MANUAL ADJUSTMENT PROCEDURES OF THE 11AK20S CHASSIS

How to enter and exit the SERVICE Menu:
- Enter the Main Menu
- Press the digits 4, 7, 2, and 5, respectively
- Press MENU key to exit
- There're two selections in the Service Menu: '**ADJUST...'** and **'OPTIONS...'**

How to use the ADJUST Menu:
- Enter the Service Menu,
- Move the selection bar on the item 'ADJUST...' using the "△P" or "P▽" keys,
- Select the item 'ADJUST...' using the "◁" or "▷" keys,
- The items below will be displayed (one of them at one time),

1)	**AGC**	(Automatic Gain Control)	**8)**	**HSH**	(Horizontal Shift)
2)	**VA1**	(Vertical Amplitude for 4:3, 50Hz)	**9)**	**WG**	(White Point GREEN)
3)	**VA2**	(Vertical Amplitude for 16:9, 50Hz)	**10)**	**WR**	(White Point RED)
4)	**VA3**	(Vertical Amplitude for 4:3, 60Hz)	**11)**	**WB**	(White Point BLUE)
5)	**VA4**	(Vertical Amplitude for 16:9, 60Hz)	**12)**	**CR**	(Cut-off Red)
6)	**VSH**	(Vertical Shift)	**13)**	**CG**	(Cut-off Green)
7)	**VL**	(Vertical Linearity)	**14)**	**OSH**	(OSD Horizontal Position)

- Press "△P" or "P▽" keys till the desired item is displayed,
- Press "◁" or "▷" keys to change the values.

NOTE: *The Service Menu below shows the ranges of the adjustment parameters.*

AGC Adjustment:
- Enter a 60dBmV RF signal level from channel C-12,
- Connect a digital voltmeter to AGC test point (or to pin1 of the tuner),
- Set the AGC parameter to zero and note the AGC voltage value,
- Increase the AGC parameter till the AGC voltage decreases 1V below the noted voltage value,
- Check that picture is normal at 90dBmV signal level.

Vertical Amplitude Adjustments:
- There're four adjustment parameters: Two for 50Hz and two for 60Hz.
- Enter a PAL B/G test pattern via RF,
- Change vertical slope till horizontal black lines on both the upper and lower part of the test pattern become very close to the upper and lower horizontal sides of picture tube and nearly about to disappears,
- Check and do the same adjustment if it becomes improper after some other geometric adjustments.

Vertical Shift and Horizontal Shift Adjustments:
- Enter a test pattern for geometric adjustments via RF,
- Change Vertical Shift till the test pattern is centred vertically and horizontally
- Check and do the same adjustment if it becomes improper after some other geometric adjustments

Vertical Linearity Adjustment:
- Enter a cross-hatch pattern via RF,
- Change VL paramaeter till the size of squares on both the upper and lower part of test pattern become equal to the squares laying on the vertical centre of the test pattern,
- Check and do the same adjustment if it becomes improper after some other geometric adjustments.

White Point Adjustment:
- Enter a white pattern via RF,
- Set all of the 3 parameters (WR, WG, WB) firstly to zero,
- Set the values till you get a pure white screen. (To to do a correct adjustment use a colour analyser).

Black point Adjustment:
- Set CR and CG parameter values firstly to zero,
- Set the values to do this adjustment.

How to use the OPTION BYTEs:

- Enter the Service Menu,
- Move the selection bar on the item 'OPTIONS...' using the "△P" or "▽P" keys,
- Select the item 'OPTIONS...' using the "◁" or "▷" keys,
- Select the desired option,
- Use the digit keys to do the adjustments. The digit keys 0 through 7 are used to change the bits 0 through 7, respectively.

NOTE: *TheService Menu below shows the meanings of each bit.*

SERVICE MENU

THE SERVICE MENU IS ALWAYS IN ENGLISH...

SERVICE
ADJUST...
OPTIONS...

ADJUST

		MIN	MAX
AGC	Automatic Gain Control	0	63
VA1	Vertical Amplitude 4:3 (50 Hz)	-32	31
VA2	Vertical Amplitude 16:9 (50 Hz)	-32	31
VA3	Vertical Amplitude 4:3 (60 Hz)	-32	31
VA4	Vertical Amplitude 16:9 (60 Hz)	-32	31
VSH	Vertical Shift(position)	-4	3
VL	Vertical Linearity	0	63
HSH	Horizontal Shift	-32	31
WR	White Point Adjust Red	-32	31
WG	White Point Adjust Green	-32	31
WB	White Point Adjust Blue	-32	31
CR	Cuttoff-R	-32	31
CG	Cuttoff-G	-32	31
OSH	OSD Horizontal Position	1	127

In this menu only one item is displayed

OPTION BYTE 1

7	6	5	4	3	2	1	0
b7	b6	b5	b4	b3	b2	b1	b0

→ Receiving System
→ Horizontal position of OSD
→ HUE enable/disable

b2	b1	b0	
0	0	0	not to be used
0	0	1	Multi LL (BG-I-L-L')
0	1	0	BG
0	1	1	BG-DK
1	0	0	I
1	0	1	BG-L-L'
1	1	0	BG-DK-I
1	1	1	Multi MN (BG-DK-I-N-PAL M-NTSC M)

b7	
1	HUE enable
0	HUE disable

OPTION BYTE 2

7	6	5	4	3	2	1	0
b7	X	X	X	b3	b2	b1	b0

b0	
1	3-Band Tuning (UHF-VHF1-VHF3)
0	1-Band Tuning (UHF)

b1	
1	Turkish available
0	Turkish not available

b2	
1	Blank Time 600ms (in TVs receiving SECAM)
0	Blank Time 410ms (in TVs not receiving SECAM)

b3	
1	RGB enable
0	RGB disable

b7	
1	Symbol Menu
0	Text Menu

NOTE: The values of the Option Bytes are written in binary form. The meaning of each bit is explained, above. The digits 0 through 7 are used to change the bit values. These digits are changing the related bits to 0 or 1. Let's change the value of the RGB bit (b3) in Option2, as an example. Firstly, select Option2, and press the digit '3'. The bit value will change from 0 to 1 or from 1 to 0 (toggle). In this way the values of the bits can be set to the desired values, easily.

CHARACTER SETS FOR TELETEXT

SET 1
English
German
Swedish
Italien
French
Spanish/Portuguese
Czechoslovak

SET 2
Polish
German
Swedish
Italien
French
Serbocroat
Czechoslovak
Rumanian

SET 3
English
German
Swedish
Italien
French
Spanish/Portuguese
Turkish

OPTION BYTE 3 (FOR TELETEXT)

7	6	5	4	3	2	1	0
b7	b6	b5	b4	X	X	b1	b0

Character Set

b1	b0	
0	0	Set 1
0	1	Set 2
1	0	Set 3
1	1	not to be used

Values of TTX Brightness/Contrast (Bits of OPTION BYTE 3)

b7	b6	b5	b4	Value
0	0	0	0	0
0	0	0	1	2
0	0	1	0	4
0	0	1	1	6
0	1	0	0	8
0	1	0	1	10
0	1	1	0	12
0	1	1	1	14
1	0	0	0	16
1	0	0	1	18
1	0	1	0	20
1	0	1	1	22
1	1	0	0	24
1	1	0	1	26
1	1	1	0	28
1	1	1	1	30

Values of TTX Brightness/Contrast and OSD Horizontal Position:
To control the Brightness of the TTX, four of the bits of 'Option Byte 3' is used. In the table just beside the values of TTX Brightness/Contrast are given according to the bit values.
To control the horizontal position of the OSD (teletext and menu display positions), the 14th parameter of ADJUST menu is used. The range is from 1 to 127. (As the value of this parameter increases the OSD moves from left to right.)
These adjustments have to be done while doing the Service Adjustments.

AFC Adjustment:

For TVs not including ‘ L/L’ ’ Standarts:

- Switched the system to the desired standard,
- Apply the IF signal to the IF inputs in accordance with the standards (38.9MHz for ‘ B/G ’ and ‘ D/K ’, 39.5MHz for ‘ I ’) at pin1 and 2 of SAW filter (Z101)
- Adjust the VL101 until getting 2.5 V_{dc} at pin9 of the microcontroller (IC501).

For TVs including ‘ L/L’ ’ Standarts:

- Switched the system to a desired standard,
- Apply the IF signal to the IF inputs in accordance with the standards (38.9MHz for ‘ B/G ’ and ‘ D/K ’, 39.5MHz for ‘ I ’) at pin1 and 2 of SAW filter (Z101),
- Adjust the VL101 until getting 2.5 V_{dc} at pin9 of the microcontroller (IC501),
- Switched the system to the standard ‘ L ’,
- Apply the IF signal to the IF inputs in accordance with the standards (33.9MHz for ‘ L ’) at pin1 and 2 of SAW filter (Z101),
- Adjust the VC101 until getting 2.5 V_{dc} at pin9 of the microcontroller (IC501).