FCC Test Report

Neology UK Ltd
ANPR Camera, Model: IRIS P500
PHIHONG Single Port Power Over Ethernet, Model: POE90U-1BT

In accordance with FCC 47 CFR Part 15B

Add value.
Inspire trust.

Prepared for: Neology UK Ltd
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UNITED KINGDOM

FCC ID: 2AKNFP500FAW

COMMERCIAL-IN-CONFIDENCE

Document 75947696-03 Issue 02

SIGNATURE			
AJ Lawson.			
NAME	**JOB TITLE**	**RESPONSIBLE FOR**	**ISSUE DATE**
Andy Lawson	Senior Engineer	Authorised Signatory	25 January 2021

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 15B. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Colin McKean	25 January 2021	

FCC Accreditation
90987 Octagon House, Fareham Test Laboratory

EXECUTIVE SUMMARY
A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15B: 2018 for the tests detailed in section 1.3.

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Contents

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	10 June 2020
2	Inclusion of the EUT FCC ID	25 January 2021

Table 1

1.2 Introduction

Applicant	Neology UK Ltd
Manufacturer	Neology UK Ltd
Model Number(s)	IRIS P500 POE90U-1BT
Serial Number(s)	30181019 P82205438A1
Hardware Version(s)	PoE COAD Rev 1
Software Version(s)	OS 1.10.245 App 5.1.3854
Number of Samples Tested	1
Test Specification/Issue/Date	FCC 47 CFR Part 15B: 2018
Order Number Date	1348-00 10-December-2019
Date of Receipt of EUT	13-January-2020 and 18-February-2020
Start of Test	18-February-2020
Finish of Test	20-February-2020
Name of Engineer(s)	Colin McKean
Related Document(s)	ANSI C63.4: 2014

1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15B is shown below.

Section	Specification Clause	Test Description	Result	Comments/Base Standard
Configuration and Mode: PoE powered via AC to PoE adapter - WLAN Receive, LTE Receive, Comms over Ethernet				
2.1	15.107	Conducted Disturbance at Mains Terminals	Pass	ANSI C63.4: 2014
2.2	15.109	Radiated Disturbance	Pass	ANSI C63.4: 2014
Configuration and Mode: AC/DC Power Supply - WLAN Receive, LTE Receive, Comms over Ethernet				
2.1	15.107	Conducted Disturbance at Mains Terminals	Pass	ANSI C63.4: 2014
2.2	15.109	Radiated Disturbance	Pass	ANSI C63.4: 2014

Table 2

1.4 Declaration of Build Status

MAIN EUT			
MANUFACTURING DESCRIPTION	P500 IRIS ANPR Camera with Wi-Fi and US 4G modem		
MANUFACTURER	Neology UK Ltd		
MODEL NAME/NUMBER	IRIS P500		
PART NUMBER	FC5742050112		
SERIAL NUMBER	30181019		
HARDWARE VERSION	PoE COAD Rev 1		
SOFTWARE VERSION	OS 1.10.245 App 5.1.3854		
PSU VOLTAGE/FREQUENCY/CURRENT	56V DC 1.07A		
HIGHEST INTERNALLY GENERATED / USED FREQUENCY	5GHz		
FCC ID (if applicable)	2AKNFP500FAW		
INDUSTRY CANADA ID (if applicable)	Not Applicable		
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	ANPR Camera for number plate recognition and capture		
COUNTRY OF ORIGIN	UK		
RF CHARACTERISTICS (if applicable)			
TRANSMITTER FREQUENCY OPERATING RANGE (MHz)	Click to edit		
RECEIVER FREQUENCY OPERATING RANGE (MHz)	Click to edit		
INTERMEDIATE FREQUENCIES	Click to edit		
EMISSION DESIGNATOR(S): (i.e. G1D, GXW)	Click to edit		
MODULATION TYPES: (i.e. GMSK, QPSK)	Click to edit		
OUTPUT POWER (W or dBm)	Click to edit		
SEPARATE BATTERY/POWER SUPPLY (if applicable)			
MANUFACTURING DESCRIPTION	90W IEEE802.3bt PoE Injector		
MANUFACTURER	Phihong		
TYPE	Click to edit		
PART NUMBER	POE90U-1BT		
PSU VOLTAGE/FREQUENCY/CURRENT	56V DC 1.6A		
COUNTRY OF ORIGIN	Click to edit		
MODULES (if applicable)			
MANUFACTURING DESCRIPTION	RS9113 n-Link™ Multi-protocol Wireless Module	LTE CAT4 Module	Click to edit
MANUFACTURER	Redpine Signals	Quectel	Click to edit
TYPE	RS9113	EC25-AF MINI PCIE	Click to edit
POWER	17dBm	33dBm	Click to edit
FCC ID	XF6-RS9113DB	XMR201808EC25AF	Click to edit
INDUSTRY CANADA ID	8407A-RS9113DB	10224A-2018EC25AF	Click to edit
EMISSION DESIGNATOR	Click to edit	Click to edit	Click to edit
DHSS/FHSS/COMBINED OR OTHER	Click to edit	Click to edit	Click to edit
COUNTRY OF ORIGIN	Click to edit	Click to edit	Click to edit
ANCILLARIES (if applicable)			
MANUFACTURING DESCRIPTION	Click to edit	Click to edit	Click to edit
MANUFACTURER	Click to edit	Click to edit	Click to edit
TYPE	Click to edit	Click to edit	Click to edit
PART NUMBER	Click to edit	Click to edit	Click to edit
SERIAL NUMBER	Click to edit	Click to edit	Click to edit
COUNTRY OF ORIGIN	Click to edit	Click to edit	Click to edit

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

Name: Neill Arnell
Position held: Senior Hardware Engineer
Date: 10 January 2020

1.5 Product Information

1.5.1 Technical Description

The primary function of the EUT is as an Automatic Number Plate Recognition (ANPR) camera. It reads the number plates of vehicles and then transmits the information over a network.

It is part of a system that uses cameras to monitor a road and detects the number plates going through the field of view. It then performs OCR on the portion of the image with the number plate to read the characters, and then packages this information up for transmission over the network.

Figure 1 - Speed Camera Front Face

Figure 2 - Speed Camera Rear Face

Figure 3 - PoE Front Face

Figure 4 - PoE Rear Face

1.5.2 EUT Port/Cable Identification

Port	Max Cable Length specified	Usage	Type	Screened
Configuration and Mode: PoE powered via AC to PoE adapter - WLAN Receive, LTE Receive, Comms over Ethernet				
AC Power Port	<1 m	Power	115 V AC Mains Power	No
Ethernet Output Port	>3 m	Data/Power	Power over Ethernet Signal Cable	Yes
Ethernet Input Port	>3 m	Data/Power	Power over Ethernet Signal Cable	Yes

Table 3

1.5.3 Test Configuration

Configuration	Description
PoE powered via AC to PoE adapter	The EUT consists of a Power Over Ethernet adapter (PoE) and an ANPR camera. The PoE was powered from a 115 V 60 Hz AC mains supply. The output port of the PoE was connected to the ANPR camera via an ethernet cable and the input port of the PoE was connected to a test laptop which was running customer supplied test software.
AC/DC Power Supply	The EUT consists of an AC/DC power adapter and an ANPR camera. The AC/DC power adapter was powered from a 115 V 60 Hz AC mains supply. The DC output of the power adapter was connected to the DC port of the ANPR camera. The ethernet port of the EUT was connected to a test laptop which was running customer supplied test software.

Table 4

1.5.4 Modes of Operation

Mode	Description
WLAN Receive, LTE Receive, Comms over Ethernet	The EUT was turned on and a laptop running PIPS ANPR Toolkit was used to configure the EUT to monitor a number plate. All transmitters were idle from power up.

Table 5

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: IRIS P500, Serial Number: 30181019			
0	As supplied by the customer	Not Applicable	Not Applicable
Model: POE90U-1BT, Serial Number: P82205438A1			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 6

1.8 Test Location

TÜV SÜD conducted the following tests at our Fareham Test Laboratory.

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: PoE powered via AC to PoE adapter - WLAN Receive, LTE Receive, Comms over Ethernet		
Radiated Disturbance	Colin McKean	UKAS
Conducted Disturbance at Mains Terminals	Colin McKean	UKAS
Configuration and Mode: AC/DC Power Supply - WLAN Receive, LTE Receive, Comms over Ethernet		
Conducted Disturbance at Mains Terminals	Colin McKean	UKAS
Radiated Disturbance	Colin McKean	UKAS

Table 7

Office Address:

Octagon House
Concorde Way
Segensworth North
Fareham
Hampshire
PO15 5RL
United Kingdom

2 Test Details

2.1 Conducted Disturbance at Mains Terminals

2.1.1 Specification Reference

FCC 47 CFR Part 15B, Clause 15.107

2.1.2 Equipment Under Test and Modification State

IRIS P500, S/N, 30181019 - Modification State 0
POE90U-1BT, S/N: P82205438A1 - Modification State 0

2.1.3 Date of Test

18-February-2020

2.1.4 Test Method

The EUT was setup according to ANSI C63.4, clause 5.2.

The EUT was placed on a non-conductive table 0.8 m above a reference ground plane. A vertical coupling plane was placed 0.4 m from the EUT boundary.

A Line Impedance Stabilisation Network (LISN) was directly bonded to the ground-plane. The EUT was located so that the distance between the boundary of the EUT and the closest surface of the LISN was 0.8 m.

Interconnecting cables that hanged closer than 0.4 m to the ground plane were folded back and forth in the centre forming a bundle 0.3 m to 0.4 m long.

Input and output cables were terminated with equipment or loads representative of real usage conditions.

The EUT was configured to give the highest level of emissions within reason of a typical installation as described by the manufacturer.

2.1.5 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)

2.1.6 Example Test Setup Diagram

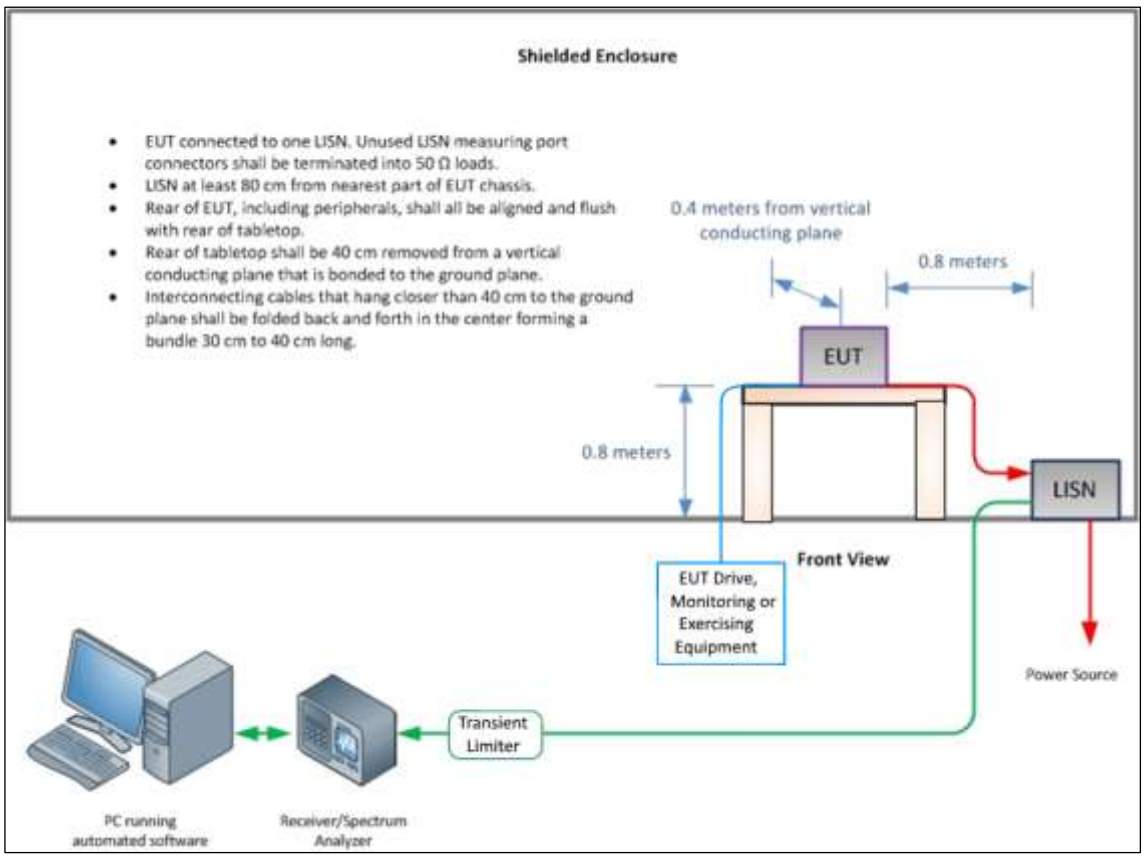

Figure 5 - Conducted Disturbance Example Test Setup

2.1.7 Environmental Conditions

Ambient Temperature	20.0 - 21.0 °C
Relative Humidity	42.0 %

2.1.8 Specification Limits

Required Specification Limits (Class A)			
Line Under Test	Frequency Range (MHz)	Quasi-peak (dBµV)	CISPR Average (dBµV)
AC Power Port	0.15 to 0.5	79	66
	0.5 to 30	73	60

Table 8

2.1.9 Test Results

Results for Configuration and Mode: PoE powered via AC to PoE adapter - WLAN Receive, LTE Receive and Comms over Ethernet.

The test was performed in accordance with the Class A limits.

Performance assessment of the EUT made during this test: Pass.

Detailed results are shown below.

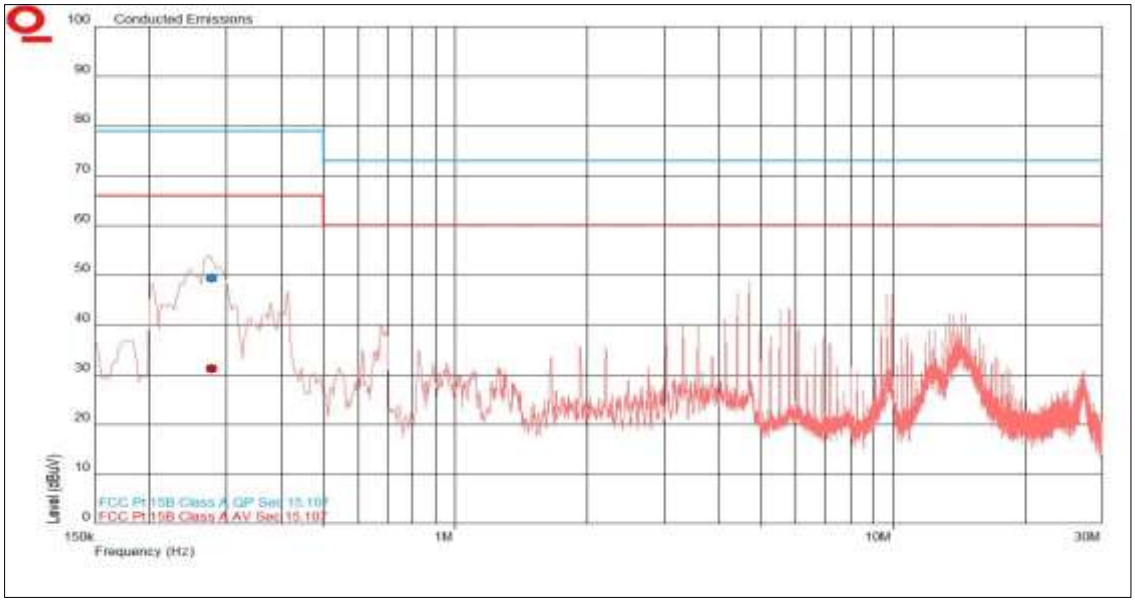

Figure 6 - Graphical Results - 115 V AC, 60 Hz AC Mains Live Line

Frequency (MHz)	QP Level (dBµV)	QP Limit (dBµV)	QP Margin (dB)	AV Level (dBµV)	AV Limit (dBµV)	AV Margin (dB)
*						

Table 9

*No formal measurements were made as all peak emissions seen were greater than 6 dB below the test limit.

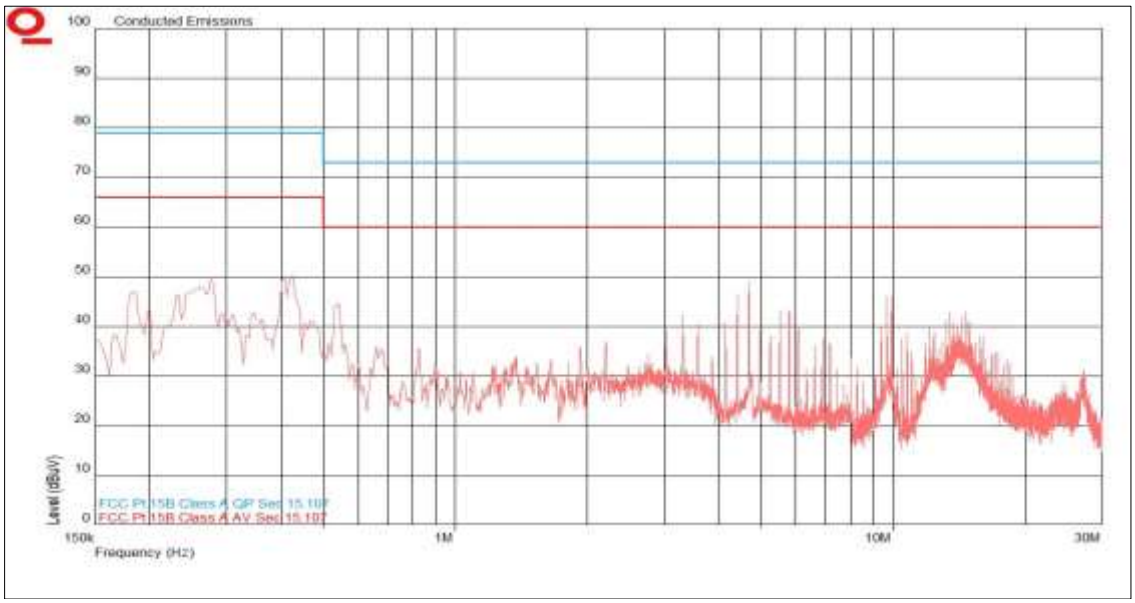

Figure 7 - Graphical Results - 115 V AC, 60 Hz AC Mains Neutral Line

Frequency (MHz)	QP Level (dBµV)	QP Limit (dBµV)	QP Margin (dB)	AV Level (dBµV)	AV Limit (dBµV)	AV Margin (dB)
*						

Table 10

*No formal measurements were made as all peak emissions seen were greater than 6 dB below the test limit.

Results for Configuration and Mode: AC/DC Power Supply - WLAN Receive, LTE Receive and Comms over Ethernet.

The test was performed in accordance with the Class A limits.

Performance assessment of the EUT made during this test: Pass.

Detailed results are shown below.

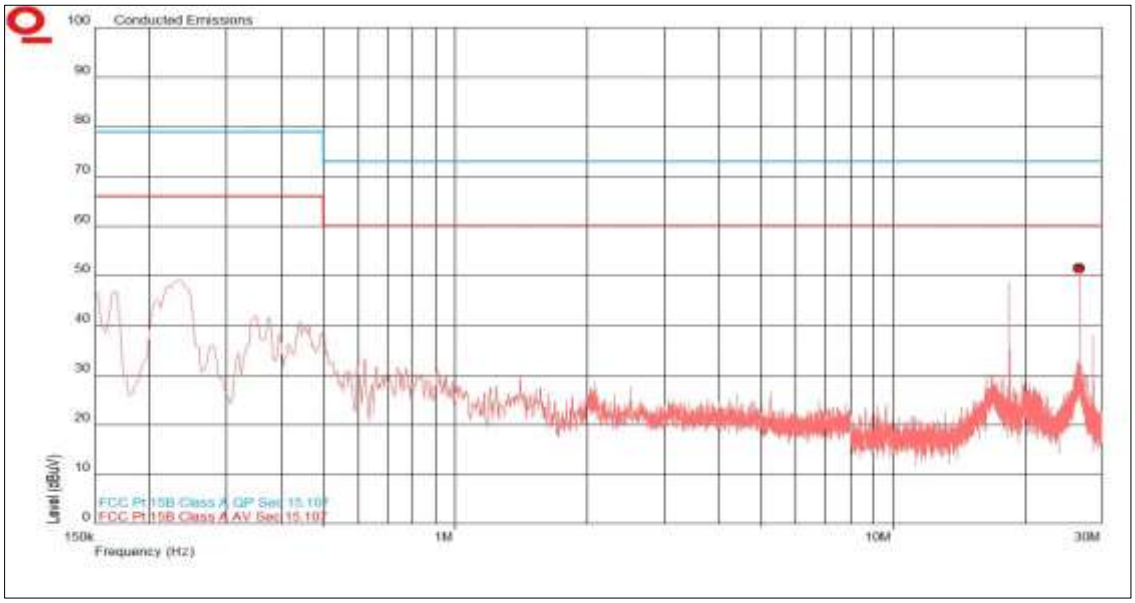

Figure 8 - Graphical Results - 115 V AC, 60 Hz AC Mains Live Line

Frequency (MHz)	QP Level (dBµV)	QP Limit (dBµV)	QP Margin (dB)	AV Level (dBµV)	AV Limit (dBµV)	AV Margin (dB)
26.592	51.7	73.0	-21.3	51.4	60.0	-8.6

Table 11

No other measurements were made as all peak emissions seen were greater than 6 dB below the test limit.

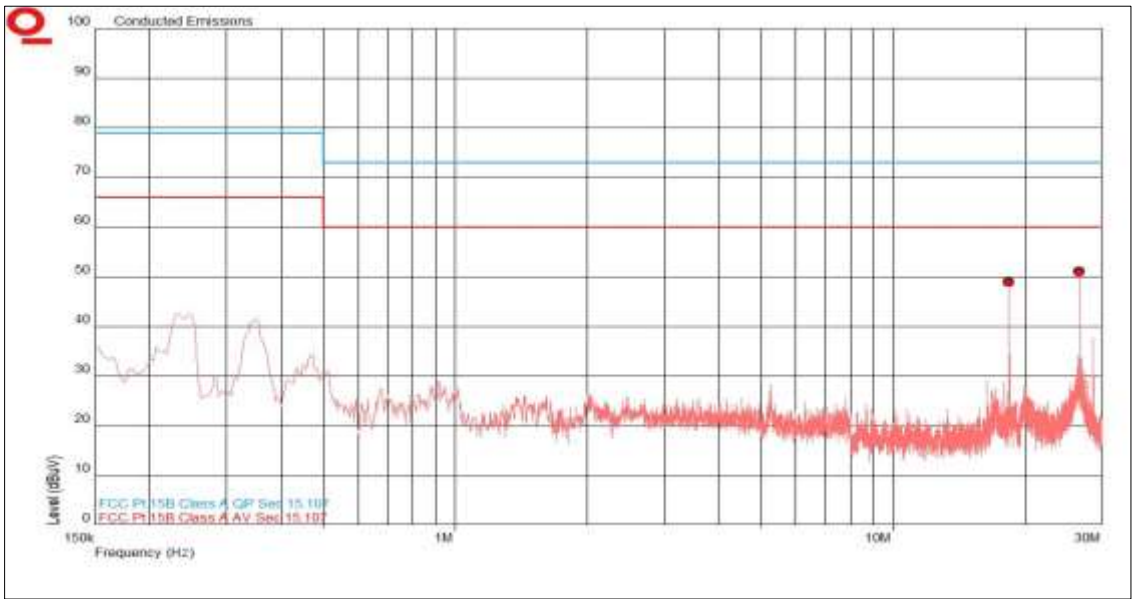

Figure 9 - Graphical Results - 115 V AC, 60 Hz AC Mains Neutral Line

Frequency (MHz)	QP Level (dBµV)	QP Limit (dBµV)	QP Margin (dB)	AV Level (dBµV)	AV Limit (dBµV)	AV Margin (dB)
18.405	49.0	73.0	-24.0	48.8	60.0	-11.2
26.583	51.2	73.0	-21.8	51.0	60.0	-9.0

Table 12

No other measurements were made as all peak emissions seen were greater than 6 dB below the test limit.

Figure 10 - Test Setup

2.1.10 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 Due
Screened Room (5)	Rainford	Rainford	1545	36	23-Jan-2021
Compliance 5 Emissions	Teseq	V5.26.51	3275	-	Software
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	03-Jan-2021
Transient Limiter	Hewlett Packard	11947A	15	12	02-Oct-2020
LISN	Rohde & Schwarz	ESH3-Z5	1390	12	27-Jan-2021
2 Meter Cable	Teledyne	PR90-088-2MTR	5200	12	30-Aug-2020
8 Meter Cable	Teledyne	PR90-088-8MTR	5210	12	06-Dec-2020

Table 13

2.2 Radiated Disturbance

2.2.1 Specification Reference

FCC 47 CFR Part 15B, Clause 15.109

2.2.2 Equipment Under Test and Modification State

IRIS P500, S/N, 30181019 - Modification State 0
POE90U-1BT, S/N: P82205438A1 - Modification State 0

2.2.3 Date of Test

18-February-2020 to 20-February-2020

2.2.4 Test Method

The EUT was set up in a semi-anechoic chamber on a remotely controlled turntable and placed on a non-conductive table 0.8m above a reference ground plane.

For an EUT which could reasonable 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.

A pre-scan of the EUT emissions profile was made at a 3m distance while varying the antenna-to-EUT azimuth and polarisation using a peak detector.

Using a list of the highest emissions detected during the pre-scan along with their bearing and associated antenna polarisation, the EUT was formally measured using a Quasi-Peak, Peak or CISPR Average detector as appropriate.

The readings were maximised by adjusting the antenna height, polarisation and turntable azimuth, in accordance with the specification.

2.2.5 Example Calculation

Below 1 GHz:

Quasi-Peak level (dBµV/m) = Receiver level (dBµV) + Correction Factor (dB/m)
Margin (dB) = Quasi-Peak level (dBµV/m) - Limit (dBµV/m)

Above 1 GHz:

CISPR Average level (dBµV/m) = Receiver level (dBµV) + Correction Factor (dB/m)
Margin (dB) = CISPR Average level (dBµV/m) - Limit (dBµV/m)

Peak level (dBµV/m) = Receiver level (dBµV) + Correction Factor (dB/m)
Margin (dB) = Peak level (dBµV/m) - Limit (dBµV/m)

2.2.6 Example Test Setup Diagram

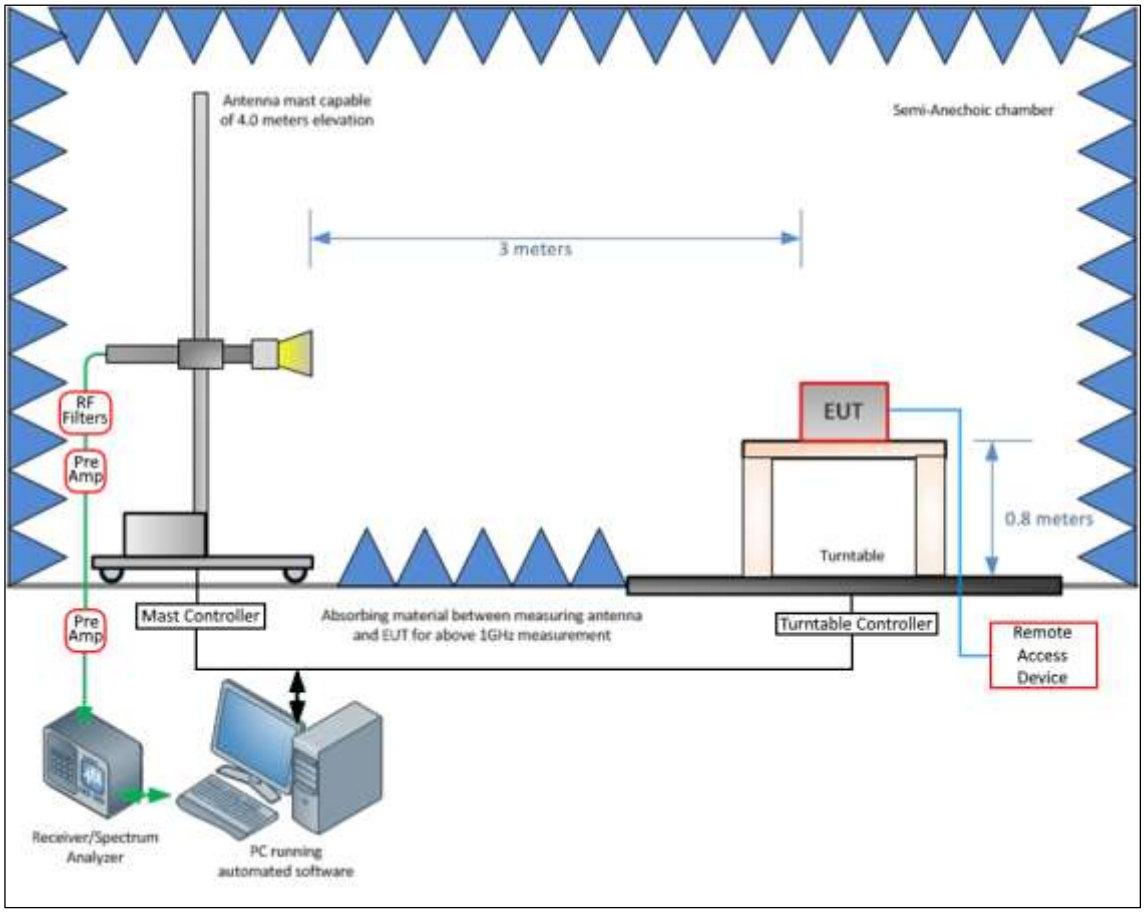

Figure 11 - Radiated Disturbance Example Test Setup

2.2.7 Environmental Conditions

Ambient Temperature	20.0 - 22.0 °C
Relative Humidity	36.0 - 42.0 %

2.2.8 Specification Limits

Required Specification Limits, Field Strength (Class A @ 10 m)		
Frequency Range (MHz)	(µV/m)	(dBµV/m)
30 to 88	90	39.1
88 to 216	150	43.5
216 to 960	210	46.4
Above 960	300	49.5
Supplementary information: Quasi-peak detector to be used for measurements below 1 GHz CISPR Average detector to be used for measurements above 1 GHz Peak test limit above 1 GHz is 20 dB higher than the CISPR Average test limit.		

Table 14

2.2.9 Test Results

Results for Configuration and Mode: PoE powered via AC to PoE adapter - WLAN Receive, LTE Receive and Comms over Ethernet.

The test was performed in accordance with the Class A limits.

Performance assessment of the EUT made during this test: Pass.

Detailed results are shown below.

Highest frequency generated or used within the EUT: 5 GHz
Which necessitates an upper frequency test limit of: 30 GHz

Frequency Range of Test: 30 MHz to 1 GHz

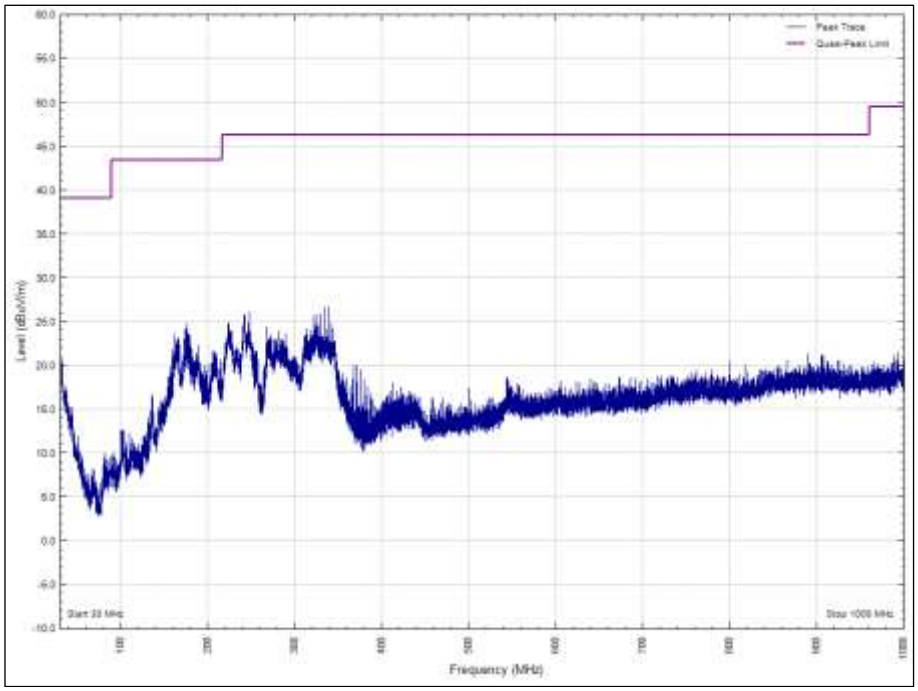

Figure 12 - Graphical Results - Horizontal Polarity

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

Table 15

*No final measurements were made as all peak emissions seen in the pre-scan were greater than 10 dB below the Quasi-Peak test limit.

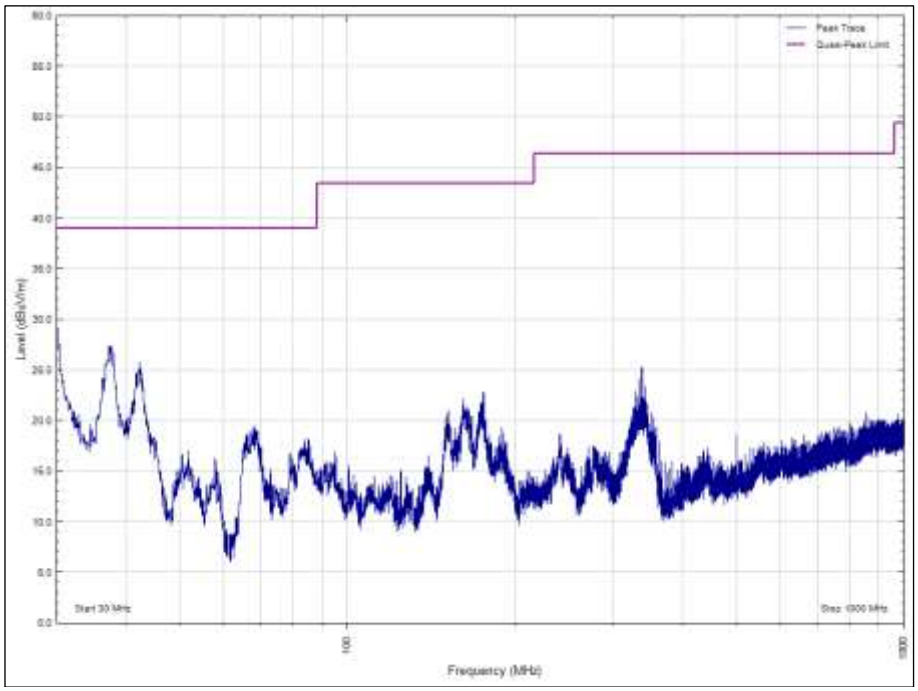

Figure 13 - Graphical Results - Vertical Polarity

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

Table 16

*No final measurements were made as all peak emissions seen in the pre-scan were greater than 10 dB below the Quasi-Peak test limit.

Frequency Range of Test: 1 GHz to 30 GHz - Peak

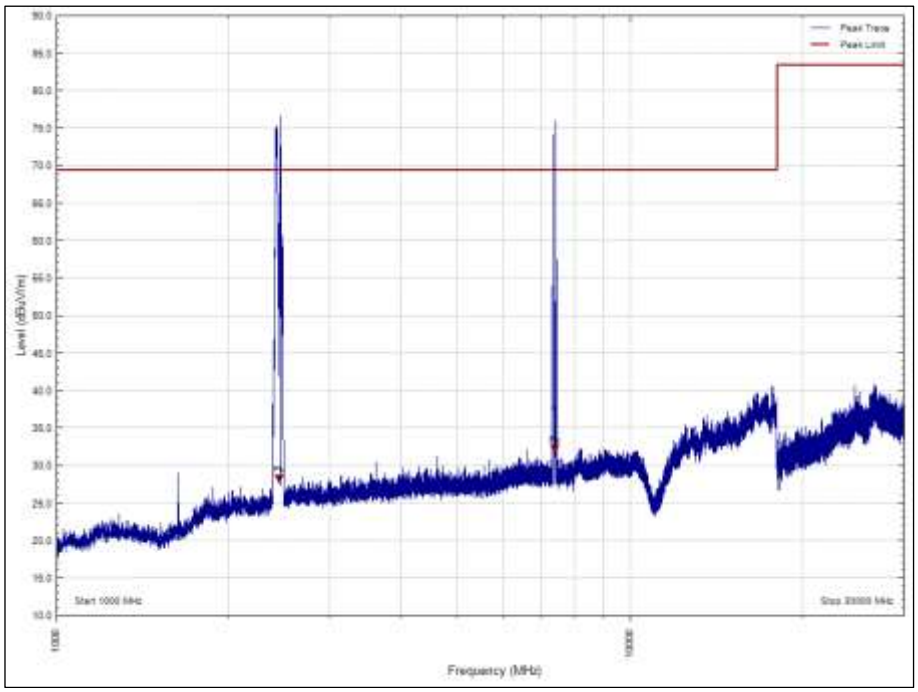

Figure 14 - Graphical Results - Horizontal Polarity

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)
2450.444	27.35	69.5	-42.15	Peak	311	100
7387.092	31.28	69.5	-38.22	Peak	108	364

Table 17

No other final measurements were made as all other peak emissions seen during the pre-scan were greater than 10 dB below the Peak test limit.

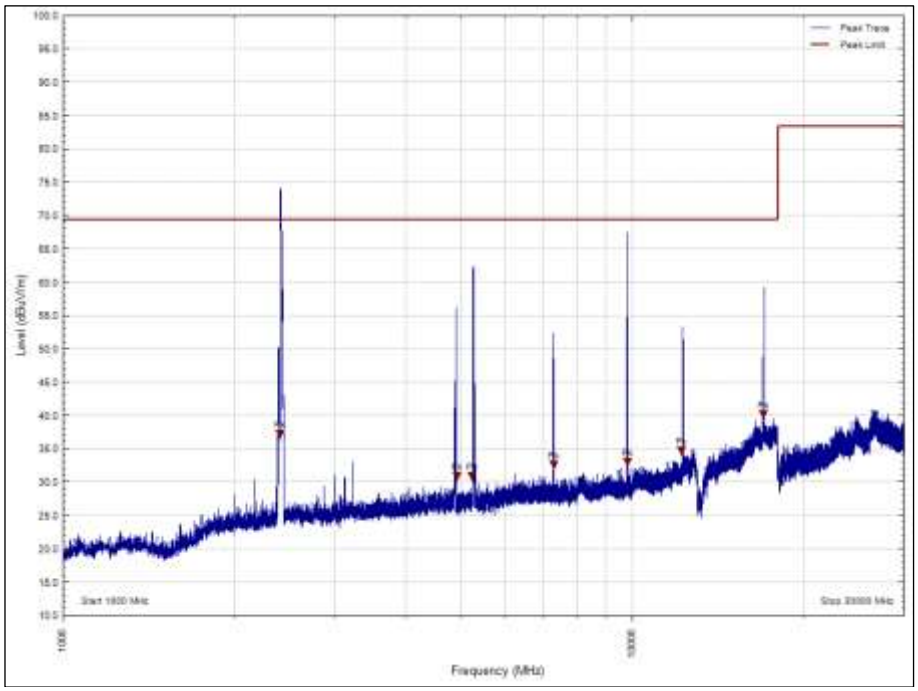

Figure 15 - Graphical Results - Vertical Polarity

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)
2408.327	36.24	69.5	-33.26	Peak	4	367
4935.999	29.85	69.5	-39.65	Peak	179	105
5237.441	29.96	69.5	-39.54	Peak	132	110
7284.876	31.54	69.5	-37.96	Peak	190	100
9814.769	32.05	69.5	-37.45	Peak	126	107
12225.911	33.66	69.5	-35.84	Peak	7	110
17046.556	39.13	69.5	-30.37	Peak	148	100

Table 18

Frequency Range of Test: 1 GHz to 30 GHz – CISPR Average

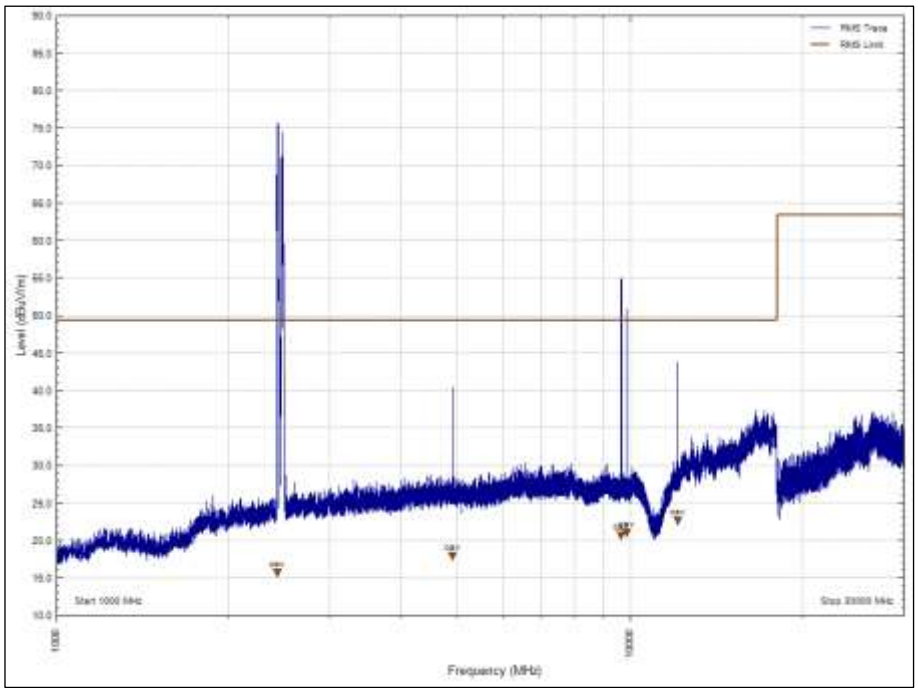

Figure 16 - Graphical Results - Horizontal Polarity

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)
2431.005	14.79	49.5	-34.71	CISPR Average	39	106
4902.972	17.04	49.5	-32.46	CISPR Average	349	128
9664.497	19.7	49.5	-29.8	CISPR Average	118	215
12109.481	21.72	49.5	-27.78	CISPR Average	246	109
9864.932	20.13	49.5	-29.37	CISPR Average	304	335

Table 19

No other final measurements were made as all other peak emissions seen during the pre-scan were greater than 10 dB below the CISPR Average test limit.

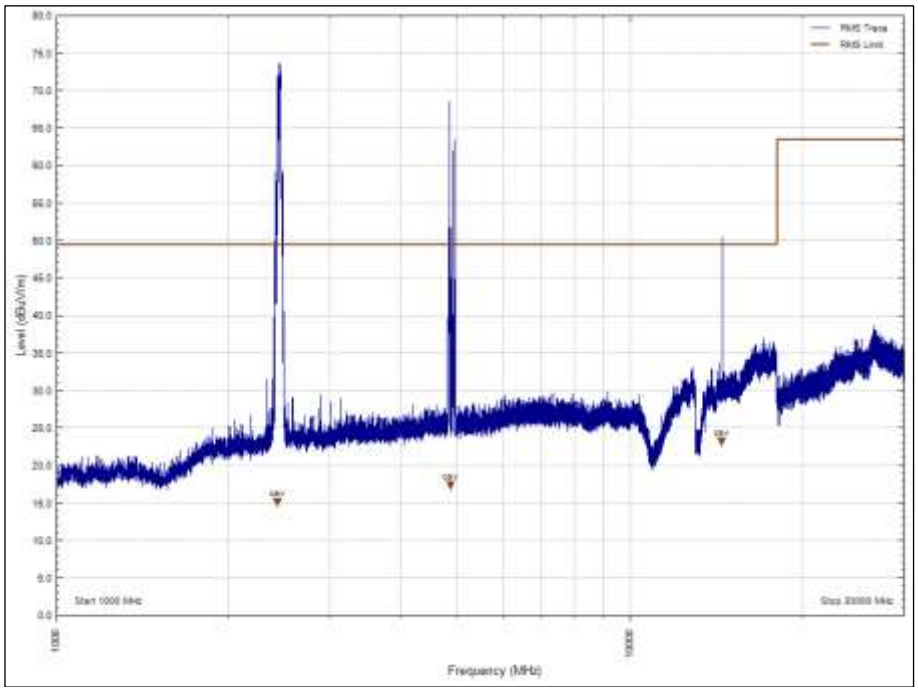

Figure 17 - Graphical Results - Vertical Polarity

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)
2427.426	14.26	49.5	-35.24	CISPR Average	307	354
4860.557	16.49	49.5	-33.01	CISPR Average	187	100
14461.015	22.29	49.5	-27.21	CISPR Average	197	106

Table 20

No other final measurements were made as all other peak emissions seen during the pre-scan were greater than 10 dB below the CISPR Average test limit.

Results for Configuration and Mode: AC/DC Power Supply - WLAN Receive, LTE Receive and Comms over Ethernet.

The test was performed in accordance with the Class A limits.

Performance assessment of the EUT made during this test: Pass.

Detailed results are shown below.

Highest frequency generated or used within the EUT: 5 GHz
Which necessitates an upper frequency test limit of: 30 GHz

Frequency Range of Test: 30 MHz to 1 GHz

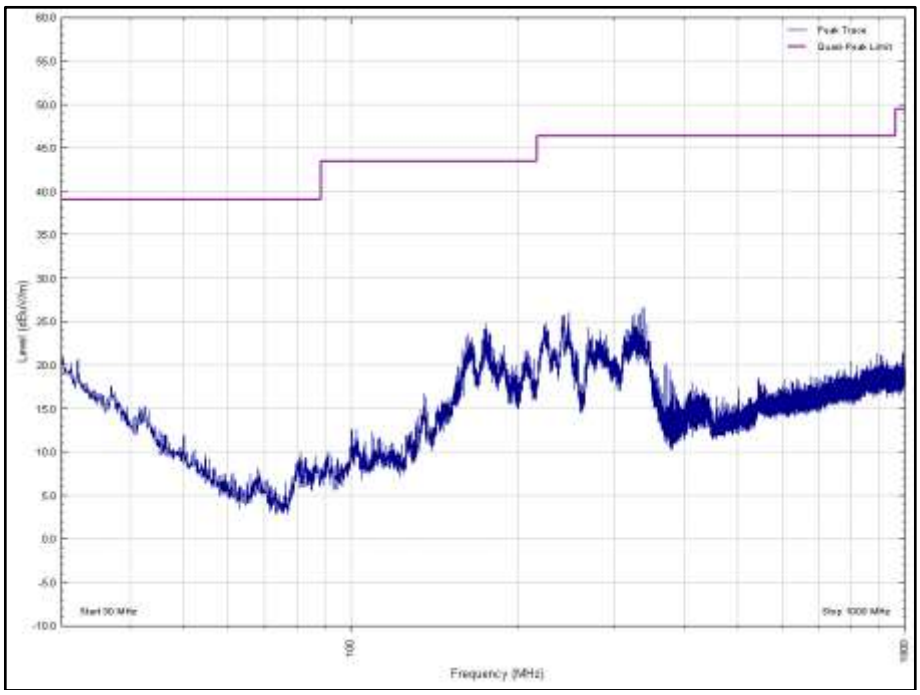

Figure 18 - Graphical Results - Horizontal Polarity

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

Table 21

*No final measurements were made as all peak emissions seen in the pre-scan were greater than 10 dB below the Quasi-Peak test limit.

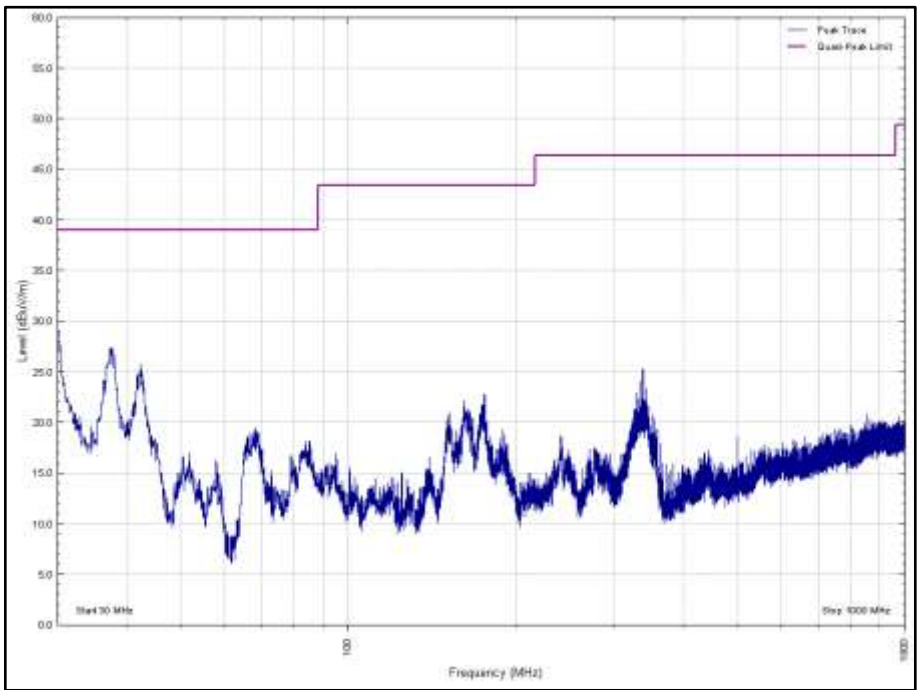

Figure 19 - Graphical Results - Vertical Polarity

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

Table 22

*No final measurements were made as all peak emissions seen in the pre-scan were greater than 10 dB below the Quasi-Peak test limit.

Frequency Range of Test: 1 GHz to 18 GHz - Peak

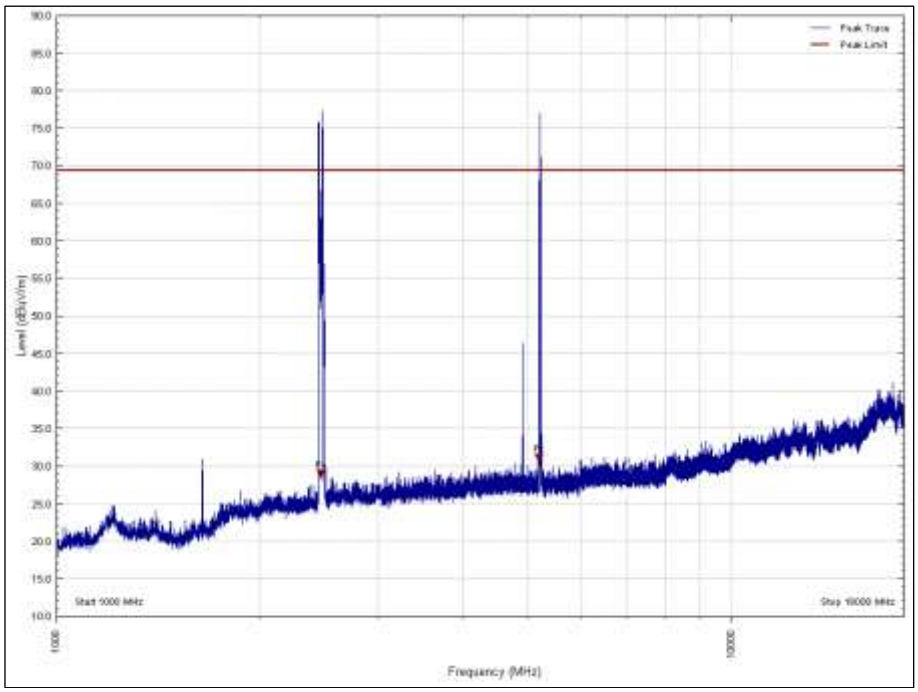

Figure 20 - Graphical Results - Horizontal Polarity

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)
2465.399	28.13	69.5	-41.37	Peak	92	165
5187.380	30.24	69.5	-39.26	Peak	6	104

Table 23

No other final measurements were made as all peak emissions seen during the pre-scan were greater than 10 dB below the Peak test limit.

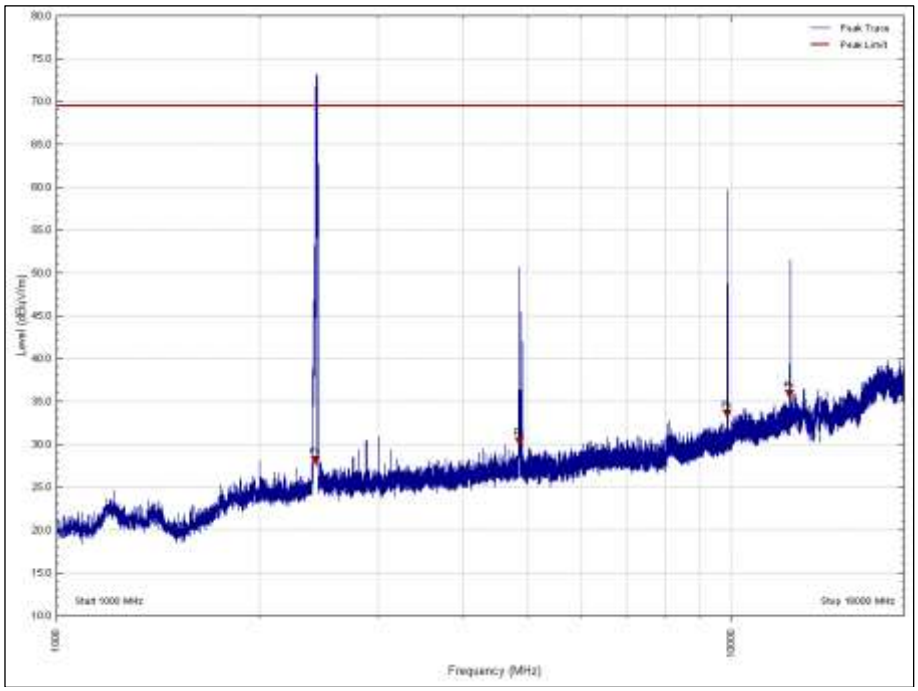

Figure 21 - Graphical Results - Vertical Polarity

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)
2424.531	27.39	69.5	-42.11	Peak	171	331
4851.995	29.54	69.5	-39.96	Peak	144	175
9849.227	32.75	69.5	-36.75	Peak	23	100
12214.326	35.01	69.5	-34.49	Peak	229	100

Table 24

No other final measurements were made as all peak emissions seen during the pre-scan were greater than 10 dB below the Peak test limit.

Frequency Range of Test: 1 GHz to 18 GHz – CISPR Average

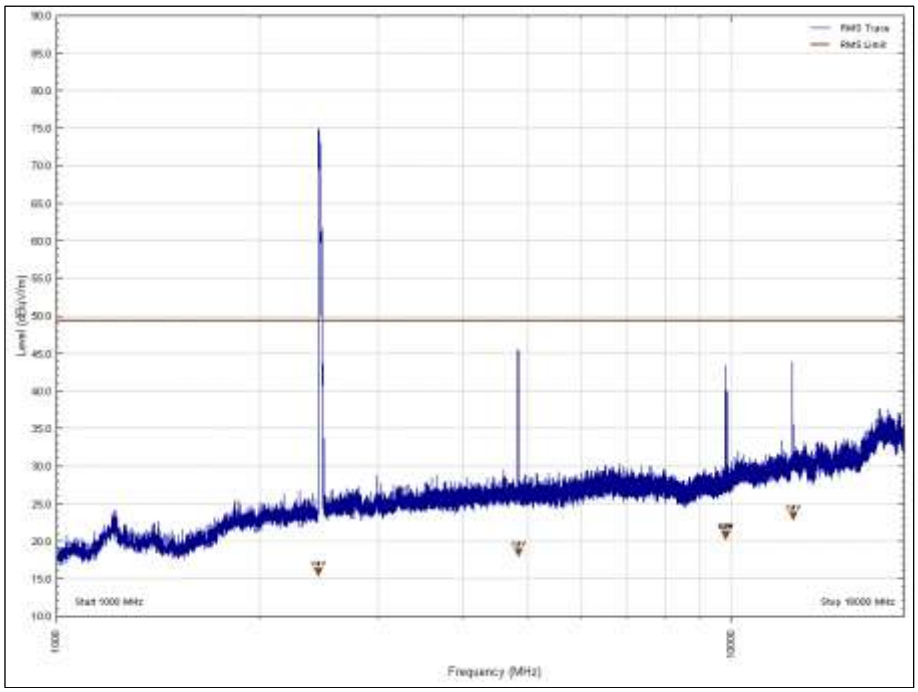

Figure 22 - Graphical Results - Horizontal Polarity

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)
2443.699	14.97	49.5	-34.53	CISPR Average	145	242
4835.985	17.6	49.5	-31.9	CISPR Average	171	101
9784.596	19.94	49.5	-29.56	CISPR Average	226	100
9815.955	20.04	49.5	-29.46	CISPR Average	234	110
12334.568	22.44	49.5	-27.06	CISPR Average	185	100

Table 25

No other final measurements were made as all peak emissions seen during the pre-scan were greater than 10 dB below the CISPR Average test limit.

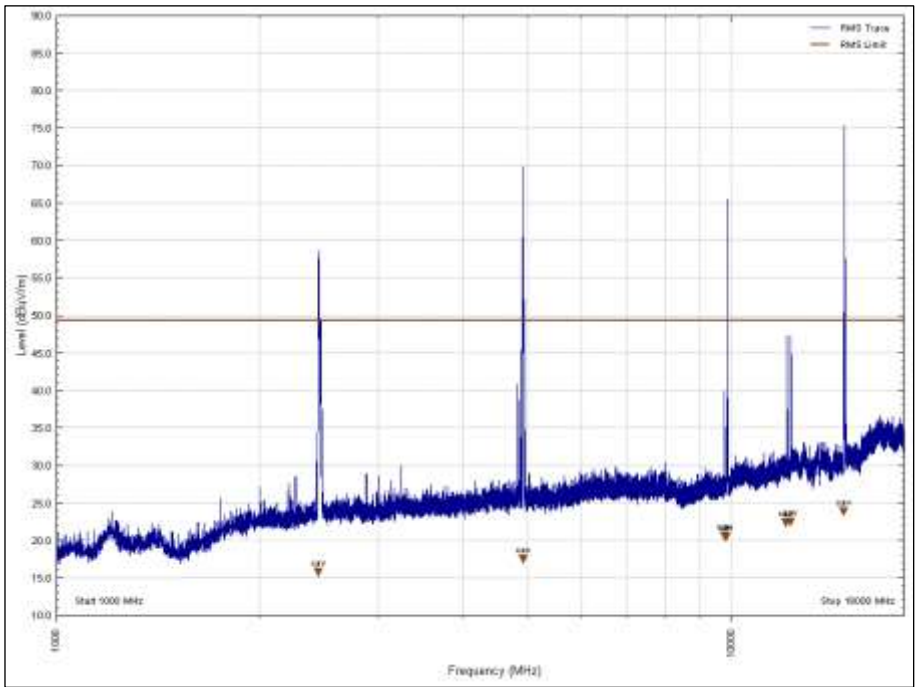

Figure 23 - Graphical Results - Vertical Polarity

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)
2447.559	14.87	49.5	-34.63	CISPR Average	276	145
4913.793	16.68	49.5	-32.82	CISPR Average	144	110
9764.914	19.74	49.5	-29.76	CISPR Average	194	102
9827.967	19.6	49.5	-29.9	CISPR Average	185	110
12059.498	21.51	49.5	-27.99	CISPR Average	202	100
12235.996	21.67	49.5	-27.83	CISPR Average	173	100
14681.986	22.92	49.5	-26.58	CISPR Average	233	103

Table 26

No other final measurements were made as all peak emissions seen during the pre-scan were greater than 10 dB below the CISPR Average test limit.

Frequency Range of Test: 18 GHz to 30 GHz – Peak

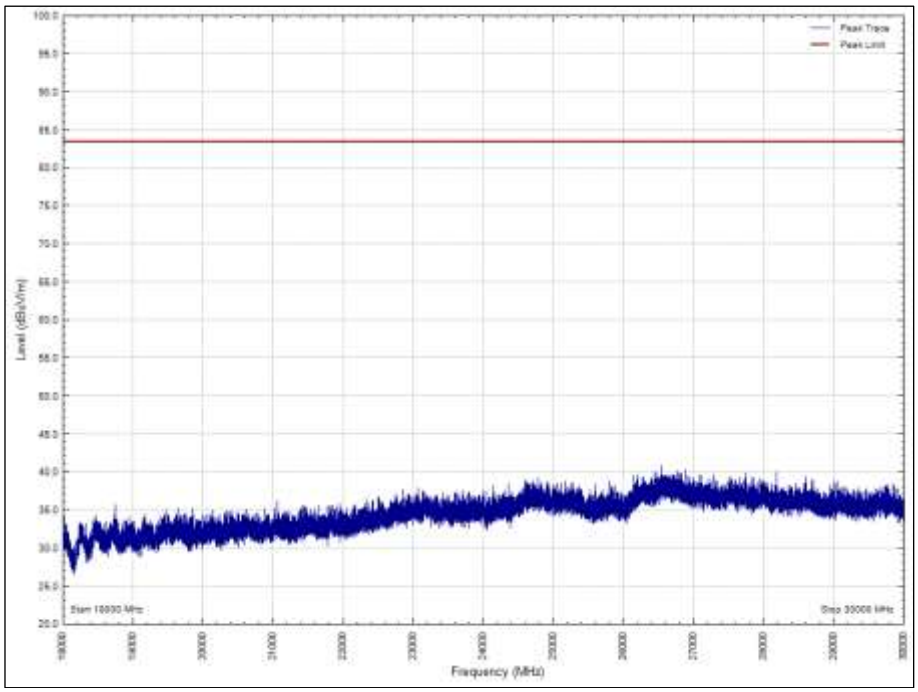

Figure 24 - Graphical Results - Horizontal Polarity

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

Table 27

*No final measurements were made as all peak emissions seen during the pre-scan were greater than 10 dB below the Peak test limit.

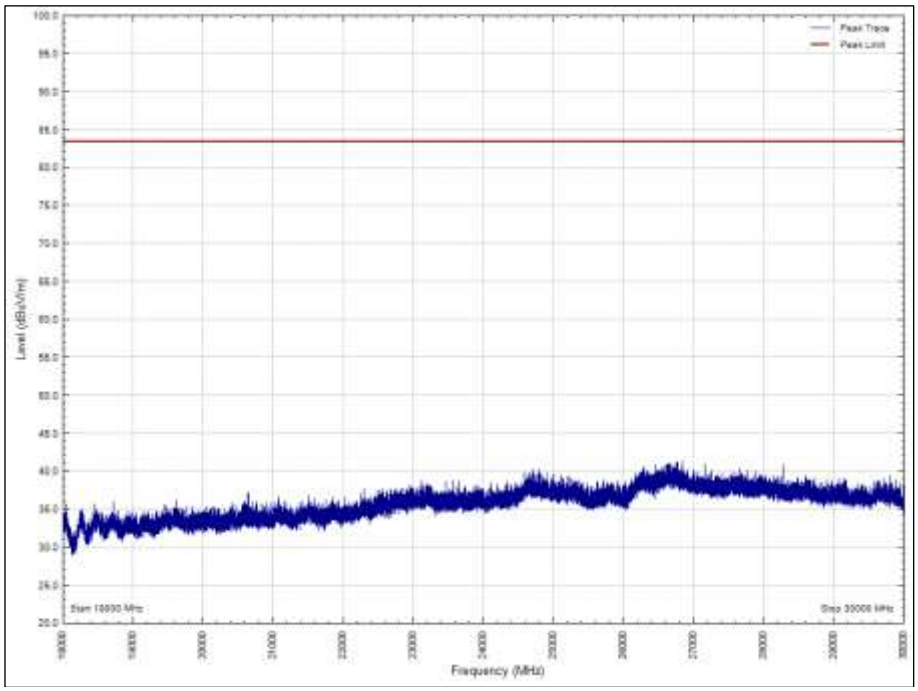

Figure 25 - Graphical Results - Vertical Polarity

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

Table 28

*No final measurements were made as all peak emissions seen during the pre-scan were greater than 10 dB below the Peak test limit.

Frequency Range of Test: 18 GHz to 30 GHz – CISPR Average

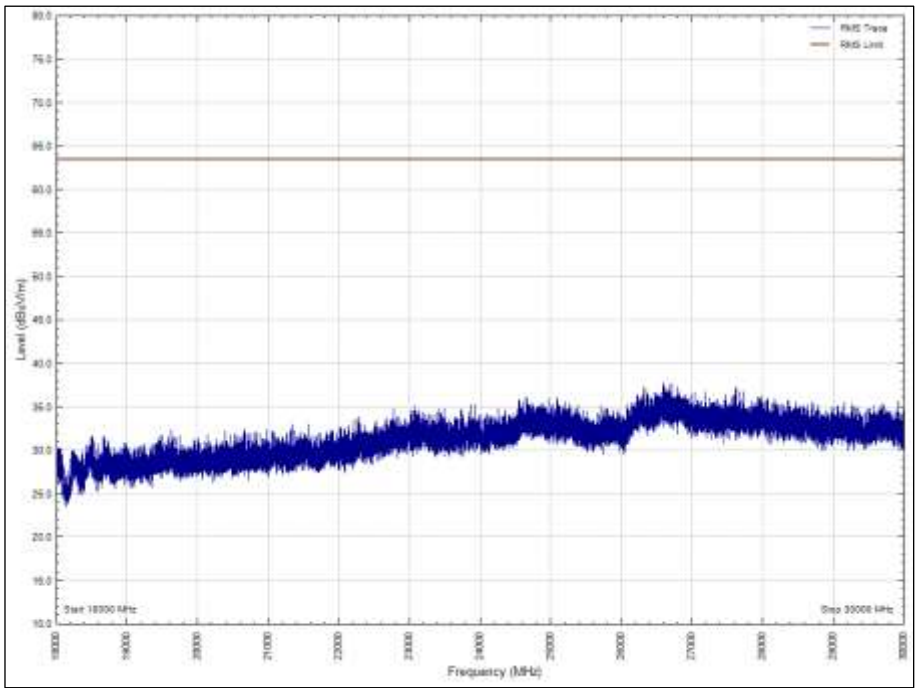

Figure 26 - Graphical Results - Horizontal Polarity

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

Table 29

*No final measurements were made as all peak emissions seen during the pre-scan were greater than 10 dB below the CISPR Average test limit.

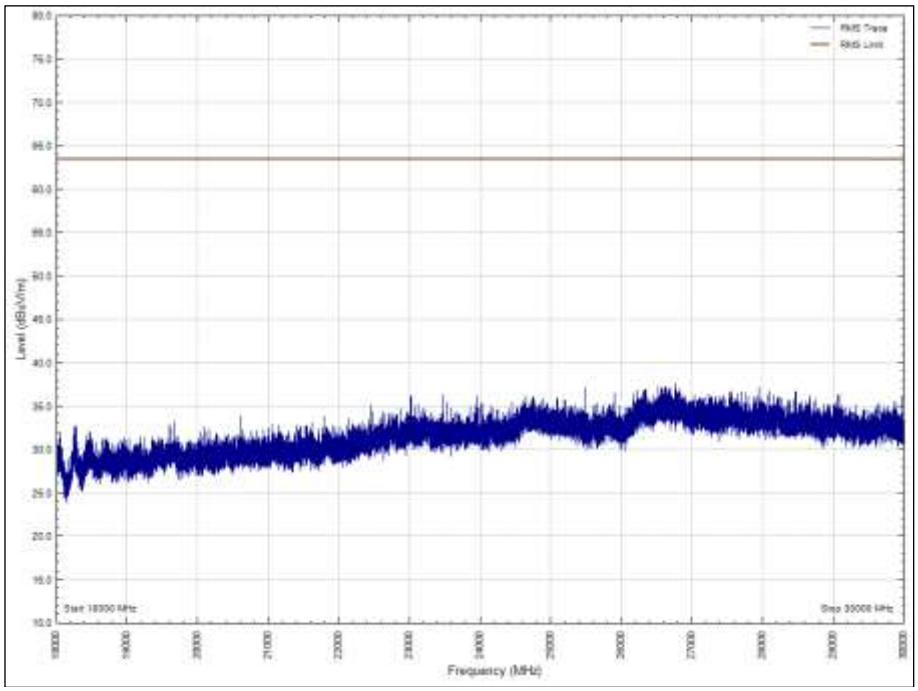

Figure 27 - Graphical Results - Vertical Polarity

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

Table 30

*No final measurements were made as all peak emissions seen during the pre-scan were greater than 10 dB below the CISPR Average test limit.

Figure 28 - Test Setup - 30 MHz to 1 GHz

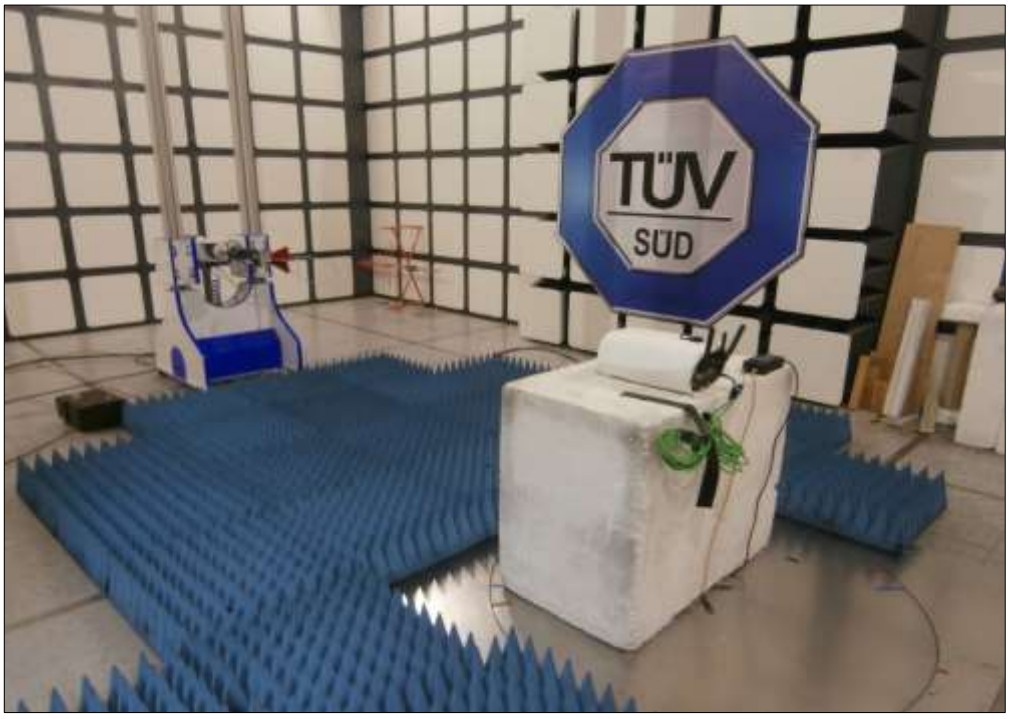

Figure 29 - Test Setup - 1 GHz to 18 GHz

Figure 30 - Test Setup - Above 18 GHz

2.2.10 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 Due
Screened Room (5)	Rainford	Rainford	1545	36	23-Jan-2021
EmX Emissions Software	TUV SUD	V1.5.6	5125	-	Software
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	03-Jan-2021
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Mast Controller	Maturo Gmbh	NCD	4810	-	TU
Tilt Antenna Mast	Maturo Gmbh	TAM 4.0-P	4811	-	TU
Antenna with permanent attenuator (Bilog)	Chase	CBL6143	2904	24	30-Sep-2021
1 – 8 GHz Pre-amp	Wright Technologies	APS04-0085	4365	12	14-Nov-2020
8 - 18 GHz Pre-amp	Wright Technologies	PS06-0061	4971	12	23-Jan-2021
Double Ridged Waveguide Horn Antenna	ETS-Lindgren	3117	4722	12	05-March-2020
18-40 GHz Pre Amplifier	Phase One	O4-0087	1534	12	18-Feb-2021
Antenna 18-40GHz (Double Ridge Guide)	Link Microtek Ltd	AM180HA-K-TU2	230	12	02-May-2020
Cable (Yellow, Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4527	6	09-Jun-2020
8m N-Type RF Cable	Teledyne	PR90-088-8MTR	5093	12	06-Oct-2020

Table 31

TU - Traceability Unscheduled

3 Incident Reports

No incidents reports were raised.

4 Measurement Uncertainty

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

Test Name	Measurement Uncertainty
Conducted Disturbance at Mains Terminals	150 kHz to 30 MHz, LISN, ±3.7 dB
Radiated Disturbance	30 MHz to 1 GHz, Bilog Antenna, ±5.2 dB 1 GHz to 40 GHz, Horn Antenna, ±6.3 dB

Table 32

Worst case error for both Time and Frequency measurement 12 parts in 10^6.

Measurement Uncertainty Decision Rule

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2007, clause 4.4.3 and 4.5.1.