



Radio Frequency Exposure Evaluation Report

FOR:

PetPomm, Inc dba Nuzzle

Model Name:

NZL-BS2016

Product Description:

Battery Charger and Beacon

FCC ID: 2AJ57-070114BST

IC ID: 22069-070114BST

Applied Rules and Standards:

CFR Part 1 (1.1307 & 1.1310), Part 2 (2.1091)

ISED RSS-102 Issue 5

Report number: EMC_PETPO-001-16001_MPE

DATE: 2017-03-16



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1. Assessment

This RF Exposure evaluation report provides information about compliance of the below identified device with the RF Exposure limits for mobile devices as defined in FCC CFR Part 1 (1.1307 & 1.1310), Part 2 (2.1091) under given conditions (measured or rated RF output power, antenna gain, distance towards human body, multiple transmitter information as presented by the applicant), and ISEDC RSS 102 Issue 5. In addition, maximum antenna gain or minimum distance towards the human body is calculated, respectively, where relevant.

The device meets the requirements for SAR exclusion as stipulated by the above given FCC/ISEDC rules.

Company	Description	Model #
PetPomm, Inc dba Nuzzle	Battery Charger and Beacon	NZL-BS2016

Responsible for Testing Laboratory:

Peter Nevermann

2017-03-16 Compliance (Director Radio Communications and EMC)

Date	Section	Name	Signature
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Responsible for the Report:

Kris Lazarov

2017-03-16 Compliance (EMC Engineer)

Date	Section	Name	Signature
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The test results of this test report relate exclusively to the test item specified in Section 3.

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2. Administrative Data

2.1. Identification of the Testing Laboratory Issuing the Test Report

Company Name:	CETECOM Inc.
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Director Radio Com. and EMC:	Peter Nevermann
Responsible Project Leader:	Kris Lazarov

2.2. Identification of the Client / Manufacturer

Applicant's Name:	PetPomm, Inc dba Nuzzle
Street Address:	408 Tamiami Trail, Unit 122
City/Zip Code	Punta Gorda, FL 33950
Country	USA
Contact Person:	Alex Andreae
Phone No.	(941) 268-4955
e-mail:	alex@hellonuzzle.com

3. Equipment under Assessment

Model No	NZL-BS2016
HW Version	1.0
SW Version	0.1.0
FCC-ID	2AJ57-070114BST
IC ID	22069-070114BST
Product Description	Battery charger and beacon
Device Category	<input checked="" type="checkbox"/> Fixed Installation <input type="checkbox"/> Mobile <input type="checkbox"/> Portable <input type="checkbox"/> Mixed Mobile and Portable
Frequency Range / number of channels	Nominal band: 2402 MHz– 2480 MHz; Center to center: 2402 MHz(ch 0) – 2480 MHz(ch 39), 40 channels
Type(s) of Modulation	Bluetooth version 4.0, Low Energy, GFSK modulation
Modes of Operation	Bluetooth LE
Max. declared antenna gain	Chip antenna max gain = 1.7 dBi
Minimum distance of antenna or radiating parts to user	20 cm
Max. declared conducted output power including tune up	Maximum conducted power 10 dBm
Power Supply/ Rated Operating Voltage Range	5 VDC from AC/DC adapter
Operating Temperature Range	-20 °C to 55 °C
Other Radios included in the device	N/A
Co-located Transmitters/ Antennas	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Sample Revision	<input type="checkbox"/> Prototype <input type="checkbox"/> Production <input checked="" type="checkbox"/> Pre-Production
Exposure Category	<input type="checkbox"/> Occupational/ Controlled <input checked="" type="checkbox"/> General Population/ Uncontrolled

4. RF Exposure Limits and FCC

For the specific described radio apparatus the following basic limits and rules apply

4.1. Power Density Limits acc. to FCC 1.1310(e)

Frequency Range (MHz)	Power density (mW/cm ²)	Averaging time (minutes)
1500 – 100.000	1.0	30

4.2. Routine Environmental Evaluation Categorical Exclusion Limits acc. to FCC 2.1091(c)

- Operating frequency > 1.5GHz: excluded if ERP < 3.0W / 34.8dBm;

Per KDB 447498 D01 FCC allows calculative estimation of RF exposure for mobile applications when routine environmental evaluation categorical exclusion applies and also for fixed applications. When categorical exclusion cannot be claimed for mobile applications MPE measurement is required for TCB approval.

4.3. Exemption Limits for Routine Evaluation to RSS-102 2.5.2

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- Operating frequency > 300MHz < 6GHz: excluded if ERP < 2.7W / 34.3dBm;

4.4. Exposure Limits RSS-102 4

For the purpose of this standard, ISED has adopted the SAR and RF field strength limits established in Health Canada's RF exposure guideline, Safety Code 6

Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)				
Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
300-6000	$3.142 f^{0.3417}$	$0.008335 f^{0.3417}$	$0.02619 f^{0.6834}$	6

4.5. RF Exposure Estimation (MPE Estimation)

Having available the source based average output power and peak antenna gain or the ERP/EIRP of the specified device and for a known minimum distance of its radiating structures from the body of persons according to its use cases (at least 20cm) the power density at that distance can be estimated by the following formula for plane-wave equivalent conditions (far-field conditions), when ground reflection is neglected.

$$S = \frac{PG}{4\pi R^2}$$

Where: S = power density (mW/cm² or W/m²)

P = power input to the antenna (mW or W)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

tenna (cm or m)

5. Evaluations

5.1. Routine Environmental Evaluation Applicability

Transmission Mode	Peak EIRP (dBm)	Duty Cycle (%)	FCC / ISEDC Limits for Routine Environmental Evaluation Applicability, EIRP (dBm)	Exempt from Routine evaluation (Yes/No)
BT 4.0 LE	11.7	5	34.3 / 34.8	Yes

Note: Based on the 10dB maximum declared output power and calculated EIRP results for 1.7dBi antenna gain.

Result:

- Since the Peak EIRP is less than the FCC / ISEDC limit, this device is exempt from routine evaluation.

5.2. Compliance with MPE (Power Density) limits

Power Density Calculation						
Band of Operation (MHz)	Peak EIRP (dBm)	Maximum Duty Cycle (%)	Distance (cm)	Power Density (mW/cm ²)	FCC / ISEDC Limit (mW/cm ²)	Result
BT 4.0 LE 2400 to 2483.5	11.7	5%	20	0.0001	1.000 / 0.547	Pass

Result:

- The equipment fulfills the MPE limits for the minimum distance between the antenna and the human body of 20cm.

6. Simultaneous Transmission MPE Test Exclusion (per KDB 447498 D01)

Result:

- Not applicable - there are no intra-band co-transmissions possible in the device.

7. Maximum allowed Antenna Gain – Gmax

Result:

- Not applicable since fixed internal antenna is used in the product.

8. Revision History

Date	Report Name	Changes to report	Report prepared by
2017-03-16	EMC_PETPO-001-16001_MPE	Initial version	Kris Lazarov