

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 **AirScale Indoor pico RRH 4T4R n48 AWPQY/Z** is typically installed on poles or walls in fixed locations. Therefore, the AWPQY/Z is neither a portable nor a mobile wireless device. The Nokia AWPQY/Z is a 4 port radio head that transmits 0.25 Watts per port over the B48/n48 spectrum (3755 – 3700 MHz). This product supports LTE 10MHz, 20 MHz single carriers, and 5G NR 20, 30, 40, 50, 60, 70, 80, 90, and 100 MHz single carriers utilizing QPSK, 16 QAM, 64QAM and 256QAM modulation formats. The 4 individual transmit ports are identical in design, rated power and performance. The RF exposure assessment for the overall AWPQY/Z will be evaluated separately to ensure the compliance.

The AWPQY/Z operate with integrated antennas for B48/n48 band. The supported antennas with their gains are Amphenol (5 dBi), Spinner (4.5 dBi), Amplitec (6.0 dBi), Commscope (5.2 dBi), and Huber Suhner (4.5 dBi). The maximum antenna gain of 6.0 dBi will be used to demonstrate RF Exposure Compliance.

The information on Nokia supplied antennas with the highest gain is provided in Table 13.1.

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 13.2, shall be met.

All the transmitters installed in the AWPQY/Z operate in the frequency range of 3.55 GHz – 3.70 GHz. The maximum power density thus needs to be less than 1.0 mW/cm² for general population/uncontrolled environment and 5.0 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.,

$$S = \frac{EIRP}{4\pi R^2}, \quad (1)$$

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 13.1 AWPQY/Z Antenna

Antenna Type	Model	Antenna Gain (dBi)
Integrated	Amplitec	6.0

Table 13.1(a) Maximum Output Power Capacity (100MHz Bandwidth)

Configuration (Widest Bandwidth)	Maxi Output Power EIRP Total
100 MHz	40 dBm

Table 13.2 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 in 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

LTE/NR Band	Freq (GHz)	Maxi Total EIRP (dBm)	Maxi Total EIRP (mW)	Limit of Power Density S (mW/cm ²)	RF Safety Distance (cm)
B48/n48	3.550	40.0	10000	1	28.22

Table 13.3 (b) Power Density at the Proposed Minimum RF Safety Distance of 28.25 cm

LTE/NR Band	Freq (GHz)	Maxi Total EIRP (dBm)	Maxi Total EIRP (mW)	RF Safety Distance (cm)	Power Density S (mW/cm ²)
B48/n48	3.550	40	10000	28.25	0.9976

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

LTE/NR Band	Freq (GHz)	Maxi Total EIRP (dBm)	Maxi Total EIRP (mW)	Limit of Power Density S (mW/cm ²)	RF Safety Distance (cm)
B48/n48	3.550	40	10000	5	12.62

Table 13.4 (b) Power Density at the Proposed Minimum RF Safety Distance of 12.65 cm

LTE/NR Band	Freq (GHz)	Maximum Total EIRP (dBm)	Maximum Total EIRP (mW)	RF Safety Distance (cm)	Power Density S (mW/cm ²)
B48/n48	3.550	40	10000	12.65	4.975

Results

The results are summarized below in Tables 13.5.

Table 13.5 Minimum RF Safety Distances for AWPQY/Z RF Module

Exposure	RF Safety Distance (cm)	Total Power Density S (mW/cm ²)	Limit of Power Density S (mW/cm ²)
Occupational/Controlled	12.65	4.975	5
General Population/Uncontrolled	28.25	0.9976	1

Therefore, the RF safety distance for the **Nokia AirScale Indoor pico RRH 4T4R n48 AWPQY/Z** RF module shall be larger than 12.65 cm or 0.1265 m for occupational/controlled exposure and larger than 28.25 cm or 0.2825 m for general population/uncontrolled exposure.