

Report on the FCC Exposure Testing of:

SureFlap Ltd
Microchip Pet Feeder, Model: MPF001

In accordance with FCC CFR 47 Part 1 subpart
1.1310



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FCC: XO9-MPF001-002

COMMERCIAL-IN-CONFIDENCE

Document Number: 75946241-09 | Issue: 01

SIGNATURE

NAME	JOB TITLE	RESPONSIBLE FOR	ISSUE DATE
Jonathan Kenny	Senior Engineer	Authorised Signatory	11 November 2019

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

FCC Accreditation
90987 Octagon House, Fareham Test Laboratory

EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with FCC CFR 47 Part 1: 2018 at a distance of 24.7 cm.

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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	11 November 2019

Table 1

1.2 Introduction

Applicant	SureFlap Ltd
Manufacturer	SureFlap Ltd
Model Number(s)	MPF001
Serial Number(s)	Pilot 1-0000201 (TUV SUD RFID EMC 1)
Hardware Version(s)	01440-DA_01 General Assembly (_01: revision 01)
Software Version(s)	Firmware 01532_FF (but special version for TUV SUD testing)
Number of Samples Tested	1
Test Specification/Issue/Date	FCC 47 CFR Part 1, Clause 1.1310: 2018 Radiofrequency radiation exposure limits
Order Number	3060
Date	07 May 2019
Date of Receipt of EUT	22 August 2019
Start of Test	29 October 2019
Finish of Test	29 October 2019
Name of Engineer(s)	Pete Dorey
Related Document(s)	OET65:97 Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields. IEEE C95.3:2002 IEEE Recommended Practice for Measurements and Computations of Radio Frequency Electromagnetic Fields with Respect to Human Exposure to Such Fields, 100 kHz–300 GHz.



1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 1 is shown below.

Section	Specification Clause	Test Description	Result	Comments/Base Standard
Configuration and Mode: Two modes; 126 kHz (Green blinking light) and 133 kHz (Red blinking light), high power setting, Mode switch in position I.				
2.1	1.1310 Table 1	Measurement of Electric and Magnetic field exposure	Pass at 24.7 cm	OET Bulletin 65

Table 2



1.4 Product Information

1.4.1 Technical Description

Pet feeder which 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.



Figure 1 – General View

1.5 Deviations from the Standard

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

1.6 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
0	As supplied by the customer	Not Applicable	Not Applicable

Table 3



1.7 Test Location

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

Test Name	Name of Engineer(s)	Accreditation
Configuration and Mode: Two modes; 126 kHz (Green blinking light) and 133 kHz (Red blinking light), high power setting, Mode switch in position I.		
Measurement of Electric and Magnetic Field Exposure	Pete Dorey	Not Accredited

Table 4

Office Address:

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



2 Test Details

2.1 RF Exposure Electric and Magnetic Fields

2.1.1 Specification Reference

FCC CFR 47 Part 1, Clause 1.1310, Table 1 Limits for maximum Permissible Exposure (MPE).
OET Bulletin 65, Section 3 Measuring RF Fields
IEEE C95.3, Section 6.3 Measurement procedures for external fields

2.1.2 Equipment Under Test and Modification State

Microchip Pet Feeder - Modification State 0

2.1.3 Date of Test

29 October 2019

2.1.4 Test Method

Instrumentation:

The specifications allow the use of either a narrowband or broadband instrument: Broadband meter and probe to be used with isotropic response (3-axis probe). Measurement of average (rms) values.

Measurement:

Measurements of field strength to determine compliance are to be made, "at distances 20 cm or greater from any object." (OET Bulletin 65 Section 1).

SureFlap has declared a separation distance from antenna to the user/bystander of 100 cm. As normal usage conditions may result in lesser separation distances, this report has assessed the EUT at a distance of 20 cm or greater which also demonstrates that exposure is compliant at 100 cm.

For frequencies equal to or less than 30 MHz measurements for determining compliance with MPE limits require independent measurement of both E field and the magnetic field (H).

At frequencies below about 1 MHz, the body of the person making the measurement may become part of the antenna, and error from probe/cable pickup and instrument/body interaction may be reduced by supporting the probe and electronics on a dielectric structure made of wood, Styrofoam, etc. In all cases, it is desirable to remove all unnecessary personnel from an area where a survey is being conducted in order to minimize errors due to reflection and field perturbation.

For the assessment of thermal exposure, the electromagnetic fields are time-averaged over a period of 6 minutes.

For the assessment of nerve stimulation exposure below 300 kHz, the electromagnetic fields are measured as instantaneous maximum (rms) measurement.



Test setup requirements:

There are no further set up requirements in the specifications referenced.

Therefore, the test separation distance will be measured from each face of the EUT to the centre of the probe (as this is the calibration point). The EUT will be mounted on an 80 cm non-metallic table or floor standing for large equipment.

2.1.5 Limits

FCC CFR 47 Part 1, Clause 1.1310, Table 1 provides electric and magnetic field limits 300 kHz – 300 MHz with averaging time of 6 minutes for the assessment of thermal effects.

The Microchip Pet Feeder operates at 126 kHz and 133 kHz. There are no limits specified for frequencies from 100 kHz to 300 kHz.

A conservative approach is to adopt the limits at 300 kHz. This approach is used by FCC for wireless power transfer devices in accordance with KDB680106.

The applicable MPE limits for electric and magnetic field at the RFID frequency of 126 kHz and 133 kHz are:

- Electric field: 614 V/m
- Magnetic field: 1.63 A/m

2.1.6 Environmental Conditions

Ambient Temperature	21 °C
Relative Humidity	33 %
Ambient Electric Field	1.40 % (ICNIRP general public limits)
Ambient Magnetic Field	0.94 % (ICNIRP general public limits)

2.1.7 Validation Check Result

Validation Source	Demagnetizer coil at 20 cm	
	Electric Field V/m	Magnetic Field A/m
Measured level	1.87 % (ICNIRP general public limits)	155 % (ICNIRP general public limits)

Table 5 – Validation Check

The validation check uses a check source to show that the meter/probe are registering fields and are not damaged. There is no target value and the validation check is positive if a level is recorded greater than the ambient level.



2.1.8 Test Results

Measurement Result (Electric Field Time Averaged)

Field Type	Measurement position	Frequency kHz	Field Strength Result (time averaged rms)	MPE Limit	Units	Test Separation Distance ¹ (mm)	Compliance (Yes/No)
Electric field	Front	126	5.30	614	V/m	200	Yes
Electric field	RHS	126	9.95	614	V/m	200	Yes
Electric field	LHS	126	7.74	614	V/m	200	Yes
Electric field	Back	126	6.44	614	V/m	200	Yes
Electric field	Top	126	12.22	614	V/m	200	Yes
Electric field	Front	133	4.95	614	V/m	200	Yes
Electric field	RHS	133	8.66	614	V/m	200	Yes
Electric field	LHS	133	8.18	614	V/m	200	Yes
Electric field	Back	133	5.73	614	V/m	200	Yes
Electric field	Top	133	4.33	614	V/m	200	Yes

Table 6 – Electric Field (Time Averaged)

Measurement Result (Magnetic Field Time Averaged)

Field Type	Measurement position	Frequency kHz	Field Strength Result (time averaged rms)	MPE Limit	Units	Test Separation Distance ¹ (mm)	Compliance (Yes/No)
Magnetic field	Front	126	1.61	1.63	A/m	247	Yes
Magnetic field	RHS	126	1.55	1.63	A/m	200	Yes
Magnetic field	LHS	126	1.51	1.63	A/m	200	Yes
Magnetic field	Back	126	1.05	1.63	A/m	200	Yes
Magnetic field	Top	126	1.61	1.63	A/m	240	Yes
Magnetic field	Front	133	1.61	1.63	A/m	225	Yes
Magnetic field	RHS	133	1.35	1.63	A/m	200	Yes
Magnetic field	LHS	133	1.30	1.63	A/m	200	Yes
Magnetic field	Back	133	0.88	1.63	A/m	200	Yes
Magnetic field	Top	133	1.49	1.63	A/m	200	Yes

Table 7 – Magnetic Field (Time Averaged)

Note 1: The test separation distance is that declared by the manufacturer or the minimum distance for compliance that is ≥ 20 cm



Measurement Result Frequency Spectrum

The frequency spectrum was viewed using the RF Field Meter FFT function to confirm the presence of the transmissions.

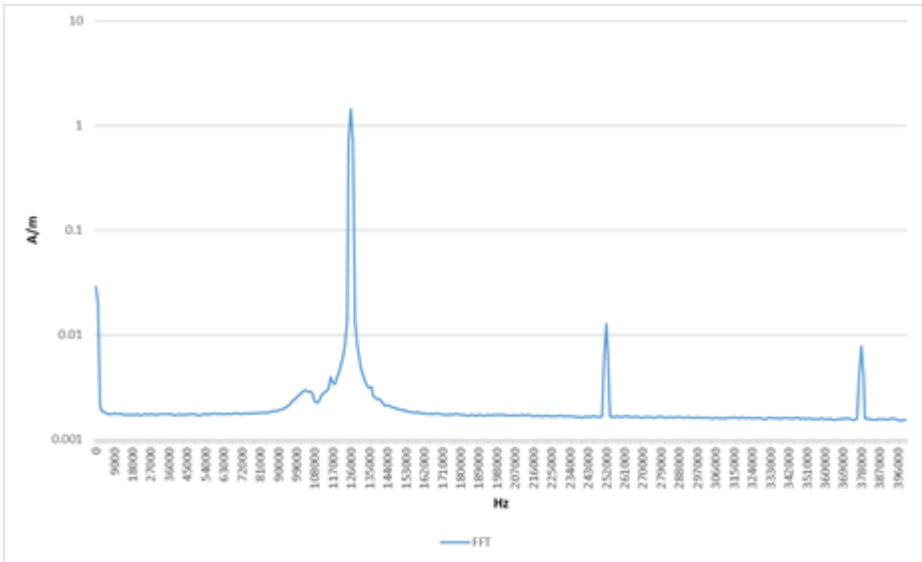


Figure 2 - Frequency Spectrum 126 kHz

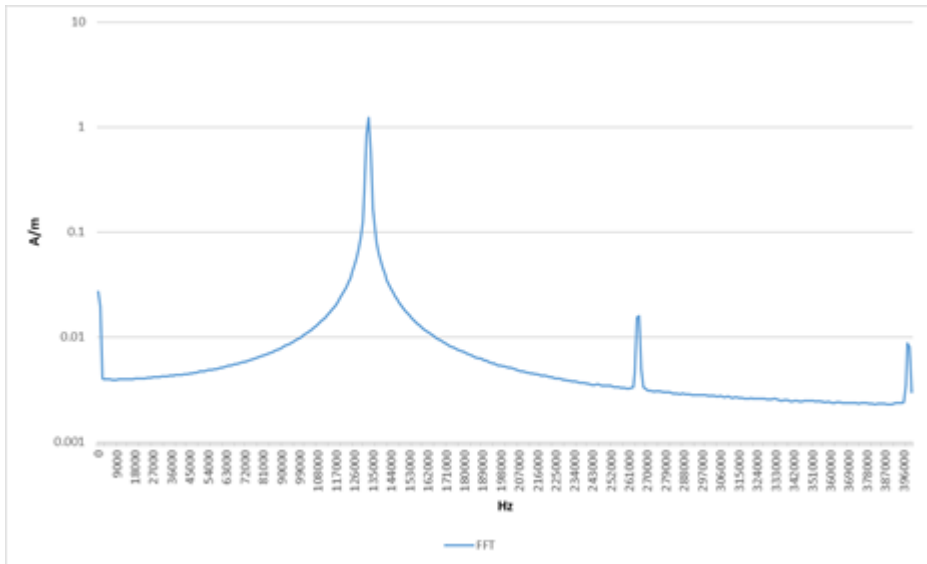


Figure 3 - Frequency Spectrum 133 kHz

2.2 Test Set-up Photographs



Figure 4 – Front Face Test Set-Up



Figure 5 – Right Hand Side Face Test Set-Up



Figure 6 – Left Hand Side Face Test Set-Up



Figure 7 – Back Face Test Set-Up

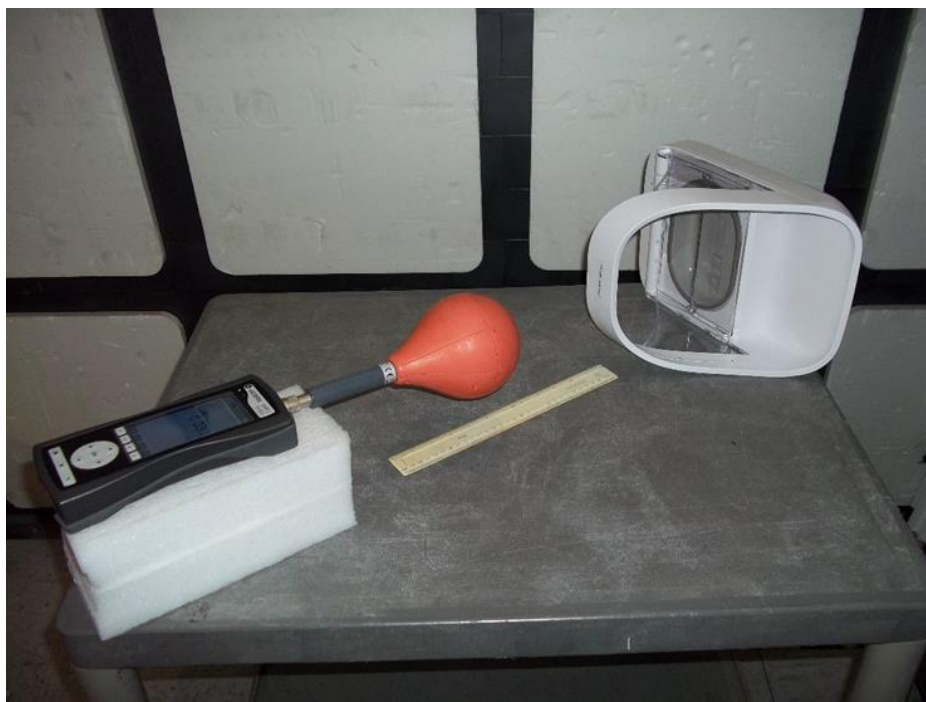


Figure 8 – Top Face Test Set-Up

2.3 Test Location and Test Equipment Used

This test was carried out in Chamber 5.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Due
EM Field Meter	Wavecontrol	SMP2 & WP400 Probe	S/N: 15SN0086 S/N: 16WP100162	24	14 Jan 2021
Thermohygrometer	Oregon Scientific	BA913HG	-	-	-

Table 8

2.4 Measurement Uncertainty

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

Test Name	Measurement Uncertainty
Electric field strength V/m	± 1.4 dB
Magnetic field strength A/m	± 1.2 dB

Table 9