QoS-1000RT
Real-Time RF Layer Monitoring Receiver

The QoS-1000RT is an extremely cost effective solution for Quality of Service (QoS) monitoring of any transmitter RF output.

Hitachi-Comark provides high performance and award winning television transmitters that are backed by more than 45 years of leadership in broadcast technologies.

The QoS-1000RT allows engineers to cost-effectively monitor the ATSC system performance of any DTV transmitter or repeater site. The QoS-1000RT utilizes a 1RU chassis and accepts an RF sample signal; the unit is powered via standard 110VAC, 60Hz line voltage. It comes preloaded for use with ATSC 1.0 signals and a simple software upgrade is available for ATSC 3.0 monitoring. A portable version of the QoS-1000RT is also available for engineers on the go.

Using high precision demodulation and signal processing, the QoS-1000RT analyzes the RF signal and provides Real-Time (<1S refresh rate) user metrics including Symbol and Constellation diagrams as well as RF spectrum, RF shoulders, MER/SNR, and frequency response / group delay. The QoS-1000RT includes an event and alarm log with user defined parameters and thresholds.

QoS-1000RT has a built-in web server that hosts user-friendly Graphical User Interface (GUI) providing a window into the heart of the RF signal. Local or remote interface to the unit is via a built-in Ethernet port.

**KEY FEATURES**

- User-friendly GUI displays:
  - RF Spectrum / FCC Mask
  - Constellation and Eye diagrams
  - Frequency resp. / Group delay
  - IMD & SNR versus time
- Simple to use; cost effective alternative to test equipment
- -20dBm nominal input level, via type N female connector
- Ethernet local / remote monitoring
- Real-time (<1S) screen refresh
- ATSC 1.0; upgradeable for 3.0
- VHF/UHF compatible, with 10Hz tuning steps
- > 50MHz analyzed bandwidth
SPECIFICATIONS

Supported Standards: (1) ATSC 1.0, ATSC 3.0 (optional)
Main signal input "RF input": (2) 50Ω, N-type
Connector: +5 to -70dBm
Level: 50 to 1000 MHz
Frequency range: 10Hz
Frequency tuning step: ≥ 50MHz
Analysis bandwidth:

Reference frequency:
External: 1PPS: LVTT, BNC
10MHz: 50Ω, BNC, 1VP-p, sine
Internal: Integrated GPS/GLONASS receiver (3) antenna connector F-type, 75Ω

Control and Monitor Ports:
Ethernet: RJ45, 10/100/1000 Mbps
WiFi (4): WLAN 802.11n
Relay Control (x2): Dry Contacts, DB9F
Power Supply: 110-250V, 50/60Hz AC (for 1RU)
Operating temperature: 0 to 50 °C

Form factor:
1RU stand-alone unit: 19" x 16" x 1.75"
Portable unit: 13.8" x 10.2" x 2.6"

Software interfaces:
- WEB GUI
- SNMP agent
- Email

General Parameters:
- MER/SNR;
- Signal PAR;
- Bandwidth;
- Frequency and Sampling rate shifts;
- Shoulder attenuation;
- Emission/Spectral mask compliance;
- Amplitude and Phase response;
- Group Delay across bandwidth

ATSC 3.0 Standard Specific:
- MER for Bootstrap, L1 and selected PLP
- ATSC3.0 frame structure;
- Bootstrap, L1D and L1B signaling info;
- LDPC BER for L1 and selected PLP

Default set of alarms:
- Input signal level;
- Spectrum shoulder levels/mask;
- Signal MER;
- SFN Echo profile variation;
- Frequency Shift

Application-specific alarm events: (3)
User-defined set of parameters and their thresholds

Parameter update rate:
- Spectrum of the main lobe and in-band interference;
- ATSC 3.0 Bootstrap, L1 constellation
- ATSC 3.0 Selected PLP constellation;
- Channel Amplitude/Phase and Impulse responses;
- CCDF;
- SFN drift;
- Constellation Diagram for ATSC 1.0;
- Eye Diagram for ATSC 1.0;
- Echo profile;
- Decoded Bootstrap and L1 info;
- Main parameters internal log;
- Report for remote downloading;
- Event and Alarm log

Available plots and data logs:

QoS-1000RTM ~ Portable Unit