

Advanced Communication Tester

- SINE SIGNAL & NOISE GENERATOR - SELECTIVE LEVEL METER**
- CROSS TALK METER - SPECTRUM & NETWORK ANALYZER**
- LONGITUDINAL BALANCE & RETURN LOSS METER**
- MICROINTERRUPTION & IMPULSIVE NOISE METER**
- VOLTAGE - RESISTANCE - CAPACITANCE METER**
- TDR & RESISTANCE FAULT LOCATOR**
- POTS DEVICE SIMULATOR**

ALL ON THE PALM OF YOUR HAND!

This new instrument combining various kinds of transmission, metallic and special tests, may be considered up to today the most advanced Test Set for qualifying and maintenance of advanced transmission systems and copper pairs used for various telecommunication services:

- POTS •ISDN •T1 •E1 •HDSL 1/2P •SHDSL •ADSL •ADSL2+ •VDSL2 •VDSLp**



ERGONOMIC CHARACTERISTICS

One of **ACT6000** most interesting features is the colour LCD high resolution graphic display, a real %window+ on the most advanced measurements world. The keypad, the function keys, connections and interfaces on the upper panel grant to the instrument a high operating level.



DATA COMMUNICATION COPPER PAIRS AND CHANNELS QUALIFICATION / TROUBLESHOOTING

One **ACT6000** can perform easy and quick %Single-End Line Tests+or specific %End-to-End Line Tests+ if coupled with another **ACT6000**. The wide kind of measurements of the **ACT6000** allows the qualification and troubleshooting on various communication carriers and copper pairs used for digital streams with a frequency occupancy up to 6 MHz (or 35 MHz optional); moreover, the instrument can automatically extrapolate the ADSL, ADSL2+, VDSL2 and VDSL Plus maximum expected data rate of the copper line under test.

GENERAL APPLICATIONS



TELCOS - Voice / data and internet services



Air Traffic . Voice and data communication services



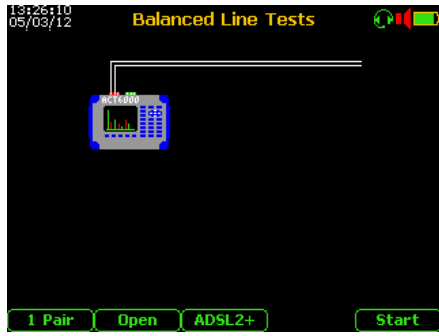
Highway - voice and data communications services



Railway - voice / data communications services

ACT6000 È Typical Applications examples

AUTOMATIC SINGLE-END LINE QUALIFICATION

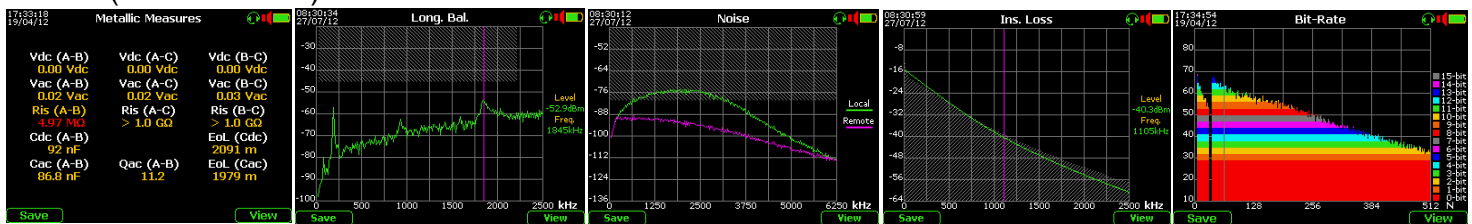


Thanks to the ASW-1/II software, after the quick cable selection among the many types included on the data base, it is possible to start an Automatic Sequence to perform a complete set of electrical and transmissive tests to qualify the line for a specific service.

For the ADSL, ADSL2+ and VDSL2 services, over the mentioned electrical and transmissive tests, the S/N Ratio and maximum Bit-Rate estimation are added.

Measure	ADSL2+	Gen.Office	Subscriber
DC Volt.	(b a)		0.00 Vdc
AC Volt.	(b c)		0.03 Vac
R Insul.	(b a)		4.97 MΩ Lo-Isol
DC Capac.	(b a)		92 nF
AC Capac.	(b a)		86.8 nF
Noise		-44.5 dBm	-63.3 dBm
Ret. Loss		-13.4 dB	
Long. Bal.		-50.1 dB	
Crosstalk			
Line End			2123 m
Ins. Loss		-23.1 dB	
Bit-Rate		1056 kbps	12896 kbps

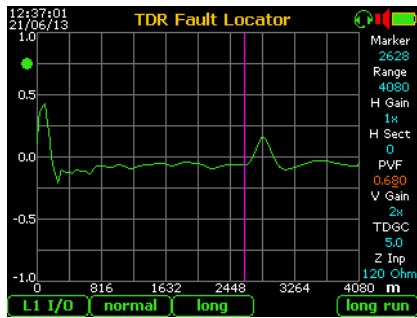
Finished the Sequence (about 100 seconds), a summary table appear on the screen with pass/fail indication (in red) for each result according to the international acceptability criteria and transmissive masks (ETSI or ANSI).



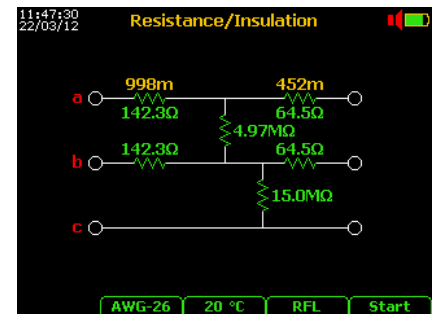
The results can be saved on the internal memory and then visualized or exported on the USB pendrive or PC as .CSV file (Windows Excel compatible) or as .BMP screenshot.

FALUTS LOCATIONS

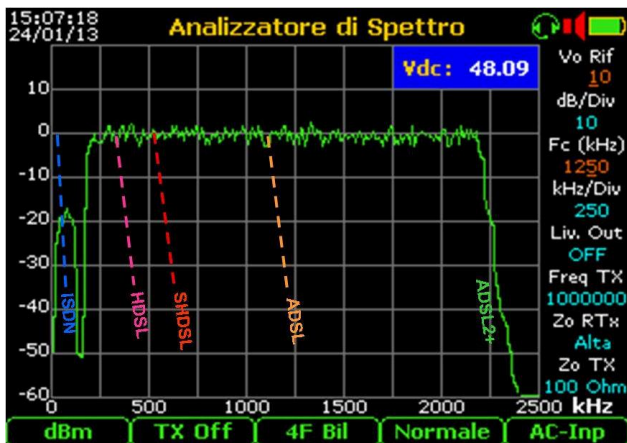
A powerful TDR allows the quick finding of the End-of-Line but also the location of possible faults or anomalies as: interruptions, short circuits, low insulation, bridge-taps, split-pairs, and also the possible micro-interruptions thanks to the %Sample & Hold+ test modality.



Other important available function is the **Resistive Bridge - Fault Locator** that allows to localize various combinations of low insulations points.



POWER SPECTRUM DENSITY (HIGH IMPEDANCE)



The ACT6000's **Spectrum Analyzer** can operate on various frequency bands, readout mode and also with special Front/End configuration as the High Impedance.

Using the High Impedance configuration (not intrusive mode), it is possible to perform the PSD to verify the spectrum and energy of any digital stream (i.e., to extrapolate the ADSL, ADSL2+ and VDSL2 profile) connecting the input instrument in parallel to the active and powered line.

Other PSD application is to perform a quick signals map staying on the Main Distribution Frame or Street Cabinet.

General

- Case ě ě ě ě ě ě ě ě : ABS shielded for EMI / EMC.
- Connections ě ě ě ě ě ě ě ě :
 - "RTX" connectors IN/OUT and %X+OUT triple banana-jack;
 - polarized connector for external supply;
 - RJ-45/4 connector for headset;
 - USB port for PC connector;
 - USB for pen-drive connector.
- Display ě ě ě ě ě ě ě ě : LCD color 320 x 240 pixel (¼ VGA) backlit.
- Power supply (internal) ě ě :
 - rechargeable battery pack (green) NiMh, with life of about 8 h. (typical), 5 h. (minimum).
 - external: from 16,5 to 26,5 Vdc / max 2,5 Ah.
- Dimensions and Weight ě ě : 150 x 210 x 50 mm / 1,5 Kg. (batteries included).
- Temperature range ě ě ě : Operating: -5 ÷ +50° C. / Storage -20 ÷ +70° C.
- Humidity range ě ě ě ě ...: 5 ÷ 90% non-condensing.
- Overvoltage Protection ě ě : In/Out RXT connectors up to 150 Vdc / 140 Vpp.
- Reference Frequency acc ě :
 - ±1 ppm within the operating temperature ±2 ppm/year.
- Reference Level accuracy ě :
 - ±0.025% within the operating temp. ±0.025% / year.
- CE mark - EMC ě ě ě ě ě ě : Directive 2004/108/CE, 89/336/EEC, Decree 2007/194 CISPR 11, ISO 14253 and CEI EN: 61326/A1/A2, 55011, 61000-4-2, 61000-4-3, 61000-4-4, 61000-4-6, 61000-4-11.
- Special Features and Setup: Results storage on internal flash memory; Software update and Results Exportation on Pen Drive or PC; PC Remote interface by USB port.

Level Generator

- Sine output frequency range:
 - base band: from 20 Hz to 25 kHz
 - med. band: from 20 kHz to 6 MHz
 - high band*: from 20 kHz to 35 MHz
- Reference Frequency acc ě :
 - ±1 ppm within the operating temp. ±2 ppm/year.
- Reference Level accuracy ě :
 - ±0.025% within the operating temp. ±0.025% / year.
- Frequency Resolution ě ě : 1 Hz up to 9.999999 MHz; 10 Hz over 10.0 MHz.
- Frequency setup mode ě ě ...: manual on single frequency and step mode on programmable band / steps.
- Balanced impedances ě ě ...:
 - base band: 150, 200 and 600 ě ;
 - medium band: 100, 110, 120, 135, 150 ě ;
 - high band *: 100 ě .
- Unbalanced impedances ě ...: 50, 55, 60, 68 and 75 ě by Banana/BNC optional adapt.
- Output level . Base Band ě ě :
 - -70 ÷ +14 dBm @ 600 ě balanced / 0.1 dB steps;
 - -64 ÷ +17 dBm @ 75 ě unbalanced / 0.1 dB steps.
- Output level . Medium Band:
 - -64 ÷ +20 dBm @ 100 ÷ 150 ě balanced / 0.1 dB steps;
 - -64 ÷ +17 dBm @ 50 ÷ 75 ě unbalanced / 0.1 dB steps;
- Output level . High Band *...:
 - 0 dBm @ 100 ě balanced;
- Output level . High Band * ě :
 - 0 dBm @ 50 ě unbalanced.
- Output level accuracy ě ě :
 - base band: ±0.2 dB from 50 Hz to 20 kHz @ 600 ě ;
 - medium band: ±0.2 dB up to 2 MHz ±0.3 dB up to 6 MHz @ 100 ě ;
 - high band: ±0.5 dB up to 10 MHz ±1 dB up to 35 MHz @ 100 ě .

- White Noise Generator : 1 kHz ÷ 6 MHz / -74 ÷ -144 dBm/Hz / 0.1 dB steps. (available on Network Analyzer)

Level Meter

- Frequency range : from 50 Hz to 6 MHz (two bands) base version; up to 35 MHz *
- Manual tuning / resolution : 1 Hz up to 9.999999 MHz; 10 Hz over 10.0 MHz.
- Level measurement mode ě : absolute (dBm, dBV, dBu, Volt) and relative (dBr).
- Reading resolution ě ě ě : 0.1 dB
- Input range ě ě ě ě ě ě :
 - base band: -110 ÷ +10 dBm @ 1 kHz / 600 ě ;
 - medium band: - 120 ÷ +12 dBm @ 1 MHz / 120 ě ;
 - high band *: -70 ÷ +5 dBm @ 10 MHz / 100 ě ;
- Level meter accuracy ě ě :
 - ±0.2 dB from 100 Hz to 20 kHz @ 0 dBm / 600 ě ;
 - ±0.2 dB up to 2 MHz, ±0.3 dB up to 6 MHz; @ 120 ě ;
 - ±1 dB up to 10 MHz, ±1.5 dB up to 35 MHz * @ 100 ě .
- Noise floor (TX OFF) ě ě ě :
 - ≤ -140 dBm/Hz up to 6 MHz;
 - ≤ -100 dBm/Hz up to 35 MHz *.
- Frequency Meter sensitivity : ≤ -30 dBm - base and medium band
- Input impedances balanced :
 - base band: 150, 200, 300, 415, 600 ě and >10 kě ;
 - medium band: 100, 110, 120, 135 150 ě and >10 kě ;
 - high band * 100 ě and > 5 kě .
- Input impedances unbal ě ...: base and medium band: 50, 55, 68 75 ě and >10 kě ; high band *: by Banana/BNC: 50 ě and > 2.5 kě .
- Noise filters ě ě ě ě ě ě :
 - base band: wide band, Psophometric; C-Message; 300 ÷ 3400 Hz, 20 ÷ 3400 Hz, 300 Hz ÷ 6 kHz, 20 Hz ÷ 6 kHz, 300 Hz ÷ 15 kHz, 20 Hz ÷ 15 kHz, 300 Hz ÷ 20 kHz, 20 Hz ÷ 20 kHz and 20.0 kHz flat.
 - medium / high band *: E, F, G / VDSL 2 and VDSL plus.
- Selective filters / notch. ě ě :
 - base band: (200 Hz ÷ 20 kHz) pass band and notch for S/N+D (dB and %) test; Selectivity: 10 Hz @ fo <200 Hz, 5% fo @ >200Hz fo <4 kHz, 200 Hz @ fo >4 kHz. Selective for telegraph. Chann.: 120, 240, 360, 480 Hz.
 - Medium / high band (20 kHz ÷ 6 or up to 35 MHz *): 25, 100, 200, 400 Hz and 1.74, 3.1, 4.0, 8.0 and 16.0 kHz.

Spectrum and Network Analyzer

- Frequency range ě ě ě ě : from 200 Hz to 6 MHz (two bands) base version; up to 35 MHz *
- In / Out 1) impedances bal ě :
 - base band: 150, 200, 300, 415, 600 ě and >10 kě ;
 - medium band: 100, 110, 120, 135 150 ě and >10 kě ;
 - high band * 100 ě and > 5 kě .
- In / Out 1) impedances unbal:
 - base and medium band: 50, 55, 68, 75 ě and >10 kě , high band *: by Banana/BNC adapter: 50 ě and > 5 kě .
- Level reading mode ě ě ě ...: dBm, dBV, dBu, Volt and dBr.

* By EBM30 optional module (ACT-13)
1) Referred to Tracking Level Generator

Measurements readout δ : normal, peak (max, mean or min. value),
 Measurement mode δ : base and medium bands:
 2 Wires +/- (for Return-Loss measurement), 2 Wires +/- (for Longitudinal Balancement measurement) and 4 Wires.
 High band *:
 2 Wires for Return-loss measurement and 4 Wires.
 Input range δ : from noise floor \div +12 dBm @ 100 δ
 Noise floor δ : \approx 140 dBm/Hz.
 Resolution vertical δ : 192 pixel / 8 div.: 1, 2, 3 \div 20 dB / division.
 Resolution marker : 0.1 dB / as selected resolution (BW).
 Tracking Level Generator : in sweep or single frequency in 2/4 wires mode; Output Lev. & Resolution are the same of Level Generator.

- **Base band** range δ : 200 \div 25000 Hz, by FFT analyzer (Kaiser window).
 Span δ : 6250 Hz (and zoom / 2), 12500 Hz and 25000 Hz.
 Resolution horizontal δ : 250 pixel / 10 div.: 625 + zoom, 1250, 2500 Hz / division.
 Resolution (BW) δ : 50, 100, 200...Hz (other resolutions are interpolated).
- **Medium band** range : 1 kHz to 6 MHz, by Digital SSB quad. conversion.
 Span : 30 ranges: from 10 to 8000 kHz, 10 per decade.
 Resolution hor. on display : 250 pixel / 10 div.: 1, 2, 4, 8, 16.. \div 800 kHz / division.
 Measurement hor. resol.: 1000 points (available on saved and exported CSV file).
 Resolution (BW) δ : 0.2, 0.5, 1, 2, 5, 8 kHz (other resolutions are Interpolated)
 Max level freq. readout ...: up to 10 Hz resolution on 1 kHz / Div.
- **High band *** range δ : 20 kHz to 30 MHz, by double conversion receiver in four bands: 0.02 to 12, to 18, to 30 to 35 MHz.
 Resolution horizontal δ : 250 pixel / 10 div.: 1.2, 1.8 3 and 3.6 MHz / division.

Mix measurements Generator/Meter and Network Analyzer

- **Cross-Talk (4 Wires)**
 by Generator & Meter. δ ...: NEXT (in Single-End mode) and FEXT (in End-to-End mode) on single frequency.
 Test by Network Analyzer : NEXT (in Single-End mode on single frequency or wide band by tracking generator) and FEXT (in End-to-End mode) on single frequency or wide band using the frequency Step Generator and sample & hold Spectrum Analyzer.
 Freq. range TX and RX δ : 200 Hz \div 6 MHz, up to 35 MHz *
 Impedances TX and RX δ : same of the Signal Generator & Level Meter, excluded the high impedances.
 Measurement accuracy δ : • up to 2 MHz: \pm 1 dB / 0 \div -90 dB;
 • up to 6 MHz: \pm 2 dB / 0 \div -86 dB;
 • up to 35 MHz *: \pm 3 dB / 0 \div -80 dB.
 Intrinsic crosstalk δ : <- 90 dB (by precise termination).

• Return Loss (2 wires)

Test by Network Analyzer : in Single-End mode on single frequency or wide band (spectral)
 Freq. range TX and RX δ : 200 Hz \div 6 MHz, up to 35 MHz *
 Impedances TX and RX δ : same of the Signal Generator & Level Meter, excluded High Z.
 Measurement accuracy δ : • up to 2 MHz: \pm 1 dB / 0 \div -50 dB;
 • up to 6 MHz: \pm 2 dB / 0 \div -46 dB;
 • up to 35 MHz*: \pm 3 dB / 0 \div -40 dB.

• Longitudinal Balance Loss (2 Wires + Gnd)

Test by Network Analyzer : in Single-End mode on single frequency or wide band . spectral readout, by tracking generator.
 Impedances TX and RX δ : same of the Signal Generator & Level Meter, excluded high Z.
 Frequency range δ : 200 Hz \div 6 MHz.
 Impedances TX and RX δ : same of the Signal Generator & Level Meter, excluded High Z.
 Measurement accuracy δ : • up to 2 MHz: \pm 1 dB / 0 \div -60 dB;
 • up to 6 MHz: \pm 2 dB / 0 \div -56 dB.

• Single-End Insertion Loss (available on the automatic SELTest sequence)

Measuring Mode / readout: by wide band FDR technology with Spectral readout.
 Operating limits δ : • minimum line length: 50 meters;
 • max. line length: 4.5 km with wires diameter of 0.4 mm.
 Graphic Extrapolation δ : 1 kHz \div 6 MHz or up to 30 MHz *.
 Accuracy δ : \pm 1 dB up to 2.2 MHz;
 \pm 2 dB up to 30 MHz *.
 Operating Impedance δ : 120 Ω balanced line.

Event Tests

- **Micro-Interruptions - O.62 (base band) and on medium band**
 Threshold level δ : -3 \div -20 dB - 2 kHz Test Tone (default) or on programmable input frequency up to 6 MHz.
 Monitoring time. δ : 4 min. \div 24 ours.
 Events indicators δ : 5 Counters (0.3ms \div >1min); Event/Time; Secs. with Events.
 Readout δ : Tabular and Time Domain histogram representation.
 Measure facilities δ : 2 kHz reference tone output from TX connector for loopback tests.
- **Impulsive Noise O.71 (base band) or medium or high band**
 - Threshold level δ : 0 \div -60 dBm.
 - Base band BW filters δ : 200 \div 12000 Hz Flat, 600 \div 3000 Hz 300 \div 500 Hz.
 - Monitoring time δ : 4 min. \div 24 hours.
 - Events indicators δ : 1 Event Counter; Event/Time Ratio; Secs. with Events.
 - Readout δ : Tabular and Time Domain Histogram representation.

Special Measurements

- **Line Immunity by White Noise injection** (available on Network Analyzer)
 - Bandwidth δ : 1 kHz \div 6 MHz.
 - Output level range δ : -70 \div -144 dBm/Hz @ Zref 100 Ω 0.1 dB Resolution.
 - Output impedance δ : 100, 120, 135, 150 and 1350 Ω (balanced).
- **TDR Fault locator**
 Distance ranges δ : 90, 180, 450, 900, 1800, 3600, 7200 m. @ 0.600 PVF.
 Zoom δ : - vertical: -8 \div +77 dB;
 - horizontal : 1x, 2x, 4x.
 Distance res. (by marker) δ : • minimum range: about 0.4 meters
 • maximum range: about 40 meters
 Operative mode δ : single line, Crosstalk (4 Wires), Differential by comparison of other test saved on internal memory; Monitoring to events localization by Peak mode (Sample & Hold).
 Pulse output level δ : short / long: 2.2 Vpp; Boost: 5.5 Vpp
 Pulse length δ : automatic on range selection, from 10 to 5000 ns.;
 IN/OUT impedance δ : 100, 110, 120, 135, 150 Ω (bal.)
 TGC (autom. gain control) δ : 0 \div 6 dB/km.
 Propagation velocity δ : PVF: 0,300 to 0,999 or PV (90 to 300 m/ μ s)

* by internal optional module EBM30 (ACT-13)

• Digital Multimeter DC / AC

Measuring mode: between a-b; a-c (Gnd); b-c (Gnd) and reverse.

- DC Voltage Range: 0 ÷ 140 Vdc
- DC Voltage Accuracy: ≤2% of reading ±1 digit.
- AC Voltage Range: 0 ÷ 100 Vrms
- AC Voltage Accuracy: ≤2% of read. ±1 digit / 15 ÷ 3300 Hz
- DC LOOP RESISTANCE / INSULATION
- Test Voltage: ≤ 100 Vdc (with current limit 1mA)
- Range / Accuracy: 2 Ω ÷ 1 GΩ / ≤2% of reading ± digit;

LINE LENGTH BY LOOP RESISTANCE

- Line length evaluation: as function of measured resistance
- Line Gauges setting: from 0.2 to 2.5 mm or from AWG 26 to AWG 11.
- Multi-section setup: up to 5 different cables type.
- Line Resistance correction: from 1.01 to 1.60 x standard copper resistance.
- Line Temperature setting...: set from -20° ÷ +60° C.
- Range / Resolution: 0 to 99.999 Units (meters or feet) / 1 units.
- Accuracy: derived from measured resistance.

RESISTANCE METER (real time) (by optional module ACT-18)

Range / Resolution: 0.1 Ω to 50 kΩ / 0.1 Ω to 999.9 Ω
Accuracy: ±2% ±1 digit.

RESISTANCE balancement: for unbalance >5 Ω, shorting a-b-c.

RFL (Resistance Fault Locator)

- Loop resistance: 1Ω to 5 kΩ maximum.
- Multi-section facility: as the setup for Loop Resistance.
- Fault resistance: from 5 Ω to 20 MΩ max.
- Accur. of RTF @ 1 MΩ: ±0.5% of Loop resistance.

DC CAPACITANCE (time of DC discharge method)

- Test Voltage: ≤ 100 Vdc
- Range: > 10 nF ÷ 10 μF.
- Accuracy: ≤ 5% of reading ± 1 digit.

AC CAPACITANCE and Q factor (by capacitive bridge)

- Measuring mode: by 1 kHz tone. 1.1 Vpp.
- Range / Resolution: 0.1 to 3000 nF / 0.1 nF.
- Accuracy: • ±1% of read. ± 1 nF @ C <500 nF;
• ±5% of reading ± 1 digit @ C >500 nF and < 3000 nF.

LINE LENGTH BY CAPACITANCE

- Line length estimation: function of measured capacitance:
- Line Capacitance setup: 10.0 to 300.0 pF / Length Unit.
- Range / Resolution: 1 to 99999 Units (m. or ft.)
- Accuracy: as from capacitance meas.

LINE IMPEDANCE RESPONSE

- Measuring range: from 30 to 3200 Ohm in five steps.
- Frequency Range: from 5 kHz to 5 MHz in four steps.
- Accuracy: ±5 % ±5 δ.

• POTS Subscriber Simulator (by optional module ACT-11)

Dial Encoder: • Pulse, progr. duration/ratio 100ms / 40/60%);
• DTMF std. tones, progr. Level, Duration, Inter-tone.

Ring Detect. Range & Meas: Level: 10 ÷ 90 Vrms;
Frequency: 15 ÷ 70 Hz.

Ring Detector AC Load: R 7310 δ ±2% in series + 940nF ±10% capacitor.

Ring current self limitation: m15 mA peak; safety fold-back limited.

On Hook / Break & Make: R = 120 δ ±2% @ I = 100 mA;
Voffset = 4 Vdc.

Automatic pre-configured SELTest sequence for line pre-qualification

With **single ACT6000 - Single-End Tests on open line**, 2 or [4] Wire mode:

Metallics: AC / DC Voltage, DC Insulation, AC / DC Capacitance, End-of-Line (TDR).

Transmissive (wide band / spectral): Noise (local), Return-Loss, Longitudinal Balance-Loss, %DR+ Insertion-loss & frequency response estimation, Noise (far-end estimation), [NEXT], and SNR prediction, Bit-Rate prediction for ADSL - ADSL2+ - VDSL2 and VDSL Plus* masks.

Manual pre-configured SELTest

Transmissive (wide band / spectral readout) measurements: Noise, Return-Loss, Longitudinal Balance-Loss, NEXT and PSD in high impedance (sniffer mode).

Automatic pre-configured DELTest sequence for line qualification & certification

With two **ACT6000** (Master/Slave mode) for **End-to-End Tests**, 2 or [4] Wire mode:

Only Transmissive (wide band / spectral): Noise (bilateral), Return-Loss (bilateral), Longitudinal Balance-Loss (bilateral %CTL+), Insertion-Loss, [NEXT and FEXT] and Bit-Rate evaluation (Up & Down stream) and SNR for ADSL - ADSL2+ VDSL2 and VDSL plus* masks.

Automatic DELTest for two unidirectional channels qualification / certification

With two **ACT6000** (Master/Slave mode) for **End-to-End Tests**, in Base Band (Voice or Modem 56K) according to **EIA-464 4W E&M** tests. *Only bilateral Noise and Insertion-Loss measurements.*

Automatic POTS Telephone DELTest sequence * (by optional module ACT-11)

With two **ACT6000** (Master/Slave mode) for **End-to-End Tests**, to perform a complete qualification on POTS links, included Signalling and Transmissive tests according to M.1040 mask.

Pre-configured masks for manual SELT or SELT / DELT line tests sequences

- Wide band: **VOICE, MODEM 56k, ISDN, HDSL 1p and 2p, E1, T1, SHDSL, ADSL, ADSL2+, and VDSL2-12a, VDSL2-17a, VDSL2-30a, VDSL Plus ***.

DBPO Masks - Automatic generation of the Threshold Mask for VDSL2* related to the primary line parameters included the %SEL+measured by ADSL2+ SELT Sequence

Supplied Accessories (base kit):

ACT6000 Base Instrument, included:

- Nylon Carrying Case with pocket for accessories;
- User Guide (English or Italian language, as requested);
- AC Power Supply and Battery Charger (Line Input: 100-220 Vac; Output: 20 Vdc);
- Banana-Banana + Crocodiles cables (2.30m total length);
- Ground Cable unipolar Banana-Crocodile cable;

Extra cost Accessories and Optional HW/SW Modules

- **ACT-11** POTS Module (Subscriber Simulator for POTS for signalling tests);
- **ACT-13** EBM30 Module (Extension Band for 35 MHz operation);
- **ACT-14** USB Pen-Drive 8 GB;
- **ACT-15** Probes to perform Medium & High Band PSD measurement on fed lines;
- **ACT-16** Plug/Probes to perform Medium & High Band PSD measurements on fed lines.
- **ACT-17-B** 50 dB Bal. Attenuator, High Z input / 150 Ohm out.
- **ACT-17-U** 50 dB Unbal. Attenuator High Z input / 75 Ohm out.
- **ACT-18** Real Time Resistance Meter module;
- **ALT-05** Headset with 2m cable and RJ-45/4 connector;
- **ALT-09** Resistive Termination Set (100, 120, 150 and 600 Ω);
- **ALT-16** Triple Banana to BNC Adapter.



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Tescom. reserves the right to change this preliminary specifications without prior notice

* by adoption of EBM 30 (ACT-13) optional module;