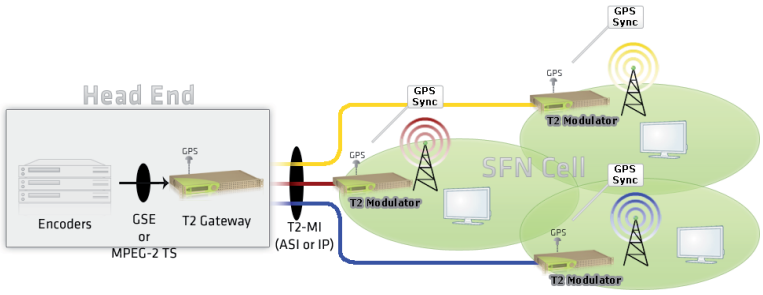
DVB-T2 in confidence

Comprehensive DVB-T2 end-to-end solution

The DVB-T2 standard is the world's most advanced DTT system offering higher efficiency, robustness and flexibility. It greatly increases the channel transmission capacity to meet HD and 3D bandwidth requirement.



Deployment of DVB-T2 network implies the insertion of T2 Gateway at the head-end, the update of transmitters with DVB-T2 modulators, as well as the replacement of STB or iTV with the new DVB-T2 front-ends. Rolling-out DVB-T2 services has also an impact on the test and monitoring chain since new modulation parameters, protocols and services have been defined in the DVB-T2 standard. The architecture remains the same for either Single PLP or M-PLP modes.

ENENSYS provides an end-to-end DVB-T2 solution that handles the complexity of the standard and provides best of breed DVB-T2 solution on the market.

DVB-T2 by the Expert

- Complete range of DVB-T2 products
- Full support of DVB-T2 standard
- Uninterrupted service guaranteed
- DVB-T2 regional broadcasting
- Eased installation and maintenance
- Simplified redundancy of T2-MI distribution
- DVB-T2 network system supervision
- DVB-T2 broadcast QoS and trend monitoring
- Various training sessions, seminars, conferences

Benefits

- Broadcast-grade products
- Field proven and interoperable solution
- Most advanced end-to-end DVB-T2 solution on the market
- No "black screen" in case of defective unit or maintenance operation
- Flexible and scalable architectures
- Spectrum efficiency optimization
- One-stop-shop solution
- Secured investment in DVB-T2 system
- Simplified T2 network administration
- Straight integration into any NMS

Points of Strength

- Head end:
  - High grade 1+1 redundant DVB-T2 Gateway
  - Seamless redundancy over ASI or IP
  - Compliant with full IP architecture
- Transmission:
  - Multiple PLP compliant
  - Local content regionalization
  - SFN MISO exciters / modulators
- Distribution:
  - Transport of T2-MI over ASI or IP
  - Redundancy of two distribution paths with seamless switching
- Test and monitoring:
  - Field testers
  - Network probes

The unique end-to-end solution

1 High grade DVB-T2 Gateway

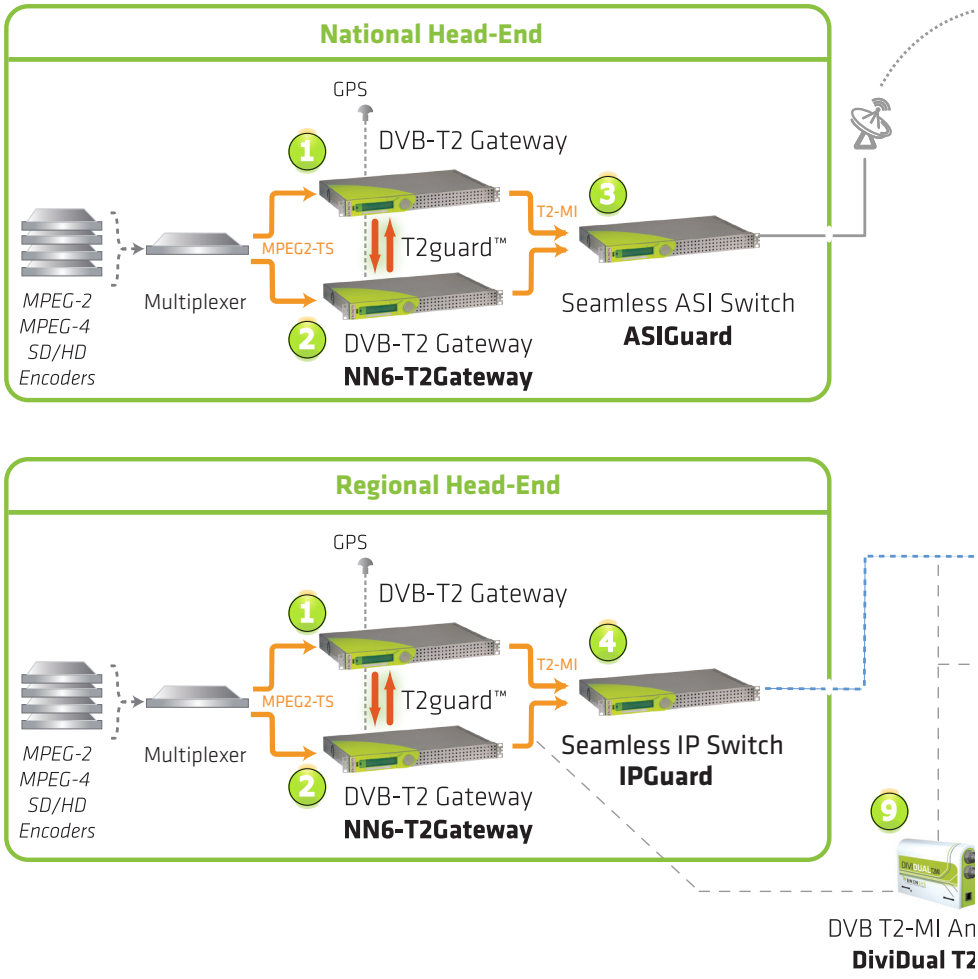
NN6-T2Gateway™ : Central body of T2 network

- Proven robustness and interoperability
- Encapsulation of MPEG-2 Transport Stream into DVB-T2 multiplex
- Full control of T2 modulation parameters
- Management of SFN/MISO network
- Physical Layer Pipes (PLP) management
- T2-MI output over ASI or IP

2 Secured redundant 1+1 T2 Adaptation

T2Guard™ : Solution for T2 Gateway

- Patented 1+1 redundancy mechanism
- Seamless operation of DVB-T2 Gateway :
  - Guaranteed T2 Frame synchronization
  - Seamless redundancy in SFN and MFN
  - Hot swap of defective unit during operation



3 4 T2-MI seamless changeover switch

ASIGuard™ and IPGuard™ : Seamless Switch

- 1+1 redundancy mechanism between two T2-MI streams
- ETR290 and T2-MI based switching conditions
- T2Gateway seamless switchover with **T2Guard**
- Passive and advanced loopthrough mechanism over ASI or IP

5 DVB-T2 Local inserter

T2Edge™ : Enabling DVB-T2 regionalization

- Patented solution for local content insertion into DVB-T2 multiplex over SFN networks
- DVB-T2 standard based solution using PLP substitution mechanism
- Reduce annual OPEX cost by delivering only once national content

or efficient DVB-T2 broadcasting

6 DVB-T2 Modulators / Exciters

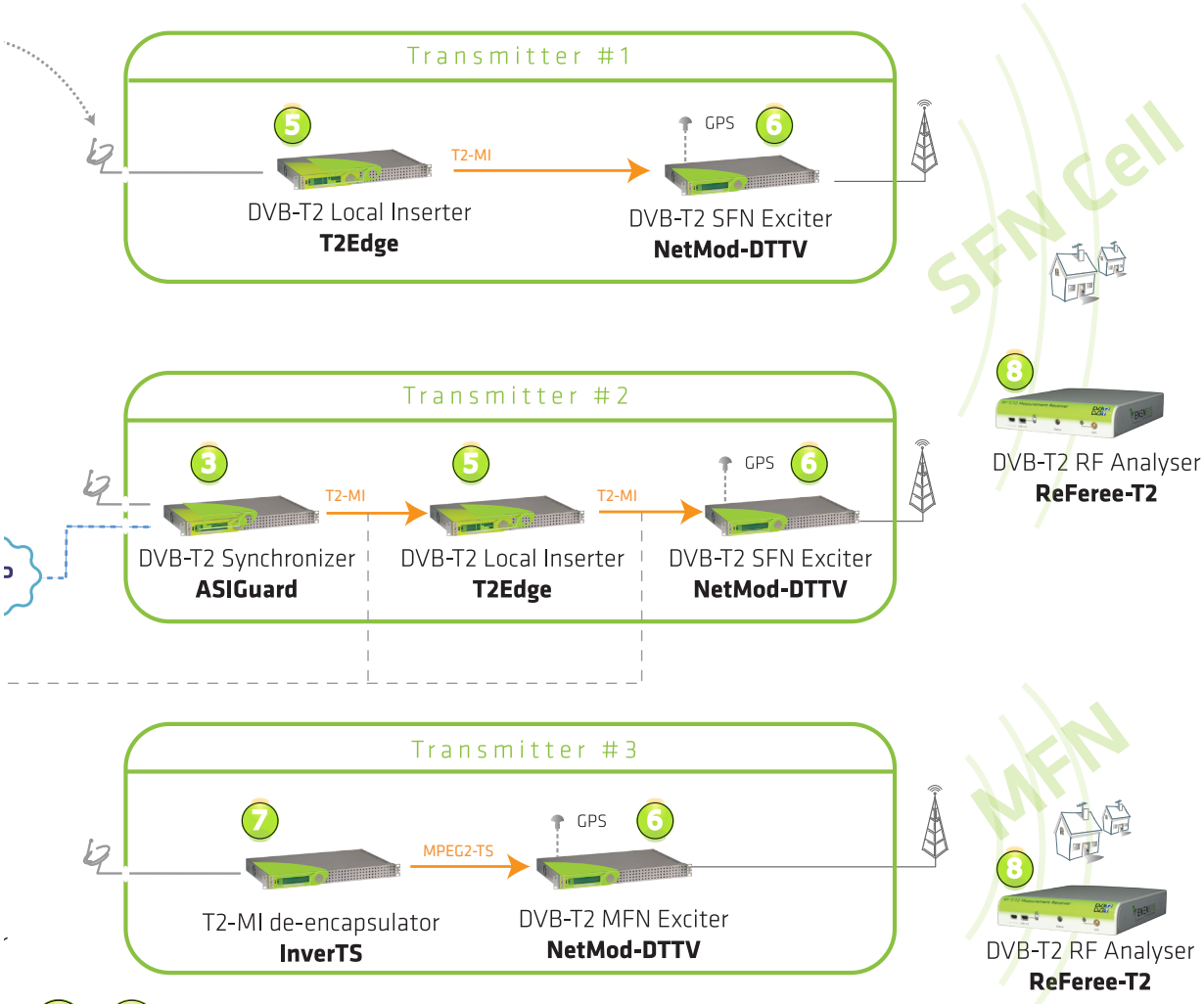
NetMod™ : Broadcast modulators

- SFN/MISO compliant
- Single and Multiple PLP support
- Outstanding performances
- Valuable integration in any transmitter
- DVB-T/H support

7 T2-MI de-encapsulator

inverTS™ : T2Gateway^{-1}

- De-encapsulation of T2-MI stream into MPEG-2 TS
- Single and Multiple PLP support
- Advanced monitoring features



8 9 DVB-T2 Analyzer

ReFeree-T2™ : RF Measurement

- Demodulator for RF DVB-T2 streams
- Receiver for baseband signals (T2-MI & MPEG2-TS)
- Analyze, capture and play DVB-T2 streams
- Portable & USB self-powered device
- Real time analysis of RF and baseband signals
- RF signal quality monitoring

DiviDual T2-MI™ : Baseband analyzer

- Validate and analyze T2-MI & MPEG2 TS layer in real time
- Compact & USB self-powered device
- All in one device :
  - Capture / Analysis / Playing baseband signals

DVB-T2 solutions by Experts

Products' Technical Characteristics

DVB-T2 Gateway

1 2

NN6-T2Gateway™

DVB-T2 encapsulation	Full support of all BB frame modes
Network configuration	In-band control of T2 modulators and individual addressing
SFN Adaptation	Integrated SFN/MISO adapter
Physical Layer Pipe	Single and M-PLP handling Type 1 and type 2 management Static and dynamic PLP allocation
Interfaces	ASI or IP inputs and outputs
Redundancy	Mirrored outputs and T2Guard

T2Guard™ — Synchonization of two T2Gateways at the T2Frame and SFN level for seamless switch at any time

T2-MI seamless switch

3 4

ASIGuard™ and **IPGuard™**

Standards	DVB-T2 MI, MPEG2-TS
Seamless switch	Guarantee seamless switchover in SFN and MFN when combined with T2Guard
Inputs resynchronization	re-alignment of identical but delayed streams
Interfaces	Seamless switch over ASI or IP
Availability	Passive and advanced loopthrough Redundant power supply

DVB-T2 Local inserter

5

T2Edge™

Local insertion	Insertion of regional/local services using PLP substitution mechanism
SFN compliant	Deterministic local TV insertion to enable SFN broadcasting
Data Inputs	2x ASI inputs ASI1: Main T2-MI M-PLP stream ASI2: SecondaryT2-MI M-PLP stream
Outputs	2x mirrored ASI outputs Compliant T2-MI M-PLP stream
Availability	Bypass mode to guarantee service availability

DVB-T2 Modulators / Exciters

6

NetMod-DTTV™

OFDM modulation	DVB-T2 and DVB-T/H
SFN support	Full support of SFN and MISO
Physical Layer Pipe	Single and M-PLP handling Type 1 and type 2 management Static and dynamic PLP management
Broadcast quality	MER > 44 dB, highly stable
Data Inputs	Redundant ASI, IP
Reference Inputs	10 MHz, 1 PPS, or GPS antenna input
Outputs	RF and IF, Main + monitoring

T2-MI de-encapsulator

7

inverTS™

PLP management	de-encapsulation of Single or M-PLP T2-MI stream
Data inputs	2x ASI inputs (T2-MI stream)
Outputs	6x ASI outputs (MPEG-2 MPTS), IP
Monitoring	Advanced monitoring of T2-MI stream

T2 Network Test and Monitoring

8 9

ReFeree T2™

All-in-one device	Capture, analyze and record DVB-T2 and DVB-T signals (RF and baseband)
Comprehensive Interfaces	RF, ASI, Ethernet, 1PPS/10MHz, GPS
RF Analysis	Accurate measurements of key RF parameters (signal level, SNR, ...)
Baseband Analysis	MPEG2-TS and T2-MI analysis compliant with ETSI TR 101 290
Small and robust format	Portable & USB self-powered unit

DiviDual T2MI™

All-in-one device	Capture, analyze and record DVB-T2 and DVB-T baseband signals
Interfaces	ASI and Ethernet
Baseband Analysis	MPEG2-TS and T2-MI analysis compliant with ETSI TR 101 290
Small and robust format	Portable & USB self-powered unit

RoHS 2002/95/EC

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