

# **Exhibit Q: RF Exposure**

**FCC ID: HN2MG18**

## Compliance with 47 CFR 2.1091

*“(c) Mobile devices ... authorized under subpart H of part 22 of this chapter, part 24 of this chapter, part 25 of this chapter, part 26 of this chapter, part 27 of this chapter, part 80 of this chapter (ship earth stations devices only) and part 90 of this chapter are subject to routine environmental evaluation for RF exposure prior to equipment authorization or use if they operate at frequencies of 1.5 GHz or below and their effective radiated power (ERP) is 1.5 watts or more, or if they operate at frequencies above 1.5 GHz and their ERP is 3 watts or more. ... All other mobile and unlicensed transmitting devices are categorically excluded from routine environmental evaluation for RF exposure prior to equipment authorization or use, except as specified in §§ 1.1307(c) and 1.1307(d) of this chapter....”*

The EUT will only be used with a separation distance of 20 centimeters or greater between the antenna and the body of the user or nearby persons and can therefore be considered a mobile transmitter per 47 CFR 2.1091 (b). The single antenna is integral to the EUT. There are no provisions for the connection of any other antennas. The EUT will be used as part of a hand-held scanner. There is no provision for carrying or attaching the device to a person’s body (e.g. belt-clip). During normal use, the antenna is greater than 5 cm from the user’s hand

The maximum peak power was measured to be 32.5 dBm (EIRP) = 1.08 W (ERP). The transmit frequency is greater than 1.5 GHz, therefore the EUT is categorically excluded from routine environmental evaluation per 47 CFR 2.1091(c).

The MPE estimates are as follows:

Table 1 in 47 CFR 1.1310 defines the maximum permissible exposure (MPE) for the general population as 1mW/cm<sup>2</sup>. The exposure level at a 20 cm distance from the EUT’s transmitting antenna is calculated using the general equation:

$$S = (PG)/4\pi R^2$$

Where: S = power density (mW/cm<sup>2</sup>)

P = power input to the antenna (mW)

G = numeric power gain relative to an isotropic radiator

R = distance to the center of the radiation of the antenna (20 cm = limit for MPE estimates)

PG = EIRP

Solving for S, the maximum power density 20 cm from the transmitting antenna is summarized as follows:

Antenna Manufacturer	Antenna Type	Antenna Part No.	Transmit Frequency (MHz)	Measured EIRP (mW)	Power Density @ 20 cm (mW/cm <sup>2</sup> )	Maximum Permitted Power Density (mW/cm <sup>2</sup> )
Centurion	omni	CAF25941	1880	1778	0.354	1

If source-based time averaging is considered, the power density at 20 cm can be further reduced (per 2.1091(d)(2)). The EUT is a GSM radio so the time-averaged power density is actually 1/8 the value of the un-modulated carrier. Thus, with source-based time averaging applied, the power density becomes .044mW/cm<sup>2</sup>.