

RF exposure exhibit

FCC RF Exposure Requirements

General information:

FCCID: S4RBST100

Modulation: CDMA, GSM, AMPS, TDMA

Device category: Mobile / Part 2.1091

Environment: General Population/Uncontrolled Exposure

Mobile devices that operate in the Cellular Service authorized under subpart H of part 22 is 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 (2.46WEIRP) or more, or if they operate at frequencies above 1.5 GHz and their ERP is 3 watts (4.92WEIRP) or more.

Otherwise, compliance with the power density limits of 1.1310 is required.

Antenna:

The device is comprised of an external radio frequency power amplifier with a maximum output power of 3W in the 824-849MHz band, a coaxial cable with a loss of at least 2dB at 824-849MHz, and antennas with a gain of less than 0.5 dBi. This device does not exceed the maximum of 7WERP per Part 22H according to the data and accessories marketed with this amplifier. The maximum antenna gain and cable loss chosen for the calculations overestimate the maximum EIRP, as found for such applications.

Typical antennas, of the type listed in the user's manual, 15" dual band magnet with max gain of 0.5dBi or glass mount antenna with max gain of 0.5dBi.

They would yield a 0.5 dBi gain if mounted with a perfect ground. However, they are used in applications where the measurement should be made in free space in the case of glass mount and with an imperfect ground plane for magnet mount. The actual rating for such antenna installed on the roof of a vehicle or a window is lower than 0.5dBi.

This device has provisions for operation in a vehicle.

Configuration	Antenna p/n	Type	Max. Gain (dBi)
Passenger car	Any	Mag mount	0.5
Truck	Any	Thru glass	0.5

Operating configuration and exposure conditions:

The conducted output power is 35.3dBm = 3.4 Watt

Vehicle Operation: The maximum antenna gain that can be used is 0.5dBi. A coaxial cable with a loss of at least 2.0dB at 824-849MHz .
For such configuration the maximum EIRP is 2.40Watt.

MPE Calculation:

The minimum separation distance is calculated as follows:

$E(V/m) = \frac{\sqrt{30 \times P \times G}}{d}$	$\text{Power density: } P_d(mW/cm^2) = \frac{E^2}{3770}$
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The limit for general population/uncontrolled exposure environment is 0.55mW/cm² for 300<freq.<1,500MHz.

Channel Frequency: 836.5MHz

Po := 3400 mWatts	dBd := -2.65 antenna gain	f := 836.5 Frequency in MHz	
G := dBd + 2.15 gain in dBi			
Gn := 10 ^{G/10} gain numeric	S := f/1500 1500 for uncontrolled		
Gn = 0.891	S = 0.558	$\frac{mW}{cm^2}$	
$R := \sqrt{\frac{(Po \cdot Gn)}{(4 \cdot \pi \cdot S)}}$		$\text{Rinches} := \frac{R}{2.54}$	
R = 20.794 distance in centimeters required for compliance		Rinches = 8.187	

Conclusion:

The device complies with the MPE requirements by providing a safe separation distance of 20 cm between the antenna, including any radiating structure, and any persons when normally operated.