APPENDIX I: MAXIMUM PERMISSIBLE EXPOSURE

FCC RULES AND REGULATIONS PART 1.1307, 1.1310, 2.1091, 2.1093: RF EXPOSURE COMPLIANCE

1. GENERAL INFORMATION:

- FCC ID: OW5BST1900
- Environment: General Population/Uncontrolled Exposure
- Device category: Mobile per Part 2.1093

2. OPERATING CONFIGURATIONS AND TEST CONDITIONS:

2.1 ANTENNA TYPE(S):

Antenna	Type	EIRP(W)	Gain
MOBILE COMMUNICATIONS TECHNOLOGIES, INC.	MAGNETIC MOUNT ANTENNA	1.977	2.0
MOBILE COMMUNICATIONS TECHNOLOGIES, INC	GLASS MOUNT ANTENNA	0.528	-3.7

3. OPERATING CONDITIONS:

The BST1900 Booster is an automobile cellular band amplifier for uplink frequencies 1850-1910 MHz; the peak radiated (EIRP) output power does not exceed 2 W.

4. TEST SIGNAL, TIME-AVERAGING, MAX. MEASURED OUTPUT POWER:

Modulation Type/Modes: TDMA IS136

Frequency Range	Frequency Tolerance (ppm)	Emission Designator
1850-1910 MHz	N/A	AMP

Antenna Type)	EIRP Highest value (Watt)	Time averaging (__% Duty Cycle)
Magnetic mount antenna	1.977	N/A

From FCC 1.1310 Table 1A, the maximum permissible RF exposure for an uncontrolled environment is 1 mW/cm^2.
The Electric field generated for a 1mW/cm^2 exposure (S) is calculated as follows:

$S = E^2/Z$

where:
S = Power density
E = Electric field
Z = Impedance.

$$E = \sqrt{S \cdot Z}$$

1 mW/cm^2 = 10 W/m^2

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

Thus:

$$E = \sqrt{10 \cdot 377} \quad = \quad 46.4 \text{ V/m which is equivalent to } 0.57 \text{mW/cm}^2$$

Using the relationship between Electric field E, Power in watts P, and distance in meters d, the corresponding Antenna numeric gain G and the transmitter output power:

$$E(V/m) = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power density: } P_d(mW/cm^2) = \frac{E^2}{3770}$$

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:

$$d = \frac{\sqrt{30 \times P \times G}}{E} \qquad 0.17m = \frac{\sqrt{30 \times 1.977}}{46.4}$$

The limit for general population/uncontrolled exposure environment from 300 to 1500MHz is f/1500 mW/cm^2.

SEPARATION DISTANCE:

Highest EIRP Power = 1.977W	
Separation Distance	
(in)	(m)
6.7	0.17