FCC RF Exposure Requirements

General information:

FCCID: H4JAMP-4-150
Device category: Mobile per Part 2.1091
Environment: Controlled Exposure

Mobile devices that operate under 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. However, compliance with the power density limits of 1.1310 is not required.

Antenna:

The manufacturer does not specify an antenna for this device and the device is fixed mounted type designed for 19 inch racks.

Configuration	Antenna p/n	Type	Max. Gain (dBi)
Fixed	Any	omni	0 to7

Operating configuration and exposure conditions:

The conducted output power is 30 Watts. In typical use the duty cycle can approach 100%. The manufacturer also markets this device only for occupation use. The general population limit will be used as exposure cannot be controlled.

- Part 2.1091 states that devices are excluded from routine evaluation if the EIRP is less than 2.46Watt (or 1.5WERP).

A coaxial cable of the type RG 8 has a loss of 1dB for a length of 30 feet. A typical installation would have at least 30 ft of coaxial cable.

MPE Calculation:

The minimum separation distance is calculated as follows:

The limit for occupation/controlled exposure environment below 300 MHz is 0.2 mW/cm^2.

Channel frequency: 150-174 MHz
The conducted power output is: 30 Watts
The coax loss was taken as: 1 dB.
Antenna gain was taken as: 7 dBi
100% talk time in 30 minutes

$W := 30.0$ power in Watts (conducted)

$D := 1$ Duty Factor in decimal % (1=100%) 1 for FM

$E := 30$ exposure time in minutes

$U := 30$ (use 6 for controlled and 30 for uncontrolled)

$$Wexp := W \cdot D \cdot \left(\frac{E}{U}\right)$$

$Wexp = 30$ Watts

$$PC := \left(\frac{E}{U}\right) \cdot 100$$

$PC = 100$ % on time

$Po := 30000.0$ mWatts

$dBd := 4.85$ antenna gain in dBd

$G1 := dBd + 2.15$ gain in dBi

$G1 = 7$ dBi

$CL := 1.$ dB coax loss

$G := G1 - CL$

$$Gn := 10^{\frac{G}{10}}$$ gain numeric

$Gn = 3.981$

$$R := \sqrt{\frac{(Po \cdot Gn)}{(4 \cdot \pi \cdot S)}}$$

$R = 217.992$ distance in centimeters required for compliance

$f := 300.0$

$$S := \frac{f}{1500}$$

See 47 CFR 1.1310

$S = 0.2$ $\frac{mW}{cm^2}$

$$inches := \frac{R}{2.54}$$

$inches = 85.824$

$$ft := \frac{inches}{12}$$

$ft = 7.152$

<u>Proposed RF exposure safety information to include in User's Manual</u>:

"FCC RF Exposure Requirements:

CAUTION:

The antennas used for this Amplifier must be fixed-mounted on outdoor permanent structures. RF exposure compliance is addressed at the time of licensing, as required by the responsible FCC Bureau(s), including antenna co-location requirements of Section 1.1307(b)(3).

Failure to observe these restrictions will result in exceeding the FCC RF exposure limits.