

DATE 4/17/56
SH. 1 OF 32
COMPILED BY

TMC SPECIFICATION NO. S-290

TITLE: PRODUCTION TESTING OF MODEL RTF

JOB E-271P

APPROVED

[Signature] H.J.S.

COMPLETE INSTRUCTIONS FOR THE PRODUCTION TESTING OF THE
MODEL RTF

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1. Purpose and Description

See Instruction Book

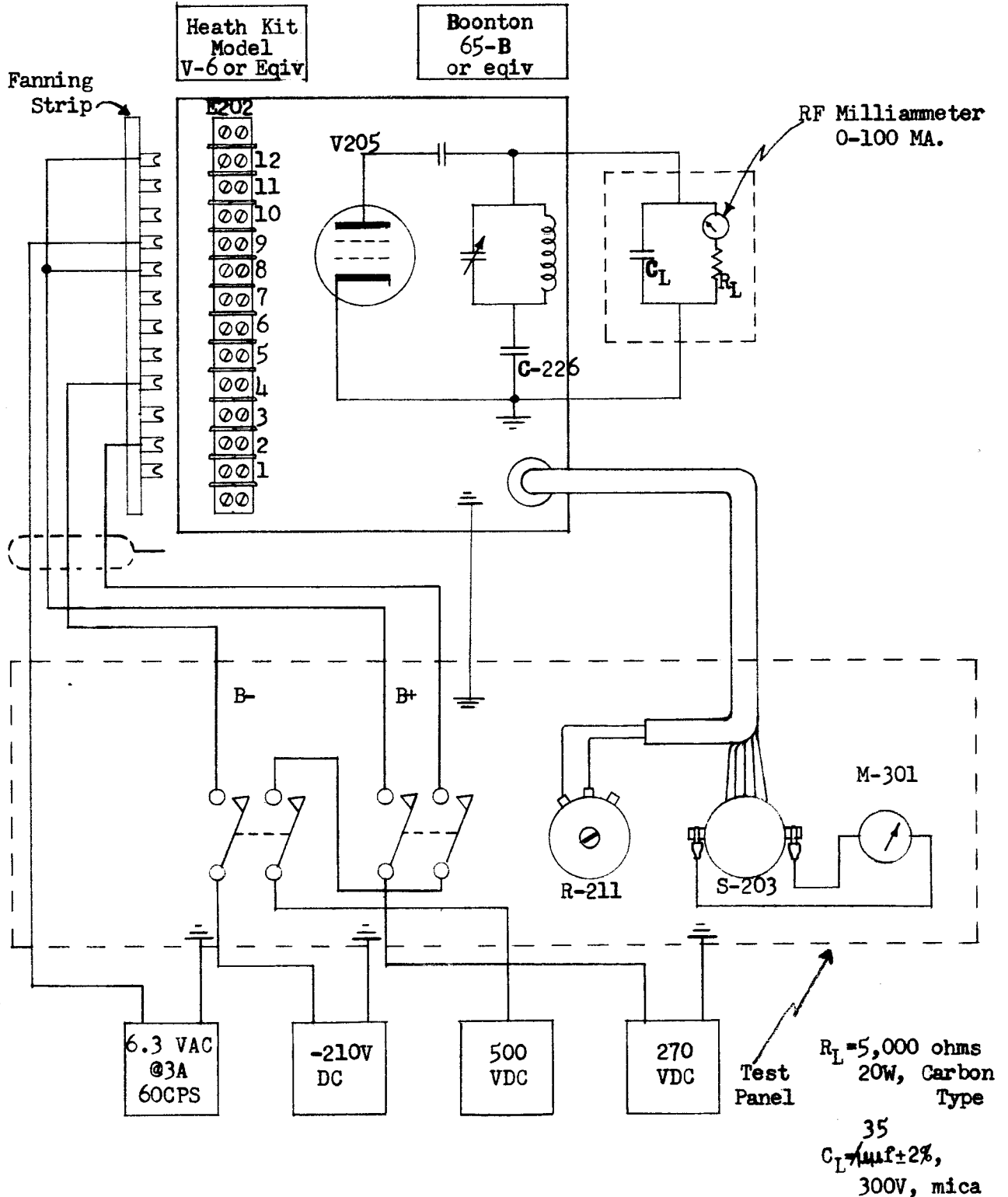
2. Test Equipment Required

- 1) Vacuum Tube: voltmeter, RF Boonton Model 62
or Equivalent
- 2) Ohmmeter: Simson Model 260
or Equivalent
- 3) Audio Generator: Heath Kit Model AO-1
or Heath Kit AG-8
- 4) RF Generator: Boonton Model 65-B
- 5) 5000 Ω non-inductive Resistor: IRC Type MPA
or Equivalent
- 6) Termline Coaxial Resistor: Bird Model 82-C
- 7) Power Supply, 500 VDC: Lambda Model 41
- 8) Power Supply, 270 VDC: Heath Kit Model PS-2
- 9) Power Supply, -210 VDC: Heath Kit Model PS-2
- 10) Milliameeter: 100 MA DC, MR-110-100-S
- 11) Ammeter RF, 5A
- 12) Milliammeter: 100 MA RF
- 13) VTVM, Heath Kit, Model V-6
- 14) AC Voltmeter, Heath Kit, Model AV-2

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3. General Instrument Layout

a) Multiplier - set up as shown below:



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b) Interconnect set-up as shown below:

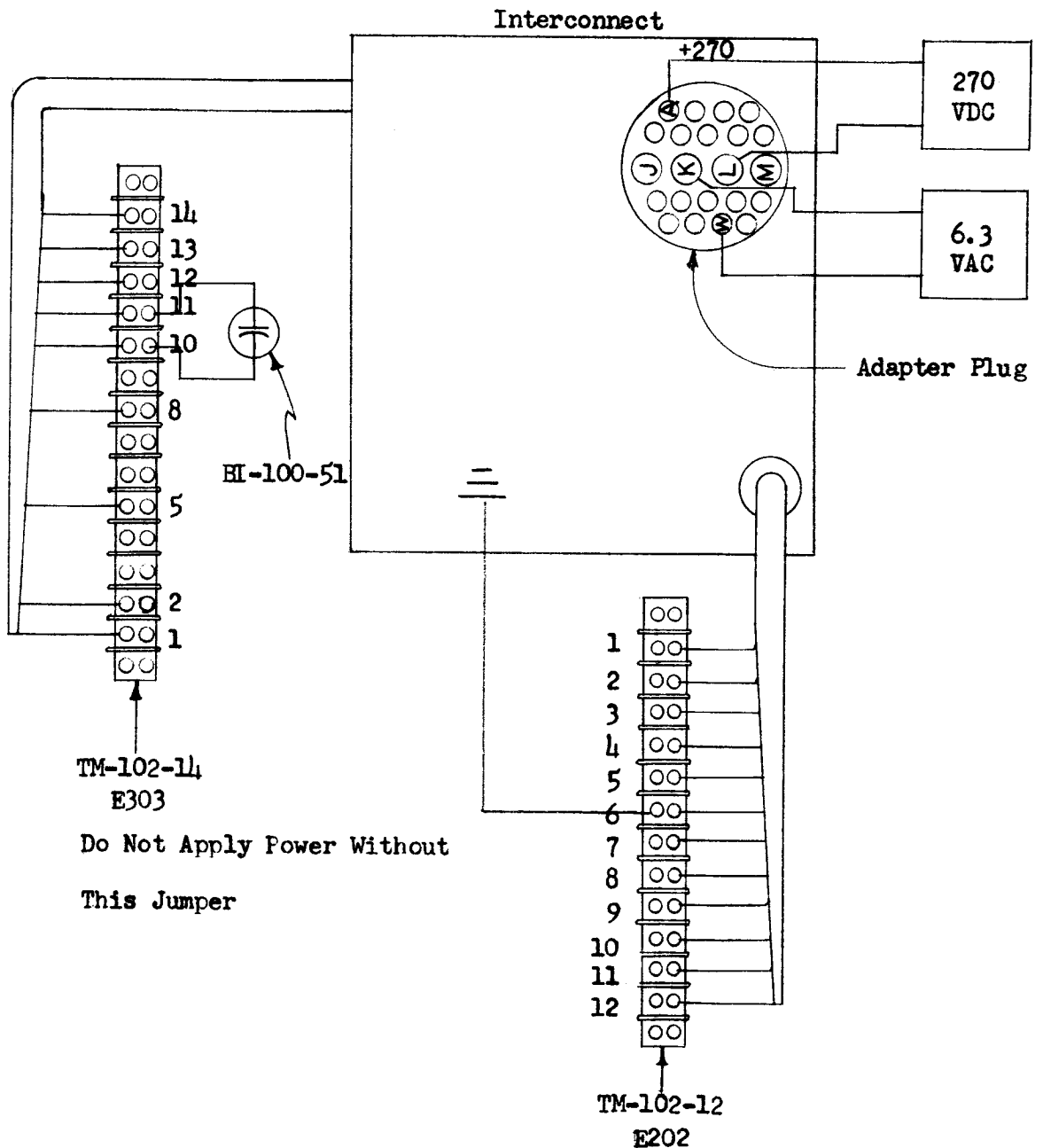
X-TALS
2, 3, 4,
mcs.

Heath Kit
Model V-6
or
Equivalent

Heath Kit
Model V-6
or
Equivalent

Heath Kit
Model OA-1
or
Equivalent

Boonton
Model 65-B
or
Equivalent



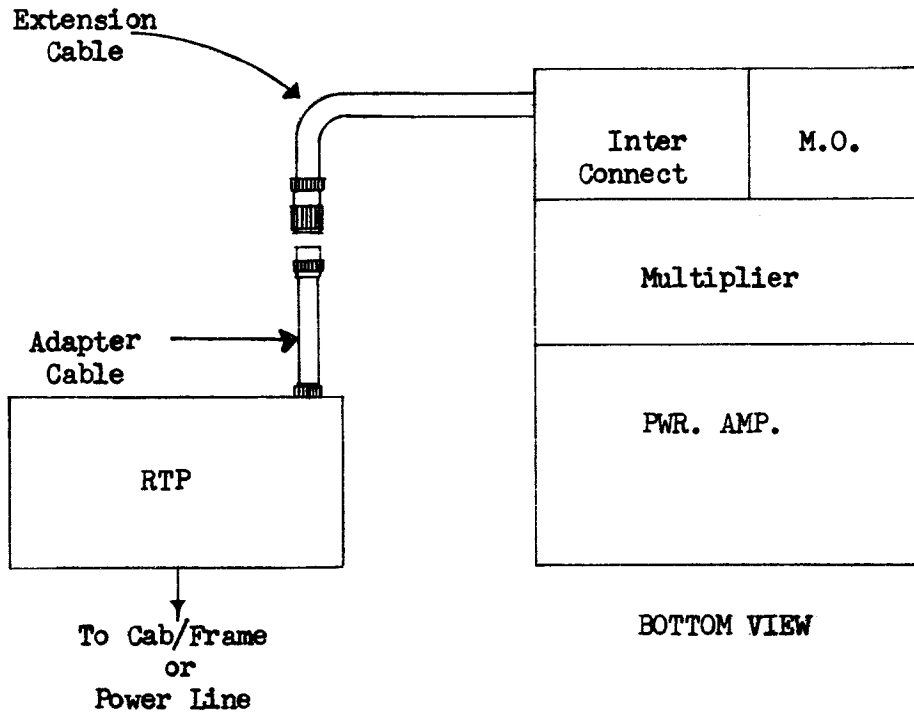
TM-102-114
E303

Do Not Apply Power Without
This Jumper

TM-102-12
E202

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c) Alignment of Multiplier set-up as shown:



1. Power to RTF may be supplied from either Cab/Frame or directly through an Adapter.
2. Keep the final plate switch off during this set-up.
3. Place the mode switch in tune position.
4. If Cab/Frame is used, place a jumper between pin 11 of E501 and S501. If Power Supply alone is used, place a short between pins "E" and "D" of J601. This is to close the interlock circuit.
5. Power Line must be 110 to 120 volts at 60 CPS.

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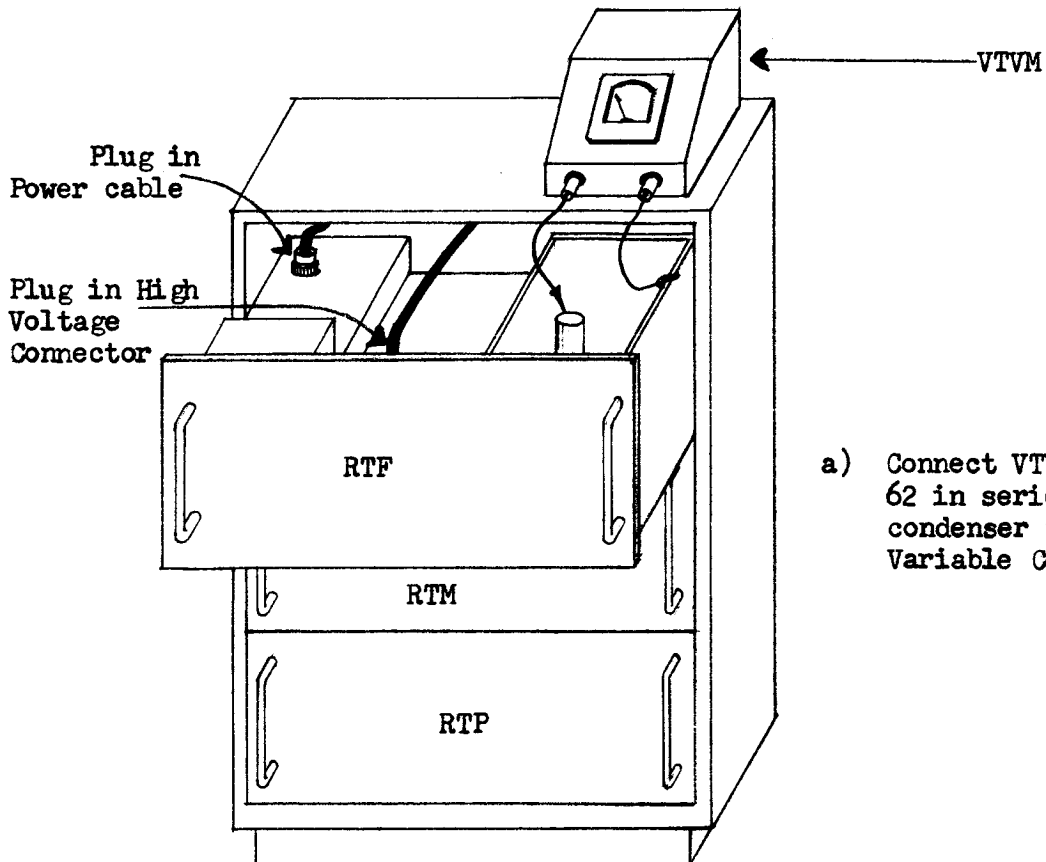
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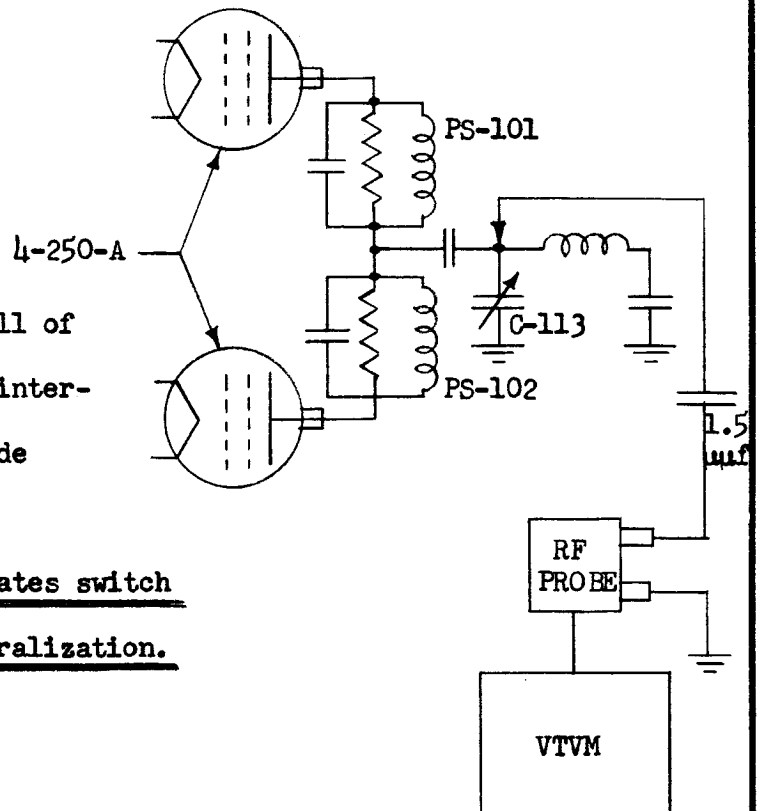
d) Neutralization of RTF set-up as follows:



a) Connect VTVM-Boonton Model-62 in series with 1.5 μmf condenser to C113--Vacuum Variable Condenser.

b) Place a jumper between pin 11 of E501 and S501 to close the interlock circuit. Place the mode switch in tune position.

Caution: Keep the final plates switch in off position during neutralization.



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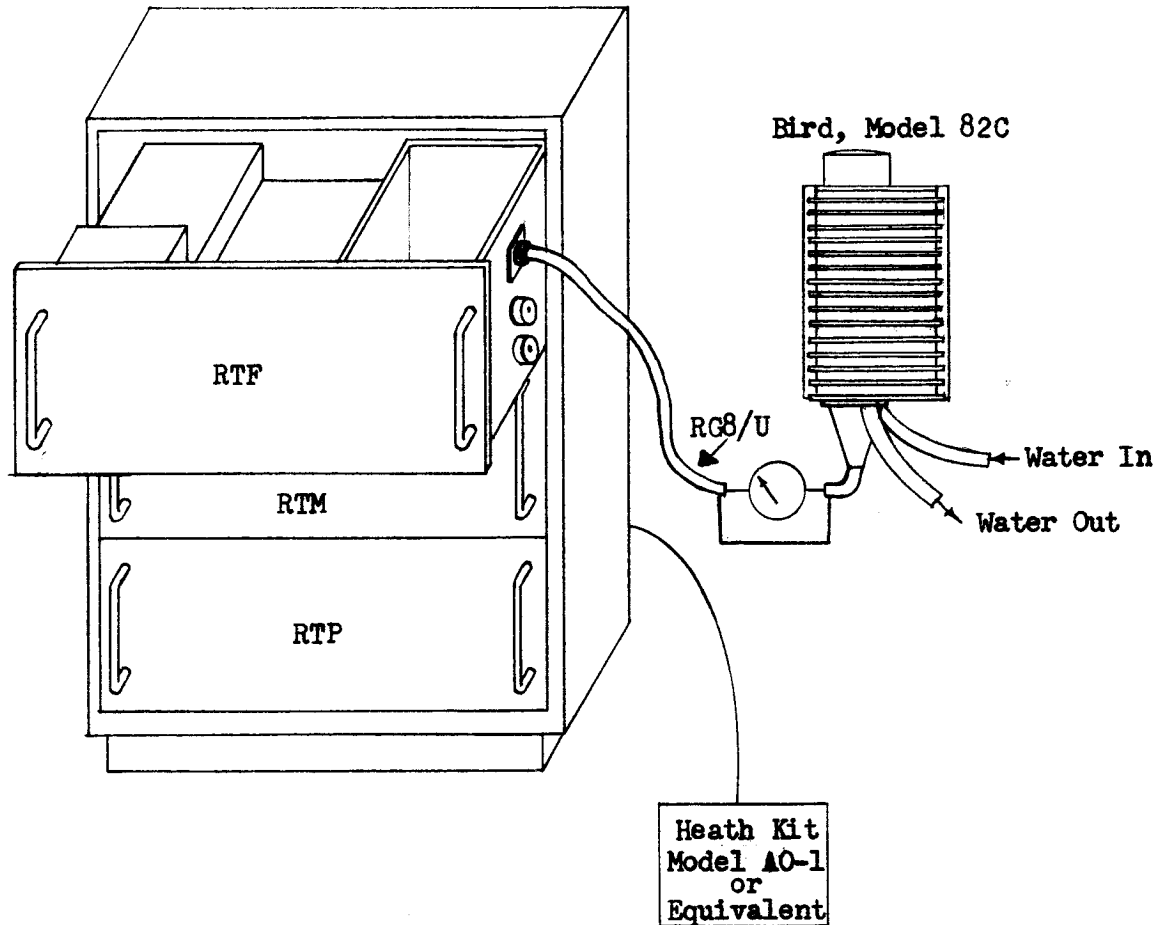
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e) RTF Efficiency and Modulation set-up as follows:



- a) Place a jumper between pin 11 of E506 and S501 in the Cab/Frame.
- b) The Mode switch on the power supply S601 must be in CW-FS position for Efficiency Test and in Phone position for Modulation Test.
- c) The load must be water cooled.

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4. Test Instructions:

Part 1: Individual Units of RTF

- a) Proceed with the test of the individual units as outlined in Test Sequence and Procedure, Part 1 to Part 4 inclusive.
- b) Fill in blanks on Report Sheets, rejecting those units which do not meet the specifications stated herein.
- c) Sign Report Sheets and submit them to your supervisor. All accepted Units must bear a tag or stamp of acceptance.

Part 2: RTF

- a) Continue as outlined in Test Sequence and Procedure from Part 5.
- b) Fill in blanks on Report Sheets, rejecting those Units which do not meet the specifications stated her in.
- c) Sign Report Sheets, remove tags, and submit them to your supervisor.

5. Test Sequence and Procedure

Part 1: Initial Calibration of Master Oscillator

- a) Set up and Calibrate the 100 KCS oscillator as per the first part of specification S-110 which relates to this subject alone.
- b) Set up and Calibrate the master oscillator cam as per the first part of specification S-110 which relates to this subject alone.

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Part 2: Multiplier

TEST A General Inspection:

- a) Inspect the Unit for obvious mechanical errors.
- b) Inspect the Unit for obvious electrical errors.
- c) Carefully inspect the unit for loose screws on shafts, couplings and other critical points, such as under tube sockets, ground lugs, etc.
- d) Inspect alignment of condensers C201A, B and S202 A, B, and detent SW179.
- e) Set SSB Switch to normal position.

TEST B Resistance and Continuity Test

- a) Turn potentiometer, Drive Control R211, full counter-clockwise for minimum drive and ground its case to the main chassis, i.e. through a clip-lead. This R-211 must remain grounded throughout the Part 2, Prealignment of Multiplier.
- b) Take following measurement from E-202 to ground.

Pin	1	2	3	4	5	6	7	8	9	10	11	12
R in ohms	open	45K 55K	short	240K 320K	open	170K 230K	19K 25K	23K 29K	.1 .3	open	open	170K 230K

- c) Take following reading from pin to pin as indicated below:

Pin 2 of E-202 to plate cap of V205--
180Ω±15Ω

Pin 5 of E-202 to the Frame of C-201C--
2.2K±.2K

E-202 Pin	E-201 Pin	R Ω
1	1	180±15
10	3 + 6	short
11	4 + 5	short

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TEST C Drive Control and Keying Circuits

(Prepare the Unit for test as described in Paragraph #3,
General Instrument Layout)

- a) Load the driver output.
- b) Connect D C milliammeter, 100 MA., to serve as M-301.
- c) Set meter switch, S-203 at position #1, Driver Plate, counter clockwise.
- d) ~~For the purpose of this test, temporarily ground C-226.~~
- e) Connect power to E-202 as follows:
6.3 to pin 9 and ground -210VDC to pin 4 and ground,
270 VDC to pins 8 and 12 and ground,
500 VDC to pin 2 and ground.

WARNING: In order to avoid serious damage to the P.A. Driver, V-205, always apply negative voltage first and do not remove it until all other DC voltages are off.

- f) Turn the filament voltage on and allow a few moments to warm up.
- g) Turn all B Voltages on, starting from negative voltage.
- h) Take following voltage readings:
pin 6 of E-202 --- -65 ± 15 VDC
pin 7 of E-202 --- 27 ± 5 VDC
pin 1 of V-201 --- -65 ± 15 VDC
pin 6 of V-201 --- 3 ± 3 VDC
pin 6 of V-204 --- 3 ± 3 VDC
pin 5 of V-205 --- -95 ± 15 VDC
pin 3 of V-205 --- 3 ± 3 VDC
- i) Set SSB Switch in SSB position
pin 3 of V-205 --- 145 ± 10 VDC

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j) Turn all B voltages off, negative voltage last, and turn the drive control, R211, clockwise for maximum drive, ground pin 7 of E202, and set SSB Switch to Normal position.

k) Turn B voltages on. NOTE: Meter M301 will now read 8 ± 3 MA.

l) Take following voltage readings:

pin 6 of E202 --- 0 ± 1 VDC

pin 1 of V201 --- 0 ± 1 VDC

pin 6 of V201 --- 140 ± 10 VDC

pin 6 of V204 --- 140 ± 10 VDC

pin 5 of V205 --- 38 ± 5 VDC

pin 3 of V205 --- 145 ± 10 VDC

1) Turn all B voltages off.

TEST D Prealignment of Multipliers

a) Set the Driver Band Switch (S201, S202) to 4-8 MC band.

b) Connect the Load Assembly as shown in Paragraph 3A.

c) Set the main tuning condenser, C201, to fully meshed position and rotate it clockwise approximately 10° .

d) Set the trimmer condensers C210 and 218 to their mid-positions (approx. 20µf.)

e) Set the signal generator to 2mcs. and at 2 volts output and connect it to J201.

f) Turn the power on and tune L204 for peak on M301.

g) Set the Driver Band Switch to 16-32 mcs band.

h) Tune L203 and L204 until peak on M301 is obtained.

i) Tune R211 for maximum RF output.

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- j) Retune L204, L207 and L214. An output of 30 MARF to be acceptable.
- k) Set the Band Switch to 8-16 mc band.
- l) Tune L213 for maximum RF output. An output of 30 MARF to be acceptable.
- m) Set the Band Switch to 4-8 mcs. band.
- n) Tune L212 for maximum output. An output of 30 MARF to be acceptable.
- o) Set the band switch to 2-4 mcs. band.
- p) Tune L203 for maximum plate current on M301.
- q) Tune L211 for maximum RF output. An output of 40 MARF to be acceptable.

TEST E: SSB INPUT CIRCUITS

- a) Connect the signal generator to J-202. Set at 2 Mcs. and 2 volts.
- b) Set the SSB switch S-204 to SSB position and turn the power on.
- c) With Boonton Model 62 VTVM, measure the voltage at pin 5 of V205 --3.7-4.3V.

Unit which has met the specifications above, is acceptable to be mounted into the RTF.

Part 3 INTERCONNECT

TEST A GENERAL INSPECTION

- a) Inspect the unit for obvious mechanical errors.
- b) Inspect the unit for obvious electrical errors.
- c) Carefully inspect the unit for loose screws on all critical points, such as under tube sockets, ground lugs, etc.

TEST B RESISTANCE AND CONTINUITY

- a) Terminat the two extending cables with TM-102-12

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and TM-102-14, Terminal Strips, which will serve as E202 and E303 respectively.

- b) Set "Drive" Switch, S402, in "normal" position.
- c) Set Oscillator Switch, S401, in "M.O." position.
- d) Remove relay (A-123)K401.
- e) Take following readings:

J-405	to Gnd	continuity to	J-405	to Gnd	continuity to
A	open	pin 8 E202	L	short	---
B	"	" 2 E202	M	open	pin 11 E202
C	"	pin A J401	N	open	pin 5 E202
D	"	pin 13 E303	P	open	open
E	"	" 12 E202	R	open	pin 6 E202
F	"	" 1 E202	S	open	open
G	"	open	T	open	pin 2 E303
H	"	" 14 E303	U	open	pin 4 E202
I	"	" 7 E202	V	open	approx. .42 pin D J401
J	open	" 9 E202	W	short	-----
K	approx. .12	---	X		pin 10 E202

- f) Take following readings:

E-303	to Gnd	Continuity to
1	open	pin 2, K401
2	open	-----
8	open	pin 3, 5, K401 and pin 11, E202
5	open	pin 4, K401
10	10K ⁺ 1K	-----
11	open	-----
12	open	pin 7, E202
13	open	-----
14	open	-----

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- g) Replace relay A-123
- h) Place oscillator switch in "Calibrate" position.
Pin A of J401 --- Short to ground.
- i) Connect the ohm-meter to pin 1 of V403 and ground.
Take following four (4) readings:

#	Condition	Drive Switch In:	Oscillator Switch In:
1	Open circuit	Normal	X-tal (any)
2	80-120 K	F.S. External	X-tal (any)
3	80-120 K	F.S. Internal	X-tal (any)
4	Short	Normal	Calibrat

- j) Return oscillator switch in "MO" position and place the drive switch in "FS External"
Pin A of J401 --- Short to ground.

TEST C WIRING OF J401

- a) Connect 6.3 VAC, Filament Supply, to pin K and pin W of J405.

NOTE: Do not ground either of the taps.

See General Instrument Layout, paragraph 3b.

- b) Connect 270 VDC to pin A (positive) and pin L (ground)
- c) Leave Drive Switch in "Normal" position.
- d) Set Oscillator Switch in "Calibrate" position.
- e) Connect NE51 bulb to terminals 10 and 11 of E303.
- f) Place a jumper between pin 6 and pin 3 at E202.
- g) Turn the Power on.
- h) With VTVM measure following voltages:

J-401

Pin Volts

B	150 5VDC
C	150 5VDC
D	-----

- i) Set the Oscillator Switch at "MO" position.
- j) Pin B of J401 150±5VDC

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k) Set the Oscillator Switch at Xtal Position (any)

l) Pin B and C of J401 0 volts.

m) Set Drive Switch at "FS-EXT." position.

Note: That VR TUBE V401 must be on.

n) Set Driver Switch at "FS-INT." position.

Note: That VR TUBE must go off.

TEST D Mixer and Audio Amplifier

a) Connect an Audio Signal Generator set for 500 cps and .2 volts output at pin 1 of V405. The Oscillator Switch S401 must be in "Cal" position. The output at pin 10 of E303 must be 20 volts within ± 5 volts.

b) The same output results must be obtained with the Signal Generator set for .4 volts at pin 7 of V405.

c) While still connected to pin 7 of 405 and driving with .4V, set Generator at its lowest frequency. NE-51 bulb, connected to terminals 10 and 11 of E303 must then flash on and off.

d) Turn B+ off.

TEST E RF Stages

a) Insert output connector RF Output (P401) into the jack (J404) marked Drive In.

b) Insert 2, 3 and 4 mcs crystals into Y-401, Y-402 and Y-403 respectively.

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- c) Set Trimmer condenser C420 at mid-capacity.
- d) Turn Drive Switch to Normal Position.
- e) Connect Signal Generator set at approximately .3 mcs and 2 V to J-402.
- f) Turn the power on and measure following voltages at J-404.

Function Switch Position	J-404 RF Volts, RMS
1- Calibrate	0
2- M.O.	1.7 to 2.3
3- Xtal-1	.6 to 1.0
4- Xtal-2	.6 to 1.0
5- Xtal-3	.6 to 1.0

- g) While in position 5, remove Xtal-3 and disconnect Signal Generator. There must be 0 Voltage at J404

*** Unit which has met the above specifications is acceptable to be mounted into RTF Frame.

Part 4 Power Amplifier Wiring

TEST A General Inspection

- a) Inspect the unit for obvious mechanical errors.
- b) Inspect the unit for obvious electrical errors, especially for shorts in the RF carrying straps relative to ground and among each other.
- c) Carefully inspect the unit for loose screws in shafts, couplings, springs, gears and other critical points, such

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as coils, switches, tube sockets, etc.

d) Verify the placement of the taps on the coils and switches.

e) Inspect all major solder connections, such as taps on coils and switches.

TEST B Continuity Test

Take Following Readings:

a) Plate cap of V101 to V102 -- infinite resistance relative to ground.

b) Plate cap (V101 to V102) approximately 1.5Ω relative to the junction C-111 and L-109.

TEST C Safety Switch, S104

a) Place ohmmeter across normally closed terminals of the switch S104.

b) Turn very slowly PS Band Switch in either direction and make sure that the safety switch will open before the feelers of the switches S101 and S102 leave their pins. After the above has happened, return the switch slowly into its previous position, observing that the feelers must contact their respective pins before the S104 closes.

TEST D Filament and Blower

a) Connect 112 to 118V 60 cps to cable lugs numbers 3 and 4, and to the Blower B-101.

b) With AC Voltmeter measure pin 1 of V101 relative to ground $5\pm.3$ volts. Pin 5 of V102 relative to ground -- volts.

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c) The Blower must provide adequate air cooling.

The Power Amplifier which meets the specifications above is acceptable to be mounted into RTF frame.

Part 5 RTF Alignment

TEST A General Inspection

- a) Inspect the master oscillator's counter and calibrate gear assembly for mechanical imperfections.
- b) Inspect all other shafts and couplings.
- c) Carefully inspect the helical gears below the vacuum variable condenser, C113, and be sure that the assembly is running smooth.

TEST B Alignment of Knobs

- a) Set the Antenna loading knob so that pointer will read "0" when C-117 is fully mashed.
- b) Position the Driver Tuning pointer by means of the coupling at the Vernier, so that it will be horizontal and to the left, when C201 is fully mashed.
- c) Check all other knobs, which have pointers, that they are aligned properly.
- d) The PA Tuning counter must read approximately 99.6 when the C113 is fully mashed. If not --- return such unit for readjustment.

TEST C Alignment of Multiplier

- a) Place the model RTF on its power amplifier side and provide all the necessary power as shown in paragraph

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3c, General Instruction Layout.

b) Insert 2 mc crystal into X-tal position #1 and

4 mc crystal into X-tal position #3.

c) Set the Drive Switch at "Normal", and SSB Switch at normal.

d) Rotate the Drive Control clockwise for maximum drive.

e) Set the Meter Switch at Driver position.

f) Set the Driver Band at 16--32 mc position.

g) Set the Driving Tuning at 4 mc mark.

h) Place the Oscillator Switch at X-tal 3.

NOTE: In order to avoid serious damage to the final amplifiers V101 and V102, do not allow the P.A. grid current to flow for a prolonged period of time of more than 40 MA. Consequently, reduce the drive (R-211) to the safe value.

i) Turn Transmitter Plates on.

j) Tune C218 and C210 for maximum Driver Plate current.

k) Set Oscillator Switch at X-tal #1.

l) Set the Driver Tuning at 2mc mark.

m) Tune L204 and L207 until peak on M301 is obtained.

n) Set Oscillator Switch at X-tal #3.

o) Set the Driver Tuning at 4mc mark.

p) Tune C218 and C210 for maximum Driver Plate current.

q) Set the meter switch at position PA Grid.

r) Tune L214 and retune C218 and C210 for maximum grid current.

s) Set Oscillator Switch at X-tal #1.

t) Set Driver Tuning at 2mc mark.

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- u) Tune L214, L204 and L207 for maximum grid current.
- v) Set Oscillator Switch at X-tal #3.
- w) Set Driver Tuning at 4mc mark.
- x) Return C218 and C210 for maximum grid current.
- y) Repeat steps "s" through "X" as many times as necessary.

NOTE: To assure sufficient amount of Drive to the power amplifier at any frequency, a grid current of not less than 35 MA. must be obtainable.

Since this unit possesses a fixed minimum, a slight deviation from the Driver Tuning Pointer must be expected.

- z) Lock coil slugs: L204, L207 and L214.
- aa) Set Oscillator Switch at X-tal #1 and tune the Driver tuning at 2mc mark until peak on M301 is obtained.
- cc) Set Meter Switch at Driver position.
- ee) Set the Driver Band at 2-4mc Band.
- ff) Tune L203 until peak on M301 is obtained and lock coil slug.
- gg) Set Meter Switch at PA Grid Position.
- hh) Set Oscillator Switch at X-tal #1.
- ii) Set Driver Band at 16-32md.
- jj) Tune Driver Tuning at 2mc mark until grid current peak is reached.

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- kk) Set Driver Band at 8-16mc.
- ll) Tune L213 for maximum grid current and lock the slug.
- mm) Set Driver Band at 4-8mc.
- nn) Tune L212 for maximum grid current and lock the slug.
- oo) Set Driver Band at 2-4mc.
- pp) Tune L211 for maximum grid current and lock the slug.
- qq) Using Master Oscillator, test the grid current flow at following frequencies (in mc):

Band	fs(mc.)
2-4	2,3,4
4-8	4,6,8
8-16	8,12,16
16-32	16,24,32

NOTE: At any frequency, grid current must be better than 35 MA.

- rr) Turn Transmitter Plates Switch off.

Part 6 RTF Neutralization

WARNING: In performing this following operation do not contact any parts, since High potentials of RF and DC are present.

Be sure that you are thoroughly familiar with this equipment.

Even with the Transmitter Plates Switch off, there still is DC potential on the neutralizing condenser (C-211), PA grids, and on some other components mainly on the resistance boards.

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No unauthorized personnel shall be permitted to be in the vicinity of this equipment while it is operated with all high voltage components exposed. Warning signs must be posted so that they can not be overlooked.

TEST A Neutralizing PA

The purpose of this test is to obtain minimum amount of coupling between grid and plate due to the inter-electrode capacitance.

WARNING: KEEP THE FINAL PLATE
SWITCH OFF THROUGHOUT
THIS TEST.

- a) Slide the Model RTF into the upper shelf of Cab/Frame.
- b) Unit must slide easily. If mechanical misalignment of slides is found, return such unit to production for adjustment.
- c) Push the unit all the way in and pull out until the automatic stops will prevent the unit from further sliding.
- d) Attach Power Cable to J405 and the H.V. cable J303.
- e) Turn the main power switch on, allow a few minutes to warm up.
- f) Connect VTVM (Boonton, Model 62) in series with 1.5 μ f to the tank of the final amplifiers (junction C113 and L112)
- g) Drive the Power Amplifiers at 8 mcs., and adjust the drive control for 20 MA. of PA grid current.

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- h) Set the PA band at 6-8 mcs.
- i) Set the Antenna Loading Condenser at "50".
- j) Set the Antenna Loading Switch at "2" and set the PA Tuning to the peak on VTVM.
- k) Adjust the neutralizing condenser C10₄ for approx. 2 V output on the VTVM.
- l) Turn the Transmitter Plates Switch off.
- m) Disconnect VTVM.

Part 7 Master Oscillator Calibration

After having concluded Part 6, leave the unit on until the inner oven commences to cycle. Depending upon ambient temperature condition, as much as three or four hours may be required to reach this point.

TEST A Inner Oven Cycling

Observe the inner oven cycling by means of I301. The on time should be, very roughly, one minute and the off time, very roughly, two minutes. Do not pass a unit which varies radically from these figures. (By more than -50, +100%.)

TEST B Outer Oven Cycling

Outer oven cycling should be, roughly, two or four seconds on, and thirty to one hundred and twenty seconds off.

TEST C 100 KCS. Oscillator Calibration

- a) Couple lightly J402 to a communications receiver tuned to WWV at either 2.5 mcs. or 5 mcs. (be sure BFO is off)
- b) Tune the master oscillator dial to the region of 2.5 mcs.

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- c) Be sure the Drive Switch is set at Normal Position.
- d) Turn Transmitter Plate Switch to on position.
- e) Set the Oscillator Switch at M.O. Position.

- f) Carefully zero beat the Master Oscillator against WWV to within a fraction of one cycle.

- g) Set the Oscillator Switch at Calibrate position.

- h) By means of C311 and the beat indicator (I202), zero beat the 100 KCS. crystal oscillator against the master oscillator to within a fraction of a cycle. The unit can be passed only after this operation has been concluded.

TEST D Master Oscillator Calibration

Recalibrate the master oscillator at both the upper and lower ends, and then, without again touching either end adjustment control, record the amount of error in the master oscillator dial against the 100 KCS. point between 2 and 4 mcs. A form has been provided for this purpose. No unit may be passed where this error exceeds 200 cps.

NOTE: Do Not turn the Final plates.
switch on during this test.

Part 8 RTF Output

WARNING: Do not make any adjustments in the unit while high voltage is on. This may cause a serious electrical shock, or RF burn, or in some cases instantaneous death. After the High Voltage has been shut off, always short the high potential B+ to ground, before handling. This is necessary in the case the stored energy in the condensers had not enough time to discharge through the bleed resistor.

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TEST A Spurious, P.A.

CAUTION: Under any circumstances do not allow the Power amplifiers to dissipate a total of more than 450W. Under no load condition, this corresponds to the plate current of approximately 150 MA.

- a) Connect the high voltage cable to J303.
- b) Leave the drawer pulled out.
- c) Be sure there is no load connected to the unit.
- d) Set the Meter Switch to PA grid position.
- e) Turn the final plate switch on.
- f) Pull out the P.S. drawer and adjust (R-608) the PA grid bias until the PA plate current reads 100 MA.
- g) Push in the drawer.
- h) Set the Driver Switch to 2-4 mcs. band. (see chart below)
- i) Set the P.A. tuning control as shown in the chart below.
- j) Set the P.A. controls at approximately 2.0 mcs. (see chart below)
- k) Observing PA grid current and PA plate current, rotate the Driver Tuning from one extreme to the other. Be especially elert while the driver tuning pointer is passing the 2.0 mc. mark.
- l) Repeat the steps i) through l), however, with different settings as follows:

Antenna Switch
Set at Position #2

f	Driver Band	PA TUNING APPROX.	ANTENNA LOADING APPX.	P.A. BAND
2	2-4	07.0	50	2.0-2.5
8	8-16	14.1	50	8.0-12
32	16-32	20.1	80	24-32

If a peak or dip in the PA plate or grid current is noticed, reject such units, since this indicates self oscillation.

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Most likely the unit must be reneutralized.

m) Turn Final Plate and Transmitter Plates Switch off.

TEST B P.A. Efficiency

NOTE: For Tune-up Procedure See Instruction Book.

a) Connect the Resistive load, (Bird, Termaline Coaxial Resistor, 51.5 ohms) in series with 0-5 Amps RF Ammeter to J-101.

SEE: General Instrument Layout
sub-paragraph "e" for interconnection.

b) Tune the Model RTF to frequencies as stated in the chart below. At 530 MA. of P.A. Plate current, the RF output must be better than 4.2 Amperes. This corresponds to our efficiency of 70% or better.

c) Fill in blank spaces on report sheets.

If on one or more frequencies the efficiency figure falls below 70%, reject such units.

Output f	PA Band mcs.	PA Tuning APPX.	Antenna Loading APPX.
2.0	2.0 - 2.5	07.0	50
2.5	2.5 - 3.0	07.3	20
3.0	3.0 - 4.0	07.4	10
4.0	4.0 - 6.0	05.7	00
8.0	6.0 - 8.0	16.0	65
12.0	8.0 - 12	18.2	75
16.0	12 - 16	20.0	75
24.0	16 - 24	20.0	75
32.0	24 - 32	20.1	80

Not : Keep
the Antenna
Loading Switch
in Position #2.

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TEST C Modulation

The Purpose of this test is to find defective condensers and to get final assurance of the spacings between the high tension straps and ground. It is not a Modulator test.

- a) After the Model RTF has been set to any arbitrary frequency, adjust its P.A. plate current to approximately 400 MA. (1 KW plate input).
- b) Connect an Audio Signal Generator to terminal 1 and 3 of E501 set at .1 V out and at 1000 cps.
- c) Turn the Modulator level to minimum.
- d) Set the S601 to phone position.
- e) Slowly increase the level control until Modulator plate current reads 380 MA.

NOTE: Do not leave the unit turned on in this condition for a prolonged period of time. A Modulation Test of 15 seconds is sufficient.

TEST D Keying

- a) Remove the interlock jumper from the cabinet.
- b) Push into the cabinet all drawers. This is necessary to obtain minimum leakage of RF.
- c) Set the units for CW operation at any arbitrary frequency and at approximately 750W output.
- d) Insert key at J-302.
 -) Pick up the signal on a communication receiver.
- f) Key the Model RTF at about five cps. rate (fift en

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words per minute) and listen on the receiver to see that the keying sounds clean and follows the key.

g) The test key must key the unit when depressed in any direction. When all of the preceding tests have been successfully completed, the unit must be placed in its final form with cover plates on, etc., and prepared for shipment. One copy of each Report Sheet shall be enclosed with each Model RTF.

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MODEL RTF	TEST REPORT SHEET	SAMPLE	
PART 1 <u>Initial Calibration</u>	<u>ACCEPT</u>	<u>MO CAM CALIBRATION</u>	
PART 2 <u>Multiplier</u>		FREQUENCY KC	CYCLES DEVIATION
TEST A: General Inspection	_____	2000	_____
TEST B: Resistance & Continuity	_____	2100	_____
TEST C: Drive Control & Keying Circuits	_____	2200	_____
TEST D: Prealignment	_____	2300	_____
TEST E: SSB Input Circuits	_____	2400	_____
PART 3 <u>Interconnect</u>		2500	_____
TEST A: General Inspection	_____	2600	_____
TEST B: Resistance & Continuity	_____	2700	_____
TEST C: Wiring of J-401	_____	2800	_____
TEST D: Mixer and Audio Amplifier	_____	2900	_____
TEST E: R F Stages	_____	3000	_____
PART 4 <u>Power Amplifier Wiring</u>		3100	_____
TEST A: General Inspection	_____	3200	_____
TEST B: Continuity Test	_____	3300	_____
TEST C: Safety Switch	_____	3400	_____
TEST D: Filaments & Blower	_____	3500	_____
PART 5 <u>RTF Alignment</u>		3600	_____
TEST A: General Inspection	_____	3700	_____
TEST B: Alignment of Knobs	_____	3800	_____
TEST C: Alignment of Multiplier	_____	3900	_____
PART 6 <u>RTF Neutralization</u>		4000	_____
TEST A: Neutralizing P.A.	_____		
PART 7 <u>Master Oscillator Calibration</u>			
TEST A: Inner Oven Cycling	_____		
TEST B: Outer Oven Cycling	_____		
TEST C: 100 Kcs. Osc. Calibration	_____		
TEST D: Master Osc. Calibration	_____		
PART 8 <u>RTF Output</u>		Serial Number	_____
TEST A: Spurious, P.A.	_____	Date	_____
TEST B: P.A. Efficiency	_____	Accepted	_____
TEST C: Modulation	_____	MO Condenser No.	_____
TEST D: Keying	_____	Test d By	_____

