

TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, DIRECT
SUPPORT, AND GENERAL SUPPORT
MAINTENANCE MANUAL INCLUDING
REPAIR PARTS AND SPECIAL TOOLS LISTS
FOR
SPECTRUM ANALYZER RF SECTION PL-1399/U
(NSN 6625-00-432-5055)
(HEWLETT - PACKARD MODEL 8553B)

H E A D Q U A R T E R S , D E P A R T M E N T O F T H E A R M Y
27 NOVEMBER 1981

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TECHNICAL MANUAL

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HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 27 November 1981

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FOR
SPECTRUM ANALYZER RF SECTION PL-1399/U
(NSN 625-0-432-5055)**

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help 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, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703.

In either case, a reply will be furnished directly to you.

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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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* Part Number - National Stock Number Cross Reference Index

**8553B
SPECTRUM ANALYZER
RF SECTION**

SERIAL NUMBERS

This manual applies directly to instruments with serial numbers prefixed 1215A.

With changes described in Section VII, this manual also applies to instruments with serial numbers prefixed 945-, 972-, 982-, 982A, and 1144A.

For additional important information about serial numbers see INSTRUMENTS COVERED BY MANUAL in Section 1.

OPTIONS H01 AND H02

With changes described in Section VII, this manual also applies to instruments with the 75-ohm input options, H01 and H02.

CERTIFICATION

Hewlett-Packard Company certifies that this product met its published specifications at the time of shipment from the factory. Hewlett-Packard further certifies that its calibration measurements are traceable to the United States National Bureau of Standards, to the extent allowed by the Bureau's calibration facility, and to the calibration facilities of other International Standards Organization members.

WARRANTY

This Hewlett-Packard instrument product is warranted against defects in material and workmanship for a period of one year from date of shipment. During the warranty period, Hewlett-Packard Company will, at its option, either repair or replace products which prove to be defective.

For warranty service or repair, this product must be returned to a service facility designated by HP. Buyer shall prepay shipping charges to HP and HP shall pay shipping charges to return the product to Buyer. However, Buyer shall pay all shipping charges, duties, and taxes for products returned to HP from another country.

HP warrants that its software and firmware designated by HP for use with an instrument will execute its programming instructions when properly installed on the instrument. HP does not warrant that the operation of the instrument, or software, or firmware will be uninterrupted or error free.

LIMITATION OF WARRANTY

The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance of Buyer, Buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product, or improper site preparation or maintenance.

NO OTHER WARRANTY IS EXPRESSED OR IMPLIED. HP SPECIFICALLY DISCLAIMS THE IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

EXCLUSIVE REMEDIES

THE REMEDIES PROVIDED HEREIN ARE BUYER'S SOLE AND EXCLUSIVE REMEDIES. HP SHALL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, WHETHER BASED ON CONTRACT, TORT, OR ANY OTHER LEGAL THEORY.

SECTION 0

INTRODUCTION

0-1. Scope

This manual describes the PL-1399/U Spectrum Analyzer. It includes technical data, installation, operation and maintenance instructions. The PL-1399/U is referred to throughout this manual as the Hewlett-Packard Model 8553B.

0-2. Indexes of Publications

Refer to the latest issue of the DA Pam 310-4 to determine if there are any new editions, changes, additional publications or modification work orders pertaining to the equipment.

0-3. 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 Discrepancies. 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) (SF361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF-361) as prescribed in AR 55-38/NAVSUPINST 4610.33BIAFR 75-18/MCO P4610.19C/DLAR 4500.15.

0-4. Reporting Equipment Improvement Recommendations (EIR)

If your 8853B Plug-In 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. Tell us why a procedure is hard to perform. Put it on an

SF-368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, NJ 07703. We'll send you a reply.

0-5. Administrative Storage

The 8853B RF Section 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 8853B RF Section in administrative storage, make the following preparations:

a. Complete the performance tests of Section IV, and if necessary, perform adjustments as indicated in Section V to assure that the unit is completely 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 temperatures and humidity.

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.

0-7. Warranty Information

The Spectrum Analyzer, PL-1399/U is warranted by Hewlett-Packard for 12 months. Warranty starts on the date found on DA Form 2410 or DA Form 2408-16 in the logbook. Report all defects in material or workmanship to your supervisor, who will take appropriate action.

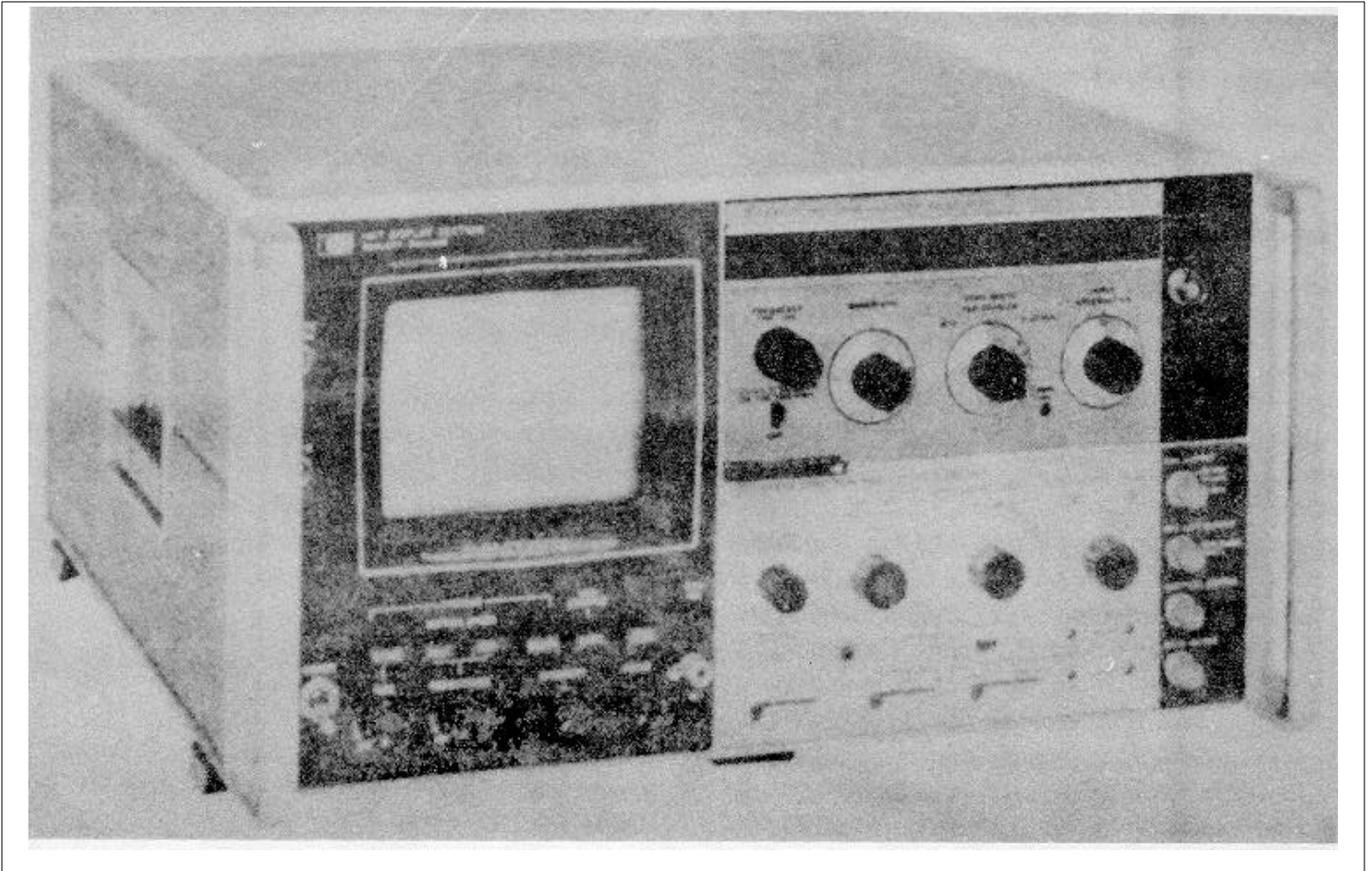


Figure 1-1. Model 8553B Spectrum Analyzer RF Section with 141T Display Section and 8552A Spectrum Analyzer IF Section

Section I**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 8553B Spectrum Analyzer RF Section. This section covers instrument identification, description, options, accessories, specifications and other basic information.

1-3. Figure 1-1 shows the Hewlett-Packard Model 8553B Spectrum Analyzer RF Section with the Model 8552A Spectrum Analyzer IF Section and the Model 141T Display Section.

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 and shipping, etc.

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

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.

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

SECTION VII, MANUAL CHANGES, contains information required to adapt this manual to 75 ohm, H01/H02 RF Sections. Also contains manual backdating information.

SECTION VIII, SERVICE, includes information for servicing the instrument.

1-5. INSTRUMENTS COVERED BY MANUAL.

1-6. Hewlett-Packard instruments carry an eight digit 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 initial issue, manual change sheets and manual up-dating information is provided. Later editions or revisions to the manual will contain the required change information in Section VII.

1-7. DESCRIPTION.

1-8. The HP Model 8553B Spectrum Analyzer RF Section is shown in Figure 1-1 with the Model 8552A Spectrum Analyzer IF Section and the Model 141T Display Section. Table 1-1, Specifications, and Table 1-2, Supplemental Performance Characteristics, are for the 8553B RF Section when used with an 8552A IF Section and the 140 Display Section.

1-9. The Analyzer is a highly sensitive super-heterodyne receiver with spectrum scanning capabilities up to 110 MHz. Output video from the receiver circuits is applied to the CRT in the display section; thus, a signal or group of signals can be analyzed in the frequency domain. Input signals are plotted on the CRT as a function of amplitude versus frequency. The amplitude (y-axis) of the CRT is calibrated in absolute units of power (dBm) or voltage ($\mu\text{V}/\text{mV}$); accordingly, absolute and relative measurements of both amplitude and frequency can be made.

1-10. Controls of the instruments are arranged for easy operation. For wide spectrum analysis, the operator can use a preset scan of 0 to 100 MHz. For more detailed study, the spectrum width can be progressively narrowed to .2 kHz, or the scanning capabilities can be eliminated altogether to use the instrument as a fixed frequency receiver. A bandwidth of 300 kHz is automatically selected for preset scan operation; for variable scan and fixed frequency operation, narrower bandwidths can be selected by the operator.

1-11. OPTIONS

1-12. The 8553B/8552 Spectrum Analyzer is available with 75 ohms input/output impedance. The 8553B Option H01 has a Western Electric WE-506A type input connector and the 8553B Option H02 has a BNC input connector. Specifications for the 75 ohm options are listed in Table 1-1 and Section VII lists the changes necessary to adapt this manual to them.