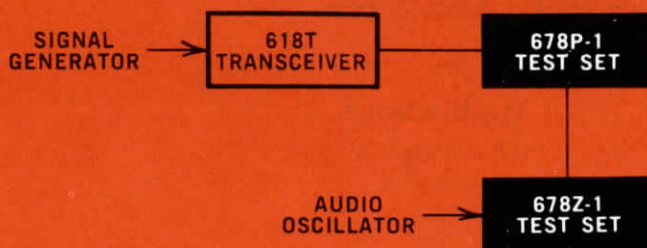


Test Equipment

Collins specialized test equipment includes spectrum analyzers to facilitate rapid and accurate measurement in single sideband systems. Equipment is also available for maintenance and calibration of systems using the 618T Transceiver and module testing of Collins automatic antenna couplers.

Accurate calibration and uniform maintenance procedures assure peak system operating conditions and increased reliability. Precise, standard adjustment of system components facilitates module interchangeability between equipment.



476D-1 Distortion Analyzer-Monitor

Features

*Rapid Measurements
Simplified Operation
Two-Tone Tests
RF Level Indication*

Applications

*SSB Installation
Laboratory*



The 476D-1 is a precision, portable test set for single sideband system measurements. Featuring simplicity of operation, it facilitates rapid and accurate measurement of single sideband systems for carrier suppression, opposite sideband suppression and distortion products near the carrier frequency. Complex measurements can be performed by field technicians or production line personnel saving costly engineering time.

An indication of relative RF voltage level permits trimming of tuned circuits operating at levels below that which can be measured by vacuum tube voltmeters. Distortion products can be measured over a 50 db range with an accuracy of approximately 1 db. The monitor function allows aural transmitter checks to be made during normal system operation.

Available only on a production contract.

proximately 1 db. The monitor function allows aural transmitter checks to be made during normal system operation.

APPLICATION

The self-contained 476D-1 is ideally suited for use in laboratories or HF single sideband stations. It includes two-tone RF and AF sources for separate measurements of receivers, transmitters, RF or AF amplifiers, modulators or complete systems. The unit is self-checking, and the front panel controls are arranged for simplified operation. RF signal frequencies are indicated on a direct reading dial. The 476D-1 can be mounted in a standard 19" rack, if desired. Connecting cables, sampling loops or coupling devices are the only accessories required.

Specifications

FREQUENCY RANGE: RF — 1.7-31.7 mc (15 bands). IF — 0.1-1.7 mc. AF — 1500 cps and 2500 cps. Tunable IF — 0.1-1.7 mc.

INPUT SENSITIVITY: RF — 0.03-0.1 v rms. AF — 0.3 v rms.

DYNAMIC RANGE: 50 db below two equal RF or IF tones.

POWER REQUIREMENTS: 115 v, 50-450 cps, 200 watts.

SIZE: 22¼" W, 18½" H, 20 7/8" D (56.52 cm W, 46.99 cm H, 53.02 cm D).

WEIGHT: Approx. 150 lbs. (68 kg).

478R-1 Spectrum Analyzer

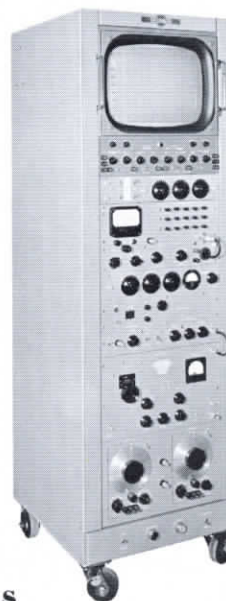
Features

*Spectrum Plots
Visual Spectrum
Presentation
Large Oscilloscope
Waveform Analysis
Intermodulation
Measurements*

Applications

*SSB Station
Laboratory*

The 478R-1 is a versatile, precision test set which accurately displays the output signal spectrum characteristics of RF generators, amplifiers, transmitters, exciters and oscillators on a 17 inch calibrated oscilloscope screen. The dynamic range of the analyzer is at least 70 db, displayed on one scale to an accuracy of ± 1 db. It will accept signals from 2 mc to 64 mc and from 250 kc to 300 kc, plotting a spectrum width of 4, 8 or 16 kc without additional coils or test equipment. Simultaneous measurements of hum, distortion, noise and other spurious products can be used as a direct plot of db level versus frequency. Permanent data for engineering reports can be provided by using a two-axis recorder.



Specifications

INPUT FREQUENCY RANGE: 2-64 mc and 250-300 kc. Other ranges with external injection.

RF INPUT VOLTAGE RANGE: 0.02-5.0 v rms for 0 db reference

level; 70 db dynamic range; RF signals below 6 uv can be detected at some frequencies.

SCANNING BANDWIDTHS: 4, 8 or 16 kc.

SCANNING TIME: 2-60 seconds. Manual scanning of spectrum can be employed.

RESOLUTION: 60 cps sidebands can be separated from the carrier frequency throughout the full range.

CALIBRATION ACCURACY: Vertical — within ± 1 db from 0 to -70 db; 10 inches of usable height.

TWO-TONE TEST SIGNAL: Continuously variable audio oscillators provide input signals. Output is 3 v rms for each tone with up to 111 db of attenuation in 0.1 db steps into a 600 ohm external load.

POWER REQUIREMENTS: 115 v, 60 cps, 1200 va (230 v and/or 50 cps on special order).

SIZE: 22" W, 69" H, 26" D (55.88 cm W, 175.26 cm H, 66.04 cm D).

WEIGHT: 600 lbs. (272.16 kg).

618T HF Transceiver Test Sets

Features

Dynamic Tests
Uniform Adjustments
System Tests
Rapid Maintenance

Applications

Shop Maintenance
Field Maintenance

The 678P-1 Test Harness, 678Y-1 Maintenance Kit and 678Z-1 Function Test Set, used with standard communication test equipment, provide a complete test facility for 618T, AN/ARC-94 or AN/ARC-102 Transceivers.

The AN/ARM-73 and MK-773 utilize groupings of these basic test equipments in lightweight, rugged, Fiberglas carrying cases for field and tactical applications. The AN/ARM-73 (678P-2) consists of the 678P-1 and associated cables, while the MK-773 (678Y-3) includes 678Y-1 components, the 678Z-1 and a kit of tools especially suited for maintenance of the 618T Transceivers.

The test sets assure peak operating condition of the communication systems by the use of uniform maintenance procedures. Precise standard adjustment of system components also facilitates modules which interchange between equipments, allowing more effective utilization and rapid over-all system maintenance.



AN/ARM-73

MK-773

678P-1 TEST BENCH HARNESS SET

The 678P-1 Test Bench Harness includes a test panel unit, together with cables and adapters. It is rugged, versatile and simple to use, allowing a rapid test of the complete system. Cable connectors are located on a rear deck away from operational controls. A 714E control unit mounts directly in the front panel. A directional wattmeter measures forward and

reflected power. Both resistive and capacitive dummy RF loads are provided.

Power Requirements: Determined by transceiver being tested. *Size:* 8½" W, 9 9/16" H, 16" D (21.59 cm W, 24.29 cm H, 40.64 cm D). *Weight:* 25 lbs. (11.34 kg).

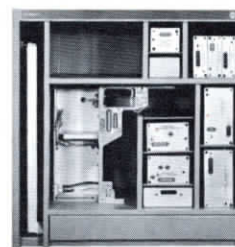


678P-1

678Y-1 MAINTENANCE KIT

The 678Y-1 Maintenance Kit consists of nine module extenders, a shipping and storage case, and a complete set of special tools, adapter plugs, cables and detectors to facilitate alignment and adjustment of the 618T Transceiver. The extender plugs into the equipment instead of the module to be tested, and the module then plugs into the extender. It is then located 6" from the 618T, AN/ARC-94 or AN/ARC-102 chassis, permitting access to all components during operation. All modules except the power amplifier and high voltage supply can be tested. Air flow cooling requirements and the presence of dangerously high voltages preclude the use of extenders for these modules. Each module extender contains test jacks arranged to aid in isolating operational difficulties. The module printed circuit boards can be loosened and exposed for inspection and maintenance.

Size: 23½" W, 24¼" H, 11½" D (59.7 cm W, 61.6 cm H, 29.2 cm D). *Weight:* 48.0 lbs. (21.77 kg).



678Y-1

678Z-1 FUNCTION TEST SET

The 678Z-1 contains a calibrated zener diode voltage source



678Z-1

which is used in conjunction with a sensitive bridge detector to provide a method of accurately adjusting the 18 v regulated supply and the reference bias voltages in the VFO and kilocycle stabilizer modules. Provisions are included for VFO capture range checks on the kilocycle stabilizer module and for overriding the transceiver TGC circuits for test purposes. A dummy microphone circuit is also included.

Power Requirements: 115 v, 400 cps, single phase, 0.1 amp. *Size:* 9.375" W, 9.141" H, 5.750" D (23.81 cm W, 23.22 cm H, 14.61 cm D). *Weight:* 5.0 lbs. (2.27 kg).

878L-1, -2, -3 Antenna Coupler Module Test Sets

Features

Dynamic Test

Uniform Adjustments

Applications

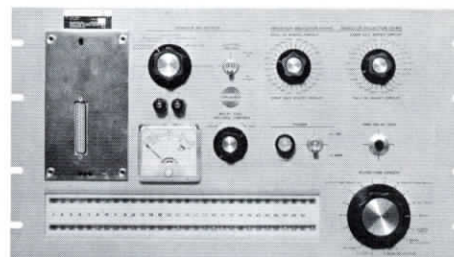
Shop Maintenance

The 878L-1 Servo Amplifier Test Set, 878L-2 Relay Control Test Set and 878L-3 Discriminator Tester facilitate maintenance procedures of automatic antenna couplers and associated coupler control units.

The test sets assure peak operating condition of the communication systems for increased reliability by accurate calibration and uniform maintenance procedures. Precise standard adjustment of system components facilitates module interchangeability between equipments, allowing more effective utilization and rapid over-all system maintenance.



878L-1

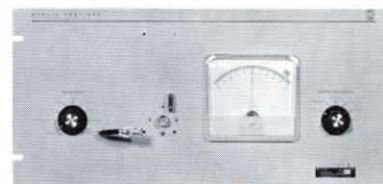


878L-2

309A-2, 309A-2D, 309A-2E, 309A-3, C-1940/ARC-58, C-2848/TRC-75 and unit 4, AN/ARC-80. It employs lamp comparisons and voltage indications in a general go-no-go type of test. Resistance selectors are provided for adjusting pull-in and drop-out voltages of the coil and tap servo relays. The unit is completely self-contained and can be mounted in a standard equipment rack. All controls and indicators, as well as the connector for the relay assembly under test, are located on the front panel.

A three-foot extension cable is included to allow easier trouble shooting on the bench, since the module has limited accessibility on the test set.

Power Requirements: 110-125 v, 400 cps, 75 watts. *Size:* 19" W, 10½" H, 8 15/16" D (48.26 cm W, 26.67 cm H, 22.7 cm D). *Weight:* 16.3 lbs. (7.39 kg).



878L-3

878L-3 DISCRIMINATOR TESTER

The 878L-3 can be used to align and perform tracking adjustments on the loading-phasing discriminators used in the Collins 180R-4, -4A, 180R-6, 180R-7, 180R-8 and 180R-10A Antenna Couplers. Operates in conjunction with an external high level RF signal source. Input impedance is 50 ohms. No primary power is required.

Size: 19" W, 8 23/32" H, 10¼" D (48.26 cm W, 22.2 cm H, 26.0 cm D). *Weight:* 12.8 lbs. (5.8 kg).

878L-1 SERVO AMPLIFIER TEST SET

The 878L-1 develops the operating voltage and error signals required for testing the servo amplifier used in Collins 309A-1, 309A-1A, 309A-2, 309A-2D, 309A-2E, C-1940/ARC-58, C-2848/TRC-75 and unit 4, AN/ARC-80 Antenna Coupler Controls. External test points allow access to servo amplifier outputs for balance and bias adjustments.

Controls are included to select either of three inputs to the servo amplifier and for selection of high and low calibrated signals for adjusting servo amplifier gain. A variable uncalibrated signal is provided for trouble shooting. A socket and holding clamp on the front panel allow direct insertion and retention of the servo amplifier being tested.

Power Requirements: 100-130 v rms, 400 cps $\pm 5\%$, not more than 3% harmonic distortion. *Size:* 19" W, 5 5/32" H, 18 13/16" D (48.26 cm W, 13.10 cm H, 47.78 cm D). *Weight:* 11½ lbs. (5.22 kg).

878L-2 RELAY CONTROL TEST SET

The 878L-2 completely tests the relay assemblies used in the following antenna coupler controls: 309A-1, 309A-1A,