

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

12.1 Transmitter Technical Characteristics

This handheld trunked radio 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 digital voice, 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 exceeds FCC emissions requirements for the 806 - 825 MHz range for which companion base stations are authorized in the United States as it is expected that this handheld 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 - 825 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

Transmission Service Mode	Transmission Time Slots Allocated per Six-Slot Frames
1) Dispatch (push-to-talk)	1 (duty cycle=16.67%)
2) Telephone Interconnect	1 (duty cycle=16.67%) or 2 (duty cycle=33.33%) (base station preset)
3) Circuit-Switched Data*	2 (duty cycle=33.33%)
4) Packet-Switched Data*#	up to 81 out of 120 contiguous slots (duty cycle=67.5% max)

* Via a peripheral serial port at an input rate of 19,600 bps maximum for circuit-switched data and 115,200 bps maximum for packet-switched data.
Via an internal world wide web browser

Variable output power. The RF output power of the transmitter is automatically adjusted in discrete steps over the range from rated power to approximately 34 dB cutback in response to changes in received signal strength. Additionally, the maximum output power level of different models of this radio type is factory programmed to nominally be either 1.1 Watt or 0.6 watts pulse average. No 1.1 Watt radio models will operate with the current limited Factory Mutual approved battery listed in section 12.2.

Table 12-2: Mean DC Current into the final RF Amplifier Per Radio Multiplex Factor

Transmit Power	Multiplex Factor			COMMENTS
	81/120	2/6	1/6	
0.2 milliWatts to 1.25 Watt pulse mean power (variable under base station control)	740 mA	420 mA	240 mA	During a 15 ms transmission slot at the maximum power. The standard input test voltage was 4.8 volts DC

- 12.1.1. Maximum Output Power 1.25 Watt Pulse Average
- 12.1.2. Minimum Output Power 0.2 milliWatt Pulse Average
- 12.1.3. Frequency Range 806 - 825 MHz #
- 12.1.4. Frequency Stability □ 1.9 PPM # *
- 12.1.5. Emission Designator 20K0D7W
- 12.1.6. Spurious Emissions < -15 dBm nominal
- 12.1.7. Antenna Gain 0.05 dBd maximum
- 12.1.8. Maximum ERP 1.26 Watt Pulse Average

See Transmitter Technical Characteristics descriptive text in preceding paragraphs

* See Exhibit 6.6

12.2. Transmitter Application

The radio is characterized by the following features, options, and accessories.

12.2.1. Battery Available:

12.2.1.1. Nickel Metal Hydride (NiMH), 1400mAh, Kit No. NTN9037

12.2.1.2. FM Approved Nickel Metal Hydride 1400mAh, Kit No. NTN9038

12.2.2. Chargers Available:

This radio contains a built in battery charger which charges an attached battery via an external AC line powered switched mode power supply. Additional battery chargers are available in which the radio may be operated:

12.2.2.1. Desktop Charger, AC line powered, Kit No. NTN9035

12.2.2.2. Vehicular Battery Charger, Kit No. NTN9034

12.2.3. Antenna Available:

12.2.3.1. Half wave whip antenna Kit No. NAF5075

12.2.4. Data Cables Available:

12.2.4.1. Data Cable, Kit No. NKN6537

12.2.4.2. Palm V Cable, Kit No. NKN6538

12.2.4.3. Palm III Cable, Kit No. NKN6539

12.2.5. Other Accessories Available:

12.2.5.1. Remote Speaker Microphone (RSM), Kit No. FLN2800

12.2.5.2. Audio Adapter, Kit No. FLN2854

12.2.5.3. Large Belt Clip, Kit No. HLN9714

12.2.5.4. D-ring, Kit No. NTN1535

12.2.5.5. Carry Case, Kit No. FLN9580

12.2.5.6. Small Belt Clip, Kit No. HLN9844

12.2.6. Housing:

The transmitter will be housed in the housing shown in the photographs of Exhibit 3.

12.3. Transmitter Programmability

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