FCC and ISED Test Report

Dyson Technology Limited
Air Purifying Headphone, Model: WP01

In accordance with FCC 47 CFR Part 15B and ICES-003 (2.4 GHz Bluetooth & Bluetooth Low Energy)

Add value.
Inspire trust.

Prepared for: Dyson Technology Limited
Tetbury Hill
Malmesbury
SN16 0RP
United Kingdom

FCC ID: QVHWP01001 IC: 7968A-WP01001

COMMERCIAL-IN-CONFIDENCE

Document 75950381-08 Issue 01

SIGNATURE			
A.J. Lawson			
NAME	**JOB TITLE**	**RESPONSIBLE FOR**	**ISSUE DATE**
Andrew Lawson	EMC Chief Engineer	Authorised Signatory	16 January 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 15B and ICES-003. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Ravi Kishore Darshanam	16 January 2023	

FCC Accreditation
330364 Bearley Test Laboratory

Industry Canada Accreditation
2932E Bearley Test Laboratory

EXECUTIVE SUMMARY
A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15B and ICES-003: 2020 and Issue 7: 2020 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	16 January 2023

Table 1

1.2 Introduction

Applicant	Dyson Technology Limited
Manufacturer	Dyson Technology Limited
Model Number(s)	WP01
Serial Number(s)	M8C-CN-FDN0393X
Hardware Version(s)	DVT1
Software Version(s)	10.3
Number of Samples Tested	1
Test Specification/Issue/Date	FCC 47 CFR Part 15B and ICES-003: 2020 and Issue 7: 2020
Order Number Date	6000091736 06-November-2020
Date of Receipt of EUT	26-August-2022
Start of Test	14-September-2022
Finish of Test	15-September-2022
Name of Engineer(s)	Ravi Kishore Darshanam
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 and ICES-003 is shown below.

Section	Specification Clause	Test Description	Result	Comments/Base Standard
Configuration and Mode: AC and Battery Powered - Bluetooth EDR/Classic & Bluetooth Low Energy Link				
2.1	15.109 and 3.2	Radiated Disturbance	Pass	ANSI C63.4: 2014

Table 2

1.4 Declaration of Build Status

MAIN EUT	
MANUFACTURING DESCRIPTION	Air Purifying Headphones
MANUFACTURER	Dyson Technology Ltd
MODEL	WP01
PART NUMBER	WP01
HARDWARE VERSION	DVT1
SOFTWARE VERSION	10.3
PSU VOLTAGE/FREQUENCY/CURRENT	EU: 240 V, 50 Hz US: 110 V, 60 Hz
HIGHEST INTERNALLY GENERATED FREQUENCY	2400 MHz
FCC ID (if applicable)	QVHWP01001
INDUSTRY CANADA ID (if applicable)	7968A-WP01001
TECHNICAL DESCRIPTION (a brief technical description of the intended use and operation)	The EUT is an Air Purifying Headphone with Bluetooth BR/EDR and Bluetooth Low Energy technologies
COUNTRY OF ORIGIN	China
RF CHARACTERISTICS (if applicable)	
TRANSMITTER FREQUENCY OPERATING RANGE (MHz)	2400 MHz to 2483.5 MHz
RECEIVER FREQUENCY OPERATING RANGE (MHz)	2400 MHz to 2483.5 MHz
INTERMEDIATE FREQUENCIES	Not Applicable
EMISSION DESIGNATOR(S): https://fccid.io/Emissions-Designator/	Not Applicable
MODULATION TYPES: (i.e. GMSK, QPSK)	Not Applicable

Table 3

The above information was provided by the applicant.

1.5 Product Information

1.5.1 Technical Description

The Equipment under test (EUT) was a Dyson Technology Limited Air Purifying Headphone, Model WP01 with Bluetooth BR/EDR and Bluetooth Low Energy technologies.

Additionally, the EUT provides purified air to the user of the headphones.

Figure 1 - EUT Overall view

Figure 2 - Air Purifying Headphone

Figure 3 - Air Purifying Mask

Figure 4 – Power Adapter

1.5.2 EUT Port/Cable Identification

Port	Max Cable Length specified	Usage	Type	Screened
AC Power Port	1.5 m	Power for EUT recharging.	AC-DC Power Adapter with USB output.	Yes

Table 4

1.5.3 Test Configuration

Configuration	Description
AC and Battery Powered	The EUT was powered from its internal batteries while a DC supply from a mains to USB adapter recharged the EUTs batteries. The EUT had no other physical connections.

Table 5

1.5.4 Modes of Operation

Mode	Description
Bluetooth EDR/Classic & Bluetooth Low Energy Link	The EUT was charging from an AC to DC power adapter. The EUTs Bluetooth Classic and BLE were enabled but not linked. The air purifier fan was running.

Table 6

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: WP01, Serial Number: M8C-CN-FDN0393X			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 7

1.8 Test Location

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

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: AC and Battery Powered		
Radiated Disturbance	Ravi Kishore Darshanam	UKAS

Table 8

Office Address:
Snitterfield Road
Bearley
Warwickshire
CV37 OEX
United Kingdom

2 Test Details

2.1 Radiated Disturbance

2.1.1 Specification Reference

FCC 47 CFR Part 15B and ICES-003, Clause 15.109 and 3.2

2.1.2 Equipment Under Test and Modification State

WP01, S/N: M8C-CN-FDN0393X - Modification State 0

2.1.3 Date of Test

14-September-2022 to 15-September-2022

2.1.4 Test Method

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

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

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.

Using a list of the highest emissions detected during the pre-scan along with their bearing and associated antenna polarisation, the EUT was then 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.

2.1.5 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)

2.1.6 Example Test Setup Diagram

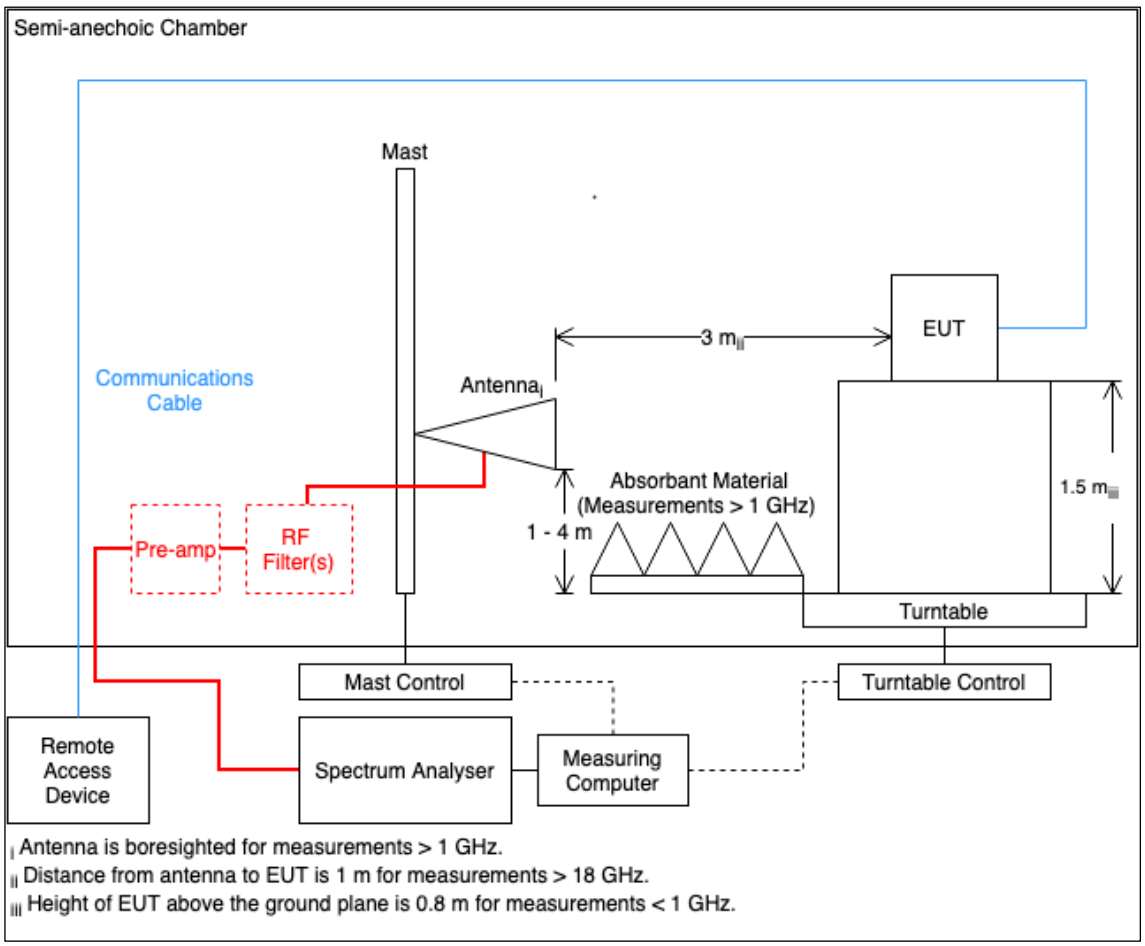

Figure 5

2.1.7 Environmental Conditions

Ambient Temperature	19.9 °C
Relative Humidity	59.2 %
Atmospheric Pressure	1009.0 mbar

2.1.8 Specification Limits

Required Specification Limits, Field Strength - Class B Test Limit at a 3 m Measurement Distance		
Frequency Range (MHz)	Test Limit (µV/m)	Test Limit (dBµV/m)
30 to 88	100	40.0
88 to 216	150	43.5
216 to 960	200	46.0
Above 960	500	54.0
Supplementary information: Note 1. A Quasi-peak detector is to be used for measurements below 1 GHz. Note 2. A CISPR Average detector is to be used for measurements above 1 GHz. Note 3. The Peak test limit above 1 GHz is 20 dB higher than the CISPR Average test limit.		

Table 9

2.1.9 Test Results

Results for Configuration and Mode: AC and Battery Powered.

This test was performed to the requirements of the Class B limits.

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

Detailed results are shown below.

Highest frequency generated or used within the EUT: 2.4 GHz
Which necessitates an upper frequency test limit of: 13.0 GHz

The EUT is handheld, body-worn, or ceiling-mounted equipment and has therefore been tested in three different orientations in accordance with ANSI C63.4, Clause 6.3.2.1.

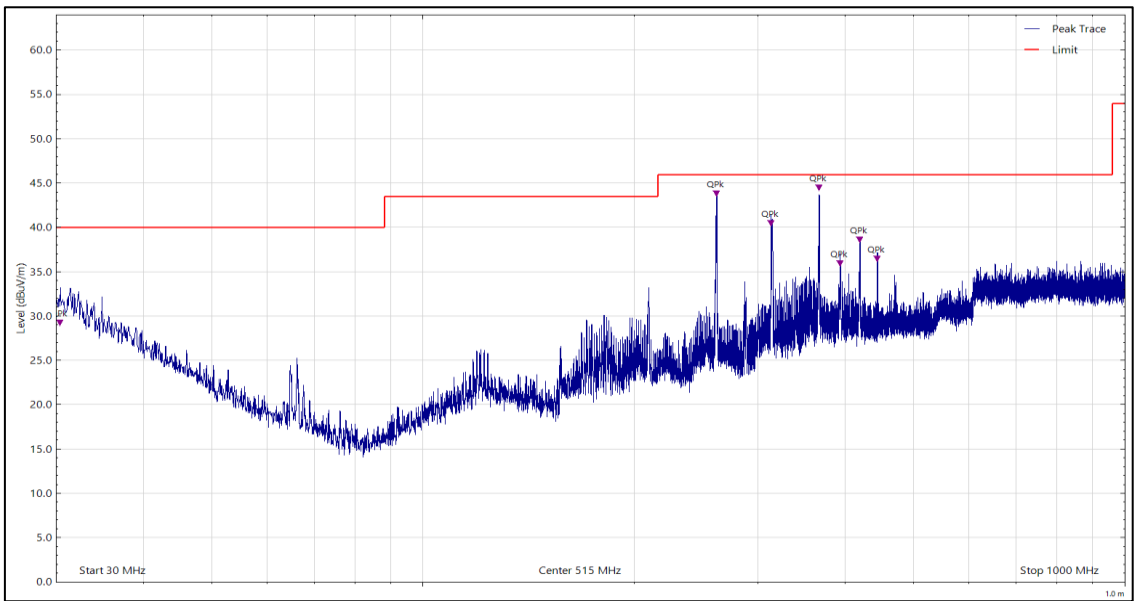

Figure 6 - 30 MHz to 1 GHz, Quasi-Peak, Horizontal - X Orientation

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
30.380	28.7	40.0	-11.3	Q-Peak	38	206	Horizontal
262.100	43.3	46.0	-2.7	Q-Peak	303	100	Horizontal
313.146	40.0	46.0	-6.0	Q-Peak	204	115	Horizontal
366.817	43.9	46.0	-2.1	Q-Peak	91	100	Horizontal
392.985	35.4	46.0	-10.6	Q-Peak	79	100	Horizontal
419.412	38.1	46.0	-7.9	Q-Peak	102	221	Horizontal
443.887	36.0	46.0	-10.0	Q-Peak	72	100	Horizontal

Table 10

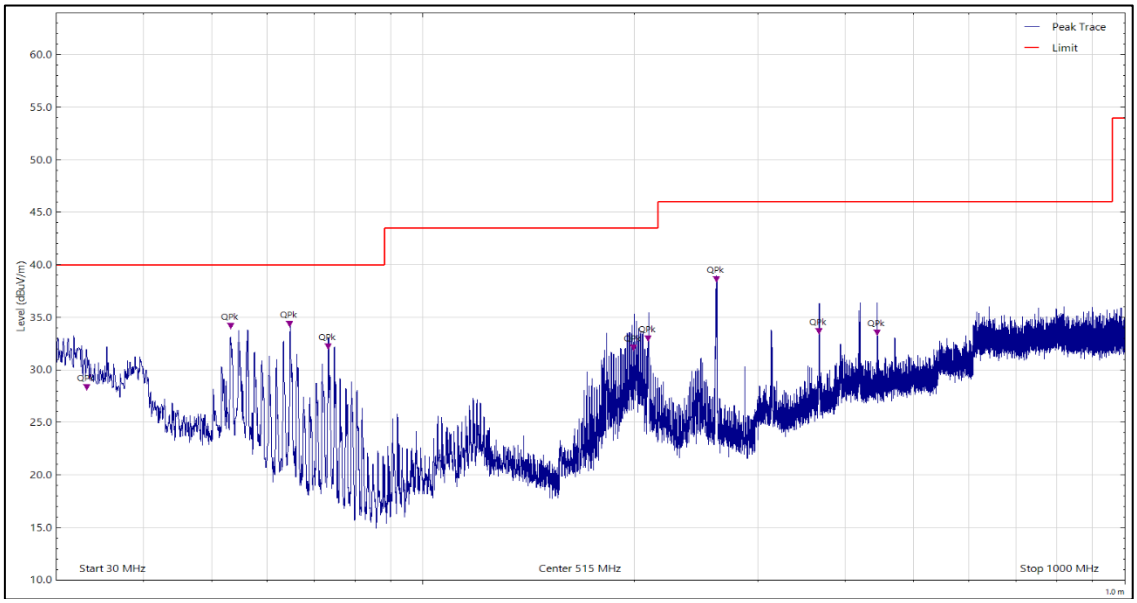

Figure 7 - 30 MHz to 1 GHz, Quasi-Peak, Vertical - X Orientation

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
33.202	27.9	40.0	-12.1	Q-Peak	259	186	Vertical
53.182	33.7	40.0	-6.3	Q-Peak	240	100	Vertical
64.662	33.9	40.0	-6.1	Q-Peak	154	100	Vertical
73.315	31.8	40.0	-8.2	Q-Peak	360	173	Vertical
199.754	31.7	43.5	-11.8	Q-Peak	219	109	Vertical
209.552	32.6	43.5	-10.9	Q-Peak	0	100	Vertical
261.852	38.2	46.0	-7.8	Q-Peak	255	100	Vertical
366.610	33.2	46.0	-12.8	Q-Peak	179	102	Vertical
443.488	33.1	46.0	-12.9	Q-Peak	301	126	Vertical

Table 11

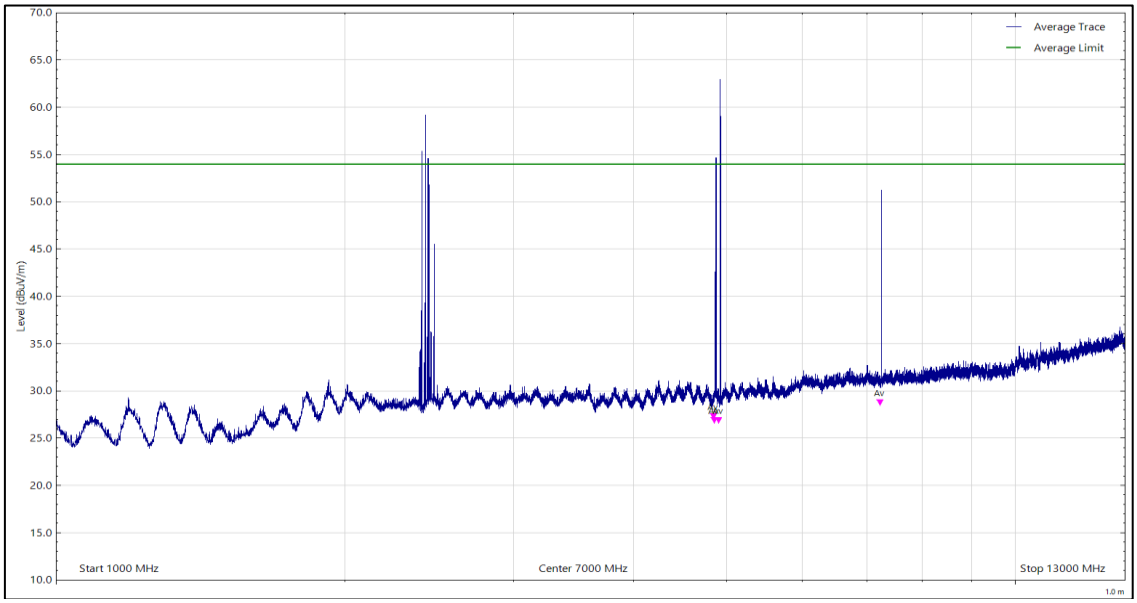

Figure 8 - 1 GHz to 13 GHz, CISPR Average, Horizontal - X Orientation

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
4844.234	26.8	54.0	-27.2	CISPR Avg	324	100	Horizontal
4852.475	26.4	54.0	-27.6	CISPR Avg	57	198	Horizontal
4905.601	26.4	54.0	-27.6	CISPR Avg	77	310	Horizontal
7226.595	28.3	54.0	-25.7	CISPR Avg	2	197	Horizontal

Table 12

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

The emissions seen at between 2.405 GHz and 2.478 GHz are intentionally generated transmissions from the EUT and are therefore not subject to the test limit. In addition to this, emissions seen at around 4.8 GHz and 7.2 GHz are harmonics of these intentionally generated transmissions and are also not subject to the test limit.

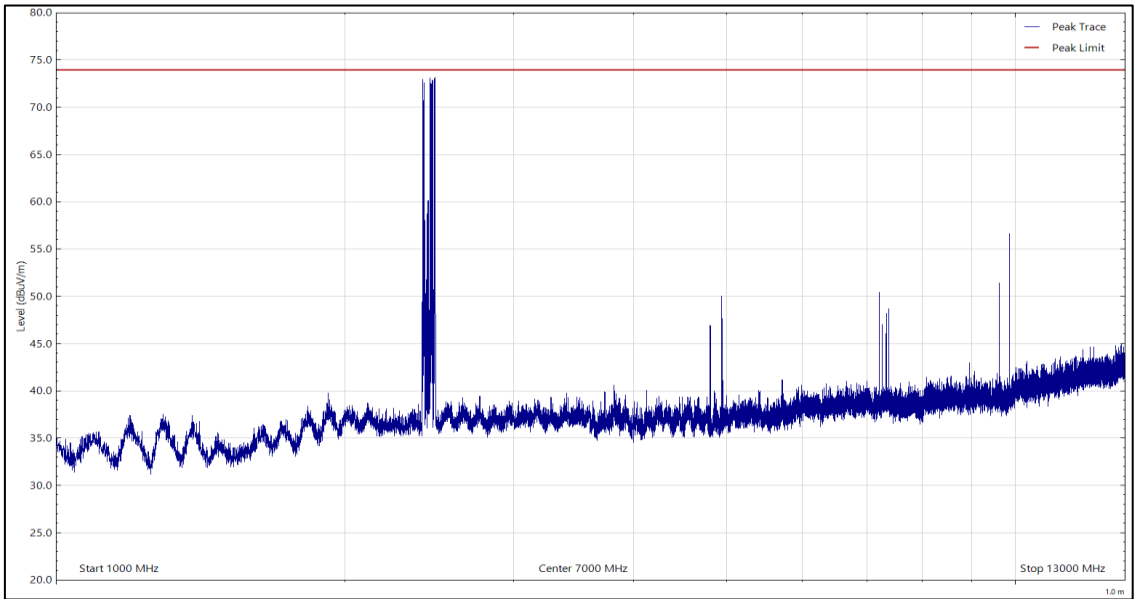

Figure 9 - 1 GHz to 13 GHz, Peak, Horizontal - X Orientation

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

Table 13

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

The emissions seen at between 2.410 GHz and 2.480 GHz are intentionally generated transmissions from the EUT and are therefore not subject to the test limit. In addition to this, emissions seen at around 4.8 GHz and 7.2 GHz are harmonics of these intentionally generated transmissions and are also not subject to the test limit.

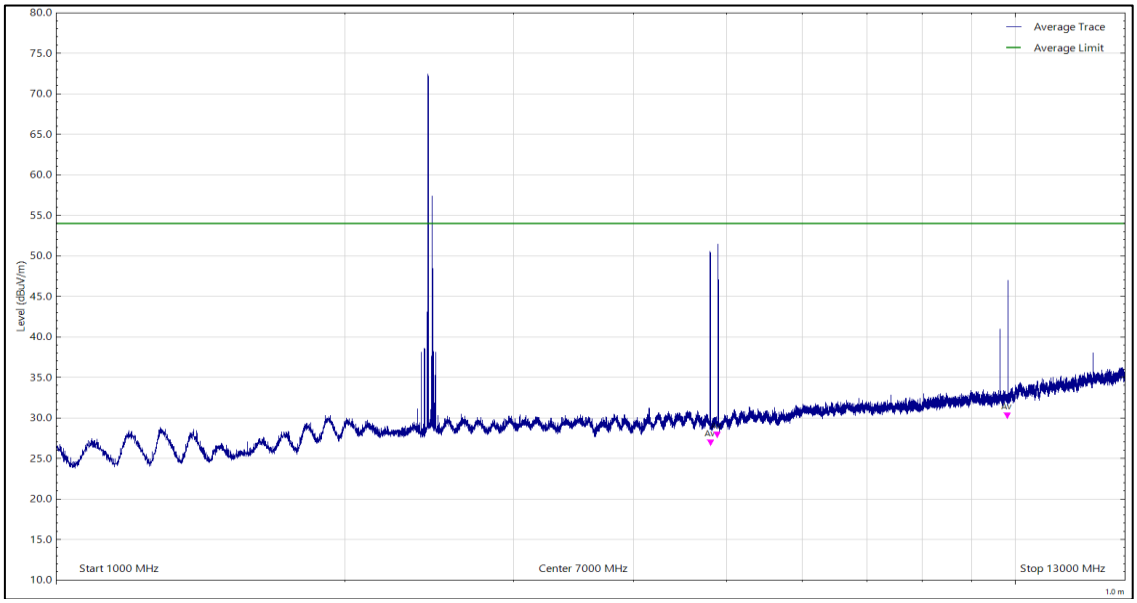

Figure 10 - 1 GHz to 13 GHz, CISPR Average, Vertical - X Orientation

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
4810.155	26.4	54.0	-27.6	CISPR Avg	249	150	Vertical
4888.549	27.4	54.0	-26.6	CISPR Avg	47	240	Vertical
9803.358	29.7	54.0	-24.3	CISPR Avg	85	347	Vertical

Table 14

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

The emissions seen at between 2.440 GHz and 2.464 GHz are intentionally generated transmissions from the EUT and are therefore not subject to the test limit. In addition to this, emissions seen at around 4.8 GHz and 7.2 GHz are harmonics of these intentionally generated transmissions and are also not subject to the test limit.

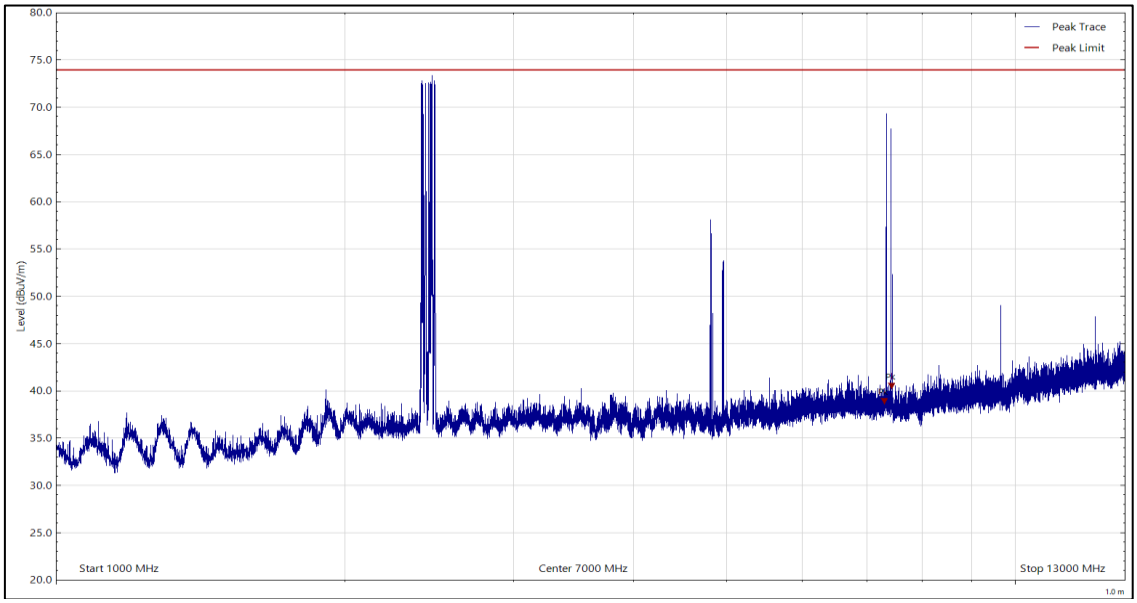

Figure 11 - 1 GHz to 13 GHz, Peak, Vertical - X Orientation

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
7300.596	38.5	74.0	-35.5	Peak	315	357	Vertical
7428.735	40.1	74.0	-33.9	Peak	68	100	Vertical

Table 15

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

The emissions seen at between 2.402 GHz and 2.480 GHz are intentionally generated transmissions from the EUT and are therefore not subject to the test limit. In addition to this, emissions seen at around 4.8 GHz and 7.2 GHz are harmonics of these intentionally generated transmissions and are also not subject to the test limit.

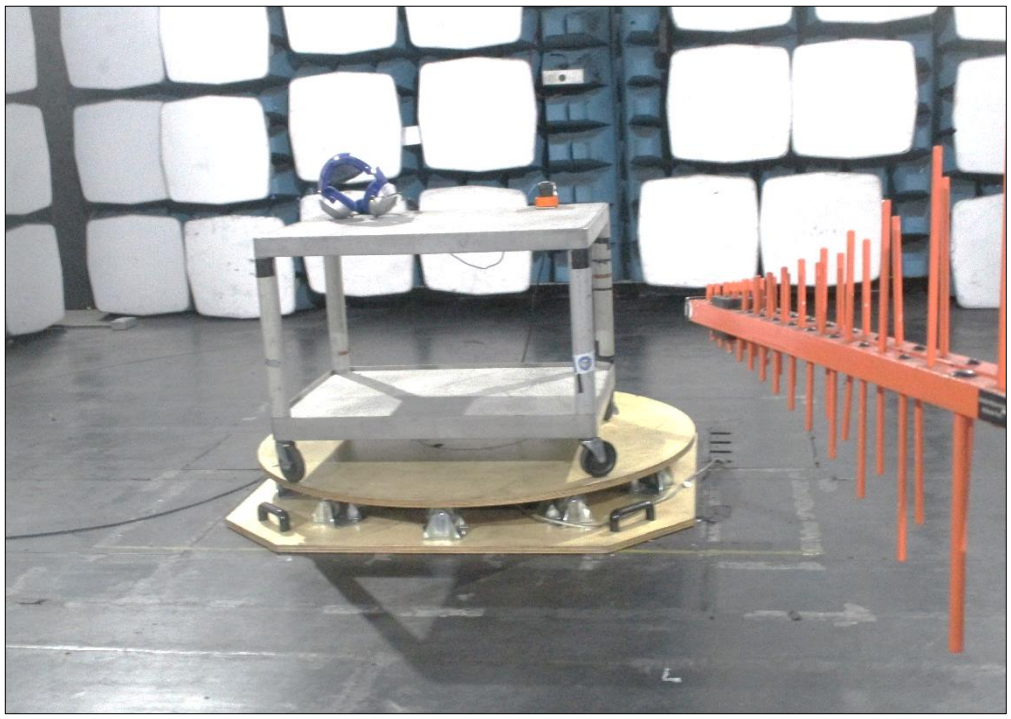

Figure 12 - Test Setup - 30 MHz to 1 GHz - X Orientation

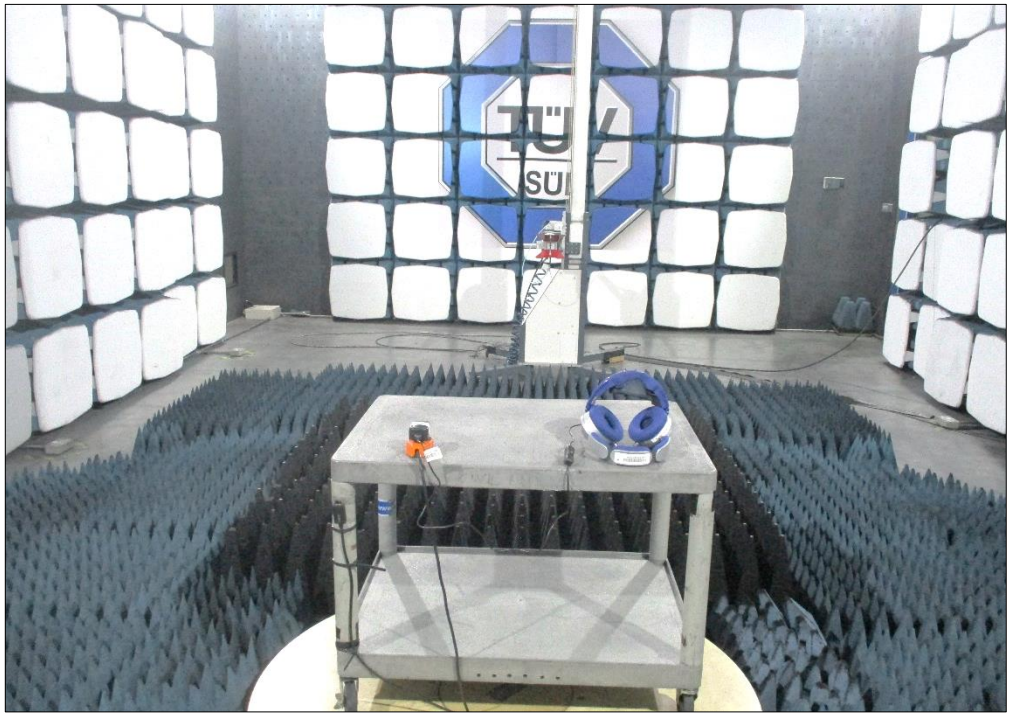

Figure 13 - Test Setup - 1 GHz to 13 GHz - X Orientation

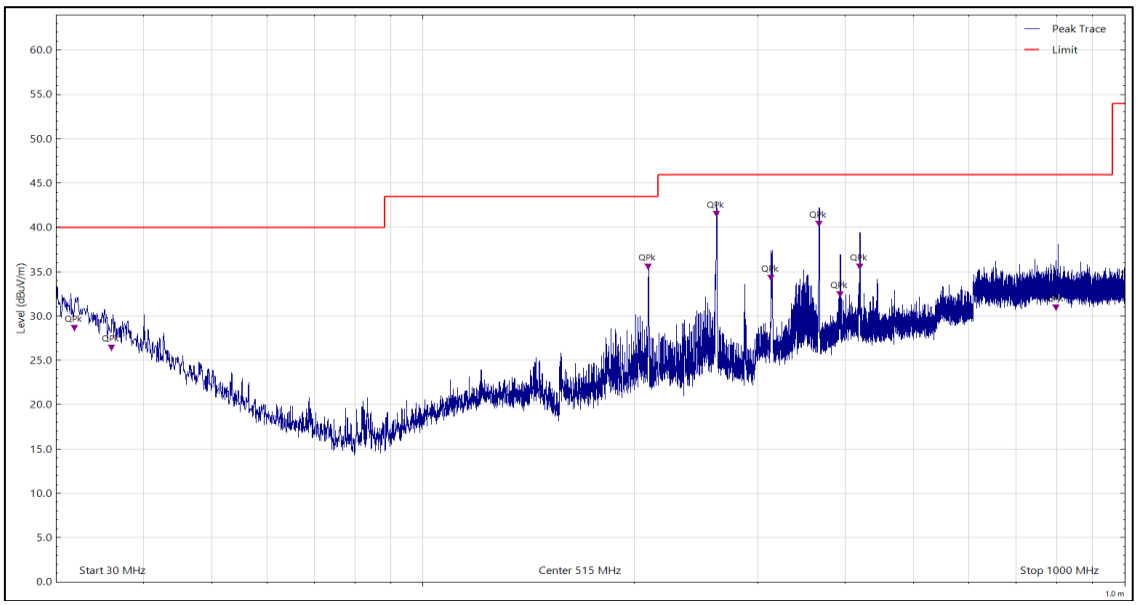

Figure 14 - 30 MHz to 1 GHz, Quasi-Peak, Horizontal – Y Orientation

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
31.919	28.2	40.0	-11.8	Q-Peak	345	102	Horizontal
35.972	25.9	40.0	-14.1	Q-Peak	291	220	Horizontal
209.605	35.0	43.5	-8.5	Q-Peak	154	162	Horizontal
261.791	41.0	46.0	-5.0	Q-Peak	108	100	Horizontal
313.073	33.8	46.0	-12.2	Q-Peak	10	132	Horizontal
366.894	39.9	46.0	-6.1	Q-Peak	9	103	Horizontal
392.806	32.0	46.0	-14.0	Q-Peak	4	120	Horizontal
418.967	35.0	46.0	-11.0	Q-Peak	33	114	Horizontal
799.082	30.5	46.0	-15.5	Q-Peak	323	148	Horizontal

Table 16

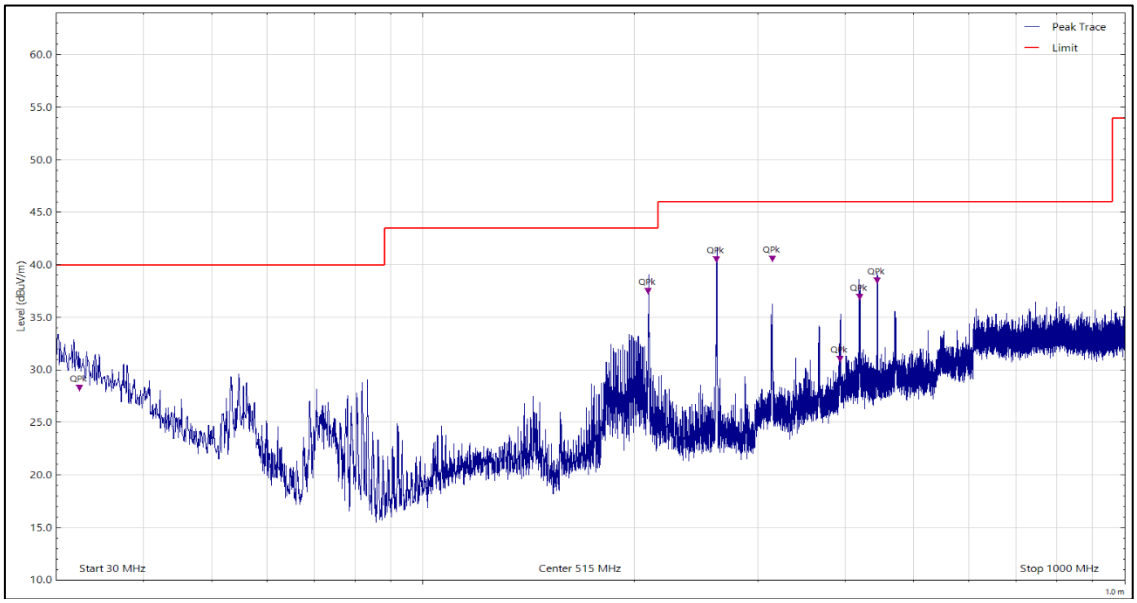

Figure 15 - 30 MHz to 1 GHz, Quasi-Peak, Vertical - Y Orientation

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
32.427	27.9	40.0	-12.1	Q-Peak	5	101	Vertical
209.621	37.1	43.5	-6.4	Q-Peak	6	100	Vertical
262.037	40.1	46.0	-5.9	Q-Peak	206	100	Vertical
314.552	40.1	46.0	-5.9	Q-Peak	174	193	Vertical
392.607	30.6	46.0	-15.4	Q-Peak	4	100	Vertical
419.022	36.5	46.0	-9.5	Q-Peak	282	100	Vertical
443.628	38.1	46.0	-7.9	Q-Peak	286	110	Vertical

Table 17

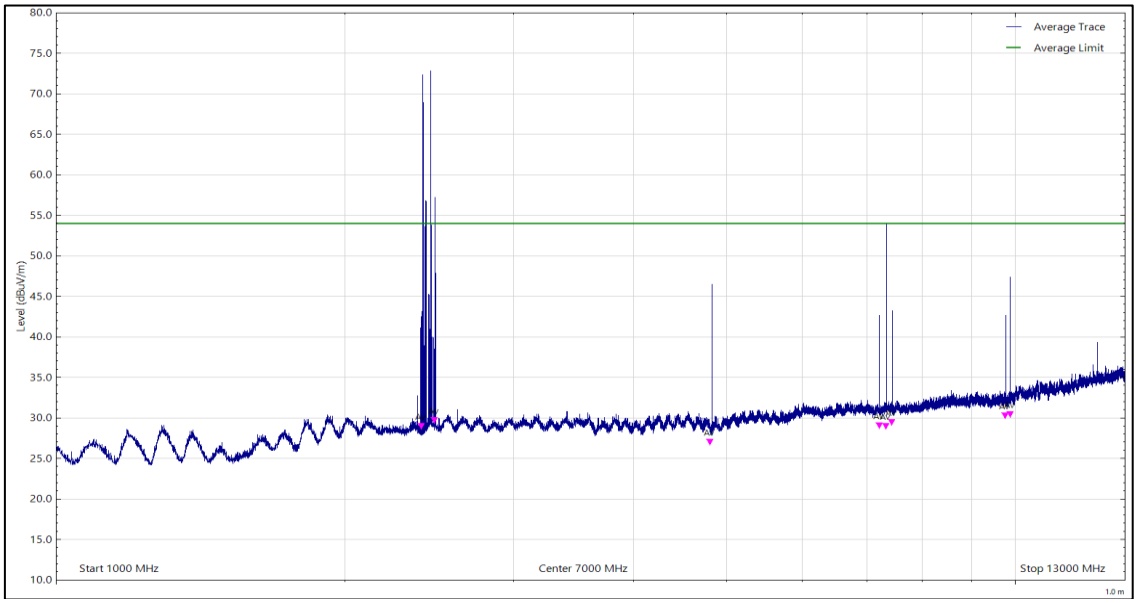

Figure 16 - 1 GHz to 13 GHz, CISPR Average, Horizontal - Y Orientation

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
4803.534	26.4	54.0	-27.6	CISPR Avg	260	146	Horizontal
7209.153	28.5	54.0	-25.5	CISPR Avg	208	154	Horizontal
7325.436	28.4	54.0	-25.6	CISPR Avg	16	256	Horizontal
7433.438	28.9	54.0	-25.1	CISPR Avg	294	156	Horizontal
9750.263	29.7	54.0	-24.3	CISPR Avg	89	205	Horizontal
9880.316	29.9	54.0	-24.1	CISPR Avg	275	396	Horizontal

Table 18

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

The emissions seen at between 2.410 GHz and 2.456 GHz are intentionally generated transmissions from the EUT and are therefore not subject to the test limit. In addition to this, emissions seen at around 4.8 GHz, 7.2 GHz and 9.8 GHz are harmonics of these intentionally generated transmissions and are also not subject to the test limit.

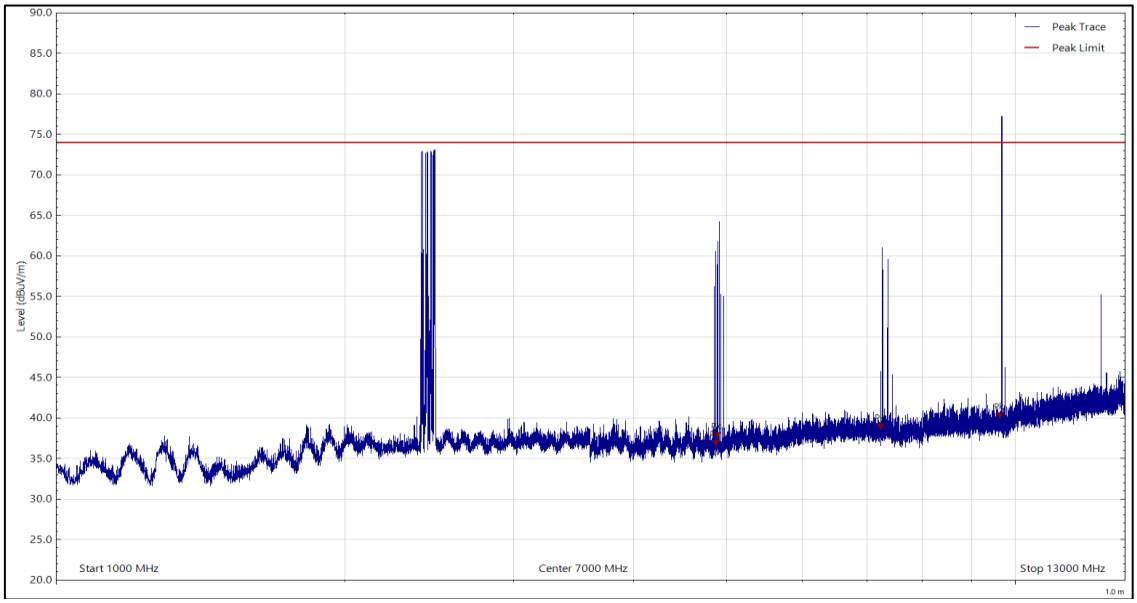

Figure 17 - 1 GHz to 13 GHz, Peak, Horizontal - Y Orientation

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
4871.084	36.3	74.0	-37.7	Peak	261	302	Horizontal
4889.422	37.3	74.0	-36.7	Peak	186	306	Horizontal
7239.269	38.4	74.0	-35.6	Peak	231	304	Horizontal
9633.618	39.7	74.0	-34.3	Peak	0	390	Horizontal

Table 19

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

The emissions seen at between 2.410 GHz and 2.480 GHz are intentionally generated transmissions from the EUT and are therefore not subject to the test limit. In addition to this, emissions seen at around 4.8 GHz, 7.2 GHz and 9.8 GHz are harmonics of these intentionally generated transmissions and are also not subject to the test limit.

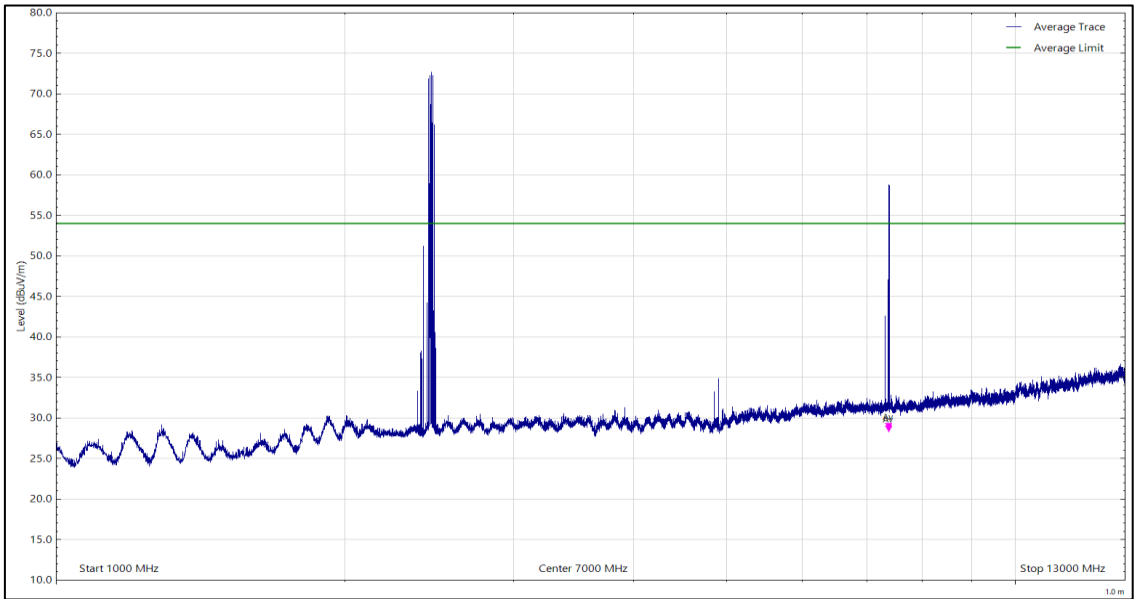

Figure 18 - 1 GHz to 13 GHz, CISPR Average, Vertical - Y Orientation

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
7377.197	28.4	54.0	-25.6	CISPR Avg	146	105	Vertical
7385.558	28.1	54.0	-25.9	CISPR Avg	350	114	Vertical

Table 20

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

The emissions seen at between 2.413 GHz and 2.479 GHz are intentionally generated transmissions from the EUT and are therefore not subject to the test limit. In addition to this, emissions seen at around 4.8 GHz, 7.2 GHz and 9.8 GHz are harmonics of these intentionally generated transmissions and are also not subject to the test limit.

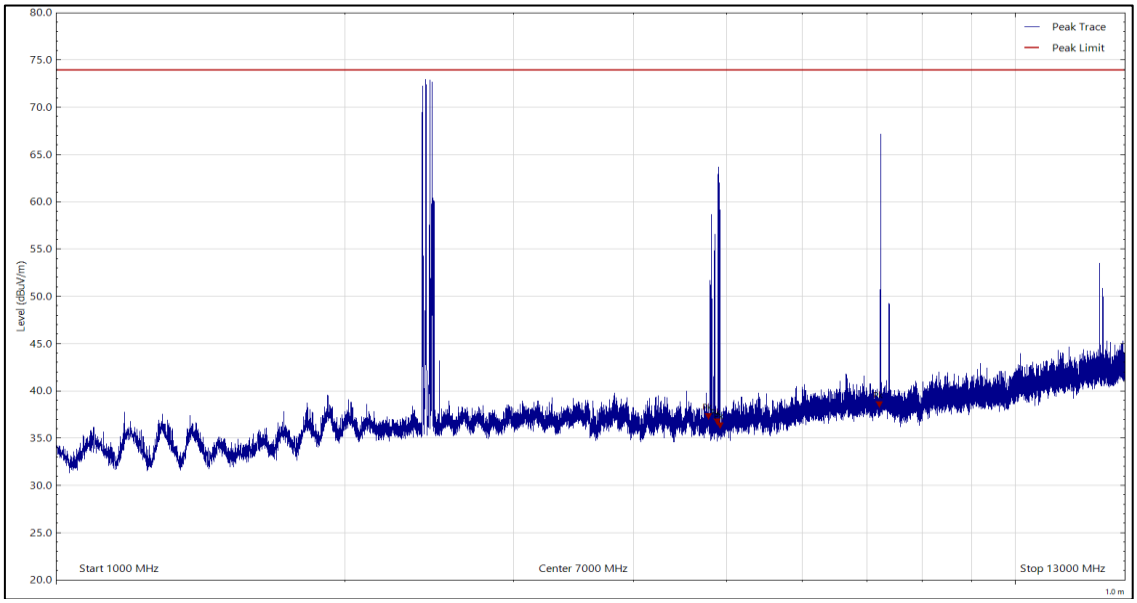

Figure 19 - 1 GHz to 13 GHz, Peak, Vertical - Y Orientation

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
4789.095	36.8	74.0	-37.2	Peak	359	303	Vertical
4884.966	36.3	74.0	-37.7	Peak	92	290	Vertical
4924.736	35.9	74.0	-38.1	Peak	0	205	Vertical
7215.811	38.1	74.0	-35.9	Peak	351	142	Vertical

Table 21

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

The emissions seen at between 2.407 GHz and 2.475 GHz are intentionally generated transmissions from the EUT and are therefore not subject to the test limit.

In addition to this, emissions seen at around 4.8 GHz, 7.2 GHz and 9.8 GHz are harmonics of these intentionally generated transmissions and are also not subject to the test limit.

Figure 20 - Test Setup - 30 MHz to 1 GHz - Y Orientation

Figure 21 - Test Setup - 1 GHz to 13 GHz - Y Orientation

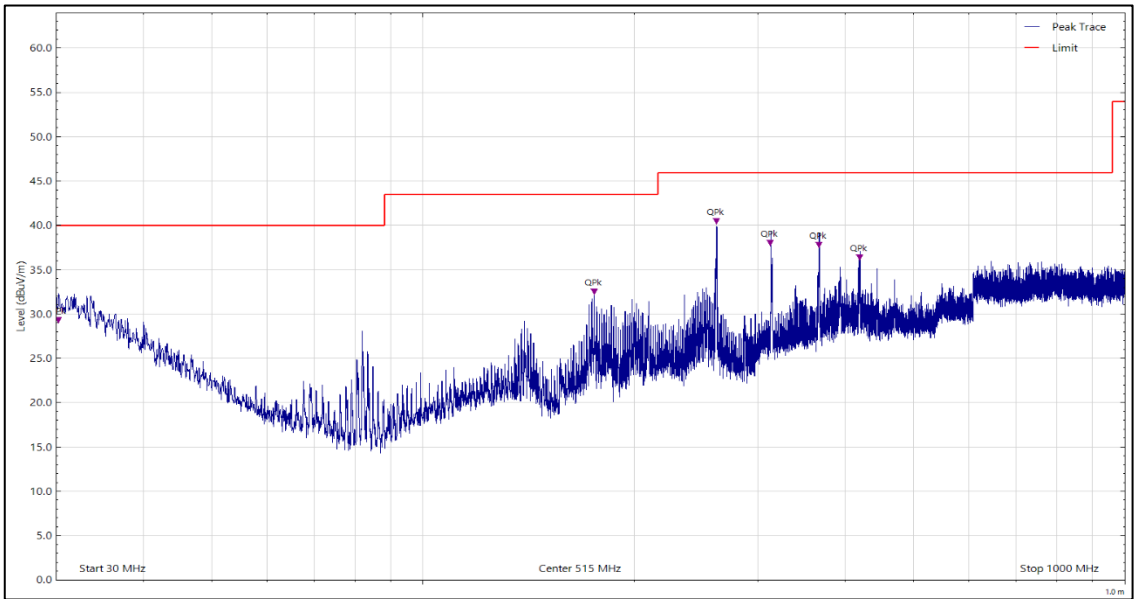

Figure 22 - 30 MHz to 1 GHz, Quasi-Peak, Horizontal – Z Orientation

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
30.257	28.8	40.0	-11.2	Q-Peak	6	259	Horizontal
175.343	32.0	43.5	-11.5	Q-Peak	194	177	Horizontal
262.066	39.9	46.0	-6.1	Q-Peak	279	132	Horizontal
312.642	37.5	46.0	-8.5	Q-Peak	70	104	Horizontal
366.764	37.3	46.0	-8.7	Q-Peak	28	110	Horizontal
419.467	35.8	46.0	-10.2	Q-Peak	255	100	Horizontal

Table 22

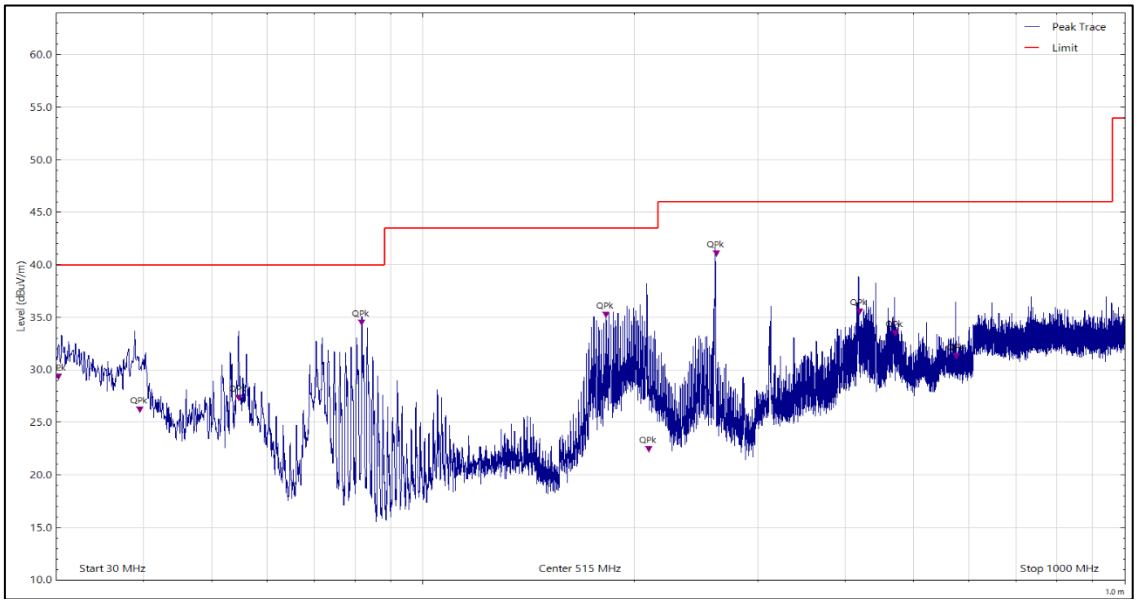

Figure 23 - 30 MHz to 1 GHz, Quasi-Peak, Vertical - Z Orientation

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
30.227	28.9	40.0	-11.1	Q-Peak	251	224	Vertical
39.559	25.8	40.0	-14.2	Q-Peak	270	202	Vertical
54.617	26.9	40.0	-13.1	Q-Peak	350	236	Vertical
81.842	34.0	40.0	-6.0	Q-Peak	359	214	Vertical
182.452	34.8	43.5	-8.7	Q-Peak	289	105	Vertical
209.719	22.0	43.5	-21.5	Q-Peak	360	217	Vertical
261.995	40.6	46.0	-5.4	Q-Peak	250	100	Vertical
419.104	35.1	46.0	-10.9	Q-Peak	246	106	Vertical
471.381	33.1	46.0	-12.9	Q-Peak	279	114	Vertical
576.250	30.9	46.0	-15.1	Q-Peak	251	110	Vertical

Table 23

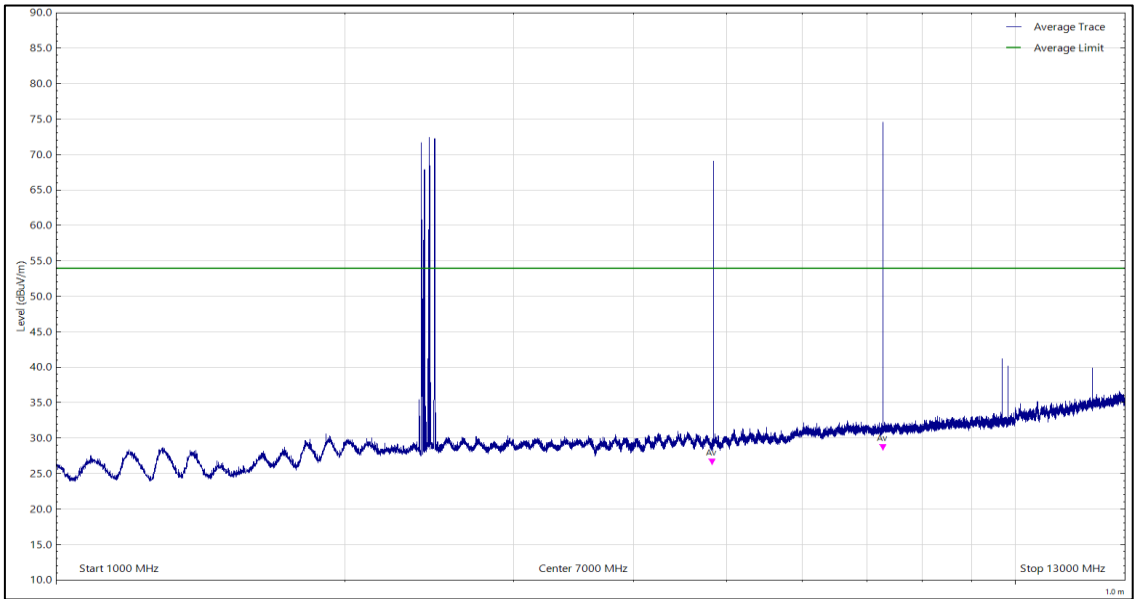

Figure 24 - 1 GHz to 13 GHz, CISPR Average, Horizontal - Z Orientation

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
4829.922	26.0	54.0	-28.0	CISPR Avg	68	370	Horizontal
7283.731	28.1	54.0	-25.9	CISPR Avg	210	309	Horizontal

Table 24

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

The emissions seen at between 2.407 GHz and 2.475 GHz are intentionally generated transmissions from the EUT and are therefore not subject to the test limit.

In addition to this, emissions seen at around 4.8 GHz, 7.2 GHz and 9.8 GHz are harmonics of these intentionally generated transmissions and are also not subject to the test limit.

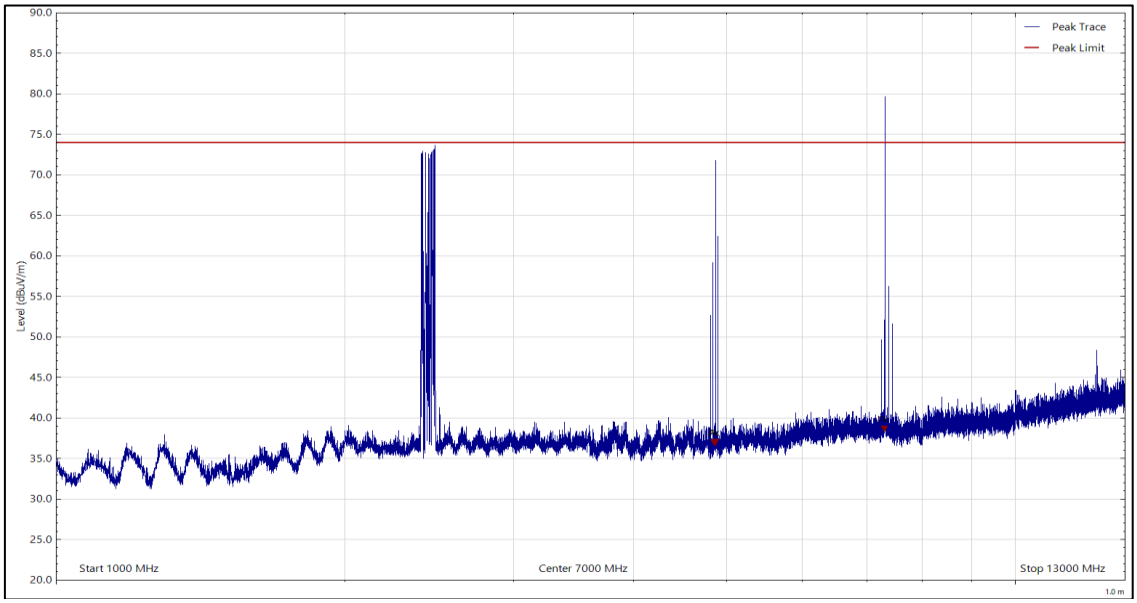

Figure 25 - 1 GHz to 13 GHz, Peak, Horizontal - Z Orientation

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
4854.398	36.4	74.0	-37.6	Peak	245	134	Horizontal
4871.169	36.4	74.0	-37.6	Peak	45	123	Horizontal
7298.030	38.1	74.0	-35.9	Peak	211	396	Horizontal

Table 25

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

The emissions seen at between 2.407 GHz and 2.475 GHz are intentionally generated transmissions from the EUT and are therefore not subject to the test limit.

In addition to this, emissions seen at around 4.8 GHz, 7.2 GHz and 9.8 GHz are harmonics of these intentionally generated transmissions and are also not subject to the test limit.

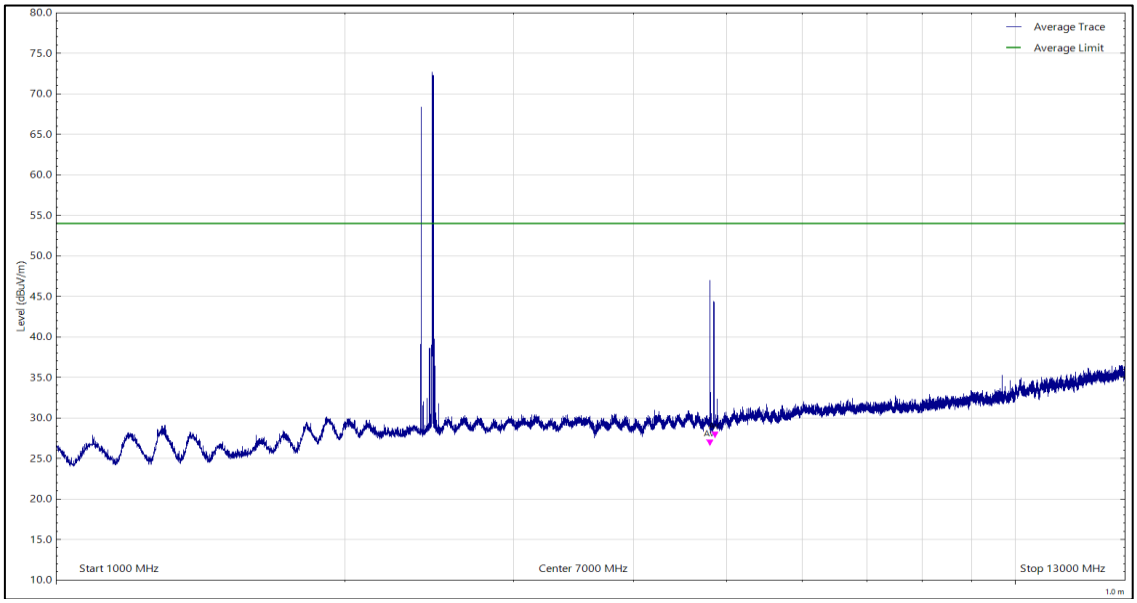

Figure 26 - 1 GHz to 13 GHz, CISPR Average, Vertical - Z Orientation

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
4804.519	26.4	54.0	-27.6	CISPR Avg	122	115	Vertical
4860.081	27.4	54.0	-26.6	CISPR Avg	302	385	Vertical

Table 26

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

The emissions seen at between 2.407 GHz and 2.475 GHz are intentionally generated transmissions from the EUT and are therefore not subject to the test limit.

In addition to this, emissions seen at around 4.8 GHz, 7.2 GHz and 9.8 GHz are harmonics of these intentionally generated transmissions and are also not subject to the test limit.

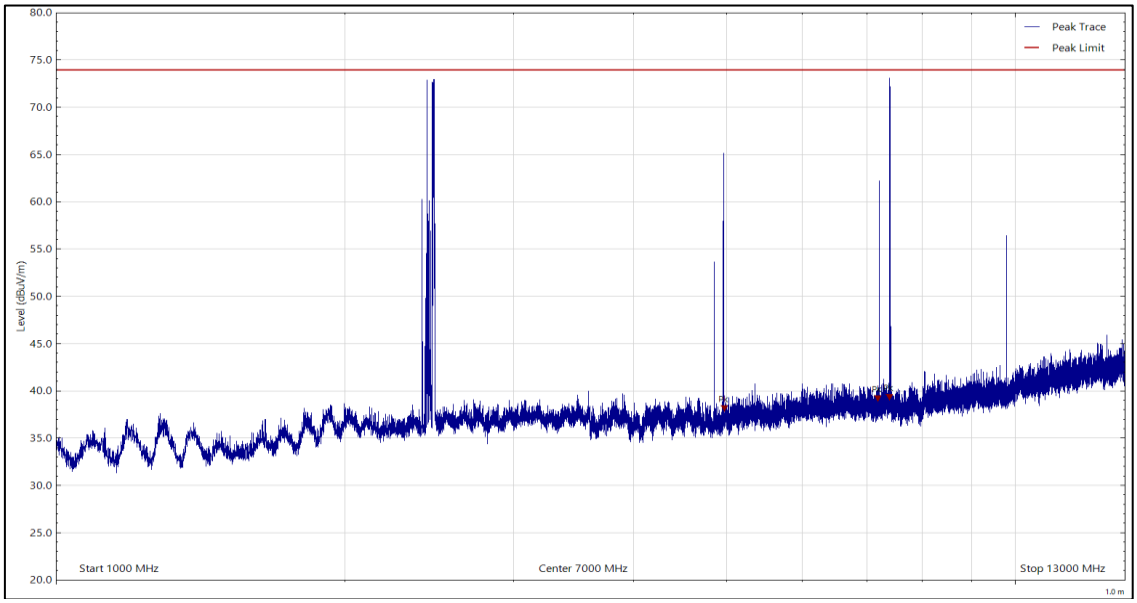

Figure 27 - 1 GHz to 13 GHz, Peak, Vertical - Z Orientation

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
4972.561	37.7	74.0	-36.3	Peak	132	386	Vertical
7189.993	38.7	74.0	-35.3	Peak	337	255	Vertical
7388.986	38.8	74.0	-35.2	Peak	104	396	Vertical

Table 27

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

The emissions seen at between 2.407 GHz and 2.475 GHz are intentionally generated transmissions from the EUT and are therefore not subject to the test limit.

In addition to this, emissions seen at around 4.8 GHz, 7.2 GHz and 9.8 GHz are harmonics of these intentionally generated transmissions and are also not subject to the test limit.

Figure 28 - Test Setup - 30 MHz to 1 GHz - Z Orientation

Figure 29 - Test Setup - 1 GHz to 13 GHz - Z Orientation

2.1.10 Test Location and Test Equipment Used

This test was carried out in Bearley EMC Chamber 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Screened Room (1)	Rainford	Hybrid	4160	36	11-Jan-2025
Emissions Software	TUV SUD	EmX V3.1.4	5125	-	Software
Test Receiver	Keysight Technologies	N9038A MXE	4974	12	22-Feb-2023
Mast controller	Innco Systems	CONTROLLER CO3000	4728	-	TU
Turntable Controller	Maturo	Maturo NCD	5275	-	TU
Cable (N-Type to N-Type, 7 m)	Teledyne Storm	SA90-195-7MTR	4173	12	13-Apr-2023
Cable (N-Type to N-Type, 3 m)	Rosenberger	LU7-036-3000	5163	12	13-Dec-2022
Cable (18GHz SMA 1m)	Rosenberger	LU7-071-1000	5164	12	13-Dec-2022
Broadband Pre-Amplifier (0.5 - 18 GHz)	Schwarzbeck	BBV 9718 D	5882	12	01-Mar-2023
Antenna (Bilog, 30 MHz to 3 GHz)	Schaffner	CBL6143	1858	24	10-Nov-2022
Antenna (Double Ridge Guide, 1 GHz to 18 GHz)	ETS-Lindgren	3117	4737	24	11-Mar-2024

Table 28

TU - Traceability Unscheduled

3 Test Equipment Information

3.1 General Test Equipment Used

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Quadtech Single Phase Programmable AC Source Unit	PDS Instruments Ltd	31020-00071	4133	-	TU
Scientific Ambient Monitor	Testo	622	5698	12	04-Mar-2023

Table 29

TU - Traceability Unscheduled

3.2 Customer Support Equipment

Instrument	Manufacturer	Type No	Serial Number	Calibration Period (months)	Calibration Due
Companion Device Mobile	Motorola	Motoe20	ZE2235DFV	-	NA
Polling device with Bluetooth dongle	Raspberry PI4	NA	NA	-	NA
keyboard	DELL	KB212-B	OC643N	-	NA
Mouse	DELL	NA	NA	-	NA

Table 30

4 Incident Reports

The following Incident Reports were issued during testing covered by this test report.

Report Serial No: 75950381 IR Serial No: 02
Date of issue: 31-Aug-2022
Applicable test: Radiated Emission

5 Measurement Uncertainty

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

Test Name	Measurement Uncertainty
Radiated Disturbance	30 MHz to 1 GHz, Bilog Antenna, ±5.2 dB 1 GHz to 40 GHz, Horn Antenna, ±6.3 dB

Table 31

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. (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.