

FCC and ISED Test Report
Manufacturer: Renishaw Plc
Model: RUP60QE



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

Prepared for: Renishaw Plc
New Mills,
Wotton-Under-Edge
GL12 8JR

FCC ID: KQGRUP60QE IC: 3928A-RUP60QE

COMMERCIAL-IN-CONFIDENCE

Document 75965522-01 Issue 01

SIGNATURE			
NAME	JOB TITLE	RESPONSIBLE FOR	ISSUE DATE
Steve Marshall	Senior Engineer	Authorised Signatory	16 January 2026
Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD document control rules.			
RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Thomas Biddlecombe	16 January 2026	
	Wenceslao Acosta Carrazco	16 January 2026	
	Ahmad Javid	16 January 2026	

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: 2024, ISED RSS-247: Issue 4 ((2025-07) 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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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	16-Jan-2026

Table 1

1.2 Introduction

Applicant	Renishaw Plc
Manufacturer	Renishaw Plc
Model Number(s)	RUP60QE
Serial Number(s)	AK3T00, AK3R97 and AK3R99
Hardware Version(s)	Production
Software Version(s)	Production
Number of Samples Tested	3
Test Specification/Issue/Date	FCC 47 CFR Part 15C: 2024 ISED RSS-247: Issue 4 (2025-07) ISED RSS-GEN: Issue 5 (2018-04) + A2 (2021-02)
Order Number	PU03737300
Date	13-August-2025
Date of Receipt of EUT	07-October-2025
Start of Test	22-October-2025
Finish of Test	04-November-2025
Name of Engineer(s)	Thomas Biddlecombe, Wenceslao Acosta Carrazco and Ahmad Javid
Related Document(s)	ANSI C63.10-2020 +Cor.1-2023+C63.10a-2024



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
	FCC 47 CFR Part 15C	ISED RSS-247	ISED RSS-GEN			
Configuration and Mode: 2.4GHz - FHSS						
2.1	15.247 (a)(1)	6.2	-	Frequency Hopping Systems - Average Time of Occupancy	Pass	
2.2	15.247 (a)(1)	6.2	-	Frequency Hopping Systems - Channel Separation	Pass	
2.3	15.247 (a)(1)	6.2	-	Frequency Hopping Systems - Number of Hopping Channels	Pass	
2.4	15.247 (a)(1)	6.2	6.7	Frequency Hopping Systems - 20 dB Bandwidth	Pass	
2.5	15.247 (b)	6.2.3.2	6.12	Maximum Conducted Output Power	Pass	
2.6	15.247 (d)	6.6	-	Authorised Band Edges	Pass	
	15.205	2.4	8.10	Restricted Band Edges	N/T	As ANSI C63.10 allows this test to be performed with hopping disabled, testing has been covered under the 'DTS' mode, as all other radio parameters are identical between FHSS and DTS mode.
	15.247 (a)(2)	6.3.1	6.7	Emission Bandwidth	N/T	As ANSI C63.10 allows this test to be performed with hopping disabled, testing has been covered under the 'DTS' mode, as all other radio parameters are identical between FHSS and DTS mode.
	15.247 (d) and 15.209	2.4 and 6.6	6.13 and 8.9	Spurious Radiated Emissions	N/T	As ANSI C63.10 allows this test to be performed with hopping disabled, testing has been covered under the 'DTS' mode, as all other radio parameters are identical between FHSS and DTS mode.
Configuration and Mode: 2.4GHz - DTS						



2.7	15.205	2.4	8.10	Restricted Band Edges	Pass	
2.8	15.247 (a)(2)	6.3	6.7	Emission Bandwidth	Pass	
2.5	15.247 (b)	6.2.3.2	6.12	Maximum Conducted Output Power	Pass	
2.6	15.247 (d)	6.6	-	Authorised Band Edges	Pass	
2.9	15.247 (d) and 15.209	2.4 and 6.6	6.13 and 8.9	Spurious Radiated Emissions	Pass	
2.10	15.247 (e)	6.3	6.12	Power Spectral Density	Pass	
Configuration and Mode: 2.4GHz -						
	15.203			Antenna Requirement	N/T	The device complies with the provisions of this section, as it uses a permanently attached integral antenna.

Table 2



The following information is required for RSP-100 Form B:

Requirement	Band 1	Band 2	Band 3	Band 4	Band 5	Band 6	Band 7	Band 8
RSS# and Issue #	RSS-247 Issue 3, RSS-GEN Issue 5							
Frequency Minimum (MHz)	2404							
Frequency Maximum (MHz)	2480							
RF Power Minimum (W) Conducted/EIRP/ERP (Average/Peak)	0.00287 W / 0.00054W Conducted EIRP Peak							
RF Power Maximum (W) Conducted/EIRP/ERP (Average/Peak)	0.00291W / 0.00055W Conducted EIRP Peak							
Field Strength (dB μ V/m at 3m)	N/A							
Measured Bandwidth (kHz) (6 dB, 99%)	816 kHz 6dB bandwidth and 1840 kHz 99% occupied							
Calculated BW as per TRC-43	N/A							
Modulation Type	N/A							
Emissions Classification	N/A							
Spurious Emissions Conducted/Radiated	51.6 dB μ V/m at 3m at 2592.00 MHz							

Table 3



1.4 Customer Supplied Form

Equipment Description

Technical Description: (Please provide a brief description of the intended use of the equipment including the technologies the product supports)		The RUP60 (model RUP60QE) is a radio transmission probe capable of ultrasonic thickness measurement of parallel-sided metal components where access is restricted to a single side.	
Manufacturer:		Renishaw	
Model:		RUP60QE	
Part Number:		A-6723-0100	
Hardware Version:		Production	
Software Version:		Production	
FCC ID of the product under test – see guidance here		KQGRUP60QE	
IC ID of the product under test – see guidance here		3928A-RUP60QE	
Device Category	Mobile ☐	Portable ☒	Fixed ☐
Equipment is fitted with an Audio Low Pass Filter		Yes ☐	No ☒

Table 4

Intentional Radiators

Technology						
Frequency Range (MHz to MHz)	2404 MHz to 2480 MHz					
Conducted Declared Output Power (dBm)	+4dBm					
Antenna Gain (dBi)	-7.25					
Supported Bandwidth(s) (MHz) (e.g. 1 MHz, 20 MHz, 40 MHz)	2MHz					
Modulation Scheme(s) (e.g. GFSK, QPSK etc)	GFSK					
ITU Emission Designator (see guidance here) (not mandatory for Part 15 devices)	1M93F7D / 1M71FXD					
Bottom Frequency (MHz)	2404MHz					
Middle Frequency (MHz)	2442MHz					
Top Frequency (MHz)	2480MHz					

Table 5



Un-intentional Radiators

Highest frequency generated or used in the device or on which the device operates or tunes	120MHz
Lowest frequency generated or used in the device or on which the device operates or tunes	32.768kHz
Class A Digital Device (Use in commercial, industrial or business environment) ☒	
Class B Digital Device (Use in residential environment only) ☐	

Table 6

Battery Power Source

Voltage:	3V / 7.2V	V
End-point voltage:	2.0V / 5.9V	V (Point at which the battery will terminate)
Alkaline ☒ Leclanche ☐ Lithium ☐ Nickel Cadmium ☐ Lead Acid* ☐ *(Vehicle regulated)		
Other ☒	Please detail:	Lithium Thionyl Chloride

Table 7

Charging

Can the EUT transmit whilst being charged	Yes ☐ No ☐
---	--

Table 8

Temperature

Minimum temperature:	5	°C
Maximum temperature:	55	°C

Table 9



Cable Loss

Adapter Cable Loss (Conducted sample)	1	dB
--	---	----

Table 10

Antenna Characteristics

Antenna connector ☐			State impedance		Ohm
Temporary antenna connector ☒			State impedance	50	Ohm
Integral antenna ☒	Type:	Dual Slot	Gain	-7.25	dBi
External antenna ☐	Type:		Gain		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 ☐ 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 11

Ancillaries (if applicable)

Manufacturer:		Part Number:	
Model:		Country of Origin:	

Table 12

I hereby declare that the information supplied is correct and complete.

Name: John Styles
Position held: Electronics Design Manager
Date: 30 September 2025



1.5 Product Information

1.5.1 Technical Description

The RUP60 (model RUP60QE) is a radio transmission probe capable of ultrasonic thickness measurement of parallel-sided metal components where access is restricted to a single side.

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: RUP60, Serial Number: AK3R99			
0	As supplied by the customer	Not Applicable	Not Applicable
Model: RUP60, Serial Number: AK3T00			
0	As supplied by the customer	Not Applicable	Not Applicable
Model: RUP60, Serial Number: AK3R97			
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: 2.4GHz - FHSS		
Frequency Hopping Systems - Average Time of Occupancy	Thomas Biddlecombe	UKAS
Frequency Hopping Systems - Channel Separation	Thomas Biddlecombe	UKAS
Frequency Hopping Systems - Number of Hopping Channels	Thomas Biddlecombe	UKAS
Frequency Hopping Systems - 20 dB Bandwidth	Thomas Biddlecombe	UKAS
Maximum Conducted Output Power	Thomas Biddlecombe	UKAS
Authorised Band Edges	Wenceslao Acosta Carrazco	UKAS
Configuration and Mode: 2.4GHz - DTS		
Restricted Band Edges	Ahmad Javid	UKAS
Emission Bandwidth	Thomas Biddlecombe	UKAS
Maximum Conducted Output Power	Thomas Biddlecombe	UKAS
Authorised Band Edges	Ahmad Javid	UKAS
Spurious Radiated Emissions	Ahmad Javid	UKAS
Power Spectral Density	Thomas Biddlecombe	UKAS

Table 14

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



2 Test Details

2.1 Frequency Hopping Systems - Average Time of Occupancy

2.1.1 Specification Reference

FCC 47 CFR Part 15C: Clause 15.247 (a)(1)
ISED RSS-247: 6.2

2.1.2 Equipment Under Test and Modification State

RUP60, S/N: AK3R99 - Modification State 0

2.1.3 Date of Test

04-November-2025

2.1.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 7.8.4.

The EUT was powered by fresh 2x 1.5 V AA batteries.

2.1.5 Environmental Conditions

Ambient Temperature	20.9 °C
Relative Humidity	53.8 %



2.1.6 Test Results

2.4GHz - FHSS

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	FCC 15.247 (a)(1)(iii) RSS-247 6.2	Test Method(s):	C63.10 7.8.4
Additional Reference(s):	-		

DUT Configuration			
Mode:	2 MB/s FHSS	Duty Cycle (%):	43.4
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	C (Pigtail Connector)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	Time of Occupancy			Limit (ms)
	Dwell Time (ms)	Number of Transmissions	Time of Occupancy (ms)	
2404	0.218	800	174.6	400.0

Table 15 - Time of Occupancy Results

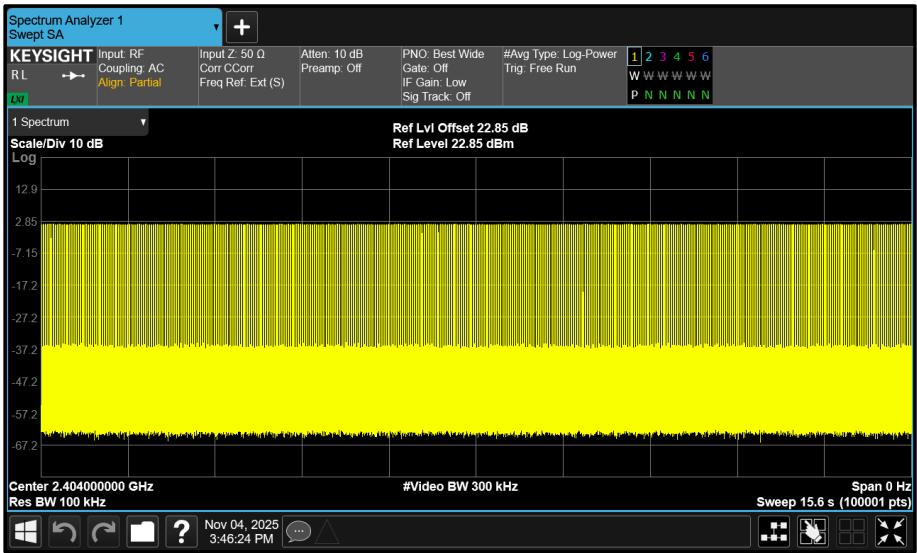


Figure 1 - 2404 MHz Accumulated Transmit Time

FCC 47 CFR Part 15, Limit Clause 15.247 (a)(1)(iii)

Frequency hopping systems operating in the band 2400-2483.5 MHz shall use at least 15 hopping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Transmissions on particular hopping frequencies may be avoided or suppressed provided that a minimum of 15 hopping channels are used.

Industry Canada RSS-247, Limit Clause 6.2.3.1(b).

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds, multiplied by the number of hopping channels employed.

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-Mar-2026
MXA Signal Analyser	Keysight Technologies	N9020B	5528	24	10-Sep-2027
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6350	12	02-Sep-2026
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	7137	12	29-Aug-2026

Table 16



2.2 Frequency Hopping Systems - Channel Separation

2.2.1 Specification Reference

FCC 47 CFR Part 15C: Clause 15.247 (a)(1)
ISED RSS-247: 6.2

2.2.2 Equipment Under Test and Modification State

RUP60, S/N: AK3R99 - Modification State 0

2.2.3 Date of Test

04-November-2025

2.2.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 7.8.2.

The EUT was powered by fresh 2x 1.5 V AA batteries.

2.2.5 Environmental Conditions

Ambient Temperature	20.9 °C
Relative Humidity	53.8 %



2.2.6 Test Results

2.4GHz - FHSS

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	FCC 15.247(a)(1) RSS-247 6.2.3.1	Test Method(s):	C63.10 7.8.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	2 MB/s FHSS	Duty Cycle (%):	-
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	C (Pigtail Connector)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	20 dB Bandwidth (MHz)	Carrier Frequency Separation (MHz)			Limit (kHz)
		F1C	F2C	FHS	
2442	2.035	2442.041	2444.051	2.010	1356.7

Table 17 - Carrier Frequency Separation Results

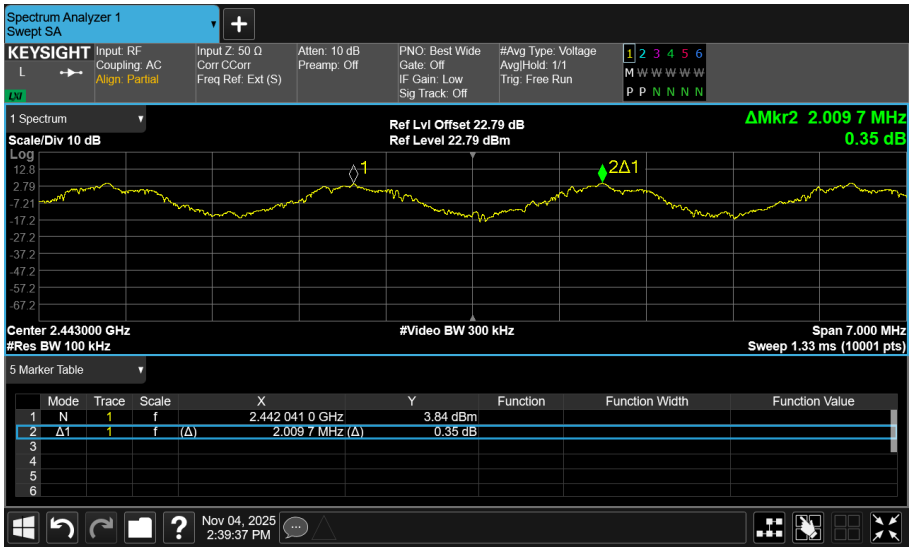


Figure 2 - Carrier Frequency Separation 2442 & 2444 MHz

FCC 47 CFR Part 15, Limit Clause 15.247 (a)(1)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Alternatively, frequency hopping systems operating in the band 2400-2483.5 MHz may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 0.125 W.

ISED RSS-247, Limit Clause 6.2.3.1(a).

FHSS shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the -20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, FHSS operating in the band 2400-2483.5 MHz may have hopping channel carrier frequencies that are separated by 25 kHz or two thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided that the systems operate with an output power no greater than 0.125 W.

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
GPSDR Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	18-Mar-2026
MXA Signal Analyser	Keysight Technologies	N9020B	5528	24	10-Sep-2027
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6350	12	02-Sep-2026
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	7137	12	29-Aug-2026

Table 18



2.3 Frequency Hopping Systems - Number of Hopping Channels

2.3.1 Specification Reference

FCC 47 CFR Part 15C: Clause 15.247 (a)(1)
ISED RSS-247: 6.2

2.3.2 Equipment Under Test and Modification State

RUP60, S/N: AK3R99 - Modification State 0

2.3.3 Date of Test

04-November-2025

2.3.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 7.8.3.

The EUT was powered by fresh 2x 1.5 V AA batteries.

2.3.5 Environmental Conditions

Ambient Temperature	20.9 °C
Relative Humidity	53.8 %



2.3.6 Test Results

2.4GHz - FHSS

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	FCC 15.247(a)(1)(iii) RSS-247 6.2	Test Method(s):	C63.10 7.8.3
Additional Reference(s):	-		

DUT Configuration			
Mode:	2 MB/s FHSS	Duty Cycle (%):	-
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	C (Pigtail Connector)	Peak Antenna Gain (dBi):	-

Number of Hopping Frequencies		Limit
39		≥15.0

Table 19 - Number of Hopping Frequencies Results

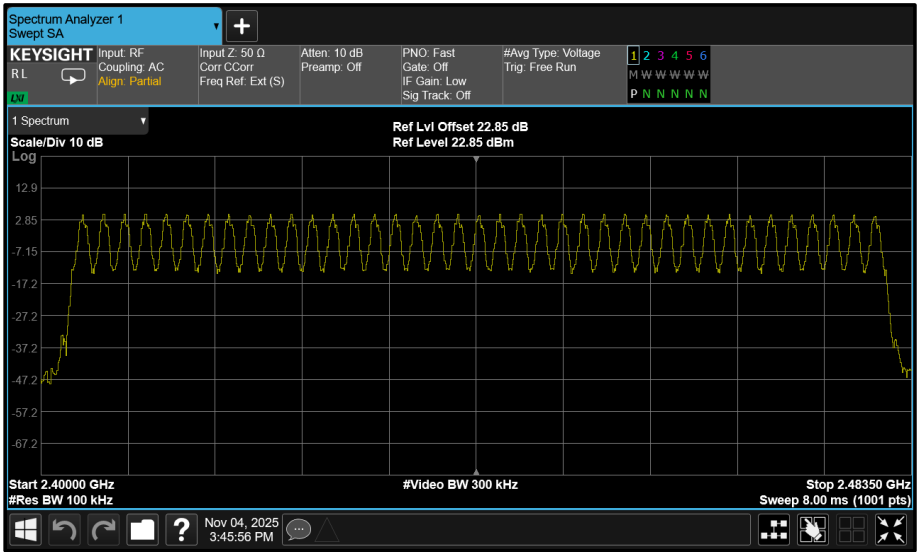


Figure 3 - 2 MB/s FHSS - Number of Hopping Channels

FCC 47 CFR Part 15, Limit Clause 15.247 (a)(1)(iii)

≥ 15 channels

ISED RSS-247, Limit Clause 6.2.3.1(b).

FHSs operating in the band 2400-2483.5 MHz shall use at least 15 hopping channels.

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-Mar-2026
MXA Signal Analyser	Keysight Technologies	N9020B	5528	24	10-Sep-2027
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6350	12	02-Sep-2026
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	7137	12	29-Aug-2026

Table 20



2.4 Frequency Hopping Systems - 20 dB Bandwidth

2.4.1 Specification Reference

FCC 47 CFR Part 15C: Clause 15.247 (a)(1)
ISED RSS-247: 6.2
ISED RSS-GEN: 6.7

2.4.2 Equipment Under Test and Modification State

RUP60, S/N: AK3R99 - Modification State 0

2.4.3 Date of Test

04-November-2025

2.4.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 6.9.2.

The EUT was powered by fresh 2x 1.5 V AA batteries.

2.4.5 Environmental Conditions

Ambient Temperature	20.9 °C
Relative Humidity	53.8 %



2.4.6 Test Results

2.4GHz - FHSS

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (a)(1) RSS-247 6.2.3.1	Test Method(s):	C63.10 6.9.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	2 MB/s FHSS	Duty Cycle (%):	-
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	C (Pigtail Connector)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	20 dB Bandwidth (MHz)			
	A	B	C	D
2404	-	-	2.035	-
2442	-	-	2.025	-
2480	-	-	2.030	-

Table 21 - 20 dB Bandwidth Results

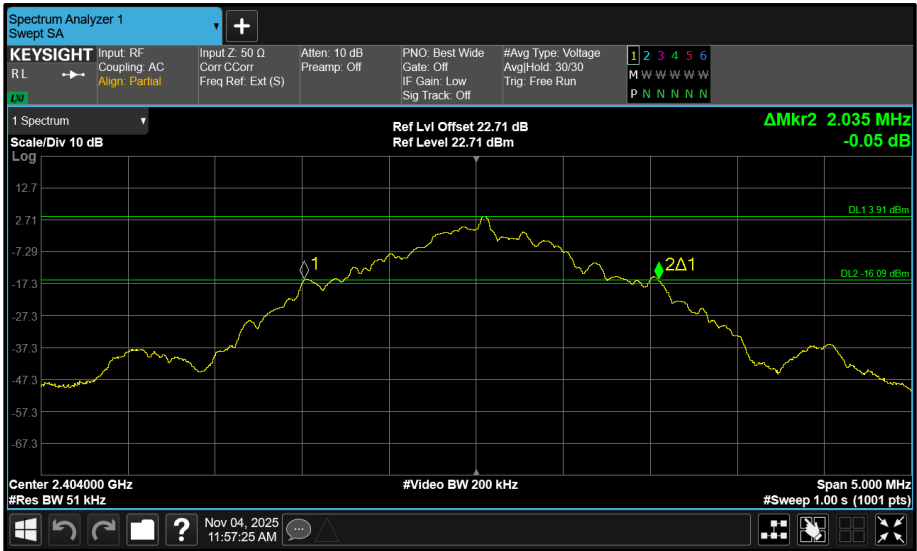


Figure 4 - Pigtail Connector (C) 2404 MHz (Bottom Channel) 20 dB Bandwidth

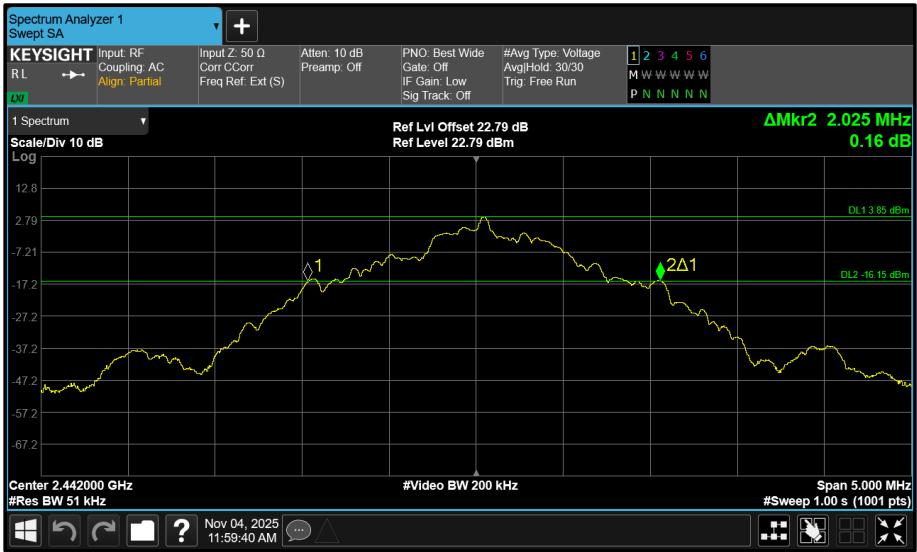


Figure 5 - Pigtail Connector (C) 2442 MHz (Middle Channel) 20 dB Bandwidth

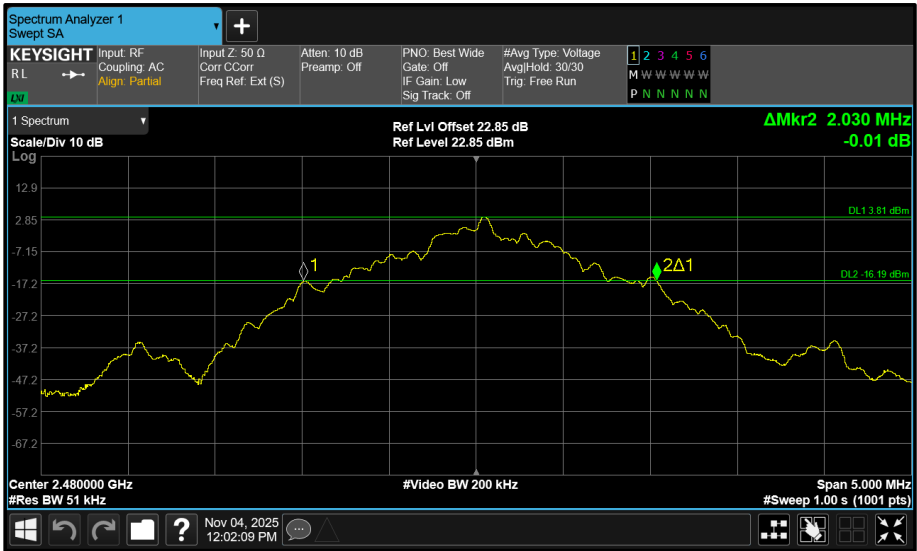


Figure 6 - Pigtail Connector (C) 2480 MHz (Top Channel) 20 dB Bandwidth



FCC 47 CFR Part 15 and ISSED RSS-247 Limit Clause

None specified.

2.4.7 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-Mar-2026
MXA Signal Analyser	Keysight Technologies	N9020B	5528	24	10-Sep-2027
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6350	12	02-Sep-2026
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	7137	12	29-Aug-2026

Table 22



2.5 Maximum Conducted Output Power

2.5.1 Specification Reference

FCC 47 CFR Part 15C: Clause 15.247 (b)
ISED RSS-247: 6.2.3.2 and 6.3.2
ISED RSS-GEN: 6.12

2.5.2 Equipment Under Test and Modification State

RUP60, S/N: AK3R99 - Modification State 0

2.5.3 Date of Test

04-November-2025

2.5.4 Test Method

2.4GHz - DTS

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

2.4GHz - FHSS

The test was performed in accordance with ANSI C63.10 clause 7.8.5 using a power meter.

The EUT was powered by fresh 2x 1.5 V AA batteries.

2.5.5 Environmental Conditions

Ambient Temperature	20.9 °C
Relative Humidity	53.8 %



2.5.6 Test Results

2.4GHz - FHSS

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (b)(1) RSS-247 6.2.3.2	Test Method(s):	C63.10 7.8.5
Additional Reference(s):	-		

DUT Configuration			
Mode:	2 MB/s FHSS	Duty Cycle (%):	43.4
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	C (Pigtail Connector)	Peak Antenna Gain (dBi):	-7.25

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2404	-	-	4.62	-	-	21.00	-16.38
2442	-	-	4.65	-	-	21.00	-16.35
2480	-	-	4.61	-	-	21.00	-16.39

Table 23 - FCC Maximum Conducted (peak) Output Power Results

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)	EIRP (dBm)	EIRP Limit (dBm)	EIRP Margin (dB)
	A	B	C	D	Σ					
2404	-	-	4.62	-	-	21.00	-16.38	-2.63	36.00	-38.63
2442	-	-	4.65	-	-	21.00	-16.35	-2.60	36.00	-38.60
2480	-	-	4.61	-	-	21.00	-16.39	-2.64	36.00	-38.64

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

FCC 47 CFR Part 15, Limit Clause 15.247 (b)(1) and (a)(1)

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

ISED RSS-247, Limit Clause 6.2.3.2

The following transmitter output power and e.i.r.p. requirements shall apply:

if the hopset uses 75 or more hopping channels, the maximum peak conducted output power shall not exceed 1.0 W.

if the hopset uses less than 75 hopping channels the maximum peak conducted output power shall not exceed 0.125 W.

the e.i.r.p. shall not exceed 4 W, except as provided in sections 6.5 a) and b).



2.4GHz - DTS

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (b)(3) RSS-247 6.3.2	Test Method(s):	C63.10 11.9.1.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	2 MB/s DTS	Duty Cycle (%):	43.4
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	C (Pigtail Connector)	Peak Antenna Gain (dBi):	-7.25

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2404	-	-	4.61	-	-	30.00	-25.39
2442	-	-	4.63	-	-	30.00	-25.37
2480	-	-	4.58	-	-	30.00	-25.42

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

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)	EIRP (dBm)	EIRP Limit (dBm)	EIRP Margin (dB)
	A	B	C	D	Σ					
2404	-	-	4.61	-	-	30.00	-25.39	-2.64	36.00	-38.64
2442	-	-	4.63	-	-	30.00	-25.37	-2.62	36.00	-38.62
2480	-	-	4.58	-	-	30.00	-25.42	-2.67	36.00	-38.67

Table 26 - 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 6.3.2

For DTS operating in the band 902-928 MHz, the maximum peak conducted output power shall not exceed 1W, and the e.i.r.p. shall not exceed 4 W.

For DTS operating in the band 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1W, and the e.i.r.p. shall not exceed 4 W, except as provided in section 6.5 a) and b).

As an alternative to a peak power measurement, compliance can be based on a measurement of the maximum conducted output power.



2.5.7 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
USB Power Sensor	Boonton	RTP5006	5184	12	29-Aug-2026
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6350	12	02-Sep-2026
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	7137	12	29-Aug-2026

Table 27



2.6 Authorised Band Edges

2.6.1 Specification Reference

FCC 47 CFR Part 15C: Clause 15.247 (d)
ISED RSS-247: 6.6

2.6.2 Equipment Under Test and Modification State

RUP60, S/N: AK3T00 - Modification State 0
RUP60, S/N: AK3R97 - Modification State 0

2.6.3 Date of Test

22-October-2025 to 23-October-2025

2.6.4 Test Method

EUT was powered with 2 double A batteries (3 VDC) for the duration of the measurement.

2.4GHz - DTS

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

2.4GHz - FHSS

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

2.6.5 Environmental Conditions

Ambient Temperature	20.6 °C
Relative Humidity	41.3 %



2.6.6 Test Results

2.4GHz - FHSS

Mode	Data Rate/MCS	Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
FHSS	2M	2404	2400.0	-45.52
FHSS	2M	2480	2483.5	-44.96

Table 28

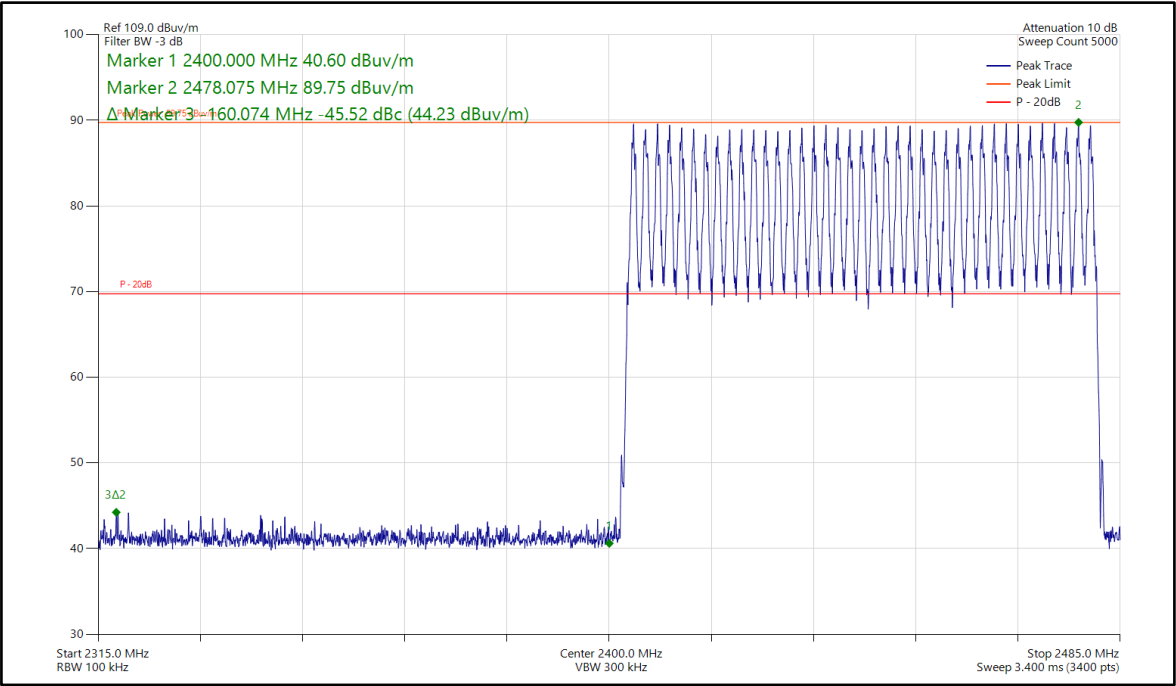


Figure 7 - BOT_FHSS_ABE, 2404-2480 MHz, Band Edge Frequency 2400 MHz

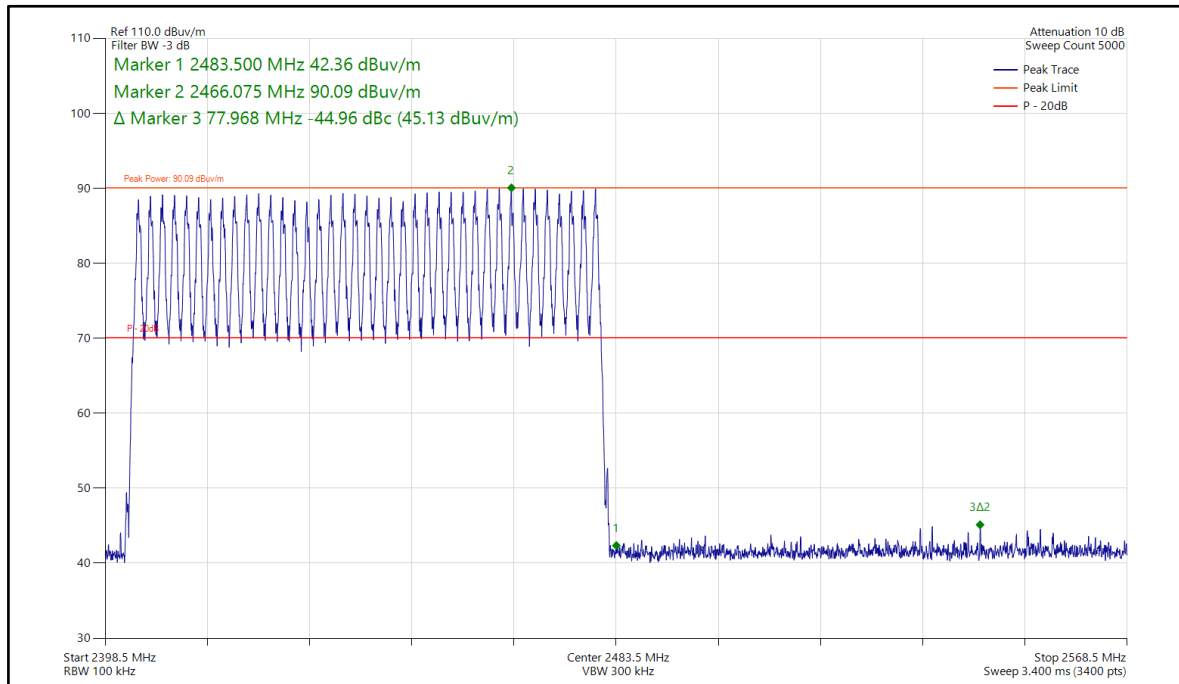


Figure 8 - TOP_FHSS_ABE, 2404-2480 MHz, Band Edge Frequency 2483.5 MHz

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 6.6

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 6.2.2.2, 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.



2.4GHz - DTS

Mode	Data Rate/MCS	Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
DTS	2M	2404	2400.0	-47.08
DTS	2M	2480	2483.5	-47.00

Table 29

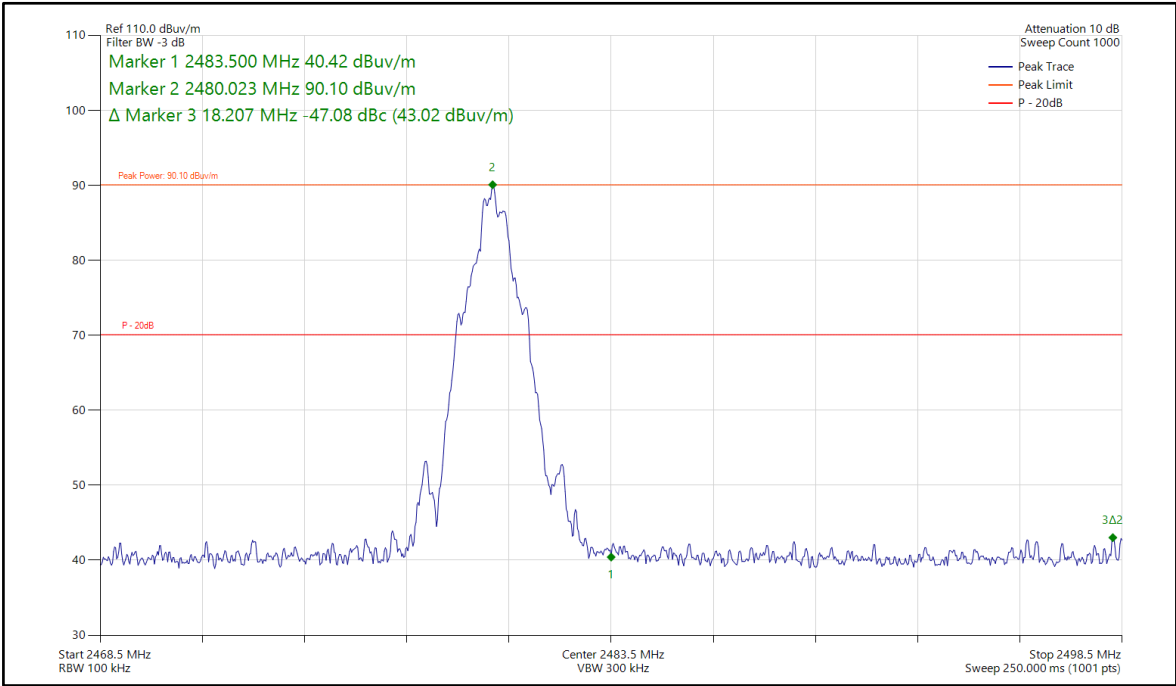


Figure 9 - CH39_BLE2M_ABE, 2480 MHz, Band Edge Frequency 2483.5 MHz

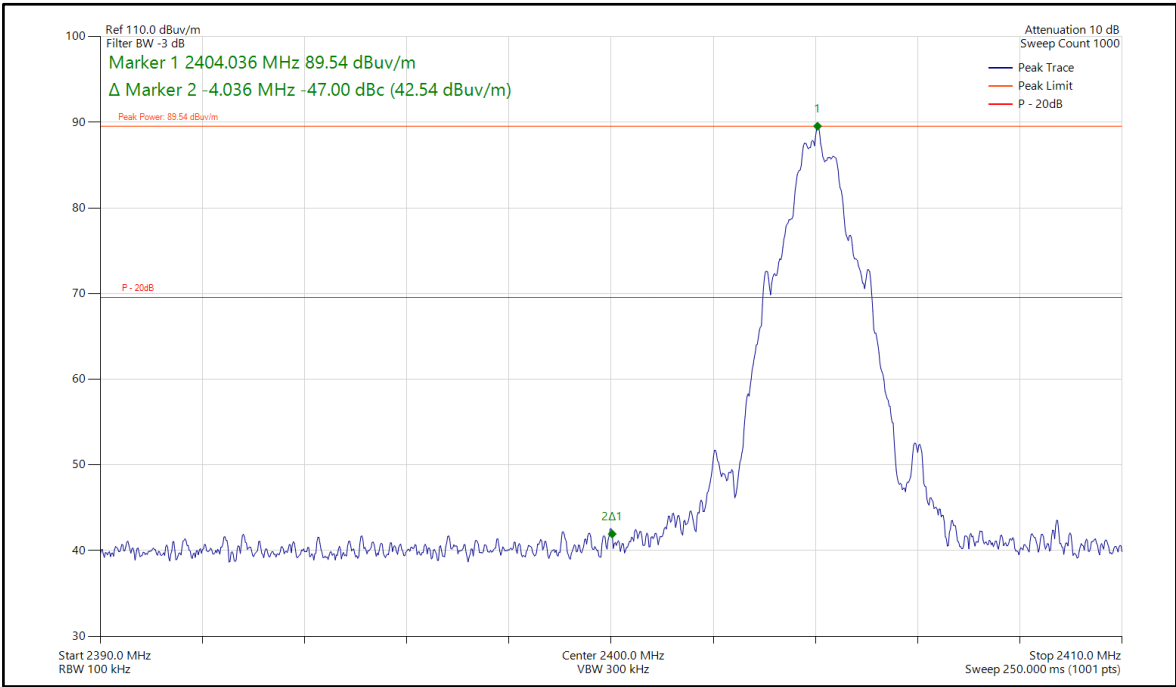


Figure 10 - CH37_BLE2M_ABE, 2404 MHz, Band Edge Frequency 2400 MHz

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 6.6

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 6.2.2.2, 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.

2.6.7 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 5.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
3m Semi-Anechoic Chamber	Rainford	RF Chamber 5	1545	36	23-Apr-2027
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Hygrometer	Rotronic	HP21	4741	12	29-May-2026
Mast Controller	Maturo GmbH	NCD	4810	-	TU
Tilt Antenna Mast	Maturo GmbH	TAM 4.0-P	4811	-	TU
Test Receiver	Rohde & Schwarz	ESW44	5084	12	13-Dec-2025
Emissions Software	TUV SUD	EmX V3.5.5	5125	-	Software
Cable (SMA to SMA, 2 m)	Junkosha	MWX221-02000AMSAMS/A	5517	12	06-Jun-2026
Antenna (DRG, 1 GHz to 10.5 GHz)	Schwarzbeck	BBHA9120B	5611	12	14-Sep-2026
Cable (N-Type to N-Type, 8 m)	Scott Cables	SCB800-A-NMNM-08.00M	6719	6	12-Dec-2025

Table 30

TU - Traceability Unscheduled



2.7 Restricted Band Edges

2.7.1 Specification Reference

FCC 47 CFR Part 15C: Clause 15.205
ISED RSS-247: 2.4
ISED RSS-GEN: 8.10

2.7.2 Equipment Under Test and Modification State

RUP60, S/N: AK3T00 - Modification State 0

2.7.3 Date of Test

23-October-2025

2.7.4 Test Method

EUT was powered with 2 x AA batteries (3 VDC) for the duration of the measurement.

2.4GHz - DTS

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:
 $10^{(\text{Field Strength in dB}\mu\text{V/m}/20)}$.

2.4GHz - FHSS

As ANSI C63.10 allows this test to be performed with hopping disabled, testing has been covered under the 'DTS' mode, as all other radio parameters are identical between FHSS and DTS mode.

2.7.5 Environmental Conditions

Ambient Temperature	20.6 °C
Relative Humidity	41.3 %



2.7.6 Test Results

2.4GHz - DTS

Mode	Data Rate/MCS	Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBμV/m)	Average Level (dBμV/m)
DTS	2M	2404	2390	53.30	41.16
DTS	2M	2480	2483.5	55.36	41.36

Table 31

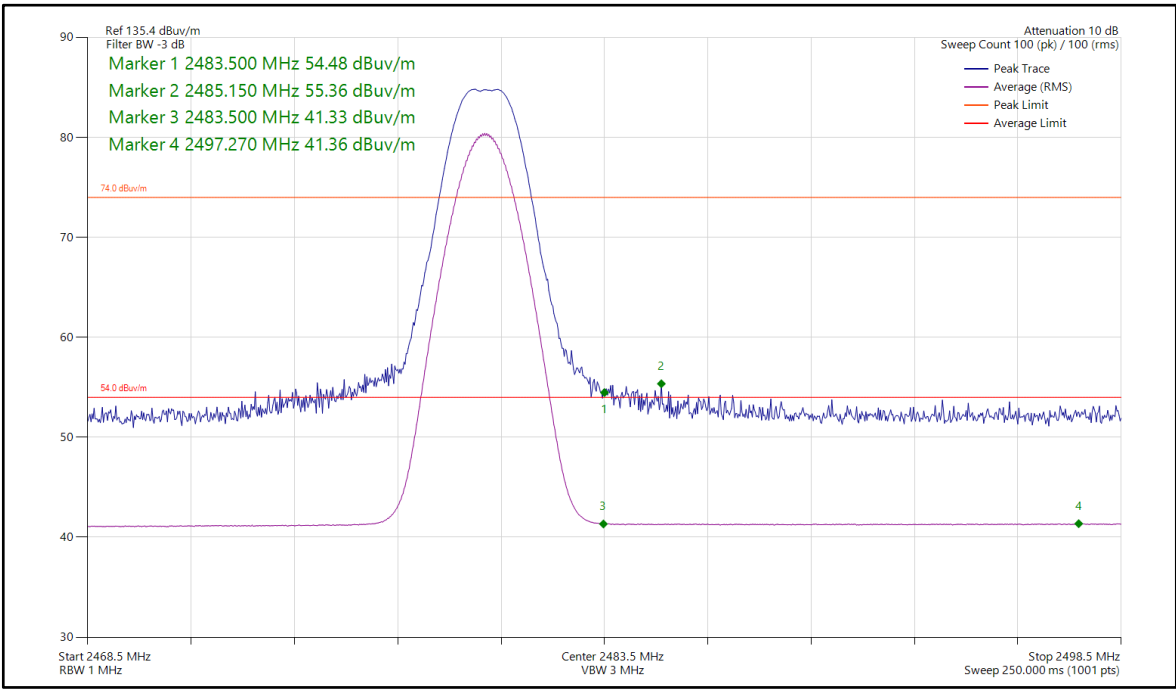


Figure 11 - CH39_BLE2M_RBE, 2480 MHz, Band Edge Frequency 2483.5 MHz

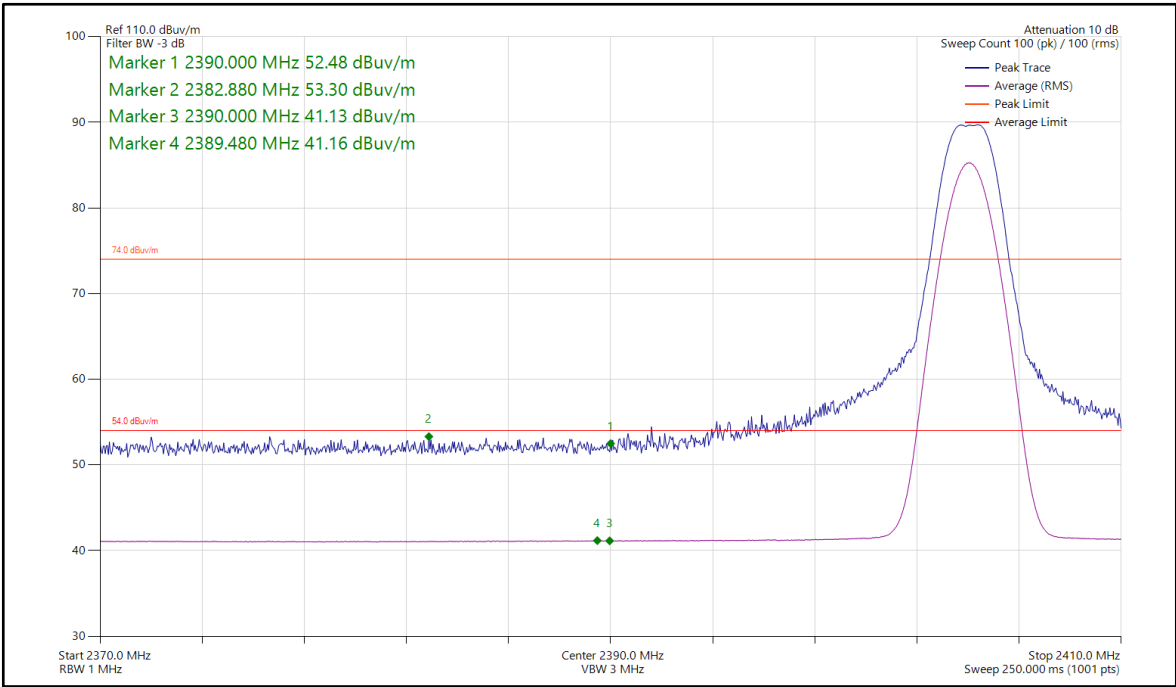


Figure 12 - CH37_BLE2M_RBE, 2404 MHz, Band Edge Frequency 2390 MHz

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 32

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 33

*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.



2.7.7 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 5.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
3m Semi-Anechoic Chamber	Rainford	RF Chamber 5	1545	36	23-Apr-2027
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Hygrometer	Rotronic	HP21	4741	12	29-May-2026
Mast Controller	Maturo GmbH	NCD	4810	-	TU
Tilt Antenna Mast	Maturo GmbH	TAM 4.0-P	4811	-	TU
Test Receiver	Rohde & Schwarz	ESW44	5084	12	13-Dec-2025
Emissions Software	TUV SUD	EmX V3.5.5	5125	-	Software
Cable (SMA to SMA, 2 m)	Junkosha	MWX221-02000AMSAMS/A	5517	12	06-Jun-2026
Antenna (DRG, 1 GHz to 10.5 GHz)	Schwarzbeck	BBHA9120B	5611	12	14-Sep-2026
Cable (N-Type to N-Type, 8 m)	Scott Cables	SCB800-A-NMNM-08.00M	6719	6	12-Dec-2025

Table 34

TU - Traceability Unscheduled



2.8 Emission Bandwidth

2.8.1 Specification Reference

FCC 47 CFR Part 15C: Clause 15.247 (a)(2)
ISED RSS-247: 6.3
ISED RSS-GEN: 6.7

2.8.2 Equipment Under Test and Modification State

RUP60, S/N: AK3R99 - Modification State 0

2.8.3 Date of Test

04-November-2025

2.8.4 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 powered by fresh 2x 1.5 V AA batteries.

2.8.5 Environmental Conditions

Ambient Temperature	20.9 °C
Relative Humidity	53.8 %



2.8.6 Test Results

2.4GHz - DTS

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (a)(2) RSS-247 6	Test Method(s):	C63.10 6.9.3 C63.10 6.9.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	2 MB/s DTS	Duty Cycle (%):	-
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	C (Pigtail Connector)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	6 dB Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
2404	-	-	0.816	-	≥500.0
2442	-	-	0.752	-	≥500.0
2480	-	-	0.744	-	≥500.0

Table 35 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
2404	-	-	1.864	-	-
2442	-	-	1.840	-	-
2480	-	-	1.832	-	-

Table 36 - 99% Bandwidth Results

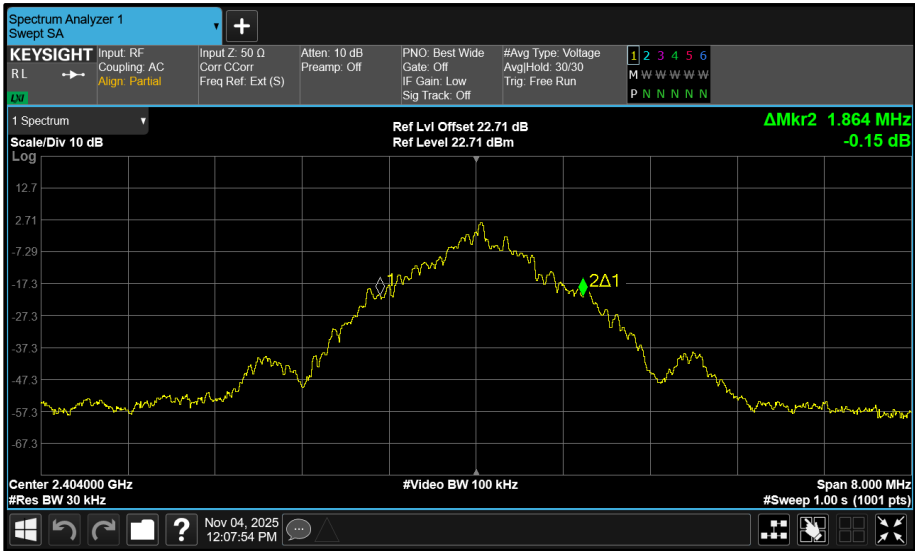


Figure 13 - Pigtail Connector (C) 2404 MHz (Bottom Channel) 99% Bandwidth

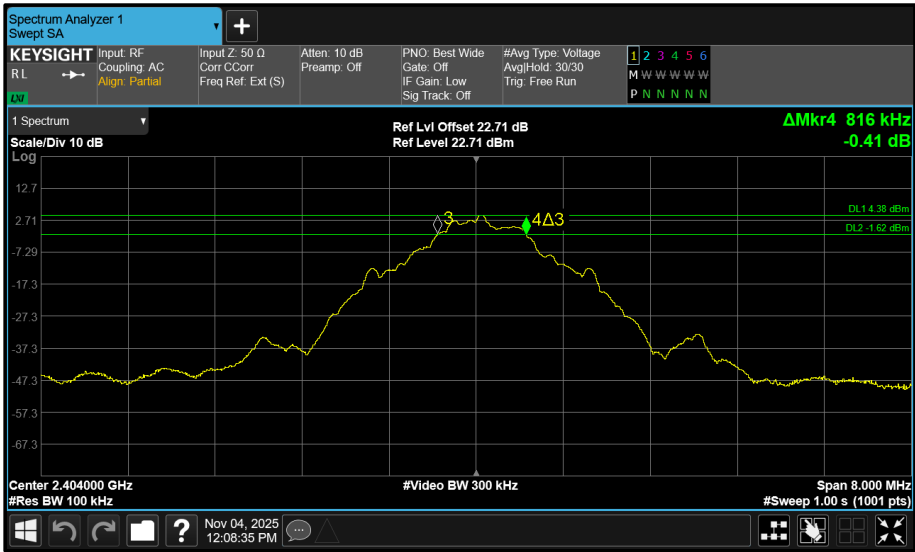


Figure 14 - Pigtail Connector (C) 2404 MHz (Bottom Channel) 6 dB Bandwidth

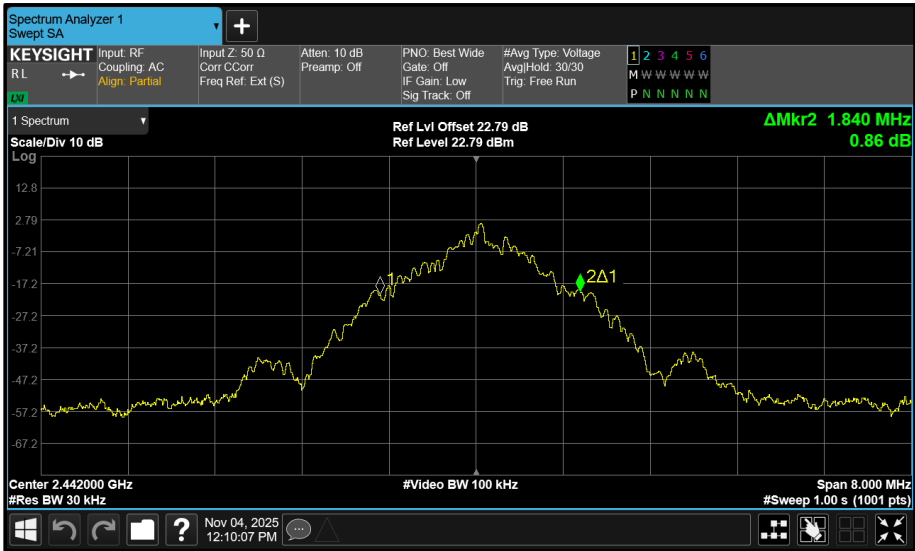


Figure 15 - Pigtail Connector (C) 2442 MHz (Middle Channel) 99% Bandwidth

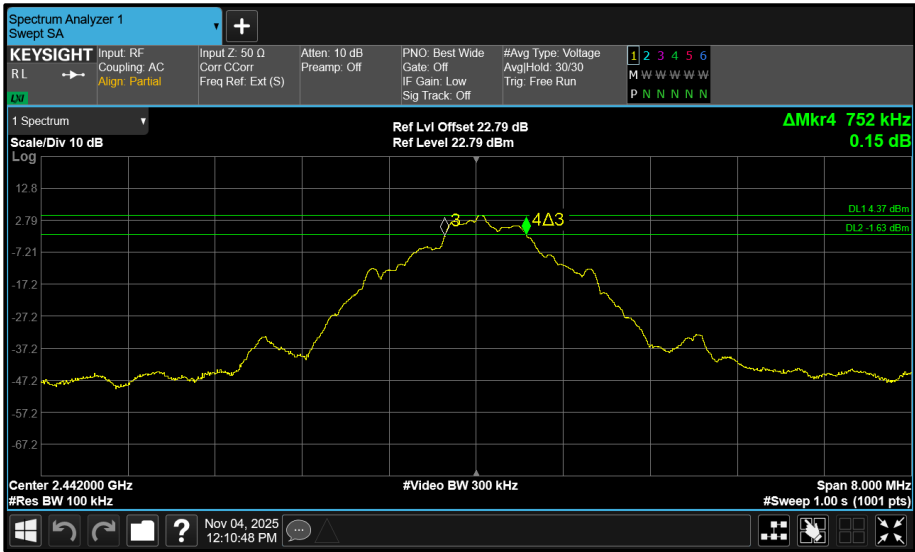


Figure 16 - Pigtail Connector (C) 2442 MHz (Middle Channel) 6 dB Bandwidth

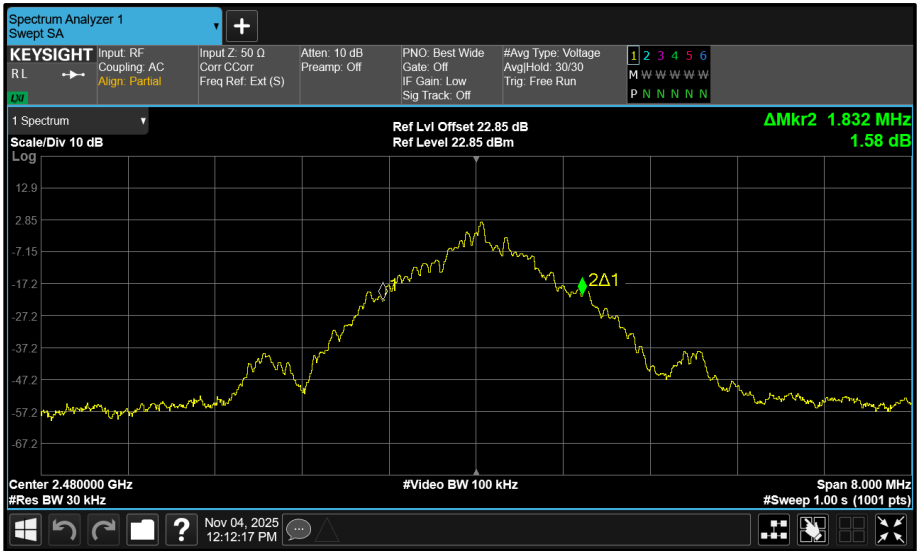


Figure 17 - Pigtail Connector (C) 2480 MHz (Top Channel) 99% Bandwidth

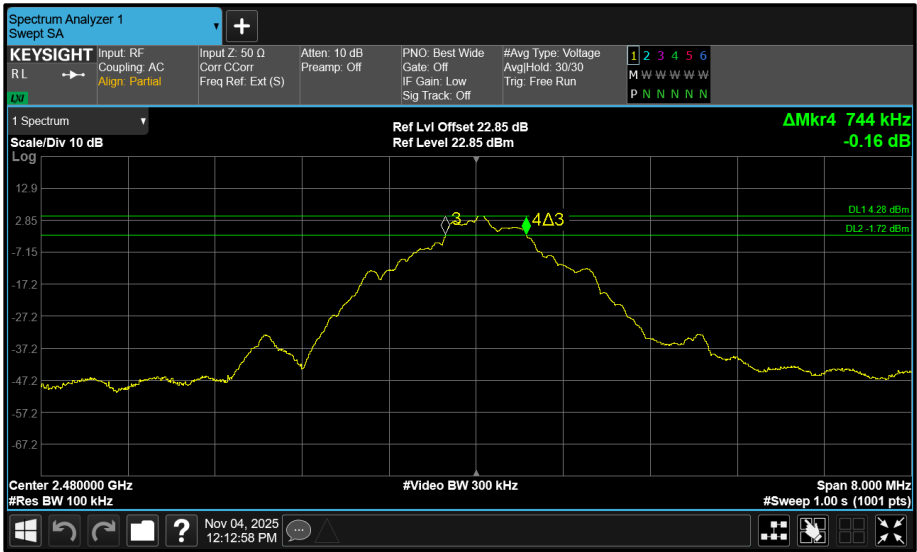


Figure 18 - Pigtail Connector (C) 2480 MHz (Top Channel) 6 dB Bandwidth



FCC 47 CFR Part 15, Limit Clause 15.247(a)(2) and ISED RSS-247, Clause 6.3.1

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

2.8.7 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-Mar-2026
MXA Signal Analyser	Keysight Technologies	N9020B	5528	24	10-Sep-2027
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6350	12	02-Sep-2026
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	7137	12	29-Aug-2026

Table 37



2.9 Spurious Radiated Emissions

2.9.1 Specification Reference

FCC 47 CFR Part 15C: Clause 15.247 (d) and 15.209
ISED RSS-247: 2.4 and 6.6
ISED RSS-GEN: 6.13 and 8.9

2.9.2 Equipment Under Test and Modification State

RUP60, S/N: AK3R97 - Modification State 0

2.9.3 Date of Test

23-October-2025 to 24-October-2025

2.9.4 Test Method

2.4GHz - DTS

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

EUT was powered with 2 x AA batteries (3 VDC) for the duration of the measurement.

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.

2.4GHz - FHSS

As ANSI C63.10 allows this test to be performed with hopping disabled, testing has been covered under the 'DTS' mode, as all other radio parameters are identical between FHSS and DTS mode.

2.9.5 Example Test Setup Diagram

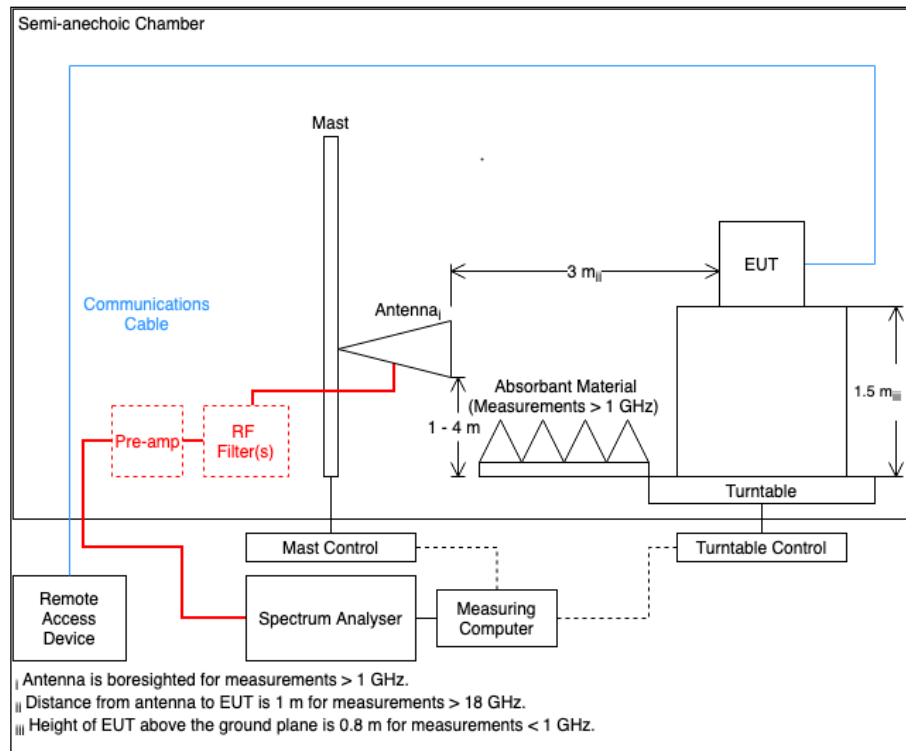


Figure 19

2.9.6 Environmental Conditions

Ambient Temperature	21.6 - 22.3 °C
Relative Humidity	39.2 - 40.7 %



2.9.7 Test Results

2.4GHz - DTS

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

Table 38 - CH37_LE2M_X, 2404 MHz, 30 MHz to 26 GHz

*No emissions found within 10 dB of the limit.

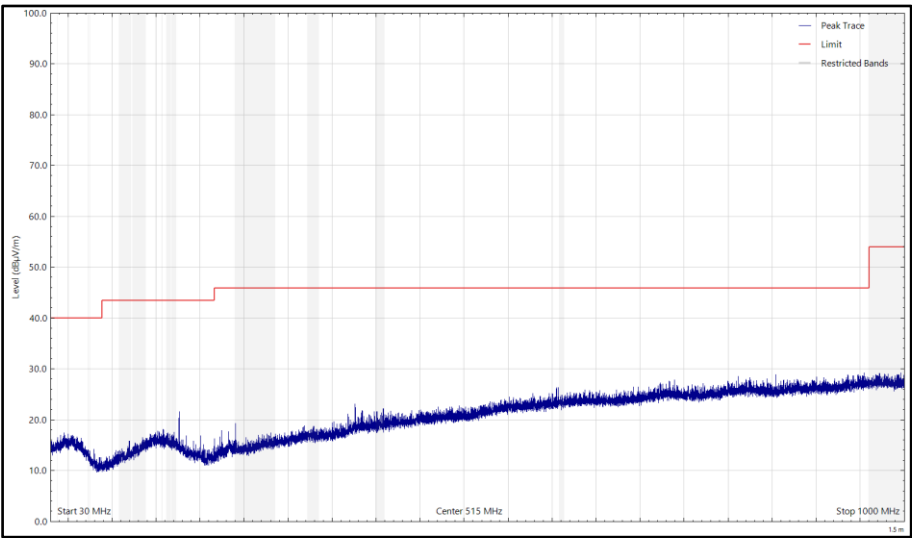


Figure 20 - CH37_LE2M_X, 2404 MHz, 30 MHz to 1 GHz, Horizontal (Peak)

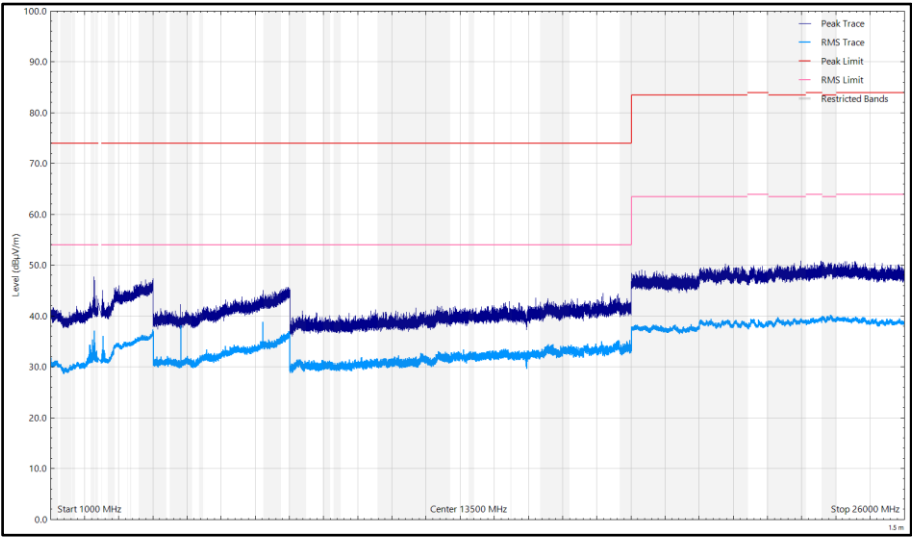


Figure 21 - CH37_LE2M_X, 2404 MHz, 1 GHz to 26 GHz, Horizontal

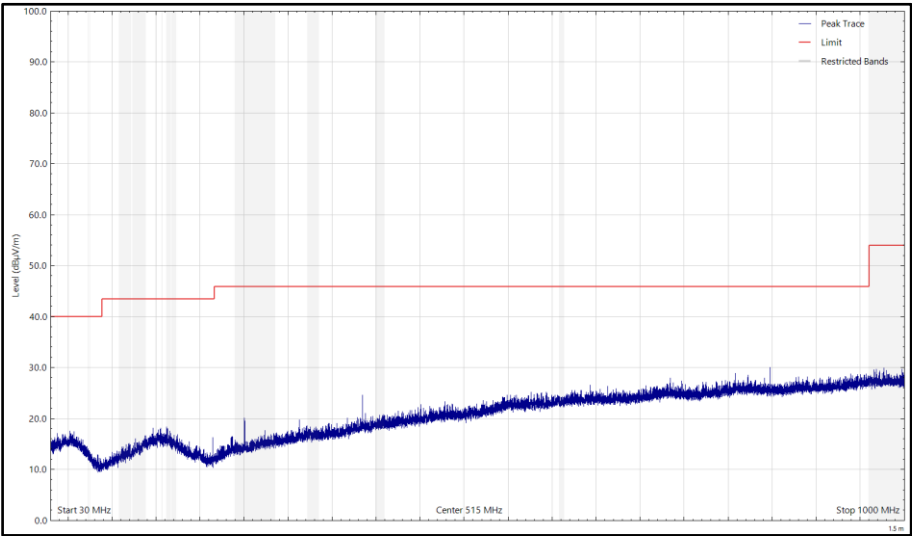


Figure 22 - CH37_LE2M_X, 2404 MHz, 30 MHz to 1 GHz, Vertical (Peak)

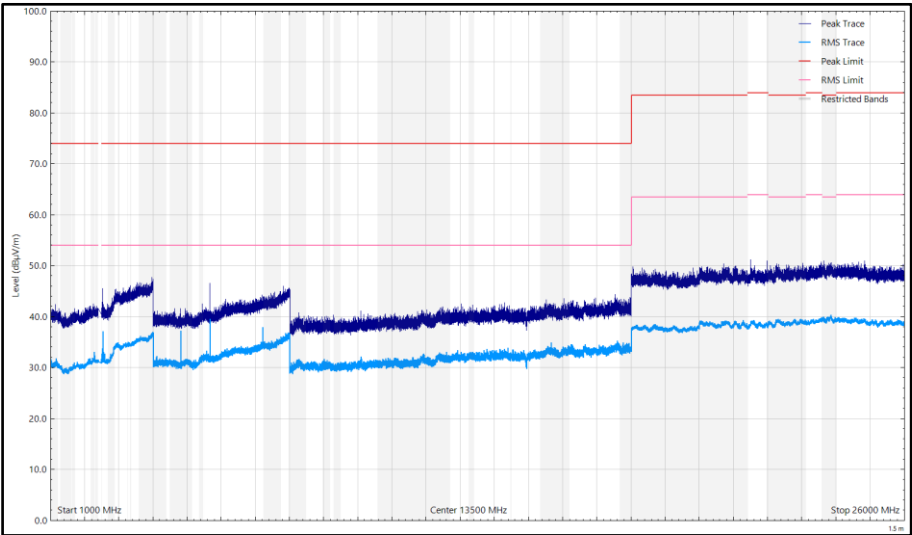


Figure 23 - CH37_LE2M_X, 2404 MHz, 1 GHz to 26 GHz, Vertical



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

Table 39 - CH37_LE2M_Y, 2404 MHz, 30 MHz to 26 GHz

*No emissions found within 10 dB of the limit.

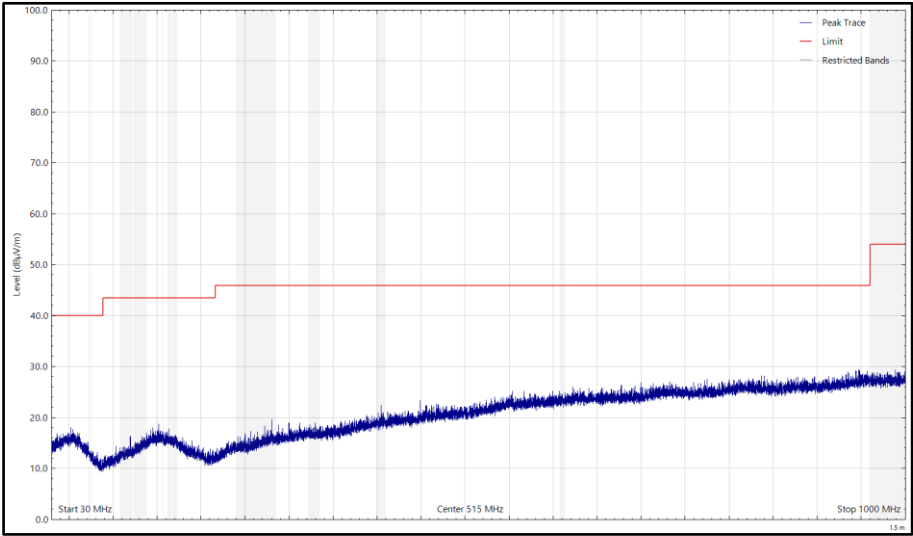


Figure 24 - CH37_LE2M_Y, 2404 MHz, 30 MHz to 1 GHz, Horizontal (Peak)

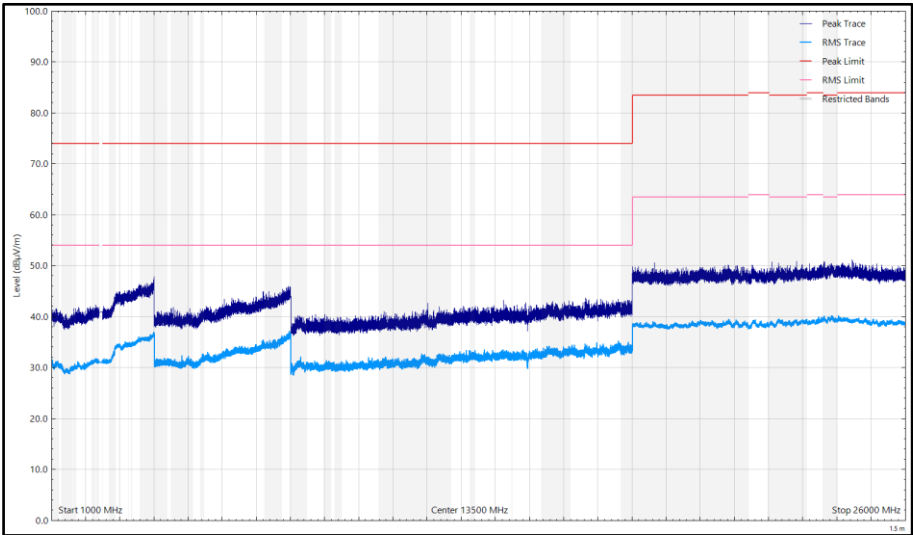


Figure 25 - CH37_LE2M_Y, 2404 MHz, 1 GHz to 26 GHz, Horizontal

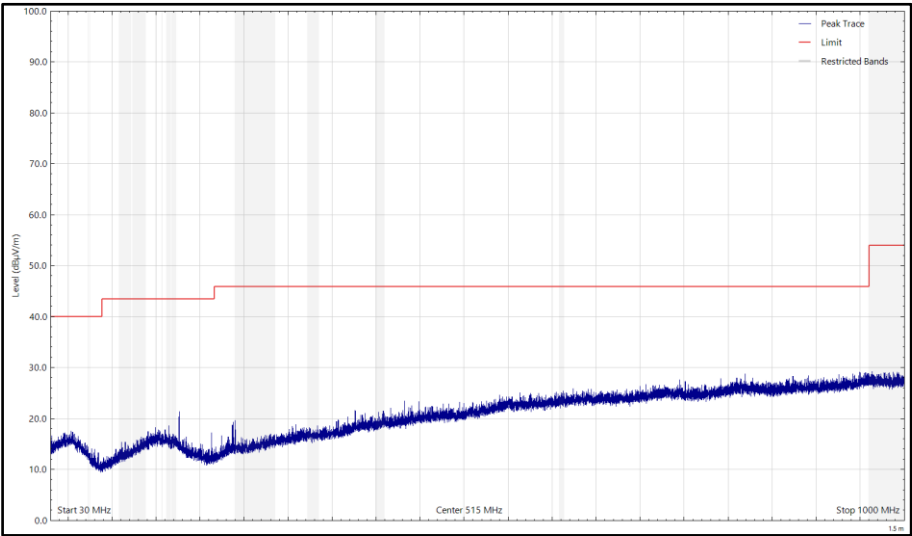


Figure 26 - CH37_LE2M_Y, 2404 MHz, 30 MHz to 1 GHz, Vertical (Peak)

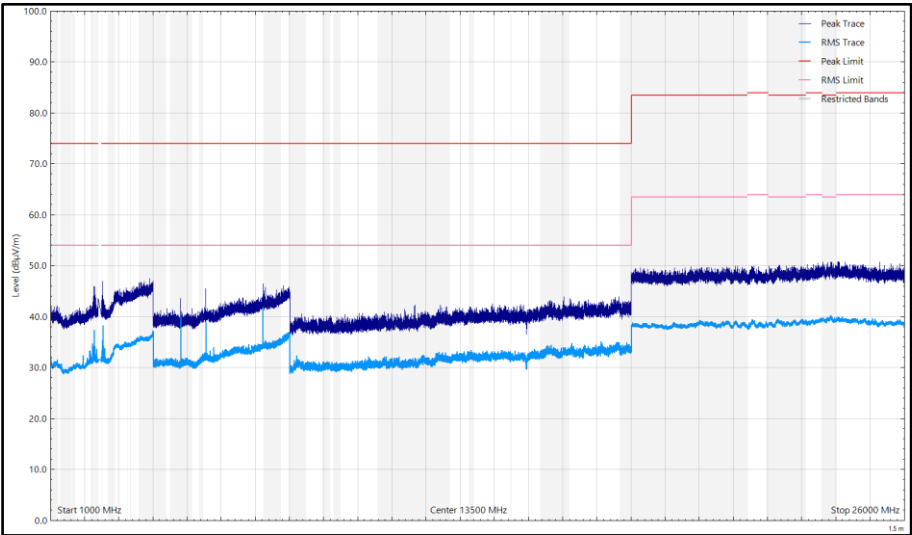


Figure 27 - CH37_LE2M_Y, 2404 MHz, 1 GHz to 26 GHz, Vertical



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

Table 40 - CH37_LE2M_Z, 2404 MHz, 30 MHz to 26 GHz

*No emissions found within 10 dB of the limit.

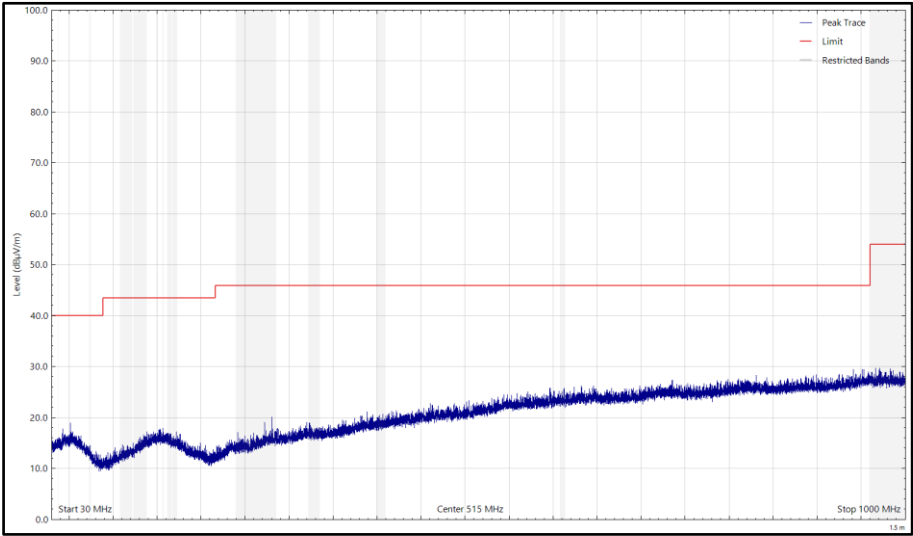


Figure 28 - CH37_LE2M_Z, 2404 MHz, 30 MHz to 1 GHz, Horizontal (Peak)

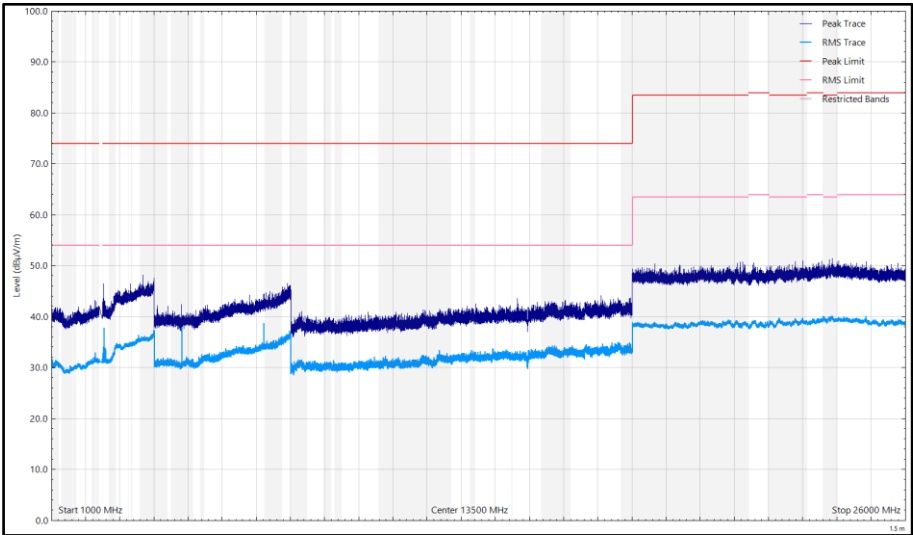


Figure 29 - CH37_LE2M_Z, 2404 MHz, 1 GHz to 26 GHz, Horizontal

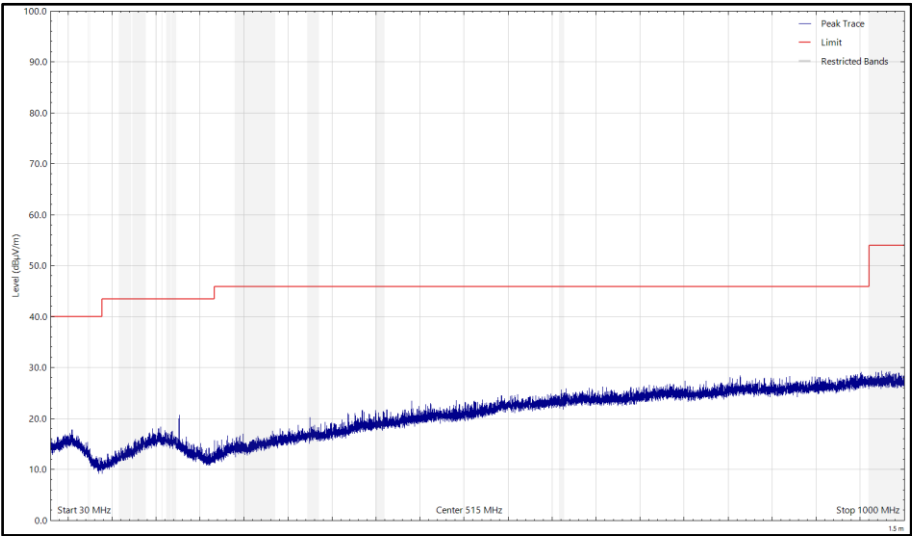


Figure 30 - CH37_LE2M_Z, 2404 MHz, 30 MHz to 1 GHz, Vertical (Peak)

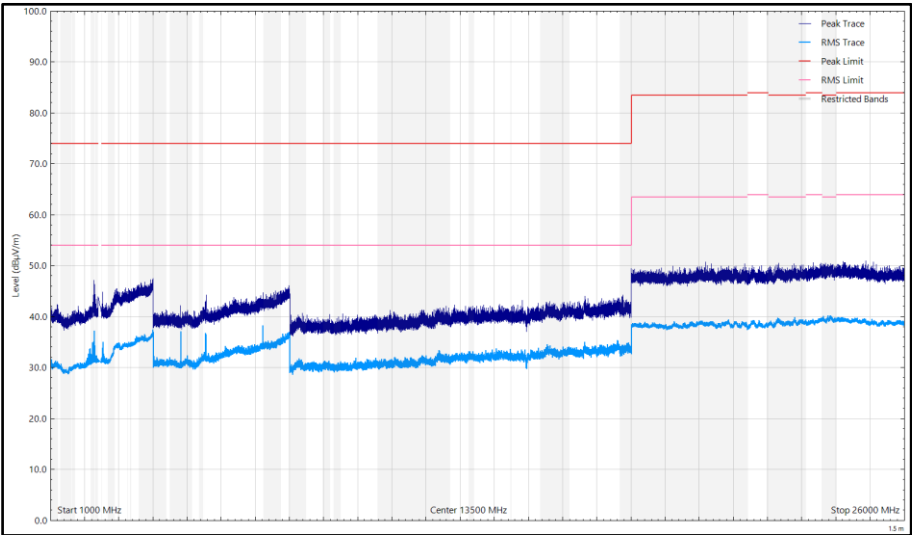


Figure 31 - CH37_LE2M_Z, 2404 MHz, 1 GHz to 26 GHz, Vertical



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

Table 41 - CH17_LE2M_X, 2440 MHz, 30 MHz to 26 GHz

*No emissions found within 10 dB of the limit.

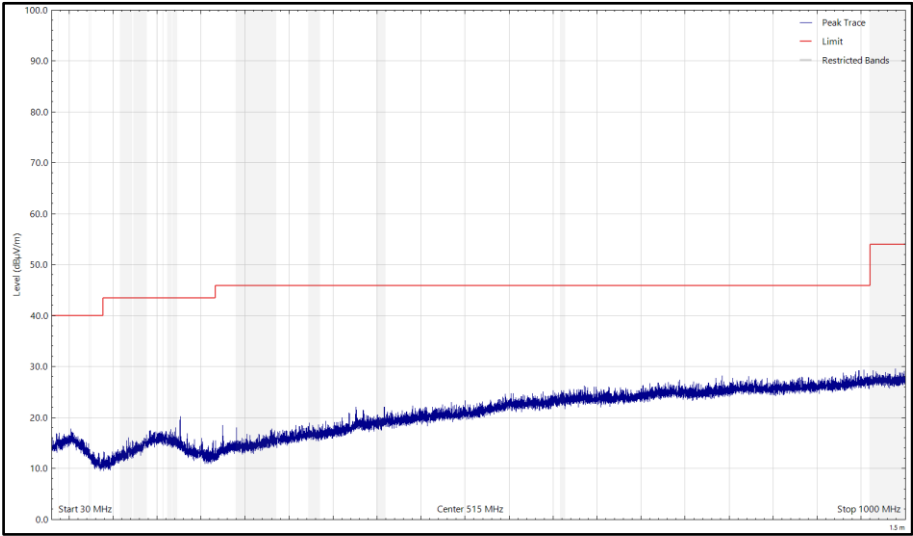


Figure 32 - CH17_LE2M_X, 2440 MHz, 30 MHz to 1 GHz, Horizontal (Peak)

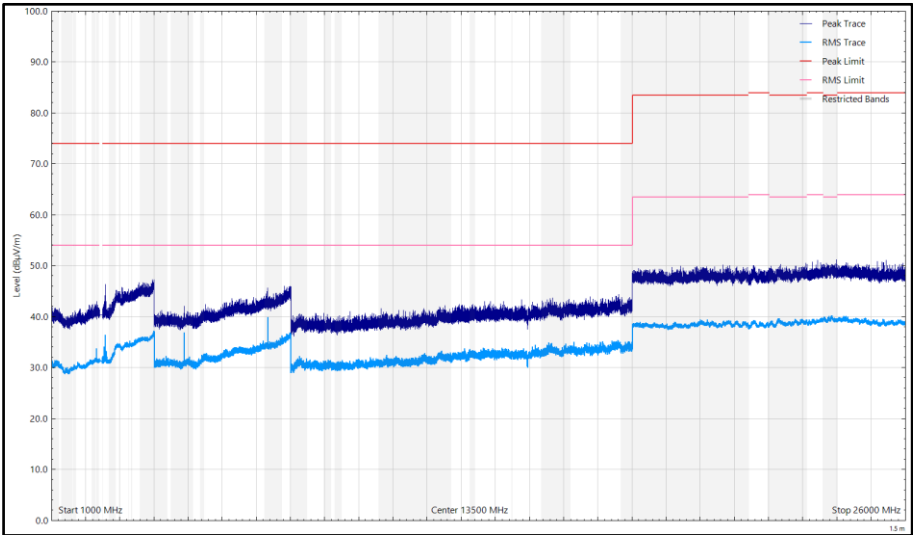


Figure 33 - CH17_LE2M_X, 2440 MHz, 1 GHz to 26 GHz, Horizontal

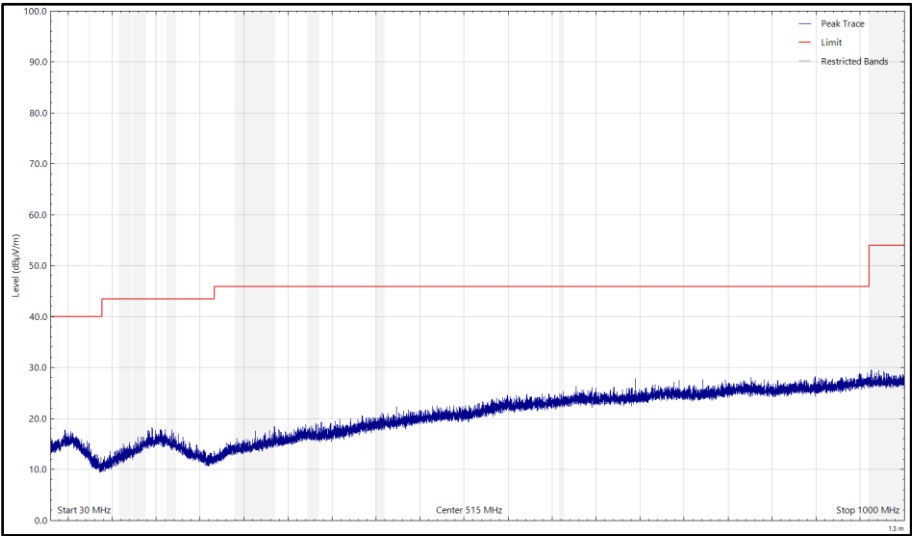


Figure 34 - CH17_LE2M_X, 2440 MHz, 30 MHz to 1 GHz, Vertical (Peak)

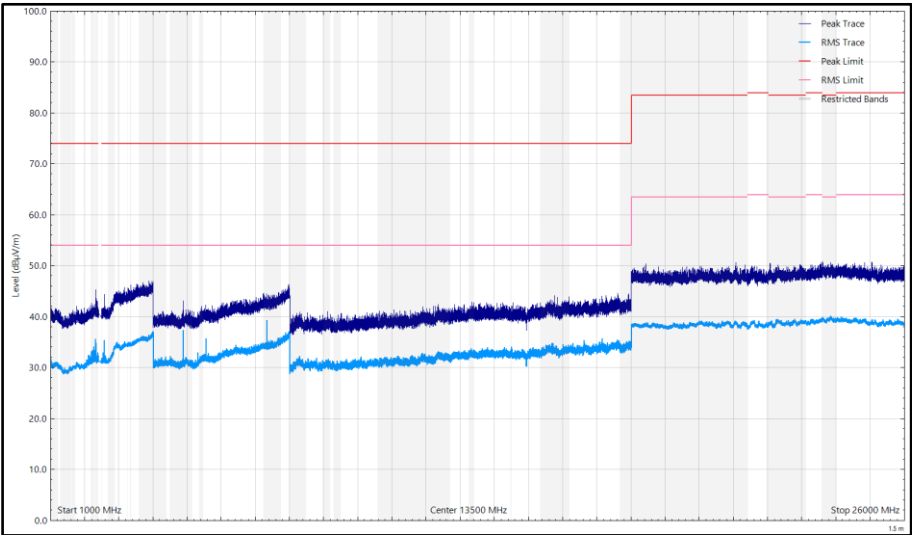


Figure 35 - CH17_LE2M_X, 2440 MHz, 1 GHz to 26 GHz, Vertical



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

Table 42 - CH17_LE2M_Y, 2440 MHz, 30 MHz to 26 GHz

*No emissions found within 10 dB of the limit.

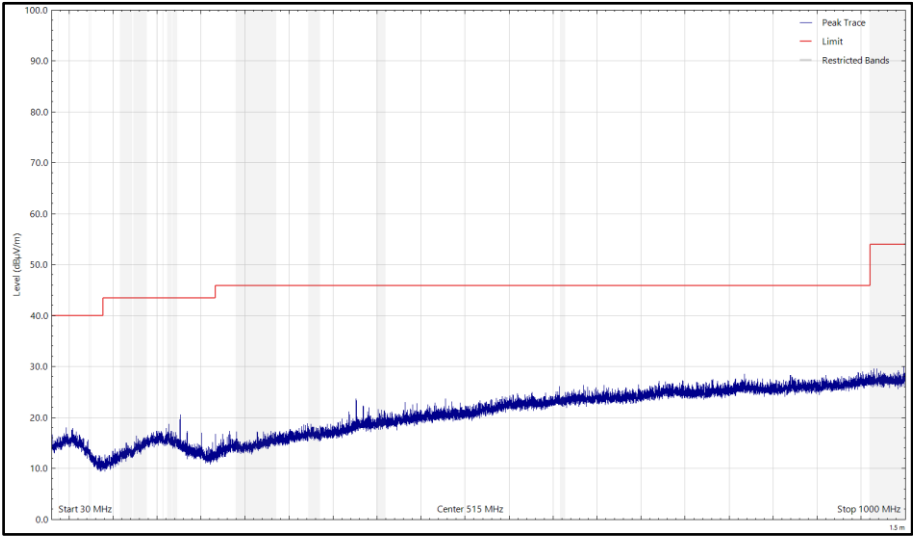


Figure 36 - CH17_LE2M_Y, 2440 MHz, 30 MHz to 1 GHz, Horizontal (Peak)

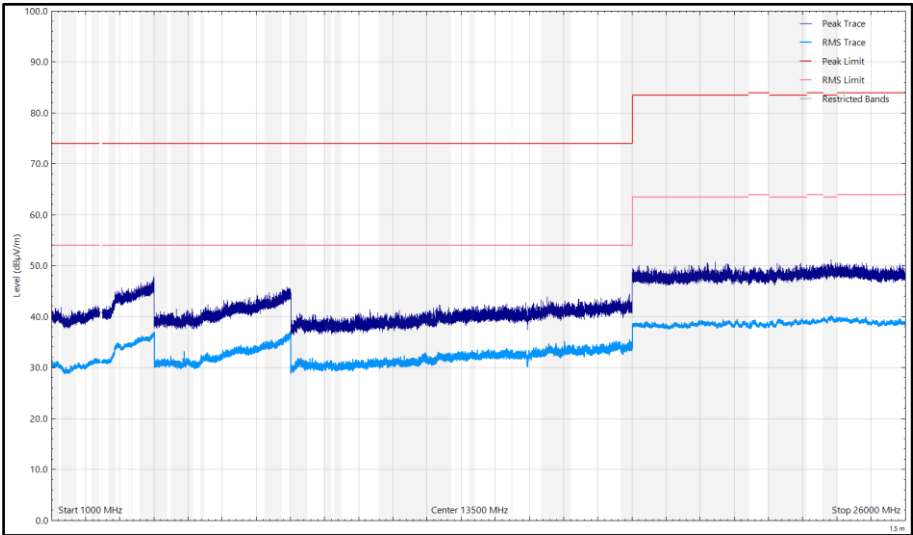


Figure 37 - CH17_LE2M_Y, 2440 MHz, 1 GHz to 26 GHz, Horizontal

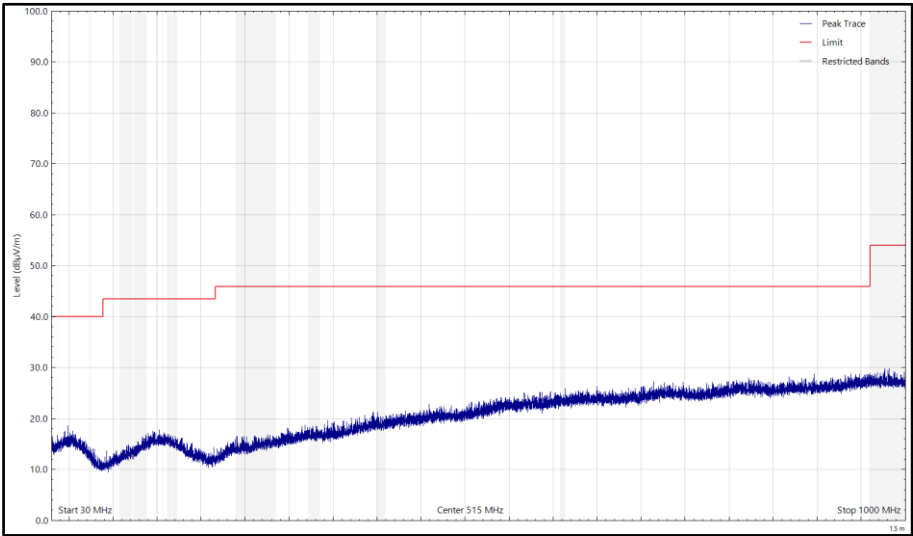


Figure 38 - CH17_LE2M_Y, 2440 MHz, 30 MHz to 1 GHz, Vertical (Peak)

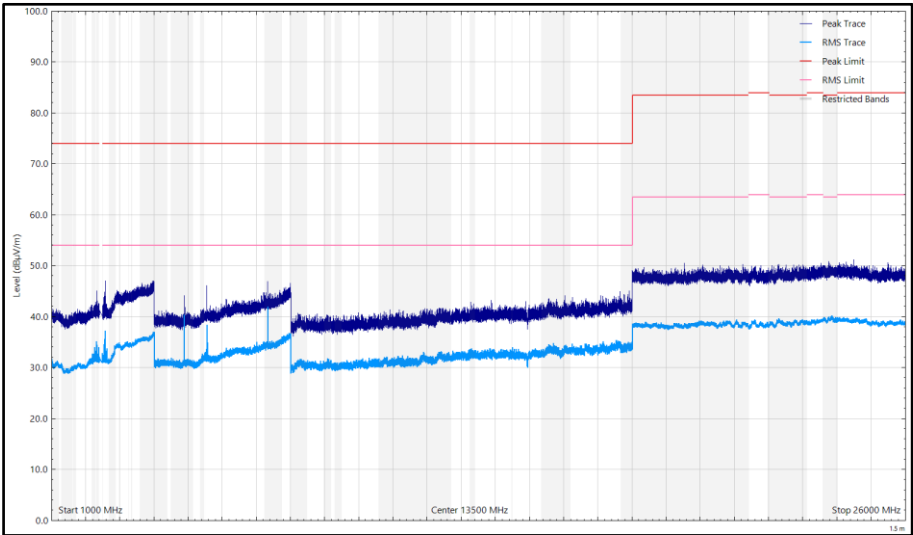


Figure 39 - CH17_LE2M_Y, 2440 MHz, 1 GHz to 26 GHz, Vertical



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

Table 43 - CH17_LE2M_Z, 2440 MHz, 30 MHz to 26 GHz

*No emissions found within 10 dB of the limit.

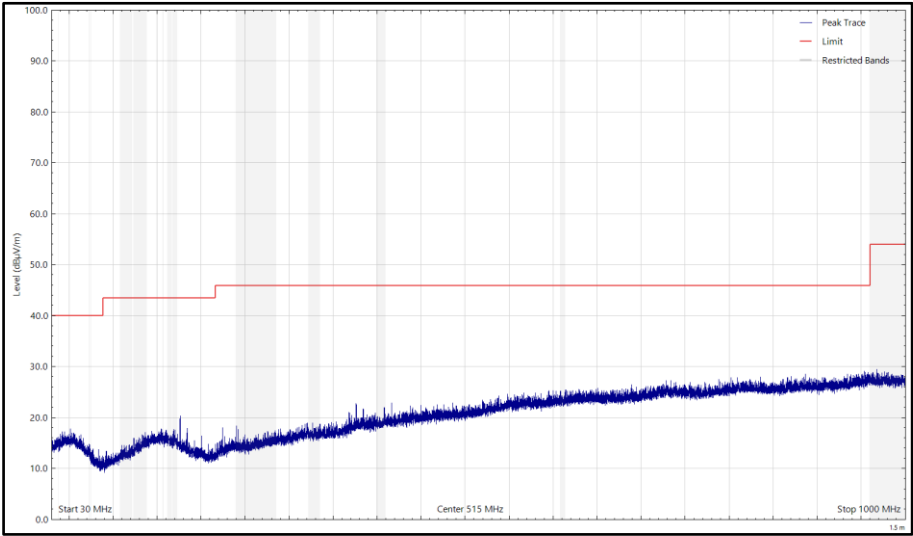


Figure 40 - CH17_LE2M_Z, 2440 MHz, 30 MHz to 1 GHz, Horizontal (Peak)

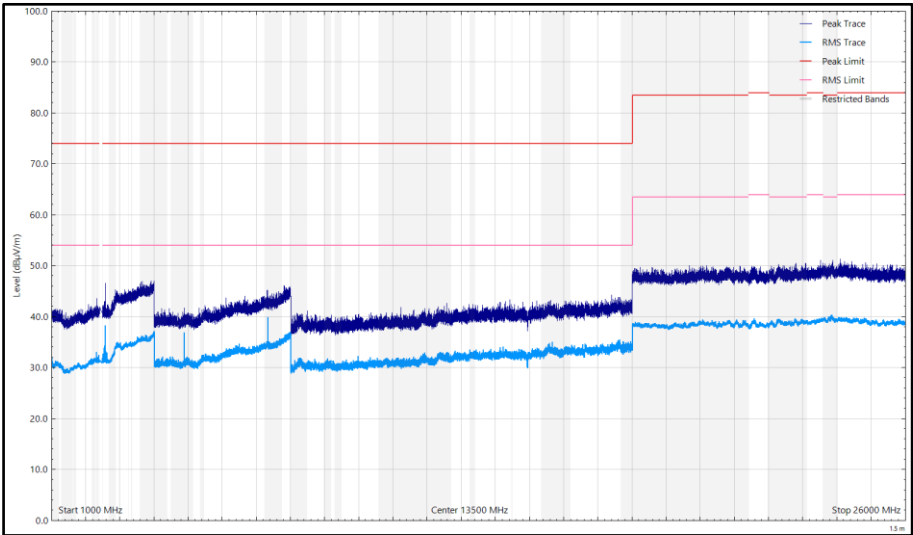


Figure 41 - CH17_LE2M_Z, 2440 MHz, 1 GHz to 26 GHz, Horizontal

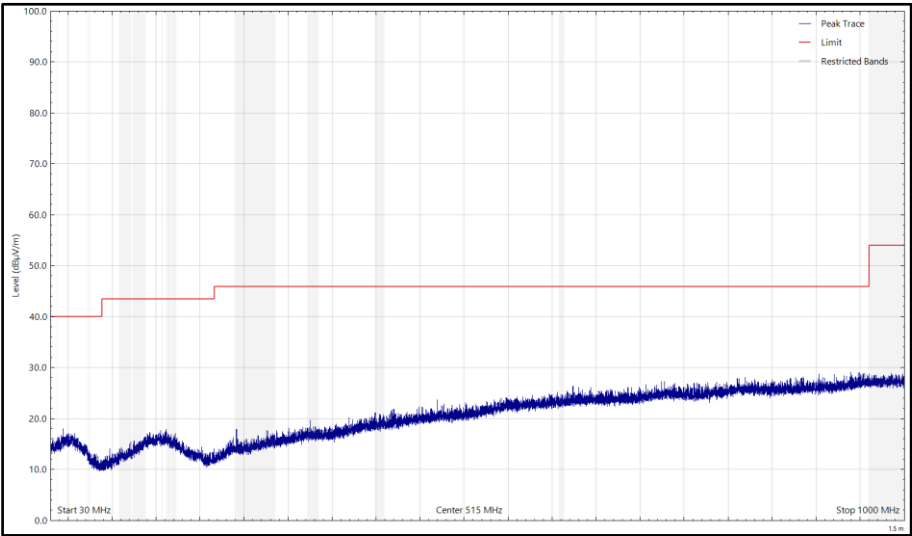


Figure 42 - CH17_LE2M_Z, 2440 MHz, 30 MHz to 1 GHz, Vertical (Peak)

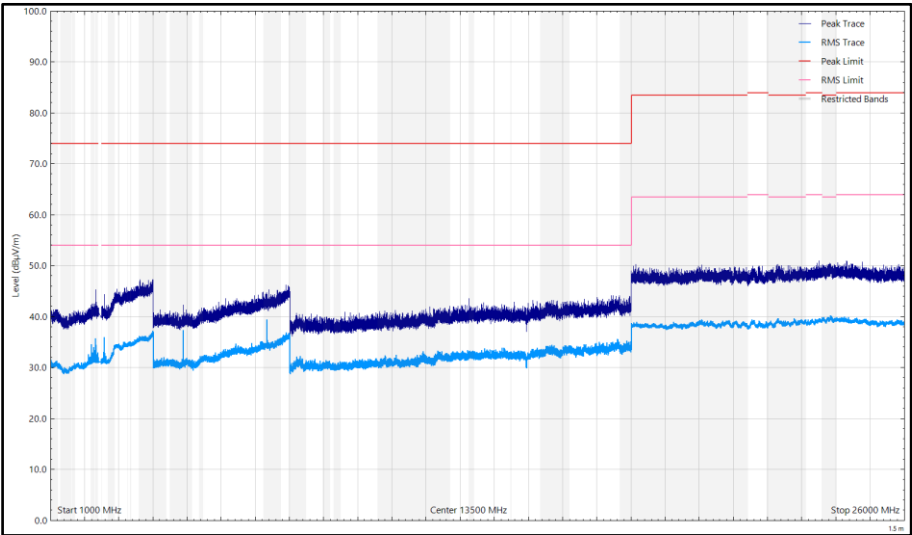


Figure 43 - CH17_LE2M_Z, 2440 MHz, 1 GHz to 26 GHz, Vertical



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

Table 44 - CH39_LE2M_X, 2480 MHz, 30 MHz to 26 GHz

*No emissions found within 10 dB of the limit.

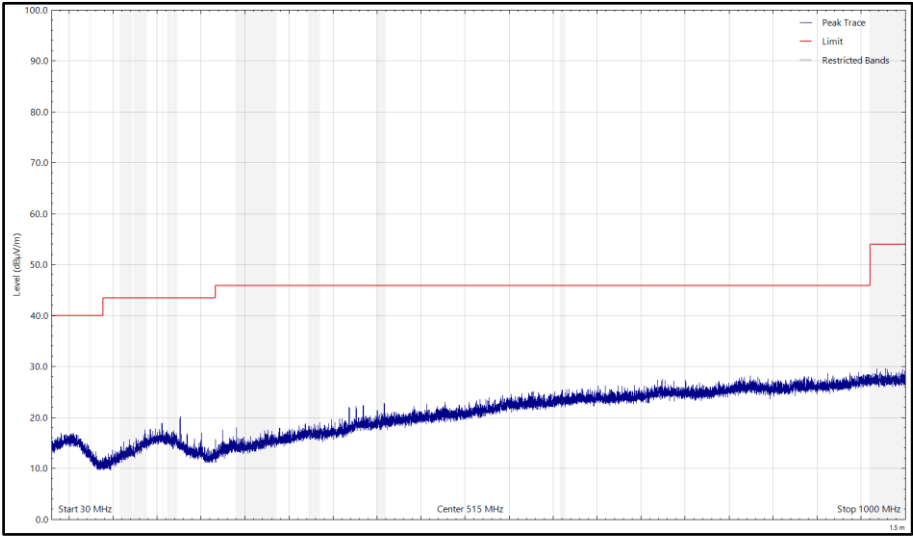


Figure 44 - CH39_LE2M_X, 2480 MHz, 30 MHz to 1 GHz, Horizontal (Peak)

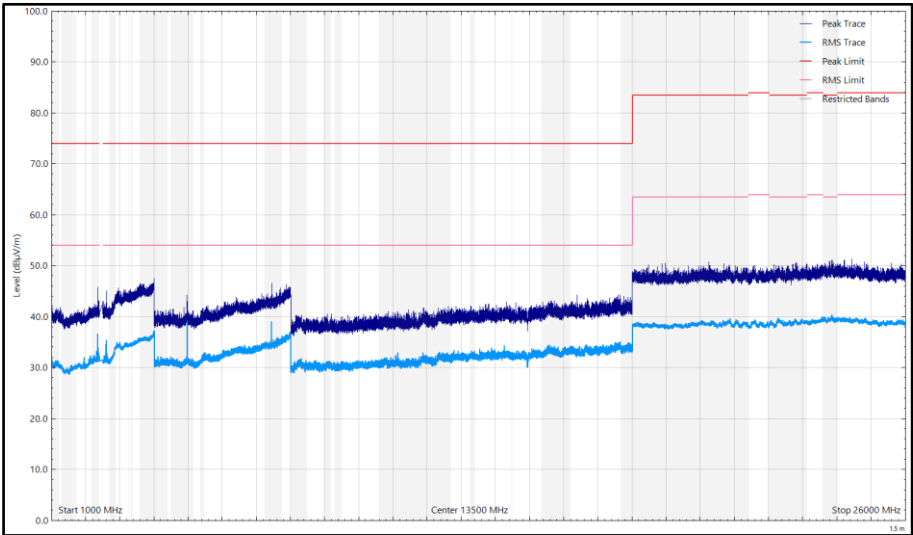


Figure 45 - CH39_LE2M_X, 2480 MHz, 1 GHz to 26 GHz, Horizontal

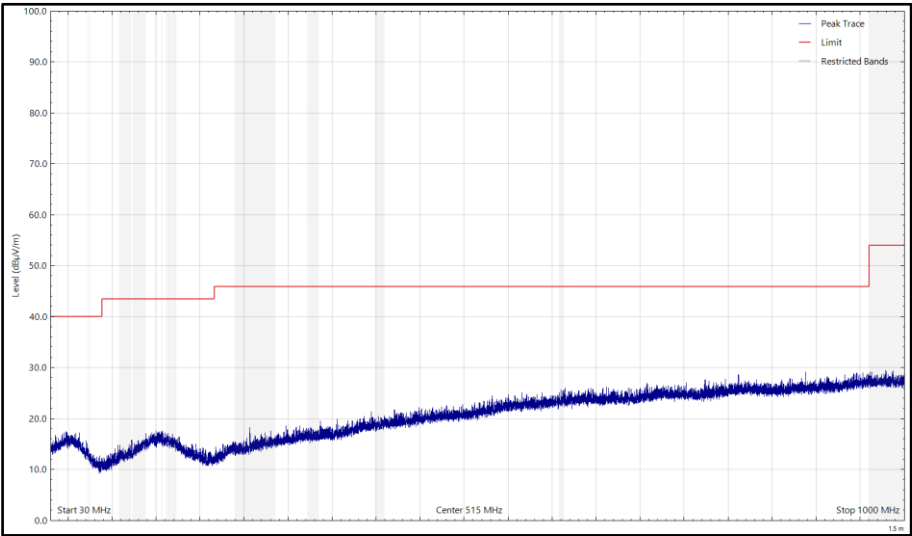


Figure 46 - CH39_LE2M_X, 2480 MHz, 30 MHz to 1 GHz, Vertical (Peak)

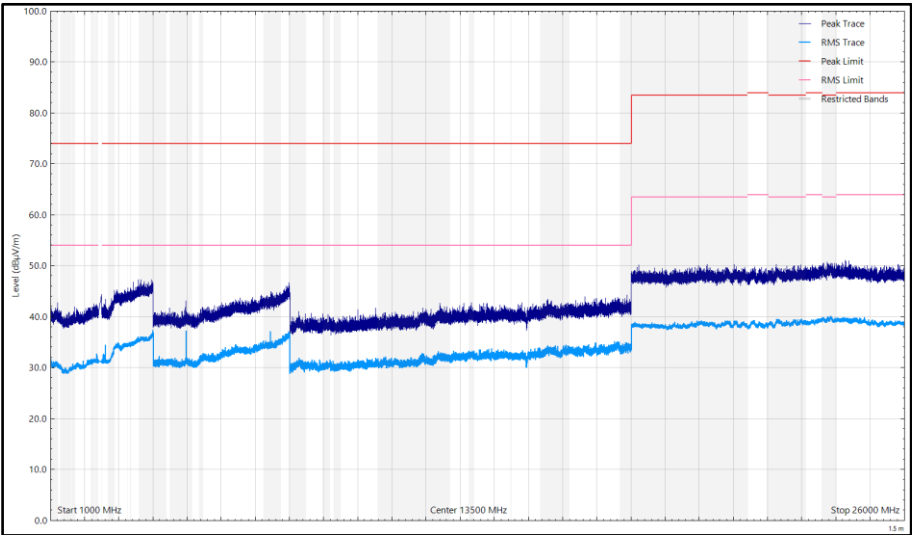


Figure 47 - CH39_LE2M_X, 2480 MHz, 1 GHz to 26 GHz, Vertical



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

Table 45 - CH39_LE2M_Y, 2480 MHz, 30 MHz to 26 GHz

*No emissions found within 10 dB of the limit.

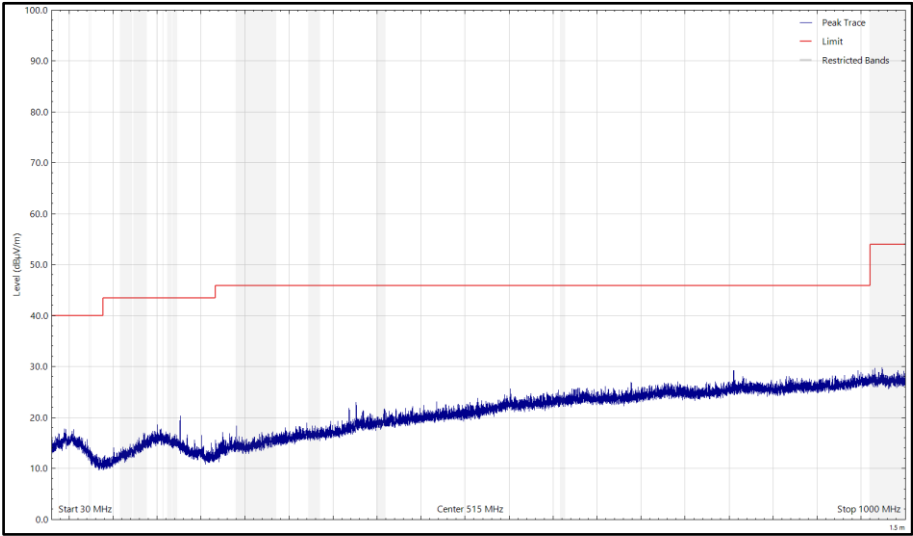


Figure 48 - CH39_LE2M_Y, 2480 MHz, 30 MHz to 1 GHz, Horizontal (Peak)

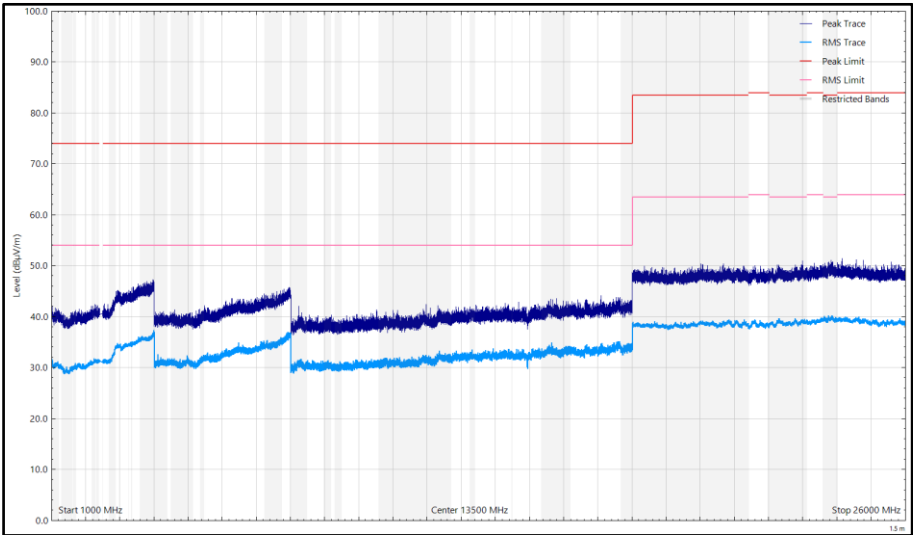


Figure 49 - CH39_LE2M_Y, 2480 MHz, 1 GHz to 26 GHz, Horizontal

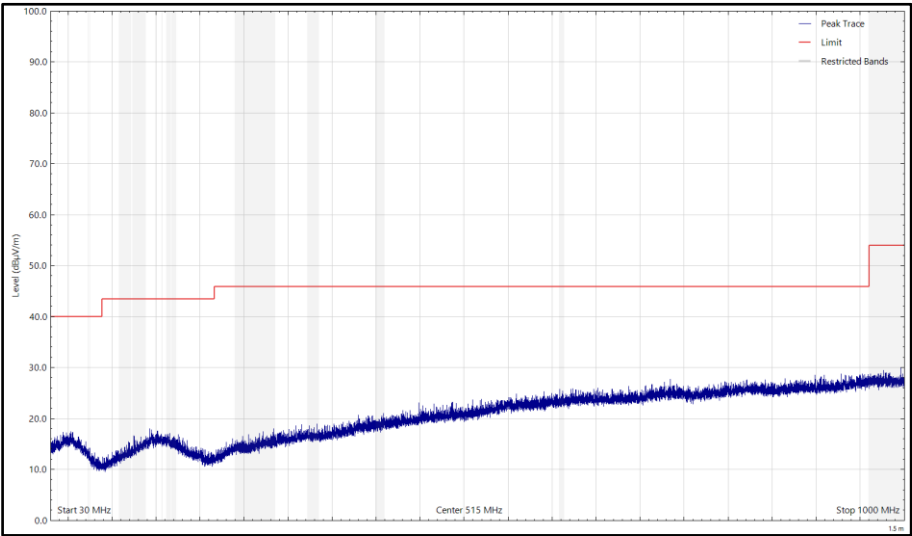


Figure 50 - CH39_LE2M_Y, 2480 MHz, 30 MHz to 1 GHz, Vertical (Peak)

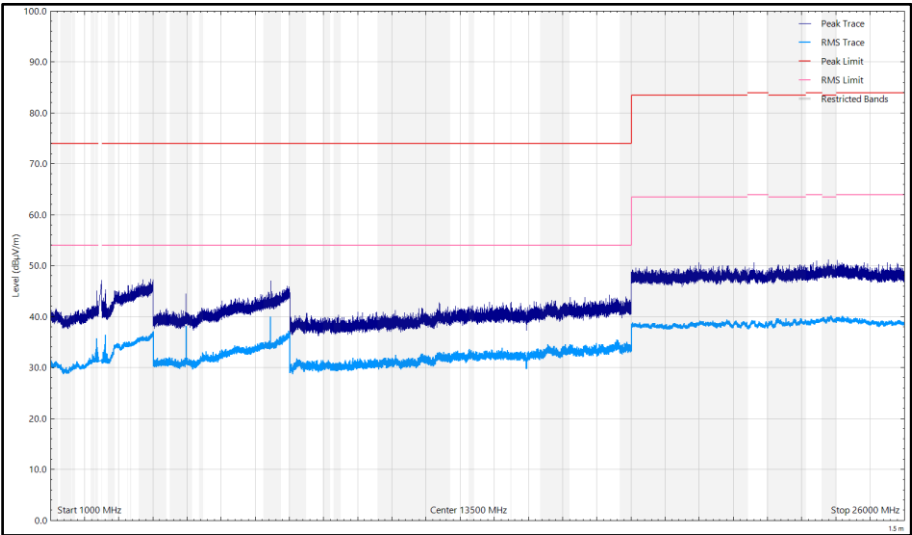


Figure 51 - CH39_LE2M_Y, 2480 MHz, 1 GHz to 26 GHz, Vertical



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

Table 46 - CH39_LE2M_Z, 2480 MHz, 30 MHz to 26 GHz

*No emissions found within 10 dB of the limit.

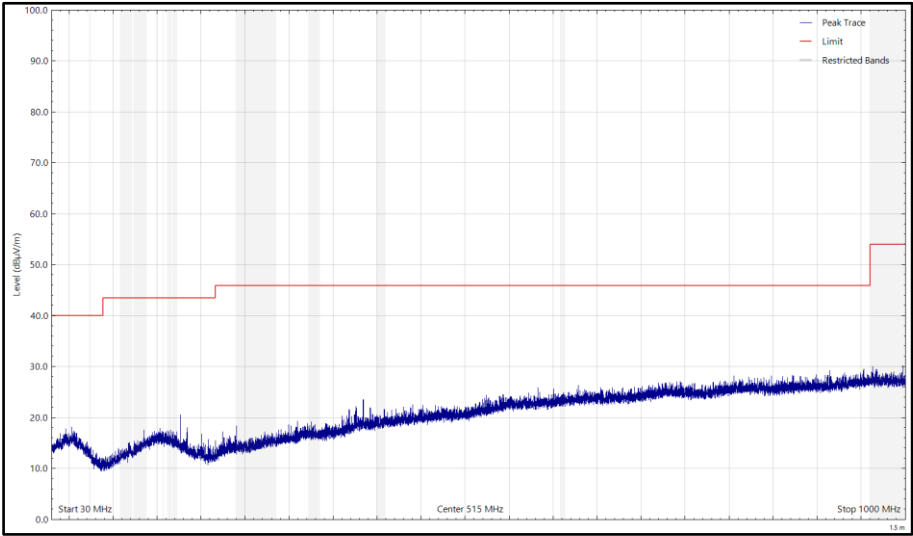


Figure 52 - CH39_LE2M_Z, 2480 MHz, 30 MHz to 1 GHz, Horizontal (Peak)

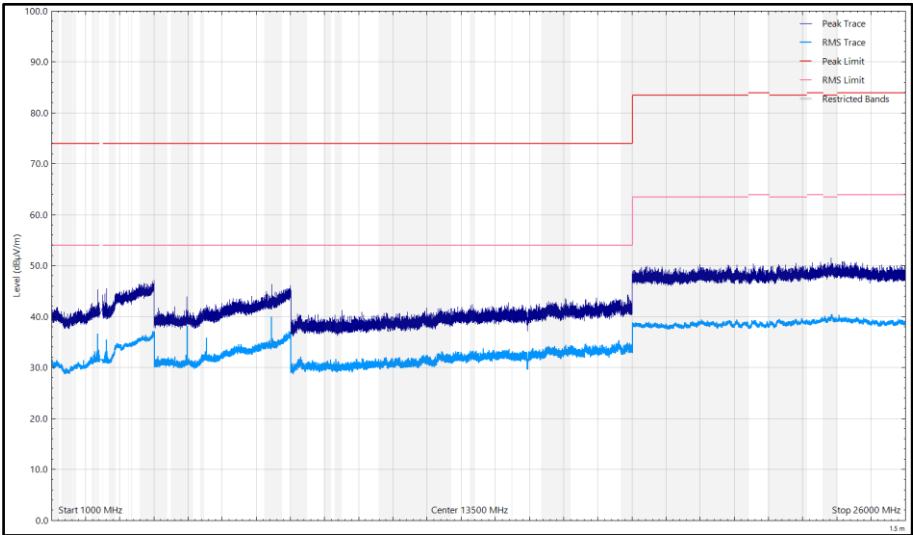


Figure 53 - CH39_LE2M_Z, 2480 MHz, 1 GHz to 26 GHz, Horizontal

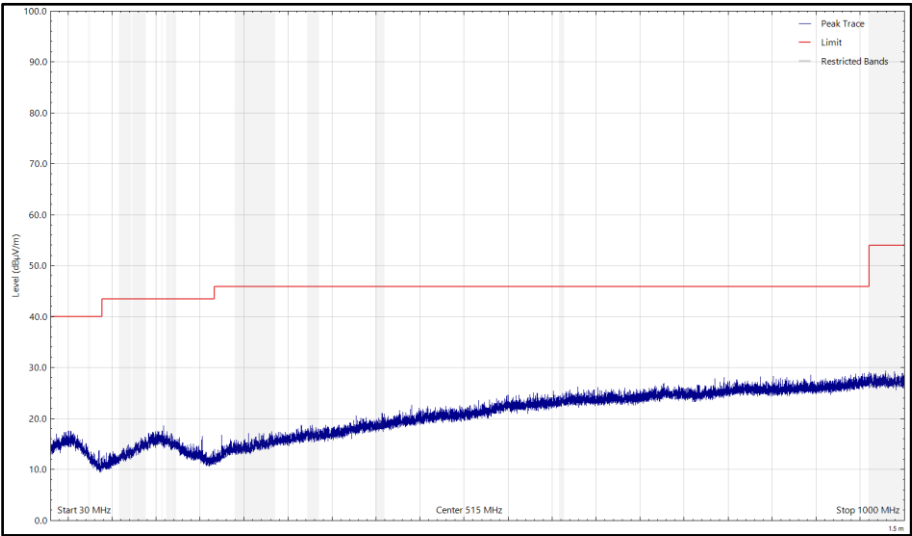


Figure 54 - CH39_LE2M_Z, 2480 MHz, 30 MHz to 1 GHz, Vertical (Peak)

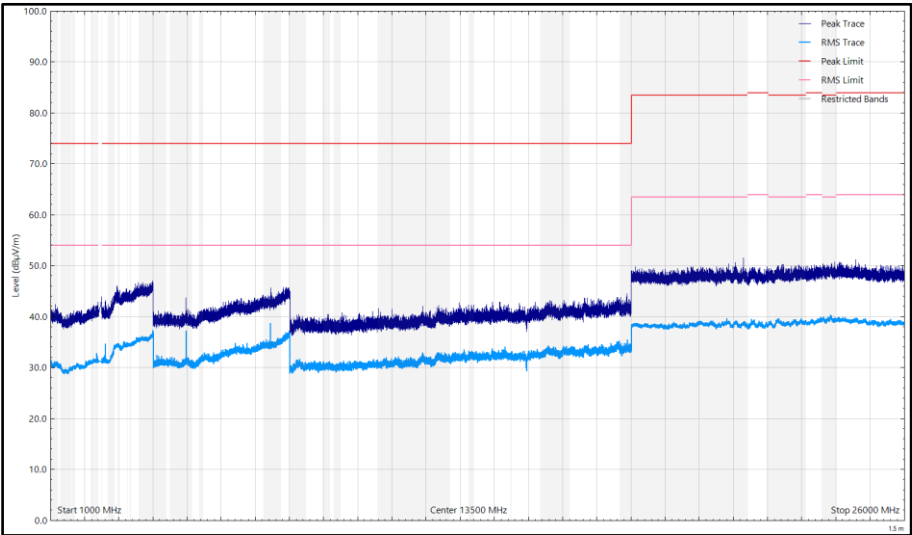


Figure 55 - CH39_LE2M_Z, 2480 MHz, 1 GHz to 26 GHz, Vertical

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

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in 15.209(a)

ISED RSS-247, Limit Clause 6.6

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 6.3.2, 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.

In addition, radiated emissions which fall in the restricted bands, as defined in RSS-GEN, clause 8.10, must also comply with the radiated emission limits specified in RSS-GEN clause 8.9.

2.9.8 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 5.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Antenna (DRG, 18 GHz to 40 GHz)	Link Microtek Ltd	AM180HA-K-TU2	230	24	08-Oct-2026
Pre-Amplifier (18 GHz to 40 GHz)	Phase One	PSO4-0087	1534	12	20-Oct-2026
3m Semi-Anechoic Chamber	Rainford	RF Chamber 5	1545	36	23-Apr-2027
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
True RMS Multimeter	Fluke	179	4007	12	10-Dec-2025
Hygrometer	Rotronic	HP21	4741	12	29-May-2026
Mast Controller	Maturo GmbH	NCD	4810	-	TU
Tilt Antenna Mast	Maturo GmbH	TAM 4.0-P	4811	-	TU
Antenna (DRG, 1 GHz to 10.5 GHz)	Schwarzbeck	BBHA9120B	4848	12	05-Jul-2026
Test Receiver	Rohde & Schwarz	ESW44	5084	12	13-Dec-2025
Emissions Software	TUV SUD	EmX V3.5.5	5125	-	Software



Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Antenna (DRG, 1 GHz to 10.5 GHz)	Schwarzbeck	BBHA9120B	5215	12	05-Jul-2026
Antenna (DRG, 7.5 GHz to 18 GHz)	Schwarzbeck	HWRD750	5216	12	12-Jul-2026
3 GHz High pass filter	Wainwright	WHKX12-2580-3000-18000-80SS	5220	12	04-Apr-2026
Pre-amplifier (30 dB, 1GHz to 18GHz)	Schwarzbeck	BBV 9718 C	5261	12	17-Apr-2026
Cable 2.92m	Junkosha	MWX241-01000KMS	5412	12	06-Jun-2026
Signal Analyzer	Keysight Technologies	PXA N9030B	5432	12	19-Aug-2026
Cable (SMA to SMA, 2 m)	Junkosha	MWX221-02000AMSAMS/A	5517	12	06-Jun-2026
7 GHz High pass Filter	Wainwright	WHKX12-5850-6800-18000-80SS	5550	12	30-May-2026
Power Supply	TTI	EX355R	5573	-	TU
Pre-Amplifier (8 GHz to 18 GHz)	Wright Technologies	APS06-0061	5596	12	28-Oct-2025
Cable (K-Type to K-Type, 2 m)	Junkosha	MWX241-02000KMSKMS/B	5934	12	12-Jun-2026
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9168	6635	24	25-Jul-2027
Cable (N-Type to N-Type, 8 m)	Scott Cables	SCB800-A-NMNM-08.00M	6719	6	12-Dec-2025

Table 47

TU - Traceability Unscheduled



2.10 Power Spectral Density

2.10.1 Specification Reference

FCC 47 CFR Part 15C: Clause 15.247 (e)
ISED RSS-247: 6.3
ISED RSS-GEN: 6.12

2.10.2 Equipment Under Test and Modification State

RUP60, S/N: AK3R99 - Modification State 0

2.10.3 Date of Test

04-November-2025

2.10.4 Test Method

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

The EUT was powered by fresh 2x 1.5 V AA batteries.

2.10.5 Environmental Conditions

Ambient Temperature	20.9 °C
Relative Humidity	53.8 %



2.10.6 Test Results

2.4GHz - DTS

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 6.3	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	2 MB/s DTS	Duty Cycle (%):	43.4
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	C (Pigtail Connector)	Peak Antenna Gain (dBi):	-7.25

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	Σ		
2404	3.0	-	-	-11.16	-	-	8.00	-19.16
2442	3.0	-	-	-11.61	-	-	8.00	-19.61
2480	3.0	-	-	-9.83	-	-	8.00	-17.83

Table 48 - 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 6.3.1

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

2.10.7 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-Mar-2026
MXA Signal Analyser	Keysight Technologies	N9020B	5528	24	10-Sep-2027
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6350	12	02-Sep-2026
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	7137	12	29-Aug-2026

Table 49

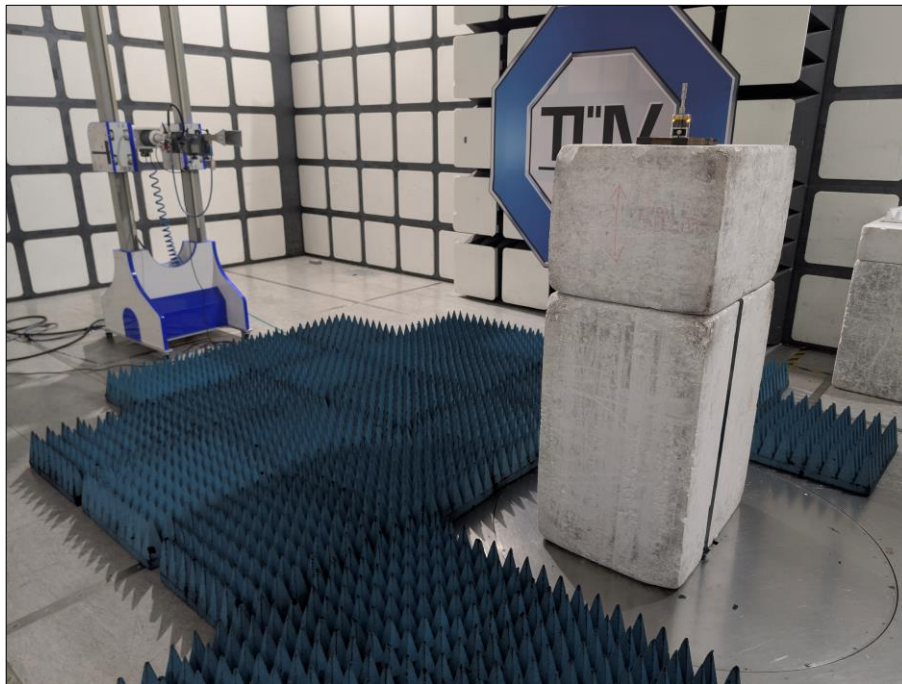


Figure 58 - Test Setup - 8 GHz to 18 GHz

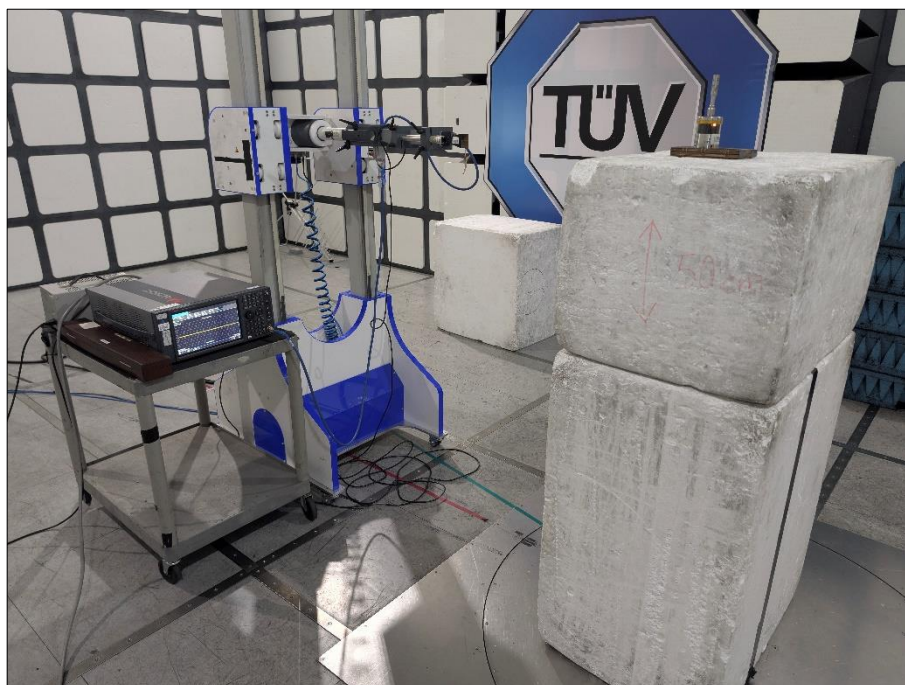


Figure 59 - Test Setup - 18 GHz to 26 GHz

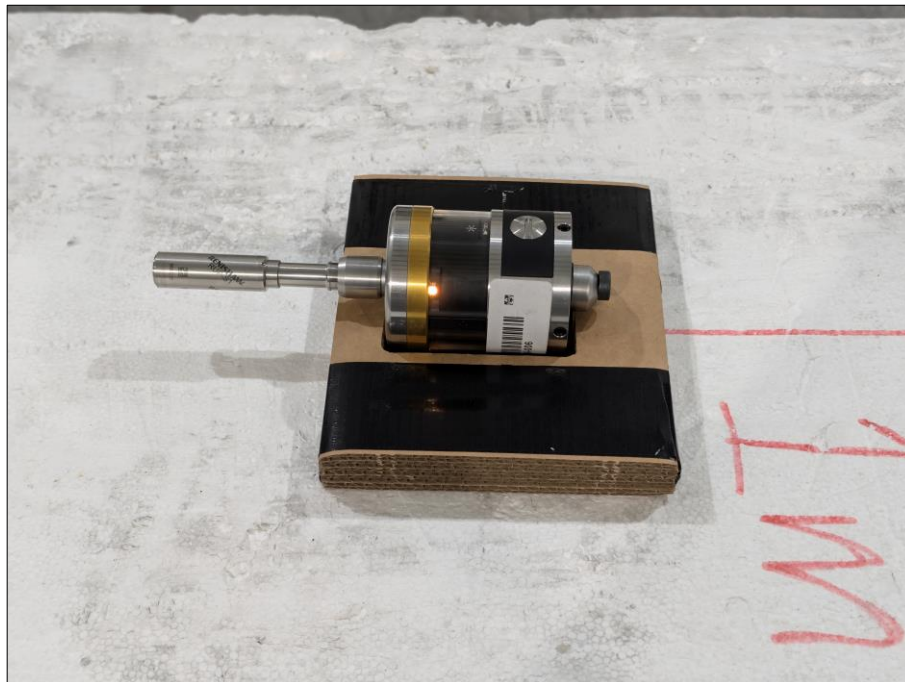


Figure 60 - Test Setup – X Orientation

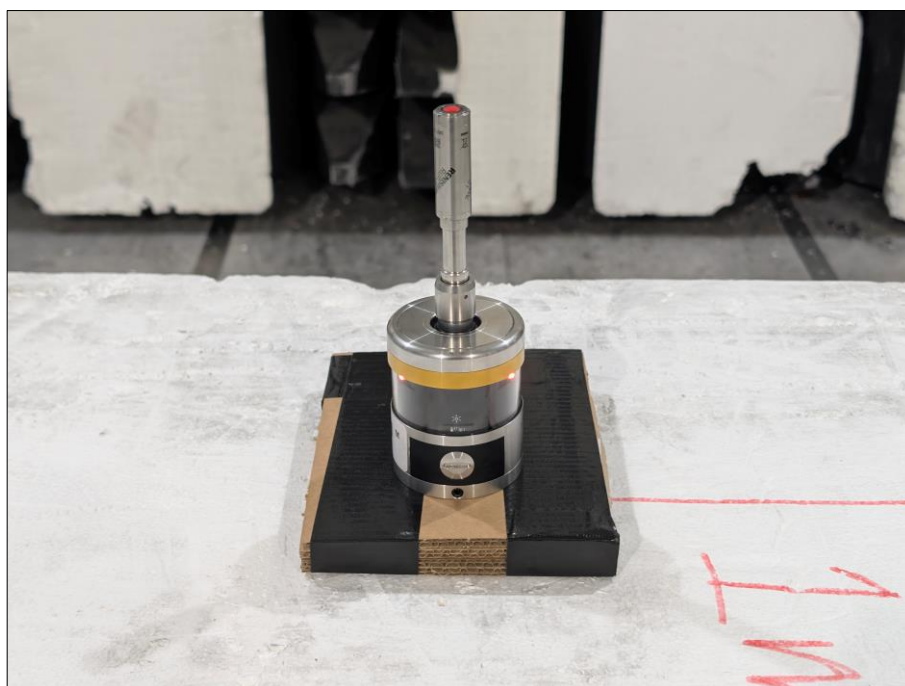


Figure 61 - Test Setup – Y Orientation

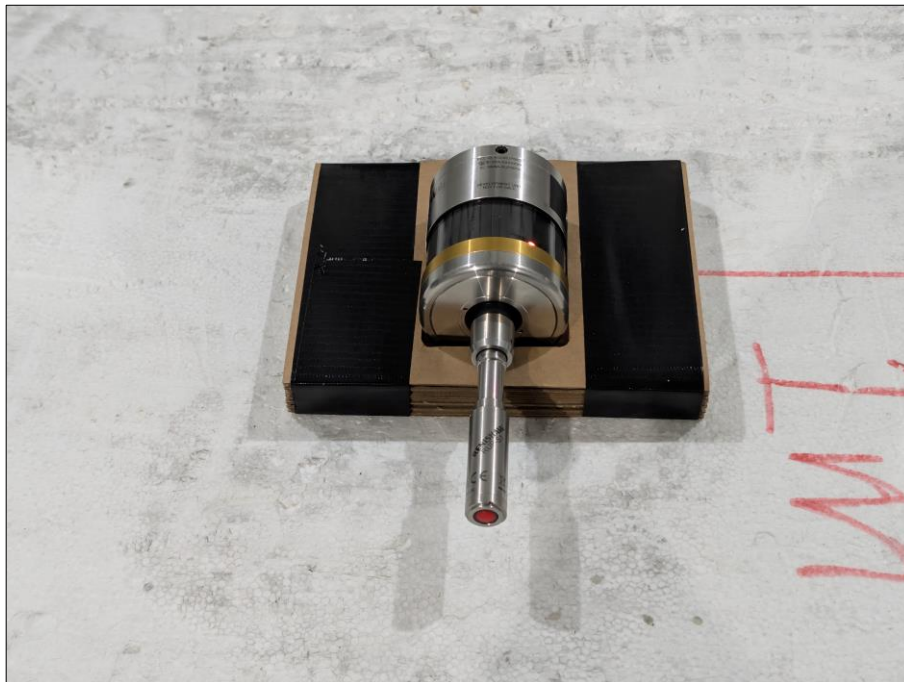


Figure 62 - Test Setup – Y Orientation

4 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

Test Name	Measurement Uncertainty
Frequency Hopping Systems - Average Time of Occupancy	-
Frequency Hopping Systems - Channel Separation	± 25.90 kHz
Frequency Hopping Systems - Number of Hopping Channels	-
Frequency Hopping Systems - 20 dB Bandwidth	± 25.90 kHz
Maximum Conducted Output Power	Method PM: ± 0.65 dB Method SA: ± 1.05 dB
Authorised Band Edges	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
Restricted Band Edges	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
Emission Bandwidth	± 42.87 kHz
Spurious Radiated Emissions	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
Power Spectral Density	± 1.00 dB

Table 50

Measurement Uncertainty Decision Rule

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115:2021, Clause 4.4.3 (Procedure 2). The measurement results are directly compared with the test limit to determine conformance with the requirements of the standard.

Risk: The uncertainty of measurement about the measured result is negligible with regard to the final pass/fail decision. The measurement result can be directly compared with the test limit to determine conformance with the requirement (compare IEC Guide 115). The level of risk to falsely accept and falsely reject items is further described in ILAC-G8.