**ReFeree T2**

**DVB-T2 Measurement Receiver**

### Applications
- R&D Labs
- R&D Test & Measurement
- DVB-T2 Baseband Signal Generation
- Broadcast
- RF Reception Quality Monitoring
- DVB-T2 Broadcast Network Troubleshooting
- Installation & Maintenance
- Coverage & Drive Tests

### Benefits
- Easy to use
- Compact, USB2-self-powered
- Complete 2-in-1 product:
  - RF + Baseband (ASI + IP)

### Characteristics
- Multi-Inputs:
  - RF input for DVB-T & DVB-T2
  - ASI input
  - IP input
  - 1pps and 10MHz inputs for SFN Monitoring
  - GPS input
  - Single and multi-PLP support

### DiviSuite Software (included)
- Service Decoding (SD and HD, MPEG-2/MPEG4 H264)
- Advanced Transport Stream recording
- Transport Stream over IP forward

### Plug-in Options
- RFScope: Analysis of RF parameters (MER, ...)
- T2MI & Multi-PLP Analysis
- TS Analyzer (ETR290, PIDs, PSI/SI parsing...)

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**Complete DVB-T2 Analysis, from RF down to the Video**

**ReFeree T2** is a **DVB-T2 measurement receiver cumulating Single-PLP and Multi-PLP DVB-T2 live reception with real-time analysis and recording.**

ENENSYS ReFeree T2 allows to monitor DVB-T2 parameters (RF, T2 frame structure, PLP parameters), whatever the DVB-T2 transmission mode (Single PLP, Multi PLP, SFN/MISO ...).

As forerunner on DVB-T2, ENENSYS proposes a real time application, capable to monitor simultaneous RF signal & Transport Stream content. Monitoring screens can be totally customized.

In its basic version, the ReFeree T2 features live stream capture capabilities for baseband stream (T2-MI and MPEG2-TS) recording. The application also integrates a video decoder enabling real-time decoding of any unencrypted services (SD, HD MPEG-2/4, H264).

To facilitate your analysis, ENENSYS RFScope plug-in includes a specific screen gathering the main RF parameters in real-time: Rotated Constellation, Impulse response, SNR level, LDPC iterations, BER monitoring...

The T2MI plug-in software gives access to the most complete T2MI Multi-PLP analyzer: L1 specific screen (pre & post signalling), T2 Frame composition, T2 timestamp, ...

Finally, with the TS Analyzer plug-in, the Transport Stream contained inside the selected PLP of the DVB-T2 stream can be analyzed. PSI/SI tables are parsed and displayed (including Private Table parsing). The 3 priority levels of ETR290 are implemented. Bitrate can be monitored globally and for each service. Customizable alarms are also available.
ReFeree T2

Input Interfaces

**RF input standards**
- DVB-T2 (DVB-T possible)
**RF Connector**
- 1x F-type (female) - 75 Ω
**Frequency range**
- UHF and VHF (45 - 864 MHz)
**Sensitivity**
- -80 to -10 dBm
**Channel bandwidth**
- 6, 7 & 8 MHz
**FFT Mode**
- 1k, 2k, 4k, 8k, 8k extended, 16k, 16k extended, 32k, 32k extended
**Modulation**
- QPSK, 16QAM, 64QAM, 256 QAM
- Normal & Rotated

**1pps connector**
- 1x BNC - 50 Ω
**10MHz connector**
- 1x BNC - 50 Ω
**DVB-ASI Connector**
- 1x BNC - 75 Ω
**GPS Connector**
- 1x MCX - 50 Ω

RF Measurements

**Constellation**
- Diagram display
**SNR**
- 0 to 24, expressed in dB
**Bit Error Rate**
- Pre-LDPC, Post-LDPC, Post-BCH
**Modulation Error Rate**
- 0 to 38
- Typical 34, expressed in dB

T2MI MPLP Analysis

**T2 Specific Analysis**
- Multi-PLP support (PLP user selection)
- T2 Signalling Analysis: T2 Frame, BB Frame, L1, ...
- T2MI Analysis (on ASI or IP input)

Transport Stream Analysis

**Transport Stream** monitored in real-time from either source:
- RF or ASI through USB from ReFeree T2
- IP from host Ethernet controller

**TR 101 290**
- Priorities 1, 2 and 3 implemented

**Service information**
- PSI/SI table display
- Service List
- PID Summary
- Private table parsing

**Bitrate monitoring**
- Overall, or filtered by program or PID

**PCR Jitter**
- PCR Jitter Accuracy graphs (real-time, history and density)

Services Processing

**Service decoding:** HD and SD, MPEG2/MPEG4 H264 decoding (unencrypted programs)
**Recording of the stream on HDD, TS over IP Forward**
**Real-time forward of the entire multiplex to an IP address**

Environment

**Operating temperature**
- 0 to 60°C / 0 to 133 °F
**Storage temperature**
- -20°C to 70°C / -4°F to 158°F
**Humidity**
- 0 to 95%, non condensing

Physical and Power

**Length**
- 210mm / 8.3 in.
**Height**
- 35 mm / 1.3 in.
**Width**
- 153 mm / 6.0 in.
**Weight**
- Approx. 660 g
**Power supply**
- USB2.0 self-powered

Ordering codes

**NN6-RFT2**: DVB-T2 RF Analyzer
Shipped bundled with DiviSuite software for Windows 7 32b / 64b / XP providing Stream overview, Video decoding, stream recording

**Plug-in Options:**
- **RFScope**: RF Analysis
- **NN6-T2MI-RF**: T2MI Analysis Option for RF Analyzer
- **NN6-TS**: Transport Stream Analysis

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