

SHARP®**SERVICE MANUAL**

SE0029LF92E00

Issued: 28th July 2004**AK-45 CHASSIS**

PAL B/G / SECAM L/L', B/G, D/K SYSTEM COLOUR TELEVISION

**MODEL 29LF-92E_{C/IT}**

In the interests of user safety (required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

In order to service the model 29LF-92E, refer to the AK-45 Chassis Service Manual (SE00AK45CHA00).

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SHARP CORPORATION

This document has been published to be used for after sales service only.

SERVICE MANUAL UPDATE LOG SHEET

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Use this page to keep any special servicing information as Technical Report (Bulletin), Technical Information, etc.
If only part number changes are required, just change part number directly the part number in the Parts Listing Section.
If you need more information, please refer to the Technical Report (Bulletin).

ELECTRICAL SPECIFICATIONS

•Power Input 220V-240 Volts AC 50 Hz

•Power Consumption

Normal Operation (Method IEC60107) 83 W

Stand-by Operation < 4 W

•Audio Power Output Rating (MPO) / Impedance

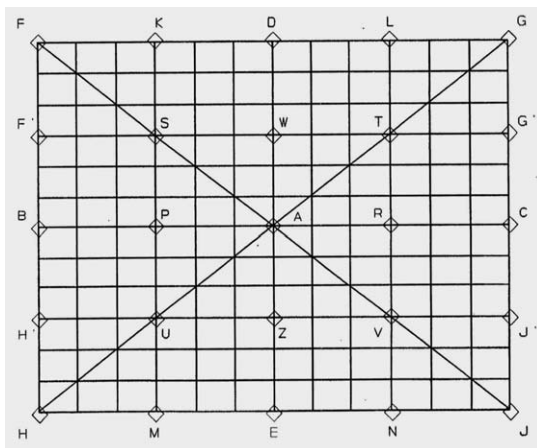
Internal Left Speaker 10 W, 7 Ω

Internal Right Speaker 10 W, 7 Ω

•Speakers

Full range (2 pcs) 60 x 120 mm

•Convergence (Maximum Misconvergence)



AREA	mm
A	0.4
BC	1.0
DE	1.0
FGHJ	1.5
KLMN	1.3
F'G'H'J'	1.3
STUV	1.0

•Picture Intermediate frequency

L' 33.9MHz

L, B/G, D/K 38.9MHz

•Sound Carrier Trap

L' 40.4MHz

L, D/K 32.4MHz

B/G 33.4MHz

•Adjacent Sound Carrier Trap

L' 32.4MHz

L, D/K, B/G 40.4MHz

•Adjacent Picture Carrier Trap

L' 41.9MHz

L, D/K 30.9MHz

B/G 31.9MHz

•Aerial Input Impedance

VHF/UHF 75 ohm Unbalanced

•Tuning Ranges 45.75MHz thru 855.25 MHz

VHF: S1 - S41 CH (Hiperband)

E2 - E12 CH / F2 - F10

UHF: E21 - E69 CH

•White Level

Apply the rated voltage at the rated frequency to the TV set, while it is receiving full white pattern RF signal of 60 dB/ μ V from its RF input via the pattern generator.

Turn all picture controls to maximum value. Measure the colour temperatures at the center of the screen by using the colour analyzer.

29LF94EC: X=0.304 $\pm$ 0.015 Y=0.306 $\pm$ 0.015

29LF94EIT: X=0.290 $\pm$ 0.015 Y=0.300 $\pm$ 0.015

Specifications are subject to change without prior notice.

MODEL DESTINATION (Operation Manual Languages)

28LF-92EC: Czech, English, Hungarian, Polish, Romanian, Russian, Slovakian

28LF-92EIT: Italiano.

WARNING

The chassis in this receiver is partially hot. Use an isolation transformer between the line cord plug and power receptacle, when servicing this chassis.

To prevent electric shock, do not remove cover. No user-serviceable parts inside. Refer servicing to qualified service personnel.

IMPORTANT SERVICING NOTES

Only qualified service personnel are allowed to carry out maintenance and repair of this receiver.

Servicing of High Voltage System and CRT

It is important that the static charge is removed from the high voltage system when carrying out work on the receiver. This can be achieved by connecting a 10K resistor (with a suitably insulated lead) from the CRT cavity connector to the CRT ground tag. This must be carried out with the AC supply disconnected from the receiver.

Note the following:

- The CRT in this receiver employs Integral Implosion Protection.
- If the CRT has to be changed it **MUST** be replaced with the correct type for continued safe working.
- **DO NOT** lift the CRT by its neck.
- When handling the CRT, ensure that shatterproof goggles are worn.
- Ensure that the CRT is discharge before handling.

X-Ray

This receiver is designed to keep any x-ray emission to an absolute minimum. Some fault conditions and servicing procedures may produce potentially hazardous x-ray radiation levels. This is a problem when in close proximity to the receiver for long periods of time. To reduce any risks associated with this, please observe the following precautions:

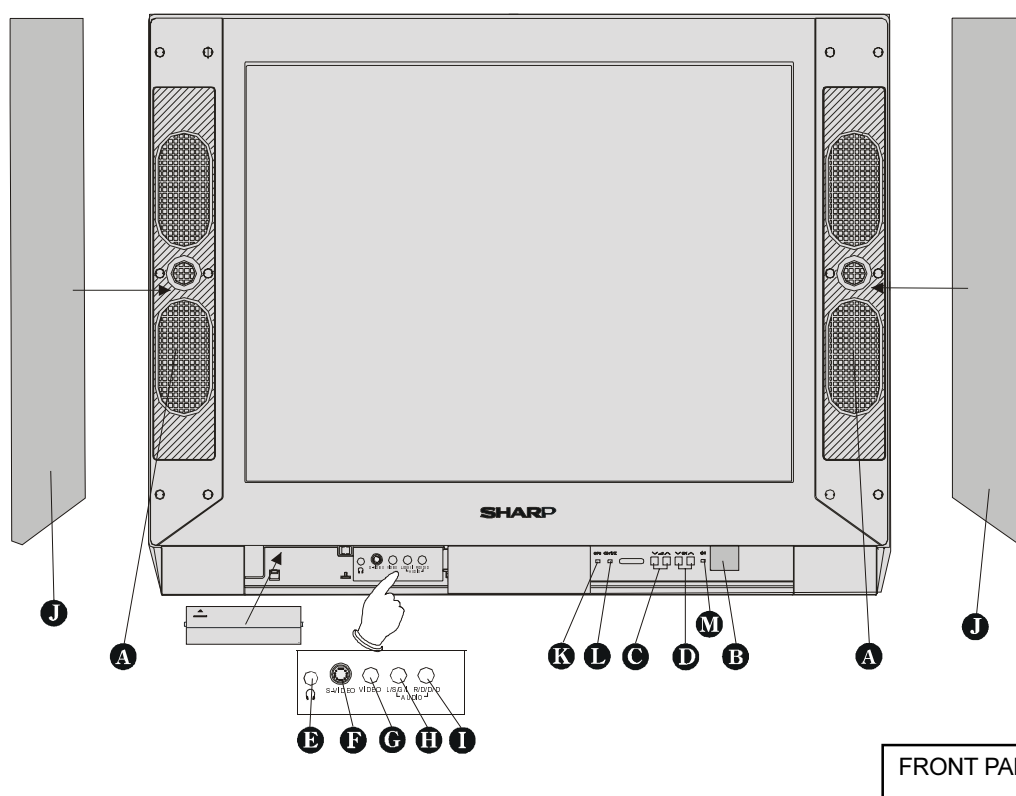
1. When undertaking any servicing on this chassis, **DO NOT** increase the EHT to more than 33 KV, (at a instantaneous beam current of 1800 μ A).
2. Ensure that during normal operation the EHT does not exceed 29.55 KV (at a beam current of 1800 μ A). This level has been preset in the factory. Always check that this level has not been exceeded after carrying out any repair on the receiver.
3. **DO NOT** replace the CRT with any other type than that specified in the parts listing as this may cause excessive x-ray radiation.

Before returning the receiver to the customer

In addition to the above checks, the following should also be carried out before returning the receiver to the customer.

1. Inspect all the leads to ensure that they are dressed correctly and that they are not obstructed or pinched by any other parts.
2. Ensure that all protective devices are in good condition. These will include nonmetallic control knobs, insulating fish papers, cabinets backs, compartment covers or shields, mechanical insulators, etc.

CONTROLS & TERMINALS



- A** Speakers (left + right)
- B** ① = Power On / Off
- C** v ▲ = Volume -/+
- D** v CH ▲ = Program -/+
- E** 🎧 = Headphone 3,6 mm Ø

- F** S-VIDEO
- G** VIDEO
- H** AUDIO (L/S/G/I) = Audio left
- I** AUDIO (R/D/D/D) = Audio right
- J** Speaker Covers

- K** Remote Control Indicator
- L** Sound Indicator
- M** Power Indicator

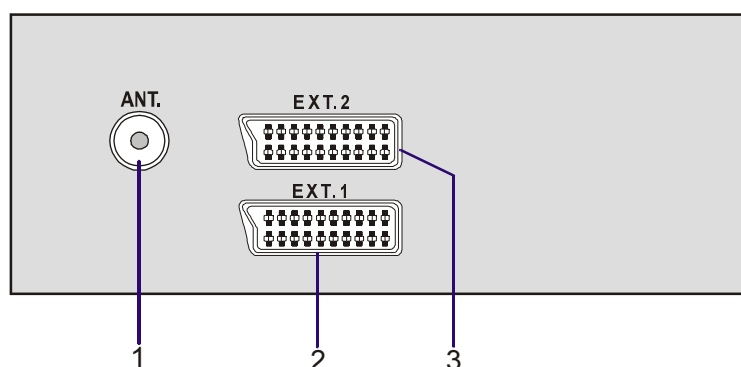
REAR TV

RF Input

1. Aerial terminal

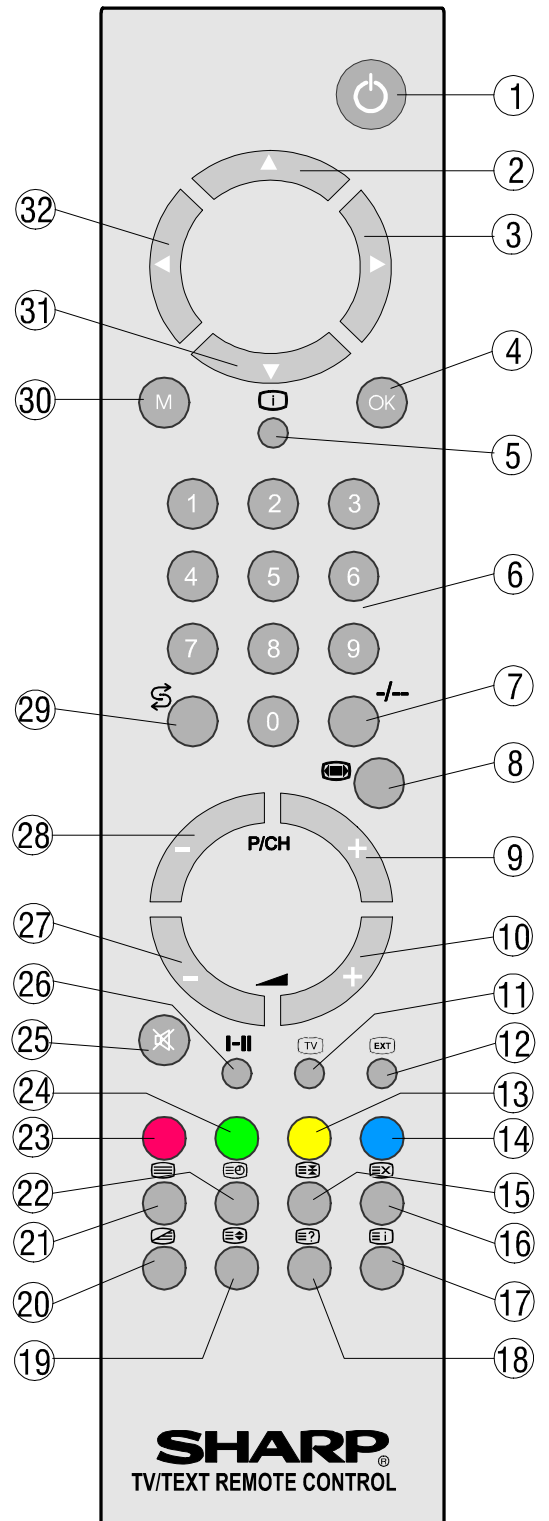
21-pin In/Out

2. 21-pin Audio/Video (RGB) (EXT.1) With PAL/SECAM/NTSC Video Input
3. 21-pin Audio/Video (EXT.2) With PAL/SECAM/NTSC Video Input



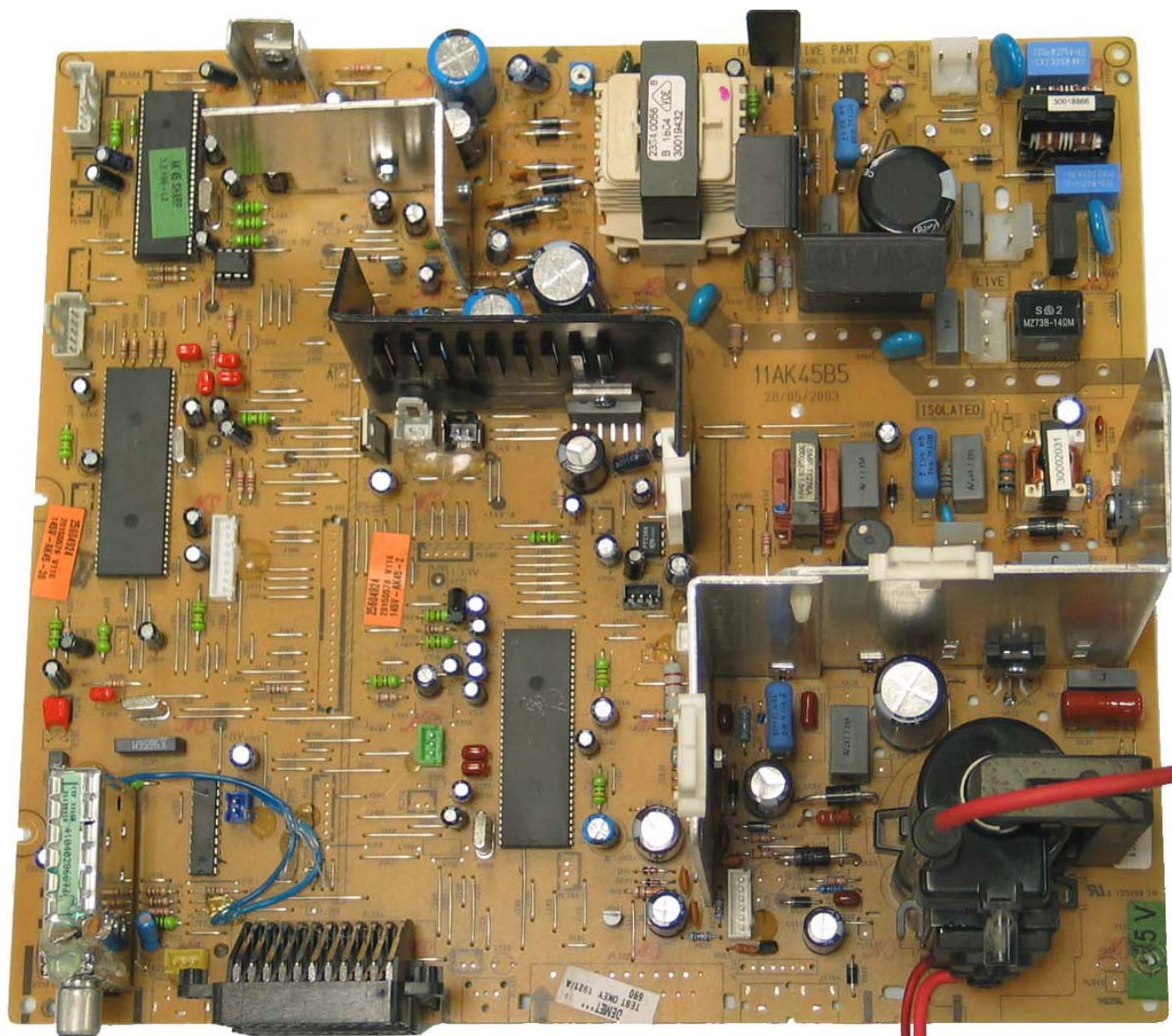
REMOTE CONTROL

- ① = Stand By
- ② = Cursor Up
- ③ = Cursor Right
- ④ OK = OK
- ⑤ = Info (Program Menu)
- ⑥ 0 - 9 = Direct Program
- ⑦ = Double Digit
- ⑧ = Wide mode button
- ⑨ P/CH+ = Program +
- ⑩ = Volume +
- ⑪ = TV / Quit Menu
- ⑫ = EXT button
(EXT-1, RGB, EXT-2, F-AV, S-VHS)
- ⑬ **Yellow** = Feature Menu
- ⑭ **Blue** = Installation Menu
- ⑮ = Hold
- ⑯ = Update
- ⑰ = Index Page
- ⑱ = Reveal
- ⑲ = Expand
- ⑳ = Mix
- ㉑ = Teletext
- ㉒ = Time
- ㉓ **Red** = Sound Menu
- ㉔ **Green** = Picture Menu
- ㉕ = Mute
- ㉖ I-II = Mono/Stereo - Dual I-II
- ㉗ = - Volume
- ㉘ - P/CH = -Program
- ㉙ = Flash back button
- ㉚ M = Menu
- ㉛ = Cursor Down
- ㉜ = Cursor Left



CHASSIS LAYOUT

Mother Unit



CRT Unit



Front AV Unit



Keyboard Unit



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1.INTRODUCTION

11AK45 is a 50Hz colour television capable of driving 24" + CRT sizes(beginning from 24" 16:9 up to 33").

The chassis is capable of operation in PAL, SECAM, NTSC (playback) colour standards and multiple transmission standards as B/G, D/K, I/I', and L/L'.

Sound system output is supplying 2x10W (10%THD) for left and right outputs of 8ohm speakers.

TV supports FASTTEXT. It is possible to decode transmissions including high graphical data.

The chassis is equipped with three full EuroScarts, only one of them supports RGB input, one headphone output, one FAV input, one SVHS input (via SCART)

2.TUNER

The hardware and software of the TV is suitable for tuners, supplied by different companies, which are selected from the Service Menu. These tuners can be combined VHF, UHF tuners suitable for CCIR systems B/G, H, L, L', I/I', and D/K. The tuning is available through the digitally controlled I²C bus (PLL). Below you will find info on one of the Tuners in use.

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.

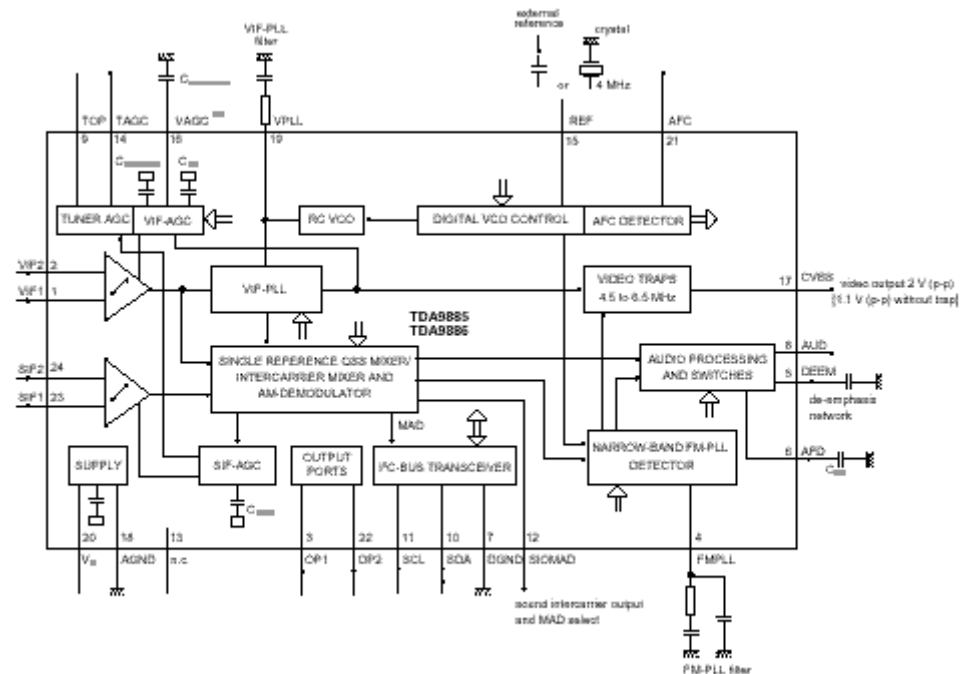
Features of UV1316:

1. Member of the UV1300 family small sized UHF/VHF tuners
2. Systems CCIR: B/G, H, L, L', I and I'; OIRT: D/K
3. Digitally controlled (PLL) tuning via I²C-bus
4. Off-air channels, S-cable channels and Hyperband
5. World standardized mechanical dimensions and world standard pinning
6. Compact size
7. Complies to "CENELEC EN55020" and "EN55013"

Pinning:

- | | | |
|--|---|-----------------------------|
| 1. Gain control voltage (AGC) | : | 4.0V, Max: 4.5V |
| 2. Tuning voltage | | |
| 3. I ² C-bus address select | : | Max: 5.5V |
| 4. I ² C-bus serial clock | : | Min:-0.3V, Max: 5.5V |
| 5. I ² C-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 | | |

3.IF PART (TDA9885/86)



[1] Not connected for TDA8885.

4.VIDEO SWITCH TEA6415

In case of three or more external sources are used, the video switch IC TEA6415 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.MULTI STANDARD SOUND PROCESSOR

The MSP 34x10G family of single-chip Multi-standard Sound Processors covers the sound processing of all analog TV-Standards worldwide, as well as the NICAM digital sound standards. The full TV sound processing, starting with analog sound IF signal-in, down to processed analog AF-out, is performed on a single chip.

The DBX noise reduction, or alternatively, MICRONAS Noise Reduction (MNR) is performed alignment free. Other processed standards are the Japanese FM-FM multiplex standard (EIA-J) and the FM Stereo Radio standard.

9.POWER SUPPLY (SMPS)

The DC voltages required at various parts of the chassis are provided by an SMPS transformer controlled by the IC MC44608, which is designed for driving, controlling and protecting switching transistor of SMPS. The transformer generates 145V for FBT input, +/-14V for audio amplifier, 5V and 3.3V stand by voltage and 8V, 12V and 5V supplies for other different parts of the chassis.

An optocoupler is used to control the regulation of line voltage and stand-by power consumption. There is a regulation circuit in secondary side. This circuit produces a control voltage according to the changes in 145V DC voltage, via an optocoupler (TCET1102G) to pin3 of the IC.

During the switch on period of the transistor, energy is stored in the transformer. During the switch off period energy is fed to the load via secondary winding. By varying switch-on time of the power transistor, it controls each portion of energy transferred to the second side such that the output voltage remains nearly independent of load variations.

10.MICROCONTROLLER SDA55XX

10.1.General Features

- Feature selection via special function register
- Simultaneous reception of TTX, VPS, PDC, and WSS (line 23)
- Supply Voltage 2.5 and 3.3 V
- ROM version package PSDIP52-2, PMQFP64-1
- Romless version package PMQFP100-2, PLCC84-2

10.2.External Crystal and Programmable Clock Speed

- Single external 6MHz crystal, all necessary clocks are generated internally
- CPU clock speed selectable via special function registers.
- Normal Mode 33.33 MHz CPU clock, Power Save mode 8.33 MHz

10.3.Microcontroller Features

- 8bit 8051 instruction set compatible CPU.
- 33.33-MHz internal clock (max.)
- 0.360 ms (min.) instruction cycle
- Two 16-bit timers
- Watchdog timer
- Capture compare timer for infrared remote control decoding
- Pulse width modulation unit (2 channels 14 bit, 6 channels 8 bit)
- ADC (4 channels, 8 bit)
- UART (rx, tx)

10.4.Memory

- Non-multiplexed 8-bit data and 16 ... 20-bit address bus (ROMless Version)
- Memory banking up to 1Mbyte (Romless version)
- Up to 128 Kilobyte on Chip Program ROM
- Eight 16-bit data pointer registers (DPTR)
- 256-bytes on-chip Processor Internal RAM (IRAM)
- 128bytes extended stack memory.
- Display RAM and TXT/VPS/PDC/WSS-Acquisition-Buffer directly accessible via MOVX

- Up to 16 Colours per DRCS Character
- One out of Eight Colours for Foreground and Background Colours for 1-bit DRCS and ROM Characters
- Shadowing
- Contrast Reduction
- Pixel by Pixel Shiftable Cursor With up to 4 Different Colours
- Support of Progressive Scan and 100 Hz.
- 3 X 4Bits RGB-DACs On-Chip
- Free Programmable Pixel Clock from 10 MHz to 32MHz
- Pixel Clock Independent from CPU Clock
- Multinorm H/V-Display Synchronization in Master or Slave Mode

10.6.Acquisition Features

- Multi-standard Digital Data Slicer
- Parallel Multi-norm Slicing (TTX, VPS, WSS, CC, G+)
- Four Different Framing Codes Available
- Data Caption only limited by available Memory
- Programmable VBI-buffer
- Full Channel Data Slicing Supported
- Fully Digital Signal Processing
- Noise Measurement and Controlled Noise Compensation
- Attenuation Measurement and Compensation
- Group Delay Measurement and Compensation
- Exact Decoding of Echo Disturbed Signals

10.7.Ports

- One 8-bit I/O-port with open drain output and optional I²C Bus emulation support (Port0)
- Two 8-bit multifunction I/O-ports (Port1, Port3)
- One 4-bit port working as digital or analogue inputs for the ADC (Port2)
- One 2-bit I/O port with secondary function (P4.2, 4.3, 4.7)
- One 4-bit I/O-port with secondary function (P4.0, 4.1, 4.4) (Not available in P-SDIP 52)

11.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.

12.SAW FILTERS

K3953M:

Standard

B/G, D/K, I, L/L'

Features

TV IF filter with Nyquist slopes at 33,90 MHz and 38,90 MHz

Constant group delay

Suitable for CENELEC EN 55020

— . .

K9356M:

Standard

B/G, D/K, I, L

Features

TV IF audio filter with pass band for sound carriers at 32,40 MHz (D/K, L), 32,90 MHz (I) and 33,40 MHz (B/G)

Terminal and Pin configuration are the same with K3953M

K9656M:

Standard

B/G, D/K, I, L/L'

Features

TV IF audio filter with two channels

Channel 1 (L') with one pass band for sound carriers at 40,40 MHz (L') and 39,75 MHz (L'- NICAM)

Channel 2 (B/G, D/K, L, I) with one pass band for sound carriers between 32,35 MHz and 33,40 MHz

Terminal and Pin configuration are the same with K3953M

13.IC DESCRIPTIONS

LM317T

MSP3410G

TEA6415

TDA7269A

24C08

MC44608

TDA9885T

TDA1308T

VDP3130Y

STV9379FA

LM7805/LM7808

SDA55XX

TCET1102G

13.1.LM317T

13.1.1.Description

The LM317T is an adjustable 3 terminal positive voltage regulator capable of supplying in excess of 1.5 amps over an output range of 1.25 to 37 volts. This voltage regulator is exceptionally easy to use and requires only two external resistors to set the output voltage. Further, it employs internal current limiting, thermal shutdown and safe area compensation, making it essentially blow-out proof. The LM317 serves a wide variety of applications including local, on card regulation. This device can also be used to make a programmable output regulator, or by connecting a fixed resistor between the adjustment and output, the LM317 can be used as a precision current regulator.

13.1.2.Features

- Output Current in Excess of 1.5 A
- Output Adjustable between 1.2 V and 37 V
- Internal Thermal Overload Protection
- Internal Short Circuit Current Limiting Constant with Temperature
- Output Transistor Safe-Area Compensation
- Floating Operation for High Voltage Applications
- Available in Surface Mount D²PAK, and Standard 3-Lead Transistor Package

- Low power consumption
- Short-circuit resistant
- High performance
- high signal-to-noise ratio
- High slew rate
- Low distortion
- Large output voltage swing.

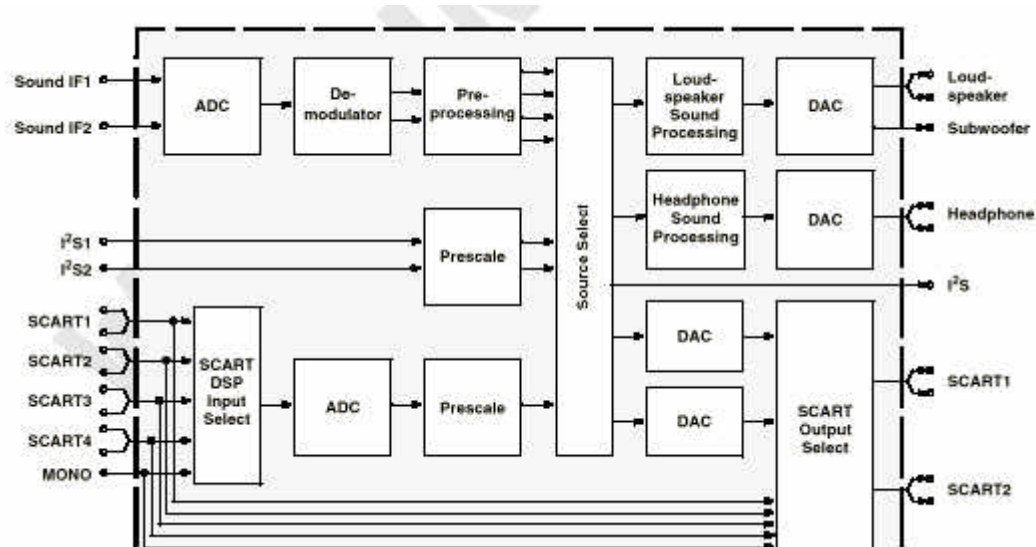
13.2.3.Pinning

SYMBOL	PIN	DESCRIPTION
OUTA	1	Output A
INA(neg)	2	Inverting input A
INA(pos)	3	Non-inverting input A
V _{SS}	4	Negative supply
INB(pos)	5	Non-inverting input B
INB(neg)	6	Inverting input B
OUTB	7	Output B
V _{DD}	8	Positive supply

13.3.MSP34X0G (MSP3410G)

13.3.1.Description

The MSP 34x0G family of single-chip Multi standard Sound Processors covers the sound processing of all analog TV-Standards worldwide, as well as the NICAM digital sound standards. The full TV sound processing, starting with analog sound IF signal-in, down to processed analog AF-out, is performed on a single chip. Figure shows a simplified functional block diagram of the MSP 34x0G.



13.3.2.Features

Standard Selection with single I²C transmission
Automatic Standard Detection of terrestrial TV standards
Automatic Sound Selection (mono/stereo/bilingual), new registers MODUS, STATUS
Two selectable sound IF (SIF) inputs
Automatic Carrier Mute function
Interrupt output programmable (indicating status change)
Loudspeaker / Headphone channel with volume, balance, bass, treble, loudness
AVC: Automatic Volume Correction
Subwoofer output with programmable low-pass and complementary high-pass filter
5-band graphic equalizer for loudspeaker channel
Spatial effect for loudspeaker channel
Four Stereo SCART (line) inputs, one Mono input; two Stereo SCART outputs
Complete SCART in/out switching matrix
Two I²S inputs; one I²S output
Dolby Pro Logic with DPL 351xA coprocessor
All analog FM-Stereo A2 and satellite standards; AM-SECAM L standard
Simultaneous demodulation of (very) high-deviation FM-Mono and NICAM
Adaptive deemphasis for satellite (Wegener-Panda, acc. to ASTRA specification)
ASTRA Digital Radio (ADR) together with DRP 3510A
All NICAM standards
Korean FM-Stereo A2 standard

13.3.3.Pin connections

NC = not connected; leave vacant
LV = if not used, leave vacant
X = obligatory; connect as described in circuit diagram
DVSS: if not used, connect to DVSS
AHVSS: connect to AHVSS

Pin No.					Pin Name	Type	Connection (if not used)	Short Description
PLCC 68-pin	PSDIP 64-pin	PSDIP 52-pin	PQFP 80-pin	PLQFP 64-pin				
1	16	14	9	8	ADR_WS	OUT	LV	ADR word strobe
2	-	-	-	-	NC		LV	Not connected
3	15	13	8	7	ADR_DA	OUT	LV	ADR Data Output
4	14	12	7	6	I2S_DA_IN1	IN	LV	I ² S1 data input
5	13	11	6	5	I2S_DA_OUT	OUT	LV	I ² S data output
6	12	10	5	4	I2S_WS	IN/OUT	LV	I ² S word strobe
7	11	9	4	3	I2S_CL	IN/OUT	LV	I ² S clock
8	10	8	3	2	I2C_DA	IN/OUT	X	I ² C data
9	9	7	2	1	I2C_CL	IN/OUT	X	I ² C data
10	8	-	1	64	NC		LV	Not connected
11	7	6	80	63	STANDBYQ	IN	X	Stand-by (low-active)
12	6	5	79	62	ADR_SEL	IN	X	I ² C bus address select
13	5	4	78	61	D_CTR_1/Q_0	IN/OUT	LV	D_CTR_1/Q_0

-	-	-	64	-	NC		LV	Not connected
-	-	-	63	-	NC		LV	Not connected
27	56	45	62	48	AVSS		X	Analog ground
-	-	-	61	-	AVSS		X	Analog ground
28	55	44	60	47	MONO_IN	IN	LV	Mono input
-	-	-	59	-	NC		LV	Not connected
29	54	43	58	46	VREFTOP		X	Reference voltage IF A/D converter
30	53	42	57	45	SC1_IN_R	IN	LV	SCART 1 input, right
31	52	41	56	44	SC1_IN_L	IN	LV	SCART 1 input, left
32	51	-	55	43	ASG1		AHVSS	Analog Shield Ground 1
33	50	40	54	42	SC2_IN_R	IN	LV	SCART 2 input, right
34	49	39	53	41	SC2_IN_L	IN	LV	SCART 2 input, left
35	48	-	52	40	ASG2		AHVSS	Analog Shield Ground 2
36	47	38	51	39	SC3_IN_R	IN	LV	SCART 3 input, right
37	46	37	50	38	SC3_IN_L	IN	LV	SCART 3 input, left
38	45	-	49	37	ASG4		AHVSS	Analog Shield Ground 4
39	44	-	48	36	SC4_IN_R	IN	LV	SCART 4 input, right
40	43	-	47	35	SC4_IN_L	IN	LV	SCART 4 input, left
41	-	-	46	-	NC		LV or AHVSS	Not connected
42	42	36	45	34	AGNDC		X	Analog reference voltage
43	41	35	44	33	AHVSS		X	Analog ground
-	-	-	43	-	AHVSS		X	Analog ground
-	-	-	42	-	NC		LV	Not connected
-	-	-	41	-	NC		LV	Not connected
44	40	34	40	32	CAPL_M		X	Volume capacitor MAIN
45	39	33	39	31	AHVSUP		X	Analog power supply 8V
46	38	32	38	30	CAPL_A		X	Volume capacitor AUX
47	37	31	37	29	SC1_OUT_L	OUT	LV	SCART output 1, left
48	36	30	36	28	SC1_OUT_R	OUT	LV	SCART output 1, right
49	35	29	35	27	VREF1		X	Reference ground 1
50	34	28	34	26	SC2_OUT_L	OUT	LV	SCART output 2, left
51	33	27	33	25	SC2_OUT_R	OUT	LV	SCART output 2, right
52	-	-	32	-	NC		LV	Not connected
53	32	-	31	24	NC		LV	Not connected
54	31	26	30	23	DACM_SUB	OUT	LV	Subwoofer output
55	30	-	29	22	NC		LV	Not connected
56	29	25	28	21	DACM_L	OUT	LV	Loudspeaker out, left
57	28	24	27	20	DACM_R	OUT	LV	Loudspeaker out, right
58	27	23	26	19	VREF2		X	Reference ground 2
59	26	22	25	18	DACA_L	OUT	LV	Headphone out, left
60	25	21	24	17	DACA_R	OUT	LV	Headphone out, right
-	-	-	23	-	NC		LV	Not connected
-	-	-	22	-	NC		LV	Not connected
61	24	20	21	16	RESETQ	IN	X	Power-on-reset
62	23	-	20	15	NC		LV	Not connected
63	22	-	19	14	NC		LV	Not connected
64	21	19	18	13	NC		LV	Not connected
65	20	18	17	12	I2S_DA_IN2	IN	LV	I ² S2-data input
66	19	17	16	11	DVSS		X	Digital ground
-	-	-	15	-	DVSS		X	Digital ground
-	-	-	14	-	DVSS		X	Digital ground
67	18	16	13	10	DVSUP		X	Digital power supply 5V
-	-	-	12	-	DVSUP		X	Digital power supply 5V

13.4.2.Features

Video Decoding and Processing

- four CVBS, one S-VHS input, one YC R C B component input
- integrated high-quality A/D converters and associated clamp and AGC circuits
- adaptive 2H comb filter Y/C separator
- multistandard colour decoder PAL/NTSC/SECAM including all substandards
- multistandard sync decoder
- automatic standard recognition
- black-line detector
- linear horizontal scaling (0.25...4), as well as nonlinear horizontal scaling “Panoramavision”
- black-level expander
- dynamic peaking
- soft limiter (gamma correction)
- colour transient improvement

RGB Processing and Deflection

- programmable RGB matrix
- two analog RGB / Fastblank inputs
- half-contrast switch
- picture frame generator
- scan velocity modulation output
- high-performance H/V deflection
- separate ADC for tube measurements
- EHT compensation
- angle and bow correction
- one 20.25 MHz crystal, few external components
- I²C-Bus Interface
- 64-pin PSDIP package

13.4.3.Pin Connections and short descriptions

NC = not connected

X = obligatory; connect as described in circuit diagram

OUT = Output

LV = if not used, leave vacant

IN = Input

SUPPLY = Supply Pin

Pin no PSDIP 64-pin	Pin name	Type	Connection (if not used)	Short description
1	TEST	IN	GNDD	Test Input
2	RESQ	IN	X	Reset Input
3	SCL	IN/OUT	X	I ² C Bus Clock
4	SDA	IN/OUT	X	I ² C Bus Data
5	GNDD	SUPPLY	X	Digital Ground
6	HCS	IN	LV	Half Contrast Switch Input
7	FSY	OUT	LV	Front Sync Output
8	CSY	OUT	LV	Composite Sync Output

25	GNDD	SUPPLY	X	Digital Ground
26	RSW2	OUT	GNDAB	Range Switch 2 for Measurement ADC
27	RSW1	OUT	GNDAB	Range Switch 1 for Measurement ADC
28	SENSE	IN	GNDAB	Sense ADC Input
29	GNDM	SUPPLY	X	Ground, MADC Input
30	VERTQ	OUT	LV	Inverted Vertical Sawtooth Output
31	VERT	OUT	LV	Vertical Sawtooth Output
32	E/w	OUT	LV	Vertical Parabola Output
33	XREF	IN	X	Reference Input for RGB DACs
34	SVMOUT	OUT	VSUPAB	Analog Scan Velocity Modulation Output
35	GNDAB	SUPPLY	X	Analog Ground Backend
36	VSUPAB	SUPPLY	X	Analog Supply Voltage (5.0V) Backend
37	ROUT	OUT	VSUPAB	Analog Red Output
38	GOUT	OUT	VSUPAB	Analog Green Output
39	BOUT	OUT	VSUPAB	Analog Blue Output
40	VRD	IN	X	DAC Reference
41	RIN	IN	GNDAB	Analog Red Input
42	GIN	IN	GNDAB	Analog Green Input
43	BIN	IN	GNDAB	Analog Blue Input
44	FBLIN	IN	GNDAB	Fast Blank Input
45	RIN2	IN	GNDAB	Analog Red Input2
46	GIN2	IN	GNDAB	Analog Green Input2
47	BIN2	IN	GNDAB	Analog Blue Input2
48	FBLIN2	IN	GNDAB	Fast Blank Input2
49	CLK20	OUT	LV	20.25 MHz System Clock Output
50	HOUT	OUT	X	Horizontal Drive Output
51	XTAL 1	IN	X	Analog Crystal Input
52	XTAL 2	OUT	X	Analog Crystal Output
53	CIN 2/CRIN		LV	Analog Chroma 2/Component C _R Input
54	CBIN	IN	LV	Component C _B Input
55	GNDAF	SUPPLY	X	Analog Ground Frontend
56	SGND	IN	GNDAF	Signal Ground for Analog Input
57	VRT	IN	X	Reference Voltage Top, Video ADC
58	VSUPAF	SUPPLY	X	Analog Supply Voltage (5.0V) Frontend
59	VOUT	OUT	LV	Analog Video Output
60	CIN1	IN	VRT	Analog Chroma 1 Input
61	VIN1	IN	VRT	Analog Video 1 Input
62	VIN2	IN	VRT	Analog Video 2 Input
63	VIN3	IN	VRT	Analog Video 3 Input
64	VIN4	IN	VRT	Analog Video 4 Input

13.5.TEA6415C

13.5.1.General Description

The main function of the IC is to switch 8 video input sources on 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 synch. top for CVBS or black level for RGB signals). Each nominal gain between any input

- 6.5dB gain between any input and output
- 55dB crosstalk at 5mHz
- Fully ESD protected

13.5.3.Pinning

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

13.6.STV9379FA

13.6.1.Description

Designed for monitors and high performance TVs, the STV9379FA vertical deflection booster can handle flyback voltage up to 90V. Further to this, it is possible to have a flyback voltage, which is more than the double of the supply (Pin 2). This allows to decrease the power consumption, or to decrease the flyback time for a given supply voltage. The STV9379FA operates with supplies up to 42V and provides up to 2.6APP output current to drive the yoke. The STV9379FA is offered in HEPTAWATT package.

13.6.2.Features

Power Amplifier
 Thermal Protection
 Output Current Up To 2.6APP
 Flyback Voltage Up To 90V (on Pin 5)
 Suitable For DC Coupling Application

13.7.TDA7269A

13.7.1.Description

The TDA7269A is class AB dual Audio power amplifier assembled in the Multiwatt package, specially designed for high quality sound application as Hi-Fi music centers and stereo TV sets.

13.7.2.Features

Wide Supply Voltage Range Up To $\pm 20V$
Split Supply
High Output Power
14 + 14W @THD =10%, $R_L = 8\Omega$, $V_S = +16V$
No Pop at Turn-On/Off
Mute (Pop Free)
Stand-By Feature (Low I_q)
Short Circuit Protection To Gnd
Thermal Overload Protection

13.8.LM7800 (LM7805/LM7808)

13.8.1.Description

The L7800 series of three-terminal positive regulators is available in TO-220 TO-220FP TO-3 and D 2 PAK packages and several fixed output voltages, making it useful in a wide range of applications. These regulators can provide local on-card regulation, eliminating the distribution problems associated with single point regulation. Each type employs internal current limiting, thermal shutdown and safe area protection, making it essentially indestructible. If adequate heat sinking is provided, they can deliver over 1A output current. Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain adjustable voltages and currents.

13.8.2.Features

Output Current Up To 1.5 A
Output Voltages of 5; 5.2; 6; 8; 8.5; 9; 12; 15; 18; 24V
Thermal Over load protection
Short Circuit Protection
Output Transition SOA Protection

13.9.AT24C08

13.9.1.Description

The AT24C01A/02/04/08/16 provides 1024/2048/4096/8192/16384 bits of serial electrically erasable and programmable read-only memory (EEPROM) organized as 128/256/512/1024/2048 words of 8 bits each. The device is optimized for use in many industrial and commercial applications where low-power and low-voltage operation are essential. The AT24C01A/02/04/08/16 is available in space-saving 8-pin PDIP, (AT24C01A/02/04/08/16), 8-lead TSSOP (AT24C01A/02/04/08/16) and 8-lead JEDEC SOIC

- 8-byte Page (1K, 2K), 16-byte Page (4K, 8K, 16K) Write Modes
- Partial Page Writes are Allowed
- Self-timed Write Cycle (10 ms max)
- High-reliability
- Endurance: 1 Million Write Cycles
- Data Retention: 100 Years
- Automotive Grade and Extended Temperature Devices Available
- 8-lead JEDEC SOIC, 8-pin PDIP and 8-lead TSSOP Packages

13.9.3.Pin Configurations

Pin name	Function
A0-A2	Address Inputs
SDA	Serial Data
SCL	Serial Clock Input
WP	Write Protect
NC	No Connect

13.10.SDA5555

13.10.1.General definition

The SDA55XX is a single chip teletext decoder for decoding World System Teletext data as well as Video Programming System (VPS), Program Delivery Control (PDC), and Wide Screen Signalling (WSS) data used for PAL plus transmissions (Line 23). The device also supports Closed caption acquisition and decoding. The device provides an integrated general-purpose, fully 8051-compatible Microcontroller with television specific hardware features. Microcontroller has been enhanced to provide powerful features such as memory banking, data pointers, and additional interrupts etc. The on-chip display unit for displaying Level 1.5 teletext data can also be used for customer defined on screen displays. Internal XRAM consists of up to 16 Kbytes. Device has an internal ROM of up to 128 KBytes. ROMless versions can access up to 1 MByte of external RAM and ROM. The SDA 55XX supports a wide range of standards including PAL, NTSC and contains a digital slicer for VPS, WSS, PDC, TTX and Closed Caption, an accelerating acquisition hardware module, a display generator for Level 1.5 TTX data and powerful On screen Display capabilities based on parallel attributes, and Pixel oriented characters (DRCS).

13.10.2.Features

General

- Feature selection via special function register
- Simultaneous reception of TTX, VPS, PDC, and WSS (line 23)
- Supply Voltage 2.5 and 3.3 V
- ROM version package PSDIP52-2, PMQFP64-1
- Romless version package PMQFP100-2, PLCC84-2

External Crystal and Programmable Clock Speed

- Single external 6MHz crystal, all necessary clocks are generated internally
- CPU clock speed selectable via special function registers

Memory

- Non-multiplexed 8-bit data and 16 ... 20-bit address bus (ROMless Version)
- Memory banking up to 1Mbyte (Romless version)
- Up to 128 Kilobyte on Chip Program ROM
- Eight 16-bit data pointer registers (DPTR)
- 256-bytes on-chip Processor Internal RAM (IRAM)
- 128bytes extended stack memory.
- Display RAM and TXT/VPS/PDC/WSS-Acquisition-Buffer directly accessible via MOVX
- UP to 16KByte on Chip Extended RAM (XRAM) consisting of;
 - 1 Kilobyte on-chip ACQ-buffer-RAM (access via MOVX)
 - 1 Kilobyte on-chip extended-RAM (XRAM, access via MOVX) for user software
 - 3 Kilobyte Display Memory

Display Features

- ROM Character Set Supports all East and West European Languages in single device
- Mosaic Graphic Character Set
- Parallel Display Attributes
- Single/Double Width/Height of Characters
- Variable Flash Rate
- Programmable Screen Size (25 Rows x 33...64 Columns)
- Flexible Character Matrixes (HxV) 12 x 9...16
- Up to 256 Dynamical Redefinable Characters in standard mode; 1024 Dynamical Redefinable Characters in Enhanced Mode
- CLUT with up to 4096 colour combinations
- Up to 16 Colours per DRCS Character
- One out of Eight Colours for Foreground and Background Colours for 1-bit DRCS and ROM Characters
- Shadowing
- Contrast Reduction
- Pixel by Pixel Shiftable Cursor With up to 4 Different Colours
- Support of Progressive Scan and 100 Hz.
- 3 X 4Bits RGB-DACs On-Chip
- Free Programmable Pixel Clock from 10 MHz to 32MHz
- Pixel Clock Independent from CPU Clock
- Multinorm H/V-Display Synchronization in Master or Slave Mode

Acquisition Features

- Multistandard Digital Data Slicer
- Parallel Multi-norm Slicing (TTX, VPS, WSS, CC, G+)
- Four Different Framing Codes Available
- Data Caption only Limited by available Memory
- Programmable VBI-buffer
- Full Channel Data Slicing Supported
- Fully Digital Signal Processing
- Noise Measurement and Controlled Noise Compensation
- Attenuation Measurement and Compensation

external components while offering a high flexibility and reliability. The device also features a very high efficiency stand-by management consisting of an effective Pulsed Mode operation. This technique enables the reduction of the stand-by power consumption to approximately 1W while delivering 300mW in a 150W SMPS.

- Integrated Start-Up Current Source
- Lossless Off-Line Start-Up
- Direct Off-Line Operation
- Fast Start-Up

13.11.2.General Features

- Flexibility
- Duty Cycle Control
- Under voltage Lockout with Hysteresis
- On Chip Oscillator Switching Frequency 40, or 75kHz
- Secondary Control with Few External Components

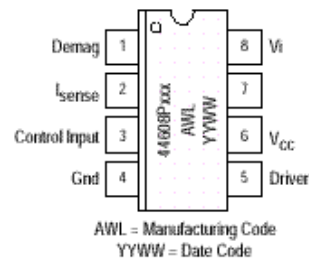
Protections

- Maximum Duty Cycle Limitation
- Cycle by Cycle Current Limitation
- Demagnetization (Zero Current Detection) Protection
- “Over Vcc Protection” Against Open Loop
- Programmable Low Inertia Over Voltage Protection Against Open Loop
- Internal Thermal Protection

GreenLine™ Controller

- Pulsed Mode Techniques for a Very High Efficiency Low Power Mode
- Lossless Startup
- Low dV/dT for Low EMI Radiations

13.11.3.Pin Connections



13.11.4.Pin Function description

Pin	Name	Description
1	Demag	The Demag pin offers 3 different functions: Zero voltage crossing detection (50mV), 24mA current detection and 120mA current detection. The 24mA level is used to detect the secondary reconfiguration status and the 120mA level to detect an Over Voltage status called Quick OVP.
2	ISENSE	The Current Sense pin senses the voltage developed on the series resistor inserted in the source of the power MOSFET. When I sense reaches 1V, the Driver output (pin 5) is disabled. This is

13.12.TCET1102G

13.12.1.Description

The TCET110/ TCET2100/ TCET4100 consists of a phototransistor optically coupled to a gallium arsenide infrared-emitting diode in a 4-lead up to 16-lead plastic dual inline package. The elements are mounted on one lead frame using a **coplanar technique**, providing a fixed distance between input and output for highest safety requirements.

13.12.2.Applications

Circuits for safe protective separation against electrical shock according to safety class II (reinforced isolation):

For appl. class I – IV at mains voltage ?300 V

For appl. class I – III at mains voltage ?600 V

According to VDE 0884, table 2, suitable for: **Switch-mode power supplies, line receiver, computer peripheral interface, microprocessor system interface.**

13.12.3.Features

VDE 0884 related features:

Rated impulse voltage (transient overvoltage) $V_{IOTM} = 8 \text{ kV peak}$

Isolation test voltage (partial discharge test voltage) $V_{pd} = 1.6 \text{ kV}$

Rated isolation voltage (RMS includes DC) $V_{IOWM} = 600 \text{ V RMS (848 V peak)}$

Rated recurring peak voltage (repetitive) $V_{IORM} = 600 \text{ V RMS}$

General features:

CTR offered in 9 groups

Isolation materials according to UL94-VO

Pollution degree 2 (DIN/VDE 0110 / resp. IEC 664)

Climatic classification 55/100/21 (IEC 68 part 1)

Special construction: Therefore, extra low coupling capacity of typical 0.2pF, high **Common Mode Rejection**

Low temperature coefficient of CTR

G = Leadform 10.16 mm; provides creepage distance > 8 mm, for TCET2100/ TCET4100 optional; suffix letter 'G' is not marked on the optocoupler

Coupling System U

13.13.TDA9885T

13.13.1.General Description

The TDA9885 is an alignment-free single standard (without positive modulation) vision and sound IF signal PLL.

13.13.2.Features

- 5 V supply voltage

- Gain controlled wide band Vision Intermediate Frequency (VIF) amplifier (AC coupled)

- SIF AGC for gain controlled SIF amplifier; single reference QSS mixer able to operate in high performance single reference QSS mode and in intercarrier mode, switchable via I²C-bus
- AM demodulator without extra reference circuit
- Alignment-free selective FM-PLL demodulator with high linearity and low noise
- I²C-bus control for all functions
- I²C-bus transceiver with pin programmable Module Address (MAD).

13.13.3.Pinning

SYMBOL	PIN	DESCRIPTION
VIF1	1	VIF differential input 1
VIF2	2	VIF differential input 2
OP1	3	output 1 (open-collector)
FMPLL	4	FM-PLL for loop filter
DEEM	5	de-emphasis output for capacitor
AFD	6	AF decoupling input for capacitor
DGND	7	digital ground
AUD	8	audio output
TOP	9	tuner AGC TakeOver Point (TOP)
SDA	10	I ² C-bus data input/output
SCL	11	I ² C-bus clock input
SIOMA	12	sound intercarrier output and MAD select
n.c.	13	not connected
TAGC	14	tuner AGC output
REF	15	4 MHz crystal or reference input
VAGC	16	VIF-AGC for capacitor; note 1
CVBS	17	video output
AGND	18	analog ground
VPLL	19	VIF-PLL for loop filter
V _p	20	supply voltage (+5 V)
AFC	21	AFC output
OP2	22	output 2 (open-collector)
SIF1	23	SIF differential input 1
SIF2	24	SIF differential input 2

13.14.PI5V330

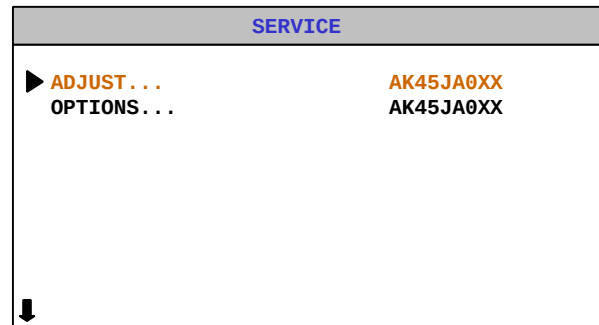
13.14.1.General Description

The PI5V330 is well suited for video applications when switching composite or RGB analog. A picture-in-picture application will be described in this brief. The pixel-rate creates video overlays so two or more pictures can be viewed at the same time. An inexpensive NTSC titler can be implemented by superimposing the output of a character generator on a standard composite video background.

14.AK45 CHASSIS PRODUCTION SERVICE MODE ADJUSTMENTS

14.1.SERVICE MENU

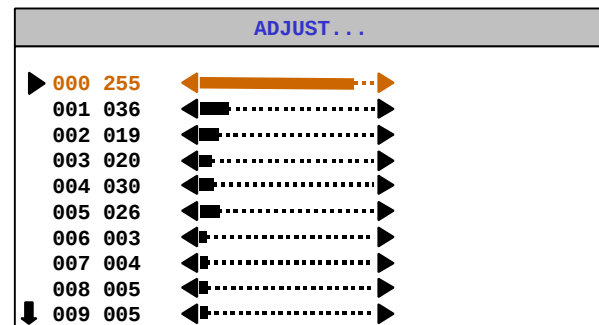
All system, geometry and white balance alignments are performed in production service mode. Before starting the production mode alignments, make sure that all manual adjustments are done correctly. To start production mode alignments enter the MAIN MENU and then press the digits 4, 7, 2 and 5 respectively or press **MUTE** and **INFO** buttons at the same time. The following first menu appears on the screen.



You can select Adjust or Options items by pressing Up/Down buttons. Selected parameter will be highlighted. In order to enter the selected parameter, press Left or Right button. To exit the service menu press MENU button. Entire service menu parameters of AK45 CHASSIS are listed below.

14.2.ADJUST MENU

Select the parameter by pressing up/down buttons. Adjust the parameter by pressing Left/Right buttons. In ADJUST menu, changed values are stored automatically.



White Point Red, White Point Green, White Point Blue:
Not used.

AGC

Apply PAL BG signal, VHF-3 Channel-12 and 60dB μ V signal level. Adjust AGC (Automatic Gain

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.

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.

Y-Delay other

Not used.

Vertical Pozition Offset

This value is fixed (127)

Vertical Pozition Offset

This value is fixed (127)

Horizontal Pozition Offset

This value is fixed (127)

Horizontal Pozition Offset

This value is fixed (127)

Vertical Blank Start

This register will be used only at 4:3 tube for 16:9 mode adjustment. It adjusts the vertical blank start position.

Vertical Blank Stop

This register will be used only at 4:3 tube for 16:9 mode adjustment. It adjusts the vertical blank stop position.

Angle

Change Angle by pressing Left/Right buttons till the vertical lines of the crosshatch pattern become completely perpendicular to horizontal lines without any angle of vertical deviation. Check and readjust ANGLE item if the adjustment becomes improper after some other geometric adjustments are done.

Bow

Change Bow by pressing Left/Right buttons till the vertical lines especially ones close to the left and right sides will of equal and symmetrical bending, i.e. they together will neither be towards left side nor right side. Check and readjust BOW item if the adjustment becomes improper after some other geometric adjustments are done.

4:3 Horizontal Blank Start

This register will be used only at 4:3 tube for 4:3 mode adjustment. It adjusts the horizontal blank start

WDR

The amplitude of R of RGB output can be adjusted with the drive parameter WDR.

WDG

The amplitude of G of RGB output can be adjusted with the drive parameter WDG.

WDB

The amplitude of B of RGB output can be adjusted with the drive parameter WDB.

CR

The DC offset values of R of RGB output can be adjusted with the cutoff parameter CR.

CG

The DC offset values of G of RGB output can be adjusted with the cutoff parameter CG.

CB

The DC offset values of B of RGB output can be adjusted with the cutoff parameter CB.

COR coring level

The amplitude of the correction signal is adjustable. Small noise amplitudes in the correction signal are suppressed by an adjustable coring circuit.

REGULAR VERT_POS (Regular mode Vertical Position)

Enter a PAL B/G circle test pattern via RF. Change Vertical Position till the test pattern is vertically centered. Horizontal line at the center pattern is in equal distance both to upper and lower side of the picture tube. Check and readjust Vertical Position item if the adjustment becomes improper after some other geometric adjustments are done.

It's used to adjust the vertical position of regular mode.

REGULAR VERT_AMPL (Regular mode Vertical Amplitude)

It's used to adjust the vertical amplitude of regular mode.

REGULAR VERT_SCOR (Regular mode Vertical S-Correction)

It's used to adjust the vertical s-correction of regular mode.

REGULAR VERT_SSYM(Regular mode Vertical S Symmetry)

It's used to adjust the vertical s-symetry of regular mode.

REGULAR TRAPEZE (Regular mode Trapeze)

Change Trapezium by pressing Left/Right buttons 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 TRPEZ item if the adjustment becomes improper after some other geometric adjustments are done.

It's used to adjust the trapeze of regular mode.

REGULAR CUSHION (Regular mode Cushion)

It's used to adjust the cushion of regular mode.

PANORAMIC VERT_POS (Panoramic mode Vertical Position)

It's used to adjust the vertical position of panoramic mode.

PANORAMIC VERT_AMPL (Panoramic mode Vertical Amplitude)

It's used to adjust the vertical amplitude of panoramic mode.

PANORAMIC VERT_SCOR (Panoramic mode Vertical S-Correction)

It's used to adjust the vertical s-correction of panoramic mode.

PANORAMIC VERT_SSYM (Panoramic mode Vertical S-Symmetry)

It's used to adjust the vertical s-symmetry of panoramic mode.

PANORAMIC TRAPEZE (Panoramic mode Trapeze)

It's used to adjust the trapeze of panoramic mode.

PANORAMIC CUSHION (Panoramic mode Cushion)

It's used to adjust the cushion of panoramic mode.

PANORAMIC HOR_COR_SYM (Panoramic mode Horizontal corner symmetry)

It's used to adjust the horizontal corners symmetry of panoramic mode.

PANORAMIC HOR_CORNER (Panoramic mode Horizontal corner)

It's used to adjust the horizontal corners of panoramic mode.

PANORAMIC HORZ_POS (Panoramic mode Horizontal position)

It's used to adjust the horizontal position of panoramic mode.

PANORAMIC HORZ_AMPL (Panoramic mode Horizontal amplitude)

It's used to adjust the horizontal amplitude of panoramic mode.

14:9 ZOOM VERT_POS (14:9 Zoom mode Vertical Position)

It's used to adjust the vertical position of 14:9 zoom mode.

14:9 ZOOM VERT_AMPL (14:9 Zoom mode Vertical Amplitude)

It's used to adjust the vertical amplitude of 14:9 zoom mode.

14:9 ZOOM VERT_SCOR (14:9 Zoom mode Vertical S-Correction)

It's used to adjust the vertical s-correction of 14:9 zoom mode.

14:9 ZOOM VERT_SSYM (14:9 Zoom mode Vertical Symmetry)

It's used to adjust the vertical s-symmetry of 14:9 zoom mode.

14:9 ZOOM TRAPEZE (14:9 Zoom mode Trapeze)

It's used to adjust the trapeze of 14:9 zoom mode.

14:9 ZOOM CUSHION (14:9 Zoom mode Cushion)

16:9 ZOOM VERT_POS (16:9 Zoom mode Vertical Position)

It's used to adjust the vertical position of 16:9 zoom mode.

16:9 ZOOM VERT_AMPL (16:9 Zoom mode Vertical Amplitude)

It's used to adjust the vertical amplitude of 16:9 zoom mode.

16:9 ZOOM VERT_SCOR (16:9 Zoom mode Vertical S-Correction)

It's used to adjust the vertical s-correction of 16:9 zoom mode.

16:9 ZOOM VERT_SSYM (16:9 Zoom mode Vertical S-Symmetry)

It's used to adjust the vertical s-symmetry of 16:9 zoom mode.

16:9 ZOOM TRAPEZE (16:9 Zoom mode Trapeze)

It's used to adjust the trapeze of 16:9 zoom mode.

16:9 ZOOM CUSHION (16:9 Zoom mode Cushion)

It's used to adjust the cushion of 16:9 zoom mode.

16:9 ZOOM HOR_COR_SYM (16:9 Zoom mode Horizontal corner symmetry)

It's used to adjust the horizontal corners symmetry of 16:9 zoom mode.

16:9 ZOOM HOR_CORNER (16:9 Zoom mode Horizontal corner)

It's used to adjust the horizontal corners of 16:9 zoom mode.

16:9 ZOOM HORZ_POS (16:9 Zoom mode Horizontal position)

It's used to adjust the horizontal position of 16:9 zoom mode.

16:9 ZOOM HORZ_AMPL (16:9 Zoom mode Horizontal amplitude)

It's used to adjust the horizontal amplitude of 16:9 zoom mode.

16:9 ZOOM SUBTITLE VERT_POS (16:9 Zoom Subtitle mode Vertical position)

It's used to adjust the vertical position of 16:9 zoom subtitle mode.

16:9 ZOOM SUBTITLE VERT_AMPL (16:9 Zoom Subtitle mode Vertical amplitude)

It's used to adjust the vertical amplitude of 16:9 zoom subtitle mode.

16:9 ZOOM SUBTITLE VERT_SCOR (16:9 Zoom Subtitle mode Vertical S-Correction)

It's used to adjust the vertical s-correction of 16:9 zoom subtitle mode.

16:9 ZOOM SUBTITLE VERT_SSYM (16:9 Zoom Subtitle mode Vertical Symmetry)

It's used to adjust the vertical s-symmetry of 16:9 zoom subtitle mode.

16:9 ZOOM SUBTITLE TRAPEZE (16:9 Zoom Subtitle mode Trapeze)

It's used to adjust the trapeze of 16:9 zoom subtitle mode.

16:9 ZOOM SUBTITLE CUSHION (16:9 Zoom Subtitle mode Cushion)

OSD Position

It's used to adjust the horizontal position of the OSD.

BCLTHR

Beam current threshold

BCLG

Beam current loop gain

ROTATION (TILT)

This adjustment only works when the TV has rotation option. Change TILT by pressing Left/Right buttons to rotate the complete raster clock-wise and counter clock-wise depending on the CRT. Check and readjust TRPEZ item if the adjustment becomes improper after some other geometric adjustments are done.

LSLSA, LSLSB, LSL2, LSLTA, LSLTB (Luma soft limiter)

LSLSA: Luma soft limiter slope A (fixed)

LSLSB: Luma soft limiter slope B (fixed)

LSL2: Luma soft limiter absolute limit (fixed)

LSLTA: Luma soft limiter segment A tilt point (fixed)

LSLTB: Luma soft limiter segment A tilt point (fixed)

REFERENCE WDR RED (NORMAL)

The amplitude of R of RGB output can be adjusted with the drive parameter WDR for the colour temperature of normal mode.

REFERENCE WDR GREEN (NORMAL)

The amplitude of G of RGB output can be adjusted with the drive parameter WDR for the colour temperature of normal mode.

REFERENCE WDR BLUE (NORMAL)

The amplitude of B of RGB output can be adjusted with the drive parameter WDR for the colour temperature of normal mode.

REFERENCE CUTOFF RED

It's fixed.

REFERENCE CUTOFF GREEN

It's fixed.

REFERENCE CUTOFF BLUE

It's fixed.

IBRM

Internal Brightness, the brightness for measurement can be set to measure at higher cutoff current. The measurement brightness is independent of the drive voltage. It's used to adjust the maximum brightness

POFS2 (RGB HORIZONTAL SHIFT)

It's used to adjust the horizontal position of RGB signal.

REFERENCE WDR RED COOL

The amplitude of R of RGB output can be adjusted with the drive parameter WDR for the colour temp of cool mode.

REFERENCE WDR GREEN COOL

The amplitude of G of RGB output can be adjusted with the drive parameter WDR for the colour temp of cool mode.

REFERENCE WDR BLUE COOL

The amplitude of B of RGB output can be adjusted with the drive parameter WDR for the colour temp of cool mode.

REFERENCE WDR RED WARM

The amplitude of R of RGB output can be adjusted with the drive parameter WDR for the colour temp of warm mode.

REFERENCE WDR GREEN WARM

The amplitude of G of RGB output can be adjusted with the drive parameter WDR for the colour temp of cool mode.

REFERENCE WDR BLUE WARM

The amplitude of B of RGB output can be adjusted with the drive parameter WDR for the colour temp of cool mode.

STANDARD MODE BRIGHTNESS

It's used to adjust the brightness value of standard mode.

STANDARD MODE COLOUR

It's used to adjust the colour value of standard mode.

STANDARD MODE CONTRAST

It's used to adjust the contrast value of standard mode.

FULL VERT_POS (16:9 MODE)

It's used to adjust the vertical position of 16:9 mode (full mode).

FULL VERT_AMPL

It's used to adjust the vertical amplitude of 16:9 mode (full mode).

FULL VERT_SCOR

It's used to adjust the vertical s-correction of 16:9 mode (full mode).

FULL VERT_GAMMA

FULL HORZ_POS

It's used to adjust the horizontal position of 16:9 mode (full mode).

FULL HORZ_AMPL

It's used to adjust the horizontal amplitude of 16:9 mode (full mode).

BRIGHT MODE BRIGHTNESS

It's used to adjust the brightness value of bright mode.

BRIGHT MODE COLOUR

It's used to adjust the colour value of bright mode.

BRIGHT MODE CONTRAST

It's used to adjust the contrast value of bright mode.

SOFT MODE BRIGHTNESS

It's used to adjust the brightness value of soft mode.

SOFT MODE COLOUR

It's used to adjust the colour value of soft mode.

SOFT MODE CONTRAST

It's used to adjust the contrast value of soft mode.

PERSONAL MODE FACTORY SETTING BRIGHTNESS

It's fixed.

PERSONAL MODE FACTORY SETTING COLOUR

It's fixed.

PERSONAL MODE FACTORY SETTING CONTRAST

It's fixed.

SCINC FOR PANAROMIC MODE

scaler1 coefficient, this scaler is compressing the signal.

SCINC1 FOR PANAROMIC MODE

scaler2 coefficient, this scaler is expanding the signal.

VOLUME AFTER APS

It's used to adjust the volume level after APS.

VERTICAL SCROLL

It's used to adjust the step width for scroll function.

14.0 HORIZONTAL START

14:9 RGB CUSHION

It's used to adjust the cushion in 14:9 mode for RGB signals.

PANAROMIC RGB HORIZONTAL AMPLITUDE

It's used to adjust the horizontal amplitude in panoramic mode for RGB signals.

16:9 RGB HORIZANTOL AMPLITUDE

It's used to adjust the horizontal amplitude in 16:9 mode for RGB signals.

16:9 SUBTITLE RGB HORIZONTAL AMPLITUDE

It's used to adjust the horizontal amplitude in 16:9 subtitle mode for RGB signals.

FULL RGB HORIZONTAL AMPLITUDE

It's used to adjust the horizontal amplitude in full mode for RGB signals.

TELETEXT HORZ_POS

It's used to adjust the horizontal position of teletext signal.

ADJUST	EXPLANATION	2835	2835W
		MULTI	MULTI - PAL I
000	White Point RED	255	255
001	White Point GREEN	126	036
002	Whit Point BLUE	127	019
003	AGC (Automatic Gain Control)	20 It will be adjusted to below 1V of Max. AGC for each TV.	
004	IF-PLL Negative	030	030
005	IF-PLL Positive	026	026
006	Y-Delay	003	002
007	Y-Delay SECAM	004	003
008	Y-Delay NTSC	005	005
009	Y-Delay OTHER	005	005
010	Vertical Position Offset	127	127
011	Vertical Amplitude Offset	127	127
012	Horizontal Position Offset	127	127
013	Horizontal Amplitude Offset	127	127
014	Vertical Blank Start (It will be used only at 4:3 tube for 16:9 mode adjustment)	149	119
015	Vertical Blank Stop (It will be used only at 4:3 tube for 16:9 mode adjustment)	013	034
016	Angle	132	132
017	Bow	126	131
018	4:3 Horz. Blank Start (It will be used only at 16:9 tube for 4:3 mode adjustment)	021	042
019	4:3 Horz. Blank Stop (It will be used only at 16:9 tube for 4:3 mode adjustment)	140	175
020	EHTV compensation	054	066
021	EHTTM compensation	004	001
022	EHTEW compensation	219	160
023	WDR	VIDEO PROCESSOR ADJUSTS ITSELF.	
024	WDG		
025	WDB		
026	CR		
027	CG		
028	CB		
029	COR coring level	015	031
030	REGULAR VERT_POS (Vertical Position)	128	129
031	REGULAR VERT_AMPL (Vertical Amplitude)	081	055
032	REGULAR VERT_SCOR (Vertical S Correction)	131	129
033	REGULAR VERT_SSYM (Vertical S Symmetry)	139	136

049	PANORAMIC HORZ_AMPL	-	013
050	14:9 ZOOM VERT_POS	-	129
051	14:9 ZOOM VERT_AMPL	-	043
052	14:9 ZOOM VERT_SCOR	-	129
053	14:9 ZOOM VERT_SSYM	-	140
054	14:9 ZOOM TRAPEZE	-	125
055	14:9 ZOOM CUSHION	-	159
056	14:9 ZOOM HOR_COR_SYM	-	141
057	14:9 ZOOM HOR_CORNER	-	110
058	14:9 ZOOM HORZ_POS	-	053
059	14:9 ZOOM HORZ_AMPL	-	032
060	16:9 ZOOM VERT_POS	-	129
061	16:9 ZOOM VERT_AMPL	-	035
062	16:9 ZOOM VERT_SCOR	-	129
063	16:9 ZOOM VERT_SSYM	-	148
064	16:9 ZOOM TRAPEZE	-	125
065	16:9 ZOOM CUSHION	-	164
066	16:9 ZOOM HOR_COR_SYM	-	138
067	16:9 ZOOM HOR_CORNER	-	104
068	16:9 ZOOM HORZ_POS	-	036
069	16:9 ZOOM HORZ_AMPL	-	020
070	16:9 ZOOM SUBTITLE VERT_POS	-	137
071	16:9 ZOOM SUBTITLE VERT_AMPL	-	039
072	16:9 ZOOM SUBTITLE VERT_SCOR	-	124
073	16:9 ZOOM SUBTITLE VERT_SSYM	-	146
074	16:9 ZOOM SUBTITLE TRAPEZE	-	119
075	16:9 ZOOM SUBTITLE CUSHION	-	164
076	16:9 ZOOM SUBTITLE HOR_COR_SYM	-	162
077	16:9 ZOOM SUBTITLE HOR_CORNER	-	081
078	16:9 ZOOM SUBTITLE HORZ_POS	-	035
079	16:9 ZOOM SUBTITLE HORZ_AMPL	-	021
080	OSD Position	217	205
081	BCLTHR Beam current threshold	050	060
082	BCLG Beam current loop gain	008	007
083	ROTATION (TILT)	000	000
084	LSLSA Luma soft limiter	000	003
085	LSLSB Luma soft limiter	000	000
086	LSL2 Luma soft limiter	255	255
087	LSLTA Luma soft limiter	000	000
088	LSLTB Luma soft limiter	000	001
089	REFERENCE WDR RED (NORMAL)	088	092
090	REFERENCE WDR GREEN (NORMAL)	074	083
091	REFERENCE WDR BLUE (NORMAL)	075	082
092	REFERENCE CUTOFF RED	065	055

108	STANDARD MODE COLOUR	050	047
109	STANDARD MODE CONTRAST	022	029
110	FULL VERT_POS (16:9 MODE)	128	129
111	FULL VERT_AMPL	093	055
112	FULL VERT_SCOR	131	129
113	FULL VERT_SSYM	133	136
114	FULL TRAPEZE	127	126
115	FULL CUSHION	148	153
116	FULL HOR_COR_SYM	137	136
117	FULL HOR_CORNER	109	109
118	FULL HORZ_POS	055	035
119	FULL HORZ_AMPL	057	020
120	BRIGHT MODE BRIGHTNESS	027	043
121	BRIGHT MODE COLOUR	050	050
122	BRIGHT MODE CONTRAST	030	032
123	SOFT MODE BRIGHTNESS	027	043
124	SOFT MODE COLOUR	050	058
125	SOFT MODE CONTRAST	017	020
126	PERSONAL MODE FACTORY SETTING BRIGHTNESS	027	043
127	PERSONAL MODE FACTORY SETTING COLOUR	050	050
128	PERSONAL MODE FACTORY SETTING CONTRAST	030	032
129	SCINC FOR PANORAMIC MODE	032	056
130	SCINC1 FOR PANORAMIC MODE	032	125
131	VOLUME AFTER APS		005
132	VERTICAL SCROLL	005	008
133	14:9 HORIZONTAL START (It will be used only at 16:9 tube for 14:9 mode adjustment)	-	031
134	14:9 HORIZONTAL STOP (It will be used only at 16:9 tube for 14:9 mode adjustment)	-	185
135	4:3 RGB HORIZONTAL AMPLITUDE	055	074
136	4:3 RGB CUSHION	163	150
137	14:9 RGB HORIZONTAL AMPLITUDE	-	055
138	14:9 RGB CUSHION	-	158
139	PANAROMIC RGB HORIZONTAL AMPLITUDE	-	031
140	16:9 RGB HORIZONTAL AMPLITUDE	-	027
141	16:9 SUBTITLE RGB HORIZONTAL AMPLITUDE	-	027
142	FULL RGB HORIZONTAL AMPLITUDE	054	027
143	TELETEXT HORIZONTAL POSITION	101	095

14.3.OPTIONS MENU

Select the parameter by pressing up/down buttons. Adjust the parameter by pressing Left/Right buttons. . In OPTIONS menu, some of the changed parameters are not stored automatically. To store the adjusted parameters, you should turn off and on TV.

OPTIONS...		
▶	000 02	00000010
	001 00	00000000
	002 22	00100010
	003 08	00001000
	004 00	00000000
	005 10	00010000
	006 00	00000000
	007 56	01010110
	008 39	00111001
↓	009 0F	00001111

Option 0. Video Processor Crystal Indication

B7: x = x
B6: x = x
B5: x = x
B4: x = x
B3: x = x
B2: x = x
B1: Xa = note1 (Crystal indication)
B0: Xb = note1 (Crystal indication)

note 1:

Xa,Xb

0,1 : Pal M, Pal N, NTSC M

Pin 34 : 3.58 (1, 2 or 3 crystals)
Pin 35 : No crystal

1,0 : Pal BG, Pal DK, Pal I/I+, Secam BG, Secam DK, Secam L/L', Secam K1

Pin 34 : No crystal
Pin 35 : 4.43 (1 crystal)

1,1 : Pal BG, Pal DK, Pal I/I+, Secam BG, Secam DK, Secam L/L', Secam K1, Pal M, Pal N, Ntsc M

Pin 34 : 3.58 (1, 2 or 3 crystals)
Pin 35 : 4.43 (1 crystal)

Option 1. (0x01) Video Processor Decoder Mode Register

B4: x = x
 B3: x = x
 B2: x = x
 B1: LUMA = 1 Luma Soft Limiter Enabled
 B0: BB = 1 Blue Background Option

Option 3. (0x19) Video Processor Cathode Drive Level

B7: x = x
 B6: x = x
 B5: x = x
 B4: x = x
 B3: x = x
 B2: x = x
 B1: x = x
 B0: country = note 0

Note 0: choice for others country option

1 : BG
 0 : DK

Option 4.

B7: x = x
 B6: x = x
 B5: x = x
 B4: x = x
 B3: x = x
 B2: x = x
 B1: x = x
 B0: x = x

Option 5. CTI Available, Mono AVL

B7: x = x
 B6: x = x
 B5: x = x
 B4: x = x
 B3: x = x
 B2: x = x
 B1: x = x
 B0: x = x

Option 6.

B7: = TEXT LANGUAGE 3
 B6: = TEXT LANGUAGE 2
 B5: = TEXT LANGUAGE 1

note 1:

F :Frequency Mode

1: = Frequency Menu Item available

0: = Frequency Menu Item not available

Option 8. IF Frequency

B7: x = x

B6: x = x

B5: IfI = 0 note 3

B4: IfD = 0 note 4

B3: IfM = note 5

B2: Aps = note 6

B1: Hp = note 7

B0: Hue = note 8

note 3:

IfI

1 = IF I 39.5 MHz Great Britain I , Only UHF Tuner

0 = IF I 38.9 MHz Ireland I+, Standard Tuner

note 4:

IfD

1 = IF DK 38.0 MHz

0 = IF DK 38.9 MHz

note 5:

IfM

1 = IF M,N 45.75 MHz S&N American Models , Tuner UV1336 (Only Pal M/N, Ntsc M)

0 = IF M,N 38.9 MHz Euro M,N Models , Standard Tuner

Note 6:

Aps (Only for PLL)

0 = A.P.S. done

1 = A.P.S. set

note 7:

Hp : Headphone available

0 = No headphone

1 = Headphone available

note 8:

Hue : Hue Available

0 = No Hue

1 = Hue available

Option 10. Scart, Combfilter, Teletext, Language

B7: x = x
B6: RGB = note 2
B5: FAV =
B4: AV2S =
B3: FSVHS = note 3
B2: BAV = note 4
B1: Sc2 = note 5
B0: BSVHS = note 6

note 2 :

RGB = RGB Menu Item active/inactive

0 = RGB Menu Item inactive
1 = RGB Menu Item active

note 3:

0 = Front S-VHS not supported
1 = Front S-VHS available

note 4:

0 = Back AV (AV-3) not supported
1 = Back AV (AV-3) available

note 5:

0 = Scart 2 not supported
1 = Scart 2 available

note 6:

0 = Back SVHS not supported
1 = Back SVHS available

Option 11. PLL Tuner Control 1 Byte

PLL tuner control 1 byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316T MK3	1	0	0	0	1	1	1	0
Philips	UV1316MK2	1	0	0	0	1	1	1	0
Alps	TELE9X062A	1	0	0	0	1	1	1	0
Samsung	TEXX2949PG28A	1	0	0	0	1	1	1	0
Siel	PT060	1	0	0	0	1	1	1	0
Temic	5001PH5-3X0003	1	0	0	0	1	1	1	0
Thomson	CTT5020	1	0	0	0	1	1	1	0

Option 12. PLL Tuner Control 2 Low Byte

PLL tuner control 2 low byte

Option 13. PLL Tuner Control 2 Mid Byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316T MK3	0	0	0	0	0	0	1	0
Philips	UV1316MK2	1	0	0	1	0	0	1	0
Alps	TELE9X062A	0	0	0	0	0	0	1	0
Samsung	TEXX2949PG28A	0	0	0	0	0	0	1	0
Siel	PT060	1	1	0	1	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	1	0	0
Thomson	CTT5020	0	0	0	0	0	1	1	0

Option 14. PLL Tuner Control 2 High Byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316T MK3	0	0	0	0	0	1	0	0
Philips	UV1316MK2	0	0	1	1	0	1	0	0
Alps	TELE9X062A	0	0	0	0	1	0	0	0
Samsung	TEXX2949PG28A	0	0	0	0	1	0	0	0
Siel	PT060	0	0	1	1	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	1
Thomson	CTT5020	1	0	0	0	0	1	0	1

Option 15. PLL Tuner VHF LOW – VHF HIGH Crossover Low Byte

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316T MK3	0	0	1	0	0	0	0	0	
Philips	UV1316MK2	0	0	0	0	1	0	1	0	(0A hex)
Alps	TELE9X062A	0	0	0	0	0	0	0	0	
Samsung	TEXX2949PG28A	0	0	0	0	1	0	0	0	
Siel	PT060	0	0	0	0	1	0	1	0	
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0	
Thomson	CTT5020	1	0	1	0	1	0	1	0	(AA hex)

Option 16. PLL Tuner VHF LOW – VHF HIGH Crossover High Byte

PLL tuner VHF LOW - VHF HIGH crossover high byte

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316T MK3	0	0	0	0	1	1	0	0	
Philips	UV1316MK2	0	0	0	0	1	1	0	0	(0C hex)
Alps	TELE9X062A	0	0	0	0	0	0	0	0	
Samsung	TEXX2949PG28A	0	0	0	0	1	1	0	1	
Siel	PT060	0	0	0	0	1	1	0	1	
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0	
Thomson	CTT5020	0	0	0	0	1	0	0	1	(09 hex)

Option 17. PLL Tuner VHF HIGH – UHF Crossover Low Byte

b7 b6 b5 b4 b3 b2 b1 b0

Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0	
Thomson	CTT5020	0	0	0	1	1	0	1	1	(1B hex)

Option 19. PIP PLL Tuner Control 1 Byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	1	0	0	0	1	1	1	0
Alps	TELE9X062A	1	0	0	0	1	1	1	0
Samsung	TEXX2949PG28A	1	0	0	0	1	1	1	0
Siel	PT060	1	0	0	0	1	1	1	0
Temic	5001PH5-3X0003	1	0	0	0	1	1	1	0
Thomson	CTT5020	1	0	0	0	1	1	1	0

Option 20. PIP PLL Tuner Control 2 Low Byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	1	0	1	0	0	0	0	1
Alps	TELE9X062A	0	0	0	0	0	0	0	1
Samsung	TEXX2949PG28A	0	0	0	0	0	0	0	1
Siel	PT060	0	1	1	0	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	0	1	0
Thomson	CTT5020	0	0	0	0	0	0	1	1

Option 21. PIP PLL Tuner Control 2 Mid Byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	1	0	0	1	0	0	1	0
Alps	TELE9X062A	0	0	0	0	0	0	1	0
Samsung	TEXX2949PG28A	0	0	0	0	0	0	1	0
Siel	PT060	1	1	0	1	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	1	0	0
Thomson	CTT5020	0	0	0	0	0	1	1	0

Option 22. PIP PLL Tuner Control 2 High Byte

		b7	b6	b5	b4	b3	b2	b1	b0
Philips	UV1316MK2	0	0	1	1	0	1	0	0
Alps	TELE9X062A	0	0	0	0	1	0	0	0
Samsung	TEXX2949PG28A	0	0	0	0	1	0	0	0
Siel	PT060	0	0	1	1	0	0	0	0
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	1
Thomson	CTT5020	1	0	0	0	0	1	0	1

Option 23. PIP PLL Tuner VHF LOW – VHF HIGH Crossover Low Byte

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316MK2	0	0	0	0	1	0	1	0	(0A hex)
Alps	TELE9X062A	0	0	0	0	0	0	0	0	
Samsung	TEXX2949PG28A	0	0	0	0	1	0	0	0	

Option 25. PIP PLL Tuner VHF HIGH – UHF Crossover Low Byte

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316MK2	1	1	1	0	0	0	1	0	(E2 hex)
Alps	TELE9X062A	0	0	0	0	0	0	0	0	
Samsung	TEXX2949PG28A	1	0	1	0	0	0	1	0	
Siel	PT060	1	0	1	0	0	1	0	0	
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0	
Thomson	CTT5020	1	0	1	0	0	0	1	0	(A2 hex)

Option 26. PIP PLL Tuner VHF HIGH – UHF Crossover High Byte

		b7	b6	b5	b4	b3	b2	b1	b0	
Philips	UV1316MK2	0	0	0	1	1	1	1	0	(1D hex)
Alps	TELE9X062A	0	0	0	0	0	0	0	0	
Samsung	TEXX2949PG28A	0	0	0	1	1	1	1	0	
Siel	PT060	0	0	0	1	1	1	1	0	
Temic	5001PH5-3X0003	0	0	0	0	0	0	0	0	
Thomson	CTT5020	0	0	0	1	1	0	1	1	(1B hex)

Option 27. Language Available 1

B7: L7 = DANISH
B6: L6 = SWEDISH
B5: L5 = ITALIAN
B4: L4 = PORTUGUESE
B3: L3 = SPANISH
B2: L2 = FRENCH
B1: L1 = GERMAN
B0: L0 = ENGLISH

1: Language available
0: Language not available

Option 28. Language Available 2

B7: L15 = CROATIC
B6: L14 = POLISH
B5: L13 = SLOVAK
B4: L12 = CZECH
B3: L11 = HUNGARY
B2: L10 = GREEK
B1: L9 = TURKEY
B0: L8 = NORWEGIAN

1: Language available
0: Language not available

Option 29. Language Available 3 and Zoom Mode Available

note 2:

Tub : Tube size

0 = 16:9 Tube size

1 = 4:3 Tube size

note 3:

Z.Def : Zoom Default Mode

0 = 16:9 mode default

1 = 4:3 mode default

Option 30. Country

B7: C4 = note 1

B6: C3 = note 1

B5: C2 = note 1

B4: C1 = note 1

B3: C0 = note 1

B2: x = x

B1: x = x

B0: x = x

note 1:

C5,C4,C3,C2,C1,C0 = Country

0, 0, 0,0,0	=	OTHER,	Not allowed
0, 0, 0,0,1	=	D,	Germany
0, 0, 0,1,0	=	A,	
0, 0, 0,1,1	=	CH,	
0, 0, 1,0,0	=	I,	
0, 0, 1,0,1	=	F,	
0, 0, 1,1,0	=	RSM,	
0, 0, 1,1,1	=	B,	
0, 1, 0,0,0	=	DK,	
0, 1, 0,0,1	=	S,	
0, 1, 0,1,0	=	N,	
0, 1,0,1,1	=	FIN,	
0, 1,1,0,0	=	GB,	
0, 1,1,0,1	=	IRL,	
0, 1,1,1,0	=	IS,	
0, 1,1,1,1	=	NL,	
1, 0,0,0,0	=	E,	
1, 0,0,0,1	=	P,	
1, 0,0,1,0	=	PL,	
1, 0,0,1,1	=	CZ,	

b7 b6 b5 b4 b3 b2 b1 b0

prescaler MSP NICAM (AVL = OFF) 0 0 0 1 1 1 1 1 (if virtual dolby option is available)

Option 33. Prescaler MSP SCART (AVL=OFF)

b7 b6 b5 b4 b3 b2 b1 b0

prescaler MSP SCART (AVL = OFF) 0 0 0 0 1 1 0 0

b7 b6 b5 b4 b3 b2 b1 b0

prescaler MSP SCART (AVL = OFF) 0 0 0 1 1 0 0 1 (if virtual dolby option is available)

Option 34. Prescaler MSP I2S (AVL=OFF)

b7 b6 b5 b4 b3 b2 b1 b0

prescaler MSP I2S (AVL = OFF) not defined yet
(if virtual dolby option is available)

Option 35. Not used

B7: x = note 7
 B6: x = note 6
 B5: x = note 5
 B4: x = note 4
 B3: AV2S = Scart2 SVHS
 B2: Macro = Macrovision
 B1: DP = Dolby Prologic
 B0: VD = Virtual Dolby

Option 36. Not used

B7: x = note 7
 B6: TAT = 1 Tilt and trapez enabled
 B5: SWF = 1 Subwoofer enabled
 B4: VLO = 1 Variable line out
 B3: VBUS = 1 Vestelbus enabled
 B2: x = x
 B1: DVD = 1 DVD enabled
 B0: DVB = 1 DVB enabled

Option 37. Reserved for USA

Option 38. TV Teletext Mode Selection, Child Lock, Equalizer Country

B7: VCR = note 7
 B6: C = note 6
 B5: LM = note 5
 B4: EQ = note 4
 B3: v = v

note 3 :

RGB = RGB Menu Item active/inactive
0 = RGB Menu Item inactive
1 = RGB Menu Item active

note 4 :

EQ = Equalizer available
0 = Equalizer not available
1 = Equalizer available

note 5 :

LM = List Mode available
0 = List Mode not available
1 = List Mode available

note 6 :

C = Country Line available / Aps available or not
0 = Country Line not available / Aps not available
1 = Country Line available / Aps available

note 7 :

VCR = VCR Menu Item available / not available
0 = VCR Menu Item not available
1 = VCR Menu Item available

Option 39. Personal Preference Equalizer Band 1

	b7	b6	b5	b4	b3	b2	b1	b0
EQUALIZER BAND 1	0	0	0	0	0	1	1	0

Option 40. Personal Preference Equalizer Band 2

	b7	b6	b5	b4	b3	b2	b1	b0
EQUALIZER BAND 2	0	0	0	0	0	1	1	0

Option 41. Personal Preference Equalizer Band 3

	b7	b6	b5	b4	b3	b2	b1	b0
EQUALIZER BAND 3	0	0	0	0	0	1	1	0

Option 42. Personal Preference Equalizer Band 4

	b7	b6	b5	b4	b3	b2	b1	b0
EQUALIZER BAND 4	0	0	0	0	0	1	1	0

Option 43. Personal Preference Equalizer Band 5

	b7	b6	b5	b4	b3	b2	b1	b0
EQUALIZER BAND 5	0	0	0	0	0	1	1	0

Option 47. Volume Offset Center

	b7	b6	b5	b4	b3	b2	b1	b0
VOLUME OFFSET CENTER	0	0	0	0	0	1	1	0

Option 48. Volume Offset Rear

	b7	b6	b5	b4	b3	b2	b1	b0
VOLUME OFFSET REAR	0	0	0	0	0	1	1	0

Option 49. Surround Delay

	b7	b6	b5	b4	b3	b2	b1	b0
SURROUND DELAY	0	0	0	0	0	0	0	1

Option 50. FM Prescale

	b7	b6	b5	b4	b3	b2	b1	b0
FM PRESCALE for Stereo	0	0	0	0	1	1	0	0

	b7	b6	b5	b4	b3	b2	b1	b0
FM PRESCALE for Dolby	0	0	0	0	1	0	0	1

Note: if virtual dolby is available, this option is not used.**Option 51. NICAM Prescale**

	b7	b6	b5	b4	b3	b2	b1	b0
NICAM Prescale for Stereo	0	0	1	0	1	1	0	1

	b7	b6	b5	b4	b3	b2	b1	b0
3D Panorama	0	0	0	0	1	0	1	1

	b7	b6	b5	b4	b3	b2	b1	b0
NICAM Prescale for Dolby	0	0	0	0	1	1	1	0

Note: if virtual dolby is available, this option is not used.**Option 52. Scart Input Prescale**

	b7	b6	b5	b4	b3	b2	b1	b0
Scart Input Prescale for Stereo	0	0	0	0	1	0	0	0

	b7	b6	b5	b4	b3	b2	b1	b0
Scart Input Prescale for Dolby	0	0	0	0	1	1	1	1

	b7	b6	b5	b4	b3	b2	b1	b0
prescaler MSP Scart (AVL = OFF)	0	0	0	1	1	0	0	1

(if virtual dolby option is available)

Option 55. Speaker Setup

	b7	b6	b5	b4	b3	b2	b1	b0
Speaker Setup (L/R, L/C/R, L/R/S, L/C/R/S)	0	0	0	0	0	0	0	0

Option 56. Audio Options Available Or Not

Attention: All bits on the Option 56 must be the "0" for MONO TV SETS

B7: nicam	=	note 7
B6: ASD	=	note 6
B5: VRS	=	note 5
B4: CRM	=	note 4
B3: ...	=	x
B2: LBE	=	note 2
B1: Spa	=	note 1
B0: Avl	=	note 0

note 7 :

nicam	=	nicam available
0	=	nicam not available
1	=	nicam available

note 6 :

ASD	=	Auto Sound Detection available/not available
0	=	Auto Sound Detection not available
1	=	Auto Sound Detection available

note 5 :

VRS	=	Virtual Surround
0	=	VRS not available
1	=	VRS available

note 4 :

CRM	=	CARRIER MUTE OFF/ON
0	=	Sound carrier mute is ON in the Stereo Sound IC
1	=	Sound carrier mute is OFF in the Stereo Sound IC (i.e. option available)

note 2 :

LBE	=	LBE (Dynamic Bass)
0	=	LBE not available
1	=	LBE available

note 1 :

Spa	=	Spatial Effect available
0	=	Spatial Effect not available
1	=	Spatial Effect available

note 1 :

b7 b6 b5 b4 b3 b2 b1 b0

MSP Stereo/Mono Threshold 0 0 0 1 1 0 0 1

Option 58. MSP Audio Flags

B7: b7 = x
 B6: b6 = x
 B5: b5 = x
 B4: Trs = note 1
 B3: Trb = note 1
 B2: Bbe = note 1
 B1: Spa = note 1
 B0: Avl = note 1

note 1 :

Defines whether the feature is toggled ON or OFF in the menu and stored.

0 : OFF
 1 : ON

Option 59. NICAM Threshold

b7 b6 b5 b4 b3 b2 b1 b0

MSP NICAM Threshold 0 1 1 0 0 1 0 0

Option 60. Power Delay Time

B7: NZ = x
 B6: HM = x
 B5: L5 = note 3
 B4: L4 = note 3
 B3: L3 = note 3
 B2: L2 = note 3
 B1: L1 = note 3
 B0: L0 = note 3

note 3:

L7 L6 L5 L4 L3 L2 L1 L0

Default Value : x x 1 1 0 0 0 0

1000 MSEC = 1SN

Number	L7L6L5L4L3L2L1L0	Delay	Number	L7L6L5L4L3L2L1L0	Delay
0	00000000	= 4 sec	32	00100000	= 12 sec
1	00000001	= 4,25 sec	33	00100001	= 12,25 sec
2	00000010	= 4,5 sec	34	00100010	= 12,5 sec
3	00000011	= 4,75 sec	35	00100011	= 12,75 sec
4	00000100	= 5 Sec	36	00100100	= 13 sec
5	00000101	= 5,25 Sec	37	00100101	= 13,25 sec

20	00010100	=	9	sec
21	00010101	=	9,25	sec
22	00010110	=	9,5	sec
23	00010111	=	9,75	sec
24	00011000	=	10	sec
25	00011001	=	10,25	sec
26	00011010	=	10,5	sec
27	00011011	=	10,75	sec
28	00011100	=	12	sec
29	00011101	=	12,25	sec
30	00011110	=	12,5	sec
31	00011111	=	12,75	sec

52	00110100	=	17	sec
53	00110101	=	17,25	sec
54	00110110	=	17,5	sec
55	00110111	=	17,75	sec
56	00111000	=	18	sec
57	00111001	=	18,25	sec
58	00111010	=	18,5	sec
59	00111011	=	18,75	sec
60	00111100	=	19	sec
61	00111101	=	19,25	sec
62	00111110	=	19,5	sec
63	00111111	=	19,75	sec

	76543210
0	00000000
1	00000001
2	00000010
3	00000011
4	00000100
5	00000101
6	00000110
7	00000111
8	00001000
9	00001001
10	00001010
11	00001011
12	00001100
13	00001101
14	00001110
15	00001111
16	00010000
17	00010001
18	00010010
19	00010011
20	00010100
21	00010101
22	00010110
23	00010111
24	00011000
25	00011001
26	00011010
27	00011011
28	00011100
29	00011101
30	00011110
31	00011111

Bit Positions

	76543210
32	00100000
33	00100001
34	00100010
35	00100011
36	00100100
37	00100101
38	00100110
39	00100111
40	00101000
41	00101001
42	00101010
43	00101011
44	00101100
45	00101101
46	00101110
47	00101111
48	00110000
49	00110001
50	00110010
51	00110011
52	00110100
53	00110101
54	00110110
55	00110111
56	00111000
57	00111001
58	00111010
59	00111011
60	00111100
61	00111101
62	00111110
63	00111111

Colour Code

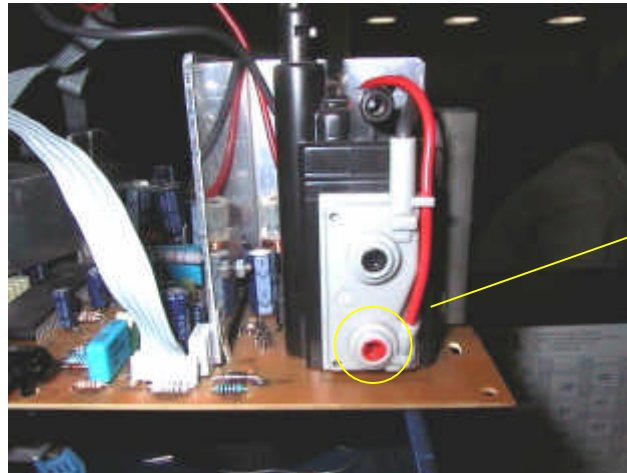
14.4.OPTION TABLE RECOMMENDED VALUES

X listed in the option can be 0 or 1

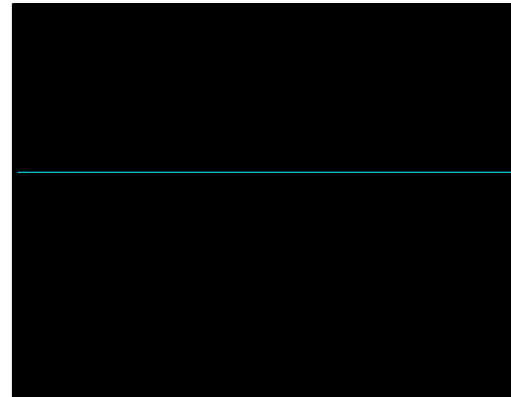
OPTION	2835 MULTI	2835W MULTI	2835W PAL I
000	X2 XXXXXX10	X2 XXXXXX10	X2 XXXXXX10
001	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
002	23 001XXX11	23 001XXX11	23 001XXX11
003	XX XXXXXXXX0	XX XXXXXXXX0	XX XXXXXXXX0
004	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
005	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
006	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
007	XX XX0XXX1X	XX XX0XXX1X	XX XX0XXX1X
008	A1 11000001	01 00000001	01 00000001
009	0B 00001111	0B 00001111	04 00001111
010	X2 XXXXX011	X7 XXXXX111	X7 XXXXX111
011	8E 10001110	8E 10001110	8E 10001110
012	03 00000011	03 00000011	03 00000011
013	06 00000110	06 00000110	06 00000110
014	15 10000101	15 10000101	15 10000101
015	AA 10101010	AA 10101010	AA 10101010
016	09 00001001	09 00001001	09 00001001
017	A2 10100010	A2 10100010	A2 10100010
018	1B 00011011	1B 00011011	1B 00011011
019	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
020	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
021	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
022	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
023	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
024	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
025	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
026	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
027	FF 11111111	FF 11111111	FF 11111111
028	FF 11111111	FF 11111111	FF 11111111
029	FF 11111111	EF 11101111	EF 11101111
030	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
031	0F 00001111	0F 00001111	0F 00001111
032	23 00100011	23 00100011	23 00100011
033	0E 00001110	0E 00001110	0E 00001110
034	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
035	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
036	X4 XXXXX1XX	X4 XXXXX1XX	X4 XXXXX1XX
037	XX XXXXXXXX	XX XXXXXXXX	XX XXXXXXXX
038	AF 11001111	AF 11001111	AF 11001111

054	75 01110101	75 01110101	75 01110101
055	00 00000000	00 00000000	00 00000000
056	DE 11011110	DE 11011110	DE 11011110
057	19 00011001	19 00011001	19 00011001
058	00 00000000	00 00000000	00 00000000
059	64 01100100	64 01100100	64 01100100
060	10 00010000	10 00010000	10 00010000

14.5.SCREEN ADJUSTMENT (FBT SCREEN)



SCREEN
ADJUST
POT

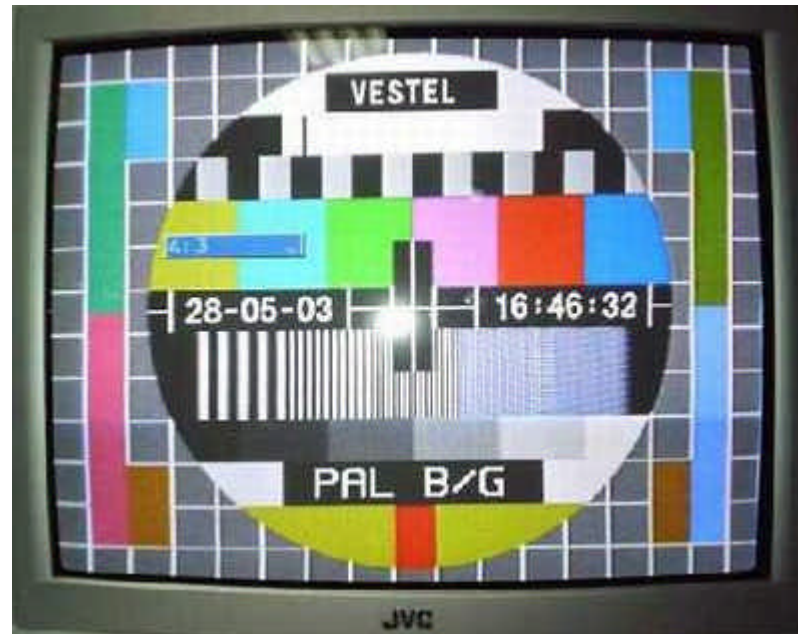


From the option list change option 2 bit 6 from 0 to 1 for disabling vertical scan. Adjust horizontal line via screen adjust pot. as thin as possible. Then press 0 to leave service menu.

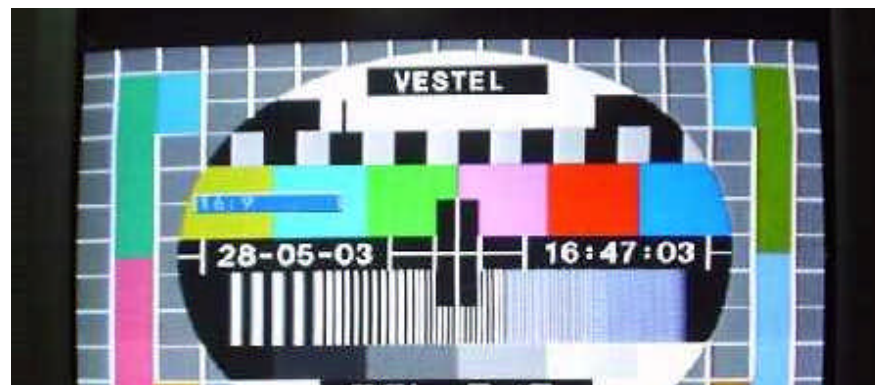
14.6.GEOMETRY ADJUSTMENT

4:3 FORMATS

4:3 MODE

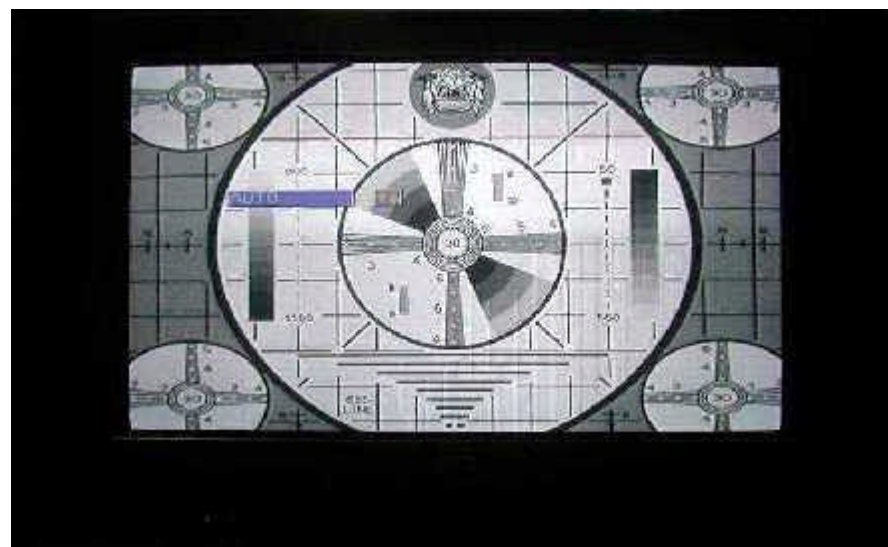


16:9 MODE

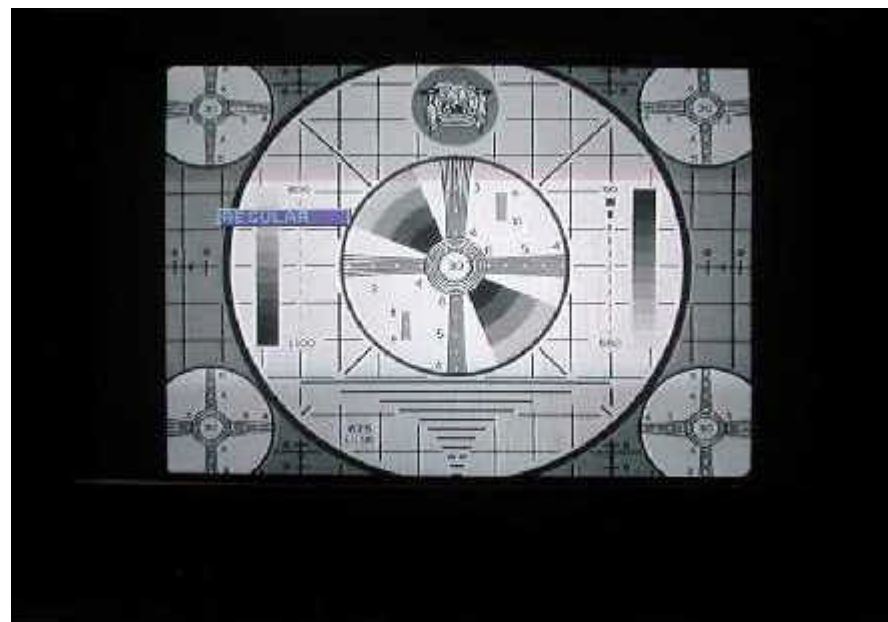
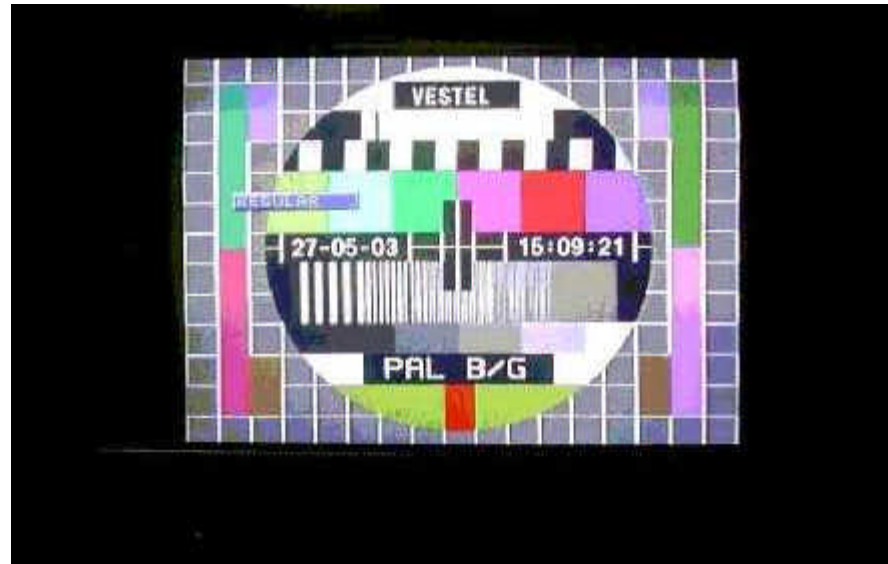


16:9 FORMATS

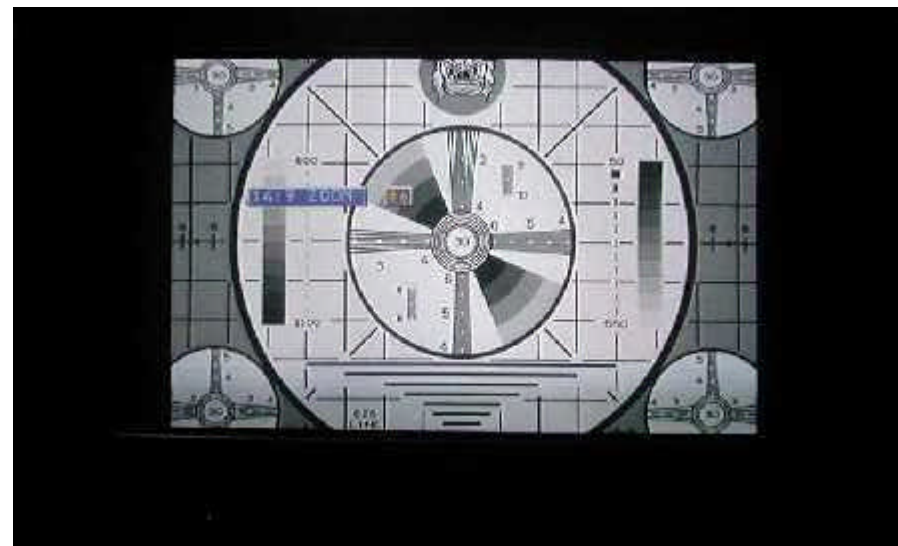
AUTO MODE



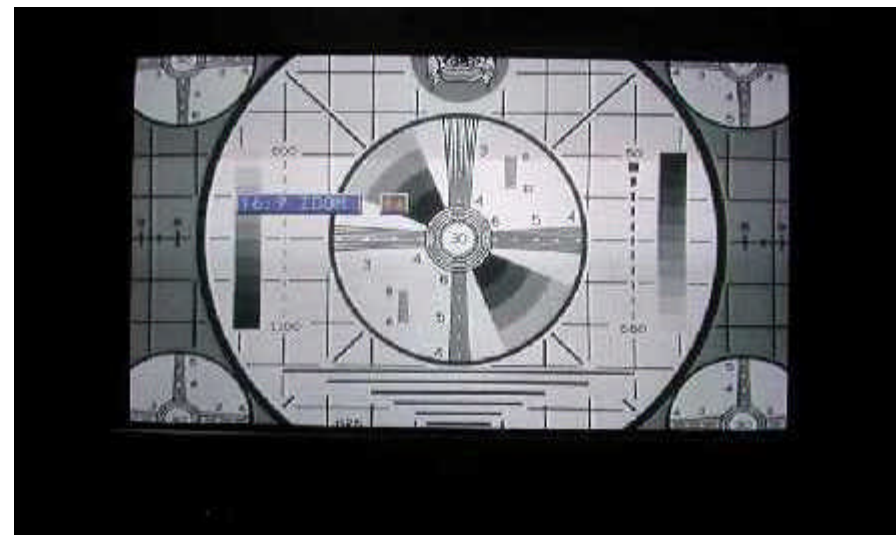
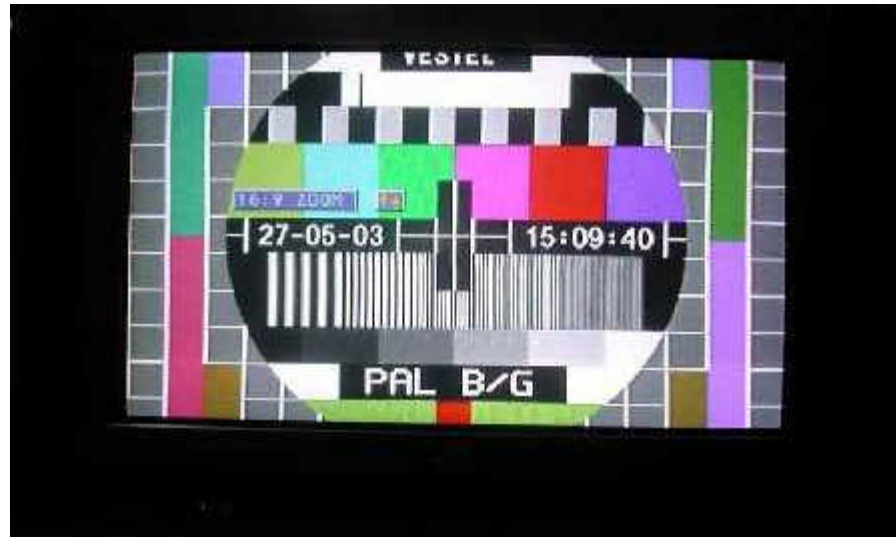
REGULAR MODE



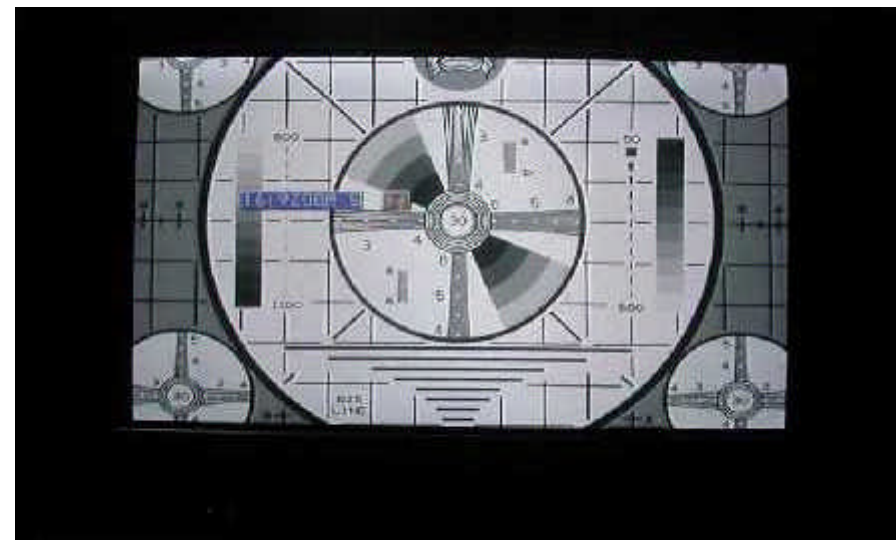
ZOOM 14:9 MODE



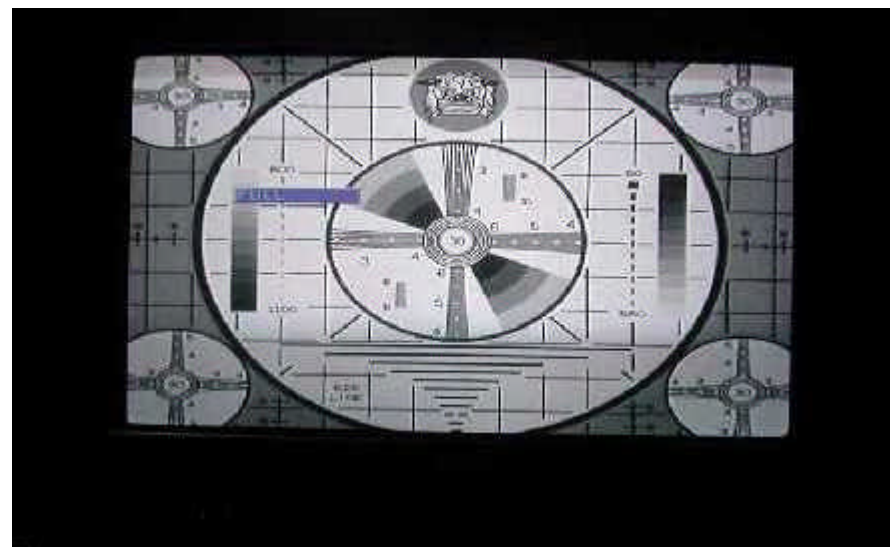
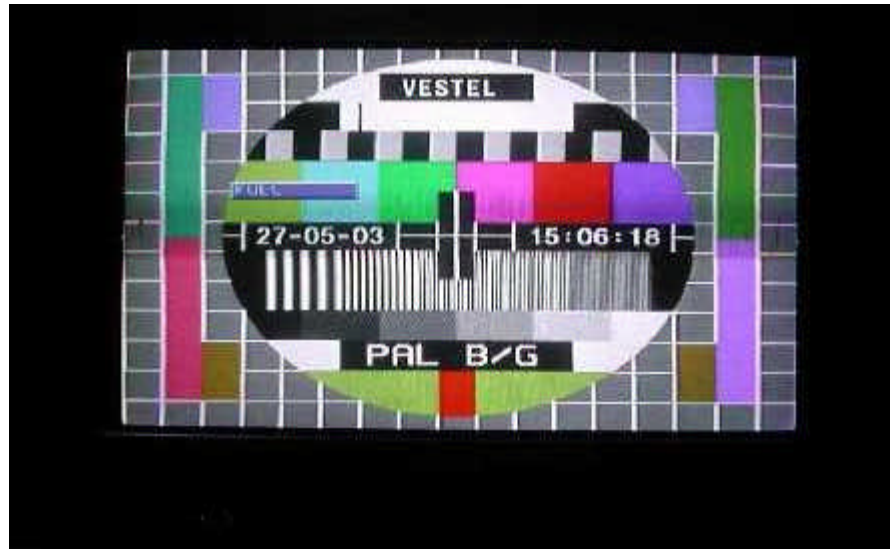
ZOOM 16:9 MODE



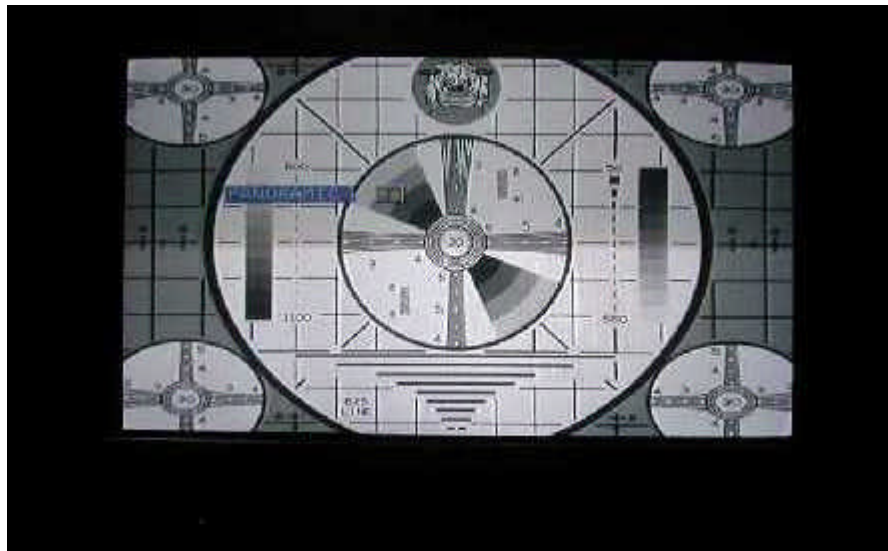
SUBTITLE ZOOM MODE



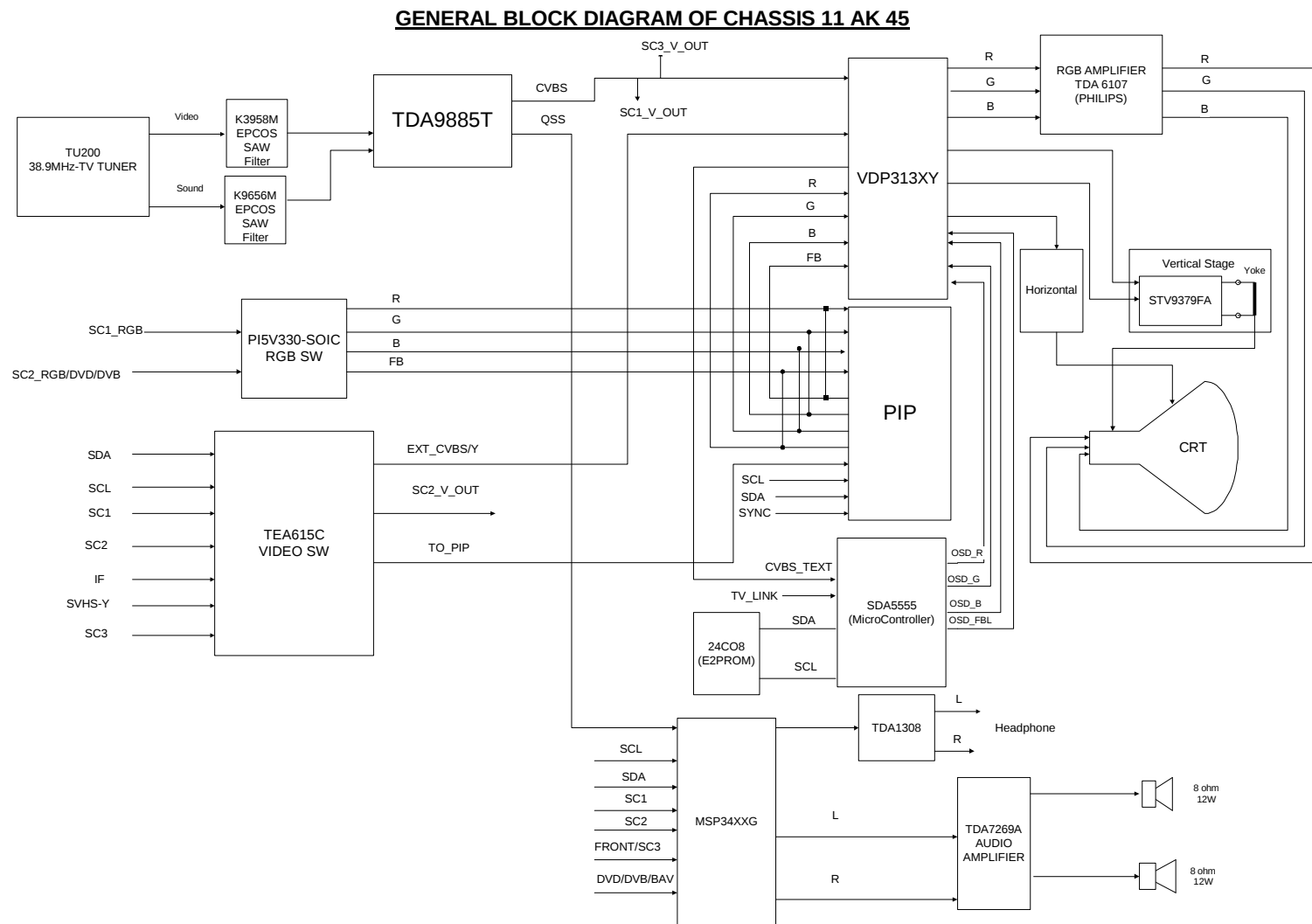
FULL MODE

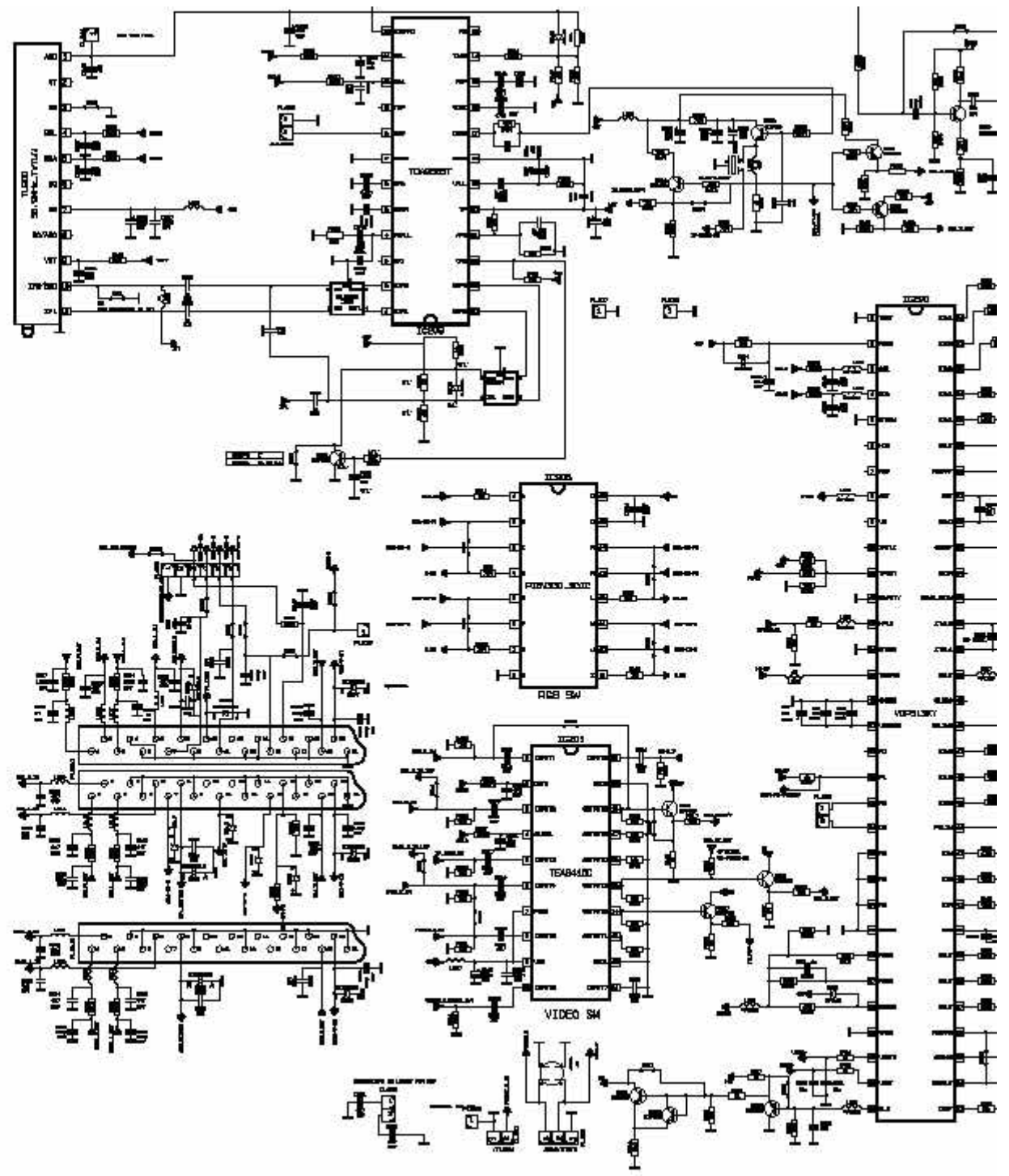


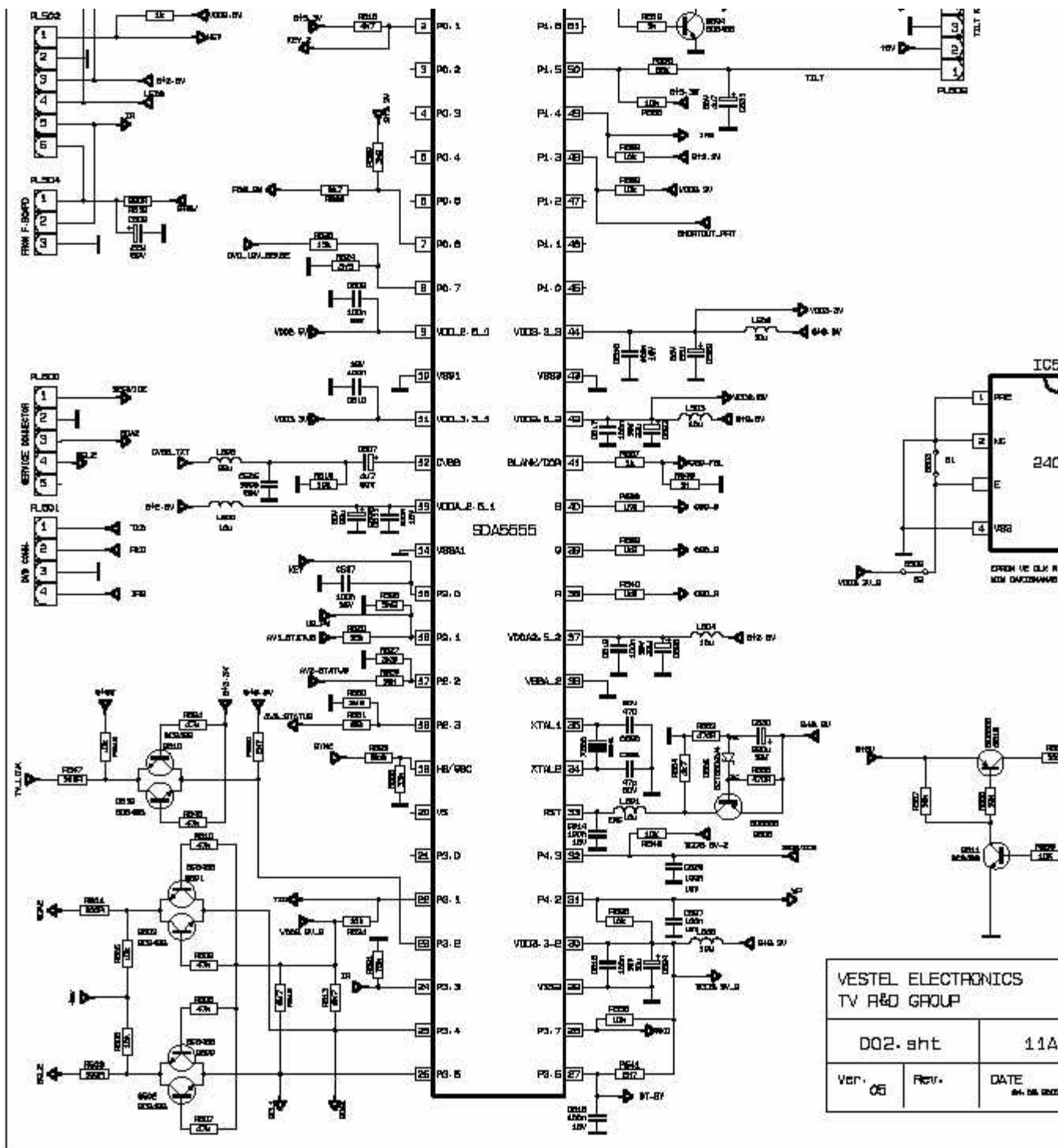
PANOROMIC MODE



16.BLOCK DIAGRAM







PARTS LISTING				
REPLACEMENT PARTS				
Replacement parts which have special safety characteristics are identified in this manual. Electrical components having such features are identified by Δ in the Replacement Parts Listing.				
The use of a substitute replacement part which does not have the same safety characteristics as the factory recommended is not permitted.				
Replacement parts not shown in this service manual may create shock fire, or other hazards.				
HOW TO ORDER REPLACEMENT PARTS				
To have your order completed promptly and correctly please supply the following information.				
1. MODEL NUMBER 2. REF. NO.				
3. PART NO. (*) 4. DESCRIPTION				
5. CODE 6. QUANTITY				
(*) When ordering any part, a "V" should be added before the Part No.				
REF No.	(*) PARTS	DESCRIPTION	SN CODE	EX CODE
PICTURE TUBE				
Δ .	30014433	29" CPT TUBE SAFE 50HZ REALFLAT	CR	DP
Δ .	30032257	29 DEG COIL&EARTH CB. SF FL W/UL(SHARP)	AL	AX
TUNER				
TU200	30009637	TUNER WSP (PLL) CTF5510A	AR	BC
INTEGRATED CIRCUITS				
IC100	30001669	PREAMPLIFIER TFMS1380	AD	AM
Δ IC100	30015087	IC SAFE OPTOCOUPLER TCET1102G	AA	AE
IC101	30001622	IC 7805 (1A)	AB	AF
IC102	30001668	IC LM317T	AC	AH
IC103	30001668	IC LM317T	AC	AH
IC104	30001500	IC LM7808	AC	AH
IC106	30011968	IC SMPS MC44608 DIP8	AF	AQ
IC116	30001506	IC TL431	AC	AH
IC200	30019492	IC VDP3134Y	AP	BA
IC201	30001619	IC VIDEO SWITCH TEA6415C DIP20	AM	AY
IC206	30021083	IC TDA9886T/V3-SO24	AL	AX
IC301	30016113	IC AAMP TDA7269A 2*14W MULTIWATT11	AH	AV
IC500	20170875	PR.IC.45-AK45_SHARP 3.3.106-L.1 (29LF92EIT)	AS	BD
IC500	20170876	PR.IC.45-AK45_SHARP 3.3.106-L.2 (29LF92EC)	AS	BD
IC502	20155581	IC 24C16 V116M5314B00040100712 (29LF92EC)	AB	AF
IC502	20155582	IC 24C16 V117L5314A00040100712 (29LF92EIT)	AB	AF
IC600	30007793	IC STV9379FA	AK	AW
IC601	30001506	IC TL431	AC	AH
IC700	30013658	IC MSP3410G SDIP64	AS	BD
IC704	30001518	IC TDA1308	AE	AP
IC900	30018768	IC TDA6109	AK	AW
IC901	30014346	IC 78L05 TO-92 (100mA)	AA	AE
IC902	30014346	IC 78L05 TO-92 (100mA)	AA	AE
TRANSISTORS				
Q1	30001455	TR BC558B	AA	AC
Q102	30001386	TR MTP6N60E (PLASTIC)	AE	AP
Q103	30001454	TR BC548B	AA	AC
Q106	30001454	TR BC548B	AA	AC
Q107	30001428	TR BF423	AA	AC
Q108	30001457	TR BC848B SMD	AA	AC
Q109	30001457	TR BC848B SMD	AA	AC
Q110	30001384	TR MCR22-6	AB	AG
Q112	30001458	TR BC858B SMD	AA	AB
Q113	30001457	TR BC848B SMD	AA	AC
Q114	30001457	TR BC848B SMD	AA	AC
Q200	30001457	TR BC848B SMD	AA	AC
Q201	30001457	TR BC848B SMD	AA	AC
Q202	30001457	TR BC848B SMD	AA	AC
Q203	30001457	TR BC848B SMD	AA	AC
Q208	30001457	TR BC848B SMD	AA	AC

REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
Q216	30001457	TR BC848B SMD	AA	AC
Q218	30001458	TR BC858B SMD	AA	AB
Q220	30001457	TR BC848B SMD	AA	AC
Q221	30001457	TR BC848B SMD	AA	AC
Q222	30001457	TR BC848B SMD	AA	AC
Q223	30001457	TR BC848B SMD	AA	AC
Q500	30001457	TR BC848B SMD	AA	AC
Q501	30001457	TR BC848B SMD	AA	AC
Q502	30001457	TR BC848B SMD	AA	AC
Q503	30001457	TR BC848B SMD	AA	AC
Q504	30001457	TR BC848B SMD	AA	AC
Q505	30001458	TR BC858B SMD	AA	AB
Q508	30001457	TR BC848B SMD	AA	AC
Q511	30001457	TR BC848B SMD	AA	AC
Q513	30001458	TR BC858B SMD	AA	AB
Q600	30001429	TR E/W N-CH TMOS 200V	AD	AM
Q601	30001435	TR NBJT BC639 1A/100V TO92	AA	AB
Q602	30001441	TR BU2508AF	AE	AP
Q603	30001458	TR BC858B SMD	AA	AB
Q605	30001458	TR BC858B SMD	AA	AB
Q606	30001458	TR BC858B SMD	AA	AB
Q700	30001458	TR BC858B SMD	AA	AB
Q703	30001458	TR BC858B SMD	AA	AB
Q704	30001457	TR BC848B SMD	AA	AC
Q900	30001427	TR BF422	AA	AE
Q901	30001458	TR BC858B SMD	AA	AB
Q902	30001458	TR BC858B SMD	AA	AB
Q903	30001458	TR BC858B SMD	AA	AB
Q904	30001458	TR BC858B SMD	AA	AB
Q905	30001458	TR BC858B SMD	AA	AB
Q906	30001452	TR BC327	AA	AC
DIODES				
D100	20060150	BRACKET LED 20	AA	AD
D100	30001274	LED RED	AA	AB
D100	30001329	DIODE 1N4007 1A/1000V 30A	AA	AB
D101	20060150	BRACKET LED 20	AA	AD
D101	30029696	LED YELLOW ORANGE 5MM ULTRA BRIGHT	AA	AE
D101	30001371	DIODE ZENER 5.1V ZPD	AA	AB
D101	20108354	DIODE BRIDGE GBU4M 4A/1000V 150A(FORMLU)	AB	AE
D102	20060150	BRACKET LED 20	AA	AD
D102	30019677	LED GREEN 5MM	AA	AC
D102	30001371	DIODE ZENER 5.1V ZPD	AA	AB
D103	30001371	DIODE ZENER 5.1V ZPD	AA	AB
D103	30001318	DIODE BA159 1A/800V 20A	AA	AB
D104	30001371	DIODE ZENER 5.1V ZPD	AA	AB
D104	30001318	DIODE BA159 1A/800V 20A	AA	AB
D105	30001371	DIODE ZENER 5.1V ZPD	AA	AB
D105	30001318	DIODE BA159 1A/800V 20A	AA	AB
D106	30001344	DIODE ZENER 6.2V 1/2W	AA	AB
D108	30001315	DIODE BYD33D 1A/200V 20A	AA	AE
D110	30001288	DIODE BYV27-200 2A/200V 50A	AA	AD
D111	30001323	DIODE BY299 2A/800V 70A	AA	AD
D112	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA
D113	30003720	DIODE ZENER BZT55C5V6 5.6V SMD	AA	AB
D114	30001285	DIODE 1N4148 SMD	AA	AB
D118	30009366	DIODE UF5402 3A/200V 150A	AB	AF
D119	30009366	DIODE UF5402 3A/200V 150A	AB	AF
D121	30007681	DIODE UF5407 3A/800V 150A	AB	AF
D121+	30001964	FERRITE BAR 5"8	AA	AD
D125	30001285	DIODE 1N4148 SMD	AA	AB
D127	30001315	DIODE BYD33D 1A/200V 20A	AA	AE
D129	30001285	DIODE 1N4148 SMD	AA	AB
D130	30001329	DIODE 1N4007 1A/1000V 30A	AA	AB
D131	30001318	DIODE BA159 1A/800V 20A	AA	AB
D132	30001285	DIODE 1N4148 SMD	AA	AB
D133	30003722	DIODE ZENER ZPD15V	AA	AA

REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE	REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
D134	30001285	DIODE 1N4148 SMD	AA	AB	L213	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
D200	30001285	DIODE 1N4148 SMD	AA	AB	L214	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
D204	30001285	DIODE 1N4148 SMD	AA	AB	L215	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
D205	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA	L216	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
D206	30018735	DIODE ZENER BZT55C15 15V SMD	AA	AB	L217	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
D207	30018735	DIODE ZENER BZT55C15 15V SMD	AA	AB	L218	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
D208	30018735	DIODE ZENER BZT55C15 15V SMD	AA	AB	L220	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
D209	30018735	DIODE ZENER BZT55C15 15V SMD	AA	AB	L227	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
D212	30001285	DIODE 1N4148 SMD	AA	AB	L232	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
D213	30012411	DIODE BA782 SMD	AA	AD	L236	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
D214	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA	L239	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
D215	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA	L247	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
D216	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA	L251	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
D217	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA	L252	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
D218	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA	L263	30001979	FIXED COIL 1UH Q45 M-A	AA	AB
D219	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA	L264	30001979	FIXED COIL 1UH Q45 M-A	AA	AB
D220	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA	L265	30001979	FIXED COIL 1UH Q45 M-A	AA	AB
D221Y	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA	L266	30001987	FIXED COIL 4.7UH Q70 K-A	AA	AB
D222Y	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA	L500	30001992	FIXED COIL 10UH Q65 K-A	AA	AB
D506	30012412	DIODE ZENER 2.4V SMD	AA	AB	L501	30001992	FIXED COIL 10UH Q65 K-A	AA	AB
D601	30001377	DIODE ZENER 33V UZT 33B	AB	AF	L502	30001992	FIXED COIL 10UH Q65 K-A	AA	AB
D602	30001318	DIODE BA159 1A/800V 20A	AA	AB	L503	30001992	FIXED COIL 10UH Q65 K-A	AA	AB
D603	30001299	DIODE UF5404 3A/400V 150A	AA	AD	L504	30001992	FIXED COIL 10UH Q65 K-A	AA	AB
D604	30001299	DIODE UF5404 3A/400V 150A	AA	AD	L505	30001992	FIXED COIL 10UH Q65 K-A	AA	AB
D609	30001318	DIODE BA159 1A/800V 20A	AA	AB	L506	30006770	FIXED COIL 0.22UH	AA	AB
D610	30001318	DIODE BA159 1A/800V 20A	AA	AB	L601	30002031	FIXED COIL INJECTION 15MH	AD	AL
D611	30007681	DIODE UF5407 3A/800V 150A	AB	AF	L602	30017085	LINEARITY COIL 20UH	AD	AM
D612	30001285	DIODE 1N4148 SMD	AA	AB	L603	30002829	FIXED COIL BRIDGE 1.5MH	AD	AL
D613	30001291	DIODE HER107 1A/800V 30A	AA	AB	L700	30001996	FIXED COIL 22UH Q40 K	AA	AB
D614	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA	L701	30001996	FIXED COIL 22UH Q40 K	AA	AB
D615	30001318	DIODE BA159 1A/800V 20A	AA	AB	L702	30001996	FIXED COIL 22UH Q40 K	AA	AB
D617	30025773	DIODE ZENER SMD BZT55B5V1	AA	AA	L703	30001996	FIXED COIL 22UH Q40 K	AA	AB
D622	30001285	DIODE 1N4148 SMD	AA	AB	L711	30001996	FIXED COIL 22UH Q40 K	AA	AB
D623	30001285	DIODE 1N4148 SMD	AA	AB	L714	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
D624	30001285	DIODE 1N4148 SMD	AA	AB	L715	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
D625	30001320	DIODE GUC BY228	AB	AF	L717	30001979	FIXED COIL 1UH Q45 M-A	AA	AB
D627	30001284	DIODE 1N4148 0.15A/100V 0.5A	AA	AB	L719	30001968	FERRITE BEAD (0805) BLM21B201S	AA	AE
D628	30001285	DIODE 1N4148 SMD	AA	AB			CERAMIC FILTERS		
D701	30007761	DIODE ZENER SMD BZT55C3V6	AA	AB	Z200	30014261	FILTER SAW K3958M	AF	AR
D702	30001285	DIODE 1N4148 SMD	AA	AB	Z201	30012545	FILTER SAW K9656M	AG	AR
D706	30001285	DIODE 1N4148 SMD	AA	AB			TRANSFORMERS		
D902	30001318	DIODE BA159 1A/800V 20A	AA	AB	△ TR100	30019432	TRF SMPS SAFE AK45 110° (170-270V)	AG	AS
D903	30001284	DIODE 1N4148 0.15A/100V 0.5A	AA	AB	△ TR600	30021290	TRF FBT SAFE 110° 50HZ LAYER	AS	BC
D904	30001318	DIODE BA159 1A/800V 20A	AA	AB	TR601	30002090	LINE DRIVER NEW TYPE	AD	AM
D905	30001318	DIODE BA159 1A/800V 20A	AA	AB	△ .	30015614	TRF PFC SAFE 0.9A 42 MH EP	AL	AX
D907	30001318	DIODE BA159 1A/800V 20A	AA	AB			CAPACITORS		
D908	30014353	DIODE BAT85	AA	AC	C100	30000371	CAP EL 22UF 50V M	AA	AB
D909	30001285	DIODE 1N4148 SMD	AA	AB	C100	30000190	CAP CER 100PF 50V J CH	AA	AB
D910	30001285	DIODE 1N4148 SMD	AA	AB	C101	30000190	CAP CER 100PF 50V J CH	AA	AB
		PACKAGED CIRCUITS			C102	30000190	CAP CER 100PF 50V J CH	AA	AB
X200	30002851	XTAL 4MHZ L.C=30PF	AC	AH	△ C102	30000084	CAP MKT SAFE 150NF 275V M AC P=15	AC	AG
X201	30008778	XTAL 20.25MHZ	AB	AF	C103	30000190	CAP CER 100PF 50V J CH	AA	AB
X500	30006662	XTAL 6MHZ	AC	AH	△ C103	30000094	CAP MKT SAFE 220NF 275V M AC	AA	AB
X700	30001756	XTAL 18.432MHZ	AE	AP	C105	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
		COILS			C106	30000290	CAP CER 10NF 50V Z F	AA	AB
L100	30001979	FIXED COIL 1UH Q45 M-A	AA	AB	C106	30000371	CAP EL 22UF 50V M	AA	AB
L101	30001979	FIXED COIL 1UH Q45 M-A	AA	AB	C107	30000290	CAP CER 10NF 50V Z F	AA	AB
△ L101	30018866	LINE FILTER SAFE 2X22MH 10mmX12.5mm	AC	AH	C107	30000421	CAP EL 220UF 400V M (FOR 28°)	AG	AS
L102	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD	△ C108	30000161	CAP MKP SAFE 47NF 630V J	AB	AE
L103	30001992	FIXED COIL 10UH Q65 K-A	AA	AB	C111	30007308	CAP CER 220PF 1KV K (PULSE)	AA	AD
L107(NOT2)	30007308	CAP CER 220PF 1KV K (PULSE)	AA	AD	C113	30006940	CAP CER 2.7NF 1KV K B	AA	AB
L203	30001996	FIXED COIL 22UH Q40 K	AA	AB	C114	30007308	CAP CER 220PF 1KV K (PULSE)	AA	AD
L206	30001979	FIXED COIL 1UH Q45 M-A	AA	AB	△ C115	30000440	CAP CER SAFE 2.2NF 4KV M	AA	AC
L207	30001979	FIXED COIL 1UH Q45 M-A	AA	AB	C118	30007308	CAP CER 220PF 1KV K (PULSE)	AA	AD
L212	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD					

REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
C119	30000090	CAP MKT 22NF 100V J	AA	AB
C120	30007308	CAP CER 220PF 1KV K (PULSE)	AA	AD
C121	30012560	CAP SMD 100PF 50V J (0603)	AA	AB
C122	30007308	CAP CER 220PF 1KV K (PULSE)	AA	AD
C124	30000376	CAP EL 220UF 25V M	AA	AB
C125	30028072	CAP EL 100UF 200V M (HR)	AE	AQ
C126	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
C127	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
C129	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
C130	30000436	CAP CER 10NF 1KV ZE	AA	AC
C133	30018259	CAP EL 4700UF 25V M	AC	AG
C134	30018259	CAP EL 4700UF 25V M	AC	AG
C135	30018259	CAP EL 4700UF 25V M	AC	AG
C137	30000367	CAP EL 1UF 250V M	AA	AB
C138	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C140	30000393	CAP EL 3.3UF 50V M	AA	AB
C141	30000359	CAP EL 1000UF 16V M	AA	AC
C142	30000387	CAP EL 33UF 50V M	AA	AB
C145	30000375	CAP EL 220UF 16V M	AA	AB
C146	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
C147	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C148	30000360	CAP EL 1000UF 25V M	AA	AE
C149	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C150	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C152	30000375	CAP EL 220UF 16V M	AA	AB
C154	30000375	CAP EL 220UF 16V M	AA	AB
C155	30000375	CAP EL 220UF 16V M	AA	AB
C156	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C157	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
△ C160	30000076	CAP MKT SAFE 100NF 275V M AC	AB	AE
△ C161	30000440	CAP CER SAFE 2.2NF 4KV M	AA	AC
C162	30007708	CAP CER 1NF 1KV K (PULSE)	AA	AD
C164	30000362	CAP EL 1UF 50V M	AA	AB
C165	30000362	CAP EL 1UF 50V M	AA	AB
C166	30000225	CAP CER 220PF 50V J SL	AA	AB
C168	30000161	CAP MKP SAFE 47NF 630V J	AB	AE
C170	30012566	CAP SMD 22PF 50V J (0603)	AA	AB
C171	30012590	CAP SMD 47NF 50V K (0603)	AA	AA
C172	30000313	CAP CER 22NF 50V Z F	AA	AB
C173	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
C174	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
C175	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
C176	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
C202	30012643	RES SMD 1/16W 120R J (0603)	AA	AA
C208	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
C209	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
C210	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
C212	30000352	CAP EL 100UF 16V M	AA	AB
C213	30012609	CAP SMD 68NF 50V K (0603)	AA	AB
C214	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
C215	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
C217	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
C218	30012610	CAP SMD 10NF 50V J (0603)	AA	AB
C222	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
C225	30000109	CAP MKT 470NF 63V J	AA	AD
C226	30000352	CAP EL 100UF 16V M	AA	AB
C227	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C229	30000345	CAP EL 10UF 50V M	AA	AB
C231	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C233	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C234	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
C235	30012610	CAP SMD 10NF 50V J (0603)	AA	AB
C237	30012583	CAP SMD 1.5NF 50V K (0603)	AA	AA
C238	30012610	CAP SMD 10NF 50V J (0603)	AA	AB
C240	30012559	CAP SMD 10PF 50V D COG (0603)	AA	AA
C242	30012560	CAP SMD 100PF 50V J (0603)	AA	AB

REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
C246	30012586	CAP SMD 22NF 50V K (0603)	AA	AB
C248	30012586	CAP SMD 22NF 50V K (0603)	AA	AB
C249	30012610	CAP SMD 10NF 50V J (0603)	AA	AB
C252	30000387	CAP EL 33UF 50V M	AA	AB
C253	30000345	CAP EL 10UF 50V M	AA	AB
C255	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
C258	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C259	30000345	CAP EL 10UF 50V M	AA	AB
C260	30012585	CAP SMD 2.2NF 50V K R (0603)	AA	AB
C261	30012588	CAP SMD 33NF 50V K (0603)	AA	AA
C262	30012610	CAP SMD 10NF 50V J (0603)	AA	AB
C263	30012588	CAP SMD 33NF 50V K (0603)	AA	AA
C264	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
C265	30000109	CAP MKT 470NF 63V J	AA	AD
C266	30000109	CAP MKT 470NF 63V J	AA	AD
C267	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C268	30012590	CAP SMD 47NF 50V K (0603)	AA	AA
C269	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C270	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C271	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C273	30012590	CAP SMD 47NF 50V K (0603)	AA	AA
C274	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C275	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C276	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C277	30000345	CAP EL 10UF 50V M	AA	AB
C278	30012559	CAP SMD 10PF 50V D COG (0603)	AA	AA
C279	30012559	CAP SMD 10PF 50V D COG (0603)	AA	AA
C280	30000345	CAP EL 10UF 50V M	AA	AB
C282	30012585	CAP SMD 2.2NF 50V K R (0603)	AA	AB
C283	30000345	CAP EL 10UF 50V M	AA	AB
C284	30012585	CAP SMD 2.2NF 50V K R (0603)	AA	AB
C286	30000345	CAP EL 10UF 50V M	AA	AB
C287	30012607	CAP SMD 150PF 50V J (0603)	AA	AA
C288	30012589	CAP SMD 4.7NF 50V K (0603)	AA	AB
C289	30012589	CAP SMD 4.7NF 50V K (0603)	AA	AB
C290	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C292	30012589	CAP SMD 4.7NF 50V K (0603)	AA	AB
C293	30012607	CAP SMD 150PF 50V J (0603)	AA	AA
C296	30012589	CAP SMD 4.7NF 50V K (0603)	AA	AB
C300	30012589	CAP SMD 4.7NF 50V K (0603)	AA	AB
C301	30012607	CAP SMD 150PF 50V J (0603)	AA	AA
C302	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C304	30012607	CAP SMD 150PF 50V J (0603)	AA	AA
C308	30012589	CAP SMD 4.7NF 50V K (0603)	AA	AB
C327	30000109	CAP MKT 470NF 63V J	AA	AD
C331	30012572	CAP SMD 390PF 50V J (0603)	AA	AA
C333	30012579	CAP SMD 82PF 50V J (0603)	AA	AB
C348	30000109	CAP MKT 470NF 63V J	AA	AD
C349	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C350	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C351	30000345	CAP EL 10UF 50V M	AA	AB
C352	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C353	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C355	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
C356	30000109	CAP MKT 470NF 63V J	AA	AD
C357	30000345	CAP EL 10UF 50V M	AA	AB
C358	30000345	CAP EL 10UF 50V M	AA	AB
C359	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C360	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C361	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
C362	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
C506	30000345	CAP EL 10UF 50V M	AA	AB
C507	30000393	CAP EL 3.3UF 50V M	AA	AB
C508	30000345	CAP EL 10UF 50V M	AA	AB
C509	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C510	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB

REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE	REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
C511	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB	C724	30000345	CAP EL 10UF 50V M	AA	AB
C514	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB	C725	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C515	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB	C728	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C516	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB	C729	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
C517	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB	C730	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
C518	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB	C731	30012583	CAP SMD 1.5NF 50V K (0603)	AA	AA
C519	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB	C732	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C520	30012573	CAP SMD 47PF 50V J (0603)	AA	AB	C733	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
C521	30012573	CAP SMD 47PF 50V J (0603)	AA	AB	C734	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C522	30000345	CAP EL 10UF 50V M	AA	AB	C735	30000393	CAP EL 3.3UF 50V M	AA	AB
C523	30000345	CAP EL 10UF 50V M	AA	AB	C736	30000345	CAP EL 10UF 50V M	AA	AB
C524	30000345	CAP EL 10UF 50V M	AA	AB	C737	30000345	CAP EL 10UF 50V M	AA	AB
C525	30000345	CAP EL 10UF 50V M	AA	AB	C738	30012576	CAP SMD 56PF 50V J CH (0603)	AA	AA
C527	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB	C739	30000345	CAP EL 10UF 50V M	AA	AB
C530	30000375	CAP EL 220UF 16V M	AA	AB	C740	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C537	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB	C741	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C601	30000351	CAP EL 10UF 350V M	AA	AE	C742	30012565	CAP SMD 1.8PF 50V J CH (0603)	AA	AA
C603	30000402	CAP EL 47UF 100V M	AA	AB	C743	30012565	CAP SMD 1.8PF 50V J CH (0603)	AA	AA
C604	30000075	CAP MKT 100NF 250V K (DC)	AA	AD	C744	30000345	CAP EL 10UF 50V M	AA	AB
C605	30028072	CAP EL 100UF 200V M (HR)	AE	AQ	C745	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C607	30012610	CAP SMD 10NF 50V J (0603)	AA	AB	C746	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C608	30000409	CAP EL 470UF 25V M	AA	AD	C747	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C609	30000082	CAP MKT 15NF 63V J	AA	AB	C748	30012583	CAP SMD 1.5NF 50V K (0603)	AA	AA
C610	30000286	CAP CER 1NF 500V K B	AA	AB	C749	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C612	30000348	CAP EL 10UF 160V M	AA	AB	C750	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C613	30000360	CAP EL 1000UF 25V M	AA	AE	C751	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C614	30000360	CAP EL 1000UF 25V M	AA	AE	C754	30000352	CAP EL 100UF 16V M	AA	AB
C616	30000151	CAP MKP 3.3NF 2KV %3.5	AB	AF	C763	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
C617	30000161	CAP MKP SAFE 47NF 630V J	AB	AE	C764	30012567	CAP SMD 220PF 50V J (0603)	AA	AB
C618	30000444	CAP CER 470PF 1KV KB	AA	AB	C765	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB
C619	30000367	CAP EL 1UF 250V M	AA	AB	C767	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB
△ C620	30000177	CAP MKP SAFE 820NF 250V J	AC	AK	C769	30000345	CAP EL 10UF 50V M	AA	AB
△ C621	30000136	CAP MKP SAFE 12NF 2000V %3.5	AC	AG	C771	30000345	CAP EL 10UF 50V M	AA	AB
C622	30000137	CAP MKP 15NF 630V J	AC	AG	C772	30000345	CAP EL 10UF 50V M	AA	AB
△ C623	30000156	CAP MKP SAFE 430NF 250V J	AB	AF	C774	30012567	CAP SMD 220PF 50V J (0603)	AA	AB
△ C624	30013003	CAP MKP SAFE 1UF 250V J P=15	AC	AG	C775	30012585	CAP SMD 2.2NF 50V K R (0603)	AA	AB
C628	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB	C776	30000352	CAP EL 100UF 16V M	AA	AB
C630	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB	C779	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C631	30000296	CAP CER 100NF 100V Z F	AA	AB	C781	30012590	CAP SMD 47NF 50V K (0603)	AA	AA
C632	30000074	CAP MKT 100NF 63V J	AA	AC	C782	30000352	CAP EL 100UF 16V M	AA	AB
C633	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB	C783	30012590	CAP SMD 47NF 50V K (0603)	AA	AA
C635	30012584	CAP SMD 1.8NF 50V K R (0603)	AA	AA	C784	30000362	CAP EL 1UF 50V M	AA	AB
C636	30009208	CAP CER 470PF 1KV K (PULSE)	AA	AC	C785	30012585	CAP SMD 2.2NF 50V K R (0603)	AA	AB
C637	30000332	CAP SMD 4.7NF 50V K (0805)	AA	AB	C786	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C638	30000092	CAP MKT 220NF 63V J	AA	AD	C789	30000362	CAP EL 1UF 50V M	AA	AB
C643	30000092	CAP MKT 220NF 63V J	AA	AD	C791	30000362	CAP EL 1UF 50V M	AA	AB
C644	30012591	CAP SMD 5.6NF 50V K (0603)	AA	AA	C793	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C645	30012591	CAP SMD 5.6NF 50V K (0603)	AA	AA	C794	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB
C646	30000296	CAP CER 100NF 100V Z F	AA	AB	C795	30012585	CAP SMD 2.2NF 50V K R (0603)	AA	AB
C648	30000069	CAP MKT 1NF 100V J	AA	AC	C796	30012585	CAP SMD 2.2NF 50V K R (0603)	AA	AB
C700	30000352	CAP EL 100UF 16V M	AA	AB	C803	30012573	CAP SMD 47PF 50V J (0603)	AA	AB
C701	30000345	CAP EL 10UF 50V M	AA	AB	C808	30000345	CAP EL 10UF 50V M	AA	AB
C702	30012583	CAP SMD 1.5NF 50V K (0603)	AA	AA	C809	30000409	CAP EL 470UF 25V M	AA	AD
C706	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB	C810	30012574	CAP SMD 470PF 50V J (0603)	AA	AA
C707	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB	C811	30012574	CAP SMD 470PF 50V J (0603)	AA	AA
C708	30000407	CAP EL 470UF 16V M	AA	AC	C900	30000075	CAP MKT 100NF 250V K (DC)	AA	AD
C712	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB	C902	30000415	CAP EL 4.7UF 250V M	AA	AC
C713	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB	C904	30000287	CAP CER 10NF 50V K B	AA	AA
C715	30012581	CAP SMD 1NF 50V K R (0603)	AA	AB	C905	30000350	CAP EL 10UF 250V M	AA	AD
C716	30016654	CAP SMD 100NF 16V K R (0603)	AA	AB	C906	30000075	CAP MKT 100NF 250V K (DC)	AA	AD
C717	30000092	CAP MKT 220NF 63V J	AA	AD	C908	30000438	CAP CER 2.2NF 2KV	AA	AD
C718	30000092	CAP MKT 220NF 63V J	AA	AD	C909	30000359	CAP EL 1000UF 16V M	AA	AC
C719	30016126	CAP SMD 220NF 16V K R (0603)	AA	AB	C910	30000294	CAP SMD 100NF 50V K (0805)	AA	AB
C720	30000345	CAP EL 10UF 50V M	AA	AB	C913	30000294	CAP SMD 100NF 50V K (0805)	AA	AB
C721	30012576	CAP SMD 56PF 50V J CH (0603)	AA	AA	C914	30012577	CAP SMD 560PF 50V J (0603)	AA	AA
C722	30012576	CAP SMD 56PF 50V J CH (0603)	AA	AA	C915	30000407	CAP EL 470UF 16V M	AA	AC

REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
C916	30000352	CAP EL 100UF 16V M	AA	AB
C918	30012577	CAP SMD 560PF 50V J (0603)	AA	AA
C919	30012577	CAP SMD 560PF 50V J (0603)	AA	AA
C920	30012577	CAP SMD 560PF 50V J (0603)	AA	AA
C921	30000294	CAP SMD 100NF 50V K (0805)	AA	AB
C931	30000075	CAP MKT 100NF 250V K (DC)	AA	AD
C932	30000367	CAP EL 1UF 250V M	AA	AB
C934	30012603	CAP SMD 100NF 25V K R (0603)	AA	AB
		RESISTORS		
R100	30000689	RES CF 1/4W 3.9K J	AA	AB
R100	30000594	RES CF 1/4W 22K J	AA	AB
R100	30000718	RES CF 1/4W 4.7K J	AA	AB
R101	30000526	RES CF 1/4W 1.5K J	AA	AB
R101	30000712	RES CF 1/4W 470R J	AA	AB
R101	30000896	RES MF 1/4W 160K G	AA	AA
R102	30000770	RES CF 1/4W 680R J	AA	AB
R102	30000594	RES CF 1/4W 22K J	AA	AB
R103	30000712	RES CF 1/4W 470R J	AA	AB
R103	30000712	RES CF 1/4W 470R J	AA	AB
R104	30000580	RES CF 1/4W 22R J	AA	AB
R104	30000650	RES CF 1/4W 33R J	AA	AB
R105	30000580	RES CF 1/4W 22R J	AA	AB
R105	30000650	RES CF 1/4W 33R J	AA	AB
R105	30000982	RES MF 1/4W 4.7K J	AA	AA
R106	30000471	RES CF 1/4W 10K J	AA	AB
R106	30000471	RES CF 1/4W 10K J	AA	AB
R106	30000593	RES SMD 1/10W 2.2K J (0805)	AA	AB
R107	30000580	RES CF 1/4W 22R J	AA	AB
R107	30000551	RES CF 1/4W 18R J	AA	AB
R108	30000471	RES CF 1/4W 10K J	AA	AB
R108	30000452	RES CF 1/4W 10R J	AA	AB
R109	30000551	RES CF 1/4W 18R J	AA	AB
R110	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R112	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R116	30001173	RES MO 1W 0.47R J	AA	AB
△ R117	30001257	RES MG SAFE 1/2W 4.7M J	AA	AD
R118	30000580	RES CF 1/4W 22R J	AA	AB
R119	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R122	30014022	RES SMD 1/16W 47R J (0603)	AA	AA
R126	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R127	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
R129	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
R130	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R131	30000886	RES MF 1/4W 1.5K F	AA	AB
R132	30000886	RES MF 1/4W 1.5K F	AA	AB
R133	30000880	RES MF 1/4W 130K F	AA	AA
R134	30000575	RES SMD 1/10W 2K J	AA	AB
R137	30000481	RES CF 1/4W 1M J	AA	AB
R138	30000660	RES CF 1/4W 3.3K J	AA	AB
R139	30000593	RES SMD 1/10W 2.2K J (0805)	AA	AB
R140	30001174	RES MO 2W 0.47R J	AA	AB
R141	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R142	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R143	30020455	RES SMD 1/16W 1.5K F (0603)	AA	AA
R144	30000480	RES SMD 1/10W 100K J (0805)	AA	AB
R145	30020457	RES SMD 1/16W 910R F (0603)	AA	AA
R146	30012697	RES SMD 1/16W 5.1K J (0603)	AA	AA
R147	30020455	RES SMD 1/16W 1.5K F (0603)	AA	AA
R148	30020457	RES SMD 1/16W 910R F (0603)	AA	AA
R149	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R150	30000466	RES CF 1/4W 1K J	AA	AB
R151	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R153	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
R154	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R155	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R156	30012641	RES SMD 1/16W 10K J (0603)	AA	AB

REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
R157	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R158	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R161	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R162	30000494	RES SMD 1/10W 120R J (0805)	AA	AB
R164	30000593	RES SMD 1/10W 2.2K J (0805)	AA	AB
R165	30001159	RES MO 1W 0.33R J	AA	AB
R166	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
△ R167	30018085	CAP VAR SAFE 510V K MFCN14D511	AA	AD
△ R168	30018085	CAP VAR SAFE 510V K MFCN14D511	AA	AD
R200	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R201	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R202	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R203	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R204	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R205	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R206	30000459	RES CF 1/4W 100R J	AA	AB
R207	30000459	RES CF 1/4W 100R J	AA	AB
R208	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R209	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R210	30012662	RES SMD 1/16W 2.7K J (0603)	AA	AB
R211	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
R215	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R217	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R219	30000792	RES CF 1/4W 75R J	AA	AB
R220	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R221	30000792	RES CF 1/4W 75R J	AA	AB
R222	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R230	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R231	30000792	RES CF 1/4W 75R J	AA	AB
R232	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R233	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R234	30012702	RES SMD 1/16W 560R J (0603)	AA	AA
R235	30000655	RES CF 1/4W 330R J	AA	AB
R236	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R237	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R238	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R239	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R241	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R242	30012696	RES SMD 1/16W 47K J (0603)	AA	AB
R247	30000500	RES CF 1/4W 12K J	AA	AB
R248	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R254	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R256	30012655	RES SMD 1/16W 180R J (0603)	AA	AA
R259	30000593	RES SMD 1/10W 2.2K J (0805)	AA	AB
R260	30012669	RES SMD 1/16W 22K J (0603)	AA	AB
R261	30012677	RES SMD 1/16W 3.3K J (0603)	AA	AA
R265	30000459	RES CF 1/4W 100R J	AA	AB
R266	30000459	RES CF 1/4W 100R J	AA	AB
R267	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R268	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R269	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R270	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R272	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R274	30012702	RES SMD 1/16W 560R J (0603)	AA	AA
R276	30000593	RES SMD 1/10W 2.2K J (0805)	AA	AB
R277	30012679	RES SMD 1/16W 3.9K J (0603)	AA	AB
R278	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R279	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R280	30012713	RES SMD 1/16W 75R J (0603)	AA	AB
R281	30012673	RES SMD 1/16W 270R J (0603)	AA	AB
R282	30012668	RES SMD 1/16W 220R J (0603)	AA	AA
R283	30012707	RES SMD 1/16W 680R J (0603)	AA	AB
R284	30012684	RES SMD 1/16W 330R J (0603)	AA	AA
R285	30012707	RES SMD 1/16W 680R J (0603)	AA	AB
R286	30012707	RES SMD 1/16W 680R J (0603)	AA	AB
R288	30000770	RES CF 1/4W 680R J	AA	AB

REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE	REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
R289	30012707	RES SMD 1/16W 680R J (0603)	AA	AB	R522	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
R299	30012510	RES SMD 1/16W 100R J (0603)	AA	AB	R523	30012712	RES SMD 1/16W 8.2K J (0603)	AA	AB
R308	30012641	RES SMD 1/16W 10K J (0603)	AA	AB	R524	30012679	RES SMD 1/16W 3.9K J (0603)	AA	AB
R310	30012713	RES SMD 1/16W 75R J (0603)	AA	AB	R526	30012679	RES SMD 1/16W 3.9K J (0603)	AA	AB
R316	30012641	RES SMD 1/16W 10K J (0603)	AA	AB	R527	30012679	RES SMD 1/16W 3.9K J (0603)	AA	AB
R317	30000792	RES CF 1/4W 75R J	AA	AB	R528	30012650	RES SMD 1/16W 15K J (0603)	AA	AB
R318	30012657	RES SMD 1/16W 1K J (0603)	AA	AB	R533	30012685	RES SMD 1/16W 33K J (0603)	AA	AA
R326	30000815	RES CF 1/4W 8.2K J	AA	AB	R535	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R327	30000480	RES SMD 1/10W 100K J (0805)	AA	AB	R537	30000466	RES CF 1/4W 1K J	AA	AB
R330	30012657	RES SMD 1/16W 1K J (0603)	AA	AB	R538	30012508	RES SMD 1/16W 1.8K J (0603)	AA	AB
R334	30012713	RES SMD 1/16W 75R J (0603)	AA	AB	R539	30012508	RES SMD 1/16W 1.8K J (0603)	AA	AB
R336	30000466	RES CF 1/4W 1K J	AA	AB	R540	30012508	RES SMD 1/16W 1.8K J (0603)	AA	AB
R337	30000466	RES CF 1/4W 1K J	AA	AB	R541	30012662	RES SMD 1/16W 2.7K J (0603)	AA	AB
R338	30000466	RES CF 1/4W 1K J	AA	AB	R548	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R342	30012657	RES SMD 1/16W 1K J (0603)	AA	AB	R549	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R343	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB	R550	30012679	RES SMD 1/16W 3.9K J (0603)	AA	AB
R349	30012641	RES SMD 1/16W 10K J (0603)	AA	AB	R553	30012695	RES SMD 1/16W 470R J (0603)	AA	AB
R350	30012510	RES SMD 1/16W 100R J (0603)	AA	AB	R554	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
R351	30012510	RES SMD 1/16W 100R J (0603)	AA	AB	R555	30012506	RES SMD 1/16W 1.5K J (0603)	AA	AB
R352	30012698	RES SMD 1/16W 5.6K J (0603)	AA	AB	R561	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R353	30012685	RES SMD 1/16W 33K J (0603)	AA	AA	R564	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
R354	30012677	RES SMD 1/16W 3.3K J (0603)	AA	AA	R565	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R355	30012643	RES SMD 1/16W 120R J (0603)	AA	AA	R566	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R356	30012707	RES SMD 1/16W 680R J (0603)	AA	AB	R567	30000459	RES CF 1/4W 100R J	AA	AB
R357	30012644	RES SMD 1/16W 12K J (0603)	AA	AB	R568	30000459	RES CF 1/4W 100R J	AA	AB
R358	30012655	RES SMD 1/16W 180R J (0603)	AA	AA	R571	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R359	30012669	RES SMD 1/16W 22K J (0603)	AA	AB	R582	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R400	30012669	RES SMD 1/16W 22K J (0603)	AA	AB	R585	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R404	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB	R586	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R406	30012650	RES SMD 1/16W 15K J (0603)	AA	AB	R587	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R409	30012713	RES SMD 1/16W 75R J (0603)	AA	AB	R588	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R411	30012657	RES SMD 1/16W 1K J (0603)	AA	AB	R589	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R412	30012657	RES SMD 1/16W 1K J (0603)	AA	AB	R590	30012679	RES SMD 1/16W 3.9K J (0603)	AA	AB
R413	30012713	RES SMD 1/16W 75R J (0603)	AA	AB	R591	30012711	RES SMD 1/16W 75K J (0603)	AA	AA
R414	30012713	RES SMD 1/16W 75R J (0603)	AA	AB	R600	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R415	30012679	RES SMD 1/16W 3.9K J (0603)	AA	AB	R601	30000470	RES CF 1/2W 10K J	AA	AA
R416	30012695	RES SMD 1/16W 470R J (0603)	AA	AB	△ R603	30001242	RES FUSE 1/4W 47R J	AA	AB
R417	30012695	RES SMD 1/16W 470R J (0603)	AA	AB	R603+	30006712	FERRITE BEAD 3.5X4.7X0.8	AA	AB
R418	30012695	RES SMD 1/16W 470R J (0603)	AA	AB	△ R604	30001244	RES FUSE SAFE 1/2W 0.47R J	AA	AB
R419	30012695	RES SMD 1/16W 470R J (0603)	AA	AB	R605	30000927	RES MF 1/4W 220K J	AA	AB
R420	30012695	RES SMD 1/16W 470R J (0603)	AA	AB	R607	30012695	RES SMD 1/16W 470R J (0603)	AA	AB
R421	30012695	RES SMD 1/16W 470R J (0603)	AA	AB	R608	30001100	RES MO 1W 150R J	AA	AB
R422	30012695	RES SMD 1/16W 470R J (0603)	AA	AB	△ R611	30001244	RES FUSE SAFE 1/2W 0.47R J	AA	AB
R423	30012695	RES SMD 1/16W 470R J (0603)	AA	AB	R612	30000471	RES CF 1/4W 10K J	AA	AB
R424	30012695	RES SMD 1/16W 470R J (0603)	AA	AB	△ R613	30001234	RES FUSE 2W 33R J	AA	AC
R425	30012695	RES SMD 1/16W 470R J (0603)	AA	AB	△ R614	30001244	RES FUSE SAFE 1/2W 0.47R J	AA	AB
R426	30012695	RES SMD 1/16W 470R J (0603)	AA	AB	R616	30018904	RES MO 5W 4.7K J	AA	AD
R427	30012661	RES SMD 1/16W 2.4K J (0603)	AA	AA	△ R618	30001233	RES FUSE SAFE 1W 2.7R J	AA	AB
R428	30012510	RES SMD 1/16W 100R J (0603)	AA	AB	R621	30012696	RES SMD 1/16W 47K J (0603)	AA	AB
R429	30012510	RES SMD 1/16W 100R J (0603)	AA	AB	R622	30012696	RES SMD 1/16W 47K J (0603)	AA	AB
R430	30012510	RES SMD 1/16W 100R J (0603)	AA	AB	R623	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R503	30012510	RES SMD 1/16W 100R J (0603)	AA	AB	R624	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
R504	30012510	RES SMD 1/16W 100R J (0603)	AA	AB	R625	30000480	RES SMD 1/10W 100K J (0805)	AA	AB
R505	30000471	RES CF 1/4W 10K J	AA	AB	R626	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
R506	30000471	RES CF 1/4W 10K J	AA	AB	R627	30000480	RES SMD 1/10W 100K J (0805)	AA	AB
R507	30012696	RES SMD 1/16W 47K J (0603)	AA	AB	R628	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R508	30012696	RES SMD 1/16W 47K J (0603)	AA	AB	R629	30012674	RES SMD 1/16W 27K J (0603)	AA	AB
R509	30012696	RES SMD 1/16W 47K J (0603)	AA	AB	R630	30000872	RES MF 1/4W 120K F	AA	AA
R510	30012696	RES SMD 1/16W 47K J (0603)	AA	AB	R631	30000872	RES MF 1/4W 120K F	AA	AA
R512	30012668	RES SMD 1/16W 220R J (0603)	AA	AA	R632	30014465	RES SMD 1/16W 2.7K F (603)	AA	AA
R513	30012662	RES SMD 1/16W 2.7K J (0603)	AA	AB	R636	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R516	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB	R637	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R518	30012662	RES SMD 1/16W 2.7K J (0603)	AA	AB	R638	30012674	RES SMD 1/16W 27K J (0603)	AA	AB
R519	30000466	RES CF 1/4W 1K J	AA	AB	R639	30001162	RES MO 1W 390R J	AA	AB
R520	30012650	RES SMD 1/16W 15K J (0603)	AA	AB	R640	30001134	RES MO 2W 2.2R J	AA	AB
R521	30012679	RES SMD 1/16W 3.9K J (0603)	AA	AB	R641	30000965	RES MF 1/2W 0.33R J	AA	AA

REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
R644	30000649	RES CF 1/2W 33R J	AA	AB
R645	30000580	RES CF 1/4W 22R J	AA	AB
R646	30012654	RES SMD 1/16W 180K J (0603)	AG	AS
R647	30012650	RES SMD 1/16W 15K J (0603)	AA	AB
R648	30012658	RES SMD 1/16W 1M J (0603)	AA	AA
△ R649	30001228	RES FUSE SAFE 1/2W 2.2R J	AA	AB
R650	30001082	RES MO 1/2W 1K J	AA	AB
R652	30000848	RES MF 1/4W 1K F	AA	AB
R653	30012509	RES SMD 1/16W 100K J (0603)	AA	AB
R654	30012708	RES SMD 1/16W 68K J (0603)	AA	AA
R655	30012674	RES SMD 1/16W 27K J (0603)	AA	AB
R656	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R657	30000466	RES CF 1/4W 1K J	AA	AB
R658	30000466	RES CF 1/4W 1K J	AA	AB
R700	30012695	RES SMD 1/16W 470R J (0603)	AA	AB
R701	30012695	RES SMD 1/16W 470R J (0603)	AA	AB
R702	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R703	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R704	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R705	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R710	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R713	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R714	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R715	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R718	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R719	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R723	30000459	RES CF 1/4W 100R J	AA	AB
R724	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R725	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R726	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R742	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
R746	30012692	RES SMD 1/16W 4.7K J (0603)	AA	AB
R747	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R749	30012709	RES SMD 1/16W 7.5K J (0603)	AA	AA
R753	30014076	RES SMD 1/16W 4.7R J (0603)	AA	AA
R754	30012709	RES SMD 1/16W 7.5K J (0603)	AA	AA
R755	30014076	RES SMD 1/16W 4.7R J (0603)	AA	AA
R756	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R759	30012712	RES SMD 1/16W 8.2K J (0603)	AA	AB
R760	30012702	RES SMD 1/16W 560R J (0603)	AA	AA
R762	30012712	RES SMD 1/16W 8.2K J (0603)	AA	AB
R763	30012702	RES SMD 1/16W 560R J (0603)	AA	AA
R765	30012669	RES SMD 1/16W 22K J (0603)	AA	AB
R766	30012669	RES SMD 1/16W 22K J (0603)	AA	AB
R793	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R794	30012657	RES SMD 1/16W 1K J (0603)	AA	AB
R815	30012644	RES SMD 1/16W 12K J (0603)	AA	AB
R817	30012641	RES SMD 1/16W 10K J (0603)	AA	AB
R818	30000723	RES CF 1/4W 47K J	AA	AB
R819	30012679	RES SMD 1/16W 3.9K J (0603)	AA	AB
R820	30012696	RES SMD 1/16W 47K J (0603)	AA	AB
R900	30000788	RES CF 1/4W 6.8M J	AA	AB
R901	30000459	RES CF 1/4W 100R J	AA	AB
R902	30000459	RES CF 1/4W 100R J	AA	AB
R903	30000459	RES CF 1/4W 100R J	AA	AB
R904	30000535	RES CF 1/2W 150K J	AA	AB
R905	30000477	RES CF 1/4W 100K J	AA	AB
R906	30000477	RES CF 1/4W 100K J	AA	AB
R907	30023197	RES CC 1W 1.5K K	AA	AD
R908	30023197	RES CC 1W 1.5K K	AA	AD
R909	30000477	RES CF 1/4W 100K J	AA	AB
R910	30023197	RES CC 1W 1.5K K	AA	AD
R911	30000468	RES CF 1/4W 1K J	AA	AB
R912	30000458	RES CF 1/2W 100R J	AA	AB
R913	30021483	RES CC 1W 2.2K K	AA	AD
R914	30000459	RES CF 1/4W 100R J	AA	AB

REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
R915	30012649	RES SMD 1/16W 150R J (0603)	AA	AB
R916	30014128	RES SMD 1/16W 33R J (0603)	AA	AB
R917	30000583	RES CF 1/4W 220R J	AA	AB
R919	30012644	RES SMD 1/16W 12K J (0603)	AA	AB
R920	30012698	RES SMD 1/16W 5.6K J (0603)	AA	AB
R921	30012649	RES SMD 1/16W 150R J (0603)	AA	AB
R922	30014128	RES SMD 1/16W 33R J (0603)	AA	AB
R923	30000583	RES CF 1/4W 220R J	AA	AB
R925	30012649	RES SMD 1/16W 150R J (0603)	AA	AB
R926	30014128	RES SMD 1/16W 33R J (0603)	AA	AB
R927	30000583	RES CF 1/4W 220R J	AA	AB
R928	30012510	RES SMD 1/16W 100R J (0603)	AA	AB
R930	30000477	RES CF 1/4W 100K J	AA	AB
R931	30012667	RES SMD 1/16W 220K J (0603)	AA	AB
R932	30012707	RES SMD 1/16W 680R J (0603)	AA	AB
R933	30012707	RES SMD 1/16W 680R J (0603)	AA	AB
PRINTED WIRING BOARD MODULES				
.	20155578	CHS.ASSY.45-317D22514121121C1125L (29LF92EC Mother Unit)	BP	CE
.	20155579	CHS.ASSY.45-317C21514121121C1125L (29LF92EIT Mother Unit)	BP	CE
.	20160076	CRT B.ASSY.TP45B-5-SI.FOC.(AK45)SHARP(RF (CRT Unit)	AR	BB
.	20154617	MD.ASY.FAV107-2962 STR. (AK45) (Front AV Unit)	AM	AY
.	20153523	MD.ASY.SB119-3 LED+TK 2962 (AK45) (Front SW Unit)	AM	AY
OWNERS MANUAL				
.	50053219	I/B SHARP 29LF92EC P/AK45/1548/EPMCSRR	AG	AT
.	50053294	I/B SHARP 29LF92E(IT) P/AK45/1548/IITA	AB	AF
29LF92EC MISCELLANEOUS PARTS				
.	20168548	LBL.CART.BOX SHARP 29LF92EC "45"	AA	AC
.	20168550	LBL.BCK.CVR.SHA.EL.SHARP 29LF92EC"45"ENG	AA	AC
29LF92EIT MISCELLANEOUS PARTS				
.	50053310	WARRANTY APPROVAL SHARP 29LF92E(IT)	AA	AA
.	50053312	FREQU./CHAN.TABLE SHARP 29LF92E(IT)AK45	AA	AB
.	20168627	LBL.CART.BOX SHARP 29LF92E(IT) "45"	AA	AC
.	50053313	LABEL APPROVAL SHARP 29LF92E(IT)AK45	AA	AC
.	20168629	LBL.BCK.CVR.SHA.EL.SHARP 29LF92E"45"	AA	AC
COMMON MISCELLANEOUS PARTS				
.	30001862	SOCKET IC 52P (SHRINK) (IC500)	AF	AQ
△ .	20146961	BACK CVR.2962 EKO2GRAY (I)	AT	BE
△ .	30028208	POWER CORD SAFE EURO 2.2M SHARP W/FILTER	AG	AT
.	20152919	SNOW BOX ASSY 2962	AH	AV
.	20146958	SNOW BOX TOP 2962	AE	AP
.	20146959	SNOW BOX BOTTOM 2962	AE	AP
.	20152921	BUTTON ASSY 2962 (M88/P)	AD	AM
.	20155351	BUTTON FUNCTION 2962 (M88/P)	AB	AF
.	35000013	SPRING ON/OFF SWITCH	AA	AB
.	40017674	LED LENS PRE-AMP XX64W (I)	AA	AD
.	20108124	BACK DOOR AK45/52 (I)	AC	AH
.	35000212	SCREW S C ZNSY YSMB 2.9*13	AA	AB
.	35000217	SCREW S C SYF YFMB 3.5*9.5	AA	AB
.	35005051	SCREW P C ZN RYSM 4x16 (HITACHI) (R:16)	AA	AB
.	35005084	SCREW C ZN RYAKB 6x30	AA	AB
.	35005418	SCREW P C ZN YSB 3.5x10 (KN1031 T35X10)	AA	AA
.	35008089	SCREW P C ZN YSMB 4*10	AA	AA
.	35008191	SCREW P C ZN YSMB 3*12	AA	AA
.	35009300	SCREW P C ZN FYSB 4x16 (D:11)	AA	AB
.	35010702	SCREW P C ZN YSB 4x20 (BEYAZ)	AA	AA
.	40000026	EJECTOR CLIP-CLAP	AC	AH
.	30013905	CNAS 2P/900 DIS W/BLKC+FER UL2547 AWG24	AB	AG
.	30027382	SPEAKER 7R 12W F/R 60x120MM-28&32" SHARP	AE	AP
.	40016872	SPEAKER BRACKET 286XW	AA	AE
.	35000136	FUSE HOLDER TK79-A (GRAY)	AA	AD
△ .	20155349	FRONT 2962 W/H SLV285S/M88(P)(PW)2U/S)	AT	BE

REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
.	20155352	CONTROL PANEL DOOR 2962 (M88/P)	AC	AH
.	20147023	BRACKET BF 2962 (I)	AA	AA
.	35008850	METAL WASHER XX6XW (SHARP)	AA	AB
.	35008850	METAL WASHER XX6XW (SHARP)	AA	AB
.	35009382	METAL WASHER (1.5x20) (SHARP)	AA	AA
.	35009471	METAL BRACKET 2962	AC	AK
.	40006731	ISOLATION COTTON (9x25000mm)	AA	AC
.	40016134	SPONGE SPEAKER BRACKET(2")	AA	AC
.	40017363	CABLE HOLDER 2162_SF SHARP	AA	AC
.	40018111	CABLE HOLDER(WIRE CLIP TA10-3)	AA	AC
.	40018612	RUBBER HOLDER 3.6 X 10 X 8.5	AA	AD
.	70000331	ADHESIVE TAPE 75MM/660M (4125)	AA	AB
.	30018087	CNAS 2P/350 TRFPFC DIS W/C	AA	AE
.	35000217	SCREW S C SYF YFMB 3.5*9.5	AA	AB
.	30000225	CAP CER 220PF 50V J SL	AA	AB
△	20140466	BRACKET CHS XX62-64W (I) V.0	AD	AM
.	30000285	CAP CER 1NF 100V KB	AA	AA
.	30007728	CABLE 1P R2.6 50 W/CLIPS	AA	AC
.	30000285	CAP CER 1NF 100V KB	AA	AA
.	30017312	CABL 1P/450 DIS UL1672AWG22	AA	AB
.	30000225	CAP CER 220PF 50V J SL	AA	AB
.	30009833	CABL 1P/100 SIS	AA	AB
.	40006432	MOUNTING BUTTON (MB-10)	AA	AB
.	30009005	IC 24C16	AF	AQ
.	20143026	R/C 1548 SHARP (EKO2GRAY/I) (GRAY/S)	AM	AY
.	50043776	LABEL LOT W/BARCODE (100X280) SHARP	AA	AC
.	20013018	LBL.BCK.CVR.ASSY (TV) (WO/UL)	AA	AB
.	50023173	LABEL LOT W/BARCODE (77X256)	AA	AC
.	40011046	WIRE SADDLE (PINGOOD CHF-8)	AA	AB
.	40017676	SPEAKER GRILL ASSEMBLY (R) 2962	AM	AY
.	40018356	LOGO SHARP (D.C.-SILVER) 29" RF	AD	AL
.	40018611	SPEAKER GRILL ASSEMBLY (L) 2962	AM	AY
B-B	30009834	CABL 1P/60 SIS	AA	AB
△	F100	FUSE SAFE 2.5A 250V 5*20MM	AA	AC
J344	30001996	FIXED COIL 22UH Q40 K	AA	AB
J388	30001971	FERRITE BEAT (805) BLM21A601S	AA	AD
JK100	30026584	TV JACK BOARD JXT1046	AG	AS
JK101	30001902	JACK HEADPHONE STEREO WO/SW	AC	AH
NOT	30011742	CABL 1P/25 SIS	AA	AB
PL100	30029258	CNAS 6P/150 TB FLT W/C UL2468AWG24	AA	AD
PL100	30001792	CONN HEADER 2P 7.5MM TOP WHT	AA	AC
PL101	30001838	CONN HEADER 3P 2.5MM TOP YELLOW SD	AA	AC
PL101	30001795	CONN HEADER 3P 5/7.5MM TOP WHT	AA	AC
PL101	30020137	CNAS 600 FAV SVHS W/DC+FER	AF	AQ
PL102	30020137	CNAS 600 FAV SVHS W/DC+FER	AF	AQ
PL102	30001830	CONN HEADER 2P 2.5MM TOP BLUE SD	AA	AB
PL102	30001792	CONN HEADER 2P 7.5MM TOP WHT	AA	AC
PL103	30020137	CNAS 600 FAV SVHS W/DC+FER	AF	AQ
PL103	30001792	CONN HEADER 2P 7.5MM TOP WHT	AA	AC
PL103	30001839	CONN HEADER 3P 2.5MM TOP GREEN SD	AA	AC
PL104	30001792	CONN HEADER 2P 7.5MM TOP WHT	AA	AC
PL104	30009317	CNAS 3P/700 FLT W/BLK C+FER UL2468AWG24	AC	AG
PL204	30010921	DOUBLE-DECK SCART SOCKET	AD	AM
PL206	30010039	CONN HEADER 8P 2.5MM TOP WHT	AA	AB
PL207	30001830	CONN HEADER 2P 2.5MM TOP BLUE SD	AA	AB
PL500	30001783	CONN HEADER 5P 2.5MM TOP BD	AA	AC
PL502	30001784	CONN HEADER 6P 2.5MM TOP BD	AA	AC
PL602	30001792	CONN HEADER 2P 7.5MM TOP WHT	AA	AC
PL602	30016483	CNAS 2P/600 HRZ DIS W/C UL1672AWG24	AA	AE
PL603	30001829	CONN HEADER 2P 2.5MM TOP WHT SD	AA	AB
PL603	30019083	CNAS 2P/600 SIS W/C+FER UL1007AWG24	AB	AF
PL604	30001850	CONN HEADER 6P 2.5MM TOP WHT SD	AA	AC
PL703	30001839	CONN HEADER 3P 2.5MM TOP GREEN SD	AA	AC
PL708	30001762	CONN HEADER 2P 2.5MM(9.7MM) TOP	AA	AC
PL709	30001764	CONN HEADER 2P 2.5MM(9.7MM) TOP BLACK	AA	AC
PL711	30001836	CONN HEADER 3P 2.5MM TOP BLACK SD	AA	AB

REF No.	PARTS	DESCRIPTION	SN CODE	EX CODE
△	PL901	SOCKET CRT SAFE NARROWNECK W/GND INCHANG	AA	AE
	PL902	30010039 CONN HEADER 8P 2.5MM TOP WHT	AA	AB
	PL902	30027546 CNAS 5P/350 SHL+3P/350 SIS RGB W/DC+FER	AD	AM
	PL903	30001850 CONN HEADER 6P 2.5MM TOP WHT SD	AA	AC
	PL903	30030432 CNAS 6P-4P/500+1P/850 SIS W/3C+FR UL1007	AA	AC
	PL904	35000176 EYELET BR 2*3MM	AA	AB
	PL905	35000176 EYELET BR 2*3MM	AA	AB
	PL905	35000135 TEST PIN 1.1MM	AA	AB
	PL909	35000176 EYELET BR 2*3MM	AA	AB
	PL909	35000135 TEST PIN 1.1MM	AA	AB
	S224	30000792 RES CF 1/4W 75R J	AA	AB
	S225	30012713 RES SMD 1/16W 75R J (0603)	AA	AB
	S226	30012713 RES SMD 1/16W 75R J (0603)	AA	AB
	S227	30012713 RES SMD 1/16W 75R J (0603)	AA	AB
	SG901	30000428 SPARK GAP 300V	AB	AG
	SG902	30000428 SPARK GAP 300V	AB	AG
	SG903	30000428 SPARK GAP 300V	AB	AG
	SG904	30000428 SPARK GAP 300V	AB	AG
	SG905	30021532 SPARK GAP 1500V	AC	AG
	SW100	30002181 SWITCH TACT(4)	AA	AC
	SW101	30002181 SWITCH TACT(4)	AA	AC
	SW102	30002181 SWITCH TACT(4)	AA	AC
	SW103	30002181 SWITCH TACT(4)	AA	AC
△	SW104	30017848 SWITCH SAFE ON/OFF 4A/128A JVC(PANASONI)	AC	AH
	SW104	40018112 BRACKET POWER SWITCH (PINGOOD HS-5)	AA	AC
△	TH101	30001268 THERMISTOR 3P	AD	AM

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