TV2KY CHASSIS

COLOUR TELEVISION RECEIVER

SERVICE MANUAL

SECIFICATION

- SYSTEM   PAL,SECAM, B/G, D/K,
- POWER INPUT   AC 180-240V(50/60Hz)
- POWER CONSUMPTION   70 W
- AERIAL IMPEDANCE   75 OHM UNVALANCED
- TUNER   VOLTAGE SYNTHESIZER TUNING
- RECEIVING CHANNELS   VHF-L E2-S10

                              VHF-H E5-S41

                              UHF E21-E69
- PROGRAMME   MAX 261 PROGRAM MEMORIES
- PICTURE TUBE   21"
- SOUND OUTPUT   ≥2X2.0 W
- AV JACKS   AV SCART & FRONT RCA

> CAUTION: Before servicing the chassis, read the "Safely Precaution".
> "X -Ray radiation Precaution" and "Product Safety Notice" in this manual.

X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To Avoid such hazards the high voltage must be specified limit. The normal value of the high voltage of this receiver is 25KV +/-1KV under 230V AC power source. The high voltage must not exceed 29.5KV.

2. Each time a receiver requires servicing the high voltage should be checked following the HIGH VOLTAGE CHECK procedure in this manual. It is recommended the reading of the high voltage 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 used in this TV receiver.

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 the PRODUCT SAFETY NOTICE below.

SAFETY PRECAUTION

WARNING: Service should not be attempted by anyone unfamiliar with the necessary
         Precautions on this receiver.

The following are the necessary precautions to be 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 fragments will be violently expelled. Use shatterproof 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: nonmetallic 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 resistor) on circuit hoard, keep the resistor APP. 10mm(1/2 in.) 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 blown, replace it with the FUSE specified in the chassis parts list.

8. The receiver is designed to operate with 230V(50Hz) AC mains.

PRODUCT SAFERY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics are often passed unnoticed by a visual inspection and the X-RAY RADIATON protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, X-RAY RADIATION or other hazards.

GENERAL ADJUSTMENT

AUTOMATIC DEGAUSSING

An automatic degaussing coil is attached around the picture tube, degaussing the tube properly in about one second after the set is switched on. If the receiver is moved or faced on a different direction, the power must be switched off at least 15 minutes in order that the automatic degaussing circuit operated properly. External degaussing is necessary if the automatic degassing proves ineffective after the set is moved.

B+ ADJUSTMENT

CAUTION: To avoid X-ray hazards and result in a nominal display width, B+ voltage must be set in the scale of 107V+/-0.5V.
1. Make sure the AC power supply is 230V, 50Hz.
2. Switch on the TV receiver, tune in an active channel.
3. Measure the voltage between C641 on Main P.C. Board by DC voltmeter.
4. Set contrast, brightness, color to maximum.
5. Adjust VR631 on Main P. C. Board for B+107V+/-0.5V voltage reading.

HIGH VOLTAGE CHECK

CAUTION: There is no high voltage adjustment in this chassis, B+108.0V voltage directly relates to the high voltage. The high voltage does not exceed 29.5KV under any conditions.
1. Connect an accurate high voltage meter to the second anode cap of the picture tube.
2. Turn on the receiver, set brightness and contrast to minimum (Zero beam current).
3. Make sure the high voltage does not exceed 29.5KV.
4. NO matter whether the luminance, contrast and chrominance controls are set to maximum or minimum, the high voltage must be kept under 29.5KV.

FOCUSING

Receive a TV test pattern signal; adjust focus knob to get optimum picture, a well-defined, sharpest display in the center area of the screen.

ADJUSTMENT AND SERVICING THE CHASSIS

1.Factory mode and factory menu operation

● Enter factory mode :

a) Press [FACTORY] key will switch system from TV mode to factory mode and display factory menu.

b) Use Remote controller without [FACTORY], first press [MENU] key to display main menu. During main menu display, enter code "6483" will active factory mode.

● Quit factory mode :

a) Press [FACTORY] key

b) First press [MENU] key to display main menu. During main menu display, enter code "6483".

c) Select factory "MENU 03" item "PROD MODE",set value to "0", then press [MENU] key quit factory menu display.

● Factory mode addition function:

a) Press [PICTURE] key, 3 more picture preset mode, F000, F550 and F110 can be selected.

F000: contract = 0, brightness = 0, color = 0

F550: contract = 50, brightness = 50, color = 0

F110: contract = 100, brightness =10 0, color = 0

b) During volume bar display, press [CALL] key will change volume 0→25→50→75→100.

c) During picture menu display, select one of BRIGHT, CONTRAST, COLOR, SHARPNESS, press [CALL] key will change value 0→25→50→75→100.

● Factory menu operation:

In factory mode, press [SLEEP] key will display factory menu. Press [MENU] key will quit factory menu (still in factory mode, for aging procedure)

[CH+] / [CH−] : select item (up/down)

[V+] / [V−]   : change value (when cursor point to first line, select menu page)

[SLEEP]   : loop select next menu page

Factory menu level:

Factory menu have two levels,

a) "MENU 03" → "OPT-ENGINEER" =0, for production

Only can select from "MENU 00" to "MENU 03"

b) "MENU 03" → "OPT-ENGINEER" =1, for engineer design
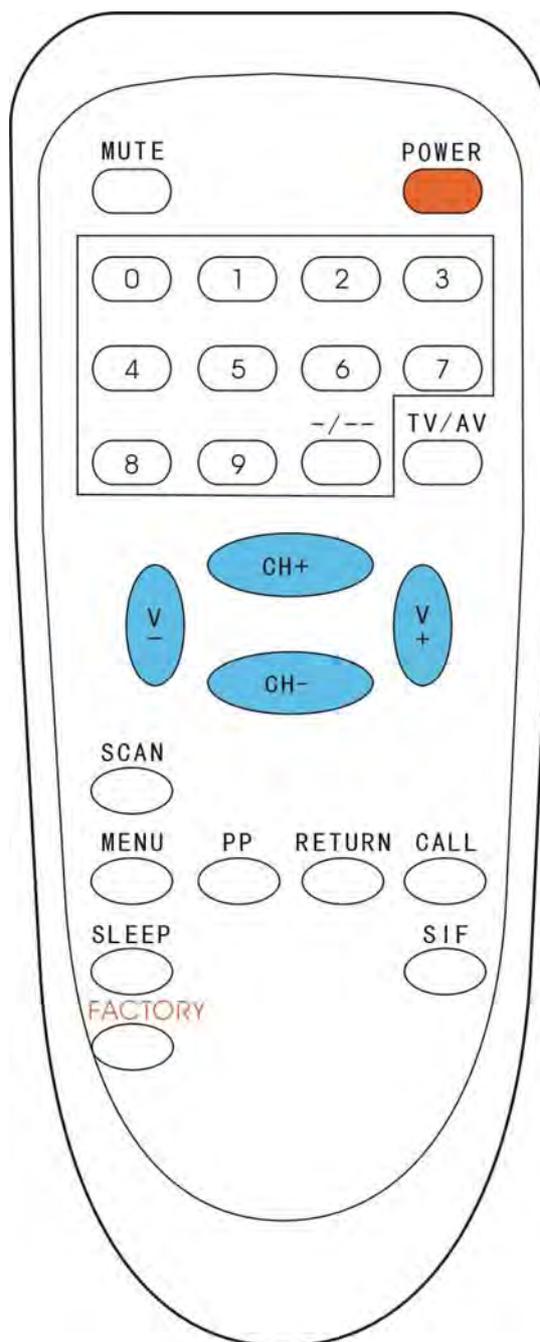
Only can select from "MENU 00" to "MENU 19" (If chip set select LA76810, "MENU 04" → "OPT 810/818" = 0, only can select from "MENU 00" to "MENU 15")

White balance adjustment:

  factory "MENU 01"
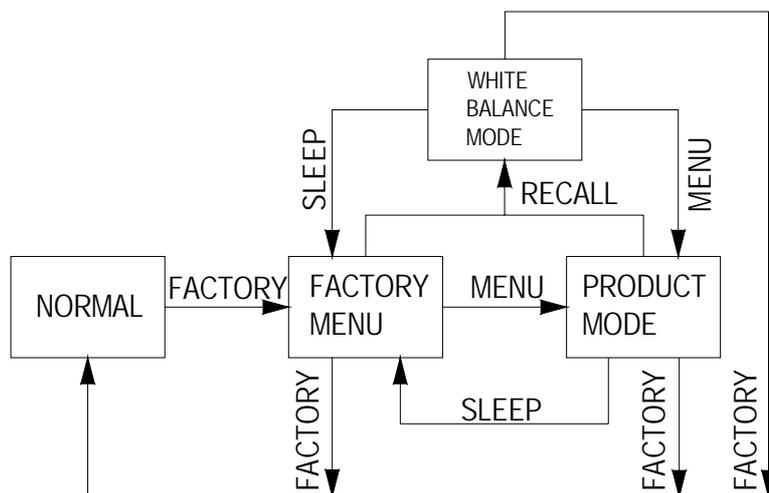
  a) Press [RETURN] key enter white balance mode,
     Single line white balance item will display on top of screen.

```
RB              : red bias      direct key→ DIGIT[3] -, DIGIT[4] +
GB              : green bias    direct key→ DIGIT[5] -, DIGIT[6] +
BB              : blue bias     direct key→ DIGIT[7] -, DIGIT[8] +
RD              : red drive
GD              : green drive
BD              : blue drive
SUB-BRIGHT      : sub-brightness  direct key→ DIGIT[1] -, DIGIT[2] +
CROSS-B/W       : test pattern, 0→normal; 1→black; 2→white; 3→ cross
```

● Factory mode flow-chat:

2. LOGO program:

When "SYSTEM" sub-menu "BACKGROUND" ON, if no signal input, the screen will display full screen blue. If factory "MENU 06" → "0-OPT-LOGO" set to "1", LOGO will display on this blue screen.

This LOGO can be programmed by engineer:

a) Set factory "MENU 06" → "LOGO-EDIT" =1;

b) Quit factory mode

c) Switch to AV mode(Don't input signal and make sure BACKGROUND is ON)

d) Press [-/--] key select edit item CHAR/COLOR/SIZE/POSITION

```
CHAR     : character edit, [VOL+/-] →move cursor; [PRO+/-] → select character
COLOR    : change color, [VOL+/-]→change color; [PRO+/-] →select line
SIZE     : change character size, [VOL+/-]→change size; [PRO+/-]→ select line
POSITION : change Display position, [VOL+/-]→move left/right;
            [PRO+/-]→move up/down
```

3. EEPROM address for auto white balance adjustment equipment :

	LA7681x sub-addr.	EEPROM addr.	Mask code	Range
R bias	007H (7)	01FH (31)	0FFH (255)	0 ~ 255
G bias	008H (8)	020H (32)	0FFH (255)	0 ~ 255
B bias	009H (9)	021H (33)	0FFH (255)	0 ~ 255
R drive	00AH (10)	022H (34)	07FH (127)	0 ~ 127
G drive	00BH (11)	023H (35)	00FH (15)	0 ~ 15
B drive	00CH (12)	024H (36)	07FH (127)	0 ~ 127
Sub-Bright	00DH (13)	025H (37)	07FH (127)	0 ~ 127

LA76810 IIC device address : 0BAH(186)
EEPRON IIC device address : 0A0H(160)

4. FACTORY MENU：
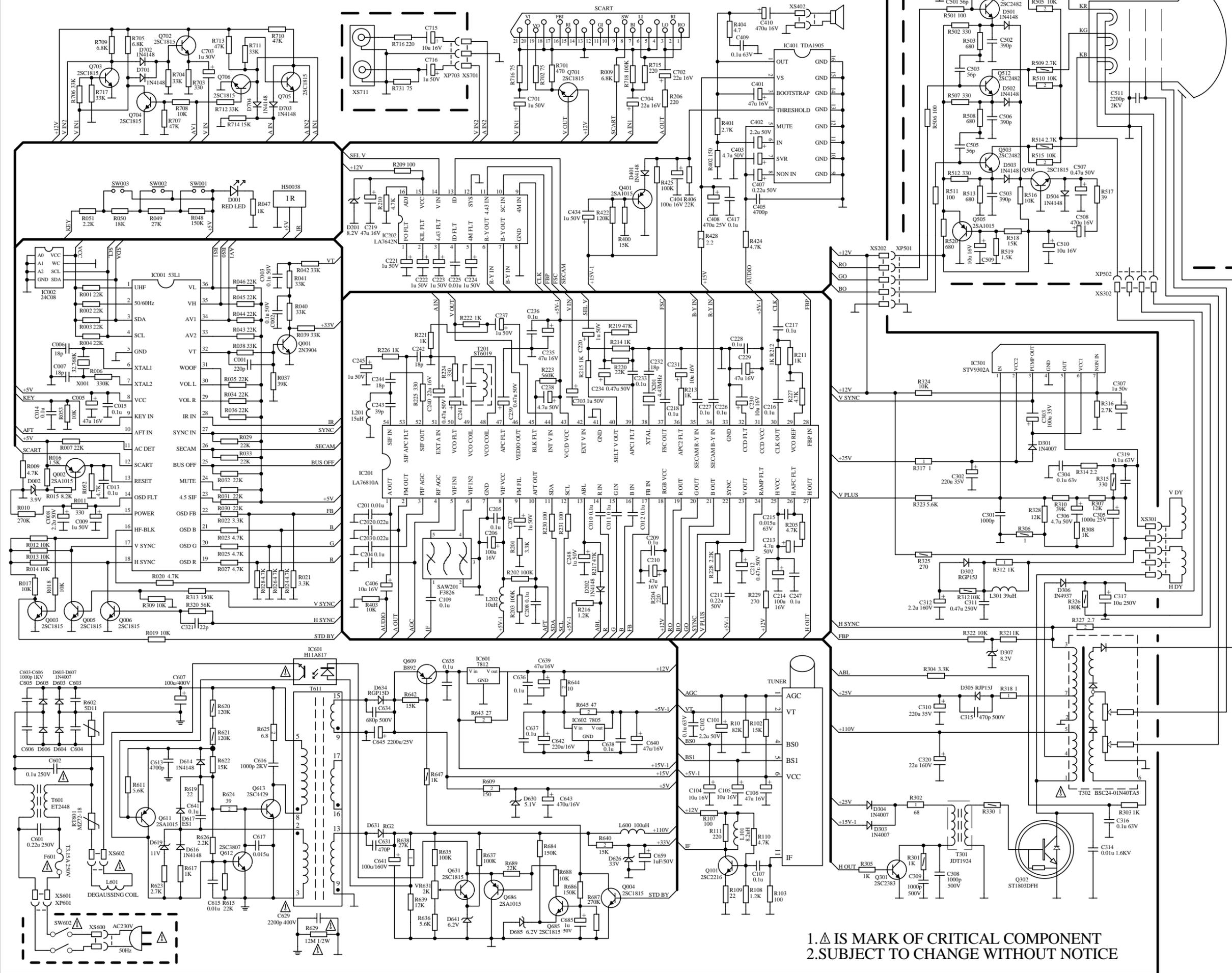
LA76810 OPTION MENU 00	Value	Range	Description
H-PAHSE/50(60)	11	0 … 31	Horizontal center
V-POS./50(60)	34	0 … 127	Vertical center
V-SIZE /50(60)	17	0 … 127	Vertical size
V-LINE /50(60)	18	0 … 31	Vertical linearity
V-SC	2	0 …31	Vertical S- Correction
OSD-V./50(60)	5	0 … 31	OSD vertical position
LA76810 OPTION MENU 01	Value	Range	Description
RB	135	0 … 255	Red bias
GB	217	0 … 255	Green bias
BB	165	0 … 255	Blue bias
RD	98	0 … 127	Red drive
GD	15	0 … 15	Green drive
BD	96	0 … 127	Blue drive
SUB-BRIGHT	96	0…127	Sub-brightness
CROSS-B/W	3	0…3	Build-in test pattern
LA76810 OPTION MENU 02	Value	Range	Description
SUB-SHARP	20	0 … 63	Sub sharpness (software)
SUB-CONT.	99	0 … 127	Sub contrast (software)
SUB-COLOR	34	0 … 63	Sub color (software)
SUB-TINT	41	0 … 127	Sub Tint (software)
OSD-H-POS.	22	0 … 63	OSD Horizontal position
H-BLK-R	4	0 … 7	Right blanking adjust
H-BLK-L	4	0 … 7	Left blanking adjust
LA76810 OPTION MENU 03	Value	Range	Description
AGC-DELAY	13	0 … 63	RF AGC delay
B-Y DC	8	0 … 15	SECAM B-Y DC level
R-Y DC	8	0 … 15	SECAM R-Y DC level
AC.HIGH	0	0…63	AC Power safety HIGH voltage
AC.LOW	63	0…63	AC Power safety LOW voltage
PROD MODE	1	0 , 1	Production mode
ENG.OPTION	0	0 , 1	Enable engineer menu
LA76810 OPTION MENU 04	Value	Range	Description
OPT 810/818	0	0 , 1	0→ LA76810; 1→ LA76818
NO-V-MUTE	0	0 , 1	Mute picture when change channel
CURTAIN	3	0~3	Curtain on/off→ None/ON/OFF/both
CURT-DELAY	0	0~7	Power on delay (when curtain ON)
LAST-POWER	1	0~2	AC power on →standby/last/on
LAST-TV/AV	0	0 , 1	Power on enter TV / last TV,AV
TUNER-TYPE	0	0~3	Tuner type (refer control logic)
P-OFF-MUTE	1	0, 1	Mute RGB when power off
LA76810 OPTION MENU 05	Value	Range	Description

AV-SYSTEM	2	0 ··· 3	AV numbers none / 1 AV/2 AV/3AV
OPT DVD	0	0 , 1	DVD YCrCb port no/yes
DVD PORT	0	0···3	DVD attach AV number
YUV-DECODE	0	0 , 1	DVD decode / Video
OPT-SVIDEO	0	0 , 1	S-VIDEO port no/yer
S-V DETECT	0	0 , 1	S-VIDEO plug-in auto detect on/off
S-V PORT	0	0···3	S-VIDEO attach AV number
O-DVD-TV	0	0 , 1	
LA76810 OPTION MENU 06	Value	Range	Description
O-OPT-LOGO	0	0 , 1	LOGO off/on
LOGO-EDIT	0	0 , 1	Normal / active LOGO edit mode
O-BALANCE	0	0 , 1	Volume PWM balance off/on
O-WOOFER	0	0 , 1	WOOFER channel off/on
O-BLU.BACK	1	0 , 1	Full screen black/blue background
O-PRO.NUM	1	0···2	Max. Program 100/255/512
O-SCART	1	0 , 1	SCART port no/yes
O-RT-IR	0	0 , 1	Normal / RTC remote controller
LA76810 OPTION MENU 07	Value	Range	Description
O-HALFTONE	1	0 , 1	OSD half-tone background off/on
O-NO SCRL	1	0 , 1	Menu scrolling off/on
O-A2/LNA	0	0 , 1	Pin32 function A2/LNA
O-K7 POWER	0	0 , 1	Front panel K7 → Search/Power
O-FM	0	0 , 1	FM module control off/on
O-CUSTOM	0	0 , 1	Custom option
O-COL.TEMP	1	0 , 1	Colour temperature
O-ZOOM	0	0 , 1	Zoom option 4:3/16:9
LA76810 OPTION MENU 08	Value	Range	Description
O-AC-DT	0	0 , 1	AC power protection off/on
O-FIX-PWM	0	0 , 1	Volume PWM active/fix
O-FIX VOL	0	0 , 1	LA76810 volume control fix
FIX VOL	127	0 ··· 127	Fix volume value
OSD-CONT.	60	0 ··· 127	OSD contrast
VIF-SYS.	0	0 ··· 3	VIF freq. → 38/38.9/45.75/49.5MHz
TUNE SPEED	0	0 ···3	Auto search speed (recommend 1)
LV1116/LV1117	0	0 , 1	LV1116 / LV1117 option
LA76810 OPTION MENU 09	Value	Range	Description
GRAY-MODE	0	0 , 1	Internal test white signal (100%/60%)
AV-AGC	1	0 , 1	AV mode mute TV off/on
C. D. MODE	0	0 ··· 7	Vertical 50/60Hz sync. Mode(testing)
VS-SEP-UP	1	0 , 1	Sensitivity of Vertical separation
V-SIZE-CMP	7	0 ··· 7	Compensate vertical size
BR-ABL-DEF	0	0 , 1	Brightness ABL defeat enable/ disable
MD-STP-DEF	0	0 , 1	Bright mid stop defeat enable/disable
BRT-ABL-TH	0	0 ··· 7	Bright ABL threshold
LA76810 OPTION MENU 10	Value	Range	Description

SYNC-KILL	0	0 , 1	Force H.OSC. free run mode(testing)
AFC-GAIN	1	0 , 1	AFC gain & gate auto/high gain
FBP-BK-SW	0	0 , 1	FBP blanking int./ int. "OR" FBP
H-FREQ	34	0 ⋯ 63	Hor. Frequency (only for ES Sample)
FILT-SYS.	2	0 ⋯ 15	Y/C filter select
TRAP.TEST	4	0⋯7	Sound trap control (testing)
LA76810 OPTION MENU 11	Value	Range	Description
C-KILL-ON	0	0 , 1	Color Kill mode (testing)
C-KILL-OFF	0	0 , 1	Disable killer circuit (testing)
AUTO-FRESH	0	0 , 1	NTSC auto flesh switch off/on
BLANK-DEF	0	0 , 1	RGB output blanking on/off
R/B G BAL	8	0 ⋯ 15	R-Y / B-Y gain balance
R/B ANGLE	8	0 ⋯ 15	R-Y / B-Y angle
VIDEO-MUTE	0	0 , 1	RGB output normal/mute (testing)
VIDEO-LVL	7	0 ⋯ 7	Align IF video level
LA76810 OPTION MENU 12	Value	Range	Description
C-EXT	0	0 , 1	S-VIDEO Chrome input (testing)
C-BYPASS	0	0 , 1	Select chrome BPF bypass(testing)
DIG.-OSD	0	0 , 1	analog / digital OSD
FM-GAIN	0	0 , 1	FM gain→±50KHz /±25KHz
DE-EMP.-TC	0	0 , 1	FM de-emphasis → 50us/75us
FM-LEVEL	17	0 ⋯ 31	FM level adjust (1000mv±20mv)
LA76810 OPTION MENU 13	Value	Range	Description
ENGLISH	1	0 , 1	ENGLISH OSD off/on
ARABIC	1	0 , 1	ARABIC OSD off/on
RUSSIAN	1	0 , 1	RUSSIAN OSD off/on
TURKISH	1	0 , 1	TURKISH OSD off/on
PERSIAN	1	0 , 1	PERSIAN OSD off/on
FRENCH	1	0 , 1	FRENCH OSD off/on
LA76810 OPTION MENU 14	Value	Range	Description
COL-PAL	1	0 , 1	Color system PAL 0:off/1:on
COL-NT3.58	0	0 , 1	Color system NTSC3.58 0:off/1:on
COL-SECAM	1	0 , 1	Color system SECAM 0:off/1:on
COL-NT4.43	0	0 , 1	Color system NTSC4.43 0:off/1:on
SND-D/K	1	0 , 1	Sound system D/K 0:off/1:on
SND-B/G	1	0 , 1	Sound system B/G 0:off/1:on
SND-I	0	0 , 1	Sound system I 0:off/1:on
SND-M/N	0	0 , 1	Sound system M/N 0:off/1:on
LA76810 OPTION MENU 15	Value	Range	Description
EM-ABL	0	0, 1	Emergency ABL defeat enable/disable
CORING EN.	1	0 , 1	Coring switch 0: enable /1:disable
BLK-STR-DF	1	0 , 1	Black stretch defeat 0:on/1:off
B-GAMMA	3	0 ⋯ 3	B γ correction
RG-GAMMA	0	0 , 1	R、G γ correction switch 0:off/1:on
LA76810 OPTION MENU 16	Value	Range	Description

DVD B-Y DC	8	0 ···15	Cb input DC shift
DVD R-Y DC	8	0 ··· 15	Cr input DC shift
V.RS TIME	0	0 , 1	Vertical Reset timing
A2.SW	0	0 , 1	A2 off/on
A.MONI.SW	1	0 , 1	Pin2 Audio out FM/Audio after Seitch
S.TRAP.SW	1	0 , 1	Sound trap off/on (testing)
LA76810 OPTION MENU 17	Value	Range	Description
CORE GAIN	1	0 ··· 3	Coring gain select off/1/2/3
G-Y ANGEL	0	0 , 1	G-Y demodulation angle 240/253 deg.
C.KILL OP.	0	0 ··· 7	Color killer operational level
RGB TMP. SW	0	0 , 1	RGB DC output color temp. -1VBE/Flat
PRE/OV. SW	0	0 , 1	Select Pre/Over-shoot adjustment
P/O. SHOOT	1	0 ··· 3	Pre/Over-shoot width → Narrow ··· Wide
FSC/CSYNC	1	0 , 1	Pin22 output FSC/Composite sync
LA76810 OPTION MENU 18	Value	Range	Description
WPL OPE.	1	0 ··· 3	White peak limiter off/1/2/3
VBLANK SW	0	0 , 1	Vertical blanking normal/wide
BLK. GAIN	2	0 ··· 3	Black stretch gain
BLK. START	3	0 ··· 3	Black stretch start point
DC. RESET	0	0 ··· 3	Select luma. DC restoration
Y GAMMA	0	0 ··· 3	Y Gamma start point→off/1/2/3
C. VCO SW	0	0 , 1	C.VCO adjust plus/minus
C. VCO ADJ.	0	0 ··· 3	Free run C.VCO frequency
LA76810 OPTION MENU 19	Value	Range	Description
OVERMOD. SW	0	0 , 1	Over modulation test
OV. MOD LVL	10	0 ··· 15	Over modulation operation point
V.LVL OFFS	2	0 ··· 3	IF video output amplitude
HF TONE-DEF	0	0 , 1	Half-tone on/off
HALF TONE	3	0 ··· 3	Adjust half-tone level

TV2KY CHASSIS SCHEMATIC DIAGRAM

1. △ IS MARK OF CRITICAL COMPONENT
2. SUBJECT TO CHANGE WITHOUT NOTICE