

APPENDIX O – REVISED (REVISED APRIL 2012)

Eastern Shore of Virginia 9-1-1 Commission Mobile and Portable Radios Procurement and Compatibility Guidelines

- Mobile and Portable Radios Operating under the ESVA 9-1-1 Fire-EMS Frequency Plan are VHF models with frequency range coverage 146-174 MHz, with a peak requirement between 150 MHz and 160 MHz. Current radio operations are analog voice without data transmissions. Digital technology is not yet deployed, however may be in the future. The following specifications are based on expected future radio and radio system capabilities.

It is also noted EMS transport vehicles will also maintain UHF radio for MED Channel operations (ambulance to hospital and hospital to ambulance communications) – These radios will meet the same core requirements as VHF radios.

- CORE REQUIREMENTS - Mobile and portable radios need to be Narrowband capable (with the ability to operate in wideband or narrowband mode), MDC1200 compliant (or other accepted/approved radio signaling standard), P25 capable/compliant, have a 96 minimum channel capacity (in multiple zones/banks), have a display screen (with a minimum of fourteen for character spacing to promote consistent nomenclature), include necessary ruggedness (military specifications-810), have “emergency button” capability, and capable of tone and digital coded squelching (DPL).
- New radios will be manufactured per FCC regulations and will meet the narrowband requirement. Radios will have the ability to operate analog core or digital format.
- MDC1200 is the signaling standard adopted by ESVA 9-1-1 which allows for the encoding and decoding of a four-character assigned code in each radio, thus permitting the identification of a calling unit (radio user) by code or alias. It also permits the transmission and processing of the “emergency button” feature on compatible radios. If another signaling standard is used it must be approved/authorized by ESVA 9-1-1 (to verify ability to identify radio).
- Continuous tone coded squelch system (CTCSS), also known as Private Line (PL), Channel Guard (CG), and other manufacturer nomenclatures is used to minimize audible interference by filtering out other system users on the same frequency through use of a sub-audible tone. Digital tone coded squelch, more commonly referred to as “Digital PL” or DPL, is a digital methodology expected to be deployed within the ESVA 9-1-1 system to meet expanding filtering needs.
- Narrowband capable refers to the FCC mandate that by January 2013 all public safety radios (VHF and UHF) will operate on 12.5 kHz or narrower channels.
- APCO Project 25 (P25) is a set of standards that have open architecture, user driven suite of system standards that define digital radio communications system architectures capable of serving the needs of Public Safety and Government

organizations. The P25 suite of standards involves digital Land Mobile Radio (LMR) services for local, state/provincial and national (federal) public safety organizations and agencies. P25 open system standards define the interfaces, operation and capabilities of any P25 compliant radio system. In other words, a P25 radio is any radio that conforms to the P25 standard in the way it functions or operates. P25 compliant radios can communicate in analog mode with legacy radios and in either digital or analog mode with other P25 radios. The P25 standard exists in the public domain, allowing any manufacturer to produce a P25 compatible radio product. P25 capable radios will require future upgrade (to become P25 compliant) at additional costs.

- For future interoperability a minimum of 96 channels is considered a core specification. Most radios use channels in banks or zones of 16 channels each. Having additional zone capacity allows for more interoperability options and/or transitional program zones. However, as the complexity of programming is increased as is user training/understanding.
 - All radios should have a display screen to quickly access and channel or mode. The display should include a minimum of fourteen for character spacing (to promote consistent nomenclature).
 - All radios should meet applicable military (ruggedness) specifications (810), including being able to withstand temporary and sustained environmental events, such as rain, humidity, and shock.
- Mobiles 45W, 96 Channel Minimum

APPROVED RADIOS:

1. MOTOROLA ASTRO XTL 2500
2. KENWOOD 5710 (if waiver option requested)
3. KENWOOD 5720 (for secondary support operations, if waiver option requested)

- Mobile Antennas
 - 3dB Gain Antenna (typical base coil and whip) if allowed by height
 - Unity Gain Antenna (short whip)
 - Low Profile Antennas only if height constrained
 - If unsure, ask for comparative specs and pros/cons
 - Remember that the antenna is a critical part of the mobile radio system which needs to be routinely checked to assure proper functioning

- Portables 5W, 96 Channel Minimum

APPROVED RADIOS:

- In addition to the MDC1200 signaling requirement, users may need to determine if a portable radio can decode Quik-Call II tones if the radio will be used to receive station pages (alerts) in conjunction with calls.

1. MOTOROLA XTS 1500 (Model 1.5)
2. KENWOOD TK-5220

- Be Sure Batteries Are In Good Condition
 - Motorola 3-Digit Date Code – “YWW” where Y equals year and WW equals week... i.e., 425 equals 25th week of 2004... batteries 3-5 years old are candidates for replacement if not functioning well
 - Other batteries (non-Motorola) typically have a date code available
- Programming of Radios
 - ESVA 9-1-1 maintains programming capabilities for most Motorola radios.
 - ESVA 9-1-1 programming vendors provide programming for most Motorola and Kenwood radios.
 - While programming is the responsibility of the radio owner, ESVA 9-1-1 will assist when possible.
 - For new radio orders, ask ESVA 9-1-1 if a “codeplug” exists that can be modified and copied to your new radio. This will provide standardization of radios at least for the basic operations. Additionally, assure that an MDC code is assignable to your radio and matched to a console alias (unit name). The codeplug can be sent to your dealer for programming your radio.

OTHER

Any requests or proposals to add, delete, or otherwise change any of the above radio recommendations and guidelines should be brought to the attention of the 9-1-1 Commission, through the 9-1-1 Director.