TEST & MONITORING
TestTree provides innovative and easy-to-use end-to-end Test and Monitoring solutions for Network operators, TV Content Providers, IPTV & OTT Platform Operators, Regulators, Chipset & TV/STB Manufacturers, R&D Labs, Automotive. TestTree is a proud member of the ENENSYS Technologies group. ENENSYS designs and manufactures innovative professional equipment and software enabling Efficient Video Delivery over Terrestrial (ATSC 3.0, DVB-T/T2, ISDB-T/Tb, HbbTV...), Satellite (DVB-S/S2/S2X) & Telecom Networks (4G/5G, IPTV, OTT).

TestTree culture is based on innovation. ENENSYS has a strong IPR portfolio, with more than 60 patents, all dedicated to the Video Delivery sector. Linked to this innovation work, TestTree is proud to be the first to introduce new test devices to support customers in their network improvements and deployments.

**About TestTree**

- **Digital TV & Radio Monitoring**
  - GlobalViewer
  - **IPTV & OTT Service Platforms**
    - High-density and scalable solution for QoS & QoE monitoring of hundreds of streams in parallel: ETR 101 290, audio levels, video freezes/black screen, live thumbnail mosaic view and service streaming.
  - StreamProbe IPTV & OTT
- **Digital TV Broadcast Networks**
  - Cost-effective and high quality monitoring probes for Head-End, Transmission and Reception sites – RF & SFN signal quality. Transport Stream QoS: ETR 101 290, DVB-T2-MI, OneBeam/Single Illumination (DVB-S/S2), BTS.
  - EdgeProbe Advanced
  - EdgeProbe Advanced module for High Density chassis
  - EdgeProbe RF & Nano
  - TRANSBOX confidence monitoring
- **ATSC 3.0 Broadcast Networks**
  - Reliable end-to-end SFN solution provided by ENENSYS TestTree.
  - EdgeProbe Advanced
- **Digital Radio Broadcast Networks**
  - Cost-effective and high quality monitoring probes: RF & SFN signal quality.
  - EdgeProbe Advanced

**TEST TOOLS FOR LAB & FIELD**

- **RF Capture/Playback & Generate**
  - 70 MHz – 6 GHz frequency range with down conversion for Ku/C band
  - RF-Catcher Starter Kit
  - Application Suite for RF-Catcher
  - ATSC 3.0 LabMod
  - RF-LiveSim
- **Analyze RF & Baseband**
  - Multi-standard (ATSC 3.0/1.0, DVB-T/T2, DVB-C/C2, DVB-S/S2, ISDB-T/Tb) professional measurement receivers and pocket-size analyzers, recorders and players; connected via USB to a Windows PC running the DiviSuite analysis software
  - ReFeree 3
  - DiviSuite
  - DiviSuite options: RF Scope, TS Analyzer, T2-MI Analyzer, Drive Test Coverage
  - Hardware products used with the DiviSuite
  - ReFeree II
  - DiviCatch RF Series
  - DiviDual SPI (LVDS or TTL)
  - DiviDual ETI
  - Pure software application using the DiviSuite
  - DiviSuite-IP

**Countries where TestTree equipment is deployed**

- 6000+ countries
- 90+ countries
- 500+ countries

**Serial Inventor**

TestTree culture is based on innovation. ENENSYS has a strong IPR portfolio, with more than 60 patents, all dedicated to the Video Delivery sector. Linked to this innovation work, TestTree is proud to be the first to introduce new test devices to support customers in their network improvements and deployments.

**Our Customers**

- R&D Labs
  - Chipset and Receivers manufacturers / Digital TV R&D centers / Broadcast equipment manufacturers / Network & Service Platform Operators / Automotive, Telecom, Defense
  - Factory testing
  - End of production equipment test and validation
  - Demos
  - Receivers Promotion, Trade Show...

**FM & Digital Radio & Info Traffic**

- Field testing & recording / R&D Lab investigation
  - Video Content Providers
    - Service processing & delivery monitoring
  - IPTV & OTT Service Platform & Broadcast Network Operators
    - System Design and Operational teams / Network Monitoring
    - Broadcast regulators
  - Field testing & recording / Network compliance monitoring
In a modern broadcast and broadband video delivery environment, video streams originate from a variety of sources.

Ensuring the availability and quality of both live and file-based content is a critical challenge for video content owners and distributors moving to Adaptive Bit Rate (ABR) and Over-The-Top (OTT) delivery models.

TestTree monitors the whole video delivery chain and thus optimizes the overall service quality and customer experience.
DIGITAL TV & RADIO MONITORING

GLOBALVIEWER
Centralized Service Availability & Network Quality views

IPTV & OTT SERVICE PLATFORMS
High-density and scalable solution for QoS & QoE monitoring of hundreds of streams in parallel: ETR 101 290, audio levels, video freeze/black screen, live thumbnail mosaic view and service streaming.
StreamProbe IPTV & OTT

DIGITAL TV BROADCAST NETWORKS
Cost-effective and high quality monitoring probes for Head-End, Transmission and Reception sites – RF & SFN signal quality, Transport Stream QoS: ETR 101 290, DVB-T2-MI, OneBeam/Single Illumination (DVB-SIS), BTS.
EdgeProbe Advanced

DIGITAL RADIO BROADCAST NETWORKS
Reliable end-to-end SFN solution provided by ENENSYS TestTree.

ATSC 3.0 BROADCAST NETWORKS
Reliable end-to-end SFN solution provided by ENENSYS TestTree.

DIGITAL TV BROADCAST NETWORKS
Cost-effective and high quality monitoring probes: RF & SFN signal quality.

TRANSBOX confidence monitoring

6000+ PROBES DEPLOYED
**STREAMPROBE IPTV**

**STREAMPROBE OTT**

**SOFTWARE SOLUTION:**
- Linux OS, VM for hypervisor type 1 (ESXi v6.0)
- Off the shelf server, 1RU or 2RU for large number of RF receivers
- CPU, RAM, HDD: depending on number of streams to monitor
- One or Multiple IP Data: 10gbs, 100gbs support
- One or Multiple RF input(s): F-type 75 Q: DVB-T/T2, DVB-S/S2, DVB-C (J.83 A,B,C); demodulation for TS extraction
- One or Multiple ASI input(s): TS extraction

**GLOBALVIEWER**

- Server Application for a Centralized Network Quality & Service Availability view
- Supervision: Live monitoring status on a world map
- Analytics: measurement data storage for customizable dashboard and automatic reports

---

**EDGEPROBE ADVANCED**

**STANDALONE UNIT:**
- 1 RU 19" format: multi-standard support in 1 RU
- Up to 4x ASI in/out
- Up to 4x IP Data in/out (VLAN support)
- Up to 2x IP Control
- Up to 4x 32 GB internal storage
- 1x TPS, 1x 10MHz inputs
- 1x GNSS input (GPS, GLONASS)
- 2x DVB-CI+ slots (decrypt up to two CA systems in parallel)*
- Up to 4x HDMI outputs*
- Dual Power Supply

**EDGEPROBE NANO**

**STANDALONE UNIT:**
- 1 RU 19" format: EdgeProbe RF
- Compact 144x137x30 mm format: EdgeProbe Nano
- Up to 1x RF input: N-type 50 Q (RF) / F-type 75 Q (Nano)
- 1x IP Control & Data in/out (VLAN support)
- 1x ASI output
- 1x 32 GB internal storage

**EDGEPROBE RF**

**TRANSCON**

- RF Monitor:
  - RF spectrum, Signal Quality
  - SFN time & frequency Synchronization
  - Channel Impulse Response (Echoes)
- TS Monitor:
  - TS, DVB T2-MI (PLP extraction), OneBeam / Single Illumination
  - STLP, BTS
  - ETSI TR 101 290 Priority 1, 2 & 3 and QoS SAE/SDE
  - SFN Network Delay & IP Jitter
- Multiplex Service Plan description
- Extended Storage:
  - Logs & Trends up to 6 months, TS recording
  - Easy integration for NMS supervision:
    - Low bitrate Web GUI (GPRS/3G/4G/SAT/AG)
    - SNMPv2 Support + v2c INFORM (no trap loss)

**TSolIP OTT-ABR**

- RF Monitor:
  - RF spectrum, Signal Quality
  - SFN time & frequency Synchronization
  - Channel Impulse Response (Echoes)

---

**STREAMPROBE OTT**

- TS Monitor:
  - ETSI TR 101 290 Priority 1, 2, 3
  - MDI: Delay Factor, Media Loss Rate
- OTT-ABR Monitor:
  - HLS, MPEG-DASH
  - Playlist integrity & network performance
- QoS Monitor:
  - Audio levels, silence detection
  - Video freeze, black screen, missing Intra detection
  - MPEG-2, H264, 4K, HEVC
- Live Thumbnail Mosaic:
  - Audio levels, subtitles, penalty box
- CA processing:
  - EMM/ECM presence & repetition
- Video processing:
  - Live streaming over low bandwidth links
  - TS recording on error or manual/scheduled

---

**EDGEPROBE RF**

- HW/SW* Option for EdgeProbe Confidence Monitoring
- Streaming of multiplex services(s) over low bandwidth network links (compression down to 500 Kbps)

---

**GLOBALVIEWER**

- Server Application for a Centralized Network Quality & Service Availability view
- Supervision: Live monitoring status on a world map
- Analytics: measurement data storage for customizable dashboard and automatic reports

---

**EDGEPROBE RF**

- RF Monitor:
  - Signal Quality, Channel Impulse Response (Echoes)
- TS Monitor:
  - TS, BTS
  - ETSI TR 101 290 Priority 1, 2 & 3 and QoS SAE/SDE
- Multiplex Service Plan description
- Extended Storage:
  - Logs & Trends up to 6 months, TS recording
  - Easy integration for NMS supervision:
    - Low bitrate Web GUI (GPRS/3G/4G/SAT/AG)
    - SNMPv2 Support + v2c INFORM (no trap loss)
GLOBALVIEWER

Centralize your Service Availability & Network Quality views!

APPLICATIONS
- Live Supervision of your Network's QoS
- Centralized monitoring data with a real-time Dashboard
- Report generation for SLA commitments
- SMS/Email alerting

BENEFITS
- Centralized management of your deployed EdgeProbe & StreamProbe
- Easy to use and configure
- Compatible with low bandwidth control network (GPRS/3G/4G)
- Virtualized SW based solution

TECHNICAL CHARACTERISTICS
VM for hypervisor type 1 (ESXi >6.0)
Minimum server requirement: 4 cores CPU, 16GB RAM, 100GB HDD; depending on the number of Probes to centralize

ORDERING CODES
<table>
<thead>
<tr>
<th>GlobalViewer</th>
<th>Perpetual Software License for server application: centralized EdgeProbe and StreamProbe monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Included</td>
<td>Supervision: Live monitoring status centralized on map display</td>
</tr>
<tr>
<td></td>
<td>Analytics: Monitoring data history Dashboard and Reports</td>
</tr>
<tr>
<td></td>
<td>Alerting: SMS/Email notifications (requires specific integration with customer’s SMS gateway)</td>
</tr>
<tr>
<td>10 Probes</td>
<td>1 Probe = 1x EdgeProbe Monitoring Unit or HDmE module, or 1x IPTV or OTT StreamProbe</td>
</tr>
<tr>
<td>SW Options</td>
<td>Additional Probes</td>
</tr>
</tbody>
</table>
StreamProbe is a high density & scalable software solution for content QoS & QoE monitoring throughout the video service processing chain.

**APPLICATIONS**
- Monitoring of the content QoS & QoE received from contribution, prior & after encoding/packaging as well as from an end user point of view
- Generation of Service Availability reports for SLA commitments
- Live TS Recording for Compliance Recording and commitment
- All services view at-a-glance: Live Thumbnail Mosaic

**KEY FEATURES IPTV**
- All services view at-a-glance: Live Thumbnail Mosaic
- Live TS Recording for Compliance Recording and commitment
- Generation of Service Availability reports for SLA contribution, prior & after encoding/packaging as well
- Monitoring of the content QoS & QoE: received from APPLICATIONS throughout the video service processing chain.

**STREAMPROBE IPTV**

**STREAMPROBE OTT**

**BENEFITS**
- High density: hundreds of services monitored in real-time & in parallel in a single 1RU server; 100s interfaces supported
- Scalables from an all-in-one system to a fully distributed architecture
- Software only: Linux OS, VM for virtualized environments
- Remotely accessible: compatible with low bandwidth control networks (GPRS/3G/4G)
- Northbound interface (SNMP, open API)

**KEY FEATURES IPTV**
- QoS TS monitoring:
  - MDI: Delay Factor, Media Loss Rate, Delta (min, max, average), Dist & Purr Dist
- FEC support: packets recovered/lost, IP jitter
- ETSI TR 101 290 Priority 1, 2, 3
- PSI/SI repetition rates, scrambling
- Bitrates: TS, service & service components, PSI/SI
- QoS monitoring:
  - Video monitoring: freeze, black screen, missing Intra detection
  - PID codec information: type, pixel format, profile, level, GOP structure and size, image count and weight, width, height, aspect ratio, frame rate and type, VB delay
  - Audio monitoring: levels, silence detection
  - PID codec information: type, channel number and layout, sample rate and format
- Subtitles DVB and Teletext: decoding and display
  - Formats: MPEG-1 audio, MPEG-2 audio/video, H264 SD & HD, HEVC
- Live Thumbnail Mosaic: all services or group filtering, audio levels, subtitles, penalty box
- Live service(s) streaming over low bandwidth links (service compression)
- TS recording: on error or manually scheduled
- CA processing:
  - EMM/ECM: presence, repetition, bitrates
  - FTA -> scrambled: transition timing displayed
- Configurable alarming thresholds: general and daily alarm profiles
- Monitoring information available via an open API [HTTP/JSON API]

**KEY FEATURES OTT**
- QoS ABR monitoring: playlist integrity & network performance check
  - HLS, MPEG-DASH
  - Manifest integrity check, content display & download
  - Profile info: availability, type, bitrate statistics, codec, resolution, base and relative URL, playlist content/format, chunk number, media sequence
  - Chunk HTTP info: availability, length, bitrate statistics, playlist format
  - HTTP connection time statistics: connection, DNS redirection, upload, download
- QoE monitoring:
  - Video monitoring: freeze, black screen, missing Intra detection
  - PID codec information: type, pixel format, profile, level, GOP structure and size, image count and weight, width, height, aspect ratio, frame rate and type, VB delay
  - Audio monitoring: levels, silence detection
  - PID codec information: type, channel number and layout, sample rate and format
- Subtitles DVB and Teletext: decoding and display
  - Formats: MPEG-1 audio, MPEG-2 audio/video, H264 SD & HD, HEVC
- Live Thumbnail Mosaic: all services or group filtering, audio levels, subtitles, penalty box
- Live service(s) streaming over low bandwidth links (service compression)

**QoE monitoring for Contribution/Encoding/Packaging**

**TECHNICAL CHARACTERISTICS**

**ORDERING CODES**

**StreamProbe IPTV**

**Perpetual software license for TS monitoring probe**

<table>
<thead>
<tr>
<th>Bitrate</th>
<th>Capacity bitrate to monitor per probe: 100Mbps, 300Mbps, 500Mbps, 1Gbps, 1.5Gbps, 2Gbps, 4Gbps, 7Gbps or custom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Included</td>
<td>QoS Monitor TS</td>
</tr>
</tbody>
</table>

**StreamProbe OTT HLS or StreamProbe OTT DASH**

**Perpetual software license for OTT-ABR monitoring probe**

<table>
<thead>
<tr>
<th>Bitrate</th>
<th>Capacity bitrate to monitor per probe: 100Mbps, 300Mbps, 500Mbps, 1Gbps, 1.5Gbps, 2Gbps, 4Gbps, 7Gbps or custom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Included</td>
<td>QoS Monitor ABR</td>
</tr>
</tbody>
</table>

*www.test-tree.com*
EDGE PROBE

RF & QoS monitoring for Broadcast Distribution & Transmission

Accurate RF signal quality measures

ETR 101 290 compliancy
STB decoding assurance

Reference SFN Monitoring – Transmission site
Time & frequency synchronization, distribution link Network Delay

RF signal time synchronization: measure the RF frame transmission time drift/delay

Before modulation: measure the TS Network Delay between HE and TX site

RF signal frequency synchronization: measure the Carrier Frequency drift

Reference SFN Monitoring – Reception site
Echo monitoring with Echo Pattern mode – more precise echo in error identification, even if the main echo suffers changes!
EdgeProbe Advanced is the ideal tool to achieve accurate & cost-effective monitoring of the quality actually delivered to all points of a DTV broadcast network.

**APPLICATIONS**
- 24/7 Monitoring and Maintenance of both Head-End and TX sites
- DTV/CATV RF Transmission (SPN/FNI), Satellite RF distribution, ASI/IP Baseband distribution
- Generation of Service Availability reports for Service Level Agreements
- Rebroadcasting receiver: RF to ASI or IP
- Live transmission recorder

**TECHNICAL CHARACTERISTICS**
- Standalone, easy to use and configure, fast deployment, SNMP compatible
- Reduce TX sites maintenance cost by anticipating and identifying issues
- Increase customer satisfaction by detecting & preventing DTV network degradations before your customers do
- Remotely accessible, compatible with low bandwidth control networks (IP/RTP/UDP)
- Low power consumption 25W

**KEY FEATURES**
- DTT & CATV RF accurate measurements: signal level, SNR, MER, BER
- DTT RF spectrum and constellation display, shoulders measurements
- DTT SPN synchronization monitoring:
  - RF Frame Time Drift, Carrier Frequency Drift
  - Channel Impulse Response with unique Echo Pattern module
  - Reliable echo in error identification when main echo suffers changes
- Network Delay: TS/T2-MI over IP/ASI input
- Satellite RF accurate measurements:
  - Signal level, CNR, link margin, Eb/No, BER
  - Multi-stream support, PL/S channel support (up to 16)
  - LNB power and control
- IP Distribution link monitoring:
  - FEC support (packets recovered/lost), IP jitter (Inter-Packet Arrival Time)
  - TS ETSI TR 101 290 validation: Priority 1, 2, 3
  - Optional DVB SAE (Service Availability Error), SDE (Service Degradation Error)
- Service Plan monitoring: multiplex structure, bitrate and resolution check
- T2-MI monitoring: L1 postprocessing, ETSI TR 101 290 T2-MI alarms, PLP T2-MI
  - TS extraction, Network Delay
  - OneBeam/Single Illumination monitoring: T2-MI marker, In-Band PIDs
  - BTS monitoring: IP, TMCC packets
  - Service streaming over low bandwidth links (compression down to 500kbps)
  - External GNSS receiver (GPS, GLONASS) for internal 1PPS generation
  - 100-240 VAC redundant power supply

**ORDERING CODES**

**EdgeProbe Advanced**
- DVB-T/T2, DVB-S/S2, ISDB-T/Tb, DVB-C (J.83 A, C), DAB/DAB+ (See Page 25), ATSC 3.0 (See Page 25)
- Select any combination of two DVB-T/T2 model of EdgeProbe Advanced in the form of an independent module (HDmE), for High Density chassis (HDc) 19" 1RU, which provides:

**HIGH DENSITY**
- Up to 6 products in the same chassis

**MODULARITY**
- Combination DVB-T/T2 EdgeProbe Advanced with different type of ENERGIS products (T2Edge, T2Edge-DT, EDGE-US, EDGE-DE) in the same chassis

**HOT PLUG**
- Start with one product and upgrade with additional products later

**SCALABILITY**
- Hot plug and independent products with redundant power supply in 220V or 48V

**RELIABILITY**
- Hot plug and independent products with redundant power supply in 220V or 48V

**EDGEPROBE ADVANCED for HDc**

**DVB-T/T2 model of EdgeProbe Advanced**

**HDc-Multi-220V** High Density chassis with 220V input
**HDc-Multi-48V** High Density chassis with 48V input

**CHASSIS IW options**
- HDcMulti-220V Redundant
- HDcMulti-48V Redundant
- HDmE 110V/220V redundant power supply
- HDmE 48V redundant power supply
- HDmE High Density module EdgeProbe Advanced for DVB-T/T2

**ORDERING CODES**

HDmE SW Options
- Contact us for availability

**CHASSIS HW Options**
- Included
  - 1 active Monitoring Unit, RF + SPN + CRI + Frequency Drift monitoring, over ASI/IP input support, VLAN, RF to ASI/IP TS retransmission
  - 10-30 km redundant power supply
  - Internal GNSS receiver (GPS, GLONASS) for internal 1PPS generation
  - Stream 1 or 2 compressed service(s) (See Page 21)
  - HDcMulti-In48VRedundant
  - HDcMulti-In220VRedundant

**ORDERING CODES**

**HDmE HW Options**
- Contact us for availability

**ORDERING CODES**

**EdgeProbe Advanced CHASSIS is composed of 2 BOARDs, each board supporting 2 parallel MONITORING UNITS**

Select your standard BOARD 1: DVB-S/S2 or DVB-T/T2 or ISDB-T/Tb or DVB-C (J.83 A, C) or DAB/DAB+
Select your standard BOARD 2: DVB-S/S2 or DVB-T/T2 or ISDB-T/Tb or DVB-C (J.83 A, C) or DAB/DAB+

- ATSC 3.0 (See Page 25)
- HDmE 220V/110V Redundant
- HDmE Multi-220V Redundant
- HDmE 48V Redundant
- HDmE High Density module EdgeProbe Advanced for DVB-T/T2

**HDmE SW Options**
- Contact us for availability
**TECHNICAL CHARACTERISTICS**

**APPLICATIONS RF**
- 24/7 Monitoring and Maintenance of DTV live transmission
- Cost-effective Monitoring of transmitters and relay sites
- Generation of Service Level Agreements
- Rebroadcasting receiver: RF to ASI or IP (including MUTE feature)
- Live transmission recorder

**APPLICATIONS NANO**
- Network operators: test the tests of new transmitters and temporary monitoring/investigation tool
- Rebroadcasting receiver: RF to ASI or IP
- Broadcasters: off-air monitoring probes to validate the on-air content
- TV/STB producers: automated tests against a professional receiver
- Labs: easy & simple access to live DTV sources via RF

**KEY FEATURES**
- RF accurate measurements: signal level, SNR, MER, BER
- Channel Impulse Response monitoring with unique Echo Pattern mode: reliable echo in error identification when main echo suffers changes
- TS ETSI TR 101 290 validation: Priority 1, 2, 3 and optional QoS SAE/SDE
- BTS monitoring: IIP, TMCC packets
- Service Plan monitoring: multiplex structure, bitrate and degradation
- Channel Impulse Response (CIR) monitoring with unique Echo Pattern mode: reliable echo in error identification when main echo suffers changes
- TS ETSI TR 101 290 validation: Priority 1, 2, 3 and optional QoS SAE/SDE
- BTS monitoring: IIP, TMCC packets
- Service Plan monitoring: multiplex structure, bitrate and degradation
- Service Streaming over RF-Catcher (See Page 30)
- Trigger RF signal capture on RF-Catcher (See Page 30)

**APPLICATIONS RF & NANO**
**DIGITAL TV & RADIO MONITORING**

**APPLICATIONS RF**
- DTV RF Monitoring Probe
- EDGEPROBE RF
- EdgeProbe RF is the ideal & most cost-effective high-quality solution for controlling remotely the signal transmission of your low/mid power TX & relay sites that are sometimes difficult to reach.

**APPLICATIONS NANO**
- DTV BROADCAST NETWORKS
- EdgeProbe Nano is the most tiny and compact RF probe with no compromise on quality!

**APPLICATIONS RF & NANO**
**TECHNICAL CHARACTERISTICS**

**ORDERING CODES**

**EdgeProbe Nano or EdgeProbe RF**

<table>
<thead>
<tr>
<th>Select your standard</th>
<th>DTV/T2/T2 Lite or DVB-C/C2 or ISDB-T/Tb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Included</td>
<td>RF + CIR monitoring, TS over IP input support, VLAN, RF to ASI/TS retransmission</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SW Options</th>
<th>DTV RF Monitoring Probe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scanning</td>
<td>Multiple RF: channels sequential monitoring over 1 RF input</td>
</tr>
<tr>
<td>TS Monitor Base</td>
<td>ETR290 Priority 1, 2 monitoring</td>
</tr>
<tr>
<td>TS Monitor Advanced</td>
<td>ETR290 Priority 3</td>
</tr>
<tr>
<td>QoS Monitor</td>
<td>SAE, SDE monitoring</td>
</tr>
<tr>
<td>BTS Monitor</td>
<td>Multicast Service/ID monitoring</td>
</tr>
<tr>
<td>TS Monitor</td>
<td>IP &amp; TMCC packet monitoring</td>
</tr>
<tr>
<td>Extended Memory</td>
<td>32 GB storage: streams, logs, TS record</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HW Options</th>
<th>TRANSBOX</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRANSCOX</td>
<td>Stream 1 or 2 compressed service(s) (see below)</td>
</tr>
<tr>
<td>Tropicalization</td>
<td>Preserve the HW from corrosion</td>
</tr>
</tbody>
</table>

**EDGEPROBE RF**

**ORDERING CODES**

<table>
<thead>
<tr>
<th>TRANSBOX</th>
<th>Transcoding Unit for EdgeProbe</th>
</tr>
</thead>
<tbody>
<tr>
<td>HW Option</td>
<td>Dual</td>
</tr>
<tr>
<td>Two parallel transcoding units in 1 RU</td>
<td></td>
</tr>
</tbody>
</table>

**TECHNICAL CHARACTERISTICS**

**ORDERING CODES**

<table>
<thead>
<tr>
<th>TRANSBOX</th>
<th>Transcoding Unit for EdgeProbe</th>
</tr>
</thead>
<tbody>
<tr>
<td>HW Option</td>
<td>Dual</td>
</tr>
<tr>
<td>Two parallel transcoding units in 1 RU</td>
<td></td>
</tr>
</tbody>
</table>

**APPLICATIONS RF & NANO**
- DTV RF Monitoring Probe
- EDGEPROBE RF
- EdgeProbe RF is the ideal & most cost-effective high-quality solution for controlling remotely the signal transmission of your low/mid power TX & relay sites that are sometimes difficult to reach.

**APPLICATIONS NANO**
- DTV BROADCAST NETWORKS
- EdgeProbe Nano is the most tiny and compact RF probe with no compromise on quality!

**APPLICATIONS RF & NANO**
**TECHNICAL CHARACTERISTICS**

**ORDERING CODES**

<table>
<thead>
<tr>
<th>Select your standard</th>
<th>DTV/T2/T2 Lite or DVB-C/C2 or ISDB-T/Tb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Included</td>
<td>RF + CIR monitoring, TS over IP input support, VLAN, RF to ASI/TS retransmission</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SW Options</th>
<th>DTV RF Monitoring Probe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scanning</td>
<td>Multiple RF: channels sequential monitoring over 1 RF input</td>
</tr>
<tr>
<td>TS Monitor Base</td>
<td>ETR290 Priority 1, 2 monitoring</td>
</tr>
<tr>
<td>TS Monitor Advanced</td>
<td>ETR290 Priority 3</td>
</tr>
<tr>
<td>QoS Monitor</td>
<td>SAE, SDE monitoring</td>
</tr>
<tr>
<td>BTS Monitor</td>
<td>Multicast Service/ID monitoring</td>
</tr>
<tr>
<td>TS Monitor</td>
<td>IP &amp; TMCC packet monitoring</td>
</tr>
<tr>
<td>Extended Memory</td>
<td>32 GB storage: streams, logs, TS record</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HW Options</th>
<th>TRANSBOX</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRANSCOX</td>
<td>Stream 1 or 2 compressed service(s) (see below)</td>
</tr>
<tr>
<td>Tropicalization</td>
<td>Preserve the HW from corrosion</td>
</tr>
</tbody>
</table>

**EDGEPROBE RF**

**ORDERING CODES**

<table>
<thead>
<tr>
<th>TRANSBOX</th>
<th>Transcoding Unit for EdgeProbe</th>
</tr>
</thead>
<tbody>
<tr>
<td>HW Option</td>
<td>Dual</td>
</tr>
<tr>
<td>Two parallel transcoding units in 1 RU</td>
<td></td>
</tr>
</tbody>
</table>

**TECHNICAL CHARACTERISTICS**

**APPLICATIONS RF & NANO**
- DTV RF Monitoring Probe
- EDGEPROBE RF
- EdgeProbe RF is the ideal & most cost-effective high-quality solution for controlling remotely the signal transmission of your low/mid power TX & relay sites that are sometimes difficult to reach.

**APPLICATIONS NANO**
- DTV BROADCAST NETWORKS
- EdgeProbe Nano is the most tiny and compact RF probe with no compromise on quality!

**APPLICATIONS RF & NANO**
**TECHNICAL CHARACTERISTICS**

**ORDERING CODES**

<table>
<thead>
<tr>
<th>Select your standard</th>
<th>DTV/T2/T2 Lite or DVB-C/C2 or ISDB-T/Tb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Included</td>
<td>RF + CIR monitoring, TS over IP input support, VLAN, RF to ASI/TS retransmission</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SW Options</th>
<th>DTV RF Monitoring Probe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scanning</td>
<td>Multiple RF: channels sequential monitoring over 1 RF input</td>
</tr>
<tr>
<td>TS Monitor Base</td>
<td>ETR290 Priority 1, 2 monitoring</td>
</tr>
<tr>
<td>TS Monitor Advanced</td>
<td>ETR290 Priority 3</td>
</tr>
<tr>
<td>QoS Monitor</td>
<td>SAE, SDE monitoring</td>
</tr>
<tr>
<td>BTS Monitor</td>
<td>Multicast Service/ID monitoring</td>
</tr>
<tr>
<td>TS Monitor</td>
<td>IP &amp; TMCC packet monitoring</td>
</tr>
<tr>
<td>Extended Memory</td>
<td>32 GB storage: streams, logs, TS record</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HW Options</th>
<th>TRANSBOX</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRANSCOX</td>
<td>Stream 1 or 2 compressed service(s) (see below)</td>
</tr>
<tr>
<td>Tropicalization</td>
<td>Preserve the HW from corrosion</td>
</tr>
</tbody>
</table>

**EDGEPROBE RF**

**ORDERING CODES**

<table>
<thead>
<tr>
<th>TRANSBOX</th>
<th>Transcoding Unit for EdgeProbe</th>
</tr>
</thead>
<tbody>
<tr>
<td>HW Option</td>
<td>Dual</td>
</tr>
<tr>
<td>Two parallel transcoding units in 1 RU</td>
<td></td>
</tr>
</tbody>
</table>

**TECHNICAL CHARACTERISTICS**

**APPLICATIONS RF & NANO**
- DTV RF Monitoring Probe
- EDGEPROBE RF
- EdgeProbe RF is the ideal & most cost-effective high-quality solution for controlling remotely the signal transmission of your low/mid power TX & relay sites that are sometimes difficult to reach.

**APPLICATIONS NANO**
- DTV BROADCAST NETWORKS
- EdgeProbe Nano is the most tiny and compact RF probe with no compromise on quality!

**APPLICATIONS RF & NANO**
**TECHNICAL CHARACTERISTICS**

**ORDERING CODES**

<table>
<thead>
<tr>
<th>Select your standard</th>
<th>DTV/T2/T2 Lite or DVB-C/C2 or ISDB-T/Tb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Included</td>
<td>RF + CIR monitoring, TS over IP input support, VLAN, RF to ASI/TS retransmission</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SW Options</th>
<th>DTV RF Monitoring Probe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scanning</td>
<td>Multiple RF: channels sequential monitoring over 1 RF input</td>
</tr>
<tr>
<td>TS Monitor Base</td>
<td>ETR290 Priority 1, 2 monitoring</td>
</tr>
<tr>
<td>TS Monitor Advanced</td>
<td>ETR290 Priority 3</td>
</tr>
<tr>
<td>QoS Monitor</td>
<td>SAE, SDE monitoring</td>
</tr>
<tr>
<td>BTS Monitor</td>
<td>Multicast Service/ID monitoring</td>
</tr>
<tr>
<td>TS Monitor</td>
<td>IP &amp; TMCC packet monitoring</td>
</tr>
<tr>
<td>Extended Memory</td>
<td>32 GB storage: streams, logs, TS record</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HW Options</th>
<th>TRANSBOX</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRANSCOX</td>
<td>Stream 1 or 2 compressed service(s) (see below)</td>
</tr>
<tr>
<td>Tropicalization</td>
<td>Preserve the HW from corrosion</td>
</tr>
</tbody>
</table>

**EDGEPROBE RF**

**ORDERING CODES**

<table>
<thead>
<tr>
<th>TRANSBOX</th>
<th>Transcoding Unit for EdgeProbe</th>
</tr>
</thead>
<tbody>
<tr>
<td>HW Option</td>
<td>Dual</td>
</tr>
<tr>
<td>Two parallel transcoding units in 1 RU</td>
<td></td>
</tr>
</tbody>
</table>
ATSC 3.0 BROADCAST NETWORKS
RELIABLE END-TO-END SOLUTION

Centralized Network Quality & Service Availability → GLOBALVIEWER See Page 12

Full-software monitoring for virtualized Head-End → STREAMPROBE See Page 14

World-renowned SFN Monitoring (TX/RX) → EDGEPROBE See Page 23

Efficient Lab & Field operation with world-deployed analyzers & recorders → RF-CATCHER → REFEREE 3 See Page 30

EDGEPROBE ADVANCED

EDGEPROBE Advanced ATSC is the ideal tool to achieve accurate & cost-effective monitoring of the quality actually delivered to all points of an ATSC 3.0/1.0 network.

APPLICATIONS

• 24/7 Monitoring and Maintenance of both Head-End and TX sites:
  - RF transmission (SFN/MFN), Satellite RF distribution, IP Baseband distribution
  - Generation of Service Availability reports to Service Level Agreements
  - SFN Monitoring in Reception Areas: put yourself in the customer shoes

KEY BENEFITS

• ATSC 1.0 compatible for repack monitoring
• Standalone, easy to use and configure, fast deployment, SNMP compatible
• Reduce TX sites maintenance cost by anticipating and identifying issues
• Increase customer satisfaction by detecting & preventing DTV network degradations before your customers do
• Remotely accessible, compatible with low bandwidth control networks (GPRS/3G/4G)
• Low power consumption 25W

KEY FEATURES

• RF accurate measurements: signal level, SNR, MER, BER
• RF spectrum and constellation display, shoulders measurements
• SFN synchronization monitoring:
  - TX ID detection and echo association
  - RF Frame Time Drift
  - Channel Impulse Response with unique Echo Pattern: over reliable RF echo in error identification when main echo suffers changes
• Network Delay: STLTP over IP input
• IP Distribution link monitoring:
  - FEC support (packets recovered/lost), IP jitter (Inter-Packet Arrival Time)
• ATSC 1.0 TS ETSI TR 101 290 validation: Priority 1, 2, 3
• Optional AIS SAE (Service Availability Error), SDE (Service Degradation Error)
• Service Plan monitoring: multiplexing structure, bitrate and regionalization check
• STLP/Gateway, Network Delay
• ATSC 1.0 Service streaming over low bandwidth links (compression down to 500Kbps) (See Page 21)
• Demodulated ATSC 1.0 TS streaming over control IP out, or retransmission over ASI out
• Trigger RF signal capture on RF-Catcher (See Page 30)

TECHNICAL CHARACTERISTICS

EdgeProbe Advanced models:
- DAB/DAB+: DVB-S/5/2, DVB-T/7/2, DVB-C/C2, ISDB-T/7T, ATSC 3.0/1.0 or any combination of two of these standards (See Page 16 for DVB-T/T2, ISDB-C/J.83A/C2, ISDB-T/7T, DVB-S/5/2, ATSC 3.0/1.0)
- Up to 4x (RF in, ETI in/out [IN, NAI], IP Data in/out [VLAN support]) in 1 RU
- Up to 2x IP Control for low bandwidth remote Web GUI
- Up to 4x 32 GB storage for 6 months logs & trends

1PPS: external or internal from GNSS receiver (GPS, GLONASS), 10MHz

ORDERING CODES

EDGEPROBE Advanced ATSC 3.0/1.0 Advanced Monitoring Probe

EdgeProbe Advanced CHASSIS is composed of 2 BOARDS, each board supporting 2 parallel MONITORING UNITS

Select your standard BOARD 1
At least 1 required
- ATSC 3.0/1.0 or DVB-T/T2 or DVB-S/5/2 or ISDB-T/7T or DVB-C/C2 or ISDB-T/7T or any combination of two of these standards
- ETR 101 290 priority 1, 2, 3 or Multiplex Service Plan over ASI/IP input support, VLAN

Select your standard BOARD 2
- ATSC 3.0/1.0 or DVB-T/T2 or DVB-S/5/2 or ISDB-T/7T or DVB-C/C2 or ISDB-T/7T or DVB-C/C2 or any combination of two of these standards
- ETR 101 290 priority 1, 2, 3 or Multiplex Service Plan over ASI/IP input support, VLAN

Included
- 2 active Monitoring Units, RF = SFN + CIR + ATSC 1.0 TS over ASI/IP input support, VLAN
- Scanning
- Multiple channels RF, AIS, IP interface, failed radio monitoring
- Extended Memory
- 32 GB internal storage: trends, logs, TS record

CHASSIS/1W Options
- Dual Power Supply
- Service Unit

Select your options per DTV BOARD
- RF Master ATSC 3.0/1.0
- ATSC 1.5 TS Monitoring
- ATSC 3.0 STLP Monitoring
- IP Monitoring

SW Options
- RF transmission, spectrum, constellation, CIR and SFN Time Drift
- ETR 101 290 priority 1, 2, 3 and Multiplex Service Plan over ASI/IP
- STLP Network Delay and integrity
- Jitter, RT/TPLC, Packet Loss/Network monitoring

www.test-tree.com
DIGITAL RADIO NETWORKS

EdgeProbe Advanced DAB/DAB+ is the ideal tool to achieve accurate & cost-effective monitoring of the quality actually delivered to all points of a Digital Radio network.

APPLICATIONS
- 24/7 Monitoring and Maintenance of both Head-End and TX sites
- RF transmission (SFN/MFN), Satellite RF distribution, ETI/EDI Baseband distribution
- Generation of Service Availability reports for Service Level Agreements
- Live transmission recorder

KEY BENEFITS
- Standalone, easy to use and configure, fast deployment, SNMP compatible
- Reduce TX sites maintenance cost by anticipating and identifying issues
- Increase customer satisfaction by detecting & preventing network degradations before your customers do
- Remotely accessible, compatible with low bandwidth control networks (GPRS/3G/4G)
- Low power consumption 25W

ORDERING CODES

EdgeProbe Advanced CHASSIS is composed of 2 BOARDS, each board supporting 2 parallel MONITORING UNITS

<table>
<thead>
<tr>
<th>BOARD 1 Options</th>
<th>BOARD 2 Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAB/DAB+ or DVB-S/S2 or DVB-T/T2 or DVB-C/C2, ISDB-T/Tb, ATSC 3.0/1.0</td>
<td>DAB/DAB+ or DVB-S/S2 or DVB-T/T2 or DVB-C/C2, ISDB-T/Tb, ATSC 3.0/1.0</td>
</tr>
<tr>
<td>(See Page 18 for DTV EdgeProbe Advanced model)</td>
<td></td>
</tr>
</tbody>
</table>

CHASSIS HW Options
- Dual Power Supply
- Internal GNSS
- Internal GNSS receiver (GPS, GLONASS) for internal 1PPS generation

Select your standard BOARD 1
Select your standard BOARD 2

Select your options per Digital Radio BOARD  (See Page 18 for DTV EdgeProbe Advanced model)

SW Options
- DAB/DAB+
- IP Data
- ETI/EDI Service Monitoring
- 1 active Monitoring Unit, 2x ETI, 1x IP Data, 1x ETI + IP Data, 1x IP Data, 1x ETI, 1x ETI + IP Data, 1x IP Data

HW Options
- 1PPS
- RS-485, RS-232 connectors

* Contact us for availability
TEST TOOLS FOR LAB & FIELD

RF CAPTURE/PLAYBACK & GENERATE
70 MHz – 6 GHz frequency range with down conversion for Ku/C band

- RF-Catcher Starter Kit $30
- Application Suite for RF-Catcher $32
- ATSC 3.0 LabMod $33
- RF-LiveSim $34

ANALYZE RF & BASEBAND
Multi-standard (ATSC 3.0/1.0, DVB-T/T2, DVB-C/C2, DVB-S/S2, ISDB-T/Tb) professional measurement receivers and pocket-size analyzers, recorders and players, connected via USB to a Windows PC running the DiviSuite analysis software

- ReFeree 3 $35
- DiviSuite™ $36
- DiviSuite Base
- DiviSuite options: RF Scope, TS Analyzer, T2-MI Analyzer, Drive Test Coverage

Hardware products used with the DiviSuite $41
- ReFeree II
- DiviCatch RF Series
- DiviDual ASI + SPI (LVDS or TTL)
- DiviDual ETI

Pure software application using the DiviSuite $45
- DiviSuite-IP

48H MAX SHIPMENT
RF RECORDING & PLAYBACK

USE-CASES

Interference Detection
RF record triggering with rolling buffer
Playback to analyze QoS artefacts
Setup: RF-Catcher + Event Trigger + EdgeProbe

FM/DAB+ Switchover
Synchronized RF records and/or playbacks
Radio switchover testing from DAB+ to FM (also compatible with other signals)
Setup: 2x RF-Catcher + Event Trigger (+ IQ Splitter)

TV/STB Validation
Receivers testing to the edge (echoes, noise)
Field configuration testing in the lab
Setup: RF-Catcher + RF TroubleMaker

Broadcast Stations Control
Power level monitoring in reception areas
Automated RF signal recording & playback
Setup: RF-Catcher + Task Scheduler

and also...

In their «all options» package, our test devices can be shipped in max 48h
RF-CATCHER STARTER KIT

The Most Compact RF Capture & Playback device!

Covering a frequency range from 70 MHz up to 6 GHz, RF-Catcher allows recording and playing real-time RF bandwidth up to 55 MHz.

- RF-Catcher allows experimentation of a wide range of signals including Radio (FM, DAB…), TV broadcast (DVB-T/T2, C/C2, ISDB-T, etc…), cellular, Wi-Fi, up to satellite signals (DVB-S/S2).
- The RF-Catcher is equipped with LNB control for frequency down conversion of Ku/C bands. The integrated GNSS receiver provides precise location information, KML file, metadata, and NMEA compatible.

TECHNICAL CHARACTERISTICS

- 2x RF inputs, 2x RF outputs for RF Capture & Playback (SMA/F connectors)*
- Frequency range from 70 MHz up to 6 GHz, resolution 1kHz
- Variable bandwidth from 1 to 55 MHz
- Automatic filtering: harmonic suppression for playback, out of band signal suppression for capture
- RF Reception:
  - Status indicators: USB connection / IQ sample loss / In band saturation (LNA)
  - FFT display: Spectrum measurements: FFT resolution, FFT markers insertion / Averaging functions: RMS, max/power hold / FFT window functions: rectangular, Hamming, Blackman, Hanning
  - Signal waterfall plot (three-dimensional spectrum)
  - Power in band measurement per frequency marker
- RF capture: variable gain, automatic gain setting (AGC), rolling buffer mode
- RF playback: variable attenuation
- Lightweight and compact 163 x 115 x 32 mm, 600 g, 3 W typical power consumption
- Connected to PC via USB3.0 connectivity (SuperSpeed) (USB2 backward compatible, but with lower performances due to limited USB2 bitrate)
- IQ files stored on the PC: 12 Msps sample rate, 170 min of record = 512GB
- Nonproprietary IQ file format, compatible with Matlab software
- Integrated GNSS (GPS, GLONASS) receiver: KML file, metadata, NMEA protocol
- Compatible Windows 7, 8/8.1, 10 (x64 versions only)

APPLICATIONS

- Chipset, STB/TV field test debugging (a great tool to support your pre-sales team)
- Easy & simple usage: no need for RF experts to capture field RF signals (ex: DAB/FM, TV broadcast, Satellite broadcast, Wi-Fi…), your sales force can do it for you anywhere in the world
- Handy demonstration setup: bring real RF sources into your laptop
- RF sources stored on a PC: easy to duplicate/transfer between head-quarter and regional sites
- Radio/TV Broadcast/Telecom RF troubleshooting
- Test automation (command line tools)
- Telecommunications Regulation Agencies validation tool

ORDERING CODE

RF-Catcher Starter Kit

RF Capture & Playback

Shipped bundled with HW device, software application for Windows 7, 8/8.1, 10 (x64)

*Both input/output connectors cannot be used at the same time

www.test-tree.com
APPLICATION SUITE FOR RF-CATCHER

One Global Launcher for all applications
Quickly access the applications without missing any information

APPLICATIONS
- ATSC 3.0 RF record & playback
- ATSC 3.0 reception validation
- R&D or factory tests and measurements
- Chipset development
- TV / Set Top Box development
- Demonstrations and roadshows

KEY BENEFITS
- 1st ATSC 3.0 modulator
- Compact (600g), USB self-powered
- 3-in-1 product: RF Record + Playback + Generate
- ATSC 3.0 PlugFest proven
- Intuitive & easy to use GUI
- Easy to configure: real-time Frame configuration validation engine
- All modulation schemes supported (from QPSK to 4096 QAM, LDM support)

ORDERING CODES

ATSC 3.0 LabMod
- \textbf{ATSC 3.0 LabMod} ATSC 3.0 Modulator for Lab
- Shipped bundled with HW device and ATSC 3.0 LabMod Application for Windows 7, 8/8.1, 10 (x64)

ATSC 3.0 LabMod Application
- \textbf{ATSC 3.0 LabMod Application for Lab}
- Windows 7, 8/8.1, 10 (x64) software application for RF-Catcher Starter Kit

Software Option
- RF Capture & Playback
- Software Application for RF transmission captures, playbacks and spectrum analysis
Covering a frequency range from 50 to 900 MHz, RF Live Simulator can emulate RF channels propagation modes for a signal bandwidth from 20 kHz to 20 MHz (gaussian noise, multipath, Doppler and frequency drift tools).

RF-LiveSim is a cost effective solution for intense automatic non regression tests at the physical layer level.

**TECHNICAL CHARACTERISTICS**

- **Standalone unit with PS/2 & VGA interfaces for screen-keyboard-mouse control**
- **1x RF in, 1x RF out (isolated)**
- **Full remote control via SCPI (Standard Commands for Programmable Instruments) protocol**
- **Signal level: output from -110 to -20 dBm without any interruption**
- **Frequency range from 50 to 900 MHz, resolution 1 Hz**
- **Variable bandwidth from 20 kHz to 20 MHz, resolution 1 kHz**
- **Channel Propagation Profile: 20 independent paths adjustable (amplitude, delay, phase, Doppler)**
- **Doppler profiles: -70 000 to +70 000 Hz (step 1 Hz), Amplitude distributions (Pure, Flat, Gaussian, Rayleigh, Rice)**
- **Frequency drift & hopping without losing receiver synchronization**
- **Preset configurations: terrestrial broadcast profiles such as TU6, rural, indoor/outdoor for fixed/ portable devices as well as profiles for physical layers for WiMAX / LTE**

**APPLICATIONS**

- **Real-time channel profile simulations**
- **Up to 20 adjustable independent terrestrial paths**
- **Several preset configurations available**
- **Remotely accessible**
- **Easy to use and configure**
- **Test automation (SCPI compliant)**

**ORDERING CODE**

RF-LiveSim - RF Live Channel Simulator - 50-900 MHz input/output - 1U rack

---

**RF-LIVESIM**

Real-time RF Channel Simulator

---

**TECHNICAL CHARACTERISTICS**

- **Stand-alone unit with PS/2 & VGA interfaces for screen-keyboard-mouse control**
- **1x RF in, 1x RF out (isolated)**
- **Ethernet port for remote control**
- **Full remote control via SCPI (Standard Commands for Programmable Instruments) protocol**
- **Signal level: output from -110 to -20 dBm without any interruption**
- **Frequency range from 50 to 900 MHz, resolution 1 Hz**
- **Variable bandwidth from 20 kHz to 20 MHz, resolution 1 kHz**
- **Channel Propagation Profile: 20 independent paths adjustable (amplitude, delay, phase, Doppler)**
- **Doppler profiles: -70 000 to +70 000 Hz (step 1 Hz), Amplitude distributions (Pure, Flat, Gaussian, Rayleigh, Rice)**
- **Frequency drift & hopping without losing receiver synchronization**

**APPLICATIONS**

- **Chipset designers: complete modulator/demodulator testing**
- **Receivers manufacturers: operating limit testing and robustness**
- **R&D Laboratories: intensive non-regression testing, design/product verification**

**ORDERING CODE**

RF-LiveSim - RF Live Channel Simulator - 50-900 MHz input/output - 1U rack
DIVISUITE BASE

- TS Recorder
- TS Player over ASI
- TS Player over IP
- A/V Output
- RF Scan

Bitrate graphs
Drag & Drop PID or Service
Bitrate Alarms

Common Features coming as a default package!

DIVISUITE SOFTWARE OPTION

- Signal Quality: level, SNR, MER, BER
- Constellation
- Channel Impulse Response
- Modulation Parameters
- SFN Synchronisation

Test the field RF Quality
TX Echoes diagram

Validate the Modulator/TX RF Quality
Signal Quality measurement: level, SNR, MER, BER
Modulation parameters
Constellation
DVB-T2 L1 signaling

Validate SFN synchronization
1 PPS & 10 MHz inputs

Modulator/TX endurance tests
Log & Report files
Save events and trend measurements
DIVISUITE SOFTWARE OPTION

**TS Analyzer**
- TS Standard: MPEG, DVB, ATSC 1.0, ISDB-T/Tb (BTS)
- PSI/SI Tables Decoding
- ETSI TR 101 290
- PCR Graphs
- ASI Network Delay

Transport Stream complete Analysis!

- Validate PSI/SI Tables
  - Supported TS: MPEG, DVB, ATSC 1.0, ISDB-T/Tb
  - Add your own table analysis specification

- Check PCR
  - Drag & Drop PID containing PCR
  - PCR accuracy graphs

- Check regionalization
  - Service Plan

- Advanced Service Analysis
  - Component type & structure
  - Component bitrates

DIVISUITE SOFTWARE OPTION

**T2-MI Analyzer**
- ETSI TR 101 290 PSI/SI Tables Decoding
- ETSI TR 101 290 Priority 1, 2, 3
- Customized alarm thresholds
- Log files

Transport Stream complete Analysis!

- Validate ETSI TR 101 290 measurements
  - ETSI TR 101 290 Priority 1, 2, 3
  - Customized alarm thresholds
  - Log files

Validate your DVB-T2 Gateway!

- T2 L1 pre/post signaling, PLP allocation
  - BB frame, TS, padding/overflow
- T2 timestamp, BB frame header, ISSY field
- Single & Multi-PLP, PLP extraction
- T2-MI Network Delay

- PLP extraction/filter

- Check T2 Frames
  - BB frame header
  - ISSY field
  - T2 timestamp

- Check T2-MI streams
  - T2 L1 pre/post signaling
  - ETSI TR 101 290 T2-MI alarms
**DIVI SUITE SOFTWARE OPTION**

- GNSS Receiver [GPS/GLONASS]
- Test Reports (Google Earth compliant)
- Internal 1PPS source

Test the field coverage!

**TECHNICAL CHARACTERISTICS**

1x RF input for DVB-T/DVB-T2 (T2 Lite supported) & DVB-C/DVB-C2
1x ASI input and 1x ASI output
1x IP Data input/output
1x 1PPS & 1x 10MHz inputs for SFN delay measurement
1x GPS/GLONASS connector for coverage tests
RF Scanning (DVB-T/T2, DVB-C/C2)
RF measurements: signal level, SNR, MER, BER, graphical constellation
SFN Drift, Network Delay, Channel Impulse Response display
Single and multi-PLP support
T2-MI analysis: L1 pre & post signaling, T2 frame statistics, BB frame header, ISSY field, T2 timestamp
DVB-C2 specific analysis: L1, C2 frame, BB frame, Data Slice, PSI/SI and PIDs parsing, PCR graphs
ETSI TR 101 290 validation (priority 1, 2, 3)
Services decoding: H.265/HEVC, H.264/MPEG-4 AVC, MPEG-1/2, AAC, MP3...
TS record scheduling (PLP extraction)
TS playback over ASI (loop counters management: CC, PCR, PTS/DTS)
TS over IP forward (PC's Ethernet interface selection)
Command Line mode
Compatible Windows 7, 8/8.1, 10
USB self-powered, 660 g

**APPLICATIONS**

- Easy to use and configure
- Compact (660 g), USB self-powered
- Complete product: RF + baseband (ASI, IP, File) analysis, baseband record & playback
- All modulation schemes supported (from QPSK to 256 QAM, Normal & Rotated for Terrestrial, from 16 QAM to 4096 QAM for Cable)
- Adapted format for Drive Tests

**KEY BENEFITS**

Bundle

All Options Bundle (RF + TS + T2-MI + Drive Test Coverage)

**ORDERING CODES**

ReFeree II is a high performance, compact and portable measurement receiver for Terrestrial and Cable TV, cumulating single and multi-PLP live reception with real-time TS analysis and recording.
DIVICATCH RF Series

The DiviCatch RF devices are pocket analyzers cumulating RF live reception with Transport Stream real-time analysis, recording and stream playing.

APPLICATIONS
- R&D Streams or Signal Analysis
- RF Broadcast Troubleshoot
- Installation & Maintenance Test Tools
- Test automation (command line mode)
- Portable Demonstration Setup

KEY BENEFITS
- 4-in-1 products: RF + Baseband + Recorders + Players
- Compact (pocket size, 160 g) and USB self-powered
- Analyze/Validate TS/T2-MI/BTS Layer in real-time
- All modulation schemes supported
- Must-have Lab Tools

PRODUCTS HIGHLIGHTS

Receive DTH streams and all modes of satellite distribution links
All modulation schemes supported from QPSK to 32APSK
Allows antenna LNB powering & configuration

All modulation schemes supported (DPSK, from QPSK to 64QAM)
Complete BTS analysis: IIP packet parsing, TMCC alarms and information

All modulation schemes supported (from QPSK to 256QAM, 4096QAM for DVB-C2)
ITU-J83 Annexes A, C (rolloff 0.15) supported

TECHNICAL CHARACTERISTICS

DIVICATCH RF-S/S2
1x RF input for DVB-S/S2
RF measurements: signal level, SNR, BER, PER, CNR, Eb/No, link margin
Stream ID selection
LNB powering & configuration

DIVICATCH RF-ISDB-T/Tb
1x RF input for ISDB-T/Tb
RF measurements: signal level, SNR, MER, BER per Layer A/B/C
Stream ID selection
LNB powering & configuration

DIVICATCH RF-T/C T2/C2
1x RF input for DVB-T/T2/T2 Lite & DVB-C/C2
ITU-J83 Annexes A, C (rolloff 0.15) supported
RF Scanning (DVB-T/T2, DVB-C/C2)
RF measurements: signal level, SNR, MER, BER

DIVICATCH RF-C
1x RF input for Digital Cable
1x RF loop output
ITU-J83 Annexes A, B, C supported
RF measurements: signal level, SNR, MER, BER, EVM

1x ASI input/output
IP source analysis (from PC)
Graphical constellation, Channel Impulse Response display
PID and PSI/SI parsing, PCR graphs
ETSI TR 101 290 validation (priority 1, 2, 3)
Audio/Video player (H.265/HEVC, H.264/MPEG-4 AVC, MPEG-1/2, AAC, MP3...)
TS record scheduling (IPL extraction)
TS playback over ASI loop counters management - CC, PCR, PTS/DTSZ
TS over IP forward (IP's Ethernet interface selection)
Command Line mode
Compatible Windows 7, 8/8.1, 10
USB self-powered, 160 g

ORDERING CODES

DiviCatch RF-S/S2
DVB-S/S2 Pocket Analyzer
DiviCatch RF-ISDB-T/Tb
ISDB-T/Tb Pocket Analyzer
DiviCatch RF-T/C T2/C2
DVB-T/T2/T2 Lite & DVB-C2 Pocket Analyzer
DiviCatch RF-C
DVB-C Pocket Analyzer
Shipped bundled with DiviSuite Base software for Windows 7, 8/8.1, 10 and RF Scope option

Software Options
RF Scope (included)
T2 Analyzer
Transport Stream Analyzer
T2-MI Analyzer (for DiviCatch RF-S/S2 and DiviCatch RF-T/C T2/C2 only)

All Options Bundle (RF + TS + T2-MI)

48H MAX SHIPMENT
**DIVIDUAL ASI+SPI (LVDS or TTL)**

The DiviDual ASI + SPI is a pocket analyzer providing Transport Stream (MPEG-2 TS, T2-MI, BTS) real-time analysis, recording and stream playing, on both DVB-ASI and DVB-SPI (LVDS or TTL) connectors.

**TECHNICAL CHARACTERISTICS**
- 1x ASI input and 1x ASI output
- 1x SPI input/output (LVDS or TTL, optional)
- IP source analysis (from PC)
- Audio/Video player (H.265/HEVC, H.264/MPEG-4 AVC, MPEG-1/2, AAC, MP3...)
- TS record scheduling (PLP extraction)
- TS playback over ASI (loop counters management: CC, PCR, PTS/DTS) & Raw player
- TS over IP forward (PC's Ethernet interface selection)
- Command Line mode
- Compatible Windows 7, 8/8.1, 10

**ORDERING CODES**
- **DiviDual ASI + SPI**
  - TS Analyzer
  - T2-MI Analyzer

**DIVIDUAL ETI**

The DiviDual ETI is a real-time ETI Stream recorder and player in a pocket-sized and robust device.

**TECHNICAL CHARACTERISTICS**
- 1x ASI input and 1x ASI output for DAB/DAB+/T-DMB
- ETI NI (G703) supported
- ETI NA5592 & NA5376 (G704) supported
- Playlist/segment/loop play mode
- Scheduled recording
- Player/Recorder command line software
- Compatible Windows XP/Vista/7

**ORDERING CODE**
- **DiviDual ETI**
  - DAB, DAB+, T-DMB Recorder, Player

**DIVISUITE-IP**

Pure Software Application

The most complete analyzer software application for baseband TS/T2-MI/BTS streams. No need to plug HW device (ReFeree, DiviDual, DiviCatch) to the PC. DiviSuite-IP can analyze TS over IP or file-based input streams.

Two licensing models: Fixed PC License or Floating Server License.

**Fixed PC License Model**
Install & use the DiviSuite-IP on N independent PCs. One license key attached to one physical machine.

**Floating Server License Model**
Enables N PCs (connected in the same LAN) to use the DiviSuite-IP simultaneously.

The floating license token distribution is handled by one PC in the LAN, assigned with the Server role.

**ORDERING CODES**
- **DiviSuite-IP**
  - DAB, DAB+, T-DMB Recorder, Player
  - TS Standard: MPEG2, DVB, ATSC 1.0, ISDB-T/B (BTS)
  - PSI/SI Tables Decoding
  - ETSI TR 101 290
  - PCR Graphs
  - TS Analyzer
  - T2-MI Analyzer
  - A/V Output
  - TS Recorder
  - TS IP Forward

**License**
- **PC Fixed**: Choose the number of PCs, one license key delivered per PC
- **Floating Server**: Choose the number of simultaneous use for the default package (DS Base + TS Analyzer) and for the software option (T2-MI Analyzer), one unique license key delivered, to be activated on one PC in the LAN (Server role)

**Included**
- DiviSuite Base, T2-MI Analyzer

**Software Option**
- DiviSuite Base, T2-MI Analyzer

**DIVISUITE-IP**

**TS Analyzer**
- TS over DVB-ASI and DVB-SPI (LVDS or TTL) Analyzer, Recorder, Player
  - Shipped bundled with DiviSuite software for Windows 7, 8/8.1, 10

**TS Standard**: MPEG2, DVB, ATSC 1.0, ISDB-T/B (BTS)
- PSI/SI Tables Decoding
- ETSI TR 101 290
- PCR Graphs
- TS Analyzer
- T2-MI Analyzer
- A/V Output
- TS Recorder
- TS IP Forward

**Local Area Network**
- DS-IP running
- DS-IP installed but not running
- DS-IP detached for temporary use outside of the LAN

**Server role**
- Handling a floating license token

**Floating Server License Model**
- Enables N PCs (connected in the same LAN)
- to use the DiviSuite-IP simultaneously.
- The floating license token distribution is handled by one PC in the LAN, assigned with the Server role.

**Server role**
- Handling a floating license token

**Detach license token**
- for temporary use outside of the LAN
TestTree
c/o ENENSYS Technologies
6 rue de la Carrière - CS 37734
35577 Cesson-Sévigné - France

Tel: (+33) 1 70 72 51 70
Fax: (+33) 2 99 36 03 84
contact@test-tree.com

Sales
sales@test-tree.com

Technical Support
support@test-tree.com

www.test-tree.com