The TDEMI 30M is the system with the smallest frequency range but it is unique regarding the measurement speed and other features. The frequency range 9 kHz - 30 MHz fits perfectly to a conducted emission measurement setup according to CISPR 16-2-1. It can be used for preinvestigations during development as well as for full compliance testing.

By its digital signal processing unit of the latest generation a really vast calculation power of more than 100 Gigamultiplications per second is achieved. A complete measurement at each frequency with quasi-peak detector up to 30 MHz can be carried out in about 12 seconds. This amazing short scan time for quasi-peak scans makes prescans with the peak detector and final measurements in the quasi-peak detector mode at critical disturbances completely obsolete. The measurement of instationary signals and transient emissions is performed reliable and reproducible with a single quasi-peak scan using the TDEMI Measurement System within such a short scan time.

A further unique feature of the TDEMI is its unparalleled dynamic range. The TDEMI 30M exhibits a multi-resolution system using several high resolution ADCs. Such a system provides a spurious free dynamic range of more than 90 dB. Signals with levels up to 100 dBµV can be measured with a noise level below 0 dBµV - also pulses up to 60 dBµV. This corresponds to pulses of several Volts. By an autorange stepped attenuator the dynamic range is enhanced up to 140 dB. For applications where this huge dynamic range is not enough, additional preselection for band A can be ordered optionally.

Fig. 21 – Emission measurement of an energy saving lamp in the frequency range 150 kHz - 30 MHz.
TDEMI 30M Specifications

**FREQUENCY RANGE**
9 kHz - 30 MHz

**REFERENCE (TCXO)**
- Temperature Drift (-40 to 60°C): ± 50 ppm
- SSB Phase Noise (1 Hz BW): 100 Hz -57 dBc/Hz (typ. @ 312.5 MHz)
- 1 kHz -95 dBc/Hz
- 10 kHz -105 dBc/Hz
- 100 kHz -110 dBc/Hz

**RECEIVER MODE (CISPR Standard)**

**IF Bandwidth 200 Hz (9 kHz - 150 kHz)**
- IF Filter: Gaussian Shaped Filter, Specification according to CISPR 16-1-1, Bandwidth Deviation < 10 %
- Detector Modes: Peak, Quasi-Peak, Average, RMS, CISPR-AV
- Displayed Average Noise Level (Input Level < 100 dBµV Sinus):
  - < 0 dBµV typ.
- Frequency Step < 100 Hz
- typical Scan Time: 4x Measurement Time
  - e.g. Quasi-Peak: 12 s
  - Quasi-Peak: 6 s (with Option DSP-UG30M)

**IF Bandwidth 9 kHz (9kHz - 30 MHz)**
- IF Filter: Gaussian Shaped Filter, Specification according to CISPR 16-1-1, Bandwidth Deviation < 10 %
- Detector Modes: Peak, Quasi-Peak, Average, RMS, CISPR-AV
- Displayed Average Noise Level (Input Level < 100 dBµV Sinus):
  - < 0 dBµV typ.
- Frequency Step < 100 Hz
- typical Scan Time: 4x Measurement Time
  - e.g. Quasi-Peak: 12 s
  - Quasi-Peak: 6 s (with Option DSP-UG30M)

**WEIGHTED REAL-TIME SPECTROGRAM**
- Weighted Spectrogram Mode: Peak, Average, RMS
- Time-domain: Fully gapless
- Minimum Time Step: 50 ms

**BAND A (9 kHz - 150 kHz)**
- Frequency Step: 140 Hz for 200 Hz IF Bandwidth
- Frequency Step Interpolation: 100 Hz for 200 Hz IF Bandwidth

**BAND B (150 kHz - 30 MHz)**
- Frequency Step: 7 kHz for 9 kHz IF Bandwidth
- Frequency Step Interpolation: 5 kHz for 9 kHz IF Bandwidth

**TIME-DOMAIN ANALYSIS (RF)**
- Bandwidth: 30 MHz
- Sampling Rate: 312.5 MS/s
- Acquisition Memory: 32000 Samples

**ABSOLUTE MAXIMUM RATINGS (ATTENUATION 0 dB)**
- Maximum DC Input Level, Pulses: 6 V
- RF-CW Signal: 120 dBµV

**INDICATION (ATTENUATION 0 dB)**
- Maximum DC Input Level, Pulses: 5 V
- RF-CW Signal: 95 dBµV
- Pulses according to CISPR 16-1-1 (Quasi-Peak): 55 dBµV

**ATTENUATOR**
- 0 - 20 dB, 20 dB Steps, Auto Attenuation
- max. Input Power: 1W CW

**PRESSELECTION (OPTION PRE-UG)**
- Preselection Band A, Highpass Filter: 150 kHz

**INTERMODULATION, NONLINEARITIES**
- CW Signals: Two Tone
  - Harmonics (> 40 dBµV, > 1 MHz): < -40 dB (typ. -60 dB)
  - Inherent Reception Points: < -40 dB (typ. < -60 dB)
  - Total Dynamic Range (9 kHz IF Bandwidth): > 140 dB
  - CISPR Intermodulation Test: > 36 dB

**MEASUREMENT TIME**
- 1 µs – 60 s (Average, RMS)
- 1 µs – infinite (Peak, Quasi-Peak, CISPR-Average, CISPR-RMS-AV (Option))

**MEASUREMENT ACCURACY**
- Sinusoidal Signals: ± 1 dB
- Pulses according to CISPR 16-1-1

**RF INPUT**
- 50 Ohm
- VSWR < 1.7 (typ. 1.3), with 0 dB Attenuation
- VSWR < 1.2 typ., with 10 dB Attenuation

**REMOTE CONTROL, INTERFACES**
- Remote control command set according to SCPI Standard
- Ethernet/LAN, USB, GPIB (Option GPIB-UG), PS/2, VGA, HDMI, Audio

**DISPLAY, USER INTERFACES**
- Resolution 800 x 600 pixels, 8.4”, True Color (16.78 Mio. colors)
- Touchscreen
- Intel Core i, 2 GB RAM, 120 GB Hard Disk or higher
- Operating system: Windows XP or Windows 7

**POWER SUPPLY**
- 230 V +/-20%, 50 Hz or 110 V +/-10%, 60 Hz

**WEIGHT**
- ca. 15 kg

**MAIN OPTIONS**
- AT - UG30M: Attenuator 0 - 30 dB, 10 dB Steps
- DSP - UG30M: Enhanced DSP Unit with doubled Frequency Resolution
- PRE - UG: Preselection Band A
- LSN - UG: Controller for Measuring Accessories (TTL, 5V)
- LSN-Cable - UG: Customized Control Cable for Accessories, e.g. LISN
- TG - UG: Powerful multicore processor (Intel Core i or comparable) for advanced computing power, doubled hard disk capacity, doubled RAM size
- KB - UG: Compact Keyboard incl. Touchpad
- RG - UG: Report Generator
- CAL - UG: Manufacturer Calibration with Certificate
- CALD - UG: DAkks Calibration with Certificate
- CLICK - UG: Click Rate Analyzer, fully integrated
- SLIDE - UG: Software for Disturbance Power Measurements

**WEIGHTED REAL-TIME SPECTROGRAM**
- Weighted Spectrogram Mode: Peak, Average, RMS
  - Frequency Step: 140 Hz for 200 Hz IF Bandwidth
  - Frequency Step Interpolation: 100 Hz for 200 Hz IF Bandwidth

**TIME-DOMAIN ANALYSIS (RF)**
- Bandwidth: 30 MHz
- Sampling Rate: 312.5 MS/s
- Acquisition Memory: 32000 Samples

**ABSOLUTE MAXIMUM RATINGS (ATTENUATION 0 dB)**
- Maximum DC Input Level, Pulses: 6 V
- RF-CW Signal: 120 dBµV

**INDICATION (ATTENUATION 0 dB)**
- Maximum DC Input Level, Pulses: 5 V
- RF-CW Signal: 95 dBµV
- Pulses according to CISPR 16-1-1 (Quasi-Peak): 55 dBµV

**ATTENUATOR**
- 0 - 20 dB, 20 dB Steps, Auto Attenuation
- max. Input Power: 1W CW

**PRESSELECTION (OPTION PRE-UG)**
- Preselection Band A, Highpass Filter: 150 kHz