

TECHNICAL MANUAL

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

FOR

**PLUG-IN, LOW FREQUENCY
(SPECTRUM ANALYZER)
PL-1387/U
(HP-8556A)
(NSN 6625-00-167-5267)**

HEADQUARTERS, DEPARTMENT OF THE ARMY

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REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can improve this manual. If you find any mistakes, or if you know of a way to improve the procedures, please let us know. Mail your letter or DA Form 2028 (Recommended Changes to Publications and Blank Forms) directly to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MP, Fort Monmouth, NJ 07703. In either case a reply will be furnished directly to you.

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SECTION O

INTRODUCTION

O-1. Scope

This manual provides technical data, and installation, operation, and maintenance instructions for the spectrum analyzer low-frequency plug-in PL1387/U, Hewlett-Packard model 8556A. The PL1387/U is referred to throughout this manual as the 8556A. Appendix A lists pertinent publications. Appendix B contains the Maintenance Allocation Chart (MAC), which defines the levels and scope of maintenance functions for the equipment in the Army system, and a list of the tools and test equipment required. Appendix F provides a cross reference between commercial part numbers and National Stock Numbers (NSN). Appendix G provides a listing of errors in this manual, and changes which are to be made to the manual, depending on the serial number of the 8556A with which the manual is to be used. As indicated, for plug-ins having serial numbers from 1124A00121, to 1124A00130, only change 1 is to be applied to the manual. For plug-ins with serial numbers 1404A2236 and later models, all nine changes to the manual are required. The list of appendices is located on page iv, following LIST OF TABLES in TABLE OF CONTENTS.

O-2. Consolidated Index of Army Publications and Blank Forms

Refer to the latest issue of DA PAM 310-1 to determine whether there are new editions, changes or additional publications pertaining to the equipment.

O-3. Maintenance Forms, Records, and Reports

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those prescribed by TM 38-750, The Army Maintenance Management system.

b. Report of Packaging and Handling Deficiencies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2/ DLAR 4140.55/NAVMATINST 4355.73/AFR 400-54/MCO 4430.3E.

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 P 4610.19C/DLAR 4500.15.

O-4. Reporting Equipment Improvement Recommendations (EIR)

If your plug in 8556A needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Put it on an SF 368 (Quality Deficiency Report). Mail it to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN; DRSEL-ME-MP, Fort Monmouth, NJ 07703. We'll send you a reply.

O-5. Administrative Storage

The 8556A plug-in can be stored in stockrooms, warehouses, or other protected facilities. The equipment should be protected from excessive humidity, sand, dust, and chemical contaminants. Before putting the 8556A in administrative storage, make the following preparations:

a. Complete the operational adjustments procedure given in figure 3-2 to assure that the plug-in is operable.

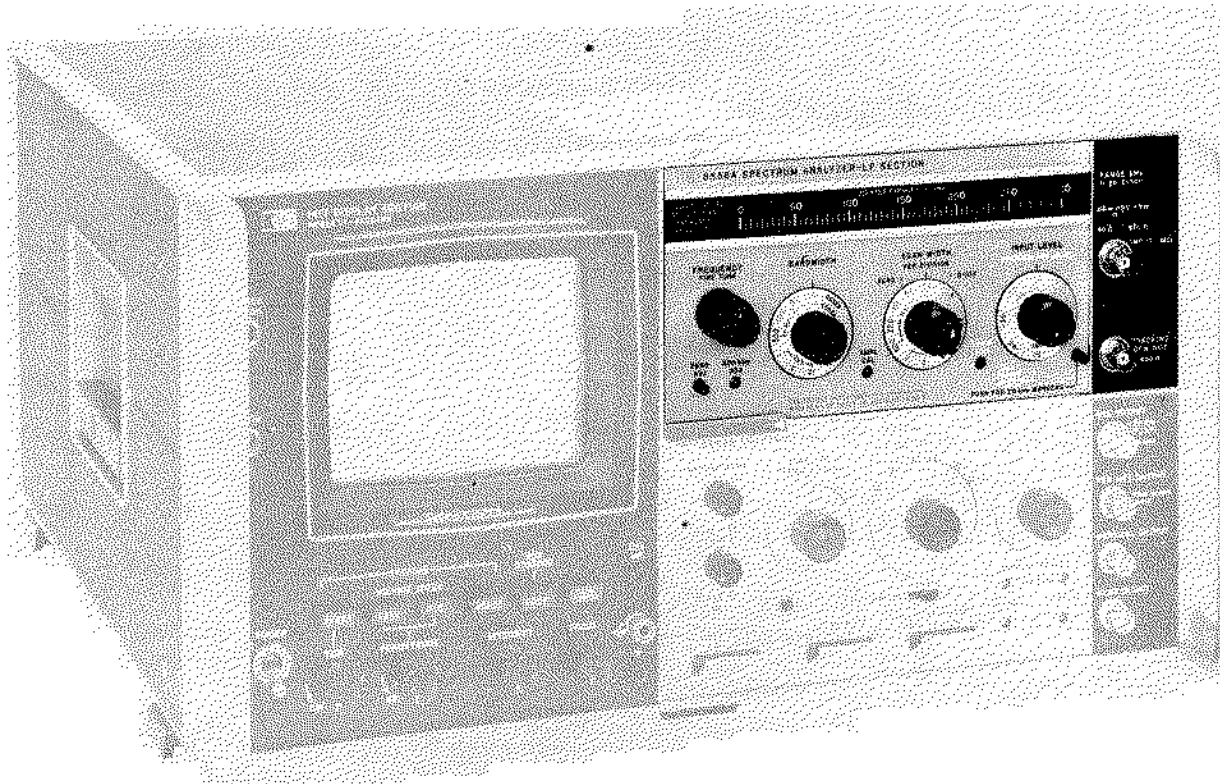
b. If the original packing material is not available, at least protect the unit with protective plastic or paper wrapping. Place the unit in a carton or box with makeshift protective packing material around it.

c. Store the equipment indoors, protected from the elements. Maintain the equipment at moderate temperature and humidity.

O-6. Destruction of Army Electronic Materiel

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

MODEL 8556A



ACCESSORIES

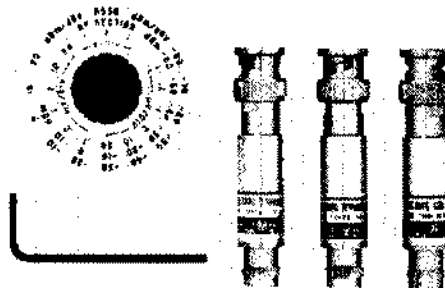


Figure 1-1. Model 8556A Spectrum Analyzer LF Section with 8552B IF Section and 141T Display Section

SECTION I

GENERAL INFORMATION

1-1. INTRODUCTION

1-2. This manual contains all information required to install, operate, test, adjust and service the Hewlett-Packard Model 8556A Spectrum Analyzer LF Section. This section covers instrument identification, description, options, accessories, specifications and other basic information.

1-3. Figure 1-1 shows the Hewlett-Packard Model 8556A Spectrum Analyzer LF Section with the Model 8552B Spectrum Analyzer IF Section and the Model 141T Display Section. Also shown are the accessories supplied with the 8556A (see paragraph 1-15).

1-4. The various sections in this manual provide information as follows:

SECTION II, INSTALLATION, provides information relative to incoming inspection, power requirements, mounting, packing, shipping, etc.

SECTION III, OPERATION, provides information relative to operating the instrument.

SECTION IV, PERFORMANCE TESTS, provides information required to ascertain that the instrument is performing in accordance with published specifications.

SECTION V, ADJUSTMENTS, provides information required to properly adjust and align the instrument after repairs are made.

SECTION VI, REPLACEABLE PARTS, provides ordering information for all replaceable parts and assemblies.

SECTION VII, MANUAL CHANGES, normally will contain no relevant information in the original issue of a manual. This section is reserved to provide back-dating and up-dating information in manual revisions or reprints.

SECTION VIII, SERVICE, includes all information required to repair the instrument.

1-5. INSTRUMENTS COVERED BY MANUAL

1-6. Hewlett-Packard instruments carry a serial number (see Figure 1-2) on the back panel. When the serial

number prefix on the instrument serial number plate of your instrument is the same as one of the prefix numbers on the inside title page of this manual, the manual applies directly to the instrument. When the instrument serial number prefix is not listed on the inside title page of this manual, manual change sheets and manual updating information is provided. Later editions or revisions to the manual will contain the required change information in Section VII.

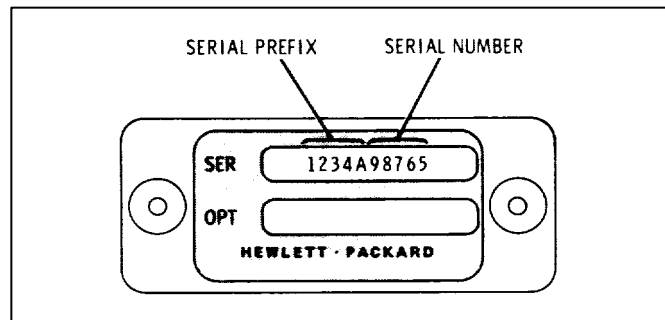


Figure 1-2. Instrument Identification

1-7. DESCRIPTION

1-8. The Hewlett-Packard Model 8556A Spectrum Analyzer LF Section covers the frequency range from 20 Hz to 300 kHz. When it is combined with an IF Section and a Display Section it functions as the tuning section of a low frequency spectrum analyzer.

1-9. The analyzer electronically scans input signals and displays their frequency and amplitude on a CRT. The horizontal, x-axis, is calibrated in units of frequency and the vertical, y-axis, is calibrated in absolute units of voltage (pV, mV, dBV) or power (dBm). Therefore, absolute and relative measurements of both amplitude and frequency can be made.

1-10. The horizontal (frequency) axis can be swept three different ways:

a. The center of the CRT is set to a frequency determined by the dial and the analyzer is swept symmetrically about that frequency.

b. The analyzer is not swept but is used as a fixed frequency receiver. Signal amplitude can be read on the CRT and signal modulation can be viewed as with an oscilloscope.

c. The analyzer is swept from 0 Hz to a higher frequency selectable from 200 Hz to 200 kHz.

1-11. The vertical (amplitude) axis provides relative and absolute measurement capability in volts, dBV, dBm into 600 ohms unbalanced, and dBm into 50 ohms.

1-12. The LF Section's input is isolated from the instrument chassis so that the CRT display is free of line frequency spurious responses due to ground loops.

1-13. Accurate frequency calibration is provided by selecting 20 kHz markers.

1-14. The LF Section also contains a tracking generator that produces a calibrated signal that precisely tracks the analyzer tuning frequency. This signal can be used to test the frequency response of a device; it can also be used, with a frequency counter, for making frequency measurements that are accurate to 1 Hz (see Section III).

1-15. ACCESSORIES SUPPLIED

1-16. The 8556A LF Section requires a special knob on the IF Section in place of the standard LOG REF LEVEL control. The special knob has three scales: one is used for the LF Section log calibration (red scale), one for log calibration with the RF Sections (black scale), and one for linear calibration with all units (blue scale). This knob and an allen wrench to install it are supplied with each 8556A. Extra knobs (HP 08556-00013) are available.

1-17. The 8556A is supplied with the following accessories:
 HP 11095A 600 ohm Feed Thru Termination
 HP 11048C 50 ohm Feed Thru Termination
 HP 11660A Tracking Generator Shunt (50 ohm output)

1-18. EQUIPMENT REQUIRED BUT NOT SUPPLIED

1-19. The 8556A LF Section must be mated with an IF Section, such as the 8552A or the 8552B, and a Display Section, such as the 140T or the 141T, before the units can perform as a spectrum analyzer.

1-20. IF Sections

1-21. The 8552A IF Section features calibrated bandwidths, log and linear amplitude calibration, and calibrated scan times. The 8552B IF Section has all of the features of the 8552A and, in addition, manual scan,

greater frequency stability, narrower bandwidths and an expanded log scale (2 dB per division).

1-22. Display Sections

1-23. The 140T Display Section is equipped with a fixed persistence, non-storage CRT; the 141T Display Section is equipped with a variable persistence, storage CRT. The 143S Display Section has a large screen (8x10 inch) CRT.

1-24. COMPATIBILITY

1-25. The 8556A LF Section is fully compatible with all current 8552A/B IF Sections; 8552A's with serial prefix 991 and below, and 8552B's with serial prefix 977 and below must be modified. The modification consists of adding a white-blue-grey (24 AWG) wire between 8552A/B connectors XA8 pin 8 and J3 pin 40. (See appropriate 8552 manual for location of connectors.)

NOTE

The 8556A requires a special knob on the IF Section in place of the standard LOG REF LEVEL control (see EQUIPMENT SUPPLIED).

1-26. The 8556A LF Section is fully compatible with all HP 140S/T, HP 141S/T, and HP 143S Display Sections. The 8556A can be used with HP 140A/B and 141A/B Oscilloscope Mainframes but some performance specifications will be slightly degraded. (For more information, contact your nearest Hewlett-Packard office.)

1-27. OPERATING ACCESSORIES

1-28. Operating accessories for use with the 8556A/8552/140 Spectrum Analyzer are listed in Table 1-3. They include a frequency counter, an oscilloscope camera, and various attenuators and probes.

1-29. TEST EQUIPMENT REQUIRED

1-30. Tables 1-4 and 1-5 list the test equipment and test equipment accessories required to check, adjust and repair the 8556A LF Section.

1-31. WARRANTY

1-32. The 8556A LF Section is warranted and certified as indicated on page C.