



## EITV – Entretenimento e Interatividade para TV Digital

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### EITV Payout

**EITV Payout** is a complete interactive digital television transmission station. With this equipment, operators and producers can transmit digital television signal using high definition and interactive content. This station can also be used by television and set-top boxes manufacturers to validate their product. To the iTV application developers it is the ideal platform to develop and test their applications.

**EITV Payout** is a digital transmission station totally prepared for the standards **SBTVD**, **ISDB** and **DVB**, supporting the exclusive features of each standard as: **H-264** and **MPEG-2** video coding; **ISDB-T**, **DVB-T**, **DVB-C** and **DVB-S** modulation; interactive applications and **Ginga**, **MHP** and **GEM** object carousels.

**EITV Payout** has an excellent cost-benefit relation, because it integrates six different equipments into a single product:

- Audio and Video Server;
- **PSI/SI** and **EPG** Generator;
- Interactive Data Server (**DSM-CC**);
- Multiplexer;
- Re-multiplexer for **HDTV**, **SDTV** and **Mobile TV** Signal Generation;
- Modulators for **ISDB-T**, **DVB-T**, **DVB-C** and **DVB-S**;

**EITV Payout** is the most adequate system for the creation of demonstration and test environments for televisions, set-top boxes, mobile and portable devices, and to present **iTV** content in high definition.

### Technical Specifications

#### Audio and Video Server

- 250 GB to store audio and video content;
- Video formats: **H-264**, **MPEG-1**, **MPEG-2** and **MPEG-4 AVC**;
- Audio formats: **MPEG AAC**, **MPEG-1**, **MPEG-2** and **MPEG-4 AAC**;
- A/V playlist configuration from content files stored on the hard disk;
- Upload support for TS high definition content (bitrate up to 40 Mbps);
- PID's configuration of audio, video and PCR;

#### PSI/SI and EPG Generator

- Generation of tables **PAT**, **PMT**, **NIT**, **EIT**, **SDT**, **TDT**, **TOT**, **BIT** and **AIT**;
- **NIT** descriptors (*area code*, *partial reception*, *remote control key id* etc.);
- **EIT** generation with electronic programming guide information for the next 30 days;
- **EIT** generation for different segments (**L-EIT**, **H-EIT** and **M-EIT**);
- Configuration of the repetition rate of the tables in milliseconds;

#### Interactive Data Server (DSM-CC)

- Generation of **DSM-CC** object carousel;
- Support to **Ginga-NCL**, **Ginga-J**, **Lua**, **Ginga-Bridge**, **MHP** and **GEM** applications;
- Real time insertion of the object carousel in the transport stream;
- Configuration of *organization id* and *application id*;
- Configuration of the *auto start* option;
- Data descriptors (*association tag*, *component tag*, *carousel id*, *data broadcast id*);
- AIT descriptors (*application signalling*, *transport protocol*, *application descriptor*);
- Configuration of the transmission bit rate of the application;
- Configuration of the AIT and *data stream* PIDs;



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### Multiplexer

- Transport stream **TS (H-222)** real time multiplexer;
- Support to real time content with **ASI** interfaces (up to 4 independent inputs);
- Option to multiplex real time and recorded content simultaneously;
- Multiplex of additional streams: video, audio, closed-caption and subtitles;
- Transport stream (**TS**) real time transmission to **ASI** or **SPI** outputs;
- Transport stream (**TS**) generation to file (**hard drive**);

### Remultiplexer for HDTV, SDTV and Mobile TV Signal Generation

- Re-multiplexer to generate transmission signals for **HDTV, SDTV** and **Mobile TV**;
- Transport stream generation organized in hierarchical **layers (A, B, C)**;
- **IIP** package generation (ISDB-T Information Packet);
- **TMCC** information generation (*Transmission and Multiplexing Configuration Control*);
- Re-generation of **PCR** packages (*Program Clock Reference*);
- Configuration of the transmission mode and guard interval;
- Configuration of segments, modulation, code rate and time interleaving of layers;
- **1-SEG** content transmission for partial reception;
- Configuration to enable emergency alert flag;

### Modulators for ISDB-T, DVB-T, DVB-C and DVB-S

- Integrated modulator in the equipment;
- Signal output in RF;
- Configuration of the channel transmission frequency;
- Terrestrial modulation compatible with SBTVD-T standard (based on Japanese ISDB-T standard);
- Terrestrial modulation compatible with the European DVB-T standard;
- Cable modulation compatible with the European DVB-C standard;
- Satellite modulation compatible with the European DVB-S standard;

## Hardware Specification

### ISDB-T Modulator

- Transmission System: ARIB STD-B31 (ISDB-T)
- Bandwidth: 5 / 6 / 7 / 8 MHz
- RF Output Frequency: 47-862 MHz  $\pm$ 1 ppm
- RF Step Size: 100 kHz
- RF Signal to Noise (S/N) 44dB typ. @474MHz
- Transmission Mode: 2k, 4k, 8k
- Phase Noise: < -90 dBc @10kHz
- Spectral Purity: > 50dB (47 ... 862 Mhz)
- RF Main Output: 50 $\Omega$  BNC
- RF Main Output Level: -34.5 ... -3 dBm  $\pm$  1 dB
- RF Main Return Loss: > 15 dB (47 ... 862 MHz)
- RF Monitor Output: 75 $\Omega$  F-Connector
- RF Monitor Output Level: -30.5 dBm  $\pm$  2 dB
- RF Monitor Return Loss: > 15 dB (47 ... 862 MHz)
- Transmission Parameters:
  - Hierarchical Layers: TV (up to 3 layers)
  - MODE: MODE 1, MODE 2, MODE 3
  - Guard Interval: 1/4, 1/8, 1/16, 1/32
  - Modulation Modes: DPSK, QPSK, 16QAM, 64QAM
  - Coding Rate: 1/2, 2/3, 3/4, 5/6, 7/8
  - Time Interleave Constant: 0 to 4
  - Segments: TV (13, arbitrary layers configuration)
  - Partial Reception: Configurable

### DVB-T (COFDM) Modulator

- Transmission System: EM 300 744(DVB-T)
- Bandwidth: 5 / 6 / 7 / 8 MHz
- Modulation Modes: QPSK, 16/64 QAM
- RF Connector: 75 $\Omega$  F-Connector (2 connectors)
- RF Output Frequency: 400-862 MHz  $\pm$ 1 ppm
- RF Step Size: 100 kHz
- RF Signal to Noise (S/N) 44dB typ. @474MHz
- Transmission Mode: 2k, 4k, 8k
- Guard Interval: 1/32, 1/16, 1/8 and 1/4



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- Code Rate: 1/2, 2/3, 3/4, 5/6, 7/8
- RF Output Level:  $-30 \pm 2$  dBm
- Spurious Suppression:  $> 50$  dB (d2: 20dB)
- Noise floor:  $-102$  dBm
- Phase Noise:  $< -85$  dBc @ 10kHz
- Return Loss:  $> 20$  dB

### DVB-C (QAM-A/C) Modulator

- Transmission System: ITU-T J.83 A/C – EM 300 429 (DVB-C)
- Modulation Modes: 4/16/32/64/128/256 QAM
- Symbol Rate: 5.0 ... 7.1 MBd
- Symbol Rate Accuracy:  $< \pm 25$  ppm
- Symbol Rate Resolution:  $< 12$  mBd
- RF Connector: 75Ω F-Connector (2 connectors)
- RF Frequency Range: 400 ... 862 MHz
- RF Frequency Accuracy:  $< \pm 1$  ppm
- Output Level:  $-25 \pm 1$  dBm
- Spurious Suppression:  $> 50$  dB (d2: 20 dB)
- Return Loss:  $> 20$  dB

### DVB-S (QPSK) Modulator

- Transmission System: ETS 300 421 (DVB-S)
- Convolutional Rate: 1/2, 2/3, 3/4, 4/5, 5/6, 6/7, 7/8
- Symbol Rate: 0.088 ... 45 MBd
- Symbol Rate Accuracy:  $< \pm 25$  ppm
- Symbol Rate Resolution:  $< 50$  mBd
- RF Connector: F-Conn (2 connectors)
- RF Frequency Range: 950 ... 2150 MHz
- RF Frequency Accuracy:  $< \pm 1$  ppm
- Output Level:  $-30 \pm 3$  dBm
- Spurious Suppression:  $> 50$  dB (d2: 25 dB)
- Return Loss:  $> 15$  dB

### ASI/SDI Input interface

- Four independent digital video channels
- DVB/ASI compatible with EN50083 standard
- SDI compatible with SMPTE-259M standard
- DVB-ASI Connectors: 75-Ω BNC (4 connectors)
- Transmit Rate: 0...214 Mbps
- 10-bit SDI, full stream @ 270 Mbit/s
- Input Return Loss:  $> 17$  dB
- Error Free Cable Length: 300m max
- Package Size: 188 or 204

### ASI Output Interface

- Physical Layer: DVB-ASI (Coax)
- Connector DVB-ASI: 75-Ω BNC (2 connectors)
- Transmit Rate: 0...150 Mbps
- Transmit Rate Resolution:  $< 1$  bps
- Transmit Rate Stability:  $< \pm 10$  ppm
- Burst Mode On/Off: yes
- Maximum Jitter: 70 ns p-p
- Package Size: 188 or 204

### SPI Output Interface

- Physical Layer: DVB-SPI (Coax)
- DVB-SPI Connector: 25-pin sub-D
- External-Clock Connector: 50-Ω SMA
- DVB-SPI Clock Rate: 0...13.5 MHz
- Clock-Generator Resolution:  $< 0.1$  Hz
- Transmit Rate: 0...108 Mbps
- Package Size: 130, 188, 192, 204
- Target-Adapter Power: 5V, 2A

### General Specification

- Voltage: AC 110 / 220V, 50/60Hz
- Operation Temperature: 10 to 40 degrees
- Operation Humidity: 45 ~ 85% RH
- Guaranteed Temperature: 15 to 35 degrees
- Guaranteed Humidity: 45 ~ 85% RH



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### ***Target Applications***

- Low cost alternative for operation in DTV broadcasters;
- Presentation of HDTV, SDTV and Mobile TV contents and programs;
- Interactive application development and test;
- Set-top box and receiver development and test;
- Middleware solution development and test;
- iTV Laboratory;
- Data transmission (data broadcasting);
- Interactive TV transmission;

### ***Available Models***

Rack 1U case:



### ***Optional Items***

- ASI/SDI input interface
- ASI output interface
- SPI output interface
- ISDB-T modulator
- COFDM (DVB-T) modulator
- QAM (DVB-C) modulator
- QPSK (DVB-S) modulator

Sales Department

EITV COMÉRCIO DE EQUIPAMENTOS DE INFORMÁTICA E TELECOMUNICAÇÕES LTDA.