APTA STANDARDS PROGRAM

RECOMMENDED PRACTICE

APTA RT-SC-RP-013-03, Rev. 1

First Published: July 26, 2004

First Revision: December 4, 2025

Signals and Communications Working Group

Passenger Information System Inspection, Testing and Maintenance

Abstract: This recommended practice provides guidelines for inspecting, testing, and maintaining rail transit communication system passenger information systems.

Keywords: communication, inspection, maintenance, passenger information system, public address system

Summary: This document establishes recommended guidelines for inspecting, testing, and maintaining rail transit passenger information systems.

Foreword

The American Public Transportation Association is a standards development organization in North America. The process of developing standards is managed by the APTA Standards Program's Standards Development Oversight Council (SDOC). These activities are carried out through several standards policy and planning committees that have been established to address specific transportation modes, safety and security requirements, interoperability, and other topics.

APTA used a consensus-based process to develop this document and its continued maintenance, which is detailed in the manual for the APTA Standards Program. This document was drafted in accordance with the approval criteria and editorial policy as described. Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

This document was prepared by the Signals and Communications Working Group as directed by the APTA Rail Transit Standards Policy Committee.

This document represents a common viewpoint of those parties concerned with its provisions, namely transit operating/planning agencies, manufacturers, consultants, engineers and general interest groups. The application of any recommended practices or guidelines contained herein is voluntary. APTA standards are mandatory to the extent incorporated by an applicable statute or regulation. In some cases, federal and/or state regulations govern portions of a transit system's operations. In cases where there is a conflict or contradiction between an applicable law or regulation and this document, consult with a legal adviser to determine which document takes precedence.

This document supersedes APTA RT-SC-RP-013-03, which has been revised. Below is a summary of changes from the previous document version:

- Use of the new APTA template which standardizes and reorganizes the document.
- Scope and purpose have been combined for clarity.
- Updated list of participants.
- Updated definitions to be consistent with standard definitions.
- Minor editorial changes to clarify language.

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Introduction

This introduction is not part of APTA RT-SC-RP-013-03, "Passenger Information System Inspection, Testing and Maintenance."

APTA recommends the use of this document by:

- individuals or organizations that operate rail transit systems;
- individuals or organizations that contract with others for the operation of rail transit systems; and
- individuals or organizations that influence how rail transit systems are operated (including but not limited to consultants, designers and contractors).

Scope and purpose

This recommended practice provides guidelines for inspecting, testing, and maintaining rail transit passenger information systems. The purpose of this recommended practice is to verify that passenger information systems and equipment are operating safely and as designed through periodic inspection, testing, and maintenance, thereby increasing reliability, reducing the risk of hazards and failures.

Passenger Information System Inspection, Testing and Maintenance

1. Inspection, testing, and maintenance provisions

1.1 Inspection, testing, and maintenance frequency

The inspection, testing, and maintenance procedures in this recommended practice should be performed when passenger information systems are placed in service, when they are modified, repaired, or disarranged, or as otherwise deemed necessary by the rail transit system.

The rail transit system should determine the need for additional inspection, testing, and maintenance frequencies for passenger information 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
- rail transit system testing and experience
- regulatory requirements

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

1.2 Training

The rail transit system 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.

1.3 Materials

The following materials are recommended for inspecting, testing, and maintaining passenger information systems:

- rail transit system–approved cleaning materials
- additional materials as required by the OEM and/or rail transit system

1.4 Tools

The following tools are recommended for inspecting, testing, and maintaining passenger information systems:

- multimeter*
- tone generator*
- portable test unit
- laptop with applicable software and hardware interface
- telephone test set
- sound level meter*
- rail transit system–approved portable radio
- standard tools carried by maintenance personnel
- additional tools as required by the OEM and/or rail transit system

NOTE: Tools marked with an asterisk (*) should be calibrated in accordance with OEM and/or rail transit system requirements.

1.5 Personal protective equipment

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

1.6 Safety

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

1.7 Inspection, testing and maintenance procedures

The inspection, testing, and maintenance procedures in this recommended practice may be modified for each rail transit system's requirements but should contain the steps listed in sections 1.7.1 and 1.7.2 as a minimum.

1.7.1 Inspection and testing

1.7.1.1 General

1. Notify the Operations Control Center (OCC) and/or other authorities of the inspection activities to be performed.
2. Inspect passenger information system equipment for proper condition and operation both local and remote.
3. From each passenger station, evaluate the audio and/or visual display quality at passenger areas.
4. Check the quality of the audio and visual display messages at each passenger area (stations), using **Table 1** below. Test the PA system to evaluate real-time messaging, pre- recorded messages and all-station, branch messaging.
5. Compare the ambient noise level to the PA audio level, using a sound level meter, to ensure that the ratio prescribed by the rail transit system and/or OEM is still being met. Ambient noise levels may increase due to several factors including new construction or increased traffic levels in the area.
6. Notify the OCC and/or other authorities when inspection is complete.

TABLE 1
DAQ/DVQ quality ratings

Delivered Audio/Visual Quality Rating	
Rating	**Criteria**
1	No audio and/or no visual display.
2	Audio and/or visual display present but unusable.
3	Speech understandable with repetition rarely required. Some noise/distortion may exist.
4	Speech and/or text message display easily understood.

1.7.1.2 Mechanical

1. Notify the OCC and/or other authorities of the inspection activities to be performed.
2. Ensure that connections are tight and that there are no missing or damaged support brackets, fasteners, and mounting hardware.
3. Inspect passenger information system equipment for damage, loose cabling, loose brackets, unprotected electrical connections, or other defects.
4. Notify the OCC and/or other authorities when inspection is complete.

1.7.1.3 Electrical

1. Notify the OCC and/or other authorities of the inspection activities to be performed.
2. Inspect cabling and wiring to ensure that it is not frayed, burned, broken, cut, or otherwise defective.
3. Inspect cables to ensure they do not exceed their normal bending radius and are positioned to prevent chafing or cutting.
4. Inspect electrical connections for signs of corrosion, broken wires, broken connections, missing hardware, loose connections, frayed or burned wires, defective insulation and moisture.
5. Inspect fuses and other electrical protection equipment for burned, separated or otherwise damaged elements and replace as required.
6. Notify the OCC and/or other authorities when inspection is complete.

1.7.2 Maintenance

1. Perform cleaning procedures as required by the OEM and/or rail transit system.
2. Perform filter cleaning and/or replacement as required by the OEM and/or rail transit system.
3. Re-coat mounting hardware as required by the OEM and/or rail transit system.
4. Lubricate moving parts as required by the OEM and/or rail transit system.
5. If no further work is to be performed, notify the OCC and/or other authorities that inspection and maintenance activities are complete.

1.8 Correction of deficiencies

Deficiencies identified during passenger information system inspection, testing, and maintenance should be corrected and documented in accordance with OEM and/or rail transit system requirements.

1.9 Documentation

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

References

This document should be used in conjunction with OEM and rail transit system specifications for passenger information system inspection, testing and maintenance.

Definitions

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. See also *delivered visual quality*.

delivered visual quality (DVQ): The quality of a video message, text or image seen by the human eye when delivered and displayed on a monitor. See also *delivered audio quality*.

fuse: A device used to protect an electric circuit from the effect of excessive current draw.

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

Operations Control Center (OCC): That facility from which train control, train dispatching, and/or train supervision takes place for the entire rail transit system or for specific segments of a system if there is more than one control center. Also called *rail control center*, *rail operations center*, *rail service control center*, *train command center*.

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

passenger information system: A system for communicating audio and/or visual information to employees and passengers.

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.

public address (PA): A system used for communicating audio information to employees and passengers.

rail transit system: The organization or portion of an organization that operates rail transit service and related activities. Also called *operating agency*, *operating authority*, *transit agency*, *transit authority*, *transit system*.

Abbreviations and acronyms

DAQ	delivered audio quality
DVQ	delivered visual quality
OCC	operations control center
OEM	original equipment manufacturer
PA	public address
PPE	personal protective equipment

Document history

Document Version	Working Group Vote	Public Comment/ Technical Oversight	Rail CEO Approval	Policy & Planning Approval	Publish Date
First published	June 25, 2002	Jan. 10, 2003	—	June 8, 2003	July 26, 2004
First revision	May 21, 2025	Aug. 31, 2025	Oct. 26, 2025	Dec. 3, 2025	Dec. 4, 2025