



Radio Frequency Exposure Evaluation Report

FOR:

Philips Respironics Inc.

Model Name:

DreamStation

Product Description:

Continuous Airway Pressure Device with Bluetooth and LTE Radio

FCC ID: THO1116426

IC ID: 3234B-1116426, Model: 1116426

Applied Rules and Standards:

CFR Part 1 (1.1307 & 1.1310), Part 2 (2.1091),
FCC KDB 447498 D01 General RF Exposure Guidance v06
Industry Canada RSS-102, Issue 5 of March 2015

Report number: EMC_PHIL4-040-18001_MPE

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IC recognized #
3462B-2

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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), and IC standard RSS-102, under given conditions (measured or rated RF output power, antenna gain, distance towards human body, multiple transmitter information as presented by the applicant). In addition, maximum antenna gain or minimum distance towards the human body is calculated, respectively, where relevant.

The device meets the limits as stipulated by the above given FCC rule parts based on available specifications.

Company Name	Product Description	Model #
Philips Respironics Inc.	Continuous Airway Pressure Device with Bluetooth and LTE Radio	200603C 200604C

Responsible for Testing Laboratory:

2018-03-01	Compliance	James Donnellan (Lab Manager)	
Date	Section	Name	Signature

Responsible for the Report:

2018-03-01	Compliance	Cindy Li (EMC Engineer)	
Date	Section	Name	Signature

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.
Department:	Compliance
Street Address:	411 Dixon Landing Road
City/Zip Code	Milpitas, CA 95035
Country	USA
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
Compliance Manager:	James Donnellan
Responsible Project Leader:	Kris Lazarov

2.2. Identification of the Client

Applicant's Name:	Philips Respironics Inc
Street Address:	1740 Goldn Mile Highway
City/Zip Code	Monroeville, PA 15146
Country	USA
Contact Person:	Jerry Shore
Phone No.	724 387 7578
e-mail:	jerry.shore@philips.com

2.3. Identification of the Manufacturer

Manufacturer's Name:	Same as Applicant
Manufacturers Address:	-----
City/Zip Code	-----
Country	-----

3. Equipment under Assessment

Model No	200603C, 200604C
HW Version	-00
SW Version	V 3.00.02
FW Version	K0.0.00.00.07.06
FCC-ID	THO1116426
IC-ID	3234B-1116426 / M/N: 1116426
Product Description	Continuous Airway Pressure Device with Bluetooth and LTE Radio
Transceiver Technology / Type(s) of Modulation	LTE Module: SARAH-R404M-00B / QPSK/16QAM Bluetooth BR/EDR / GFSK, $\pi/4$ DQPSK, 8DPSK Bluetooth Low Energy / GFSK
Frequency Range	LTE Band 13: 777-787 MHz Bluetooth: 2400-2483.5 MHz
Max. declared antenna gain	LTE Band 13 = -0.72 dBi Bluetooth = 1.5 dBi
Co-located Transmitters/ Antennas?	LTE / BT
Power Supply/ Rated Operating Voltage Range	AC/DC Adapter
Operating Temperature Range	25 °C
Sample Revision	<input type="checkbox"/> Prototype <input checked="" type="checkbox"/> Production <input type="checkbox"/> Pre-Production
Device Category	<input type="checkbox"/> Fixed Installation <input type="checkbox"/> Mobile <input checked="" type="checkbox"/> Portable
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)
300 – 1500	$f \text{ (MHz)} / 1500$	30
1500 – 100.000	1.0	30

4.2. Power Density Limits acc. To RSS-102

Frequency Range (MHz)	Power density (W/m ²)	Averaging time (minutes)
300 – 6000	$0.02619 f^{0.6834}$	6

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

Mobile devices that operate in the Commercial Mobile Radio Services pursuant to part 20 of this chapter; the Cellular Radiotelephone Service pursuant to part 22 of this chapter; the Personal Communications Services pursuant to part 24 of this chapter; the Satellite Communications Services pursuant to part 25 of this chapter; the Miscellaneous Wireless Communications Services pursuant to part 27 of this chapter; the Maritime Services (ship earth station devices only) pursuant to part 80 of this chapter; the Specialized Mobile Radio Service, and the 3650 MHz Wireless Broadband Service pursuant to part 90 of this chapter; and the Citizens Broadband Radio Service pursuant to part 96 of this chapter are subject to routine environmental evaluation for RF exposure prior to equipment authorization or use if:

- (i) They operate at frequencies of 1.5 GHz or below and their effective radiated power (ERP) is 1.5 watts or more, or
- (ii) They operate at frequencies above 1.5 GHz and their ERP is 3 watts or more.

4.4. Exemption Limits for Routine Evaluation — RF Exposure Evaluation RSS-102

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 $1.31 \times 10^{-2} f^{0.6834} \text{ W}$ (adjusted for tune-up tolerance), where f is in MHz;

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 centre of radiation of the antenna (cm or m)

The objective of the measurements done by CETECOM Inc. was to assess the performance of the EUT according to the relevant requirements specified in FCC rules Part 15.247 of Title 47 of the Code of Federal Regulations and Radio Standard Specification RSS-247 of ISED Canada.

Testing procedures are based on 558074 D01 DTS Meas Guidance v04 – "GUIDANCE FOR PERFORMING COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEMS (DTS) OPERATING UNDER SECTION 15.247" - April 5, 2017, by the Federal Communications Commission, Office of Engineering and Technology, Laboratory Division.

5. Evaluations

5.1. Routine Environmental Evaluation Applicability Stand Alone transmission

Transmission Mode	EIRP dBm	Duty Cycle %	Limits for Routine Environmental Evaluation Applicability, EIRP dBm	Exempt from Routine evaluation (Yes/No)
LTE Band 13	22.27	100	< 30.94	Yes
BT	6.63	100	< 34.27	Yes

Note1: EIRP power calculation is based on the maximum conducted output power and antenna gain for each transmission band

5.2. Compliance with MPE (Power Density) limits

Power Density Calculation						
Band of Operation MHz	EIRP dBm	Maximum Duty Cycle %	Distance cm	Power Density mW/cm ²	FCC / IC Limit mW/cm ²	Verdict
LTE Band 13	22.27	100	20	0.034	0.52/0.25	Pass
BT	6.63	100	20	0.00092	1.00/0.54	Pass

6. Routine Environmental Evaluation Applicability Simultaneous Transmission

Possible worst case simultaneous transmissions:

- LTE Band 13 with BT

Transmission Mode	Ratio of Power Density to Applicable limit for Stand Alone Operation	Sum of the Ratios for the Highest Possible Simultaneous Operation	Limits for the Highest Combined Ratio	Exempt from Routine evaluation
LTE B13 + BT	0.034 + 0.00092	0.035	< 1	Yes

Note: Power Density to Applicable limit for Stand Alone Operation are derived from table in section 5.2

7. Revision History

Date	Report Name	Changes to report	Report prepared by
03-01-2018	EMC_PHIL4-040-18001_MPE	Initial Version	Cindy Li