

NAVSHIPS 94200.4-2 Directory of Electronics Test
Equipment - Supplement 2
Section 4.10 Combination and Group Test Equipment

12 October 1964

Cog Service: USN

FSN:

TEST SET, INTERCOMMUNICATION SET AN/AIM-3

Functional Class:

USA

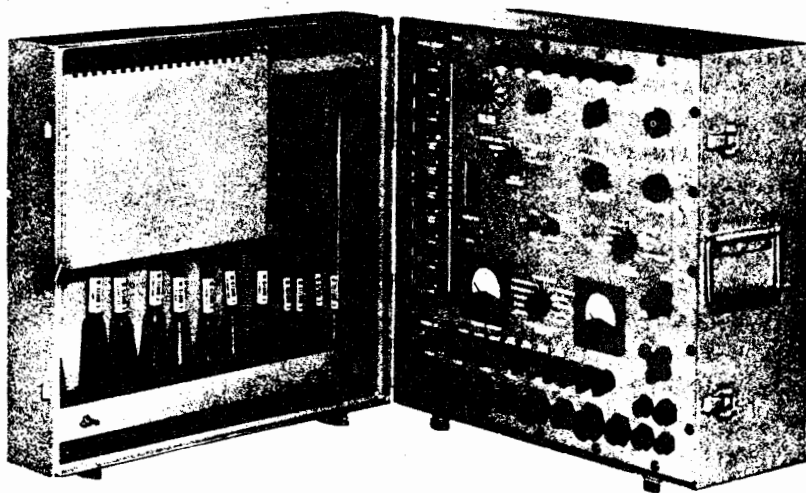
USN

USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER: Telephonics Corporation, (78711).



TEST SET, INTERCOMMUNICATION SET AN/AIM-3

FUNCTIONAL DESCRIPTION:

Test Set, Intercommunication Set AN/AIM-3 provides a means for completely testing the operation of individual modules of the Intercommunication Set AN/AIC-14. The AN/AIM-3 is designed to also simultaneously test combinations of modules of the AN/AIC-14 system.

No field changes in effect at time of preparation (11 August 1964).

RELATION TO OTHER EQUIPMENT:

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

4.10 AN/AIM-3: 1

150

AN/AIM-3 TEST SET, INTERCOMMUNICATION SET

TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS: 27.5 ± 0.5 v dc.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set, Intercommunication Set AN/AIM-3 includes:		12 x 20-3/4 x 28	71
1	Test Set TS-1573/AIM-3		9-1/4 x 20-3/4 x 28	46
1	Cover, Test Set CW-591/AIM-3			
1	Cable Assembly W-1/AIM-3			
1	Cable Assembly W-2/AIM-3			
1	Cable Assembly W-3/AIM-3			
1	Cable Assembly W-4/AIM-3			
1	Cable Assembly W-5/AIM-3			
1	Cable Assembly W-6/AIM-3			
1	Cable Assembly W-7/AIM-3			
1	Cable Assembly W-8/AIM-3			
1	Cable Assembly W-9/AIM-3			
1	Cable Assembly W-10/AIM-3			
1	Cable Assembly W-11/AIM-3			
1	Cable Assembly W-12/AIM-3			

REFERENCE DATA AND LITERATURE:

NAVWEPS 16-30AIM-3-1: Handbook for Operation and Service Instruction with Illustrated Parts Breakdown Test Set, Intercommunication Set AN/AIM-3.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

CRYSTALS: Not required.

SEMI-CONDUCTORS: (1) 2N465

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
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PROCUREMENT DATA

PROCURING SERVICE: USN

DESIGN COG: USN, BuWeps

SPEC &/OR DWG:

4.10 AN/AIM-3: 2

TEST SET, INTERCOMMUNICATION SET AN/AIM-3

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Telephonics Corporation	Huntington, New York	NOas 59-0236f	

152

14 December 1965
Cog Service: USN FSN:

TEST SET INTERCOMMUNICATIONS SET AN/AIM-3A
Functional Class:

USA

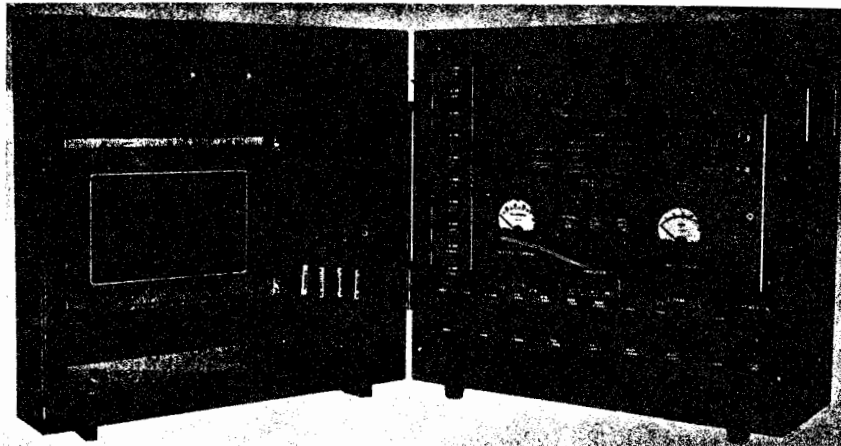
USN

USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER: Telephonics Corp., (78711).



TEST SET INTERCOMMUNICATIONS SET AN/AIM-3A

FUNCTIONAL DESCRIPTION:

Test Set Intercommunications Set AN/AIM-3A is designed to test the operation of individual modules commonly used in aircraft employing the AN/AIX-14 SYSTEM. It is capable of testing the operation of the equipments which are a part of, or used in conjunction with the Intercommunication set AN/AIC-14.

No field changes in effect at time of preparation (24 September 1965).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

TECHNICAL CHARACTERISTICS:

POWER REQUIREMENT: 28.0 v dc at 1.0 amp.

4.10 AN/AIM-3A: 1

TEST SET INTERCOMMUNICATIONS SET AN/AIM-3A

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set Intercommunication Set AN/AIM-3A includes:		12-9/16 x 20-13/16 x 22-9/32	65
1	Test Set TS-1573A/AIM-3A		10-1/4 x 20-13/16 x 22-9/32	40
1	Cover Assy CW-663/AIM-3A		4-1/4 x 20-13/16 x 22-9/32	25

REFERENCE DATA AND LITERATURE:

NAVWEPS 16-30AIM3-2: Handbook of Operation and Service Instructions with illustrated Parts Breakdown for Test Set, Intercommunications Set AN/AIM-3A.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

CRYSTALS: Not required.

SEMI-CONDUCTORS: (1) 1N975A

154

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
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PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

DESIGN COG: USN, BuWeps

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Telephonics Corp.	Huntington, New York	NOW-60-0683	

13 December 1965

TEST SET LIQUID COOLER AND CONTROL INDICATOR AN/ALM-42

Cog Service: USN FSN:

Functional Class:

USA

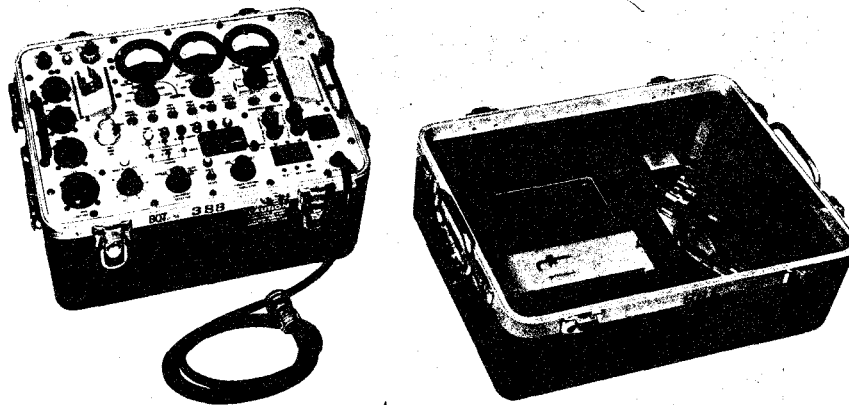
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USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER: Litton Systems, Inc., (92755).



TEST SET LIQUID COOLER AND CONTROL INDICATOR AN/ALM-42

FUNCTIONAL DESCRIPTION:

Test Set Liquid Cooler and Control Indicator AN/ALM-42 tests the functions of the Liquid Cooler and Control Indicator Units of Countermeasures Transmitting Set AN/ALT-21. The Test Set, through the use of interconnecting cables, is capable of testing the Liquid Cooler and the Control Indicator individually or simultaneously.

No field changes in effect at time of preparation (24 September 1965).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

TEST SET LIQUID COOLER AND CONTROL INDICATOR AN/ALM-42

TECHNICAL CHARACTERISTICS:

POWER REQUIREMENTS

EXTERNAL SOURCE

VOLTAGE: 115 v ac \pm 10%, 3 ph, 380 to 420 cps.

CURRENT: AT 115 v ph A: Approx 2.25 amps.

ph B: Approx 2.51 amps.

ph C: Approx 2.65 amps.

INPUTS FROM LIQUID COOLER UNIT DC:	Voltage	Current
	+ 900	0.3 amp nom
	+ 300 v	0.2 amp nom
	+ 150 v	0.1 amp nom
	+ 100 v	0.04 amp nom
	- 250 v	0.04 amp nom

TEMPERATURE REQUIREMENTS

CONTINUOUS OPERATION: 0 to + 55° C.

INTERMITTENT OPERATION: 0 to + 71° C.

NON-OPERATING: - 62 to + 85° C.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set Liquid Cooler and Control Indicator AN/ALM-42		15 x 15 x 19	50

256

REFERENCE DATA AND LITERATURE:

NAVWEPS 16-30ALM-42-1: Handbook of Operation and Service Instructions with Illustrated Parts Breakdown for Liquid Cooler and Control Indicator Test Set AN/ALM-42.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

CRYSTALS: Not required.

SEMI-CONDUCTORS: (3) 1N2843B (6) 1N538 (1) 1N2822B (1) 1N547

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
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PROCUREMENT DATA

PROCURING SERVICE: USN

DESIGN COG: USN, BuWeps

SPEC &/OR DWG:

4.10 AN/ALM-42: 2

TEST SET LIQUID COOLER AND CONTROL INDICATOR AN/ALM-42

CONTRACTOR:	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Litton Systems, Inc.	College Park, Maryland	NOw 61-0562	

157

28 May 1965

RADAR SIMULATOR TEST SET AN/APM-195(XZ-1)

Cog Service: USN FSN:

Functional Class:

USA

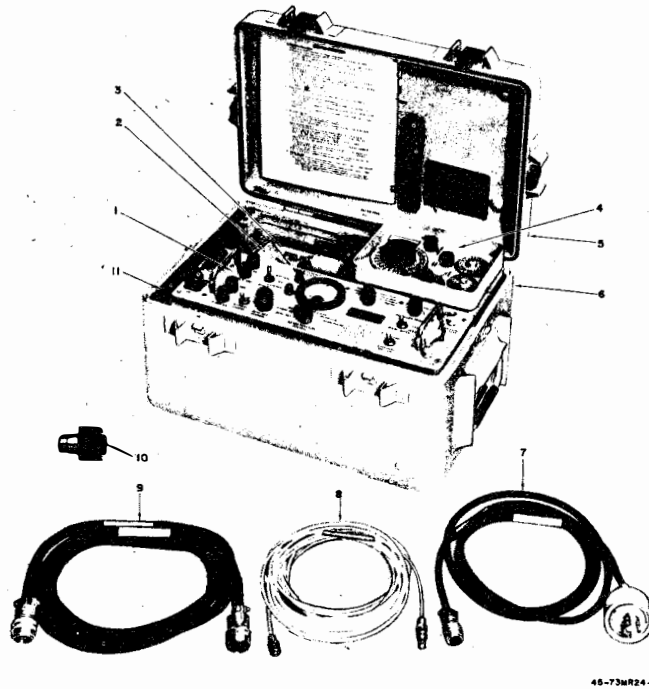
USN

USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER: Micro Radionics Incorporated, (01220).



RADAR SIMULATOR TEST SET AN/APM-195(XZ-1)

FUNCTIONAL DESCRIPTION:

Radar Simulator Test Set AN/APM-195(XZ-1) checks the range, calibration, threshold sensitivity, frequency response, airborne moving target indication operation, and gain of aircraft radar-receivers.

No field changes in effect at time of preparation (11 August 1964).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED: None.

4.10 AN/APM-195(XZ-1): 1

158

RADAR SIMULATOR TEST SET AN/APM-195(XZ-1)

TECHNICAL CHARACTERISTICS:

OUTPUT SIGNAL CHARACTERISTICS

FREQUENCY RANGE: 15.5 to 17.1 kmc.

PULSE REPETITION RATE: 1200 pps, 2400 pps, 3400 pps (double pulse), prf of external trigger signal, or cw.

PULSE WIDTH (1200 OR 2400 PPS ONLY): 0.4 or 10 microseconds.

PULSE WIDTH (3400 PPS ONLY): 1 microsecond with 5 microseconds between pulses.

AMPLITUDE OF KLYSTRON MODULATING PULSE: - 11 v.

TIME DELAY: 2 to 500 microseconds (used for external synchronization) (equivalent to 0.162 to 40.47 miles).

AMPLITUDE: - 20 to - 100 dbm.

BATTERY CHARACTERISTICS

TERMINAL VOLTAGE: 24, + 5, 8, - 2 v dc.

CURRENT DRAIN: 2.25 amp max.

DISCHARGE RATE: 4 hrs at rated value before requiring recharge.

CHARGE RATE: 13 hrs max. required for recharge.

LIFE: Min. of one year and 50 discharge - charge cyc.

TEMPERATURE LIMITS: Operating - 0 deg C (32° F) to 50 deg C (119° F) Non-operating, dry condition - 54 deg C (- 70° F) to 50 deg C (119° F) Non-operating, wet condition - 0 deg C (32° F) to 38 deg C (91° F) for continuous exposure of 0 deg C (32° F) to 50 deg C (119° F) where exposure is limited to 24 continuous hrs and 240 cumulative hrs.

POWER REQUIREMENTS

EXTERNAL: 115 v ac, 400 cps, single ph, 3 amp max, 27 amp normal operating current.

INTERNAL: 24 v dc (nom) from self contained silver-zinc battery.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Radar Simulator Test Set		10-1/2 x 13-5/8 x 19-5/8	54
	AN/APM-195(XZ-1) includes:			
1	Radar Control-Test			
	C-4648(XZ-1)APM-195			
1	Waveguide Horn			
	AS-1436(XZ-1)APM-195			
1	Radar Simulator			
	SM-338(XZ-1)APM-195			
1	Electrical Power Cable Assy			
	CX-8773(XZ-1)APM-195			
1	Special Purpose Electrical Cable Assembly			
	CX-8772(XZ-1)APM-195			
1	Power Supply Group Modulator			
	OA-4600(XZ-1)APM-195			
1	Battery Charger			
	PP-3724(XZ-1)APM-195			
1	Radio Frequency Cable Assembly			
	CC-2656(XZ-1)APM-195			

4.10 AN/APM-195(XZ-1): 2

RADAR SIMULATOR TEST SET AN/APM-195(XZ-1)

REFERENCE DATA AND LITERATURE:

NAVWEPS 16-45-73: Handbook Operation and Service Instructions with Illustrated Parts Breakdown Radar Simulator Test Set AN/APM-195(XZ-1).

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (1) C200035576

CRYSTALS: Not required.

SEMI-CONDUCTORS: (31) 1N483B (3) 2N297A (1) 1N538 (11) 2N333 (16) 1N645 (1) 2N492
(16) 1N647 (1) 1N749A (13) 1N753A (9) 2N498 (1) 1N754A (4) 1NB21
(16) 2N706 (1) 1N914 (3) 1N938B (2) 2N1073 (1) 1N944B (1) 2N1120
(1) 1N962B (4) 1N967B (2) 1N1614 (1) 2N1131 (1) 1N2986B
(1) 1N3011B (1) 2N1132 (1) 1N3015B (1) 1N3016B (1) 2N1172
(4) 1N3189 (1) 1N3190 (1) 2N1302 (1) SV3141 (3) 2N1303
(1) CTP1726 (2) CTP1730

SHIPPING DATA

PKGS VOLUME (CU FT) WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

DESIGN COG: USN, BuWeps

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Micro Radionics Inc.	Van Nuys, California	NOas 59-0259	

160

20 November 1964

Cog Service: USN

FSN:

TEST SET, RADAR AN/SPM-15

Functional Class:

USA

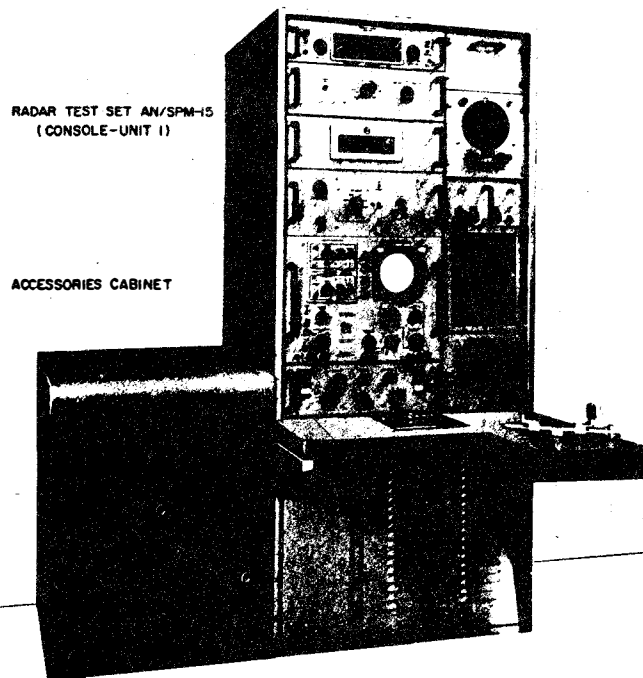
USN

USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER: Raytheon Company, (49956).



TEST SET, RADAR AN/SPM-15

FUNCTIONAL DESCRIPTION:

Test Set, Radar AN/SPM-15 is designed for use by shipboard operating personnel who have a basic background in electronics. The test set is used to test fire-control equipment modules that have a maintenance need and is capable of swiftly locating a malfunction within a module. The test set contains, a visual aid (film viewer), a programmer, equipment to generate and instruments to measure a wide range of test signals, and power supplies. The storage cabinet contains an electrical cable assembly set and an interconnecting box set (programming boards). The film visual aid set consists of film strips, an integral part of the radar test set concept, which provide step by step setup and test procedures for trouble shooting FCS modules. This equipment is programmed to test modules of Radar Sets AN/SPG-51 and AN/SPG-51B and Director MK 73 Mod 1. All test equipment of Radar Test Set AN/SPM-15 can be used independently for most any particular application.

No field changes in effect at time of preparation (17 November 1964).

RELATION TO OTHER EQUIPMENT:

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

TECHNICAL CHARACTERISTICS:

INPUT IMPEDANCE: 10 meg min.

POWER REQUIREMENTS: 115 v \pm 10% at 60 cps \pm 5%.

COMPUTING SPEED: Three scans per sec min.

DC VOLTAGE RANGE: 0.0000 to 0.9999; 1.00 to 9.999; 10.00 to 99.99; 100.0 to 999.9.

VOLTAGE ACCURACY: \pm 0.01% of reading \pm 1 digit across resistive or reactive loads.

RESISTANCE RANGES (MANUAL OR AUTO): 0.0000 to 9.999K; 10.00 to 99.99K; 100.0 to 999.9K;
1000 to 9999K.

RESISTANCE ACCURACY: \pm 0.05% of reading \pm 1 digit.

VOLTAGE CONVERTER 1A3: The voltage converter (VTVM) is used to measure sinusoidal voltages from 100 uv to 1000 v. Its dc resultant output is coupled to the input of control-multi-meter group 1A2 and translated for display on the digital readout.

FREQUENCY RANGE:

AC MULTIPLIER SWITCH AT X1 POSITION: 10 cps to 2 mc.

AC MULTIPLIER SWITCH AT X10 POSITION: 40 cps to 10 kc.

ACCURACY

AC MULTIPLIER SWITCH AT X1 POSITION: 15 cps to 1 mc \pm 3%; 10 to 15 cps \pm 5%; 1 to 2 mc \pm 5%.

AC MULTIPLIER SWITCH AT X10 POSITION: \pm 5% over full range.

AC VOLTAGE RANGE

AC MULTIPLIER SWITCH AT X1 POSITION: 100 uv to 100 v in six decade steps.

AC MULTIPLIER SWITCH AT X10 POSITION: Increase range to 1000 v.

DC OUTPUT: 0.1 to 1 v for ea decade range less than 3 mv at 40 cps input freq.

INPUT FREQUENCY: 2 meg (min) shunted by 19 uf.

POWER REQUIREMENTS: 115 v \pm 10% at 50 to 400 cps at 35 W.

SIGNAL GENERATOR 1A4: Signal generator 1A4 (oscillator) generates freq in the subsonic, audio, and ultra sonic ranges. Circuitry ensures an output voltage of low distortion and high stability w/any output load impedance from zero ohms to open circuit. The instrument may be operated balanced as well as unbalanced through use of the 600 ohm impedance match provided.

FREQUENCY RANGE

RANGE SWITCH POSITION: X1-5 to 60 cps; X10-50 to 600 cps; X100-500 to 6000 cps; X1K-5,000 to 60,000 cps; X10K-50,000 to 600,000 cps.

POWER OUTPUT RATING: 160 mw at 10 v into 600 ohms (open circuit) 20 v.

DISTORTION: Less than 5% over entire freq range independent of load impedance.

HUM AND NOISE LEVEL: Less than 1% of output voltage.

OUTPUT BALANCE: Better than 0.1% at low frequencies, approx 1% at higher frequencies.

INTERNAL IMPEDANCE: 600 ohms.

POWER REQUIREMENTS: 115 or 230 v \pm 10% at 50 to 1000 cps at 75 W.

OSCILLOSCOPE 1A5: The oscilloscope is a wide range, general-purpose laboratory instrument which provides accurate dc measurements to the 15 mc range. This instrument can be

162

operated with any letter-series plug-in unit to satisfy the requirements for virtually any application.

VERTICAL DEFLECTION SYSTEM: Specifications for the vertical deflection system of the oscilloscope depend upon the plug-in unit used w/the instrument. The following specifications are given when a type CA plug-in unit is used.

OPERATING MODES

CHANNEL A ONLY (A ONLY)

CHANNEL B ONLY (B ONLY)

ELECTRONIC SWITCHING AT 100 KC (CHOPPED)

ELECTRONIC SWITCHING ON ALTERNATE

SWEEPS (ALTERNATE)

BOTH CHANNELS COMBINED AT OUT (ADDED ALGEBRAICALLY)

AMPLIFIER SENSITIVITY

BASIC DEFLECTION FACTOR: 0.05 v/cm, ac or dc.

NINE CALIBRATED SENSITIVITIES: 0.05 v/cm to 20 v/cm, accurate within 3% when set on any one step.

AMPLIFIER TRANSIENT RESPONSE

BANDPASS: DC to 10 mc.

RISE TIME: 0.035 usec.

INPUT IMPEDANCE: 1 meg shunted by 20 uuf w/P410 probe 10 meg 7.5 uuf.

TRIGGERING

MODES

AUTOMATIC

AC

DC

AC LF REJECT

HF SYNC

SIGNAL REQUIREMENTS

INTERNAL TRIGGERING

SIGNAL PRODUCING: 2mm of vert deflection.

EXTERNAL TRIGGERING: Signal of 0.2 to 100 v.

HIGH FREQUENCY SYNC

Signal producing a cm of vert deflection or external signal of more than 2 v.

SWEEP SPEEDS: 0.1 usec to 5 sec per cm in 24 accurately calibrated steps within 3% in all cases, 1% typically, continuous variance between 0.5 usec and 12 sec per cm w/uncalibrated control.

EXTERNAL HORIZONTAL INPUT

DEFLECTION FACTOR: 0.2 to 15 v/cm continuously variable.

FREQUENCY RESPONSE: DC to 240 kc (response down 3 db at 240 kc).

CONNECTOR CHARACTERISTICS: 1 meg paralleled by approximately 47 uuf.

DIGITAL ELECTRONIC COUNTER

The digital electronic counter is a frequency measuring counter capable of measuring events from 10 cyc per sec to 1 mc per sec.

FREQUENCY RANGE: 10 cps to 1 mc per sec.

CRYSTAL STABILITY: ± 3 parts in 10 million/week.

ACCURACY: ± 1 count \pm xtal stability

DISPLAY TIME: 0.2 to 8 sec.

INPUT: 105 to 125 v, single ph at 60 cps.

POWER SUPPLIES 1A7 THROUGH 1A10: 0 to 320 v; power supplies 1A7 through 1A10 are variable output supplies whose output (0 to 320 v) is controlled by remote programming.

AN/SPM-15 TEST SET, RADAR

INPUT: 105 to 125 v, single ph at 60 cps.

OUTPUT: 0 to 320 v dc at 0 to 400 ma dc.

REGULATION: No load to full load, 10 mv max, 10 mv max line.

RIPPLE AND NOISE: 1 mv rms max.

POWER SUPPLY ASSEMBLY 1A11 (0 TO 36 AND 45 V): Power supply 1A11 consists of two independent supplies; a 0 to 36 v remotely programmed output supply and a 45 v supply.

INPUT: 105 to 125 v, single ph at 60 cps.

OUTPUT: 0 to 36 v dc at 500 ma dc; 45 v dc at 0 to 750 ma dc.

REGULATION: 0 to 36 v; no load to full load, 10 mv max; 10 mv max line; 45 v no load to full load, not more than 5% for a fixed line voltage.

POWER SUPPLY 1A12 (450/600 VOLTS): Pwr supply 1A12 has a remotely programmed output of either 450 or 600 v dc 115 , single ph 400 cps.

OUTPUT: 400 v dc \pm 30 v; 600 v dc \pm 40 v.

RIPPLE: Less than 3 v rms.

PULSE GENERATOR 1A14: Pulse generator 1A14 supplies the indicated outputs by remote programming.

OUTPUTS: 20 v square wave at 10 kc/s; 2 us pulse + 20 v at 10 kc/s; 2 us pulse + 20 v at 16 kc/s; 1.5 us pulse + 20 v at 10 kc/s; delayed 14 usec; 1.5 us pulse - 20 v at 10 kc/s delayed 14 usec; 2 us pulse - 4 v at 10 kc/s; 2 us pulse - 4 v at 16 kc/s; 0.5 us pulse + 20 v at 42 kc/s; 0.4 us pulse - 20 v at 333 kc/s; 0.4 us pulse - 20 v at 43 kc/s delayed 10 usec.

NOISE: At 50 cps to 500 kc/s.

TRANSFORMER-RELAY ASSEMBLY 1A15: The transformer-relay assembly supplies the indicated outputs by remote programming.

INPUTS: 115 v, single ph, 60 cps; 115 v, single ph, 400 cps.

OUTPUTS: T1 - 6.3 v ac \pm 10%; T2 - 24 v ac \pm 20%; T3 - 115 v ac \pm 5% + 5%; T4, CR1, CR2 7 - v dc w/80 mv - 10%.

RIPPLE MAX: T5 - 6.3 v ac \pm 10%; T6 - 115 v ac \pm 5%.

POWER SUPPLY 1A17 (28 VOLTS): Power Supply 1A17 supplies a 28 v output to control circuitry of the console.

INPUT: 105 to 125 v, single ph 60 cps \pm 5%.

OUTPUT: 27 to 29 v dc at 2 amp.

REGULATION

No load to full load 0.5% max line - 0.05% max.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set Radar AN/SPM-15 includes: Group Cabinet Unit 1 includes:		40 x 42 x 80	880
4	Power Supplies PP-3499/SPM-15			
1	Power Supply 1A11			
1	Pulse Generator 1A14			
1	Transformer Relay Assy 1A15			
1	Test Set Programmer 1A16			

4.10 AN/SPM-15: 4

TEST SET, RADAR AN/SPM-15

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
2	Oscilloscope 1A5		23 x 25 x 33	170
3	Control Multimeter Group 1A2 Digital Electronic Counter Unit 1, Shelf 1A6		28 x 40 x 40	270
4	Voltage Converter 1A3 Signal Generator Still Picture Viewer 1A1 Power Supply 1A12 Test Set Subassembly 1A13 Power Supply 1A17 Installation Kit including: Vibration isolators, Sway Stabilizers and Hardware		34 x 37 x 43	370
5	Interconnecting Box Set includes: Accessory Cabinet Drawers		26 x 28 x 29	200
6	Accessories Group Storage Cabinet Cable Assembly Set Film Set, Visual Aid		28 x 29 x 40	272

REFERENCE DATA AND LITERATURE:

NAVWEPS OP3177 (VOLUME 1): Description, Operation and Maintenance Radar Test Set AN/SPM-15.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (1) T12G (1) T533 (2) OA2 (2) 12AX7 (6) B5092 (3) 3517 (2) 6AK5
 (4) 12B4 (6) T2040 (2) 6AL5 (3) 12BY7 (2) 6AU5GT or 6AV5GT (1) 543GT
 (10) 6AU6 (2) 5642 (2) 6CL6 (1) 5651 (1) 6D4 (5) 5654 (16) 6DJ8
 (3) 5670 (2) 6SH7 (5) 5687 (1) 5751 (1) 6X4 (5) 5814A (1) 5879
 (10) 12AT7 (2) 6080 (2) 6197 (4) 12AU6 (1) 6201 (3) 12AU7

CRYSTALS: Not required.

SEMI-CONDUCTORS: (60) GTQ2327 (2) GTP-5313 (4) 2N1304 (1) HD6007 (3) 3577
 (4) 2N1377 (58) PA305A (5) 2N1378 (8) PA320A (18) 2N1471
 (32) PA340A (4) 2N1499 (1) RT6 (8) 2N1499A (1) SM72 (1) 2N1671A
 (20) FD1059 (3) 2N1681 (3) CTP309 (12) 2N1774 (1) IEZ12T10
 (6) 2N2401 (2) G148 (73) F1105 (2) G149 (12) B1217 (1) G150
 (6) D152 (1) GT5313

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
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165

AN/SPM-15 TEST SET, RADAR

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

DESIGN COG: USN, BuWeps

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Raytheon Company	Lexington, Massachusetts	NOw 62-0380	

166

9 October 1964

Cog Service: USN FSN:

TEST SET, SONAR AN/UQM-3

Functional Class:

USA

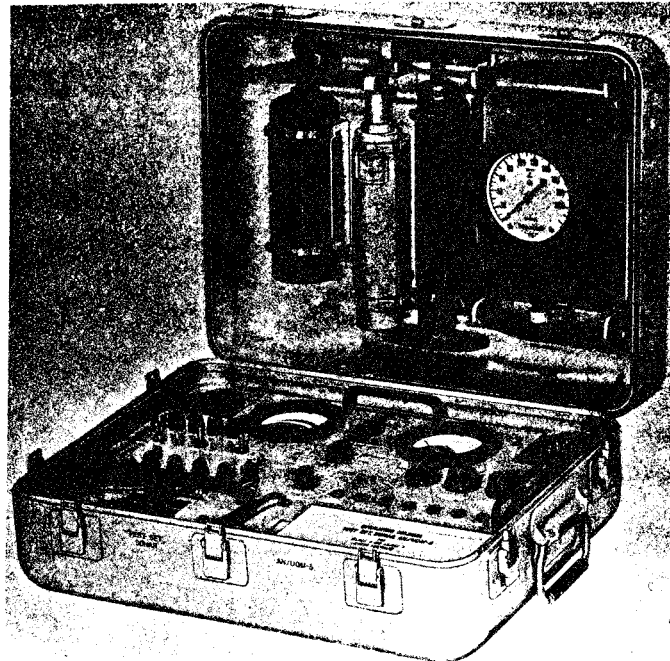
USN

USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER: Texas Instrument Incorporated, (01295).



TEST SET, SONAR AN/UQM-3

FUNCTIONAL DESCRIPTION:

Test Set, Sonar AN/UQM-3 is designed to check the operation of the electrical and mechanical functions of the Sonar Systems for all models of Sonar Set AN/AQS-4 and Detecting-Ranging Set, Sonar AN/AQS-5. The Test Set is also equipped for checking calibration of the depth-pressure transmitter and operation of the radiating transducer ceramic elements of the Sonar Set Dome and Transducer Assembly.

No field changes in effect at time of preparation (2 October 1964).

RELATION TO OTHER EQUIPMENT:

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Sonar Set AN/AQS-4 or (1) Detecting Ranging Set AN/AQS-5; (1) Transducer Calibrator P/N 62704.

4.10 AN/UQM-3: 1

167

AN/UQM-3 TEST SET, SONAR

TECHNICAL CHARACTERISTICS:

SERVICE CONDITIONS

ALTITUDE: Sea level.

HUMIDITY: 90%.

TEMPERATURE: - 40 to + 55° C.

OPERATING POWER: 115 v, 400 cps, ac supplied through the training motor fixed-field circuit.

This power is used directly and also converted to 28 and 13 v dc to supply B+ to the test set transistor circuitry.

AC VOLTMETER

RANGE: 0 to 150 v.

SENSITIVITY: 1000 ohms/v.

DC VOLTMETER

RANGE: 0 to 5 v.

SENSITIVITY: 1000 ohms/v.

PNEUMATIC PRESSURE GAGE

RANGE: 0 to 105 psi or 0 to 225 ft of seawater depth.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set, Sonar AN/UQM-3		9 x 17 x 22	54

REFERENCE DATA AND LITERATURE:

NAVWEPS 16-30UQM3-1: Handbook of Operation and Service Instructions with Illustrated Parts Breakdown for Test Set, Sonar AN/UQM-3.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: Not required.

CRYSTALS: (3) CR-38/U (1) 416707-1.

SEMI-CONDUCTORS: (10) 1N538 (1) 1N749A (1) 1N1816A (2) 2N251 (3) 2N1302 (5) 2N1303
(4) 2N335 (3) 1N645 (1) 1N277

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
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PROCUREMENT DATA

PROCURING SERVICE: USN

DESIGN COG: USN, BuWeps

SPEC &/OR DWG:

4.10 AN/UQM-3: 2

168

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Texas Instrument Inc.	Dallas, Texas	NOas 59-0270	

169

7 July 1965

Cog Service: USN FSN:

TEST SET, SONAR AN/WQM-3A

Functional Class:

USA

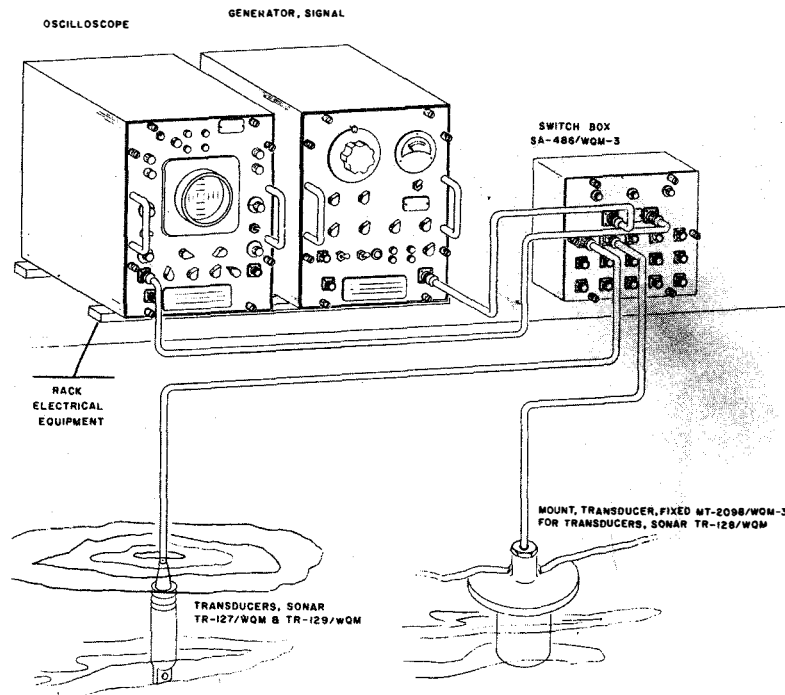
USN

USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER: Dyna-Empire Inc., (90827).



TEST SET, SONAR AN/WQM-3A

FUNCTIONAL DESCRIPTION:

Test Set, Sonar AN/WQM-3A is designed for use in testing Navy sonar equipment in order to maintain this equipment at its highest operating efficiency. The equipment acts as a known source of acoustic energy at any desired frequency between 160 cycles per second and 160 kilocycles per second for checking the sonar system receiving circuits. The equipment also is capable of receiving and displaying an acoustic signal for the purpose of checking the sonar system transmitting circuits.

Following functions of a sonar are capable of being tested by the WQM-3A equipment: (a) Receiving sensitivity; (b) Minimum detectable pressure or threshold echo level; (c) Self-noise of the system; (d) Intensity of the transmitted signal; (e) Frequency; (f) Accuracy of range indication.

No field changes in effect at time of preparation (14 May 1965).

TEST SET, SONAR AN/WQM-3A

RELATION TO OTHER EQUIPMENT:

The AN/WQM-3A is identical to AN/WQM-3 except for the following changes: Mechanical mounting facilities and time delay range scales: AN/WQM-3A provides delays of 200, 400, 800, 2000, 4000, 8000 and 15000 yds; AN/WQM-3 provides delays of 200, 500, 1000, 2500, 5000, 10000 and 15000 yds.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Transducer, Sonar TR-127/WQM; (1) Transducer, Sonar TR-128/WQM; (1) Transducer, Sonar TR-129/WQM.

TECHNICAL CHARACTERISTICS:

GENERATOR, SIGNAL SG-618/WQM-3A

FREQUENCY RANGE: 160 cps to 160 kc.

THREE TUNING RANGES: 160 cps to 1600 cps; 1600 cps to 16 kc; 16 kc to 160 kc.

FREQUENCY ACCURACY: $\pm 1\%$.

HARMONIC DISTORTION: 2% into matched resistive load.

POWER OUTPUT: ± 45 db//1ub at 1 yd from the transducer over the freq range 5 to 160 kc.

PULSE WIDTH: Three ranges - 1 to 20 ms - 10 to 200 ms and continuous wave.

PULSE WIDTH ACCURACY: $\pm 10\%$.

OSCILLOSCOPE OS-163/WQM-3A

FREQUENCY RESPONSE: ± 3 db from dc to 300 kc for both vertical and horizontal amplifiers.

DEFLECTION SENSITIVITY: 0.5 mv/cm from both vertical and horizontal amplifiers, capable of being reduced by attenuators to 50 v/cm.

SWEEP RATE: 1/3 cps to 50 kc.

CALIBRATING VOLTAGE: 1 kc sq waves, $\pm 5\%$ voltage accuracy.

TRANSDUCERS

TR-127/WQM

OPERATING FREQUENCY RANGE: 1 to 40 kc.

FREQUENCY RESPONSE: Avg value of - 102 db//1v/1ub ± 3 db.

SLOPE OF FREQUENCY RESPONSE CURVE: ± 2 db/kc.

TRANSMITTING RESPONSE: Capable of CW or pulsed level of ± 45 db//1ub at 1 yd over its freq range.

VERTICAL BEAM WIDTH: 15° at - 3 db points at 10 kc.

HORIZONTAL PATTERN: Omnidirectional within ± 3 db.

MOUNTING: Portable w/75 ft extension cable.

TR-128/WQM

OPERATING FREQUENCY RANGE: 20 to 160 kc.

FREQUENCY RESPONSE: Avg value of - 108 db//1v/1ub ± 3 db.

SLOPE OF FREQUENCY CURVE: ± 2 db/kc.

TRANSMITTING RESPONSE: Capable of CW or pulsed level of ± 45 db//1ub at 1 yd over its freq range.

VERTICAL BEAM WIDTH: 15° at - 3 db points at 100 kc.

HORIZONTAL PATTERN: Omnidirectional within ± 3 db.

MOUNTING: Hull mtg w/75 ft extension cable.

TR-129/WQM

ELECTRICAL AND ACOUSTIC: Same as TR-128/WQM.

MOUNTING: Portable w/75 ft extension cable.

TEST SET, SONAR AN/WQM-3A

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set Sonar AN/WQM-3A includes:			
1	Generator Signal SF-618/WQM-3A		11-3/4 x 16-1/8 x 21-3/4	45
1	Oscilloscope OS-163/WQM-3A		11-3/4 x 16-1/8 x 21-3/4	45
1	Switch Box SA-486/WQM-3		3 x 10-1/8 x 10-5/8	5
1	Rack Electrical Equipment		2-1/4 x 21-1/2 x 26-1/2	3

REFERENCE DATA AND LITERATURE:

NAVSHIPS 96106: Technical Manual for Sonar Test Set AN/WQM-3A.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (2) 1X2B (1) 5R4WGA (1) 5AQP7 (8) 6AU6WA (2) 6X4W (15) 12AT7WA (2) 5651
(5) 5670 (7) 5687/WA (4) 5726/6AL5W (1) 5751 (7) 5814A (4) 6005/6AQ5W
(2) 6205

CRYSTALS: Not required.

SEMI-CONDUCTORS: (2) 1N198

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	9.6	150

PROCUREMENT DATA

PROCURING SERVICE: USN DESIGN COG: USN, BuShips
SPEC &/OR DWG: MIL-T-23546(SHIPS)

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Dyna-Empire Inc.	Garden City, New York	N600(24) 61015	

4.10 AN/WQM-3A: 3

172

5 October 1964

TEST SET, SONAR AN/WQM-4

Cog Service: USN

FSN: 2F5845-994-3304

Functional Class:

USA

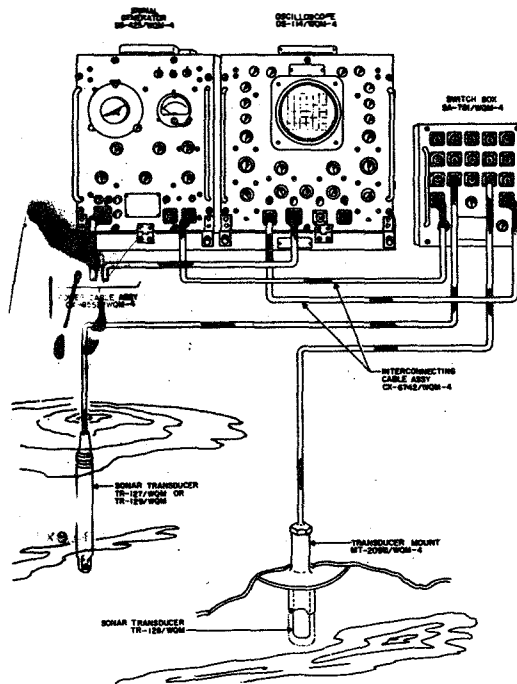
USN

USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER: Daven Div. of General Mills, (17870).



TEST SET, SONAR AN/WQM-4

FUNCTIONAL DESCRIPTION:

Test Set, Sonar AN/WQM-4 provides an accurate means of testing Navy sonar equipment in order to maintain this equipment at its highest operating efficiency. The equipment acts as a known source of sonic energy at any desired frequency between 160 cps and 160 kc for checking the sonar system receiving circuits. The equipment also is capable of receiving and displaying a sonic signal for checking the sonar system transmitting circuits.

The following functions of a sonar system can be tested by the AN/WQM-4 equipment: (1) Receiving sensitivity; (2) Minimum detectable pressure or threshold echo level; (3) Self noise of the system; (4) Intensity of the transmitted signal; (5) Frequency; (6) Accuracy of range indication.

No field changes in effect at time of preparation (28 October 1964).

RELATION TO OTHER EQUIPMENT:

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

TECHNICAL CHARACTERISTICS:

FREQUENCY RANGE: No. 1 - 160 cps to 1,600 cps; no. 2 - 1,600 cps to 16 kc; no. 3 - 16 kc to 160 kc.

FREQUENCY ACCURACY: $\pm 1\%$.

HARMONIC DISTORTION: 2% max into matched resistive load at full output.

POWER OUTPUT: + 60 db referred to 1 microbar at 1 yd from the transducer over the frequency range of 5 kc to 160 kc.

TYPE OF EMISSION: Continuous wave or pulse.

PULSE WIDTH: Range no. 1-1 to 20 ms range; no. 2-10 to 200 ms.

PULSE WIDTH ACCURACY: $\pm 10\%$.

TIME DELAY RANGE SCALE: 200, 500, 1,000, 2,500, 5,000, 10,000 and 15,000 yds.

TIME DELAY ACCURACY: $\pm 1\%$.

OSCILLOSCOPE OS-114/WQM-4

DEFLECTION SENSITIVITY: 0.0005 v/in., can be reduced by the attenuators to 127 v/in. for both vert and horiz amplifiers.

FREQUENCY RESPONSE: ± 3 db from dc to 300 kc for both vert and horiz amplifiers

SWEEP RATE: 1/3 cps to 50 kc.

SWEEP METHOD: Repetitive, from input signal, line; or as an externally triggered sweep.

CALIBRATING VOLTAGE: 1-kc square wave; $\pm 5\%$ accuracy.

TEST TRANSDUCERS

SONAR TRANSDUCER TR-127/WQM.

OPERATING FREQUENCY RANGE: 1 to 40 kc.

FREQUENCY RESPONSE: Avg value of - 108 db referred to 1 v per microbar ± 3 db.

SLOPE OF FREQUENCY RESPONSE CURVE: Less than ± 2 db/kc.

TRANSMITTING RESPONSE: Continuous or pulsed source level of at least + 60 db referred to 1 microbar at 1 yd.

VERTICAL BEAMWIDTH: 15 deg at - 3 db points at 10 kc.

HORIZONTAL PATTERN: Omnidirectional within ± 3 db from an avg value circle.

MOUNTING: Portable, supplied w/75 foot cable.

SONAR TRANSDUCER TR-128/WQM.

OPERATING FREQUENCY RANGE: 20 to 160 kc.

FREQUENCY RESPONSE: Avg value of - 102 db referred to 1 v per microbar ± 3 db.

SLOPE OF FREQUENCY RESPONSE CURVE: Less than ± 2 db/kc.

TRANSMITTING RESPONSE: Continuous or pulsed source level of at least + 60 db referred to 1 microbar at 1 yd.

VERTICAL BEAMWIDTH: 15 deg at - 3 db points at 100 kc.

HORIZONTAL PATTERN: Omnidirectional within ± 3 db from an avg value circle.

MOUNTING: Hull mtd; supplied with 75 foot cable.

SONAR TRANSDUCER TR-129/WQM.

ELECTRICAL AND ACCOUSTICAL: Same as Sonar Transducer TR-128/WQM.

MOUNTING: Portable; Supplied w/75 foot cable.

174

TEMPERATURE RANGE: The equipment is capable of continuous normal operation over an ambient temp of 0° to 50° C (32° to 122° F).

POWER REQUIREMENTS: The equipment will operate over a voltage range of 103.5 to 126.5 v, 60 cps, single ph, 485 W.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set Sonar AN/WQM-4	2F5845-994-3304		
	includes:			
1	Oscilloscope OS-114/WQM-4		15 x 15 x 20	75
1	Signal Generator SG-425/WQM-4		12 x 15 x 20	75
1	Switch Box SA-781/WQM-4		6-1/8 x 9-1/16 x 10-3/4	5-3/4
2	Power Cable Assembly CX-8553/WQM-4			
2	Interconnecting Cable Assy CX-6742/WQM-4			
1	Electrical Equipment Rack MT-2869/WQM-4		4-11/16 x 19-3/16 x 28-1/4	15
1	Transducer TR-127/WQM		1-1/16 x 13-3/4	2
1	Transducer TR-128/WQM		1-1/16 x 4-13/16	2
1	Transducer TR-129/WQM		7/8 x 4-1/8	2
1	Fixed Transducer Mount MT 2098/WQM-4		3-7/8 x 6	

REFERENCE DATA AND LITERATURE:

NAVSHIPS 94931: Technical Manual for Sonar Test Set AN/WQM-4.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (2) 0A2WA (3) 1B3GT (1) 5ADP7 (1) 5R4WGB (1) 5V4GA (4) 6AH6WA (1) 5670
 (3) 6AU6WB (1) 6AX5GT (2) 6L6WGB (1) 10M105ZR5 (10) 12AT7WA (3) 5651WA
 (1) 5687WA (2) 5726/6AL5W (6) 5751 (9) 5814A (2) 6005/6AQ5W (1) 6072A
 (2) 6080WB (1) GV3A-1500

CRYSTALS: Not required.

SEMI-CONDUCTORS: (2) 1N253 (6) 1N276 (2) 1N457 (2) 1N540 (1) 1N754A (1) 2N174
 (1) 2N38B

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
1	9.6	210
2	0.37	10
3	0.22	10

4.10 AN/WQM-4: 3

175

TEST SET, SONAR AN/WQM-4

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
4	0.22	10
5	0.22	10

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Daven Div. of General Mills	Livingston, N. J.	N0bsr-75144	\$3500.00

176

28 June 1965

Cog Service: USN

FSM:

TEST SET, ELECTRONIC CIRCUIT PLUG-IN UNIT TS-2138/SPS-40

Functional Class:

USA

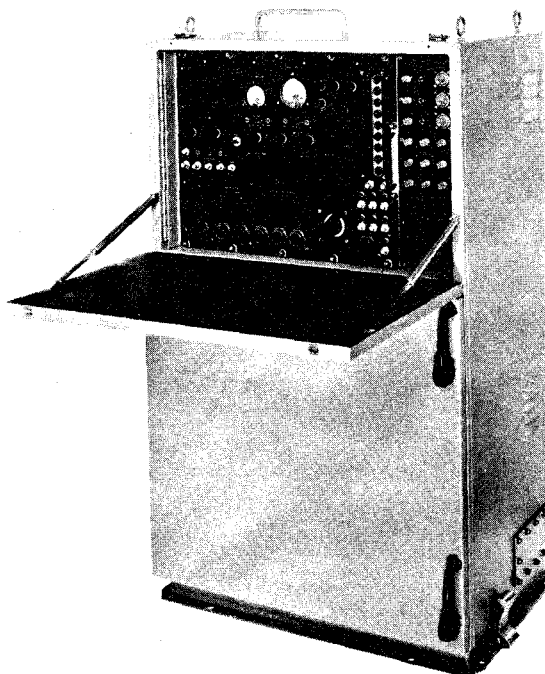
USN

USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER: Lockheed Electronics Co., Div of Lockheed Aircraft Corporation, (87557).



TEST SET, ELECTRONIC CIRCUIT PLUG-IN UNIT TS-2138/SPS-40

FUNCTIONAL DESCRIPTION:

Test Set, Electronic Circuit Plug-In Unit TS-2138/SPS-40 is a multiple power-generating system with pulse/gate generating capabilities that provides the power and signals required for bench testing, repair and alignment of Radar Set AN/SPS-40 sub units. It is a self-contained unit and does not depend on the AN/SPS-40 for any power or signals.

The tester can test 90 subunits of the AN/SPS-40; 79 of which require power and/or signals for operational testing. The remaining 11 subunits utilize the tester in a passive mode for minor, though important, nonpower functions, such as terminations, attenuation, adapters, etc.

The upper cabinet door, when lowered, serves as a work table also. Test cables, adapters, probes, etc, associated with testing are contained in a storage box located inside the lower portion of the tester. This storage box may be removed from the tester for ease of access of required test items during testing.

Positioning of tester controls corresponding to a subunit under test routes all power and

TEST SET, ELECTRONIC CIRCUIT PLUG-IN UNIT TS-2138/SPS-40

signals to the subunit, permitting it to become operational. Internal metering circuits provide for ac and dc current and voltage monitoring of the unit under test. Externally mounted Government-furnished test equipment are required when test conditions require the generation of RF signals and the viewing of signals and waveforms.

No field changes in effect at time of preparation (10 June 1965).

RELATION TO OTHER EQUIPMENT: None.

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

(1) Oscilloscope AN/USM-140A; (1) Delay Generator Plug-in Unit MX-2962/USM; (1) Pre-amplifier Plug-in Unit AM-3568/USM; (1) Electronic Counter CAQI-542D; (1) Electronic Multi-meter AN/USM-116; (1) Frequency Converter Plug-in Unit, CAQI-525A; (1) Frequency Converter Plug-in Unit CAQI-525C; (1) Multimeter AN/PSM-4B; (1) Signal Generator CAQI-608C; (1) Sweep Generator CCTR-900A; (1) Vacuum Tube Voltmeter AN/USM-143; (1) Power Meter AN/USM-177.

TECHNICAL CHARACTERISTICS:

SUBUNITS TESTED

OPERATIONAL TESTING: 1A2, 2A1A1, 3A2 to 3A6, 3A7, 3A9, 5A4 to 5A10, 5A12, 5A13, 5A15 to 5A25, 5A27 to 5A40, 5A42, 5A43, 5A44A1, 5A44A2, 5A45, 5A46, 5A48 to 5A50, 5A52, 5A53, 5A57, 5A58, 8A1A1, 8A1A1 to 8A1A7, 22A2 to 22A8, 23A2 to 23A7, 24A1, 24A2 and 24A5.

PASSIVE TESTING: 5A3A1, 5A3A2, 5A11, 5A14, 5A26, 5A47, 5A54 to 5A56, 24A3 and 24A4.

AC POWER SOURCES PROVIDED

0 TO 135 V: Adj ac for variable positive dc power supply or unit 1A2 when under test.

6.3 v ± 10%: Filament supply for subunit under test.

14.5 V ADJUSTABLE ± 10%, 3 PH: Primary power for unit 22A8 when under test.

23 V ADJUSTABLE ± 10%, 3 PH: Primary power for units 22A5 and 22A8 when under test.

28 v ± 10%: Tester indicator lamp power.

30 V ADJUSTABLE + 10%, 3 PH: Primary power for unit 22A6 when under test.

36 V ADJUSTABLE ± 10%, 3 PH: Primary power for unit 22A4 when under test.

52 V ADJUSTABLE + 10%, 3 PH: Primary power for unit 22A8 when under test.

115 V REGULATED ± 2%: Primary power for tester power supplies.

145 V ADJUSTABLE ± 10%, 3 PH: Primary power for units 22A3 and 22A7 when under test.

275 V ADJUSTABLE + 10%, 3 PH: Primary power for unit 22A2 when under test.

DC POWER SOURCES PROVIDED

VOLTAGE	MAX LOAD	AC RIPPLE LESS THAN
+ 6.3 v ± 5%	1.9 amp	0.1 rms
+ 9 v ± 10%	90 ma	2%
- 22 v ± 10%	100 ma	2%
+ 22 v ± 10%	82 ma	2%
+ 28 v ± 15%	280 ma	2%
+ 100 v ± 5%	12 ma	2%
- 150 v ± 5%	10 ma	2%
+ 150 v ± 5%	150 ma	2%
- 200 v ± 5%	17 ma	2%
+ 300 v ± 5%	54 ma	2%

Three dc voltages adjustable simultaneously from 0 to 847 v dc, 352 v dc, and 297 v dc, are also provided. Normal operating voltages of + 770, + 320 and + 270 are used during testing.

821

TEST SET, ELECTRONIC CIRCUIT PLUG-IN UNIT TS-2138/SPS-40

PULSE AND GATE GENERATION: The following pulses and gates are generated in the tester and distributed to the various subunits under test. The prf is controllable over a small range, 300 ± 10%.

SYNC PULSE: Positive, 6 v min, 2 ± 1 usec duration, 300 pps ± 10%.

POSITIVE PULSE: Adjustable in amplitude 0 to 6 v min, 2 ± 1 usec duration, 300 pps ± 10%.

NEGATIVE PULSE: Adjustable in amplitude 0 to 16 v min, 2 ± 1 usec duration, 300 pps ± 10%.

POSITIVE DELAYED PULSE: Adjustable in amplitude 0 to 16 v min, 2 ± 1 usec duration, 300 pps ± 10%, delay-time adjustable 10 to 250 usec in respect to sync pulse.

NEGATIVE DELAYED PULSE: Adjustable in amplitude 0 to 6 v min, 2 ± 1 usec duration, 300 pps ± 10%, delay-time adjustable 10 to 250 usec in respect to sync pulse.

POSITIVE GATE: Adjustable in amplitude 0 to 16 v min, adjustable in duration 10 to 250 usec, 300 pps ± 10%. Leading edge delay time dependent on neg delayed pulse occurrence.

NEGATIVE GATE: Adjustable in amplitude 0 to 16 v min, adjustable in duration 10 to 250 usec, 300 pps ± 10%. Leading edge delay time dependent on neg delayed pulse occurrence.

TERMINATING RESISTOR PROVIDED: Jack connected 50, 75, 200, 500, and 1000 ohm terminations are mtd on the front panel.

ATTENUATOR: A panel mounted step attenuator provides attenuation in 1, 2, 3, 5, 10 and 20 db steps. Toggle switches determine "IN/OUT" attenuation selection. Total attenuation available is 101 db.

INPUT POWER REQUIREMENTS

(1) 115 v ± 10%, 60 cps, 1 ph, ± 5% at 5 amp.

HEATER POWER MODE: 200 W.

STANDBY POWER MODE: 300 W.

OPERATE POWER MODE: 600 W.

(2) 440 v ± 10%, 60 cps, 3 ph, ± 5% at 3 amp per line.

OPERATE POWER MODE: 590 W.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Test Set, Electronic Circuit Plug-in Unit TS-2138/SPS-40 consists of:		22-3/4 x 29 x 50-1/2	380
1	Plug-in Fixture Unit 25A9			
1	Technical Manual NAVSHIPS 96088			
1	Test Procedures Manual NAVSHIPS 96089			
1	Storage Box w/63 Accessories		4-29/32 x 7-1/2 x 22	

REFERENCE DATA AND LITERATURE:

NAVSHIPS 96089: Technical Manual for Test Set, Electronic Circuit Plug-in Unit TS-2138/SPS(U).

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA:

TUBES: (1) 1C21

179

TEST SET, ELECTRONIC CIRCUIT PLUG-IN UNIT TS-2138/SPS-40

CRYSTALS: Not required.

SEMI-CONDUCTORS: (1) 1N538M (2) 1N1734 (1) 1N540M (1) 1N2973B (13) 1N560 (6) 1N561
(3) 1N29858 (1) 1N2986B (21) 1N662 (1) 1N3189 (2) 1N914 (1) 2N424
(16) 1N3190 (1) 1N963BM (1) 1N3009B (1) 1N971BM (1) 1N3034B
(1) 1N973B (6) 1N1130 (2) 1N1202 (4) 1N1204 (2) 1N1614

SHIPPING DATA

PKGS VOLUME (CU FT) WEIGHT (LBS)

PROCUREMENT DATA

PROCURING SERVICE: USN
SPEC &/OR DWG:

DESIGN COG: USN, BuShips

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
Lockheed Electronics Co., Div of Lockheed Aircraft Corporation	Plainfield, New Jersey	N0bsr 89402	

180