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Rockwell Collins

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July 10, 2009

To Whom It May Concern

Subject: **RF Exposure**

Applicant: **Rockwell Collins**

FCC ID: **XEU2703240**

Dear Sir/Madam:

Below is the RF Exposure warning for the above Equipment.

> ⚠ WARNING: To satisfy FCC RF exposure requirements for mobile transmitting devices, a separation distance of 10 in or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance is not recommended.
>
> The antenna used for this transmitter must not be co-located in conjunction with any other antenna or transmitter

Sincerely,

Jason J. Heimer

Program Manager

Rockwell Collins

5.5. RF EXPOSURE REQUIREMENTS [§§ 1.1310 & 2.1091]

5.5.1. Limits

§ **1.1310:** The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in 1.1307(b).

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm²)	Average Time (minutes)
(A) Limits for Occupational/Control Exposures				
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
(B) Limits for General Population/Uncontrolled Exposure				
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30

Note: f is frequency in MHz

5.5.2. Method of Measurements

<u>Calculation Method of RF Safety Distance</u>:

$$S = \frac{PG}{4\pi \cdot r^2} = \frac{EIRP}{4\pi \cdot r^2}$$

Where,   P: power input to the antenna in mW
EIRP: Equivalent (effective) isotropic radiated power.
S: power density mW/cm²
G: numeric gain of antenna relative to isotropic radiator
r: distance to centre of radiation in cm

$$r = \sqrt{\frac{PG}{4\pi \cdot S}} = \sqrt{\frac{EIRP}{4\pi \cdot S}}$$

FCC radio frequency exposure limits may be exceeded at distances closer than r cm from the antenna of this device.

ULTRATECH GROUP OF LABS **File #: ETST-001F90**
3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4 August 18, 2009
Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: vic@ultratech-labs.com, Website: http://www.ultratech-labs.com

All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)

5.5.3. Evaluation of RF Exposure Compliance Requirements

Maximum RF Power conducted, $P_{conducted}$**[dBm]** = 32.91 at 769.5 MHz

Maximum Antenna Gain, **G[dBi]** = 3

Maximum EIRP, P_{EIRP}**[dBm]** = 35.91

MPE Limit for Occupational/Controlled Exposure, $S_{controlled}$**[mW/cm^2]** = 769.5/300 = 2.57

MPE Limit for General Population/Uncontrolled Exposure, $S_{uncontrolled}$**[mW/cm^2]** = 769.5/1500 = 0.51

Calculated RF Safety Distance for Occupational/Controlled Exposure, $r_{safety\_controlled}$**[cm]** = 11.00

Calculated RF Safety Distance for General Population/Uncontrolled Exposure, $r_{safety\_uncontrolled}$**[cm]** = 24.59

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