

FCC and ISED Test Report

Apple Inc
Model: A3113

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

Prepared for: Apple Inc
One Apple Park Way
Cupertino,
California
95014
USA



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FCC ID: BCGA3113

IC: 579C-A3113

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Document 75959605-07 Issue 01

SIGNATURE

NAME	JOB TITLE	RESPONSIBLE FOR	ISSUE DATE
Andrew Lawson	Chief Engineer, EMC	Authorised Signatory	01 December 2023

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

ENGINEERING STATEMENT

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

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Jonas Ayipah	01 December 2023	
Testing	Muhammad Enam	01 December 2023	
Testing	Nathan Harrison	01 December 2023	

FCC Accreditation

492497/UK2010 Octagon House, Fareham Test Laboratory

ISED Accreditation

12669A Octagon House, Fareham Test Laboratory

EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15C, ISED RSS-247 and ISED RSS-GEN: 2021, Issue 2 (02-2017) and Issue 5 (04-2018) + A2 (02-2021) for the tests detailed in section 1.3.



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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
1	First Issue	01 December 2023

Table 1

1.2 Introduction

Applicant	Apple Inc
Manufacturer	Apple Inc
Model Number(s)	A3113
Serial Number(s)	WQYQ2X0DMK and XVVPY3NJ0L
Hardware Version(s)	REV 1.0
Software Version(s)	23C22a and 23A32771a - Thread
Number of Samples Tested	2
Test Specification/Issue/Date	FCC 47 CFR Part 15C: 2021 ISED RSS-247: Issue 2 (02-2017) ISED RSS-GEN: Issue 5 (04-2018) + A2 (02-2021)
Start of Test	25-October-2023
Finish of Test	23-November-2023
Name of Engineer(s)	Muhammad Enam, Jonas Ayipah and Nathan Harrison
Related Document(s)	ANSI C63.10 (2020) ANSI C63.10 (2013)



1.3 Brief Summary of Results

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

Section	Specification Clause	Test Description	Result	Comments/Base Standard
Configuration and Mode: AC Powered - 2.4 GHz Bluetooth				
2.1	15.207, 3.1 and 8.8	AC Power Line Conducted Emissions	Pass	ANSI C63.10 (2020) ANSI C63.10 (2013)
Configuration and Mode: AC Powered - 2.4 GHz WLAN				
2.1	15.207, 3.1 and 8.8	AC Power Line Conducted Emissions	Pass	ANSI C63.10 (2020) ANSI C63.10 (2013)
Configuration and Mode: AC Powered - 5 GHz WLAN				
2.1	15.207, 3.1 and 8.8	AC Power Line Conducted Emissions	Pass	ANSI C63.10 (2020) ANSI C63.10 (2013)
Configuration and Mode: AC Powered - 6 GHz WLAN				
2.1	15.207, 3.1 and 8.8	AC Power Line Conducted Emissions	Pass	ANSI C63.10 (2020) ANSI C63.10 (2013)
Configuration and Mode: AC Powered - Thread				
2.1	15.207, 3.1 and 8.8	AC Power Line Conducted Emissions	Pass	ANSI C63.10 (2020) ANSI C63.10 (2013)
Configuration and Mode: AC Powered - Narrowband				
2.1	15.207, 3.1 and 8.8	AC Power Line Conducted Emissions	Pass	ANSI C63.10 (2020) ANSI C63.10 (2013)

Table 2



1.4 Product Information

1.4.1 Technical Description

The equipment under test (EUT) was a portable laptop computer.

1.4.2 EUT Port/Cable Identification

Port	Max Cable Length specified	Usage	Type	Screened
Configuration and Mode: AC Powered - All Modes				
AC Power Port	2 m	Power	AC to DC Power Adapter with USB-C Output	No
USB Port 1	2 m	Data	USB Type-C	No
USB Port 2	Unterminated	Data	USB Type-C	No
Audio Jack Port	0.5 m	Audio Output	3.5 mm Jack	No

Table 3

1.4.3 Test Configuration

Configuration	Description
AC Powered	The EUT was powered from a 115 V 60 Hz AC supply via an AC to DC adapter, model: A2743. A set of headphones was used to terminate the EUT's 3.5 mm audio jack port. A USB-C to USB-A adapter and optical mouse were used to terminate the USB Port 1. USB Port 2 was unterminated.

Table 4



1.4.4 Modes of Operation

Mode	Description
2.4 GHz Bluetooth	The EUT was connected to a R&S CMW 500 test set. The EUT was configured to display video on the EUT screen whilst playing audio through the headphones. The display was set to maximum brightness and sleep mode was disabled.
2.4 GHz WLAN	The EUT was continuously pinging to the IP Address of a Wi-Fi router. The EUT was configured to display video on the EUT screen whilst playing audio through the headphones. The display was set to maximum brightness and sleep mode was disabled.
5 GHz WLAN	The EUT was continuously pinging to the IP Address of a Wi-Fi router. The EUT was configured to display video on the EUT screen whilst playing audio through the headphones. The display was set to maximum brightness and sleep mode was disabled.
6 GHz WLAN	The EUT was continuously pinging to the IP Address of a Wi-Fi router. The EUT was configured to display video on the EUT screen whilst playing audio through the headphones. The display was set to maximum brightness and sleep mode was disabled.
Thread	The EUT was placed in a link with another customer provided sample. The EUT was configured to display video on the EUT screen. As the EUT was in a diagnostic state for this mode of operation, audio output was unable to be exercised. The display was set to maximum brightness and sleep mode was disabled.
Narrowband	The EUT was placed in a link with another customer provided sample. The EUT was configured to display video on the EUT screen whilst playing audio through the headphones. The display was set to maximum brightness and sleep mode was disabled.

Table 5

1.5 Deviations from the Standard

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

1.6 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: A3113, Serial Number: WQYQ2X0DMK			
0	As supplied by the customer	Not Applicable	Not Applicable
Model: A3113, Serial Number: XVVPY3NJ0L			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 6



1.7 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 - 2.4 GHz Bluetooth		
AC Power Line Conducted Emissions	Jonas Ayipah	UKAS
Configuration and Mode: AC Powered - 2.4 GHz WLAN		
AC Power Line Conducted Emissions	Jonas Ayipah	UKAS
Configuration and Mode: AC Powered - 5 GHz WLAN		
AC Power Line Conducted Emissions	Muhammad Enam	UKAS
Configuration and Mode: AC Powered - 6 GHz WLAN		
AC Power Line Conducted Emissions	Nathan Harrison	UKAS
Configuration and Mode: AC Powered - Thread		
AC Power Line Conducted Emissions	Muhammad Enam	UKAS
Configuration and Mode: AC Powered - Narrowband		
AC Power Line Conducted Emissions	Muhammad Enam	UKAS

Table 7

Office Address:

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



2 Test Details

2.1 AC Power Line Conducted Emissions

2.1.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.207
ISED RSS-247, Clause 3.1
ISED RSS-GEN, Clause 8.8

2.1.2 Equipment Under Test and Modification State

A3113, S/N: WQYQ2X0DMK - Modification State 0
A3113, S/N: XVVPY3NJ0L - Modification State 0

2.1.3 Date of Test

25-October-2023 to 23-November-2023

2.1.4 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 a Line Impedance Stabilisation Network (LISN).

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

2.1.5 Example Calculation

Quasi-Peak level (dB μ V) = Receiver level (dB μ V) + Correction Factor (dB)
Margin (dB) = Quasi-Peak level (dB μ V) - Limit (dB μ V)

CISPR Average level (dB μ V) = Receiver level (dB μ V) + Correction Factor (dB)
Margin (dB) = CISPR Average level (dB μ V) - Limit (dB μ V)

2.1.6 Example Test Setup Diagram

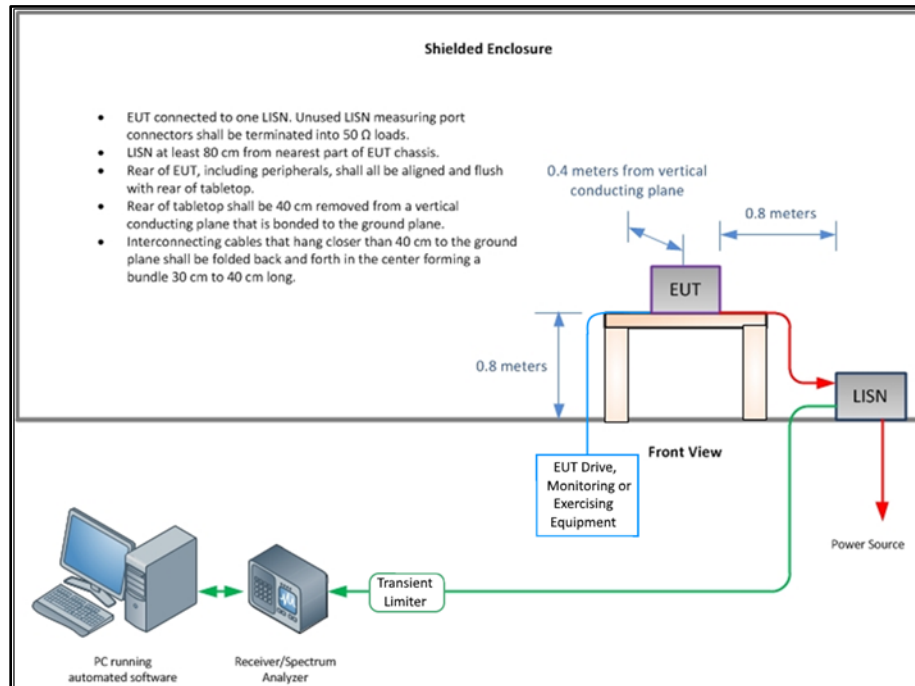


Figure 1 - Conducted Emissions

FCC 47 CFR Part 15, Limit Clause 15.207 and ISED RSS-GEN, Limit Clause 8.8

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

Table 8

*Decreases with the logarithm of the frequency.

2.1.7 Environmental Conditions

Ambient Temperature 20.3 - 22.7 °C
 Relative Humidity 46.3 - 59.8 %
 Atmospheric Pressure 992.1 - 997.5 mbar



2.1.8 Test Results

Results for Configuration and Mode: AC Powered - 2.4 GHz Bluetooth

Applied supply voltage: 115 V AC

Applied supply frequency: 60 Hz

Frequency (MHz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
0.151	56.58	66.00	-9.42	Q-Peak
0.151	25.68	56.00	-30.32	CISPR Avg
0.166	54.44	65.10	-10.66	Q-Peak
0.166	24.40	55.10	-30.70	CISPR Avg
0.193	51.40	63.90	-12.50	Q-Peak
0.193	32.64	53.90	-21.26	CISPR Avg
0.214	49.03	63.00	-13.97	Q-Peak
0.214	18.84	53.00	-34.16	CISPR Avg
0.243	46.15	62.00	-15.85	Q-Peak
0.243	16.20	52.00	-35.80	CISPR Avg
0.287	42.45	60.60	-18.15	Q-Peak
0.287	21.08	50.60	-29.52	CISPR Avg

Table 9 - Live Line Emissions Results

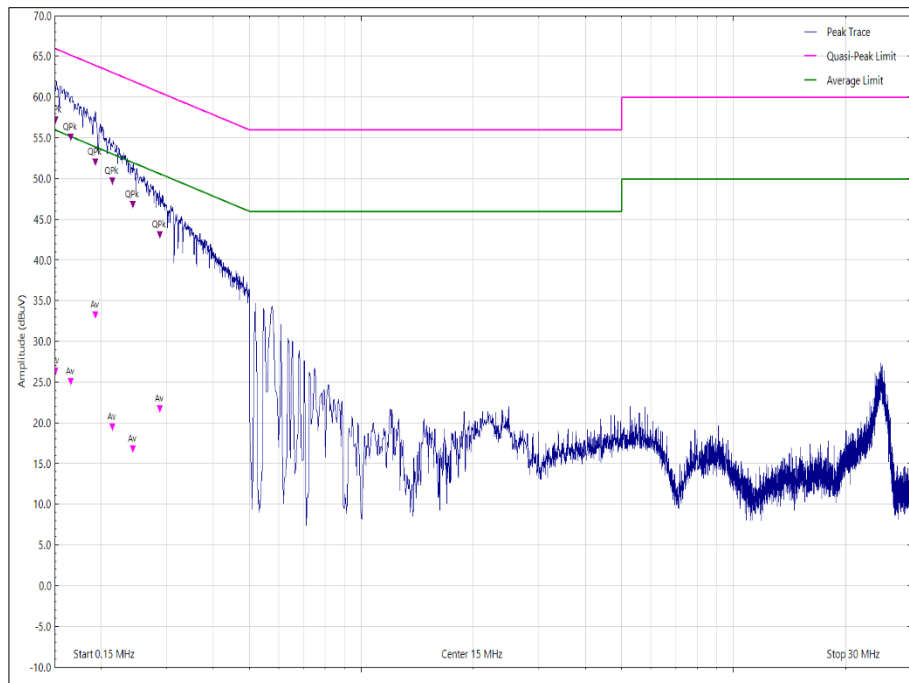


Figure 2 - Live Line - 150 kHz to 30 MHz



Frequency (MHz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
0.153	56.25	65.80	-9.55	Q-Peak
0.153	25.35	55.80	-30.45	CISPR Avg
0.182	31.14	54.40	-23.26	CISPR Avg
0.182	52.23	64.40	-12.17	Q-Peak
0.198	32.63	53.70	-21.07	CISPR Avg
0.198	50.08	63.70	-13.62	Q-Peak
0.220	17.43	52.80	-35.37	CISPR Avg
0.220	47.44	62.80	-15.36	Q-Peak
0.238	16.07	52.20	-36.13	CISPR Avg
0.238	45.92	62.20	-16.28	Q-Peak
0.268	14.60	51.20	-36.60	CISPR Avg
0.268	43.58	61.20	-17.62	Q-Peak

Table 10 - Neutral Line Emissions Results

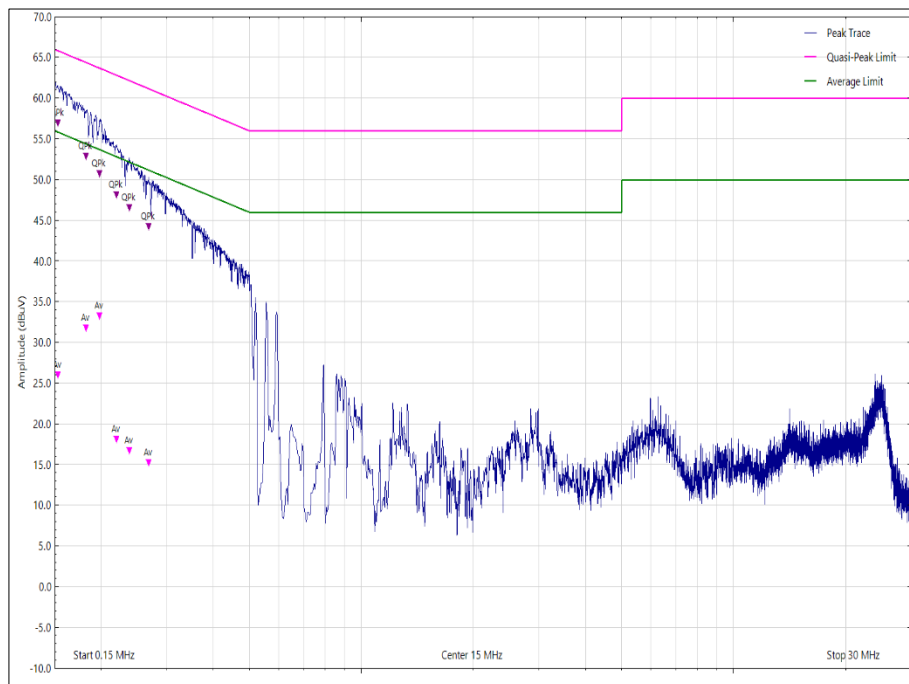


Figure 3 - Neutral Line - 150 kHz to 30 MHz



Results for Configuration and Mode: AC Powered - 2.4 GHz WLAN

Applied supply voltage: 115 V AC
 Applied supply frequency: 60 Hz

Frequency (MHz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
0.153	56.11	65.80	-9.69	Q-Peak
0.153	25.30	55.80	-30.50	CISPR Avg
0.173	53.43	64.80	-11.37	Q-Peak
0.173	23.33	54.80	-31.47	CISPR Avg
0.194	34.89	53.90	-19.01	CISPR Avg
0.194	51.04	63.90	-12.86	Q-Peak
0.206	20.69	53.40	-32.71	CISPR Avg
0.206	49.25	63.40	-14.15	Q-Peak
0.228	16.73	52.50	-35.77	CISPR Avg
0.228	46.69	62.50	-15.81	Q-Peak
0.251	44.14	61.70	-17.56	Q-Peak
0.251	14.71	51.70	-36.99	CISPR Avg

Table 11 - Live Line Emissions Results

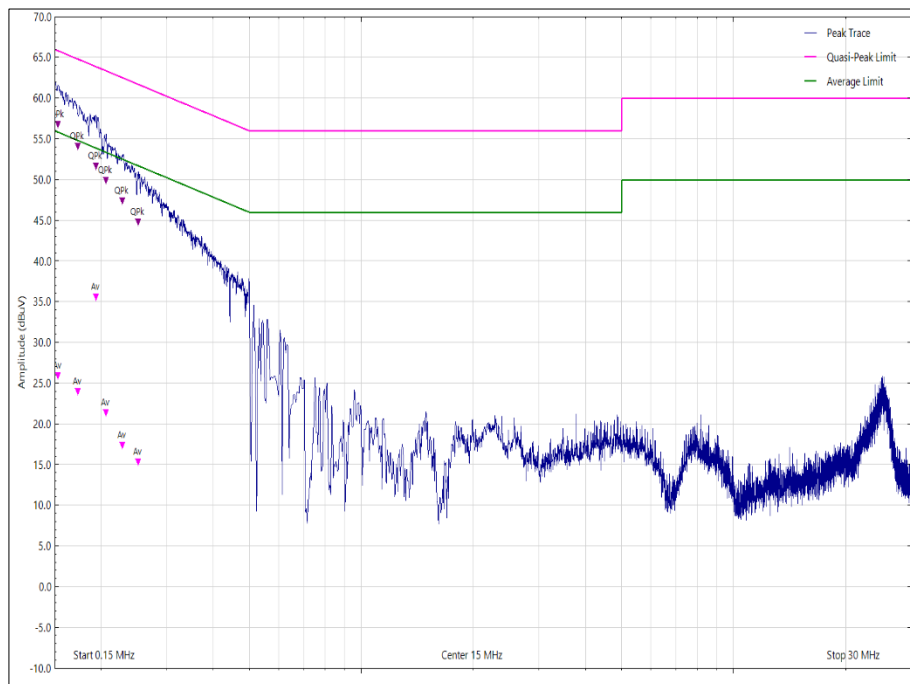


Figure 4 - Live Line - 150 kHz to 30 MHz



Frequency (MHz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
0.152	24.96	55.90	-30.94	CISPR Avg
0.152	55.66	65.90	-10.24	Q-Peak
0.164	24.16	55.20	-31.04	CISPR Avg
0.164	53.89	65.20	-11.31	Q-Peak
0.177	24.18	54.60	-30.42	CISPR Avg
0.177	52.27	64.60	-12.33	Q-Peak
0.195	35.28	53.80	-18.52	CISPR Avg
0.195	50.48	63.80	-13.32	Q-Peak
0.204	49.29	63.40	-14.11	Q-Peak
0.204	23.23	53.40	-30.17	CISPR Avg
0.223	17.24	52.70	-35.46	CISPR Avg
0.223	47.19	62.70	-15.51	Q-Peak

Table 12 - Neutral Line Emissions Results

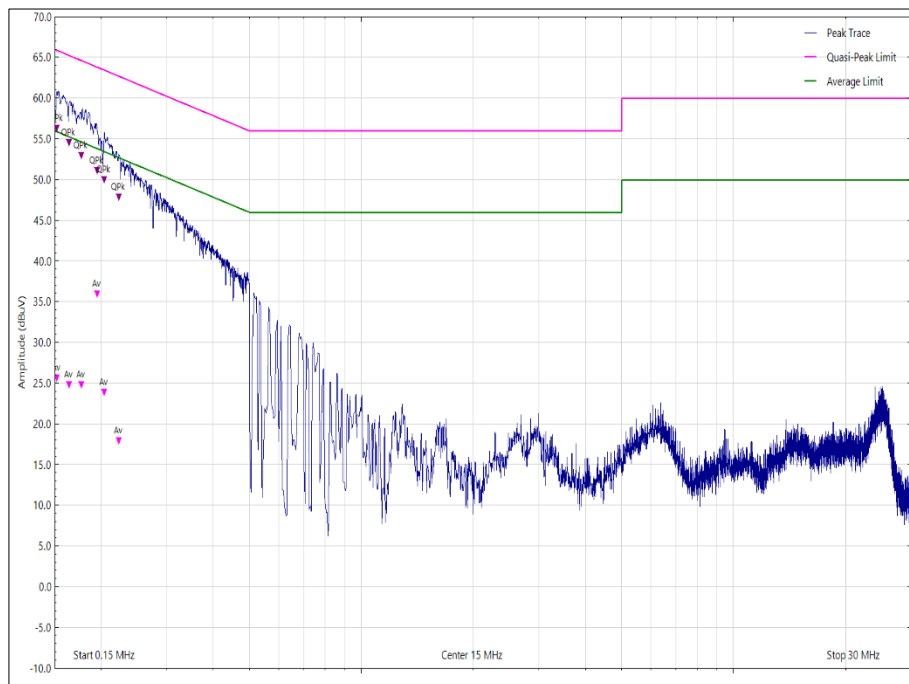


Figure 5 - Neutral Line - 150 kHz to 30 MHz



Results for Configuration and Mode: AC Powered - 5 GHz WLAN

Applied supply voltage: 115 V AC
 Applied supply frequency: 60 Hz

Frequency (MHz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
0.151	54.91	65.90	-10.99	Q-Peak
0.151	24.31	55.90	-31.59	CISPR Avg
0.158	54.03	65.60	-11.57	Q-Peak
0.158	23.72	55.60	-31.88	CISPR Avg
0.163	53.39	65.30	-11.91	Q-Peak
0.163	23.60	55.30	-31.70	CISPR Avg
0.178	50.98	64.60	-13.62	Q-Peak
0.178	24.55	54.60	-30.05	CISPR Avg
0.193	49.11	63.90	-14.79	Q-Peak
0.193	35.00	53.90	-18.90	CISPR Avg
0.205	20.04	53.40	-33.36	CISPR Avg
0.205	46.59	63.40	-16.81	Q-Peak
0.228	14.47	52.50	-38.03	CISPR Avg
0.228	43.74	62.50	-18.76	Q-Peak
0.240	13.60	52.10	-38.50	CISPR Avg
0.240	42.68	62.10	-19.42	Q-Peak
0.259	12.37	51.50	-39.13	CISPR Avg
0.259	41.01	61.50	-20.49	Q-Peak
0.277	19.36	50.90	-31.54	CISPR Avg
0.277	39.45	60.90	-21.45	Q-Peak
0.366	11.29	48.60	-37.31	CISPR Avg
0.366	33.59	58.60	-25.01	Q-Peak

Table 13 - Live Line Emissions Results

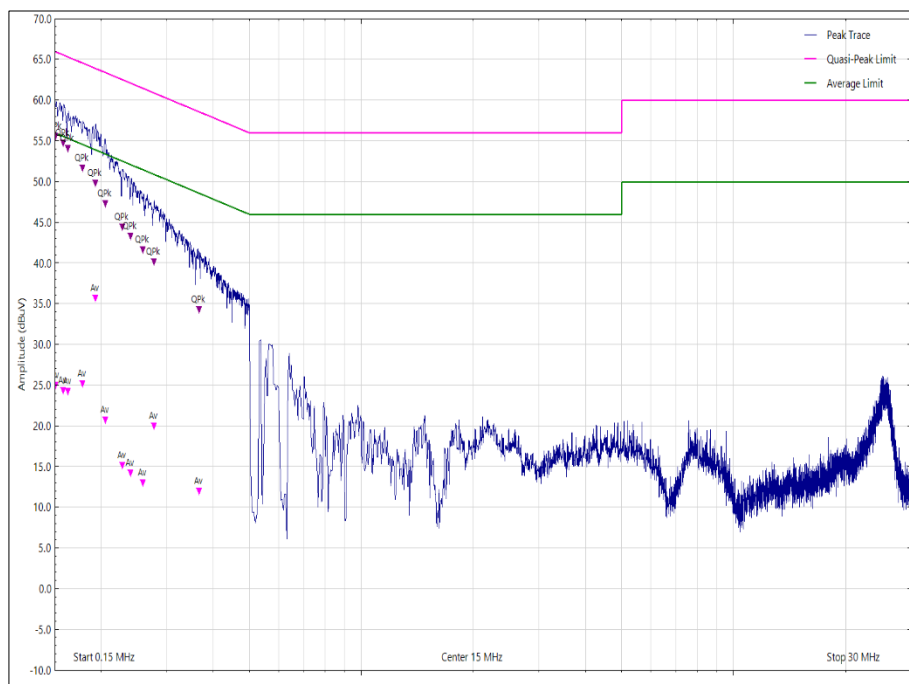


Figure 6 - Live Line - 150 kHz to 30 MHz



Frequency (MHz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
0.155	22.45	55.70	-33.25	CISPR Avg
0.155	52.76	65.70	-12.94	Q-Peak
0.163	21.86	55.30	-33.44	CISPR Avg
0.163	51.68	65.30	-13.62	Q-Peak
0.167	20.90	55.10	-34.20	CISPR Avg
0.167	50.01	65.10	-15.09	Q-Peak
0.181	28.19	54.40	-26.21	CISPR Avg
0.181	48.34	64.40	-16.06	Q-Peak
0.185	33.87	54.20	-20.33	CISPR Avg
0.185	48.80	64.20	-15.40	Q-Peak
0.199	30.79	53.70	-22.91	CISPR Avg
0.199	46.90	63.70	-16.80	Q-Peak
0.226	40.91	62.60	-21.69	Q-Peak
0.226	12.36	52.60	-40.24	CISPR Avg
0.268	36.98	61.20	-24.22	Q-Peak
0.268	10.60	51.20	-40.60	CISPR Avg
0.302	33.99	60.20	-26.21	Q-Peak
0.302	12.11	50.20	-38.09	CISPR Avg
0.358	5.87	48.80	-42.93	CISPR Avg
0.358	29.94	58.80	-28.86	Q-Peak
0.442	25.21	57.00	-31.79	Q-Peak
0.442	4.02	47.00	-42.98	CISPR Avg

Table 14 - Neutral Line Emissions Results

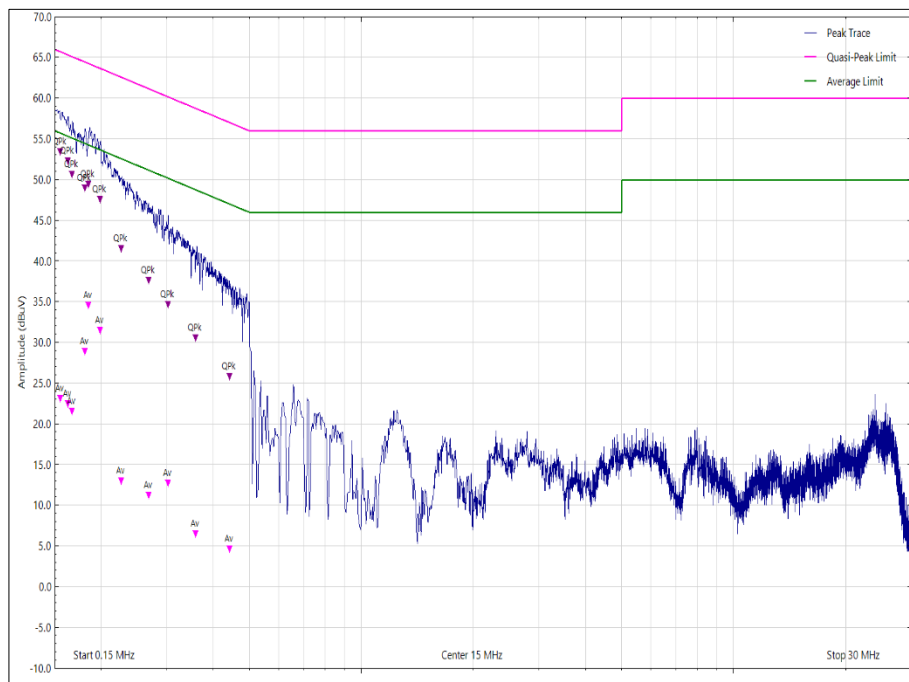


Figure 7 - Neutral Line - 150 kHz to 30 MHz



Results for Configuration and Mode: AC Powered - 6 GHz WLAN

Applied supply voltage: 115 V AC
 Applied supply frequency: 60 Hz

Frequency (MHz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
0.151	57.01	66.00	-8.99	Q-Peak
0.151	26.19	56.00	-29.81	CISPR Avg
0.168	54.65	65.00	-10.35	Q-Peak
0.168	24.94	55.00	-30.06	CISPR Avg
0.193	32.99	53.90	-20.91	CISPR Avg
0.193	51.92	63.90	-11.98	Q-Peak
0.216	49.26	63.00	-13.74	Q-Peak
0.216	19.01	53.00	-33.99	CISPR Avg
0.248	46.08	61.80	-15.72	Q-Peak
0.248	16.24	51.80	-35.56	CISPR Avg
0.290	20.49	50.50	-30.01	CISPR Avg
0.290	42.83	60.50	-17.67	Q-Peak
0.342	39.32	59.10	-19.78	Q-Peak
0.342	11.23	49.10	-37.87	CISPR Avg
0.423	34.92	57.40	-22.48	Q-Peak
0.423	8.21	47.40	-39.19	CISPR Avg

Table 15 - Live Line Emissions Results

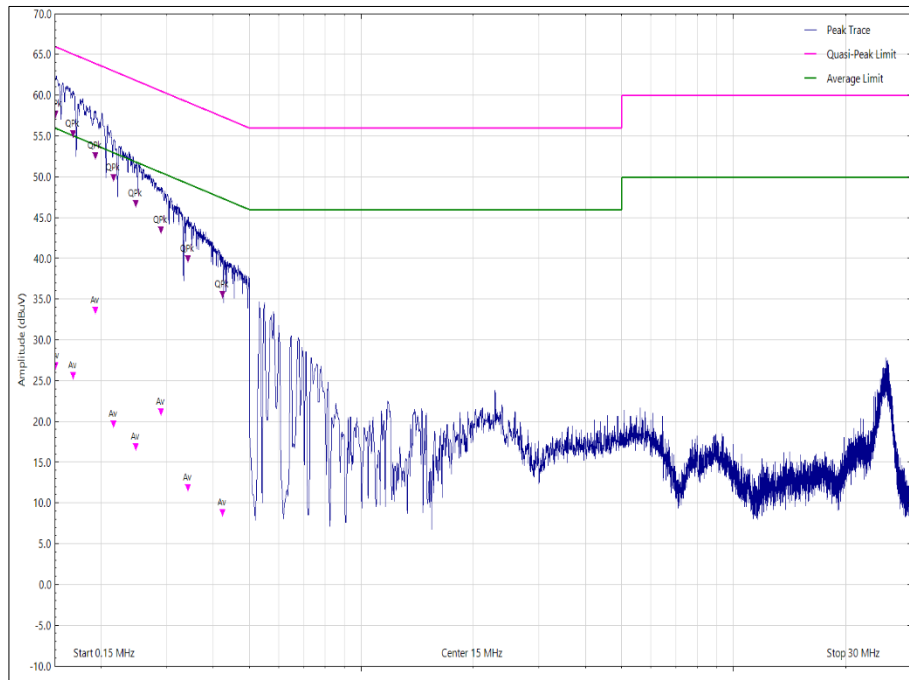


Figure 8 - Live Line - 150 kHz to 30 MHz



Frequency (MHz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
0.152	25.73	55.90	-30.17	CISPR Avg
0.152	56.75	65.90	-9.15	Q-Peak
0.172	53.93	64.90	-10.97	Q-Peak
0.172	23.79	54.90	-31.11	CISPR Avg
0.194	34.97	53.90	-18.93	CISPR Avg
0.194	51.41	63.90	-12.49	Q-Peak
0.219	18.35	52.80	-34.45	CISPR Avg
0.219	48.64	62.80	-14.16	Q-Peak
0.246	16.24	51.90	-35.66	CISPR Avg
0.246	46.15	61.90	-15.75	Q-Peak
0.285	19.87	50.70	-30.83	CISPR Avg
0.285	43.48	60.70	-17.22	Q-Peak

Table 16 - Neutral Line Emissions Results

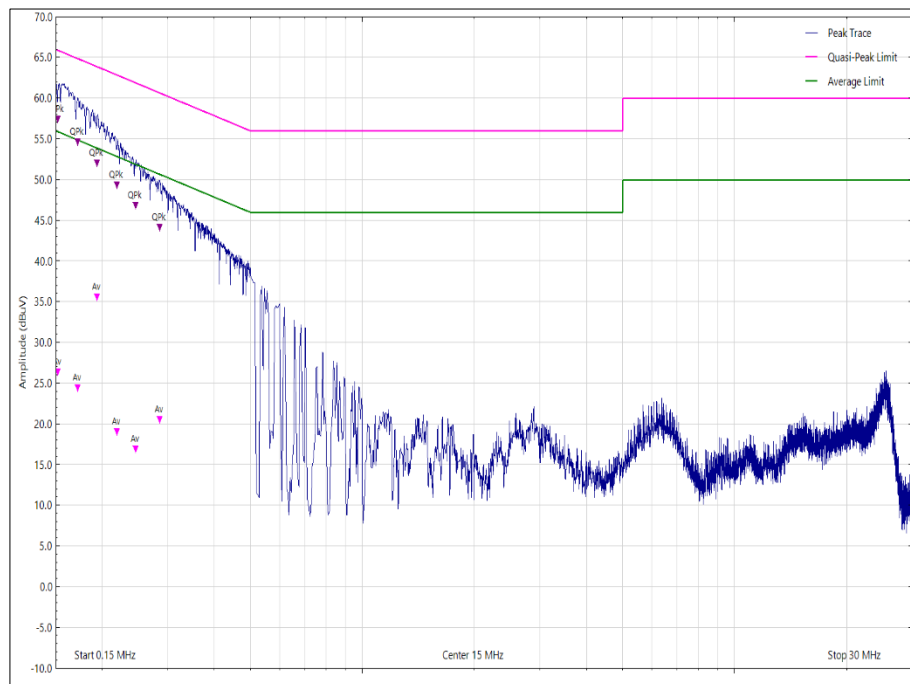


Figure 9 - Neutral Line - 150 kHz to 30 MHz



Results for Configuration and Mode: AC Powered - Thread

Applied supply voltage: 115 V AC
 Applied supply frequency: 60 Hz

Frequency (MHz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
0.154	43.64	65.80	-22.16	Q-Peak
0.154	16.16	55.80	-39.64	CISPR Avg
0.167	16.53	55.10	-38.57	CISPR Avg
0.167	42.12	65.10	-22.98	Q-Peak
0.187	41.47	64.20	-22.73	Q-Peak
0.187	28.08	54.20	-26.12	CISPR Avg
0.207	16.65	53.30	-36.65	CISPR Avg
0.207	37.12	63.30	-26.18	Q-Peak
0.221	35.50	62.80	-27.30	Q-Peak
0.221	13.07	52.80	-39.73	CISPR Avg

Table 17 - Live Line Emissions Results

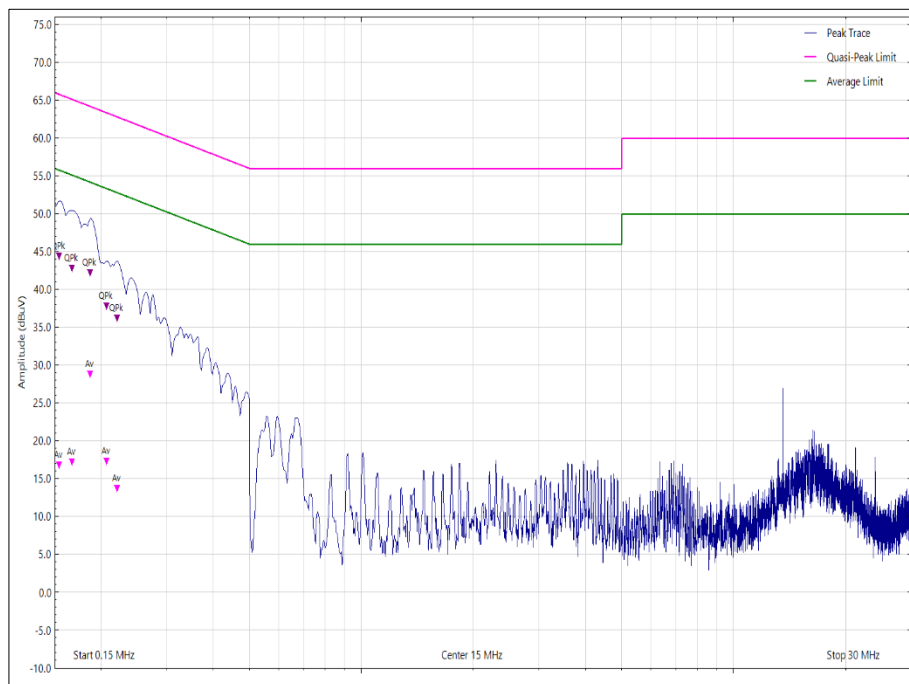


Figure 10 - Live Line - 150 kHz to 30 MHz



Frequency (MHz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
0.155	43.97	65.70	-21.73	Q-Peak
0.155	16.63	55.70	-39.07	CISPR Avg
0.167	17.31	55.10	-37.79	CISPR Avg
0.167	42.41	65.10	-22.69	Q-Peak
0.177	26.92	54.60	-27.68	CISPR Avg
0.177	41.64	64.60	-22.96	Q-Peak
0.195	39.44	63.80	-24.36	Q-Peak
0.195	22.98	53.80	-30.82	CISPR Avg
0.209	37.20	63.20	-26.00	Q-Peak
0.209	17.03	53.20	-36.17	CISPR Avg
0.222	35.77	62.70	-26.93	Q-Peak
0.222	14.08	52.70	-38.62	CISPR Avg
0.253	32.97	61.70	-28.73	Q-Peak
0.253	11.83	51.70	-39.87	CISPR Avg

Table 18 - Neutral Line Emissions Results

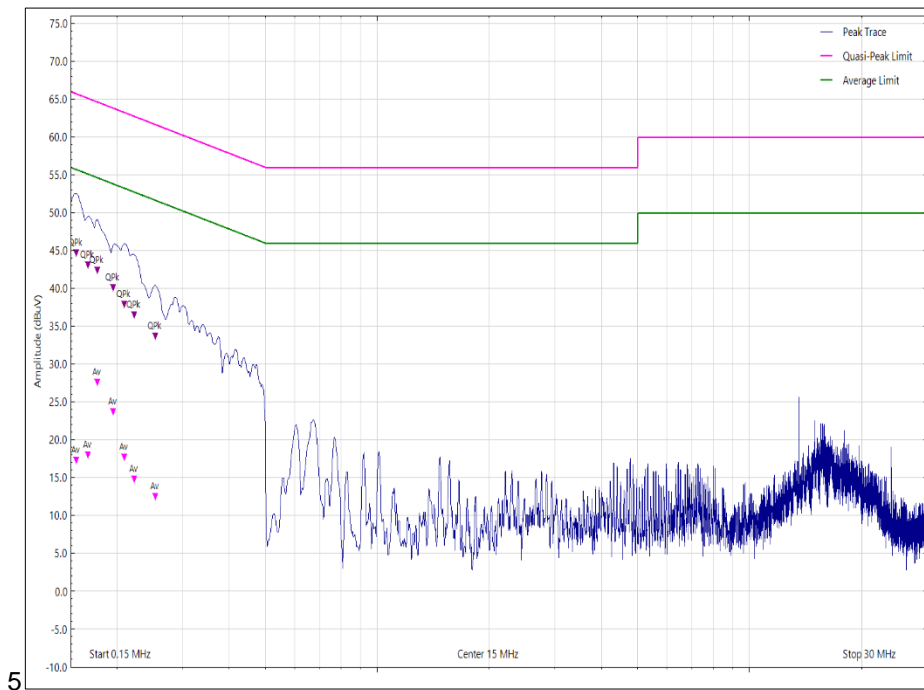


Figure 11 - Neutral Line - 150 kHz to 30 MHz



Results for Configuration and Mode: AC Powered - Narrowband

Applied supply voltage: 115 V AC

Applied supply frequency: 60 Hz

Frequency (MHz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
0.154	55.73	65.80	-10.07	Q-Peak
0.154	25.18	55.80	-30.62	CISPR Avg
0.163	24.81	55.30	-30.49	CISPR Avg
0.163	54.60	65.30	-10.70	Q-Peak
0.171	53.53	64.90	-11.37	Q-Peak
0.171	23.64	54.90	-31.26	CISPR Avg
0.196	50.78	63.80	-13.02	Q-Peak
0.196	30.52	53.80	-23.28	CISPR Avg
0.219	48.31	62.80	-14.49	Q-Peak
0.219	18.22	52.80	-34.58	CISPR Avg
0.267	14.86	51.20	-36.34	CISPR Avg
0.267	44.28	61.20	-16.92	Q-Peak
0.317	40.93	59.80	-18.87	Q-Peak
0.317	12.61	49.80	-37.19	CISPR Avg
0.391	36.98	58.10	-21.12	Q-Peak
0.391	14.09	48.10	-34.01	CISPR Avg
0.466	14.21	46.60	-32.39	CISPR Avg
0.466	33.72	56.60	-22.88	Q-Peak
0.509	32.24	56.00	-23.76	Q-Peak
0.509	6.64	46.00	-39.36	CISPR Avg
0.540	31.32	56.00	-24.68	Q-Peak
0.540	6.19	46.00	-39.81	CISPR Avg
0.572	12.37	46.00	-33.63	CISPR Avg
0.572	30.47	56.00	-25.53	Q-Peak
0.625	4.92	46.00	-41.08	CISPR Avg
0.625	28.95	56.00	-27.05	Q-Peak
0.674	27.78	56.00	-28.22	Q-Peak
0.674	9.09	46.00	-36.91	CISPR Avg

Table 19 - Live Line Emissions Results

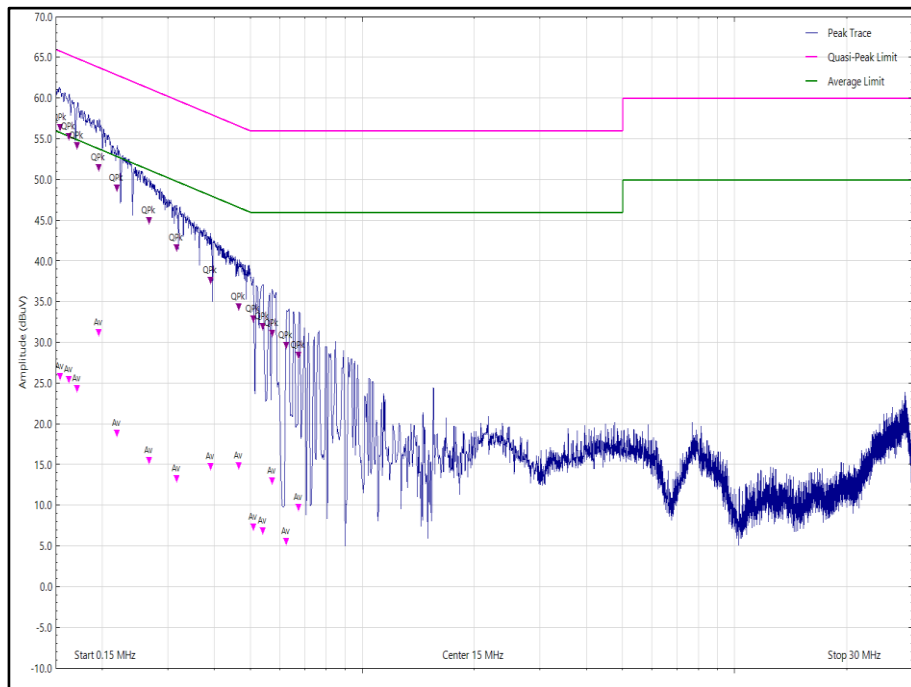


Figure 12 - Live Line - 150 kHz to 30 MHz



Frequency (MHz)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
0.154	25.12	55.80	-30.68	CISPR Avg
0.154	55.77	65.80	-10.03	Q-Peak
0.167	54.02	65.10	-11.08	Q-Peak
0.167	24.33	55.10	-30.77	CISPR Avg
0.187	34.07	54.20	-20.13	CISPR Avg
0.187	51.73	64.20	-12.47	Q-Peak
0.198	30.53	53.70	-23.17	CISPR Avg
0.198	50.52	63.70	-13.18	Q-Peak
0.245	15.82	51.90	-36.08	CISPR Avg
0.245	45.47	61.90	-16.43	Q-Peak
0.299	15.06	50.30	-35.24	CISPR Avg
0.299	41.12	60.30	-19.18	Q-Peak
0.359	9.66	48.80	-39.14	CISPR Avg
0.359	37.32	58.80	-21.48	Q-Peak
0.482	10.46	46.30	-35.84	CISPR Avg
0.482	31.60	56.30	-24.70	Q-Peak
0.527	5.35	46.00	-40.65	CISPR Avg
0.527	29.51	56.00	-26.49	Q-Peak
0.580	27.64	56.00	-28.36	Q-Peak
0.580	9.80	46.00	-36.20	CISPR Avg

Table 20 - Neutral Line Emissions Results

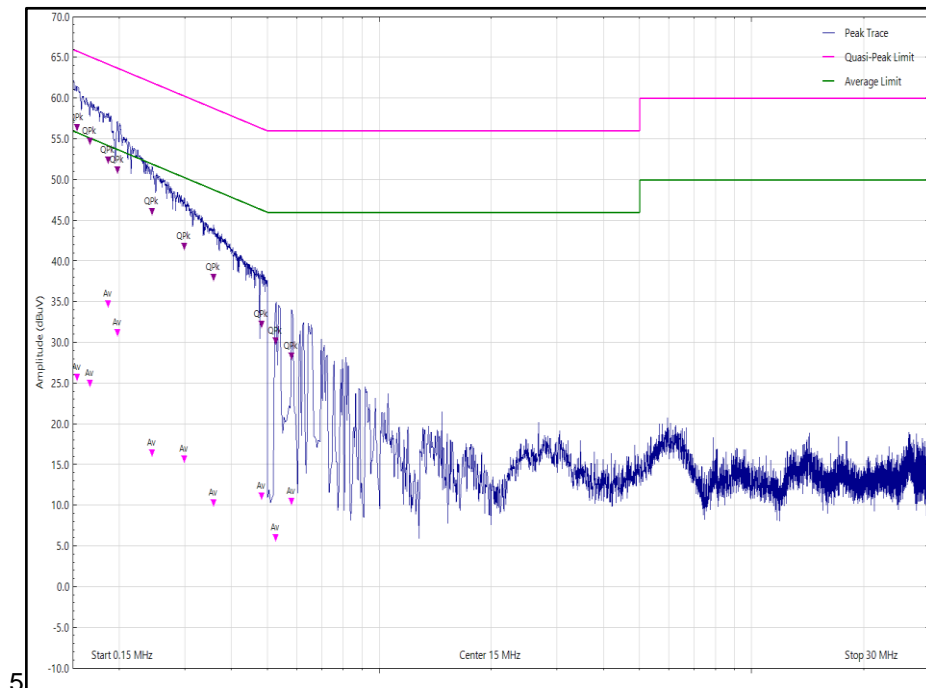


Figure 13 - Neutral Line - 150 kHz to 30 MHz



2.1.9 Test Location and Test Equipment Used

This test was carried out in EMC Chamber 12 and EMC Chamber 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Screened Room 12	MVG	EMC-3	5621	36	07-Aug-2026
Screened Room (1)	Rainford	Rainford	1541	12	24-Aug-2024
Emissions Software	TUV SUD	EmX V3.1.12	5125	-	Software
EMC Test Receiver	Rohde & Schwarz	ESW44	6334	12	31-Jan-2024
Test Receiver	Rohde & Schwarz	ESU40	3506	12	30-Mar-2024
Transient Limiter	Hewlett Packard	11947A	2377	12	02-Mar-2024
Termination (50ohm)	Meca	405-1	550	12	24-Nov-2023
Cable (N-Type to N-Type, 2 m)	Junkosha	MWX221-02000AMSAMS/B	5729	6	05-Dec-2023
Cable (N-Type to N-Type, 8 m)	Junkosha	MWX221-08000NMSNMS/B	6321	12	04-Feb-2024
LISN (CISPR 16, Single Phase)	Rohde & Schwarz	ESH3-Z5	1390	12	02-Feb-2024

Table 21



3 Test Equipment Information

3.1 General Test Equipment Used

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Thermo-Hygro-Barometer	PCE Instruments	PCE-THB-40	5478	12	21-Apr-2024

Table 22



4 Measurement Uncertainty

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

Test Name	Measurement Uncertainty
AC Power Line Conducted Emissions	150 kHz to 30 MHz, LISN, ± 3.7 dB

Table 23

Measurement Uncertainty Decision Rule – Accuracy Method

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.