



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.

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.

Benefits

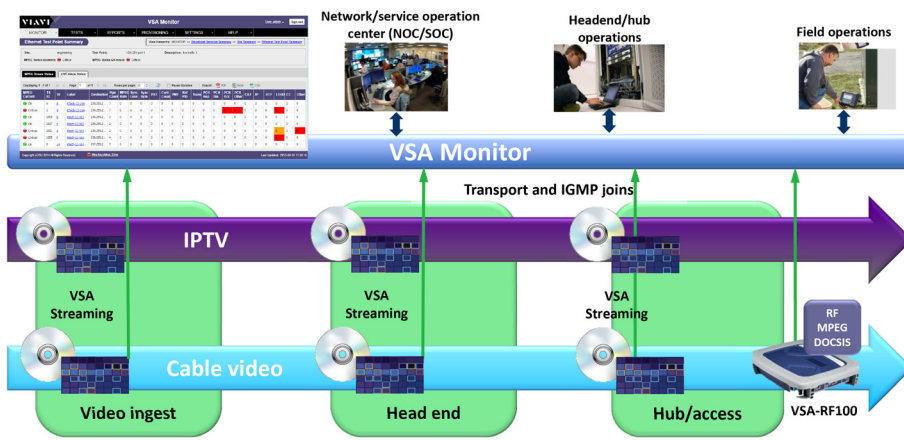
- Proactively identify and resolve problems having the greatest impact on customer experience in a fraction of the time
- Increase network availability using notification of forward-path degradation before service is disrupted
- Intelligently filter alarms based on severity

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



Linear video end-to-end visibility with VSA

Specifications

Frequency	
Range	0.5 to 1,100 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
Regional demods	DVB-C
MER scan	10 channels/sec
MER	Range to 44 dB (on a fully loaded plant) Resolution 0.1 dB Accuracy ±2 dB (for signals less than 42 MER)
Symbol rate	Annex A: 5.007 – 6.980 Msyb/sec Annex B Annex C

Measurements	
Analog Channels	Delta audio to video levels
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	4.89 kg (10.8 lb)
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
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
Included Accessories	
AC power supply with choice of country-specific adapter plug	
Quick-start guide	
Optional Accessories	
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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