1. Introduction/Purpose
This policy is pertinent to the addition of any Radio Equipment into the WV SIRN system. This policy spells out the requirements for all radio manufacturers to have their equipment approved. It will also categorize radios into various Levels according to the radios testing and capabilities.

2. Definitions
All definitions are located in the “Definitions” document located on the SIRN Website at www.sirn.wv.gov.

3. Radio Equipment Requirements
   a. No equipment shall be programmed or attempted to be used with the SIRN that is not listed on the SIRN Approved Equipment List (SIRN AEL), as set forth by the SIEC.
   b. The SIRN AEL shall be based on criteria to establish minimum operating standards and not based on a specific manufacturer(s).
   c. The SWIC shall publish an updated SIRN AEL on the SIRN website as soon as reasonably possible after changes have been made.
   d. No radio activations, unless approved by the SIEC Technical Committee for official testing, shall be made for equipment not approved.
   e. Per FCC Licensing, mobile unit output power is limited to no more than 50 watts.
   f. The approved radios will be broken down in the following format utilizing 4 Levels
      i. Level 1; Radios in this section shall meet or exceed ALL of the below criteria;
         1. At Least 1000 Channels
         2. Mixing Conventional and Trunking in the Same Zone
         3. Priority Scanning Conventional and Trunking in the Same List
         4. TDMA (Phase 2) Enabled
         5. Capable of AES Encryption with Multi-Key
      ii. Level 2; Radios in this section shall meet or exceed ALL of the below criteria;
          1. 512 or More Channels
          2. Mixing Conventional and Trunking in the Same Zone
          3. Scanning Conventional and Trunking in the Same List
          4. TDMA (Phase 2) Enabled
          5. Capable of AES Encryption with Multi-Key
iii. Level 3; Radios in this section will meet 1 or more of the below criteria
   1. NOT Capable of AES Encryption with Multi-Key
   2. LESS than 512 Channels
   3. TDMA (Phase 2) Enabled
   4. NOT Capable of Mixing Conventional and Trunking in the Same Zone
   5. NOT Capable of Scanning Conventional and Trunking in the Same List

iv. Level 4; Special Note: These radios are Special Condition Radios, Caution Should Be Taken before purchasing these radios. Please read the notes and understand the limitations before purchasing.

v. Level 99 – No longer recommended for use (End of life). The radio listings in Level 99 are radios that are no longer being supported by the manufacturer. While the device may still work to some level of usability on SIRN, the radio has noted significant issues. The radio is NOT RECOMMENDED for use or purchase by the SIEC

g. Site equipment (such as new sites or related equipment) will be evaluated on a case-by-case basis. Please refer to the Standard Operation Procedure for “Adding Astro Site Repeater Sites”. Parties interested in purchasing a new site shall contact the SWIC to begin the process.

h. Testing of radio equipment (new or currently approved equipment) or testing of parameter changes shall only be conducted with prior approval of the SIEC Technical Committee.

i. No vendor shall conduct radio testing of parameters or equipment that is not approved by the SIEC Technical Committee.

j. In order for radio equipment to be properly categorized and accepted for use on the system the following testing process has been established:
   i. A vendor shall submit a request to the SWIC to have a device tested.
   ii. A vendor shall appoint a single point of contact representing the vendor and the appointed tester.
   iii. The SWIC or designee will coordinate with the Chair of the SIEC Technical Committee to assign the initial testing of the device to the most appropriate person. All equipment submissions must include the radio and accessories needed to operate the unit, programming software and cables if requested and any needed technical support needed to program and test the radios.
   iv. The SIEC will test the radios to demonstrate proper operation and notify the vendor of any issues and make reasonable attempts to resolve minor issues.
   v. After acceptance, the SIEC Technical Committee will determine the appropriate Level of Acceptance and suggest to the SIEC the Approval of the equipment.
   vi. After SIEC approval of the radios it will be added to the SIRN AEL. If not approved, the reason(s) will be conveyed to the vendor who has the opportunity to correct the issues and resubmit for testing.
   vii. Any vendor who desires to have their approved product placed on the SIRN approved equipment list (SIRN AEL), must provide four (4) radios of each make/model that is requesting approval to the Office of the SWIC along with all accessories to make said radio usable as well as un-expiring programming software for the duration of that radio’s life span or for the length of time said radio is on the approved equipment list. All equipment must be tested for no less than 30 days and will only be approved at a regularly scheduled meeting of the SIEC.
   viii. Vendors knowingly selling equipment that is not approved will be reported to the appropriate officials for investigation. The SIEC reserves the right to remove Manufacturers from the SIRN AEL that has vendors routinely selling equipment not meeting the specifications for use on SIRN.
   ix. The SIEC will only test and approve radios based on the data available from the vendors and the configuration of the radio sent for testing. Please submit properly equipped radios and proper documentation with the radios for testing. Radio features (ie. Encryption, TDMA, etc.) that are not included in the radio cannot be tested, and will not be able to approved at the level the option is required.
   x. The SIRN AEL and testing process is based on properly equipped radios. Due to different options available from various manufacturers please ensure the radio is properly configured for operation.
   xi. Radio programming shall not necessitate a connection to the internet by the radio or the
programming laptop. All programming shall be possible via a programming cable using a computer that is not connected to the internet. Programming via an internet cloud site is not acceptable.

k. In order to establish proper operation with the existing system and user equipment the following criteria has been established.

   i. Required – All equipment must meet these criteria for approval. If at any time the equipment is found to not meet these requirements it will be immediately removed. (Listed Alphabetical)

   1. Adjustable time-out timer – Must be able to programmer enter values from 30 seconds to 120 seconds.

   2. Busy Channel – The radio must alert the user that they are attempting a PTT on a busy channel; the radio must give audible warning to the user as long as the PTT button is pressed.

   3. Busy Queuing and Call Back – The radio will notify the end user (Both Visual and Audible) that the system is busy and when a talk channel is available the radio will notify the user they can now transmit.

   4. Capable of operation at least from 400-470 MHz – Wider operation is acceptable; this is due to the SIRN implementing sites in the 400-410 range.

   5. Conventional Radio Resource – Must be able to populate the radio with conventional channels as well as trunking.

   6. Dynamic Regroup capability – Must be able to dedicate a channel and place that channel in a zone/group on any channel spot.

   7. Full Spectrum Control Channel Scan – Must automatically search for available control channels.

   8. Multi-Zone Roaming – The radio must allow operation on a multizone controlled system

   9. Out of Range Indication – The radio must alert the user (visually and audible) that the radio is out of system range. Audible and/or visual indication should be selectable by the programmer.

   10. Radio inhibit capability – The radio must be able to be rendered nonoperational by the system administrators

   11. Return to affiliation after conventional channel activity – The radio must be able to be changed from conventional to trunking and reaffiliate without any user interaction other than channel changes.

   12. Return to affiliation after Out of Range – The radio must return to system operation after it has gone out of system range without user interaction.

   13. Site Trunking Notification – The radio must give the programmer the option to set audible, visual or both alerts to the user when the radio senses a Site Trunking situation.

   14. Site Trunking Roaming to Wide Area Sites – The radio shall, without user interaction, search for and roam to wide area sites, if available, when a Site Trunking situation is indicated.

   15. Talkgroup Call – The radio must be able to transmit and receive on the programmed talkgroups

   ii. Optional Features – These features will be tested if present and the results noted, but they are not required for approval. Users should check with the vendor to ensure the radio they are purchasing has the Optional Features they desire.

   1. Ability to software program a radio for single site operation

   2. Ability to mute all or select Alert Tones

   3. Call Alert (Encode and Decode), Both Trunking and Conventional

   4. Emergency Alarm (Encode and Decode)

   5. Operator Programmable Scan List

   6. Operator Programmable Zone List

   7. P-25 CAI Operation
8. PTT Unit ID/Alias Display
9. RSSI Indication
10. Secure Operation (Other than AES) & Multi-key Operation
11. Operation of TDMA (APCO P-25 Phase II)

I. Requirements of Manufacturers – The following are general requirements of the manufacturer for their radios to be considered for the Approved Equipment List. This policy section will become effective January 1, 2018.

   i. Firmware updates
      1. The manufacturer must provide field installable firmware as needed to address functional issues with the radio, this must be provided free of charge and may not require the use of an external USB/Key type device.
      2. The manufacturer must provide an online portal for firmware downloading, as updates are released. Access to this portal and downloads will start at time of testing and continue until the radio is no longer on the SIRN AEL.

   ii. Software updates
      1. The manufacturer must provide field upgradable software as needed to keep software updated to the current version
      2. The manufacturer must provide an online portal for software downloading, as updates are released. Registration and login requirements are acceptable

   iii. A reasonable fee for software licensing is acceptable, software must be provided at no cost for testing purposes of equipment.

Note: Most radio manufactures have options when ordering equipment, the tested and approved equipment should be reviewed and the purchaser should ensure that a radio is properly configured before purchasing. Proper Make and Model numbers do not always indicate proper configuration.