

**Exhibit 12 (Revised). Transmitter Description -- Pursuant 47 CFR 2.1033 (c)****12.1 Transmitter Technical Characteristics -- 2.1033(c)4, 5, 6, 7, 8**

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 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 - 821 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 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.

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.

<b>Transmission Service Mode</b>	<b>Time Slots Allocated per six slot frame</b>
1.) Dispatch (push-to-talk)	1
2.) Telephone Interconnect	1 or 2 (base station preset)
3.) Circuit-Switched Data*	2
4.) Packet-Switched Data* <sup>#</sup>	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 19,600 bps maximum for circuit-switched data and 115,200 bps maximum for packet-switched data.

<sup>#</sup> 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 35 dB cutback.

A. Output Power Range	<u>0.2 to 700 milliwatts (Pulse average)</u>
B. Maximum Antenna Gain	<u>0.15 dBd</u>
C. Maximum ERP	<u>725 milliwatts (Pulse average)</u>
D. Frequency Range	<u>806-825 MHz**</u>
E. Frequency Stability	<u>≤ 1.9 PPM *</u>
F. Emission Designator	<u>18K3D7W</u>
G. Spurious Emissions	<u>&lt; -15 dBm</u>
H. Maximum DC Voltage and Current into the final RF amplifier stage (at nominal battery voltage)	<u>3.90 V in transmit slot<sup>#</sup></u> <u>0.52 A in transmit slot<sup>#</sup></u>

\*\* See Exhibit 12.1

\* See Exhibit 6.5

<sup>#</sup> See Exhibit 6.1

## 12.2. Transmitter Application

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

### A. Power Supply Available:

1. Mid Size Battery, 680mAh (NTN9810)  
Optionally available batteries:
  - a). Slim Battery, 500mAh (NTN9809)
  - b). Mid Size Battery, Spanish/Portuguese (NTN9959)
  - c). Slim Battery, Spanish/Portuguese (NTN9958)
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 (NPN6225)
  - c). Rapid Travel Charger (SPN4716)
  - d). MidRate Multi-Voltage Travel Charger (SPN4940)
  - e). MidRate Economy Travel Charger (SPN4808)
  - f). Plug Adapter (SYN7456, SYN7455, SYN8127, SYN7461, SYN7460)

### B. Antenna Available

1. Retractable half-wave (8504163G01)

### 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/VII Adapter (NKN6546)
3. Palm Pilot V Adapter (NKN6547)
4. Y Data Cable (NKN6540)
5. Generic PDA Adapter (NTN8993)
6. USB Data Cable (SKN6311)

**E. Audio Accessories Available**

1. Privacy Earpiece and Microphone with Garment Clip (SYN8390)
2. Privacy Earpiece with Microphone and Remote PTT, Black (NNTN4033)
3. Privacy Earpiece with Microphone and Remote PTT, Fancy Silver (NTN9618)
4. Over the Ear Headset with Boom Microphone (SYN8146)
5. Lightweight Headset with Microphone (NTN8496)
6. Hearing Aid Neckloop (SYN7875)
7. Privacy Earpiece and Microphone (NTN8367)
8. Heavy Duty Headset with Microphone (NTN8513)
9. Over the Ear Headset with Boom Microphone (NTN8497)
10. Adjustable Over the Ear Headset with Boom Microphone (SYN8908)

**F. Car Accessories Available**

1. Hands Free Car Kit (NTN1796)
2. Dash Mount Holder (NTN9715)

**G. Body-worn Accessories**

1. Leather Carry Case (NTN9811)
2. Leather Carry Case Package with Belt Clip (NTN1823)
3. Swivel Carry Clip (NTN1824)
4. Wrist Strap (NTN9812)

**H. Housing**

The transmitter will be housed in the housing shown in the accompanying photographs (Exhibit 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 can not be changed by the user.