

Service
Service
Service

TPH18.2A
LA



Service Manual

Chassis name	Platform	Model name
TPH18.2A LA	V201	22PFA5403S/67
		22PFA5403S/70

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1. Product information

Product information may be subject to change without prior notice. For detailed product information, please go to www.philips.com/support

Display & Sound

Intrinsic resolution

- 1920 x 1080

Sound power

- 3W x 2
-

Supported input signal formats

Video formats

Resolution — Refresh rate

- 480i - 60 Hz
- 480p - 60 Hz
- 576i - 50 Hz
- 576p - 50 Hz
- 720p - 50 Hz, 60 Hz
- 1080i - 50 Hz, 60 Hz
- 1080p - 50 Hz, 60 Hz

Computer formats

Resolution — Refresh rate

- 640 x 480 - 60 Hz
 - 800 x 600 - 60 Hz
 - 1024 x 768 - 60 Hz
 - 1360 x 768 - 60 Hz
 - 1920 x 1080 - 60 Hz
-

Connectivity

TV Side

- POWER
- USB
- HDMI
- AV IN: CVBS, Audio L, Audio R

TV Rear

- Antenna (75 ohm)
 - AUDIO IN (VGA/DVI)
 - VAG
-

Multimedia

Supported storage devices: USB (Supports FAT 32/NTFS USB storage devices.)

Playback formats

- Video formats: MPEG- 2/MPEG 4, H.264
 - Audio formats: MP3
 - Image formats: JPEG
 - Documentation formats: TXT
-

Power supply/ tuner/ reception/ transmission

Power supply

- Mains: 110-240V, 50-60Hz
- Standby power consumption: ≤0.5W
- Ambient temperature: 5°C to 40°C
- Power consumption: 30W

Tuner/ reception/ transmission

- Antenna input: 75ohm coaxial (IEC75)
- TV system: NTSC, SECAM, PAL
- Video Play: NTSC, SECAM, PAL

2. Precautions, Notes, and Abbreviation List

2.1 Safety Instructions

Safety regulations require the following during a repair:

- Connect the set to the Mains/AC Power via an isolation transformer (> 800 VA).
- Replace safety components, indicated by the symbol ▲, only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

Safety regulations require that after a repair, the set must be returned in its original condition. Pay in particular attention to the following points:

- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the Mains/AC Power lead for external damage.
- Check the strain relief of the Mains/AC Power cord for proper function.
- Check the electrical DC resistance between the Mains/AC Power plug and the secondary side (only for sets that have a Mains/AC Power isolated power supply):
 1. Unplug the Mains/AC Power cord and connect a wire between the two pins of the Mains/AC Power plug.
 2. Set the Mains/AC Power switch to the “on” position (keep the Mains/AC Power cord unplugged!).
 3. Measure the resistance value between the pins of the Mains/AC Power plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 MΩ and 12 MΩ.
 4. Switch “off” the set, and remove the wire between the two pins of the Mains/AC Power plug.
- Check the cabinet for defects, to prevent touching of any inner parts by the customer.

2.2 Warnings

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD ▲). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential.
- Be careful during measurements in the high voltage section.
- Never replace modules or other components while the unit is switched “on”.
- When you align the set, use plastic rather than metal

tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

2.3 Notes

2.3.1 General

- Measure the voltages and waveforms with regard to the chassis (= tuner) ground ($\perp$), or hot ground ($\downarrow$), depending on the tested area of circuitry. The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode with a colour bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz for PAL, or 61.25 MHz for NTSC (channel 3).
- Where necessary, measure the waveforms and voltages with ($\sqcap$) and without ($\boxtimes$) aerial signal. Measure the voltages in the power supply section both in normal operation ($\textcircled{I}$) and in stand-by ($\textcircled{b}$). These values are indicated by means of the appropriate symbols.

2.3.2 Schematic Notes

- All resistor values are in ohms, and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kΩ).
- Resistor values with no multiplier may be indicated with either an “E” or an “R” (e.g. 220E or 220R indicates 220 Ω).
- All capacitor values are given in micro-farads ($\mu = \times 10^{-6}$), nano-farads ($n = \times 10^{-9}$), or pico-farads ($p = \times 10^{-12}$).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An “asterisk” (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed on the Philips Spare Parts Web Portal.

2.3.3 Spare parts

For the latest spare part overview, consult your Philips Spare Part web portal.

2.3.4 BGA (Ball Grid Array) ICs

Introduction

For more information on how to handle BGA devices, visit this URL: <http://www.atyourservice-magazine.com>. Select “Magazine”, then go to “Repair downloads”. Here you will find Information on how to deal with BGA-ICs.

BGA Temperature Profiles

For BGA-ICs, you must use the correct temperature-profile. Where applicable and available, this profile is added to the

IC Data Sheet information section in this manual.

2.3.5 Lead-free Soldering

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free soldering tin. If lead-free solder paste is required, please contact the manufacturer of your soldering equipment. In general, use of solder paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free soldering tin. The solder tool must be able:
 - To reach a solder-tip temperature of at least 400°C.
 - To stabilize the adjusted temperature at the solder-tip.
 - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature of around 360°C - 380°C is reached and stabilized at the solder joint. Heating time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C, otherwise wear-out of tips will increase drastically and flux-fluid will be destroyed. To avoid wear-out of tips, switch “off” unused equipment or reduce heat.
- Mix of lead-free soldering tin/parts with leaded soldering tin/parts is possible but PHILIPS recommends strongly to avoid mixed regimes. If this cannot be avoided, carefully clear the solder-joint from old tin and re-solder with new tin.

2.3.6 Alternative BOM identification

It should be noted that on the European Service website, “Alternative BOM” is referred to as “Design variant”.

The third digit in the serial number (example: AG2B0335000001) indicates the number of the alternative B.O.M. (Bill Of Materials) that has been used for producing the specific TV set. In general, it is possible that the same TV model on the market is produced with e.g. two different types of displays, coming from two different suppliers. This will then result in sets which have the same CTN (Commercial Type Number; e.g. 28PW9515/12) but which have a different B.O.M. number.

By looking at the third digit of the serial number, one can identify which B.O.M. is used for the TV set he is working with. If the third digit of the serial number contains the number “1” (example: AG1B0335000001), then the TV set has been manufactured according to B.O.M. number 1. If the third digit is a “2” (example: AG2B0335000001), then the set has been produced according to B.O.M. no. 2. This is important for ordering the correct spare parts!

For the third digit, the numbers 1...9 and the characters A...Z can be used, so in total: 9 plus 26 = 35 different B.O.M.s can be indicated by the third digit of the serial number.

Identification: The bottom line of a type plate gives a 14-digit serial number. Digits 1 and 2 refer to the production centre (e.g. SN is Lysomice, RJ is Kobierzyce), digit 3 refers to the B.O.M. code, digit 4 refers to the Service version change code, digits 5 and 6 refer to the production year, and digits 7 and 8 refer to production week (in example below it is 2010 week 10 / 2010 week 17). The 6 last digits contain the serial number.



Figure 3-1 Serial number (example)

2.3.7 Board Level Repair (BLR) or Component Level Repair (CLR)

If a board is defective, consult your repair procedure to decide if the board has to be exchanged or if it should be repaired on component level.

If your repair procedure says the board should be exchanged completely, do not solder on the defective board. Otherwise, it cannot be returned to the O.E.M. supplier for back charging!

2.3.8 Practical Service Precautions

- **It makes sense to avoid exposure to electrical shock.**
While some sources are expected to have a possible dangerous impact, others of quite high potential are of limited current and are sometimes held in less regard.

- **Always respect voltages.** While some may not be dangerous in themselves, they can cause unexpected reactions that are best avoided. Before reaching into a powered TV set, it is best to test the high voltage insulation. It is easy to do, and is a good service precaution.

2.4 Abbreviation List

0/6/12	SCART switch control signal on A/V board. 0 = loop through (AUX to TV), 6 = play 16 : 9 format, 12 = play 4 : 3 format
DNR	Digital Noise Reduction: noise reduction feature of the set
AARA	Automatic Aspect Ratio Adaptation: algorithm that adapts aspect ratio to remove horizontal black bars; keeps the original aspect ratio
ACI	Automatic Channel Installation: algorithm that installs TV channels directly from a cable network by means of a predefined TXT page
ADC	Analogue to Digital Converter
AFC	Automatic Frequency Control: control signal used to tune to the correct frequency
AGC	Automatic Gain Control: algorithm that controls the video input of the feature box
AM	Amplitude Modulation
AP	Asia Pacific
AR	Aspect Ratio: 4 by 3 or 16 by 9
ASF	Auto Screen Fit: algorithm that adapts aspect ratio to remove horizontal black bars without discarding video information
ATSC	Advanced Television Systems Committee, the digital TV standard in the USA
ATV	See Auto TV
Auto TV	A hardware and software control system that measures picture content, and adapts image parameters in a dynamic way
AV	External Audio Video
AVC	Audio Video Controller
AVIP	Audio Video Input Processor
B/G	Monochrome TV system. Sound carrier distance is 5.5 MHz
BDS	Business Display Solutions (iTV)
BLR	Board-Level Repair
BTSC	Broadcast Television Standard Committee. Multiplex FM stereo sound system,

B-TXT	originating from the USA and used e.g. in LATAM and AP-NTSC countries
C	Blue TeleteXT
CEC	Centre channel (audio)
	Consumer Electronics Control bus: remote control bus on HDMI connections
CL	Constant Level: audio output to connect with an external amplifier
CLR	Component Level Repair
ComPair	Computer aided rePair
CP	Connected Planet / Copy Protection
CSM	Customer Service Mode
CTI	Color Transient Improvement: manipulates steepness of chroma transients
CVBS	Composite Video Blanking and Synchronization
DAC	Digital to Analogue Converter
DBE	Dynamic Bass Enhancement: extra low frequency amplification
DCM	Data Communication Module. Also referred to as System Card or Smartcard (for iTV).
DDC	See "E-DDC"
D/K	Monochrome TV system. Sound carrier distance is 6.5 MHz
DFI	Dynamic Frame Insertion
DFU	Directions For Use: owner's manual
DMR	Digital Media Reader: card reader
DMSD	Digital Multi Standard Decoding
DNM	Digital Natural Motion
DRAM	Dynamic RAM
DRM	Digital Rights Management
DSP	Digital Signal Processing
DST	Dealer Service Tool: special remote control designed for service technicians
DTCP	Digital Transmission Content Protection; A protocol for protecting digital audio/video content that is traversing a high speed serial bus, such as IEEE-1394
DVB-C	Digital Video Broadcast - Cable
DVB-T	Digital Video Broadcast - Terrestrial
DVD	Digital Versatile Disc
DVI(-d)	Digital Visual Interface (d= digital only)
E-DDC	Enhanced Display Data Channel (VESA standard for communication channel and display). Using E-DDC, the video source can read the EDID information from the display.

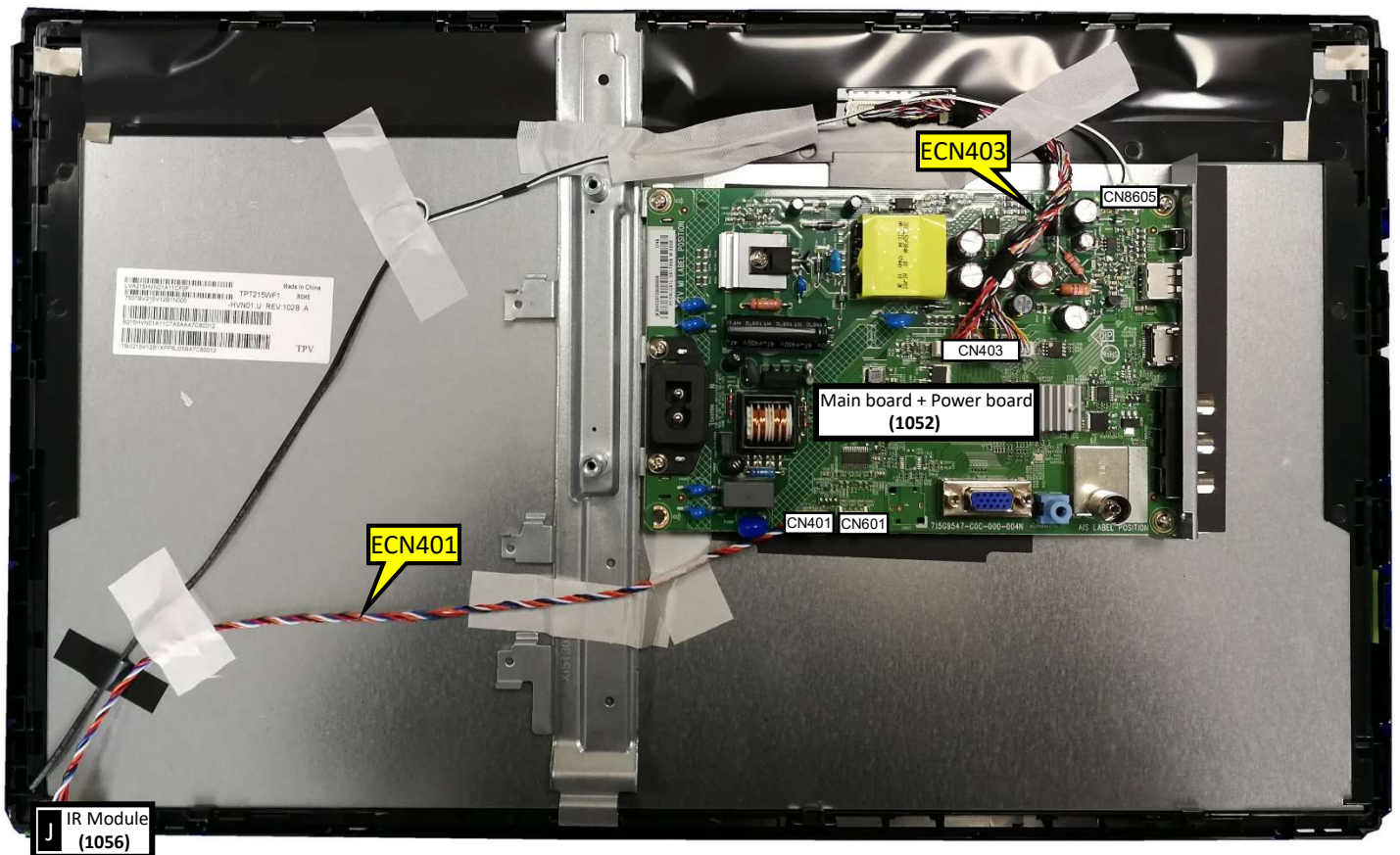
EDID	Extended Display Identification Data (VESA standard)		Uncompressed digital component or digital composite signals can be used. The SDI signal is self-synchronizing, uses 8 bit or 10 bit data words, and has a maximum data rate of 270 Mbit/s, with a minimum bandwidth of 135 MHz.
EEPROM	Electrically Erasable and Programmable Read Only Memory		
EMI	Electro Magnetic Interference		
EPG	Electronic Program Guide		
EPLD	Erasable Programmable Logic Device	iTV	Institutional TeleVision; TV sets for hotels, hospitals etc.
EU	Europe		
EXT	EXternal (source), entering the set by SCART or by cinches (jacks)	LS	Last Status; The settings last chosen by the customer and read and stored in RAM or in the NVM. They are called at start-up of the set to configure it according to the customer's preferences
FDS	Full Dual Screen (same as FDW)		
FDW	Full Dual Window (same as FDS)		
FLASH	FLASH memory		
FM	Field Memory or Frequency Modulation	LATAM	Latin America
FPGA	Field-Programmable Gate Array	LCD	Liquid Crystal Display
FTV	Flat TeleVision	LED	Light Emitting Diode
Gb/s	Giga bits per second	L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I
G-TXT	Green TeleteXT		
H	H_sync to the module		
HD	High Definition	LPL	LG.Philips LCD (supplier)
HDD	Hard Disk Drive	LS	Loudspeaker
HDCP	High-bandwidth Digital Content Protection: A "key" encoded into the HDMI/DVI signal that prevents video data piracy. If a source is HDCP coded and connected via HDMI/DVI without the proper HDCP decoding, the picture is put into a "snow vision" mode or changed to a low resolution. For normal content distribution the source and the display device must be enabled for HDCP "software key" decoding.	LVDS Mbps M/N MHEG MIPS	Low Voltage Differential Signalling Mega bits per second Monochrome TV system. Sound carrier distance is 4.5 MHz Part of a set of international standards related to the presentation of multimedia information, standardised by the Multimedia and Hypermedia Experts Group. It is commonly used as a language to describe interactive television services Microprocessor without Interlocked Pipeline-Stages; A RISC-based microprocessor
HDMI	High Definition Multimedia Interface		
HP	HeadPhone		
I	Monochrome TV system. Sound carrier distance is 6.0 MHz	MOP MOSFET	Matrix Output Processor Metal Oxide Silicon Field Effect Transistor, switching device
I ² C	Inter IC bus		
I ² D	Inter IC Data bus	MPEG	Motion Pictures Experts Group
I ² S	Inter IC Sound bus	MPIF	Multi Platform InterFace
IF	Intermediate Frequency	MUTE	MUTE Line
IR	Infra Red	MTV	Mainstream TV: TV-mode with Consumer TV features enabled (iTV)
IRQ	Interrupt Request		
ITU-656	The ITU Radio communication Sector (ITU-R) is a standards body subcommittee of the International Telecommunication Union relating to radio communication. ITU-656 (a.k.a. SDI), is a digitized video format used for broadcast grade video.	NC NICAM NTC	Not Connected Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, mainly used in Europe. Negative Temperature Coefficient, non-linear resistor

NTSC	National Television Standard Committee. Color system mainly used in North America and Japan. Color carrier NTSC M/N= 3.579545 MHz, NTSC 4.43= 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)	RAM	Random Access Memory
		RGB	Red, Green, and Blue. The primary color signals for TV. By mixing levels of R, G, and B, all colors (Y/C) are reproduced.
		RC	Remote Control
NVM	Non-Volatile Memory: IC containing TV related data such as alignments	RC5 / RC6	Signal protocol from the remote control receiver
O/C	Open Circuit	RESET	RESET signal
OSD	On Screen Display	ROM	Read Only Memory
OAD	Over the Air Download. Method of software upgrade via RF transmission. Upgrade software is broadcasted in TS with TV channels.	RSDS	Reduced Swing Differential Signalling data interface
		R-TXT	Red Teletext
		SAM	Service Alignment Mode
		S/C	Short Circuit
OTC	On screen display Teletext and Control; also called Artistic (SAA5800)	SCART	Syndicat des Constructeurs d'Appareils Radiorécepteurs et Téléviseurs
P50	Project 50: communication protocol between TV and peripherals	SCL	Serial Clock I ² C
		SCL-F	CLock Signal on Fast I ² C bus
PAL	Phase Alternating Line. Color system mainly used in West Europe (colour carrier = 4.433619 MHz) and South America (colour carrier PAL M = 3.575612 MHz and PAL N = 3.582056 MHz)	SD	Standard Definition
		SDA	Serial Data I ² C
		SDA-F	DAta Signal on Fast I ² C bus
		SDI	Serial Digital Interface, see "ITU-656"
PCB	Printed Circuit Board (same as "PWB")	SDRAM	Synchronous DRAM
PCM	Pulse Code Modulation	SECAM	SEquence Couleur Avec Mémoire. Colour system mainly used in France and East Europe. Colour carriers = 4.406250 MHz and 4.250000 MHz
PDP	Plasma Display Panel		
PFC	Power Factor Corrector (or Pre-conditioner)	SIF	Sound Intermediate Frequency
PIP	Picture In Picture	SMPS	Switched Mode Power Supply
PLL	Phase Locked Loop. Used for e.g. FST tuning systems. The customer can give directly the desired frequency	SoC	System on Chip
		SOG	Sync On Green
		SOPS	Self Oscillating Power Supply
POD	Point Of Deployment: a removable CAM module, implementing the CA system for a host (e.g. a TV-set)	SPI	Serial Peripheral Interface bus; a 4-wire synchronous serial data link standard
		S/PDIF	Sony Philips Digital InterFace
POR	Power On Reset, signal to reset the uP	SRAM	Static RAM
PSDL	Power Supply for Direct view LED backlight with 2D-dimming	SRP	Service Reference Protocol
		SSB	Small Signal Board
PSL	Power Supply with integrated LED drivers	SSC	Spread Spectrum Clocking, used to reduce the effects of EMI
PSLS	Power Supply with integrated LED drivers with added Scanning functionality		
		STB	Set Top Box
PTC	Positive Temperature Coefficient, non-linear resistor	STBY	STand-BY
		SVGA	800 × 600 (4:3)
PWB	Printed Wiring Board (same as "PCB")	SVHS	Super Video Home System
PWM	Pulse Width Modulation	SW	Software
QRC	Quasi Resonant Converter	SWAN	Spatial temporal Weighted Averaging Noise reduction
QTNR	Quality Temporal Noise Reduction		
QVCP	Quality Video Composition Processor	SXGA	1280 × 1024

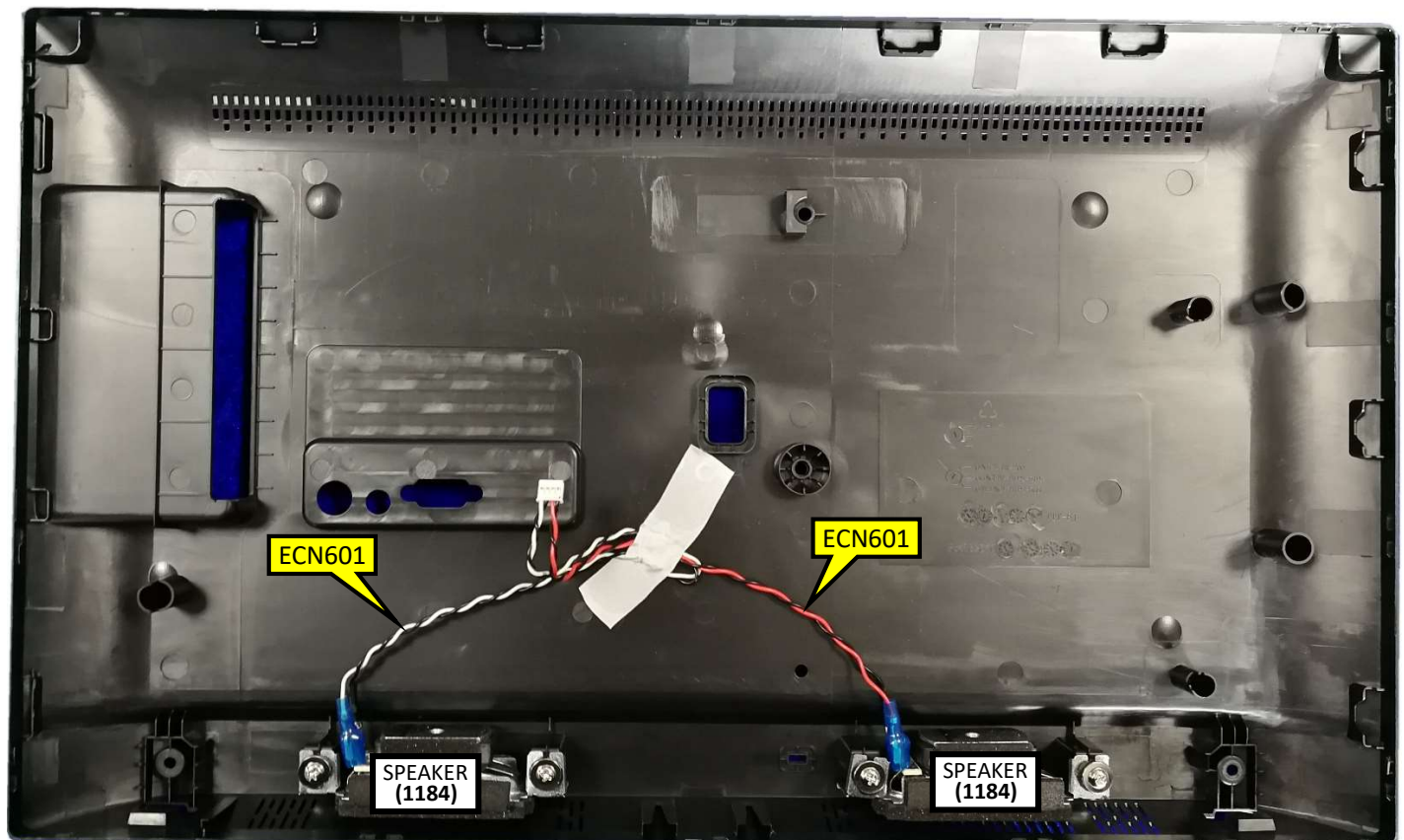
TFT	Thin Film Transistor		toward external amplifier
THD	Total Harmonic Distortion	VSF	Vestigial Side Band; modulation method
TMDS	Transmission Minimized Differential Signalling	WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
TS	Transport Stream		
TXT	TeleteXT	WXGA	1280 × 768 (15:9)
TXT-DW	Dual Window with TeleteXT	XTAL	Quartz crystal
UI	User Interface	XGA	1024 × 768 (4:3)
uP	Microprocessor	Y	Luminance signal
UXGA	1600 × 1200 (4:3)	Y/C	Luminance (Y) and Chrominance (C) signal
V	V-sync to the module		
VESA	Video Electronics Standards Association	YPbPr	Component video. Luminance and scaled color difference signals (B-Y and R-Y)
VGA	640 × 480 (4:3)		
VL	Variable Level out: processed audio output	YUV	Component video

3. Mechanical Instructions

3.1 Cable Dressing



Cable dressing (22" 5403 series)



Back cover overview (22" 5403 series)

3.2 Assembly/Panel Removal

3.2.1 Stand removal

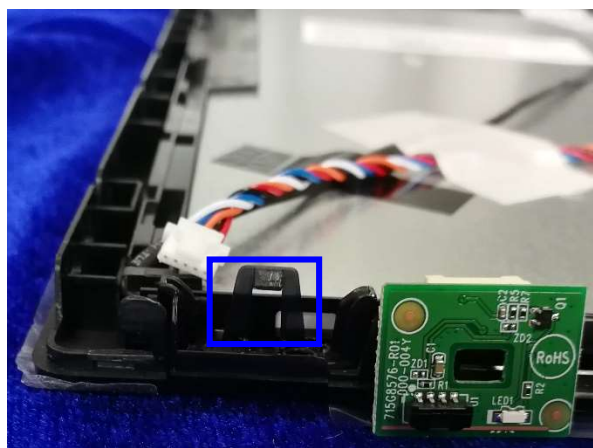
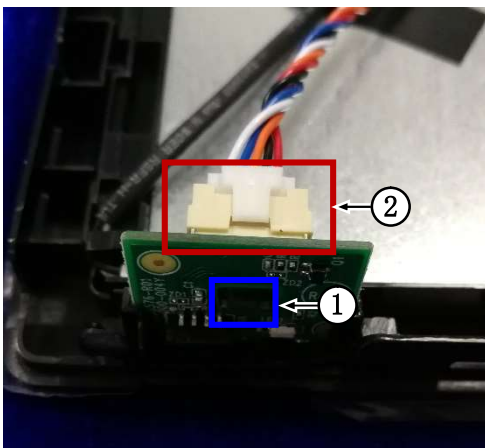
1. Remove the fixation screws [1] that secure the stand.
2. Take the stand bracket out from the set.



3.2.2 IR board Control Unit

1. Unplug the connector [2] from the IR board.
2. Press the snap that marked by blue box below backward then take out the IR board.

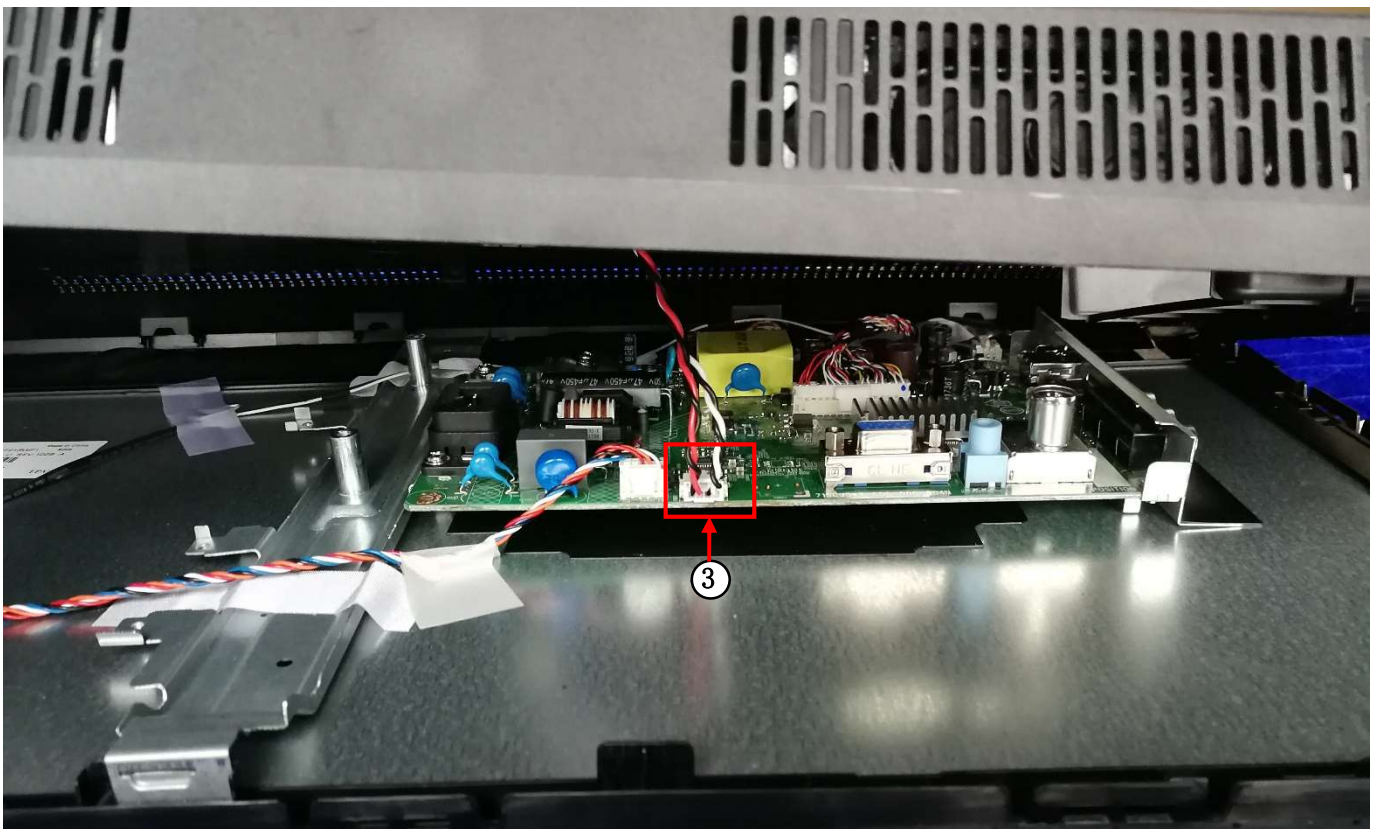
When defective, replace the whole unit.



3.2.3 Rear Cover

Warning: Disconnect the mains power cord before removing the rear cover.

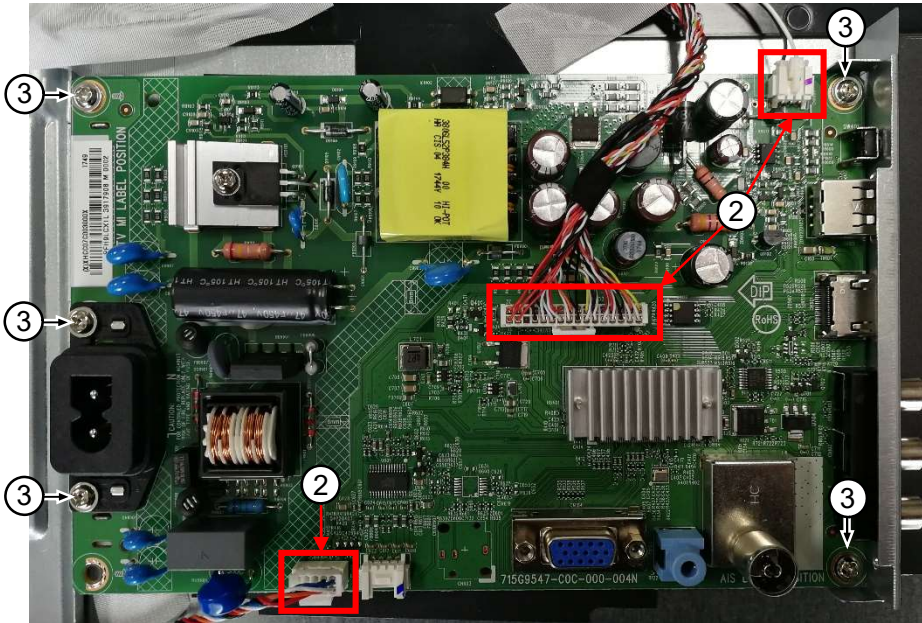
1. Releasing the clips carefully at the indicated areas [2] that secure the back cover.
2. Unplug connector [3] carefully, as the speaker is catch on back cover.
3. Gently lift the rear cover from the TV. Make sure that wires and cables are not damaged while lifting the rear cover from the set.



3.2.4 Main + Power board

Caution: it is mandatory to remount all different screws at their original position during re-assembly. Failure to do so may result in damaging the SSB.

1. Unplug all connectors [2].
2. Remove all the fixation screws [3].
3. The Main + Power board can now be shifted from side connector cover, then lifted and taken out of the I/O bracket.



3.2.5 Speakers

1. Gently release the tapes that secure the speaker cables.
2. Unplug the speaker connector from the SSB.
3. Take the speakers out.

When defective, replace the both units.

3.2.6 LCD Panel

1. Remove the Main + Power board as described earlier.
2. Remove the stand bracket as described earlier.
3. Remove the IR/LED as described earlier.
4. Remove the fixations screws that fix the metal clamps to the front bezel. Take out those clamps.
5. Remove all other metal parts not belonging to the panel.
6. Lift the LCD Panel from the bezel.

When defective, replace the whole unit.

4. Service Modes

4.1 Service Modes

The Service Mode feature is split into following parts:

- Factory Mode.
- Customer Service Mode (CSM).

Factory mode offer features, which can be used by the Service engineer to repair/align a TV set. Some features are:

- Make alignments (e.g. White Tone).
- Display information.

The CSM is a Service Mode that can be enabled by the consumer. The CSM displays diagnosis information, which the customer can forward to the dealer or call centre. The information provided in CSM and the purpose of CSM is to:

- Increase the home repair hit rate.
- Decrease the number of nuisance calls.
- Solved customers' problem without home visit.

4.2 Factory mode:

Purpose

- To perform extended alignments.

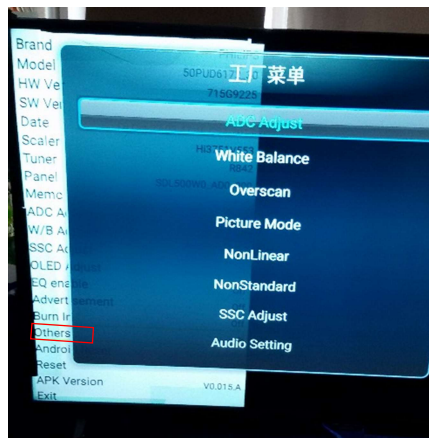
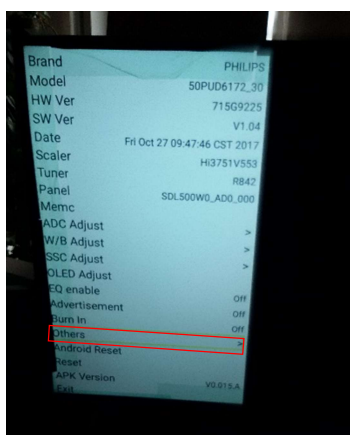
How to Activate the Factory mode

To activate the Factory mode, use the following method:

- Press the following key sequence on the remote control transmitter: from the “Menu/Home” press “1999”, directly followed by the “Back/Return” button. Do not allow the display to time out between entries while keying the sequence.

After entering the Factory mode, we can see many items displayed, use the **UP/DOWN** keys to display the next/previous menu items

Factory mode overview



How to Exit the Factory mode

- Select “EXIT” from the menu and press the “OK” button.

Note: When the TV is switched “off” by a power interrupt, or normal switch to “stand-by” while in the factory mode, the TV will show up in “normal operation mode” as soon as the power is supplied again. The error buffer will not be cleared.

4.3 Customer Service Mode (CSM)

Purpose

The call centre can instruct the customer (by telephone) to enter CSM in order to identify the status of the set. This helps the call centre to diagnose problems and failures in the TV set before making a service call.

The CSM is a read-only mode; therefore, modifications are not possible in this mode.

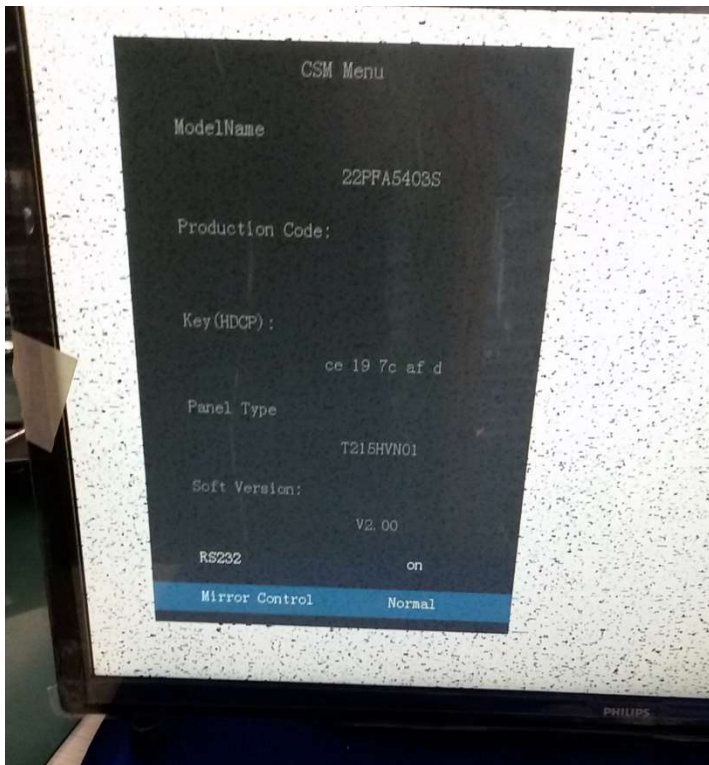
How to Activate CSM

To activate CSM, press the following key sequence on a standard remote control transmitter: from the **"Menu/Home"** press **"456987"** (do not allow the display to time out between entries while keying the sequence). After entering the Customer Service Mode, the following items are displayed.

Use the **Right/Left** keys to display the next/previous menu items

Note: Activation of the CSM is only possible if there is no (user) menu on the screen!

CSM Overview



How to Navigate

By means of the "CURSOR-DOWN/UP" knob (or the scroll wheel) on the RC-transmitter, can be navigated through the menus.

How to Exit CSM

To exit CSM, use one of the following methods.

- Press the MENU/HOME button on the remote control transmitter.
- Press the POWER button on the remote control transmitter.
- Press the POWER button on the television set.

5. Software Upgrading

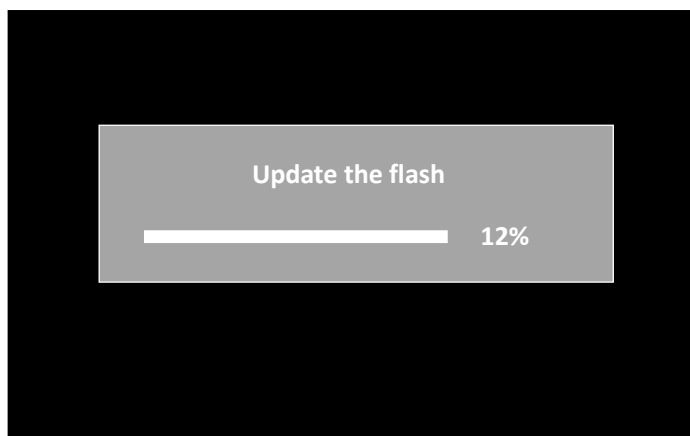
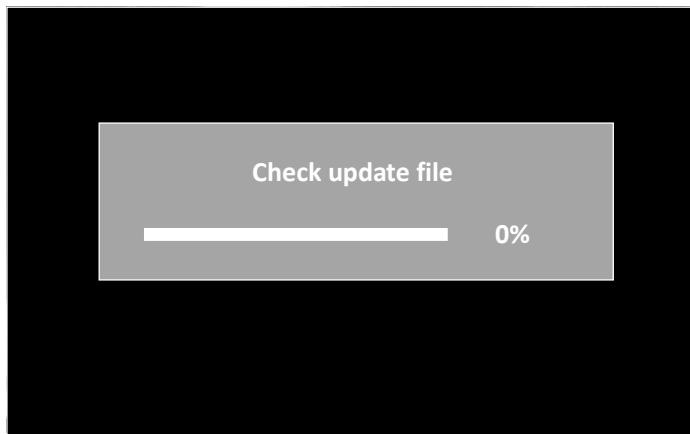
Software Upgrading

Step 1: Ready for F/W Upgrade

1. Prepare a USB memory (File format: FLAT, Size: 1G~8G).
2. Copy the software (.bin file) to USB flash disk (root directory).
3. Rename the file name to "image.bin".
4. Insert the USB memory stick that contains the software update files in TV's USB 2.0 port.

Step 2: F/W Upgrade

1. Power off then power on the TV. The TV will detect the USB memory stick automatically. Then a window jumps out as below:

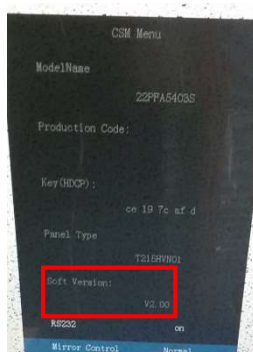


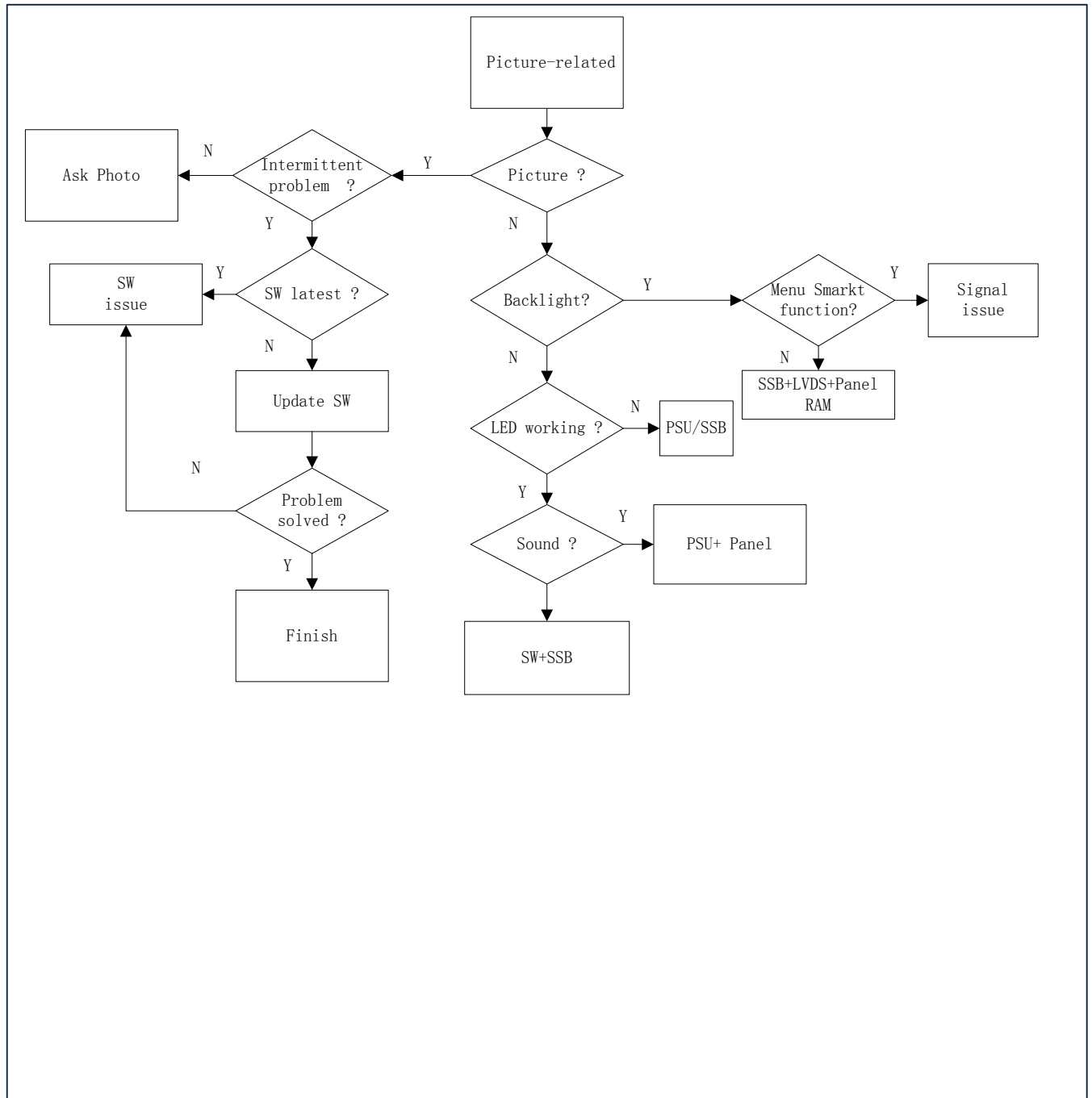
2. When the TV software is updated, please reboot the TV. Remove your USB flash drive.
3. We can enter in CSM mode to check the current software version.

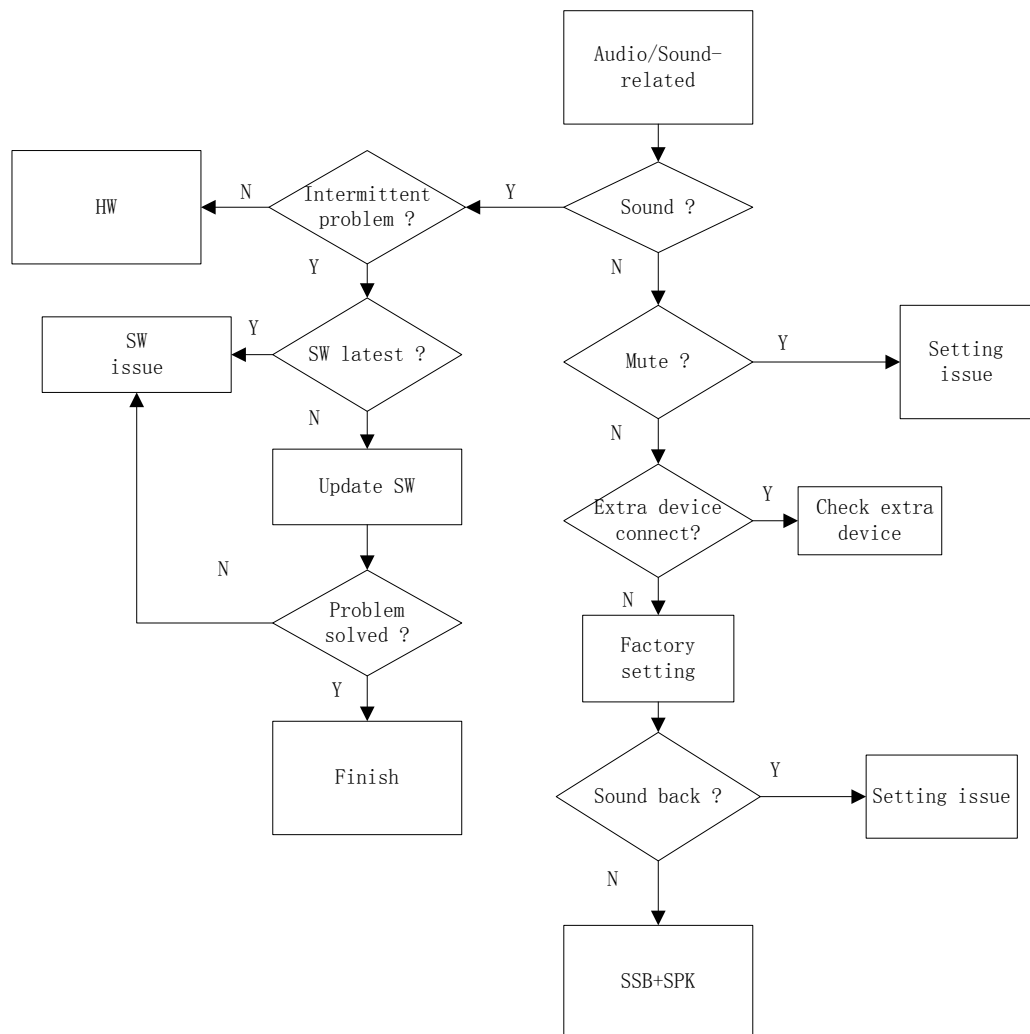
Caution: Please make sure that software upgrade is finished before unplug the USB and AC power!

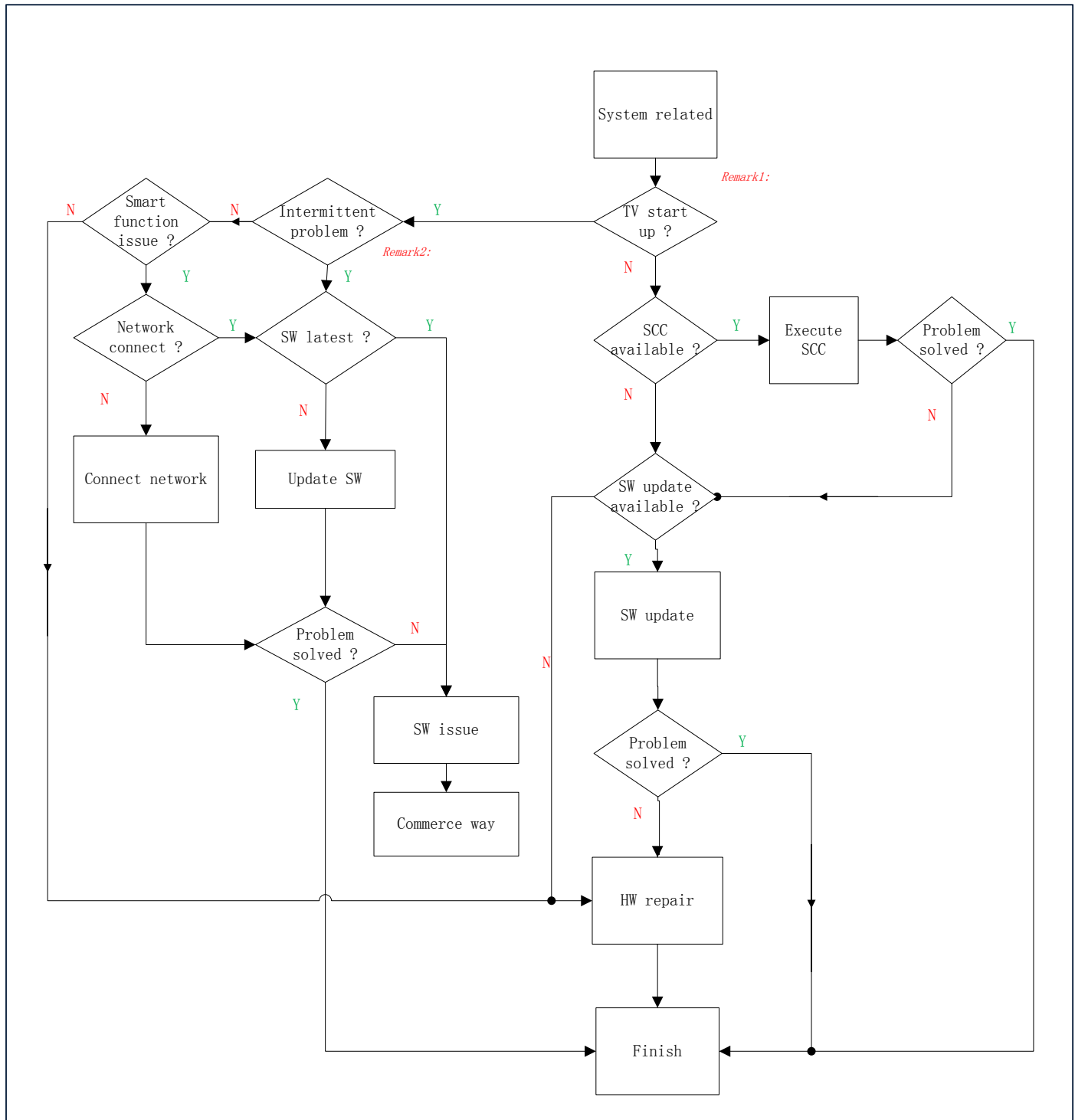
Step 3: Check the SW version

1. After burning software, restart the TV.
2. Press "Menu/Home+456987", enter Customer Service Mode to check if the software version is correct.









Remark1 : What is System related issue ?

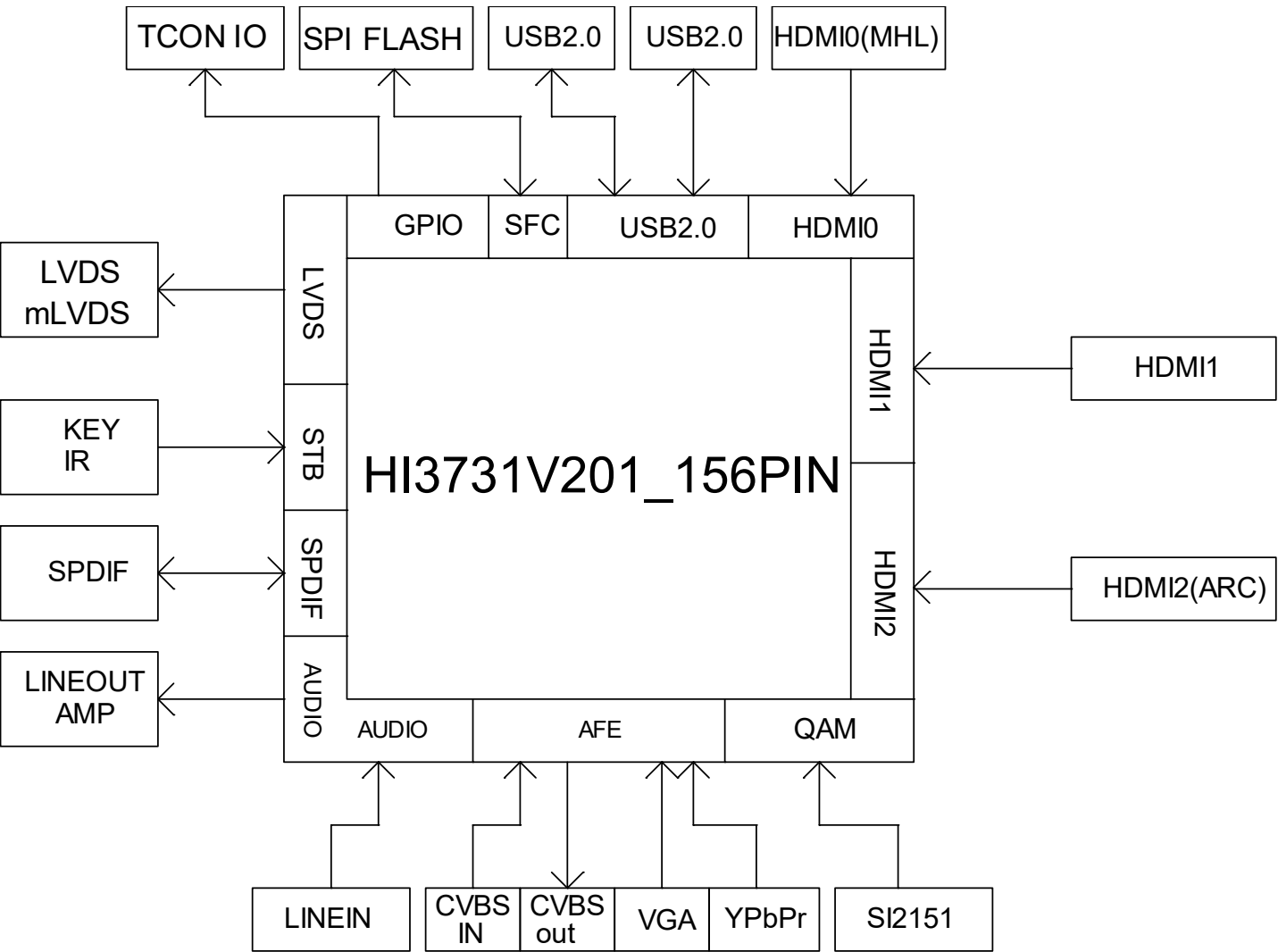
1. Permanent reboots
2. Intermittent reboots
3. No function, no standby LED (set dead)
4. No function, blinking LED
5. Set freezes, intermittently
6. Slow response to user interaction
7. Switches ON by itself
8. Switches Off by itself
9. Stuck in standby mode / unable to start up
10. Stuck on PHILIPS / ANDROID logo
11. CAM not recognized by TV
12. CAM authentication issue
13. Misc CAM issue
14. IP-EPG issues
15. BC-EPG issues
16. PVR issues w/ BC-EPG
17. PVR issues w/ IP-EPG
18. PVR issues / generic
19. EDFU-related issue
20. Features not available in UI / cannot be activated

Remark2 : How to judge intermittent issue ?

1. When the problem happened can be solved by:
 - 1) AC off AC on
 - 2) DC off DC on
 - 3) RC switch different source
2. The problem intermittent happened

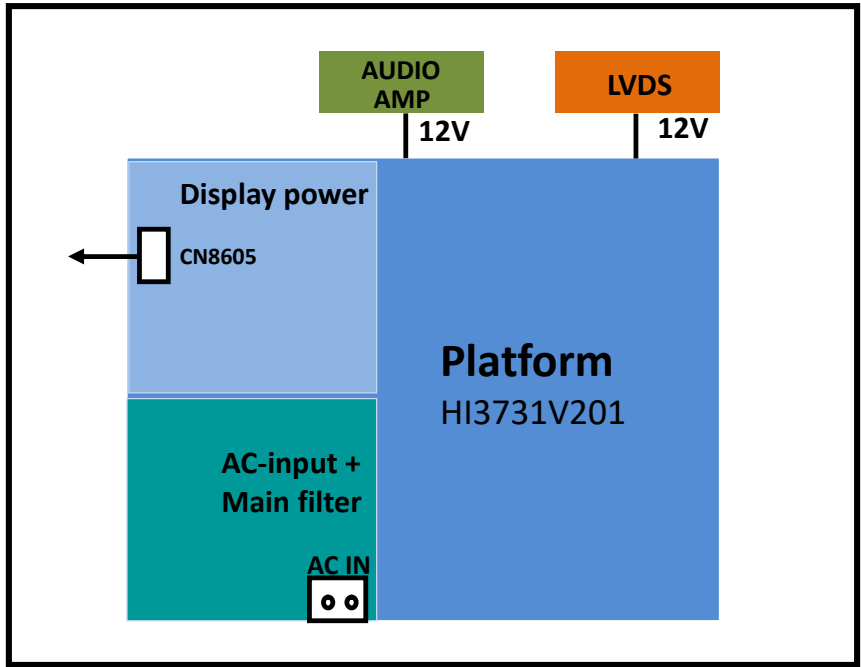
7. Electrical Diagram

7.1 Block diagram (For 715G9547)



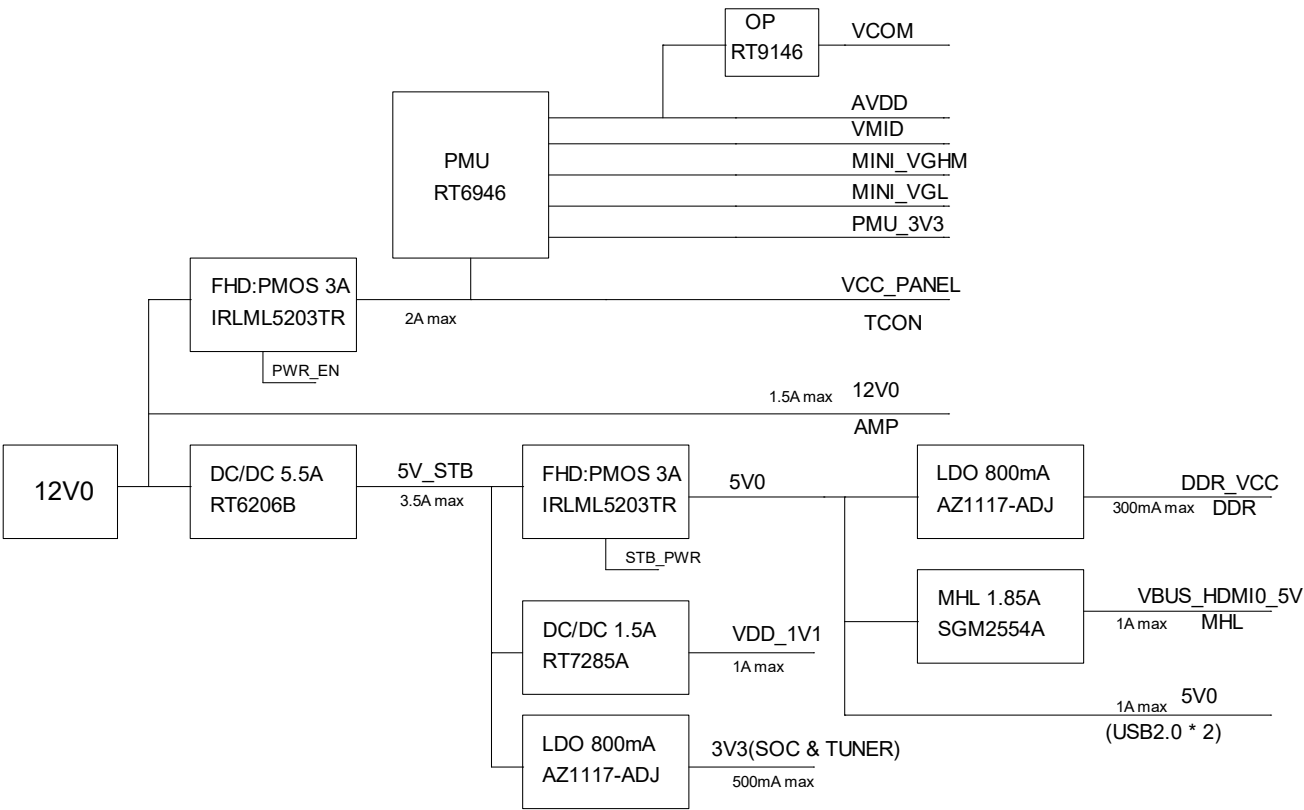
7.2 Power Supply

Power architecture of this platform.

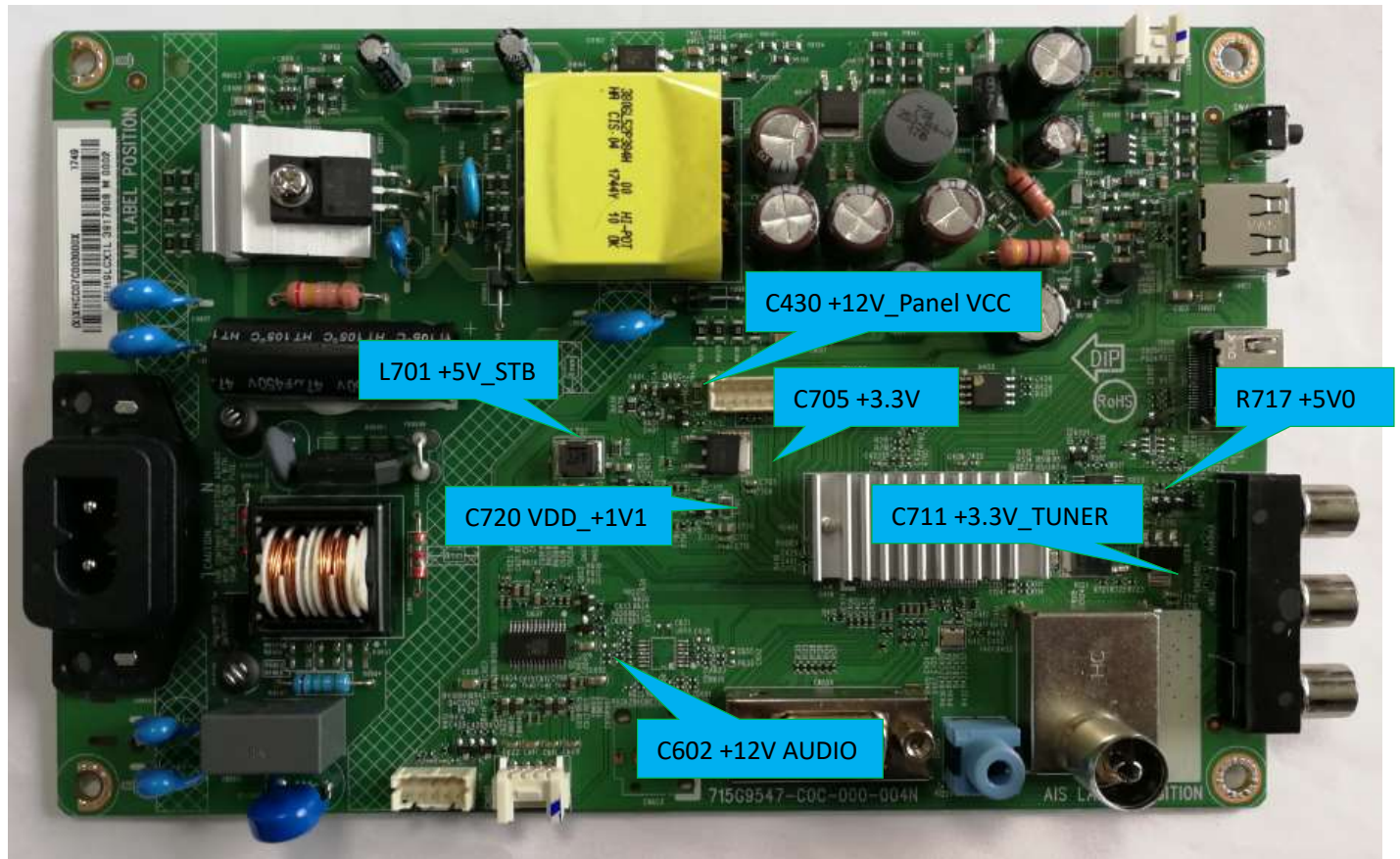


7.3 Power tree (For 715G9547C)

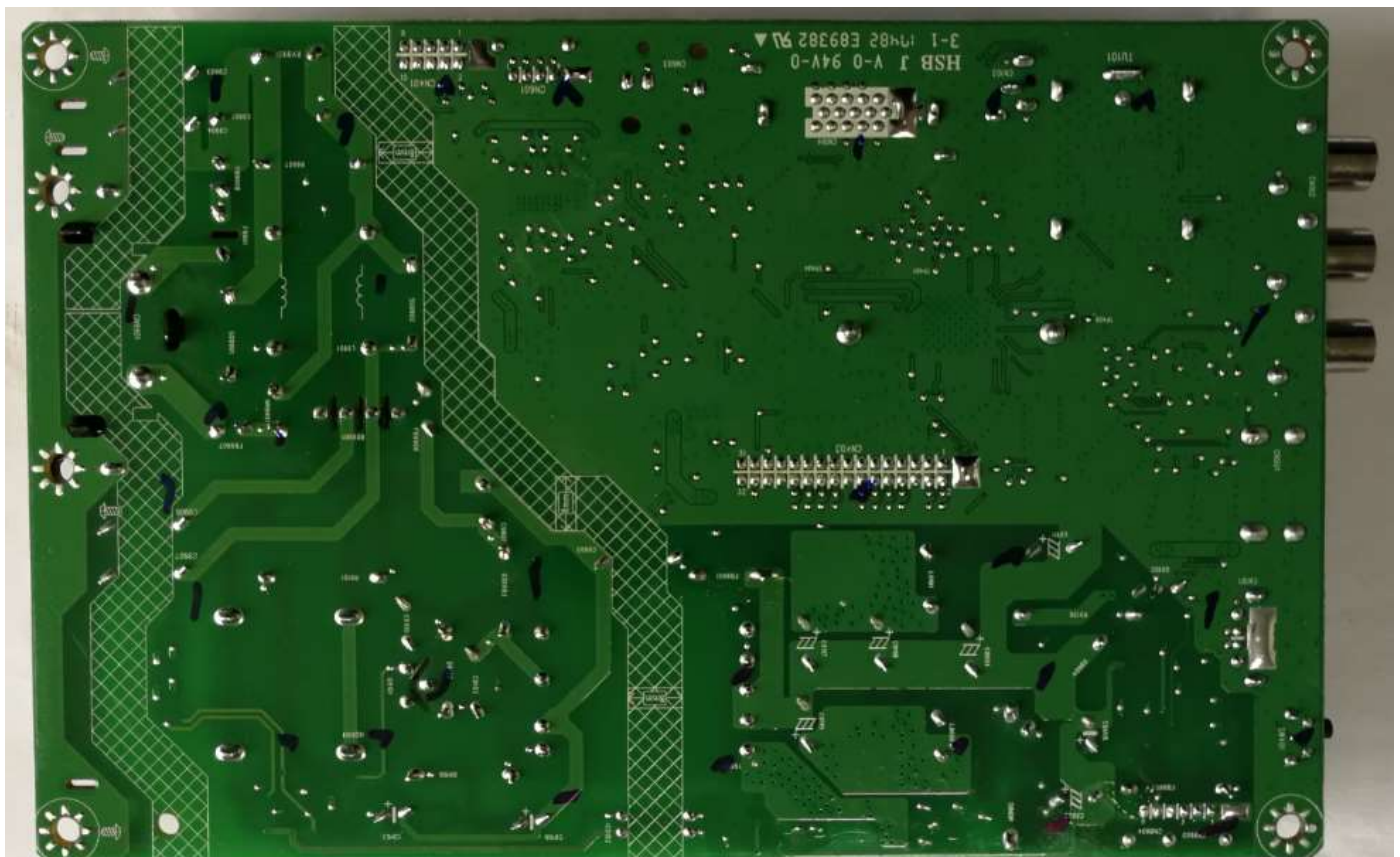
Power tree



7.4 Power layout SSB



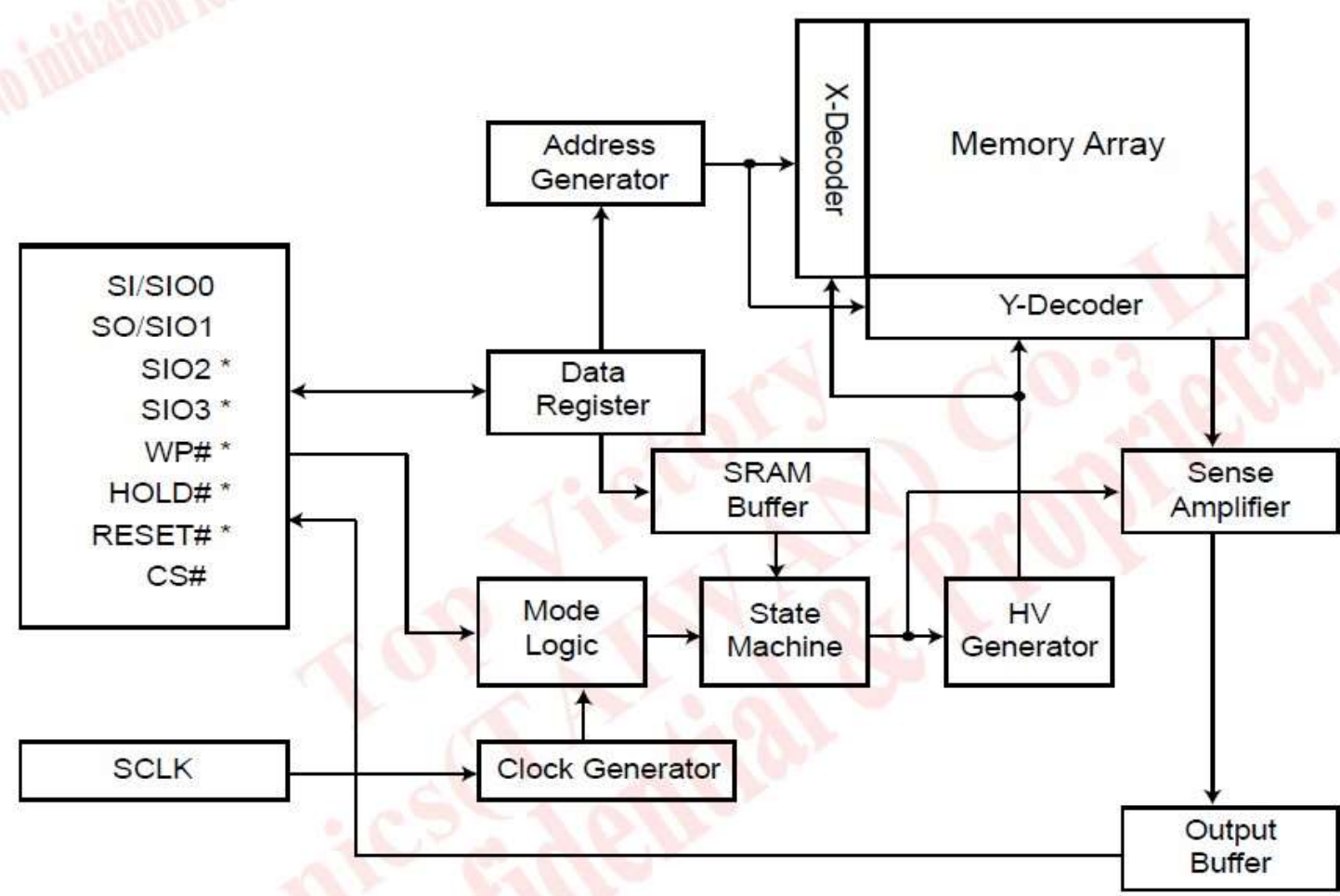
Power SSB Top View (For 715G9547C)



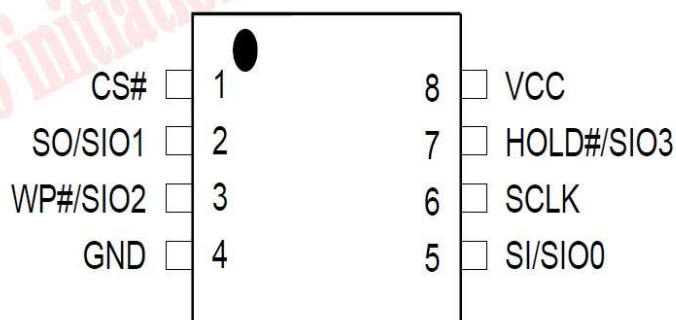
Power SSB Bottom View (For 715G9547C)

8. IC Data Sheets

8.1 MX25L3236FM2I-08G (IC U402--FLASH)



8-PIN SOP (200mil)

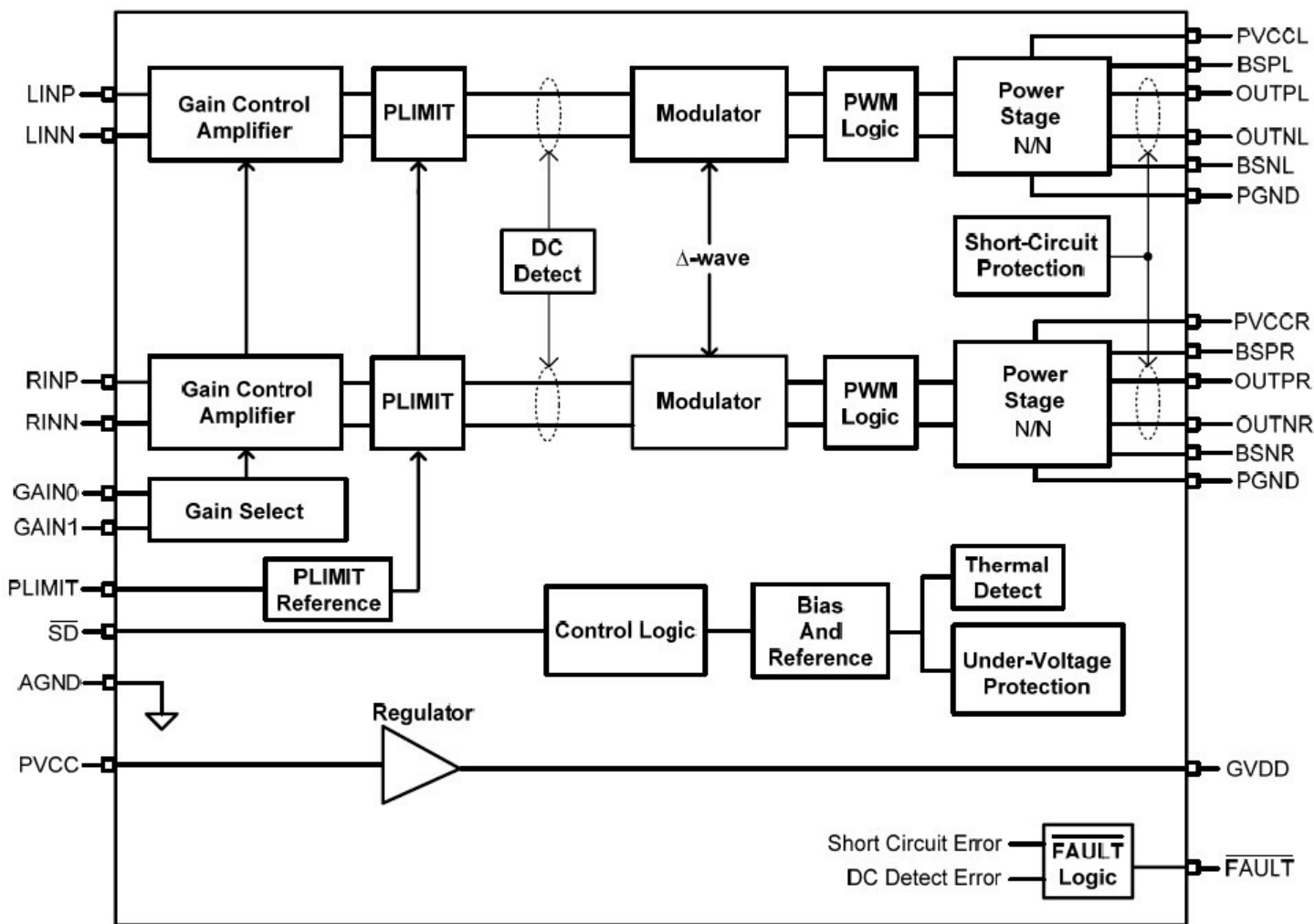


4. PIN DESCRIPTION

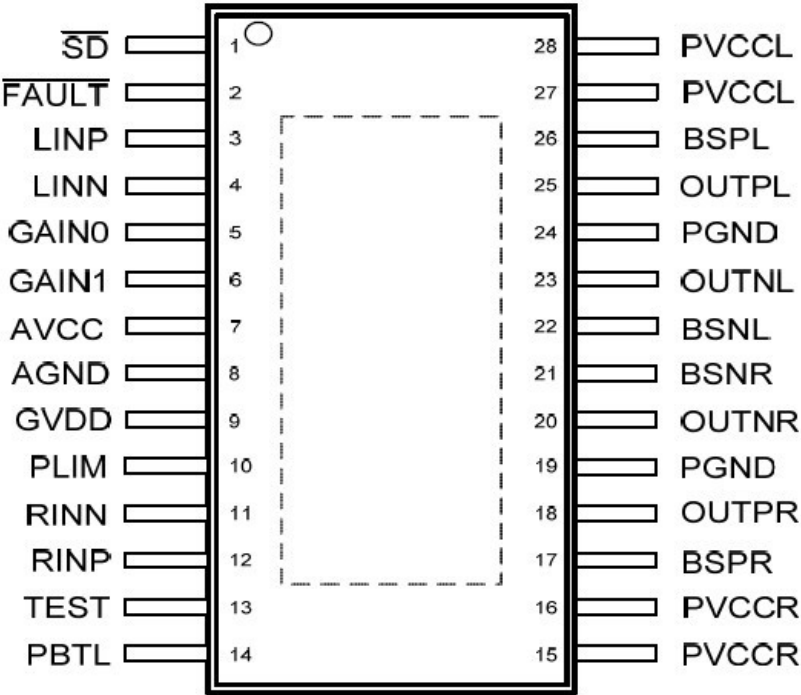
SYMBOL	DESCRIPTION
CS#	Chip Select
SI/SIO0	Serial Data Input (for 1xI/O)/ Serial Data Input & Output (for 2xI/O mode and 4xI/O mode)
SO/SIO1	Serial Data Output (for 1xI/O)/Serial Data Input & Output (for 2xI/O mode and 4xI/O mode)
SCLK	Clock Input
WP#/SIO2	Write protection Active Low or Serial Data Input & Output (for 4xI/O mode)
HOLD#/SIO3	To pause the device without deselecting the device or Serial data Input/Output for 4 x I/O mode
VCC	+ 3.0V Power Supply
GND	Ground
NC	No Connection

Note: The HOLD# pin is internal pull high.

8.2 AD52060-QG28NRR (IC U601--AUDIO)



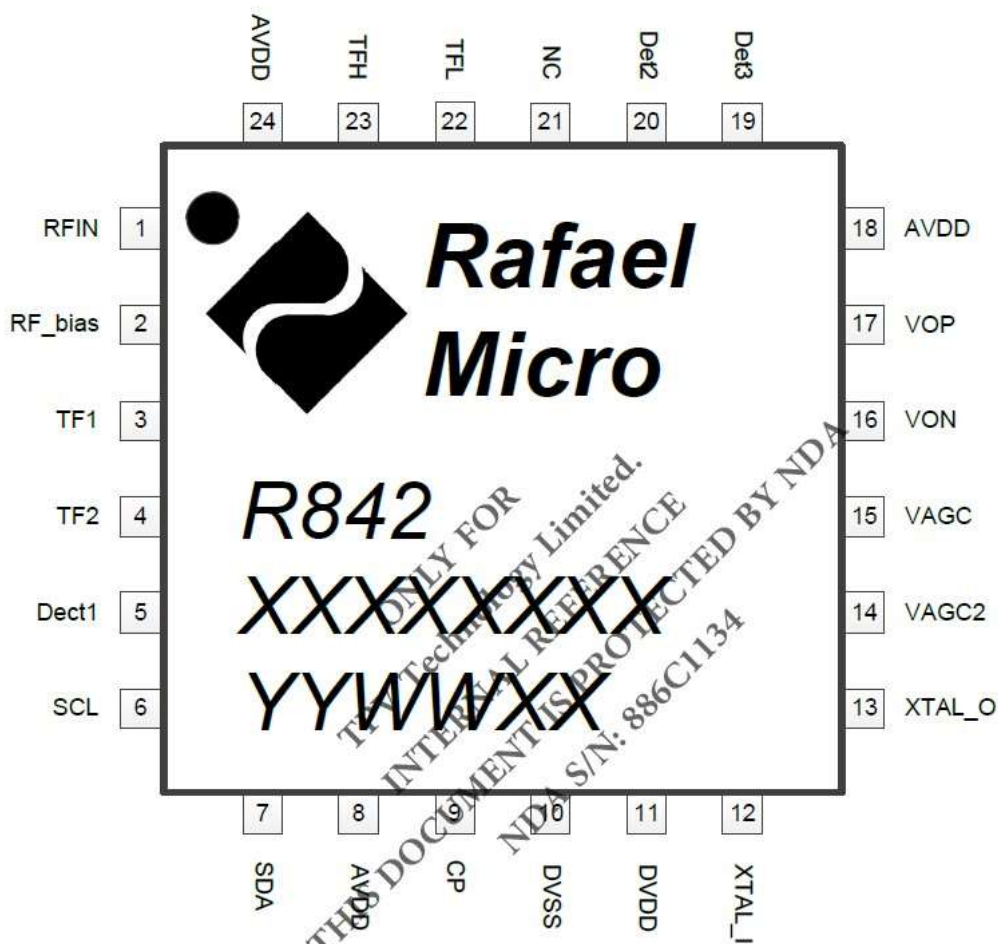
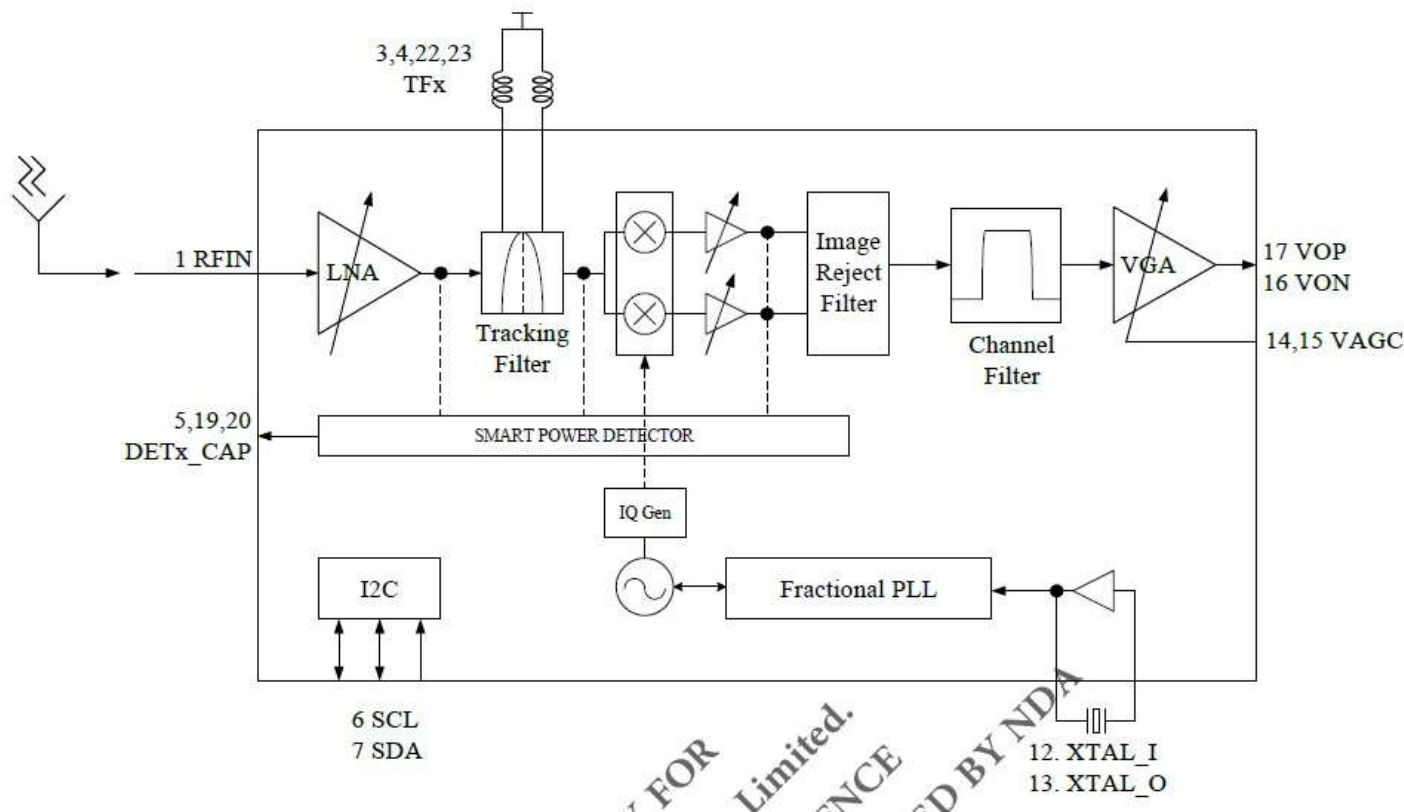
E-TSSOP-28L
(TOP VIEW)



Pin Description

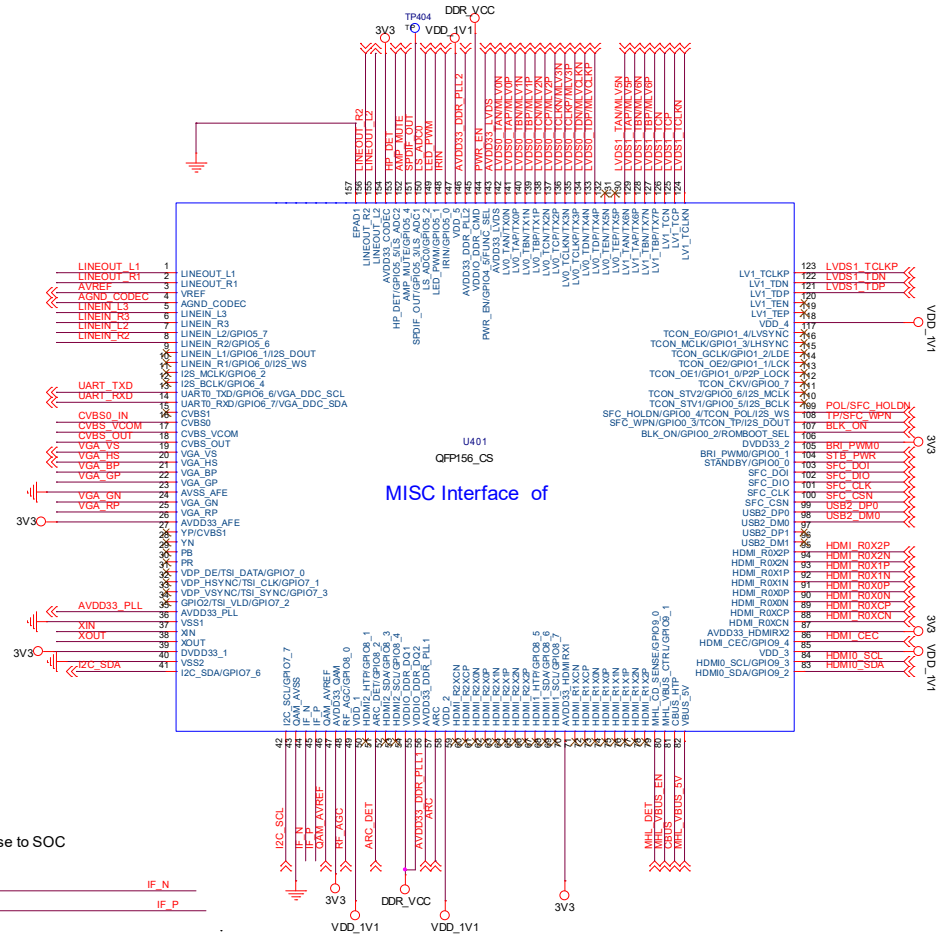
NAME	E-TSSOP -28L	TYP	DESCRIPTION
$\overline{\text{SD}}$	1	I	Shutdown signal for IC (low = disabled, high = operational). Voltage compliance to AVCC.
$\overline{\text{FAULT}}$	2	O	Open drain output used to display short circuit or dc detect fault. Voltage compliant to AVCC. Short circuit faults can be set to auto-recovery by connecting FAULTB pin to $\overline{\text{SD}}$ pin. Otherwise, both short circuit faults and dc detect faults must be reset by cycling AVCC.
LINP	3	I	Positive audio input for left channel. Biased at 2.5V.
LINN	4	I	Negative audio input for left channel. Biased at 2.5V.
GAIN0	5	I	Gain select least significant bit. Voltage compliance to AVCC.
GAIN1	6	I	Gain select most significant bit. Voltage compliance to AVCC.
AVCC	7	P	Analog supply.
AGND	8	P	Analog signal ground. Connect to the thermal pad.
GVDD	9	O	5V regulated output, also used as supply for PLIMIT function.
PLIMIT	10	I	Power limit level adjustment. Connect a resistor divider from GVDD to GND to set power limit. Give $V(\text{PLIMIT}) < 2.4\text{V}$ to set power limit level. Connect to GVDD ($> 2.4\text{V}$) or GND to disable power limit function.
RINN	11	I	Negative audio input for right channel. Biased at 2.5V.
RINP	12	I	Positive audio input for right channel. Biased at 2.5V.
TEST	13	I	Test mode pin.
PBTL	14	I	Parallel BTL mode switch, high for parallel BTL output. Voltage compliance to AVCC.
PVCCR	15,16	P	High-voltage power supply for right-channel. Right channel and left channel power supply inputs are connect internal.
BSPR	17	I	Bootstrap I/O for right channel, positive high side FET.
OUTPR	18	O	Class-D H-bridge positive output for right channel.
PGND	19	P	Power ground for the H-bridges.
OUTNR	20	O	Class-D H-bridge negative output for right channel.
BSNR	21	I	Bootstrap I/O for right channel, negative high side FET.
BSNL	22	I	Bootstrap I/O for left channel, negative high side FET.
OUTNL	23	O	Class-D H-bridge negative output for left channel.
PGND	24	P	Power ground for the H-bridges.
OUTPL	25	O	Class-D H-bridge positive output for left channel.
BSPL	26	I	Bootstrap I/O for left channel, positive high side FET.
PVCCL	27,28	P	High-voltage power supply for right-channel. Right channel and left channel power supply inputs are connect internal.
Thermal Pad		P	Must be soldered to PCB's ground plane.

Functional Block Diagram



2.2 Pin Assignment

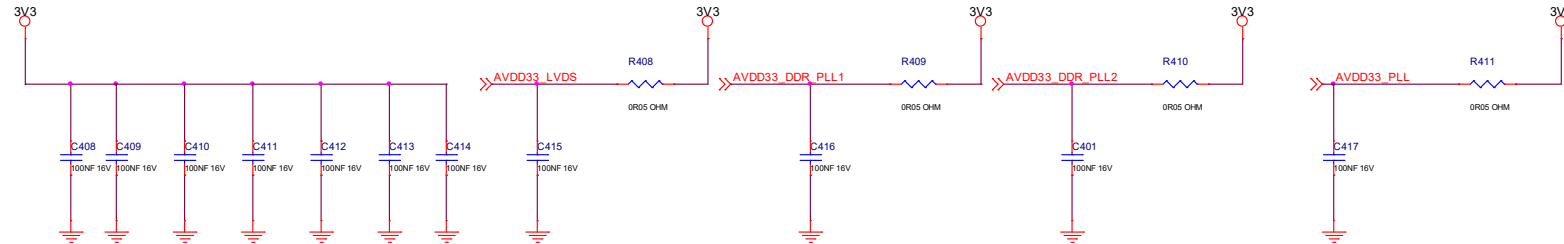
Pin Number	Symbol	I/O	Description
1	RFIN	I	RF input
2	RF_bias	-	RF circuit bias
5,19,20	Detx	-	Power detector decoupling capacitor
3,4,22,23	TFxx	-	Tracking filter pin out
6	SCL	I	I ² C bus, clock input
7	SDA	I/O	I ² C bus, data input/ output
8	AVDD	S	AVDD for PLL
9	CP	-	PLL Charge Pump decouple
10	DVSS	S	Digital Ground
11	DVDD	S	Digital 3.3V Supply
12	XTAL_I	I	Crystal Driver Input
13	XTAL_O	I	Crystal Driver Output
14,15	VAGC	I	IF automatic gain control input
16,17	VOP, VON	O	Differential IF output
18	AVDD	S	Analog 3.3V supply
21	NC	-	No used
24	AVDD	S	RF 3.3V Supply



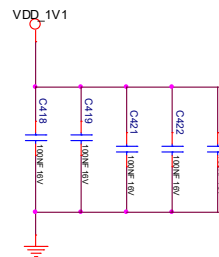
9-1-2 SOC POWER1

Power for SOC

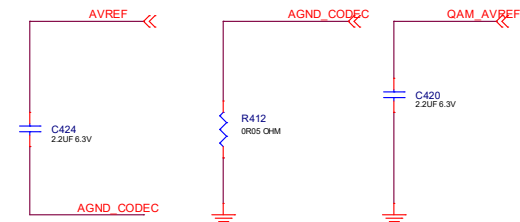
3V3



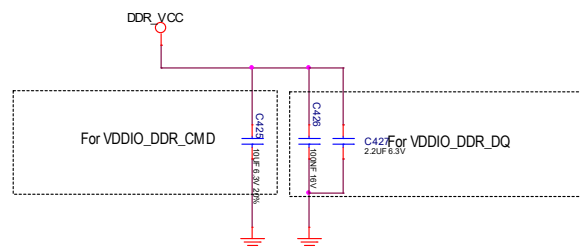
VDD



Vref Power

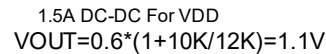
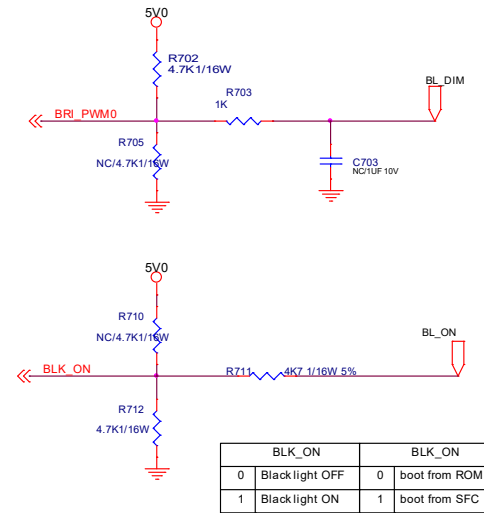


DDR

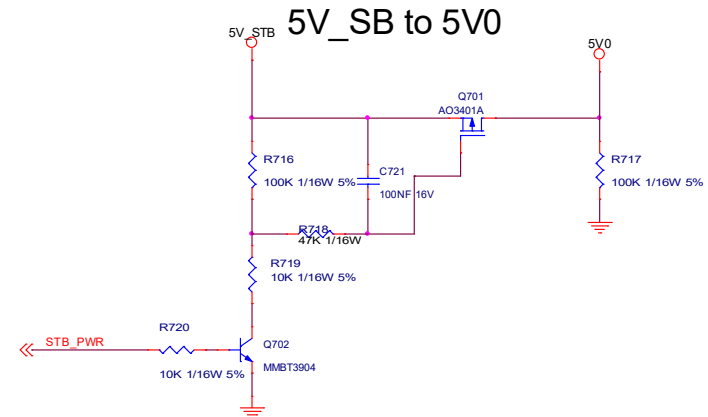


Power supply mangement

VDD

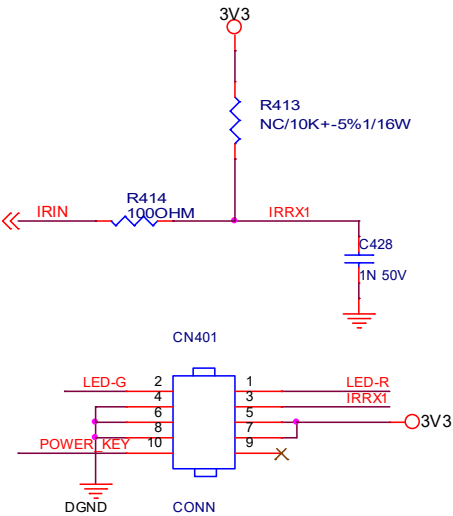


STB	
0	5V0 OFF
1	5V0 ON

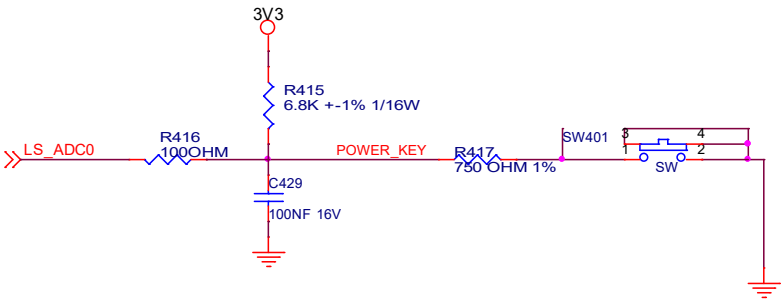


UART & IR & KEY & XTAL

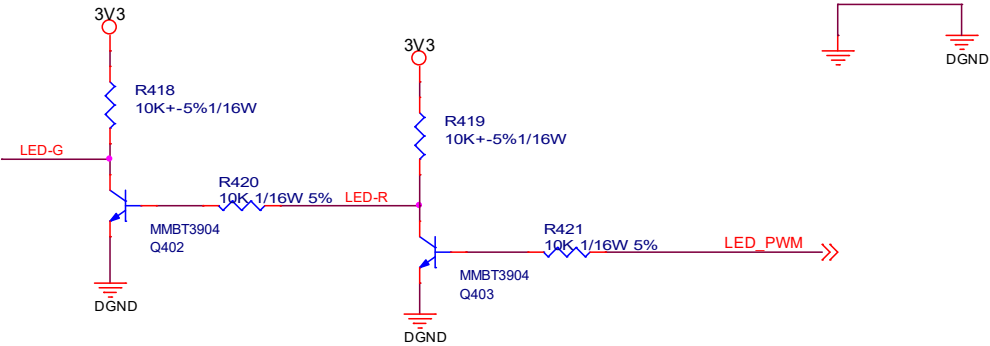
IR



KEY PADS



UART



USB & SPI FLASH & LVDS

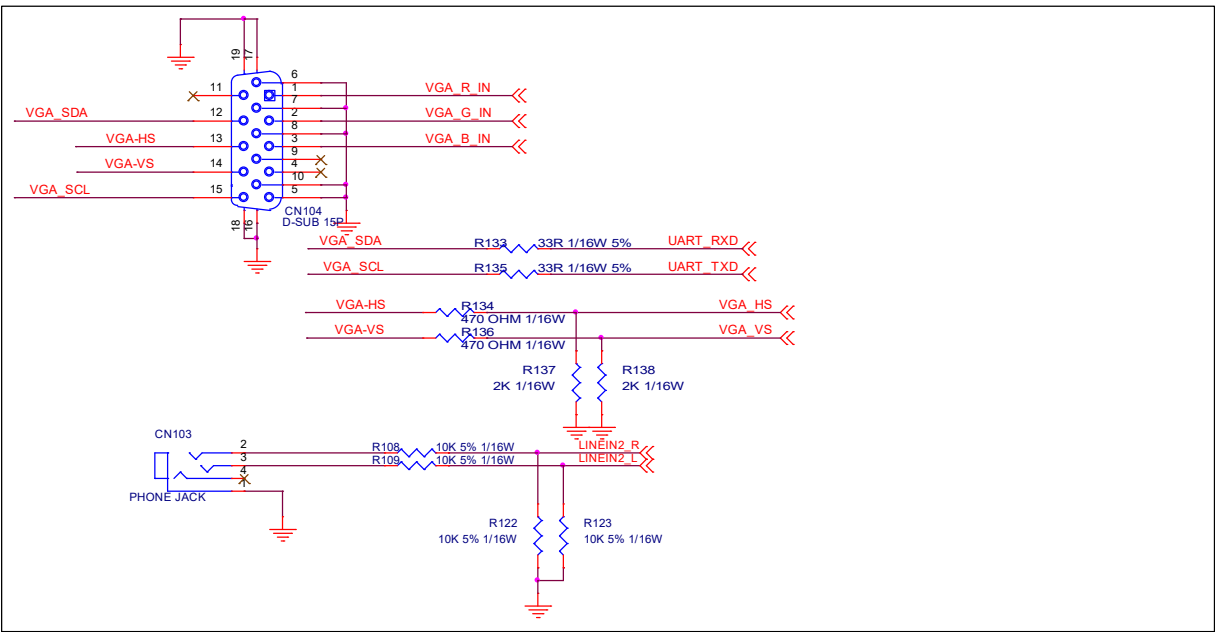
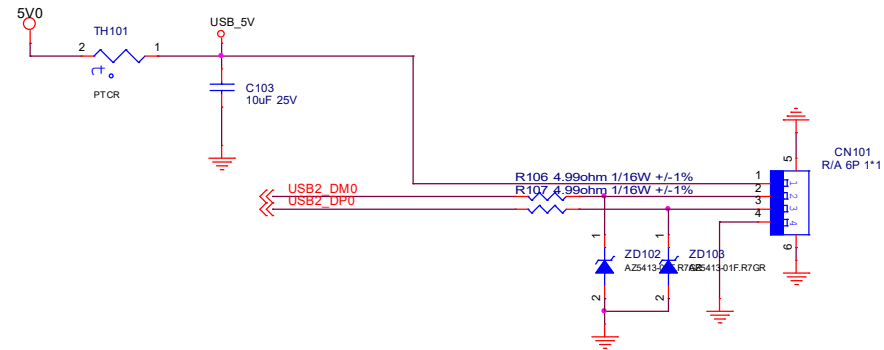
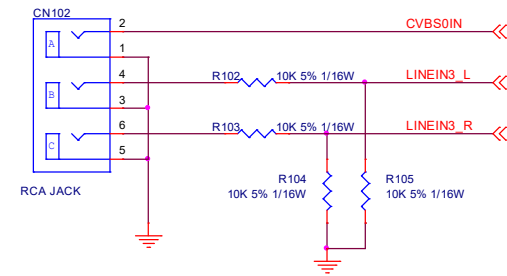
The schematic diagram illustrates the electrical connections for a device, featuring several key components and sections:

- Power Supply Section (+12V):** Includes a 3V3 input connected through resistors R423 and R424 (NC/4.7K) to ground. A 12V input is connected through resistor R439 (00H) to the 5V_STB pin.
- Panel Power Section:** Features a P12V connector, a 12V input, and a 5V_STB input. The circuit includes resistors R428 (100K 1/16W 5%), R430 (2K 1/4W), R431 (33K 1%), and R432 (4K7 1/16W 5%). It also contains capacitors C431 (100N 50V) and C433 (100NF 16V), a transistor Q404 (MMBT3904), and a diode D401 (NC/BAS316WS).
- LVDS Section:** Shows a CN403 connector with pins 1-32. Signals include LVDS0 TAP/MLV0P, LVDS0 TBP/MLV1P, LVDS0 TCP/MLV2P, LVDS0 TCLKP/MLV3P, LVDS0 TDP/MLVCLKP, LVDS1 TAP/MLV5P, LVDS1 TBP/MLV6P, LVDS1 TCP, LVDS1 TCLKP, LVDS1 TDP, LVDS0 TAN/MLV0N, LVDS0 TBN/MLV1N, LVDS0 TON/MLV2N, LVDS0 TCLKN/MLV3N, LVDS0 TDN/MLVCLKN, LVDS1 TAN/MLV5N, LVDS1 TBN/MLV6N, LVDS1 TCN, LVDS1 TCLKN, and LVDS1 TDN. A VCC_PANEL input is shown at the top.
- SPI FLASH Section:** Includes a U402 component (MX25L3236FM2I-08G) with pins 1-8. Signals include SFC_CSN, SFC_DOI, TP/SFC_WPN, NC/OR05_OBN, VCC, CS#, SO/SIO1_HOLD#, WP#, GND, SI/SIO0, SFC_CLK, SFC_DIO, POL/SFC_HOLDN, and SFC_DOI. Resistors R425 (10K 5% 1/16W) and R426 (10K 5% 1/16W) are present, along with capacitor C432 (100NF 16V).

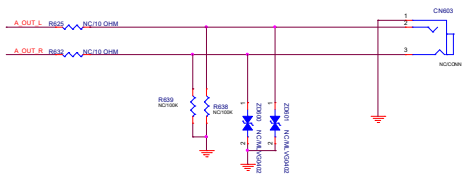
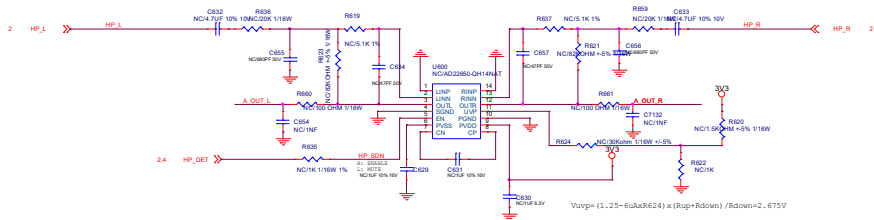
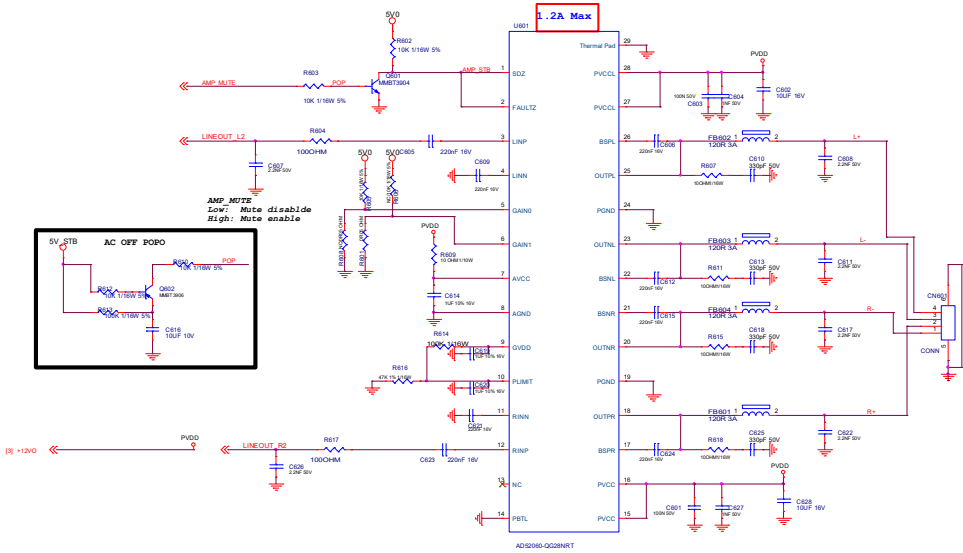
9-1-6 CVBS&USB&VGA

USB2.0

CVBS0 IN



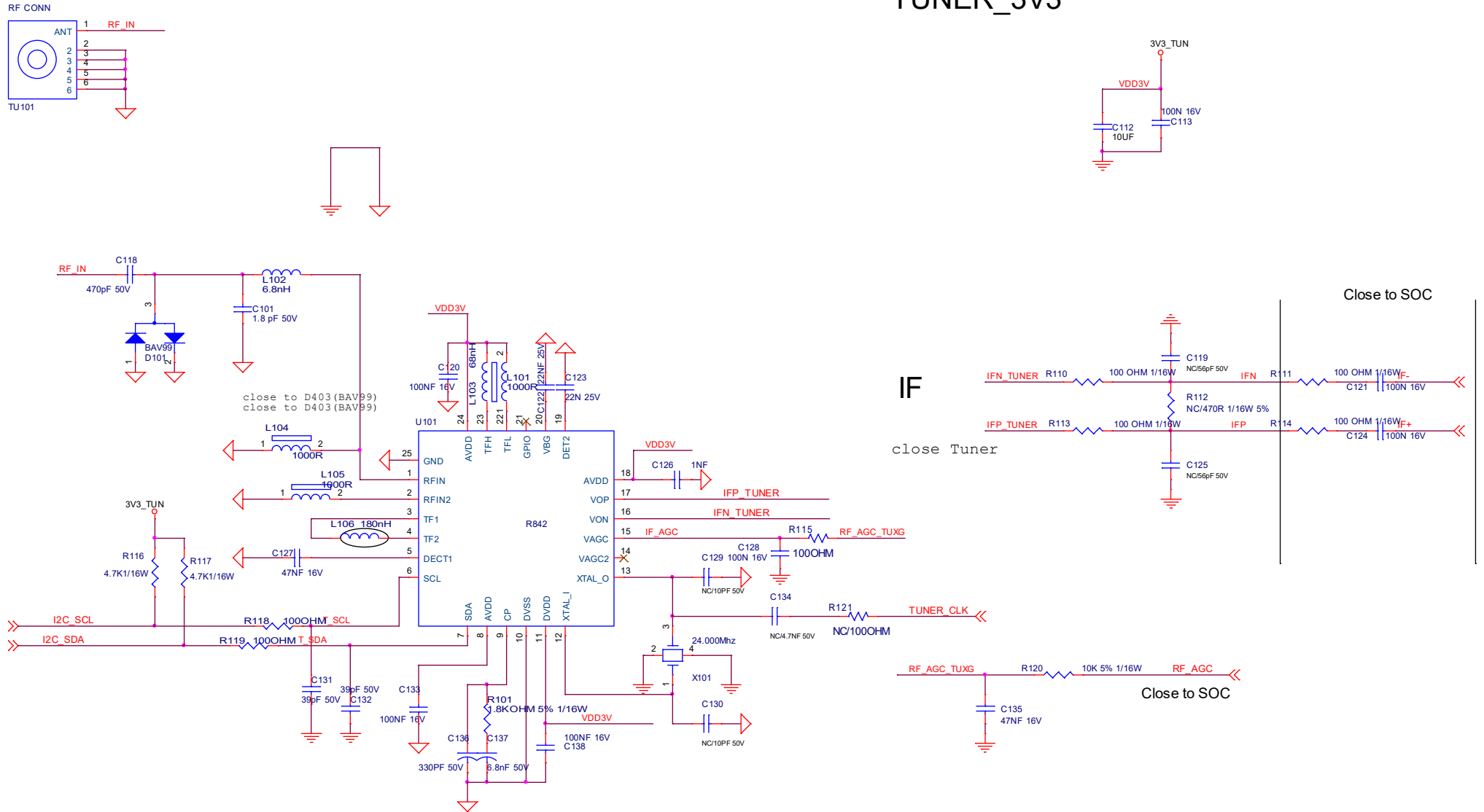
9-1-7 AUDIO AMP



9-1-8 Tuner

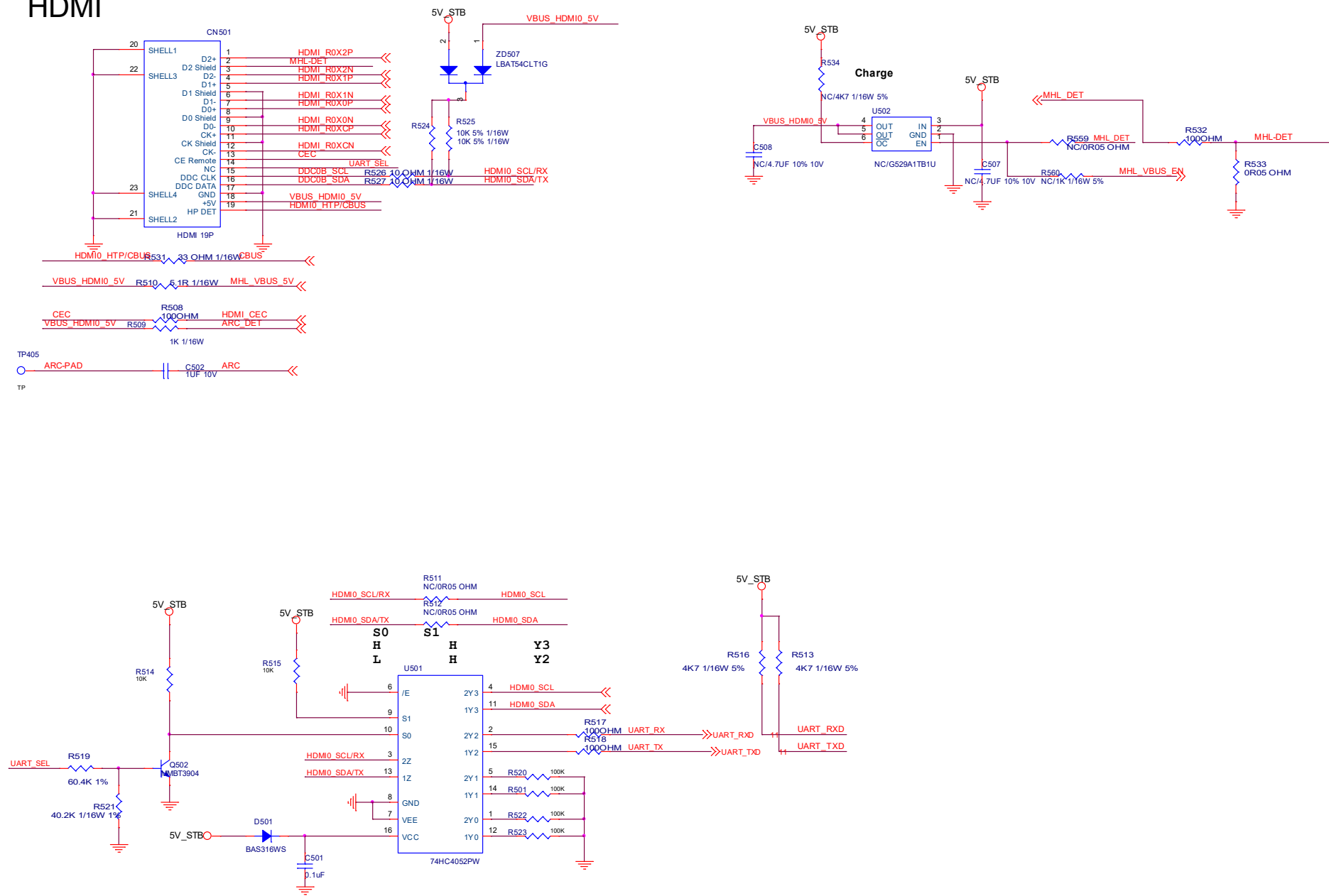
Tuner(R842)

TUNER_3V3



9-1-9 HDMI&RS232

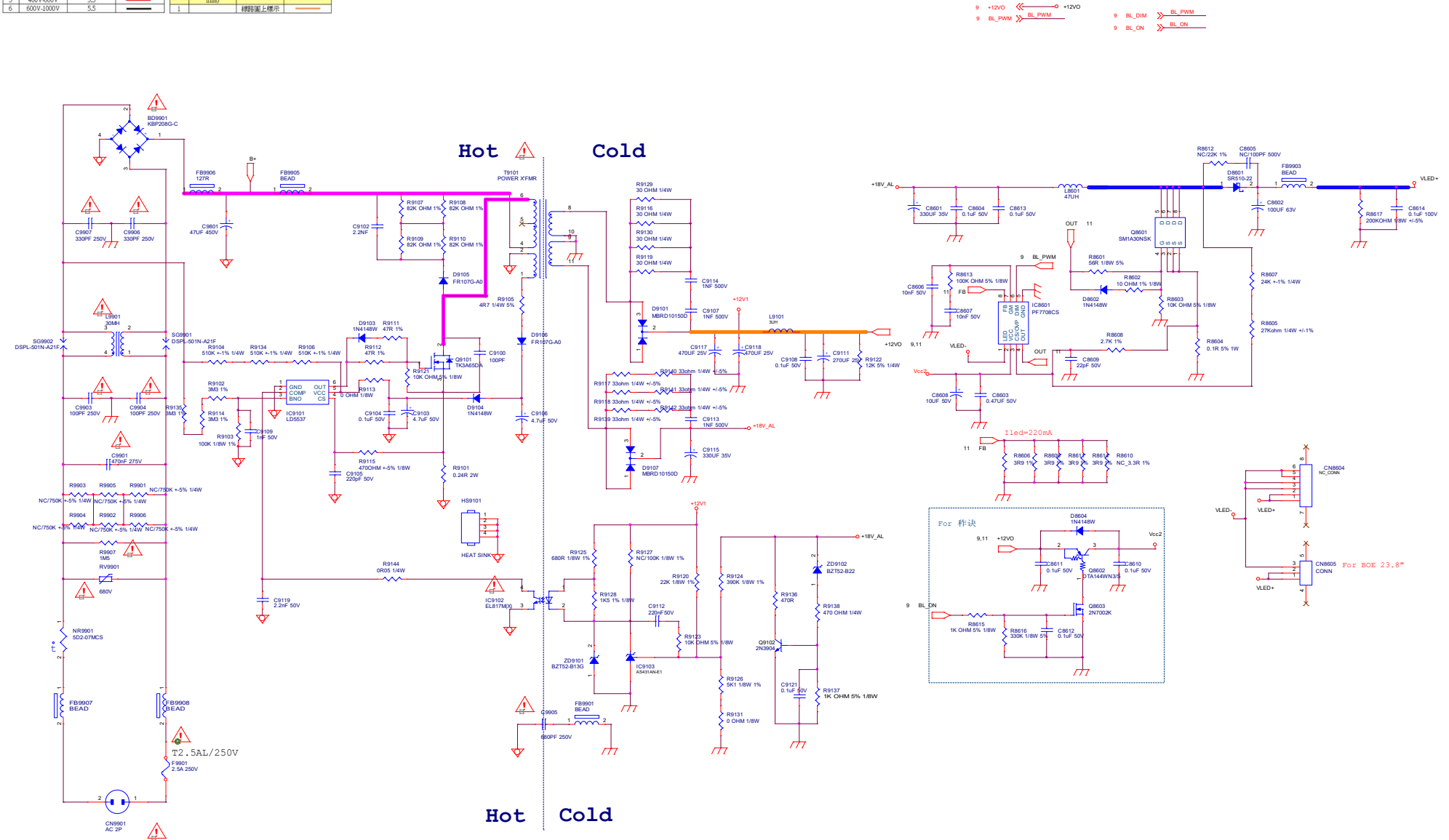
HDMI



9-1-10 AC Power

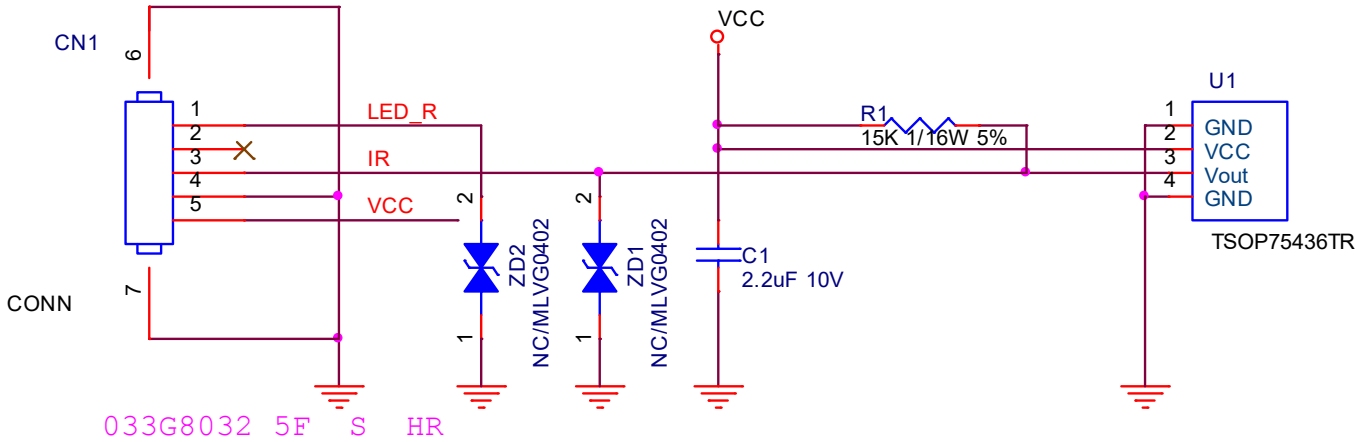
Layout 佈局時電源線佈局規格標準			
序號	電壓值 (Vdc or Vrms)	最少銅箔間距 (mm)	標記顏色
1	40V 1	0.30	無標記
2	40V-100V	0.8	藍色
3	100V-200V	1.5	紫色
4	200V-400V	2.5	綠色
5	400V-600V	3.5	紅色
6	600V-1000V	5.5	黑色

Layout trace 電路佈局線寬度、1mm 最少 3mm 以上寬度			
序號	電流值 (I dc or I rms)	最少線寬 (mm)	標記顏色
1			標記線上標記

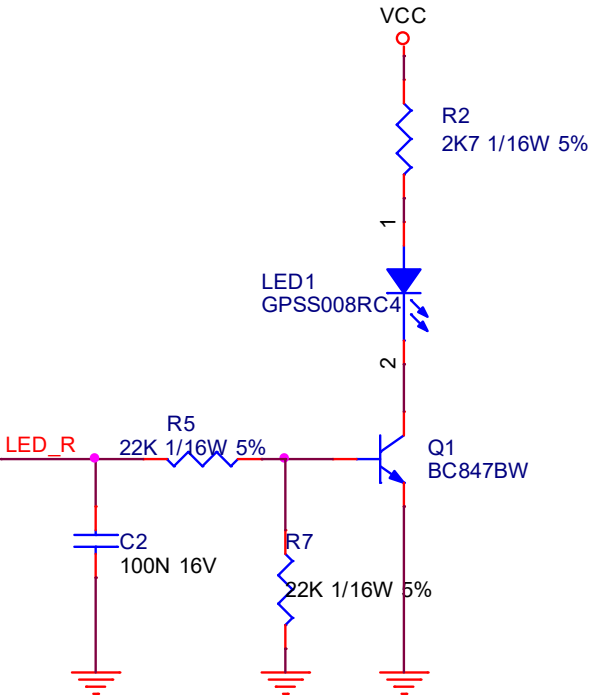


9.2 715G8576 IR/LED Panel

9-2-1 IR LED

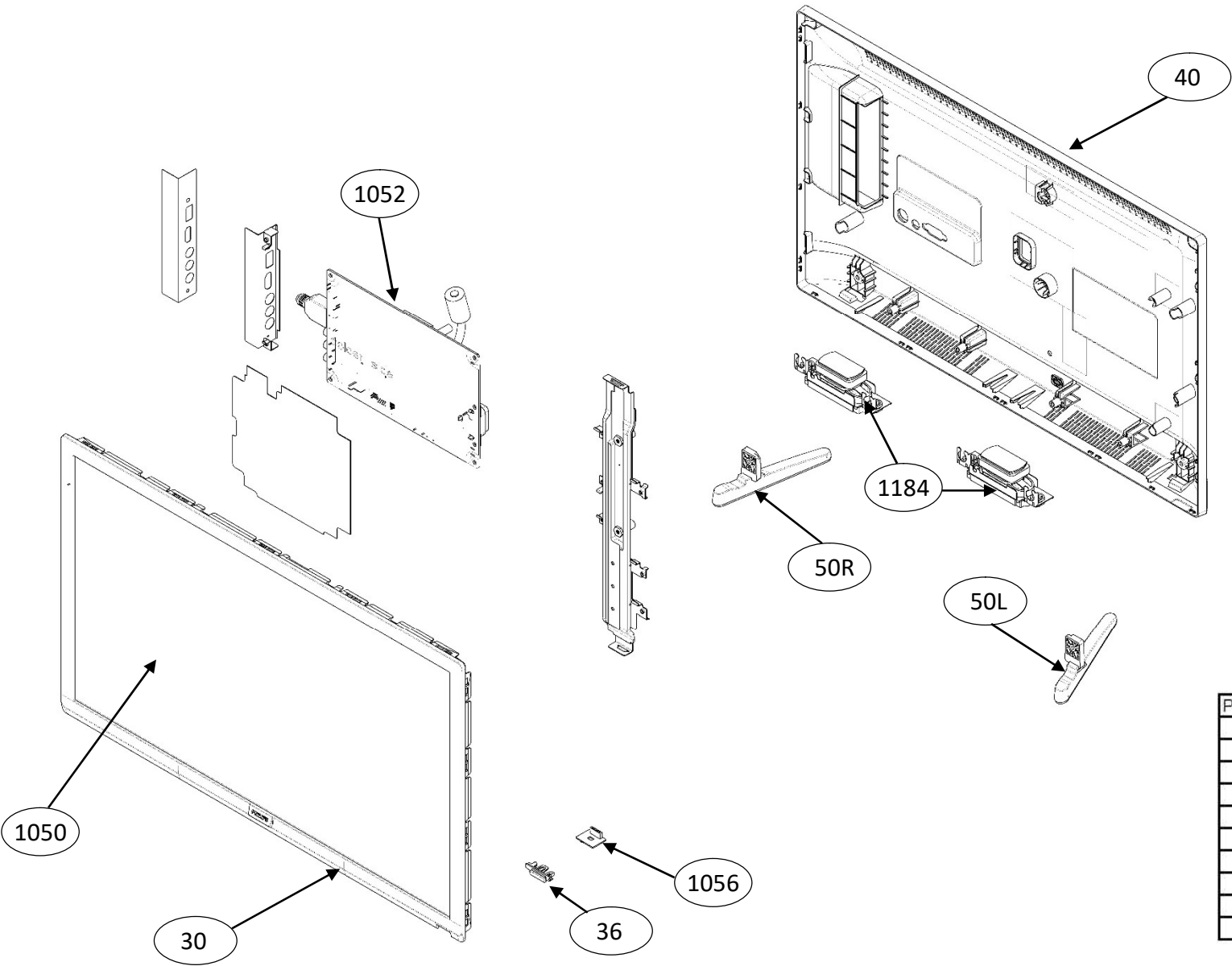


033G8032 5F S HR



10. Styling Sheets

5403 series 22"



Pos NO.	Description	Remark
0030	BEZEL(Integrated with panel)	
0040	REAR COVER	
0036	LENS IR	
1050	LCD PANEL	
1052	MAIN BOARD+POWER BOARD	
1056	IR BOARD	
1176	REMOTE CONTROL	Not displayed
1184	SPEAKS	
50L	BASE LEFT	
50R	BASE RIGHT	