AKIRA

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Colour TV
Service Manual

Model Group: CT-14DX9

CHASSIS: SS1

MODEL:
CT-14DX9A
CT-14DX9N
CT-14DX9R
CT-14DX9CP
CT-14DX9R(G)
CT-14DX9(IKD)

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SPECIFICATIONS

RECEIVING SYSTEM

Sound System	: **A = BG/DK/I/M, R, N = BG/DK/I, CP = BG**
Colour System	: **A = PAL/SECAM/NTSC/NTSC P/B** **R.N = PAL/SECAM/NTSC P/B** **CP = PAL/NTSC P/B**
Picture Tube	: 14" = 37 diagonal
Ext. Antenna	: 75 Ohm Coaxial Cable
Ext. In/Out	: Audio/Video-in/out
Speakers	: 8W x 2
Audio Output	: Maximum 4W
Volts	: A = AC100 ~ 260V 50/60Hz R,N,CP = AC150 ~260V 50/60Hz
Power Consumption	: 14" = 65W
Dimension	: 14" = 401(W) x 365(D) x 345(H) mm
Net Weigh	: 14" (10 kg)

REMOTE CONTROL

Transmitting System	: Infra-red
Power Supply	: DC 3V (1.5Vx2)

Design and specifications are subject to change without prior notice

CAUTION
Before serving the chassis, read the "X-Ray Radiation Precaution", "Safety Precaution" and "Product Safety Notice" on this page.

X-RAY RADIATION PRECAUTION

1. 1.Excessive high voltage can produce potentially hazardous X-Ray Radiation. To avoid such hazards, the high voltage must not be above the specified limit. The normal value of the high voltage of this receiver is 24KV at zero beam current (minimum brightness) under 220V AC power source. The high voltage must not, under any circumstances, exceed 30KV.
2. Each time a receiver requires service, the high voltage should be checked following the High Voltage Check procedure in this manual. It is recommended the reading of the high voltage should be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
3. The primary source of X-Ray Radiation in this TV receiver is the picture tube. For continued X-Ray Radiation protection, the replacement tube must be exactly the same type tube as specified in the part list.
4. Some parts in this receiver have special safety – related characteristics for X-Ray Radiation protection. For continued safety, parts replacement should be undertaken only after referring to the Product Safety Notice.

SAFETY PRECAUTION

Warning: Service should not be attempted by anyone unfamiliar with necessary precaution on this receiver. The following are the necessary precautions observed before servicing this chassis.

1. Since the power supply circuit of this receiver is directly connected to the AC power line, an isolation transformer should be used during any dynamic service to avoid possible shock hazard.
2. Always discharge the picture tube anode to the CRT conductive coating before handling the picture tube. The picture tube is highly evacuated and if broken, glass fragment will be violently expelled. Use shatter proof goggles and keep picture tube away from the unprotected body while handling.
3. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as: non-metallic control knobs, insulating covers, shields, isolation resistor-capacitor network etc.
4. When replacing parts or circuit boards, disconnect the power cord.
5. When replacing a high voltage resistor (Metal oxide film resistor) on circuit board, keep the resistor 10mm (1/2in.) away from circuit board.
6. Connection wires must be kept away from components with high voltage or high temperature.
7. If any fuse in this TV receiver is blow, replace it with the FUSE specified in the chassis part list.
8. The receiver is designed to operate with 220V(50/60Hz) AC mains.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety –related characteristics. These characteristics are often passed unnoticed by a visual inspection and the X-Ray Radiation protection afforded by them cannot necessarily be obtained by using replacement components rated for high wattage, etc. Replaced parts which have these special safety characteristics are identified in this manual and its supplements, electrical components having such features are shaded on the schematic diagram and the part list.

Before replacing any of these components, read the part list in this manual carefully. The use of substitute replacement parts, which do not have the same safety characteristics, as specified in the part list may create shock, fire, and X-Ray Radiation or other hazards.

ALIGNMENT INSTRUCTION

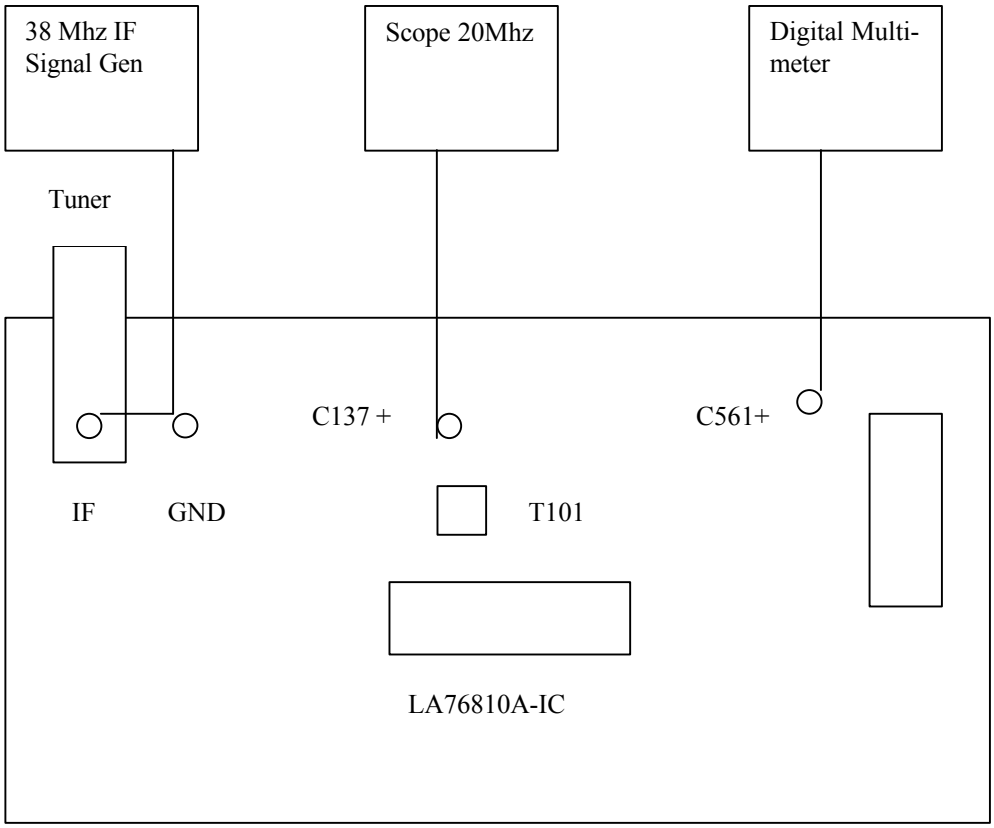
(A) MAIN CHASSIS ALIGNMENT INSTRUCTION

1. **Equipment requirement**:-
   - 1.1. Colour Television signal generator or Central TV signal generator
   - 1.2. IF alignment – Philips Gen. 5418 or 5518
   - 1.3. Scope 20 MHz – 2 channels types
   - 1.4. Digital multi-meter with LED display 4 digits
   - 1.5. Factory mode remote control unit

2. Channels setting required:-

Channel -1	Monoscope pattern	PAL DK	Music
Channel -7	Half Colour Bar pattern	PAL I	Modulation
Channel -12	Crosshatch pattern	PAL BG	Music
Channel -13	Picture	PAL DK	Music
Channel -24	Half Colour Bar pattern	PAL BG	Modulation
Channel -56	Full Colour Bar pattern	NTSC	Modulation

3. Set-up Alignment:-



4. **B+ Voltage Alignment**:-
   4.1. Set and connected all the points.
   4.2. Locate the RP551 alignment VR location.
   4.3. Use digital multi-meter to measure the B+ voltage.
   4.4. Switch on the TV chassis and connect by Philips pattern for alignment.
   4.5. Align the Rp551 VR with the digital multi-meter to the required spec voltage110 Volt +/- 0.5V,(14"&21") and 129.5Volt +/- 0.5V (25"/29"/34").
   4.6. Alignment finished, apply glue onto RP551 VR. After glue re-check the B+ voltage to ensure the B+ voltage is within spec of 110V(14"&21") and 129.5Volt(25"/29"/34").

5. **Alignment Mode and Factory Setting**:-
   5.1. Switch on the TV chassis and change to AV mode position.
   5.2. Press "Factory mode" key to enter " factory alignment mode". Use "CH +/-" to select the alignment item, and use "V +/-" keys to do adjustment to you requirement.

6. **IF Voltage Adjustment**:-
   6.1. Setting-up – set-up the Philips 5418/5518 pattern generator, AV out frequency to 38MHz, signal level to 70dB +/- 2 dB.
   6.2. IF set-up 38MHz signal connected with coaxial cable with 1 capacitor of "0.01uF" and connect to main chassis IF" / ground points.
   6.3. Tuner must not insert with the antenna.
   6.4. Switch on TV chassis, adjust the IF coil "T110" and check the Ch 2 brightness line for the range change from 0 to 5V. Readjust the voltage to meet Ch 1 position.

Note: LA76810A alignment only on VCO (T110) not others.

7. **Vertical Line – Pin–Cushion Adjustment** :-
   7.1. Receive Channel 7 colour bar.Adjust the PR301 for vertical lines pin-cushion to 1 straight line, adjust the PR302 for horizontal phase to spec requirement.

8. **Vertical Line and Size Adjustment**:-
   8.1. Receive crosshatch pattern, use factory mode remote control to press "factory mode" key for adjustment. Using CH +/- keys for V. Size and V. Line selection.
   8.2. Use V +/- keys to adjust the picture line requirement and the size to spec.

9. **RF AGC Adjustment**:-
   9.1. Receive channel 13 of picture pattern. Adjust the AGC at 60 dB for no picture noise. 100 dB – picture should not be distorted and the VOS do not have unstable condition.

10. **Checking the Electrical Function**:-
    10.1. Connect the power cord and connect the signal to RF input.
    10.2. Check the power supply whether OK or not. Switch on the TV set and the LED is on. Switch off the TV screen and should not have CRT spot within 3 sec.
    10.3. Receive the channel 1 for monoscope pattern to check the picture focus and the round circle should not be distorted. The Centre position, and VOS line/size are within spec. Check the brightness, contrast and colour condition. Check the convergence, picture must be clear, focus OK and white balance are OK. Also check the complete screen picture quality. High voltage condition OK and the Screen picture must be OK.
    10.4. Check all the functional keys must be working well.
    10.5. Receive colour pattern signal and the system colour. (PAL/SECAM/NTSC) Check the power main on/off switch, brightness, volume, colour, contrast and tint. The picture quality must not have colour noise, unbalance size and distorted condition.
    10.6. Check the sound quality standards, Volume up/down are OK to spec, and sound output. Ensure the sound output is not distorted and noisy. No interference for DK/BG/I/M.
    10.7. Use remote Control Unit for all types of function check and ensure OK.
    10.8. Check the words display condition.
    10.9. Shock test and make sure the picture and sound are not distorted and shifted.

10.10. Use strong and weak signal to check the colour picture condition. After adjust the signal level to 35-40 dB and the colour should not gone. The picture and sound must be OK. At 60 dB the picture should not have snow noise.
10.11. Ensure the factory mode setting are set. Set-off the factory mode function and last switch off the TV set.
10.12. All the "NG" sets must send for repairing and recording for reference.
10.13. Check the AV input and output the picture and sound must be OK.

11. **Reliability Aging Test:**
11.1. 1st lot of production sets. Sampling 20 sets for aging 7 days continues test with colour signal in. Normal production sets must be age for 1 day.

12. Mechanical Inspection:-
12.1. Inspect all glue are firmly placed.
12.2. Check all screws are tightened, no missing and loose.
12.3. Check all the connectors are fully located onto the chassis base.
12.4. Check all the safety components are firmly located onto the chassis and no damage.
12.5. The TV internal side should not see any excess metal materials.
12.6. Check all the cable and wire are OK in-used.
12.7. Check the FBT and switching transformers not high mounting. The big capacito are not slanting and high mounting.

13. **High Potential Testing**:-
13.1. Set the mega-meter is set in position.(Insulation tester)
13.2. Set the meter to DC500V.
13.3. Use the meter probe onto the tuner body and the power cord on connector socket.
13.4. Switch on the button and test the insulation performance and the reading at 2/3 position.
13.5. Insulation spec must over 9.0 Mohm. if not reject.

Note: Everyday work check the high pot. Condition as 3100V, 10 mA, 5 sec are OK.

14. **Safety Check**:-
14.1. High voltage checking. Use high pot tester and set the tester to 3100V, 10mA and ensure the AC/DC switch is in AC position. Set the tester to 10mA and timer to 5 sec.
14.2. Checking methods.
14.2.1. connect the power cord into power socket.
14.2.2. the high pot tester gun pointed at metal part of TV set body.
14.2.3. switch on the switch to test the high electric power.
14.2.4. connect with high voltage within 5 second and remove the tester gun point.

(B) CTV SET ALIGNMENT - FACTORY SERVICE MODE

1. "**Enter" and "Leave" the Factory mode adjustment methods**:
1.1. Enter factory password: (use normal Remote control unit)
1.1.1. Set TV as RF condition and press remote control "PROG" key and follow by "6", "4", "8", "3"
1.1.1.1. Repeat the same step of "1.1.1." to enter into "White Balance" adjustment condition
1.1.1.2. Repeat the same step of "1.1.1." to enter into "Factory mode" adjustment condition
1.1.1.3. Repeat the same step of "1.1.1." to enter into "Factory mode" setting condition
1.1.1.4. Repeat the same step of "1.1.1" to leave the factory mode function

2. Direct Enter:
   2.1. Use Factory mode Remote control unit, press the “factory” key to enter into “factory mode” function. Press one more time “factory” key to enter “White balance” adjustment condition, press one more time to enter the adjustment condition. Press One “factory” key to setting up our requirement spec. Last press once “factory” key to leave factory mode function.

Use “factory mode” for TV ageing, 2nd step is to align the White Balance in good condition. 3rd step adjust the required electrical specification. (The function adjustment are 20 selection) Others function of adjustment are 39 items, and you can use “P+/P-“ key and “V+/V-“ key for selection and adjustment.

1. Setting of company logo:

1.1. Switch on the TV set and set the TV in AV mode, Press Remote control “DISP” key and the TV screen will display “AV” and follow by presetting the Numeric key “6”, “4”, “8”, “3” to enter the company logo setting.

1.2. Press the “P+/P-“ key for selection of function and press “V+/V-“ key for adjustment. Press “>*<-“ key to change or select your requirement.

1.3. Logo setting 1st row that come with 4 kinds of setting:

1.4. Logo setting 2nd row that come with 2 kinds of setting:
1st turn off the display, 2nd turn on the display (display the word setting of maximum 10 words).

1.5. When the 2 rows of words are display on the TV screen, and you can check the words positioning. Not too lose to each other or the words are not clear to display on the screen. Re-set the logo words from the logo setting factory mode.

FACTORY MODE ADJUSTMENT TABLE

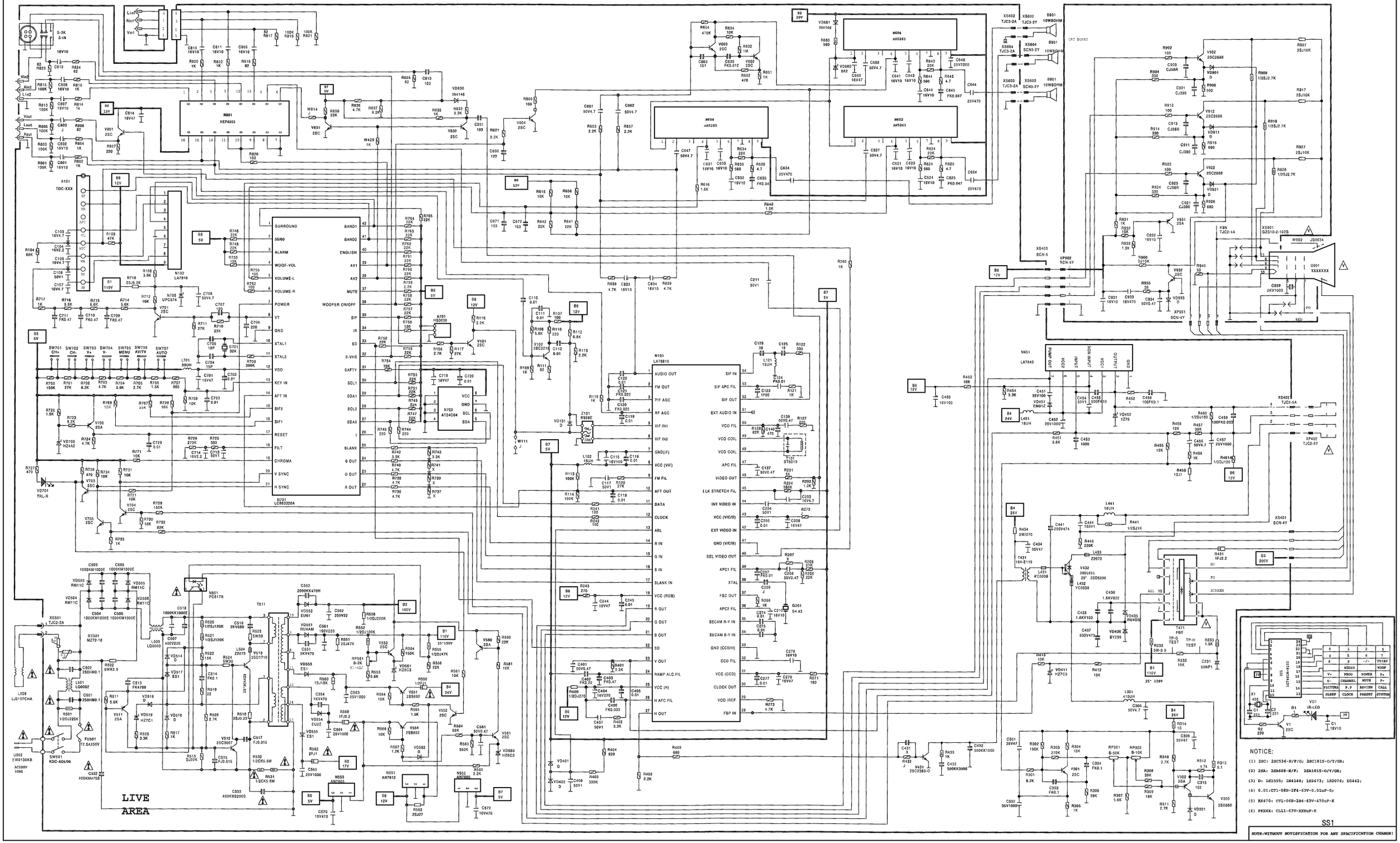
Table 1

Selection Items	OSD Display	Setting Description	14”	14”/21”	25”/29”	34”	Reading limit
00	H.PHASE	Horizontal centre	7	9	7	6	0-31
01	NT.PHASE	NTSC center setting	2	0	0	0	-5 - + 16
02	H.BLK.LEFT	Horizontal left adjust		4	4	4	0/1
03	H.BLK.RIGHT	Horizontal right adjust		4	4	4	0/7
04	V.SIZE	Vertical size	52	82	88	83	0 -127
05	V.LINE	Vertical Linearity	11	13	16	14	0 - 31
06	V.POSI	Vertical position	24	23	23	25	0 - 63
07	V.SC	Vertical SC adjust		0	0	0	0 - 31
08	NT.V.SIZE	NTSC Vertical size	6	0	0	0	-31 - +32
09	NT.V.LINE	NTSC Vertical line	1	0	0	0	-15 - +16
10	NT.V.POST	NTSC Vertical position	10	0	0	0	-31 - +32
11	NT.V.SC	NTSC Vertical SC	2	0	0	0	-15 - +16
12	RF.AGC	RF AGC adjustment	23	26	26	26	0 - 63
13	VOLUME OUT	Sound output	128	108	108	108	0 - 127
14	SUB. CONT	Contrast	23	26	26	26	0 - 31
15	SUB. COLOUR	Colour		30	30	30	0 - 63
16	SUB. SHARP	Sharpmness		8	8	8	0 - 31
17	SUB.TNT	TINT Colour	16	26	26	26	0 - 63
18	OSD.CONT	OSD Contrast	56	60	60	60	0 - 127
19	OSD. H.POSI	OSD left/right	36	30	30	30	0 - 127
20	OSD.V.POSI	OSD up/down	17	12	12	12	0 - 31

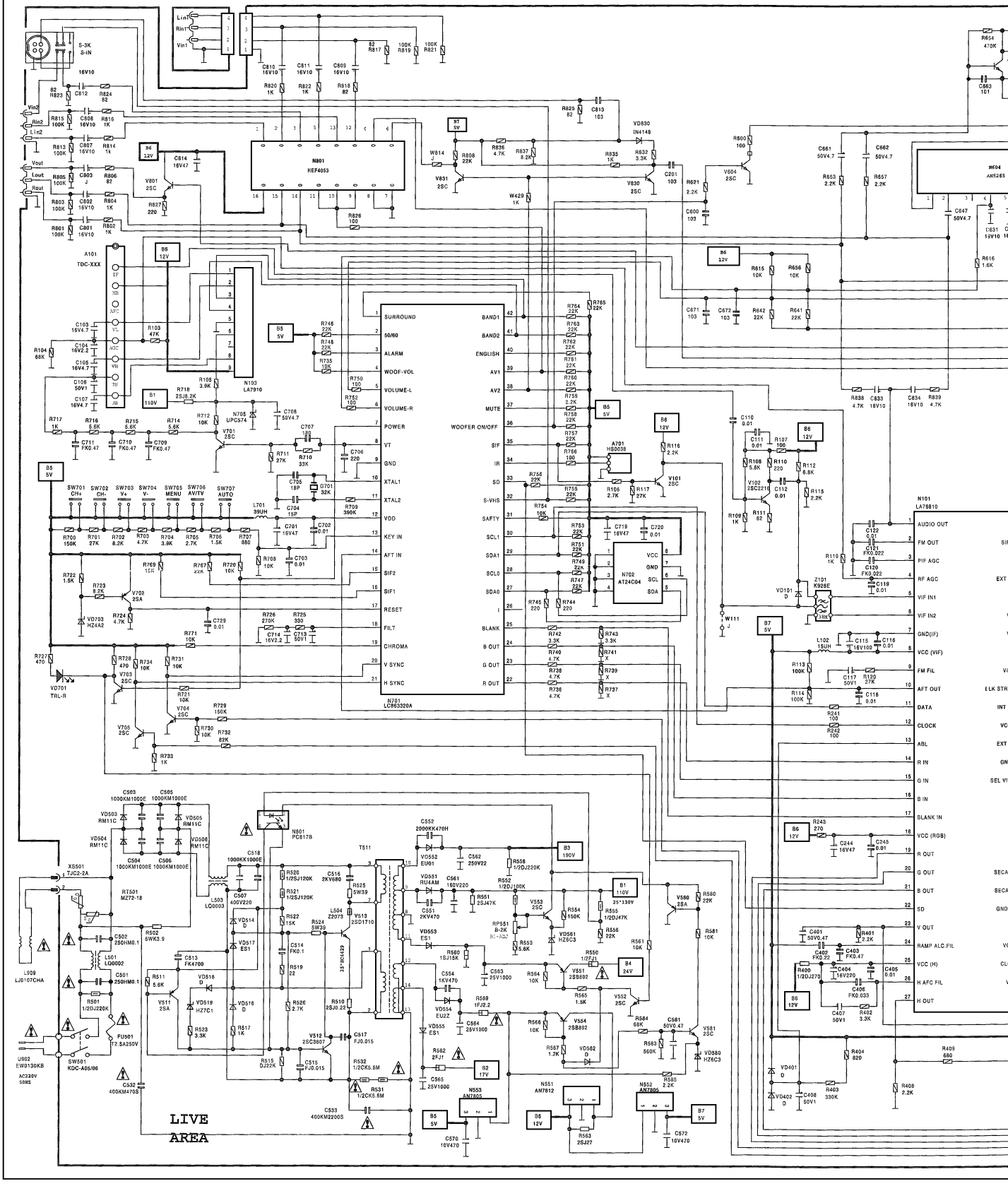
Table 2

Selection Items	OSD Display	Setting Description	14”	14”/21”	25”/29”	34”	Reading limit
00	BLK…STR.DET	Black strick detect		0	0	0	0/1
01	AFT.GAIN	AFT improvement		1	1	1	0/1
02	V.SETUP	Vertical set-up		1	1	1	0/1
03	CD.MODE	VOS standards		0	0	0	0-7
04	GRAY MOD	Internal gray mode set 0:100%, 0:50%		0	0	0	0/1
05	B.GAM.DEF	Blue Gam selection		3	3	3	0-3
06	RG.GAM.SEF	Blue Gam adjustment		0	0	0	0/1
07	BRIGHT ABL.TH	ABL setting, 0-start, 7-late		5	5	5	0-7
08	EMG.ABL.BEF	Emergency on/pff, 0-ON, 1-OFF		0	0	0	0/1
09	BRT.ABL.DEF	ABL ON/OFF, 0-ON, 1-OFF		0	0	0	0/1
10	MID.STP.DEF	Brightness detection		0	0	0	0/1
11	R-Y/B-Y G.BL	R-Y/B-Y improvement		8	8	8	0-15
12	T-Y/B-Y ANG	R-Y/B-Y adjustment		8	8	8	0-15
13	SECAM B-Y DC	SECAM B-Y DC adjustment		8	8	8	0-15
14	SECAM R-Y DC	SECAM R-Y DC adjustment		8	8	8	0-15
15	SND TRAP	Colour trap filter control		4	4	4	0-7
16	VOL FIL	Sound trap filter control		1	1	1	0-3
17	VIF SYS SW	VCO setting	1	0	0	0	0-7
18	VIDEO LEVEL	Video output adjustment		7	7	7	0-7
19	FM LEVEL	Sound output adjustment		16	16	16	0-31
20	POWER OPTION	Power on selection	0	1	1	1	0/3
21	LOGO AT P. ON	Logo display		1	1	1	0/1
22	SEARCH CHECK	Check the auto search function		1	1	1	0/1
23	BAND OPTION	Band selection		0	0	0	0-3
24	CHANNEL MAX	Maximum channel selection	254	254	254	254	0-254
25	AV OPTION	AV input selection	2	2	2	2	0-3
26	POSITION L/R	Channecl OSD display position	1	1	1	1	0/1
27	BLUE BACK	No signal Blue screen selection	1	1	1	1	0/1
28	BLACK BACK	Channel screen in black selection	1	1	1	1	0/1
29	STEREO OPTION	Stereo selection	1	1	1	1	0/1
30	STEREO IC	Type of stereo IC used		0	0	0	0/1
31	WOOF VOLUME	Woofer selection		0	0	0	0/1
32	SIF 4.5M	Set 4.5 sound		1	1	1	0/1
33	SIF 5.5M	Set 5.5 sound		1	1	1	0/1
34	SECAM	Select Secam system	1	0	0	0	0/1
35	CHINESE OSD	Chinese/English selection	0	1	1	1	0/1
36	SENSITIVITY	Receive sensitivity		0	0	0	0/1
37	CUT MODE	Cut picture mode		1	1	1	0/1
38	V MUTE OFF	Turn off Screen black screen display	1	0	0	0	0/1

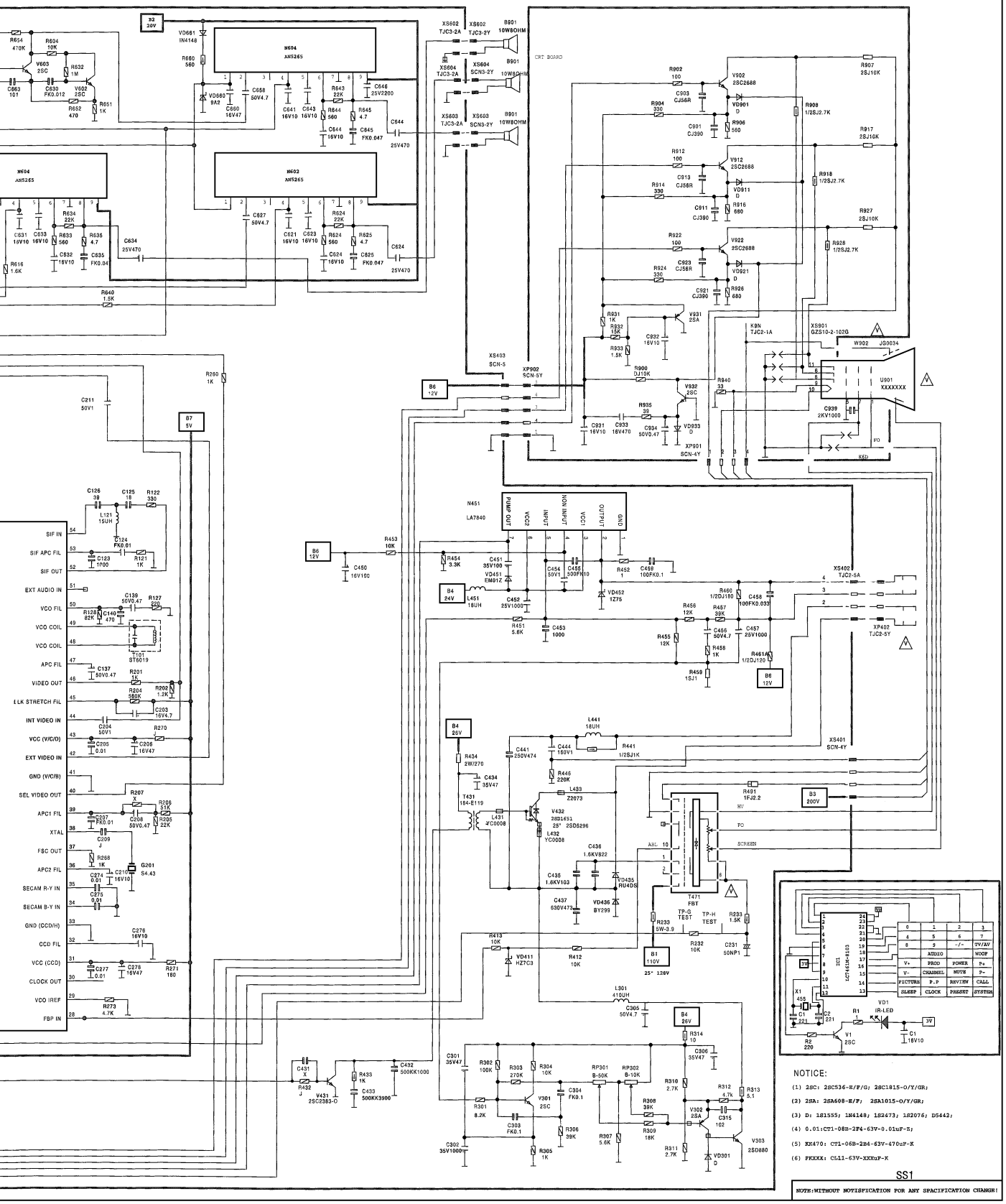
COLOUR TV SCHEMATIC DIAGRAM



COLOUR TV SCHEMAT



MATIC DIAGRAM



NOTICE:

(1) 2SC: 2SC536-E/F/G; 2SC1815-O/Y/GR;

(2) 2SA: 2SA608-E/F; 2SA1015-O/Y/GR;

(3) D: 181555; 1N4148; 182473; 182076; D5442;

(4) 0.01:CT1-08B-2P4-63V-0.01uF-Z;

(5) KK470: CT1-06B-2B4-63V-470uF-K

(6) PKXXX: CL11-63V-XXXuF-K

SS1

NOTE:WITHOUT NOTISFICATION FOR ANY SPACIFICATION CHANGE!