

SAR Exclusion Assessment

For

Pet Mate Ltd

on

MiBowl+ module

Report no. TRA-059540-47-01B

2nd August 2023



Report Number: TRA-059540-47-01B
Issue: B

SAR Exclusion Assessment
Pet Mate Ltd
MiBowl+ module

Tested by:

p.p. Sing Lung Sui
Radio Test Engineer

Approved by:

D Winstanley
Radio Senior Test Engineer

Date: 2nd August 2023

Disclaimers:

- [1] THIS DOCUMENT MAY BE REPRODUCED ONLY IN ITS ENTIRETY AND WITHOUT CHANGE
[2] THE RESULTS CONTAINED IN THIS DOCUMENT RELATE ONLY TO THE ITEM(S) TESTED



1 Revision Record

<i>Issue Number</i>	<i>Issue Date</i>	<i>Revision History</i>
A	9 th June 2023	Original
B	2 nd August 2023	General updates

2 Summary

ASSESSMENT REPORT NUMBER:	TRA-059540-47-01B
WORKS ORDER NUMBER:	TRA-059540-00
PURPOSE OF TEST:	SAR Exclusion Assessment
TEST SPECIFICATION:	47CFR Part 15 & KDB 447498
EQUIPMENT UNDER TEST (EUT):	MiBowl+ module
FCC IDENTIFIER:	RDY-CP50Y
EUT SERIAL NUMBER:	Test Sample S1
MANUFACTURER/AGENT:	Pet Mate Ltd
ADDRESS:	7-8 Lyon Road Hersham Surrey KT12 3PU
CLIENT CONTACT:	Mike Sankey ☎ 07841827055 ✉ mikes@pet-mate.com
ORDER NUMBER:	1238

3 Contents

1	Revision Record	3
2	Summary	4
3	Contents	5
4	Test Specifications	6
4.1	Normative References	6
5	Equipment under Test	7
5.1	Identification	7
5.2	EUT Mode of Operation	7
5.2.1	Transmission	7
5.3	EUT Radio Parameters	7
5.3.1	General	7
5.4	EUT Description	7
6	Duty Cycle	8
6.1	Definition	8
6.2	Test Parameters	8
6.3	Test Limit	8
6.4	Test Method	9
6.5	Test Equipment	9
6.6	Test Results	10
7	General SAR test reduction & exclusion guidance	14

4 Test Specifications

4.1 Normative References

- FCC 47 CFR Ch. I – Part 15 – Radio Frequency Devices.
- ANSI C63.10-2013 – American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.
- ANSI C63.4-2014 – American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
- KDB 447498

5 Equipment under Test

5.1 Identification

- Name: MiBowl+ module
- Serial Number: Test Sample S1
- Model Number: ESP32S2WROOM
- Software Revision: V5.1.1
- Build Level / Revision Number: Rev-02

5.2 EUT Mode of Operation

5.2.1 Transmission

The mode of operation for Transmitter tests was as follows:

The EUT was transmitting on the frequencies as indicated.

5.3 EUT Radio Parameters

5.3.1 General

Frequency of operation:	2.412GHz – 2.462GHz
Modulation type(s):	QPSK
Nominal Supply Voltage:	6Vdc from Battery

5.4 EUT Description

The EUT is an IoT enabled pet feeding device, which works with RFID. The lid is opened when a RFID tag is detected. When no RFID tag is detected, the lid is closed. Events relating to pet RFID identification are communicated to mobile application devices.

6 Duty Cycle

6.1 Definition

The ratio of the sum of all pulse durations to the total period, during a specified period of operation.

6.2 Test Parameters

Test Location:	Element Skelmersdale
Test Standard and Clause:	ANSI C63.10-2013, Clause 11.6
Deviations From Standard:	None
Temperature Extreme Environment Test Range:	N/A
Voltage Extreme Environment Test Range:	N/A

Environmental Conditions (Normal Environment)

Temperature: 21 °C	+15 °C to +35 °C (as declared)
Humidity: 42 % RH	20 % RH to 75 % RH (as declared)

6.3 Test Limit

N/A.

6.4 Test Method

With the EUT setup as per section 9 of this report and connected as per Figure vii, the duty of the EUT was calculated from the sum of total on and off times over the observation period.

The measurements were performed with EUT set at its maximum duty.

Duty was measured at the antenna port

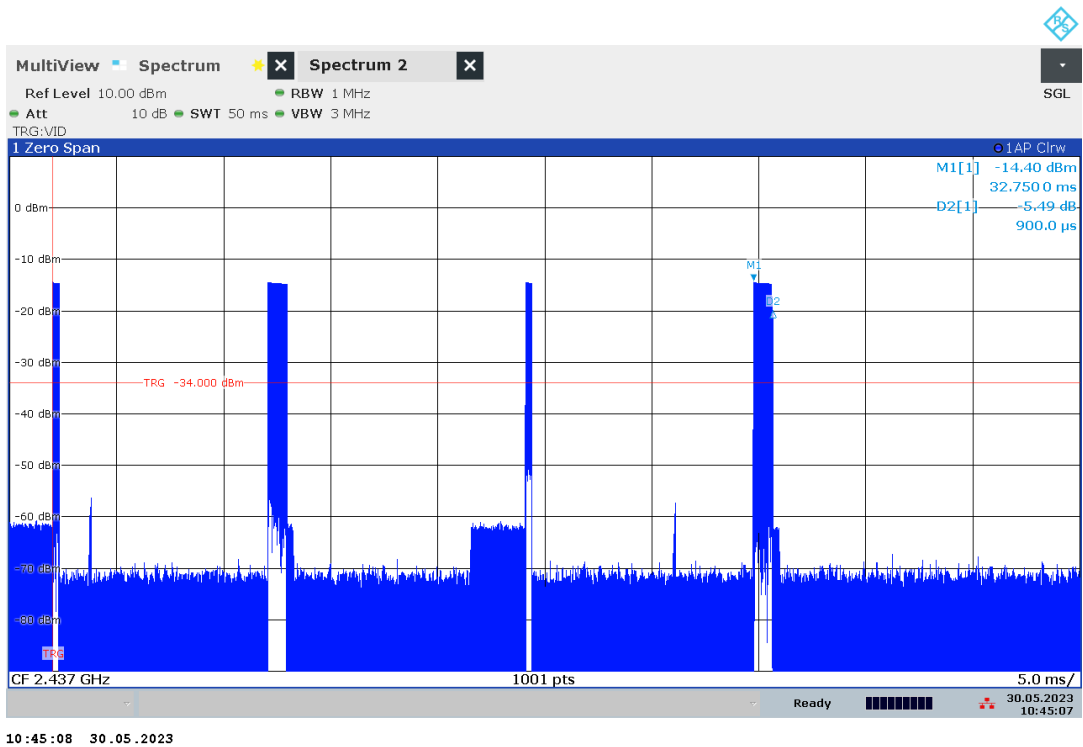
Figure vii Test Setup

6.5 Test Equipment

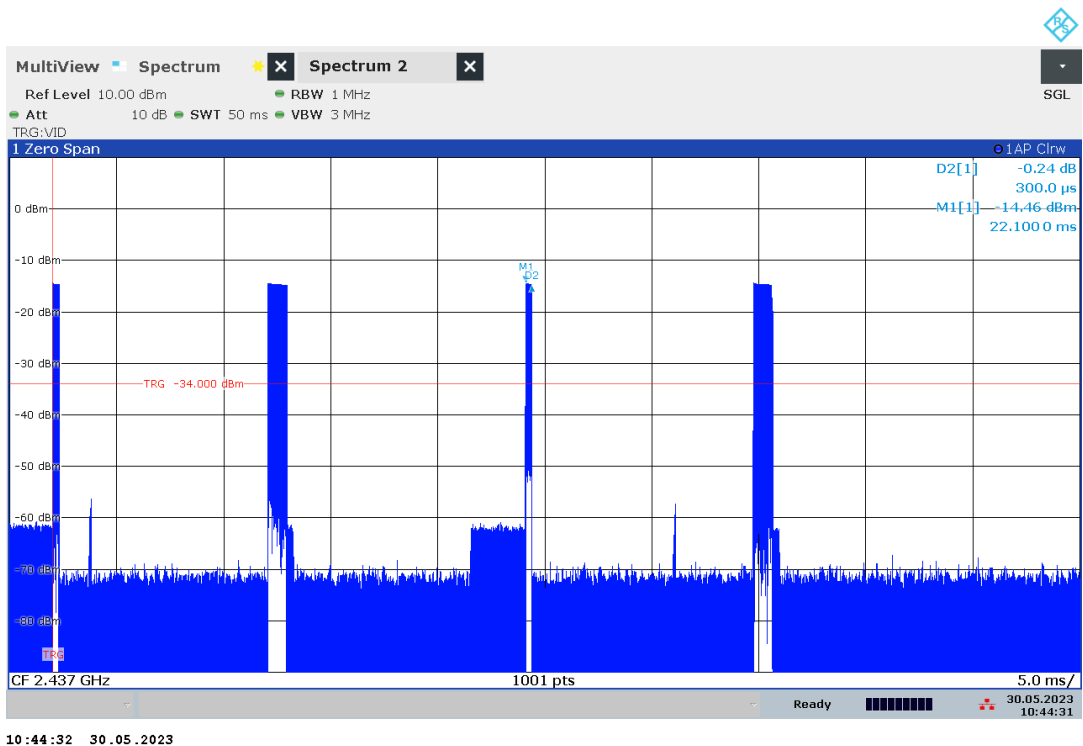
Equipment Type	Manufacturer	Equipment Description	Element No	Due For Calibration
Spectrum Analyser	R&S	FSW 43	U728	2024-05-10

6.6 Test Results

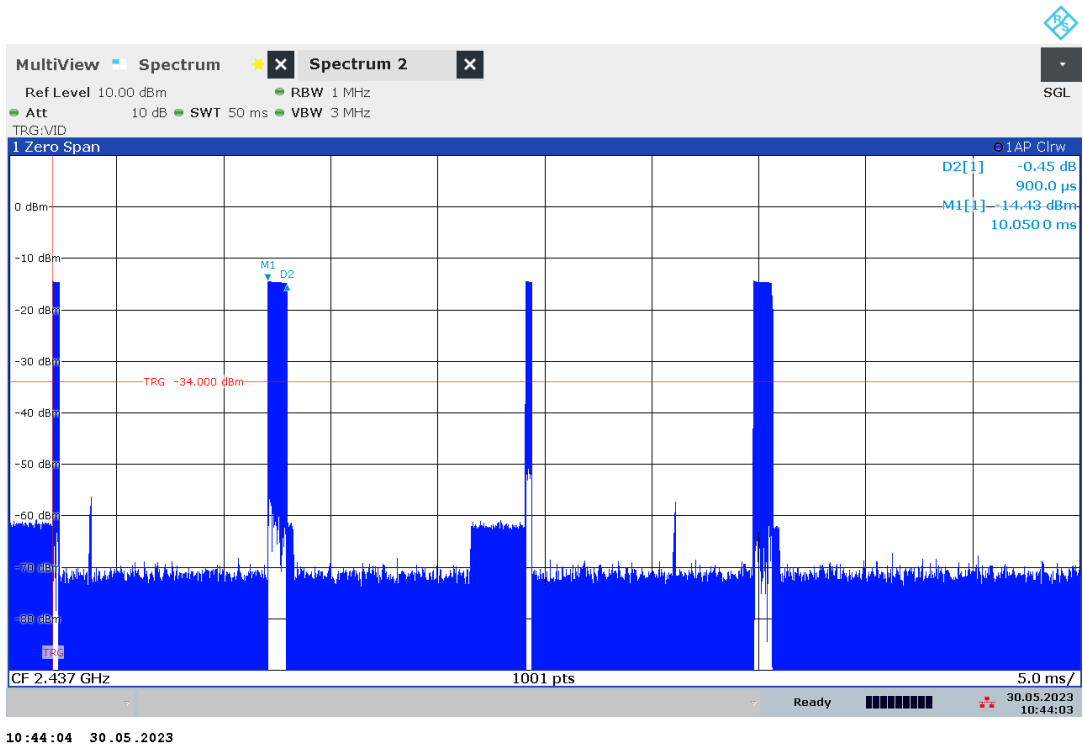
Pulse 1:



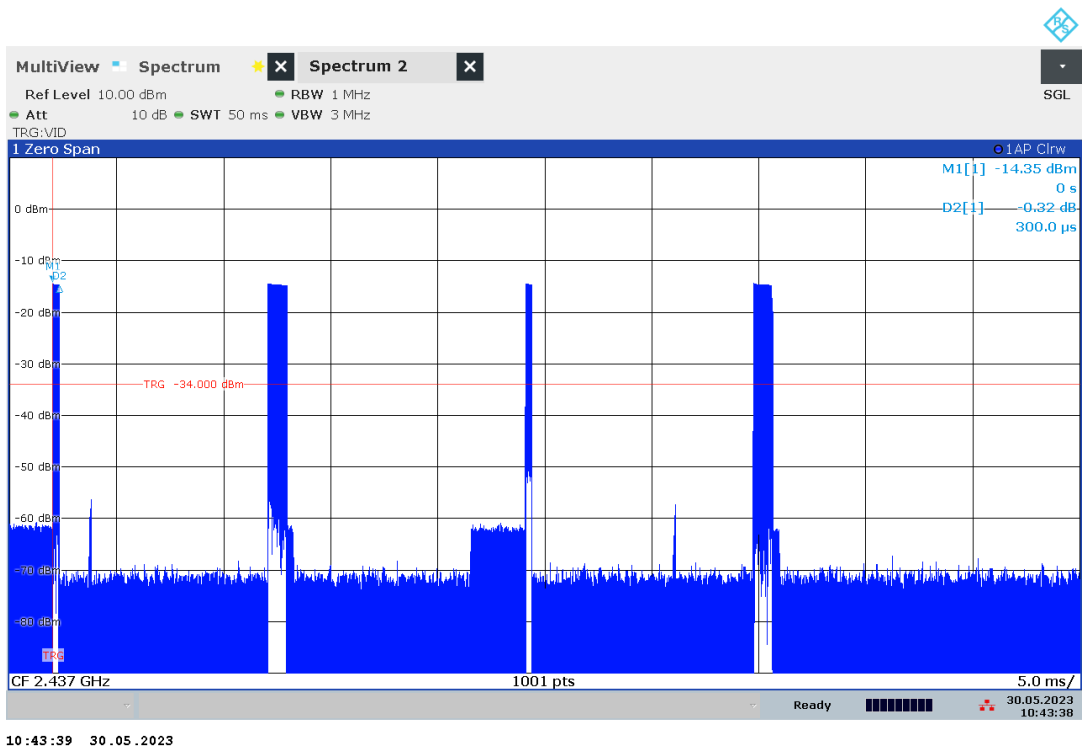
Pulse 2:



Pulse 3:

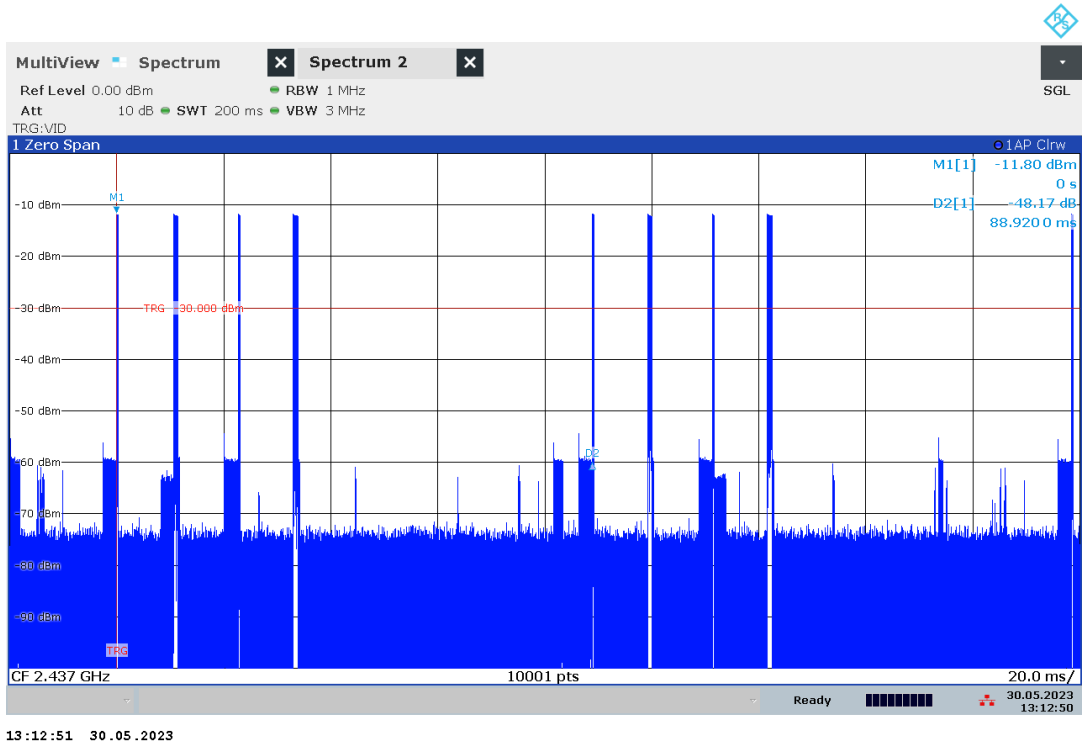


Pulse 4:



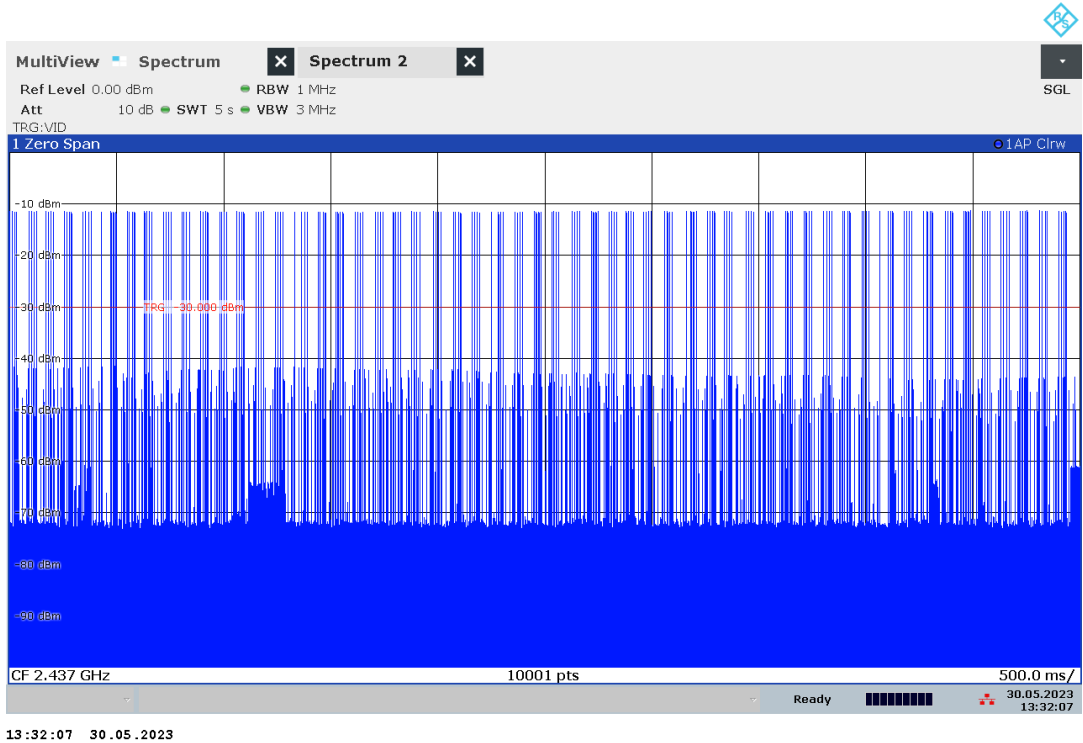
	Pulse 1	Pulse 2	Pulse 3	Pulse 4	Total
Tx On (ms)	0.3	0.9	0.3	0.9	2.4

Total period of the pulses:

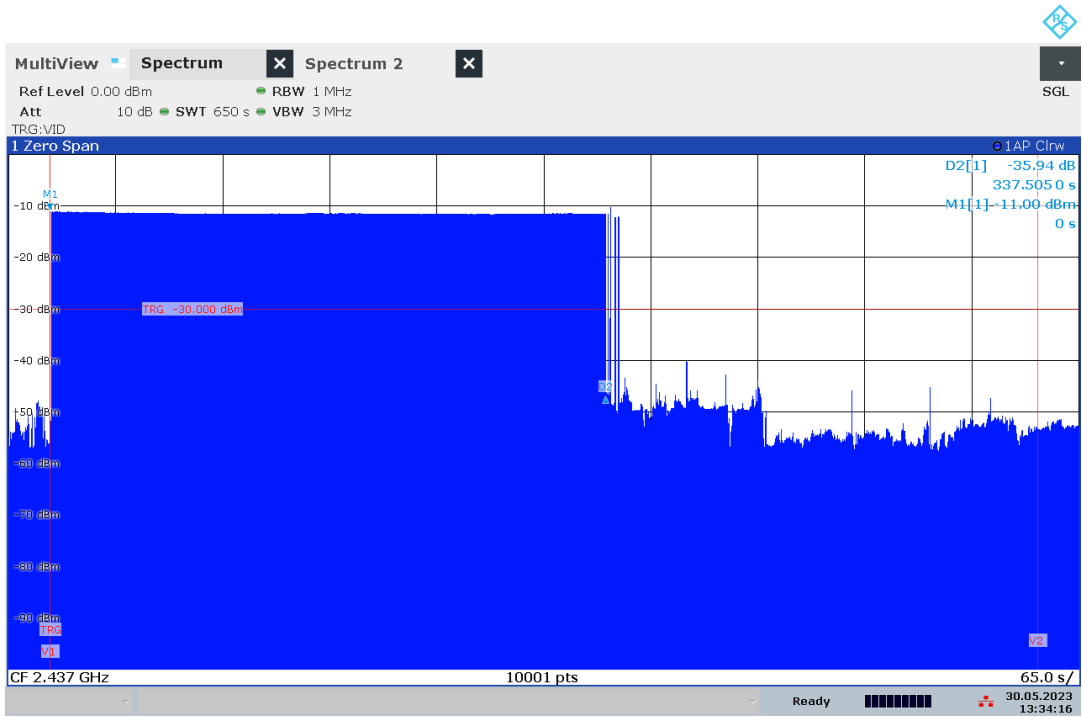


Pulse Sequence Period (ms)
88.92

5 seconds period:



No. of Pulses in 5 second period
55



13:34:16 30.05.2023

Total Time of message (s)
337.505

Test Environment		Frame Period (s)	TxOn time in Frame Period (s)	Duty Cycle Percentage (%)
V _{nominal}	T _{nominal}	337.505	8.91	2.64

7 General SAR test reduction & exclusion guidance

KDB 447498

Section 4.3 General SAR test reduction and exclusion guidance

For Standalone SAR exclusion consideration, when SAR Exclusion Threshold requirement in KDB 447498 is satisfied, standalone SAR evaluation for general population exposure conditions by measurement or numerical simulation is not required.

The SAR Test Exclusion Threshold for frequencies in the range 100 MHz to 6 GHz, and for test separation distance of ≤ 50 mm, is determined as follows.

$$\text{SAR Exclusion Threshold (SARET)} = (\text{NT} \times \text{TSD}_A) / \sqrt{f_{\text{GHz}}}$$

Where,

NT = Numeric Threshold (3.0 for 1-g SAR and 7.5 for 10-g SAR)

TSD_A = Minimum Test separation distance or 50 mm (whichever is lower)

f_{GHz} = Transmit frequency in GHz

<i>Channel Frequency (MHz)</i>	<i>Output Power (mW)</i>	<i>Maximum Duty Cycle %</i>	<i>Time Averaged Output power (mW)</i>	<i>SAR Exclusion Threshold at 6 mm (mW)</i>	<i>SAR Evaluation</i>
2412 - 2462	316	2.64	8.34	11.5	Not Required

Therefore standalone SAR evaluation for general population exposure conditions by measurement or numerical simulation is not required.