

SECTION 688

DATA RADIO COMMUNICATION SYSTEM

DESCRIPTION

688.01.01 GENERAL

- A. The data radio unit for use at remote signalized intersections shall be of solid state design.
 - 1. The data radio unit shall be an ENCOM Energy-Int or approved equal.
- B. The data radio shall be configurable as a main or remote unit.
 - 1. Full network diagnosis shall be available when operating as a main or remote unit.
 - 2. The unit shall provide high system performance and data integrity through digital signal processing.

MATERIALS / EQUIPMENT

688.02.01 FUNCTIONAL REQUIREMENTS

- A. The data radio units shall conform to the following general requirements:
 - 1. Supply Voltage: Shall utilize a PoE 802.3af/at or newer technology.
 - 2. Sleep Mode: 15 mA nominal humidity, 95% at 104 °F, non-condensing.
 - 3. Temperature Range: -40 °F to 176 °F.
 - 4. Data Rate: IEEE 802.11a/n/ac.
 - 5. Port Speed: Minimum of 9,600 bps.
 - 6. Casing: IP67 weather protection rating or higher.
 - 7. Operational Modes: Dynamic frequency, full-duplex.
 - 8. Data Interface: Ethernet.
 - 9. Current Consumption: Maximum of 19 W +PoE output.
 - 10. Communication Distance: Minimum range of 20 miles line of sight.
- B. Radio Receiver: The radio receiver shall conform to the following:
 - 1. Sensitivity: -96 dBm to 72 dBm nominal.
- C. Radio Transmitter: The radio transmitter shall conform to the following:
 - 1. RF Power: Software adjustable up to at least 1 W.
 - 2. Duty Cycle: Continuous.
 - 3. Output Impedance: 50 ohms.
- D. Connectors and Harnesses:
 - 1. All connectors and harnesses shall be furnished with each data radio unit. It is the supplier's responsibility to contact FAST to determine the type of connectors required.
- E. Power Requirements: The data radio units shall meet all manufacturer's required specifications.

- F. GPS/Network Management Requirements: Network mapping with automatic geolocation.
- G. Antennae Requirements:
 - 1. An integrated panel type antennae with at least 20 dB gain antenna shall be provided with each unit.
 - 2. The antennae shall be capable of operation within the 4.92 GHz to 6.1 GHz bandwidth.
- H. Software Requirements: All software necessary for the units to be fully functional shall be downloaded into the devices.
- I. Compliance to FAST: All equipment supplied shall conform to the requirements of FAST.

CONSTRUCTION

688.03.01 INSTALLATION

- A. The radio unit shall be installed as shown on the plans.

METHOD OF MEASUREMENT

688.04.01 MEASUREMENT

- A. The quantity of Data Radio Units shall be measured per each.

BASIS OF PAYMENT

688.05.01 PAYMENT

- A. The accepted quantity of Data Radio Units will be paid for at the contract unit price bid per each which shall be full compensation for providing and installing the radio unit and appurtenant equipment, measured as provided under **Subsection [688.04.01](#), "Measurement,"** as specified, and shown on the drawings.
- B. Payment will be made under:

PAY ITEM:	PAY UNIT
Data Radio Unit	Each