

# EDGEPROBE ADVANCED DVB-T/T2



## Head-End, SFN TX & SFN Reception DTTV Monitoring: RF, ASI, IP

THE IDEAL TOOL FOR ACCURATE & COST-EFFECTIVE MONITORING OF THE QUALITY ACTUALLY DELIVERED TO ALL POINTS OF DVB-T AND DVB-T2 NETWORKS.



Combined with a Network Monitoring System or not, EdgeProbe Advanced provides a powerful network alert & diagnosis tool allowing DTV network operators to monitor global trends and anticipate potential failures. EdgeProbe Advanced provides monitoring of the signal at different levels:

- RF transmission: measures key RF signal parameters (Level, MER, SNR, BER), the Frequency Offset, the SFN Drift and indicates the modulation parameters as well as the Channel Impulse Response (CIR).
- T2-MI: checks the distribution link at L1 pre & post signaling level.
- Transport Stream: checks the ETSI TR 101 290 (Priority 1, 2 & 3) conformance and provides optional Quality of Service indicators (Service Availability, Service Degradation).

### APPLICATIONS

- 24/7 Monitoring and Maintenance of both Head-End and TX sites (SFN/MFN, RF/Baseband)
- Generation of Service Availability reports for Service Level Agreements
- Rebroadcasting receiver: RF to ASI or IP
- Live transmission recorder

### Accurate DVB-T/T2 RF signal quality monitor

Signal Level, MER, SNR, BER

Modulation parameters, L1 signaling in DVB-T2, TPS in DVB-T

RF Spectrum & Constellation display

DVB-T, DVB-T2 (1.1.1, 1.2.1, 1.3.1) & T2 Lite support

DVB-T2 Single/Multi-PLP reception support

### TS monitor and forward over ASI/IP interfaces

Monitor TS & T2-MI baseband distribution links at Head-End output and TX site input through the ASI and IP inputs (up to 4 in 1RU)

Forward the analyzed TS/T2-MI over ASI or IP output

VLAN support on the IP Data link

### Complete T2-MI monitoring

Single/Multi-PLP support

ETSI TR 101 290 T2-MI packet

T2 L1 pre/post signaling

Network Delay

PLP extraction and TS PLP analysis

### Internal GNSS receiver (Hardware option)

Generates an internal 1PPS reference signal for SFN synchronization measurements (SFN Drift, Frequency Offset)

GPS & GLONASS support

### User-friendly interface

Easy-to-use HTML5 interface compatible with most recent browsers (Google Chrome, Mozilla Firefox...)

15 minutes only for a first configuration

### BENEFITS

- **Standalone, easy to use and configure**, fast deployment, SNMP compatible
- Increase customer satisfaction by **detecting & preventing DTV network degradations** before your customers do
- **Reduce TX sites maintenance cost** by anticipating and identifying issues
- Plan and improve the network configuration by identifying global trends
- Remotely accessible, compatible with **low bandwidth control networks** (GPRS/3G)
- Low power consumption

### Complete SFN synchronisation monitor

**Transmission site SFN monitor: quick identification of which TX site is causing SFN issues!**

- RF Frame Delay & Drift
- Carrier Frequency Offset & Drift
- Before modulator: Network Delay of TS (MIP packet) or T2-MI streams

**SFN overlapping Reception Area monitor:** Channel Impulse Response (Echo Delay and Level alarming thresholds) – with **TestTree's Unique Echo Pattern** monitor

### Complete TS monitoring

ETSI TR 101 290 Priority 1, 2, 3

QoS indicators (optional): Service Availability Error & Service Degradation Error

Verify Regionalization: Service Plan view, PID/Service presence, Scrambling

Service & components bitrates

### 32 GB of internal storage (up to 4 in 1RU)

Alarm logs up to 6 months

RF parameter trends up to 6 months

TS/T2-MI recording (trigger: manual or automatic by SNMP)

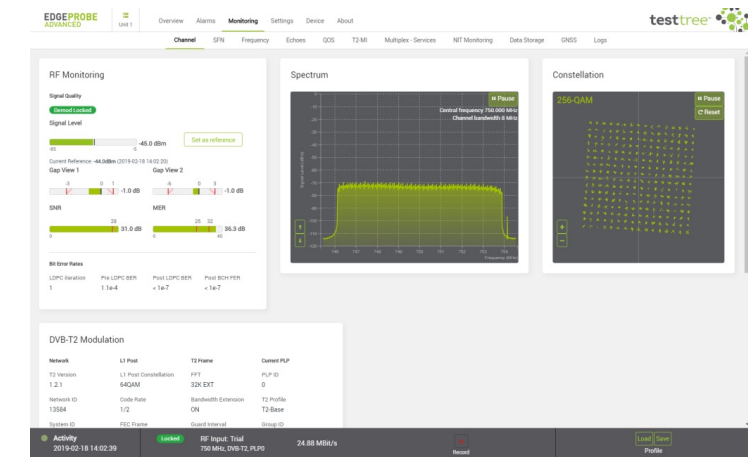
### Dual Power Supply (Hardware option)

Additional Power Supply can be installed on the equipment in order to ensure the power redundancy



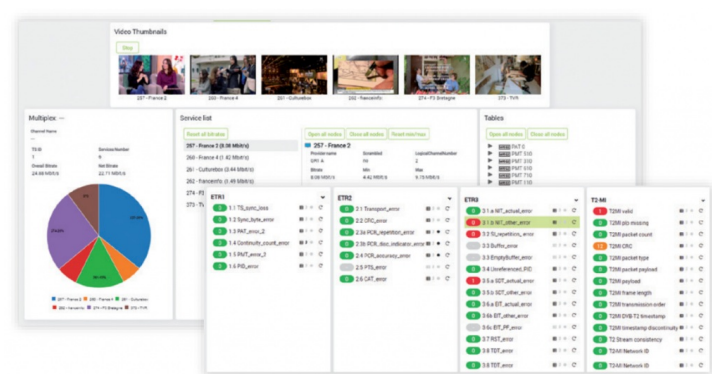
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## INTERFACES

Control	Up to 2x Gigabit Ethernet for: HTTP Web GUI (management), SNMP v2/v2c/INFORM (alarm traps and OID command SET/GET), FTP (firmware update, log file download, profile update)
RF	Up to 4x RF inputs (N-type female – 50 $\Omega$ )
Standards	DVB-T – ETSI EN 300 744 DVB-T2 & T2 Lite – ETSI EN 302 755 v1.3.1, ETSI TS 102 831 T2-MI – ETSI TS 102 773
Frequency range	40 to 1000 MHz
Sensitivity	-80 to -5 dBm; RF lock down to -80dBm
Channel bandwidth	1, 7, 5, 6, 7, 8 MHz
TS/T2-MI	Up to 4x ASI in/out (BNC-type female – 75 $\Omega$ )
TS/T2-MI	Up to 4x Gigabit Ethernet for Data in/out (VLAN support)
GNSS & Time Reference	1x GNSS antenna input (SMA-type – 50 $\Omega$ ) (GPS/GLONASS) HW option, 3.3V antenna power up 1x 1PPS input (BNC-type female – 50 $\Omega$ ) 1x 10MHz input (BNC-type female – 50 $\Omega$ )
Web UI	HTML5 User Interface, compatible with up-to-date browsers (Google Chrome, Mozilla Firefox...)



## PHYSICAL

Height (1 or 2 monitoring units) : 45 mm / 1.7 in, Width: 440 mm / 17.3 in, Depth: 145 mm / 5.7 in
Height (4 monitoring units) : 45 mm / 1.7 in, Width: 440 mm / 17.3 in, Depth: 300 mm / 11.8 in
Format: 1 RU, width 19", Power supply: 100-240 VAC +/-10%
Power consumption: 10 W per active monitoring unit
Redundant Power Supply (HW option)

## ENVIRONMENT

Operating temperature	-20 to 55 °C / -4 to 131 °F
Storage temperature	-20 to 70 °C / -4 to 158 °F
Humidity	0 to 95%, non condensing

MONITORING FEATURES

RF Monitor	Power – Signal Level, SNR, MER, BER
Demodulation status	Lock / Unlock
Signal Level	Measure from -90 to -5 dBm ±1 dBm, typically ±0.5 dBm, resolution 0.2 dBm Unit: dBm or dBμV
Constellation, Spectrum display	.
MER	0 to 40 dB (0 to 36 dB: ±1 dB, 36 to 40 dB: ±2 dB)
SNR	0 to 40 dB (±1 dB)
BER (DVB-T)	Pre/Post-Viterbi, Post-RS
BER (DVB-T2)	Pre/Post-LDPC, Post-BCH
Modulation parameters	L1 signaling in DVB-T2, TPS in DVB-T
SFN Monitor at RX site (SFN overlapping area)	Channel Impulse Response (CIR) monitoring in the SFN overlapping reception area: Echoes Delay and Power Level alarming masks With <b>TestTree's unique Echo Pattern</b> monitor: more reliable echo in error identification even if the main (strongest) echo suffers changes!
SFN Monitor at TX site	Quick identification of which TX site is causing SFN issues ! Time Synchronization: RF Frame Drift Frequency Synchronization: Carrier Frequency Offset (±1 Hz, resolution 0.1 Hz)
Distribution Network Delay	Delay for the TS (with MIP packet) / T2-MI stream between the Broadcast Gateway and the Remote Transmission Site. Measured before the modulator.
IP Link Monitor	UDP/RTP supported Network Jitter, RTP packet errors, FEC
T2-MI Monitor	Single/Multi-PLP support ETSI TR 101 290 T2-MI packet, L1 pre/post signaling T2-MI Network Delay PLP extraction and TS PLP analysis (ETR 101 290)
OneBeam/Single Illumination Monitor	Specific PID from the DTH stream used to recover the T2-MI distribution on TX site
ETSI TR 101 290 Monitor	MPEG-2 TS Monitor, ETSI TR 101 290 Priority 1, 2, 3 TS (with MIP packet) Network Delay
QoS	SAE (Service Availability Error), SDE (Service Degradation Error) based on ETR 101 290
Service Plan	Verify regional services, Service & PID bitrates, Scrambling, Service & PID presence Thumbnails for unencrypted video services (refresh rate might vary upon encoding) PSI/SI tables decoding
Round-Robin	Monitor sequentially several channels or PLPs, in a Round-Robin mode within one single Monitoring Unit. Monitoring context (measurement alarms) are kept between successive rounds.
Internal Storage	Up to 4x 32 GB: event logs up to 6 months, trends up to 6 months, analyzed TS/T2-MI recording

ORDERING\_CODES

EdgeProbe Advanced DVB-T/T2	DVB-T/T2 Advanced Monitoring Probe
<i>options</i>	<b>SW PACK ACCESS</b> : RF Monitoring, Round-Robin, ETSI TR 101 290 Monitoring (Priorities 1, 2, 3) <b>SW PACK PERFORMANCE</b> : RF Monitoring, Round-Robin, ETSI TR 101 290 Monitoring (Priorities 1, 2, 3), Service Plan & Multiplex View <b>SW PACK ULTIMATE</b> : RF Monitoring, Round-Robin, ETSI TR 101 290 Monitoring (Priorities 1, 2, 3), Service Plan & Multiplex View, IP Monitoring (littering, RTP FEC...), T2-MI Monitoring, OneBeam Monitoring <b>EPA3-In220VRedundant</b> : Add 1x redundant 220V AC input in the EPA3 chassis (hardware) <b>EPA3-GNSS</b> : Add GNSS support on the module (hardware)

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