

APPENDIX A: RF EXPOSURE INFORMATION

FCC RULES AND REGULATIONS PART 1.1307, 1.1310, 2.1091, 2.1093:

General Information:

FCCID: O6YUTS-EA1H75B

Environment: Occupational User/Controlled Exposure

Device category: Portable per Part 2.1093

Operating Configurations and Test Conditions:

Antenna Type(s):

Antenna	Type	Gain (dBi)	Gain (numeric)
UT STARCOM, INC.	OMNI- DIRECTIONAL	7.0	5.0

Operating Conditions:

The UTS-EA1H75B has an internal 7.0 dBi antenna used to communicate within a PHS telephony communications system.

Test signal, Time-averaging, Maximum Measured Output Power:

Modulation Type/Mode: TDMA-TDD

Frequency Range	Frequency Tolerance (ppm)	Emission Designator
1893.65-1909.95 MHz	13	277KDXW

Output Power (Watt/dBm)	High (Watt)	High (dBm)	Time averaging (12.5% Duty Cycle = -8.9 dB)
EIRP	0.363	25.6	16.7 dBm / 0.047W

Duty cycle is based on a 12.5 % (-8.9 dB) correction.

Calculation:

$$10 \log (.125) = -8.9 \text{ dB}$$

From FCC 1.1310 table 1A, the maximum permissible RF exposure for an uncontrolled environment is 1 mW/cm².

The Electric field generated for a 1mW/cm² exposure (S) is calculated as follows:

$$S = \frac{E^2}{Z}$$

where:

S = Power density

E = Electric field

Z = Impedance

$$E(V/m) = \sqrt{S \times Z}$$

$$\text{If } 1 \text{ mW/cm}^2 = 10 \text{ W/m}^2$$

The impedance of free space is 377 ohms, where E and H fields are perpendicular.

Thus:

$$E(V/m) = \sqrt{10 \times 377} = 61.4 \text{ V/m}$$

MPE Calculation:

The maximum distance, from the antenna at which MPE is met or exceeded, is calculated from the equation relating field strength E in V/m, transmit power P in Watts, transmit antenna numeric gain G, and separation distance in meters above and solving for d below:

$$d = \frac{\sqrt{30 \times P \times G}}{E} \quad 0.043m = \frac{\sqrt{30 \times 0.047 \times 5.0}}{61.4}$$

The limit for general population/uncontrolled exposure environment is 1 mW / cm²

SEPARATION DISTANCE:

Separation Distance ^A	Antenna Gain (dBi)	
	+7	
Power ^B (Watt)	(in)	(cm)
0.047	1.7	4.3

Notes:

^A = Distances are calculated for the largest (worst-case) separation distance as applicable

^B = Measured output power