

EXHIBIT 5

RF EXPOSURE ASSESSMENT

Section 1.1307 (b) Environmental Assessment Requirement for Equipment Authorization

Commission actions granting construction permits, licenses to transmit or renewals thereof, equipment authorizations or modifications in existing facilities, require the preparation of an Environmental Assessment (EA) if the particular facility, operation or transmitter would cause human exposure to levels of radiofrequency radiation in excess of the limits in §§ 1.1310 and 2.1093 of this chapter.

Section 1.1310 Radio Frequency Radiation Exposure Limits

The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in Section 1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of § 2.1093 of this chapter. Further information on evaluating compliance with these limits can be found in the FCC’s OST/OET Bulletin Number 65, “Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radiofrequency Radiation.”

Response

The **Nokia AHBCD AirScale Dual RRH 4T4R 240W** is a new Remote Radio Head (RRH) (hereinafter referred to as “**AHBCD**”) for operation under the regulations of FCC Part 22 - Public Mobile Services operating in the Band 869-894 MHz, FCC Part 27 - MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES operating in the Frequency Band 746-758 MHz, and FCC Part 90 - PRIVATE LAND MOBILE RADIO SERVICES Equipment operating in the Frequency Band 860-869 MHz.

The Nokia AHBCD AirScale Dual RRH 4T4R 240W is typically installed on poles or walls in fixed locations. Therefore, the AHBCD is neither a portable nor a mobile wireless device.

Table 13.1 Product Specifications on AHBCD (URBAN)

Product	Technologies	Transmitting Frequency (MHz)	Max Total Output Conducted Power (dBm rms)	Max Total Output EIRP Power (dBm rms)
AHBCD	LTE-FDD 5, 10, & 15 MHz 5G-NR 5, 10, 15 & 20 MHz Q16/64/256QAM	Band 5 - 869 – 894 Band 13 - 746-756 Band 26 - 860 - 869	53.8	75.15

Table 13.2 Product Specifications on AHBCD (RURAL)

Product	Technologies	Transmitting Frequency (MHz)	Max Total Output Conducted Power (dBm rms)	Max Total Output EIRP Power (dBm rms)
AHBCD	LTE-FDD 5, 10, & 15 MHz	Band 5 - 869 – 894	53.8	78.16
	5G-NR 5, 10, 15 & 20 MHz	Band 13 - 746-756		
	Q16/64/256QAM	Band 26 - 860 - 869		

The information on Nokia supplied antennas is provided in Table 13.3

The limits specified in FCC Section 1.1310 Table 1(B) for occupational/controlled exposure and general population/uncontrolled exposure, which are tabulated below in Table 13.4, shall be met.

All of the transmitters installed in the AHBCD operate in the frequency range of 746 MHz – 894 MHz. The maximum power density thus needs to be less than 0.5 mW/cm² for general population/uncontrolled environment and 2.49 mW/cm² for occupational/controlled environment.

Per FCC’s OST/OET Bulletin Number 65, the appropriate EIRP (equivalent or effective isotropically radiated power) limits can be calculated based on the relationship between power density and EIRP, i.e.,

$$S = \frac{EIRP}{4\pi R^2}, \tag{1}$$

where S is the power density in mW/cm², R is the distance to the center of radiation of the antenna in cm and EIRP is in mW.

Table 13.3 (a) AHBCD Antenna

Antenna	Deployment Area	Model	Antenna Gain (dBi)
Directional	URBAN	AHBCD	21.35

Table 13.3 (b) AHBCD Antenna

Antenna	Deployment Area	Model	Antenna Gain (dBi)
Directional	RURAL	AHBCD	24.36

Table 13.4 Limits for Occupational/Controlled Exposure and General Population/Uncontrolled Exposure (FCC Section 1.1310 Table 1(B))

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Average Time E ² , H ² or S (minutes)
(A) Limits for Occupational/Controlled Exposure				
300 - 1500			F/300	6
1500 - 100,000			5.0	6
(B) Limits for General Population/Uncontrolled Exposure				
300 - 1500			F/1500	30
1500 - 100,000			1.0	30

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

When all transmitters operate simultaneously, the EIRP and thus power density from all transmitters gives the worst-case scenario.

Table 13.3 (a) Minimum RF Safety Distances for Uncontrolled Exposure (URBAN)

Module	Freq Band (GHz)	Maxi Total P _{out} (4x4) (dBm)	Antenna Gain	Maximum Total EIRP (dBm)	Maximum Total EIRP (mW)	Limit of Power Density S (mW/cm ²)	RF Safety Distance (cm)
AHBCD	869	53.8	21.35	75.15	32734069.49	0.50	2283.07

Table 13.3 (b) Power Density at the Proposed Minimum RF Safety Distance (2283.10 cm)

Module	Freq (MHz)	Maxi Total EIRP (dBm)	Maxi Total EIRP (mW)	RF Safety Distance (cm)	Power Density S (mW/cm ²)
AHBCD	869	53.8	32734069.49	2283.10	0.499

Table 13.4 (a) Minimum RF Safety Distances for Controlled Exposure

Module	Freq (GHz)	Maxi Total EIRP (dBm)	Maxi Total EIRP (mW)	Limit of Power Density S (mW/cm ²)	RF Safety Distance (cm)
AHBCD	869	53.8	32734069.49	2.49	1023.07

Table 13.4 (b) Power Density at the Proposed Minimum RF Safety Distance (1023.10 cm)

LTE Band	Freq (GHz)	Maximum Total EIRP (dBm)	Maximum Total EIRP (mW)	RF Safety Distance (cm)	Power Density S (mW/cm ²)
AHBCD	869	53.8	32734069.49	1023.10	2.489

Table 13.5 (a) Minimum RF Safety Distances for EUT Operation under Maximum Capacity and Uncontrolled Exposure (RURAL)

Module	Freq Band (GHz)	Maxi Total P _{out} (4x4) (dBm)	Antenna Gain	Maximum Total EIRP (dBm)	Maximum Total EIRP (mW)	Limit of Power Density S (mW/cm ²)	RF Safety Distance (cm)
AHBCD	869	53.8	24.36	78.16	65463617.41	0.50	3228.644

Table 13.5 (b) Power Density at the Proposed Minimum RF Safety Distance for EUT Operation under Maximum Capacity and Uncontrolled Exposure (3228.70 cm)

LTE Band	Freq (GHz)	Maxi Total EIRP (dBm)	Maxi Total EIRP (mW)	RF Safety Distance (cm)	Limit of Power Density S (mW/cm ²)
AHBCD	869	53.8	65463617.41	3228.7	0.499

Table 13.6 (a) Minimum RF Safety Distances for EUT Operation under Maximum Capacity and Controlled Exposure

LTE Band	Freq (GHz)	Maxi Total EIRP (dBm)	Maxi Total EIRP (mW)	Limit of Power Density S (mW/cm ²)	RF Safety Distance (cm)
AHBCD	869	53.8	65463617.41	2.49	1446.79

Table 13.6 (b) Power Density at the Proposed Minimum RF Safety Distance for EUT Operation Under Maximum Capacity and Controlled Exposure (1446.90 cm)

LTE Band	Freq (GHz)	Maxi Total EIRP (dBm)	Maxi Total EIRP (mW)	RF Safety Distance (cm)	Power Density S (mW/cm ²)
AHBCD	869	53.8	65463617.41	1446.9	2.489

Results

The results are summarized below in Tables 13.7.

Table 13.7(a) Minimum RF Safety Distances for AHBCD

Exposure	RF Safety Distance (cm)	RF Safety Distance (m)	Total Power Density S (mW/cm ²)	Limit of Power Density S (mW/cm ²)
Occupational/Controlled	1023.10	10.23	2.489	2.49
General Population/Uncontrolled	2283.10	22.83	0.499	0.5

Table 13.7(b) Minimum RF Safety Distances for AHBCD Operation Under Maximum Capacity

Exposure	RF Safety Distance (cm)	RF Safety Distance (m)	Total Power Density S (mW/cm ²)	Limit of Power Density S (mW/cm ²)
Occupational/Controlled	1446.90	14.47	2.489	2.49
General Population/Uncontrolled	3228.70	32.29	0.499	0.5

Therefore, the RF safety distance for the Nokia **AHBCD AirScale Dual RRH 4T4R 240W** shall be larger than 1446.90 cm (14.47 m) for occupational/controlled exposure and larger than 3228.70 cm (32.29 m) for general population/uncontrolled exposure when operate under the maximum capacity with 20 MHz Carriers.