Exhibit 1

ENVIRONMENTAL ASSESSMENT
FOR
EXPERIMENTAL STA REQUEST
(17.3-20.2 GHZ)

INTRODUCTION

This environmental assessment is provided in accordance with C.F.R. 47 Part 1.1307 for a roof top experimental station installation to be operated by Raytheon Systems Company at 6600 Chase Oaks Boulevard, Plano, Texas with a maximum EIRP of 55 DBw. Evaluation is provided for areas adjacent to the building where general population could be present and for the rooftop where only occupational personnel may be present. This assessment shows that the limits for maximum permissible exposure (MPE) of C.F.R. 47 Part 1.1310 are met for the general population with uncontrolled exposure and that the limits for occupational personnel with controlled exposures (5 mW/square cm) are met by the installation and operation of the station.

INSTALLATION

The experimental station is an extension of an existing effort for communication systems equipment development located in a controlled access laboratory and on the roof of a Raytheon Systems building that is currently being used to support office and laboratory activities and is in compliance with existing zoning requirements. The experimental station will have a maximum EIRP of 55 DBw. The antennas to be used in association with this experimental license application will consist of both flat plate electronic array and parabolic dish reflector types of 0.3 meter to 0.5 meter diameters with gains ranging from 35 dB to 43 dB. The antenna will be mounted on a gimbaled supporting structure approximately 2 meter in height (12 meters above ground level) and approximately 10 meters from the nearest edge of the building. The antenna will be capable of 360 degrees rotation in azimuth (horizontal plane) and 0 to 90 degrees in elevation (vertical plane). The building has controlled access and the roof access is monitored and controlled by building security. The slant range to the ground area where the general public may be present is 153 meters with a negative deflection angel of approximately 11 degrees. The distance and the 11 degrees from the beam center eliminates any potential RF hazard to the general public outside of the controlled access building.

TRANSMITTER

The experimental transmitter has an output power of 1 to 15 watts and is collocated with the antenna with a feed loss of 1.0 dB. The modulation will be a composite consisting of one or more channels containing quantized or digital information, together with one or more channels. The modulation to be used during equipment development test will be QPSK, Offset QPSK. 8PSK, 16QAM and BPSK/QPSK direct sequence asynchronous modulation. The data rates will be up to 622 mbps with baud rates of up to 500 mega-baud in the 17.3 GHz to 20.2 GHz frequency range and occupy a bandwidth from less than 1 MHz up to 500 MHz during the development and test of the equipment

ANTENNA

The antennas to be used with this experimental station will consist of either flat plate arrays or a parabolic dish reflector type of 0.3 meter to 0.5 meter diameter. The gain of these antennas will range from 35 dB to 43 dB and be mounted on a gimbaled supporting structure on the rooftop of the building. The antenna will be capable of 360 degrees rotation in azimuth and 0 to 90 degrees in elevation.

CALCULATIONS

Maximum power density in front of the 0.5 meter antenna aperture with 15 watts input is calculated as follows.

$$S(surface) = 4P/A = 4P/\Pi R^2 = 4(15)/(\Pi \times 0.25^2) = 305.57 watts/meter^2$$

The range of the near field region is

$$R(nf\ @20.3GHz) = D^2/4\lambda = 0.5^2/(4 \times 0.01485) = 4.209 meters$$

The maximum near field on axis power density is

$$S(nf) = 16nP/\Pi D^2$$
$$S(nf) = (16 \times 0.6 \times 15)/(\Pi \times 0.5^2)$$
$$S(nf) = 183.34 watts/meter^2 .$$

The maximum near field off axis power density is

$$S(nf, offaxis) = 16n(P/100)/\Pi D^2$$
$$S(nf, offaxis) = \left(16 \times 0.6 \times (15/100)\right)/\left(\Pi \times 0.5^2\right)$$
$$S(nf, offaxis) = 1.83 watts/meter^2$$

Thus, the RF hazard need only be considered within the antenna main beamwidth.

The following calculations provide the minimum safe distance for occupational personnel on the rooftop assuming a worse case antenna elevation angel of zero degrees while operating at the maximum transmitter power of 15 watts (55DBw).

The distance to the beginning of the far field region at 20.3 GHz is

$$R(ff) = 0.6D^2/\lambda = \left(0.6 \times 0.5^2\right)/0.01485 = 10.1 meters$$

The transition region extends from $R(nf)$, the range of the near field region (4.21 meters) to $R(ff)$, the range of the beginning of the far field region (10.1 meters). The on axis power density in the transition region is given as

$$S(t) = S(nf)R(nf)/R(ff) = (183.34)(4.21)/10.1 = 76.42 watts/meter^2$$

Since this greater than the $50 watts/meter^2$ limit the far field region must be evaluated for the safe personnel distance from the front of the antenna for the case where the antenna is at low elevation angels, (main beam exposure conditions).

The power density decreases inversely as the square of the distance in the far field. Hence, the power density is given by

$$S(ff) = PG/4\Pi R^2 = (15)(21134.89)/4\Pi R^2 = 25227.94/R^2$$

the distance R which the limits for Occupational/Controlled Exposure (MPE) per OET Bulletin 65 of $50 watts/meter^2$ is met can be determined by solving the previous equation for the distance where this power density can be obtained. This is:

$$R\left(for 50 watts / m^2 \right) = (25227.94 / 50)^{1/2} = 22.46 meters$$

CONCLUSIONS

It is extremely unlikely under normal circumstances for any person to be in any location where their exposure would exceed FCC guidelines, because the antenna installation is on the roof of a building approximately 10 meters above ground level with controlled access to the building and limited access to the roof. Signs have been posted at the entry to the roof that a potential RF hazard could be present and other signs alert employees to be not closer than 25 meters in front of the antenna during test operations. In addition, the roof access is monitored by building security who must be notified prior to roof entry. The operating procedure for the test lab is to coordinate their test with building security and limit access to the roof area during test periods.

The geometry of the rooftop antenna installation and the areas prevent any RF hazards for the general population that might be on the ground in the parking lots and sidewalks that surround the building. In addition, the limited access to the rooftop, security monitoring of the access and coordination with the test lab along with the warning signs ensures a safe operating environment for the installation.