10 April, 2001

Federal Communications Commission
7435 Oakland Mills Road
Columbia, MD 21046

Attention: Frank Coperich
fcoperic@fcc.gov
FCC Application Processing Branch

Re: FCC ID PDGBR-3501
Applicant: Infinition inc
Correspondence Reference Number: 18801
731 Confirmation Number: EA99716

Subject: RF Exposure Issues Identified

Mr. Coperich,

This letter is in response to your e-mail dated 10 April, 2001.

The following Warning Statement:

> *"Based on limits specified by the Federal Communication Commission (FCC) on Radio Frequency (RF) emissions in a general population environment, continued exposure to radiation should be avoided within 1.1 meter in front of the radar. Radiation levels outside this region fall within regulations of 1 mW/cm^2 and are not considered safety hazards. When setting up the antenna, special care should be taken to avoid situations where the antenna radiates towards individuals. The antenna should be positioned such that bystanders are located behind the antenna. During antenna setup, the antenna power cord should be unplugged to avoid accidental hazardous exposures to radiations. Always turn the antenna transmitter off during periods of inactivity."*

now appears in the revised BR-3501 User Manual and is justified below.

The maximum permissible exposure for the general population is obtained as follow:

Radar Specifications

Transmitter Frequency: 35 GHz
Measured EIRP: 141.2 W

Limits for General Population Exposure

Frequency Range: 1500 – 100000 MHz
Power Density: 1 mW/cm^2 or 10 W/m^2

Since the radar is based on a lens antenna, equation for aperture antennas cannot be used. General radar equation (eq. 4 in OET Bulletin 65 from FCC, p. 19) has been used to calculate the power density:

$$\frac{EIRP}{4*\boldsymbol{p}*R^2} = PD$$

where   EIRP   is the Effective Isotropic Radiated Power
          R   Range [m]
          PD   Power Density [W/m^2]

The minimum range for a safe exposure based on the radar specifications and the limits for General Population Exposure situations is given by:

$$R \geq \sqrt{\frac{EIRP}{PD*4*\boldsymbol{p}}} = \sqrt{\frac{EIRP}{10*4*\boldsymbol{p}}} = 1.06m$$

where   EIRP = 141.2 W
          PD = 10 W/m^2 (General Population Exposure Limit)

Exposure to radiation should be avoided within 1.06 meter in front of the radar. The minimum range specified in the safety warning has been increased to 1.1 meter.

Sincerely,

Jean-Luc Gagnon
President
Infinition Inc. http://www.infinition.com