



Standard Operating Procedure

Title / Subject

Adding Astro Repeater Sites

References/Updates:

Approved: 04/08/2024

Table of Change

1.	Add 3a ii, 3d. Modify Title, 3a vii, c, e, f	Page 1
2.	Add 5 c, d and e. Modify 4a,4c, 6b and 6c.	Page 2
3.		

1. Introduction/Purpose

This policy is pertinent to the addition of Motorola ASR (ASTRO Site Repeater) Radio Sites into the SIRN network. This policy does not pertain to the connectivity of other manufacturers or vendor dispatch equipment. SIRN will only allow Motorola sites and equipment to be connected into the network. Common descriptions of these approved sites may be called six packs, ESS Stacks, GTR Stacks and the like, with all equipment built and configured by Motorola. The SIEC Technical Committee must be consulted and will review all proposed plans to add any additional equipment into the SIRN system.

2. Definitions

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

3. Adding an RF Site (ASR Site)

- a. Agencies who desire to add a radio site into the SIRN network will only be allowed to add sites based on the following criteria:
 - i. SIRN will only allow Motorola sites and equipment to be connected into the network.
 - ii. SIRN will only allow sites to be brought on line via the Aviat microwave connectivity. No other forms of ASR site connectivity are permitted.
 - iii. Minimum number of repeaters physically present to be installed is six. Adding additional GTR or current equivalent repeaters above six is acceptable.
 - iv. Site equipment shall be able to operate on AC and DC.
 - v. All site equipment must be installed in a SIRN approved equipment shelter.
 - vi. Repeater must be able to be interfaced into the existing or supplied DC power plant consistent with the current SIRN operation being implemented through the State.
 - vii. All repeaters to be used at a site must operate in the UHF 400-470 MHz band. Some exceptions may be presented to the SIEC Technical Committee to operate outside of the 400-470 MHz band, but the range must be within UHF.
 - viii. The recommended configuration shall be discussed with the SIEC and SIRN team before soliciting bids or purchasing any equipment.

- ix. The purchase shall include a minimum subscriber unit ID license increase of 500 subscribers.
- x. The purchase shall include a minimum of 500 Radio Authentication Licenses.
- b. Agencies must purchase all necessary transmit and receive antennae as well as all feed line necessary for the complete installation and operation of the site.
- c. Agencies will be responsible for all site, zone, and system licensing to add the proposed site to the SIRN ASTRO platform payable to Motorola.
- d. Each site will include at least two Channels capable of TDMA operation. This includes any hardware, software, and all licensing including the ability of operate in Dynamic Dual Mode.
- e. Agencies will be responsible for providing the Multicoupler as used throughout the rest of SIRN.
- f. Agencies will be responsible for providing the combiner as used throughout the rest of SIRN.
- g. Motorola Solutions will provide network configuration files to SIRN technicians necessary for site operations with any cost to be included in the agency purchase.
- h. SIRN technicians will perform site and system installation, configuration and activation that is consistent across the SIRN system.

4. Site Connectivity, backhaul transport methodology

- a. Agencies shall only connect sites into the SIRN network by Aviat microwave. An exception may be granted by the SIEC for temporary use of alternate backhaul methodology for Ubiquity until supply chain issues have resolved to allow Aviat equipment to be installed.
- b. Microwave established connectivity must have built in reliability such as monitored hot standby.
- c. Microwave transport must have capabilities of remote monitoring compatible with the ProVision (or current monitoring software) suite as currently in use by SIRN.

5. Site RF Licensing

- a. SIRN will not accept any site into the system that does not already have verified FCC licenses with frequencies licensed FB8, MO8 and associated FX1's as desired.
- b. Licenses shall be licensed to the State or licensed to an agency and provided to the State for SIRN use via a Memorandum of Understanding.
- c. Any MOU should include the ability to also allow the licensing of those same frequencies simultaneously in the name of SIRN.

6. Operating Mode

- a. SIRN will not accept any site that is not capable of operating in FDMA/TDMA mixed mode.
- b. SIRN will not accept any site that is strictly FDMA (APCO P-25 Phase I).
- c. SIRN will not accept any site that is strictly TDMA (APCO P-25 Phase II).

- d. Agencies will be responsible for all additional operational, capacity, and feature licensing with Motorola.

7. Alternate Power Sources

- a. Agencies who are providing SORN infrastructure at a location that does not already have backup AC power, will need to provide a generator with excess capacity to run the entire site as well as fuel capacity to support the site at full capacity for 14 days. The generator is preferred to operate on propane.
- b. As an alternate to 7a listed above, where applicable, a natural gas or diesel substitute is acceptable.
- c. Agencies must provide a DC power plant for use at the site if one is not already present that is comparable to with the current DC power plant (at least 48 volts) being used throughout SORN.
- d. Agencies who provide fuel and generator services for section 7a must ensure that the fuel tanks have tank monitoring for fuel levels when the tank is placed in service. The fuel monitoring must have remote capabilities of being monitored by ProVision (or current monitoring software) suite as currently in use by SORN.