

Exhibit 12. Transmitter Description ----- 47 CFR 2.1033 (c) 4,5,6,7,8

12.1 Transmitter Technical Characteristics

This Type II PC Card iDEN Modem transceiver is of the receive first type, meaning it must first find, acquire and lock onto a control channel from a predefined set of control channel frequencies assigned to a compatible base station. Transmission is not possible until acquisition and lock has been achieved, then it is limited to transmission of service request bursts on the digitally modulated reverse control channel. Upon recognition of a proper request, the control channel base station transmitter will then assign the transceiver a traffic channel for transmission of circuit-switched data or packet-switched data from the set of frequencies for which the trunking system is licensed.

The technical capability of the transceiver complies with FCC emissions requirements for the 806 - 821 MHz range for which companion base stations are authorized in the United States. It is expected that this Type II PC Card iDEN Modem transceiver marketed in the United States will also be used for itinerant roaming operation outside the United States with companion base stations that may operate anywhere within the broader frequency range 806 - 825 MHz. It is also expected that this transceiver type will be marketed outside the United States and brought into the United States for itinerant "roaming" operation on compatible 806 - 821 MHz base stations located in the United States. Thus performance data is provided to substantiate FCC compliant operation with a companion base station over the broader international 806 to 825 MHz band expected in use of this handheld transceiver outside the United States.

In addition to controlling the assigned frequency to which the transceiver will be slaved, the compatible base station frequency serves as an accurate, stable reference for the transceiver local reference oscillator by virtue of a transceiver AFC function inherent in the acquisition and lock process.

The trunking system protocol uses a 90ms frame divided into six 15ms time slots. The base station allocates the number of 15ms time division multiplex (TDM) time slots in which the transceiver transmits, depending on the user requested transmission mode. These slot allocations are summarized in Table 12-1.

Table 12-1: TDM Time Slot Allocation

<u>Transmission Service Mode</u>	<u>Transmission Time Slots Allocated per Six-Slot Frames</u>
1) Circuit-Switched Data*	1 (duty cycle=16.67%) or 2 (duty cycle=33.33%) (base station preset)
2) Packet-Switched Data**#	up to 81 out of 120 contiguous slots (duty cycle=67.5% max)

* Via a PCMCIA port at an input rate of 115,200 bps maximum for circuit-switched data and for packet-switched data.

In addition to controlling the assigned frequency to which the transceiver will be slaved, the compatible base station frequency serves as an accurate, stable reference for the transceiver local reference oscillator by virtue of a transceiver AFC function inherent in the acquisition and lock process. The RF output power of the transceiver also is dynamically controlled by the radio which senses the received signal strength and adjusts transmitter output power in approximately 1dB steps over the range from rated power to 34 dB cutback.

- A. Output Power 0.221 to 700 milliWatts (Pulse average)
- B. Maximum Antenna Gain -1.0 dBd
- C. Maximum ERP 546 milliWatts (Pulse average)
- D. Frequency Range 806-825 MHz**
- E. Frequency Stability ≤ 1.9 PPM *
- F. Emission Designator 18K3D7W
- G. Spurious Emissions < -13 dBm
- H. Maximum DC Voltage and Current into the final RF amplifier stage (at nominal battery voltage) 4.1 V in transmit slot#
0.85 A in transmit slot#

** See Exhibit 12.1

* See Exhibit 6.6

See Exhibit 6.1

12.2. Transmitter Application

The following features, options, and accessories characterize the modem.

12.2.1. Battery Available:

12.2.1.1. Lithium Ion (Li), 470mAh, Kit No. NNTN4051A

12.2.2. Chargers Available:

12.2.2.1. Rapid Travel Charger, AC line powered, Kit No. SPN4716

12.2.2.2. Vehicular Power Adapter, Kit No. SYN7818

12.2.3. Antennas Available:

12.2.3.1. Standard, Monopole whip antenna Kit No. FAF5055A

12.2.3.2. Optional, Roof Mount antenna Kit No. HAF9067A*

12.2.3.3. Optional, Magnetic mount antenna Kit No. RAF4136AMM*

12.2.3.4. Optional, Window Mount antenna Kit No. FAD5524A*

* Requires Adapter Cable For External Antenna Kit No. NKN6657A

12.3. Transmitter Programmability

The subject transmitter complies with 47 CFR 90.203 because the operator cannot manually program or select the transmission frequency.