
TECHNICAL MANUAL

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

**SIGNAL GENERATOR SG-735 / URM-165
(HEWLETT-PACKARD MODEL 8616A)
(NSN 6625-00-254-6671)**

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HEADQUARTERS
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**OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT, AND
GENERAL SUPPORT MAINTENANCE MANUAL
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(INCLUDING DEPOT MAINTENANCE REPAIR
PARTS AND SPECIAL TOOLS)
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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, the format has not been structured to consider levels of maintenance.

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SECTION I GENERAL INFORMATION

1-1. INTRODUCTION

1-2. The Model 8616A Signal Generator provides RF power in the 1800- to 4500-MHz range. The instrument produces an RF power output of at least 2 mW. Output frequency and attenuation are read directly on digital dials, and fine frequency changes can be made by means of the front-panel A F control. Complete specifications are given in Table 1-1. The 8616A is shown in Figure 1-1.

1-3. The instrument has two power output connectors which supply RF power simultaneously. One output provides at least 10 mW (2 mW from 3000 to 4500 MHz) of power and may be leveled. When in the leveled output mode of operation and the output is 0 dBm or less, the RF output is held quite constant across the band without resetting the attenuator or power monitor. The other output connector provides an uncalibrated output of at least 0.5 mW. A wave-guide-beyond-cutoff attenuator, which is referenced to the RF output, accurately attenuates the calibrated RF power output from 0 to -127 dBm.

1-4. RF power output can be internally square-wave modulated. In addition, the RF power can be externally AM, FM, or pulse modulated. An external ALC (automatic level control) input which can be used for remote leveling loop control and an external DC-coupled FM input which can be used for external AFC is also provided.

1-5. PIN diode attenuators are used for leveling, square wave, pulse, and amplitude modulation. The PIN attenuator is an absorption device that can be electrically controlled to attenuate RF power. A sampling loop which includes a PIN diode attenuator compensates for changes in RF power output to hold the RF power output nearly constant.

1-6. SUPPLEMENTARY INSTRUMENTS

1-7. Two instruments capable of extending the operating parameters of the generator are the 8403A and the Model 2650A. The Model 8403A Modulator produces output pulses with 30 to 40

nanosecond rise and decay time characteristics. Pulse outputs are accurately variable in frequency, width, and delay. Amplitude modulation is available with frequency responses to 10 MHz for sine waves. Square-wave frequency capability is accurately available. The modulator also provides sync and delayed-sync outputs.

1-8. The Model 2650A Oscillator Synchronizer may be used directly to stabilize all internal cavity reflex klystron signal generators. Short-term stability is one part in 10⁸/sec, and long-term stability is one part in 10⁶/week over 0 to 50 degrees centigrade.

1-9. INSTRUMENT OPTIONS

1-10. In addition to the standard instrument, the option 01 is available. The option 01 instrument has its input connectors located on both the front and rear panel and its output connectors located on the rear panel; in all other respects it is the same as the regular signal generator.

1-11. INSTRUMENT IDENTIFICATION

1-12. Hewlett-Packard uses a ten digit serial number (on instrument rear panel) to identify instruments. The first four numbers and letter are the serial prefix number and the last five digits are unique to a specific instrument. If the serial prefix on your instrument does not appear on the title page of this manual, there are differences between the manual and your instrument which are described in a Manual Change sheet included with the manual. If the change sheet is missing, it may be obtained, on request, from your nearest Hewlett-Packard office.

1-13. KLYSTRON WARRANTY CLAIM SHEET

1-14. The klystron supplied and replacement klystrons purchased from Hewlett-Packard are guaranteed as set forth in the CONDITIONS OF WARRANTY FOR KLYSTRON TUBES which is found on the next to last page of this manual.