Type Acceptance Information for TS4000 Radio Modem with 3412 Transceiver
Proposed FCC ID JWFTS4000B

<u>**OPERATION DESCRIPTION**</u>

Radio Channel Programming and Switching
Up to 99 radio channels can be pre-programmed into the modem board's non-volatile memory with a PC based programming software. This software is only available to authorized dealers and service centers. The user can switch between pre-programmed channels by sending an ASCII control string through one of the modem board's serial ports.

The frequency of the radio transceiver is controlled by the microcontroller using the SPI port. This port directly controls the PLL (Phase Lock Loop) on the radio transceiver board.   The microcontroller monitors the lock condition of this PLL using the lock detect signal from the radio transceiver.

Radio Power Control
The transmit power is adjustable from 0.1 to 5 watts. The actual value is adjustable by the end user using the TS4000 configuration software but can never be set over the maximum value of 5 watts. The modem board controls the radio power by setting the radio power DAC on the radio transceiver. This DAC is controlled through the radio transceiver's SPI interface. The maximum value that this circuit can be set for is configured when the unit is tuned up. This prevents the user from setting the output power higher than the maximum allowed.

Data Rate and Emission Masks
The modulation data rate is controlled by the microcontroller using the clock circuitry (described above). The modulation data rate, combined with deviation, controls the occupied bandwidth of the transmitted signal. The allowed occupied bandwidth depends on the channel bandwidth and the corresponding emission mask of the signal. Please reference the emission designator calculations in the front of this document for the maximum modulation data rate and deviation allowed for each designated emission.

The maximum modulation rate that a unit can operate at is configured by Teledesign Systems when a unit is tuned up. The TS4000 configuration software allows the user to adjust the modulation data rate but can never set it above the maximum value that is configured when the unit is tuned up. The deviation is controlled by the modem board based on the modulation data rate that the unit is set for.

<u>Spectral Efficiency</u>
This equipment is capable of supporting a minimum of 4800 bits per second per 6.25 kHz of channel bandwidth. This allows this equipment to support the latest FCC spectral efficiency requirements.