

RF Exposure Evaluation Report

APPLICANT : Nokia Shanghai Bell Co., Ltd.
EQUIPMENT : Nokia WiFi Beacon 4
BRAND NAME : NOKIA
MODEL NAME : Beacon 4
FCC ID : 2ADZRBEACON4
STANDARD : 47 CFR Part 2.1091
FCC KDB 447498 D01 v06

The product evaluation date was started from Sep. 05, 2025 and completed on Sep. 05, 2025. We, Sporton International Inc. (Kunshan), would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091 and FCC KDB 447498 D01 v06, and pass the limit. Without written approval of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.



Approved by: Si Zhang

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA571804	Rev. 01	Initial issue of report.	Sep. 19, 2025



1. Administration Data

1.1. Testing Laboratory

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Testing Laboratory			
Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR01-KS	CN1257	314309

Applicant	
Company Name	Nokia Shanghai Bell Co., Ltd.
Address	No.388, Ningqiao Rd, Pilot Free Trade Zone, Shanghai, 201206 P.R. China

Manufacturer	
Company Name	Nokia of America Corporation
Address	2301 Sugar Bush Rd. Raleigh, NC 27612

2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	Nokia WiFi Beacon 4
Brand Name	NOKIA
Model Name	Beacon 4
FCC ID	2ADZRBEACON4
Wireless Technology and Frequency Range	WLAN 2.4GHz Band: 2412 MHz - 2462 MHz WLAN 5.2GHz Band: 5180 MHz - 5240 MHz WLAN 5.3GHz Band: 5260 MHz - 5320 MHz WLAN 5.5GHz Band: 5500 MHz - 5720 MHz WLAN 5.8GHz Band: 5745 MHz - 5825 MHz
Mode	WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 2.4GHz 802.11ax HE20/HE40 WLAN 2.4GHz 802.11be EHT20/EHT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac/ax VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160 WLAN 5GHz 802.11be EHT20/EHT40/EHT80/EHT160
Antenna Type	WLAN: Dipole Antenna
EUT Stage	Production Unit

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. WLAN2.4GHz/WLAN5GHz all support SISO and MIMO mode, MIMO tune up power was chosen to perform MPE calculation conservatively.
3. This device support TX beamforming for WLAN 2.4GHz 802.11 ax/be and WLAN 5GHz 802.11 ac/ax/be.
4. For WLAN CDD & Tx Beamforming mode, the MPE calculation performed separately.
5. There are two Antennas for optional: Inpaq antenna and AOT antenna, the detail gain value please refers to following gain table. Please refer to the antenna report for the maximum Single antenna gain and CDD (Cyclic Delay Diversity) directional gain and TXBF (Tx Beamforming) directional gain.

Comments and Explanations:

1. 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.
2. The maximum RF output tune up power, antenna gain also the safe distance used for evaluate RF exposure were declared by manufacturer.

For Antenna Gain:

Manufacturer	Frequency Bands	Maximum Single Antenna gain (dBi)		CDD Gain (dBi)	TXBF Gain (dBi)
		ANT1	ANT2		
AOT antenna	WLAN 2.4GMHz	2.93	3.40	2.15	5.16
	WLAN 5.2GMHz	3.92	3.64	2.79	5.77
	WLAN 5.3GMHz	3.92	3.64	2.79	5.77
	WLAN 5.5GMHz	3.16	2.82	2.87	5.88
	WLAN 5.8GMHz	2.78	3.21	2.86	5.87
Inpaq antenna	WLAN 2.4GMHz	3.54	5.11	2.54	5.11
	WLAN 5.2GMHz	3.80	3.84	2.18	5.08
	WLAN 5.3GMHz	3.80	3.84	2.18	5.08
	WLAN 5.5GMHz	2.83	4.52	2.75	5.70
	WLAN 5.8GMHz	2.69	2.43	1.16	4.13

3. Maximum RF average output tune up power among production units

<For CDD/MIMO Mode>

<2.4GHz WLAN >

Mode		Maximum Average Power (dBm)
		Ant.1+2
2.4GHz	802.11b	30.0
	802.11g	30.0
	802.11n-HT20	29.0
	802.11n-HT40	25.0
	802.11ax-HE20	29.0
	802.11ax-HE40	25.0
	802.11be-EHT20	29.0
	802.11be-EHT40	25.0

<5GHz WLAN >

Mode		Maximum Average Power (dBm)
		Ant.1+2
5.2GHz	802.11a	28.0
	802.11n-HT20	28.0
	802.11n-HT40	30.0
	802.11ac-VHT20	28.0
	802.11ac-VHT40	30.0
	802.11ac-VHT80	23.5
	802.11ac-VHT160	22.0
	802.11ax-HE20	28.0
	802.11ax-HE40	30.0
	802.11ax-HE80	24.0
	802.11ax-HE160	22.5
	802.11be-EHT20	28.0
	802.11be-EHT40	30.0
	802.11be-EHT80	24.0
	802.11be-EHT160	22.5
5.3GHz	802.11a	22.0
	802.11n-HT20	22.0
	802.11n-HT40	23.5
	802.11ac-VHT20	22.0
	802.11ac-VHT40	23.5
	802.11ac-VHT80	20.5
	802.11ax-HE20	22.5
	802.11ax-HE40	23.98
	802.11ax-HE80	20.5
	802.11be-EHT20	22.5
	802.11be-EHT40	23.98



5.5GHz	802.11be-EHT80	20.5
	802.11a	22.0
	802.11n-HT20	22.50
	802.11n-HT40	23.98
	802.11ac-VHT20	22.50
	802.11ac-VHT40	23.98
	802.11ac-VHT80	23.98
	802.11ac-VHT160	23.98
	802.11ax-HE20	22.50
	802.11ax-HE40	23.98
	802.11ax-HE80	23.98
	802.11ax-HE160	23.98
	802.11be-EHT20	22.50
	802.11be-EHT40	23.98
	802.11be-EHT80	23.98
	802.11be-EHT160	23.98
5.8GHz	802.11a	30.00
	802.11n-HT20	30.00
	802.11n-HT40	30.00
	802.11ac-VHT20	30.00
	802.11ac-VHT40	30.00
	802.11ac-VHT80	27.00
	802.11ax-HE20	30.00
	802.11ax-HE40	30.00
	802.11ax-HE80	27.50
	802.11be-EHT20	30.00
	802.11be-EHT40	30.00
	802.11be-EHT80	27.50

Note: WLAN2.4GHz/WLAN5GHz all support SISO/MIMO mode, MIMO tune up power was chosen to perform MPE calculation conservatively.

<For Tx Beamforming Mode>

<2.4GHz WLAN >

Mode		Maximum Average Power (dBm)
		Ant.1+2
2.4GHz	802.11ax-HE20	30.00
	802.11ax-HE40	25.00
	802.11be-EHT20	30.00
	802.11be-EHT40	25.00

**<5GHz WLAN >**

Mode		Maximum Average Power (dBm)
		Ant.1+2
5.2GHz	802.11ac-VHT20	28.00
	802.11ac-VHT40	30.00
	802.11ac-VHT80	23.50
	802.11ac-VHT160	22.00
	802.11ax-HE20	29.00
	802.11ax-HE40	30.00
	802.11ax-HE80	24.00
	802.11ax-HE160	23.00
	802.11be-EHT20	29.00
	802.11be-EHT40	30.00
	802.11be-EHT80	24.00
	802.11be-EHT160	23.00
5.3GHz	802.11ac-VHT20	22.00
	802.11ac-VHT40	23.98
	802.11ac-VHT80	21.00
	802.11ax-HE20	23.00
	802.11ax-HE40	23.98
	802.11ax-HE80	21.00
	802.11be-EHT20	23.00
	802.11be-EHT40	23.98
	802.11be-EHT80	21.00
5.5GHz	802.11ac-VHT20	22.00
	802.11ac-VHT40	23.98
	802.11ac-VHT80	23.98
	802.11ac-VHT160	23.98
	802.11ax-HE20	23.00
	802.11ax-HE40	23.98
	802.11ax-HE80	23.98
	802.11ax-HE160	23.98
	802.11be-EHT20	23.00
	802.11be-EHT40	23.98
	802.11be-EHT80	23.98
	802.11be-EHT160	23.98
5.8GHz	802.11ac-VHT20	30.00
	802.11ac-VHT40	30.00
	802.11ac-VHT80	29.00
	802.11ax-HE20	30.00
	802.11ax-HE40	30.00
	802.11ax-HE80	29.00
	802.11be-EHT20	30.00
	802.11be-EHT40	30.00
	802.11be-EHT80	29.00

Note: WLAN2.4GHz 802.11ax/be and WLAN5GHz 802.11ac/ax/be support Tx Beamforming mode.

4. 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 ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	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				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	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 24 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



5. Radio Frequency Radiation Exposure Evaluation

5.1. Standalone Power Density Calculation

<WLAN MIMO Mode>

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Average EIRP (mW)	Power Density at 24cm (mW/cm ²)	Limit (mW/cm ²)	Power Density / Limit
2.4GHz WLAN	2412.0	5.11	30.00	35.110	3243.396	0.448	1.000	0.448
5.2GHz WLAN	5180.0	3.92	30.00	33.920	2466.039	0.341	1.000	0.341
5.3GHz WLAN	5260.0	3.92	23.98	27.900	616.595	0.085	1.000	0.085
5.5GHz WLAN	5500.0	4.52	23.98	28.500	707.946	0.098	1.000	0.098
5.8GHz WLAN	5745.0	3.21	30.00	33.210	2094.112	0.289	1.000	0.289

<Tx Beamforming Mode>

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Average EIRP (mW)	Power Density at 24cm (mW/cm ²)	Limit (mW/cm ²)	Power Density / Limit
2.4GHz WLAN	2412.0	5.16	30.00	35.160	3280.953	0.454	1.000	0.454
5.2GHz WLAN	5180.0	5.77	30.00	35.770	3775.722	0.522	1.000	0.522
5.3GHz WLAN	5260.0	5.77	23.98	29.750	944.061	0.130	1.000	0.130
5.5GHz WLAN	5500.0	5.88	23.98	29.860	968.278	0.134	1.000	0.134
5.8GHz WLAN	5745.0	5.87	30.00	35.870	3863.670	0.534	1.000	0.534

Note:

- For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band.
- For WLAN 2.4GHz/5GHz, chose the maximum RF output tune up power and the maximum antenna gain of all antennas among same frequency WLAN bands to perform MPE calculation conservatively.
- WLAN2.4GHz and WLAN5GHz chose the higher SISO gain as MIMO gain to perform MPE calculation.

5.2. Collocated Power Density Calculation

<WLAN 2.4GHz + WLAN 5GHz >:

Maximum WLAN 2.4GHz Power Density / Limit	Maximum WLAN 5GHz Power Density / Limit	Σ (Power Density / Limit) of WLAN 2.4GHz + WLAN 5GHz
0.454	0.534	0.988

Note:

- Σ (Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for WLAN 2.4GHz + WLAN 5GHz.
- Considering all transmitter of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE collocated transmitters is compliant.

Conclusion:

According to 47 CFR §2.1091, the equipment at least 24 cm to show compliance with the power density limit, the RF exposure analysis concludes that the RF Exposure is FCC compliant.

-----THE END-----