

R&S[®]SMCVB-KV12

DRM+ Waveforms

User Manual



1179277702
Version 03

ROHDE & SCHWARZ
Make ideas real



This document describes the following software options:

- R&S®SMCVB-KV12 DRM+ Waveforms (1434.5405.xx)

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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-KV12 option

The R&S SMCVB-KV12 is a waveform library that provides waveform files in accordance with the DRM+ digital standard.

This user manual contains a reference description of the functionality that the waveform 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-KV12 features:

- Numerous waveform files in accordance with DRM+ digital standard
- Efficient use with dedicated waveforms

1.2 Installation

Required options

The equipment layout for processing files of waveform libraries includes:

- R&S SMCV100B base unit, including arbitrary waveform generator (64 MSample ARB memory, 60 MHz RF bandwidth)
- Waveform library option (R&S SMCVB-KVxx)

For more information on ARB options, see chapter "Using the arbitrary waveform generator (ARB)" in the R&S SMCV100B user manual.

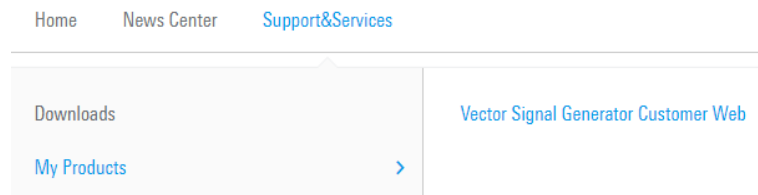
To access R&S SMCV100B libraries

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.

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



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

- 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 waveform library file

1. Load the waveform 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, select the file in the dialog "Baseband" > "ARB" > "Load Waveform".

3. To select the file, navigate to the storage location (1).

4. Select "ARB" > "State" > "On".

The R&S SMCV100B processes the waveform file.

5. In the block diagram, select "RF" > "On"

The waveform file is modulated onto the RF carrier and output at the RF 50 Ω connector.

For more information on loading waveform files, see chapter "How to create, generate and play waveform files" in the R&S SMCV100B user manual.

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

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 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

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

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 waveform files

2.1 General settings and features

All files have general features and settings as follows:

- DRM Mode E (DRM+)
- Sample rate 192 kHz
- Bandwidth 100 kHz
- Filter bandwidth 2x 76.8 kHz
- File length approx. 500 MB
- Play time per file approx. 10 minutes
- Included PRPS services have the polynomial $G_{23}(x)=x^{23} + x^{18} + 1$, register contents are initially all set to binary 1.

2.2 Naming conventions

DRM setting files (chapter 2.3)

The file name consists of:

- MSC mapping type
- MSC lower protection level
- MSC higher protection level
- SDC protection level

Example: `MSC_4QAM_MSC_LPP_0_MSC_HPP_0_SDC_1.wv`

This file has the following characteristics:

- MSC mapping type: 4QAM
- MSC lower protection level (MSC_LPP): 0
- MSC higher protection level (MSC_HPP): 0
- SDC protection level (SDC): 1

DRM service files (chapter 2.3)

The file name consists of:

- Services
- Number of services
- Audio coding of each service

Example: `Services_3_HE-AAC_HE-AAC_PRBS.wv`

This file has the following characteristics:

- Contains 3 services
- Audio coding: service 0: HE-AAC; service 1: HE-AAC; service 2: data PRBS

EN 303 345 DRM testing files (chapter 2.5)

The file name consists of:

- Frequency band
- Wanted/unwanted signal

Example: VHF_wanted.wv

In this standard, there are three different frequency bands defined. Only the VHF band uses robustness mode E. The other frequency bands use robustness mode B and are excluded from this library. These files are part of the waveform library R&S SMCVB-KV11 DRM Waveforms (1434.5370.xx).

2.3 DRM settings

2.3.1 4QAM MSC mapping

Describes the files with 4QAM MSC mapping and different protection levels.

2.3.1.1 MSC_4QAM_MSC_LPP_0_MSC_HPP_0_SDC_1.wv

Table 2-1: General settings

| | |
|-----------------------|-----------------------|
| Samples | 125337600 |
| Peak offset | 3.12 dB |
| Peak/RMS | 12.44 dB |
| Duration | 10 minutes 52 seconds |
| MSC mapping | 4QAM |
| MSC lower protection | 0 (highest) |
| MSC higher protection | 0 (highest) |
| SDC protection | 1 (highest) |

Service 2 and 3 are not available.

Table 2-2: Services

| | Service 0 | Service 1 |
|------------|-----------|-----------|
| Service ID | 0xAFFE | 0xAFFF |
| Language | Japanese | Korean |

| | | |
|-----------------------------|---|--|
| Service label | HE-AAC | Data PRBS |
| Service content | Audio HE-AAC 16.32 kb/s HPP 43 bytes 24 kHz Param. stereo + SBR | PRBS 20.88 kb/s Synchronized Low protected: 226 bytes High protected: 35 bytes |
| Program type | Varied | |
| Links to AFS1 | | |
| Service | eFM+RDS, 0xD001 | |
| Schedule | None | |
| Content | Equal | |
| Frequency | 96.6 MHz | |
| Local Information | | |
| Country | Germany | |
| Language of audience | English | |
| Text | | |
| Text headline | Text Message Service 0 | |
| Text content | Rohde & Schwarz GmbH & Co. KG Munich, Germany Waveform Library DRM Mode E | |
| Text transmit | 4 times | |

2.3.1.2 MSC_4QAM_MSC_LPP_1_MSC_HPP_1_SDC_1.wv

Table 2-3: General settings

| | |
|------------------------------|-----------------------|
| Samples | 126028800 |
| Peak offset | 2.83 dB |
| Peak/RMS | 12.75 dB |
| Duration | 10 minutes 56 seconds |
| MSC mapping | 4QAM |
| MSC lower protection | 1 (high) |
| MSC higher protection | 1 (high) |
| SDC protection | 1 (highest) |

Service 2 and 3 are not available.

Table 2-4: Services

| | Service 0 | Service 1 |
|--------------------------|---|---|
| Service ID | 0xAFFA | 0xAFFF |
| Language | German | English |
| Service label | Service 0 xHE | Data PRBS |
| Service content | Audio xHE-AAC 32.08 kb/s No HPP 38.4 kHz Stereo no SBR | Data PRBS 17.6 kb/s Synchronized Low protected: 220 bytes High protected: 0 bytes |
| Program type | Varied | |
| Links to AFS1 | | |
| Service | eFM+RDS, 0xD001 | - |
| Schedule | None | - |
| Content | Equal | - |
| Frequency | 96.6 MHz | - |
| Local Information | | |
| Country | Germany | |
| Language of audience | English | |
| Text | | |
| Text headline | Text Message Service 0 | |
| Text content | Rohde & Schwarz GmbH & Co. KG Munich, Germany Waveform Library DRM Mode E | |
| Text transmit | 4 times | |

2.3.1.3 MSC_4QAM_MSC_LPP_1_MSC_HPP_1_SDC_0.wv

Table 2-5: General settings

| | |
|----------------------|-----------------------|
| Samples | 125107200 |
| Peak offset | 3.84 dB |
| Peak/RMS | 12.06 dB |
| Duration | 10 minutes 51 seconds |
| MSC mapping | 4QAM |
| MSC lower protection | 1 (high) |

| | |
|-----------------------|----------|
| MSC higher protection | 1 (high) |
| SDC protection | 0 (weak) |

Service 3 is not available.

Table 2-6: Services

| | Service 0 | Service 1 | Service 2 |
|--------------------------|--|---|---|
| Service ID | 0xAFFE | 0xF | 0xFF |
| Language | German | German | German |
| Service label | Audio 0 HE-AAC | Audio 1 HE-AAC | Audio 2 HE-AAC |
| Service content | Audio HE-AAC 16.32 kb/s HPP: 43 bytes 24 kHz Param. stereo + SBR | Audio HE-AAC 16.32 kb/s HPP: 43 bytes 24 kHz Param. stereo + SBR | Audio xHE-AAC 16.32 kb/s HPP 43 bytes 24 kHz Param. stereo + SBR |
| Program type | Pop music | Other music | Science |
| Links to AFS1 | | | |
| Service | eFM+RDS, D001 | eFM+RDS 0xD001 | eFM (no service ID) |
| Schedule | None | None | None |
| Content | Equal | Equal | Equal |
| Frequency | 96.6 MHz | 88.9 MHz | 88.9 MHz |
| Local Information | | | |
| Country | Germany | Canada | Canada |
| Language of audience | English | Kakota | Balinese |
| Text | | | |
| Text headline | Text Message Service 0 | Text Message Service 1 | Text Message Service 2 |
| Text content | Munich, Germany Waveform Library DRM Mode E Rohde&Schwarz | DRM Mode E Waveform Library Rohde & Schwarz GmbH & Co. KG Munich, Germany | DRM Mode E Waveform Library Rohde & Schwarz Broadcast and Media Division Munich, Germany |
| Text transmit | 4 times | 6 times | 4 times |

2.3.1.4 MSC_4QAM_MSC_LPP_2_MSC_HPP_1_SDC_1.wv

Table 2-7: General settings

| | |
|-------------|-----------|
| Samples | 125107200 |
| Peak offset | 3.76 dB |

| | |
|------------------------------|-----------------------|
| Peak/RMS | 11.79 dB |
| Duration | 10 minutes 51 seconds |
| MSC mapping | 4QAM |
| MSC lower protection | 2 (medium) |
| MSC higher protection | 1 (high) |
| SDC protection | 1 (highest) |

Table 2-8: Services

| | Service 0 | Service 1 | Service 2 | Service 3 |
|-----------------------------|---|---|---|--|
| Service ID | 0xAFFE | 0xF | 0xFF | 0xAFFF |
| Language | German | German | English | Not specified |
| Service label | Audio 0 HE-AAC | Audio 1 HE-AAC | Audio 2 HE-AAC | Data PRBS |
| Service content | Audio HE-AAC 16.32 kb/s HPP: 43 bytes 24 kHz Param. stereo + SBR | Audio HE-AAC 16.32 kb/s HPP: 43 bytes 24 kHz Param. stereo + SBR | Audio HE-AAC 16.32 kb/s HPP: 43 bytes 24 kHz Param. stereo + SBR | Data PRBS 8.48 kb/s Synchronized Low protected: 104 bytes High protected : 2 bytes |
| Program type | Pop music | Other music | Science | |
| Links to AFS1 | | | | |
| Service | eFM+RDS, D001 | eFM+RDS 0xD001 | eFM (no service ID) | |
| Schedule | None | None | None | |
| Content | Equal | Equal | Different | |
| Frequency | 96.6 MHz | 88.9 MHz | 87.5 MHz | |
| Local Information | | | | |
| Country | Germany | Canada | Canada | |
| Language of audience | English | Dakota | Balinese | |
| Text | | | | |
| Text headline | Text Message Service 0 | Text Message Service 1 | Text Message Service 2 | |

| | | | | |
|----------------------|---|---|---|--|
| Text content | Rohde & Schwarz GmbH & Co. KG Munich, Germany Waveform Library DRM Mode E | DRM Mode E Waveform Library Rohde & Schwarz GmbH & Co. KG Munich, Germany | DRM Mode E Waveform Library Rohde & Schwarz Broadcast and Media Division Munich, Germany | |
| Text transmit | 4 times | 6 times | 5 times | |

2.3.1.5 MSC_4QAM_MSC_LPP_2_MSC_HPP_2_SDC_1.wv

Table 2-9: General settings

| | |
|------------------------------|-----------------------|
| Samples | 125337600 |
| Peak offset | 4.73 dB |
| Peak/RMS | 11.75 dB |
| Duration | 10 minutes 52 seconds |
| MSC mapping | 4QAM |
| MSC lower protection | 2 (medium) |
| MSC higher protection | 2 (medium) |
| SDC protection | 1 (highest) |

Table 2-10: Services

| | Service 0 | Service 1 | Service 2 | Service 3 |
|------------------------|---|---|--|---|
| Service ID | 0xAFFE | 0xF | 0xFF | 0xAFFF |
| Language | German | German | English | Not specified |
| Service label | Audio 0 HE-AAC | Audio 1 HE-AAC | Audio 2 HE-AAC | Not specified |
| Service content | Audio HE-AAC 16.32 kb/s HPP 43 bytes 24 kHz Param. stereo +SBR | Audio HE-AAC 16.32 kb/s HPP 43 bytes 24 kHz Param. stereo +SBR | Audio HE-AAC 16.32 kb/s HPP 43 bytes 24 kHz Param. stereo + SBR | Data PRBS 10.64 kb/s Synchronized Low protected: 130 bytes High protected : 3 bytes |
| Program type | Music | Other music | | |
| Links to AFS1 | | | | |
| Service | eFM+RDS, D001 | eFM+RDS, D001 | eFM (no service ID) | |
| Schedule | None | None | None | |
| Content | Equal | Equal | Equal | |
| Frequency | 96.6 MHz | 88.9 MHz | 88.9 MHz | |

| | | | | |
|-----------------------------|--|--|--|--|
| Local Information | | | | |
| Country | Germany | Canada | Canada | |
| Language of audience | English | Dakota | Balinese | |
| Text | | | | |
| Text headline | Message Service 0 | Text Message Service 1 | Text Message Service 2 | |
| Text content | Rohde & Schwarz GmbH & Co. KG Munich, Germany Waveform Library DRM Mode E | DRM Mode E Waveform Library Rohde & Schwarz GmbH & Co. KG Munich, Germany | DRM Mode E Waveform Library Rohde & Schwarz Broadcast and Media Division Munich, Germany | |
| Text transmit | 4 times | 6 times | 5 times | |

2.3.1.6 MSC_4QAM_MSC_LPP_2_MSC_HPP_3_SDC_1.wv

Table 2-11: General settings

| | |
|------------------------------|-----------------------|
| Samples | 125337600 |
| Peak offset | 2.38 dB |
| Peak/RMS | 12.82 dB |
| Duration | 10 minutes 52 seconds |
| MSC mapping | 4QAM |
| MSC lower protection | 2 (medium) |
| MSC higher protection | 3 (weak) |
| SDC protection | 1 (highest) |

Service 3 is not available.

Table 2-12: Services

| | Service 0 | Service 1 | Service 2 |
|------------------------|---|--|---|
| Service ID | 0xAFFE | 0x422 | 0x423 |
| Language | German | German | Not specified |
| Service label | Audio 0 HE-AAC | Label audio 1 AAC | Data PRBS |
| Service content | Audio HE-AAC 16.32 kb/s HPP: 43 bytes 24 kHz Param. stereo no SBR | Audio AAC 32.0 kb/s HPP 83 bytes 48 kHz Mono | Data PRBS 13.36 bit/s Synchronized Low protected: 163 bytes High protected: 4 bytes |
| Program type | Pop music | Serious classical | -- |

| | | | |
|-----------------------------|---|---|--|
| Links to AFS1 | | | |
| Service | eFM+RDS, D001 | DAB 0x422 | |
| Schedule | None | None | |
| Content | Equal | Equal | |
| Frequency | 96.6 MHz | 5A | |
| Local Information | | | |
| Country | Germany | Austria | |
| Language of audience | English | Not specified | |
| Text | | | |
| Text headline | Text Message Service 0 | Text Message Service 1 | |
| Text content | Rohde & Schwarz GmbH & Co. KG Munich, Germany Waveform Library DRM Mode E | DRM Mode E Waveform Library Rohde & Schwarz GmbH & Co. KG Munich, Germany | |
| Text transmit | 4 times | 6 times | |

2.3.1.7 MSC_4QAM_MSC_LPP_2_MSC_HPP_3_SDC_0.wv

Table 2-13: General settings

| | |
|------------------------------|-----------------------|
| Samples | 125337600 |
| Peak offset | 3.36 dB |
| Peak/RMS | 12.49 dB |
| Duration | 10 minutes 52 seconds |
| MSC mapping | 4QAM |
| MSC lower protection | 2 (medium) |
| MSC higher protection | 3 (weak) |
| SDC protection | 0 (weak) |

Table 2-14: Services

| | Service 0 | Service 1 | Service 2 | Service 3 |
|----------------------|------------------|------------------|------------------|------------------|
| Service ID | 0xC1D2 | 0x467 | 0x468 | 0x469 |
| Language | Hindi | German | German | German |
| Service label | Audio xHE-AAC | Audio xHE-AAC | Audio xHE-AAC | Data slideshow |

| | | | | |
|-----------------------------|---|---|--|---|
| Service content | Audio xHE-AAC 16.32 kb/s No HHP 32 kHz Stereo no SBR | Audio xHE-AAC 14.96 kb/s No HPP 32 kHz Stereo no SBR | Audio xHE-AAC 14.96 kb/s No HHP 24 kHz Stereo no SBR | Packed data 10.96 kb/s Low protected: 155 bytes High protected: 5 bytes MOT slideshow 10.96 kb/s |
| Program type | Science | Varied | Other music | |
| Links to AFS1 | | | | |
| Service | aFM (no Service ID) | aFM+PI 0x467 | DRM+ | |
| Schedule | Schedule 1 | Schedule 1 | Schedule 1 | |
| Content | Equal | Equal | Equal | |
| Frequency | 76 MHz | 76 MHz | 100.0 MHz | |
| Local Information | | | | |
| Country | India | Pakistan | Afghanistan | Cameroon |
| Language of audience | Hindi | Urdu | Artificial language | Not specified |
| Text | | | | |
| Text headline | Text Message Service 0 | Text Message Service 1 | Text Message Service 2 | |
| Text content | Company Rohde&Schwarz Munich, Germany DRM Mode E Waveform Library | Waveform Library DRM+ ES 201 980 Rohde & Schwarz Germany, Munich | PC based DRM modulator DRM Mode E Rohde&Schwarz GmbH & Co. KG Germany, Munich | |
| Text transmit | 4 times | 11 times | | |

2.3.1.8 MSC_4QAM_MSC_LPP_3_MSC_HPP_3_SDC_0.wv

Table 2-15: General settings

| | |
|-----------------------------|-----------------------|
| Samples | 125337600 |
| Peak offset | 3.09 dB |
| Peak/RMS | 12.60 dB |
| Duration | 10 minutes 52 seconds |
| MSC mapping | 4QAM |
| MSC lower protection | 3 (weak) |

| | |
|-----------------------|----------|
| MSC higher protection | 3 (weak) |
| SDC protection | 0 (weak) |

Table 2-16: Services

| | Service 0 | Service 1 | Service 2 | Service 3 |
|-----------------------------|---|---|--|---|
| Service ID | 0xC1D2 | 0x467 | 0x468 | 0x469 |
| Language | Hindi | German | German | German |
| Service label | Audio0 xHE-AAC | Audio1 xHE-AAC | Audio2 HE-AAC | Data slideshow |
| Service content | Audio xHE-AAC 18.08 kb/s No HHP 32 kHz Stereo no SBR | Audio xHE-AAC 22.96 kb/s No HHP 32 kHz Stereo no SBR | Audio HE-AAC 16.32 kb/s HHP: 43 bytes 24 kHz Parm. Stereo + SBR | Packed data 17.12 kb/s Low protected: 209 bytes High protected: 5 bytes MOT slideshow 17.12 kb/s |
| Program type | Science | Varied | Other music | |
| Links to AFS1 | | | | |
| Service | aFM (no Service ID) | aFM+PI 0x467 | DRM+ 0x486 | |
| Schedule | Schedule 1 | Schedule 1 | Schedule 1 | |
| Content | Different | Different | Equal | |
| Frequency | 76 MHz | 76 MHz | 100.0 MHz | |
| Local Information | | | | |
| Country | India | Pakistan | Afghanistan | Cameroon |
| Language of audience | Hindi | Urdu | Artificial language | Not specified |
| Text | | | | |
| Text headline | Text Message Service 0 | Text Message Service 1 | Text Message Service 2 | |
| Text content | Company Rohde&Schwarz Munich, Germany DRM Mode E Waveform Library | Waveform Library DRM+ ES 201 980 Rohde & Schwarz Germany, Munich | PC based DRM modulator DRM Mode E Rohde&Schwarz GmbH & Co. KG Germany, Munich | |
| Text transmit | 4 times | 11 times | | |

2.3.2 16QAM MSC mapping

Describes the files with 16QAM MSC mapping and different protection levels.

2.3.2.1 MSC_16QAM_MSC_LPP_0_MSC_HPP_0_SDC_1.wv

Table 2-17: General settings

| | |
|-----------------------|-----------------------|
| Samples | 125337600 |
| Peak offset | 4.38 dB |
| Peak/RMS | 11.83 dB |
| Duration | 10 minutes 52 seconds |
| MSC mapping | 16QAM |
| MSC lower protection | 0 (highest) |
| MSC higher protection | 0 (highest) |
| SDC protection | 1 (highest) |

Service 2 and 3 are not available.

Table 2-18: Services

| | Service 0 | Service 1 |
|--------------------------|---|--|
| Service ID | 0xAFFD | 0xAFFF |
| Language | Arabic | Bengali |
| Service label | xHE-AAC | Data PRBS |
| Service content | Audio xHE-AAC, 41.44 kb/s No HPP 48 kHz Stereo no SBR | PRBS 57.76 kb/s Synchronized Low protected: 629 bytes High protected: 93 bytes |
| Program type | News | |
| Links to AFS1 | | |
| Service | 1: eFM+RDS, 0xD001 2: DAB 0xA | - |
| Schedule | 1: None 2: Schedule 1 | - |
| Content | 1: Different 2: Different | - |
| Frequency | 1: 96.6 MHz 2: 5A | - |
| Local Information | | |
| Country | Afghanistan | |

| | | |
|----------------------|---|--|
| Language of audience | Afar | |
| Text | | |
| Text headline | Text Message Service 0 | |
| Text content | Rohde & Schwarz GmbH & Co. KG Munich, Germany Waveform Library DRM Mode E | |
| Text transmit | 4 times | |

2.3.2.2 MSC_16QAM_MSC_LPP_1_MSC_HPP_1_SDC_1.wv

Table 2-19: General settings

| | |
|-----------------------|-----------------------|
| Samples | 125337600 |
| Peak offset | 3.93 dB |
| Peak/RMS | 12.65 dB |
| Duration | 10 minutes 52 seconds |
| MSC mapping | 16QAM |
| MSC lower protection | 1 (high) |
| MSC higher protection | 1 (high) |
| SDC protection | 1 (highest) |

Service 1, 2 and 3 are not available.

Table 2-20: Services

| | |
|----------------------|---|
| | Service 0 |
| Service ID | 0xAFFD |
| Language | Chinese |
| Service label | xHE-AAC |
| Service content | Audio xHE-AAC 121.44 kb/s No HPP 48 kHz Stereo no SBR |
| Program type | Current affairs |
| Links to AFS1 | |
| Service | eFM+RDS, 0xD001 |
| Schedule | None |
| Content | Different |

| | |
|--------------------------|---|
| Frequency | 96.6 MHz |
| Local Information | |
| Country | Åland Islands |
| Language of audience | Abkhazian |
| Text | |
| Text headline | Text Message Service 0 |
| Text content | Rohde & Schwarz GmbH & Co. KG Munich, Germany Waveform Library DRM Mode E |
| Text transmit | 4 times |

2.3.2.3 MSC_16QAM_MSC_LPP_1_MSC_HPP_1_SDC_0.wv

Table 2-21: General settings

| | |
|-----------------------|-----------------------|
| Samples | 125107200 |
| Peak offset | 3.68 dB |
| Peak/RMS | 12.79 dB |
| Duration | 10 minutes 51 seconds |
| MSC mapping | 16QAM |
| MSC lower protection | 1 (high) |
| MSC higher protection | 1 (high) |
| SDC protection | 0 (weak) |

Table 2-22: Services

| | Service 0 | Service 1 | Service 2 | Service 3 |
|-----------------|--|---|--|--|
| Service ID | 0xAFFD | 0xF | 0xFF | 0x45A |
| Language | Dutch | Hindi | German | French |
| Service label | Audio 0 HE-AAC | Audio 1 HE-AAC | Audio 2 xHE-AAC | Audio 3 HE-AAC |
| Service content | Audio HE-AAC 16.32 kb/s HPP: 43 bytes 24 kHz Param. stereo + SBR | Audio HE-AAC HE-AAC 4 1.44 kb/s No HPP 24 kHz Mono + SBR | Audio xHE-AAC 14.96 kb/s No HPP 32 kHz Stereo no SBR | Audio HE-AAC 48.64 kb/s HPP 30 bytes 24 kHz Stereo + SBR |
| Program type | Information | Education | Science | Drama |
| Links to AFS1 | | | | |

| | | | | |
|-----------------------------|--|---|--|-------------------------------------|
| Service | eFM+RDS, D001 | eFM+RDS 0xD001 | eFM (no service ID) | DRM+ 0x45B |
| Schedule | None | None | None | Schedule 1 |
| Content | Different | Different | Different | Equal |
| Frequency | 96.6 MHz | 88.9 MHz | 88.9 MHz | 98.5 MHz |
| Local Information | | | | |
| Country | Albania | American Samoa | Andorra | Angola |
| Language of audience | Achinese | Acoli | Adangme | Adyghe; Adygei |
| Text | | | | |
| Text headline | Text Message Service 0 | Text Message Service 1 | Text Message Service 2 | Text Message Service 3 |
| Text content | Munich, Germany Waveform Library DRM Mode E Rohde&Schwarz | Broadcast and media Division Rohde & Schwarz GmbH & Co. KG Mühldorfstraße 15 81671 Munich Germany | DRM Mode E Waveform Library Rohde & Schwarz Broadcast and Media Division Munich, Germany | Test ÏÓßÔöÖµρΠÙÿ Ÿ˘˙˚˛˜˝˞˟ˠˡˢ |
| Text transmit | 4 times | 6 times | 4 times | 10 times |

2.3.2.4 MSC_16QAM_MSC_LPP_2_MSC_HPP_1_SDC_1.wv

Table 2-23: General settings

| | |
|------------------------------|-----------------------|
| Samples | 125337600 |
| Peak offset | 2.61 dB |
| Peak/RMS | 12.82 dB |
| Duration | 10 minutes 52 seconds |
| MSC mapping | 16QAM |
| MSC lower protection | 2 (medium) |
| MSC higher protection | 1 (high) |
| SDC protection | 1 (highest) |

Table 2-24: Services

| | Service 0 | Service 1 | Service 2 | Service 3 |
|----------------------|------------------|------------------|------------------|------------------|
| Service ID | 0xAFFD | 0xF | 0xFF | 0xAFFF |
| Language | Javanese | Korean | Portuguese | Not specified |
| Service label | Audio 0 HE-AAC | Audio 1 xHE-AAC | Audio 2 xHE-AAC | Data PRBS |

| | | | | |
|-----------------------------|--|--|--|--|
| Service content | Audio HE-AAC 41.44 kb/s No HPP 24 kHz Mono + SBR | Audio xHE-AAC 30.96 kb/s No HPP 38.4 kHz Stereo no SBR | Audio xHE-AAC 22.96 kb/s No HPP 32 kHz Stereo no SBR | Data PRBS 53.68 kb/s Synchronized Low protected: 671 bytes High protected: 0 bytes |
| Program type | Serious classical music | Rock Music | Easy listening music | |
| Links to AFS1 | | | | |
| Service | eFM+RDS, D001 | eFM+RDS 0xD001 | eFM (no service ID) | |
| Schedule | None | None | None | |
| Content | Different | Different | Different | |
| Frequency | 96.6 MHz | 88.9 MHz | 87.5 MHz | |
| Local Information | | | | |
| Country | Anguilla | Antarctica | Antigua and Barbuda | |
| Language of audience | Afro-Asiatic languages | Afrihili | Afrikaans | |
| Text | | | | |
| Text headline | Text Message Service 0 | Text Message Service 1 | Text Message Service 2 | |
| Text content | Rohde & Schwarz GmbH & Co. KG Munich, Germany Waveform Library DRM Mode E | DRM Mode E Waveform Library Rohde & Schwarz GmbH & Co. KG Munich, Germany | DRM Mode E Waveform Library Rohde & Schwarz Broadcast and Media Division Munich, Germany | |
| Text transmit | 4 times | 6 times | 5 times | |

2.3.2.5 MSC_16QAM_MSC_LPP_2_MSC_HPP_2_SDC_1.wv

Table 2-25: General settings

| | |
|-----------------------------|-----------------------|
| Samples | 125337600 |
| Peak offset | 3.51 dB |
| Peak/RMS | 12.94 dB |
| Duration | 10 minutes 52 seconds |
| MSC mapping | 16QAM |
| MSC lower protection | 2 (medium) |

| | |
|------------------------------|-------------|
| MSC higher protection | 2 (medium) |
| SDC protection | 1 (highest) |

Table 2-26: Services

| | Service 0 | Service 1 | Service 2 | Service 3 |
|-----------------------------|--|--|---|---|
| Service ID | 0xAFFD | 0xF | 0xFF | 0xAFFF |
| Language | Russian | Korean | Portuguese | Not specified |
| Service label | Audio 0 xHE-AAC | Audio 1 HE-AAC | Audio 2 HE-AAC | Service 3 PRBS |
| Service content | Audio xHE-AAC 41.44 kb/s No HPP 48 kHz Stereo no SBR | Audio HE-AAC 16.32 kb/s HPP 43 bytes 24 kHz Param. stereo +SBR | Audio ScienceHE-AAC 16.32 kb/s HPP 43 bytes 24 kHz Param. stereo + SBR | Data PRBS 74.8 kb/s Synchronized Low protected: 935 bytes High protected: 0 bytes |
| Program type | Light classical | Other music | Science | |
| Links to AFS1 | | | | |
| Service | eFM+RDS, D001 | eFM+RDS, D002 | eFM (no service ID) | |
| Schedule | None | None | None | |
| Content | Different | Different | Different | |
| Frequency | 96.6 MHz | 88.9 MHz | 87.5 MHz | |
| Local Information | | | | |
| Country | Antigua and Barbuda | Canada | Cabo Verde | |
| Language of audience | Ainu | Dakota | Dargwa | |
| Text | | | | |
| Text headline | Text Message Service 0 | Text Message Service 1 | Text Message Service 2 | |
| Text content | Rohde & Schwarz GmbH & Co. KG Munich, Germany Waveform Library DRM Mode E | DRM Mode E Waveform Library Rohde & Schwarz GmbH & Co. KG Munich, Germany | DRM Mode E Waveform Library Rohde & Schwarz Broadcast and Media Division Munich, Germany | |
| Text transmit | 4 times | 6 times | 4 times | |

2.3.2.6 MSC_16QAM_MSC_LPP_2_MSC_HPP_3_SDC_1.wv

Table 2-27: General settings

| | |
|------------------------------|-----------------------|
| Samples | 125337600 |
| Peak offset | 3.04 dB |
| Peak/RMS | 12.49 dB |
| Duration | 10 minutes 52 seconds |
| MSC mapping | 16QAM |
| MSC lower protection | 2 (medium) |
| MSC higher protection | 3 (weak) |
| SDC protection | 1 (highest) |

Table 2-28: Services

| | Service 0 | Service 1 | Service 2 | Service 3 |
|-----------------------------|--|--|--|--|
| Service ID | 0xAFFD | 0x3FE | 0x3FF | 0x400 |
| Language | Russian | Spanish | Arabic | Not specified |
| Service label | Audio 0 xHE-AAC | Audio 1 xHE-AAC | Audio 2 xHE-AAC | Data PRBS |
| Service content | Audio xHE-AAC 30.96 kb/s No HPP 38.4 kHz Stereo no SBR | Audio xHE-AAC 30.96 kb/s No HPP 38.4 kHz Stereo no SBR | Audio xHE-AAC 32.4 bit/s No HPP 38.4 kHz Stereo no SBR | Data PRBS 54.72 kb/s Low protected: 684 bytes High protected: 0 bytes |
| Program type | Business | Pop music | Science | |
| Links to AFS1 | | | | |
| Service | aFM (no service ID) | DAB+EEC 0x3FE | DAB 0x3FF | |
| Schedule | None | None | None | |
| Content | Different | Equal | Equal | |
| Frequency | 78.6 MHz | 5A | 5A | |
| Local Information | | | | |
| Country | Cayman Islands | Central African Republic | Chad | |
| Language of audience | Land Dayak languages | Caddo | Basa | |
| Text | | | | |
| Text headline | Text Message Service 0 | Text Message Service 1 | Headline Service 2 | |

| | | | | |
|----------------------|---|---|--|--|
| Text content | Rohde & Schwarz GmbH & Co. KG Munich, Germany Waveform Library DRM Mode E | DRM Mode E Waveform Library Rohde & Schwarz GmbH & Co. KG Munich, Germany | DRM+ Library Waveforms Rohde & Schwarz | |
| Text transmit | 4 times | 4 times | 4 times | |

2.3.2.7 MSC_16QAM_MSC_LPP_2_MSC_HPP_3_SDC_0.wv

Table 2-29: General settings

| | |
|------------------------------|-----------------------|
| Samples | 125337600 |
| Peak offset | 3.03 dB |
| Peak/RMS | 12.43 dB |
| Duration | 10 minutes 52 seconds |
| MSC mapping | 16QAM |
| MSC lower protection | 2 (medium) |
| MSC higher protection | 3 (weak) |
| SDC protection | 0 (weak) |

Table 2-30: Services

| | Service 0 | Service 1 | Service 2 | Service 3 |
|------------------------|--|--|--|---|
| Service ID | 0xC1D2 | 0x467 | 0x468 | 0x469 |
| Language | Hindi | Dutch | Chinese | Bengali |
| Service label | Audio 0 xHE-AAC | Audio 1 xHE-AAC | Audio 2 HE-AAC | Data slideshow |
| Service content | Audio xHE-AAC 30.96 kb/s No HPP 38.4 kHz Stereo no SBR | Audio xHE-AAC 41.44 kb/s No HPP 48 kHz Stereo no SBR | Audio HE-AAC 29.12 kb/s No HPP 24 kHz Param. stereo + SBR | Packed data 48.16 kb b Low protected: 557 Bytes High protected: 45 bytes Packet size: 258 bytes MOT slideshow 41.28 kb/s |
| Program type | Science | Varied | Other music | |
| Links to AFS1 | | | | |
| Service | aFM +PI 0xC1D2 | aFM (no service ID) | eFM+ECC 0x468 | |
| Schedule | None | Schedule 2 | Schedule 1 | |
| Content | Different | Different | Different | |

| | | | | |
|-----------------------------|---|---|--|---------------|
| Frequency | 76 MHz | 76 MHz | 87.5 MHz | |
| Local Information | | | | |
| Country | India | Pakistan | Afghanistan | Cameroon |
| Language of audience | Hindi | Urdu | Artificial language | Not specified |
| Text | | | | |
| Text headline | Text Message Service 0 | Text Message Service 1 | Text Message Service 2 | |
| Text content | Company Rohde&Schwarz Munich, Germany DRM Mode E Waveform Library | Waveform Library DRM+ ES 201 980 Rohde & Schwarz Germany, Munich | PC based DRM modulator DRM Mode E Rohde&Schwarz GmbH & Co. KG Germany, Munich | |
| Text transmit | 4 times | 11 times | | |

2.3.2.8 MSC_16QAM_MSC_LPP_3_MSC_HPP_3_SDC_0.wv

Table 2-31: General settings

| | |
|------------------------------|-----------------------|
| Samples | 125337600 |
| Peak offset | 3.37 dB |
| Peak/RMS | 12.76 dB |
| Duration | 10 minutes 52 seconds |
| MSC mapping | 16QAM |
| MSC lower protection | 3 (weak) |
| MSC higher protection | 3 (weak) |
| SDC protection | 0 (weak) |

Table 2-32: Services

| | Service 0 | Service 1 | Service 2 | Service 3 |
|----------------------|------------------|------------------|------------------|------------------|
| Service ID | 0xC1D2 | 0x467 | 0x468 | 0x469 |
| Language | French | Arabic | Chinese | German |
| Service label | Service0 xHE-AAC | Service1 HE-AAC | Service2 HE-AAC | Data slideshow |

| | | | | |
|-----------------------------|---|---|--|--|
| Service content | Audio xHE-AAC 41.44 kb/s No HHP 48 kHz Stereo no SBR | Audio HE-AAC 48.64 kb/s HHP 30 Bytes 24 kHz Stereo + SBR | Audio HE-AAC 31.2 kb/s HHP 78 bytes 24 kHz Stereo + SBR | Packed data 64.72 kb/s Low protected: 804 bytes High protected: 5 bytes Packet size: 258 bytes MOT slideshow 61.92 kb/s |
| Program type | Science | Varied | Other music | |
| Links to AFS1 | | | | |
| Service | aFM (no Service ID) | aFM+PI 0x467 | DRM+ 0x496 | |
| Schedule | Schedule 1 | Schedule 1 | Schedule 1 | |
| Content | Different | Different | Equal | |
| Frequency | 76 MHz | 76 MHz | 100.0 MHz | |
| Local Information | | | | |
| Country | India | Pakistan | Germany | Cameroon |
| Language of audience | Hindi | Urdu | Artificial language | Not specified |
| Text | | | | |
| Text headline | Text Message Service 0 | Text Message Service 1 | Text Message Service 2 | |
| Text content | Company Rohde&Schwarz Munich, Germany DRM Mode E Waveform Library | Waveform Library DRM+ ES 201 980 Rohde & Schwarz Germany, Munich | PC based DRM modulator DRM Mode E Rohde&Schwarz GmbH & Co. KG Germany, Munich | |
| Text transmit | 4 times | 11 times | 11 times | |

2.4 DRM services

All files of this group have DRM settings as follows:

- MSC mapping: 16QAM
- MSC lower protection: 2 (medium)
- MSC higher protection: 2 (medium)
- SDC protection: 1 (highest)

2.4.1 Services_1_aac.wv

Table 2-33: General settings

| | |
|-------------|-----------------------|
| Samples | 125337600 |
| Peak offset | 3.11 dB |
| Peak/RMS | 12.26 dB |
| Duration | 10 minutes 52 seconds |

Service 1, 2 and 3 are not available.

Table 2-34: Services

| | |
|--------------------------|--|
| | Service 0 |
| Service ID | 0xABCD |
| Language | Japanese |
| Service label | Sweep 20 Hz 20 kHz |
| Service content | Audio AAC 149.04 kb/s HHP: 377 bytes |
| Program type | Science |
| Links to AFS1 | |
| Service | DAB data 0x3ED |
| Schedule | None |
| Content | Different |
| Frequency | 5A |
| Local Information | |
| Country | Åland Islands |
| Language of audience | Acoli |
| Text | |
| Text headline | Headline Service 0 |
| Text content | Test wave sweep sine 20 Hz to 20 kHz Duration 20 s |
| Text transmit | 4 times |

2.4.2 Services_2_he-aac_xhe-aac.wv

Table 2-35: General settings

| | |
|-------------|-----------------------|
| Samples | 125337600 |
| Peak offset | 3.41 dB |
| Peak/RMS | 12.65 dB |
| Duration | 10 minutes 52 seconds |

Service 2 and 3 are not available.

Table 2-36: Services

| | Service 0 | Service 1 |
|----------------------|--|---|
| Service ID | 0xBCDE | 0xBCDF |
| Language | Portuguese | Other Language |
| Service label | Audio0 HE-AAC | Audio 1 xHE-AAC |
| Service content | Audio HE-AAC 121.44 kb/s HPP: 307 bytes 48 kHz Stereo no SBR | Audio xHE-AAC 27.6 kb/s No HPP 38.4 kHz Stereo no SBR |
| Program type | Science | Rock music |
| Links to AFS1 | | |
| Service | eFM+EEC, BCDE | |
| Schedule | None | |
| Content | Equal | |
| Frequency | 87.5 MHz | |
| Local Information | | |
| Country | Yemen | Western Sahara |
| Language of audience | Zande languages | Zenaga |
| Text | | |
| Text headline | Headline Service 0 | Headline Service 1 |
| Text content | Mozart 121.44 kbit/s HE-AAC 48 kHz Stereo, no SBR | Schadstoff Rock xHE-AAC 28.24 kbit/s Stereo |
| Text transmit | 4 times | 4 times |

2.4.3 Services_2_he-aac_aac.wv

Table 2-37: General settings

| | |
|-------------|-----------------------|
| Samples | 125337600 |
| Peak offset | 4.10 dB |
| Peak/RMS | 12.42 dB |
| Duration | 10 minutes 52 seconds |

Service 2 and 3 are not available.

Table 2-38: Services

| | Service 0 | Service 1 |
|--------------------------|---|---|
| Service ID | 0xCEEE | 0x3FB |
| Language | Russian | Korean |
| Service label | Audio 0 HE-AAC | Audio AAC |
| Service content | Audio HE-AAC 61.84 kb/s HPP 157 bytes 48 kHz Stereo no SBR | Audio AAC 87.2 kb/s HPP 227 bytes Mono |
| Program type | Light classical | Other music |
| Links to AFS1 | | |
| Service | aFM+Pi, 0xCEEE | eFM+RDS, 0x3FB |
| Schedule | Schedule 1 | None |
| Content | Different | Equal |
| Frequency | 76 MHz | 87.5 MHz |
| Local Information | | |
| Country | Vietnam | Venezuela |
| Language of audience | Yupik languages | Yoruba |
| Text | | |
| Text headline | Text Message Service 0 | Sweep 20 Hz 20 kHz |
| Text content | Rohde & Schwarz GmbH & Co. KG Munich, Germany Waveform Library DRM Mode E | Sine sweep 20 Hz to 20 kHz Duration 20 s AAC 87.2 kbit/s HPP = 227 bytes |
| Text transmit | 4 times | 4 times |

2.4.4 Services_3_he-aac_aac_prbs.wv

| | |
|--------------------|-----------------------|
| Samples | 125337600 |
| Peak offset | 3.22 dB |
| Peak/RMS | 12.42 dB |
| Duration | 10 minutes 52 seconds |

Service 3 is not available.

Table 2-39: Services

| | Service 0 | Service 1 | Service 2 |
|-----------------------------|---|---|---|
| Service ID | 0x3F1 | 0x3EA | 0x3EB |
| Language | Korean | Javanese | German |
| Service label | Audio HE-AAC | Audio AAC | Data PRBS |
| Service content | Audio HE-AAC 74.48 kb/s HPP 188 bytes 24 kHz Stereo + SBR | Audio HE-AAC 37.28 kb/s HPP 93 bytes Mono | PRBS Synchronized 37.28 kb/s HPP 0 bytes |
| Program type | Other music | Science | |
| Links to AFS1 | | | |
| Service | aFM (no service ID) | DAB+EEC 0x3EA | |
| Schedule | None | None | |
| Content | Different | Equal | |
| Frequency | 76 MHz | 5A | |
| Local Information | | | |
| Country | Vanuata | Uzbekistan | |
| Language of audience | Yiddish | Yapese | |
| Text | | | |
| Text headline | Headline Service 0 | Headline Service 1 | |
| Text content | Mozart HE-AAC 74.48 kbit/s HPP 188 bytes 24 kHz stereo | Sweep audio 20 Hz to 20 kHz 20 seconds Audio AAC 37.28 kbit/s HPP 28 bytes | |
| Text transmit | 4 times | 4 times | |

2.4.5 Services_3_he-aac_he-aac_prbs.wv

Table 2-40: General Settings

| | |
|--------------------|-----------------------|
| Samples | 125337600 |
| Peak offset | 2.96 dB |
| Peak/RMS | 12.89 dB |
| Duration | 10 minutes 52 seconds |

Service 3 is not available.

Table 2-41: Services

| | Service 0 | Service 1 | Service 2 |
|-----------------------------|--|---|--|
| Service ID | 0xC111 | 0x3EA | 0x3EB |
| Language | Arabic | Javanese | Other Language |
| Service label | Audio Sweep HE | Audio 1 Rock | Data PRBS |
| Service content | Audio HE-AAC 61.84 kb/s HPP 157 bytes 48 kHz Stereo no SBR | Audio HE-AAC 43.6 kb/s HPP 113 bytes 24 kHz Stereo + SBR | Data PRBS Synchronized 43.6 kb/s No HHP |
| Program type | Science | Varied | |
| Links to AFS1 | | | |
| Service | aFM (no Service ID) | eFM (no service ID) | |
| Schedule | None | None | |
| Content | Different | Equal | |
| Frequency | 76 MHz | 87.5 MHz | |
| Local Information | | | |
| Country | Uruguay | Tuvalu | |
| Language of audience | Yao | Xhosa | |
| Text | | | |
| Text headline | Headline Text 0 | Headline Service 1 | |
| Text content | Coding HE-AAC 61.84 kbit/s HPP 187 bytes 48 kHz Stereo, no SBR | Mozart HE-AAC 43.6 kbit/s HPP 113 bytes 24 kHz stereo SBR | |
| Text transmit | 4 times | 8 times | |

2.4.6 Services_4_xhe-aac_xhe-aac_xhe-aac_xhe-aac.wv

Table 2-42: General settings

| | |
|--------------------|-----------------------|
| Samples | 125337600 |
| Peak offset | 3.77 dB |
| Peak/RMS | 13.11 dB |
| Duration | 10 minutes 52 seconds |

Table 2-43: Services

| | Service 0 | Service 1 | Service 2 | Service 3 |
|-----------------------------|--|--|--|--|
| Service ID | 0xA001 | 0xA002 | 0xA003 | A004 |
| Language | Other language | Dutch | French | Hindi |
| Service label | Audio0 xHE-AAC | Audio1 xHE-AAC | Audio2 xHE-AAC | Audio3 xHE-AAC |
| Service content | Audio xHE-AAC 30.96 kb/s No HPP 38.4 kHz Stereo no SBR | Audio xHE-AAC 27.92 kb/s No HPP 38.4 kHz Stereo no SBR | Audio xHE-AAC 41.44 kb/s No HPP 48 kHz Stereo no SBR | Audio xHE-AAC 27.92 kb/s No HPP 38.4 kHz Stereo no SBR |
| Program type | Other music | Rock Music | Serious classical | Varied |
| Links to AFS1 | | | | |
| Service | aFM (no service ID) | AM+AMSS | AM (no service ID) | aFM+PI 0xA004 |
| Schedule | None | None | None | None |
| Content | Different | Equal | Equal | Equal |
| Frequency | 76 MHz | 6.95 MHz | 6.75 MHz | 76 MHz |
| Local Information | | | | |
| Country | Turkey | Tunisia | Trinidad and Tobago | Tonga |
| Language of audience | Walloon | Sorbian languages | Welsh | Washo |
| Text | | | | |
| Text headline | Headline Service 0 | Headline Service 1 | Headline Service 2 | |

| | | | | |
|----------------------|---|--|---|--|
| Text content | Martin Luther King (speech) Coding xHE-AAC 30.96 kbit/s No HHP 38.4 kHz Stereo, no SBR | Schadstoff Rock Coding xHE-AAC 27.92 kbit/s No HPP 38.4 kHz Stereo no SBR | Mozart Coding xHE-AAC 41.44 kbit/s No HPP 48 kHz Stereo no SBR | Schadstoff Rock Coding xHE-AAC 27.92 kbit/s No HPP 32.8 kHz Stereo no SBR |
| Text transmit | 4 times | 4 times | 4 times | 4 times |

2.5 EN 303 345 DRM testing

The files in this folder are for DRM testing according to EN 303 345-5 v0.0.5. Table 1 in this standard defines the required parameters.

The proposed test cases are defined for three different frequency bands:

- LFMF
- HF
- VHF

For each frequency band, two signals are required:

- Wanted signal (1 kHz sine)
- Unwanted signal (2 kHz sine)

The LFMF band and the HF band use robustness mode B. The VHF band uses robustness mode E.

This waveform library (R&S SMCVB-KV12) contains only DRM test signals that use robustness mode E. They are described in [Chapter 2.5.1, "VHF_wanted.wv"](#), on page 38 and [Chapter 2.5.2, "VHF_unwanted.wv"](#), on page 39.

DRM test signals using robustness mode B are part of the waveform library R&S SMCVB-KV11 DRM Waveforms (1434.5370.xx).

2.5.1 VHF_wanted.wv

Table 2-44: General settings

| | |
|--------------------|----------------------|
| Samples | 53683200 |
| Peak offset | 0 dB |
| Peak/RMS | 12.11 dB |
| Duration | 6 minutes 59 seconds |

Table 2-45: Services

| | |
|-------------------|------------------|
| | Service 0 |
| Service ID | 0x1001 |

| | |
|----------------------|----------------|
| Language | English |
| Service label | "Sine 1 kHz" |
| Program type | Other Music |
| Country | United Kingdom |
| Language of audience | English |

Table 2-46: Audio Parameters

| Parameter | Service 0 |
|---------------|---------------------|
| Audio Signal | 1 kHz tone, -3 dBFs |
| Audio Coding | AAC |
| Audio Mode | Mono |
| SBR | Disabled |
| Sampling rate | 48 kHz |
| Bit rate | 149040 bps |

2.5.2 VHF_unwanted.wv

Table 2-47: General settings

| | |
|-------------|----------------------|
| Samples | 53683200 |
| Peak offset | 0 dB |
| Peak/RMS | 12.11 dB |
| Duration | 6 minutes 59 seconds |

Table 2-48: Services

| | Service 0 |
|----------------------|----------------|
| Service ID | 0x1001 |
| Language | English |
| Service label | "Sine 2 kHz" |
| Program type | Other Music |
| Country | United Kingdom |
| Language of audience | English |

Table 2-49: Audio Parameters

| Parameter | Service 0 |
|--------------|---------------------|
| Audio Signal | 2 kHz tone, -3 dBFs |
| Audio Coding | AAC |
| Audio Mode | Mono |

| | |
|----------------------|------------|
| SBR | Disabled |
| Sampling rate | 48 kHz |
| Bit rate | 149040 bps |

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