R&S®SMCVB-KV17
Digital TV Interferers Waveforms
User Manual

1179282502
Version 01

ROHDE&SCHWARZ
Make ideas real

This document describes the following software options:

- R&S®SMCVB-KV17 Digital TV Interferers Waveforms (1434.5557.xx)

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

Contents

1 Welcome to the R&S SMCVB-KV17 Option

The R&S SMCVB-KV17 is a waveform library that provides waveform files in accordance with various digital TV standards.

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-KV17 features:

- Numerous waveform files in accordance with various digital TV standards
- Efficient use with dedicated waveforms as interferer signal

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 later than FW 4.70.176.xx of the R&S SMCV100B.

1.3 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

1.3.1 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.

1.3.2 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.

1.3.3 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

1.3.4 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.

1.3.5 Printed Safety Instructions

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

1.3.6 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

1.3.7 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

1.3.8 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 Available Waveform Files

This chapter contains the description of the available waveform files sorted by standard.

The files of the following standards are decodable and seamless:

- 8VSB (see Chapter 2, "Available Waveform Files", on page 10)
- DVB-T (see Chapter 2, "Available Waveform Files", on page 10)
- DVB-T2 (see Chapter 2.4, "DVB-T2", on page 14)
- FM Jamer (see Chapter 2.5, "FM Jamer", on page 30)
- T-DMB/DAB (see Chapter 2.8, "T-DMB/DAB", on page 31)
- CMMB (see Chapter 2.9, "CMMB", on page 34)

The files of the following standards are not seamless and therefore not decodable:

- DTMB (see Chapter 2.2, "DTMB", on page 11)
- ISDB-T (see Chapter 2.6, "ISDB-T", on page 30)
- MediaFlo (see Chapter 2.7, "MediaFlo", on page 31)
- ATSC 3.0 (see Chapter 2.10, "ATSC 3.0", on page 35)

The spectra comply with the corresponding standard. However, there could be errors in the FEC i.e. a receiver locks but may show bit errors.

2.1 8VSB

The 8 VSB files play a signal compliant with the ATSC standard "Digital Television Standard (A/53), Revision C; Annex D". The payload is null packets.

2.1.1 8VSB_Center.wv

All frequency adjustments are referenced to the center of the output spectrum (see Figure 2-1).

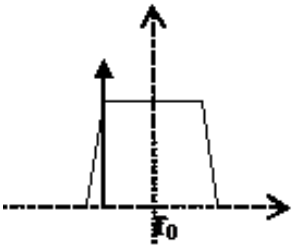

Figure 2-1: 8VSB_Center

2.1.2 8VSB_Pilot.wv

All frequency adjustments are referenced to the pilot of the output spectrum (see Figure 2-2)

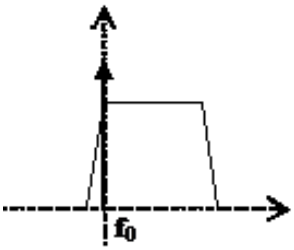

Figure 2-2: 8VSB_Pilot

2.2 DTMB

2.2.1 dtmb_8MHz_MC_16QAM.wv

Not decodable DTMB signal:

- Multicarrier
- 16QAM
- Channel bandwidth: 8 MHz

2.2.2 dtmb_8MHz_SC_4QAM.wv

Not decodable DTMB signal:

- Single-carrier
- 4QAM
- Channel bandwidth: 8 MHz

2.2.3 dtmb_8MHz_SC_16QAM.wv

Not decodable DTMB signal:

- Single-carrier
- 16QAM
- Channel bandwidth: 8 MHz

2.2.4 dtmb_8MHz_SC_32QAM.wv

Not decodable DTMB signal:

- Single-carrier
- 32QAM
- PN420 header
- Channel bandwidth: 8 MHz

2.2.5 dtmb_8MHz_SC_64QAM.wv

Not decodable DTMB signal:

- Single-carrier
- 64QAM
- Channel bandwidth: 8 MHz

2.2.6 dtmb_8MHz_SC_32QAM_PN595.wv

Not decodable DTMB signal:

- Single-carrier
- 32QAM
- PN595 header
- Channel bandwidth: 8 MHz

2.3 DVB-T

The DVB-T signals are generated according to ETSI EN 300 744 as follows:

- Code rate: 3/4
- Constellation: 64QAM
- FFT mode: 2K
- Guard interval: 1/32.

The payload is null packets.

2.3.1 DVB-T_5MHz.wv

One DVB-T signal:

- Channel bandwidth: 5 MHz

2.3.2 DVB-T_6MHz.wv

One DVB-T signal:

- Channel bandwidth: 6 MHz

2.3.3 DVB-T_7MHz.wv

One DVB-T signal:

- Channel bandwidth: 7 MHz
- According the international standard IEC 62002-1 pattern S2

2.3.4 DVB-T_8MHz.wv

One DVB-T signal:

- Channel bandwidth: 8 MHz
- According the international standard IEC 62002-1 pattern S2

2.3.5 DVB-T_8MHz_EN303340.wv

One DVB-T signal:

- Channel bandwidth: 8 MHz
- Settings are according to ETSI EN 303 340 V1.1.1, Table 2

2.3.6 2CH_DVB-T_5MHz.wv

Two DVB-T signals:

- Channel bandwidth: 5 MHz

2.3.7 2CH_DVB-T_6MHz.wv

Two DVB-T signals:

- Channel bandwidth: 6 MHz

2.3.8 2CH_DVB-T_7MHz.wv

Two DVB-T signals:

- Channel bandwidth: 7 MHz
- According the international standard IEC 62002-1 pattern L3

2.3.9 2CH_DVB-T_8MHz.wv

Two DVB-T signals:

- Channel bandwidth: 8 MHz
- According the international standard IEC 62002-1 pattern L3

The two signals are grouped around the RF frequency with a spacing of one channel (see Figure 2-3).

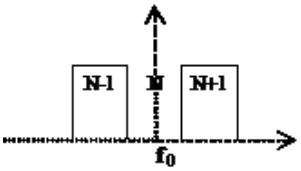

Figure 2-3: Two channel DVB-T signal

To make the measurements described in IEC 62002-1 "Mobile and portable DVB-T/H radio access", the signals must be shifted using either "Signal Frequency Offset" or "Modulation Frequency Offset" under Modulation.

2.4 DVB-T2

When playing these waveform files, the following applies:

- Playing this ARB file should get a DVB-T2 receiver locked.
- Framing will be continuous due to a whole number of super frames.
- Wrap around time of the ARB file might be too short for decoding of video and audio.

2.4.1 DVBT2_VV003_SF2.wv

ARB file name	DVBT2_VV003_SF2.wv
ARB file version	01.00
Date of generation	2009-01-16
ARB file play time (8 MHz CH BW)	0.867 seconds
ARB clock (8 MHz CH BW)	11.428570 MHz
Number of super frames	2

T2 Transmission Parameter

Table 2-1: Input Mode

Parameter	Value	Possible values
Input Mode	A (single PLP)	A (single PLP), B (multi PLP)
Number of PLP	1	1 to 255
Mode Adapt. Type	CCM	CCM, ACM

Table 2-2: Mode Adapt., Stream Adapt.

Parameter	Value	Possible values
PLP 0		
PLP 0: Input Format	TS	TS, GSE, GCS, GFPS
PLP 0: PLP ID	0x00	0x00 to 0xFF
PLP 0: PLP Type	Data Type 1	Data Type 1, Data Type 2, Common
PLP 0: Mode	HEM	HEM, NM
PLP 0: ISSY	OFF	On, Off
PLP 0: Null Packet Deletion	Off	On, Off
PLP 0: In-Band Signaling	Off	On, Off
PLP 0: Input Data Rate	40.2146452 Mbit/s	

Table 2-3: BICM

Parameter	Value	Possible values
PLP 0		
PLP 0: FEC Frame	Normal	Normal, Short
PLP 0: Code Rate	2/3	1/2, 3/5, 2/3, 3/4, 4/5, 5/6
PLP 0: Constellation	256QAM	QPSK, 16QAM, 64QAM, 256QAM
PLP 0: Const. Rotation	On	On, Off
PLP 0: Time Interl. Type	Type 0	Type 0, Type 1
PLP 0: Frame Interv. (I Jump)	1	1 to 255
PLP 0: Time Interl. Length	3	0 to 255

Table 2-4: Framing

Parameter	Value	Possible values
T2 Frames per Super Frame (N_T2)	2	2 to 255
OFDM Symbols per T2 Frame (L_F)	60	4 to max. (max. -> EN302755)

Data Symbols per T2 Frame (L_Data)	59	3 to max. (max. -> EN302755)
Subslices per T2 Frame (N_Sub)	1	1 to 6480

Table 2-5: OFDM

Parameter	Value	Possible values
Channel Bandwidth	8 MHz	1.7 MHz, 5 MHz, 6 MHz, 7 MHz, 8 MHz, 10 MHz
FFT Size	32K	1K, 2K, 4K, 8K, 16K, 32K
Extended Carrier Mode	On	On, Off
Guard Interval	1/128	1/4, 19/128, 1/8, 19/256, 1/16, 1/32, 1/128
Pilot Pattern	PP7	PP1, PP2, PP3, PP4, PP5, PP6, PP7, PP8

Table 2-6: T2 System

Parameter	Value	Possible values
Transmission System	SISO	SISO, MISO
MISO Group	---	1, 2
PAPR	Off	On, Off
PAPR Function Tag	---	
PAPR Function Length	---	
PAPR Gain	---	
PAPR Extension Limit	---	
PAPR Clipping Threshold	---	
FEF	Off	On, Off
FEF Type	---	
FEF Length	---	
FEF Interval	---	
TFS	Off	On, Off
L1 Post Modulation	64QAM	BPSK, QPSK, 16QAM, 64QAM
L1 Repetition	Off	On, Off
L1 Post Extension	Off	On, Off

Num. Aux. Streams	0	0 to 15
Cell ID	0x0000	0x0000 to 0xFFFF
Network ID	0x3085	0x0000 to 0xFFFF
T2 System ID	0x8001	0x0000 to 0xFFFF
TX ID State	Off	On, Off
TX ID	---	0x0000 to 0xFFFF

PLP Content

PLP 0: Pattern

2.4.2 2CH_DVB-T2_8MHz.wv

ARB file name	2CH_DVB-T2_8MHz.wv
ARB file version	01.00
Date of generation	2009-01-16
ARB file play time (8 MHz CH BW)	0.867 seconds
ARB clock (8 MHz CH BW)	11.428570 MHz
Number of super frames	2

This waveform file contains the same DVB-T2 signal as DVBT2_VV003_SF2, but shifted by 8 MHz left and right to the center frequency (channel n-1 and n+1). For details on the content refer to insert link"T2 Transmission Parameter" on page 15.

2.4.3 DVB-T2_7MHz.wv

ARB file name	**DVB-T2_7MHz.wv**
ARB file version	01.00
Date of generation	2011-06-30
ARB file play time (7 MHz CH BW)	0.99635 seconds
ARB clock (7 MHz CH BW)	10.0 MHz
Number of super frames	2

T2 Transmission Parameter

Table 2-7: Input Mode

Parameter	Value	Possible values
Input Mode	A (single PLP)	A (single PLP), B (multi PLP)

Number of PLP	1	1 to 255
Mode Adapt. Type	CCM	CCM, ACM

Table 2-8: Mode Adapt., Stream Adapt.

Parameter	Value	Possible values
PLP 0		
PLP 0: Input Format	TS	TS, GSE, GCS, GFPS
PLP 0: PLP ID	0x00	0x00 to 0xFF
PLP 0: PLP Type	Data Type 1	Data Type 1, Data Type 2, Common
PLP 0: Mode	HEM	HEM, NM
PLP 0: ISSY	Off	On, Off
PLP 0: Null Packet Deletion	Off	On, Off
PLP 0: In-Band Signaling	Off	On, Off
PLP 0: Input Data Rate	31.989 401 Mbit/s	

Table 2-9: BICM

Parameter	Value	Possible values
PLP 0		
PLP 0: FEC Frame	Normal	Normal, Short
PLP 0: Code Rate	3/4	1/2, 3/5, 2/3, 3/4, 4/5, 5/6
PLP 0: Constellation	256QAM	QPSK, 16QAM, 64QAM, 256QAM
PLP 0: Const. Rotation	On	On, Off
PLP 0: Time Interl. Type	Type 0	Type 0, Type 1
PLP 0: Frame Interv. (I Jump)	1	1 to 255
PLP 0: Time Interl. Length	3	0 to 255

Table 2-10: Framing

Parameter	Value	Possible values
T2 Frames per Super Frame (N_T2)	2	2 to 255
OFDM Symbols per T2 Frame (L_F)	54	4 to max. (max. -> EN302755)
Data Symbols per T2 Frame (L_Data)	53	3 to max. (max. -> EN302755)
Subslices per T2 Frame (N_Sub)	1	1 to 6480

Table 2-11: OFDM

Parameter	Value	Possible values
Channel Bandwidth	7 MHz	1.7 MHz, 5 MHz, 6 MHz, 7 MHz, 8 MHz, 10 MHz
FFT Size	32K	1K, 2K, 4K, 8K, 16K, 32K
Extended Carrier Mode	Off	On, Off
Guard Interval	1/8	1/4, 19/128, 1/8, 19/256, 1/16, 1/32, 1/128
Pilot Pattern	PP2	PP1, PP2, PP3, PP4, PP5, PP6, PP7, PP8

Table 2-12: T2 System

Parameter	Value	Possible values
Transmission System	SISO	SISO, MISO
MISO Group	---	1, 2
PAPR	Off	On, Off
PAPR Function Tag	---	
PAPR Function Length	---	
PAPR Gain	---	
PAPR Extension Limit	---	
PAPR Clipping Threshold	---	
FEF	Off	On, Off
FEF Type	---	
FEF Length	---	
FEF Interval	---	
TFS	Off	On, Off
L1 Post Modulation	64QAM	BPSK, QPSK, 16QAM, 64QAM
L1 Repetition	Off	On, Off
L1 Post Extension	Off	On, Off
Num. Aux. Streams	0	0 to 15
Cell ID	0x0000	0x0000 to 0xFFFF
Network ID	0x3085	0x0000 to 0xFFFF

T2 System ID	0x8001	0x0000 to 0xFFFF
TX ID State	Off	On, Off
TX ID	---	0x0000 to 0xFFFF

PLP Content

PLP 0: Pattern

2.4.4 DVB-T2_7MHz_ExtCarrier.wv

ARB file name	**DVB-T2_7MHz_ExtCarrier.wv**
ARB file version	01.00
Date of generation	2017-04-06
ARB file play time (7 MHz CH BW)	0.992 seconds
ARB clock (7 MHz CH BW)	16.0 MHz
Number of super frames	2

T2 Transmission Parameter

Table 2-13: Input Mode

Parameter	Value	Possible values
Input Mode	A (single PLP)	A (single PLP), B (multi PLP)
Number of PLP	1	1 to 255
Mode Adapt. Type	CCM	CCM, ACM

Table 2-14: Mode Adapt., Stream Adapt.

Parameter	Value	Possible values
PLP 0		
PLP 0: Input Format	TS	TS, GSE, GCS, GFPS
PLP 0: PLP ID	0x00	0x00 to 0xFF
PLP 0: PLP Type	Data Type 1	Data Type 1, Data Type 2, Common
PLP 0: Mode	HEM	HEM, NM
PLP 0: ISSY	Off	On, Off
PLP 0: Null Packet Deletion	Off	On, Off
PLP 0: In-Band Signaling	Off	On, Off
PLP 0: Input Data Rate	31.623 164 Mbit/s	

Table 2-15: BICM

Parameter	Value	Possible values
PLP 0		
PLP 0: FEC Frame	Normal	Normal, Short
PLP 0: Code Rate	3/5	1/2, 3/5, 2/3, 3/4, 4/5, 5/6
PLP 0: Constellation	256QAM	QPSK, 16QAM, 64QAM, 256QAM
PLP 0: Const. Rotation	On	On, Off
PLP 0: Time Interl. Type	Type 0	Type 0, Type 1
PLP 0: Frame Interv. (I Jump)	1	1 to 255
PLP 0: Time Interl. Length	3	0 to 255

Table 2-16: Framing

Parameter	Value	Possible values
T2 Frames per Super Frame (N_T2)	2	2 to 255
OFDM Symbols per T2 Frame (L_F)	60	4 to max. (max. -> EN302755)
Data Symbols per T2 Frame (L_Data)	59	3 to max. (max. -> EN302755)
Subslices per T2 Frame (N_Sub)	1	1 to 6480

Table 2-17: OFDM

Parameter	Value	Possible values
Channel Bandwidth	7 MHz	1.7 MHz, 5 MHz, 6 MHz, 7 MHz, 8 MHz, 10 MHz
FFT Size	32K	1K, 2K, 4K, 8K, 16K, 32K
Extended Carrier Mode	On	On, Off
Guard Interval	1/128	1/4, 19/128, 1/8, 19/256, 1/16, 1/32, 1/128
Pilot Pattern	PP7	PP1, PP2, PP3, PP4, PP5, PP6, PP7, PP8

Table 2-18: T2 System

Parameter	Value	Possible values
Transmission System	SISO	SISO, MISO
MISO Group	---	1, 2
PAPR	Off	On, Off
PAPR Function Tag	---	

PAPR Function Length	---	
PAPR Gain	---	
PAPR Extension Limit	---	
PAPR Clipping Threshold	---	
FEF	Off	On, Off
FEF Type	---	
FEF Length	---	
FEF Interval	---	
TFS	Off	On, Off
L1 Post Modulation	64QAM	BPSK, QPSK, 16QAM, 64QAM
L1 Repetition	Off	On, Off
L1 Post Extension	Off	On, Off
Num. Aux. Streams	0	0 to 15
Cell ID	0x0000	0x0000 to 0xFFFF
Network ID	0x0000	0x0000 to 0xFFFF
T2 System ID	0x0000	0x0000 to 0xFFFF
TX ID State	Off	On, Off
TX ID	---	0x0000 to 0xFFFF

PLP Content

PLP 0: Pattern

2.4.5 DVB-T2_6MHz.wv

ARB file name	**DVB-T2_6MHz.wv**
ARB file version	01.00
Date of generation	2014-09-09
ARB file play time (6 MHz CH BW)	0.264619 seconds
ARB clock (6 MHz CH BW)	13.714286 MHz
Number of super frames	2

T2 Transmission Parameter

Table 2-19: Input Mode

Parameter	Value	Possible values
Input Mode	A (single PLP)	A (single PLP), B (multi PLP)
Number of PLP	1	1 to 255
Mode Adapt. Type	CCM	CCM, ACM

Table 2-20: Mode Adapt., Stream Adapt.

Parameter	Value	Possible values
PLP 0		
PLP 0: Input Format	TS	TS, GSE, GCS, GFPS
PLP 0: PLP ID	0x00	0x00 to 0xFF
PLP 0: PLP Type	Data Type 1	Data Type 1, Data Type 2, Common
PLP 0: Mode	HEM	HEM, NM
PLP 0: ISSY	Off	On, Off
PLP 0: Null Packet Deletion	Off	On, Off
PLP 0: In-Band Signaling A	Off	On, Off
PLP 0: In-Band Signaling B	Off	On, Off
PLP 0: Input Data Rate	23.502 958 Mbit/s	

Table 2-21: BICM

Parameter	Value	Possible values
PLP 0		
PLP 0: FEC Frame	Normal	Normal, Short
PLP 0: Code Rate	2/3	1/2, 3/5, 2/3, 3/4, 4/5, 5/6
PLP 0: Constellation	256QAM	QPSK, 16QAM, 64QAM, 256QAM
PLP 0: Const. Rotation	On	On, Off
PLP 0: Time Interl. Type	Type 0	Type 0, Type 1
PLP 0: Frame Interv. (I Jump)	1	1 to 255
PLP 0: Time Interl. Length	3	0 to 255

Table 2-22: Framing

Parameter	Value	Possible values
T2 Frames per Super Frame (N_T2)	2	2 to 255
OFDM Symbols per T2 Frame (L_F)	49	4 to max. (max. -> EN302755)

Data Symbols per T2 Frame (L_Data)	47	3 to max. (max. -> EN302755)
Subslices per T2 Frame (N_Sub)	1	1 to 6480

Table 2-23: OFDM

Parameter	Value	Possible values
Channel Bandwidth	6 MHz	1.7 MHz, 5 MHz, 6 MHz, 7 MHz, 8 MHz, 10 MHz
FFT Size	8K	1K, 2K, 4K, 8K, 16K, 32K
Extended Carrier Mode	Off	On, Off
Guard Interval	1/8	1/4, 19/128, 1/8, 19/256, 1/16, 1/32, 1/128
Pilot Pattern	PP2	PP1, PP2, PP3, PP4, PP5, PP6, PP7, PP8

Table 2-24: T2 System

Parameter	Value	Possible values
Transmission System	SISO	SISO, MISO
MISO Group	---	1, 2
PAPR	TR	TR, Off
TR V Clip	2.83	
TR Iterations	9	
FEF	Off	On, Off
FEF Type	---	
FEF Length	---	
FEF Interval	---	
TFS	Off	On, Off
L1 Post Modulation	16QAM	BPSK, QPSK, 16QAM, 64QAM
L1 Repetition	Off	On, Off
L1 Post Extension	Off	On, Off
Num. Aux. Streams	0	0 to 15
Cell ID	0x0000	0x0000 to 0xFFFF

Network ID	0x0000	0x0000 to 0xFFFF
T2 System ID	0x0000	0x0000 to 0xFFFF
TX ID State	Off	On, Off
TX ID	---	0x0000 to 0xFFFF

PLP Content

PLP 0: Pattern

2.4.6 DVB-T2_5MHz.wv

ARB file name	**DVB-T2_5MHz.wv**
ARB file version	01.00
Date of generation	2014-09-09
ARB file play time (5 MHz CH BW)	0.317542 seconds
ARB clock (5 MHz CH BW)	11.428571 MHz
Number of super frames	2

T2 Transmission Parameter

Table 2-25: Input Mode

Parameter	Value	Possible values
Input Mode	A (single PLP)	A (single PLP), B (multi PLP)
Number of PLP	1	1 to 255
Mode Adapt. Type	CCM	CCM, ACM

Table 2-26: Mode Adapt., Stream Adapt.

Parameter	Value	Possible values
PLP 0		
PLP 0: Input Format	TS	TS, GSE, GCS, GFPS
PLP 0: PLP ID	0x00	0x00 to 0xFF
PLP 0: PLP Type	Data Type 1	Data Type 1, Data Type 2, Common
PLP 0: Mode	HEM	HEM, NM
PLP 0: ISSY	Off	On, Off
PLP 0: Null Packet Deletion	Off	On, Off
PLP 0: In-Band Signaling A	Off	On, Off

PLP 0: In-Band Signaling B	Off	On, Off
P**LP 0: Input Data Rate**	19.585 799 Mbit/s	

Table 2-27: BICM

Parameter	Value	Possible values
PLP 0		
PLP 0: FEC Frame	Normal	Normal, Short
PLP 0: Code Rate	2/3	1/2, 3/5, 2/3, 3/4, 4/5, 5/6
PLP 0: Constellation	256QAM	QPSK, 16QAM, 64QAM, 256QAM
PLP 0: Const. Rotation	On	On, Off
PLP 0: Time Interl. Type	Type 0	Type 0, Type 1
PLP 0: Frame Interv. (I Jump)	1	1 to 255
PLP 0: Time Interl. Length	3	0 to 255

Table 2-28: Framing

Parameter	Value	Possible values
T2 Frames per Super Frame (N_T2)	2	2 to 255
OFDM Symbols per T2 Frame (L_F)	49	4 to max. (max. -> EN302755)
Data Symbols per T2 Frame (L_Data)	47	3 to max. (max. -> EN302755)
Subslices per T2 Frame (N_Sub)	1	1 to 6480

Table 2-29: OFDM

Parameter	Value	Possible values
Channel Bandwidth	5 MHz	1.7 MHz, 5 MHz, 6 MHz, 7 MHz, 8 MHz, 10 MHz
FFT Size	8K	1K, 2K, 4K, 8K, 16K, 32K
Extended Carrier Mode	Off	On, Off
Guard Interval	1/8	1/4, 19/128, 1/8, 19/256, 1/16, 1/32, 1/128
Pilot Pattern	PP2	PP1, PP2, PP3, PP4, PP5, PP6, PP7, PP8

Table 2-30: T2 System

Parameter	Value	Possible values
Transmission System	SISO	SISO, MISO
MISO Group	---	1, 2

PAPR	TR	TR, Off
TR V Clip	2.83	
TR Iterations	9	
FEF	Off	On, Off
FEF Type	---	
FEF Length	---	
FEF Interval	---	
TFS	Off	On, Off
L1 Post Modulation	16QAM	BPSK, QPSK, 16QAM, 64QAM
L1 Repetition	Off	On, Off
L1 Post Extension	Off	On, Off
Num. Aux. Streams	0	0 to 15
Cell ID	0x0000	0x0000 to 0xFFFF
Network ID	0x0000	0x0000 to 0xFFFF
T2 System ID	0x0000	0x0000 to 0xFFFF
TX ID State	Off	On, Off
TX ID	---	0x0000 to 0xFFFF

PLP Content

PLP 0: Pattern

2.4.7 DVB-T2_1p7MHz.wv

ARB file name	**DVB-T2_1p7MHz.wv**
ARB file version	01.00
Date of generation	2012-08-30
ARB file play time (1.7 MHz CH BW)	0.983446 seconds
ARB clock (1.7 MHz CH BW)	3.690141 MHz
Number of super frames	2

T2 Transmission Parameter

Table 2-31: Input Mode

Parameter	Value	Possible values
Input Mode	A (single PLP)	A (single PLP), B (multi PLP)
Number of PLP	1	1 to 255
Mode Adapt. Type	CCM	CCM, ACM

Table 2-32: Mode Adapt., Stream Adapt.

Parameter	Value	Possible values
PLP 0		
PLP 0: Input Format	TS	TS, GSE, GCS, GFPS
PLP 0: PLP ID	0x00	0x00 to 0xFF
PLP 0: PLP Type	Data Type 1	Data Type 1, Data Type 2, Common
PLP 0: Mode	HEM	HEM, NM
PLP 0: ISSY	Off	On, Off
PLP 0: Null Packet Deletion	Off	On, Off
PLP 0: In-Band Signaling A	Off	On, Off
PLP 0: In-Band Signaling B	Off	On, Off
PLP 0: Input Data Rate	6.324 006 Mbit/s	

Table 2-33: BICM

Parameter	Value	Possible values
PLP 0		
PLP 0: FEC Frame	Normal	Normal, Short
PLP 0: Code Rate	2/3	1/2, 3/5, 2/3, 3/4, 4/5, 5/6
PLP 0: Constellation	256QAM	QPSK, 16QAM, 64QAM, 256QAM
PLP 0: Const. Rotation	On	On, Off
PLP 0: Time Interl. Type	Type 0	Type 0, Type 1
PLP 0: Frame Interv. (I Jump)	1	1 to 255
PLP 0: Time Interl. Length	3	0 to 255

Table 2-34: Framing

Parameter	Value	Possible values
T2 Frames per Super Frame (N_T2)	2	2 to 255
OFDM Symbols per T2 Frame (L_F)	49	4 to max. (max. -> EN302755)

Data Symbols per T2 Frame (L_Data)	47	3 to max. (max. -> EN302755)
Subslices per T2 Frame (N_Sub)	1	1 to 6480

Table 2-35: OFDM

Parameter	Value	Possible values
Channel Bandwidth	1.7 MHz	1.7 MHz, 5 MHz, 6 MHz, 7 MHz, 8 MHz, 10 MHz
FFT Size	8K	1K, 2K, 4K, 8K, 16K, 32K
Extended Carrier Mode	Off	On, Off
Guard Interval	1/8	1/4, 19/128, 1/8, 19/256, 1/16, 1/32, 1/128
Pilot Pattern	PP2	PP1, PP2, PP3, PP4, PP5, PP6, PP7, PP8

Table 2-36: T2 System

Parameter	Value	Possible values
Transmission System	SISO	SISO, MISO
MISO Group	---	1, 2
PAPR	TR	TR, Off
TR V Clip	2.83	
TR Iterations	9	
FEF	Off	On, Off
FEF Type	---	
FEF Length	---	
FEF Interval	---	
TFS	Off	On, Off
L1 Post Modulation	16QAM	BPSK, QPSK, 16QAM, 64QAM
L1 Repetition	Off	On, Off
L1 Post Extension	Off	On, Off
Num. Aux. Streams	0	0 to 15
Cell ID	0x0000	0x0000 to 0xFFFF

Network ID	0x0000	0x0000 to 0xFFFF
T2 System ID	0x0000	0x0000 to 0xFFFF
TX ID State	Off	On, Off
TX ID	---	0x0000 to 0xFFFF

PLP Content

PLP 0: Pattern

2.5 FM Jamer

2.5.1 FM_JAMER_50KHZ.wv

Decodable FM signal:

- Modulated with ±50 kHz deviation
- 1 kHz frequency
- According the international standard IEC 62002-2 GSM900 TX blocking signal test

2.6 ISDB-T

2.6.1 ISDB-TSB_1SEG.wv

Not decodable ISDB-TSB (1 segment) signal.

The spectrum of this signal is according to ARIB STD-B29.

2.6.2 ISDB-TSB_3SEG.wv

Not decodable ISDB-TSB (3 segment) signal.

The spectrum of this signal is according to ARIB STD-B29.

2.6.3 ISDB-T.wv

Not decodable ISDB-T signal.

The spectrum of this signal is according to ARIB STD-B31.

2.7 MediaFlo

2.7.1 MediaFLO_6MHz.wv

Not decodable MediaFLO signal:

- Channel bandwidth: 6 MHz

2.8 T-DMB/DAB

The T-DMB_DAB_M1 files are coded for T-DMB in transmission mode I.

The payload is one audio program service and null packets.

2.8.1 T-DMB_DAB_M1.wv

One T-DMB channel centered to the RF frequency.

2.8.2 DAB_Interferer_Channel_1111.wv

Four T-DMB channels within an 8 MHz channel.

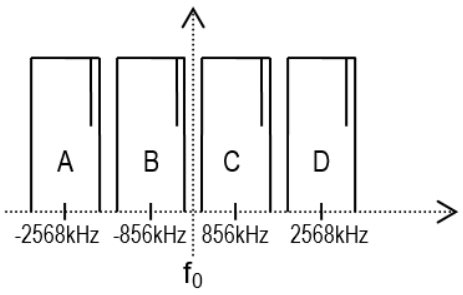

Figure 2-4: Four channel T-DMB signal

2.8.3 DAB_Interferer_Channel_1110.wv

Three T-DMB channels within an 8 MHz channel.

Figure 2-5 shows the default setting for channels A, B and C. To get the occupation of channels B, C and D, use a frequency shift of 1.712 MHz.

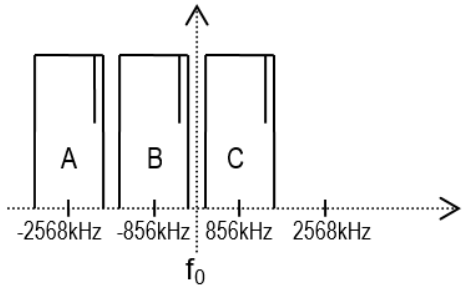

Figure 2-5: Three channel T-DMB signal

2.8.4 DAB_Interferer_Channel_1011.wv

T-DMB channels A, C and D within an 8 MHz channel.

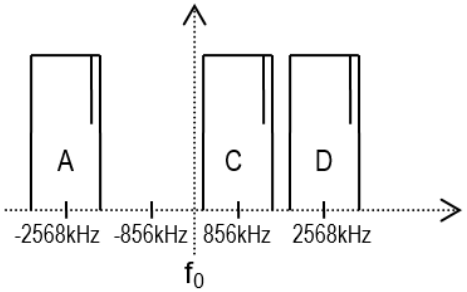

Figure 2-6: Three channel T-DMB signal

2.8.5 DAB_Interferer_Channel_1101.wv

T-DMB channels A, B and D within an 8 MHz channel.

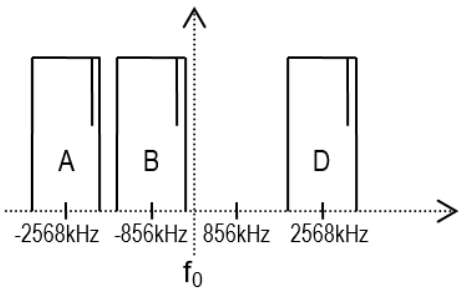

Figure 2-7: Three channel T-DMB signal

2.8.6 DAB_Interferer_Channel_1001.wv

Two T-DMB channels A and D within an 8 MHz channel.

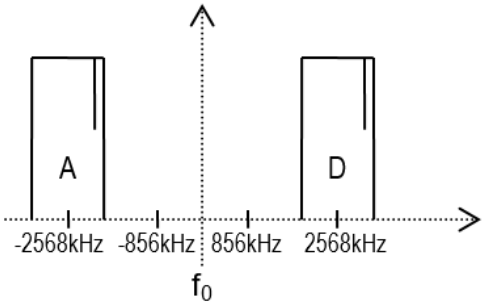

Figure 2-8: Two channel T-DMB signal

2.8.7 DAB_Interferer_Channel_1010.wv

Two T-DMB channels A and C within an 8 MHz channel.

For channels B and D, use a frequency shift of 1.712 MHz.

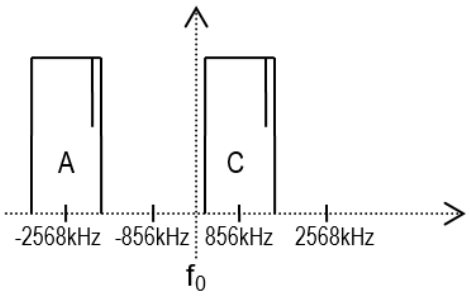

Figure 2-9: Two channel T-DMB signal

2.8.8 DAB_Interferer_Channel_1100.wv

Two T-DMB channels A and B within an 8 MHz channel.

For channels C and D, use a frequency shift of 3.424 MHz.

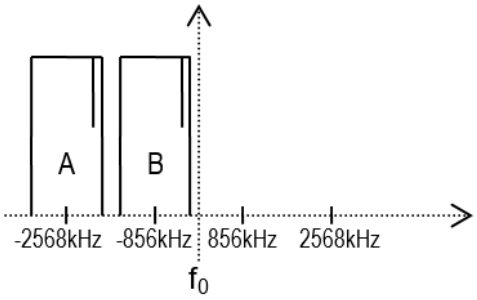

Figure 2-10: Two channel T-DMB signal

2.9 CMMB

2.9.1 cmmb_2M_QPSK.wv

This file plays a decodable CMMB signal:

- PRBS content
- Channel bandwidth: 2 MHz
- Play length: 1 second

The settings for the PLCHs are shown in Table 2-37.

Table 2-37: PLCH settings

Frequency	754 MHz							
Bandwidth	2 MHz							
OFDM	1 K							
Data Rate	0.142848 Mbit/s							
Services	**ID**	**RS**	**BYT IL**	**LDPC**	**Const.**	**SCR. Mode**	**Start TS**	**Stop TS**
0	-		1	1/2	BPSK	0	0	0
1	8193	0:(240,240)	1	1/2	QPSK	0	1	5

2.9.2 cmmb_8M_QPSK.wv

This file plays a decodable CMMB signal:

- Audio and video content
- Channel bandwidth: 8 MHz
- Play length: 1 second

The settings for the PLCHs are shown in Table 2-38.

Table 2-38: PLCH settings

Frequency	754 MHz							
Bandwidth	8 MHz							
OFDM	4 K							
Data Rate	3.939840 Mbit/s							
Services	**ID**	**RS**	**BYT IL**	**LDPC**	**Const.**	**SCR. Mode**	**Start TS**	**Stop TS**
0	-		1	1/2	BPSK	0	0	0
1	245	0:(240,240)	1	1/2	QPSK	0	1	2
2	8194	1:(240,224)	1	1/2	QPSK	0	3	6
3	8195	1:(240,224)	1	1/2	QPSK	0	7	10

4	8196	1:(240,224)	1	1/2	QPSK	0	11	14
5	8197	1:(240,224)	1	1/2	QPSK	0	15	18
6	8198	1:(240,224)	1	1/2	QPSK	0	19	22
7	8199	1:(240,224)	1	1/2	QPSK	0	23	26
8	8200	1:(240,224)	1	1/2	QPSK	0	27	30

2.10 ATSC 3.0

The ATSC 3.0 files play a signal compliant with the ATSC standard "Physical Layer Protocol (A/322)". The payload is IP packets with PRBS content. The settings are according to document S32-269r37-VandV_Simulation_Parameters_Sets-2017-05-12.xlsx of the ATSC 3.0 verification and validation workgroup.

2.10.1 ATSC30_VV600_IP_6MHz.wv

One ATSC 3.0 signal:

- Settings according to VV600 ATSC 3.0 test case
- Channel bandwidth: 6 MHz

2.10.2 ATSC30_VV600_IP_7MHz.wv

One ATSC 3.0 signal:

- Settings according to VV600 ATSC 3.0 test case
- Channel bandwidth: 7 MHz

2.10.3 ATSC30_VV600_IP_8MHz.wv

One ATSC 3.0 signal:

- Settings according to VV600 ATSC 3.0 test case
- Channel bandwidth: 8 MHz

2.10.4 ATSC30_VV603_IP_6MHz.wv

One ATSC 3.0 signal:

- Settings according to VV603 ATSC 3.0 test case
- Channel bandwidth: 6 MHz

2.10.5 ATSC30_VV603_IP_7MHz.wv

One ATSC 3.0 signal:

- Settings according to VV603 ATSC 3.0 test case
- Channel bandwidth: 7 MHz

2.10.6 ATSC30_VV603_IP_8MHz.wv

One ATSC 3.0 signal:

- Settings according to VV603 ATSC 3.0 test case
- Channel bandwidth: 8 MHz

2.10.7 ATSC30_VV604_IP_6MHz.wv

One ATSC 3.0 signal:

- Settings according to VV604 ATSC 3.0 test case
- Channel bandwidth: 6 MHz

2.10.8 ATSC30_VV604_IP_7MHz.wv

One ATSC 3.0 signal:

- Settings according to VV604 ATSC 3.0 test case
- Channel bandwidth: 7 MHz

2.10.9 ATSC30_VV604_IP_8MHz.wv

One ATSC 3.0 signal:

- Settings according to VV604 ATSC 3.0 test case
- Channel bandwidth: 8 MHz

2.10.10 ATSC30_VV605_IP_6MHz.wv

One ATSC 3.0 signal:

- Settings according to VV605 ATSC 3.0 test case
- Channel bandwidth: 6 MHz

2.10.11 ATSC30_VV605_IP_7MHz.wv

One ATSC 3.0 signal:

- Settings according to VV605 ATSC 3.0 test case

- Channel bandwidth: 7 MHz

2.10.12 ATSC30_VV605_IP_8MHz.wv

One ATSC 3.0 signal:

- Settings according to VV605 ATSC 3.0 test case
- Channel bandwidth: 8 MHz

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