

**7L5 Characteristics—Continued**

**Accuracy** — (Max Output calibrated at 500 kHz.)

50  $\Omega$ , 0 dBm  $\pm 0.25$  dBm

75  $\Omega$ , -6 dBm  $\pm 0.4$ , -0.2 dBm

600  $\Omega$ , -17 dBm  $\pm 0.5$ , -0.1 dBm

**Attenuator** —

Range: 0 to 63 dB in 10 dB or 1 dB steps.

Accuracy: Within 0.2 dB/dB to a maximum of 0.25 dB/10 dB absolute.

**Flatness** —

50  $\Omega$  and 75  $\Omega$ : Within 0.5 dB peak-to-peak.

600  $\Omega$ : Within 1.0 dB peak-to-peak.

Total System Flatness (7L5 with Option 25)

50  $\Omega$  and 75  $\Omega$ : Within 1.0 dB peak-to-peak.

600  $\Omega$ : Within 1.25 dB peak-to-peak.

**Dynamic Range (7L5 with Option 25)** —  $\geq 110$  dB.

**Residual FM (peak-to-peak)** —

Spans to 2 kHz/div: 2 Hz (7L5 with Option 25).

Spans 5 kHz/div or greater: 40 Hz (7L5 with Option 25).

**Stability** — 25 Hz/5 minutes after 10 minute warm-up decreasing to 25 Hz/hr maximum after 1 hour.

**Spurious Suppression, 10 Hz to 5.0 MHz (Harmonic and non-harmonic)** — 40 dB or more with respect to the carrier.

**Auxiliary Output** —  $\geq 200$  mV rms into 50  $\Omega$ .

**ORDERING INFORMATION**

**7L5 Spectrum Analyzer** .....\$6650

(Spectrum Analyzer Requires L Plug-in Module.)

**Option 21 with Logarithmic Frequency**

**Display** .....Add \$750

**Option 25 with Tracking Generator**.....Add \$1000

For a separate tracking generator, (One-wide field modification to be attached to an existing 7L5) order 040-0810-00 .....\$1025

**Option 28 with Front-Panel Readout**.....Add \$500

**Option 30 combines Options 21 and 25** ....Add \$1400

**Option 32 combines Options 25 and 28** .....Add \$1300

**Option 33 combines Options 21, 25 and 28** .Add \$1800

**Included Accessories** — Graticule, Spectrum Analyzer 337-1159-00 (7000 Series), and 337-1439-01 (7603). Filter, light blue 378-0684-00.

**L1 Plug-in Module (50  $\Omega$ )** .....\$600

**L2 Plug-in Module (75  $\Omega$ )** .....\$600

**L3 Plug-in Module (1 M $\Omega$ , 50  $\Omega$ , 600  $\Omega$ )** . \$925

**L3 Plug-in Module Option 01 (1 M $\Omega$ , 75  $\Omega$ , 600  $\Omega$ )**

..... No Charge

**L1-GC Module (50  $\Omega$ )** .....Request Quote

†7603 Oscilloscope .....\$2260

†7603 Oscilloscope (Rackmount) .....\$2560

**Option 06 Internal S A Graticule** .....+50

**Option 08 Protective Front Cover (Cabinet**

**Only)** .....Add \$100

†7704A Oscilloscope .....\$3635

†7704 Oscilloscope .....\$4630

†Suggested Mainframe. See 7000-Series pages for oscilloscope specifications and options.

**OPTIONAL ACCESSORIES**

**Tracking Generator, one wide field modification kit, to be attached to an existing 7L5 040-0810-00**.....\$1025

**2701 50  $\Omega$  Step Attenuator** .....\$350

**2703 75  $\Omega$  Step Attenuator** .....\$375

**75  $\Omega$  to 50  $\Omega$  Min Loss Attenuator (Ac Coupled)**

**011-0112-00** .....\$50

**P6105 10X Probe, (2m) 010-6105-03** .....\$75

**BALANCED INPUT TRANSFORMER**

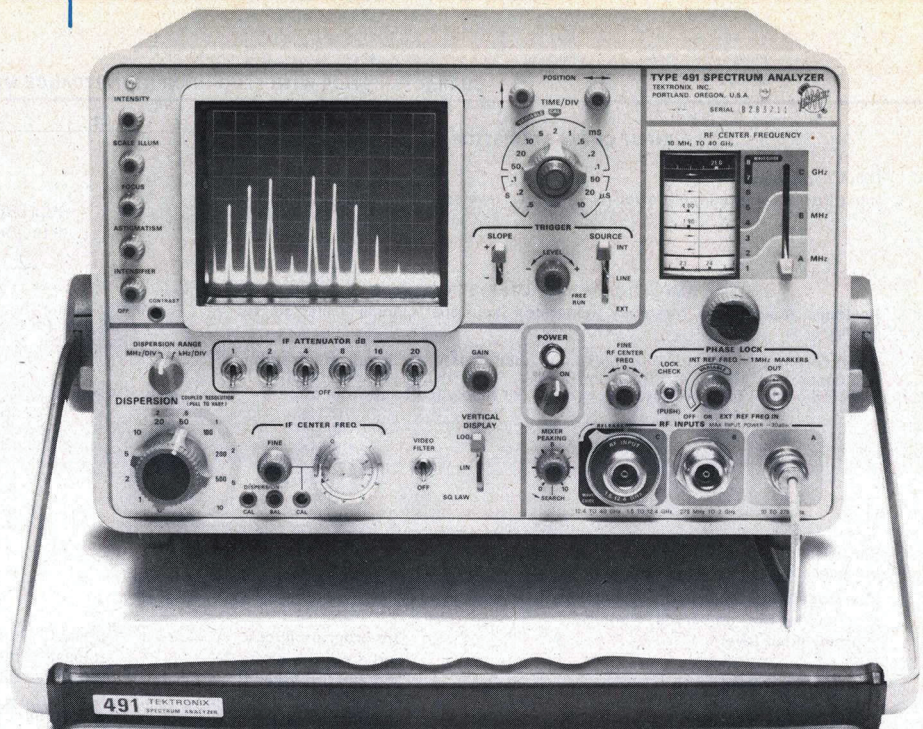
**Frequency Range** — 50 kHz to 3 MHz, usable from 10 kHz to 20 MHz.

**Flatness** — 0.25 dB peak-to-peak maximum (50 kHz to 3 MHz) including nominal 0.1 dB insertion loss.

**Common-Mode Rejection** — 25 dB minimum (50 kHz to 3 MHz).

**Output Termination** — Switchable between 124 $\Omega$ , 135 $\Omega$ , and NONE for bridging or external termination. **Connectors** — WECO (0.37" with 0.090 center) on 0.625" spacing for balanced input. BNC for single-ended output.

**Balanced Input Transformer 013-0182-00** .....\$120



**10 MHz to 40 GHz with 491**

**10 MHz to 2 GHz with 491 Option 01**

**1.5 GHz to 40 GHz with 491 Option 02**

The 491 is a precision, wide-band spectrum analyzer designed for rugged environmental conditions and easy mobility. It is easy to carry, weighing less than 40 pounds complete with accessories. The R491 is electrically identical and requires only seven inches of rack height.

**FREQUENCY CHARACTERISTICS**

**Range**

10 MHz to 40 GHz

Option 01

10 MHz to 2 GHz

Option 02

1.5 GHz to 40 GHz

**Resolution** — 1 kHz to 100 kHz, coupled with calibrated dispersion positions but separately switchable.

**Frequency Stability** —  $\pm 200$  kHz after 1 minute.

**Incidental Fm** — Less than 300 Hz at fundamental, with Phase Lock.

**AMPLITUDE CHARACTERISTICS**

**Display Flatness** — Max amplitude variation over 100 MHz dispersions up to 12.4 GHz is 3 dB or less, except over 50 MHz dispersion in Band 1. Above 12.4 GHz the max amplitude variation (100 MHz dispersion) is 6 dB or less.

**Max Input Power** — -30 dBm for linear operation, +15 dBm (25 mW) safe diode power limit.

**Vertical Display (8 Div)** — Log —  $\geq 40$  dB dynamic range. Linear. Square Law —  $\geq 13$  dB dynamic range.

**If Attenuator** — 51 dB in 1 dB steps,  $\pm 0.1$  dB/dB.

**If Gain Control** —  $> 50$  dB range.

**Sensitivity** — Greater than -100 dBm to 8.2 GHz

Greater than -90 dBm to 18 GHz

Greater than -70 dBm to 40 GHz

**INPUT CHARACTERISTICS**

50  $\Omega$  Input

**SWEEP CHARACTERISTICS**

**Sweep Range** — The 491 uses a complete triggered oscilloscope type time base with 15 calibrated steps from 10  $\mu$ s/div to 0.5 s/div.

**Calibrated Dispersion** — 1 kHz/div to 10 MHz/div in 1-2-5 sequence, 2 ranges (kHz/div and MHz/div).

**CRT AND DISPLAY FEATURES**

**Crt** — 8 x 10 div display area (each div = 0.8 cm); P7 phosphor.

**ENVIRONMENTAL CAPABILITIES**

The 491 meets MIL-I-6181D specs for EMI, operates up to 15,000 ft with temperatures from -15°C to +55°C and can stand a 30 g shock.

<b>Weight</b> — Rackmount	41 lb	18.6 kg
Portable	30 lb	13.6 kg

**INCLUDED STANDARD ACCESSORIES**

6 ft. BNC cable, 50  $\Omega$  miniature coax (012-0113-00); 6 ft. N cable, RG 223/U coax (012-0114-00); 2 ft. TNC cable, RG 223/U coax (012-0115-00); wave guide mixer, 12.4 to 18 GHz (119-0097-00); wave guide mixer, 18 to 26.5 GHz (119-0098-00); wave guide mixer, 26.5 to 40 GHz (119-0099-00); 10-dB attenuator, Type N fittings (011-0085-00); 20-dB attenuator, Type N fittings (011-0086-00); 40-dB attenuator, Type N fittings (011-0087-00); two BNC male to N female adapters (103-0058-00); two BNC female to N male adapters (103-0045-00); wave guide mixer adapter (119-0104-00); power cable (161-0024-03); protective cover (016-0074-01); blue light filter (378-0558-00); amber light filter (378-0559-00); clear crt protector plate (386-0118-00); ornamental ring (354-0248-00); two one-ampere fuses (159-0022-00); 1/2-ampere fuse (159-0025-00); front cover (200-0633-03). The R491 includes all above accessories except the front cover and protective cover, also includes slide-out assembly and hardware.

**ORDERING INFORMATION**

**491 Spectrum Analyzer** .....\$10,700

**R491 Spectrum Analyzer (Rackmount)** .....\$10,825

**Option 01 (10 MHz to 2 GHz)** .....-\$1395

**Option 02 (1.5 GHz to 40 GHz)** .....-\$1195

**1105 Battery Power Supply** .....\$915

Additional specifications are available through your local Tektronix Field Office.