

Metro Region ARMER Standards

Section 3 – Metro 3.33.2 – STR – Transportable Tower Repeater

Date Established2-06-12Date Revised/Reviewed2-14-20

1. Purpose or Objective
- To establish policies and procedures for the deployment and use of the Metro Region Strategic Technology Reserve (STR) component:

Transportable Tower and Repeaters

2. Technical Background

- Capabilities
- As part of the Public Safety Interoperable Communications grant program, a transportable tower and repeater system has been established in Metro Region. The transportable tower and repeater system basic capabilities are described as follows:

Resource	Description
Transportable Tower	Trailer based, 50' crank up aluminum tower, assembled with 800 MHz, VHF and transmission cables.
Repeaters	Repeater -Transportable 800 MHz and VHF repeater capable of cross-band operation in analog and digital P25 modes. The repeater is equipped to support at least two 800 MHz frequency pairs and at least two VHF frequency pairs for repeater operation. The repeater is enclosed in a case that can be transported in the back of an SUV; weighs approximately 70 lbs. The repeater is battery operated and can be connected to a 12-volt vehicle battery or 120 VAC power source.

STR transportable repeater frequencies will be identified in the State of Minnesota Interoperability Frequency Plan and should be available in public safety mobile and portable radios throughout the State of Minnesota. They may also be programmed into public safety mobile and portable radios for neighboring state agencies operating along the Minnesota border.

Through the allocations of this STR resource, the Metro Region should have the ability to respond to any catastrophic loss of the existing public safety communication resources under certain circumstances and to provide local responders with a transportable communication resource should they respond to a major event or natural disaster in another state.

- **Constraints**

The Interoperability Frequency Plan and the National Interoperable Frequency Operational Guide (NIFOG) provide a comprehensive list of all available interoperability frequencies. In the VHF spectrum, most interoperability frequencies are specifically simplex and not paired for repeater use. There are very few permanent repeaters in place on interoperability frequencies outside the Minneapolis/St. Paul metropolitan area. Based upon the limited nature of this resource, care must be exercised in the overall coordination of communications, the deployment of equipment to achieve the maximum effectiveness and in defining expectations.

3. Operational Context

The Metro Region STR transportable tower and repeater system will be housed at the City of Bloomington, 9920 Logan Avenue South. The primary contact for emergency deployment of the equipment will be directed through the Minnesota State Duty Officer, followed by the Metropolitan Emergency Services Board's (MESB) Regional Radio Services Coordinator. The maintenance and support of the Metro Region STR transportable tower and repeater system will be conducted by Metro Region COML and COMT personnel.

The Metro Region STR transportable tower and repeater system may be deployed individually or used in conjunction with other STR resources. The Metro Region STR transportable tower and repeater system has been designed to provide a limited resource (capacity and coverage) that can be implemented very quickly to address safety communication needs over a very limited geographic region (3-7-mile radius). Actual area coverage may vary depending upon tower placement which should be at the highest point overlooking the area of operations. Where additional communication paths are needed, consideration should be given to requesting the STR Satellite enabled ARMER base radio site.

4. Standardized Policy

Any of the ten counties in the Metro Region can request the use of the Metro Region STR transportable tower and repeater system. The primary use will be to respond to any loss of basic public safety communications. This standard defines the steps necessary to make sure the Metro Region STR transportable tower and repeater system is available for deployment by addressing the requirements to maintain, operate and deploy the STR transportable tower and repeater system.

To the greatest extent possible, the Metro Region STR transportable tower and repeater system should be available to support operations in other regions of the state and to provide communications resources for public safety personnel responding to an event or disaster in another state.

Maintenance and Storage

The Metro Region STR transportable tower and repeater system will be housed at the City of Bloomington, 9920 Logan Avenue South.

The Metro Region STR transportable tower and repeater system will be fully exercised annually at a structured exercise to assure all equipment and features are in good working order. This testing will be conducted by the Metro Region Communications Taskforce (CRTF). In addition to the annual exercise equipment, the repeater battery should be maintained with a "maintenance charge" and tested under load at least once annually.

The Metro Region STR transportable tower and repeater system will be tested by a qualified technician at least once every other year, and after each deployment. The tests will include, frequency error, power output and controller tests to ensure the equipment is kept ready for deployment.

Resource Activation

Any time the Metro Region STR transportable tower and repeater system is deployed, at least one person involved in the deployment **must** have participated in deployment familiarization training within the last year. It may be possible for a qualified person to conduct deployment familiarization training immediately before deployment, but such training must be documented.

A pre-deployment check list must be maintained with the equipment that includes a thorough list of the equipment, and verification of set up procedure. This check list must be followed and must remain with the equipment.

Written step-by-step set procedures including safety notices, should be reviewed periodically, and must remain with equipment at all times. These procedures must be followed; a copy of the procedures must remain with the equipment.

Deployment of the Metro Region STR transportable tower and repeater system within the region may be for any purpose authorized by the MESB or its Radio Technical Operations Committee (Radio TOC).

Deployment outside the region to support public safety response to an event or natural disaster must be coordinated through the Minnesota Duty Officer.

The requesting agency shall be responsible for the transporting of the Metro Region STR transportable tower and repeater system to and from the incident scene.

The agency requesting the Metro Region STR transportable tower and repeater system assumes full risk of loss for any equipment loaned to it which are stolen, damaged, consumed, inoperable or destroyed until the equipment is returned to the Metro Region.

Operational Training

Deployment familiarization training will be conducted annually.

All Metro Region-trained Communication Leaders Communication Technicians should participate in deployment familiarization training for the equipment at least once per year.

The Metro Region STR transportable tower and repeater system will be available for local disaster exercises, local events (fairs or celebrations) or other activities where operational will be familiar with the deployment procedures and operational characteristics of the equipment.

5. Management

The MESB will maintain responsibility for assuring compliance with this standard. The Metro Radio TOC or a subcommittee thereof shall review this standard and make adjustments as necessary. In that process, the subcommittee shall seek comment and suggestions from the

STR transportable tower and repeater system points of contact and may inspect equipment to determine needs.

Section 3 – Metro 3.33.2 – STR – Transportable Tower Repeater - Appendix A

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The following frequencies identified for use in the Transportable Tower/Repeater shall be maintained in all repeaters maintained as part of Minnesota's Strategic Technology Reserve:

VHF

Name	Transmit	Receiver	CTCSS/NAC
F1-TAC14/VTAC14R	159.4725 MHz	154.6875 MHz	156.7 Hz E/D
F2-LE2 Federal LE Interop*	167.2500	162.2625 MHz	167.9 Hz E/D
F3-IR2 Medical Evac Control	170.4125 MHz	165.9625 MHz	\$68F

*Subject to coordination with Federal LE partners

800 MHz

Name	Transmit	Receiver	CTCSS/NAC
F1-8CALL90	851.01250 MHz	806.01250 MHz	156.7 Hz
F2-8TAC91	851.51250 MHz	806.51250 MHz	156.7 Hz
F3-8TAC92	852.01250 MHz	807.01250 MHz	156.7 Hz
F4-8TAC93	852.51250 MHz	807.51250 MHz	156.7 Hz
F5	853.01250 MHz	808.01250 MHz	156.7 Hz