

**GENERAL INFORMATION**

1. Production Plans---Pursuant 2.983 (c)

Quantity production is planned.

2. Application References---Pursuant 2.1061

Reference is made to the following Motorola "Application References" on file with the Commission:

None

3. Data Submittal Procedure:

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

Standard used on measurements supplied are J-STD-008.

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

IHDT6XB1 - Portable Broadband PCS Transceiver

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

A. Types of emission

The equipment is designed to provide emissions consistent with emission designator 1M25F9W, determined as explained in paragraph 6 of this exhibit. Reference is also made to J-STD-008.

Actual measurements of Occupied Bandwidth are shown in Exhibit 9B.

## B. Frequency range

The frequency range of the equipment is the Domestic Public Personal Communications Service bands, 1850 - 1910 MHz (transmit) and 1930 - 1990 MHz (receive).

Frequency Stability versus Temperature and Voltage measurements are shown in Exhibits 9E and 9F. This equipment uses Automatic Frequency Control (AFC) to lock to within  $\pm 150$  Hz of the received frequency from the Land Station system.

## C. Maximum output power

The maximum radio frequency output power allowed per J-STD-008 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. The nominal 'conducted' output power setting for this equipment is 0.25 Watts (24.0 dBm) with a tolerance of  $\pm 0.5$  dB. Maximum 'conducted' output power is then 0.28 Watts (24.5 dBm).

RF Output Power measurement results are shown in Exhibit 9A.

## D. Modulation techniques

Modulation is OQPSK (Offset Quaternary Phase Shift Keying). Reference is made to the J-STD-008, Section 2.1.3.

Exhibits 6C, 6D and 6F further discuss details of the modulation techniques.

Exhibit 9B show the results of modulation related testing.

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 J-STD-008, section 2.1.3.10 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 J-STD-008 Section 2.1.3.1.10, the Base band 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.