EEO TEST SHEET NO. 58 (Pg. 1 of 7 pages)
REVISED MARCH. 1959.
REVISED DECEMBER 1959

EQUIPMENT OSR - 5A

SERIAL NO. 906

SHIP NSD

DATE OF COMPLETION OF FINAL TRIAL

HANDBOOK BRCN 2767

RECOMMENDED LIST OF TEST EQUIPMENT TO BE USED

EQUIPMENT	NAVCAT NO.
FREQUENCY METER BC221	478 0064
OR AN/URM - 32	478 0359
MULTIMETER STARK - 460	478 0083
OR ME - 77/U	478 0375
SIGNAL GENERATOR AN/URM25D	478 0072
HP 400 D AC VTVM	478 0278
TS 505 B/U DC VTVM	478 0391

NOTES: (1) THIS TEST SHEET IS FOR RECORD AND GUIDANCE ONLY. THE HANDBOOK IS TO BE USED FOR ALL TUNING AND TESTING.

(2) TUNING AND TESTING AUTHORITY IS TO CARRY OUT ALL TESTS CONTAINED HEREIN.

(3) TRIALS OFFICERS TO CARRY OUT THOSE TESTS MARKED WITH AN ASTERISK (*) AND ANY OTHERS WHICH MAY BE CONSIDERED NECESSARY.

(4) THOSE TESTS MARKED WITH A DOUBLE ASTERISK (**) CAN BE USED AS AN EQUIPMENT PERFORMANCE CHECK.

CSR-5A TEST AGENDA

PRELIMINARY CHECKS

		LIMITS	T&T	TRIALS
A.	Set Grounded from earth terminal with heavy braid. The resistance from the ground post to a main hull member is less than 0.01 ohms.	OK		
B.	Check receiver dial is clean.	OK	✓	
C.	Lettering legible, case free from marks and scratches, and chassis free from corrosion.	OK	✓	
D.	Check that the associated power supply is properly connected for the available supply voltage.	OK		
E.	Check fuses against following schedule: VP-3 Power Unit F1-10A 25V F2-3A 250V WE-11 Power Unit F1-3A 250V ZM-11 POWER UNIT F3-3A 250V F4-3A 250V	OK		
F.	Check that antenna re-radiation resistor is 100 ohms.	OK	✓	
G.	Check to ensure the bandswitch operates satisfactorily and that the stops are correct.	OK	✓	
H.	Ensure that the output plug is in correct jack for audio load used.	OK		
I.	Check that the numbered nameplate has been fitted.	OK	✓	

S&K 7 Need new former for supply

I. POWER

Refer to Figure 1.

TEST POINT		CHECK	OPERATION	LIMITS	T&T	TRIALS
A	P2	+250V Supply	With multimeter measure and record +250 V Supply.	230 to 270 V DC	250	
B	V10, Pin 5 to Gnd.	+150 V Regulated Supply.	Measure and record +150V regulated voltage.	148 to 152 V DC	148	

II IF/SENSITIVITY

1. Connect an AN/URM 25D generator through the 3'11" test cable to impedance adapter MX 1487. Connect the 1363/U test lead to impedance adapter and to the control grid of V3 (6K8).
2. Set the generator on 575 Kc/s with the 30% modulation at 400 cps.
3. Ground the 10,000 ohm receiver output with a 10,000 ohm resistor and connect a HP 400 D AC VTVM across it.
4. Adjust the receiver as follows:
   (a) AVC - Off
   (b) R/F Gain - 20
   (c) Dial - 1.5
   (d) Tone - Fixed
   (e) Limiter - Off.
   (f) A/F Gain - 10
   (g) Range - D
   (h) Dial - 1.5 Mc/s
   (i) BFO to be On in Positions 3 and 4.

CSR-5A TEST AGENDA

II (cont)

5. Increase generator input from zero until the standard 500 MW output is indicated by 70.7 volts with the selectivity switch in position 2.

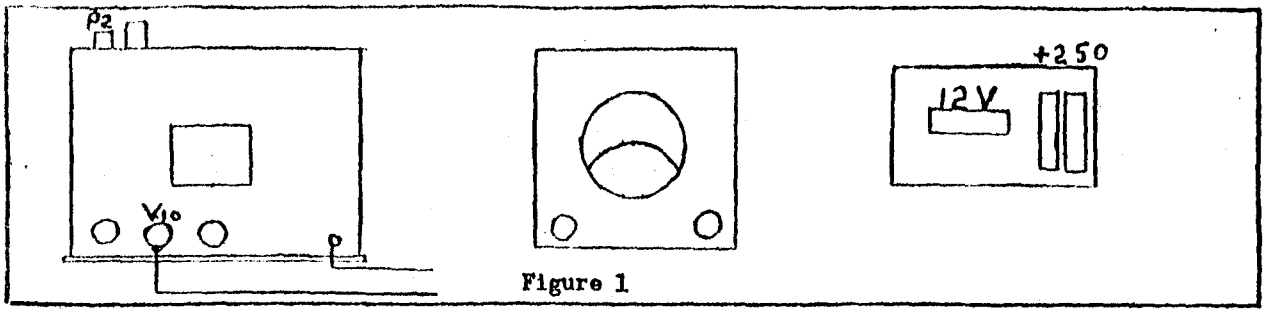

Figure 1

TEST POINT		CHECK	OPERATION	LIMITS	T&T	TRIALS
A	Input level.	I/F Sens. Pos. 2.	Adjust generator for standard output with selectivity switch at 2.	40uV ± 50%	18	
B	Input Level.	I/F Sens. Position 1.	Same as above in position 1.	40uV ± 50%	15	
C	Input Level.	I/F Sens. Position 3.	Same as above in position 3. BFO ON	20 uV ± 50%	6	
D	Input Level.	I/F Sens. Position 4.	Same as above in Position 4. BFO ON	4 uV ± 50%	1.5	

XXIII RECEIVER SENSITIVITY

CAUTION

1. The generator and receiver should have been in operation for at least one half hour.

2. Both units should be grounded.

3. The generator should be connected with the proper order of test leads as indicated below or correct results will not be obtained.

PROCEDURE

1. Connect the AN/URM 25D generator through the 3' 11" test cable to the impedance adapter MX 1487. Connect the univeral dummy antenna SM-35 to the impedance adapter using one of the 5" cables. Using the other 5" cable, connect the dummy antenna to the UG 273/U adapter and connect the adapter to the coaxial antenna input of the receiver.

2. Utilize the same output termination as previously specified for I.F. sensitivity measurements. (10,000 ohms)

3. Adjust the receiver as follows:
   (a) AVC - OFF
   (b) Xtal - OFF
   (c) Tone - MED.
   (d) Selectivity - Pos. 2
   (e) Limiter - OFF
   (f) BFO - OFF
   (g) Audio Gain - Max.

111 (cont'd)

4. With zero output from sig. gen. advance R.F. gain control to a point that produces slightly more that 7 volts of noise output. (If this cannot be obtained insert sufficent CW from the sig. gen. at the freq. at which the sensitivity check is being made.)

5. Adjust the audio gain control so that there is exactly 7 volts of noise output.

6. Switch on Mod. 400 cycles 30% and increase output until output meter reads 70 volts.

7. Note the input in microvolts to produce the 70 volts output. (If CW input was required to set the 7 volt noise base, subtract this value in microvolts from the previous reading. NOTE: This is usually 1 microvolt or less.)

8. This is the receiver sensitivity for 20db S/N ratio MCW.

9. Complete the sensitivity tests for the frequencies indicated below:

BAND	FREQUENCY	LIMITS	T&T	TRIALS
A.	28.0	11 microvolts	11	
	15.6	12 microvolts	10	
B.	15.0	7.5 microvolts	6	
	7.4	9 microvolts	6	
C.	7.2	5 microvolts	3.5	
	3.6	4.5 microvolts	3.5	
D.	3.3	3.5 microvolts	2.5	
	1.6	4.5 microvolts	3	
E.	470	3.0 microvolts	1.5	
	210	5.0 microvolts	3.5	
F.	190	4 microvolts	2.5	
	85	12 microvolts	8	

RECEIVER SELECTIVITY

1. Set up the AN/URM 25D as for I/F sensitivity.
2. Remove the 9002 oscillator and 6H6 limiter tubes, connect a 20,000 ohm-per-volt DC meter between pins (3) and (8) of the limiter socket. Insert a 9002 with plate pin 5 removed. (Pin 3 is negative)
3. Set up the receiver as follows:-
   - Selectivity - position 1
   - Range - D 1.5 Mc/s. on dial
   - BFO - OFF
   - Limiter - OFF
   - AVC - OFF
   - R.F. gain - full C.W.
4. Swing the S.G. for maximum output.
5. Adjust the generator for 1 volt D.C. on the meter.
6. Increase S.G. output 10X.
7. Tune the S.G. below the setting established in (4) for 1 volt D. C.
8. Record this frequency with the frequency meter.
9. Tune the S.G. up through the band pass until it again falls to 1 volt D.C.
10. Record this frequency with the frequency meter.
11. Subtract the difference between (8) and (10) as the I/F band pass at 20 db down for position 1 of the selectivity switch.
12. Record the selectivity for positions 1, 2, 3, and 4.
13. Remove the 9002 with the clipped plate pin.
14. Replace the original 9002 and 6H6.

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IV. (cont)

TEST POINT		CHECK	OPERATION	LIMITS	T&T	TRIALS
A	Output meter	I/F Selectivity 20db down	Switch to Position 1	9 to 12.5 Kc/s	12.5	
			Position 2	4 to 7.5 Kc/s	7.	
			position 3	1.5 to 3.5 Kc/s	1.7	
			position 4	1 to 2 Kc/s	1.8	

*V AVC

**A	AVC Threshold	AVC	1. Connect a DC VTVM (TS505B/U) between the top contact of the AVC switch and ground. 2. Connect the AN/URM 25D generator to the antenna input as for the sensitivity test. Receiver R/F gain to maximum. 3. Switch the AVC on. 4. Increase the generator input until the VTVM commences to increase. 5. Record the input in microvolts as AVC delay.	Not less than 2 microvolts.	6	
**B	AVC output limiting	AVC	1. Equipment set up as for sens. test. 2. The increase in input by 10X shall not increase the output by more than 10 db. NB: db = 20 log. $\frac{V2}{V1}$	Not more than 10 db increase	2	

VI. BEAT FREQUENCY OSCILLATOR

**A	BFO	Freq. Calib. and zero beat.	Set Signal generator and receiver to 6 Mc/s. 400 cycles at 30%. Tune receiver to Max. output with selectivity control to 3. Remove modulation. Switch on BFO and zero beat on zero of the BFO dial. Turn BFO control to 5 on either side of zero and audio note should be 5 Kc/s.	OK	✓	

VIII *DIAL CALIBRATION

(A) Check to ensure that the vernier zero registers coincidence with each of the 23 logging marks. ± 10 division ✓

(B) 1. Loosely couple BC 221 or AN/URM-32 to Receiver.
2. Set dial of receiver exactly on the frequency being checked.
3. Set the selectivity switch to 2.
4. Audio Gain control fully clockwise.
5. RF gain control at position to give desired audio level.
6. Crystal out, BFO on, limiter off, tone control med.
7. Set BC 221 crystal check point nearest frequency being checked.
8. Switch BC221 to operate and move tuning control of BC 221 to zero beat.
9. Record BC 221 frequency.
10. Use phone output of receiver when tuning for zero beat.

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VII (cont)

BAND	RECEIVER	LIMITS (+ or -)	FREQUENCY READ From AN/URM 32	T & T	TRIALS
**A	28 Mc/s	140 Kc/s	28 M.C.	—	
**A	16 Mc/s	80 Kc/s	16 "	—	
**B	15 Mc/s	75 Kc/s	15 "	—	
**B	7.2 Mc/s	36 Kc/s	7.210	10 KC	
**C	7 Mc/s	35 Kc/s	7.007	7 KC	
**C	3.4 Mc/s	17 Kc/s	3.403	3 KC	
**D	3.4 Mc/s	17 Kc/s	3.404	4 KC	
**D	1.6 Mc/s	8 Kc/s	1.6	—	
**E	500 Kc/s	2.5 Kc/s	500 KC	—	
**E	210 Kc/s	1.05 Kc/s	210 "	—	
**F	125 Kc/s	1.0 Kc/s	125	—	

VIII NOISE LIMITER OPERATION

TEST POINT		CHECK	OPERATION	LIMITS	T&T	TRIALS
**A		Noise Limiter	For this check remove test equipment, reconnect the antenna and tune freq. Turn limiter switch on and check peak limiting action on short pulse type noise.	OK	✓	

IX MISCELLANEOUS CHECKS

*A.	Tune the receiver to a phone station and check the following points.			
	(a) The back lash in the dial shall not exceed one degree on the vernier dial and shall not change the frequency more than 1 part in 10,000 at 10 Mc/s when checked with the BC 221 frequency meter.	1/10,000	✓	
	(b) That the re-setting logging accuracy may be kept to a similiar tolerance.	1/10,000	✓	
	(c) The back ground hum level is not audibly discernable.	OK	✓	
	(d) That there is no noticable distortion inherent in the receiver when checked on phone stations.	OK	✓	

EQUIPMENT CSR-5A TEST AGENDA

SERIAL NO. 906

REMARKS: TUNING AND TESTING AUTHORITY (Including modifications accomplished by TUNING AND TESTING AUTHORITY)

DATE June 7/61 F.W. Curtis (SIGNATURE)

REMARKS: - TRIALS OFFICER

DATE _____ _____ (SIGNATURE)