Roadstar®

11AK19P4-Vestel

Service Manual - 11AK19P4-Vestel

SERVICE MANUAL

TELEVISION COLOUR

CHASSIS 11AK19

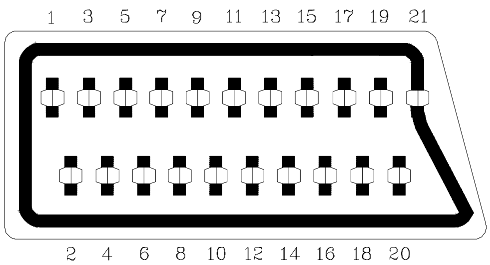
FOR ALL MODELS

DO NOT CHANGE ANY MODULE UNLESS THE SET IS SWITCH OFF
The mains supply side of the switch mode power supply transformer is live.
Use an isolating transformer.
The receivers fulfill completely the safety requirements.

Safety precautions:
Servicing of this TV should only be carried out by a qualified person.
- Components marked with the warning symbol on the circuit diagram are critical for safety and must only be replaced with an identical component.
- Power resistor and fusable resistors must be mounted in an identical manner to the original component.
- When servicing this TV, check that the EHT does not exceed 26kV.

TV Set switched off:
Make short-circuit between HV-CRT clip and CRT ground layer.
Short C804 (150mF) before changing IC802 or other components in primary side of SMPS.
Measurements:
Voltage readings and oscilloscope traces are measured under following conditions.
Antenna signal 60dB from colourbar generator. (100% white, 75% colour saturation)
Brightness, contrast, colour set for a normal picture.
Mains supply, 220VAC, 50Hz.

PERI-TV SOCKET



SCART 1 (SC050)

1	Audio right output	0.5Vrms / 1K
2	Audio right input	0.5Vrms / 10K
3	Audio left output	0.5Vrms / 1K
4	Ground AF	
5	Ground Blue	
6	Audio left input	0.5Vrms / 10K
7	Blue input	0.7Vpp / 75ohm
8	AV switching input	0-12VDC /10K
9	Ground Green	
10	-	
11	Green input	0.7Vpp / 75ohm
12	-	
13	Ground Red	
14	Ground Blanking	
15	Red input	0.7Vpp / 75ohm
16	Blanking input	0-0.4VDC, 1-3VDC / 75ohm
17	Ground CVS output	
18	Ground CVS input	
19	CVS output	1Vpp / 75ohm
20	CVS input	1Vpp / 75ohm
21	Ground	

SCART 2 (SC051)

1	Audio right output	0.5Vrms / 1K
2	Audio right input	0.5Vrms / 10K
3	Audio left output	0.5Vrms / 1K
4	Ground AF	
5	Ground Blue	
6	Audio left input	0.5Vrms / 10K
7	Blue input	0.7Vpp / 75ohm
8	AV switching input	0-12VDC /10K
9	Ground Green	
10	-	
11	-	
12	-	
13	Ground Red	
14	Ground Blanking	
15	-	
16	-	
17	Ground CVS output	
18	Ground CVS input	
19	CVS output	1Vpp / 75ohm
20	CVS input	1Vpp / 75ohm
21	Ground	

*** * ALL WIRES TO FRONT PANEL & LOUD SPEAKERS MUST BE ZIP-TIED TOGETHER AFTER ANY KIND OF REPAIREMENT**

1. INTRODUCTION
11AK19 is a 90ø and 110ø chassis capable of driving 20-21”,24”,25”,28-29”,32”,33” tubes at appropriate currents.
The chassis is capable of working in both PAL and SECAM. The sound system is capable of giving 6watts RMS output into a load of 8ohms.
One 8 page simple TELETEXT, TOPTEXT and FASTEXT is provided.
The chassis is equipped with 21-pin scart connectors which can accept via scart the SVHS format from VCRs so equipped.

2. SMALL SIGNAL PART WITH TDA884X
The TDA8840/8842/8844 combine all small signal functions required for a colour TV receiver, except tuning.

2.1. Vision IF amplifier
The IF-amplifier contains 3 AC-coupled control stages with a total gain control range which is higher than 66dB.
The sensitivity of the circuit is comparable with that of modern IF-IC’ s. The video signal is demodulated by means of a PLL carrier regenerator. This circuit contains a frequency detector and a phase detector. The AFC output is obtained by using the VCO control voltage of the PLL and can be read via the I²C-bus. For fast search tuning systems the window of the AFC can be increased with a factor 3. The setting is realised with the AFW bit.
Depending on the type the AGC-detector operates on top-sync level (single standard versions) or on top sync and top white-level (multi standard versions). The demodulation polarity is switched via the I²C-bus. The AGC detector time-constant capacitor is connected externally. This mainly because of the flexibility of the application. The time-constant of the AGC system during positive

modulation is rather long to avoid visible variations of the signal amplitude. To improve the speed of the AGC system a circuit has been included which detects whether the AGC detector is activated every frame period. When during 3 frame periods no action is detected the speed of the system is increased. For signals without peak white information the system switches automatically to a gated black level AGC. Because a black level clamp pulse is required for this way of operation the circuit will only switch to black level AGC in the internal mode.
The circuits contain a video identification circuit which is independent of the synchronisation circuit. Therefore search tuning is possible when the display section of the receiver is used as a monitor. The ident output is supplied to the tuning system via the I²C-bus. The video ident circuit can be made less sensitive by means of the STM bit. This mode can be used during search tuning to avoid that the tuning system will stop at very weak input signals.

2.2. Video Switches

The circuits have two CVBS inputs (internal and external CVBS) and Y/C input. When the Y/C input is not required the Y input can be used as third CVBS input. The selection of the various sources is made via the I²C-bus. The circuit has one CVBS output.

2.3. Sound Circuit

The sound band pass and trap filters have to be connected externally. The filtered intercarrier signal is fed to a limiter circuit and is demodulated by means of a PLL demodulator. This PLL circuit tunes itself automatically to the incoming carrier signal so that no adjustment is required.
The volume is controlled via the I²C-bus. The deemphasis capacitor has to be connected externally. The non-controlled audio signal can be obtained from this pin. The FM demodulator can be muted via the I²C-bus. This function can be used to switch-off the sound during a channel change so that high output peaks are prevented. The TDA8840/8842 contain an automatic volume levelling (AVL) circuit which automatically stabilises the audio output signal to a certain level which can be set by the viewer by means of the volume control. This function prevents big audio output fluctuations due to variations of the modulation depth of the transmitter. The AVL function can be activated via the I²C-bus.

2.4. Synchronisation circuit

The sync seperator is preceded by a controlled amplifier which adjusts the sync pulse amplitude to a fixed level. These pulses are fed to the slicing stage which is operating at 50% of the amplitude. The separated sync pulses are fed to the first phase detector and to the coincidence detector. This coincidence detector is used to detect whether the line oscillator is synchronised and can also be used for transmitter identification. The first PLL has a very high statical steepness so that the phase of the picture is independent of the line frequency.
The horizontal output signal is generated by means of an oscillator which is running at twice the line frequency. Its frequency is divided by 2 to lock the first control loop to the incoming signal. The time-constant of the loop can be forced by the I²C-bus (fast or slow). If required the IC can select the time-constant depending on the noise content of the incoming video signal.
To protect the horizontal output transistor, the horizontal drive is immediately switched off when a power-on-reset is detected. The drive signal is switched-on again when the normal switch-on procedure is followed.
Via the I²C-bus, adjustments can be made of the horizontal and vertical geometry. The vertical sawtooth generator drives the vertical output drive circuit which has a differrential output current. For the EW drive a single ended current output is available.
When the horizontal scan is reduced to display 4 : 3 pictures on a 16 : 9 picture tube an accurate video blanking can be switched on to obtain well defined edges on the screen.
Overvoltage conditions can be detected via the EHT tracking pin.When an overvoltage condition is detected the horizontal output drive signal will be switched-off via the slow stop procedure but it is also possible that the drive is not switched-off and that just a protection indication is given in the I²C-bus output byte. The choice is made via the input bit PRD.

2.5. Chroma and Luminance processing

The circuits contain a chroma bandpass and trap circuit. The filters are realised by means of gyrator circuits and they are automatically calibrated by comparing the tuning frequency with the X-tal frequency of the decoder.
The luminance delay line and the delay for the peaking circuit are also realised by means of gyrator circuits.
The centre frequency of the chroma bandpass filter is switchable via the I²C-bus so that the performance can be optimised for "front-end" signals and external CVBS signals.
During SECAM reception the centre frequency of the chroma trap is reduced to get a better suppression of the SECAM carrier frequencies.

2.6. Colour Decoder

The decoder contains an alignment-free X-tal oscillator, a killer circuit and two colour difference demodulators. The 90° phaseshift for the reference signal is made internally.
The IC contains an automatic colour limiting (ACL) circuit which prevents that oversaturation occurs when signals with a high chroma-to-burst ratio are received. The ACL circuit is designed such that it only reduces the chroma signal and not the burst signal. This has the advantage that the colour sensitivity is not affected by this function.
The base-band delay line is integrated in the PAL/SECAM IC' s.
The demodulated colour difference signals are internally supplied to the delay line. The matrixed signals are externally available.
The colour difference matrix switches automatically between
PAL/SECAM and NTSC, however, it is also possible to fix the matrix in the PAL standard.
Which colour standard the IC can decode depends on the external X-tals. The X-tal to be connected to pin 34 must have a frequency of 3.5 MHz (NTSC-M, PAL-M or PAL-N) and pin 35 can handle X-tals with a frequency of 4.4 and 3.5 MHz. To prevent calibration problems of the horizontal oscillator the external switching between the 2 X-tals should be carried out when the oscillator is forced to pin 35. For a reliable calibration of the horizontal oscillator it is very important that the X-tal indication bits (XA and XB) are not corrupted. For this reason the X-tal bits can be read in the output bytes so that the software can check the I²C-bus transmission.

2.7. RGB output circuit and black-current stabilisation

The colour-difference signals are matrixed with the luminance signal to obtain the RGB-signals. The TDA 884X device has one linear RGB input. This RGB signal can be controlled on contrast and brightness.
The output signal has an amplitude of about 2 volts black-to-white at nominal input signals and nominal settings of the controls.
To increase the flexibility of the IC it is possible to insert OSD and/or teletext signals directly at the RGB outputs.
This insertion mode is controlled via the insertion input (pin 26 in the S-DIP 56- and pin 38 in the QFP-64 level). This blanking action at the RGB outputs has some delay which must be compansated externally.
To obtain an accurate biasing of the picture tube a "Continuous Cathode Calibration" circuit has been developed.
This function is realised by means of a 2-point black level stabilisation circuit.
When the TV receiver is switched-on, the RGB output signals are blanked and the black current loop will try to set the right picture tube bias levels.Via the AST bit a choice can be made between automatic start-up or a start-up via the m-processor.

3. TUNER
Either a PLL or a VST tuner is used as a tuner.
UV1316 (VHF/UHF) is used as a PLL tuner. For only PALM/N, NTSC M applications UV 1336 is used as the PLL tuner. UV 1315 (VHF/UHF) is used as a VST Tuner.

Channel coverage of UV1316:

BAND	OFF-AIR CHANNELS		CABLE CHANNELS	
	CHANNELS RANGE (MHz)	FREQUENCY	CHANNELS	FREQUENCY RANGE (MHz)
Low Band	E2 to C	48.25 to 82.25 **(1)**	S01 to S08	69.25 to 154.25
Mid Band	E5 to E12	175.25 to 224.25	S09 to S38	161.25 to 439.25
High Band	E21 to E69	471.25 to 855.25 **(2)**	S39 to S41	447.25 to 463.25

(1). Enough margin is available to tune down to 45.25 MHz.
(2). Enough margin is available to tune up to 863.25 MHz.

Noise	Typical	Max.	**Gain**	Min.	Typical	Max.
Low band	: 5dB	9dB	All channels	: 38dB	44dB	52dB
Mid band	: 5dB	9dB	Gain Taper (of-air channels)	: -	-	8dB
High band	: 6dB	9dB				

Channel Coverage UV1336:

BAND	CHANNELS	FREQUENCY RANGE (MHz)
Low Band	2 to D	55.25 to 139.25
Mid Band	E to PP	145.25 to 391.25
High Band	QQ to 69	397.25 to 801.25

Noise is typically 6dB for all channels. **Gain** is minimum 38dB and maximum 50dB for all channels.

Channel Coverage of UV1315:

BAND	OFF-AIR CHANNELS		CABLE CHANNELS	
	CHANNELS	FREQUENCY RANGE (MHz)	CHANNELS	FREQUENCY RANGE (MHz)
Low Band	E2 to C	48.25 to 82.25 **(1)**	S01 to S10	69.25 to 168.25
Mid Band	E5 to E12	175.25 to 224.25	S11 to S39	231.25 to 447.25
High Band	E21 to E69	471.25 to 855.25 **(2)**	S40 to S41	455.25 to 463.25

(1). Enough margin is available to tune down to 45.25 MHz.
(2). Enough margin is available to tune up to 863.25 MHz.

Noise	Typ.	Max.	**Gain**	Min.	Typ.	Max.
Low band	: 6dB	9dB	All Channels	38dB	44dB	50dB
Mid band	: 6dB	10dB	Gain Taper	-	-	8dB
High band	: 6dB	11dB	(off-air channels)			

4.VIDEO SWITCH TEA6415C
In case of three or more external sources are used, the video switch IC TEA6415C is used. The main function of this device is to switch 8 video input sources on the 6 outputs.
Each output can be switched on only one of each input. On each input an alignment of the lowest level of the signal is made (bottom of sync. top for CVBS or black level for RGB signals).
Each nominal gain between any input and output is 6.5dB.For D2MAC or Chroma signal the alignment is switched off by forcing, with an external resistor bridge, 5VDC on the input. Each input can be used as a normal input or as a MAC or Chroma input (with external resistor bridge). All the switching possibilities are changed through the BUS.
Driving 75ohm load needs an external resistor.
It is possible to have the same input connected to several outputs.

5. AM DEMODULATOR TDA9830
The TDA9830 is designed for AM-sound demodulation used in L and L’ standard.

Sound IF Input:
The sound IF amplifier consists of three AC-coupled differential amplifier stages each with approximately 20dB gain.
At the output of each stage is a multiplier for gain controlling. The overall control range is approximately -6 to +60dB and the frequency response (-3dB) of the IF amplifier is approximately 6 to 70MHz. The steepness of gain control is approximately 10mV/dB.

IF AGC:
The automatic gain control voltage to maintain the AM demodulator output signal at a constant level is generated by a mean level detector.The AGC-detector charges and discharges the capacitor at pin 3 controlled by the output signal of the AM-demodulator compared to an internal reference voltage.The maximum charge/discharge current is approximately 5 mA.

AM-demodulator
The IF amplifier output signal is fed to a limiting amplifier (two stages) and to a multiplier circuit.
However the limiter output signal (which is not any more AM modulated) is also fed to the multiplier, which provides AM demodulation (in phase demodulation). After lowpass filtering (fg @ 400kHz) for carrier rejection and buffering, the demodulator output signal is present at pin 6.

Audio Switch
This circuit is an operational amplifier with three input stages and internal feedback network determining gain (0dB) and frequency response (fg @ 700kHz). Two of the input stages are connected to pin 7 and pin 9, the third input stage to an internal reference voltage. Controlled by the switching pins 10 and 12, one of the three input stages can be activated and a choice made between two different AF signals or mute state. The selected signal is present at pin 8. The decoupling capacitors at the input pins are needed, because the internally generated bias voltage for the input stages must not be influenced by the application in order to avoid DC-plop in case of switching.

Reference Circuit:
This circuit is a band gap stabiliser in combination with a voltage regulation amplifier, which provides an internal reference voltage of about 3.6V nearly independent from supply voltage and temperature. This reference voltage is filtered by the capacitor at pin 4 in order to reduce noise. It is used as a reference to generate all important voltages and currents of the circuit.
For application in 12V power supply concepts, there is an internal voltage divider in combination with a Darlington transistor in order to reduce the supply voltage for all IC function blocks to approximately 6V.

6. DIGITAL TV SOUND PROCESSOR TDA9875
The TDA9875 is a single-chip Digital TV Sound Processor.
Supported standards are M, B/G, D/K, I and L.

Description of the demodulator and decoder section:
SIF Input:
Two input pins are provided, SIF1 e.g. for terrestrial TV and SIF2 e.g. for a satellite tuner. The selected signal is passed through an AGC circuit and then digitized by an 8-bit ADC operating at 24.576MHz.
AGC:
The gain of the AGC amplifier is controlled from the ADC output by means of a digital control loop employing hysteresis.
The AGC has a fast attack behaviour to prevent ADC overloads and slow decay behaviour AGC oscillations.
For AM demodulation AGC must be switched off.
Mixer
The digitized input signal is fed to the mixers, which mix one or both input sound carriers down to zero IF. A 24-bit control word for each carrier sets the required frequency.
FM and AM Demodulation
An FM or AM input signal is fed via a band-limiting filter to a demodulator that can be used for either FM or AM demodulation.
Apart from the standard (fixed) de-emphasis characteristic, an adaptive de-emphasis is available for encoded satellite programs.
A stereo decoder recovers the left and right signal channels from the demodulated sound carriers.
FM Identification:
The identification of the FM sound mode is performed by AM synchronous demodulation of the pilot signal and narrow-band detection of the identification frequencies. The result is available via the I²C-bus interface.
NICAM Demodulation:
The NICAM signal is transmitted in a DQPSK code at a bit rate of 728 kbit/s. The NICAM demodulator performs DQPSK demodulation and feeds the resulting bitstream and clock signal onto the NICAM decoder and, for evaluation purposes, to PCLK (pin 1) and NICAM (pin 2).
NICAM Decoder:
The device performs all decoding functions in accordance with the “EBU NICAM 728 specification”. After locking to the frame alignment word, the data is descrambled by applying the defined pseudo-random binary sequence; the device will then synchronise to the periodic frame flag bit C0.
The status of the NICAM decoder can be read out from the NICAM status register by the user. The OSB bit indicates that the decoder has locked to the NICAM data. The VDSP bit indicates that the decoder has locked to the NICAM data and that the data is valid sound data.

7. SOUND OUTPUT STAGE TDA2614/TDA2615/TDA2616Q
TDA2614 is used as the AF output amplifier for mono applications. It is supplied by ±12VDC coming from a separate winding in the SMPS transformer. An output power of 2*6W (THD=0.5%) can be delivered into an 8ohm load.
TDA2615 is used as the AF output amplifier for stereo applications. It is supplied by ±12VDC coming from a separate winding in the SMPS transformer. An output power of 2*6W (THD=0.5%) can be delivered into an 8ohm load.
TDA2616Q is used as the AF output amplifier for stereo and dolby prologic applications. It is supplied by ±16VDC coming from a separate winding in the SMPS transformer. An output power of 2*12W (THD=0.5%) can be delivered into an 8ohm load.

8. VERTICAL OUTPUT STAGE WITH TDA8351/8356
The TDA8351/8356 vertical deflection circuit can be used in 90° and 110° deflection systems with field frequencies from 50 up to 120Hz. With its bridge configuration the deflection output can be DC coupled with few external components.
Only a single supply voltage for the scan and a second supply for the flyback are needed. The TDA8356 is intended for 90° systems and the TDA8351 is intended for 110° systems.
The drive voltage is amplified by an amplifier and fed to two amplifiers, one is inverting and the other is a non inverting amplifier.
The outputs (pins 7 and 4) are connected to the series connection of the vertical deflection coil and feedback resistor Rsense (R702//R703). The voltage across Rsense is fed via pin 9 to correction amplifier, to obtain a deflection current which is proportional to the drive voltage. The supply voltage for the TDA8351/8356 is 15VDC at pin 3. The supply voltage generator has a separate supply voltage of 45VDC at pin 6.

9. VIDEO OUTPUT AMPLIFIER TDA6107Q
The TDA6107Q consists of three monolithic video output amplifiers. The amplifier can be seen as an operational amplifier with negative feedback.
The advantage of negative feedback is that the amplifier characteristics do not play an important role up to certain frequencies.
The internal flash diodes protect the amplifiers against flash over in the picture tube.
The only protections required at the cathode outputs are a flash resistor and a sparkgap.
The TDA6107Q has an internal thermal protection circuit which gives a decrease of the slew rate at high temperatures.
Furthermore, the device needs only one power supply voltage (Vdd).
In contrast to previous types of DMOS video amplifiers, all the external resistors (Rf, Ri and Ra) are integrated, so the gain is fixed and saves 9 resistors.
Furthermore, the reference voltage is integrated, it saves a resistor divider and a decoupling capacitor. So, the replacement value of the TDA6107Q is very high.
The TDA6107Q is provided with a black current data pin. Since TDA884X is used as drive device, no adjustments are required for gain and black setting, as the TDA884X has I²C white point adjustment and black current set-up.

10. SINGLE/MULTISTANDARD VIF/SIF-PLL and FM-PLL/AM DEMODULATOR TDA9818
The TDA9818is an IC for multistandard vision IF signal processing, sound AM and FM demodulation.
It is a gain controlled wide band VIF-amplifier (AC-coupled). It is applicable for IF frequencies of 38.9 MHz, 45.75 MHz and 58.75 MHz.
True synchronous demodulation is provided with active carrier regeneration. It has a VCO frequency which can be switchable between L and L accent (alignment external) picture carrier frequency.
The TDA9818 has a SIF input for single reference QSS mode (PLL controlled). SIF AGC detector is to provide gain controlled SIF amplifier. The AM demodulator is without extra reference circuit. The supply voltage is +5VDC at pin 21.

11. COMBFILTER SAA4961
The SAA 4961 is a one-chip, PAL/NTSC combfilter IC with internal delay lines, filters, clock control, synchronisation and signal switches. The combfilter function is realised in a switched capacitor technique, so it has time discrete but amplitude continuous processing.
The Y/CVBS input is first clamped and then fed to the delay-line and combfilter section via a low pass pre-filter.
This filter can be bypassed via the external LPF-on pin. This pin is internally pulled up, to put the filter default on. The Y/CVBs input is also fed to the sync seperator, where horizontal and vertical reference pulses are made.
Bypass mode can be forced via BYP (pin 3).FSC (pin 1) is the subcarrier input which is connected to the colour decoder.
Input FSCSW pin indicates if fsc or 2*fsc is used.
The Sys1,2 pins (20, 23) indicate which system standard is processed. Sys2 is internally pulled up, Sys1 is internally pulled down.
Therefore when the Sys1,2 inputs are left open, automatically PAL 4.43MHz is forced.
SAA4961output pin 15 “CVBS” can be used for parallel-synced teletext decoders, to guarantee that the teletext display always has a correct timing relation with the main picture. Comb filter is disabled by setting SAA4961 pin 3 “BYP” high.

12. POWER SUPPLY (SMPS)
The DC voltages required at various parts of the chassis are provided by an SMPS transformer controlled by the IC MC44604 which is designed for driving, controlling and protecting switching transistor of SMPS. The transformer produces 150/115V for FBT input, ±14V for audio output IC, S+5V for microcontroller, +15V for vertical output (field scan) and +33V for tuner and some other ICs and transistors.

13. MICROCONTROLLER SDA525X
The device is TV TEXT tuning and control system based on the SDA 525X TV TEXT microcontroller. It is designed for a low cost mono TV-SET with analogue picture and sound control. Neverthless the system offers an on screen display (OSD) and IR remote control of all functions.
SDA525X has the following features:
- Display of program number, channel number, TV standard, analogue values, sleep timer, parental control, and mute is done by OSD.
- Single LED for IR active, standby and on mode indication.
- 1 Control line to select external source.
- 3 Control lines for TV standard selection.
- Frequency synthesis tuning (62.5 kHz steps)
- 192 step fine tuning
- Channels corresponding to standards B/G, OIRT, L and I (I+)
- Mono sound control by analogue voltage
- System configuration with service mode

14. SERIAL ACCESS CMOS 8K (1024*8) EEPROM ST24C08
The ST24C08 is a 8Kbit electrically erasable programmable memory (EEPROM), organised as 4 blocks of 256*8 bits.
The memory is compatible with the I²C standard, two wire serial interface which uses a bi-directional data bus and serial clock.
The memory carries a built-in 4 bit, unique device identification code (1010) corresponding to the I²C bus definition.
This is used together with 1 chip enable input (E) so that up to 2*8K devices may be attached to the I²C bus and selected individually.

15. CLASS AB STEREO HEADPHONE DRIVER TDA1308

The TDA1308 is an integrated class AB stereo headphone driver contained in a DIP8 plastic package.
The device is fabricated in a 1 mm CMOS process and has been primarily developed for portable digital audio applications.

16. SAW FILTERS

Saw filter type	:	Model:
G1965M	:	PAL-SECAM B/G MONO
G3962M	:	PAL-SECAM B/G GER&NIC STEREO, PAL I' NIC STEREO, INT-1
G1984	:	PAL-SECAM B/G GER&NIC STEREO INT-2
J1951M	:	PAL-I MONO
J3950M	:	PAL-I NIC STEREO
J1956M	:	PAL-I' MONO
K2955M	:	PAL-SECAM B/G-D/K MONO, PAL-SECAM B/G-D/K-I', MONO, PAL-SECAM B/G-D/K-L MONO
K2958M	:	PAL-SECAM B/G-D/K (38) MONO
K2962M	:	PAL-SECAM B/G-L/L' MONO
G3957M	:	PAL-SECAM B/G-L/L' GER&NIC BG/L STEREO
K6256K	:	PAL-SECAM B/G-D/K-I-L/L' MONO, PAL-SECAM B/G-D/K-I, L/L' GER&NIC BG/L STEREO, PAL-SECAM B/G-D/K-I-L/L' I, NICAM STEREO, PAL-SECAM B/G-D/K-I-L/L' GER&NIC I'-B/G-L, STEREO
K6259K	:	PAL-SECAM B/G-D/K-I-M/N (EURO) MONO
M1963M	:	PAL M/N MONO, NTSC M MONO, PAL M/N-NTSC M MONO

17. BTSC STEREO/SAP/DBX-DECODER and AUDIO PROCESSOR TDA9855

The TDA9855 is a BTSC stereo/SAP/dbx decoder and audio processor. It performs all functions to transform the composite baseband signal into the appropriate audio output signals to line out and to the loudspeaker output stages.

IC DESCRIPTIONS AND INTERNAL BLOCK DIAGRAM

- TDA8840/8842/8844
- TUNER (UV1315, UV1316, UV1336)
- TEA6415C
- TDA9830
- TDA2614/2615/2616Q
- TDA8351/8356
- TDA6107Q
- SAA4961
- MC44604
- SDA525X
- TDA9875
- TDA9818
- ST24C08
- TDA1308
- G1965M
- TDA9855

TDA8840/8842/8844:

The TDA884X is IıC-bus controlled single chip TV processor which is intended to be applied in PAL, NTSC, PAL/NTSC and multi-standard television receivers. These IC' s are nearly pin compatible with the TDA837X TV processors but have a higher degree of integration because the delay line (TDA4665 function) and the SECAM decoder have been integrated. In addition to these functions some additional features have been added like “Continuous Cathode Calibration” (2-point black current loop which results in an accurate biasing of the 3 guns), adjustable luminance delay time, blue stretching and dynamic skin tone control.

Features:

- Vision IF circuit with PLL demodulator
- Alignment-free multi-standard FM sound demodulator (4.5 MHz to 6.5 MHz)
- Audio switch
- Flexible source selection with CVBS switch and Y(CVBS)/C input so that a comb filter can be applied
- Integrated chrominance trap circuit
- Integrated luminance delay line
- Asymmetrical peaking in the luminance channel with a noise coring function
- Black stretching of non-standard CVBS or luminance signals
- Integrated chroma band-pass filter with switchable center frequency
- Blue stretch circuit which offsets colours near white towards blue
- RGB control circuit with “Continuous Cathode Calibration” and white point adjustment
- Linear RGB inputs and fast blanking
- Possibility to insert a “blue black” option when no video signal is available
- Horizontal synchronisation with two control loops and alignment-free horizontal oscillator
- Vertical count-down circuit
- Vertical driver optimised for DC-coupled vertical output stages
- IıC-bus control of various functions
- Low dissipation (850 mW)

Functional Differences between the 8840/8842/8844:

IC VERSION (TDA)	8840	8842	8844
Multi-standard IF		X	X
Automatic Volume Limiting	X	X	
PAL Decoder	X	X	X
SECAM Decoder		X	X
NTSC Decoder		X	X
Dynamic Skin Control			X
Colour Matrix PAL/NTSC (Japan)		X	X
Colour Matrix NTSC Japan/USA			
YUV interface			X
Base-band delay line	X	X	X
Adjustable luminance delay time			X
Horizontal geometry			X
Horizontal and vertical zoom			X
Vertical scroll			X

PINNING	PIN VALUE
1. Sound IF input	: 1mVrms
2. External audio input	: 500mVrms
3. IF demodulator tuned circuit 1	
4. IF demodulator tuned circuit 2	
5. IF-PLL loop filter	: Min:32-Max:60 MHz
6. IF video output	: 4.7V (Negative Modulation), 2V (Positive Modulation)
7. Serial clock input	: Low level max:1.5 V, High level min 3.5V
8. Serial data input/output	: Low level max:1.5 V, High level min 3.5V
9. Bandgap decoupling	
10. Chrominance input (S-VHS)	: 1Vpp, Max:1.4Vpp
11. External CVBS/Y input	: 1Vpp, Max:1.4Vpp
12. Main supply voltage 1	: 8V, Min:7.2V, Max:8.8V
13. Internal CVBS input	: 1Vpp, Max:1.4Vpp
14. Ground 1	
15. Audio output	: 700mVrms, Min:500mVrms, Max:900mVrms
16. SECAM PLL decoupling	
17. External CVBS input	: Vpp, Max:1.4Vpp
18. Black-current input	: Amplitude of “low” reference current : 8mA Amplitude of “high” reference current : 20mA
19. Blue output	: 2Vpp
20. Green output	: 2Vpp
21. Red output	: 2Vpp
22. Beam current limiter input/V-guard input	
23. Red input for insertion	: 0.7Vpp, Max:0.8Vpp
24. Green input for insertion	: 0.7Vpp, Max:0.8Vpp
25. Blue input for insertion	: 0.7Vpp, Max:0.8Vpp
26. RGB insertion input	: Max:0.3V
27. Luminance input	: 1.4Vpp
28. Luminance output	: 1.4Vpp
29. (B-Y) signal output	: 1.05Vpp
30. (R-Y) signal output	: 1.05Vpp
31. (B-Y) signal input	: 1.05Vpp
32. (R-Y) signal input	: 1.05Vpp
33. Subcarrier reference output	: 3.58/4.43 MHz
34. 3.58 MHz crystal connection	
35. 4.43/3.58 MHz crystal connection	
36. Loop filter phase detector	
37. 2nd supply voltage 1	: 8V, Min:7.2V, Max:8.8V
38. CVBS output	: 1Vpp, Max:1.4Vpp
39. Decoupling digital supply	: 1.8V
40. Horizontal output	: Max: 0.3V
41. Flyback input/sandcastle output	: Min:100ma, Max:300mA
42. Phase-2 filter	: 150 ms/ms
43. Phase-1 filter	: ±0.9 kHz, Max: ±1.2 kHz
44. Ground 2	
45. East-west drive output	
46. Vertical drive A output	: 0.95mA
47. Vertical drive B output	: 0.95mA
48. IF input 1	
49. IF input 2	
50. EHT/overvoltage protection input	: Min:1.2V, Max : 2.8V
51. Vertical sawtooth capacitor	: 3Vpp
52. Reference current input	: 3Vpp
53. AGC decoupling capacitor	
54. Tuner AGC output	: Max:9V (Maximum tuner AGC Output voltage), 300mV (Output saturation voltage)
55. Audio deemphasis	: 500mVrms
56. Decoupling sound demodulator	

UV1315, UV1316, UV1336

General description of UV1315:
The UV1315 tuner belongs to the UV 1300 familiy of tuners, which are designed to meet a wide range of applications.
It is a combined VHF, UHF tuner suitable for CCIR systems B/G, H, L, L', I and I'. The low IF output impedance has been designed for direct drive of a wide variety of SAW filters with sufficient suppression of triple transient.

Features of UV1315:
- Member of the UV1300 family small sized UHF/VHF tuners
- Systems CCIR:B/G, H, L, L', I and I'; OIRT:D/K
- Voltage synthesized tuning (VST)
- Off-air channels, S-cable channels and Hyperband
- Standardized mechanical dimensions and pinning
- Compact size

PINNING		PIN VALUE
1. Gain control voltage (AGC)	:	4.0V, Max:4.5V
2. Tuning voltage		
3. High band switch	:	5V, Min:4.75V, Max:5.5V
4. Mid band switch	:	5V, Min:4.75V, Max:5.5V
5. Low band switch	:	5V, Min:4.75V, Max:5.5V
6. Supply voltage	:	5V, Min:4.75V, Max:5.5V
7. Not connected		
8. Not connected		
9. Not connected		
10. Symmetrical IF output 1		
11. Symmetrical IF output 2		

Bandswitching table:

	Pin 3	Pin 4	Pin 5
Low band	0V	0V	+5V
Mid band	0V	+5V	0V
High band	+5V	0V	0V

General description of UV1316:

The UV1316 tuner belongs to the UV 1300 family of tuners, which are designed to meet a wide range of applications.
It is a combined VHF, UHF tuner suitable for CCIR systems B/G, H, L, L', I and I'. The low IF output impedance has been designed for direct drive of a wide variety of SAW filters with sufficient suppression of triple transient.

Features of UV1316:
- Member of the UV1300 family small sized UHF/VHF tuners
- Systems CCIR: B/G, H, L, L', I and I'; OIRT: D/K
- Digitally controlled (PLL) tuning via IıC-bus
- Off-air channels, S-cable channels and Hyperband
- World standardized mechanical dimensions and world standard pinning
- Compact size
- Complies to "CENELEC EN55020" and "EN55013"

PINNING		PIN VALUE
1. Gain control voltage (AGC)	:	4.0V, Max:4.5V
2. Tuning voltage		
3. I²C-bus address select	:	Max:5.5V
4. I²C-bus serial clock	:	Min:-0.3V, Max:5.5V
5. I²C-bus serial data	:	Min:-0.3V, Max:5.5V
6. Not connected		
7. PLL supply voltage	:	5.0V, Min:4.75V, Max:5.5V
8. ADC input		
9. Tuner supply voltage	:	33V, Min:30V, Max:35V
10. Symmetrical IF output 1		
11. Symmetrical IF output 2		

General description of UV1336:
UV1336 series is developed for reception of channels broadcast in accordance with the M, N standard. The tuning is available through built-in digitally controlled IıC bus (PLL).

Features of UV1336:
- Global standard pinning
- Integrated Mixer-Oscillator&PLL function
- Conforms to CISPR 13, FCC and DOC (Canada) regulations
- Low power consumption
- Both Phono connector and 'F' connector are available

PINNING		PIN VALUE
1. Gain control voltage	:	4.0V, Max:4.5V
2. Tuning voltage		
3. Address select	:	Max:5.5V
4. Serial clock	:	Min:-0.3V, Max:5.5V
5. Serial data	:	Min:-0.3V, Max:5.5V
6. Not connected		
7. Supply voltage	:	5.0V, Min:4.75V, Max:5.5V
8. ADC input (optional)		
9. Tuning supply voltage	:	33V, Min:30V, Max:35V
10. Ground		
11. IF output		

TEA6415C:

General Description:

The main function of the TEA6415C is to switch 8 video input sources on the 6 outputs.
Each output can be switched to only one of the inputs whereas but any same input may be connected to several outputs.
All switching possibilities are controlled through the IıC-bus.

Features:

- 20 MHz Bandwith
- Cascadable with another TEA6415C (Internal address can be changed by pin 7 voltage)
- 8 inputs (CVBS, RGB, Mac, CHROMA, …)
- 6 Outputs
- Possibility of MAC or chroma signal for each input by switching-off the clamp with an external resistor bridge
- Bus controlled
- 6.5dB gain between any input and output
- -55dB crosstaljk at 5MHz
- Fully ESD protected

PINNING		PIN VALUE				
1. Input	:	Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
2. Data	:	Low level	: -0.3V Max:1.5V, High level	: 3.0V	Max	: Vcc+0.5V
3. Input	:	Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
4. Clock	:	Low level	: -0.3V Max:1.5V, High level	: 3.0V	Max	: Vcc+0.5V
5. Input	:	Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
6. Input	:	Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
7. Prog						
8. Input	:	Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
9. Vcc	:	12V				
10. Input	:	Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
11. Input	:	Max	: 2Vpp, Input Current	: 1mA,	Max	: 3mA
12. Ground						
13. Output	:	5.5Vpp,	Min : 4.5Vpp			
14. Output	:	5.5Vpp,	Min : 4.5Vpp			
15. Output	:	5.5Vpp,	Min : 4.5Vpp			
16. Output	:	5.5Vpp,	Min : 4.5Vpp			
17. Output	:	5.5Vpp,	Min : 4.5Vpp			
18. Output	:	5.5Vpp,	Min : 4.5Vpp			
19. Ground						
20. Input	:	Max : 2Vpp, Input Current		: 1mA,	Max	: 3mA

TDA9830:

General description:

The TDA9830, a monolithic integrated circuit, is designed for AM-sound demodulation used in L- and L'-standard.
The IC provides an audio source selector and also mute switch.

Features:

- Adjustment free wideband synchronous AM demodulator
- Audio source-mute switch (low noise)
- Audio level according EN50049
- 5 to 8V power supply or 12 V alternative
- Low power consumption

PINNING		PIN VALUE
1. Sound IF differential input signal	:	Minimum IF input signal (between pins 1 and 16):60mV Max:100mV Maximum IF input signal (between pins 1 and 16) :120mV Min :70mV
2. Not connected		
3. AGC capacitor		
4. REF voltage filtering capacitor		
5. Not connected		
6. AM demodulator output	:	THD:0.8%, Max:2%; S/N:53dB, Min:47%; DC potential:2.15V, Min : 2.00V Max :2.30V
7. Input signal (from AM) to audio switch	:	Max:1.2V
8. Output signal from audio switch	:	80dB, Min : 70dB
9. Input signal (from external) to audio switch	:	Max:1.2V

10. Switch input select control : Audio switching voltage to activate pin7 : Min :0V, Max :0.8V
Audio switching voltage to activate pin9 : Min:1.5V, Max :Vp
11. Supply voltage : 12V, Min:10.8V, Max:13.2V
12. Mute control : For Mute-ON Min : 0V, Max : 0.8V For Mute-OFF Min : 1.5V, Max : Vp
13. Ground
14. Supply voltage : 5V, Min : 4.5V, Max : 8.8V
15. Not connected
16. Sound IF differential input signal : Look at pin 1

TDA2614/TDA2615/TDA2616Q:

General Description of TDA2614:
The TDA2614 is a power amplifier in a 9-lead single-in-line (SIL9) plastic medium power package. It has been especially designed for mains fed applications.

Features:
- Requires very few external components
- No switch-on/switch-off clicks
- Input mute during switch-on and switch-off
- Low offset voltage between output and ground
- Hi-fi in accordance with IEC 268 and DIN 45500
- Short-circuit proof and thermal protected
- Mute possibility

PINNING	PIN VALUE
1. Not connected	
2. Mute input	: 300mA (For mute to activate)
3. Ground	
4. Not connected	
5. Supply voltage (negative)	: -12VDC
6. Output	: 6.9Vrms
7. Supply voltage (positive)	: +12VDC
8. Inverting input (Ground)	: 0V
9. Non-inverting input	: 700mVrms, Min : 500mVrms, Max : 900mVrms

General Description of TDA2615:
The TDA2615 is a dual power amplifier in a 9-lead single-in-line (SIL9). It has been especially designed for mains fed applications.

Features:
- Requires very few external components
- No switch-on/switch-off clicks
- Input mute during switch-on and switch-off
- Low offset voltage between output and ground
- Excellent gain balance of both amplifiers
- Hi-fi in accordance with IEC 268 and DIN 45500
- Short-circuit proof and thermal protected
- Mute possibility

PINNING	PIN VALUE
1. Non-inverting input 1	: 700mVrms, Min :500mVrms, Max : 900mVrms
2. Mute input	: 300mA (For mute to activate)
3. Ground	
4. Output 1	: 6.9Vrms
5. Supply voltage (negative)	: -12VDC
6. Output 2	: 6.9Vrms
7. Supply voltage (positive)	: +12VDC
8. Inverting inputs 1 and 2 (Ground)	: 0V
9. Non-inverting input 2	: 700mVrms, Min : 500mVrms, Max : 900mVrms

General Description of TDA2616Q:
The TDA2616Q is a dual power amplifier. It is supplied in a 9-lead SIL-bent-to DIL plastic power package (SOT157).
It has been especially designed for mains fed applications.

Features:
- Requires very few external components
- No switch-on/switch-off clicks
- Input mute during switch-on and switch-off
- Low offset voltage between output and ground
- Excellent gain balance of both amplifiers
- Hi-fi in accordance with IEC 268 and DIN 45500
- Short-circuit proof and thermal protected
- Mute possibility

PINNING		**PIN VALUE**
1. Non-inverting input 1	:	700mVrms, Min : 500mVrms, Max : 900mVrms
2. Mute input	:	300mA (For mute to activate)
3. Ground		
4. Output 1	:	9.8Vrms
5. Supply voltage (negative)	:	-16VDC
6. Output 2	:	9.8Vrms
7. Supply voltage (positive)	:	+16VDC
8. Inverting inputs 1 and 2 (Ground)	:	0V
9. Non-inverting input 2	:	700mVrms, Min : 500mVrms, Max : 900mVrms

TDA8351/8356:

General Description:

The TDA8356 is a power circuit for use in 90ø colour deflection system for field frequencies of 50 to 120 Hz.
The circuit operates as a highly efficient class G system.
The TDA8351 is a power circuit for use in 110ø colour deflection system for field frequencies of 50 to 120 Hz.
The circuit operates as a highly efficient class G system.

Features:

- Few external components
- Highly efficient fully DC-coupled vertical output bridge circuit
- Vertical flyback switch
- Guard circuit
- Protection against:
  - short-circuit of the output pins (7 and 4)
  - short-circuit of the output pins to Vp
- Temperature (thermal) protection
- High EMC immunity because of common mode inputs
- A guard signal in zoom mode

PINNING		**PIN VALUE**
1. Input power-stage (positive); includes Ii(sb) signal bias	:	400mA, Min : 50mA, Max : 500mA
2. Input power-stage (negative); includes Ii(sb) signal bias	:	400mA, Min : 50mA, Max : 500mA
3. Operating supply voltage	:	+15VDC
4. Output voltage B	:	Max : 52V Output current : 2App (TDA8356) 3App (TDA8351)
5. Ground		
6. Input flyback supply voltage	:	Min : Vp, Max : 50V
7. Output voltage A	:	Max : 52V Output current : 2App (TDA8356) 3App (TDA8351)
8. Guard output voltage	:	Max:5.5V (Io:100mA)
9. Input feedback voltage	:	Max:52V

TDA6107Q:

The TDA6107Q includes three video output amplifiers in a SIL 9 MP (Single In Line 9 pins Medium Power) package SOT111BE, using high-voltage DMOS technology, and is intended to drive the three cathodes of a colour picture tube.
In contrast to previous types of DMOS video amplifiers, all external resistors (Rf, Ri and Ra) are integrated, so the gain is fixed and it saves 9 resistors.
To obtain maximum performance, the amplifier should be used with black-current control and mounted on the CRT panel.

Features:

- Bandwith: 4.0 MHz typ at 100Vpp (Measured in appli,cation set-up, with Rfl=1K5 and Cl=Ctube+Cpcb=10pF)
- Slewrate: 950V/ms
- Fixed gain of 50 times
- No external components, only the well known supply decoupling
- Very simple application with a variety of colour decoders
- Black-current measurement output for automatic black current stabilization
- Only one supply voltage needed
- Internal protection against positive appearing CRT flash-over discharges
- Protection against ESD
- Internal reference voltage
- Thermal protection
- Controllable switch-off behaviour
- Very small PCB dimensions
- Very high replacement value

PINNING	**PIN VALUE**
1. Inverting input 1	: 2Vpp
2. Inverting input 2	: 2Vpp
3. Inverting input 3	: 2Vpp
4. Ground	
5. BSC-output	: Max:7V
6. Supply voltage	: 200VDC
7. Cathode output 3	: 20mA, 100Vpp
8. Cathode output 2	: 20mA, 100Vpp
9. Cathode output 1	: 20mA, 100Vpp

SAA4961:

The SAA4961 is an adaptive alignment-free one chip comb filter compatible with both PAL and NTSC systems and provides high performance in Y/C separation.

Features:

- One chip adaptive multi-standard comb filter
- Time discrete but continuous amplitude signal processing with analogue interfaces
- Internal delay lines, filters, clock processing and signal switches
- Alignment-free
- No hanging dots or residual cross colour on vertical transients
- Few external components

It is possible to switch the comb filter into one of the following 3 modes:

1. Comb mode : In this mode, luminance and chrominance comb filter function are active. Chrominance output pin (pin 12) outputs comb filtered chrominance signal, luminance output pin (pin 14) outputs comb filtered luminance signal and CVBS output pin (pin 15) outputs delay compensated CVBS signal.

2. Comboff mode : In this mode, luminance comb filter function is turned off, but chrominance comb filter function operates. Chrominance output pin (pin 12) outputs comb filtered chrominance signal, luminance output pin (pin 14) outputs delay compensated CVBS signal and CVBS output pin (pin 15) outputs delay compensated CVBS signal.

3. Bypass mode : In this mode, no IC-function is active. Cext is bypassed to chrominance output pin (pin 12) and Yext/CVBS is bypassed to luminance output pin (pin 14) and CVBS output pin (pin 15).

PINNING	PIN VALUE
1. Subcarrier frequency input	: 200mVpp, Min : 100mVpp, Max : 400mVpp
2. Internal connected	
3. Bypass mode forcing	: HIGH level input voltage Min : 2.4VDC, Max : Vcc
4. Internal connected	
5. Decoupling capacitor	: 1.25VDC, Min : 1.1VDC, Max : 1.4VDC
6. Internal connected	
7. Analogue supply voltage	: 5VDC, Min : 4.75VDC, Max : 5.5VDC
8. Analogue supply voltage output buffer	: 5VDC, Min : 4.75VDC, Max : 5.5VDC
9. Analogue ground	
10. External chrominance input	: 0.7Vpp, Max : 1Vpp
11. Analogue ground output buffer	
12. Chrominance output signal	: 0mV, Min : -400mV, (DC offset voltage related to input) Max : +400mV BYPASS-mode:Co/Cext : 0dB, Min : -1dB, Max : +1dB
13. fsc reference selection	: HIGH level input voltage Min : 2V, Max : Vcc : Low level input voltage Min : 0V, Max : 0.8V
14. Luminance output signal	: 1Vpp, Min : 0.6Vpp, Max : 1.54Vpp
15. CVBS and Y output signal	: 1Vpp, Min : 0.6Vpp, Max : 1.54Vpp
16. Internal connected	
17. CVBS and Y input signal	: 1Vpp, Min : 0.7Vpp, Max : 1.4Vpp
18. Disable prefilter	: HIGH level input voltage Min : 2.0VDC, Max : Vcc LOW level input voltage Min : 0VDC, Max : 0.8VDC
19. Storage Capacitor	: 2.5VDC, Min : 1.8VDC, Max : Vcc
20. Standard select 1	: HIGH level input voltage Min : 2.0VDC, Max : Vcc LOW level input voltage Min : 0VDC, Max : 0.8VDC
21. Digital ground	
22. Digital supply voltage	: 5VDC, Min : 4.75VDC, Max : 5.5VDC
23. Standard select 2	: HIGH level input voltage Min : 2.0VDC, Max : Vcc LOW level input voltage Min : 0VDC, Max : 0.8VDC
24. Decoupling capacitor	: 1.25VDC, Min : 1.1VDC, Max : 1.4VDC
25. Controlling I/O pin	: HIGH level input voltage Min : 2.4VDC, Max : Vcc LOW level input voltage Min : 0VDC, Max : 1.5VDC
26. Analogue ground PLL	
27. Analogue supply voltage PLL	: 5VDC, Min : 4.75VDC, Max : 5.5VDC
28. Internal connected	

MC44604:

General description:

The MC44604 is an enhanced high performance controller that is specifically designed for off-line and DC-to-DC converter applications. It offers a really safe and reliable power management thanks particularly to its protection features (foldback, overvoltage detection, soft start, accurate demagnetization detection). Its high current totem pole output is also ideally suited for driving a power MOSFET, but can also be used for driving a bipolar transistor in low power converters. In addition to these features, the MC44604 offers an efficient stand-by mode.

Features:

Current Mode Controller

- Operation up to 250 kHz Output Switching Frequency
- Inherent Feed Forward Compensation
- Latching PWM for Cycle-by-Cycle Current Limiting
- Oscillator with Precise Frequency Control

High Flexibility

- Externally Programmable Reference Current
- Secondary or Primary Sensing
- High Current Totem Pole Output
- Undervoltage Lockout with Hysteresis

Safety/Protection Features

- Overvoltage Protection Facility against Open Loop
- Protection against Short Circuit on Oscillator Pin
- Fully Programmable Foldback
- Soft-Start Feature
- Accurate max Duty Cycle Setting
- Demagnetization (Zero Current Detection) Protection
- Internally Trimmed Reference

"Green Controller"

- Low Start-Up and Operating Current
- Patented Stand-by Pulsed Mode for low stand-by losses
- Low dV/dT for Low EMI radiations

PINNING		**PIN VALUE**
1. Output Supply Voltage (Vcc)	:	12VDC
2. Output Supply Voltage (Vc)	:	12VDC
3. Output voltage	:	LOW Level Drop Voltage 1VDC, Max : 1.2VDC (Isink=100mA) 1.4VDC, Max : 2VDC (Isink=500mA) HIGH Level Drop Voltage 1.5VDC, Max : 2VDC (Isource=200mA) 2VDC, Max : 2.7VDC (Isource=500mA)
4. Ground		
5. Foldback input	:	0.9VDC, Min:-0.3VDC, Max : Vcc+0.3VDC
6. Overvoltage protection (OVP)	:	0.78VDC, Min:-0.3VDC, Max : Vcc+0.3VDC
7. Current sense input	:	Min:-0.3VDC, Max : Vcc+0.3VDC
8. Demagnetization detection input	:	Idemag-ib (source):-4mA Idemag-ib (sink) : 10mA
9. Standby current set	:	Ipeak-stby/Iref : 0.40 Min : 0.37 Max : 0.43
10. Oscillator voltage swing	:	2Vpp
11. Soft start/Dmax/Voltage mode	:	Idischarge : 5mA, Min : 1.5mA (Vsoft start=1V)
12. Clamp E/A input	:	4.7VDC, Min : 4.5VDC Max : 4.9VDC
13. E/A output	:	HIGH State: 6.5VDC, Min : 5.5VDC, Max : 7.5VDC LOW State : 1.0VDC, 1.1VDC
14. E/A input	:	2.5VDC, Min : 2.4VDC, Max : 2.6VDC
15. Stand-by management	:	Stand-by On Detection current ratio : Idet/Iref : 0.38, Min : 0.34, Max : 0.42 Stand-by regulation current ratio : Ireg/Iref : 20.5, Min : 18, Max : 23
16. Rref input	:	2.5VDC, Min : 2.4VDC, Max : 2.6VDC

SDA525X:

General description:

The SDA525X is designed for a low cost mono TV-set with analogue picture and sound control. IN SDA525X the following IC' s are used and supported:

Non-volatile memory	: SDA 2526 or SDA2546
PLL	: SDA 3202-3, SDA 3302
IR transmitter	: SDA 2208-3 or SDA 2218
IR preamplifier	: SFH 506-32

Features:

General:

- Display of program number, channel number, TV standard, analogue values, sleep timer, parental control, and mute is done by OSD
- Single LED for IR active, standby and on mode indication
- Local control (8 keys)
- IR remote control
- Control of volume, contrast, brightness, and saturation by analogue voltages
- Non-volatile memory for 50 or 100 programs, optimum analogue values and system parameters
- Individual delta volume for each program
- 1 control line to select external source
- 3 control lines for TV standard selection
- Automatic muting if no carrier detected
- Automatic switch-off when carrier disappears for more than 5 minutes
- Software protection against tube flashovers with internal watchdog timer
- Sleep timer
- Parental control
- IF 38 MHz or 38.9 MHz selectable

Tuning:

- Frequency synthesis tuning (62.5 kHz steps)
- 192 step fine tuning
- Channels corresponding to standards
- 100 programs selectable by directly entering a program number or by up/down function depending on the NVM size
- Channel selection by directly entering a channel number or by up/down function
- Channel search function in two directions

Sound:

- Mono sound control by analogue voltage

Service Mode:

- System configuration with service mode

PINNING		PIN VALUE
1. Crystal selection output 1	:	LOW level : 0V HIGH level : 4.2V
2. Volume + switch input	:	LOW level : 0V HIGH level : 5V
3. Volume - switch input	:	LOW level : 0V HIGH level : 5V
4. Program - switch input	:	LOW level : 0V HIGH level : 5V
5. Program + switch input:	:	LOW level : 0V HIGH level : 5V
6. LED output	:	LOW level : 0V HIGH level : 4.2VDC
7. Filter (sound standard) selection output 1	:	LOW level : 0V HIGH level : 4.2V
8. Filter (sound standard) selection output 2	:	LOW level : 0V HIGH level : 4.2V
9. Mod-switch selection output	:	LOW level : 0V HIGH level : 4.2V
10. Ground		
11. Supply voltage	:	+5V
12. 18 MHz crystal connection 1	:	2Vpp
13. 18 MHz crystal connection 2	:	2Vpp
14. L-ACC output	:	LOW level : 0V HIGH level : 3.6V
15. RESET output		LOW level : 0V HIGH level : 5V
16. Comb filter PAL/SECAM selection output	:	LOW level : 0V HIGH level : 5V
17. Tuning output	:	LOW level : 0V HIGH level : 3.4V
18. Audio switch transistor selection 1	:	LOW level : 0V HIGH level : 5V
19. Audio switch transistor selection 2	:	LOW level : 0V HIGH level : 5V
20. Audio switch transistor selection 3	:	LOW level : 0V HIGH level : 5V
21. Audio switch transistor selection 4	:	LOW level : 0V HIGH level : 5V
22. Comb filter standard selection 1	:	LOW level : 0V HIGH level : 5V
23. Comb filter standard selection 2	:	LOW level : 0V HIGH level : 5V
24. Analogue ground		
25. Filter 3		
26. Filter 2		
27. Filter 1		
28. Analogue supply voltage	:	5VDC
29. Reference current input		
30. CVBS input	:	1Vpp
31. Service output	:	LOW level : 0V HIGH level : 5V
32. AV2-status input	:	LOW level : 0V HIGH level : 5V
33. AV1-status input	:	LOW level : 0V HIGH level : 5V
34. AFC output	:	600mVpp
35. Ground		
36. IR-input	:	LOW level : 0V HIGH level : 5V
37. Supply voltage	:	5V
38. LC input	:	5Vpp
39. LC output	:	5Vpp
40. Mute output	:	LOW level : 0V HIGH level : 4.2V
41. St-by output	:	LOW level : 0V HIGH level : 1.4V
42. Clock signal output		
43. Data output		
44. Local connection	:	LOW : 0V HIGH : 5V
45. SAND input	:	4Vpp
46. ODD/EVEN output	:	1.8V
47. OSD-red output	:	LOW level : 0V HIGH level : 5V
48. OSD-green output	:	LOW level : 0V HIGH level : 5V
49. OSD-blue output	:	LOW level : 0V HIGH level : 5V
50. OSD-blanking output	:	LOW level : 0Vh HIGH level : 5V
51. COR output	:	LOW level : 0V HIGH level : 5V
52. Crystal selection output 2	:	LOW level : 0V HIGH level : 4.2V

TDA9875:

General description:

The TDA9875 is a single-chip Digital TV Sound Processor (DTVSP) for analogue and digital multi-channel sound systems.

Features:

Demodulator and decoder section:

- Sound IF (SIF) input switch e.g. to select between terrestrial TV SIF and SAT SIF sources
- SIF AGC with 21dB control range
- SIF 8-bit Analogue-to-Digital Converter (ADC)
- DQPSK demodulation for different standards, simultaneously with 1-channel FM demodulation
- NICAM decoding (B/G, I and L standard)
- Two-carrier multistandard FM demodulation (B/G, D/K and M standard)
- Decoding for three analogue multi-channel systems (A2, A2+ and A2*) and satellite sound
- Optional AM demodulation for system L, simultaneously with NICAM
- Programmable identification (B/G, D/K and M standard) and different identification times

DSP section:

- Digital crossbar switch for all digital signal sources and destinations
- Control of volume, balance, contour, bass, treble, pseudo stereo, spatial, bass boost and soft-mute
- Plop-free volume control
- Automatic Volume Level (AVL) control
- Adaptive de-emphasis for satellite
- Programmable beeper
- Monitor selection for FM/AM DC values and signals, with peak detection option
- I²S-bus interface for a feature extension (e.g. Dolby surround) with matrix, level adjust and mute.

Analogue audio section:

- Analogue crossbar switch with inputs for mono and stereo, SCART 1 input/output, SCART2 input/output and line output
- User defined full-level/-3dB scaling for SCART outputs
- Output selection of mono, stereo, dual A/B, dual A or dual B
- 20 kHz bandwith for SCART-to-SCART copies
- Standby mode with functionality for SCART copies
- Dual audio digital-to-analogue converter from DSP to analogue crossbar switch, bandwith 15kHz
- Dual audio ADC from analogue inputs to DSP
- Two dual audio Digital-to-Analogue Converters (DACs) for loudspeakers (Main) and headphone (Auxiliary) outputs; also applicable for L, R, C and S in the Dolby Pro Logic mode with feature extension.

PINNING		PIN VALUE
1. NICAM clock output (728kHz)	:	LOW level input voltage : Max : 0.8V HIGH level input voltage : Min : 2.0V
2. Serial NICAM DATA output (728kHz)	:	LOW level input voltage : Max : 0.8V HIGH level input voltage : Min : 2.0V
3. First I²C-bus slave address modifier	:	LOW level input voltage : Max : 0.8V HIGH level input voltage : Min : 2.0V
4. SCL (I²C-bus clock)	:	LOW level input voltage : Max : 1.6V HIGH level input voltage : Min : 3.0V
5. SDA (I²C-bus data)	:	LOW level input voltage : Max : 0.8V HIGH level input voltage : Min : 2.0V
6. Analogue supply ground 1	:	0V
7. Analogue supply voltage 1	:	5V, Min : 4.75V, Max : 5.5V
8. Resistor for reference current generator	:	Iref : 220mA, Min : 170mA, Max : 260mA
9. First general purpose I/O pin		
10. Sound IF input 2	:	Min : 21Vrms, Max : 250mVrms
11. Reference voltage for demodulator part	:	Vdda1/Vssa1 : 50%, Min : 35%, Max : 65%
12. Sound IF input 1	:	Min : 21Vrms, Max : 250mVrms
13. Second I²C-bus slave address modifier	:	LOW level input voltage : Max : 0.8V HIGH level input voltage : Min : 2.0V
14. Digital supply ground 1	:	0V
15. Digital supply voltage 1	:	5V, Min : 4.75V, Max : 5.5V
16. Capacitor for power-on reset	:	LOW level input voltage : Max : 1.6V HIGH level input voltage : Min : 3.0V
17. Crystal oscillator output		
18. Crystal oscillator input		
19. Tuning voltage output for crystal oscillator		
20. Second general purpose I/O pin		
21. System clock output	:	LOW level input voltage : Max : 0.5V HIGH level input voltage : Min : 2.9V
22. I²S-bus clock	:	LOW level input voltage : Max : 0.8V HIGH level input voltage : Min : 2.0V
23. I²S-bus word select	:	LOW level input voltage : Max : 0.8V HIGH level input voltage : Min : 2.0V
24. I²S-bus data output 2	:	LOW level input voltage : Max : 0.8V HIGH level input voltage : Min : 2.0V
25. I²S-bus data output 1	:	LOW level input voltage : Max : 0.8V HIGH level input voltage : Min : 2.0V
26. I²S-bus data input 2	:	LOW level input voltage : Max : 0.8V HIGH level input voltage : Min : 2.0V
27. I²S-bus data input 1	:	LOW level input voltage : Max : 0.8V HIGH level input voltage : Min : 2.0V
28. First test pin; connected to ground for normal operation		
29. Audio mono input	:	500mVrms
30.Second test pin; connected to ground for normal operation		
31. External audio input right channel	:	350mVrms

32. External audio input left channel : 350mVrms
33. SCART 1 input right channel : 350mVrms
34. SCART 1 input left channel : 350mVrms
35. Ground guards
36. SCART 2 input right channel : 350mVrms
37. SCART 2 input left channel : 350mVrms
38. Analogue supply voltage 2 : 5V, Min : 4.75V, Max : 5.5V
39. Positive reference voltage
40. Reference voltage ground : 0V
41. Filter capacitor pin 1
42. Filter capacitor pin 2
43. Analogue supply ground 2 : 0V
44. Filter capacitor pin 2
45. Filter capacitor pin 1
46. Reference voltage 2 : Vdda2/Vssa2 : 50%
47. Scart 1 output right channel : 500mVrms
48. Scart 1 output left channel : 500mVrms
49. Digital supply ground 2 : 0V
50. Analogue supply ground 4 : 0V
51. Scart 2 output right channel : 500mVrms
52. Scart 2 output left channel : 500mVrms
53. Reference voltage 3 : Vdda3/Vssa3:50%
54. Post-filter capacitor pin right channel
55. Post-filter capacitor pin left channel
56. Analogue supply ground 3 : 0V
57. Headphone output right channel : Vo(clip) : Min : 1400mVrms
58. Headphone output left channel : Vo(clip) : Min : 1400mVrms
59. Analogue supply voltage 3 : 5.0V, Min : 4.75V, Max : 5.5V
60. Loudspeaker (main) output right channel : Vo(clip) : Min : 1400mVrms
61. Loudspeaker (main) output left channel : Vo(clip) : Min : 1400mVrms
62. Line output left channel : 500mVrms
63. Line output right channel : 500mVrms
64. Digital supply voltage 2 : 5.0V, Min : 4.75V, Max : 5.5V

TDA9818:

General description:
The TDA9818 is an integrated circuit for multistandard vision IF signal processing, sound AM and FM demodulation.

Features:

- 5 V supply voltage
- Applicable for IF frequencies of 38.9 MHz, 45.75 MHz and 58.75 MHz
- Gain controlled wide band VIF-amplifier (AC-coupled)
- True synchronous demodulation with active carrier regeneration (very linear demodulation, good intermodulation figures, reduced harmonics, excellent pulse response)
- Robustness for overmodulation better than 105% due to gated phase detector at L/L accent standard and PLL-bandwidth control at negative modulated standards
- VCO frequency switchable between L and L accent (alignment external) picture carrier frequency
- VIF AGC detector for gain control, operating as peak sync detector for B/G, peak white detector for L; signal controlled reaction time for L
- Tuner AGC with adjustable takeover point (TOP)
- AFC detector without extra reference circuit
- AC-coupled limiter amplifier for sound intercarrier signal
- Alignment-free FM-PLL demodulator with high linearity
- SIF input for single reference QSS mode (PLL controlled); SIF AGC detector for gain controlled SIF amplifier; single reference QSS mixer able to operate in high performance single reference QSS mode and in intercarrier mode
- AM demodulator without extra reference circuit
- Stabilizer circuit for ripple rejection and to achieve constant output signals
- ESD protection for all pins

PINNING **PIN VALUE**

1. VIF differential input signal voltage 1 : Input signal voltage sensitivity 60mVrms, Max:100mVrms
2. VIF differential input signal voltage 2 : Input signal voltage sensitivity 60mVrms, Max:100mVrms
3. Standard switch : Min : 2.8V, Max : Vp
4. VIF AGC capacitor : **Charging current** : 1mA, Min : 0.75mA, Max : 1.25mA
   Discharging current : B/G standard : 20mA, Min : 15mA, Max:25mA
   Normal mode L : 300nA, Min : 225nA, Max : 375nA
   Fast mode L : 40mA, Min : 30mA, Max : 50mA
5. SIF AGC capacitor : **Charging current** : FM mode : 12mA, Min : 8mA, Max : 16mA
   AM mode : 1.2mA, Min : 0.8mA, Max : 1.6mA
   Discharging current : FM mode : 12mA, Min : 8mA, Max : 16mA
   Normal mode AM : 1.4mA, Min : 1mA, Max : 1.8mA
   Fast mode AM : 85mA, Min : 60mA, Max : 110mA
6. PLL loop filter : Min : 0V, Max : Vp
7. L/L accent switch and adjust : Min : 0V, Max : Vp
8. Audio output : Rx : 470ohm : 250mVrms, Min : 200mVrms, Max : 300mVrms
   Rx : 0ohm : 500mVrms, Min : 400mVrms, Max : 600mVrms
9. De-emphasis input : Min : 0V, Max : Vp
10. De-emphasis output : Min : 0V, Max : Vp
11. Decoupling capacitor : Min : 0V, Max : Vp
12. Single reference QSS/intercarrier output voltage : 140mVrms, Min : 100mVrms Max : 180mVrms

13. Sound intercarrier input voltage : Input signal voltage for lock-in: Max : 100mVrms
Input signal voltage : 250mVrms
14. Tuner AGC output : IF input signal voltage for minimum starting point of tuner takeover 2mV, Max : 5mV
IF input signal voltage for maximum starting point of tuner takeover 100mV, Min : 50mV
15. Black level detector : Min : 0V, Max : Vp
16. Composite video output voltage : 1.1Vpp, Min : 0.97Vpp, Max : 1.23Vpp
17. AFC output : Upper limit : Vp-0.3V, Min : Vp-0.6V, Lower limit : 0.3V, Max : 0.6V
18. VCO1 resonance circuit
19. VCO2 resonance circuit
20. Ground : 0V
21. Supply voltage : 5V, Min : 4.5V, Max : 5.5V
22. Tuner AGC takeover adjust (TOP)
23. SIF differential input signal voltage 1 : Input signal voltage sensitivity 50mVrms, Max : 100mVrms
24. SIF differential input signal voltage 2 : Input signal voltage sensitivity 50mVrms, Max : 100mVrms

ST24C08:

General description:
The ST24C08 is a 8Kbit electrically erasable programmable memory (EEPROM), organized as 4 blocks of 256 * 8 bits.
The memory operates with a power supply value as low as 2.5V. Both Plastic Dual-in-Line and Plastic Small Outline packages are available.
Features:
- Minimum 1 million ERASE/WRITE cycles with over 10 years data retention
- Single supply voltage:4.5 to 5.5V
- Two wire serial interface, fully IıC-bus compatible
- Byte and Multibyte write (up to 8 bytes)
- Page write (up to 16 bytes)
- Byte, random and sequential read modes
- Self timed programming cycle

PINNING **PIN VALUE**
1. Write protect enable (Ground) : 0V
2. Not connected (Ground) : 0V
3. Chip enable input (Ground) : 0V
4. Ground : 0V
5. Serial data address input/output : Input LOW voltage : Min : -0.3V, Max : 0.3*Vcc
Input HIGH voltage: Min : 0.7*Vcc, Max : Vcc+1
6. Serial clock : Input LOW voltage : Min: -0.3V, Max : 0.3*Vcc
Input HIGH voltage: Min : 0.7*Vcc, Max : Vcc+1
7. Multibyte/Page write mode : Input LOW voltage : Min: -0.3V, Max :0.5V
Input HIGH voltage: Min : Vcc-0.5, Max : Vcc+1
8. Supply voltage : Min : 2.5V, Max : 5.5V

TDA1308:
Features:
- Wide temperature range
- No switch ON/OFF clicks
- Excellent power supply ripple rejection
- Low power consumption
- Short-circuit resistant
- High performance
  - high signal-to-noise ratio
  - high slew rate
  - low distortion
- Large output voltage swing

PINNING **PIN VALUE**
1. Output A (Voltage swing) : Min : 0.75V, Max : 4.25V
2. Inverting input A : Vo(clip) : Min : 1400mVrms
3. Non-inverting input A : 2.5V
4. Ground : 0V
5. Non-inverting input B : 2.5V
6. Inverting input B : Vo(clip) : Min : 1400mVrms
7. Output B (Voltage swing) : Min : 0.75V, Max : 4.25V
8. Positive supply
: 5V, Min : 3.0V, Max : 7.0V

G1965M:
Features:
- TV IF filter with Nyquist slope and sound shelf at typ. 20.4dB
- High colour carrier level at typ. 1.0dB
- Constant group delay
- Insertion attenuation typ. 15.0dB

PINNING
1. Input
2. Input-ground
3. Chip carrier-ground

TDA9855

General description:

The TDA9855 is a bipolar-integrated BTSC stereo/SAP decoder with hi-fi audio processor (IıC-bus controlled) for application in TV sets.

Features:

- Quasi alignment-free BTSC stereo decoder due to auto adjustment of channel separation via IıC-bus
- High integration level with automatically tuned integrated filters
- Input level adjustment IıC-bus controlled
- Alignment-free Sap processing
- dbx noise reduction circuit
- Audio processor
  -Selector for internal and external signals (line in)
  -Automatic volume level control
  -Subwoofer or surround output with separate volume control
  -Volume control
  -Special loudness characteristic automatically controlled in combination with volume setting
  -Bass and treble control
  -Audio signal zero crossing detection between any volume step switching
  -Mute control at audio signal zero crossing
  -IıC-bus tranceiver.

PINNING	PIN VALUE
1. Treble control capacitor, left channel	
2. Bass control capacitor, left channel	
3. Bass control capacitor, left channel	
4. Not connected	
5. Programmable address bit (module address)	
6. Output, left channel	: 500mVrms, Min : 480mVrms, Max : 520mVrms
7. Input loudness, left channel	
8. Input volume control, left channel	: 2.15Vrms, Min : 2Vrms
9. Output effects, left channel	
10. Automatic volume control capacitor	
11. Reference voltage 0.5Vcc	: 4VDC
12. Line input, left channel	: 2.3Vrms, Min : 2Vrms
13. Input automatic volume control, left channel	: Min : 2Vrms
14. Output selector, left channel	
15. Line output, left channel	: 500mVrms
16. Capacitor timing wideband for dbx	
17. Capacitor timing spectral for dbx	
18. Capacitor wideband for dbx	
19. Capacitor spectral for dbx	
20. Variable emphasis out for dbx	
21. Variable emphasis in for dbx	
22. Capacitor noise reduction for dbx	
23. Capacitor mute for SAP	
24. Capacitor DC decoupling for SAP	
25. Common ground	: 0V
26. Serial data input/output	: High level input voltage: Min : 3VDC, Max : Vcc Low level input voltage: Min : -0.3VDC, Max : 1.5VDC Low level output voltage : Max : 0.4VDC
27. Serial clock input	: High level input voltage: Min : 3VDC, Max : Vcc Low level input voltage : Min : -0.3VDC, Max : 1.5VDC Low level output voltage : Max : 0.4VDC
28. Supply voltage	: 8VDC
29. Input composite signal	: 250mVrms
30. Capacitor for electronic filtering of supply	
31. Capacitor for pilot detector	
32. Capacitor for pilot detector	
33. Capacitor for phase detector	
34. Capacitor for filter adjust	
35. Ceramic resonator	
36. Capacitor DC decoupling mono	
37. Capacitor DC decoupling stereo/SAP	
38. Line output, right channel	: 500mVrms
39. Output selector, right channel	
40. Input automatic volume control, right channel	: Min:2Vrms
41. Line input, right channel	: 2.3Vrms, Min : 2Vrms
42. Capacitor 2 pseudo function	
43. Capacitor 1 pseudo function	
44. Output effects, right channel	
45. Input volume control, right channel	: Min : 2Vrms
46. Input loudness, right channel	
47. Output, right channel	: 500mVrms, Min : 480mVrms, Max : 520mVrms
48. Not connected	
49. Filter capacitor for subwoofer	
50. Bass control capacitor, right channel	
51. Bass control capacitor, right channel	
52. Treble control capacitor	

AK19 CHASSIS MANUAL ADJUSTMENTS PROCEDURE

In order to enter the service mode, first enter the installation menu (or press blue button on the remote control handset) and then press the digits 4, 7, 2 and 5 respectively.

For ADJUST settings:

Select **Adjust** using ▽or△ button and press ▷or◁ button to enter it. To select different adjust parameters, use ▽or△ button. To change the selected parameter, use ▷ or ◁ button.

WHITE BALANCE ADJUSTMENT:
The following three parameters are used to make white balance adjustment. To do this, use a Colour Analyser. Using white point RED, white point GREEN and white point BLUE parameters, insert the + sign in the square which is in the middle of the screen.
ADJUST 00 = White Point RED
ADJUST 01 = White Point GREEN
ADJUST 02 = White Point BLUE

AGC ADJUSTMENT:
In order to do AGC adjustment, enter a 60dBmV RF signal level from channel C-12.
Connect a digital voltmeter to pin 1 of the tuner. Change the AGC parameter until you see 3.70VDC on voltmeter display. Check that picture is normal at 90dBmV signal level.

IF-PLL NEGATIVE ADJUSTMENT (Only with PLL tuner):
Connect 38.9 MHz test pattern for PAL B/G, PAL-SECAM B/G, 39.5 MHz test pattern for PAL I or 45.75 MHz test pattern for PAL M/N, NTSC M model to Z401 SAW filter input terminals. Change the IF-PLL Negative parameter until you see IN, DOWN below. If you cannot catch IN, DOWN position this way, using a screwdriver rotate the VIF-COIL LT401 left or right until you see IN, DOWN.

IF-PLL POSITIVE ADJUSTMENT (Only with PLL tuner):
Connect 33.9 MHz test pattern for SECAM L' model to Z401 SAW filter input terminals. Change the IF-PLL Positive parameter until you see IN, DOWN below. If you cannot catch IN, DOWN position this way, using a screwdriver rotate the VIF-COIL LT401 left or right until you see IN, DOWN.

LUMINANCE DELAY ADJUSTMENT (with only TDA 8844 video processor):
Y-Delay PAL

Enter a PAL B/G colour and black-white bar test pattern via RF. Adjust Y-Delay PAL till the colour transients on the colour bar of the pattern become as sharper and colours between transients do not mix with each other as possible.
Note: If the SAW filter is one of the G1965M, J1951M, J3950M, K2958M, K2962M, G3957M, K6256K, K6259K or M1963M, there is constant group delay distortion, so for an equal delay of the luminance and chrominance signal the delay must be set at a value of 160nS. This means the adjustment must be set to the maximum value.
Y-Delay SECAM

Enter a SECAM B/G colour and black-white bar test pattern via RF. Adjust Y-Delay SECAM till the colour transients on the colour bar of the pattern become as sharper and colours between transients do not mix with each other as possible.
Note: If the SAW filter is one of the G1965M, K2958M, K2962M, G3957M, K6256K or K6259K, there is constant group delay distortion, so for an equal delay of the luminance and chrominance signal the delay must be set at a value of 160nS.
This means the adjustment must be set to the maximum value.
Y-Delay NTSC

Enter an NTSC colour and black-white bar test pattern via RF. Adjust Y-Delay NTSC till the colour transients on the colour bar of the pattern become as sharper and colours between transients do not mix with each other as possible.
Note: If the SAW filter is M1963M, there is constant group delay distortion, so for an equal delay of the luminance and chrominance signal the delay must be set at a value of 160nS. This means the adjustment must be set to the maximum value.
Y-Delay Other

In case of other colour systems, enter this system with colour and black-white bar test pattern via RF. Adjust Y-Delay Other till the colour transients on the colour bar of the pattern become as sharper and colours between transients do not mix with each other as possible. Normally for an equal delay of the luminance and chrominance signal the delay must be set at a value of 160nS. This means the adjustment must be set to the maximum value.

VERTICAL ZOOM ADJUSTMENT (only for 110ø picture tubes):
Enter a PAL B/G circle test pattern via RF. Change vertical zoom till you see the upper and lower limit of the circle as close to the upper and lower limit of the picture tube as possible.

VERTICAL SCROLL ADJUSTMENT (only for 110ø picture tubes):
Enter a PAL B/G circle test pattern via RF. Change vertical scroll till you see the circle exactly in the middle of the screen.

4:3 HORIZONTAL SHIFT ADJUSTMENT:
Enter a RED PURITY test pattern via RF.Change horizontal shift till the picture is horizontally centred. Check whether this adjustment is correct after completing Service Mode Adjustment.

4:3 VERTICAL SLOPE ADJUSTMENT:
Enter a CROSS-HATCH B/G test pattern via RF. Change vertical slope 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 readjust VERTICAL SLOPE item if the adjustment becomes improper after some other geometric adjustments are done.

4:3 VERTICAL AMPLITUDE ADJUSTMENT:

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 disappear. Check and readjust VERTICAL AMPLITUDE item if the adjustment becomes improper after some other geometric adjustments are done.

4:3 S-CORRECTION ADJUSTMENT:

Enter a PAL B/G circle test pattern via RF. Change S-correction till the middle part of the circle is as round as possible.

4:3 VERTICAL SHIFT ADJUSTMENT:

Enter a PAL B/G test pattern via RF. Change Vertical Shift till the test pattern is vertically centred, i.e. horizontal line at the centre pattern is in equal distance both to upper and lower side of the picture tube. Check and readjust Vertical Shift item if the adjustment becomes improper after some other geometric adjustments are done.

4:3 EW WIDTH ADJUSTMENT (only for 110ø picture tubes):

Enter a PAL B/G test pattern via RF. Change EW Width till the vertical black and white bars on both left and right side of the pattern exactly disappear.

4:3 EW PARABOLA WIDTH ADJUSTMENT (only for 110ø picture tubes):

Enter a PAL B/G test pattern via RF. Change EW Parabola Width till vertical lines close to the both sides of the picture frame become parallel to vertical sides of picture tube. Check and readjust EW Parabola Width item if the adjustment becomes improper after some other geometric adjustments are done.

4:3 EW CORNER PARABOLA ADJUSTMENT (only for 110ø picture tubes):

Enter a PAL B/G test pattern via RF. Change EW Corner Parabola till vertical lines at the corners of both sides of picture frame become vertical and parallel to vertical corner sides of picture tube. Check and readjust EW Corner Parabola item if the adjustment becomes improper after some other geometric adjustments are done.

4:3 EW TRAPEZIUM ADJUSTMENT (only for 110ø picture tubes):

Enter a PAL B/G test pattern via RF. Change EW Trapezium till vertical lines, especially lines at the sides of the picture frame became parallel to the both sides of picture tube as close as possible. Check and readjust EW Trapezium item if the adjustment becomes improper after some other geometric adjustments are done.

16:9 HORIZONTAL SHIFT ADJUSTMENT:

Enter a RED PURITY test pattern via RF.Change horizontal shift till the picture is horizontally centred. Check whether this adjustment is correct after completing Service Mode Adjustment.

16:9 VERTICAL SLOPE ADJUSTMENT:

Enter a CROSS-HATCH B/G test pattern via RF. Change vertical slope 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 readjust VERTICAL SLOPE item if the adjustment becomes improper after some other geometric adjustments are done.

16:9 VERTICAL AMPLITUDE ADJUSTMENT:

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 disappear. Check and readjust VERTICAL AMPLITUDE item if the adjustment becomes improper after some other geometric adjustments are done.

16:9 S-CORRECTION ADJUSTMENT:

Enter a PAL B/G circle test pattern via RF. Change S-correction till the middle part of the circle is as round as possible.

16:9 VERTICAL SHIFT ADJUSTMENT:

Enter a PAL B/G test pattern via RF. Change Vertical Shift till the test pattern is vertically centred, i.e. horizontal line at the centre pattern is in equal distance both to upper and lower side of the picture tube. Check and readjust Vertical Shift item if the adjustment becomes improper after some other geometric adjustments are done.

16:9 EW WIDTH ADJUSTMENT (only for 110ø picture tubes):

Enter a PAL B/G test pattern via RF. Change EW Width till the vertical black and white bars on both left and right side of the pattern exactly disappear.

16:9 EW PARABOLA WIDTH ADJUSTMENT (only for 110ø picture tubes):

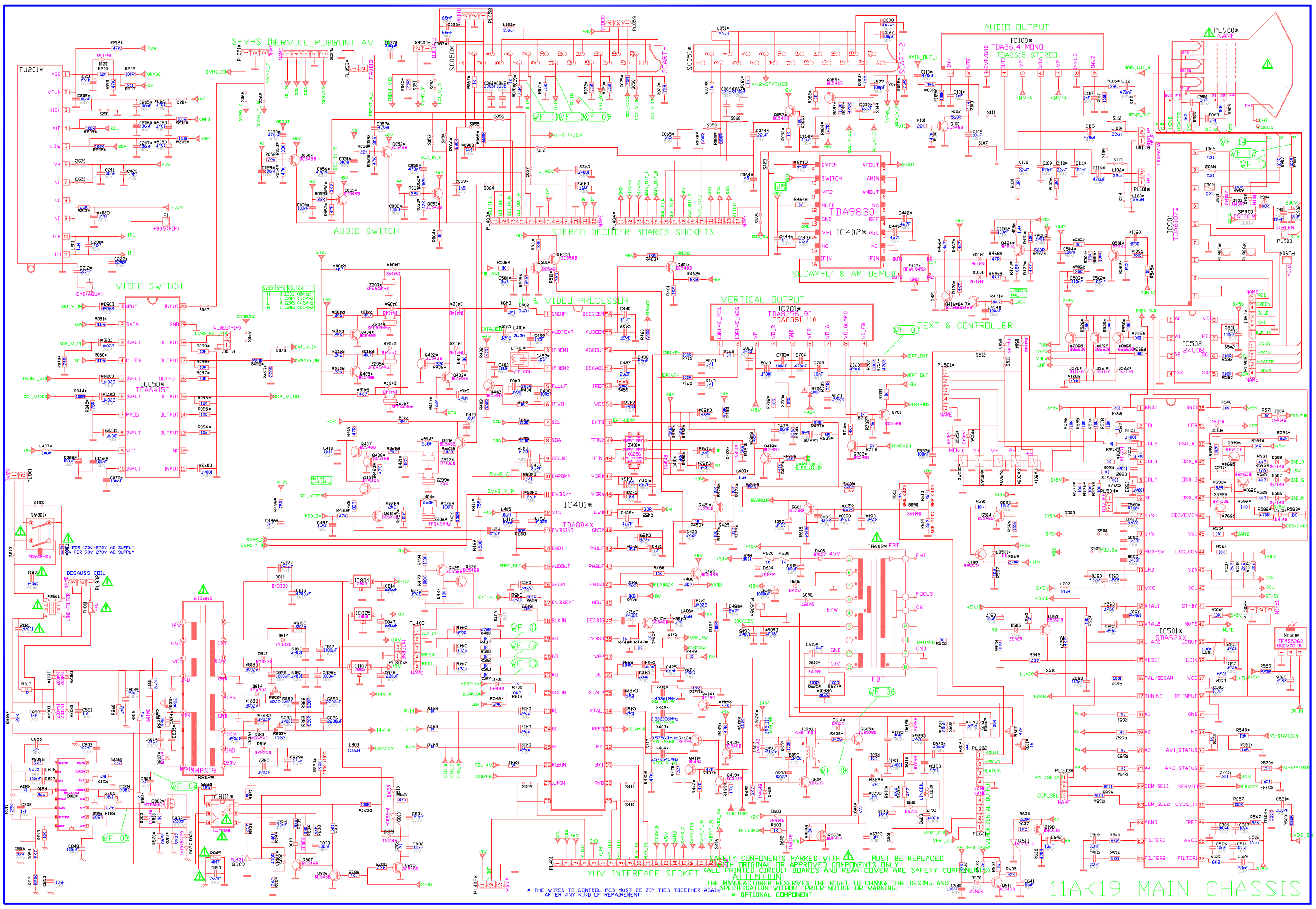
Enter a PAL B/G test pattern via RF. Change EW Parabola Width till vertical lines close to the both sides of the picture frame become parallel to vertical sides of picture tube. Check and readjust EW Parabola Width item if the adjustment becomes improper after some other geometric adjustments are done.

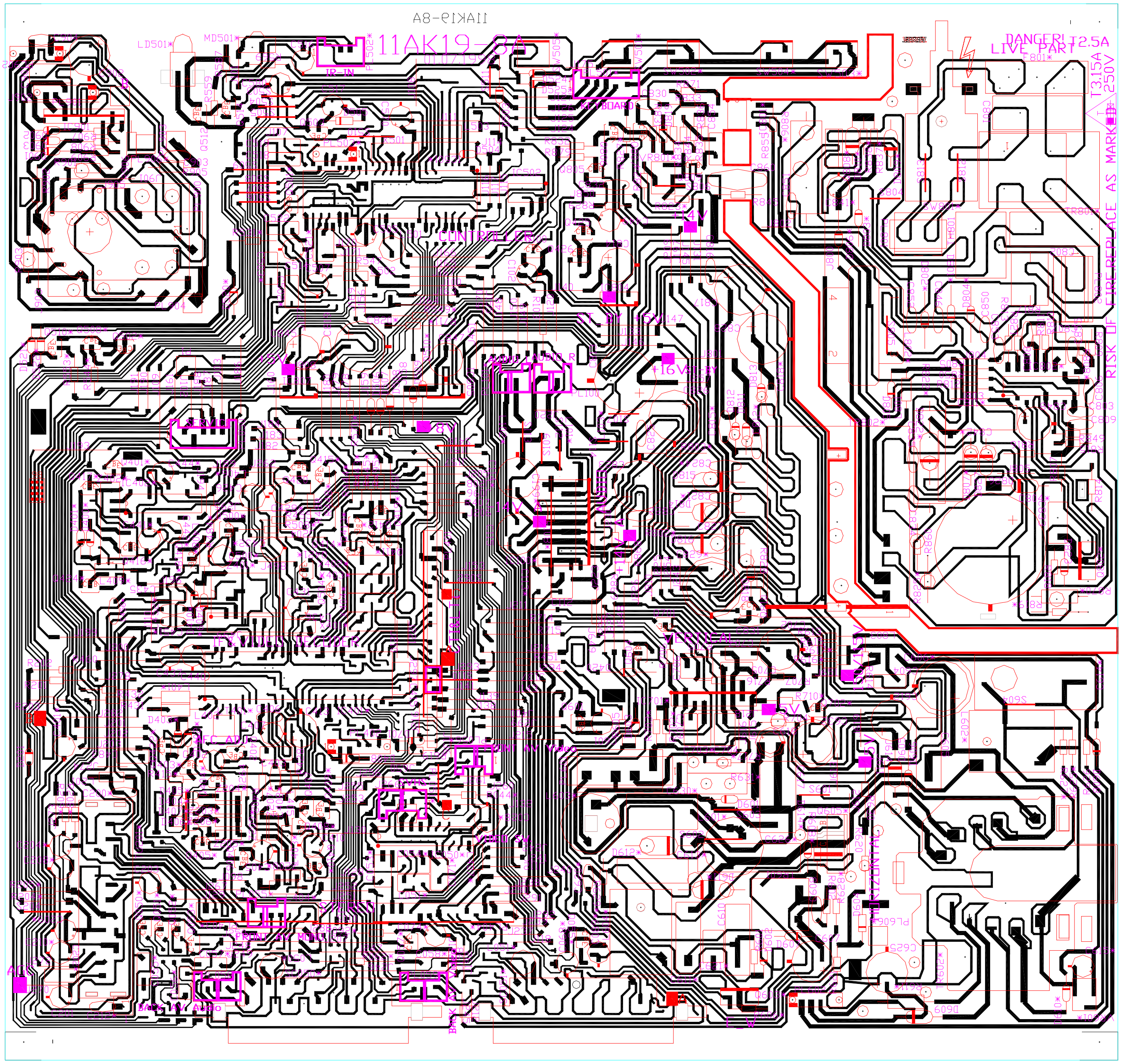
16:9 EW CORNER PARABOLA ADJUSTMENT (only for 110ø picture tubes):

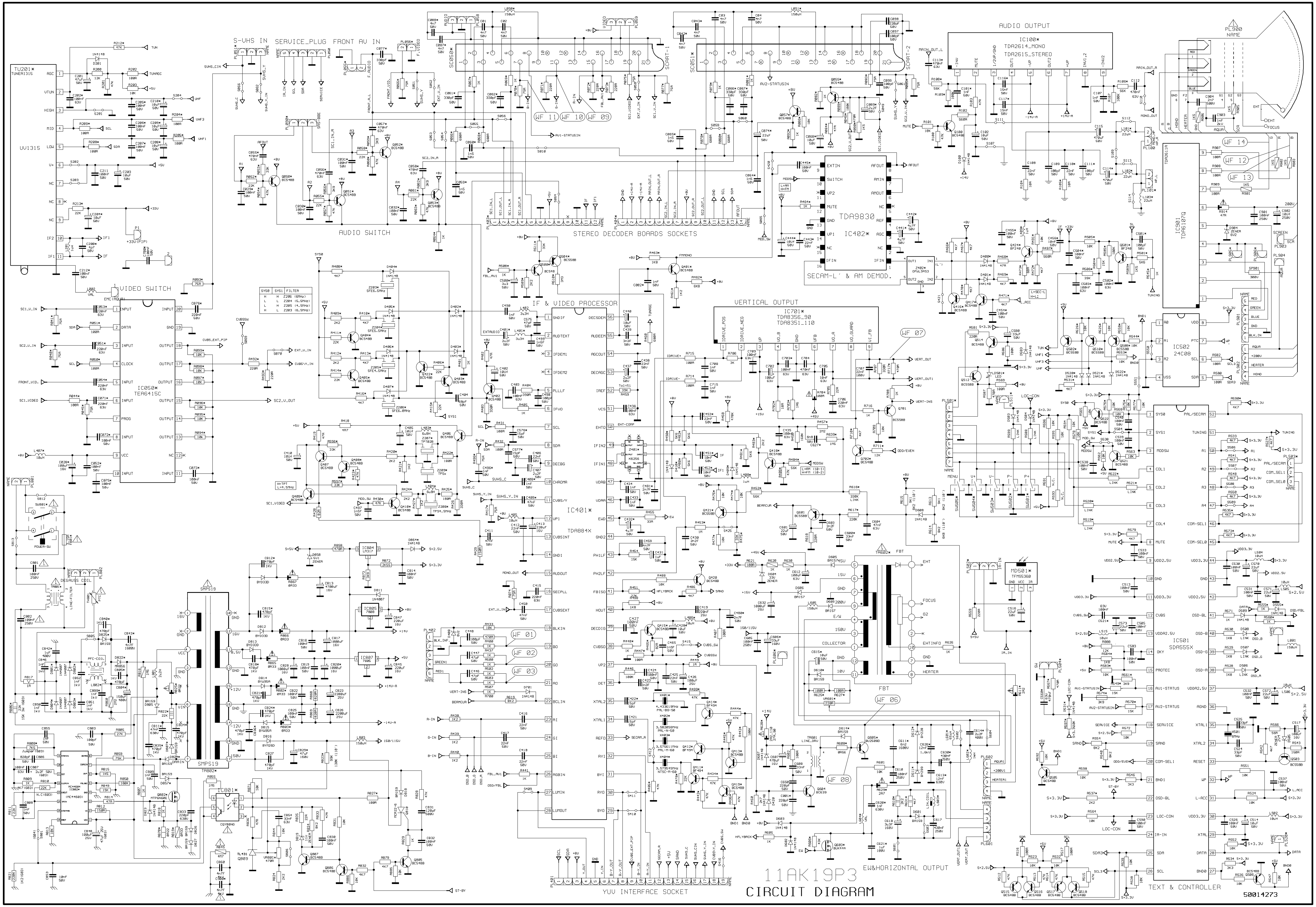
Enter a PAL B/G test pattern via RF. Change EW Corner Parabola till vertical lines at the corners of both sides of picture frame become vertical and parallel to vertical corner sides of picture tube. Check and readjust EW Corner Parabola item if the adjustment becomes improper after some other geometric adjustments are done.

16:9 EW TRAPEZIUM ADJUSTMENT (only for 110ø picture tubes):

Enter a PAL B/G test pattern via RF. Change EW Trapezium till vertical lines, especially lines at the sides of the picture frame became parallel to the both sides of picture tube as close as possible. Check and readjust EW Trapezium item if the adjustment becomes improper after some other geometric adjustments are done.


AUDIO OUTPUT
AUDIO SWITCH
VIDEO SWITCH
STEREO DECODER BOARDS SOCKETS
IF & VIDEO PROCESSOR
VERTICAL OUTPUT
TEXT & CONTROLLER
SECAM-L' & AM DEMOD
YUV INTERFACE SOCKET
DEGAUSS COIL
11AK19 MAIN CHASSIS


11AK19-8A
DANGER!
LIVE PART
T2.5A
T3.15A
250V
RISK OF FIRE-REPLACE AS MARKED
IR IN
KEYBOARD
CONTROL IC
VERTICAL
HORIZONTAL


AUDIO OUTPUT
IC100*
TDA2614_MONO
TDA2615_STEREO
S-VHS IN
SERVICE_PLUG
FRONT AV IN
SCART-1
SCART-2
TU201*
TUNER1315
UV1315
AUDIO SWITCH
STEREO DECODER BOARDS SOCKETS
TDA9830
IC402*
SECAM-L' & AM DEMOD.
VIDEO SWITCH
IC050*
TEA6415C
IF & VIDEO PROCESSOR
IC401*
TDA884X
VERTICAL OUTPUT
IC701*
TDA8356_90
TDA8351_110
TDA6107Q
IC901
IC502
24C08
IC501
SDA555X
TEXT & CONTROLLER
FBT
SMPS19
POWER-SW
DEGAUSS COIL
YUV INTERFACE SOCKET
EW&HORIZONTAL OUTPUT
11AK19P3
CIRCUIT DIAGRAM
50014273