RADIO
FREQUENCY

INTERFERENCE

AND FIELD INTENSITY

measuring equipment

V H F

VERY HIGH FREQUENCY

20 mc to 400 mc

STODDART NM-30A

STODDART NM-30A

very high frequency operation

DESCRIPTION

The Stoddart NM-30A is a sensitive, frequency selective, calibrated VHF microvoltmeter and special purpose receiver covering the RF spectrum of 20 mc to 400 mc. Within this frequency range, the NM-30A equipment investigates, analyzes, monitors and measures conducted or radiated RF energy to the highest practical degree of accuracy. The equipment measures rms of sine wave signals. It also readily measures quasi-peak and peak values of complex waveforms including pulsed RF, and broadband interference signals.

APPLICATIONS

Applications include spectrum signature performance tests; interference measurement for military and commercial acceptance tests; RF energy surveillance and monitoring; verification of the electronic compatibility of modern weapon systems, i.e., missile firing and guidance, computer, telemetering and communications; range safety determination at missile sites; frequency conservation and allocation studies; performing measurements required by FCC regulations governing restricted and incidental radiation devices; antenna propagation studies; field intensity surveys; the measurement of electro-mechanical devices, transmitting and receiving equipment, and virtually any device, equipment or system capable of producing radiated or conducted RF energy; in conjunction with other test equipment, as an ancillary instrument to measure attenuation, insertion loss, impedance, etc.

SPECIFICATIONS

FREQUENCY RANGE:
20 mc to 400 mc in six bands.

RF INPUT IMPEDANCE:
50 ohms coaxial input.

SENSITIVITY:
The sensitivity data indicated in the following table is based on a signal to noise ratio of unity. Sensitivity data related to the antennas reflects the sensitivity and antenna factor variation with frequency.

NARROW BAND (CW) SENSITIVITIES

Frequency (mc)	50 Ohm Input		Tuned Dipole Input		
				Antenna Induced	
	μv	db above 1 μv	μv/meter	μv	db above 1 μv
20 to 145	0.5 to 1	−6 to 0	0.3 to 4.0	1.25 to 2.5	2 to 8
145 to 240	2	6	8 to 13.6	5	14
240 to 400	<6	<15.5	<40 to 60	<15	<24

BROADBAND SENSITIVITIES

Frequency (mc)	50 Ohm Input		Tuned Dipole Input		
				Antenna Induced	
	μv/kc	db above 1 μv/mc	μv/meter/kc	μv/kc	db above 1 μv/mc
20 to 145	0.005 to 0.01	14 to 20	0.003 to 0.04	0.0125 to 0.025	22 to 28
145 to 240	0.02	26	0.08 to 0.136	0.05	34
240 to 400	<0.06	<36	0.40 to 0.60	<0.150	<44

VOLTAGE MEASUREMENT RANGE:
Measurement range is 40 db in the lowest attenuator position. An additional 80 db attenuation is provided in 20 db steps resulting in a maximum voltage measurement capability of 120 db greater than the sensitivities indicated.

VOLTAGE MEASUREMENT ACCURACY:
Overall voltage measurement accuracy is within ±1.5 db

FREQUENCY SCALE ACCURACY:
True frequency is within ±2% of the indicated frequency.

BANDWIDTH:
Impulse bandwidth is approximately 200 kc. 6 db bandwidth is 5% less. Charts provide exact bandwidth-vs.-frequency data.

SPURIOUS RESPONSE REJECTION:
IF Rejection — greater than 80 db. Image Rejection — greater than 40 db. Rejection to all other spurious responses is greater than 60 db.

SHIELDING EFFECTIVENESS:
60 db minimum.

OSCILLATOR RADIATION:
The local oscillator emission is less than 200 micro-microwatts at the RF INPUT receptacle.

OVERLOAD CAPACITY:
20 db at full scale meter indication.

VIDEO OUTPUT:
500 millivolts into a one megohm load; frequency response ±3 db from 20 cps to 60 kc.

AUDIO OUTPUT:
Greater than 250 milliwatts into a 600 ohm load with an RF input of 100 microvolts modulated 30% at 1000 cps.

15 mc IF OUTPUT:
Approximately 2.5 millivolts across a 50 ohm load at full scale meter indication.

RECORDER OUTPUT:
1.5 vdc across a 1500 ohm resistive load at full scale meter deflection. Recorder output is proportional to meter deflection.

AC POWER REQUIREMENTS:
Line Voltage: Either 105 to 125 volts or 210 to 250 volts. Measurement accuracy is not impaired by line voltage fluctuations within these ranges.
Line Frequency: Single phase; 50 — 60 or 400 cps.
Power Consumption: Approximately 125 watts at 115 or 230 volts, 60 cps.

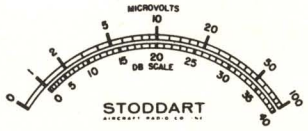
THE STODDART NM-30A is the commercial equivalent of and identical to the AN/URM-47A; and is approved for interference measurements in accordance with the following military specification series:

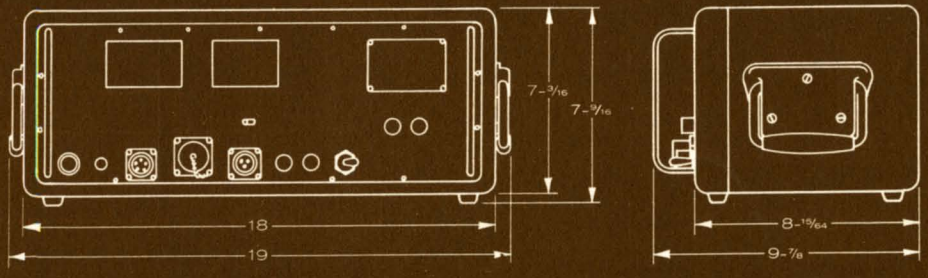
- **MIL-I-16910 (Ships)**
- **MIL-I-6181**
- **MIL-I-26600 (U.S.A.F.)**
- **MIL-I-11748 (Sig. C.)**

The NM-30A also measures to S.A.E., F.C.C. and other Military Specification requirements.

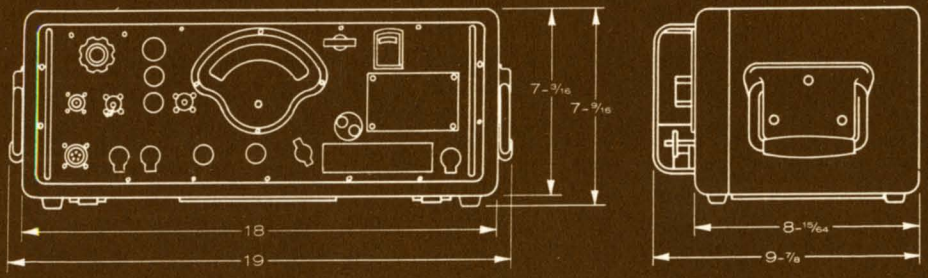
FEATURES

- Each instrument is individually calibrated in the Stoddart Test Laboratories by competent engineers. Calibration data is provided in simplified chart form.
- The rugged indicating meter is of special design, incorporating extremely short response time as an aid in measuring pulse type interference in the quasi-peak function of the equipment.
- Though portable, the equipment is of sturdy drip-proof construction and may be operated for prolonged periods in driving rain or snow with no deleterious effects.
- Internal impulse calibrator automatically switched into the input circuit by a panel control.
- New power supply, 0.5% regulation, for filament, bias and plate voltages; may also be used as a standard laboratory power supply.
- Three detector functions for the measurement of PEAK, QUASI-PEAK or RMS values.
- Impulse interference is measured directly in terms of microvolts-per-kilocycle or microvolts-per-megacycle without involving complicated bandwidth computations.
- Video output for visual presentation of received signal.
- Visual peak threshold indicator for accurate slide-back peak voltage measurements.
- Peak voltage measurement accuracy is independent of pulse repetition rate.
- I-F output for connection to external devices, i.e., panoramic display, narrow band amplification for increased sensitivity, etc.
- Recorder and remote meter outputs provide simultaneous recording and monitoring of received signals without disabling the instrument output meter.
- Over 60 db shielding effectiveness increases measurement capabilities in the presence of strong RF fields.
- Single knob tuning.
- Two decade logarithmic meter scale increases range of voltage measurement without changing attenuator steps.

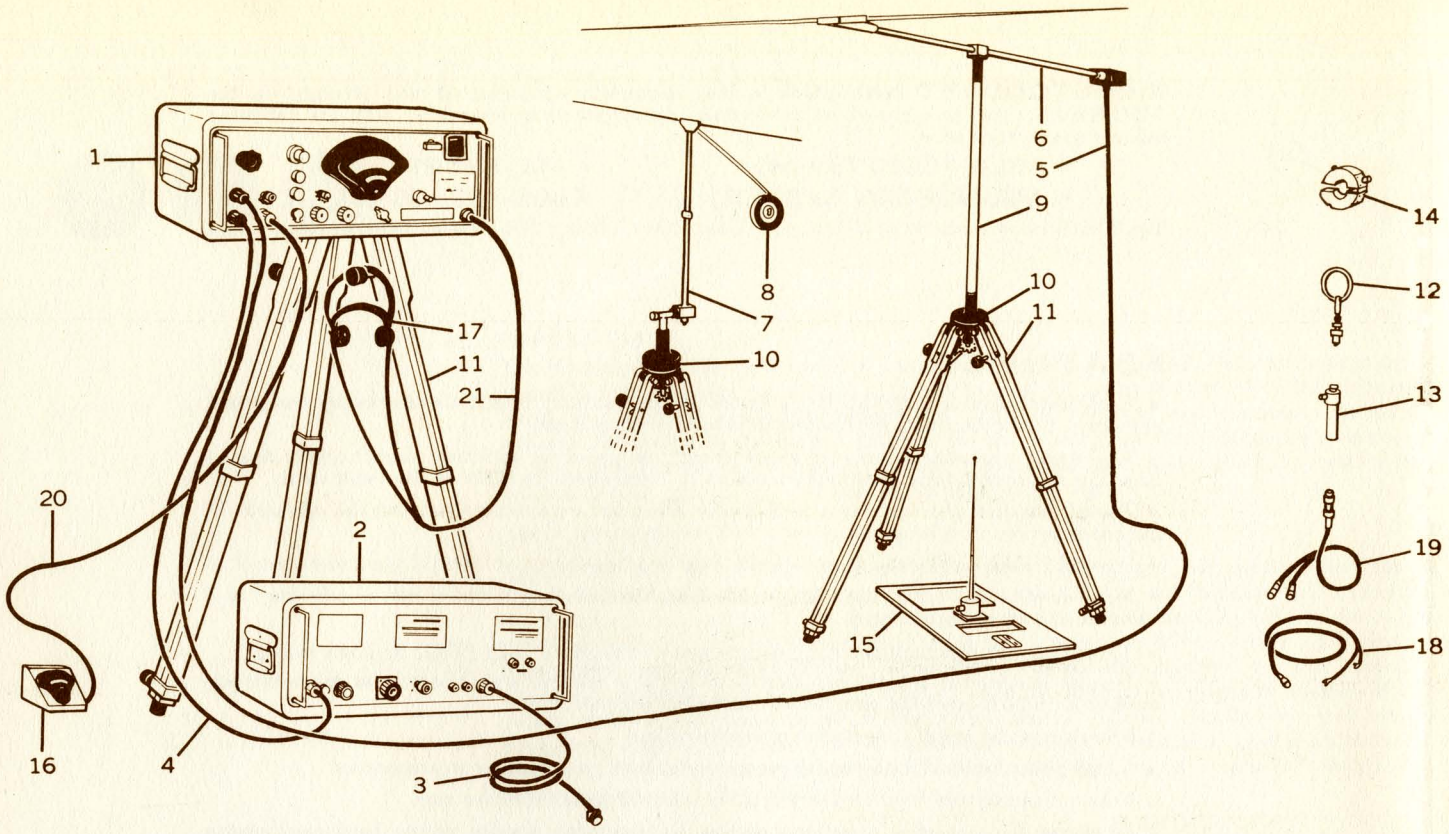




POWER SUPPLY, OUTLINE DRAWING/Weight 35#



RADIO INTERFERENCE-FIELD INTENSITY METER UNIT, OUTLINE DRAWING/Weight 36½#



NM-30A EQUIPMENT AND ACCESSORIES

Item	Stoddart Number	Description	Item	Stoddart Number	Description
1	NM-30A	Radio Interference-Field Intensity Meter, Frequency Range – 20 mc to 400 mc	14	91550-1	RF Current Probe
2	91923-2	AC Power Supply	15	91972-4	Ground Plane Vertical Antenna (Antenna element will be required if not ordering Item #6)
3	91258-1	AC Power Cable, 6 ft.			
4	91487-1	Power Supply Cable, 10 ft.	16	90078-11	Remote Meter
5	90933-1	RF Transmission Line, 20 ft.	17	10796	Headphones, 300-7000 cps response
6	91865-2	Dipole Antenna, Low Frequency (20-88 mc)	18	90071-1	Oscilloscope Cable, 3 ft.
			19	90757-2	RF Probe Cable, 18 inches
7	91870-2	Dipole Antenna, High Frequency (88-400 mc)	20	90075-2	Remote Meter Cable, 20 ft.
			*21	90074-1	Headphone Extension Cable, 20 ft.
8	10645	Frequency Measuring Tape	*22	91595-6	Meter Transit Case
9	90920-2	Antenna Mast	*23	91595-4	Power Supply Transit Case
10	91932-2	Antenna Mounting Adapter	*24	92049-1	Tripod Bag (Holds one Tripod)
11	91933-2	Collapsible Tripod (see note 1)	*25	92227-2	Antenna Bag
12	90799-2	Loop Antenna	*26	91981-2	Cable Bag
13	90995-2	Loop Antenna Base	*27	————	Instruction Book
			*28	91934-2	Tripod Bag (Holds two tripods)

NOTES: 1. Item (11) may be used to support either the NM-30A or antennas.
** Items not shown.*

ORDERING INFORMATION

(Numbers in parentheses indicate item numbers)

Minimum requirements for an operating equipment are the NM-30A (1), AC Power Supply (2), AC Power Cable (3), Power Supply Cable (4), and the RF Transmission Line (5). The Tripod (11) may be desired as a convenient method of supporting the NM-30A.

Radio interference measurements in accordance with Military Specifications will require the Dipole Antennas (6 and 7) and the Frequency Measuring Tape (8) in addition to the minimum requirements.

Selection of accessories for use with the minimum requirements is dependent upon the measurement application of the NM-30A. The Dipole Antennas (6 & 7), Loop Antenna (12) and Ground Plane Vertical Antenna (15) are used for radiated measurements. The Dipole Antennas may be mounted on the Tripod (11) by using the Antenna Mounting Adapter (10). Mounting the Loop Antenna (12) on the Tripod (11) will also require the Loop Antenna Base (13). Elevation of the Antennas may be increased by using one or more Antenna Masts (9).

The RF Current Probe (14) is used for measuring conducted RF currents and the RF Probe Cable (19) is used for direct connection to a line for conducted voltage measurements. Other accessories may be desired for convenience of operation in the field or for specialized operation requiring graphic recordings, oscilloscope display or remote meter indications.

OUR SALES ENGINEERING DEPARTMENT will give you individual consideration and information in the areas of interference problems or measurement with which you are particularly concerned . . . provide engineering bulletins, military specification information, descriptions of new measurement techniques and applications . . . individual instruction in the calibration and maintenance of Stoddart instruments. For prompt service please call "Sales Engineering," HOllywood 4-9292.

STODDART

AIRCRAFT RADIO CO., INC.

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serving 33 countries in Radio Interference control