

# R&S<sup>®</sup>SMCVB-KS13

## ATSC & Mobile DTV Streams

### User Manual



1179267702  
Version 03

**ROHDE & SCHWARZ**  
Make ideas real



This document describes the following software options:

- R&S®SMCVB-KS13 ATSC & Mobile DTV Streams (1434.5011.xx)

© 2023 Rohde & Schwarz GmbH & Co. KG  
Muehldorfstr. 15, 81671 Muenchen, Germany  
Phone: +49 89 41 29 - 0  
Email: [info@rohde-schwarz.com](mailto:info@rohde-schwarz.com)  
Internet: [www.rohde-schwarz.com](http://www.rohde-schwarz.com)

Subject to change – data without tolerance limits is not binding.  
R&S® is a registered trademark of Rohde & Schwarz GmbH & Co. KG.  
All other trademarks are the properties of their respective owners.

1179.2677.02 | Version 03 | R&S®SMCVB-KS13

The following abbreviations are used throughout this manual: R&S®SMCV100B is abbreviated as R&S SMCV100B.

# Contents

<b>1</b>	<b>Welcome to the R&amp;S SMCVB-KS13 option.....</b>	<b>5</b>
1.1	Key features.....	5
1.2	Installation.....	5
1.3	What's new.....	9
1.4	Documentation overview.....	9
1.4.1	Getting started manual.....	9
1.4.2	User manuals and help.....	10
1.4.3	Service manual.....	10
1.4.4	Instrument security procedures.....	10
1.4.5	Printed safety instructions.....	10
1.4.6	Data sheets and brochures.....	10
1.4.7	Release notes and open source acknowledgment (OSA).....	11
1.4.8	Application notes, application cards, white papers, etc.....	11
1.4.9	Videos.....	11
<b>2</b>	<b>Available DTV stream files.....</b>	<b>12</b>
2.1	Transport stream files list, ordered by disk number.....	12
2.2	3ServESG_RS24_HHQQ_5Slots.ATSC_C.....	14
2.3	1Serv_RS24_HHQQ_5Slots.ATSC_C.....	15
2.4	1Serv_RS48_QHHQ_5Slots.ATSC_C.....	15
2.5	1Serv_RS48_HHHH_5Slots.ATSC_C.....	16
2.6	3Ens_RS48.ATSC_C.....	16
2.7	3Ens_RS48_RS36_RS24.ATSC_C.....	17
2.8	1Ens_Separated_RS24_RS48.ATSC_C.....	18
2.9	3Ens_AutoFEC_All.ATSC_C.....	18
2.10	3Ens_AutoFEC_RS.ATSC_C.....	19
2.11	3Ens_AutoFEC_SCCC.ATSC_C.....	20
2.12	3Ens_AutoFEC_SCCC_BlockMode.ATSC_C.....	21
2.13	Referencestream.atsc_c.....	22
2.14	BCAST_1.0_DIST_INT_103.ATSC_C.....	22
2.15	BCAST_1.0_DIST_INT_107.ATSC_C.....	23
2.16	BCAST_1.0_DIST_INT_111.ATSC_C.....	24

2.17	CEA_CON_103_Stream1.ATSC_C.....	24
2.18	CEA_CON_103_Stream3.ATSC_C.....	25
2.19	CEA_CON_104.ATSC_C.....	26
2.20	CEA_IOP_100_101_109.ATSC_C.....	26
2.21	CEA_IOP_103.ATSC_C.....	27
2.22	CEA_IOP_104.ATSC_C.....	28
2.23	CEA_IOP_105.ATSC_C.....	28
2.24	CEA_IOP_106.ATSC_C.....	29
2.25	CEA_IOP_106a.ATSC_C.....	30
2.26	CEA_IOP_106b.ATSC_C.....	30
	<b>Index.....</b>	<b>32</b>

# 1 Welcome to the R&S SMCVB-KS13 option

The R&S SMCVB-KS13 is a stream library that provides stream files in accordance with the ATSC digital standard.

This user manual contains a reference description of the functionality that the stream library provides. All functions not discussed in this manual are described in the R&S SMCV100B user manual. The latest version is available at:

[www.rohde-schwarz.com/manual/SMCV100B](http://www.rohde-schwarz.com/manual/SMCV100B)

## 1.1 Key features

The R&S SMCVB-KS13 features:

- Numerous stream files in accordance with ATSC digital standard
- Streaming of high-quality video contents
- Streaming of high-quality audio contents
- Efficient use with dedicated streams

## 1.2 Installation

### Required options

The equipment layout for processing files of waveform libraries includes:

- R&S SMCV100B base unit (64 MSample ARB memory, 60 MHz RF bandwidth)
- Broadcast standard option for the "TS Player" application (R&S SMCVB-Kxxx)
- Enable Broadcast Standards option (R&S SMCVB-K519)
- Stream library option (R&S SMCVB-KSxx)

For more information on stream options, see chapter "TS Player section "Required options" in the broadcast standard option user manual of the R&S SMCV100B.

### To access R&S SMCV100B libraries

R&S SMCV100B stream and waveform libraries are available for download for registered users on the "Vector Signal Generator Customer Web" at the global Rohde & Schwarz information system (GLORIS).

1. For access, register at <https://gloris.rohde-schwarz.com>:  
In section "How to register", follow the instructions provided in the introduction video "How to register for GLORIS".
2. For access to the "Vector Signal Generator Customer Web", register the R&S SMCV100B:

- a) In the menu "Support&Services", select "My Products" > "Register my product".
- b) To register the R&S SMCV100B, click "Add Equipment".
- c) In the section "Information about your product", specify order number ("Material no.") and serial number ("Serial No.") of the R&S SMCV100B.

3. After product registration, log in at GLORIS.
4. In the menu bar, select "Support&Services > My Products > Vector Signal Generator Customer Web".

The "R&S SMCV100B Customer Web" page opens.

5. In the selection field "Product Selection for VSG", select "R&S®SMCV100B".

A webpage opens and displays search results for products related to the R&S SMCV100B.

#### Product Related Documents

### To download a library file

This procedure describes how to download library files. It provides a step-by-step description for download of a stream library file. The download of waveform library files is analogous.

1. Access the "Product Related Documents" web page as described in ["To access R&S SMCV100B libraries"](#) on page 5.

2. In the search navigation bar, select "Firm-/Software" > "Waveform & Streams".

The search lists all information related to stream and waveform libraries of the R&S SMCV100B:

- R&S SMCVB-KSxx results relate to stream libraries.
- R&S SMCVB-KVxx results relate to waveform libraries.

You are searching for: Product: **R&S®SMCV100B**

\*

All Product Documents **Firm-/Software**

[Firmware](#) [Software](#) [Driver](#) [Waveform & Streams](#) [Archive](#)

2452 Results available Sort by date ▼

**Show options**

**SMCVB-KS10 DAB / T-DMB STREAMS**

Attachments

[SMCVB-KS10 DAB / T-DMB STREAMS](#) [SMCVB-KS10 DAB / T-DMB STREAMS User Manual \(download version\)](#)

3. Optionally, deactivate the filtering to display all waveform and stream library content.

- a) On the left menu, select "Show options".
- b) Click "Filtering on. Reset all filters."

**Filtering on. Reset all filters.**

4. Optionally, to filter for stream library content enter \*KS in the search input field.

You are searching for: Product: **R&S®SMCV100B**

\*KS

All Product Documents **Firm-/Software**

[Firmware](#) [Software](#) [Driver](#) [Waveform & Streams](#) [Archive](#)

142 Results available Sort by date ▼

**Show options**

**SMCVB-KS10 DAB / T-DMB STREAMS**

Attachments

[SMCVB-KS10 DAB / T-DMB STREAMS](#) [SMCVB-KS10 DAB / T-DMB STREAMS User Manual \(download version\)](#)

5. In the search result list, navigate to the required library.
6. To download required library files, click the download link in the "Attachments" section of library product page.

For example, for DAB/T-DMB streams, click the download link "R&S SMCVB-KS10 DAB / T-DMB STREAMS".

A download dialog opens to select and save files of the stream library.

### To save a library file

You can save the library file to several storage locations:

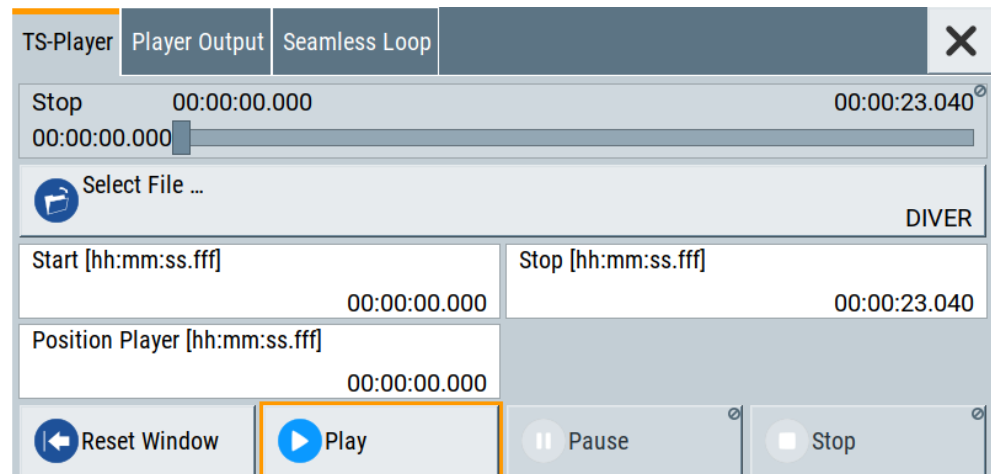
- External storage device (HDD, memory stick): Use external USB storage device to save large files or complete libraries. Connect the storage device to one of the USB 3.0 connectors on the rear panel of the R&S SMCV100B. If detected correctly, you can access the files on the R&S SMCV100B in the `/usb/` directory in file-select dialogs.  
The R&S SMCV100B supports the following storage formats: ext2/ext3/ext4, FAT16/FAT32, NTFS (read-only), ISO9660, UDF
- Internal memory (SSD): Use the internal memory to save single files to the user directory `/var/user/` of the R&S SMCV100B, for example, using FTP via a LAN connection.

### To load and play a stream library file

1. Load the file from its storage location:
  - External storage device (HDD, memory stick): Load the file from the `/usb/` directory.
  - Internal memory (SSD): Load the file from the user directory `/var/user/`

**Note:** Library files are encrypted files. Loading the library file at the R&S SMCV100B requires installation of the corresponding library option. See "[Required options](#)" on page 5.
2. To load the file at the R&S SMCV100B, open the "TS Player" application in digital broadcast standard ("`<Broadcast_Standard>`") dialogs:
  - a) Select "Baseband" > "`<Broadcast_Standard>`" > "Input Signal".
  - b) Select "Source" > "TS Player".
  - c) Select "TS Player" button.
  - d) Select "Select File".
3. To select the file, navigate to the storage location (1).
4. Select "TS-Player" > "Play".





The R&S SMCV100B processes the stream file.

5. Select "<Broadcast\_Standard>" > "State" > "On", to activate the baseband signal.
6. In the block diagram, select "RF" > "On".

The stream file is modulated onto the RF carrier and output at the "RF 50  $\Omega$ " connector.

For more information on loading stream files, see chapter "How to generate an internal TS signal" in the broadcast standard option user manual of the R&S SMCV100B.

## 1.3 What's new

Compared to the previous version the documentation provides updated installation instructions to access, download and play waveform library files, see [Chapter 1.2, "Installation"](#), on page 5.

## 1.4 Documentation overview

This section provides an overview of the R&S SMCV100B user documentation. Unless specified otherwise, you find the documents at:

[www.rohde-schwarz.com/manual/smcv100b](http://www.rohde-schwarz.com/manual/smcv100b)

### 1.4.1 Getting started manual

Introduces the R&S SMCV100B and describes how to set up and start working with the product. Includes basic operations, typical measurement examples, and general information, e.g. safety instructions, etc. A printed version is delivered with the instrument.

## 1.4.2 User manuals and help

Separate manuals for the base unit and the software options are provided for download:

- **Base unit manual**  
Contains the description of all instrument modes and functions. It also provides an introduction to remote control, a complete description of the remote control commands with programming examples, and information on maintenance, instrument interfaces and error messages. Includes the contents of the getting started manual.
- **Software option manual**  
Contains the description of the specific functions of an option. Basic information on operating the R&S SMCV100B is not included.

The contents of the user manuals are available as help in the R&S SMCV100B. The help offers quick, context-sensitive access to the complete information for the base unit and the software options.

All user manuals are also available for download or for immediate display on the Internet.

## 1.4.3 Service manual

Describes the performance test for checking compliance with rated specifications, firmware update, troubleshooting, adjustments, installing options and maintenance.

The service manual is available for registered users on the global Rohde & Schwarz information system (GLORIS):

<https://gloris.rohde-schwarz.com>

## 1.4.4 Instrument security procedures

Deals with security issues when working with the R&S SMCV100B in secure areas. It is available for download on the internet.

## 1.4.5 Printed safety instructions

Provides safety information in many languages. The printed document is delivered with the product.

## 1.4.6 Data sheets and brochures

The data sheet contains the technical specifications of the R&S SMCV100B. It also lists the options and their order numbers and optional accessories.

The brochure provides an overview of the instrument and deals with the specific characteristics.

See [www.rohde-schwarz.com/brochure-datasheet/smcv100b](http://www.rohde-schwarz.com/brochure-datasheet/smcv100b)

#### **1.4.7 Release notes and open source acknowledgment (OSA)**

The release notes list new features, improvements and known issues of the current firmware version, and describe the firmware installation.

The software makes use of several valuable open source software packages. An open-source acknowledgment document provides verbatim license texts of the used open source software.

See [www.rohde-schwarz.com/firmware/smcv100b](http://www.rohde-schwarz.com/firmware/smcv100b)

#### **1.4.8 Application notes, application cards, white papers, etc.**

These documents deal with special applications or background information on particular topics.

See [www.rohde-schwarz.com/application/smcv100b](http://www.rohde-schwarz.com/application/smcv100b)

#### **1.4.9 Videos**

Find various videos on Rohde & Schwarz products and test and measurement topics on YouTube: <https://www.youtube.com/@RohdeundSchwarz>

## 2 Available DTV stream files

The ATSC A/153 standard has a logical separation between the preprocessor and postprocessor.

The preprocessor calculates an M/H-specific expanded Reed Solomon code and a serial concatenated convolutional code (SCCC), and creates the frame groups and packet formats. In the packet multiplexer, the M/H data is derived. Then, it is combined with the conventional ATSC data (the main service multiplex) into a single data stream. At the end, it is stuffed into the required data rate of 19.392658 Mbit/s. The postprocessor synchronizes with this data stream and calculates the rest of the FEC components. The postprocessor is implemented exclusively in the R&S SFE and R&S SFU systems.

The ATSC / ATSC & mobile DTV streams option is therefore an external code replacement for the main and M/H service, the preprocessor and finally the multiplexer. Different files are available for the different preprocessor settings.

All streams include one legacy ATSC SD/HD program as main service multiplex and mobile content with at least one M/H service. Some of the streams allow SFN transmitter synchronization by carrying synchronization data over the dummy data bytes channel and also over the OMP transmission control packet (TCP) (ATSC A/110:2011).

The PID of the mobile content can vary depending on the selected file. Therefore every stream is associated with a script file (\*.scpi) that passes a correct MHE PID setting to the TX application when the stream is opened in the player.

The streams described in the chapters [Chapter 2.9, "3Ens\\_AutoFEC\\_All.ATSC\\_C"](#), on page 18 to [Chapter 2.26, "CEA\\_IOP\\_106b.ATSC\\_C"](#), on page 30 (ReferenceTest.ATSC\_C, BCAST\*.ATSC\_C, CEA\_CON\_\*.ATSC\_C, CEA\_IOP\_\*.ATSC\_C) have been designed for conformance and interoperability testing at the CEA SIG PlugFest (March 1st to 4th, 2010). Note that these streams exhibit an issue with the fast information channel (FIC). The "current\_next\_indicator" flag of the FIC chunk header is set to "0", whereas the correct setting would be "1".

The configurations and content details of the M/H multiplex service are described in the following tables.

### 2.1 Transport stream files list, ordered by disk number

Transport stream file	Described on page	File size [MB]	Disk no.
3Ser-vESG_RS24_HHQQ_5S lots.ATSC_C	<a href="#">Chapter 2.2, "3Ser-vESG_RS24_HHQQ_5S lots.ATSC_C"</a> , on page 14	700.1	1
1Serv_RS24_HHQQ_5S lots.ATSC_C	<a href="#">Chapter 2.3, "1Serv_RS24_HHQQ_5 Slots.ATSC_C"</a> , on page 15	501.2	1

## Transport stream files list, ordered by disk number

1Serv_RS48_QHHQ_5Slots.ATSC_C	Chapter 2.4, "1Serv_RS48_QHHQ_5Slots.ATSC_C", on page 15	501.2	1
1Serv_RS48_HHHH_5Slots.ATSC_C	Chapter 2.5, "1Serv_RS48_HHHH_5Slots.ATSC_C", on page 16	501.2	1
3Ens_RS48.ATSC_C	Chapter 2.6, "3Ens_RS48.ATSC_C", on page 16	501.2	1
3Ens_RS48_RS36_RS24.ATSC_C	Chapter 2.7, "3Ens_RS48_RS36_RS24.ATSC_C", on page 17	501.2	1
1Ens_Separated_RS24_RS48.ATSC_C	Chapter 2.8, "1Ens_Separated_RS24_RS48.ATSC_C", on page 18	501.2	1
3Ens_Auto-FEC_All.ATSC_C	Chapter 2.9, "3Ens_Auto-FEC_All.ATSC_C", on page 18	501.2	1
3Ens_Auto-FEC_RS.ATSC_C	Chapter 2.10, "3Ens_Auto-FEC_RS.ATSC_C", on page 19	501.2	1
3Ens_Auto-FEC_SCCC.ATSC_C	Chapter 2.11, "3Ens_Auto-FEC_SCCC.ATSC_C", on page 20	501.2	1
3Ens_Auto-FEC_SCCC_Block-Mode.ATSC_C	Chapter 2.12, "3Ens_Auto-FEC_SCCC_Block-Mode.ATSC_C", on page 21	501.2	1
Reference-Stream.ATSC_C	Chapter 2.13, "Referencestream.atsc_c", on page 22	501.2	2
BCAST_1.0_DIST_INT_103.ATSC_C	Chapter 2.14, "BCAST_1.0_DIST_INT_103.ATSC_C", on page 22	416.9	2
BCAST_1.0_DIST_INT_107.ATSC_C	Chapter 2.15, "BCAST_1.0_DIST_INT_107.ATSC_C", on page 23	501.2	2
BCAST_1.0_DIST_INT_111.ATSC_C	Chapter 2.16, "BCAST_1.0_DIST_INT_111.ATSC_C", on page 24	417.9	2

CEA_CON_103_Stream 1.ATSC_C	Chapter 2.17, "CEA_CON_103_Strea m1.ATSC_C", on page 24	501.2	2
CEA_CON_103_Stream 3.ATSC_C	Chapter 2.18, "CEA_CON_103_Strea m3.ATSC_C", on page 25	501.2	2
CEA_CON_104.ATSC_ C	Chapter 2.19, "CEA_CON_104.ATSC_ C", on page 26	501.2	2
CEA_IOP_100_101_109 .ATSC_C	Chapter 2.20, "CEA_IOP_100_101_10 9.ATSC_C", on page 26	501.2	2
CEA_IOP_103.ATSC_C	Chapter 2.21, "CEA_IOP_103.ATSC_C ", on page 27	501.2	2
CEA_IOP_104.ATSC_C	Chapter 2.22, "CEA_IOP_104.ATSC_C ", on page 28	501.2	2
CEA_IOP_105.ATSC_C	Chapter 2.23, "CEA_IOP_105.ATSC_C ", on page 28	501.2	2
CEA_IOP_106.ATSC_C	Chapter 2.24, "CEA_IOP_106.ATSC_C ", on page 29	501.2	2
CEA_IOP_106a.ATSC_ C	Chapter 2.25, "CEA_IOP_106a.ATSC_ C", on page 30	501.2	2
CEA_IOP_106b.ATSC_ C	Chapter 2.26, "CEA_IOP_106b.ATSC_ C", on page 30	501.2	2

## 2.2 3ServESG\_RS24\_HHQQ\_5Slots.ATSC\_C

### MHE PID

0x1FF4

### Parades

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	5	24	None	Separa- ted	1/2	1/2	1/4	1/4

**Ensembles**

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	7681 (30-01)	RS_Serv_1	224.1.1.1	Grouper
1	7682 (30-02)	RS_Serv_2	224.1.1.2	Diver
1	7683 (30-03)	GMIT_Barker	224.1.1.20	Traffic
1	7690 (30-10)	ESG	225.0.23.1	ESG

**Description**

Single ensemble containing three basic TV services and a service guide.

**2.3 1Serv\_RS24\_HHQQ\_5Slots.ATSC\_C****MHE PID**

0x1FFE

**Parades**

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	5	24	None	Separated	1/2	1/2	1/4	1/4

**Ensembles**

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	513 (02-01)	RS24 HHQQ	224.1.1.100	R&S promotional

**Description**

Single ensemble containing one basic TV service. Carries the OMP transmission control packet for the SFN synchronization.

**2.4 1Serv\_RS48\_QHHQ\_5Slots.ATSC\_C****MHe PID**

0x1FFE

**Parades**

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	5	48	None	Separated	1/4	1/2	1/2	1/4

**Ensembles**

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	513 (02-01)	RS48 QHHQ	224.1.1.100	R&S promotional

**Description**

Single ensemble containing one basic TV service. Uses the OMP transmission control packet for the SFN synchronization.

## 2.5 1Serv\_RS48\_HHHH\_5Slots.ATSC\_C

**MHE PID**

0x1FF4

**Parades**

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	5	48	None	Combined	1/2	1/2	1/2	1/2

**Ensembles**

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	513 (02-01)	RS24 HHQQ	224.1.1.100	R&S promotional

**Description**

Single ensemble containing one basic TV service. Uses the OMP transmission control packet for the SFN synchronization.

## 2.6 3Ens\_RS48.ATSC\_C

**MHE PID**



0x1FF9

**Parades**

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	4	48	None	Com-bined	¼	¼	¼	¼
2	2	48	None	Com-bined	½	½	½	½
3	3	48	None	Separated	½	¼	¼	¼

**Ensembles**

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	7937 (31-01)	RSTEST_1	224.1.1.1	Codec169
2	7938 (31-02)	RSTEST_2	224.1.1.2	Flowers
3	7939 (31-03)	RSTEST_3	224.1.1.3	Park

**Description**

Three ensembles, each with a different SCCC rate. Every ensemble carries one basic TV service. Uses the OMP transmission control packet for the SFN synchronization.

## 2.7 3Ens\_RS48\_RS36\_RS24.ATSC\_C

**MHE PID**

0x1FF9

**Parades**

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	4	24	None	Com-bined	¼	¼	¼	¼
2	2	36	None	Com-bined	½	½	½	½
3	3	48	None	Separated	½	¼	¼	¼

**Ensembles**

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	7937 (31-01)	RSTEST_1	224.1.1.1	Codec169
2	7938 (31-02)	RSTEST_2	224.1.1.2	Flowers
3	7939 (31-03)	RSTEST_3	224.1.1.3	Park

**Description**

Three ensembles, each with different RS primary code rate. Every ensemble carries one basic TV service. Uses the OMP transmission control packet for the SFN synchronization.

**2.8 1Ens\_Separated\_RS24\_RS48.ATSC\_C****MHE PID**

0x1FF9

**Parades**

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	4	24	48	Separated	1/4	1/4	1/2	1/2

**Ensembles**

Ensemble ID	Service ID	Service name	Destination IP	Service content
1 (primary RS-Frame)	7937 (31-01)	RSTEST_1	224.1.1.1	Codec169
1 (secondary RS-Frame)	7938 (31-02)	RSTEST_2	224.1.1.2	Flowers

**Description**

One ensemble with both primary and secondary RS frames. Each RS frame carries one basic TV service. Uses the OMP transmission control packet for the SFN synchronization.

**2.9 3Ens\_AutoFEC\_All.ATSC\_C****MHE PID**

0x1FF9

**Parades**

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	4	48	None	Com-bined	¼	¼	¼	¼
2	2	48	None	Com-bined	½	½	½	½
3	2	Variable	None	Variable	Variable	Variable	Variable	Variable

**Ensembles**

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	7937 (31-01)	RSTEST_1	224.1.1.1	Codec169
2	7938 (31-02)	RSTEST_2	224.1.1.2	Flowers
3	7939 (31-03)	RSTEST_3	224.1.1.3	Park-ABR

**Description**

Three ensembles, two with constant FEC settings, one using the auto FEC mode. The FEC of the third ensemble is automatically adjusted to utilize the variable data rate of the mobile content (ABR encoded video). This stream file includes changes of:

- RS code
- SCCC block mode
- SCCC code rate

The OMP transmission control packet is activated.

## 2.10 3Ens\_AutoFEC\_RS.ATSC\_C

**MHE PID**

0x1FF9

**Parades**

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	4	48	None	Com-bined	¼	¼	¼	¼

2	2	48	None	Com- bined	½	½	½	½
3	2	Variable	None	Separa- ted	½	¼	½	¼

### Ensembles

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	7937 (31-01)	RSTEST_1	224.1.1.1	Codec169
2	7938 (31-02)	RSTEST_2	224.1.1.2	Flowers
3	7939 (31-03)	RSTEST_3	224.1.1.3	Park-ABR

### Description

Three ensembles, two with constant FEC settings, one using the auto FEC mode. The FEC of the third ensemble is automatically adjusted to utilize the variable data rate of the mobile content (ABR encoded video). This stream file includes changes of:

- RS code

The OMP transmission control packet is activated.

## 2.11 3Ens\_AutoFEC\_SCCC.ATSC\_C

### MHE PID

0x1FF9

### Parades

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	4	48	None	Com- bined	¼	¼	¼	¼
2	2	48	None	Com- bined	½	½	½	½
3	2	48	None	Separa- ted	Variable	Variable	Variable	Variable

### Ensembles

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	7937 (31-01)	RSTEST_1	224.1.1.1	Codec169
2	7938 (31-02)	RSTEST_2	224.1.1.2	Flowers
3	7939 (31-03)	RSTEST_3	224.1.1.3	Park-ABR

**Description**

Three ensembles, two with constant FEC settings, one using the auto FEC mode. The FEC of the third ensemble is automatically adjusted to utilize the variable data rate of the mobile content (ABR encoded video). This stream file includes changes of:

- SCCC code rate

The OMP transmission control packet is activated.

**2.12 3Ens\_AutoFEC\_SCCC\_BlockMode.ATSC\_C****MHE PID**

0x1FF9

**Parades**

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	4	48	None	Com-bined	¼	¼	¼	¼
2	2	48	None	Com-bined	½	½	½	½
3	2	48	None	Variable	Variable	Variable	Variable	Variable

**Ensembles**

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	7937 (31-01)	RSTEST_1	224.1.1.1	Codec169
2	7938 (31-02)	RSTEST_2	224.1.1.2	Flowers
3	7939 (31-03)	RSTEST_3	224.1.1.3	Park-ABR

**Description**

Three ensembles, two with constant FEC settings, one using the auto FEC mode. The FEC of the third ensemble is automatically adjusted to utilize the variable data rate of the mobile content (ABR encoded video). This stream file includes changes of:

- SCCC block mode
- SCCC code rate

The OMP transmission control packet is activated.

## 2.13 Referencestream.atsc\_c

### MHE PID

0x1FF4

### Parades

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	8	48	None	Separated	½	¼	¼	¼

### Ensembles

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	5121 (20-01)	R&S_Service1	224.1.1.1	Codec169
1	5122 (20-02)	R&S_Service2	224.1.1.2	Jump
1	5123 (20-03)	R&S_Service3	227.1.1.20	Counter
1	5130 (20-10)	ESG	225.0.23.1	ESG

### Description

Three basic TV components and a service guide in a single ensemble. This stream serves as a reference for the following test streams.

Known issue: The "current\_next\_indicator" flag of the FIC chunk header is set to "0".

## 2.14 BCAST\_1.0\_DIST\_INT\_103.ATSC\_C

### MHE PID

0x1FF4

### Parades

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	8	48	None	Separated	½	¼	¼	¼

**Ensembles**

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	5121 (20-01)	R&S_Service1	224.1.1.1	Codec169
1	5122 (20-02)	R&S_Service2	224.1.1.2	Jump
1	5130 (20-10)	ESG	225.0.23.1	ESG
1	17921 (70-01)	R&S_Service3	227.1.1.20	Counter

**Description**

One ensemble containing three basic TV services (two local and one regional) and a service guide. A change in content name occurs in the service guide for service 20-01 at time 01:00 and 02:00 (mm:ss).

Known issue: The "current\_next\_indicator" flag of the FIC chunk header is set to "0".

**2.15 BCAST\_1.0\_DIST\_INT\_107.ATSC\_C****MHE PID**

0x1FF4

**Parades**

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	8	48	None	Separated	1/2	1/4	1/4	1/4

**Ensembles**

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	5121 (20-01)	R&S_Service1	224.1.1.1	Codec169
1	5122 (20-02)	R&S_Service2	224.1.1.2	Jump
1	5130 (20-10)	ESG	225.0.23.1	ESG
1	17921 (70-01)	R&S_Service3	227.1.1.20	Counter

**Description**

One ensemble containing three basic TV services (two local and one regional) and a service guide. The service guide is not GZIP-compressed.

Known issue: The "current\_next\_indicator" flag of the FIC chunk header is set to "0".

## 2.16 BCAST\_1.0\_DIST\_INT\_111.ATSC\_C

### MHE PID

0x1FF4

### Parades

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	8	48	None	Separated	1/2	1/4	1/4	1/4

### Ensembles

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	5121 (20-01)	R&S_Service1	224.1.1.1	Codec169
1	5122 (20-02)	R&S_Service2	224.1.1.2	Jump
1	5130 (20-10)	ESG	225.0.23.1	ESG
1	17921 (70-01)	R&S_Service3	227.1.1.20	Counter

### Description

One ensemble containing three basic TV services (two local and one regional) and a service guide. Service 20-01 contains two audio components which are described in the service guide as different language-specific content.

Known issue: The "current\_next\_indicator" flag of the FIC chunk header is set to "0".

## 2.17 CEA\_CON\_103\_Stream1.ATSC\_C

### MHE PID

0x1FF4

### Parades

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	8	48	None	Auto	Auto	Auto	Auto	Auto



**Ensembles**

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	5121 (20-01)	R&S_Service1	224.1.1.1	Codec169
1	5122 (20-02)	R&S_Service2	224.1.1.2	Jump
1	5123 (20-03)	R&S_Service3	227.1.1.20	Counter
1	5130 (20-10)	ESG	225.0.23.1	ESG

**Description**

Three basic TV components and a service guide in a single ensemble. The FEC parameters SCCC Mode and SCCC Rate change frequently.

Known issue: The "current\_next\_indicator" flag of the FIC chunk header is set to "0".

**2.18 CEA\_CON\_103\_Stream3.ATSC\_C****MHE PID**

0x1FF4

**Parades**

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	8	24 / 48	None	Separated	¼ / ½	¼	¼	¼

**Ensembles**

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	5121 (20-01)	R&S_Service1	224.1.1.1	Codec169
1	5122 (20-02)	R&S_Service2	224.1.1.2	Jump
1	5123 (20-03)	R&S_Service3	227.1.1.20	Counter
1	5130 (20-10)	ESG	225.0.23.1	ESG

**Description**

Three basic TV components and a service guide in a single ensemble. The FEC parameters Primary RS Code Mode and SCCC Rate A change every minute.

Known issue: The "current\_next\_indicator" flag of the FIC chunk header is set to "0".

## 2.19 CEA\_CON\_104.ATSC\_C

### MHE PID

0x1FF4

### Parades

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	8	48	None	Separated	½	¼	¼	¼

### Ensembles

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	5121 (20-01)	R&S_Service1	224.1.1.1	Codec169
1	5122 (20-02)	R&S_Service2	224.1.1.2	Jump
1	5123 (20-03)	R&S_Service3	227.1.1.20	Counter
1	5130 (20-10)	ESG	225.0.23.1	ESG

### Description

Three basic TV components and a service guide in a single ensemble. The service 20-03 disappears and reappears every minute.

Known issue: The "current\_next\_indicator" flag of the FIC chunk header is set to "0".

## 2.20 CEA\_IOP\_100\_101\_109.ATSC\_C

### MHE PID

0x1FF4

### Parades

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	7	48	None	Separated	½	¼	¼	¼
2	2	48	None	Separated	½	¼	¼	¼

### Ensembles

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	5121 (20-01)	R&S_Service1	224.1.1.1	Codec169
1	5122 (20-02)	R&S_Service2	224.1.1.2	Jump
1	5130 (20-10)	ESG	225.0.23.1	ESG
2	17921 (70-01)	R&S_Service3	227.1.1.20	Counter

### Description

Two ensembles, the first one with two regional (ID 20-01 and 20-02) basic TV services and a service guide. The second ensemble contains a single local (ID 70-01) basic TV service.

Known issue: The "current\_next\_indicator" flag of the FIC chunk header is set to "0".

## 2.21 CEA\_IOP\_103.ATSC\_C

### MHE PID

0x1FF4

### Parades

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	7	48	None	Separated	1/2	1/4	1/4	1/4
2	2	48	None	Separated	1/2	1/4	1/4	1/4

### Ensembles

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	5121 (20-01)	R&S_Service1	224.1.1.1	Codec169
1	5122 (20-02)	R&S_Service2	224.1.1.2	Jump
1	5130 (20-10)	ESG	225.0.23.1	ESG
2	17921 (70-01)	R&S_Service3	227.1.1.20	Counter

### Description

Two ensembles, the first one with two regional (ID 20-01 and 20-02) basic TV services and a service guide. The second ensemble contains a single local (ID 70-01) basic TV service. The status of broadcasted services is listed in the following table.

Service ID	Service Status
5121 (20-01)	active, visible
5122 (20-02)	inactive, visible
5130 (20-10)	active, visible
5123 (70-01)	active, hidden

Known issue: The "current\_next\_indicator" flag of the FIC chunk header is set to "0".

## 2.22 CEA\_IOP\_104.ATSC\_C

### MHE PID

0x1FF4

### Parades

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	8	48	None	Separated	½	¼	¼	¼

### Ensembles

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	5121 (20-01)	R&S_Service1	224.1.1.1	Codec169
1	5122 (20-02)	R&S_Service2	224.1.1.2	Jump
1	5123 (20-03)	R&S_Service3	227.1.1.20	Counter
1	5130 (20-10)	ESG	225.0.23.1	ESG

### Description

A single ensemble containing two basic TV services (20-01 and 20-02), one basic radio service carrying only an audio component (20-03) and a service guide. Known issue: The "current\_next\_indicator" flag of the FIC chunk header is set to "0".

## 2.23 CEA\_IOP\_105.ATSC\_C

### MHE PID

0x1FF4

**Parades**

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	8	48	None	Separated	½	¼	¼	¼

**Ensembles**

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	5121 (20-01)	R&S_Service1	224.1.1.1	Codec169
1	5122 (20-02)	R&S_Service2	224.1.1.2	Jump
1	5123 (20-03)	R&S_Service3	227.1.1.20	Counter
1	5130 (20-10)	ESG	225.0.23.1	ESG

**Description**

Three basic TV components and a service guide in a single ensemble. The service label information delivered by the service guide is inconsistent with the SMT/SLT label carried by the service-signaling channel.

Known issue: The "current\_next\_indicator" flag of the FIC chunk header is set to "0".

## 2.24 CEA\_IOP\_106.ATSC\_C

**MHE PID**

0x1FF4

**Parades**

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	8	48	None	Separated	½	¼	¼	¼

**Ensembles**

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	5121 (20-01)	R&S_Service1	224.1.1.1	Codec169
1	5122 (20-02)	R&S_Service2	224.1.1.2	Jump
1	5123 (20-03)	R&S_Service3	227.1.1.20	Counter

**Description**

Three basic TV components carried by a single ensemble. No service guide is in the broadcast.

Known issue: The "current\_next\_indicator" flag of the FIC chunk header is set to "0".

## 2.25 CEA\_IOP\_106a.ATSC\_C

### MHE PID

0x1FF4

### Parades

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	6	48	None	Separated	½	¼	¼	¼
2	3	48	None	Separated	½	¼	¼	¼

### Ensembles

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	5121 (20-01)	R&S_Service1	224.1.1.1	Codec169
1	5122 (20-02)	R&S_Service2	224.1.1.2	Jump
1	5130 (20-10)	ESG_Ensemble1	225.0.23.1	ESG
2	5123 (20-03)	R&S_Service3	227.1.1.20	Counter
2	5131 (20-11)	ESG_Ensemble2	225.0.23.2	ESG

### Description

There are two M/H ensembles in this stream. The first one contains two basic TV services and a service guide. The other one carries one basic TV service and a second service guide.

Known issue: The "current\_next\_indicator" flag of the FIC chunk header is set to "0".

## 2.26 CEA\_IOP\_106b.ATSC\_C

### MHE PID

0x1FF4

**Parades**

ID	Number of groups	RS prim	RS sec	SCCC mode	SCCC rate a	SCCC rate b	SCCC rate c	SCCC rate d
1	6	48	None	Separated	1/2	1/4	1/4	1/4

**Ensembles**

Ensemble ID	Service ID	Service name	Destination IP	Service content
1	5121 (20-01)	R&S_Service1	224.1.1.1	Codec169
1	5122 (20-02)	R&S_Service2	224.1.1.2	Jump
1	5123 (20-03)	R&S_Service3	227.1.1.20	Counter

**Description**

Three basic TV components carried by a single ensemble. This broadcast contains no service guide, but there is an entry in the Guide Access Table referencing a service guide in another broadcast (referenced TSID: 0x040F, referenced stream ID: 0x1064).

Known issue: The "current\_next\_indicator" flag of the FIC chunk header is set to "0".

# Index

## A

Application cards .....	11
Application notes .....	11

## B

Brochures .....	10
-----------------	----

## D

Data sheets .....	10
Documentation overview .....	9
DTV stream files .....	12

## G

Getting started .....	9
-----------------------	---

## H

Help .....	10
------------	----

## I

Installation .....	5
Instrument help .....	10
Instrument security procedures .....	10

## K

Key features .....	5
--------------------	---

## L

Libraries	
Access .....	5
Download file .....	7
Load file .....	8
Play file .....	8
Required options .....	5
Save file .....	8

## O

Open source acknowledgment (OSA) .....	11
--	----

## R

Release notes .....	11
---------------------	----

## S

Safety instructions .....	10
Security procedures .....	10
Service manual .....	10

## U

User manual .....	10
-------------------	----

## V

Videos .....	11
--------------	----

## W

Welcome .....	5
What's new .....	9
White papers .....	11