

AN/URC-121(V) SERIES

The AN/URC-121(V) Transportable HF System provides high-performance, long-range communications capability. It is designed to provide reliable, easily maintained, HF voice and data communications for transportable and mobile operation. The transceiver, configured with a 500-watt or 1000-watt linear power amplifier and remote control, fulfills a wide range of communications requirements.

System Features

- 100/500/1000 watts output power
- 1.6 to 30 MHz
- Microprocessor controlled
- Digital fine tuning
- 10 Hz synthesized steps
- 99 field programmable channels

The AN/URC-121(V) Transportable HF System is based on the RT-1446/URC, a microprocessor-controlled

transceiver, conservatively rated at 100 watts PEP and Average output power. The solid-state power amplifier assures continuous full-output power during keydown operation. All operating and metering functions of the transceiver are fully remote controllable over phone lines or computer interfaces. Additionally, the built-in phone patch and internally-mounted AFSK option provide communication flexibility. The unit is compatible with standard DOD secure communications devices, including ANDVT.

The exceptionally rugged design and construction of this system guarantee continuous high performance and reliability under demanding field conditions. Automatic diagnostic BITE provides board-level fault isolation for the entire system.

The AN/URC-121(V) Transportable HF Transceiver System is tuned by simply selecting a frequency (or preset channel) and keying. All other functions, including linear power amplifier and antenna tuning, are performed automatically.

Upgrade All Your Long Range HF Radio Communications with a Product Line of Nomenclatured Equipment

The versatile AN/URC-121(V) HF System has been selected by the United States Department of Defense for a wide range of transportable applications, for large scale replacement of existing systems, as well as new communications requirements. It is electronically and mechanically designed to be compatible with existing networks and anticipated adaptive operating schemes to provide reliable, supportable, high-performance communications into the 21st century.

Operation of any system configuration is straightforward. Frequency, mode, and other operating characteristics can be operator selected or can be preset on up to 99 field-programmable channels. Tuning is as easy as selecting a frequency or channel and keying. All other tuning functions are automatic. An individual can become a qualified operator in a matter of minutes. System self-test and automatic diagnostic BITE make it simple to identify and locate problems in the field. Modular construction puts you back on the air when seconds count.

Operation and maintenance manuals, data, documentation, provisioning, and training packages provide all required levels of support from the field to the depot.



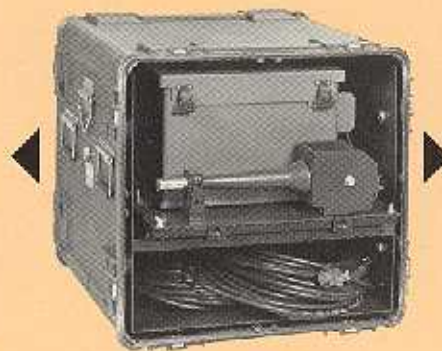
Typical Application Features

- Demonstrated AFSK interface with Transportable Record Communications Terminal (TRCT).
- Demonstrated high-speed data transmission and reception up to 2400 bps (with RF-3466 High-Speed Data Modem and ANDVT).
- Adaptive HF with channel evaluation and selective call using RF-7110 AUTOLINK® Adaptive Controller.
- Built-in phone patch and VOX for operation to/from telephone lines.
- Interfaces with various record message devices such as AN/UGC-74, AN/UGC-129, and AN/UGC-141.
- Operates with various digital message entry devices (DMED) to provide burst communications capability.
- Demonstrated interface with COMSEC equipment such as Parkhill KY65/KY75 and Advanced Narrow-Band Digital Voice Terminal (ANDVT) CV-3591.

AN/URC-121(V) System Configurations



The basic Transportable Ground System is designed for applications requiring a pre-wired, pre-configured system. The system is fully operational by removing the front and rear end bells.



The AN/URC-121(V) Antenna Coupler/Remote Control Deployment option provides storage for the antenna coupler, control and RF cables, and accessory remote control (when required).



The Adaptive Transportable Ground System provides full adaptive HF operation by incorporating the RF-7110-04 Adaptive Controller. This transportable AUTOLINK® system provides automatic link establishment, link quality analysis (LQA), and automated channel selection.



The Transportable Open Field option provides the versatility required for a fully-protected, open field system. The case housing the R/T and 500 Watt Power Amplifier is designed to environmentally protect the system when exposed to the elements. The second case contains the remote control, antenna coupler, coupler control, and RF cables, as well as interface cables for use with standard 407L cables provided by the government.



Specifications for the AN/URC-121(V) Transportable HF Transceiver System

RT-1446/URC 100 Watt HF Transceiver

General

Frequency Range 1.6 to 30 MHz (10 Hz synthesized steps).
 Power Output 100 watt PEP/Average.
 Channels 99 front panel programmable channels.
 Frequency Stability 0.3 parts in 10⁶.
 Power Input 110/220 VAC ± 10% at 50 to 400 Hz, +28 VDC or +12 VDC.

RF Input/Output

Impedance 50 ohms nominal unbalanced, capable of driving a 2:1 VSWR load.

Temperature -30° to +50° C.

Tuning Time Less than 10 msec.

Display LCD.

Built-in Test

Diagnostics Fault isolation to LRU/front-panel alphanumeric indication.

Emission Modes A3J (single sideband, upper or lower);
 A3H (compatible AM); A2J (CW); AF5K.
 Size 8.75 H x 16.75 W x 20.0 D inches
 (22.2 H x 42.5 W x 50.8 cm).

Weight 85 lbs. (38.6 kg).

Mounting Rack, stack, or tactical case.

Transmitter

Power Output SSB (A3J) 100 watt PEP/Average; compatible
 AM (A3H) 25 watt carrier nominal; CW (A2J)
 100 watt PEP.

Overload Protection Power amplifier is fully protected from mis-
 match, including an open or shorted antenna.

Carrier Suppression

(A3J Mode) At least 50 dB below PEP output.

Intermodulation

Distortion 33 dB below PEP.

Undesired Sideband

Suppression 50 dB at 1 kHz.

Harmonic Suppression 2nd 40 dB, 3rd 55 dB, 50-400 MHz 70 dB
 below PEP.

Audio Input Either carbon or dynamic microphone; in
 addition, a 600 ohm input is provided.

Residual Noise Level 50 dB below PEP.

Receiver

Sensitivity SSB: 0.5 μ v for 10 dB SINAD.
 AM: 3 μ v for 10 dB SINAD.

Audio Output 4 watts to internal speaker.

Selectivity SSB: nominally 350-3050 Hz at 3 dB.

Image and IF Rejection Greater than 80 dB.

AGC Characteristics Attack time: SSB 30 msec. max.
 Release time: selectable 3 ± 1 sec.
 200 ± 100 msec., 30 msec. max.

Intermodulation

Distortion In-band third order: -50 dB or better for two
 equal -36 dBm signals falling within SSB filter.
 Out-of-band third order: -60 dB or better for
 two equal 0 dBm signals falling at f_0 + 100
 kHz and f_0 + 200 kHz.

Overload Protection Receiver protected for input to 100 VRMS.

Spurious Responses -80 dB.

*FSK Modem Interface MIL-STD-188-114 (low level).

*Center Frequency
 and Shift 2805 ± 42.5 Hz.
 2000 ± 85 Hz.
 2000 ± 425 Hz.

*With optional AFSK module.

*—AUTOLINK is a registered trademark of Harris Corp.

Because Harris engineers are continually striving to improve all aspects of our equipment, published specifications are subject to change without notice.

AM-7223/URC 500 Watt HF Linear Power Amplifier and AM-7224/URC 1 kW Linear Power Amplifier with PP-7913/URC Power Supply

Frequency Range 1.6 to 30 MHz.
 RF Output Power AM-7223/URC: 500 watt PEP and 250 watt
 Average.
 AM-7224/URC with PP-7913/URC: 1000
 watt PEP and Average.

Channel Change Time 5 seconds nominal.

RF Drive Power

Required 65 watts for full power output.

Output Impedance 50 ohms.

Working VSWR 2:1 self-protecting for any load.

Intermodulation

Distortion Third order more than 33 dB down.

Harmonic Output More than 40 dB down.

Input Power AM-7223/URC: 110/220 VAC ± 10% at 50 to
 400 Hz or +28 VDC.
 AM-7224/URC with PP-7913/URC: 110/220
 VAC ± 10% at 50 to 400 Hz.

Metering Output power, grid current, plate current,
 and plate voltage.

Operating Temperature -30 to +50° C.

Cooling Forced air from internal blower.

Size AM-7223/URC:

7.0 H x 16.75 W x 20.0 D inches
 (17.8 H x 42.5 W x 50.8 D cm).

AM-7224/URC:

10.5 H x 16.75 W x 20.0 D inches
 (26.7 H x 42.5 W x 50.8 D cm).

PP-7913/URC:

10.5 H x 16.75 W x 20.0 D inches
 (26.7 H x 42.5 W x 50.8 D cm).

Weight AM-7223/URC: 77 lbs. (35.0 kg)

AM-7224/URC: 40 lbs. (18.1 kg)

PP-7913/URC: 135 lbs. (61.2 kg)

Mounting Rack or stack.

C-11329/URC Remote Control Unit

Functions The remote control provides full control and
 monitoring of the transceiver.

Display LCD.

Receive Frequency Controllable in 10 Hz steps, from 1.6 to
 30 MHz.

Transmit Frequency Controllable in 10 Hz steps, from 1.6 to
 30 MHz.

Distance 1 mile using RS-232C/422 on field wire;
 unlimited over V1 grade phone lines.

Temperature Range -30° to +50° C.

Size 5.25 H x 16.75 W x 12.5 D inches
 (13.3 H x 42.5 W x 31.8 D cm).

Weight 20 lbs. (9.1 kg).

CU-2310/URC 100/500 Watt HF Antenna Coupler

Input Impedance 50 ohms (maximum VSWR 1.5:1)

Frequency Range 1.6 to 30 MHz (into a 15- to 35-foot whip or
 a 75- to 150-foot long wire antenna).

Power Level 500 watt PEP/250 watt Average, continuous
 duty.

Size 11.0 H x 16.0 W x 18.0 D inches
 (27.9 H x 40.6 W x 45.7 D cm).

Weight 25 lbs. (11.3 kg).

Case Construction Waterproof (sealed) for exposed mounting.

Operating Power Derived from associated RT-1446/URC HF
 Transceiver.



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TRANSPORTABLE
HF TRANSCEIVER SYSTEM



 HARRIS