

**TECHNICAL MANUAL**

**OPERATOR'S, ORGANIZATIONAL, DIRECT  
SUPPORT, AND GENERAL SUPPORT  
MAINTENANCE MANUAL INCLUDING  
REPAIR PARTS AND SPECIAL TOOLS LISTS**

**SPECTRUM ANALYZER PL-1391/U**

**(TEKTRONIX MODEL 7L5)**

**(NSN 6625-01-015-6587)**

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**HEADQUARTERS, DEPARTMENT OF THE ARMY**

**DECEMBER 1978**

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TECHNICAL MANUAL HEADQUARTERS  
DEPARTMENT OF THE ARMY  
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**REPORTING OF ERRORS**

You can improve this manual by recommending improvements using DA Form 2028-2 located in the back of the manual. Simply tear out the self-addressed form, fill it out as shown on the sample, fold it where shown, and drop it in the mail.

If there are no blank DA Forms 2028-2 in the back of the manual, use the standard DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forward to the Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. In either case a reply will be furnished direct to you.

**NOTE**

This manual is an authentication of the manufacturer's commercial literature which, through usage, has been found to cover the data required to operate and maintain this equipment. Since the manual was not prepared in accordance with military specifications and AR 310-3, the format has not been structured to consider levels of maintenance.

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## SECTION 0 INTRODUCTION

### 0-1. SCOPE

This manual describes Spectrum Analyzer PL-1391/U and provides instructions for operation (Part I) and maintenance (Part II). Throughout this manual the PL-1391/U is referred to as the Tekronix Model 7L5.

### 0-2. INDEXES OF PUBLICATIONS

a. DA Pam 310-4. Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

b. DA Pam 310-7. Refer to the DA Pam 310-7 to determine whether there are modification work orders (MWO's) pertaining to the equipment.

### 0-3. FORMS AND RECORDS

a. *Reports of Maintenance and Unsatisfactory Equipment.* Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 38-750.

b. *Report of Packaging and Handling Deficiencies.* Fill out and forward DD Form 6 (Packaging Improvement Report) as prescribed in AR 700-58/NAVSUPINST 4030.29/AFR 71-13lmco P4030.29A and DLAR 4145.8.

c. *Discrepancy in Shipment Report (DISREP) (SF 361).* Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38/NAVSUPINST 4610.33B/AFR 75-18/MCO P4610.19C and DLAR 4500.15.

### 0-4. REPORTING EQUIPMENT IMPROVEMENT RECOMMENDATIONS (EIR)

EIR's will be prepared using SF Form 368, Quality Deficiency Report. Instructions for preparing EIR's are provided in TM 38-750, The Army Maintenance Management System. EIR's should be mailed direct to Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. A reply will be furnished direct to you.

### 0-5. ADMINISTRATIVE STORAGE

For information concerning storage, refer to section 2.

### 0-6. DESTRUCTION OF ARMY ELECTRONICS MATERIEL

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

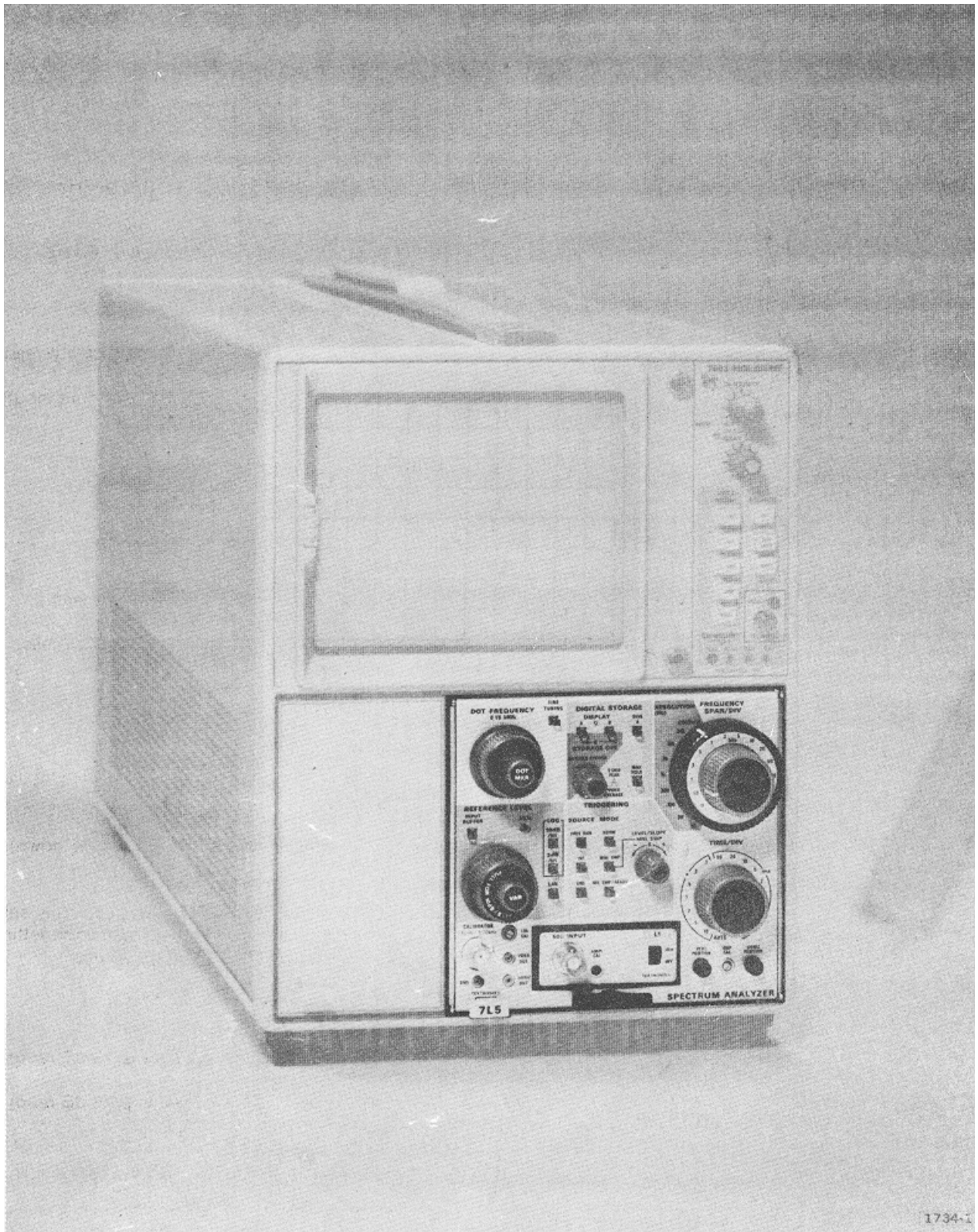


Fig. 1-1. 7L5 Spectrum Analyzer.

**SECTION 1. SPECIFICATION**

**Introduction**

To effectively use the 7L5 Spectrum Analyzer, the operation and capabilities of the instrument must be known. This instruction manual covers general operating information about the instrument. Service information, such as circuit description and calibration are contained in the Service manual.

**Description**

The 7L5 is a 5 MHz spectrum analyzer with digital storage. Frequency stability is within 5 Hz/hr and center frequency (dot) can be read with six digit accuracy immediately after turn-on. There is no need to fine tune the display. Complex measurements and analysis can be made with relative ease. Built-in micro-processing circuits decode control settings, process frequency and reference level information, and optimize sweep time and resolution for the selected frequency span.

The 7L5 with 80 dB or more of spurious free dynamic range, provides the ability to measure wide relative amplitudes. Nanovolt sensitivity provides very low-level signal and noise measurements.

The 7L5 display is fully calibrated in dBm, dBV, or volts/div. The reference level can be accurately set to 1 dB increments. A front panel input buffer control increases front-end immunity to intermodulation distortion while maintaining a constant reference level. To accommodate a wide variety of impedance sources, the 7L5 uses quick disconnect plug-in input impedance modules of 50 Ω, 75 Ω, 600 Ω, 1 MΩ/28 pF and customized units to meet special requirements.

Digital storage allows any 7000-Series mainframe, with crt readout, to present clean, easy to photograph, displays. A smooth integrated display provides an accurate analysis of most displays. Two complete displays can be held in memory for comparison. Two modes select either the conventional peak display or a digitally averaged display.

**ELECTRICAL CHARACTERISTICS**

The following electrical characteristics apply when the 7L5 Spectrum Analyzer, in combination with a Plug-In Module, are normally installed in a 7000-Series oscilloscope and after a warm-up of ten minutes or more.

**Frequency Characteristics**

**Range**

Input Frequency: 10 Hz through 5.0 MHz.

Dot Frequency: 0 Hz through 4999.75 kHz.

**Accuracy**

20 °C to 30°C:  $+(5 \text{ Hz} + 2 \times 10^{-6} \text{ of dot readout})$ .

0°C to 50°C:  $\pm(20 \text{ Hz} + 10^{-5} \text{ of dot readout})$ .

**Drift**

5 Hz/hour or less.

**Residual (Incidental) FM**

50 Hz/div to 2 kHz/div: 1 Hz (p-p) or less.

5 kHz/div to 500 kHz/div: 40 Hz (p-p) or less.

**Resolution Bandwidth**

**Accuracy**

30 kHz--30 Hz: Within 20% of selected resolution (6 dB down).

10 Hz: Within 100 Hz  $\pm 20$  Hz (70 dB down).

The COUPLED setting electronically selects the best resolution bandwidth for each setting of the FREQUENCY SPAN/DIV control.

**Shape Factor**

30 kHz-3 kHz 5:1 or better (60:6 dB ratio).

1 kHz-10 Hz: 10:1 or better (60:6 dB ratio).

**Amplitude Deviation**

30 kHz-100 Hz: 0.5 dB or less.

30 kHz-10 Hz: 2.0 dB or less.