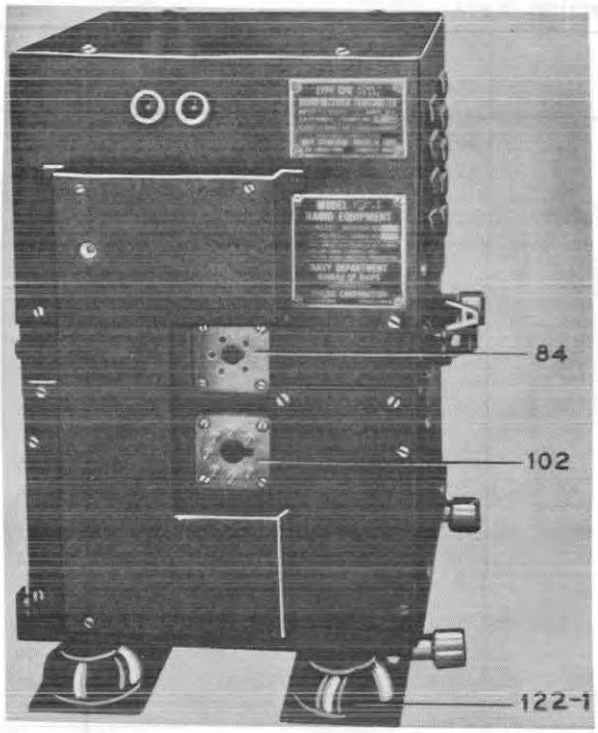
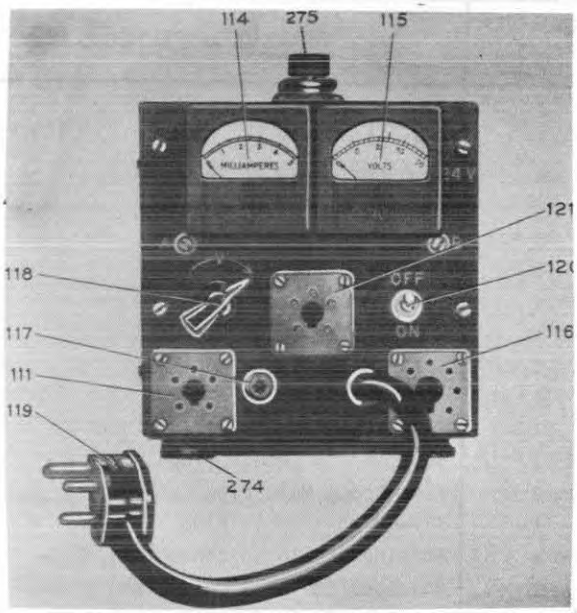
RADIO EQUIPMENT ABD



Radio Receiver Unit 43AAH



Control Unit 23ABE

FUNCTIONAL DESCRIPTION

The ABD is designed for aircraft use.
No field changes in effect at time of preparation (9 November 1956).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE
A BAND: 38 to 52 mc.
BAND : 195 to 220 mc.
OPERATING POWER
CONTROL UNIT: 12 to 14 v DC, 5 amp.
RADIO RECEIVER: 12 v DC, 5 amp.

MANUFACTURER'S OR CONTRACTOR'S DATA

Philco Corporation, Philadelphia, Pennsylvania.
Contract NOs-99911, dated 25 February 1942.

TUBE AND/OR CRYSTAL COMPLEMENT

(3) 7C7	(2) 1203-A	(1) HY-615
(1) 1201	(1) RK34	

Total Tubes: (8)

REFERENCE DATA AND LITERATURE

NAVAER 08-55-30: Technical Manual for Radio Equipment ABD, ABD-1, ABD-2, ABD-3, ABE and ABE-1.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUAER
PROCUREMENT COGNIZANCE
STOCK NO.

ABD RADIO EQUIPMENT

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiver Unit 43AAH	9-1/2 x 13 x 13-1/2	24
1	Control Unit 23ABE	3-7/8 x 6-1/8 x 7-1/2	3.5
2	Antenna Insulator Bushing		
2	Antenna Shock Cord Assy		
1	"D" Plug		
1	Fuse Assembly		0.25
1	Pilot Control Switch		0.6
1	Terminal Block (ceramic)		0.1
1	Terminal Block (bakelite)		
2	Antenna Plugs		
1	Seven-Prong Male Plug		0.15
1	Seven-Prong Female Plug		0.15
2	Five-Prong Male Plug		0.14
1	Five-Prong Female Plug		0.14
1	Shielded Cable (6 conductor)		0.18
1	Shielded Cable (8 conductor)		0.19
1	Shielded Cable (3 conductor)		0.09
1	Power Socket Assy		0.4
2	Five-Prong Plug Shield Assy		
1	Seven Prong Plug Shield Assy		
1	"D" Plug Shield Assy		
1	Equipment Spare Parts Group		
1	Detonator Indicator		
1	Junction Box		
1	Detonator		
1	Receiver Shock Mounting		0.9

April 1958

AIRCRAFT RADIO RECEIVING EQUIPMENT ABK, ABK-1 thru -7

Aircraft Radio Receiving Equipment

ABK, ABK-1 THRU 7

FUNCTIONAL DESCRIPTION

The ABK and ABK-1 thru -7 are part of the Mark III IFF System, and are primarily intended for use in aircraft as a means of establishing identity. They are combination receivers and transmitter-coders which respond with the appropriate coded signal when excited by the signal from an interrogator. All models of the ABK Series are similar except for power supply voltage.

No field changes in effect at time of preparation (7 April 1958).

RELATION TO OTHER EQUIPMENT

The ABK Series are used to reply to challenges from Mark III IFF interrogators. They are also used on shipboard where they are known as the BK Series.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 158 to 168 mc.

POWER SOURCE REQUIRED
ABK-2,-4,-6: 12 v DC.
ABK-1,-3,-5,-7: 24 v DC.

MANUFACTURER'S OR CONTRACTOR'S DATA

Hazeltine Electronics Corporation, New York, New York.
Contract NOs 95492 (ABK, ABK-1).
Subcontractors: Stewart Warner Corporation, Stromberg-Carlson Tel. Mfg. Company, Zenith Radio Corporation.
Stromberg-Carlson Company, Rochester, New York.
Contract NXs 8127 (ABK-2,ABK-3).
Zenith Radio Corporation, Chicago, Ill.
Contract NXs 8128 (ABK-4,ABK-5).
Stewart-Warner Corporation, Chicago, Ill.
Contract NXs 8129 (ABK-6,ABK-7).

TUBE AND/OR CRYSTAL COMPLEMENT

ABK, ABK-1 THRU -7
(2) 2C22 (2) 6H6
(5) 6SH7
Total Tubes: (9)

No Crystal Data Available.

REFERENCE DATA AND LITERATURE

CSP1375: Technical Manual for Navy Model ABK Series Aircraft Radio Receiving Equipment.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUAER
PROCUREMENT COGNIZANCE	ABK-RE-9079-A,
STOCK NO.	ABK-1-RE-9079-A

ABK, ABK-1 thru -7 AIRCRAFT RADIO RECEIVING EQUIPMENT

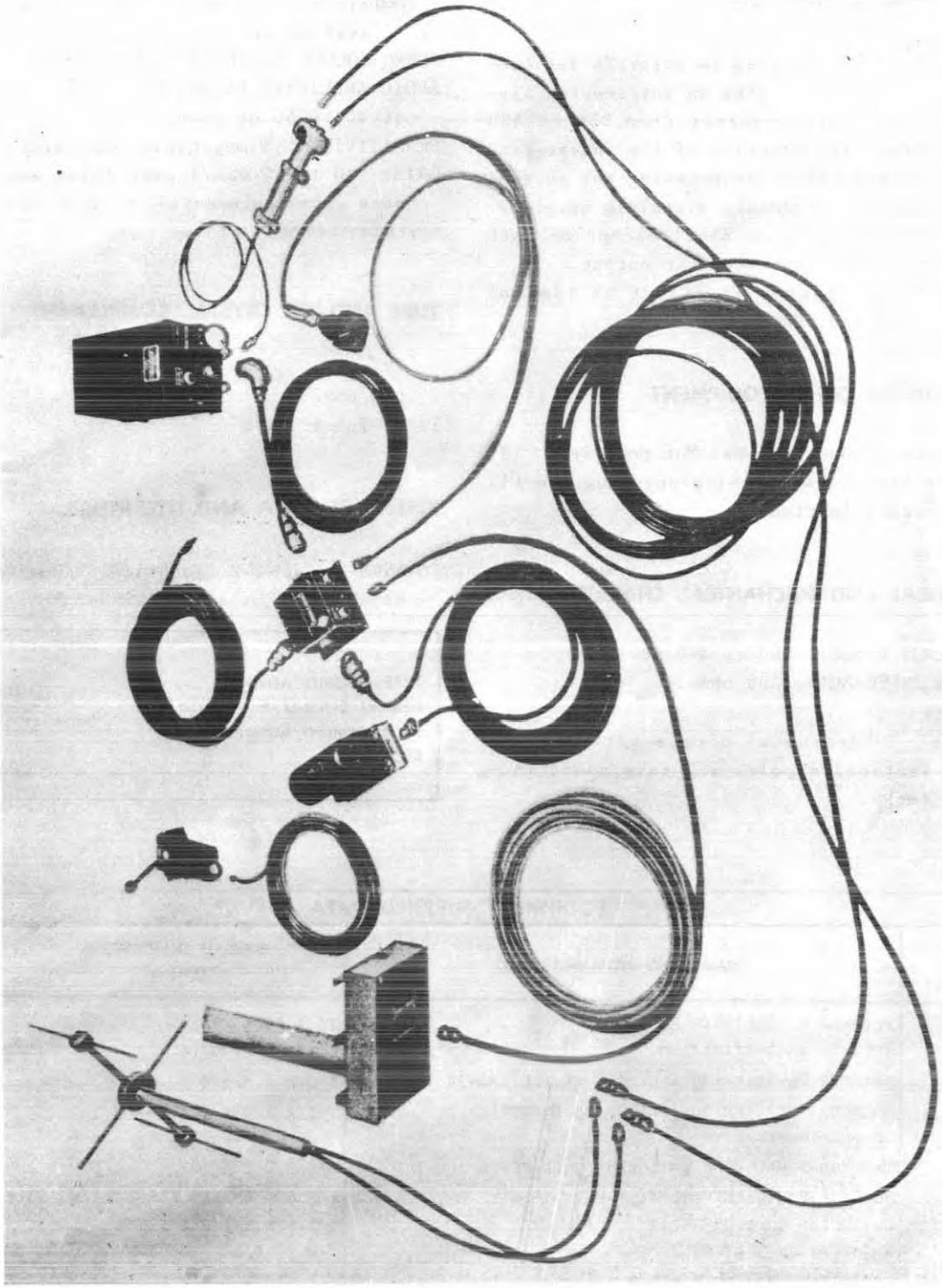
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Aircraft Radio Receiver (Transponder) NT-43AAX* NT-43AAY**	9 X 13 X 12-5/16	30
1	Control Unit NT-23ABG	3-1/2 X 6-1/4 X 8	1
1	Selector Unit NT-23ABH	3-1/2 X 6-1/4 X 8	0.5
1	Antenna Assembly NT-66AAV or NT-66AAW		0.8 1.5
1	Set of Equipment Spares	6-5/8 X 9-1/4 X 21	28.0

NOTE: *For 12-v DC power source (ABK-2, -4, -6).
**For 24-v DC power source (ABK-1, -3, -5, -7).

DIRECTION FINDER RADIO SYSTEM

AN/ARD-3



Direction Finder Radio System AN/ARD-3

AN/ARD-3

DIRECTION FINDER RADIO SYSTEM

FUNCTIONAL DESCRIPTION

The AN/ARD-3 is used in aircraft for homing or direction finding on intercepted signals ranging in frequency from 350 to 400 megacycles. The direction of the intercepted signal is establised by rotating the antenna until thepoint ofminimum signal is obtained. Either headphones, an oscilloscope or both are connected to the receiver output.

No field changes in effect at time of preparation (30 January 1957).

RELATION TO OTHER EQUIPMENT

Equipment Required But Not Supplied: (1) 600 ohm headset with telephone plug and (1) Oscilloscope (optional)

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 300 to 400 mc.
OUTPUT IMPEDANCE: 600 ohms.
ANTENNA
TYPE: horizontal dipole w/two phased vertical dipoles 1/2 wave apart (Adcock).
ROTATION: 100° each side of longitudinal axis of aircraft.
POWER SOURCE REQUIRED: 24 to 28 v DC.
AUDIO AMPLIFIER BANDWIDTH: 400 to 2000 cps at 40 to 50 db down.
SENSITIVITY: 1 megacycle band width.
GAIN: 40 to 50 dbw/1 usec pulse and recurrance rates between 400 to 2000 cps.
EFFECTIVE RANGE: 13 mi.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 955 (5) 6AC7
(2) 6SN7 (1) 6J5
Total Tubes: (10)

REFERENCE DATA AND LITERATURE

CO-AN08-30-ARD-3-2, Technical Manual for Model AN/ARD-3 Direction Finder Radio System.

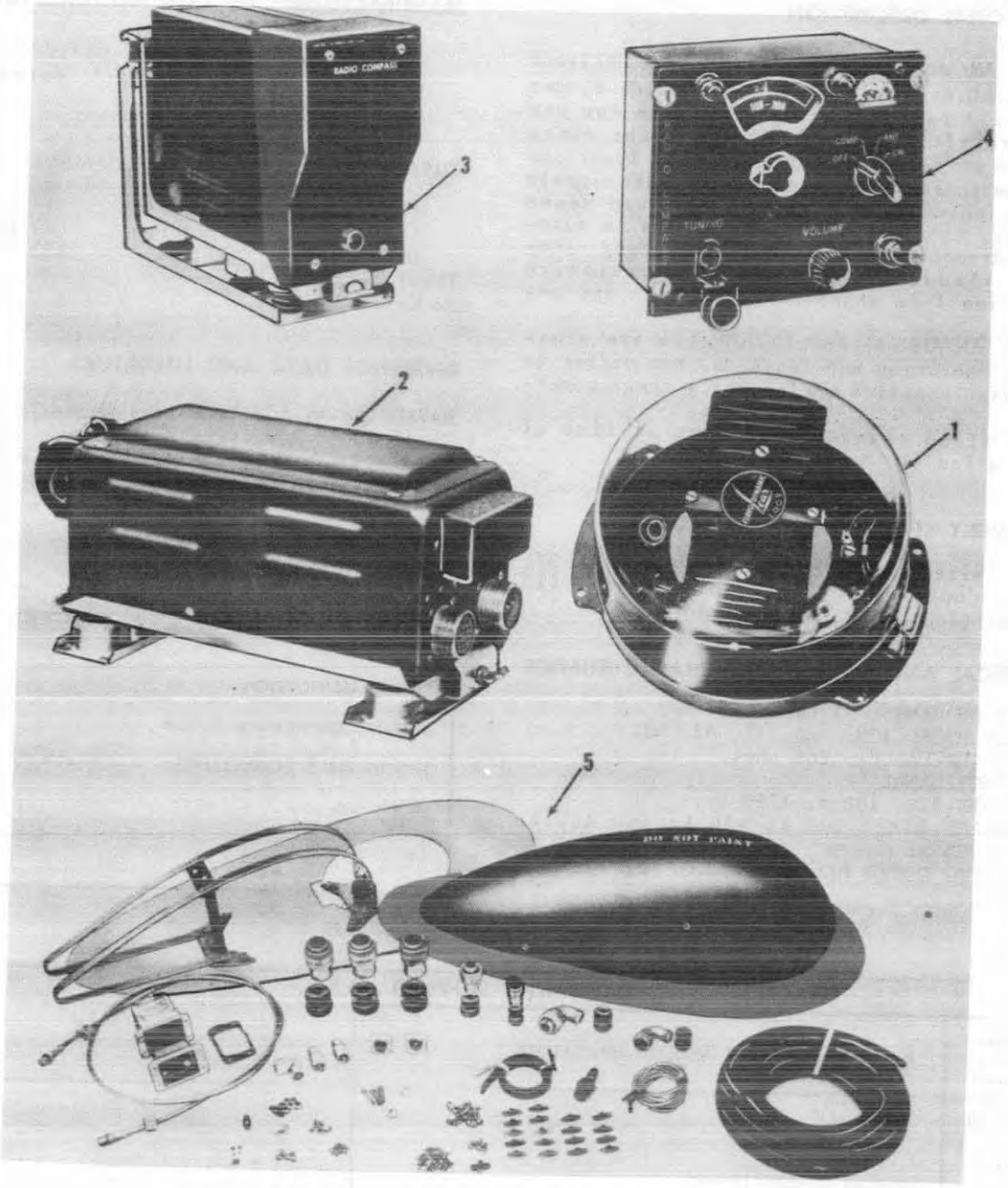
TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Antenna Assembly AS-86/ARD-3	15 X 19 X 44-1/2	5.3
1	Antenna Base AB-25/ARD-3	7-1/4 X 12-9/16 X 34-1/8	10.4
1	Antenna Positioning Assembly MX-110/APA-24	1-5/8 X 5-3/8 X 15-1/2	6.3
1	Antenna Positioning Indicating Assembly ID-61/APA-24	3-1/4 X 3-1/4 X 3-7/8	1.9
1	Impedance Matching Switching Unit RF-10/ARD-3	2-1/8 X 3 X 10	2
1	Control Box C-101/ARD-3	4-7/8 X 6-7/16 X 7-3/8	3.5
1	Dynamotor Unit DY-18/AR	4-3/8 X 6-7/8 X 7-3/8	9.5
1	Mounting Base MT-201/AR	1-3/32 X 4-1/2 X 7-3/8	0.8
1	Radio Receiver R-67/ARD-3 Interconnecting cable and copper tubing	6-11/16 X 7-17/32 X 15-3/8	10.0

RADIO RECEIVING SET

AN/ARN-41 AND AN/ARN-41A



Receiving Set, Radio AN/ARN-41A

1. Antenna AT-556B/ARN-41
2. Amplifier, Electronic Control AM-1507/ARN-41A with Mounting MT-1533/ARN-41
3. Receiver, Radio R-638/ARN-41A with Mounting MT-1534/ARN-41A
4. Control, Radio Set C-1542/ARN-41A
5. Installation Kit for Radio Receiving Set AN/ARN-41A

Radio-Receivers

AN/ARN-41 AND AN/ARN-41A

RADIO RECEIVING SET

FUNCTIONAL DESCRIPTION

The AN/ARN-41 and AN/ARN-41A are designed as a combination Automatic Direction Finder (ADF) and radio receiver, designed for use in aircraft. When signals from the sense antenna are selected, the equipments functions as a conventional radio receiver. When signals are selected from both the loop and sense antenna, the equipment functions as an automatic direction finder (adf) providing automatic visual indication of the relative direction from which radio signals are received.

The AN/ARN-41 and AN/ARN-41A are similar in operation and function, but differ in equipment supplied and frequency range coverage.

No field changes in effect at time of preparation (10 September 1958).

EQUIPMENT REQUIRED BUT NOT SUPPLIED

(1) Direction Indicator ID-90, 91 or 92, (1) Loudspeaker (3.2 ohm voice coil), (1) Headset (200 ohm), (1) Sense Antenna

ELECTRICAL AND MECHANICAL CHARACTERISTICS

NUMBER OF BANDS: 3 bands.
TYPE OF RECEPTION: A0, A1, A2, A3.
OUTPUT IMPEDANCE: 260 ohms.
FREQUENCY RANGE
AN/ARN-41: 190 to 1750 kc.
AN/ARN-41A: 190 to 430 kc and 480 to 1725 kc.
OPERATING POWER REQUIREMENTS: 28 v DC, 4 amps.

MANUFACTURER'S OR CONTRACTOR'S DATA

Lear Inc., Santa Monica, California
Contract NOas 55-757-f, dated 31 May 1955.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 12AT7WA	(2) 12BA6	(1) 6BF6
(1) 12AU7	(1) 12BE6	(2) 6BJ6
(2) 12AX7	(4) 6AK6	(2) 6X4WA

Total Tubes: (16)
No Crystals used.

REFERENCE DATA AND LITERATURE

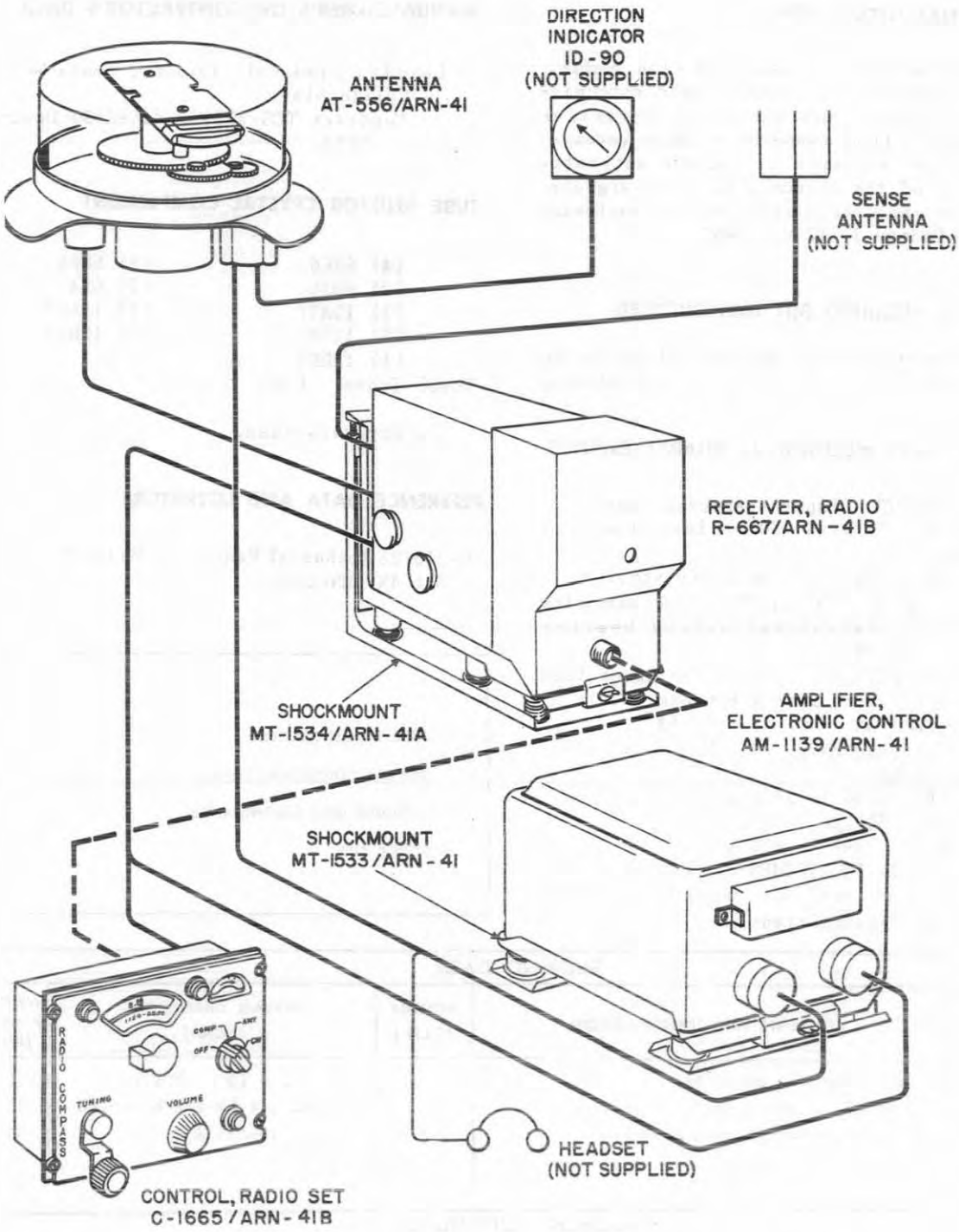
NAVAER 16-45-550 Technical Manual for AN/ARN-41 Radio Receiving Set.
NAVAER 16-30ARN41-501 Technical Manual for AN/ARN-41A Radio Receiving Set.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUAER
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT		NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
AN/ARN				
41	41A			
1		Antenna AT-556/ARN-41	4-3/4 X 6-1/2 X 7-5/8	
	1	Antenna AT-556B/ARN-41	4-3/4 X 6-1/2 X 7-5/8	
1		Amplifier Electronic Control AM-1139/ARN-41	5-5/8 X 6-3/8 X 12-3/16	
	1	Amplifier Electronic Control AM-1507/ARN-41A	5-21/32 X 6-3/8 X 14-3/4	
1		Radio Receiver R-637/ARN-41	3.8 X 7 X 8-1/2	
	1	Radio Receiver R-638/ARN-41A	4 X 8-5/8 X 12	
1		Connector and Switch Kit		
	1	Radio Control Set C-1542/ARN-41A	3-1/2 X 4-1/2 X 5-3/4	
1		Shockmount		
	1	Installation Kit for Radio Receiving Set AN/ARN-41A		

RADIO RECEIVING SET AN/ARN-41B



Radio Receiving Set AN/ARN-41B

Radio-Receivers

AN/ARN-41B RADIO RECEIVING SET

FUNCTIONAL DESCRIPTION

The AN/ARN-41B is designed as a combination low and medium frequency radio communications receiver and automatic direction finder (ADF). It is a superheterodyne receiver with special circuits to provide automatic indication of the source of received signals.

Data on this sheet reflects the following changes: Change 1, 17 May 1957.

EQUIPMENT REQUIRED BUT NOT SUPPLIED

(1) Direction Indicator Navy Type ID-90, (1) Headset (200-600 ohm), (1) Sense Antenna.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF CIRCUIT: Superheterodyne type.
LOOP SPEED: Rotates 180° in less than six seconds.
AUDIO OUTPUT: One watt max, undistorted.
ABSOLUTE COMPASS SENSITIVITY: 100 microvolts per meter (absolute) giving bearing accuracy of ±2°.
RECEIVER SENSITIVITY: 15 microvolts or less for 5 milliwatts into a 600 ohm load.
TYPE OF RECEPTION: AO, A1, A2, A3.
INTERMEDIATE FREQUENCY: 465 kc.
FREQUENCY RANGE
BAND ONE: 1150 to 2850 kc.
BAND TWO: 500 to 1150 kc.
BAND THREE: 190 to 430 kc.
OPERATING POWER REQUIREMENT: 28 v DC at 3.3 amps normal, and 4.3 amps during band switching (intermittent).

MANUFACTURER'S OR CONTRACTOR'S DATA

Lear Inc., Learcal Division, Santa Monica, California.
Contract TCG-39516, dated 30 December 1953.

TUBE AND/OR CRYSTAL COMPLEMENT

(4) 6AK6
(2) 6BJ6
(1) 12AT7
(2) 12AX7
(1) 12BF6
(1) 6BF6
(2) 6X4
(1) 12AU7
(2) 12BA6

Total Tubes: (16)

No Crystals used.

REFERENCE DATA AND LITERATURE

CG-273-26 Technical Manual for Radio Receiving Set AN/ARN-41B.

TYPE CLASSIFICATION

DESIGN COGNIZANCE USCG

PROCUREMENT COGNIZANCE

STOCK NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Connector Kit Container	1.5	7-1/2 X 13 X 26-1/2	13
1	Control and Antenna Container	1.2	10-1/2 X 14-1/2 X 15-1/2	12
1	Amplifier Rectifier and Shock-mount Container	2.6	14 X 14-1/2 X 23	35

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiver R-667/ARN-41B	5-21/32 X 6-3/8 X 12-3/16	7.2

RADIO RECEIVING SET AN/ARN-41B

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Amplifier Electronic Control AM-1139/ARN-41	5 X 7-1/4 X 14-1/32	10.0
1	Antenna AT-556/ARN-41		
1	Radio Control Set C-1665/ARN-41B	4-1/2 X 4-3/4 X 5-3/4	2.0
1	Mounting Amplifier Electronic Control MT-1533/ARN-41	5-21/32 X 6-3/8 X 12-3/16	1.0
1	Mounting Radio Receiver MT-1534/ARN-41A	5 X 7-1/4 X 14-1/32	1.0
1	Connector Kit		

RADIO RECEIVING SET AN/ARN-41C

FUNCTIONAL DESCRIPTION

The AN/ARN-41C is designed as a combination low and medium frequency radio communications receiver and Automatic Direction Finder (ADF). The purpose of the equipment when used as an automatic direction finder is to indicate the direction of received radio signals relative to the heading of the aircraft in which the equipment is installed.

The basic principles of operation for the AN/ARN-41C when used as a conventional communications radio are those of a low frequency superheterodyne receiver. The equipment can receive both Amplitude Modulated (AM) and unmodulated Continuous Wave (CW) signals.

No field changes in effect at time of preparation (6 May 1959).

RELATION TO OTHER EQUIPMENT

The AN/ARN-41C is functionally interchangeable with the AN/ARN-41B except for differences in components supplied.

EQUIPMENT REQUIRED BUT NOT SUPPLIED

(1) Sense Antenna, (1) Direction Indicator ID-90, (1) Headset (200 to 600 ohm).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF RECEPTION: A0, A1, A2, A3.
TYPE OF RECEIVER: Superheterodyne.
NUMBER OF BANDS: 3 bands.
RECEIVER SENSITIVITY: 15 microvolts or less for 5 milliwatts into a 600 ohm load.
INTERMEDIATE FREQUENCY: 465 kc.
ABSOLUTE COMPASS SENSITIVITY: 100 microvolts per meter (absolute) giving bearing accuracy of $\pm 2^{\circ}$.
LOOP SPEED: Rotates 180° in less than 6 seconds.
AUDIO OUTPUT: 1 W max, undistorted.
OPERATING FREQUENCY RANGE: 190 to 2850 kc.
OPERATING POWER RQMT: 28 v DC.

MANUFACTURER'S OR CONTRACTOR'S DATA

Lear Inc., Learical Division, Santa Monica, California.
Contract TCG-40365(USCG), dated 21 February 1957.

TUBE AND/OR CRYSTAL COMPLEMENT

(4) 12AK6	(1) 12AT7WA	(1) 12AU7
(2) 12AX7	(2) 12BA6	(1) 12BE6
(1) 6BF6	(2) 6BJ6	(2) 6X4WA

Total Tubes: (16)

No Crystals used.

REFERENCE DATA AND LITERATURE

Nomenclature Card AN/ARN-41C for Radio Receiving Set.
CG-273-26: Technical Manual for Radio Receiving Set AN/ARN-41B.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiving Set AN/ARN-41C		26.6
1	Radio Receiver R-820/ARN-41C	5-1/32 X 8-5/8 X 10-11/16	
1	Mounting MT-1534/ARN-41A		
1	Amplifier Electronic Control AM-1695/ARN-41C	5-21/32 X 6-3/4 X 14-3/4	
1	Mounting MT-1533/ARN-41		
1	Control Radio Set C-1665A/ARN-41B	3-5/16 X 4-3/8 X 5-3/4	
1	Antenna AT-556/ARN-41		2.7

April 1959

Radio-Receivers

RADIO RECEIVING SET AN/ARN-44

FUNCTIONAL DESCRIPTION

The AN/ARN-44 is designed to guide the aircraft to a radio transmitting station at its destination, or, as a navigational aid to take bearings on such stations. An indicator such as the Type ID-90A calibrated in degrees azimuth, continuously indicates the direction of the station with respect to the heading of the aircraft. In addition, it may be used as a radio communication receiver.

No field changes in effect at time of preparation (18 May 1959).

RELATION TO OTHER EQUIPMENT

The AN/ARN-44 is similar to the AN/ARN-6 except that band 1 now covers the frequency spectrum of 2.0 to 3.5 mc, in lieu of 100 to 200 kc.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF RECEIVER: Superhetrodyne.
TYPE OF RECEPTION: 0_9 type reception.
NUMBER OF BANDS: 4 bands.
OPERATING FREQUENCY RANGE: 200 to 1750 kc and 2.0 to 3.5 mc.
OPERATING POWER RQMT: 26 v DC.

MANUFACTURER'S OR CONTRACTOR'S DATA

Navigation Electronics Corp., North Hollywood, California.
Contract TCG-39852(CG-34,869-A), dated 15 June 1955.

TUBE AND/OR CRYSTAL COMPLEMENT

(6) 12SK7	(4) 12SX7GT	(1) 12SY7
(2) 26A7GT	(1) 12SW7	(2) 2050

Total Tubes: (16)

No Crystals used.

REFERENCE DATA AND LITERATURE

U.S.C.G: Technical Manual for Radio Receiving Set AN/ARN-44.

TYPE CLASSIFICATION
DESIGN COGNIZANCE U.S.C.G.
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiver R-713/ARN-44	5-3/8 X 11-3/8 X 15-7/16	
1	Mounting MT-273/ARN-6	4 X 11-9/16 X 17-1/8	
1	Control Selector C-1717/ARN-44 thru C-1719/ARN-44		
1	Mounting MT-275/ARN-6	2 X 5 X 8	0.8
1	Loop Antenna AS-313B/ARN-6	5-3/8 X 9-1/4 X 10-1/2	
1	Indicator ID-90/ARN-6	3-1/4 X 3-1/4 X 5-19/32	2.3
1	Indicator ID-92A/ARN-6	5 X 5-1/8 X 5-1/8	
1	Coupling Unit CU-65/ARN-6		

RADIO RECEIVING EQUIPMENT

AN/ARN-8

RECEIVER
R-8/ARN-8

POWER CABLE
WF-1/U

OUTPUT CABLE
WM-1/U

Radio Receiving Equipment AN/ARN-8

FUNCTIONAL DESCRIPTION

The AN/ARN-8 is a VHF receiver designed for aircraft reception of marker beacon signals transmitted by CAA Inner, Outer, or Cone of Silence marker transmitters or the military marker transmitters employed in instrument approach systems.

No field changes in effect at time of preparation (11 June 1956).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) Antenna, (1) Transmission Line (1) Power Source, (1) Connection to pilots phone jacks on panel, Mounting Screws as required.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: Fixed tuned at 75 mc.
RECEPTION: A2, A3.
POWER INPUT: 1.5 amp, 28 v DC.
RF INPUT IMPEDANCE: 52 ohms.
SENSITIVITY: 800 uv for 10 mw output.
AF POWER OUTPUT: 10 mw into 300 ohm load.
OUTPUT IMPEDANCE: 300 ohms.

MANUFACTURER'S OR CONTRACTOR'S DATA

Air Track Mfg. Corp., College Park, Md.
Contract NXsa-17035 dated 5 May 1943

TUBE COMPLEMENT

(2) 12SH7 (2) 12SQ7 (3) 25L6GT
Total Tubes: (7)

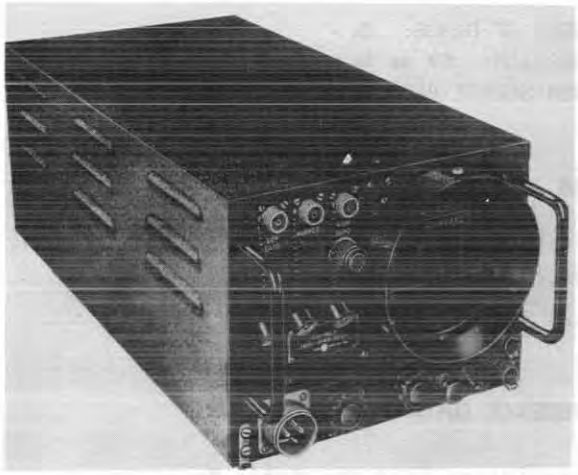
REFERENCE DATA AND LITERATURE

AN 08-30 ARN8-2: Technical Manual for Model AN/ARN-8 Marker Beacon Receiving Equipment.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUAER
PROCUREMENT COGNIZANCE	
STOCK NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inched)	WEIGHT (lbs.)
1	Receiver with Mounting Base R-8/ARN-8	6-5/16 X 6-3/8 X 7-13/16	4.2
1	Set of Accessories		1.1



Receiving Equipment AN/ARQ-5

FUNCTIONAL DESCRIPTION

The AN/ARQ-5 is an airborne double superheterodyne panoramic receiver. The receiver uses two antenna inputs and motor driven capacitor tuning. Received signals are converted and amplified to form video patterns rather than the usual output. Incoming signals appear as pips rising from a baseline. The position of the pip along the baseline may be converted into frequency by reference to the calibrated scale on the screen. Relative signal strength and type of modulation may also be determined.

No field changes in effect at time of preparation (14 June 1956).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (2) Signal Generator GR-809C or similar type; Power Cable AN-20 (Length as Required); (1) Power Source furnishing 120 Watts, 115 volts, 400-2600 cycles a.c. and 8 amperes at 28 volts D.C.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 18 to 80 mc in 2 bands.
SKIP EFFECTS: Below 40 mc. (approx).
LINE OF SIGHT EFFECTS: 40 mc.
INDICATION: 5 in. CR tube.
SENSITIVITY: At 25 uv signal pip is 1/4 in. and signal to noise ratio is 2 to 1.
POWER REQUIREMENTS: 80 or 115 v AC, 400 to 2600 cps, 120 W; 28 v DC, 8 amp.

MANUFACTURER'S OR CONTRACTOR'S DATA

Purchase Plan 44-3083, dated 5 February 1944.
Purchase Plan 44-3161.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 5Y3GT/G	(1) 2X2	(1) OB3/VR90
(4) 6AG5	(2) 9002	(1) 927
(1) 12SG7	(1) 12SA7	(2) 12SK7
(1) 12H6	(1) 12SQ7	(1) 2050
(1) 6SN7	(1) 12SH7	(1) 5CP1

Total Tubes: (20)

REFERENCE DATA AND LITERATURE

AN 16-30ARQ5-3: Technical Manual for AN/ARQ Receiving Equipment.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	USAF
PROCUREMENT COGNIZANCE	
STOCK NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiver R-61/ARQ-5	7-3/4 X 10-1/2 X 21-15/16	51
1	Mounting Base MT-171/U	2-1/2 X 10-3/8 X 22-3/4	2.18
5	Plug PL-259	3/4 X 1-1/4	0.05
5	Adapter M-359		
1	Plug AN 3108-22-45	19/32 dia X 2-1/8	
1	Adapter AN 3057-12		
4	Insulator IN-88		
2	Antenna Support AB-27/A		
2	Tension Unit		
	Radio Frequency Cable RG-8/U	420 lg.	
	Wire AB-27/A	600 lg.	

RADIO RECEIVING SET AN/ARR-11

FUNCTIONAL DESCRIPTION

The AN/ARR-11 receives CW or modulated signals within the 200 to 500 kc band and the 1.5 to 18 mc band. It requires a 24 V DC source of power and comprises certain radio receiving components of Radio Set SCR-287-B.

The equipment does not include the necessary antenna components and hence does not function as a complete receiving equipment.

No field changes in effect at time of preparation (1 March 1957).

RELATION TO OTHER EQUIPMENT

Serves as the principal component of Radio Receiving Set AN/ARC-8.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 200 to 500 kc and 1.5 to 18 mc.

NUMBER OF BANDS: 2.
RECEPTION: CW or MCW.
POWER SOURCE REQUIRED: 24 v DC.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 6K6GT	(1) 6SJ7	(4) 6SK7WA
(1) 6SA7	(1) 6SR7	

Total Tubes: (8)

REFERENCE DATA AND LITERATURE

Nomenclature Card for Radio Receiving Set AN/ARR-11.

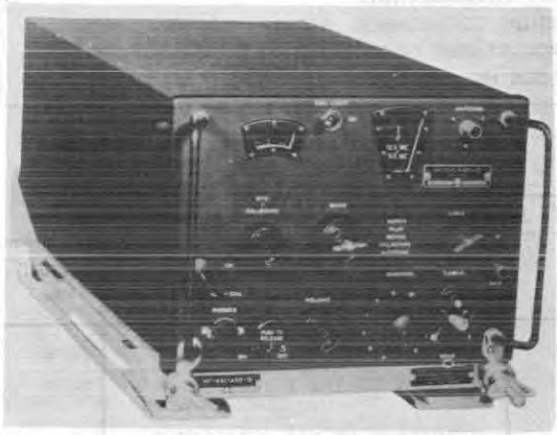
TYPE CLASSIFICATION	
DESIGN COGNIZANCE	USAF
PROCUREMENT COGNIZANCE	
STOCK NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiver BC-348-(*)		
1	Mounting FT-154-(*)		
1	Vacuum Tube Set for Radio Receiver BC-348-(*)		
1	Technical Manual (Maintenance Instructions) for BC-348-(*)		
1	Technical Manual (Operating Instructions) for BC-348-(*)		
1	Plug PL-P103 or PL-Q103		

NOTE: (*) indicates all models of the series

RADIO SET AN/ARR-15 and AN/ARR-15A



Radio Set AN/ARR-15

Radio Set Control C-733/ARR-15A

FUNCTIONAL DESCRIPTION

The AN/ARR-15 and AN/ARR-15A are airborne radio receiving equipments designed for MHF communications. The equipment may be controlled locally or from a remote position. An autotune system permits automatic mechanical selection of any one of 10 preset crystal-controlled channels with-in the 1.5 to 18.5 mc frequency range.

The AN/ARR-15A is electrically and mechanically interchangeable with the AN/ARR-15 except that crystal detector 1N34 or 1N38 has been replaced with electron tube 12SL7. The autotune units have been improved and its components changed.

No field changes in effect at time of preparation (2 October 1957).

RELATION TO OTHER EQUIPMENT

Used with ATC Radio Transmitting Set AN/ART-13 and similar equipment.

Equipment Required but not Supplied: (1) Fixed aircraft antenna ranging from 17 feet to 40 feet in length, Headsets, H-1/AR or equal, Junction Box J36A/AJA-2A or equal, Jack Box J-22B/ARC-5, are required in quantities dependant upon the installation.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 1.5 to 18.5 mc.
TYPE RECEPTION: A1, A2, A3.
FREQUENCY CONTROL: Crystal (10 preset channels)
NUMBER OF BANDS: 6.
AUDIO OUTPUT: 500 mw.
DISTORTION: 15% or less with rf input of 10 to 10,000 uv and 30% modulation.
AUDIO RESPONSE: Flat within ±3 db relative to the response at 1000 cps, from 300 to 3500 cps.
OPERATING TEMPERATURE RANGE: -40 deg C to +60 deg C.
ALTITUDE LIMIT: 40,000 ft above sea level.
POWER SOURCE REQUIRED: 26.5 v DC at 8-1/2 amps.
PERMISSABLE VOLTAGE VARIATION: ±10%.
DYNAMOTOR STARTING SURGE: 15 amps approx.

MANUFACTURER'S OR CONTRACTOR'S DATA

Collins Radio Co., Cedar Rapids, Iowa.
Contract NOa(s)-9972 for AN/ARR-15A.
Approximate Cost: $1500.00, with equipment spares (AN/ARR-15).

TUBE AND/OR CRYSTAL COMPLEMENT

AN/ARR-15
(1) 12A6 (1) 12H6 (5) 12SG7Y
(5) 12SJ7 (2) 12SL7GT
Total Tubes: (14)

AN/ARR-15A
(1) 12A6 (1) 12H6 (5) 12SG7Y
(4) 12SJ7 (3) 12SL7GT
Total Tubes: (14)

*(1) 1N34A
Total Crystals: (1)
* AN/ARR-15 only

AN/ARR-15 and AN/ARR-15A RADIO SET

REFERENCE DATA AND LITERATURE

AN16-30ARR15-3: Technical Manual for Radio Set AN/ARR-15 and AN/ARR-15A.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiver R-105/ARR-15 or	7-7/8 X 10-3/8 X 21-9/16	39.5
1	Radio Receiver R-105A/ARR-15	7-7/8 X 10-3/8 X 21-9/16	39.5
1	Dynamotor DY-34/ARR-15		
1	Receiver Mounting Base MT-461/ARR-15 or	3-15/16 X 10-7/8 X 23-27/32	3.31
1	Receiver Mounting Base MT-461A/ARR-15	3-15/16 X 10-7/8 X 23-27/32	3.31
1	Power Connector	1-5/16 X 2-15/32 X 4-15/16	0.69
1	Radio Set Control C-733/ARR-15A or	2-1/4 X 5-11/32 X 5-3/4	1.7
1	Radio Set Control C-733A/ARR-15A	2-1/4 X 5-11/32 X 5-3/4	1.7

RADIO RECEIVING EQUIPMENT

AN/ARR-2

*Aircraft Radio Receiving Equipment *AN/ARR-2*

AN/ARR-2 RADIO RECEIVING EQUIPMENT

Aircraft Radio Receiving Equipment *AN/ARR-2*

RADIO RECEIVING EQUIPMENT AN/ARR-2

FUNCTIONAL DESCRIPTION

The AN/ARR-2 is designed as a special purpose radio receiving equipment used to receive a particular type of Ultra-High-Frequency (UHF) signal in the range of 234 to 258 megacycles (MC). The signal must have a modulation at a lower radio frequency, which usually is keyed telegraphically but may be amplitude modulated in turn by a voice signal. The modulation may be set at any one of six (6) frequencies in the range of 540 to 830 kilocycles (KC).

The AN/ARR-2 is designed for remote control operation only.

No field changes in effect at time of preparation (28 April 1959)

RELATION TO OTHER EQUIPMENT

The AN/ARR-2 is similar to the AN/ARR-2X and 2AX except that the AN/ARR-2 is designed for a 28 volt system and the AN/ARR-2X and AN/ARR-2AX is designed for 14 volt system.

EQUIPMENT REQUIRED BUT NOT SUPPLIED

(1) Antenna AT-5/ARR-1 w/coaxial plugs 49195 and 49192, (1) DC Power Supply for 28 v system, (1) Head Set, (1) LM Series Frequency Measuring Equipment or Frequency Motor BG-221-( ), (1) Test Oscillator TS-24/ARR-2 with Slip Cover CW-8/ARR-2.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

RECEPTION: Receiver will respond to a superimposed modulation frequency at any one of six (6) preset frequencies within the range 540 to 830 kc.
OUTPUT IMPEDANCE: 300, 400 ohms.
SENSITIVITY
CW RECEPTION: 10 uv input for 1.7 v across a 300 ohm load or 6.3 v across a 4000 ohm load.
VOICE RECEPTION: 450 uv input for 1.7 v across a 300 ohm load or 6.3 v across a 4000 ohm load.
ANTENNA DATA
TYPE: Quarter wave.
INPUT IMPEDANCE: 50 ohms.
POWER OUTPUT: CW-500 mw; MCW-900 mw.
FREQUENCY RANGE: 234 to 258 mc.
OPERATING POWER RQMT: 28 v DC, 1.6 amp total, 0.5 heaters, 1.1 amp dynamotor.

MANUFACTURER'S OR CONTRACTOR'S DATA

Western Electric Co., New York, New York.
Contract C-NXs-4967 and Contract NXsr 38075, dated 5 May 1944.
Zenith Radio Corp., Chicago, Illinois.
Contract NXs-59128, dated 5 May 1944.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 12A6	(7) 9001
(3) 6AK5	(3) 95S

Total Tubes: (14)

No Crystals used.

REFERENCE DATA AND LITERATURE

AN16-30/ARR2-2: Technical Manual for Aircraft Radio Receiving Equipment AN/ARR-2, 2X, 2A, 2AX,

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUAER
PROCUREMENT COGNIZANCE RE-13A578C
STOCK NO.
R.D.B. IDENT. NO.

AN/ARR-2 RADIO RECEIVING EQUIPMENT

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiver R-4/ARR-2	4-27/32 X 5-11/16 X 12-1/16	6.5
1	Radio Receiver R-4A/ARR-2	4-27/32 X 5-11/16 X 12-1/16	6.5
1	Mounting Rack MT-7/ARR-2	4-1/2 X 6-1/8 X 13-1/4	1.4
1	Mounting Base MT-5/ARR-2	1-3/4 X 7 X 10-3/4	0.9
1	Dynamotor DY-2/ARR-2	2-23/32 X 3-9/32 X 4-13/16	3.0
1	Dynamotor DY-2B/ARR-2	2-3/4 X 3-19/32 X 4-1/2	2.2
1	Control Unit C-2/ARR-2	3 X 3-3/8 X 5-15/32	1.3
1	Control Unit Mounting Plate MT-4/ARR-2	1/16 X 3-9/16 X 5-9/16	0.2
1	Adapter MX-2/ARR-2	1-7/32 dia	0.12
1	Coaxial Plug 49195 or PL-259	13/16 dia	0.06
1	2-Contact Plug PL-147, PL-147A or 9127	1-7/32 dia	0.12
2	8-Contact Plug PL-152, PL-152A, 6577 or 9125	1-7/32 dia	0.12
1	Right Angle Coaxial Adapter 49192 or M-359	13/16 dia	0.1
1	Right Angle Adapter for Mechanical Linkage MX-22/ARR-2	5/8 X 1-11/32 X 1-19/32	0.2
15	Concentric Transmission Line RG-8/U	0.41	
1	Mechanical Linkage No. 6151 or Tuning Shaft MC-215	5/8 dia	
5	4-Conductor Cable WF-1/U (AR-4)	1/2 dia	
10	8-Conductor Cable WM-1/U (AR-8)	1/2 dia	
3	Decode Cards		

Cog Service: USN FSN: Functional Class:

USA	USN	USAF

TYPE CLASS: Used by Used by

MANUFACTURER'S NAME/CODE NUMBER: Audio Products Corp., (70676).

Radio Receiving Set AN/ARR-27

FUNCTIONAL DESCRIPTION:

The Radio Receiving Set AN/ARR-27 is designed as an airborne radar relay receiving equipment for AEW (Aircraft Early Warning) systems. The purpose of which, is to receive Video, IFF, and azimuth sync information originating in a remote search radar (AN/APS-20A) and transmitted by a radar relay transmitter (AN/ART-26 or AN/ART-28), and to perform one or both of the following functions:

(1) It serves in conjuction with a radar transmitter as part of a relay station. In this function the video, IFF, and azimuth sync information is received by the AN/ARR-27 and is retransmitted, extending the range of the basic radar.

(2) It serves as a remote indicator by presenting the information from the basic radar on a PPI scope at the receiver location. The remote presentation is identical with that on the basic radar scope.

No field changes in effect at time of preparation (8 March 1962).

TECHNICAL CHARACTERISTICS:

TYPE OF RECEIVER: Superheterodyne.
TYPE OF TUNING: Rotary Air Capacitor.
TYPE OF INPUT SIGNAL: Video modulated RF energy.
TYPE OF INDICATION: Visual
RADIO FREQUENCY INPUT IMPEDANCE: 52 ohms.
INTERMEDIATE FREQUENCY: 60 mc.
BANDWIDTH: 4 mc at 3 db down.
FREQUENCY RANGE: 465 to 510 mc.
NUMBER OF PRESET CHANNELS: 4.
OPERATING POWER RQMT: 115 v ac, 320-1000 cps, 3 ph.

RELATION TO OTHER EQUIPMENT:

The AN/ARR-27 is designed to be used with, but not part of Radar Set AN/APS-20A and Radio Transmitting Sets AN/ART-26 and AN/ART-28.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(2) Antenna AS-366/AR or equivalent; (1) AC Power Source (115 v ac, 320-1000 cps, 3 ph, 625 va); (1) DC Power Source (28 v dc, 3 amps).

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Radio Receiving Set AN/ARR-27 consists of:			
1	Radio Receiver R-267/ARR-27		7-13/16 x 10-17/32 x 23-1/32	31-1/2
1	R.F. Head RF-45/ARR-27			
1	I.F. Amplifier AM-259/ARR-27			
1	Mounting MT-654/U		2-5/8 x 11-1/8 x 20-13/16	2
1	Mounting MT-1114/ARR-27		2-5/8 x 11-1/8 x 20-13/16	2
1	Video Decoder KY-42/ARR-27		7-13/16 x 10-7/32 x 23-1/16	28-1/2
1	Mounting MT-681/U		2-5/8 x 11-1/8 x 20-13/16	2
1	Power Supply PP-389/ARR-27		5-5/16 x 7-3/4 x 22-1/2	25-1/2
1	Mounting MT-653/U		2-5/8 x 5-7/8 x 20-13/16	1.6
1	Mounting MT-1112/ARR-27		2-5/8 x 5-7/8 x 20-13/16	1.6
1	Receiver Control C-532/ARR-27		4-3/16 x 5 x 9-15/16	3.6
1	Mounting MT-667/ARR-27		5/16 x 5-3/16 x 9-3/4	0.3
1	Power Supply PP-444/ARR-27		2-7/16 x 4-5/8 x 13-15/16	4.3
1	Range-Azimuth Indicator IP-41/ARR-27		5-5/16 x 6 x 13-7/8	14-1/2
1	Mounting MT-668/ARR-27		1-11/16 x 6-7/8 x 10-3/8	0.6
1	Mounting MT-1113/ARR-27		1-25/32 x 7-1/16 x 10-1/2	1-1/4
1	Visor MX-927/ARR-27		5-1/2 dia x 11-3/4 lg	3/4
2	Straight Plugs UG-21B/U		25/32 dia x 1-5/8 lg	0.11

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
4	Straight Plugs UG-260/U		9/16 dia x 1 lg	0.025
1	Straight Plug AN-3106-28-12S		1-31/32 dia x 2-5/16 lg	0.32
1	Clamp AN-3057-16		1-5/16 lg x 1-7/8 dia	0.087

REFERENCE DATA AND LITERATURE:

AN16-30ARR27-3: Technical Manual for Radio Receiving Set AN/ARR-27.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (1) 0A2 (1) 0B2 (1) 2C51 (1) 5FP7A (2) 5R4GY (1) 5V4G (4) 6AG5 (1) 6AH6
(12) 6AK5 (7) 6AL5 (10) 6AQ5 (1) 6AS6 (3) 6AS7G (1) 6F4 (15) 6J6
(3) 6X4 (9) 12AT7 (8) 12AU7 (5) 12AX7 (1) 5651

CRYSTALS: None used.

SEMI-CONDUCTORS: (1) 1N21B (4) 1N34

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: BuWeps DESIGN COG: USN, BuWeps
SPEC &/OR DWG: C-16R99(Aer)

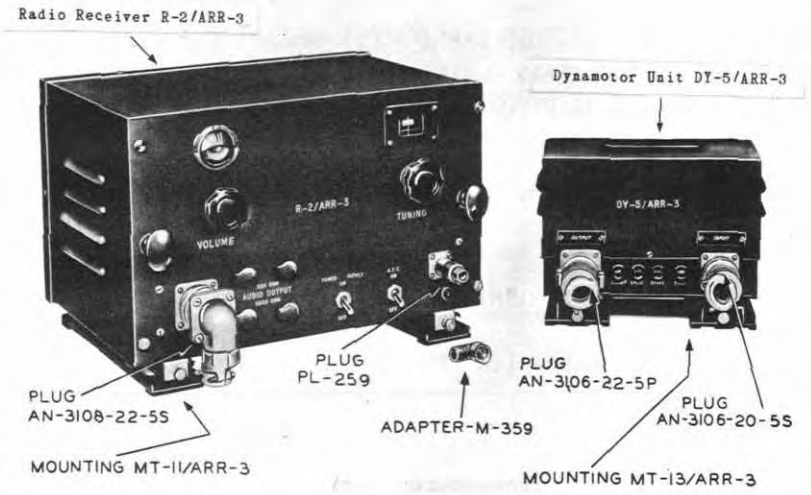
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Audio Products Corp.	Los Angeles, Calif.	NOa(s)-10636 NOa(s)-10953	

Cog Service: FSN: Functional Class:

USA USN USAF

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Freed Radio Corp.



Radio Receiving Set AN/ARR-3

FUNCTIONAL DESCRIPTION:

The Radio Receiving Set AN/ARR-3 is designed as an airborne radio receiver with an extended audio frequency range, and is capable of receiving frequency modulated (FM) signals throughout the range of 67.2 to 72.2 megacycles (MC), in the 150 kilocycles (KC) band.

No field changes in effect at time of preparation (14 December 1961).

TECHNICAL CHARACTERISTICS:

TYPE OF EQUIPMENT: Airborne.
EQUIPMENT PURPOSE: The reception of FM signals.
NUMBER OF BANDS: 2 bands.
OPERATING FREQUENCY RANGE: 67.2 to 72.2 mc; 150 kc band.
OPERATING POWER RQMT: 12 v dc, or 24 v dc.

AN/ARR-3 RADIO RECEIVING SET

RELATION TO OTHER EQUIPMENT:

The AN/ARR-3 is designed to be used with, but not part of, Radio Transmitting Set AN/CRT-1.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Radio Receiving Set AN/ARR-3 consists of:			
1	Antenna AT-3/ARR-3			2-1/4
1	Antenna Coupling Unit CU-1/ARR-3		3/4 x 3-7/8 x 4-9/16	1/4
1	Antenna Plug PL-259			0.05
1	Cable (Battery to Dyn. Unit)			
1	Cable (Dyn. Unit to Receiver)			
1	Coaxial Cable WC-562			
2	Cords CD-307-A			0.80
1	Dynamotor Input Plug AN-3106-20-5S W/AN-3057-12 Clamp			
1	Dynamotor Output Plug AN-3106-22-5P W/AN-3057-12 Clamp			
1	Dynamotor Unit DY-5/ARR-3		4-11/16 x 8-3/32 x 8-11/16	10
2	Headsets H-3/ARR-3			1-1/2
1	Mounting (Dyn. Unit) MT-13/ARR-3		3/4 x 4-11/16 x 8-11/16	1/2
1	Mounting (Receiver) MT-11/ARR-3		3/4 x 10-1/4 x 13	3/4
1	Radio Receiver R-2/ARR-3		9-1/2 x 11-1/4 x 14-5/8	16
1	Receiver Power Input Plug AN-3108-22-5S W/AN-3057-12 Clamp			
1	Right Angle Adapter M-359			

REFERENCE DATA AND LITERATURE:

Technical Order No. 08-10-160: Technical Manual for Radio Receiving Set AN/ARR-3.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (1) 12A6 (1) 12H6 (6) 12SG7Y (3) 12SH7 (1) 12SQ7 (1) 1629

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

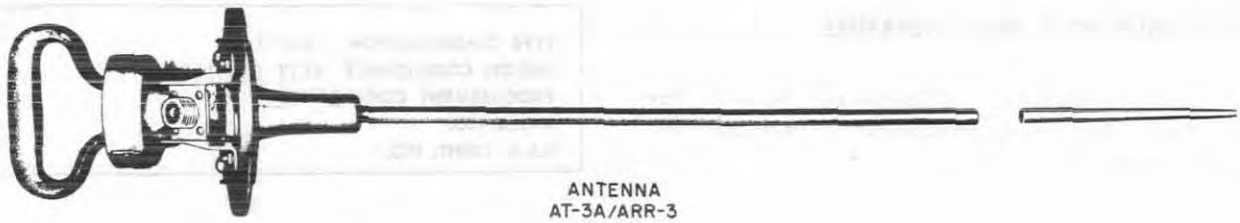
PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: DESIGN COG: BuWeps
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Freed Radio Corp.	New York, N. Y.	NXsa-36247	

RADIO RECEIVING EQUIPMENT AN/ARR-3B



ANTENNA
AT-3A/ARR-3

RECEIVER
R-2A/ARR-3

DYNAMOTOR
DY-5A/ARR-3

Radio Receiving Equipment AN/ARR-3B

FUNCTIONAL DESCRIPTION

The AN/ARR-3B is a frequency-modulated (FM), airborne, radio receiving equipment designed for use in conjunction with Radio Transmitting Equipments AN/CRT-1A and AN/CRT-1B. The transmitters have hydrophones for detecting sounds of submarines. These sounds are transmitted on frequency bands to which the receiving equipment is tuned. These receivers together with their associated transmitters enable an airplane in flight to ascertain the approximate positions, within a given area, of a submerged submarine.

No field changes in effect at time of preparation (29 August 1960).

RELATION TO OTHER EQUIPMENT

The AN/ARR-3B is similar to Radio Receiving Equipment AN/ARR-3A.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

NUMBER OF BANDS: 2 bands.
OPERATING FREQUENCY RANGE: 62 to 72 mc.
OPERATING POWER RQMT: 12 or 26 v DC.

MANUFACTURER'S OR CONTRACTOR'S DATA

Freed Radio Corp., New York, N.Y.
Contract NXsa-66738.
Contract NXsa-60026.

TUBE AND/OR CRYSTAL COMPLEMENT

(6) 12SG7	(3) 12SH7
(1) 12A6	(1) 1629
(1) 12SQ7	(1) 12H6

Total Tubes: (13)
No Crystals used.

AN/ARR-3B RADIO RECEIVING EQUIPMENT

REFERENCE DATA AND LITERATURE

CO-ANO8-30 ARR 3-2: Technical Manual for Radio Receiving Equipment AN/ARR-3A, AN/ARR-3B.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE NAVY BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

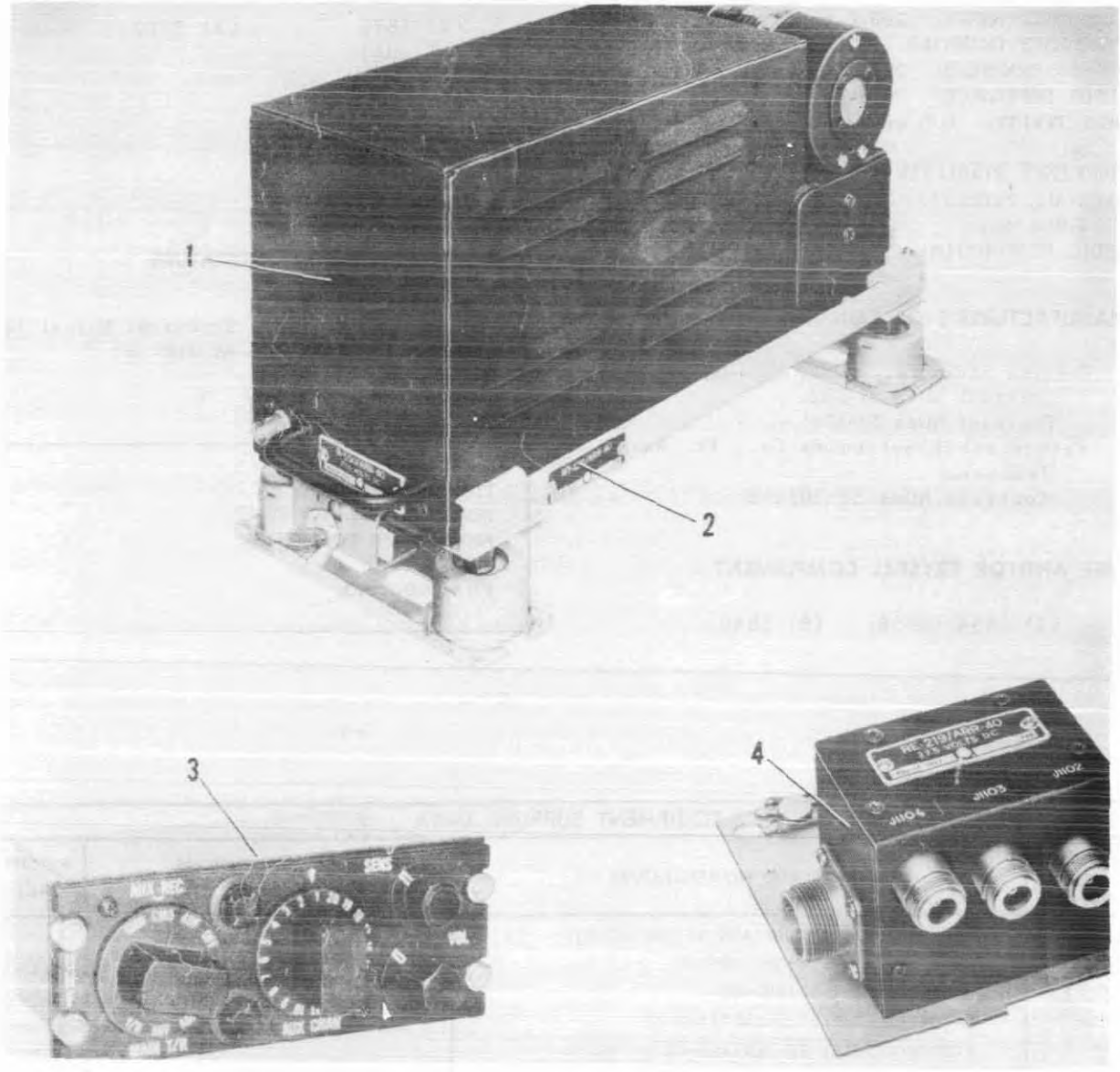
SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Radio Receiver R-2/ARR-3	1.159	12-3/4 x 12-3/4 x 17	23
1	Dynamotor Unit DY-5A/ARR-3	0.572	8 x 11 x 11-1/4	10
1	Antenna AT-3/ARR-3 or AT-3A/ARR-3	1.104	6 x 6 x 53	16
2	Headset H-3A/ARR-3			
1	Mounting MT-11/ARR-3			
1	Mounting MT-13/ARR-3			
1	20 ft of Radio Frequency Cable RG-11/U			

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiver R-2/ARR-3	9-1/2 x 11-1/4 x 14-5/8	18.72
1	Mounting MT-11/ARR-3	3/4 x 10-1/4 x 13	1.22
1	Dynamotor Unit DY-5A/ARR-3	5-1/16 x 6-11/16 x 8-7/16	6.91
1	Mounting MT-13/ARR-3	3/4 x 4-11/16 x 8-11/16	0.84
1	Antenna AT-3A/ARR-3		2.23
2	Headsets H-3A/ARR-3		1.06
2	Cords (for headsets) CX-3/AR(5' 0")		0.31
1	Plug, Receiver Power Input AN-3108-22-5S		0.23
1	Plug, Dynamotor Output AN-3106-22-5P		0.14
2	Plug, Coaxial C-49195		0.05
1	Adapter, Angle Coaxial Plug C-49192		0.08
1	Cable, 2-Wire NAF-47024-216		
1	Cable, 4-Wire NAF-47024-405		

RADIO RECEIVING SET AN/ARR-40



1. Radio Receiver R-550/ARR-40
2. Mounting MT-1511/ARR-40
3. Receiver Control C-1457/ARR-40
4. Armature Relay RE-219/ARR-40

Radio Receiving Set AN/ARR-40

FUNCTIONAL DESCRIPTION

Radio Receiving Set AN/ARR-40 provide for reception of AM signals. It is designed for normal use in automatic direction finding operations, it may also be used to provide auxiliary or emergency voice reception in case of failure of the uhf command transceivers.

No field changes in effect at time of preparation (8 April 1959).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER REQUIREMENTS: 27.5 v, 3 amp.

AN/ARR-40 RADIO RECEIVING SET

FREQUENCY RANGE: 265.0 to 284.9 mc.
FREQUENCY CHANNELS: 220 possible.
PRESET CHANNELS: 20.
INPUT IMPEDANCE: 50 ohms.
SELECTIVITY: 6.0 uv, modulated 30% at 1,000 cy.
FREQUENCY STABILITY: ±22.5 kc.
OVER-ALL FIDELITY: +1 to -3 db from 300 to 4,000 cps.
AUDIO DISTORTION: Not more than 10%.

MANUFACTURER'S OR CONTRACTOR'S DATA

Collins Radio Co., Cedar Rapids, Iowa.
Contract NOas 51-632.
Contract NOas 53-676.
Farnsworth Electronics Co., Ft. Wayne, Indiana.
Contract NOas 56-1071-f.

TUBE AND/OR CRYSTAL COMPLEMENT

(3) 5654/6AK5W (8) 5840
(2) 5896 (1) 5902
(6) 6021

Total Tubes: (20)

No Crystals used.

REFERENCE DATA AND LITERATURE

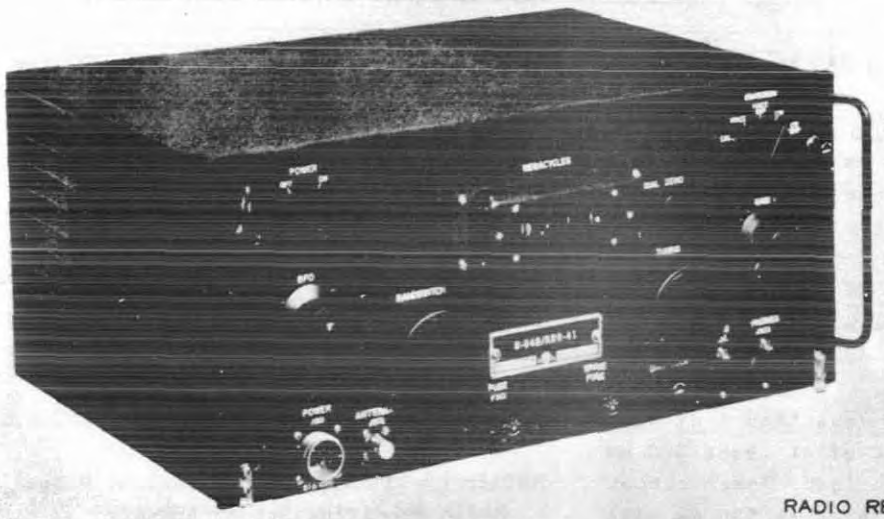
NAVAER 16-30ARR40-502: Technical Manual for Receiving Set, Radio AN/ARR-40.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUAER
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

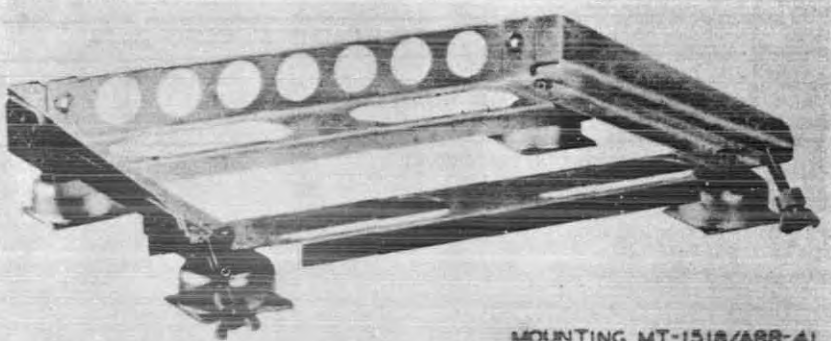
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiving Set AN/ARR-40 Including:		
	Radio Receiver R-550/ARR-40	4-7/8 X 5-31/32 X 12-7/16	13.4
	Mounting MT-1511/ARR-40	1-17/32 X 6-1/16 X 14-17/32	1.5
	Receiver Control C-1457/ARR-40	2-1/4 X 5-3/4 X 6-5/8	1.5
	Armature Relay RE-219/ARR-40		1.78

RADIO RECEIVING SET AN/ARR-41



RADIO RECEIVER R-648/ARR-41



MOUNTING MT-1518/ARR-41

Radio Receiving Set AN/ARR-41

FUNCTIONAL DESCRIPTION

The AN/ARR-41 is a general purpose receiving set designed for mounting in larger types of aircraft and capable of receiving amplitude-modulated radiotelephony, unmodulated continuous-wave radiotelegraphy, and frequency-shift-keyed radioteletype, when an external converter is employed for operation of the printer. Frequency coverage is in five bands, within the ranges of 190 to 550 kilocycles and 2 to 25 megacycles.

No field changes in effect at time of preparation (2 July 1957).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) Antenna, (1) Headset H-1/AR or H-4/AR, (1) Interphone AN/AIC-4 or equal, (1) Antenna Tuning Unit CU-351/AR or equal, (1) Power Cable, (1) RF Cable RG-58/U, (1) Plug UG-88/U, (1) Connector AN3108B-16S-1S.

AN/ARR-41 RADIO RECEIVING SET

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 190 to 550 kc and 2 to 25 mc.

RECEPTION: A1, A2, A3.

TYPE RECEIVER: Superheterodyne with double conversion on all bands except the 2 to 4 mc band which is single conversion.

FREQUENCY STABILITY

190 TO 550 KC BAND: ±2.1 kc.

2 to 25 MC BANDS: ±1.9 kc +0.01%.

SPURIOUS FREQUENCIES: Attenuated at least 60 db below 5 uv.

SENSITIVITY: Input of less than 5 uv will produce power output of at least 300 mw into a 300 ohm audio load. Power output will increase to as high as 500 mw with stronger signals.

SIGNAL PLUS NOISE-TO-NOISE RATIO: At least 6 db for radiotelephone and 10 db for cw reception.

TEMPERATURE RANGE: -55 to + 71 deg C (-67 to +160 deg F).

POWER REQUIREMENTS: 27.5 v DC, 3 amps above 32 deg F, 5.8 amps below 32 deg F.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) OA2WA	(2) 5726/6AL5W
(1) 6AU6WA	(7) 5749/6BA6W
(1) 5654/6AK5W	(2) 5750/6BE6W
(1) 5686	(2) 5814A

Total Tubes: (17)

(1) 1N137A	(9) CR-23/U
(1) CR-18/U	(1) CR-47/U

Total Crystals: (12)

REFERENCE DATA AND LITERATURE

NAVAER 16-30ARR41-501: Technical Manual for Radio Receiving Set AN/ARR-41.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUAER
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiver R-648/ARR-41	7-11/16 x 13-1/8 x 17	32.5
1	Mounting MT-1518/ARR-41	3-1/4 x 13-3/8 x 17	3.5

March 1957

RADIO RECEIVING SET AN/ARR-5

FUNCTIONAL DESCRIPTION

The AN/ARR-5 is an airborne search receiver intended to locate radio frequency channels of enemy radar and communications equipment operating in the frequency range 27.8 to 143 mc. It may operate in conjunction with Radar Indicator Assembly AN/APA-6 or AN/APA-11, Panoramic Adapter AN/APA-10 or BC-1032, and Photographic Adapter AN/APA-7.

No field changes in effect at time of preparation (26 October 1956).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (As required) RF Cable RG-8/U. (1) RF Plug UG-21C/U, (1) Adapter UG-27B/U, (1) Inverter, (1) Headset HS-23 or HS-33, (2) Circuit Breaker MS-25005-5, (1) Plug PJ-055, (1) Adapter UG-213/U.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 27.8 to 143 mc.

TYPE RECEPTION: AM, FM.

AUDIO POWER: 50 mw.

OPERATING POWER: 80 to 115 v, 400 to 2600 cps, single phase, 175 W.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) OD3W	(2) 6H6	(1) 6V6Y
(3) 5U4G	(1) 6J5	(1) 954
(1) 6AB7	(1) 6SK7WA	(1) 955
(2) 6AC7WA	(1) 6SQ7	(2) 956

Total Tubes: (17)

REFERENCE DATA AND LITERATURE

T.O. 16-30 AN/ARR5-2: Technical Manual for Radio Receiving Set AN/ARR-5.

TYPE CLASSIFICATION
DESIGN COGNIZANCE USAF
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Antenna Stub AT-38/APT or AT-38A/APT or	29-1/2 lg	6
	Antenna AT-190A/AP	25 lg X 2-5/16 h	3.75
1	Antenna Base AB-1098/AP	3 X 4 X 7	1.3
1	Radio Receiver R-44/ARR-5	7-3/4 X 10-1/4 X 21-1/4	35
	Mounting Base MT-171/U	2-1/2 X 10-3/4 X 22-3/4	2.18
	Rectifier Power PP-32/AR	5 X 7-3/4 X 21	25
	Mounting Base MT-167/U	2-1/2 X 6 X 22-3/4	1.81
	Plug AN3106-22-4S	1-19/32 dia	0.24
	Plug AN3106-22-5P	1-19/32 dia	0.14
	Plug AN3106-22-5S	1-19/32 dia	0.23
	Plug PL-259-A	3/4 dia	0.05
	Adapter M-359-A	23/32 dia	0.076
	Adapter MX-923/A	2-1/8 X 2-1/8 X 5	0.3
3	Cable Clamp AN3057-12	1-3/8 dia	0.061

RADIO SET AN/ARW-2

Radio Set AN/ARW-2

FUNCTIONAL DESCRIPTION

The AN/ARW-2 is an airborne equipment forming the receiving end of a remote control link. It provides remote radio control of ten seperate electrical circuits. The receiver is capable of actuating any of ten separate control functions by means of self-contained relays. When properly adjusted, the ten control channels may be used in any combination, provided no more than three are actuated at any one time.

This equipment receives FM signals transmitted by Radio Set AN/ARW-3.

No field changes in effect at time of preparation (25 March 1958).

RELATION TO OTHER EQUIPMENT

Identical to AN/ARW-2X except for input power requirement.

Equipment Required but not Supplied: (1) Antenna, (1) Control Box, and controlled circuits.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 30 to 42 mc.
TYPE: Superheterodyne.
NUMBER PRESET FREQUENCIES: 1.
TONE CHANNEL FREQUENCIES: 300, 420, 590, 830, 1155, 1620, 2270, 3180, 4450, 6230 cps.
TYPE MODULATION: FM ±15 kc max deviation.
SENSITIVITY
WITH SUPPRESSOR DISCONNECTED: Adjustable, 1 to 5 uv with suppressor.
WITH SUPPRESSOR OPERATING: Adjustable, 4 to 30 uv.
FREQUENCY STABILITY: ±0.025% from −30 deg to +50 deg C.
ANTENNA INPUT IMPEDANCE: 50 ohms.
POWER SOURCE REQUIRED: 27.0 v DC, 3.25 amp.

MANUFACTURER'S OR CONTRACTOR'S DATA

Fred M. Link, N. Y., N. Y.
Contract NXsa 33081.
Contract NXsa 95103.

TUBE AND/OR CRYSTAL COMPLEMENT

(3) 6AC7
(1) 6V6GT/G
(1) 12SJ7
(1) 12SA7
(1) 6H6
(2) 12SH7
(5) 12SN7GT
Total Tubes: (14)

(1) Quartz Crystal
Total Crystals: (1)

REFERENCE DATA AND LITERATURE

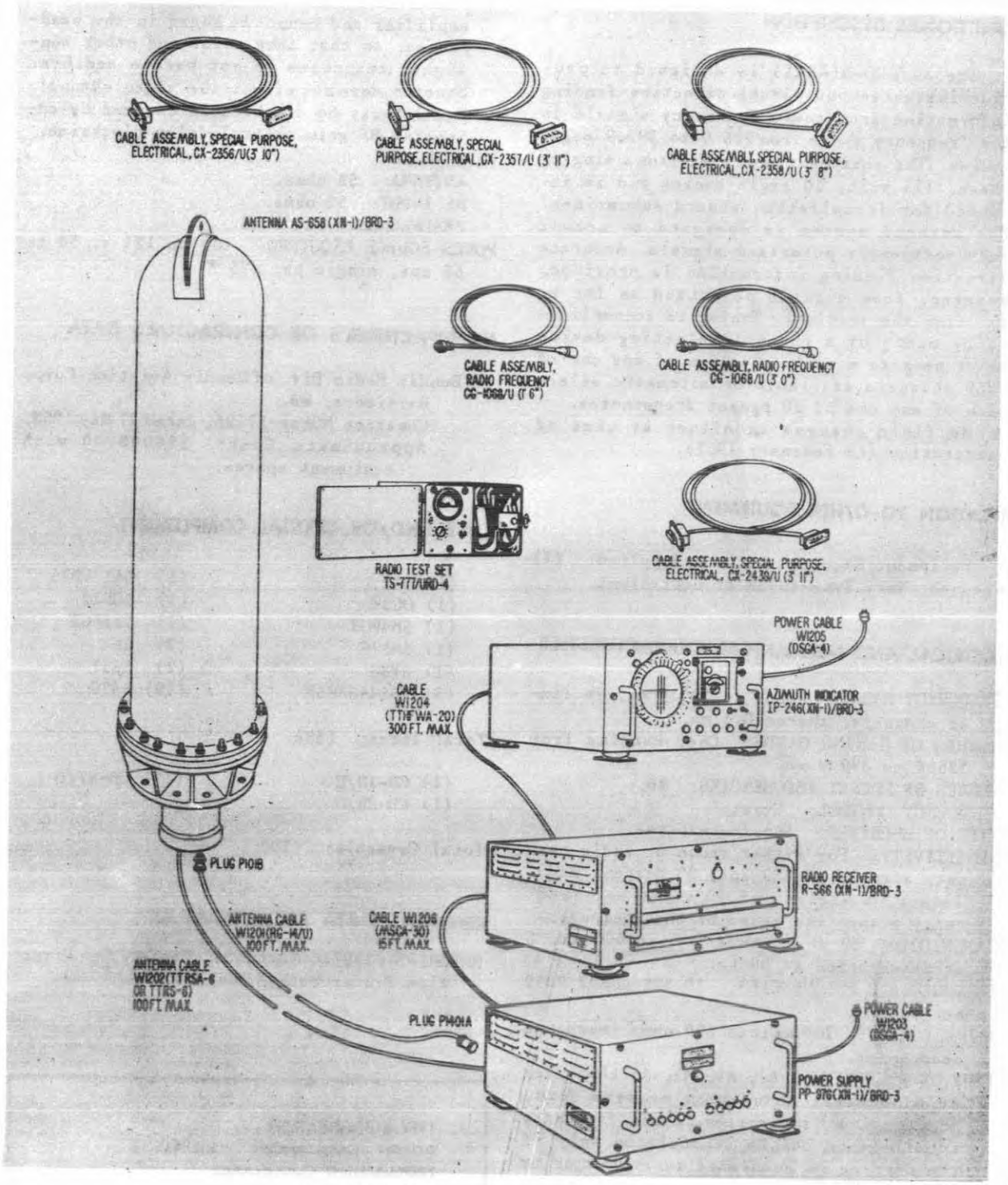
AN16-30ARW2-3: Handbook of Maintenance Instructions for Models AN/ARW-2, AN/ARW-2X and AN/ARW-3 Aircraft Radio Equipment.
AN-08-10-233: Handbook of Operating Instruction for AN/ARW-2, AN/ARW-2X and AN/ARW-3.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	
PROCUREMENT COGNIZANCE	
STOCK NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiver R-32/ARW-2	9-3/16 X 10-7/16 X 22-3/8	48.6
1	Mounting Base MT-52/UR	2-3/16 X 10-7/16 X 22	3.9
1	Remote Control Cable		
1	Power Cable		
1	Antenna Cable		

DIRECTION FINDER SET AN/BRD-3(XN-1)



Direction Finder Set AN/BRD-3(XN-1)

Radio-Receivers

October 1957

AN/BRD-3(XN-1) DIRECTION FINDER SET

FUNCTIONAL DESCRIPTION

The AN/BRD-3(XN-1) is designed to provide instantaneous visual direction finding information from radio frequency signals in the frequency range from 225.0 to 399.9 megacycles. The equipment operates from a single-phase, 115 volt, 60 cycle source and is intended for installation aboard submarines. The antenna system is designed to accept only vertically polarized signals. Accurate direction finding information is provided, however, from signals polarized as far as 45° from the vertical. Tuning is accomplished by means of a channel selecting device which permits manual selection of any one of 1750 channels available or automatic selection of any one of 20 preset frequencies.

No field changes in effect at time of preparation (13 February 1957).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) headset, Navy Type-40916 or equivalent.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 225.0 to 399.9 mc, in fixed channels, spaced 0.1 mc.

NUMBER OF TUNING BANDS: One, ranging from 225.0 to 399.9 mc.

NUMBER OF PRESET FREQUENCIES: 20.

FREQUENCY CONTROL: Crystal.

TYPE OF RECEIVER: Superheterodyne.

SENSITIVITY: For either video or audio output, signals of 400 cps, 30 percent modulation, a minimum of 10 uv at any frequency within the range of the equipment.

BANDWIDTH: 60 db attenuation at 400 kc; 6 db attenuation at 80 kc.

INTERMEDIATE FREQUENCIES: 15.325 and 2.8072 mc.

AUDIO OUTPUT: 100 mw into 600 ohms impedance headphones.

TYPE OF RECEPTION: A0, A1, A2, A3 character or of complex modulation or wave form, permits visual indication. Audio frequency intelligence can be demodulated only if the carrier is modulated in amplitude by such intelligence.

SQUELCH CIRCUIT CHARACTERISTICS: Any signal at a level lower than that for squelch is designed does not pass through the audio amplifier and cannot be heard in the headphones, so that tube noise and other non-signal responses do not become audible. Squelch does not effect the video channel. Squelch may be disabled if desired by advancing RF gain control fully clockwise.

IMPEDANCES

ANTENNA: 52 ohms.

RF INPUT: 52 ohms.

HEADPHONES: 600 ohms.

POWER SOURCE REQUIRED: 109 to 121 v, 54 to 66 cps, single ph, 425 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Bendix Radio Div. of Bendix Aviation Corp, Baltimore, Md.
Contract NObsr-57426, dated 27 May 1952.
Approximate Cost: $20000.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) OA2	(1) OA3/VR75
(1) OC3W	(1) 5CP12
(1) 5R4WGY	(1) 5Y3WGT
(1) 6AS7G	(3) 6F4
(1) 6Y6G	(2) 5517
(5) 5654-6AK5W	(19) 5670

Total Tubes: (58)

(1) CR-18/U	(17) CR-27/U
(1) CR-28/U	

Total Crystals: (19)

REFERENCE DATA AND LITERATURE

NAVSHIPS-92297: Technical Manual for Direction Finder Set-AN/BRD-3(XN-1).

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

DIRECTION FINDER SET AN/BRD-3(XN-1)

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Antenna AS-658(XN-1)/BRD-3	40	27 X 27 X 86	600
1	Radio Receiver R-566(XN-1)/BRD-3	8.8	18 X 28 X 30	200
1	Power Supply PP-976(XN-1)/BRD-3	8.8	18 X 28 X 30	200
1	Azimuth Indicator IP-246(XN-1)/BRD-3	5.2	16 X 20 X 28	120

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Antenna AS-658(XN-1)/BRD-3	21-1/16 X 80-17/64	300
1	Radio Receiver -R-566(XN-1)/BRD-3 contained in:		
1	Cabinet, Elect. Equip. CY-1394(XN-1)/BRD-3	13 X 21-13/16 X 24	100
1	Power Supply PP-976(XN-1)/BRD-3 contained in:		
1	Cabinet, Elect. Equip. -CY-1395(XN-1)/BRD-3	21-1/2 X 21-45/64 X 24	110
1	Azimuth Indicator IP-246(XN-1)/BRD-3 contained in:		
1	Cabinet, Elect. Equip. CY-1396(XN-1)/BRD-3	10 X 14-3/4 X 22	65
1	Radio Test Set TS-777/URD-4	3-1/2 X 6-1/2 X 8	4
2	Technical Manual NAVSHIPS-92297		
1	Cable Assy CX-2356/U	46 lg	
1	Cable Assy CX-2357/U	47 lg	
1	Cable Assy CX-2358/U	44 lg	
1	Cable Assy CG-1068/U	18 lg	
1	Cable Assy CG-1068/U	36 lg	
1	Cable Assy CX-2439/U	47 lg	
1	Cable, Coaxial RG-14/U	1248 lg	
1	Cable TTRSA-6	1248 lg	
1	Cable TTHFWA-20	3648 lg	
1	Cable MSCA-30	228 lg	
1	Cable TTRS-6		
2	Cable DSGA-4		
2	Connector, Plug UG-204A/U		
1	Spare Parts Box		
2	Connector, Coaxial UG-204A/U		
1	Cable TTRS-6	480 lg	
1	Gland Nut		
1	Washer		
1	Stuffing Tube Body		

22 August 1962 RADIO RECEIVING SET AN/DRW-2

Cog Service: USN FSN: Functional Class:

USA	USN	USAF

TYPE CLASS: Used by Used by

MANUFACTURER'S NAME/CODE NUMBER: Bendix Control Engineering Corp., (86270).

Radio Receiving Set AN/DRW-2

FUNCTIONAL DESCRIPTION:

The Radio Receiving Set AN/DRW-2 is designed to be installed in a radio controlled missile. Its function is to close, by remote radio control, a detonator circuit in the missile, thereby causing destruction of the missile. The equipment is arranged to cause detonation upon removal of the radio control signal, providing a means of intentionally destroying an erratic or uncontrollable missile.

No field changes in effect at time of preparation (8 September 1961).

TECHNICAL CHARACTERISTICS:

TYPE OF RECEPTION: AM type.
TYPE OF CONTROL: Provides remote control for pilotless aircraft.
RECEIVER INPUT FREQUENCY: 65.9 mc.
RECEIVER INPUT TUNING RANGE: 57 to 68 mc.

AN/DRW-2 RADIO RECEIVING SET

I.F. FREQUENCY: 3 mc.
I.F. BANDWIDTH: Approx 30 kc.
MINIMUM BATTERY OPERATING LIFE: 30 minutes.
POWER DRAIN: 0.45 amps, 1.4 v (filament); 7.5 ma, 60 v B+.
SIGNAL-TO-NOISE RATIO: 15 to 1 minimum.
IMAGE RATIO: 25 to 1 minimum.
INPUT SENSITIVITY: 25 microvolts.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Receiving Antenna (To provide satisfactory for Radio Receiving Set AN/DRW-2 at carrier frequency used); (1) R.F. Coaxial type RG-58/U; (1) High-Frequency Signal Generator TS-497/URR or Measurements Model no. 80; (1) Multimeter (1,000 ohms/volt) TS-297/U; (1) Multimeter (20,000 ohms/volt) TS-352/U; (1) Tube Tester Signal Corps Type I-177A.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Radio Receiving Set AN/DRW-2 consists of:			
1	Radio Receiver RT-341/DRW-2		1.2 x 3.75 x 8.3	2
1	Acceleration Switch		1.65 x 2.25 x 3.9	0.4
1	Power & Arming Cable		1,5 x 1.5 x 60	0.4
1	Arming Plug		1.5 x 1.5 x 2.2	0.15
1	Antenna Connector Plug UG-88/U		0.6 x 0.6 x 1.1	0.03

REFERENCE DATA AND LITERATURE:

CO-AN16-30DRW2-3: Technical Manual for Radio Receiving Set AN/DRW-2.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (4) 1AD4 (2) CK5678

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

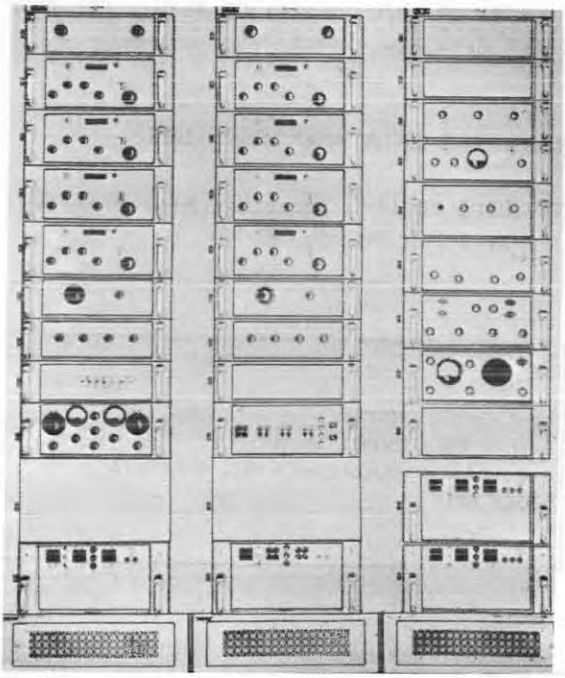
PROCUREMENT DATA

PROCURING SERVICE: USN
DESIGN COG: BuWeps
SPEC &/OR DWG: BuAer XEL-108

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Bendix Control Engineering Corp. Pt/Dwg no. 201-B-60	Baltimore, Maryland	NOa(S)-9614(Dev) NOA(S)-10437	

April 1958

RADIO RECEIVING SET AN/FRR-10



Radio Receiving Set AN/FRR-10

FUNCTIONAL DESCRIPTION

The AN/FRR-10 is a double-conversion superhetrodyne type diversity receiver contained in three rack cabinets. The receiver is designed for use at shore stations. The complete receiving equipment consists of two radio receivers together with the switching-comparing and filtering necessary to receive the following types of signals in single-channel or space dual diversity operation.

a. Double-side band radio-telephone.
b. Single-sideband radio-telephone or teletype.
c. Single-sideband-suppressed-carrier radio telephone or teletype.

No field changes in effect at time of preparation (30 January 1958).

RELATION TO OTHER EQUIPMENT

Basically the AN/FRR-10 performs the same function as the AN/FRR-24 and AN/FRR-37, except that it provides a means of receiving single-sideband suppressed carrier signals and does not provide for the reception of frequency shift telegraph signals or telegraph (A1) signals.

Equipment Required but not Supplied: A 70 ohm antenna, headphones.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE
- BAND 1: 2.0 to 4 mc.
- BAND 2: 4 to 8 mc.
- BAND 3: 8 to 16 mc.
- BAND 4: 16 to 32.0 mc.

TYPE FREQUENCY CONTROL: Manual tuning with tunable oscillator or crystal-controlled oscillator (16 crystals).

TYPE RECEPTION: A2, A3, A3a, A3b.

TYPE RECEIVER: Double superheterodyne.

INTERMEDIATE FREQUENCY: First IF of 1750 kc, second IF of 50 kc.

ANTENNA INPUT IMPEDANCE: 70 ohms nominal, unbalanced.

OUTPUT CIRCUIT: Audio 60 mw into each of 4 lines, each line to match up to five 600 ohm loads in parallel.

FREQUENCY STABILITY
- TEMPERATURE: 0.002% per deg C frequency variation; 6 db gain variation.
- HUMIDITY: 0.025% total frequency variation; 6 db gain variation.

OSCILLATOR RADIATION: Less than 400 microwatts.

I.F. REJECTION: Greater than 100 db.

IMAGE FREQUENCY REJECTION: Greater than 110 db.

AUTOMATIC GAIN CONTROL TIME CONSTANT
- FAST: 2 sec.
- MEDIUM: 4 sec.
- SLOW: 8 sec.

SENSITIVITY: 2 mv or better.

GAIN VARIATION: Within 6 db over any tuning band.

RESERVE GAIN: 12 db.

FREQUENCY OVERLAP: Not less than 1% at each end of any frequency band.

POWER SOURCE REQUIRED: 105/115/125 v, single ph, 50 to 60 cps.

Radio-Receivers

AN/FRR-10 RADIO RECEIVING SET

April 1958

MANUFACTURER'S OR CONTRACTOR'S DATA

National Co. Inc, Malden, Mass.
Contract: NObsr-52433, dated 23 May 1951.
Approximate Cost: $43100.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(10) OA2	(19) OB2	(12) 5R4WGA
(3) 6AH6	(13) 6AK6	(16) 6AN5WA
(31) 6AU6WA	(3) 6AV6	(19) 6C4WA
(3) 12AT7WA	(6) 5725	(15) 5726
(44) 5749	(14) 5750	(19) 5751
(7) 5814	(5) 6005	(14) 6080WA

Total Tubes: (253)

(16) CR-18/U (1) CR-25/U (1) 21NA
Total Crystals: (18)

REFERENCE DATA AND LITERATURE

NAVSHIPS 92144: Technical Manual for Radio Receiving Set AN/FRR-10.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE MIL-R-15947A
STOCK NO.

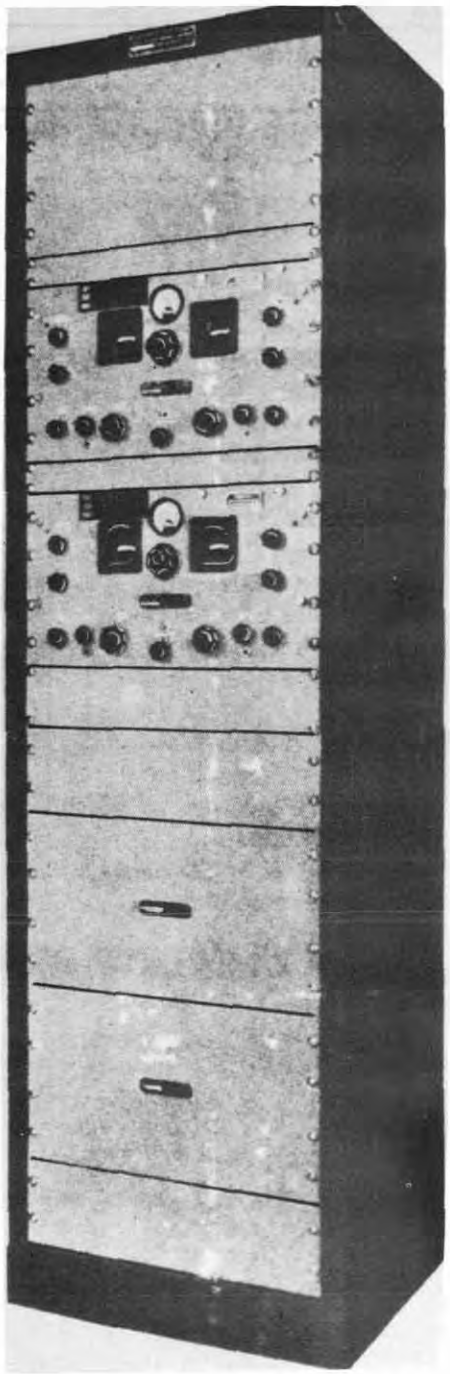
SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
2	Control Panel SB-142A/FRR-24	3.5	11-3/4 x 21-1/8 x 24-3/8	55
2	Amplifier-Converter AM-450B/FRR-24	4.1	13-1/2 x 21-1/8 x 24-3/8	80
2	Amplifier-Converter AM-451B/FRR-24	4.1	13-1/2 x 21-1/8 x 24-3/8	80
2	Amplifier-Converter AM-452B/FRR-24	4.1	13-1/2 x 21-1/8 x 24-3/8	80
2	Amplifier-Converter AM-453B/FRR-24	4.1	13-1/2 x 21-1/8 x 24-3/8	80
2	Frequency Converter CV-126B/FRR-24	3.5	11-3/4 x 21-1/8 x 24-3/8	55
2	I.F. Amplifier AM-900/FRR-10	3.5	11-3/4 x 21-1/8 x 24-3/8	55
1	Communication Patching Panel SB-260/FRR-10	3.5	11-3/4 x 21-1/8 x 24-3/8	40
1	Communication Patching Panel SB-261/FRR-10	3.5	11-3/4 x 21-1/8 x 24-3/8	40
1	R.F. Oscillator O-131B/FRR-24	4.1	13-1/2 x 21-1/8 x 24-3/8	65
1	Power Distribution Panel SB-253/FRR	4.1	13-1/2 x 21-1/8 x 24-3/8	55
2	Electrical Filter Assy F-171/FRR-10	3.5	11-3/4 x 21-1/8 x 24-3/8	65
1	R.F. Amplifier AM-851/FRR-10	3.5	11-3/4 x 21-1/8 x 24-3/8	58
1	Signal Comparator CM-55/FRR-10	3.5	11-3/4 x 21-1/8 x 24-3/8	56
1	R.F. Oscillator O-204/FRR-10	4.1	13-1/2 x 21-1/8 x 24-3/8	65
1	Signal Comparator CM-49/FRR-10	4.1	13-1/2 x 21-1/8 x 24-3/8	65
1	Amplifier Detector AM-722/FRR-10	4.1	13-1/2 x 21-1/8 x 24-3/8	68
	Audio Frequency Monitor ID-338/FRR-10	4.1	13-1/2 x 21-1/8 x 24-3/8	56
	Tool Box	4.1	13-1/2 x 21-1/8 x 24-3/8	60
2	Power Supply PP-884/FRR-10	4.45	15 x 21-1/8 x 24-3/8	120
2	Power Supply PP-844/FRR-10	4.45	15 x 21-1/8 x 24-3/8	120
3	Cabinet CY-1377/FRR-10	44.5	27 x 32-3/4 x 87	450
1	Equipment Repair Parts	5.0	14-1/2 x 18 x 35	182

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
2	Control Panel SB-142A/FRR-24	5-7/32 x 15-7/16 x 19	33
2	Amplifier-Converter AM-450B/FRR-24	6-31/32 x 16-15/16 x 19	58
2	Amplifier-Converter AM-451B/FRR-24	6-31/32 x 16-15/16 x 19	58
2	Amplifier-Converter AM-452B/FRR-24	6-31/32 x 16-15/16 x 19	58
2	Amplifier-Converter AM-453B/FRR-24	6-31/32 x 16-15/16 x 19	58
2	Frequency Converter CV-126B/FRR-24	5-7/32 x 16-15/16 x 19	33
2	I.F. Amplifier AM-900/FRR-10	5-7/32 x 16-15/16 x 19	29
1	Communication Patching Panel SB-260/FRR-10	5-7/32 x 15-5/16 x 19	21
1	Communication Patching Panel SB-261/FRR-10	5-7/32 x 15-5/16 x 19	21
1	R.F. Oscillator 0-131B/FRR-24	6-31/32 x 16-15/16 x 19	42
1	Power Distribution Panel SB-253/FRR	6-31/32 x 15-5/16 x 19	28
2	Electrical Filter Assy F-171/FRR-10	5-7/32 x 16-15/16 x 19	38
1	R.F. Amplifier AM-851/FRR-10	5-7/32 x 16-15/16 x 19	33
1	Signal Comparator CM-55/FRR-10	5-7/32 x 16-15/16 x 19	31
1	R.F. Oscillator 0-204/FRR-10	6-31/32 x 16-15/16 x 19	40
1	Signal Comparator CM-49/FRR-10	6-31/32 x 16-15/16 x 19	40
1	Amplifier-Detector AM-722/FRR-10	6-31/32 x 16-15/16 x 19	43
1	Audio Frequency Monitor ID-338/FRR-10	6-31/32 x 16-15/16 x 19	32
1	Tool Box	6-31/32 x 16-15/16 x 19	41
2	Power Supply PP-884/FRR-10	8-23/32 x 15-5/16 x 19	96
2	Power Supply PP-844/FRR-10	8-23/32 x 15-5/16 x 19	96
3	Cabinet CY-1377/FRR-10	22-3/8 x 24 x 85	292

RADIO RECEIVING SET AN/FRR-12



Radio Receiving Set AN/FRR-12

FUNCTIONAL DESCRIPTION

The AN/FRR-12 is designed as a fixed station set for avoiding the effects of fading and primarily designed for use in a point-to-point radio-teletype system of communication.

The AN/FRR-12 comprises two (2) modified superheterodyne Radio Receivers R-270/FRR (designated receiver A and receiver B) operating independently from two separate antennas for the reception of frequency shift teletype and other type radio signals. A junction box provides for either balanced or unbalanced input from the antennas. This dual radio receiving system which prevents fading is known as dual diversity reception.

No field changes in effect at time of preparation (21 May 1959).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF RECEIVER: Superheterodyne.
TYPE OF SIGNALS RECEIVED: Frequency shift radio teletype; CW, ICW, MCW telegraph; AM telephone; certain types of FM.
INTERMEDIATE FREQUENCY: 465 kc.
SENSITIVITY: 2 microvolts up to 20 mc and 5 microvolts from 20 to 40 mc for 500 mw AF output (any frequency w/carrier modulated 30% at 400 cps) w/IF output at least 200 millivolts.
IMAGE REJECTION RATIO: 3000:1 or better below 10 mc; 200:1 or better between 10 and 20 mc; 30:1 or better above 20 mc.
SIGNAL PLUS NOISE TO NOISE POWER RATIO: At least 10:1 below 10 mc; 4:1 above 10 mc.
SELECTIVITY: Variable.
TYPE OF CONTROL: Crystal control; any 3 channels in the frequency range of 1.5 to 26 mc.
FREQUENCY RANGE
- BAND ONE: 1.25 to 2.5 mc.
- BAND TWO: 2.50 to 5.0 mc.
- BAND THREE: 5.0 to 10.0 mc.
- BAND FOUR: 10.0 to 20.0 mc.
- BAND FIVE: 20.0 to 40.0 mc.

POWER SUPPLY UNIT RA-74-D
- NOMINAL OUTPUT VOLTAGES: 50 v DC, 6.3 v AC, 100 v DC, 250 v DC, 380 v DC.
- POWER CONSUMPTION: 400 W approx.
- POWER RQMT: 95/105/117/130/190/210/234/260 v AC, 25 to 60 cps, single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

Western Electric Co., New York, New York.
Contract Order 12618-Phila-47-7.

AN/FRR-12 RADIO RECEIVING SET

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 5U4G
(1) 6L7
(1) 6H6
(1) 6SN7
(3) 6F6
(3) 6K7
(1) 6J7
(1) 6SJ7
(1) 6AC7
(1) 5Y3GT
(3) 6SK7
(1) 6N7
(1) 6J5

Total Tubes: (17)

No Crystals used.

REFERENCE DATA AND LITERATURE

TM11-896: Technical Manual for Radio Receiving Set AN/FRR-12.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE 71-3280 (ARMY)
STOCK NO.
R.D.B. IDENT. NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Rack Mounting MT-660( )/FRR-12	30.00	23 X 27 X 83-1/2	475
1	Radio Receiver R-270/FRR	4.5	15-1/2 X 21-1/4 X 24-1/2	117
1	Power Supply Unit RA-74-D	2.8	13-1/4 X 14-1/4 X 24	115

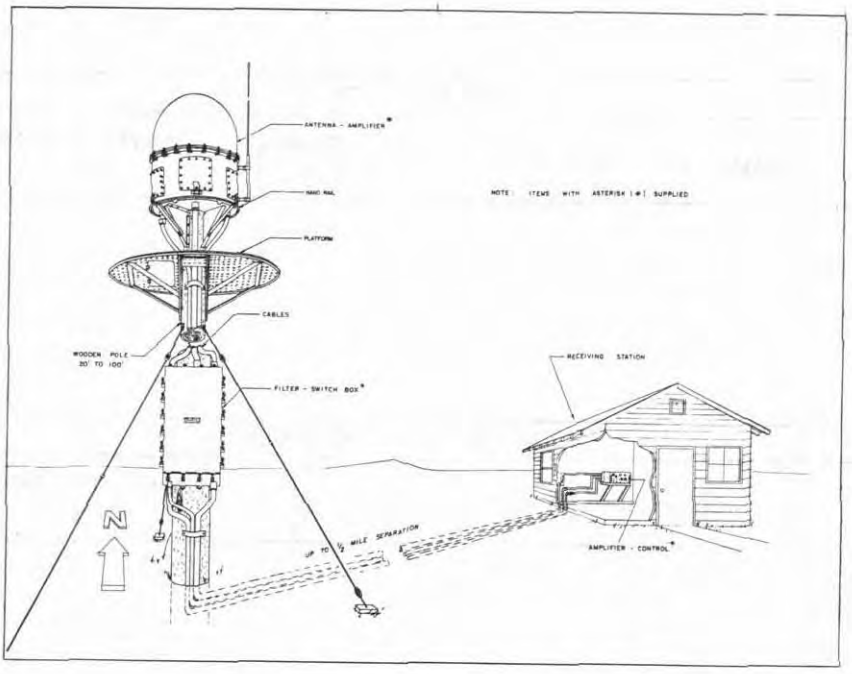
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Rack Mounting MT-660( )/FRR-12	18 X 22 X 76	230
2	Radio Receiver R-270/FRR	10-1/2 X 16-3/4 X 19	60-1/2
2	Power Supply Unit RA-74-D	10-1/4 X 10-1/2 X 19	60-1/2

USA	USN	USAF

TYPE CLASS: Used by Used by

MANUFACTURER'S NAME/CODE NUMBER: West Coast Electronics Co., Subsidiary of Litton Industries, (83842).



Radio, Receiving Set AN/FRR-15(XN-1)

FUNCTIONAL DESCRIPTION:

The Radio, Receiving Set AN/FRR-15(XN-1) is a superheterodyne receiver, designed to provide a means of "barrage" reception of keyed Continuous Wave (CW) and Frequency Shift (FSK) radio transmissions in the Very Low Frequency (VLF) and Low Frequency (LF) range. The AN/FRR-15(XN-1) is tunable from 14 to 30 kilocycles (KC).

No field changes in effect at time of preparation (21 March 1962).

TECHNICAL CHARACTERISTICS:

TYPE OF INSTALLATION: Shore.
TYPE OF RECEIVER: Superheterodyne.
TYPE OF RECEPTION: A1, F1 types.
FREQUENCY RANGE: 14 to 30 kc.
INTERMEDIATE FREQUENCY: 9 kc.
NUMBER OF BANDS: 1 band.
RECEIVER OUTPUT
AF OUTPUT: Not less than 60 mw into a 600 ohm resistive load w/7% maximum distortion, not less than 180 mw into a 200

ohm resistive load w/7% maximum distortion.

HEADPHONE JACK OUTPUT: Not less than 60 mw into 600 ohm resistive load w/7% maximum distortion.

AUXILIARY IF OUTPUT: Not less than 1 mv across a 70 ohm resistive load with the gain control adjusted for 60 mw AF output into a 600 ohm resistive load.

IMPEDANCE (NOMINAL)

AF OUTPUT: 600 ohms balanced.

HEADPHONE JACK OUTPUT: 600 ohms unbalanced.

AUXILIARY IF OUTPUT: 70 ohms unbalanced.

IF OUTPUT OF RF-IF ASS'Y: 70 ohms unbalanced.

IF OUTPUT OF IF-AF ASS'Y: 70 ohms unbalanced.

POWER SOURCE CHARACTERISTICS

RECEIVER AND SERVO CIRCUITS

VOLTAGE: 105/115/125 v ac.

FREQUENCY: 50 to 60 cps.

PHASE: 1 ph.

CURRENT: 2.55/2.45/2.35 amps.

POWER: 266/280/292 W.

SPACE HEATERS

VOLTAGE: 115 v ac.

FREQUENCY: 50 to 60 cps.

PHASE: 1 ph.

CURRENT: 9.5 amps.

POWER: 1.1 kilowatt (KW).

RELATION TO OTHER EQUIPMENT:

The AN/FRR-15(XN-1) is similar to AN/FRR-16(XN-1) and AN/FRR-17(XN-1) except that it differs in frequency coverage, circuitry and construction.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(As required) IF Cable Type RG-85/U; (As required) IF Cable Type RG-11/U; (As required) Control & Primary Supply Cable Type MHFA-19; (As required) Heater & Service Outlet Supply Type FHFA-9; (As required) Primary Supply Cable Type FHFA-4; (As required) Primary Supply Cable Type FHOF-4; (As required) Audio Output Cable Type TTRS-2; (1) Headphone Set NT 49985-A; (1) Loudspeaker or other audio device; (1) Junction Box; (1) Installation of Stuffing Tubes Instructions NAVSHIPS 900171.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Radio Receiving Set AN/FRR-15(XN-1) consists of:			465
1	Antenna Amplifier Unit, Unit #1		31.5 x 32.3 x 32.6	250
1	Filter Switch Box Unit #2		7.2 x 21 x 36.3	120
1	Amplifier-Control Unit, Unit #3		8.5 x 17 x 22.75	95

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Stuffing Tube Type 21 Size G			
1	Stuffing Tube Type 21 Size L			
2	Connector Adaptor RW4S1652			
1	Connector AN3108B-28-16P			
1	Connector AN3106B-14S-2S			
1	Connector AN3106B-14S-2P			
3	Connector PL-259A			
1	Cable Clamp AN3057-16A			
2	Cable Clamp AN3057-6A			
1	Set of Test Cables			
2	Technical Manual NAVSHIPS 92716		7/8 x 8-1/2 x 11-1/2	

REFERENCE DATA AND LITERATURE:

NAVSHIPS 92716: Technical Manual for Radio Receiving Sets AN/FRR-15(XN-1), AN/FRR-16(XN-1), and AN/FRR-17(XN-1).

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (4) 0B2WA (1) 5687 (4) 5763 (1) 5726/6AL5W (5) 6005/6AQ5W (1) 5725/6AS6W (3) 6AU6WA (5) 5749/6RA6W (8) 6X4W (4) 12AT7WA (1) 5814A/12AU7

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	33.4	290
1	5.8	166
1	4.5	134
1	2.3	45

PROCUREMENT DATA

PROCURING SERVICE: USN
DESIGN COG: USN, BuShips
SPEC &/OR DWG: MIL-R-15272(SHIPS)

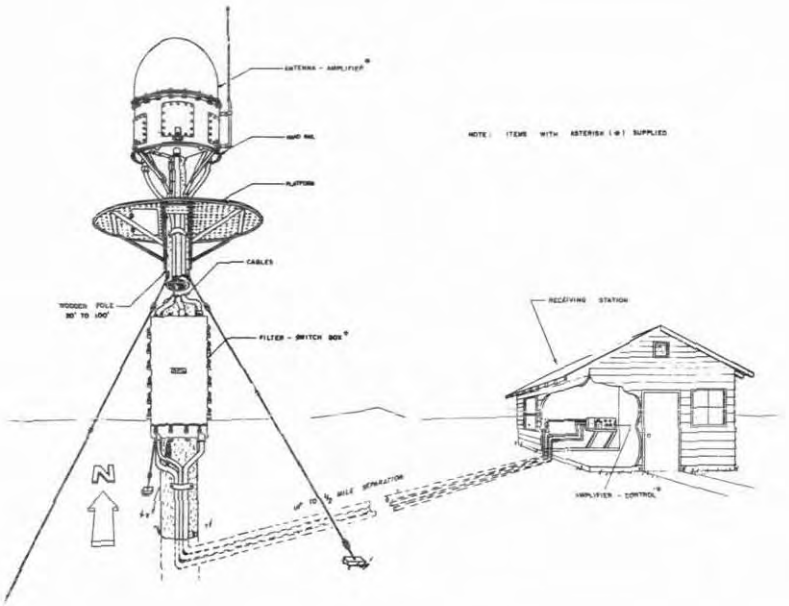
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
West Coast Electronics Co., Subsidiary of Litton Industries	Los Angeles, California	NObsr-63296, 29 February 1956	

14 August 1962 RADIO RECEIVING SET AN/FRR-16(XN-1)

Cog Service: USN FSN: Functional Class:

USA	USN	USAF
TYPE CLASS:	Used by	Used by

MANUFACTURER'S NAME/CODE NUMBER: West Coast Electronics Co., Subsidiary of Litton Industries, (83842).



Radio Receiving Set AN/FRR-16(XN-1)

FUNCTIONAL DESCRIPTION:

The Radio Receiving Set AN/FRR-16(XN-1) is a superheterodyne receiver, designed to provide a means of "barrage" reception of keyed continuous wave (CW) and frequency shift (FSK) radio transmissions in the Very Low Frequency (VLF) and Low Frequency (LF) range. The AN/FRR-16(XN-1) is tunable from 30 to 70 kilocycles (KC).

No field changes in effect at time of preparation (22 March 1962).

TECHNICAL CHARACTERISTICS:

TYPE OF INSTALLATION: Shore.
TYPE OF RECEIVER: Superheterodyne.
TYPE OF RECEPTION: A1, F1 types.
FREQUENCY RANGE: 30 to 70 kc.
INTERMEDIATE FREQUENCY: 9 kc.

AN/FRR-16(XN-1) RADIO RECEIVING SET

NUMBER OF BANDS: 1 band.
RECEIVER OUTPUT
AF OUTPUT: Not less than 60 mw into a 600 ohm resistive load w/7% maximum distortion, not less than 180 mw into a 200 ohm resistive load w/7% maximum distortion.
HEADPHONE JACK OUTPUT: Not less than 60 mw into 600 ohm resistive load w/7% maximum distortion.
AUXILIARY IF OUTPUT: Not less than 1 mv across a 70 ohm resistive load with the Gain Control adjusted for 60 mw AF output into a 600 ohm resistive load.
IMPEDANCE (NOMINAL)
AF OUTPUT: 600 ohms balanced.
HEADPHONE JACK OUTPUT: 600 ohms unbalanced.
AUXILIARY IF OUTPUT: 70 ohms unbalanced.
IF OUTPUT OF RF-IF ASS'Y: 70 ohms unbalanced.
IF INPUT OF IF-AF ASS'Y: 70 ohms unbalanced.
POWER SOURCE CHARACTERISTICS
RECEIVER AND SERVO CIRCUITS
VOLTAGE: 105/115/125 v ac.
FREQUENCY: 50 to 60 cps.
PHASE: 1 ph.
CURRENT: 2.55/2.45/2.35 amps.
POWER: 266/280/292 W.
SPACE HEATERS
VOLTAGE: 115 v ac.
FREQUENCY: 50 to 60 cps.
PHASE: 1 ph.
CURRENT: 9.5 amps.
POWER: 1.1 kw.

RELATION TO OTHER EQUIPMENT:

The AN/FRR-16(XN-1) is similar to AN/FRR-15(XN-1) and AN/FRR-17(XN-1) except that it differs in frequency coverage, circuitry and construction.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(As required) IF Cable Type RG-85/U; (As required) IF Cable Type RG-11/U; (As required) Control & Primary Supply Cable Type MHFA-19; (As required) Heater & Service Outlet Supply Type FHFA-9; (As required) Primary Supply Cable Type FHFA-4; (As required) Audio Output Cable Type TTRS-2; (1) Headphone Set N.T. 49985-A; (1) Loudspeaker or other Audio Device; (1) Junction Box; (1) Installation of Stuffing Tubes Instructions NAVSHIPS 900171.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Radio Receiving Set AN/FRR-16(XN-1) consists of:			465
1	Antenna Amplifier Unit, Unit #1		31.5 x 32.3 x 32.6	250
1	Filter-Switch Box, Unit #2		7.2 x 21 x 36.3	120
1	Amplifier Control Unit, Unit #3		8.5 x 17 x 22.75	95

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Stuffing Tube, Type 21 Size G			
1	Stuffing Tube, Type 21 Size L			
2	Connector Adaptor RW4S1652			
1	Connector AN3106B-14S-2S			
1	Connector AN3108B-28-16P			
1	Connector AN3106B-14S-2P			
3	Connector PL-259A			
1	Cable Clamp AN3057-16A			
2	Cable Clamp AN3057-6A			
1	Set of Test Cables			
2	Technical Manual NAVSHIPS 92716		7/8 x 8-1/2 x 11-1/2	

REFERENCE DATA AND LITERATURE:

NAVSHIPS 92716: Technical Manual for Radio Receiving Sets AN/FRR-15(XN-1), AN/FRR-16(XN-1) and AN/FRR-17(XN-1).

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (4) 0B2WA (1) 5687 (4) 5763 (1) 5726/6AL5W (5) 6005/6AQ5W (1) 5725/6AS6W (3) 6AU6WA (5) 5749/6BA6W (8) 6X4W (4) 12AT7WA (1) 5814A/12AU7

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	33.4	290
1	5.8	166
1	4.5	134
1	2.3	45

PROCUREMENT DATA

PROCURING SERVICE: USN
DESIGN COG: USN, BuShips
SPEC &/OR DWG: MIL-R-15272(SHIPS)

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
West Coast Electronics Co. Subsidiary of Litton Industries	Los Angeles, Calif.	NObsr-63296, 29 February 1956	

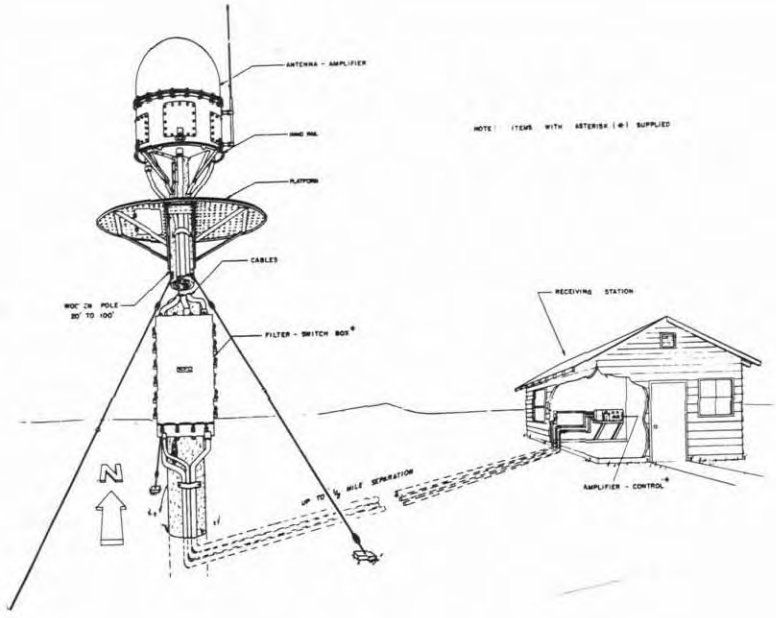
31 July 1962
Cog Service: USN FSN:

RADIO RECEIVING SET AN/FRR-17(XN-1)
Functional Class:

USA	USN	USAF

TYPE CLASS: Used by Used by

MANUFACTURER'S NAME/CODE NUMBER: West Coast Electronics Co. Subsidiary of Litton Ind. (83842).



Radio Receiving Set AN/FRR-17(XN-1)

FUNCTIONAL DESCRIPTION:

The Radio Receiving Set AN/FRR-17(XN-1) is a superheterodyne receiver designed to provide a means of of "barrage" reception of keyed continuous wave (CW) and frequency shift (FSK) radio transmissions in the very low frequency (VLF) and low frequency (LF) range. The AN/FRR-17(XN-1) is tunable from 70 to 150 kilocycles (KC).

No field changes in effect at time of preparation (26 March 1962).

TECHNICAL CHARACTERISTICS:

TYPE OF INSTALLATION: Shore.
TYPE OF RECEIVER: Superheterodyne.
TYPE OF RECEPTION: A1, F1 types.
FREQUENCY RANGE: 70 to 150 kc.
INTERMEDIATE FREQUENCY: 9 kc.

NUMBER OF BANDS: 1 band.
RECEIVER OUTPUT
AF OUTPUT: Not less than 60 mw into a 600 ohm resistive load w/7% max distortion, not less than 180 mw into a 200 ohm resistive load w/7% max distortion.
HEADPHONE JACK OUTPUT: Not less than 60 mw into 600 ohm resistive load with 7% max distortion.
AUXILIARY IF OUTPUT: Not less than 1 mv across a 70 ohm resistive load with the Gain Control adjusted for 60 mw AF output into a 600 ohm resistive load.
IMPEDANCE (Nominal)
AF OUTPUT: 600 ohms balanced.
HEADPHONE JACK OUTPUT: 600 ohms unbalanced.
AUXILIARY IF OUTPUT: 70 ohms unbalanced.
IF OUTPUT OF RF-IF ASS'Y: 70 ohms unbalanced.
IF INPUT OF IF-AF ASS'Y: 70 ohms unbalanced.
POWER SOURCE CHARACTERISTICS
RECEIVER AND SERVO CIRCUITS
VOLTAGE: 105/115/125 v ac.
FREQUENCY: 50 to 60 cps.
CURRENT: 2.55/2.45/2.35 amps.
PHASE: 1 ph.
POWER: 266/280/292 W.
SPACE HEATERS
VOLTAGE: 115 v ac.
FREQUENCY: 50 to 60 cps.
PHASE: 1 ph.
CURRENT: 9.5 amps.
POWER: 1.1 kw.

RELATION TO OTHER EQUIPMENT:

The AN/FRR-17(XN-1) is similar to AN/FRR-15(XN-1) and AN/FRR-16(XN-1) except that it differs in frequency coverage, circuitry and construction.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(As required) IF Cable Type RG-85/U; (As required) IF Cable Type RG-11/U; (As required) Control & Primary Supply Cable Type MHFA-19; (As required) Heater & Service Outlet Supply Type FHFA-9; (As required) Primary Supply Cable Type FHFA-4; (As required) Audio Output Cable Type TTRS-2; (1) Headphone Set N.T. 49985-A; (1) Loudspeaker or other Audio Device; (1) Junction Box; (1) Installation of Stuffing Tubes - Instruction NAVSHIPS 900171.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Radio Receiving Set AN/FRR-17(XN-1) consists of:			
1.4	AN/FRR-17(XN-1): 2			

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Antenna Amplifier Unit Unit #1		31.5 x 32.3 x 32.6	250
1	Filter Switch Box Unit #2		7.2 x 21 x 36.3	120
1	Amplifier Control Unit Unit #3		8.5 x 17 x 22.75	95
1	Stuffing Tube Type 21 Size G			
1	Stuffing Tube Type 21 Size L			
2	Connector Adapter RW4S1652			
1	Connector AN3106B-14S-2S			
1	Connector AN3108B-28-16P			
1	Connector AN3106B-14S-2P			
3	Connector PL-259A			
1	Cable Clamp AN3057-16A			
2	Cable Clamp AN3057-6A			
1	Set of Test Cables			
2	Technical Manual NAVSHIPS 92716		7/8 x 8-1/2 x 11-1/2	

REFERENCE DATA AND LITERATURE:

NAVSHIPS 92716: Technical Manual for Radio Receiving Sets AN/FRR-15(XN-1), AN/FRR-16(XN-1) and AN/FRR-17(XN-1).

TUBES, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (4) 0B2WA (1) 5687 (4) 5763 (1) 5726/6AL5W (5) 6605/6AQ5W (1) 5725/6AS6W
(3) 6AU6WA (5) 5749/6BA6W (8) 6X4W (4) 12AT7WA (1) 5814A/12AU7

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	33.4	290
1	5.8	166
1	4.5	134
1	2.3	45

PROCUREMENT DATA

PROCURING SERVICE: USN
DESIGN COG: USN, BuShips
SPEC &/OR DWG: MIL-R-15272 (SHIPS)

RADIO RECEIVING SET AN/FRR-17(XN-1)

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
West Coast Electronics Co. Subsidiary of Litton Ind.	Los Angeles, Calif.	NObsr-63296, 29 February 1956	

Cog Service: USN FSN: Functional Class:

USA	USN	USAF

TYPE CLASS: Used by Used by

MANUFACTURER'S NAME/CODE NUMBER: Radio Corporation of America, (79089).

Radio, Receiving Set AN/FRR-18

FUNCTIONAL DESCRIPTION:

The Radio, Receiving Set AN/FRR-18 is designed as a double superheterodyne, having two stages of radio frequency amplification ahead of the first mixer and local oscillator. In addition to the local oscillator, the AN/FRR-18 has four preset crystal frequencies, to enable quick tuning to any one of four predetermined frequencies.

No field changes in effect at time of preparation (6 February 1962).

TECHNICAL CHARACTERISTICS:

TYPE OF INSTALLATION: Fixed, shore installation.
TYPE OF EMISSION: A1, A2, and FSK.
TYPE OF RECEIVER: Double superheterodyne.
TYPE OF FREQUENCY CONTROL: Crystal-controlled oscillator.
NUMBER OF BANDS: 5 bands.

AN/FRR-18 RADIO, RECEIVING SET

NUMBER OF PRESET: 4 preset frequencies.
FREQUENCY RANGE: 14 to 600 kc.
BAND ONE: 14 to 30 kc.
BAND TWO: 30 to 63 kc.
BAND THREE: 63 to 133 kc.
BAND FOUR: 133 to 283 kc.
BAND FIVE: 283 to 600 kc.
POWER FACTOR: 90% pf.
INPUT IMPEDANCE TO ANTENNA PREAMPLIFIER
LOW IMPEDANCE: 73 ohms.
HIGH IMPEDANCE: 200 ohms.
OPERATING POWER RQMT: 105, 115, 125, v ac, 50 to 60 or 400 cps, 0.85 amps, single ph.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) or (2) (as required) Headset NT49507 or equivalent; (1) or (2) (as required) Loud-speaker-Amplifier AM-215/U or equivalent; (1) Frequency Shift Converter, Audio Type CV-60/URR or equivalent; (1) Frequency Shift Converter, IF Type CV-57/URR or equivalent.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Radio, Receiving Set AN/FRR-18		8-23/32 x 17-1/4 x 18-7/16	76
1	Set of Connectors, Clamps & Cables comprising:			
1	Connector AN3106A-16S-5S			
3	Connector AN3106A-10SL-4S			
3	Connector UG-88/U			
1	Connector UG-21B/U			
3	Clamp, Cable AN3057-4			
1	Clamp, Cable AN3057-8			
1	Test Cable CG-1101/SRR			
2	Technical Manual NAVSHIPS 92286		3-1/4 x 9-7/8 x 11-1/2	

REFERENCE DATA AND LITERATURE:

NAVSHIPS 92286: Technical Manual for Radio, Receiving Set AN/FRR-18.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (4) 5636 (1) 5644 (6) 5647 (5) 5718 (2) 5719 (2) 5840 (5) 5899
(1) 5902 (2) 6X4WA

CRYSTALS: None used.

SEMI-CONDUCTORS: (1) 1N69A

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	1.6	76

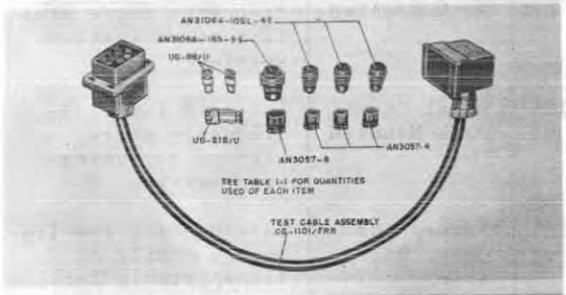
PROCUREMENT DATA

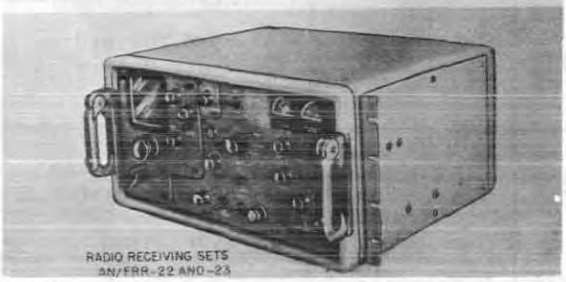
PROCURING SERVICE: USN
DESIGN COG: USN, BuShips
SPEC &/OR DWG: MIL-R-15132(SHIPS)

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Radio Corporation of America Pt/Dwg A-8823215-501	Camden, N. J.	NObsr-52168, 30 January 1951	

April 1958

RADIO RECEIVING SET AN/FRR-21, 22, 23





Radio Receiving Sets AN/FRR-21,22,23

FUNCTIONAL DESCRIPTION

The AN/FRR-21, -22, and -23 are designed for fixed station operation, with provisions, for rack mounting. These radio receivers are divided into three frequency types which cover all frequencies from 14 kc to 32 mc. The AN/FRR-21 (low frequency type) is from 14 to 600 kc, AN/FRR-22 (medium frequency type) is from 0.25 to 8 mc, and AN/FRR-23 (high frequency type) is from 2 to 32 mc. The frequency range in each receiver is divided into five bands with continuous tuning throughout each band.

The basic receiver represented by the AN/FRR-21, -22, and -23 is a double superheterodyne having two stages of RF amplification ahead of the first mixer and local oscillator. The AN/FRR-22 and -23 have accommodations for an external oscillator, which can replace the local oscillator.

No field changes in effect at time of preparation (17 March 1958).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1 or 2) Headset NT-49507, (1 or 2) Loudspeaker Amplifier AM-215/U, (1) Frequency Shift Converter, Audio CV-60/URR, (1) Frequency Shift Converter IF CV-57/URR or equivalent items.

BASIC SIMILARITIES IN RADIO RECEIVING SETS
AN/FRR, AN/MRR, AND AN/SRR

MODEL	FREQUENCY COVERED	TYPES OF EMISSION RECEIVED	POWER SOURCE	MECHANICAL DESIGN	REMARKS
AN/FRR-18	14 to 600 kc	A1, A2, F1	105, 115 or 125 volts, 50-60 or 400 cycles	Metal Case-Rack Mounted	Intended for shore station low-frequency frequency-shift service. Uses crystal local oscillator.
AN/FRR-19	2 to 32 mc	A1, A2, A3, A4, F1	105, 115 or 125 volts, 50-60 or 400 cycles	Metal Case, Rack Mounted	Intended for shore station high-frequency frequency-shift service. Uses crystal local oscillator.

AN/FRR-21, 22, 23 RADIO RECEIVING SET

April 1958

MODEL	FREQUENCY COVERED	TYPES OF EMISSION RECEIVED	POWER SOURCE	MECHANICAL DESIGN	REMARKS
AN/FRR-21	14 to 600 kc	A1, A2, A3, A4, F1	105, 115 or 125 volts, 50-60 or 400 cycles	Metal Case-Rack Mounted	Intended for low-frequency shore station communication service.
AN/FRR-22	0.25 to 8 mc	A1, A2, A3, A4, F1	105, 115 or 125 volts, 50-60 or 400 cycles	Metal Case-Rack Mounted	Intended for medium frequency shore station communication service.
AN/FRR-23	2 to 32 mc	A1, A2, A3, A4, F1	105, 115 or 125 volts, 50-60 or 400 cycles	Metal Case-Rack Mounted	Intended for high-frequency shore station communication service.
AN/MRR-1	14 to 600 kc	A1, A2, F1	105, 115 or 125 volts, 50-60 or 400 cycles	Waterproof Case, Portable	Intended for low-frequency mobile or transportable service
AN/MRR-2	0.25 to 8 mc	A1, A2, A3, A4, F1	*24 volts d-c 105, 115 or 125 volts, 50-60 or 400 cycles	Waterproof Case, Portable	Intended for medium frequency mobile or transportable service.
AN/MRR-3	2 to 32 mc	A1, A2, A3, A4, F1	*24 volts d-c 105, 115 or 125 volts, 50-60 or 400 cycles	Waterproof Case, Portable	Intended for high-frequency mobile or transportable service.
AN/SRR-11	14 to 600 kc	A1, A2, F1	105, 115 or 125 volts, 50-60 or 400 cycles	Metal Case, Table-top Mounted	Intended for low-frequency shipboard communication service.
AN/SRR-12	0.25 to 8 mc	A1, A2, A3	105, 115 or 125 volts, 50-60 or 400 cycles	Metal Case, Table-top Mounted	Intended for medium-frequency shipboard communication service.
AN/SRR-13	2 to 32 mc	A1, A2, A3, F1	105, 115 or 125 volts, 50-60 or 400 cycles	Metal Case, Table-top Mounted	Intended for high-frequency shipboard communication service.

*Separate power supply assembly supplied to accommodate 24 volts d-c source.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE AND BANDS

BAND	AN/FRR-21	AN/FRR-22	AN/FRR-23
1	14 to 30 kc	250 to 500 kc	2 to 4 mc
2	30 to 63 kc	500 to 1000 kc	4 to 8 mc
3	63 to 133 kc	1000 to 2000 kc	8 to 16 mc
4	133 to 283 kc	2000 to 4000 kc	16 to 24 mc
5	283 to 600 kc	4000 to 8000 kc	24 to 32 mc

FREQUENCY CONTROL: Continuous L-C Oscillator tuning is employed by all receivers.

RECEIVER TYPE: Superheterodyne, employing double conversion.

RECEPTION

AN/FRR-21: A1, A2, and F1.

AN/FRR-22 and AN/FRR-23: A1, A2, A3 and F1.

RECEIVER OUTPUT: 6 mw into 600 ohms (0 db); Output through headphones and indicated on OUTPUT meter.

INPUT IMPEDANCE TO ANTENNA PREAMPLIFIER: 73 ohms low impedance, 200 ohms high impedance.

FIRST INTERMEDIATE FREQUENCY

AN/FRR-21: 60 kc on bands 1 and 4; 200 kc on bands 2, 3 and 5.

AN/FRR-22: 200 kc on bands 1, 2 and 3; 1600 kc on bands 4 and 5.

AN/FRR-23: 1600 kc on all 5 bands.

SECOND INTERMEDIATE FREQUENCY: 200 kc for all three receivers.

RECEIVER SENSITIVITY: (CW with High Impedance Antenna).

14 to 18 kc: 8 microvolts minimum.
18 to 100 kc: 5 microvolts minimum.
100 to 600 kc: 3.5 microvolts minimum.
600 kc to 8 mc: 3 microvolts minimum.
8 to 24 mc: 4 microvolts.
24 to 32 mc: 5 microvolts or better.

POWER REQUIREMENTS: 105, 115 or 125 v, 50 to 60 or 400 cps, single ph, 0.85 amp, 90% pf.

MANUFACTURER'S OR CONTRACTOR'S DATA

Radio Corp of America, RCA Victor Division, Camden, N.J.
Contract NObsr 52623, dated 29 June 1951.
Contract NObsr 57135, dated 19 Dec 1951.

TUBE AND/OR CRYSTAL COMPLEMENT

AN/FRR-21	AN/FRR-22	AN/FRR-23
(4) 5636	(3) 5636	(3) 5636
(1) 5644	(1) 5644	(1) 5644
(6) 5647*	(6) 5647*	(6) 5647*
(4) 5718	(6) 5718	(7) 5718
(2) 5719	(2) 5719	(2) 5719
(2) 5840	(1) 5840	(5) 5899
(5) 5899	(5) 5899	(1) 5902
(1) 5902	(1) 5902	(2) 6X4
(2) 6X4	(2) 6X4	
Total Tubes: (27)	Total Tubes: (27)	Total Tubes: (27)

AN/FRR-21	AN/FRR-22	AN/FRR-23
(1) 1N69	(1) 1N69	(1) 1N69
(5) 1N458*	(5) 1N458*	(5) 1N458*
Total Crystals: (6)	Total Crystals: (6)	Total Crystals: (6)

*AN/FRR-21: Serial No. 107 through 220 and 335 and up; 5 type 5647's are replaced by 5 type 1N458.
*AN/FRR-22: Serial No. 236 and up, 5 type 5647's are replaced by 5 type 1N458.
*AN/FRR-23: Serial No. 343 through 492 and 643 and up, 5 type 5647's are replaced by 5 type 1N458.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92211: Technical Manual for Radio Receiving Sets AN/FRR-21, AN/FRR-22, AN/FRR-23.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

SHIPPING DATA

NUMBER OF BOXES			CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
AN/FRR-						
21	22	23				
1	1	1	Radio Receiving Set	4.9	13 X 24 X 30-1/4	130

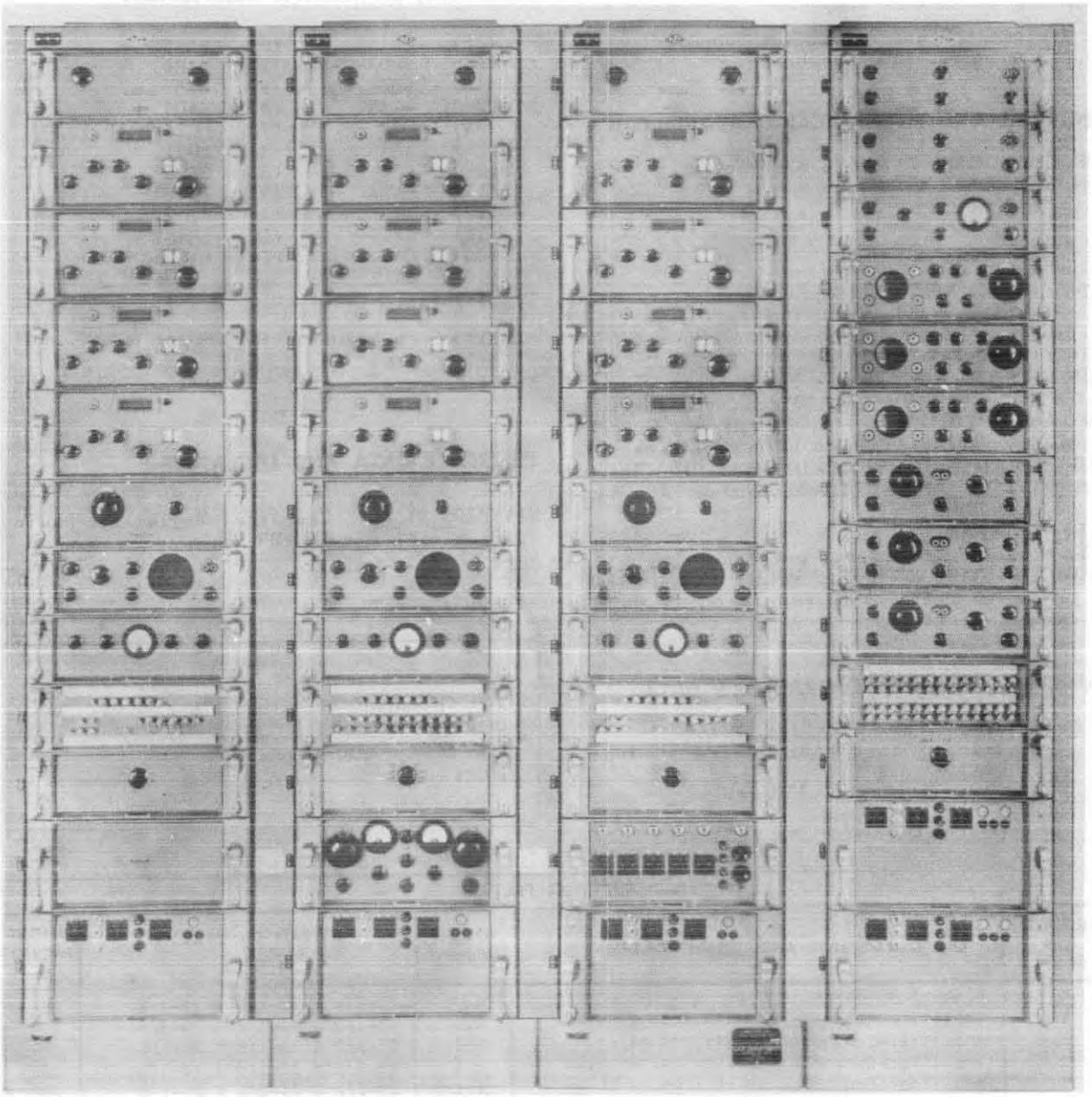
AN/FRR-21, 22, 23 RADIO RECEIVING SET

April 1958

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT			NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
AN/FRR-					
21	22	23			
1	1	1	Radio Receiving Set	8-3/4 X 17-1/2 X 18-1/2	75
1	1	1	Set of Connectors, Cables, and Clamps		
2	2	2	Technical Manuals NAVSHIPS 92211		

RADIO RECEIVING SET



Radio Receiving Set AN/FRR-24

FUNCTIONAL DESCRIPTION

The AN/FRR-24 is a double-conversion superheterodyne type diversity receiver contained in four rack cabinets. The complete equipment consists of a group of three radio receivers together with switching-combining circuits necessary to receive the following type of signals in single channel operation, and in space, or frequency dual, or triple diversity operation:

Double-side band radio telephone.
On-off keyed radio-telegraph.
Frequency-shift keyed telegraph.

No field changes in effect at time of preparation (13 June 1956).

RADIO RECEIVING SET

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) 70 ohm Antenna, (1) Headphones.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 2.0 to 32.0 mc.
TUNING BANDS: 4.
2 to 4 mc.
4 to 8 mc.
8 to 16 mc.
16 to 32 mc.
TYPE OF FREQUENCY CONTROL: Manual tuned with tuneable oscillator or Crystal-Controlled oscillator.
TYPE OF EMISSION: A1, A2, A3, F1, F4.
TYPE OF RECEIVER: Double Superheterodyne.
ANTENNA INPUT IMPEDANCE: 70 ohms, unbalanced.
FREQUENCY STABILITY: 0.002% per deg C frequency variation, 6 db gain variation.
INTERMEDIATE FREQUENCY REJECTION: 100 db.
SENSITIVITY: A2, A3, 2 microvolts; A1, A4, F1 3 microvolts.
GAIN VARIATION: 6 db.
KEYING SPEED: 500 words per minute.
CHARACTERISTIC OF POWER SUPPLIED PROVIDED FOR OPERATION: 105, 115, and 125 v; 50 to 60 cycles; single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

National Co., Inc., Malden, Mass.
Contract NObsr-39402, dated 30 June 1947.
Approximate Cost: $60,260.00.

TUBE AND/OR CRYSTAL COMPLEMENT

(18)	6BA6	(3)	6AK5
(66)	9003	(2)	6AH6
(18)	6BE6	(9)	6J6
(34)	12AX7	(3)	6AQ5
(34)	OB2	(7)	OC3(VR-105)
(28)	6AN5	(3)	2D21
(29)	6C4	(3)	2BP1
(13)	6AU6	(9)	12AU7
(22)	6AG5	(2)	12AT7
(32)	6AK6	(15)	5R4GY
(20)	OA2	(14)	6AS7/G
(36)	6AL5		

Total Tubes: (420)

(17)	CR-18/U	(1)	CR-25/U
(1)	21NA		

Total Crystals: (19)

REFERENCE DATA AND LITERATURE

NAVSHIPS 91580: Technical Manual for Radio Receiving Set AN/FRR-24.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
3	Control Panel SB-142/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	83
3	Amplifier-Converter AM-450/FRR-24	4.1	13-1/2 X 21-1/8 X 24-3/8	108
3	Amplifier-Converter AM-451/FRR-24	4.1	13-1/2 X 21-1/8 X 24-3/8	108
3	Amplifier-Converter AM-452/FRR-24	4.1	13-1/2 X 21-1/8 X 24-3/8	108
3	Amplifier-Converter AM-453/FRR-24	4.1	13-1/2 X 21-1/8 X 24-3/8	108
3	Frequency-Converter CV-126/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	83
3	Amplifier-Detector AM-439/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	86
3	R. F. Amplifier AM-454/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	82
1	Patch Panel SB-138/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	71
1	Patch Panel SB-140/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	71
1	Patch Panel SB-169/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	71
1	Patch Panel SB-143/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	71
3	Filter Assembly F-99/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	95
1	Tool Box	4.1	13-1/2 X 21-1/8 X 24-3/8	91
1	Oscillator Assembly O-131/FRR-24	4.1	13-1/2 X 21-1/8 X 24-3/8	92
1	Power Distribution Panel SB-141/FRR-24	4.1	13-1/2 X 21-1/8 X 24-3/8	78
3	Power Supply PP-590/FRR-24	4.45	15 X 21-1/8 X 24-3/8	146

RADIO RECEIVING SET AN/FRR-24

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
2	Amplifier-Detector AM-440/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	81
1	Amplifier-Detector AM-438/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	86
3	Frequency Shift Converter CV-127/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	85
3	Keyer KY-62/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	89
1	Comparator-Keyer CM-32/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	83
1	Power Supply PP-648/FRR-24	4.45	15 X 21-1/8 X 24-3/8	146
1	Power Supply PP-649/FRR-24	4.45	15 X 21-1/8 X 24-3/8	146
1	Set of Eight Test Cables	4.55	13-7/8 X 16-7/8 X 33-5/8	90
1	Cabinet CY-860/FRR-24 Mounting Hardware One Single Blower Two Technical Manuals Two Operator's Handbooks Two Maintenance Handbooks One Spare Parts Catalog	24.4	19 X 25-1/4 X 87-1/2	465
1	Cabinet CY-860/FRR-24 One Single Blower Five Trim Strips	24.4	19 X 25-1/4 X 87-1/2	465
1	Cabinet CY-860/FRR-24 One Single Blower Eleven Interconnecting Cables Forty-Five Patch Cords Terminal Box		19 X 25-1/4 X 87-1/2	495
1	Cabinet CY-860/FRR-24 One Double Blower Eight Handles Interconnecting Cable Assembly Sixteen Panel Screws Four Trim Panels	24.4	19 X 25-1/4 X 87-1/2	485
1	Equipment Repair Parts	4.55	13-7/8 X 16-7/8 X 33-5/8	145

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
3	Control Panel SB-142/FRR-24	5-7/32 X 15-7/16 X 19	33
3	Amplifier Converter AM-450/FRR-24	6-31/32 X 16-15/16 X 19	58
3	Amplifier Converter AM-451/FRR-24	6-31/32 X 16-15/16 X 19	58
3	Amplifier Converter AM-452/FRR-24	6-31/32 X 16-15/16 X 19	58
3	Amplifier Converter AM-453/FRR-24	6-31/32 X 16-15/16 X 19	58
3	Frequency Converter CV-126/FRR-24	5-7/32 X 16-15/16 X 19	33
3	Amplifier-Detector AM-439/FRR-24	5-7/32 X 16-15/16 X 19	36
3	R. F. Amplifier AM-454/FRR-24	5-7/32 X 16-15/16 X 19	32
1	Patch Panel SB-138/FRR-24	5-7/32 X 16-15/16 X 19	21
1	Patch Panel SB-140/FRR-24	5-7/32 X 16-15/16 X 19	21
1	Patch Panel SB-143/FRR-24	5-7/32 X 16-15/16 X 19	21
1	Patch Panel SB-169/FRR-24	5-7/32 X 16-15/16 X 19	21
3	Filter Assembly F-99/FRR-24	5-7/32 X 16-15/16 X 19	45

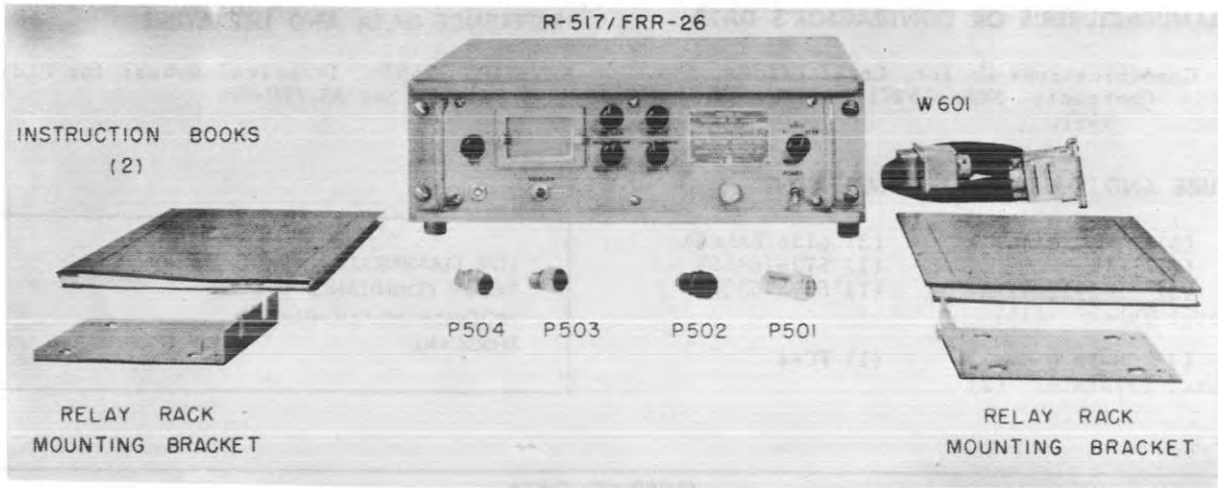
AN/FRR-24 RADIO RECEIVING SET

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Tool Box	6-31/32 X 16-15/16 X 19	41
1	Oscillator Assembly O-131/FRR-24	6-31/32 X 16-15/16 X 19	42
1	Power Distribution Panel SB-141/FRR-24	6-31/32 X 15-5/16 X 19	28
3	Power Supply PP-590/FRR-24	8-23/32 X 15-5/16 X 19	96
2	Amplifier-Detector AM-440/FRR-24	5-7/32 X 16-15/16 X 19	31
1	Amplifier-Detector AM-438/FRR-24	5-7/32 X 16-15/16 X 19	36
3	Frequency Shift Converter CV-127/FRR-24	5-7/32 X 16-15/16 X 19	35
3	Keyer KY-62/FRR-24	5-7/32 X 16-15/16 X 19	39
1	Comparator-Keyer CM-32/FRR-24	5-7/32 X 16-15/16 X 19	33
1	Power Supply PP-648/FRR-24	8-23/32 X 15-5/16 X 19	96
1	Power Supply PP-649/FRR-24	8-23/32 X 15-5/16 X 19	96
4	Cabinet CY-860/FRR-24	14-3/4 X 20-7/8 X 84	215

April 1958

RADIO RECEIVING SET AN/FRR-26



Radio Receiving Set AN/FRR-26

FUNCTIONAL DESCRIPTION

The AN/FRR-26 is designed to provide means for reception of telegraphy, without the use of modulating audio frequencies in the A1 and A1 BROAD positions; telegraphy by the keying of modulating audio frequencies and telephony in the A2 and A3 position of operation over a 2 to 8 mc frequency range. It is designed for use in airtraffic control towers at Naval Air Stations. The receiver can also be used at Naval Shore Stations or advanced bases on point to point communication circuits. It is also designed for both local and limited remote operation and is capable of continuous operation over long periods of time.

No field changes in effect at time of preparation (24 February 1958).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) Antenna, (as required) Antenna Transmission Line, (1 ea channel) Crystal Unit CR-18/U, (as required) Power Cable, (as required) Audio Output Cable, (1) Headphone NT-49016, (1) Loudspeaker, (1) Remote Control Unit.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE
- BAND 1: 2 to 4 mc.
- BAND 2: 4 to 6 mc.
- BAND 3: 6 to 8 mc.

NUMBER PRESET FREQUENCIES: 1 as determined by CR-18/U.

TYPE FREQUENCY CONTROL: Crystal-controlled oscillators.

TYPE MODULATION: Amplitude modulation on A2-A3 reception.

TYPE RECEIVER: Double conversion superheterodyne.

INTERMEDIATE FREQUENCIES: 455 kc first IF, 120 kc second IF.

RECEIVER OUTPUT
- AUDIO CHANNEL: At least 1.5 W into a 200 to 600 ohms load, with less than 7% distortion.
- PHONE JACK: At least 15 mw into a 600 ohm load, with less than 7% distortion.

TYPE RECEPTION: A1, A2, and A3.

FREQUENCY STABILITY VARIATION
- LINE VOLTAGE: ±10% of normal does not vary resonant frequency by more than 100 cycles.
- POWER LINE FREQUENCY: 50 to 60 cps.
- AMBIENT TEMPERATURE: -15 deg C to + 50 deg C does not vary resonant frequency by more than 200 cycles.

SQUELCH CIRCUIT
- EFFECTIVE SILENCING RANGE: 1 to over 100 uv.
- TIME CONSTANT: Under 0.2 sec.

IMPEDANCE
- ANTENNA INPUT: 72 ohms, unbalanced.
- AUDIO CHANNEL OUTPUTS
  - AUDIO RECEPTACLES (J-505): Load can be within a range of 200 to 600 ohms with 2 db max variation of audio output.
  - HEAD-TELEPHONE JACK (J-504): Used with 600 ohm head-telephone.

POWER SOURCE REQUIRED: 105 v, 115 v, 125 v ±10%, 50 to 60 cps, 0.57 amp at 115 v, 62 W at 115 v rms.

Radio-Receivers

AN/FRR-26 RADIO RECEIVING SET

April 1958

MANUFACTURER'S OR CONTRACTOR'S DATA

Communications Co Inc, Coral Gables, Fla.
Contract: NObsr-52715, dated 29 June 1951.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92557: Technical Manual for Radio Receiving Set AN/FRR-26.

TUBE AND/OR CRYSTAL COMPLEMENT

(5) 5749/6BA6W
(2) 6AV6
(3) 6201/12AT7WA
(3) 6136/6AU6WA
(1) 5726/6AL5W
(1) 6005/6AQ5W
Total Tubes: (15)

(1) CR-18/U
(1) FC-4
Total Crystals: (2)

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Radio Receiving Set AN/FRR-26	4.23	12 X 23 X 26-1/2	88.5

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiver R-517/FRR-26	6 X 17 X 18-3/4	40
4	Plugs	1 X 3-1/2 X 3-1/2	0.312
1	Pair Relay Mounting Brackets	1 X 5-1/4 X 6	0.562
1	Test Cable (W-601)	3-1/2 X 3-1/2 X 12	1.125
2	Technical Manuals NAVSHIPS 92557	1/2 X 8-3/4 X 11-1/2	2

RADIO RECEIVING SET AN/FRR-27

Radio Receiving Set AN/FRR-27

FUNCTIONAL DESCRIPTION

The AN/FRR-27 is a VHF, double conversion superheterodyne receiver designed for single channel, crystal controlled operation over a frequency range of 100 to 156 mc, and provides means for reception of amplitude modulated voice and tone transmission. It is designed for use in air traffic control towers at Naval Air Stations and can be used at Naval Shore Stations or advanced bases on point to point communications circuits.

No field changes in effect at time of preparation on (18 May 1956).

RELATION TO OTHER EQUIPMENT

The AN/FRR-27 is part of a series of fixed tuned crystal controlled radio receivers similar in design and construction with different frequency ranges; AN/FRR-26 (2 to 8 mc); AN/FRR-30 (200 to 560 kc); AN/FRR-31 (8 to 32 mc).

Equipment Required but not Supplied: (1) Antenna, (1) Crystal Unit Type CR-23/U, (1) Headphone Navy Type No. 49016, (1) Loudspeaker, Cable as Required.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE
  RATED: 100 to 156 mc in 1 band.
  MAXIMUM: 98 to 159 mc.
RECEPTION: A2 and A3.
FREQUENCY CONTROL: Crystal controlled oscillator.
RECEIVER TYPE: Double conversion superheterodyne.
INTERMEDIATE FREQUENCIES: 23 mc and 3 mc.
POWER OUTPUT
  AUDIO CHANNEL: 1.5 W min into 200 to 600 ohm load, with less than 7% distortion.
  PHONE JACK: 15 mw min into 600 ohm load.
FREQUENCY STABILITY (RECEIVER): Variation in line voltage of +10% of normal does not vary resonant frequency by more than 0.002%. Variation in ambient temp between −20 deg C to +50 deg C does not vary resonant frequency by more than 0.01% from 25 deg C.
SQUELCH CIRCUIT
  EFFECTIVE SILENCING RANGE: 1 to 100 uv.
  TIME CONSTANT: 0.2 sec max.
  AUDIO OUTPUT REDUCTION: Over 40 db.
POWER REQUIREMENTS: 105/115/125 v, 50 to 60 cps, 1 ph, 0.50 amp, 54 W nominal.
ANTENNA INPUT: 50 ohm, unbalanced.

MANUFACTURER'S OR CONTRACTOR'S DATA

Communication Co. Inc., Coral Gables, Fla.
Contract NObsr 52715, dated 29 June 1951.
Approximate Cost: $390.60.

TUBE COMPLEMENT

(2) 5654
(3) 5749
(2) 6AU6WA
(2) 6AV6
(3) 6201/12AT7WA
(1) 6005/6AQ5W
Total Tubes: (13)
(1) CR-23/U
Total Crystals: (1)

REFERENCE DATA AND LITERATURE

NAVSHIPS 92021: Technical Manual for Radio Receiving Set AN/FRR-27.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE MIL-R-15645B(SHIPS)
STOCK NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVER-ALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Radio Receiving Set AN/FRR-27	4.2	12 X 23 X 26-1/2	84

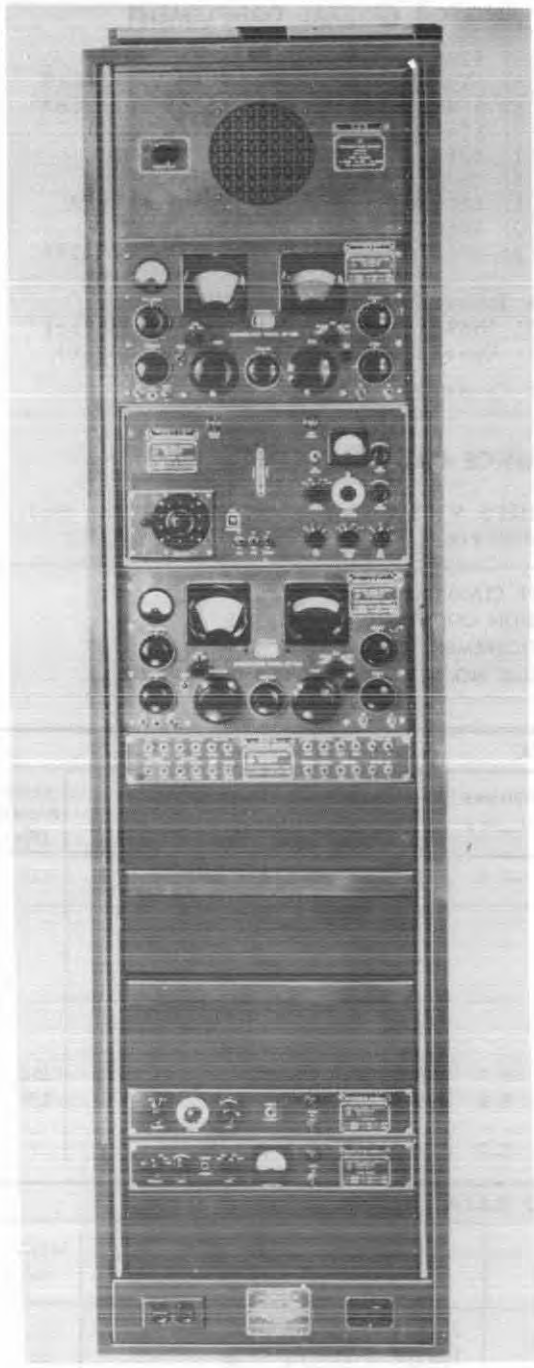
AN/FRR-27 RADIO RECEIVING SET

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVER-ALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiver R-518/FRR-27 including mounting legs	6 X 17 X 18-3/4	35.5
2	Relay Rack Mounting Bracket	1 X 5-1/4 X 6	0.6
1	Test Cable W601	3-1/2 X 3-1/2 X 12	1.33
1	Set of 3 Plugs for External Cords	1 X 3-1/2 X 3-1/2	0.2
2	Instruction Book NAVSHIPS 92021	1/2 X 8-3/4 X 11-1/2	2.0

April 1958

RADIO RECEIVING SET AN/FRR-28



Radio Receiving Set AN/FRR-28

FUNCTIONAL DESCRIPTION

The AN/FRR-28 is a multipurpose receiving equipment. It is specifically designed for dual "space diversity" reception of high speed radio teleprinter, telegraph, or telephone signals, but may be used for two single receivers or for dual "frequency diversity" reception of these signals. The receiving set is capable of receiving AM radiophone signals, amplitude modulated CW signals, or unmodulated CW signals, and when the receiving set is used in conjunction with a frequency-shift converter-comparator group it is possible to receive "frequency-shift signals."

The receiving set may be operated for local use of the received signal in conjunction with other equipment such as teleprinter, or for remote service, such as part of a relay link.

All units are mounted in relay rack Cabinet CY-597A/G by means of front panel screws. Provision is also made for mounting a converter-comparator group such as Frequency Shift Converter-Comparator Group AN/URA-6, within the rack. Other converters with suitable characteristics may be used.

No field changes in effect at time of preparation (18 October 1957).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (2) Antennas having 72 ohm coaxial cable leadins (RG-12/U) installed for space-diversity reception, (1) headphone set (8000 ohms) for monitoring purposes, (3) high frequency crystals (CR-18/U), (2) low frequency crystals (CR-18/U). (Crystals optional, required only when crystal controlled frequencies are desired), (1) Converter-Comparator Group AN/URA-6 or similar group necessary for reception of frequency-shift signals.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 540 kc to 54 mc.
NUMBER OF BANDS
  RADIO RECEIVER R-450/FRR: 6.
  RADIO FREQUENCY OSCILLATOR O-165/UR: 4.
NUMBER OF PRE-SET FREQUENCIES
  RADIO FREQUENCY OSCILLATOR O-165/UR: Provision for 3 HF Oscillator crystals, provision for 2 BFO crystals.
FREQUENCY CONTROL
  RADIO RECEIVER R-450/FRR: Int variable osc or ext osc.
  RF OSCILLATOR O-165/UR: Temperature-controlled variable osc or choice of 3 crystals.
TYPE OF RECEIVER: Single superheterodyne from 0.5 to 7.4 mc, double superheterodyne from 7.4 to 54 mc.
IF: 455 kc for input sig below 7.4 mc, 3.955 mc and 455 kc for input sig above 7.4 mc.

AN/FRR-28 RADIO RECEIVING SET

April 1958

IMPEDANCES
RECEIVER INPUT: 72 ohms.
RECEIVER OUTPUT: 600 ohms for loudspeaker or ext lines, 8000 ohms at front panel headphone jack.
KEYER OUTPUT: 600 ohms.
AMPLIFIER-DETECTOR INPUT: 1000 ohms.
AMPLIFIER-DETECTOR OUTPUT: 4000 ohms.
LOUDSPEAKER INPUT: 500 ohms.
AUDIO POWER OUTPUT: 2.5 W into 600 ohms, 15 mw into 8000 ohms.
TYPE OF RECEPTION: A1, A2, A3 and freq-shift Keying (FSK) (when suitable converter is used).
KEYER
INPUT: Pos polar Keying, neg polar Keying, Keyed tone, polar relay Keying,
OUTPUT TONE: 425, 765, 1105, 1445, 1785, or 2125 cps into 600 ohms.
POWER SOURCE REQUIRED: 115 or 230 v, 50 to 60 cps, 570 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Northern Radio Co, Inc, New York, N.Y.
Contract NObsr-52132 dated 19 December 1950.

TUBE AND/OR CRYSTAL COMPLEMENT

(6) 12AU7	(2) 5R4WGB
(3) 5Y3WGTB	(6) 5726/6AL5W
(14) 5749/6BA6W	(5) 5750/6BE6W
(2) 6C4WA	(1) 6H6
(1) 6J5	(4) 6J6WA
(1) 6SA7	(2) 6SJ7
(1) 6SL7WGT	(1) 6SN7WGTA
(2) 6V6GTY	(2) 6V6Y
(4) 6005/6AQ5W	(4) 6626/OA2WA

Total Tubes: (61)

(2) 1N69	(1) Quartz(3500kc)
(1) Quartz(455kc)	(1) Quartz(100kc)

Total Crystals: (5)

REFERENCE DATA AND LITERATURE

NAVSHIPS 91582, Technical Manual for Radio Receiving Set AN/FRR-28.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

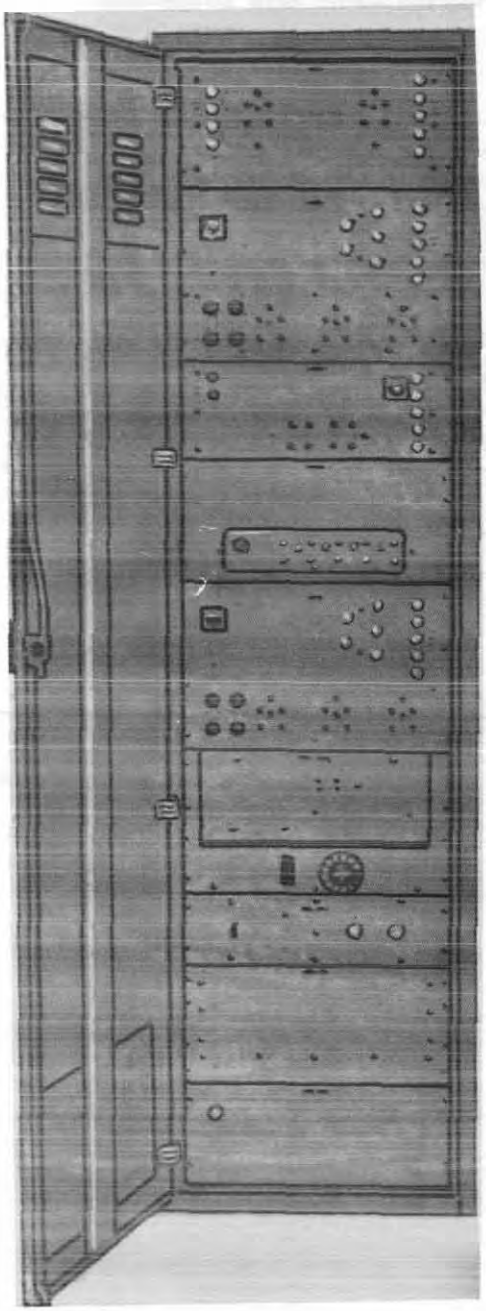
SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Relay Rack Cabinet CY-597A/G c/o (1) Loudspeaker LS-187/UR (1) Communication Patching Panel S13-224/UR (3) Blank panels (2) Fuses (6) Patch Cords Miscellaneous Hardware	58.6	31-3/4 X 32-1/4 X 96	515
1	RF Oscillator w/cable O-165/UR	5.7	15 X 23 X 28-1/2	100
2	Radio Receivers R-450/FRR-28	5.4	16-1/2 X 22-1/2 X 27	176
1	Keyer KY-79/UR w/cable and Amplifier-Detector AM-615/UR w/cable	3.7	13-1/2 X 19-1/2 X 24	73

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Relay Rack Cabinet CY-597A/G	22-3/8 X 24 X 87-1/2	275
2	Radio Receiver R-450/FRR-28	10-1/2 X 16-1/2 X 19	66
1	R.F. Oscillator O-165/UR incl cable	10-1/2 X 14 X 19	54
1	Communication Patching Panel incl 6 Patch Cords	3-1/2 X 6 X 19	7
1	Amplifier-Detector AM-615/UR incl cable	3-1/2 X 14 X 19	15
1	Keyer KY-79/UR w/cable	3-1/2 X 13-1/2 X 19	22
12	Cables		
1	Magnetic Loudspeaker LS-187/UR	3-13/16 X 10-1/2 X 19	12

DIVERSITY RECEIVING EQUIPMENT



Diversity Receiving Equipment AN/FRR-3, -3A

FUNCTIONAL DESCRIPTION

The AN/FRR-3 and AN/FRR-3A are normally associated with Radio Teletype Terminal Equipments AN/FGC-1 Series, but any audio type converter-comparator such as Frequency Shift Converter-Comparator Group AN/URA-8 may be employed. These equipments are crystal-controlled fixed station sets designed for use in a point-to point radioteletype system of communications to overcome the effects of fading. Both models are provided with a local and a remote telephone dial which may be used to turn the equipment on or off, select any of five pre-tuned frequencies, and any combination of four antennas.

The main difference between the AN/FRR-3 and the AN/FRR-3A exists in the changes made in the oscillator circuit. Also, the AN/FRR-3A contains a triode cathode follower in the antenna circuits.

No field changes in effect at time of preparation (25 March 1958).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 2.4 to 23.0 mc in five bands (may be extended).
RECEIVER TYPE: Superheterodyne.
RECEPTION: A2, A3, FSK.
SENSITIVITY: 3 uv or less for 50 mw output (any frequency with carrier modulated 30% at 400 cps).
IMAGE RATIO
AN/FRR-3: Better than 50 db at 23 mc.
AN/FRR-3A: Better than 60 db at any frequency.
SIGNAL-TO-NOISE RATIO: Better than 10 db at any frequency.
SELECTIVITY: 5 kc bandwidth at 6 db down.
AVC REGULATION: Within 3 db for a signal change of 10000 to 1.
METHOD OF CALIBRATION: Crystal controlled.
POWER SOURCE REQUIRED: 100 to 130 v or 200 to 260 v, 50 to 60 cps, single ph, 400 W.
ANTENNA: Rhombic or similar type.

MANUFACTURER'S OR CONTRACTOR'S DATA

Press Wireless.
Proc. Or. No. 18278-Phila-43(PR-6287).
Approximate Cost: $3000.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

AN/FRR-3

(2) OD3W	(3) 6H6
(2) 6SN7WGTA	(2) 5V4G
(2) 6J5	(5) 6V6GTY
(5) 6AC7WA	(1) 6SA7Y
(2) 6E5	(4) 6SK7WA

Total Tubes: (28)

AN/FRR-3,-3A DIVERSITY RECEIVING EQUIPMENT

AN/FRR-3A

(2) OD3W	(3) 6H6
(2) 6SN7WGTA	(2) 5U4G
(4) 6J5	(5) 6V6GTY
(5) 6AC7WA	(1) 6SA7Y
(2) 6E5	(4) 6SK7WA

Total Tubes: (30)

Crystal Data not Available.

REFERENCE DATA AND LITERATURE

TM 11-872: Technical Manual for Diversity Receiving Equipments AN/FRR-3 and AN/FRR-3A

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.

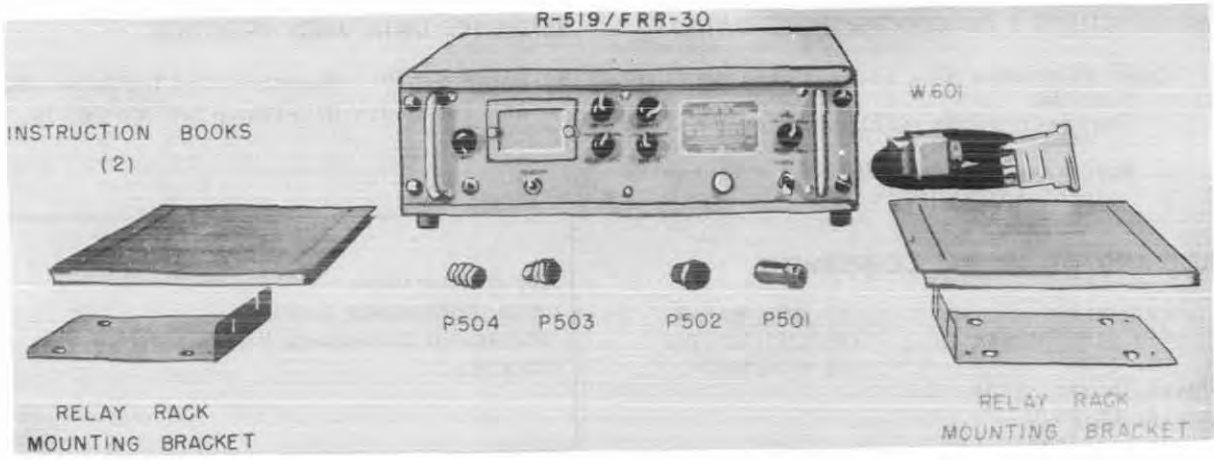
SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Diversity Receiving Equipment AN/FRR-3 or AN/FRR-3A (Cabinet)	37-10/12		800
1	Multiplier, Oscillator and antenna chassis	7-10/12		183
1	Receiver A and Receiver B	7-2/12		163

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Antenna Unit	8-3/4 X 13-5/8 X 18-3/4	35
1	Receiver B	12-1/4 X 13-3/4 X 18-3/4	46
1	Multiplier Unit	7 X 13-3/4 X 18-3/4	29.5
1	Oscillator Unit	8-3/4 X 10-5/8 X 18-3/4	35
1	Receiver A	12-1/4 X 13-3/4 X 18-3/4	46
1	Remote Control Unit	8 X 10-1/2 X 18-3/4	24.25
1	Power Control Unit	5-1/4 X 7-1/2 X 18-3/4	15.25
1	Power Filter Unit	8-3/4 X 11-1/4 X 18-3/4	62.5
1	Power Supply Unit	7-1/2 X 13-5/8 X 18-3/4	61.75
1	Cabinet	17 X 22-1/2 X 85	

RADIO RECEIVING SET AN/FRR-30



Radio Receiving Set AN/FRR-30

FUNCTIONAL DESCRIPTION

The AN/FRR-30 is designed to provide means for reception of telegraphy, without the use of modulating audio frequencies in the A1 and AI Broad positions; telegraphy by the keying of modulating audio frequencies and telephony in the A2, A3 position of operation over a 200 to 560 kc frequency range. It is designed for use in air traffic control towers at Naval Air Stations. The receiver can also be used at Naval Shore Stations or advanced bases on point to point communication circuits. It can be used for both local and limited remote operation and is capable of continuous operation over long periods of time.

No field changes in effect at time of preparation (28 June 1956).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) Antenna, (1) Headphones NT-49016, (1) Loudspeaker, (1) Remote Control Unit; Crystal Unit CR-25/0, Antenna Transmission Line, Power Cable, and Audio Output Cable as required.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 200 to 560 kc.
TUNING BANDS: Two bands, 200 to 380 kc and 380 to 560 kc.
NUMBER OF PRESET FREQUENCIES: One as determined by the crystal of the channel determining oscillator.
FREQUENCY CONTROL: Crystal-controlled oscillator.
MODULATION: Amplitude on A2, A3 reception
RECEIVER TYPE: Single conversion.
INTERMEDIATE FREQUENCY: 75 kc.
RECEIVER OUTPUT
  AUDIO CHANNEL: 1.5W minimum into a 200 to 600 ohm load, with less than 7% distortion.
PHONE JACK: 15 mw minimum into a 600 ohm load with less than 7% distortion.
RECEPTION: A1, A2, and A3.
FREQUENCY STABILITY DATA
  VARIATION IN LINE VOLTAGE: +10% of normal does not vary the resonant frequency by more than 100 cps (approx).
  VARIATION IN POWER LINE FREQUENCY: 50 to 60 cps does not vary resonant frequency by more than 100 cps (approx).
  VARIATION IN AMBIENT TEMPERATURE: -15°C to +50°C does not vary the resonant frequency by more than 200 cps (approx).
SQUELCH CIRCUIT:
  EFFECTIVE SILENCING RANGE: 1 to 100 uv (approx).
TIME CONSTANT: Under 0.2 sec.
  IMPEDANCES
    ANTENNA INPUT: 72 ohms unbalanced.
    AUDIO CHANNEL OUTPUTS
    AUDIO RECEPTACLE: Load can be within a range of 200 to 600 ohms with less than 2 db variation of audio output.
    HEAD-TELEPHONE JACK: Can be used with a 600 ohm headtelephone.
POWER REQUIREMENTS: 105, 115 or 125 v, 50 to 60 cps, 0.57 amp at 115 v, 62W at 115 v RMS.
ANTENNA DATA: An antenna having a 72 ohm terminal impedance is required.

AN/FRR-30 RADIO RECEIVING SET

December 1956

MANUFACTURER'S OR CONTRACTOR'S DATA

Communications Co. Inc., Coral Gables, Florida.
Contract NObsr-52715, dated 29 June 1951.
Approximate Cost: $630.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(4) 5749
(1) 6136/6AU6WA
(2) 6AV6
Total Tubes: (13)
(1) 5726/6AL5W
(4) 6201/12AT7WA
(1) 6005/6AQ5W
(1) CR-25/U
Total Crystals: (1)

REFERENCE DATA AND LITERATURE

NAVSHIPS 92679: Manuscript of Technical Manual for Radio Receiving Set AN/FRR-30.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE MIL-R-15645A
STOCK NO.

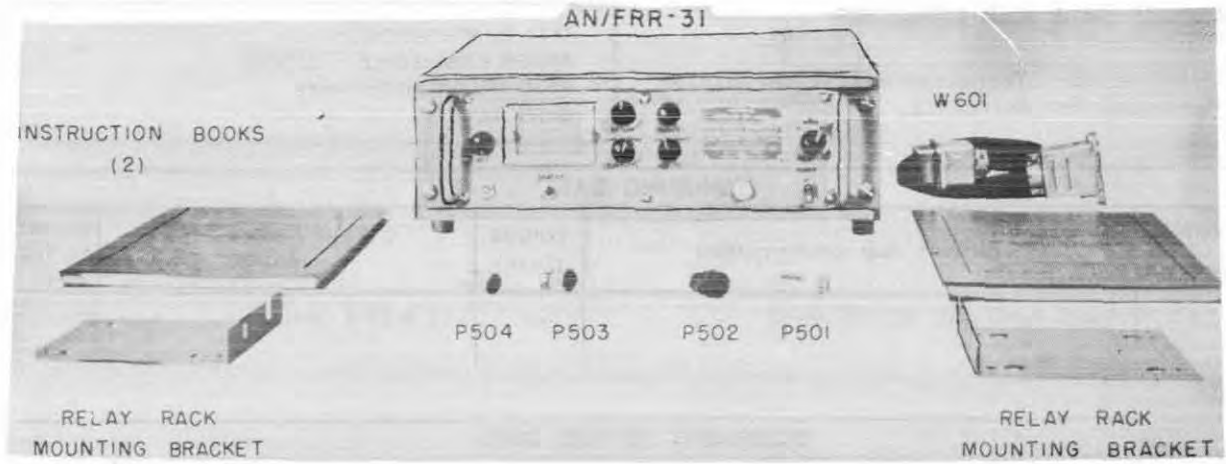
SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Radio Receiving Set AN/FRR-30	4.25	12 x 23 x 26-1/2	88.5

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiver R-519/FRR-30 (including legs)	6 x 17 x 18-3/4	40
1	Set of Plugs (4)	1 x 3-1/2 x 3/1/2	.31
1	Pair of Relay Rack Mounting Brackets	1 x 5-1/4 x 6	.56
1	Test Cable	3-1/2 x 3-1/2 x 12	1.13
2	Technical Manuals NAVSHIPS 92679		

RADIO RECEIVING SET AN/FRR-31



Radio Receiving Set AN/FRR-31

FUNCTIONAL DESCRIPTION

The AN/FRR-31 is designed to provide means for reception of telegraphy, without the use of modulating audio frequencies in the A1 and A1 BROAD position; telegraphy by the keying of modulating audio frequencies and telephony in the A2-A3 position of operation over a 8 to 32 mc range. It is designed for use in air traffic control towers at Naval Air Stations. The receiver can also be used at Naval Shore Stations or advanced basis on point to point communication circuits. The equipment is designed for both local and limited remote operation and is capable of continuous operation over long periods of time.

No field changes in effect at time of preparation (9 October 1956).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) Antenna, (as required) Antenna Transmission Line, (1 ea channel) Crystal Unit CR-18/U, (as required) Power Cable, (as required) Audio Output Cable, (1) Headphone NT-49016, (1) Loudspeaker or other Audio Device, (1) Remote Control Unit.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 8 to 32 mc, 3 bands.
PRESET FREQUENCIES: 1.
TYPE CONTROL: Crystal-controlled oscillator.
TYPE MODULATION: Amplitude Modulated on A2-A3.
IF: 2020 kc first IF, and 120 kc second IF.
RECEIVER OUTPUT
  AUDIO CHANNEL: At least 1.5 W into 200 to 600 ohm load.
  PHONE JACK: At least 15 mw in to 600 ohm load.
TYPE RECEPTION: A1, A2 and A3.
SQUELCH CIRCUIT
  EFFECTIVE SILENCING RANGE: 1 to over 100 uv.
  TIME CONSTANT: Under 0.2 sec.
IMPEDANCE
  ANTENNA INPUT: 72 ohms unbalanced.
  AUDIO CHANNEL OUTPUT
    AUDIO RECEPTACLE: 200 to 600 ohms with less than 2 db variation.
    HEADPHONE: 600 ohms.
OPERATING POWER: 105, 115 or 125 v, 50 to 60 cps, 62 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Communications Co Inc, Coral Gables, Florida.
Contract: NObsr 52715, dated 29 June 1951.
Approximate Cost: $3850.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 5654/6AK5W
(3) 6136/6AU6WA
(1) 5726/6AL5W
(1) 6005/6AQ5W
(4) 5749/6BA6W
(2) 6AV6
(3) 6201/2AT7WA

Total Tubes: (15)

Radio-Receivers

AN/FRR-31 RADIO RECEIVING SET

REFERENCE DATA AND LITERATURE

NAVSHIPS 92835: Technical Manual for Radio Receiving Set AN/FRR-31.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

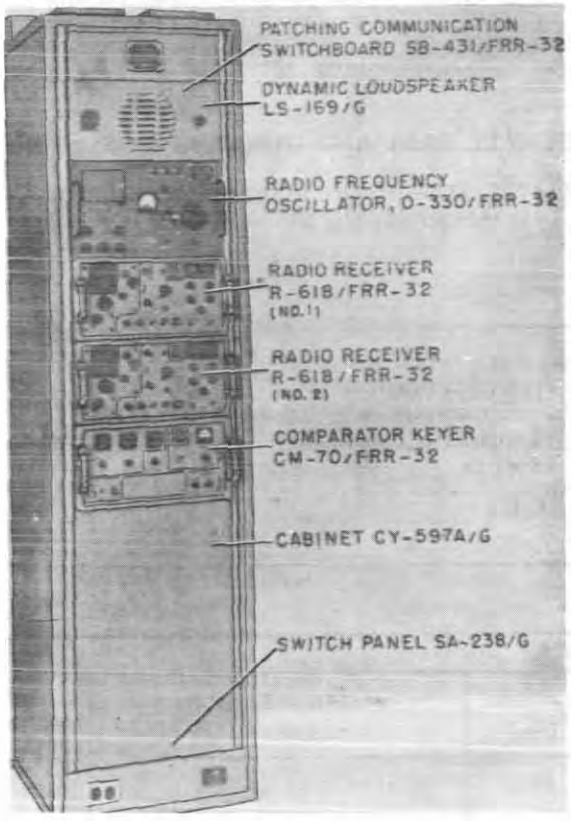
SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Radio Receiving Set AN/FRR-31	4.3	12 X 23 X 26-1/2	88.5

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiver R-777/FRR-31	6 X 17 X 18-3/4	40
1	Set Plugs	1 X 3-1/2 X 3-1/2	
1	Pair Relay Rack Mounting Brackets	1 X 5-1/4 X 6	
1	Test Cable	3-1/2 X 3-1/2 X 12	1
2	Technical Manual NAVSHIPS 92835	1/2 X 8-3/4 X 11-1/2	2

RADIO RECEIVING SET AN/FRR-32



Radio Receiving Set AN/FRR-32

FUNCTIONAL DESCRIPTION

The AN/FRR-32 is designed for fixed station operation. It includes two radio receivers which may be used either singly, or in diversity to eliminate the effect of fading. Fading in this case, denotes the variations in signal strength over periods of several seconds down to only a few milliseconds or less.

The two component receivers used in Radio Receiving Set AN/FRR-32 are complete self-contained units and are capable of high quality reception when used individually. They are designed to give high standards of sensitivity, selectivity, stability, and reliability. They are capable of receiving A1, A2, A3 and Frequency Shift F1 emission over a frequency range of 2 to 32 megacycles. Together with the Radio Frequency Oscillator, the Comparator Keyer and the Dynamic Loudspeaker they form a diversity system of reception which eliminates the possibility of fading and gives decidely better results than can be obtained with a single receiver.

The use of an external oscillator, for both receivers during diversity reception produces greater stability. In addition, any variation in oscillator conditions will effect both receivers in like manner. Hence tracking in both receivers should be the same.

No field changes in effect at time of preparation (19 March 1958).

RELATION TO OTHER EQUIPMENT

Similar to AN/FRR-19, AN/FRR-23, AN/MRR-3, AN/SRR-13 except for changes in mechanical design, intended application and power source required.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQ RANGE: 2 to 32 mc.
TUNING BANDS AND RANGE
- BAND 1: 2 to 4 mc.
- BAND 2: 4 to 8 mc.
- BAND 3: 8 to 16 mc.
- BAND 4: 16 to 24 mc.
- BAND 5: 24 to 32 mc.

FREQ CONTROL: Xtal controlled when using the RF Oscillator, and continuous L-C oscillator tuning when operating the receivers w/o the master OSC.
TYPE OF RECEIVERS: Dual conversion superheterodyne.
INTERMEDIATE FREQ: First IF 1600 kc, second IF 200 kc.
TYPE OF RECEPTION: A1, A2, A3 and F1.
RECEIVER OUTPUT: 6 mw into 600 ohms (zero db). Output through headphones and indicated on output meter.
INPUT IMPEDANCE (TO ANTENNA PREAMPLIFIER)
- LOW: 73 ohms.
- HIGH: 200 ohms,

RECEIVER SENSITIVITY (CW)
- 2 TO 8 MC: 5 uv min.
- 8 TO 24 MC: 6 uv min.
- 24 TO 32 MC: 8 uv min.

SILENCER DIODES: Operated on A3 signal.
THRESHOLD CONTROL RANGE: 40 db
POWER SOURCE REQUIRED: 105, 115 or 125 v, 50 to 60 cps, single ph, 90% pf.

Radio-Receivers

AN/FRR-32 RADIO RECEIVING SET

April 1958

POWER DATA (115 V)
RECVR 1 AND 2: 62.5 W.
COMPARATOR KEYER: 80 W.
RF OSC: 295 W.
OVERALL: 490 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Radio Corp of America RCA Victor Div, Camden, N. J.
Contract NObsr-57571.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) OA2WA	(3) 6C4	(2) 5644
(1) 5750	(10) 5899	(1) 6136
(1) 5V4G	(7) 6X4WA	(12) 5647
(6) 5751	(2) 5902	(5) 6AQ5
(3) 12AU7	(2) 5814	(14) 5718
(2) 6005	(6) 5636	(1) 5750/6BE6W
(2) 5840	(4) 5719	(2) 6074

Total Tubes: (87)

(3) 1N69	(2) CR-25/U	(1) CR-100
(4) 1N34	(5) CR-18/U	(1) CR-46/U
(1) 200 kc		

Total Crystals: (17)

REFERENCE DATA AND LITERATURE

NAVSHIPS 92736: Technical Manual for Radio Receiving Set AN/FRR-32.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Cabinet CY-597A/G inc Dynamic Loudspeaker LS-169/G Switch Panel SA-238/G	69.3	33 X 37 X 98	610
1	Comparator Keyer CM-70/FRR-32	11.3	21 X 29 X 32	150
1	Radio Frequency Oscillator O-330/FRR-32	11.3	21 X 29 X 32	165
1	Radio Receiver R-618/FRR-32	11.3	21 X 29 X 32	175
1	Radio Receiver R-618/FRR-32	11.3	21 X 29 X 32	175
1	Spare Parts	12.7	23 X 28 X 34	140

EQUIPMENT SUPPLIED DATA

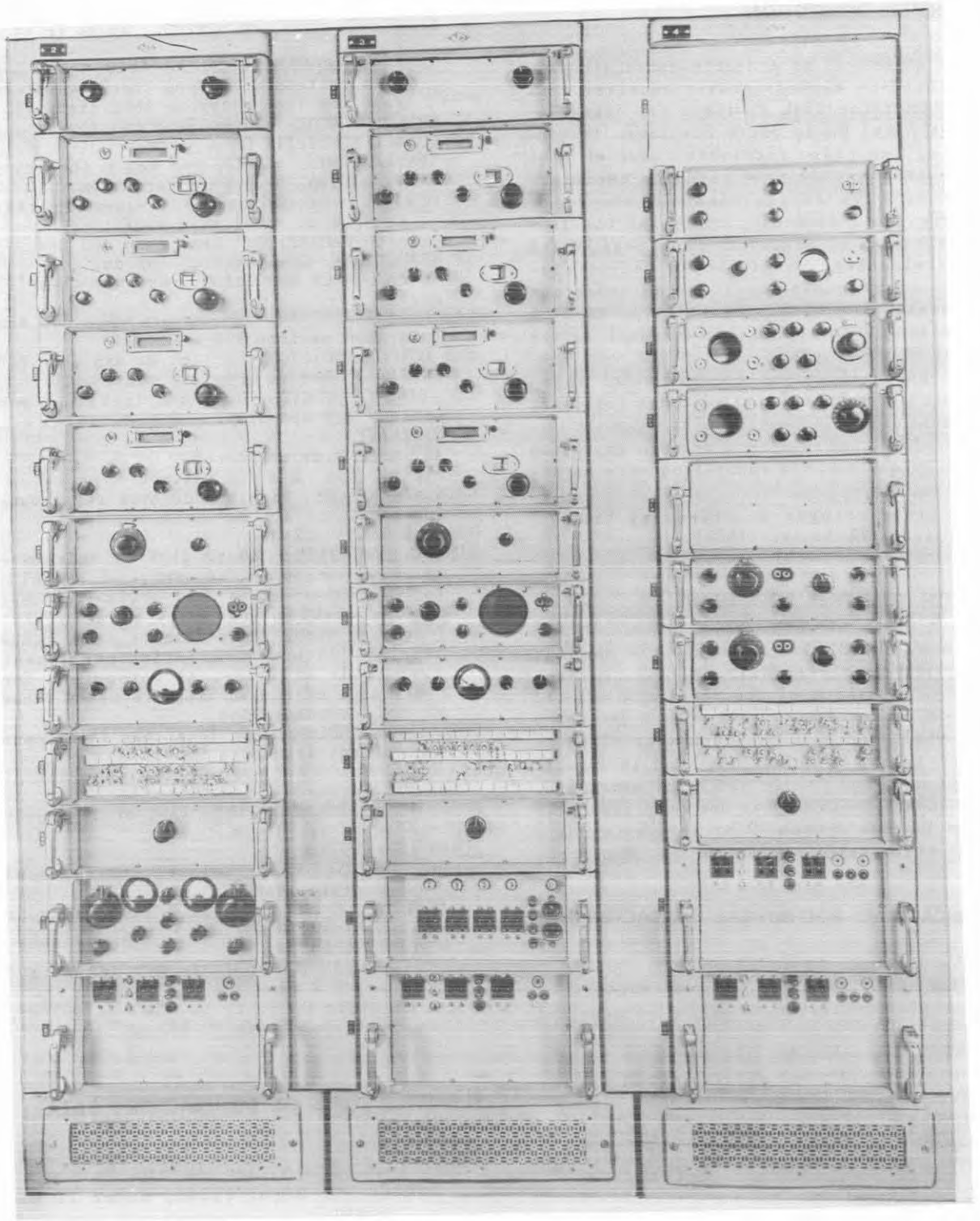
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiving Set AN/FRR-32	22-3/8 X 24 X 87-9/16	510
2	Radio Receiver R-618/FRR-32	8-3/4 X 18-1/2 X 19	78
1	Comparator Keyer CM-70/FRR-32	8-23/32 X 18-3/16 X 19	55
1	Radio Freq OSC O-330/FRR-32	10-15/32 X 18-5/8 X 19	66
1	Dynamic Loudspeaker LS-169/G	4-3/8 X 8-23/32 X 19	
1	Patching Communication Switch board SB-431/FRR-32	1-1/16 X 10-1/2 X 19	
1	Cabinet CY-597A/G (incl Switch Panel SA-238/G mounted)	22-3/8 X 24 X 87-9/16	311*

NOTE: *Incl Dynamic Loudspeaker LS-169/G, Patching Communication Switchboard SB-431/FRR-32, and Switch Panel SA-238/G.

April 1958

RADIO RECEIVING SET

AN/FRR-37



Radio Receiving Set AN/FRR-37

Radio-Receivers

AN/FRR-37 RADIO RECEIVING SET

April 1958

FUNCTIONAL DESCRIPTION

The AN/FRR-37 is a double-conversion superheterodyne type diversity receiver contained in three rack cabinets for installation at Naval Radio Shore Stations. It consists of two radio receivers together with the switching-combining circuits necessary to receive in single-channel, space, or frequency dual diversity operation the following types of signals: double-sideband radio-telephone, on-off keyed radio-telegraph, and frequency-shift keyed telegraph to operate single-channel teletype at 24.5 dot-cycles and/or up to four-channel multiplex at 98 dot-cycles.

It has an IF output circuit which is available for connection to suitable auxiliary apparatus to permit reception of single-channel facsimile and telephoto signals employing frequency shift of the radio-frequency carrier.

No field changes in effect at time of preparation (23 January 1958).

RELATION TO OTHER EQUIPMENT

The AN/FRR-37 is basically the same as the AN/FRR-24 functionally except that the AN/FRR-37 consists of two receivers mounted in three bays and is capable of dual diversity only, while the AN/FRR-24 consists of three receivers mounted in four bays and is capable of both dual and triple diversity operation.

Equipment Required but not Supplied: (1) 70-ohm Antenna System (2 or more antennas), (1) Teletypewriter, Headphones as Required.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 2 to 32 mc.
TYPE FREQUENCY CONTROL: Manual tuned with tuneable oscillator or crystal-controlled oscillator.
RECEPTION: A1, A2, A3, F1, F4.
TYPE RECEIVER: Double superheterodyne.
INTERMIDIATE FREQUENCY
  FIRST IF: 1750 kc.
  SECOND IF: 50 kc.
ANTENNA INPUT IMPEDANCE: 70 ohms nom, unbalanced.
OUTPUT CIRCUITS
  AUDIO: 60 mw into each of from 1 to 5 resistive loads of 600 ohms in parallel.
  FREQUENCY SHIFT FACSIMILE: 50 kc IF at 1 v nom.
  TELETYPE CURRENT: 60 ma (110 v and 666 ohms in teletype; loop current must be supplied from external loop circuit).
  KEYED DC TONE: 12 mw into 600 ohms.
FREQUENCY STABILITY DATA
  TEMPERATURE: 0.002% per deg C frequency variation, 6 db gain variation.
  HUMIDITY: 0.025% total frequency variation, 6 db total gain variation.
OSCILLATOR RADIATION: Less than 400 uuw.
IF REJECTION: Greater than 100 db.
IMAGE FREQUENCY REJECTION: Greater than 110 db.
RESONANT OVERLOAD: 600 mw min into 600 ohm load, 300 mw into 120 ohm load.
MAX OUTPUT(UNDISTORTED): 60 mw min into 600 ohm load, 300 mw into 120 ohm load.
AGC TIME CONSTANT: 0.01 sec fast, 0.1 sec medium, 1.0 sec slow.
SENSITIVITY
  A2, A3: 2 uv or better.
  A1, F4, F1: 3 uv or better.
GAIN VARIATION: Within 6 db over any 1 tuning band.
RESERVE GAIN: 12 db.
TUNING LINEARITY: 80 to 110% of reference value variation in frequency per division for any 100-division dial scale increment in the working frequency range of any frequency band. The reference value is the average frequency variation per linear dial scale division, as determined for the limits of the working frequency range of any frequency band.
FREQUENCY OVERLAP: Not less than 1% at each end of any frequency band.
KEYING SPEED: 500 words per minute for A1 on-off keying.
POWER REQUIREMENTS: 105, 115, or 125 v, 50 to 60 cps, single ph.
POWER CONSUMPTION
  AC LINE TO BAY 2: 438 W, 463 va, 4.03 amps drain, 0.945 pf.
  AC LINE TO BAY 3: 422 W, 446 va, 3.88 amps drain, 0.95 pf.
  AC LINE TO BAY 4
    AM UNITS B, C, H, J, M: 463 W, 497 va, 4.3 amps drain, 0.932 pf.
    FS UNITS D, E, L, N: 502 W, 603 va, 4.6 amps drain, 0.947 pf.

MANUFACTURER'S OR CONTRACTOR'S DATA

National Company, Inc, Malden, Mass.
  Contract NObsr-57388, dated 21 May 1952.
  Approximate Cost: $41,245.00 with equipment spares.

April 1958

RADIO RECEIVING SET AN/FRR-37

TUBE AND/OR CRYSTAL COMPLEMENT

(15) OA2WA
(5) OC3W
(2) 2BP1
(2) 5654/6AK5W
(2) 5727/2D21W
(12) 5750/6BE6W
(8) 5814A
(2) 6AH6
(20) 6AN5WA
(9) 6AU6WA
(6) 6J6WA
(44) 9003
(25) OB2WA
(2) 12AT7WA
(12) 5R4WGB
(28) 5726/6AL5W
(12) 5749/6BA6W
(24) 5751
(15) 6AG5
(22) 6AK6
(14) 6AS7G
(20) 6C4WA
(2) 6005/6AQ5W

Total Tubes: 303

(17) CR-18/U
(1) 2INA
(1) CR-25/U

Total Crystals: (19)

REFERENCE DATA AND LITERATURE

NAVSHIPS 91896: Technical Manual for Radio Receiving Set AN/FRR-37.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE MIL-R-16852A(SHIPS)
STOCK NO.

SHIPPING DATA

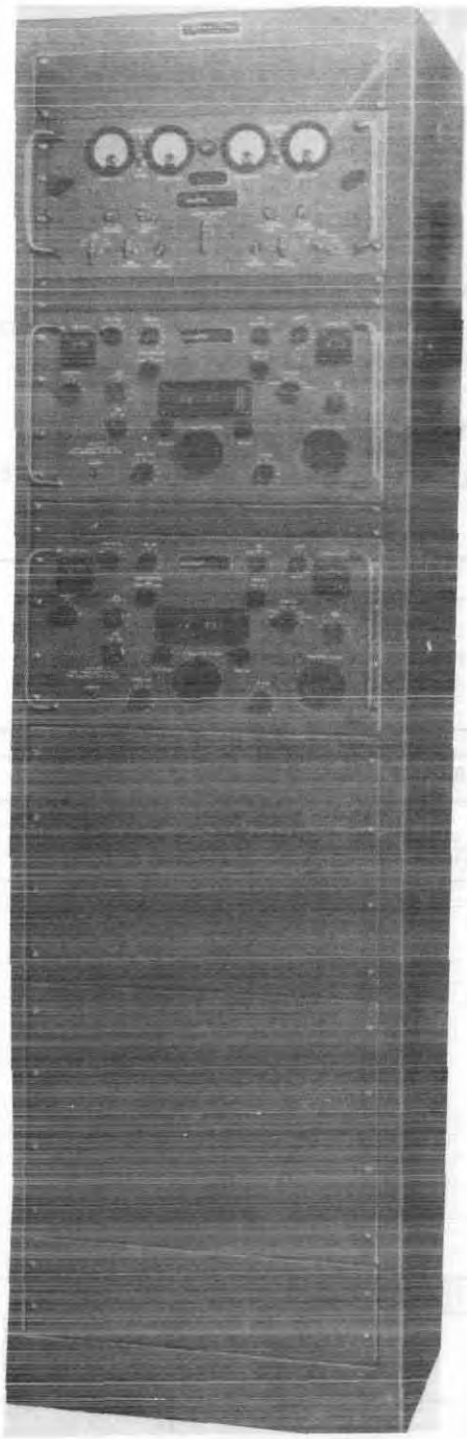
NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
2	Control Panel SB-142A/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	55
2	Amplifier-Converter AM-450A/FRR-24	4.1	13-1/2 X 21-1/8 X 24-3/8	80
2	Amplifier-Converter AM-451A/FRR-24	4.1	13-1/2 X 21-1/8 X 24-3/8	80
2	Amplifier-Converter AM-452A/FRR-24	4.1	13-1/2 X 21-1/8 X 24-3/8	80
2	Amplifier-Converter AM-453A/FRR-24	4.1	13-1/2 X 21-1/8 X 24-3/8	80
2	Frequency Converter CV-126A/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	55
2	Amplifier-Detector AM-439A/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	55
2	RF Amplifier AM-454A/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	55
1	Communication Patching Panel SB-283/FRR-37	3.5	11-3/4 X 21-1/8 X 24-3/8	40
1	Communication Patching Panel SB-282/FRR-37	3.5	11-3/4 X 21-1/8 X 24-3/8	40
1	Communication Patching Panel SB-281/FRR-37	3.5	11-3/4 X 21-1/8 X 24-3/8	40
2	Electrical Filter Assembly F-207/FRR-37	3.5	11-3/4 X 21-1/8 X 24-3/8	65
1	Tool Box	4.1	13-1/2 X 21-1/8 X 24-3/8	60
1	Oscillator Assembly O-131A/FRR-24	4.1	13-1/2 X 21-1/8 X 24-3/8	65
1	Power Distribution Panel SB-280/FRR-37	4.1	13-1/2 X 21-1/8 X 24-3/8	55
2	Power Supply PP-590A/FRR-24	4.45	15 X 21-1/8 X 24-3/8	120
1	Amplifier-Detector AM-440A/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	55
1	Amplifier-Detector AM-438A/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	60
2	Frequency Shift Converter CV-127A/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	55
2	Keyer KY-62A/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	65
1	Comparator-Keyer CM-32A/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	50
1	Power Supply PP-912/FRR-37	4.45	15 X 21-1/8 X 24-3/8	120
1	Power Supply PP-913/FRR-37	4.45	15 X 21-1/8 X 24-3/8	120
3	Cabinet CY-1377/FRR-10	44.5	27 X 32-3/4 X 87	450
1	Set of Equipment Spares	5.0	14-1/2 X 18 X 35	182

AN/FRR-37 RADIO RECEIVING SET

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
2	Control Panel SB-142A/FRR-24	5-7/32 X 15-7/16 X 19	33
2	Amplifier-Converter AM-450A/FRR-24	6-31/32 X 16-15/16 X 19	58
2	Amplifier-Converter AM-451A/FRR-24	6-31/32 X 16-15/16 X 19	58
2	Amplifier-Converter AM-452A/FRR-24	6-31/32 X 16-15/16 X 19	58
2	Amplifier-Converter AM-453A/FRR-24	6-31/32 X 16-15/16 X 19	58
2	Frequency Converter CV-126A/FRR-24	5-7/32 X 16-15/16 X 19	33
2	Amplifier-Detector AM-439A/FRR-24	5-7/32 X 16-15/16 X 19	36
2	RF Amplifier AM-454A/FRR-24	5-7/32 X 16-15/16 X 19	32
1	Communication Patching Panel SB-283/FRR-37	5-7/32 X 15-5/16 X 19	21
1	Communication Patching Panel SB-282/FRR-37	5-7/32 X 15-5/16 X 19	21
1	Communication Patching Panel SB-281/FRR-37	5-7/32 X 15-5/16 X 19	21
2	Electrical Filter Assembly F-207/FRR-37	5-7/32 X 16-15/16 X 19	45
1	Oscillator Assembly O-131A/FRR-24	6-31/32 X 16-15/16 X 19	42
1	Power Distribution Panel SB-280/FRR-37	6-31/32 X 15-5/16 X 19	28
2	Power Supply PP-590A/FRR-24	8-23/32 X 15-5/16 X 19	96
1	Amplifier-Detector AM-440A/FRR-24	5-7/32 X 16-15/16 X 19	31
1	Amplifier-Detector AM-438A/FRR-24	5-7/32 X 16-15/16 X 19	36
2	Frequency Shift Converter CV-127A/FRR-24	5-7/32 X 16-15/16 X 19	35
2	Keyer KY-62A/FRR-24	5-7/32 X 16-15/16 X 19	39
1	Comparator-Keyer CM-32A/FRR-24	5-7/32 X 16-15/16 X 19	33
1	Power Supply PP-912/FRR-37	8-23/32 X 15-5/16 X 19	96
1	Power Supply PP-913/FRR-37	8-23/32 X 15-5/16 X 19	96
3	Cabinet CY-1377/FRR-10	22-3/8 X 24 X 85	292
1	Tool Box	6-31/32 X 16-15/16 X 19	41
1	Set of Equipment Spares	12 X 20 X 30	142
2	Technical Manual NAVSHIPS 91896	3-3/4 X 9 X 11-1/2	

RADIO RECEIVING SET



Radio Receiving Set AN/FRR-38

FUNCTIONAL DESCRIPTION

The AN/FRR-38 forms the radio receiving link in a radio teletype communications system. This receiving set is used for dual diversity reception of frequency shift radio teletype signals. Voice intelligence may also be received by the radio receiver(s) if desired. Frequency stability is sufficient for unattended reception of radio teletype signals under all normally encountered conditions.

The AN/FRR-38 may be used in either a frequency diversity application or a space diversity application.

No field changes in effect at time of preparation 24 May 1956.

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: Antenna(s), Receiving Teletypewriter and Control Unit.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

RADIO RECEIVER R-390/URR
- FREQUENCY RANGE: 0.5 to 32 mc in 32 steps.
- TYPE CIRCUIT: Triple-conversion superheterodyne on 8 lowest frequency bands; double conversion superheterodyne all other bands.
- RECEPTION: A1, A2, A3, F1.
- TUNING: Continuous
- CONTROL: Crystal.
- CALIBRATION: Every 100 kc.
- OUTPUT (Audio Power)
  - LINE (600 ohm)
    - UNBALANCED: 500 mw.
    - BALANCED: 10 mw.
  - PHONES: 5 mw.
- SELECTIVITY: 100 cps to 16 kc bandwidth in 6 steps.
- INTERMEDIATE FREQUENCIES
  - FIRST VARIABLE (8 lowest bands): 9 to 18 mc.
  - SECOND VARIABLE (All bands): 2 to 2.5 mc on lowest step; 2 to 3 mc on all other steps.
- SENSITIVITY:
  - AM Signals: 3 uv min.
  - CW Signals: 1 uv min.
- POWER REQUIREMENTS: 115/230 v ±10%, 48 to 62 cps, 270 w total input, 170 W, with oven heaters off.
- TEMPERATURE RANGE: −40 deg C to 55 deg C (−40 deg F to 131 deg F).
- ALTITUDE: 10000 ft max.

AN/FRR-38 RADIO RECEIVING SET

ANTENNA DATA
UNBALANCED: Random length vehicular-mtd whip or straight wire.
BALANCED: 125 ohm nom terminating impedance; matches 70 to 200 ohm line or unbalanced transmission line with adapter.
CENTER FREQUENCIES (IF)
Channel A: 50 kc.
Channel B: 29.3 kc.
INPUT FREQUENCY: 450 to 510 kc.
INPUT FREQUENCY SHIFT RANGE: 150 to 1000 cycles.
INPUT VOLTAGE: 100 uv min.
INPUT IMPEDANCE: Approx 50 ohms ±20%.
OUTPUT CURRENT
MARK: 0.060 amp.
SPACE: 0 amp.
POWER REQUIREMENTS: 115 v, 50 to 60 cps Single ph, 200 W (approx).

TUBE COMPLEMENT

(1) 3TF7	(3) 6AJ5
(3) 6AK6	(1) 6BH6
(7) 6BJ6	(3) 6C4W
(1) 12AT7	(6) 12AU7
(2) 26Z5W	(2) 5651
(2) 5749/6BA6W	(2) 6082
(9) 5726	(2) 6AQ5W
(12) 6AU6	(2) 6BA7
(15) 5814	(5) 6X4W

Total Tubes: (78)

(1) CR-25/U 405 kc (1) CR-25/U 425.7 kc
Total Crystals: (2)

REFERENCE DATA AND LITERATURE

TMII-647 : Technical Manual for Radio Receiving set AN/FRR-38.

MANUFACTURER'S OR CONTRACTOR'S DATA

Hoffman Laboratories, Inc., Los Angeles, California.
Contract 26565-PH-52-93, dated June 1952.
Approximate Cost: $8500.00 including equipment spares.

TYPE CLASSIFICATION
DESIGN COGNIZANCE OC SIG O
PROCUREMENT COGNIZANCE
STOCK NO.

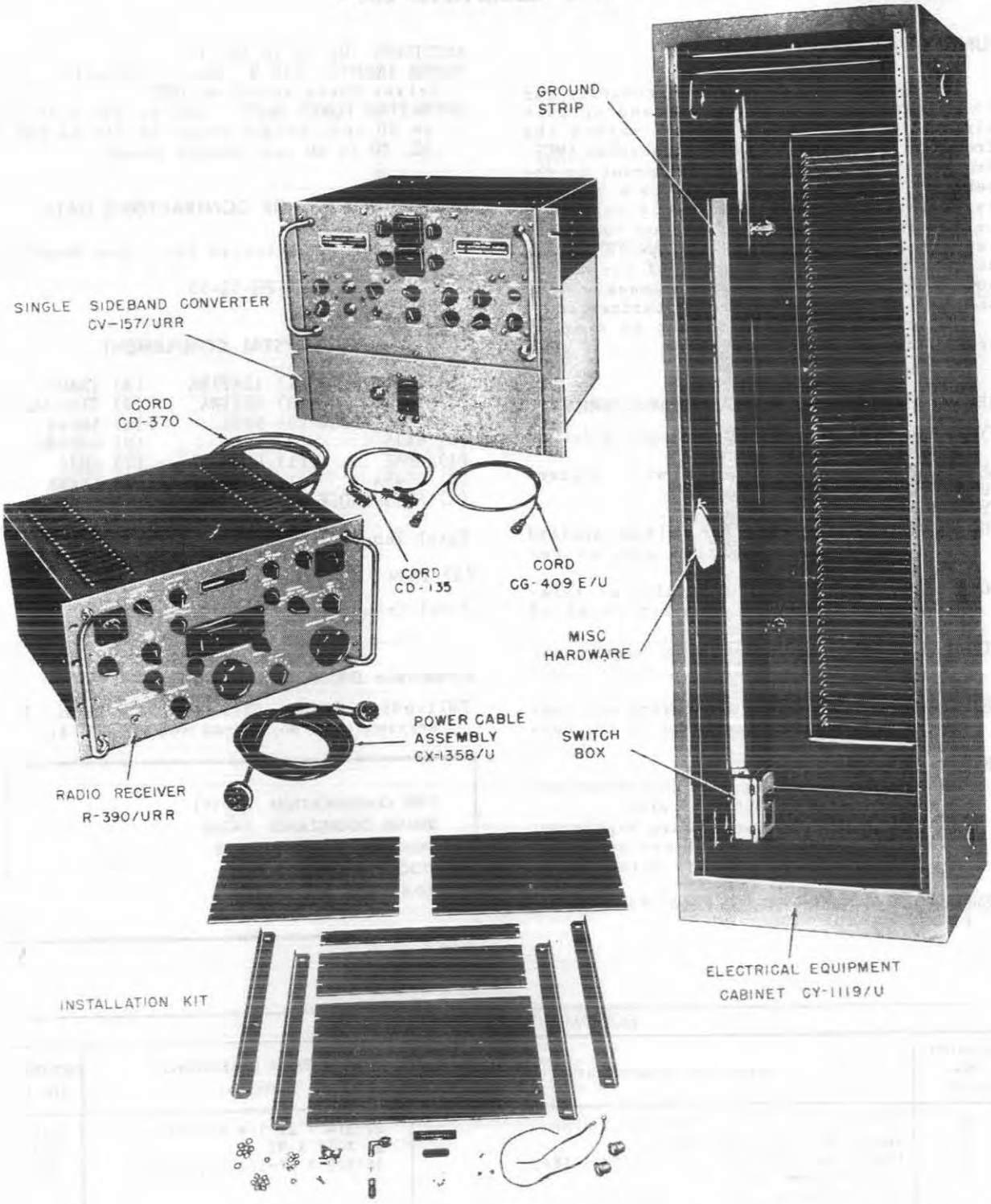
SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVER-ALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
2	Radio Receiver R-390/URR including 1 Power Supply PP-621/URR 1 Cable Assy., Power Electrical CX-1358/U 1 Running Spares 2 Technical Manuals	12.4	21 X 32 X 32	100
1	Frequency Shift Converter CV-116/URR including: 2 Cord CG-409A/U 1 Cable Assy., Power Electrical CX-1119/U 1 Running Spares 2 Technical Manuals	4.1	11-3/4 X 22-1/2 X 27	90
1	Electrical Equipment Cabinet CY-1119/U including 1 Set Miscellaneous Hardware	34.2	26-3/8 X 27-1/2 X 81-1/2	
1	Installation Kit	1.2	6 X 14-1/2 X 23	50

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
2	Radio Receiver R-390/URR	10-1/2 X 17-1/4 X 19	80
1	Frequency Shift Converter CV-116/URR	8-3/4 X 17 X 19	65
1	Electrical Equipment Cabinet CY-1119/U	20-1/2 X 21 X 7/32 X 76	225
1	Installation Kit		40

RADIO RECEIVING SET AN/FRR-40



Radio Receiving Set AN/FRR-40

AN/FRR-40 RADIO RECEIVING SET

FUNCTIONAL DESCRIPTION

The AN/FRR-40 is designed primarily for the reception of single-sideband or twin single-sideband radio signals within the frequency range of 0.5 to 32 megacycles (MC). Provisions are made in the equipment to receive this range of signals up to a 12 kilocycle (kc) bandwidth that carry multiplex teletypewriter, facsmile, and/or voice intelligence. In addition, the AN/FRR-40 is used to improve the reception of the Amplitude-Modulation (AM) signals under conditions of extreme atmospheric interference.

No field changes in effect at time of preparation (26 January 1960).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPES OF SIGNALS RECEIVED: Single-sideband and twin single-sideband.
SENSITIVIY: Single-sideband 1 uv or better.
NUMBER OF CHANNELS: 2 channels.
TYPE OF FREQUENCY CONTROL: Afc.
AUTOMATIC GAIN CONTROL: Agc voltage applied from converter to control gain in receiver.
MONITORING FACILITIES: Available at telephone jack, located on front panel of converter.
SQUELCH ALARM: Operates when signal-to-noise ratio falls below a predetermined level.
DRIFT ALARM: Actuated just before afc control circuit has reached end of its corrective range.
ANTENNAS
UNBALANCED: Random length vehicular-mounted whip or straight wire.
BALANCED: 125 ohm terminating impedance; matches 70 to 200 ohm lines or unbalanced transmission lines using adapters.
TEMPERATURE RANGE: -40° C (-40° F) to 55° C (131° F).
ALTITUDE: Up to 10,000 ft.
POWER INPUT: 520 W total; 420 with receiver Ovens switch at OFF.
OPERATING POWER RQMT: 105 to 125 v AC, 50 to 60 cps, single phase or 210 to 250 v AC, 50 to 60 cps, single phase.

MANUFACTURER'S OR CONTRACTOR'S DATA

Hoffman Laboratories Inc., Los Angeles, California.
PROC. 26565-PH-52-93.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) OA2WA	(1) 12AT7WA	(6) 12AU7
(2) 5R4WGB	(3) 5651WA	(3) 5726-6AL5W
(2) 5749-6BA6W	(9) 5751	(14) 5814A
(3) 6AJ5	(3) 6AK6	(9) 6AU6WA
(1) 6BA7	(1) 6BH6	(7) 6BJ6
(3) 6C4WA	(1) 6U8A	(1) 6X4WA
(1) 6005-6AQ5W	(1) 6080WA	(2) 6082

Total Tubes: (74)

(1) 1N69

Total Crystals: (1)

REFERENCE DATA AND LITERATURE

TM11-649 Technical Manual for Radio Receiving Sets AN/FRR-40 and AN/FRR-41.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

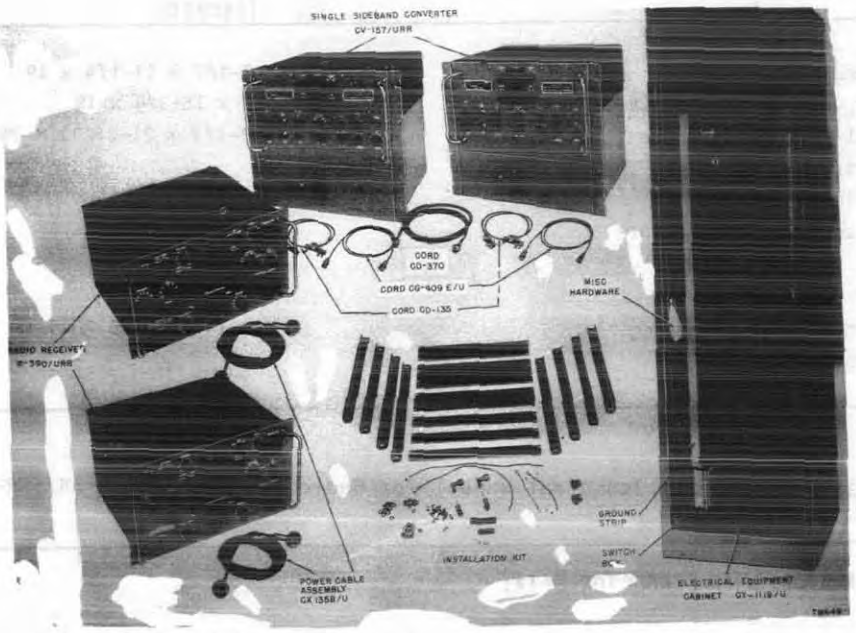
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Single Sideband Converter CV-157/URR	22-3/4 X 22-3/4 X 25-1/4	162
1	Radio Receiver R-390/URR	31 X 32 X 32	100
1	Electrical Equipment Cabinet CY-1119/U	26-3/8 X 27-1/2 X 81-1/2	335
1	Installation Kit		
1	Power Cable Assembly CX-1358/U		
1	Cord CD-370		
1	Cord CD-135		
1	Cord CG-409E/U		
1	Set of Misc Hardware		

Cog Service: TASSA FSN: Functional Class:

	USA	USN	USAF
TYPE CLASS:	Used by	Used by	

MANUFACTURER'S NAME/CODE NUMBER: Hoffman Laboratories, Inc., (82260).



Radio, Receiving Set AN/FRR-41

FUNCTIONAL DESCRIPTION:

The Radio, Receiving Set AN/FRR-41 is designed for dual-diversity reception of single-sideband or twin single-sideband radio signals within the frequency of 0.5 to 32 megacycles (MC). Provisions are made in the equipment to receive this range of signals up, to 12-kilocycle (KC) bandwidth that carry multiplex teletypewriter, facsimile, and/or voice intelligence. In addition, the AN/FRR-41 is used to improve the reception of the Amplitude-Modulated (AM) signals under conditions of extreme atmospheric interference.

No field changes in effect at time of preparation (13 February 1962).

TECHNICAL CHARACTERISTICS:

EQUIPMENT PURPOSE: Communications.
TYPE OF EMISSION: A3, A3a, A3b.
NUMBER OF CHANNELS: 2 channels.
NUMBER OF TUNING STEPS: 32
TYPE OF FREQUENCY CONTROL: AFC.
FREQUENCY RANGE: 0.5 to 32 mc.

AN/FRR-41 RADIO, RECEIVING SET

OPERATING POWER RQMT: 105 to 125 v ac, 50 to 60 cps, single ph or 210 to 250 v ac, 50 to 60 cps single ph.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
2	Radio, Receiver R-390/URR		10-1/2 x 17-1/4 x 19	80
2	Converter, Single Sideband CV-157/URR		15 x 15-3/4 x 19	104
1	Electrical Equipment Cabinet CY-1119/U		20-1/2 x 21-27/32 x 76	225
1	Installation Kit			24
1	Set of Miscellaneous Hardware			
1	Connector Plug UG-573/U			
1	Connector, Adapter UG-971			
4	Angle Brackets		1-1/4 x 1-3/8 x 19	
1	Set of Ground Straps			

REFERENCE DATA AND LITERATURE:

TM11-649 & TO 31R2-2FRR-221: Technical Manual for Radio, Receiving Set AN/FRR-40 and AN/FRR-41.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (2) 0A2WA (2) 12AT7WB (12) 12AU7 (4) 5R4WGB (6) 5651WA (6) 5726-6AL5W (18) 5751 (14) 5814A (6) 6AJ5 (6) 6AK6 (18) 6AU6WB (2) 6BA7 (2) 6BH8 (14) 6BJ6A (6) 6C4WA (2) 6U8A (2) 6X4WA (2) 6005-6AQ5W (2) 6080WA (4) 5749-6BA6W (4) 6082

CRYSTALS: None used.

SEMI-CONDUCTORS: (2) 1N69A

SHIPPING DATA

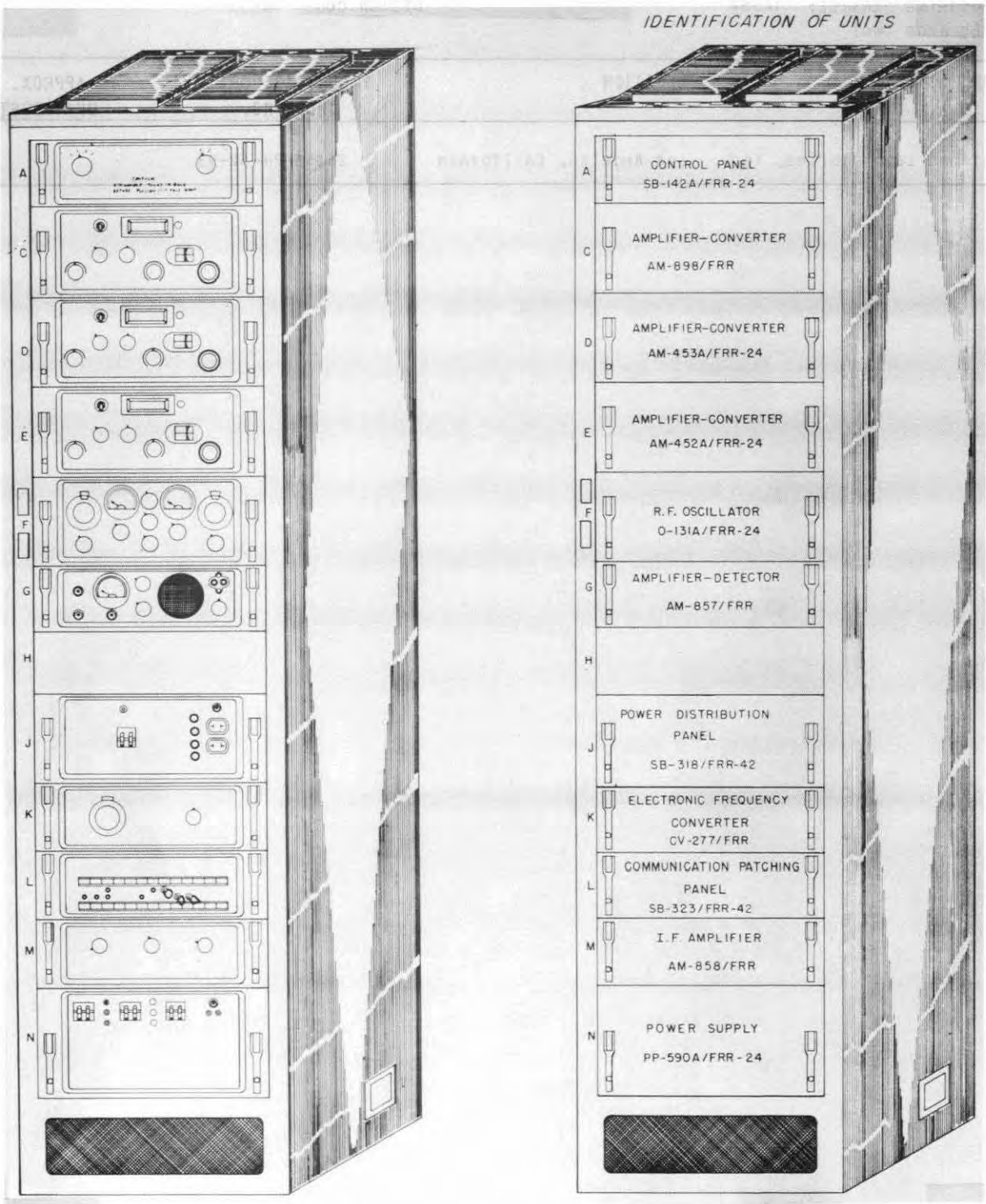
PKGS	VOLUME (CU FT)	WEIGHT (LBS)
2	12.4	100
2	7.6	162
1	34.2	335
1	1.1	50

PROCUREMENT DATA

PROCURING SERVICE: TASSA DESIGN COG: TASSA
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Hoffman Laboratories, Inc.	Los Angeles, California	26565-PH-52-93	

RADIO RECEIVING SET AN/FRR-42, -43



Radio Receiving Set AN/FRR-42

Radio-Receivers

AN/FRR-42, -43 RADIO RECEIVING SET

April 1958

FUNCTIONAL DESCRIPTION

The AN/FRR-42 and AN/FRR-43 are double-conversion, superheterodyne type receivers designed for use at Naval Radio Shore Stations.

The AN/FRR-42 is a single-channel receiver mounted in a single rack cabinet, and is capable of providing single channel reception only.

The AN/FRR-43 consists of a group of three radio receivers mounted in three rack cabinets, and is capable of providing single receiver, dual or triple spaced antenna diversity or frequency diversity reception. Diversity combining facilities and detection are accomplished in auxiliary equipment which is not a part of the AN/FRR-43.

Three paralleled output connectors are provided for connection to suitable auxiliary apparatus to permit reception of single-channel facsimile and radioteletype signals.

No field changes in effect at time of preparation (24 January 1958).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 4 to 32 mc.
FREQUENCY CONTROL: Manual with tuneable oscillator or crystal-controlled oscillator.
RECEPTION: A2, A3 and F1 and F4 with auxiliary equipment.
TYPE RECEIVER: Double superheterodyne.
IF: 1750 kc first conversion, 37.5 kc second conversion.
ANTENNA INPUT IMPEDANCE: 70 ohms nom, unbalanced.
OUTPUT DATA
- AUDIO: 1 W into loudspeaker.
- LINE: 15 mw min into 600 ohm load.
- PHONE: 15 mw max into 600 ohm load.
- A2, F1, F4: 37.5 kc IF at 1 v nom into 4700 ohms.

FREQUENCY STABILITY: 0.002% per deg C frequency variation.
OSCILLATOR RADIATION: Less than 400 uuw.
REJECTION
- IF: Greater than 100 db.
- IMAGE FREQUENCY: Greater than 110 db.

RESONANT OVERLOAD: 60 mw min into 600 ohm load.
AGC TIME CONSTANT
- CHARGE: 0.005 sec or less.
- DISCHARGE: 0.5 sec average.

SENSITIVITY: 7 uv or better for A2 and A3.
GAIN VARIATION: Within 6 db over any one tuning band.
RESERVE GAIN: 12 db.
TUNING LINEARITY: 80 to 110% of reference value per division for any 100 division dial scale increment in the working frequency range of any frequency band, using the average frequency variation per linear dial scale division, as determined for the limits of the working frequency range of any frequency band as a reference value.
FREQUENCY OVERLAP: Not less than 1% at each end of any frequency band.
POWER REQUIREMENTS: 105, 115, or 125 v, 50 to 60 cps, single ph, 3 power units of AN/FRR-43 may be connected to separate phases of a 3 ph system.
POWER CONSUMPTION AND CURRENT DRAIN
- AN/FRR-43
  - BAY 1: 443 W, 467 va, 4.06 amps drain.
  - BAY-2: 453 W, 474 va, 4.12 amps drain.
  - BAY-3: 443 W, 467 va, 4.06 amps drain.
- AN/FRR-42: 453 W, 474 va, 4.12 amps drain.

MANUFACTURER'S OR CONTRACTOR'S DATA

National Company, Inc, Malden, Mass.
Contract NObsr-57572, dated 19 June 1952.
Approximate Cost: $18,025.00 with equipment spares. (AN/FRR-42).
Approximate Cost: $54,085.00 with equipment spares. (AN/FRR-43).

TUBE AND/OR CRYSTAL COMPLEMENT

AN/FRR-42

(3) 0A2WA	(7) 0B2WA
(3) 5R4WGB	(5) 5686
(5) 5726/6AL5W	(8) 5749/6BA6W
(4) 5750/6BE6W	(8) 5751
(1) 6AG5	(2) 6AH6
(1) 6AK6	(6) 6AN5WA
(3) 6AS7G	(4) 6AU6WA
(3) 6C4WA	(6) 9003

Total Tubes: (69)

(17) CR-18/U	(1) CR-25/U

Total Crystals: (18)

AN/FRR-43

(9) 0A2WA	(21) 0B2WA
(9) 5R4WGB	(15) 5686

April 1958

RADIO RECEIVING SET AN/FRR-42, -43

(11) 5726/6AL5W
(12) 5750/6BE6W
(1) 6AG5
(3) 6AK6
(9) 6AS7G
(9) 6C4WA
(24) 5749/6BA6W
(24) 5751
(2) 6AH6
(18) 6AN5WA
(10) 6AU6WA
(18) 9003
Total Tubes: (195)

(19) CR-18/U
(1) CR-25/U
Total Crystals: (20)

REFERENCE DATA AND LITERATURE

NAVSHIPS 91891: Technical Manual for Radio Receiving Set AN/FRR-42 and Radio Receiving Set AN/FRR-43.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	SHIPS-R-563
STOCK NO.	

SHIPPING DATA

NUMBER OF BOXES		CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
AN/FRR-					
42	43				
1	3	Control Panel SB-142A/FRR-24	3.5	11-3/4 X 21-1/8 X 24-3/8	83
1	3	Amplifier-Converter AM-898/FRR	4.1	13-1/2 X 21-1/8 X 24-3/8	108
1	3	Amplifier-Converter AM-452A/FRR-24	4.1	13-1/2 X 21-1/8 X 24-3/8	108
1	3	Amplifier-Converter AM-453A/FRR-24	4.1	13-1/2 X 21-1/8 X 24-3/8	108
1	3	Frequency Converter CV-277/FRR	3.5	11-3/4 X 21-1/8 X 24-3/8	55
1	3	Amplifier-Detector AM-857/FRR	3.5	11-3/4 X 21-1/8 X 24-3/8	55
1	3	IF Amplifier AM-858/FRR	3.5	11-3/4 X 21-1/8 X 24-3/8	55
1		Communication Patching Panel SB-323/FRR-42	3.5	11-3/4 X 21-1/8 X 24-3/8	35
	1	Communication Patching Panel SB-322/FRR-43	3.5	11-3/4 X 21-1/8 X 24-3/8	35
	1	Communication Patching Panel SB-321/FRR-43	3.5	11-3/4 X 21-1/8 X 24-3/8	35
	1	Communication Patching Panel SB-320/FRR-43	3.5	11-3/4 X 21-1/8 X 24-3/8	35
1	1	RF Oscillator O-131A/FRR-24	4.1	13-1/2 X 21-1/8 X 24-3/8	92
1		Power Distribution Panel SB-318/FRR-42	4.1	13-1/2 X 21-1/8 X 24-3/8	50
	1	Power Distribution Panel SB-319/FRR-43	4.1	13-1/2 X 21-1/8 X 24-3/8	50
1	3	Power Supply PP-590A/FRR-24	4.45	15 X 21-1/8 X 24-3/8	146
1	3	Cabinet CY-1377/FRR-10	44.5	27 X 32-3/4 X 87	450
1	1	Set of Equipment Spares	2.0	12-1/2 X 12-1/2 X 22-1/2	139

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT		NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
AN/FRR-				
42	43			
1	3	Control Panel SB-142A/FRR-24	5-7/32 X 15-7/16 X 19	33
1	3	Amplifier-Converter AM-898/FRR	6-31/32 X 16-15/16 X 19	58
1	3	Amplifier-Converter AM-452A/FRR-24	6-31/32 X 16-15/16 X 19	58
1	3	Amplifier-Converter AM-453A/FRR-24	6-31/32 X 16-15/16 X 19	58
1	3	Frequency Converter CV-277/FRR	5-7/32 X 16-15/16 X 19	33
1	3	Amplifier-Detector AM-857/FRR	5-7/32 X 16-15/16 X 19	36
1	3	IF Amplifier AM-858/FRR	5-7/32 X 16-15/16 X 19	32
1		Communication Patching Panel SB-323/FRR-42	5-7/32 X 15-5/16 X 19	20
1	1	RF Oscillator O-131A/FRR-24	6-31/32 X 16-15/16 X 19	42
1		Power Distribution Panel SB-318/FRR-42	6-31/32 X 16-15/16 X 19	25
	1	Power Distribution Panel SB-319/FRR-43	6-31/32 X 16-15/16 X 19	28

Radio-Receivers

AN/FRR-42, -43 RADIO RECEIVING SET

April 1958

EQUIPMENT SUPPLIED DATA

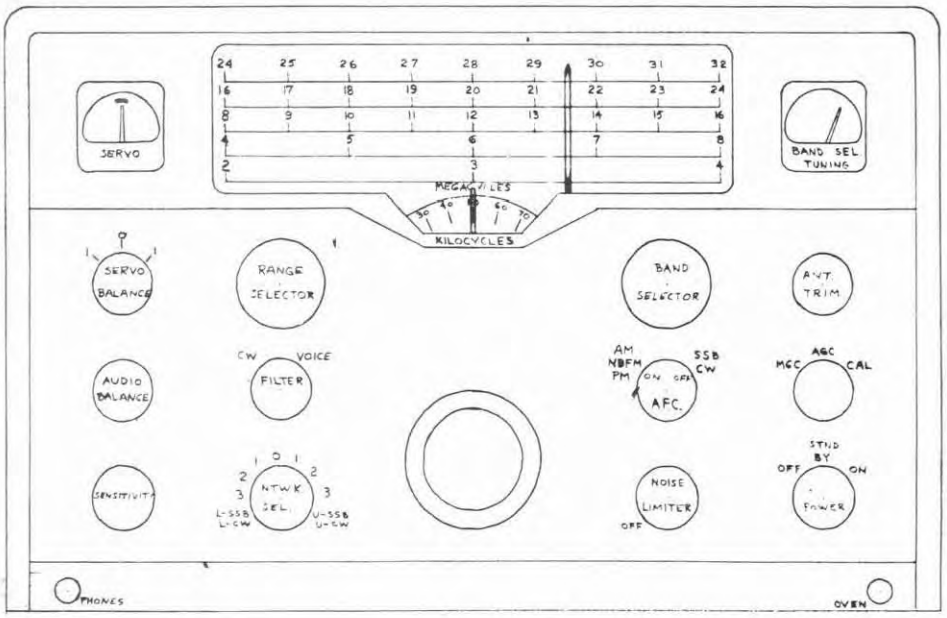
QUANTITY PER EQUIPT		NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
AN/FRR-				
42	43			
1	3	Power Supply PP-590A/FRR-24	8-23/32 X 15-5/16 X 19	96
1	3	Cabinet CY-1377/FRR-10	22-3/8 X 24 X 85	292
	1	Communication Patching Panel SB-322/FRR-43	5-7/32 X 16-15/16 X 19	21
	1	Communication Patching Panel SB-321/FRR-43	5-7/32 X 16-15/16 X 19	21
	1	Communication Patching Panel SB-320/FRR-43	5-7/32 X 16-15/16 X 19	21
1	1	Set of Equipment Spares		
2	2	Technical Manual NAVSHIPS 91891	3 X 9 X 11-1/2	

26 July 1962 | RADIO, RECEIVING SET AN/FRR-48(XW-1)

Cog Service: USN FSN: | Functional Class:

USA	USN	USAF
TYPE CLASS:	Used by	Used by

MANUFACTURER'S NAME/CODE NUMBER: General Electric Co., Electronics Laboratory, (24454).



Radio, Receiving Set AN/FRR-48(XW-1)

FUNCTIONAL DESCRIPTION:

The Radio, Receiving Set AN/FRR-48(XW-1) is designed to operate in the frequency range of 2 to 30 megacycle (MC). It provides double side band suppressed carrier voice and A2, A3, A3a, A3b and F2 type reception.

No field changes in effect at time of preparation (9 February 1962).

TECHNICAL CHARACTERISTICS:

TYPE OF INSTALLATION: Fixed installation.
TYPE OF CIRCUIT: Synchronous detection.
TYPE OF EMISSION: A2, A3, A3a, A3b, F2 and A9 types.
TYPE OF TUNING: Continuous.
TYPE OF FREQUENCY CONTROL: Crystal synthesizer.
TYPE OF PRESENTATION: Audio type.

AN/FRR-48(XW-1) RADIO, RECEIVING SET

ANTENNA IMPEDANCES
BALANCED AND UNBALANCED: 75 ohms nominal.
NUMBER OF BANDS: 4 bands.
FREQUENCY RANGE: 2 to 32 mc.
OPERATING POWER RQMT: 115 v ac, 60 ps, single ph.

RELATION TO OTHER EQUIPMENT:

The AN/FRR-48(XW-1) is designed to be used with, but not part of Radio, Transmitting Set AN/FRT-29( ).

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Radio, Receiving Set AN/FRR-48(XW-1)			

REFERENCE DATA AND LITERATURE:

NAVSHIPS 92991: *Technical Manual for Radio, Receiving Set AN/FRR-48(XW-1).*

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (2) 6BA6/5749 (2) 6AW8 (3) 6AS6/5725 (3) 12AX7/5751 (4) 12BH7 (9) 12AT7/6201
(4) 12AU7/5814 (3) 6AU8 (1) 6CL6 (1) 6BQ7A (8) 6AN8 (1) 6AH6 (1) 5725
(1) 12BY7 (1) 0A2 (2) 5U4GB (4) 6080/6AS7G

CRYSTALS: None used.

SEMI-CONDUCTORS: (2) 1N35 (4) 1N67A

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

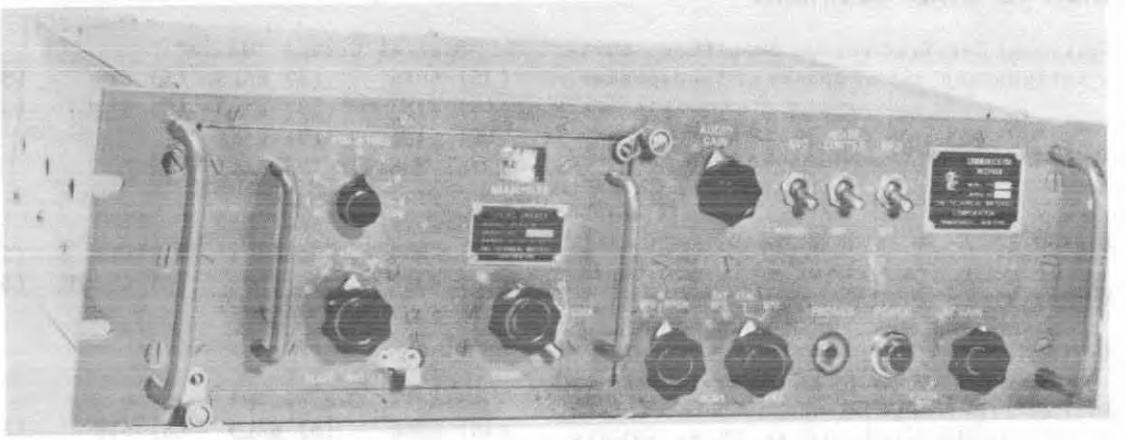
PROCURING SERVICE: BuWeps
DESIGN COG: USN, BuShips
SPEC &/OR DWG: RADC-1566

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
General Electric Co., Electronics Laboratory Model XSDR-1	Syracuse, N. Y.	AF30(602)-584	

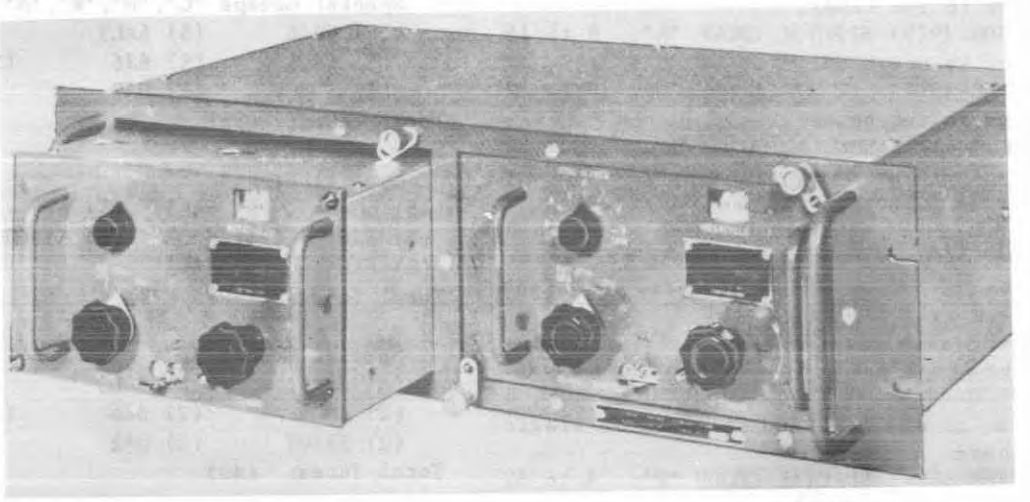
RADIO RECEIVING SET

AN/FRR-49(V)

Basic, GP A thru V



Receiver Subassembly R-5007/FRR-502 with tuning unit



Cabinet, Electrical Equipment CY-5045A/FRR-502 with tuning unit

FUNCTIONAL DESCRIPTION

The AN/FRR-49(V) Special Group "Basic" and Special Groups "A" through "V" inclusive have been designed to fulfill the long existing need for a sturdy easily tunable receiver which will provide maximum flexibility and thoroughly dependable unattended continuous reception of amplitude-modulated radio telephone, continuous wave telegraph or teletype and modulated continuous wave telegraph signals. The various special groups listed above differ in the quantities and types of components but are functionally and mechanically similar.

No field changes in effect at time of preparation (5 September 1957).

AN/FRR-49(V) RADIO RECEIVING SET

Basic, GP A thru V

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: Suitable antenna and set of phones or loudspeaker.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE

AN/FRR-49(V) SPECIAL GROUP "BASIC", "A", "B", AND "S": 2 to 32 mc in four bands.

AN/FRR-49(V) SPECIAL GROUP "C": 4 to 16 mc in two bands.

AN/FRR-49(V) SPECIAL GROUP "D" AND "H" thru "M": 2 to 16 mc in three bands.

AN/FRR-49(V) SPECIAL GROUP "E": 4 to 8 mc single band, 16 to 32 mc single band and 100 to 200 kc single band.

AN/FRR-49(V) SPECIAL GROUP "F": 2 to 8 mc in two bands.

AN/FRR-49(V) SPECIAL GROUP "G": 4 to 16 mc in two bands.

AN/FRR-49(V) SPECIAL GROUP "N": 8 to 16 mc in one band.

AN/FRR-49(V) SPECIAL GROUP "O": 8 to 32 mc in two bands.

AN/FRR-49(V) SPECIAL GROUP "P": 16 to 32 mc in one band and a single 500 kc channel.

AN/FRR-49(V) SPECIAL GROUP "R": 2 to 8 mc in two bands, 16 to 32 mc in one band, 200 to 400 kc in three bands and a single 500 kc channel.

AN/FRR-49(V) SPECIAL GROUP "T": 2 to 4 mc in one band, 8 to 32 mc in two bands.

AN/FRR-49(V) SPECIAL GROUP "U": 4 to 8 mc in one band and 16 to 32 mc single band.

AN/FRR-49(V) SPECIAL GROUP "V": 4 to 32 mc in three bands.

BAND CHANGE: By means of plug-in tuning drawers.

TYPE OF RECEPTION: AM, CW and MCW signals.

TUNING SYSTEM: Single dial control.

ANTENNA INPUT CIRCUIT: 75 ohms unbalanced, 300 ohms balanced.

SENSITIVITY: 10 uv for a 10 db signal to noise power ratio.

OUTPUT POWER: 2 W max.

POWER SOURCE REQUIRED: 110 or 220 v, 50 to 60 cps, single ph, 85 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Technical Material Corp, Mamoroneck, N.Y.

TUBE AND/OR CRYSTAL COMPLEMENT

Special Groups "Basic"

(15) 6BA6	(5) 6AL5	(5) 6T8	(5) 6AQ5
(5) 6J6	(38) 6AG5	(5) 5Y3GT	(5) OA2
(9) 6AU6	(3) 6AK5		

Total Tubes: (95)

Special Groups "A"

(15) 6BA6	(5) 6AL5	(5) 6T8	(5) 6AQ5
(5) 6J6	(30) 6AG5	(5) 5Y3GT	(5) OA2
(7) 6AU7	(3) 6AK5		

Total Tubes: (85)

Special Groups "B"

(15) 6BA6	(5) 6AL5	(5) 6T8	(5) 6AQ5
(5) 6J6	(43) 6AG5	(5) 5Y3GT	(5) OA2
(11) 6AU6	(6) 6AK5		

Total Tubes: (105)

Special Groups "C", "D", "M", "N"

(15) 6BA6	(5) 6AL5	(5) 6T8
(5) 6AQ5	(5) 6J6	(25) 6AG5
(5) 5Y3GT	(5) OA2	(5) 6AU6

Total Tubes: (75)

Special Groups "E"

(15) 6BA6	(5) 6AL5	(5) 6T8	(5) 6AQ5
(5) 6J6	(34) 6AG5	(5) 5Y3GT	(5) OA2
(8) 6AU6	(3) 6AK5		

Total Tubes: (90)

Special Groups "F"

(6) 6BA6	(2) 6AL5	(2) 6T8
(2) 6AQ5	(2) 6J6	(18) 6AG5
(2) 5Y3GT	(2) OA2	(4) 6AU6

Total Tubes: (40)

Special Groups "G"

(15) 6BA6	(5) 6AL5	(5) 6T8
(5) 6AQ5	(5) 6J6	(33) 6AG5
(5) 5Y3GT	(5) OA2	(7) 6AU6

Total Tubes: (85)

Special Groups "H", "I"

(15) 6BA6	(5) 6AL5	(5) 6T8
(5) 6AQ5	(5) 6J6	(41) 6AG5
(5) 5Y3GT	(5) OA2	(9) 6AU6

Total Tubes: (95)

Special Groups "J"

(21) 6BA6	(7) 6AL5	(7) 6T8
(7) 6AQ5	(7) 6J6	(55) 6AG5

RADIO RECEIVING SET

AN/FRR-49(V)

Basic, GP A thru V

(7) 5Y3GT (7) OA2 (12) 6AU6
Total Tubes: (130)

Special Groups "K"
(15) 6BA6 (5) 6AL5 (5) 6T8
(5) 6AQ5 (5) 6J6 (49) 6AG5
(5) 5Y3GT (5) OA2 (11) 6AU6
Total Tubes: (105)

Special Groups "L"
(21) 6BA6 (7) 6AL5 (7) 6T8
(7) 6AQ5 (7) 6J6 (51) 6AG5
(7) 5Y3GT (7) OA2 (11) 6AU6
Total Tubes: (125)

Special Groups "O"
(15) 6BA6 (5) 6AL5 (5) 6T8 (5) 6AQ5
(5) 6J6 (14) 6AG5 (5) 5Y3GT (5) OA2
(6) 6AU6 (15) 6AK5
Total Tubes: (80)

Special Groups "P"
(15) 6BA6 (5) 6AL5 (5) 6T8 (5) 6AQ5
(5) 6J6 (19) 6AG5 (5) 5Y3GT (5) OA2
(5) 6AU6 (6) 6AK5
Total Tubes: (75)

Special Groups "Q"
(20) 6BA6 (10) 6AL5 (5) 6T8 (10) 6AQ5
(10) 6J6 (10) 6AG5 (10) 5Y3GT (10) OA2
(15) 12AU7 (10) 6BE6
Total Tubes: (110)

Special Groups "R"
(20) 6BA6 (10) 6AL5 (5) 6T8 (10) 6AQ5
(10) 6J6 (51) 6AG5 (10) 5Y3GT (10) OA2
(11) 6AU6 (3) 6AK5 (15) 12AU7 (10) 6BE6
Total Tubes: (165)

Special Groups "S"
(20) 6BA6 (10) 6AL5 (5) 6T8 (10) 6AQ5
(10) 6J6 (31) 6AG5 (10) 5Y3GT (10) OA2
(6) 6AU6 (3) 6AK5 (15) 12AU7 (10) 6BE6
Total Tubes: (140)

Special Groups "T"
(15) 6BA6 (5) 6AL5 (5) 6T8 (5) 6AQ5
(5) 6J6 (29) 6AG5 (5) 5Y3GT (5) OA2
(9) 6AU6 (12) 6AK5
Total Tubes: (95)

Special Groups "U"
(15) 6BA6 (5) 6AL5 (5) 6T8 (5) 6AQ5
(5) 6J6 (11) 6AG5 (5) 5Y3GT (5) OA2
(3) 6AU6 (6) 6AK5
Total Tubes: (65)

Special Groups "V"
(6) 6BA6 (2) 6AL5 (2) 6T8 (2) 6AQ5
(2) 6J6 (15) 6AG5 (2) 5Y3GT (2) OA2
(4) 6AU6 (3) 6AK5
Total Tubes: (40)

CRYSTAL COMPLIMENT
SPECIAL GROUPS

TYPE	Basic	A	B	C	D	E	F	G	H	I	J	K
CR-46/U	5	5	5	5	5	5	2	5	5	5	7	5
CR-16/U	2	1	2	-	3	-	3	-	4	4	5	5
CR-18/U	7	6	9	5	2	6	1	7	5	5	7	6
CR-102	-	-	-	-	-	-	2	-	-	-	-	-
CR-104	-	-	-	-	-	-	2	-	-	-	-	-
Totals:	14	12	16	10	10	15	6	12	14	14	19	16

TYPE	L	M	N	O	P	Q	R	S	T	U	V
CR-46/U	7	5	5	5	5	15	15	15	5	5	2
CR-16/U	4	1	-	-	-	-	1	1	2	-	-
CR-18/U	7	4	5	6	5	-	8	5	7	3	4
CR-102	-	-	-	-	-	-	2	-	-	-	-
CR-104	-	-	-	-	-	-	2	-	-	-	-
Totals:	18	10	10	11	10	15	28	21	14	8	6

REFERENCE DATA AND LITERATURE

NAVSHIPS 92786A, Technical Manual for Radio Receiving Set AN/FRR-49(V).

Bureau of Ships Special Technical Requirements Serial 88OF-1(831-107)5185-A dated 17 May 1955 Revised 28 June 1955.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

AN/FRR-49(V) RADIO RECEIVING SET

Basic, GP A thru V

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
	AN/FRR-49(V) Special Group "Basic"		
5	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
2	Tuner, R.F. TN-5010/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
4	Tuner, R.F. TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	Tuner, R.F. TN-5012/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
1	Tuner, R.F. TN-5014/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	Cabinet Electrical Equipment CY-5045A/FRR-502	5-1/4 X 15 X 19	
	AN/FRR-49(V) Special Group "A"		
5	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
1	Tuner, R.F. TN-5010/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	Tuner, R.F. TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
3	Tuner, R.F. TN-5012/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
1	Tuner, R.F. TN-5014/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
1	Cabinet Electrical Equipment CY-5045A/FRR-502	5-1/4 X 15 X 19	
	AN/FRR-49(V) Special Group "B"		
5	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
2	Tuner, R.F. TN-5010/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
3	Tuner, R.F. TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
4	Tuner, R.F. TN-5012/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	Tuner, R.F. TN-5014/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
3	Storage Cabinet (panels) CY-5045/FRR-502	5-1/4 X 15 X 19	
	AN/FRR-49(V) Special Group "C"		
5	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
2	Tuner, R.F. TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
3	Tuner, R.F. TN-5012/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
	AN/FRR-49(V) Special Group "D"		
5	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
3	Tuner, R.F. TN-5010/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
1	Tuner, R.F. TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
1	Tuner, R.F. TN-5012/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
	AN/FRR-49(V) Special Group "E"		
5	Receiver Subassembly R-5007/FRR 502	5-1/4 X 15 X 19	35
5	Tuner, R.F. TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
1	Tuner, R.F. TN-5014/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	Tuner, R.F. TN-275/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
	AN/FRR-49(V) Special Group "F"		
2	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
3	Tuner, R.F. TN-5010/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
1	Tuner, R.F. TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
1	Storage Cabinet (Panels) CY-5045A/FRR-502	5-1/4 X 15 X 19	
	AN/FRR-49(V) Special Group "G"		
5	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
5	Tuner, R.F. TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	Tuner, R.F. TN-5012/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	Storage Cabinet (Panels) CY-5045A/FRR-502	5-1/4 X 15 X 19	
	AN/FRR-49(V) Special Group "H"		
5	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
4	Tuner, R.F. TN-5010/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
4	Tuner, R.F. TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
1	Tuner, R.F. TN-5012/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	Cabinet, Electrical Equipment CY-5045A/FRR-502	5-1/4 X 15 X 19	
	AN/FRR-49(V) Special Group "I"		

RADIO RECEIVING SET AN/FRR-49(V)

Basic, GP A thru V

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
5	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
4	Tuner, R.F. TN-5010/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
3	Tuner, R.F. TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	Tuner, R.F. TN-5012/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	Cabinet, Electrical Equipment CY-5045A/FRR-502 AN/FRR-49(V) Special Group "J"	5-1/4 X 15 X 19	
7	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
5	Tuner, R.F. TN-5010/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
4	Tuner, R.F. TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
3	Tuner, R.F. TN-5012/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
3	Cabinet, Electrical Equipment CY-5045A/FRR-502 AN/FRR-49(V) Special Group "K"	5-1/4 X 15 X 19	
5	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
5	Tuner, R.F. TN-5010/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
5	Tuner, R.F. TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
1	Tuner, R.F. TN-5012/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
3	Cabinet, Electrical Equipment CY-5045A/FRR-502 AN/FRR-49(V) Special Group "L"	5-1/4 X 15 X 19	
7	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
4	Tuner, R.F. TN-5010/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
5	Tuner, R.F. TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	Tuner, R.F. TN-5012/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
3	Cabinet, Electrical Equipment CY-5045A/FRR-502 AN/FRR-49(V) Special Group "M"	5-1/4 X 15 X 19	
5	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
1	Tuner, R.F. TN-5010/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
3	Tuner, R.F. TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
1	Tuner, R.F. TN-5012/FRR-502 AN/FRR-49(V) Special Group "N"	3-1/8 X 7-1/2 X 8-3/4	
5	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
5	Tuner, R.F. TN-5012/FRR-502 AN/FRR-49(V) Special Group "O"	3-1/8 X 7-1/2 X 8-3/4	
5	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
1	Tuner, R.F. TN-5012/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
5	Tuner, R.F. TN-5014/FRR-502 AN/FRR-49(V) Special Group "P"	3-1/8 X 7-1/2 X 8-3/4	
5	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
2	Tuner, R.F. TN-5014/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
3	Tuner, R.F. TN-277/FRR-502 AN/FRR-49(V) Special "Q"	3-1/8 X 7-1/2 X 8-3/4	
5	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
5	Mode Selector, Receiving CV-591/URR AN/FRR-49(V) Special Group "R"		
5	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
5	Mode Selector, Receiving CV-591/FRR-502		
1	Tuner, R.F. TN-5010/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
5	Tuner, R.F. TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
1	Tuner, R.F. TN-5014/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	Tuner, R.F. TN-277/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	Tuner, R.F. TN-276/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
3	Cabinet, Electrical Equipment CY-5045A/FRR-502	5-1/4 X 15 X 19	

AN/FRR-49(V) RADIO RECEIVING SET

Basic, GP A thru V

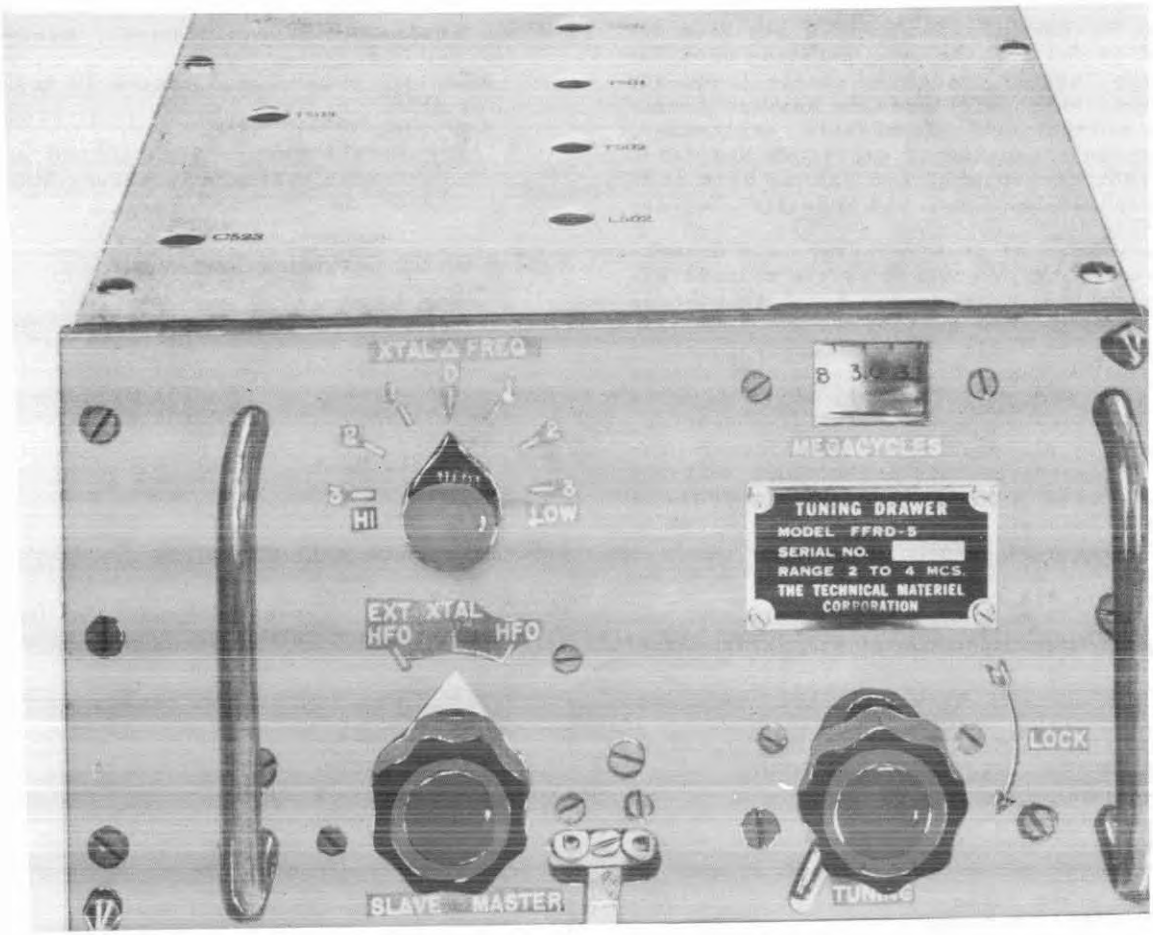
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
	AN/FRR-49(V) Special Group "S"		
5	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
5	Mode Selector, Receiving CV-591/FRR-502		
1	Tuner, R.F. TN-5010/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	Tuner, R.F. TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	Tuner, R.F. TN-5012/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
1	Tuner, R.F. TN-5014/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
	AN/FRR-49(V) Special Group "T"		
5	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
2	Tuner, R.F. TN-5010/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
3	Tuner, R.F. TN-5012/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
4	Tuner, R.F. TN-5014/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
	AN/FRR-49(V) Special Group "U"		
5	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
1	Tuner, R.F. TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	Tuner, R.F. TN-5014/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
	AN/FRR-49(V) Special Group "V"		
2	Receiver Subassembly R-5007/FRR-502	5-1/4 X 15 X 19	35
1	Tuner, R.F. TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	Tuner, R.F. TN-5012/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
1	Tuner, R.F. TN-5014/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
1	Cabinet, Electrical Equipment CY-5045A/FRR-502	5-1/4 X 15 X 19	

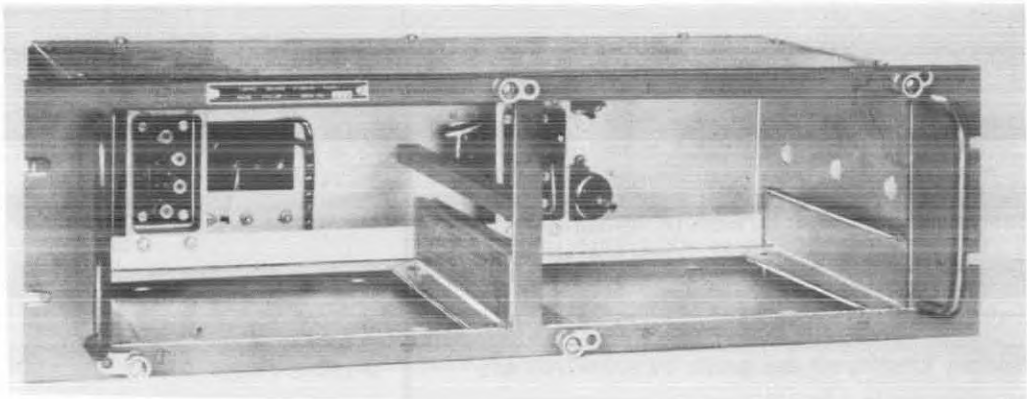
April 1959

RADIO RECEIVING SET

AN/FRR-49(V) BASIC (MOD)



Front View, Model FFRD



Cabinet, Electrical Equipment CY-5045A/FRR-502

Radio-Receivers

April 1959

AN/FRR-49(V) BASIC (MOD)

RADIO RECEIVING SET

FUNCTIONAL DESCRIPTION

The AN/FRR-49(V) BASIC (MOD) has been designed to fulfill the long existing need for a sturdy, easily tuneable, single frequency receiver, which will provide maximum flexibility and thoroughly dependable, unattended, continuous reception of Amplitude Modulated (AM) radio telephone, Continuous Wave (CW) telegraph or teletype, and Modulated Continuous Wave (MCW) telegraph signals.

The design of this receiver is a departure from the conventional single channel receiver in that it provides for both crystal and VFO operation of the HFO and BFO. The front end is simply and accurately tuned by a single Frequency Tuning Dial with a vernier reduction ratio of 10 to 1, which permits maximum traverse speed and ease of operation. A specially designed input transformer provides an impedance matching circuit suitable for use with a straight wire antenna, a balanced doublet, and a 75 ohm unbalanced or 300 ohm balanced line.

No field changes in effect at time of preparation (14 March 1959).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

BAND CHANGE: By means of plug-in tuning drawers.
TYPE OF RECEPTION: AM, CW and MCW signals.
TUNING SYSTEM: Single dial control.
ANTENNA INPUT CIRCUIT
UNBALANCED: 75 ohms.
BALANCED: 300 ohms.
SENSITIVITY: 10 uv for a 10 db signal to noise power ratio.
OUTPUT POWER: 2 W max.
POWER SOURCE REQUIRED: 110 or 220, 50 to 60 cps, approx 85 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

The Technical Materiel Corp., Mamaroneck, N.Y.
Contract NObsr-75528, dated 19 August 1958.
Contract NObsr-75656.
Approximate Cost: $420,600.00 with equipment spares for Contract NObsr-75528.

TUBE AND/OR CRYSTAL COMPLEMENT

(15) 6BA6	(5) 6AL5
(5) 6T8	(5) 6AQ5
(5) 6J6	(38) 6AG5
(5) 5Y3GT	(5) OA2
(9) 6AU6	(3) 6AK5

Total Tubes: (95)
No Crystals Used.

REFERENCE DATA AND LITERATURE

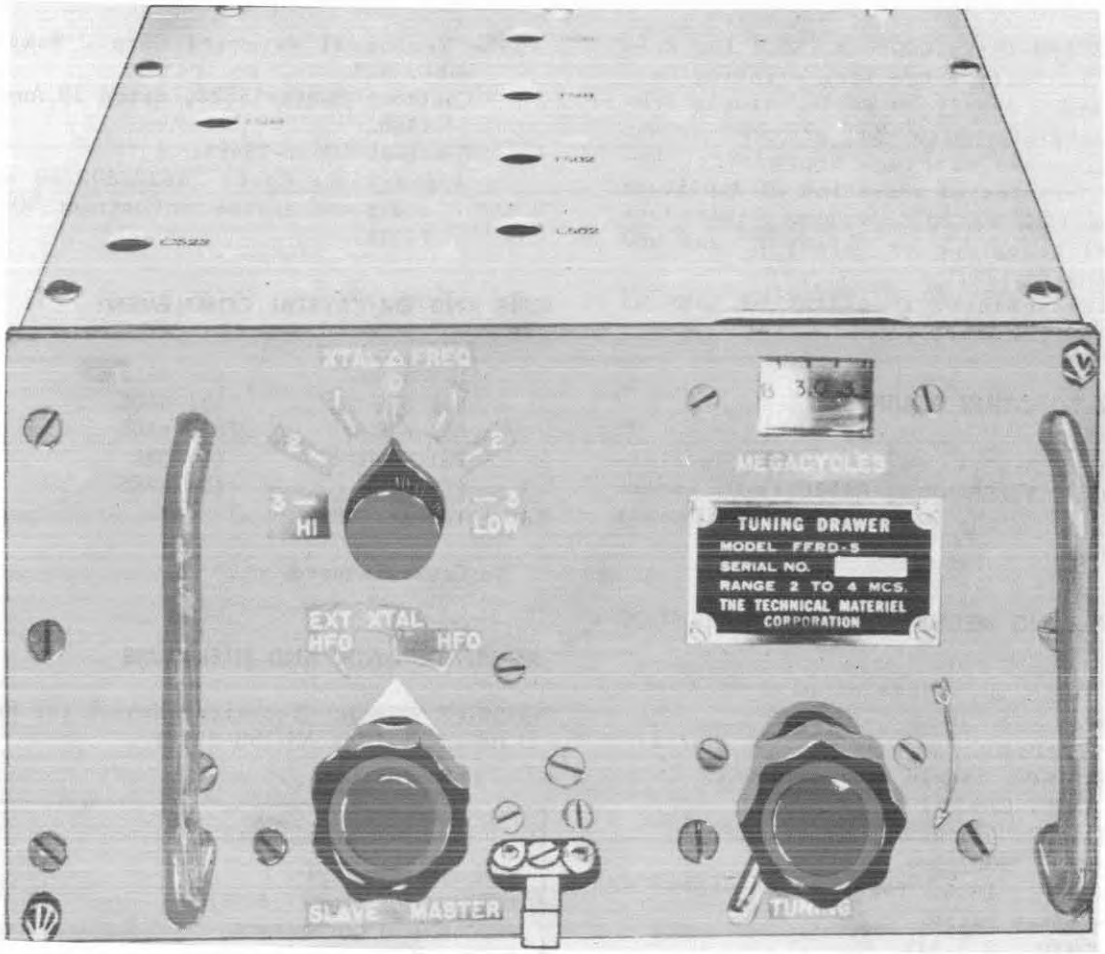
NAVSHIPS 92786A: Technical Manual for Radio Receiving Set AN/FRR-49(V).

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

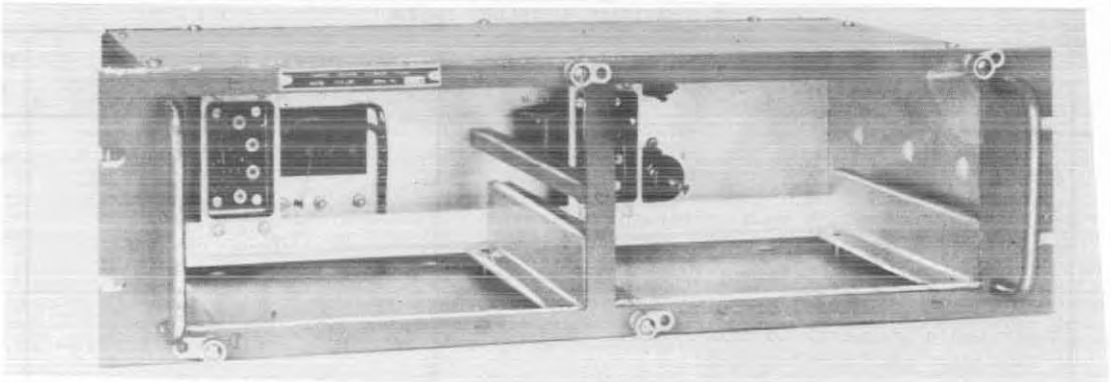
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
5	Communication Receiver R-5007A/FRR-502 Tech Materiel Corp Model FFR-3	5-1/4 X 15 X 19	Approx 35
2	Tuner Radio Frequency TN-5010/FRR-502 Tech Materiel Corp Model FFRD-5	3-1/8 X 7-1/2 X 8-3/4	
4	Tuner Radio Frequency TN-5011/FRR-502 Technical Materiel Corp Model FFRD-6	3-1/8 X 7-1/2 X 8-3/4	
2	Tuner Radio Frequency TN-5012A/FRR-502 Technical Materiel Corp Model FFRD-7B	3-1/8 X 7-1/2 X 8-3/4	
1	Tuner Radio Frequency TN-5014A/FRR-502 Technical Materiel Corp Model FFRD-8B	3-1/8 X 7-1/2 X 8-3/4	
2	Cabinet Electrical Equipment CY-5045A/FRR-502	5-1/4 X 9 X 19	

RADIO RECEIVING SET AN/FRR-49(V) GROUP A (MOD)



Front View, Model FFRD



Cabinet, Electrical Equipment CY-5045A/FFR-502

Radio-Receivers

April 1959

AN/FRR-49(V) GROUP A (MOD)

RADIO RECEIVING SET

FUNCTIONAL DESCRIPTION

The AN/FRR-49(V) GROUP A (MOD) has been designed to fulfill the long existing need for a sturdy, easily tuneable, single frequency receiver, which will provide maximum flexibility and thorough dependable, unattended, continuous reception of Amplitude Modulated (AM) radio telephone Continuous Wave (CW) telegraph or teletype, and MCW telegraph signals.

No field changes in effect at time of preparation (14 March 1959).

RELATION TO OTHER EQUIPMENT

The AN/FRR-49(V) Group A (MOD) is similar to the AN/FRR-49(V) BASIC (MOD) except it differs in the quantity of equipments supplied.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

BAND CHANGE: By means of plug-in tuning drawers.
TYPE OF RECEPTION: AM, CW and MCW signals.
TUNING SYSTEM: Single dial control.
ANTENNA INPUT CIRCUIT
UNBALANCED: 75 ohms.
BALANCED: 300 ohms.
SENSITIVITY: 10 uv for a 10 db signal to noise power ratio.
OUTPUT POWER: 2 W max.
POWER SOURCE REQUIRED: 110 or 220, 50 to 60 cps, approx 85 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

The Technical Materiel Corp., Mamaroneck, N.Y.
Contract NObsr-75528, dated 19 August 1958.
Contract NObsr-75656.
Approximate Cost: $420,000.00 with equipment spares for Contract NObsr-75528.

TUBE AND/OR CRYSTAL COMPLEMENT

(15) 6BA6	(5) 6AL5
(5) 6T8	(5) 6AQ5
(5) 6J6	(30) 6AG5
(5) 5Y3GT	(5) OA2
(7) 6AU6	(3) 6AK5

Total Tubes: (85)

No Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92786A: Technical Manual for Radio Receiving Set AN/FRR-49(V).

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
5	Communication Receiver R-5007A/FRR-502 Technical Materiel Corp Model FFR-3	5-1/4 X 15 X 19	approx 35
1	Tuner Radio Frequency TN-5010/FRR-502 Technical Materiel Corp Model FFRD-5	3-1/8 X 7-1/2 X 8-3/4	
3	Tuner Radio Frequency TN-5012A/FRR-502 Technical Materiel Corp Model FFRD-7B	3-1/8 X 7-1/2 X 8-3/4	
2	Tuner Radio Frequency TN-5011/FRR-502 Technical Materiel Corp Model FFRD-6	3-1/8 X 7-1/2 X 8-3/4	
1	Tuner Radio Frequency TN-5014A/FRR-502 Technical Materiel Corp Model FFRD-8B	3-1/8 X 7-1/2 X 8-3/4	
1	Cabinet Electrical Equipment CY-5045A/FRR-502	5-1/4 X 9 X 19	

Radio-Receivers

RADIO RECEIVING SET AN/FRR-49(V) GROUP C (MOD)

Radio Receiving Set R-5007/FRR-502

With Tuning Unit

FUNCTIONAL DESCRIPTION

The AN/FRR-49(V) GROUP C (MOD) has been designed to fulfill the long existing need for a sturdy, easily tunable, single frequency receiver, which will provide maximum flexibility and thoroughly dependable, unattended, continuous reception of Amplitude Modulation (AM) radio telephone, Continuous Wave (CW) telegraph or teletype, and Modulated Continuous Wave (MCW) telegraph signals.

No field changes in effect at time of preparation (17 March 1959).

RELATION TO OTHER EQUIPMENT

The AN/FRR-49(V) Group C (MOD) is similar to the AN/FRR-49(V) Group D (MOD), AN/FRR-49(V) Group E (MOD), AN/FRR-49(V) Group O (MOD), AN/FRR-49(V) Group U (MOD) and AN/FRR-49(V) Group Z (MOD) except that it differs in tube complement and equipment supplied.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF TUNING SYSTEM: Single dial control.
TYPE OF RECEPTION: AM CW and MCW signals.
ANTENNA INPUT CIRCUIT
UNBALANCED: 75 ohms.
BALANCED: 300 ohms.
OUTPUT POWER: 2 watts max.
OPERATING FREQUENCY RANGE: 50 to 400 kc, 500 kc and 2 to 32 mc.
OPERATING POWER REQUIREMENT: 110 or 220 v, 50 to 60 cps, single phase, 85 watts.

MANUFACTURER'S OR CONTRACTOR'S DATA

The Technical Materiel Corp., Mamaroneck, N.Y.
Contract NObsr-75528, dated 18 August 1958.
Contract NObsr-75656.
Approximate Cost: $420,600.00 with equipment spares for Contract NObsr-75528.

TUBE AND/OR CRYSTAL COMPLEMENT

(15) 6BA6	(5) 6AL5	(5) 6T8
(5) 6AQ5	(5) 6J6	(28) 6AG5
(5) 5Y3GT	(5) OA2	(5) 6AU6

Total Tubes: (78)
No Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92786A: Technical Manual for Radio Receiving Set AN/FRR-49(V).

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
5	Communication Receiver R-5007A/FRR-502	5-1/4 X 15 X 19	35
2	Tuner Radio Frequency TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
3	Tuner Radio Frequency TN-5012A/FRR-502	3-1/8 X 7-1/2 X 8-3/4	

April 1959

RADIO RECEIVING SET AN/FRR-49(V) GROUP D (MOD)

Radio Receiving Set R-5007/FRR-502 with Tuning Unit

FUNCTIONAL DESCRIPTION

The AN/FRR-49(V) GROUP D (MOD) has been designed to fulfill the long existing need for a sturdy, easily tunable single frequency receiver, which will provide maximum flexibility and thoroughly dependable, unattended, continuous reception of Amplitude Modulation (AM) radio telephone, Continuous Wave (CW) telegraph or teletype, and Modulated Continuous Wave (MCW) telegraph signals.

No field changes in effect at time of preparation (17 March 1959).

RELATION TO OTHER EQUIPMENT

The AN/FRR-49(V) Group D (MOD) is similar to the AN/FRR-49(V) Group E (MOD), AN/FRR-49(V) Group O (MOD), AN/FRR-49(V) Group U (MOD) and AN/FRR-49(V) Group Z (MOD) except that it differs in frequency coverage, tube complement and equipment supplied.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF TUNING SYSTEM: Single dial control.
TYPE OF RECEPTION: AM, CW and MCW signals.
ANTENNA INPUT CIRCUIT
UNBALANCED: 75 ohms.
BALANCED: 300 ohms.
OUTPUT POWER: 2 watts max.
OPERATING FREQUENCY RANGE: 50 to 400 kc, 500 kc and 2 to 32 mc.
OPERATING POWER REQUIREMENT: 110 or 220 v, 50 to 60 cps, single ph, approx 85 watts.

MANUFACTURER'S OR CONTRACTOR'S DATA

The Technical Materiel Corp., Mamaroneck, N.Y.
Contract NObsr-75528, dated 18 August 1958.
Contract NObsr-75656.
Approximate Cost: $420,600.00 with equipment spares for Contract NObsr-75528.

TUBE AND/OR CRYSTAL COMPLEMENT

(5) 6BA6	(5) 6AL5	(5) 6T8
(5) 6AQ5	(5) 6J6	(22) 6AG5
(5) 5Y3GT	(5) OA2	(5) 6AU6
(3) 6AK5		

Total Tubes: (75)
No Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92786A: Technical Manual for Radio Receiving Set AN/FRR-49(V).

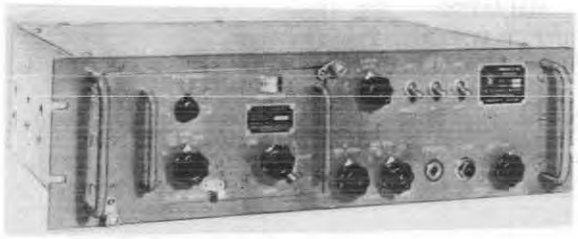
TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
5	Communication Receiver R-5007A/FRR-502	5-1/4 X 15 X 19	35
3	Tuner Radio Frequency TN-5010/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
1	Tuner Radio Frequency TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
1	Tuner Radio Frequency TN-5012A/FRR-502	3-1/2 X 7-1/2 X 8-3/4	

RADIO RECEIVING SET

AN/FRR-49(V) GROUP E (MOD)



Radio Receiving Set R-5007/FRR-502 with Tuning Unit

FUNCTIONAL DESCRIPTION

The AN/FRR-49(V) GROUP E (MOD) has been designed to fulfill the long existing need for a sturdy, easily tunable, single frequency receiver, which will provide maximum flexibility and thoroughly dependable, unattended, continuous reception of Amplitude Modulation (AM) radio telephone, Continuous Wave (CW) telegraph or teletype, and Modulated Continuous Wave (MCW) telegraph signals.

No field changes in effect at time of preparation (17 March 1959).

RELATION TO OTHER EQUIPMENT

The AN/FRR-49(V) Group E (MOD) is similar to the AN/FRR-49(V) Group D (MOD), AN/FRR-49(V) Group C (MOD), AN/FRR-49(V) Group O (MOD), AN/FRR-49(V) Group U (MOD) and AN/FRR-49(V) Group Z (MOD) except that it differs in tube complement and equipment supplied.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF TUNING SYSTEM: Single dial control.
TYPE OF RECEPTION: AM, CW, and MCW signals.
ANTENNA INPUT CIRCUIT
UNBALANCED: 75 ohms.
BALANCED: 300 ohms.
OUTPUT POWER: 2 watts max.
OPERATING FREQUENCY RANGE: 50 to 400 kc, 500 kc, and 2 to 32 mcs.
OPERATING POWER REQUIREMENT: 110 or 220 v, 50 to 60 cps, single ph, 85 watts.

MANUFACTURER'S OR CONTRACTOR'S DATA

The Technical Materiel Corp., Mamaroneck, N.Y.
Contract NObsr-75528, dated 18 August 1958.
Contract NObsr-75656.
Approximate Cost: $420,600.00 with equipment spares for Contract NObsr-75528.

TUBE AND/OR CRYSTAL COMPLEMENT

(15) 6BA6	(5) 6AL5	(23) 6AU6
(5) 6T8	(5) 6AQ5	(6) 6AK5
(5) 6J6	(34) 6AG5	(5) OA2
(5) 5Y3GT		

Total Tubes: (108)
No Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92786A: Technical Manual for Radio Receiving Set AN/FRR-49(V).

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO.	
R.D.B. IDENT. NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
5	Communication Receiver R-5007A/FRR-502	5-1/4 X 15 X 19	35
2	Tuner Radio Frequency TN-275/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
5	Tuner Radio Frequency TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
1	Tuner Radio Frequency TN-5014A/FRR-502	3-1/8 X 7-1/2 X 8-3/4	

April 1959

Radio-Receivers

RADIO RECEIVING SET AN/FRR-49(V) GROUP O (MOD)

Radio Receiving Set R-5007/FRR-502 with Tuning Unit

FUNCTIONAL DESCRIPTION

The AN/FRR-49(V) GROUP O (MOD) has been designed to fulfill the long existing need for a sturdy, easily tunable, single frequency receiver, which will provide maximum flexibility and thoroughly dependable, unattended, continuous reception of Amplitude Modulation (AM) radio telephone, Continuous Wave (CW) telegraph or teletype, and Modulated Continuous Wave (MCW) telegraph signals.

No field changes in effect at time of preparation (18 March 1959).

RELATION TO OTHER EQUIPMENT

The AN/FRR-49(V) Group O (MOD) is similar to the AN/FRR-49(V) Group E (MOD), AN/FRR-49(V) Group D (MOD), AN/FRR-49(V) Group C (MOD), AN/FRR-49(V) Group U (MOD) and AN/FRR-49(V) Group Z (MOD) except that it differs in tube complement and in equipment supplied.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF TUNING SYSTEM: Single dial control.
TYPE OF RECEPTION: AM, CW and MCW signals.
UNBALANCED: 75 ohms.
BALANCED: 300 ohms.
OUTPUT POWER: 2 watts max.
OPERATING FREQUENCY RANGE: 50 to 400 kc, 500 kc and 2 to 32 mc.
OPERATING POWER REQUIREMENT: 110 or 220 v, 50 to 60 cps, single ph, 85 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

The Technical Materiel Corp., Mamaroneck, N.Y.
Contract NObsr-75528, dated 18 August 1958.
Contract NObsr-75656.
Approximate Cost: $420,600.00 with equipment spares for Contract NObsr-75528.

TUBE AND/OR CRYSTAL COMPLEMENT

(15) 6BA6	(5) 6AL5	(5) 6T8
(5) 6AQ5	(5) 6J6	(14) 6AG5
(5) OA2	(6) 6AU6	(15) 6AK5
(5) 5Y3GT		

Total Tubes: (80)
No Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92786A: Technical Manual for Radio Receiving Set AN/FRR-49(V).

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
5	Communication Receiver R-5007A/FRR-502	5-1/4 X 15 X 19	35
1	Tuner Radio Frequency TN-5012A/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
5	Tuner Radio Frequency TN-5014A/FRR-502	3-1/8 X 7-1/2 X 8-3/8	

April 1959

Radio-Receivers

RADIO RECEIVING SET AN/FRR-49(V) GROUP U (MOD)

Radio Receiving Set R-5007/FRR-502

With Tuning Unit

FUNCTIONAL DESCRIPTION

The AN/FRR-49(V) GROUP U (MOD) has been designed to fulfill the long existing need for a sturdy, easily tunable, single frequency receiver, which will provide maximum flexibility and thoroughly dependable, unattended, continuous reception of Amplitude Modulation (AM) radio telephone, Continuous Wave (CW) telegraph or teletype, and Modulated Continuous Wave (MCW) telegraph signals.

No field changes in effect at time of preparation (18 March 1959).

RELATION TO OTHER EQUIPMENT

The AN/FRR-49(V) Group U (MOD) is similar to the AN/FRR-49(V) Group O (MOD), AN/FRR-49(V) Group E (MOD), AN/FRR-49(V) Group D (MOD), AN/FRR-49(V) Group C (MOD), except that it differs in equipment supplied and tube complement.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF TUNING SYSTEM: Single dial control.
TYPE OF RECEPTION: AM, CW and MCW signals.
ANTENNA INPUT CIRCUIT
UNBALANCED: 75 ohms.
BALANCED: 300 ohms.
OUTPUT POWER: 2 watts maximum.
OPERATING FREQUENCY RANGE: 50 to 400 kc, 500 kc and 2 to 32 mc.
OPERATING POWER REQUIREMENT: 110 or 220 v, 50 to 60, single ph, 85 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

The Technical Materiel Corp., Mamaroneck, N.Y.
Contract NObsr-75528, dated 18 August 1958.
Contract NObsr-75656.
Approximate Cost: $420,600.00 with equipment spares for Contract NObsr-75528.

TUBE AND/OR CRYSTAL COMPLEMENT

(15) 6BA6	(5) 6AL5	(5) 6T8
(5) 6AQ5	(5) 6J6	(11) 6AG5
(5) 5Y3GT	(5) OA2	(3) 6AU6
(6) 6AK5		

Total Tubes: (65)
No Crystals used.

REFERENCE DATA AND LITERATURE

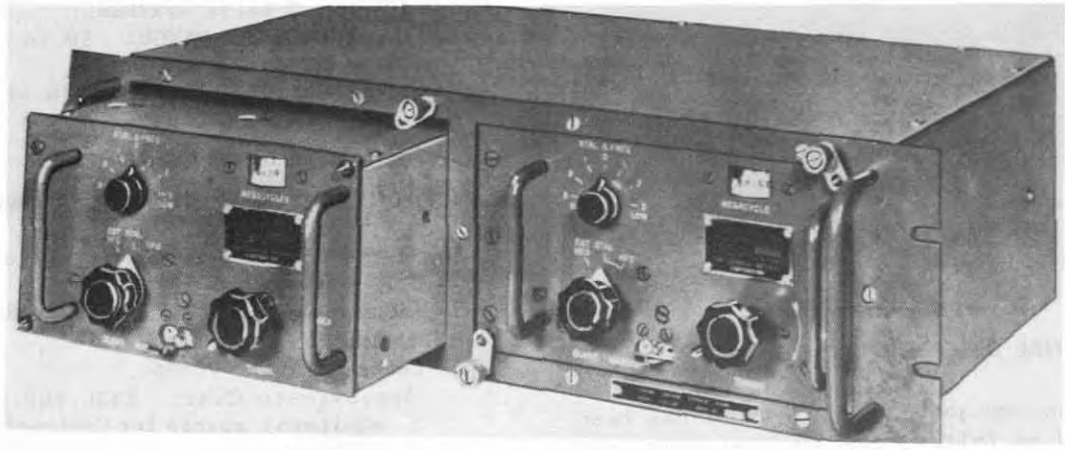
NAVSHIPS 92786A: Technical Manual for Radio Receiving Set AN/FRR-49(V).

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.

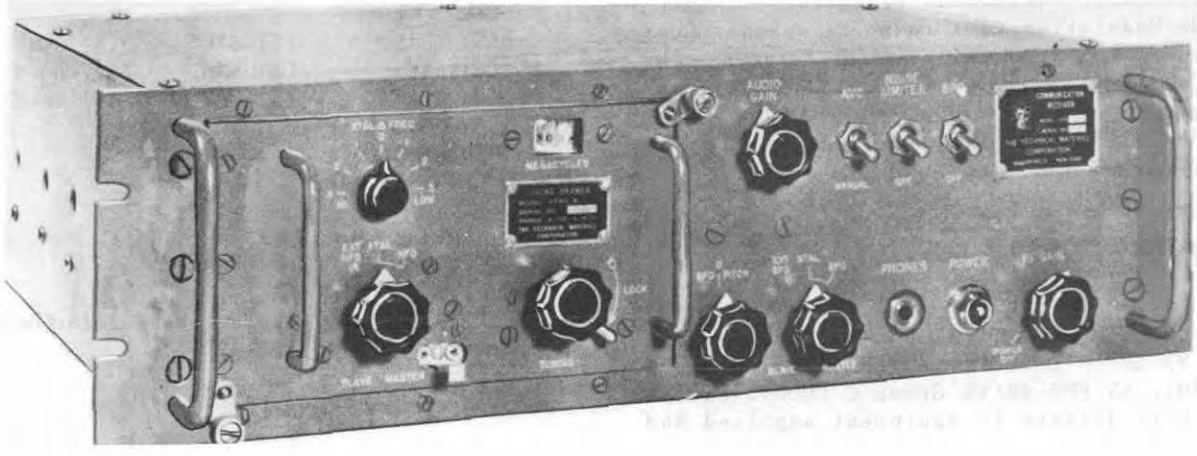
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
5	Communication Receiver R-5007A/FRR-502	5-1/4 X 15 X 19	35
1	Tuner Radio Frequency TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	Tuner Radio Frequency TN-5014A/FRR-502	3-1/8 X 7-1/2 X 8-3/4	

RADIO RECEIVING SET AN/FRR-49(V) GROUPS W THROUGH Z



Cabinet, Electrical Equipment CY-5045A/FRR-502 With Tuning Units



Receiver Subassembly R-5007/FRR-502 With Tuning Unit

FUNCTIONAL DESCRIPTION

The AN/FRR-49(V) Special Groups W through Z have been designed to fulfill the long existing need for a sturdy easily tunable receiver which will provide maximum flexibility and dependable unattended continuous reception of amplitude-modulated radio telephone, continuous wave telegraph or teletype and modulated continuous wave telegraph signals. The various special groups differ in the quantities and types of components but are functionally and mechanically similar.

No field changes in effect at time of preparation (13 June 1958).

EQUIPMENT REQUIRED BUT NOT SUPPLIED

Suitable antenna and set of phones or loudspeaker.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE
- AN/FRR-49(V) SPECIAL GROUP W: 2 to 32 mc.
- AN/FRR-49(V) SPECIAL GROUP X: 2 to 32 mc.
- AN/FRR-49(V) SPECIAL GROUP Y: 2 to 32 mc.
- AN/FRR-49(V) SPECIAL GROUP Z: 2 to 32 mc.

BAND CHANGE: By means of plug-in tuning drawers'.

AN/FRR-49(V) GROUPS W THROUGH Z

RADIO RECEIVING SET

TYPE OF RECEPTION: AM, CW, and MCW signals.
TUNING SYSTEM: Single dial control.
ANTENNA INPUT CIRCUIT: 75 ohms unbalanced, 300 ohms balanced.
SENSITIVITY: 10 uv for a 10 db signal noise power ratio.
OUTPUT POWER: 2 W max.
POWER REQUIREMENTS: 110/220 v, 50 to 60 cps, 1 ph, 85 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

The Technical Material Corp; Mamaroneck, N.Y.
Contract NObsr-64820.

TUBE AND/OR CRYSTAL COMPLEMENT

R-5007/FRR-502

(1) OA2
(1) 6AG5
(1) 6AQ5
(1) 6J6
(1) 5Y3GT
(1) 6AL5
(3) 6BA6
(1) 6T8

Total Tubes: (10)

TN-5010/FRR-502
(4) 6AG5
(1) 6AU6
Total Tubes: (5)

TN-5011/FRR-502
(4) 6AG5
(1) 6AU6
Total Tubes: (5)

TN-5012/FRR-502
(4) 6AG5
(1) 6AU6
Total Tubes: (5)

TN-5014/FRR-502
(1) 6AG5
(3) 6AK5
(1) 6AU6
Total Tubes: (5)

TN-5007/FRR-502
(1) CR-46/U
Total Crystals: (1)

TN-5010/FRR-502
(1) CR-16/U
Total Crystals: (1)

TN-5011/FRR-502
(1) CR-18/U
Total Crystals: (1)

TN-5012/FRR-502
(1) CR-18/U
Total Crystals: (1)

TN-5014/FRR-502
(1) CR-18/U
Total Crystals: (1)

REFERENCE DATA AND LITERATURE

NAVSHIPS 92786A: Technical Manual for Radio Receiving Set AN/FRR-49(V).

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT				NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
	Group					
X	W	Y	Z			
5	5	5	5	Receiver Subassembly, R-5007/FRR-502	5-1/2 X 15 X 19	
	1	1	1	Tuner, Radio Frequency, TN-5010/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	1	2	2	Tuner, Radio Frequency, TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	2	2	2	Tuner, Radio Frequency, TN-5012/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	1	1	2	Tuner, Radio Frequency, TN-5014/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
1		1	1	Cabinet, Electrical Equipment, CY-5045A/FRR-502	5-1/4 X 13 X 19	

RADIO RECEIVING SET AN/FRR-49(V) GROUP Z (MOD)

Radio Receiving Set R-5007/FRR-502

With Tuning Unit

FUNCTIONAL DESCRIPTION

The AN/FRR-49(V) GROUP Z (MOD) has been designed to fulfill the long existing need for a sturdy, easily tunable, single frequency receiver, which will provide maximum flexibility and thoroughly dependable, unattended, continuous reception, of Amplitude Modulation (AM) radio telephone, Continuous Wave (CW) telegraph or teletype, and Modulated Continuous Wave (MCW) telegraph signals.

No field changes in effect at time of preparation (18 March 1959).

RELATION TO OTHER EQUIPMENT

The AN/FRR-49(V) Group Z (MOD) is similar to AN/FRR-49(V) Group U (MOD), AN/FRR-49(V) Group C (MOD), AN/FRR-49(V) Group D (MOD), AN/FRR-49(V) Group E (MOD) and AN/FRR-49(V) Group O (MOD) except that it differs in equipment supplied and tube complement.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF TUNING SYSTEM: Single dial control.
TYPE OF RECEPTION: AM, CW and MCW signals.
ANTENNA INPUT CIRCUIT
UNBALANCED: 75 ohms.
BALANCED: 300 ohms.
OUTPUT POWER: 2 watt max.
OPERATING FREQUENCY RANGE: 50 to 400 kc, 500 kc and 2 to 32 mc.
OPERATING POWER REQUIREMENT: 110 or 220 v, 50 to 60 cps, single ph, 85 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

The Technical Materiel Corp., Mamaroneck, N.Y.
Contract NObsr-75528, dated 18 August 1958.
Contract NObsr-75656.
Approximate Cost: $420,600.00 with equipment spares for Contract NObsr-75528.

TUBE AND/OR CRYSTAL COMPLEMENT

(15) 6BA6	(5) 6AL5	(5) 6T8
(5) 6AQ5	(5) 6J6	(27) 6AG5
(5) 5Y3GT	(5) OA2	(7) 6AU6
(6) 6AK5		

Total Tubes: (85)
No Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 92786A: Technical Manual for Radio Receiving Set AN/FRR-49(V).

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
5	Communication Receiver R-5007A/FRR-502	5-1/4 X 15 X 19	35
1	Tuner Radio Frequency TN-5010/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	Tuner Radio Frequency TN-5011/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	Tuner Radio Frequency TN-5012A/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
2	Tuner Radio Frequency TN-5014A/FRR-502	3-1/8 X 7-1/2 X 8-3/4	
1	Cabinet Electrical Equipment CY-5045A/FRR-502	5-1/4 X 9 X 19	

January 1958

Radio-Receivers

RADIO RECEIVING SET AN/FRR-5

FUNCTIONAL DESCRIPTION

The AN/FRR-5 is used for the reception of FM signals in fixed station communications.

No field changes in effect at time of preparation (21 May 1957).

RELATION TO OTHER EQUIPMENT

Part of Radio Set AN/FRC-9

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF RECEPTION: FM.
FREQUENCY RANGE: 30 to 40 mc.
NUMBER OF CHANNELS: Single.
TYPE OF RECEIVER: Superheterodyne.
FREQUENCY CONTROL: Crystal.

MANUFACTURER'S OR CONTRACTOR'S DATA

Galvin Mfg. Co.

TUBE AND/OR CRYSTAL COMPLEMENT

Total Tubes: (14) Type Not Available.

Total Crystals: (2) Type Not Available.

REFERENCE DATA AND LITERATURE

Nomenclature Card for Radio Receiving Set AN/FRR-5 dated 29 September 1950.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiver		
2	Technical Manuals		
1	Loudspeaker		
2	Crystals		

RADIO RECEIVING SET AN/FRR-503

FUNCTIONAL DESCRIPTION

The AN/FRR-503 is an ultra-high frequency receiver, crystal tuned to a frequency in the range of 470 to 500 megacycles, which detects amplitude modulation in the UHF link due to the doppler effect and sends an alarm to a central monitoring station.

No field changes in effect at time of preparation (3 May 1957).

RELATION TO OTHER EQUIPMENT

Part of AN/FPS-503.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF RECEPTION: AO.
FREQUENCY RANGE: 470 to 500 mc.
NUMBER OF BANDS: Single.
POWER SOURCE REQUIRED: 115 v, 60 cps, single ph., 900 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

RCA Victor Co., Limited, Montreal, Canada

TUBE AND/OR CRYSTAL COMPLEMENT

Total Tubes: (72) Type Not Available.
Crystals: Not Available.

REFERENCE DATA AND LITERATURE

Nomenclature Card for Receiving Set, Radio AN/FRR-503 dated 29 October 1956.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Electrical Equipment Cabinet CY-5064/FRR-503	24 x 26 x 91	
1	Power Distribution Panel SB-5020/FRR-503		
1	Power Supply PP-5047/FRR-503		
1	Alarm Control C-5050/FRR-503		
1	Alarm Control C-5051/FRR-503		
1	Alarm Control C-5052/FRR-503		
1	Radio Receiver R-5012/FRR-503		
1	Control-Monitor C-5053/FRR-503		
1	Radio Interference Filter F-5013/FRR-503		
1	Audio Frequency Amplifier AM-5043/FRR-503		
1	Relay Assembly RE-5004/FRR-503		
1	Control-Monitor C-5054/FRR-503		

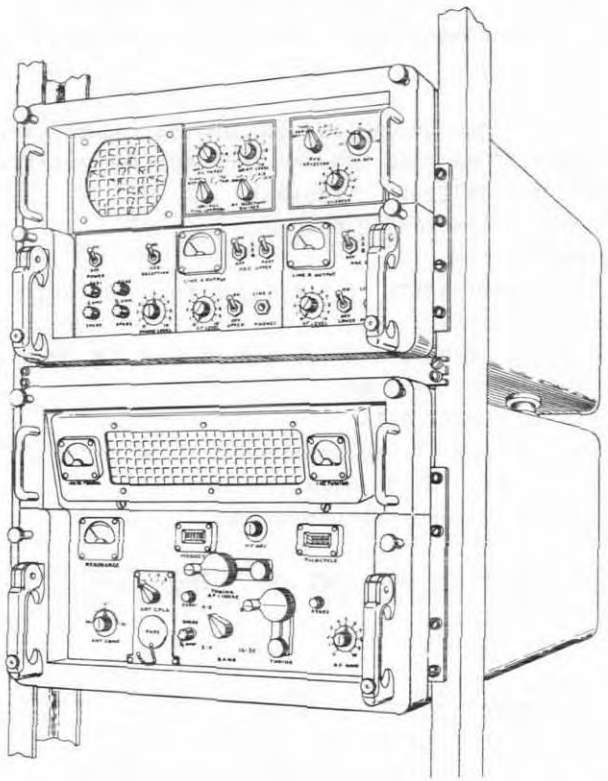
Cog Service: USN FSN: 5840-784-4332 Functional Class:

USA	USN	USAF

Used by

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: National Co. Inc., (42498).



Radio Receiving Set AN/FRR-59

FUNCTIONAL DESCRIPTION:

Radio Receiving Set AN/FRR-59 is a triple-conversion superheterodyne receiver designed to operate in the frequency range of 2 to 32 mc. It is intended for use in all classes and types of ships employed in the U. S. Navy in communications between ships, between ship and shore, and with aircraft.

No field changes in effect at time of preparation (27 April 1961).

TECHNICAL CHARACTERISTICS:

FREQUENCY RANGE

NOMINAL: 2 to 32 mc.

FREQUENCY OVERLAP: 1.9 to 32.1 mc.

TUNING BANDS: 4.

TYPE OF FREQUENCY CONTROL

INCREMENTAL TUNING: 1 kc tuning increments controlled by a crystal standard.
CONTINUOUS TUNING: 300 100 kc increments controlled by the crystal standard; lesser increments oscillator-controlled.

TYPES OF RECEPTION
A1: On/off keyed cw.
A2: On/off keyed tune-modulated cw.
A3: Voice (amplitude) modulated cw.
A9: Single sideband.
F1: Frequency-shift teletype, high-speed data transmission, and four-channel multiplex.
F4: Facsimile.

MAXIMUM RECEIVER OUTPUT
AF LINE TERMINALS: Minimum 60 mw into 600 ohm noninductive-resistive load.
PHONE JACKS: Maximum 15 mw into 600 ohm noninductive-resistive load.

FREQUENCY-CONTROL CRYSTAL (INTERNAL STANDARD)
TYPE: CR-36/U (special) in HC-6/U holder.
OSCILLATION FREQUENCY: 1 mc.
CRYSTAL TEMPERATURE COEFFICIENT: 1 ppm/deg C from P80 deg C to P90 deg C.
CRYSTAL OPERATING TEMPERATURE: 85 deg C (185 deg F) porm 1 deg C.
FREQUENCY ACCURACY OVER OPERATING RANGE: Porm 0.0005% of the nominal frequency at 85 deg C (185 deg F) porm 5 cps at 1 mc.

FREQUENCY STABILITY AND ACCURACY DATA
INCREMENTAL TUNING (FULL DRIFT CANCELLATION): 1 part in 10^7.
CONTINUOUS TUNING: 1 part in 10^7 porm 150 cyc.

RECOMMENDED ANTENNA: 50 ohm terminal impedance.

POWER REQUIREMENTS
VOLTAGE: 105, 115, or 125 v, 50 to 60 cyc, single ph.
CURRENT: 2.17 amps, nominal.
POWER: 250 W at 115 v, 60 cyc.

HETERODYNE FREQUENCY RANGE
HIGH-FREQUENCY OSCILLATOR: 3.725 to 33.725 mc.
INTERPOLATION OSCILLATOR: 680 to 580 kc.

IF FREQUENCIES DEVELOPED
FIRST CONVERSION: 1625 to 1725 kc (100 kc band).
SECOND CONVERSION: 220 kc.
THIRD CONVERSTION: 80 kc.

AMBIENT TEMPERATURE: M28 deg C to P65 deg C (M18 deg F to P149 deg F).

RELATION TO OTHER EQUIPMENT:

This equipment is identical to AN/WRR-2, except it is designed for ship operation; and it is shock mounted.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Headset NT-49985-A or equivalent; (1) Antenna; (as required) Coaxial Cable RG-10A/U; (as required) Power Cable THFA; (as required) Power Cable DHFA.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Radio Receiving Set AN/FRR-59 includes:		21.0 x 22.5 x 24.5	250
1	Electronic Frequency Converter CV-920/WRR-2		12.2 x 19.8 x 22.5	135
1	Intermediate Frequency-Audio Amplifier AM-2477/WRR-2		10.5 x 19.8 x 22.5	100
1	Signal IF Cable W601			
1	Carrier Cable W602			
1	Power Cable W603-1			
1	Control Cable W604			
1	Patch Cord Cable W624			
1 set	Miscellaneous Cable Connectors			
1 set	Rack Mount Hardware			
1	Panel Filter			
2	Technical Manual NAVSHIPS 93550(A)			
1	Maintenance Standards Book NAVSHIPS 93550.42			
1	Operating Instructions Chart NAVSHIPS 93550.21			

REFERENCE DATA AND LITERATURE:

NAVSHIPS 93550(A): Technical Manual for Radio Receiving Sets AN/WRR-2 and AN/FRR-59.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (32) 5654 (5) 5670 (1) 5725 (7) 5749 (6) 5750 (3) 5751 (2) 5814A
(4) 6005 (3) 0B2WA (1) 12AT7WA

CRYSTALS: (1) CR-36/U

SEMI-CONDUCTORS: (4) 1N198 (2) 1N457 (10) 1N458 (8) 1N547

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	16.0	340

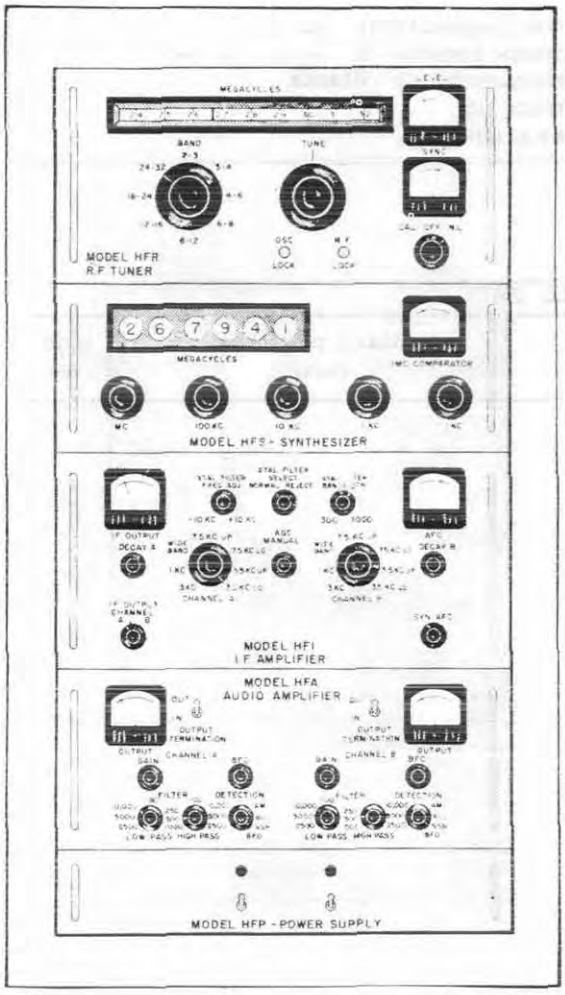
AN/FRR-59 RADIO RECEIVING SET

PROCUREMENT DATA

PROCURING SERVICE: USN
DESIGN COG: USN, BuShips
SPEC &/OR DWG: SHIPS-R-3174A

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
National Co. Inc.	Malden, Mass.	NObsr-75698, 26 February 1959	

RADIO RECEIVING SET AN/FRR-60



Radio Receiving Set AN/FRR-60

FUNCTIONAL DESCRIPTION

The AN/FRR-60 is designed to receive single sideband signals in dual frequency or space diversity over the frequency range of 2 to 32 megacycles (MC). It may be used to receive CW, FSK, MCW, Pulse, Phase and other types of signals by means of appropriate adapters. The receiver is provided with a synthesizer controlled by a 1 megacycle standard which provides a stability of 1 part in 10^8 per day. The receiver is also supplied with automatic frequency control which may be disabled when not required.

No field changes in effect at time of preparation (3 November 1960).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF PRESENTATION: Audio & electric meter type.

NUMBER OF BANDS: 8 bands.

NUMBER OF CHANNELS: 320,000 channels.

STABILITY (AFC DISABLED): 1 mc internal standard.

INTERNAL STANDARD: 1 mc with a one day stability of 1 part in 10^8 correctable to an external frequency standard.

NOISE FIGURE: 6 db or better.

INTERMODULATION: 60 db down from the max tone.

AUDIO REEQUENCY DISTORTION: 40 db through the audio channels.

OVER-ALL AUDIO FREQUENCY RESPONSE: P3 db from 300 cps to 7,500 cps, output adjustable from 0 to 1 Watt.

IMAGE AND SPURIOUS RESPONSE: 80 db.

NOISE LIMITER: Improved noise limiter for AM, SSB, pulse and phase type information.

HUM LEVEL: Minimum 50 db at 1 W of modulated output.

AMBIENT TEMPERATURE RANGE: 0 deg C to P50 deg C.

OPERATING FREQUENCY RANGE: 2 to 32 mc.

OPERATING POWER RQMT: 115 or 230 v ac, 50 to 60 cps single ph.

MANUFACTURER'S OR CONTRACTOR'S DATA

The Technical Materiel Corp., Mamaroneck, N. Y.
Model DDR-5.
Contract NObsr-75928, dated 17 June 1959.
Approximate cost $20,000 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

Electron Tube and/or Crystal data not available.

Radio-Receivers

AN/FRR-60 RADIO RECEIVING SET

REFERENCE DATA AND LITERATURE

No. 3692-S: Technical Materiel Corporation's Catalog for Radio Receiving Set (Model DDR-5) AN/FRR-60.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE NAVY BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO.

EQUIPMENT SUPPLIED DATA

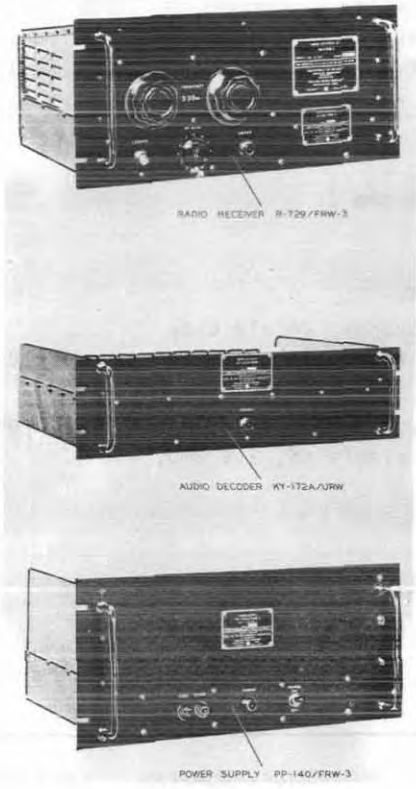
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiving Set AN/FRR-60 consists of:		
2	I. F. Amplifier Model H. F. I.		
2	A. F. Amplifier Model H. F. A.		
2	Synthesizer Model H. F. S.		
2	Power Supply Model H. F. P.		

Cog Service: USN FSN: Functional Class:

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Collins Radio Company.



Radio Receiving Set AN/FRW-3

FUNCTIONAL DESCRIPTION:

Radio Receiving Set AN/FRW-3 is intended for installation in permanent buildings at special missile test sites. It provides monitoring facilities for the radio control signals sent to guided missiles and pilotless aircraft.

No field changes in effect at time of preparation (11 September 1961).

TECHNICAL CHARACTERISTICS:

RADIO RECEIVER R-729/FRW-3

FREQUENCY RANGE: 406 to 549 mc.
FREQUENCY CHANNELS: 144.
CHANNEL SPACING: Every integral megacycle frequency.
FREQUENCY STABILITY: Porm 0.01%.
TYPE OF RECEPTION: FM.

SENSITIVITY: 5 uv or less input for 6 db signal-plus noise-to-noise ratio with P300 kc. deviation.
SELECTIVITY: 1.7 porm 0.3 mc at 6 db, 5 mc at 60 db.
SUPPLY VOLTAGES (SUPPLIED BY PP-1401/FRW-3): 150 v dc, 6.3 v ac, 55 to 65 cyc.
INPUT IMPEDANCE: 52 ohms, approx; unbalanced.
SPURIOUS RESPONSE: 60 db down.
AUDIO FREQUENCY RESPONSE: Porm 1 db from 1 kc to 25 kc, P1 to M3 db from 0.3 kc to 100 kc with 10 kc as reference.
HARMONIC DISTORTION: From 300 cps to 1 kc is 3% max, from 1 kc to 100 kc is 2% max.
PHASE RESPONSE: Is linear with frequency from 300 cps to 100,000 cps with a max deviation from linearity of porm 2 deg.
TEMPERATURE RANGE
OPERATING: M55 to P65 deg C.
NON-OPERATING: M55 to P85 deg C.

AUDIO DECODER KY-172A/URW
FREQUENCY CHANNELS: 20.
FREQUENCY STABILITY: Porm 1%.
INPUT IMPEDANCE: 560 ohms, approx; unbalanced.
SUPPLY VOLTAGES (SUPPLIED BY PP-1401/FRW-3): 265 v dc, M20 v dc, 6.3 v ac, 55 to 65 cyc.

POWER SUPPLY PP-1401/FRW-3
OUTPUTS: 150 v dc at 200 ma, 265 v dc at 65 ma, M20 v dc at 25 ma, 6.3 v ac at 14 amp.
INPUT: 115 v, 55 to 65 cyc, single ph, 2.0 amp, 230 W.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Antenna; (1) Relay Rack CY-614/G; (1) RF Cable RG-8/U; (as required) Power Cable.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Radio Receiving Set AN/FRW-3 includes:			
1	Radio Receiver R-729/FRW-3		8-23/32 x 18-3/8 x 19	25.5
1	Audio Decoder KY-172A/URW		5-7/32 x 19 x 20-1/2	20.5
1	Power Supply PP-1401/FRW-3		8-23/32 x 17-7/8 x 19	51
1	Connector AN3108B-18-20D			
1	Connector AN3108B-18-3S		1-5/16 x 2-1/8 x 2-11/16	0.2
7	Cable Clamp AN3057-10		1-1/8 x 1-7/16 x 1-7/16	0.05
2	Connector AN3108B-18-12P		29/64 x 1-11/32 x 2-11/16	0.15
1	Connector AN3108B-18-20S			0.145
1	Connector AN3108B-18-12S			0.148
4	Connector UG-88/U		5/8 x 5/8 x 1-1/32	0.03
1	Connector UG-21B/U		25/32 x 25/32 x 1-13/16	0.3
1	Connector AN3108B-18-8S		1-11/32 x 2-9/64 x 2-11/16	0.15
1	Connector AN3108B-28-15S		2 x 2-23/32 x 3-13/32	0.15

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Connector AN3108B-28-21S		2 x 2-23/32 x 3-13/32	0.32
2	Cable Clamp AN3057-16		1-5/16 x 1-7/8 x 1-7/8	0.09

REFERENCE DATA AND LITERATURE:

NA16-30FRW3-501: Handbook for Radio Receiving Set AN/FRW-3.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (2) 5R4WGB (1) 6J4WA (10) 5654/6AK5W (24) 5670 (2) 5725/6AS6W
(1) 5726/6AL5W (1) 5751 (1) 5763 (2)5876

CRYSTALS: (25) CR-23/U

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

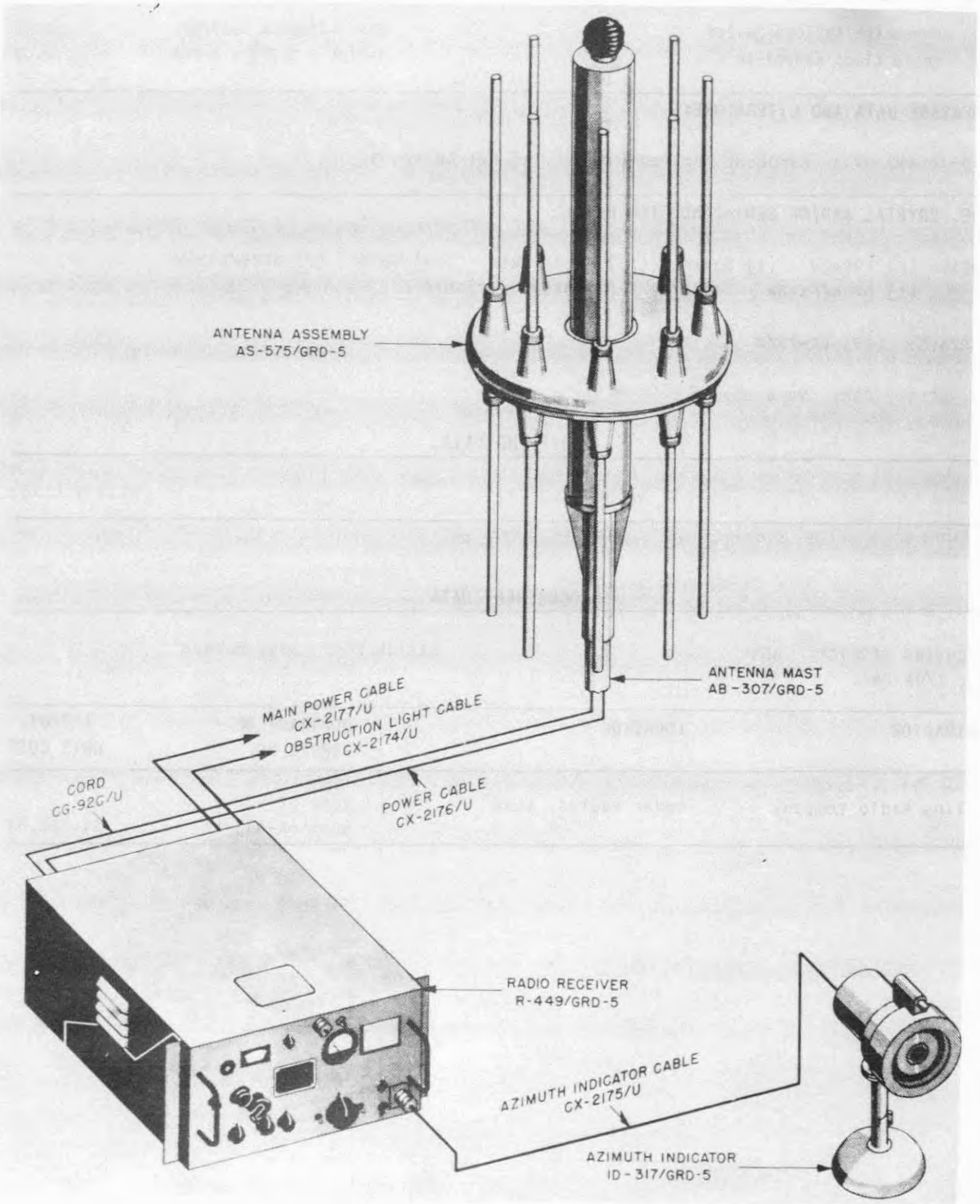
PROCURING SERVICE: USN DESIGN COG: USN, BuWeps
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Collins Radio Company	Cedar Rapids, Iowa	NOas 52-920 NOas 55-618-r	$4,581.64

April 1958

RADIO DIRECTION FINDER SET

AN/GRD-5



Radio Direction Finder Set AN/GRD-5

AN/GRD-5 RADIO DIRECTION FINDER SET

April 1958

FUNCTIONAL DESCRIPTION

The AN/GRD-5 is designed to provide instantaneous azimuth indication on continuous wave, modulated continuous wave, and amplitude modulated voice transmissions from an aircraft in the 120 to 156 megacycle frequency range. It features automatic sensing means so that a single bearing is presented at all times while a signal is being received, the presence of a signal being indicated visually by a neon lamp.

It is used in conjunction with ground control approach equipment used in locating and homing aircraft, and it may either be truck mounted or used at control tower installations.

No field changes in effect at time of preparation (17 October 1957).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) Loudspeaker or Headset, (9) Crystal CR-23/U.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE
DIRECTION FINDING: 120 to 156 mc.
COMMUNICATION: 100 to 160 mc.
FREQUENCY CONTROL: Crystal or continuously variable.
RECEPTION: A1, A2, A3.
TYPE RECEIVER: Superheterodyne.
RECEIVER OUTPUT: Greater than 500 mw into 600 ohms load with less than 10% distortion.
INTERMEDIATE FREQUENCY: 15.09 mc.
SENSITIVITY: Better than 10 uv at 30% modulation, 400 cps, 20 db signal-plus-noise to noise ratio.
TUNING BANDS: (9) Crystal-controlled preset channels, (1) continuously-tuned channel.
IMPEDANCE DATA
INPUT: 50 ohms.
OUTPUT: 600 ohms.
SQUELCH DATA: Operates from complete squelch to complete unsquelched condition on change of incoming signal of less than 2 db.
POWER REQUIREMENTS: 115 ±5.75 v, 60 ±6 cps, single ph, 276 W nom.
TYPE ANTENNA: Eight element Adcock array using broad-band dipoles.

MANUFACTURER'S OR CONTRACTOR'S DATA

Federal Telecommunication Laboratories, Inc., Nutley, N.J.
Contract NObsr-49106, dated 16 May 1950.
Approximate Cost: $7350.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 12AT7WA
(4) 12AU7
(1) 5R4WGB
(1) 5Y3WGTB
(1) 5725/6AS6W
(3) 5726/6AL5W
(3) 5654/6AK5W
(4) 5749/6BA6W
(2) 6AK6
(2) 6AU6WA
(1) 6X4WA
(2) 6005/6AQ5W
(1) 6626/OA2WA
(3) 6627/OB2WA
Total Tubes: (30)
(9) CR-23/U
Total Crystals: (9)

REFERENCE DATA AND LITERATURE

NAVSHIPS 91871: Technical Manual for Radio Direction Finder Set AN/GRD-5.

TYPE CLASSIFICATION
DESIGN COGNIZANCE BUSHIPS
PROCUREMENT COGNIZANCE SHIPS-D-52
STOCK NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Radio Receiver R-449/GRD-5	10.0	16 x 29-1/4 x 37	160
1	Azimuth Indicator ID-317/GRD-5	3.5	14 x 17-1/2 x 25	69
1	Antenna Mast AB-307/GRD-5	22.5	14 x 19 x 147-1/2	478
1	Antenna AS-575/GRD-5	40.0	33 x 34-1/2 x 62	240
1	Set of Equipment Spares	11.6	20-1/2 x 21 x 47	187

RADIO DIRECTION FINDER SET AN/GRD-5

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Antenna AS-575/GRD-5	25-3/8 x 25-3/8 x 57-3/16	70
1	Antenna Mast AB-307/GRD-5 including: Guys	300 x 384 x 384	167
1	Azimuth Indicator ID-317/GRD-5	6 x 6-5/8 x 13	8
1	Radio Receiver R-449/GRD-5	8-25/32 x 17-17/32 x 19-7/32	95
1	Antenna Power Cable CX-2176/U	1200 lg	17
1	Antenna RF Cable CG-92B/U	1200 lg	13
1	Obstruction Light Power Cable CX-2174/U	96 lg	0.8
1	System Power Input Cable CX-2177/U	96 lg	0.8
1	Indicator Cable CX-2175/U	180 lg	2
1	Set of Equipment Spares	15-1/8 x 16-1/4 x 43-1/2	152
2	Technical Manual NavShips 91871	3/8 x 8-1/2 x 11-1/2	0.5

October 1957

Radio-Receivers

DIRECTION FINDER SET AN/GRD-8

FUNCTIONAL DESCRIPTION

The AN/GRD-8 is a general purpose direction finder which gives instant indication of signal bearing for evaluation of worth of bearing. It provides A0, A1, A2 reception over a frequency range of 1.5 to 22 mc. Visual indication of target signal is indicated on a 5 in. diameter cathode ray plan-position-indicator (PPI) with 0 to 360 degrees azimuth scale. The equipment is suitable for table or rack mounting.

No field changes in effect at time of preparation (2 April 1957).

RELATION TO OTHER EQUIPMENT

This equipment is the Radio Set SCR-291-A modified for high frequency application. Not interchangeable with the SCR-291-A.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

RECEPTION: A0, A1, A2.
FREQUENCY RANGE: 1.5 to 22 mc.
INDICATION: PPI.
AZIMUTH RANGE: 0° to 360°.
POWER SOURCE REQUIRED: 110 v, 60 cps, single ph.
MOUNTING: Table or rack.

MANUFACTURER'S OR CONTRACTOR'S DATA

New York Naval Shipyard, Brooklyn, N.Y.
Approximate Cost: $10,000.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 1R5	(2) 5U4G	(1) 6SH7
(1) 2X2A	(1) 6AC7WA	(1) 6SJ7
(1) OC3W	(1) 6H6	(4) 6SK7WA
(1) OD3W	(1) 6SQ7	(1) 6J5
(1) 3B7	(1) 6L6WGB	(1) 6V6GT
(1) 5BP1	(1) 6SA7Y	(4) 7V6

Total Tubes: (25)

REFERENCE DATA AND LITERATURE

Nomenclature Card for Direction Finder Set AN/GRD-8 dated 21 January 1953.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiver		
1	Control Panel		
1	Telephone Panel		
1	Rack		
1	Goniometer		
1	Azimuth Indicator		
1	Antenna		
1	Phase Inverter		
1	Cabling		
1	Power Unit and Accessories		

RADIO RECEIVER

Radio-Receiver AN/GRR-2

FUNCTIONAL DESCRIPTION

The AN/GRR-2 is a general purpose superheterodyne receiver covering the frequency range of 550 KC to 42 mc in six bands. It is designed to receive amplitude-modulated or keyed continuous-wave signals. The receiver may be operated with the internal power supply from an AC source, or from an external DC source.

No field changes in effect at time of preparation (27 March 1958).

RELATION TO OTHER EQUIPMENT

The AN/GRR-2 is mechanically and electrically interchangeable with the Radio Receiving Equipments RCF and RCF-1 which it replaces. The AN/GRR-2, RCF and RCF-1 are Hallicrafters Inc Model SX-28-A Super Skyrider Receiver.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY
- BAND 1: 550 kc to 1.6 mc.
- BAND 2: 1.6 mc to 3.0 mc.
- BAND 3: 3.0 mc to 5.8 mc.
- BAND 4: 5.8 mc to 11 mc.
- BAND 5: 11 mc to 21 mc.
- BAND 6: 21 mc to 42 mc.

FREQUENCY RESPONSE: Flat to within 2.5 db over the frequency range of 70 to 3000 cycles.

INTERMEDIATE FREQUENCY: 455 kc.

SENSITIVITY: 6 to 20 uv for a 500 mw output over the entire range of the receiver.

TYPE RECEPTION: A1, A2, A3.

POWER OUTPUT: 8 W into a 5,000 ohm load.

POWER SOURCE REQUIRED: 110 to 125 v, 50 to 60 cps, single ph, 138 W; or 6 v DC, 4.8 amp heater supply, and 270 v DC, 150 ma, 108 W high voltage supply.

Radio-Receiver

AN/GRR-2

RADIO RECEIVER

MANUFACTURER'S OR CONTRACTOR'S DATA

The Hallicrafters Inc, Chicago, Ill.
Approximate Cost: $304.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 6AB7
(2) 6SK7
(1) 6J5
(1) 5Z3
(2) 6SA7
(1) 6L7
(2) 6V6GT
(1) 6H6
(2) 6B8
(1) 6SC7

Total Tubes: (15)

(1) 500 or 1000 kc
Total Crystals: (1)

REFERENCE DATA AND LITERATURE

TM11-874: Technical Manual for Radio Receiver AN/GRR-2 (Hallicrafters Model SX-28-A).

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	TASSA
PROCUREMENT COGNIZANCE	
STOCK NO.	

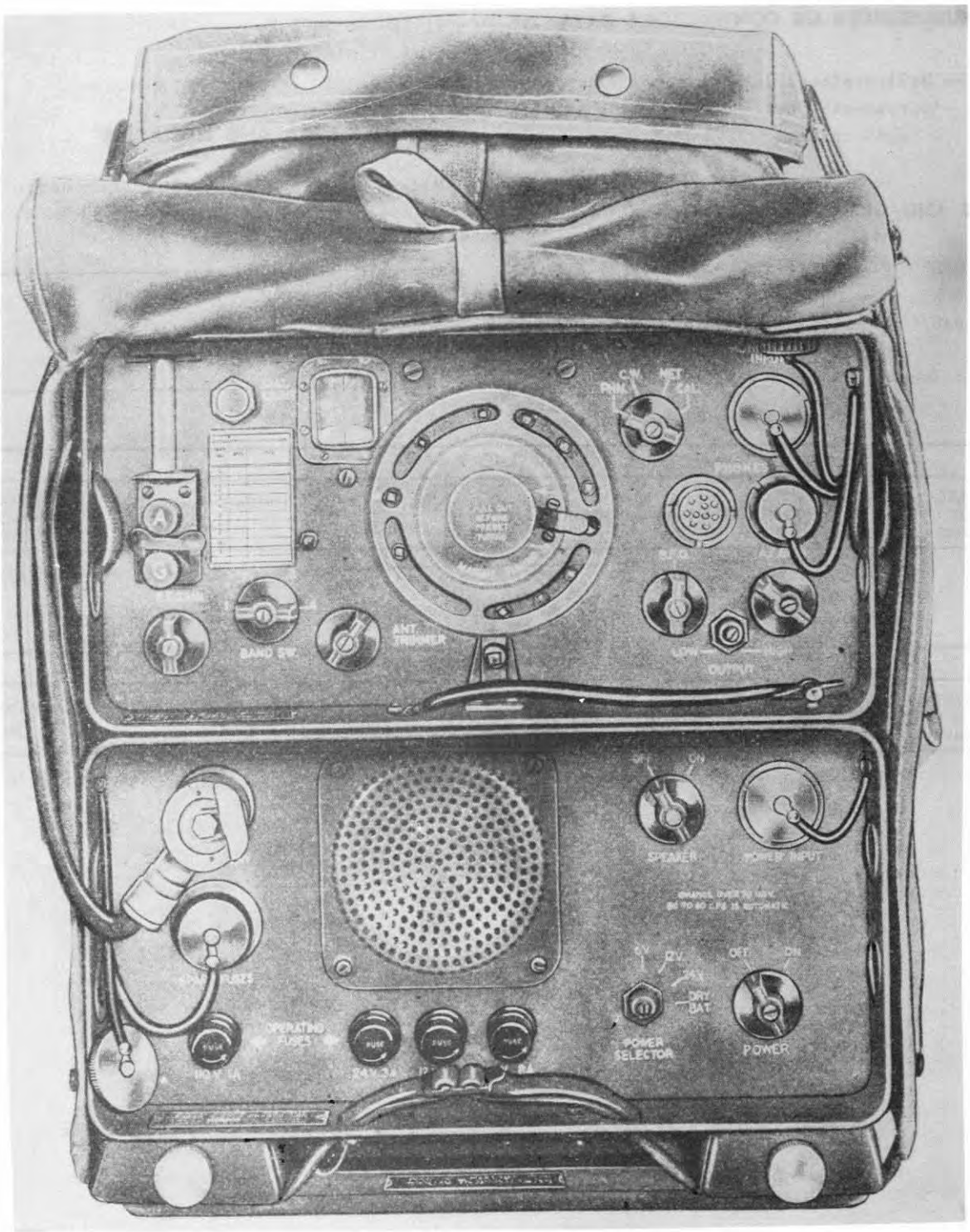
SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Radio Receiver AN/GRR-2		15-1/2 x 21-1/2 x 27	135

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiver AN/GRR-2	10-3/4 x 16-1/2 x 20-3/4	78

RADIO RECEIVING SET AN/GRR-5



Radio Receiving Set AN/GRR-5

Radio-Receivers

AN/GRR-5 RADIO RECEIVING SET

FUNCTIONAL DESCRIPTION

The AN/GRR-5 is a mobile equipment intended for use in a fixed-field station and for mobile operation. It is capable of receiving amplitude-modulated or continuous-wave signals over the 1.5 to 18 megacycle frequency range. It provides facilities for operation either with a loudspeaker or headset connected externally, or with both loudspeaker and headset.

No field changes in effect at time of preparation (17 June 1958).

EQUIPMENT REQUIRED BUT NOT SUPPLIED

(1) 6 v, 12 v, or 24 v Storage Battery for vehicular installation or (2) 90 v Batteries and (1) 1.5 v Battery for field installation, (1) Vehicle Installation Unit as Required.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 1.5 to 18 mc.
RECEPTION: A1, A3.
TYPE RECEIVER: Superheterodyne.
TYPE TUNING: Continuous with provision for presetting detents for any 10 channels.
IF: 455 kc.
CALIBRATION DATA
  TYPE: Built-in crystal frequency calibrator.
  CALIBRATION POINTS: Every 200 kc.
AUDIO OUTPUT
  HIGH: 90 mw.
  LOW: 20 mw.
DISTORTION: 10% max for 70 mw output measured at 5 mc with 400 cps, 30% modulation.
SENSITIVITY
  A1: 2 uv or better for 10 mw output, with signal-plus-noise to noise ratio of 10 to 1.
  A3: 5 uv or better for 10 mw output, with signal-plus-noise to noise ratio of 10 to 1.
IF SELECTIVITY: 6.5 kc at 60 db down to 28 kc at 60 db down.
POWER REQUIREMENTS
  VEHICULAR OPERATION: 6, 12, or 24 v storage battery.
  FIELD OPERATION: (2) 90 v and (1) 1.5 v dry battery.
  FIXED INSTALLATION: 115 v, 50 or 60 cps, 52.4 W.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) OB2	(1) 1007
(3) 1L4	(3) 1R5
(1) 1U5	(1) 3V4
(2) 6AG7	

Total Tubes: (12)

(1) FT-241-A
Total Crystal: (1)

REFERENCE DATA AND LITERATURE

TM11-295: Technical Manual for Radio Receiving Set AN/GRR-5.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE MIL-R-10138
STOCK NO.

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
	DOMESTIC SHIPMENT			
1	Radio Receiving Set AN/GRR-5	11.1	15-1/4 X 27-1/4 X 46-1/4	110
	EXPORT SHIPMENT			
1	Radio Receiving Set AN/GRR-5	17.0	19 X 31 X 50	162

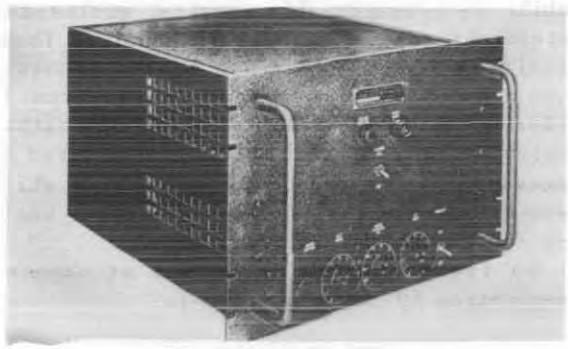
RADIO RECEIVING SET

AN/GRR-5

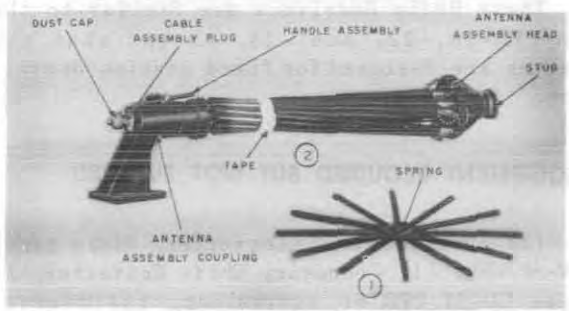
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Electrical Equipment Cabinet CY-615/URR	8-1/16 X 12-1/8 X 13-7/32	8.6
1	Radio Receiver R-174/URR	5-5/16 X 7-7/8 X 12	18.9
1	Power Supply PP-308/URR	5-1/2 X 8 X 12	26.0
1	Mounting MT-768/URR	5-1/2 X 9-5/16 X 13-1/16	7.0
1	Cover CW-211/U	11 X 14-1/2 X 15-3/4	1.75
1	Bag CW-206/GR	27 w X 44 lg	3.5
1	Electron Tube Case CY-1031/URR	3 X 4-1/64 X 9-27/32	2.9
2	Mast Section MS-116-A	39-1/2 lg	0.15
1	Mast Section MS-117-A	39-1/2 lg	0.15
1	Mast Section MS-118-A	39-1/2 lg	0.2
1	Bag CW-212/U	5-1/2 X 11 X 13-1/4	1.5
1	Power Cable Assembly CX-1358/U	96 lg	1.0
1	Power Cable Assembly CX-1359/U	114 lg	1.5
1	Power Cable Assembly CX-1360/U	24 lg	0.9
1	Headset Cord CX-1334/U	78 lg	0.2
1	Receiver-Power Supply Cable	36 lg	0.4
1	Headset NT-49507-A		0.4
2	Technical Manual TM11-295	1/2 X 8 X 11	0.5

RADIO RECEIVING SET AN/GRR-7



Radio-Receiver R-361/GR



Antenna Assembly AT-197/GR

Radio Set AN/GRR-7

FUNCTIONAL DESCRIPTION

The AN/GRR-7 is designed as a single channel ground Ultra High Frequency (UHF) receiver, which covers the frequency range from 225 to 399.9 megacycles (mc). It can be used for reception of either voice or tone amplitude modulated (AM) signals. It is intended for installation in control towers and airway stations of the United States Air Force (USAF).

No field changes in effect at time of preparation (20 April 1959).

EQUIPMENT REQUIRED BUT NOT SUPPLIED

(1) Antenna type AT-197/GR or AS-505/GR, (1) Antenna Cable type CG-597/U, (1) Set of Crystals CR-32/U, (1) Power Cable CX-1541/U, (1) DC Voltmeter, (1) Signal Generator, (1) Speaker and/or (1) Pair of Headphones, (1) Mounting Rack type MT-686/GR, (1) Muting Cable.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPE OF SIGNAL: AM type signal.
NUMBER OF CHANNELS: 1 channel.
TEMPERATURE RANGE: -29° C (-20° F) to +55° C (+131° F).
FREQUENCY DATA
RANGE: 225 to 400 mc.
SPACING: 100 kc apart.
OPERATING POWER RQMT: 115 v ±10 W; 230 v ±20 v, 50 to 60 cps, single ph, 150 W.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 5Y3GT	(1) 6AG5	(4) 6AK5W
(2) 6AL5W	(1) 6AQ5	(1) 6AU6
(4) 6BA6	(2) 6J4	(2) 12AT7
(2) 12AX7		

Total Tubes: (21)
No Crystals Used.

REFERENCE DATA AND LITERATURE

TM11-5820-201-10: Technical Manual for Radio Set.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	TASSA
PROCUREMENT COGNIZANCE	
STOCK NO.	
R.D.B. IDENT. NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Receiver R-361/GR	10-1/2 X 15 X 19	
1	Antenna Ass'y AT-197/GR		
1	Socket Screw Key (#6 Multiple-Spline)		
1	Socket Screw Key (#10 Multiple-Spline)		