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## 5. Alignment and Adjustments

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### 5-1 RF AGC Adjustment

1. Tune to the strongest local station.
2. Turn the AGC control fully clockwise (VR111, on the IF board).
3. Adjust the AGC control until noise (snow) disappears from the screen.

### 5-2 Screen Adjustment

1. Turn to the Active channel.
2. Adjust the VR (VR501, VR531, VR561) screen for a normal picture is (no blooming or flyback line).
3. Adjust the FOCUS control for well defined scanning lines in the center area of the screen.

### 5-3 Horizontal Dynamic Focus Adjustment

#### PREPARATION

1. Input a crosshatch pattern.
2. Cover the Red and Blue Lenses.
3. Enter "STANDARD" video mode.
4. Adjust the Green Lens for best focus.

#### ADJUSTMENT

Adjust VRZ01 (located on the convergence board). Balance the left and right sides of the dynamic focus lines.

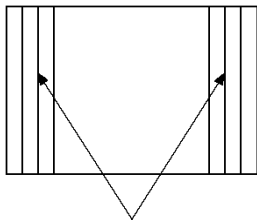


Fig. 5-1 Balance the left and right sides

### 5-4 FBT B<sup>+</sup> Voltage Adjustment

#### PREPARATION

1. Note: The B<sup>+</sup> voltage adjustment (FBT) is done during the chassis check at the factory. Perform this adjustment after Sub-Brightness and Convergence.
2. Warm up the TV for at least for 10 minutes.
3. Input 100% white pattern.
4. Select the "STANDARD" video mode.

#### ADJUSTMENT

1. Connect the leads of a multimeter to GT405 (B<sup>+</sup>) and GT406(G).
2. Set VR401 (on deflection board) to either 126.9V (for NTSC), or 125.6V (for PAL).

## 5-5 Lens Focus and Static Focus Adjustment

### 5-5-1 Static Focus (Electric Focus)

#### PREPARATION

1. Select the "STANDARD" video mode.
2. Input a crosshatch pattern.
3. Cover the lenses that are not being adjusted.
4. Connect a convergence jig and read data.
5. Adjust the lens for best focus.

#### ADJUSTMENT

Vary the focus pack VR (Red, Blue) on the front cabinet. Adjust the TV for best possible focus around the center of the crosshatch pattern, without losing overall screen balance.

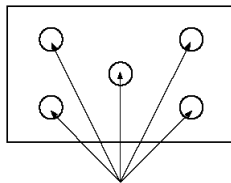


Fig. 5-2 Crosshatch Pattern. Examine these points together

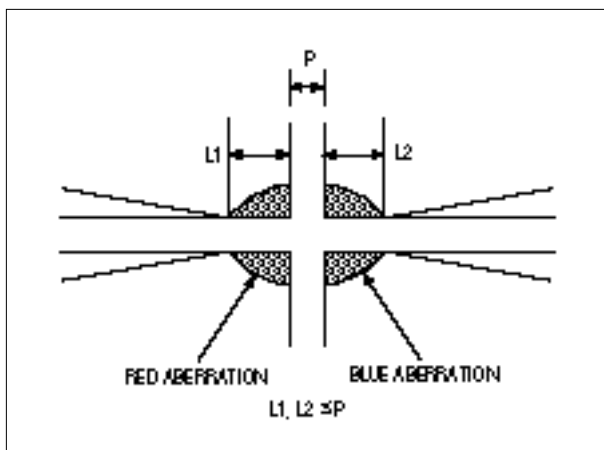


Fig. 5-3 Color Aberration

### 5-5-2 Lens Focus

#### PREPARATION

1. Do this adjustment after the static focus adjustment .
2. Select the " STANDARD " video mode. (Contrast: 64, Brightness: 32)
3. Input a cross hatch pattern.

#### ADJUSTMENT

1. Loosen the lens screws.
2. Cover the two lenses that are not being adjusted.
3. Adjust the lens, observing the color aberration vertically and horizontally within 3 blocks of the center of the crosshatch pattern.
4. When the lens is turned clockwise, the color aberration will change as follows:

Lens	Color Aberration Change
R	Orange — Crimson
G	Blue — Red
B	Purple — Green

5. Green lens adjustment:  
Set the lens at the point where Blue just changes to Red. If the color aberration is irregular throughout the picture screen, adjust the lens to show Red within a 3-block grid around the horizontal center-line.

Observe the the color aberration near the intersection points of the horizontal and vertical lines (approximately 1 - 3 mm area). If the aberration is irregular, adjust the lens as shown in the diagram below. (Accurate alignment of Green is important for overall color quality.)

6. Set the Red lens at the point where Orange becomes Crimson.
7. Set the Blue lens at the point where Purple becomes Green.

## 5-6 Convergence Adjustment

### 5-6-1 Convergence Adjustment

1. Input a PAL pattern.
  2. Warm up the set for 30 minutes before adjustment.
  3. Display the test pattern (Crosshatch) by pressing the remote-control keys in this sequence : Conv. °E Mute °E 1°E 8°E 2.
  4. When the convergence data is severely tilted (or if readjustments are necessary because the convergence module was replaced), select the "Mute" and "Yellow (TTX)" keys in turn so that the basic data of module micom applies to the convergence adjustments.
- When making only one convergence adjustment, only one parameter needs to be adjusted. (The basic data does not change.)
5. After selecting R-Mute and B-Mute, display only a green color pattern. Center the pattern by adjusting CY.
  6. After selecting G-Mute and B-Mute, adjust the Red CY to center the picture.
  7. Center the Blue Pattern as above.
  8. After the picture is centered, begin the convergence adjustments.  
First, display the green pattern:

The "Menu" key moves the cursor vertically and horizontally.

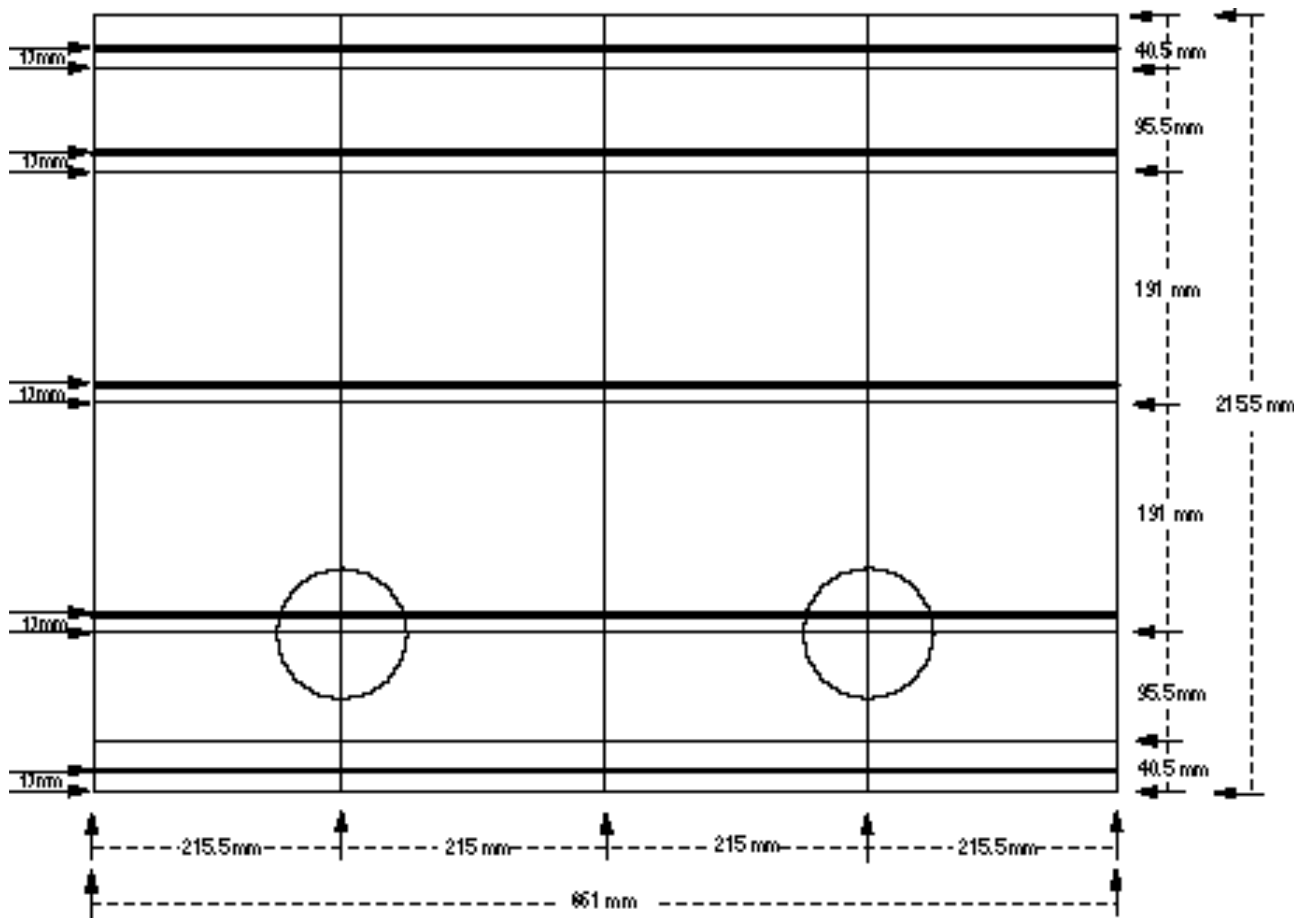
Use the Channel and Volume keys (Up/Down) to adjust convergence.

9. Use the "Surround" key for minor adjustments.
10. After the Green Adjustment is completed, press the R-Mute key (confirm Green to Red).
11. Adjust Blue as above.
12. After the adjustments are completed, press "Recall" to save the data.
13. Change from PAL mode to NTSC when making NTSC adjustments.
14. After setting the NTSC line (on Screen Jig), readjust as 7~10.
15. After the NTSC pattern adjustments are completed, press the "RECALL" key to save the NTSC data.
16. After the Convergence Adjustments are completed, press the Escape key.

#### Note

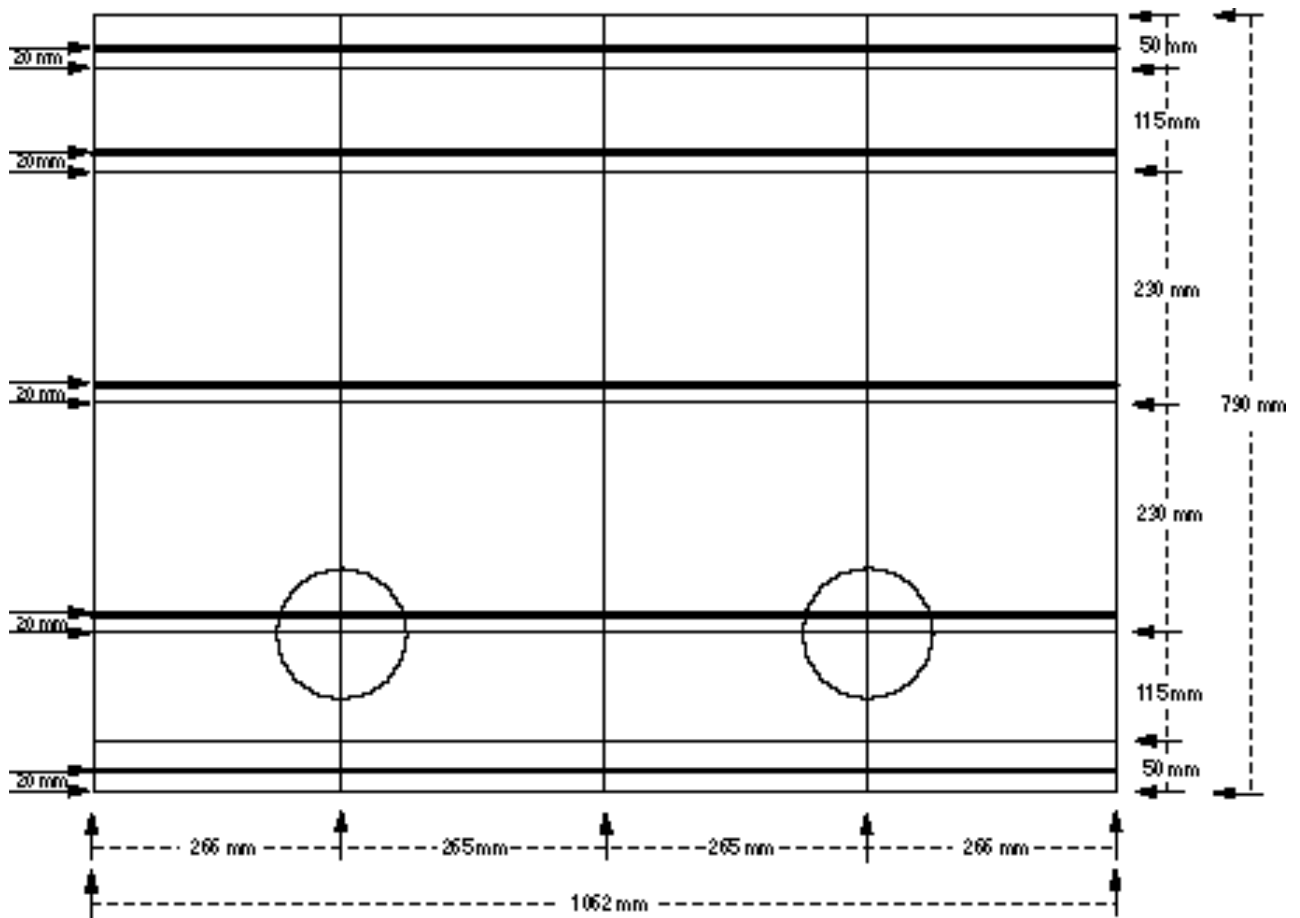
1. If the convergence data is lost during adjustment, use the "Saturation" (TV/Video) key to reset the data to the initial values of the ROM.
2. Make minor adjustments with the User Convergence key.  
A "+" pattern appears when "Conv." is pressed.
3. Use the "R/B" and "Ch/Vol" keys to correct convergence. After the adjustments are completed, press "Escape".

### 5-6-2 Screen Jig



1. **———** line : PAL convergence adjustment line (horizontal).
2. **———** line : NTSC convergence adjustment line (horizontal).
3. Horizontal line : Used for NTSC/PAL
4. Application Model : SVP4388/SPM4388PF

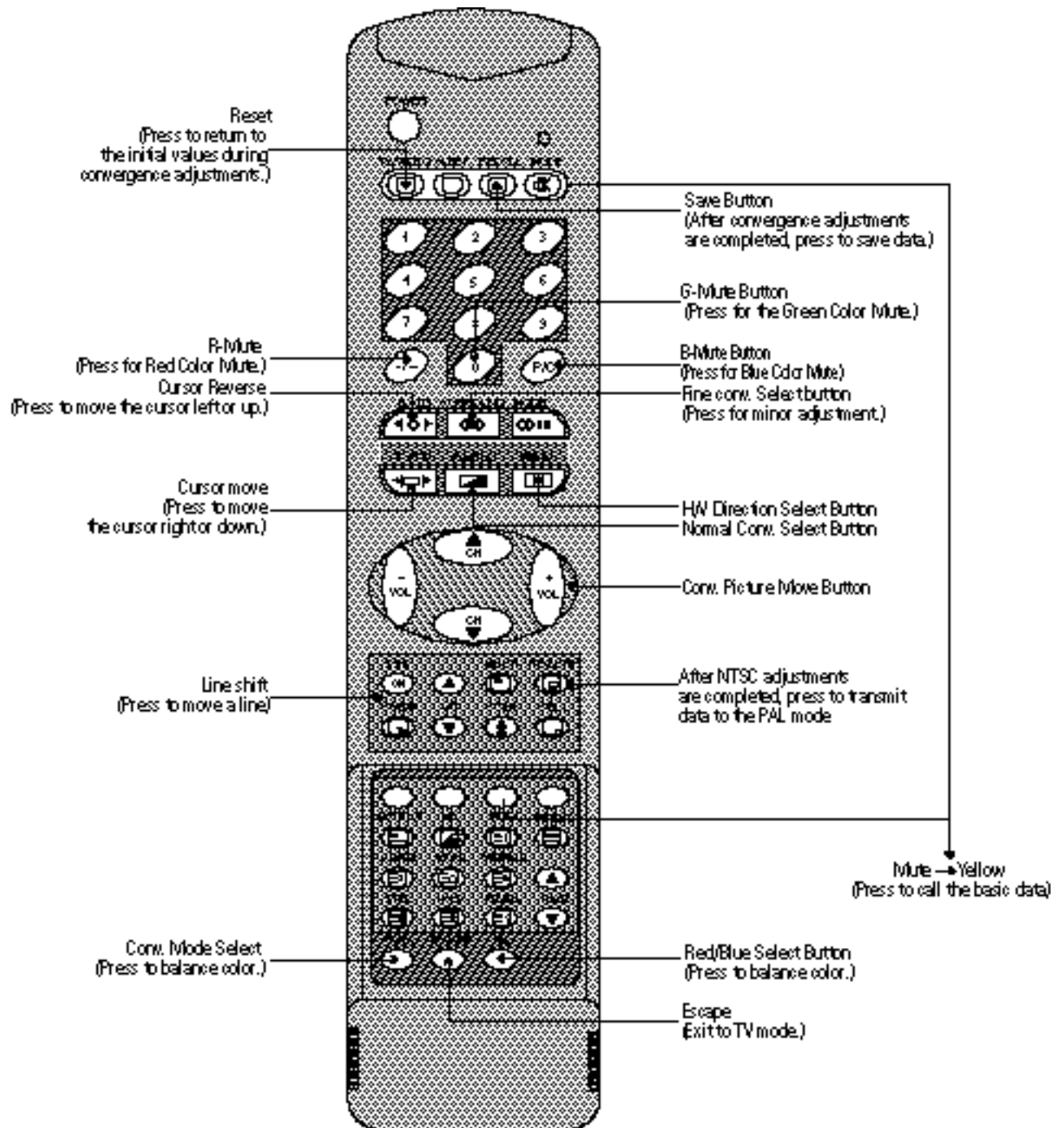
Fig. 5-5 43 inch JIG Screen



1. **—————** line : PAL convergence adjustment line (horizontal).
2. **—————** line : NTSC convergence adjustment line (horizontal).
3. Horizontal line : Used for NTSC/PAL
4. Application Model: SVP5288 / SPME288PF

Fig. 5-5 52 inch JIG Screen

### 5-6-3 Remote Control for Servicing



## 5-7 Manual Alignment (Factory Mode)

1. Enter the Factory Mode. Press the remote-control keys in this sequence:



2. Use the CHANNEL and VOLUME keys (Up/Down) to move the cursor. Select an alignment parameter:

SERVICE MODE
ADJUSTMENT
TEST PATTERN
OPTION BYTES
RESET
BONUS

3. Adjustment must be done for both 50Hz and 60Hz field rates:

SBT 08	GG 49
SCR 10	BG 32
SCT 13	PW 32
STT 08	GAM 00
RRC 26	ALS 07
GRC 42	ASS 32
BRC 32	PCT 04
RG 28	PTT 32

**Adjustment I**

Function	OSD	Range	Note
SUB-BRIGHT	SBT	00-13	
SUB-COLOR	SCR	00-13	
SUB-CONTRAST	SCT	00-13	
SUB-TINT	STT	00-13	
RED REFERENCE	RRC	00-63	Low-light adjustment
GREEN REFERENCE	GRC	00-63	"
BLUE REFERENCE	BRC	00-63	"
RED GAIN	RG	00-63	High-light adjustment
GREEN GAIN	GG	00-63	"
BLUE GAIN	BG	00-63	"
PEAK WHITE	PW	00-63	
GAMMA	GAM	00-63	
AUDIO LEVEL SETTING	ALS	00-15	
AUDIO SEPARATION SETTING	ASS	00-63	
PIP CONTRAST	PCT	00-15	
PIP TINT	PTT	00-63	

**4. Access Adjustment II by pressing the CHANNEL keys (Up/Down) while the cursor is positioned on "SBT" or "PTT" (see Adjustment I):**

PHS 42	PVA 15
PEW 27	PSC 30
PEP 23	PVS 10
PEC 02	HSP 13
PET 47	PVP 10
PSC 40	PHP 72

**Adjustment II - 50Hz Picture**

NHS 32	NVA 32
NEW 27	NSC 13
NEP 30	NVS 55
NEC 02	HSN 11
NET 28	NVP 04
NSL 16	NHP 73

**Adjustment II - 60Hz Picture**

Function	OSD	Range
PAL HORIZONTAL SHIFT	PHS	00-63
NTSC HORIZONTAL SHIFT	NHS	00-63
PAL E-W WIDTH	PEW	00-63
NTSC E-W WIDTH	NEW	00-63
PAL E-W PARABOLA	PEP	00-63
NTSC E-W PARABOLA	NEP	00-63
PAL E-W TRAPEZIUM	PET	00-63
NTSC E-W TRAPEZIUM	NET	00-63
PAL VERTICAL SLOPE	PSL	00-63
NTSC VERTICAL SLOPE	NSL	00-63
PAL VERTICAL AMPLITUDE	PVA	00-63
NTSC VERTICAL AMPLITUDE	NVA	00-63
PAL S CORRECTION	PSC	00-63
NTSC S CORRECTION	NSC	00-63

Function	OSD	Range
PAL VERTICAL SHIFT	PVS	00-63
NTSC VERTICAL SHIFT	NVS	00-63
PIP PAL HORIZONTAL SHIFT	HSP	05-20
PIP NTSC HORIZONTAL SHIFT	HSN	00-20
PIP PAL VERTICAL POSITION	PVP	00-33
PIP NTSC VERTICAL POSITION	PVN	00-33
PIP PAL HORIZONTAL POSITION	PHP	00-83
PIP NTSC HORIZONTAL POSITION	PHN	00-83



5. After the Factory Mode Adjustments are completed, return to the first menu and set up "Test Pattern," "Option" and "Bonus." Use the CHANNEL and VOLUME keys to position the cursor and make a selection:

7-Color Bar
Cross hatch
Red
Green
Blue

**Test Pattern I**

Kara-OK On
TTX On
Tuner CCIR
List
OSD Language Select

**Option Bytes**

OE	80
BON	01
WD	08
01	40
02	32
03	10
AMS	00
SVR	00

**Bonus (see data, below)**

Content	OSD
TDA4780 BLACK STRETCH	OE
TDA9170 BLACK OFFSET COMPENSATION ENABLE	BON
TDA9170 WINDOW SELECT	WD
USER VARIABLE GAMMA (TDA9170)	01
ADAPTIVE GAMMA (TDA9170)	02
NON LINEARITY AMPLITUDE (TDA9170)	03
AMPLITUDE SELECTION (TDA9170)	AMS
FULL SCREEN BLACK LEVEL (TDA9170)	SVR

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