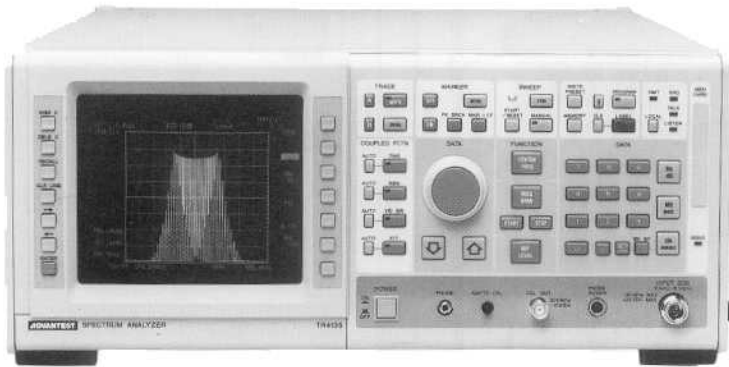


## Spectrum Analyzers **16**

### Affordable, High-Stability 3.6-GHz Spectrum Analyzer



### TR4135 Spectrum Analyzer

- Wide band coverage: 10 kHz to 3.6 GHz
- Wide input level range: -131 to +20 dBm
- High-precision frequency measurement to 30-Hz resolution
- High-Q device frequency measurements in combination with the TR4154 Tracking Generator
- 3-Decade log sweep
- Direct reading of field strength and quasipeak-value measurements conforming CISPR standards
- GPIB provided as standard for full remote operation

The TR4135 Spectrum Analyzer uses a synthesized local oscillator to enable high-stability spectrum analysis. It features frequency coverage from 10 kHz to 3.6 GHz, input range of -131 to +20 dBm, a maximum resolution of 30 Hz, residual FM of 30 Hzp-p and skirt noise characteristics of -105 dBc/Hz at 20 kHz from the carrier. The TR4135 is suitable for measurements on 900-MHz mobile radiotelephone equipment, fixed broadcast stations and mobile A-band equipment. It can be used for satellite broadcast received field-strength measurements and in the evaluation and testing of CATV equipment. It enables high-precision frequency measurements and directly readable field strength measurements by means of antenna calibration and is further capable of quasipeak-value measurements conforming to CISPR standards. Completely independent digital memories for two channels enable storage of two displays each and a versatile complement of marker functions is provided to increase measurement speed. GPIB is provided to enable full remote control and the use of a synthesized local oscillator ensures accurate frequency setting, making the TR4135 usable as a spectrum analyzer for automated measuring systems.

#### (Specifications)

**Frequency**  
**Frequency range:** 10 kHz to 3.6 GHz  
**Noise sidebands:**

85 dBc/Hz	100 dBc/Hz	105 dBc/Hz
1-kHz offset	10-kHz offset	20-kHz offset

#### Stability:

Frequency drift 500 Hz/min, span  $\leq$  2 MHz  
 Residual FM 30 Hzp-p max, span  $\leq$  2 MHz

#### Resolution:

3-dB bandwidth 30 Hz to 1 MHz  
 6-dB bandwidth 200 Hz, 9 kHz, 120 kHz

#### Amplitude

**Measurement range:** -131 dBm to +20 dBm

#### Dynamic range:

Average noise level  
 -116 dBm +1.55 f(GHz) dB max. (at 1-kHz resolution bandwidth)  
 2nd and 3rd order distortion -70 dB max. (-30-dBm input level, at 10 MHz or greater)  
 Residual response -100 dBm max. (at 100 kHz or greater)

#### Sweep

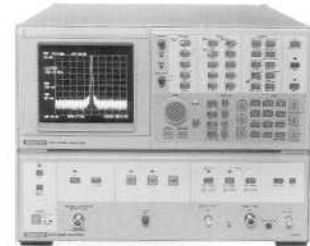
**Sweep time:** 50 ms to 1000 s  
**Trigger modes:** Free-run, line, video, external, single, TV-V

#### Input

**Maximum input level:** +20 dBm (at 20-dB input attenuation or greater)  
 $\pm$ 25 VDC max.

#### Options

**Option 04** Occupied bandwidth Measurement  
**Option 06** Memory card



### TR4171 Spectrum Analyzer

- 10 Hz to 120 MHz with resolution to 3 Hz
- High input sensitivity: -150 dBm
- Amplitude characteristics, phase and group delay characteristic measurements
- Quasipeak-value measurements, occupied bandwidth measurement, adjacent-channel leakage power measurements, Smith chart display impedance measurements and gated sweep (optional)

The TR4171 is a spectrum analyzer capable of phase and group delay measurements over the range 10 Hz to 120 MHz. It uses a built-in processor to perform spectrum analysis with an input sensitivity of -150 dBm and a maximum resolution of 3 Hz. Its high-purity local oscillator enables high C/N measurements and a gated sweep function ensures high-accuracy spectrum analysis of burst signals.

#### (Specifications)

**Measurement range:** 10 Hz to 120 MHz  
**Noise sidebands:** -125 dBc/Hz (min value at 20 kHz from the carrier)

#### Stability (frequency span $\leq$ 5.0 kHz):

Drift 1 Hz/min max., 10 Hz/30 minutes max.  
 Residual FM 0.2 Hzp-p/s max.

#### Resolution:

3-dB bandwidth 3 Hz to 100 kHz in 1-3 sequence steps

#### Amplitude

**Measurement range:** -150 dBm to +30 dBm

**Average noise level:** -140 dBm max. (3-Hz bandwidth resolution, 1-Hz video bandwidth, 0-dBm input attenuation)  
 -155 dBm in 50  $\Omega$  and 75  $\Omega$  high-sensitivity mode with 3-Hz bandwidth resolution, 1-Hz video bandwidth and 0-dBm input attenuation

#### Sweep

**Sweep time:** 50 ms to 1000 s per sweep (10 div)  
 100  $\mu$ s to 1000 s for zero span

#### Input

**Maximum input level:** +30 dBm (1 Watt)  
 $\pm$ 15 VDC, at 50  $\Omega$  or 75  $\Omega$  inputs