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APPROVED	TITLE:	JOB

COMPLETE INSTRUCTIONS FOR THE PRODUCTION TESTING OF THE MODEL RFA-1

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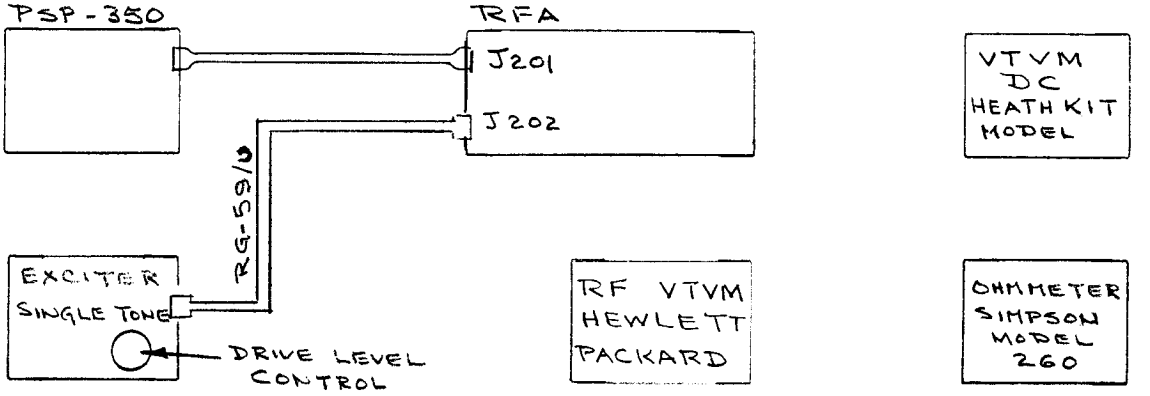
2. TEST EQUIPMENT REQUIRED

1. PSP-350
2. Vacuum Tube Voltmeter (RF), Hewlett Packard Model 410B
3. Vacuum Tube Voltmeter (DC), Heathkit Model V-6 or equivalent
4. RF (Dummy) Load Bird, Model 82C or Jones Model 636 NC
5. Exciter: SBE or Two-Tone Generator.
6. Distortion Analyser Panoramic Model LP-1a or equivalent with converter equipment

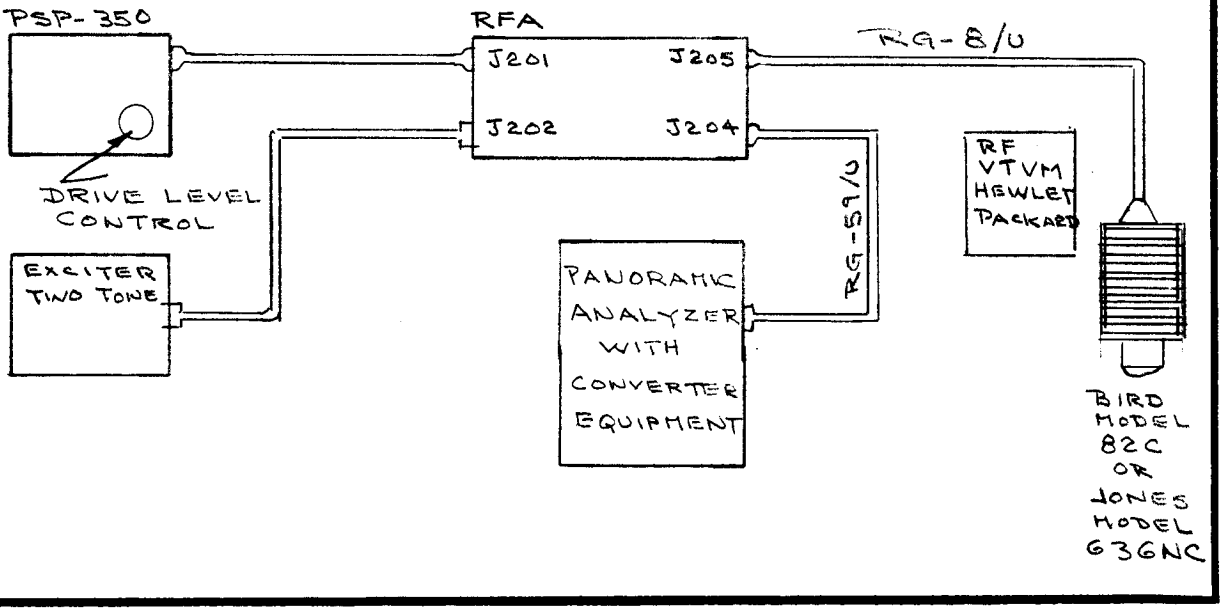
SB-12A

3. GENERAL INSTRUMENT LAYOUT

a. Driver stages testing and P.A. Neutralization:



b. P.A. Performance and Intermodulation Distortion Test:



4. TEST INSTRUCTIONS:

a. Proceed with the test as outlined in Test Sequence and Procedure paragraph 5 to follow.

b. Fill in blanks on report sheet, rejecting those units which do not meet specifications stated herein.

c. Sign report sheets and submit them to your supervisor.

5. TEST SEQUENCE AND PROCEDURE:

A. General Inspection

a. Inspect the unit for obvious mechanical and electrical imperfections.

b. Inspect all the relative positions of variable capacitors C205, C213 and C276 with respect to dial settings. The dials must read zero when capacitors are fully mashed (extreme counter clockwise position).

c. Visually inspect the pressurized compartment for "shorts" from components to ground as well as between the component parts.
All RF connections must be as short as physically possible.
NOTE: Do not enclose the pressurized compartment until resistance check has been performed.

d. Visually inspect the Driver chassis for "shorts" of component parts, and make sure that all RF connections were kept as short as physically possible.

e. Inspect all the RF wiring of S202, T208, T209, C213, C276 and C273.

B. Blower Wiring

Blower must be wired in accordance with schematic CK-359. C268 must be 1 mfd. All connections are color coded.
NOTE: If power applied, the improperly wired blower will b damaged.

C. Resistance Check

Warning: Place a bus wire across the meter terminals and disconnect the red lead from M202, Multi-Meter (50 mi roampm ter) befor measuring resistances with an ohmmeter, otherwise the meter will be permanently damaged.

D. Initial Power Check

a. Connect power supply unit, PSP-350, to unit under test as shown in general instrument layout paragraph 3a. DO NOT apply RF drive.

b. Be sure that transmitter plates switch and high voltage breaker are off.

c. Turn the main line breaker to on position and note if all filaments operate.

d. Quickly go through all positions of metering switch observing multi-meter. No meter readings should b seen except in filament position.

e. Meter switch in filament position, reset filament adjust pot. R216 to 6 V on Multi-meter.

f. Set bias controls R213 and R221 to full counter clockwis position.

g. Measure voltage to ground from pin C of V203 --- must be 90 V to 115 V.

h. Measure voltageat pin 2 of V201 --- must be 147 V - 163V.

i. Pull out all the interlocks: S204, S205.

j. Turn on the transmitter plates switch, the transmitter plates indicator lamps must go on.

E. Voltage Check

a. With VTVM check following voltages:

From	To	Voltage
Plate Cap	Ground	90 to 150 V
Pin 6 of V201	Ground	90 to 150 V
Pin 3 of V202	Ground	40 to 70 V
Pin 4 of V202	Ground	-120 to -130 V
Pin 5 of V202	Ground	-140 to -150 V
Pin 2 of V201	Ground	-145 to -155 V
Pin 1 of V201	Ground	-140 to -150 V

b. Turn off th power and plac cover on th bottom f pr ssurized compartment.

a. J201

Pin	To	Ohms	Remarks
1	- Terminal of M202	Short	S203 in H.V. position
2	Pin 7 of J202	3 to 6 ohms	F201 must be inserted
3	Ground	14-16 Meg	S203 in PA SG position
4	Ground	M201 must read	
5	Ground	20K-38K	
6	N.C.	-	
7	Ground	Short	F201 must be inserted
8	Ground	190K-250K	
9	Ground	Open	
10	Ground	Open	With S204; S205 in closed position
11	To pin 10 of J201	Short	With S204; S205 in closed position
12	Ground	Short	
A-1	Ground	Open	

b. Pressurized Compartment

Warning: Do not place ohmmeter leads to other point than indicated in the chart below, otherwise the germanium diodes CR204 and CR205 may be damaged.

From	To	R Lies Between the Values of	Remarks
Pin 1 of V203	C259	3½ to 4½ ohms	Be certain that ohmmeter leads are making good contacts.
Pin 1 of V203	Pin 1 of V2	2 to 3 ohms	
Pin C of V203	C260	19K to 25K	R213 and R221 s t in extreme C.C.W. position.
Pin C of V203	Pin C of V204	Short to 2K	

c. Reconnect the red lead on M202, Multi-Meter.

F. Alignment of Driver Chassis

a. Turn on the main power.

b. After 60 seconds turn on the transmitter plates switch.

c. Check the P.A. filament voltage (reset if necessary, R216 Fil. Adj.).

d. Set the multimeter switch to RF DR position.

e. Set all trimmers to their midway capacity.

f. Set the driver band switch to 2-4 mcs. position.

g. Set driver tuning at point No. 1.

h. Apply drive slowly at 2 mcs. (single tone)

i. Tune T201 and T204 to the peak indication on the multimeter reducing the drive to maintain 30 V on the multimeter.

j. Set driver tuning at point # 9 .

k. Tune trimmers C201 and C207 to the peak indication on multimeter, readjust drive to maintain 30 V on multimeter.

NOTE: Remove drive and if multimeter continues to read, readjust C223 and start from step (g).

l. Repeat steps (g) through (k) several times until no further adjustment of coils and trimmers is necessary.

m. Set driver band switch to 4-8 mcs. position.

n. Set driver tuning at point No. 1.

o. Apply drive slowly at 4 mcs. (single tone)

p. Tune T202 and T205 to the peak indication on multimeter.

q. Set driver tuning at point No. 9.

r. Tune trimmers C202 and C208 to the peak indication on th multimeter.

NOTE: Check for oscillation as in the note after step (K).

s. R peat steps (n) through (r) several times until no further adjustment of coils and trimmers is necessary.

t. Set driver band switch to 8-16 mcs. position.

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u. Set driver tuning at point No. 1.

v. Apply driver slowly at 8 mcs. (single tone)

w. Tune T203 and T206 to the peak indication on multimet r.

x. Set driver tuning at point No. 9.

y. Tune trimmers C204 and C211 to the peak indication on th multimeter.

NOTE: Check for oscillation as in the note after step (K).

z. Repeat steps (n) through (y) several times until no further adjustment of coils and trimmers is necessary.

aa. Set driver switch to 16-32 mcs. position.

bb. Set driver tuning at point No. 1.

cc. Apply drive slowly at 16 mcs.(single tone)

dd. Tune L208 and T207 to the peak indication on multimeter.

ee. Set driver tuning at point No. 9.

ff. Tune trimmers C203 and C210 to the peak indication on the multimeter.

NOTE: Check for oscillation as in the note after step (K).

gg. Repeat steps (aa) through (ff) several times until no furth r adjustment of coils and trimmers is necessary.

hh. Lock all coils observing the multimeter.

ii. Please cover over driver chassis and tighten at least one screw.

jj. Repeat steps (f) through (ff) but setting driver tuning at point No. 9 only and retuning trimmers only.

NOTE: It is of the utmost importance that the driver chassis be aligned with great care. Inadequate gain in th se stages will originate an appreciable amount of distortion.

kk. Turn off the transmitter plates switch.

G. Neutralization of P.A.

Warning: Be certain that overload breaker stays in off position throughout the neutralization process.

a. Turn ALDC Adj. to extreme counter clockwise position.

b. Connect VTVM to the plates of power amplifiers.

c. Set P.A. loading at point No. 0.

d. Disconnect lead from C215.

e. Turn on transmitter plates switch.

f. Apply drive at 32 mcs. (single tone), tuning the driver stages to the peak meter indication in RF DR position. Adjust the drive control to 30 V on multimeter.

g. Set PA bandswitch to 24-32 mcs. position.

h. Tune P.A. tuning to peak indication on R.F. VTVM.

i. Adjust P.A. neutralizing capacitor C214 each tim retuning P.A. tuning to the peak until the reading on VTVM is approximately 0.9 volts RMS.

j. Apply drive at 16 mcs. and tune the driver stages to the peak indication in RF DR position. Adjust the drive control till 30 V on multimeter is obtained.

k. Set the P.A. band switch to 16-24 mcs. position.

l. Tune P.A. tuning to the peak indication on RF VTVM; the reading must not exceed 1 V RMS.

m. Set up the unit at 2 mcs. The reading on VTVM must not exceed 1 V RMS. If more than 1 V RMS, readjust the neutralizing capacitor C214 and recheck at 32 mcs.

n. Disconnect VTVM and remove drive.

o. Turn off the transmitter plates switch.

p. Connect the feedback cable to C215.

H. Adjustment of P.A. Bias

a. Be certain that V203 Bias and V204 Bias control potentiometers are in extreme counter clockwise position.

b. Disconnect the exciter from J202.

c. Turn on the transmitter plates switch.

d. Turn on the high voltage breaker.

e. Turn V203 Bias control potentiometer slowly clockwise until the PA plate current will read 95 ma and lock the potentiometer.

f. Turn V204 Bias control potentiometer slowly clockwise until the PA plate current will read 180 ma and lock the potentiometer.

g. Set the multimeter switch to PA HV position; the multimeter must read approximately 2000 VDC.

h. Turn off the transmitter plates switch.

I. Spurious Test

NOTE: Do not connect a load and drive to the unit for this test.

a. Turn on the transmitter plates switch.

b. Turn on the high voltage breaker.

c. Tune the driver stages and the PA at approximately 2 mcs., move tuning knobes slightly, observing PA plate current and RF DR.

d. Continue to rotate driver tuning and PA tuning knobs throughout the band keeping the driver tuning frequency and the PA plate frequency approximately the same.
Switch bands and check all frequencies until 32 mcs.

NOTE: If there is a sudden jump in PA plate current and RF DR during the tests in (c) and (d):

1. Determine the parasitic frequency.
2. If it is grid to plate oscillation, then the unit must be reneutralized.

J. P.A. Performance and Intermodulation

Distortion Test

a. Set up the equipment as described in paragraph 3b.

b. Set up the unit for all operations, using two ton signal from exciter; set the band switches as per chart below; the voltage across the 52 ohm load must be 140 V as measured with Hewlett Packard VTVM.

The third and fifth order products may not be less than 40 db below fundamental tones.

F	Driver Band	PA Band
2	2 - 4	2.0 - 2.5
2.5	2 - 4	2.5 - 3.0
3.0	2 - 4	3.0 - 4.0
4.0	4 - 8	4.0 - 6.0
6.0	4 - 8	6.0 - 8.0
8.0	8 - 16	8.0 - 12
12	8 - 16	12 - 16
16	16 - 32	16 - 24
24	16 - 32	24 - 32
32	16 - 32	24 - 32

The multimeter reading must be as follows at each frequency:

Sw. Pos.	Valu
ISG	-8 to -10 ma
RF DR	25 to 30 V
RF PL	appx. 800 V
RF OUT	appx. 140 V

c. If the above test is acceptable proceed immediately to the next test.

K. ALDC Adjustment

a. While the unit is still fully tuned at some frequency, turn slowly clockwise the ALDC adjustment potentiometer until the output will just begin to drop off.

b. Increase the drive from the exciter, the output must increase only slightly.

c. Turn off all the power.

Units which have met the specifications above must be prepared for shipment; cover plates, loose items etc.

One copy of report sheet must accompany each Model RFA.

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MODEL RFA-1

TEST REPORT SHEET

		ACCEPT
A.	GENERAL INSPECTION	
B.	BLOWER WIRING	
C.	RESISTANCE CHECK	
D.	INITIAL POWER CHECK	
E.	VOLTAGE CHECK	
F.	ALIGNMENT OF DRIVER CHASSIS	
G.	NEUTRALIZATION OF P.A.	
H.	ADJUSTMENT OF P.A. BIAS	
I.	SPURIOUS TEST	
J.	P.A. PERFORMANCE AND INTERMODULATION PERFORMANCE TEST	
K.	ALDC ADJUSTMENT	

SERIAL NUMBER _____ ACCEPTED _____

DATE _____ TESTED BY _____