

# AMSTRAD STV 2104

## General Information

Satellite Ready  
21” Television with Fast Text

## Recommended Safety Parts

Item	Part No.	Description
IC902	253327	IC TLP621
Q402	175665	TR2SD1555E
L401	242040	Coil 54uH HCL-91278-04
T402	241691	Tx Flyback CFO34I
T901	241929	Tx Switching EI-49
S901	241608	Switch Power 01-48
	241692	C.R.T. 21" A51JSW90X10
	242086	AC Line Cord W/Plug Black
F901	194246	Fuse T4A 250V
R406	242024	2.2 ohm
R409	241520	470 ohm
R423	242025	180 ohm
R468	241513	0.68 ohm 1/2W
R422	241805	0.68 ohm 1W
C423,426,918-922	174811	220pF
C430	176462	680pF
C504-506	176488	1200pF 500V
C420	242036	1200pF
C916 400V	253610	0.0022uF
C413,414 500V	176754	0.0022uF
C903,930,944 500V	242098	0.0047uF
C507 2KV	242098	0.0056uF
C431,509 250V	241711	10uF
C946 160V		100uF
C428,925 200V		150uF
C907 400V	272870	220uF
C417,419 1.6KV	271245	0.0015uF
C901-905 250VAC	253611	0.047uF

## Service Adjustments

### Safety Tests

Note: When any work is carried out on a set, the following safety tests must be carried out to ensure continued electrical safety.

#### 1) Flash Test

Test at 3.5k V between the live and neutral of the mains lead joined together and ALL accessible metal points on the exterior of the set.

#### 2) Insulation Resistance Test

Test between the live and neutral of the mains lead joined together and ALL accessible electrical points on the exterior of the set to show a resistance of at least 4M W.

### Alignment Instructions

#### Test Equipment

- 1: VIF sweep generator.
- 2: SIF sweep generator.
- 3: Colour bar/Dot/Crosshatch generator.
- 4: DC power supply (14V).
- 5: Oscilloscope.
- 6: Vacuum tube voltmeter.
- 7: Volt ohmmeter.
- 8: High voltage meter.
- 9: Ampere meter (0.5 class, DC 3mA max.).
- 10: Demagnetising coil.
- 11: Philips pattern generator.
- 12: Frequency counter.
- 13: Continuous waveform generator.

### Tank Coil Adjustment

#### Signal In:

VIF signal generator. Tuner test point TP and tuner case (earth).

#### Signal Out:

Oscilloscope TP601 and earth.

#### Method:

- 1: Adjust AGC bias voltage for maximum amplitude of waveform.
- 2: Adjust the output level of VIF sweep generator to achieve 2Vp-p output on oscilloscope.
- 3: Adjust T103 to obtain maximum amplitude of response at PC (38.9 MHz).

#### Remarks:

- 1: Refer to fig. 1 and fig. 2.
- 2: Supply DC 12.5V to “+” lead of TP402 (steps 1 - 4 only).
- 3: Supply RF AGC bias 5.5V voltage to TP101, refer to fig. 1a (step 1- 3 only).
- 4: Check if AGC voltage is  $5.5V \pm 0.25V$ .

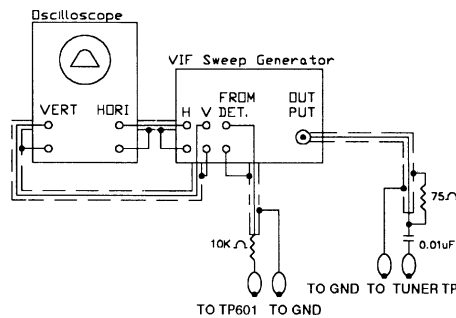


Fig. 1

Fig. 1a

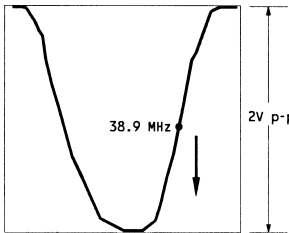
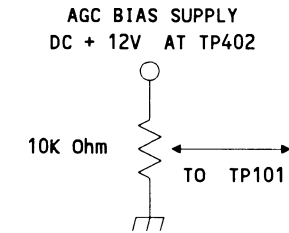


Fig. 2

### VIF Adjustment

#### Signal In:

VIF signal generator. Tuner test point TP and tuner case (earth).

#### Signal Out:

Oscilloscope TP601 and earth.

#### Method:

- 1: Connect 100 W resistor between TP102 and TP 103.
- 2: Adjust the level of sweep generator for maximum amplitude of waveform.
- 3: Increase the output level of sweep generator to achieve 2Vp-p output.
- 4: Increase the output level of sweep generator in 20dB.
- 5: Adjust AGC bias voltage to achieve 2Vp-p output.
- 6: Adjust tuner converter for coil to obtain the waveform shown.

#### Remarks:

- 1: Refer to fig. 3.
- 2: Disconnect 100 W resistor after satisfactory results.

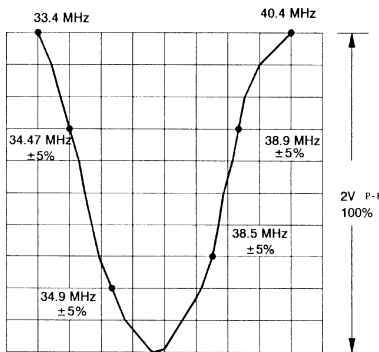


Fig. 3

### AFC Alignment

#### Signal In:

VIF signal generator. Tuner test point TP and tuner case (earth).

#### Signal Out:

Oscilloscope TP106 and earth.

#### Method:

- 1: Adjust the output level of VIF signal generator for maximum amplitude waveform without saturation.
- 2: Adjust T102 to obtain frequency response as shown in the fig. at 38.9 MHz.

### Remarks:

- 1: Refer to fig. 4.

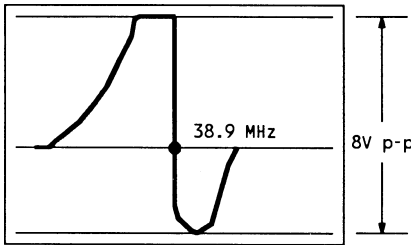


Fig. 4

### SIF Alignment

#### Signal In:

SIF signal generator TP105 and earth.

#### Signal Out:

Oscilloscope TP604 and earth.

#### Method:

- 1: Connect TP101 (AGC) to earth.
- 2: Set the frequency of FM signal generator 5.5 MHz with 400 Hz 25 kHz deviation and signal output level to 100dB.
- 3: Adjust T104 to obtain the maximum output.

### Remarks:

- 1: Disconnect the TP101 (AGC) to earth after satisfactory results.

### B+ Adjustment

#### Signal In:

Power on.

#### Signal Out:

AVO meter.

#### Method:

- 1: Connect voltmeter to TP405 and earth.
- 2: Adjust VR901 to read DC  $106.5V \pm 0.5V$ .

### Horizontal Circuit Adjustment

#### Signal In:

Signal generator.

#### Signal Out:

Frequency counter IC302 pin 41 and earth.

#### Method:

- 1: Set the TV to AV mode.
- 2: Connect the frequency counter between IC302 pin 41 and earth.
- 3: Adjust VR303 (H. Freq.) to the reading of  $15330 \pm 30$  Hz and back to TV mode.
- 4: Receive monoscope pattern.
- 5: Adjust VR301 (H. CEN.) control to obtain normal picture.

### Vertical Circuit Adjustment

#### Signal In:

Signal generator.

#### Signal Out:

Frequency counter V-Deflection Yoke and earth.

#### Method:

- 1: Set the TV to AV mode.
- 2: Connect the frequency counter between V-Deflection Yolk and earth.
- 3: Adjust VR304 (V-Hold) to the reading 44 Hz +2 -0 Hz and back to the TV mode.
- 4: Receive monoscope pattern.
- 5: Adjust VR401 (V-High) control to obtain normal picture.

### White Balance Adjustment

#### Signal In:

Receive a black and white picture signal.

#### Signal Out:

Screen.

#### Method:

- 1: Set screen control to minimum.
- 2: Turn R. G. B. VR501, VR502, VR503 and drv. VR504, VR505 to mid position.
- 3: Set contrast and brightness controls to mid position.
- 4: Connect jumper wire between TP401 and TP402.
- 5: Turn screen control clockwise until dim line appears.
- 6: Adjust VR501 to get a red H. line, VR502 to get a yellow line and VR503 to get a white line.
- 7: Disconnect the jumper wire after White Balance Adjustment.
- 8: Adjust VR504 and VR505 to obtain a white uniform picture.

### Focus

#### Signal In:

Signal generator.

#### Signal Out:

Screen.

#### Method:

- 1: Set contrast control to maximum.
- 2: Set the brightness control to mid position.
- 3: Adjust focus control to get the sharpest picture.

### RF AGC

#### Signal In:

Signal generator CH 9 (203.25 MHz).

#### Signal Out:

Voltmeter Tuner AGC.

#### Method:

- 1: Set input signal level to 60dB  $\pm 1$  dB.
- 2: Connect voltmeter to tuner AGC and earth.
- 3: Adjust VR101 to read DC  $5V +0.5 -0.2V$ .

### Colour DE Mod Adjustment

#### Signal In:

Signal generator.

#### Signal Out:

Screen.

#### Method:

- 1: Set colour control to maximum.
- 2: Set contrast control to minimum.
- 3: Connect oscilloscope to TP406.
- 4: Adjust CT301, VR302 and T301 to obtain as Fig.

### Remarks:

Refer to fig 5.

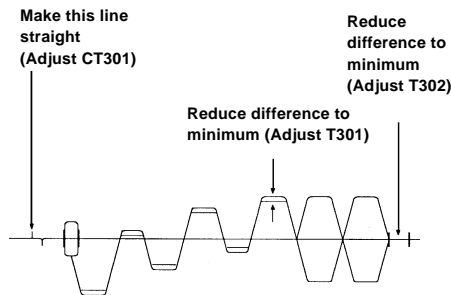


Fig. 5

### Sub Brightness Adjustment

#### Signal In:

Signal generator.

#### Signal Out:

Screen.

#### Method:

- 1: Select grey scale.
- 2: Set brightness, contrast and colour to mid position.
- 3: Adjust VR305 control until 10th step of grey scale just appears on the screen.

### On Screen Adjustment

#### Signal In:

Signal Generator.

#### Signal Out:

Screen.

#### Method:

- 1: Press the volume Up/Down key.
- 2: Adjust T601(OSD CEN.) for adjust the lettering to centre of CRT.

### Teletext Picture Adjustment

#### Signal In:

Receive a pattern with a Teletext signal.

#### Signal Out:

Frequency counter TP801 and earth.

#### Method:

- 1: Select a Teletext page.
- 2: Short pin 22 of IC801 to ground.
- 3: Adjust CT801 until the frequency counter reading  $6.0 \text{ MHz} \pm 0.2 \text{ kHz}$ .

### Colour Purity Adjustment

See fig. 6.

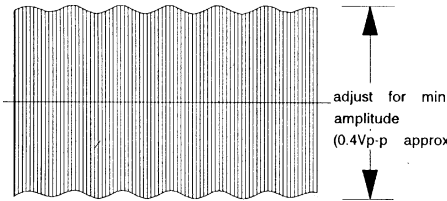


Fig. 6

**Note:** Before adjustments described below are attempted, V-Hold, V-High, B+ Voltage and Focusing adjustments should be completed.

#### Method:

- 1: Place the TV receiver facing North or South.
- 2: Plug in the TV and switch it on.
- 3: Operate the receiver for over 30 mins.
- 4: Fully degauss the receiver by using an external degaussing coil.
- 5: Receive a crosshatch pattern and roughly adjust the static convergence control.
- 6: Loosen the clamp screw of the deflection yoke and pull the deflection yoke towards you.
- 7: Fully turn the red and blue drive (VR504 and VR505) controls counter-clockwise.
- 8: Adjust the purity magnets so that green field is obtained at the centre of the screen.
- 9: Slowly push the deflection yoke towards bell of CRT and set it where a uniform green field is obtained.
- 10: Tighten the clamp screw of the deflection yoke.

Adjustments Cont'd

Convergence Adjustment (see fig. 7)

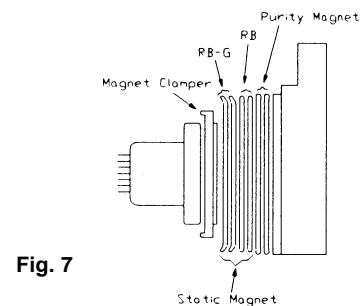


Fig. 7

Method:

- 1: Receive a dotted pattern.
- 2: Un-fix the convergence magnet clamper and align red with blue dots at the centre of the screen by rotating (R, B) static convergence.
- 3: Align red/blue with green dots at the centre of the screen by rotating (RB-G) static convergence magnet.
- 4: Fix the convergence magnets by fixing the clamper.
- 5: Remove the DY wedges and slightly tilt the deflection yoke horizontally and vertically to obtain good overall convergence.
- 6: Fix the deflection yoke by wedges.
- 7: If purity error is found, follow Purity

Adjustment instructions

SAT Section

AFC Alignment

Signal In:

Power on.

Signal Out:

Voltmeter at TP2.

Method:

- 1: Adjust VR102 to read 2.9 -3V.

Remarks:

Tuner without signal I/P and loading.

Signal In:

LNB supply alignment

Signal Out:

Voltmeter at tuner LNB input.

Method:

- 1: Connect 43 W resistor to LNB input.
- 2: Connect TP1 to GND and power on.
- 3: Press SEQ. key twice and press select +/- key to select V-polarisation.
- 4: Press pre-set key twice until the turning bar appears.
- 5: Press select +/- key to adjust LNB voltage to 13.1V  $\pm$  0.1V.
- 6: Press SEQ. key and select +/- key to select H-polarisation.
- 7: Press pre-set key twice until the turning bar appears.
- 8: Press select +/- key to adjust LNB voltage to 17.5V  $\pm$  0.1V.

SIF Alignment

Signal In:

RF signal generator.

Signal Out:

VTVM and distortion meter at pin 1 and 3 of SAT SCART.

Method:

- 1: Receive the correct RF program and audio channel.
- 2: Adjust T101 to maximum level output and minimum distortion output of pin 3 of SAT SCART.
- 3: Adjust T102 to maximum level output and minimum distortion output of pin 1 of SAT SCART.

Remarks:

- 1: Pre-set audio mode to stereo and audio frequency L to 7.02 MHz and audio frequency R to 7.20 MHz of RF signal generator.
- 2: Pre-set audio deviation to 100 kHz p-p.

Video DEV. Alignment

Signal In:

RF signal generator.

Signal Out:

Oscilloscope at pin 19 of SAT SCART.

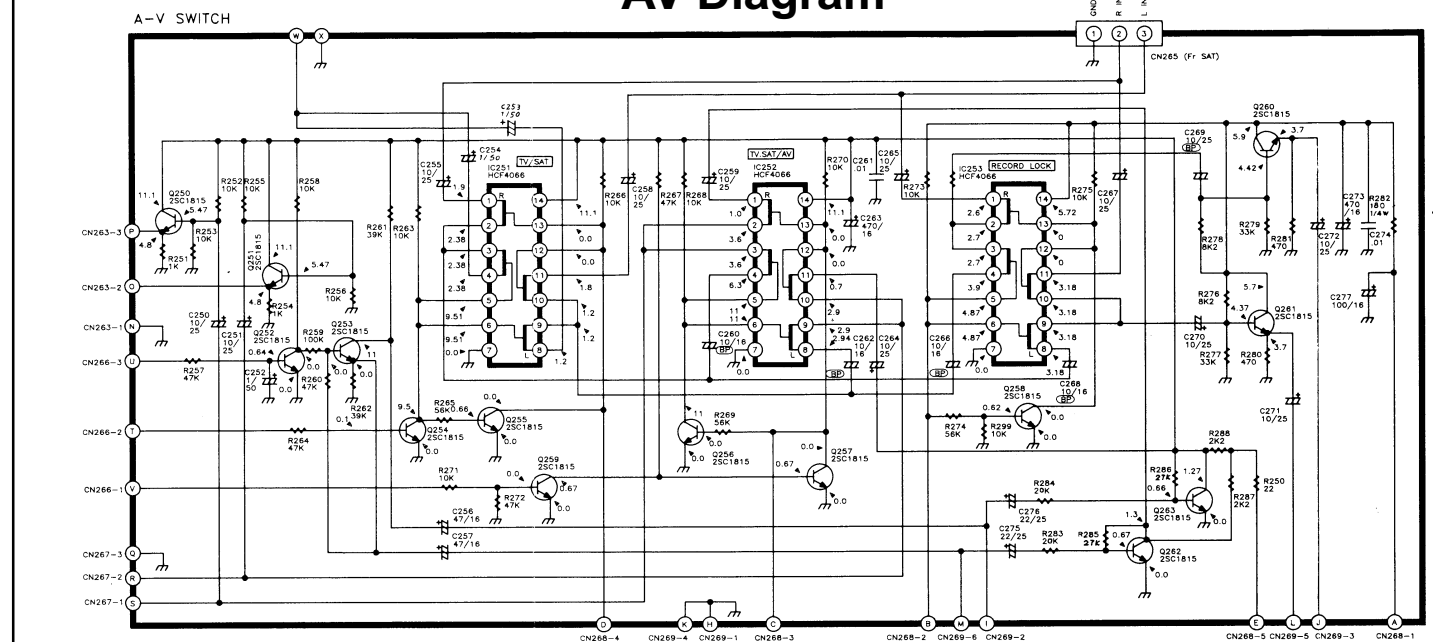
Method:

- 1: Receive the monoscope pattern.
- 2: Press SEQ. key and select +/- key to select 16 MHz video deviation.
- 3: Adjust VR101 to output 1Vp-p.

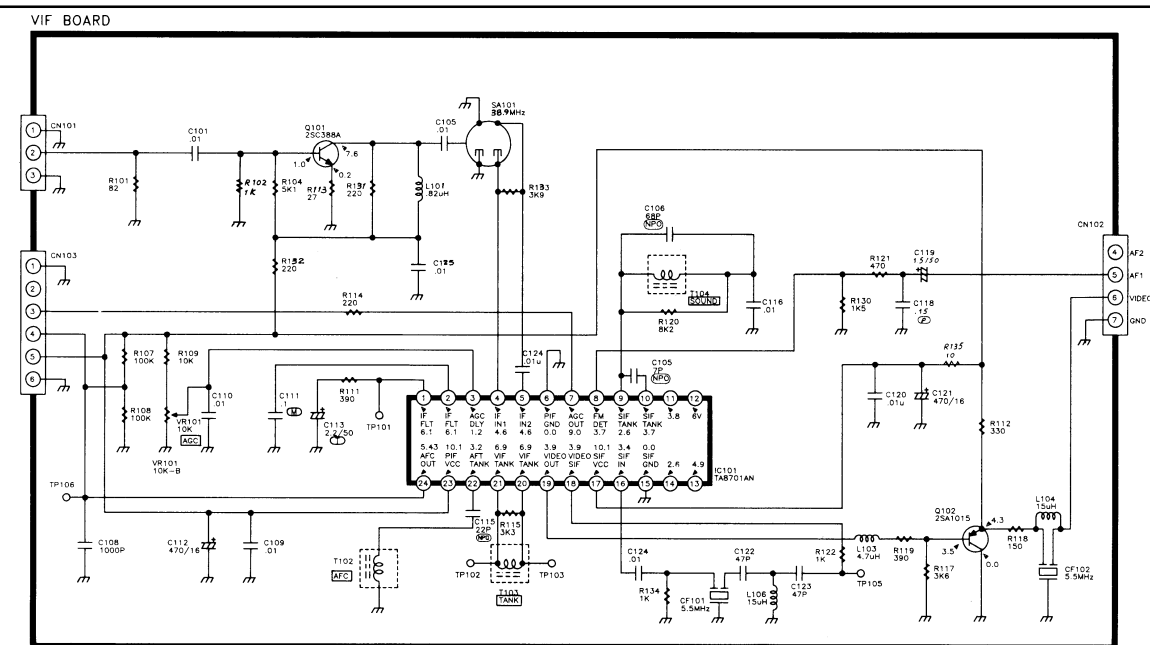
Remarks:

- 1: Connect 75 W resistor between ground to pin 10, pin 12 and pin 19 of SAT SCART.

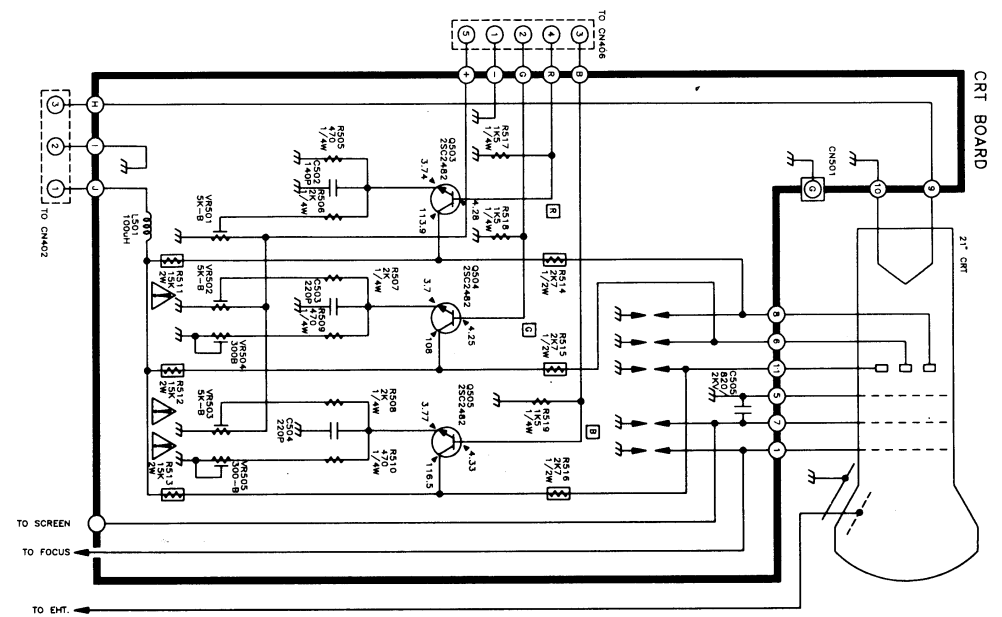
AV Diagram



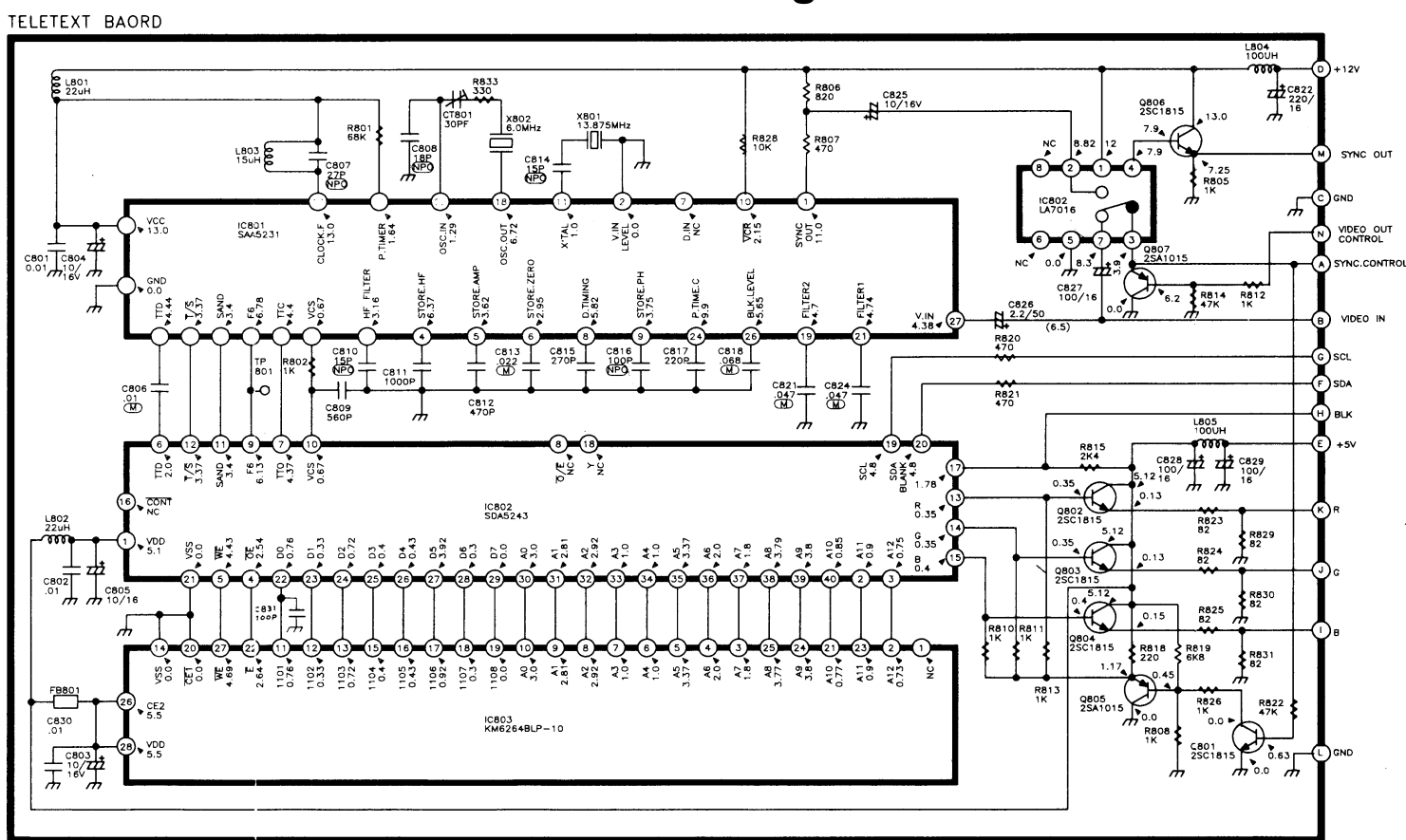
IF Diagram



CRT Diagram

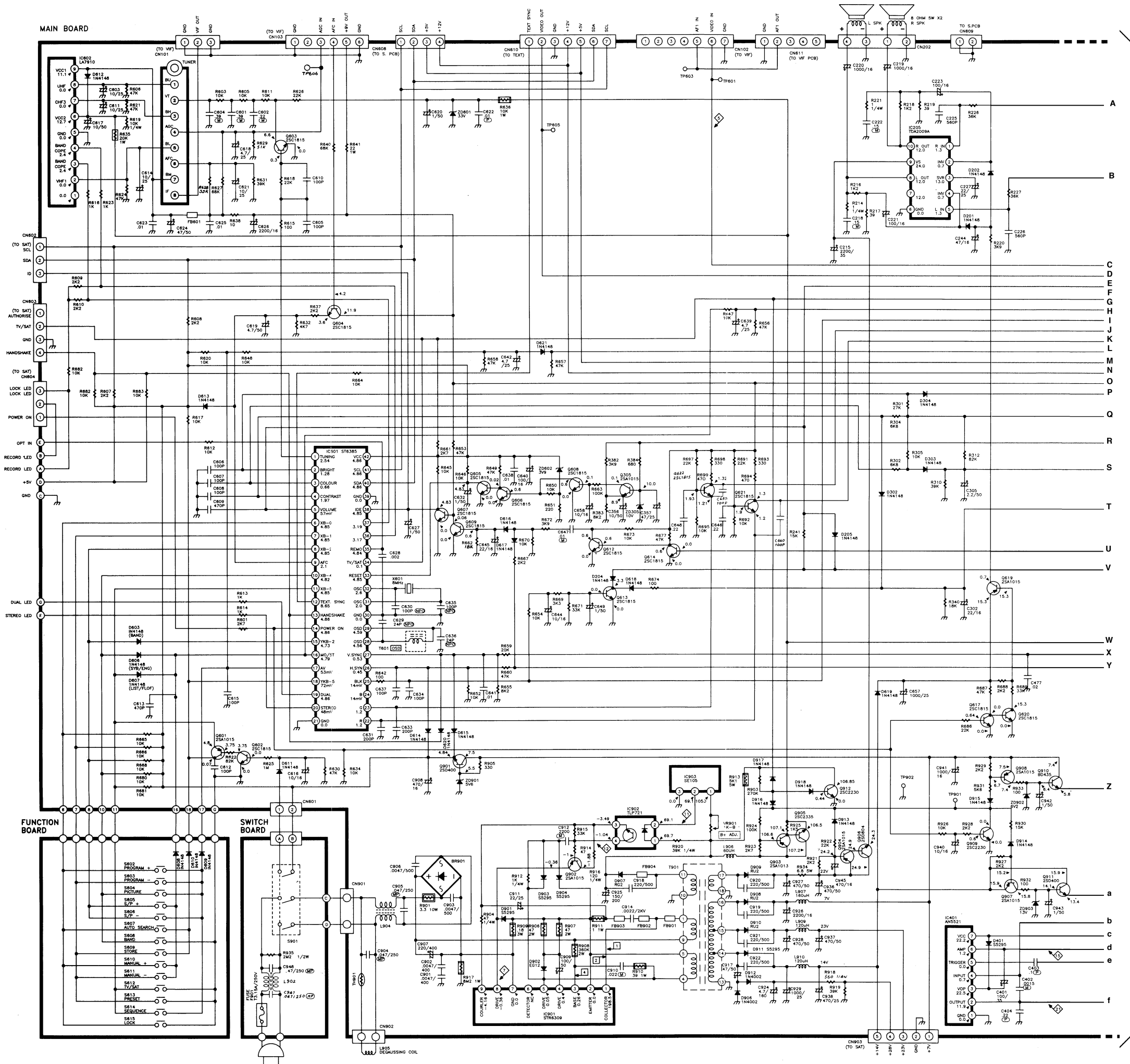
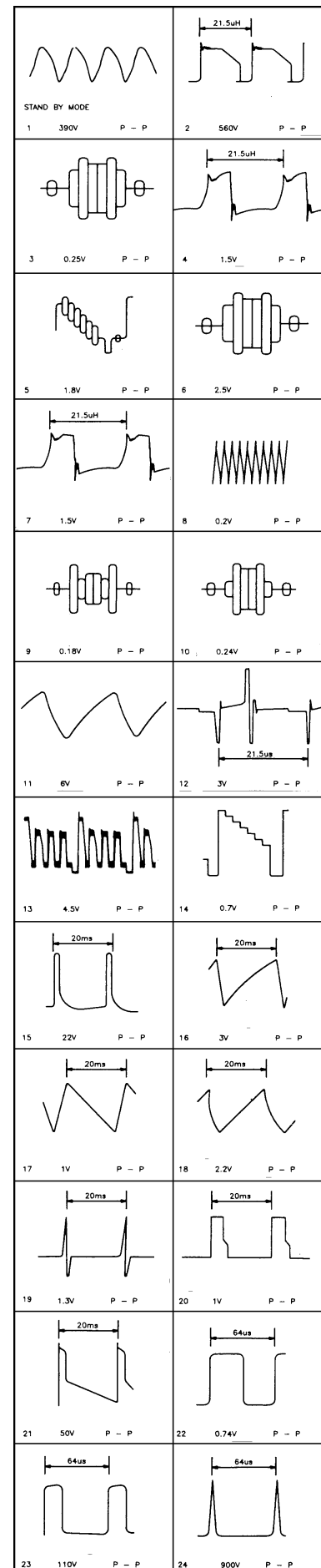


Teletext Diagram



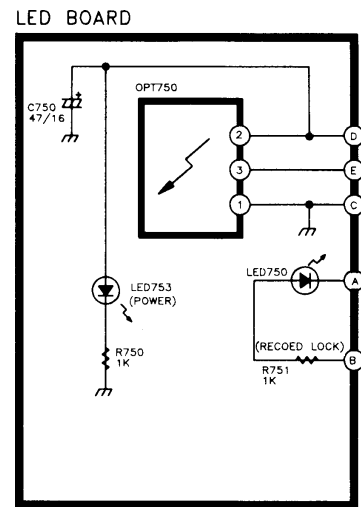


## Main Diagram



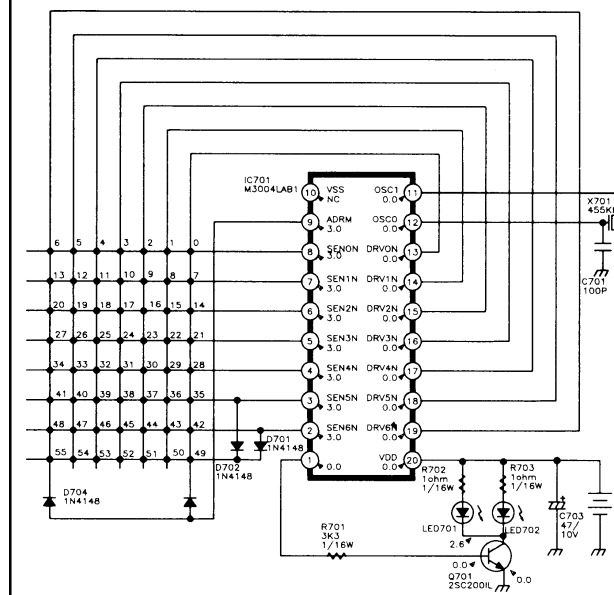
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LED Diagram



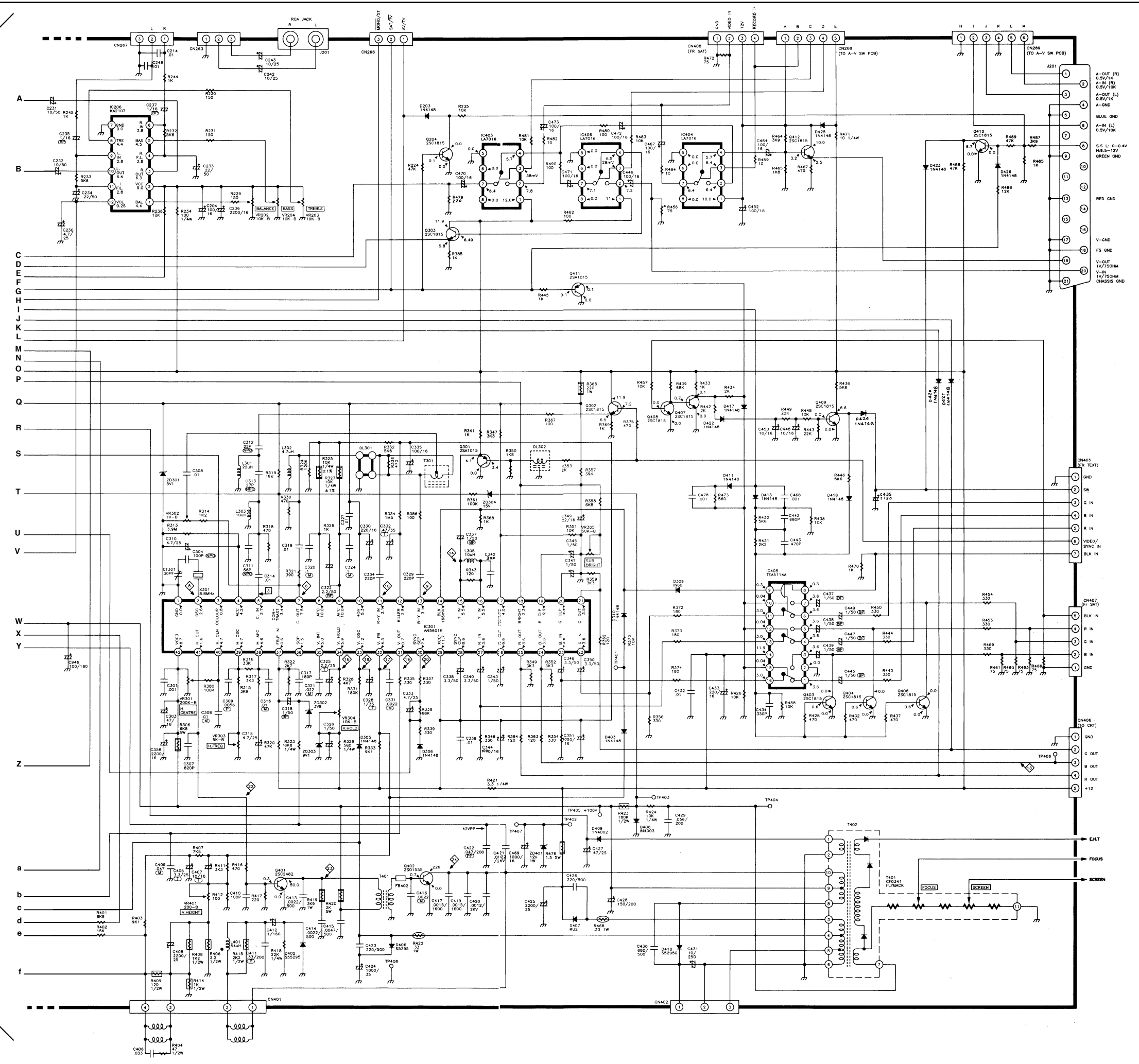
Main Diagram  
Cont'd.

Remote Control Diagram



LOCAL COMMANDS FOR IC701

0. 0	10.	20. NORMAL	30. CYAN	40. SOUND PICTURE -	50.
1. 1	11.	21. RECORD	31. YELLOW	41. -	51. EXPAND
2. 2	12.	22. PRESET	32. INDEX	42. -	52. REVEAL
3. 3	13.	23. BROWSE	33. HOLD	43. -	53. SUBPAGE
4. 4	14.	24. TV/SAT	34. CANCEL	44. SELECT +	54. SLEEP
5. 5	15.	25. STAND BY	35. PROGRAM +	45. SELECT -	55. MUTE
6. 6	16.	26. SEQUENCE	36. PROGRAM -	46. MIX	
7. 7	17.	27. MODE	37. PAGE +	47. TEXT	
8. 8	18.	28. CALL	38. PAGE -	48. PICTURE	
9. 9	19.	29. ST/MOZ/XT	39. SOUND PICTURE +	49.	





## Main Diagram (Satellite Receiver & Clamping)

