

RADIO TEST REPORT

No. 1817392STO-002, Ed. 1

RF Performance

EQUIPMENT UNDER TEST

Equipment: Bluetooth beacon transmitter
Type/Model: TENA SmartCare transmitter
Manufacturer: Essity Hygiene and Health AB
Tested by request of: Essity Hygiene and Health AB

SUMMARY

Referring to the emission limits, and the operating mode during the tests specified in this report, the equipment complies with the requirements according to the following standards:

47 CFR Part 15: Subpart C: Intentional radiators. Section 15.247

47 CFR Part 15: Subpart B: Unintentional radiators

RSS-GEN Issue 5 (2018): General requirements of compliance of radio apparatus (2018)

RSS-247 Issue 2 (2017): Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

For details, see clause 2 – 4.

Date of issue: 2019-06-13

Tested by:



Matti Virkki

Approved by:



Stefan Andersson

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

REPORT ON EXPOSURE TO ELECTROMAGNETIC FIELDS

No. 1817392STO-003, Ed. 1

EQUIPMENT

Equipment: Bluetooth beacon transmitter
Type/Model: TENA SmartCare transmitter
Manufacturer: Essity Hygiene and Health AB
Tested by request of: Essity Hygiene and Health AB

*See opinions and interpretations clause 2.2

SUMMARY

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

EN 50663: 2017
CFR 47 §1.1307, §1.1310
RSS-102 Issue 5

Date of issue: 2019-06-13

Tested by:


Matti Virkki

Approved by:


Stefan Andersson

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

Revision History

Edition	Date	Description	Changes
1	2019-06-13	First release	

CONTENTS

	Page
1 Client Information	4
2 Equipment	4
2.1 Identification of the equipment	4
3 Test Specifications	5
3.1 Standards	5
4 Summary	5
5 RF Exposure, single transmitter	6
5.1 Limits	6
5.2 Calculations	8
5.3 Results	8

1 CLIENT INFORMATION

This assessment has been done by request of:

Company Essity Hygiene and Health AB
Mölnåls Bro 2
405 03 Gothenburg
Sweden

Name of contact Rickard Holmerson

2 EQUIPMENT

2.1 Identification of the equipment

Equipment: Bluetooth beacon transmitter
Type/Model: TENA SmartCare Transmitter
Brand name: D116, D113
Manufacturer: Essity Hygiene and Health AB
Transmitter frequency range: 2402 – 2480 MHz
Measured output power to antenna*: +2 dBm
Declared output power to antenna: +4 dBm
Antenna gain: -1,5 dBi
User separation distance: 5mm
Exposure conditions: ☐ Controlled environment (occupational)
 ☒ Uncontrolled environment (general population)
Region of body: ☒ Head or trunk
 ☐ Limbs

*

Reference for measurement: Test report 1817392STO-001 Ed. 1

3 TEST SPECIFICATIONS

3.1 Standards

EN 50663: 2017: Generic standard for assessment of low power electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (10 MHz - 300 GHz)

EN 62479:2010, Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz)

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)

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	NA ¹

1. EUT only has a single transmitter or transmitters can't operate simultaneously

5 RF EXPOSURE, SINGLE TRANSMITTER

Result:	PASS
---------	------

5.1 Limits

Reference: COUNCIL RECOMMENDATION of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz) 1999/519/EC: Annex 2 Basic restrictions

Guideline / standard	SAR limit, SAR _{max} W/kg	Averaging mass, m g	P _{max} mW	Exposure tier	Region of body
199/519/EC	2	10	20	General public	Head and trunk
	4	10	40	General public	Limbs

Reference: CFR 47 §1.1307, §1.1310

KDB 447498 D01 General RF Exposure Guidance v06

Section 4.3.1, 1) 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:

$$\left[\frac{(\text{max. power of channel, including tune-up tolerance, mW})}{(\text{min. test separation distance, mm})} \right] \cdot \sqrt{f(\text{GHz})} \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR}$$

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.

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

Section 2.5.1, Table 1: SAR evaluation – Exemptions limits for routine evaluation based on frequency and separation distance

Frequency	Exemptions limits				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Frequency	Exemptions limits				
	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of ≥50 mm
≤300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW

For limb-worn devices where the 10 gram value applies, the exemption limits for routine evaluation in Table 1 are multiplied by a factor of 2.5.

5.2 Calculations

EIRP: $Power\ to\ antenna\ (dBm) + Antenna\ gain\ (dBi) = EIRP\ dBm$
Declared EIRP = 2,5 dBm
Measured EIRP = 0,5 dBm

Conversion dBm to W:

Conducted: $1\ mW * 10^{(Power\frac{dBm}{10})} = 2.51\ mW = 3mW$

EIRP: $1\ mW * 10^{(EIRP\frac{dBm}{10})} = 1,78\ mW = 2mW$

Low power exclusion limit:

KDB447498 D01 v06: $\frac{EIRP\ mW}{Separation\ distance\ mm} * \sqrt{Operating\ frequency\ GHz} = 0.94$

5.3 Results

The highest of the measured and declared values is used to evaluate the compliance

Standard	Reference for limit	Value	Unit	Limit	Result
EN 50663: 2017	EN 62479	3	mW	< 20	PASS
§1.1310	KDB 447498	0.94	NA	< 3	PASS
RSS-102	RSS-102	3	mW	< 4	PASS