

General Information

1994
Chassis: EE2
CRT: A34EAC01X12
Remote Control:
290P015O30 - BM/LM
290Po14O30 - LTXTX
Main Power Button:
704C906010

Specifications

Reception System:	CCIR-I
Colour System:	PAL
Reception Frequency:	VHF 47- 89MHz. 104 - 470MHz (CT-14MS1LM, CT-14MS1LTX) UHF 470 - 862MHz
Mains Input:	AC 230V; 50Hz
Power Consumption:	44W (CT-14MS1LM) 60W (CT-14MS1BM) 64W (CT-14MS1LTX, CT-14MS1TX)
Aerial Input:	75 Ohm
Speaker:	80mm Round type 2 pcs. (CT-14MS1BM, CT-14MS1LTX, CT-14MS1TX) 80mm Round type 1pc. (CT-14MS1LM)

Recommended Safety Parts

Item	Part No.	Description
	409B066O40	Degaussing Coil
	930C851O02	AV PCB ASSY (BM)
	930C851O01	AV PCB ASSY (LTX, TX)
	930C850O02	CRT PCB ASSY (BM)
	930C862O01	CRT PCB ASSY (LM)
	920A411O07	Main PCB ASSY (BM)
	920A411O09	Main PCB ASSY (LM)
	920A411O08	Main PCB ASSY (LTX)
	920A411O06	Main PCB ASSY (TX)
	930C852O01	Text PCB ASSY (LTX, TX)
	246C162O10	AC Power Cord
	700C186O30	Back Cover (BM)
	700C186O40	Back Cover (LM)
	700C187O90	Back Cover (LTX)
	700C186O50	Back Cover (TX)
	290P015O30	Remote Hand Unit (BM, LM)
	290P014O30	Remote Hand Unit (LTX, TX)
C 981	189P094O20	C-Ceramic-AC ACT4K E3300pF-M (BM, TX)
C 991	189P115O20	C-M-P-AC AC 250V 0.22mF-M
F 991	283D047O40	Fuse T2A
J 651	449C127O10	CRT Socket
R 368	103P378O60	Fuse 1/4W 3.3W-J
R 369	103P378O060	Fuse 1/4W 3.3W-J (BM, LTX, TX)
R 559, R 561	103P397O90	Fuse 1/2W 0.82W-J
R 590	103P398O40	Fuse 1/2W 2.2W-J
R 681	103P448O60	Fuse Metal 1W 3.3W-K/J
R 981, R 982	109D021O20	Composition 1/2W 6.8mW-k
RP991	265P047O30	Positive Thermistor PTH-BG180M290
S 991	432C048O10	Push Switch AC 250V 5A/80A
T 551	334P232O10	Flyback

Service Adjustments

Safety Precautions

Notice: Observe all cautions and safety related notes located inside the receiver cabinet and on the receiver chassis.

Warning:

- 1: An isolation transformer should be used between the television receiver and the AC supply point before any test/service is performed on a LIVE chassis television receiver.
- 2: Operation of these receivers outside the cabinet or with the cover removed, involves a shock hazard from the receiver power supplies. Work on the receiver should not be attempted by anyone who is not thoroughly familiar with precautions necessary when working on high voltage equipment.
- 3: Do not install, handle or remove the picture tube in any manner unless shatter-proof goggles are worn. People not so equipped should be kept away while the picture tube is being handled. Keep the picture tube away from the body while handling.
- 4: When service is required, observe the original lead dressing. Extra precaution should be given to assure correct lead dressing in the high voltage area. Where a short-circuit has occurred, replace those components that indicate evidence of overheating.

X Radiation Warning

The surface of the cathode ray tube may generate X-Radiation. Take precautions when servicing and, if possible, the use of a lead apron is recommended for shielding while handling. When replacing the cathode ray tube use only the designated replacement part since it is a critical component with regard to X-Radiation as noted above (no high voltage adjustments are provided).

Leakage Current Cold Check

Before returning the receiver to the customer, it is recommended that the leakage current be measured according to the following methods: With the AC plug removed from the AC source, place a jumper across the live and neutral prongs of the main plug. Turn the receiver AC switch on. Using an 500V DC Insulation Tester, connect one lead to the jumpered AC plug and touch the other lead to each exposed metal part (antennas, screwheads etc.), particularly any exposed metal part having a return path to the chassis. Exposed metal parts having a return path to the chassis should have a minimum reading of 4 meg ohm. Any resistance below this value indicates an abnormality which requires collective action.

Electrical Adjustment

Perform only the alignments required. If proper equipment is not available, do not attempt an alignment.

Measuring Equipment and Jigs

Oscilloscope
Signal Generator
Direct Current Millammeter
Electrical Tools

Test Signal

- 1: Monoscope Signal
When you have no monoscope signal source for adjustment, connect the unit to a VCR and play an alignment tape (Monoscope).
- 2: Colour Bar Signal
In this manual, unless otherwise specified in particular, use colour bar signal in fig 1.

Recommended Safety Parts

Item	Part No.	Description
T 901	350P630O10	Power SMT4G5126-02
V 271	255P909O10	CRT ASSY A34EAC01X12-AT1625/4
Z 951	299P087O50	Surge Protector PRF 1600
Z 953	299P132O10	Surge Protector PRF 5000
(BM):	CT - 14MS1BM	
(LM):	CT - 14MS1LM	
(LTX):	CT - 14MS1LTX	
(TX):	CT - 14MS1TX	

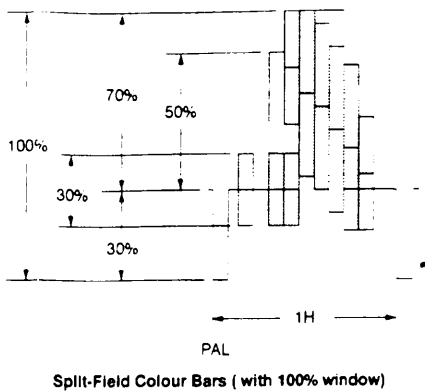


Fig 1.

Location of Testpoints and Adjustments

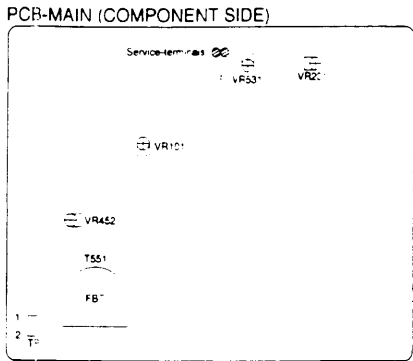


Fig 2.

PCB-CRT (SOLDER SIDE)

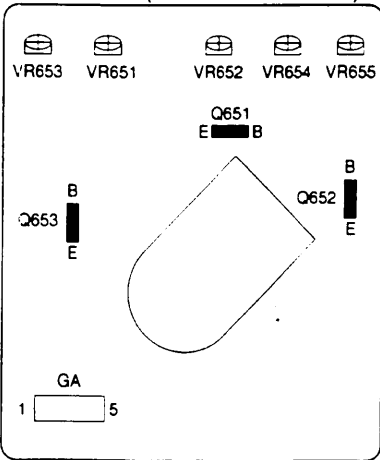


Fig 3.

1: RF AGC: (VIF circuit)

Adjustment purpose:
The best receiving condition of RF signal.

Symptom when incorrectly adjusted:
Poor S/N ratio or cross modulation.

Input signal:
RF signal (programme)

Input terminal:
RF IN terminal

PCB-MAIN (COMPONENT SIDE)

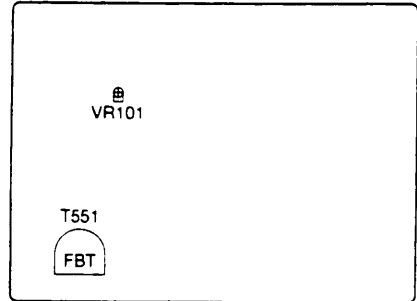


Fig 4.

- 1: Supply an RF signal (Programme).
- 2: Turn on AFT.
- 3: Adjust VR101 so that the picture and sound have no beat, noise and inter-modulation distortion.

2: Cut-off, White (CRT circuit)

Adjustment purpose:
Rate of electron beam shot from each electron gun of R, G and B.

Symptom when incorrectly adjusted:
Coloured monochrome, too dark or too bright picture.

Measuring instrument:
Oscilloscope.

Test point:
Collector of Q651

Measurement range:
DIV 5V TIM 20 μ s.

PCB-MAIN (COMPONENT SIDE)

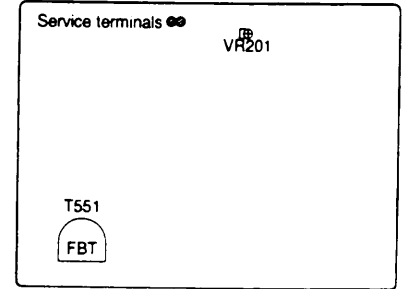


Fig 5.

PCB-Main (Component Side)

* Preheat the set for twenty minutes or more.

- 1: Set the no signal condition in AV mode.
- 2: Set VR651, VR652 and VR653 to the mechanical centre position.
- 3: Set VR654, VR655 and VR201 to the mechanical centre position.
- 4: Set SCREEN control on F.B.T. to fully counter-clockwise position.
- 5: Observe the waveform at the collector of Q651. (Use GA connector pin REG for ground).
- 6: Adjust VR651 so that the pedestal level is 140V.

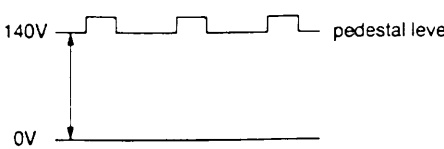


Fig 6.

- 7: Observe the waveform at the collector of Q652. (Use GA connector pin REG for Ground).
- 8: Adjust VR652 so that the pedestal level is 140V.
- 9: Observe the waveform at the collector Q653. (Use GA connector pin REG for ground).
- 10: Adjust VR653 so that the pedestal level is 140V.
- 11: Short-circuit the service terminals.
- 12: Adjust SCREEN control on F.B.T. to the point where one red, green or blue line just becomes visible.
- 13: Among VR651, VR652 and VR653, adjust the VF's corresponding to the two colours other than that made visible in step 12 above, so that the horizontal line is white.
- 14: Open the service terminals.
- 15: Supply a video signal (white raster).
- 16: Adjust VR654 and VR655 so that the entire screen is pure white.

3: Focus (CRT circuit)

Adjustment purpose:
Sharpness of picture.

Symptom when incorrectly adjusted:
Poor sharpness of picture.

Input signal:
RF signal (Programme).

Input terminal:
RF IN terminal.

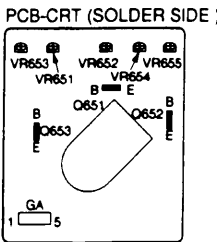


Fig 7.

- 1: Supply an RF signal (programme).
- 2: Adjust FOCUS volume on F.B.T. to the best overall focus.

4: Black Level: (CRT circuit)

Adjustment purpose:
Black level or video signal.

Symptom when incorrectly adjusted:
Too bright or too dark picture.

Input signal:
Video signal (Colour bar).

Input terminal:
VIDEO IN terminal.

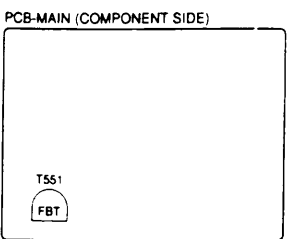


Fig 8.

Service Adjustments Cont'd.

- 1: Supply an RF signal (Programme)
- 2: Adjust FOCUS volume on F.B.T. to the best overall focus.

4: Black Level (CRT Circuit)

Adjustment purpose:
Black level of video signal

Symptom if incorrectly adjusted:
Picture too bright or too dark

Input signal:
Video signal (Monoscope)

Input Terminal:
VIDEO IN terminal

PCB-MAIN (COMPONENT SIDE)

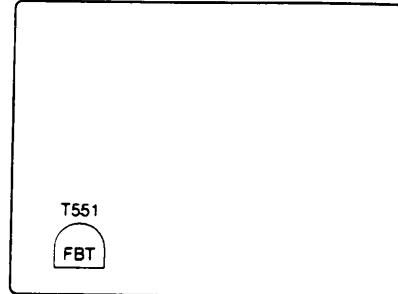


Fig 9.

- 1: Supply a video signal (Colour bar).
- 2: Set COLOUR control to minimum.
- 3: Make sure that the blue bar area does not brighten.
If necessary, adjust SCREEN control on FBT so that the blue bar area does not brighten.
- 4: Make sure that the red bar area is slightly bright.
If necessary, adjust SCREEN control on FBT so that the red bar area is slightly bright.

5: Horizontal Centre (Deflection circuit)

Adjustment purpose:
Horizontal position of picture.

Symptom if incorrectly adjusted:
Picture too shifted to the left or right.

Input signal:
Video signal (Monoscope).

Input terminal:
VIDEO IN terminal.

PCB-MAIN (COMPONENT SIDE)

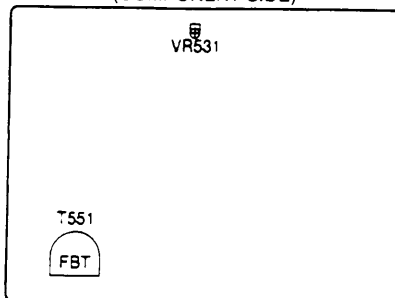


Fig 10.

- 1: Supply a video signal (Monoscope).
- 2: Adjust VR531 so that readings of left and right markers are the same.

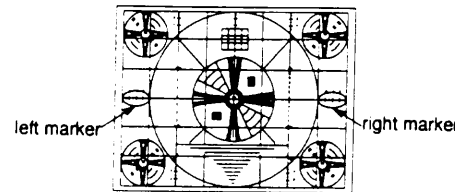


Fig 11.

6: Vertical Height (Deflection circuit).

Adjustment purpose:
Vertical height and linearity of picture.

Symptom when incorrectly adjusted:
Too compressed or too expanded vertical height of picture.
Poor vertical linearity of picture.

Input signal:
Video signal (Monoscope).

Input terminal:
VIDEO IN terminal.

PCB-MAIN (COMPONENT SIDE)

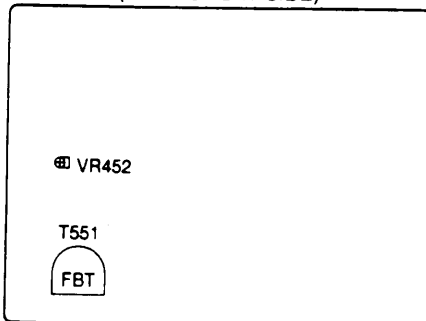


Fig 12.

- 1: Supply a video signal (Monoscope).
- 2: Press OPTIMUM button on the remote hand unit.
- 3: Adjust VR452 so that the largest circle is a complete round.

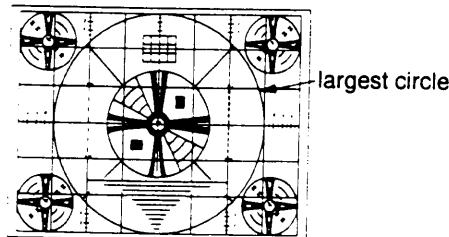


Fig 13.

7: Sub Cont. (Video circuit).

Adjustment purpose:
The best value of beam current.

Symptom when incorrectly adjusted:
Too bright or too dark picture.

Measuring instrument:
DC milliammeter.

Test point:
-lead: pin 1 of TP.
-lead: pin 2 of TP.

Input signal:
Video signal (Colour bar 80% MOD.).

Input terminal:
VIDEO IN terminal.

PCB-MAIN (COMPONENT SIDE)

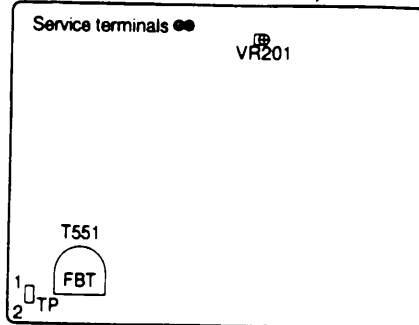


Fig 14.

* Preheat the set for twenty minutes or more.

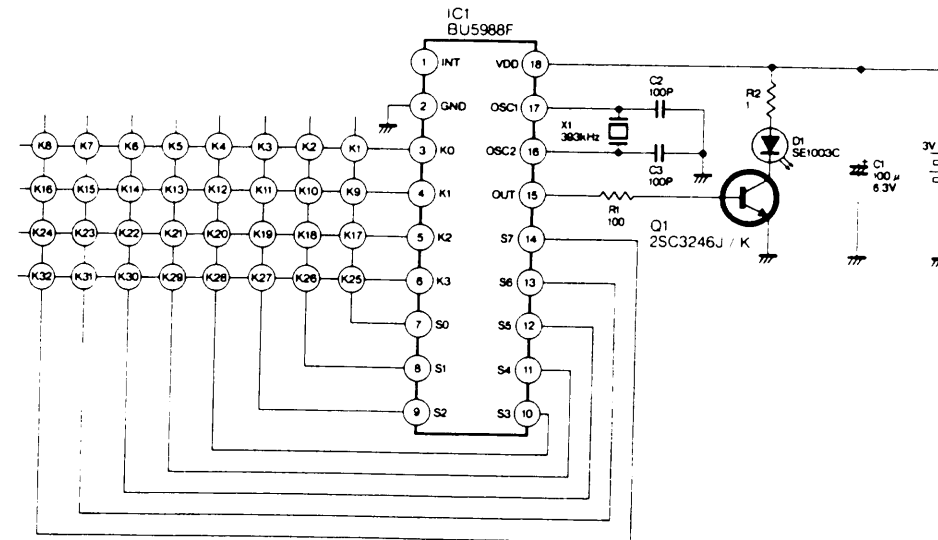
- 1: Supply a video signal (Colour bar 80% MOD.).
- 2: Press OPTIMUM button on the remote hand button.
- 3: Observe the beam current values at pin 1 and pin 2 of connector TP. (Plus lead to pin 1 of connector TP).
- 4: Adjust VR201 so that the beam current is a value listed as below.

CT-14MS1BM
CT-14MS1LM
CT-14MS1LTX
CT-14MS1TX
700 ± 20µA

Beam Current

Remote Control Diagram "A"

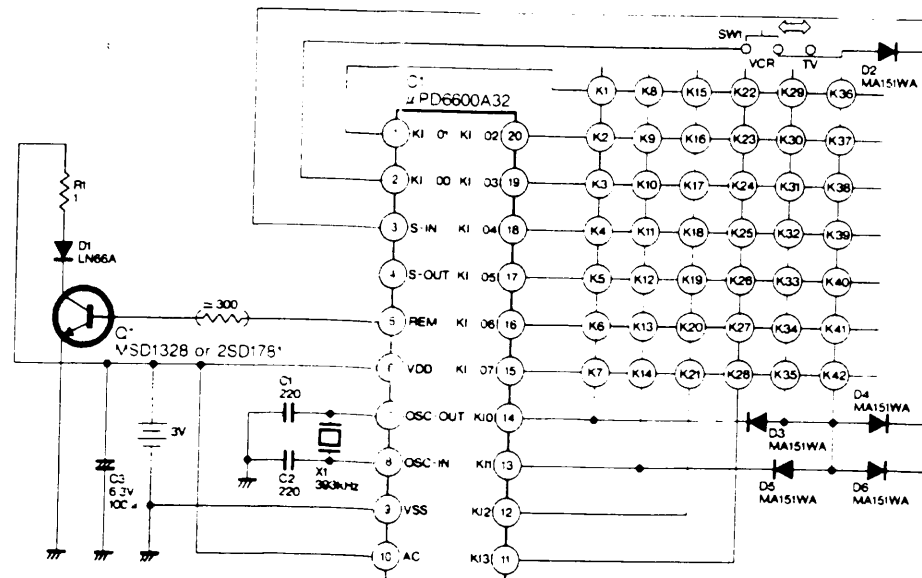
TRANSMITTER-REMOCON (CT-14MS1BM/CT-14MS1LM)



K1	TUNING	K17	CH-DISP
K2	MUTE	K18	CH3
K3	CH1	K19	CH6
K4	CH4	K20	CH9
K5	CH7	K21	CH2
K6	CH0	K22	CH-BACK
K7	CH-DOWN	K23	MENU
K8	VOL-DOWN	K24	OPTIMUM
K9	OFF-TIMER	K25	(1/11)
K10	AV	K26	(CM)
K11	CH2	K27	(TEXT)
K12	CH5	K28	(SIZE)
K13	CH8	K29	(HOLD)
K14	--	K30	(INDEX)
K15	CH-UP	K31	(TIME/CANCEL)
K16	VOL-UP	K32	(REVEAL)

Remote Control Diagram "B"

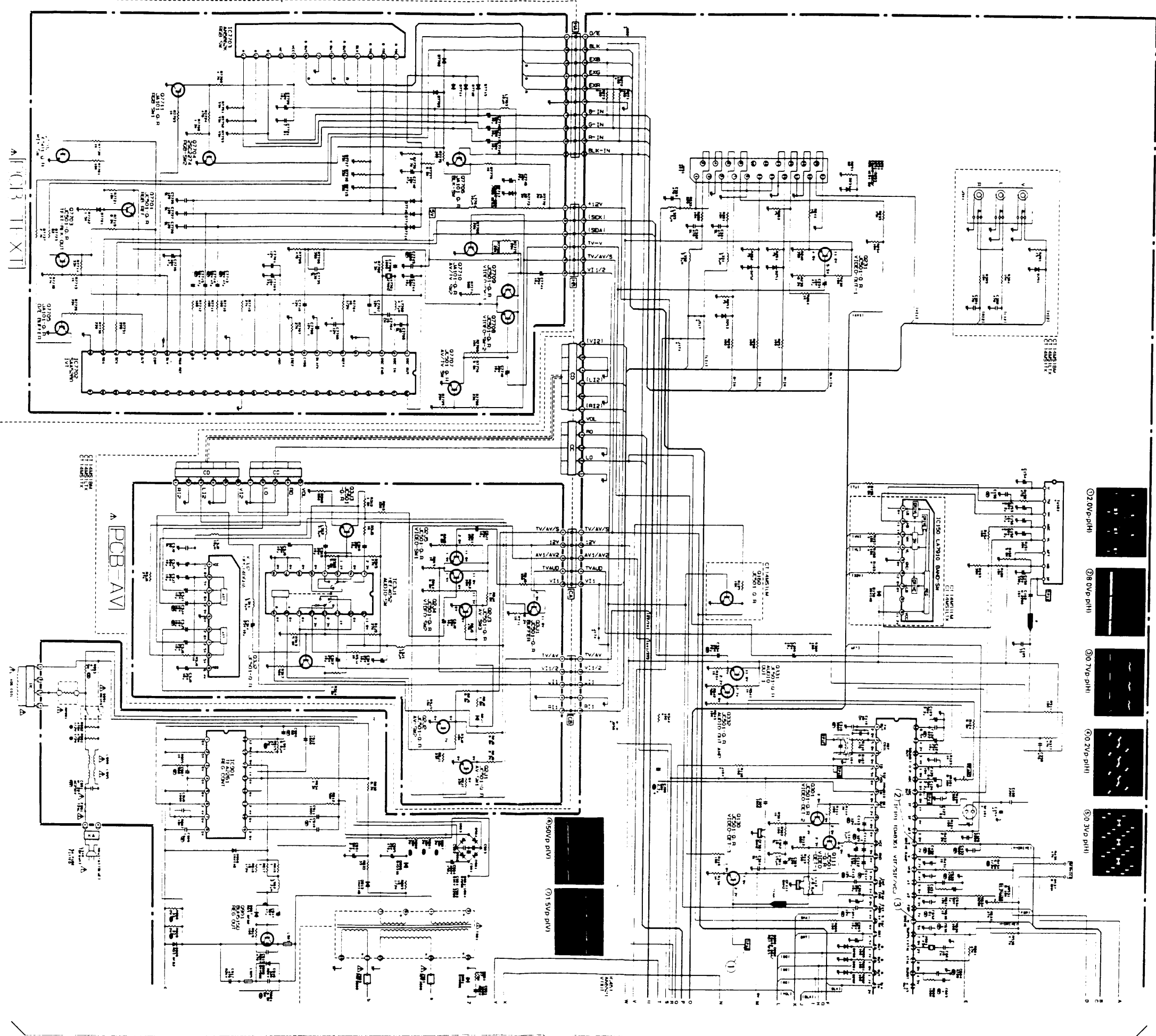
TRANSMITTER-REMOCON (CT-14MS1LTX/CT-14MS1TX)



TV MODE			
K1	POWER	K22	DISPLAY
K2	OFF-TIMER	K23	CH3
K3	CH1	K24	CH7
K4	CH5	K25	--
K5	CH9	K26	CH-UP
K6	CH-DOWN	K27	--
K7	--	K28	VOL-UP
K8	VOL-DOWN	K29	AV
K9	REVEAL	K30	CH4
K10	RED	K31	CH8
K11	--	K32	LAST CH
K12	SIZE	K33	MUTE
K13	GREEN	K34	OPTIMUM
K14	HOLD	K35	CANCEL
K15	TUNING	K36	STORE
K16	CH2	K37	YELLOW
K17	CH6	K38	TV/TEXT-MIX
K18	CH0	K39	MODE
K19	--	K40	CYAN
K20	MENU	K41	INDEX
K21	--	K42	--

VCR MODE			
K1	--	K22	--
K2	--	K23	CH3
K3	CH1	K24	CH7
K4	CH5	K25	--
K5	CH9	K26	--
K6	--	K27	--
K7	--	K28	--
K8	--	K29	--
K9	--	K30	CH4
K10	--	K31	CH8
K11	REC	K32	--
K12	--	K33	--
K13	--	K34	--
K14	REW	K35	--
K15	--	K36	--
K16	CH2	K37	STOP
K17	CH6	K38	PLAY BACK
K18	CH0	K39	--
K19	--	K40	PAUSE
K20	--	K41	FF
K21	--	K42	--

Main Diagram



- ① 20Vp-p(H)
- ② 80Vp-p(H)
- ③ 7Vp-p(H)
- ④ 2Vp-p(H)
- ⑤ 3Vp-p(H)

Main
Diagram
Cont'd.

