SQA Signal Quality Analyzer

...designed for perfect signals

BETTER MADE IN GERMANY

Broadband remote Spectrum Analyzer

The SQA series represents broadband remote RF signal monitoring solutions enabling continues signal monitoring but also faults and performance to be identified quickly. The SQA´s feature broadband remote Spectrum Analyzer units (5MHz – 3GHz) available with 1, 16, 32 or 64 inputs for monitoring of max. 64 RF signals.

The units are available in a compact size of 1RU/19" (1 or 16 inputs) or 3RU/19" (32 or 64 Inputs) rack mount chassis each populated with a high quality RF-switch as well as 1:1 redundant dual power supply. All RF connectors are either 50Ohm SMA(f) or 75Ohm F(f) type (self-terminated).

The multi-input RF switches have an isolation between adjacent input ports of 80dB ensuring that the integrity of measurements is not compromised and faithfully recorded. The integrated Spectrum Analyzer board allows measurement and monitoring of the selected RF signal levels and channel frequency.

The "SQA´s" consist of three elements:
- The internal broadband RF Analyzer board
- A high quality 16-way, 32-way or 64-way RF switch (SQA-16, SQA-32 & SQA-64), 50OHm SMA(f) or 75OHm F(f)
- The corresponding carrier-monitoring-software (CMS)

Access, configuration, measurement and monitoring can be done via the Carrier-Monitoring-Software (CMS). The CMS continuously scans all input ports on sequence and measures the specified parameters for every channel on the selected input port while a single measurement mode allows to select individual an RF port and a specific channel on that port can be measured as required.

The software also features corrections for the connecting cable losses and slope, test point attenuation, alarm functions, measurement history, record/replay, print function and more.

The CMS RF measurement data includes the switch reference, switch port, actual channel center frequency, channel level, RF power and bandwidth.

The SQA is a scalable sequential analyzer and monitoring tool, perfectly suited for applications in Satellite Earth Stations, Teleports, DSNG´s, Broadcast- and CATV/IPTV headend operations wherever accurate monitoring is required. It features optimal performance and significantly reduces space and costs for remote monitoring applications.

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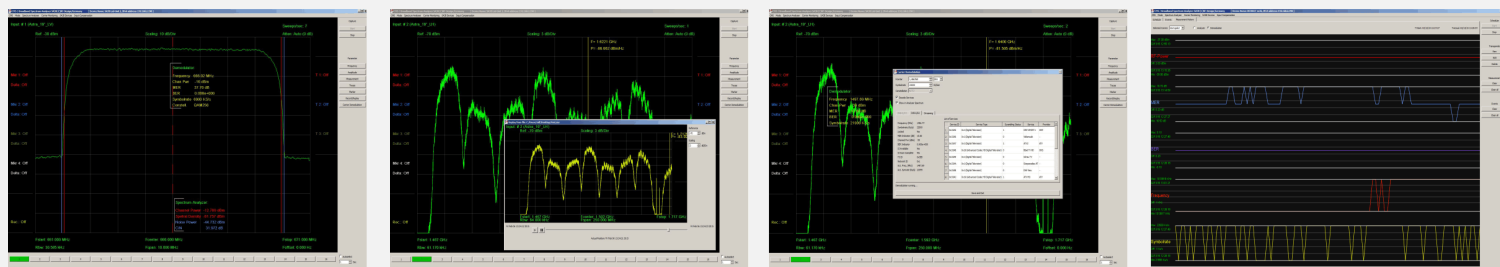
FEATURES & BENEFITS

- Space saving 1RU/19" or 3RU/19" rack mount design
- Superior sequential analyzer & monitoring arrangement
- Perfect for accurate and continuous monitoring
- Allows quick performance and signal fault identification
- Ideally suited for remote monitoring applications
- Broadband frequency-range 5MHz – 3GHz covering satellite, cable and terrestrial carriers
- Available with 50Ohm SMA(f) or 75Ohm F(f) connectors
- SQA units available with 1, 16, 32 or 64 input ports for monitoring of up to 64 signals with only one unit
- Supports 10MHz reference external input

- High quality internal 16:1, 32:1 or 64:1 RF-Switch with superior RF performance, e.g. at Isolation RF-Power level 0dBm to -80dBm
- Cable loss equalization via CMS Software
- Supports long-time analysis
- Parameter measurement with Threshold and Alarm Functions
- Supports 1:1 redundant dual power supply (hot-swappable)
- Easy and flexible access, configuration, measurement and monitoring via corresponding CMS Software (see detailed CMS features & specifications on last page)
- Excellent performance, reliability and stability

RF PARAMETER MEASUREMENT

- Measurement of RF-Power, C/N & Bandwidth
- Actual channel center frequency & channel level
- Supports Carrier Monitoring function
- Features Scheduler mode
- Snapshot: N° of IQ time samples approx. 32 million
- Linear & Log Power/Bin (8192 Samples, 255 averages)
- Peak hold on the browser interface
- Raw IQ samples (decimated 2 to 100.000 in steps of 2)
- Selectable Spectral Inversion

- Programmatic measurement
- Spectrum mode & Time domain mode
- Easy access, configuration & monitoring via CMS-SW
- SNMP status interface
- FFT sizes:
  - 128 (Flattop), 256 (Hanning),
  - 512 (Hamming), 1024 (Uniform),
  - 2048/4096/8192 (Blackm.-Harris)

TECHNICAL SPECIFICATIONS

Physical, Power supply & Control Specs

Dimensions:	1RU/19" (SQA, SQA-16) / 3RU/19" (SQA-32, SQA-64)
Power Supply:	85 – 230VAC, 50/60Hz, 1:1 redundant (hot-swappable)
Power Consumption:	<10W (SQA-16)
Control Interface:	RJ45 100Mbit Ethernet-Interface, via CMS (Control Monitoring Software) only

rf Design

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Broadband RF Input Specs. (Internal RF Switch)

Frequency Range:	5MHz – 3GHz
RF Inputs:	1 (SQA), 16 (SQA-16), 32 (SQA-32), 64 (SQA-64)
Input Power Level:	-110 to +5dBm
RF Connectors:	50Ohm SMA(f) or 75Ohm F(f)
Noise Floor:	-150dBm/Hz typ. (@ min. attenuation) / -130dBm/Hz typ. (@max. attenuation)
Isolation:	80dB
Phase Noise:	80dBc/Hz @ 1kHz offset / 95dBc/Hz @ 100 kHz offset / -125dBc/Hz @ 1MHz offset
Max. Safe Input:	+10dBm

RF Measurement (Spectrum Analyzer)

Amplitude Sccuracy:	±0.5dB (@ 25°C), ±1dB (0- 50°C)
Frequency Accuracy:	±2,6ppm (internal), as per external reference
Frequency Resolution:	1Hz
Resolution Bandwidth:	1Hz –15MHz
Frequency Response:	< ±1,5dB
Spurious:	
▶ **DC Offset:**	< -55dBc typ.
▶ **Images:**	< -55dBc typ.
▶ **Aliasing:**	< -55dBc typ.
▶ **Analysis Bandwidth:**	1kHz – 200MHz
▶ **Averaging up to:**	255 cycles

Measurement Speed

500MHz Span, 1MHz RBW:	0,5 seconds
200MHz Span, 30kHz RBW:	0,5 seconds
3.5MHz Span, 8kHz RBW:	0,5 seconds
Maximum Span:	5MHz – 3GHz

Additional Specs

10MHz Reference:	10MHz, -5dBm to +13dBm, external reference port, rear side 50Ohm BNC(f)
Configuration / Monitoring:	Via CMS Carrier Monitoring Software

Environmental Conditions

Operating temperature:	0°C to 45°C
Storage temperature:	-10°C to 60°C
Humidity:	90%, non-condensing
RoHS:	Compliant

ORDER INFORMATION

Type	Type-No.:	Short Description	I/O connectors
SQA	9000996	Signal Quality Analyzer, Broadband 5MHz – 3GHz, 1 Input, 1RU/19" rack mount	50Ohm SMA(f)
SQA-16	9000651	Signal Quality Analyzer, Broadband 5MHz – 3GHz, 16 Inputs, 1RU/19" rack mount	50Ohm SMA(f)
SQA-16-75	9000670	Signal Quality Analyzer, Broadband 5MHz – 3GHz, 16 Inputs, 1RU/19" rack mount	75Ohm F(f)
SQA-32	9000688	Signal Quality Analyzer, Broadband 5MHz – 3GHz, 32 Inputs, 3RU/19" rack mount	50Ohm SMA(f)
SQA-32-75	9000689	Signal Quality Analyzer, Broadband 5MHz – 3GHz, 32 Inputs, 3RU/19" rack mount	75Ohm F(f)
SQA-64	9000690	Signal Quality Analyzer, Broadband 5MHz – 3GHz, 64 Inputs, 3RU/19" rack mount	50Ohm SMA(f)
SQA-64-75	9000691	Signal Quality Analyzer, Broadband 5MHz – 3GHz, 64 Inputs, 3RU/19" rack mount	75Ohm F(f)
CMS-LK-4.0	9000997	Carrier-Monitoring-Software License-Key (Version 4.0) for SQA unit (needed for each unit)	

CMS - Carrier Monitoring Software

Access, configuration, measurement and monitoring of the individual SQA unit can be done via the Carrier-Monitoring-Software (CMS). The CMS continuously scans all input ports on sequence and measures the specified parameters for every channel on that input port while a single measurement mode allows to select an individual RF port and a specific channel on that port can be measured as required. The software has various features such as corrections for the connecting cable losses and slope, test point attenuation, alarm functions, measurement history, record/replay, print function and more.

The RF measurement data includes the switch reference, switch port, actual channel center frequency, channel level, RF power and bandwidth.

It is perfectly suited for maintaining signal quality and identifying interferences including error messaging. Advanced features include trace recording, full screen mode, scheduler mode, bandwidth and channel-power monitoring, print mode, record/replay function and a history mode that is providing a graphical display and recording of channel power and C/N.
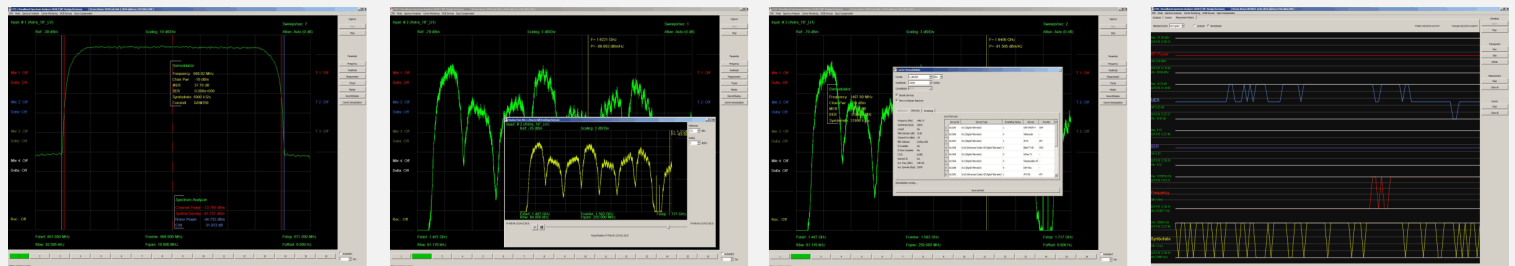
FEATURES & BENEFITS

Spectrum Analyzer Mode

- Broadband, 5MHz...3GHz monitoring range
- Adjustable span, RBW, input attenuator, FFT-window
- Max./Min/Hold function, 3 traces
- 4 absolute markers with corresponding delta markers
- Channel power and C/N measurement

- Input selector for 16, 32 or 64 RF-signals/ports (SQA-16, SQA-32, SQA-64)
- Manual and automatic switching between ports
- Bandwidth and Channel-power monitoring/displaying

Carrier Monitoring Mode

- Scheduler based automatic carrier monitoring
- Definable limits for channel power and C/N
- 24-hour history recording and storage for any defined transponder

- Event handling featuring error messaging to up to 3 predefined e-mail addresses

Special Features

- LNB polarization decoupling measurement
- Correction for connecting cable losses and slope
- Test point attenuation
- Record/Replay function

- Trace record & full-screen mode function
- Configuration file load and safe function
- Print function (parameters & spectrum display)

Access criteria / System conditions

- CMS communicating with SQA units via Ethernet
- Easy remote access, monitoring, recording and printing

- Operates on MS-Windows (XP, Vista, 7; 10)