General information:

APPLICANT: AVIDYNE CORPORATION
FCC ID: RZYIFDXXXV

Device category: Mobile per Part 2.1091
Environment: Controlled Exposure

Mobile devices that operate under Part 87 of this chapter are subject to evaluation for RF exposure prior to equipment authorization.

Antenna:

The manufacturer does not specify an antenna for this device and the device is fixed mounted for use in aircraft only.

Configuration	Antenna p/n	Type	Max. Gain (dBi)
Fixed	Any	omni	3

Operating configuration and exposure conditions:

The conducted output power is 16 Watts. In typical use the duty cycle is 50 %. The general population limit will be used as exposure is usually not controlled.

A coaxial cable of the type RG 58 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:

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

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

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Channel frequency: 118-138 MHz
The conducted power output is: 16 Watts
The coax loss was taken as: 1 dB.
Antenna gain was taken as: 3 dBi
50% talk time in 30 minutes

$W := 16.$ power in Watts

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

1 for FM
0.6 for SSB

$E := 15$ exposure time in minutes

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

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

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

$Wexp = 8$ Watts

$PC = 50$ % on time

$Po := 8000$ mWatts

$f := 300$ Frequency in MHz

$dBd := .85$ antenna gain in dBd

$G1 := dBd + 2.15$ gain in dBi

$$S := \frac{f}{1500}$$ power density limit for uncontrolled exposure

$G1 = 3$ dBi

$CL := 1.0$ dB coax loss

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

$G := G1 - CL$

General population
S is 1 between 1500 and 100k MHz
S is f/1500 for 300 to 1500 MHz
S is 0.2 between 30 and 300 MHz

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

Occupational
S is 1 between 30 and 300 MHz
S is f/300 between 300 and 1500 MHz
S is 5 between 1500 and 100k MHz
(See 47 CFR 1.1310)

$Gn = 1.585$

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

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

$R = 71.027$ distance in centimeters required for compliance

$inches = 27.963$

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

$ft = 2.33$

CONCLUSION:

The device complies with the MPE requirements by providing a safe separation distance of 71 cm between the antenna, including any radiating structure, and any persons when normally operated.

PROPOSED RF EXPOSURE SAFETY INFORMATION TO INCLUDE IN USER'S MANUAL:

"FCC RF EXPOSURE REQUIREMENTS:

CAUTION:

This transmitter must be restricted to work related operations in a Controlled RF exposure environment. All qualified end-users of this device must have the knowledge to control their exposure conditions and/or duration, and the exposure conditions and/or duration of their passengers and bystanders, to comply with the General Population / Uncontrolled MPE limit and requirements.

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 0.71m (2.33 ft) from all persons.

Nam Nguyen
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