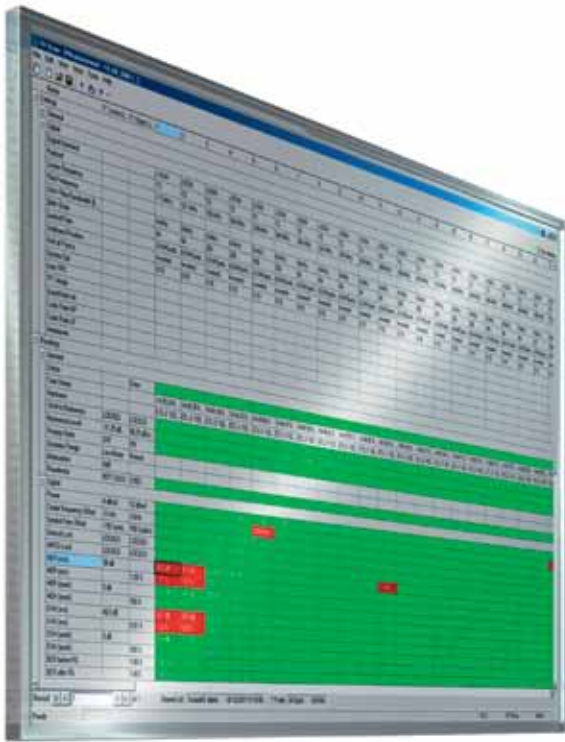


R&S®TVSCAN Automatic TV Channel Scan Software

Quality assessment of multichannel TV signals at cable TV headends or in the field



R&S®TVSCAN

Automatic TV Channel Scan

Software

At a glance

The R&S®TVSCAN automatic TV channel scan software allows fast acquisition of quality parameters of multichannel TV signals such as used at cable TV headends. The software can also effectively measure the transmission parameters of terrestrial TV signals, allowing users to assess their quality. R&S®TVSCAN can be used with the R&S®ETL TV analyzer, the R&S®FSH3-TV TV analyzer and the R&S®EFA TV test receiver.

R&S®TVSCAN performs sequential measurements on multiple TV channels. For these measurements, the software relies on channel tables and suitable measurement profiles, both of which can easily be created and changed by the user.

The results of a measurement sequence are clearly presented in a matrix. Critical results are highlighted in color.

Predefined channel tables, measurement profiles and automated measurement sequences save time and deliver reproducible results at all times.

Key facts

- Automated measurements on multichannel TV signals
- Quick overview of measured quality parameters
- Comparison of current and previous measurement values
- Measurements for analog TV, DVB-C, J.83/A, J.83/B, DVB-T and DVB-T2
- Usable with the R&S®ETL, R&S®FSH3-TV and R&S®EFA

The screenshot displays the R&S TVSCAN software interface. At the top, there is a menu bar (File, Edit, View, Scan, Tools, Help) and a toolbar. Below this, a 'Name' row lists channels 1 through 21. The main area is a large table with columns for each channel and rows for various measurement parameters. The parameters include:

- General:** Status, Time Stamp, Hardware, 10 MHz Reference, Reference Level, Presence State, Dynamic Forge, Modulation, Modulation Residual.
- Digital:** Power, Carrier Frequency Offset, Symbol Rate Offset, Demod Lock, NPS Lock, HFR (Level), HCR (Level), HCR (Level), HCR (Level), EVM (Level), EVM (Level), BER before RS, BER after RS.

The table contains numerical data for each parameter across the 21 channels. Some cells are highlighted in red, indicating critical or out-of-specification values. For example, in the 'Reference Level' row, channel 10 has a value of 20.25 dBm, and in the 'HCR (Level)' row, channel 10 has a value of 1.78 dB. The bottom of the interface shows a 'Channel List' and '1' Pulse' information.

R&S®TVSCAN

Automatic TV Channel Scan Software

Benefits and key features

Time-saving measurement of quality parameters of multichannel TV signals

- Automatic scanning of all TV channels in one go (single scan)
- Repetitive scanning of all TV channels in defined intervals or in a defined period of time (multiscan)

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Reproducible measurements at all times

- Easy-to-create channel tables with preselectable instrument settings
- Definable measurement profiles specifying measurement parameters and tolerances

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Assessment at a glance

- Clear, compact result matrix
- Highlighting of out-of-tolerance measurement values
- Fast comparison of current and previous measurement values

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Time-saving measurement of quality parameters of multichannel TV signals

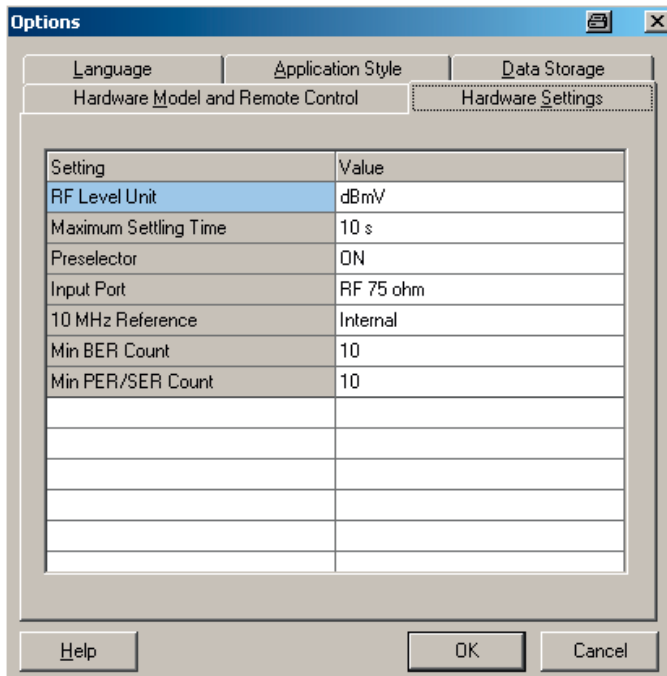
Automatic scanning of all TV channels in one go (single scan)

R&S®TVSCAN scans all TV channels of a selected scan table one after another in one go (single scan). The signal parameters defined in the measurement profile are measured. R&S®TVSCAN automatically sets preselected channel-specific and global instrument settings, including the TV standard, modulation mode and the analyzer's input attenuation.

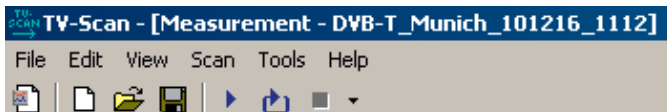
Repetitive scanning of all TV channels in defined intervals or in a defined period of time (multiscan)

For measurements that need to be performed at regular intervals (multiscan), an interval between scans can be defined. A scan can be performed every hour or once a day, for example. Alternatively, the user can specify a time period during which all channels should be continuously scanned.

Preselectable instrument settings.



Toolbar for single scan and multiscan.



Reproducible measurements at all times

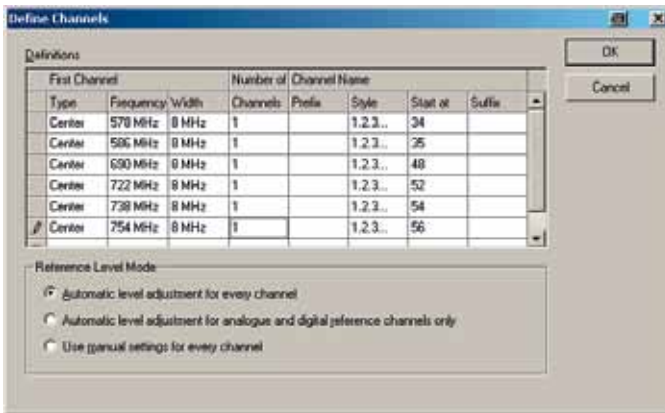
Easy-to-create channel tables with preselectable instrument settings

Input aids and copying functions help users to quickly and easily create channel tables. In addition to basic information such as channel frequency, channel name, frequency offset, TV standard and modulation, other instrument settings can be assigned to each channel.

Definable measurement profiles specifying measurement parameters and tolerances

The signal parameters to be measured as well as their tolerances depend on the measurement location (test point). Using R&S®TVSCAN, various measurement profiles can be created for various scenarios. Once defined, these profiles can easily be passed on to help ensure consistent, reproducible results in technical teams.

Creating channel tables.



TV-Scan - [New Channel List 1]						
Name	1	2	3	4	5	6
Settings						
General						
Channel Type	Digital	Digital	Digital	Digital	Digital	Digital
Channel #	34	35	48	52	54	56
Description						
Profile Type	1*	1*	1*	1*	1*	1*
Channel Center	578 MHz	586 MHz	690 MHz	722 MHz	738 MHz	754 MHz
Frequency Offset	0 Hz	0 Hz	0 Hz	0 Hz	0 Hz	0 Hz
Digital						
Digital Standard	DVBT	DVBT	DVBT	DVBT	DVBT	DVBT
Payload	TS	TS	TS	TS	TS	TS
Center Frequency	578 MHz	586 MHz	690 MHz	722 MHz	738 MHz	754 MHz
Pilot Frequency						
SAW Filter Bandwidth (E...	8 MHz	8 MHz	8 MHz	8 MHz	8 MHz	8 MHz
QAM Order						
Symbol Rate						
Sideband Position	Normal	Normal	Normal	Normal	Normal	Normal
Roll off Factor						
System Opt.	Fast/SFN	Fast/SFN	Fast/SFN	Fast/SFN	Fast/SFN	Fast/SFN
Auto TPS	ACTIVE	ACTIVE	ACTIVE	ACTIVE	ACTIVE	ACTIVE

Assessment at a glance

Clear, compact result matrix

R&S®TVSCAN scans all TV channels of a selected channel table using a suitable measurement profile. While the scan is being performed, results are entered in a compact matrix; the columns are labeled with the channel numbers and the rows with the parameter names.

Highlighting of out-of-tolerance measurement values

The objective of R&S®TVSCAN is to perform automated measurements, mainly to enable fast assessment of the signal quality of each TV channel. Measurement values that are outside specified tolerances are highlighted with a red background. Measurement values that are within specified tolerances are highlighted with a green background. This allows users to quickly identify problem TV channels.

Scanning analog TV signals.

- Analogue				
Video Standard			Standard B	Standard B
Vision Carrier Frequency			303,25 MHz	311,25 MHz
Group Delay			Flat	Flat
Audio Standard			FM 5.5 / F...	FM 5.5 / F...
Sideband Position			Upper	Upper
Test Line Type			CCIR 17	CCIR 17
Test Line Field				
Test Line Number			17	17
Quiet Line Field				
Quiet Line Number			6	6
Readings				
- General				
Status		Done	Done	Done
Time Stamp			13:32:46 2...	13:33:29 2...
Hardware			ETL-3 100...	ETL-3 100...
10 MHz Reference	LOCKED	LOCKED	LOCKED	LOCKED
Reference Level	-33 dBmV	67 dBmV	14 dBmV	14 dBmV
Preamp State	OFF	ON	ON	ON
Dynamic Range	Low Noise	Normal		
Attenuation	0dB			
Preselector	NOT USED	USED	USED	USED
+ Digital				
- Analogue				
Vision Carrier Level	-13 dBmV	11 dBmV	9,1 dBmV	9,1 dBmV
Carrier Frequency Offset	-50 kHz	50 kHz	5 kHz	224 Hz
Vision Detector	LOCKED	LOCKED	LOCKED	LOCKED
Sync Separator	LOCKED	LOCKED		
Luminance Bar Amplitud...	-10 %	10 %	-1,5 %	-1 %
S/N Video Weighted (bar)	40 dB	55 dB	47,5 dB	48,5 dB
S/N Video Weighted (nom)	40 dB	55 dB	47,6 dB	48,6 dB
FM1 Sound Carrier	PRESENT	PRESENT	PRESENT	PRESENT
FM2 Sound Carrier	PRESENT	PRESENT	PRESENT	PRESENT
FM Mode	MONO	DUAL		
Modulation Depth	0 %	100 %	87,2 %	87,7 %
Residual Picture Carrier	0 %	100 %	12,8 %	12,3 %
Vision/FM1 Carrier Powe...	11 dB	15 dB	13,9 dB	12,7 dB
FM1 Intercarrier Freq Off...	-10 kHz	10 kHz	-57 Hz	-86 Hz
FM1 Deviation		30 kHz		
Vision/FM2 Carrier Powe...	18 dB	22 dB	20,1 dB	19 dB
FM2 Intercarrier Freq Off...	-10 kHz	10 kHz	-49 Hz	35 Hz
FM2 Deviation		30 kHz		
Hum	30 dB	50 dB	45 dB	39,5 dB

Scanning digital TV signals.

- General								
Status		Done	Done	Done	Done	Done	Done	Done
Time Stamp			13:32:46 2...	13:33:29 2...	13:34:14 2...	13:34:59 2...	13:35:42 2...	13:36:27 2...
Hardware			ETL-3 100...	ETL-3 100...	ETL-3 100...	ETL-3 100...	ETL-3 100...	ETL-3 100...
10 MHz Reference	LOCKED	LOCKED	LOCKED	LOCKED	LOCKED	LOCKED	LOCKED	LOCKED
Reference Level	-33 dBmV	67 dBmV	14 dBmV	14 dBmV	3 dBmV	3 dBmV	3 dBmV	3 dBmV
Preamp State	OFF	ON	ON	ON	ON	ON	ON	ON
Dynamic Range	Low Noise	Normal						
Attenuation	0dB							
Preselector	NOT USED	USED	USED	USED	USED	USED	USED	USED
- Digital								
Power	3 dBmV	20 dBmV			1,3 dBmV	4,3 dBmV	4 dBmV	3,5 dBmV
Carrier Frequency Offset	3 kHz	3 kHz			2,523 kHz	-	501,5 Hz	-
Symbol Rate Offset	51,5 Sym/s	51,5 Sym/s			-13,9 Sym/s	5,5 Sym/s	-1,3 Sym/s	50,6 Sym/s
Demod Lock	LOCKED	LOCKED			LOCKED	LOCKED	LOCKED	LOCKED
MPEG Lock	LOCKED	LOCKED			LOCKED	LOCKED	LOCKED	LOCKED
MER (rms)	27,4 dB				34,3 dB	29 dB	29,1 dB	29,3 dB
MER (peak)	0 dB	1,35 %			1,75 %	1,11 %	1,11 %	1,11 %
EVM (rms)	40,9 dB				22,7 dB	25,7 dB	25,8 dB	27,5 dB
EVM (peak)	0 dB	100 %			4,79 %	4,68 %	4,11 %	4,53 %
BER before RS	1,0E-7				30,6 dB	43,5 dB	43,3 dB	43,3 dB
BER after RS	1,0E-7				1,38 %	0,67 %	0,69 %	0,67 %
PER/USER	1,0E-7				27,9 dB	31,5 dB	30,5 dB	31,3 dB
TS Rate	4 Mbit/s				4,85 %	2,75 %	3,17 %	2,68 %
Phase Jitter	0				0,0E+000	6,0E+002	0,0E+000	0,0E+000
Dist Factor-Margin	0 dB				0,0E+000	0,0E+000	0,0E+000	0,0E+000
Dist Factor-Max	0 dB				0,0E+000	0,0E+000	0,0E+000	0,0E+000
Dist Factor-Current	0 dB				0,0E+000	0,0E+000	0,0E+000	0,0E+000
Group Delay	0 s				20,9 ns	30,4 ns	33,6 ns	30 ns
Amplitude Response	0 dB				0,5 dB	0,8 dB	0,5 dB	0,5 dB
Phase Response	0 deg				3,8 deg	3,9 deg	3,3 deg	3,3 deg
I/Q Imbalance	0 %				0,01 %	0,01 %	0,02 %	0,02 %
I/Q Quad Error	0 deg				0 deg	0 deg	0 deg	0 deg
Carrier Suppression	0 dB				50,4 dB	50,1 dB	50,7 dB	49,1 dB
CA	0 dB							
S/N	0 dB				75,1 dB	40,2 dB	40,1 dB	40,2 dB

Fast comparison of current and previous measurement values

In cable TV networks, it is important to quickly detect any steady deterioration in quality. A comparison of current signal parameter values with previous data is a valuable aid.

R&S®TVSCAN saves all measured values of a measurement sequence as a record in a file. Users can later page through records to compare values. Color highlighting of critical signal parameters makes it easy to trace back signal deterioration.

Comparison of measurement values of two records

Record 1

Demod Lock	LOCKED	LOCKED	LOCKED
MPEG Lock	LOCKED	LOCKED	LOCKED
MER (rms)	0 dB		31,1 dB
MER (rms)		100 %	2,78 %
MER (peak)	0 dB		16,1 dB
MER (peak)		100 %	13,5 %
EVM (rms)	0 dB		33,6 dB
EVM (rms)		100 %	2,08 %
EVM (peak)	0 dB		19,3 dB
EVM (peak)		100 %	13,48 %
BER before Viterbi		1,0E0	0,0E0 (13/...
BER before RS		1,0E0	0,0E0 (100)
BER after RS		1,0E0	0,0E0 (19/...
PER/SER		1,0E0	0,0E0 (17/...
TS Rate	0 bit/s		13,2706 T...
Shoulder Atten Lower	0 dB		41,7 dB

Record 2

Demod Lock	LOCKED	LOCKED	LOCKED
MPEG Lock	LOCKED	LOCKED	LOCKED
MER (rms)	0 dB		29 dB
MER (rms)		100 %	3,55 %
MER (peak)	0 dB		3,7 dB
MER (peak)		100 %	65,54 %
EVM (rms)	0 dB		31,6 dB
EVM (rms)		100 %	2,64 %
EVM (peak)	0 dB		5,1 dB
EVM (peak)		100 %	54,85 %
BER before Viterbi		1,0E0	0,0E0 (13/...
BER before RS		1,0E0	3,2E-5 (10)
BER after RS		1,0E0	0,0E0 (20/...
PER/SER		1,0E0	0,0E0 (17/...
TS Rate	0 bit/s		13,2706 T...
Shoulder Atten Lower	0 dB		36,8 dB

Measurement record selection.

Record: of 1 Channel List: 1* Profile:

Parameter list

		TV analyzer/TV test receiver					
		R&S®ETL	R&S®ETL	R&S®ETL	R&S®EFA, models .20/.23	R&S®EFA, models .60/.63	R&S®FSH3-TV
		TV standard					
Category	Information/measured parameter	DVB-C, J.83/B, analog TV	DVB-T	DVB-T2	DVB-C	DVB-C	DVB-C, J.83/B, analog TV
General	Status	•	•	•	•	•	•
	Time Stamp	•	•	•	•	•	•
	Hardware Model, Serial Number and Firmware Version	•	•	•	•	•	•
	10 MHz Reference	•	•	•	•	•	•
	Reference Level	•	•	•			•
	Preamp State	•	•	•	•		•
	Dynamic Range				•	•	•
	Attenuation				•	•	
	Preselector	•	•	•			•
	Digital	Power	•	•	•	•	•
Carrier Frequency Offset		•	•	•	•	•	•
Symbol Rate Offset		•				•	•
Bit Rate Offset			•	•			
Demod Lock		•	•	•	•	•	•
PLP Lock				•			
MPEG Lock		•	•		•	•	•
MER (RMS)		•	•		•	•	•
MER (peak)		•	•		•	•	
EVM (RMS)		•	•		•	•	•
EVM (peak)		•	•		•	•	
MER L1 (RMS)				•			
MER L1 (peak)				•			
MER PLP (RMS)				•			
MER PLP (peak)				•			
EVM PLP (RMS)				•			
EVM PLP (peak)				•			
BER before Viterbi			•				
BER before RS		•	•		•	•	•
BER after RS		•	•			•	
BER before BCH				•			
BER before LDPC				•			
LDPC Iteration				•			
PER/SER		•	•	•		•	•
TS Rate		•	•			•	•
Shoulder Atten Lower		•	•	•		•	•
Shoulder Atten Upper		•	•	•		•	•
Phase Jitter	•			•	•		
Crest Factor Margin					•		
Crest Factor Max					•		
Crest Factor Current	•	•	•		•		
Group Delay	•	•	•		•		

		TV analyzer/TV test receiver					
		R&S®ETL	R&S®ETL	R&S®ETL	R&S®EFA, models .20/.23	R&S®EFA, models .60/.63	R&S®FSH3-TV
		TV standard					
Category	Information/measured parameter	DVB-C, J.83/B, analog TV	DVB-T	DVB-T2	DVB-C	DVB-C	DVB-C, J.83/B, analog TV
	Amplitude Response	•	•	•		•	
	Phase Response	•	•	•		•	
	I/Q Imbalance	•	•	•	•	•	
	I/Q Quad Error	•	•	•	•	•	
	Carrier Suppression	•	•	•	•	•	
	Carrier Phase		•	•			
	C/I				•		
	S/N	•			•	•	
	Level Echo 1 to 10		•	•			
	Delay Echo 1 to 10		•	•			
Analog	Vision Carrier Level	•					•
	Carrier Frequency Offset	•					•
	Vision Detector	•					•
	Sync Separator						•
	Luminance Bar Amplitude Error	•					•
	Luminance Bar Amplitude	•					•
	S/N Video Weighted (bar)	•					•
	S/N Video Weighted (nom)	•					•
	AM Sound Carrier						•
	FM Sound Carrier	•					•
	FM1 Sound Carrier	•					•
	FM2 Sound Carrier	•					•
	NICAM Carrier	•					•
	FM Mode						•
	BTSC Mode						•
	NICAM Mode						•
	NICAM BER						•
	Modulation Depth	•					•
	Residual Picture Carrier	•					•
	Vision/AM Power relative						•
	AM Intercarrier Freq						•
	Vision/FM Power relative	•					•
	FM Intercarrier Freq	•					•
	FM Deviation						•
	Vision/FM1 Power relative	•					•
	FM1 Intercarrier Freq	•					•
	FM1 Deviation						•
	Vision/FM2 Power relative	•					•
	FM2 Intercarrier Freq	•					•
	FM2 Deviation						•
	Vision/NICAM Power relative	•					•
	Hum	•					•

		TV analyzer/TV test receiver					
		R&S®ETL	R&S®ETL	R&S®ETL	R&S®EFA, models .20/.23	R&S®EFA, models .60/.63	R&S®FSH3-TV
		TV standard					
Category	Information/measured parameter	DVB-C, J.83/B, analog TV	DVB-T	DVB-T2	DVB-C	DVB-C	DVB-C, J.83/B, analog TV
Cable	CSO Ref.						•
	CSO						•
	CSO at Offset #1						•
	CSO at Offset #2						•
	CSO at Offset #3						•
	CSO at Offset #4						•
	CTB Ref.						•
C/N	CTB						•
	C/N Ref.						•
	C/N						•
	C/N Ratio Channel Bandwidth						•
	C/No						•

System requirements

- Operating system: Windows XP Service Pack 2, Vista, 7 (32 bit)
- Administrator rights (for installation)
- PC with Pentium processor (min. 600 MHz)
- 512 Mbyte RAM
- 15 Mbyte free disk space
- 640 × 480 pixel minimum graphics resolution (recommended 1280 × 1024 pixel), 256 colors
- Ethernet connection or GPIB interface for remote control of multiple R&S®ETL TV analyzers
- Serial interface or GPIB interface for remote control of the R&S®EFA
- USB interface for remote control of the R&S®FSH3-TV

Ordering information

Designation	Type	Order No.
Automatic TV Channel Scan Software		
For the R&S®ETL	R&S®TVSCAN	2115.1660.02
For the R&S®FSH3-TV	R&S®TVSCAN	2115.1660.03
For the R&S®EFA	R&S®TVSCAN	2115.1660.04

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To find your nearest Rohde&Schwarz representative, visit
www.sales.rohde-schwarz.com

Service you can rely on

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

About Rohde & Schwarz

Rohde & Schwarz is an independent group of companies specializing in electronics. It is a leading supplier of solutions in the fields of test and measurement, broadcasting, radiomonitoring and radiolocation, as well as secure communications. Established more than 75 years ago, Rohde & Schwarz has a global presence and a dedicated service network in over 70 countries. Company headquarters are in Munich, Germany.

Environmental commitment

- | Energy-efficient products
- | Continuous improvement in environmental sustainability
- | ISO 14001-certified environmental management system

Certified Quality System
ISO 9001

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