The 7L5 makes accurate baseband communications measurements such as noise, spurious response, distortion, and transient interference, all with the certainty of 10 Hz resolution. The 7L5 Option 25 provides swept frequency measurements from 20 Hz to 5 MHz. The tracking generator is built into a “three-wide” 7L5 plug-in analyzer.

This highly capable audio/baseband analyzer finds a place in many areas of use, including baseband evaluation of FM broadcast and television stereo signals, measurement of communications system basebands, power line distortion, EMC/RFI, and computer systems.

Make semi-automatic measurements by using the Tektronix 7854 Digitizing Mainframe. This programmable unit's calculation and marker capabilities can greatly enhance your productivity using the 7L5 Spectrum Analyzer. Specify 7L5 Option 12 for proper 7854 interface. Get full details from your Tektronix Sales Engineer or ask for Application Note 26W-5663.

**CHARACTERISTICS**

The following characteristics and features apply to the 7L5 Spectrum Analyzer after a warm-up period of ten minutes.

**FREQUENCY RELATED**

**Center Frequency Range**—Input Frequency Range: 30 Hz through 5.0 MHz. Dot Frequency Range: 0 Hz through 4999.75 kHz tuned in 10 kHz or 250 Hz steps. Accuracy at 0 to 50°C; \(\pm (20\ Hz + 1\ Hz/\text{dot frequency})\). 20 to 30°C: \(\pm (5\ Hz + 2\ Hz/\text{dot frequency})\).

**Frequency Span/Division Range**—50 Hz/div to 500 kHz/div (maximum) in a 1-2-5 sequence. Accuracy: Within 5%. Linearity: Within 5% over the center eight divisions. Zero Span: Provides fixed frequency operation for time domain display.

**Resolution Bandwidth (6 dB)**—10 Hz to 30 kHz in eight steps. Coupled position electronically couples resolution to span/division selection so that both are controlled by the same knob. Accuracy: Within 20% of resolution selected (30 Hz to 30 kHz). 10 Hz is 100 Hz \(\pm 20\ Hz\ 70\ dB\) down.

**Resolution Shape Factor (60/6 dB)**—10:1 or better for 10 Hz to 1 kHz and 5:1 or better for 3 kHz to 30 kHz.

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7L5 Option 25 Spectrum Analyzer with L3 (50 Ω, 600 Ω, 1 MΩ) plug-in module in a 7603 Option 06 mainframe with internal spectrum analyzer graticule. The L3-1 module (shown at upper right) is switch selectable to 75 Ω, 600 Ω or 1 MΩ.
Signal Level Change Between Any Two Bandwidths—30 kHz to 100 Hz: ±0.5 dB, 30 kHz to 10 Hz: ±2.0 dB.

Residual FM—<1 Hz (p-p) for frequency span of 50 Hz/div to 2 kHz/div, <40 Hz (p-p) for frequency span of 5 kHz/div to 500 kHz/div.

Stability—<5 Hz/hour.

AMPLITUDE RELATED
Display Modes—Log 10 dB/Division: Provides 80 dB display dynamic range. Accuracy is within 0.08 dB/div to 2 dB/m in 50 dB display dynamic range. Log 2 dB/Division: Provides 16 dB display dynamic range. Accuracy is within 0.15 dB/div to 1 dB maximum over 16 dB display dynamic range. LIN: 20 nV/div to 200 mV/div in a 1-2-5 sequence. Accuracy is within 5%.

Reference Level—±21 to ±128 dBm (50 or 75 Ω input impedance), ±10 to ±139 dBm (600 Ω input impedance), ±8 to ±141 dBm (1 MΩ input impedance). Calibrated in 1 and 10 dB steps.

Display Flatness—0.7 dB maximum from 20 Hz to 5 MHz (add 0.5% quantization error in digital storage).

Sensitivity—Equivalent input noise for each resolution bandwidth setting is measured in video average mode with 10 s/div sweep rate and input buffer control off. Sensitivity is degraded an additional 8 dB when the input buffer is on.

<table>
<thead>
<tr>
<th>Resolution Bandwidth</th>
<th>Averaged Noise Level dBm 50 Ω</th>
<th>dBV 75 Ω</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Hz</td>
<td>-135 dBm</td>
<td>-140.5 dBV</td>
</tr>
<tr>
<td>30 Hz</td>
<td>-133 dBm</td>
<td>-135.5 dBV</td>
</tr>
<tr>
<td>100 Hz</td>
<td>-125 dBm</td>
<td>-125.5 dBV</td>
</tr>
<tr>
<td>300 Hz</td>
<td>-125 dBm</td>
<td>-126.5 dBV</td>
</tr>
<tr>
<td>1 kHz</td>
<td>-120 dBm</td>
<td>-125.5 dBV</td>
</tr>
<tr>
<td>3 kHz</td>
<td>-115 dBm</td>
<td>-120.5 dBV</td>
</tr>
<tr>
<td>10 kHz</td>
<td>-110 dBm</td>
<td>-115.5 dBV</td>
</tr>
<tr>
<td>30 kHz</td>
<td>-105 dBm</td>
<td>-110.5 dBV</td>
</tr>
</tbody>
</table>

SPURIOUS RESPONSES
Residual—<143 dBm (noncalibrator related, referenced to the input).

Intermodulation Products—Within any frequency span for two on-screen signals of any input level, third order down 75 dB or more and second order down 72 dB or more; of any input level up to 53 dBV or of any input level with input buffer on, second and third order down 80 dB or more.

GENERAL CHARACTERISTICS
Sweep—Triggered, manual, auto.

Sweep Time—10 s/div to 0.1 s/div in a 1-2-5 sequence.

Accuracy—Within 5% of selected time/division.

Triggering—Sources are free run, internal and line. Modes are normal, manual sweep and single sweep.

Sensitivity—±1.5 div of internal signal for both normal and single sweep modes over the approximate frequency range of 30 Hz to 500 kHz.

Shipping Weight—7.6 kg (17 lb).

Option 25 Tracking Generator

The 75L with Option 25 Tracking Generator provides selectable 50 Ω, 75 Ω, or 600 Ω impedance source that has a calibrated output level for swept frequency tests from 20 Hz to 5.0 MHz. The output frequency can be adjusted so it tracks within 10 Hz of the spectrum analyzer frequency. The frequency span and rates are controlled with the spectrum analyzer. The output level is controlled from the tracking generator. Output level is calibrated and controlled in 10 dB and 1 dB steps over a 63 dB range. An Aux Output may be used to drive a frequency counter. The 75L with Option 25 is a three-way unit for the 7000 Series mainframes.

CHARACTERISTICS
Frequency—Range 20 Hz to 5.0 MHz.

Output Impedance—50 Ω, 75 Ω, or 600 Ω selected by a front panel switch.

Amplitude—The output level is calibrated in dBm or dBV and selectable in 10 or 1 dB steps. A vernier provides continuous variation between calibrated steps.

Range—50 Ω: 0 to -63 dBm, 75 Ω: -6 to -69 dBm, 600 Ω: -17 to -80 dBm.

Accuracy (Maximum Output Calibrated at 500 kHz)—50 Ω: 0 dBm ±0.25 dB, 75 Ω: -6 dBm ±0.4, -0.2 dB, 600 Ω: -17 dBm ±0.5, -0.1 dB.

Attenuator—Range: 0 to 63 dB in 10 dB or 1 dB steps. Accuracy: Within 0.2 dB/div to a maximum of 0.25 dB/10 dB absolute.

Flatness—50 and 75Ω: Within 0.5 dB p-p, 600 Ω: Within 1.0 dB p-p, Total System Flatness (75L with L3 Plug-In Module and Option 25) 50 and 75Ω: Within 1.0 dB p-p, 600 Ω: Within 1.25 dB p-p.

Dynamic Range (75L With Option 25)—≥110 dB.

Residual FM (p-p)—(75L with Option 25). Spans to 2 kHz/div: 2 Hz. Spans 5 kHz/div or Greater: 40 Hz.

Stability—25 Hz/5 minutes after ten minute warmup decreasing to 25 Hz/hour maximum after one hour.

Sporadic Suppression—20 Hz to 5.0 MHz (Harmonic and Nonharmonic)—40 dB or more with respect to the carrier.

Auxiliary Output—≥ 200 nV RMS into 500Ω.

BALANCED INPUT TRANSFORMER
Frequency Range—50 kHz to 3 MHz, usable from 10 kHz to 20 MHz.

Flatness—0.25 dB p-p 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 Ω, 135 Ω, and none for bridging or external termination.

Connectors—WECO (0.37 in with 0.090 center) on 0.625 inch spacing for balanced input. BNC for single-ended output.

ORDERING INFORMATION
75L Spectrum Analyzer, 20 Hz to 5 MHz (Requires L3 Plug-In Module). $12,500
Includes: Spectrum analyzer graticule (357-1159-00), (7060 Series), and (357-1439-01); (7603), light blue filter (378-0864-00); operator manual (070-1734-01); service manual (070-2184-01).

OPTIONS
Option 11—L3 Module with Option 01 +$1,775
Option 12—8764 Oscilloscope capability +$165
Option 20—L3 Plug-In Module without Option 01 +$1,775
Option 25—Tracking Generator +$1,765
L3 Plug-In Unit to 75L—50 Ω, 75 Ω, 1 MΩ +$1,775
Option 01—75 Ω, 600 Ω, 1 MΩ NC
Includes: Instruction manual (070-2154-02)

CONVERSION KIT
Tracking Generator—To add to existing 75L, Order 040-0810-04 +$2,345
RECOMMENDED MAINFRAMES
7603* Oscilloscope, 100 MHz. $3,995
7603* Backmount Oscilloscope, 100 MHz. $4,910
7854 Waveform Processing Oscilloscope, 400 MHz. $15,275
* Suggested oscilloscope

OPTIONS (7603/7603)
Option 06—Internal Spectrum Analyzer Graticule. +$50
Option 08—Protective Front Cover (7603 only). +$115
Option 77—GM (P7) Phosphor and Internal Spectrum Analyzer Graticule. +$100

OPTIONAL ACCESSORIES
75 to 50 Ω Minimum Loss Attenuator—AC coupled. Order 011-0112-00. $60
P6105A—10X, 2 m Probe. $93
Balanced Input Transformer—Order 010-0182-00. $385