RF EXPOSURE EVALUATION REPORT

FCC ID	:	2ADZRBEACON10
Equipment	:	NOKIA WiFi Beacon 10
Brand Name	:	NOKIA
Model Name	:	Beacon 10
Applicant	:	Nokia Shanghai Bell Co., Ltd. No.388, Ningqiao Rd, Pilot Free Trade Zone, Shanghai, 201206 P.R. China
Manufacturer	:	Nokia of America Corporation 2301 Sugar Bush Rd. Raleigh, NC 27612
Standard	:	47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part2.1091 and it complies with applicable limit.

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC evaluation.

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

Approved by: Cona Huang / Deputy Manager

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)

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History of this test report

Report No.	Version	Description	Issued Date
FA330612	Rev. 01	Initial issue of report	May 04, 2023

1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	NOKIA WiFi Beacon 10
Brand Name	NOKIA
Model Name	Beacon 10
FCC ID	2ADZRBEACON10
Wireless Technology and Frequency Range	WLAN 2.4 GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2 GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.3 GHz Band: 5250 MHz ~ 5350 MHz WLAN 5.6 GHz Band: 5470 MHz ~ 5725 MHz WLAN 5.8 GHz Band: 5725 MHz ~ 5850 MHz WLAN 6E: 5925 MHz ~ 6425 MHz, 6425 MHz ~ 6525 MHz, 6525 MHz ~ 6875 MHz, 6875 MHz ~ 7125 MHz
Mode	WLAN: 802.11a/b/g/n/ac/ax HT20/HT40/VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160
EUT Stage	Production Unit

Reviewed by: Jason Wang

Report Producer: Carlie Tsai

2. Maximum RF average output power among production units

<Non-Beamforming>

Mode	Maximum Average power(dBm)
WLAN 2.4GHz	29.51
WLAN 5GHz	29.95
WLAN 6GHz	22.02

<Beamforming>

Mode	Maximum Average power(dBm)
WLAN 2.4GHz	26.79
WLAN 5GHz	28.49
WLAN 6GHz	11.27

3. Determination of exemption

Per 1.1307(b)(3), (i) For single RF sources (i.e., any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

(A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);

(B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold Pth (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). Pth is given by:

$$\text{Pth (mW)} = \text{ERP}_{20cm}\,(d / 20)^{x} \quad \text{for distance } d \le 20cm$$

$$\text{Pth (mW)} = \text{ERP}_{20cm} \quad \text{for distance } 20cm < d \le 40cm$$

$$x = -log10\left(\frac{60}{ERP_{20cm}\sqrt{f}}\right)$$

$$\text{ERP}_{20cm}\text{(mW)} \quad \begin{matrix} 0.3\ GHz \le f < 1.5\ GHz: & 2040\ f \\ 1.5\ GHz \le f \le 6\ GHz: & 3060 \end{matrix}$$

(C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least λ/2π, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of λ/4 or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	1,920 R^2.
1.34-30	3,450 R^2/f^2.
30-300	3.83 R^2.
300-1,500	0.0128 R^2f.
1,500-100,000	19.2R^2.

4. RF Exposure Evaluation

4.1. Standalone assessment

General Note:

1. Pi is mean the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm
2. Pth is mean the exemption threshold power (Pth) according to the § 1.1307(b)(3)(i)(B) formula for fixed, mobile, or portable RF source i.
3. In this report was used Part1.1307(b)(3)(i)(B) perfrom RF Exposure evaluation
4. The distance of 20cm is for this device

<Non-Beamforming>

Band	Antenna Gain (dBi)	Maximum Conducted Power (dBm)	Maximum EIRP (dBm)	Maximum ERP (dBm)	Maximum EIRP (mW)	Maximum ERP (mW)	Pi (dBm)	Pi (mW)	Part1.1307 option(b) Threshold (mW)	Part1.1307 option(b) Pi/Pth
WLAN2.4GHz Band	3.22	29.51	32.73	30.58	1874.99	1142.88	30.58	1142.88	3060.000	0.373
WLAN5GHz Band	3.26	29.95	33.21	31.06	2094.11	1276.44	31.06	1276.44	3060.000	0.417
WLAN6GHz Band	2.71	22.02	24.73	22.58	297.17	181.13	22.58	181.13	3060.000	0.059

<Beamforming>

Band	Antenna Gain (dBi)	Maximum Conducted Power (dBm)	Maximum EIRP (dBm)	Maximum ERP (dBm)	Maximum EIRP (mW)	Maximum ERP (mW)	Pi (dBm)	Pi (mW)	Part1.1307 option(b) Threshold (mW)	Part1.1307 option(b) Pi/Pth
WLAN2.4GHz Band	4.08	26.79	30.87	28.72	1221.80	744.73	28.72	744.73	3060.000	0.243
WLAN5GHz Band	4.41	28.49	32.90	30.75	1949.84	1188.50	30.75	1188.50	3060.000	0.388
WLAN6GHz Band	4.99	11.27	16.26	14.11	42.27	25.76	14.11	25.76	3060.000	0.008

4.2. Collocated assessment

General Note:

1. Either MPE-based exemption may be considered for test exemption for fixed, mobile, or portable device exposure conditions; therefore, the contributions from each exemption in conjunction with the measured SAR (*Evaluatedk* term) shall be used to determine exemption for simultaneous transmission according to Formula (C.1).
2. The sum of the ratios of the applicable terms for MPE-based and MPE shall be less than 1, to determine WLAN 2.4GHz + WLAN 5GHz + WLAN 6GHz simultaneous transmission exposure compliance.

$$\sum_{i=1}^{a}\frac{P_i}{P_{\text{th},i}}+\sum_{j=1}^{b}\frac{ERP_j}{ERP_{\text{th},j}}+\sum_{k=1}^{c}\frac{Evaluated_k}{Exposure\ Limit_k}\leq 1 \qquad (C.1)$$

<Non-Beamforming>

WLAN 2.4GHz Pi/Pth Ratio	WLAN 5GHz Pi/Pth Ratio	WLAN 6GHz Pi/Pth Ratio	Σ (Pi/Pth Ratio) of WLAN 2.4GHz + WLAN 5GHz + WLAN 6GHz
0.373	0.417	0.059	0.849

<Beamforming>

WLAN 2.4GHz Pi/Pth Ratio	WLAN 5GHz Pi/Pth Ratio	WLAN 6GHz Pi/Pth Ratio	Σ (Pi/Pth Ratio) of WLAN 2.4GHz + WLAN 5GHz + WLAN 6GHz
0.243	0.388	0.008	0.639

Conclusion:

According to 47 CFR §1.1307, the RF exposure analysis concludes that the RF Exposure is FCC compliant.