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VSA-RF100

RF QAM and MPEG video probe for the VSA Monitor video service assurance system

Deployed in hub sites and headends, the VSA-RF100 probe provides RF forward-path analysis including analog video, MPEG, and DOCSIS. It integrates both RF and MPEG analysis to quickly identify and troubleshoot customer-affecting issues down to the individual program level.
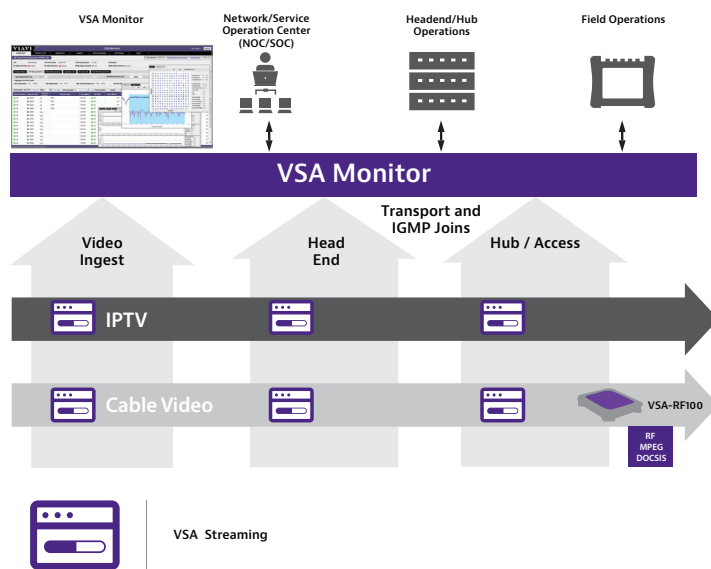
Benefits

· Proactively identify and resolve problems having the greatest impact on customer experience in a fraction of the time

· Increase network availability using notification of forward-path degradation before service is disrupted

· Intelligently filter alarms based on severity

Features

· Deep MER capabilities > 44 dB

· Fast scan times — RF power and MER on a 120 channel lineup in less than a minute

· Live, in-depth troubleshooting

· Digital quality index (DQI) to identify intermittent problems

· MPEG stream error monitoring (TR 101-290 priority 1, 2, and 3)

· Content scrambling/encryption detection

· Simple network management protocol (SNMP) trap forwarding

· Easily accesses performance history

· Plug-and-play compatible with the ISS-5116 switch family — up to 128 ports with a single VSA-RF100

Applications

· VSA Monitor RF probe for CATV video and downstream DOCSIS assurance

· TR 101-290 MPEG monitoring

· Remote troubleshooting via Web-based access to live and historical measurements

The VSA-RF100 probe provides remote monitoring and analysis and troubleshooting to the field, headend, and network operations center (NOC) without the delay and expense of deploying a specialist to the physical hub location.

Simply viewing the QAM with a spectrum analyzer, or measuring and monitoring MER and BER on QAM carriers, provides limited insight into MPEG video transport streams. It is critical for cable network operators to have system-wide visibility into the underlying content, including the MPEG protocol layer, to ensure the quality of programming content.

Specifications

Frequency	
Range	0.5 to 1,800 MHz
Accuracy	1 ppm
Level	
Max input level	65 dBmV
Min detectable level	−58 dBmV (320 kHz RBW)
Amplitude accuracy	· ±0.75 dB at 25°C, 2.0/T (typical CW) · ±2 dB over temp range (spectrum analyzer)
Return loss	14 dB typical (12 dB worst case)
Analog Channel Measurement	
Video and audio levels (dual)	
Standards	NTSC and PAL
Accuracy	±2 dB
Downstream Digital Channel Analysis	
QAM modulation(s)	Q64, Q128, Q256, annex A, B, and C, OFDM, QPSK
Regional demods	DVB-C
MER scan	10 channels/sec
MER	· Range > 44 dB (on a fully loaded plant) · Accuracy ±2 dB (for signals less than 42 MER)
Symbol rate	· Annex A: 5.007 – 6.980 Msyb/sec · Annex B · Annex C
Symbol rate	· Unreferenced PID error PSIP and ATSC error · SI error

Measurements		
Analog Channels	VSA-RF100	
Digital Channels	Symbol offset	
	BER down to 1E-9 (pre and post FEC)	
	Ingress under carrier	
	Group delay	
	DQI (digital quality index)	
	Digital hum	
	Level	
	Symbol rate	
	Carrier frequency	
	Modulation	
	Constellation	
Video	Change in program count	
	Bit-rate thresholds for null PIDs, programs, video PIDs, primary/secondary audio PID	
	CC errors/second (as opposed to just CC errors)	
	Scrambling detection	
Test Point	Maximum analog delta	
	Maximum digital delta	
	Maximum analog to digital delta	
	Adjacent channel delta	

Specifications

Environmental

Temp range	−4° to 122°F (−20° to 50°C)
Storage temp	−20° to 149°F (−20° to 65°C)

Physical

Dimensions w/o rack kit	7 x 29.85 x 35.56 cm (2.75 x 11.75 x 14 in)
Dimensions w/rack kit (2U)	8.8 x 48.3 x 35.6 cm (19 x 3.5 x 14 in)
Weight w/o rack kit	Weight w/rack kit and power supply
Weight w/rack kit and power supply	7.26 kg (16.0 lb) est.

Inputs/Outputs

RF – 1 downstream	F connector/ 75 Ohms
USB host	For IP configuration/setup
Ethernet (RJ45)	10/100 Base T IP and UDP addressable

Power

Polarized plug to VSA-RF100	110/220 VAC
Typical power	35 W
Maximum current (100/240V)	1 A

MPEG TR101-290 Measurements (Option)

Priority 1	· Synch loss error · Synch byte error · PAT error · Continuity count error PMT error · Referenced PID error
Priority 2	· Transport error · CRC error · PCR repetition error PCR discontinuity error PTS error · CAT error
Priority 3	· Unreferenced PID error PSIP and ATSC error · SI error

Ordering Information

Description	Part Number
VSA-RF100 stream analyzer probe	VSA-RF100
VSA-RF100 stream analyzer probe extended frequency 1.8 GHz	VSA-RF100-1800EXT
MPEG TS analyzer	VSA-RF100 MPEG
Package with VSA-RF100 probe and MPEG TS	VSA-RF100-MPEG PKG
Scrambling and encryption detection	VSA-RF100-SD
Base package supporting all VSA, RSAM and RF100 products, includes support for 5 VSA-RF100 and 5 VSA	VSA-MONITOR-BASE
Adds 10 VSA-RF100 to an existing VSA Monitor system	VSA-MONITOR-10-RF100
Adds 50 VSA-RF100 to an existing VSA Monitor system	VSA-MONITOR-50-RF100
Software update and support	VSA-RF100-SUS

Optional Accessories

AC power supply with choice of country-specific adapter plug	
VSA-RF100 interface for ISS-5116A selector switch	VSA-RF100-5116A-INTFC
Rack mount kit	RACK-KIT-VSA-RF100/VSE
16x1 RF input selector switch	1010-00-0906 (ISS-5116A)
Master switch configuration cable	VSA-RF100-MSTR-SWTCH-CBL

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