

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 " Δ " or " ∇ " 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 " Δ " or " ∇ " 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 parameter 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 "▲" or "▼" 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: The Service Menu below shows the meanings of each bit.

SERVICE MENU																																																																																																																																																															
<p><u>THE SERVICE MENU IS ALWAYS IN ENGLISH...</u></p> <p>SERVICE ADJUST... OPTIONS...</p> <p>ADJUST</p> <table border="1" style="width:100%; border-collapse: collapse; font-size: 8px;"> <thead> <tr> <th></th> <th></th> <th>MIN</th> <th>MAX</th> </tr> </thead> <tbody> <tr><td>AGC</td><td>Automatic Gain Control</td><td>0</td><td>63</td></tr> <tr><td>VA1</td><td>Vertical Amplitude 4:3 (50 Hz)</td><td>-32</td><td>31</td></tr> <tr><td>VA2</td><td>Vertical Amplitude 16:9 (50 Hz)</td><td>-32</td><td>31</td></tr> <tr><td>VA3</td><td>Vertical Amplitude 4:3 (60 Hz)</td><td>-32</td><td>31</td></tr> <tr><td>VA4</td><td>Vertical Amplitude 16:9 (60 Hz)</td><td>-32</td><td>31</td></tr> <tr><td>VSH</td><td>Vertical Shift(position)</td><td>-4</td><td>3</td></tr> <tr><td>VL</td><td>Vertical Linearity</td><td>0</td><td>63</td></tr> <tr><td>HSH</td><td>Horizontal Shift</td><td>-32</td><td>31</td></tr> <tr><td>WR</td><td>White Point Adjust Red</td><td>-32</td><td>31</td></tr> <tr><td>WG</td><td>White Point Adjust Green</td><td>-32</td><td>31</td></tr> <tr><td>WB</td><td>White Point Adjust Blue</td><td>-32</td><td>31</td></tr> <tr><td>CR</td><td>Cutoff-R</td><td>-32</td><td>31</td></tr> <tr><td>CG</td><td>Cutoff-G</td><td>-32</td><td>31</td></tr> <tr><td>OSH</td><td>OSD Horizontal Position</td><td>1</td><td>127</td></tr> </tbody> </table> <p style="font-size: 8px;">In this menu only one item is displayed</p>			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	Cutoff-R	-32	31	CG	Cutoff-G	-32	31	OSH	OSD Horizontal Position	1	127	<p style="text-align: center;">OPTION BYTE 1</p> <table border="1" style="width:100%; border-collapse: collapse; font-size: 8px;"> <tr><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td></tr> <tr><td>b7</td><td>b6</td><td>b5</td><td>b4</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr> </table> <p style="font-size: 8px;"> └─── Receiving System └─── Horizontal position of OSD └─── HUE enable/disable </p> <table border="1" style="width:100%; border-collapse: collapse; font-size: 8px;"> <tr><td>b2</td><td>b1</td><td>b0</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>not to be used</td></tr> <tr><td>0</td><td>0</td><td>1</td><td>Multi LL (BG-I-L-L')</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>BG</td></tr> <tr><td>0</td><td>1</td><td>1</td><td>BG-DK</td></tr> <tr><td>1</td><td>0</td><td>0</td><td>I</td></tr> <tr><td>1</td><td>0</td><td>1</td><td>BG-L-L'</td></tr> <tr><td>1</td><td>1</td><td>0</td><td>BG-DK-I</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>Multi MN (BG-DK-I-N-PAL M-NTSC M)</td></tr> </table> <table border="1" style="width:100%; border-collapse: collapse; font-size: 8px;"> <tr><td>b7</td></tr> <tr><td>1</td><td>HUE enable</td></tr> <tr><td>0</td><td>HUE disable</td></tr> </table>	7	6	5	4	3	2	1	0	b7	b6	b5	b4	b3	b2	b1	b0	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	<p style="text-align: center;">OPTION BYTE 2</p> <table border="1" style="width:100%; border-collapse: collapse; font-size: 8px;"> <tr><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td></tr> <tr><td>b7</td><td>X</td><td>X</td><td>X</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td></tr> </table> <table border="1" style="width:100%; border-collapse: collapse; font-size: 8px;"> <tr><td>b0</td></tr> <tr><td>1</td><td>3-Band Tuning (UHF-VHF1-VHF3)</td></tr> <tr><td>0</td><td>1-Band Tuning (UHF)</td></tr> </table> <table border="1" style="width:100%; border-collapse: collapse; font-size: 8px;"> <tr><td>b1</td></tr> <tr><td>1</td><td>Turkish available</td></tr> <tr><td>0</td><td>Turkish not available</td></tr> </table> <table border="1" style="width:100%; border-collapse: collapse; font-size: 8px;"> <tr><td>b2</td></tr> <tr><td>1</td><td>Blank Time 600ms (in TVs receiving SECAM)</td></tr> <tr><td>0</td><td>Blank Time 410ms (in TVs not receiving SECAM)</td></tr> </table> <table border="1" style="width:100%; border-collapse: collapse; font-size: 8px;"> <tr><td>b3</td></tr> <tr><td>1</td><td>RGB enable</td></tr> <tr><td>0</td><td>RGB disable</td></tr> </table> <table border="1" style="width:100%; border-collapse: collapse; font-size: 8px;"> <tr><td>b7</td></tr> <tr><td>1</td><td>Symbol Menu</td></tr> <tr><td>0</td><td>Text Menu</td></tr> </table>	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
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<p style="text-align: center;">CHARACTER SETS FOR TELETEXT</p> <table border="1" style="width:100%; border-collapse: collapse; font-size: 8px;"> <tr><td style="background-color: #cccccc;">SET 1</td></tr> <tr><td>English</td></tr> <tr><td>German</td></tr> <tr><td>Swedish</td></tr> <tr><td>Italian</td></tr> <tr><td>French</td></tr> <tr><td>Spanish/Portuguese</td></tr> <tr><td>Czechoslovak</td></tr> </table> <table border="1" style="width:100%; border-collapse: collapse; font-size: 8px;"> <tr><td style="background-color: #cccccc;">SET 2</td></tr> <tr><td>Polish</td></tr> <tr><td>German</td></tr> <tr><td>Swedish</td></tr> <tr><td>Italian</td></tr> <tr><td>French</td></tr> <tr><td>Serbocroat</td></tr> <tr><td>Czechoslovak</td></tr> <tr><td>Rumanian</td></tr> </table> <table border="1" style="width:100%; border-collapse: collapse; font-size: 8px;"> <tr><td style="background-color: #cccccc;">SET 3</td></tr> <tr><td>English</td></tr> <tr><td>German</td></tr> <tr><td>Swedish</td></tr> <tr><td>Italian</td></tr> <tr><td>French</td></tr> <tr><td>Spanish/Portuguese</td></tr> <tr><td>Turkish</td></tr> </table>	SET 1	English	German	Swedish	Italian	French	Spanish/Portuguese	Czechoslovak	SET 2	Polish	German	Swedish	Italian	French	Serbocroat	Czechoslovak	Rumanian	SET 3	English	German	Swedish	Italian	French	Spanish/Portuguese	Turkish	<p style="text-align: center;">OPTION BYTE 3 (FOR TELETEXT)</p> <table border="1" style="width:100%; border-collapse: collapse; font-size: 8px;"> <tr><td>7</td><td>6</td><td>5</td><td>4</td><td>3</td><td>2</td><td>1</td><td>0</td></tr> <tr><td>b7</td><td>b6</td><td>b5</td><td>b4</td><td>X</td><td>X</td><td>b1</td><td>b0</td></tr> </table> <p style="text-align: center;">Character Set</p> <table border="1" style="width:100%; border-collapse: collapse; font-size: 8px;"> <tr><td>b1</td><td>b0</td></tr> <tr><td>0</td><td>0</td><td>Set 1</td></tr> <tr><td>0</td><td>1</td><td>Set 2</td></tr> <tr><td>1</td><td>0</td><td>Set 3</td></tr> <tr><td>1</td><td>1</td><td>not to be used</td></tr> </table> <p style="text-align: center;">Values of TTX Brightness/Contrast (Bits of OPTION BYTE 3)</p> <table border="1" style="width:100%; border-collapse: collapse; font-size: 8px;"> <tr><td>b7</td><td>b6</td><td>b5</td><td>b4</td><td>Value</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>1</td><td>2</td></tr> <tr><td>0</td><td>0</td><td>1</td><td>0</td><td>4</td></tr> <tr><td>0</td><td>0</td><td>1</td><td>1</td><td>6</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>0</td><td>8</td></tr> <tr><td>0</td><td>1</td><td>0</td><td>1</td><td>10</td></tr> <tr><td>0</td><td>1</td><td>1</td><td>0</td><td>12</td></tr> <tr><td>0</td><td>1</td><td>1</td><td>1</td><td>14</td></tr> <tr><td>1</td><td>0</td><td>0</td><td>0</td><td>16</td></tr> <tr><td>1</td><td>0</td><td>0</td><td>1</td><td>18</td></tr> <tr><td>1</td><td>0</td><td>1</td><td>0</td><td>20</td></tr> <tr><td>1</td><td>0</td><td>1</td><td>1</td><td>22</td></tr> <tr><td>1</td><td>1</td><td>0</td><td>0</td><td>24</td></tr> <tr><td>1</td><td>1</td><td>0</td><td>1</td><td>26</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>0</td><td>28</td></tr> <tr><td>1</td><td>1</td><td>1</td><td>1</td><td>30</td></tr> </table> <div style="border: 1px solid black; padding: 5px; font-size: 8px;"> <p>Values of TTX Brightness/Contrast and OSD Horizontal Position:</p> <p>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.</p> <p>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.</p> </div>	7	6	5	4	3	2	1	0	b7	b6	b5	b4	X	X	b1	b0	b1	b0	0	0	Set 1	0	1	Set 2	1	0	Set 3	1	1	not to be used	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																		
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1	1	1	0	28																																																																																																																																																											
1	1	1	1	30																																																																																																																																																											

AFC Adjustment:***For TVs not including 'L/L' Standards:***

- 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' Standards:

- 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).