AR-3300 & AR-3500 Alignment Procedures

SYNTHESIZER

1. - Set radio to 29.9000 Mhz. FM mode.
2. - Connect DVM to TP-1 and adjust T-13 for 3.8 VDC.
3. - Set the radio to 28.0000 Mhz. (Clarifier Center)
4. - Connect Scope to **TP-2.** Adjust **T-12** for Max in AM mode.
5. - Connect Scope to cathode of **D-77.** Adjust **T-11** for Max in AM mode.

NOTE : Step 2 of SSB Transmitter Alignment should be done at this time as it effects 10.695 Mhz. Oscillator adjustment.

Please note that radios with the optional 2.6 Khz. SSB filter use different offset frequency adjustments. The filter can be identified by the markings on the top. **(10M2.6D is the 2.6 filter).**

6. - Connect frequency counter to **TP-3 (High impedence probe).**

4.2 Khz. **2.6 Khz.**

A. - Adjust **T-16** for **10.6925** -- or - **10.6935** in **USB** mode.
B. - Adjust **T-17** for **10.6975** -- or - **10.6965** in **LSB** mode.
C. - Adjust **T-15** for **10.6943** -- or - **10.6943** in **CW** mode.
D. - Adjust **T-14** for **10.6950** -- or - **10.6950** in **AM TX** mode.

7. - Connect frequency counter to **TP-2.**

4.2 Khz. **2.6 Khz.**

A. - Adjust **VR-3** for **17.3050** -- or -- **17.3050** in **FM** mode.
B. - Adjust **VR-1** for **17.3075** -- or -- **17.3065** in **USB** mode.
C. - Adjust **VR-2** for **17.3025** -- or -- **17.3035** in **LSB** mode.

8. - Adjust **T-14** for output freq. of **28.0000 Mhz.** FM mode.

RECEIVER

IF (10.695 Mhz.)

1. - Set radio in **AM** mode. Apply a **10.6950 Mhz. (AM modulated at 60%)** signal from signal generator through a 10 to 1 probe to the **emitter of Q-2.** (Output of Signal Generator should be just enough to produce output at speaker, about **12 db. Sinad.)**

2. - Adjust **T-4, T-5, T-8, T-9, and T-10** for Max AF output.

NOTE : Any excessive Signal Generator output will activate AGC and cause a false alignment.

3. - Set radio to CW mode, Signal generator to 0% modulation. Adjust T-6 & T-7 for max audio output.

NOISE BLANKER

1. - Connect a noise generator (Sencore NL 204 or equivalent) in series with signal generator output. Connect Scope to **TP-4.** Set signal generator for **20 uV.** output. Adjust **T-400 & T-401** for Max peaks.

HIGH FREQUENCY

1. - Set radio to **28.0000 Mhz. on AM mode.**
2. - Apply a 28.0000 Mhz. **(AM modulated at 60%)** signal to antenna.

3. - Adjust **T-1, T-2 & T-3** for max AF output (output of Signal Generator should be about 12 db Sinad.

IF NOISE

1. - Set radio to **LSB mode** and disconnect any input to antenna terminal.
2. - Adjust **R-39 (IF GAIN)** for an AF output of 0.2 VRMS with **"AF GAIN"** at MAX

S METER

1. - Set radio to 28.0000 Mhz. on FM mode
2. - Apply a 28.0000 Mhz. signal to antenna at 50 uV.
3. - Adjust **VR-7** so that four LED bars are lit.
4. - Set radio to **USB** mode.
5. - Adjust **VR-9** so that four LED bars are lit.

FM QUADRATURE

1. - Set the radio to **FM** mode. Inject a 28.0000 FM deviation at 5 Khz, 1 Khz tone signal from signal generator to antenna. Connect scope to junction of R-123 & C-96.

2. - Adjust **T-18** for Max sin wave with minimum distortion.

TRANSMITTER - SSB MODE

1. - Set radio to 28.0000 Mhz. on SSB mode.
2. - Set **"MIKE GAIN"** to **minium** and adjust **VR-9 & VR-10 (Balanced Modulator)** for minimum RF output These controls should be balanced for even output on **LSB & USB. IF ADJUSTMENT IS REQUIRED AT THIS STEP THEN REPEAT STEP 6 OF PLL-VCO ALIGNMENT.**

3. - Set **"MIKE GAIN" to Minimum, MODE** to **LSB TX.** Connect DVM to ferrite bead side of **R-198** and ground. Adjust **VR-14** for **0.68 VDC (Driver Bias.)**

Move DVM to ferrite bead side of **R-190**
Adjust **VR-12** for **0.68 VDC (Final Amp Bias.)**

Move DVM to ferrite bead side of **R-194**
Adjust **VR-13** for **0.68 VDC (Final Amp Bias.)**
NOTE : After VR-12, VR-13 are adjusted,
Re-Adjust VR-14 for best swing.

100 WATT BIAS ADJUSTMENT

Remove Red power lead of amplifier at main power jack. Insert AMP Meter in series with removed red wire and positive pin of power jack. Adjust **VR-101 for 150 Milliamperes.**

4. - Set **"Mike Gain" to max** and apply 1,000 Hz. tone to microphone. Adjust **VR-15** for Max RF output.

5. - Adjust **T-22, T-21, T-20 & T-19** for Max RF output
6. - Balance RF output between lowest & highest freq. with L-6, L-7 & L-9

7. - Readjust **VR-15 (ALC)** so that output power just starts to drop (about 2 watts.)

AM MODE

1. - Set radio to 28.0000 Mhz. **AM** mode, Mic gain Max.
2. - Adjust **VR-6, (AM POWER)** for 7 Watts output power
(30 Watts for 100 Watt Model)

3. - Apply 1,000 Hz. tone to microphone and **Adjust VR-17 (AMC)** for 95 %

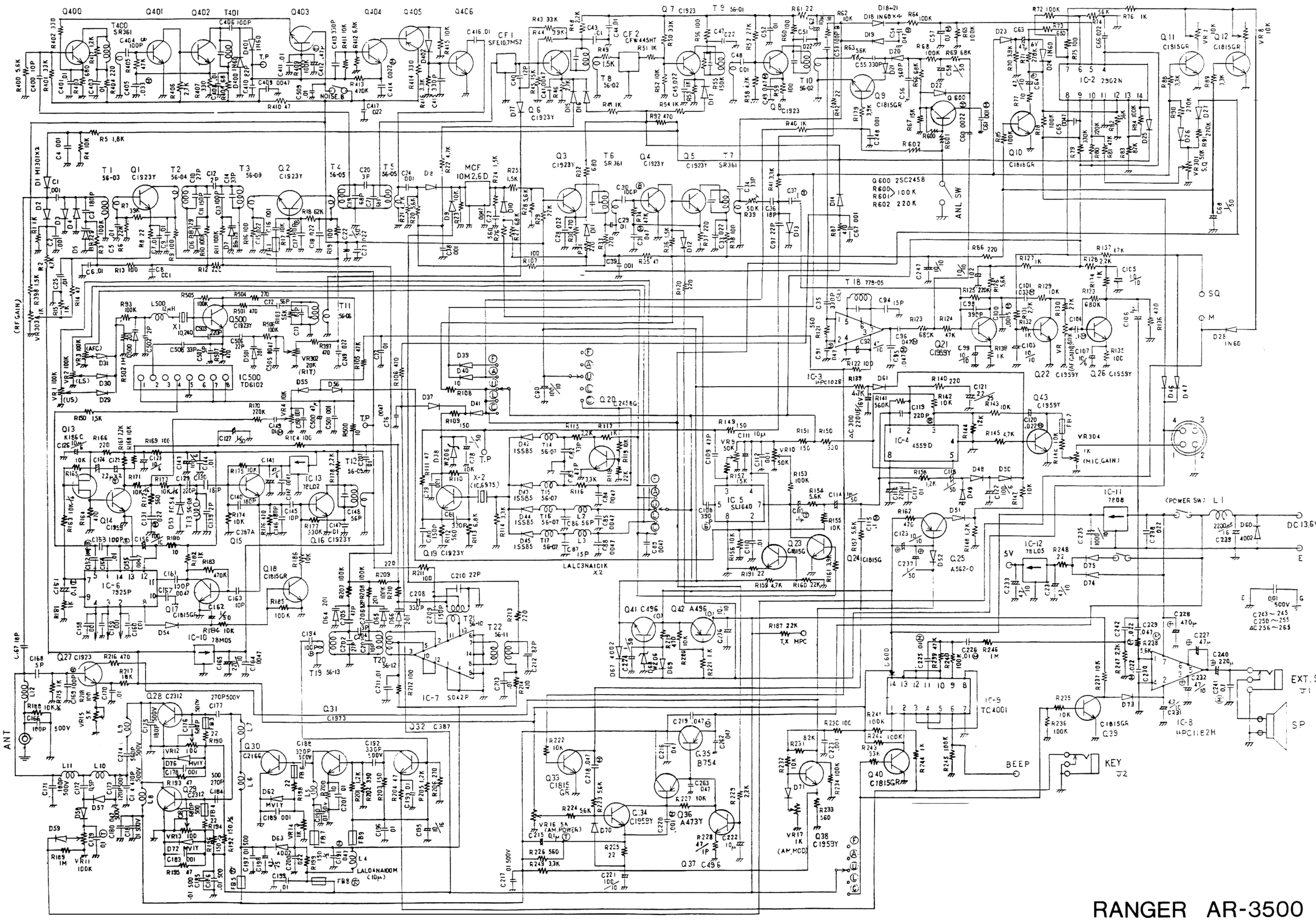
FM MODE

1. - Set radio to 28.0000 Mhz. FM mode, Mic gain Max.
2. - Apply 1,000 Hz. tone to microphone and Adjust VR-4 (FM DEV) for a maximum deviation of 5 Khz.

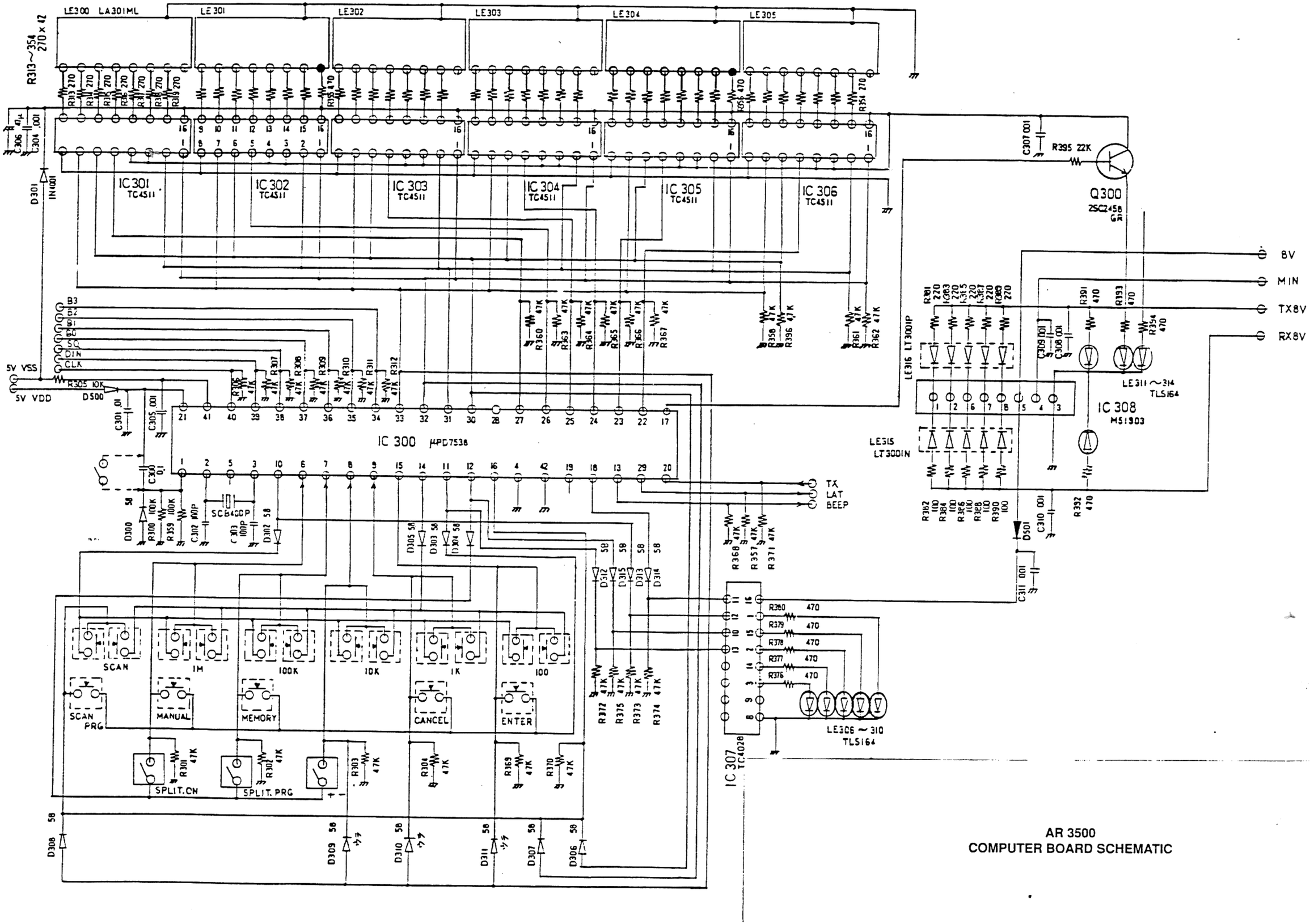
RF OUTPUT METER

1. - Set radio to 28.0000 Mhz. FM mode.
2. - Adjust **VR-11** so that two LED bars are lit with 7 Watt output power.

SCHEMATIC DIAGRAM

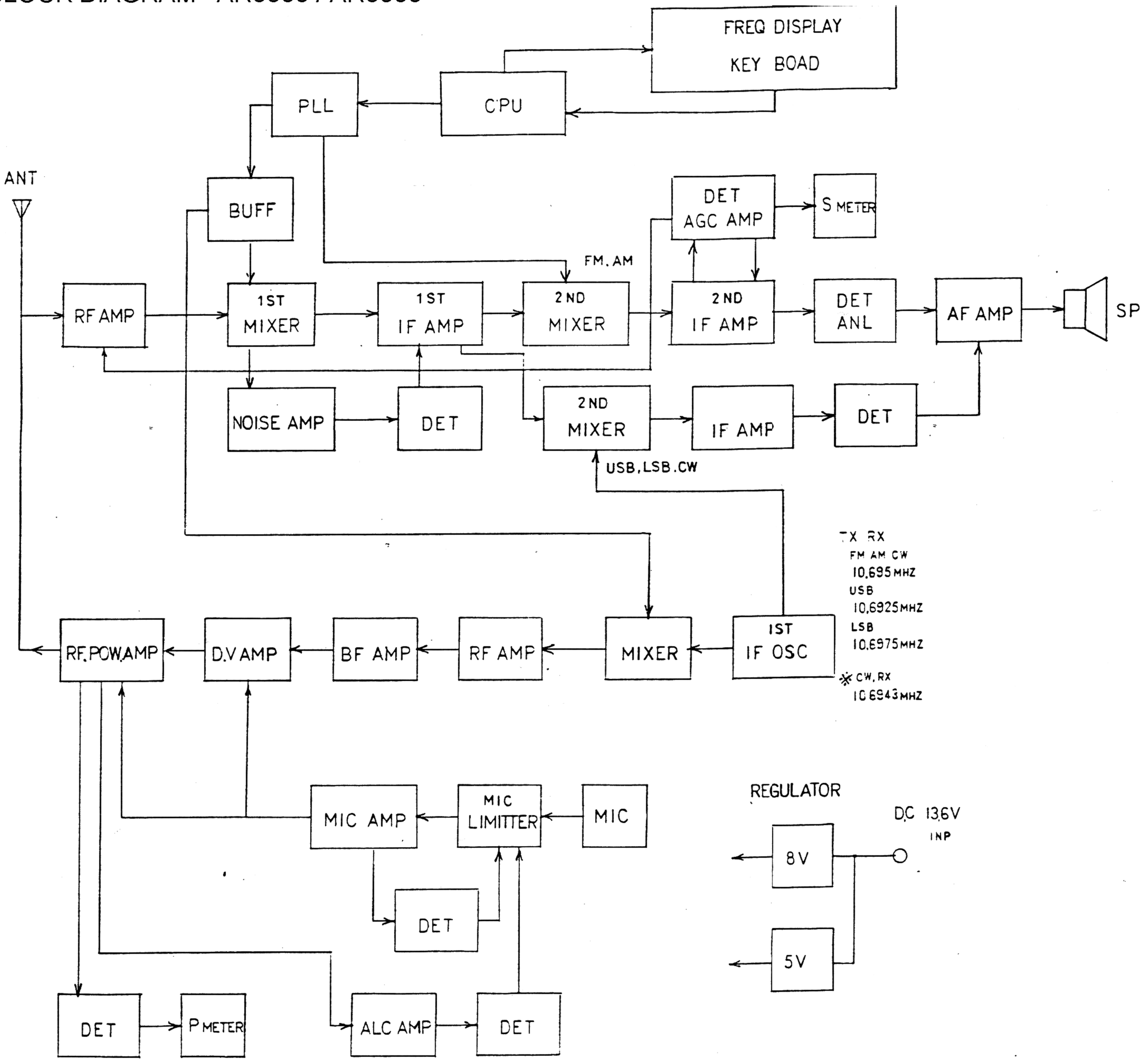


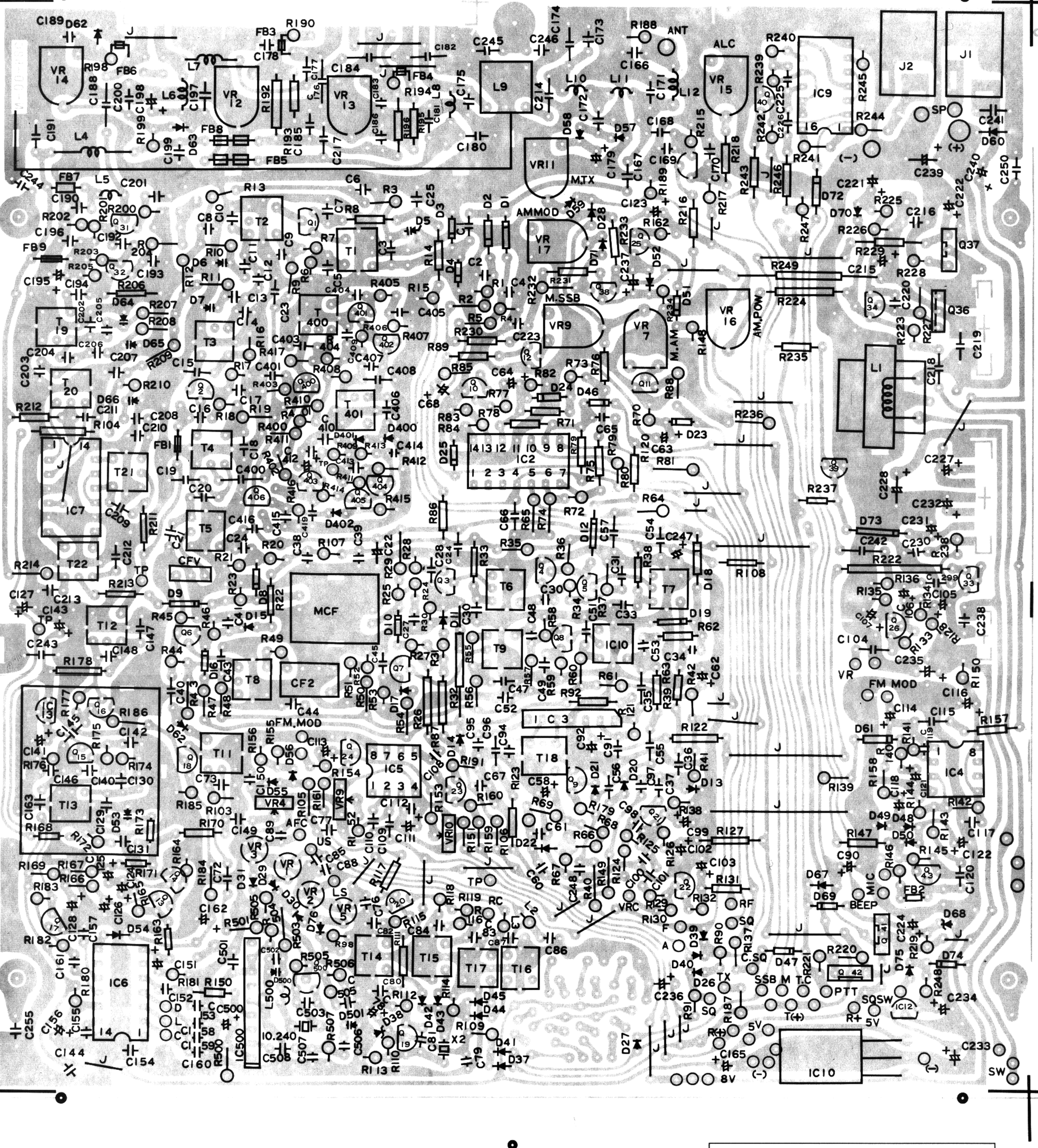
RANGER AR-3500



AR 3500
COMPUTER BOARD SCHEMATIC

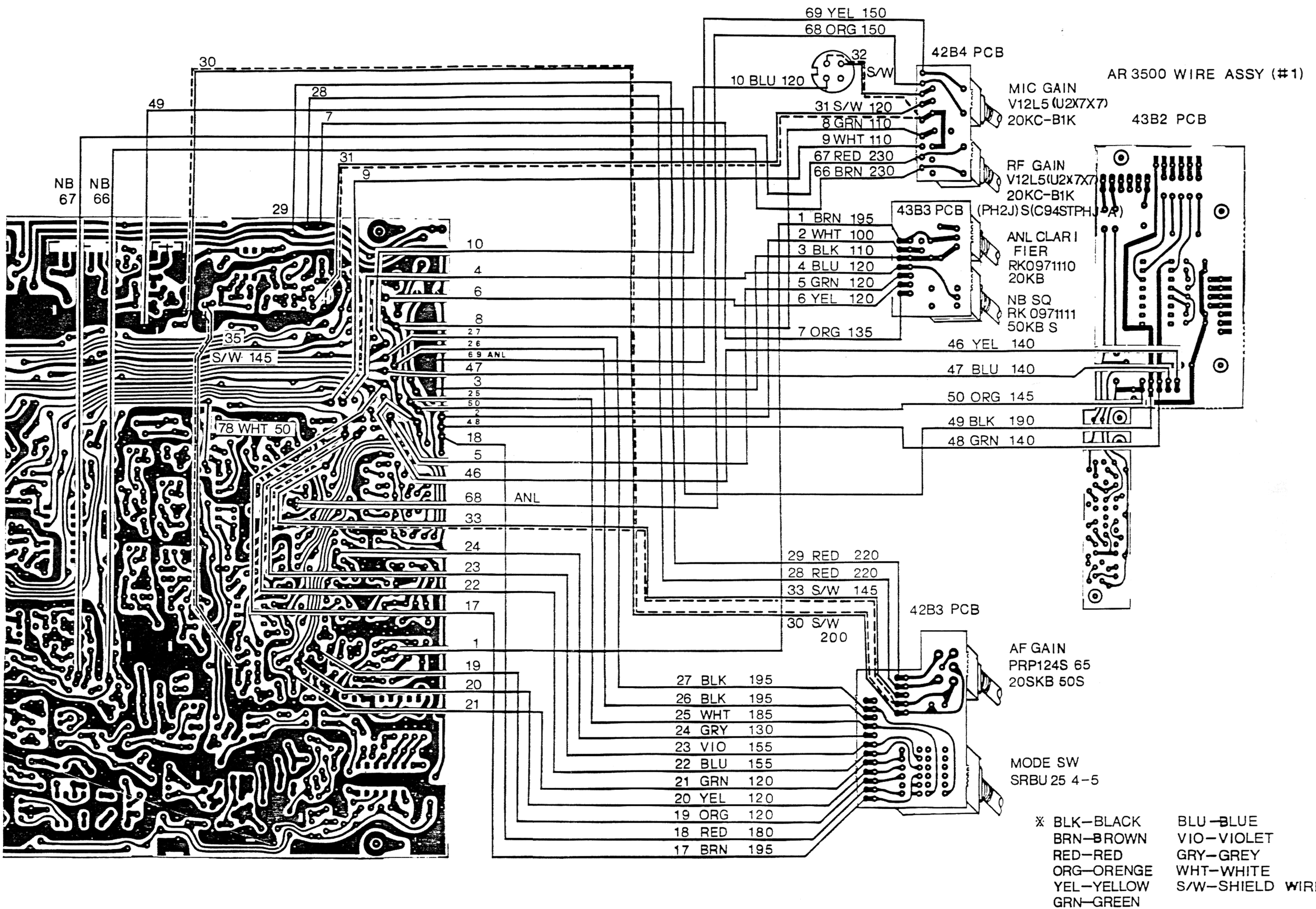
BLOCK DIAGRAM AR3300 / AR3500





PLO-1 AR 3500
MAIN BOARD SCHEMATIC

AR 3500 WIRE ASSY (#1)



※ BLK—BLACK
BRN—BROWN
RED—RED
ORG—ORENGE
YEL—YELLOW
GRN—GREEN
BLU—BLUE
VIO—VIOLET
GRY—GREY
WHT—WHITE
S/W—SHIELD WIRE

AR 3500 WIRE ASSY (#2)