

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

### 12.1. Transmitter Technical Characteristics -- Pursuant 47 CFR 2.1033 (d)

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 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 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 MHz to 821 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 - 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. To enhance international roaming capability this transceiver has been designed to scan and lock to GSM frequencies in the 935 to 960 MHz band for service in the absence of a companion base station.

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

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. The trunking system protocol for voice transmission uses a 90ms frame divided into six 15 ms time slots. These slot allocations are summarized in Table shown below.

**Time Slot Allocation Table**

<b>Transmission Mode</b>	<b>Time Slots Allocated per frame</b>
1.) Dispatch (push-to-talk)	1
2.) Telephone Interconnect	1 or 2 (base station preset)
3.) Circuit-Switched Data*	2

\*via a peripheral serial port at an input rate of 19,600bps.

The RF output power of the transceiver also is controlled by the base station receiver which sense the received signal strength and, via control channel commands, adjusts active transmitter output power in 1dB steps over the range from rated power to approximately 34 dB cutback.

A. Output Power	<u>0.19 to 720 milliWatt</u>
B. Maximum Antenna Gain	<u>0.0 dBD</u>
C. Effective Radiated Power	<u>0.19 to 720 milliWatt</u>
D. Frequency Range	<u>806-825 MHz**</u>
E. Frequency Stability	<u>≤ 1.9 PPM *</u>
F. Emission Designator	<u>20K0D7W</u>
G. Spurious Emissions	<u>&lt; -20 dBm nominal</u>
H. DC Voltage and Current into the final RF amplifier stage/stages	<u>3.6 Volts DC</u> <u>180 mA average current at 1/6 multiplexing</u> <u>360mA average current at 2/6 multiplexing</u>

\*\* See Exhibit 12.1

\* See Exhibit 6.5

## 12.2. Transmitter Application

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

### A. Power Supply Available:

Two types of rechargeable secondary batteries: Li-ion standard, and Li-ion Slim battery. The three available chargers are the Vehicular Battery Charger, the Dual Pocket Desk Top Stand, and the Rapid Switch Mode Power supply.

### B. Antenna Available

Non detachable retractable antenna, 1/2 wave (extended), 1/4 wave (retracted)

### C. Microphone Available

1. Internal
2. Audio Connector
3. Adjustable Headset
4. Over the earpiece with microphone headset
5. Earpiece with microphone
6. Over the head headset

### D. Other Accessories Available

1. Programming cable (Servicing purposes)
2. Soft Install Car Kit
3. Car Holder Dash Mount with Bracket
4. Leather Carrying Case with belt clip
5. Car kit soft install (handsfree adapter)
6. Holder hands free PTT dash mount

### E. Maximum Transmit Channel Capability

All channels in the 806-825 MHz band are a multiple of 12.5kHz. This includes EA based SMR service channels.

### F. Housing

The transmitter will be housed in the housing shown in the accompanying photographs.

### *12.3. Transmitter Programmability*

The subject transmitter complies with 47 CFR 90.203 (e) 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 operator.

The programming of available transmitter frequency channels by an authorized service person is accomplished by the use of a personal computer using MS-DOS, a Level Shifter card, and licensed "Radio Service Software" (RSS).

No operation, receive or transmit is permitted during programming of the portable radio. The transceiver can transmit only after it's receiver has acquired and locked onto the base station. The maximum frequency error of the transceiver is 1.9 PPM based on the base station meeting the FCC requirement of 1.5 PPM. This locking ensures an accurate transmission frequency. For further description please refer to Exhibit 7.5.