

Collins 32RS-1

HF SSB Transceiver



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The Collins 32RS-1 HF SSB Transceiver offers the fixed station operator an easy-to-use transceiver which requires a minimum of operator training. It is ideal for lumbering, mining and petroleum companies, maritime services and police, government and civil defense agencies.

The 32RS-1 provides output power of 100 watts PEP on any one of four pretuned channels in the 1.6-15.0 MHz range.

The single sideband (SSB) technique results in more effective communication by increasing talking power and reducing distortion and interference.

The entire station is compactly arranged and features simplified controls for operation by nontechnical personnel. Equipment is enclosed in a compact cabinet for tabletop mounting.

Frequency control is accomplished by pretuned circuits and precision crystal oscillators which have a high order of frequency stability. Due to this stability, it is not necessary for the operator to manually trim the frequency or adjust for speech clarity, or frequently synchronize with network stations.

Each of the four frequency channels may be independently specified to operate on either upper or lower sideband, although communication on upper sideband is considered conventional.

The 32RS-1 has seven basic operating controls which include power supply switches, frequency channel selector switch, transmit audio gain, receiver volume and loudspeaker On-Off switch.

A front panel meter indicates output while transmitting and incoming signal strength while receiving. This meter can be switched by maintenance personnel for transmitter tuning functions, which means the equipment can be set up on a new operating frequency, or checked at any time, without external test equipment.

The radio has a self-contained audio oscillator to facilitate tune-up procedure. Tune-up is straightforward.

The 32RS-1 is equipped with an inte-

gral voice-operated relay (VOX) which automatically switches the unit from receive function to transmit function whenever the operator speaks into the handset. If desired, VOX can be overridden by depressing a push-to-talk button built into the handset or by grounding the key terminal at the rear of the set.

The VOX control makes it possible to operate the 32RS-1 with ordinary telephone extensions or through a telephone switchboard since there is no need to equip the extension telephones with push-to-talk switches and associated extra wiring.

An accessory "hybrid" termination unit is available for connection of the 32RS-1 to existing two-wire telephone circuits.

Selection of the desired sideband is accomplished by a Collins Mechanical Filter, which also rejects undesired components. The sideband is converted to the output frequency in a balanced mixer. This mixer, together with five tuned circuits, suppresses spurious frequencies.

Automatic Load Control (ALC) is provided in the transmitter circuitry. ALC maintains a high level of transmitted "talking power" by compensating for changes in voice levels. Up to 6 db of compression is provided by the circuit, which requires only one tube. ALC operates with less voice distortion than speech clipping devices.

The main channel components, coils, crystals and crystal ovens are the "plug-in" type and are sold separately, thus enabling the customer to purchase only those required for his specific application. A crystal, five plug-in RF coils and one plug-in power amplifier network are necessary for one channel.

Each channel covers the entire range, permitting frequencies to be freely assigned anywhere between 1.6-15.0 MHz. Since each crystal oven will hold two crystals, only two are required for four channels. A high stability (one part in 10⁶) oven insures requisite stability for radio teletypewriter operation and voice circuits.

Accessories

302E-2 DIRECTIONAL WATTMETER

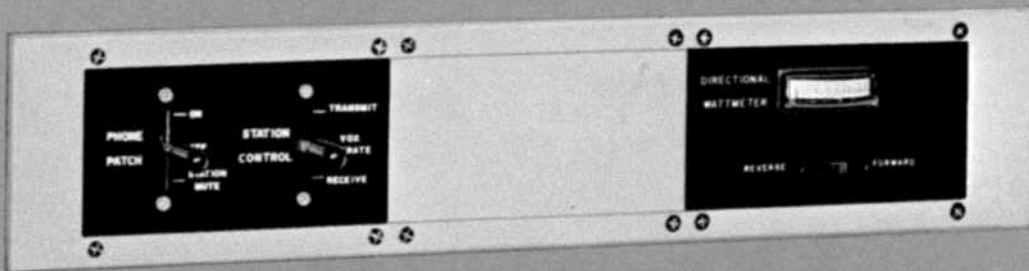
Normally fitted directly into the 32RS-1 accessory panel, this directional wattmeter can be easily removed for use at the antenna coupler site. A 0-200 watt indication of either forward or reverse power is presented. The wattmeter weighs 3 lbs. (1.36 kg) and is 5" W, 3" H, 5¼" D (12.7 cm W, 7.62 cm H, 13.34 cm D).

152J-1 PHONE PATCH

The 152J-1 Phone Patch uses a resistance hybrid circuit to match a 600 ohm telephone line to the unbalanced transmit and receive audio inputs. It effectively isolates receiver and transmitter functions. When the phone patch is in operation, the 32RS-1 handset is left on its cradle and the station's telephone is used. The level sent out along the phone lines is monitored using the station phone. A position is provided to "disconnect" the 32RS-1 when only telephone usage is desired. The station operator is given complete supervisory control by the inclusion of a function switch which allows transmit, receive or VOX operation. The phone patch weighs 3 lbs. (1.36 kg) and is 5" W, 3" H, 6⅝" D (12.7 cm W, 7.62 cm H, 16.83 cm D), excluding the front panel controls.

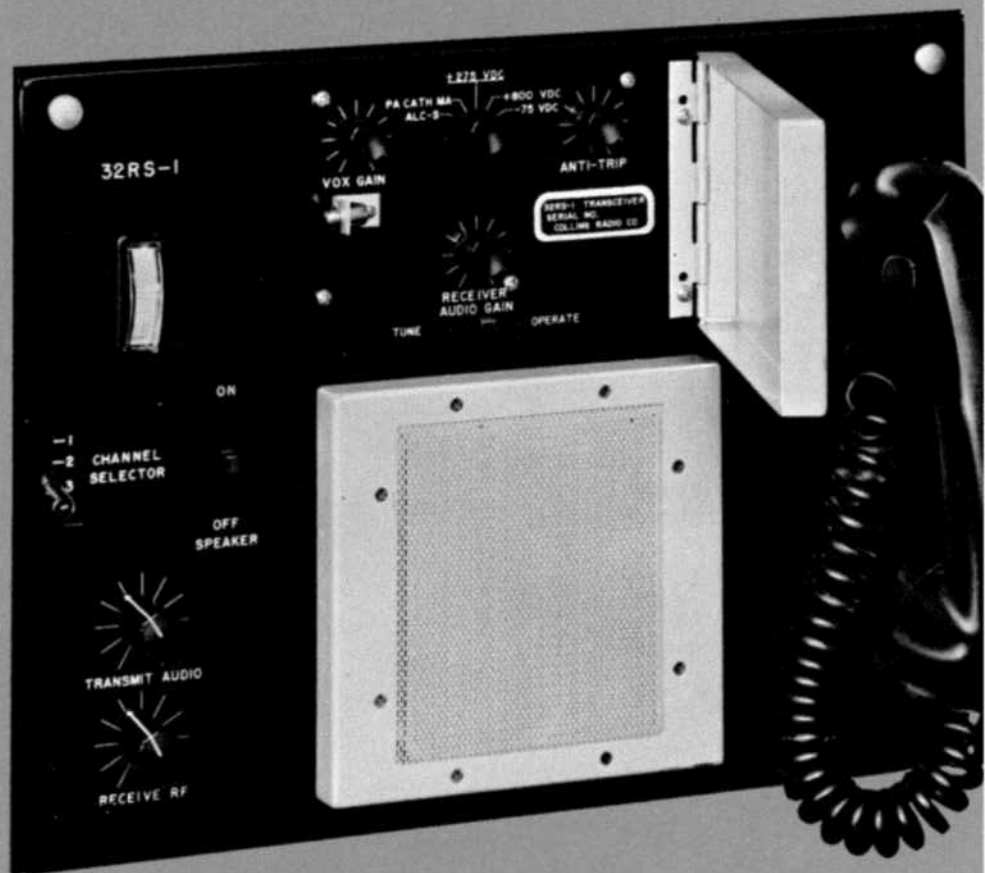
180V-2 ANTENNA COUPLER

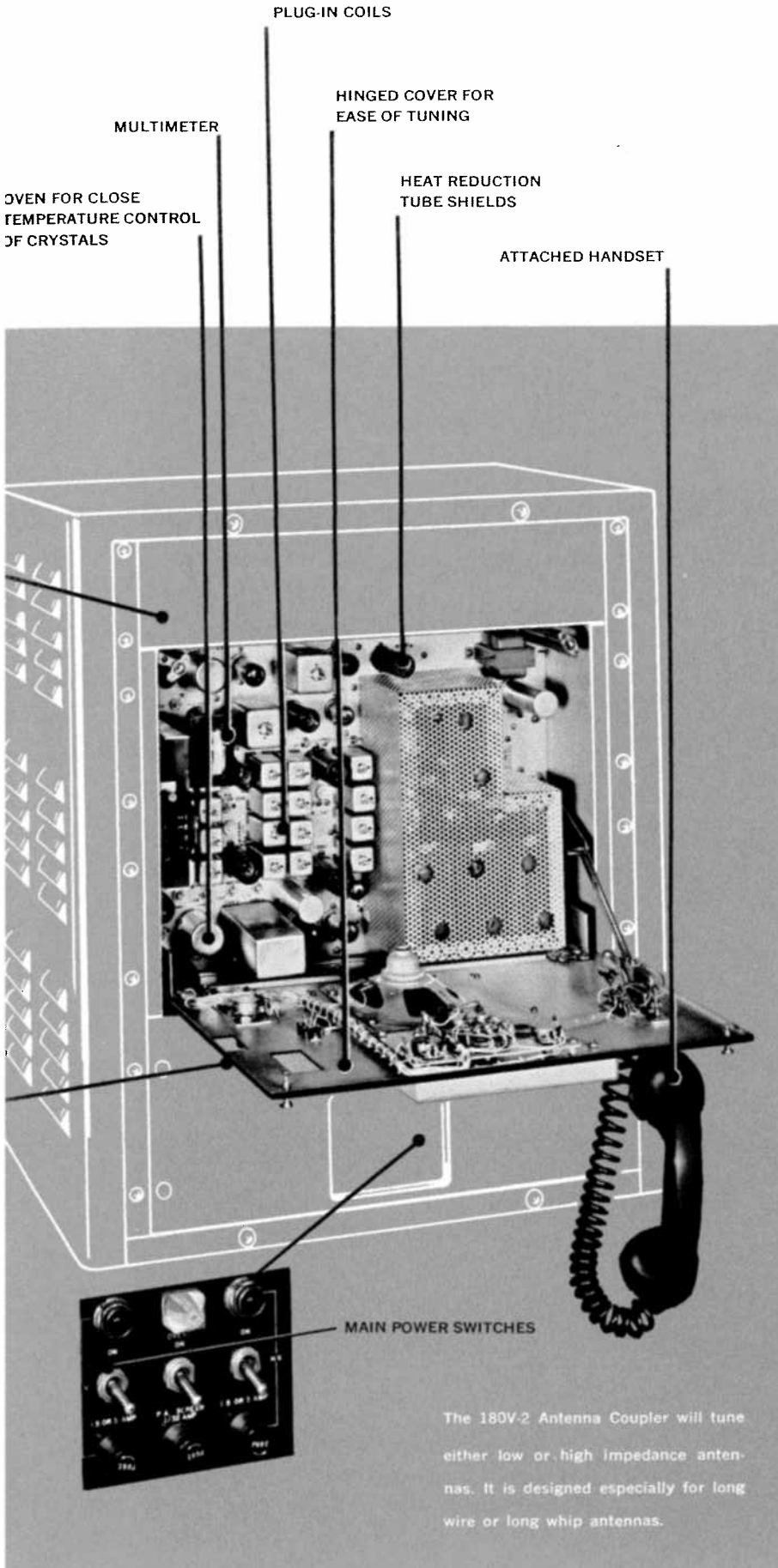
The 180V-2 is a preset, automatically switched, four channel tuner for coupling the 32RS-1 to an antenna. It will load single wire or whip antennas longer than 50 ft. over the 1.6-15.0 MHz range, or longer than 30 ft. over the 2.5-15.0 MHz range. The 180V-2 is housed in a weatherproof cabinet which may be located directly at the antenna base in fixed installations to provide maximum RF radiation efficiency. The antenna coupler weighs 13 lbs. (5.89 kg) and is 12" W, 7-7/8" H, 12" D (30.48 cm W, 20.0 cm H, 30.48 cm D).



32RS-1 Accessory Panel (left to right):
152J-1 Phone Patch, blank panel for
other accessory and 302E-2 Directional
Wattmeter.

Controls (left, top to bottom): S/ALC
meter, which also serves as a tuning
indicator and test meter; channel se-
lector; On-Off switch for speaker;
and gain controls. Hinged cover re-
mains closed except for tuning or
maintenance checks.





The 180V-2 Antenna Coupler will tune either low or high impedance antennas. It is designed especially for long wire or long whip antennas.

DIPOLE ANTENNA KIT

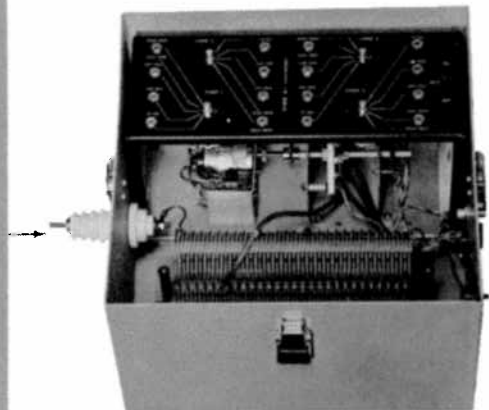
For operation on a single frequency using a resonant dipole antenna, a Dipole Antenna Kit is recommended since impedance characteristics best match those of the 32RS-1. The kit provides installation instructions and all the materials for antenna construction with the exception of the towers and coax feedline. For operation on up to four frequencies, a separate Dipole Antenna Kit will be required for each frequency connection. Automatic switching is accomplished by means of the Antenna Coaxial Connector Kit.

WHIP ANTENNA KIT

Operation on up to four frequencies can be accomplished by the use of the non-resonant whip antenna. The whip is available in either aluminum or stainless steel versions and has a length of 35 ft. 7 in. (10.82 meters). The whip antenna requires the 180V-2 Antenna Coupler.

ANTENNA COAXIAL CONNECTOR KIT

Whenever there is a need for more than one antenna, it is necessary to use the Antenna Coaxial Connector Kit to provide the additional outputs. This kit contains four BNC type flange mounted connectors and the necessary coaxial cable for connection to the wafer switch on the 32RS-1 channel selector. A separate antenna connection is provided for each channel, which is selected internally.

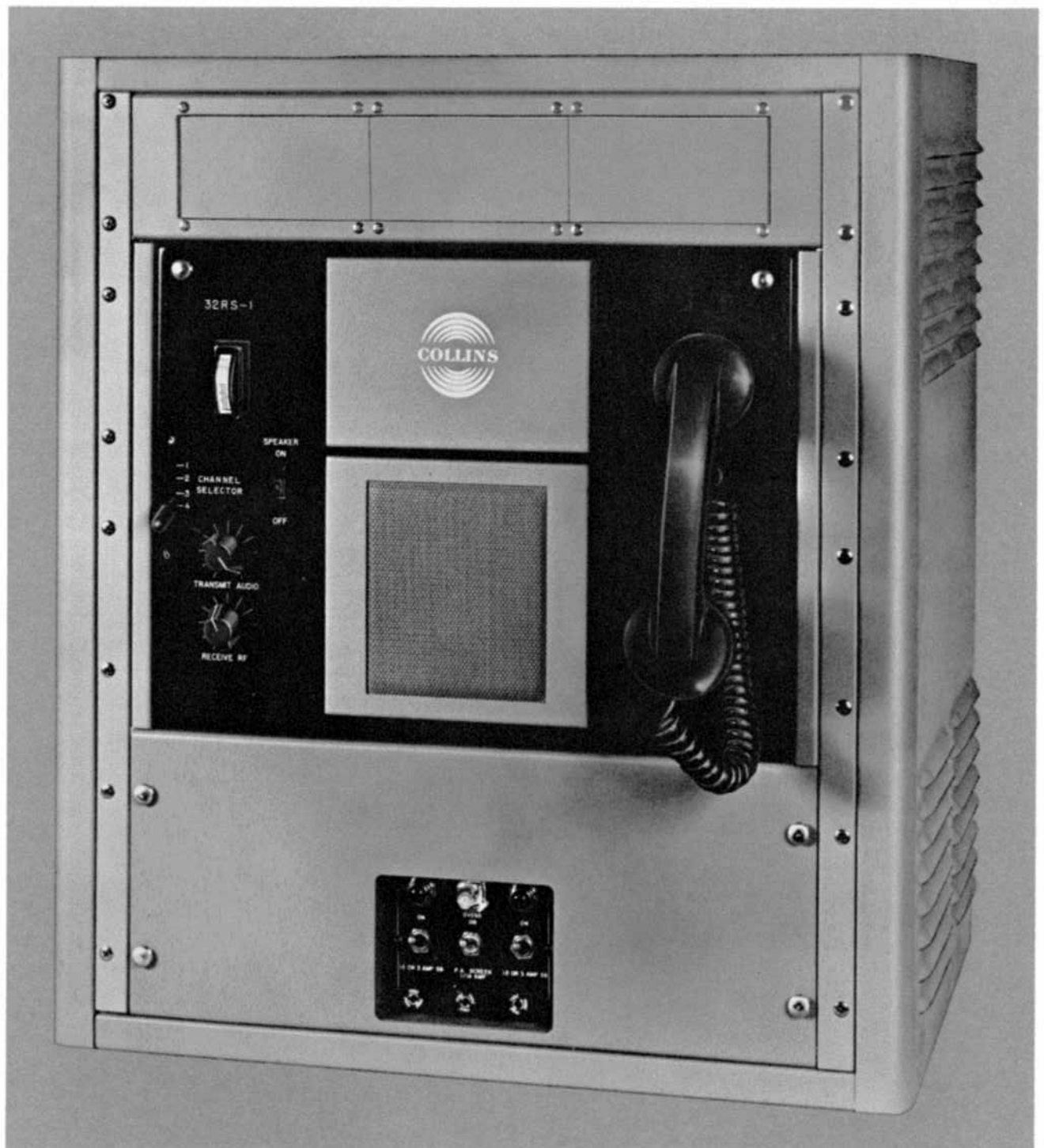


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*Increased talk power through single sideband technique.
Sharp selectivity through use of Collins Mechanical Filter.
100 watts PEP on any one of four pretuned channels.
Independent channel selection of upper or lower sideband.
Simplified controls for nontechnical personnel.
Precision oscillators eliminate manual frequency trimming.*



Specifications

GENERAL CHARACTERISTICS

FREQUENCY RANGE:
1.6-15.0 MHz.

CHANNEL SELECTION:
4 crystal-controlled channels selected by channel switch.

FREQUENCY STABILITY:
1 part in 10⁶ (0.0001%).

OVERALL RESPONSE:
±3 db, 350-3,000 Hz.

AMBIENT TEMPERATURE RANGE:
-15° C to +55° C.

AMBIENT HUMIDITY RANGE:
0%-90%.

POWER SOURCE:
115 v or 230 v, 50-60 Hz, single phase.

POWER REQUIREMENTS:
175 watts receive only, 230 watts standby, 350 watts for full power transmit (average speech) and 450 watts for full power transmit (2-tone test).

SIZE:
22" W, 24½" H, 14¾" D (55.88 cm W, 62.23 cm H, 37.47 cm D).

WEIGHT:
97 lbs. (44 kg).

OCDM CERTIFICATION:
Item No. U-66SSB.

TRANSMITTING CHARACTERISTICS

POWER OUTPUT:
100 watts PEP.

OPERATING MODES:
Choice of upper sideband voice or lower sideband voice by specification of individual channel operation (USB is standard); FSK teleprinter by means of optional FSK Keyer-Converter.

OUTPUT IMPEDANCE:
50 ohms, capable of tuning a VSWR of 2:1.

HARMONIC AND OTHER SPURIOUS SUPPRESSION:
(Equipment used with 180V-2 Antenna Coupler.)

Carrier — At least 50 db below peak output.
Lower sideband — At least 50 db below peak output.

Second harmonic — At least 60 db below peak output.

Spurious radiation — -60 db.

AUDIO INPUT:

Telephone handset with provision for external 4-wire telephone connection, or with accessory hybrid, 2-wire telephone connection.

AUDIO FREQUENCY DISTORTION:
Less than 6%, with 100 watt PEP output.

AUTOMATIC LOAD CONTROL:
Capability of at least 6 db compression.

RECEIVING CHARACTERISTICS

SELECTIVITY:
2.7 kHz, 3 db bandwidth; 6.4 kHz, 40 db bandwidth.

SENSITIVITY:
Less than 1 uv for 10 db signal-to-noise ratio.

IMAGE REJECTION:
-50 db, 1.6-12.0 MHz; -40 db, 12-13 MHz; -30 db, 13-15 MHz.

AUDIO OUTPUT POWER:
2 watts maximum, undistorted. More than 50 mw output for a 1 uv input signal.

RECEIVER DISTORTION:
Less than 10% harmonic distortion and -30 db intermodulation distortion at 0.5 watt audio output.

Specifications subject to change without notice.



STATUS REPORT

32-RS1

More than 50 32-RS1's have been procured by all branches of the U. S. Military Services and are in use in all theaters of operation.