

## Spectrum Analyzer R&amp;S®FSL

## Analyzing TV signals in cable networks

**A new application software option adds measurements on analog and digital TV signals in cable networks to the application range of the Spectrum Analyzer R&S®FSL. Using this option, service technicians can perform complete measurements by pressing a single button; it also offers various setting capabilities for laboratory use.**

## Measurements on analog and digital TV signals

Equipped with the new Cable TV Measurements R&S®FSL-K20 option, the R&S®FSL (FIGs 1 and 2) combines the advantages of a full-featured spectrum analyzer with those of a TV analyzer. It is extremely versatile – regardless of whether you use it for regular maintenance of cable networks, development of TV components or servicing. In the lab, flexible setting capabilities are important whereas during work in the cable duct, performing the necessary measurements quickly and easily, ideally at the press of a button, is what counts.

The special thing about measurements in cable networks is that usually you have to repeat the same measurements in many channels – also on different measurement points such as amplifiers

or building entrance facilities. For any measurement, the R&S®FSL-K20 option offers the appropriate presettings that are based on a channel table. The typical procedure when performing a measurement on a cable, for example, is to select the channel table, set the channel number, and you're done! It doesn't matter whether you have a mix of analog and digital channels – the R&S®FSL-K20 option masters all typical measurements in all important TV standards, including CSO and CTB for analog requirements as well as MER, constellation and APD for digital requirements (FIGs 3 to 7). Most measurements can even be performed in the In-Service mode, i.e. without individual channels being switched off by the network operator. Users in the lab can of course manually adapt the instrument default settings to meet their specific measurement requirements.

Predefined or user-generated channel tables minimize the operating steps for measurements in cable networks to a minimum by providing typical channel spacings. Once tables have been set up, they can be copied and distributed to all field technicians. By means of convenient dialogs, you can easily adapt the supplied channel tables to the local transmitter assignment.

The R&S®FSL is an indispensable tool: powerful, versatile and easy to handle.

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**FIG 1** The Spectrum Analyzer R&S®FSL: compact, easy to carry ...



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More information and data sheet at  
[www.rohde-schwarz.com](http://www.rohde-schwarz.com)  
 (search term: FSL)



FIG 2 ... and well protected for use in the field.

	Off-Service mode	In-Service mode
<b>Analog TV</b>		
Spectrum	✓	✓
Carriers: level and frequencies of vision and sound carriers	✓	
Carrier to noise ratio (C/N)	✓	✓
Composite second (order) beat (CSO)	✓	✓
Composite triple beat (CTB)	✓	✓
Video scope	✓	
Vision modulation	✓	
Hum	✓	
<b>Digital TV</b>		
Spectrum	✓	✓
Modulation errors: EVM, MER, phase jitter, carrier frequency offset, symbol rate offset, carrier suppression, quadrature offset, amplitude imbalance	✓	
Constellation	✓	
Echo pattern: channel impulse response	✓	
Channel power	✓	✓
Amplitude probability distribution (APD)	✓	✓
Cumulative complementary distribution function (CCDF)	✓	✓
<b>TV analyzer</b>		
Tilt	✓	✓

FIG 3 The Cable TV Measurements R&S®FSL-K20 option handles all typical measurements on analog and digital TV signals.

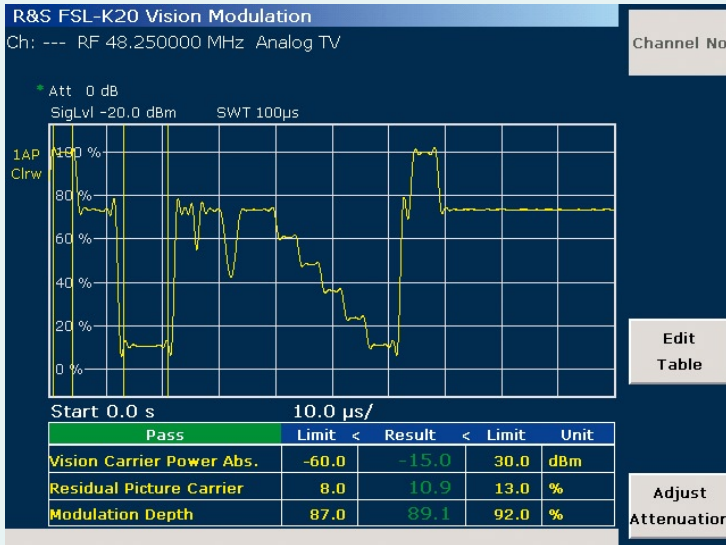


FIG 4 Vision modulation measurement of an analog TV signal.

FIG 6 Result table with modulation errors of a digital TV signal.

Pass	Limit	<	Result	<	Limit	Unit
MER (rms)	24.0		40.6		-----	dB
MER (peak)	10.0		29.5		-----	dB
EVM (rms)	-----		0.61		4.40	%
EVM (peak)	-----		2.20		22.00	%
Carrier Freq Offset	-30000.0		-27.5		30000.0	Hz
Symbol Rate Offset	-10000.0		-0.3		10000.0	Symb/s

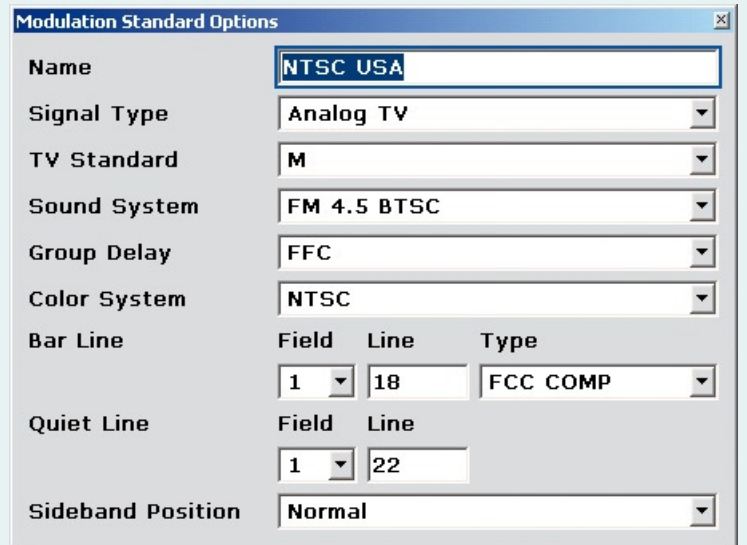


FIG 5 Setting menu for analog TV signals.

FIG 7 The R&S®FSL-K20 option supports all important TV standards.

Analog TV	Digital TV
B / G, D / K, I, K1, L, M, N	QAM J.83/A (DVB-C Europe) QAM J.83/B (US Cable) QAM J.83/C (Japanese Cable)
PAL, NTSC, SECAM	16QAM to 1024QAM Symbol rates 0.1 to 7.15 Msymbol/s