Report on the FCC and IC Testing of:

SureFlap Ltd
Microchip Pet Feeder Connect.
Model: iMPF

In accordance with FCC 47 CFR Part 15B and ICES-003

Prepared for: SureFlap Ltd
7 The Irwin Centre, Scotland Road, Dry Drayton
Cambridge, Cambridgeshire, CD23 8AR
United Kingdom

FCC ID: XO9-IMF00-001 IC: 8906A-IMPF0001

Add value.
Inspire trust.

COMMERCIAL-IN-CONFIDENCE

Document Number: 75944242-05 | Issue: 02

SIGNATURE			
NAME	**JOB TITLE**	**RESPONSIBLE FOR**	**ISSUE DATE**
Matt Russell	RF Team Leader	Authorised Signatory	20 May 2019

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.

SIGNATURE			
NAME	**JOB TITLE**	**RESPONSIBLE FOR**	**ISSUE DATE**
Graeme Lawler	Test Engineer	Testing	20 May 2019

FCC Accreditation
90987 Octagon House, Fareham Test Laboratory

Industry Canada Accreditation
IC2932B-1 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: 2017 and ICES-003: 2016.

TÜV SÜD
is a trading name of TUV SUD Ltd
Registered in Scotland at East Kilbride,
Glasgow G75 0QF, United Kingdom
Registered number: SC215164

TUV SUD Ltd is a
TÜV SÜD Group Company

Phone: +44 (0) 1489 558100
Fax: +44 (0) 1489 558101
www.tuv-sud.co.uk

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

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 2019
2	Change FCC ID from XO9-IMPF00-001 to XO9-IMF00-001	20 May 2019

Table 1

1.2 Introduction

Applicant	SureFlap Ltd
Manufacturer	SureFlap Ltd
Model Number(s)	iMPF
Serial Number(s)	U001-0001142
Hardware Version(s)	00818-DA_05 iMPF General Assembly (_05: revision 05))
Software Version(s)	Firmware 01233_FF (but special version for TUV SUD testing)
Number of Samples Tested	1
Test Specification/Issue/Date	FCC 47 CFR Part 15B: 2017 ICES-003: 2016
Order Number Date	2745 07-November-2018
Date of Receipt of EUT	27-November-2018
Start of Test	03-December-2018
Finish of Test	03-December-2018
Name of Engineer(s)	Graeme Lawler
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
	Part 15B	ICES-003			
Configuration and Mode: Idle					
2.2	15.109	6.2	Radiated Emissions	Pass	ANSI C63.4: 2014

Table **2**

1.4 Application Form

MAIN EUT			
MANUFACTURING DESCRIPTION	Microchip Pet Feeder Connect		
MANUFACTURER	SureFlap Ltd		
MODEL NAME/NUMBER	Microchip Pet Feeder Connect		
PART NUMBER	iMPF		
SERIAL NUMBER	see on the units		
HARDWARE VERSION	00818-DA_05 iMPF General Assembly (_05: revision 05))		
SOFTWARE VERSION	Firmware 01233_FF (but special version for TUV SUD testing)		
PSU VOLTAGE/FREQUENCY/CURRENT	6VDC nom.		
HIGHEST INTERNALLY GENERATED / USED FREQUENCY	2.4GHz		
FCC ID (if applicable)	XO9-IMF00-001		
INDUSTRY CANADA ID (if applicable)	8906A-IMPF0001		
TECHNICAL DESCRIPTION (a brief description of the intended use and operation)	Feeder connected by 2.4 GHz RF to a hub which is connected to the internet. Allows the conditional access to food based on the animal RFID tags. It is intended for use in a domestic environment. (Usually situated on the floor in a kitchen.)		
COUNTRY OF ORIGIN	China		
RF CHARACTERISTICS (if applicable)			
TRANSMITTER FREQUENCY OPERATING RANGE (MHz)	2400		
RECEIVER FREQUENCY OPERATING RANGE (MHz)	2400		
INTERMEDIATE FREQUENCIES			
EMISSION DESIGNATOR(S): (i.e. G1D, GXW)			
MODULATION TYPES: (i.e. GMSK, QPSK)			
OUTPUT POWER (W or dBm)	7.5 dBm		
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: Nick Hill Position held: Managing Director
Date: 07th May 2019

1.5 Product Information

1.5.1 Technical Description

Feeder connected by 2.4 GHz RF to a hub which is connected to the internet. Allows the conditional access to food based on the animal RFID tags. Usually situated on the floor in a kitchen.

1.5.2 Test Setup Diagram(s)

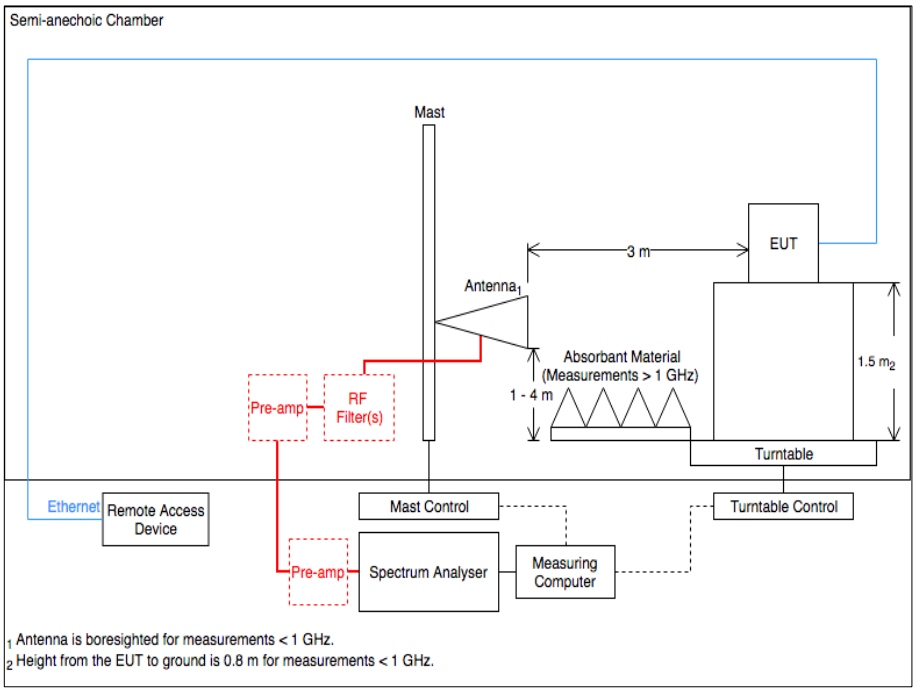

Figure 1 - Radiated Emissions

1.5.3 EUT Configuration and Rationale for Radiated Spurious Emissions

The EUT was placed on the non-conducting platform in a manner typical of a normal installation.

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
Serial Number: U001-0001142			
0	As supplied by the customer	Not Applicable	Not Applicable

Table 3

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: Idle		
Radiated Disturbance	Graeme Lawler	UKAS

Table 4

Office Address:

Octagon House
Concorde Way
Segensworth North
Fareham
Hampshire
PO15 5RL
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 6.2

2.1.2 Equipment Under Test and Modification State

iMPFWT, S/N: U001-0001142 - Modification State 0

2.1.3 Date of Test

03-December-2018

2.1.4 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.

A pre-scan of the EUT emissions profile was made while varying the antenna-to-EUT azimuth and antenna-to-EUT polarisation using a peak detector; measurements were taken at a 3m distance. Using the pre-scan list of the highest emissions detected, their bearing and associated antenna polarisation, the EUT was then formally measured using a Quasi-Peak, Peak, 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 Environmental Conditions

Ambient Temperature	19.1 °C
Relative Humidity	58.7 %

2.1.6 Test Results

Results for Configuration and Mode : Idle

Testing was performed in accordance with 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: 2400 MHz
Which necessitates an upper frequency test limit of: 13 GHz

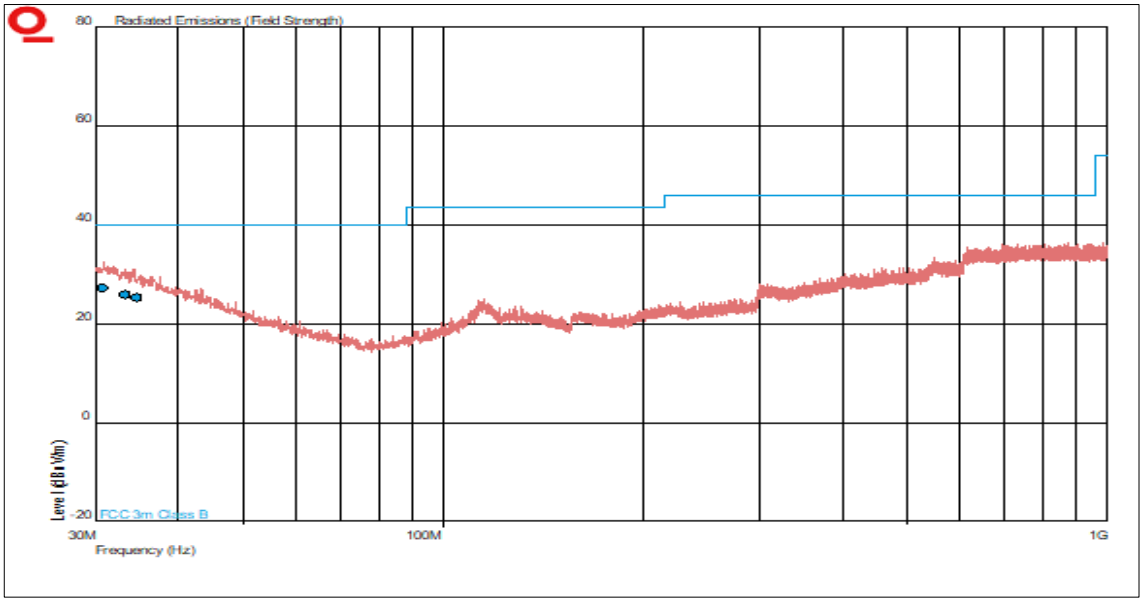

Figure 2 - Graphical Results – 30 MHz to 1 GHz
Horizontal and Vertical Polarity - EUT Orientation: X

Frequency (MHz)	QP Level (dBuV/m)	QP Limit (dBuV/m)	QP Margin (dBuV/m)	Angle(Deg)	Height(m)	Polarity
30.800	27.3	40.0	-12.7	257	1.00	Vertical
33.247	25.9	40.0	-14.1	3	2.21	Horizontal
34.598	25.3	40.0	-14.7	19	1.00	Vertical

Table 5 - Emission Results, 30 MHz to 1 GHz - EUT Orientation: X

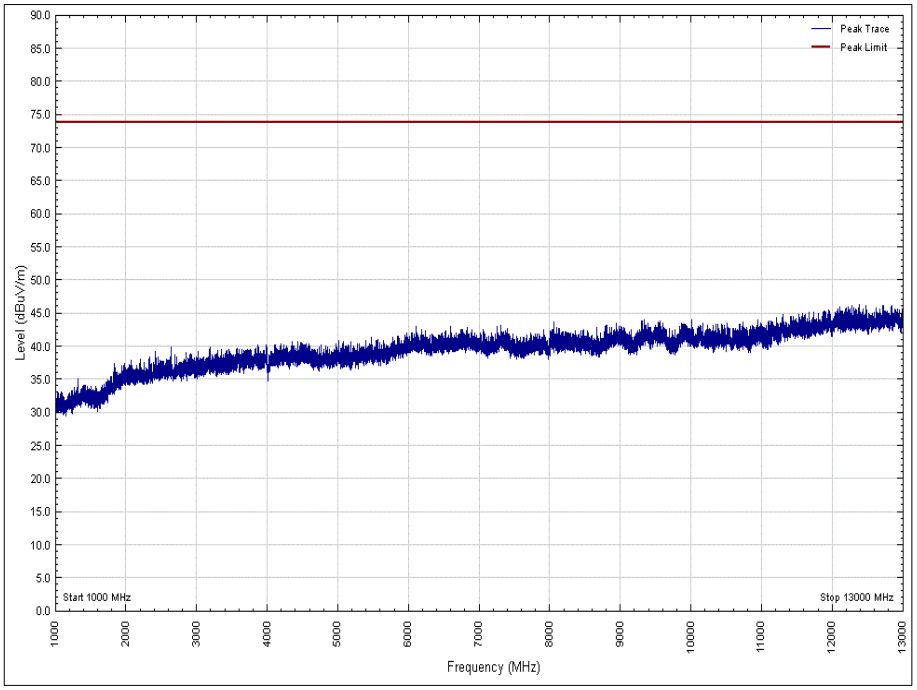

Figure 3 - Graphical Results - 1 GHz to 13 GHz Peak
Vertical Polarity - EUT Orientation: X

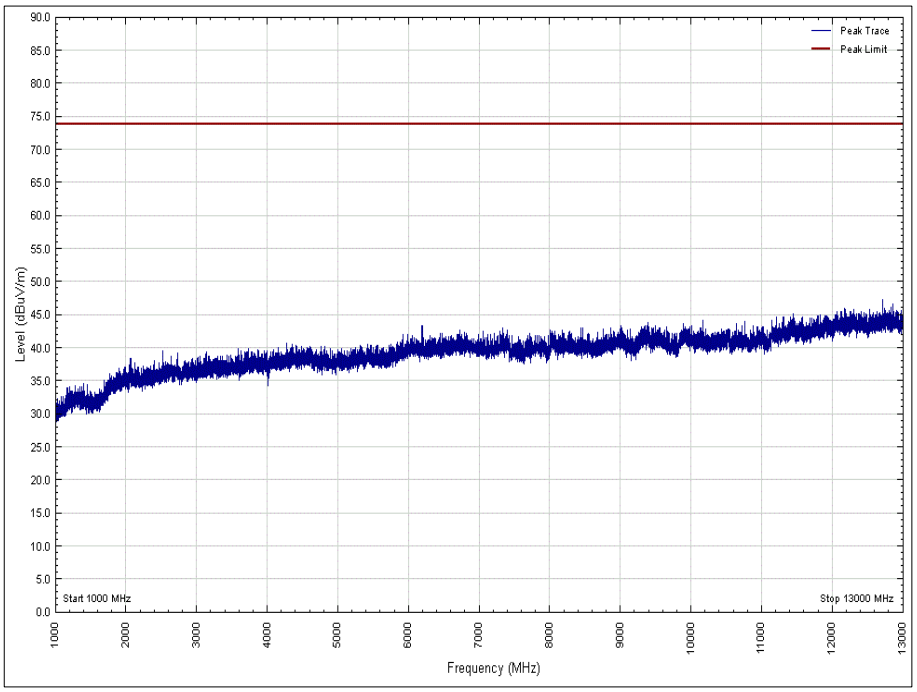

Figure 4 - Graphical Results - 1 GHz to 13 GHz Peak
Horizontal Polarity - EUT Orientation: X

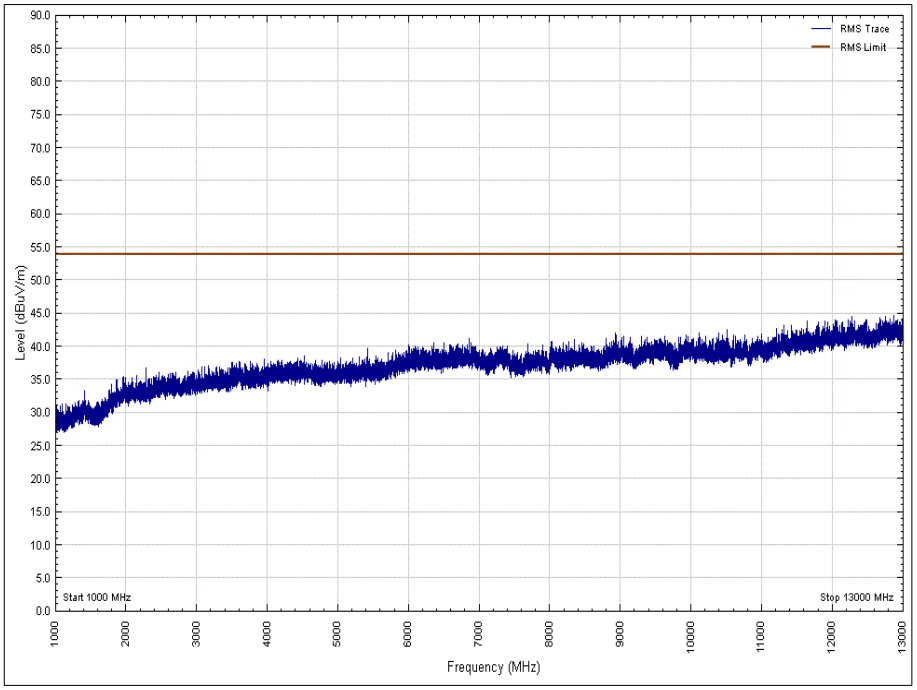

**Figure 5 - Graphical Results - 1 GHz to 13 GHz Average
Vertical Polarity - EUT Orientation: X**

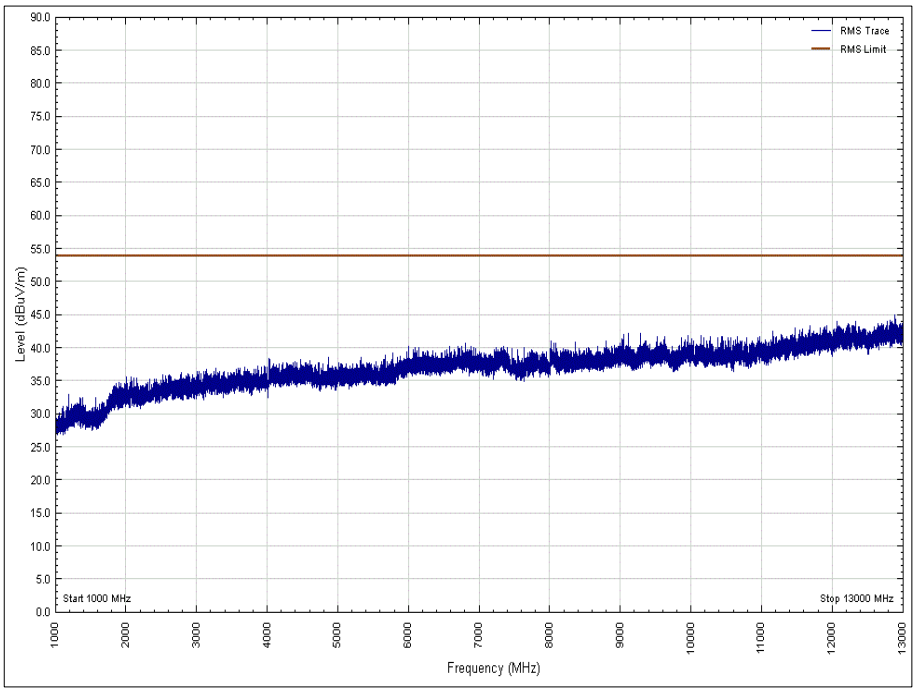

**Figure 6 - Graphical Results - 1 GHz to 13 GHz Average
Horizontal Polarity - EUT Orientation: X**

No emissions were detected within 10 dB of the limit.

2.1.7 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
Antenna (Active Loop, 9kHz-30MHz)	Rohde & Schwarz	HFH2-Z2	333	24	09-Dec-2018
Antenna (Dish/Tripod/Adaptor, 1GHz-18GHz)	Rohde & Schwarz	AC-008	334	-	TU
Pre-Amplifier	Phase One	PS04-0086	1533	12	12-Jan-2019
Screened Room (5)	Rainford	Rainford	1545	36	23-Jan-2021
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Antenna with permanent attenuator (Bilog)	Chase	CBL6143	2904	24	08-Aug-2019
Test Receiver	Rohde & Schwarz	ESIB40	2941	12	07-Aug-2019
Compliance 5 Emissions	Teseq	V5.26.51	3275	-	Software
1GHz to 8GHz Low Noise Amplifier	Wright Technologies	APS04-0085	4365	12	25-Oct-2019
1 metre K-Type Cable	Florida Labs	KMS-180SP-39.4-KMS	4520	12	13-Feb-2019
Cable (Rx, Km-Km 2m)	Scott Cables	KPS-1501-2000-KPS	4526	6	26-Apr-2019
EMI Receiver	Keysight Technologies	N9038A MXE	4629	12	09-Oct-2019
Double Ridged Waveguide Horn Antenna	ETS-Lindgren	3117	4722	12	01-Mar-2019
Mast Controller	Maturo Gmbh	NCD	4810	-	TU
Tilt Antenna Mast	Maturo Gmbh	TAM 4.0-P	4811	-	TU
9m N type RF cable	Rosenberger	2303-0 9.0m PNm PNm	4827	6	04-Jan-2019
4dB Attenuator	Pasternack	PE7047-4	4935	-	O/P Mon
Hygrometer	Rotronic	HP21	4989	12	26-Apr-2019
EmX Software	TUV SUD	EmX	5125	-	Software

Table 6

TU - Traceability Unscheduled
O/P Mon – Output Monitored using calibrated equipment

3 Photographs

3.1 Test Setup Photographs

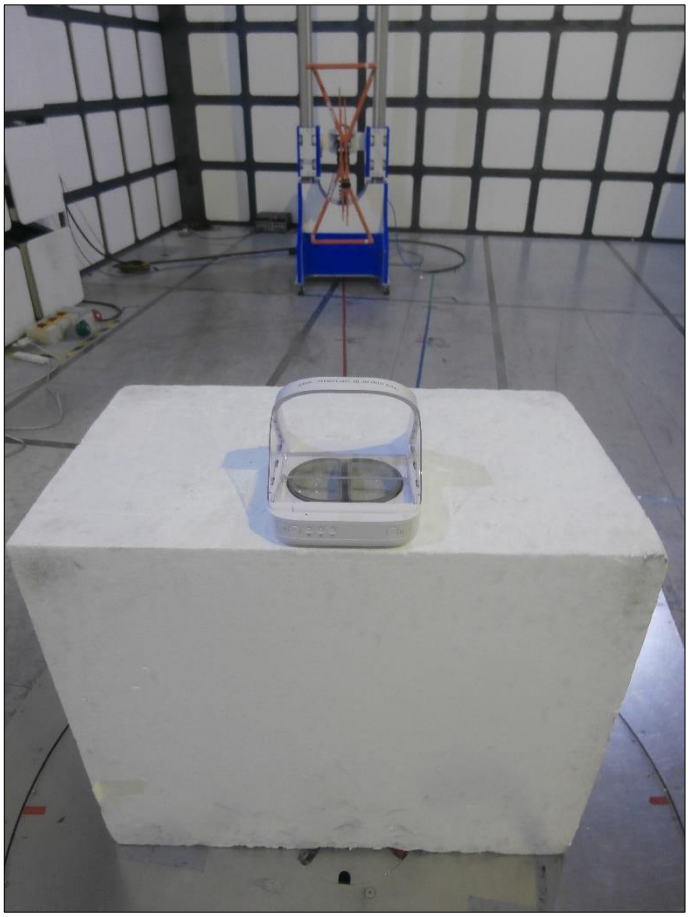

Figure 7 – Radiated Disturbance - 30 MHz to 1 GHz

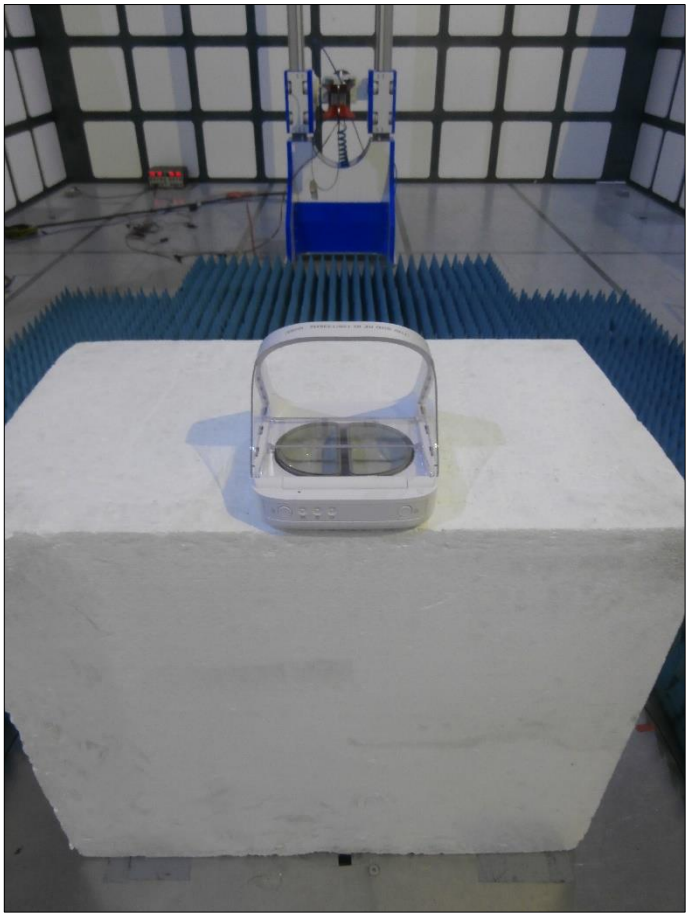

Figure 8 – Radiated Disturbance - 1 GHz to 13 GHz

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 7