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FCC SAR EXEMPTION REPORT

REPORT NUMBER: M2003018-1

TEST STANDARD: FCC KDB 447498 D01

CLIENT: SMART FOAL PTY LTD

DEVICE: SMART FOAL FOALING ALARM TRANSMITTER

MODEL: PROTOTYPE

DATE OF ISSUE: 14 MAY 2020

REVISION TABLE

Version	Sec/Para Changed	Change Made	Date
1		Initial issue of document	14/05/2020

CONTENTS

FCC SAR EXEMPTION REPORT

Device:	Smart Foal Foaling Alarm Transmitter
Model Number:	Prototype
Serial Number:	Pre-production unit
Part Number:	N/A
Manufacturer:	Smart Foal
Tested for:	Smart Foal Pty Ltd
Address:	40 Gard Road, Mount Cottrell VIC 3024
Phone Number:	0404905084
Contact:	Aimee Nizette
Email:	aimee@smartfoal.com
Standards:	**FCC KDB 447498 D01 General RF Exposure Guidance v6** Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.
Result:	Based on an assessment of the documentation provided the Smart Foal Foaling Alarm Transmitter Prototype is exempted from SAR evaluation. Refer to Report M2003018-1 for full details
Issue Date:	14 May 2020
Assessment Engineer:	Peter Jakubiec
Authorised Signatory:	Emad Mansur

EMC Technologies Pty Ltd

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1 INTRODUCTION

The transmitter was assessed against FCC KDB 447498 D01 General RF Exposure Guidance v6.

This report shows the SAR exclusion on the Smart Foal Foaling Alarm Transmitter, Model Prototype, in accordance with FCC KDB 447498 D01 clause 4.3.1,

The test sample was provided by the Client. The conclusion herein is based on the information provided by the client.

1.1 Laboratory Overview

EMC Technologies Pty. Ltd. is an independently owned Australian company that is NATA accredited to ISO 17025 for both testing and calibration and ISO 17020 for Inspection. – **Accreditation Number 5292.**

1.2 Test Laboratory/Accreditations

Inspections are performed at EMC Technologies' laboratory in Keilor Park, Victoria Australia.

Table 1-1: Accreditations for Conformity Assessment

Country/Region	Body	
Australia/New Zealand	NATA	Accreditation Number: 5292
Europe	European Union	Notified Body Number: 0819
USA	FCC	Designation Number: AU0001 (Melb)
Canada	ISED Canada	Company Number: 3569B(Melb)
Japan	VCCI	Company Number: 785
Taiwan	BSMI	Lab Code SL2-IN-E-5001R

2 DEVICE DETAILS

(Information supplied by the Client)

The Smart Foal Foaling Alarm Transmitter Prototype has one transmitting antenna used in the 2.45 MHz band. The antenna is located below the front cover with the spacing to the user of less than 5mm.

Manufacturer: Smart Foal
Test Sample: Smart Foal Foaling Alarm Transmitter
Model Number: Prototype
Serial Number: **Error! No text of specified style in document.**

Transmit parameters were provided by the customer and are shown below:

Table 2-1: Transmitter Parameters

Transmitter #1	
Wireless Interface:	CDEByyte E01-ML01SP4
Operating Frequency:	2476 MHz in the 2400~2525 MHz band
Max. RF Output Power Level:	20dBm (tune-up tolerance 20.2 dBm (104.7mW)
Antenna Type:	2.4GHz Wi-Fi Flexible Polymer antenna
Antenna model:	Blue Diamond FXP73 2.4GHz Flex PCB
Max Antenna gain:	2.5dBi Gain

3 SAR TEST EXCLUSION THRESHOLD FOR 100MHZ TO 6GHZ AND ≤50MM

Table1: SAR test exclusion threshold 100 MHz- 6GHz

Frequency (MHz)	5	10	15	20	25	mm
150	39	77	116	155	194	SAR Test Exclusion Threshold (mW)
300	27	55	82	110	137	
450	22	45	67	89	112	
435	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$$\frac{\text{max. power of channel, including tune} - \text{up tolerance (mW)}}{\text{min. test separation distance (mm)}} * \sqrt{f(GHz)} \leq 3.0$$

Where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz.

4 UNCERTAINTY

EMC Technologies has evaluated the tools and methods used to perform Radiated Electromagnetic Field predictions.

The estimated inspection uncertainties for the test shown within this report are as follows:

Electromagnetic Modelling

30 MHz to 100GHz ±2.8 dB

The above expanded uncertainties are based on standard uncertainties multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

5 ASSUMPTIONS IN THIS ASSESSMENT

This assessment does not include accumulated RF fields from nearby sites/antennas or possible radio signal reflections or attenuation due to buildings or the general environment.

Antenna Parameters and power settings were supplied by the customer.

A 100% duty cycle is assumed.

The aperture of the radiating element assumed to be a point source in free space and far field conditions.

6 EVALUATION RESULT

The standalone transmitter is exempted from SAR if the below condition satisfied in conjunction with threshold power condition in table 1

$$\frac{\text{max. power of channel, including tune} - \text{up tolerance (mW)}}{\text{min. test separation distance (mm)}} * \sqrt{f(GHz)} \leq 3.0$$

Where

Minimum test separation distance (mm): 3

The minimum test separation distance is determined by the smallest distance from the antenna (radiating structures) to the outer surface of the device

Maximum power of channel (mW): 105 (burst power), the RF Duty Cycle is 3.8 %

Time-averaged maximum conducted output power (mW): 4

$$\frac{\text{max. power of channel, including tune} - \text{up tolerance (mW)}}{\text{min. test separation distance (mm)}} * \sqrt{f(GHz)} = \frac{4mW}{5mm} * \sqrt{2.45\ GHz}$$

$$= 1.25 \leq 3.0$$

As the transmitted power is (4.0 mW) - less than 10 mW indicated in table (1), and the result of the above condition is 1.25 (less than 3), hence this transmitter is excepted from SAR evaluation.

7 CONCLUSION

Based on an assessment of the documentation provided the Smart Foal Foaling Alarm Transmitter Prototype is exempted from SAR evaluation based on the test exclusion guidance in FCC KDP 447498 D01 clause 4.3.1

8 APPENDIX A

Referenced Documents

Document	Comments
Blue Diamond FXP73 2.4GHz Flex PCB Antenna, IPEX MHFI, 100mm Ø1.13 cable – Taoglas.pdf	Antenna Details
E01-ML01SP4_Usermanual_EN_V1.3.pdf	Tune-up tolerance