# TEST REPORT

| | | |
|---|---|---|
| **Reference No.** | : | WTD21D04037657W002 |
| **FCC ID** | : | ZLZ-WMTSN1 |
| **Applicant** | : | Shenzhen Mindray BIO-Medical electronics Co.,LTD. |
| **Address** | : | Mindray Building, Keji 12th Road South, Hi-tech Ind, Shenzhen, China |
| **Manufacturer** | : | Shenzhen Mindray BIO-Medical electronics Co.,LTD. |
| **Address** | : | 1203 Nanhuan Avenue, Guangming District, Shenzhen, PEOPLE'S REPUBLIC OF CHINA |
| **Product** | : | patient monitor |
| **Model(s)** | : | BeneVision N1 |
| **Brand Name** | : | Mindray |
| **Standards** | : | FCC PART 2.1091 |
| **Date of Receipt sample** | : | 2021-04-23 |
| **Date of Test** | : | 2021-04-23 to 2021-04-28 |
| **Date of Issue** | : | 2021-06-01 |
| **Test Result** | : | **Pass** |

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.


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WALTEK TESTING GROUP CO.,LTD. WALTEK TEST REPORT

Daniel Liu / Designated Reviewer

# 2 Contents

# 3 Revision History

| Test report No. | Date of Receipt sample | Date of Test | Date of Issue | Purpose | Comment | Approved |
|---|---|---|---|---|---|---|
| WTD21D04037657W002 | 2021-04-23 | 2021-04-23 to 2021-04-28 | 2021-06-01 | original | - | Valid |

# 4 General Information

## 4.1 General Description of E.U.T.

| | |
|---|---|
| Product: | patient monitor |
| Model(s): | BeneVision N1 |
| Model Description: | N/A |
| Support: | WMTS |
| Hardware Version: | 1.0 |
| Software Version: | 01.23.00.01 |

## 4.2 Details of E.U.T.

| | |
|---|---|
| Operation Frequency: | 608MHz(608-614MHz)<br>1.4GHz(1395-1400MHz)<br>1.4GHz(1427-1432MHz) |
| Max. RF output power: | ANT 1:608MHz:103.05dBuv/m ,1.4GHz: 100.60 dBuv/m<br>ANT 2: 608MHz: 103.23 dBuv/m, 1.4GHz: 99.70 dBuv/m |
| Type of Modulation: | GFSK |
| Antenna Gain: | ANT 1:608MHz:-0.83dBi,1.4GHz: 1.45dBi<br>ANT 2:608MHz:-0.51dBi,1.4GHz: 1.13dBi |
| Antenna installation: | WMTS: External antenna |
| Ratings: | Battery DC 7.2V, 2500mAh |
| Adapter: | DC 12V, 2.5A, charging from adapter or Dock<br>(Adapter Input: 100-240V~50/60Hz 0.6-1A)<br>(Dock Input: 100-240V~50/60Hz 0.35-0.65A)<br>Manufacturer: FSP GROUP INC.<br>Model No.: FSP030-RCAM-G |

# 5 Test Summary

| Test Items | Test Requirement | Result |
|---|---|---|
| Maximum Permissible Exposure (Exposure of Humans to RF Fields) | 1.1307(b)(1) | PASS |

# 6 Test Facility

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: 7760A**

  Waltek Testing Group Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration number 7760A, October 15, 2015.

- **FCC Test Site 1#– Registration No.: 880581**

  Waltek Testing Group Co., Ltd. EMC Laboratory `has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 880581, April 29, 2014.

- **FCC Test Site 2#– Registration No.: 328995**

  Waltek Testing Group Co., Ltd. EMC Laboratory `has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 328995, December 3, 2014.

# 7 RF Exposure

Test Requirement: FCC Part 1.1307

Test Mode: The EUT work in test mode(Tx).

## 7.1 Requirements

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

## 7.2 The procedures / limit

FCC Part 1.1307:

(A) Limits for Occupational / Controlled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ $cm^2$) | Averaging Time $\|E\|^2$,$\|H\|^2$or S (minutes) |
|---|---|---|---|---|
| 0.3-3.0 | 614 | 1.63 | (100)* | 6 |
| 3.0-30 | 1842 / f | 4.89 / f | (900 / f)* | 6 |
| 30-300 | 61.4 | 0.163 | 1.0 | 6 |
| 300-1500 | | | F/300 | 6 |
| 1500-100,000 | | | 5 | 6 |

(B) Limits for General Population / Uncontrolled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ $cm^2$) | Averaging Time $\|E\|^2$,$\|H\|^2$ or S (minutes) |
|---|---|---|---|---|
| 0.3-1.34 | 614 | 1.63 | (100)* | 30 |
| 1.34-30 | 824/f | 2.19/f | (180/f)* | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | | | F/1500 | 30 |
| 1500-100,000 | | | 1.0 | 30 |

Note: f = frequency in MHz ; *Plane-wave equivalent power density

## 7.3 MPE Calculation Method

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = power density (in appropriate units, e.g. mW/cm$^2$)

P = power input to the antenna (in appropriate units, e.g., mW).

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained

**ANT 1:**

613.46MHz

| Frequency | Antenna Gain (dBi) | Antenna Gain (numeric) | Max.Peak Output Power (dBm) | Peak Output Power (mW) | Power Density (mW/cm$^2$) | Limit of Power Density (mW/cm$^2$) |
|---|---|---|---|---|---|---|
| 613.46 | -0.83 | 0.826 | 8.68 | 7.38 | 0.001213 | 0.409 |

Note: the following is Source-based time-averaged maximum output power Calculation

| Frequency | Source-based time-averaged maximum output power | Substituted (0dBm) | Source-based time-averaged maximum output power |
|---|---|---|---|
| (MHz) | (dBμV/m) | (dBμV/m) | (dBm) |
| 613.46 | 103.05 | 95.2 | 7.85 |

1431.5 MHz

| Frequency | Antenna Gain (dBi) | Antenna Gain (numeric) | Max.Peak Output Power (dBm) | Peak Output Power (mW) | Power Density (mW/cm$^2$) | Limit of Power Density (mW/cm$^2$) |
|---|---|---|---|---|---|---|
| 1431.5 | 1.45 | 1.396 | 3.95 | 2.48 | 0.000690 | 0.95 |

Note: the following is Source-based time-averaged maximum output power Calculation

| Frequency | Source-based time-averaged maximum output power | Substituted (0dBm) | Source-based time-averaged maximum output power |
|---|---|---|---|
| (MHz) | (dBμV/m) | (dBμV/m) | (dBm) |
| 1431.5 | 100.60 | 95.2 | 5.4 |

**ANT 2:**

613.46MHz

| Frequency | Antenna Gain (dBi) | Antenna Gain (numeric) | Max.Peak Output Power (dBm) | Peak Output Power (mW) | Power Density ($mW/cm^2$) | Limit of Power Density ($mW/cm^2$) |
|---|---|---|---|---|---|---|
| 613.46 | -0.51 | 0.889 | 8.54 | 7.14 | 0.001264 | 0.409 |

Note: the following is Source-based time-averaged maximum output power Calculation

| Frequency | Source-based time-averaged maximum output power | Substituted (0dBm) | Source-based time-averaged maximum output power |
|---|---|---|---|
| (MHz) | (dBμV/m) | (dBμV/m) | (dBm) |
| 613.46 | 103.23 | 95.2 | 8.03 |

1431.5 MHz

| Frequency | Antenna Gain (dBi) | Antenna Gain (numeric) | Max.Peak Output Power (dBm) | Peak Output Power (mW) | Power Density ($mW/cm^2$) | Limit of Power Density ($mW/cm^2$) |
|---|---|---|---|---|---|---|
| 1431.5 | 1.13 | 1.297 | 3.37 | 2.17 | 0.000561 | 0.95 |

Note: the following is Source-based time-averaged maximum output power Calculation

| Frequency | Source-based time-averaged maximum output power | Substituted (0dBm) | Source-based time-averaged maximum output power |
|---|---|---|---|
| (MHz) | (dBμV/m) | (dBμV/m) | (dBm) |
| 1431.5 | 99.70 | 95.2 | 4.5 |

# 8 Photographs of test setup and EUT.

Note: Please refer to appendix-BeneVision N1-Photo.

======End of Report======