

R&S[®]SMCVB-KS15

EMC Streams

User Manual



1179269002
Version 02

ROHDE & SCHWARZ
Make ideas real



This document describes the following software options:

- R&S®SMCVB-KS15 EMC Streams (1434.5092.xx)

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1179.2690.02 | Version 02 | R&S®SMCVB-KS15

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

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1 Welcome to the R&S SMCVB-KS15 option

The R&S SMCVB-KS15 is a stream library that provides stream files for EMC certification.

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

1.1 Key features

The R&S SMCVB-KS15 features:

- Numerous stream files for EMC certification
- Streaming of high-quality video contents
- Streaming of high-quality audio contents
- Efficient use with dedicated streams

1.2 Installation

You can find detailed installation instructions in the supplement document of the R&S SMCV100B user manual and in the R&S SMCV100B user manual describing firmware versions FW 4.90.002.xx and later of the R&S SMCV100B.

1.3 What's new

Compared to the previous version there are editorial changes only.

1.4 Documentation overview

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

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

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 open-source acknowledgment document provides verbatim license texts of the used open source software.

See 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

2 DTV stream files

The EMC streams option contains data streams that can specifically be used for EMC certification testing in accordance with CISPR 13 (EN 55013) and CISPR 20 (EN 55020). The test signals are available in common HDTV and SDTV formats for DVB systems (DVB T and DVB T2 delivery system) or ATSC systems. Also, the test signals feature MPEG 2/H.262 or AVC/H.264 video compression. All transport streams comprise the moving color bar test pattern and supply two services with the same video but different audio: service 1 transmits a 1 kHz sinusoidal tone with a level of 6 dBFS, service 2 transmits an audio with no tone (silence). Since EMC tests always require a screen-filling video representation, the library contains test patterns with an aspect ratio of 4:3 and 16:9.

2.1 Available test patterns

2.1.1 Color bar with moving element 4:3 standard (definition) television SDTV

- 480i / 29.97 frames per second
- 576i / 25 frames per second)



Figure 2-1: Figure 2-1: Moving color bar 4:3 SDTV

This test pattern is compliant to the ITU R BT.471 1 defined 100/0/75/0 color bars signal with levels given from ITU R BT.801. It is enhanced with the moving edge (element) in the lower center for EMC purposes.

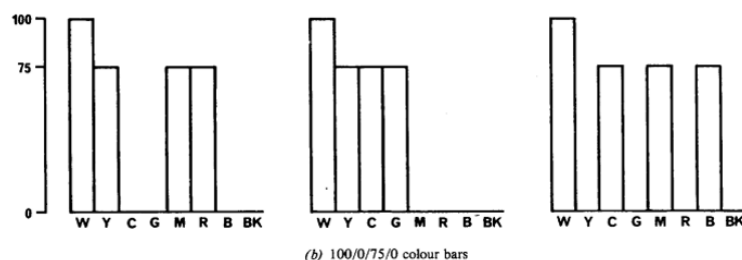


Figure 2-2: Figure 2-2: Definition of ITU R BT.471 1 color bars (75 %)

2.1.2 Color bar with moving element 16:9 standard (definition) television SDTV

- 480i / 29.97 frames per second
- 576i / 25 frames per second)



Figure 2-3: Figure 2-3: Moving color bar 16:9 SDTV

This test pattern is compliant to the ITU R BT.471 1 defined 100/0/75/0 color bars signal with levels given from ITU R BT.801. It is enhanced with the moving edge (element) in the lower center for EMC purposes.

2.1.3 Moving color bars 16:9 high definition television HDTV

- 1080i / 29.97 frames per second
- 1080i / 25 frames per second

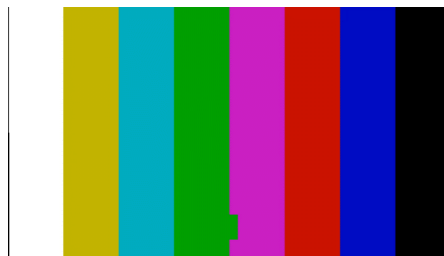


Figure 2-4: Figure 2-4: Moving color bar 16:9 SDTV

This test pattern uses the signal levels given by ITU R BT.801. Although these levels do not match the conversion matrix of ITU R BT.709 5, it is suitable for EMC measurements.

2.1.4 Moving color bars 16:9 standard (definition) television SDTV according to CISPR 32

- 480i / 29.97 frames per second
- 576i / 25 frames per second)



Figure 2-5: Figure 2-5: CISPR 32 moving color bar 16:9 SDTV

This test pattern is given in the CISPR 32 standard to be used for complexity level 4. The standard points to color bars of the ITU R BT.1729 test pattern, which is an SDTV 100 % (100/0/100/0) color bars signal with additional grey bars on each side. It is enhanced with the moving edge (element) in the lower center for EMC purposes.

Complexity Level	Display image	Description	Examples of equipment
4 (Most)	Colour bars with moving picture element	Standard television colour bar signal according to ITU-R BT 1729 with an additional small moving element. See ^a .	Digital television set, set-top box, personal computer, DVD equipment, video game console, stand alone monitor.

Figure 2-6: Reference to ITU R BT.1729 color bars in CISPR 32

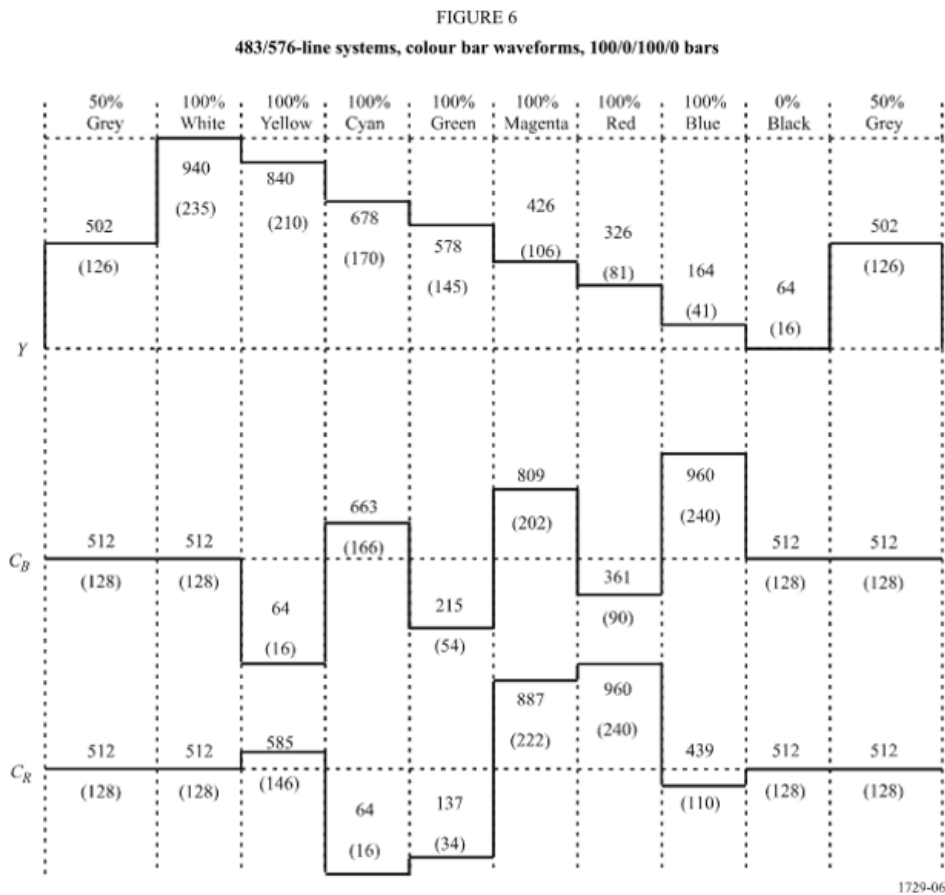


Figure 2-7: Definition of SDTV color bar levels in ITU R BT.1729

2.1.5 Moving color bars 16:9 high definition television HDTV according to CISPR 32

- 1080i / 29.97 frames per second
- 1080i / 25 frames per second)

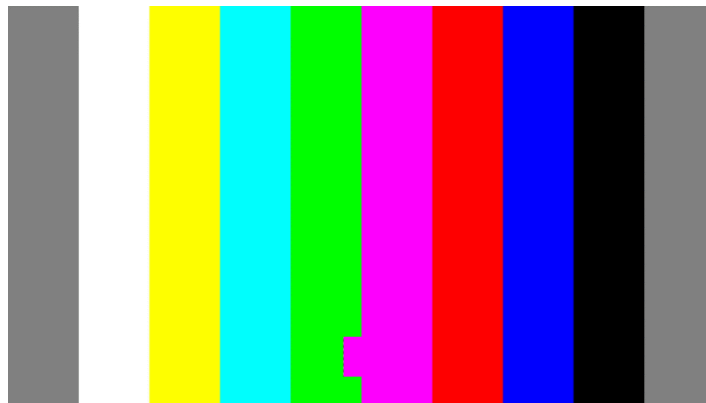


Figure 2-8: CISPR 32 moving color bar 16:9 HDTV

This test pattern is given in the CISPR 32 standard to be used for complexity level 4. The standard points to color bars of the ITU R BT.1729 test pattern, which is an HDTV 100 % (100/0/100/0) color bars signal with additional grey bars on each side. It is enhanced with the moving edge (element) in the lower center for EMC purposes.

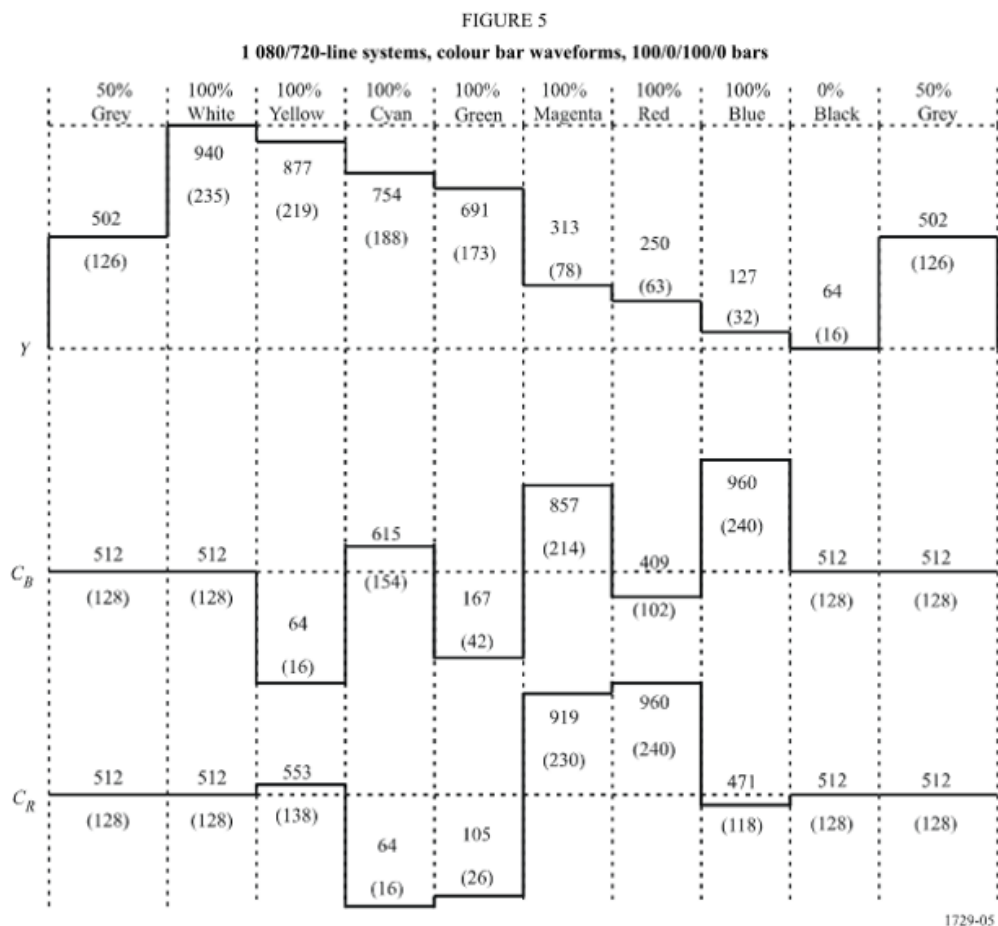


Figure 2-9: Definition of HDTV color bars levels in ITU R BT.1729

2.1.6 ITU-R BT.1729 multizone test pattern 16:9 high definition television HDTV

- 1080i / 25 frames per second

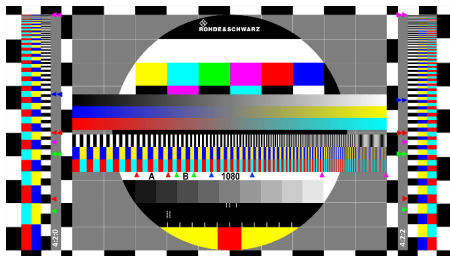


Figure 2-10: Figure 2-10: ITU R BT.1729 test pattern HDTV interlaced

- 1080p / 50 frames per second

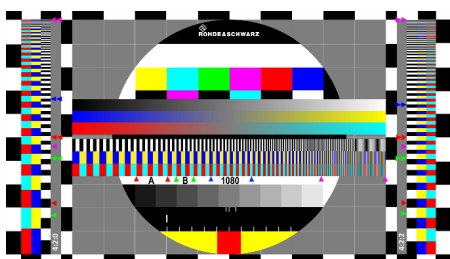


Figure 2-11: Figure 2-11: ITU R BT.1729 test pattern HDTV progressive

Although CISPR 32 requires an SDTV color bars signal only, modern TV receiver equipment is able to display high definition signals. Therefore, also perform the EMC tests with HDTV signals. For that reason, the ITU-R BT.1729 multizone test pattern itself is provided in addition in this signal library. The test pattern includes a moving element (white horizontal moving line) already.

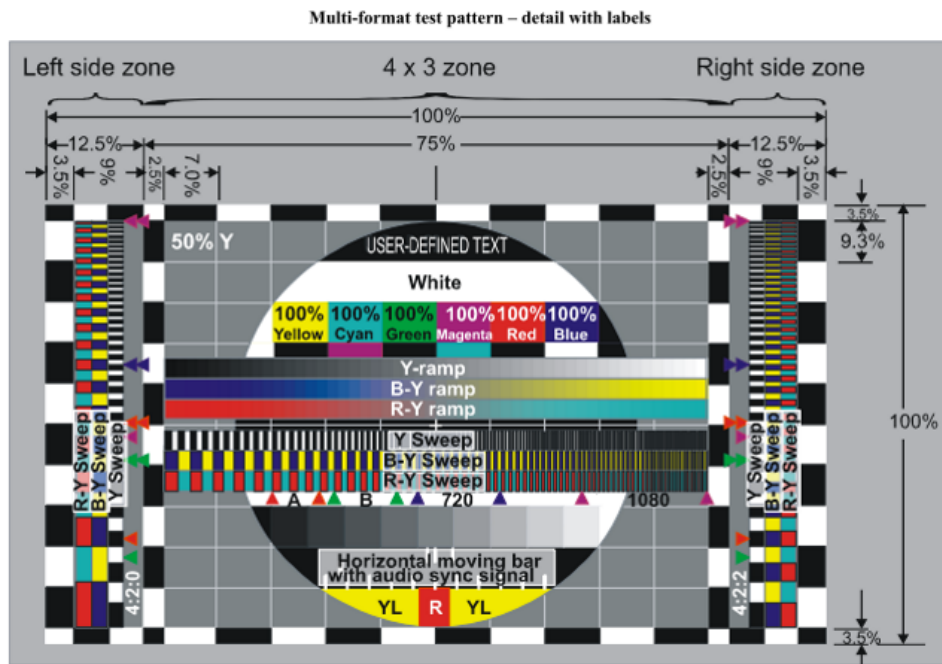


Figure 2-12: Figure 2-12: Definition of HDTV test pattern in ITU R BT.1729

2.2 DVB-MPEG-2 / H.262 streams with terrestrial delivery system descriptor

The network information section of these streams contains the terrestrial delivery system descriptor.

Table 2-1: DVB T_MPEG2_MCBBar25Hz_576i_43_19200ms.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	576i	25 Hz	Moving color bars MPEG-2 video 6 Mbps	4:3	1 kHz, -6 dB ^{FS} MPEG-2 audio 192 kbps
2	576i	25 Hz	Moving color bars MPEG-2 video 6 Mbps	4:3	Silence MPEG-2 audio 192 kbps

DVB-MPEG-2 / H.262 streams with terrestrial delivery system descriptor

Table 2-2: DVB T_MPEG2_MCBar25Hz_576i_169_19200ms.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	576i	25 Hz	Moving color bars MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 192 kbps
2	576i	25 Hz	Moving color bars MPEG-2 video 6 Mbps	16:9	Silence MPEG-2 audio 192 kbps

Table 2-3: DVB T_MPEG2_MCBar25Hz_1080i_169_19200ms.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	25 Hz	Moving color bars MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 192 kbps
2	1080i	25 Hz	Moving color bars MPEG-2 video 6 Mbps	16:9	Silence MPEG-2 audio 192 kbps

Table 2-4: DVB-T_MPEG2_MCBar_CISPR32_25Hz_576i_169.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	576i	25 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} AC-3 audio 192 kbps
2	576i	25 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	Silence AC-3 audio 192 kbps

Table 2-5: DVB-T_MPEG2_MCBar_CISPR32_25Hz_1080i_169.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	25 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} AC-3 audio 192 kbps
2	1080i	25 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	Silence AC-3 audio 192 kbps

DVB-AVC / H.264 streams with terrestrial delivery system descriptor

Table 2-6: DVB T_MPEG2_ITU-R_BT1729_25Hz_1080i.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	25 Hz	ITU-R BT1729 MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 384 kbps
2	1080i	25 Hz	ITU-R BT1729 MPEG-2 video 6 Mbps	16:9	Silence MPEG-2 audio 384 kbps

2.3 DVB-AVC / H.264 streams with terrestrial delivery system descriptor

The network information section of these streams contains the terrestrial delivery system descriptor.

Table 2-7: DVB T_H264_MCBBar25Hz_576i_43_19200ms.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	576i	25 Hz	Moving color bars AVC video 6 Mbps	4:3	1 kHz, -6 dB _{FS} MPEG-2 audio 192 kbps
2	576i	25 Hz	Moving color bars AVC video 6 Mbps	4:3	Silence MPEG-2 audio 192 kbps

Table 2-8: DVB T_H264_MCBBar25Hz_576i_169_19200ms.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	576i	25 Hz	Moving color bars AVC video 6 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 192 kbps
2	576i	25 Hz	Moving color bars AVC video 6 Mbps	16:9	Silence MPEG-2 audio 192 kbps

DVB-MPEG-2 / H.262 with DVB-T2 delivery system descriptor

Table 2-9: DVB T_H264_MCBBar25Hz_1080i_169_19200ms.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	25 Hz	Moving color bars AVC video 6 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 192 kbps
2	1080i	25 Hz	Moving color bars AVC video 6 Mbps	16:9	Silence MPEG-2 audio 192 kbps

Table 2-10: DVB T_H264_ITU-R_BT1729_25Hz_1080i.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	25 Hz	ITU-R BT1729 AVC video 3 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 384 kbps
2	1080i	25 Hz	ITU-R BT1729 AVC video 3 Mbps	16:9	Silence MPEG-2 audio 384 kbps

Table 2-11: DVB T_H264_ITU-R_BT1729_50Hz_1080p.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080p	50 Hz	ITU-R BT1729 AVC video 6 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 384 kbps
2	1080p	50 Hz	ITU-R BT1729 AVC video 6 Mbps	16:9	Silence MPEG-2 audio 384 kbps

2.4 DVB-MPEG-2 / H.262 with DVB-T2 delivery system descriptor

The network information section of these streams contains the DVB T2 delivery system descriptor with PLP ID = 0x00 and T2 System ID = 0x0000.

DVB-MPEG-2 / H.262 with DVB-T2 delivery system descriptor

Table 2-12: DVB T2_MPEG2_MCBBar25Hz_576i_43_19200ms.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	576i	25 Hz	Moving color bars MPEG-2 video 6 Mbps	4:3	1 kHz, -6 dB _{FS} MPEG-2 audio 192 kbps
2	576i	25 Hz	Moving color bars MPEG-2 video 6 Mbps	4:3	Silence MPEG-2 audio 192 kbps

Table 2-13: DVB T2_MPEG2_MCBBar25Hz_576i_169_19200ms.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	576i	25 Hz	Moving color bars MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 192 kbps
2	576i	25 Hz	Moving color bars MPEG-2 video 6 Mbps	16:9	Silence MPEG-2 audio 192 kbps

Table 2-14: DVB T2_MPEG2_MCBBar25Hz_1080i_169_19200ms.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	25 Hz	Moving color bars MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 192 kbps
2	1080i	25 Hz	Moving color bars MPEG-2 video 6 Mbps	16:9	Silence MPEG-2 audio 192 kbps

Table 2-15: DVB-T2_MPEG2_MCBBar_CISPR32_25Hz_576i_169.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	576i	25 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} AC-3 audio 192 kbps
2	576i	25 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	Silence AC-3 audio 192 kbps

Table 2-16: DVB-T2_MPEG2_MCBBar_CISPR32_25Hz_1080i_169.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	25 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} AC-3 audio 192 kbps
2	1080i	25 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	Silence AC-3 audio 192 kbps

Table 2-17: DVB T2_MPEG2_ITU-R_BT1729_25Hz_1080i.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	25 Hz	ITU-R BT1729 MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 384 kbps
2	1080i	25 Hz	ITU-R BT1729 MPEG-2 video 6 Mbps	16:9	Silence MPEG-2 audio 384 kbps

2.5 DVB-AVC / H.264 with DVB-T2 delivery system descriptor

The network information section of these streams contains the DVB T2 delivery system descriptor with PLP ID = 0x00 and T2 System ID = 0x0000.

Table 2-18: DVB T2_H264_MCBBar25Hz_576i_43_19200ms.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	576i	25 Hz	Moving color bars AVC video 6 Mbps	4:3	1 kHz, -6 dB _{FS} MPEG-2 audio 192 kbps
2	576i	25 Hz	Moving color bars AVC video 6 Mbps	4:3	Silence MPEG-2 audio 192 kbps

DVB-AVC / H.264 with DVB-T2 delivery system descriptor

Table 2-19: DVB T2_H264_MCBBar25Hz_576i_169_19200ms.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	576i	25 Hz	Moving color bars AVC video 6 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 192 kbps
2	576i	25 Hz	Moving color bars AVC video 6 Mbps	16:9	Silence MPEG-2 audio 192 kbps

Table 2-20: DVB T2_H264_MCBBar25Hz_1080i_169_19200ms.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	25 Hz	Moving color bars AVC video 6 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 192 kbps
2	1080i	25 Hz	Moving color bars AVC video 6 Mbps	16:9	Silence MPEG-2 audio 192 kbps

Table 2-21: DVB T2_H264_ITU-R_BT1729_25Hz_1080i.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	25 Hz	ITU-R BT1729 AVC video 3 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 384 kbps
2	1080i	25 Hz	ITU-R BT1729 AVC video 3 Mbps	16:9	Silence MPEG-2 audio 384 kbps

Table 2-22: DVB T2_H264_ITU-R_BT1729_50Hz_1080p.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080p	50 Hz	ITU-R BT1729 AVC video 5.5 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 384 kbps
2	1080p	50 Hz	ITU-R BT1729 AVC video 5.5 Mbps	16:9	Silence MPEG-2 audio 384 kbps

2.6 DVB-MPEG-2 / H.262 with DVB-C delivery system descriptor

The network information section of these streams contains the cable delivery system descriptor.

Table 2-23: DVB-C_MPEG2_MCBBar_CISPR32_25Hz_576i_169.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	576i	25 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} AC-3 audio 192 kbps
2	576i	25 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	Silence AC-3 audio 192 kbps

Table 2-24: DVB-C_MPEG2_MCBBar_CISPR32_25Hz_1080i_169.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	25 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} AC-3 audio 192 kbps
2	1080i	25 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	Silence AC-3 audio 192 kbps

Table 2-25: DVB C_MPEG2_ITU-R_BT1729_25Hz_1080i.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	25 Hz	ITU-R BT1729 MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 384 kbps
2	1080i	25 Hz	ITU-R BT1729 MPEG-2 video 6 Mbps	16:9	Silence MPEG-2 audio 384 kbps

2.7 DVB-AVC / H.264 with DVB-C delivery system descriptor

The network information section of these streams contains the cable delivery system descriptor.

Table 2-26: DVB C_H264_ITU-R_BT1729_25Hz_1080i.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	25 Hz	ITU-R BT1729 AVC video 3 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 384 kbps
2	1080i	25 Hz	ITU-R BT1729 AVC video 3 Mbps	16:9	Silence MPEG-2 audio 384 kbps

Table 2-27: DVB C_H264_ITU-R_BT1729_50Hz_1080p.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080p	50 Hz	ITU-R BT1729 AVC video 5.5 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 384 kbps
2	1080p	50 Hz	ITU-R BT1729 AVC video 5.5 Mbps	16:9	Silence MPEG-2 audio 384 kbps

2.8 DVB-MPEG-2 / H.262 with DVB-S delivery system descriptor

The network information section of these streams contains the satellite delivery system descriptor.

Table 2-28: DVB S_MPEG2_ITU-R_BT1729_25Hz_1080i.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	25 Hz	ITU-R BT1729 MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 384 kbps
2	1080i	25 Hz	ITU-R BT1729 MPEG-2 video 6 Mbps	16:9	Silence MPEG-2 audio 384 kbps

DVB-AVC / H.264 with DVB-S delivery system descriptor

Table 2-29: DVB-S_MPEG2_MCBBar_CISPR32_25Hz_576i_169.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	576i	25 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} AC-3 audio 192 kbps
2	576i	25 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	Silence AC-3 audio 192 kbps

Table 2-30: DVB-S_MPEG2_MCBBar_CISPR32_25Hz_1080i_169.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	25 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} AC-3 audio 192 kbps
2	1080i	25 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	Silence AC-3 audio 192 kbps

2.9 DVB-AVC / H.264 with DVB-S delivery system descriptor

The network information section of these streams contains the satellite delivery system descriptor.

Table 2-31: DVB S_H264_ITU-R_BT1729_25Hz_1080i.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	25 Hz	ITU-R BT1729 AVC video 6 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 384 kbps
2	1080i	25 Hz	ITU-R BT1729 AVC video 6 Mbps	16:9	Silence MPEG-2 audio 384 kbps

DVB-MPEG-2 / H.262 with DVB-S2 delivery system descriptor

Table 2-32: DVB S_H264_ITU-R_BT1729_50Hz_1080p.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080p	50 Hz	ITU-R BT1729 AVC video 5.5 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 384 kbps
2	1080p	50 Hz	ITU-R BT1729 AVC video 5.5 Mbps	16:9	Silence MPEG-2 audio 384 kbps

2.10 DVB-MPEG-2 / H.262 with DVB-S2 delivery system descriptor

The network information section of these streams contains the satellite delivery system descriptor with settings for DVB-S2.

Table 2-33: DVB-S2_MPEG2_MCBBar_CISPR32_25Hz_576i_169.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	576i	25 Hz	CISPR32 mov- ing color bars MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} AC-3 audio 192 kbps
2	576i	25 Hz	CISPR32 mov- ing color bars MPEG-2 video 6 Mbps	16:9	Silence AC-3 audio 192 kbps

Table 2-34: DVB-S2_MPEG2_MCBBar_CISPR32_25Hz_1080i_169.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	25 Hz	CISPR32 mov- ing color bars MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} AC-3 audio 192 kbps
2	1080i	25 Hz	CISPR32 mov- ing color bars MPEG-2 video 6 Mbps	16:9	Silence AC-3 audio 192 kbps

Table 2-35: DVB S2_MPEG2_ITU-R_BT1729_25Hz_1080i.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	25 Hz	ITU-R BT1729 MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 384 kbps
2	1080i	25 Hz	ITU-R BT1729 MPEG-2 video 6 Mbps	16:9	Silence MPEG-2 audio 384 kbps

2.11 DVB-AVC / H.264 with DVB-S2 delivery system descriptor

The network information section of these streams contains the satellite delivery system descriptor with settings for DVB-S2.

Table 2-36: DVB S2_H264_ITU-R_BT1729_25Hz_1080i.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	25 Hz	ITU-R BT1729 AVC video 3 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 384 kbps
2	1080i	25 Hz	ITU-R BT1729 AVC video 3 Mbps	16:9	Silence MPEG-2 audio 384 kbps

Table 2-37: DVB S2_H264_ITU-R_BT1729_50Hz_1080p.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080p	50 Hz	ITU-R BT1729 AVC video 5.5 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 384 kbps
2	1080p	50 Hz	ITU-R BT1729 AVC video 5.5 Mbps	16:9	Silence MPEG-2 audio 384 kbps

2.12 ATSC-MPEG-2 / H.262 streams

Table 2-38: ATSC_MCBBar2997Hz_480i_43_32032ms.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	480i	29.97 Hz	Moving color bars MPEG-2 video 6 Mbps	4:3	1 kHz, -6 dB _{FS} AC-3 audio 384 kbps
2	480i	29.97 Hz	Moving color bars MPEG-2 video 6 Mbps	4:3	Silence AC-3 audio 384 kbps

Table 2-39: ATSC_MCBBar2997Hz_480i_169_32032ms.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	480i	29.97 Hz	Moving color bars MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} AC-3 audio 384 kbps
2	480i	29.97 Hz	Moving color bars MPEG-2 video 6 Mbps	16:9	Silence AC-3 audio 384 kbps

Table 2-40: ATSC_MCBBar2997Hz_1080i_169_32032ms.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	29.97 Hz	Moving color bars MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} AC-3 audio 384 kbps
2	1080i	29.97 Hz	Moving color bars MPEG-2 video 6 Mbps	16:9	Silence AC-3 audio 384 kbps

Table 2-41: ATSC_MPEG2_MCBBar_CISPR32_2997Hz_480i_169.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	480i	29.97 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} AC-3 audio 192 kbps
2	480i	29.97 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	Silence AC-3 audio 192 kbps

Table 2-42: ATSC_MPEG2_MCBBar_CISPR32_2997Hz_1080i_169.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	29.97 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} AC-3 audio 192 kbps
2	1080i	29.97 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	Silence AC-3 audio 192 kbps

2.13 ISDB-T-MPEG-2 / H.262 streams

Table 2-43: ISDB-T_MPEG2_MCBBar_CISPR32_2997Hz_480i_169.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	480i	29.97 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 192 kbps
2	480i	29.97 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	Silence MPEG-2 audio 192 kbps

Table 2-44: ISDB-T_MPEG2_MCBBar_CISPR32_2997Hz_1080i_169.EMC_C

Service	Format	Frame rate	Video	Aspect ratio	Audio
1	1080i	29.97 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	1 kHz, -6 dB _{FS} MPEG-2 audio 192 kbps
2	1080i	29.97 Hz	CISPR32 moving color bars MPEG-2 video 6 Mbps	16:9	Silence MPEG-2 audio 192 kbps

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