



ReFeree T2

DVB-T2 Measurement Receiver

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.

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...)

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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