Read This First

Tektronix

**MTS200 Series
Software Version 3.0**

071-0537-00

Read This First

Read This First contains release information about the MTS 200 Series MPEG Test System Application Software version 3.0.

This document is organized as follows:

CD-ROM Directories

The following three directories are provided on the CD-ROM:

AV Delay   This directory contains audio and video elementary streams and configuration files so that you can create transport streams that can be used to measure audio/video delay with VM700 or VM700A instruments.

Manuals   The *MPEG Test System Version 3.0 Installation Software CD-ROM* contains user manuals for all MPEG Test System applications in Adobe Acrobat (.pdf) format. You can read and print the manuals with the Acrobat Reader, which is also included. For additional information about the manuals and installing the reader, refer to the Readme.txt file in the *Manuals* directory.

Window NT Service Pack 3   Windows NT Service Pack 3 is required to run version 3.0 software. The I386 directory contains the installation software for Service Pack 3, and the software upgrade kit contains the installation instructions.

Software Program Versions

The application versions are listed in Table 1. To determine your application version, select the **About** command in the Help menu.

Table 1: MTS 200 Series software program versions

Icon name	Program file	Version	Executable Date
ATSC Table Editor	EditableATSC.exe	01.00.05	16 April 99
Data Store Administrator	matracom.exe	02.03.08	7 May 99
Dolby Digital Audio Stream Analyzer	Audace.exe	01.00.01	20 May 99
DVB Channel Coding and Decoding	Canal.exe	01.00.03	July 1998
DVB Table Editor	editable.exe	02.06.02	15 April 99
Error Injector	Einjwin.exe	1.02	June 1998
Jitter Adder	gigue.exe	2.00.04	May 1998
License Manager	protek.exe		
MPEG Audio Stream Analyzer	Austral.exe	01.03.05	3 May 99
MPEG Video Stream Analyzer	vistal.exe	01.02.06	3 May 99
MPEG-2 DVB/ATSC System Analyzer	adn_carb.exe	5.00.05	11 May 99
MPEG-2 Help	Mpeg2nt.hlp	4.00.5000	
Multiplexer	mux_mpg2.exe	03.06.04	28 April 99
No icon	browserServer.exe	01.00.02	30 March 99
Open Mux Server	OpenMux.exe	01.35.02	15 April 99
Private Syntax Interpreter	OpenTable.exe	01.00.02	9 May 99
Program Stream Analyzer	PulSAR.exe	01.03.06	16 April 99
Real-Time Analyzer	Rta.exe	02.15.03	12 May 99
Real-Time Multiplexer	Confg.exe	01.05.10	23 April 99
Uninstall MTS V3.0	UNINST~1.ISU		

Standard Applications

Table 2 lists the applications that are standard in each of the MTS 200 series instruments.

Table 2: Standard applications

Instrument	Licensed applications
MTS 215	ATSC Table Editor
	Data Store Administrator
	DVB Channel Coder/Decoder
	DVB Table Editor
	Jitter Adder
	MPEG-2 DVB/ATSC System Analyzer
	Multiplexer (deferred-time multiplexer)
	Private Syntax Interpreter (for RTA only)
	Real Time Analyzer (with ATSC Analysis and SNMP Agent)
MTS 210 Option AG	ATSC Table Editor
	Data Store Administrator
	DVB Channel Coder/Decoder
	DVB Table Editor
	Jitter Adder
	MPEG-2 DVB/ATSC System Analyzer
	Multiplexer (deferred-time multiplexer)
MTS 210 Option 1A	ATSC Table Editor
	Data Store Administrator
	DVB Channel Coder/Decoder
	DVB Table Editor
	Jitter Adder
	MPEG-2 DVB/ATSC System Analyzer
MTS 210 Option 1G	ATSC Table Editor
	DVB Channel Coder/Decoder
	DVB Table Editor
	Data Store Administrator
	Jitter Adder
	Multiplexer (deferred-time multiplexer)
MTS 205	Private Syntax Interpreter (for RTA only)
	Real-Time Analyzer (with ATSC Analysis and SNMP Agent)

Software Upgrades

If you have MTS 100 or MTS 200 products that are running version 2.2 or older software, order the MTS2F25 Upgrade Kit to install version 3.0 software.

If you have MTS 200 products that are running version 2.5 software, order the MTS2F30 Upgrade Kit to install version 3.0 software.

If you have MTS 200 products that are already running version 3.0 software, you can add features such as AC-3 Analysis, SSI input/output capability, Open Mux Real-Time Multiplexer, and the PSA 200 Program Stream Analyzer by purchasing the appropriate kit.

To order software upgrade kits, contact your local Tektronix distributor or sales office.

New Software Options

The following new options are available with MPEG Test System version 3.0 software:

■ Option AC adds the AC-3 Analyzer. You can add this feature to your MTS 200 Series MPEG Test System by installing upgrade kit MTSFAC3.

■ Option OM adds the Open Mux Real-Time Multiplexer. You can add this feature to your MTS 210 or MTS 215 system by installing upgrade kit MTSFOMX.

■ Option SS adds the Synchronous Serial Input/Output capability (SSI-SMPTE 310 board). You can add this feature to your MTS 200 Series MPEG Test System (Compaq Proliant platform only) by installing upgrade kit MTSFSSI.

Demonstration License

MTS 200 series instruments are manufactured with files, icons, and menu items for all MTS applications that work with the installed hardware, even though some applications may not be licensed for use with your test system model.

NOTE. The Demonstration License applies to all unlicensed applications concurrently and cannot be renewed. Be sure to try all applications of interest within thirty days of activating the license.

To try optional applications, use the following procedure to activate the Demonstration License, which enables all unlicensed applications for thirty days:

1. Consult the password document supplied with your MPEG Test System product and identify the eight-digit Demonstration Password.

2. Start any unlicensed application. The License Management dialog box opens.
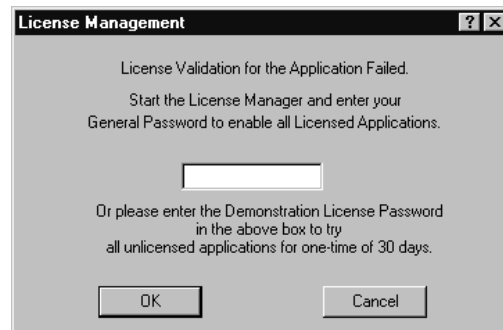
3. Enter the password in the License Management dialog box and then click **OK**. Once you have correctly entered the password, all unlicensed or optional applications are available for the following thirty days.

New Applications and New Features

This section describes new applications and features that have been added to existing applications for the MTS 200 Series. For more information about these changes, refer to the user manual that shipped with your product.

Dolby Digital Audio Stream Analyzer
This new application provides the ability to analyze AC-3 audio streams that have been stored on the MTS system hard drive. The analysis is based on the same paradigm as used in the MPEG-2 Audio Analyzer (AUSTRAL), which is currently available from Tektronix. Structural, interpretive, and graphical views are available. These include a Dialog Normalization Graph, a Heavy Compression Graph, and a Dynamic Range Control Graph. You can select which portion of the stream you wish to analyze.

ATSC Table Editor
This new application provides both a table editor for creating or altering ATSC-specific tables and an analyzer function, which checks edited tables for compliance with the ATSC standard. You have access to two types of hierarchical representations of the table/stream data: one specific to the tables themselves and one showing the relationships between all the tables and the programs that contain them.

Open Mux Server This new application allows you to take MPEG-2, DVB, or ATSC-compliant transport streams and remultiplex them into a single compliant transport stream. It also provides the ability to take video and audio elementary streams as input and multiplex them into multiple-program transport streams. Remultiplexing is accomplished by a client operation.

Open Mux supports the ability to provide seamless looping of specially constructed streams.

MTS2AN Version 3.0 of the software adds the following new features to the Transport Stream Analyzer:

■ ATSC/PSIP Analysis

■ Mega-frame Table Analysis

MTS2CR Version 3.0 of the software adds the following new features to the Transport Stream Creation (Multiplexing):

■ ATSC Deferred-Time Multiplexer

■ Capability to apply Mega-frame information to output

MTS2TS Version 3.0 of the software adds the following new features to the Transport Stream Analysis/Creation:

■ ATSC/PSIP Analysis

■ ATSC Deferred-Time Multiplexer

■ Mega-frame Table Analysis

MPEG-2 DVB/ATSC System Analyzer Version 3.0 of the software adds the following new features to the MPEG-2 System Analyzer:

■ Mega-frame Table Analysis. You can analyze the tables associated with Mega-frame for correctness of content.

■ ATSC/PSIP Analysis. You can specify ATSC/PSIP analysis by selecting ATSC/PSIP in the Options menu of the DTA. When you select this option, the following information and displays are available:

   ■ Hierarchical view of the selected ATSC transport stream complete with new icons for the ATSC-specific tables.

   ■ Interpreted views of the information within each of the ATSC tables in the selected transport stream.

■ Analysis of the selected stream for consistency with the ATSC specification, including table repetition rates, semantic analysis, and syntactic analysis.

■ Buffer information for the video, audio, and system elements of the selected ATSC transport stream.

Multiplexer

With version 3.0 software, you can use the Deferred-Time Multiplexer to multiplex ATSC-compatible transport streams.

Real-Time Analyzer

Version 3.0 of the software adds the following new features to the Real-Time Analyzer:

■ Open Table Private Syntax Generator/Interpreter. This application allows you to create a private table syntax. This syntax can be linked to the Real-Time Analyzer so that streams containing tables of this type can be fully analyzed.

■ ATSC/PSIP Analyzer capability. You can now use the RTA to display a hierarchical view of the transport stream contents using the same paradigm as used for the DVB and MPEG-2 stream analysis. You can analyze the six table types specified by ATSC. Semantic and syntactic analyses are performed in accordance with the ATSC standards documents.

■ SNMP Agent. An MIB interface has been added. The MIB provides information on analysis data collected by the RTA. Trap functions have also been added, to provide you with immediate notification of errors or predetermined conditions during analysis. At this release, the MIB does not provide access to ATSC analysis information or SI-DAT information.

■ IP Data Monitoring. This feature allows you to analyze DSM-CC compliant protocols described in the DVB standard. You can:

  ■ Display transport streams containing IP datagrams in the tree view

  ■ View the SI-DAT tables in detail

  ■ Analyze the SI-DAT tables for proper syntax

  ■ Monitor data flow on TCP/IP data broadcasting sessions.

■ Screen Resolution Control. Pie charts, bar graphs, and various control or error indicators can be properly displayed on screens which have resolution down to 800 x 600 pixels.

■ Ghost PID Analysis. The RTA can identify ghost PID types. Analysis is available for each ghost PID whose type can be identified.

- Mega-frame table analysis. You can analyze the tables associated with Mega-frames for correctness of content.

- Event Reporting. A hierarchical view has been added to the events reporting panels. This view is a structured index to the error reporting groups, which are defined as Multiplex, Syntax, Clock, and Rate. A high-level display of errors is provided for each group, to include a summary list of the errors and an error-occurrence histogram. You can display lower-level information by double-clicking on the error category in the hierarchical view.

- Timing Graph Improvements. Histogram displays plot frequency deviation or timing intervals on the X-axis and frequency-of-occurrence information on the Y-axis.

- Events Viewer. The identifier code word has been extended from 16 bits to 32 bits for individual events. In this way, the events number duplication can be eliminated.

- Version Information Display. The About Box now contains more information about SW and HW versions.

- Settings Dialog Box. The tabs at the top of the panels are replaced by a narrow hierarchical view panel at the left of the display, which lists each panel title. Click the icon for a panel to access the panel.

- PID Allocation View. You can define the PID selection by dragging and dropping an icon from the hierarchical display to the Selection button. You can also display the Average Rate or Current Rate by clicking the toggle button near the top of the view window.

- PID List View. The location of the pie chart and the PID list has been inverted from its alignment in version 2.5.

- Program Allocation View. A horizontal bar graph display of the current bitrate usage for each program has been added, so that you can select specific programs for viewing. The display also includes an indicator of the peak bitrate detected during a measurement session.

- MPEG-2 Enhancements. A Transport Stream Description Table (TSDT) icon is added to the RTA hierarchical view when this table type is detected.

- Enhanced ETR 290 measurement capability. The ETR 290 measurement suite has been updated to reflect the latest specified measurements. However, the T-STD buffer analysis is not included with this release.

Performance Issues

This section describes problems you might encounter while using version 3.0 and describes how to minimize or eliminate the impact on product operation.

MTS2AC3

The MTS2AC3 is a stand-alone software product intended for installation on personal computers running Windows NT 4.0. You *cannot* install MTS2AC3 on a Tektronix MTS 100 or MTS 200-series test system. To install the Dolby Digital Audio Stream Analyzer on your personal computer, order MTSFAC3; please contact your Tektronix representative for additional information.

MTS2ES

The MTS2ES is a stand-alone software product intended for installation on personal computers running Windows NT 4.0. You *cannot* install MTS2ES on a Tektronix MTS 100 or MTS 200-series test system. To install the elementary stream analyzers on your personal computer, order MTS2F07; please contact your Tektronix representative for additional information.

ATSC Table Editor

Reference IRSdb05538: ETT Saving & Loading. When you save a new EIT file using the PSIP Table Editor, the following error message may appear when you try to reopen the saved file: "The file name is not correct." To avoid this error, use the file naming convention: namexxx.ett, where xxx is a number between 0 and 127. For example, toto001.eit.

Data Store Administrator

Reference N/A. Stream length limitations can be encountered when you attempt to generate streams saved on the Loop Partition of the Data Store.

To avoid generating incomplete streams, copy the stream from the Loop Partition to the test system hard drive with the Data Store Administrator. Then copy the stream from the system hard disk to the Single Shot Partition. This will ensure that a complete stream is generated from the Single Shot Partition.

Reference CSEbd12699. All four Data Store disks must read/write at the rate required for acquisition and generation. As a disk ages, its performance can degrade until it cannot always read/write quickly enough for the highest Data Store acquisition and generation rates—even though it continues to meet the disk manufacturer's specification for average access speed. One degraded disk can prevent acquisition or generation at high data rates; in these circumstances, a "Disk *n* too slow" (where *n* is the number of the inadequate disk) error message appears.

Replace the slow disk to restore the Data Store system's ability to acquire and generate at the desired data rate.

**MPEG-2 DVB/ATSC
System Analyzer**

Reference N/A. While analyzing large transport stream files, the analyzer can appear to be busy with no indication of progress; in addition, the message window can obscure the "Press Escape to abort" reminder. Analysis of large transport stream files can take many minutes; press **ESC** to suspend or abort most MPEG-2 System Analyzer operations.

Reference CSEdb03373. When displaying a large font, some characters are displayed badly (or not at all) in the packet views. Use a smaller font.

Reference CSEdb08680. Violations of the repetition time limits for PAT, CAT, and PMT (as defined by the DVB guidelines) are not reported. The limit used is 100 ms instead of the correct 40 ms.

Reference CSEdb17277. Streams generated with the MPEG Test System Multiplexer application can cause buffer overflow during Dynamic Analysis with the MPEG-2 System Analyzer. This can occur because the Dynamic Analysis algorithm uses the "Leak method" to transfer video elementary stream data from the main buffer (MBn) to the elementary stream buffer (EBn); therefor, buffer overflow can occur when analyzing streams—such as those created with the Multiplexer application—that require "VBV delay method" data transfer.

Refer to ISO/IEC 13818-1 for additional information about leak method and VBV delay method buffering.

Open Mux Server

Reference IRSdb05528: PMT video description. In ATSC mode, when the configuration is one PSI/ATSC input and one ES video only input, the video descriptor and smoothing descriptor may be missing.

Real-Time Analyzer

Reference N/A. When using the System Analyzer to examine a partial, filtered, transport stream captured with the RTA, timing analysis is not advised for the following reasons:

- The System Analyzer cannot compute the bit rate if the first PMT declared in the PAT has no PCR information, which occurs when the corresponding PID has been filtered by the Real-Time Analyzer.

- Even if you input the correct overall bit rate, all information related to timing (PCR, PTS/DTS, section rates, and dynamic analyses) can be incorrect because the time distribution of the packets repartition is lost when filtered data is captured. PCRs, for example, will be incorrect because they are computed at the source on the complete stream, not on a filtered part of it.

If you intend to perform in-depth timing analysis of a captured stream, always select **No filtering mechanism** on the Data Storage Configuration tab of the RTA **Settings** window.

Reference CSEdb19930. To save, load (restore), or delete Real-Time Analyzer configuration profiles, you must be logged in to Windows NT as a user that is a member of either the Administrators user group or the Backup Operators user group. To restore or delete a profile, you must be logged in as the user who saved the profile.

The default user in the standard MTS 200 series V2.5 configuration, *MTS100*, is a member of the Backup Operators group. To add a user or change the group memberships of a user, log in as the administrator and select the User Manager application from the Windows NT Start/Programs/Administrative Tools (common) subdirectory. Refer to the Windows NT documentation for additional information about the User Manager application.

Reference CSEdb20616. Files acquired through RTA data storage are always truncated to a multiple of 24064*N bytes, where N is the number of data store disks. In a standard MTS 200 Series test system, therefore, the saved file size must be an exact multiple of 96256 bytes, and the resulting file can be up to 96255 bytes smaller than the total size specified in the **Before Event** and **After Event** settings fields.

Reference IRSdb05371: Unable to start analysis after Data Storage start/stop warning. Under certain conditions (if the Data Store Administrator is already running and you start the real-time analyzer), selecting Configuration/Settings/Data Storage may prevent you from starting analysis. Click Cancel to exit the Data Storage Window, and then start analysis.

Reference IRSdb05445: Semantic errors not shown in View Section analysis. For some streams, the Section Analysis view shows only syntactic errors, and not semantic errors.

Reference IRSdb05587: EMM syntax error reported as ECM syntax error. In some cases, the EMM table might have the table id of an ECM, which creates an error message.

Reference IRSdb06399: Maximum rate for a single PID seems limited to 30 Mb/s or 48 Mb/s. 48 Mb/s is the maximum rate of a single PID that can be analyzed by the real-time analyzer.

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