

# RF EXPOSURE EVALUATION REPORT

FCC ID : 2ADZRBEACON24  
Equipment : NOKIA WiFi Beacon 24  
Brand Name : NOKIA  
Model Name : Beacon 24  
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
FA3N0940	Rev. 01	Initial issue of report	Jan. 19, 2024



**1. Description of Equipment Under Test (EUT)**

Product Feature & Specification	
EUT Type	NOKIA WiFi Beacon 24
Brand Name	NOKIA
Model Name	Beacon 24
FCC ID	2ADZRBEACON24
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/be HT20/HT40/VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160/EHT20/EHT40/EHT80/EHT160/EHT320 Bluetooth BR/EDR/LE
EUT Stage	Production Unit

**Reviewed by: Jason Wang**

**Report Producer: Carlie Tsai**

## 2. Maximum RF average output power among production units

### <Non-Beamforming>

#### Ant 1+2+3+4

Mode	Maximum Average power(dBm)
WLAN 5GHz (5150MHz ~ 5350MHz)	29.28

#### Ant A+B+C+D

Mode	Maximum Average power(dBm)
WLAN 2.4GHz	29.99
WLAN 5GHz (5470MHz ~ 5850MHz)	29.57

#### Ant 5+6+7+8

Mode	Maximum Average power(dBm)
WLAN 6GHz	24.34

### <Beamforming>

#### Ant 1+2+3+4

Mode	Maximum Average power(dBm)
WLAN 5GHz (5150MHz ~ 5350MHz)	28.37

#### Ant A+B+C+D

Mode	Maximum Average power(dBm)
WLAN 2.4GHz	29.78
WLAN 5GHz (5470MHz ~ 5850MHz)	29.91

#### Ant 5+6+7+8

Mode	Maximum Average power(dBm)
WLAN 6GHz	20.43

**Note:**

This device has three sets of antennas, and their combinations, supported band, and maximum combined output power are as shown in the table above.



### 3. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposures</b>				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

The MPE was calculated at 31 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

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

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna

## 4. Radio Frequency Radiation Exposure Evaluation

### 4.1. Standalone Power Density Calculation

#### <Non-Beamforming>

##### Ant 1+2+3+4

Band	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 31cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Power Density / Limit
WLAN5GHz Band	5.95	29.28	35.23	3.33	3334.26	0.276	1.000	0.276

##### Ant A+B+C+D

Band	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 31cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Power Density / Limit
WLAN2.4GHz Band	5.88	29.99	35.87	3.86	3863.67	0.320	1.000	0.320
WLAN5GHz Band	5.96	29.57	35.53	3.57	3572.73	0.296	1.000	0.296

##### Ant 5+6+7+8

Band	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 31cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Power Density / Limit
WLAN6GHz Band	5.40	24.34	29.74	0.94	941.89	0.078	1.000	0.078

#### <Beamforming>

##### Ant 1+2+3+4

Band	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 31cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Power Density / Limit
WLAN5GHz Band	5.95	28.37	34.32	2.70	2703.96	0.224	1.000	0.224

##### Ant A+B+C+D

Band	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 31cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Power Density / Limit
WLAN2.4GHz Band	5.88	29.78	35.66	3.68	3681.29	0.305	1.000	0.305
WLAN5GHz Band	5.96	29.91	35.87	3.86	3863.67	0.320	1.000	0.320

##### Ant 5+6+7+8

Band	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 31cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Power Density / Limit
WLAN6GHz Band	5.40	20.43	25.83	0.38	382.82	0.032	1.000	0.032



**4.2. Collocated Power Density Calculation**

Maximum Ant 1+2+3+4 Power Density / Limit	Maximum Ant A+B+C+D Power Density / Limit	Maximum Ant 5+6+7+8 Power Density / Limit	$\Sigma$ (Power Density / Limit) Of Maximum (Ant 1+2+3+4) + Maximum (Ant A+B+C+D) + Maximum (Ant 5+6+7+8)
0.276	0.320	0.078	0.674

**Note:**

1.  $\Sigma$  (Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for (Ant 1+2+3+4) + (Ant A+B+C+D) + (Ant 5+6+7+8).
2. Considering the transmitter of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of all collocated transmitters is compliant.

**Conclusion:**

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.