

**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.

It is expected that this handheld time division multiplexed transceiver with integral antenna, marketed in the United States, will also be used for itinerant operation with companion authorized base stations by users requesting trunked radio and telephone interconnect service while roaming outside the United States. In some countries the companion base stations are licensed to operate at frequencies in the 821-825/866-870 MHz band in addition to some of those in the 806-821/851-856 MHz band normally used in United States SMR systems. Consequently, this transmitter has been designed to meet FCC requirements for operation in the 806-821 MHz band over the more global band of 806 - 825 MHz when used with a companion authorized base station.

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 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.

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.

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

\* Via a peripheral serial port at an input rate of 19,200 bps maximum for circuit-switched data and 115,200 bps maximum for packet-switched data.

# Via an internal world wide web browser

**Table 12-1: TDM time slot allocation**

|                                                              |                                     |
|--------------------------------------------------------------|-------------------------------------|
| 12.1.1. Output Power <sup>1</sup> (at maximum power setting) | 0.72 watts, maximum <sup>2</sup>    |
| 12.1.2. Maximum antenna gain                                 | -0.6 dBd                            |
| 12.1.3. Maximum Effective Radiated Power (ERP) <sup>1</sup>  | 0.63 watts <sup>2</sup>             |
| 12.1.4. Output Power at minimum power setting                | 0.00015 watts, minimum <sup>2</sup> |
| 12.1.5. Maximum ERP at minimum power setting                 | 0.00013 watts <sup>2</sup>          |
| 12.1.6. Frequency Range <sup>3</sup>                         | 806 - 825 MHz                       |
| 12.1.7. Frequency Stability <sup>4</sup>                     | □ 1.9 PPM                           |
| 12.1.8. Emission Designator <sup>5</sup>                     | 18K3D7W                             |
| 12.1.9. Spurious Emissions                                   | ◁ -15 dBm <sup>2</sup>              |

- 1) dynamically controlled per preceding text
- 2) pulse average (i.e. – average value during TDM pulse transmission)
- 3) per preceding text, 806-821 MHz in the United States
- 4) per Exhibit 6.5
- 5) per Exhibit 6.2

## 12.2. Transmitter Application

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

### 12.2.1. Battery Available:

- 12.2.1.1. NTN8615 Lithium Ion 500 mAh slim battery
- 12.2.1.2. NTN8614 Lithium Ion 900 mAh high capacity

### 12.2.2. Chargers Available:

- 12.2.2.1. NTN8653 Desktop Charger
- 12.2.2.2. NTN8655 Vehicular Battery Charger
- 12.2.2.3. NPN6197 Travel Battery Charger
- 12.2.2.4. NTN1627 Desktop Charger Dual Pocket

### 12.2.3. Integral Antenna:

- 12.2.3.1. Collapsible whip antenna, Part No. 8585769B02

### 12.2.4. Data Cables Available:

- 12.2.4.1. NKN6522 Data Cable
- 12.2.4.2. NKN6523 In Line Palm Pilot Cable
- 12.2.4.3. NKN8993 Generic PDA Cable
- 12.2.4.4. NKN6503 Enhanced Y-cable

### 12.2.5. Other Accessories Available:

- 12.2.5.1. FLN9108 Optional Remote PTT
- 12.2.5.2. NTN8654 Audio Adapter
- 12.2.5.3. NTN1628 Headset with Boom Microphone
- 12.2.5.4. NTN9131 Hands-Free Car Kit
- 12.2.5.5. NTN9247 Leather Carry Case
- 12.2.5.6. NTN9071 Car Holder

### 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.