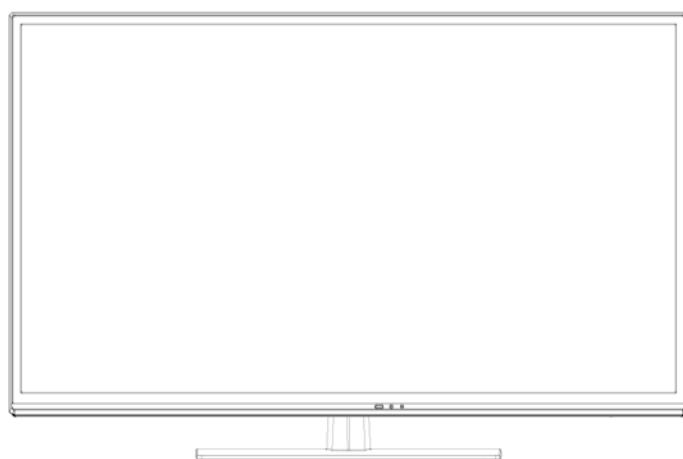


FILE NO

SERVICE MANUAL LED TV

TC-L39EM6X



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Attention: This service manual is only for service personnel to take reference with. Before servicing please read the following points carefully.

Safety precautions

1. Instructions

Be sure to switch off the power supply before replacing or welding any components or inserting/plugging in connection wire. Anti static measures to be taken (throughout the entire production process!):

- a) Do not touch here and there by hand at will;
- b) Be sure to use anti static electric iron;
- c) It's a must for the welder to wear anti static gloves.

Please refer to the detailed list before replacing components that have special safety requirements. Do not change the specs and type at will.

2. Points for attention in servicing of LED

2.1 Screens are different from one model to another and therefore not interchangeable. Be sure to Use the screen of the original model for replacement.

2.2 The operation voltage of LED screen is high voltage. Be sure to take proper measures in protecting yourself and the machine when testing the system in the course of normal operation or right after the power is switched off. Please do not touch the circuit or the metal part of the module That is in operation mode. Relevant operation is possible only one minute after the power is switched off.

2.3 Do not use any adapter that is not identical with the TV set. Otherwise it will cause fire or damage to the set.

2.4 Never operate the set or do any installation work in bad environment such as wet bathroom, laundry, kitchen, or nearby fire source, heating equipment and devices or exposure to sunlight etc. Otherwise bad effect will result.

2.5 If any foreign substance such as water, liquid, metal slices or other matters happens to fall into the module, be sure to cut the power off immediately and do not move anything on the module lest it should cause fire or electric shock due to contact with the high voltage or short circuit.

2.6 Should there be smoke, abnormal smell or sound from the module, please shut the power off at once. Likewise, if the screen is not working after the power is on or in the course of operation, the power must be cut off immediately and no more operation is allowed under the same condition.

2.7 Do not pull out or plug in the connection wire when the module is in operation or just after the power is off because in this case relatively high voltage still remains in the capacitor of the driving circuit. Please wait at least one minute before the pulling out or plugging in the connection wire.

2.8 When operating or installing LED please don't subject the LED components to bending, twisting or extrusion, collision lest mishap should result.

2.9 As most of the circuitry in LED TV set is composed of CMOS integrated circuits, it's necessary to pay attention to anti statics. Before servicing LED TV make sure to take anti static measure and ensure full grounding for all the parts that have to be grounded.

2.10 There are lots of connection wires between parts behind the LED screen. When servicing or moving the set please take care not to touch or scratch them. Once they are damaged the screen would be unable to work and no way to get it repaired.

If the connection wires, connections or components fixed by the thermo tropic glue need to disengage when service, please soak the thermo tropic glue into the alcohol and then pull them out in case of damage.

2.11 Special care must be taken in transporting or handling it. Exquisite shock vibration may lead to breakage of screen glass or damage to driving circuit. Therefore it must be packed in a strong case before the transportation or handling.

2.12 For the storage make sure to put it in a place where the environment can be controlled so as to prevent the temperature and humidity from exceeding the limits as specified in the manual. For prolonged storage, it is necessary to house it in an anti-moisture bag and put them altogether in one place. The ambient conditions are tabulated as follows:

Temperature	Scope for operation	0 ~ + 35 °C
	Scope for storage	-20 ~ + 60°C
Humidity	Scope for operation	20% ~ 80 %
	Scope for storage	10% ~ 90%

2.13 Display of a fixed picture for a long time may result in appearance of picture residue on the screen, as commonly called “ghost shadow”. The extent of the residual picture varies with the maker of LED screen. This phenomenon doesn’t represent failure. This “ghost shadow” may remain in the picture for a period of time (several minutes). But when operating it please avoid displaying still picture in high brightness for a long time.

3. Points for attention during installation

3.1 The front panel of LED screen is of glass. When installing it please make sure to put it in place.

3.2 For service or installation it’s necessary to use specified screw lest it should damage the screen.

3.3 Be sure to take anti dust measures. Any foreign substance that happens to fall down between the screen and the glass will affect the receiving and viewing effect

3.4 When dismantling or mounting the protective partition plate that is used for anti vibration and insulation please take care to keep it in intactness so as to avoid hidden trouble.

3.5 Be sure to protect the cabinet from damage or scratch during service, dismantling or mounting.

2. Alignment instructions

(1) Test equipment

VG-859 (YPbPr, VGA, HDMI signal generator)

FLUKE 54200(TV signal generator)

CA310 (white balancer)

(2) Power test

Connect main board, power board and IR board according the wiring diagram, connect the power and press power key (Remote controller or Keypad) button to turn on the TV.

a) Test the pin voltage of P802/power board , the data is shown in table1:

Table1 voltage data of P802

For 39"					
P802	Pin1,2	Pin3,4	Pin5,6,7	Pin8,9	Pin10,11
Voltage	GND	11.4V~12.6V	GND	11.4V~12.6V	4.75V~5.25V

For 39"				
Pin12	Pin13	Pin 14	Pin15	Pin16
On:2.5V~5.25V Off: 0~0.5V	Normal: 2.0~5V Abnormal :0~0.5V	On:2.5V~5.25V Off: 0~0.5V	Duty 5%~100%	NC

(3) Alignment flow-chart

The alignment flow-chart is shown as fig-1

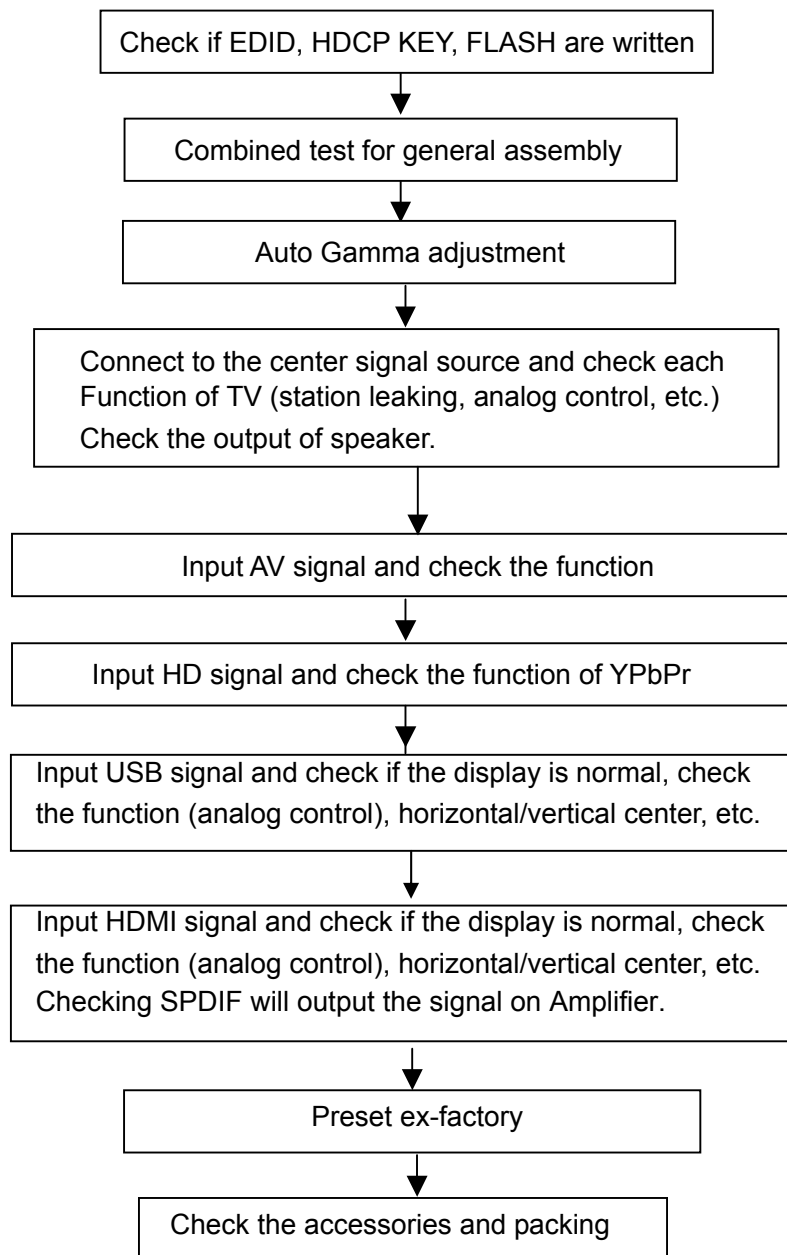


Fig-1 adjustment flow-chart

(4) Adjustment instruction

At any input source then press the “←”, “EXIT” and “OK” (using RC within 1 sec) to enter factory mode

During Factory menu, if “EXIT” key is pushed, system will exit factory mode.

4-1. Auto Gamma Adjustment & Check

4-2.1. Set into factory mode then choose Auto Gamma Adjust,

4-2.2. Press "2" "3" "2" "4" in turn within 1sec to enter the item, and push Init will self-generate gray pattern for adjusting.



4-2.3. Following the Cool spec as bellow.

Color	Cool	
x	100IRE	0.2662
	50IRE	0.2658
y	100IRE	0.2667
	50IRE	0.2654
Adjust Tolerance	±0.005	

(1) Adjust 100IRE

First, Decrease G to meet y spec(0.2667).

Second, Decrease R to meet x spec(0.2662).

(2) Adjust 50IRE

First, Decrease G to meet y spec(0.2654).

Second, Decrease R to meet x spec(0.2658).

Note: Do not adjust the B GAIN on both 100IRE and 50IRE.

When match the spec, pressing “Save” then exit the adjustment page.

(3) When match the spec, pressing right key in "Save" position then exit the adjustment page.

4-2.4. Exit Factory Mode:

After finish Gamma adjust press [EXIT] to exit factory mode.

(5) Items of Factory menu

When in any source, press the "Left -> Exit -> Enter" key of remote control can enter into factory mode.

During Factory menu, only "EXIT" key is pushed, system will exit factory mode.

Press up and down key can move high light item from Model Change -> Color Temp. Adjust -> Auto Gamma Adjust -> Timer Clear -> Preset Channel -> Full Power -> ADC Calibration -> Shipping reset -> Bypass Gamma -> Uart Enable -> I2C -> Boot Loader Upgrade -> V-Com Adjust -> SG Pattern.

Push "Enter" key can enter high light item function. (Press left and right can adjust value)

Display Model version, Release Date, firmware version and released date on the bottom.



1)Model ID

Press up or down key can select high light item function

Press enter or right key to enter the item.

It's only used for FW engineer.

2)Color Temp. Adjust

Press up or down key can select high light item function

Press enter or right key to enter the item.

It's only used for PQ engineer.

3)Auto Gamma Adjust

Press up or down key can select high light item function

Press enter or right key to enter the item.

It's only used for PQ engineer.

4)Timer Clear

Reset the timer which records hours of LED panel burn in

This item will have a check dialog "yes or no" to do or not.

- Time in factory mode: Time function shall be displayed automatically. Saving the total time of system power on (LED turn on), and count the time automatically. The timer is continuous and saved (per 10 minutes) forever, unless it will be reset by doing "Timer Clear".

5)Preset channel

Load preset channel for production line.

6)Full Power

This is for power consumption testing.

To measure the maximum power consumption of TV set, we adjust the value of following items to maximum.

- Video: Contrast maximum value, Brightness maximum value, Backlight maximum value.

- Audio: Volume maximum value, Bass default value, Treble default value.

Press enter key to turn on Full Power and OSD stay display until press enter key to recover from Full Power.

7)ADC Calibration

ADC Calibration function is reserved for calibration by hand (PQ engineer only).

8)Shipping reset

Reset all settings of OSD menu to default value.

Reset settings: Channel table, Model table (H/V Position, Clock, Phase), Source dependent setting (Contrast, Brightness etc.), Common setting (Volume, Language etc.), Parental Control (Rating, Password etc), Closed Caption.

9)Bypass Gamma

For factory test value of gamma.

10)UART Enable

Enable to communicate with Auto-Alignment system.

11)I2C

Enable to communicate with Eeprom burn-in tool.

12)Boot Loader Upgrade

For firmware downgrade used.

13)V-Com Adjust

It's reserved for BMS function.

14)SG Pattern

Aging is for factory burn in and PTN ID provides each pattern for tester using.

(6) Performance check

6-1 TV function

Connect RF to the center signal source, enter Channel menu → auto tuning, check if there are channels be skipped, check if the picture and speaker are normal.

6-2 AV terminals

Input Video signal, check if the picture and sound are normal.

6-3 YPbPr terminal

Input YUV signal (VG859 signal generator), separately input the YUV signals listed in table4 and check if the display and sound are normal at any situation (power on, channel switch and format convert, etc.)

Table4 YUV signal format

MODE	FREQ	PERIOD	SYNC POLARITY	PIXEL CLOCK	Display	SYNC WIDTH	BACK PORCH
	LINE(kHz) FRAME (Hz)	LINE (pixel) FIELD (lines)	LINE FIELD	(MHz)	LINE (pixel) FRAME (lines)	LINE (pixel) FRAME (lines)	LINE (pixel) FRAME (lines)
59.94Hz 720x480i	15.734	1716	Negative	27	1440	124	114
	59.94	525	Negative		480	3	15
59.94Hz 720x480P	31,469	858	Negative	27	720	62	60
	59.94	525	Negative		480	6	30
60Hz 1280x720P	45	1650	Positive	74.25	1280	40	220
	60	750	Positive		720	5	20
60Hz 1920X1080i	33.75	2200	Positive	74.25	1920	44	148
	60	1125	Positive		1080	5	15
60Hz 1920X1080P	67.5	2200	Positive	148.5	1920	44	148
	60	1125	Positive		1080	5	36

6-4 HDMI terminal

Input HDMI signal (VG859 signal generator), separately input the signals listed in table6 and check the display and sound (32 KHz, 44.1 KHz, 48 KHz) at any situation (power on, channel switch and format convert, etc.)

Table6 HDMI signal format

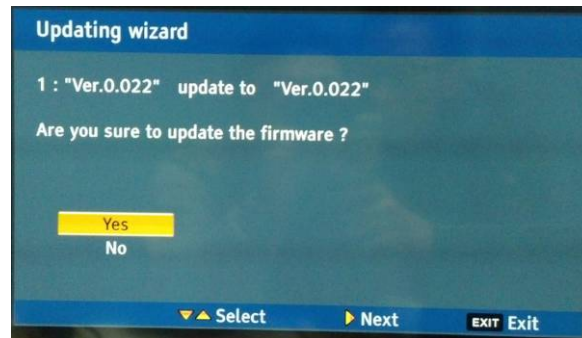
HDMI 1/2/ DVI Timing Table	FREQ	FREQ	PERIOD	SYNC POLARITY	PIXEL CLOCK	Display	SYNC WIDTH	BACK PORCH
	MODE	LINE(kHz) FRAME(Hz)	LINE (pixel) FIELD(lines)	LINE FIELD	(MHz)	LINE (pixel) FRAME (lines)	LINE (pixel) FRAME (lines)	LINE (pixel) FRAME (lines)
	640x480	31.47 59.94	800 525	Negative Negative	25.175	640 480	96 2	48 33
	800x600	37.88 60.32	1056 628	Positive Positive	40	800 600	128 4	88 23
	1024x768	48.36 60	1344 806	Negative Negative	65	1024 768	136 6	160 29
	1280x768 (1280cvt)	47.4 59.99	1440 790	Positive Negative	68.25	1280 768	32 7	80 12
	1280x768	47.78 59.87	1664 798	Negative Positive	79.5	1280 768	128 7	192 20
	1280x1024	63.98 60.02	1688 1066	Positive Positive	108	1280 1024	112 3	248 38
	1360x768	47.71 60.02	1792 795	Positive Positive	85.5	1360 768	112 6	256 18
	1366x768	47.71 59.79	1792 795	Positive Positive	85.5	1366 768	112 6	256 18
	1920x1080	67.5 60	2200 1125	Positive Positive	148.5	1920 1080	44 5	148 36
	59.94Hz 1440x480i	15.73 59.94	1716 262.5	Negative Negative	27	1440 480	124 3	114 15
	59.94Hz 720x480P	31.47 59.94	858 525	Negative Negative	27	720 480	62 6	60 30
	60Hz 1280x720P	45 60	1650 750	Positive Positive	74.25	1280 720	40 5	220 20
	60Hz 1920X1080i	33.75 60	2200 562.5	Positive Positive	74.25	1920 1080	44 5	148 15
	24Hz 1920x1080P	27 24	2750 1125	Positive Positive	74.25	1920 1080	44 5	148 36
	30Hz 1920x1080P	33.75 30	2200 1125	Positive Positive	74.25	1920 1080	44 5	148 36
	60Hz 1920X1080P	67.5 60	2200 1125	Positive Positive	148.5	1920 1080	44 5	148 36

6-5 other functions check

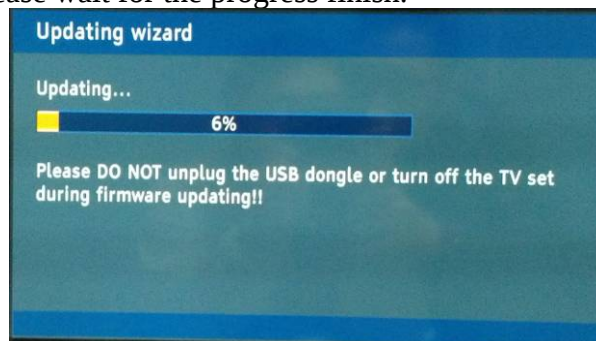
a) Check the sleep timer, picture/sound mode, OSD, stereo and analog TV Teletext, etc.

(7) Firmware update process

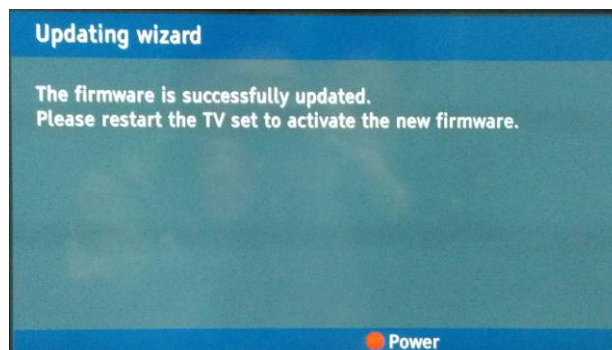
- (1) Plug the USB with the firmware file named upgrade_2013_NA_60.pkg
- (2) If system detect upgrade_2013_NA_60.pkg, USB upgrade message would appear automatically.
- (3) Press Up key to select Yes, and then press OK key to start the upgrading.



- (4) Upgrading is starting, please wait for the progress finish.



- (5) When the progress completed, please follow the instruction to remove USB and restart Power off then on.



Working principle analysis of the unit

1. NTSC signals flow:

Antenna signal will be sent to tuner TDST-H021F, then the Tuner will be demodulating and output standard video signal TV-CVBS, and sound SIF signal.

TV-CVBS will be sent to the master control IC MT5385 to video decode, de-interlace and scaler, then output LVDS level drive for panel display.

The sound IF (SIF) will be fed into MT5385, after demodulating, pre-amplifying, bass adjusting and volume control, the sound signal will be transformed into digital I2S signal and sent to digital amplifier TAS5707.

2. Composite/Component signal flow

Composite signal and Component signal will be fed to MT5385 to perform video decode, de-interlace and scaler, then output LVDS drive level for panel display.

Audio signal from Composite/Component terminal via matched resistance is fed to MT5385 to bass adjust and volume control, the sound signal will be transformed into digital I2S signal and sent to digital amplifier TAS5707.

3. HDMI signal flow

Two HDMI video signals are directly fed to the master control IC MT5385 to digital decode, image scale, then output LVDS drive level for panel display. HDMI audio signal via decoder built-in MT5385 to bass adjust and volume control, the sound signal will be transformed into digital I2S signal and sent to digital amplifier TAS5707.

4. USB signal flow

USB signal via USB connector sent to MT5385 and its A/D conversion to YPbPr output for MT5385, then output R/G/B of 24 bit to back end module to video decode, de-interlace and image scale, then send to LVDS level drive for panel display.

Sound signal of USB signal via matched resistance and sent to MT5385 to bass adjust and volume control, the sound signal will be transformed into digital I2S signal and sent to digital amplifier TAS5707.

5. SPDIF signal flow

The master control IC MT5385 will transfer digital sound signal out by format Dolby Digital or PCM.

4. Specifications

Specifications

Power rating

AC 110-127 V, 60 Hz

Rated Power Consumption

39" : 56 Watts

Standby condition

39" : 0.3 Watts

Visible screen size (diagonal)

39" class : 38.5inch (98cm)

Number of pixels

39" FHD (1920X1080)

Dimensions (W × H × D) (Including Stand)

39" : 35.1" × 23.4" × 8.6" (890 mm × 593 mm × 217 mm)

Net Weight

39" : 27.6lb. (12.5kg) (Including Stand)

39" : 24.3lb. (11 kg) (TV only)

Sound System

1-way 2 bottom SP System

Channel Capability-ATSC/NTSC (Digital/Analog)

VHF/UHF: 2 - 69, CATV: 1 - 135

Sound Output

39" : 10W+10W

Maximum Visible Range

39" : 33.7" × 19.0" (857 mm x 482 mm)

Operating Conditions

Temperature: 32° F - 95° F (0°C to 35°C)

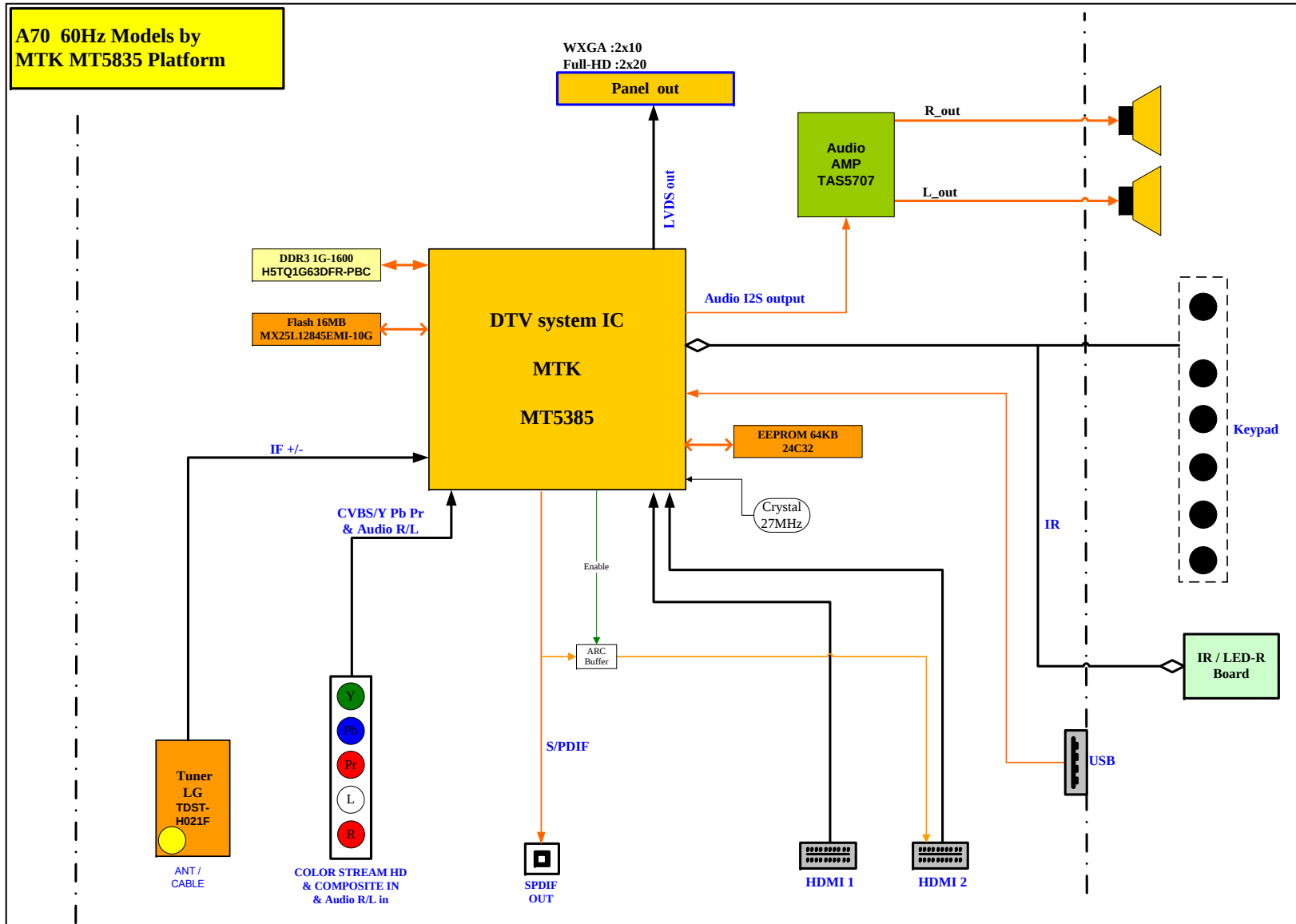
Humidity: 20 % - 80 % RH (non-condensing)

- Specifications are subject to change without notice.
- The On-Screen Menu and figures in this manual may differ slightly from the product.
- USB Flash Memory format : FAT16, FAT32 (no support exFAT or NTFS).
- Some USB devices (USB HUB or card adapter) or some USB stick may not be used with this TV.

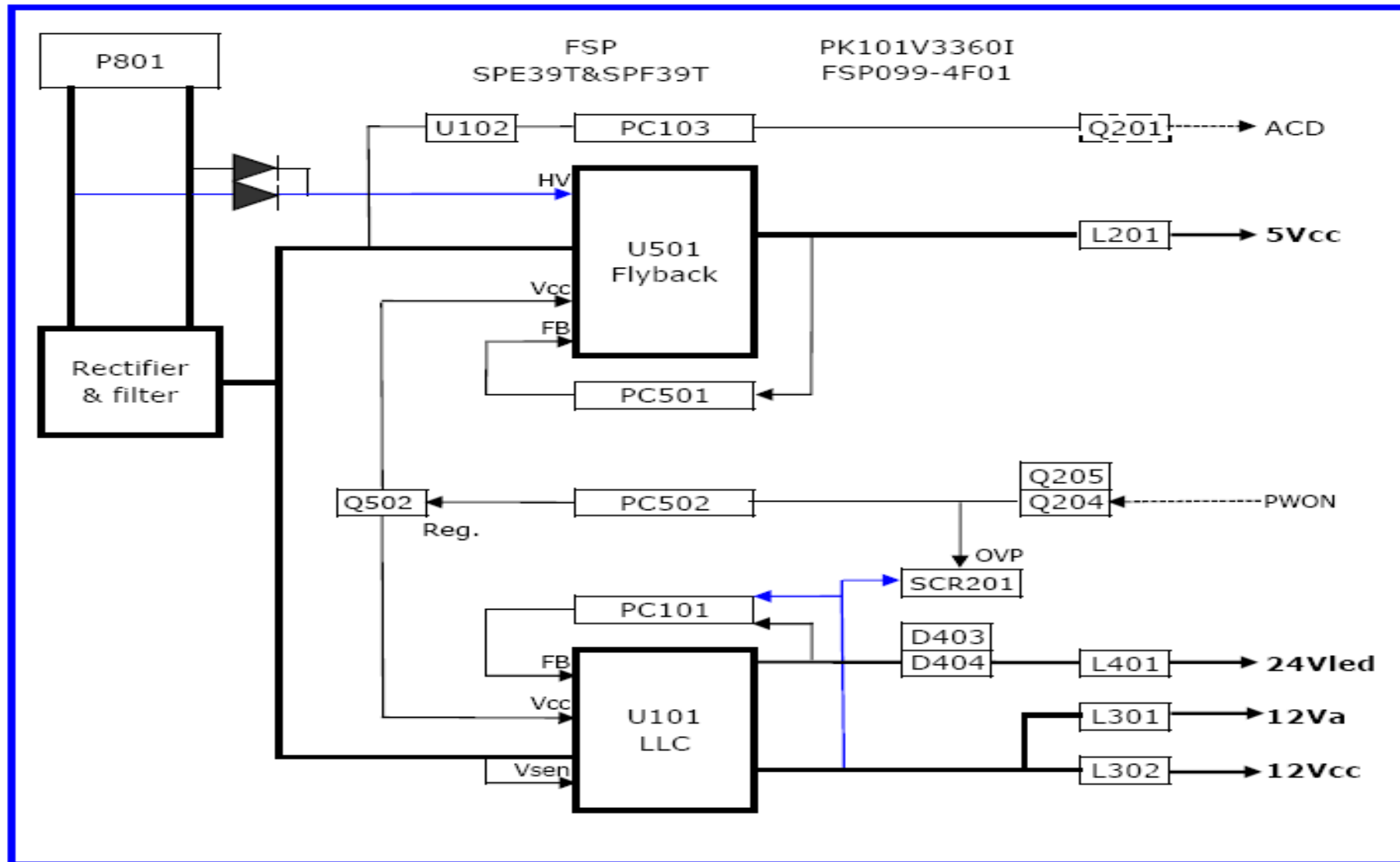
SPE39T 39" Block Diagram

5-1 Block Diagram

EE:



Power Board: FSP



[illegible]

IC block diagram

1. MT5385

GENERAL FEATURE LIST

Host CPU

- ARM11 single core 700MHz
- Floating Point Unit
- 16K I-Cache and 16K D-Cache for ARM11 core
- 128K L2 Cache
- Boot ROM
- Boot from serial flash, NAND flash
- Supports security boot
- JTAG ICE interface
- Watch Dog timers

General Copy Protection Unit

- Supports CPPM/CPRM
- Supports AES with 128/192/256 bit key
- Supports AACS
- Supports DES/3DES
- Supports SHA-1/224/256
- Supports MD5
- Supports CSS
- Supports RC4
- Random number generator

MPEG1 Decoder

MPEG2 Decoder

- MPEG MP@ML, MP@HL
- Supports de-blocking filter
- Full-HD 30P dual decoder

MPEG4 Decoder (option)

- ASP@L5
- Full-HD 30P dual decoder

H.264 (MPEG4.10 / AVC) HD Decoder (option)

- MP@L4.0, HP@L4.0, constrained BP@L3 video standard
- Full-HD 30P dual decoder

VC-1 (SMPTE421M) Decoder (option)

- MP@HL, AP@L3
- WMV9 decoder MP@HL
- Full-HD 30P dual decoder

DivX (XviD) Decoder (option)

DIVX3 / DIVX4 / DIVX5 / DIVX6 / DIVX HD
 Full-HD 30P dual decoder
 AVS Decoder (option)
 Jizhun profile @Level 6.2 (supports 4:2:0 format)
 Full-HD 30P dual decoder
 RMVB Decoder (option)
 RealVideo8/9/10
 Full-HD 30P dual decoder
 VP6 Decoder (option)
 VP8 Decoder (option)
 Supports 3D side-by-side Full-HD contents
 Full-HD 30P dual decoder

MVC
 H.264 stereo high profile Full-HD 60fps

Still Image decoding
 JPEG decoder (base-line or progressive), hardware accelerator
 BMP/PNG/JIF decoder

De-mosquito engine
 For all AV inputs

2D Graphics
 Supports multiple color modes
 Point, horizontal/vertical line primitive drawings
 Rectangle fill and gradient fill functions
 Bitblt with transparent options
 Alpha blending and optional pre-multiplied alpha composition Bitblt
 Stretch Bitblt
 YCbCr to RGB color space conversion
 Supports index to direct mode bitblt

Image Resizer
 Supports 16bpp/32bpp direct color format
 Supports 420/422 video format
 Supports 420/422/444 JPEG format
 Arbitrary ratio vertical/horizontal scaling of video, from 1/128X to 128X
 Simple DMA
 Supports MMU in OSD mode

OSD Plane
 Three linking list OSDs with multiple color mode and all of them have
 up-scaler
 Supports stereo OSD

Video Plane

- Supports video freeze and over scan
- Flesh tone management
 - Gamma correction
- Color Transient Improvement (CTI)
- 2D Peaking
- Saturation/hue adjustment
- Brightness and contrast adjustment
- Black and White level extender
- Adaptive Luma management
- Automatic detect video, film and mixed-mode source
- 3:2/2:2 pull down source detection
- Supports FHD motion-adaptive de-interlace
- Supports excellent low angle image processing
- Brilliant boundary shaping for moving object
- Advanced non-linear panorama scaling
- Programmable zoom viewer
- Progressive scan output
- Supports alpha blending for OSD on video plane
- Dithering processing for flat panel display
- Frame rate conversion
- Supports FHD panel and VGA dot-to-dot
- Supports PIP/POP, (dual de-interlace, one HD and one SD)

OD (option)

- Supports 60Hz Full-HD and WXGA panel over drive

TCON (option)

- Flexible timing control with programmable timing
 - Horizontal timing control
 - Vertical timing control
 - Multi-line timing control
 - Multi-frame timing control
- Supports gate power modulation timing
- Supports command-based timing
- Supports POL inversion every 30 seconds
- Supports 1/2/4/8 frame inversion, 1-line inversion, 2-line inversion, and could up to 255-line dot inversion

Local Dimming

- Block division: up to 800 total blocks, up to 100 horizontal blocks
- Supports 50K ~ 50M SPI clock rate

LVDS

Supports 6/8/10-bit one-link, 6/8/10-bit dual-link LVDS transmitter
Built-in spread spectrum for EMI performance
Programmable panel timing output

Mini-LVDS

Dual port 8-bit 6 pairs mini-LVDS output

CVBS In

On-chip 54 MHz 10-bit video ADC
Supports PAL (B,G,D,H,M,N,I,Nc), NTSC, NTSC-4.43, SECAM
NTSC/PAL supports 3D/2D comb filter
Built-in motion-adaptive 3D Noise Reduction
VBI data slicer for CC/TT decoding
Supports 1 S-Video
Supports 2 1-channel CVBS
Supports SCART connector

VGA In

Supports VGA input up to UXGA 162 MHz
Supports full VESA standards

Component Video In

Supports 2 component video inputs
Supports 480i / 480p / 576i / 576p / 720p / 1080i / 1080p

Audio ADC

Supports 3 pair L/R input

Audio digital input

Supports 1 bit (2 channel) I

2

S audio input

HDMI Receiver

Two channel HDMI1.4a
Maximum data rate can be up to 3.3 GHz
Audio return channel
EIA/CEA-861 B
CEC

Video bypass

ATV bypass
CVBS Monitor (any AV or S-video input)

TV audio demodulator

Supports BTSC / EIA-J / A2 / NICAM / PAL FM / SECAM world-wide
formats
Standard automatic detection

Stereo demodulation, SAP demodulation
Mode selection (Main/SAP/Stereo)

Audio DAC

Supports 2-pair audio DACs

DRAM Controller

16-bit DDR2/DDR3 interface

Supports DDR2 1066Mhz, DDR3 1333Mhz

Supports 512Mb or 1Gb or 2Gb DDR2 and DDR3 DRAM device

Supports DDR2-1066/DDR3-1333/DDR3-1600 device

Audio DSP

Supports AC-3 (Dolby Digital) decoding (ATSC) and E-AC3 (Dolby Digital Plus) decoding (option)

MPEG-1 layer I/II decoding

Supports WMA / HE-AAC (option)

Support Dolby DDCO, and MS10 (option)

Dolby Prologic II (option)

Audio output: 5.1ch + 2ch (down mix) + 2ch(bypass)

Pink noise and white noise generator

Equalizer

Bass management

3D surround processing with virtual surround

Audio and video lip synchronization

Supports bass/treble

Automatic volume control

Supports 5-bit (10-channel) main audio I

2

S output interface, each of these channels is up to 24-bit resolution

S/PDIF interface

Supports SPDIF in bypass

SPDIF out

Analog TV IF Demodulator

Supports world-wide analog TV standard

Accept direct IF and low IF

Full digital AGC control and carrier recovery

Embedded SAW filter and IF Amplifier. Cost effective TV front-end

structure and no more cost on:

External analog SAW filters (Video/Audio)

External analog IF demodulator

External peripheral circuit on CVBS signal data path

External SAW filter and IF VGA on tuner

Digital TV (ATSC / Open-Cable) Demodulator

- Compliant with ATSC digital television standard
- Supports SCTE DVS-031 and ITU J.83 Annex B digital CATV standard
- Accept direct IF (44 MHz or 43.75 MHz) and low IF (5.38 MHz)
- NTSC interference rejection capability
- Meet all ATSC/A74 requirements
- Excellent adjacent and co-channel rejection capability
- Dual digital AGC controls for IF and RF, respectively
- Full-digital frequency offset recovery with wide acquisition range 500KHz for ATSC and 250 kHz for CATV reception
- EIA/CEA-909 antenna interface, both mode A and mode B are supported
- Embedded SAW filter and IF Amplifier. Cost effective TV front-end structure and no more cost on:
 - External analog IF demodulator
 - External SAW filter and IF VGA on tuner

Peripherals

- Seven basic serial interfaces: one is for the tuner, three are the masters for general purpose and two of them can be active in standby mode, one is the slave for VGA DDC, the other two extra slave serial interfaces used for HDMI EDID data

- Five PWMs, two of them can be active in standby mode
- IR receiver
- Real-time clock and watchdog controller
- Built-in 2-link USB2.0/1.1, both of them support external hub with 16 endpoints.

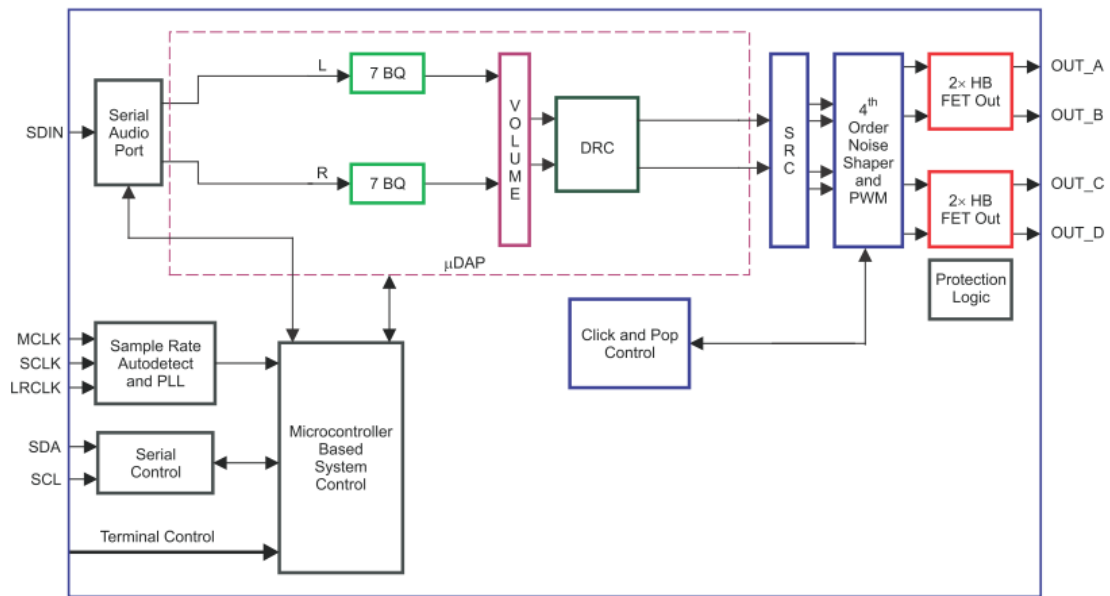
- Built-in uP for standby mode
- Supports SDIO interface
- Supports smart card interface
- Supports two serial flash or one serial and one NAND flash
- Supports 2-input low-speed ADC
- Supports boundary scan (JTAG)

IC Outline

- LQFP Package 216 pins with E-pad
- 3.3V/1.2V and 1.8V for DDR2 or 1.5V for DDR3

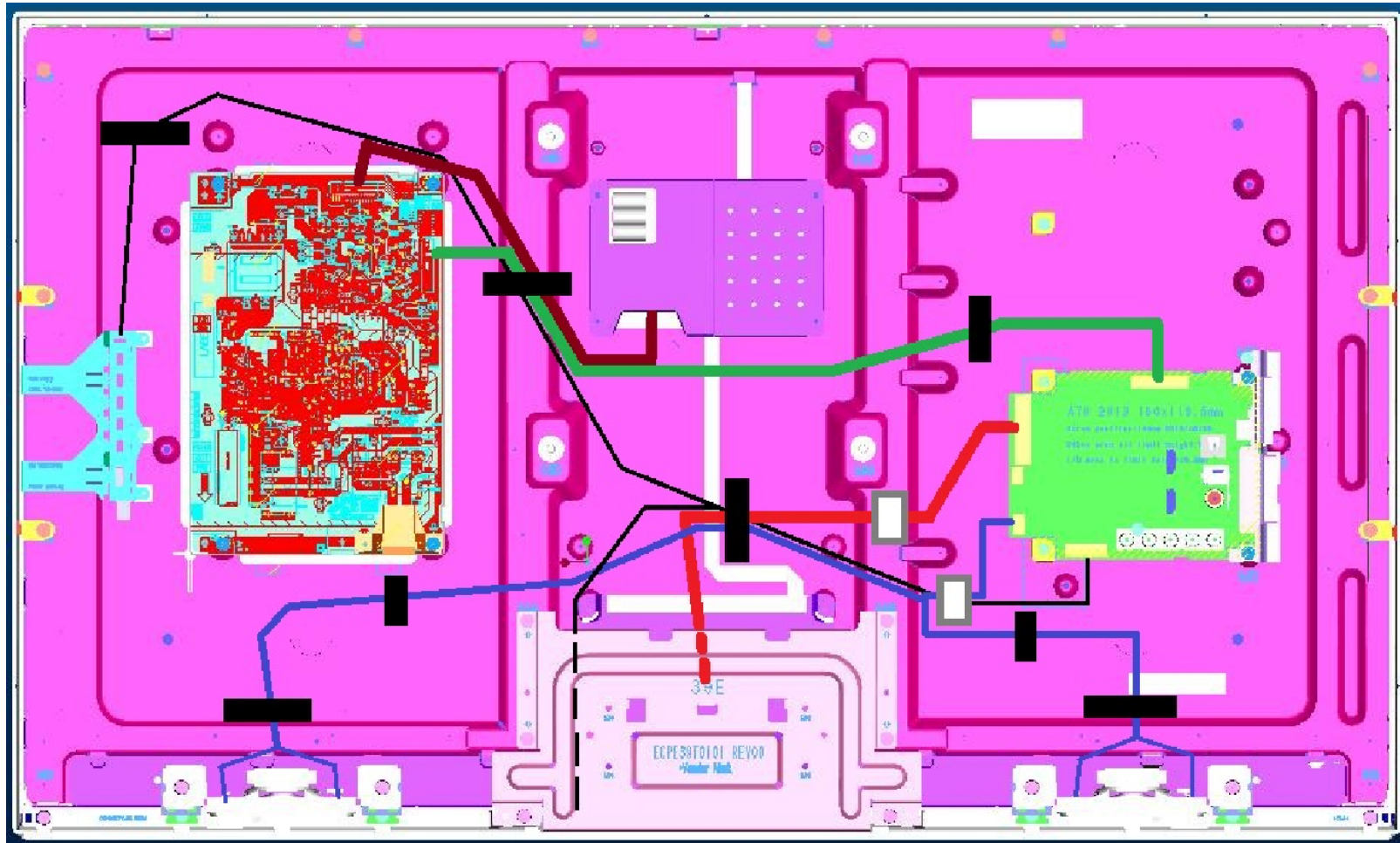
2. TI TAS5707

20-W STEREO DIGITAL AUDIO POWER AMPLIFIER WITH EQ AND DRC



SPE39T 39-inch Wiring Diagram

7-1 BLOCK



7-2 Wiring Connection

CMi panel

Main board to Panel				
SPE39T DC02L00720I 500 mm				
Panel side			Main board CN1	
PKS24020P51		LVDS cable	JWT A2006H00-2X20P	
1	NC	NC		
2	NC	NC		
3	NC	NC		
4	NC	NC		
5	NC	NC		
6	NC	NC		
7	SELLVDS	Yellow	28	LVDS_SEL
8	NC	NC		
9	NC	NC		
10	NC	NC		
11	GND	NC		
12	ORX0-	White	40	TX_AO0N
13	ORX0+	Black	39	TX_AO0P
14	ORX1-	White	38	TX_AO1N
15	ORX1+	Brown	37	TX_AO1P

Main board to Speaker				
SPE39T DC02A00160I L:280 & R:480 mm				
Main board CN4			Speaker	
JWT A2001WR2-4P		Color	Right	
1	SPK_OUTL+	Red	P3	Speaker +
2	SPK_OUTL-	Black	P2	Speaker -
				Left
3	SPK_OUTR-	Green	P5	Speaker -
4	SPK_OUTR+	White	P4	Speaker +

Main board to IR board/ Key				
SPE39T DC02V04170I IR:500 mm & Key:900mm				
IR board CN1			Main board CN3	
JWT A2001WR2-11P		Color	JWT A2001WR2-5P	
1	VCC3V3_STB	Red	1	VCC5_0_STB
2	IRR	White	2	IRR

16	ORX2-	White	36	TX_AO2N
17	ORX2+	Red	35	TX_AO2P
18	GND	Black	15	GND
19	OCLK-	White	34	TX_AOCKN
20	OCLK+	Orange	33	TX_AOCKP
21	GND	Black	16	GND
22	ORX3+	White	32	TX_AO3N
23	ORX3-	Yellow	31	TX_AO3P
24	NC	NC		
25	NC	NC		
26	NC	NC		
27	NC	NC		
28	ERX0-	White	12	TX_AE0N
29	ERX0+	Black	11	TX_AE0P
30	ERX1-	White	1	TX_AE1N
31	ERX1+	Brown	9	TX_AE1P
32	ERX2-	White	8	TX_AE2N
33	ERX2+	Red	7	TX_AE2P
34	GND	Black	17	GND
35	ECLK-	White	6	TX_AECKN
36	ECLK+	Orange	5	TX_AECKP
37	NC	Black	18	GND
38	ERX3-	White	4	TX_AE3N
39	ERX3+	Yellow	3	TX_AE3P

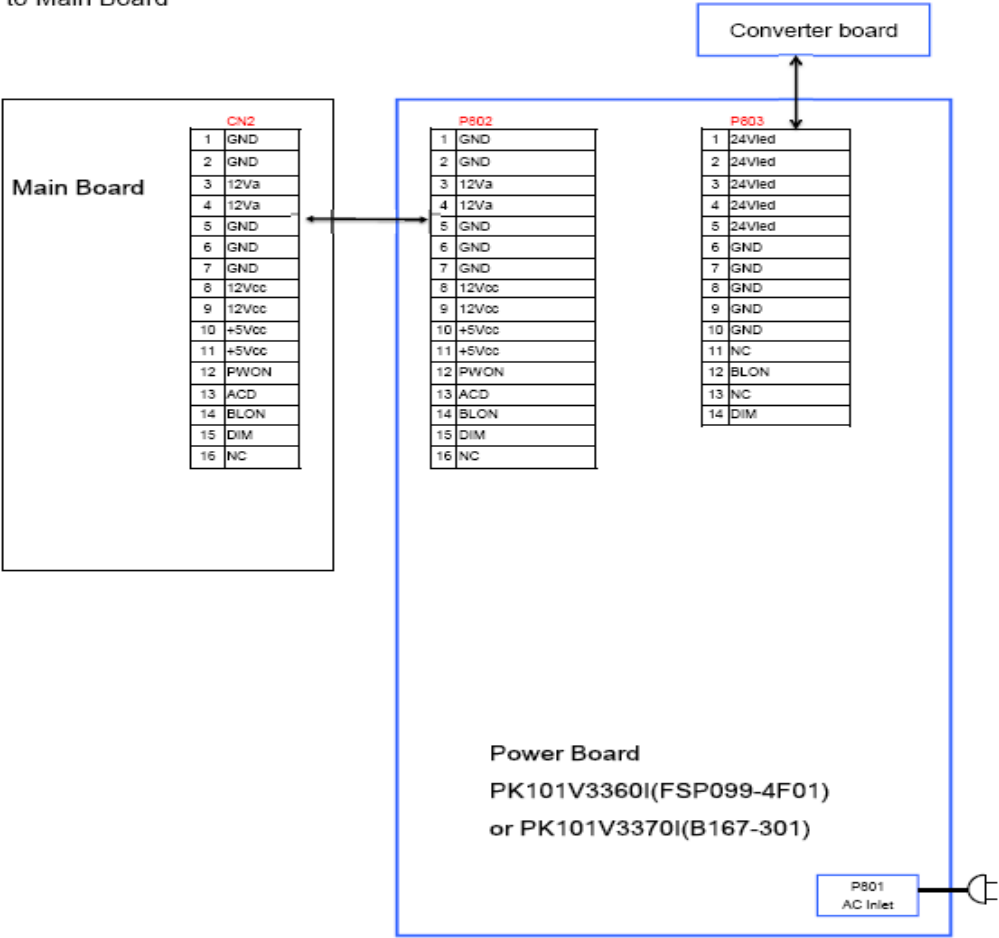
3	GND	Black	3	GND
4	LED_G	Orange	4	LEDG
		NC	5	LEDR
		NC	6	Light_S_C
		NC	7	Light_S_D
1	GND	Black	8	GND
2	Power	Red	9	Power Key
3	SAR0	Orange	10	SAR0
4	SAR1	Yellow	11	SAR1

40	NC	NC		
41	NC	NC		
42	GND	NC		
43	GND	NC		
44	GND	Black	25	GND
45	GND	Black	26	GND
46	GND	Black	27	GND
47	NC	NC		
48	VCC	Red	19	LVDS_PWR
49	VCC	Red	20	LVDS_PWR
50	VCC	Red	21	LVDS_PWR
51	VCC	Red	22	LVDS_PWR

Main board to Power board:

SPE39T&SPF39T Interconnect

Power to Main Board



8. Trouble shooting

1. Fault clearance

Before calling your dealer or service center for assistance, check the matters below once again.

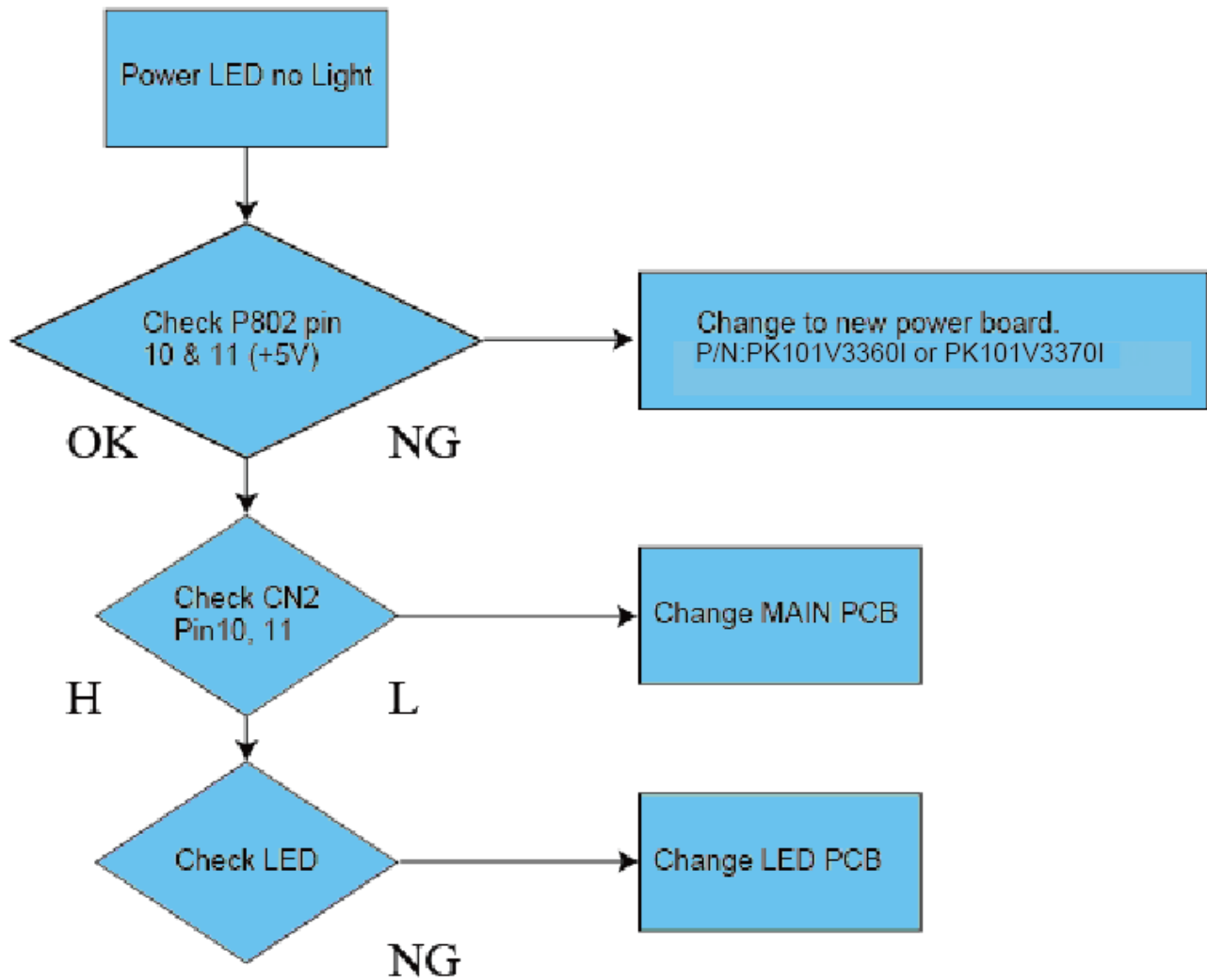
- (1) Make sure you have connected LED TV to your equipment as described in the section "CONNECTING LED TV".
- (2) Check cable connection. Verify that all external equipment and power cord are properly connected.
- (3) Verify that all power is switched on.
- (4) If LED TV still does not produce an image, re-start the external equipment.
- (5) If the image still does not appear, unplug LED TV from the external equipment and check the external equipment. The problem may be with your graphics controller rather than with LED TV. (When you reconnect LED TV, remember to turn the external equipment and TV off before you power up LED TV. Power the equipment back on in order of LED TV and external equipment.)
- (6) If the problem still exists, check the following chart.

Problem	Try these Solutions
NO POWER	• Plug this LED TV into the AC outlet. • Press POWER button on side control or on Remote Control to turn on LED TV. • Check POWER Indicator. If this indicator blank, this TV has getting trouble.
Remote Control does not work	• Check the batteries. • Make sure nothing is between the Remote Receiver and the Remote Control. • Make sure you are not too far from LED TV when using Remote Control. • Maximum operating range is 5m. • Is direct sunlight or strong artificial light shining on LED TV's Infrared Remote Receiver? Eliminate the light by closing curtains, pointing the light in a different direction, etc.
No image	• Check the connection between the external equipment and LED TV. • When turning LED TV on, it takes within 7 seconds (ATV mode) to display the image. • Check the system that you select is corresponding with the external equipment or the video equipment. • Make sure the temperature is not out of the Operating Temperature (0°C ~ 40°C). • Turn off power, then turn on again, re-start LED TV.
No sound	• Check Audio cable connection from Audio input source. • Adjust the Sound System. • Press VOLUME (+) button. • Press MUTE button.
There are tiny black points and/or bright point on the TV	• Dark or bright points of light (red, green, or blue) may appear on the screen. This is a characteristic of the LED panel, not a malfunction of the LED TV. • LED panel is produced with very high accuracy technology. There is 99.99% or more dot pixel, but there is also 0.01 % or less of dot pixel lack or dot pixel that is constantly lighted. This is not defect. • Regarding LED panel characteristic, it may occur picture remain (look like a mirror) when the screen is changed if it displays same screen for a long time. Changing the picture or turn-off the power supply may recover. • Stripe pattern (more, interference stripes) may show up on the screen depends on the reflected picture.
Abnormal color of image	• Adjust the value of color. • Select different color system.

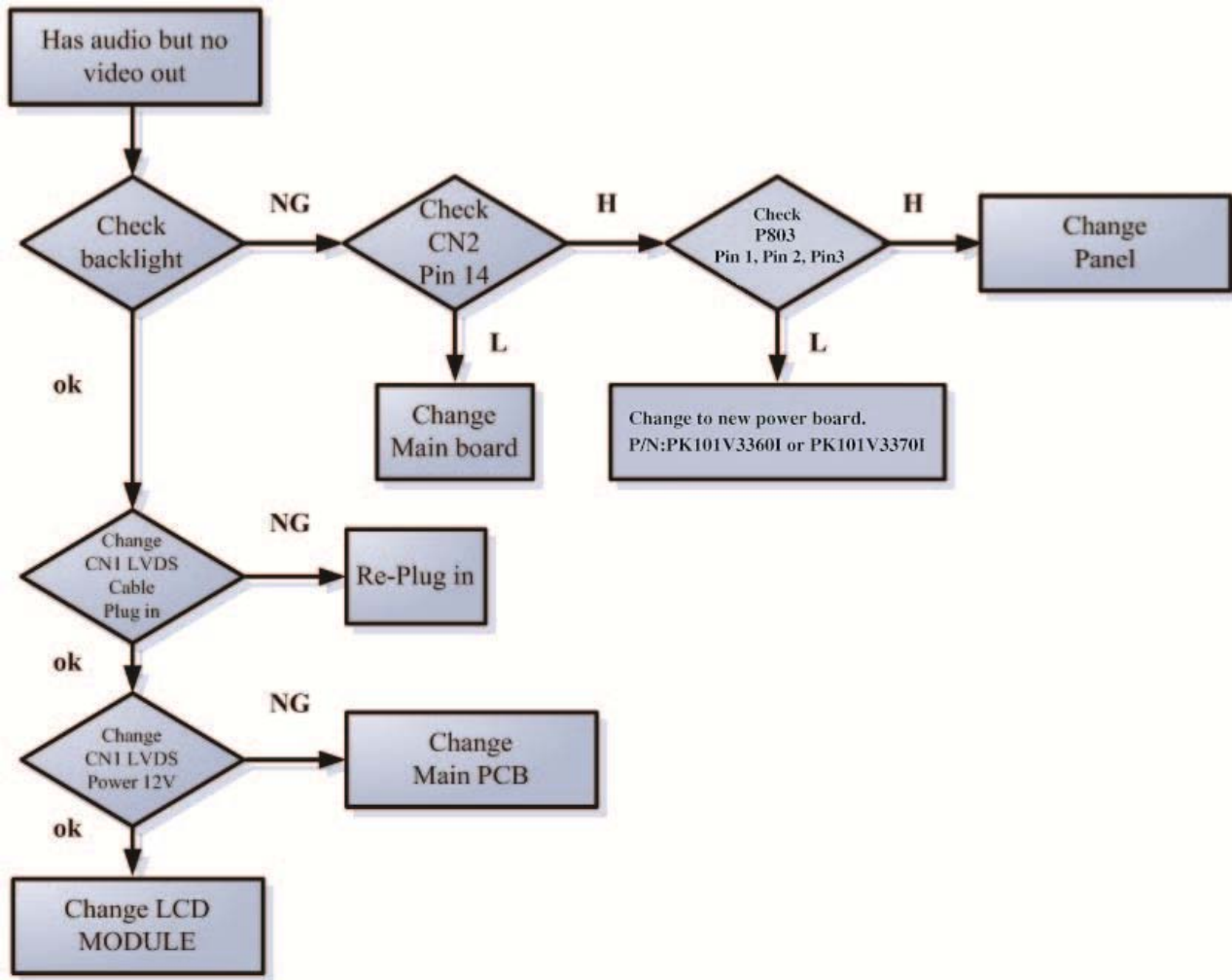
2. Troubleshooting guide

The flow chart shown below will help you to troubleshoot your Television set with it doesn't display normally. Each procedure offers a simple way to check for system errors. Before starting, ensure that there is a signal in and that the Television is turned on.

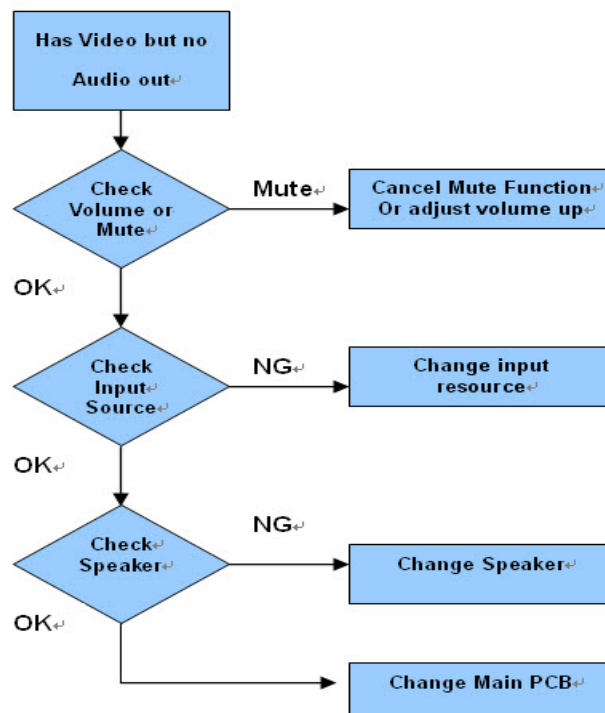
2-1 Power LED no light



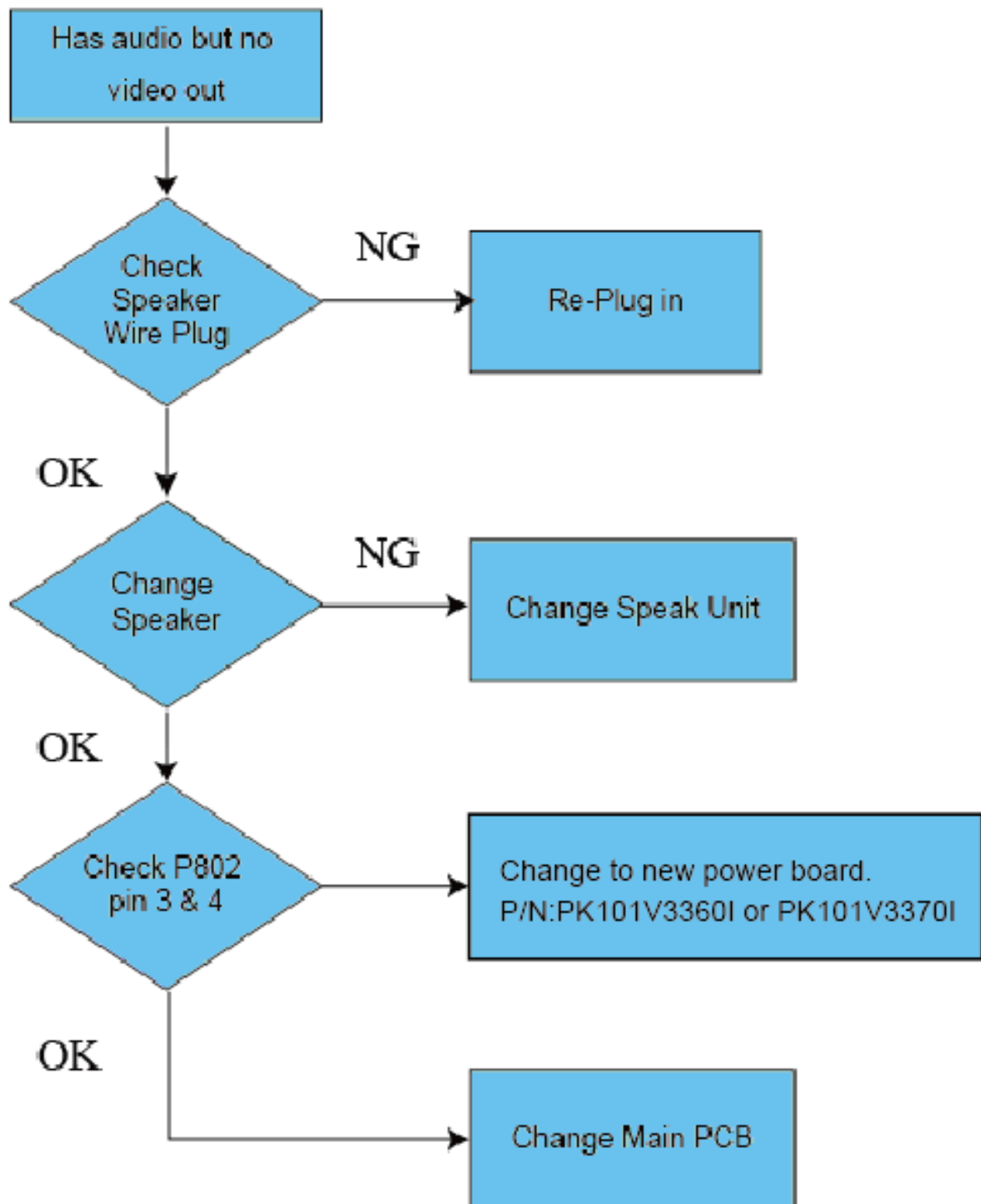
2-2 Has audio but no video out



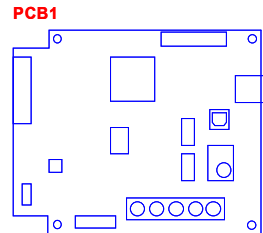
2-3 Has video but no audio out step 1



2-4 Has video but no audio out step 2



9. SCHEMATIC DIAGRAM --ELECTRON



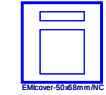
VTV-L32616 REV.1

FW1

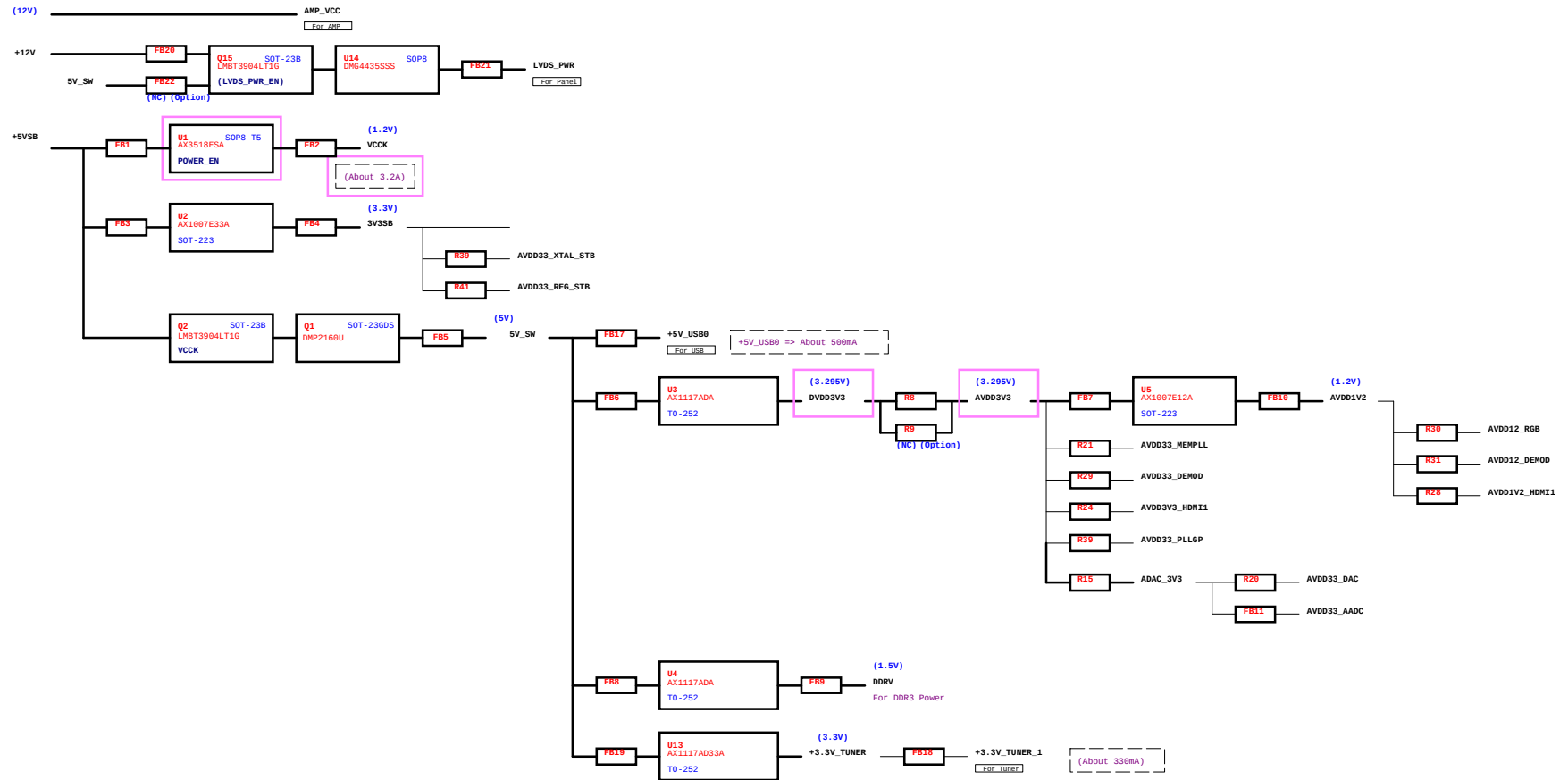
FIRMWARE

FW L32616

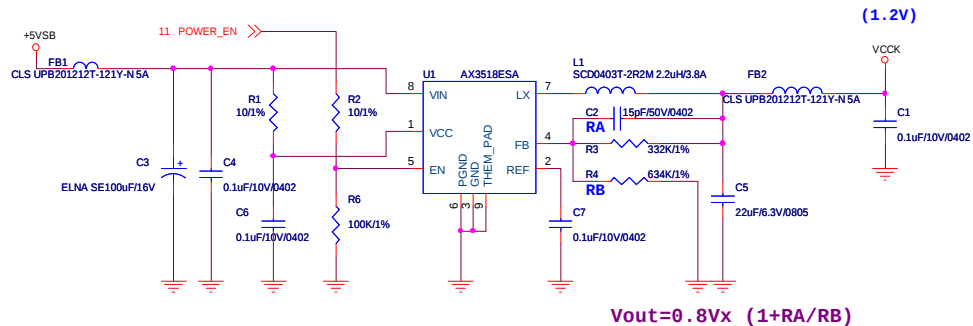
E1



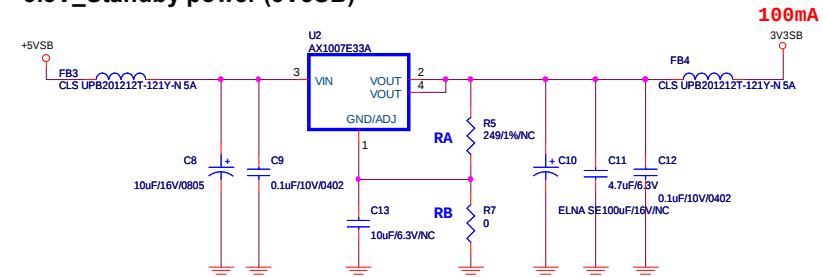
MT5385 Power Tree



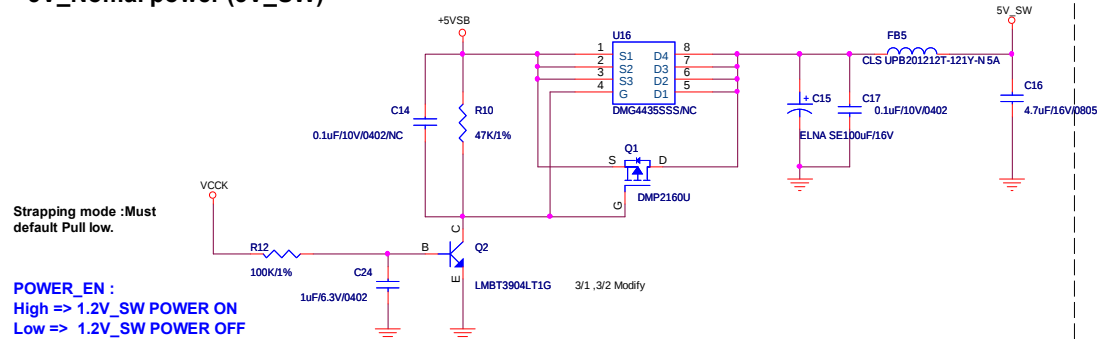
Buck Converter 4A



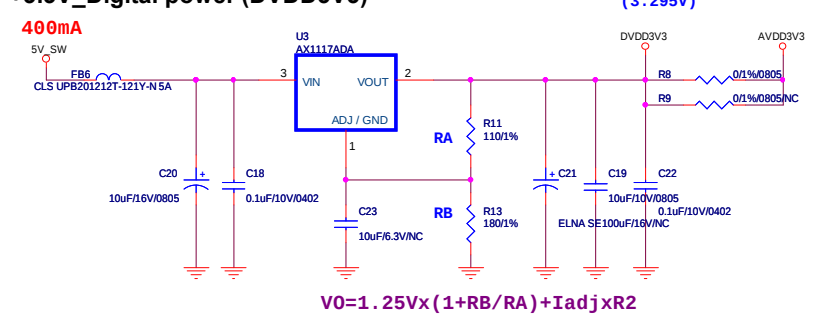
+3.3V_Standby power (3V3SB)



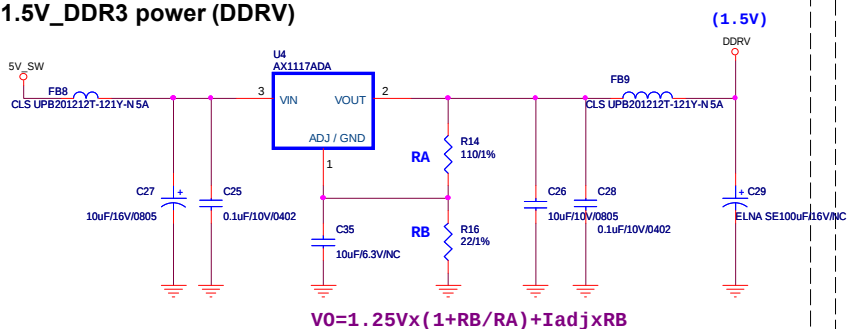
+5V_Nomal power (5V_SW)



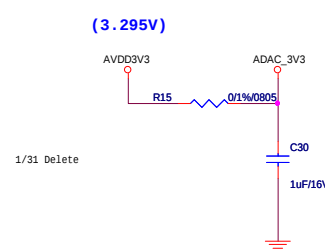
+3.3V_Digital power (DVDD3V3)



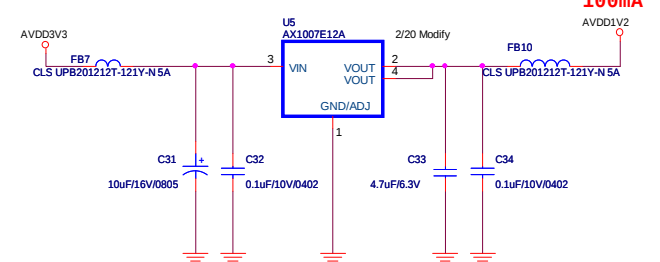
+1.5V_DDR3 power (DDR3V)

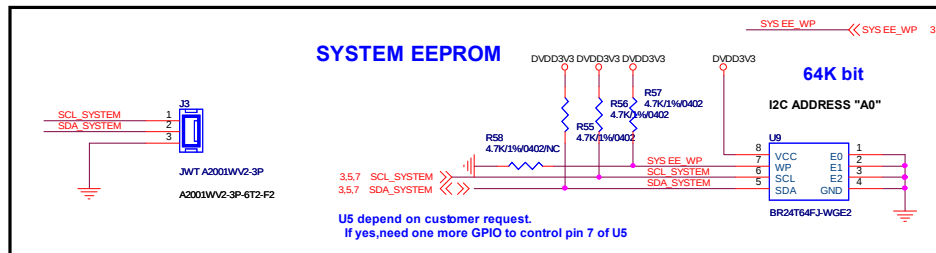
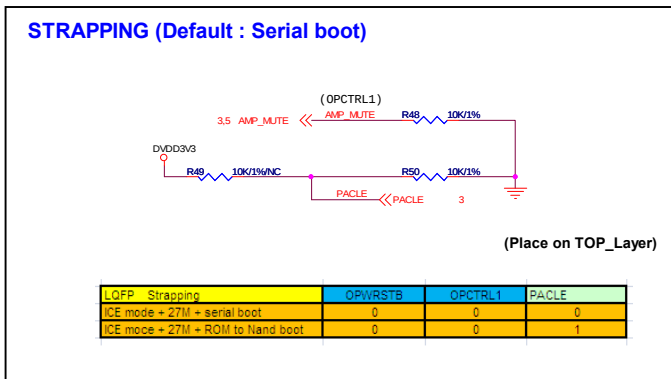
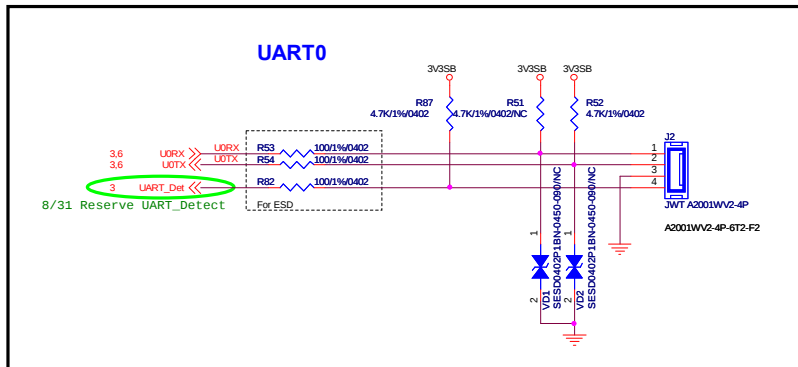
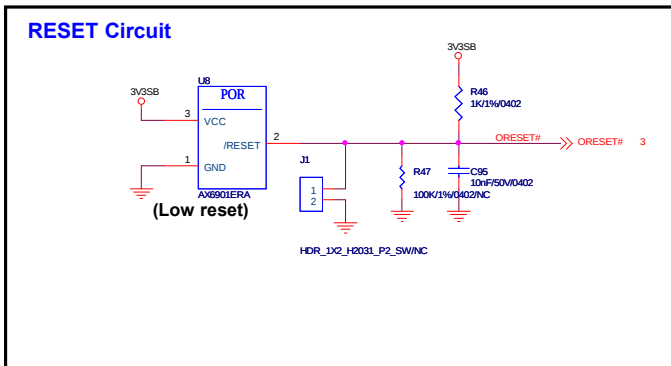
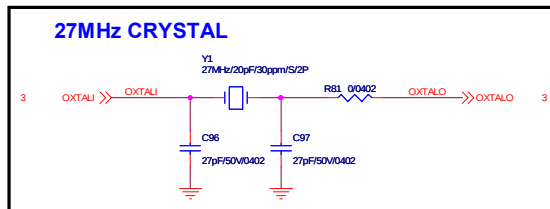
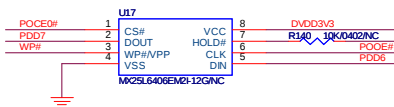
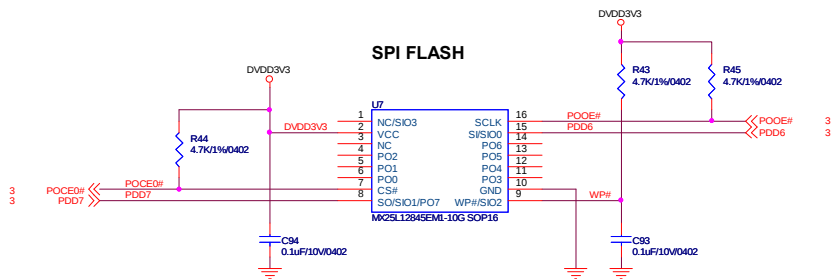


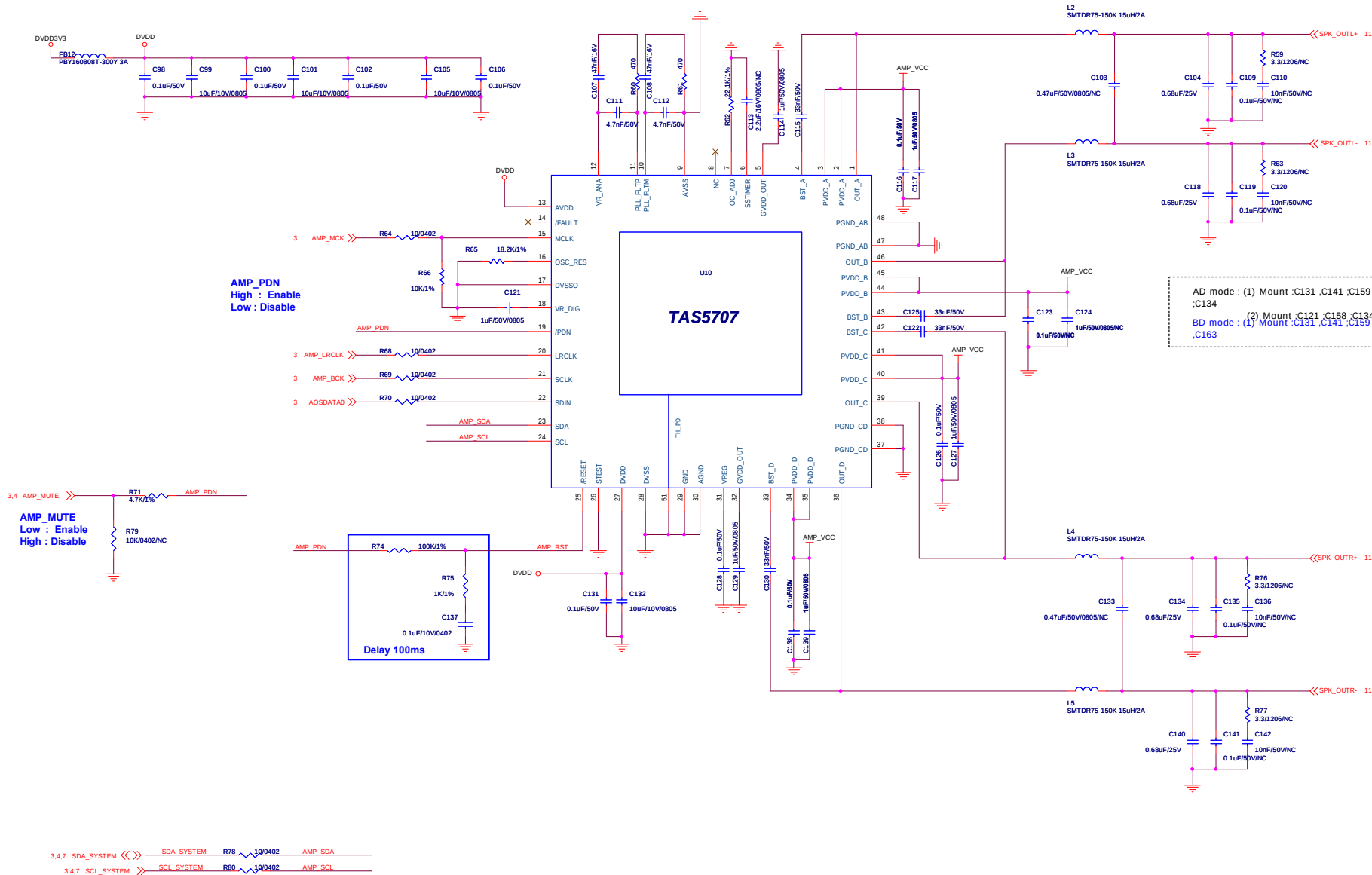
+3.3V_Analog power (ADAC_3V3)



+1.2V_Analog power (AVDD1V2)

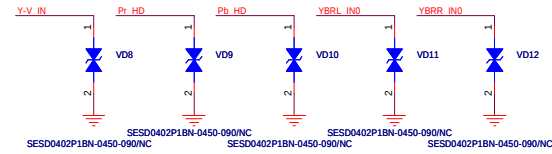
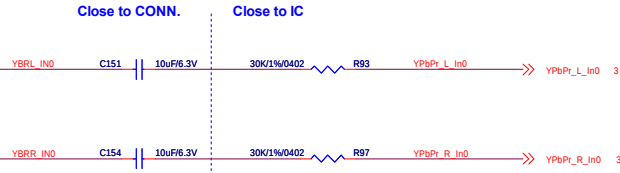
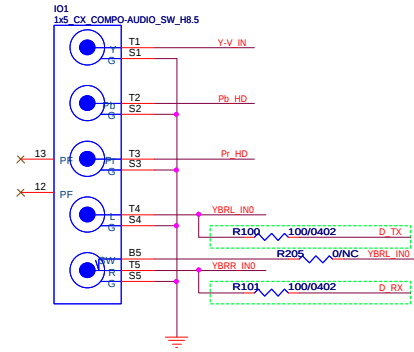
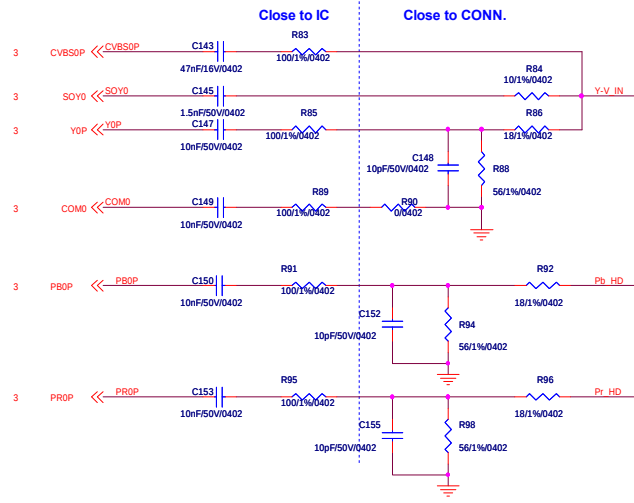




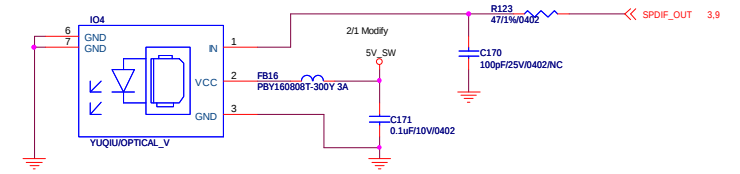


Component input

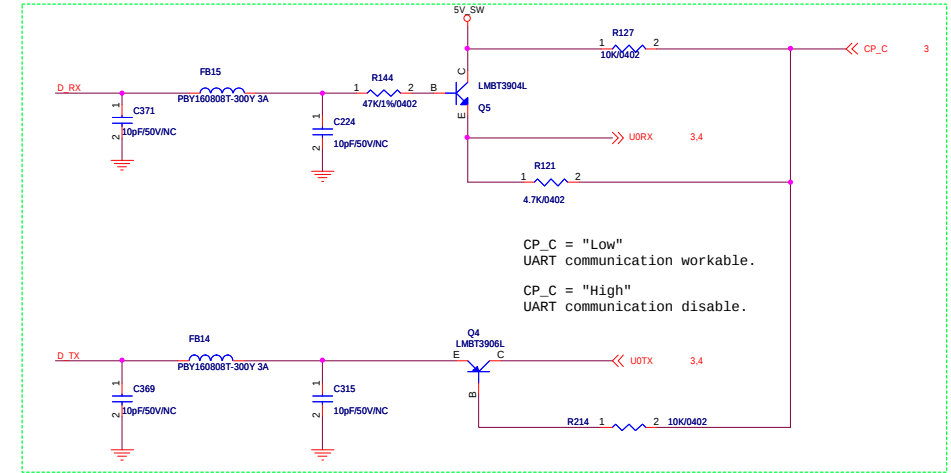
A/V input



OPT SPDIF out



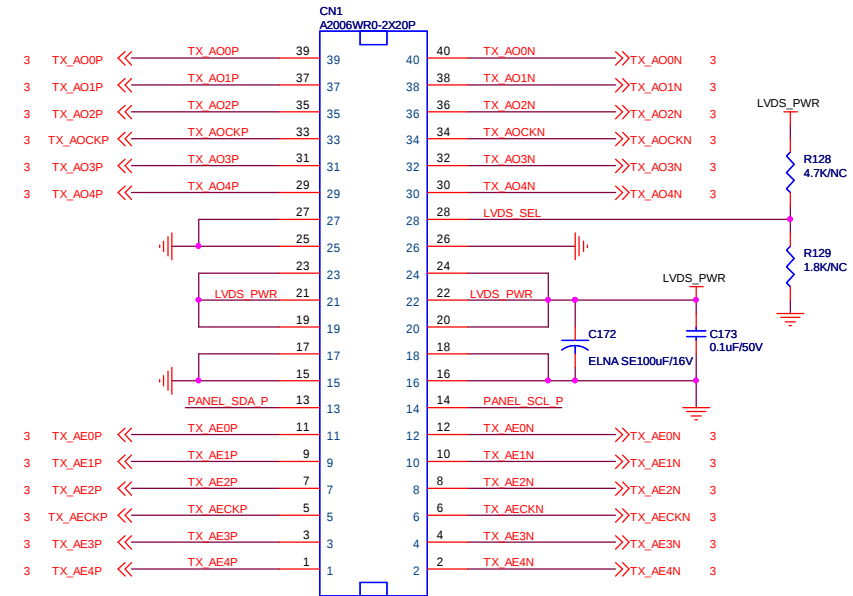
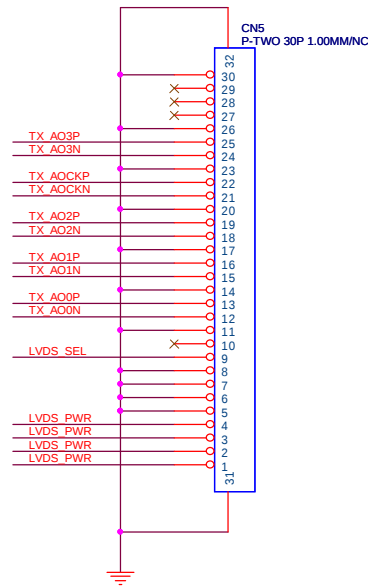
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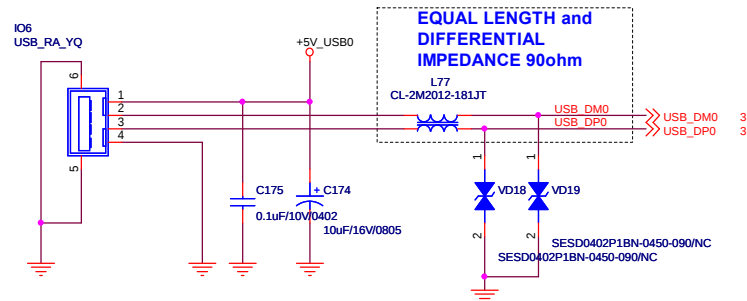
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Size	Document Number	XXXXXX
Date:	Tuesday, November 27, 2012	Sheet 6 of 11
		Rev 1

WXGA A2006WV0-2X10P
FHD A2006WV0-2X20P

(PIN21~PIN40)
(PIN1~PIN40)



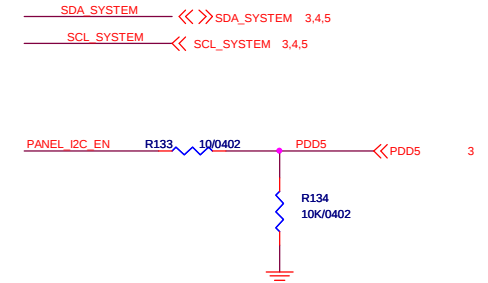
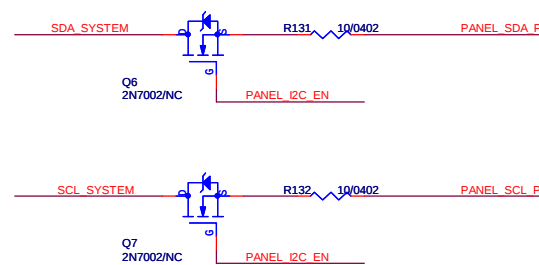
USB



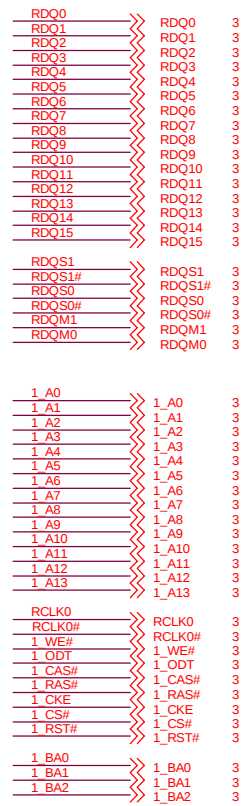
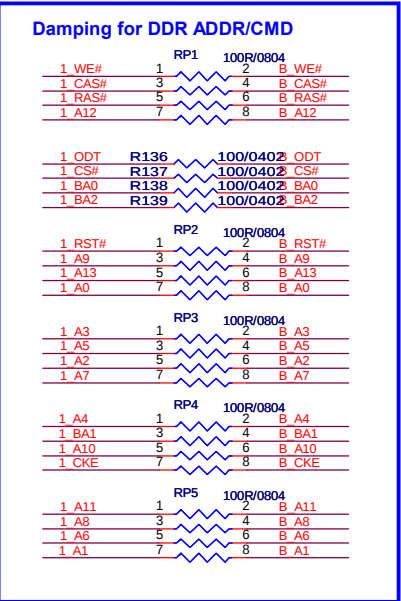
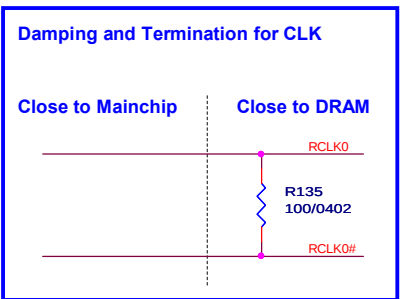
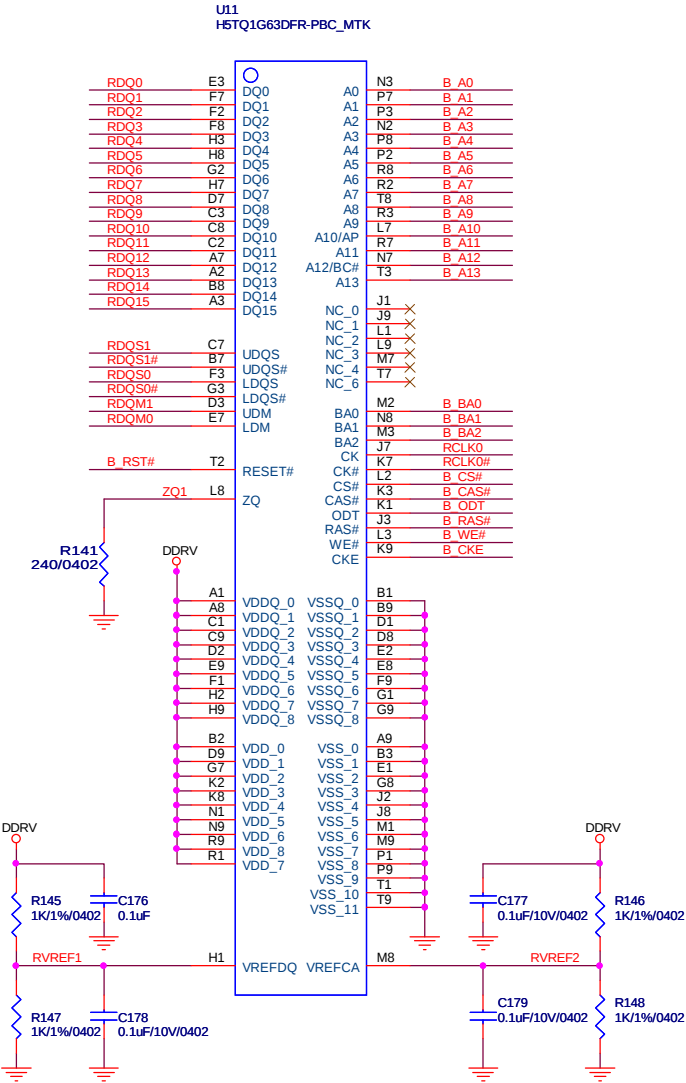
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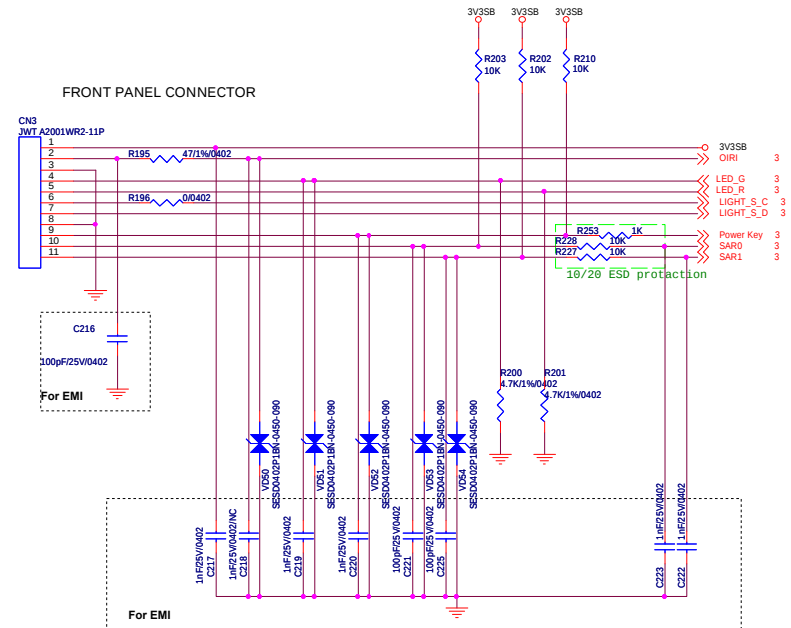
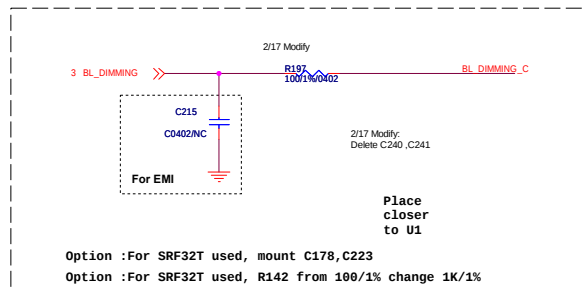
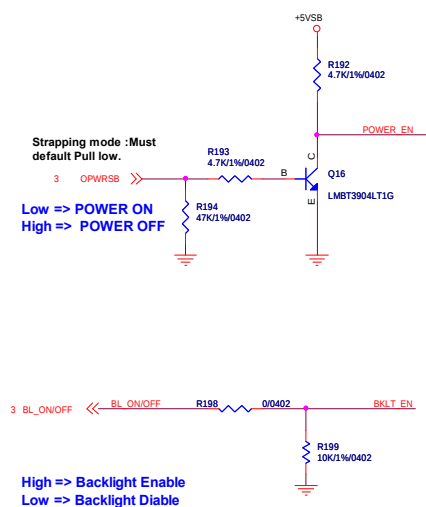
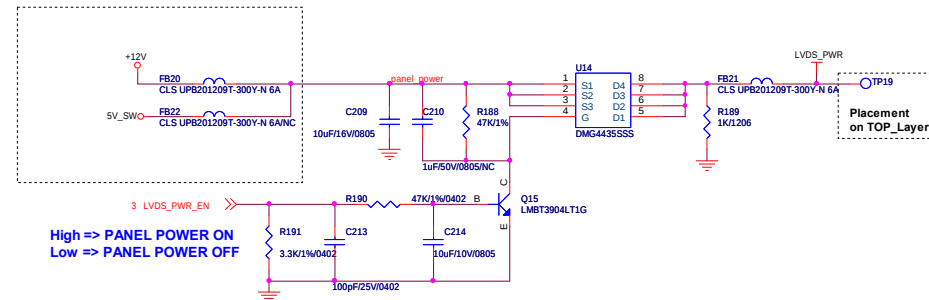
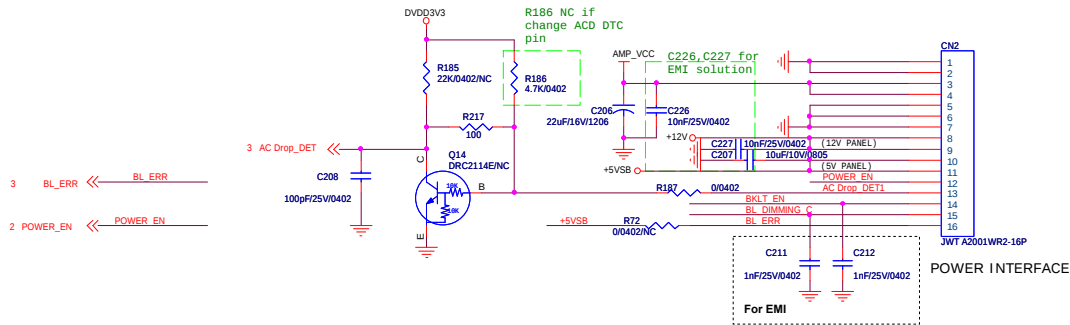


3 PANEL SLET >> PANEL SLET R130 100/0402/NC LVDS_SEL



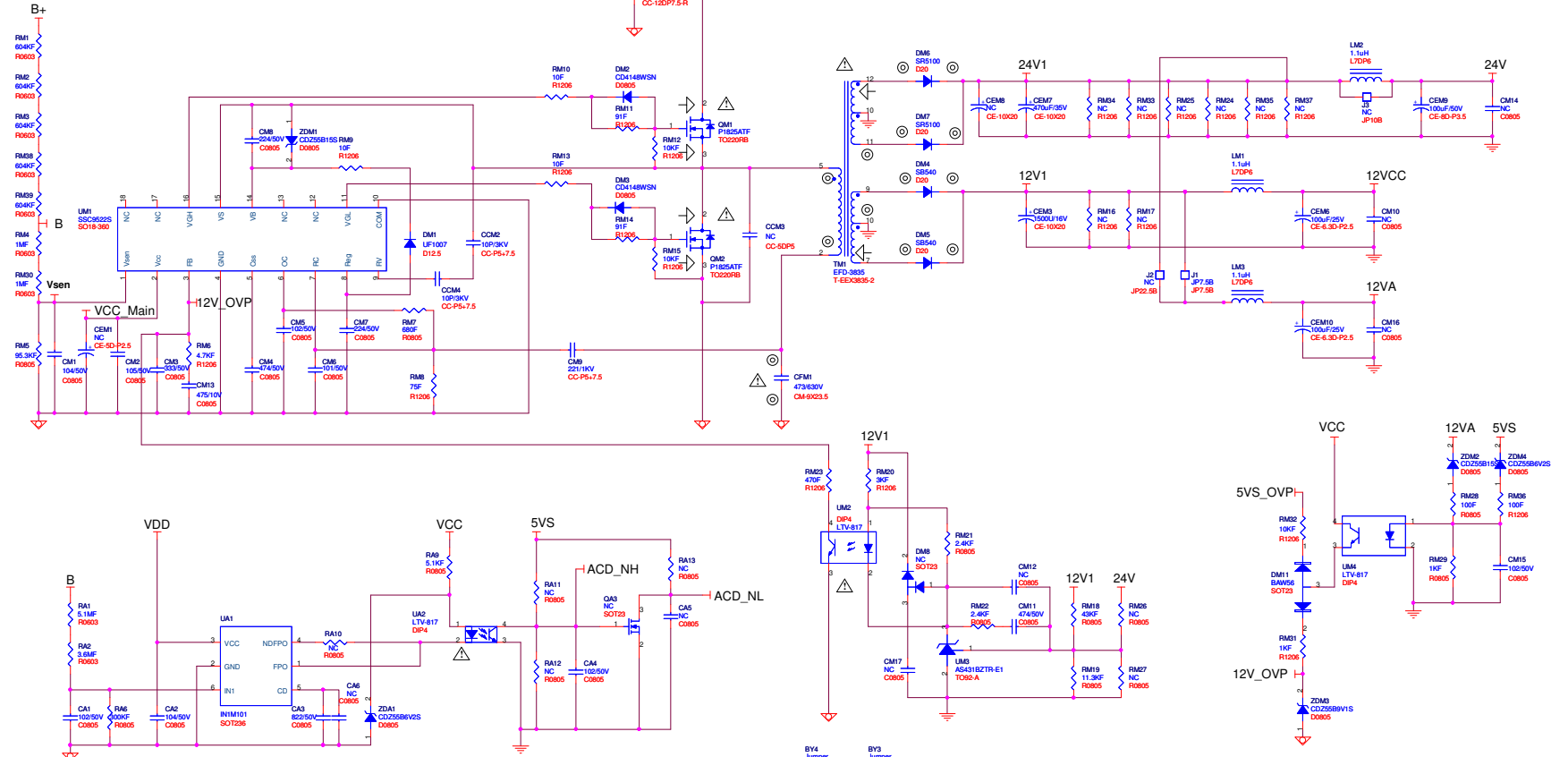
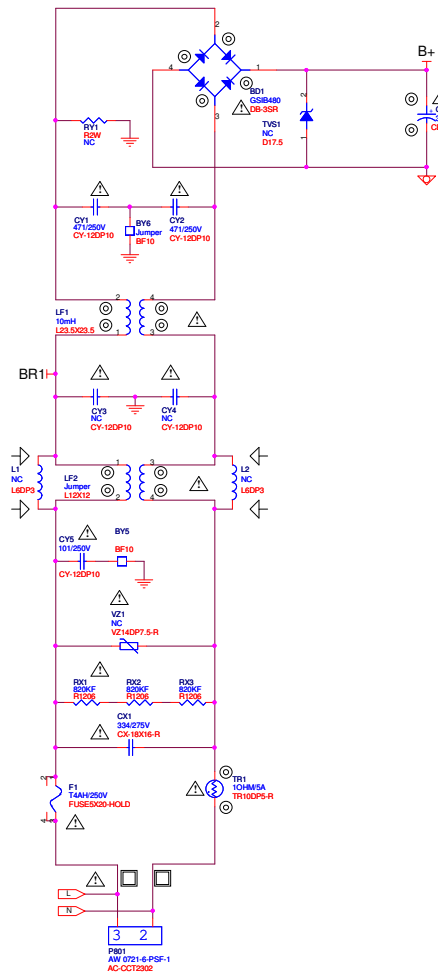
DDR3#1 1Gb DDR3-1600 for H5TQ1G63DFR-PBC



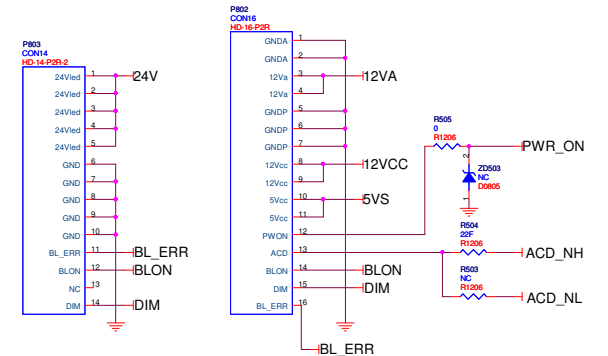
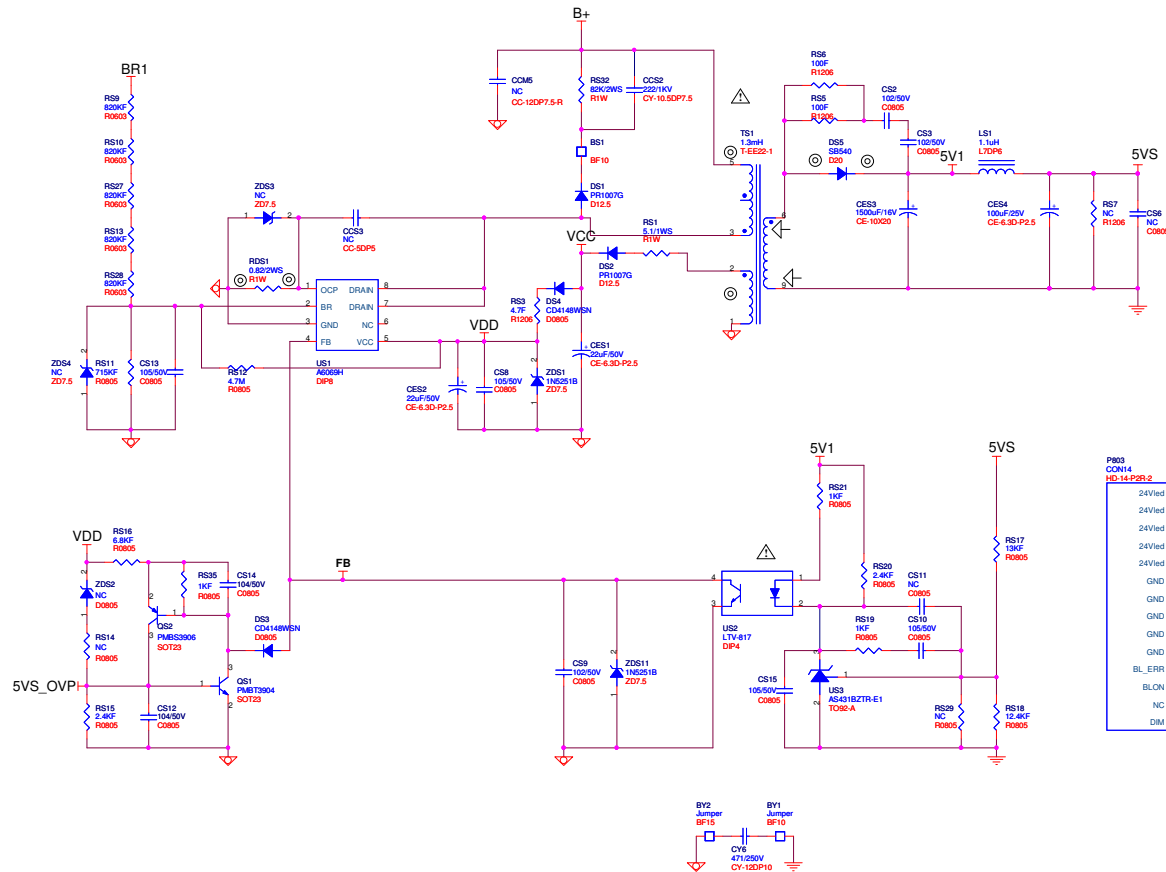
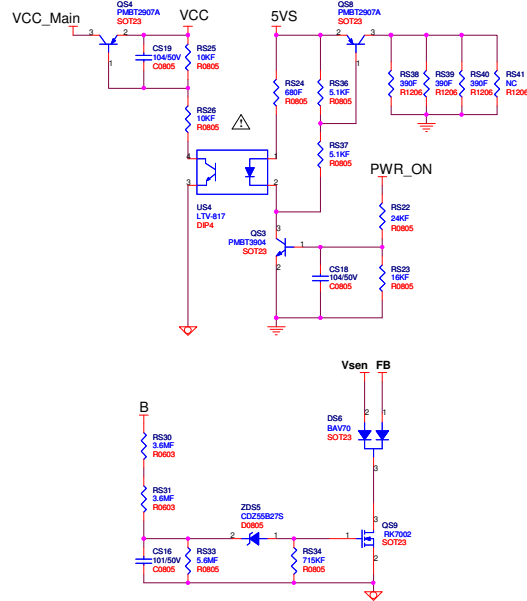


SCHEMATIC DIAGRAM POWER

EMI CIRCUIT



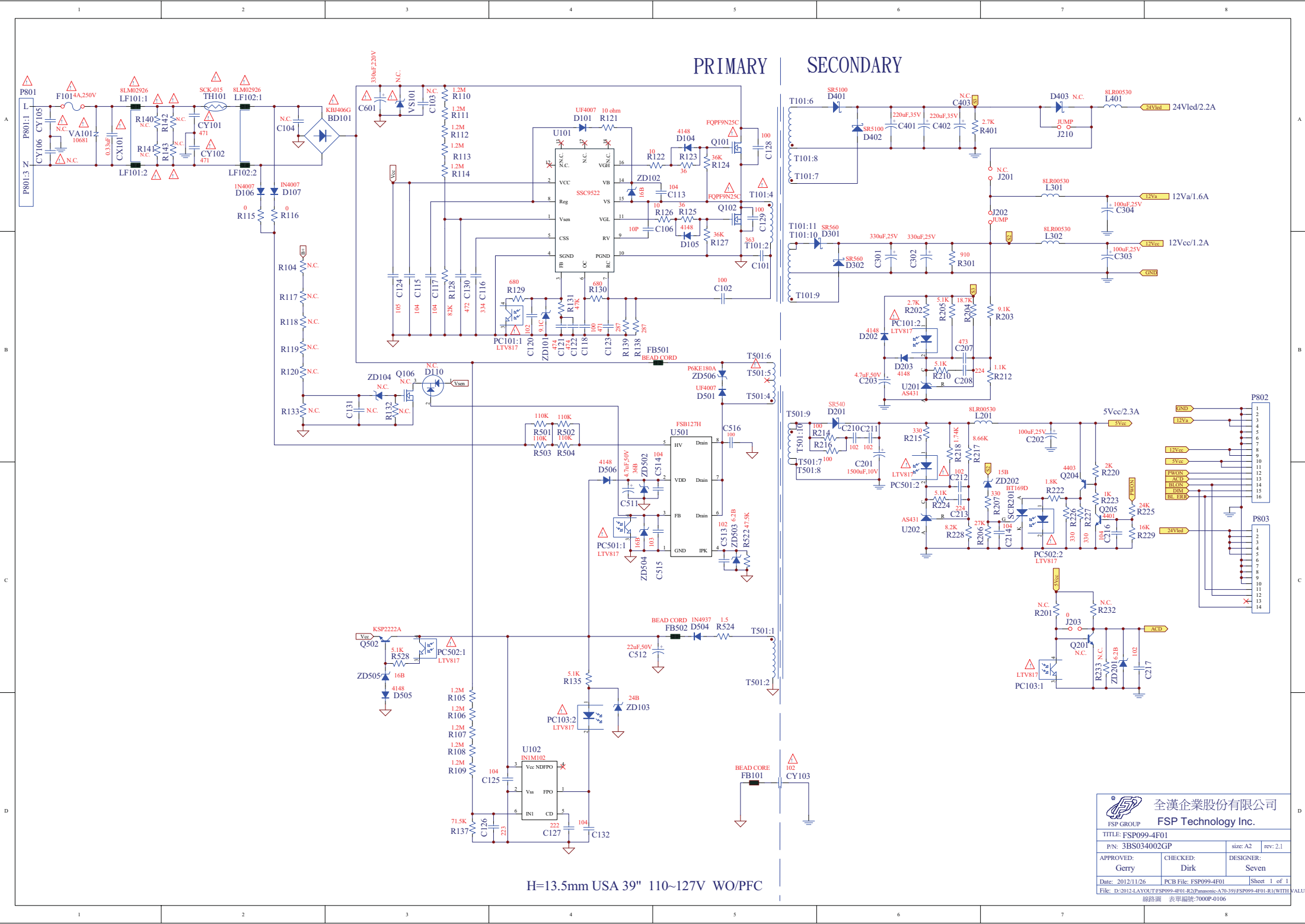
AC DETECT CIRCUIT



NC = No Component

2.2mm eyelet
1.6mm eyelet
補錫

PCB: FR1-CTI600
Basic: 3.5mm, Reinforced: 7.5mm



PRIMARY

SECONDARY

H=13.5mm USA 39" 110~127V WO/PFC

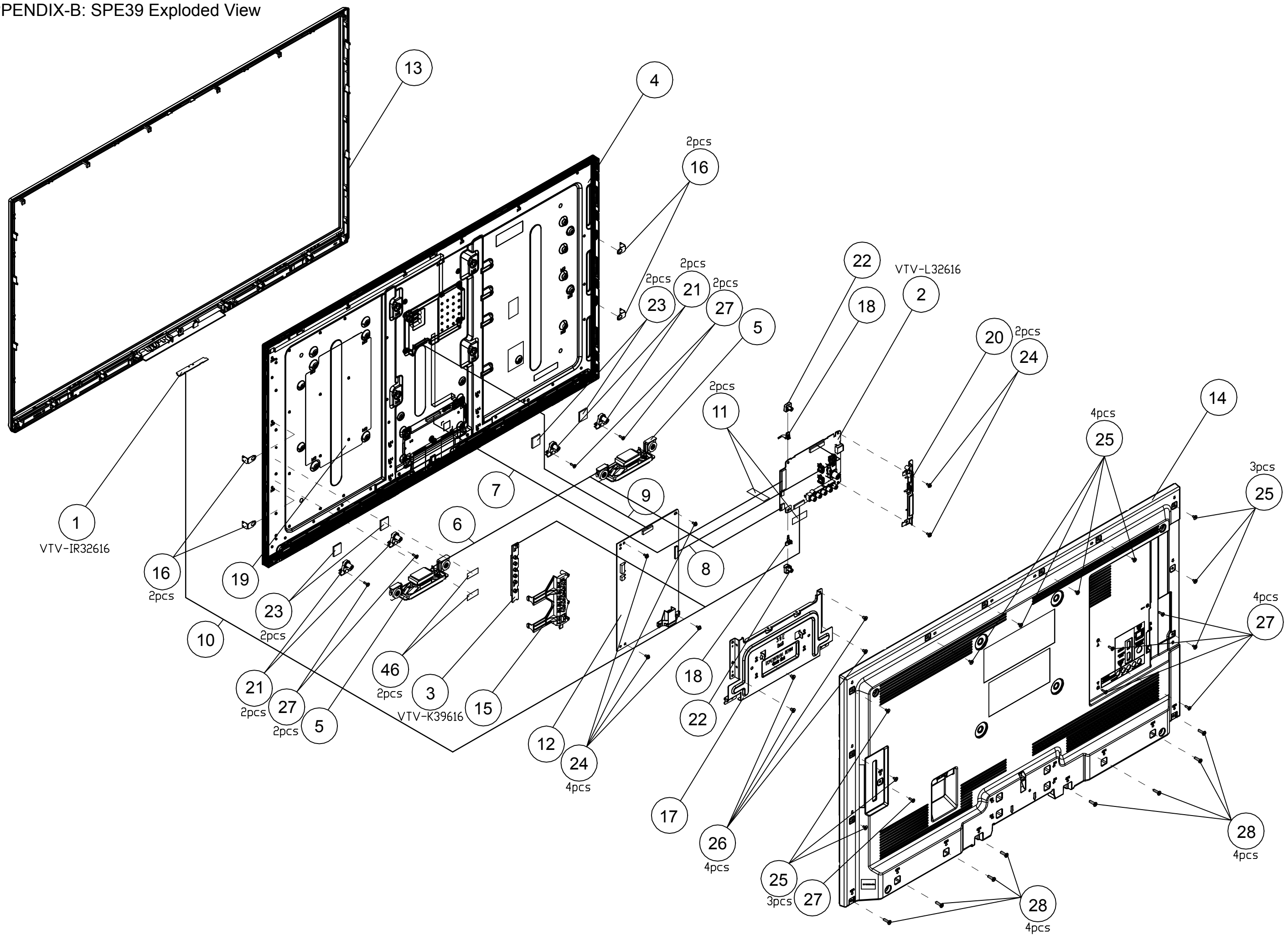
 全漢企業股份有限公司 FSP Technology Inc.			
TITLE: FSP099-4F01			
P/N: 3BS034002GP		size: A2	rev: 2.1
APPROVED: Gerry	CHECKED: Dirk	DESIGNER: Seven	
Date: 2012/11/26	PCB File: FSP099-4F01	Sheet 1 of 1	
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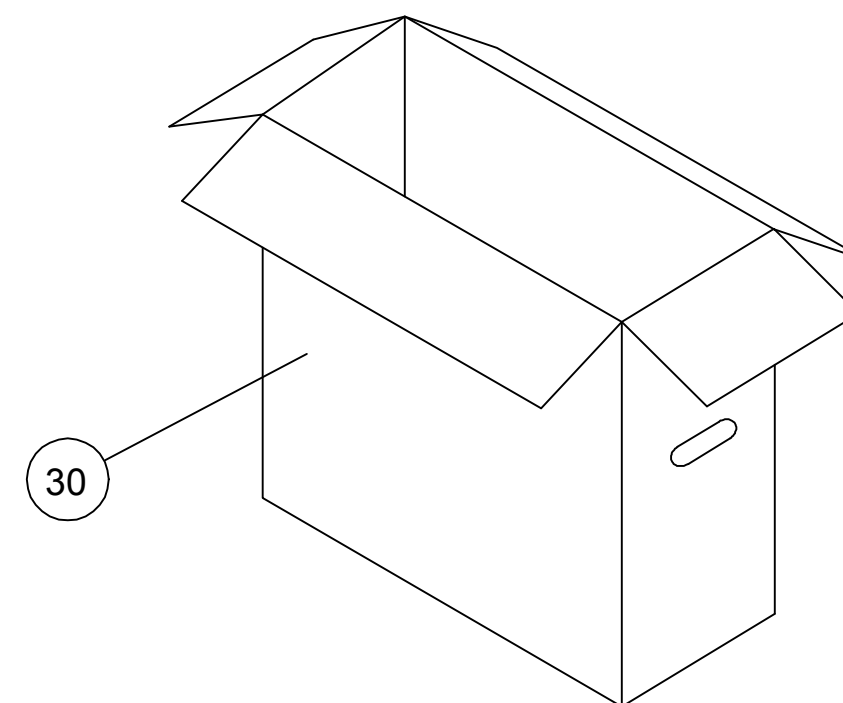
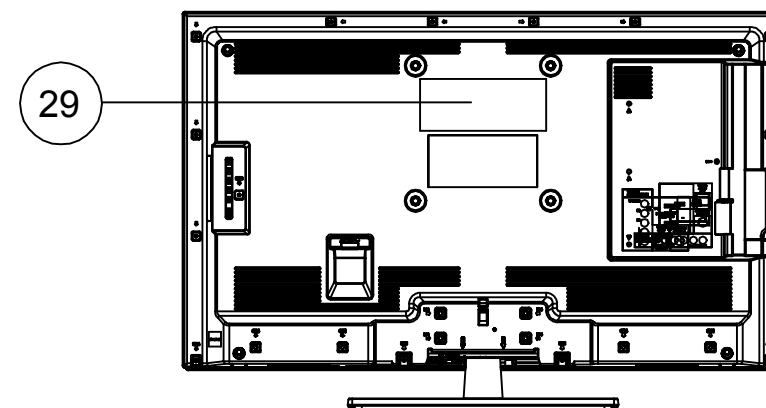
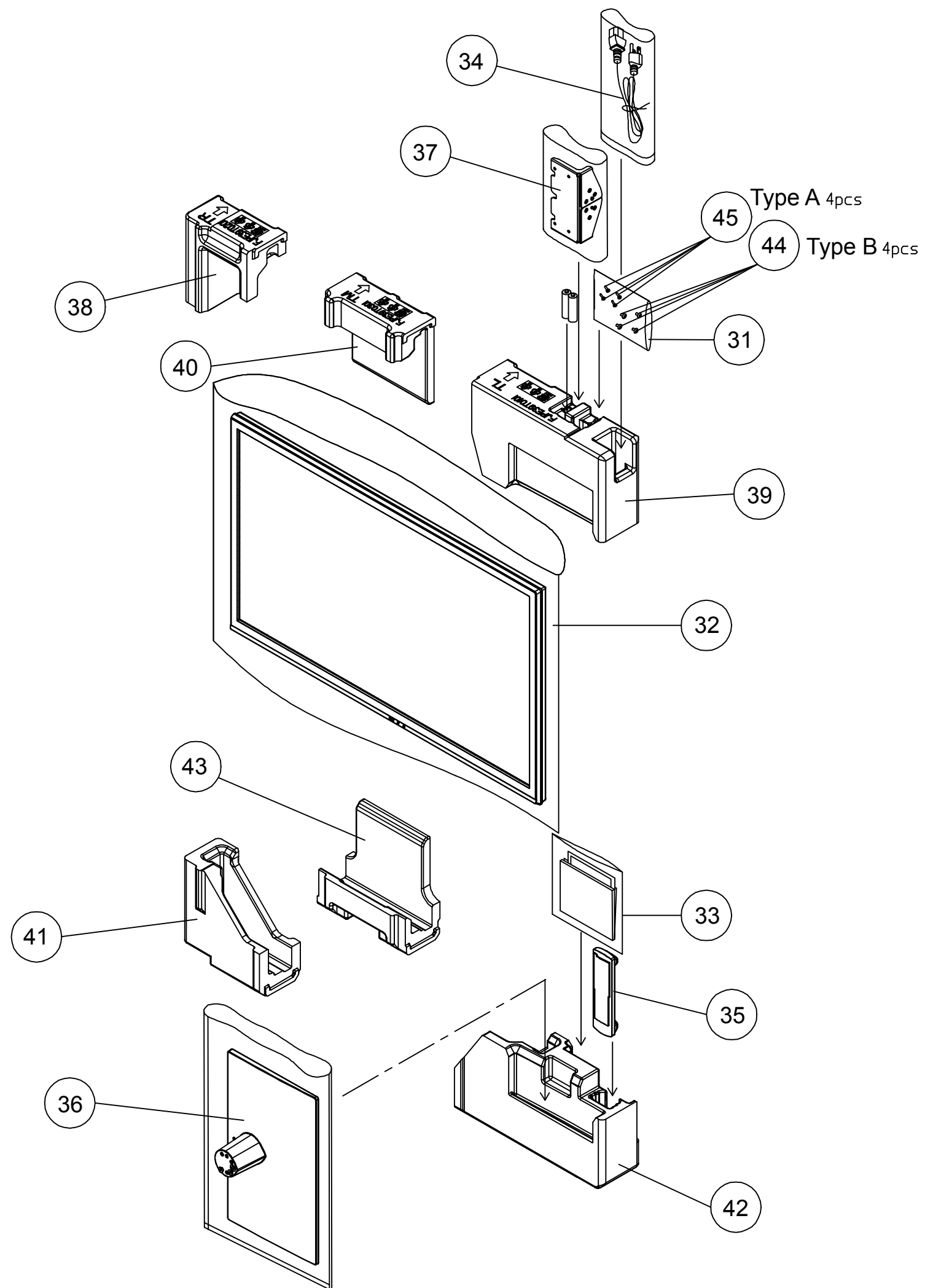
APPENDIX-A: Main assembly
SPE39T (TC-L39EM6X)
Version:01

REF. NO	Description	Part Number		Qty.	Remarks
		Chassis no: SPE39T			
		Product no: SPE39TMX010	Product no: SPE39TMX101 SKD -PANAMEX		
1	PCBA IR/B	454C4070L01	454C4070L01	1	
2	FIRMWARE M/B	461C6270L41	454C4770L01	1	
3	PCBA KEY/B	454C4770L01	461C6270L41	1	
4	LCD MODU	AC6VM3900R1	NA	1	
5	SPK SET	CG101023P0I	CG101023P0I	2	
6	H-CON SET	DC02A00160I	DC02A00160I	1	
7	H-CON SET	DC02L00720I	DC02L00720I	1	
8	H-CON SET	DC02P01990I	DC02P01990I	1	
9	H-CON SET	DC02P02000I	DC02P02000I	1	
10	H-CON SET	DC02V04170I	DC02V04170I	1	
11	MYLAR AL TAPE	LCTC324010I	LCTC324010I	2	
12	PWR MODU(SPE39T)	PK101V3360I or PK101V3370I	PK101V3360I or PK101V3370I	1	
13	CABINET ASY (39EM6X)	APPE39T010I	APPE39T011I	1	
14	BACK COVER ASY (39EM	APPE39T020I	APPE39T021I	1	
15	KEY BUTTON BRACKET A	APPE39T050I	APPE39T050I	1	
16	LCD MTG SIDE(32XM6)	ECPE32T040I	ECPE32T040I	4	
17	METAL BRACKET BOTTOM	ECPE39T010I	ECPE39T010I	1	
18	GROUND_SPRING (32XM6	EEPE32T010I	EEPE32T010I	2	
19	BARRIER P-PCB LCD	ELPE39T010I	ELPE39T010I	1	
20	SIDE AV BRACKET(32B6	FAPD32T050I	FAPD32T050I	1	
21	SPEAKER BRACKET(32XM	FAPE32T050I	FAPE32T050I	4	

22	CH MOUNT BOSS(32XM6)	FAPE32T060I	FAPE32T060I	2	
23	CR4305 FOAM+F247	FHPE39T070I	FHPE39T070I	4	
24	SCREW+LOCK WASHER(8)	MAA8002040I	MAA8002040I	6	
25	SCREW(NL)	MAAI30001ZI	MAAI30001ZI	10	
26	SCREW	MAAT40001ZI	MAAT40001ZI	4	
27	TAPPING SCREW	MAB300001ZI	MAB300001ZI	9	
28	TAPPING SCREW	MABT40140ZI	MABT40140ZI	8	
29	RATING NP-TC-L32B6X	EJ4PD32050I	EJ4PD32050I	1	
30	CARTON-TC-L39EM6X	HB4PE39011I	NA	1	
31	ZIPPERED BAG	HK3OL77801I	HK3OL77801I	1	
32	PE BAG FOR TV	HK3PE39001I	HK3PE39001I	1	
33	MANUAL KITS-32XM/39E	PK28PE3211I	PK28PE3211I	1	
34	PWR CORD(S)	GA18000020I	GA18000020I	1	
35	REMO CTRL AA	PK11V01870I	PK11V01870I	1	
36	PEDESTAL ASY (39EM6)	APPE39T040I	APPE39T040I	1	
37	STAND METAL	ECPE39T030I	ECPE39T030I	1	
38	EPS TL (NA)	FJPE39T010I	NA	1	
39	EPS TR (NA)	FJPE39T020I	NA	1	
40	EPS TM (NA)	FJPE39T030I	NA	1	
41	EPS BL (NA)	FJPE39T040I	NA	1	
42	EPS BR (NA)	FJPE39T050I	NA	1	
43	EPS BM (NA)	FJPE39T060I	NA	1	
44	SCRW-SEMS-W	MAA7000130I	MAA7000130I	4	Type B screw
45	SCREW	MAAF50001ZI	MAAF50001ZI	4	Type A screw
46	ACETIC ACID TAPE	LCPF50T050I	LCPF50T050I	2	Add new part

APPENDIX-B: SPE39 Exploded View

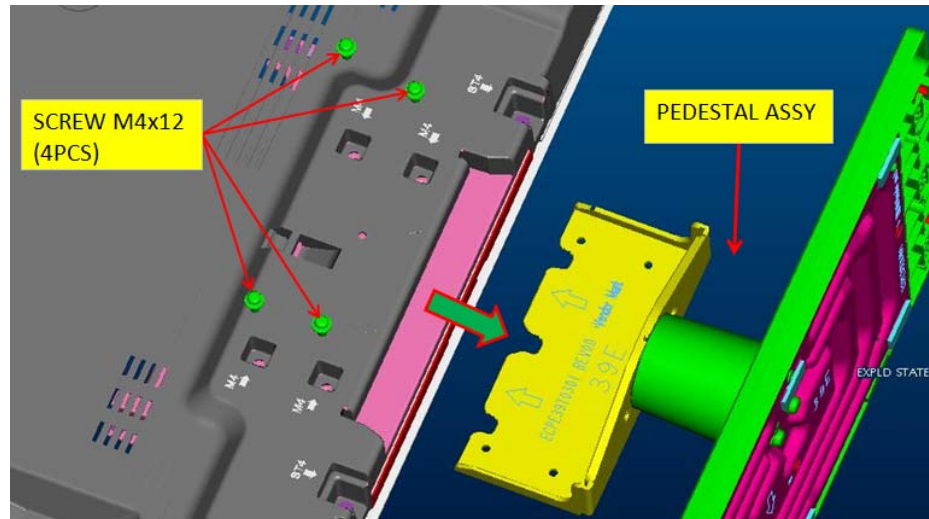




11 Disassembly and Assembly Instructions

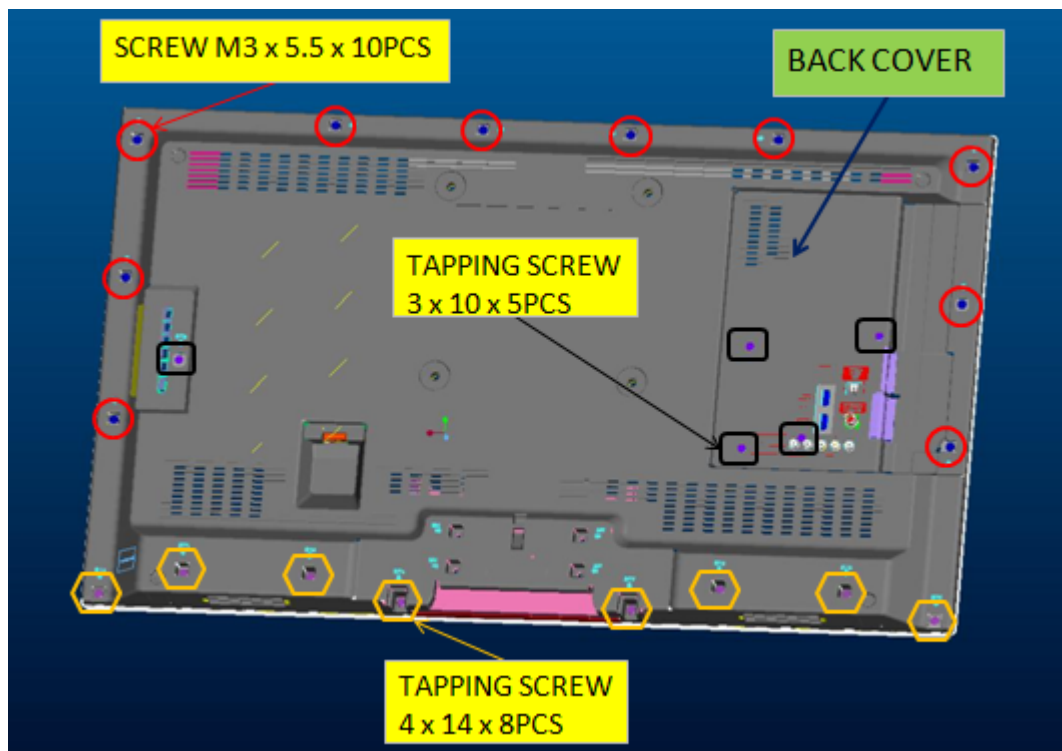
11.1. PEDESTAL

1. Lay down the unit so that the rear cover faces upward.
2. Remove the 4 screws.
3. Remove the Pedestal_assy



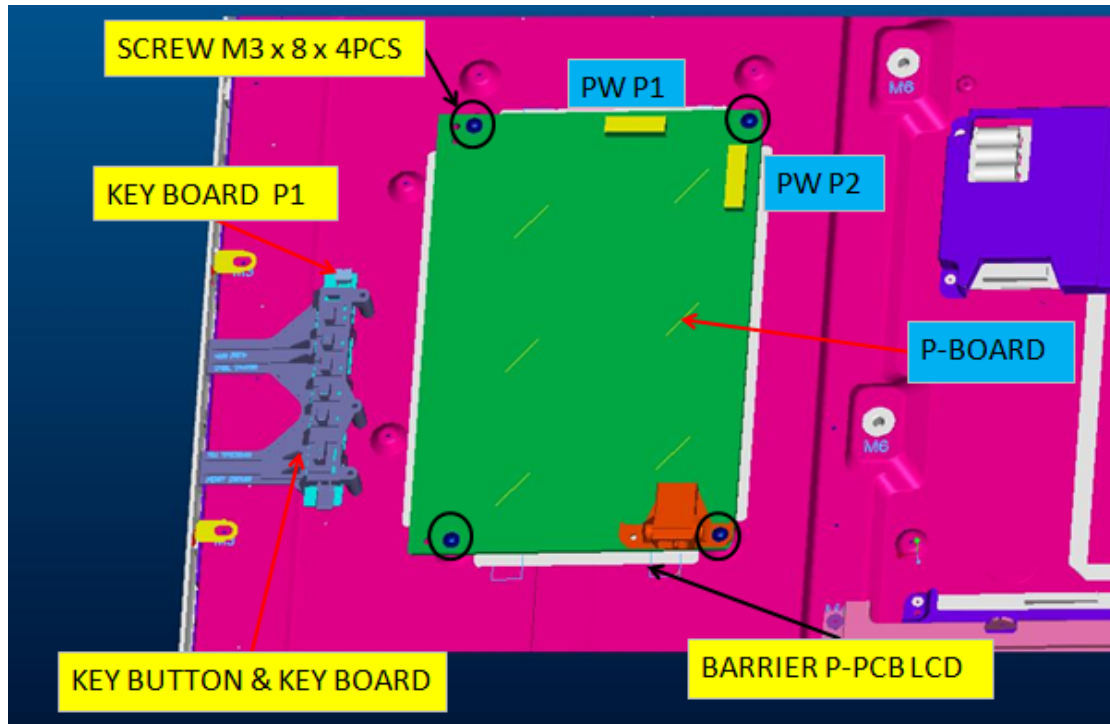
11.2. Back cover

1. Remove the 23 screws.
2. Remove the Back cover.



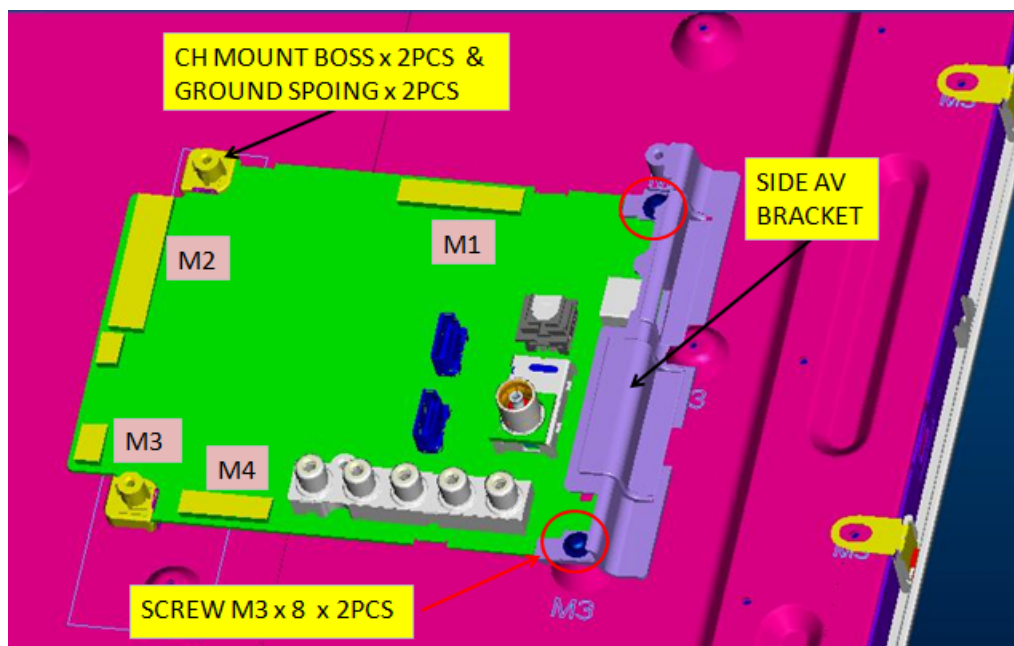
11.3. P-Board

1. Remove the 4 screws.
2. Disconnect the key board connectors (P1) & P-board connectors (PW P1, PW P2)
3. Remove the P-Board.
4. Remove the key button & key board.



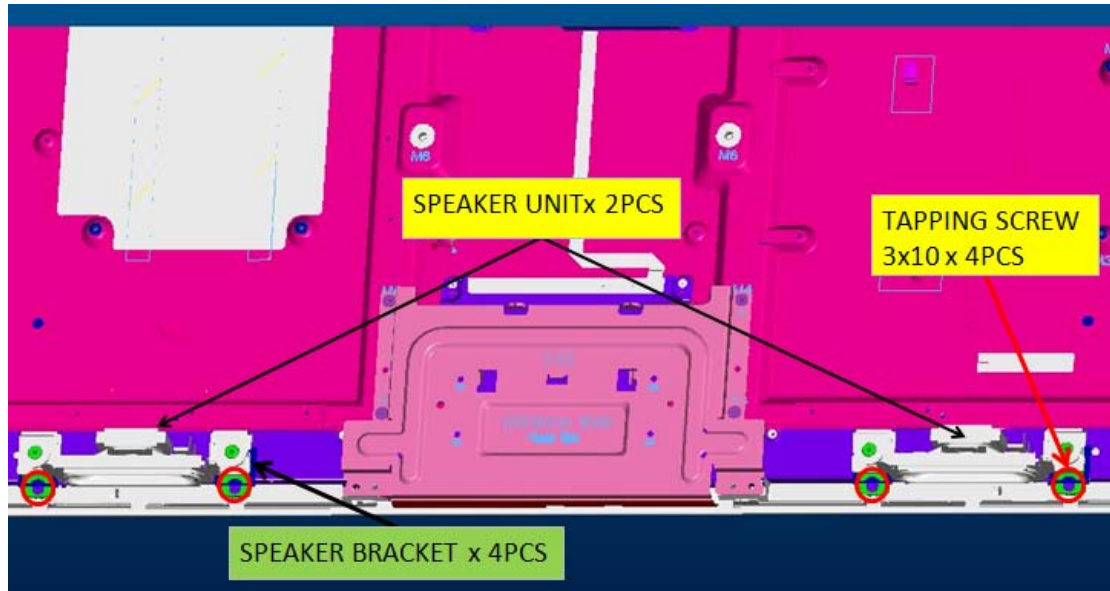
11.4. M-Board

1. Remove the 2 screws.
2. Disconnect the connectors (M1,M2, M3,M4).
3. Remove the M-Board. & Side AV Bracket



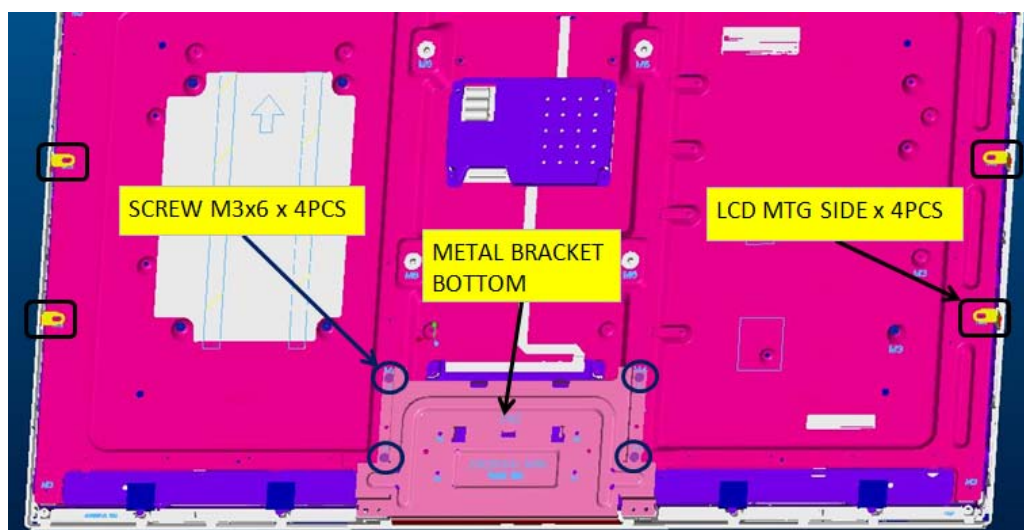
11.5. Speaker unit

1. Remove the speaker units.
2. Remove the 4 screws.
3. Remove the speaker bracket x 4pcs.



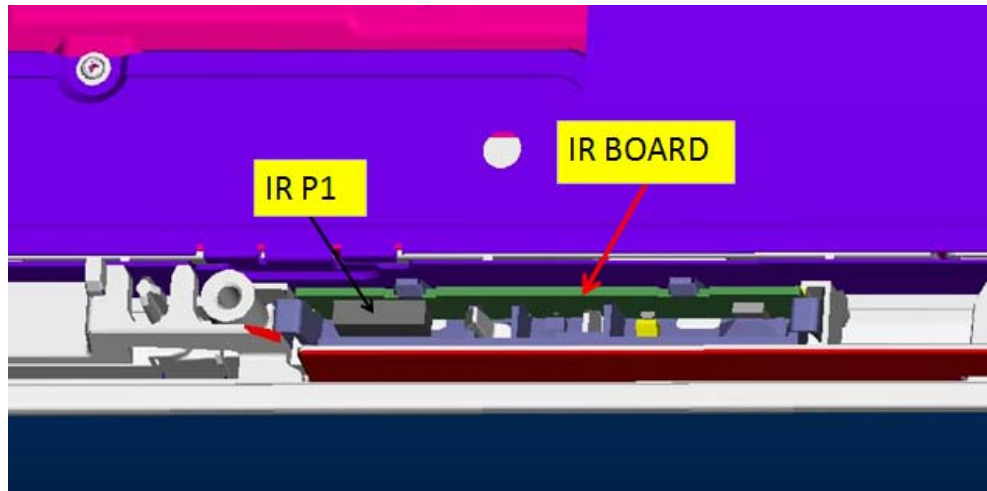
11.6. Metal parts

1. Remove the 4 screws.
2. Remove the metal (metal bracket bottom).
3. Remove the 4 metal (LCD MTG side).



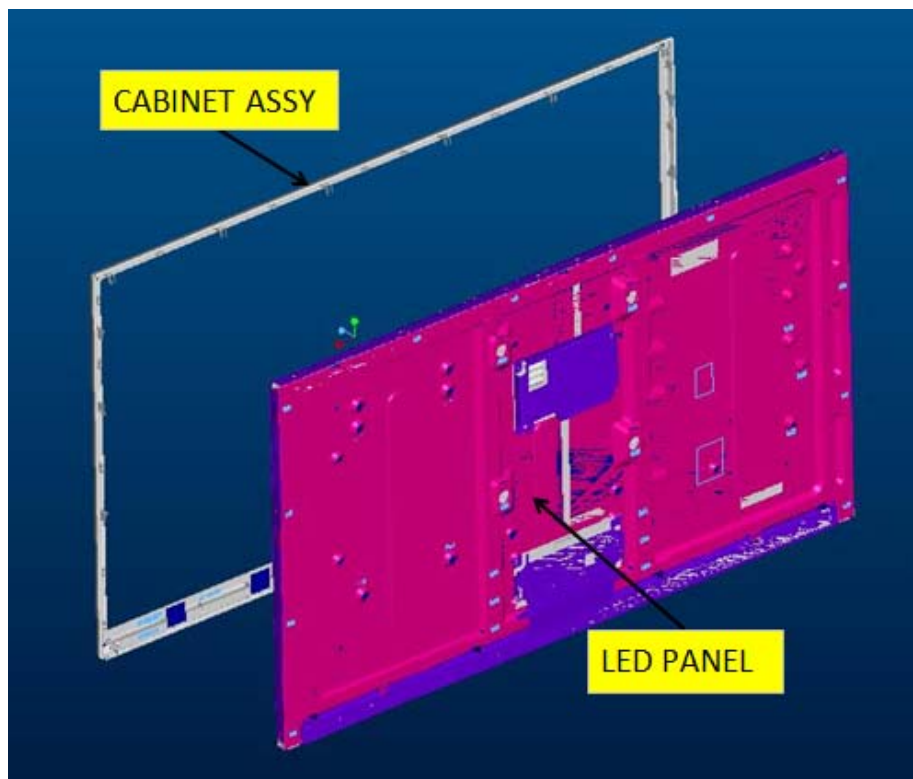
11.7. IR-Board

1. Disconnect the connectors (IR P1).
2. Remove the IR-Board.



11.8. LED Panel

1. Remove the LED panel.



PE39T SERVICE MANUAL CHANGE LIST

[illegible]