

# 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 Ratio

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

Service & components bitrates

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

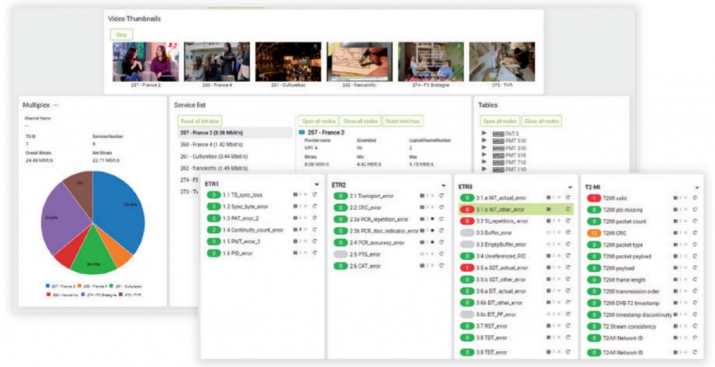
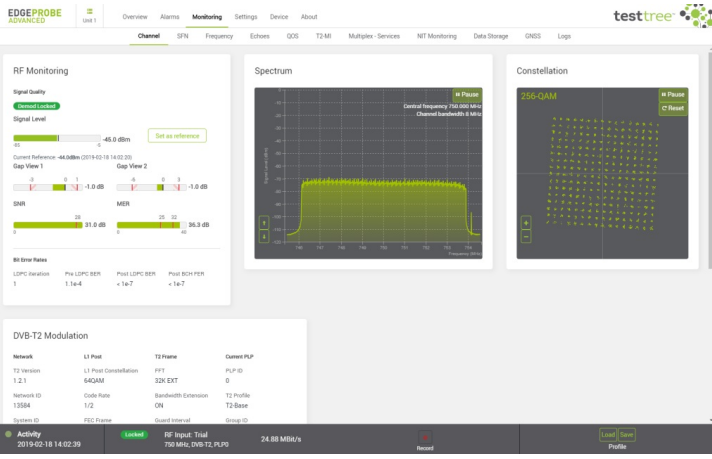
Alarm logs up to 6 months

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



## 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 Ω)
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 Ω)
TS/T2-MI	Up to 4x Gigabit Ethernet for Data in/out (VLAN support)
GNSS & Time Reference	1x GNSS antenna input (SMA-type – 50 Ω) (GPS/GLONASS) HW option, 3.3V antenna power up 1x 1PPS input (BNC-type female – 50 Ω) 1x 10MHz input (BNC-type female – 50 Ω)
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 $\pm$ 1 dBm, typically $\pm$ 0.5 dBm, resolution 0.2 dBm Unit: dBm or dB $\mu$ V
Constellation, Spectrum display	.
MER	0 to 40 dB (0 to 36 dB: $\pm$ 1 dB, 36 to 40 dB: $\pm$ 2 dB)
SNR	0 to 40 dB ( $\pm$ 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 ( $\pm$ 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

#### options

**SW PACK ACCESS** : RF Monitoring, Round-Robin, ETSI TR 101 290 Monitoring (Priorities 1, 2, 3)

**SW PACK PERFORMANCE** : RF Monitoring, Round-Robin, ETSI TR 101 290 Monitoring (Priorities 1, 2, 3), Service Plan & Multiplex View

**SW PACK ULTIMATE** : RF Monitoring, Round-Robin, ETSI TR 101 290 Monitoring (Priorities 1, 2, 3), Service Plan & Multiplex View, IP Monitoring (Jittering, RTP FEC...), T2-MI Monitoring, OneBeam Monitoring

**EPA3-In220VRedundant** : Add 1x redundant 220V AC input in the EPA3 chassis (hardware)

**EPA3-GNSS** : Add GNSS support on the module (hardware)

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