



THURLBY THANDAR INSTRUMENTS

TSA250 & TSA1000



Spectrum Analyser Adaptors, 250MHz & 1GHz

- *Converts any oscilloscope into a cost effective Spectrum Analyser*
- *0.4MHz to 250MHz or 1000MHz frequency range*
- *250kHz bandwidth, variable scan width & scan speed*
- *High accuracy (1.5dB typical), built-in calibration marker*
- *Wide dynamic range, -70dBm to 0dBm*
- *Digital readout of centre frequency*
- *Very low cost*

Spectrum Analyser Adaptors TSA250 & TSA1000

Operation with almost any oscilloscope

The TSA1000 converts any conventional oscilloscope into a highly cost effective spectrum analyser. Bandwidth is unimportant and the only requirement is for an X-Y mode.

Surprisingly high performance

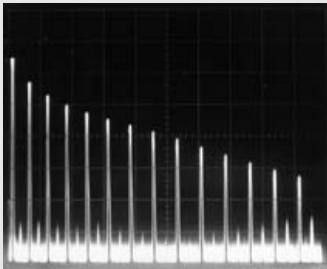
Despite its low cost, the adaptor offers excellent performance. The frequency range is 400kHz to 1GHz and the bandwidth (selectivity) is 250kHz. The centre frequency can be adjusted over the full frequency range with direct frequency readout on a large liquid crystal display. Both scan width and scan rate are fully adjustable.

The amplitude range is -70 to 0dBm with good accuracy over the whole amplitude and frequency range. A front panel CAL button allows a calibrated -30dBm 50MHz marker signal to be superimposed for precise amplitude and frequency checks.

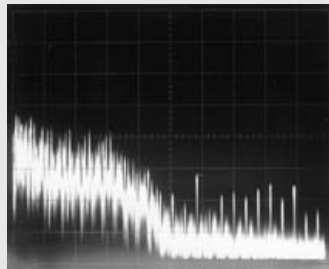
Easy to connect and use

The adaptor connects to an oscilloscope via two BNC cables.

The BNC input is true 50Ω for low VSWR. A low capacitance Hi-Z connection can be made using a standard 10:1 'scope probe adjusted for 20dB attenuation.



Spectrum of 5MHz square wave from function generator



Noise emanating from a personal computer

A wide range of applications

The TSA1000 will find many applications within research, development, servicing and education. Application areas include:

EMC Investigations: Make estimations of spurious emissions from equipment, locate sources and quantify the effects of modifications. Examine external interference sources.

Oscillators and Transmitters: Check frequency and harmonics, output levels and antenna efficiencies etc.

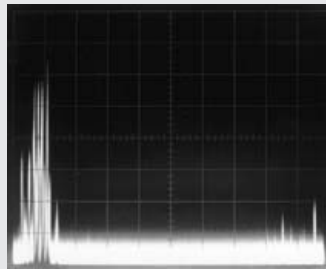
Receivers and RF Amplifiers: Check LOs, mixers, stage gains, bandwidths and alignment.

Education: Demonstrate frequency domain techniques. Illustrate the Fourier components of waveforms. Show the effects of mixing and intermodulation.

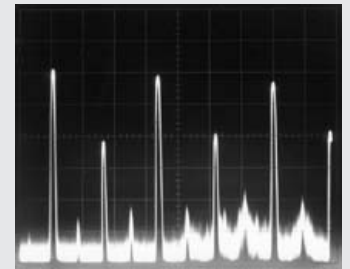
Production and Servicing: Make rapid comparisons between good and faulty equipment. Trace RF signals through complex signal paths.

A portable and robust instrument

The TSA1000 is compact and fully portable. It is mains powered and is housed in a robust ABS case with full internal screening to meet EMC requirements.



FM broadcast signals from a telescopic antenna



Spectrum of a 2MHz multi-phase clock generator

Specifications

| FREQUENCY | TSA250 | TSA1000 |
|--------------------------|--------------------------------------|----------------------|
| Frequency range: | 400kHz-250MHz | 400kHz-1000MHz |
| Centre frequency adjust: | 0MHz to 250MHz | 0MHz to 1000MHz |
| Bandwidth: | 250kHz (-6dB typical) | |
| Meter accuracy: | Typically 2% of F.S. | 1% of reading + 1MHz |
| Calibration marker: | 50MHz fundamental, harmonics to 1GHz | |
| Frequency scan width: | 1MHz to 25MHz/div | 1MHz to 100MHz/div |
| Scan speed: | 0.5ms to 10ms/div | 0.5ms to 35ms/div |

| AMPLITUDE | TSA250 | TSA1000 |
|----------------------|----------------------------------|-----------------------------------|
| Input impedance: | 50Ω | |
| Amplitude range: | -70dBm to 0dBm nominal | |
| Amplitude scale: | Logarithmic, 10dB/div | |
| Amplitude linearity: | Typically ±1.5dB | Typically ±2dB |
| Amplitude flatness: | Typically ±1.5dB, 1MHz to 250MHz | Typically ±1.5dB, 4MHz to 1000MHz |
| Max. input level: | +10dBm | |
| Calibration marker: | -30dBm ±1dB at 50MHz | |

| OSCILLOSCOPE REQUIREMENTS | |
|---------------------------|-----------------------------------------------|
| Oscilloscope mode: | X-Y mode, DC coupling; bandwidth not critical |
| X-Input sensitivity: | 0.5V/div |
| Y-Input Sensitivity: | 0.5V/div |

| POWER REQUIREMENTS | |
|--------------------|----------------------------------------------------------------------------------------------------------|
| Input voltage: | 220/240 or 110/120 Volts at 50/60Hz, internally adjustable. Full operating range 198-264V or 99-132V. |
| Power consumption: | 8VA max. |

| GENERAL & ENVIRONMENTAL | |
|-------------------------|------------------------------------------------------|
| Electrical safety: | Designed and manufactured to IEC1010-1 |
| Operating range: | +5°C to +40°C, 20% to 80% RH |
| Storage range: | -10°C to +65°C |
| Size: | 260(W) x 88(H) x 235(D)mm, excluding handle and feet |
| Weight: | 1.4kg |

Thurlby Thandar Instruments Ltd. operates a policy of continuous development and reserves the right to alter specifications without prior notice.

Designed and built in Europe by:



Thurlby Thandar Instruments Ltd.

Glebe Road, Huntingdon. Cambs. PE29 7DR England

Tel: +44 (0)1480 412451 Fax: +44 (0) 1480 450409

Email: sales@tti-test.com Web: www.tti-test.com

N.B. The TSA250 is no longer manufactured.