

FCC and ISED Test Report

Manufacturer: Danfoss A/S
Model: AK-CC25 Pro BT

In accordance with FCC 47 CFR Part 15C and ISED RSS-247 and ISED RSS-GEN
Technology: (2.4 GHz Bluetooth Low Energy)



Add value.
Inspire trust.

Prepared for: Danfoss A/S
Nordborgvej 81
6430 Nordborg
Denmark

FCC ID: 2ATXJ-AKCC25
IC: 25253-AKCC25

COMMERCIAL-IN-CONFIDENCE
Document 75965025-01 Issue 02

SIGNATURE			
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Steve Marshall	Senior Engineer	Authorised Signatory	17 June 2026
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RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Wenceslao Acosta Carrazco	17 June 2026	
	Thomas Biddlecombe	17 June 2026	
	Mohiuddin Mohammed	17 June 2026	

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.

FCC Accreditation: 492497/UK2010 Octagon House, Fareham Test Laboratory
ISED Accreditation: 12669A/UK0003 Octagon House, Fareham Test Laboratory

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Contents

1 **Report Summary2**

1.1 Report Modification Record.....2

1.2 Introduction.....3

1.3 Brief Summary of Results4

1.4 Customer Supplied Form5

1.5 Product Information9

1.6 Deviations from the Standard.....9

1.7 EUT Modification Record9

1.8 Test Location 10

2 **Test Details 11**

2.1 Restricted Band Edges..... 11

2.2 AC Line Power Conducted Emissions 16

2.3 Emission Bandwidth 23

2.4 Maximum Conducted Output Power 29

2.5 Authorised Band Edges 32

2.6 Spurious Radiated Emissions 35

2.7 Power Spectral Density 46

3 **Photographs 49**

4 **Measurement Uncertainty 52**



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	15-September-2025
02	Addition of AC Line Conducted Emissions, corrected Part 15C to 2024 and RSS-247 updated to Issue 4	17-Jun-2026

Table 1



1.2 Introduction

Applicant	Danfoss A/S
Manufacturer	Danfoss A/S Nordborgvej 81, 6430, Syddanmark, Nordborg, DENMARK
Model Number(s)	AK-CC25 Pro BT
Hardware Version Identification Number (HVIN)	084B4023 and 084B4025
Manufacturer Declared Variant(s)	AK-CC25 Pro BT AK-CC25 Ultra BT
Serial Number(s)	Not serialized (FAR 936821 - 002) Not serialized (FAR 936821 - 003) Not Serialized (FAR 1035826-002)
Hardware Version(s)	PV1.0
Software Version(s)	EMC SW v1.03
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	4410810859
Date	23-June-2025
Date of Receipt of EUT	14-July-2025
Start of Test	29-July-2025
Finish of Test	26-May-2026
Name of Engineer(s)	Wenceslao Acosta Carrazco, Thomas Biddlecombe, Mohiuddin Mohammed and Ahmad Javid
Related Document(s)	ANSI C63.10 (2020)



1.3 Brief Summary of Results

A 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: AC Powered -						
2.1	15.205	2.4	8.10	Restricted Band Edges	Pass	ANSI C63.10 (2020)
2.2	15.207	2.4	8.8	AC Power Line Conducted Emissions	Pass	ANSI C63.10 (2020)
2.2	15.247 (a)(2)	6.3.1	6.7	Emission Bandwidth	Pass	ANSI C63.10 (2020)
2.3	15.247 (b)	6.3.2	6.12	Maximum Conducted Output Power	Pass	ANSI C63.10 (2020)
2.4	15.247 (d)	6.6	N/A	Authorised Band Edges	Pass	ANSI C63.10 (2020)
2.5	15.247 (d) and 15.209	2.4 and 6.6	6.13 and 8.9	Spurious Radiated Emissions	Pass	ANSI C63.10 (2020)
2.6	15.247 (e)	6.3.1	6.12	Power Spectral Density	Pass	ANSI C63.10 (2020)
2.7	15.203			Antenna Requirement	N/T	The device complies with the provisions of this section, as it uses a single permanently attached integral antenna.

Table 2

A gap analysis between ISED RSS-247 Issue 3 to ISED RSS-247 Issue 4 was performed and it was confirmed there were no changes to the requirements related to the testing performed prior to the release of ISED RSS-247 Issue 4.



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>	AK-CC25 variants is Complete refrigeration appliance control with flexibility to adapt to refrigeration appliances and cold storage rooms. The controller with Bluetooth contains a *Renesas' ultra-low power, BLE-protocol, wireless MCU, DA14531. The controller contains all required passive components, including a 32 MHz crystal and a Stamped metal PCB antenna. All variants is based on same PCB layout and BLE circuit		
Manufacturer:	Danfoss A/S Nordborgvej 81 6430, Syddanmark Nordborg DENMARK		
Model:	AK-CC25 Pro BT (description: Case controller, 4 relay, BLE, Pro Software) AK-CC25 Ultra BT (description: Case controller, SSR, 3 relay, BLE, Ultra Software)# #- same HW, 3 relay and 1 SSR model, SW different. Note: PCB remains the same for all variants, the population of components will vary based on the model.		
Hardware Version Identification Number <i>The HVIN identifies hardware specification of a product version</i>	084B4023 and 084B4025		
Part Number:	084B4023 AK-CC25 Pro BT 084B4025AK-CC25 Ultra BT		
Hardware Version: <i>May be same as HVIN</i>	PV1.0		
Software Version:	EMC SW v1.03		
FCC ID of the product under test – see guidance here	2ATXJ-AKCC25		
IC ID of the product under test – see guidance here	25253-AKCC25		
Device Category	Mobile ☐	Portable ☐	Fixed ☒
Equipment is fitted with an Audio Low Pass Filter	Yes ☐	No ☒	



Intentional Radiators

Technology	Bluetooth Low Energy
Frequency Range (MHz to MHz)	2400 – 2483.5
Conducted Declared Output Power (dBm)	+2.5
Antenna Gain (dBi)	1
Supported Bandwidth(s) (MHz) (e.g. 1 MHz, 20 MHz, 40 MHz)	1
Modulation Scheme(s) (e.g. GFSK, QPSK etc)	GFSK
ITU Emission Designator (see guidance here) (not mandatory for Part 15 devices)	NA
Bottom Frequency (MHz)	2402
Middle Frequency (MHz)	2440
Top Frequency (MHz)	2480

Un-intentional Radiators

Highest frequency generated or used in the device or on which the device operates or tunes	2480 MHz
Lowest frequency generated or used in the device or on which the device operates or tunes	200 Hz
Class A Digital Device (Use in commercial, industrial or business environment) ☒	
Class B Digital Device (Use in residential environment only) ☐	

AC Power Source

AC supply frequency:	50/60 Hz	Hz
Voltage	100 - 240V	V
Max current:	0.15	A
Single Phase ☒ Three Phase ☐		

DC Power Source

Nominal voltage:	NA	V
Extreme upper voltage:	NA	V
Extreme lower voltage:	NA	V
Max current:	NA	A



Battery Power Source

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

Charging

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

Temperature

Minimum temperature:	-20	°C
Maximum temperature:	55	°C

Cable Loss

Adapter Cable Loss (Conducted sample)	1.3	dB
--	-----	----

Antenna Characteristics

Antenna connector ☐			State impedance		Ohm
Temporary antenna connector ☒			State impedance	50	Ohm
Integral antenna ☒	Type:	Stamped Metal Antenna	Gain	1	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.



Ancillaries (if applicable)

Manufacturer:		Part Number:	
Model:		Country of Origin:	

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

Name: Hans Jorgen Petersen
Position held: Senior Manager, Global HW development
Date: 11/7-2025

A handwritten signature in blue ink, appearing to read "Hans J. Petersen". The signature is fluid and cursive, with a long horizontal stroke at the end.



1.5 Product Information

1.5.1 Technical Description

AK-CC25 variants are Complete refrigeration appliance control with flexibility to adapt to refrigeration appliances and cold storage rooms.

The controller with Bluetooth contains a *Renesas' ultra-low power, BLE-protocol, wireless MCU, DA14531. The controller contains all required passive components, including a 32 MHz crystal and a Stamped metal PCB antenna.

All variants are based on same PCB layout and BLE circuit

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
AK-CC25 SN: Not serialized (FAR 936821-002)			
0	As supplied by the customer	Not Applicable	Not Applicable
AK-CC25 SN: Not serialized (FAR 936821-003)			
0	As supplied by the customer	Not Applicable	Not Applicable
AK-CC25 SN: Not serialized (FAR 1035826-002)			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 3



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: AC Powered -		
Restricted Band Edges	Wenceslao Acosta Carrazco	UKAS
AC Power Line Conducted Emissions	Ahmad Javid	UKAS
Emission Bandwidth	Thomas Biddlecombe	UKAS
Maximum Conducted Output Power	Thomas Biddlecombe	UKAS
Authorized Band Edges	Wenceslao Acosta Carrazco	UKAS
Spurious Radiated Emissions	Mohiuddin Mohammed	UKAS
Power Spectral Density	Thomas Biddlecombe	UKAS

Table 4

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

2 Test Details

2.1 Restricted Band Edges

FCC 47 CFR Part 15C, Clause 15.205

ISED RSS-247, Clause 2.4

ISED RSS-GEN, Clause 8.10

2.1.1 Equipment Under Test and Modification State

AK-CC25, S/N: - Not serialized (FAR 936821 - 002);

2.1.2 Date of Test

30-July-2025

2.1.3 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 EUT was powered with 120 VAC 60Hz for the duration of the test.

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

2.1.4 Test Setup Diagram

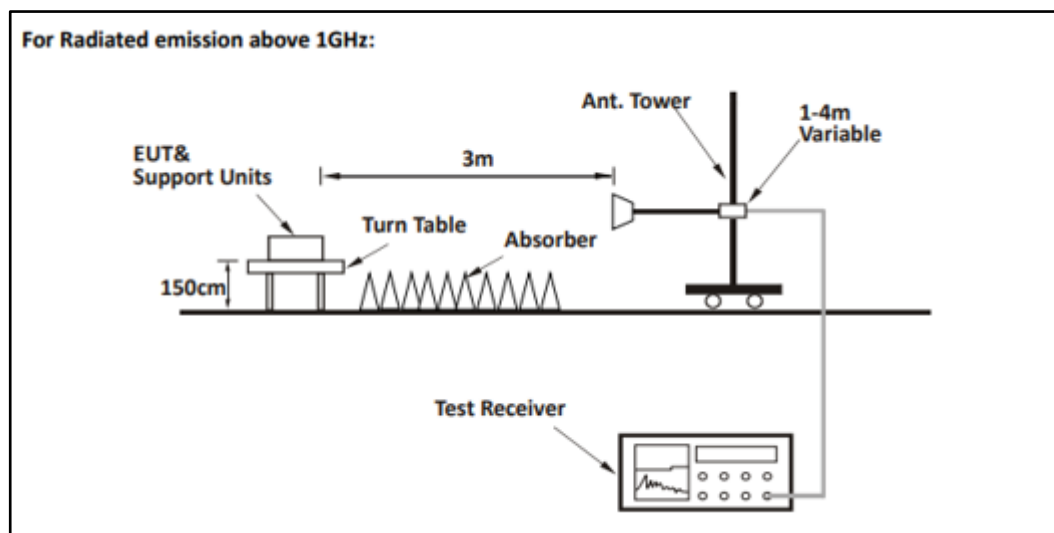


Figure 1 - Test Setup Diagram for Restricted Band Edges

2.1.5 Environmental Conditions

Ambient Temperature 19.2 °C

Relative Humidity 73.0 %



2.1.6 Test Results

Mode	Data Rate/MCS	Frequency (MHz)	Band Edge Frequency (MHz)	Peak Level (dBμV/m)	Average Level (dBμV/m)
BLE	1M	2402	2390	54.54	42.20
BLE	1M	2480	2483.5	55.19	42.71

Table 5

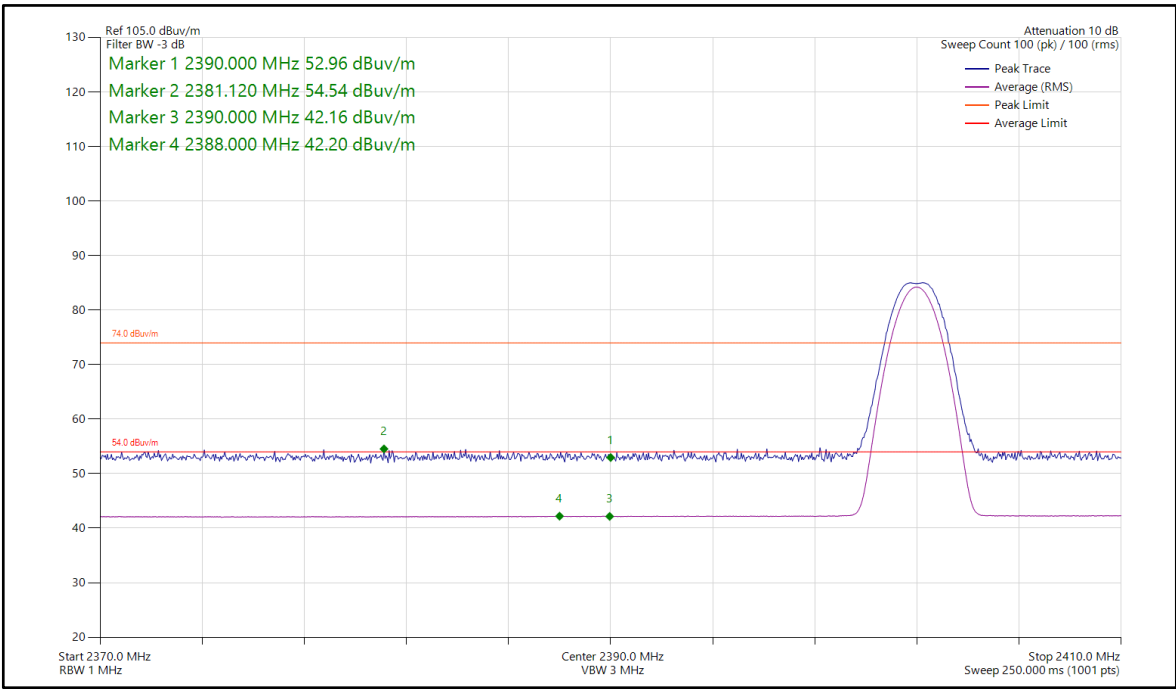


Figure 2 - BOT_BW_1_RBE, 2402 MHz, Band Edge Frequency 2390 MHz

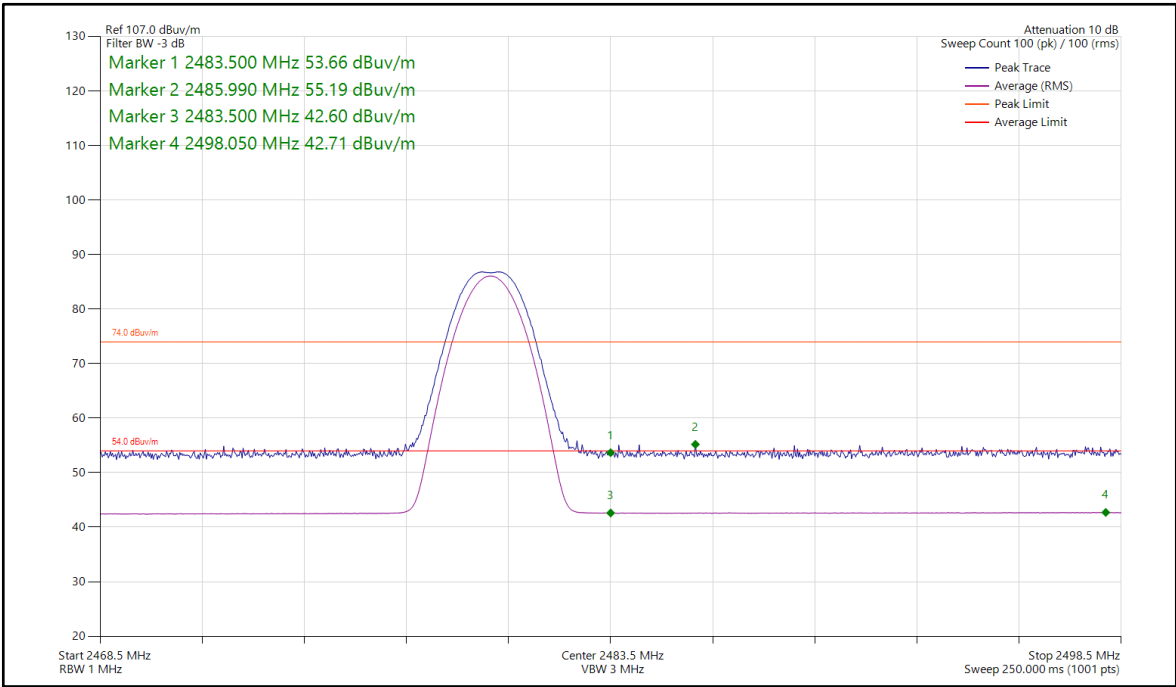


Figure 3 - TOP_BW_1_RBE, 2480 MHz, Band Edge Frequency 2483.5 MHz



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 6

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 7

*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.



2.1.7 Test Location and Test Equipment Used

This test was carried out in RF Chamber 11.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
True RMS Multimeter	Fluke	79 Series III	411	12	09-Jan-2026
Hygrometer	Rotronic	I-1000	3220	12	02-Dec-2025
Emissions Software	TUV SUD	EmX V3.5.4	5125	-	Software
3m Semi-Anechoic Chamber	Rainford	RF Chamber 11	5136	36	14-Nov-2027
Mast	Maturo	TAM 4.0-P	5158	-	TU
Mast and Turntable Controller	Maturo	Maturo NCD	5159	-	TU
Turntable	Maturo	TT 15WF	5160	-	TU
Antenna (DRG, 1 GHz to 10.5 GHz)	Schwarzbeck	BBHA9120B	5215	12	05-Jul-2026
Cable (SMA to SMA, 2 m)	Junkosha	MWX221-02000AMSAMS/A	5517	12	06-Jun-2026
EMC Test Receiver	Rohde & Schwarz	ESW44	5808	12	05-May-2026
Cable Assy 8m (N to N) 18GHz	Junkosha	MWX221-08000NMSNMS/B	7049	12	01-Jun-2026

Table 8

TU - Traceability Unscheduled



2.2 AC Line Power Conducted Emissions

2.2.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.207

ISED RSS-247, Clause 2.4

ISED RSS-GEN, Clause 8.8

2.2.2 Equipment Under Test and Modification State

AK-CC25, S/N: - Not serialized (FAR 1035826)

2.2.3 Date of Test

26-May-2026

2.2.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 6.2.

The EUT was placed on a non-conductive table 0.8m above a reference ground plane and 0.4m away from a vertical coupling plane

All power was connected to the EUT through an Artificial Mains Network (AMN).

Conducted disturbance voltage measurements on mains lines were made at the output of the AMN.

2.2.5 Example Calculation

Quasi-Peak level (dBμV) = Receiver level (dBμV) + Correction Factor (dB)

Margin (dB) = Quasi-Peak level (dBμV) - Limit (dBμV)

CISPR Average level (dBμV) = Receiver level (dBμV) + Correction Factor (dB)

Margin (dB) = CISPR Average level (dBμV) - Limit (dBμV)

2.2.6 Example Test Setup Diagram

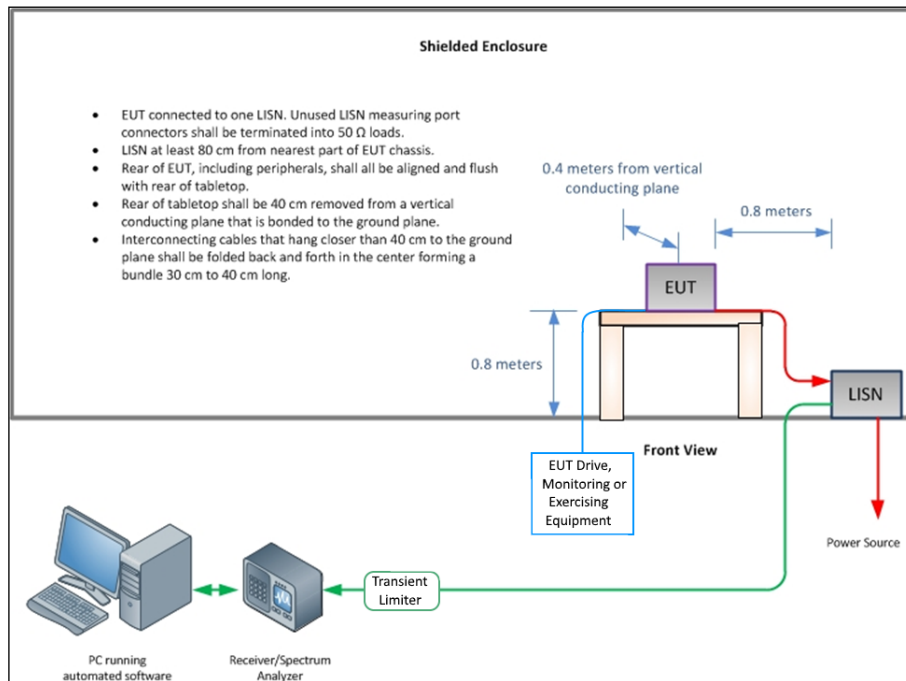


Figure 4 - Conducted Disturbance Example Test Setup

2.2.7 Environmental Conditions

Ambient Temperature	20.3 °C
Relative Humidity	47.6 %



2.2.8 Test Results

AC Powered -

Applied supply Voltage: 115 Vac
 Applied supply frequency: 60 Hz

Frequency (MHz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
0.150	45.60	66.00	-20.40	Q-Peak
0.150	29.67	56.00	-26.33	CISPR Avg
0.200	23.84	53.60	-29.76	CISPR Avg
0.200	39.18	63.60	-24.42	Q-Peak
0.263	31.01	61.30	-30.29	Q-Peak
0.263	15.57	51.30	-35.73	CISPR Avg
0.344	13.52	49.10	-35.58	CISPR Avg
0.344	22.46	59.10	-36.64	Q-Peak
0.429	22.76	47.30	-24.54	CISPR Avg
0.429	28.17	57.30	-29.13	Q-Peak
0.868	16.32	56.00	-39.68	Q-Peak
0.868	9.83	46.00	-36.17	CISPR Avg
4.526	16.07	56.00	-39.93	Q-Peak
4.526	9.86	46.00	-36.14	CISPR Avg

Table 9 - Live, 0.15 to 30 MHz

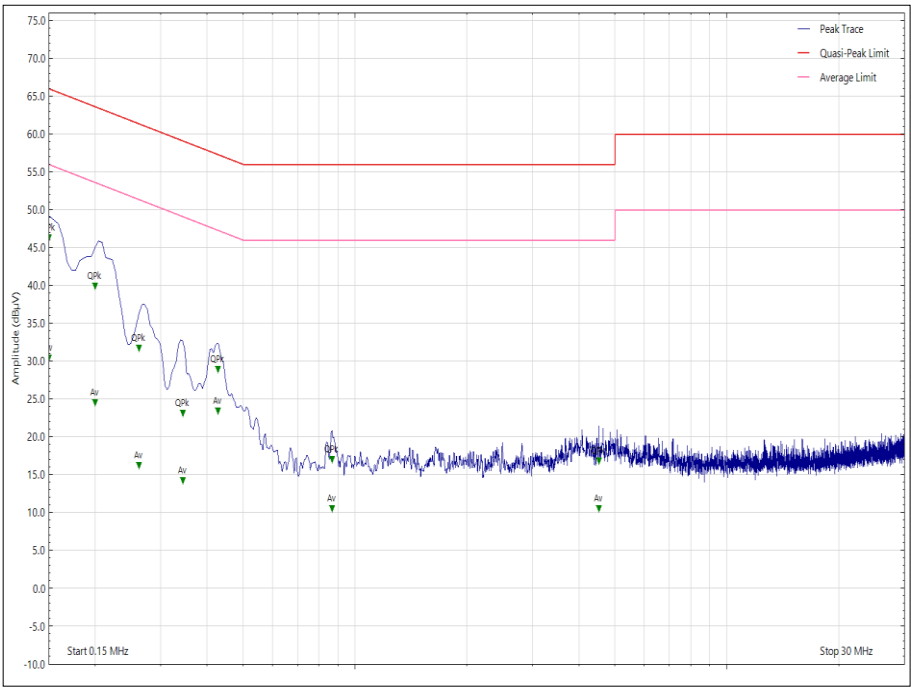


Figure 5 - Live Line - 150 kHz to 30 MHz

Frequency (MHz)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector
0.152	45.52	65.90	-20.38	Q-Peak
0.152	29.68	55.90	-26.22	CISPR Avg
0.194	23.99	53.90	-29.91	CISPR Avg
0.194	40.35	63.90	-23.55	Q-Peak
0.268	16.10	51.20	-35.10	CISPR Avg
0.268	30.92	61.20	-30.28	Q-Peak
0.430	27.15	57.30	-30.15	Q-Peak
0.430	21.64	47.30	-25.66	CISPR Avg
0.599	15.99	56.00	-40.01	Q-Peak
0.599	9.77	46.00	-36.23	CISPR Avg
13.577	10.03	50.00	-39.97	CISPR Avg
13.577	16.24	60.00	-43.76	Q-Peak

Table 10 - Neutral, 0.15 to 30 MHz

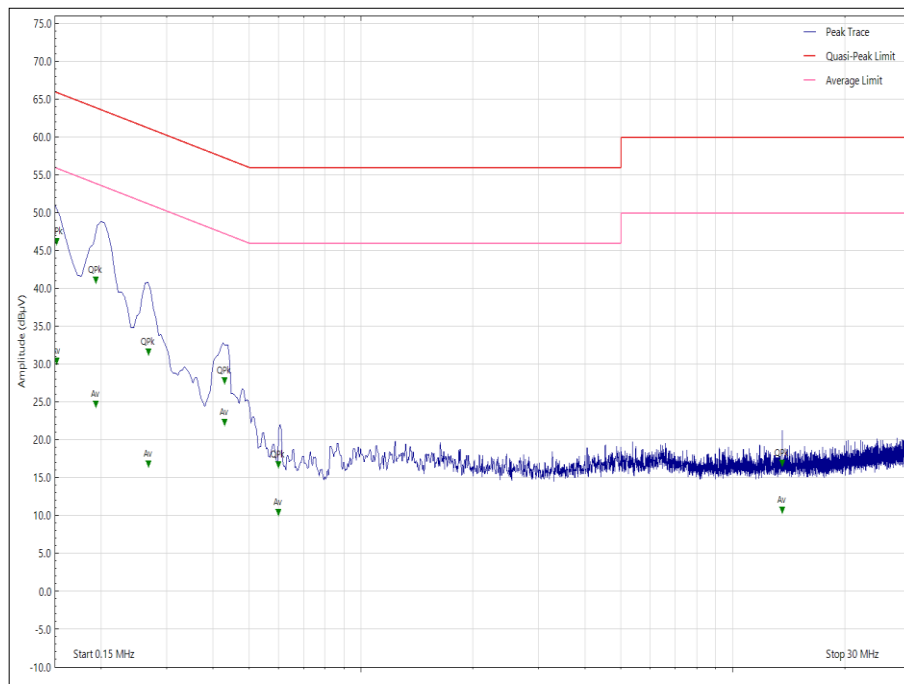


Figure 6 - Neutral Line - 150 kHz to 30 MHz

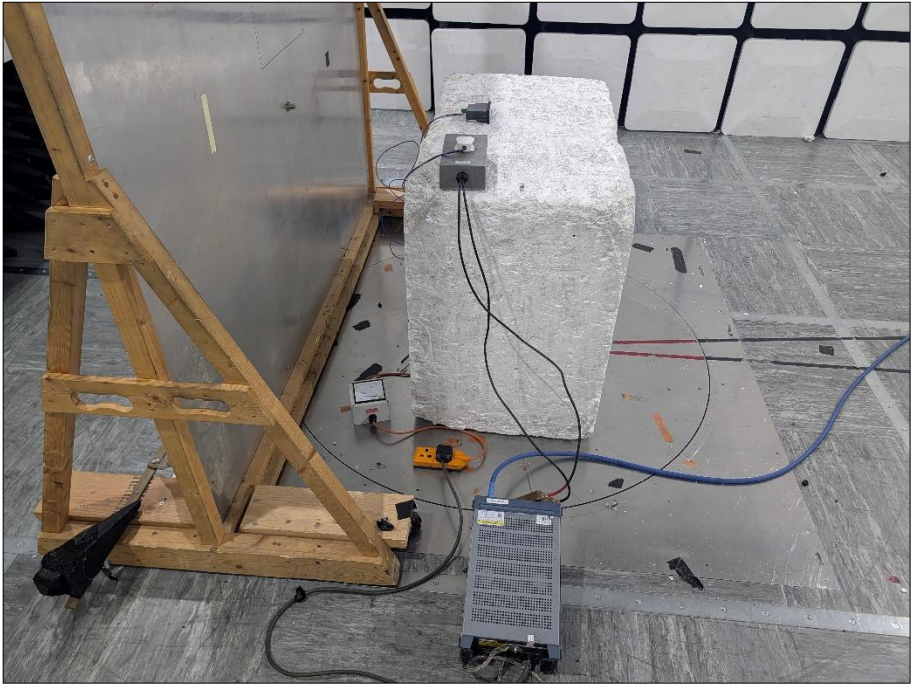


Figure 7 - Test Setup

FCC 47 CFR Part 15, Limit Clause 15.207

Frequency of Emission (MHz)	Conducted Limit (dBµV)	
	Quasi-Peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 5	56	46
5 to 30	60	50

Table 11

*Decreases with the logarithm of the frequency.



2.2.1 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 12.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Transient Limiter	Hewlett Packard	11947A	15	12	06-Nov-2026
LISN (CISPR 16, Single Phase)	Rohde & Schwarz	ESH3-Z5	1390	12	05-Feb-2027
Emissions Software	TUV SUD	EmX V3.6.1	5125	-	Software
Thermo-Hygro-Barometer	PCE Instruments	PCE-THB-40	5475	12	28-Aug-2026
3m Semi-Anechoic Chamber	MVG	EMC Chamber 12	5621	36	07-Aug-2026
Cable (N to N, 2 m)	Junkosha	MWX221-02000AMSAMS/B	5725	6	09-Jun-2026
Test Receiver	Rohde & Schwarz	ESW44	5802	12	05-Nov-2026
Cable (N-Type to N-Type, 8 m)	Junkosha	MWX221-08000NMSNMS/B	7054	12	01-Jun-2026

Table 12

2.3 Emission Bandwidth

2.3.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247(a)

ISED RSS-247, Clause 6.3.1

ISED RSS-GEN, Clause 6.7

2.3.2 Equipment Under Test and Modification State

AK-CC25, S/N: - Not serialized (FAR 936821 - 003)

2.3.3 Date of Test

29-July-2025

2.3.4 Test Method

This test was performed in accordance with ANSI C63.10, clause 11.8.1 for 6 dB BW and 6.9.3 for 99% occupied bandwidth measurements.

The EUT was powered with 120 VAC 60Hz for the duration of the test.

2.3.5 Test Setup Diagram

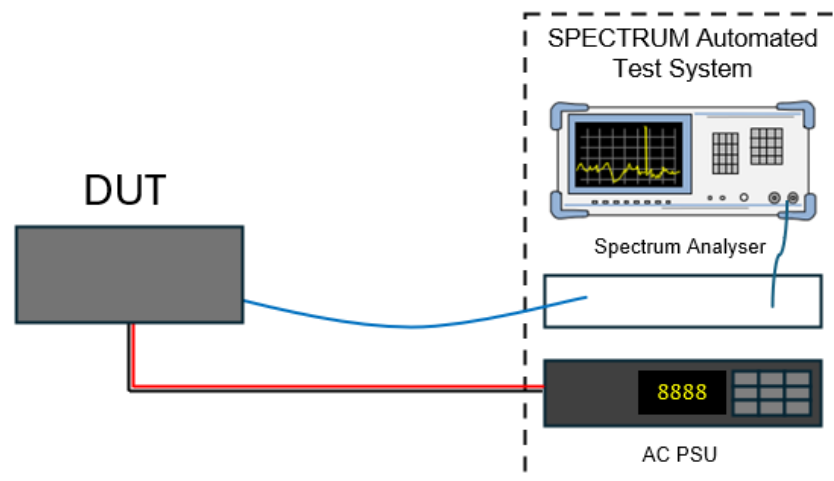


Figure 8 - Test Setup Diagram for Emission Bandwidth

2.3.6 Environmental Conditions

Ambient Temperature	21.6 °C
Relative Humidity	51.5 %



2.3.7 Test Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (a)(2) RSS-247 6.3.1 (a)	Test Method(s):	C63.10 6.9.3 C63.10 6.9.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	BT GFSK (LE 1M)	Duty Cycle (%):	-
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	B (Conducted Port)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	6 dB Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
2402	-	0.856	-	-	≥500.0
2440	-	0.764	-	-	≥500.0
2480	-	0.748	-	-	≥500.0

Table 13 - 6 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
2402	-	1.072	-	-	-
2440	-	1.072	-	-	-
2480	-	1.068	-	-	-

Table 14 - 99% Bandwidth Results

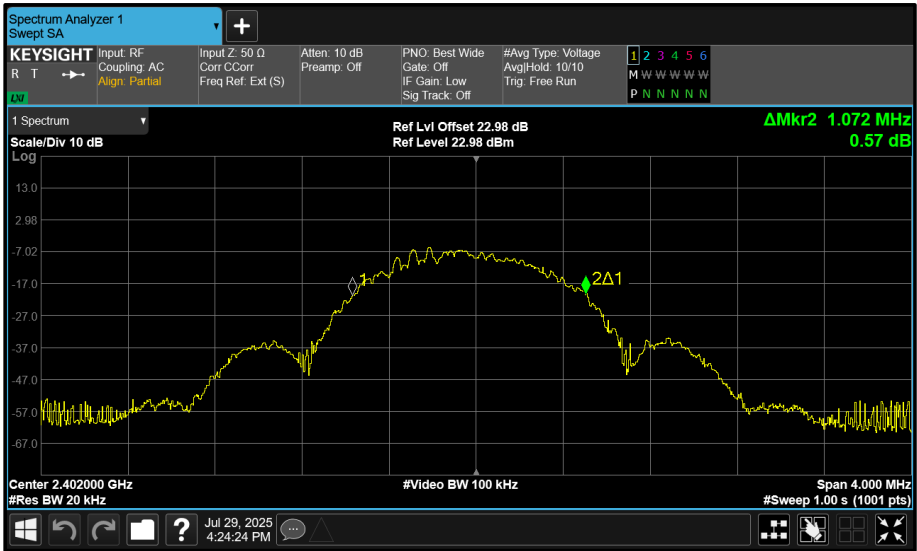


Figure 9 - 2402 MHz (CH37) 99% Bandwidth

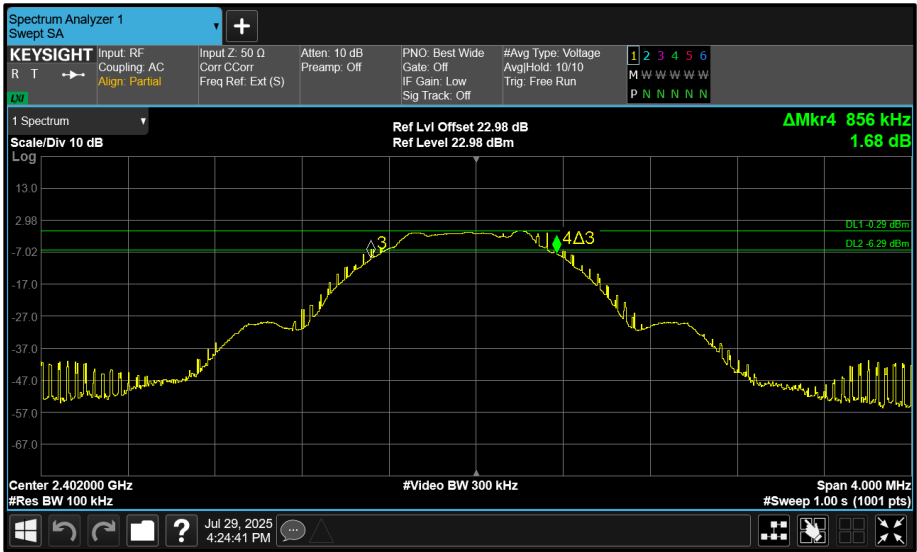


Figure 10 - 2402 MHz (CH37) 6 dB Bandwidth

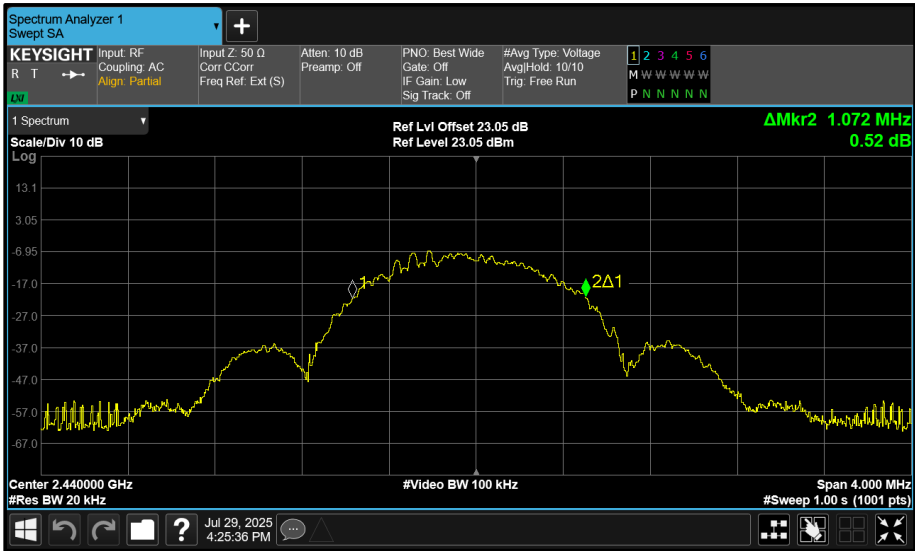


Figure 11 - 2440 MHz (CH17) 99% Bandwidth

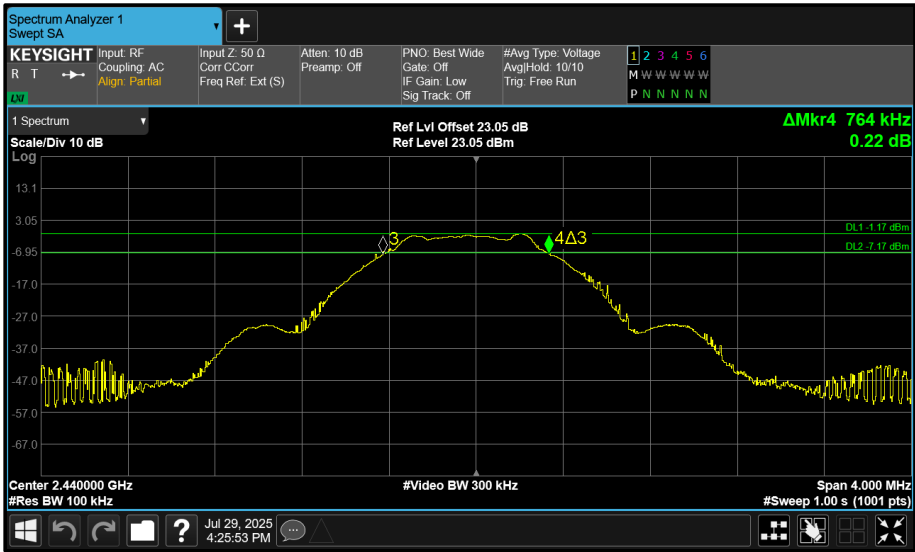


Figure 12 - 2440 MHz (CH17) 6 dB Bandwidth

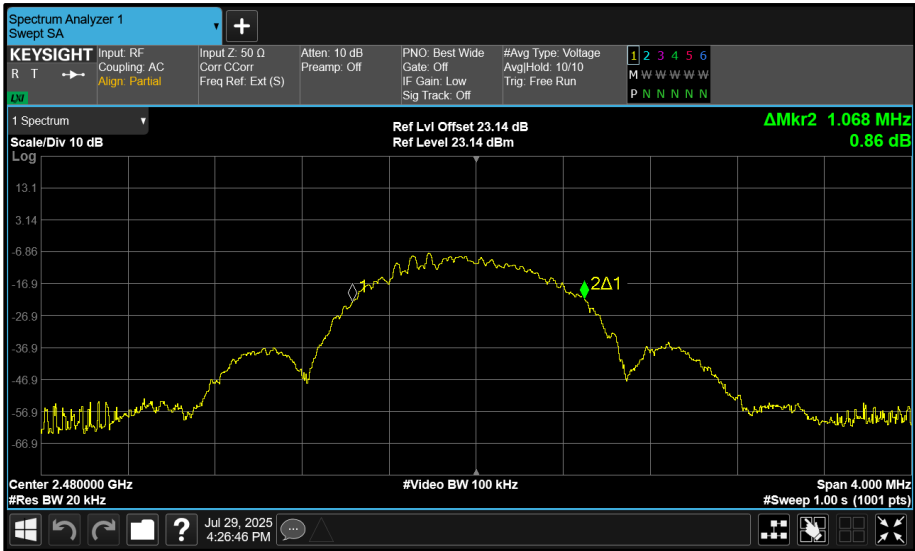


Figure 13 - 2480 MHz (CH39) 99% Bandwidth

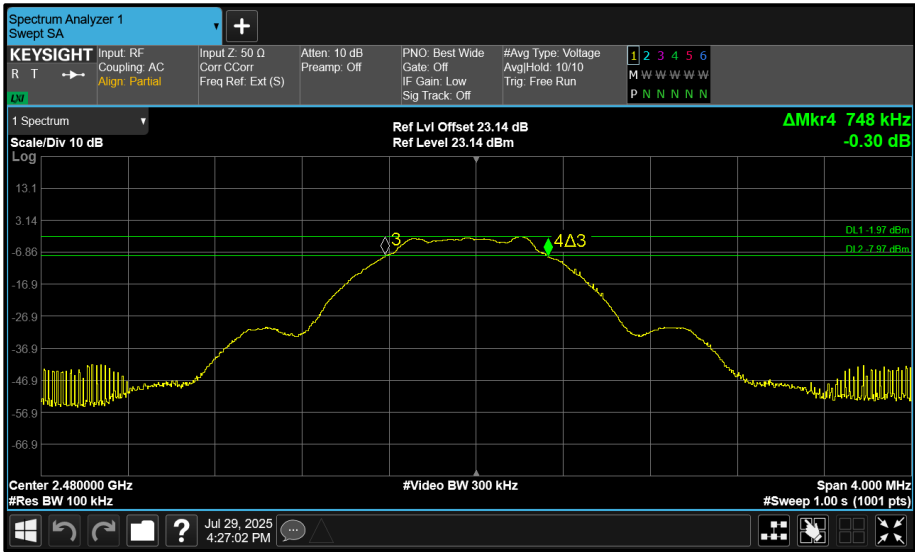


Figure 14 - 2480 MHz (CH39) 6 dB Bandwidth



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

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

2.3.8 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
Multimeter	Fluke	75 Mk3	455	12	09-Jan-2026
Hygrometer	Rotronic	I-1000	2891	12	02-Dec-2025
GPSDR Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	18-Sep-2025
AC Programmable Power Supply	iTech	IT7324	5226	-	O/P Mon
MXA Signal Analyser	Keysight Technologies	N9020B	5528	24	18-Sep-2025
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6350	12	02-Aug-2025
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	6639	12	02-Aug-2025

Table 15

O/P Mon – Output Monitored using calibrated equipment

2.4 Maximum Conducted Output Power

2.4.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247(b)

ISED RSS-247, Clause 6.3.2

ISED RSS-GEN, Clause 6.12

2.4.2 Equipment Under Test and Modification State

AK-CC25, S/N: - Not serialized (FAR 936821 - 003)

2.4.3 Date of Test

29-July-2025

2.4.4 Test Method

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

The EUT was powered with 120 VAC 60Hz for the duration of the test.

2.4.5 Test Setup Diagram

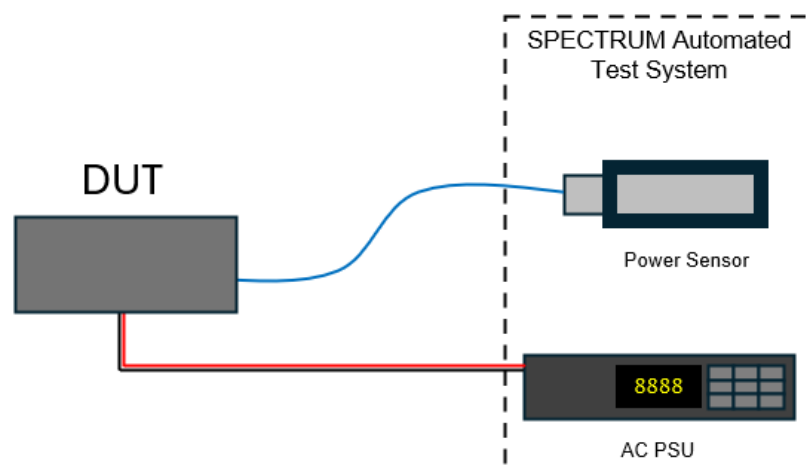


Figure 15 - Test Setup Diagram for Maximum Conducted Output Power

2.4.6 Environmental Conditions

Ambient Temperature 21.6 °C

Relative Humidity 51.5 %



2.4.7 Test Results

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:	BT GFSK (LE 1M)	Duty Cycle (%):	98.6
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	B (Conducted Port)	Peak Antenna Gain (dBi):	1.00

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	-	2.07	-	-	-	30.00	-27.93
2440	-	1.37	-	-	-	30.00	-28.63
2480	-	0.52	-	-	-	30.00	-29.48

Table 16 - 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					
2402	-	2.07	-	-	-	30.00	-27.93	3.07	36.00	-32.93
2440	-	1.37	-	-	-	30.00	-28.63	2.37	36.00	-33.63
2480	-	0.52	-	-	-	30.00	-29.48	1.52	36.00	-34.48

Table 17 - ISCED 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 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).

2.4.8 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
Multimeter	Fluke	75 Mk3	455	12	09-Jan-2026
Hygrometer	Rotronic	I-1000	2891	12	02-Dec-2025
AC Programmable Power Supply	iTech	IT7324	5226	-	O/P Mon
USB Power Sensor	Boonton	RTP5008	5834	12	01-Sep-2025
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6350	12	02-Aug-2025
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	6639	12	02-Aug-2025

Table 18

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 6.6

ISED RSS-GEN, Clause N/A

2.5.2 Equipment Under Test and Modification State

AK-CC25, S/N: - Not serialized (FAR 936821 - 002)

2.5.3 Date of Test

30-July-2025

2.5.4 Test Method

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

The EUT was powered with 120 VAC 60Hz for the duration of the test.

2.5.5 Test Setup Diagram

For Radiated emission above 1GHz:

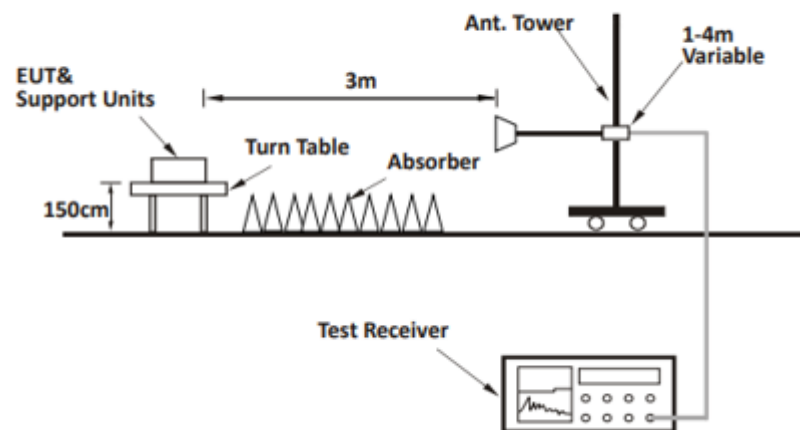


Figure 16 - Test Setup Diagram for Authorised Band Edges

2.5.6 Environmental Conditions

Ambient Temperature 19.2 °C

Relative Humidity 73.0 %



2.5.7 Test Results

Mode	Data Rate/MCS	Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
BLE	1M	2402	2400	-40.32

Table 19

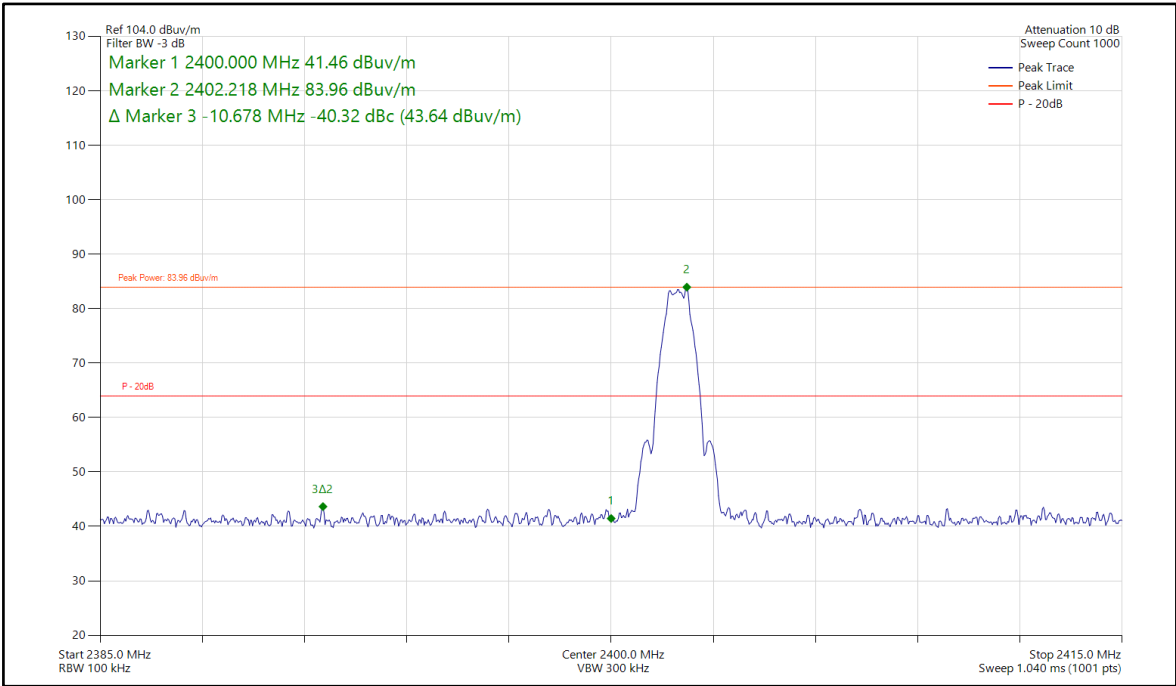


Figure 17 - BOT_BW_1_ABE, 2402 MHz, Band Edge Frequency 2400 MHz



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 device, digitally modulated device, or hybrid system 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.

2.5.8 Test Location and Test Equipment Used

This test was carried out in RF Chamber 11.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
True RMS Multimeter	Fluke	79 Series III	411	12	09-Jan-2026
Hygrometer	Rotronic	I-1000	3220	12	02-Dec-2025
Emissions Software	TUV SUD	EmX V3.5.4	5125	-	Software
3m Semi-Anechoic Chamber	Rainford	RF Chamber 11	5136	36	14-Nov-2027
Mast	Maturo	TAM 4.0-P	5158	-	TU
Mast and Turntable Controller	Maturo	Maturo NCD	5159	-	TU
Turntable	Maturo	TT 15WF	5160	-	TU
Antenna (DRG, 1 GHz to 10.5 GHz)	Schwarzbeck	BBHA9120B	5215	12	05-Jul-2026
Cable (SMA to SMA, 2 m)	Junkosha	MWX221-02000AMSAMS/A	5517	12	06-Jun-2026
EMC Test Receiver	Rohde & Schwarz	ESW44	5808	12	05-May-2026
Cable Assy 8m (N to N) 18GHz	Junkosha	MWX221-08000NMSNMS/B	7049	12	01-Jun-2026

Table 20

TU - Traceability Unscheduled



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 2.4 and 6.6

ISED RSS-GEN, Clause 6.13 and 8.9

2.6.2 Equipment Under Test and Modification State

AK-CC25, S/N: - Not serialized (FAR 936821 - 002)

2.6.3 Date of Test

31-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 Fixed and therefore reasonable to be used in Fixed planes, pre-scans were performed with the EUT at one orientated plane with reference to the ground plane.

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

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

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

The DUT was powered throughout the test by 120VAC.

2.6.5 Example Test Setup Diagram

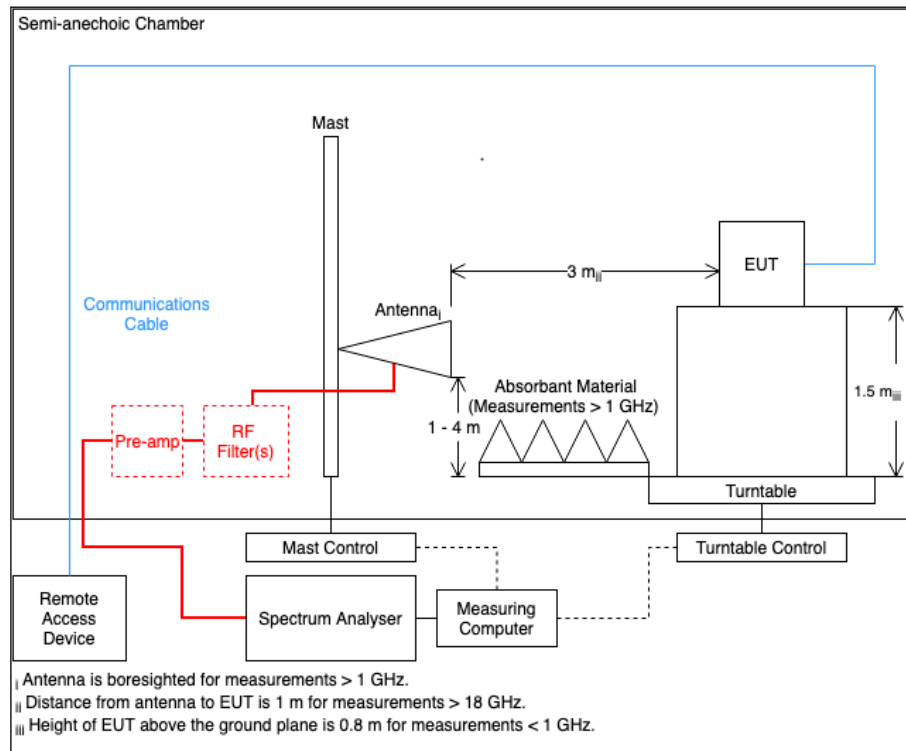


Figure 18

2.6.6 Environmental Conditions

Ambient Temperature	20.8 °C
Relative Humidity	63.3 %

2.6.7 Test Results

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
350.223	30.11	46.00	-15.89	Q-Peak	255	109	Horizontal
12010.998	43.01	54.00	-10.99	RMS	196	218	Horizontal
12011.011	47.02	54.00	-6.98	RMS	180	396	Vertical

Table 21 - CH37_LE1M, 2402 MHz, 30 MHz to 26 GHz

No other emissions found within 10 dB of the limit.

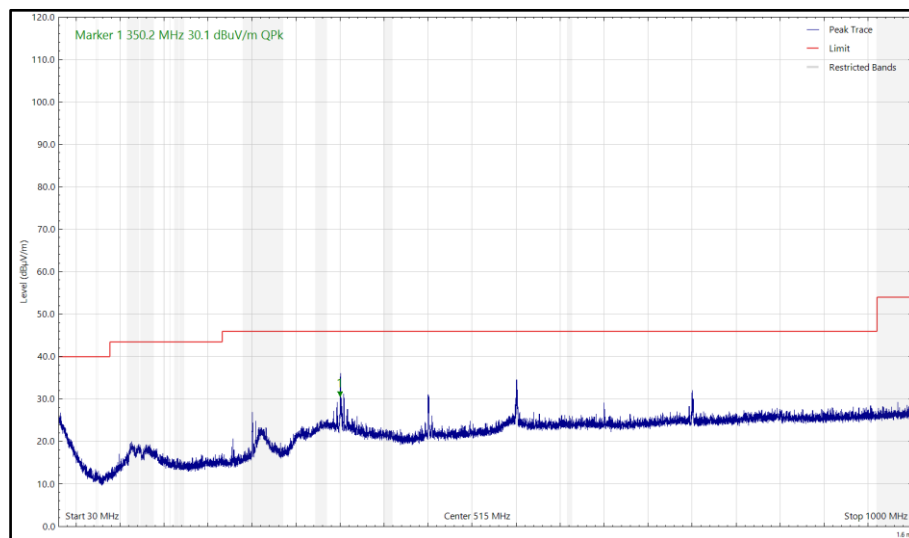


Figure 19 - CH37_LE1M, 2402 MHz, 30 MHz to 1 GHz, Horizontal (Peak)

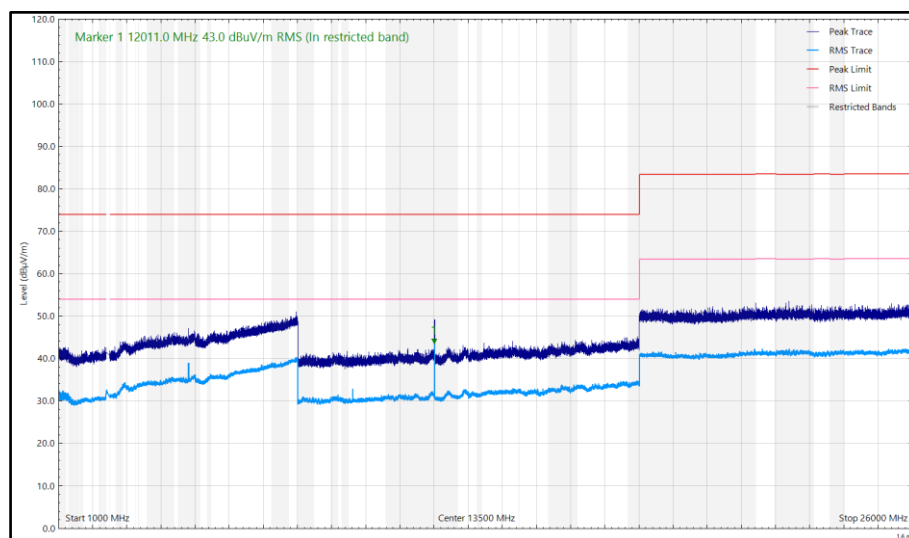


Figure 20 - CH37_LE1M, 2402 MHz, 1 GHz to 26 GHz, Horizontal

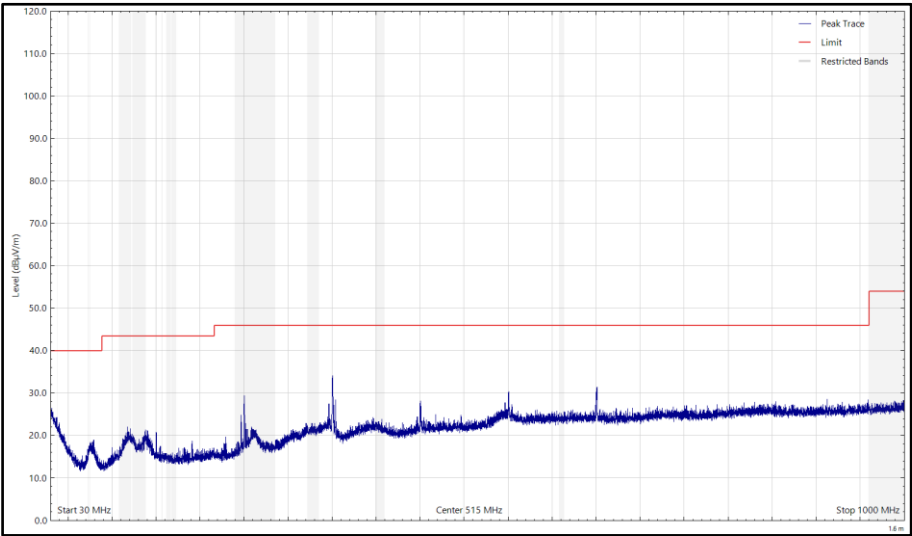


Figure 21 - CH37_LE1M, 2402 MHz, 30 MHz to 1 GHz, Vertical (Peak)

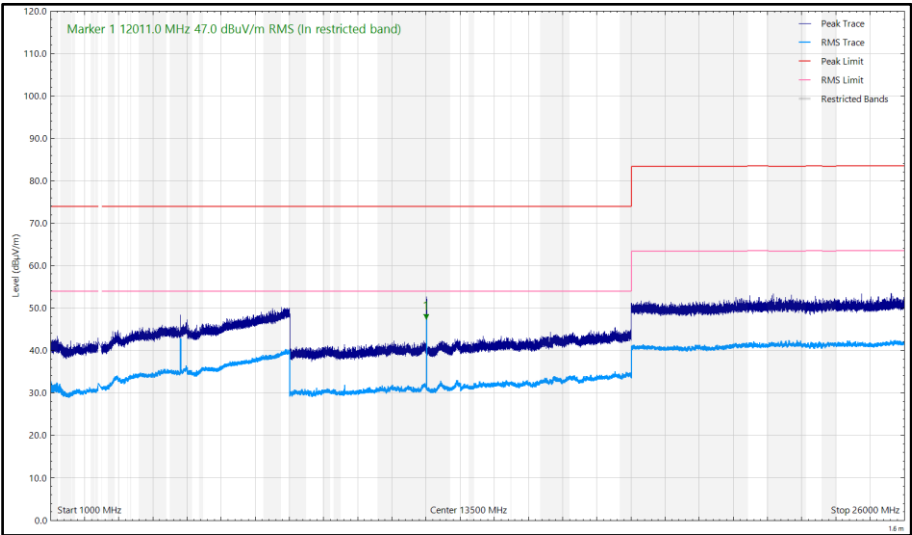


Figure 22 - CH37_LE1M, 2402 MHz, 1 GHz to 26 GHz, Vertical



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

Table 22 - CH17_LE1M, 2440 MHz, 30 MHz to 26 GHz

*No emissions found within 10 dB of the limit.

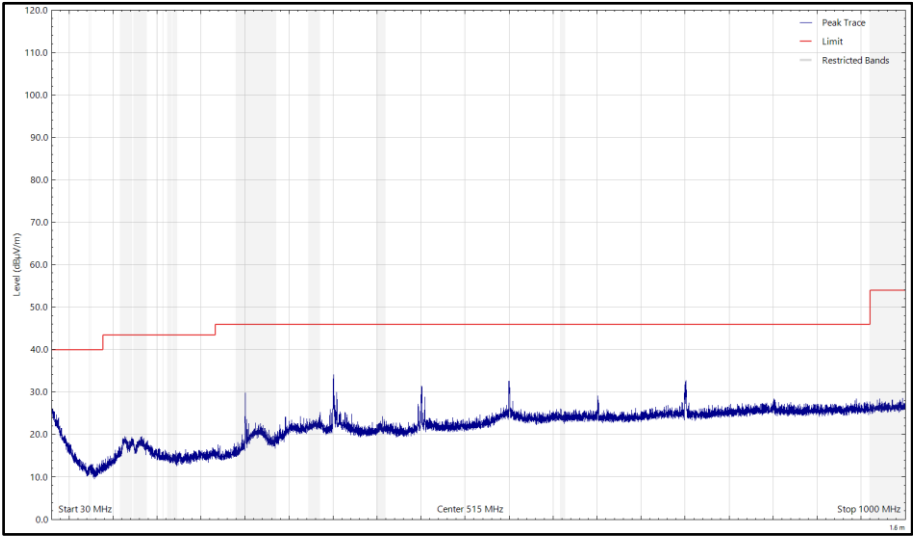


Figure 23 - CH17_LE1M, 2440 MHz, 30 MHz to 1 GHz, Horizontal (Peak)

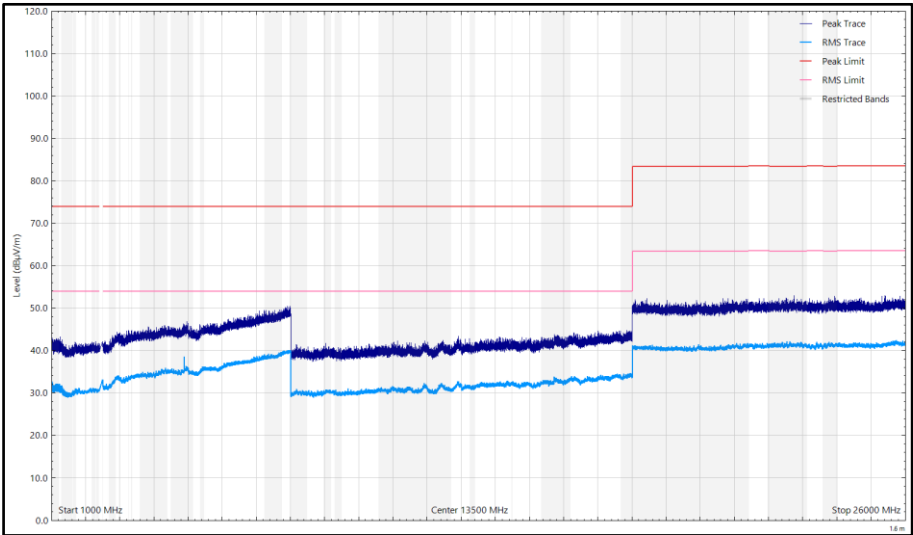


Figure 24 - CH17_LE1M, 2440 MHz, 1 GHz to 26 GHz, Horizontal

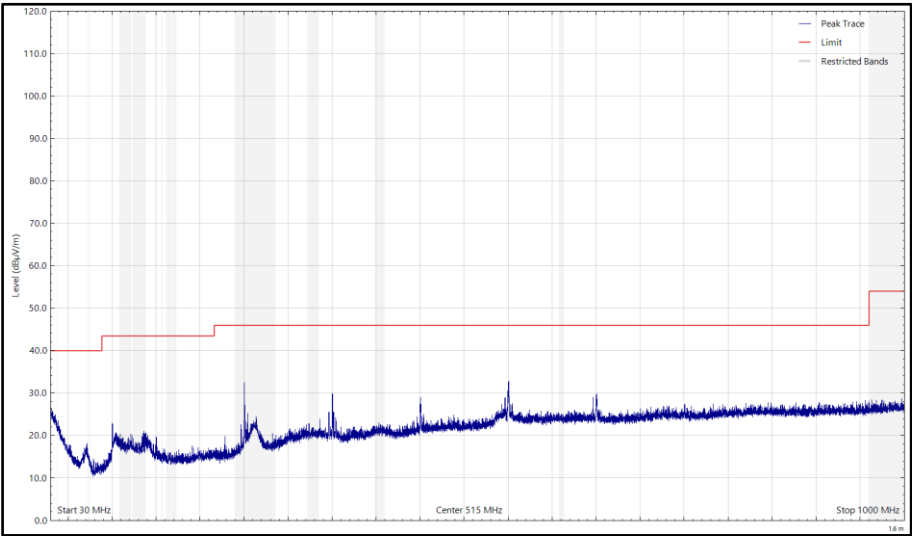


Figure 25 - CH17_LE1M, 2440 MHz, 30 MHz to 1 GHz, Vertical (Peak)

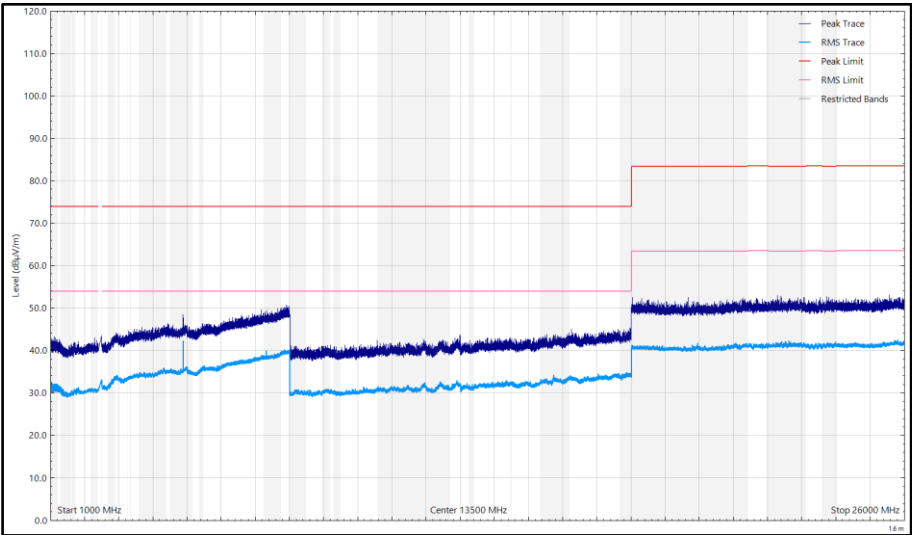


Figure 26 - CH17_LE1M, 2440 MHz, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
750.111	29.55	46.00	-16.45	Q-Peak	196	106	Horizontal
12400.951	48.76	54.00	-5.24	RMS	175	377	Vertical
12401.000	50.32	54.00	-3.68	RMS	235	225	Horizontal

Table 23 - CH39_LE1M, 2480 MHz, 30 MHz to 26 GHz

No other emissions found within 10 dB of the limit.

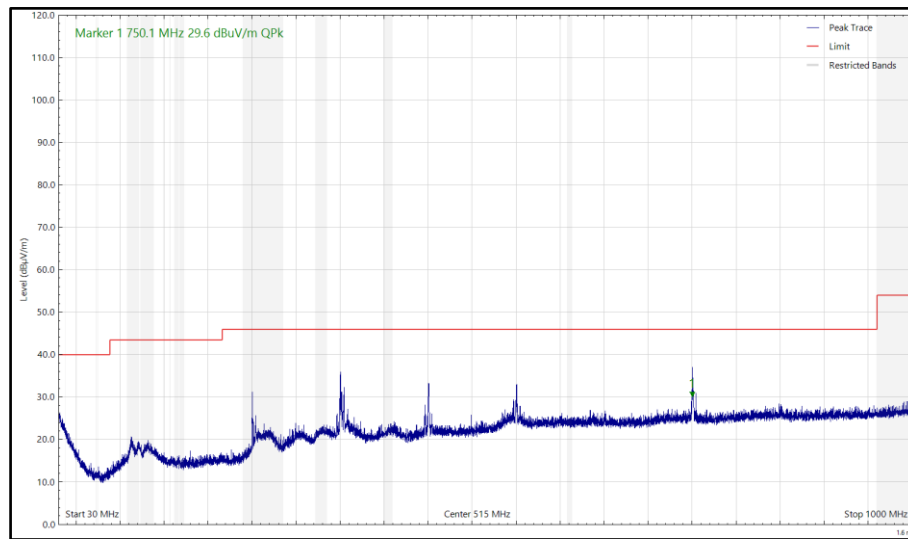


Figure 27 - CH39_LE1M, 2480 MHz, 30 MHz to 1 GHz, Horizontal (Peak)

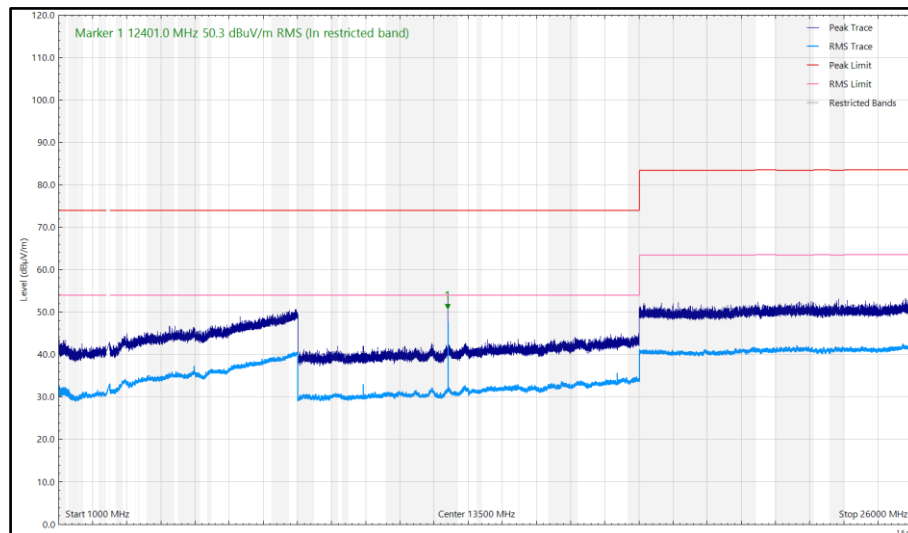


Figure 28 - CH39_LE1M, 2480 MHz, 1 GHz to 26 GHz, Horizontal

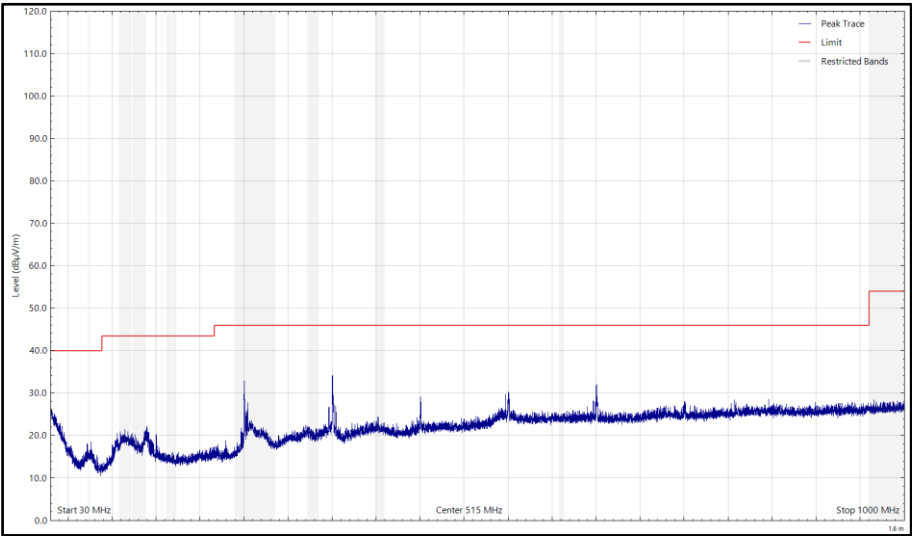


Figure 29 - CH39_LE1M, 2480 MHz, 30 MHz to 1 GHz, Vertical (Peak)

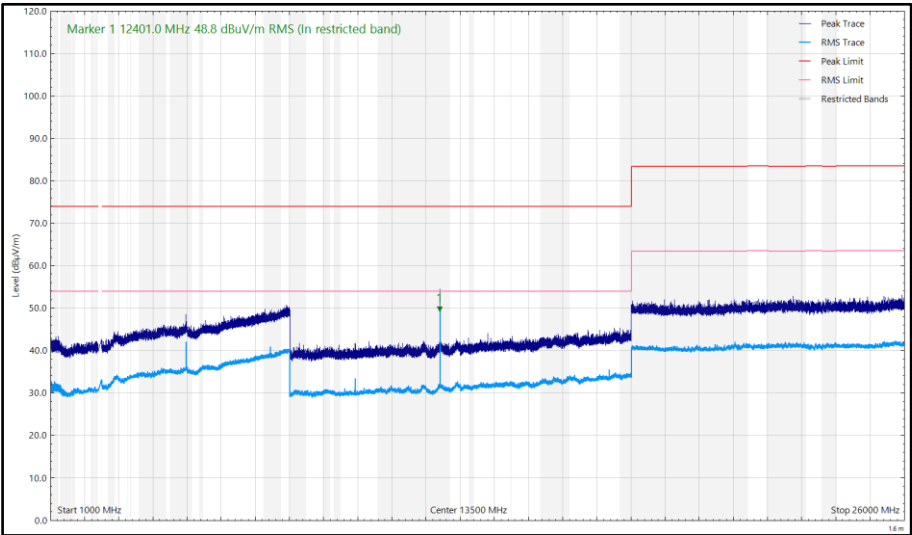


Figure 30 - CH39_LE1M, 2480 MHz, 1 GHz to 26 GHz, Vertical



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 device, digitally modulated device, or hybrid system 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.



2.6.8 Test Location and Test Equipment Used

This test was carried out in RF Chamber 11.

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	8-Oct-2026
Antenna (Bilog with attenuator, 30 MHz to 3 GHz)	Schaffner	CBL6143	287	24	29-Aug-2026
True RMS Multimeter	Fluke	79 Series III	411	12	9-Jan-2026
Pre-Amplifier (18 GHz to 40 GHz)	Phase One	PSO4-0087	1534	12	16-Aug-2025
Programmable Power Supply	Iso-tech	IPS 2010	2437	-	O/P Mon
Hygrometer	Rotronic	I-1000	3220	12	2-Dec-2025
Band Reject Filter - 2.425 GHz	Wainwright	WRCGV14-2390-2400-2450-2460-50SS	5067	12	14-Oct-2025
Band Reject Filter - 2.4585 GHz	Wainwright	WRCGV14-2423.5-2433.5-2483.5-2493.5-50SS	5069	12	7-Nov-2025
Emissions Software	TUV SUD	EmX V3.5.4 V.	5125	-	N/A - Software
3m Semi-Anechoic Chamber	Rainford	RF Chamber 11	5136	36	14-Nov-2027
Mast	Maturo	TAM 4.0-P	5158	-	TU
Mast and Turntable Controller	Maturo	Maturo NCD	5159	-	TU
Turntable	Maturo	TT 15WF	5160	-	TU
Antenna (DRG, 1 GHz to 10.5 GHz)	Schwarzbeck	BBHA9120B	5215	12	5-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	4-Apr-2026
Cable 2.92m	Junkosha	MWX241-01000KMS	5412	12	6-Jun-2026
Cable 2.92m	Junkosha	MWX241-01000KMS	5413	12	23-May-2026
Pre-Amplifier (1 GHz to 26.5 GHz)	Agilent Technologies	8449B	5445	12	10-Jul-2026
Cable (SMA to SMA 1m)	Junkosha	MWX221-01000AMSAMS/A	5514	12	6-Jun-2026
Cable (SMA to SMA, 2 m)	Junkosha	MWX221-02000AMSAMS/A	5517	12	6-Jun-2026



7 GHz High pass Filter	Wainwright	WHKX12-5850-6800-18000-80SS	5550	12	30-May-2026
Pre-Amplifier (8 GHz to 18 GHz)	Wright Technologies	APS06-0061	5596	12	28-Oct-2025
EMC Test Receiver	Rohde & Schwarz	ESW44	5808	12	5-May-2026
MXA Signal Analyser	Keysight Technologies	N9020B	6876	24	31-Aug-2026
1m SMA Cable	Junkosha	MWX221-01000AMSAMS/B	6919	12	8-Dec-2025
Cable Assy 8m (N to N) 18GHz	Junkosha	MWX221-08000NMSNMS/B	7049	12	1-Jun-2026

Table 124

2.7 Power Spectral Density

2.7.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (e).

ISED RSS-247, Clause 6.3.1

ISED RSS-GEN, Clause 6.12

2.7.2 Equipment Under Test and Modification State

AK-CC25, S/N: - Not serialized (FAR 936821 - 003)

2.7.3 Date of Test

29-July-2025

2.7.4 Test Method

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

The EUT was powered with 120 VAC 60Hz for the duration of the test.

2.7.5 Test Setup Diagram

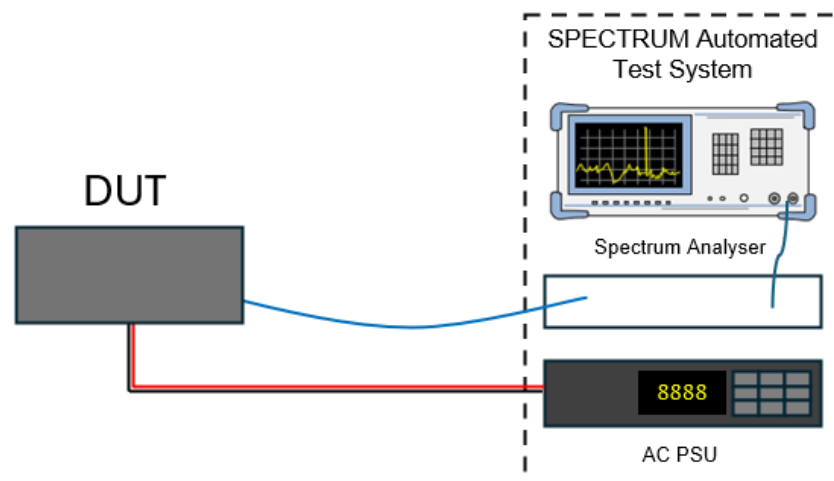


Figure 31 - Test Setup Diagram for Power Spectral Density

2.7.6 Environmental Conditions

Ambient Temperature	21.6 °C
Relative Humidity	51.5 %



2.7.7 Test Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 6.3.1 b)	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	BT GFSK (LE 1M)	Duty Cycle (%):	98.6
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	B (Conducted Port)	Peak Antenna Gain (dBi):	1.00

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	Σ		
2402	100.0	-	0.73	-	-	-	8.00	-7.27
2440	100.0	-	-0.13	-	-	-	8.00	-8.13
2480	100.0	-	-0.95	-	-	-	8.00	-8.95

Table 25 - 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 (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

2.7.8 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
Multimeter	Fluke	75 Mk3	455	12	09-Jan-2026
Hygrometer	Rotronic	I-1000	2891	12	02-Dec-2025
GPSDR Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	18-Sep-2025
AC Programmable Power Supply	iTech	IT7324	5226	-	O/P Mon
MXA Signal Analyser	Keysight Technologies	N9020B	5528	24	18-Sep-2025
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6350	12	02-Aug-2025
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	6639	12	02-Aug-2025

Table 26

O/P Mon – Output Monitored using calibrated equipment

3 Photographs

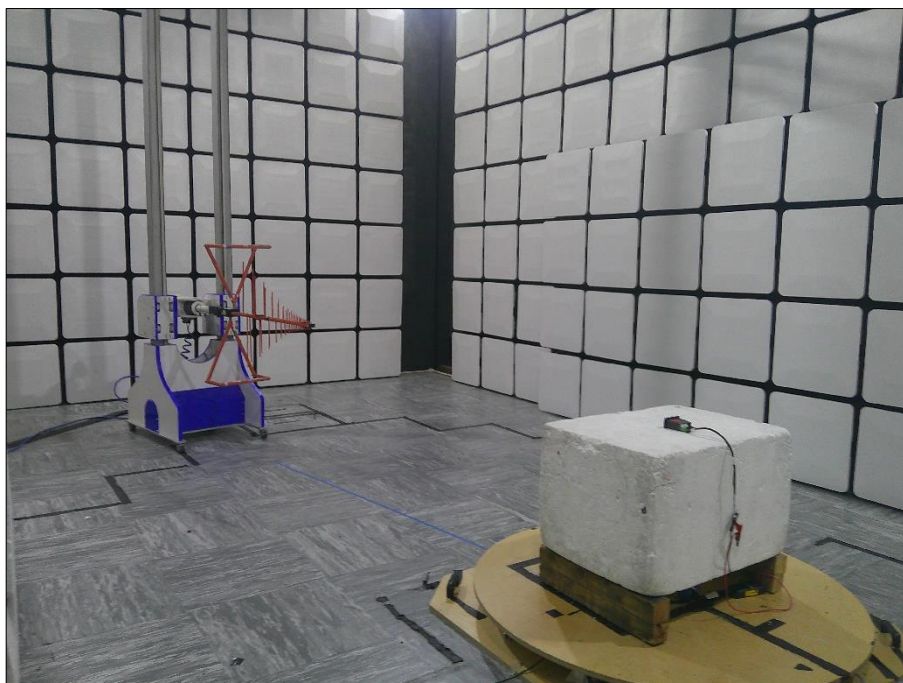


Figure 32 - Test Setup - 30 MHz to 1 GHz

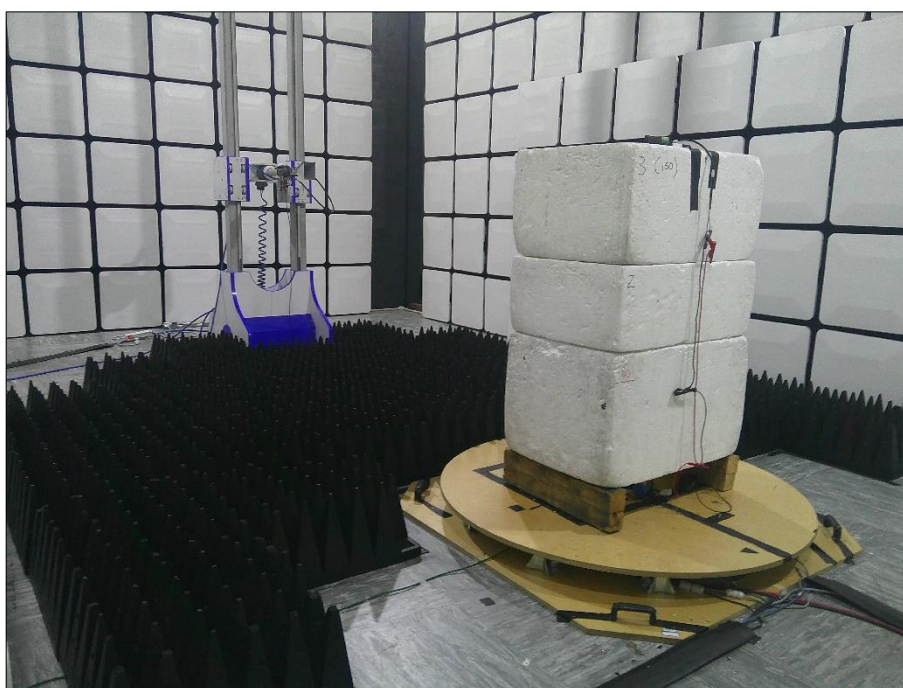


Figure 33 - Test Setup - 1 GHz to 18 GHz



Figure 34 - Test Setup - 18GHz to 26 GHz



Figure 35 - Test Setup - DUT



Figure 36 - Test Setup for Maximum Conducted Output Power, Power Spectral Density and Emission Bandwidth.

4 Measurement Uncertainty

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

Test Name	Measurement Uncertainty
Restricted Band Edges	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
AC Power Line Conducted Emissions	150 kHz to 30 MHz, LISN, ± 3.7 dB
Emission Bandwidth	± 25.35 kHz
Maximum Conducted Output Power	± 0.65 dB
Authorised Band Edges	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
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 27

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.