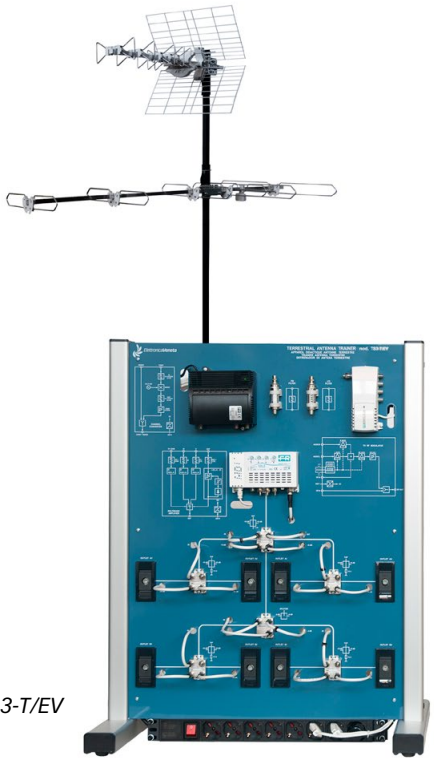
TV/SAT ANTENNA LABORATORY

INTRODUCTION

With the TV/SAT ANTENNA LABORATORY, learners can examine the typical aspects of the design and realization of an antenna reception system, with an in-depth analysis of signal amplification and distribution.
It is composed of two trainers mounted on a handy and modular vertical structure. The equipment is very user friendly during experiments, thanks to the functional diagram silkscreen printed on the structure.
Each trainer includes professional devices, which enable to realize:

- **MATV** (Master Antenna Television), centralized systems for terrestrial signals;
- **SMATV** (Satellite Master Antenna Television), centralized systems for satellite signals.



Mod. TS3-T/EV

Mod. TS3-S/EV

The lab is composed of the following two trainers, which can be used both individually and together to realize a complete system:

- **Terrestrial Antenna Trainer mod. TS3-T/EV**: enables to study a complete MATV system. Reception, amplification and distribution of VHF/UHF terrestrial TV signal for a two-floor building with 8 user plugs.
- **Satellite Antenna Trainer mod. TS3-S/EV**: enables to study a complete SMATV system. Reception, amplification and distribution of satellite TV signal provided by two dish antennas for a two-floor building with 16 user plugs.

The combinations of trainers **TS3-T/EV** and **TS3-S/EV** will enable to study a complete reception, amplification and distribution system of both types of signals, for a two-floor building with 16 user plugs.

The following optional accessory is available:

- **Field meter with noise generator mod. TS3-M/EV**
  It can be used with both trainers to:
  - Satellite Dish Pointing Calculator
  - Correct pointing of TV antennas and satellite dishes
  - Measure signal level and attenuation with accurate results
  - Visualize the spectrum of the received signal
  - Visualize the received terrestrial or satellite TV program
  - Analysis of TV / IF SAT / CATV amplifiers and distribution networks
  - Band and channel filters calibration
  - Attenuation of cables and passive components measurements

TERRESTRIAL ANTENNA TRAINER mod. TS3-T/EV

TRAINING PROGRAM:

- Design of a complete MATV system, composed of:
  - 2 VHF/UHF antennas
  - 2 floors
  - 8 user plugs
  - passive and active components to amplify and distribute the signal
- Characteristics and operation of the featured components, such as: mixers, wide band multi-input and channel amplifiers, filters, converters, power supplies, cables, plugs, switches, dividers and TV antennas (VHF/UHF)
- Cable attenuation measurement **(mod. TS3-M/EV option)**
- Distribution network: cascade on 1 column and nodes
- System including multi-band amplifier and TV signal distribution
- Use of channel filters and of a channel converter
- Use of an included RF generator to test signal attenuation and frequency conversion
- Use of antennas
- Connection of the terrestrial and satellite antenna systems **(mod. TS3-S/EV option)** to realize a complete reception, amplification and distribution system, compatible with all TV/SAT signals.

TECHNICAL SPECIFICATION:

- Aluminum vertical frame
- 1 multi-band amplifier:
  - 4 RF inputs for antennas in III/IV/V/UHF bands
  - 1 RF output combining all the input signals
  - Gain: > 30dB, adjustable to 20dB for each input
  - Output level: > 100dBµ(90 dBµ band III)
  - A.B.L.A. technology (Automatic Building Level Adjustment) to keep output levels constant at varying input levels
  - power supply: 230 Vac (110 Vac upon request)–50/60Hz
- 1 FM notch filter (88-108MHz)
- 1 LTE notch filter (790-862MHz)
- 1 Channel converter:
  - 1 RF Input for the main antenna
  - 1 RF Input for the secondary antenna
  - Converted channel level control: 20dB
  - 1 RF output combining all the input signals
  - In/Out channels: selectable via Dip-Switch
- 1 RF Generator:
  - Audio/Video inputs
  - Output level: 90dBµ, adjustable
  - Output channel: selectable via Dip-Switch
- 1 two-way divider
- 5 two-way switches
- 8 simple user plugs (terminals), IEC connector
- 2 Antennas for VHF and UHF bands
- RF connectors: IEC type
- Accessories:
  - 1 RF cable coil, 100m
  - 5 cables, 1.5m
  - 1 pole to fix antennas
  - 8 terminations, 75 Ohm
  - 10 F Type Female Screw-on connectors
  - 1 tripod

Power supply: 230/110Vca 50/60Hz – 10W
Dimensions: 660 x 360 x 810 mm
Weight: 16 kg

SATELLITE ANTENNA TRAINER mod. TS3-S/EV

TRAINING PROGRAM:

- Design of a complete SMATV system composed of:
  - 2 SAT antennas
  - 2 floors
  - 16 user plugs
  - passive and active components for signal amplification and distribution
- Characteristics and operation of the featured components, such as: passive and active multi-switches, switches, and SAT antennas.
- Cable attenuation measurement **(mod. TS3-M/EV option)**
- Distribution network: cascade on 1 column
- Multi-switch cascade system for IF SAT and TV signal distribution
- How to install and point a satellite dish
- Connection of the satellite and terrestrial antenna systems **(mod. TS3-T/EV option)** to realize a complete reception, amplification and distribution system, compatible with all TV/SAT signals.

TECHNICAL SPECIFICATION:

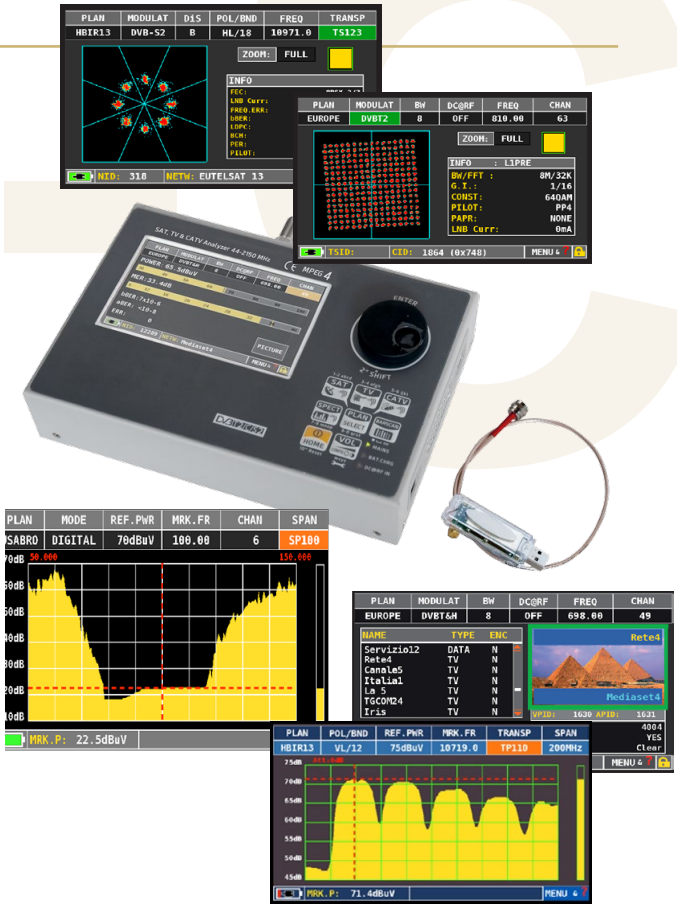
- Aluminum vertical frame
- 2 Multi-switches:
  - installation: through and endline
  - 8 IF-SAT inputs
  - Compatibility: V/H polarization, Low/High band, signals provided by two LNBs (SAT1/SAT2)
  - 1 terrestrial TV input
  - 8 derived TV/SAT outputs
  - 8 IF-SAT outputs (only for "through" configuration)
  - 1 terrestrial TV output (only for "through" configuration)
  - power supply: 230 Vac (110 Vac upon request)–50/60Hz
- Satellite commutation control:
  - 14/18 V
  - 0/22 kHz
  - DISEqC
- 16 de-mixed user plugs (terminal):
  - 1 IF-SAT+TV cable input
  - 1 TV plug with IEC connector
  - 1 SAT plug with F connector
- 2 Antennas for Ku bands:
  - Parabolic reflector: 1m diameter, offset type
  - LNB: 4 IF outputs (V/H, Low-High)
- IF/RF connectors: F/IEC type
- Accessories:
  - 1 RF cable coil, 100m
  - 5 cables, 1.5m
  - 1 pole to fix antennas
  - 20 F Type Female Screw-on connectors
  - 1 tripod

Power supply: 230/110Vca 50/60Hz – 10W
Dimensions: 660 x 360 x 810 mm
Weight: 16 kg

SUPPLIED WITH

THEORETICAL-EXPERIMENTAL MANUAL
PRACTICAL EXERCISES: MEASUREMENT AND PARAMETERS VARIATION

Optional: FIELD METER WITH NOISE GENERATOR - Mod. TS3-M/EV



FIELD METER

- Accurate and easy to use
- DVB-S/S2, DVB-T/T2, DVB-C
- All digital measurements
- DISEqC & SCR dCSS
- SD and full HD MPEG 2 - 4 images
- Analog TV and Video Input
- Automemory and Autoquality
- Spectrum with memory peak
- Features:
  - Measures level / spectrum / parameters of CATV (Cable TV) / RF (VHF/UHF) and SAT (IF) signal
  - Satellite Dish Pointing Calculator
  - Correct pointing of TV antennas and satellite dishes
  - Measure signal level and attenuation with accurate results
  - Visualize the spectrum of the received signal
  - Visualize the received terrestrial or satellite TV program
  - Analysis of TV / IF SAT / CATV amplifiers and distribution networks
  - Band and channel filters calibration
  - Attenuation of cables and passive components measurements
- Received signal spectrum visualization:
  - 44-860 and 950-2150 MHz
  - Min. span 2 MHz
- Analog, HD DVB-T and DVB-S TV demodulator with TV program visualization
- Measurements:
  - POWER
  - BER (bBER / aBER) and MER
- QPSK/8PSK/64QPSK/256QPSK constellation visualization
- 1 Display for measurement/program settings/visualization: 4,3" color LCD touch screen, 16/9
- Mechanical keypad for instrument settings
- Wall power supply and rechargeable battery
- PC interface software
- Supplied with shoulder bag
- Dimensions: 120 x 180 x 45 mm
- Weight: 1 Kg

NOISE GENERATOR

- Frequency range: 4 – 2.500 MHz
- Noise type: White Gaussian
- Output power: – 56 dBm
- Flatness: 1,5 dB typ.
- Impedance: 75 Ω
- Power supply: via USB, 5 Vdc, 80 mA
- Dimensions: USB key