



# FCC RADIO EXPOSURE TEST REPORT

FCC ID : 2ADZRHA0336GA  
Equipment : Nokia WiFi Beacon 6  
Brand Name : NOKIA  
Model Name : HA-0336G-A  
Applicant : Nokia Shanghai Bell Co. Ltd.  
No. 388, Ningqiao Rd. Pilot Free Trade Zone Shanghai ,  
China 201206  
Manufacturer : Nokia Shanghai Bell Co. Ltd.  
No. 388, Ningqiao Rd. Pilot Free Trade Zone Shanghai ,  
China 201206  
Standard : 47 CFR Part 2.1091

The product was received on Dec. 10, 2019, and testing was started from Jan. 15, 2020 and completed on Apr. 08, 2020. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in 47 CFR Part 2.1091 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Sam Chen

**SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory**

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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### **Photographs of EUT v01**





## Summary of Test Result

| Report Clause | Ref Std. Clause | Test Items          | Result (PASS/FAIL) | Remark |
|---------------|-----------------|---------------------|--------------------|--------|
| 2             | -               | Exposure evaluation | PASS               | -      |

Note: Reference to Sporton Project No.: 9D0907

**Declaration of Conformity:**

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

**Comments and Explanations:**

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

**Reviewed by: Cliff Chang**

**Report Producer: Viola Huang**



# 1 General Description

## 1.1 EUT General Information

| RF General Information |                                                  |                                                  |                                                                                                                                                                                                 |
|------------------------|--------------------------------------------------|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Evaluation Mode        | Frequency Range (MHz)                            | Operating Frequency (MHz)                        | Modulation Type                                                                                                                                                                                 |
| 2.4GHz WLAN            | 2400-2483.5                                      | 2412-2462                                        | 802.11b: DSSS (DBPSK, DQPSK, CCK)<br>802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)<br>VHT: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM )<br>802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM) |
| 5GHz WLAN              | 5150-5250<br>5250-5350<br>5470-5725<br>5725-5850 | 5180-5240<br>5260-5320<br>5500-5700<br>5745-5825 | 802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)<br>802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)<br>802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)                                  |

## 1.2 Table for Multiple Listing

| Model Name | Kit Code     | EMA Code     | Part Description                               |
|------------|--------------|--------------|------------------------------------------------|
| HA-0336G-A | 3FE48064AAAA | 3FE49001AAAA | Beacon6, AX4200, Triband wi-fi6, US plug,1PACK |
|            | 3FE48065AAAA | 3FE49001AAAA | Beacon6, AX4200, Triband wi-fi6,US plug,2PACK  |

## 1.3 Testing Location

| Testing Location                    |        |                                                                                                                               |  |
|-------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------|--|
| <input type="checkbox"/>            | HWA YA | ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.<br>TEL : 886-3-327-3456 FAX : 886-3-327-0973   |  |
| <input checked="" type="checkbox"/> | JHUBEI | ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C.<br>TEL : 886-3-656-9065 FAX : 886-3-656-9085 |  |



## 2 Maximum Permissible Exposure

### 2.1 Limit of Maximum Permissible Exposure

(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 <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> 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 <sup>2</sup> ) | Averaging Time  E  <sup>2</sup> , H  <sup>2</sup> 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

### 2.2 MPE Calculation Method

The MPE was calculated at 26 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

**E** = Electric field (V/m)

**P** = RF output power (W)

**G** = EUT Antenna numeric gain (numeric)

**d** = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$



## 2.3 Calculated Result and Limit

### Exposure Environment: General Population / Uncontrolled Exposure

| Mode     | DG (dBi) | Power (dBm) | EIRP (dBm) | Tolerance (dB) | Tune-up EIRP (dBm) | Tune-up EIRP (W) | Distance (cm) | S (mW/cm <sup>2</sup> ) | S Limit (mW/cm <sup>2</sup> ) |
|----------|----------|-------------|------------|----------------|--------------------|------------------|---------------|-------------------------|-------------------------------|
| 2.4G;G1D | 3.54     | 29.54       | 33.08      | 0.50           | 33.58              | 2.28034          | 26            | 0.26843                 | 1.00000                       |
| 5.2G;D1D | 4.66     | 28.30       | 32.96      | 0.50           | 33.46              | 2.21820          | 26            | 0.26112                 | 1.00000                       |
| 5.3G;D1D | 5.24     | 23.78       | 29.02      | 0.50           | 29.52              | 0.89536          | 26            | 0.10540                 | 1.00000                       |
| 5.6G;D1D | 6.07     | 23.60       | 29.67      | 0.32           | 29.99              | 0.99770          | 26            | 0.12241                 | 1.00000                       |
| 5.8G;D1D | 5.80     | 29.96       | 35.76      | 0.23           | 35.99              | 3.97192          | 26            | 0.46757                 | 1.00000                       |

### Simultaneous Transmission Analysis Mode: WLAN 2.4GHz + WLAN 5GHz Band 1, 2 + WLAN 5GHz Band 3, 4

| Mode     | DG (dBi) | Power (dBm) | EIRP (dBm) | Tolerance (dB) | Tune-up EIRP (dBm) | Tune-up EIRP (W) | Distance (cm) | S (mW/cm <sup>2</sup> ) | S Limit (mW/cm <sup>2</sup> ) | Ratio (S/Limit) |
|----------|----------|-------------|------------|----------------|--------------------|------------------|---------------|-------------------------|-------------------------------|-----------------|
| 2.4G;G1D | 3.54     | 29.54       | 33.08      | 0.50           | 33.58              | 2.28034          | 26            | 0.26844                 | 1.00000                       | 0.26844         |
| 5.2G;D1D | 4.66     | 28.3        | 32.96      | 0.50           | 33.46              | 2.2182           | 26            | 0.26112                 | 1.00000                       | 0.26112         |
| 5.8G;D1D | 5.80     | 29.96       | 35.76      | 0.23           | 35.99              | 3.97192          | 26            | 0.46757                 | 1.00000                       | 0.46757         |
|          |          |             |            |                |                    |                  |               |                         | Sum Ratio                     | 0.99713         |
|          |          |             |            |                |                    |                  |               |                         | Ratio Limit                   | 1               |

Note: The above antenna gain was declared by manufacturer.

————THE END————