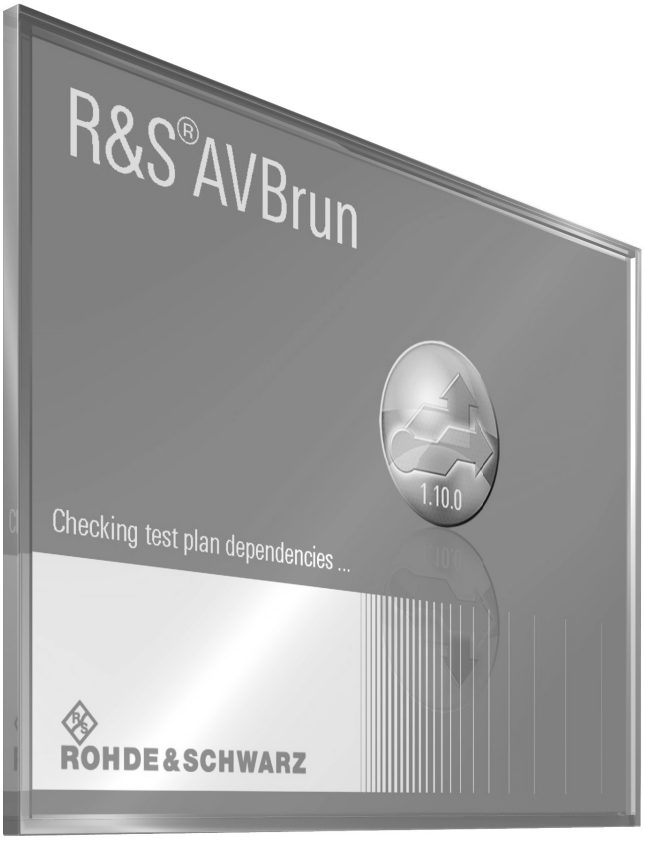
R&S®AVBrun
Audio/Video/Broadcast Sequencer Software Tool
Specifications



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Data Sheet | 05.00

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Test cases in line with DTG D-Book specification (R&S®BTC-KT3310)

The R&S®AVBrun test suite software for DTG D-Book includes all test cases for DVB-T and DVB-T2 receivers in line with DTG D-Book. Degradation criterion is based upon the picture failure point.

Test specification

DTG D-Book	In line with D-Book 7.0 part A (version 1)	
	Chapter 10	RF test procedures for DVB-T and DVB-T2 receivers
	10.7	Basic RF tests
	10.7.1	RF sensitivity
	10.7.2	Performance with AWGN
	10.7.3	Performance with PAL CCI interference
	10.7.4	Performance with PAL ACI interference
	10.7.5	Performance with (N+9) PAL interference (image)
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DTG D-Book	In line with D-Book 7.0 part A (version 3)	
	Chapter 10	RF test procedures for DVB-T and DVB-T2 receivers
	10.7	Basic RF tests
	10.7.1	RF sensitivity
	10.7.2	Performance with AWGN
	10.7.3	Performance with PAL CCI interference
	10.7.6	Performance with ACI DVB-T/T2E interference
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	10.9	Impulsive interference tests

DTG testing has approved the R&S®BTC broadcast test center together with the R&S®AVBrun D-Book test suite for precompliance testing in line with D-Book 7.3.

Test cases in line with NorDig unified RF test specification for terrestrial tuners and demodulators (R&S®BTC-KT3311)

The R&S®AVBrun NorDig RF test suite performs RF test cases for DVB-T and DVB-T2 receivers in line with the NorDig unified test plan. Degradation criterion is based upon the picture failure point.

Test specification

NorDig	**In line with NorDig unified test plan version 2.4**	
Test cases	Chapter 2	Test specification for NorDig – test set A
	2.3	Task 3: Terrestrial tuner and demodulator
	2.3.9	Test cases
	2.3.9.1	Test cases – DVB-T IRD
	Task 3.19	Performance: C/N performance on Gaussian channel
	Task 3.20	Performance: C/N performance on 0 dB echo channel
	Task 3.21	Performance: minimum receiver signal input levels on Gaussian channel
	Task 3.22	Performance: minimum IRD signal input levels on 0 dB echo channel
	Task 3.23	Performance: noise figure on Gaussian channel
	Task 3.24	Performance: maximum receiver signal input levels
	Task 3.25	Performance: immunity to “analog” signals in other channels
	Task 3.26	Performance: immunity to “digital” signals in other channels
	Task 3.27	Performance: immunity to “LTE” signals in other channels
	Task 3.28	Performance: immunity to co-channel interference from analog TV signals
	Task 3.29	Performance in time-varying channels
	Task 3.30	Performance: synchronization for varying echo power levels in SFN
	Task 3.31	Performance: C/(N+1) performance in SFN for more than one echo
	Task 3.32	Performance: C/(N+1) performance in SFN inside the guard interval
	Task 3.33	Performance: C/(N+1) performance in SFN outside the guard interval
	2.3.9.2	Test cases – DVB-T2 IRD
	Task 3.57	Performance: C/N performance on Gaussian channel
	Task 3.58	Performance: C/N performance on 0 dB echo channel
	Task 3.59	Performance: minimum receiver signal input levels on Gaussian channel
	Task 3.60	Performance: minimum IRD signal input levels on 0 dB echo channel
	Task 3.61	Performance: receiver noise figure on Gaussian channel
	Task 3.62	Performance: maximum receiver signal input levels
	Task 3.63	Performance: immunity to “digital” signals in other channels
	Task 3.64	Performance: immunity to “LTE” signals in other channels
	Task 3.65	Performance: immunity to co-channel interference from analog TV signals
	Task 3.66	Performance in time-varying channels
	Task 3.67	Performance: synchronization for varying echo power levels in SFN
	Task 3.68	Performance: C/(N+1) performance in SFN for more than one echo
	Task 3.69	Performance: C/(N+1) performance in SFN inside the guard interval
	Task 3.70	Performance: C/(N+1) performance in SFN outside the guard interval

Test cases in line with NorDig unified general test specification for terrestrial tuners and demodulators (R&S®BTC-KT3327)

The R&S®AVBrun NorDig general test suite performs general test cases for DVB-T and DVB-T2 receivers in line with the NorDig unified test plan. Degradation criterion is based upon the picture failure point.

Test specification

NorDig	**In line with NorDig unified test plan, version 2.4**	
Test cases	Chapter 2	Test specification for NorDig – test set A
	2.3	Task 3: Terrestrial tuner and demodulator
	2.3.9	Test cases
	2.3.9.1	Test cases – DVB-T IRD
	Task 3.1	General
	Task 3.2	General
	Task 3.3	Quality reception detector
	Task 3.4	Frequencies: center frequencies
	Task 3.5	Frequencies: frequency offset
	Task 3.6	Frequencies: signal bandwidths
	Task 3.7	Modes
	Task 3.8	Tuning/scanning procedure: general
	Task 3.9	Tuning/scanning procedure: basic status check
	Task 3.10	Tuning/scanning procedure: automatic channel search for the same service bouquet
	Task 3.11	Tuning/scanning procedure: automatic channel search for different service bouquets
	Task 3.12	Tuning/scanning procedure: manual channel search
	Task 3.13	Verification of signal strength indicator (SSI)
	Task 3.14	Verification of signal strength indicator (SQI)
	Task 3.15	Changes in modulation parameters
	Task 3.17	RF output connector
	2.3.9.2	Test cases – DVB-T2 IRD
	Task 3.34	Frequencies: center frequencies
	Task 3.35	Frequencies: frequency offset
	Task 3.36	Frequencies: signal bandwidths
	Task 3.37	Modes
	Task 3.38	MISO
	Task 3.39	Input mode B (multiple PLPs)
	Task 3.40	Input mode B (multiple PLPs and common PLP)
	Task 3.41	Input mode B (RBM for TDI)
	Task 3.42	Input mode B (RBM for DJB)
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	Task 3.45	Input mode A (zero power FEF present)
	Task 3.46	Input mode A (RBM when FEF present)
	Task 3.47	Auxiliary streams
	Task 3.48	Reception of version 1.1.1
	Task 3.49	Tuning/scanning procedure: automatic channel search for the same service bouquet
	Task 3.50	Tuning/scanning procedure: basic status check
	Task 3.51	Verification of signal strength indicator (SSI)
	Task 3.52	Verification of signal strength indicator (SQI)
	Task 3.53	Changes in modulation parameters
	Task 3.54	Time interleaving

Test cases in line with NorDig Unified specification for satellite tuners and demodulators (R&S®BTC-KT3326)

The R&S®AVBrun NorDig test suite for satellite tuners and demodulators is in line with the NorDig unified test plan. Degradation criterion is based upon the picture failure point.

Test specification

NorDig	**In line with NorDig unified test plan, version 2.4**	
Test cases	Chapter 2	Test specification for NorDig – test set A
	2.1	Task 1: Satellite tuner and demodulator
	Task 1.1	General
	Task 1.2	General
	Task 1.3	Quality reception detector
	Task 1.4	M4 level – symbol and FEC rate (DVB-S2)
	Task 1.5	Input frequency range/tuning range
	Task 1.6	Tuning/scanning procedure (with NIT)
	Task 1.7	Tuning/scanning procedure (without NIT)
	Task 1.9	M4 level – demodulation (DVB-S2)
	Task 1.11	Input signal level
	Task 1.13	Performance: digital interference
	Task 1.14	Performance: analog interference

Test cases in line with NorDig Unified specification for cable tuners and demodulators (R&S®BTC-KT3325)

The R&S®AVBrun NorDig test suite for cable tuners and demodulators is in line with the NorDig unified test plan. Degradation criterion is based upon the picture failure point.

Test specification

NorDig	**In line with NorDig unified test plan version 2.4**	
Test cases	Chapter 2	Test specification for NorDig – test set A
	2.2	Task 3: Terrestrial tuner and demodulator
	2.2.2	Test cases
	Task 2.1	General
	Task 2.2	General
	Task 2.3	Quality reception detector
	Task 2.4	RF characteristics: input frequency range and input level, digital channels
	Task 2.5	RF characteristics: symbol rate and modulation
	Task 2.7	RF bypass
	Task 2.13	Total input power
	Task 2.14	RF performance: C/N for reference BER
	Task 2.15	RF performance: C/N with echo
	Task 2.16	Performance data: noise figure
	Task 2.17	RF performance: image channel
	Task 2.18	RF performance: digital adjacent channel
	Task 2.19	RF performance: analog adjacent channel
	Task 2.20	LO leakage
	Task 2.21	Spurious emission

Test cases in line with E-Book specification (R&S®BTC-KT3312)

The R&S®AVBrun E-Book test cases for DVB-T2 receiver are in line with the DIGITALEUROPE specification. Degradation criterion is based upon the picture failure point.

Test specification

E-Book		
Test descriptions	White paper: Standardized DVB-T2 RF specifications (Brussels, 17 April 2012)	
	4	Minimum receiver signal input levels
	5	Maximum receiver input level
	7	AWGN C/N performance
	8	Immunity to analog and digital signals in other channels
	9	Immunity to co-channel interference
	10	Multipath performance
	11	Performance in time varying channels
	12	Tolerance to impulse interference
	13	Operation with FEFS

Test cases in line with DTMB specification (R&S®BTC-KT3330)

The R&S®AVBrun DTMB consists of RF performance test cases for digital terrestrial television receivers in line with GB 20600-2006 digital terrestrial reception functionality. Degradation criterion is based upon the picture failure point.

Test specification

DTMB	**In line with GB/T 26685-201x**	
Test descriptions	5.2	RF demodulation and channel decoding requirements
	5.2.2	Change of operating mode and modulation parameters
	5.2.3	Frequency range
	5.2.4	Frequency capture range
	5.2.6	Gaussian carrier-to-noise threshold
	5.2.7	Static multipath carrier-to-noise threshold
	5.2.8	Receivable signal power range
	5.2.9	Immunity to adjacent channel analog TV interference
	5.2.10	Immunity to co-channel analog TV interference
	5.2.11	Immunity to adjacent channel digital TV interference
	5.2.12	Immunity to co-channel analog TV interference
	5.2.13	Immunity to 0 dB echo
	5.2.14	Immunity to dynamic multipath
	5.2.15	Immunity to impulse interference
	5.2.16	Immunity to two path long delay echoes
	5.2.17	Immunity to three path long delay echoes
	5.2.18	Immunity to noise channel 1 under fixed reception conditions
	5.2.19	Immunity to noise channel 2 under fixed reception conditions
	5.2.20	Immunity to single frequency interference
	5.2.21	Multipath interference
	5.2.22	Immunity to echo outside guard interval
	5.2.23	RF loop output gain

Test cases in line with Thailand profile specification (R&S®BTC-KT3332)

The R&S®AVBrun Thailand profile includes test cases for DVB-T2 receivers in line with the NBTC specification. Degradation criterion is based upon the picture failure point.

Test specification

NBTC DVB-T2 specification		
Test descriptions	1	Center frequencies
	2	Frequency offset
	3	Modes
	4	Multi PLPs support (manual judgment)
	5	Multi PLPs and common PLP (manual judgment)
	6	C/N performance on AWGN channel
	7	Minimum input level on AWGN channel
	8	Minimum input level on 0 dB echo channel
	9	Noise figure on AWGN channel
	10	Immunity to digital signals
	11	Immunity to co-channel
	12	Performance in SFN with echoes
	13	Performance in SFN inside guard interval
	14	Performance in SFN outside guard interval

Test cases in line with Vietnam profile specification (R&S®BTC-KT3333)

The R&S®AVBrun Vietnam profile includes test cases for DVB-T2 receivers in line with the VNTA specification. Degradation criterion is based upon the picture failure point.

Test specification

VNTA DVB-T2 specification		
Test descriptions	General	
	3.1.1	Frequency
	3.1.2	Frequency
	3.2.1	Signal bandwidths
	3.2.2	Signal bandwidths
	3.3.1	RF modes
	3.3.2	Modes
	3.4	Multi PLPs support (manual judgment)
	3.5	Multi PLPs and common PLP (manual judgment)
	3.6	Normal mode (NM) support
	3.7.1	Change in modulation
	3.7.2	Change in modulation
	3.8	RF bypass
	RF	
	3.9.1	C/N performance in AWGN channel
	3.9.2	C/N performance in AWGN channel
	3.10.1	C/N performance in 0 dB echo channel
	3.10.2	C/N performance in 0 dB echo channel
	3.11.1	Minimum input level in AWGN channel
	3.11.2	Minimum input level in AWGN channel
	3.12.1	Minimum input level in 0 dB echo channel
	3.12.2	Minimum input level in 0 dB echo channel
	3.13.1	Noise figure in AWGN channel
	3.13.2	Noise figure in AWGN channel
	3.14.1	Maximum input level
	3.14.2	Maximum input level
	3.15.1	Immunity to analog channel
	3.15.2	Immunity to analog channel
	3.16.1	Immunity to digital channel
	3.16.2	Immunity to digital channel
	3.17.1	Immunity to co-channel
	3.17.2	Immunity to co-channel
	3.18.1	Performance in SFN inside guard interval
	3.18.2	Performance in SFN inside guard interval
	3.19.1	Performance in SFN outside guard interval
	3.19.2	Performance in SFN outside guard interval

Automated receiver testing (R&S®VT-KT3380)

The R&S®AVBrun basic receiver test include basic quality test cases for DVB-T/DVB-T2 and DTMB receiver. Degradation criterion is based upon picture failure point. Any signal and frequency setting is possible.

Basic receiver test is done by R&S®VTC.

Test specification

Test descriptions		
Test cases	1	RF sensitivity
	2	Performance with AWGN

Camera solution (R&S®KT3329 camera support, R&S®BTC-Z3329 camera package)

The R&S®AVBrun camera support package enables perpetual video quality measurement directly from the monitor display output. The solution consists of the R&S®BTC-KT3329 software option for the R&S®BTC (camera support) and the R&S®BTC-Z3329 camera package (hardware and software).

Technical data

Camera hardware		
Resolution		2048 × 1088 pixel
Frame rate		50 fps
Interface		Ethernet
Lens mount		C-mount
Power requirements		12 V DC
Power consumption		2.5 W
Sensor type		CMOS

Test specification

Supported test cases	
DTG D-Book	In line with D-Book 7.0 part A (version 1) chapter 10
DTG D-Book	In line with D-Book 7.0 part A (version 3) chapter 10
NorDig	In line with NorDig unified test plan version 2.4 chapter 2 task 3: terrestrial tuner and demodulator [1]

[1] In preparation.

Test cases in line with HDMI™ CTS specification (R&S®VTC-KT3356/R&S®VTC-KT3357)

The sequential tool R&S®AVBrun HDMI™ CTS source test (protocol) includes all test cases in line with the HDMI™ compliance test specification version 1.4b and version 2.0.

Test specification

HDMI™ CTS source test	**In line with HDMI™ compliance test specification version 1.4b**	
Test cases	Chapter 7	Tests – source
	7.4	Source – protocol
	Test ID 7-16	Legal codes
	Test ID 7-17	Basic protocol
	Test ID 7-18	Extended control period
	Test ID 7-19	Packet types
	7.5	Source – video
	Test ID 7-21	Minimum format support
	Test ID 7-22	Additional format support
	Test ID 7-23	Pixel encoding – RGB to RGB-only sink
	Test ID 7-24	Pixel encoding – YC_BC_R to YC_BC_R sink
	Test ID 7-25	Video format timing
	Test ID 7-26	Pixel repetition
	Test ID 7-27	AVI InfoFrame
	7.6	Source – audio
	Test ID 7-28	IEC 60958/IEC 61937
	Test ID 7-29	ACR
	Test ID 7-30	Audio sample packet jitter
	Test ID 7-31	Audio InfoFrame
	Test ID 7-32	Audio sample packet layout
	7.7	Source – interoperability with DVI
	Test ID 7-33	Interoperability with DVI
	Test ID 7-33a	Interoperability with multiple VSDB
	7.8	Source – advanced features
	Test ID 7-34	Deep color
	Test ID 7-35	Gamut metadata transmission
	Test ID 7-36	High bitrate audio
	Test ID 7-37	One bit audio
	Test ID 7-38	3D Video format timing
	Test ID 7-39	4k × 2k video format timing
	Test ID 7-40	Extended colorimetry transmission (without xvYCC)

HDMI™ CTS source test	**In line with HDMI™ compliance test specification version 2.0**	
Test cases	Chapter 7	Source – tests
	7.2	Source – TMDS protocol test
	Test ID HF1-13	Scrambling ≤ 3.4 Gbps
	Test ID HF1-10	6G – TMDS bit clock ratio
	Test ID HF1-11	6G – 2160p legal codes
	Test ID HF1-12	6G – basic protocol and scrambling
	Test ID HF1-21	6G – non-2160p legal codes
	Test ID HF1-22	6G – non-2160p basic protocol and scrambling
	7.3	Source – TMDS pixel encoding
	Test ID HF1-31	YC_BC_R 4:2:0 tests – TMDS pixel encoding
	Test ID HF1-32	YC_BC_R 4:2:0 deep color – TMDS pixel encoding
	7.4	Source – video timing tests
	Test ID HF1-14	Source video timing – 21:9 (64:27)
	Test ID HF1-15	6G – 2160p 24-bit color depth
	Test ID HF1-16	6G – 2160p deep color
	Test ID HF1-24	6G – 2160p 3D
	Test ID HF1-25	6G – non-2160p 24-bit color depth
	Test ID HF1-26	6G – non-2160p deep color
	Test ID HF1-33	YC_BC_R 4:2:0
	Test ID HF1-34	YC_BC_R 4:2:0 deep color
	Test ID HF1-35	21:9 (64:27)
	7.5	Source – audio encoding tests
	Test ID HF1-41	3D audio – IEC sample packet
	Test ID HF1-36	3D audio (L-PCM) – packet format
	Test ID HF1-38	MS audio (L-PCM and 61937) – packet format
	Test ID HF1-39	MS audio (one bit) – packet format
	Test ID HF1-40	CEA-861-F audio
	7.6	Source – HDMI-VSIF tests
	Test ID HF1-47	3D OSD disparity
	Test ID HF1-48	Dual view
	Test ID HF1-49	Independent view
	7.7	Source – AVI InfoFrame and GCP tests
	Test ID HF1-18	6G – 2160p
	Test ID HF1-28	6G – non-2160p
	Test ID HF1-51	YC_BC_R 4:2:0
	Test ID HF1-52	YC_BC_R 4:2:0 BT.2020

HDMI™ CTS sink test	**In line with HDMI™ compliance test specification version 1.4b**	
Test cases	Chapter 8	Tests – sink
	8.4	Sink – protocol
	Test ID 8-15	Character synchronization
	Test ID 8-16	Acceptance of all valid packet types
	8.5	Sink – video
	Test ID 8-17	Basic format support requirements
	Test ID 8-18	HDMI™ format support requirements
	Test ID 8-19	Pixel encoding requirements
	Test ID 8-20	Video format timing
	8.6	Sink – audio
	Test ID 8-21	Audio clock regeneration
	Test ID 8-22	Audio sample packet jitter
	Test ID 8-23	Audio formats
	8.7	Sink – interoperability with DVI
	Test ID 8-24	Interoperability with DVI
	8.8	Sink – advanced features
	Test ID 8-25	Deep color
	Test ID 8-27	High bitrate audio
	Test ID 8-28	One bit audio
	Test ID 8-29	3D video format timing
	Test ID 8-30	4k × 2k video format timing
	Test ID 8-31	AVI InfoFrame

HDMI™ CTS sink test	**In line with HDMI™ compliance test specification version 2.0**	
Test cases	Chapter 8	Sink – tests
	8.2	Sink – TMDS protocol test
	Test ID HF2-9	Scrambling ≤ 340 MCSC
	Test ID HF2-5	6G – scrambling
	8.3	Sink – pixel encoding
	Test ID HF2-23	YC_BC_R 4:2:0
	Test ID HF2-24	YC_BC_R 4:2:0 deep color
	8.4	Sink – video timing tests
	Test ID HF2-25	21:9 (64:27)
	Test ID HF2-6	6G – 2160p 24-bit color depth
	Test ID HF2-7	6G – 2160p deep color
	Test ID HF2-8	6G – 2160p 3D
	Test ID HF2-36	6G – non-2160p 24-bit color depth
	Test ID HF2-37	6G – non-2160p deep color
	Test ID HF2-38	6G – non-2160p 3D
	8.8	Sink – EDID tests
	Test ID HF2-10	6G – HF-VSDB
	Test ID HF2-31	YC_BC_R 4:2:0 – data block
	Test ID HF2-32	YC_BC_R 4:2:0 BT.2020 – data block
	Test ID HF2-35	YC_BC_R 4:2:0 deep color HF-VSDB
	Test ID HF2-39	3D and multistream audio data blocks
	Test ID HF2-41	HDMI-VSDBs – independent view
	Test ID HF2-26	Video format declaration
	Test ID HF2-53	HF-VSDB

Test cases in line with HDMI™ source electrical test (R&S®VTC-KT3358)

The sequential tool R&S®AVBrun HDMI™ source electrical test includes test cases in line with the HDMI™ source transition minimized differential signaling (TMDS) test specification version 1.4b and version 2.0.

Test specification

HDMI™ source TMDS test	**In line with HDMI™ compliance test specification version 1.4b**	
Test cases	Chapter 7	Tests – Source
	7.2	Source – EDID / E-DDC / HPD
	Test ID 7-1	EDID – related behavior
	7.3	Source – electrical
	Test ID 7-2	TDMS – V_L
	Test ID 7-3	TDMS – V_{OFF}
	Test ID 7-4	TDMS – T_{RISE}, T_{FALL}
	Test ID 7-6	TDMS – inter-pair skew
	Test ID 7-7	TDMS – intra-pair skew
	Test ID 7-8	TDMS – clock duty cycle
	Test ID 7-10	TDMS – data eye diagram
	Test ID 7-11	+5 V power
	Test ID 7-12	Hot plug detect
	Test ID 7-13	DDC/CEC capacitance and voltage
	Test ID 7-15	CEC line degradation

HDMI™ source test	**In line with HDMI™ generic compliance test specification version 2.0**	
Test cases	Chapter 7.1	Source – TMDS electrical tests
	7.1.1	Source – TMDS electrical 6G test
	Test ID HF1-1	Source TMDS electrical – 6G – V_L and V_{SWING}
	Test ID HF1-2	Source TMDS electrical – 6G – T_{RISE} ,T_{FALL}
	Test ID HF1-3	Source TMDS electrical – 6G – inter-pair skew
	Test ID HF1-4	Source TMDS electrical – 6G – intra-pair skew
	Test ID HF1-5	Source TMDS electrical – 6G – differential voltage
	Test ID HF1-6	Source TMDS electrical – 6G – clock duty cycle and clock rate

Video and speech quality analysis (R&S®CMW-KT105)

Video quality tests are performed with the A/V distortion analyzer in the R&S®VTx.

The speech quality test performs measurements according to the perceptual objective listening quality analysis (POLQA) and perceptual evaluation of speech quality (PESQ).

The video and speech quality analysis is part of the R&S®CMW-KT105. Please see the corresponding data sheet.

Test specification

Test descriptions	Perceptual objective listening quality	POLOQ version 1.9 ITU-T Rec P.863 v.11
	Perceptual evaluation of speech quality	PESQ version 13 ITU-T Rec P.862

Ordering information

For R&S®AVBrun D-Book, NorDig E-Book test suites and the Thailand and Vietnam profiles

Designation	Type	Order No.
Audio/Video/Broadcast Sequencer Software Tool, base software, free download from the Rohde & Schwarz website	R&S®AVBrun	2116.1192.00
Software options (for R&S®BTC)		
AVBrun D-Book Test Suite	R&S®BTC-KT3310	2114.7987.02
AVBrun NorDig Test Suite Subset DVB-T/DVB-T2 RF Test	R&S®BTC-KT3311	2114.7993.02
AVBrun E-Book Test Suite	R&S®BTC-KT3312	2114.8002.02
AVBrun NorDig Test Suite Subset Cable	R&S®BTC-KT3325	2114.8019.02
AVBrun NorDig Test Suite Subset Satellite	R&S®BTC-KT3326	2114.8025.02
AVBrun NorDig Test Suite Subset DVB-T/DVB-T2 General Test	R&S®BTC-KT3327	2114.8077.02
AVBrun DTMB Terrestrial (China)	R&S®BTC-KT3330	2114.8060.02
AVBrun Thailand Profile	R&S®BTC-KT3332	2114.8102.02
AVBrun Vietnam Profile	R&S®BTC-KT3333	2114.8119.02
AVBrun Camera Support supplement to D-Book, NorDig	R&S®BTC-KT3329	2114.8090.02
Hardware option (for R&S®BTC-KT3329 camera support)		
Camera Package, incl. camera and software extension, automatically added to R&S®AVBrun camera support	R&S®BTC-Z3329	2114.7964.02
Extended Warranty for Camera Package	R&S®WE1, R&S®WE2, R&S®WE3	Please contact your local Rohde & Schwarz sales office.
R&S®BTC base unit and extensions (for D-Book, Nordig, E-Book test suites and Thailand and Vietnam profiles)		
Broadcast Test Center	R&S®BTC [2]	2114.3000.02
Baseband Generator (first channel)	R&S®BTC-B1	2114.3500.02
Baseband Generator (second channel)	R&S®BTC-B2	2114.3600.02
Baseband Main Module (path A)	R&S®BTC-B11	2114.6500.02
Baseband Main Module (path AB)	R&S®BTC-B12	2114.6600.02
RF Path A, 100 kHz to 3 GHz	R&S®BTC-B3103	2114.3100.02
RF Path B, 100 kHz to 3 GHz	R&S®BTC-B3203	2114.3300.02
Fading Simulator (path A)	R&S®BTC-B1031	2114.3700.02
Fading Simulator (path B)	R&S®BTC-B1032	2114.3800.02
Multimedia Generator Suite	R&S®BTC-K20	included in base unit
Multiprofile Gateway DVB-T2	R&S®BTC-K24	2114.7006.02
Arbitrary Waveform Generator	R&S®BTC-K35	2114.6974.02
DVB-T/DVB-H Coder	R&S®BTC-K501	2114.6980.02
J.83/A/B/C Coder (DVB-C, US Cable, ISDB-C)	R&S®BTC-K502	2114.6997.02
DVB-S/DVB-S2, DSNG Coder	R&S®BTC-K508	2114.7093.02
DVB-T2 Coder	R&S®BTC-K516	2114.7035.02
DVB-C2 Coder	R&S®BTC-K517	2114.7041.02
AWGN after Fading	R&S®BTC-K1040	2114.7070.02
Extended Noise Generator	R&S®BTC-K1043	2114.7235.02
DTV Interferers	R&S®WV-K1114	2116.9964.02
Cable Interferers	R&S®WV-K1116	2116.9970.02
Satellite Interferers	R&S®WV-K1123	2116.9987.02
Analog Signals	R&S®WV-K816	2116.9935.02
Basic Stream Library	R&S®LIB-K70	2116.9558.02
DVB-T2 MI Streams	R&S®LIB-K57	2116.9429.02
HDMI™ RX 225 MHz Analyzer Module	R&S®VT-B2360	2115.7616.06
HDMI™ RX 300 MHz Analyzer Module	R&S®VT-B2361	2115.7639.06
Analog A/V RX	R&S®VT-B2370	2115.7600.06
A/V Distortion Test	R&S®VT-KT3360	2115.8387.02
Video Analysis	R&S®VT-K2100	2115.8029.02
Video Measurement	R&S®VT-K2101	2115.8264.02
A/V Distortion Analysis	R&S®VT-K2111	2115.8041.03
Power Measurement	R&S®BTC-K2055	2114.7258.02

[2] For a detailed configuration of the R&S®BTC, see www.rohde-schwarz.com\BTC pro.

Recommended accessory		
RedRat3-II Infrared Remote Control Input/Output Device	RedRat3	2114.3375.02

For R&S®AVBrun basic receiver test

Designation	Type	Order number
Audio/Video/Broadcast Sequencer Software Tool, base software, free download from the Rohde &Schwarz website	R&S®AVBrun	2116.1192.00
Software options (for R&S®VTC or R&S®VTE)		
AVBrun A/V Distortion Test	R&S®VT-KT3360	2115.8387.02
AVBrun Basic Receiver Test	R&S®VT-KT3380	2115.8693.02
AVBrun Camera Support	R&S®BTC-KT3329	2114.8090.02
Hardware option (for R&S®BTC-KT3329 camera support)		
Camera Package, incl. camera and software extension, automatically added to R&S®AVBrun camera support	R&S®BTC-Z3329	2114.7964.02
Base unit		
Video Test Center	R&S®VTC	2115.7400.02
Video Tester	R&S®VTE	2115.7300.02
Broadcast modulator options		
Broadcast TX Modulator	R&S®VT-B600	2115.7522.06
Frequency Extension 3 GHz	R&S®VT-K3083	2115.8335.02
Electronic Attenuator 110 dB	R&S®VT-K3084	2115.8341.02
AWGN Generator	R&S®VT-K1340	2115.8329.02
TRP Player	R&S®VT-K22	included in R&S®VT-B600
Video Generator	R&S®VT-K23	included in R&S®VT-B600
DVB-T/DVB-H Coder	R&S®VT-K601	2115.8106.02
DVB-T2 Coder	R&S®VT-K616	2115.8187.02
DTMB(GB20600-2006) Coder	R&S®VT-K612	2115.8164.02
ISDB-T/ISDB-T_{SB}/ISDB-T_B Coder	R&S®VT-K606	2115.8129.02
Basic Stream Library	R&S®LIB-K70	2116.9558.02
Input module options		
HDMI™ RX/TX 600 MHz module	R&S®VT-B2363	2115.7716.06
HDMI™ RX	R&S®VT-K2364	2115.8587.02
Analog A/V RX	R&S®VT-B2370	2115.7600.06
Component Support	R&S®VT-K2371	2115.8258.02
AV analysis options		
A/V Distortion Analysis	R&S®VT-K2111	2115.8041.02
Recommended accessories		
RedRat3-II Infrared Remote Control Input/Output Device	RedRat3	2114.3375.02

For R&S®AVBrun HDMI™ CTS source test, R&S®AVBrun HDMI™ CTS sink test and R&S®AVBrun HDMI™ source electrical test

Designation	Type	Order number
Audio/Video/Broadcast Sequencer Software Tool, base software, free download from the Rohde &Schwarz website	R&S®AVBrun	2116.1192.00
Software options for R&S®VTx		
R&S®AVBRun HDMI™ CTS Source Test	R&S®VT-KT3357	2115.8506.02
R&S®AVBRun HDMI™ CTS Sink Test	R&S®VT-KT3356	2115.8493.02
R&S®AVBRun HDMI™ Source Electrical Test	R&S®VT-KT3358	2115.8512.02
R&S®VTx base units and extensions		
Video Test Center	R&S®VTC	2115.7400.02
Video Tester	R&S®VTE	2115.7300.02
For R&S®AVBrun HDMI™ CTS source test		
HDMI™ CTS RX/TX 600 MHz	R&S®VT-B2362	2115.7700.06
HDMI™ RX 225 MHz	R&S®VT-B2360	2115.7616.06
HDMI™ RX 300 MHz	R&S®VT-B2361	2115.7639.06
HDMI™ CTS Source Test	R&S®VT-K2365	2115.8270.02
For R&S®AVBrun HDMI™ CTS sink test		
HDMI™ TX 300 MHz	R&S®VT-B360	2115.7500.06
HDMI™ Moving Pictures	R&S®VT-K361	2115.7545.02
HDMI™ User-Defined Timing	R&S®VT-K362	2115.8293.02
HDMI™ CTS Sink Test	R&S®VT-K365	2115.8312.02

For R&S®AVBrun HDMI™ source electrical test		
TMDS TDA	R&S®VT-B2380	2115.7597.06
HDMI™ CTS Source Test (electrical)	R&S®VT-K2385	2115.8529.02
HDMI™ Type A TPA (plug)	R&S®VT-Z2385	2115.7668.02

For automated A/V tests in wireless communications applications

Designation	Type	Order number
R&S®CMWrun VTX-AV Quality	R&S®CMW-KT105	see data sheet R&S®CMW

Extended warranty with a term of one to three years (WE1 to WE3)
Repairs carried out during the contract term are free of charge [3]. Necessary calibration and adjustments carried out during repairs are also covered. Simply contact the forwarding agent we name; your product will be picked up free of charge and returned to you in top condition a couple of days later.

For product brochure, see PD 3606.8437.12 and www.rohde-schwarz.com

[3] Excluding defects caused by incorrect operation or handling and force majeure. Wear-and-tear parts are not included.

Service that adds value

- Worldwide
- Local and personalized
- Customized and flexible
- Uncompromising quality
- Long-term dependability

About Rohde&Schwarz

The Rohde&Schwarz electronics group offers innovative solutions in the following business fields: test and measurement, broadcast and media, secure communications, cybersecurity, radiomonitoring and radiolocation. Founded more than 80 years ago, this independent company has an extensive sales and service network and is present in more than 70 countries. The electronics group is among the world market leaders in its established business fields. The company is headquartered in Munich, Germany. It also has regional headquarters in Singapore and Columbia, Maryland, USA, to manage its operations in these regions.

Sustainable product design

- Environmental compatibility and eco-footprint
- Energy efficiency and low emissions
- Longevity and optimized total cost of ownership

Certified Quality Management
ISO 9001

Certified Environmental Management
ISO 14001

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R&S®AVBrun Audio/Video/Broadcast Sequencer Software Tool
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