GENERAL INFORMATION

1. Production Plans - Pursuant 2.1033(c)

   Quantity production is planned.

2. Application References - Pursuant 2.1061

   None

3. Data Submittal Procedure - Pursuant 2.999, 2.947

   Data is supplied in accordance with Part 2, Subpart J of the Commission's rules.

   Standards used on measurements supplied are TIA/EIA IS-95-A, TIA/EIA IS-98 and OST 53.

4. Similar to "Currently Type Accepted Transmitter Type(s):"

5. Report of measurements pertaining to types of emission, frequency range, maximum output power and modulation techniques for CDMA.

   A. Types of emission

      This equipment meets FCC emissions standards for operation in the Domestic Public Cellular Radio Telecommunications Service in the Analog Mode.

      In the Digital CDMA Mode, a new emission designator **1M25F9W** is added, determined as explained in section 6 of this exhibit. Reference is also made to TIA/EIA IS-95-A.

      Actual measurements of Occupied Bandwidth for the Digital CDMA Mode are shown in Exhibit 9F-5.

      Spurious Emissions (Conducted and Radiated) reported in Exhibits 9G and 9H are the worst (highest level) of AMPS and Digital Modes.

   B. Frequency range

      The frequency range of the equipment is the Domestic Public Cellular Radio Telecommunications Service bands, 824 - 849 MHz and 869 - 894 MHz, regardless of whether in Analog or Digital Mode. In Analog Mode, the channel spacing is 30 kHz on signaling channels and voice channels. In Digital CDMA Mode, the channel increment is 30 kHz for all data and voice channels although centers of adjacent CDMA channels are typically spaced a minimum of 1.23 MHz apart as well as minimum of 0.69 MHz away from the band edges. Again, reference is made to TIA/EIA IS-95, and EIA/TIA IS-98.

      Frequency Stability versus Temperature and Voltage measurements is shown in Exhibits 9J-1&2 and 9K-1&2. This equipment uses a temperature compensated 19.68 MHz crystal oscillator (VCTCX1: see exhibit 5D) to provide a highly stable reference frequency source for the 966 MHz , 260 MHz (XMIT), and 170

MHz (RCV) loops, and in analog mode a frequency stabillity of ± 2.5 ppm is maintained over temperature and voltage variation. In CDMA mode, the base station signal is used as a frequency reference, and a reference oscillator stability of .5 ppm is maintained (assuming the base station frequency is within specification).

C. Maximum output power

Analog Mode

Power output capability of the Mobile Station equipment is reported to the Land Station system (via the Mobile Station Power Class in the Station Class Mark) and the Mobile Station will respond to commands from the Land Station system to change power levels as defined in the specifications.

Digital Mode

The maximum radio frequency power allowed per the standard ranges from 0.2 Watts to 1.0 Watt. The mobile maximum output power during a power control group is within the specified limits and is controlled by commands from a Land Station system.

R. F. Output Power measurement results are shown in Exhibit 9A.

D. Modulation techniques

Analog Mode

Modulation in the Analog Mode is conventional Frequency Modulation with the highest modulating frequency being the nominal 6 kHz Supervisory Audio Tone (SAT) and 10 kHz Signaling Tone (ST)/Data.

Digital CDMA Mode

Modulation in the Digital Mode is OQPSK (Offset Quaternary Phase Shift Keying). Reference is made to TIA/EIA IS-95-A, Section 6.

Exhibits 6C and 6D further discuss details of the modulating circuitry.

Exhibit 9F-5 shows the results of modulation related testing (pursuant to Section 2.1049 of the Commission's rules) for the Digital Mode.

Exhibit 6F discusses digital modulation techniques used in both digital and analog modes.

6. Determination of Emission Designator (per Part 2 - Subpart C of the Commission's rules)

A. Emission, modulation and transmission characteristics (per section 2.201)

a. First Symbol - Type of modulation of the main carrier.

The main carrier is Offset Quaternary Phase Shift Keyed (OQPSK) and has both amplitude and angle modulation characteristics. OQPSK in and of itself does not necessarily produce amplitude modulation characteristics, however, the In-Phase (I) channel and the Quadrature (Q) channel modulating signals are filtered by a 47 tap FIR filter specified in TIA/EIA IS-95-A, section 6.1.3.1.10 before being applied to a quadrature modulator. The filtering produces amplitude variation on the main carrier. Therefore, the main carrier is not a constant envelope signal, but is both amplitude and angle-modulated. Upon discussion with FCC Laboratory personnel, however, it has been agreed that the amplitude modulation characteristics are incidental to the nature of OQPSK and the filtering so 'angle-modulation' is predominant.

This corresponds to the symbol F, defined as "Emissions in which the main carrier is angle-modulated."

b. Second Symbol - nature of signal(s) modulating the main carrier.

The nature of the modulating signal is quantized voice or other audio information, analogue in nature at its source, and digital information for transceiver control or data transmission. The main carrier is modulated using direct sequence CDMA techniques.

This corresponds to symbol 9, defined as "Composite system with one or more channels containing quantized or digital information, together with one or more channels containing analogue information."

c. Third symbol - Type of information to be transmitted.

The information transmitted in the digital mode of operation is a combination of data transmission (command data) and telephony (sampled quantized voice or other audio signals).

This corresponds to symbol W, defined as "combination of above" which would be the combination of symbol D, "Data transmission, telemetry, telecommand," and symbol E, "Telephony (including sound broadcasting)."

B. Bandwidths (per section 2.202)

Bandwidth is primarily determined by a 47-tap FIR filter used to filter the I channel and Q channel modulating signals. Per TIA/EIA IS-95-A, section 6.1.3.1.10, the Baseband filter is defined to have a one-sided 1.5 dB ripple bandwidth of 590 kHz minimum and a 40dB minimum stopband at 740 kHz maximum. Computer simulations show that the occupied bandwidth as defined in paragraph 2.202(a) is 1.25MHz.

Based on these considerations, the bandwidth used is 1.25 MHz. Converting this result to the format indicated in paragraph 2.202(a), yields 1M25.

The resulting complete emission designator is then 1M25F9W.