

Exhibit 12. Transmitter Description -- Pursuant 47 CFR 2.1033-(c), 2.983-(d)

12.1 Transmitter Technical Characteristics --2.1033(c) 4, 5, 6, 7, 8; 2.983(d) 1, 2, 3, 4, 5

The 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 inhibited until control channel 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 – 821 and 896 – 902 MHz range for which companion base stations are authorized in the United States. 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 the 806 – 825 and 896 – 902 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 the 806 – 821 and 896 – 902 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 the 806 – 825 and 896 – 902 MHz band expected in use of this handheld transceiver outside the United States.

When the transceiver is operating in the 896-902 MHz frequencies, the transceiver will be operated on frequencies midway between those of the channels given in table 4B of 47CFR90.617(d).

The trunking system basic 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. Packet data transmission uses 15ms time slots in a 1.8 second frame. These slot allocations are summarized in Table 12-1.

Transmission Service Mode	Time Slots Allocated per six slot frame
1.) Dispatch (push-to-talk)	1
2.) Telephone Interconnect	1 or 2 (base station preset)
3.) Circuit-Switched Data*	2
4.) Packet-Switched Data*#	1 to 6 in any particular frame (up to a maximum of 81 slots in 20 contiguous frames)

* via a peripheral serial port at an input rate of 115.2 Kbps maximum for RS-232 cables or a maximum of 12,000 Kbps for USB cable.

via an internal world wide web browser

Table 12-1: TDM Time Slot Allocation

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.

800 MHz Operation:

- A. Output Power 0.278 to 700 milliWatts (Pulse average)
- B. Maximum Antenna Gain -0.75 dBd
- C. Maximum ERP 589 milliWatts (Pulse average)
- D. Frequency Range 806-825 MHz**
- E. Frequency Stability ≤ 1.9 PPM *
- F. Emission Designator 18K3D7W
- G. Spurious Emissions < -15 dBm
- H. Maximum DC Voltage and Current into the final RF Amplifier stage (at nominal battery voltage) 3.89 V in transmit slot#
1.03 A in transmit slot#

** See Exhibit 12.1

* See Exhibit 6.5

See Exhibit 6.1

900 MHz Operation:

A. Output Power	<u>0.278 to 700 milliWatts (Pulse average)</u>
B. Maximum Antenna Gain	<u>0.95 dBd</u>
C. Maximum ERP	<u>871 milliWatts (Pulse average)</u>
D. Frequency Range	<u>896 – 902 MHz**</u>
E. Frequency Stability	<u>≤ 0.5 PPM *</u>
F. Emission Designator	<u>18K3D7W</u>
G. Spurious Emissions	<u>< -15 dBm</u>
H. Maximum DC Voltage and Current into the final RF Amplifier stage (at nominal battery voltage)	<u>3.89 V in transmit slot#</u> <u>1.03 A in transmit slot#</u>

** See Exhibit 12.1

* See Exhibit 6.5

See Exhibit 6.1

12.2. Transmitter Application

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

A. Power Supply Available:

1. Batteries:
 - a) 800 mAH Lithium Ion (SNN5705)
 - b) 500 mAH Lithium Polymer (SNN5717)
 - c) 1100 mAH Lithium Ion (SNN5706)
 - d) 1350 mAH Lithium Ion (SNN5716)

2. 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:
 - a). Rapid Vehicle Charger (SYN7818)
 - b). Dual Pocket Desktop Charger (NTN9568, NPN1033)
 - c). Rapid Universal Travel Charger (SPN4716, SPN4735, SPN4736, SPN4738, NPN6220)
 - d). Switching MidRate Travel Charger (SPN4940)
 - e). Linear MidRate Travel Charger (SPN4808)
 - f). Plug Adapter (SYN7456, SYN7455, SYN8127, SYN7460)

B. Antenna Available

1. Retractable half-wave (8585197D02)

C. Microphones Available

1. Internal
2. External via an optional Audio Connector (see following list of audio accessories)

D. Data Cables Available

1. RS232 Data Cable (NKN6544)
2. Palm Pilot III / Palm VII Data Cable (NKN6546)
3. Palm Pilot V Cable (NKN6547)
4. Dual Port Adapter Cable (NKN6540)
5. Universal PDA Adapter (NTN8993)
6. USB PC Cable (SKN6311)

E. Audio Accessories Available

1. Privacy Earpiece and Microphone (SYN8390)
2. Lightweight Headset with microphone (NTN8496)
4. Lightweight Over-the-Ear Style Headset (SYN8146)
5. Hearing Aid Neckloop KIT (SYN7875)

F. Car Accessories Available

1. Easy install hands free car kit (NTN1796)
2. Pro install hands free car kit (NTN9477)
3. Dash mount holder for soft install (NTN9476)

G. Body-worn Accessories

1. Belt clip holder (NTN9475)
2. Leather case (NTN9804, NTN9805)

H. Housing

The transmitter will be housed in a housing as shown in the accompanying photographs (Exhibit 3 and 9). There will also be several variations of housing color and keypad color and shape. All transceivers will be identical from a standpoint of hardware operation and internal circuitry.

12.3. Transmitter Programmability

The subject transmitter complies with 47 CFR 90.203 in that it is not front panel programmable by the operator. The transmitter internal control computer automatically selects one of the preprogrammed frequency channels in coordination with the trunking systems control channel. The transceivers authorized transmit frequency list is preprogrammed at the factory and cannot be changed by the operator.