



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: Peng Fuwei
Peng Fuwei (Test engineer)

Approved by: Peng Huarui
Peng Huarui (Supervisor)

NOTE: This document is issued by MORLAB, the test report shall not be reproduced except in full without prior written permission of the company. The test results apply only to the particular sample(s) tested and to the specific tests carried out which is available on request for validation and information confirmed at our website.





DIRECTORY

- 1. Technical Information..... 3
- 1.1 Applicant and Manufacturer Information..... 3
- 1.2 Equipment Under Test (EUT) Description 3
- 1.3 Applied Reference Documents 4
- 2. Device Category And RF Exposure Limit..... 5
- 3. Measurement Of conducted Output Power..... 6
- 4. RF Exposure Evaluation 7

| 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 |



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.

_____ END OF REPORT _____