

REPORT ON EXPOSURE TO ELECTROMAGNETIC FIELDS

No. 2019843STO-307

EQUIPMENT

Equipment: Remote care solution
Type/Model: Hub
Manufacturer: Pink Nectarine Health AB
Tested by request of: Pink Nectarine Health AB

SUMMARY

Based on the assessment in this statement, the equipment is determined to comply with the following requirements without testing:

CFR 47 §1.1307, §1.1310
RSS-102 Issue 5

Date of issue: December 15, 2020

Tested by:



Robert Hietala

Approved by:



Björn Utermöhl

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Revision History

Test report number	Date	Description	Changes
2019843STO-307	December 15, 2020	First release	--

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1 CLIENT INFORMATION

This assessment has been done by request of:

Company	Pink Nectarine Health AB Munkbron 11 111 28 Stockholm Sweden
Name of contact	Tobias Linghammar, +46 70 461 48 27

2 EQUIPMENT

2.1 Identification of the equipment

Equipment:	Remote care solution
Type/Model:	Hub
Brand name:	Nectarine Health
Manufacturer:	Pink Nectarine Health AB
Transmitter frequency range:	Bluetooth Low Energy: 2402 – 2480 MHz Wi-Fi 2.4 GHz: 2412 – 2472 MHz Wi-Fi 5 GHz: 5150 – 5850 MHz
Measured output power to antenna:	Bluetooth low energy ¹ : +4.9 dBm Wi-Fi 2.4 GHz ² : +21.9 dBm Wi-Fi 5 GHz ³ : +19.8 dBm
Declared output power to antenna:	Bluetooth low energy: +6.0 dBm Wi-Fi 2.4 GHz: +22.0 dBm Wi-Fi 5 GHz: +21.0 dBm
Antenna gain:	Bluetooth low energy: +0.4 dBi Wi-Fi 2.4 GHz: -0.5 dBi Wi-Fi 5 GHz: +0.8 dBi
User separation distance:	20 cm
Exposure conditions:	<input type="checkbox"/> Controlled environment (occupational) <input checked="" type="checkbox"/> Uncontrolled environment (general population)

¹ Reference for measurement: Intertek Test Report 2019843STO-304
² Reference for measurement: Nore Testing Center Report No NTC1712035FV00
³ Reference for measurement: Testing Centre Technology Report No TCT171018E032

3 TEST SPECIFICATIONS

3.1 Standards

CFR 47: Code of Federal Regulations Title 47: Telecommunications §1.1307, §1.1310
KDB447498 D01 v06

RSS-102: Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)

3.2 Additions, deviations and exclusions from standards

No additions, deviations or exclusions have been made from standards.

4 SUMMARY

The evaluation has been carried out at the Intertek Semko AB premises in Kista, Sweden.
The results in this report apply only to sample tested:

Test	Result
RF Exposure, single transmitter	PASS
RF Exposure, multiple simultaneous transmitters	PASS

5 RF EXPOSURE

Result, single transmitter:	PASS
Result, multiple transmitter:	PASS

5.1 Limits

Reference: CFR 47 §1.1310 TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

Reference: RSS-102 – Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands) Issue 5

Section 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:

- below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- 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;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

5.2 Calculations

EIRP: $Power\ to\ antenna\ (dBm) + Antenna\ gain\ (dBi) = EIRP\ dBm$

Declared EIRP, Bluetooth Low Energy = +6.0 dBm
 Measured EIRP, Bluetooth Low Energy = +5.3 dBm

Declared EIRP, Wi-Fi 2.4 GHz = +22.0 dBm
 Measured EIRP, Wi-Fi 2.4 GHz = +21.4 dBm

Declared EIRP, Wi-Fi 5 GHz = +21.0 dBm
 Measured EIRP, Wi-Fi 5 GHz = +20.6 dBm

Conversion dBm to mW:

EIRP: $1\ mW * 10^{(EIRP\frac{dBm}{10})}$

Bluetooth Low Energy = 4.0 mW
 Wi-Fi 2.4 GHz = 158.5 mW
 Wi-Fi 5 GHz = 125.9 mW

MPE calculation

A worst-case calculation for power density:

$$S = \frac{dc \times EIRP}{4 \times \pi \times r^2}$$

dc = 1
 S = W / m²
 r = 20 cm

5.3 Results, single transmitter

Technique	Standard	Reference for limit	Value	Unit	Limit	Result
Bluetooth Low Energy	§1.1310	§1.1310	0.001	mW/cm ²	1.0	PASS
Bluetooth Low Energy	RSS-102	RSS-102	0.004	W	2.7 ¹	PASS
Wi-Fi 2.4 GHz	§1.1310	§1.1310	0.032	mW/cm ²	1.0	PASS
Wi-Fi 2.4 GHz	RSS-102	RSS-102	0.159	W	2.7 ¹	PASS
Wi-Fi 5 GHz	§1.1310	§1.1310	0.025	mW/cm ²	1.0	PASS
Wi-Fi 5 GHz	RSS-102	RSS-102	0.126	W	4.6	PASS

¹ Based on worst-case channel frequency 2440 MHz

² Based on worst-case channel frequency 2412 MHz

³ Based on worst-case channel frequency 5240 MHz

5.4 Results, multiple transmitters

Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is ≤ 1.

Standard	Reference for limit	Value	Unit	Limit	Result
§1.1310	KDB 447498 D01	0.058	--	≤ 1	PASS
RSS-102	KDB 447498 D01	0.095	--	≤ 1	PASS