



REPORT No. : SZ17120100S02

RF EXPOSURE EVALUATION REPORT

APPLICANT : Shenzhen Jingwah Information Technology Co., Ltd.
PRODUCT NAME : Laptop
MODEL NAME : N141A, N14500
BRAND NAME : PACKARD BELL
FCC ID : RBD-N141A
STANDARD(S) : 47CFR 2.1093
KDB 447498
ISSUE DATE : 2018-01-23

Tested by:

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Approved by:

Peng Huarui (Supervisor)

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MORLAB

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Change History		
Issue	Date	Reason for change
1.0	2018-01-23	First edition



1. Technical Information

Note: Provide by manufacturer.

1.1 Applicant and Manufacturer Information

Applicant:	Shenzhen Jingwah Information Technology Co., Ltd.
Applicant Address:	4F, Bldg 4, Jinghua Square, No.1 Huafa North Road, Futian District, Shenzhen, China
Manufacturer:	Shenzhen Jingwah Information Technology Co., Ltd.
Manufacturer Address:	4F, Bldg 4, Jinghua Square, No.1 Huafa North Road, Futian District, Shenzhen, China

1.2 Equipment Under Test (EUT) Description

EUT Type:	N141A, N14500
Hardware Version:	EM_A8316C_178B_V1.0
Software Version:	windows 10 home
Frequency Bands:	Bluetooth: 2402 MHz ~ 2480 MHz
Modulation Mode:	Bluetooth:4.2BR+EDR+LE
Antenna type:	PIFA Antenna



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1.3 Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	47 CFR§2.1093	Radio frequency Radiation Exposure Evaluation: portable devices
2	KDB 447498 D01v06	General RF Exposure Guidance



2. Device Category And RF Exposure Limit

Per user manual, this device is a Laptop. Based on 47CFR 2.1093, this device belongs to portable device category with General Population/Uncontrolled exposure.

Portable Devices:

47CFR 2.1093(b)

For purposes of this section, a portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user.

GENERAL POPULATION / UNCONTROLLED EXPOSURE

47CFR 2.1093(d) (2)

Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). General Population/Uncontrolled limits apply when the general public may be exposed, or when persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or do not exercise control over their exposure. Warning labels placed on consumer devices such as cellular telephones will not be sufficient reason to allow these devices to be evaluated subject to limits for occupational/controlled exposure in paragraph (d)(1) of this section.

3. Measurement Of conducted Output Power

1. Bluetooth Average output power

Band	Channel	Frequency (MHz)	Output Power(dBm)		
			GFSK	$\pi/4$ -DQPSK	8-DPSK
BT 2.1+EDR	0	2402	3.24	-0.38	-1.30
	39	2441	3.12	-0.54	-1.30
	78	2480	2.03	-0.78	-2.33

Band	Channel	Frequency (MHz)	Output Power(dBm)
			GFSK
BT4.0	0	2402	1.77
	19	2441	1.45
	39	2480	0.68



4. RF Exposure Evaluation

The device only incorporates a Bluetooth transmitter, so standalone SAR evaluation is required for Bluetooth and simultaneous SAR is not required.

Standalone transmission SAR evaluation

According to KDB 447498 section 4.3.1, the 1-g SAR test exclusion thresholds at test separation Distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$

The maximum tune-up limit power is **2.24 mW @ 2.402GHz**

When Laptop is used on the hand, so use **5mm** as the most conservative minimum test separation distance,

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] = \mathbf{0.29} \leq 3.0$

So SAR evaluation is not required for this device.

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