Exhibit 1

Form 442 - Application for New Radio Service Under Part 5 of FCC Rules

Item 4 - Transmission Characteristics

The HDD-250 is a Doppler Weather Radar used for the detection and display of precipitation targets. The HDD-250 has the following transmission modes:

(a) Log Intensity Mode: 2.0 μsec. pulse duration and PRF of 250 pps.

(b) Doppler Mode:

(i) Pulse duration of 0.8 μsec. and 0.5 μsec..

(ii) Variable pulse repetition frequency of 786 PRF and 1180 PRF at 0.8 μsec. and 2400 PRF at 0.5 μsec..

Item 4G - Necessary and Occupied Bandwidth.

The necessary bandwidth of the transmission is based on the calculation below, using the definition of Section 2.202 (b):

$$Bn = \frac{2K}{t}$$ **where K depends on the pulse width to rise time ratio.**

The rise time of the pulse is 50 nsec., thus for pulses of 0.5 μsec to 2.0 μsec;

$$Bn = \frac{2K}{t} = \frac{(2 \times 10)}{0.5} = 40 \text{ Mhz.}$$

$$Bn = \frac{(2 \times 40)}{2} = 40 \text{ Mhz.}$$

Exhibit 2

Item 10

(1) Scope of Service

Technical demonstrations of the HDD-250 Doppler weather radar will be made to television stations and other meteorological users. There are a number of television stations that are anticipating the purchase of doppler radars with graphic displays in order to enhance their presentations of local weather to the viewing public.

We expect to conduct demonstrations in response to requests from various stations. During these tests, we plan certain physical layout adjustments in order to tailor the final product to the broadcast industry.

(2) Type of Operation to be Conducted

As shown in Figure 1, the transmitter is coupled to the antenna and receiver through a 4-port circulator. An integrated front end (LNA/Mixer/Post amplifier) provides 37 dB of gain and noise figure of 2.3 dB to the 30 Mhz IF section. A splitter separates the IF into a log channel and a linear channel. Video outputs from the log amplifier

and I/O detector are processed by a Digital Signal Processor. The display unit provides a high resolution display for precipitation targets. The display output is calibrated in dbZ for reflectivity and in m/s for velocities. Figure 1a shows the overall cabinet layout.

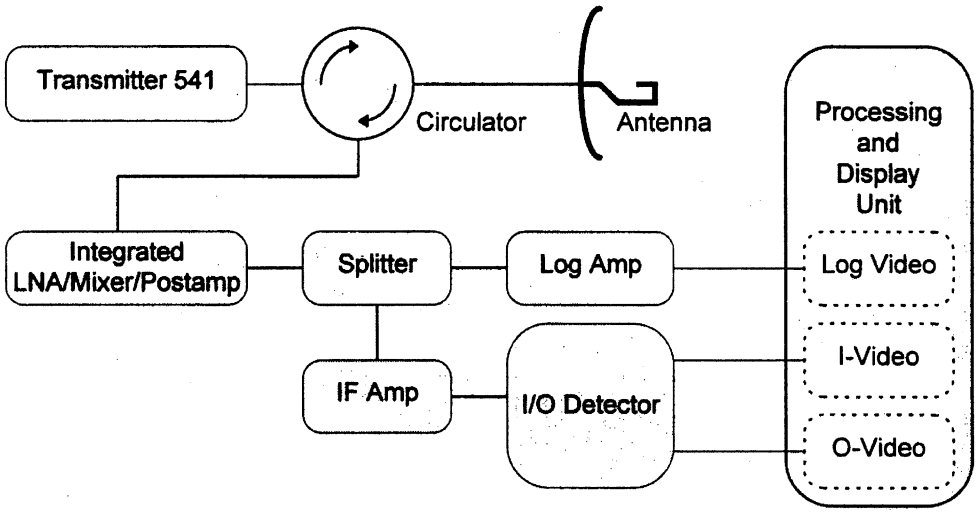

Figure 1a.
Block diagram of the HDD-250 doppler weather radar.

ASE 541 Transmitter

The magnetron transmitter employs the CTL PM-155X magnetron driven by a power MOSFET cathode modulator. The modulator high voltage power supply is a duty cycle regulated DC to DC converter design. The magnetron filament power supply is also a duty cycle regulated DC to DC converter design with magnetron filament programming as a function of magnetron average current. The 4 port circulator in the magnetron output provides the receiver duplex function and load isolation for the magnetron.

The modulator is contained in an aluminum enclosure which also contains the magnetron cathode pulse to avoid video interference. The physical configuration is shown in the attached outline drawing (Fig. 2a). The location for the coaxial interface connectors is also shown. The output waveguide flange is toward the rear of the chassis as shown. The output flange also faces up and is above the transmitter. The magnetron and RF output circuit are located on an aluminum plate attached to the top of the Model 541-X- modulator. The coaxial interface connectors are located in a small panel supported from the magnetron mounting plate. The top panel shown is simply a close-out panel. The transmitter is slide mounted in the standard 19" rack (see Fig. 2b).

Figure 2c is a block diagram of the 250 Kw Magnetron Transmitter.

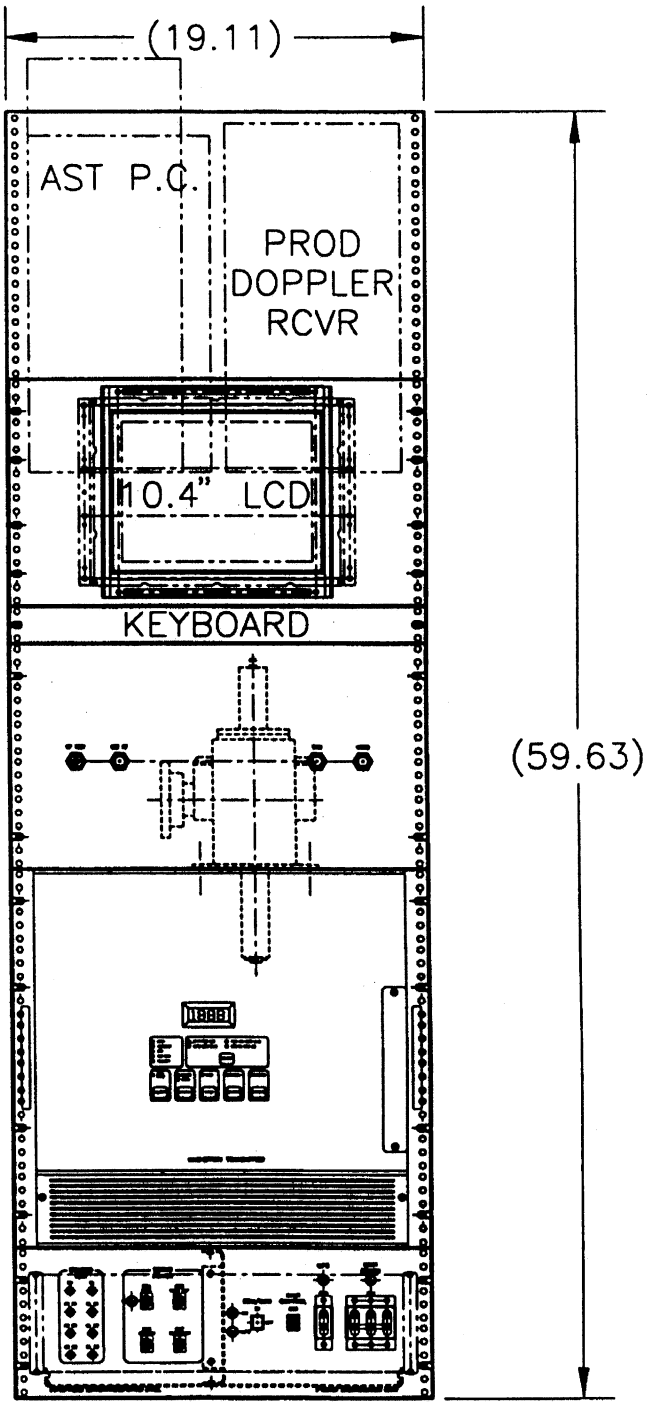

Figure 1b.
Overall cabinet layout.

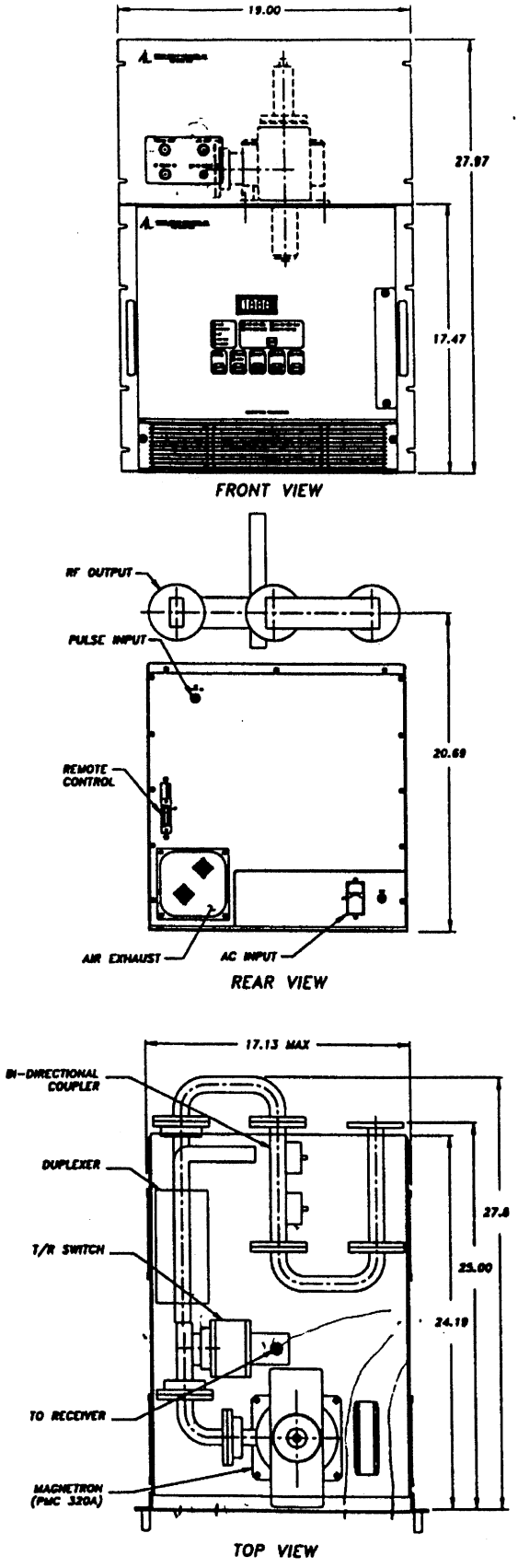

Figure 2a.
Physical configuration of the REI-541-X Magnetron Transmitter.

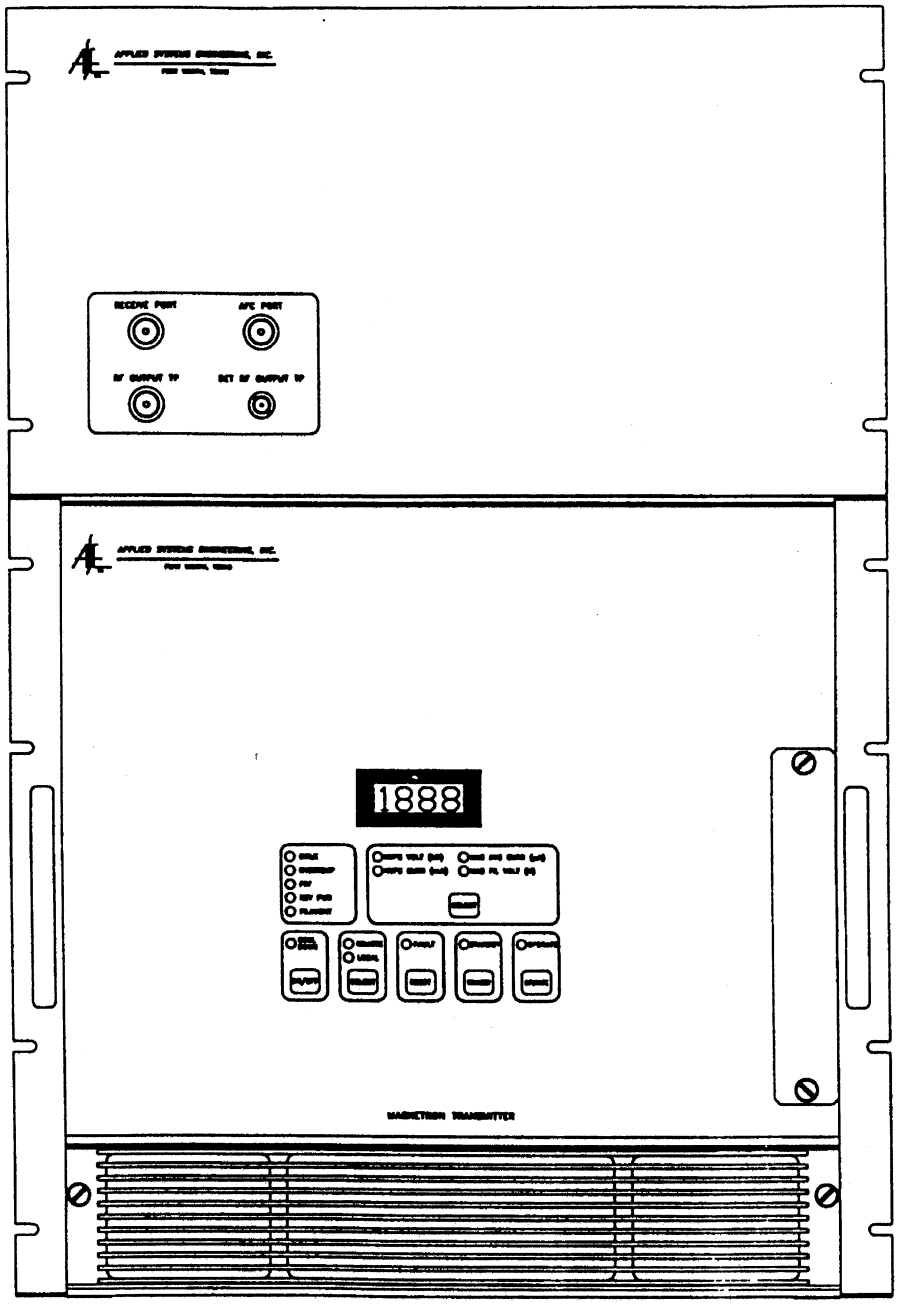

Figure 2b
REI-541-X Magnetron Transmitter front panel layout.

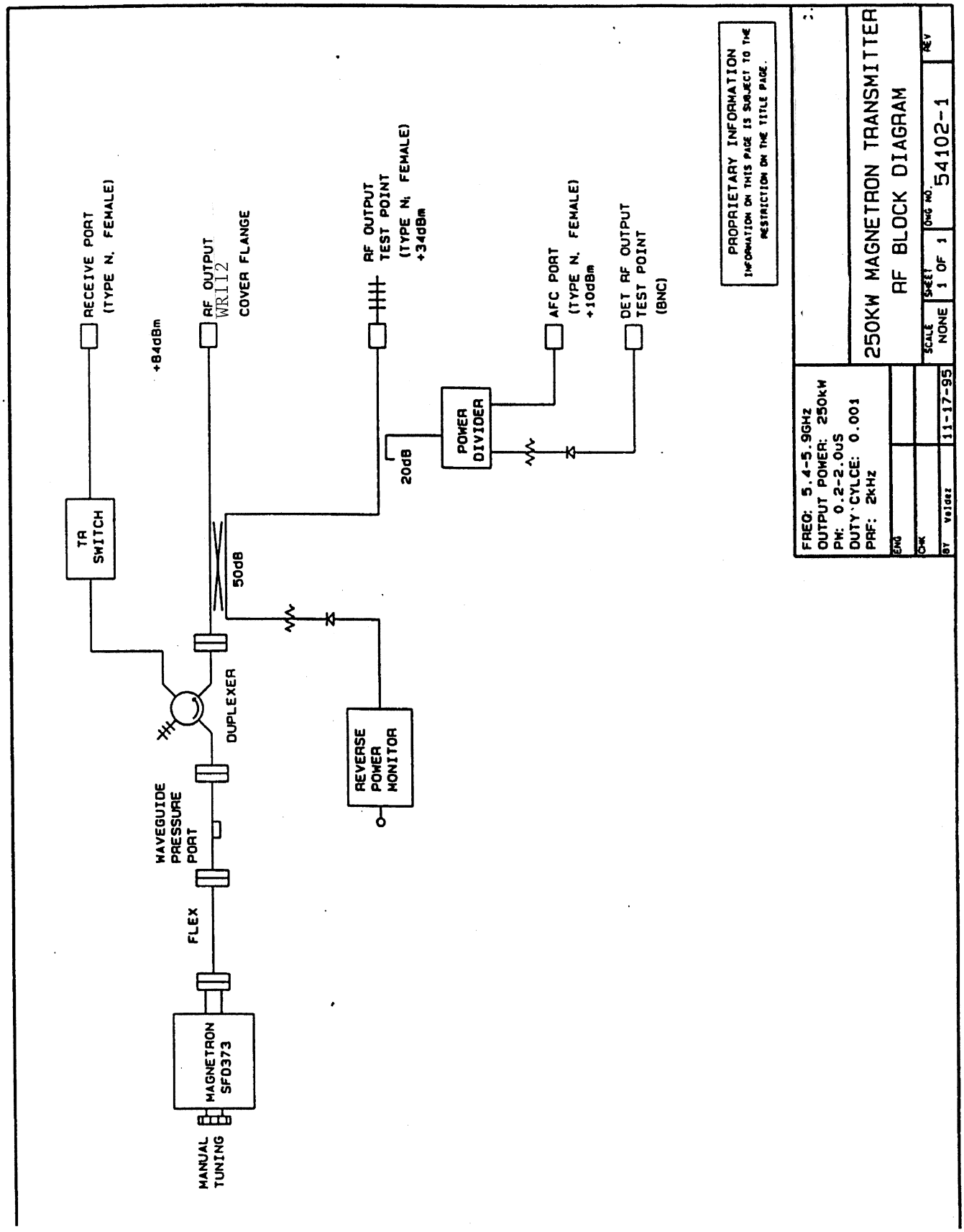

Figure 2c.
REI-541-X Magnetron Transmitter RF Block Diagram.

A list of performance parameters for the proposed transmitters is included in the following table.

Characteristics of the ASE-541 Transmitter

Frequency	7.9-8.4 Ghz
Frequency Stability	±0.2% after 30 minutes of radiate time.
Spurious Response	-40 dBc, Max.
Peak Power Output	250 Kw, Min.
Power Output Stability	0.1 dB, Max.
Duty Cycle	0.001, Max.
Pulse Width Range	200 nsec. to 2.0 μsec., continuously variable.
PRF Pulse Rise Time	50 nsec., Max., 10% to 90%.
RF Pulse Fall Time	150 nsec., Max., 90% to 10%.
Pulse to Pulse Jitter	±10 nsec., Max.
Pulse Width Jitter	±10 nsec. Max.
Pulse Ripple	±10%, Max. (including overshoot on detected pulse)
Pulse Droop	0.5 dB, Max., (2.0 μsec. pulse.)
PRF	250 to2400 PPS, (continuously variable)
Time Delay (Pulse Input to RF Output)	1.0 μsec., Max.
Input/Output Pulse Width Tracking	RF output tracks the input pulse within ±5%.
Pulse Recovery Time	1.0 μsec., Max.
Pulse Input	TTL Level, 50Ω

HVPS / Modulator Specifications

Energy Limit to Magnetron Arc	1.0 Joule Peak, Max.
Filament Voltage Regulation	±1%
Filament Voltage Monitor	High and Low
Filament Voltage Run-up	Current limited to 150% of Standby Filament Current Value.
Filament Voltage Program	Filament voltage in Operate programmed as a function of Magnetron Average Current.
Over-Temperature Protection	Temperature Interlock both magnetron and HVPS/Modulator.
Input pulse inhibit	Until all voltages are applied.
Protection Circuits	HVPS Over-correct Magnetron Over-duty.

Physical and Interface Parameters

RF Output Waveguide	WR-112 Cover Flange
Receive Port	Type N, Female
Receive Port Isolation from Transmitter output.	20 dB, Min.
RF Test Point	Type N, Female
AFC Port	Type N, Female
Detected RF Output Test Point	BNC, Female
External Trigger	BNC, Female
Primary Power	120 VAC, 60 Hz
Weight	200 lb., Nominal
Cooling	Internal fan, filtered air inlet.

3. Purpose of operation

Detection and display of meteorological targets (intensity and mean radial velocities).

4. Duration of operation

Authority is requested to conduct the experimental program described above for a period of twenty four (24) months.

Exhibit 3

Compliance with FCC Rules and Policies

Radtec Engineering hereby confirms that it will accept grant of the license in the Experimental Radio Services requested here with the express understanding that:

(a) authority to use the frequency or frequencies assigned is granted upon an experimental basis only and does not confer any right to conduct an activity of a continuing nature

(b) such grant is subject to change or cancellation by the Commission at any time without hearing if in its discretion the need for such action arises.

Radtec will use all reasonable precautions to ensure that radio frequency energy and emissions from its experiments will not cause harmful interference to the services carried by stations operating in accordance with the Table of Frequency Allocations in Part 2 of the Commission's Rules. If harmful interference develops, Radtec will cease transmission and transmissions shall not be resumed until it is satisfied that harmful interference will not be caused. Radtec hereby confirms that it will not conduct its experiment in the vicinity of any FCC monitoring station listed in Section 0.121 (c) of the Commission's Rules.

The Commission is requested to exempt, by the terms of the station authorization requested here, each class of station proposed to be deployed in the experiment from compliance with the station identification requirements in Section 5.152 of the Commission's Rules.