

FCC and ISED Test Report



Apple Inc
Model: A3389

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

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

FCC ID: BCGA3389 IC: 579C-A3389

COMMERCIAL-IN-CONFIDENCE

Document 75961400-54 Issue 01

SIGNATURE			
			
NAME	JOB TITLE	RESPONSIBLE FOR	ISSUE DATE
Andrew Lawson	Chief Engineer, EMC	Authorised Signatory	17 September 2024

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

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 15C 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	Matthew Dawkins	17 September 2024	
Testing	Callum Pennells	17 September 2024	

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

EYECUTIVE SUMMARY

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: 2023, Issue 3 (2023-08) and Issue 5 (2018-04) + A2 (2021-02) 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	17-Sept-2024

Table 1

1.2 Introduction

Applicant	Apple Inc
Manufacturer	Apple Inc
EUT/Sample Identification	Refer to section 1.6
Test Specification/Issue/Date	FCC 47 CFR Part 15C, ISED RSS-247 and ISED RSS-GEN: 2023, Issue 3 (2023-08) and Issue 5 (2018-04) + A2 (2021-02)
Start of Test	30-August-2024
Finish of Test	30-August-2024
Name of Engineer(s)	Matthew Dawkins and Callum Pennells
Related Document(s)	ANSI C63.10 (2020)



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
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

Table 2

Section	Specification Clause	Test Description	Result	Comments/Base Standard
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

Table 3

Section	Specification Clause	Test Description	Result	Comments/Base Standard
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

Table 4



Section	Specification Clause	Test Description	Result	Comments/Base Standard
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

Table 5

Section	Specification Clause	Test Description	Result	Comments/Base Standard
Configuration and Mode: AC Powered - Thread				
2.1	15.207, 3.1 and 8.8	AC Power Line Conducted Emissions	Pass	ANSI C63.10

Table 6

Section	Specification Clause	Test Description	Result	Comments/Base Standard
Configuration and Mode: AC Powered - Narrowband				
2.1	15.207, 3.1 and 8.8	AC Power Line Conducted Emissions	Pass	ANSI C63.10

Table 7



1.4 Product Information

1.4.1 Technical Description

The equipment under test (EUT) was a desktop 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	3 Pin Power Cable	No
USB Port 1	1 m	Data	USB Type C	No
USB Port 2	1 m	Data	USB Type C	No
USB Port 3	Unterminated	Data	USB Type C	No
USB Port 4	Unterminated	Data	USB Type C	No
USB Port 5	Unterminated	Data	USB Type C	No
USB Port 6	Unterminated	Data	USB Type C	No
USB Port 7	1 m	Data	USB Type A	No
USB Port 8	Unterminated	Data	USB Type A	No
Ethernet Port	3 m	Data	Cat 6	No
HDMI Port	2 m	Data	HDMI	No
Audio Jack Port	1 m	Data	Audio Jack 3.5mm	No

Table 8

1.4.3 Test Configuration

Configuration	Description
AC Powered	The EUT was powered from a 230 V 50 Hz AC supply. The Audio Jack Port was terminated with a set of headphones. The Ethernet Port was terminated with an ethernet switch. The HDMI Port was terminated using a monitor. USB Port 7 was terminated using a mouse. USB Port 1 was terminated using a keyboard. USB Port 2 was terminated using a network box. Five USB ports were unterminated.

Table 9



1.4.4 Modes of Operation

Mode	Description
2.4 GHz Bluetooth	The EUT was powered with a connection established to a CMW 500 test set.
2.4 GHz WLAN	The EUT was powered with a network link established to an access point.
5 GHz WLAN	The EUT was powered with a network link established to an access point.
6 GHz WLAN	The EUT was powered with a network link established to an access point.
Thread	The EUT was powered and placed in a link with another customer provided slave device.
Narrowband	The EUT was powered and placed in a link with another customer provided slave device.

Table 10

1.5 Deviations from the Standard

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

1.6 Identification of the EUT

The table below details identification of the EUT(s) that have been used to carry out the testing within this report.

Serial Number	Hardware Version	Software Version	Firmware
Model: A3389			
J2X0Q012KJ	REV1.0	24B31	WLAN: 23.10.888.0.41.51.162 Bluetooth: 22.1.136.1387 Narrowband: 22.1.136.1387 Thread: 22.1.136.1387
VX5710Q27J	REV1.0	24B31	WLAN: 23.10.888.0.41.51.162 Bluetooth: 22.1.136.1387 Narrowband: 22.1.136.1387 Thread: 22.1.136.1387
QPJCXP4WP7	REV1.0	24A62401t	WLAN: 23.10.849.0.41.51.149 Bluetooth: 22.1.91.681 Narrowband: 22.1.91.681 Thread: 22.1.91.681

Table 11



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: A3389, Serial Number: QPJXP4WP7			
0	As supplied by the customer	Not Applicable	Not Applicable
Model: A3389, Serial Number: VX5710Q27J			
0	As supplied by the customer	Not Applicable	Not Applicable
Model: A3389, Serial Number: J2X0Q012KJ			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 12



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 - 2.4 GHz Bluetooth		
AC Power Line Conducted Emissions	Matthew Dawkins	UKAS

Table 13

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: AC Powered - 2.4 GHz WLAN		
AC Power Line Conducted Emissions	Callum Pennells	UKAS

Table 14

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: AC Powered - 5 GHz WLAN		
AC Power Line Conducted Emissions	Callum Pennells	UKAS

Table 15

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: AC Powered - 6 GHz WLAN		
AC Power Line Conducted Emissions	Callum Pennells	UKAS

Table 16

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: AC Powered - Thread		
AC Power Line Conducted Emissions	Matthew Dawkins	UKAS

Table 17

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: AC Powered - Narrowband		
AC Power Line Conducted Emissions	Matthew Dawkins	UKAS

Table 18

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, ISED RSS-247 and ISED RSS-GEN, Clause 15.207, 3.1 and 8.8

2.1.2 Equipment Under Test and Modification State

A3389, S/N: J2X0Q012KJ - Modification State 0

A3389, S/N: VX5710Q27J - Modification State 0

A3389, S/N: QPJJCXP4WP7 - Modification State 0

2.1.3 Date of Test

30-August-2024

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 an Artificial Mains Network (AMN).

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

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

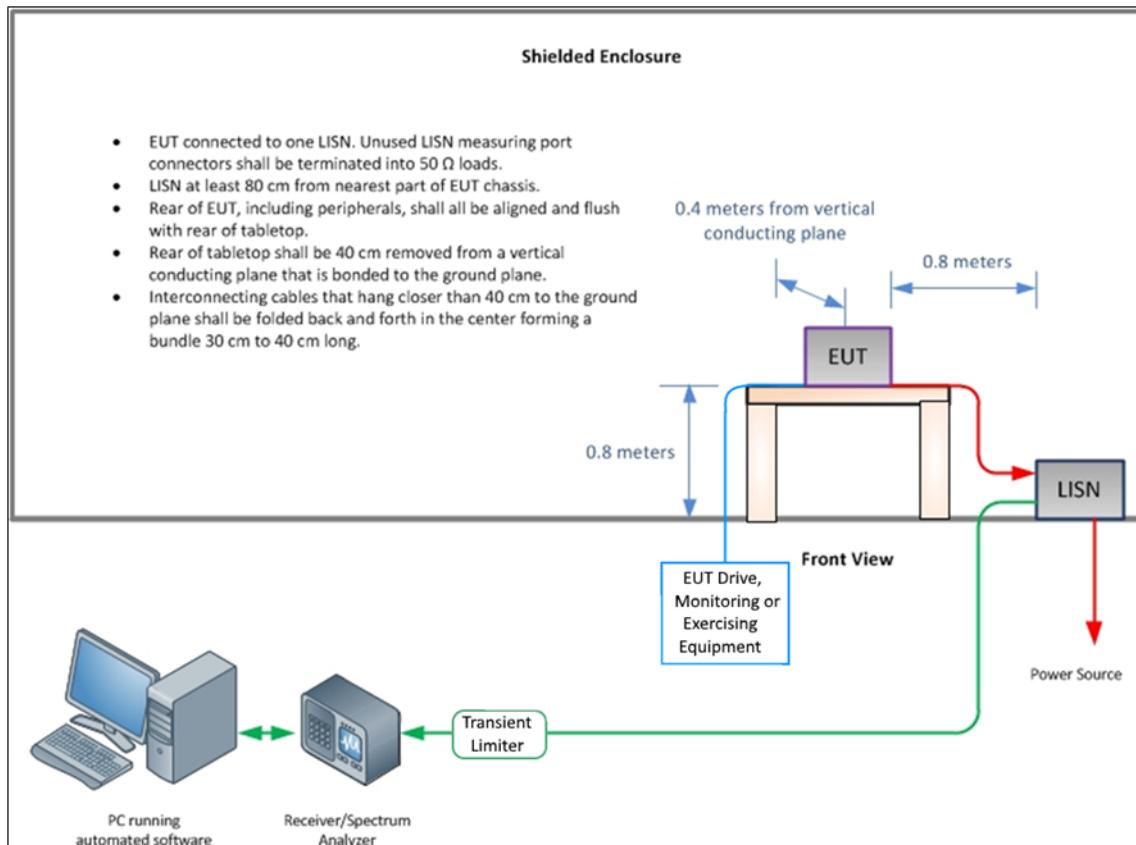


Figure 1 - Conducted Disturbance

2.1.7 Environmental Conditions

Ambient Temperature 20.3 °C
Relative Humidity 50.4 %

2.1.8 Specification Limits

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	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 19



2.1.9 Test Results

AC Powered - 2.4 GHz Bluetooth

Applied supply voltage: 120 V AC

Applied supply frequency: 60 Hz

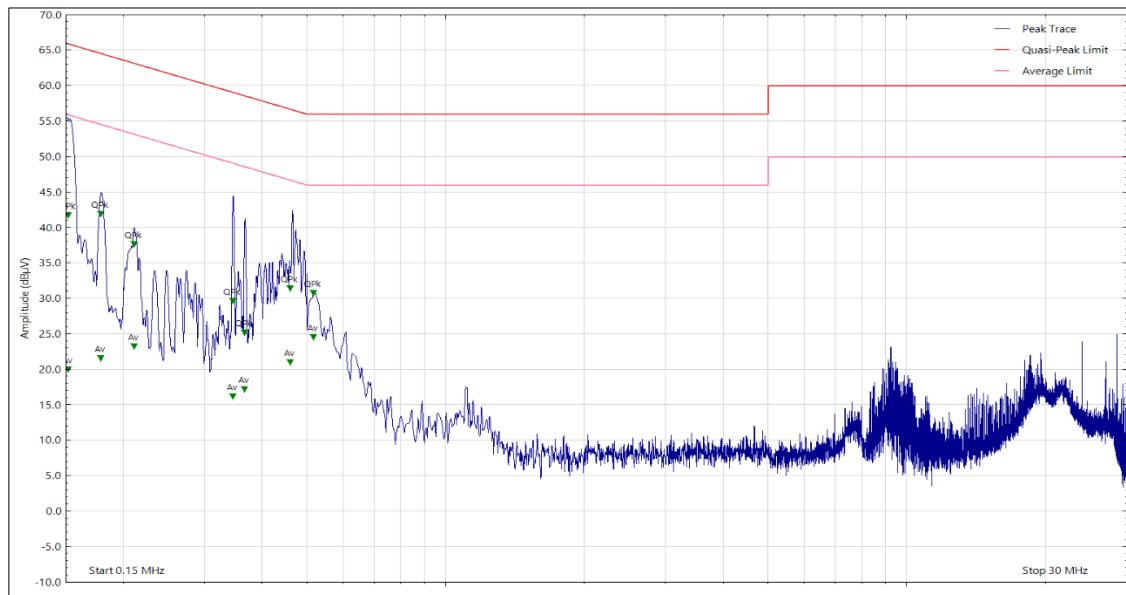


Figure 2 - Live Line - 150 kHz to 30 MHz.

Frequency (MHz)	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Detector
0.152	41.04	65.90	-24.86	Q-Peak
0.152	19.35	55.90	-36.55	CISPR Avg
0.179	41.20	64.50	-23.30	Q-Peak
0.179	20.86	54.50	-33.64	CISPR Avg
0.211	37.00	63.20	-26.20	Q-Peak
0.211	22.53	53.20	-30.67	CISPR Avg
0.346	15.49	49.10	-33.61	CISPR Avg
0.346	28.94	59.10	-30.16	Q-Peak
0.367	16.56	48.60	-32.04	CISPR Avg
0.367	24.55	58.60	-34.05	Q-Peak
0.460	30.71	56.70	-25.99	Q-Peak
0.460	20.37	46.70	-26.33	CISPR Avg
0.518	23.85	46.00	-22.15	CISPR Avg
0.518	30.05	56.00	-25.95	Q-Peak

Table 20 - Live Line Emissions Results

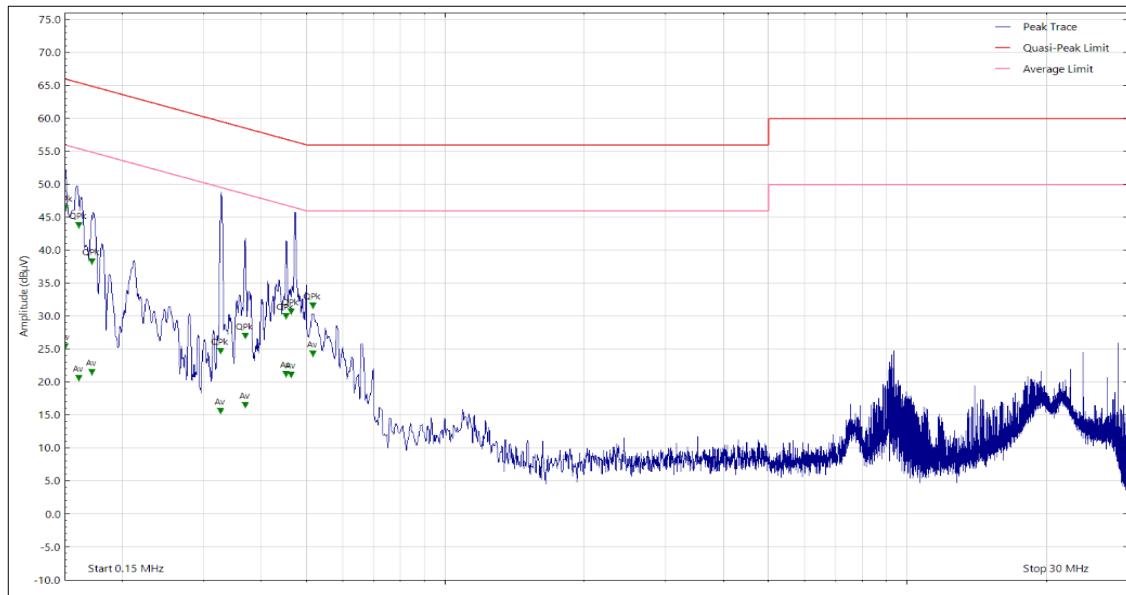


Figure 3 - Neutral Line - 150 kHz to 30 MHz.

Frequency (MHz)	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Detector
0.150	24.73	56.00	-31.27	CISPR Avg
0.150	45.72	66.00	-20.28	Q-Peak
0.161	19.96	55.40	-35.44	CISPR Avg
0.161	43.09	65.40	-22.31	Q-Peak
0.172	20.79	54.90	-34.11	CISPR Avg
0.172	37.62	64.90	-27.28	Q-Peak
0.326	14.96	49.50	-34.54	CISPR Avg
0.326	24.00	59.50	-35.50	Q-Peak
0.369	15.80	48.50	-32.70	CISPR Avg
0.369	26.28	58.50	-32.22	Q-Peak
0.452	29.32	56.80	-27.48	Q-Peak
0.452	20.53	46.80	-26.27	CISPR Avg
0.463	20.41	46.60	-26.19	CISPR Avg
0.463	29.97	56.60	-26.63	Q-Peak
0.518	23.63	46.00	-22.37	CISPR Avg
0.518	30.87	56.00	-25.13	Q-Peak

Table 21 - Neutral Line Emissions Results



AC Powered - 2.4 GHz WLAN

Applied supply voltage: 120 V AC
Applied supply frequency: 60 Hz

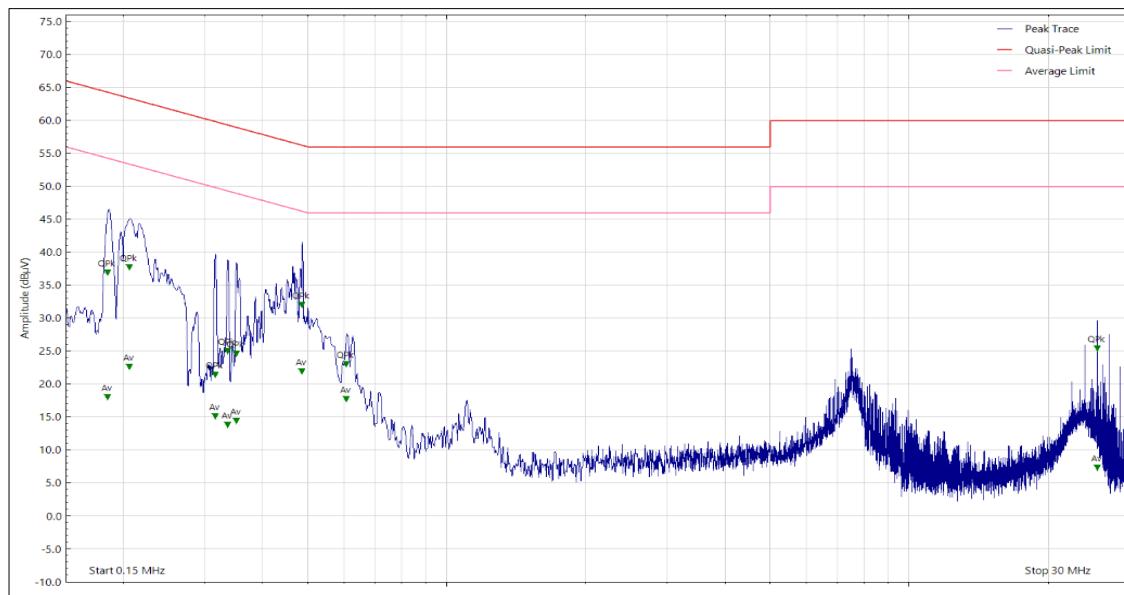


Figure 4 - Live Line - 150 kHz to 30 MHz.

Frequency (MHz)	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Detector
0.185	17.31	54.20	-36.89	CISPR Avg
0.185	36.24	64.20	-27.96	Q-Peak
0.206	21.88	53.40	-31.52	CISPR Avg
0.206	36.96	63.40	-26.44	Q-Peak
0.316	14.46	49.80	-35.34	CISPR Avg
0.316	20.73	59.80	-39.07	Q-Peak
0.336	24.28	59.30	-35.02	Q-Peak
0.336	13.13	49.30	-36.17	CISPR Avg
0.351	23.90	58.90	-35.00	Q-Peak
0.351	13.70	48.90	-35.20	CISPR Avg
0.486	21.23	46.50	-25.27	CISPR Avg
0.486	31.33	56.50	-25.17	Q-Peak
0.606	17.01	46.00	-28.99	CISPR Avg
0.606	22.32	56.00	-33.68	Q-Peak
25.503	24.71	60.00	-35.29	Q-Peak
25.503	6.62	50.00	-43.38	CISPR Avg

Table 22 - Live Line Emissions Results

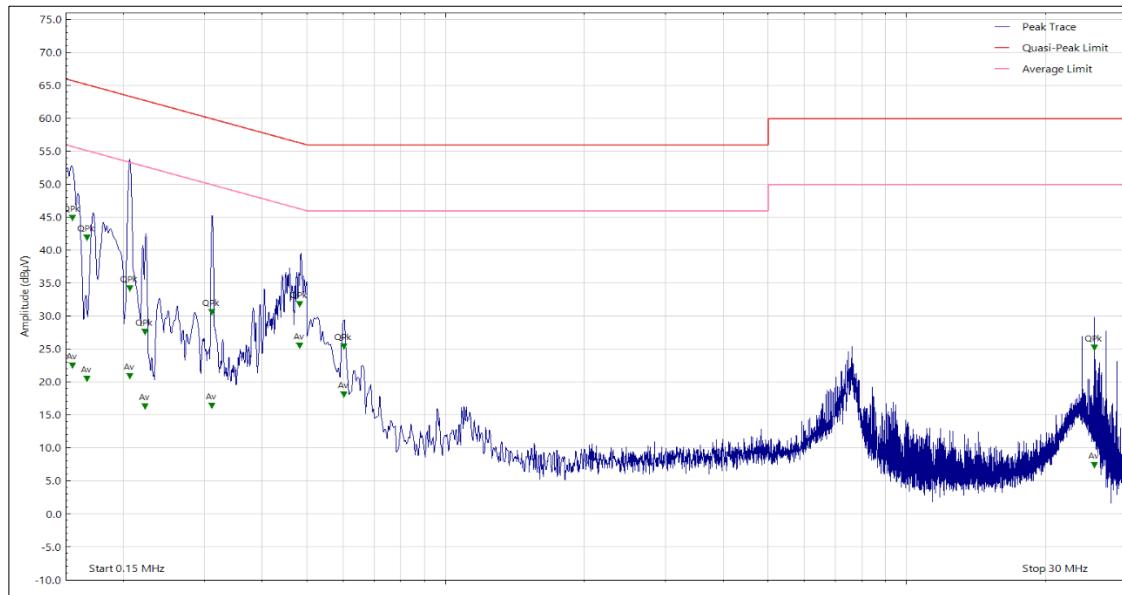


Figure 5 - Neutral Line - 150 kHz to 30 MHz.

Frequency (MHz)	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Detector
0.155	44.20	65.70	-21.50	Q-Peak
0.155	21.80	55.70	-33.90	CISPR Avg
0.167	41.22	65.10	-23.88	Q-Peak
0.167	19.78	55.10	-35.32	CISPR Avg
0.207	33.50	63.30	-29.80	Q-Peak
0.207	20.21	53.30	-33.09	CISPR Avg
0.223	26.87	62.70	-35.83	Q-Peak
0.223	15.66	52.70	-37.04	CISPR Avg
0.311	29.93	59.90	-29.97	Q-Peak
0.311	15.77	49.90	-34.13	CISPR Avg
0.482	24.81	46.30	-21.49	CISPR Avg
0.482	31.13	56.30	-25.17	Q-Peak
0.603	24.70	56.00	-31.30	Q-Peak
0.603	17.37	46.00	-28.63	CISPR Avg
25.495	6.78	50.00	-43.22	CISPR Avg
25.495	24.47	60.00	-35.53	Q-Peak

Table 23 - Neutral Line Emissions Results



AC Powered - 5 GHz WLAN

Applied supply voltage: 120 V AC
Applied supply frequency: 60 Hz

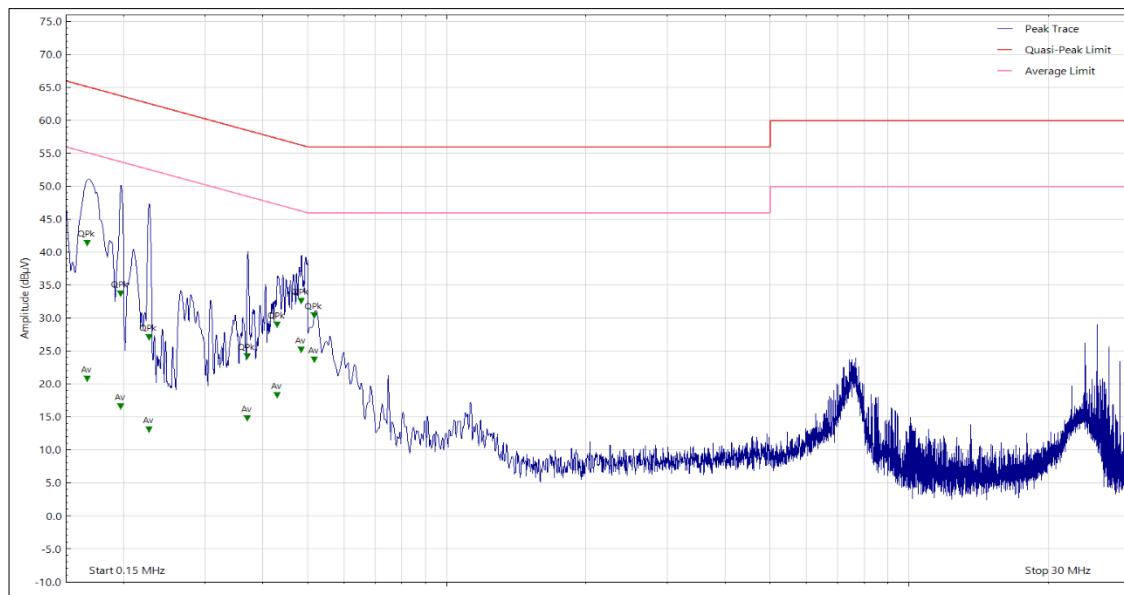


Figure 6 - Live Line - 150 kHz to 30 MHz.

Frequency (MHz)	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Detector
0.167	40.72	65.10	-24.38	Q-Peak
0.167	20.12	55.10	-34.98	CISPR Avg
0.197	32.99	63.70	-30.71	Q-Peak
0.197	15.89	53.70	-37.81	CISPR Avg
0.227	26.44	62.50	-36.06	Q-Peak
0.227	12.39	52.50	-40.11	CISPR Avg
0.371	23.50	58.50	-35.00	Q-Peak
0.371	14.13	48.50	-34.37	CISPR Avg
0.430	17.60	47.20	-29.60	CISPR Avg
0.430	28.31	57.20	-28.89	Q-Peak
0.485	31.86	56.30	-24.44	Q-Peak
0.485	24.54	46.30	-21.76	CISPR Avg
0.517	29.75	56.00	-26.25	Q-Peak
0.517	22.97	46.00	-23.03	CISPR Avg

Table 24 - Live Line Emissions Results

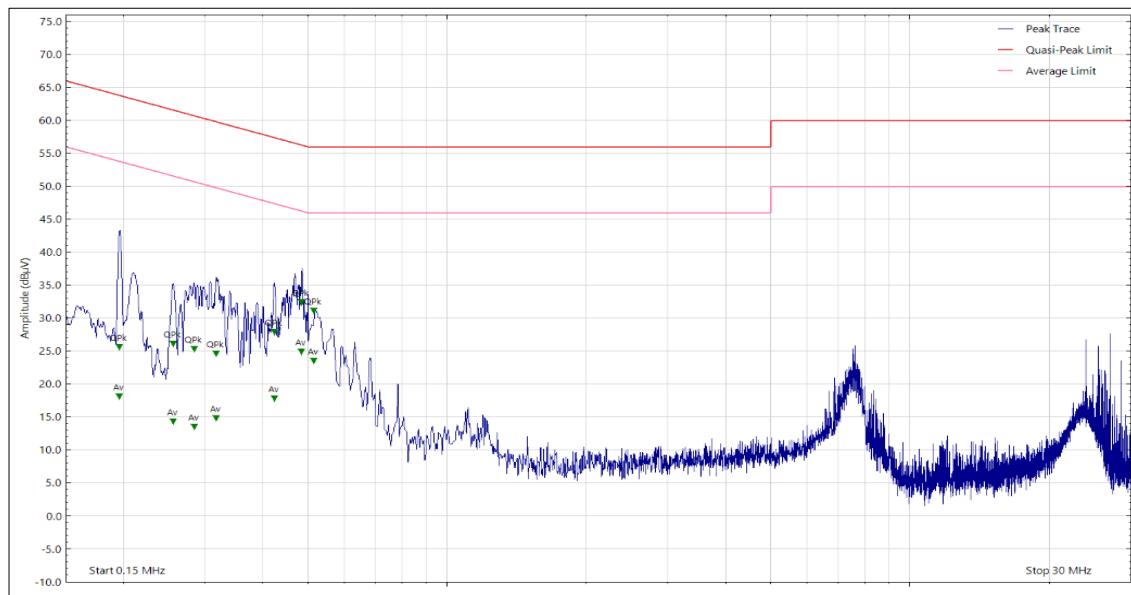


Figure 7 - Neutral Line - 150 kHz to 30 MHz.

Frequency (MHz)	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Detector
0.196	24.95	63.80	-38.85	Q-Peak
0.196	17.39	53.80	-36.41	CISPR Avg
0.256	13.58	51.60	-38.02	CISPR Avg
0.256	25.41	61.60	-36.19	Q-Peak
0.284	12.83	50.70	-37.87	CISPR Avg
0.284	24.57	60.70	-36.13	Q-Peak
0.317	14.10	49.80	-35.70	CISPR Avg
0.317	23.93	59.80	-35.87	Q-Peak
0.423	17.15	47.40	-30.25	CISPR Avg
0.423	27.23	57.40	-30.17	Q-Peak
0.485	24.26	46.30	-22.04	CISPR Avg
0.485	31.68	56.30	-24.62	Q-Peak
0.516	22.78	46.00	-23.22	CISPR Avg
0.516	30.45	56.00	-25.55	Q-Peak

Table 25 - Neutral Line Emissions Results



AC Powered - 6 GHz WLAN

Applied supply voltage: 120 V AC
Applied supply frequency: 60 Hz

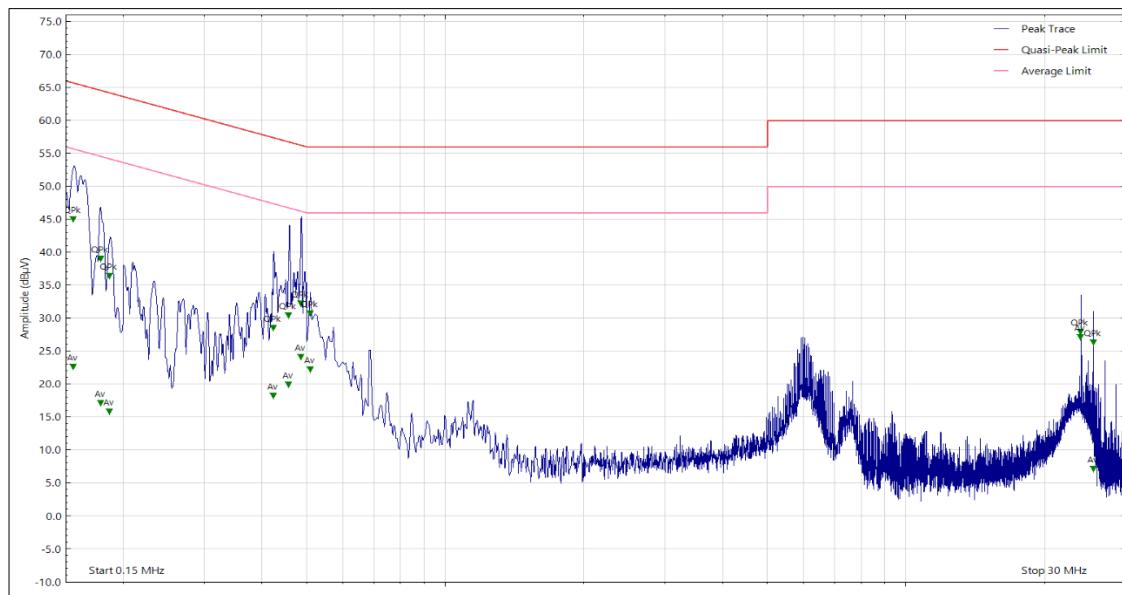


Figure 8 - Live Line - 150 kHz to 30 MHz.

Frequency (MHz)	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Detector
0.156	44.25	65.70	-21.45	Q-Peak
0.156	21.92	55.70	-33.78	CISPR Avg
0.179	38.28	64.60	-26.32	Q-Peak
0.179	16.38	54.60	-38.22	CISPR Avg
0.187	35.66	64.20	-28.54	Q-Peak
0.187	15.13	54.20	-39.07	CISPR Avg
0.424	17.54	47.40	-29.86	CISPR Avg
0.424	27.83	57.40	-29.57	Q-Peak
0.457	19.24	46.70	-27.46	CISPR Avg
0.457	29.68	56.70	-27.02	Q-Peak
0.486	23.43	46.20	-22.77	CISPR Avg
0.486	31.48	56.20	-24.72	Q-Peak
0.509	21.56	46.00	-24.44	CISPR Avg
0.509	29.96	56.00	-26.04	Q-Peak
23.936	27.25	60.00	-32.75	Q-Peak
23.936	26.36	50.00	-23.64	CISPR Avg
25.499	6.43	50.00	-43.57	CISPR Avg
25.499	25.63	60.00	-34.37	Q-Peak

Table 26 - Live Line Emissions Results

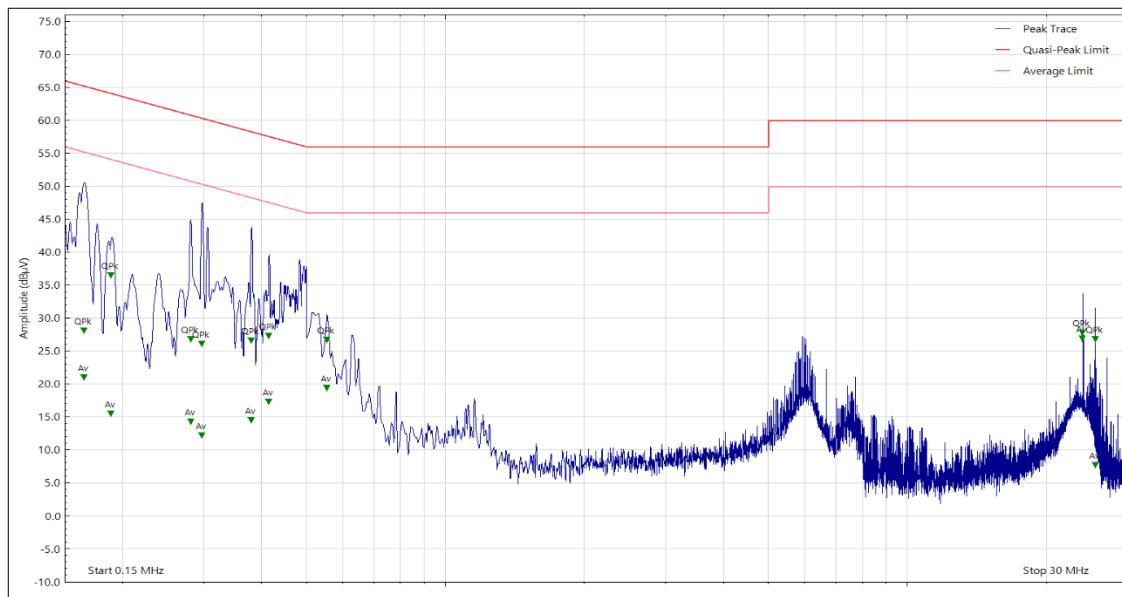


Figure 9 - Neutral Line - 150 kHz to 30 MHz.

Frequency (MHz)	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Detector
0.165	20.28	55.20	-34.92	CISPR Avg
0.165	27.40	65.20	-37.80	Q-Peak
0.189	14.87	54.10	-39.23	CISPR Avg
0.189	35.78	64.10	-28.32	Q-Peak
0.281	13.65	50.80	-37.15	CISPR Avg
0.281	26.13	60.80	-34.67	Q-Peak
0.297	11.55	50.30	-38.75	CISPR Avg
0.297	25.42	60.30	-34.88	Q-Peak
0.380	13.79	48.30	-34.51	CISPR Avg
0.380	25.88	58.30	-32.42	Q-Peak
0.415	16.64	47.50	-30.86	CISPR Avg
0.415	26.61	57.50	-30.89	Q-Peak
0.553	18.74	46.00	-27.26	CISPR Avg
0.553	26.01	56.00	-29.99	Q-Peak
23.935	26.16	50.00	-23.84	CISPR Avg
23.935	27.06	60.00	-32.94	Q-Peak
25.503	26.08	60.00	-33.92	Q-Peak
25.503	7.08	50.00	-42.92	CISPR Avg

Table 27 - Neutral Line Emissions Results



AC Powered - Narrowband

Applied supply voltage: 120 V AC
Applied supply frequency: 60 Hz

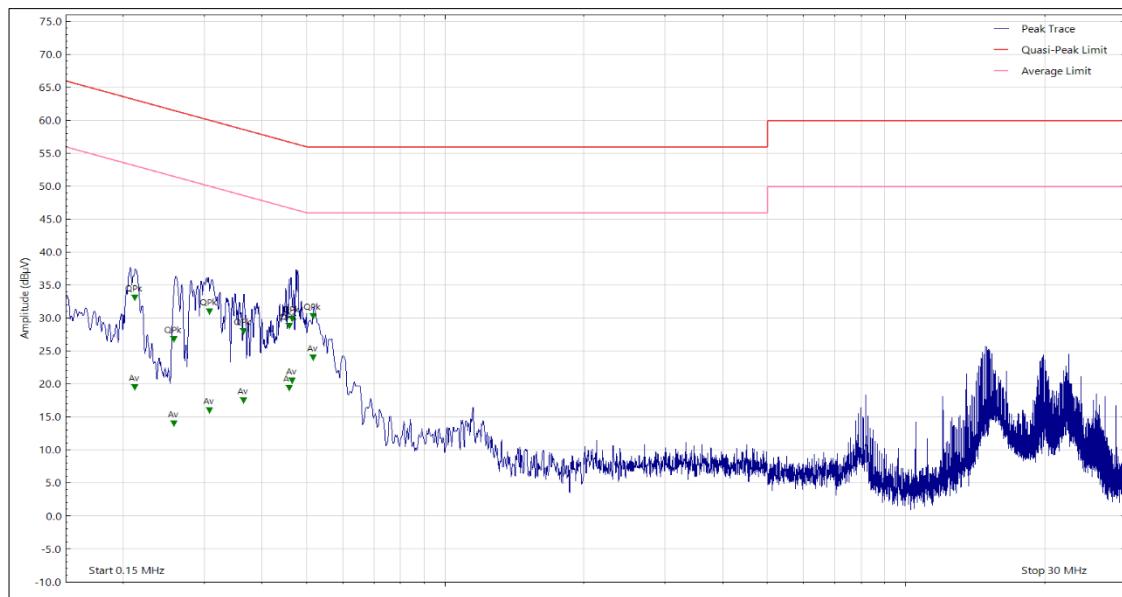


Figure 10 - Live Line - 150 kHz to 30 MHz.

Frequency (MHz)	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Detector
0.212	32.45	63.10	-30.65	Q-Peak
0.212	18.80	53.10	-34.30	CISPR Avg
0.258	26.12	61.50	-35.38	Q-Peak
0.258	13.29	51.50	-38.21	CISPR Avg
0.308	15.29	50.00	-34.71	CISPR Avg
0.308	30.32	60.00	-29.68	Q-Peak
0.365	27.33	58.60	-31.27	Q-Peak
0.365	16.78	48.60	-31.82	CISPR Avg
0.458	18.68	46.70	-28.02	CISPR Avg
0.458	28.10	56.70	-28.60	Q-Peak
0.466	29.17	56.60	-27.43	Q-Peak
0.466	19.80	46.60	-26.80	CISPR Avg
0.518	23.27	46.00	-22.73	CISPR Avg
0.518	29.64	56.00	-26.36	Q-Peak

Table 28 - Live Line Emissions Results

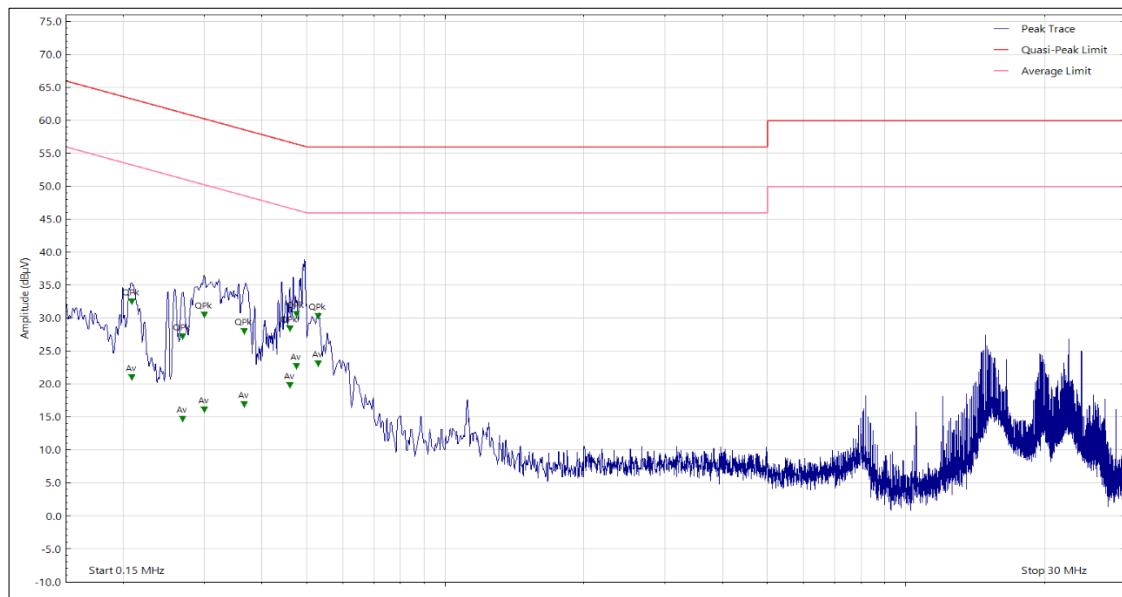


Figure 11 - Neutral Line - 150 kHz to 30 MHz.

Frequency (MHz)	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Detector
0.209	20.33	53.30	-32.97	CISPR Avg
0.209	31.77	63.30	-31.53	Q-Peak
0.269	26.54	61.10	-34.56	Q-Peak
0.269	13.99	51.10	-37.11	CISPR Avg
0.300	15.46	50.20	-34.74	CISPR Avg
0.300	29.84	60.20	-30.36	Q-Peak
0.367	16.20	48.60	-32.40	CISPR Avg
0.367	27.31	58.60	-31.29	Q-Peak
0.461	19.11	46.70	-27.59	CISPR Avg
0.461	27.73	56.70	-28.97	Q-Peak
0.475	22.04	46.40	-24.36	CISPR Avg
0.475	29.87	56.40	-26.53	Q-Peak
0.531	29.65	56.00	-26.35	Q-Peak
0.531	22.43	46.00	-23.57	CISPR Avg

Table 29 - Neutral Line Emissions Results



AC Powered - Thread

Applied supply voltage: 120 V AC
Applied supply frequency: 60 Hz

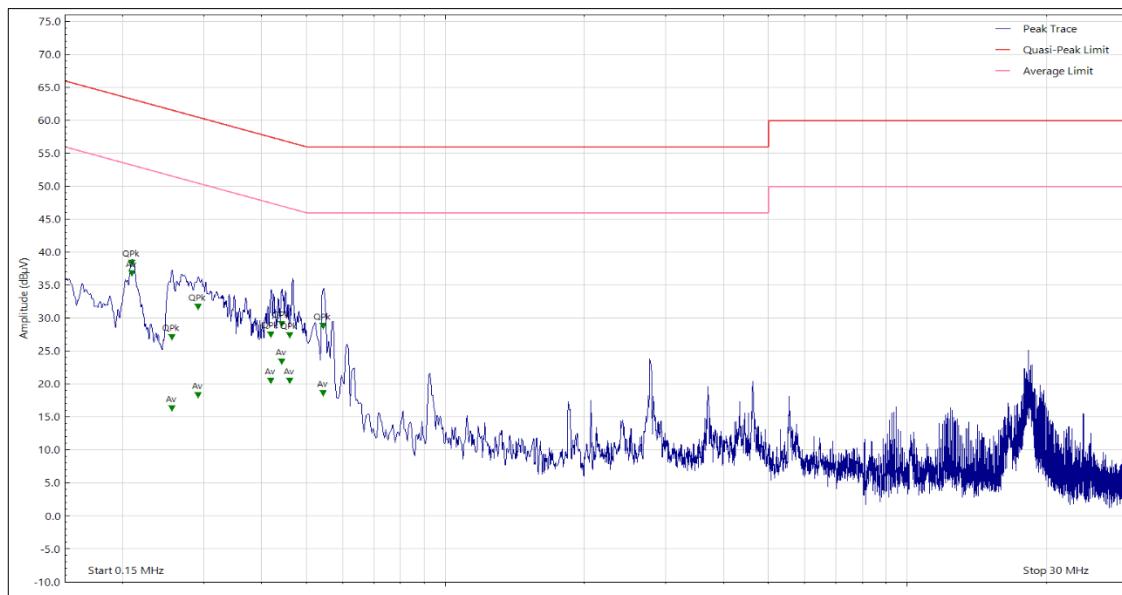


Figure 12 - Live Line - 150 kHz to 30 MHz.

Frequency (MHz)	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Detector
0.210	37.67	63.20	-25.53	Q-Peak
0.210	36.13	53.20	-17.07	CISPR Avg
0.256	15.60	51.60	-36.00	CISPR Avg
0.256	26.45	61.60	-35.15	Q-Peak
0.292	17.57	50.50	-32.93	CISPR Avg
0.292	30.97	60.50	-29.53	Q-Peak
0.419	26.82	57.50	-30.68	Q-Peak
0.419	19.77	47.50	-27.73	CISPR Avg
0.442	22.72	47.00	-24.28	CISPR Avg
0.442	28.43	57.00	-28.57	Q-Peak
0.461	26.66	56.70	-30.04	Q-Peak
0.461	19.79	46.70	-26.91	CISPR Avg
0.545	28.08	56.00	-27.92	Q-Peak
0.545	17.87	46.00	-28.13	CISPR Avg

Table 30 - Live Line Emissions Results

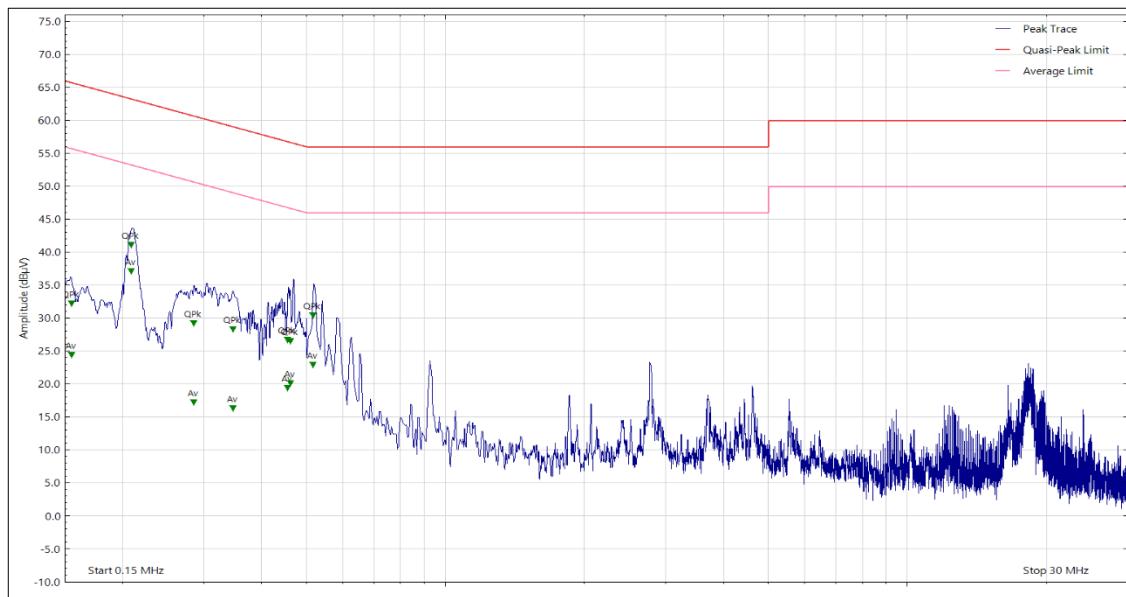


Figure 13 - Neutral Line - 150 kHz to 30 MHz.

Frequency (MHz)	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Detector
0.155	23.69	55.70	-32.01	CISPR Avg
0.155	31.49	65.70	-34.21	Q-Peak
0.209	36.44	53.20	-16.76	CISPR Avg
0.209	40.40	63.20	-22.80	Q-Peak
0.285	16.55	50.70	-34.15	CISPR Avg
0.285	28.52	60.70	-32.18	Q-Peak
0.347	15.63	49.00	-33.37	CISPR Avg
0.347	27.63	59.00	-31.37	Q-Peak
0.456	18.69	46.80	-28.11	CISPR Avg
0.456	26.04	56.80	-30.76	Q-Peak
0.462	19.43	46.70	-27.27	CISPR Avg
0.462	25.79	56.70	-30.91	Q-Peak
0.518	22.17	46.00	-23.83	CISPR Avg
0.518	29.75	56.00	-26.25	Q-Peak

Table 31 - Neutral Line Emissions Results



2.1.10 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
Emissions Software	TUV SUD	EmX V3.2.0	5125	-	Software
Test Receiver	Rohde & Schwarz	ESU40	3506	12	17-Apr-2025
Transient Limiter	Hewlett Packard	11947A	15	12	24-Oct-2024
Termination (50ohm)	JFW	50T-054	3952	12	20-Mar-2025
Cable (N-Type to N-Type, 2 m)	Junkosha	MWX221-02000AMSAMS/B	5729	12	02-Feb-2025
Cable (N-Type to N-Type, 8 m)	Junkosha	MWX221-08000NMSNMS/B	6321	12	04-Feb-2025
LISN (CISPR 16, Three Phase)	Rohde & Schwarz	ESH2-Z5	16	12	05-Sep-2024
LISN (CISPR 16, Single Phase)	Rohde & Schwarz	ESH3-Z5	1390	12	01-Feb-2025
Thermo-Hygro-Barometer	PCE Instruments	PCE-THB 40	5604	12	22-Nov-2024

Table 32



3 Test Equipment Information

3.1 General Test Equipment Used

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	35	-	TU
Spectrum Analyser	Agilent Technologies	E7405A	1410	12	23-Nov-2024
Wideband Radio Communication Tester	Rohde & Schwarz	CMW 500	4143	12	10-Sep-2024
Cable Assembly - 18GHz 2m	Scott Cables	MWX221-02000AMSAMS/B	6727	6	15-Oct-2024

Table 33

TU - Traceability Unscheduled



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 34

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.