

Bid Specifications

FDMA / FSK Digital Radio Communications System

Bid must include the following:

1. FDMA/FSK Digital Mobile Radios
2. FDMA/FSK Digital Portable Radios
3. FDMA/FSK Repeaters for Conventional/Trunked operation
4. AVL/GPS Fleet Tracking System
5. Communication System Airtime Service Agreement

Winning Bid must be valid for a minimum of 5 years with no more than 3% annual increase after first year unless otherwise modified or extended in writing and mutually agreed upon by both parties.

Specifications for FDMA/FSK Digital Mobile Radio Unit

1. UHF Band, frequency range of 450 to 520 mhz.
2. Must be able to perform FM Conventional, LTR Analog, FDMA/FSK Digital Conventional and FDMA/FSK Trunked format modes. Radio must be Project 25 compatible by upgrade option.
3. Radio shall be capable of the following emission types: 16K0F3E, 11K0F3E, 8K30F1E, 8K30F1D, 8K30F7W, 4K00F1E, 4K00F1D, 4K00F2D (25khz, 12.5khz, and 6.25khz)
4. Frequency stability shall be at least ± 1.0 ppm or better.
5. 512 CH/GID / 128 zone LTR trunk memory capacity.
6. Shall have full NXDN® feature set including AMBE+2 vocoder, Emergency Call, Status Messaging, Remote Stun/Kill, Remote Check, GPS Location w/voice, NXDN® Scrambler, Over-the-Air-Programming (OTAP), and Multi-Site IP Network Compatible with Automatic Site Roaming Capability.
7. 30 watt minimum transmitter power output.
8. Front facing speaker, 4 watt audio power into 4 ohm w/less than 3% distortion.
9. Build-in voice inversion scrambling and NXDN® Digital Scrambling.
10. Internal plug-in connector for optional Rolling Code Scrambler and/or GPS Receiver. GPS Receiver option and programming must be compatible with existing Sevier County, TN mobile tracking system hardware.
11. Must have Rear DB-25 Accessory Port w/up to 9 programmable inputs/outputs.
12. Ability to add Remote Control Head Option.
13. 14 character dot matrix display.
14. Must meet MIL-STD 810 C/D/E/F.
15. Must have Fleetsync / Fleetsync II PTT ANI & Deadbeat Disable Protocol.
16. Equipment manufacturer must be ISO9001 Certified.
17. Bid must include programming to make radio functional on Conventional Repeaters, LTR Multi-site Trunking System, NXDN® Multi-site Trunking System, and GPS tracking system that is already in place for Sevier County, TN.
18. Radio must have a minimum of 3 years manufacturers warranty on labor and parts and a minimum of 1 year manufacturers warranty on all accessories.

Specifications for FDMA/FSK Digital Portable Radio Unit

1. UHF Band, frequency range of 450 to 520 mhz.
2. Must be able to perform FM Conventional, LTR Analog, FDMA/FSK Digital Conventional and FDMA/FSK Trunked format modes. Radio must be Project 25 compatible by upgrade option.
3. Radio shall be capable of the following emission types: 16K0F3E, 11K0F3E, 8K30F1E, 8K30F1D, 8K30F7W, 4K00F1E, 4K00F1D, 4K00F2D (25khz, 12.5khz, and 6.25khz)
4. Frequency stability shall be at least ± 1.0 ppm or better.
5. 512 CH/GID / 128 zone LTR trunk memory capacity.
6. Shall have full NXDN® feature set including AMBE+2 vocoder, Emergency Call, Status Messaging, Remote Stun/Kil, Remote Check, GPS Location w/voice, NXDN® Scrambler, Over-the-Air-Programming (OTAP), and Multi-Site IP Network Compatible with Automatic Site Roaming Capability.
7. 5 watt minimum transmitter power output.
8. 500mw audio power into 8 ohm w/ less than 3% distortion..
9. Build-in voice inversion scrambling and NXDN® Digital Scrambling.
10. Internal plug-in connector for optional Rolling Code Scrambler and/or GPS Receiver. GPS Receiver option and programming must be compatible with existing Sevier County, TN mobile tracking system hardware.
11. High capacity Li-Ion battery more than 12.5hrs service @ 5-5-90 duty cycle.
12. 14 character dot matrix display.
13. Must meet MIL-STD 810 C/D/E/F.
14. Must have Fleetsync / Fleetsync II PTT ANI & Deadbeat Disable Protocol.
15. Equipment manufacturer must be ISO9001 certified.
16. Bid must include programming to make radio functional on Conventional Repeaters, LTR Multi-site Trunking System, NXDN® Multi-site Trunking System, and GPS tracking system that is already in place for Sevier County, TN.
17. Radio must have a minimum of 3 years manufacturers warranty on labor and parts and a minimum of 1 year manufacturers warranty on all accessories.

Specifications for FDMA/FSK Digital Repeater / Base Unit

1. UHF Band, Frequency Range of 450-480mhz.
2. Unit must perform as Repeater / Duplex / Simplex Operation.
3. Unit must perform as FM CTCSS/DCS Conventional, LTR Analog, FDMA/FSK Digital Conventional, and FDMA/FSK Trunked single and Multi-site format modes and must currently support Fleetsync.
4. Unit shall be capable of the following emission types: 16K0F3E, 11K0F3E, 8K30F1E, 8K30F1D, 8K30F7W, 4K00F1E, 4K00F1D, 4K00F2D (25khz, 12.5khz, and 6.25khz)
5. Frequency Stability must be at least ± 0.5 ppm or better.
6. Must have FDMA feature set including AMBE+2 Vocoder, 3000 UDI's/GID's Trunking Validation, 65,519 UID's/GID's Digital Conventional Validation., Transmission and Message Trunked modes, NXDN® Scrambled audio support, NXDN® traffic Channel Sharing, Compact Flash Memory expansion.
7. Up to 5 watt exciter power output and RF final amplifier of 100 watts.
8. Flash firmware supporting Remote System Firmware Updates, Firmware Updates must be capable of being performed from an off site location.
9. Repeater(s) must be capable of being installed with currently operating NXDN® Multi-site Trunking System that is owned by a 3rd party and is Public/Private partnership for channel expansion purposes and must be programmed utilizing the existing System Key Configuration and software package supporting USB Secure Key Access, Direct, Dial-UP, and IP connectivity, Subscriber Privileging, Remote Site Programming, Real – Time Activity Monitoring, NXR/Network Interface Diagnostics, and Call Logging / Event Logging.
10. Equipment manufacturer must be ISO9110,

Specifications for AVL/GPS Fleet Tracking System

This bid specification is for the County of Sevier TN Wide area AVL/GPS Fleet Tracking System. System will include tracking capabilities using existing Kenwood radios with installed GPS receivers (Fleetsync® technology) and cellular AVL tracking (using CDMA technology- NO GSM) and overlay both technologies on same map simultaneously. Options must also be available to use other asset tracking formats such as Iridium / Inmarsat/ Globalstar satellite, Kenwood Nexedge®, and Android / Blackberry / Iphone smartphones. System will also include Client software and/or Web Browser login capability for Customer to track their vehicles and show the status of the vehicles. The GPS tracking Server shall be owned, operated, and maintained by the Dealer and the Dealer shall provide as a service to the Customer unlimited connection time via Internet. Internet connection on Customer side will be provided by the Customer.

Required features for Client.

- Log-in connection methods shall be Web browser based supporting Internet Explorer, Firefox, or other compatible web browser and/or standalone internet based client software installed in standalone computer.
- No required customer premises radios for data transmission as all data shall be through secured IP connection to Dealers server.
- Large wall mounted display screen (42in or larger) to view map of tracked vehicles and their status.
- Web connection or client software must have map capability of street view, aerial view and topographical capabilities as well as integration of the Sevier County ESRI based GIS map.
- Automatic updating of vehicle location with a minimum of 2.5 minute intervals on the Kenwood Fleetsync® and Nexedge® formats and a minimum of 45 second intervals using cellular technologies.
- Must be able to see all asset formats on the chosen map simultaneously.
- Ability of request immediate real time location (Polling) of any asset on the map.
- Ability to receive status messaging, ie Emergency Lights On, Emergency Man Down, etc.
- Automatic E-mail notification of speeding vehicles, geofence violations, OBDII/J1939 vehicle diagnostic problems and other preconfigured alerting options.

Required Services from Dealer.

- Dealer shall provide from their location, static public IP address supporting multiple client logins via Web Client and / or Client software simultaneously.
- Dealer shall own and maintain their own GPS Tracking Server without reselling a third party vendor.
- System shall provide updated asset location at a minimum of 2.5 minute intervals for Kenwood® radio technologies and a minimum of 45 second intervals for all cellular technologies while accepting ping or polling requests from Web Clients or Client Software for immediate real-time asset location.
- System shall provide immediate notification to client of any status messaging.
- System shall provide to client via e-mail notification of speeding vehicles or status messaging.
- Dealer shall provide infrastructure to accept AVL data from the existing Kenwood® radios from at least 3 mountain top sites within the Sevier County TN area.
- The Dealer shall have full capabilities of running reports on customers units if there is ever a need and the customer was not connected during a period in question.
- Dealer shall be able to sell, install, and fully support GPS radio unit inside existing Customer owned Kenwood® brand 2-way mobile radios and program to work on system. Dealer shall also be able to sell, install, and fully support standalone CDMA cellular technology devices that will work with existing Customer purchased “Aircards” and will overlay the AVL data on the existing data plan. All AVL/GPS reporting formats shall be NMEA-0183.

Specifications for Communications System Airtime Agreement

This specification describes the Airtime agreement for the subscriber units. The Customer shall own the subscriber units (no leased units). The Dealer shall own, operate and maintain the Communications System Infrastructure according to the guidelines set forth and established with the Federal Communications Commission. Dealer shall also maintain such infrastructure equipment as to providing digital trunking channel capacity, frequencies, FCC licensing, system licensing fees and other associated costs to ensure a compatible 24/7 operational environment with redundant backups for Public Safety entities.

Dealer Requirements

- Dealer must be able to provide documentation and proof that it is certified and competent to provide the requested services; ie FCC Certification, references, etc)
- Provide multi-site digital trunking system operational on at least 4 sites to ensure adequate coverage for the Sevier County TN public safety organizations.
- Provide unlimited airtime as needed by each department.
- Pricing shall be on a monthly basis per subscriber unit.
- Equipment must be simultaneously compatible with ALL existing infrastructures (12.5khz conventional analog, 12.5khz multisite LTR trunking, and Kenwood's Nexedge® digital conventional and trunking formats – 12.5khz & 6.25khz)
- Equipment must be programmed and provisioned to operate with existing infrastructures and system must support Digital Over the Air Reprogramming.
- All subscriber equipment sold must meet specifications listed previously including but not limited to Project 25 support thru firmware upgrade.
- Dealer must provide monthly detailed reporting showing the airtime usage statistics of the digital communications system for each public safety entity and reference the previous 12 months airtime trends to indicate system growth.
- Dealer must provide the necessary number of communication channels required to maintain a system loading factor of less than 30 percent to ensure that there is adequate resources available during busy event times.
- Dealer is responsible for all maintenance costs to keep system operational for a 24/7/365 Public Safety environment while keeping downtime to an absolute minimum. During maintenance downtime or in the event of failure, a fully redundant backup equipment and deployment plan must already be in place, maintained and operational 24/7/365 ready for immediate switch-over when needed.
- Infrastructure equipment must be compatible and monitored by the Monitoring for Integrity System that is already owned by Sevier County. Monitoring includes, status of each communication channel, current draw and summary alarms for each power amplifier, primary and backup power supply voltages, utility power status, backup generator status(s), building and equipment temperature(s), intrusion alarms, etc and must provide those alarms to the Sevier County E911 dispatch center for immediate action.
- Dealer should also have access for log-in to video surveillance at each of the sites.