

General Information

Also Covers:
Panasonic TC-21S1R
Chassis: Z5
CRT: A51KSV43X13 (B)
A51EAL55X13 (BN)
A51EFS43X191 (BH)
Remote Control:
TNQ8E0461
Main Power Button:
TBX8E018

Matrix

Item	See Model
Safety Notes	Panasonic TX-14S1T
Text Diagram	Panasonic TX-14S1T

Specifications

Power Source: 220V - 240V AC 50 Hz
Power Consumption: 58W
Aerial Impedance: 75 W unbalanced, coaxial type
Receiving System: PAL - 1 (UHF) PAL - 60
Receiving Channels: UHF E21 - E69
Intermediate Frequency: Video: 39.5 MHz
 Sound: 33.5 MHz
 Colour: 35.07 MHz (PAL)
Video/Audio Terminals:
 AV1 In: Video: (21 pin) 1Vp-p 75 W
 Audio: (21 pin) 500mVrms 10k W
 RGB: (21 pin)
 AV1 Out: Video: (21 pin) 1Vp-p 75 W
 Audio: (21 pin) 500mVrms 1k W
 RCA In: Video: 1Vp-p 75 W
 Audio: 500mVrms 1k W
High Voltage: 27.5KV±0.7/-1.0KV
 (zero beam current)
Picture Tube: A51KSV43X13 - (B Models)
 A51EAL55X13 - (BN Models)
 A51EFS43X191 - (BH Models)
 51cm V 90° measured diagonally
Audio Output: Internal Speaker: 5W
 Speaker: 8 W Impedance

Recommended Safety Parts

Item	Part No.	Description
	ENV87877G3	Tuner
	TQB8E0839	Instruction Book
	TQB8E0882	Set-up Guide
1	A51KSV43X13	CRT
10	TNP8EY008AA	Y P. C. B.
11	TNP8EE004AB	E P. C. B.
12	TNP8ET001AA	T P. C. B.
13	TSX8E0012	Mains Lead
7	TKU8E00145	Rear Cover
8	TKY8E029	Cabinet
C355	ECKC3D152J	Ceramic 2KV 1.5nF
C357	ECKC2H152J	Ceramic 500V 1.5nF
C452, C561, C563, C566, C808, C851, C855	ECKC2H471J	Ceramic 500V 470pF

Service Adjustments

Safety Precautions

X-Radiation Warning

- 1: The potential sources of X-Radiation in TV sets are the high voltage section and the picture tube.
- 2: When using a picture tube test jig for service, ensure that the jig is capable of handling 29.0kV and without causing X-Radiation.

Note: It is important to use an accurate periodically calibrated high voltage meter.

- 1: Set the brightness to minimum.
- 2: Measure the high voltage. The meter should indicate: 27.5kV +0.7kV/-1.0kV. If the meter indication is out of tolerance immediate service and correction is required to prevent the possibility of premature component failure.
- 3: To prevent X-Radiation possibility, it is essential to use the specified tube.

High Voltage

Preparation

- 1: Receive a crosshatch pattern.
- 2: Set Contrast, Bright and Sub-Bright controls to their minimum positions (zero beam current).

Adjustment Procedure

- 1: Connect a high voltage meter (Electrostatic type) to an anode of the picture tube.
- 2: Confirm that the high voltage is within a range of 27.5kV +0.7kV/-1.0kV.

Shut Down Circuit Test

Note: This test must be made as a final check before the set is returned to the customer.

- 1: Receive the Phillips pattern.
- 2: Check that the shut down circuit functions when -60V is applied to TPE7, but does not function when -40V is applied.

Adjustments

B Voltage

Preparation

- 1: Operate the TV set.

- 2: Set controls:
 Bright (R318): minimum
 Sub Bright (R306): minimum
 Contrast: minimum
 Beam Current: zero

Adjustment Procedure

- 1: Confirm the indicated test points for the specified voltage.
 TPE 10: 185V ± 10V
 TPE 11: 31V ± 2V
 TPE 6: 28.0V ± 1.5V
 TPE 4: 15.5V ± 1.0V
 TPE 3: 8.0V ± 1.0V
 TPE 14: 30V ± 2.5V
 TPE 13: 124.5V ± 1.5V
 TPE 1: 11V ± 1V
 TPE 9: 23.0V ± 1.0V
 TPE 5: 12.0V ± 1.0V
 TPE 2: 5.0V ± 0.3V

AFC

Preparation:

- 1: Operate the TV set.
- 2: Connect a DVM to TPE58.

Adjustment Procedure:

- 1: Apply 39.5 MHz continuous wave to

- 2: Adjust L104 so that voltage at TPE58 becomes 2.5±0.1V.
- 3: Change the frequency and confirm the voltage as shown below:
 + 100kHz: less than 1.0V
 -100kHz: more than 4.0V.

RF AGC

Preparation:

- 1: Receive the Philips pattern.
- 2: Set the input level to 65±2dB (75W open).
- 3: Connect an oscilloscope to TPE59 (RF AGC terminal).

Adjustment Procedure:

- 1: Turn RF AGC control R109 fully counter-clockwise.
- 2: Slowly turn RF AGC control clockwise to set it at the point just before voltage at TPE59 starts to fall.

Sub Contrast

Preparation:

- 1: Receive a Philips pattern. (Input level 75dB).

- 2: Connect an oscilloscope to TPE59.
- 3: Set controls to:
 Brightness: minimum
 Contrast: maximum
 Colour: centre
 PIX: minimum
 PIX: minimum
 CATS eye: off

Adjustment Procedure:

- 1: Adjust Sub brightness (R305) to set the black level to 0.2V
- 2: Adjust the Sub contrast (R305) to set the drive voltage to 2.3V ± 0.1V. See Fig 1.

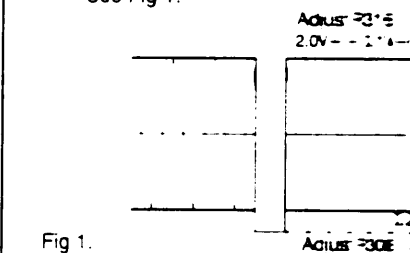


Fig 1.

Sub Colour

Preparation:

- 1: Receive a PAL colour bar pattern.

- 2: Set controls to:
 Brightness: minimum
 Contrast: maximum
 Colour: centre
 PIX: minimum
 PIX: minimum
 CATS eye: off
- 3: Connect an oscilloscope to TPE59.

Adjustment Procedure:

- 1: Adjust the Sub colour (R305) to set the drive voltage to 2.3V ± 0.1V. See Fig 2.

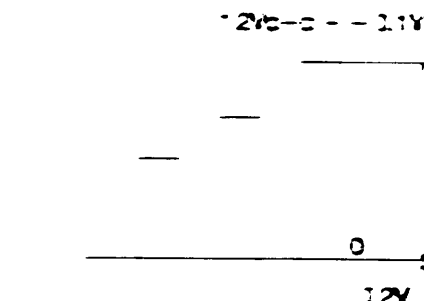


Fig 2.

Recommended Safety Parts

Item	Part No.	Description
C512	ECKC2H222J	Ceramic 500V 2200pF
C551	ECKC3D102J	Ceramic 2KV 1nF
C553	ECWH12H822J	Ceramic 500V 8.2nF
C557	ECKC3D122J	Ceramic 2KV 1200pF
C558	ECWF2H474J	Film 500V 470nF
C567	ECKC2H561J	Ceramic 500V 560pF
C802	ECQU2A473MN	Film 200V 47nF
C803, C804, C805, C806	ECKC2H472J	Ceramic 500V 4.7nF
C807	ECES2GG101	Elect 400V 100µF
C812, C824, C556	ECKC3D152J	Ceramic 2KV 1.5nF
C817	ECKCNS102J	Ceramic 1.2KV 1nF
C823	ECKC2H103J	Ceramic 50V 10nF
F801	2153.15H	Fuse
R254, R3508	ERQ14AJ100	Metal 0.25W 5% 10 Ω
R259	ERQ1CJP120	Metal 1W 5% 12 Ω
R302	ERQ14AJ470	Metal 0.25W 5% 47 Ω
R365	ERDS1FJ152	Carbon 0.5W 5% 1K5 Ω
R520	ERQ12HJ1R0	Metal 0.5W 5% 1R0 Ω
R521	ERQ2CJP8R2	Metal 2W 5% 8R2 Ω
R522	ERQ12HJ1R2	Metal 0.5W 5% 1R20 Ω
R553	ERQ1CJP102	Metal 1W 5% 1K Ω
R564	ERQ12HJ2R2	Fusible 0.5W 5% 2R2 Ω
R568	ERQ12HJ8R2	Metal 0.5W 5% 8R2 Ω
R801	ERF5ZK2R7	Wound 5W 20% 2.7 Ω
R809	TSF19401	FS Link
R812	ERQ12HJ330	Metal 0.5W 5% 33 Ω
R815	ERD75TAJ825	Carbon 0.75W 5% 8M2 Ω
R828	ERW12PKR33	Wound 0.5W 10% 0R33 Ω
S801	ESB91232A	Switch
T552	TLF15639F	Flyback Transformer

TX-21S1T/BN

1	A51EAL55X13	CRT
10	TNP8EY008AE	Y P. C. B.
11	TNP8EE004AT	E P. C. B.
12	TNP8ET001AA	T P. C. B.
C551	ECKC3D102J	Ceramic 2KV 1nF
C556, C557	ECKC3D122J	Ceramic 2KV 1200pF
C558	ECWF2H474J	Film 500V 470nF
R3508	ERQ14AJ100	Metal 0.25W 5% 10 Ω

Recommended Safety Parts

Item	Part No.	Description
TX-21S1T/BN Cont'd.		
R521	ERQ2CJP8F2	Metal 2W 5% 8R2 Ω
R522	ERQ12HJ1F2	Metal 0.5W 5% 1F2 Ω
R564	ERQ12HJ2F2	Fusible 0.5W 5% 2F2 Ω
R568	ERQ12HJ8F2	Metal 0.5W 5% 8F2 Ω
R809	TSF19401	FS Link
R812	ERQ12HJ33C	Metal 0.5W 5% 33 Ω
TX-21S1T/BH		
1	A51EFS43X191	CRT
10	TNP8EY008AE	Y P. C. B.
11	TNP8EE004BH	E P. C. B.
12	TNP8ET001AA	T P. C. B.
C454	ECKC2H102J	Ceramic 500V 10nF
C556	ECKC3D152J	Ceramic 2KV 1.5nF
C557	ECKC3D122J	Ceramic 2KV 1200pF
C558	ECWF2H474J	Film 500V 470nF
D813, D822	TLP621GR-F2	Photo Coupler
R3508	ERQ14AJ100	Metal 0.25W 5% 10 Ω
R521	ERQ2CJP8F2	Metal 2W 5% 8R2 Ω
R522	ERQ12HJ1F2	Metal 0.5W 5% 1F2 Ω
R564	ERQ1CJP1F0	Resistor
R568	ERQ12HJ8F2	Metal 0.5W 5% 8F2 Ω
R809	TSF19401	FS Link
R812	ERQ12HJ33C	Metal 0.5W 5% 33 Ω

TC-21S1R/B

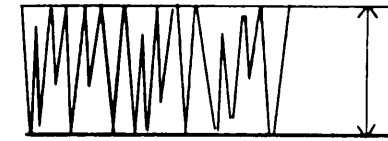
1	A51EFS43X191	CRT
10	TNP8EY008AE	Y P. C. B.
11	TNP8EE004BH	E P. C. B.
12	TNP8ET001AA	T P. C. B.
C454	ECKC2H102J	Ceramic 500V 10nF
C556	ECKC3D152J	Ceramic 2KV 1.5nF
C557	ECKC3D122J	Ceramic 2KV 1200pF
C558	ECWF2H474J	Film 500V 470nF
D813, D822	TLP621GR-F2	Photo Coupler
R3508	ERQ14AJ100	Metal 0.25W 5% 10 Ω
R521	ERQ2CJP8F2	Metal 2W 5% 8R2 Ω
R522	ERQ12HJ1F2	Metal 0.5W 5% 1F2 Ω
R564	ERQ1CJP1F0	Resistor
R568	ERQ12HJ8F2	Metal 0.5W 5% 8F2 Ω
R809	TSF19401	FS Link
R812	ERQ12HJ33C	Metal 0.5W 5% 33 Ω

Service
Adjustments
Cont'd.

Text Contrast (TX -21S1T only)

- Preparation:
- 1: Receive a teletext signal.
 - 2: Connect an oscilloscope T2 pin 5.

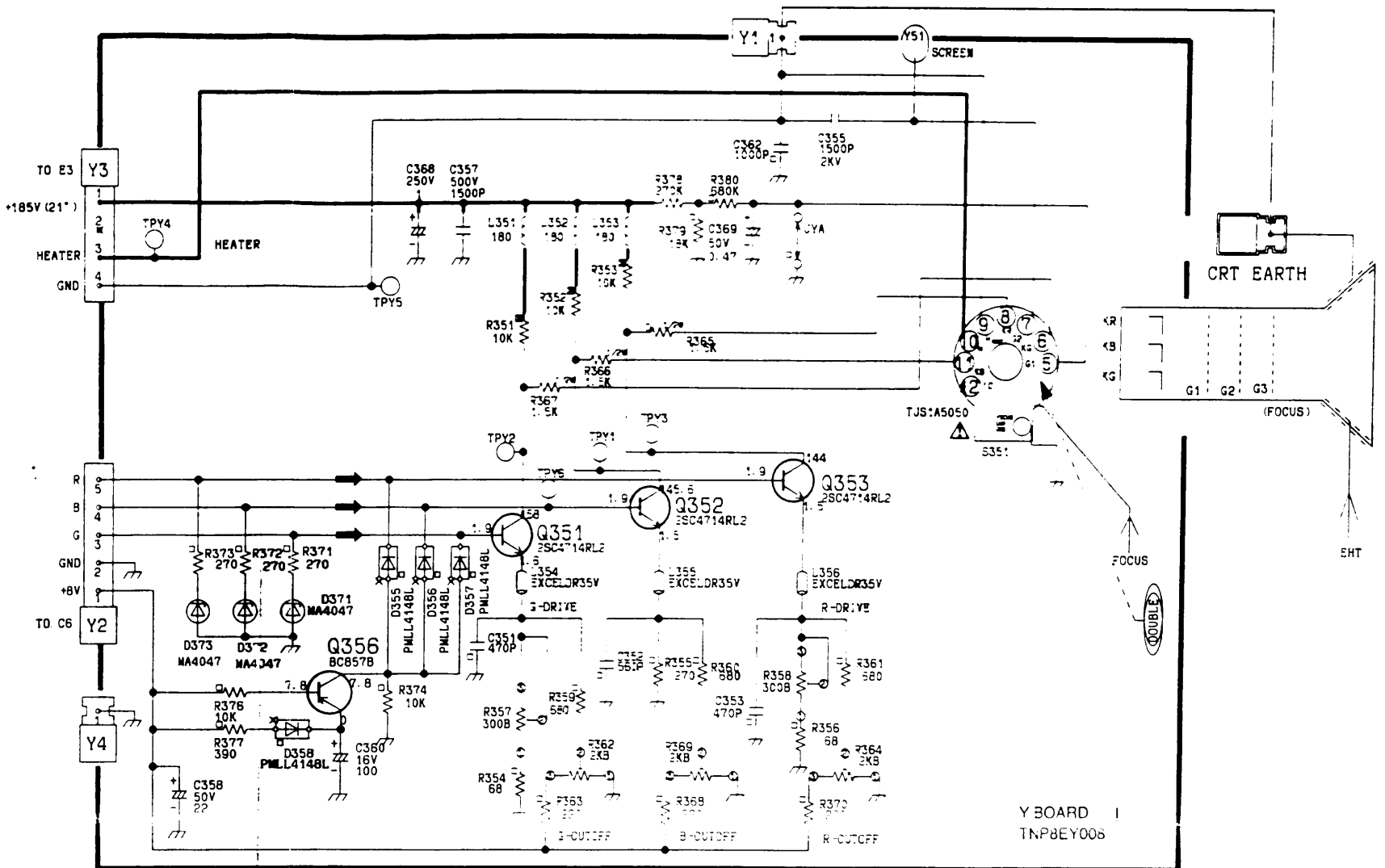
- Adjustment Procedure:
- 1: Adjust R3515 to obtain the waveform as shown in fig. 3.



0.6Vp-p ± 0.02V

Fig 3.

CRT Diagram



Recommended Safety Parts

Item	Part No.	Description
TC-21S1R/BN		
1	A51EAL55X13	CRT
10	TNP8EY008AE	Y P. C. B.
11	TNP8EE004AU	E P. C. B.
C551	ECKC3D102J	Ceramic 2KV 1nF
C556, C557	ECKC3D122J	Ceramic 2KV 1200pF
C558	ECWF2H474J	Film 500V 470nF
R1215	ERO25CKF9531	Metal 0.25W 1% 9K53 Ω
R521	ERQ2CJP8R2	Metal 2W 5% 8R2 Ω
R522	ERQ12HJ1R2	Metal 0.5W 5% 1R2 Ω
R546	ERQ12HJ2R2	Fusible 0.5W 5% 2R2 Ω
R568	ERQ12HJ8R2	Metal 0.5W 5% 8R2 Ω
R809	TSF19401	FS Link
R812	ERQ12HJ330	Metal 0.5W 5% 33 Ω
TC-21S1R/BN		
1	A51EFS43X191	CRT
10	TNP8EY008AE	Y P. C. B.
11	TNP8EE004BA	E P. C. B.
C556	ECKC3D152J	Ceramic 2KV 1.5nF
C557	ECKC3D122J	Ceramic 2KV 1200pF
C558	ECWF2H474J	Film 500V 470nF
R1215	ERO25CKF9531	Metal 0.25W 1% 9K53 Ω
R521	ERQ2CJP8R2	Metal 2W 5% 8R2 Ω
R522	ERQ12HJ1R2	Metal 0.5W 5% 1R2 Ω
R564	ERQ1CJP1R0	Resistor
R568	ERQ12HJ8R2	Metal 0.5W 5% 8R2 Ω
R809	TSF19401	FS Link
R812	ERQ12HJ330	Metal 0.5W 5% 33 Ω
TC-21S1R/BH		
1	A51EFS43X191	CRT
10	TNP8EY008AE	Y P. C. B.
11	TNP8EE004BA	E P. C. B.
C556	ECKC3D152J	Ceramic 2KV 1.5nF
C557	ECKC3D122J	Ceramic 2KV 1200pF
C558	ECWF2H474J	Film 500V 470nF
R1215	ERO25CKF9531	Metal 0.25W 1% 9K53 Ω
R521	ERQ2CJP8R2	Metal 2W 5% 8R2 Ω
R522	ERQ12HJ1R2	Metal 0.5W 5% 1R2 Ω
R564	ERQ1CJP1R0	Resistor
R568	ERQ12HJ8R2	Metal 0.5W 5% 8R2 Ω
R809	TSF19401	FS Link
R812	ERQ12HJ330	Metal 0.5W 5% 33 Ω

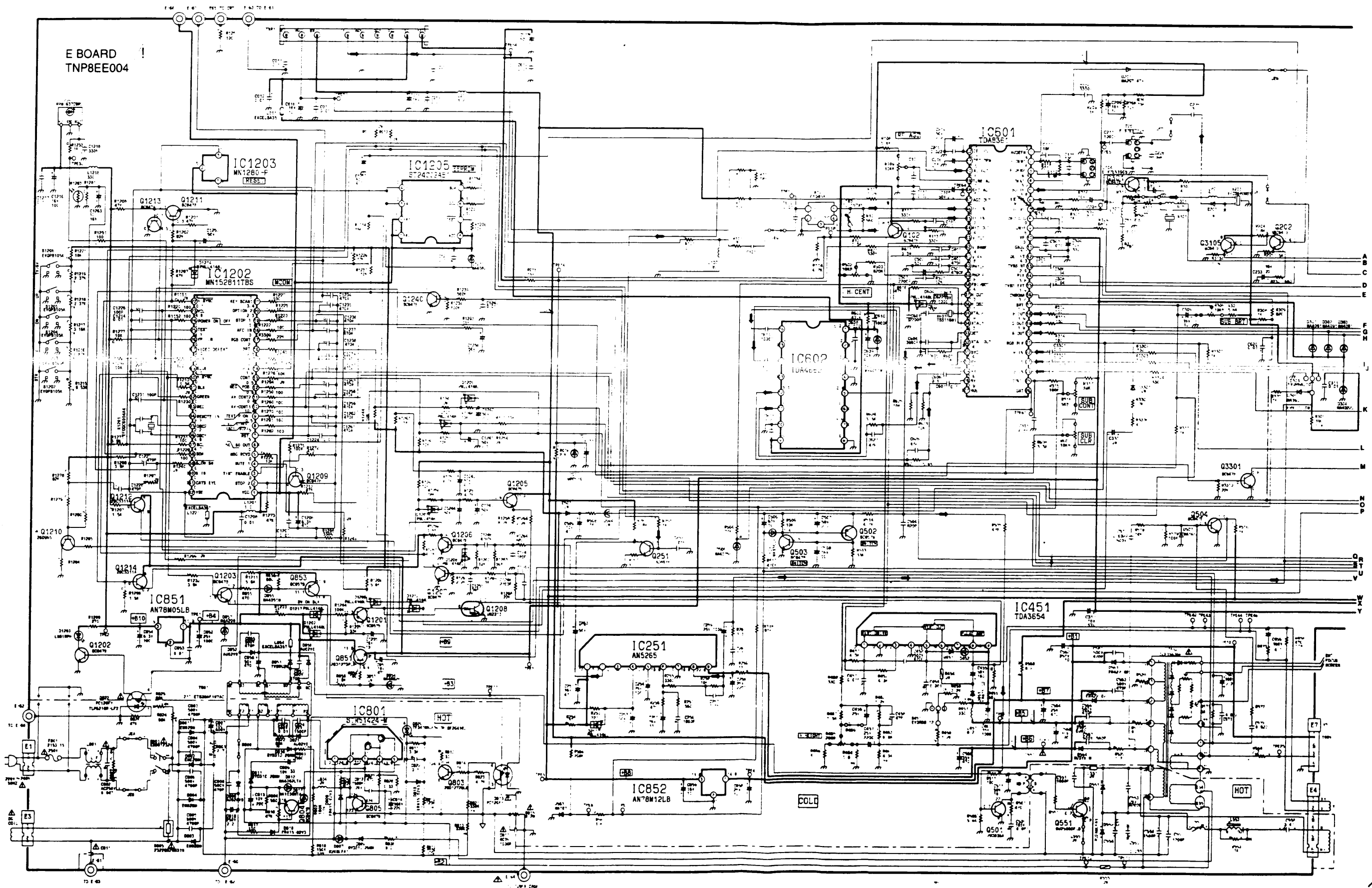
Recommended Safety Parts

Item	Part No.	Description
TX-21S1T/B & TC-21S1R/B (CRT Option)		
1	A51KSV43X13	CRT
10	TNP8EY008AA	Y P. C. B.
11	TNP8EE004AB	E P. C. B. TX21SIT only
11	TNP8EE004AN	E P. C. B. TC21S1R only
C459	ECEA1E470B	Elec 25V 47μF
C551	ECKW3D102J	Ceramic 2KV 1nF
C556	ECKW3D152J	Ceramic 2KV 1.5nF
TX-21S1T/BH & TC-21S1R/BH (CRT Option)		
1	A51EFS43X191	CRT
10	TNP8EY008AE	Y P. C. B.
11	TNP8EE004BH	E P. C. B. TX21SIT only
11	TNP8EE004BA	E P. C. B. TC21S1R only
C459	ECEA1E330B	Elec 25V 33μF
C551	ECKW3D102J	Ceramic 2KV 1nF
C556	ECKW3D152J	Ceramic 2KV 1.5nF
R564	ERQ1CJP1R0	Fusible 1W 5% 1R0 Ω
TX-21S1T/BN & TC-21S1R/BN (CRT Option)		
1	A51KSV43X13	CRT
10	TNP8EY008AA	Y P. C. B.
11	TNP8EE004AB	E P. C. B. TX21SIT only
11	TNP8EE004AN	E P. C. B. TC21S1R only
C459	ECEA1E470B	Elec 25V 47μF
C551	ECKW3D102J	Ceramic 2KV 1nF
C556	ECKW3D152J	Ceramic 2KV 1.5nF

Main Diagram Differences

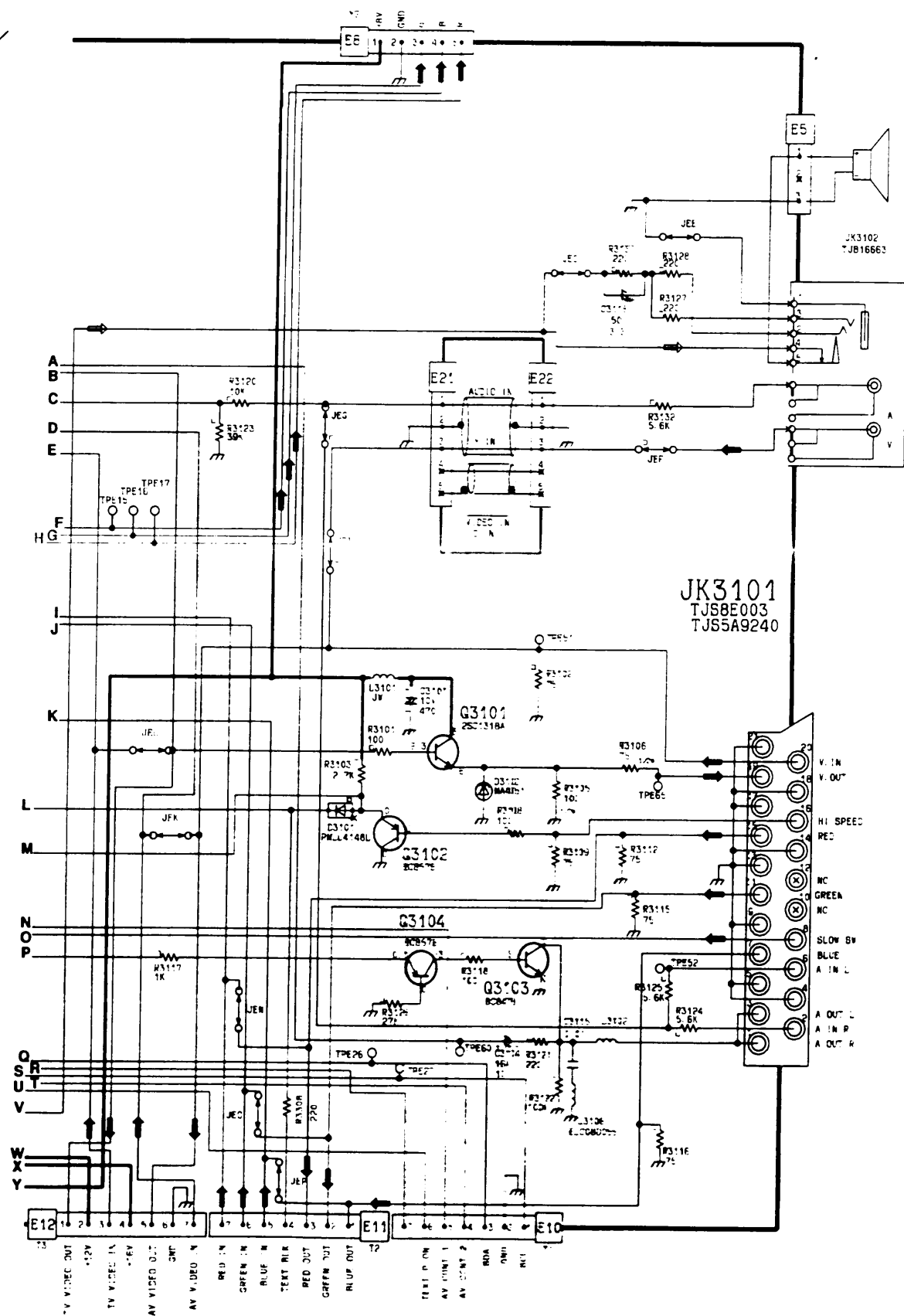
Col. Ref.	TX-21S1T/B	TX-21S1T/BN	TX-21S1T/BH	TC-21S1R/B	TC-21S1R/BN	TC-21S1R/BH
No.	TNP8EE004AB	TNP8EE004AT	TNP8EE004BH	TNP8EE004AN	TNP8EE004AU	TNP8EE004BA
C450	NIL	NIL	ECUV*H103KBX	NIL	NIL	ECUV1H103KBX
C451	ECUV1H4732FX	ECUV1H103KBX	ECUV*H103KBX	ECUV1H4732FX	ECUV1H103KBX	ECUV1H103KBX
C458	ECEA1CN470SB	ECOV1H104JL3	ECEA1CN470SB	ECEA1CN470SB	ECOV1H104JL3	ECEA1CN470SB
C459	ECEA1EU330B	ECEA1EU470B	ECEA1EU330B	ECEA1EU330B	ECEA1EU470B	ECEA1EU330B
C556	ECKW3D152JBN	ECKW3D122JBN	ECKW3D152JBN	ECKW3D152JBN	ECKW3D122JBN	ECKW3D152JBN
C551	ECKW3D102JBN	ECKW3D102JBN	NIL	ECKW3D102JBN	ECKW3D102JBN	NIL
L552	ELH16F784	ELH16F729	ELH16F784	ELH16F784	ELH16F729	ELH16F784
L553	ELH5L401	ELH5L429	ELH5L401	ELH5L401	ELH5L429	ELH5L401
R1202	ERJ6GEY823V	ERJ6GEY683V	ERJ6GEY823V	ERJ6GEY683V	ERJ6GEY823V	ERJ6GEY823V
R564	ERQ12HJ2R2P	ERQ12HJ2R2P	ERQ1CJP1R0S	ERQ12HJ2R2P	ERQ12HJ2R2P	ERQ1CJP1R0S
R463	ERJ6GEYJ682V	ERJ6GEYJ432V	ERJ6GEYJ682V	ERJ6GEYJ682V	ERJ6GEYJ432V	ERJ6GEYJ682V
R464	ERDS1TJ1R8T	ERDS1TJ2R2T	ERDS1TJ1R8T	ERDS1TJ1R8T	ERDS1TJ2R2T	ERDS1TJ1R8T
R467	ERJ6GEY152V	ERJ6GEY122V	ERJ6GEY152V	ERJ6GEY152V	ERJ6GEY122V	ERJ6GEY152V
E10	CONNECTOR	CONNECTOR	CONNECTOR	NIL	NIL	NIL
E11	CONNECTOR	CONNECTOR	CONNECTOR	NIL	NIL	NIL
E12	CONNECTOR	CONNECTOR	CONNECTOR	NIL	NIL	NIL
JEK	NIL	NIL	NIL	WIRE LINK	WIRE LINK	WIRE LINK
JEL	NIL	NIL	NIL	WIRE LINK	WIRE LINK	WIRE LINK
JEN	NIL	NIL	NIL	WIRE LINK	WIRE LINK	WIRE LINK
JEO	NIL	NIL	NIL	WIRE LINK	WIRE LINK	WIRE LINK
JEP	NIL	NIL	NIL	WIRE LINK	WIRE LINK	WIRE LINK
R1215	NIL	NIL	NIL	EROS2TKF9531	EROS2TKF9531	EROS2TKF9531

Main Diagram



Continued at 1

Main Diagram Cont'd.



Waveforms

