

ETV 100 C



DVB/T/S



ETV 100 C – Digital Terrestrial and Satellite TV (DVB-T & DVB-S)

STUDIED TOPICS

DTTV: Digital Terrestrial TV

- ✓ Transmission standards
- ✓ Transmission encodings
- ✓ COFDM
- ✓ Wired transmission
- ✓ Transmission in a clear channel
- ✓ Reception
- ✓ Quality measurement (power, MER, CBER, VBER)
- ✓ Code rate influence, guard interval, FFT-type on for the rate

Satellite

- ✓ Transmission standards
- ✓ Transmission encodings
- ✓ Reception
- ✓ Quality measurement (power, MER, CBER, VBER)

AREAS OF APPLICATION

- Vocational training in electricity/electronics, digital telecommunications
- Institutes of technology
- Bachelor's degree / Master's degree
- Electrical Engineering / Telecoms / Network school
- Engineering school

Transmission

ETV 100 000 – HDMI source

Mini PC Vesa under Windows 7 starter provided with:

- Open Office.
- CPU Atom N2600, 1,6 GHz quad-core.
- Graphics card Intel accelerator 3600.
- Hard disk 320 GB, RAM 2 GB.
- 1 LAN port realtek PCIe GBE.
- 4 USB links.
- Power supply *via* external mains adapter (*provided*).
- Audio/Video device management software installed.
- 1 HDMI, 1 VGA, 1 audio output.
- 21,5-inch HDMI screen, 1680x1050 full HD, integrated Webcam.
- Keyboard/Mouse.



ETV 110 000 – DVB-T digital modulator (EN206)

DVB-T digital modulator, high definition:

- HDMI encoding to DVB-T (VHF and UHF).
- Video encoding: MPEG-4 AVC/H.264.
- Audio encoding MPEG-1 Layer II, 48-kHz sampling.
- Keyboard/Display programming.
- DVB-T COFDM modulation.
- Bandwidth (6 MHz, 7 MHz, 8 MHz).
- Constellation (QPSK, QAM16, QAM 64).
- Code rate (1/2, 2/3, 3/4, 5/6, 7/8).
- Guard interval (1/4, 1/8, 1/16, 1/32).
- Transmission mode 2 k, 8k MER \geq 42 dB.
- Frequency RF 30~960 MHz, 1-kHz steps.
- Integrated coupler.
- LCN programming.
- Generation of DVB tables.



ETV 101 000 – Yagi antenna (gain: 12,5 dB) on a tripod

UHF antenna:

- 28 elements.
- Gain: 12,5 dB.
- Channels 21-60 (470 to 790 MHz).
- LTE protection -32 dB.
- 75-Ohm output (BNC female).
- 10-m BNC cable.
- Butterfly nuts..



Reception

EMD 038 220 – HD Ranger Lite, field-strength meter DVB-T/T2/C/C2/S/S2

Powerful field-strength meter

Triple-window displaying → 3 functions on 1 single screen:

Spectrum analyzer:

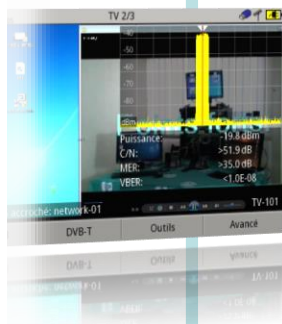
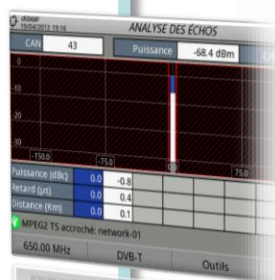
- **Tuning ranges:**
 - 5 → 1000 MHz (terrestrial)
 - 950 → 2150 MHz (satellite)
- **Level 70dB μ V → 120dB μ V** (setting by step of 5dB μ V)
- **Full span/ 500MHz/ 200MHz/ 100MHz/ 50MHz/ 10MHz**

Measurement:

- **DVB-T & DVB-T2, COFDM:**
 - 35 dB μ V → 115 dB μ V
 - Power measurements: CBER, VBER, MER, S/N
- **FM radio:**
 - Level
- **DVB-S QPSK:**
 - 35 dB μ V → 115 dB μ V
 - Power measurements: CBER, MER, C/N
- **DVB-S2 QPSK, 8PSK, 16APSK, 32APSK:**
 - 35 dB μ V → 115 dB μ V
 - Power measurements: CBER, LBER, MER, S/N, BCH
- **DSS QPSK:**
 - 35 dB μ V → 115 dB μ V

Tools:

- Constellation diagram
- Echoes analyzer mode
- *Datalogger* (automatic captures and savings of the measurements)
- Selection of the PLS code, ISI filtering, key for screenshots.



ETV 102 000 – Satellite dish (35 cm) on a tripod

Model: Golden Media GM-201:

- Noise figure: 0,1 dB.
- Output: 950 MHz - 2150 MHz.
- Satellite compass.
- 10-m BNC cable.
- Full HD, 3D Ready.
- Input: 10.70 – 12.75 GHz.
- L.O: 975 MHz/10.6 GHz.
- Tripod, adjustable.





DTTV transmission/reception configuration



ETV 100 041 – User & Practical works manuals:

- Introduction to DVB-T
- COFDM transmission for the DVB-T
- Hardware architecture
- Wire-line DVB-T transmission
- Signal sturdiness
- Amplifier
- Hertzian DVB-T transmission
- DVB-T reception pattern
- Satellite DVB-S reception

Standard configuration:

ETV 100 C – Complete Package for the study of DVB-T and S broadcasting, including:

Reference	Description	Qty
ETV100000	HDMI Source, Software for the audio and video peripherals, 21.5'' HD screen, 1680*1050, loudspeakers, embedded Webcam, power supply.	1
ETV110000	DVB-T digital modulator high definition (EN-206) BNC output, supplied with HDMI lead.	1
ETV110200	Full HD HDMI Hub, 3 HDMI leads.	1
ETV111000	Full HD TV, 48'', BNC/TV transfer, BNC 'T'.	1
EMD038220	Field strength meter, DVB-T/T2/C/C2/S/S2 (HD Ranger Lite) BNC input, protective cover.	1
ETV101000	DTTV antenna with tripod and RG58 coaxial connecting lead, 10m, 75Ω BNC.	2
ETV102000	Satellite antenna kit, with tripod, and RG58 coaxial connecting lead, 10m, 75Ω BNC, compass.	1
ETV103000	100-m cable, RG58, with BNC connections.	1
ETV104000	Set of accessories: (2x BNC 'T', 3x BNC 20 dB attenuators, 3x 1-m BNC leads, RF amplifier).	1
ETV100041	User and Practical works manuals.	1