

# 39. Recommended Practice for Yard Intercom System Inspection, Testing and Maintenance

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**Abstract:** This recommended practice provides guidelines for inspecting, testing, and maintaining rail transit yard intercom systems.

**Keywords:** communication, inspection, intercom system, maintenance, PA, public address system, test, testing, yard page, yard public address system

## Introduction

(This introduction is not a part of APTA RT-SC-RP-039-03, *Recommended Practice for Yard Intercom System Inspection, Testing and Maintenance*.)

APTA rail transit safety standards and recommended practices represent an industry consensus on practices for rail transit systems to help achieve a high level of safety for passengers, employees, and the general public. This document was created by and for those parties concerned with its provisions; namely, rail transit systems (operating agencies), manufacturers, consultants, engineers, and general interest groups. This recommended practice provides guidelines for inspecting, testing, and maintaining rail transit yard intercom systems.

APTA recommends this practice for:

- Individuals or organizations that inspect, maintain, and/or operate rail transit systems
- Individuals or organizations that contract with others for the inspection, maintenance, and/or operation of rail transit systems
- Individuals or organizations that influence how rail transit systems are inspected, maintained, and/or operated (including but not limited to consultants, designers, and contractors)

The application of any practices or guidelines contained herein is voluntary. In some cases, federal and/or state regulations govern portions of how a rail transit system operates. In such cases, the government regulations override any conflicting practices this document recommends.

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# Recommended Practice for Yard Intercom Inspection, Testing and Maintenance

## 1. Overview

### 1.1 Scope

This document establishes recommended guidelines for inspecting, testing, and maintaining rail transit yard intercom systems.

### 1.2 Purpose

The purpose of this recommended practice is to verify that yard intercom systems and equipment are operating safely and as designed through periodic inspection, testing, and maintenance, thereby increasing reliability and reducing the risk of hazards and failures.

## 2. Definitions and acronyms

For the purposes of this recommended practice, the following definitions and acronyms apply:

### 2.1 Definitions

**2.1.1 delivered audio quality (DAQ):** The quality of an audio message as heard by the human ear when delivered to a speaker or other audio device.

**2.1.2 hazard:** Any real or potential condition that can cause injury, death, or damage or loss of equipment or property.

**2.1.3 operations control center (OCC):** A location or locations designed, equipped, and staffed for the purposes of monitoring and controlling RTS activities from a central location or locations.  
*Syn:* rail control center, rail operations center, rail service control center.

**2.1.4 original equipment manufacturer (OEM):** The enterprise that initially designs and builds a piece of equipment.

**2.1.5 personal protective equipment (PPE):** All clothing and other work accessories designed to create a barrier against workplace hazards. Examples include safety goggles, blast shields, hard hats, hearing protectors, gloves, respirators, aprons, and work boots.

**2.1.6 rail transit system (RTS):** The organization or portion of an organization that operates rail transit service and related activities. *Syn:* **operating agency, operating authority, transit agency, transit authority, transit system.**

**2.1.7 yard intercom system:** A system for communicating audio information to employees within designated yard zones/groups. *Syn:* **yard page system, yard public address system.**

## 2.2 Acronyms

<b>DAQ</b>	delivered audio quality
<b>OCC</b>	operations control center
<b>OEM</b>	original equipment manufacturer
<b>PPE</b>	personal protective equipment
<b>RTS</b>	rail transit system

## 3. Inspection, testing, and maintenance provisions

### 3.1 Inspection, testing, and maintenance frequency

The inspection, testing, and maintenance procedures in this recommended practice should be performed when yard intercom systems are placed in service, when they are modified, repaired, or disarranged, or as otherwise deemed necessary by the RTS.

The RTS should determine the need for additional inspection, testing, and maintenance frequencies for yard intercom systems. A review of the following factors may be useful in making this assessment:

- OEM-recommended intervals
- Industry experience
- Operating environment/conditions
- Historical data
- Reliability-centered maintenance program development
- Failure analysis
- RTS testing and experience
- Regulatory requirements

The frequency of tasks should comply with applicable federal, state, and local regulations.

### 3.2 Training

The RTS and/or their maintenance contractors should develop and execute training programs that provide employees with the knowledge and skills necessary to safely and effectively perform the tasks outlined in this recommended practice.

### 3.3 Materials

The following materials are recommended for inspecting, testing, and maintaining yard intercom systems:

- RTS-approved cleaning materials
- Additional materials as required by the OEM and/or RTS

### 3.4 Tools

The following tools are recommended for inspecting, testing, and maintaining yard intercom systems:

- Multi-meter\*
- Telephone test set
- Tone generator\*
- Sound level meter\*
- RTS-approved portable radio
- Standard tools carried by maintenance personnel
- Additional tools as recommended by the OEM and/or RTS

\* Calibrate in accordance with OEM and/or RTS requirements.

### 3.5 Personal protective equipment

Personal protective equipment, as required by the RTS, should be worn at all times during inspection, testing, and maintenance.

### 3.6 Safety

RTS safety rules, procedures, and practices shall be followed at all times during inspection, testing, and maintenance.

### 3.7 Inspection, testing, and maintenance procedures

Yard intercom system inspection, testing, and maintenance may be modified for each rail transit system's requirements but should contain the steps listed in Sections 3.7.1-3.7.2 as a minimum.

#### 3.7.1 Inspection and testing

##### 3.7.1.1 General

- 3.7.1.1.1 Notify the operations control center (OCC) and/or other authorities of the inspection activities to be performed.
- 3.7.1.1.2 Inspect yard intercom system equipment for proper condition and operation both local and remote.
- 3.7.1.1.3 Check the quality of the audio messages at speaker locations, using Table 1 delivered audio quality (DAQ) below. An acceptable rating in Table 1 must be 3 or 4. Test the yard intercom system to evaluate real-time messaging, in all zones and in specific zone messaging modes.

Table 1 - DAQ Ratings

Delivered Audio Quality Rating	
Rating	Criteria
1	No audio.
2	Audio present but unusable.
3	Speech understandable with repetition rarely required. Some noise/distortion may exist.
4	Speech easily understood.

- 3.7.1.1.4 Test handset receiver and if required adjust to dbA level specified by RTS and/or OEM.
- 3.7.1.1.5 Compare the ambient noise level to the yard intercom audio level, using a sound level meter, to ensure that the ratio prescribed by the RTS and/or OEM is still being met. Test outside speaker and if required adjust to dbA level at distance specified by the RTS and/or OEM. Do not exceed maximum level specified by RTS and/or OEM. Ambient noise levels may increase due to a number of factors including new construction or increased traffic levels in the area.
- 3.7.1.1.6 Notify the OCC and/or other authorities when inspection is complete.

##### 3.7.1.2 Mechanical

- 3.7.1.2.1 Notify the OCC and/or other authorities of the inspection activities to be performed.



**3.7.1.2.2** Ensure that connections are tight and that there are no missing or damaged support brackets, fasteners and mounting hardware.

**3.7.1.2.3** Inspect yard intercom system equipment for damage, loose cabling, loose brackets, unprotected electrical connections or other defects.

**3.7.1.2.4** Notify the OCC and/or other authorities when inspection is complete.

### **3.7.1.3 Electrical**

**3.7.1.3.1** Notify the OCC and/or other authorities of the inspection activities to be performed.

**3.7.1.3.2** Inspect cabling and wiring to ensure that it is not frayed, burned, broken, cut, or otherwise defective.

**3.7.1.3.3** Inspect cables to ensure they do not exceed their normal bending radius and are positioned to prevent chafing or cutting.

**3.7.1.3.4** Inspect electrical connections for signs of corrosion, broken wires, broken connections, missing hardware, loose connections, frayed or burned wires, defective insulation and moisture.

**3.7.1.3.5** Inspect ribbon or cartridge type fuses and other electrical protection equipment for burned, separated or otherwise damaged elements and replace as required.

**3.7.1.3.6** Notify the OCC and/or other authorities when inspection is complete.

### **3.7.2 Maintenance**

**3.7.2.1** Notify the OCC and/or other authorities of the maintenance activities to be performed.

**3.7.2.2** Perform cleaning procedures as required by the OEM and/or RTS.

**3.7.2.3** Re-coat mounting hardware as required by the OEM and/or RTS.

**3.7.2.4** Lubricate moving parts as required by the OEM and/or RTS.

**3.7.2.5** Notify the OCC and/or other authorities when maintenance activities are complete.

### **3.8 Correction of deficiencies**

Deficiencies identified during yard intercom system inspection, testing, and maintenance should be corrected and documented in accordance with OEM and/or RTS requirements.

### **3.9 Documentation**

Inspection, testing, and maintenance activities should be documented, reviewed, and filed in accordance with RTS procedures.

## **Annex A**

(informative)

### **Bibliography**

- [B1] Original equipment manufacturer (OEM) specifications for yard intercom system inspection, testing, and maintenance.
- [B2] Rail transit system (RTS) procedures for yard intercom system inspection, testing, and maintenance.