

MN/DOT

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Specification for an unlicensed 900MHz wireless spread spectrum data modem

This specification states the minimum requirements for a 900 MHz spread spectrum radio modem.

General Requirements

1. Shall be a stand alone shelf mountable unit
2. Shall be Frequency Hopping Spread Spectrum (FHSS) Technology
3. Shall meet FCC part 15 rules and Industry Canada RSS-210 for unlicensed radio operation in the 902-928 MHz band -
4. Shall be programmable to operate in any of the following modes:
 - Master
 - Slave
 - Repeater
 - Slave/Repeater
5. Shall operate at a 60 mile range when antennas have a clear line of sight
6. Shall operate at temperatures of -40°C to +75°C (-40 °F to +167°F).
7. Shall have two (2) year limited warranty period for defects in materials or workmanship under normal use and service for a period of two (2) years from the date of installation

Minimum Radio Requirements

1. Shall operate in the frequency range of 902 – 928MHz
2. Shall have an operational range of 60 miles
3. Shall be programmable to operate in any of the following modes:
 - Master
 - Slave
 - Repeater
 - Slave/Repeater
4. Shall employ Frequency Hopping Spread Spectrum Technology
5. Shall have an RF transmitter capable of an output power of 1 watt
6. Shall have a receiver sensitivity of -108dBm
7. Shall support data transmission throughput of 1200 -115Kbps
8. Shall have an EIA/RS 232 data interface
9. Shall use a DB9 connector for the EIA/RS 232 data interface
10. Shall have transmission latency of no more that 5 msec
11. Shall have a minimum of 16 bits of CRC data error detection
12. Shall operate with an input voltage in the range of 6 – 30 VDC
13. Shall have a maximum power consumption of 450 mA @ 12VDC when the radio transmit power is set at 1 Watt

Optional Software Requirements

When available from the radio manufacturer the interface software should have the following features.

1. Local and Remote Configuration
2. Pre-built Radio Drivers/Templates for Traffic Controller applications
3. Spectrum Analyzer
4. View/Save/Print Configuration Files (PDF format)
5. Network-wide Diagnostics
 - a) Noise Levels
 - b) Signal Strength
 - c) Data Packet Testing
 - d) Alarm logging and notification of diagnostic values which exceed user settable thresholds
 - e) VSWR (reflected power)
 - f) Input Voltage readings (Max/Min)
 - g) Temperature readings

This interface software is not a requirement of this specification and therefore not a prerequisite for radios being placed on the MN/DOT Signals QPL.