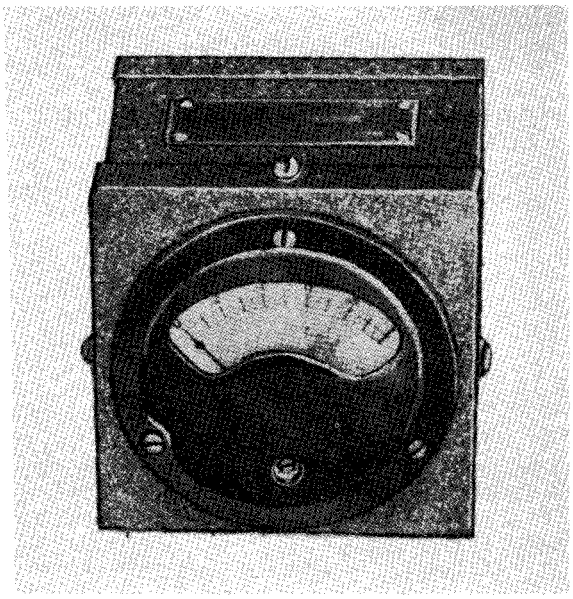
NAVSHIPS 94200.4 Directory of Electronics Test Equipment
Section 4.14 Power Measuring Equipment

April 1959

Test-Power Measuring

INDICATOR ASSEMBLY AN/APM-62



Test Meter TS-60/U

FUNCTIONAL DESCRIPTION

The AN/APM-62 is an airborne relative power indicator used to measure the power output of jamming transmitters. It consists of antenna assemblies, a control box, and a test meter.

No field changes in effect at time of preparation (21 August 1958).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TS-60/U DATA

METER RANGE: 0 to 200 ma DC.

ACCURACY: ±3%.

METER RESISTANCE: 75 ohms.

TEMPERATURE RANGE (AMBIENT): −20 to +122 deg F.

MANUFACTURER'S OR CONTRACTOR'S DATA

Camfield Mfg Co., Grand Haven, Michigan.
Contract NOas-4683(C-157/AP, AS-168/AP).

Delco Radio Div of General Motor Corp., Kokomo, Indiana.
Contract NXss-28022(TS-60/U).

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes Used.
Crystal Data Not Available.

REFERENCE DATA AND LITERATURE

Nomenclature Card for Indicator Assembly AN/APM-62.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	BUAER
PROCUREMENT COGNIZANCE	M-642, M-643
STOCK NO.	
R.D.B. IDENT. NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Test Meter TS-60/U	3 X 4 X 4	1.1
1	Control Box C-157/AP	3 X 4 X 4	
4	Pick-Up Antenna Assembly AS-168/AP		

USA USN USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Sierra Electronic Corp., (94668).

(No Illustration Available)

FUNCTIONAL DESCRIPTION:

Wattmeter AN/URM-120 is a portable test equipment that measures average incident or reflected rf power in watts.

No field changes in effect at time of preparation (14 November 1962).

TECHNICAL CHARACTERISTICS:

FREQUENCY RANGE: 2 to 1000 mc.
PLUG-IN COUPLER-DETECTORS
CU-753/URM-120: 2 to 30 mc.
CU-754/URM-120: 25 to 250 mc.
CU-755/URM-120: 200 to 1000 mc.
POWER RANGE: 0 to 1, 5, 10, 50, 100, 500, 1000 W.
PLUG-IN COUPLER-DETECTORS
CU-753/URM-120: 0 to 10, 50, 100, 500 W ranges.
CU-754/URM-120: 0 to 10, 50, 100, 500 W ranges.
CU-755/URM-120: 0 to 10, 50, 100, 500 W ranges.
ACCURACY: Porm 5% full scale, all ranges.
INSERTION VSWR: Less than 1.08, all ranges.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Wattmeter AN/URM-120 includes:			
1	Wattmeter TS-1285/URM-120			
1	Coupler-Detector CU-753/URM-120		2-1/4 dia x 4-1/2	
1	Coupler-Detector CU-754/URM-120		2-1/4 dia x 4-1/2	
1	Coupler-Detector CU-755/URM-120		2-1/4 dia x 4-1/2	
1	Carrying Case CY-2606/URM-120			

AN/URM-120 WATTMETER

REFERENCE DATA AND LITERATURE:

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Data not available.

CRYSTALS: Data not available.

SEMI-CONDUCTORS: Data not available.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1		

PROCUREMENT DATA

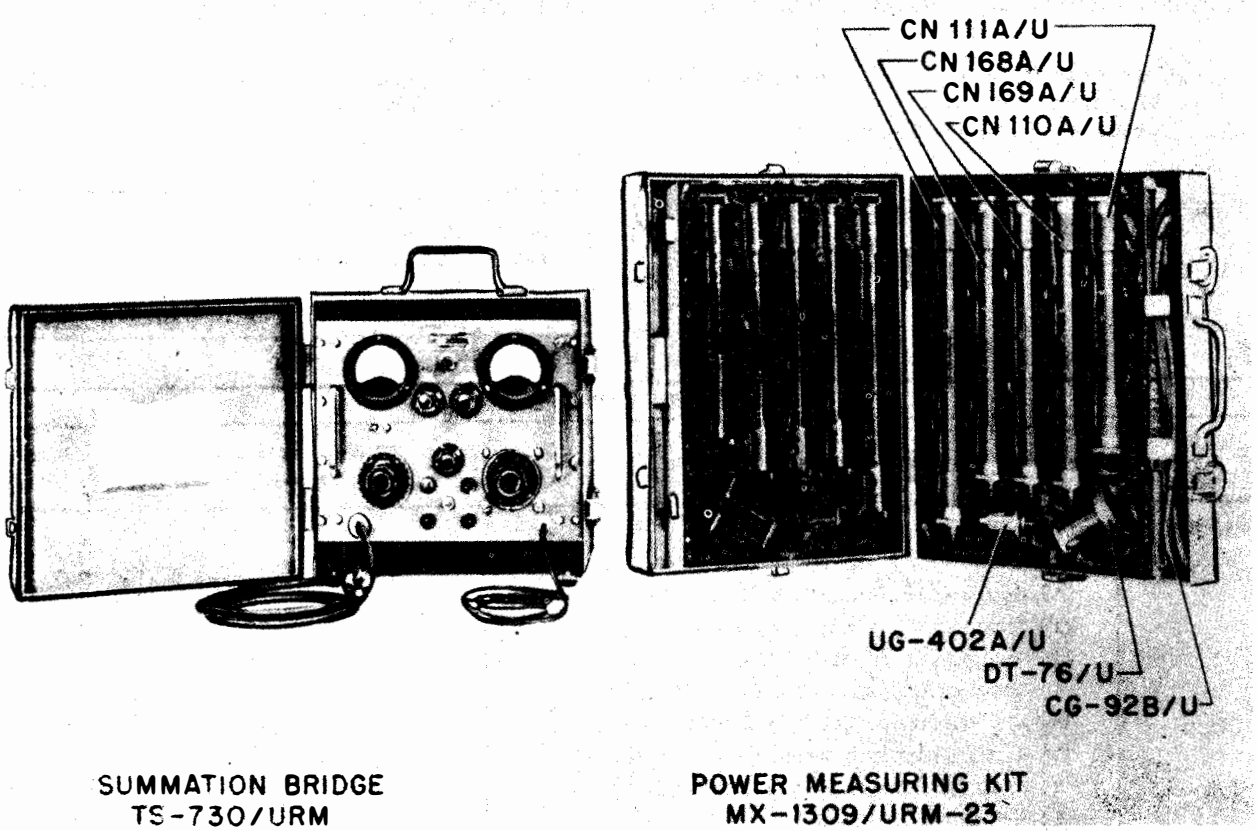
PROCURING SERVICE: USN DESIGN COG: USN, BuWeps
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Sierra Electronic Corp.	Menlo Park, Calif.	NOas 59-0238-f	

January 1958

Test-Power Measuring

SUMMATION BRIDGE AN/URM-23



Summation Bridge AN/URM-23

FUNCTIONAL DESCRIPTION

The AN/URM-23 is an RF wattmeter designed to measure power from 5 milliwatts to 5 watts in the frequency range from 1000 to 4000 megacycles per second. The wattmeter employs a direct reading summation type circuit in which a bolometer acts as one arm of a DC Wheatstone bridge while at the same time providing the correct resistive termination for RF power entering the wavemeter. The resistance of the bolometer may be controlled by varying the direct current through the bridge. This procedure enables comparison of RF power with an equal amount of DC power. The summation type circuit allows the RF power to be read directly.

The equipment has been modified to increase its accuracy by changing the value of one resistor in the power supply and by providing a dual "SET ZERO" control which affords a "course" and "fine" adjustment. This modification was made by USAF in accordance with Technical Order 33A1-7-6-501 dated 15 April 1955.

No field changes in effect at time of preparation (12 June 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

WATTAGE RANGE: 5 mw to 5 W.
ACCURACY: ±15%.
METER SCALE: 0 to 50 mw; range extended by use of proper attenuators in RF input circuits.
FREQUENCY: 1000 to 4000 mc.
OPERATING TEMPERATURE: −40 deg C to +55 deg C; continuous operation.
BOLOMETER ELEMENT
- TYPE: Mica w/carbon film deposits.
- RESISTANCE: 100 ohms.
- DC BIAS CURRENT: 35 ma for normal operation.
- POWER RANGE: 5 to 50 mw.
- MAX PEAK POWER: 100 W.
- VOLTAGE STANDING WAVE RATIO: 1-30.

POWER SOURCE REQUIRED: 115 v, 50 to 1000 cps, single ph.

Test-Power Measuring

January 1958

AN/URM-23 SUMMATION BRIDGE

MANUFACTURER'S OR CONTRACTOR'S DATA

Polytechnic Research and Development Co.,
Brooklyn, New York.
Contract W28-099-AC-462.

REFERENCE DATA AND LITERATURE

TM11-5128, Technical Manual for Summation Bridge AN/URM-23.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 5Y3WGTA (1) 6080 (1) 6AU6WA (2) 5651

Total Tubes: (5)

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

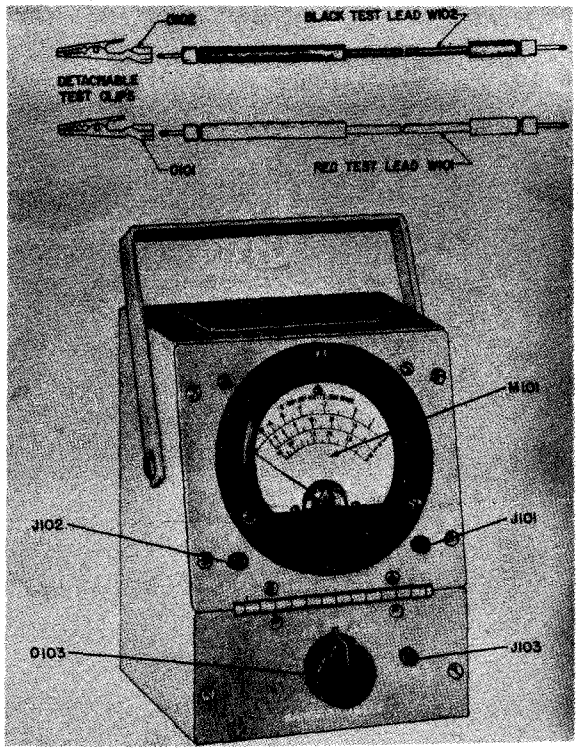
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Summation Bridge TS-730/URM		
1	Power Measuring Kit MX-1309/URM-23 c/o		
	(1) Combination Case CY-1405/URM-23		
	(1) Attenuator (3 db, 5 W)CN-168A/U		
	(1) Attenuator (6 db 3 W)CN-169A/U		
	(1) Attenuator (10 db 1 W)CN-110A/U		
	(1) Attenuator (20 db 5 W)CN-111A/U		
	(1) R. F. Bolometer Mount (with element)DT-76/U		
	(1) Adapter Connector UG-402/U		
	(1) R-F Cord CG-92B/U		
	(5) Bolometer Element (spare)		
	(12) Coupling Screws AN501-10 -10		

Test-Power Measuring

April 1958

AUDIO LEVEL METER AN/URM-38, -38A



Audio Level Meter AN/URM-38, -38A

FUNCTIONAL DESCRIPTION

The AN/URM-38 and AN/URM-38A are used to measure directly the audio level, expressed in decibels, of power referenced to one milliwatt on audio frequency lines having a 600 ohm impedance, for convenience the scales are calibrated directly in decibels referenced to 1 milliwatt. Measurements may be made on advanced or unbalanced lines and, by calculation on lines having impedances other than 600 ohms.

The AN/URM-38A differs from the AN/URM-38 in that it has a front panel that is hinged in such a way that the equipment can be removed from the carrying case and mounted flush in a rack panel if desired.

No field changes in effect at time of preparation (3 February 1958).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

RANGES: -20 to +2, +2 to +16 and +16 to +30 decibels.
INPUT IMPEDANCE: 600 ohms to ±10%, constant.
DB REFERENCE LEVEL: "0" db, 1 milliwatt into 600 ohms (0.773 v).
RECTIFIER CIRCUIT: Double half wave bridge type, external to meter.
USABLE FREQUENCY RANGE: 60 cycles to 10000 cycles.

MANUFACTURER'S OR CONTRACTOR'S DATA

The Hickok Electrical Instrument Co, Cleveland, Ohio.
Contract NObsr-57328 dated 25 April 1952 (AN/URM-38).
Contract NObsr-57328 and 63262 dated 2 March 1953.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals.

REFERENCE DATA AND LITERATURE

NAVSHIPS 91470A, Technical Manual for Audio Level Meter AN/URM-38.
NAVSHIPS 92183, Technical Manual for Addio Level Meter AN/URM-38A.

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

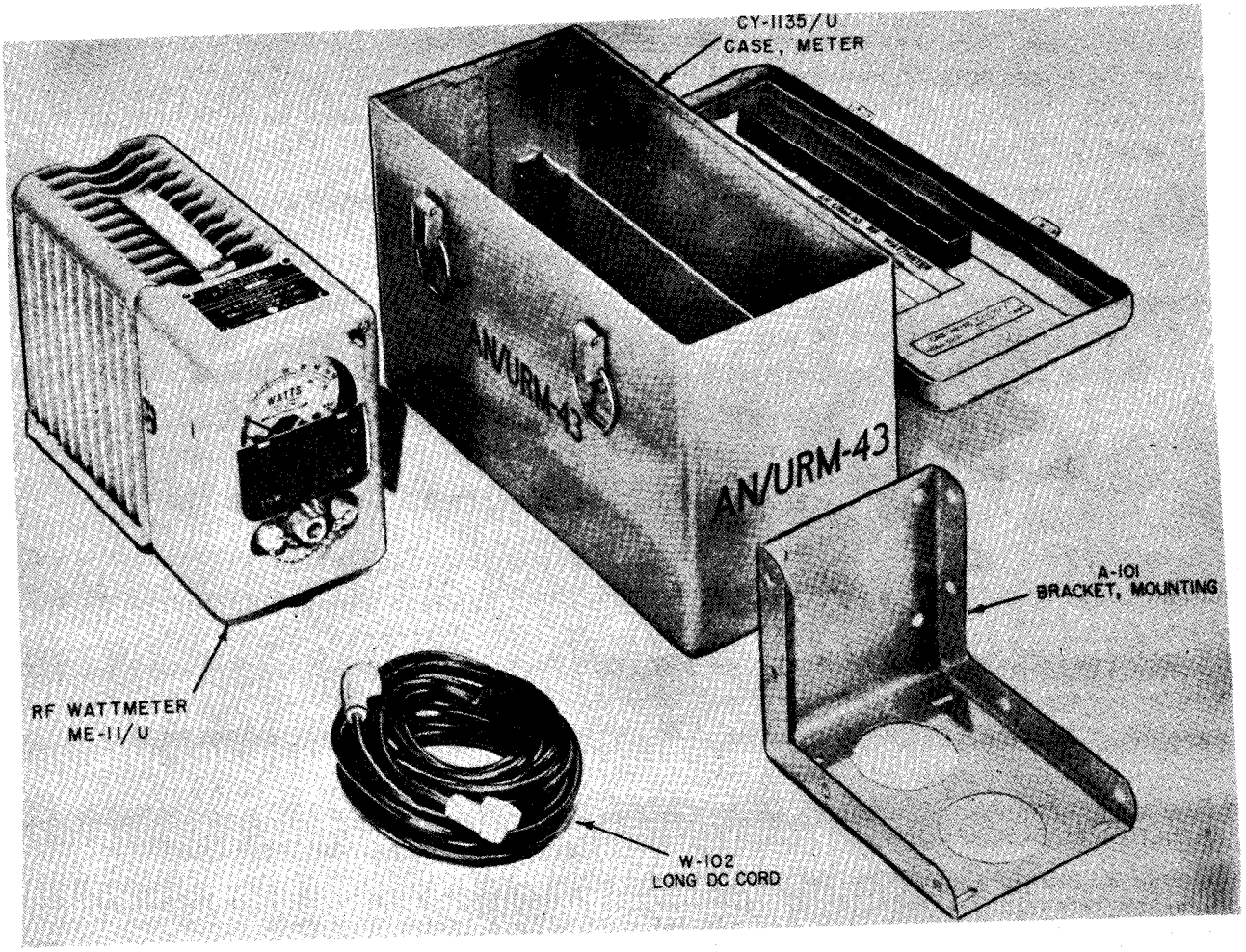
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Audio Level Meter ME-49/U*	3-5/8 x 5-1/2 x 7-1/8	2
1	Audio Level Meter ME-92/URM-38A**	4-3/16 x 4-1/2 x 5-7/8	3
1	Test lead, black	48 lg	
1	Test lead, red	48 lg	
2	Alligator Clips**	2 lg	
1	Carrying Case CY-1051/URM-38*	4-3/8 x 6-3/8 x 8-1/2	
2	Technical Manuals NAVSHIPS 91470A*		
2	Technical Manuals NAVSHIPS 92183**		

NOTES: *Supplied w/AN/URM-38 only.
**Supplied w/AN/URM-38A only.

RF WATTMETER

AN/URM-43



RF Wattmeter AN/URM-43

FUNCTIONAL DESCRIPTION

RF Wattmeter AN/URM-43 is an rf absorption-type equipment used in measuring power output and loss in transmission lines, and in tuning transmitters. It may also be employed as a dummy load, a modulation monitor, and an rf resistance.

No field changes in effect at time of preparation (29 September 1959).

RELATION TO OTHER EQUIPMENT

This equipment supersedes RF Wattmeter ME-11/U and is similar to Termuline RF Wattmeter, Bird Electronic Corp Model 61.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 30 to 60 mc/sec.

POWER: 2 to 60 W in two ranges.

OUTPUT CIRCUIT: Coaxial, 51.5 ohms.

TYPE OF MODULATION: CW, AM, FM, or Television Type Signals.

MANUFACTURER'S OR CONTRACTOR'S DATA

Bird Electronic Corp., Cleveland, Ohio
Contract NObsr-52121, dated 13 December 1950.
Contract NObsr-52667, dated 20 June 1951.

Test-Power Measuring

February 1960

AN/URM-43 RF WATTMETER

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes used.

(1) 1N21B
Total Crystals: (1)

REFERENCE DATA AND LITERATURE

NAVSHIPS 91551: Technical Manual for RF WATTMETER AN/URM-43.

TYPE CLASSIFICATION (NAVY) STD
DESIGN COGNIZANCE USN, BUSHIPS
PROCUREMENT COGNIZANCE SPEC: MIL-R-15331A(SHIPS)
STOCK NO.
R.D.B. IDENT. NO. 14.2

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	RF Wattmeter AN/URM-43.	0.41	6-3/4 X 8-1/4 X 12-1/2	14.2

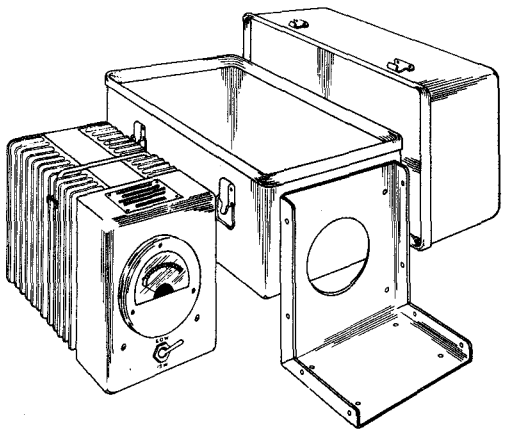
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	RF Wattmeter AN/URM-43 including:		
1	Case, Meter CY-1135/U	6-1/4 X 7-5/8 X 12-1/4	3.5
1	RF Wattmeter ME-11/U	4-3/4 X 6-1/2 X 9-1/2	7.35
1	Bracket	4-3/8 X 4-1/2 X 5-3/4	0.9
1	DC Cable	300 lg	0.75
2	Technical Manual NAVSHIPS 91551	1/4 X 9 X 11-1/2	0.6

February 1960

Test-Power Measuring

RF WATTMETER AN/URM-43A



RF Wattmeter AN/URM-43A

FUNCTIONAL DESCRIPTION

RF Wattmeter AN/URM-43A is an rf absorption-type equipment used in measuring power output and loss in transmission lines, and in tuning transmitters. It may also be employed as a dummy load, a modulation monitor, and an rf resistance.

No field changes in effect at time of preparation (29 September 1959).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 30 to 60 mc/sec.
POWER: 2 to 60 W in two ranges.
OUTPUT CIRCUIT: Coaxial, 51.5 ohms.
TYPE OF MODULATION: CW, AM, FM, or Television Type Signals.

MANUFACTURER'S OR CONTRACTOR'S DATA

Electro-Impulse Laboratory Inc., Red Bank, New Jersey.
Contract NObsr-57180.
Contract NObsr-59605.
Contract NObsr-64272.
Contract NObsr-64796, dated 17 February 1956.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes used.
(1) 1N82
Total Crystals: (1)

REFERENCE DATA AND LITERATURE

NAVSHIPS 91842: Technical Manual for RF WATTMETER AN/URM-43A, AN/URM-43B, AN/URM-43C.
TM11-5133: Technical Manual for RF WATTMETER AN/URM-43A.

TYPE CLASSIFICATION STD (NAVY)
DESIGN COGNIZANCE USN, BUSHIPS
PROCUREMENT COGNIZANCE SPEC: MIL-R-15931 B (SHIPS)
STOCK NO.
R.D.B. IDENT. NO. 14.2

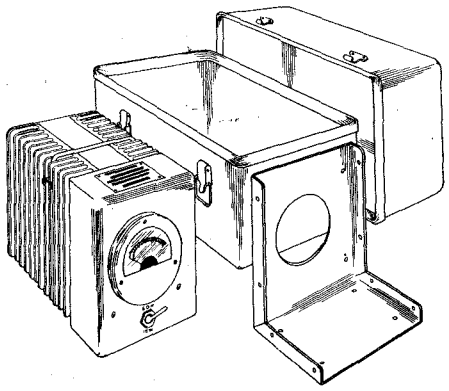
SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	RF Wattmeter AN/URM-43A	0.45	7.5 X 10 X 10.5	12.5

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	RF Wattmeter AN/URM-43A Including:		
1	Case, Meter CY-1135A/U	5.7 X 7.2 X 9.2	2.15
1	RF Wattmeter ME-11A/U	4.5 X 6.5 X 8.7	6.4
1	Bracket	3.5 X 4.6 X 5.5	0.6
2	Technical Manual NAVSHIPS 91842	1/4 X 5.5 X 7.5	0.25

RF WATTMETER AN/URM-43B



RF Wattmeter AN/URM-43B

FUNCTIONAL DESCRIPTION

RF Wattmeter AN/URM-43B is an rf absorption-type equipment used in measuring power output and loss in transmission lines, and in tuning transmitters. It may also be employed as a dummy load, a modulation monitor, and on rf resistance.

No field changes in effect at time of preparation (29 September 1959).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 30 to 60 mc/sec.
POWER: 2 to 60 W in two ranges.
OUTPUT CIRCUIT: Coaxial, 51.5 ohms.
TYPE OF MODULATION: CW, AM, FM, or Television Type Signals.

MANUFACTURER'S OR CONTRACTOR'S DATA

Electronics of Clearfield, Clearfield, Pennsylvania.
Contract NObsr-71355, dated 6 February 1959.
Contract NObsr-75427, dated 13 April 1959.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes used.
(1) 1N82
Total Crystals: (1)

REFERENCE DATA AND LITERATURE

NAVSHIPS 91842: Technical Manual for RF WATTMETER AN/URM-43A, AN/URM-43B, AN/URM-43C.

TYPE CLASSIFICATION (NAVY) STD
DESIGN COGNIZANCE USN, BUSHIPS
PROCUREMENT COGNIZANCE SPEC: MIL-R-15331 B
STOCK NO. (SHIPS)
R.D.B. IDENT. NO 14.2

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	RF Wattmeter AN/URM-43B	0.45	7.5 X 10 X 10.5	12.5

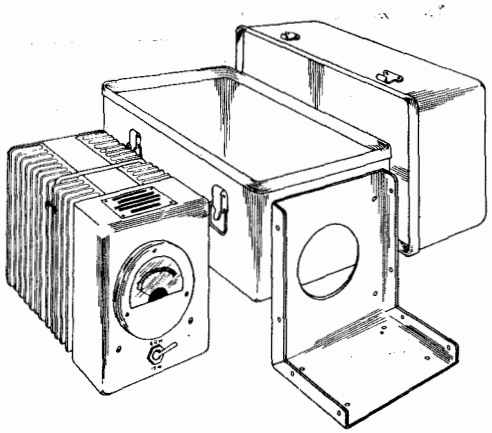
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	RF Wattmeter AN/URM-43B Including:		
1	Case, Meter CY-1135A/U	5.7 X 7.2 X 9.2	2.15
1	RF Wattmeter ME-11B/U	4.5 X 6.5 X 8.7	6.4
1	Bracket	3.5 X 4.6 X 5.5	0.6
2	Technical Manual NAVSHIPS 91842	1/4 X 5.5 X 7.5	0.25

February 1960

Test-Power Measuring

RF WATTMETER AN/URM-43C



RF Wattmeter AN/URM-43C

FUNCTIONAL DESCRIPTION

RF Wattmeter AN/URM-43C is an rf absorption-type equipment used in measuring power output and loss in transmission lines, and in tuning transmitters. It may also be employed as a dummy load, a modulated monitor, and on rf resistance.

No field changes in effect at time of preparation (29 September 1959).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 30 to 60 mc/sec.
POWER: 2 to 60 W in two ranges.
OUTPUT CIRCUIT: Coaxial, 51.5 ohms.

TYPE OF MODULATION: CW, AM, FM or Television Type Signals.

MANUFACTURER'S OR CONTRACTOR'S DATA

Electro-Impulse Laboratory Inc., Red Bank, New Jersey.
Contract NObsr-71807, dated 18 June 1957.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes used.
(1) 1N82
Total Crystals: (1)

REFERENCE DATA AND LITERATURE

NAVSHIPS 91842: Technical Manual for RF WATTMETER AN/URM-43A, AN/URM-43B, AN/URM-43C.

TYPE CLASSIFICATION	(NAVY) STD
DESIGN COGNIZANCE	USN, BUSHIPS
PROCUREMENT COGNIZANCE	SPEC: MIL-W-15331D (SHIPS)
STOCK NO.	
R.D.B. IDENT. NO.	14-2

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	RF Wattmeter AN/URM-43C	0.45	7.5 X 10 X 10.5	12.5

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Case, Meter CY-1135A/U	5.7 X 7.2 X 9.2	2.15
1	RF Wattmeter ME-11C/U	4.5 X 6.5 X 8.7	6.4
1	Bracket	3.5 X 4.6 X 5.5	0.6
2	Technical Manual NAVSHIPS 91842	1/4 X 5.5 X 7.5	0.25

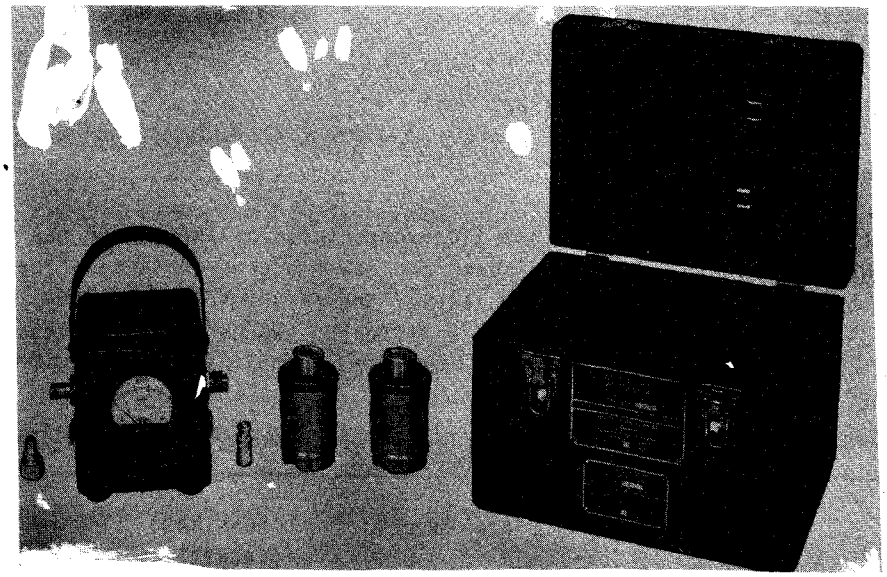
15 February 1963 **WATTMETER AN/URM-96**

Cog Service: USN **FSN: F6625-513-9607** **Functional Class: 14.1**

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Sierra Electronic Corp., (94668).



Wattmeter AN/URM-96

FUNCTIONAL DESCRIPTION:

Wattmeter AN/URM-96 is a portable test equipment that measures average incident or reflected rf power in watts. Two interchangeable plug-in elements cover a total power range of 10-500 watts and a total frequency range of 25-1000 mc. One of the elements covers the frequency range of 25-250 mc; the other element covers the frequency range of 200-1000 mc. The wattmeter connects directly into the rf transmission line between the power source and the load. A directional coupler in the selected plug-in element is oriented with the transmission line to pick up rf energy in a forward or reverse direction. This energy is then rectified, developed across an impedance, and indicated on a linear meter.

There are two controls; one to orient the coupler and the other to select the power range. The wattmeter can be used to measure continuous or intermittent average power, to match a load to its rf power source (by minimum reflected-power indication), to measure loss and VSWR on transmission lines, and as a field instrument to test or tune mobile transmitters.

No field changes in effect at time of preparation (14 November 1962).

AN/URM-96 WATTMETER

TECHNICAL CHARACTERISTICS:

FREQUENCY RANGE: 25 to 1000 mc.
PLUG-IN COUPLER-DETECTORS
CN-396/URM-96: 25 to 250 mc.
CN-397/URM-96: 200 to 1000 mc.
POWER RANGE: 10 to 500 W.
PLUG-IN COUPLER-DETECTORS
CN-396/URM-96: 10, 50, 100 W ranges.
CN-397/URM-96: 10, 50, 100, 500 W ranges.
ACCURACY: Porm 5% full scale, all ranges.
IMPEDANCE: 50 ohms.
INSERTION VSWR: Less than 1.08, all ranges.

RELATION TO OTHER EQUIPMENT:

This equipment is the same as the AN/URM-120 except that the AN/URM-120 has an additional plug-in coupler-detector that extends its power and low-frequency coverage. The plug-in elements from either wattmeter are interchangeable. The AN/URM-96 has two UG- to BNC adapters not supplied with the AN/URM-120 and a different (wooden) carrying case.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Wattmeter AN/URM-96 includes:			
1	Wattmeter ME-113/URM-96		5-1/4 x 7 x 7-5/8	6-1/2
1	Coupler-Detector CN-396/URM-96		2-1/2 x 4-3/8	1-1/8
1	Coupler-Detector CN-397/URM-96		2-1/2 x 4-3/8	1-1/8
1	Carrying Case CY-2050/URM-96		8-1/4 x 10 x 11-1/2	6-1/4
1	Adapter UG-201/U		7/8 x 1-1/2	1/4
1	Adapter UG-349A/U		5/8 x 1-9/16	1/4

REFERENCE DATA AND LITERATURE:

NAVSHIPS 92805: Technical Manual for Wattmeter AN/URM-96.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: None used.

CRYSTALS: (1) 1N21 or 1N23

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1		

PROCUREMENT DATA

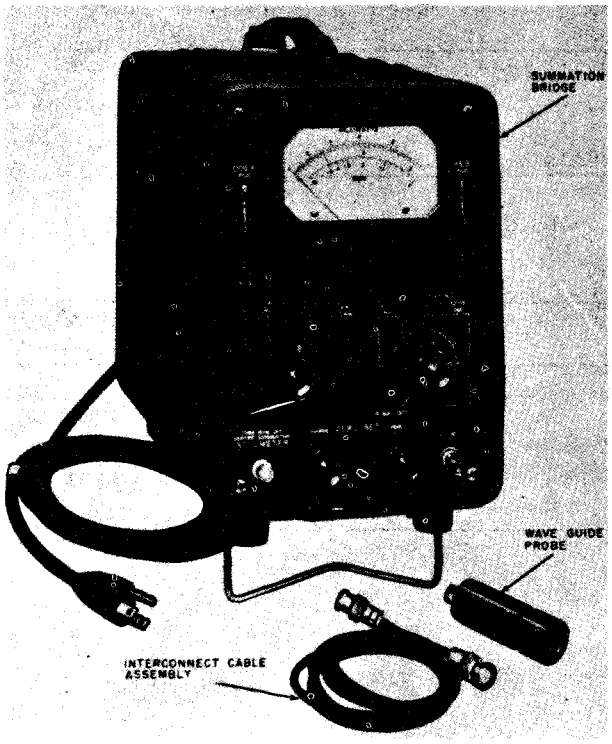
PROCURING SERVICE: USN
DESIGN COG: USN, BuShips
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Sierra Electronic Corp.	Menlo Park, Calif.	NObsr-71259	$251.78
		NObsr-71638	$258.78
		NObsr-81135, 9 December 1959	$283.63

October 1957

Test-Power Measuring

WATTMETER AN/URM-98



Wattmeter AN/URM-98

ELECTRICAL AND MECHANICAL CHARACTERISTICS

SUMMATION BRIDGE DATA

FREQUENCY RANGE: Depends on associated waveguide probe used. Waveguide probes may have either 100 or 200 ohms operating resistance and either pos or neg temp coef.

POWER RANGE (AVERAGE): 0.1, 0.3, 1, 3, 10 mw and -20 to +10 dbm full scale readings.

DC BIAS CURRENT: Continuously adjustable and independent of waveguide probe resistance and power level range.

ACCURACY: Within 5% of full scale reading.

POWER REQUIREMENTS: 105 to 125 v or 210 to 250 v, 50 to 1000 cps.

WAVEGUIDE PROBE DATA

FREQUENCY RANGE: 10 mc to 10 kilo-mc.

POWER RANGE: 0.01 to 10 mw when used with summation bridge TS-779/U.

BOLOMETER ELEMENT: Thermistor type, neg temp coef, 200 ohms resistance.

STANDING WAVE RATIO: Less than 1.5 to 1 full frequency range, less than 1.3 to 1 for 50 mc to 5 kilo-mc range.

FUNCTIONAL DESCRIPTION

The AN/URM-98 is a portable test set used to measure radio frequency power in either milliwatts or in decibles referred to 1 milliwatt. It may be used at any frequency range for which a waveguide probe exists, and it measures either continuous or pulsed power with thermistor or barretter type waveguide probes. Its performance stability permits measurements of low power levels under wide temperature variations.

No field changes in effect at time of preparation (14 February 1957).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) Test Cable.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 6AV6	(2) 22AX7	(2) 6AV5GT
(3) 6CB6	(1) 5651	(1) 5Y3

Total Tubes: (10)

REFERENCE DATA AND LITERATURE

TM11-5124: Technical Manual for Wattmeter AN/URM-98.

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

Test-Power Measuring

AN/URM-98 WATTMETER

October 1957

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Wattmeter AN/URM-98	2.92	11-3/4 X 16-1/4 X 26-1/4	55

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Summation Bridge TS-779/U	7-3/8 X 11-1/2 X 12-1/4	20
1	Waveguide Probe MX-2144/U	1 dia X 3-3/16	0.25
1	Cord CG-409/U	51 lg	
1	Set of Running Spares		
2	Technical Manuals TM-11-5124	1/4 X 7-7/8 X 10-1/4	1

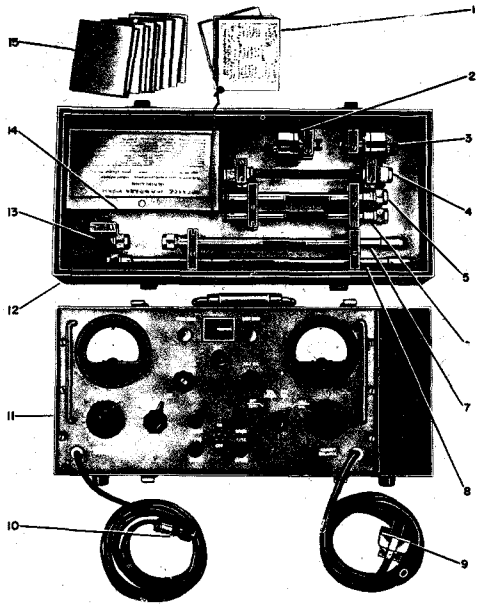
29 MAY 1962
Cog Service: USAF FSN:

TEST SET, RADIO FREQUENCY POWER AN/USM-68
Functional Class: 14.2

USA USN USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Bruno-New York Industries Co., (95325).



1. Calibration Cards
2. Bolometer, Radio Frequency DT-214/USM-68
3. Bolometer, Radio Frequency DT-218/USM-68
4. Cord CG-92E/U
5. Attenuator, Fixed CN-588/U
6. Attenuator, Fixed CN-589/USM-68
7. Attenuator, Fixed CN-590/USM-68
8. Attenuator, Fixed CN-591/U
9. Power Plug P101
10. Radio Frequency Power Input Plug P102
11. Test Set, Radio Frequency Power TS-1339/USM-
12. Cover, Test Set CW-534/USM-68
13. Adapter, Connector UG-1340/USM-68
14. Storage Compartment
15. Bolometer Elements (Spare)

Test Set, Radio Frequency Power AN/USM-68

FUNCTIONAL DESCRIPTION:

Test set, Radio Frequency Power AN/USM-68 is an ac operated, transistorized, portable test unit, used to measure the radio frequency power output from either continuous wave, modulated,, or pulsed sources.

No field changes in effect at time of preparation.

TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: 115 v, 50 to 1,000 cyc, single ph.
FREQUENCY RANGE: 500 to 11,000 mc.
INPUT POWER LEVEL: 100 uw to 5 W within porm 15% at full scale, porm 18% below full scale.
TYPES OF SIGNAL INPUT: CW, modulated, or pulsed.
TEMPERATURE RANGE: M40 deg to P55 deg C (M40 deg to P131 deg F).

AN/USM-68 TEST SET, RADIO FREQUENCY POWER

RELATION TO OTHER EQUIPMENT:

This equipment is similar to Test Set, Radio Frequency Power AN/USM-96, except differs in high power range.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set, Radio Frequency Power AN/USM-68 includes:		7-1/2 x 9-1/2 x 17-3/4	
1	Test Set, Radio Frequency Power TS-1339/USM-68		5-3/4 x 9-1/2 x 17-3/4	
1	Cover, Test Set CW-534/USM-68		2-3/4 x 9-1/2 x 17-3/4	
1	Bolometer, R.F. DT-214/USM-68		2 dia x 3-1/16	
6	Bolometer Element DT-215/USM-68		1 dia x 0.125	
1	Bolometer, R.F. DT-216/USM-68		2 dia x 3-1/16	
6	Bolometer Element DT-217/USM-68		1 dia x 0.005	
1	Attenuator, Fixed CN-588/U		25/32 dia x 8-7/32	
1	Attenuator, Fixed CN-589/USM-68		25/32 dia x 8-7/32	
1	Attenuator, Fixed CN-590/USM-68		25/32 dia x 13	
1	Attenuator, Fixed CN-591/U		25/32 dia x 16	
1	Cord CG-92E/U		8 lg	
1	Adapter, Connector UG-1340/USM-68			

REFERENCE DATA AND LITERATURE:

NAVWEPS 16-30USM68-1: Handbook of Operation Instructions for Test Set, Radio Frequency Power AN/USM-68.

NAVWEPS 16-30USM68-3: Illustrated Parts Breakdown for Test Set, Radio Frequency Power AN/USM-68.

TO 33A1-7-33-1: Handbook of Operation Instructions for Test Set, Radio Frequency Power AN/USM-68.

TO 33A1-7-33-4: Illustrated Parts Breakdown for Test Set, Radio Frequency Power AN/USM-68.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: (2) 1N538 (2) 1N1984 (2) 2N43A (1) 2N301

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USAF
DESIGN COG: USAF
SPEC &/OR DWG: MIL-B-9560(USAF)

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Bruno-New York Industries Co.	New York, New York	AF33(604)-16923	

19 February 1963 — ANALYZER SET ENGINE GENERATOR AN/USM-86

Cog Service: USMC FSN: — Functional Class: 1.2.2

USA USN USAF

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: American Machine & Foundry Company.

(No Illustration Available)

FUNCTIONAL DESCRIPTION:

The AN/USM-86 is a general purpose type of test equipment for electrical power applications. It measures and records the voltage, frequency, and kilovolt ampere of all generators at 50, 60 and 400 cycles up to 1000 kilowatts.

No field changes in effect at time of preparation (6 February 1963).

TECHNICAL CHARACTERISTICS:

TYPE OF MEASUREMENTS: Measures and records the voltage, frequency, and kva of all generators.

TYPE OF RECORDER: String galvanometer type.

TYPE OF PAPER USED: Photographic paper, Kodak type 808, Spec no. 1 or equivalent.

PAPER SIZE: 3-5/8 in. w and 50 ft lg.

OPERATING FREQUENCY: 400 cps range only.

OPERATING POWER RQMT: 110 to 130 v ac, 50 to 400 cps, single ph, 60 W.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Analyzer Set, Engine Generator AN/USM-86 includes:		11 x 17 x 23	63
1	Transit Case		11 x 17 x 23	
1	Analyzer Chassis			
1	Recorder CCFT-560E			
3	Clamp-on-current Transformer CG-AK-5			
1	Set of Potential Cables			
1	Set of Interconnecting Cables			

REFERENCE DATA AND LITERATURE:

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Data not available.

AN/USM-86 ANALYZER SET ENGINE GENERATOR

CRYSTALS: Data not available.

SEMI-CONDUCTORS: Data not available.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

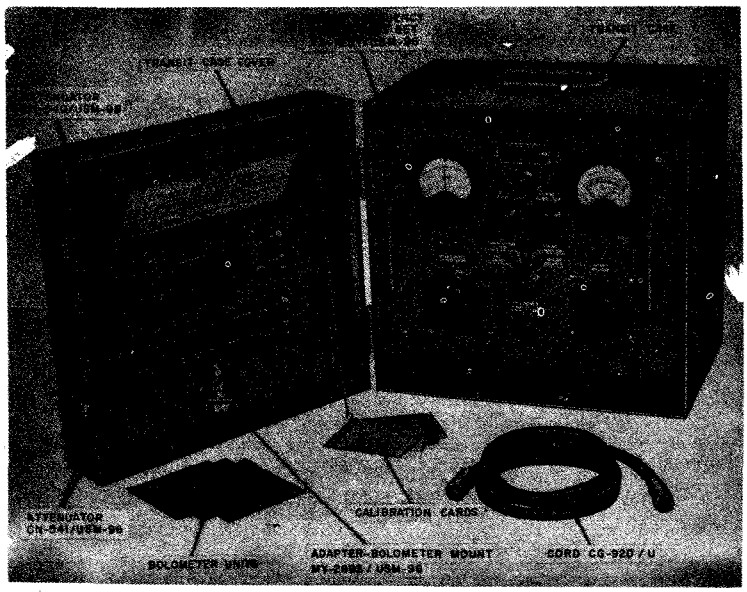
PROCURING SERVICE: USMC DESIGN COG: USMC
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
American Machine & Foundry Company	Alexandria, Va.	NOm-69770	

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Bruno-New York Industries, (95325).



Test Set, Radio Frequency Power AN/USM-96

FUNCTIONAL DESCRIPTION:

Test Set, Radio Frequency Power AN/USM-96 is an ac operated, portable test unit, used to measure the radio frequency power output from either continuous-wave, modulated, or pulsed sources.

No field changes in effect at time of preparation (12 March 1962).

TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: 70 W, 115 v, 50 to 1,000 cyc.
FREQUENCY RANGE: 1,000 to 10,000 mc.
INPUT POWER LEVEL: 100 uw to 5 W.
POWER MEASUREMENT ACCURACY: Porm 5%.
TYPES OF SIGNAL INPUT: CW, modulated, or pulsed.
TEMPERATURE RANGE: M40 deg to P55 deg C (M40 deg to P131 deg F).

AN/USM-96 TEST SET, RADIO FREQUENCY POWER

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None..

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Radio Frequency Power Test Set AN/USM-96 includes:			
1	Radio Frequency Power Test Set TS-1257/USM-96		13 x 13 x 14	45
1	Adapter-Bolometer Mount MX-2683/USM-96		2 dia x 3	0.6
2	Attenuator CN-540/USM-96		13/16 dia x 8-1/4	0.5
2	Attenuator CN-541/USM-96		13/16 dia x 8-1/4	0.5
1	Cord CG-92D/U		76 lg	0.5
4	Calibration Cards		1/64 x 3 x 3-1/2	0.1
1	Bolometer Unit, High-Power (94CEH)		1 dia x 0.009	0.01
1	Bolometer Unit, Low-Power (94CEL)		1 dia x 0.009	0.01
2	Technical Manual TM11-6625-248-12			
1	Set Running Spares			

REFERENCE DATA AND LITERATURE:

TM11-6625-248-12: Operation and Organizational Maintenance for Radio Frequency Power Test Set AN/USM-96.
TM11-6625-248-35: Field and Depot Maintenance for Test Set Radio Frequency Power AN/USM-96.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (1) 5Y3GT (1) 6AS7G (1) 6AU6 (2) 5651

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	3.44	57

PROCUREMENT DATA

PROCURING SERVICE: USA
SPEC &/OR DWG:

DESIGN COG: USA, Sig C

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Bruno-New York Industries	New York, N. Y.	14908-PC-58	

8 February 1963 **POWER METER CAQI-430C**

Cog Service: USN **FSN: F6625-560-6084** **Functional Class: 14.2**

USA	USN	USAF

TYPE CLASS: Used by

MANUFACTURER'S NAME/CODE NUMBER: Hewlett-Packard Company, (28480).

Power Meter CAQI-430C

FUNCTIONAL DESCRIPTION:

Power Meter CAQI-430C provides instantaneous rf power readings direct in dbm or mw. The instrument may be used at any frequency for which there are bolometer mounts, and measurements are entirely automatic. In measuring CW power, this instrument uses either an instrument fuse, barretter, or thermistor as a bolometer element. CW or pulsed power may be measured by using either a negative or positive temperature-coefficient element at 100 or 200 ohm levels. Power is read direct in milliwatts, 0.02 to 10 mw, or in dbm M20 to P10. Higher powers may be measured by adding attenuators to the system (such as Hewlett-Packard 370, 380, or 382A series). Directional couplers, such as Hewlett-Packard 750 or 752, may be used also to sample energy. This instrument also provides up to 16 ma bias current.

No field changes in effect at time of preparation (4 February 1963).

CAQI-430C POWER METER

TECHNICAL CHARACTERISTICS:

POWER RANGE: 5 ranges, front panel selector. Full scale indications of 0.1, 0.3, 1.0, 3.0, and 10.0 mw. Also calibrated in dbm to give continuous indication from M20 to P10 dbm (0 dbm equals 1 mw). Power range can be extended with attenuators or directional couplers.

EXTERNAL BOLOMETER: Frequency range depends on bolometer mount. Bolometers can operate at resistance levels of 100 or 200 ohms, and can have positive or negative temperature coefficients. A dc bias up to 16 ma is available for biasing positive or negative temperature coefficient bolometers. DC bias is continuously adjustable and independent of bolometer resistance and power level range.

SUITABLE BOLOMETERS ARE:

INSTRUMENT FUSES: Hewlett-Packard G-28A and G-28B, 1/100 amp fuses.

BARRETTERS: Sperry 821, Narda N821B, Narda N610B, PRD610A, PRD617, PRD631C.

THERMISTORS: W.E. D166382, V.E. Co. 32A3, 32A5, Narda 333 and 334.

ACCURACY: Within 5% of full scale value.

POWER REQUIREMENTS: 115 or 230 v porm 10%, 50 to 1000 cyc, single ph, approx 90 W.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Power Meter CAQI-430C (cabinet mount) or		7-3/8 x 11-1/2 x 14	14
1	Power Meter CAQI-430C (rack mount)		7 x 12-1/2 x 19	17

REFERENCE DATA AND LITERATURE:

NAVSHIPS 92999: Technical Manual for Microwave Power Meter 430C serial 6151 and above.
NAVSHIPS 93712: Technical Manual for Microwave Power Meter 430C.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (1) 5Y3 (1) 5651 (1) 6AV6 (3) 6CB6 (2) 6AU5GT (2) 12AX7

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1		32
1		35

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

DESIGN COG: Commercial

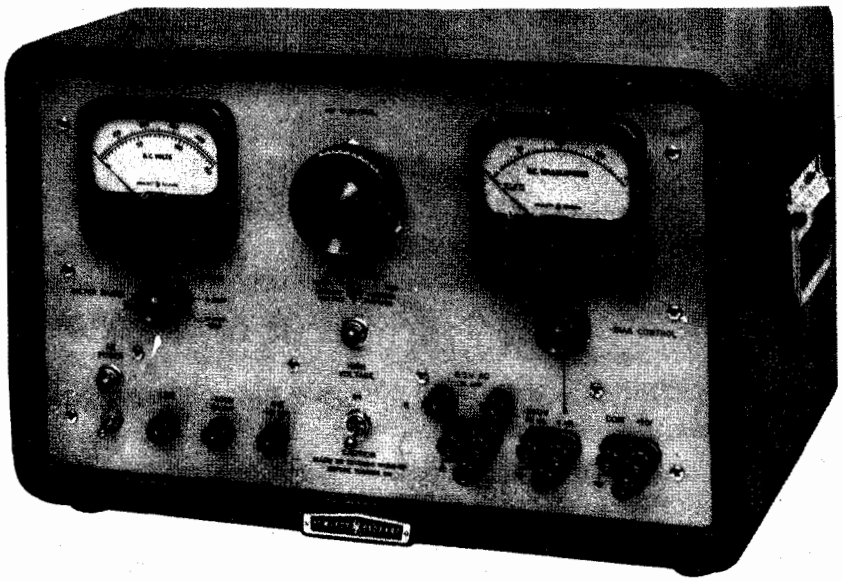
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Hewlett-Packard Company Model no. 430C	Palo Alto, California	NObsr-75635, 19 December 1958	$250.00
		NObsr-81371, 3 June 1960	$250.00
		NObsr-81493, 29 June 1960	$250.00
		NObsr-85049, 31 August 1960	$250.00

18 May 1962 REGULATED POWER SUPPLY CAQI-712B

Cog Service:	FSN:	Functional Class:
	USA USN USAF	

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Hewlett-Packard Company.



Regulated Power Supply CAQI-712B

FUNCTIONAL DESCRIPTION:

The Regulated Power Supply CAQI-712B is designed to provide four (4) outputs for maximum applicability and has less than fifty (50) millivolts change (no load to full load) at any regulated output voltage. Internal impedance is 0.1 ohm in series with 25 uh maximum. Transient recovery is 0.1 milliseconds upon application of full load.

No field changes in effect at time of preparation (23 June 1961).

TECHNICAL CHARACTERISTICS:

TYPE OF INSTALLATION: Portable-Cabinet mounted.
OUTPUT VOLTAGES
DC REGULATED HIGH VOLTAGE: 0 to 500 v (without switching) 200 ma max load.
DC REGULATED FIXED BIAS: M300 v, 50 ma max load.
DC VARIABLE BIAS: 0 to M150 v, 5 ma max load.

AC UNREGULATED: 6.3 v center tapped 10 amps max.

REGULATION

DC REGULATED HIGH VOLTAGE: Less than 50 mv change, no load to full load, at any output voltage. Less than 100 mv change in any voltage or current condition for porm 10% line voltage variation.

DC REGULATED FIXED BIAS: 50 mv no load to full load.

DC VARIABLE BIAS: Regulated against line voltage changes.

RIPPLE: 500 volts.

INTERNAL IMPEDANCE

DC REGULATED HIGH VOLTAGE (FOR FREQUENCIES ABOVE 20 CPS) FULL LOAD: 0.1 ohm in series with 25 uh max.

MV LOAD: 1 ohm in series with 50 uh max.

DC REGULATED BIAS: 0 to 10,000 ohm (varies with bias control setting).

RECOVERY TIMES: Decrease from full load to 0 ma requires a max of 0.5 millisecond. Decrease from full load to 25 ma requires a max of 0.1 milliseconds.

METERING

CURRENT METER: 0 to 200 ma (hv only).

VOLTMETER: 3-ranges, 0 to P500, 0 to P150 and 0 to M150 v.

TERMINALS: Either positive or negative dc regulated high voltage terminals may be grounded. Positive terminals of both bias supplied and negative terminal of dc reg hv are common.

OVERLOAD PROTECTION: AC line, dc reg hv, dc reg fixed bias, and filament supply are separately fused. DC reg hv drops to a safe value if fuse blows.

POWER RQMT: 115 v ac, 50 to 60 cps, single ph, 120 to 450 W depending on load and line conditions.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Regulated Power Supply CAQI-712B		12-1/2 x 14-1/4 x 20-1/2	69

REFERENCE DATA AND LITERATURE:

Hewlett-Packard Company Catalog for Electronic Test Instruments ESO Copy #196-F, Regulated Power Supply CAQI-712B.

NAVSHIPS 93400: Preliminary Data Form for Regulated Power Supply CAQI-712B.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (4) 12AX7 (2) 5R4WGB (1) 5Y3WGTB (1) 5651WA (4) 6L6WGB

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE:
SPEC &/OR DWG: Commercial

DESIGN COG: USN, BuShips

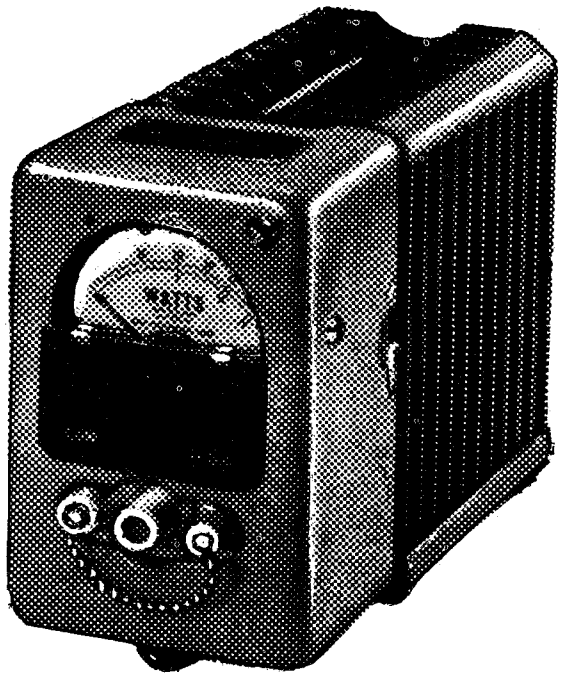
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Hewlett-Packard Co. Model 712B	Palo Alto, California		$365.00

13 April 1962 WATTMETER CAWY-67

Cog Service:	FSN: 6625-708-8582	Functional Class:
USA	USN	USAF

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Bird Electronic Corp.



Wattmeter CAWY-67

FUNCTIONAL DESCRIPTION:

The Wattmeter, CAWY-67 is a portable direct reading non-radiating "load type wattmeter". It is used for bench testing fixed station transmitters, generally of 250 watts rating.
No field changes in effect at time of preparation (23 August 1960).

TECHNICAL CHARACTERISTICS:

TYPE OF INSTALLATION: Portable.
TYPE OF POWER MEASURED: Average.
IMPEDANCE: 50 ohms nominal.
INPUT POWER: 0 to 500 W.
SCALE DATA
UNIT OF MEASUREMENT: Watts.
RANGE OF INSCRIPTION: 0 to 25 cw, 0 to 100 cw, 0 to 500 cw.

CAWY-67 WATTMETER

FREQUENCY RANGE: 300 to 500 mc.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Wattmeter CAWY-67		6 x 9 x 17	30

REFERENCE DATA AND LITERATURE:

Catalog for Bird Electronic Corp.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1		35

PROCUREMENT DATA

PROCURING SERVICE: DESIGN COG: Commercial

SPEC &/OR DWG:

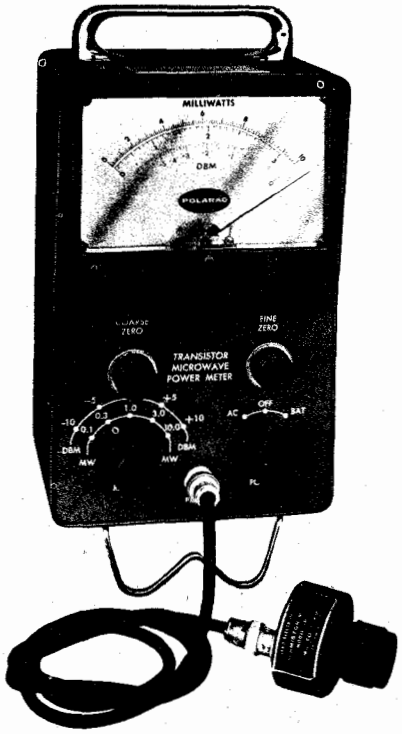
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Bird Electronic Corp. Model no. 67	Cleveland, Ohio	NObsr-75325	$359.00

29 May 1962 MICROWAVE POWER METER CBVT-P-3

Cog Service:	FSN:	Functional Class:
	USA USN USAF	

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Polarad Electronic Corporation.



Microwave Power Meter CBVT-P-3

FUNCTIONAL DESCRIPTION:

The Microwave Power Meter CBVT-P-3 is a completely, transistorized, portable rf power measuring device which may be operated from an internal battery for field use, or over a wide range of line frequencies when ac power is available. It covers an RF frequency range of 10 to 39000 megacycle (MC) through the use of five (5) Thermistor Mounts. It measures power within the full frequency range of the Thermistor Mount in use without tuning.

No field changes in effect at time of preparation (29 June 1961).

TECHNICAL CHARACTERISTICS:

TYPE OF INSTALLATION: Portable.
ACCURACY: Porm 5% of full scale.
TYPE OF CONNECTOR: Type BNC.
AUDIO SUBSTITUTION

CBVT-P-3 MICROWAVE POWER METER

FREQUENCY: 10 kc.
POWER RANGES: Full scale power readings of 0.1 mw, 0.3 mw, 1.0 mw, 3.0 mw, 10.0 mw and direct reading dbm scale from M20 dbm to P10 dbm.
FUSE RATING: 1/16 amp (BAG).
FREQUENCY RANGE: 10 to 39,000 mc.
TEMPERATURE COEFFICIENT: Negative.
MAXIMUM POWER: 100 milliwatts.
MAXIMUM CURRENT: 130 milliamps.
COLD RESISTANCE: 2000 ohms.
THERMISTOR SPECIFICATIONS
TYPE OF THERMISTOR MOUNT: Type TM-1.
FREQUENCY RANGE: 10 mc to 10,000 mc.
TYPE OF THERMISITOR MOUNT: Type TM-2.
FREQUENCY RANGE: 8,200 mc to 12,400 mc.
TYPE OF THERMISTOR MOUNT: Type TM-4.
FREQUENCY RANGE: 12,400 mc to 18,000 mc.
TYPE OF THERMISTOR MOUNT: Type TM-6A.
FREQUENCY RANGE: 18,000 mc to 27,500 mc.
TYPE OF THERMISTOR MOUNT: Type TM-9A.
FREQUENCY RANGE: 27,000 mc to 39,000 mc.
INPUT POWER: Four standard "D" cells for battery operation or 115 v ac porm 15%, 30 ma for ac operation.

RELATION TO OTHER EQUIPMENT:

The CBVT-P-3 is designed to be used with, but not part of, Thermistor Mount TM-1.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Microwave Power Meter CBVT-P-3		5 x 6 x 8	6

REFERENCE DATA AND LITERATURE:

Polarad Electronics Corporation Technical Manual for Mode P-3 Microwave Power Meter.
NAVSHIPS 93400: Preliminary Data Form for Microwave Power Meter CBVT-P-3.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: None used.

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

TRANSISTORS: (10) GT-109 (1) 2N235A

MICROWAVE POWER METER CBVT-P-3

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE:
SPEC &/OR DWG: Commercial

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Polarad Electronic Corp. Model-P-3	Long Island City, N. Y.		$295.00

WATTMETER DW

FUNCTIONAL DESCRIPTION

The Model DW (Sensitive Research Instrument corp) is a portable instrument designed for use on DC or AC circuits up to 800 cycles in the 0 to 600 watt range at a maximum of 50 percent power factor. It is shielded from external magnetic fields and electrostatic charges and is enclosed in a wood case with a carrying handle.

No field changes in effect at time of preparation (15 October 1956).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

SCALE DATA
RANGE: 0 to 150, 300, 600 W.
GRADUATION: 75 scale divisions, linear.
ACCURACY: 1/4% at full scale deflection.
FIELD CURRENT DATA
NORMAL (UNITY PF) 1.5 amps series, 3.0 amps parallel.
MAXIMUM (50% PF): 3 amps series, 6 amps parallel.
VOLTAGE: 100 to 200 v, 60% overload.

MANUFACTURER'S OR CONTRACTOR'S DATA

Sensitive Research Instrument Corp, Mount Vernon, New York.
Approximate Cost: $150.00 with equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

REFERENCE DATA AND LITERATURE

Sensitive Research Instrument Corp, Catalog No. 50 for Wattmeters Model DW.

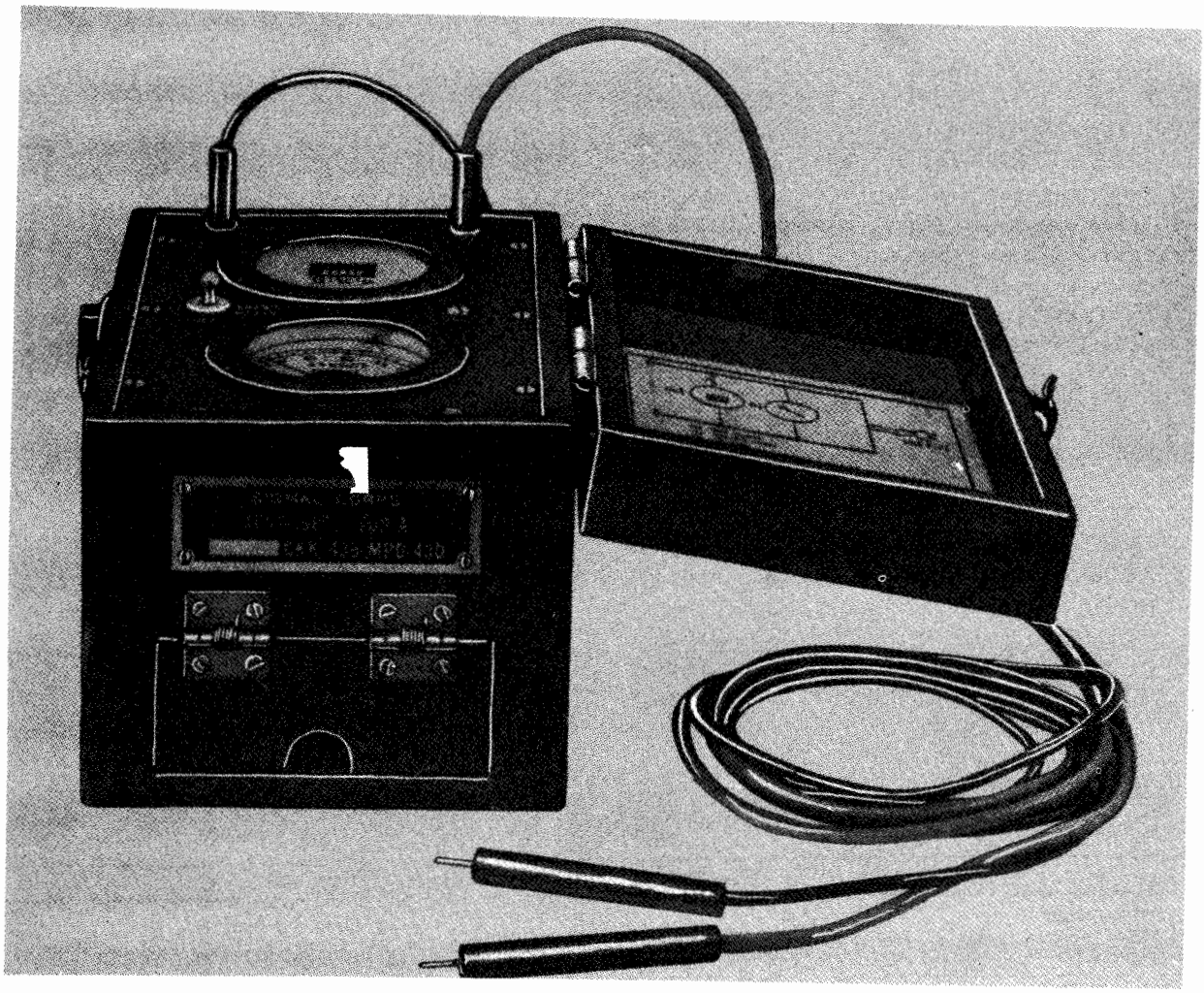
TYPE CLASSIFICATION	
DESIGN COGNIZANCE	Commercial
PROCUREMENT COGNIZANCE	
STOCK NO.	
R.D.B. IDENT. NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Wattmeter Model DW	6 X 7-1/2 X 6	8

Test-Power Measuring

TEST SET I-209-A



Test Set I-209A

FUNCTIONAL DESCRIPTION

The I-209-A is used to test the power system of Radio Direction Finder Central TC-8 and Radio Intercept Central TC-9, or any other system whose voltage and frequency measure about 110 v, 60 cps. The unit tests the voltage and frequency at any one of the power distrubution outlets JB104 and JB105 of the Cord Assemblies RC-243 and RC-244.

No field changes in effect at time of preparation (20 Nov 1956).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TEST RANGES: 0 to 150 v AC and 58 to 62 cps operating power; 110 v, 60 cps, single ph.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

REFERENCE DATA AND LITERATURE

TM11-2501: Technical Manual for TEST SET I-209-A.

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

Test-Power Measuring

I-209-A TEST SET

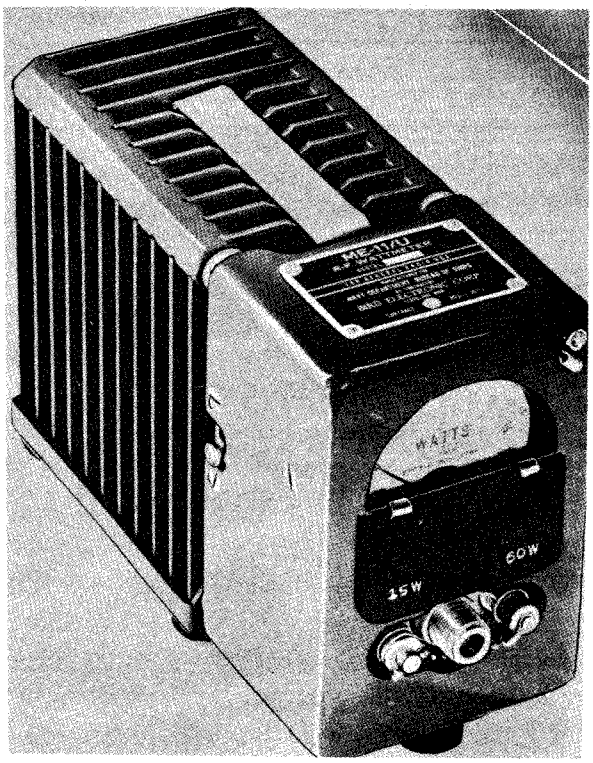
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	TEST SET I-209-A	5-3/4 x 5-3/4 x 8-3/4	4.5
1	SET TEST LEADS	65 lg	
1	Technical Manual		

April 1958

Test-Power Measuring

R.F. WATTMETER ME-11/U,-11A/U



R.F. Wattmeter - ME-11/U,-11A/U

FUNCTIONAL DESCRIPTION

The ME-11/U and ME-11A/U is designed to measure output power and facilitate tuning of transmitters falling within the frequency range of 30 to 500 megacycles (30 to 600 mc for ME-11A/U) at 2 to 60 watts power. Either of these equipments can also be used as a dummy load of 51.5 ohms up to a limit of 60 watts, as a modulation monitor, as an accurate R.F. resistance and for measurements of loss along transmission lines.

These equipments are absorption-type wattmeters built around an accurate coaxial resistor. Power is measured under non-radiating conditions by a dual range crystal rectifier-voltmeter arrangement.

The ME-11A/U differs from the ME-11/U in extended frequency coverage and in the use of a front panel switch for wattage range selection in place of the insertion of a crystal diode into the proper socket on the front panel.

No field changes in effect at time of preparation (25 November 1957).

RELATION TO OTHER EQUIPMENT

ME-11/U and ME-11A/U is superseded by the AN/URM-43 which includes a carrying case and a mounting bracket.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE
ME-11/U: 30 to 500 mc.
ME-11A/U: 30 to 600 mc.
POWER RANGE: 2 to 60 W in two steps, 0 to 15 W and 0 to 60 W.
ACCURACY: ±5% of full scale between 100 and 500 mc.
INPUT IMPEDANCE: 51.5 ohms.
TYPE OF MODULATION: CW, AM, FM or television (w/the exception of pulsed signals).

MANUFACTURER'S OR CONTRACTOR'S DATA

Bird Electronic Corp, Cleveland, Ohio.
Contract NObsr-39113, dated 31 January 1947.
Contract NObsr-42504, dated 31 January 1947.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

(1) 1N21B
Total Crystals: (1)

REFERENCE DATA AND LITERATURE

NAVSHIPS 91842: T.O. Technical Manual for R.F. Wattmeter ME-11/U.
NAVSHIPS 91842: T.P. No 16-30URM43-15; Technical Manual for Radio Frequency Wattmeter AN/URM-43A.

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

Test-Power Measuring

ME-11/U,-11A/U R.F. WATTMETER

April 1958

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	R.F. Wattmeter ME-11/U or ME-11A/U	0.67	9-1/4 x 9-3/4 x 12-3/4	11.0

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	R.F. Wattmeter ME-11/U or ME-11A/U	3-3/4 x 6-1/2 x 9-1/2	7.5
1	DC Cable	300 lg	0.75

February 1960

Test-Power Measuring

WATTMETER ME-125/U

FUNCTIONAL DESCRIPTION

Wattmeter ME-125/U is designed to measure peak rf power. The unit is ruggedly constructed, which makes it useful for field application as well as laboratory service, especially where accuracy, low VSWR and high stability are important.

No field changes in effect at time of preparation (7 January 1960).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER REQUIREMENTS: 35 W, 105 to 125 v rms, 50 to 60 cy, single ph.
POWER RANGE: 5 and 15 kw full scale.
PULSE WIDTH: 3.0 to 5.0 usec.
REPETITION RATE: 300 to 7200 pps.
ACCURACY: ±10% of full scale.
FREQUENCY RANGE: 450 to 1250 mc.
IMPEDANCE: 50 ohms.
VSWR: Less than 1.2.
AVERAGE POWER: 500 W (max).

MANUFACTURER'S OR CONTRACTOR'S DATA

Sierra Electronic Corp., Menlo Park, California.
Model No. 195A-U.
Contract NObsr-71616.
Approximate Cost: $450.65.

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 12AU7 (1) 6173 (1) OB2

Total Tubes: (4)

No Crystals used.

REFERENCE DATA AND LITERATURE

NAVSHIPS 93032: Technical Manual for WATTMETER ME-125/U.

TYPE CLASSIFICATION (NAVY)
DESIGN COGNIZANCE USN, BUSHIPS
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO. 14.2

EQUIPMENT SUPPLIED DATA

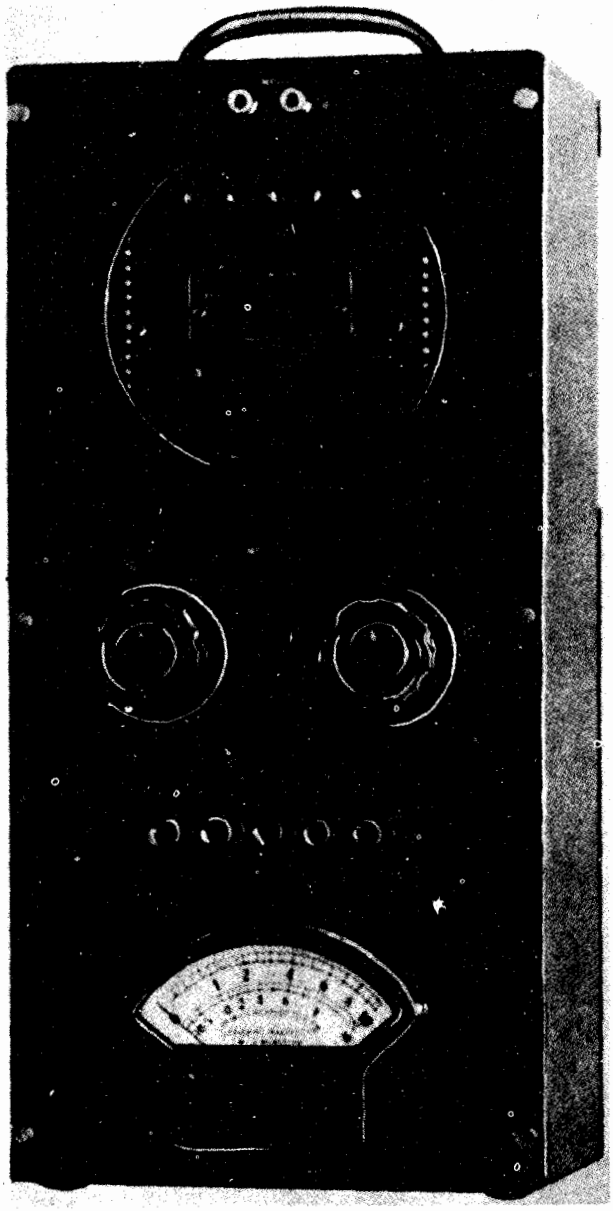
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Wattmeter ME-125/U	6 X 8 X 23-1/4	35

June 1957

Test-Power Measuring

OUTPUT POWER METER

ME-2/U



Output Power Meter ME-2/U

FUNCTIONAL DESCRIPTION

The ME-2/U is a direct-reading instrument for measuring the power output of audio-frequency circuits. The power output of the circuit under measurement is indicated directly on the scale of a direct current instrument which, in conjunction with its multiplier, provides a range of from 0.2 mw to 100 W. Its input impedance is adjustable in forty steps from 2.5 to 20,000 ohms. These steps are approximately equally spaced on a logarithmic scale. An auxiliary scale reading decibels above one mw is also provided on the indicator.

No field changes in effect at time of preparation (24 Sept 1956).

RELATION TO OTHER EQUIPMENT

Same as General Radio Co. type no. 783-A

ELECTRICAL AND MECHANICAL CHARACTERISTICS

RANGE: 0.2 mw to 100 W in 5 steps; -10 to +50 db in 5 steps, with reference to 1 mw.

ACCURACY

POWER RANGES: ±0.25 db.

MIDDLE RANGES: ±2%.

IMPEDANCE RANGES: ±5% from 10,000 to 20,000 ohms.

MANUFACTURER'S OR CONTRACTOR'S DATA

General Radio Co, Cambridge, Mass.

Contract NObsr 40865

Approximate Cost: $400 with Equipment spares.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

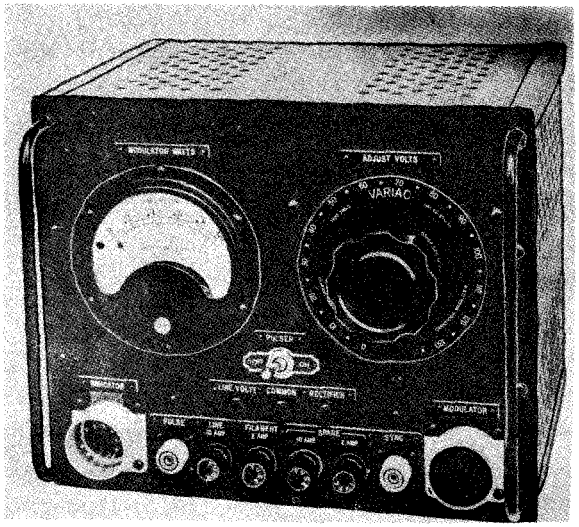
REFERENCE DATA AND LITERATURE

NAVSHIPS 91095: Technical Manual for Output Power Meter ME-2/U.

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.)
1	Output Power Meter ME-2/U	7 x 8 x 18	17



Test Unit TS-104/TPM-1

FUNCTIONAL DESCRIPTION

The TS-104/TPM-1 is used in conjunction with other depot testing equipment for bench testing certain radar systems such as AN/TPS-1 and Mark XX.

Its use permits the radar modulator to be tested without the associated radio frequency unit and permits making range marker calibration test on the radar indicator without operating the entire radar system to produce triggering pulses.

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

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (2) Power cable.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

The test unit acts as a power connecting link between the radar indicator and the associated modulator so that the modulator may be tested without the use of an RF unit.

It controls the input voltage to the high voltage rectifier of the modulator so that the voltage can be set to any value desired for testing.

It measures the power taken by the modulator. The 1 KW Wattmeter measures all of the power delivered to the modulator with the exception of the filament power supply.

It generates both positive and negative pulses for operating the sweep and marker circuits in the radar indicator. A portion of the positive pulse can be used to trigger a range calibrator.

MANUFACTURER'S OR CONTRACTOR'S DATA

Western Electrical Company, Inc., New York, N.Y.
Contract NOrd 3456

TUBE AND/OR CRYSTAL COMPLEMENT

(2) 6SN7GT
Total Tubes: (2)

REFERENCE DATA AND LITERATURE

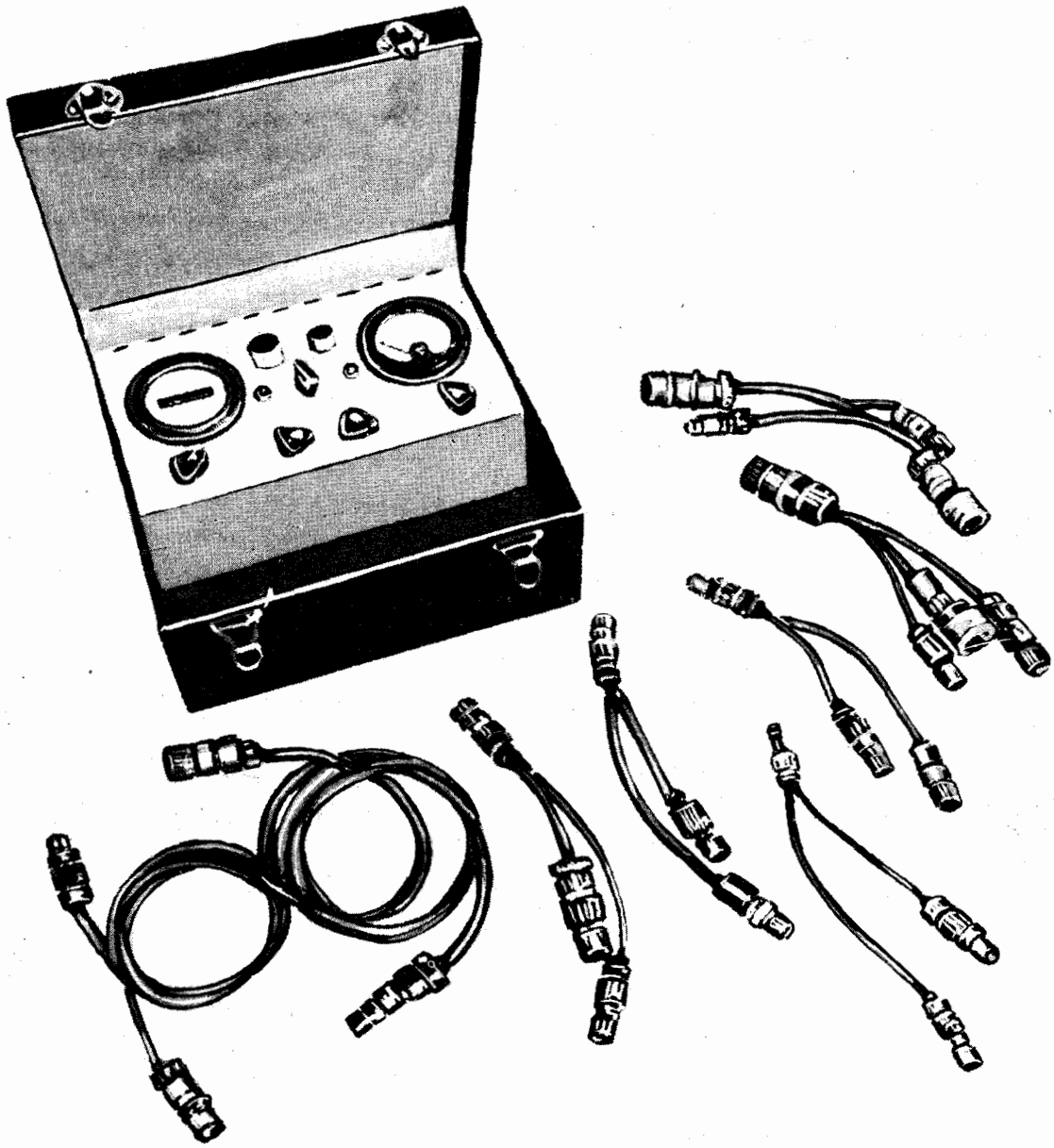
NAVSHIPS 900;535: Technical Manual for Test Unit TS-104/TPM-1.

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

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Test Unit TS-104/TPM-1	9-1/4 X 9-1/2 X 11	20 lbs 8 oz

TEST SET GYROMAGNETIC COMPASS TS-1086/U



Test Set, Gyromagnetic Compass, Type P-1 TS-1086/U

FUNCTIONAL DESCRIPTION

The Slaved Gyro Magnetic Compass Field Tester, Type P-1, is designed to make flux valve, slaving and power supply checks of various gyro magnetic compasses. Power supply tests include the checking of the frequency and voltage of single-phase, 120-volt, 400 cycle alternating current; the voltage of 28-volt direct current; and the phase rotation of three phase, 115-volt, 400 cycle alternating current.

No field changes in effect at time of preparation (14 January 1960).

Test-Power Measuring

January 1961

TS-1086/U TEST SET GYROMAGNETIC COMPASS

RELATION TO OTHER EQUIPMENT

The TS-1086/U Test Set, Gyro Magnetic Compass is the same as commerical model P-1 Field Tester.

The TS-1086/U is designed to be used with but not part of Gyro Magnetic Compass Set AN/ASN-13( ).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

TYPES OF CHECKS MADE: Flux valve slaving and power supply checks, such as frequency and voltage of single ph, 120 v, 400 cps AC.

OPERATING POWER RQMT: 115 to 120 v AC, 400 cps, single ph; 28 v dc.

MANUFACTURER'S OR CONTRACTOR'S DATA

Sorensen & Co., Inc., Stamford, Conn.

Type No. P1 Field Tester.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals used.

REFERENCE DATA AND LITERATURE

TM11-6625-247-15: Technical Manual for Gyro Magnetic Compass, Test Set TS-1086/U.

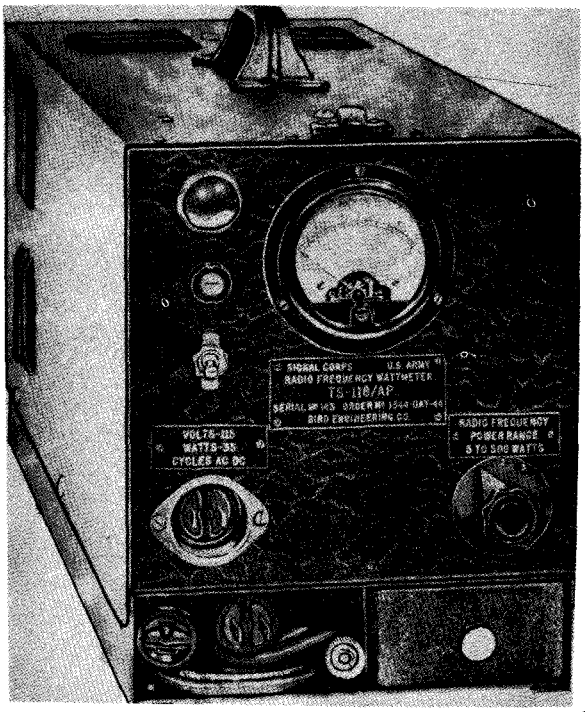
TYPE CLASSIFICATION	(NAVY)
DESIGN COGNIZANCE	USN, BUSHIPS
PROCUREMENT COGNIZANCE	
STOCK NO.	
R.D.B. IDENT. NO.	

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Gyro Magnetic Compass, Test Set TS-1086/U	9 X 11-3/4 X 11-3/4	

Test-Power Measuring

RADIO FREQUENCY WATTMETER TS-118/AP



Radio Frequency Wattmeter TS-118/AP

FUNCTIONAL DESCRIPTION

The TS-118/AP is a portable test equipment used in measuring the average rf power output of radio transmitters.

No field changes in effect at time of preparation (16 April 1958).

RELATION TO OTHER EQUIPMENT

This equipment supersedes Radio Frequency Wattmeter TS-70/AP.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 20 to 1,000 mc.
POWER RANGE: 5 to 500 W (rf).
IMPEDANCE: 50 ohms (input).
ACCURACY: ±10%.
POWER REQUIREMENTS: 115 v, 50 to 60 cps, 1 ph, 100 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Bird Engineering Co, Cleveland, Ohio
Contract NXsr-44551.
Order No. 1344-DAY-44, dated 30 June 1944.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals used.

REFERENCE DATA AND LITERATURE

AN16-35TS118-2: Handbook of Maintenance Instructions for Radio Frequency Wattmeter TS-118/AP.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE SPEC MIL-R-11817
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 Frequency Wattmeter TS-118/AP	3.48	13 x 16 x 29	75

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Frequency Wattmeter TS-118/AP including:	8-1/2 x 11 x 24-1/2	26
1	Case CY-174/AP	12-1/2 x 14 x 31	22
3	Thermo couple (low-power) MX-205/AP		
3	Thermo couple (medium-power) MX-206/AP		

TS-118/AP RADIO FREQUENCY WATTMETER

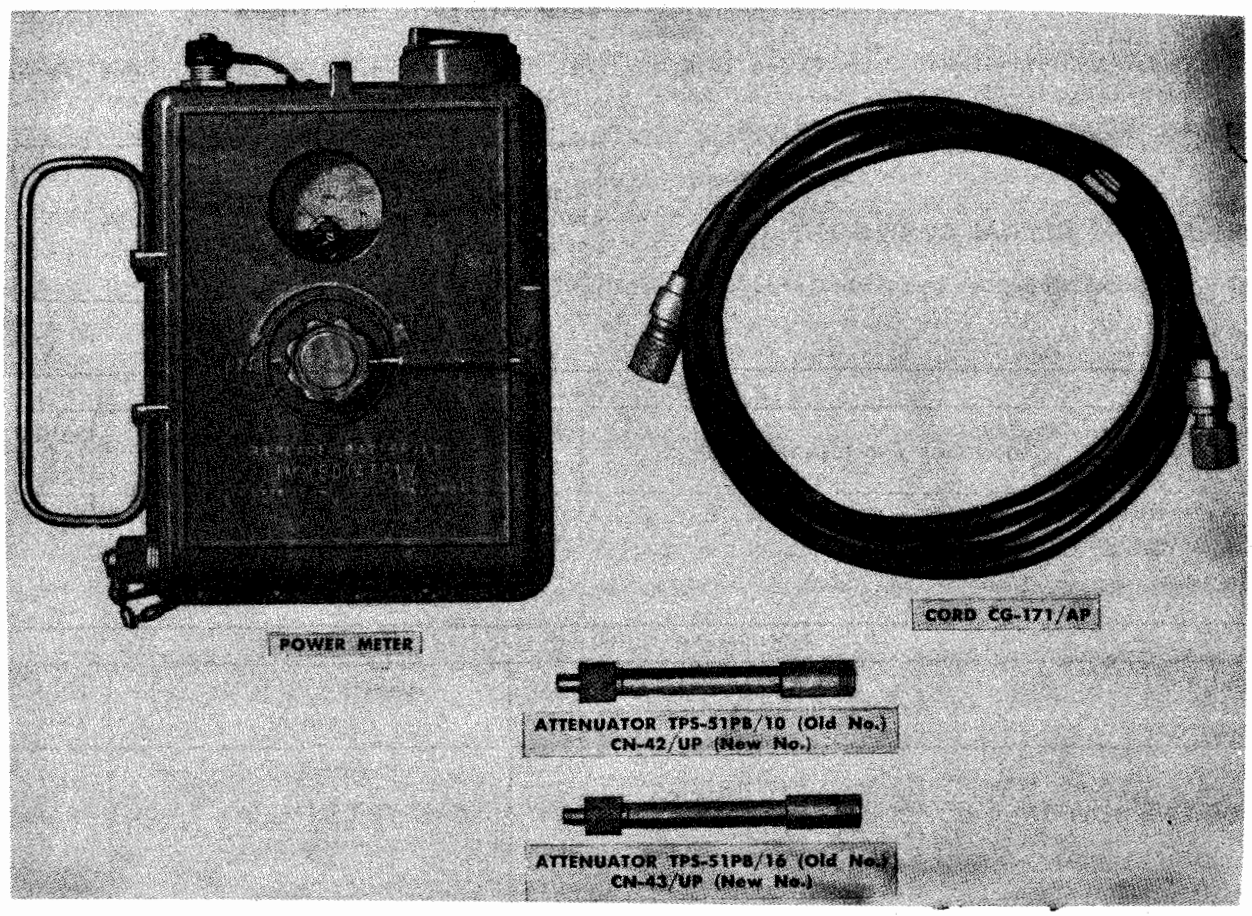
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
3	Thermo couple (high-power) MX-207/AP		
1	Cord CX-237/U	120 lg	
1	Cord CG-123/U	8 lg	
1	Cord CG-122/U	9 lg	
1	Cord CG-56/U	9 lg	
2	Radio Frequency Adapter UG-108/U		
1	Tuning Stub TN-87/AP		
1	Calibration Chart		
1	Calibration Chart (high-power range)		
5	Fuse (2 amp)		
1	Wrench for #8 Hex-Socket Set Screws		

April 1958

Test-Power Measuring

POWER METER TS-125/AP



Power Meter TS-125/AP

FUNCTIONAL DESCRIPTION

The TS-125/AP is a compact, light-weight, battery-operated, UHF wattmeter used in checking the relative power output or radar transmitters. It may also be employed in measuring antenna radiation patterns and standing wave ratios.

This equipment consists of a temperature-compensated thermistor bridge, a milliwattmeter, and a horn-type pick-up antenna.

No field changes in effect at time of preparation (16 April 1958).

RELATION TO OTHER EQUIPMENT

This equipment is part of Test Set AN/APM-33, Test Set UPM-2, and Test Kit AN/UPM-7.

Equipment Required but not Supplied: (3) Battery BA-30.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 2,400 to 3,335 mc.
TYPE OF EMISSION: CW, pulse.
POWER RANGE: 0 to 2 mw, 0 to 4 W (with attenuators); above 4 W (with pick up ant).
TEMPERATURE RANGE: −20° to +60° C.
ACCURACY: ±0.5 db.
POWER REQUIREMENTS: 4.5 v DC.

MANUFACTURER'S OR CONTRACTOR'S DATA

Cover-Dual Signal Systems Inc, Chicago, Illinois.

Test-Power Measuring

TS-125/AP POWER METER

Order No. 289-45-RA, dated 28 July 1944.
Order No. 971-45-RA, dated 12 Jan 1948.
Order No. 1109-DAY-44, dated 31 May 1944.
Electric Products Co, Chicago, Illinois.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals Used.

REFERENCE DATA AND LITERATURE

TM11-1217: Technical Manual for Power Meter TS-125/AP.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE Army Spec 71-5067
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	Power Meter TS-125/AP	3.75	12 X 15-1/2 X 29	55

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Power Meter TS-125/AP including:	5-5/16 X 7-7/8 X 10	12
1	Antenna AT-67/AP	3-1/2 dia X 4-1/4	
1	Cord CG-171/AP	111 lg	
1	Attenuator CN-42/UP	5 lg	
1	Attenuator CN-43/UP	5 lg	
2	Technical Manual TM11-1217		

3 April 1962 — TEST SET, ELECTRICAL POWER TS-1261/U

Cog Service: USMC FSN: — Functional Class: 14.1

USA | USN | USAF

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Niagara Electrical Instrument Co., (90679).

(No Illustration Available)

FUNCTIONAL DESCRIPTION:

Test Set, Electrical Power TS-1261/U is used for electrical testing for determination of input power in terms of amperes, volts, kilowatts, and power factor. For testing single-phase and poly phase frequencies from 25 to 400 cycles. Auxiliary transformers permit testing to 2400 max volts, poly phase current transformer rated from 10 ampere min to 100 ampere max.

No field changes in effect at time of preparation (19 February 1962).

TECHNICAL CHARACTERISTICS:

WER REQUIREMENTS: 115 v, 25 cyc, single ph; 600 v, 400 cyc, single ph.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set, Electrical Power TS-1261/U		7-1/2 x 11-3/8 x 21	

REFERENCE DATA AND LITERATURE: None.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Data not available.

CRYSTALS: Data not available.

SEMI-CONDUCTORS: Data not available.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)

TS-1261/U TEST SET, ELECTRICAL POWER

PROCUREMENT DATA

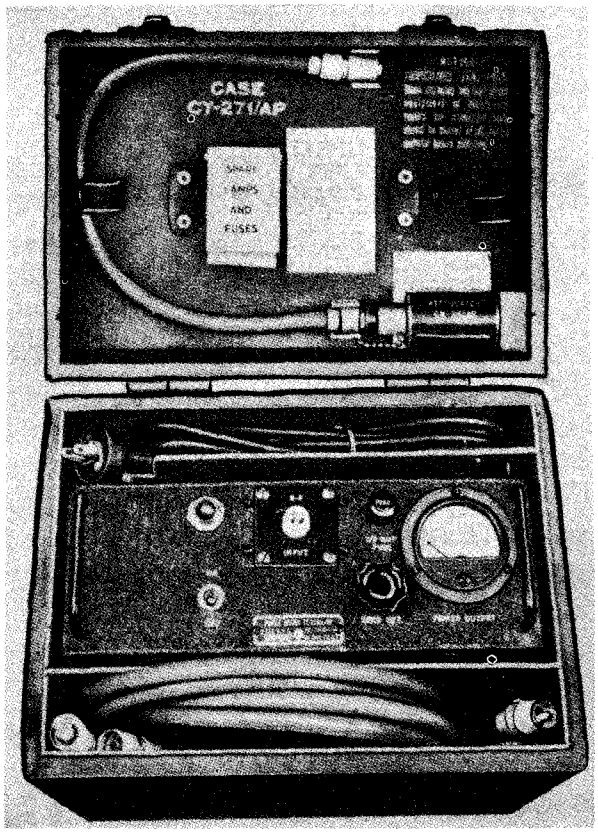
PROCURING SERVICE: USMC
DESIGN COG: USMC
SPEC &/OR DWG:

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Niagara Electrical Instrument Co. Model no. 77-A-4	Buffalo, N. Y.	NOm-70448	

January 1958

Test-Power Measuring

POWER METER TS-226A/AP



Power Meter TS-226A/AP

FUNCTIONAL DESCRIPTION

The TS-226A/AP is a portable test equipment designed to measure peak power levels of pulsed transmitters whose pulse recurrence frequency is greater than 250 pulses per second and which operate in the 405 to 425 megacycle range. It is designed essentially for use in conjunction with Radio Sets AN/APS-16 and AN/APS-13. It may be used to measure peak power levels up to 1000 watts and up to 10000 watts when used in conjunction with attenuator CN-24/AP.

No field changes in effect at time of preparation (10 July 1957).

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 405 to 425 mc.
METER ACCURACY: ±15%.
OPERATING TEMPERATURE: -40° to 55°C.
METER RANGE: 0 to 1000 W peak power; 0 to 10000 W peak power when used with Attenuator CN-24/AP.
POWER SOURCE REQUIRED: 115 v, 50 to 2400 cps, single ph.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 559 (1) 6H6 (1) 6SN7GT
Total Tubes: (3)

REFERENCE DATA AND LITERATURE

AN16-35TS226-2, Technical Manual for Power Meter TS-226A/AP.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	USAF
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	Power Meter TS-226A/AP			

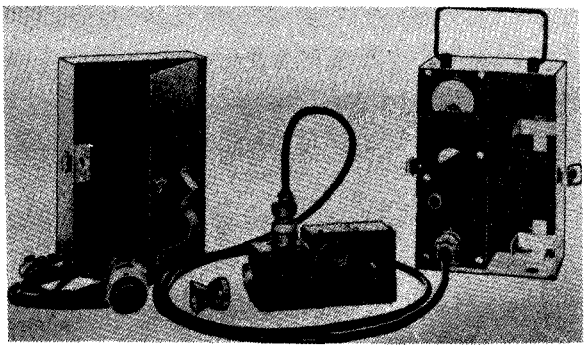
EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Attenuator CN-24/AP	1-1/2 x 1-1/2 x 3-1/2	1/4
1	Case CY-271/AP	8-1/2 x 10 x 12	8
1	Cord CG-92/U	60 lg	3/4
1	Cord CG-92/U (chained to Attenuator CN-24/AP)	20-1/4 lg	6 oz
1	Cord CG-192/AP	60	3/4 lbs
1	Power Meter TS-226A/AP	4 x 7 x 10-3/4	7-3/4

February 1960

Test-Power Measuring

POWER METER TS-254/AP



Power Meter TS-254/AP

FUNCTIONAL DESCRIPTION

Power Meter TS-254/AP is a portable equipment used in measuring the power output of oscillators or radar transmitters.

No field changes in effect at time of preparation (13 July 1959).

EQUIPMENT REQUIRED BUT NOT SUPPLIED

Battery: (4) BA-30.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

POWER REQUIREMENTS: 6 v, 30 ma DC; 28 v, 200 ma DC.
FREQUENCY: 24,000 mc ±2%.
TYPE OF RECEPTION: AM, CW, pulse.
POWER RANGE: 1 to 631 mw.

MANUFACTURER'S OR CONTRACTOR'S DATA

Electronic Corp of America, N. Y., N. Y.
Order No. 280-DAY-45RA.
Order No. 2104-45, dated 10 March 1945.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes or Crystals used.

REFERENCE DATA AND LITERATURE

AN 16-35TS254-2-M: Technical Manual for POWERMETER TS-254/AP.

TYPE CLASSIFICATION
DESIGN COGNIZANCE USAF, WADC
PROCUREMENT COGNIZANCE USAF SPEC S-7015
STOCK NO.
R.D.B. IDENT. NO. 14.2

SHIPPING DATA

NUMBER OF BOXES	CONTENTS AND IDENTIFICATION	VOLUME (Cu.Ft.)	OVERALL DIMENSIONS (inches)	WEIGHT PACKED (lbs.)
1	Power Meter TS-254/AP	1.42	12 X 12 X 17	32

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Power Meter TS-254/AP Including:	5-25/32 X 5-7/8 X 8-3/64	5.5
1	Technical Manual AN 16-35TS254-2-M		
1	Antenna AT-105/AP	1-1/8 X 1-1/4	0.1
1	Cord CX-68/AP	120 lg	0.6
1	Cord CX-715/U	72 lg	0.5
1	Case CY-391/AP	7 X 7-1/2 X 10	6.3
1	Radio Frequency Head	1-7/8 X 2-3/4 X 6	1.5

September 1956

POWER METER TS-305/UP

FUNCTIONAL DESCRIPTION

The TS-305/UP is a portable test equipment designed to measure the peak power level of pulsed transmitters which operate in the 215 to 330 megacycle range such as the AN/APN-3 and AN/CPN-2 Radio Sets. It may be used to measure peak power levels up to 1000 Watts with a 52 ohm load.

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

RELATION TO OTHER EQUIPMENT

Similar to Power Meter TS-226A/AP except that the line dimensions and the frequency range are different to permit use with other equipments.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 215 to 330 megacycles.
METER ACCURACY: ±2%.
EQUIPMENT ACCURACY: ±15%.
OPERATING TEMPERATURE RANGE: -40 to +55 deg C.
PEAK POWER RANGE: 0 to 1000 W.
POWER SOURCE: 115 v, 50 to 2400 cps, single phase.

MANUFACTURER'S OR CONTRACTOR'S DATA

Approximate Cost: $200.00.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) 6H6GT/G (1) 559 (1) 6SN7GT

Total Tubes: (3)

REFERENCE DATA AND LITERATURE

T.O. 16-55-213: Radio, Radar and Electronics Spare Parts List for Power Meter TS-305/UP.

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

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Attenuator CN-27/UP		
1	Case CY-324/UP	8 x 8 x 12	
1	Cord CG-55/U	12 lg	
1	Cord GG-278/U	30 in. lg	
1	Power Meter TS-305/UP	4 x 6 x 11	8

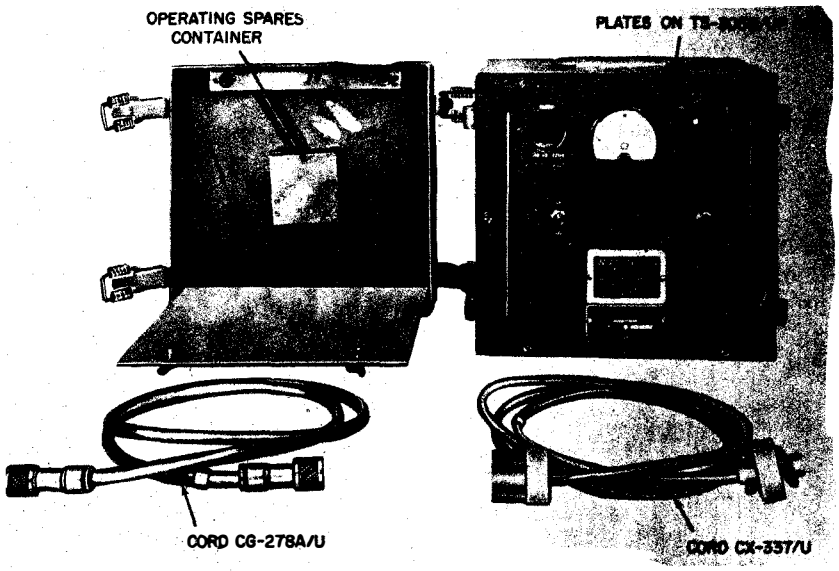
22 May 1962 POWER METER TS-305A/UP

Cog Service: USAF FSN: Functional Class: 14.2

USA	USN	USAF

TYPE CLASS: Std

MANUFACTURER'S NAME/CODE NUMBER: Industrial Instruments Incorporated, (30646).



Power Meter TS-305A/UP

FUNCTIONAL DESCRIPTION:

Power Meter TS-305A/UP is a portable test set designed for measuring the rf power output of radio and radar sets.

No field changes in effect at time of preparation (7 February 1962).

TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: 115 v porm 10%, 150 ma, 50 to 1,600 cyc, single ph.
RANGE OF OPERATION: 220 to 320 mc.
POWER RANGE: 0 to 50 kw.
INPUT IMPEDANCE: 52 ohms (nominal).
TEMPERATURE RANGE: M40 to P130 deg F (M40 to P55 deg C).
HUMIDITY RANGE: To 95%.
ALTITUDE RANGE: To 10,000 ft.
ACCURACY: Porm 10%.

TS-305A/UP POWER METER

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Power Meter TS-305A/UP includes:		10-1/2 x 11-1/4 x 12	25-3/4
1	Cord CG-278A/U		58 lg	
1	Cord CX-337/U		84 lg	

REFERENCE DATA AND LITERATURE:

TO 33A1-7-22-1: Handbook of Operation and Maintenance Instructions for Power Meter TS-305A/UP and TS-305B/UP.
TO 33A1-7-22-4: Parts Catalog for Power Meter TS-305A/UP and TS-305B/UP.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (1) 2822 (1) 6H6GT (1) 6SN7GT

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1		32

PROCUREMENT DATA

PROCURING SERVICE: USAF
DESIGN COG: USAF, WADC
SPEC &/OR DWG: MIL-P-5714

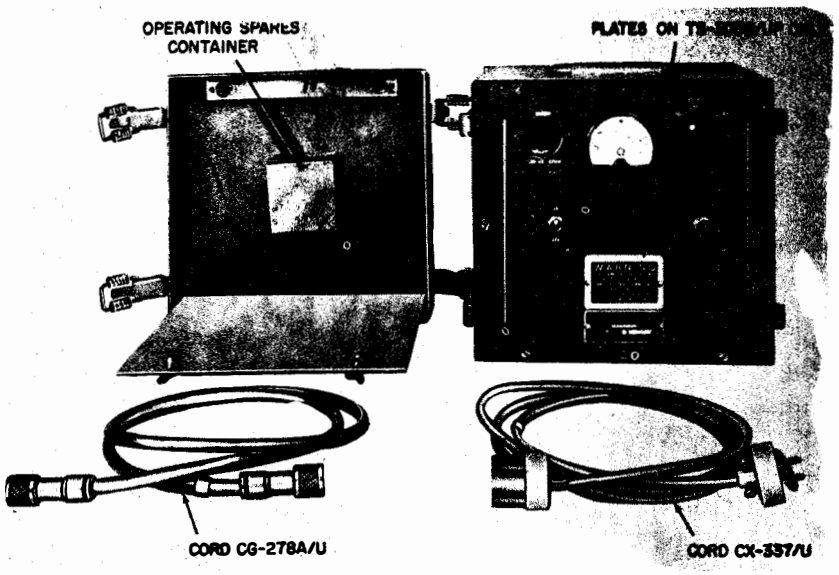
CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Industrial Instruments Inc.	Cedar Grove, New Jersey	AF33(038)-13689, 27 June 1950	$144.00

24 May 1962 POWER METER TS-305B/UP

Cog Service: USAF FSN: 6625-643-2987 Functional Class: 14.2

USA	USN	USAF
TYPE CLASS:	Used by	Std

MANUFACTURER'S NAME/CODE NUMBER: Industrial Instruments Inc., (30646).



Power Meter TS-305B/UP

FUNCTIONAL DESCRIPTION:

Power Meter TS-305B/UP is a portable test set designed for measuring the rf power output of radio and radar sets.

No field changes in effect at time of preparation (7 February 1962).

TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: 115 v porm 10%, 50 to 1600 cyc, single ph.
RANGE OF OPERATION: 220 to 320 mc.
POWER RANGE: 0 to 50 kw.
INPUT IMPEDANCE: 52 ohms (nominal).
TEMPERATURE RANGE: M40 to P130 deg F (M40 to P55 deg C).
HUMIDITY RANGE: To 95%.

TS-305B/UP POWER METER

ALTITUDE RANGE: To 10000 ft.
ACCURACY: Porm 10%.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Power Meter TS-305B/UP includes:		10-1/2 x 11-1/4 x 12	25-3/4
1	Cord CG-278A/U		58 lg	
1	Cord CX-337/U		84 lg	

REFERENCE DATA AND LITERATURE:

TO 33A1-7-22-1: Handbook of Operation and Maintenance Instructions for Power Meter TS-305A/UP and TS-305B/UP.
TO 33A1-7-22-4: Parts Catalog for Power Meter TS-305A/UP and TS-305B/UP.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (1) 2B22 (1) 6H6GT (1) 6SN7GT

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1		32

PROCUREMENT DATA

PROCURING SERVICE: USAF DESIGN COG: USAF, WADC
SPEC &/OR DWG: MIL-P-5714A

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Industrial Instruments Inc.	Cedar Grove, New Jersey	AF33(600)-19218	

5 April 1962 POWER METER TS-305C/UP

Cog Service: USAF FSN: 6625-643-2421 **Functional Class: 14.2**

USA	USN	USAF

TYPE CLASS: Used by Std

MANUFACTURER'S NAME/CODE NUMBER: Electro Impulse Laboratory, (91161).

(No Illustration Available)

FUNCTIONAL DESCRIPTION:

Power Meter TS-305C/UP is a portable test set designed for measuring the rf power output of radio and radar sets.

No field changes in effect at time of preparation (7 February 1962).

TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: 115 v porm 10%, 50 to 1,000 cyc, single ph.
RANGE OF OPERATION: 220 to 320 mc.
POWER RANGE: 0 to 50 kw.
INPUT IMPEDANCE: 52 ohms.
TEMPERATURE RANGE: M40 to P130 deg F (M40 to P55 deg C).
HUMIDITY RANGE: To 95%.
ALTITUDE RANGE: To 10,000 ft.
ACCURACY: Porm 10%.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Power Meter TS-305C/UP includes:		8 x 9-1/8 x 9-1/2	13
1	Cord CG-278A/U		58 lg	
1	Cord CX-337/U		84 lg	

REFERENCE DATA AND LITERATURE: None.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (1) 2B22 (1) 5814A (1) 6X4WA

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

TS-305C/UP POWER METER

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1		

PROCUREMENT DATA

PROCURING SERVICE: USAF
SPEC &/OR DWG: MIL-P-5714A

DESIGN COG: USAF, WADC

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Electro Impulse Laboratory	Red Bank, N. J.	AF33(604)-8536	$172.51

5 April 1962 — POWER METER TS-305D/UP

Cog Service: USAF FSN: — Functional Class: 14.2

USA	USN	USAF

TYPE CLASS: Used by — Std

MANUFACTURER'S NAME/CODE NUMBER: J. H. Keeney and Co., (75242).

(No Illustration Available)

FUNCTIONAL DESCRIPTION:

Power Meter TS-305D/UP is a portable test set designed for measuring the rf power output of radio and radar sets.

No field changes in effect at time of preparation (7 February 1962).

TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: 115 v porm 10%, 50 to 1,000 cyc, single ph.
RANGE OF OPERATION: 220 to 320 mc.
POWER RANGE: 0 to 50 kw.
INPUT IMPEDANCE: 52 ohms (nominal).
TEMPERATURE RANGE: M40 to P130 deg F (M40 to P55 deg C).
HUMIDITY RANGE: To 95%.
ALTITUDE RANGE: To 10,000 ft.
ACCURACY: Porm 10%.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Power Meter TS-305D/UP includes:		8 x 9-1/2 x 10-1/2	13
1	Cord CG-278A/U		58 lg	
1	Power Cable CX-3135/U		72 lg	

REFERENCE DATA AND LITERATURE: None.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (1) 2B22 (1) 5814A (1) 6X4WA

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

TS-305D/UP POWER METER

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1		

PROCUREMENT DATA

PROCURING SERVICE: USAF
SPEC &/OR DWG: MIL-W-5714D

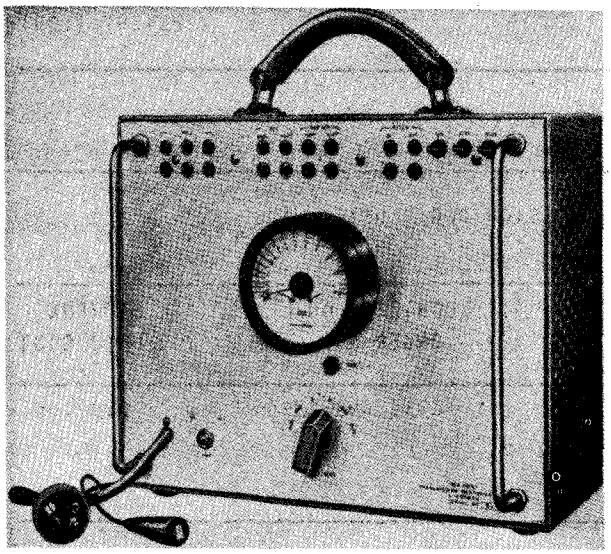
DESIGN COG: USAF, WADC

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
J. H. Keeney and Co.	Chicago, Ill.	AF33(604)-29260	$137.08

January 1958

Test-Power Measuring

DECIBEL METER TS-400/U



Decibel Meter TS-400/U

ELECTRICAL AND MECHANICAL CHARACTERISTICS

FREQUENCY RANGE: 150 cps to 150 kc.
MEASURING RANGE: −35 to +35 dbm from 600 ohm circuit.
ACCURACY: ±0.5 db.
POWER REQUIREMENTS: 105 to 125 v, 50 to 60 cps, 50 W.

MANUFACTURER'S OR CONTRACTOR'S DATA

Western Electric Company, New York, N. Y.

TUBE AND/OR CRYSTAL COMPLEMENT

(1) OD3W
(1) 6H6
(1) 5Y3WGTB
(1) 6G6G
(2) 6SJ7
Total Tubes: (6)

FUNCTIONAL DESCRIPTION

The TS-400/U is a portable, alternating-current, rectifier-type transmission measuring set used to measure testing power over a 150 cycles-per-second to 150 kilocycle frequency range. Power can be measured from a 600 ohm circuit on either a terminated or bridging basis. It includes an attenuator.

No field changes in effect at time of preparation (23 July 1957).

RELATION TO OTHER EQUIPMENT

The TS-400/U is a part of Test Set AN/FCM-1, and will be replaced by Test Set TS-140/PCM.

REFERENCE DATA AND LITERATURE

TM11-487H: Directory of Signal Corps Equipments, Test Equipment.
Nomenclature Card for Decibel Meter TS-400/U.

TYPE CLASSIFICATION
DESIGN COGNIZANCE TASSA
PROCUREMENT COGNIZANCE
STOCK NO.
R.D.B. IDENT. NO. 14.2

EQUIPMENT SUPPLIED DATA

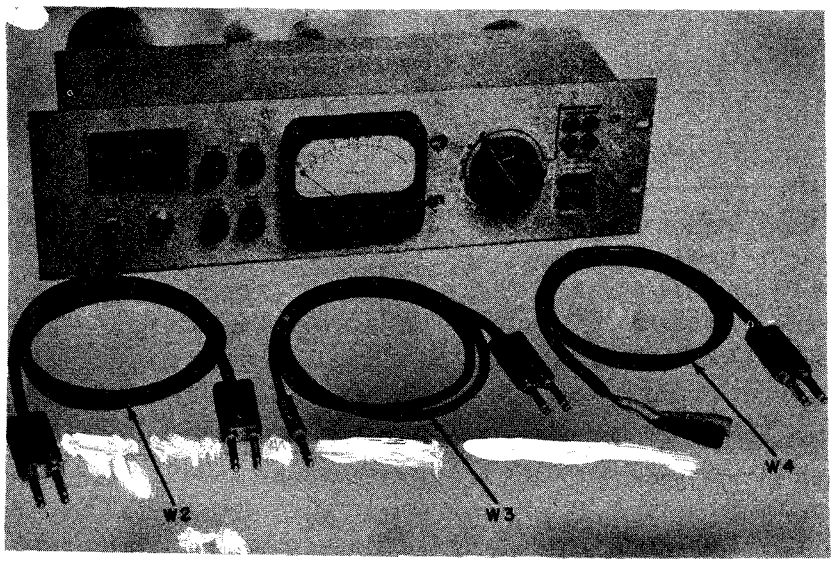
QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Decibel Meter TS-400/U	8 X 11 X 12	40

Cog Service: FSN: 6625-585-4006 Functional Class:

USA USN USAF

TYPE CLASS:

MANUFACTURER'S NAME/CODE NUMBER: Schulmerich Electronics Inc.



Audio Level Test Panel TS-629C/U

FUNCTIONAL DESCRIPTION:

Audio Level Test Panel TS-629C/U is designed to accurately measure audio levels in broadcasting, sound recording, telephone transmission and allied fields where precise monitoring over the audio range is required.

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

TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: 105 to 120 v, 50 to 60 cyc, single ph.
FREQUENCY RANGE: 200 to 10,000 cyc.
INPUT IMPEDANCE
BRIDGE CONNECTION: 12,500 ohms.
TERMINATING CONNECTION: 600 ohms.

TS-629C/U AUDIO LEVEL TEST PANEL

AUDIO LEVEL RANGE
BRIDGING: M20 to P20 db.
TERMINATING: M40 to M20 db.
FREQUENCY RESPONSE: Flat from 200 to 9,000 cyc; porm 0.5 db from 30 to 15,000 cyc.
TEMPERATURE RANGE: M15 deg to P55 deg C.
ACCURACY: Porm 5%.

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Audio Level Test Panel TS-629C/U includes:		5-1/4 x 11 x 19	20
1	Cable Ass'y CX-2549/U		63 lg	
1	Cable Ass'y CX-2550/U		62-1/2 lg	
1	Cable Ass'y CX-2551/U		64 lg	
1	Power Cord CD-307		84 lg	
2	Technical Manual			

REFERENCE DATA AND LITERATURE:

NAVSHIPS 93429: Technical Manual for Audio Level Test Panel TS-629C/U.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (1) 0D3/VR150 (1) 6AG7 (1) 6C20 (1) 6X5GT

CRYSTALS: None used.

SEMI-CONDUCTORS: None used.

SHIPPING DATA

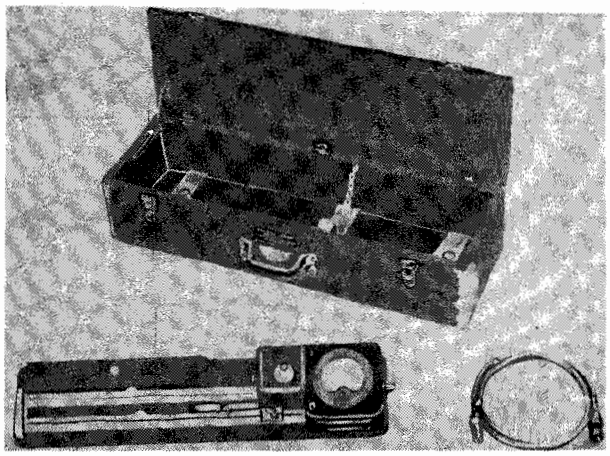
PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	2.1	35

PROCUREMENT DATA

PROCURING SERVICE: DESIGN COG: USN, BuShips
SPEC &/OR DWG: MIL-A-17045(SHIPS), Amend 1

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Schulmerich Electronics Inc.	Sellersville, Pa.	NObsr-71877	$156.12
		NObsr-75428	$203.26

RADIO FREQUENCY WATTMETER TS-70/AP



Radio Frequency Wattmeter TS-70/AP

FUNCTIONAL DESCRIPTION

The TS-70/AP is a portable test equipment designed primarily for use in depots for the measurement of the power output of radio transmitters. The power output is measured on a meter which is part of the equipment.

No field changes in effect at time of preparation (11 July 1957).

RELATION TO OTHER EQUIPMENT

Equipment Required but not Supplied: (1) DC Voltmeter w/scales 0-50, 0-10, 0-5 V, (1) DC Ammeter w/scales 0-1, 0-0.5, 0-0.2, 0-0.1 amp, (1) Battery source 50 to 60 v at 0.5 amp, (1) Potentiometer capable of varying voltage source from 5 to 50 volts.

ELECTRICAL AND MECHANICAL CHARACTERISTICS

MEASUREMENT RANGE: 25 W.
FREQUENCY RANGE: 200 to 700 mc.
POWER SOURCE REQUIRED: Power output of transmitter under measurement is the only power required for operation of wattmeter.

TUBE AND/OR CRYSTAL COMPLEMENT

No Electron Tubes.

REFERENCE DATA AND LITERATURE

AN08-35TS70-2: Technical Manual for Radio Frequency Wattmeter TS-70/AP.

TYPE CLASSIFICATION	
DESIGN COGNIZANCE	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 Frequency Wattmeter TS-70/AP			

EQUIPMENT SUPPLIED DATA

QUANTITY PER EQUIPT	NAME AND NOMENCLATURE	OVERALL DIMENSIONS (inches)	WEIGHT (lbs.)
1	Radio Frequency Wattmeter TS-70/AP	4-1/2 x 5 x 23-1/2	10
1	Cord CG-55/U	60 lg	12 oz
1	Case CY-81/AP	5-1/4 x 9-3/4 x 26-1/4	9