FCC and ISED Test Report

SureFlap Ltd
Microchip Felaqua Connect Pet Drinking Station.
Model: iCWS

In accordance with FCC 47 CFR Part 15B, ICES-003 and ISEDC RSS-GEN

Prepared for: SureFlap Ltd
Ground floor, Building 2020
Cambourne Business Park,
Cambourne,
Cambridgeshire,
CB23 6DW
United Kingdom

FCC ID: XO9-ICWS001 IC: 8960A -ICWS001

COMMERCIAL-IN-CONFIDENCE

Document 75950067-02 Issue 01

SIGNATURE			
NAME	**JOB TITLE**	**RESPONSIBLE FOR**	**ISSUE DATE**
John Laydon	General Manager	Authorised Signatory	18 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, ICES-003 and ISEDC RSS-GEN. The sample tested was found to comply with the requirements defined in the applied rules.

RESPONSIBLE FOR	NAME	DATE	SIGNATURE
Testing	Martin Perry	18 January 2021	

FCC Accreditation	Industry Canada Accreditation
217472 Bearley Test Laboratory	2932E Bearley Test Laboratory

EXECUTIVE SUMMARY
A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15B: 2019, ICES-003 Issue 7: 2020 and ISEDC RSS-GEN: Issue 5 (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	18 January 2021

Table 1

1.2 Introduction

Applicant	SureFlap Ltd
Manufacturer	SureFlap Ltd
Model Number(s)	iCWS
Serial Number(s)	P001-0000420
Hardware Version(s)	V2 as defined by 10850-DA-02 Poseidon General Assembly
Software Version(s)	Firmware 01742_FF
Number of Samples Tested	1
Test Specification/Issue/Date	FCC 47 CFR Part 15B: 2019 ICES-003 Issue 7: 2020 ISEDC RSS-GEN: 2019 Issue 5: 2018
Order Number Date	3957 21-September-2020
Date of Receipt of EUT	23-November-2020
Start of Test	23-November-2020
Finish of Test	23-November-2020
Name of Engineer(s)	Martin Perry
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, ICES-003 and ISEDC RSS-GEN is shown below.

Section	Specification Clause	Test Description	Modification State	Result	Comments/Base Standard
Configuration and Mode: Battery Powered - Idle					
2.1	15.109, 3.2 and 7.1	Radiated Disturbance	0	Pass	ANSI C63.4: 2014

Table 2

1.4 Declaration of Build Status

MAIN EUT			
MANUFACTURING DESCRIPTION	Pet Hydration station		
MANUFACTURER	SureFlap Ltd.		
MODEL	iCWS		
PART NUMBER	iCWSWT		
HARDWARE VERSION	V2 as defined by 10850-DA-02 Poseidon General Assembly		
SOFTWARE VERSION	Firmware 01742_FF (but special version for TUV SUD testing)		
PSU VOLTAGE/FREQUENCY/CURRENT	6 VDC		
HIGHEST INTERNALLY GENERATED FREQUENCY	2.4 GHz		
FCC ID (if applicable)	XO9-ICWS001		
INDUSTRY CANADA ID (if applicable)	8906A -ICWS001		
TECHNICAL DESCRIPTION (a brief technical description of the intended use and operation)	The iCWS is a pet drinking station designed to provide the user with a measurement of how much their pet is drinking. The unit includes load cells to weight the water as it is drunk and an RFID antenna to identify the animal drinking. The units also includes a 2.4 GHz link (802.15.4) for communication to the user App via a Sure Petcare Hub.		
COUNTRY OF ORIGIN	China		
RF CHARACTERISTICS (if applicable)			
TRANSMITTER FREQUENCY OPERATING RANGE (MHz)	2425 – 2480 for 802.15.4 0.126 – 0.133 for RFID		
RECEIVER FREQUENCY OPERATING RANGE (MHz)	2425 – 2480 for 802.15.4 0.126 – 0.133 for RFID		
INTERMEDIATE FREQUENCIES	N/a		
EMISSION DESIGNATOR(S): https://fccid.io/Emissions-Designator/	2M50G1D		
MODULATION TYPES: (i.e. GMSK, QPSK)	O-QPSK for the 2.4GHz 802.15.4 AM for the RFID		
OUTPUT POWER (W or dBm)	7.5 dBm for 802.15.4 (TBC) 59.5 dBuV/m @30 m for the RFID		
SEPARATE BATTERY/POWER SUPPLY (if applicable)			
MANUFACTURING DESCRIPTION			
MANUFACTURER			
TYPE			
PART NUMBER			
PSU VOLTAGE/FREQUENCY/CURRENT			
COUNTRY OF ORIGIN			
MODULES (if applicable)			
MANUFACTURING DESCRIPTION			
MANUFACTURER			
TYPE			
POWER			
FCC ID			
INDUSTRY CANADA ID			
EMISSION DESIGNATOR			
DHSS/FHSS/COMBINED OR OTHER			
COUNTRY OF ORIGIN			
ANCILLARIES (if applicable)			
MANUFACTURING DESCRIPTION			
MANUFACTURER			
TYPE			
PART NUMBER			
SERIAL NUMBER			
COUNTRY OF ORIGIN			

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

Name:
Position held:
Date Customer Supplied Form

1.5 Product Information

1.5.1 Technical Description

The Equipment Under Test (EUT) was a SureFlap Limited, Microchip Felaqua Connect Cat Water Station. Model iCWS.

The primary function of the EUT is a pet drinking station designed to provide the user with a measurement of how much their pet is drinking. The unit includes load cells to weigh the water as it is drunk and an RFID antenna to identify the animal drinking. The unit also includes a 2.4 GHz link (802.15.4) for communication to the user App via a Sure Petcare Hub

Figure 1 - General View - Front Profile

Figure 2 - General View - Side Profile

Figure 3 - General View - Rear Profile

Figure 4 - General View - Product Information

Figure 5 - General View - Serial Number (Unit E)

Figure 6 - General View - Serial Number (Unit F)

1.5.2 EUT Port/Cable Identification

No cables are utilised by the EUT.

1.5.3 Test Configuration

Configuration	Description
Battery Powered	The EUT was powered from 4x C-cell batteries that provided 6Vdc.

Table 3

1.5.4 Mode(s) of Operation

Mode	Description
Idle	The EUT's WiFi and RFID was active but not linked to any support device.

Table 4

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: iCWS, Serial Number: P001-0000420			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 5

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: Battery Powered - Idle		
Radiated Disturbance	Martin Perry	UKAS

Table 6

Office Address:

Snitterfield Road
Bearley
Stratford-upon-Avon
Warwickshire
CV37 0EX
United Kingdom

2 Test Details

2.1 Radiated Disturbance

2.1.1 Specification Reference

FCC 47 CFR Part 15B, Clause 15.109
ICES-003, Clause 3.2
ISEDC RSS-GEN, Clause 7.1

2.1.2 Equipment Under Test and Modification State

iCWS, S/N: P001-0000420 - Modification State 0

2.1.3 Date of Test

23-November-2020

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

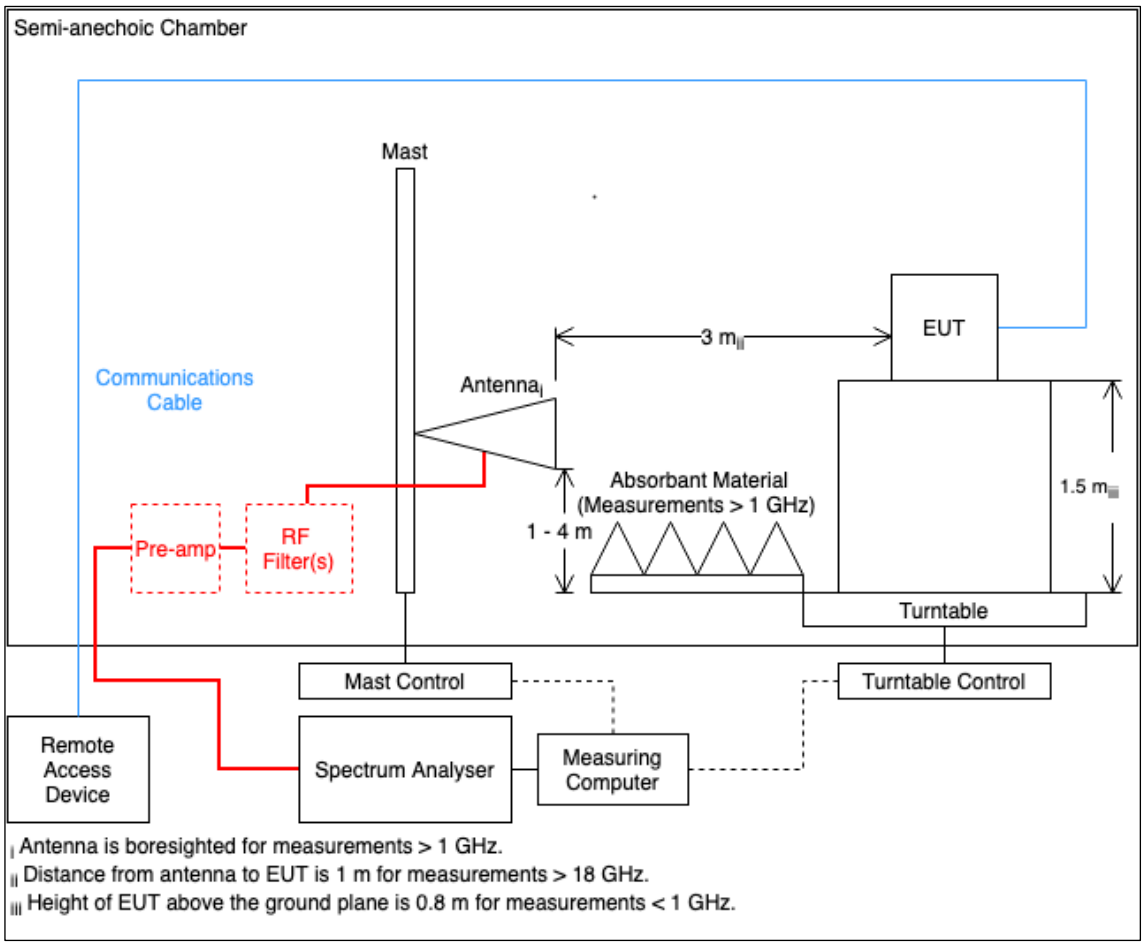

Figure 7

2.1.7 Environmental Conditions

Ambient Temperature	15.6 - 17.6 °C
Relative Humidity	47.4 - 56.0 %

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 7

2.1.9 Test Results

Results for Configuration and Mode: Battery Powered - Idle.

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 GHz

Frequency Range of Test: 30 MHz to 1 GHz

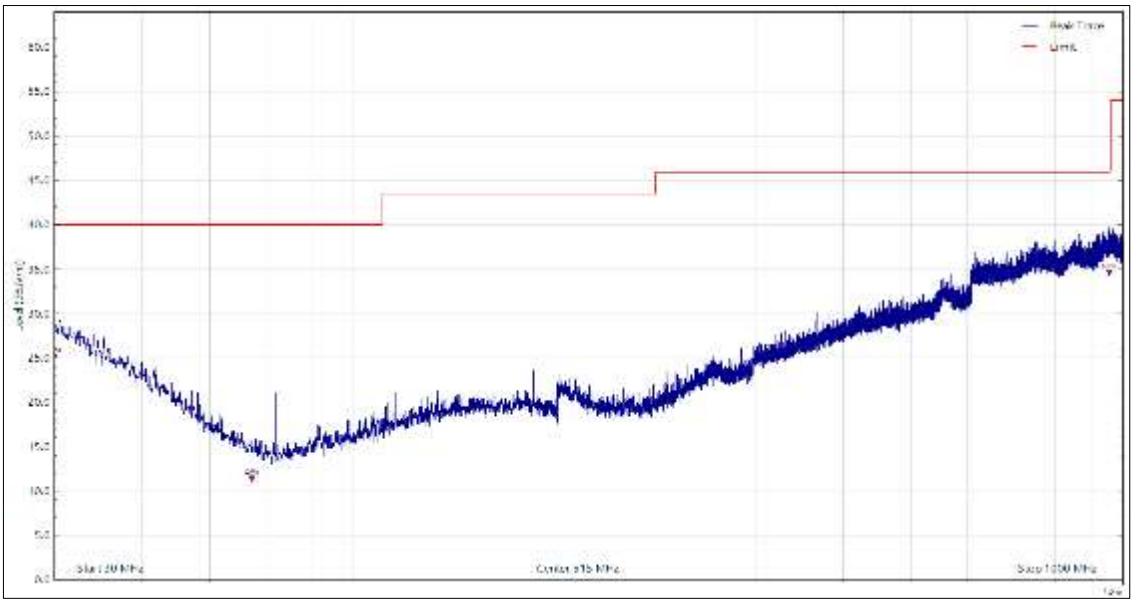

Figure 8 - 30 MHz to 1 GHz, Quasi-Peak, Vertical

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation	Orientation
30.040	24.7	40.0	-15.3	Q-Peak	46	100	Vertical	-
57.476	10.9	40.0	-29.1	Q-Peak	351	103	Vertical	-
955.896	34.1	47.0	-12.9	Q-Peak	1	164	Vertical	-

Table 8

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.

Frequency Range of Test: 30 MHz to 1 GHz

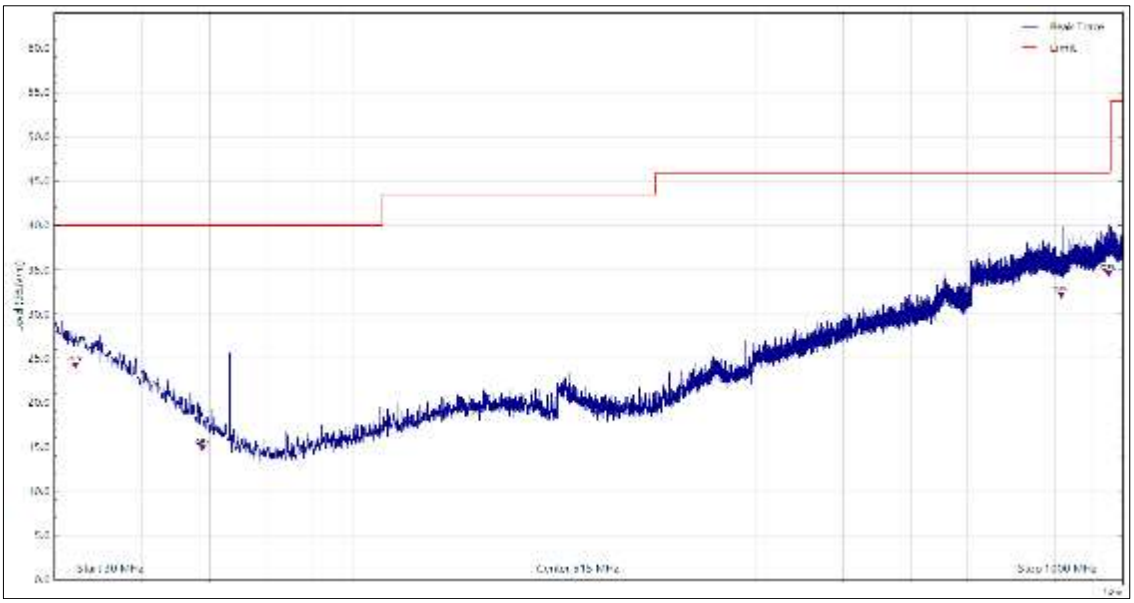

Figure 9 - 30 MHz to 1 GHz, Quasi-Peak, Horizontal

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation	Orientation
32.159	23.7	40.0	-16.3	Q-Peak	319	241	Horizontal	-
48.916	14.3	40.0	-25.7	Q-Peak	272	207	Horizontal	-
816.757	31.6	47.0	-15.5	Q-Peak	106	110	Horizontal	-
954.095	34.0	47.0	-13.0	Q-Peak	73	100	Horizontal	

Table 9

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.

Frequency Range of Test: 1 GHz to 13 GHz - Peak Detector

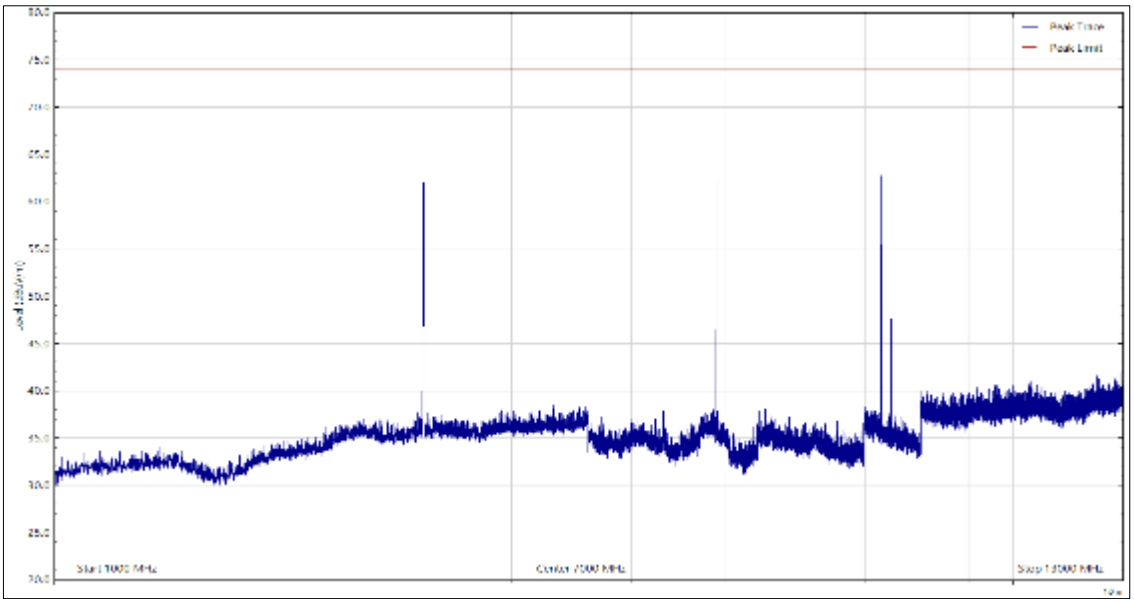

Figure 10 - 1 GHz to 13 GHz, Peak, Vertical

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

Table 10

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

The emission seen at 2424.27 MHz is an intentionally generated transmission from the EUT and is therefore not subject to the test limit.

The emissions seen at 4899.15 MHz, 7275.92 MHz & 7441.44 MHz are harmonics of the fundamental intentional transmission from the EUT and are not subject to the test limit.

Frequency Range of Test: 1 GHz to 13 GHz - CISPR Average Detector

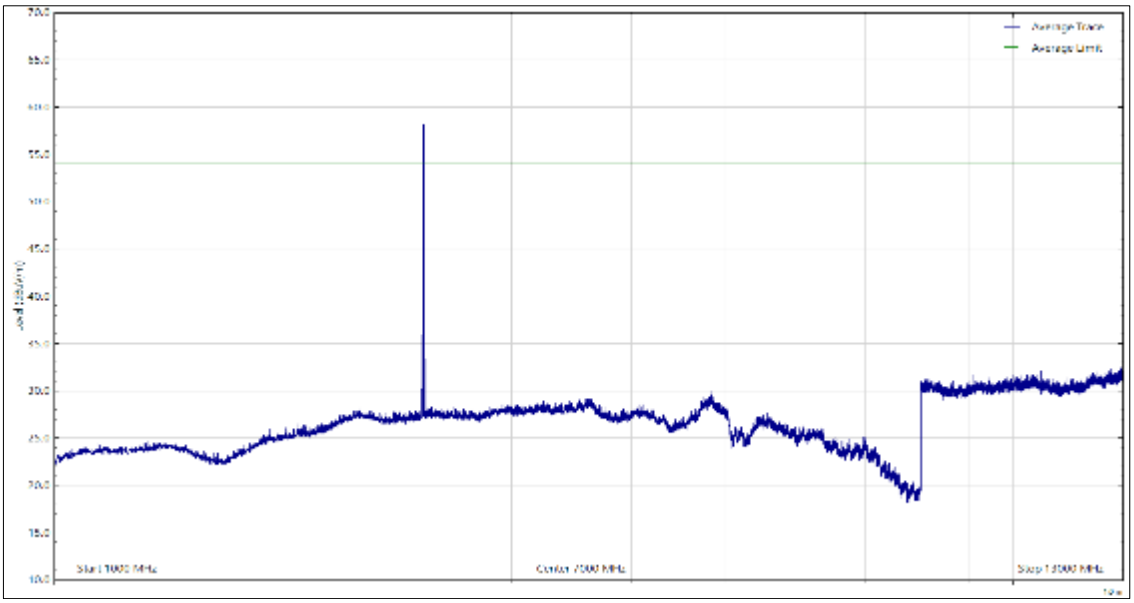

Figure 11 - 1 GHz to 13 GHz, CISPR Average, Vertical

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

Table 11

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

The emission seen at 2425.27 MHz is an intentionally generated transmission from the EUT and is therefore not subject to the test limit.

Frequency Range of Test: 1 GHz to 13 GHz - Peak Detector

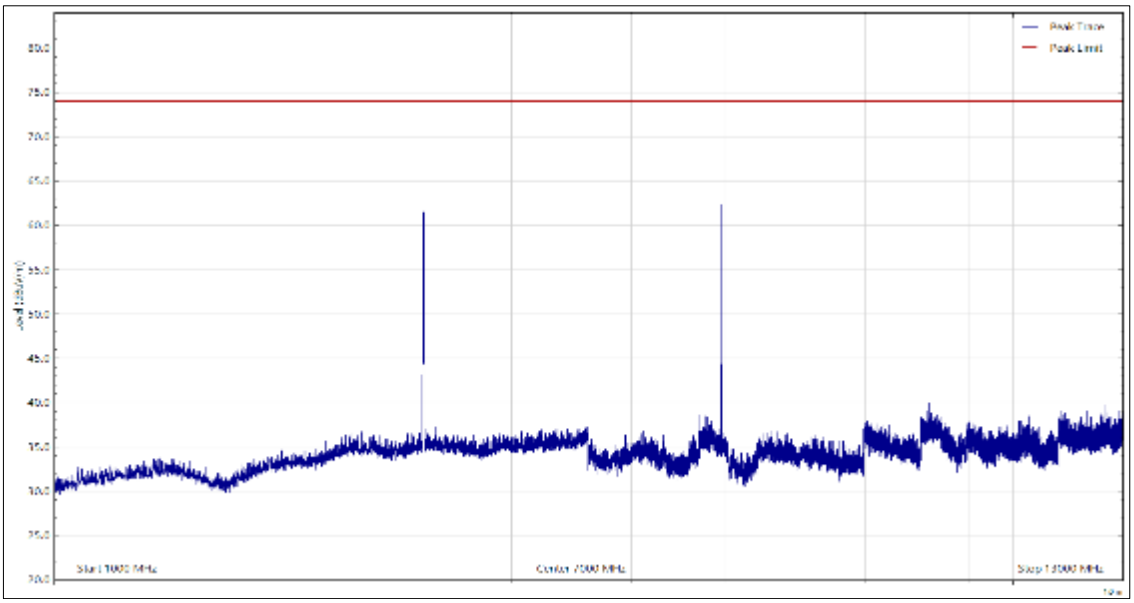

Figure 12 - 1 GHz to 13 GHz, Peak, Horizontal

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

Table 12

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

The emission seen at 2425.27 MHz is an intentionally generated transmission from the EUT and is therefore not subject to the test limit.

The emissions seen at 4849.14 MHz & 4961.15 MHz are harmonics of the fundamental intentional transmission from the EUT and are not subject to the test limit.

Frequency Range of Test: 1 GHz to 13 GHz - CISPR Average Detector

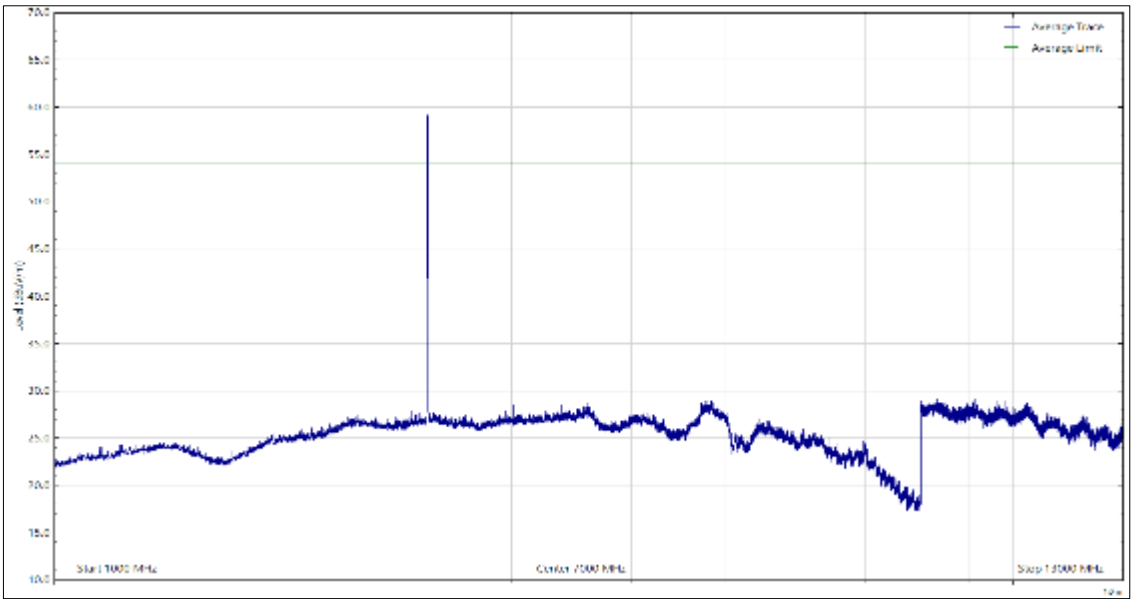

Figure 13 - 1 GHz to 13 GHz, CISPR Average, Horizontal

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

Table 13

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

The emission seen at 2450.28 MHz is an intentionally generated transmission from the EUT and is therefore not subject to the test limit.

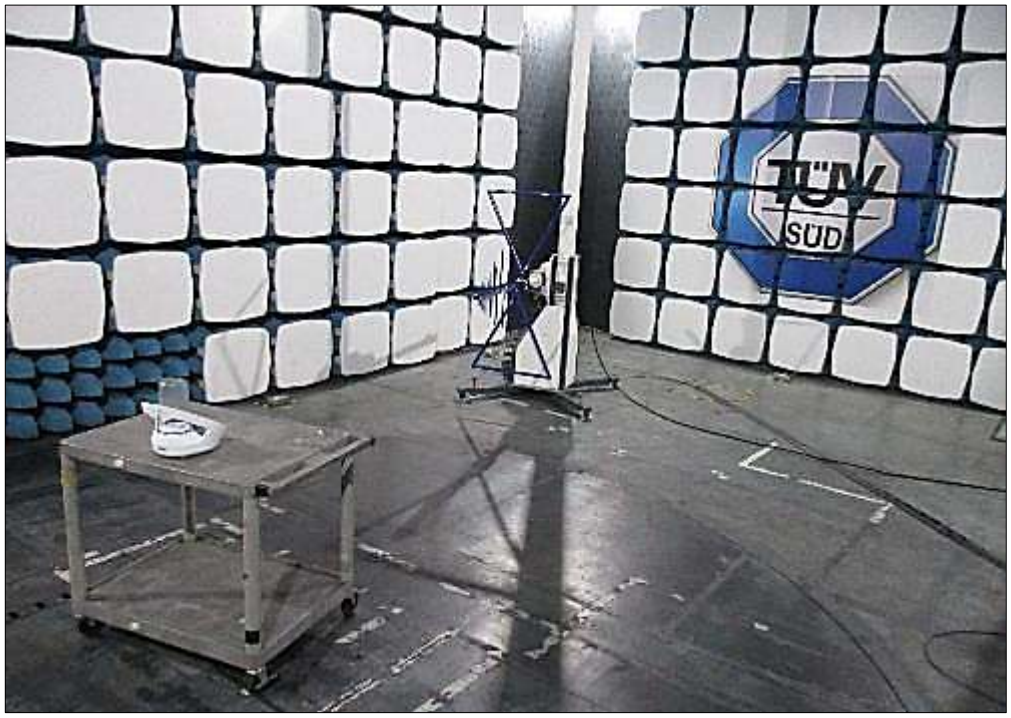

Figure 14 - Test Setup - 30 MHz to 1 GHz

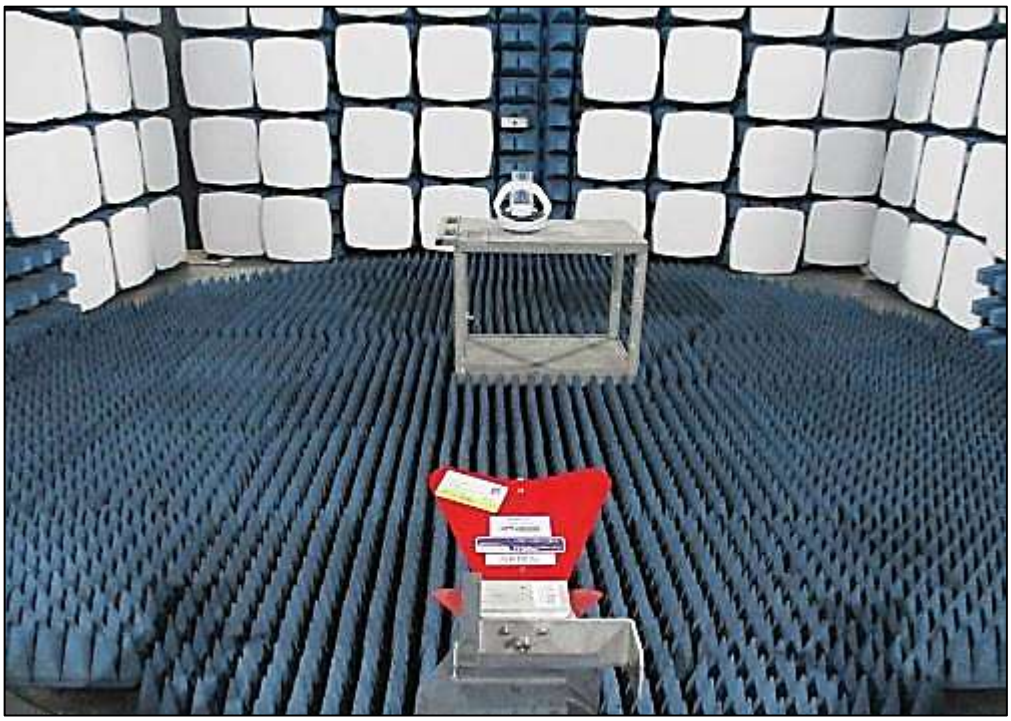

Figure 15 - Test Setup - 1 GHz to 13 GHz

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 Due
CBL 6111D 30-1000MHz Bi-Log Antenna	Teseq	CBL6111D	5615	24	16-Oct-2022
1 - 18GHz DRG Horn	ETS-Lindgren	3117	4737	24	28-Jul-2021
1-8 GHz Amplifier	Wright Technologies	APS04-0085	4674	12	18-Aug-2021
7m N-Type Cable	Teledyne Storm	SA90-195-7MTR	4168	12	10-Mar-2021
Cable (18GHz N Type 3m)	Rosenberger	LU7-036-3000	5163	12	06-Dec-2020
EMI Receiver	Keysight Technologies	N9038A MXE	4974	12	11-Feb-2021
EmX Emissions Software	TUV SUD	V2.0.1	5125	-	Software
EMC 3m Semi Anechoic Chamber	Rainford	Hybrid	4160	36	16-Dec-2021
EMC Mast controller	Innco Systems	Controller CO3000	4728	-	TU
Turntable Controller	Maturo	Maturo NCD	5275	-	TU
Hygrometer	Rotronic	I-1000	2830	12	01-Oct-2021

Table 14

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

Table 15

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.