

### **Project Description**

The County of Summit, Ohio desires to engage the services of a wireless communications equipment vendor to engineer and implement one or more bi-directional-amplifiers (BDA's) to improve the uplink and downlink performance of 800 MHz portable radios operating on the Summit County-Akron 800 MHz Regional Radio System (SCA8RRS) within all inhabitable areas of the Summit County Jail located at 205 E. Crosier St, Akron, Ohio 44311.

### **SCA8RRS Description**

SCA8RRS is a Motorola Solutions, 800MHz, 4.1 Smartzone, five site simulcast and voted Trunked Radio System (TRS). Portable and mobile radios transmit on uplink frequencies between 806-825MHz and receive on downlink frequencies between 851-869MHz. The system utilizes both analog and digital modulation.

### **BDA System Specifications**

The proposed BDA system shall meet or exceed the following minimum specifications:

- Improve the downlink signal from SCA8RRS to a level of no less than -113dBm as received by a portable radio with a standard whip antenna worn on the belt of individual operating within all inhabitable areas of the Summit County Jail while in either a standing, sitting, or prone position.
- Improve the uplink signal from a portable radio with a standard whip antenna worn on the belt of individual operating within all inhabitable areas of the Summit County Jail while in either a standing, sitting, or prone position to a level of no less than -113dBm as received by SCA8RRS system.
- The proposed design, equipment, and operation shall comply with the Federal Communications Commission (FCC) rules 47 CFR 90.219 regarding the use of signal boosters.
- The proposed system shall be compatible with the current SCA8RRS system and future SCA8RRS P25 system without modification.
- The BDA system shall be powered by the building's electrical system. A transient voltage surge suppressor shall be provided as part of the bi-directional amplifier design to protect the BDA(s) from power line transients.
- The BDA(s) shall be supplied with an uninterruptable power supply (UPS) or battery backup system (BBS) to ensure operation for a minimum period of four hour in the event of a loss of commercial power or failure of the backup generator.
- The BDA(s), UPS(s), or BBS(s) shall be placed in a vendor supplied locking NEMA 3 cabinet(s). The cabinet(s) should be clearly labeled as "Radio System Amplifier".
- All exterior and interior antennas, feedlines, power dividers, taps, surge suppressors, and lightning arrestors, should be labeled as "Radio System Amplifier" to easily indentify these items in the future.

- The exterior antenna system(s) shall consist of an omni-directional antenna, an antenna mount, coaxial lightning surge suppressor, and a low loss coaxial cable feed to the BDA(s). The gain of the antenna(s) and specific size of the feed line coaxial cable(s) shall be determined by the vendor based on the system design. The exterior antenna(s) shall be configured to mount on or near the building rooftop at a location affording the best view towards the nearest radio repeater site. The vendor is responsible for determining if plenum rated cable is required. Any building penetration for RF feed line cabling shall be protected with a waterproof/UV stabilized cable boot suitable for the installation. The exterior antenna system(s) shall be grounded in accordance to Motorola R56 Grounding Standards.
- Indoor antenna(s) shall consist of a sufficient number and/or radiating cable distributed within the building to meet the required signal levels. The gain of the antenna(s) and specific size of the coaxial cable(s) shall be determined by the vendor based on the system design. If radiating coaxial cable is used as part of the design it shall be installed per manufactures recommendations within the ceiling or walls and, as much as possible, not visible. Cable jackets for any coaxial cables installed indoors shall be low smoke, non-halogen construction. All indoor cabling shall meet applicable codes related to “plenum ratings” and fire/electrical as meeting UL or other testing standards. If indoor antennas are used they will be internal to the ceiling or flush mount, and as visually unobtrusive as possible.

#### **Installation**

- Installation of the system will be during normal business hours. The selected vendor will need to schedule work times with the jail staff and adhere to all rules that pertain to vendors working within the jail.

#### **Testing & Acceptance**

- Upon completion of the installation, a 30 day test will commence. This test will confirm the system meets the required technical specifications, its reliability and functionality. Any deficiencies shall be corrected by the vendor within 72 hours. Once corrected, a new 30 day test period will begin. The system will not be accepted by the County of Summit, Ohio until it has functioned without error for 30 days.

#### **System Documentation**

- The vendor shall include in their proposal a block diagram of the system indicating the location of all exterior and interior antennas, BDA(s), power dividers, taps, and cabling. The proposal should also include specification sheets for all equipment to be supplied. Upon completion of the system installation, the vendor shall turnover all service manuals or related service documents associated with the installed equipment.

#### **System Warranty**

- The vendor shall provide a one-year warranty on the entire system. This shall include all BDA(s), Exterior Antenna(s), Interior Antenna(s), Cabling, UPS(s), BBS(s), Power Dividers, Taps, and Labor. The one-year warranty will begin upon acceptance of the system by the County of Summit, Ohio.

**System Maintenance**

- The vendor shall provide as part of their proposal, the option for an annual maintenance agreement. The agreement shall cover entire system including all BDA(s), Exterior Antenna(s), Interior Antenna(s), Cabling, UPS(s), BBS(s), Power Dividers, Taps, and Labor.

**700MHz Option**

- The vendor shall provide as part of their proposal, the option to add 700MHz coverage to address in-building coverage on the State of Ohio MARCS 3.5 and 7X systems. All uplink and downlink signal level requirements for the 800MHz system shall apply to the 700MHz optional coverage.