



Radio Frequency Exposure Evaluation Report

FOR

Respironics, Inc.

Marketing Name: / Model No:

DreamStation Go / DSG500S11

Product Description:

Positive Airway Pressure (PAP) Device.

FCC ID: THO1116426

IC ID: 3234B-1116426

Per:

CFR Part Part 1 (1.1307 & 1.1310), Part 2 (2.1091),
FCC KDB 447498 D01 General RF Exposure Guidance v06

Report number: EMC-PHIL4-028-16001-FCC-MPE-Rev1

DATE: April 04, 2017



**FCC Recognized
A2LA Accredited**

**IC recognized #
3462B-1**

CETECOM Inc.

411 Dixon Landing Road • Milpitas, CA 95035 • U.S.A.

Phone: + 1 (408) 586 6200 • Fax: + 1 (408) 586 6299 • E-mail: info@cetecom.com • <http://www.cetecom.com>

CETECOM Inc. is a Delaware Corporation with Corporation number: 2905571

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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 issue 5 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 and IC rule parts based on available specifications.

Company	Description	Model #
Respiroics, Inc.	Positive Airway Pressure (PAP) Device	DSG500S11

Responsible for the Test Laboratory:

Peter Nevermann

April 04, 2017 Compliance (Director Radio Communications and EMC)

Date	Section	Name	Signature
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Responsible for the Report:

James Donnellan

April 04, 2017 Compliance (Sr. EMC Engineer)

Date	Section	Name	Signature
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2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the EMC 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:	Peter Nevermann
Responsible Project Leader:	James Donnellan

2.2 Identification of the Client

Applicant's Name:	Respironics, Inc.
Street Address:	1740 Golden Mile Highway
City/Zip Code	Monroeville, PA 15146
Country	USA
Contact Person:	Roger Strane
Phone No.	724-387-4813
e-mail:	roger.strane@philips.com

2.3 Identification of the Manufacturer

Manufacturer's Name:	Respironics, Inc.
Manufacturers Address:	1001 Murry Ridge Lane
City/Zip Code	Murrysville, PA 15668
Country	USA

3 Equipment under Assessment

Model #:	DSG500S11
Product Description:	Positive Airway Pressure (PAP) Device
FCC-ID:	THO1116426
IC certification number, HVIN, PMN	3234B-1116426, DSG500S11, DreamStation Go
Technology / Type(s) of Modulation:	Bluetooth 4.0 LE (TI CC2530 with CC2591 LNA/PA)
Operating Frequency Ranges (MHz)/ Channels:	ISM band 2.4 GHz – 2.4835 GHz
Antenna info:	1.5 dBi for 2.4 GHz Band
Co-located Transmitters/ Antennas?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Device Category:	<input checked="" type="checkbox"/> Fixed Installation <input type="checkbox"/> Mobile <input type="checkbox"/> Portable <input type="checkbox"/> Mixed Mobile and Portable
Exposure Category:	<input type="checkbox"/> Occupational/ Controlled <input checked="" type="checkbox"/> General Population/ Uncontrolled
Power Supply/ Rated Operating Voltage Range:	AC Input:100-240V, 50-60 Hz
operating temperature range	5 °C to 35 °C
Test Sample Status:	Production unit

4 RF Exposure Limits - EMC (ERP/EIRP) Limits - FCC and IC Basic Rules

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

4.1 Power Density Limits acc. to FCC 1.1310(e) / IC RSS-102 i5, cl. 4:

FCC

Frequency Range (MHz)	Power density (mW/cm ²)	Averaging time (minutes)
300 – 1500	$f \text{ (MHz)} / 1500$	30
1500 – 100.000	1.0	30

IC

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

4.2 FCC Categorical Exclusion and IC Routine Environmental Evaluation Exemption Thresholds

FCC § 2.1091(c)

operating frequency < 1.5GHz: excluded if ERP < 1.5W / 31.8dBm (EIRP: 33.9);

operating frequency > 1.5GHz: excluded if ERP < 3.0W / 34.8dBm (EIRP: 36.9);

IC RSS-102, cl. 2.5

300MHz < = operating frequency < 6 GHz: exempted if EIRP < $0.0131 \times f \text{ (MHz)}^{0.6834} \text{ W}$

When a device (mobile or fixed application) qualifies for the FCC categorical exclusion provision of § 2.1091(c) estimation of RF exposure compliance for example per plane wave power density formula (see below) is permitted. Otherwise, further MPE evaluation (measurement or simulation) would be required for TCB approval.

Industry Canada RSS-102 does generally not require further RF exposure evaluation for fixed or mobile applications which stay below the above given exemption limits.

Note that the thresholds for FCC categorical exclusion and IC routine evaluation exemption are no compliance limits but determine the ERP/EIRP limit above which further MPE evaluation (e.g. E or H field measurement) or simulation would be required to show compliance.

4.3 EMC Output Power Limits (ERP/EIRP)

In any case, the EMC ERP/EIRP limits of the relevant FCC / IC rule parts must be respected.

FCC §15.247 (b)(1)

For frequency hopping systems employing less than 75 non-overlapping hopping channels in the 2400-2483.5 MHz band: 0.125 W (20.99dBm)

RSS-247 5.4(2)

For FHSs operating in the band 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 0.125 W (20.99dBm) and the e.i.r.p. shall not exceed 0.5 W (26.99dBm) if the hop set uses less than 75 hopping channels

4.4 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 (cm or m)

5 Evaluations

5.1 Routine Environmental Evaluation Applicability - Categorical Exclusion per FCC / IC

EIRP for BT is based on maximum declared from EMC-PHIL4-028-16001-15-247-DSS-Rev1 report
With the antenna gain of 1.5 dBi.

Transmission Mode	Duty Cycle (%)	Maximum EIRP [dBm]	FCC / IC Limits for Routine Environmental Evaluation Applicability, EIRP (dBm)	Exempt from Routine evaluation (Yes/No)
BT	100	6.63	36.9 / 34.3	Yes

Conclusion:

- For operation of a single transmitter the equipment qualifies for the categorical exclusion provision of FCC § 2.1091(c) and is exempted from further RF exposure routine evaluation acc. to IC RSS-102 section 2.5.2.

5.2 Compliance with FCC and IC Plane Wave Power Density Limits - single transmitters

Power Density Calculation for a distance between the transmitter and the human body of 20cm				
Band of Operation (MHz)	max EIRP (dBm)	Power Density (mW/cm ²)	FCC/IC Limit (mW/cm ²)	Verdict
BT	6.63	0.0009	1.00 / 0.54	Pass

note: comparison with IC limits is provided for information only but not required according to the result of section 5.1

Conclusion:

- The equipment respects the FCC and IC Plane Wave Power Density Limits for the minimum distance between the antenna and the human body of 20cm, and above.

5.3 Maximum allowed Antenna Gain – Gmax

- not applicable since fixed internal antenna is used in the product;

5.4 Simultaneous Transmission Evaluation

Simultaneous transmission does not occur as there is only a BT LE Radio

6 Revision History

Date	Report Name	Changes to report	Report prepared by
March 28, 2017	EMC-PHIL4-028-16001-FCC-MPE	First Version	James Donnellan
April 04, 2017	EMC-PHIL4-028-16001-FCC-MPE-Rev1	Updated Company Name	James Donnellan