwidth

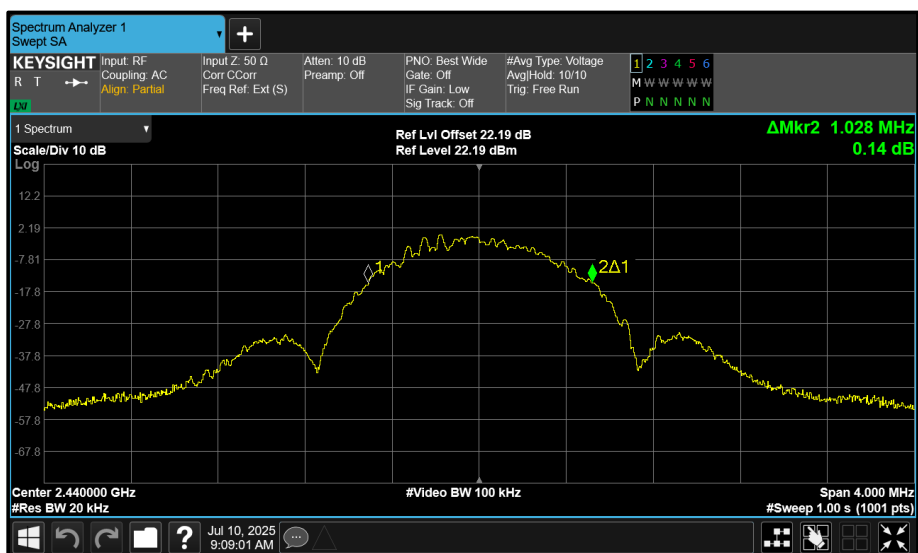


Figure 15 - 2440 MHz (CH17) 99% Bandwidth

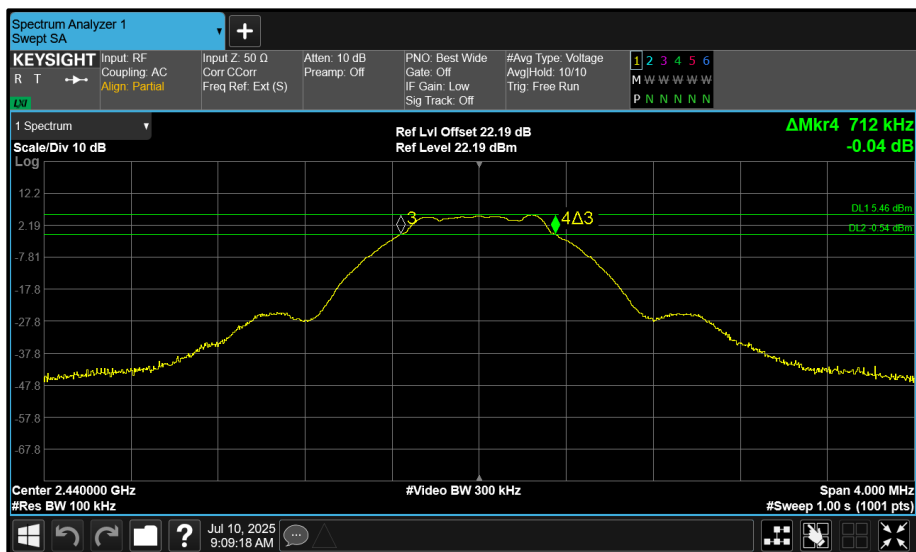


Figure 16 - 2440 MHz (CH17) 6 dB Bandwidth

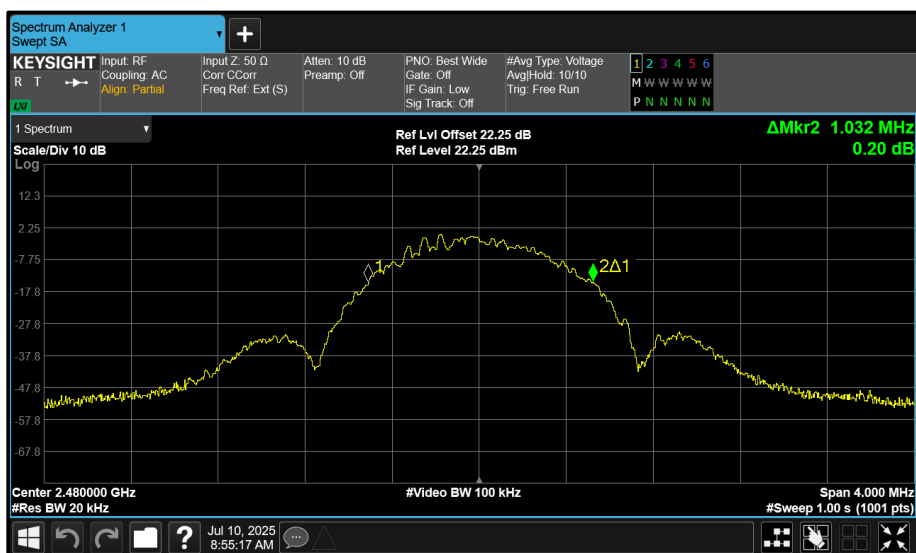


Figure 17 - 2480 MHz (CH39) 99% Bandwidth

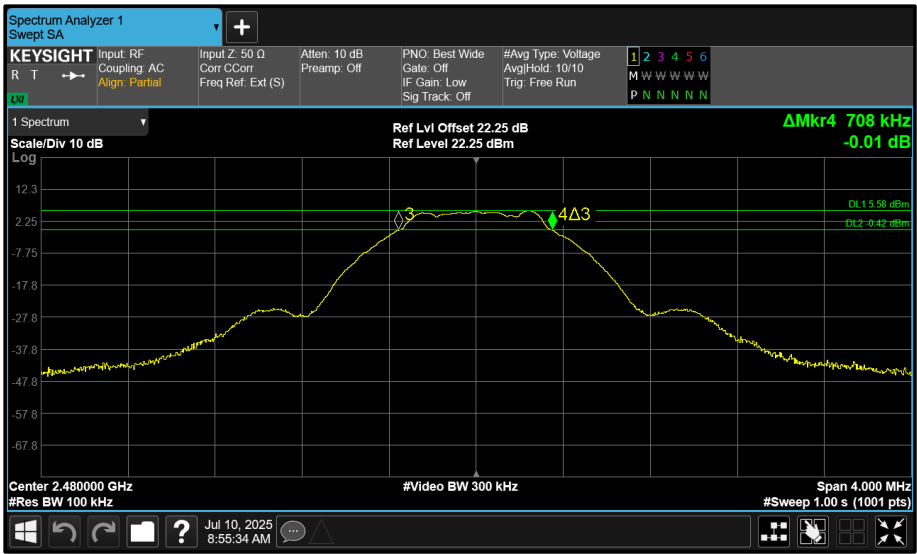


Figure 18 - 2480 MHz (CH39) 6 dB Bandwidth



Test Configuration			
Service Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (a)(2) RSS-247 5.2 (a)	Test Method(s):	C63.10 6.9.3 C63.10 6.9.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	BLE GFSK (LE 1M 8-Coding 125 kbps)	Duty Cycle (%):	100.0
Antenna Configuration:	SISO	DCCF (dB):	-
Power Configuration :	63 deci-dBm	Peak Antenna Gain (dBi):	-
Supply Voltage:	3.00 VDC	Tx Mode:	Continuous PN9 Modulated Stream

Test Frequency (MHz)	6 dB Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
2402	0.676	-	-	-	≥500.0
2440	0.676	-	-	-	≥500.0
2480	0.672	-	-	-	≥500.0

Table 21 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
2402	1.048	-	-	-	-
2440	1.048	-	-	-	-
2480	1.048	-	-	-	-

Table 22 - 99% Bandwidth Results

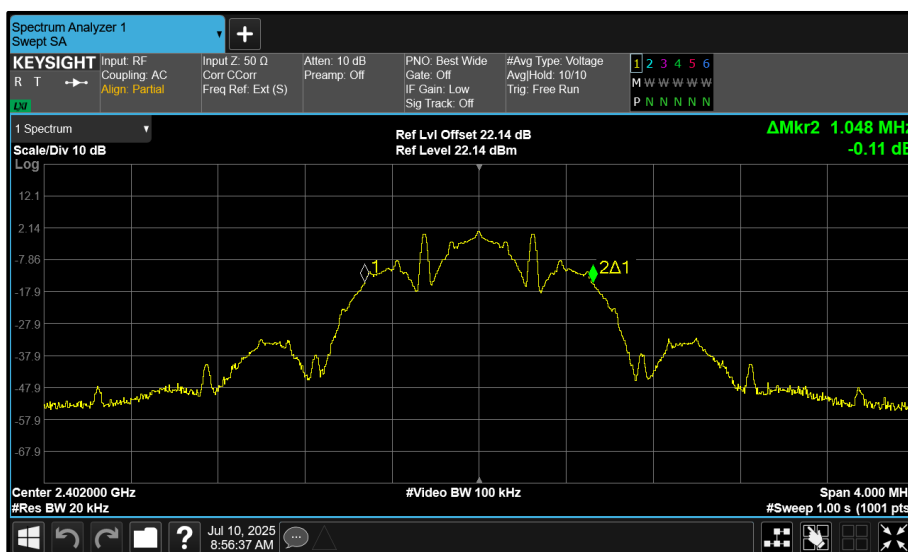
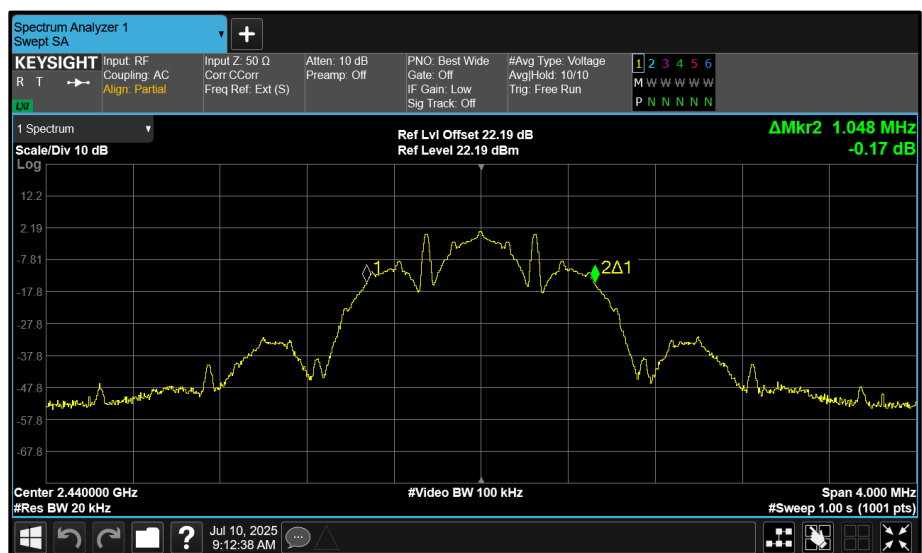
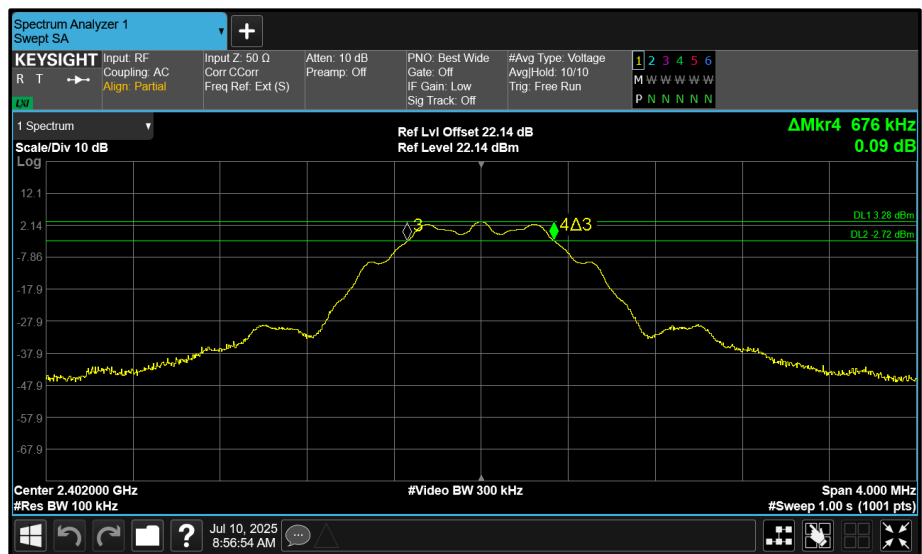


Figure 19 - 2402 MHz (CH37) 99% Bandwidth



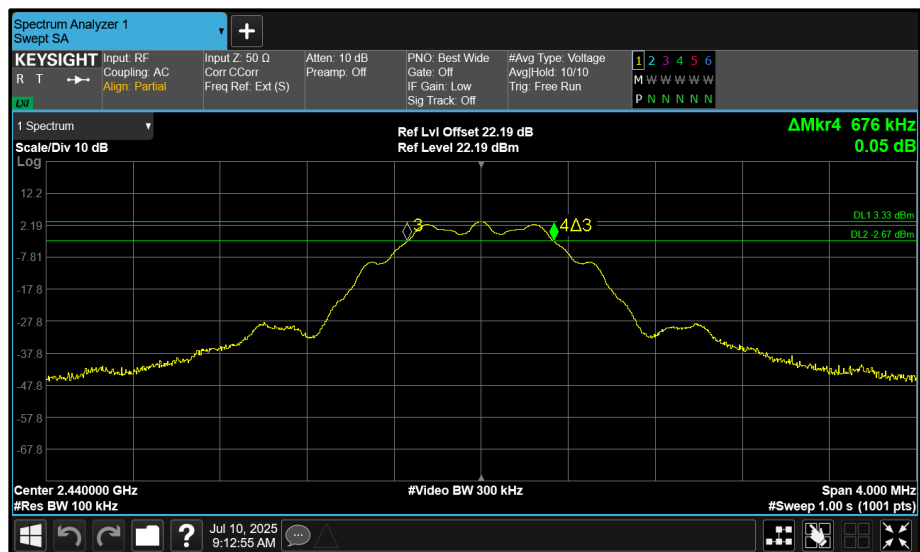


Figure 22 - 2440 MHz (CH17) 6 dB Bandwidth

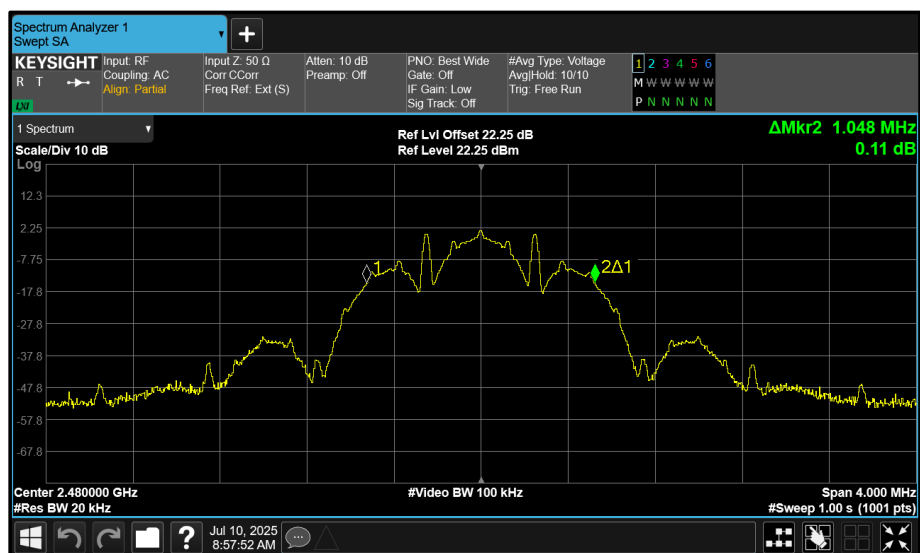


Figure 23 - 2480 MHz (CH39) 99% Bandwidth

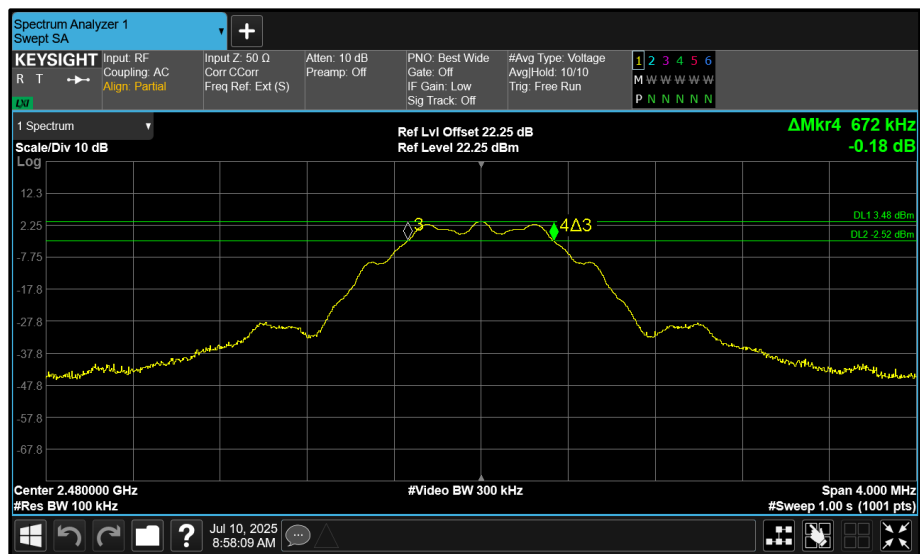


Figure 24 - 2480 MHz (CH39) 6 dB Bandwidth

FCC 47 CFR Part 15, Limit Clause 15.247(a)(2) and ISSED RSS-247, Clause 5.2(a)

The minimum 6 dB Bandwidth shall be at least 500 kHz.

2.1.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Hygrometer	Rotronic	I-1000	2891	12	02-Dec-2025
GPSDR Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	18-Sep-2025
Digital Multi-meter	Iso-tech	IDM93N	4435	12	06-Mar-2026
MXA Signal Analyser	Keysight Technologies	N9020B	5528	24	18-Sep-2025
Modular Power System Mainframe	Keysight Technologies	N6701C	5835	-	TU
DC Power Module 60V 20A 300W	Keysight Technologies	N6754A	5836	-	O/P Mon
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6350	12	02-Aug-2025
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	6638	12	02-Aug-2025

Table 23

TU - Traceability Unscheduled

O/P Mon – Output Monitored using calibrated equipment



2.2 Maximum Conducted Output Power

2.2.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (b),
ISED RSS-247, Clause 5.4
ISED RSS-GEN, Clause 6.12

2.2.2 Equipment Under Test and Modification State

Model: MGM270S22A, S/N: xGM270S_S4, - Modification State 0

2.2.3 Date of Test

10-July-2025

2.2.4 Test Method

The test was performed in accordance with ANSI C63.10 clause 11.9.1.2 Method PKPM1.

The EUT was supplied with 3 VDC directly with a DC PSU.

2.2.5 Environmental Conditions

Ambient Temperature	22.1 °C
Relative Humidity	60.4 %



2.2.6 Test Results

2.4 GHz Bluetooth Low Energy

Test Configuration			
Service Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (b)(3) RSS-247 5.4 d)	Test Method(s):	C63.10 11.9.1.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	BLE GFSK (LE 1M)	Duty Cycle (%):	100.0
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	Module's RF Pin for Conducted Measurements via a semi-rigid coax cable + SMA Connector	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.00 VDC	Tx Mode:	Continuous PN9 Modulated Stream

Test Frequency (MHz)	Power Configuration (dec-dBm)	Maximum Conducted Output Power (dBm)	Limit (dBm)	Margin (dB)
2402	63	6.73	30.00	-23.27
2440	63	6.76	30.00	-23.24
2480	63	6.88	30.00	-23.12

Table 24 - FCC Maximum Conducted (peak) Output Power Results

Test Frequency (MHz)	Power Configuration (dec-dBm)	Maximum Conducted Output Power (dBm)	Limit (dBm)	Margin (dB)	EIRP (dBm)	EIRP Limit (dBm)	EIRP Margin (dB)
2402	63	6.73	30.00	-23.27	9.53	36.00	-26.47
2440	63	6.76	30.00	-23.24	9.56	36.00	-26.44
2480	63	6.88	30.00	-23.12	9.68	36.00	-26.32

Table 25 - ISSED Maximum Conducted (peak) Output Power Results



Test Configuration			
Service Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (b)(3) RSS-247 5.4 d)	Test Method(s):	C63.10 11.9.1.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	BLE GFSK (LE 2M)	Duty Cycle (%):	100.0
Antenna Configuration:	SISO	DCCF (dBi):	-
Active Port(s):	Module's RF Pin for Conducted Measurements via a semi-rigid coax cable + SMA Connector	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.00 VDC	Tx Mode:	Continuous PN9 Modulated Stream

Test Frequency (MHz)	Power Configuration (dec-dBm)	Maximum Conducted Output Power (dBm)	Limit (dBm)	Margin (dB)
2404	63	6.70	30.00	-23.30
2440	63	6.76	30.00	-23.24
2478	63	6.44	30.00	-23.56

Table 26 - FCC Maximum Conducted (peak) Output Power Results

Test Frequency (MHz)	Power Configuration (dec-dBm)	Maximum Conducted Output Power (dBm)	Limit (dBm)	Margin (dB)	EIRP (dBm)	EIRP Limit (dBm)	EIRP Margin (dB)
2404	63	6.70	30.00	-23.30	9.50	36.00	-26.50
2440	63	6.76	30.00	-23.24	9.56	36.00	-26.44
2478	63	6.44	30.00	-23.56	9.24	36.00	-26.76

Table 27 - ISED Maximum Conducted (peak) Output Power Results



Test Configuration			
Service Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (b)(3) RSS-247 5.4 d)	Test Method(s):	C63.10 11.9.1.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	BLE GFSK (LE 1M 2-Coding 500 kbps)	Duty Cycle (%):	100.0
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	Module's RF Pin for Conducted Measurements via a semi-rigid coax cable + SMA Connector	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.00 VDC	Tx Mode:	Continuous PN9 Modulated Stream

Test Frequency (MHz)	Power Configuration (dec-dBm)	Maximum Conducted Output Power (dBm)	Limit (dBm)	Margin (dB)
2402	63	6.73	30.00	-23.27
2440	63	6.74	30.00	-23.26
2480	63	6.89	30.00	-23.11

Table 28 - FCC Maximum Conducted (peak) Output Power Results

Test Frequency (MHz)	Power Configuration (dec-dBm)	Maximum Conducted Output Power (dBm)	Limit (dBm)	Margin (dB)	EIRP (dBm)	EIRP Limit (dBm)	EIRP Margin (dB)
2402	63	6.73	30.00	-23.27	9.53	36.00	-26.47
2440	63	6.74	30.00	-23.26	9.54	36.00	-26.46
2480	63	6.89	30.00	-23.11	9.69	36.00	-26.31

Table 29 - ISED Maximum Conducted (peak) Output Power Results



Test Configuration			
Service Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (b)(3) RSS-247 5.4 d)	Test Method(s):	C63.10 11.9.1.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	BLE GFSK (LE 1M 8-Coding 125 kbps)	Duty Cycle (%):	100.0
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	Module's RF Pin for Conducted Measurements via a semi-rigid coax cable + SMA Connector	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.00 VDC	Tx Mode:	Continuous PN9 Modulated Stream

Test Frequency (MHz)	Power Configuration (dec-dBm)	Maximum Conducted Output Power (dBm)	Limit (dBm)	Margin (dB)
2402	63	6.69	30.00	-23.31
2440	63	6.78	30.00	-23.22
2480	63	6.86	30.00	-23.14

Table 30 - FCC Maximum Conducted (peak) Output Power Results

Test Frequency (MHz)	Power Configuration (dec-dBm)	Maximum Conducted Output Power (dBm)	Limit (dBm)	Margin (dB)	EIRP (dBm)	EIRP Limit (dBm)	EIRP Margin (dB)
2402	63	6.69	30.00	-23.31	9.49	36.00	-26.51
2440	63	6.78	30.00	-23.22	9.58	36.00	-26.42
2480	63	6.86	30.00	-23.14	9.66	36.00	-26.34

Table 31 - ISED Maximum Conducted (peak) Output Power Results

FCC 47 CFR Part 15, Limit Clause 15.247 (b)(3)

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

ISED RSS-247, Limit Clause 5.4 (d)

For DTSS employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1 W. The e.i.r.p. shall not exceed 4 W, except as provided in section 5.4(e) of the specification.



2.2.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Hygrometer	Rotronic	I-1000	2891	12	02-Dec-2025
Digital Multi-meter	Iso-tech	IDM93N	4435	12	06-Mar-2026
USB Power Sensor	Boonton	RTP5008	5833	12	26-Jul-2025
Modular Power System Mainframe	Keysight Technologies	N6701C	5835	-	TU
DC Power Module 60V 20A 300W	Keysight Technologies	N6754A	5836	-	O/P Mon
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6350	12	02-Aug-2025
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	6638	12	02-Aug-2025

Table 32

TU - Traceability Unscheduled

O/P Mon – Output Monitored using calibrated equipment



2.3 Power Spectral Density

2.3.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (e),
ISED RSS-247, Clause 5.2
ISED RSS-GEN, Clause 6.12

2.3.2 Equipment Under Test and Modification State

Model: MGM270S22A, S/N: xGM270S_S4, - Modification State 0

2.3.3 Date of Test

10-July-2025

2.3.4 Test Method

This test was performed in accordance with ANSI C63.10, clause 11.10.2.

The EUT was supplied with 3 VDC directly with a DC PSU.

2.3.5 Environmental Conditions

Ambient Temperature	22.2 °C
Relative Humidity	61.2 %



2.3.6 Test Results

2.4 GHz Bluetooth Low Energy

Test Configuration			
Service Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	BLE GFSK (LE 1M)	Duty Cycle (%):	100.0
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	Module's RF Pin for Conducted Measurements via a semi-rigid coax cable + SMA Connector	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.00 VDC	Tx Mode:	Continuous PN9 Modulated Stream

Test Frequency (MHz)	Power Configuration (decibel-dBm)	RBW (kHz)	PSD (dBm/RBW)	Limit (dBm/3 kHz)	Margin (dB)
2402	63	100.0	5.48	8.00	-2.52
2440	63	100.0	5.49	8.00	-2.51
2480	63	100.0	5.60	8.00	-2.40

Table 33 - Maximum Power Spectral Density Results

Test Configuration			
Service Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	BLE GFSK (LE 2M)	Duty Cycle (%):	100.0
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	Module's RF Pin for Conducted Measurements via a semi-rigid coax cable + SMA Connector	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.00 VDC	Tx Mode:	Continuous PN9 Modulated Stream

Test Frequency (MHz)	Power Configuration (decibel-dBm)	RBW (kHz)	PSD (dBm/RBW)	Limit (dBm/3 kHz)	Margin (dB)
2404	63	100.0	3.66	8.00	-4.34
2440	63	100.0	3.70	8.00	-4.30
2478	63	100.0	3.36	8.00	-4.64

Table 34 - Maximum Power Spectral Density Results



Test Configuration			
Service Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	BLE GFSK (LE 1M 2-Coding 500 kbps)	Duty Cycle (%):	100.0
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	Module's RF Pin for Conducted Measurements via a semi-rigid coax cable + SMA Connector	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.00 VDC	Tx Mode:	Continuous PN9 Modulated Stream

Test Frequency (MHz)	Power Configuration (dec-dBm)	RBW (kHz)	PSD (dBm/RBW)	Limit (dBm/3 kHz)	Margin (dB)
2402	63	100.0	5.48	8.00	-2.52
2440	63	100.0	5.49	8.00	-2.51
2480	63	100.0	5.60	8.00	-2.40

Table 35 - Maximum Power Spectral Density Results

Test Configuration			
Service Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	BLE GFSK (LE 1M 8-Coding 125 kbps)	Duty Cycle (%):	100.0
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	Module's RF Pin for Conducted Measurements via a semi-rigid coax cable + SMA Connector	Peak Antenna Gain (dBi):	2.80
Supply Voltage:	3.00 VDC	Tx Mode:	Continuous PN9 Modulated Stream

Test Frequency (MHz)	Power Configuration (dec-dBm)	RBW (kHz)	PSD (dBm/RBW)	Limit (dBm/3 kHz)	Margin (dB)
2402	63	100.0	3.28	8.00	-4.72
2440	63	100.0	3.33	8.00	-4.67
2480	63	100.0	3.46	8.00	-4.54

Table 36 - Maximum Power Spectral Density Results



FCC 47 CFR Part 15, Limit Clause 15.247 (e)

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

ISED RSS-247, Limit Clause 5.2(b)

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

2.3.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Hygrometer	Rotronic	I-1000	2891	12	02-Dec-2025
GPSDR Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	18-Sep-2025
Digital Multi-meter	Iso-tech	IDM93N	4435	12	06-Mar-2026
MXA Signal Analyser	Keysight Technologies	N9020B	5528	24	18-Sep-2025
Modular Power System Mainframe	Keysight Technologies	N6701C	5835	-	TU
DC Power Module 60V 20A 300W	Keysight Technologies	N6754A	5836	-	O/P Mon
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6350	12	02-Aug-2025
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	6638	12	02-Aug-2025

Table 37

TU - Traceability Unscheduled

O/P Mon – Output Monitored using calibrated equipment



2.4 Restricted Band Edges

2.4.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.205
ISED RSS-247, Clause 3.3
ISED RSS-GEN, Clause 8.10

2.4.2 Equipment Under Test and Modification State

Model: MGM270S22A, S/N: xGM270S_S2 - Modification State 0
Model: MGM270S22A, S/N: xGM270S_S8 - Modification State 0

2.4.3 Date of Test

10-July-2025 to 13-July-2025

2.4.4 Test Method

This test was performed in accordance with ANSI C63.10, clause 6.10.5 and 11.12.1.

Plots for average measurements were taken in accordance with ANSI C63.10, clause 11.12.2.5.2.

The following conversion can be applied to convert from dBμV/m to μV/m:
 $10^{(\text{Field Strength in dB}\mu\text{V/m}/20)}$

Testing was performed on worst-case modes which were LE1M and LE2M as per ANSI C63.10
Clause 5.6.2.2.a

The EUT was set to transmit a continuous modulated stream of PN9 data, at a configured power level of 63 deci-dBm.

The EUT was supplied with 3 VDC directly with a DC PSU.

2.4.5 Environmental Conditions

Ambient Temperature	19.8 °C – 23 °C
Relative Humidity	60.0 % - 65.7 %

2.4.6 Test Results

2.4 GHz Bluetooth Low Energy - External dipole whip Antenna (xGM270S S2 with ANT-2.4-CW-CT-RPS)

Mode	Data Rate/MCS	Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dB μ V/m)	Average Level (dB μ V/m)
BLE	1M	2402	2390	54.06	42.40
BLE	1M	2480	2483.5	57.36	47.57
BLE	2M	2404	2390	54.30	42.73
BLE	2M	2478	2483.5	61.31	50.89

Table 29

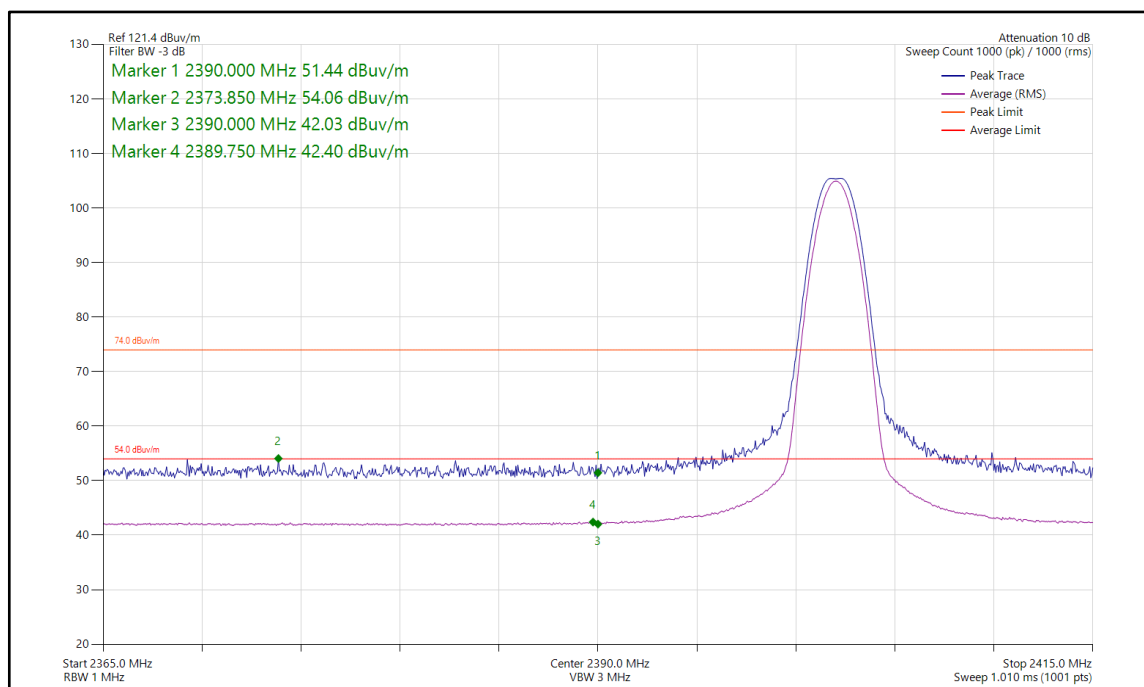


Figure 25 - BOT_BLE_1M_2402 MHz, Band Edge Frequency 2390 MHz

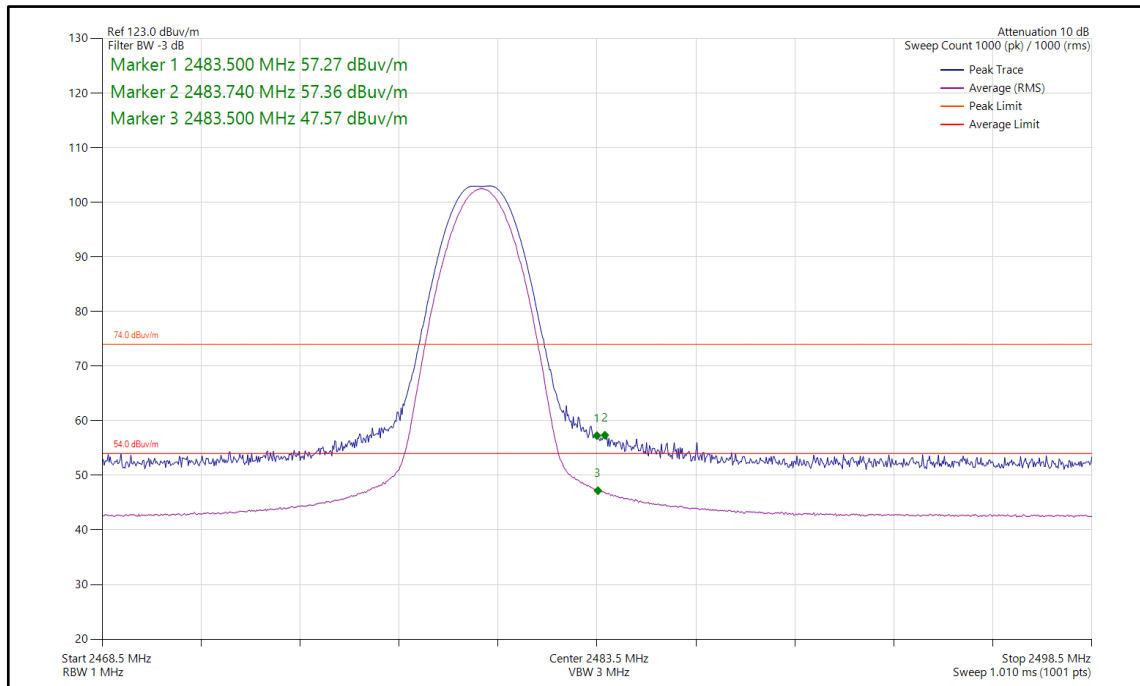


Figure 26 - TOP_BLE_1M_2480 MHz, Band Edge Frequency 2483.5 MHz

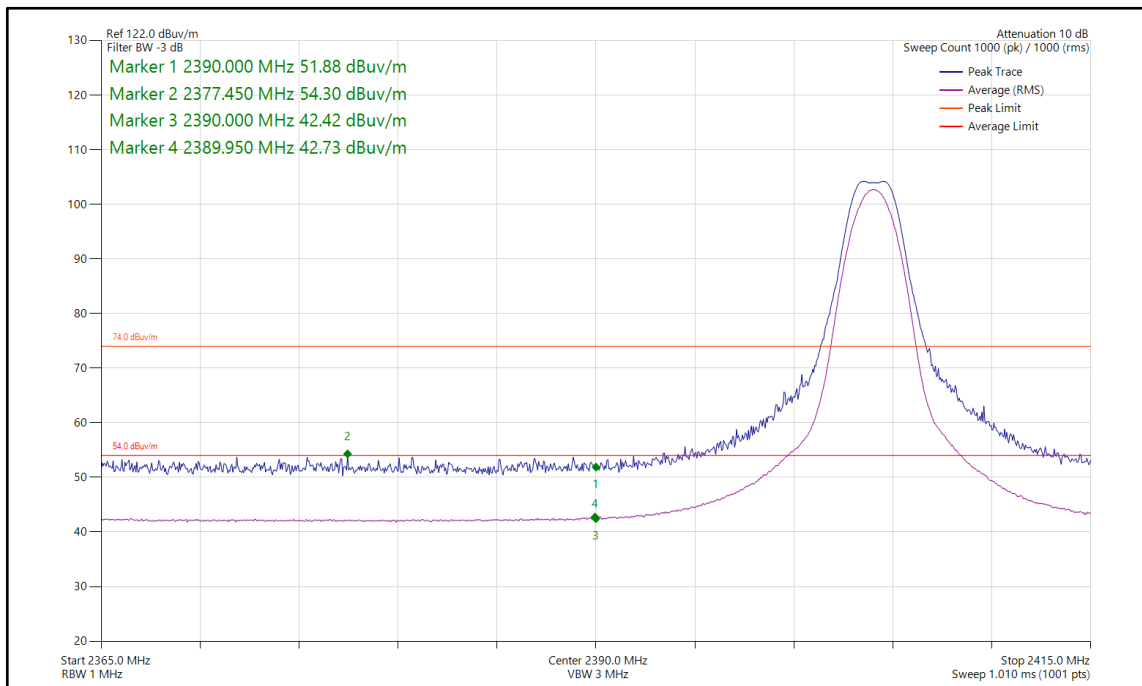


Figure 27 - BOT_BLE_2M_2404 MHz, Band Edge Frequency 2390 MHz

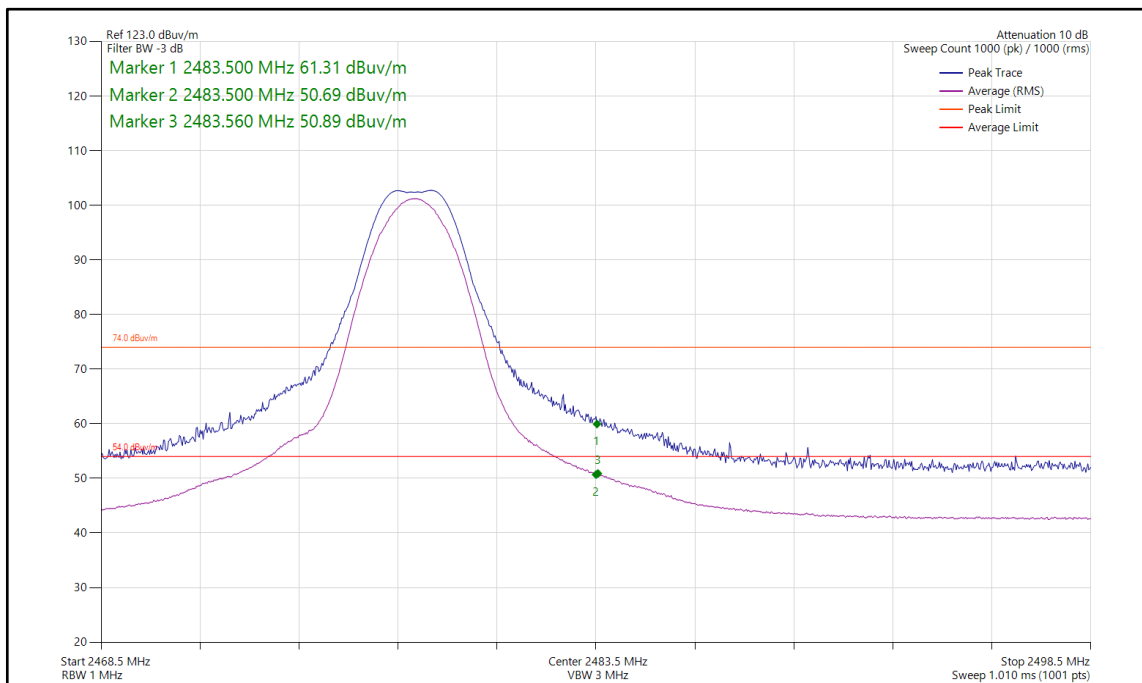


Figure 28 - TOP_BLE_2M_2478 MHz, Band Edge Frequency 2483.5 MHz

2.4 GHz Bluetooth Low Energy - PCB Trace Antenna (XGM270S S8)

Mode	Data Rate/MCS	Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBμV/m)	Average Level (dBμV/m)
BLE	1M	2402	2390	54.40	42.48
BLE	1M	2480	2483.5	57.47	47.72
BLE	2M	2404	2390	54.33	42.56
BLE	2M	2478	2483.5	60.58	50.33

Table 29

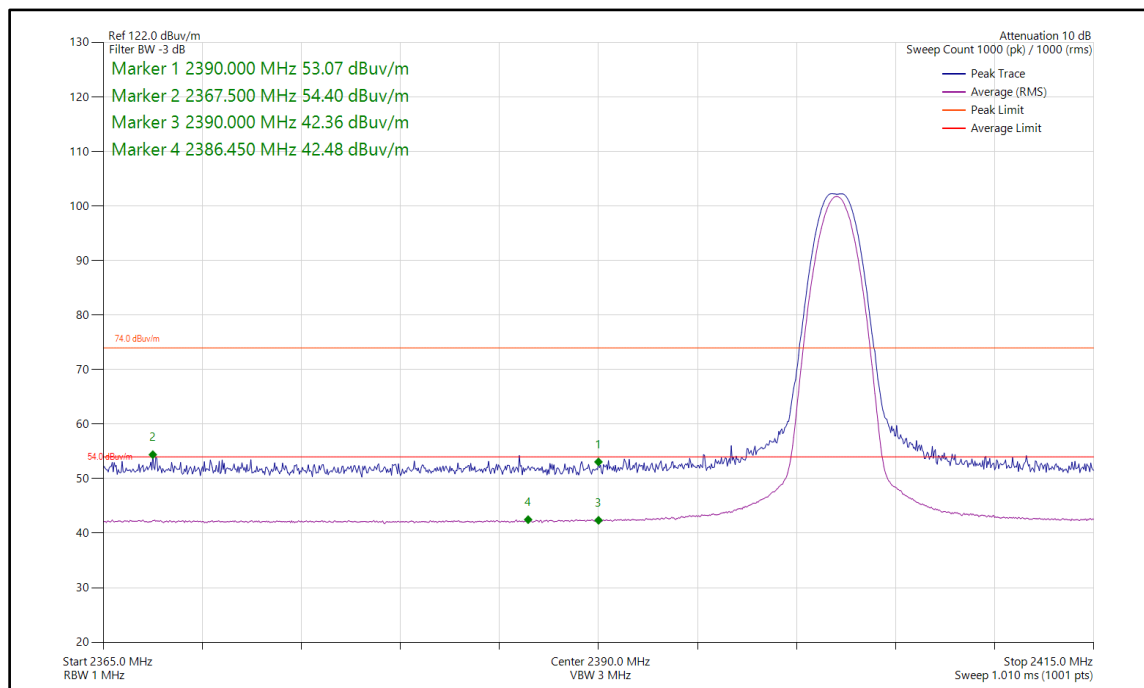


Figure 29 - BOT_BLE_1M_2402 MHz, Band Edge Frequency 2390 MHz

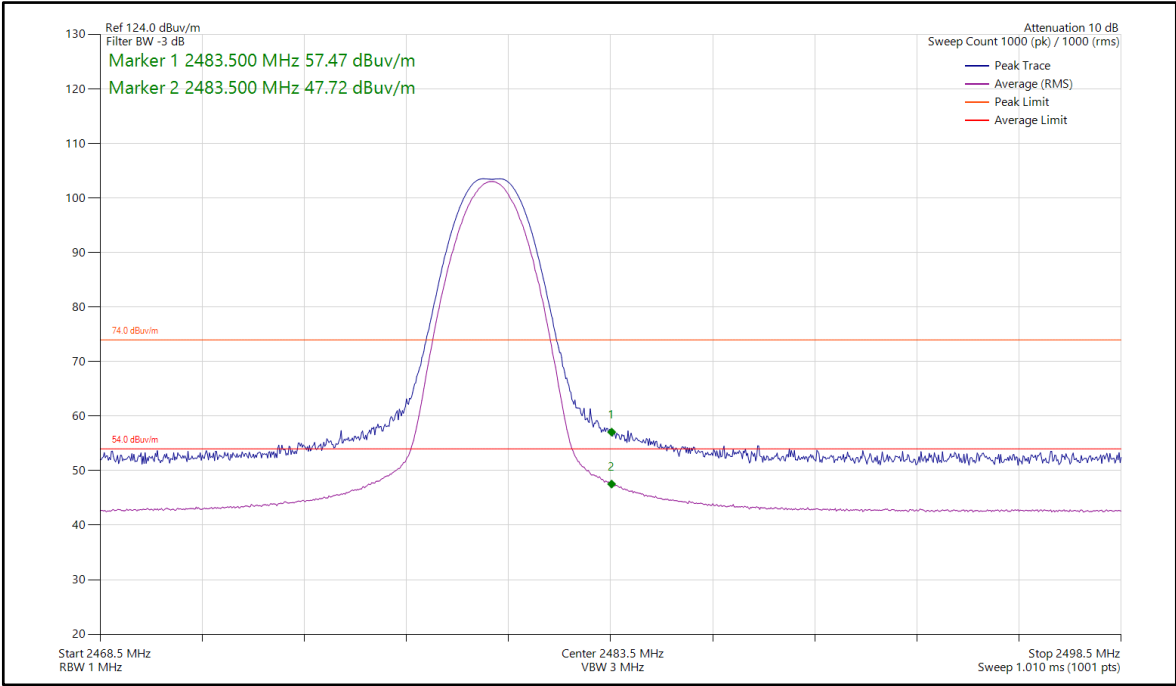


Figure 30 - TOP_BLE_1M_2480 MHz, Band Edge Frequency 2483.5 MHz

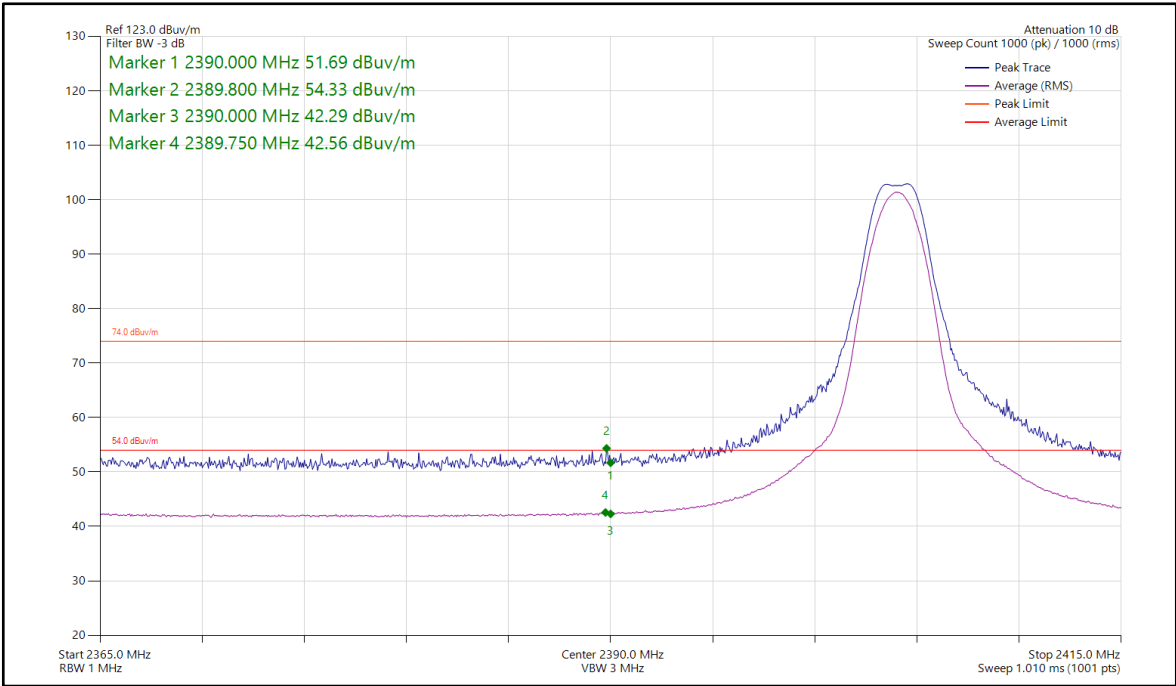


Figure 31 - BOT_BLE_1M_LE2M, 2404 MHz, Band Edge Frequency 2390 MHz

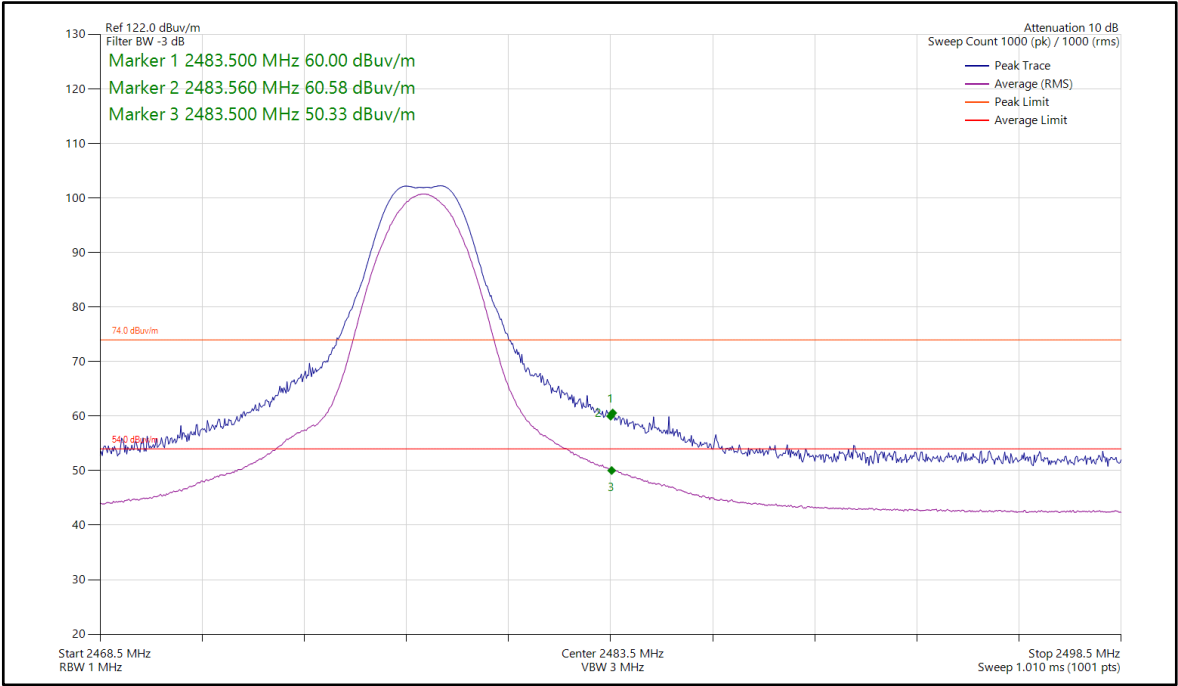


Figure 32 - TOP_BLE_1M_LE2M, 2478 MHz, Band Edge Frequency 2483.5 MHz



FCC 47 CFR Part 15, Limit Clause 15.209

Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$ at 3 m)
30 to 88	100
88 to 216	150
216 to 960	200
Above 960	500

Table 38

ISED RSS-GEN, Limit Clause 8.9

Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$ at 3 m)
30 to 88	100
88 to 216	150
216 to 960	200
Above 960*	500

Table 39

*Unless otherwise specified, for all frequencies greater than 1 GHz, the radiated emission limits for licence-exempt radio apparatus stated in applicable RSSs (including RSS-Gen) are based on measurements using a linear average detector function having a minimum resolution bandwidth of 1 MHz. If an average limit is specified for the EUT, then the peak emission shall also be measured with instrumentation properly adjusted for such factors as pulse desensitization to ensure the peak emission is less than 20 dB above the average limit.



2.4.7 Test Location and Test Equipment Used

This test was carried out in RF Chamber 12.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Dual Power Supply Unit	Hewlett Packard	6253A	271	-	O/P Mon
True RMS Multimeter	Fluke	79 Series III	411	12	09-Jan-2026
Power Supply Unit	Farnell	H60-25	1092		O/P Mon
Multimeter	Iso-tech	IDM101	2421	12	07-Nov-2025
Emissions Software	TUV SUD	EmX V3.5.3	5125	-	Software
Antenna (DRG, 1 GHz to 10.5 GHz)	Schwarzbeck	BBHA9120B	5215	12	05-Jul-2026
Pre-Amplifier (1 GHz to 18 GHz)	Schwarzbeck	BBV 9718 C	5350	12	16-Dec-2025
Cable (SMA to SMA, 2 m)	Junkosha	MWX221-02000AMSAMS/A	5517	12	06-Jun-2026
Turntable & Mast Controller	Maturo Gmbh	NCD/498/2799.01	5612	-	TU
Tilt Antenna Mast	Maturo Gmbh	TAM 4.0-P	5613	-	TU
Turntable	Tilt Antenna Mast	Turntable 1.5 SI-2t	5614	-	TU
3m Semi-Anechoic Chamber	MVG	EMC Chamber 12	5621	36	07-Aug-2026
Test Receiver	Rohde & Schwarz	ESW44	5802	12	25-Oct-2025
Cable (2.92 mm(f) to N-Type(m), 2 m)	Junkosha	MWX241-02000KFSNMS/B	6332	12	27-Sep-2025
Humidity & Temperature meter	R.S Components	1364	6347	12	13-Mar-2026
Cable Assy 8m (N to N) 18GHz	Junkosha	MWX221-08000NMSNMS/B	7049	12	01-Jun-2026
Cable (N-Type to N-Type, 8 m)	Junkosha	MWX221-08000NMSNMS/B	7054	12	01-Jun-2026

Table 40

TU - Traceability Unscheduled

O/P Mon – Output Monitored using calibrated equipment



2.5 Authorised Band Edges

2.5.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (d),
ISED RSS-247, Clause 5.5

2.5.2 Equipment Under Test and Modification State

Model: MGM270S22A, S/N: xGM270S_S2 - Modification State 0
Model: MGM270S22A, S/N: xGM270S_S8 - Modification State 0

2.5.3 Date of Test

10-July-2025 to 13-July-2025

2.5.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 6.10.4.

Testing was performed on worst-case modes which were LE1M and LE2M as per ANSI C63.10 Clause 5.6.2.2.a

The EUT was set to transmit a continuous modulated stream of PN9 data, at a configured power level of 63 deci-dBm.

The EUT was supplied with 3 VDC directly with a DC PSU.

2.5.5 Environmental Conditions

Ambient Temperature	19.8 °C – 23 °C
Relative Humidity	60.0 % - 65.7 %

2.5.6 Test Results

2.4 GHz Bluetooth Low Energy - External dipole whip Antenna (xGM270S S2 with ANT-2.4-CW-CT-RPS)

Mode	Data Rate/MCS	Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
BLE	1M	2402	2400	-51.98
BLE	2M	2404	2400	-46.29

Table 29

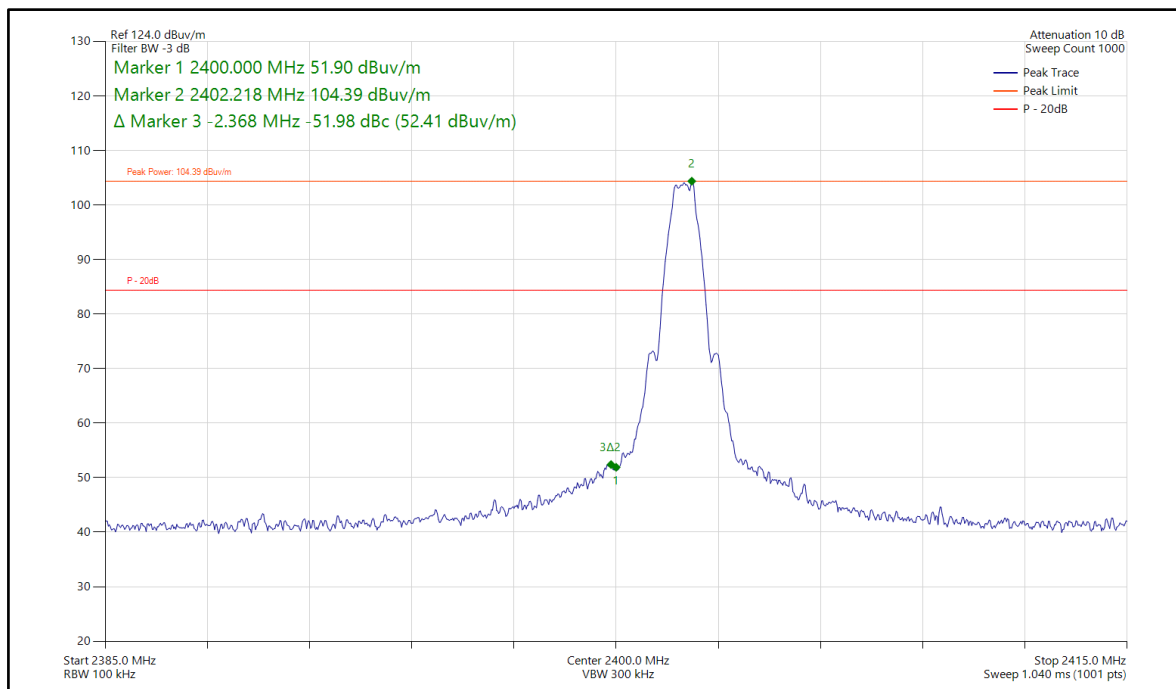


Figure 33 - BOT_BLE_1M_2402 MHz, Band Edge Frequency 2400 MHz

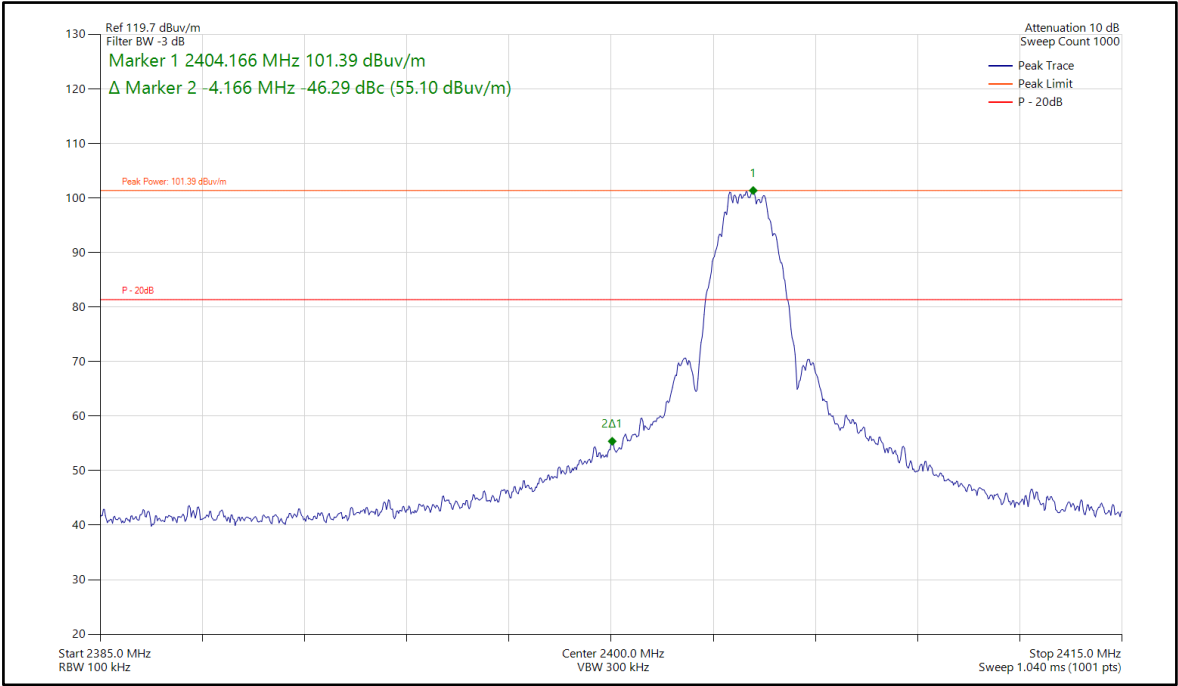


Figure 34 - BOT_BLE_2M_2404 MHz, Band Edge Frequency 2400 MHz

2.4 GHz Bluetooth Low Energy - PCB Trace Antenna (XGM270S S8)

Mode	Data Rate/MCS	Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
BLE	1M	2402	2400	-50.90
BLE	2M	2404	2400	-46.13

Table 29

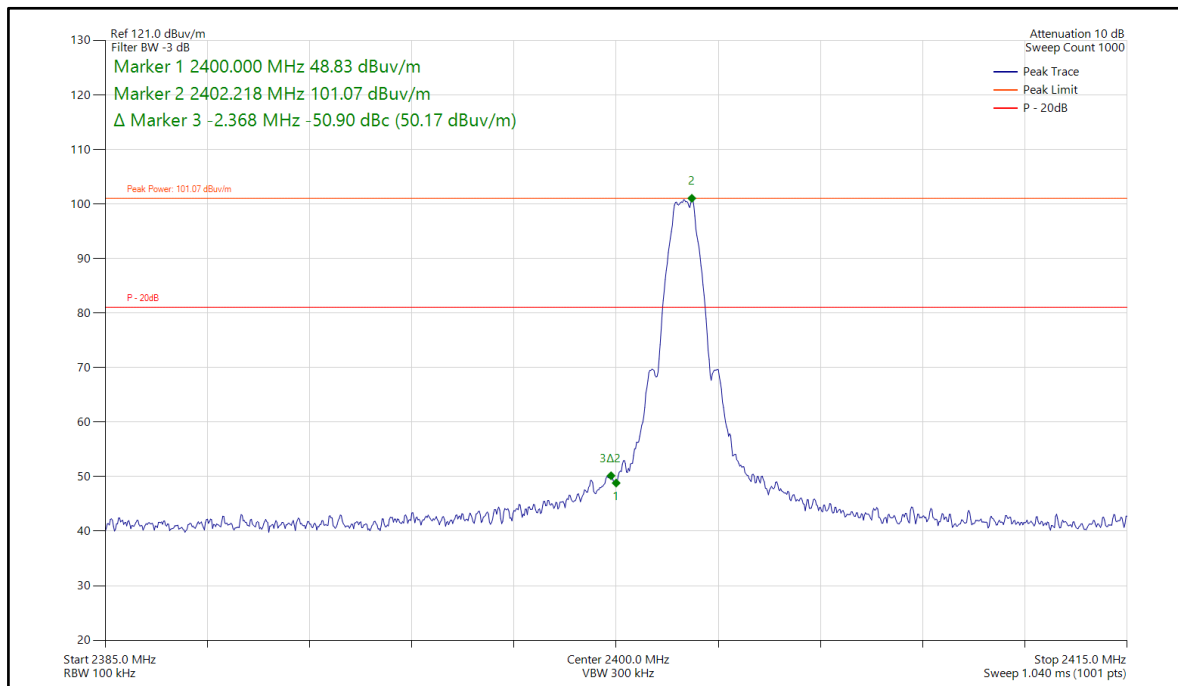


Figure 35 - BOT_BLE_1M_2402 MHz, Band Edge Frequency 2400 MHz

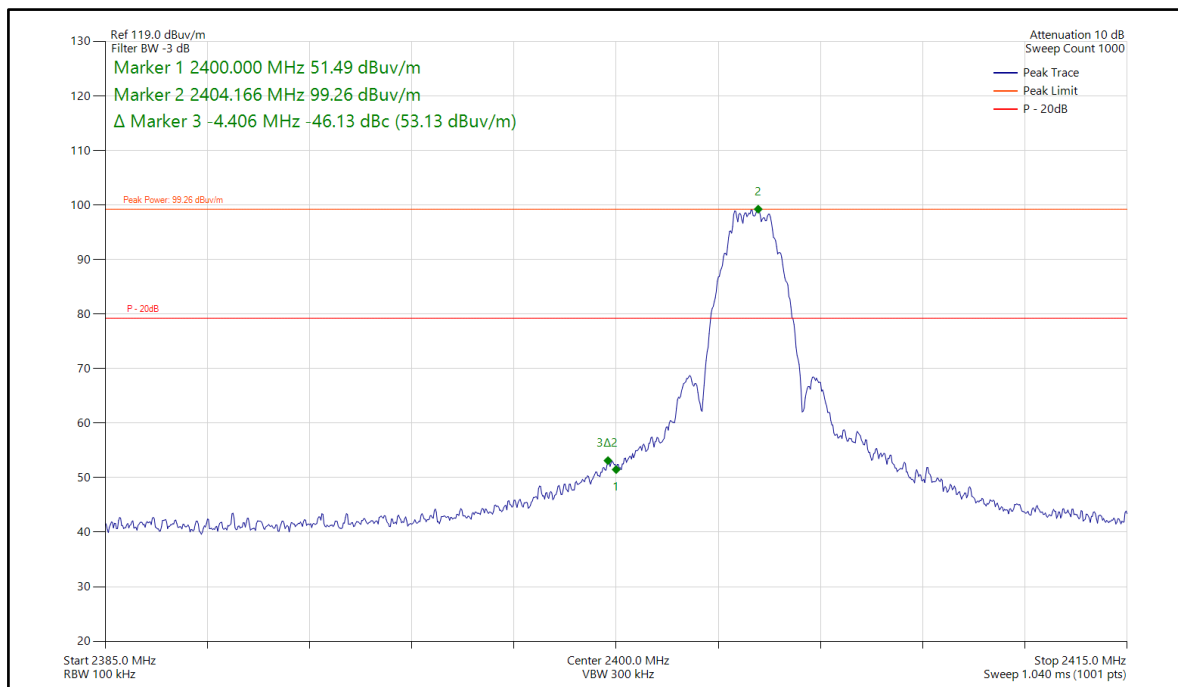


Figure 36 - BOT_BLE_2M_2404 MHz, Band Edge Frequency 2400 MHz

FCC 47 CFR Part 15, Limit Clause 15.247 (d)

20 dB below the fundamental measured in a 100 kHz bandwidth using a peak detector. If the transmitter complies with the conducted power limits, based on the use of RMS averaging over a time interval, the attenuation required shall be 30 dB below the fundamental instead of 20 dB.

ISED RSS-247, Limit Clause 5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.



2.5.7 Test Location and Test Equipment Used

This test was carried out in RF Chamber 12.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Dual Power Supply Unit	Hewlett Packard	6253A	271	-	O/P Mon
True RMS Multimeter	Fluke	79 Series III	411	12	09-Jan-2026
Power Supply Unit	Farnell	H60-25	1092		O/P Mon
Multimeter	Iso-tech	IDM101	2421	12	07-Nov-2025
Emissions Software	TUV SUD	EmX V3.5.3	5125	-	Software
Antenna (DRG, 1 GHz to 10.5 GHz)	Schwarzbeck	BBHA9120B	5215	12	05-Jul-2026
Pre-Amplifier (1 GHz to 18 GHz)	Schwarzbeck	BBV 9718 C	5350	12	16-Dec-2025
Cable (SMA to SMA, 2 m)	Junkosha	MWX221-02000AMSAMS/A	5517	12	06-Jun-2026
3m Semi-Anechoic Chamber	MVG	EMC Chamber 12	5621	36	07-Aug-2026
Test Receiver	Rohde & Schwarz	ESW44	5802	12	25-Oct-2025
Cable (2.92 mm(f) to N-Type(m), 2 m)	Junkosha	MWX241-02000KFSNMS/B	6332	12	27-Sep-2025
Resonant Loop Antenna (CF2132)	ETS-Lindgren	3127-2132	6397	24	30-Dec-2026
Cable Assy 8m (N to N) 18GHz	Junkosha	MWX221-08000NMSNMS/B	7049	12	01-Jun-2026
Cable (N-Type to N-Type, 8 m)	Junkosha	MWX221-08000NMSNMS/B	7054	12	01-Jun-2026

Table 41

TU - Traceability Unscheduled
O/P Mon – Output Monitored using calibrated equipment



2.6 Spurious Radiated Emissions

2.6.1 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

2.6.2 Equipment Under Test and Modification State

Model: MGM270S22A, S/N: xGM270S_S1 - Modification State 0
Model: MGM270S22A, S/N: xGM270S_S7 - Modification State 0

2.6.3 Date of Test

18-July-2025 to 24-July-2025

2.6.4 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 dBuV/m to uV/m:
 $10^{(\text{Field Strength in dBuV/m}/20)}$

Above 18 GHz, the measurement distance was reduced to 1 m. The limit line was increased by $20 \cdot \text{LOG}(3/1) = 9.54$ dB.

At a measurement distance of 1 meter the limit line was increased by $20 \cdot \text{LOG}(3/1) = 9.54$ dB.

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

The EUT was set to transmit a continuous modulated stream of PN9 data, at a configured power level of 63 deci-dBm.

The EUT was supplied with 3 VDC directly with a DC PSU.

Preliminary conducted measurements were performed to determine the worst case mode for radiated emissions testing, the worst case mode was found to be: LE Coded PHY (S=2): 500kb/s. All radiated emissions testing was performed using this worst case mode.

2.6.5 Example Test Setup Diagram

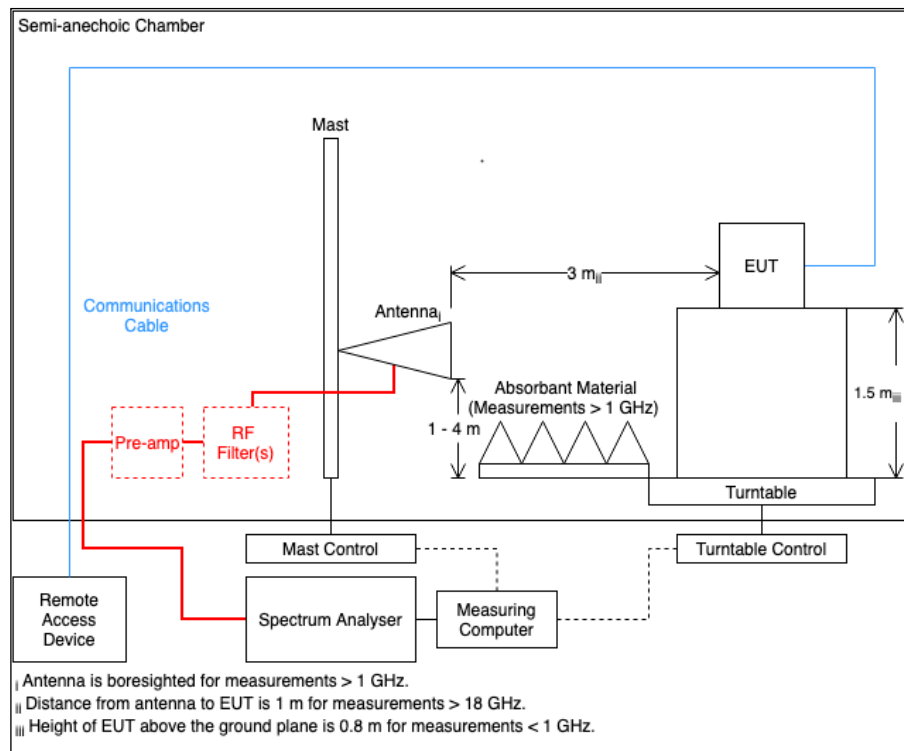


Figure 37

2.6.6 Environmental Conditions

Ambient Temperature	20.5 - 26.6 °C
Relative Humidity	43.2 - 71.0 %

2.6.7 Test Results

2.4 GHz Bluetooth Low Energy - External dipole whip Antenna (xGM270S S1 with ANT-2.4-CW-CT-RPS)

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
12008.850	47.87	54.00	-6.13	RMS	156	193	Vertical
12011.000	48.38	54.00	-5.62	RMS	157	208	Horizontal
12011.048	49.80	54.00	-4.20	RMS	152	220	Horizontal
16812.350	47.11	54.00	-6.89	RMS	248	215	Horizontal
16812.400	51.06	54.00	-2.94	RMS	274	293	Vertical
16812.451	50.31	54.00	-3.69	RMS	279	296	Vertical
16815.547	47.38	54.00	-6.62	RMS	256	219	Horizontal

Table 42 - Bottom_LE500k - 2402 MHz, 30 MHz to 26 GHz X Orientation

No other emissions found within 10 dB of the limit.

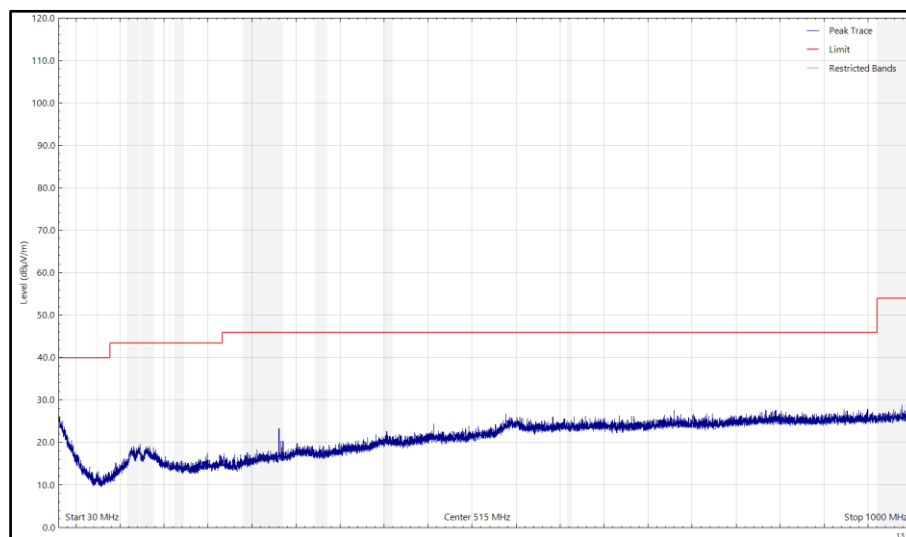


Figure 38- Bottom_LE500k - 2402 MHz, 30 MHz to 1 GHz, Horizontal (Peak) X- Orientation

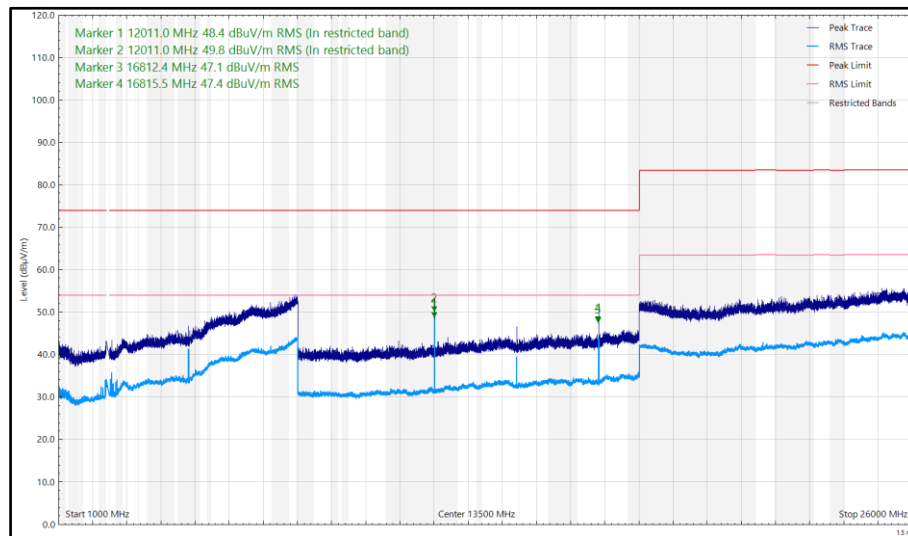


Figure 39- Bottom_ LE500k - 2402 MHz, 1 GHz to 26 GHz, Horizontal (Peak) X- Orientation

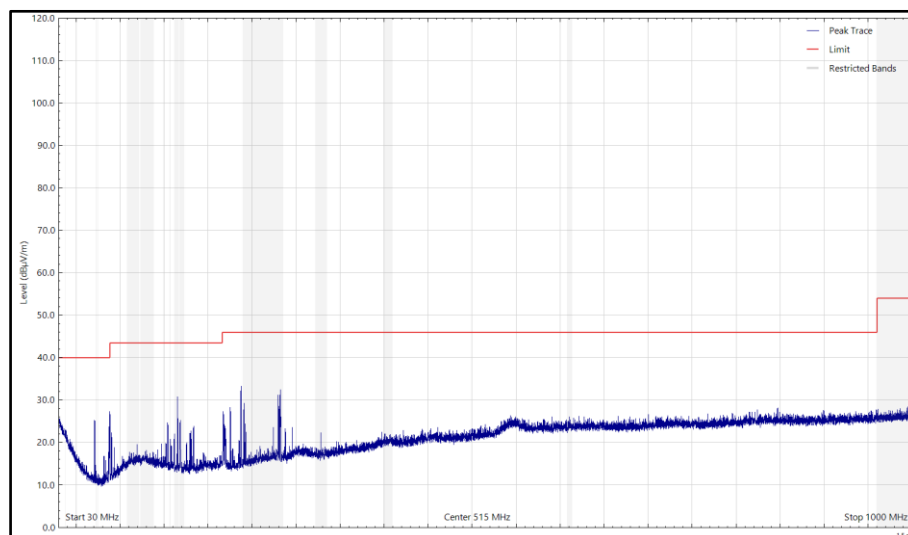


Figure 40- Bottom_ LE500k - 2402 MHz, 30 MHz to 1 GHz, Vertical (Peak) X- Orientation

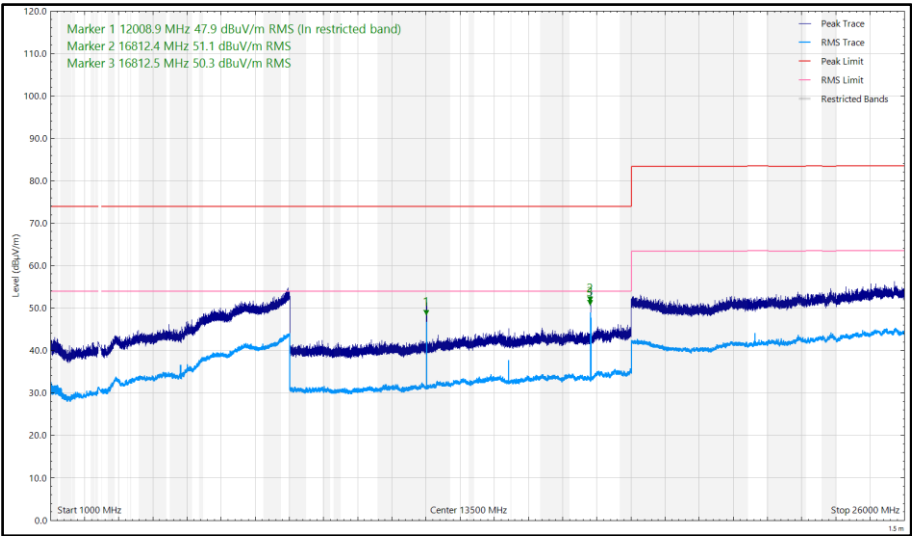


Figure 41- Bottom_ LE500k - 2402 MHz, 1 GHz to 26 GHz, Vertical (Peak) X- Orientation

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
12198.950	48.12	54.00	-5.88	RMS	154	202	Horizontal
12200.998	47.14	54.00	-6.86	RMS	151	200	Horizontal
17078.354	46.00	54.00	-8.00	RMS	272	284	Vertical

Table 43 – Mid_ LE500k 2440 MHz, 30 MHz to 26 GHz X Orientation

No other emissions found within 10 dB of the limit.

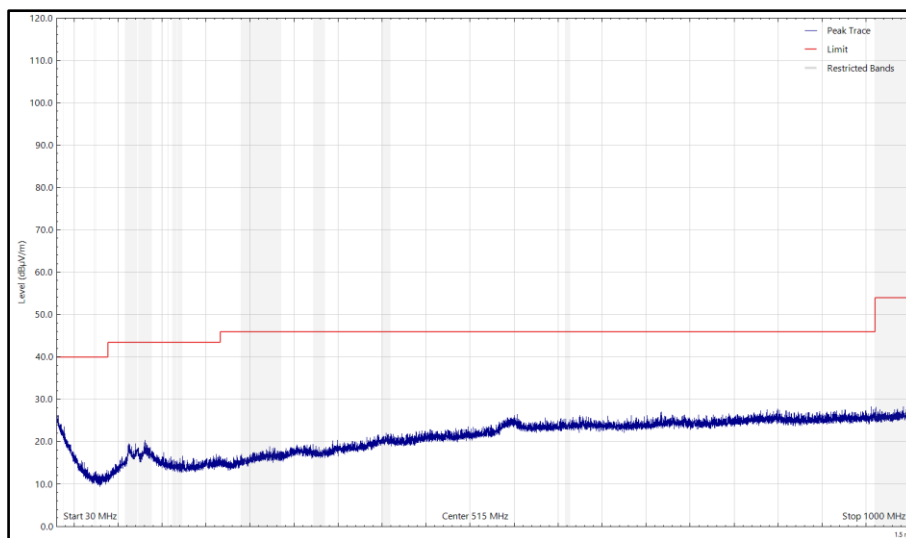


Figure 42- Mid_ 2440 MHz, LE500k - 30 MHz to 1 GHz, Horizontal (Peak) X-Orientation

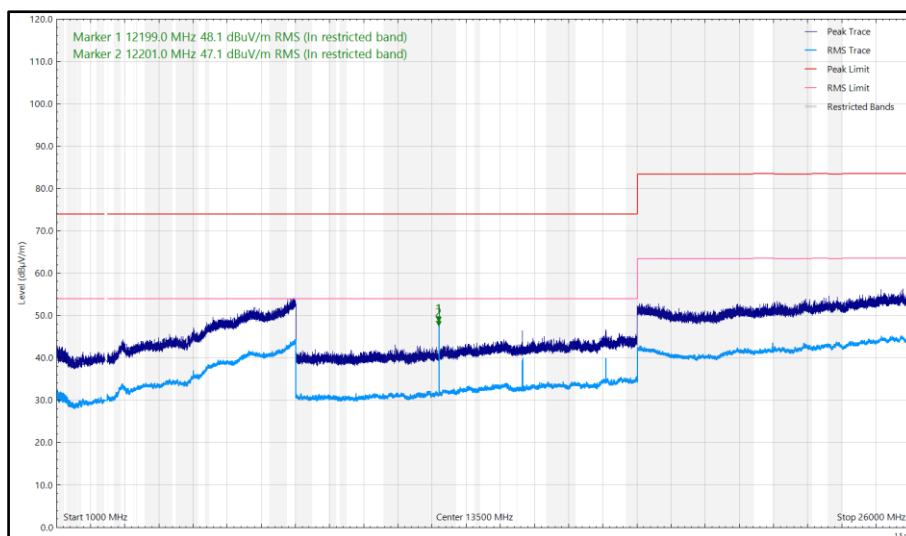


Figure 43- Mid_ 2440 MHz, LE500k - 1 GHz to 26 GHz, Horizontal (Peak) X-Orientation

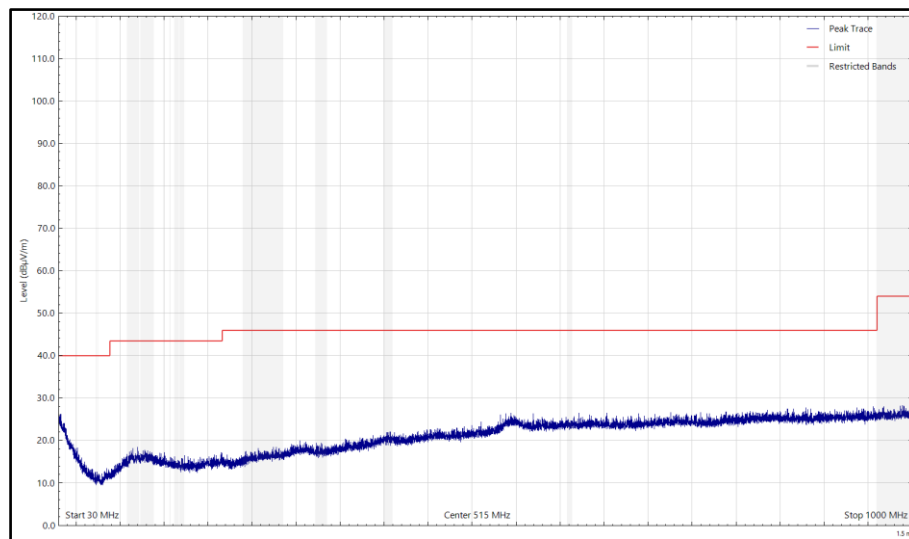


Figure 44- Mid_ 2440 MHz, LE500k - 30 MHz to 1 GHz, Vertical (Peak) X-Orientation

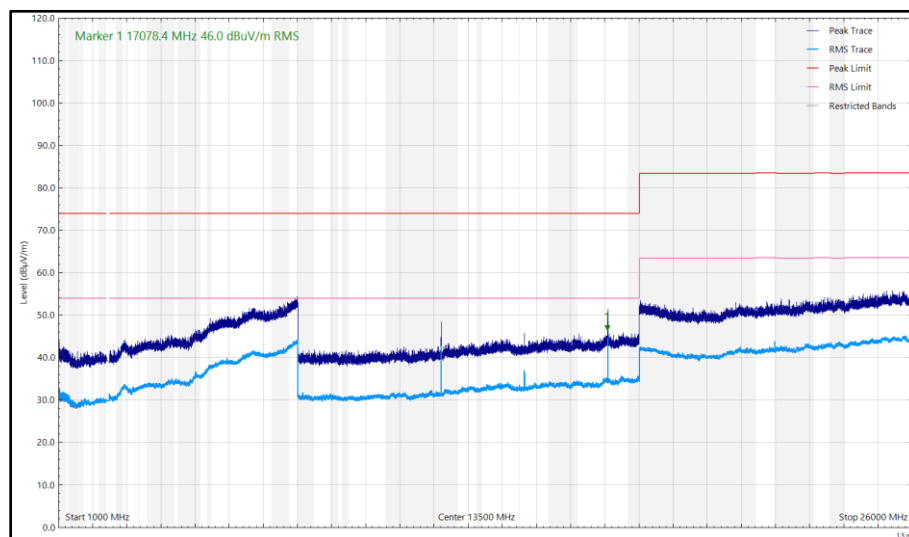


Figure 45- Mid_ 2440 MHz, LE500k - 1 GHz to 26 GHz, Vertical (Peak) X-Orientation

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
12401.103	47.59	54.00	-6.41	RMS	138	209	Horizontal
17361.500	48.89	54.00	-5.11	RMS	279	294	Vertical

Table 44 – Top_ 2480 MHz, LE500k - 30 MHz to 26 GHz X-Orientation

No other emissions found within 10 dB of the limit.

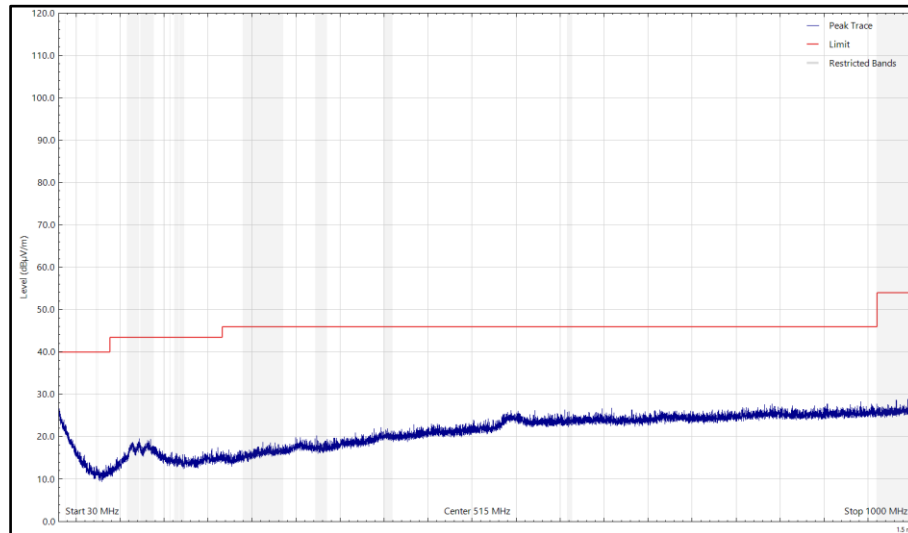


Figure 46- Top_ 2480 MHz, LE500k - 30 MHz to 1 GHz, Horizontal (Peak) X-Orientation

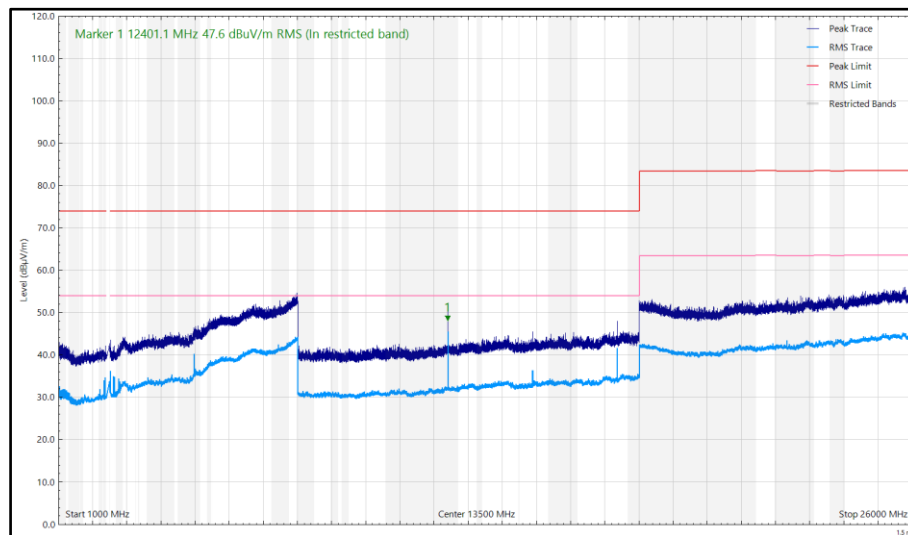


Figure 47- Top_2480 MHz, LE500k - 1 GHz to 26 GHz, Horizontal (Peak) X-Orientation

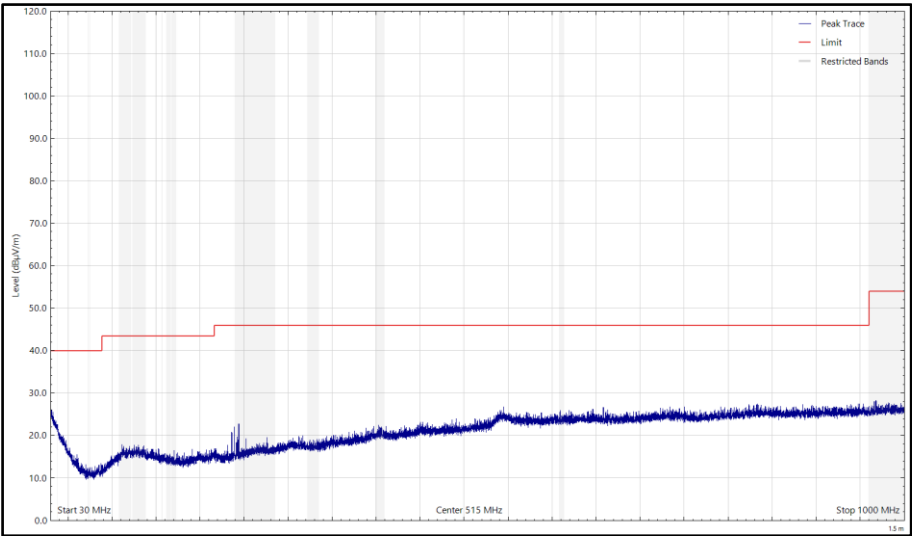


Figure 48- Top_2480 MHz, LE500k - 30 MHz to 1 GHz, Vertical (Peak) X-Orientation

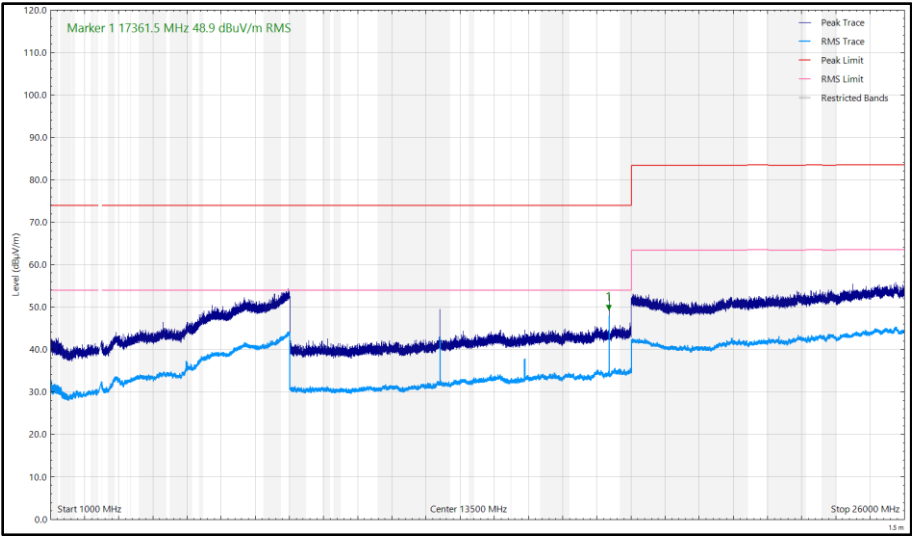


Figure 49 - Top_ 2480 MHz, LE500k - 1 GHz to 26 GHz, Vertical (Peak) X-Orientation

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
*							

Table 45 – Bottom_2402 MHz, LE500k - 30 MHz to 26 GHz Y Orientation

*No emissions found within 10 dB of the limit.

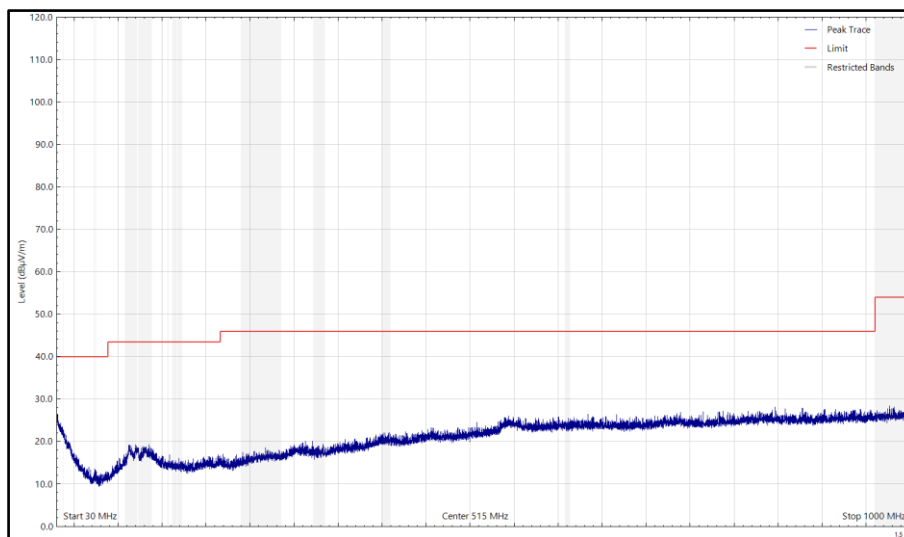


Figure 50- Bottom_ 2402 MHz, LE500k - 30 MHz to 1 GHz, Horizontal (Peak) Y- Orientation

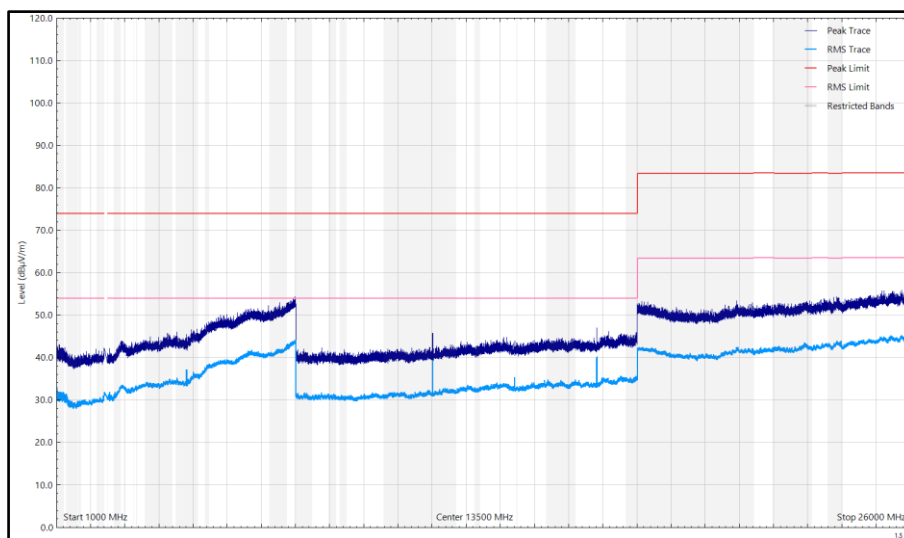


Figure 51- Bottom_ 2402 MHz, LE500k - 1 GHz to 26 GHz, Horizontal (Peak) Y- Orientation

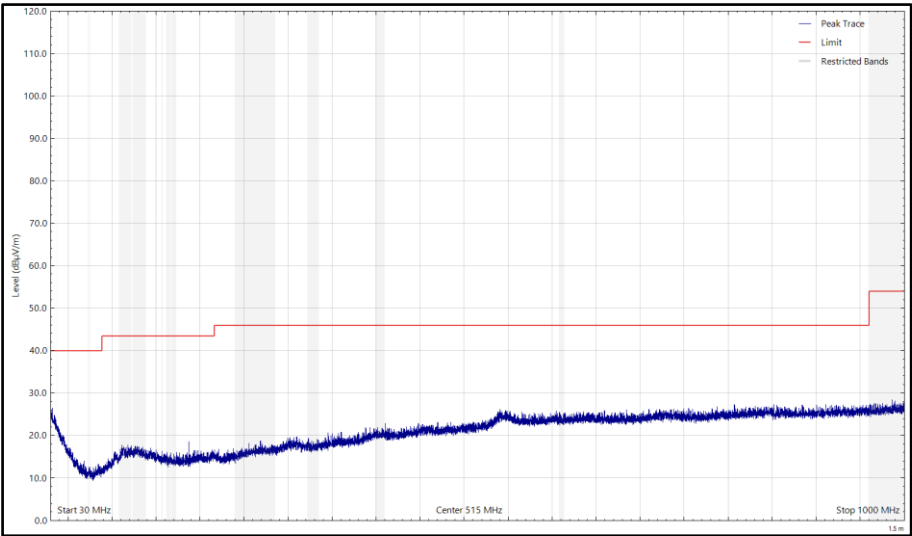


Figure 52- Bottom_2402 MHz, LE500k - 30 MHz to 1 GHz, Vertical (Peak) Y- Orientation

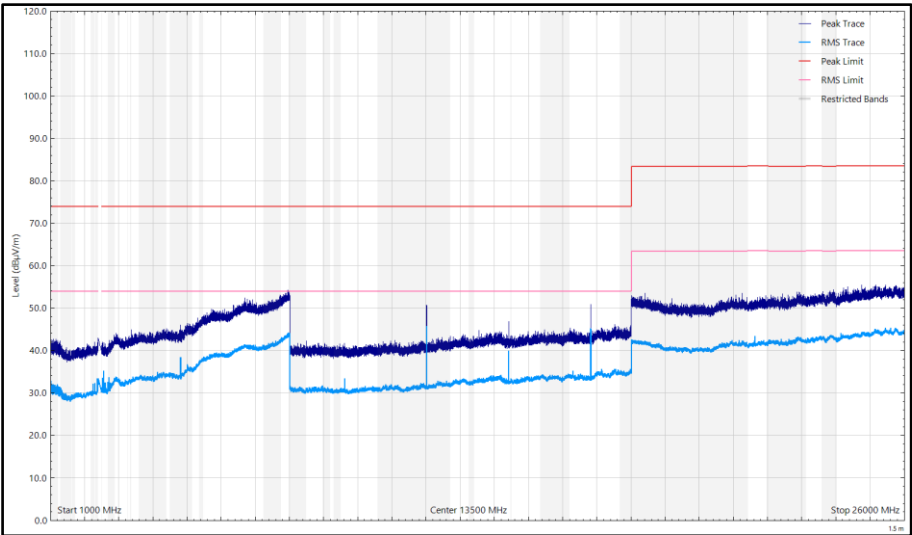


Figure 53- Bottom_2402 MHz, LE500k - 1 GHz to 26 GHz, Vertical (Peak) Y- Orientation



Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
*							

Table 46 – Mid_ 2440 MHz, LE500k - 30 MHz to 26 GHz Y- Orientation

*No emissions found within 10 dB of the limit.

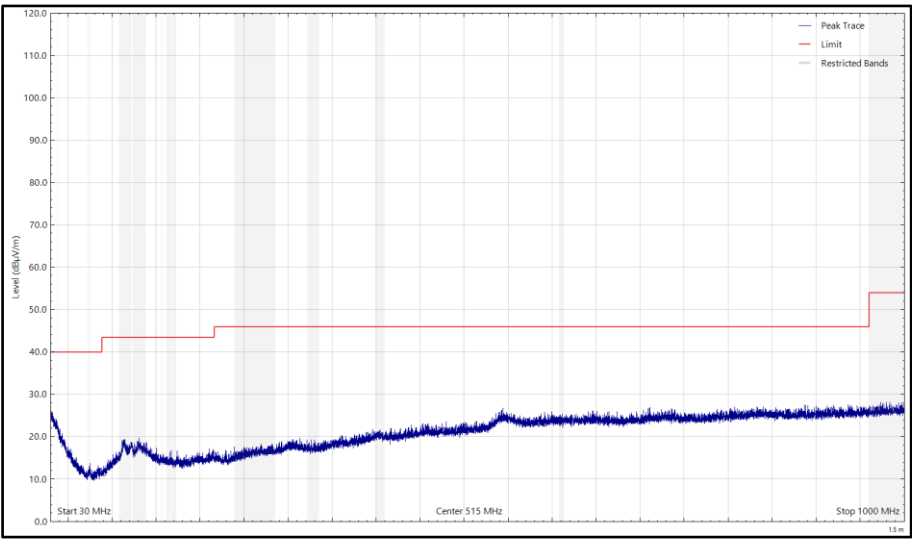


Figure 54- Mid_BLE_2402 MHz, LE500k - 30 MHz to 1 GHz, Horizontal (Peak) Y- Orientation

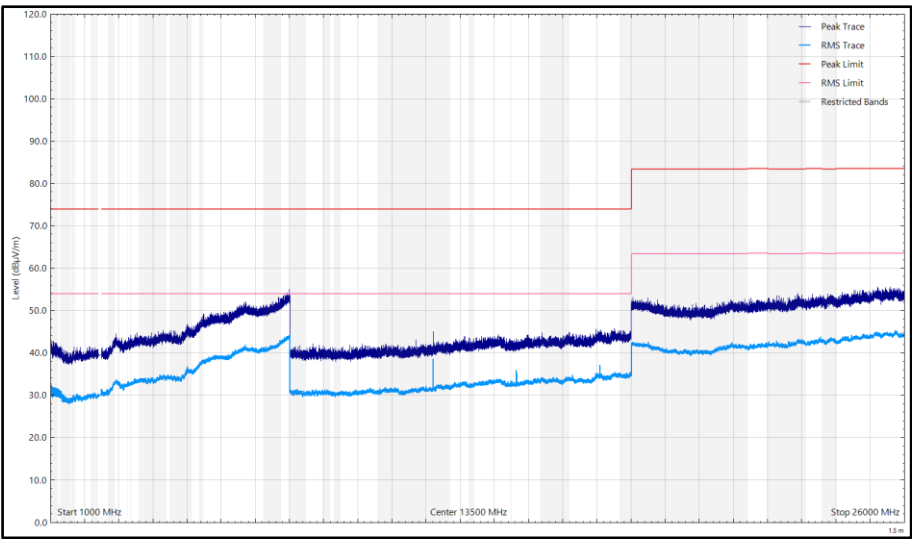


Figure 55- Mid_ 2402 MHz, LE500k - 1 GHz to 26 GHz, Horizontal (Peak) Y- Orientation

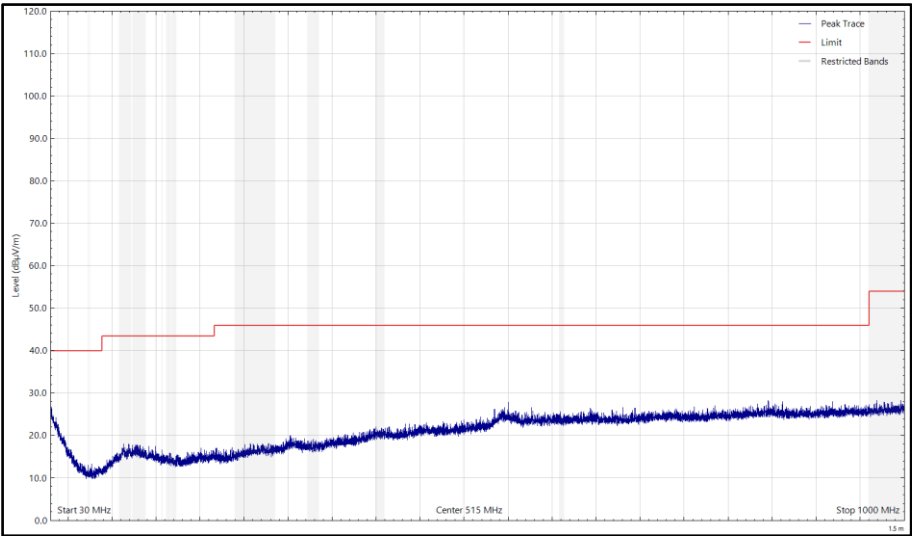


Figure 56- Mid_ 2402 MHz, LE500k - 30 MHz to 1 GHz, Vertical (Peak) Y- Orientation

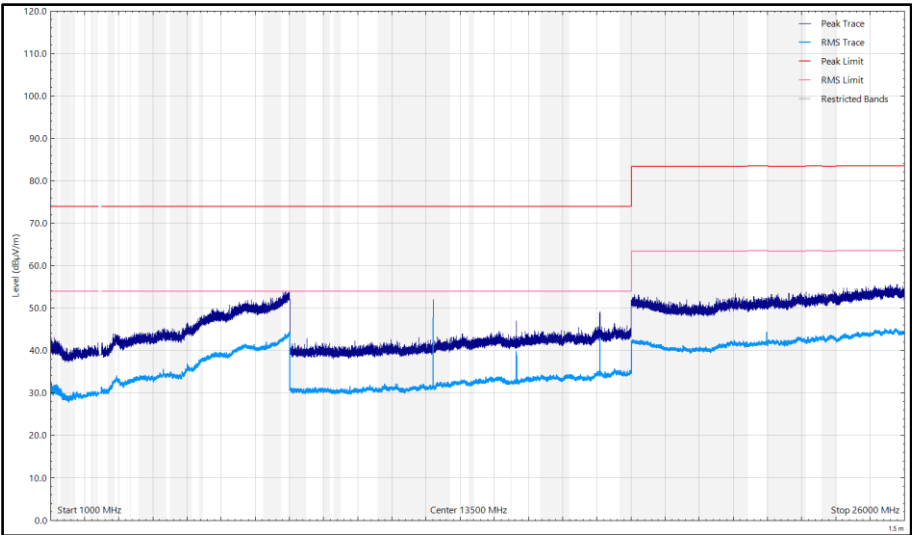


Figure 57- Mid_ 2402 MHz, LE500k - 1 GHz to 26 GHz, Vertical (Peak) Y- Orientation

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
12398.952	45.73	54.00	-8.27	RMS	335	247	Vertical
17361.497	44.97	54.00	-9.03	RMS	36	150	Vertical

Table 47 – TOP_2480 MHz, LE500k - 30 MHz to 26 GHz Y-Orientation

No other emissions found within 10 dB of the limit.

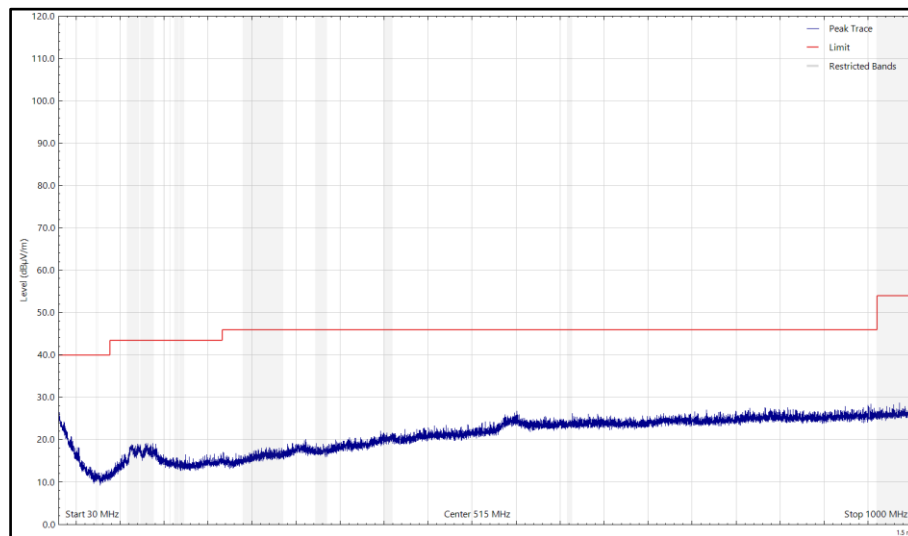


Figure 58- TOP_ 2480 MHz, LE500k - 30 MHz to 1 GHz, Horizontal (Peak) Y-Orientation

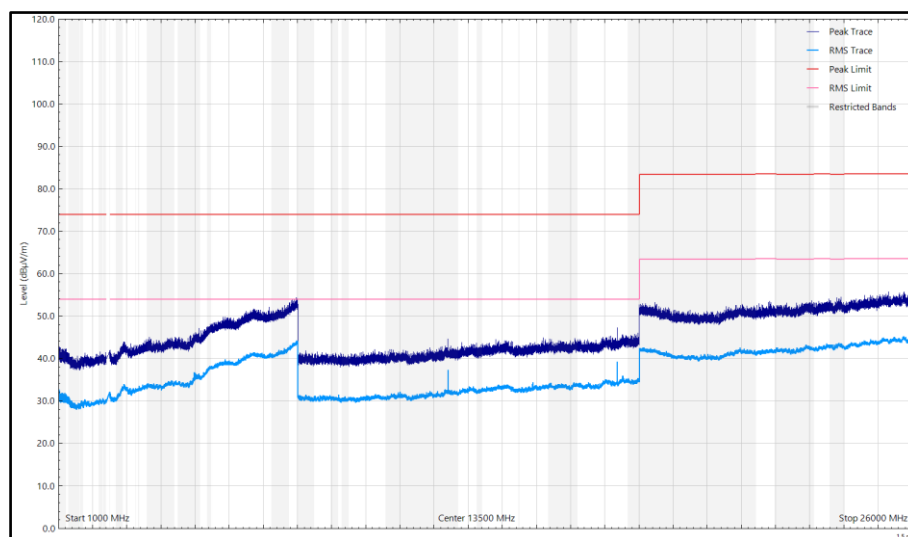


Figure 59- TOP_ 2480 MHz, LE500k - 1 GHz to 26 GHz, Horizontal (Peak) Y-Orientation

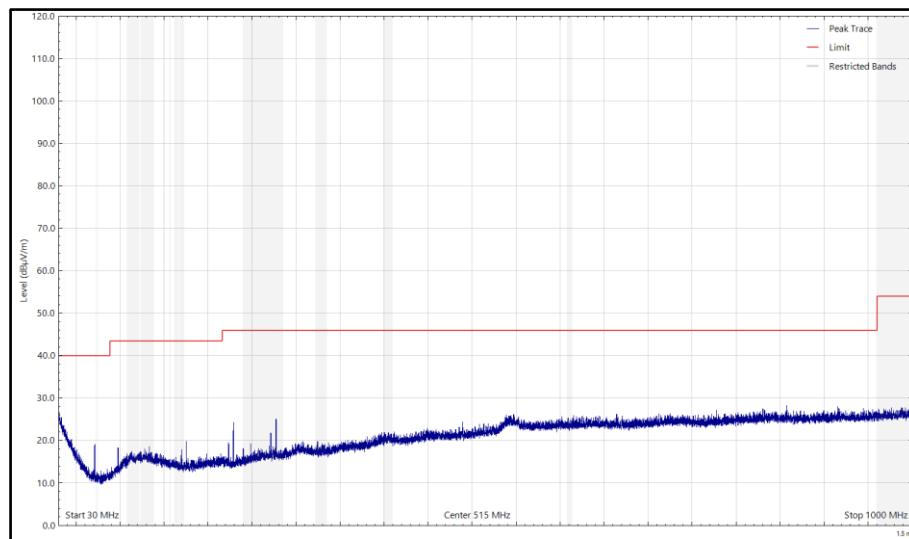


Figure 60- TOP_2480 MHz, LE500k - 30 MHz to 1 GHz, Vertical (Peak) Y-Orientation

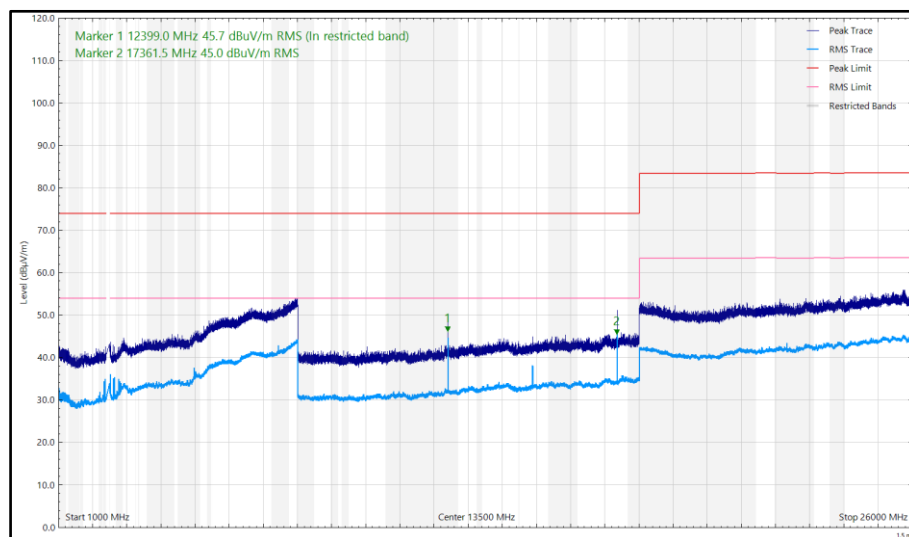


Figure 61- TOP_2480 MHz, LE500k - 1 GHz to 26 GHz, Vertical (Peak) Y-Orientation

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
12010.901	49.75	54.00	-4.25	RMS	219	257	Horizontal
12010.998	48.69	54.00	-5.31	RMS	209	252	Horizontal
16812.400	47.52	54.00	-6.48	RMS	328	224	Horizontal
16815.497	49.24	54.00	-4.76	RMS	335	226	Horizontal

Table 48 – Bottom_2402 MHz, LE500k - 30MHz to 26 GHz Z - Orientation

No other emissions found within 10 dB of the limit.

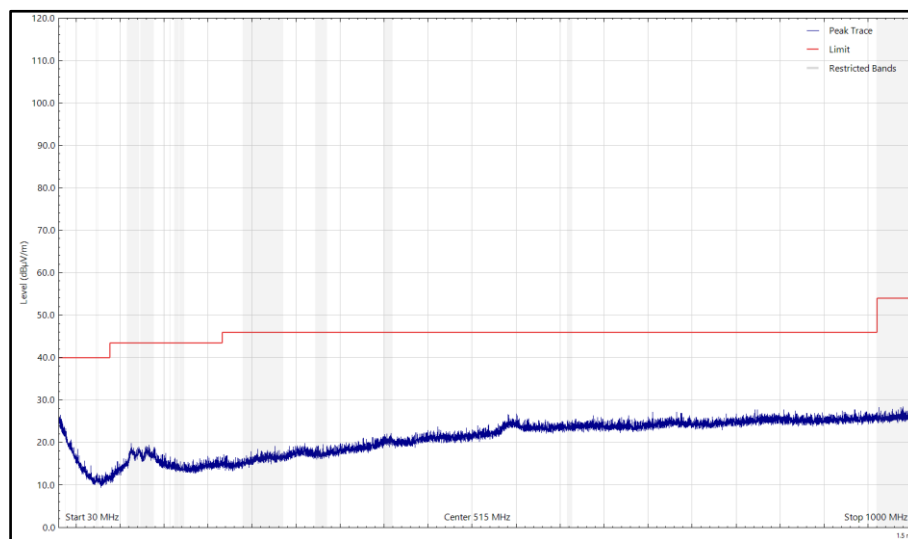


Figure 62- Bottom_2402 MHz, LE500k - 30 MHz to 1 GHz, Horizontal (Peak) Z- Orientation

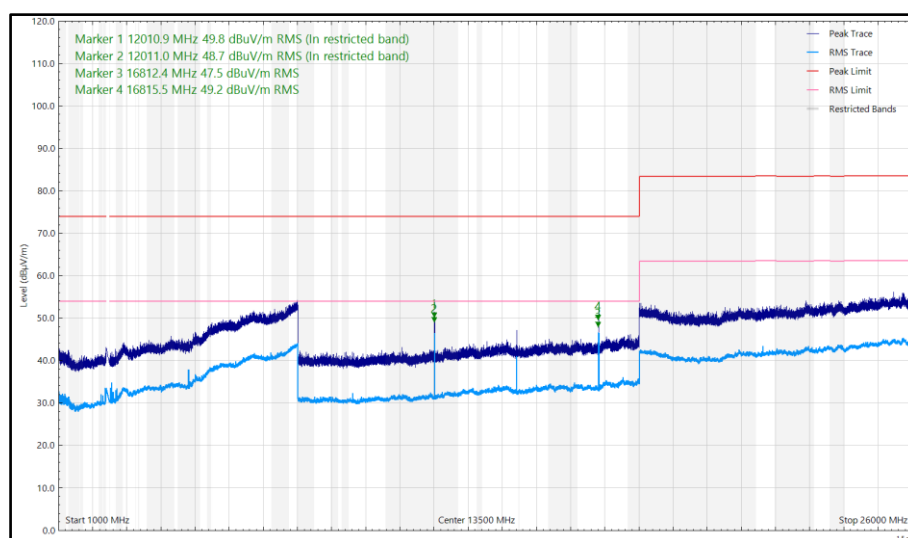


Figure 63- Bottom_2402 MHz, LE500k - 1 GHz to 26 GHz, Horizontal (Peak) Z- Orientation

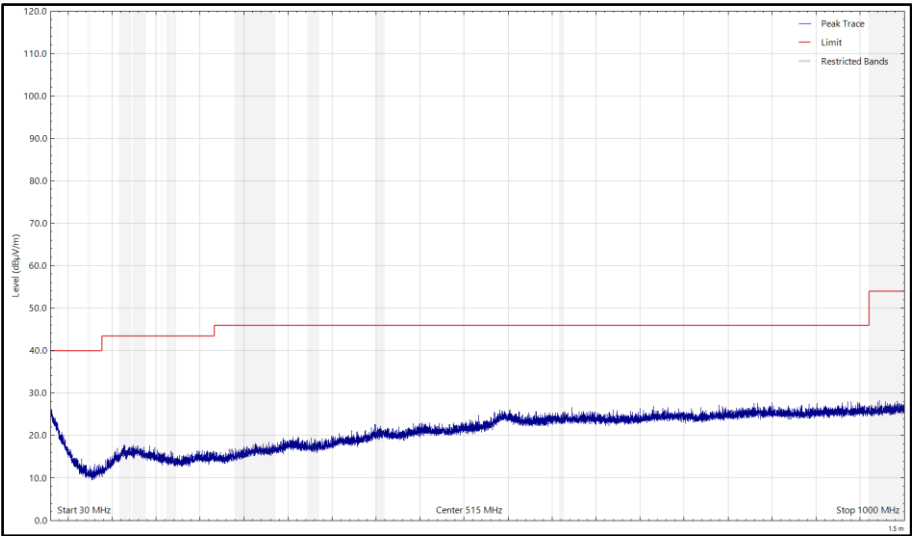


Figure 64- Bottom_2402 MHz, LE500k - 30 MHz to 1 GHz, Vertical (Peak) Z- Orientation

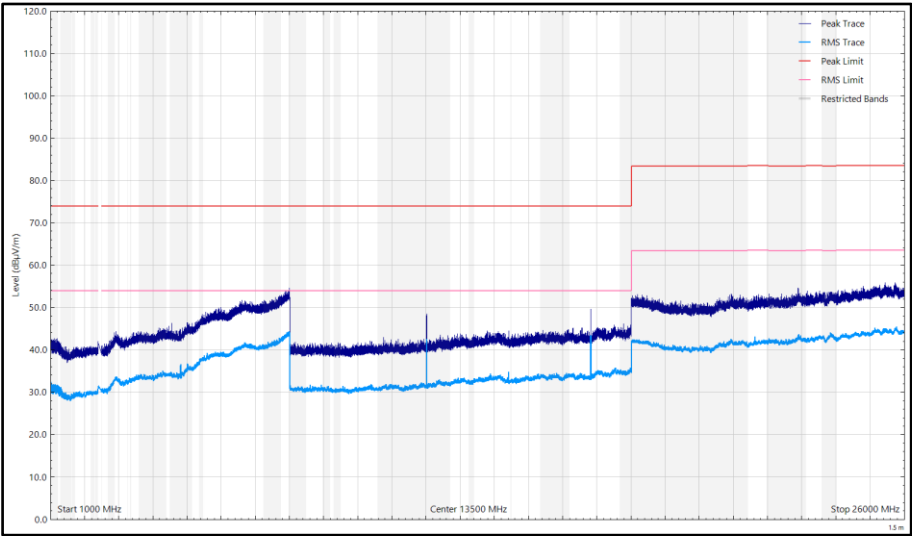


Figure 65- Bottom_2402 MHz, LE500k - 1 GHz to 26 GHz, Vertical (Peak) Z- Orientation

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
12198.800	49.17	54.00	-4.83	RMS	215	268	Horizontal
12201.098	48.90	54.00	-5.10	RMS	219	262	Horizontal
17081.547	45.00	54.00	-9.00	RMS	330	227	Horizontal

Table 49 - Mid_2440 MHz, LE500k - 1 to 8 GHz Z - Orientation

No other emissions found within 10 dB of the limit.

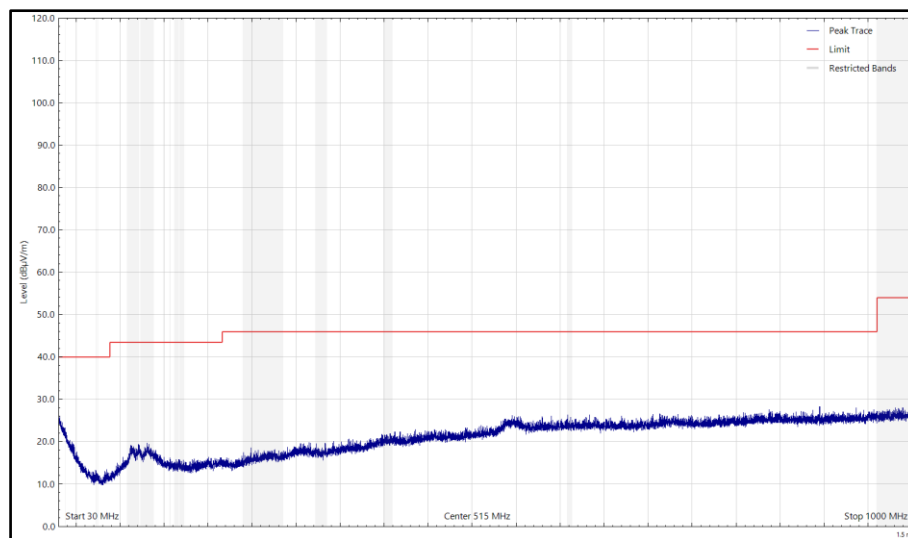


Figure 66- Mid_2440 MHz, LE500k - 30 MHz to 1 GHz, Horizontal (Peak) Z- Orientation

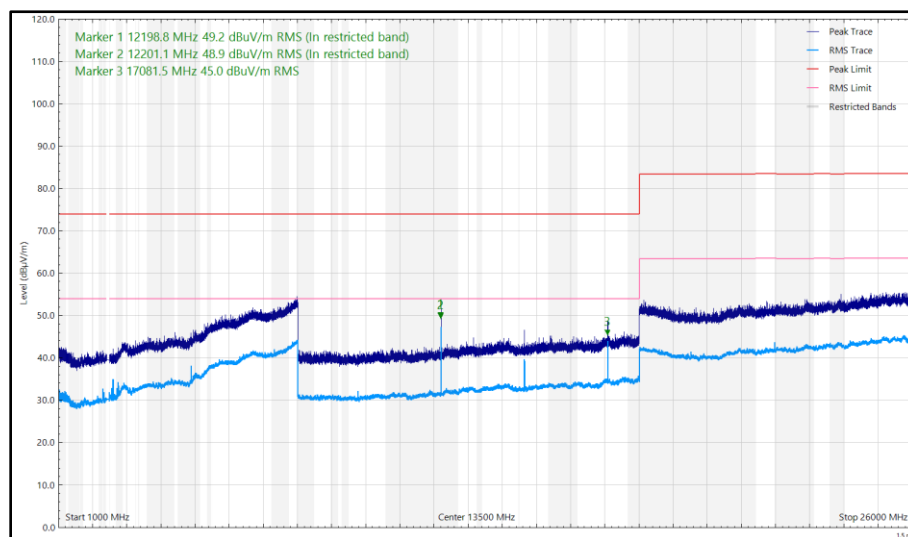


Figure 67- Mid_2440 MHz, LE500k - 1 GHz to 26 GHz, Horizontal (Peak) Z- Orientation

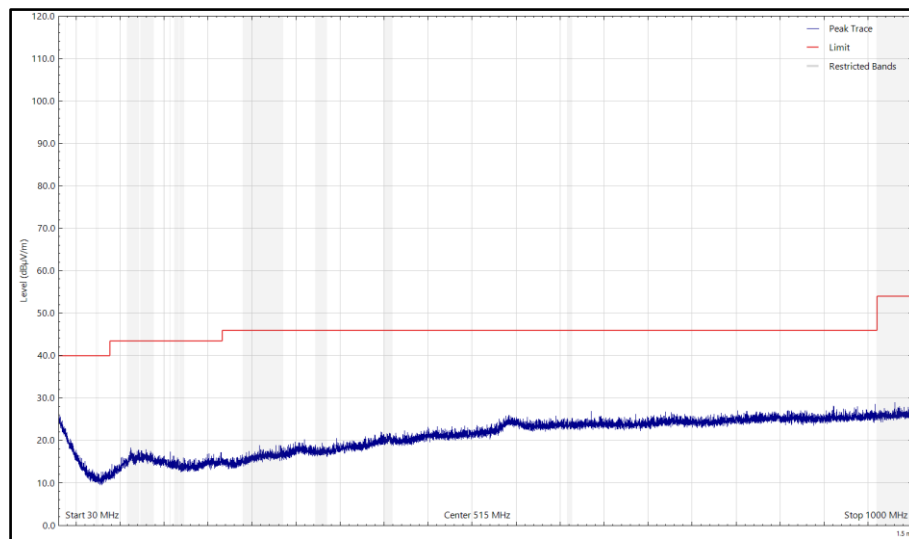


Figure 68- Mid_2440 MHz, LE500k - 30 MHz to 1 GHz, Vertical (Peak) Z- Orientation

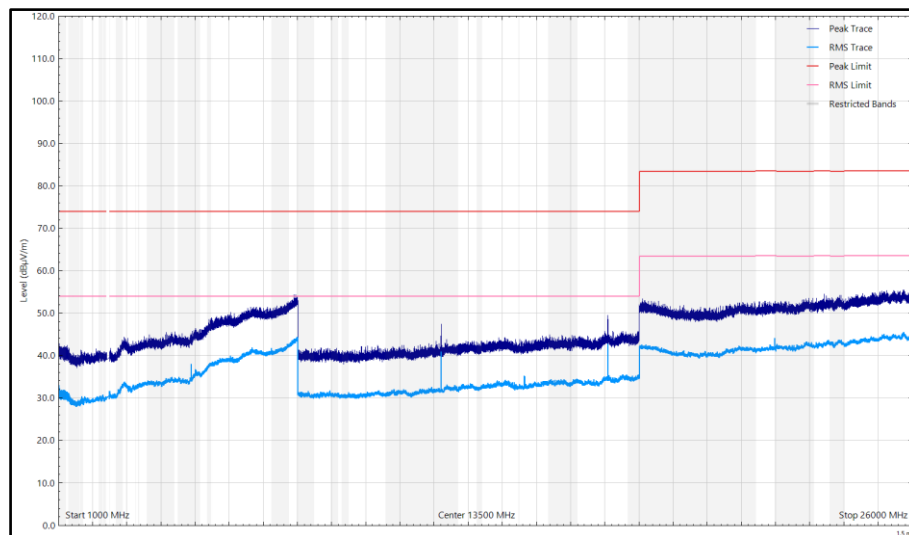


Figure 69- Mid_2440 MHz, LE500k - 1 GHz to 26 GHz, Vertical (Peak) Z- Orientation

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
12401.050	48.49	54.00	-5.51	RMS	225	247	Horizontal
17358.454	47.03	54.00	-6.97	RMS	336	225	Horizontal
17358.454	47.96	54.00	-6.04	RMS	0	208	Vertical

Table 50 – TOP_2480 MHz, LE500k - 1 to 8 GHz Z - Orientation

No other emissions found within 10 dB of the limit.

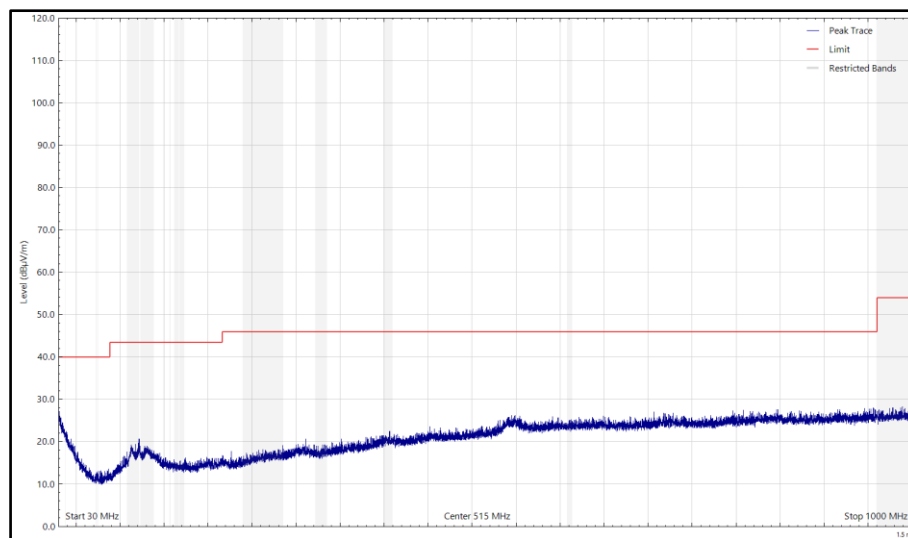


Figure 70- TOP_2480 MHz, LE500k - 30 MHz to 1 GHz, Horizontal (Peak) Z -Orientation

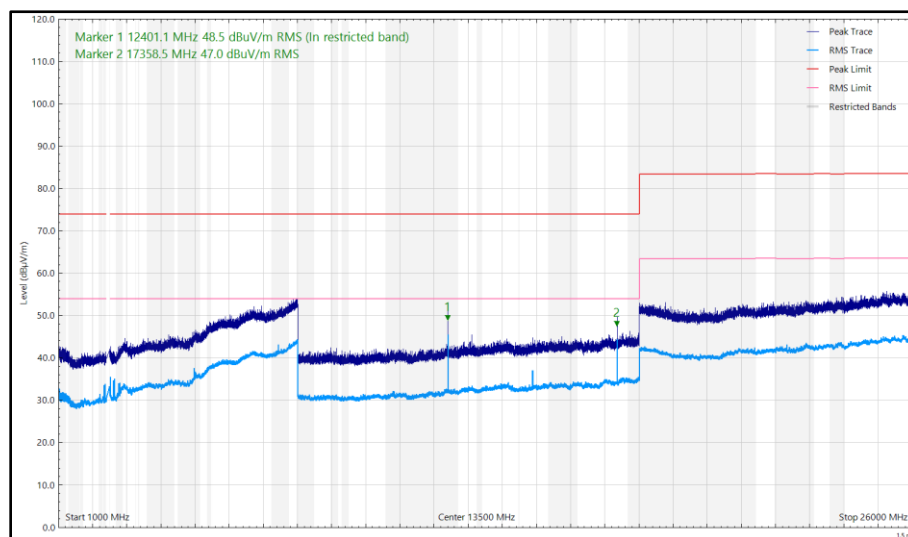


Figure 71- TOP_2480 MHz, LE500k - 1 GHz to 26 GHz, Horizontal (Peak) Z-Orientation