

From: Chuck Zappala
To: John Kennedy
Date: July 11, 2005
Subject:
FCC File # 0239-EX-PL-2004

Message:

Meeting NTIA Recommendation Chap. 8.3.28
Authorizing GPS Re-Radiators Under Specific Circumstances
(GPS Re-Radiation (Re-Rad) System to Support Military Aircraft
Production)

The Boeing Company
St. Louis, MO

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Reference: WB9XXP File Number 0357-EX-ST-2004
Submitted: 7/11/05

by

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This document is in response to the FCC's request for a compliance
statement for
Chapter 8.3.28.

The following is the text of the FCC's Request:

In order to perform GPS re-radiation, the maximum equivalent isotropically
radiated power must

be such that the calculated emissions are no greater than -140 dBm/ 24 MHz at a distance of 100 feet (30 meters) from the building where the test is being conducted. Calculations showing compliance with this requirement must be provided with this application for frequency assignment and should be based on free space propagation with no allowance for building attenuation.

Also, please submit the name and telephone number (preferably the cell phone number) of a person who will be available to stop transmissions at all times during GPS re-radiation operation of the device under any condition.

The following is Boeing's response:

Chapter 8.3.28 Item 7

RF power from antenna to the 100 foot measurement point is calculated as:

Gain of the antenna at the -9.7 degree lobe of (negative) tilt is -7.5 dB. The antenna is located

30 feet above the factory floor illuminating an area directly below about 100 feet in diameter

where the aircraft is located. The antenna is placed no less than 75 feet from any building

outside edge perimeter.

Frequency of interest is GPS L1 1575.42 MHz. The roof mounted antenna has a built-in bandpass

filter with 60 dB skirts at +/- 1.0 MHz

Main lobe power at each antenna + Side lobe loss to negative tilt = Side lobe power from any

antenna toward the corresponding measurement point

$(-74.0 \text{ dBm}) + (-10.5 \text{ dB}) = -84.5 \text{ dBm}$ or 3.5 Pico watts

75 feet min. from any antenna to building perimeter + 100 feet to measurement point = 175 foot

free space path loss

Therefore using the free space equation: the

Side lobe power from any antenna + 175 foot path loss = RF at 100 feet from building perimeter

$(-84.5 \text{ dBm}) + (-70.9 \text{ dB}) = -155.4 \text{ dBm}$

This value exceeds the requirements of Item 7 by 15.4 dB.

Chapter 8.3.28 Item 10

A "Stop Buzzer" point of contact for the authorized device must be identified and available at all times during GPS re-radiation operation of the device under any condition.

Name, Office Desk, Office Mobile, Office Pager, Home Phone

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Chapter 8.3.28, Items 1 to 6, 8 and 9

Boeing certifies compliance with all other items listed in Chapter 8.3.28.