Colour Television

Chassis

TPM18.1E

EU

Service
Service
Service

Service Manual

Chassis name	Platform	Model name
TPM18.1E LA	MTK5596+333/334	43PUS7303/12
		49PUS7503/12
		50PUS7303/12
		55PUS7303/12
		55PUS7503/12
		65PUS7303/12
		65OLED873/12
		65OLED973/12

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1. Product information

Product information is subject to change without notice.

For detailed product information, please visit www.philips.com/support

Display Type

Diagonal screen size

- 108 cm / 43 inch
- 123 cm / 49 inch
- 126 cm / 50 inch
- 139 cm / 55 inch
- 164 cm / 65 inch

Display resolution

- 3840 x 2160

Display Input Resolution

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– 24 Hz, 25 Hz, 30 Hz
- 2160p– 24 Hz, 25 Hz, 30 Hz, 50 Hz, 60 Hz

Computer formats

Resolutions (amongst others)

- 640 x 480p – 60Hz
- 800 x 600p – 60Hz
- 1024 x 768p – 60Hz
- 1280 x 768p – 60Hz
- 1360 x 765p – 60Hz
- 1360 x 768p – 60Hz
- 1280 x 1024p – 60Hz
- 1920 x 1080p – 60Hz
- 3840 x 2160p –24 Hz, 25 Hz, 30 Hz, 50 Hz, 60 Hz

Connectivity

Common

TV Side

- Common Interface slot: CI+/CAM
- USB 1 – USB 2.0
- USB 2 – USB 3.0
- Headphones – Stereo mini-jack 3.5mm
- HDMI 1 in – ARC – MHL – Ultra HD – HDR
- HDMI 2 in – ARC –Ultra HD – HDR

TV Bottom

- Audio out – Optical Toslink
- Network LAN – RJ45
- YPbPr, L/R
- HDMI 4 in – ARC
- HDMI 3 in - ARC
- Antenna(75 ohm)
- Satellite tuner

OLED973 Series

TV Bottom

- Common Interface slot: CI+/CAM
- USB 1 – USB 2.0
- USB 2 – USB 3.0
- Headphones – Stereo mini-jack 3.5mm
- HDMI 1 in – ARC – MHL – Ultra HD – HDR
- HDMI 2 in – ARC –Ultra HD – HDR
- Audio out – Optical Toslink
- Network LAN – RJ45
- YPbPr, L/R
- HDMI 4 in – ARC
- HDMI 3 in - ARC
- Antenna(75 ohm)
- Satellite tuner

Sound

- Output power (RMS):
  7303 series: 20W
  7503 series: 25W
  OLED873 series: 50W
  OLED973 series: 60W
- Dolby Audio
- DTS Premium Sound ™

Multimedia

Connections

- USB 2.0 / USB 3.0
- Ethernet LAN RJ-45
- Wi-Fi 802.11a/b/g/n/ac (built-in)
- BT2.1 with EDR & BT4.0 with BLE(* Your TV doesn't support Bluetooth subwoofer and Bluetooth speakers)

Supported USB file systems

- FAT 16, FAT 32, NTFS

Playback formats

- Video Codecs : AVI,MKV,H264/MPEG-4 AVC,MPEG-1, MPEG-2, MPEG-4,WMV9/VC1,HEVC
- Audio Codecs : AAC,MP3,WAV,WMA(v2 up to v9.2),WMA-PRO(v9 and v10)
- Subtitles :
  - Formats : SRT,SUB,TXT,SMI
  - Character encodings : UTF-8,Central Europe and Eastern Europe (Windows-1250), Cyrillic (Windows-1251),Greek (Windows-1253),Turkish (Windows-1254),Western Europe (Windows-1252)
- Image Codecs : JPEG
- Limitations :
  - Maximum supported total bit rate for a media file is 30Mbps.
  - Maximum supported video bit rate for a media file is 20Mbps.
  - MPEG-4 AVC(H.264) is supported up to High Profile @ L5.1.
  - H.265(HEVC) is supported upto Main / Main 10 Profile up to Level 5.1
  - VC-1 is supported up to Advanced Profile @ L3.

Supported media server software(DMS)

- You can use any DLNA V1.5 certified media server software(DMS class)
- You can use the Philips TV Remote app (iOS and Android) on mobile devices.

Performance may vary, depending on the capabilities of the mobile device and the software used.

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 (⏚), or hot ground (⏚), 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 (⊓) and without (⊼) aerial signal. Measure the voltages in the power supply section both in normal operation (⏻) and in stand-by (⏻). 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 (μ = $x10^{-6}$), nano-farads (n = $x10^{-9}$), or pico-farads (p = $x10^{-12}$).
- 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: AG1B033500001), 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 ontrols 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, originating from the USA and used e.g. in LATAM and AP-NTSC countries
B-TXT	Blue TeleteXT
C	Centre channel (audio)
CEC	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 form the display.

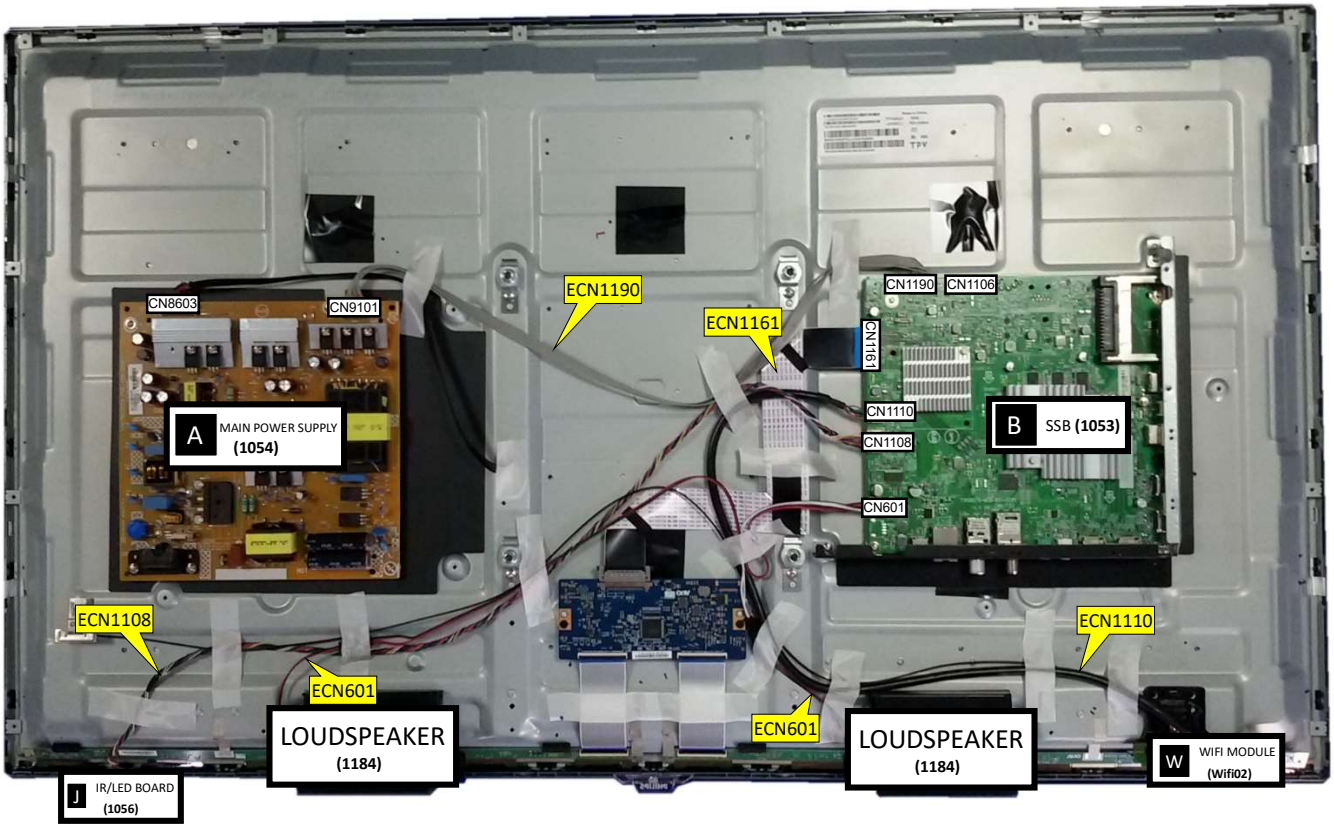
EDID	Extended Display Identification Data (VESA standard)
EEPROM	Electrically Erasable and Programmable Read Only Memory
EMI	Electro Magnetic Interference
EPG	Electronic Program Guide
EPLD	Erasable Programmable Logic Device
EU	Europe
EXT	EXTernal (source), entering the set by SCART or by cinches (jacks)
FDS	Full Dual Screen (same as FDW)
FDW	Full Dual Window (same as FDS)
FLASH	FLASH memory
FM	Field Memory or Frequency Modulation
FPGA	Field-Programmable Gate Array
FTV	Flat TeleVision
Gb/s	Giga bits per second
G-TXT	Green TeleteXT
H	H_sync to the module
HD	High Definition
HDD	Hard Disk Drive
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.
HDMI	High Definition Multimedia Interface
HP	HeadPhone
I	Monochrome TV system. Sound carrier distance is 6.0 MHz
I^2C	Inter IC bus
I^2D	Inter IC Data bus
I^2S	Inter IC Sound bus
IF	Intermediate Frequency
IR	Infra Red
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. 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.
iTV	Institutional TeleVision; TV sets for hotels, hospitals etc.
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
LATAM	Latin America
LCD	Liquid Crystal Display
LED	Light Emitting Diode
L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I
LPL	LG.Philips LCD (supplier)
LS	Loudspeaker
LVDS	Low Voltage Differential Signalling
Mbps	Mega bits per second
M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz
MHEG	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
MIPS	Microprocessor without Interlocked Pipeline-Stages; A RISC-based microprocessor
MOP	Matrix Output Processor
MOSFET	Metal Oxide Silicon Field Effect Transistor, switching device
MPEG	Motion Pictures Experts Group
MPIF	Multi Platform InterFace
MUTE	MUTE Line
MTV	Mainstream TV: TV-mode with Consumer TV features enabled (iTV)
NC	Not Connected
NICAM	Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, mainly used in Europe.
NTC	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)
NVM	Non-Volatile Memory: IC containing TV related data such as alignments
O/C	Open Circuit
OSD	On Screen Display
OAD	Over the Air Download. Method of software upgrade via RF transmission. Upgrade software is broadcasted in TS with TV channels.
OTC	On screen display Teletext and Control; also called Artistic (SAA5800)
P50	Project 50: communication protocol between TV and peripherals
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)
PCB	Printed Circuit Board (same as “PWB”)
PCM	Pulse Code Modulation
PDP	Plasma Display Panel
PFC	Power Factor Corrector (or Pre-conditioner)
PIP	Picture In Picture
PLL	Phase Locked Loop. Used for e.g. FST tuning systems. The customer can give directly the desired frequency
POD	Point Of Deployment: a removable CAM module, implementing the CA system for a host (e.g. a TV-set)
POR	Power On Reset, signal to reset the uP
PSDL	Power Supply for Direct view LED backlight with 2D-dimming
PSL	Power Supply with integrated LED drivers
PSLS	Power Supply with integrated LED drivers with added Scanning functionality
PTC	Positive Temperature Coefficient, non-linear resistor
PWB	Printed Wiring Board (same as “PCB”)
PWM	Pulse Width Modulation
QRC	Quasi Resonant Converter
QTNR	Quality Temporal Noise Reduction
QVCP	Quality Video Composition Processor
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
RC5 / RC6	Signal protocol from the remote control receiver
RESET	RESET signal
ROM	Read Only Memory
RSDS	Reduced Swing Differential Signalling data interface
R-TXT	Red TeleteXT
SAM	Service Alignment Mode
S/C	Short Circuit
SCART	Syndicat des Constructeurs d'Appareils Radiorécepteurs et Téléviseurs
SCL	Serial Clock I^2C
SCL-F	CLock Signal on Fast I^2C bus
SD	Standard Definition
SDA	Serial Data I^2C
SDA-F	DAta Signal on Fast I^2C bus
SDI	Serial Digital Interface, see “ITU-656”
SDRAM	Synchronous DRAM
SECAM	SEequence Couleur Avec Mémoire. Colour system mainly used in France and East Europe. Colour carriers = 4.406250 MHz and 4.250000 MHz
SIF	Sound Intermediate Frequency
SMPS	Switched Mode Power Supply
SoC	System on Chip
SOG	Sync On Green
SOPS	Self Oscillating Power Supply
SPI	Serial Peripheral Interface bus; a 4-wire synchronous serial data link standard
S/PDIF	Sony Philips Digital InterFace
SRAM	Static RAM
SRP	Service Reference Protocol
SSB	Small Signal Board
SSC	Spread Spectrum Clocking, used to reduce the effects of EMI
STB	Set Top Box
STBY	STand-BY
SVGA	800 × 600 (4:3)
SVHS	Super Video Home System
SW	Software
SWAN	Spatial temporal Weighted Averaging Noise reduction
SXGA	1280 × 1024

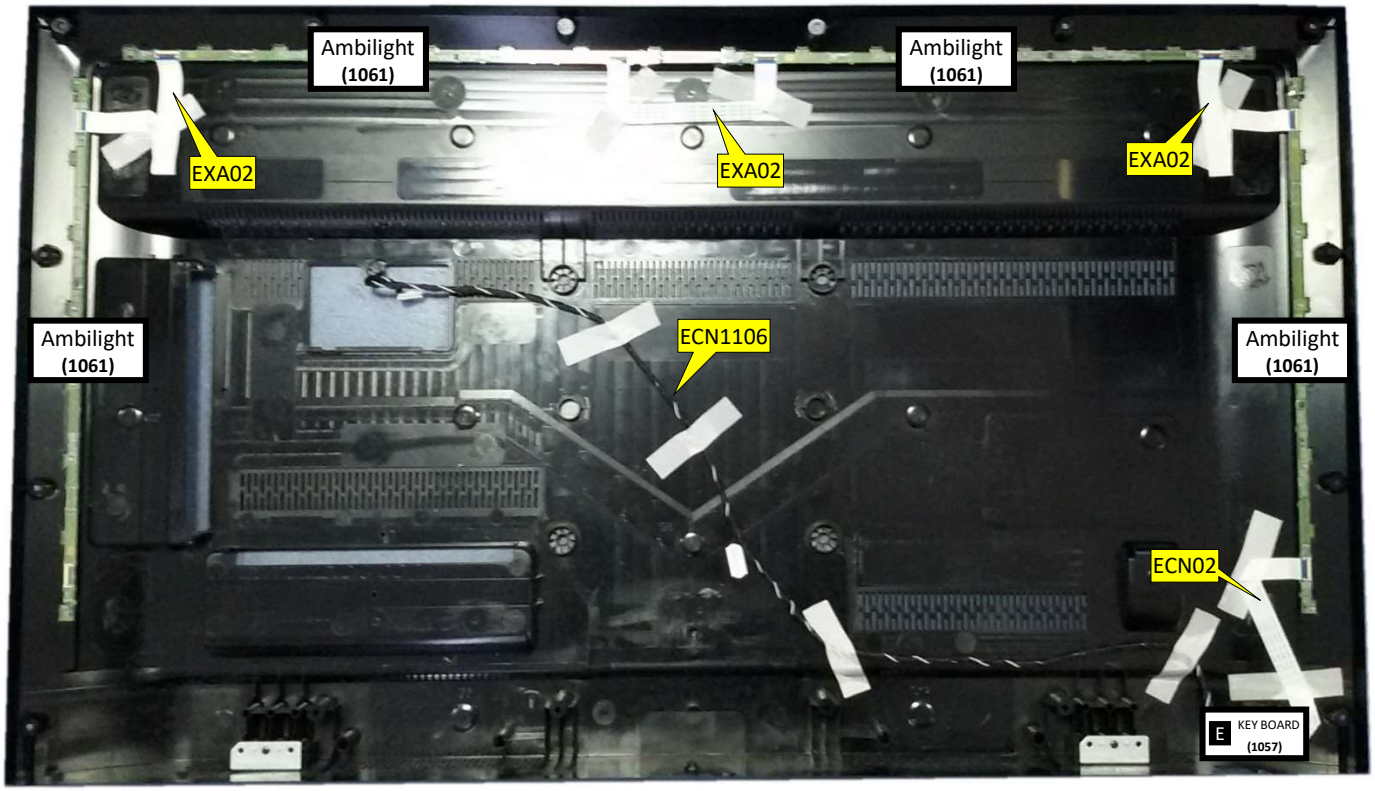
TFT	Thin Film Transistor
THD	Total Harmonic Distortion
TMDS	Transmission Minimized Differential Signalling
TS	Transport Stream
TXT	TeleteXT
TXT-DW	Dual Window with TeleteXT
UI	User Interface
uP	Microprocessor
UXGA	1600 × 1200 (4:3)
V	V-sync to the module
VESA	Video Electronics Standards Association
VGA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

3. Mechanical Instructions

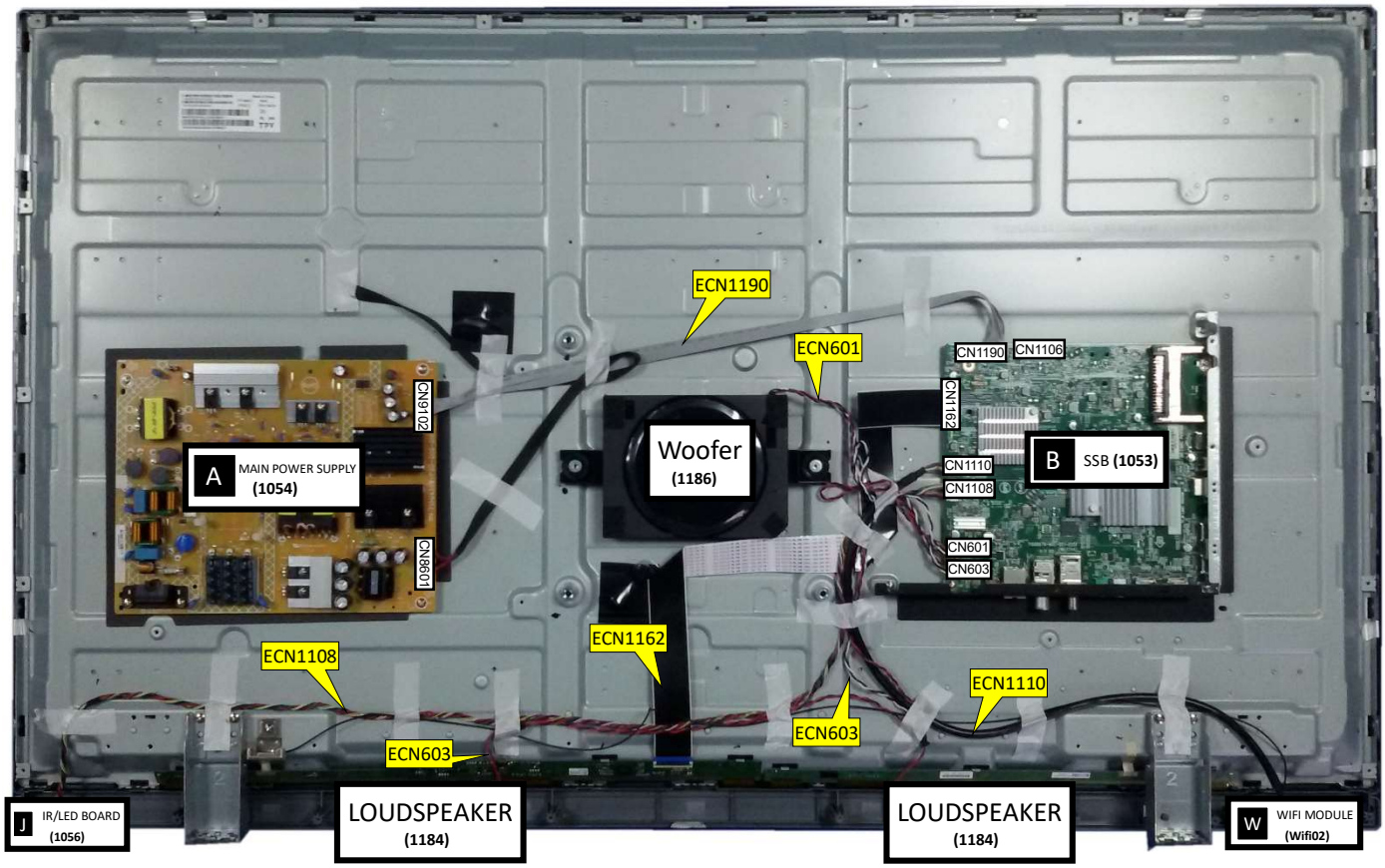
3.1 Cable Dressing



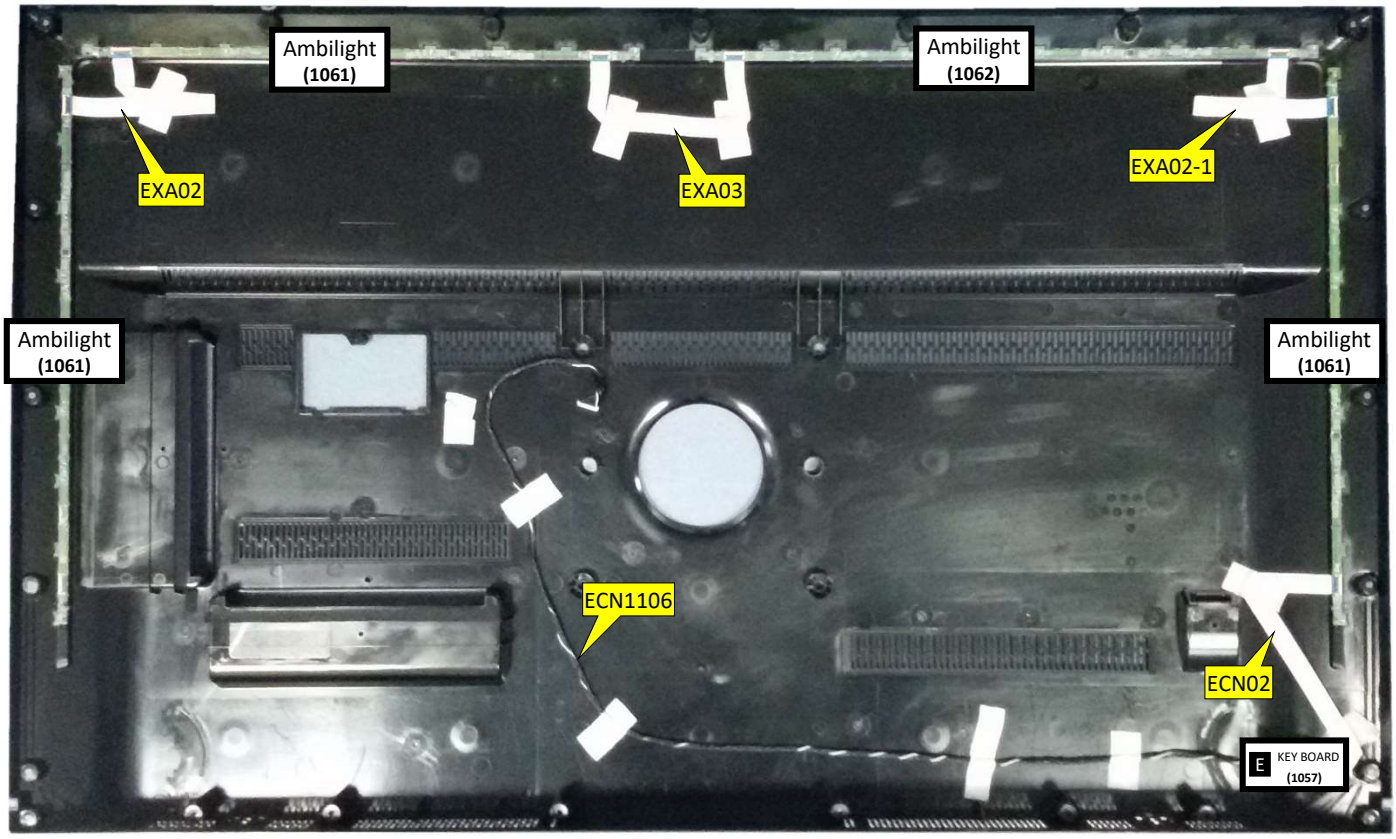
Cable dressing (43" 7303 series)



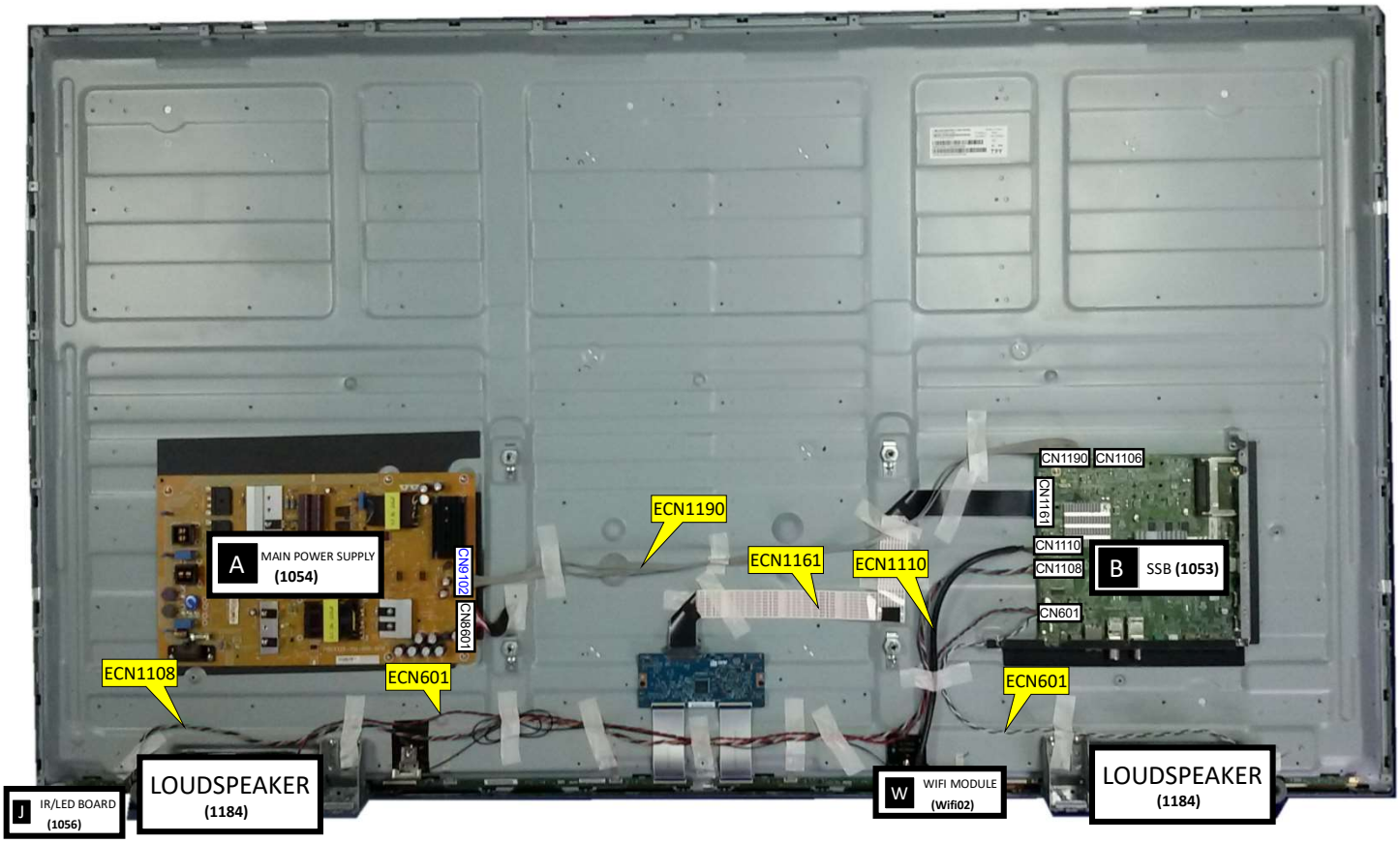
Back cover overview (43" 7303 series)



Cable dressing (49/55" 7503 & 50/55" 7303 series)



Back cover overview (49/55" 7503 & 50/55" 7303 series)



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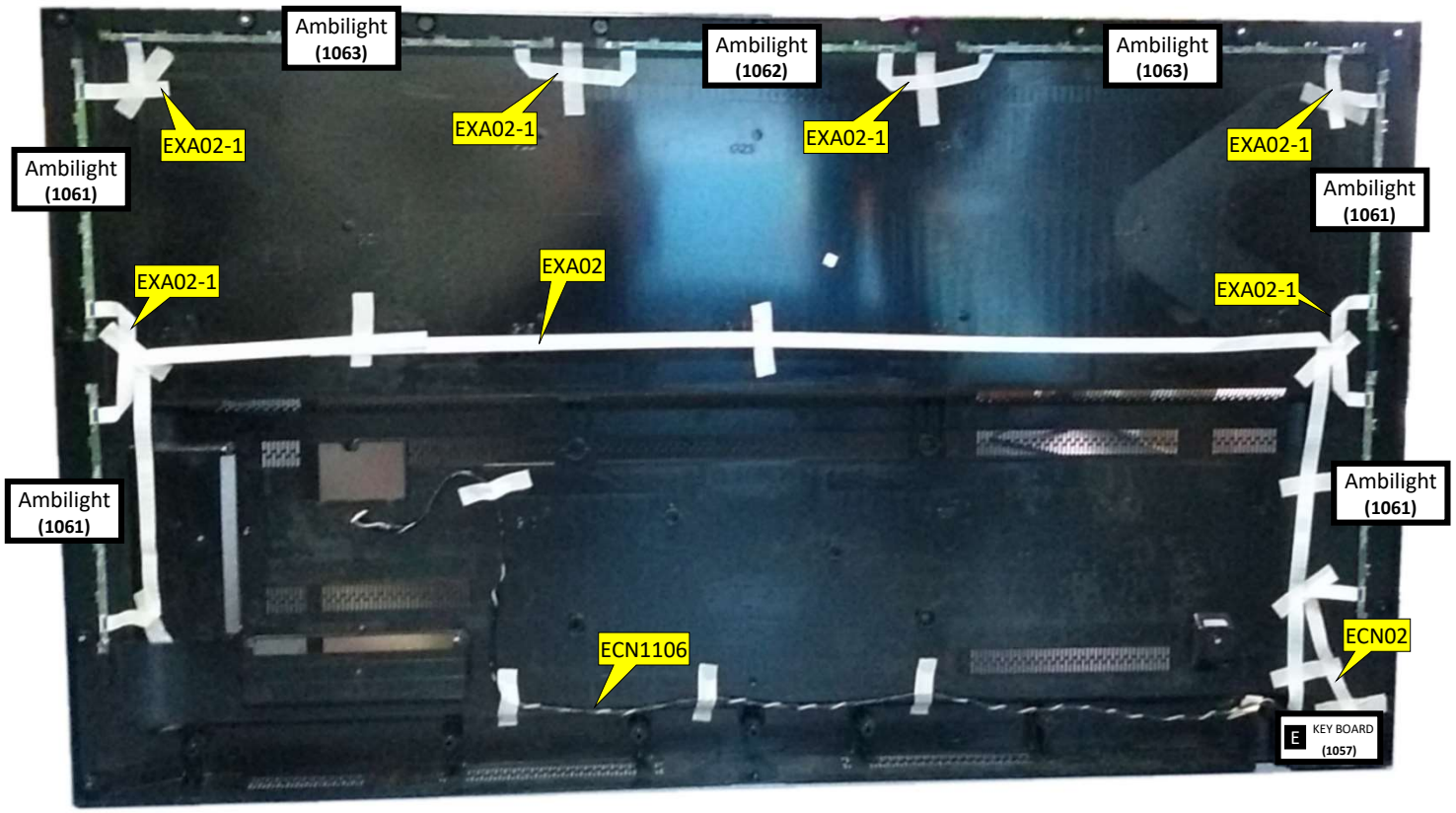
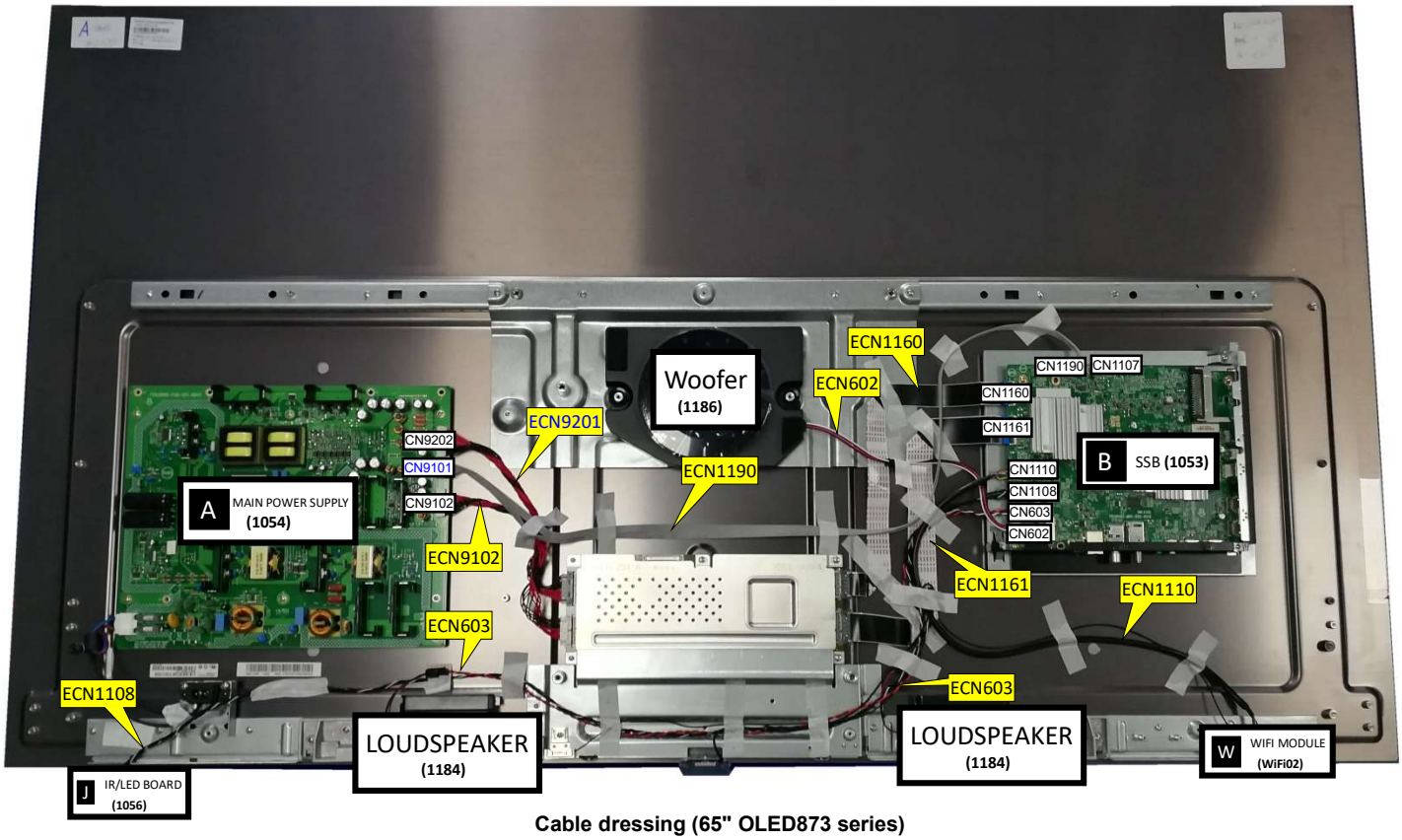
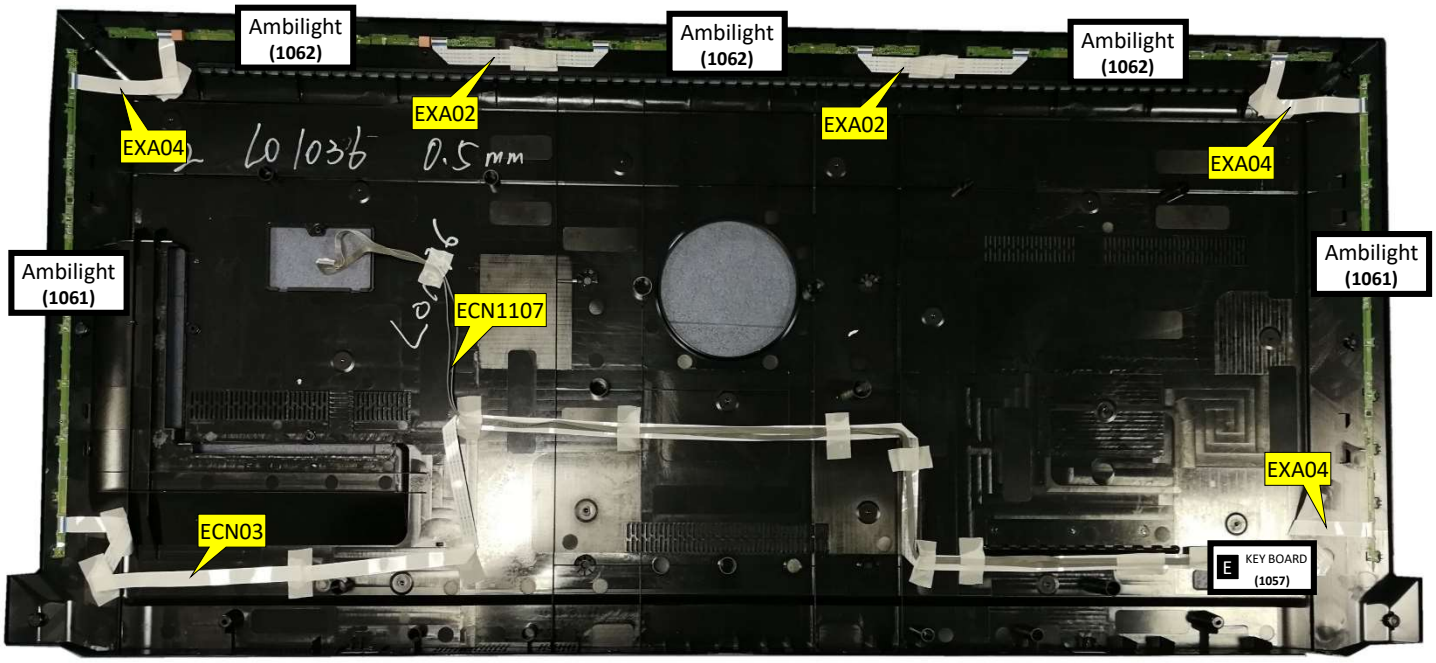


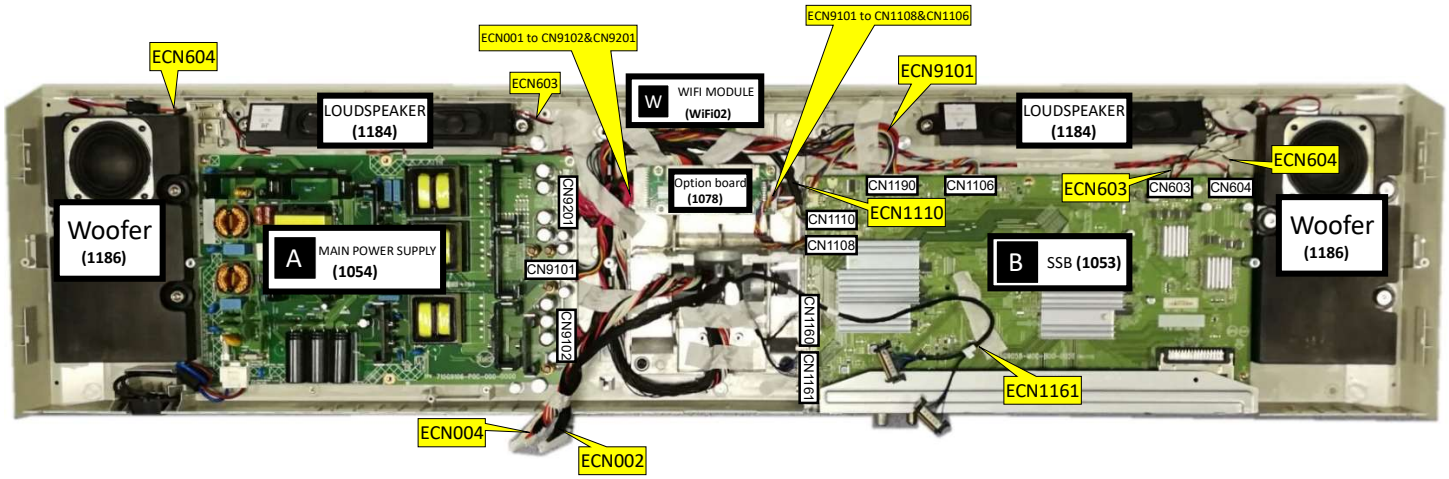
Back cover overview (65" 7303 series)



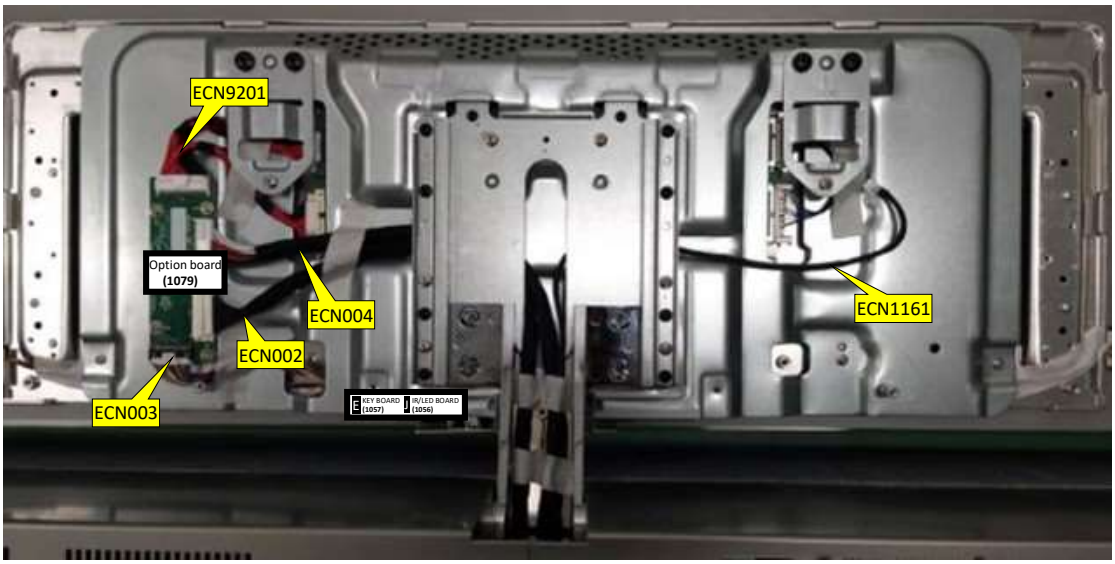
Cable dressing (65" OLED873 series)

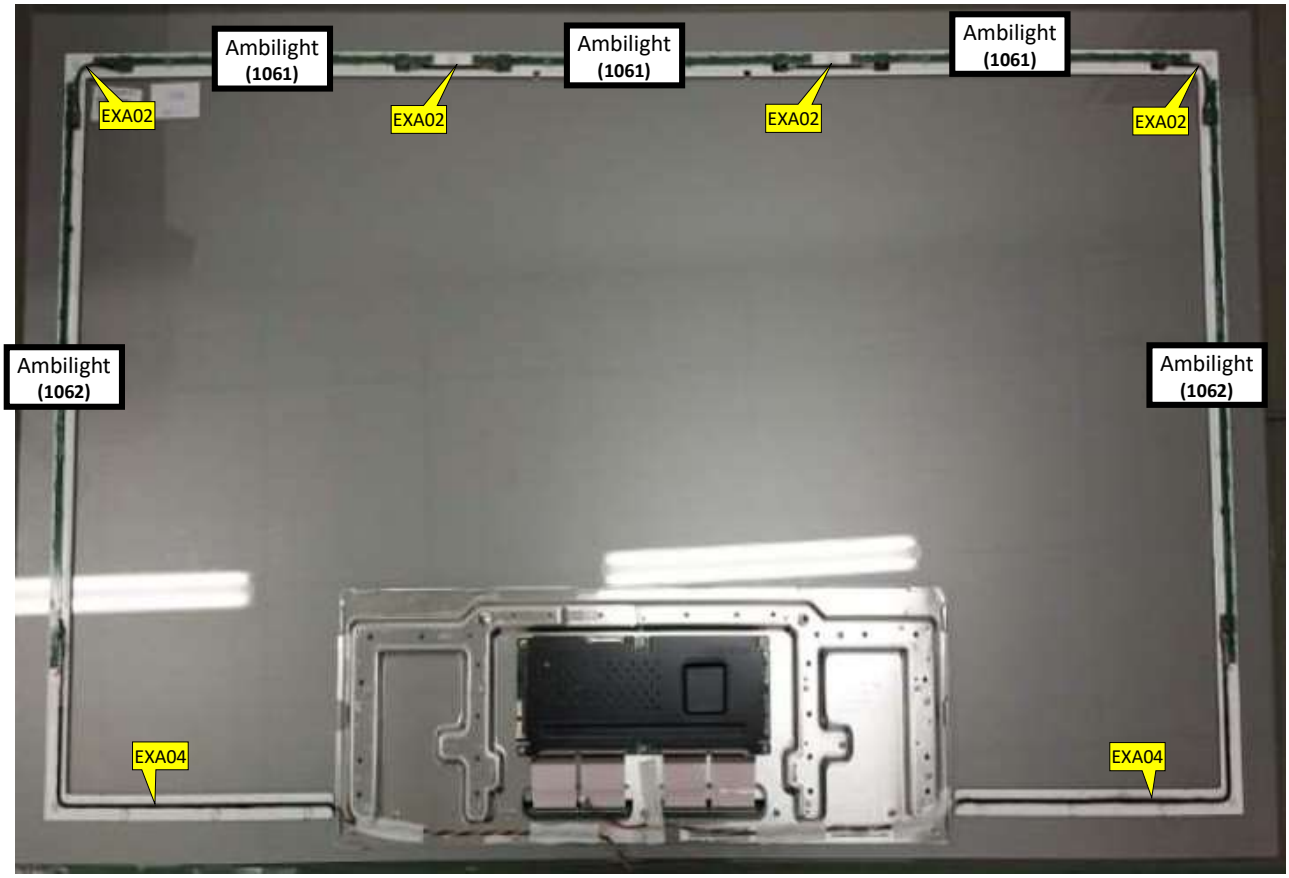


Back cover overview (65" OLED873 series)



Cable dressing (65" OLED973 series)





Back cover overview (65" OLED973 series)

3.2 Assembly/Panel Removal

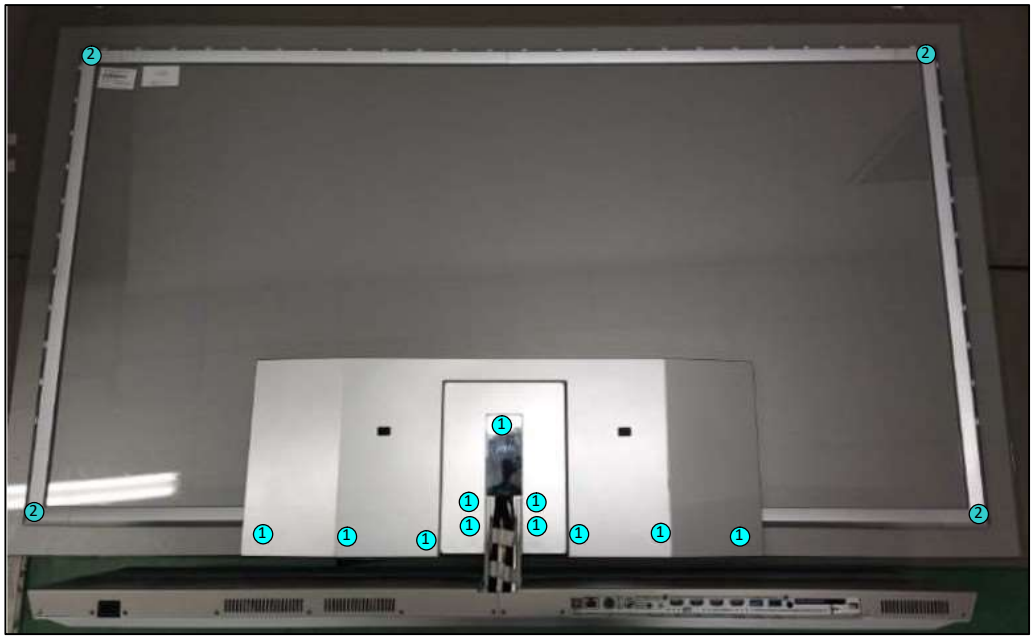
3.2.1 Stand/Base removal

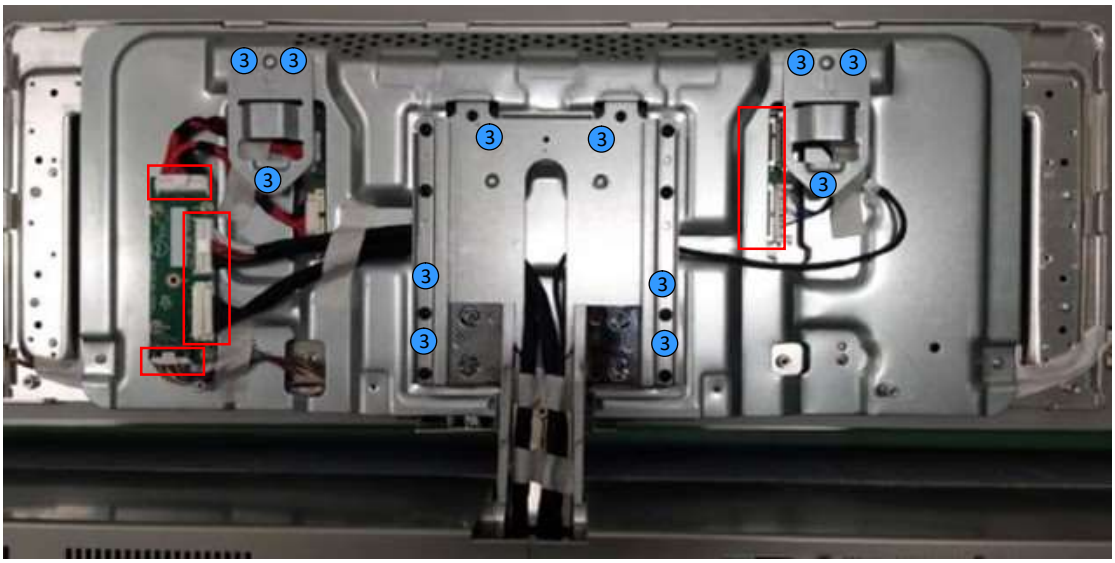
Common:

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

OLED 973 Series:

1. Remove all fixation screws [1] then take out rear cover.
2. Remove all fixation screws [2] & plastics.
3. Hold the base then remove all fixation screws [3], take out all iron bracket.
4. Unplug all connectors, then take the base ass'y out from the set.
5. Remove all fixation screws [4] then take the base out.

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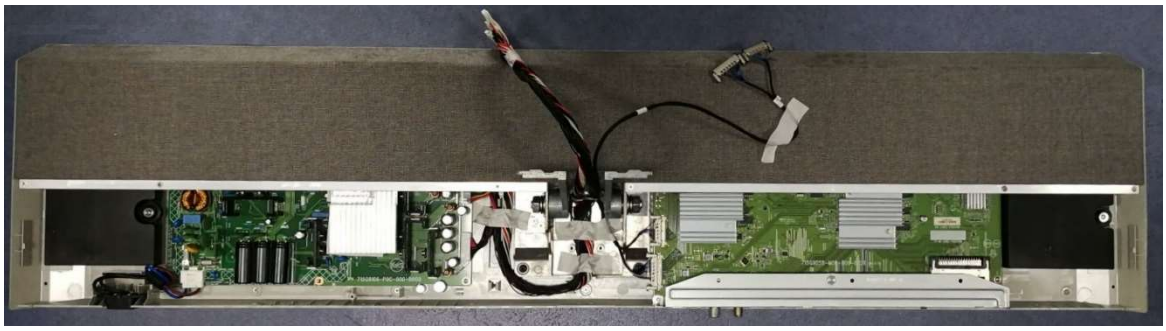
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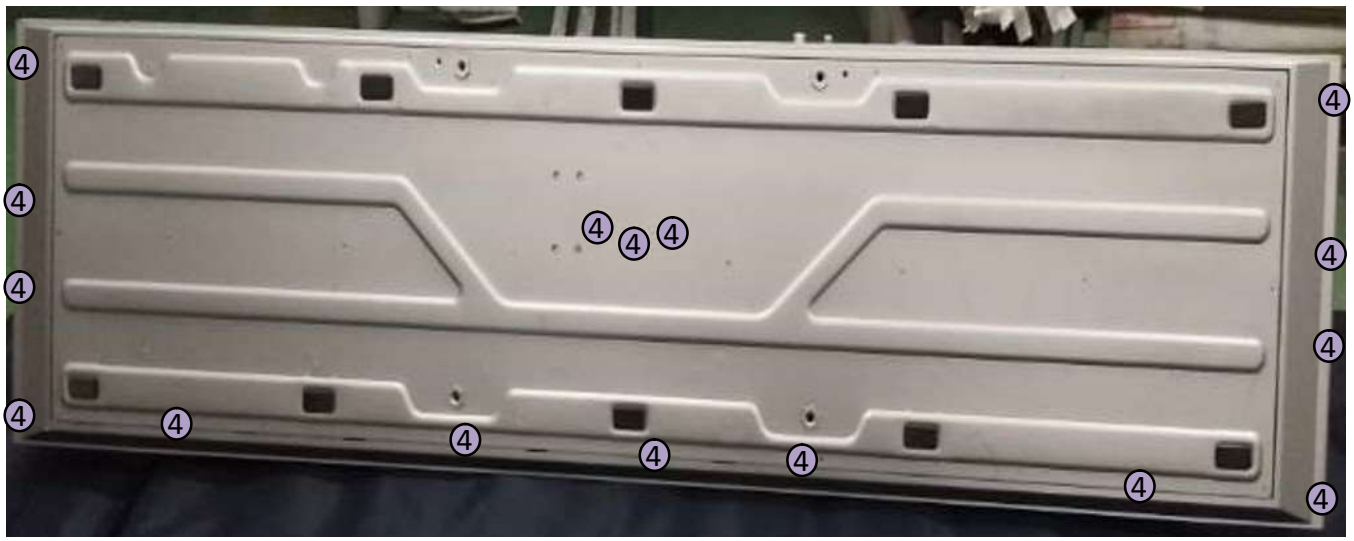
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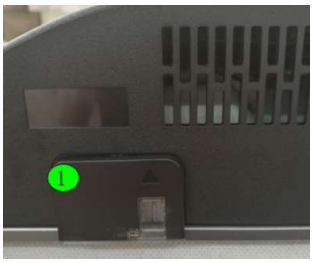
3.2.2 IR board Control Unit

Common:

1. Unplug the connector from the SSB.

   Caution: be careful, as these are very fragile connectors!
2. Remove all the fixation screws [1] and connector from the IR board control unit.
3. Remove the IR lens, IR board from the DECO_REAR_COVER.

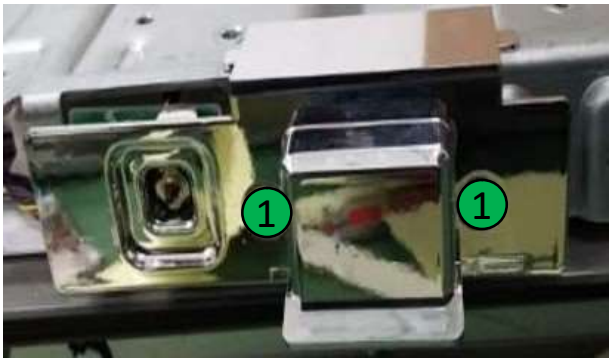
When defective, replace the whole unit.

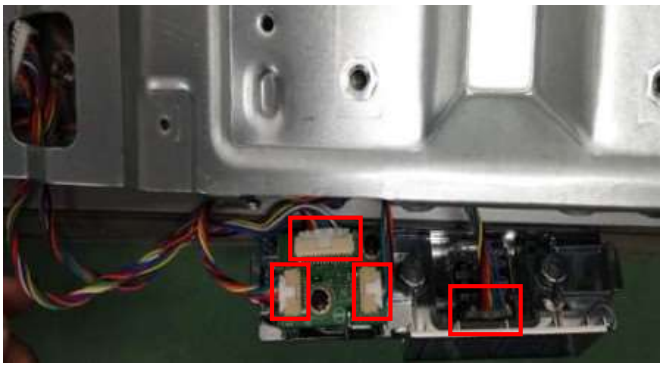


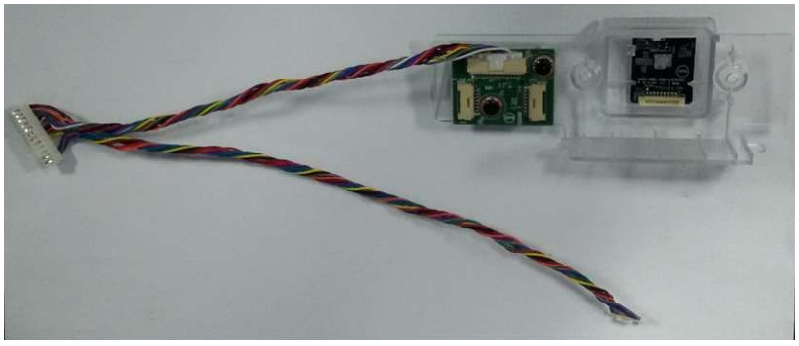
OLED 973 Series:

1. Remove all the fixation screws [1] and connector from the DECO ASS'Y.
2. Remove lens, take out IR board & Key board.

When defective, replace the whole unit.





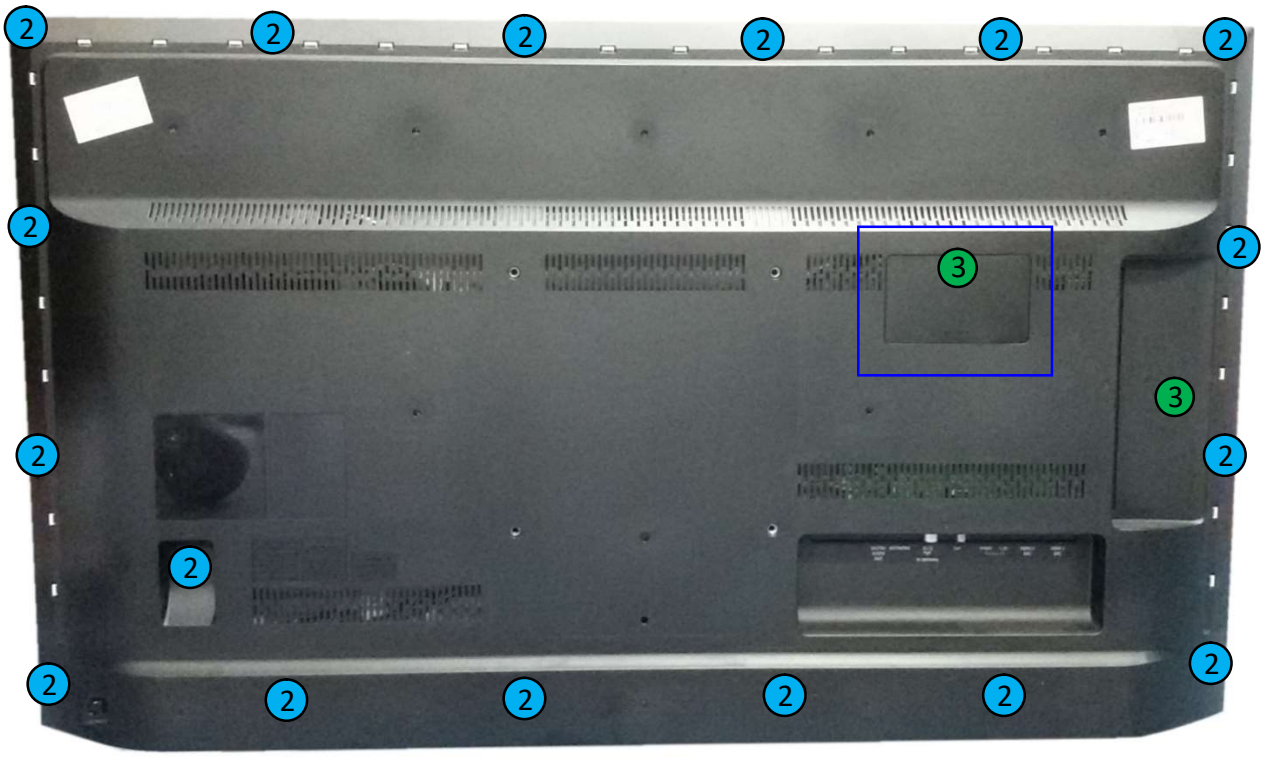


3.2.3 Rear Cover

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

7303/7503 series:

1. Remove all fixation screws [2] and [3] that secure the Back cover assy.
2. Unplug the connector [2] that marked by red box below from SSB.
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.

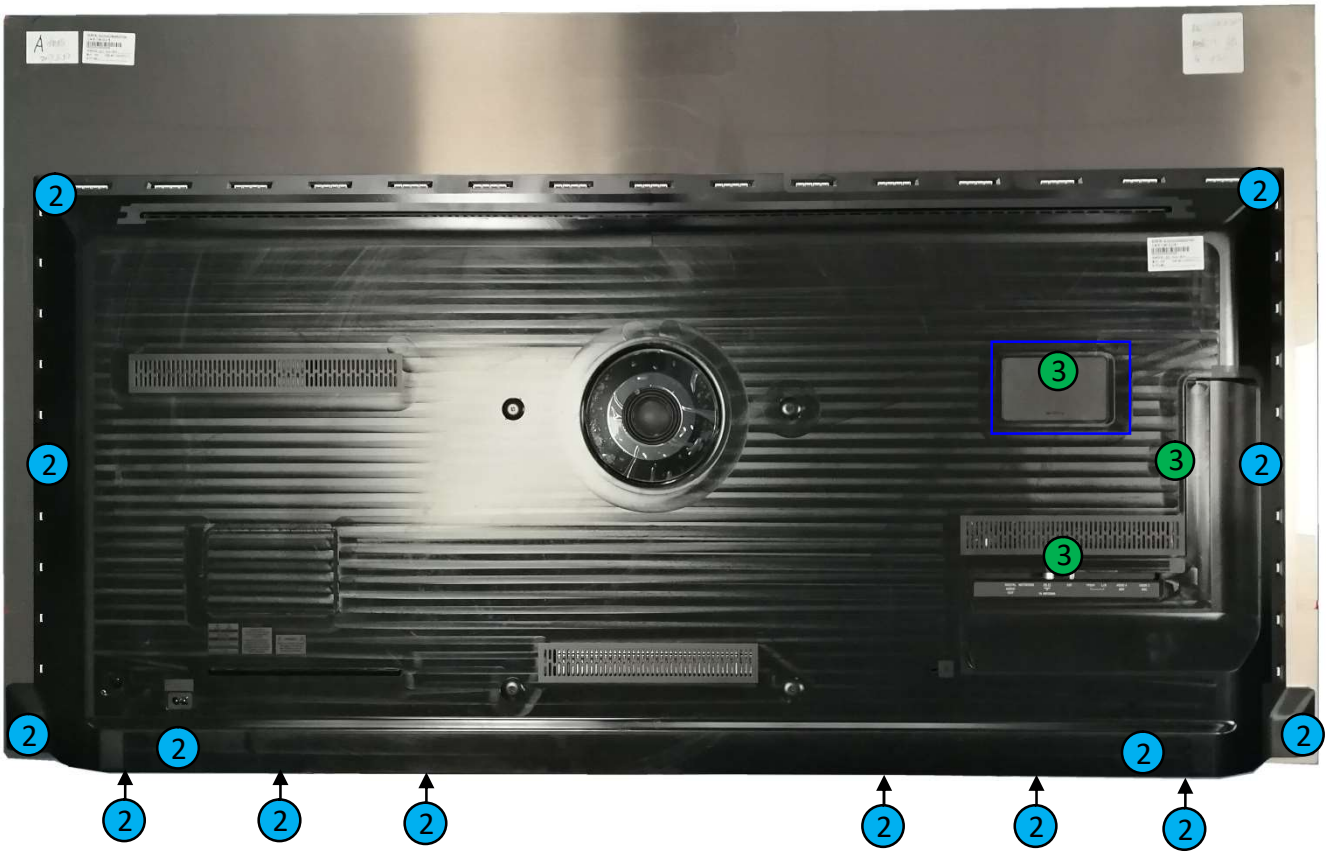


(7303/7503 series)

Remark: Pictures above are taken from model 43PUS7303/12, but instructions will be similar for other 7303/7503 series models.

OLED 873 series:

1. Remove all fixation screws [2] and [3] that secure the Back cover assy.
2. Unplug the connector [2] that marked by red box below from SSB.
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.



(OLED 873 series)

OLED 973 series:

Clarified in chapter 3.2.1 base removal.

2.2.4 Keyboard Control Unit

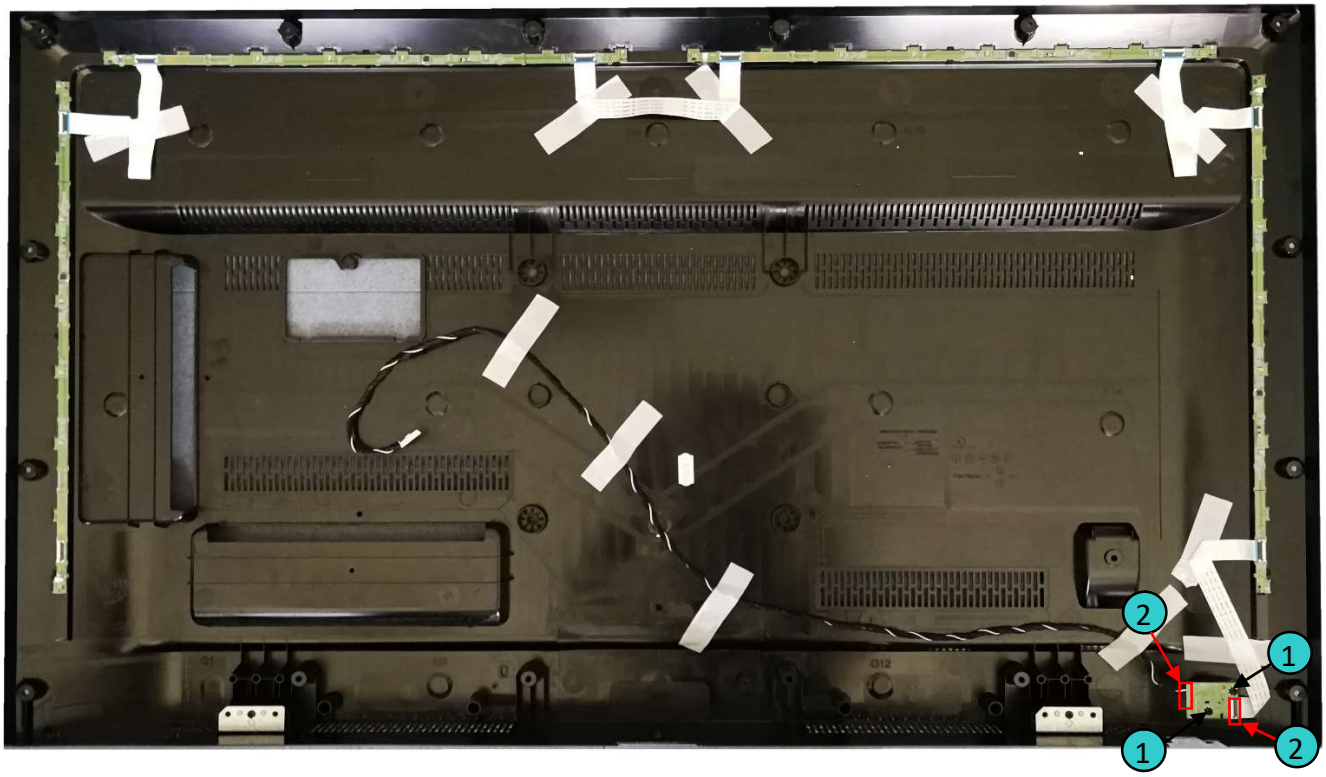
Common:

1. Release the connector from the SSB Board.

   Caution: be careful, the Keyboard is catch on the Back cover, please be careful to avoid damage the fragile connectors!

2. Remove all the fixation screws [1] and connectors [2] from the keyboard control panel then take it out from the Back cover.

When defective, replace the whole unit.



Remark: Picture above is taken from model 43PUS7303/12, but instructions will be similar for other series models.

OLED 973 series:

Clarified in chapter 3.2.2.

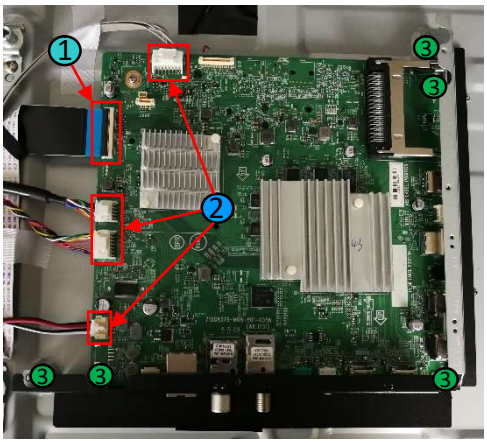
3.2.5 Small Signal Board (SSB)

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. Release the clips from the LVDS connector that connect with the SSB[1].

   Caution: be careful, as these are very fragile connectors!

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



3.2.6 Power Supply Unit (PSU)

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 PSU.

1. Gently unplug all connectors from the PSU.
2. Remove all fixation screws from the PSU.
3. The PSU can be taken out of the set now.

3.2.7 Speakers

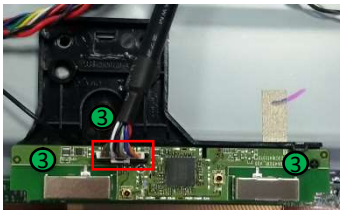
1. Gently release the tapes that secure the speaker cables.
2. Unplug the speaker connector from the SSB.
3. Take the speakers out.

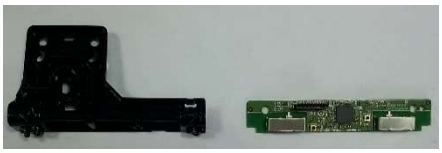
When defective, replace the both units.

3.2.8 WIFI module

1. Unplug the connector that marked by red box.
2. Remove fixation screw [3] that secure the WIFI module.

When defective, replace the whole unit.





3.2.9 LCD Panel

1. Remove the SSB as described earlier.
2. Remove the PSU as described earlier.
3. Remove the keyboard control panel as described earlier.
4. Remove the stand bracket/base as described earlier.
5. Remove the IR/LED as described earlier.
6. Remove the fixations screws that fix the metal clamps to the front bezel. Take out those clamps.
7. Remove all other metal parts not belonging to the panel.
8. 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:

- Service Alignment Mode (SAM).
- Factory Mode.
- Customer Service Mode (CSM).SAM and the Factory mode offer features, which can be used by the Service engineer to repair/align a TV set.

SAM and the 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), reset the error buffer (SAM and Factory Mode).
- Display information (“SAM” indication in upper right corner of screen, error buffer, software version, operating hours,options and option codes, sub menus).

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. In CSM mode, “CSM”, is displayed in the top right corner of the screen. 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.

Note: For the new model range, a new remote control (RC) is used with some renamed buttons. This has an impact on the activation of the Service modes. For instance the old “MENU” button is now called “HOME” (or is indicated by a “house” icon).

4.2 Service Alignment Mode (SAM)

Purpose

- To modify the NVM.
- To display/clear the error code buffer.
- To perform alignments.

Specifications

- Operation hours counter (maximum five digits displayed).
- Software version, error codes, and option settings display.
- Error buffer clearing.
- Option settings.
- Software alignments (White Tone).
- NVM Editor.
- Set screen mode to full screen (all content is visible).

How to Activate SAM

To activate SAM, use one of the following methods:

- Press the following key sequence on the remote control transmitter: **“062596”**, directly followed by the **“INFO/OK”** button. Do not allow the display to time out between entries while keying the sequence.
- Or via ComPair.

After entering SAM, the following items are displayed,

with “SAM” in the upper right corner of the screen to indicate that the television is in Service Alignment Mode.

How to Navigate

- In the SAM menu, select menu items with the UP/DOWN keys on the remote control transmitter. The selected item will be indicated. When not all menu items fit on the screen, use the **UP/DOWN keys** to display the next/previous menu items.

- With the “LEFT/RIGHT” keys, it is possible to:
  - (De) activate the selected menu item.
  - (De) activate the selected sub menu.
  - Change the value of the selected menu item.
- When you press the MENU button once while in top level SAM, the set will switch to the normal user menu (with the SAM mode still active in the background).

How to Store SAM Settings

To store the settings changed in SAM mode (except the RGB Align settings), leave the top level SAM menu by using the POWER button on the remote control transmitter or the television set. The mentioned exceptions must be stored separately via the STORE button.

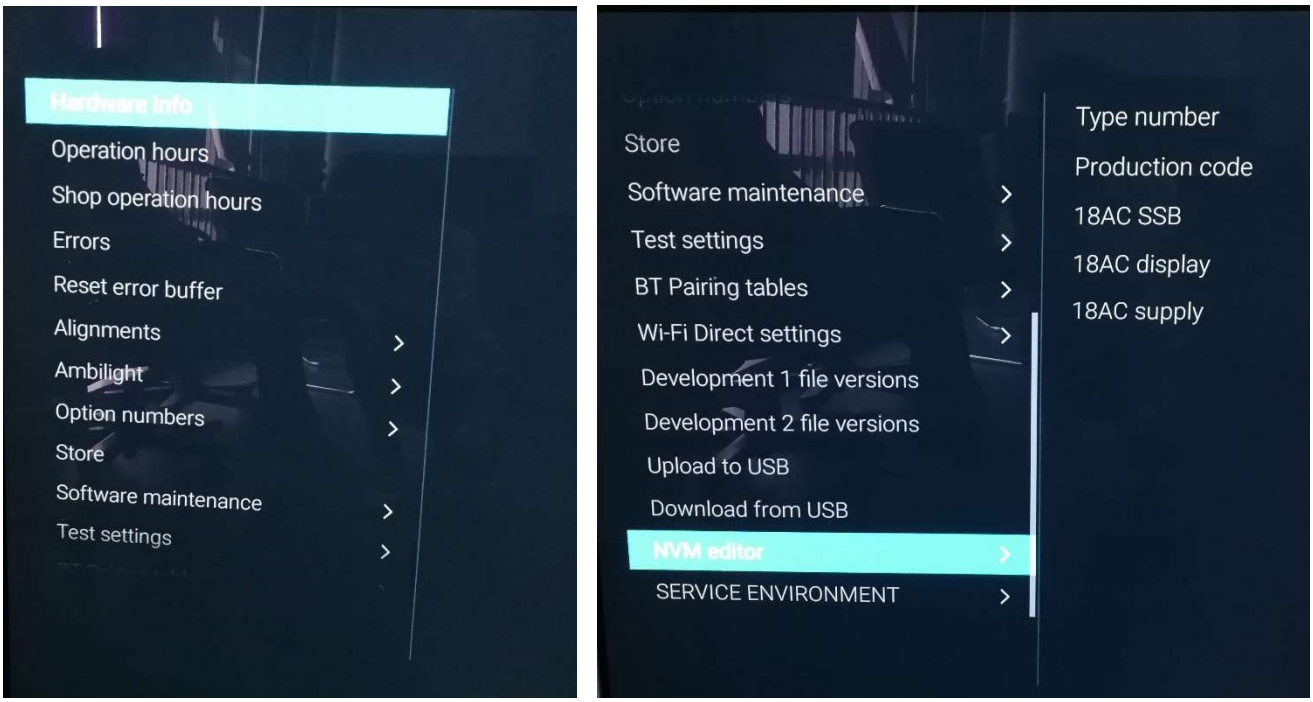
How to Exit SAM

Use one of the following methods:

- Switch the set to STANDBY by pressing the mains button on the remote control transmitter or the television set.
- Via a standard RC-transmitter, key in “00” sequence.

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

SAM mode overview



Remark: Under main menu “NVM editor”, you can use the **UP/DOWN keys** to view and change the set Type number, the set Production code or the 18AC of a part.(The NVM-editor still has the same function as before, alpha-numeric entry.)

4.3 Factory mode:

Purpose

- To perform extended alignments.

Specifications

- Displaying and or changing Panel ID information.
- Displaying and or changing Tuner ID information.
- Error buffer clearing.
- Various software alignment settings.
- Testpattern displaying.

- Public Broadcasting Service password Reset.
- etc.

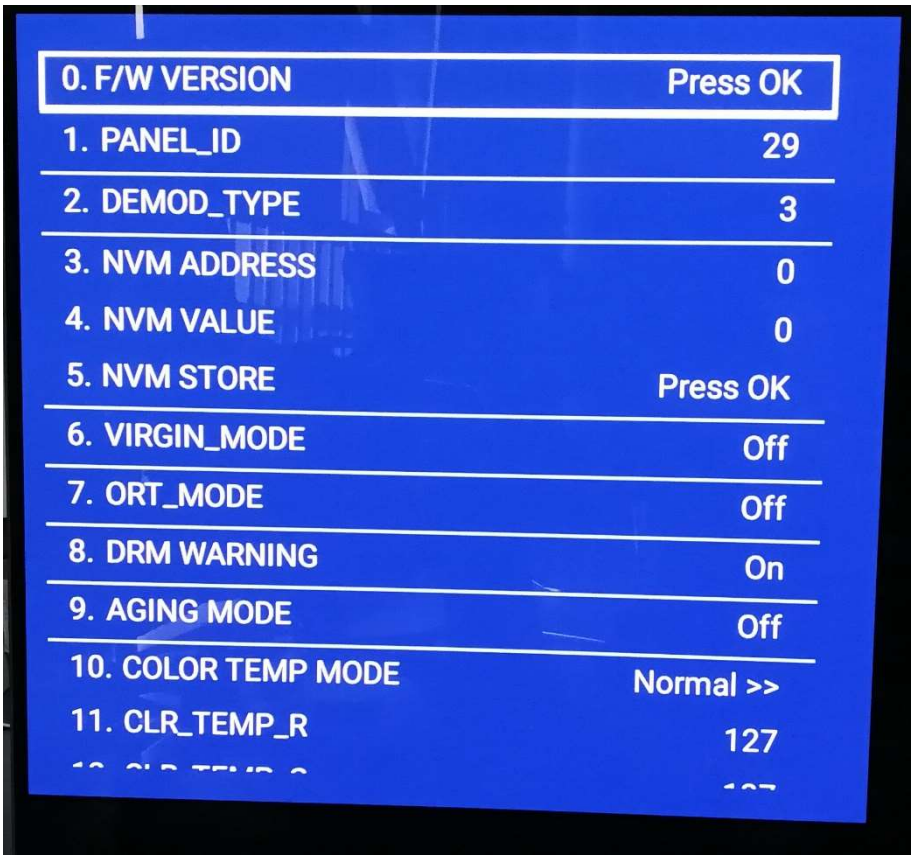
How to Activate the Factory mode

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

Use one of the following methods:

- Select EXIT_FACTORY 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.

4.4 Customer Service Mode (CSM)

Purpose

The Customer Service Mode shows error codes and information on the TVs operation settings.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.

Specifications

- Ignore "Service unfriendly modes".

- Line number for every
  line (to make CSM language independent).
- Set the screen mode to full
  screen (all contents on screen is visible).
- After leaving the Customer Service Mode, the original settings are restored.
- Possibility to use “CH+” or “CH-” for channel surfing, or enter the specific channel number on the RC.

How to Activate CSM

To activate CSM, press the following key sequence on a standard remote control transmitter: **“123654”** (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, Error code and Panel Code

5.1 Software Upgrading

Step 1: Ready for F/W Upgrade

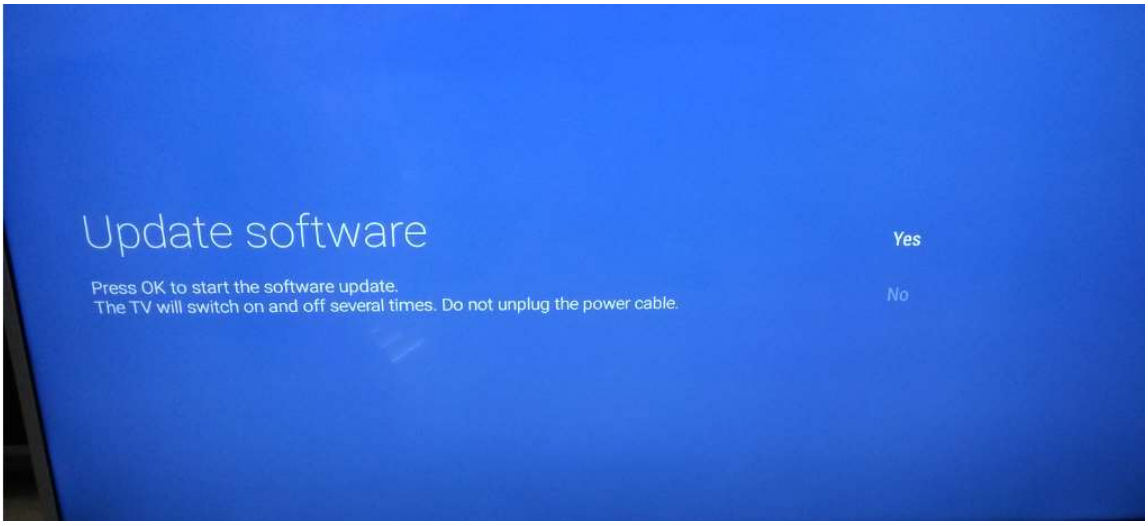
1. Rename the software as “autorun.upg”.
2. Prepare a USB memory (File format: FLAT, Size: 1G~8G).
3. Copy the software to USB flash disk (root directory).

Note the version of this F/W before you change the software file name.

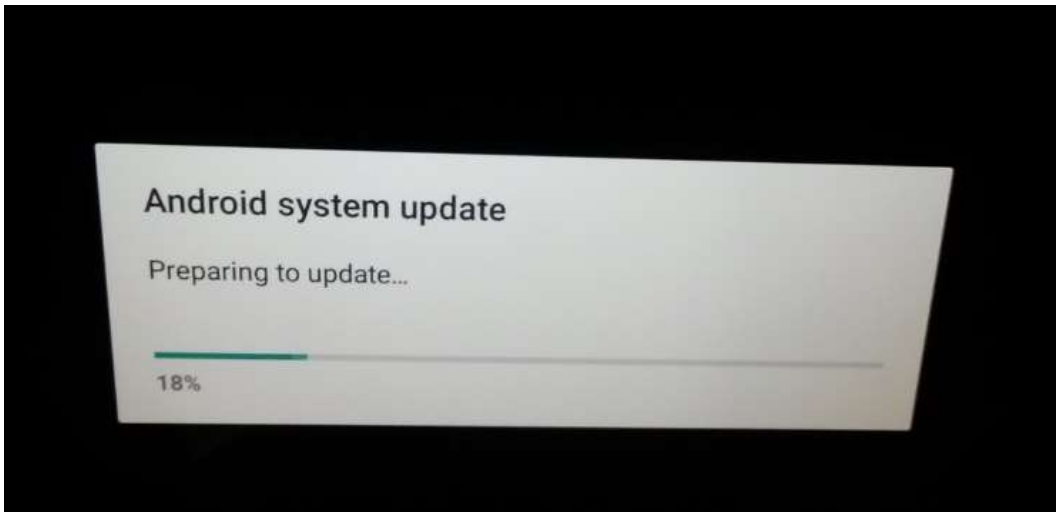
Step 2: F/W Upgrade

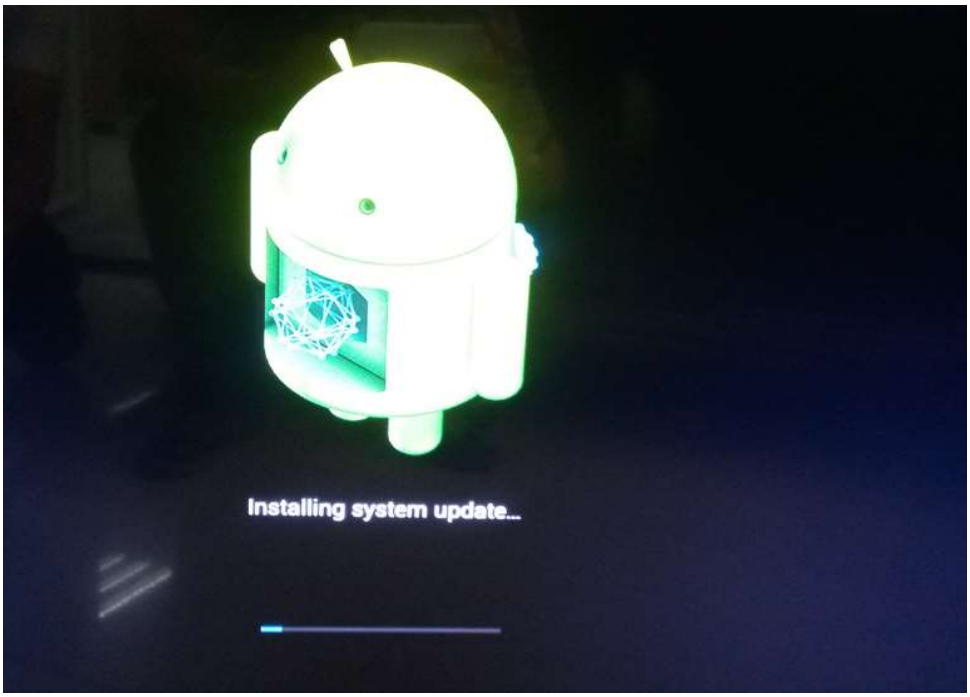
1. Plug the USB memory on the USB port on the side I/O port of TV (Please connect to USB 2.0 port, not recommend USB 3.0 port.).
2. AC on (Power plug).
3. TV will take a few minutes the downloading to detect the software, and then upgrade automatically as detect the software

4. Press OK to start software upgrade



5. Upgrade in progress

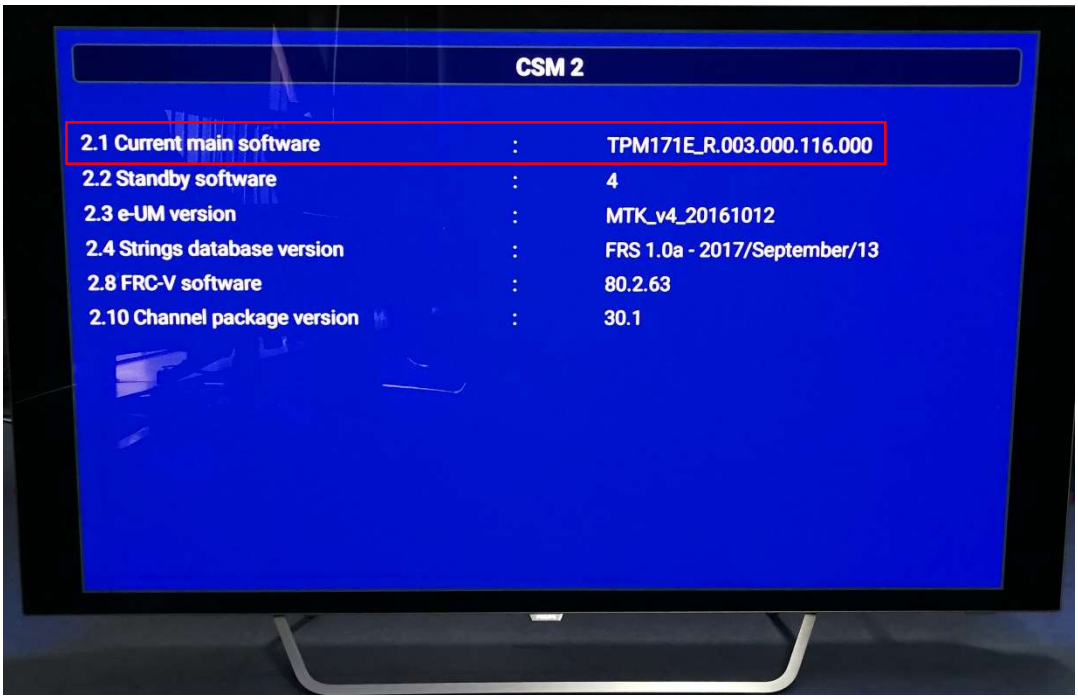




Step 3: Check the SW version

1. After burning software, TV will restart.
2. Press “123654”, enter Customer Service Mode to check if the software version is correct.

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



5.2 Error Code

5.2.1 Introduction

Error codes are required to indicate failures in the TV set. In principle a unique error code is available for every:

• Activated (SW) protection.

• Failing I2C device.

• General I2C error.

The last five errors, stored in the NVM, are shown in the Service menu’s. This is called the error buffer.

The error code buffer contains all errors detected since the last time the buffer was erased. The buffer is written from left to right. When an error occurs that is not yet in the error code buffer, it is displayed at the left side and all other errors shift one position to the right.

An error will be added to the buffer if this error differs from any error in the buffer. The last found error is displayed on the left.

An error with a designated error code never leads to a deadlock situation. It must always be diagnosable (e.g. error buffer via OSD or blinking LED).

In case a failure identified by an error code automatically results in other error codes (cause and effect), only the error code of the MAIN failure is displayed.

5.2.2 How to Read the Error Buffer

You can read the error buffer in below ways:

• On screen via the SAM/CSM (if you have a picture).

Example:

– **ERROR: 000 000 000 000 000**: No errors detected

– **ERROR: 013 000 000 000 000**: Error code 13 is the last and only detected error

– **ERROR: 034 013 000 000 000**: Error code 13 was detected first and error code 34 is the last detected (newest) error

• Via the blinking LED procedure (when you have no picture).

5.2.3 Error codes overview

In this chassis only “layer 2” error codes are available and point to problems on the SSB. They are triggered by LED blinking when CSM is activated. Only the following layer 2 errors are defined:

Description	LAYER 1 error	LAYER 2 error	Monitored	Error	I²C address	EB: in error buffer	Device	Defective board
				Prot.		BL: Blinking LED		
I²C BUSSES								
DSP bus (00)	2	11	SOC	E	00	BL/EB	SSB	Audio DSP
AMP bus (01)	2	12	SOC	E	01	BL/EB	SSB	Audio DSP
SSB bus (0F)	2	13	SOC	E	0F	BL/EB	SSB	SSB
BE bus (3F)	2	14	SOC	E	3F	BL/EB	SSB	SSB
FE bus (2F)	2	17	SOC	E	2F	BL/EB	SSB	SSB
DISP bus (30)	2	18	SOC	E	30	BL/EB	SSB	Display
AMBI bus (31)	2	19	SOC	E	31	BL/EB	SSB	Proj AL
SOC doesn’t boot (HW cause)	2	15	St-by µP	P	D4	BL	MT5593	SSB
Supply related								
12V	3	16	St-by µP	P		BL		Supply
SSB								
I2C switch (SSB bus)	9	24	SOC	E	E0	EB	PCA9540	Audio DSP
I2C switch (BE bus)	2	25	SOC	E	E0	EB	PCA9540	SSB
Channel dec	2	27	SOC	E	C8-CE	EB	Silab Si216x	SSB
Boston (HDMI2.2)	2	29	SOC	E	40	EB	SIL 9777	SSB
Lnb controler	2	31	SOC	E	10	EB	LNBH 25	SSB
Tuner	2	34	SOC	E	C0	EB	Si2151/AV 2019	SSB
Tuner S2	2	36	SOC	E		EB		
Class - D 3 (DSP bus)	9	35	SOC	E	D8	EB	TAS 5760 LD	Audio DSP
Audio DSP	9	36	SOC	E	70	EB		Audio DSP
Class-D 1	2/9	37	SOC	E	D8	EB	TAS5760LD	SSB/Audio DSP
DSP EEPROM	9	38	SOC	E	A0	EB	Durango	Audio DSP
Class - D 2	2/9	39	SOC	E	DA	EB	TAS 5760 LD	SSB/Audio DSP
T° sensor SSB	2	42	SOC	E	98	EB	LM 75	T°sensor
Light sensor	6	43	SOC	E	52	EB	TSL2571	SET
B&O signal board	4	44	SOC	E		EB		
HDD XFS repair	8	45	SOC	E		EB		
DSP doesn’t boot (SW cause)	9	52	SOC	E	70	EB	MT5593	Audio DSP
SOC doesn’t boot (SW cause)	2	53	St-by µP	P	D4	BL	MT5593	SSB
FRC	2	61	SOC	E	34	EB	NT72324/72333	SSB
ASIC	2	62	SOC	E	84	EB	ASIC	SSB
Display	5	63	SOC	E	34	EB	Innolux	Display

5.2.4 How to Clear the Error Buffer

The error code buffer is cleared in the following cases:

• By using the CLEAR command in the SAM menu

• By using the CLEAR command in the Factory mode:

• By using the following key sequence on the remote control transmitter: “**062599**” directly followed by the **OK** button.

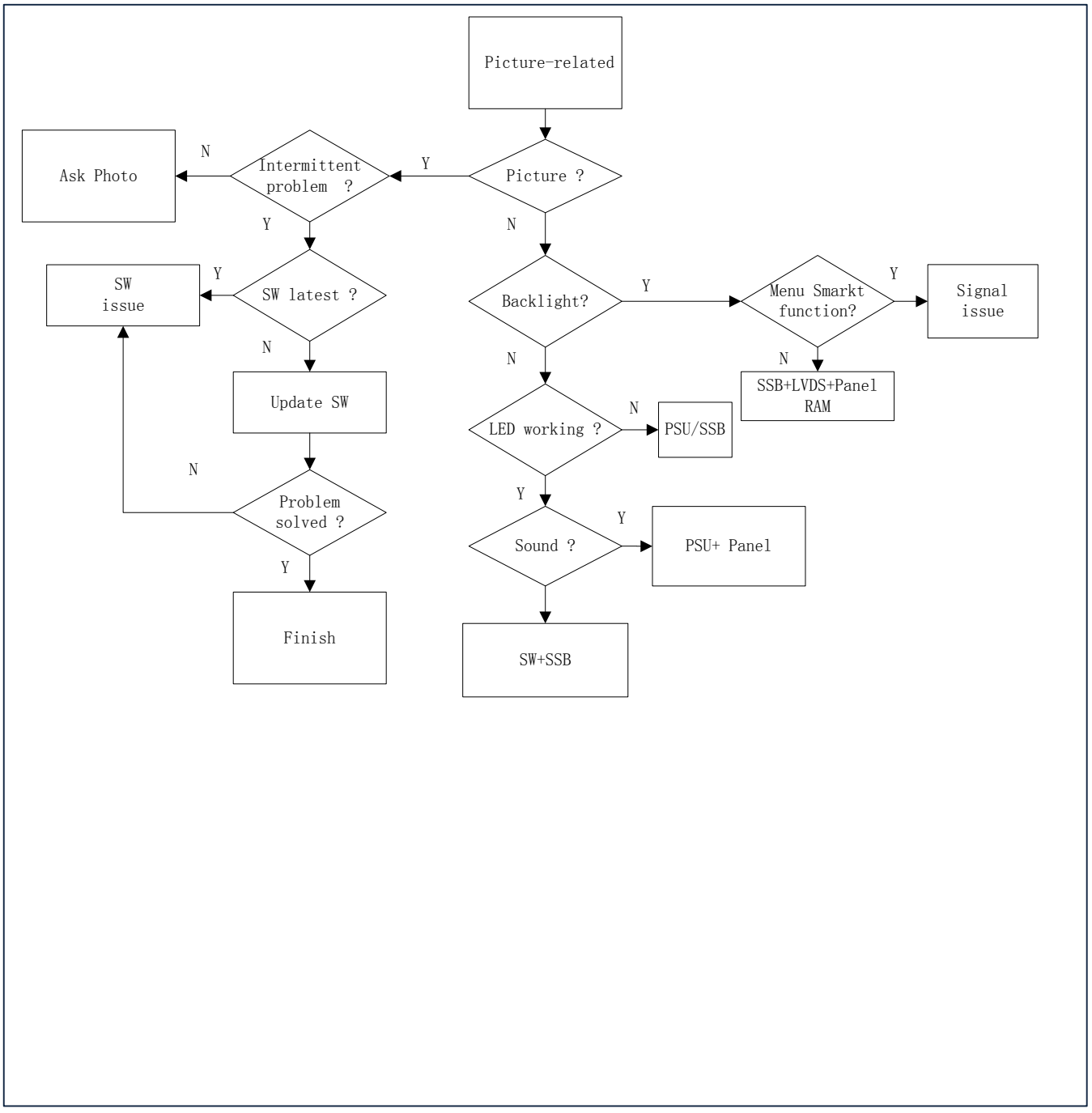
• If the contents of the error buffer have not changed for 50 hours, the error buffer resets automatically.

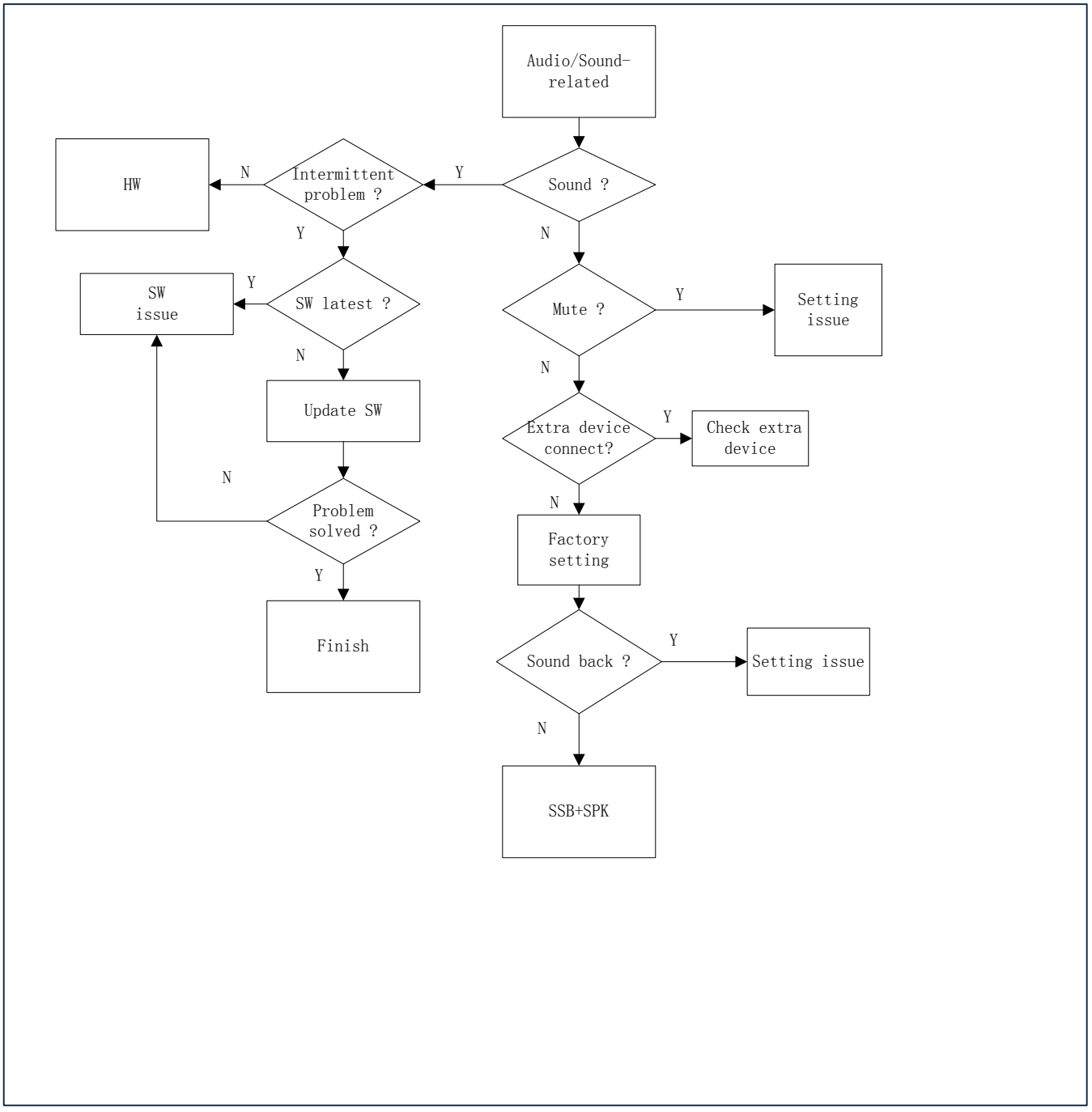
Note: If you exit SAM by disconnecting the mains from the television set, the error buffer is not reset.

5.3 Panel Code

Press the following key sequence on a standard RC transmitter: “062598” directly followed by MENU and “xxx”, where “xxx” is a 3 digit decimal value of the panel type: see column “Display Code” in below tab. After resetting the Display Code, restart the set immediately.

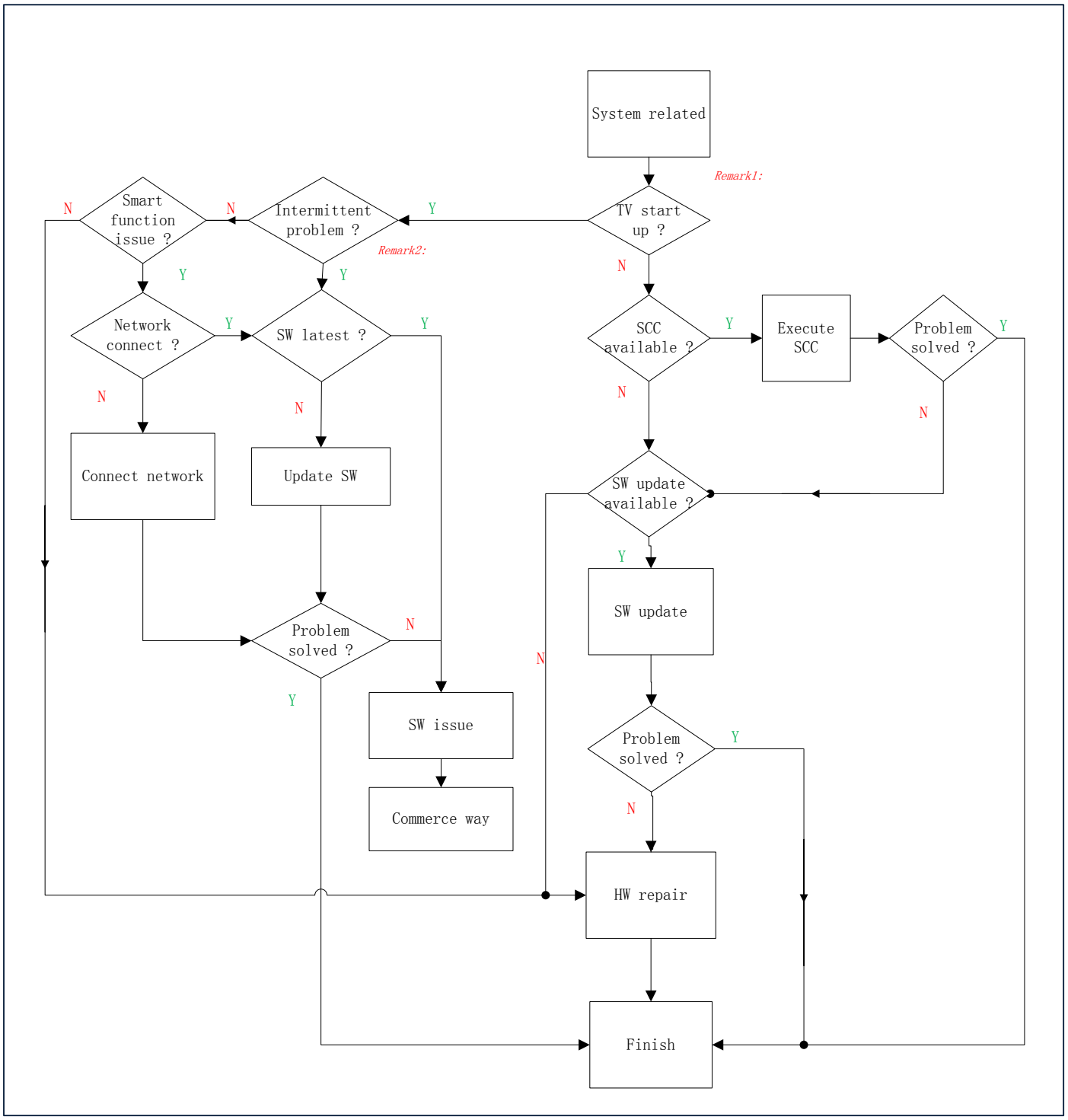
CTN_ALT BOM#	Panel Type	Display Code	Setting Set Option Code
43PUS7303/12	TPT430U3-QVN03.U S0B0K	030	167
49PUS7503/12	TPT490F2-FN02.S S802A	034	171
50PUS7303/12	TPT500U1-QVN03.U S5B0Y	031	168
55PUS7303/12	TPT550U1-QVN05.U S57B0F	032	169
55PUS7503/12	TPT550U1-QVN05.U S57B0E	035	172
65PUS7303/12	TPT650UA-QVN06.U S300Q	033	170
65OLED873/12	LC650AQD-EKAA KR LGD	029	164
65OLED973/12	LC650AQD-GKA6 KR LGD	023	134


Picture-related
Picture ?
Y
Intermittent problem ?
N
Ask Photo
Y
SW latest ?
Y
SW issue
N
Update SW
N
Problem solved ?
Y
Finish
N
Backlight?
Y
Menu Smarkt function?
Y
Signal issue
N
SSB+LVDS+Panel RAM
N
LED working ?
N
PSU/SSB
Y
Sound ?
Y
PSU+ Panel
SW+SSB


Audio/Sound-related
Sound ?
Y
Intermittent problem ?
N
HW
Y
SW latest ?
Y
SW issue
N
Update SW
Problem solved ?
N
Y
Finish
N
Mute ?
Y
Setting issue
N
Extra device connect?
Y
Check extra device
N
Factory setting
Sound back ?
Y
Setting issue
N
SSB+SPK

Trouble shooting system

2016/12/11



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

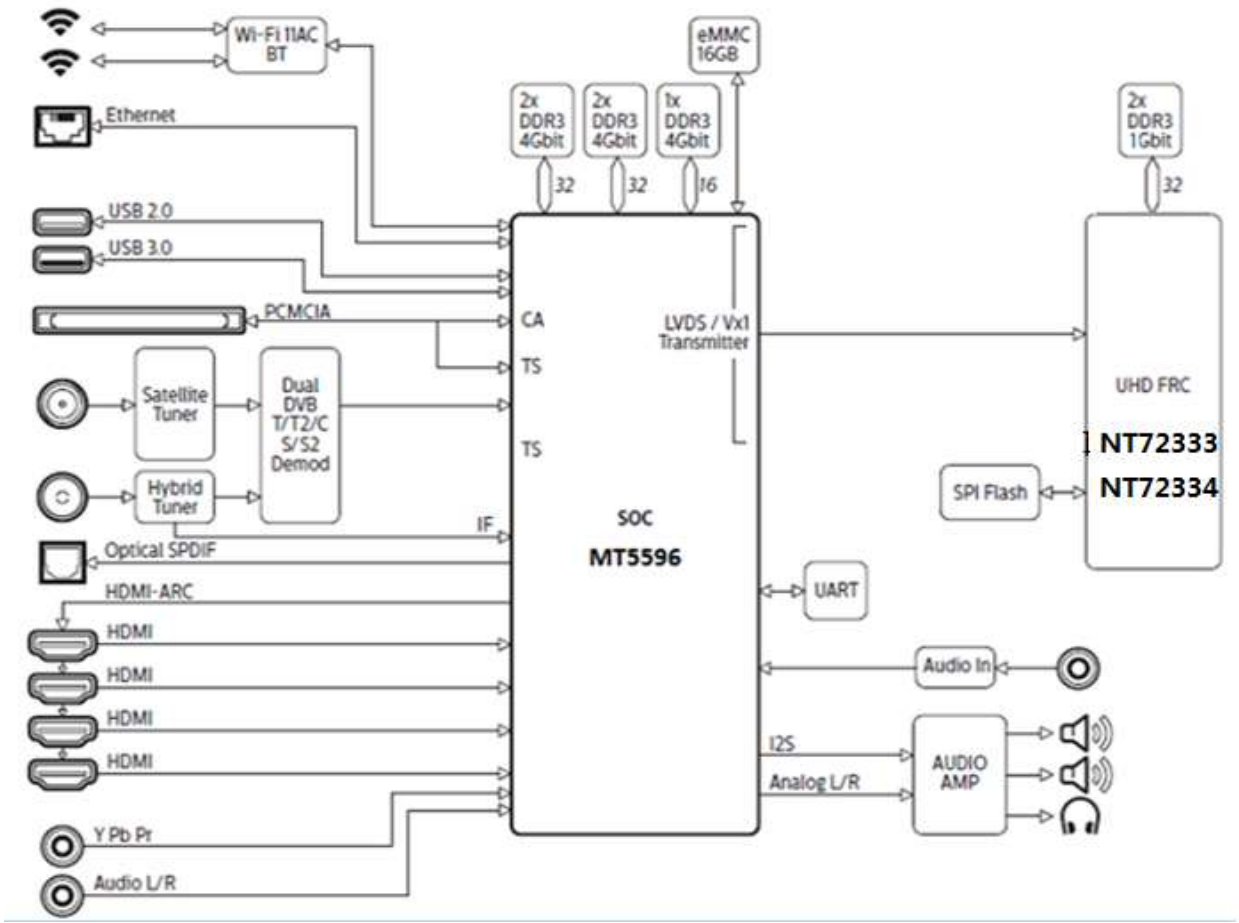
Remark2 : How to judge intermittent issue ?

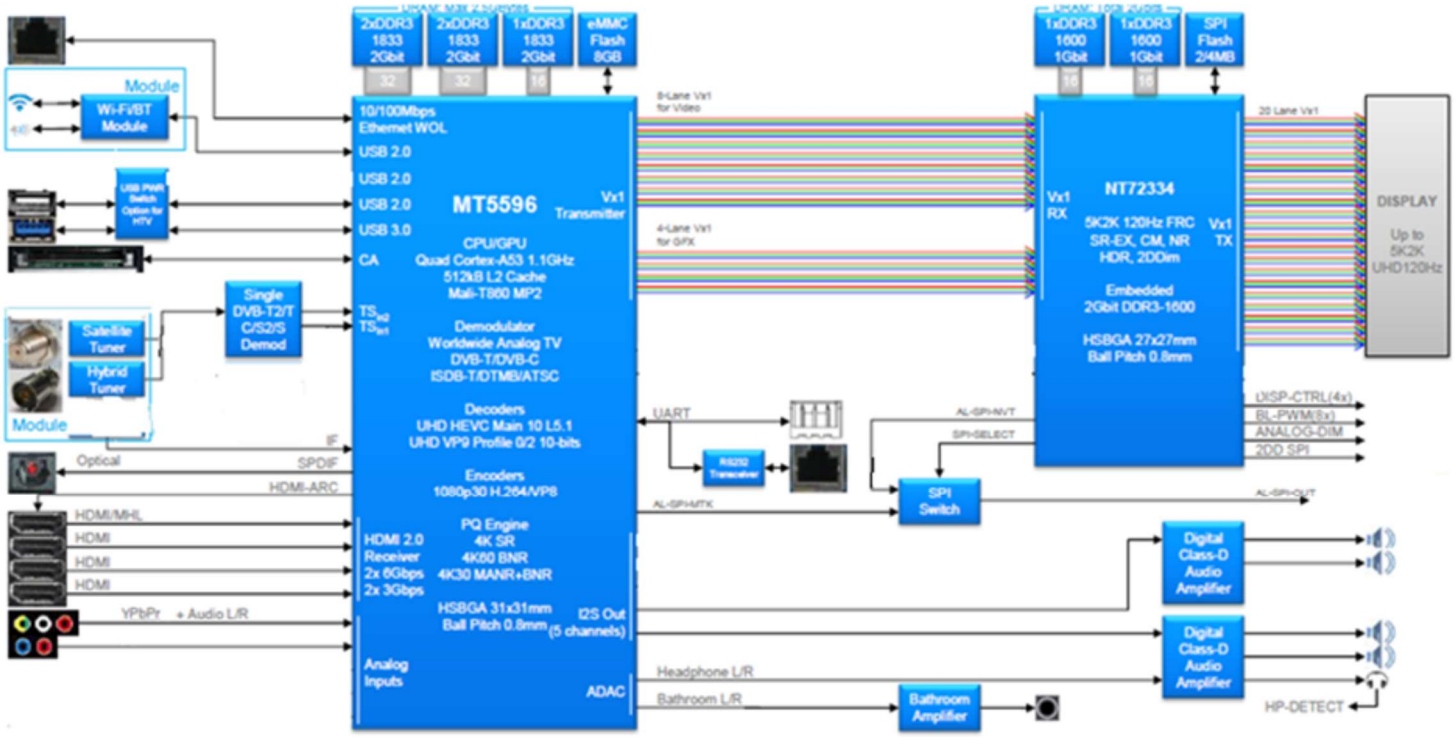
1.When the problem happened can be solved by:
1)AC off AC on
2)DC off DC on
3)RC switch different source

2.The problem intermittent happened

7. Electrical Diagram

7.1 Block diagram

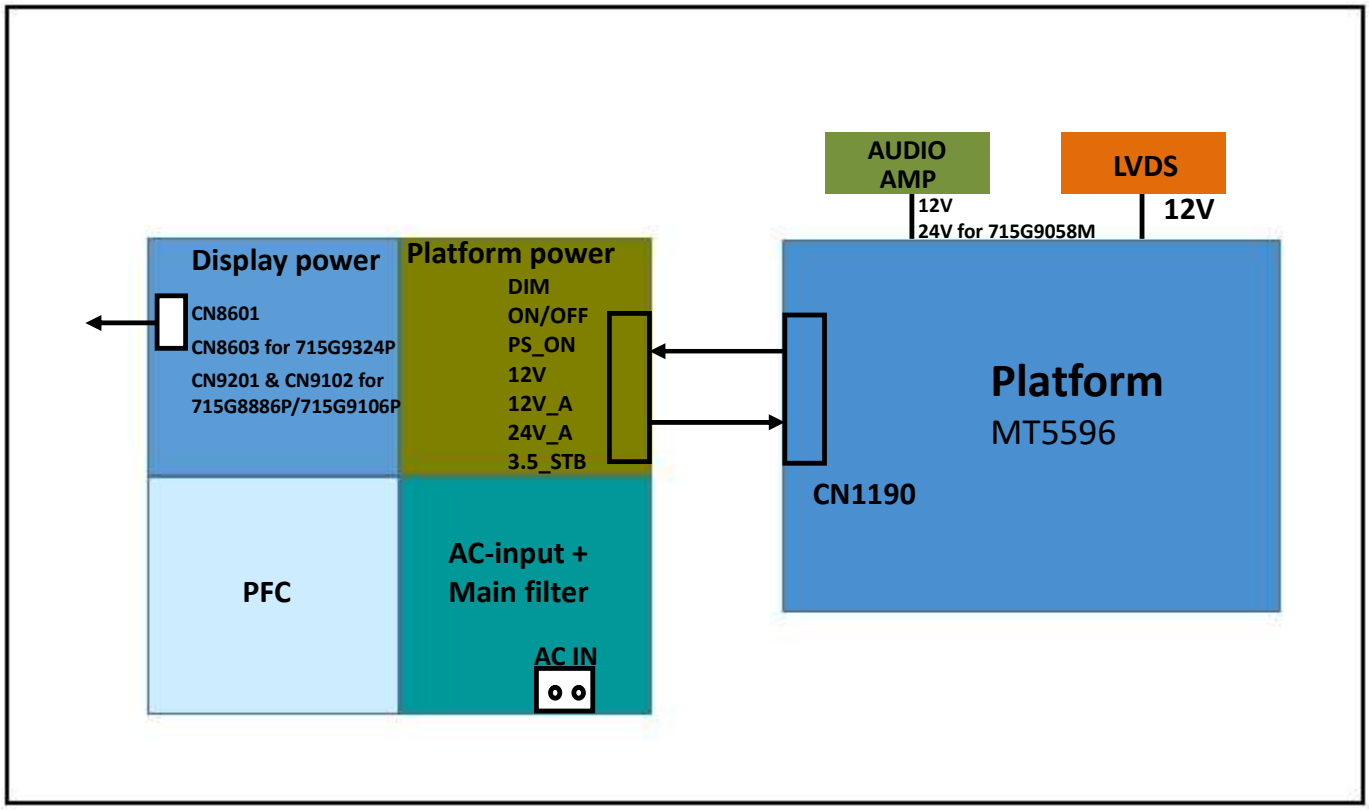




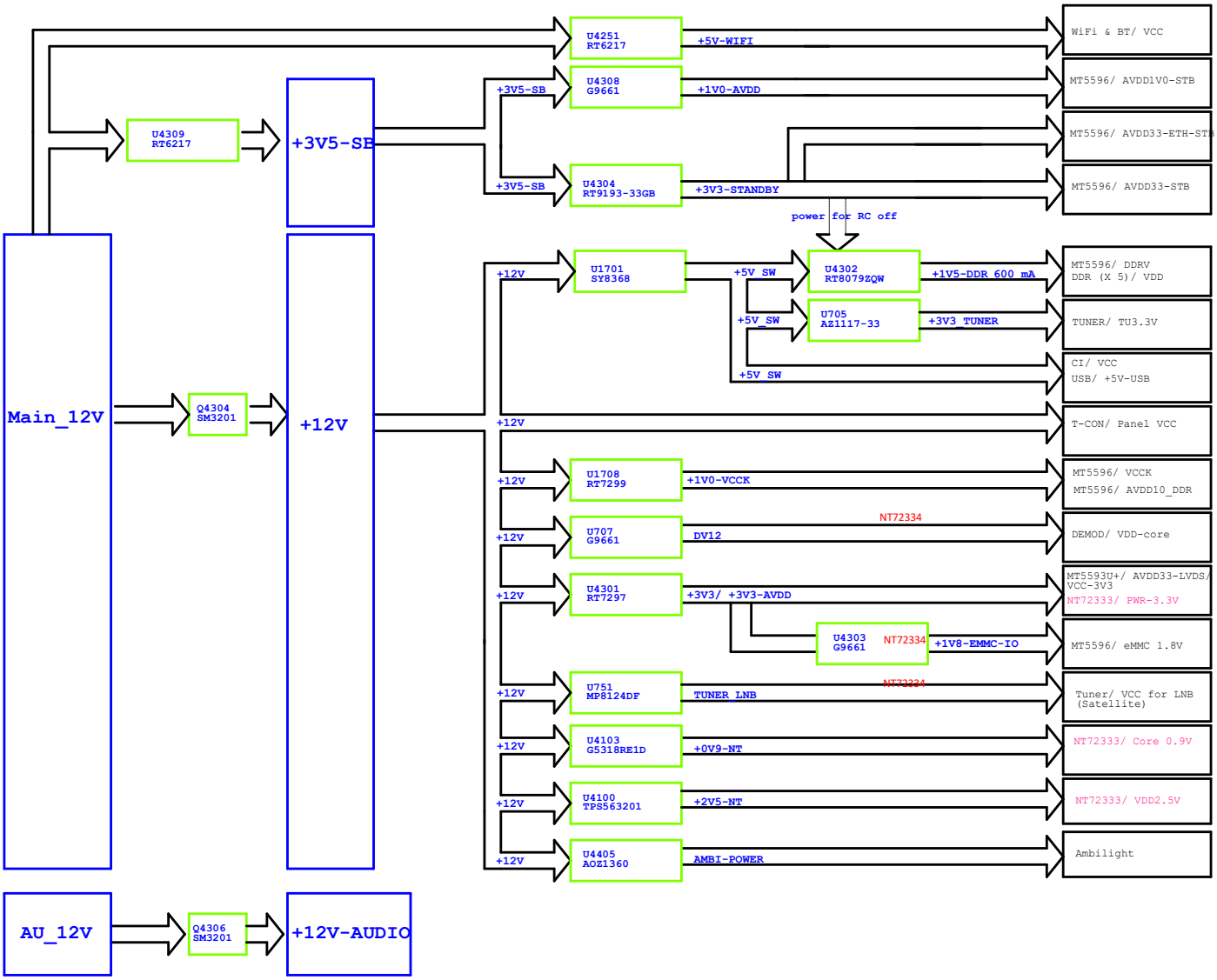
(For 715G9058M)

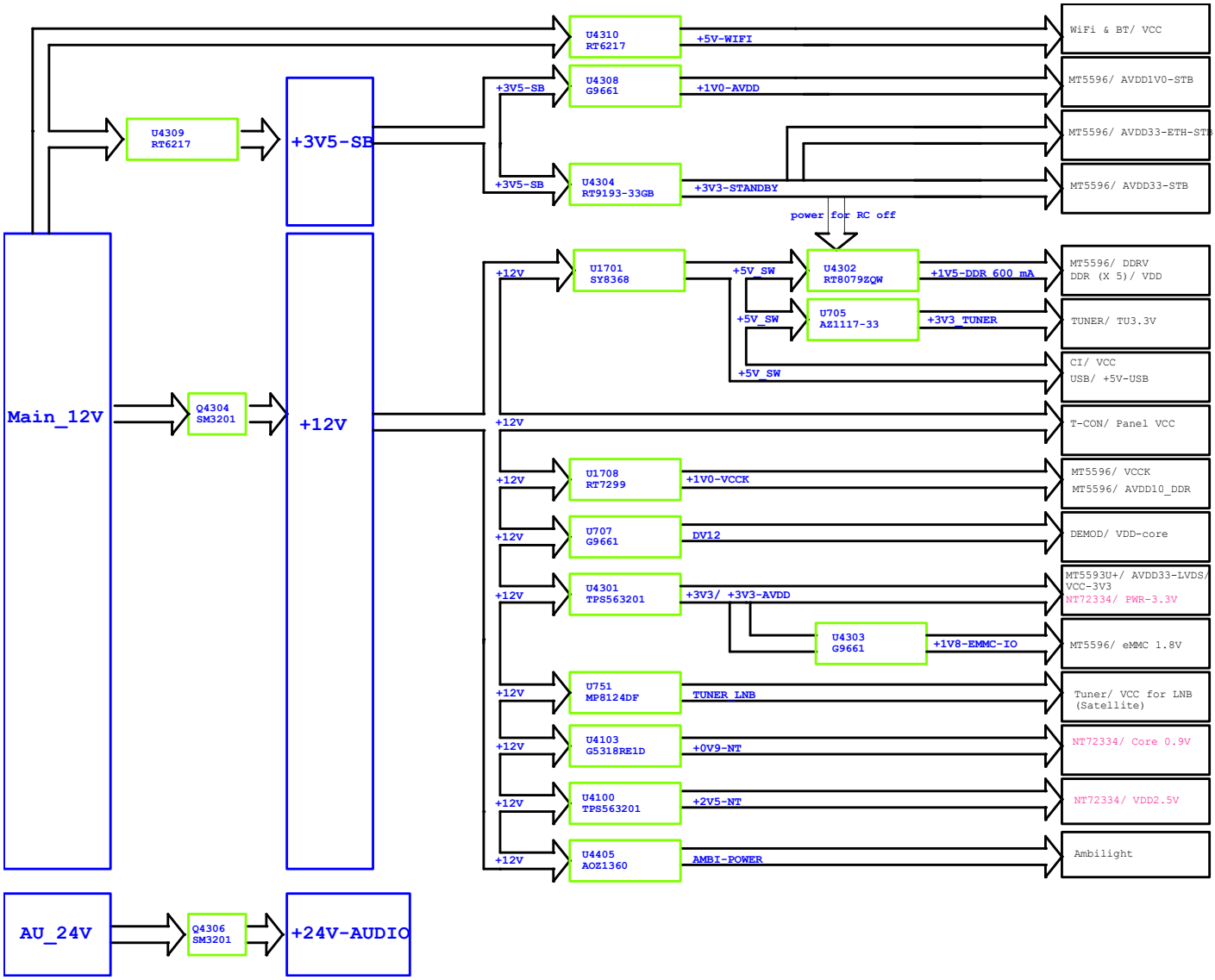
7.2 Power Supply

Power architecture of this platform.



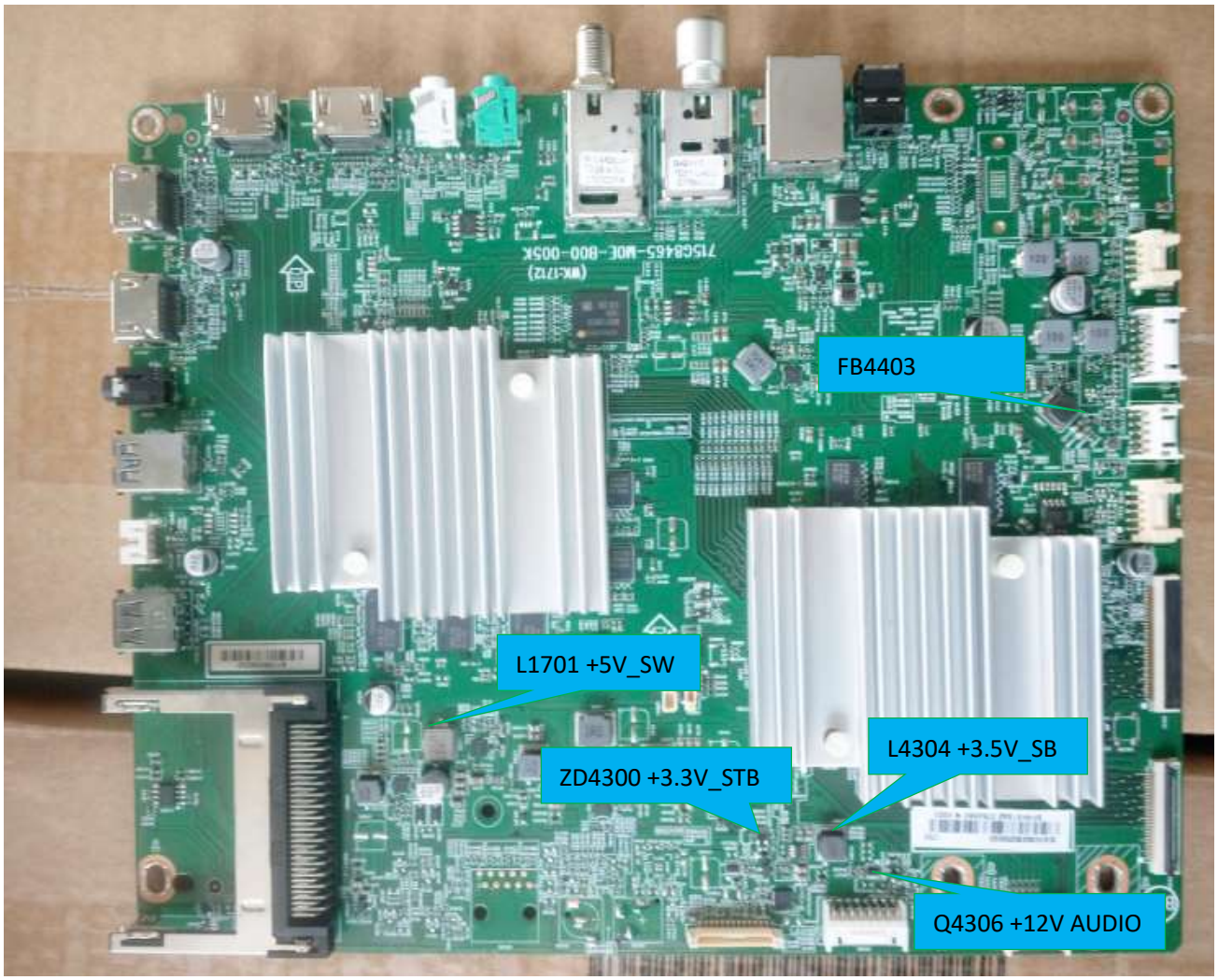
7.3 Power tree





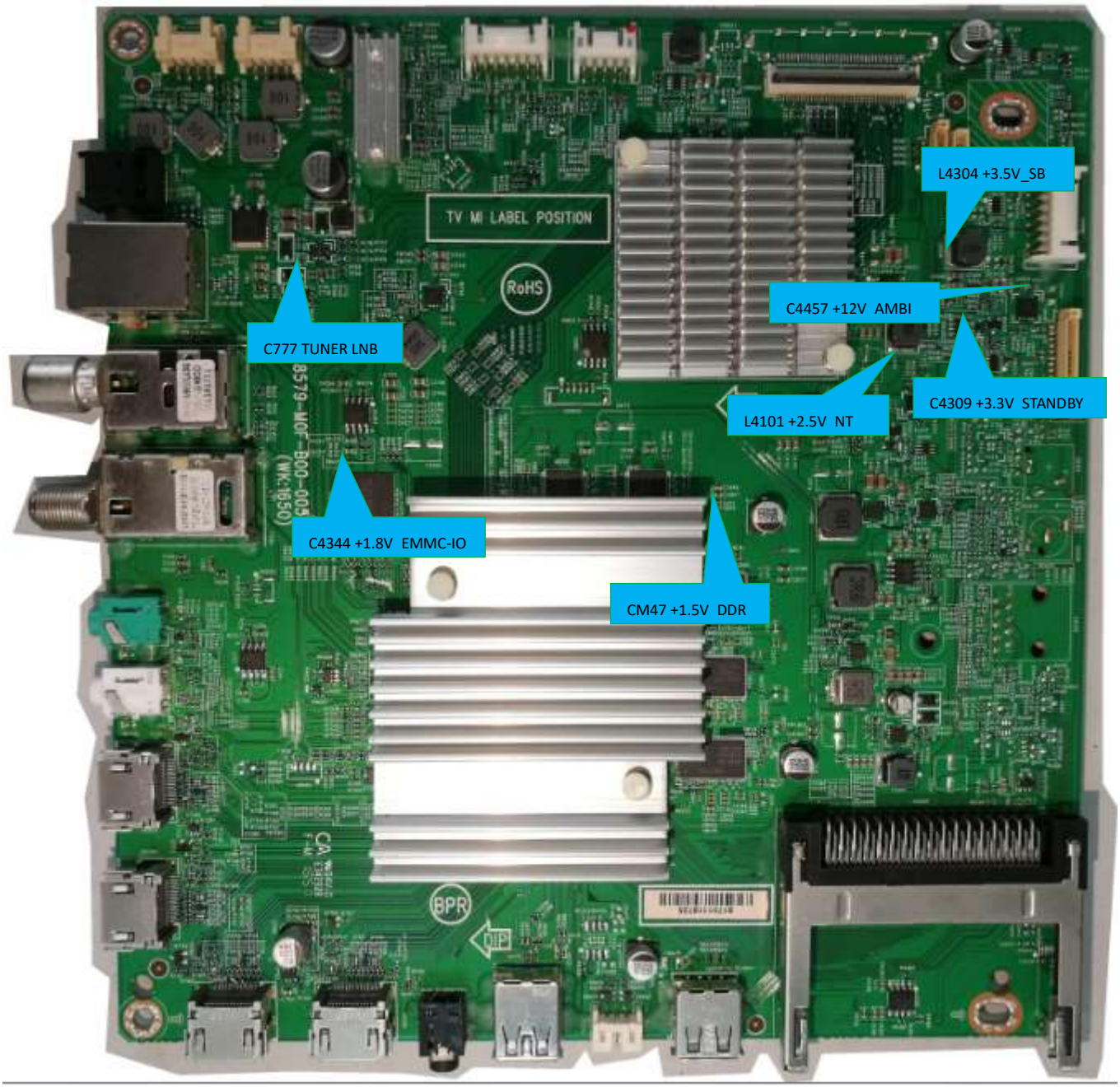
(For 715G9058M)

7.3 Power layout SSB

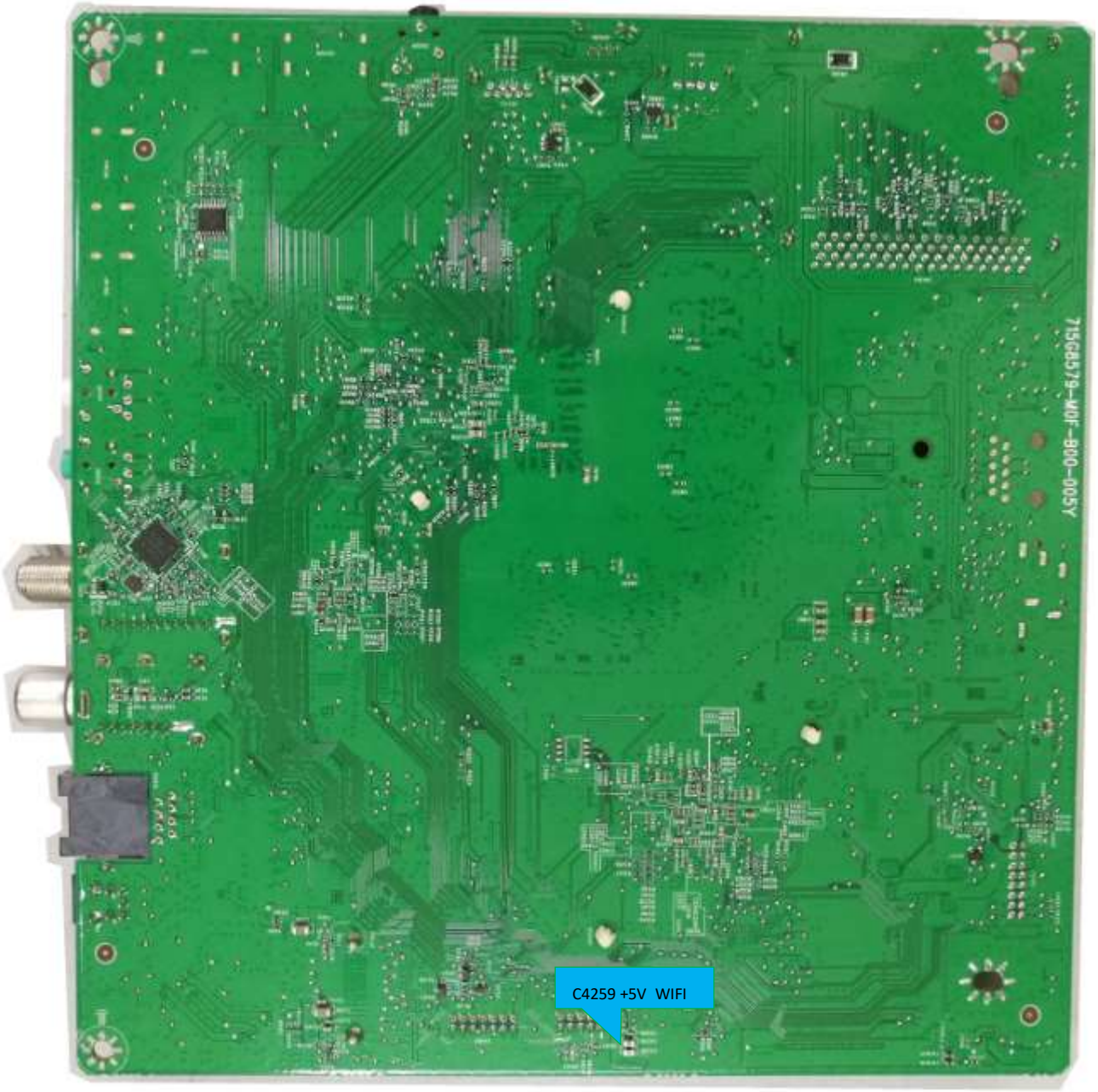


Power SSB Top View (OLED 873 series)

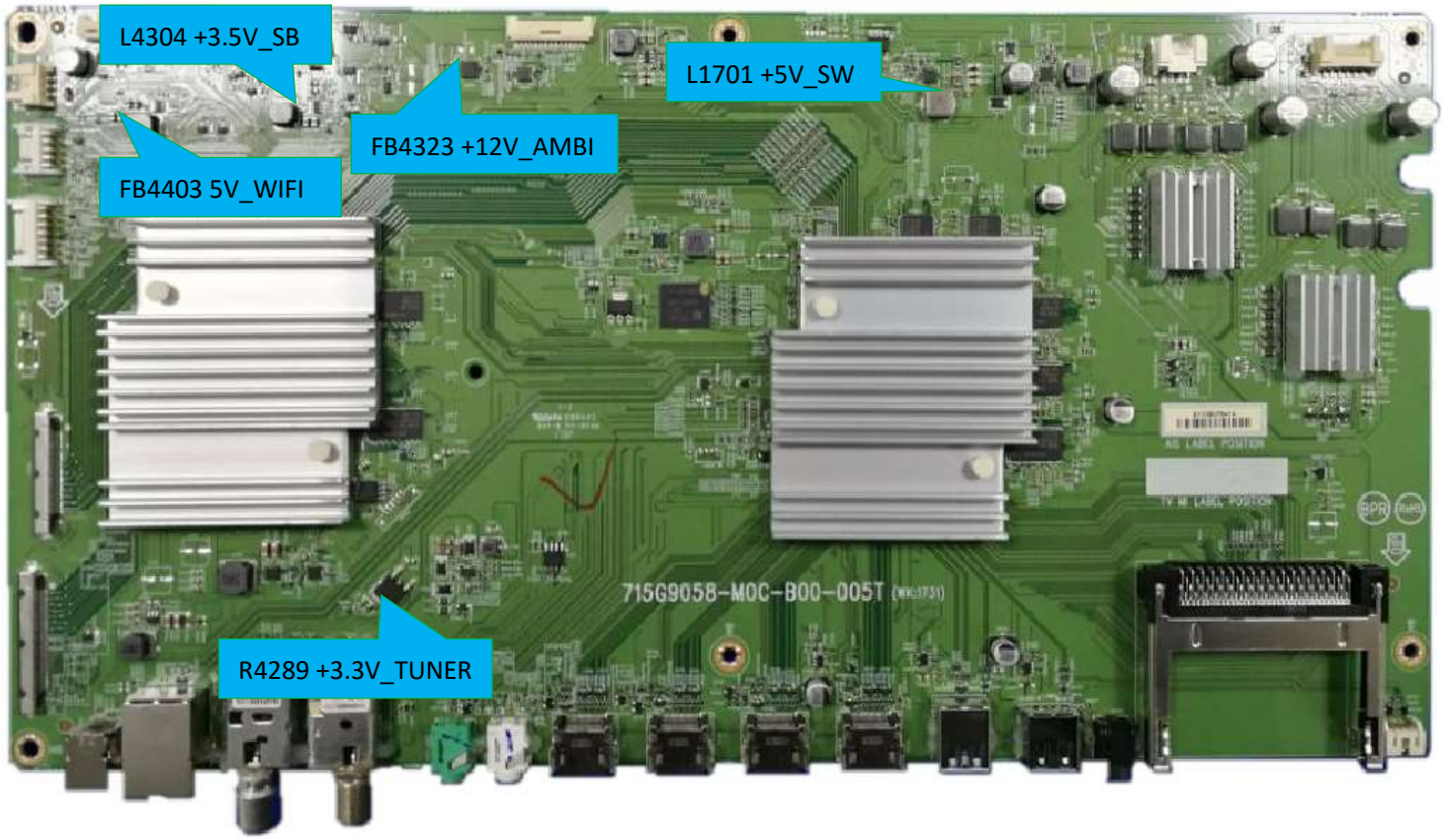
Power SSB Bottom View (OLED 873 series)



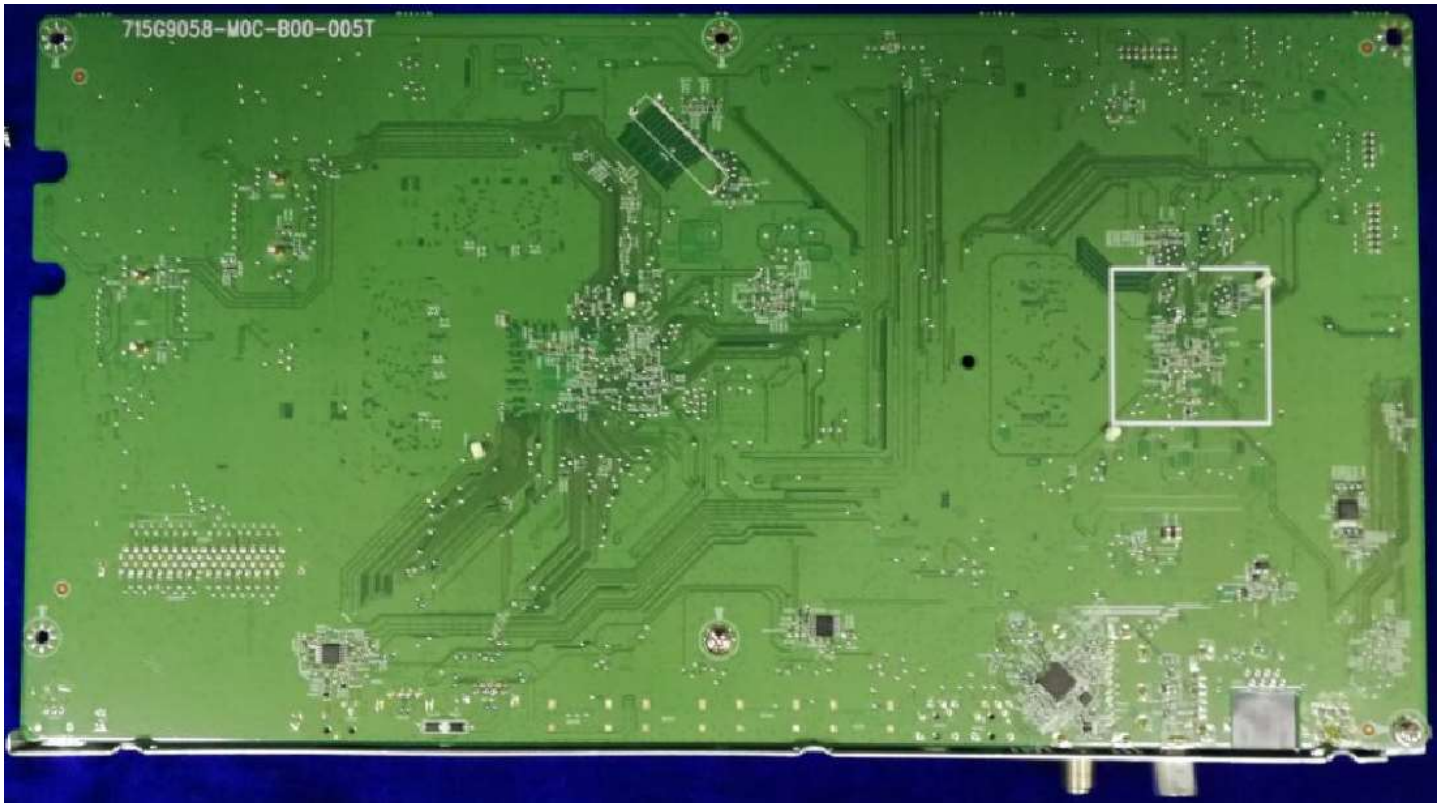
Power SSB Top View (7303/7503 series)



Power SSB Bottom View (7303/7503 series)



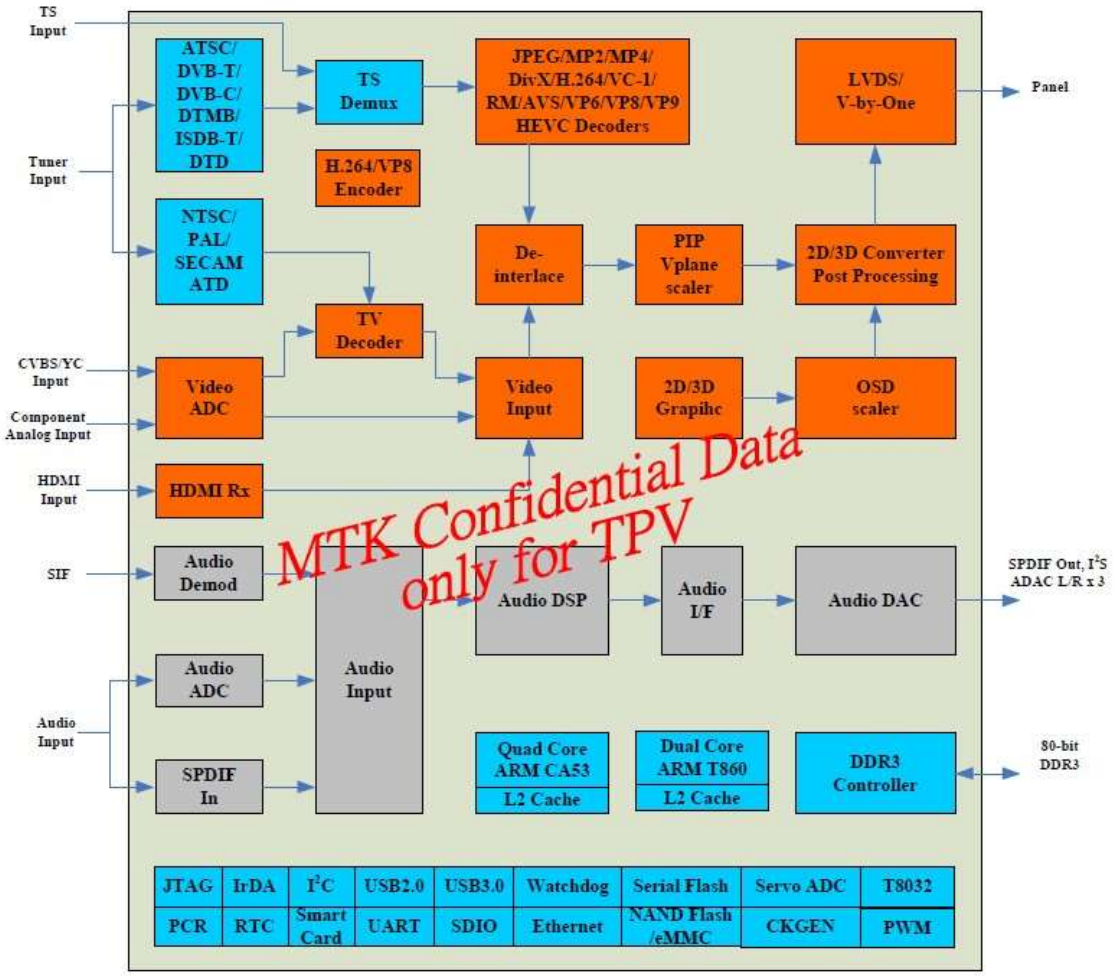
Power SSB Top View (OLED 973 series)



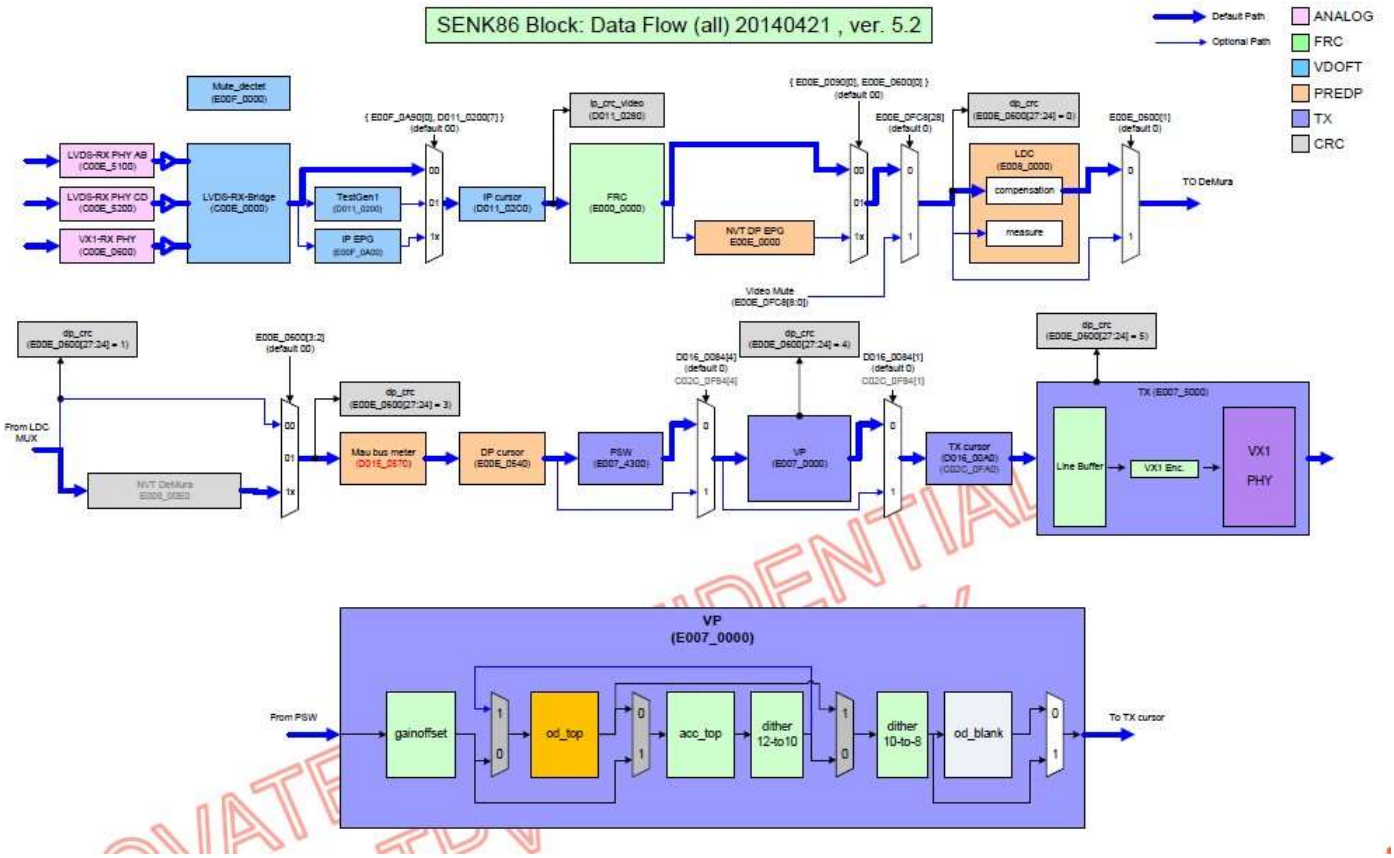
Power SSB Bottom View (OLED 973 series)

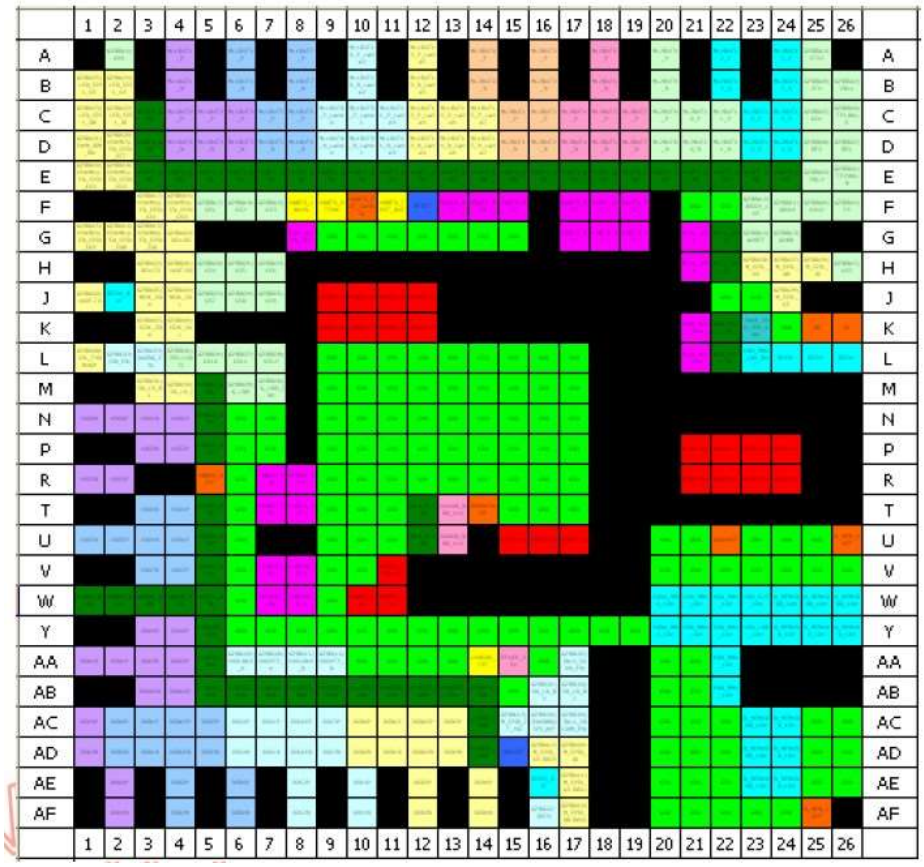
8. IC Data Sheets

8.1 MT5596UIIJ (IC U9400)



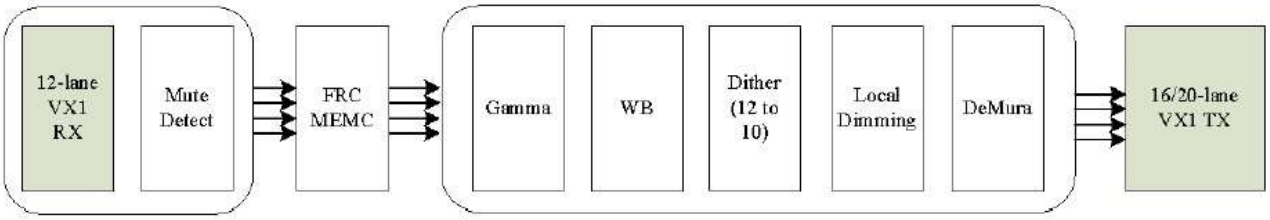
8.2 NT72333TBG/BA (IC U3100)

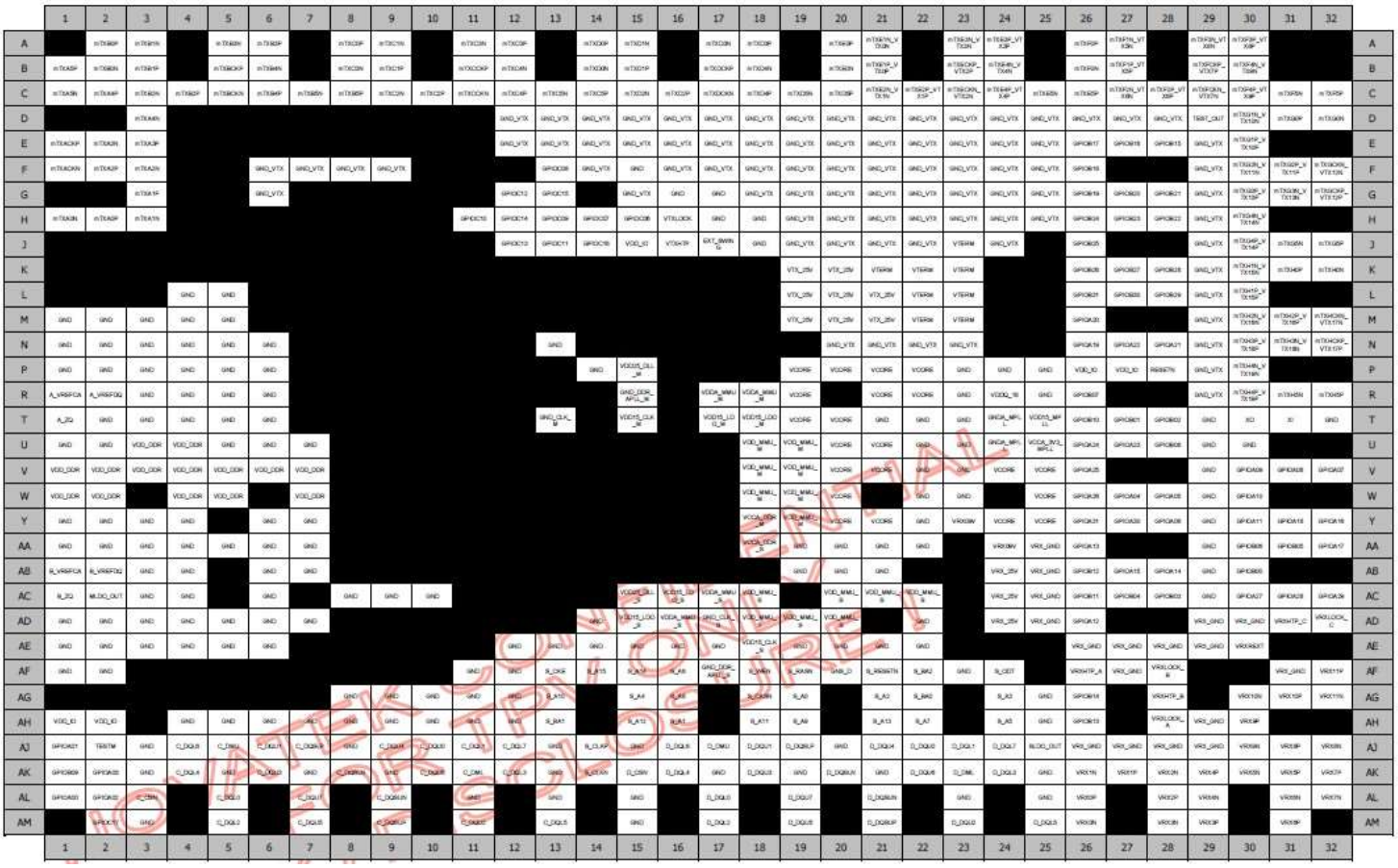




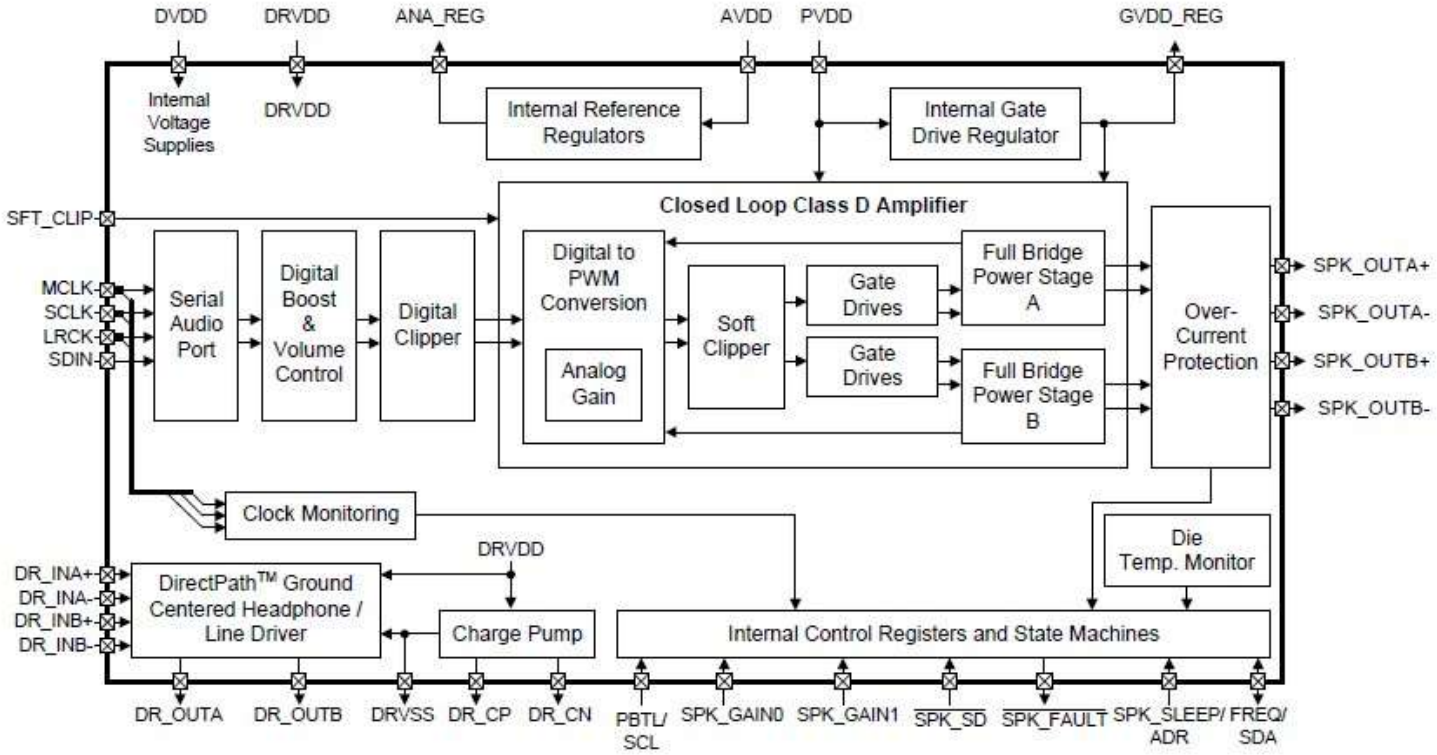
8.3 NT72334TBG/BA (IC U5000)

Video Path Diagram

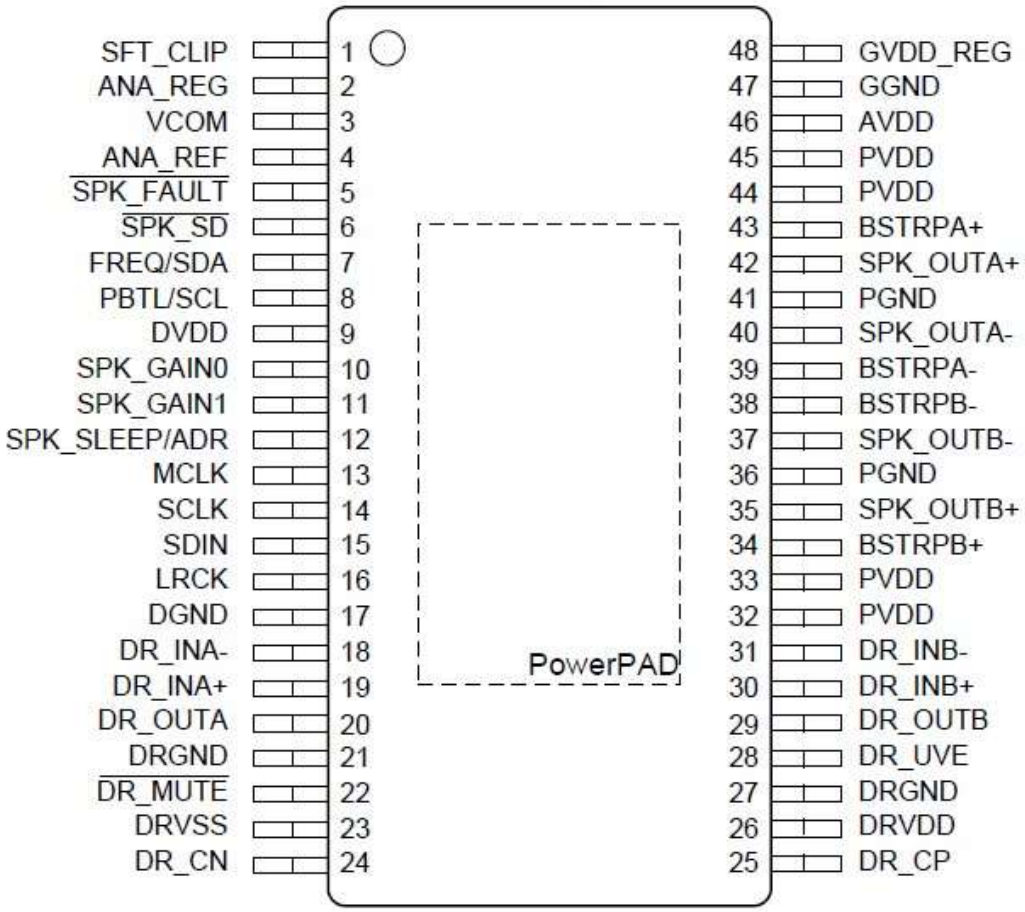




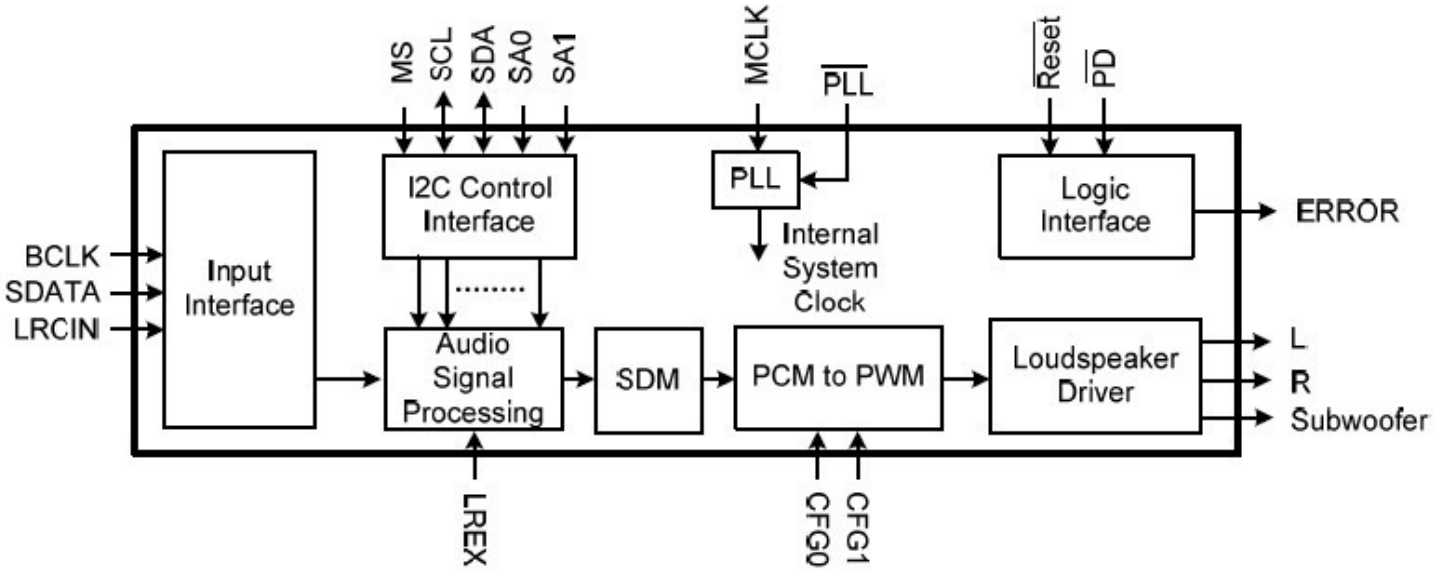
8.4 TAS5760LDDCAR (IC U5100--Audio)

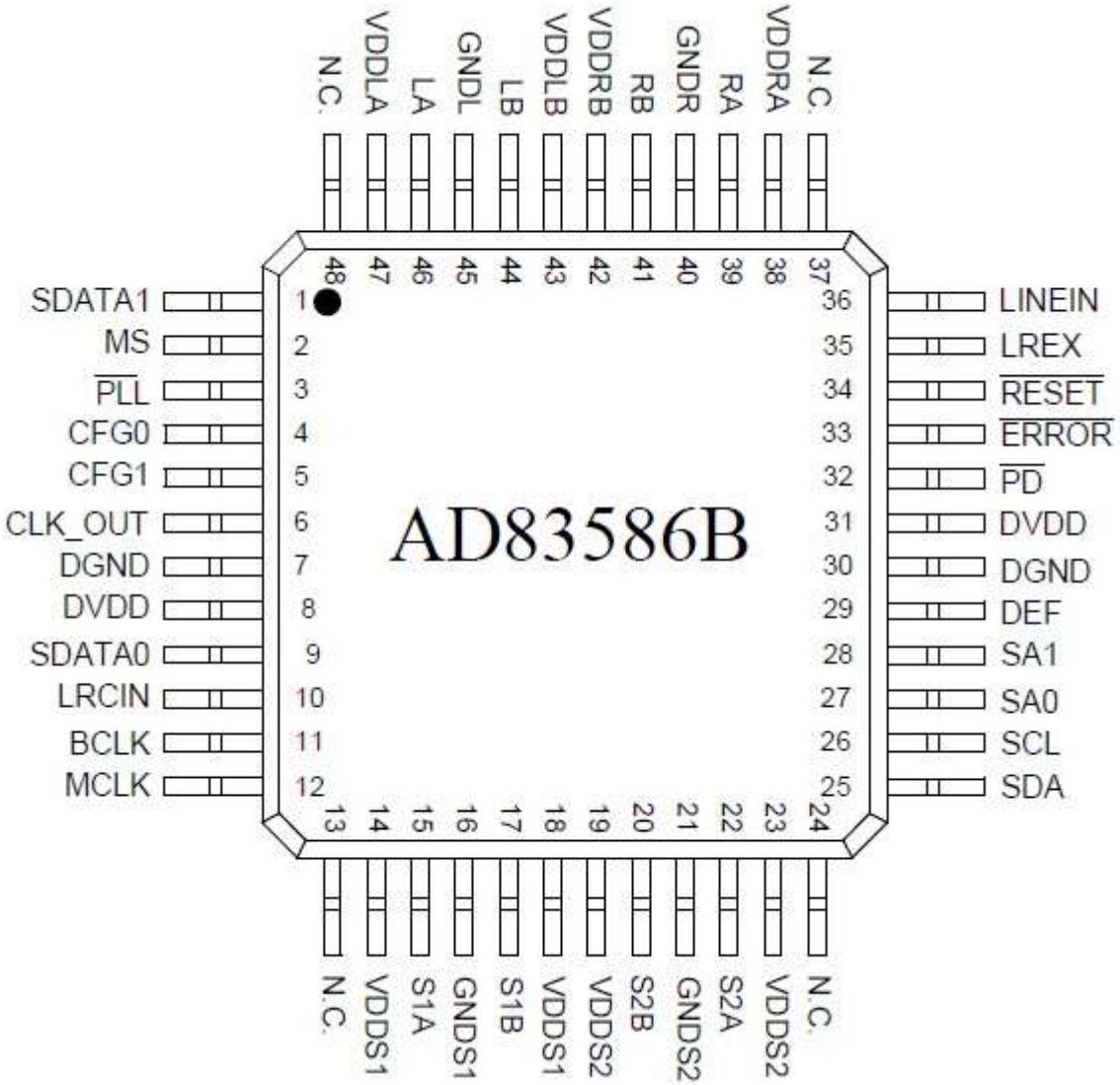


TSSOP PACKAGE
DCA-48
(TOP VIEW)

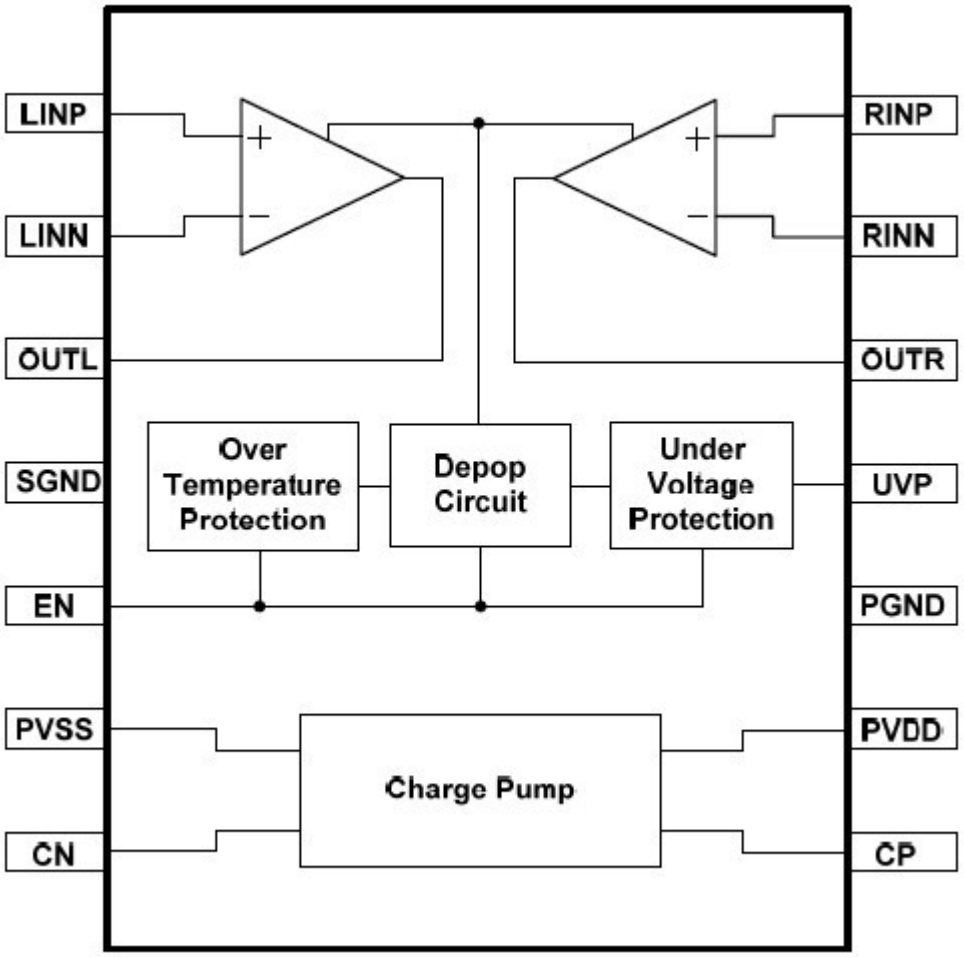


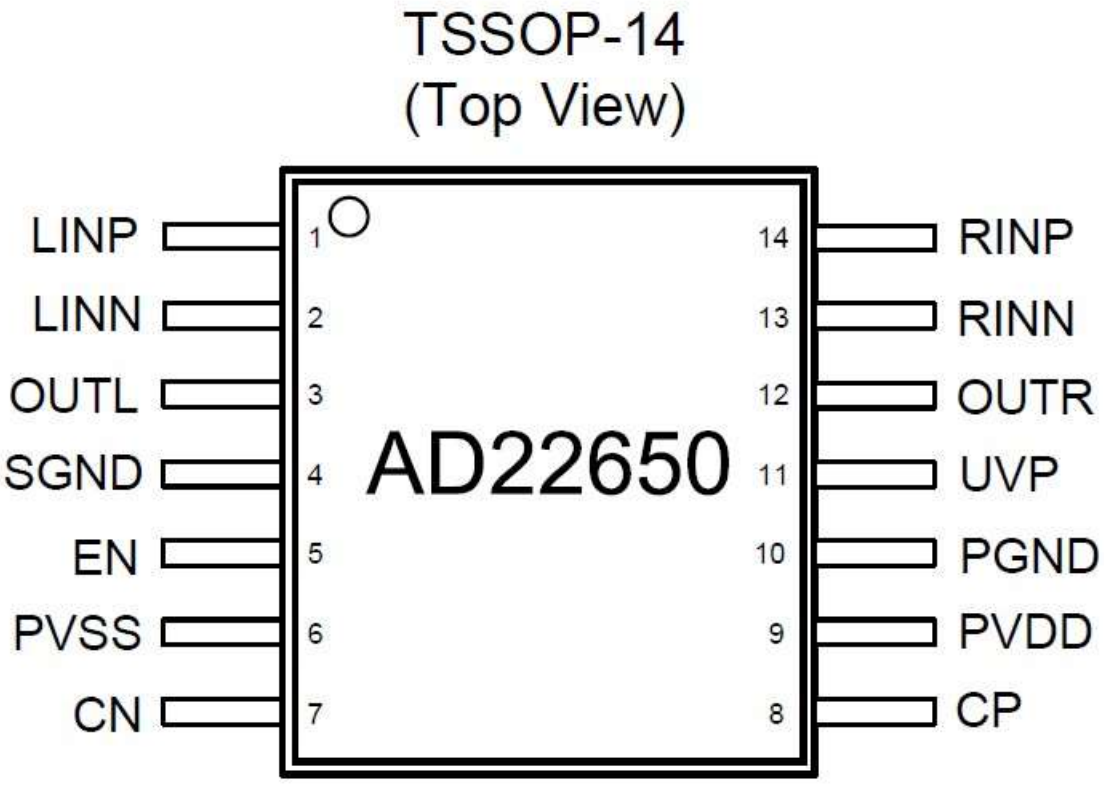
8.5 AD83586B-LG48NAY (IC U6000--Audio)



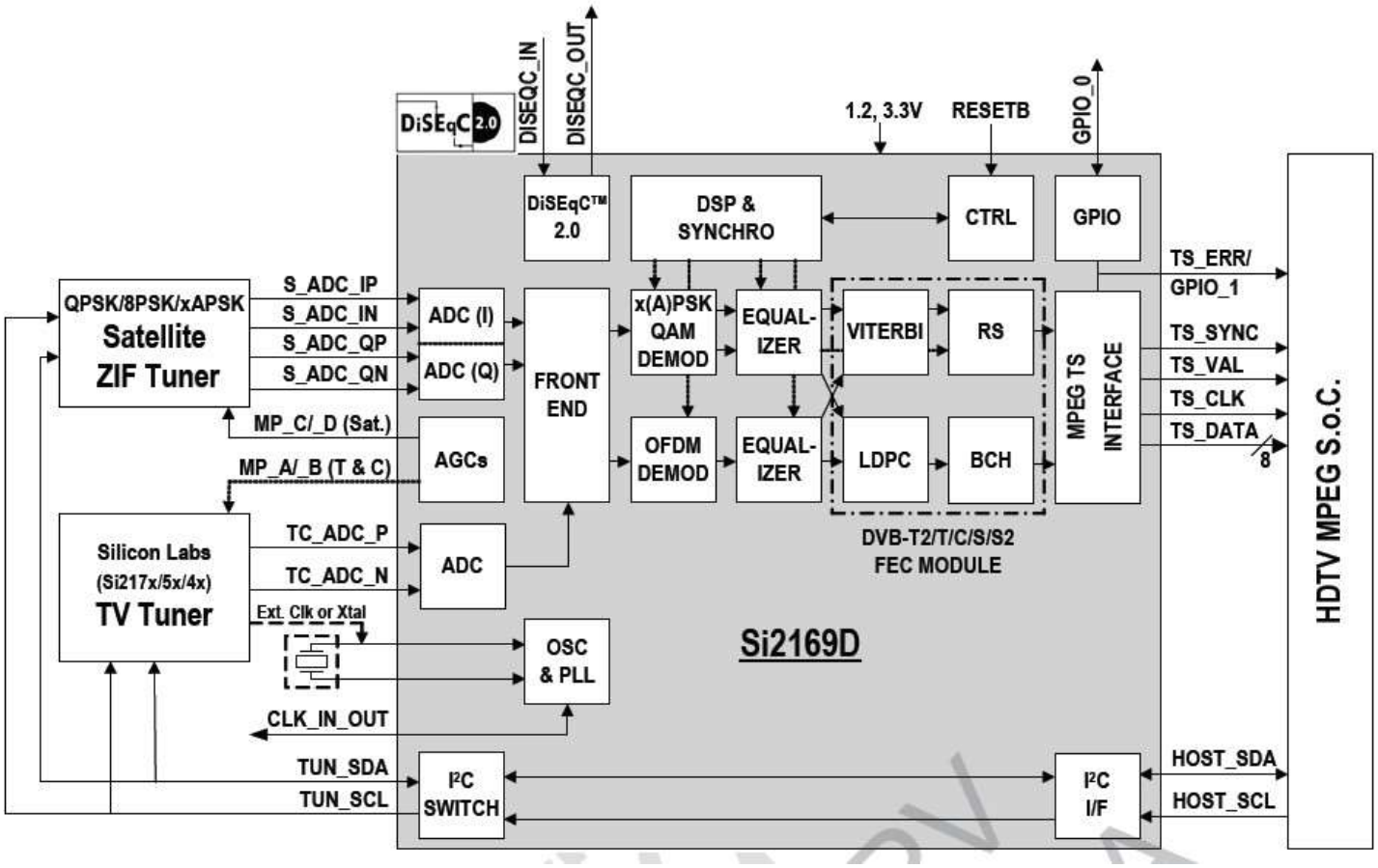


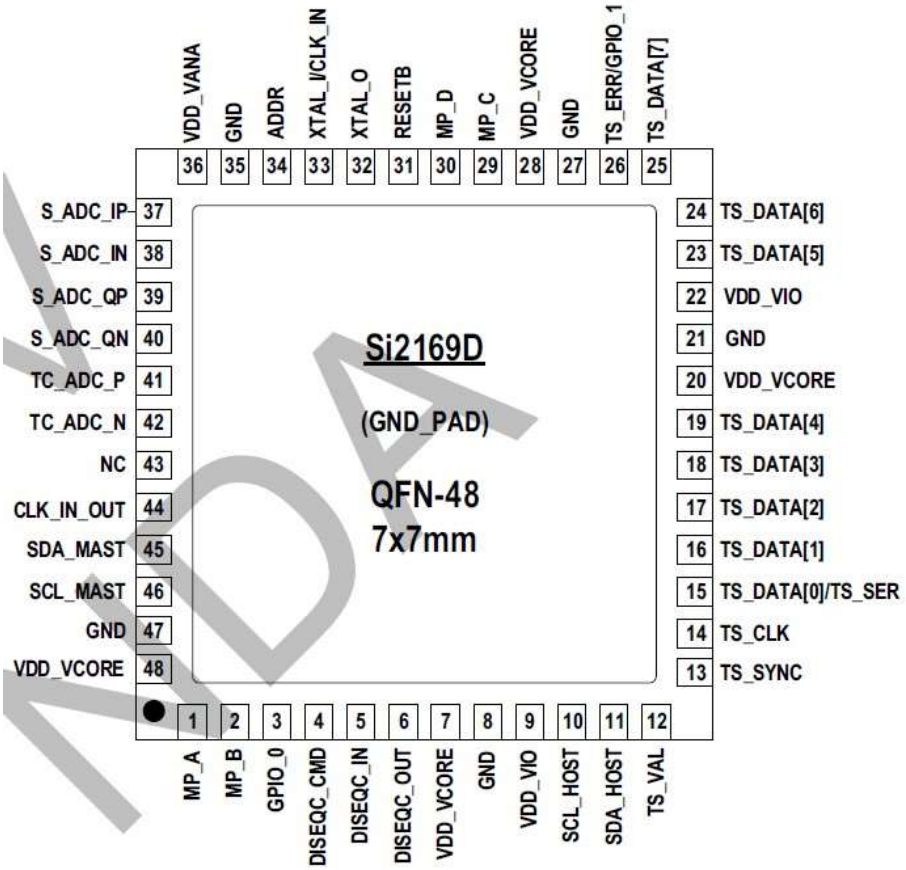
8.6 AD22650-QH14NAR (IC U6001--Audio)



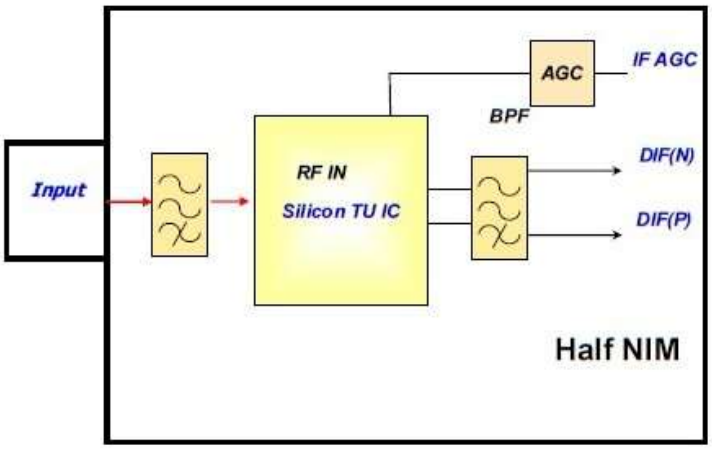


8.7 SI2169-D60-GMR (IC U201--DEMODULATOR)

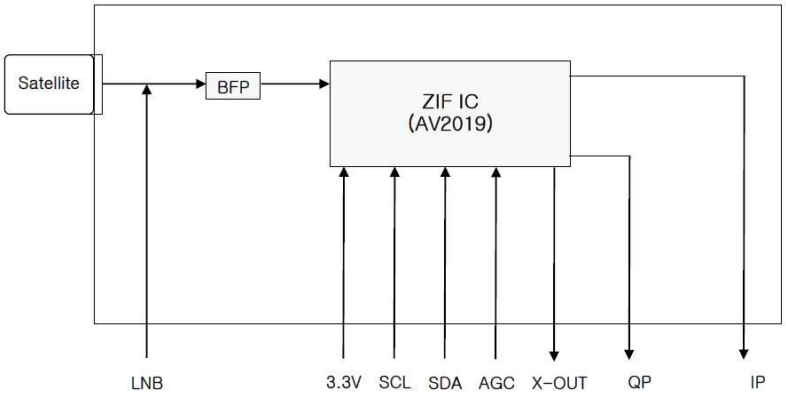


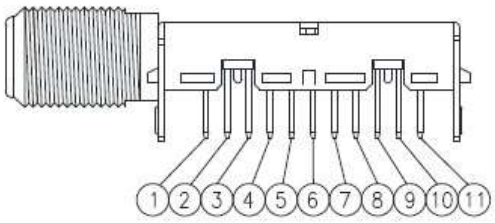


8.8 TDSY-G480D EUROPE (TU201)



8.9 TDQS-A701F EUROPE (TU202)



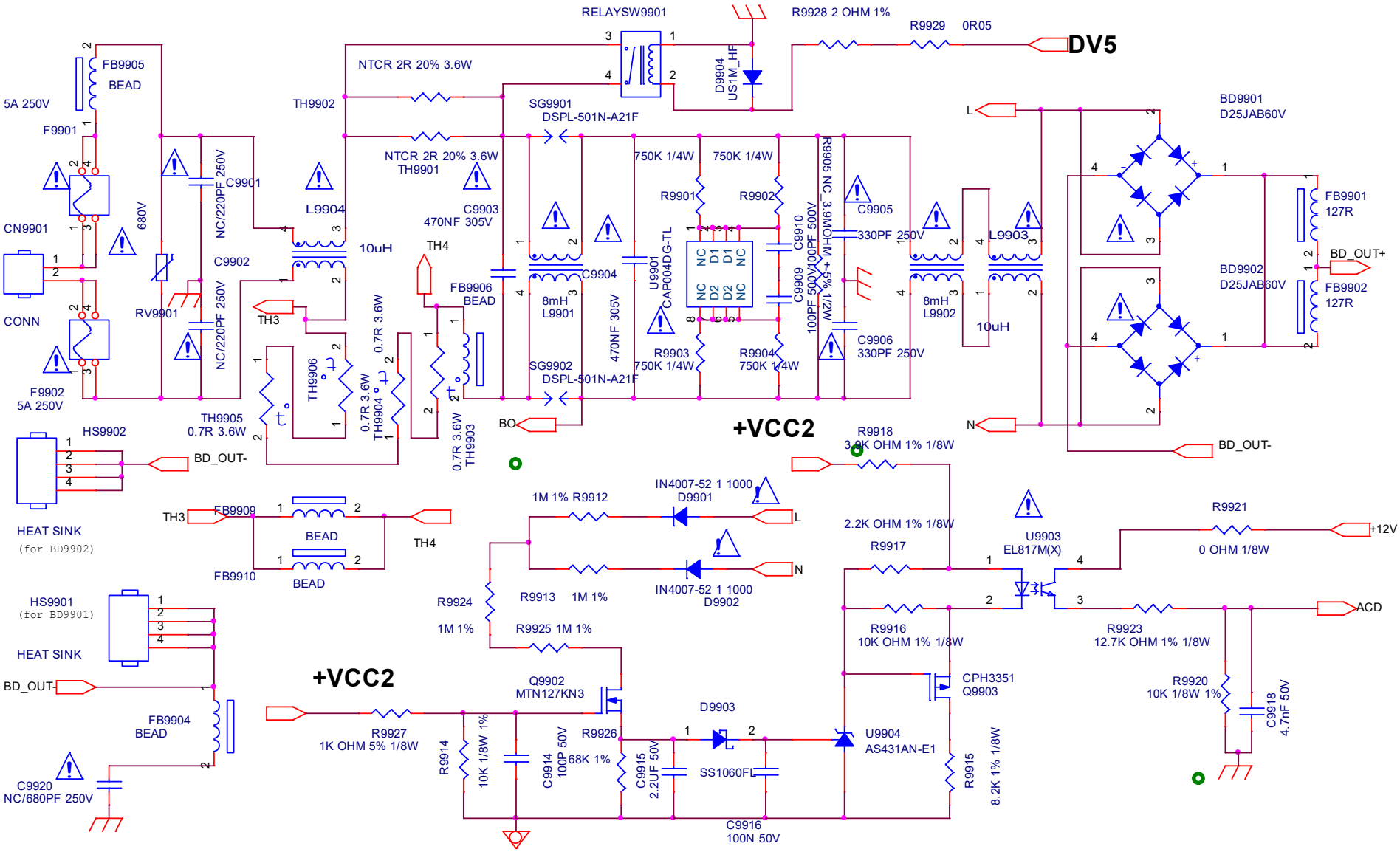


Pin No	Pin Name	Pin Description
1	LNB A	LNB power supply. To put 1nF of ceramic capacitor into ground.
2	NC	No Connection
3	TU 3.3V	+3.3V Supply for ZIF IC
4	NC	No Connection
5	QP Output	Base band output from Tuner to Demod.
6	IP Output	
7	NC	No Connection
8	AGC	AGC Voltage input
9	X-OUT	X-tal Output (refer to Address 0x01)
10	SDA	Serial programming interface data.
11	SCL	Serial programming interface clock.

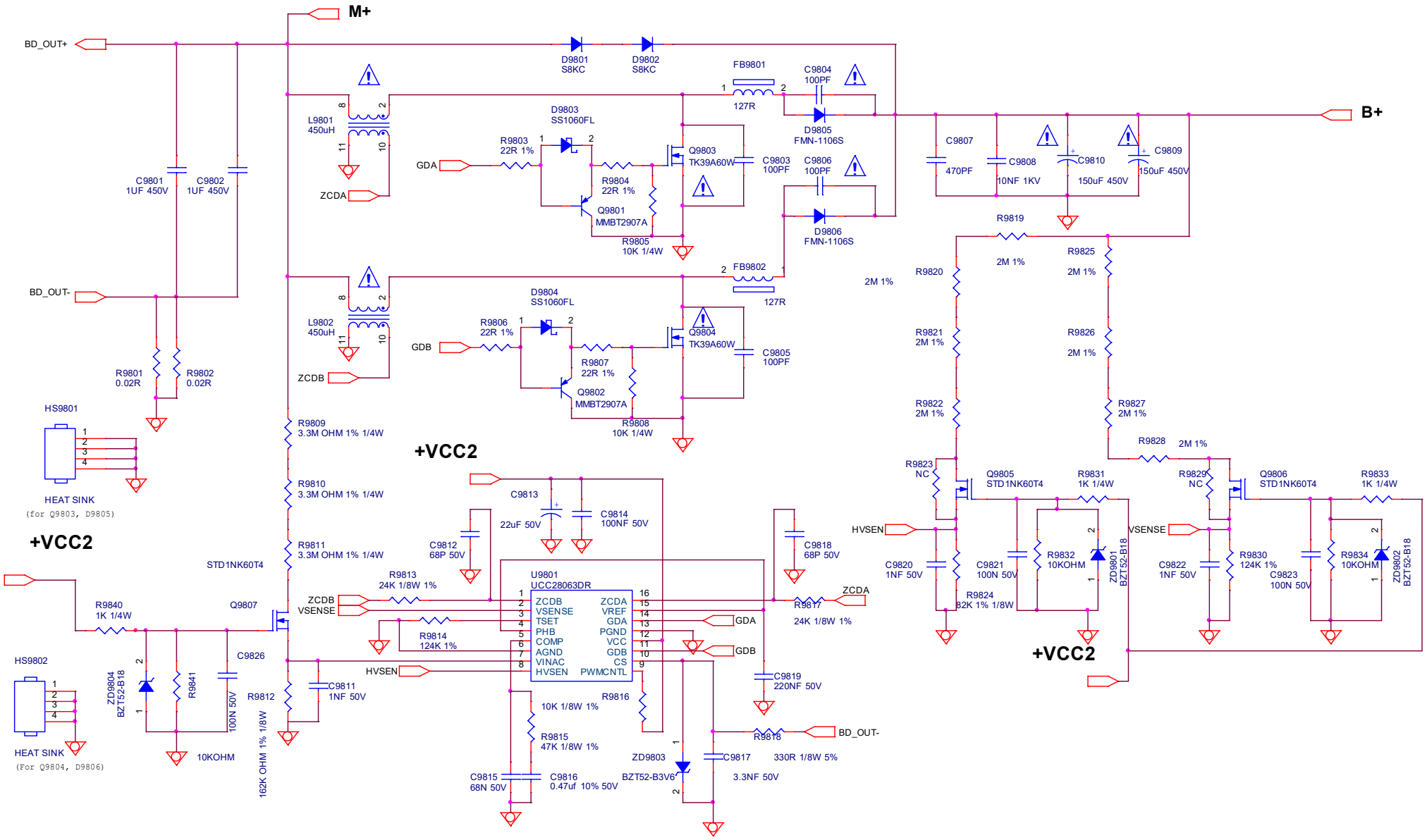
9.Circuit Diagrams

9.1 A 715G8886 PSU (For OLED873 Series)

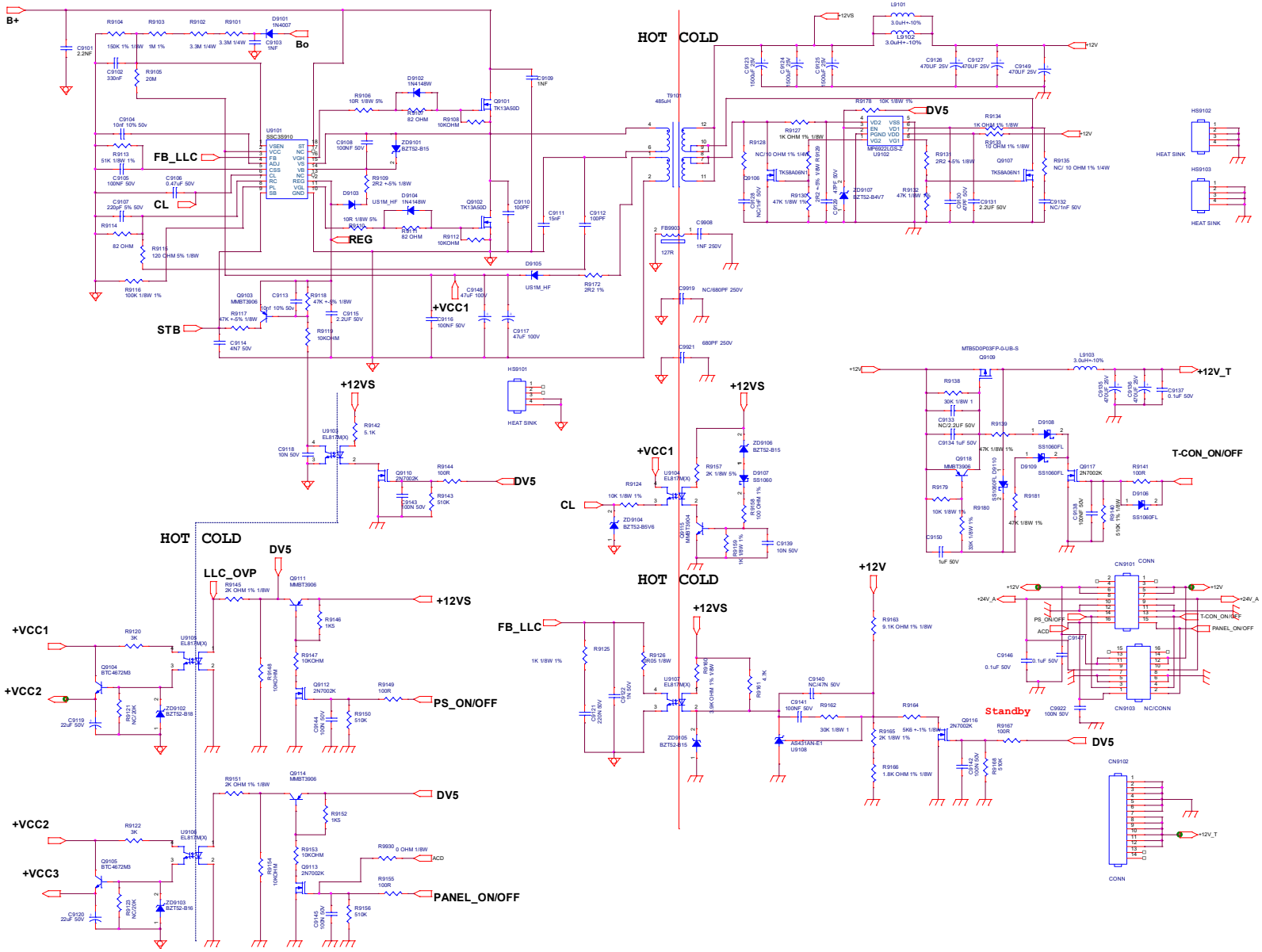
9-1-1 Input stage



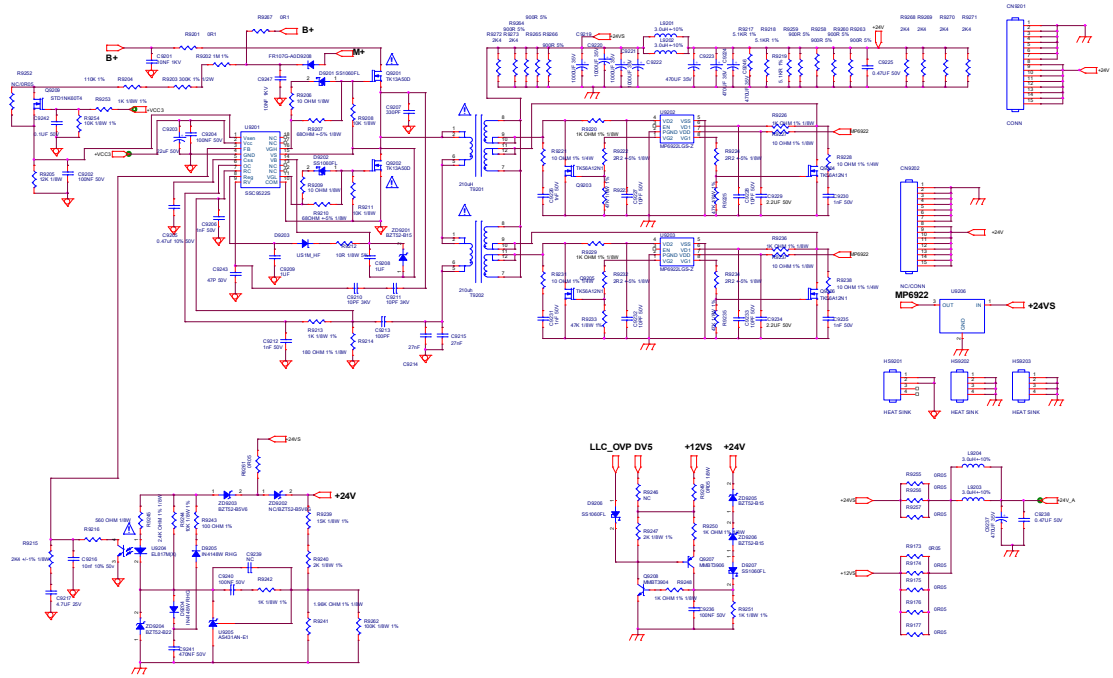
9-1-2 PFC stage



9-1-3 12V power stage

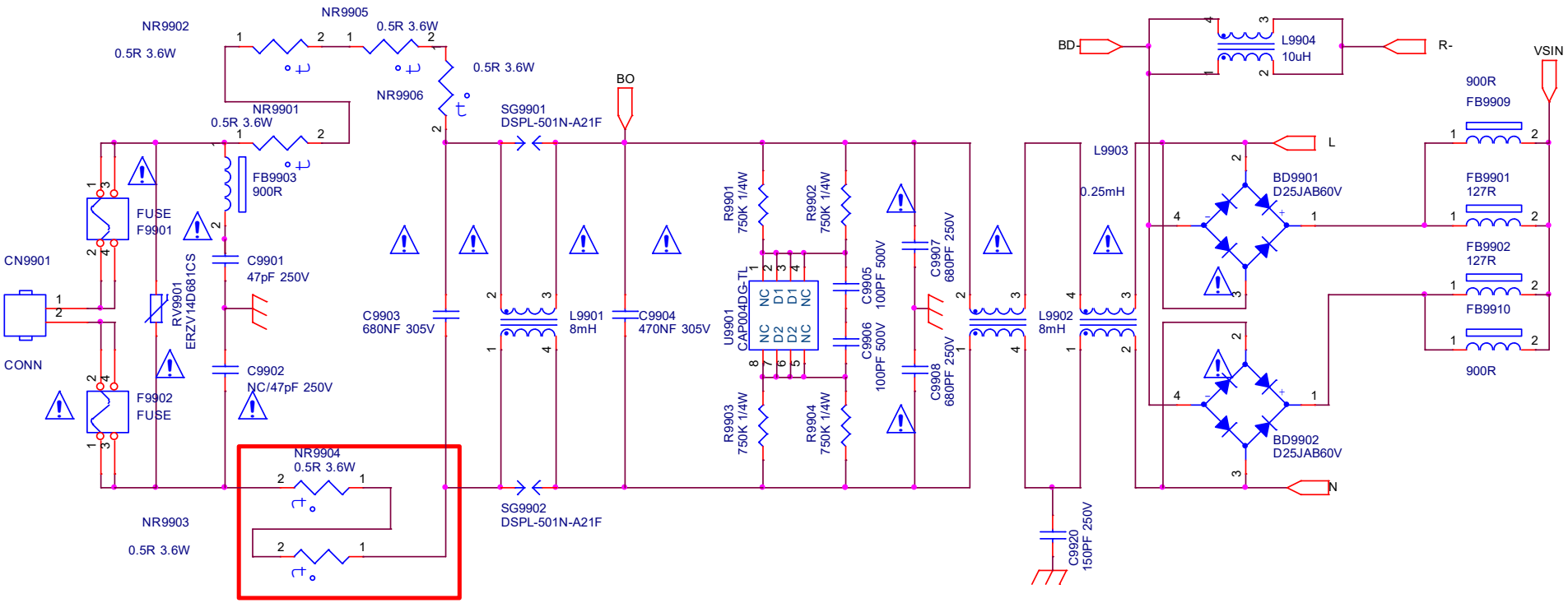


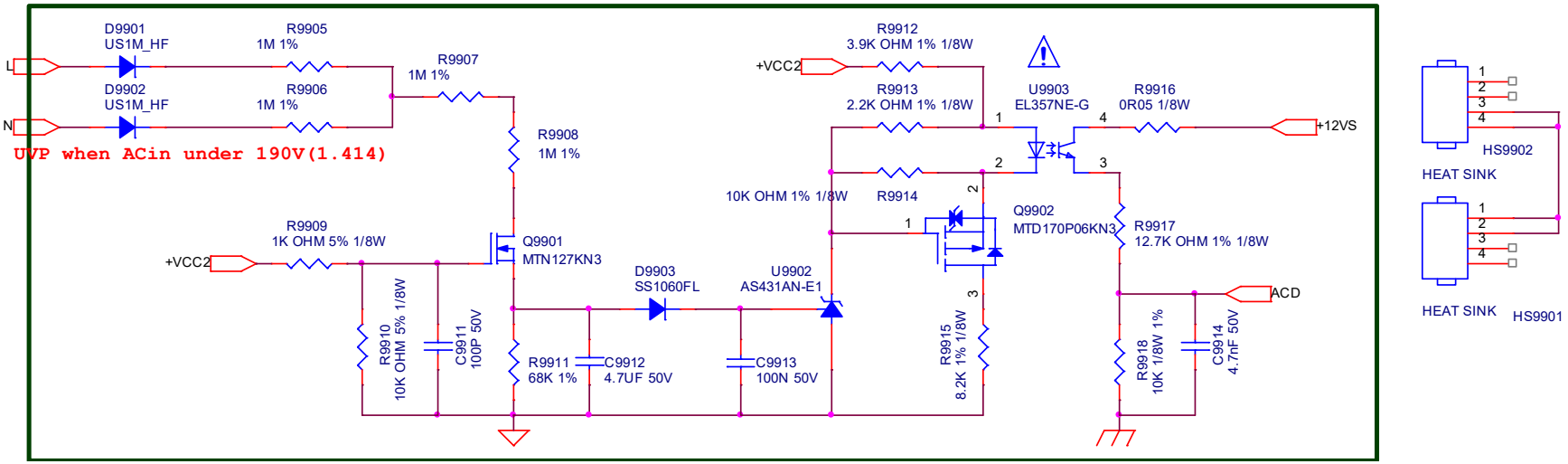
9-1-4 24V power stage



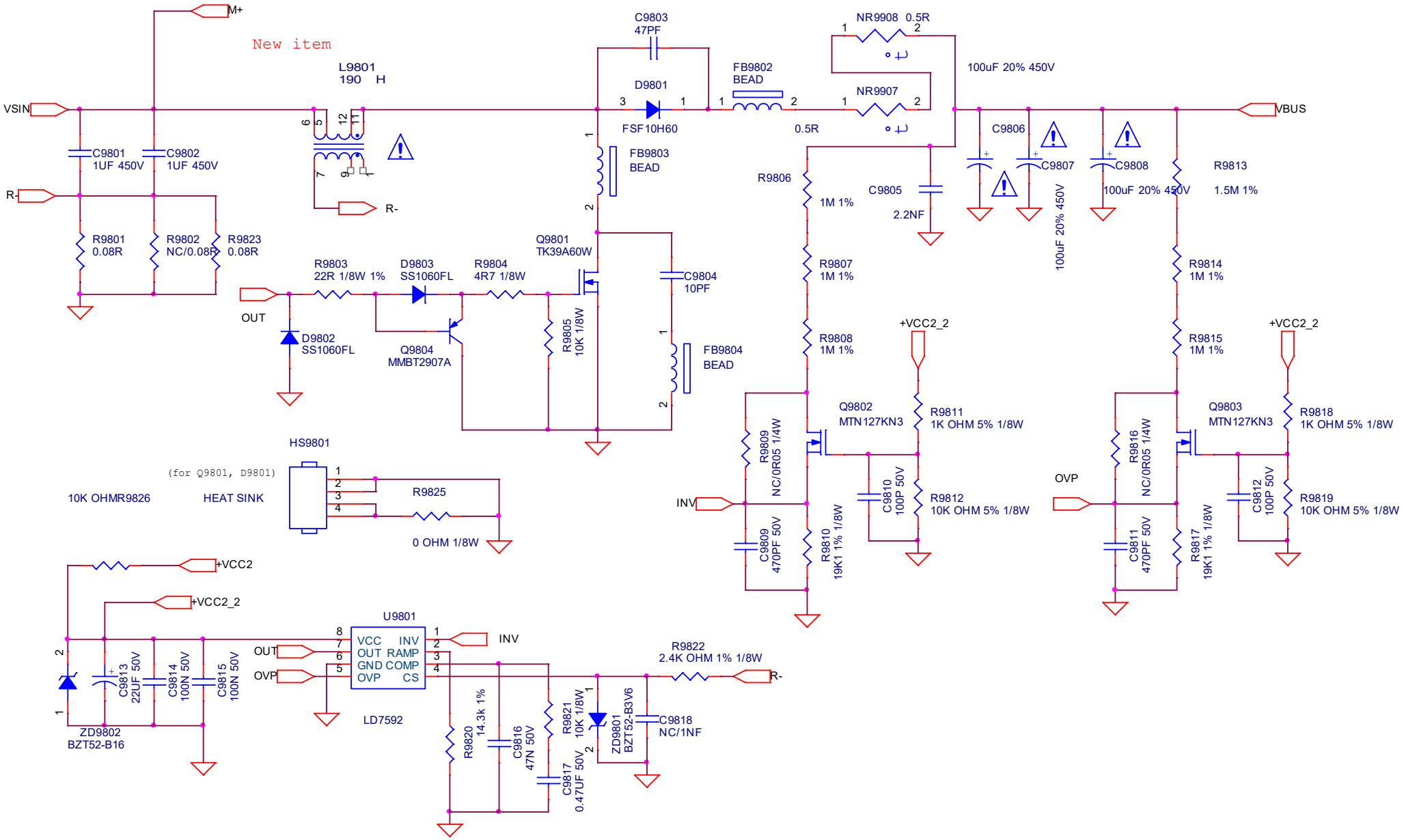
9.2 A 715G9106 PSU (For OLED973 Series)

9-2-1 Input stage

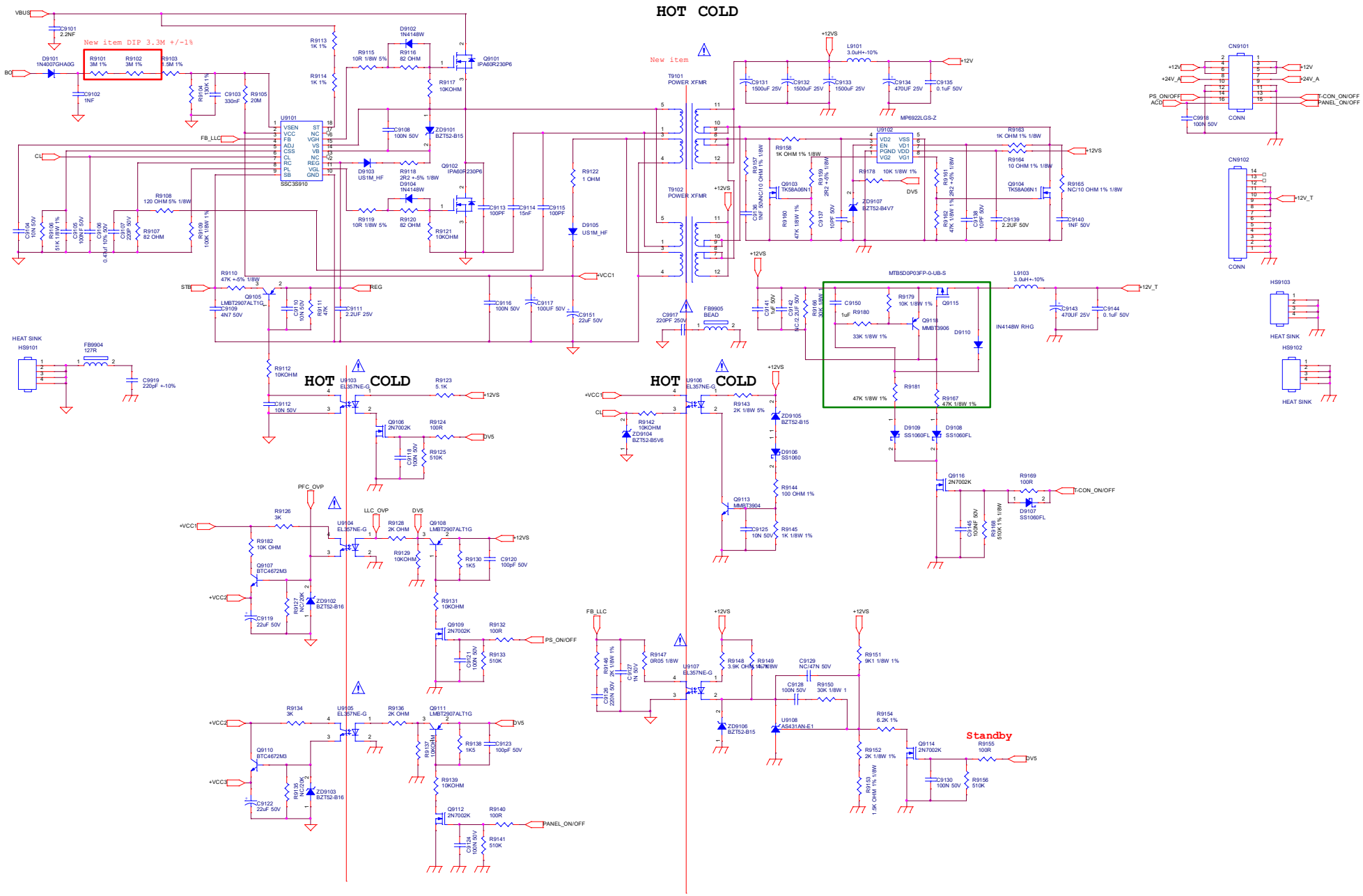




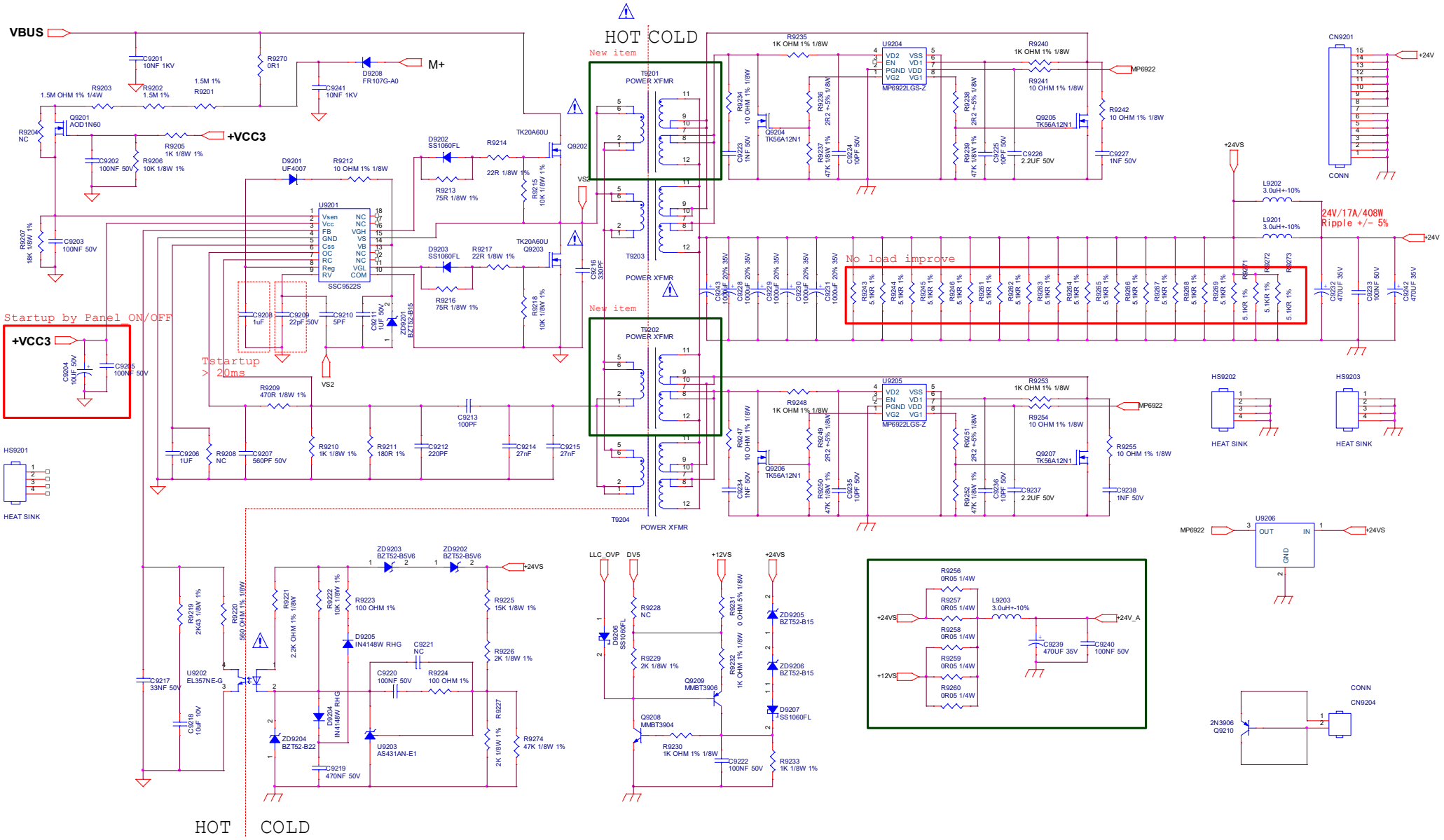
9-2-2 PFC stage



9-2-3 12V power stage

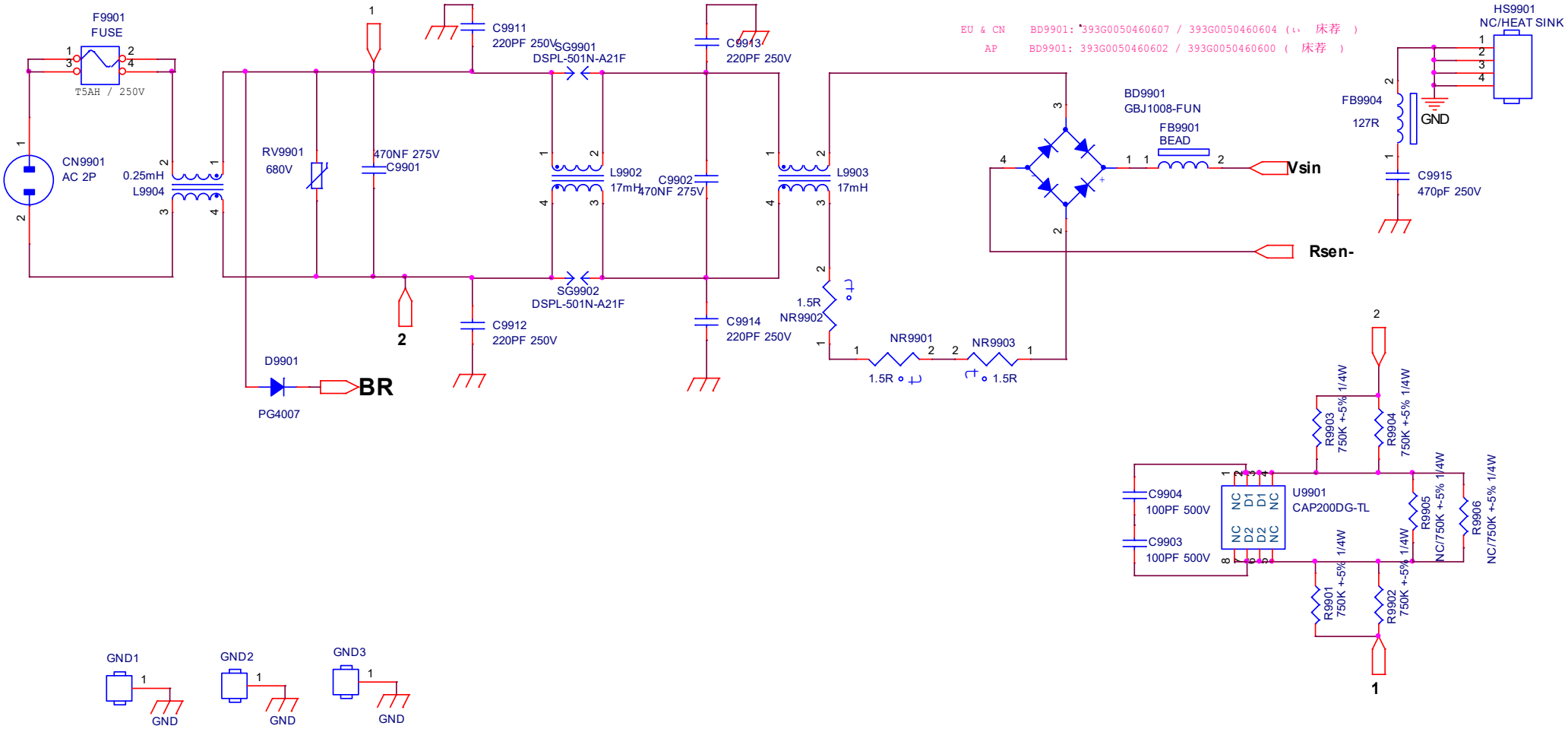


9-2-4 24V power stage

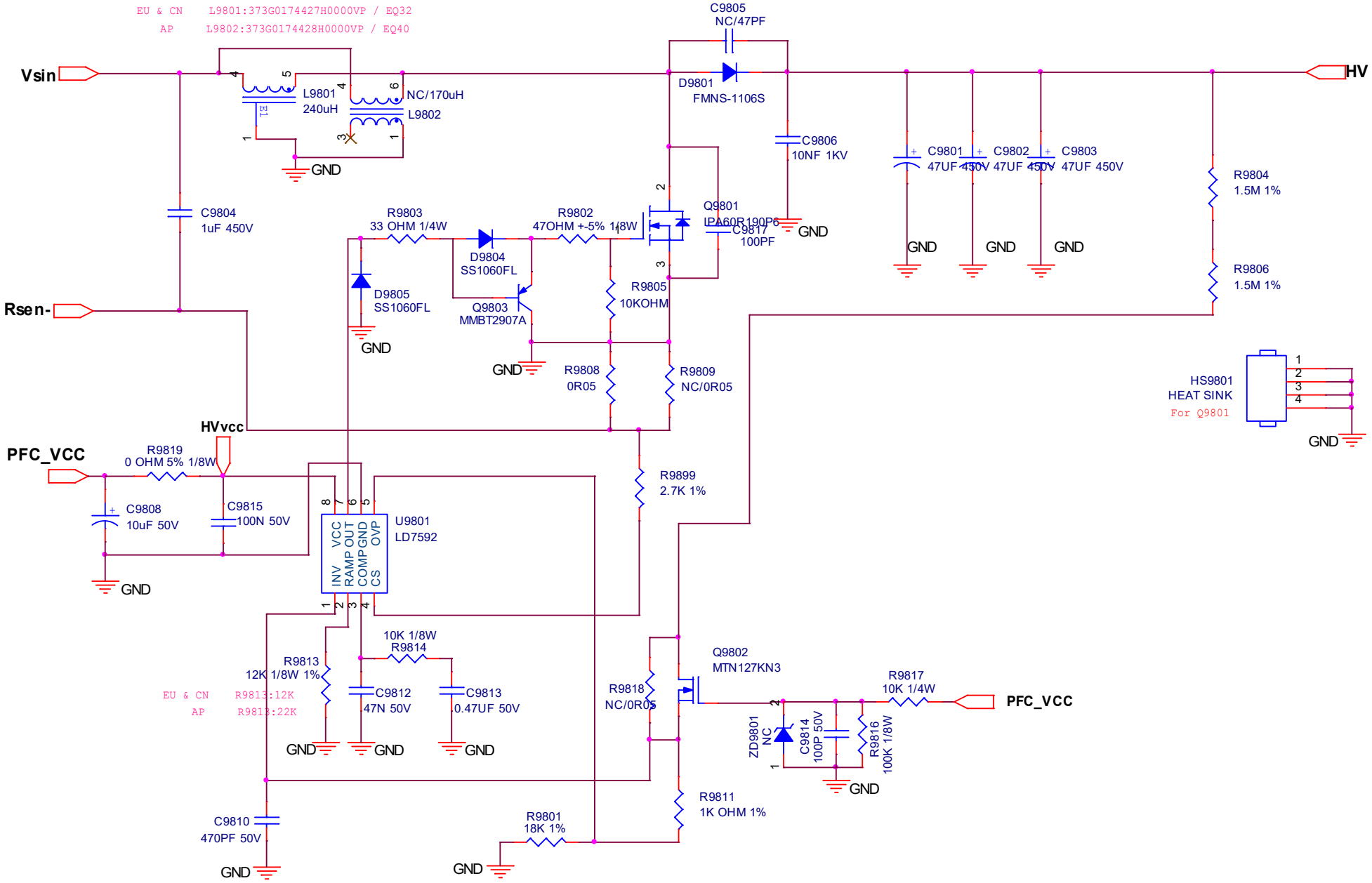


9.3 A 715G9309 PSU (For 49/55” 7503 & 50/55” 7303 Series)

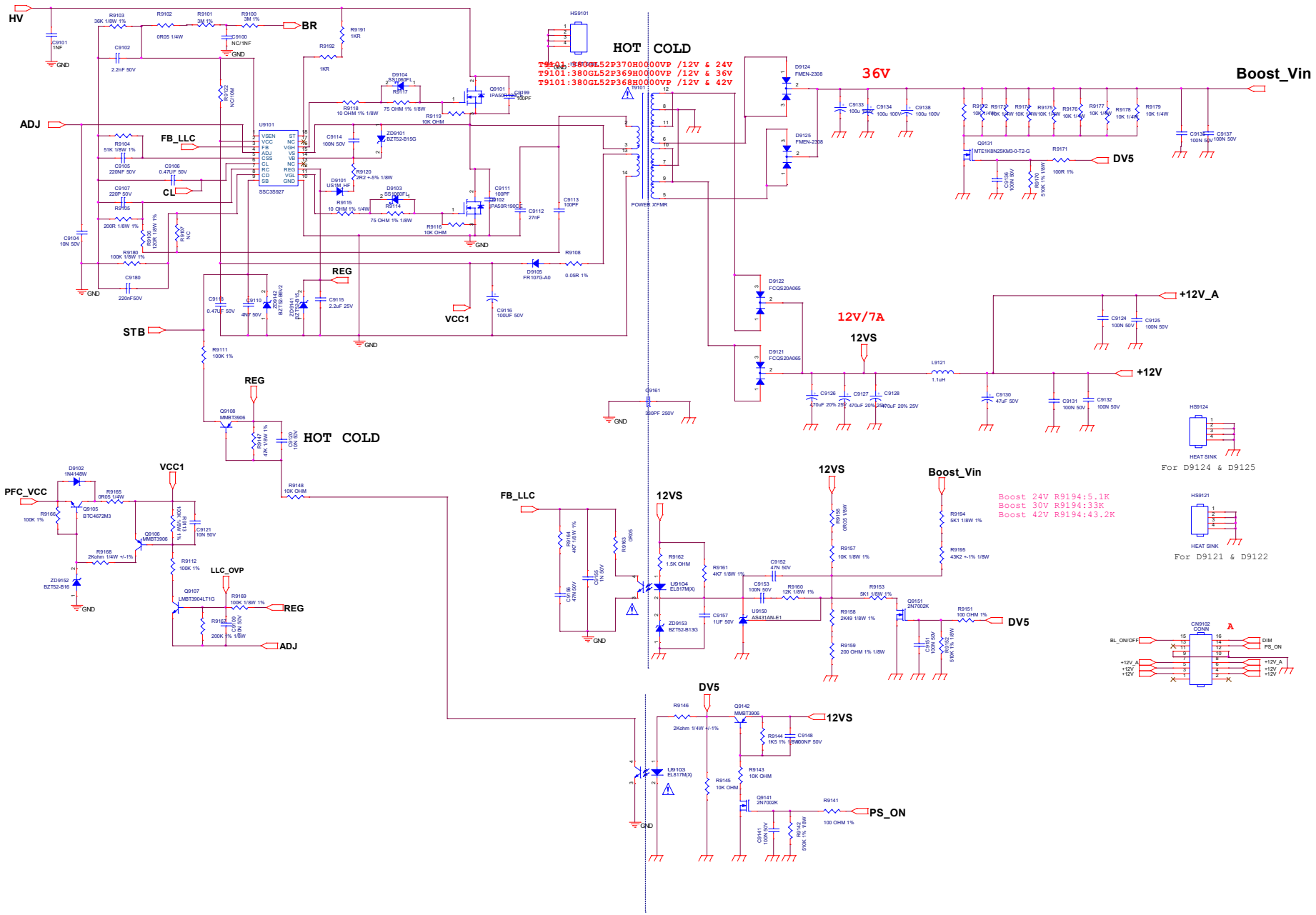
9-3-1 AC input



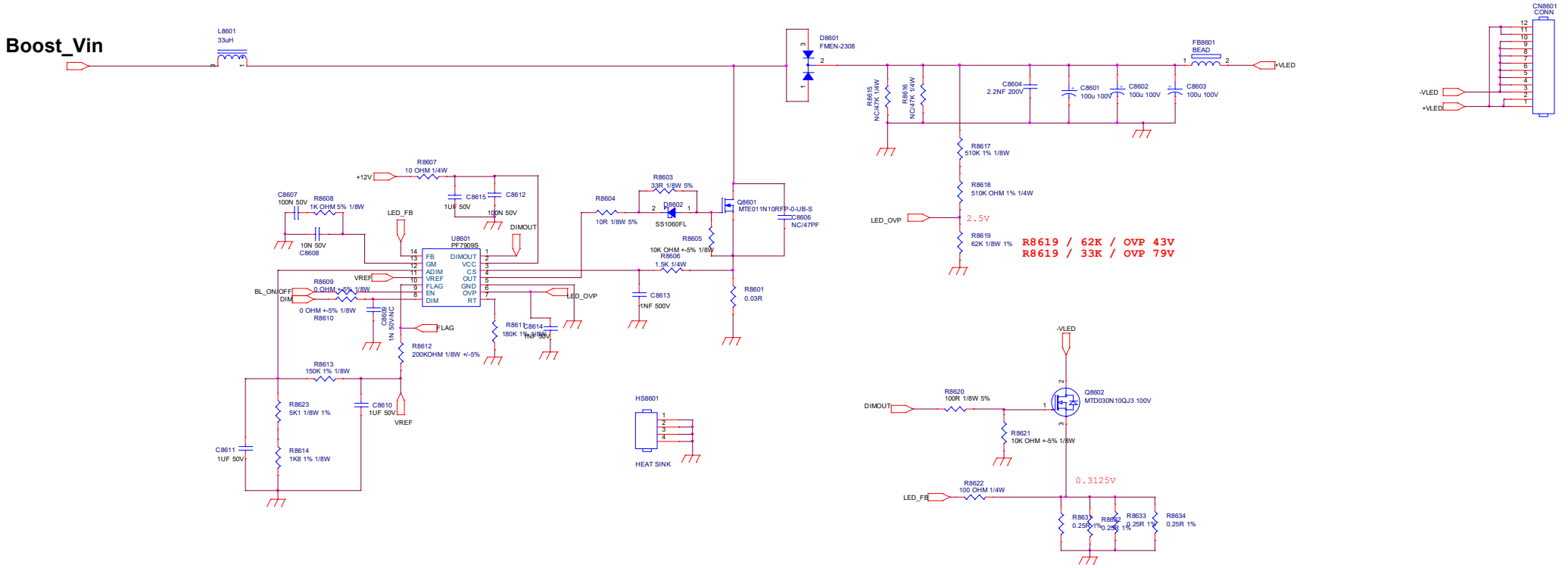
9-3-2 PFC with LD7592S



9-3-3 LLC with SSC3S927

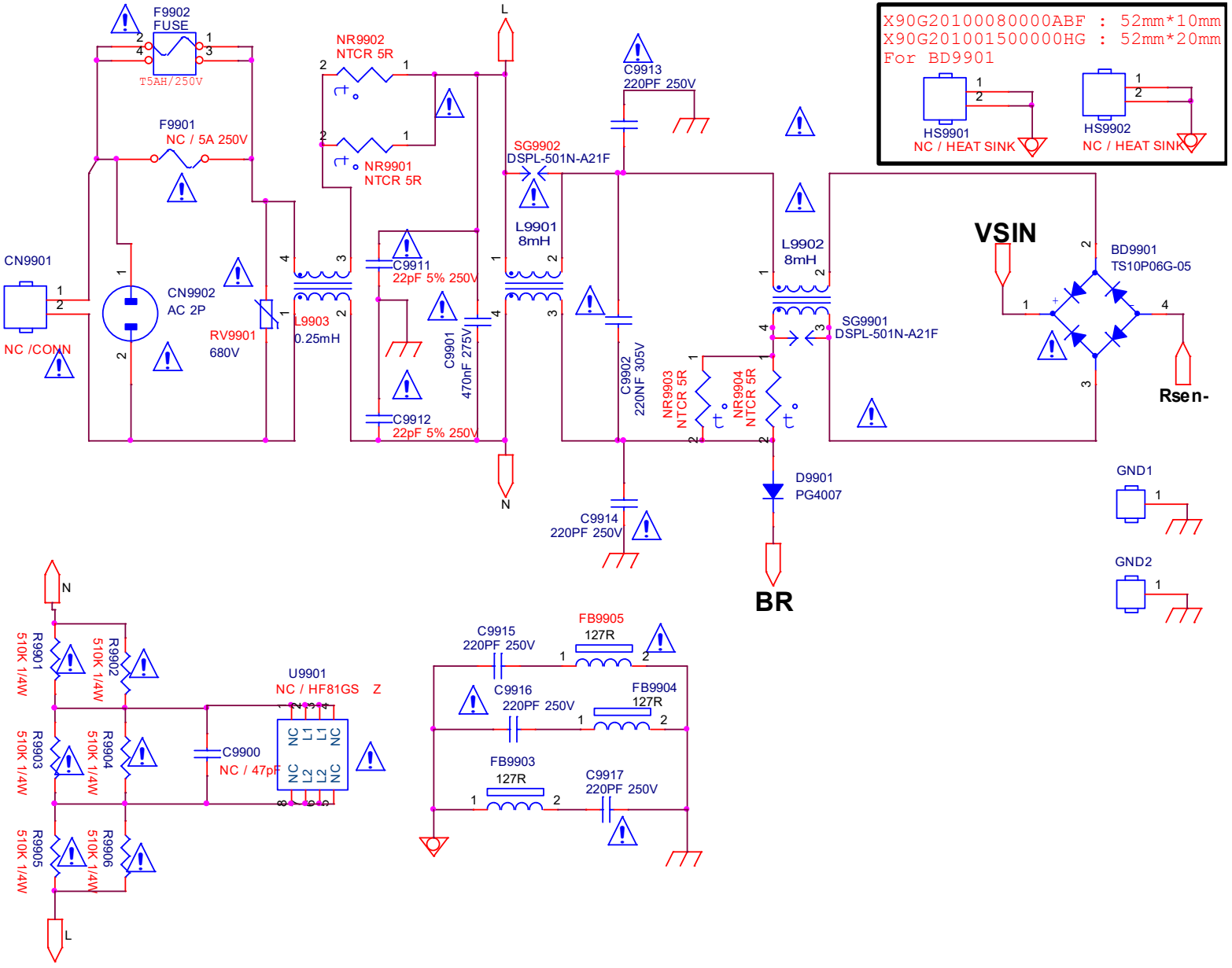


9-3-4 Driver with PF7909S

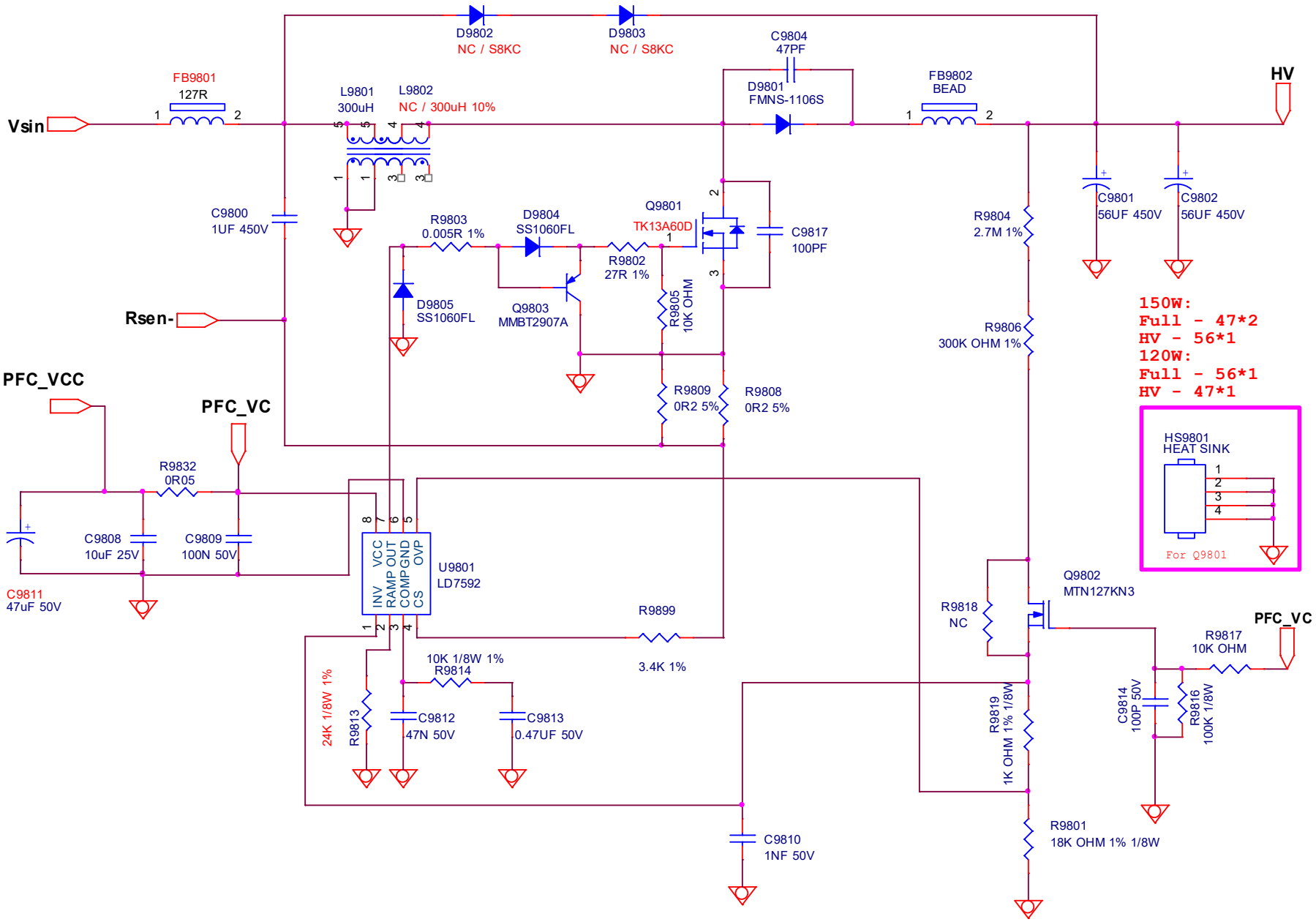


9.4 A 715G9324 PSU (For 43” 7303 Series)

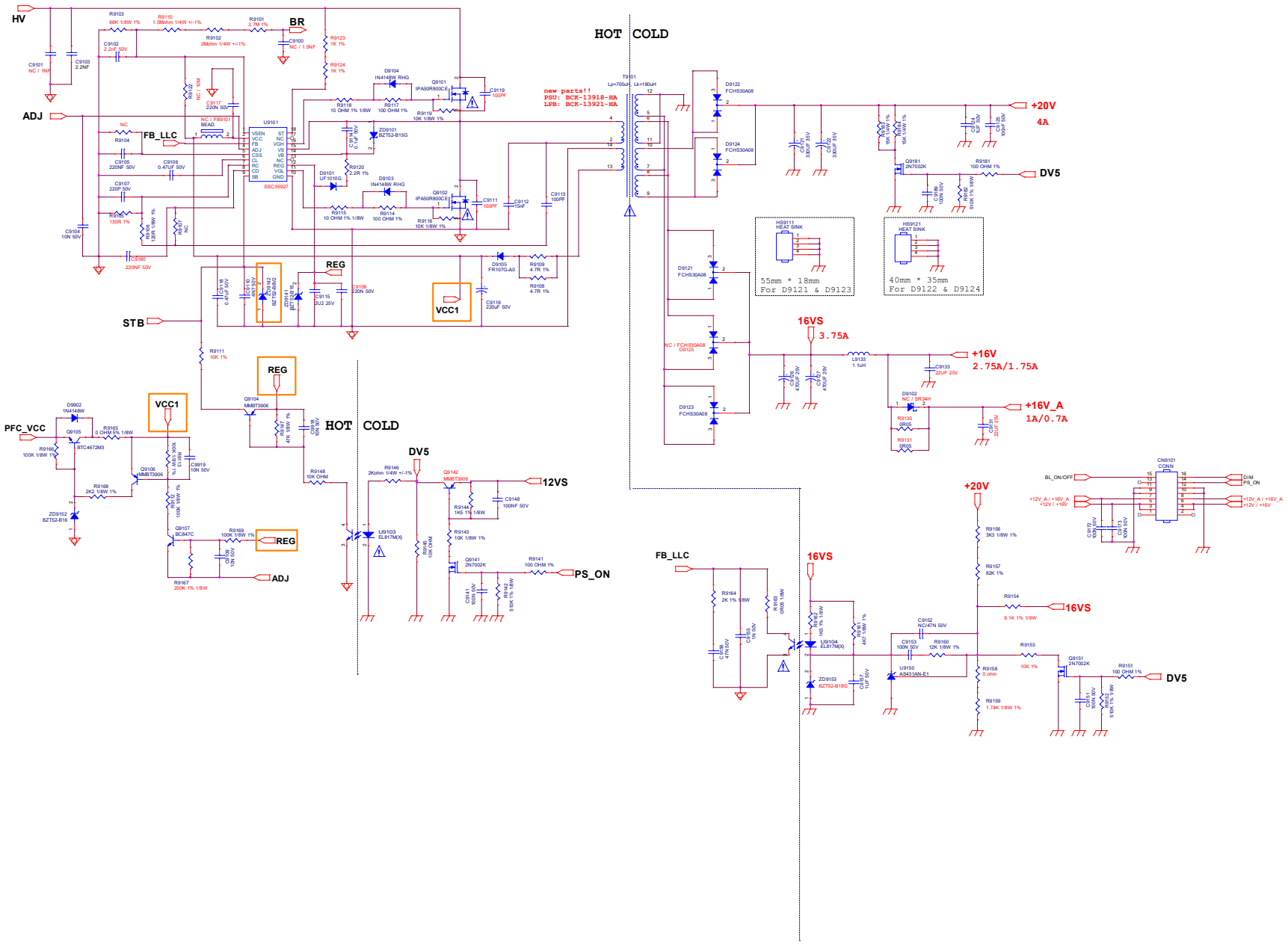
9-4-1 AC input



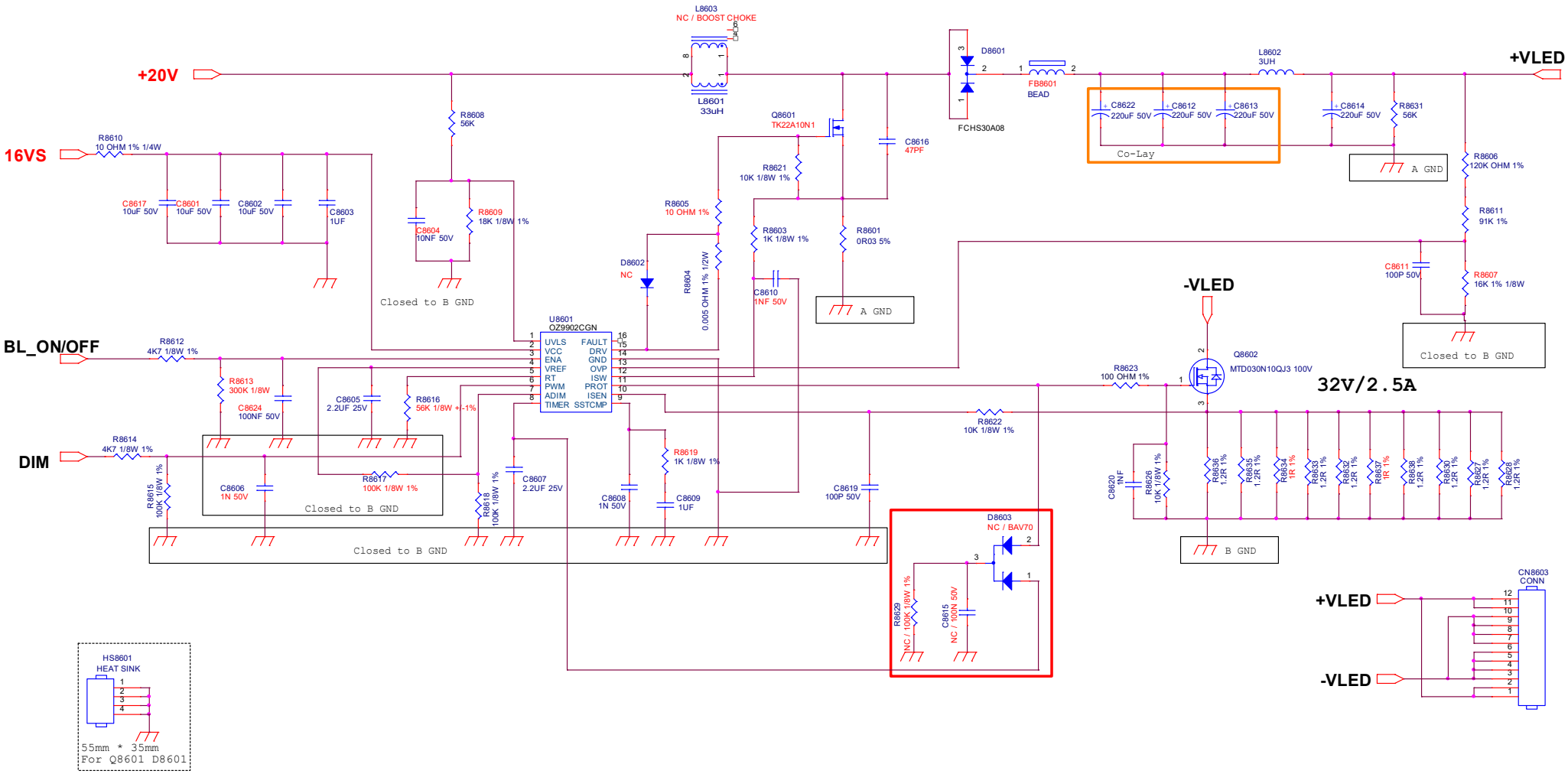
9-4-2 PFC with LD7592GS



9-4-3 LLC with SSC3S927

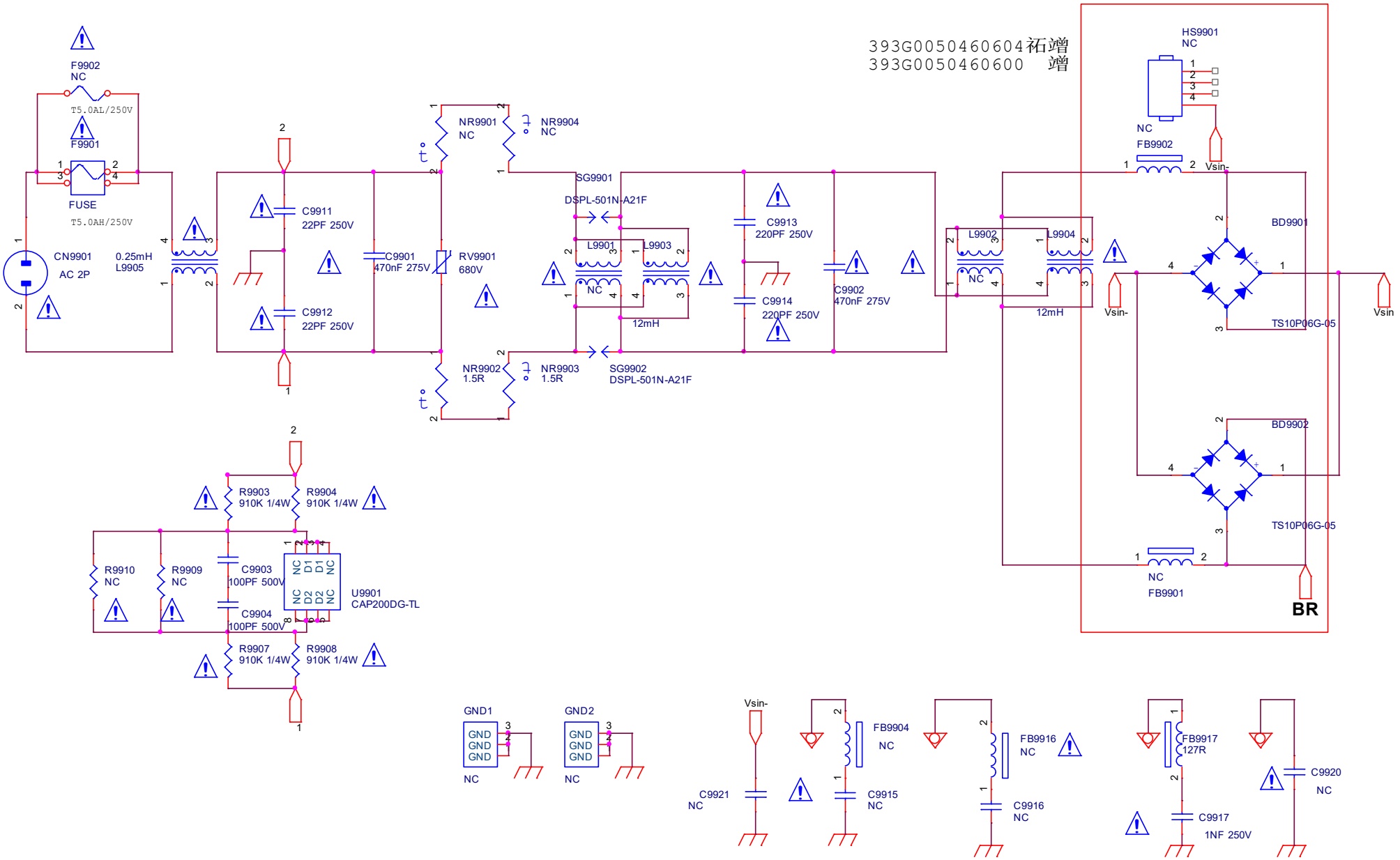


9-4-4 Driver with OZ9902C

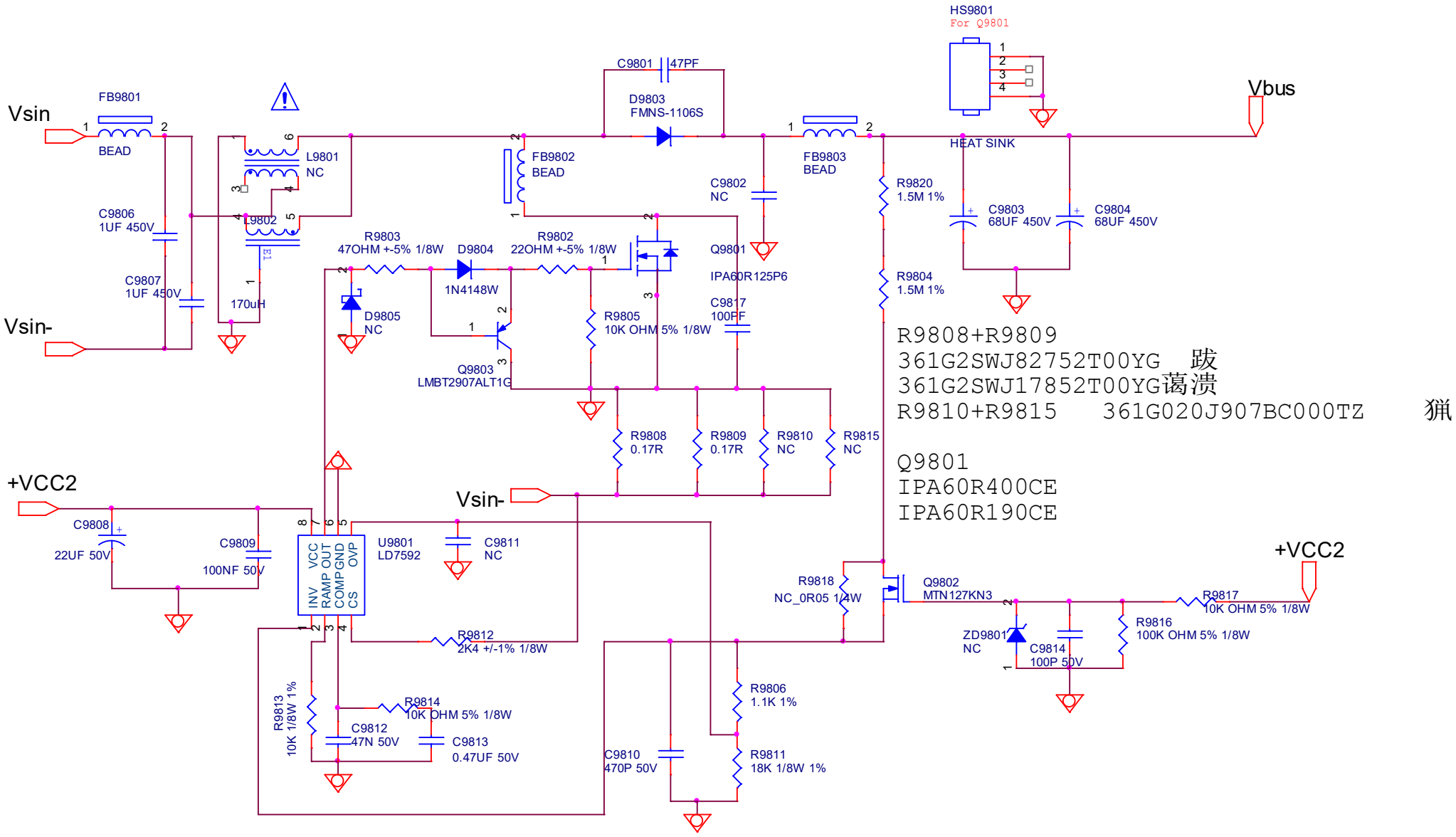


9.5 A 715G9325 PSU (For 65” 7303 Series)

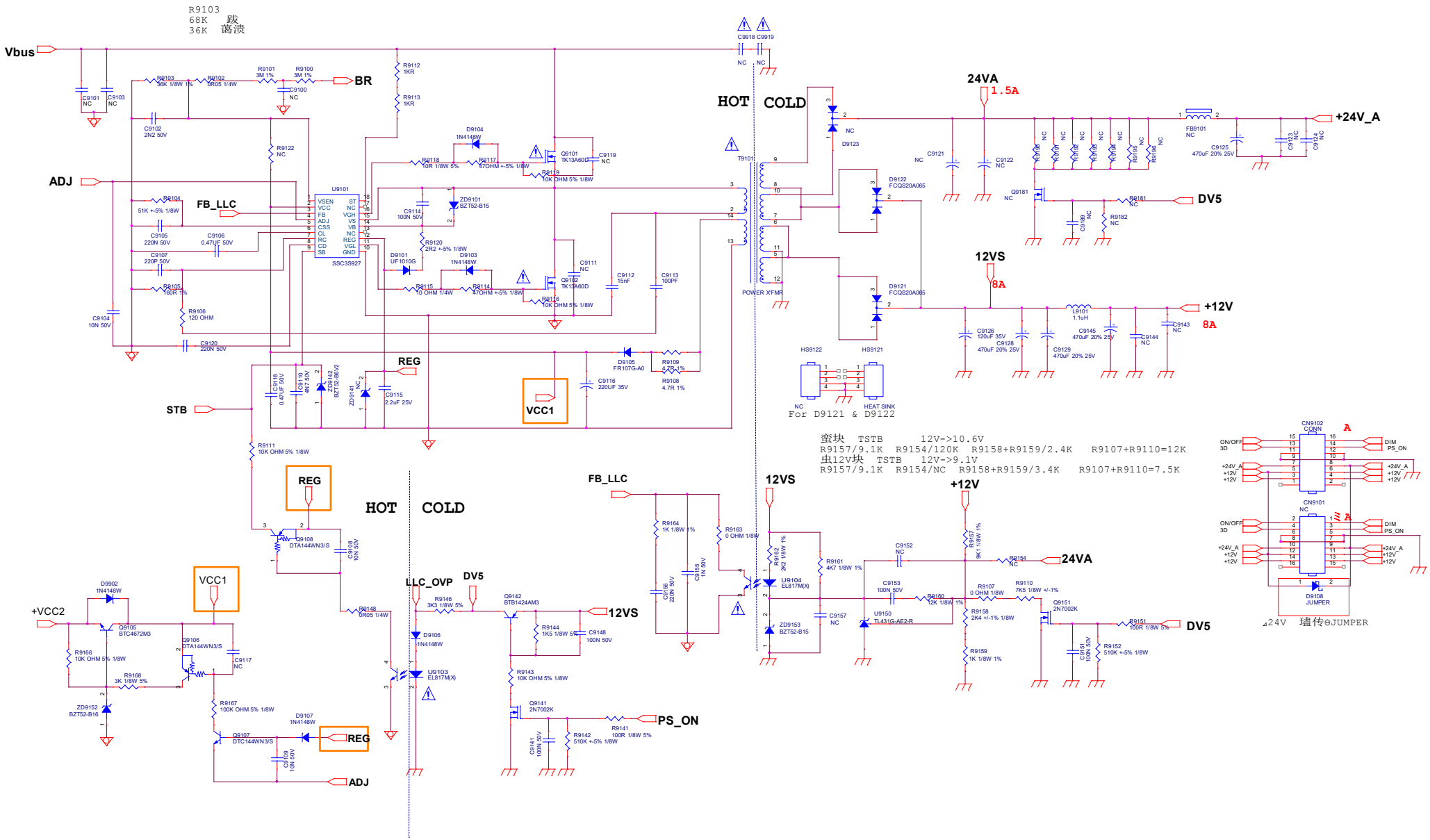
9-5-1 AC input



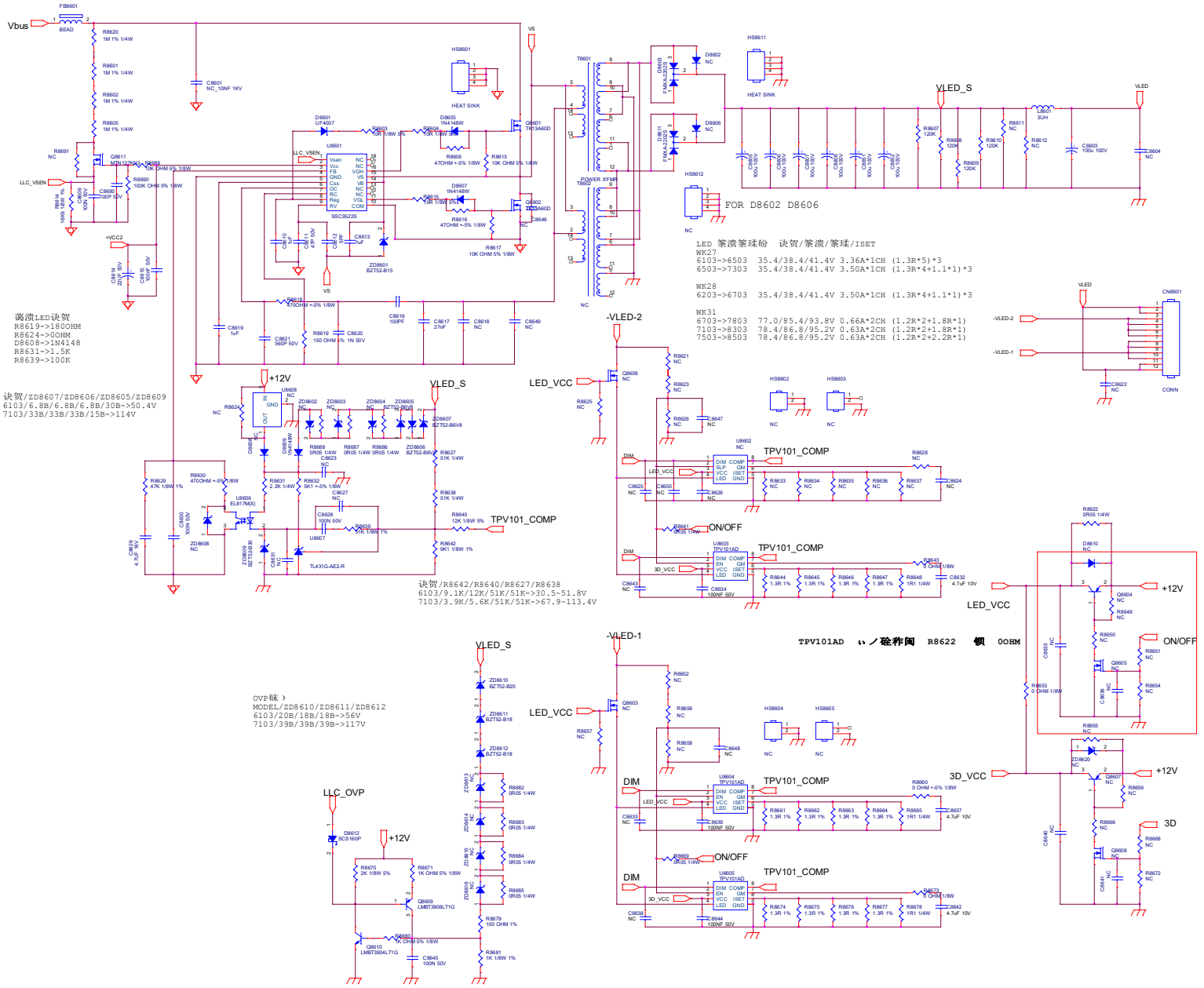
9-5-2 PFC with LD7592



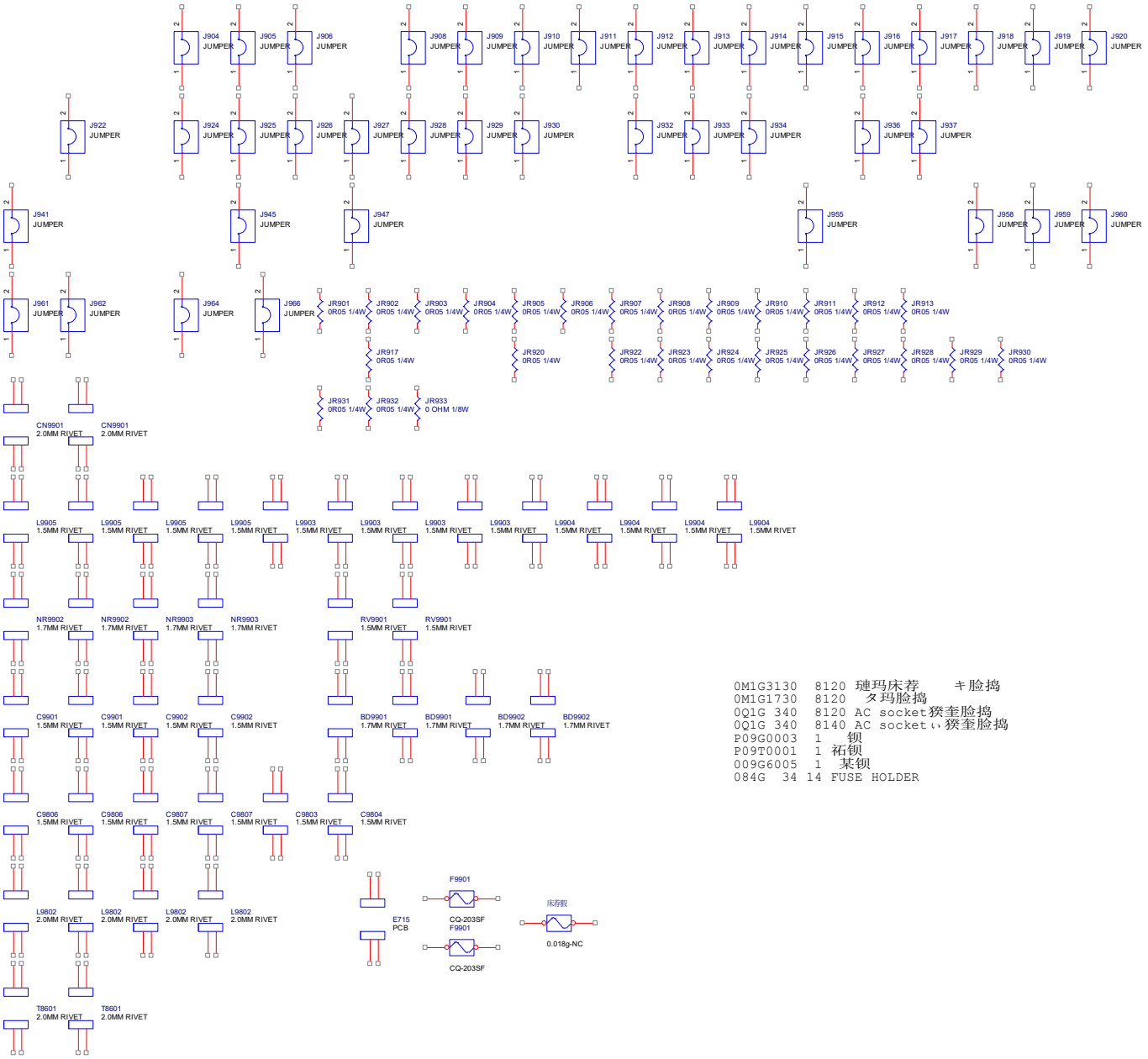
9-5-3 LLC with SSC3S927



9-5-4 LLC SSC9522 with TPV101



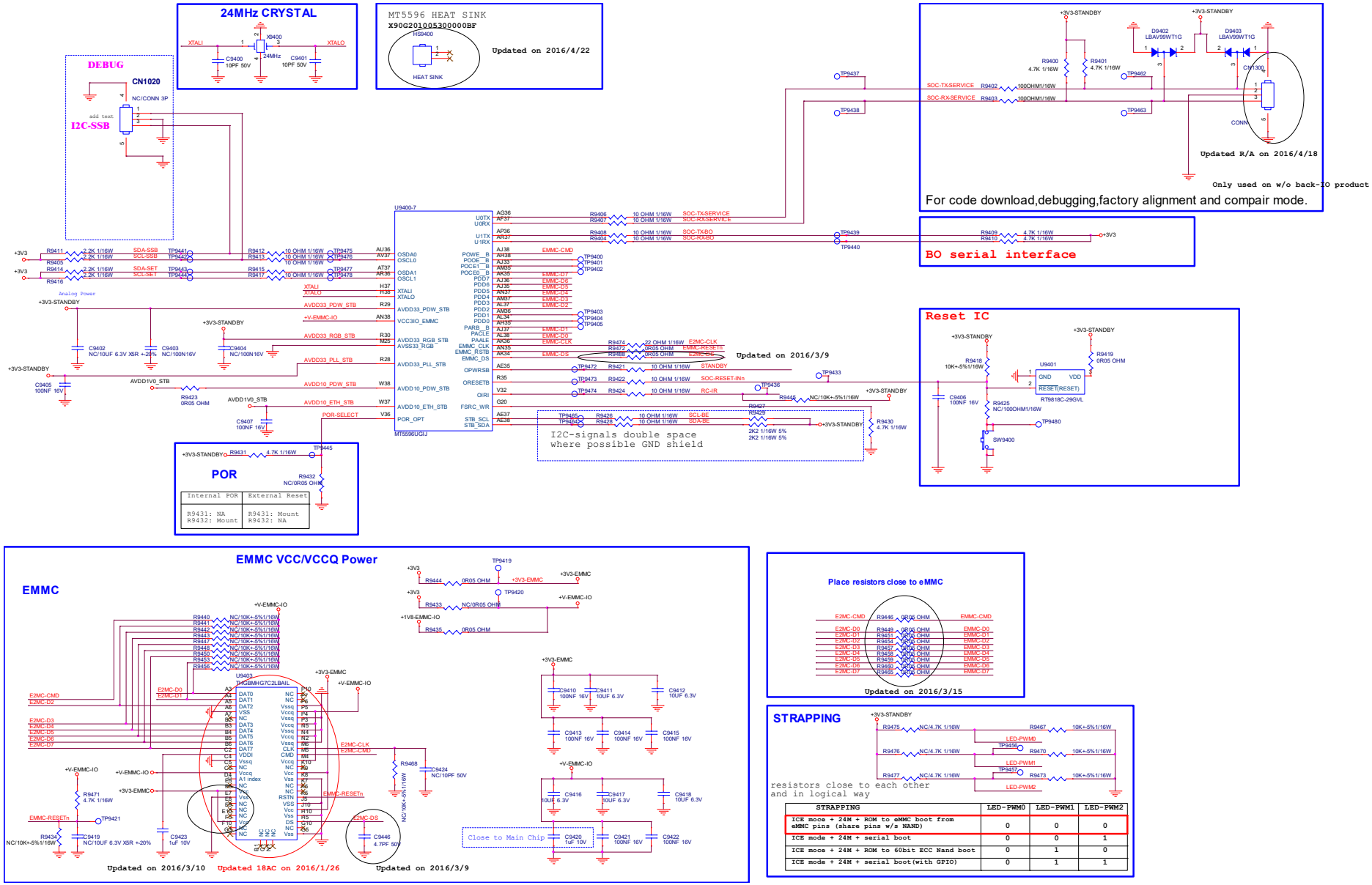
9-5-5 JUMPER



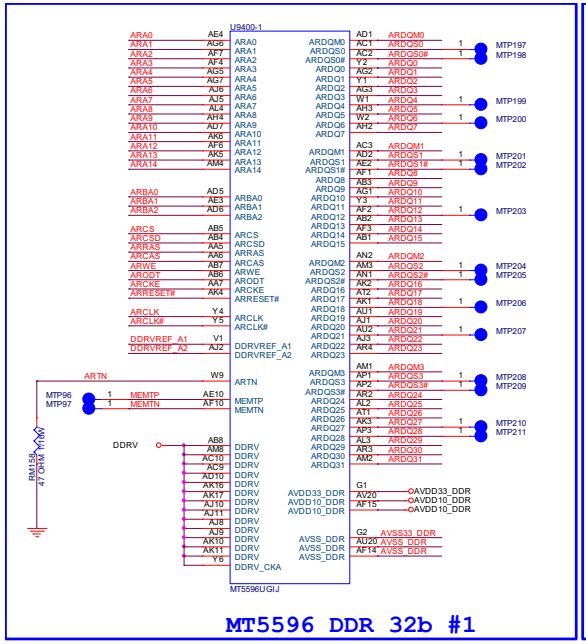
0M1G3130 8120 璉玛床荐 キ脸捣
0M1G1730 8120 夕玛脸捣
0Q1G 340 8120 AC socket猃奎脸捣
0Q1G 340 8140 AC socketい猃奎脸捣
P09G0003 1 钡
P09T0001 1 祐钡
009G6005 1 某钡
084G 34 14 FUSE HOLDER

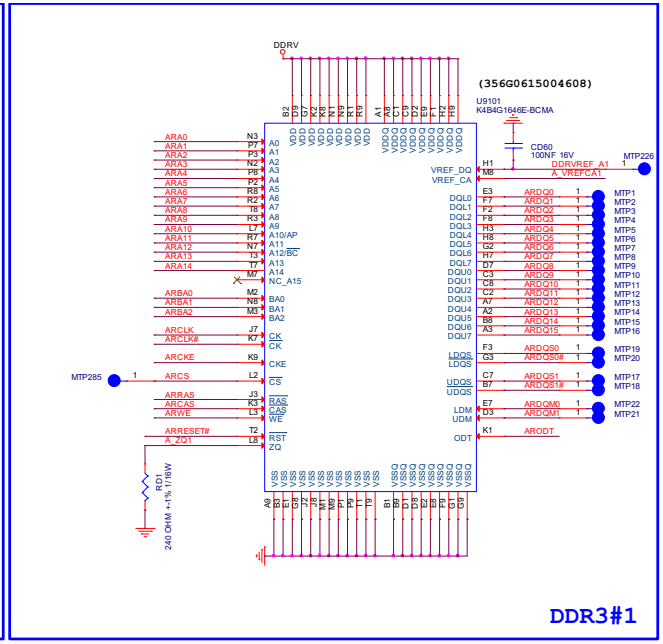
9.6 B 715G8579 SSB (For 7303/7503 Series)

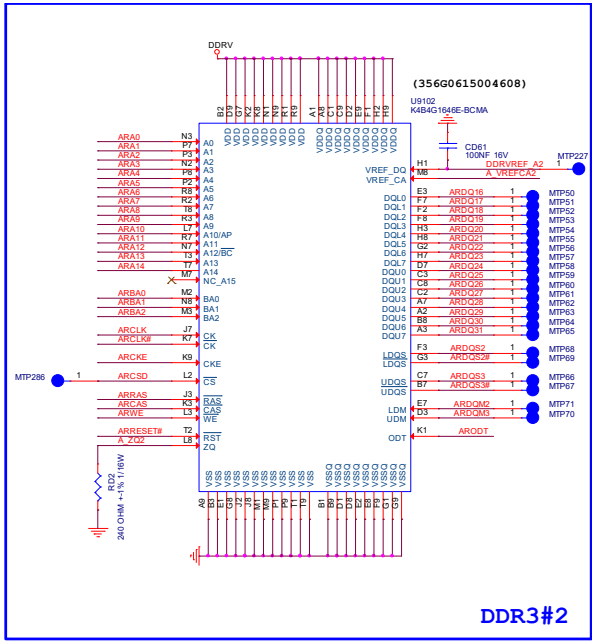
9-6-1 SOC-EMMC

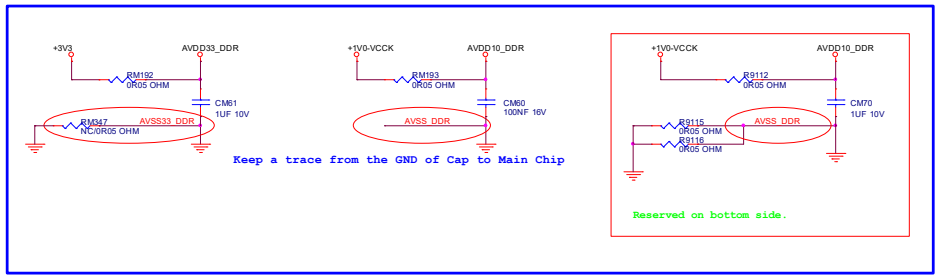


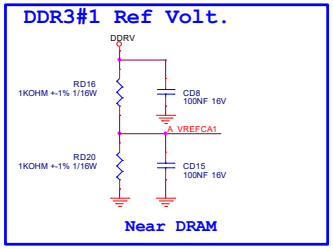
9-6-2 SOC-DDR3-1-2

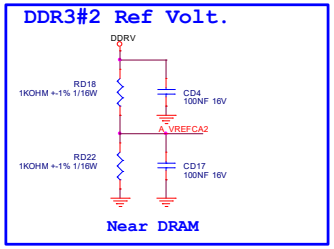


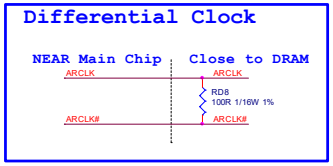


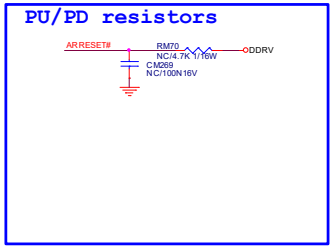


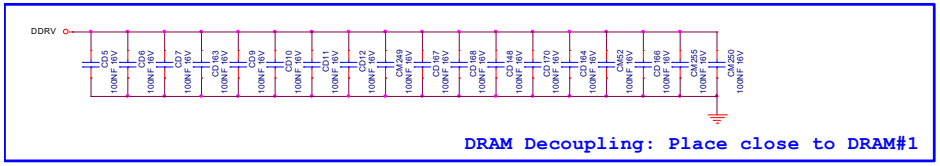


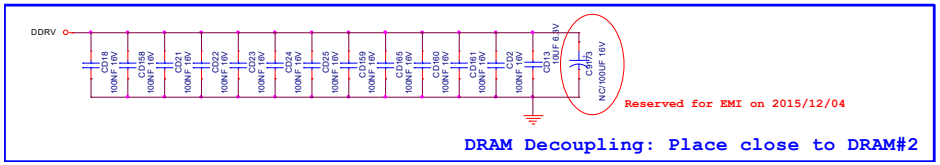




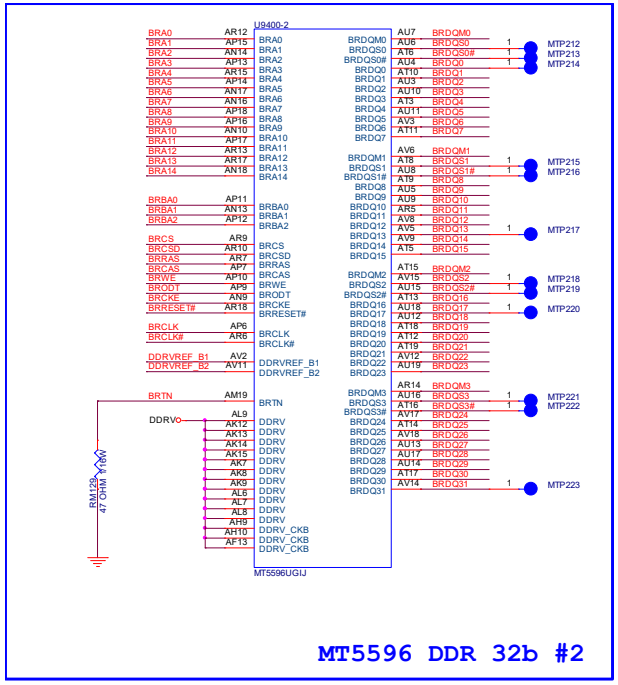


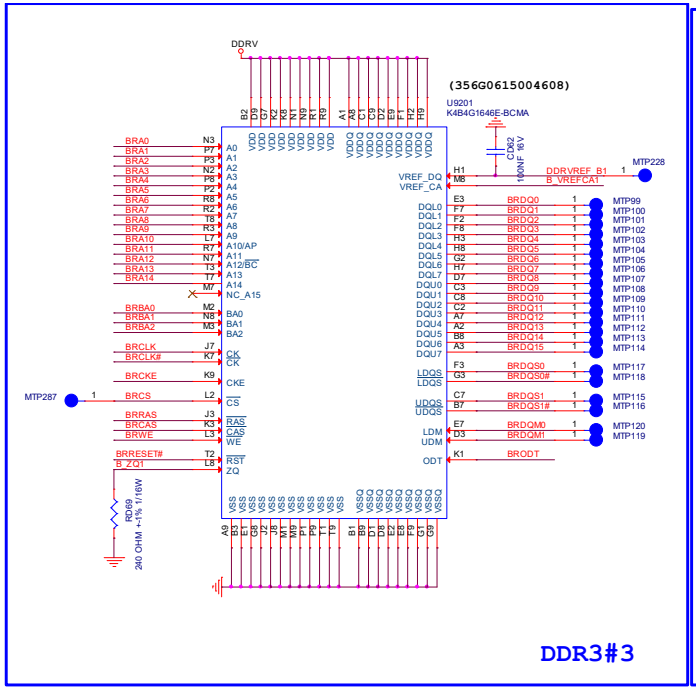


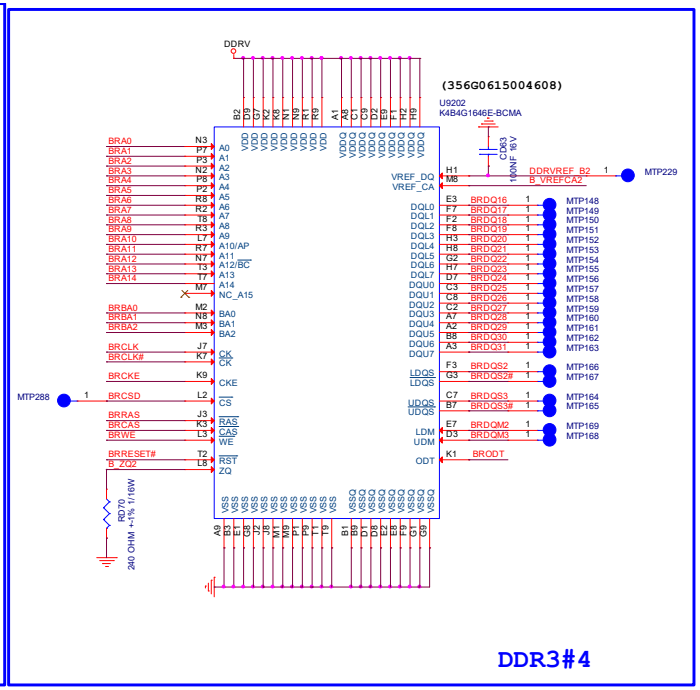


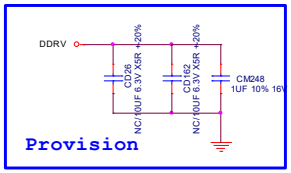


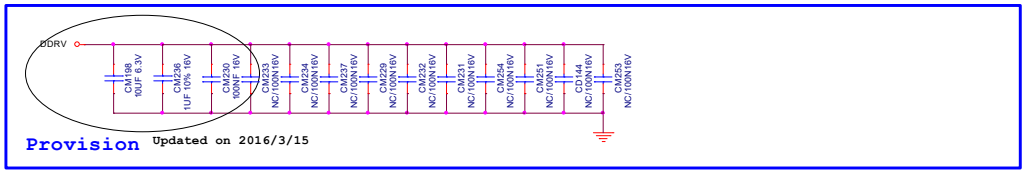
9-6-3 SOC-DDR3-3-4

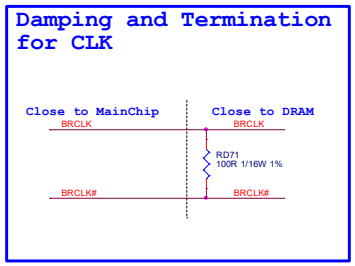


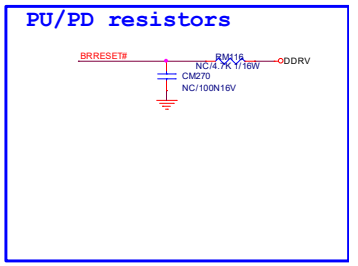


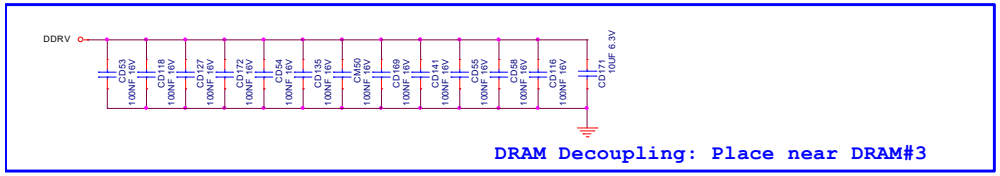


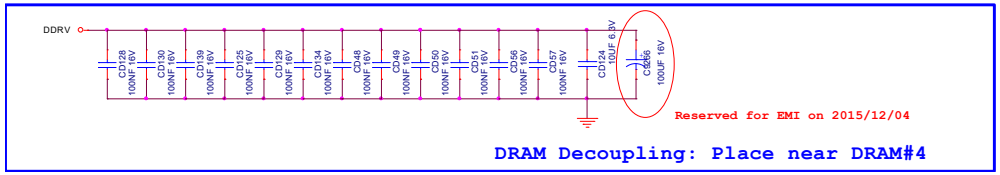


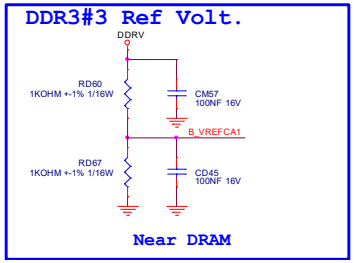


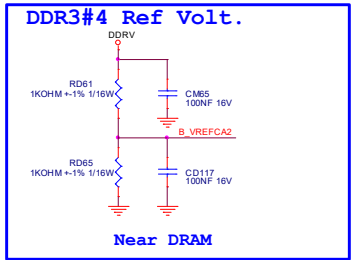




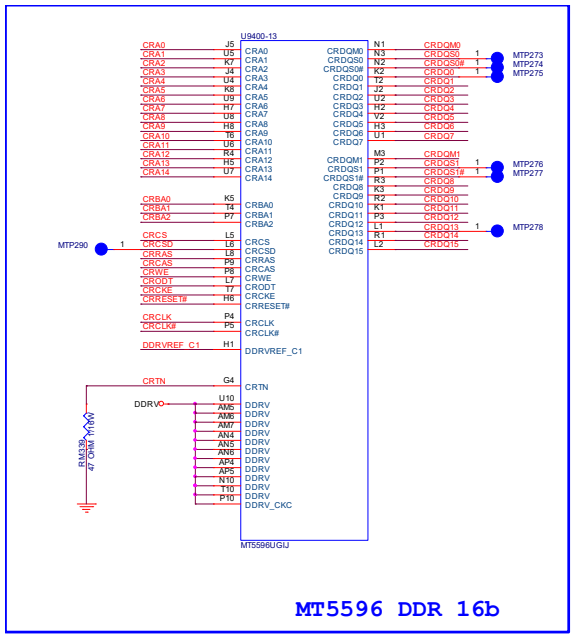


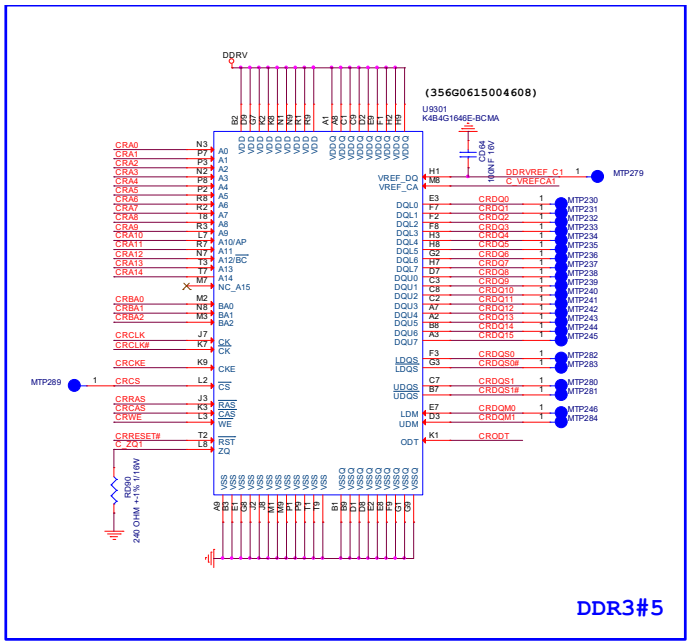


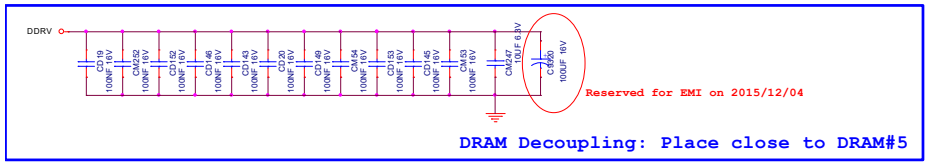


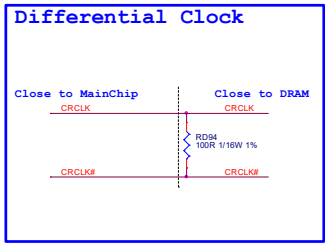


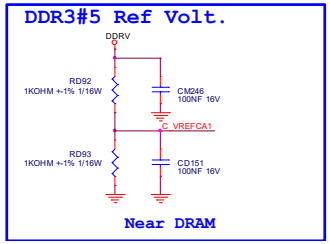
9-6-4 SOC-DDR3-5

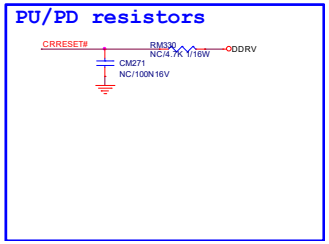




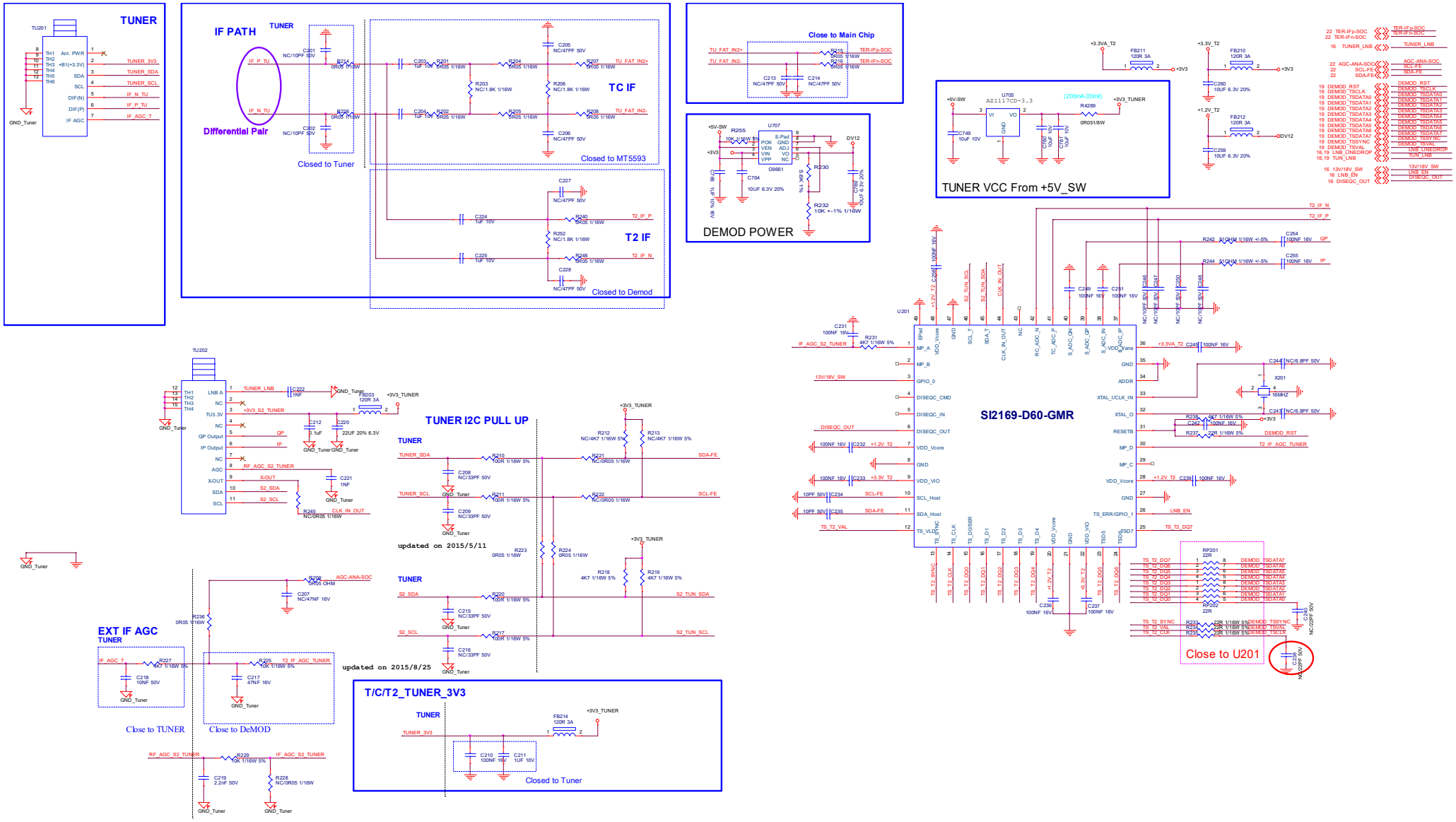




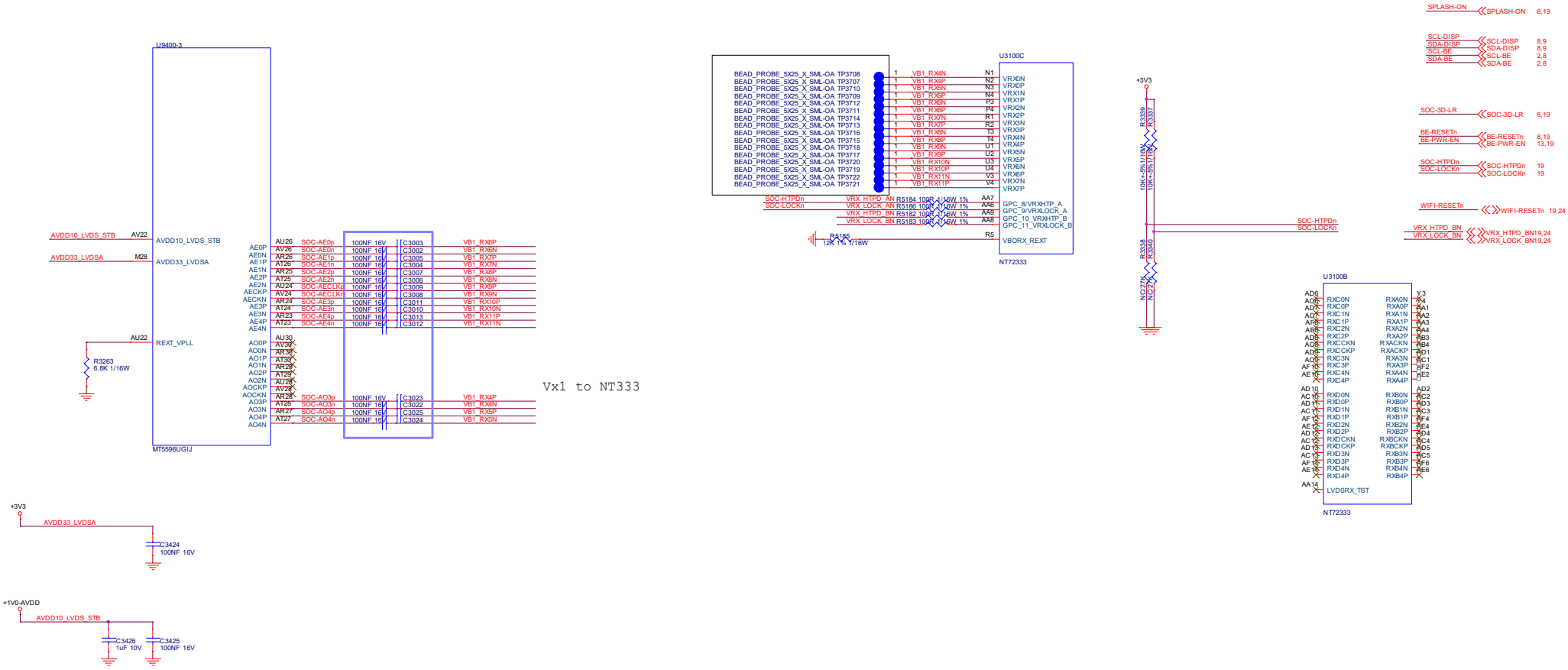




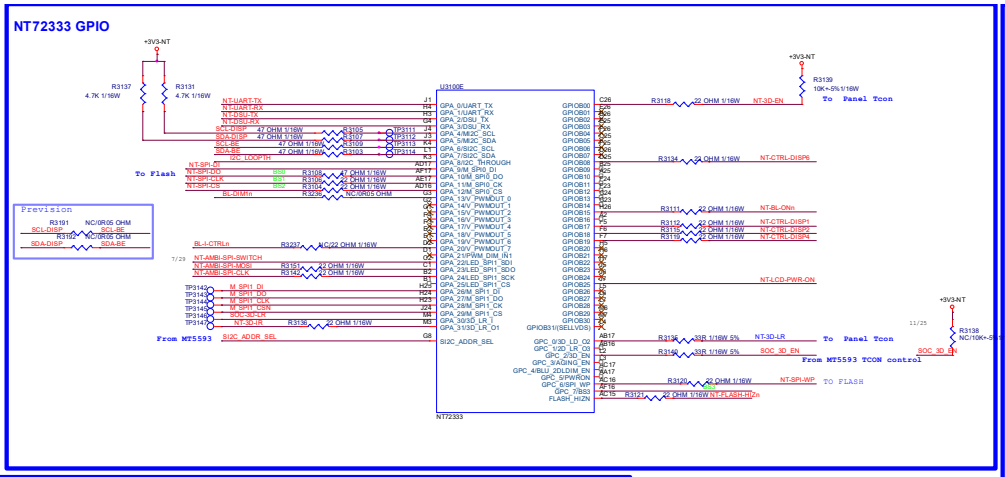
9-6-5 FE-TUNER-DEMOD-TPV

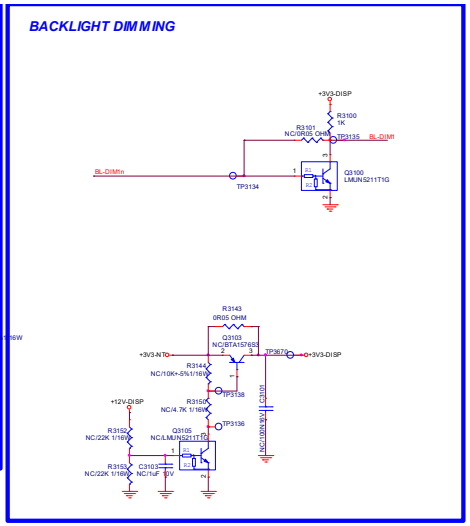


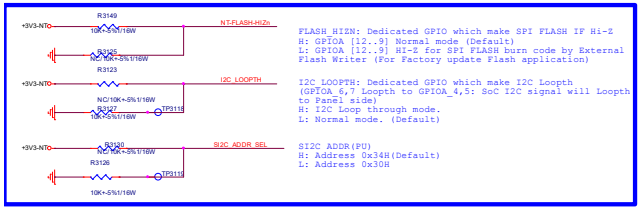
9-6-6 BE-NT72333a-Vx1-INPUT

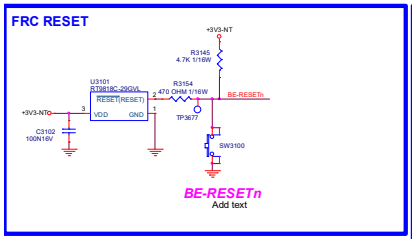


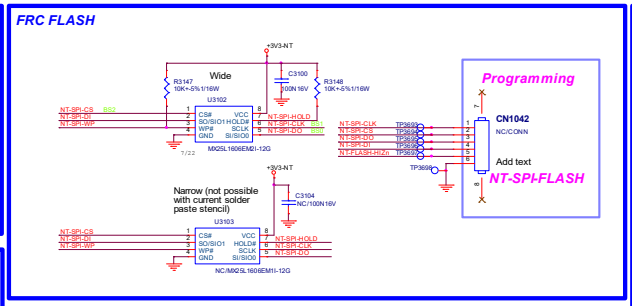
9-6-7 BE-NT72333b-GPIO

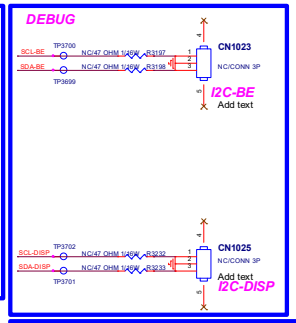


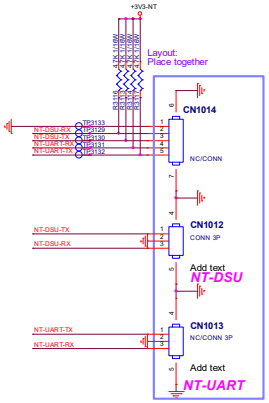


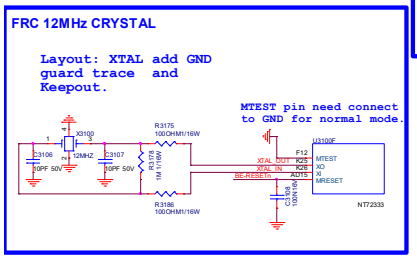


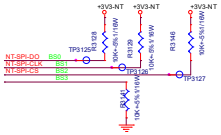


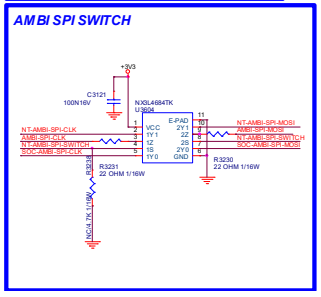


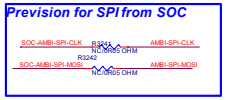






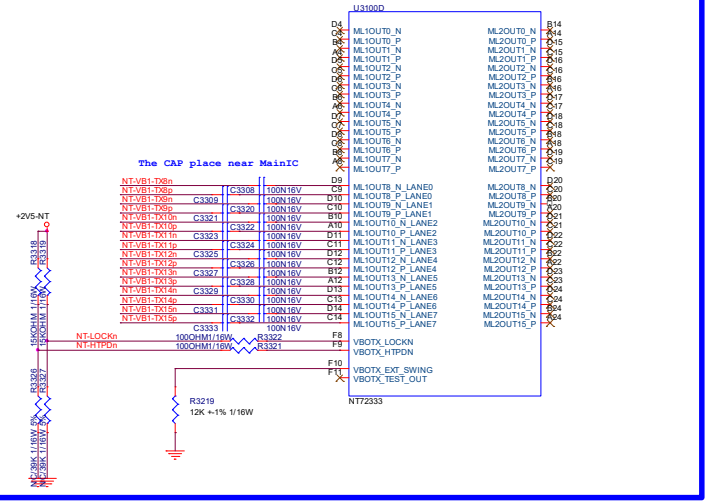




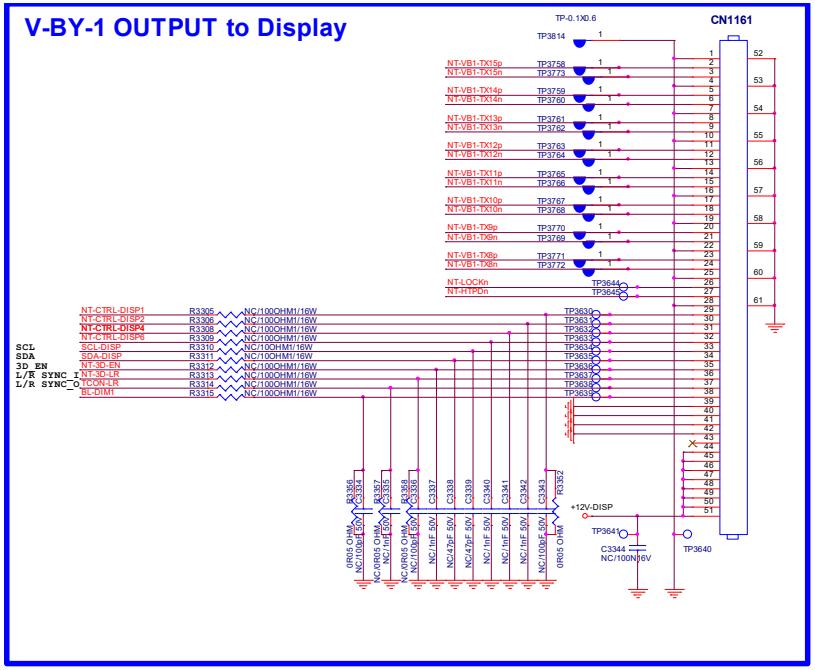


9-6-8 BE-NT72333c-TX-VB1

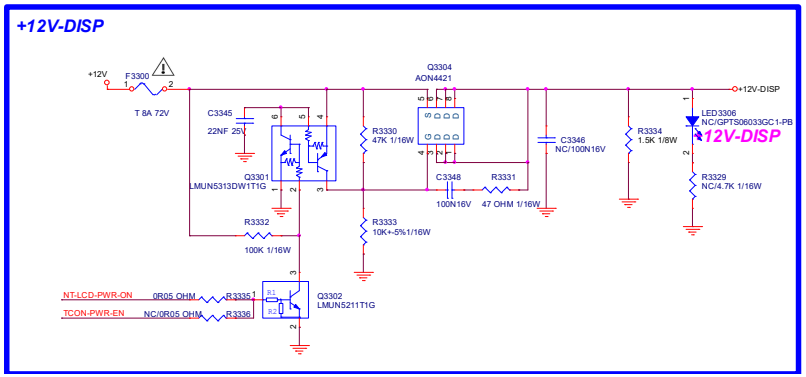
NT72333 V-BY-1 OUTPUT



V-BY-1 OUTPUT to Display

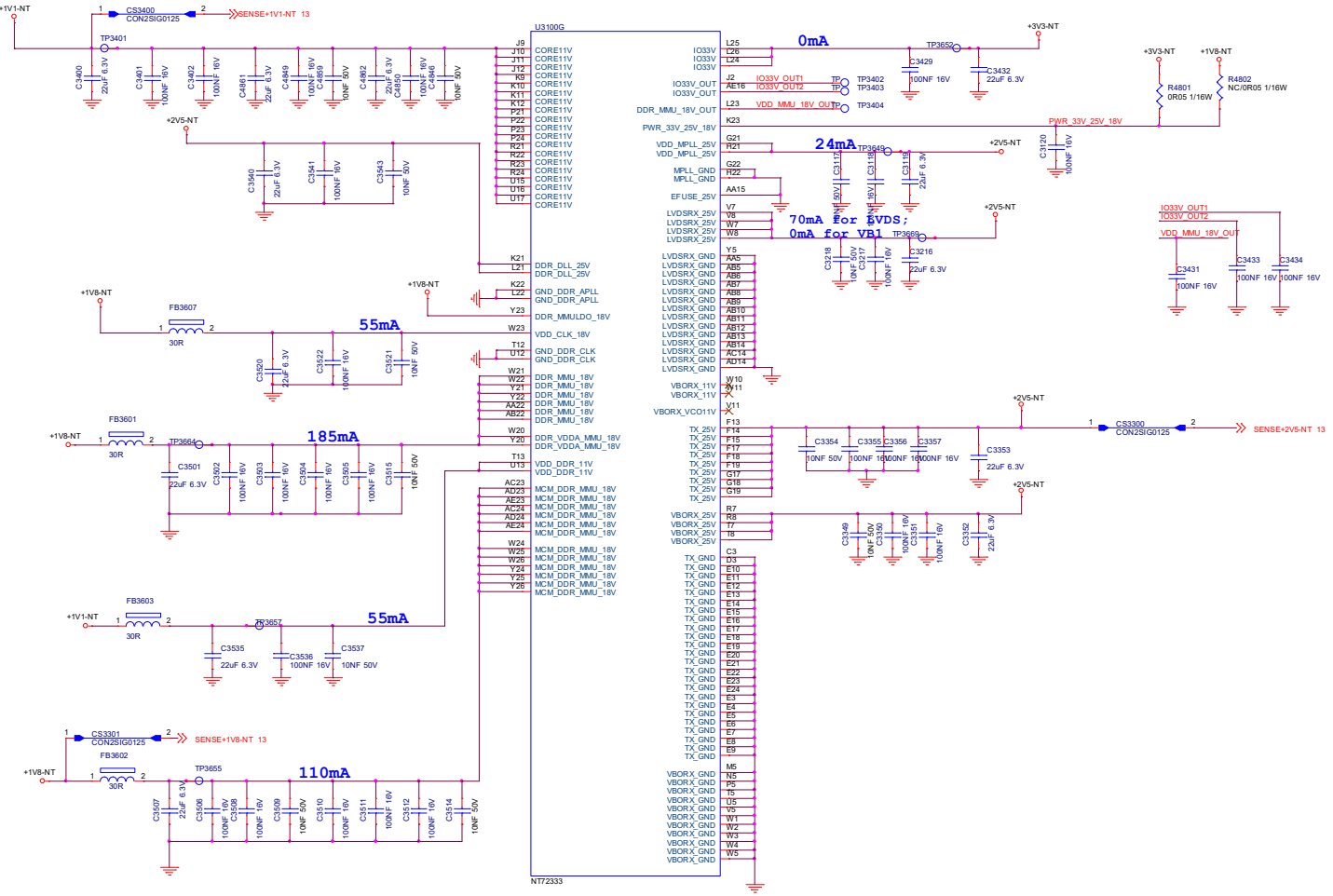


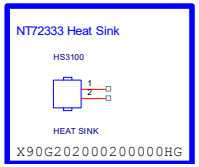
+12V-DISP



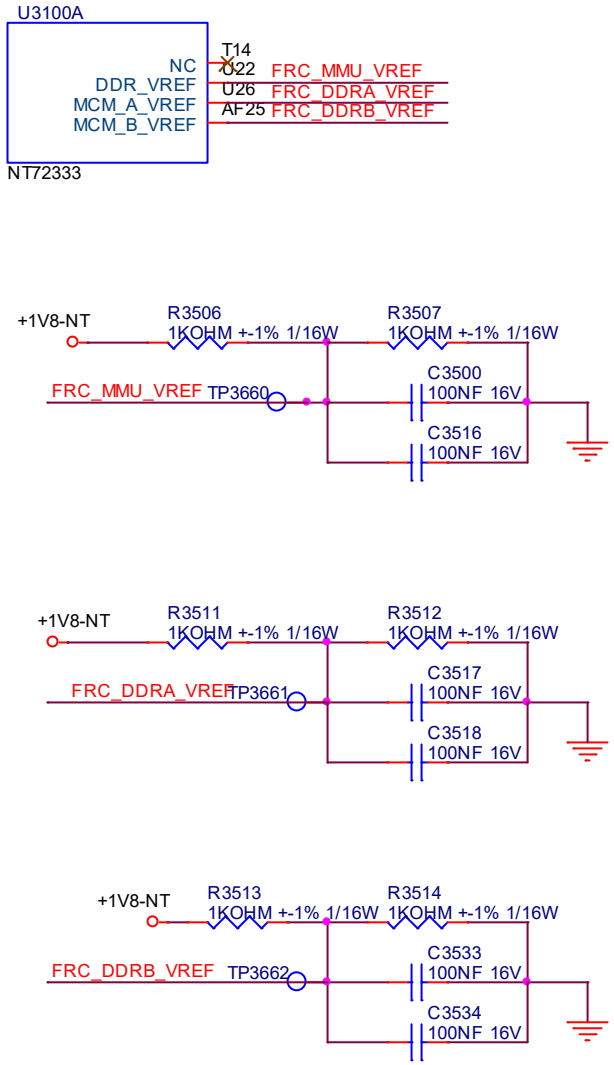
9-6-9 BE-NT72333d-POWER

NT72333 POWER





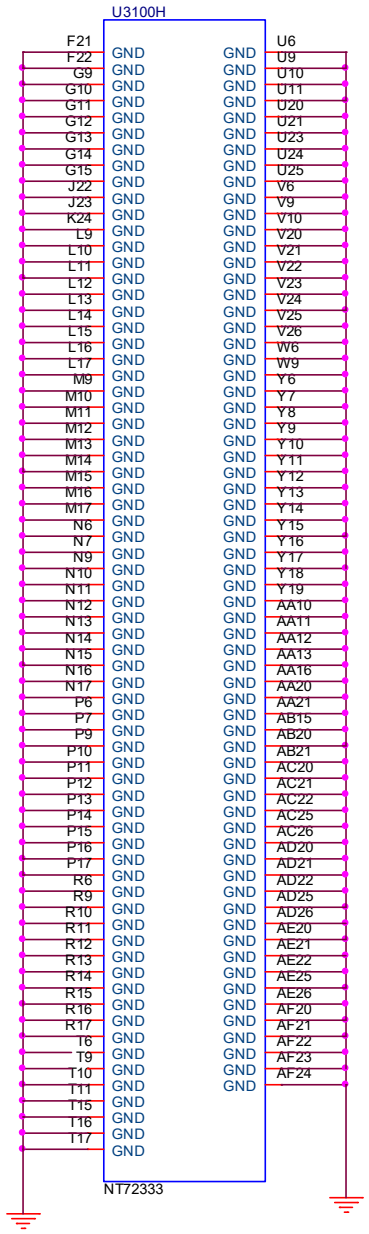
NT72333 DDR



VREF voltage divider

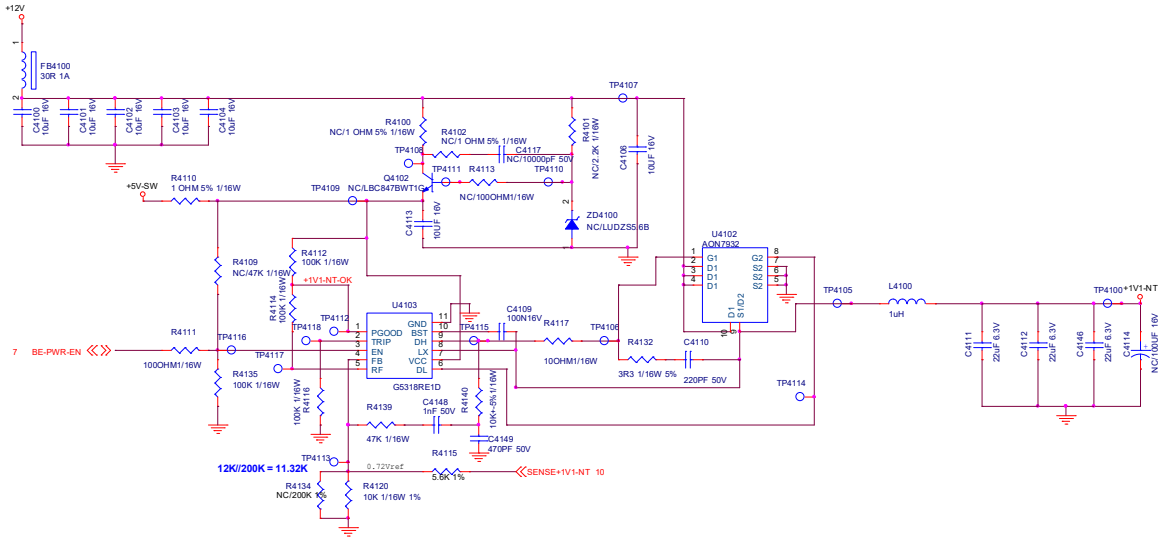
9-6-11 BE-NT72333f-GND

NT72333 GND

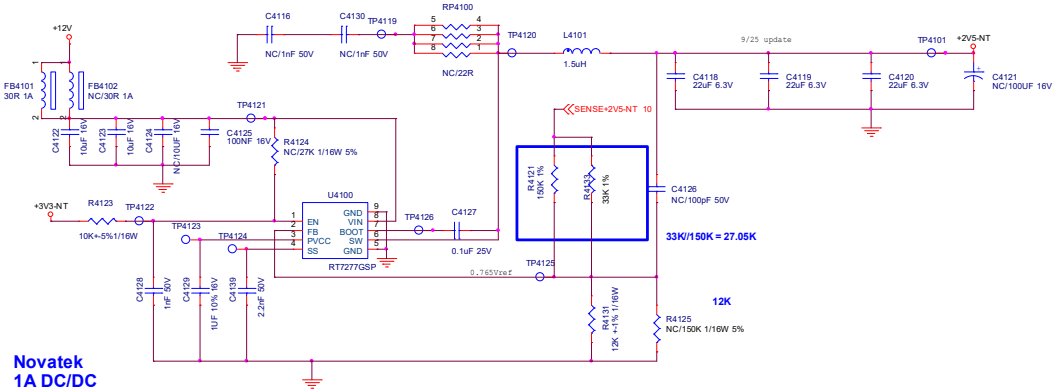


9-6-12 DCDC-Novatek-POWER

FRC_1.1V

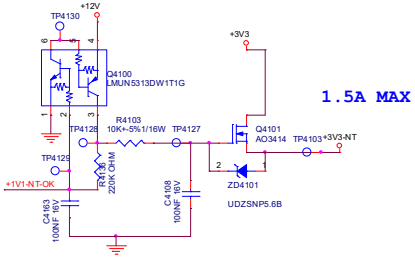


FRC_2.5V

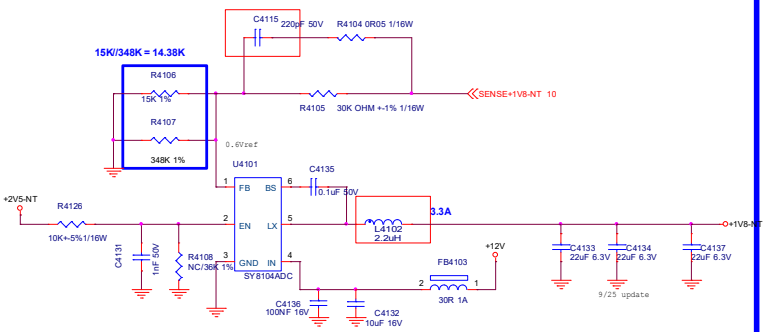


Novatek
1A DC/DC

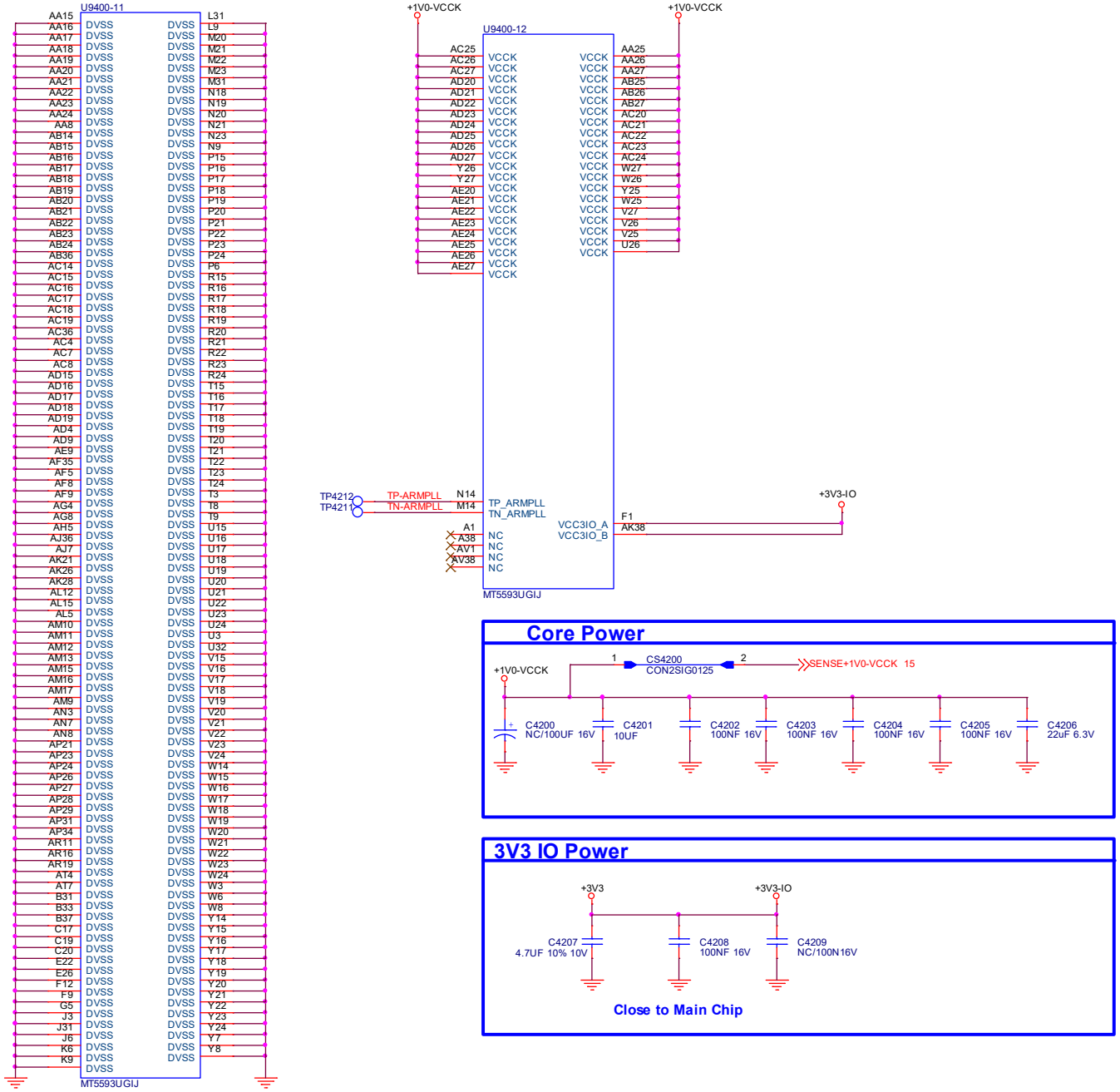
FRC_3.3V



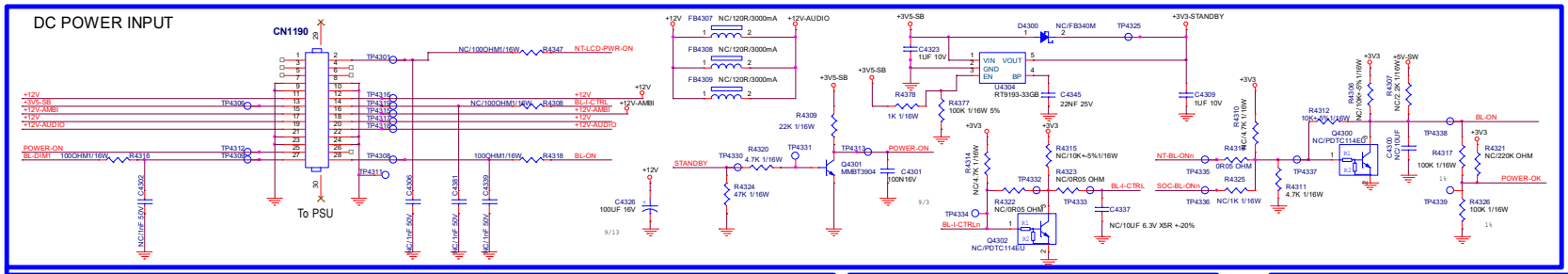
FRC_1.8V

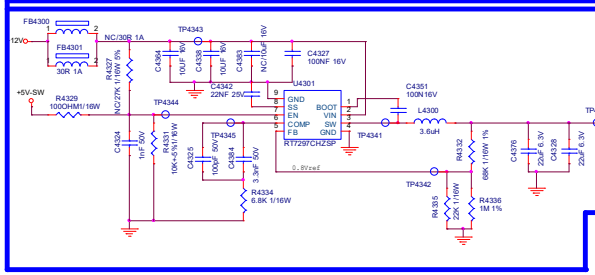


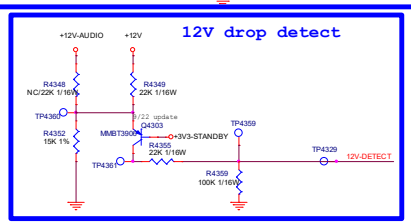
9-6-13 DCDC-SOC-VCCK-DVSS

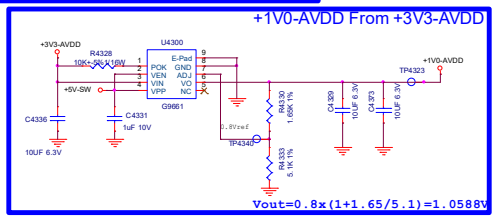


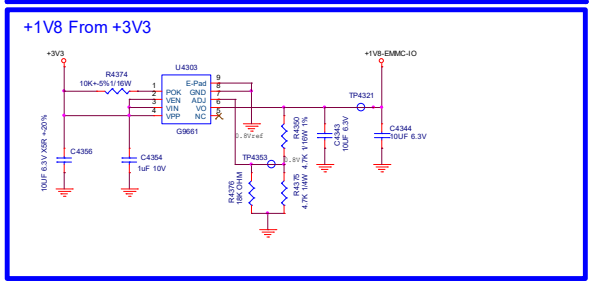
9-6-14 DCDC-SYSTEM-POWER1

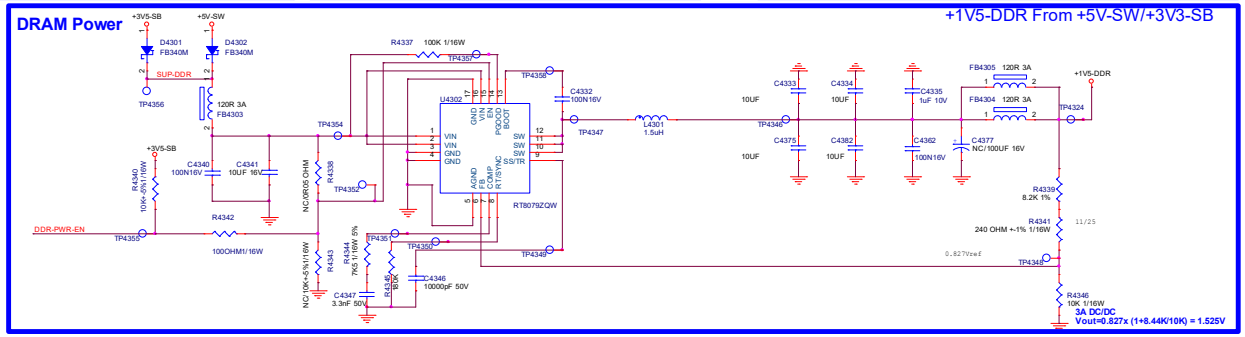


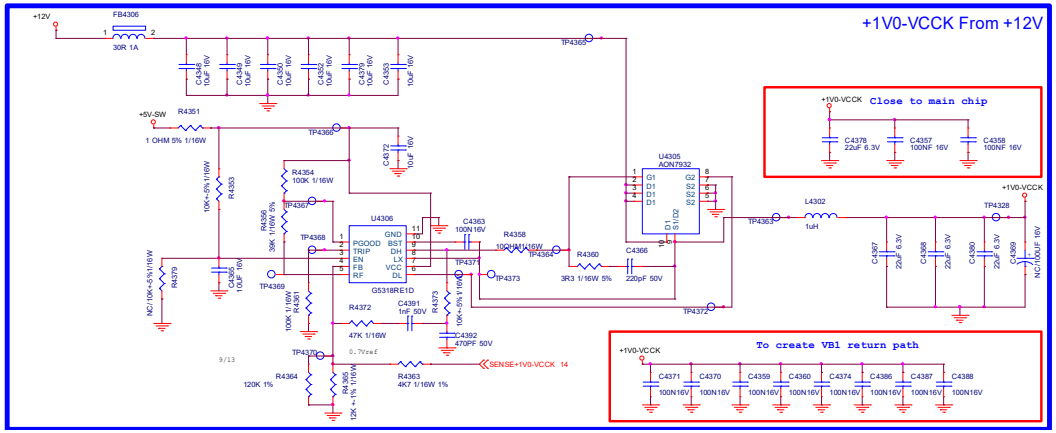


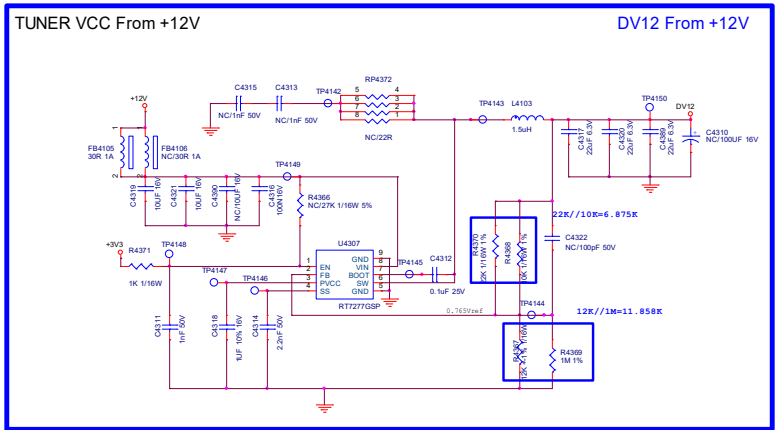




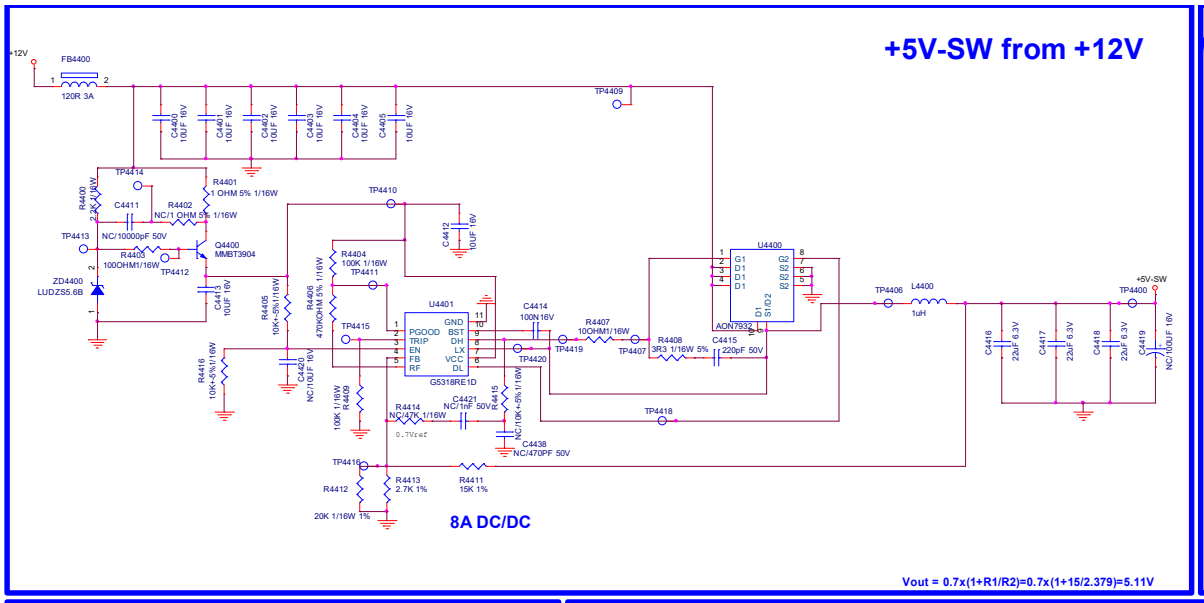


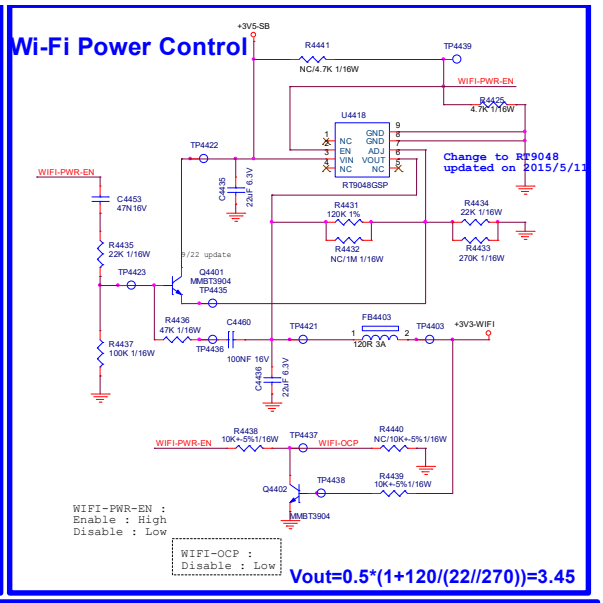


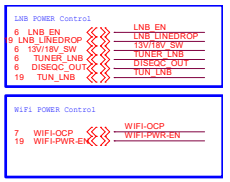


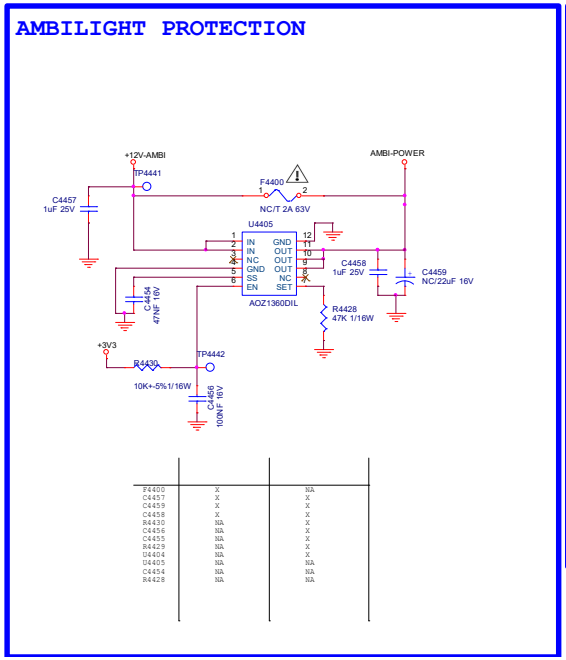


9-6-15 VCCK & DVSS









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C4457	X	X
C4459	X	X
C4458	X	X
R4430	NA	X
C4456	NA	X
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R4429	NA	X
U4404	NA	X
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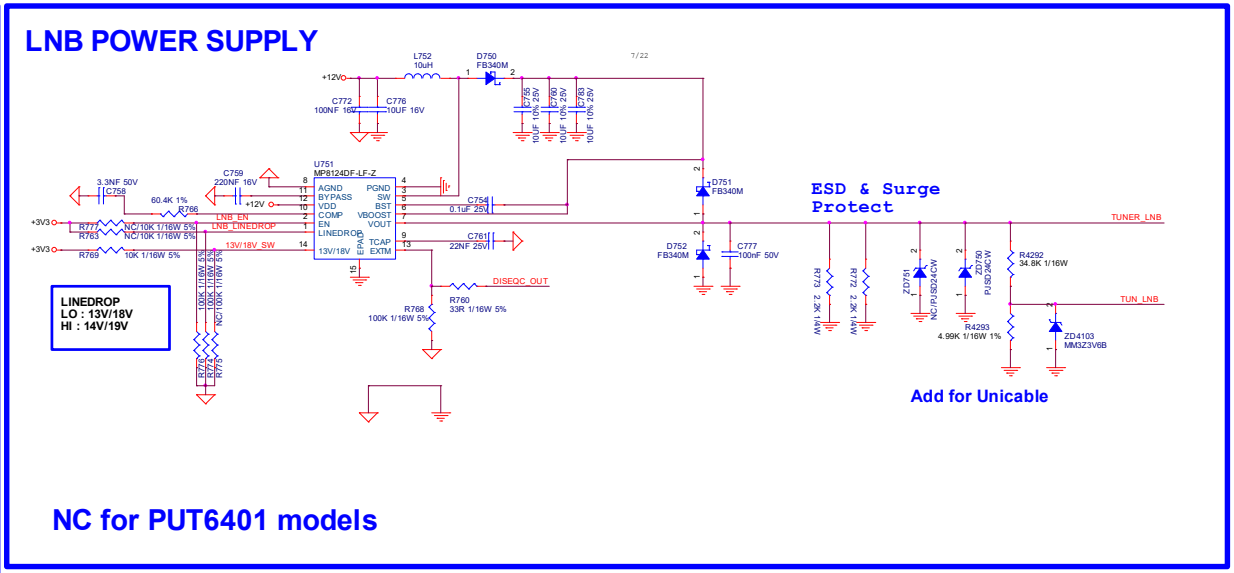
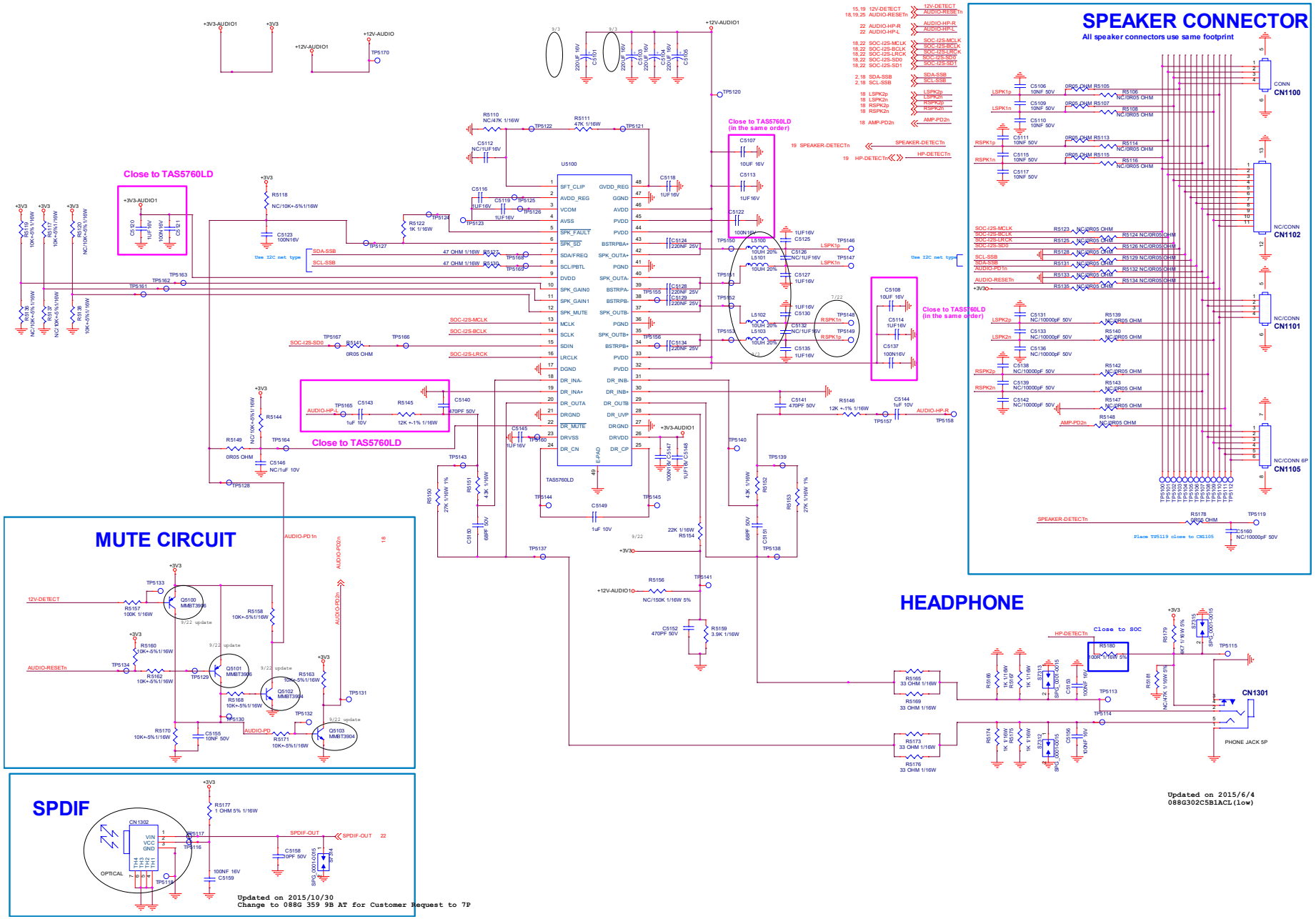
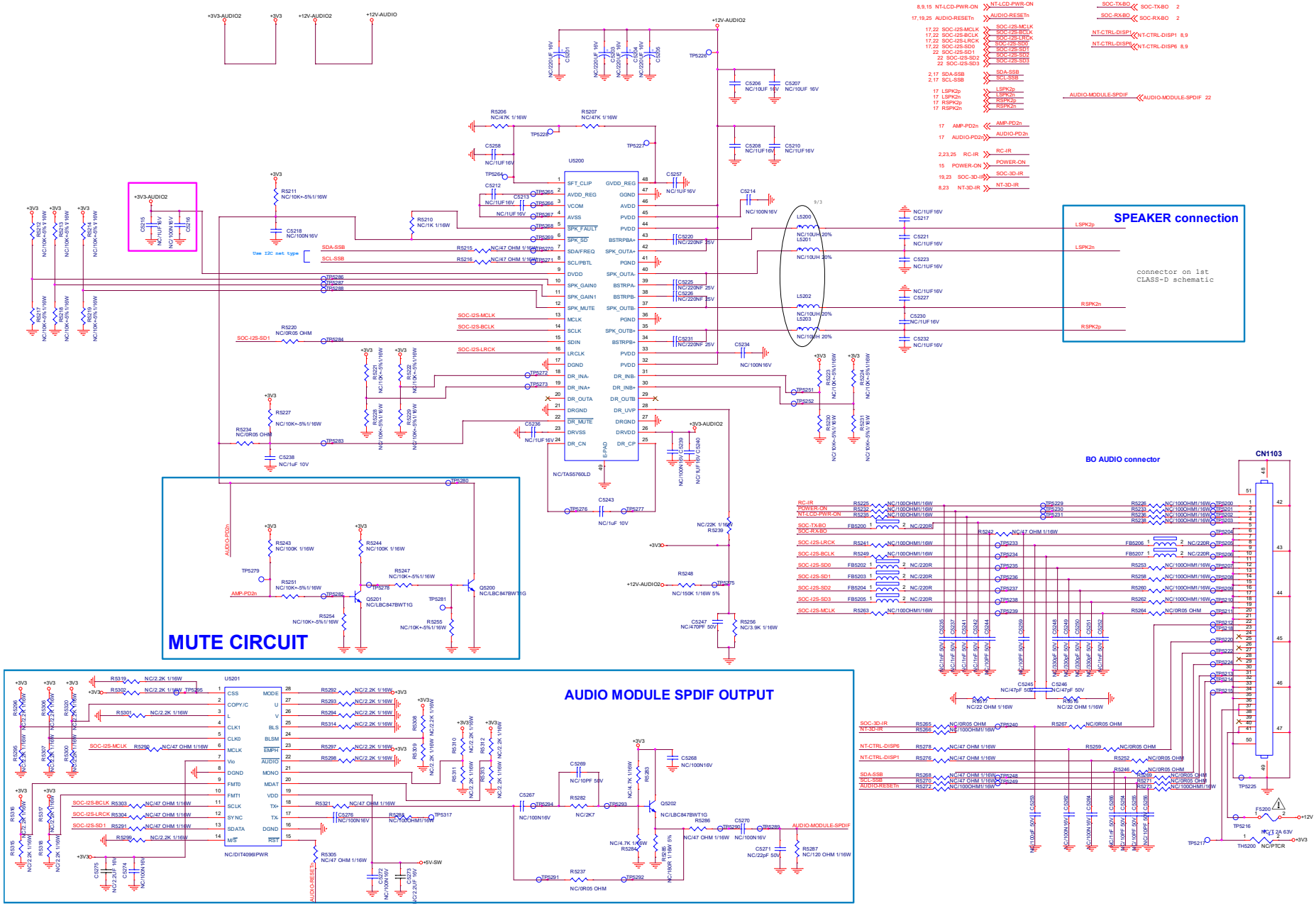


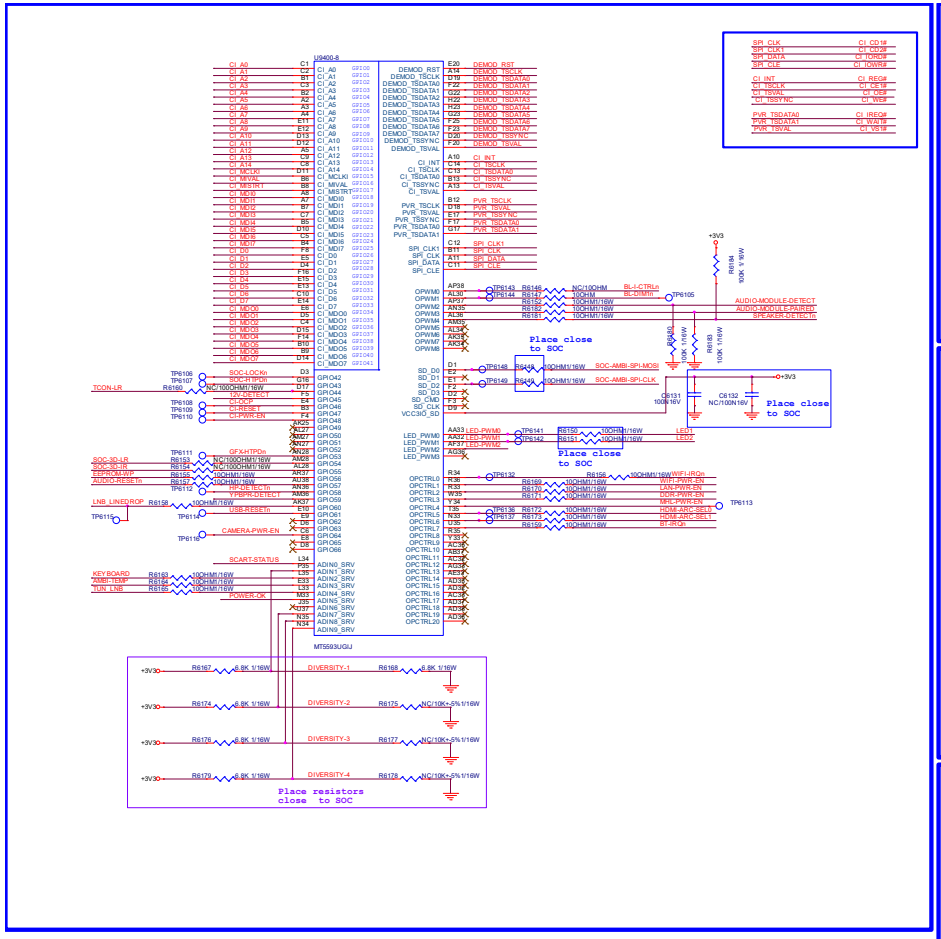
9-6-16 AUDIO-1st-CLASS-D-AMP

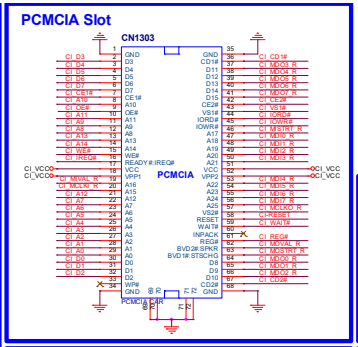


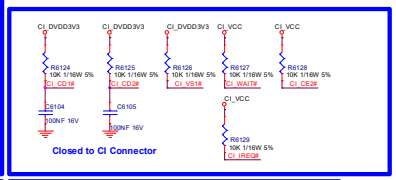
9-6-17 AUDIO-2nd-CLASS-D-AMP

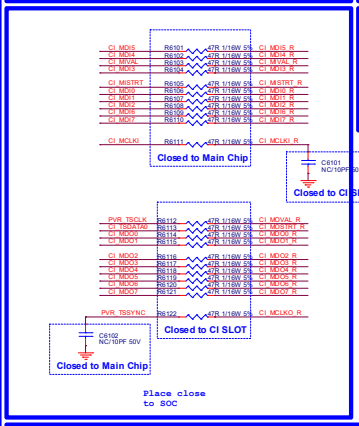


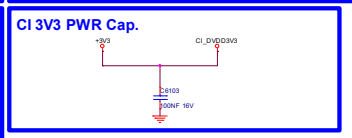
9-6-18 SOC-GPIO & PCMCIA

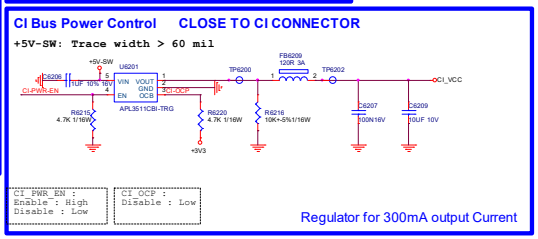


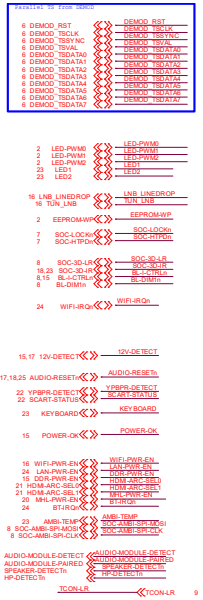






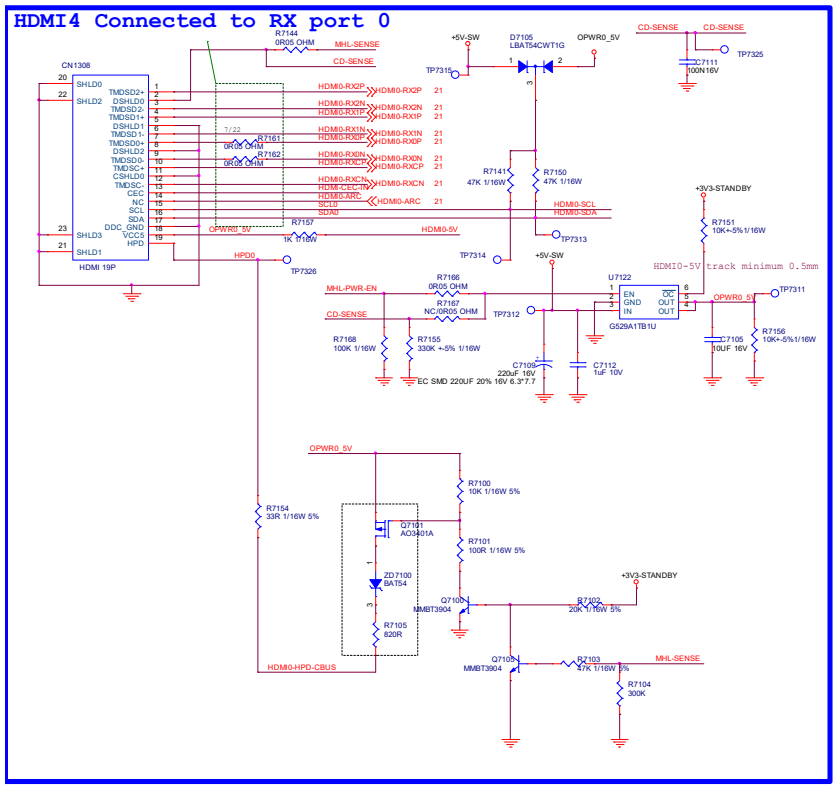


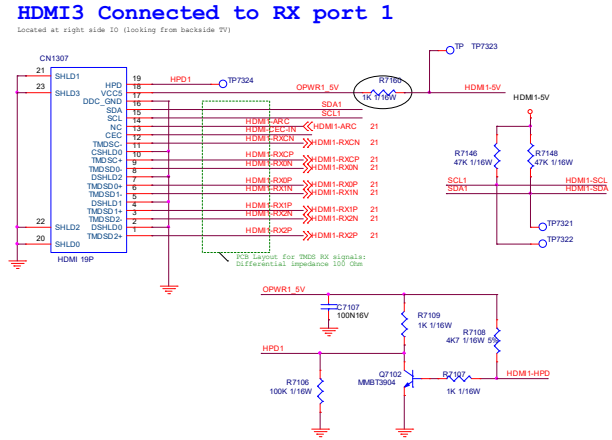


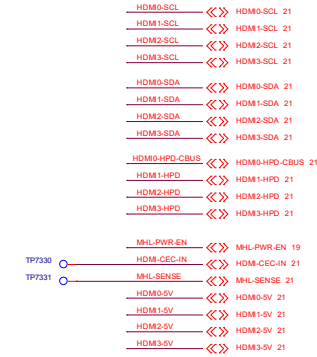


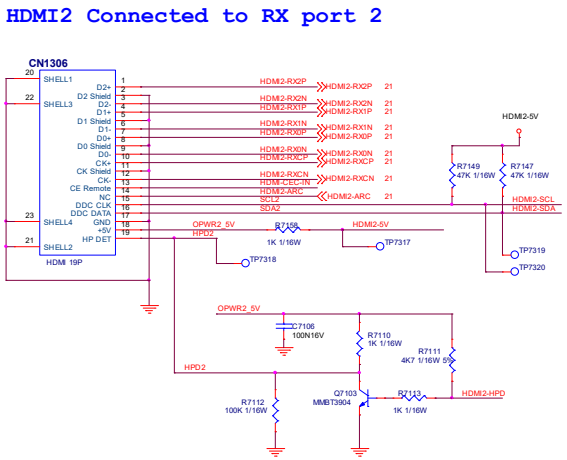
Item number in function group 6 sub-group1

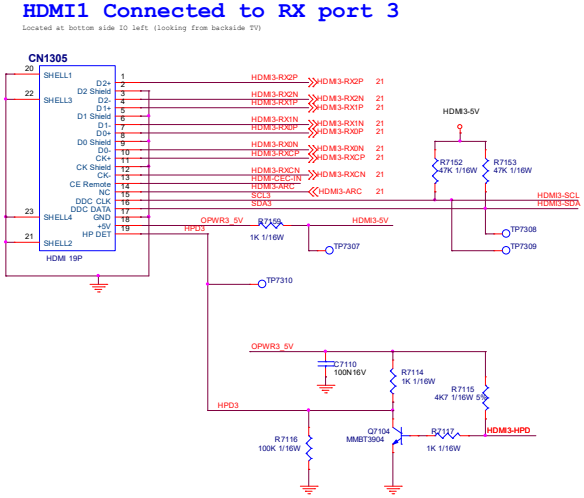
9-6-19 HDMI-INPUTS

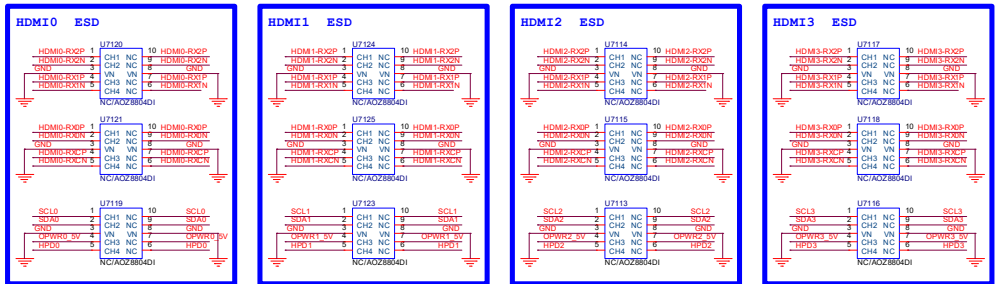




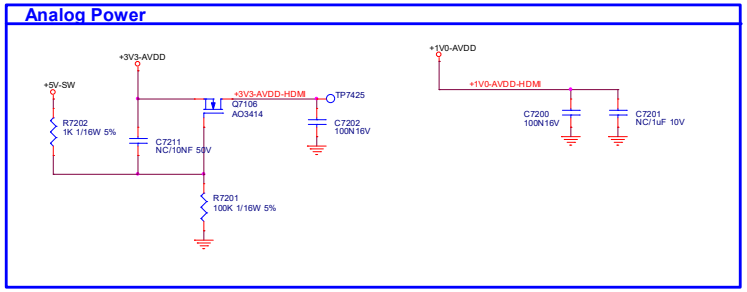


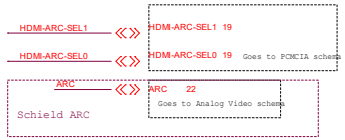


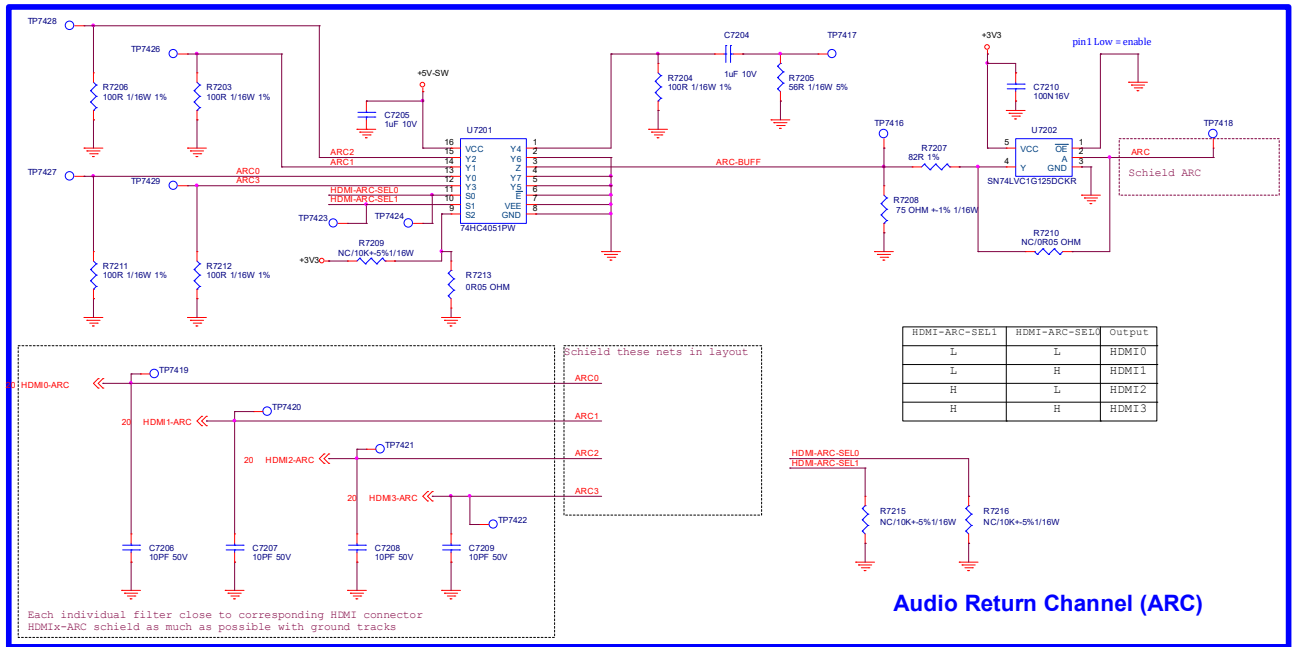




9-6-20 HDMI-SOC-ARC

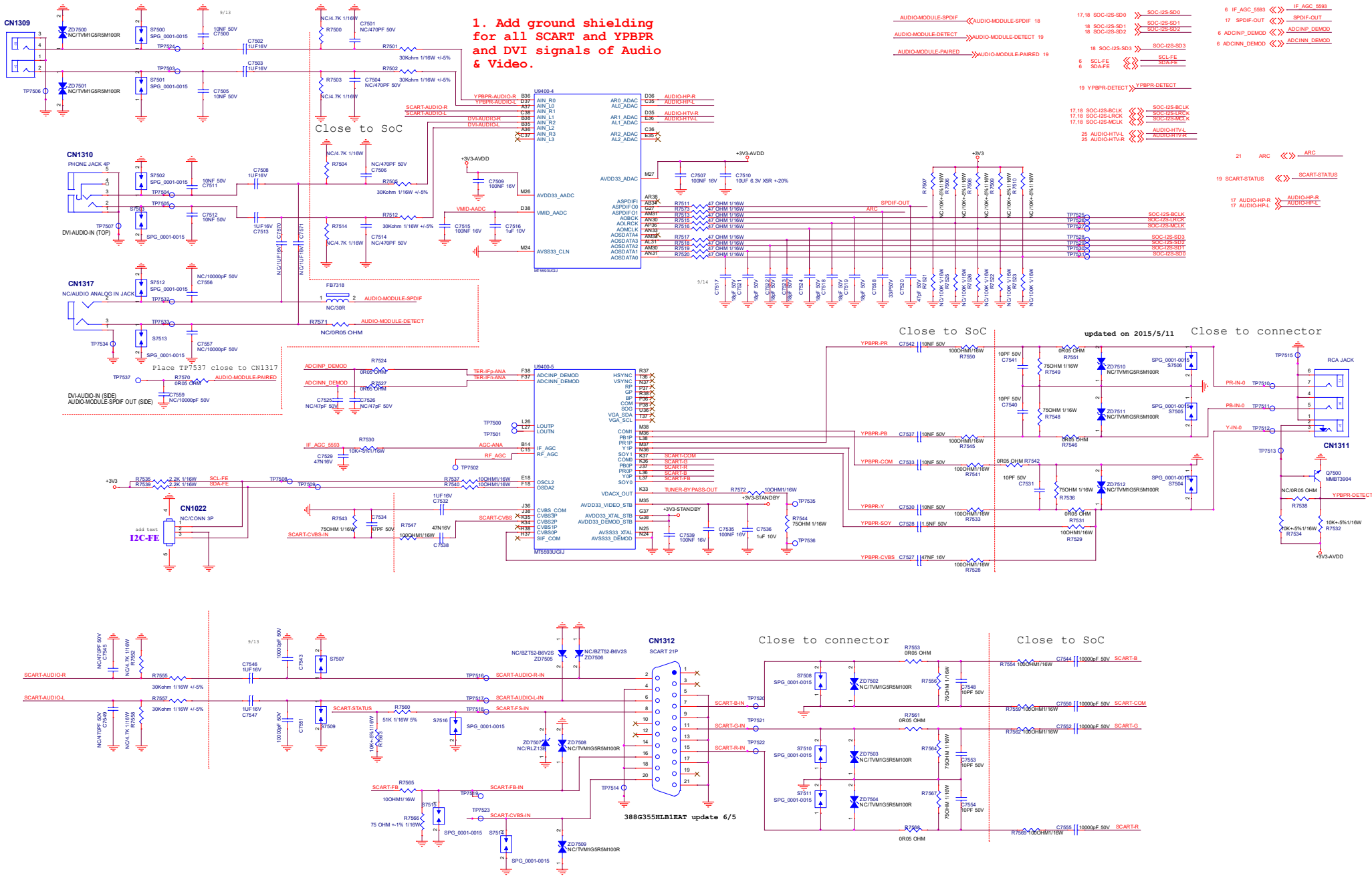




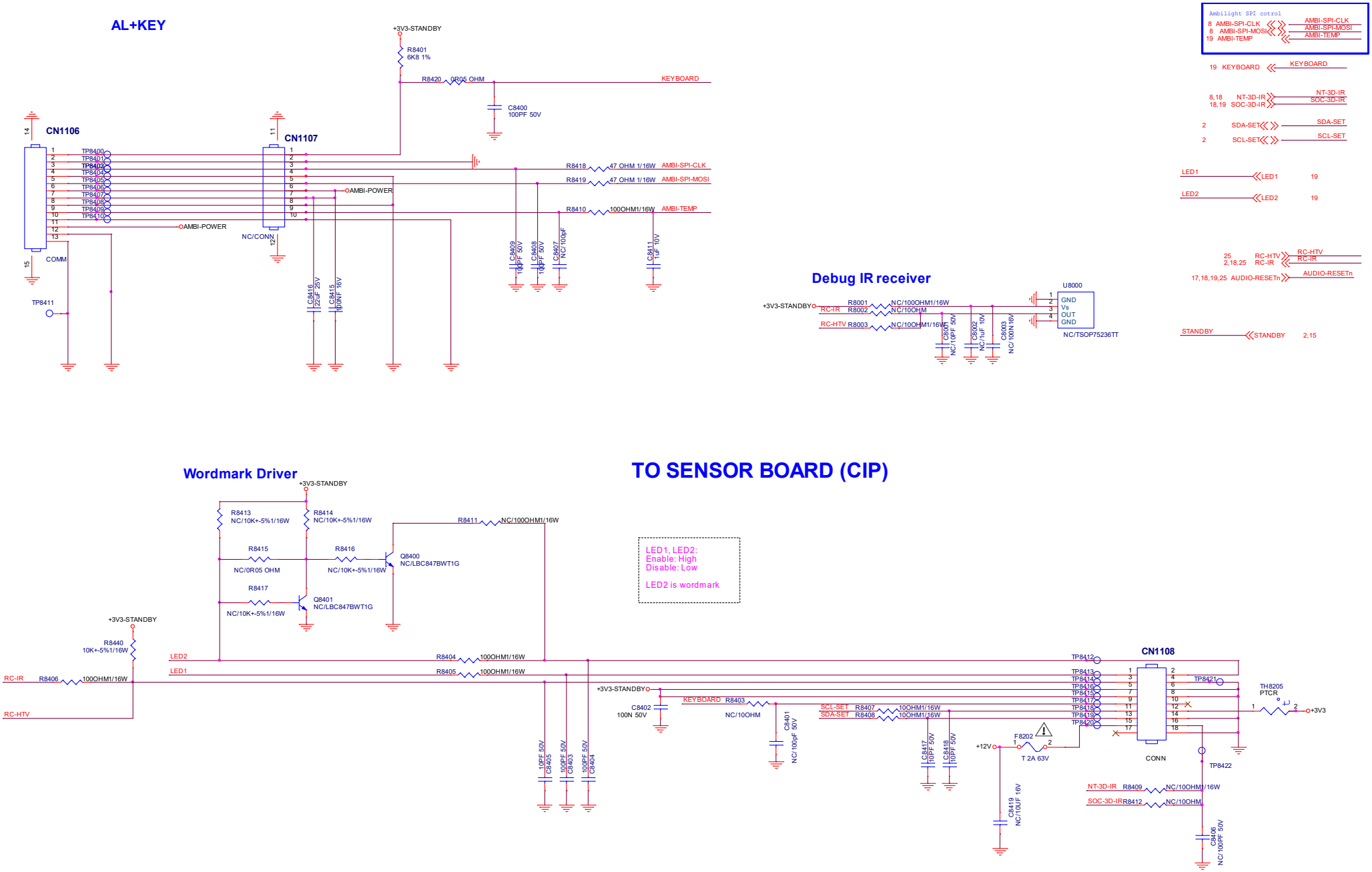


HDMI-ARC-SEL1	HDMI-ARC-SEL0	Output
L	L	HDMI0
L	H	HDMI1
H	L	HDMI2
H	H	HDMI3

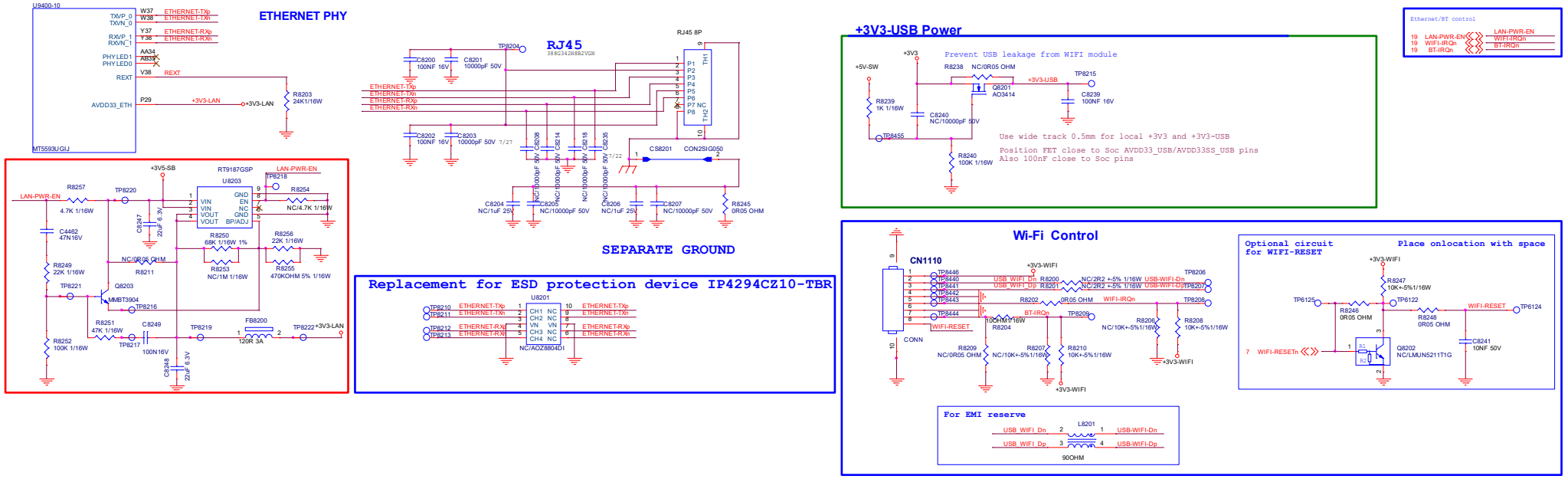
9-6-21 SCART-YPbPr-CVBS



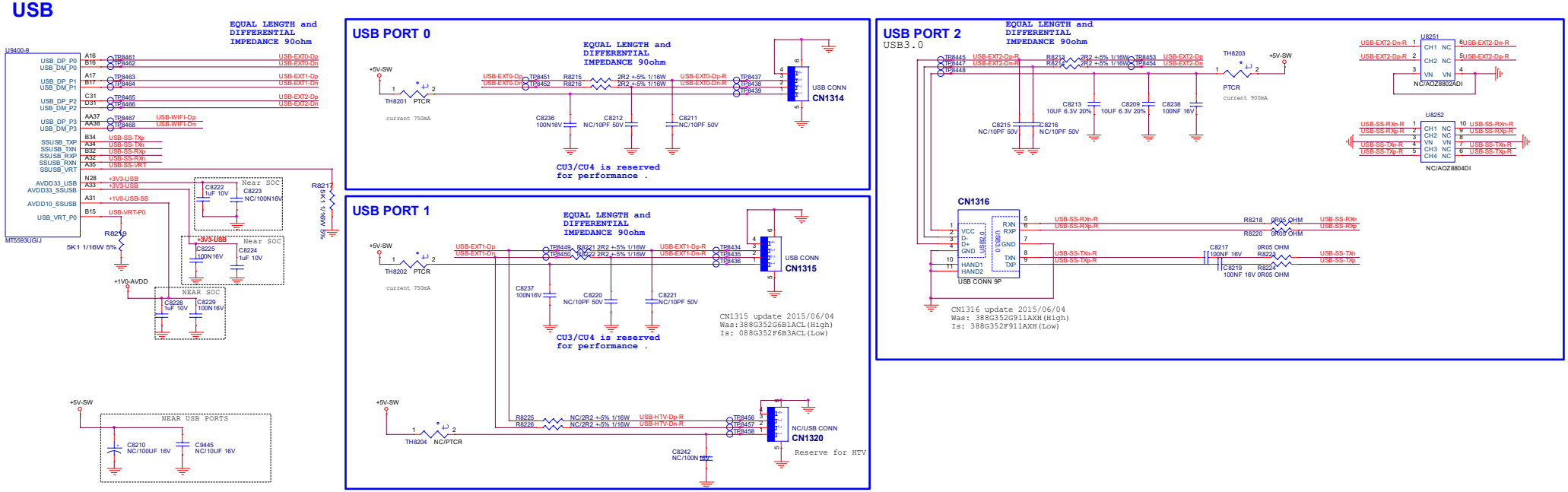
9-6-22 CTRL-CONNECTORS



9-6-23 CTRL-ETHERNET-PHY

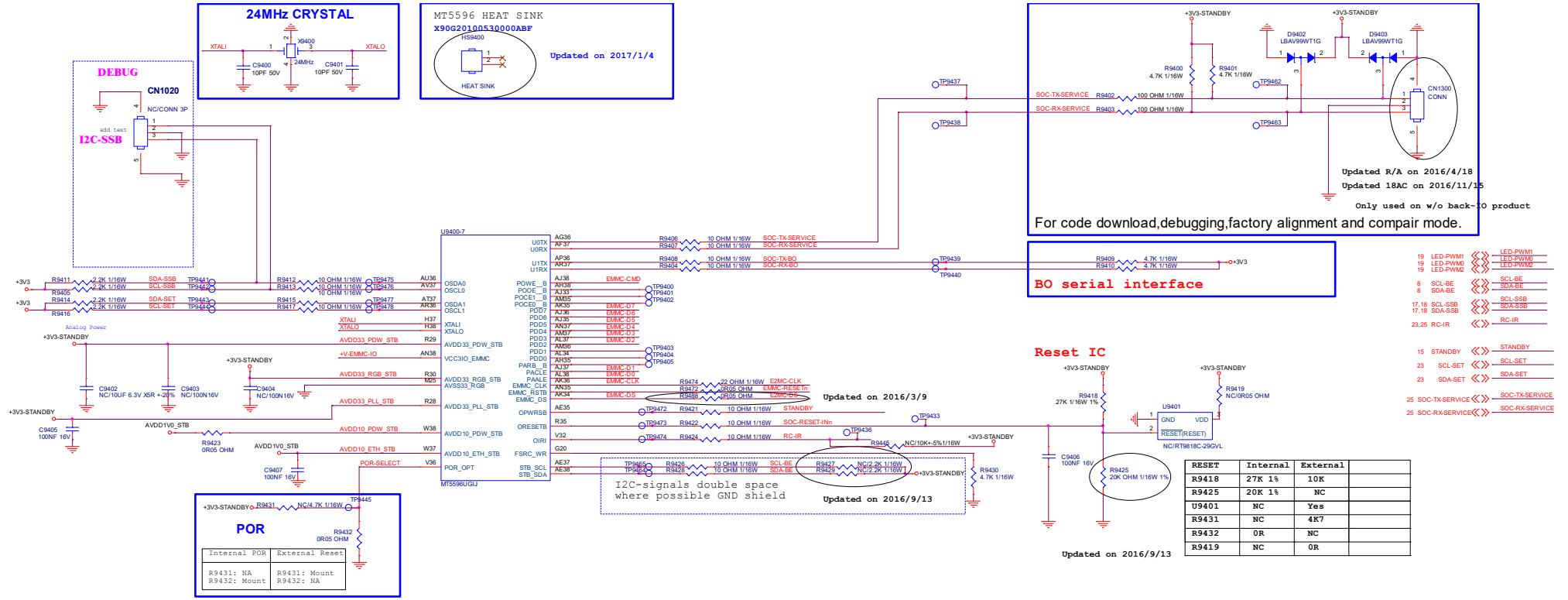


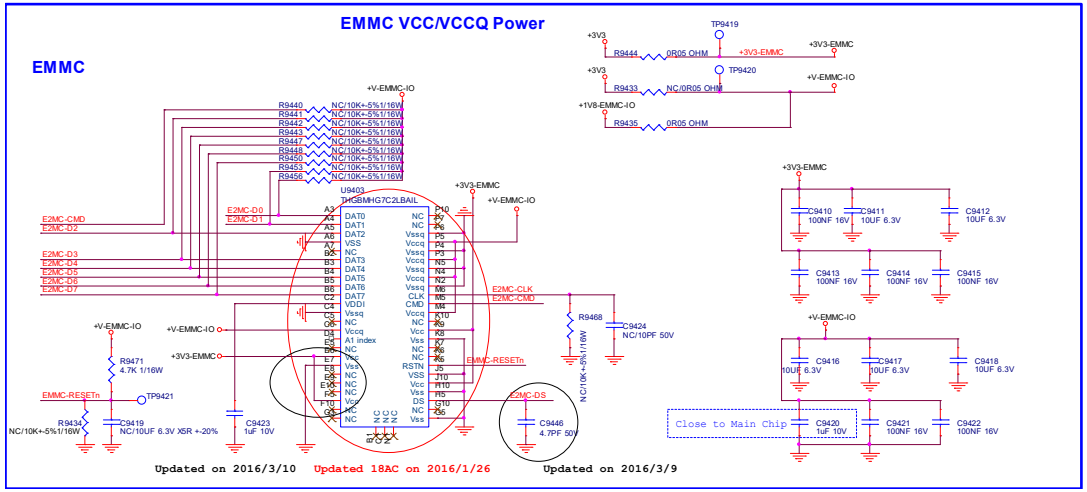
USB

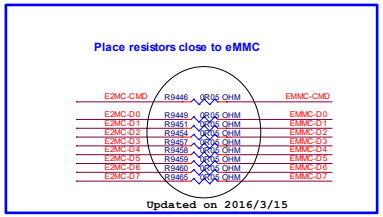


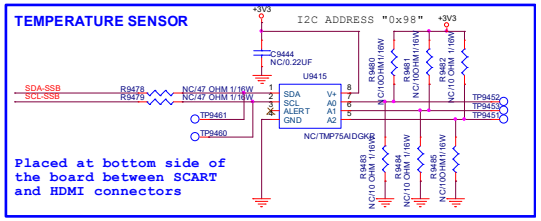
9.7 B 715G8465 SSB (For OLED873 Series)

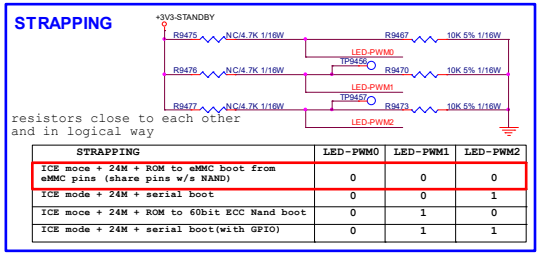
9-7-1 SOC-EMMC





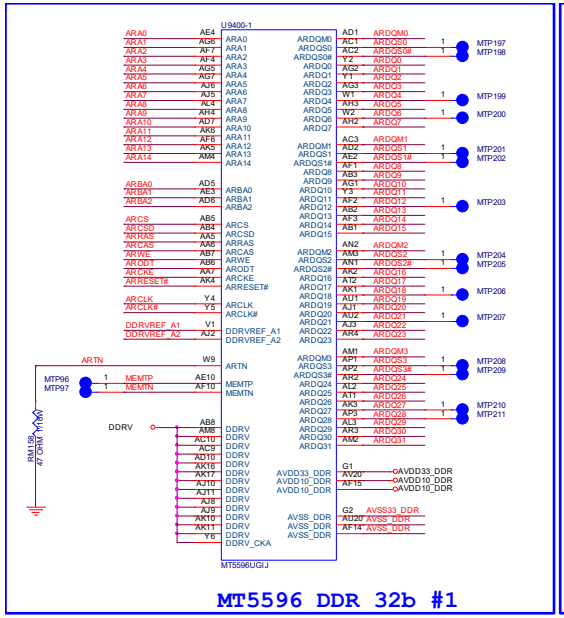


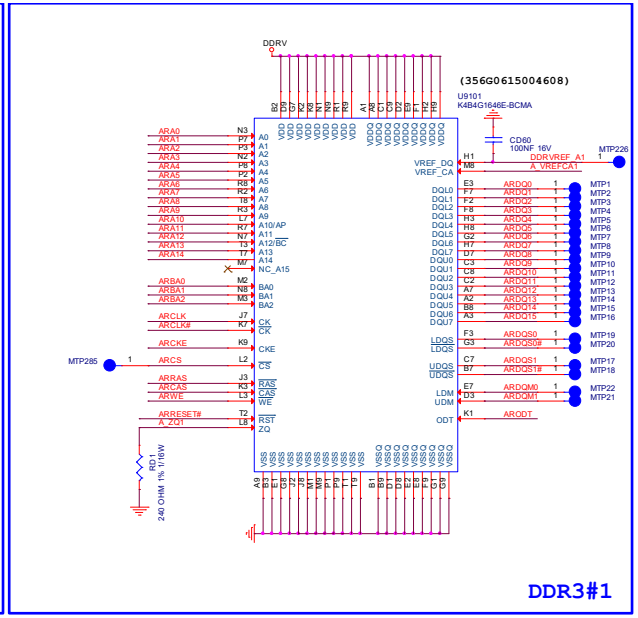


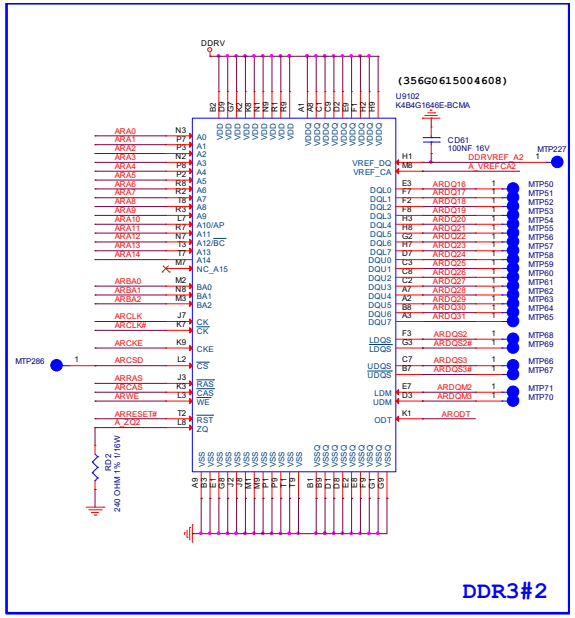


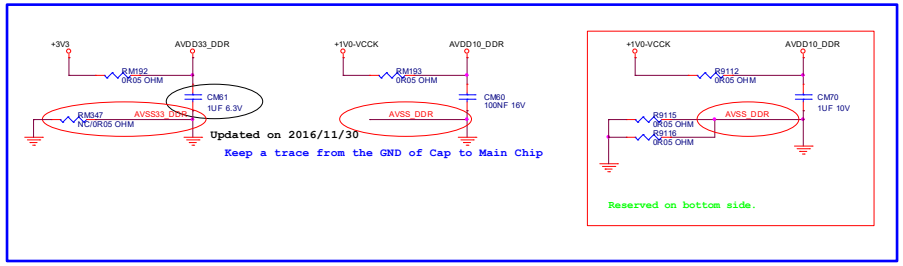
STRAPPING	LED-PWM0	LED-PWM1	LED-PWM2
ICE moce + 24M + ROM to eMMC boot from eMMC pins (share pins w/s NAND)	0	0	0
ICE mode + 24M + serial boot	0	0	1
ICE moce + 24M + ROM to 60bit ECC Nand boot	0	1	0
ICE mode + 24M + serial boot(with GPIO)	0	1	1

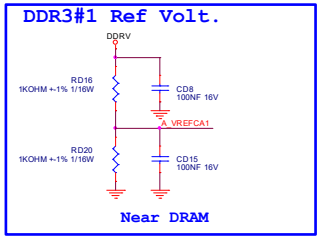
9-7-2 SOC-DDR3-1-2

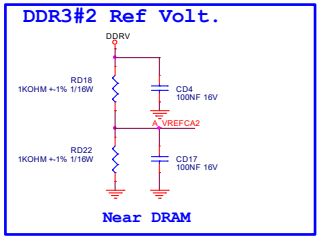


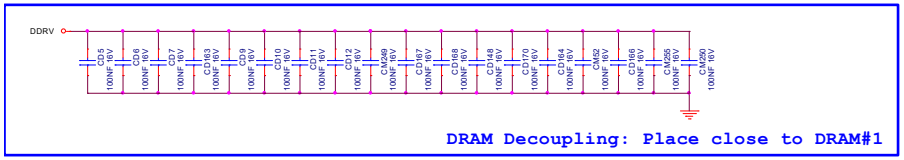


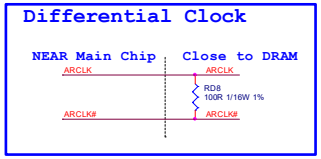


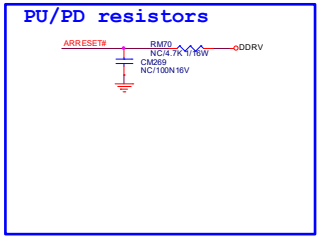


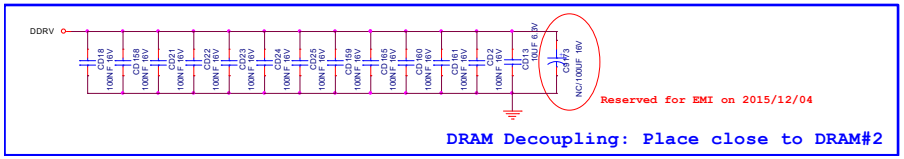




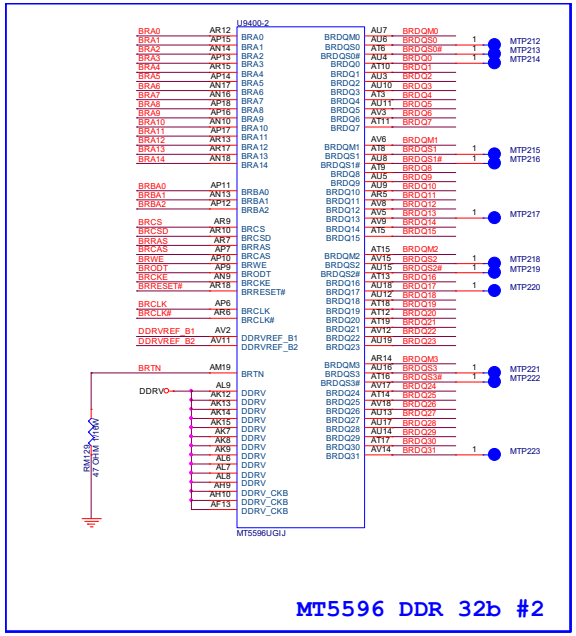


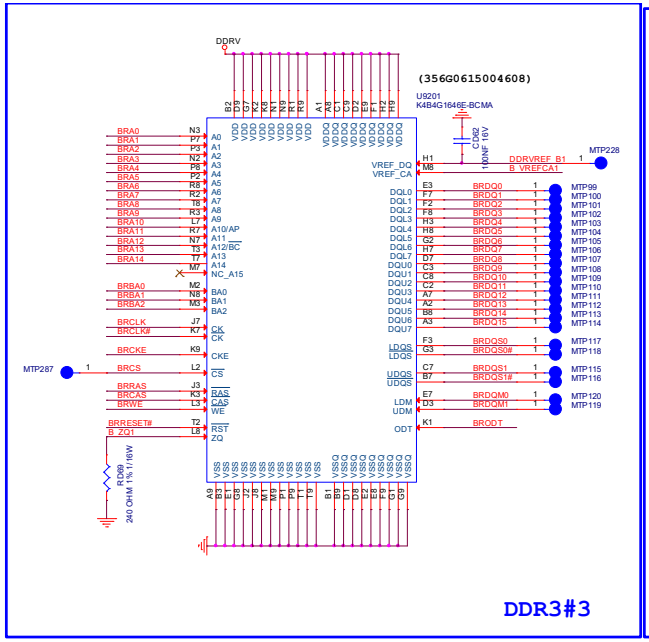


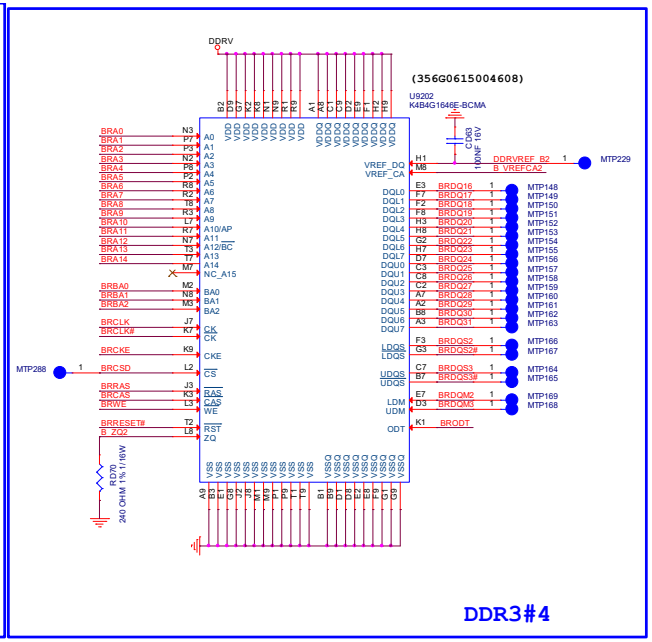


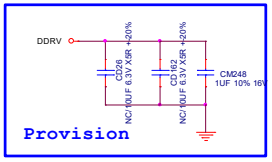


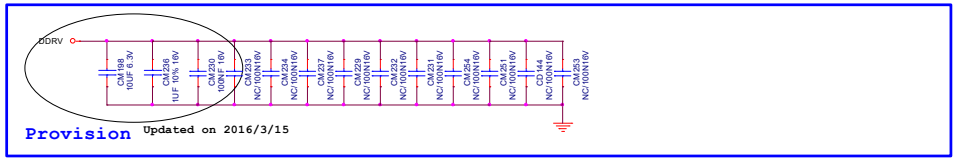
9-7-3 SOC-DDR3-3-4

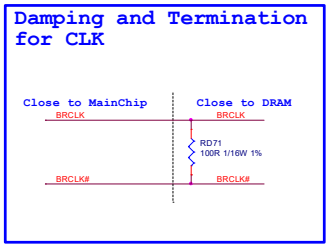


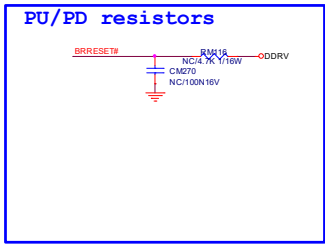


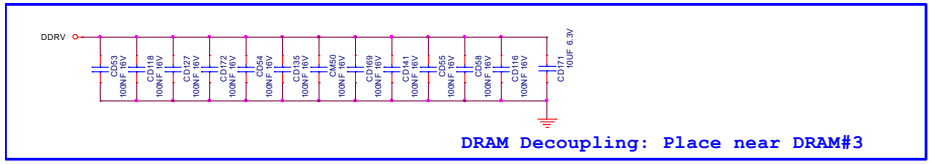


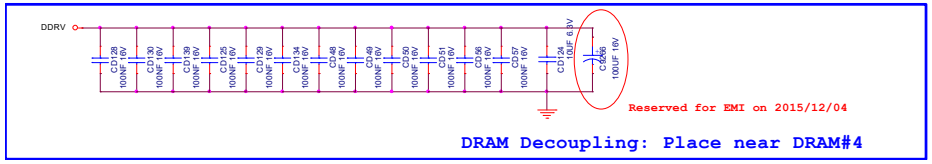


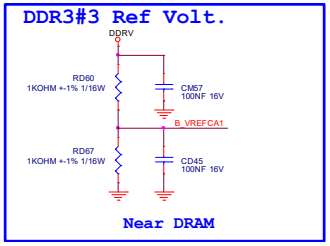


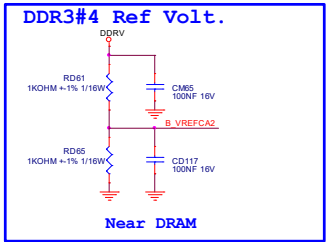




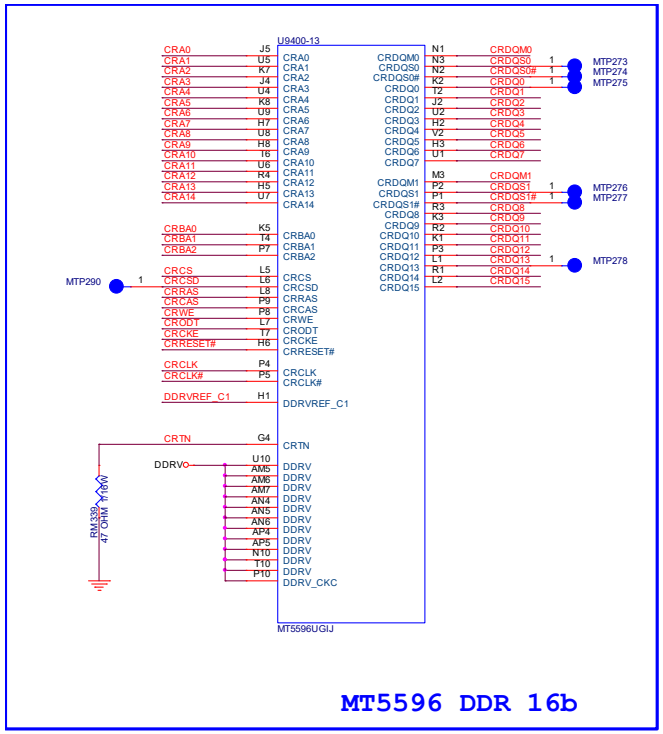


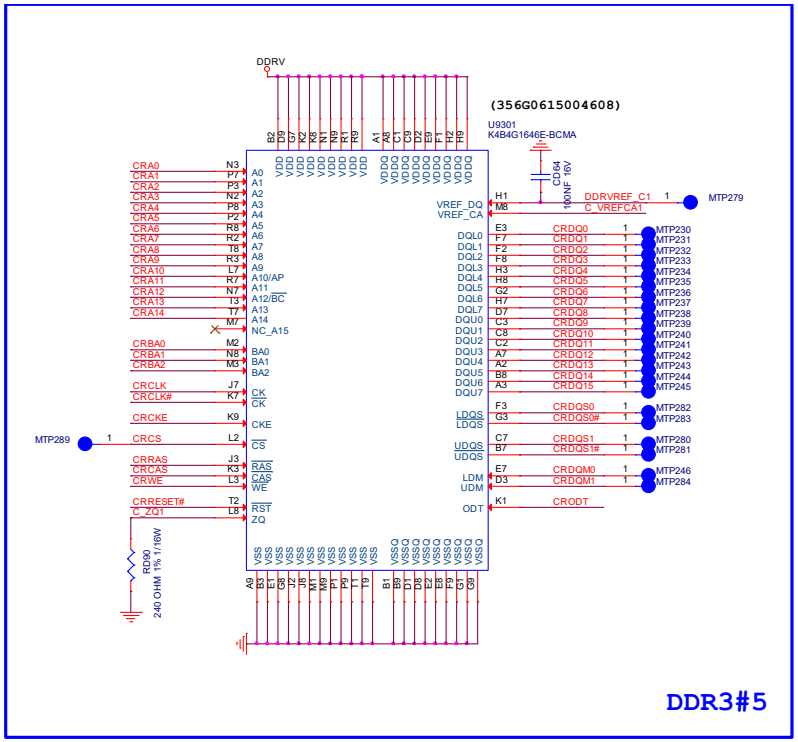


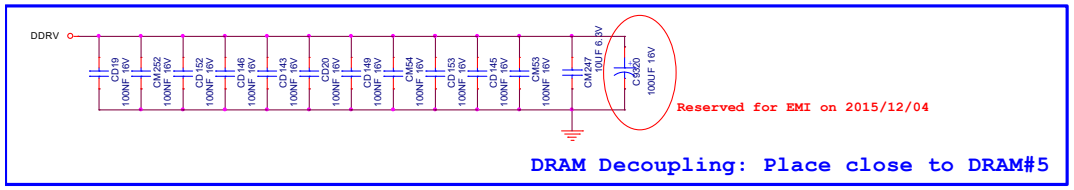


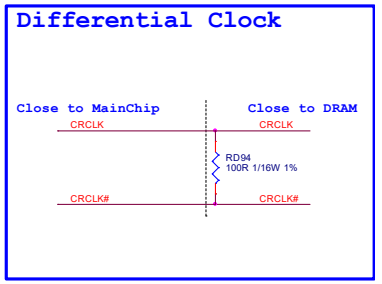


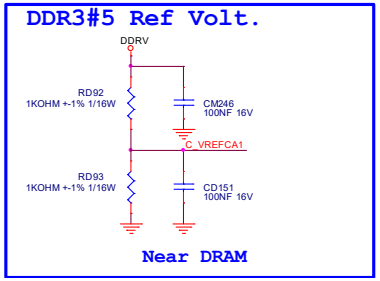
9-7-4 SOC-DDR3-5

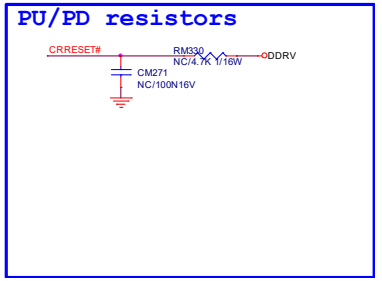




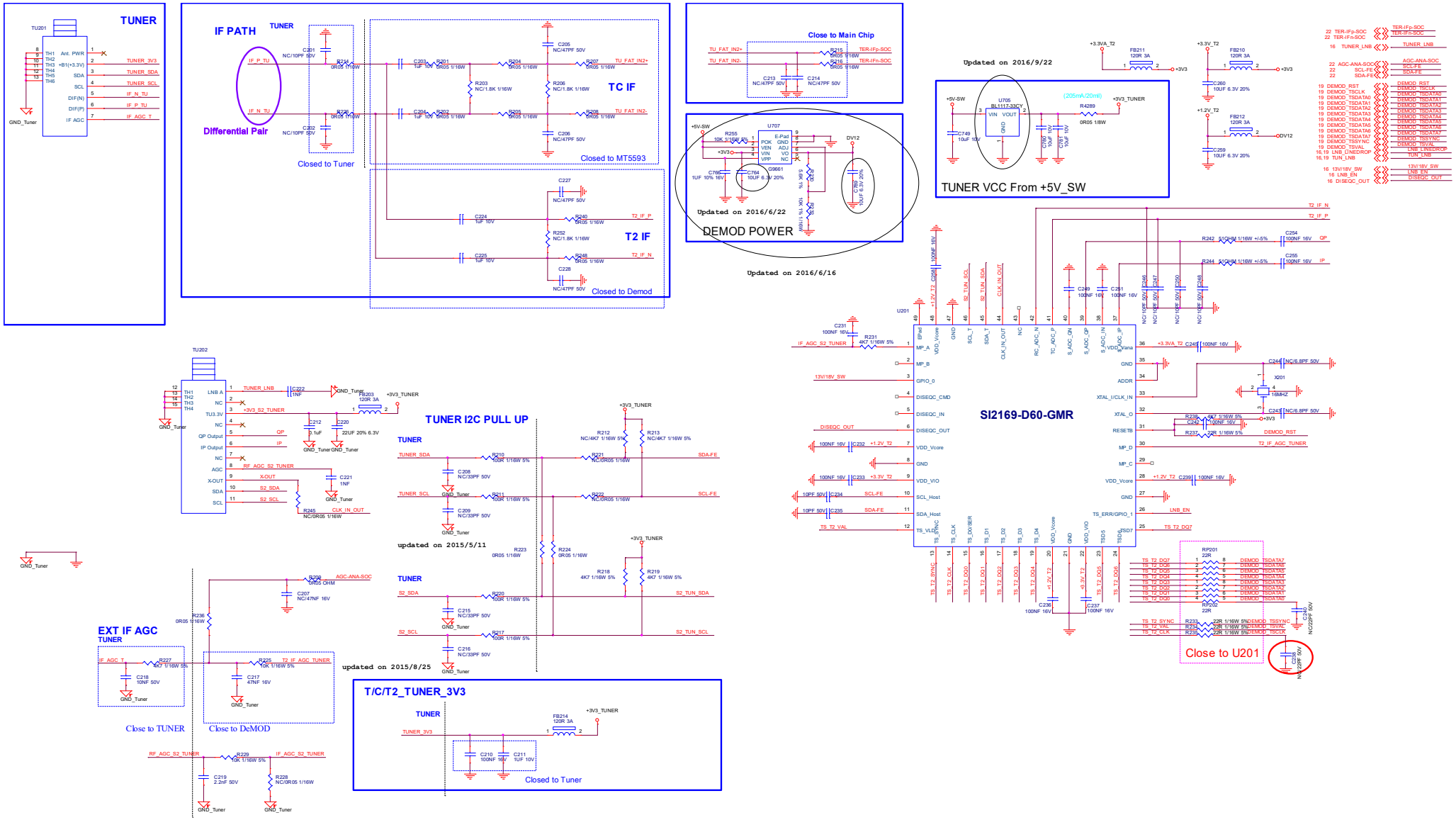






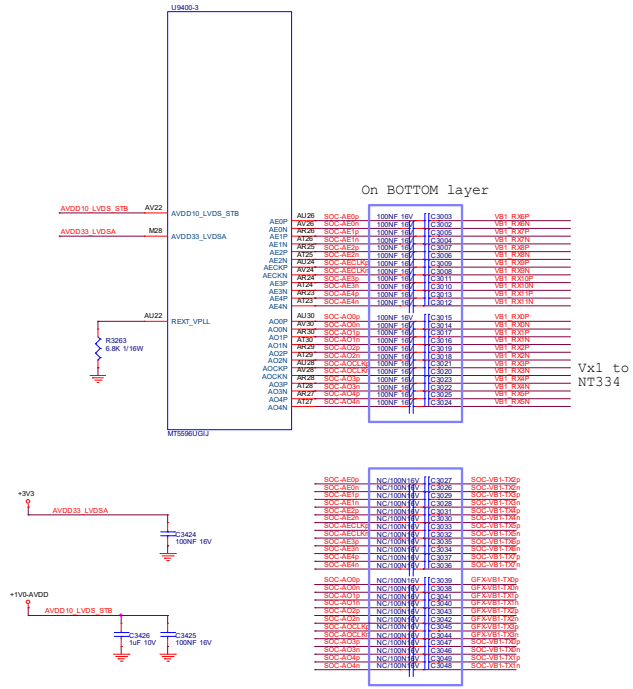


9-7-5 FE-TUNER-DEMOD-TPV

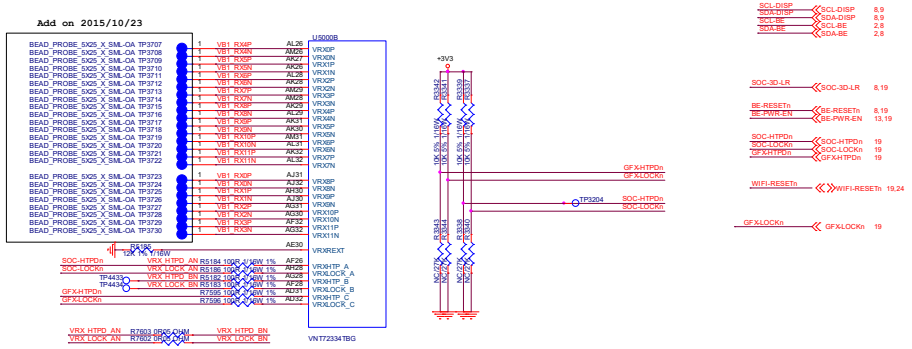


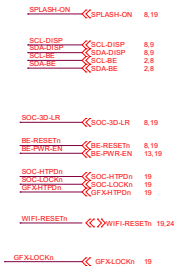
9-7-6 BE-NT7234a-Vx1-INPUT

MT5596 Vx1 OUTPUT

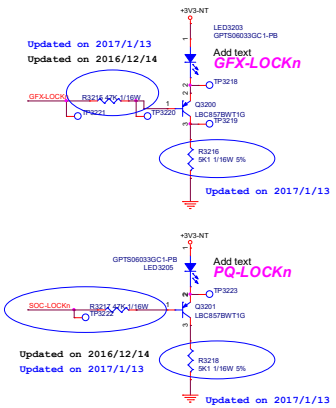


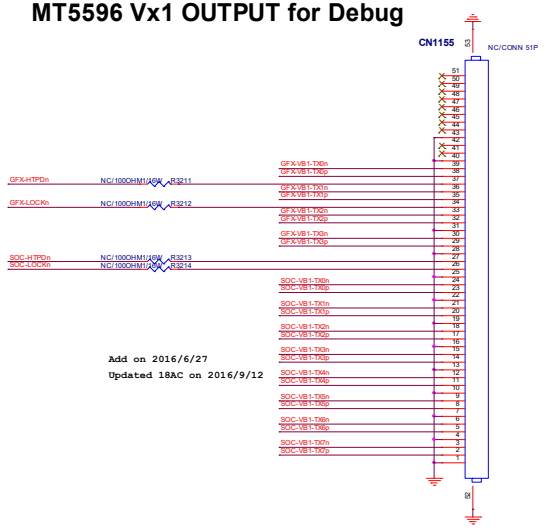
NT334 Vx1 INPUT





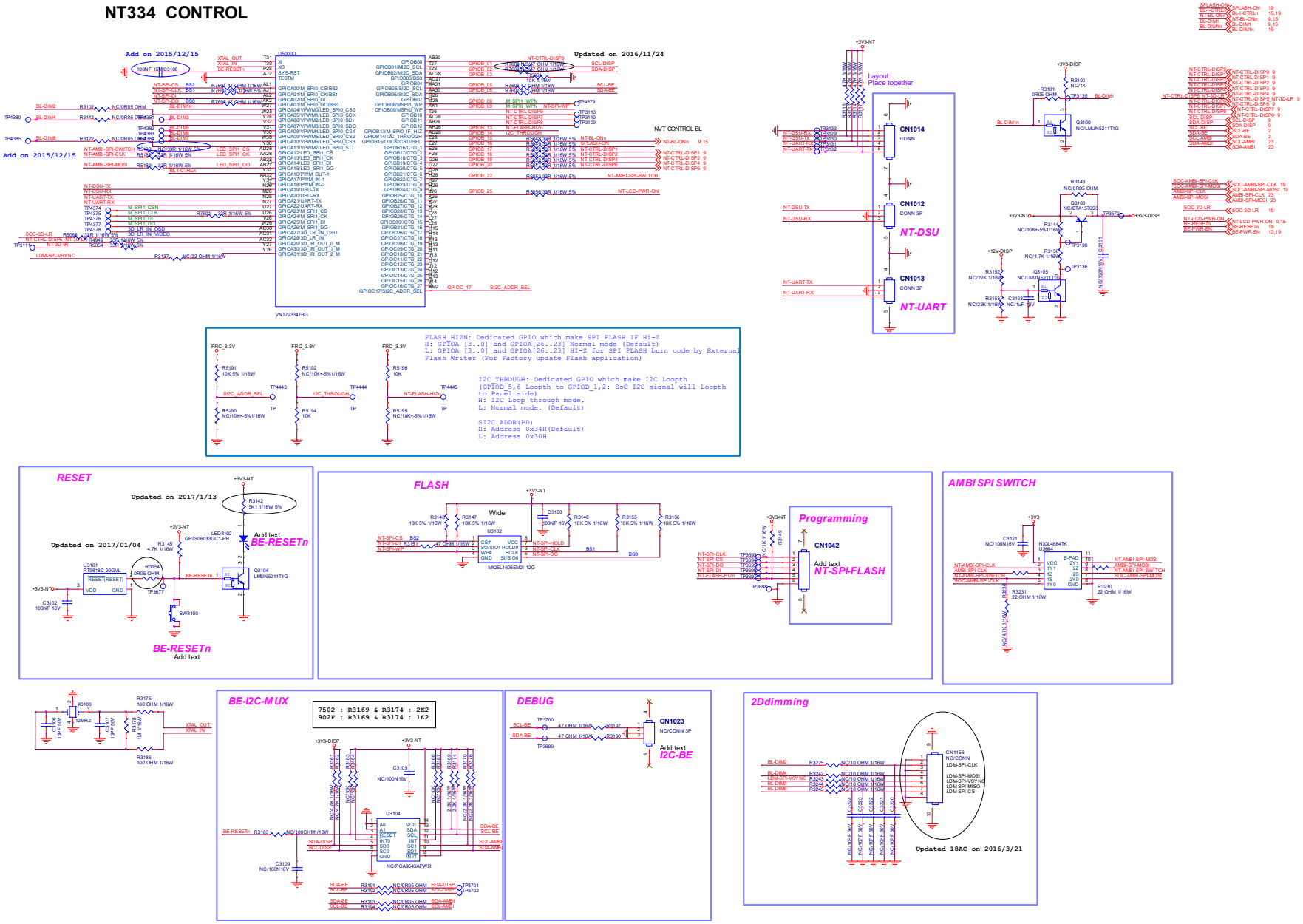
MT5596 Vx1 OUTPUT for Debug





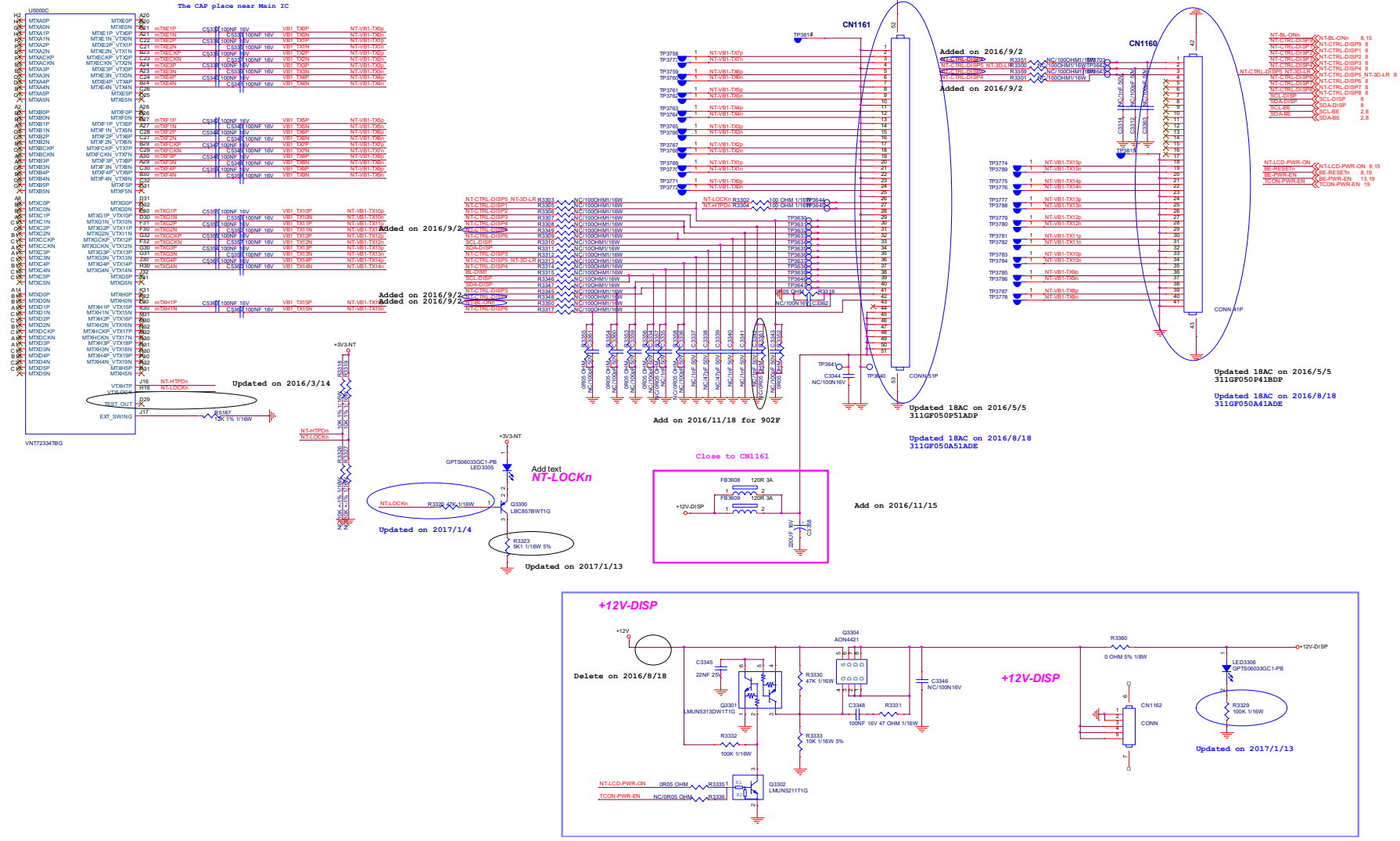
9-7-7 BE-NT7234b-GPIO

NT334 CONTROL



9-7-8 BE-NT7234c-TX-VB1

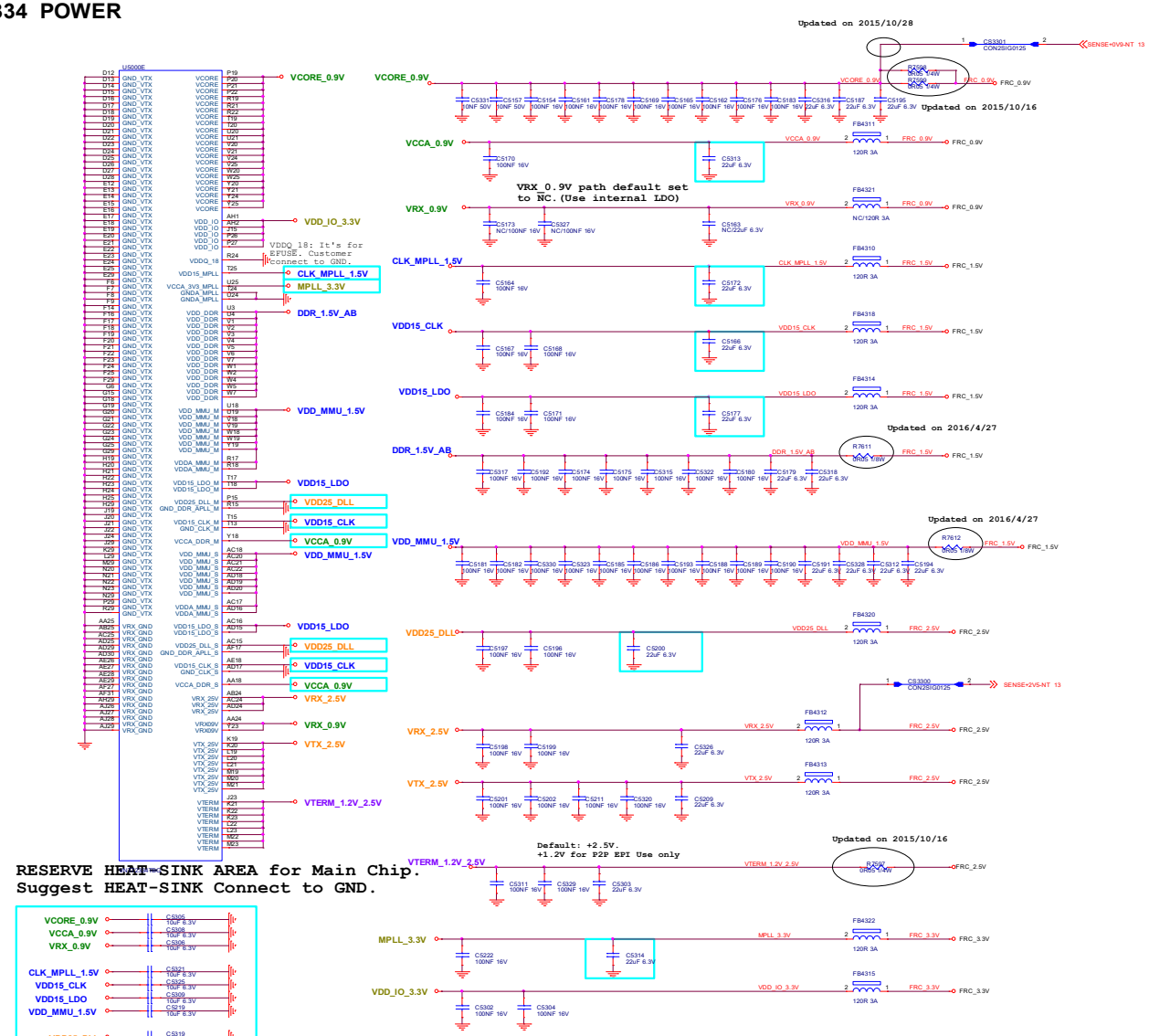
NT334 V-BY-1 OUTPUT



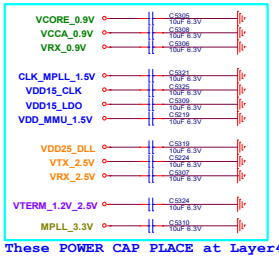
V-BY-1 OUTPUT to Display

9-7-9 BE-NT7234d-POWER

NT334 POWER



RESERVE HEAT-SINK AREA for Main Chip.
Suggest HEAT-SINK Connect to GND.

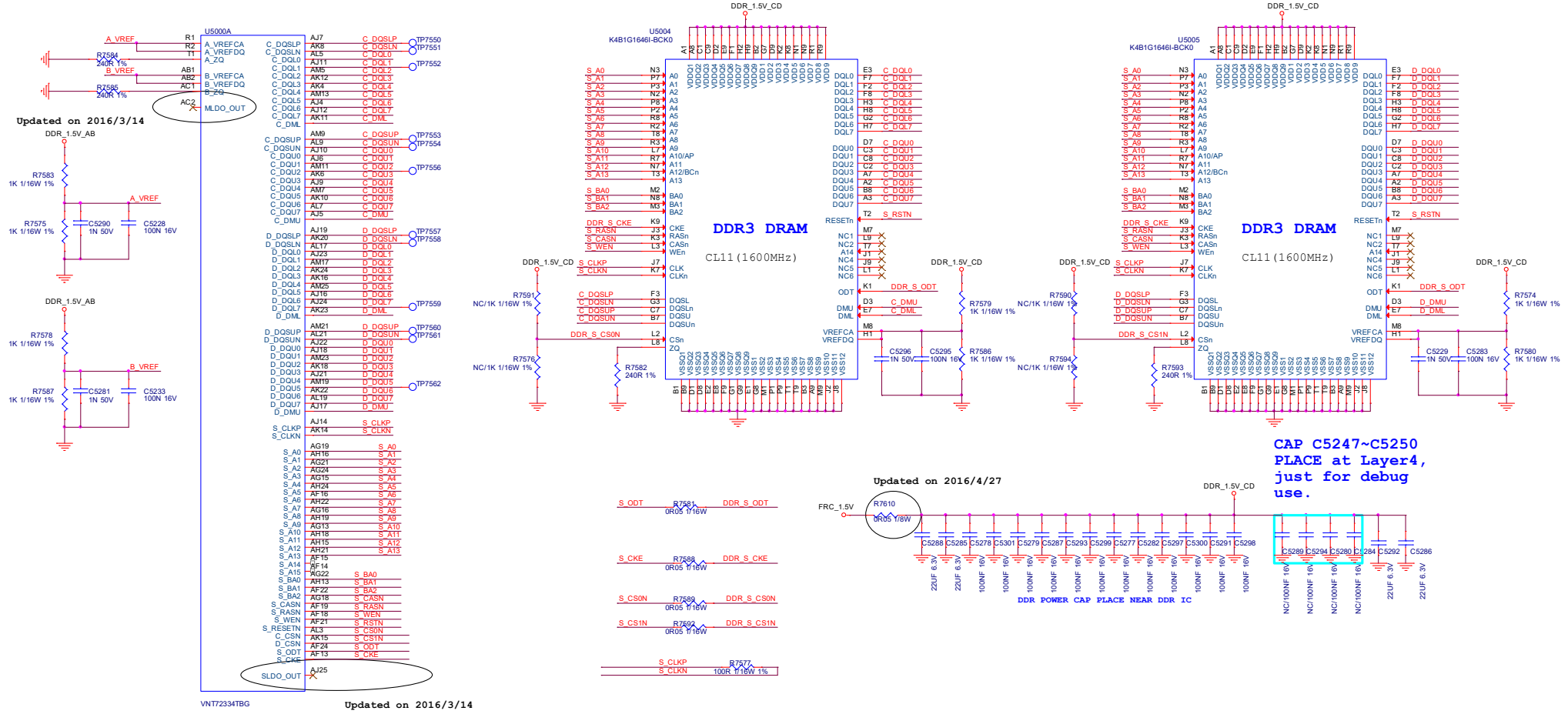


These POWER CAP PLACE at Layer4, just for debug use.

The POWER CAP PLACE NEAR Main IC

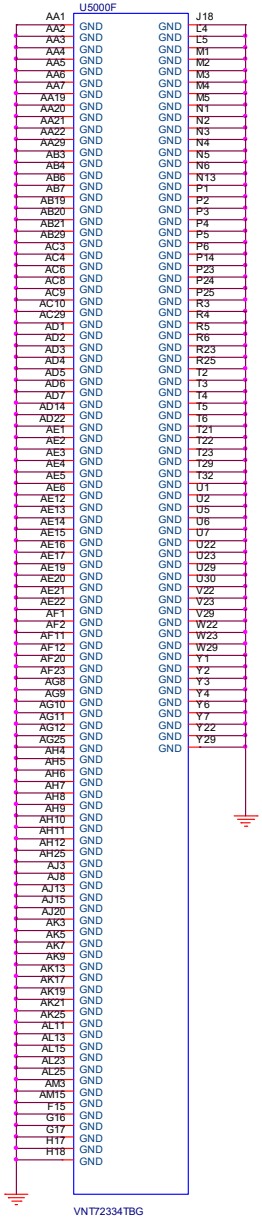
Please add a 22uF cap for the CLK/DLL/MPLL power IF.

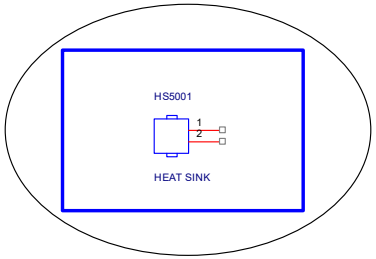
NT334 DDR A-B


U5000A
VNT72334TBG
Updated on 2016/3/14
Updated on 2016/3/14
U5004
K4B1G1646I-BCK0
U5005
K4B1G1646I-BCK0
DDR3 DRAM
CL11(1600MHz)
DDR3 DRAM
CL11(1600MHz)
DDR_1.5V_CD
DDR_1.5V_AB
A_VREF
B_VREF
MLDO_OUT
SLDO_OUT
Updated on 2016/4/27
FRC_1.5V
CAP C5247~C5250
PLACE at Layer4,
just for debug
use.
DDR POWER CAP PLACE NEAR DDR IC

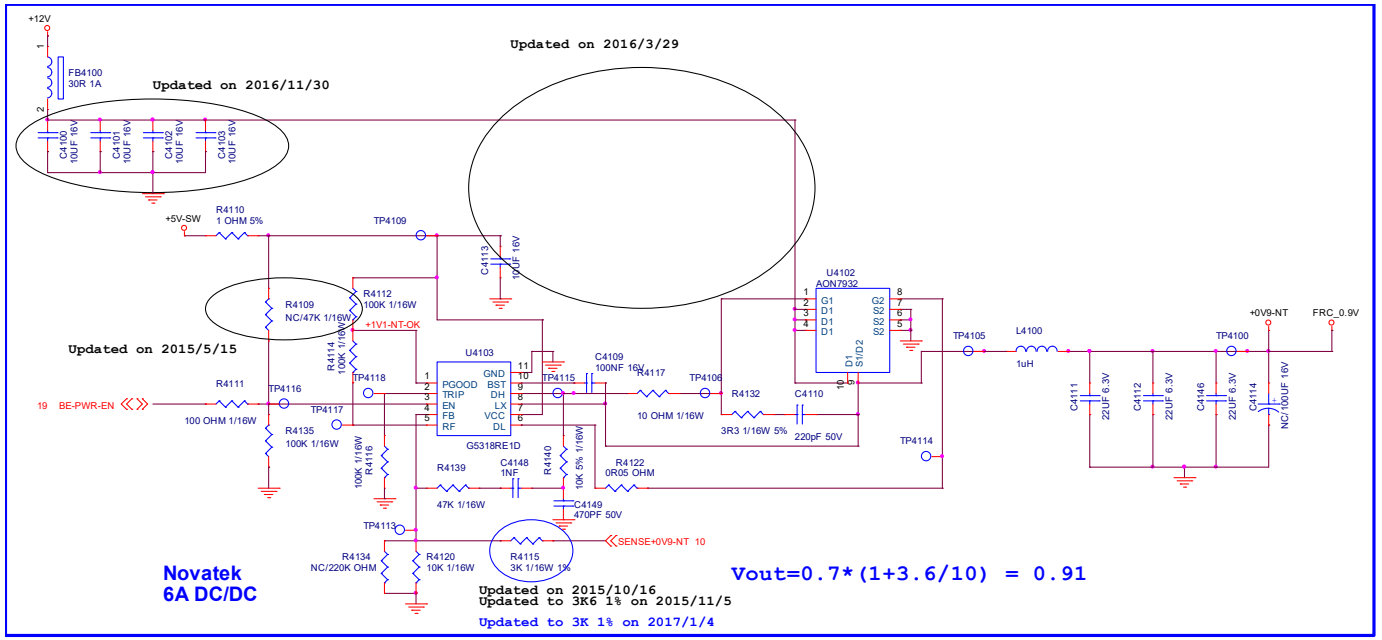
9-7-11 BE-NT7234f- GROUND

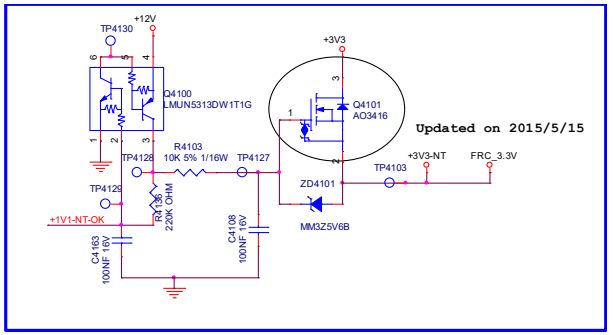
NT334 GROUND

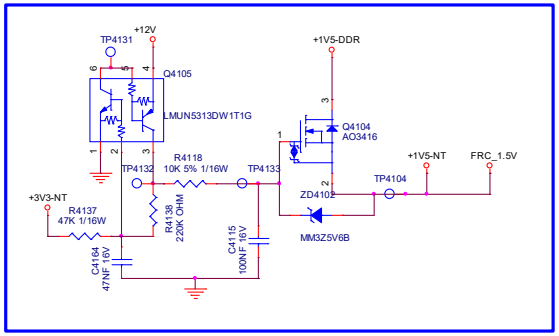


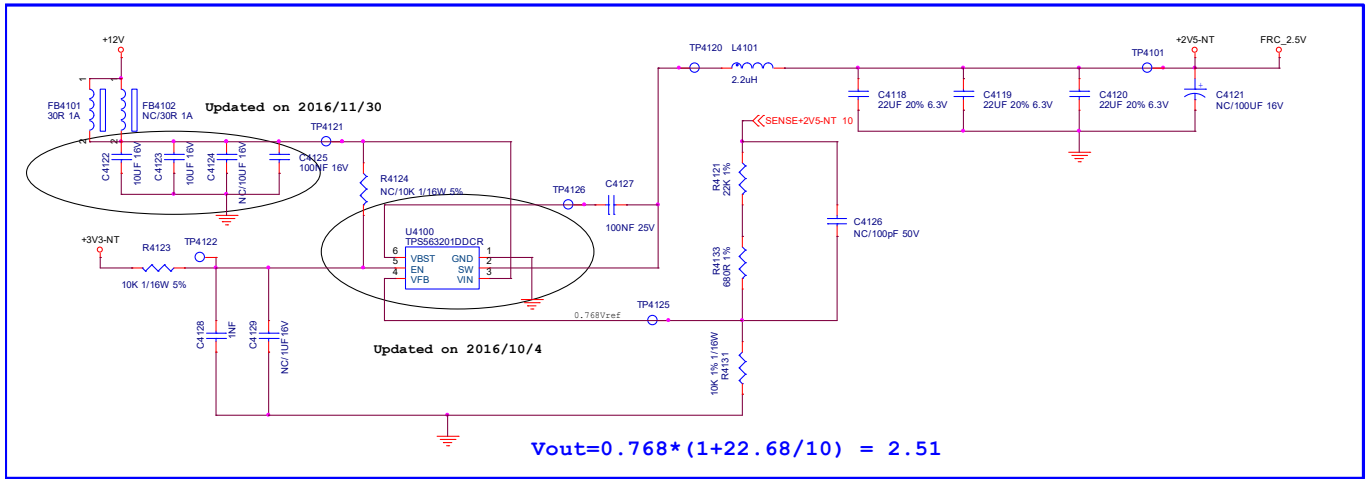


9-7-12 DCDC-Novatek-POWER

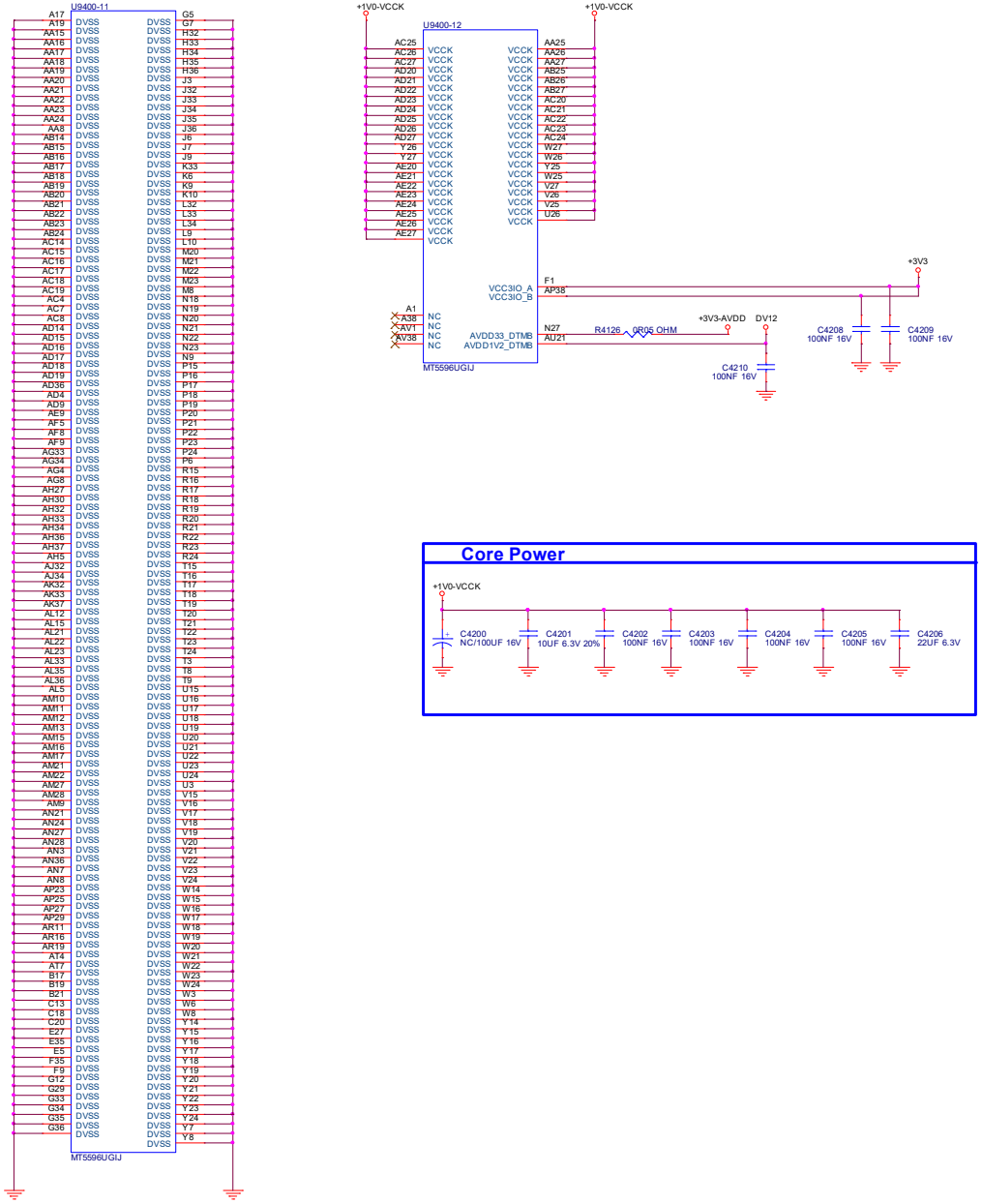




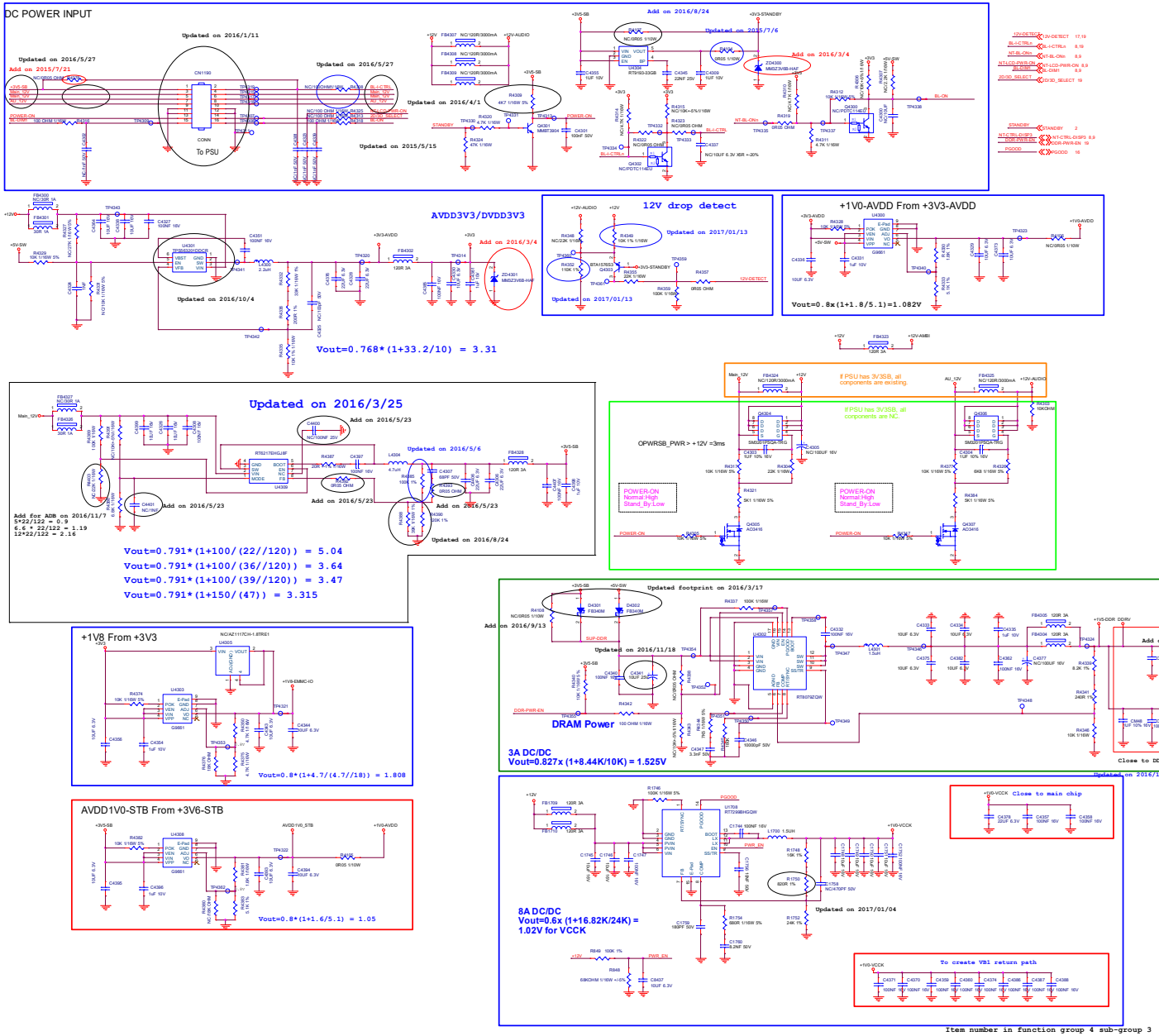




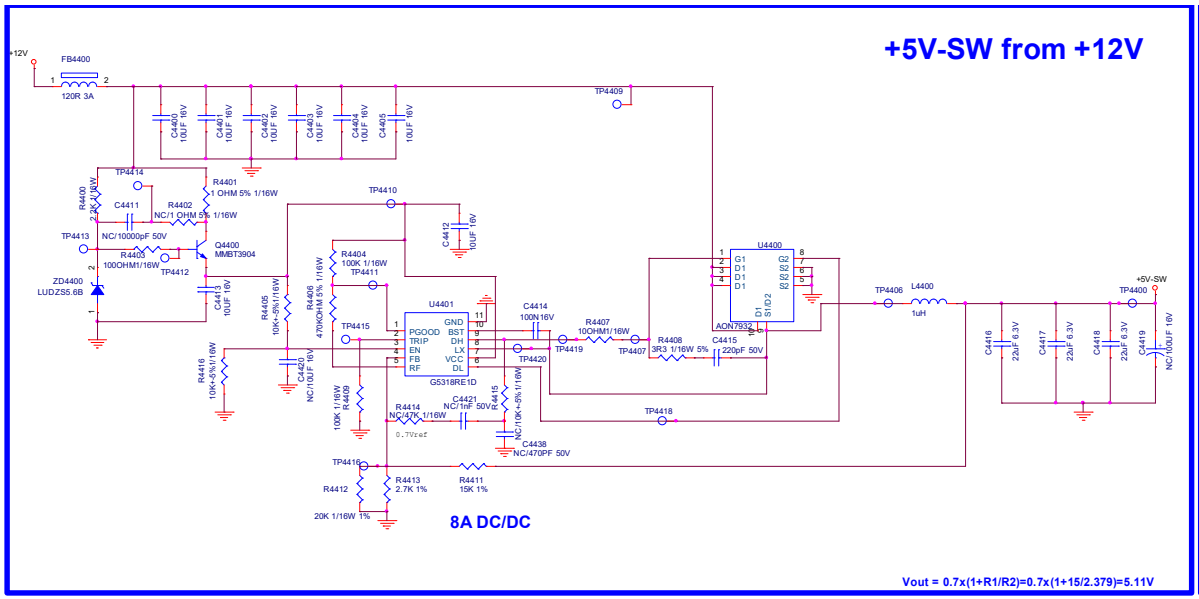
9-7-13 DCDC-SOC-VCCK-DVSS

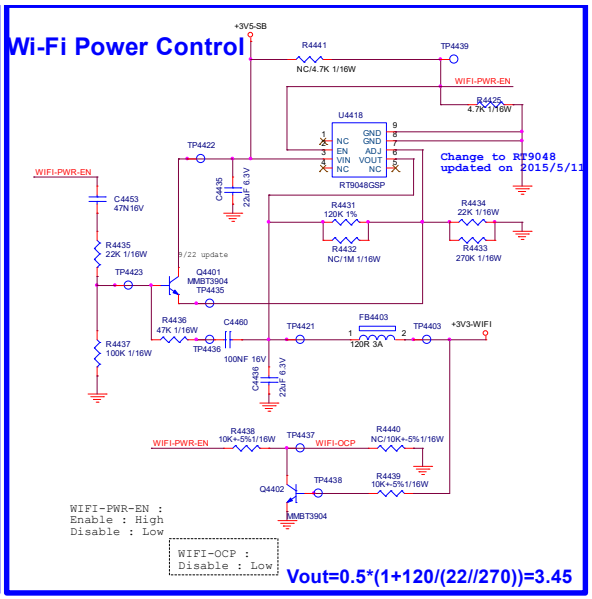


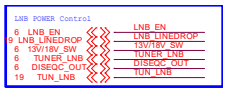
9-7-14 DCDC-SYSTEM-POWER1

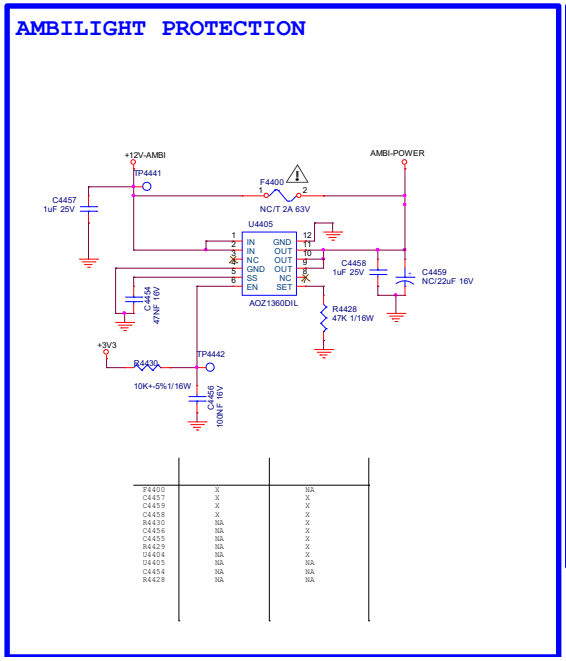


9-7-15 VCCK & DVSS

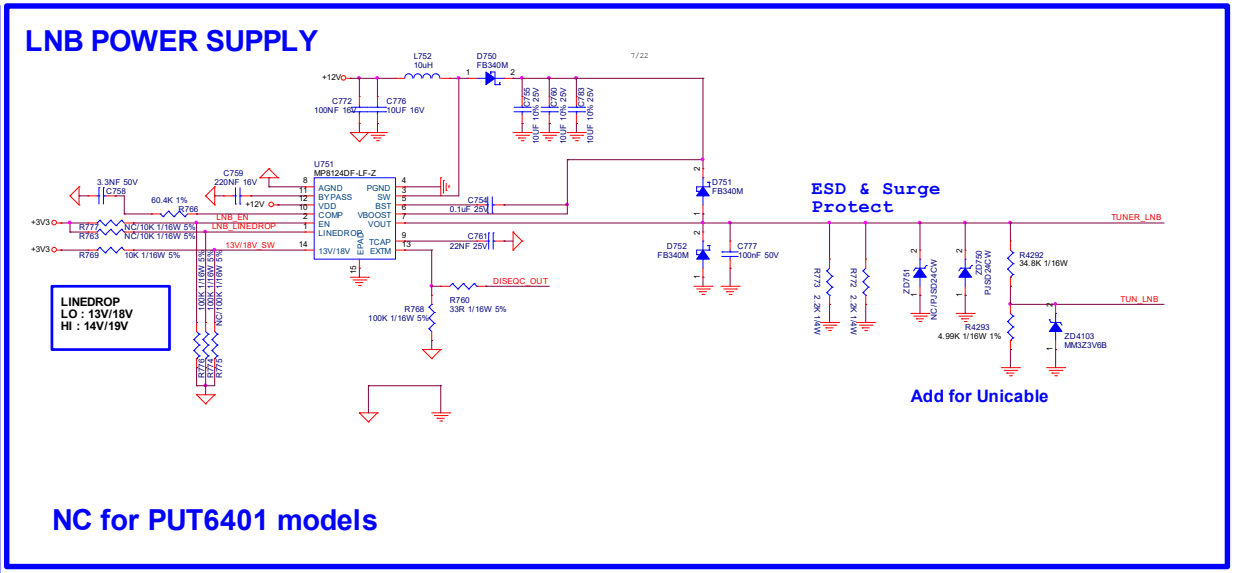




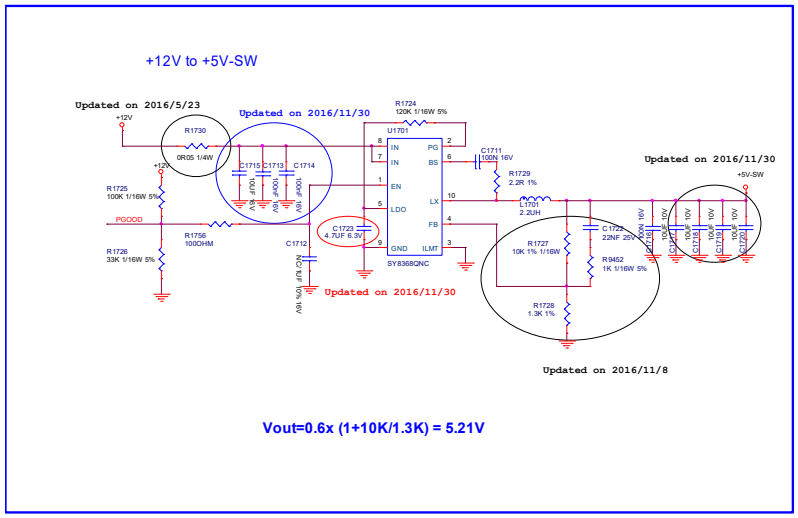


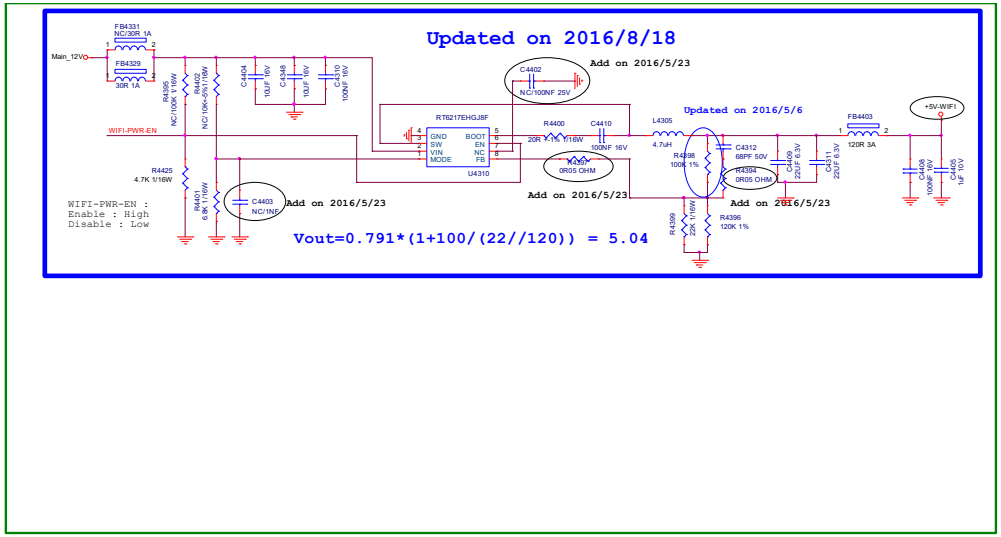


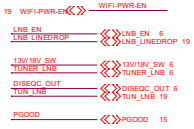
F4400	X	NA
C4457	X	X
C4459	X	X
C4458	X	X
R4430	NA	X
C4456	NA	X
C4455	NA	X
R4429	NA	X
U4404	NA	X
U4405	NA	NA
C4454	NA	NA
R4428	NA	NA

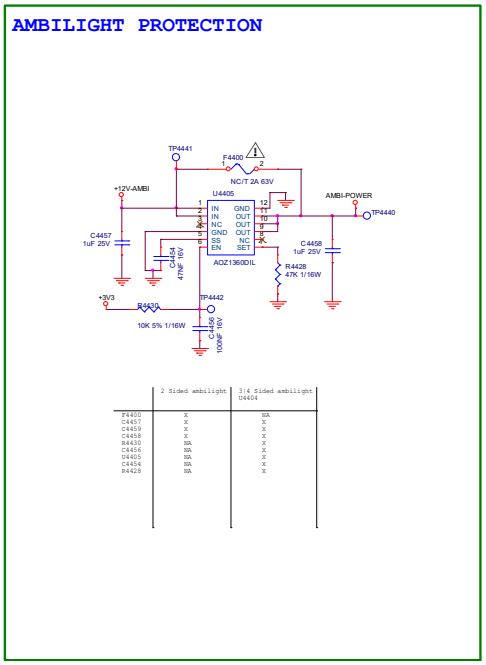


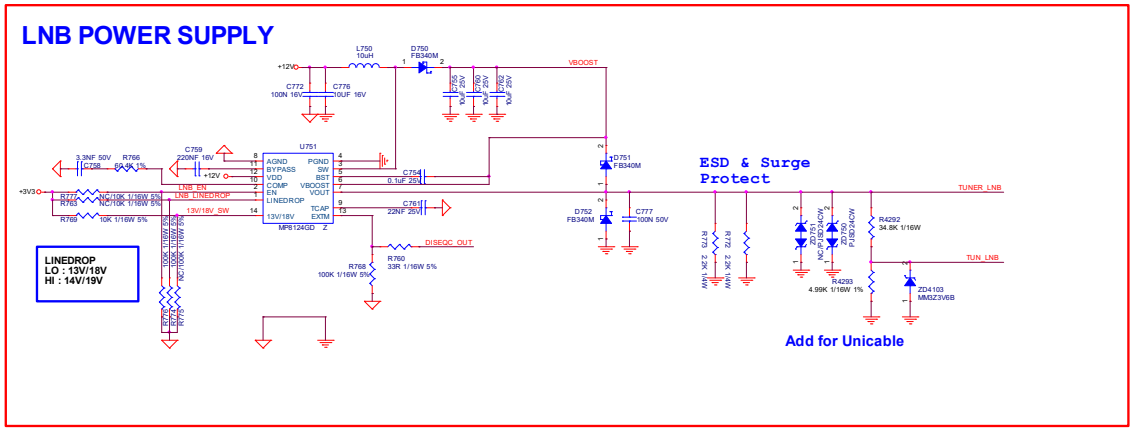
9-7-16 DCDC-SYSTEM-POWER2



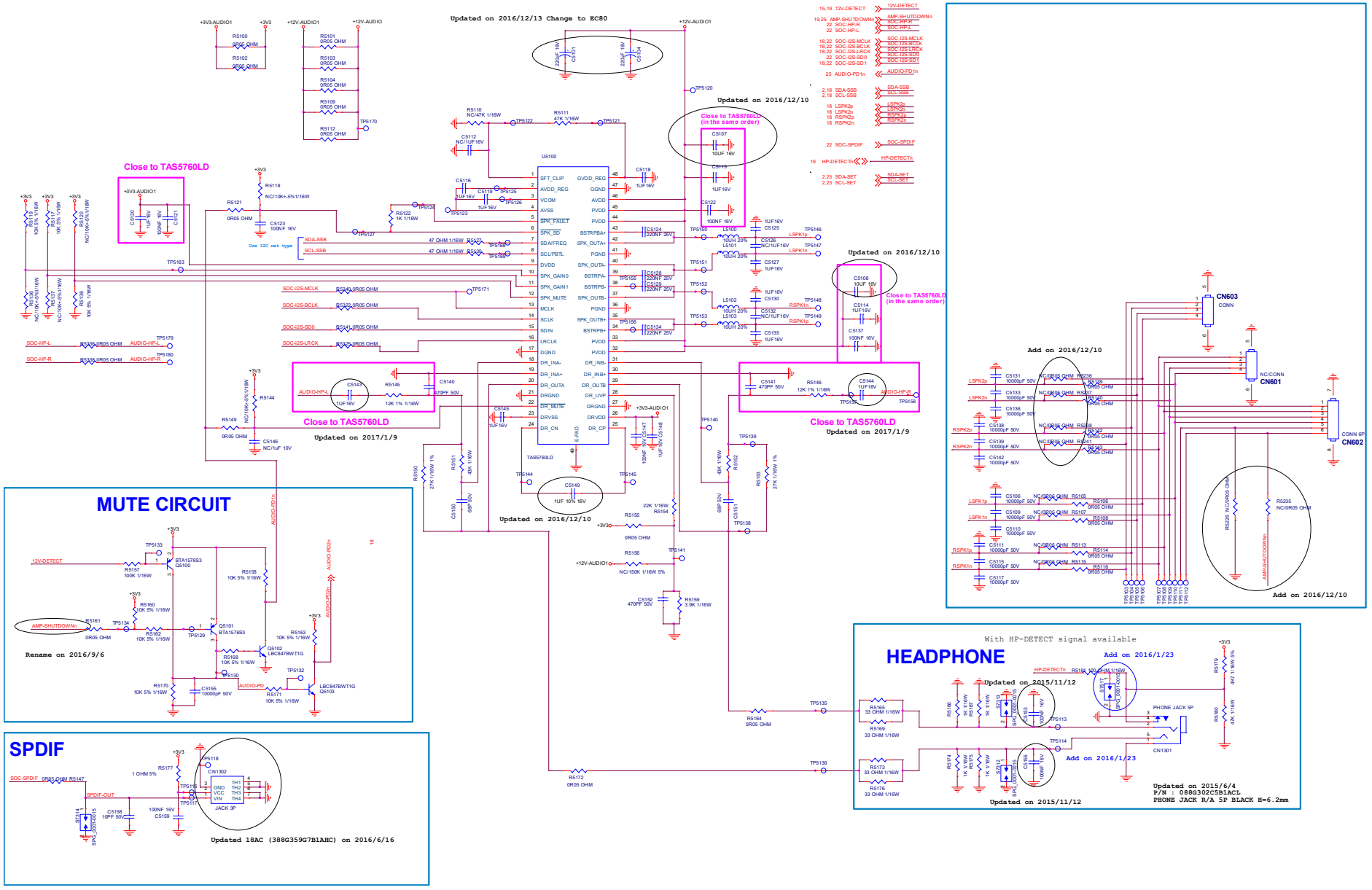




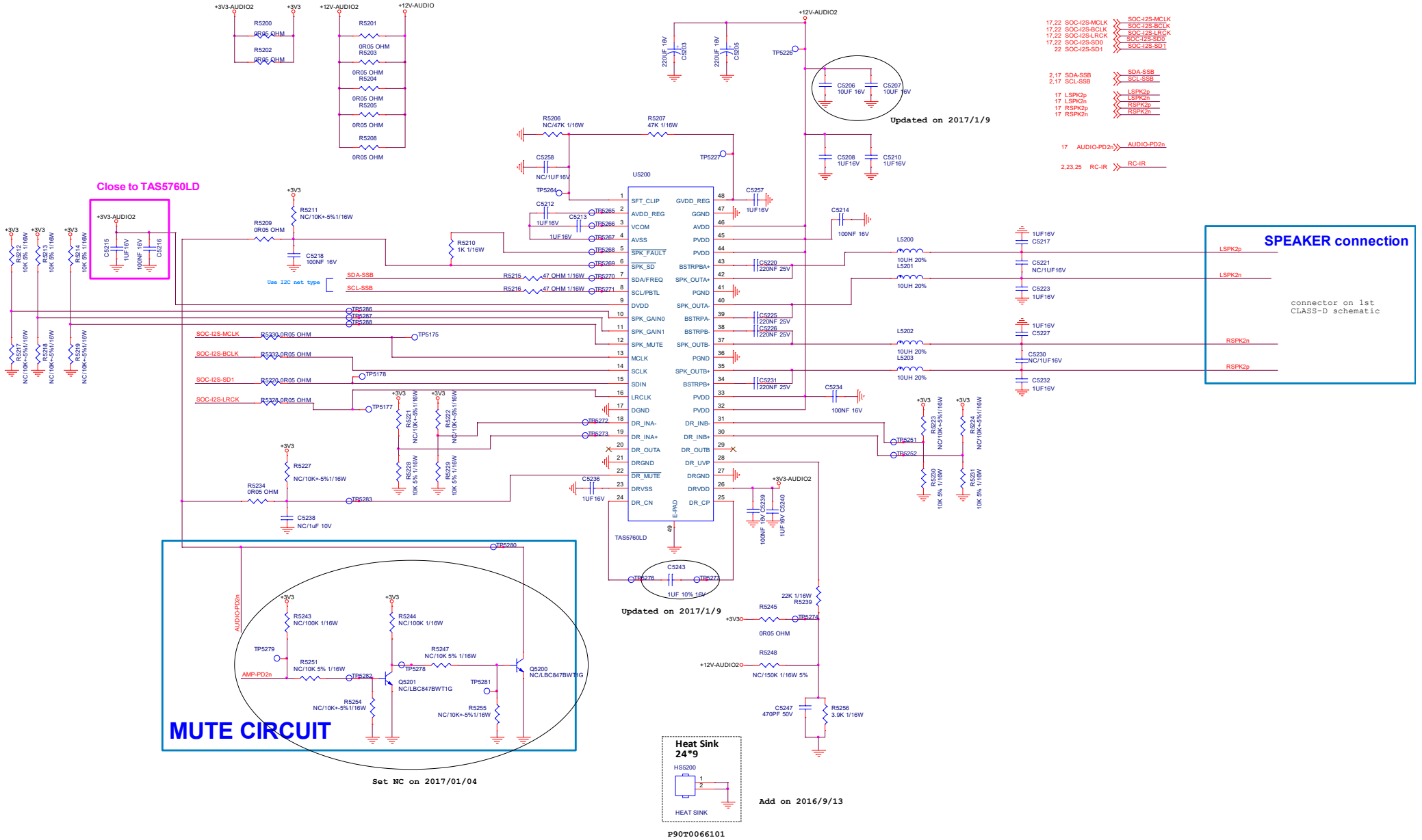




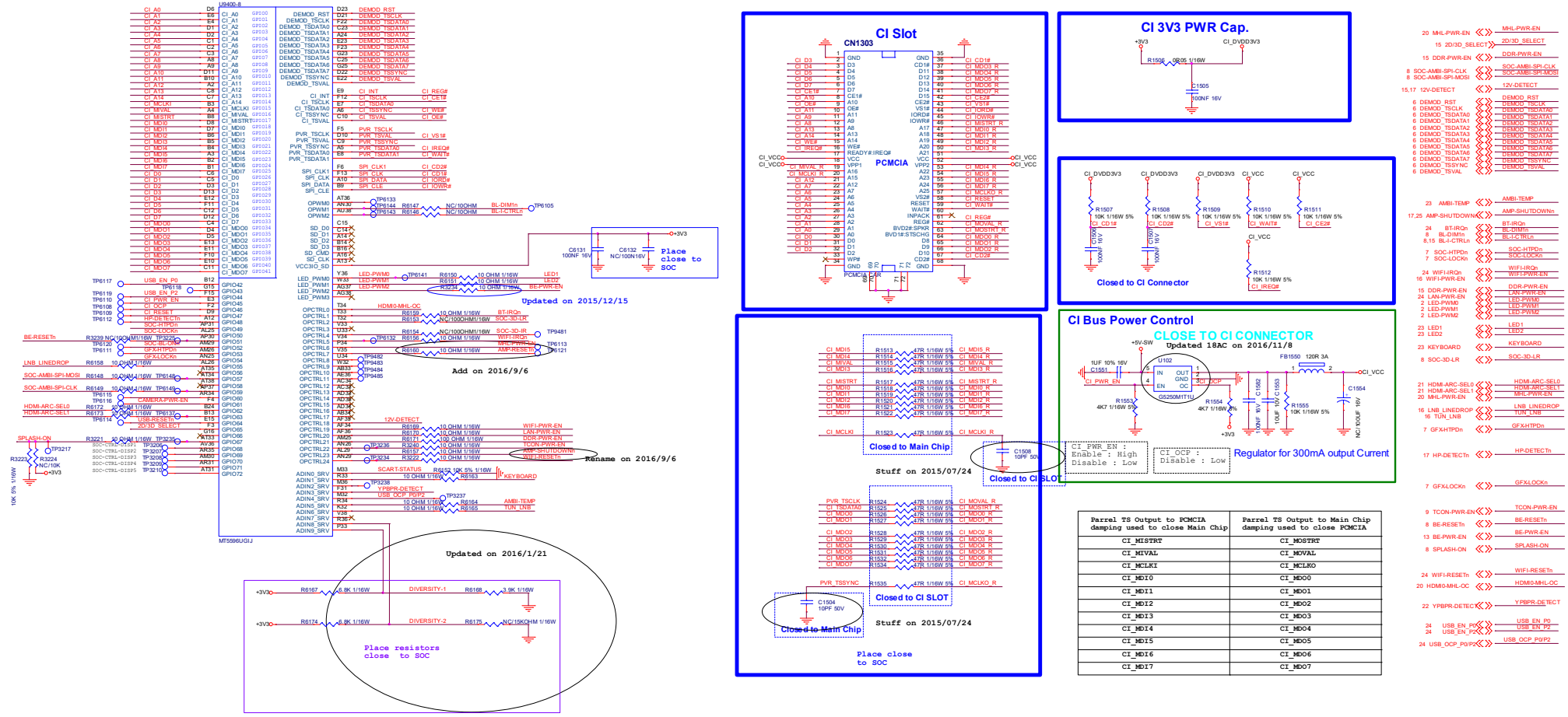
9-7-17 AUDIO-1st-CLASS-D-AMP



9-7-18 AUDIO-2nd-CLASS-D-AMP

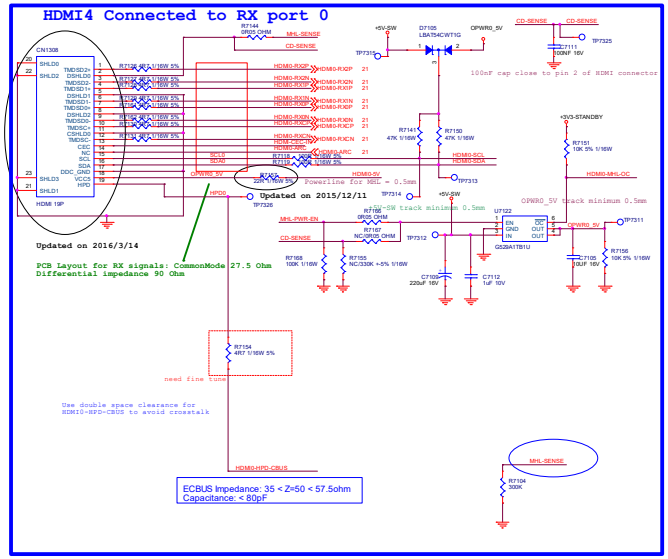


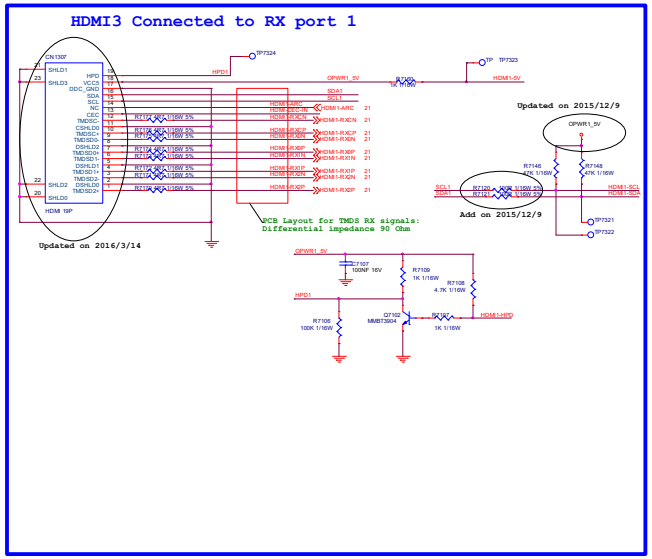
9-7-19 PCMCIA

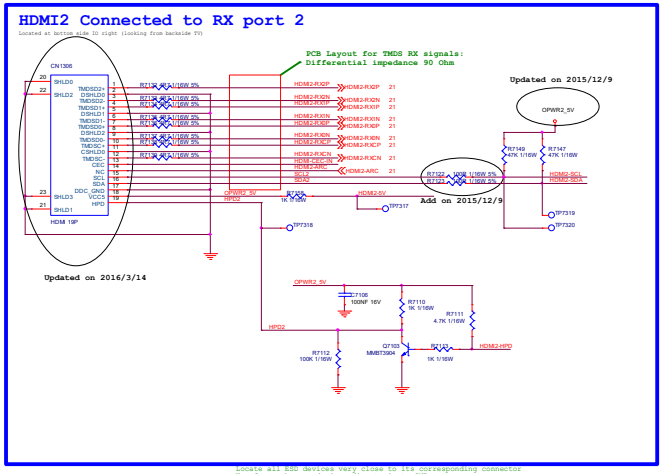


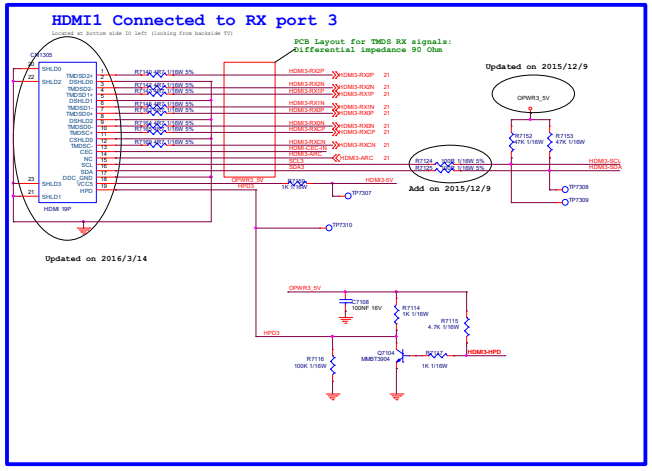
Parrel TS Output to PCMCIA damping used to close Main Chip	Parrel TS Output to Main Chip damping used to close PCMCIA
CI_MISTRT	CI_MOSTRT
CI_MIVAL	CI_MOVAL
CI_MCLKI	CI_MCLKO
CI_MDI0	CI_MDO0
CI_MDI1	CI_MDO1
CI_MDI2	CI_MDO2
CI_MDI3	CI_MDO3
CI_MDI4	CI_MDO4
CI_MDI5	CI_MDO5
CI_MDI6	CI_MDO6
CI_MDI7	CI_MDO7

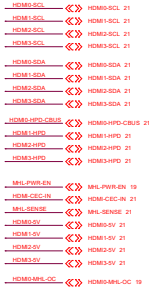
9-7-20 HDMI-INPUTS

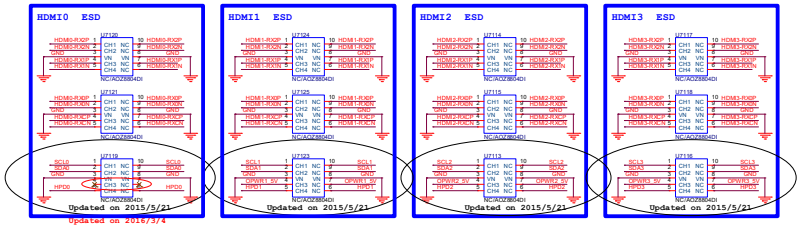




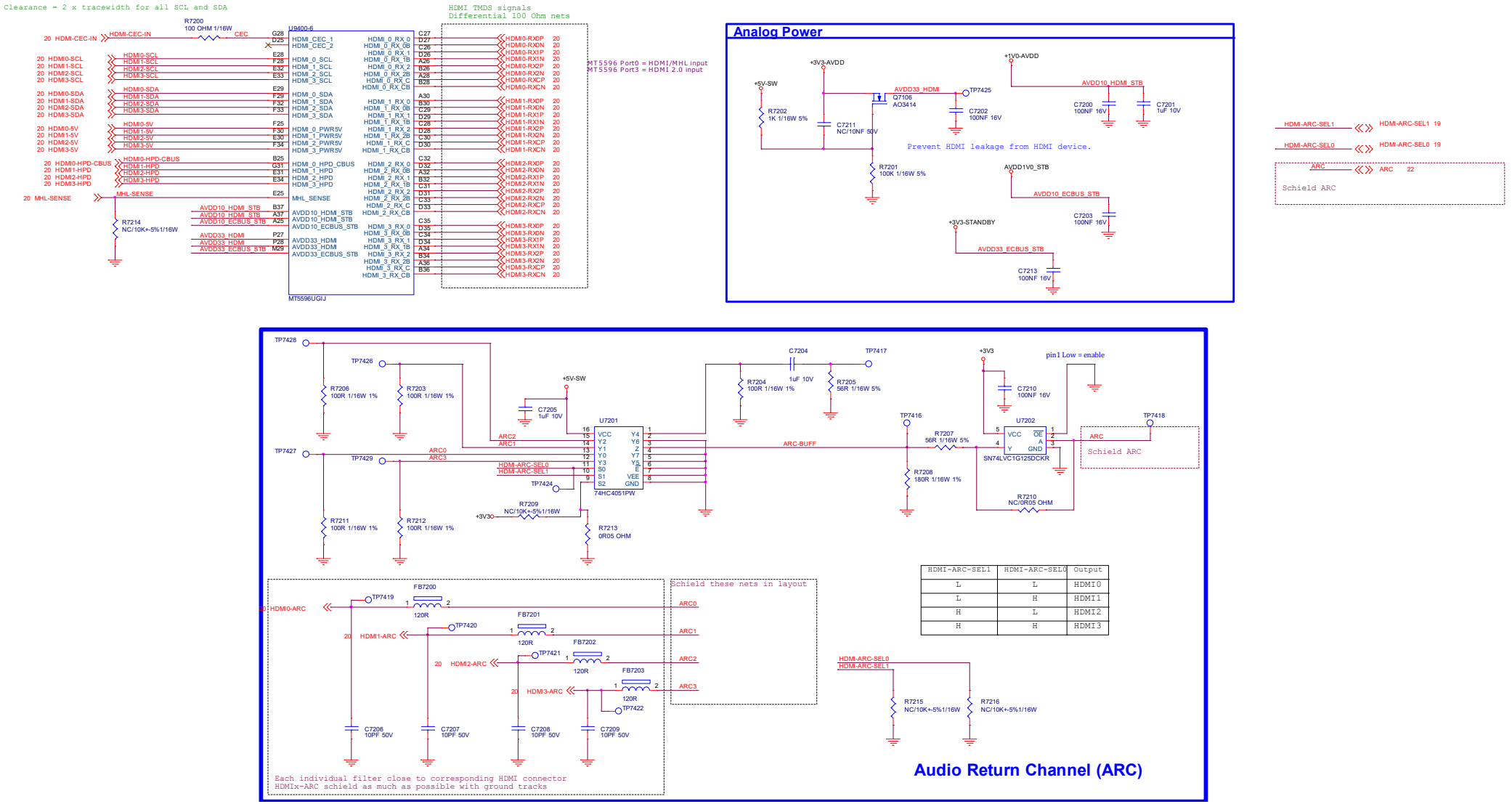




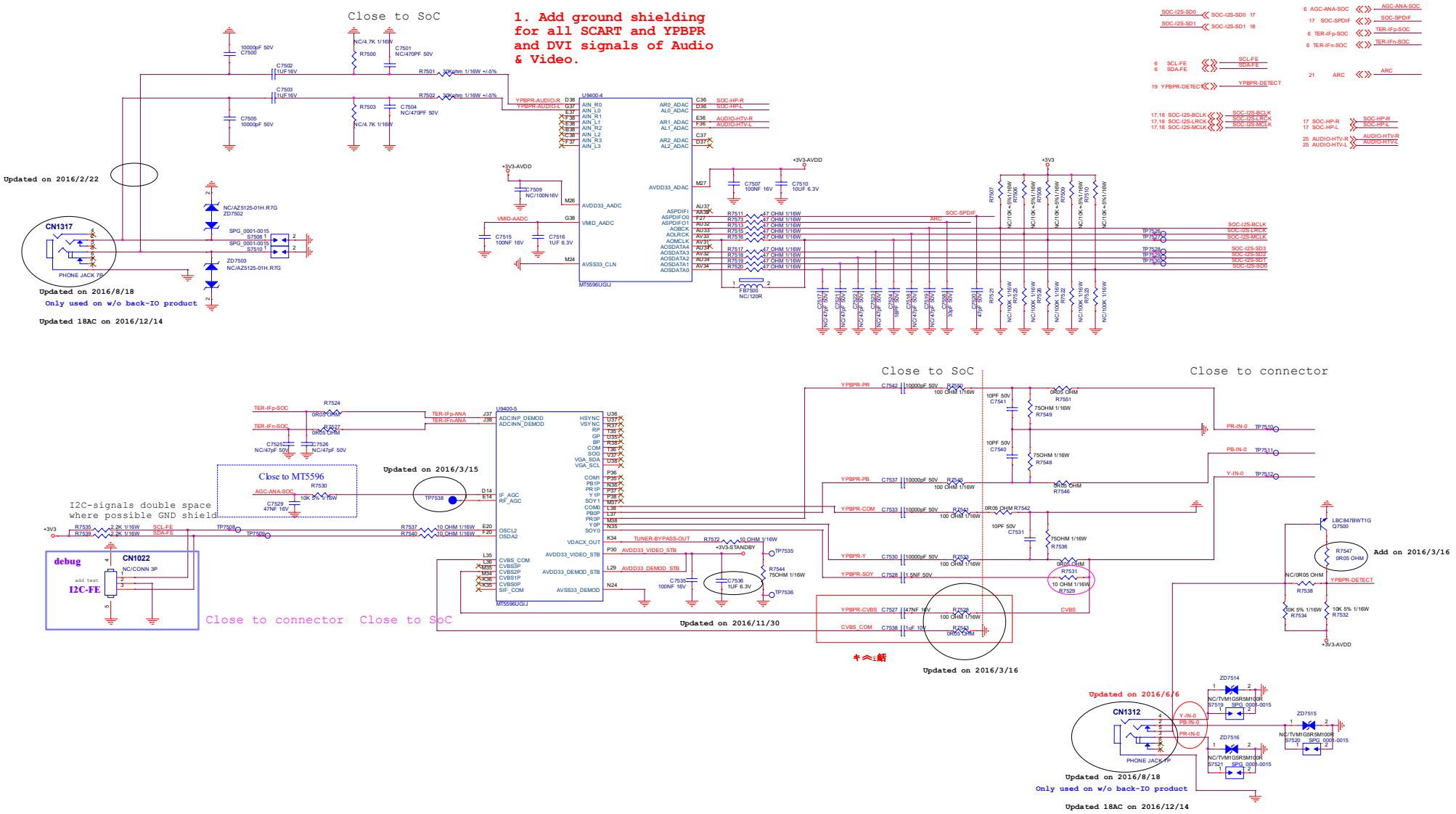




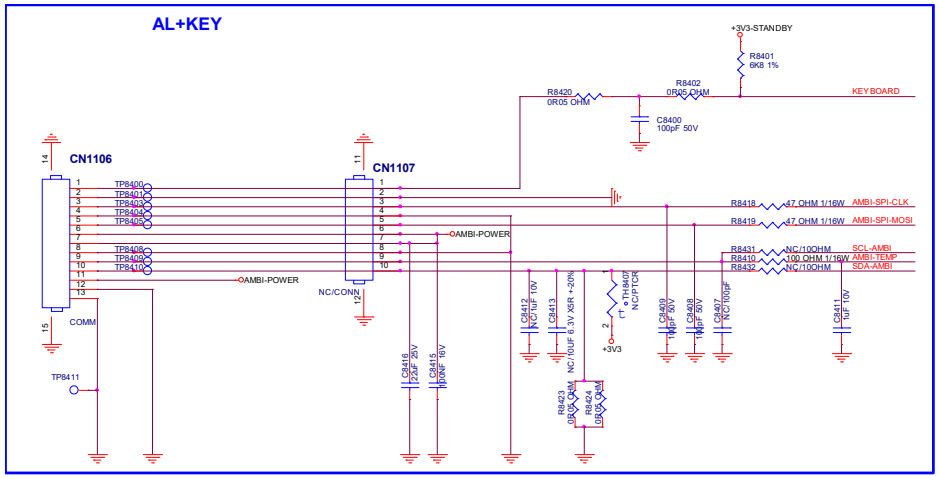
9-7-21 HDMI-SOC-ARC

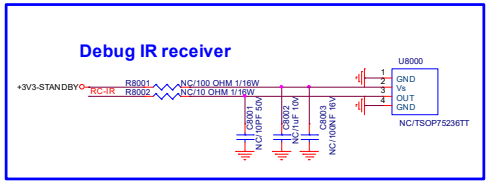


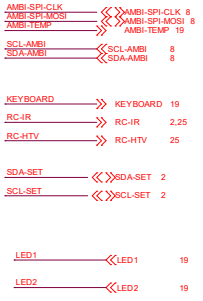
9-7-22 SCART-YPbPr-CVBS

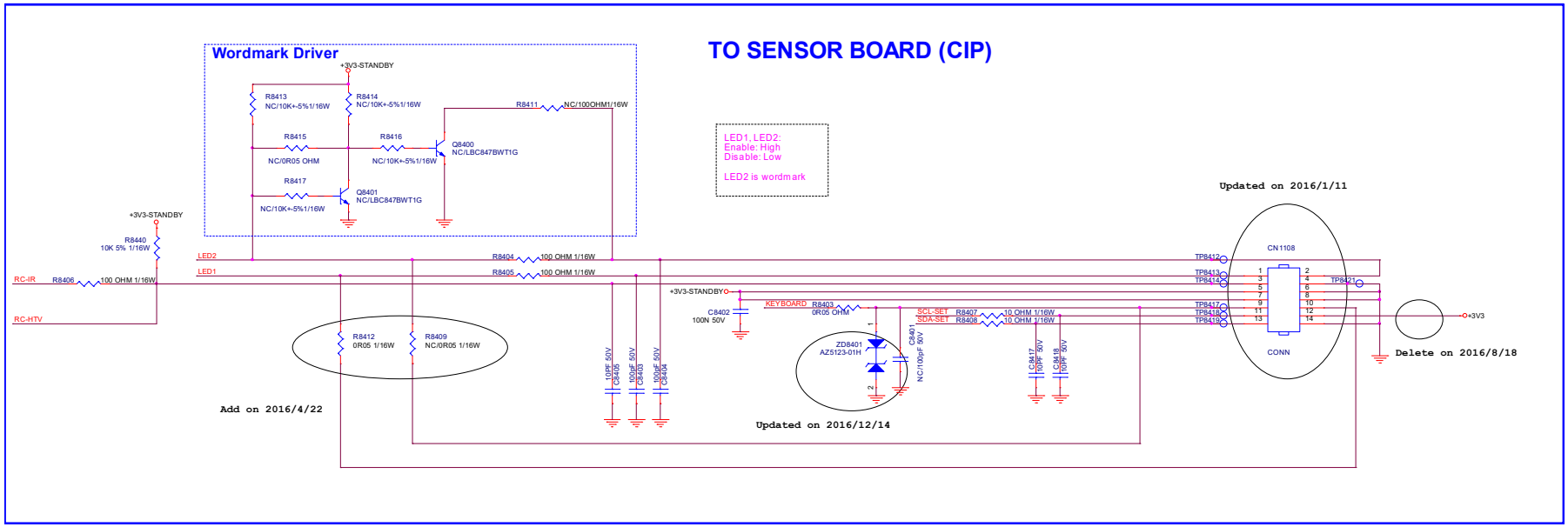


9-7-23 CTRL-CONNECTORS

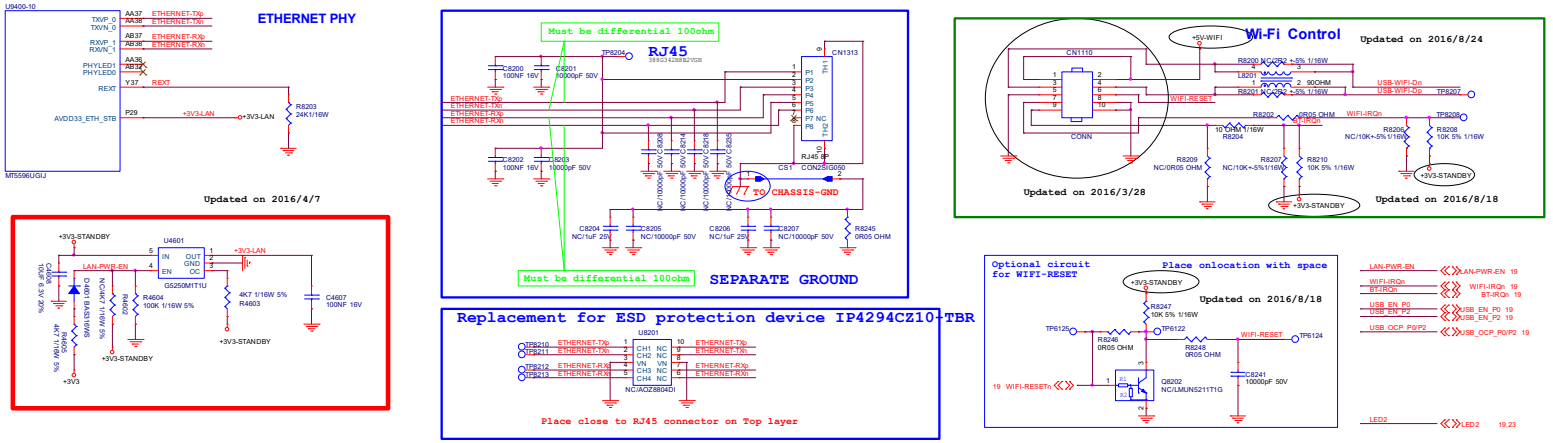




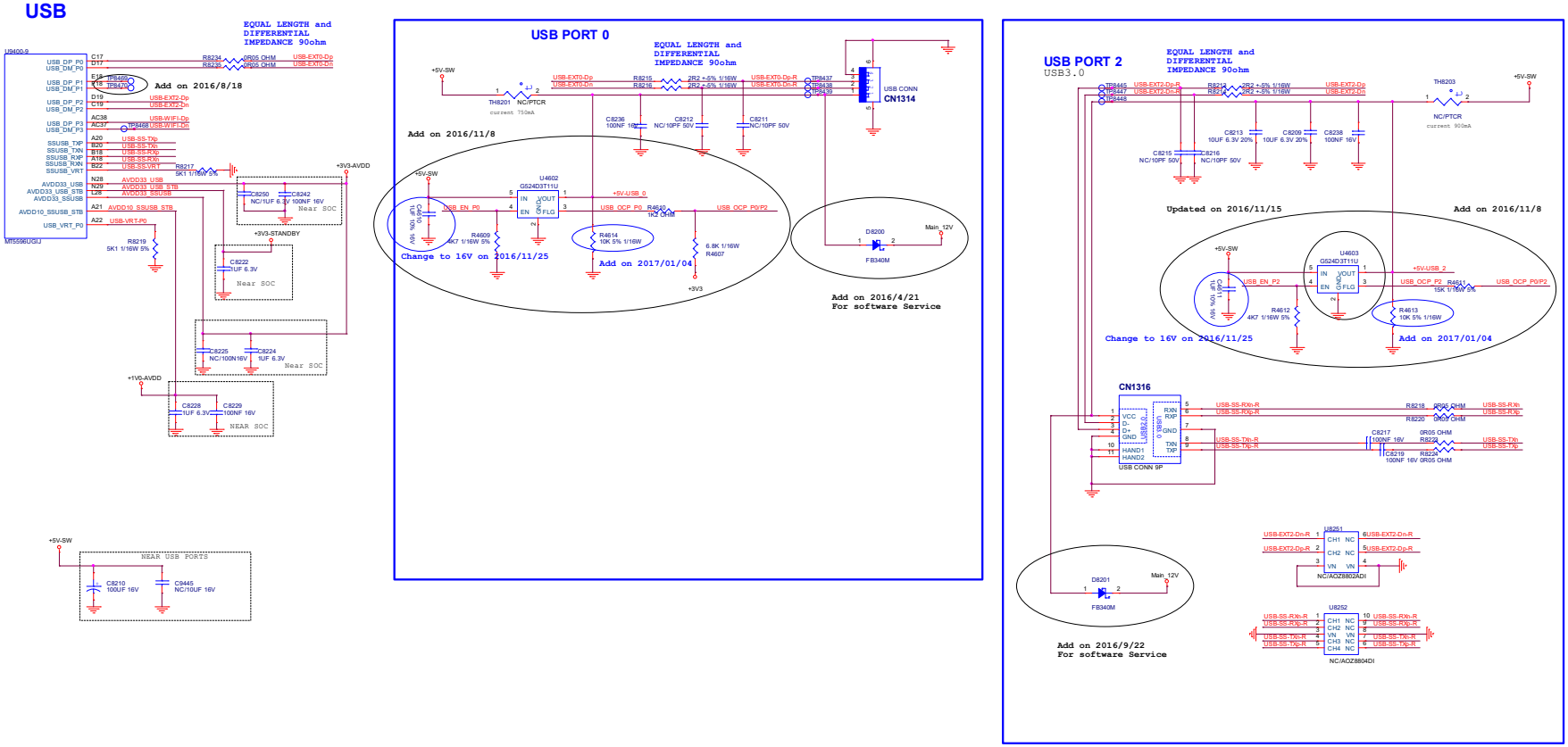




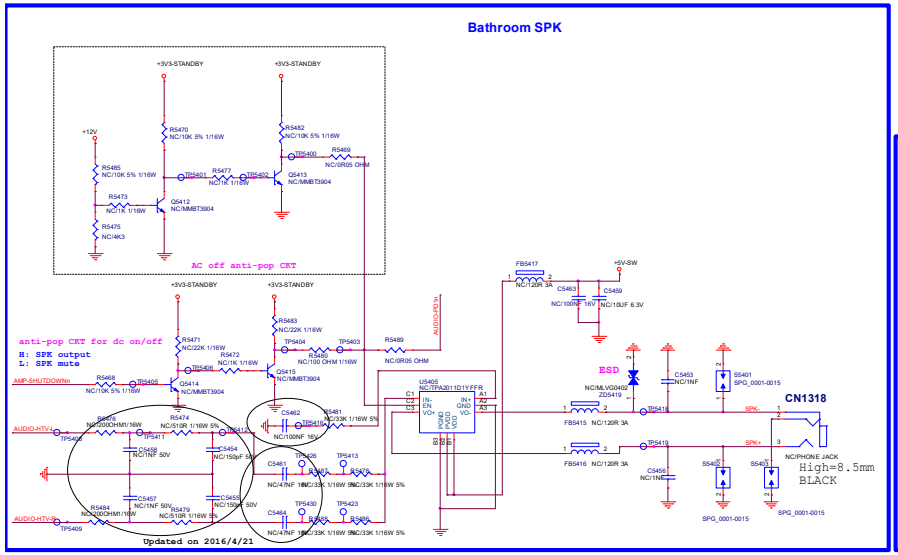
9-7-24 CTRL-ETHERNET-PHY

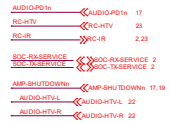


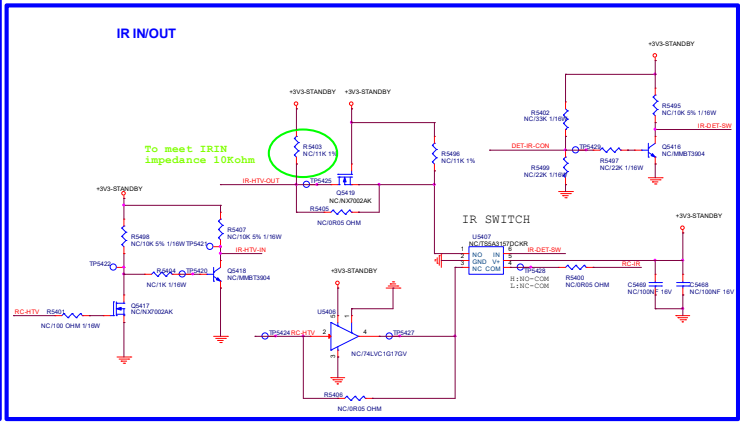
USB

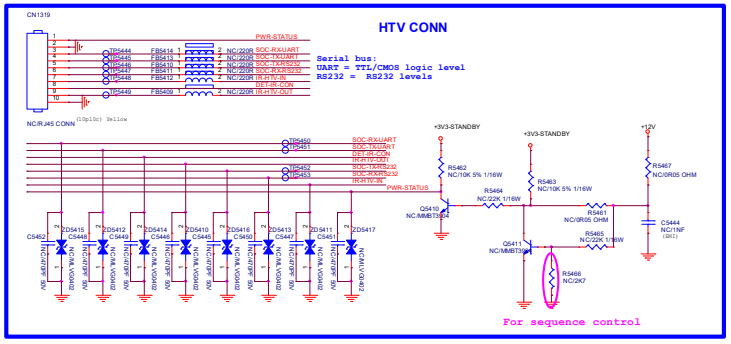


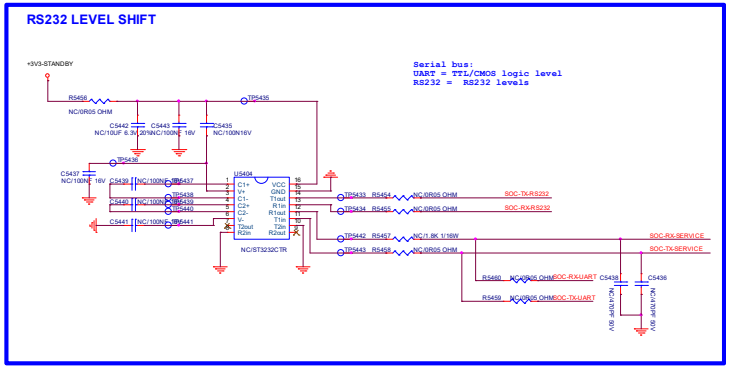
9-7-25 HTV

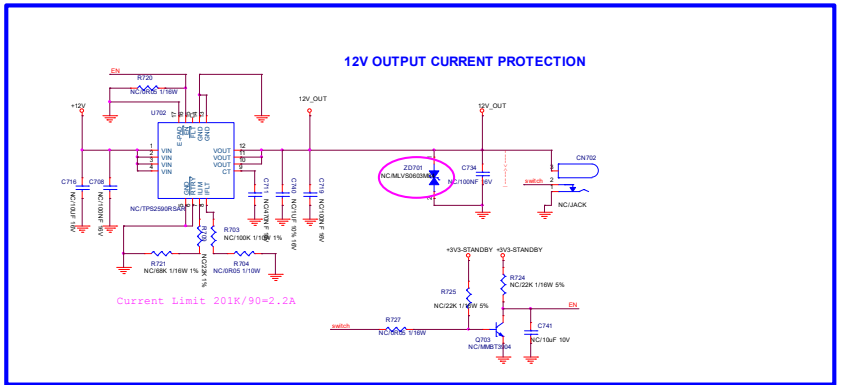

Bathroom SPK
AC off anti-pop CKT
anti-pop CKT for dc on/off
H: SPK output
L: SPK mute
ESD
CN1318
NC/PHONE JACK
High=8.5mm
BLACK
Updated on 2016/4/21


AUDIO-PD1n
RC-HTV
RC-IR
SOC-RX-SERVICE
SOC-TX-SERVICE
AMP-SHUTDOWNn
AUDIO-HTV-L
AUDIO-HTV-R


IR IN/OUT
To meet IRIN
impedance 10Kohm
IR SWITCH

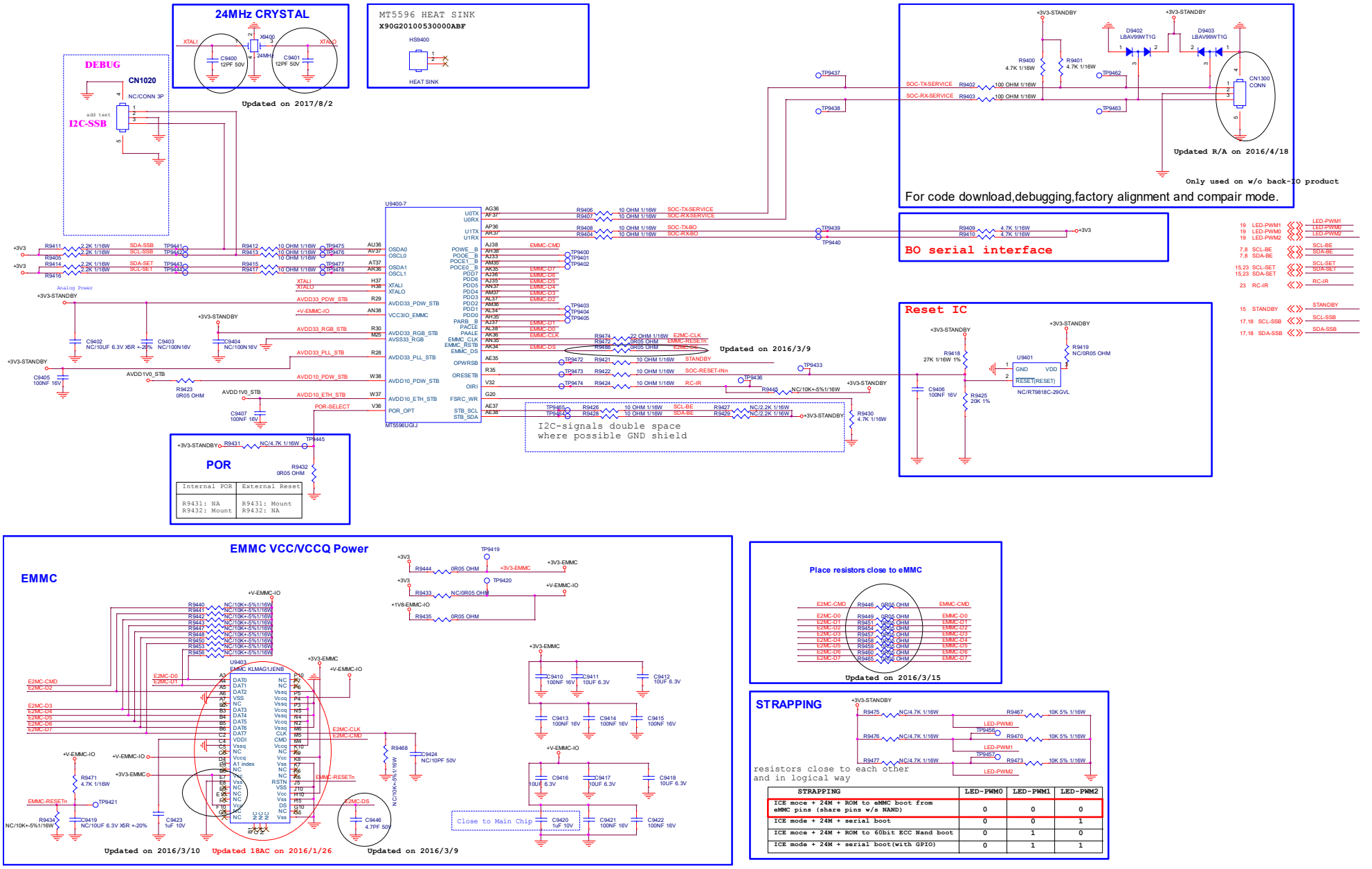

HTV CONN
Serial bus:
UART = TTL/CMOS logic level
RS232 = RS232 levels
For sequence control


RS232 LEVEL SHIFT
Serial bus:
UART = TTL/CMOS logic level
RS232 = RS232 levels

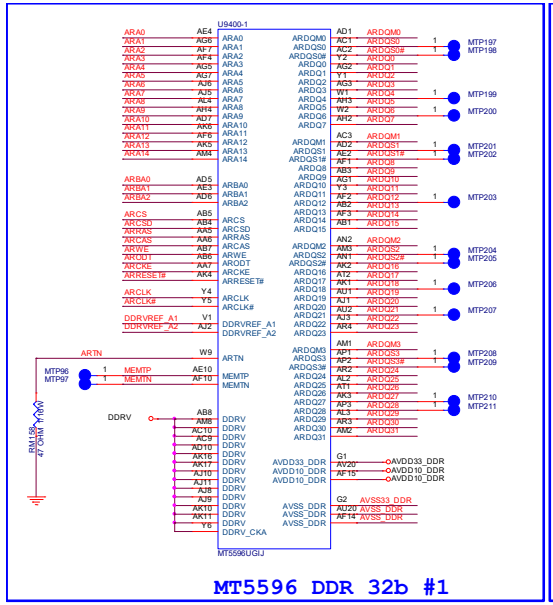

12V OUTPUT CURRENT PROTECTION
Current Limit 201K/90=2.2A

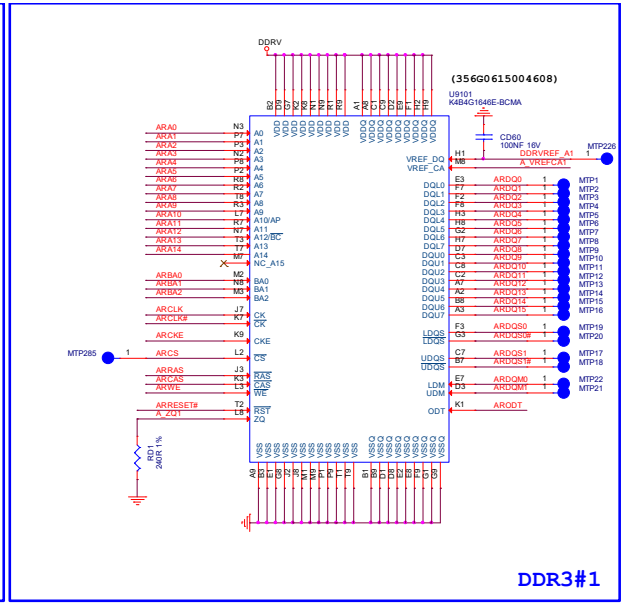
9.8 B 715G9058 SSB (For OLED973 Series)

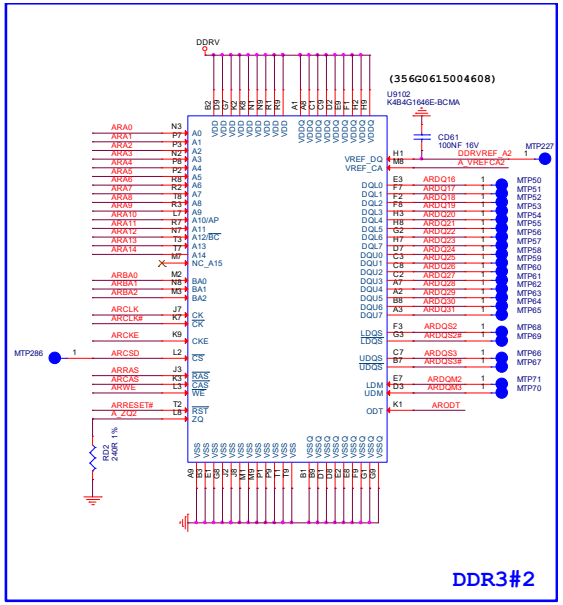
9-8-1 SOC-EMMC

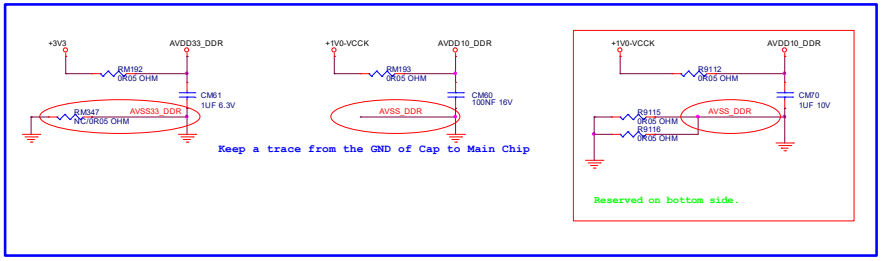


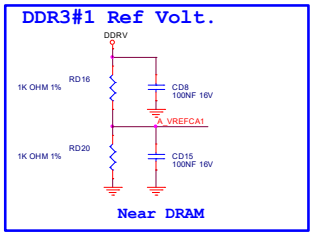
9-8-2 SOC-DDR3-1-2

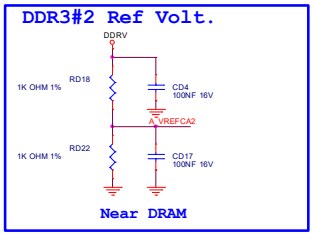


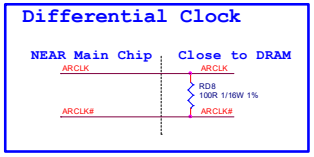


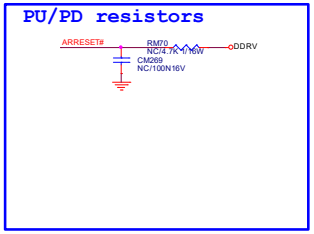


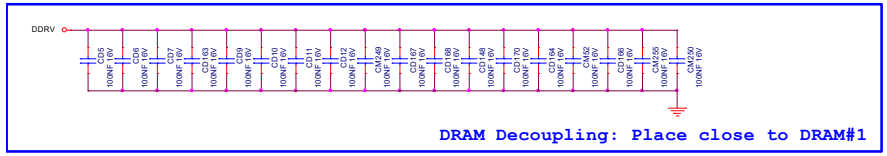


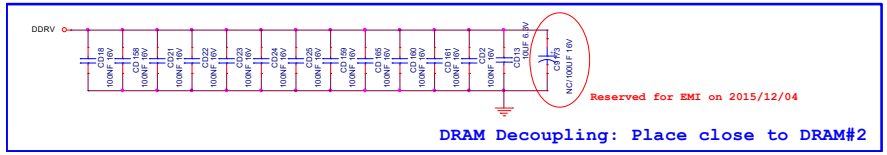




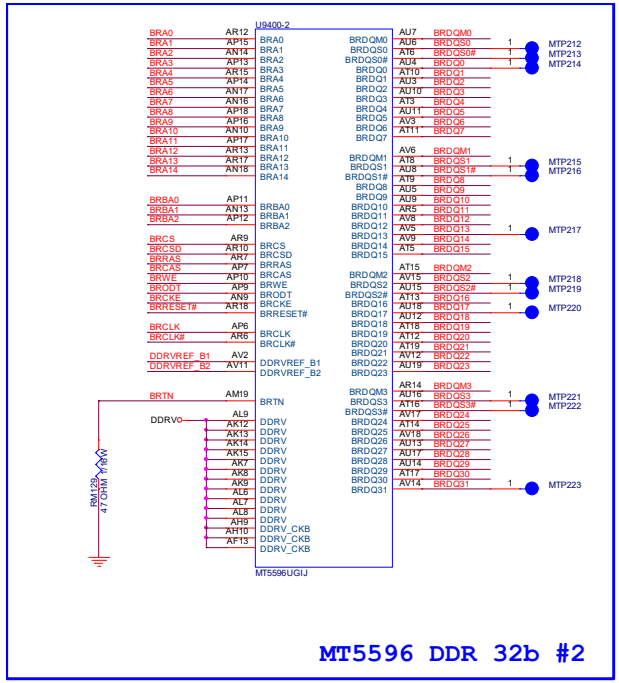


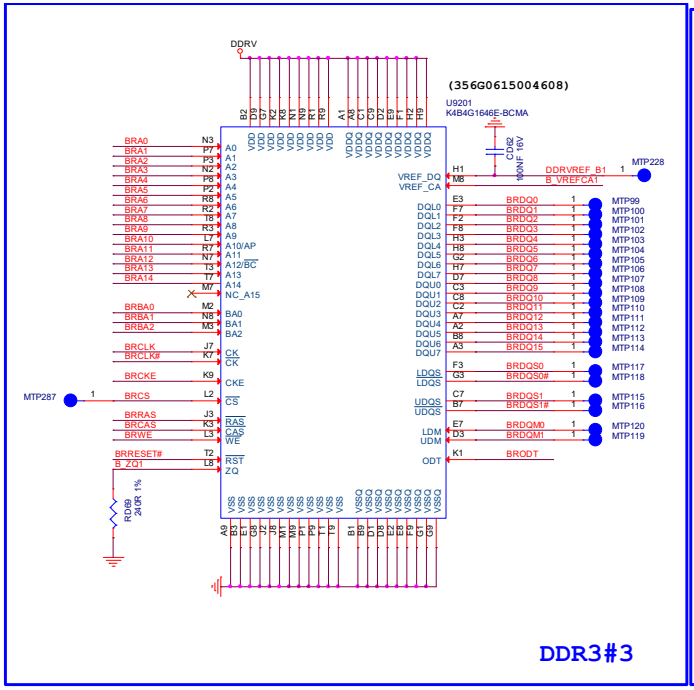


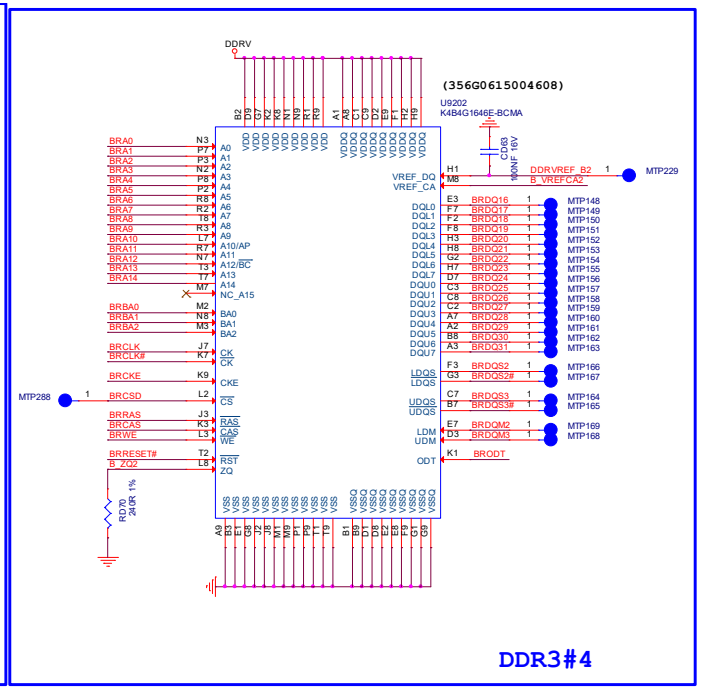


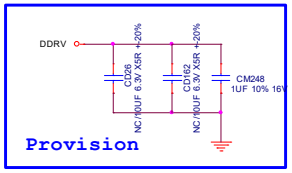


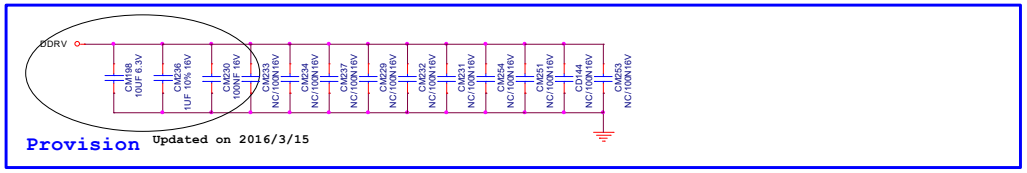
9-8-3 SOC-DDR3-3-4

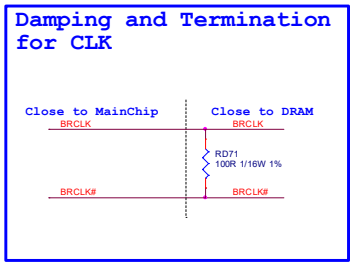


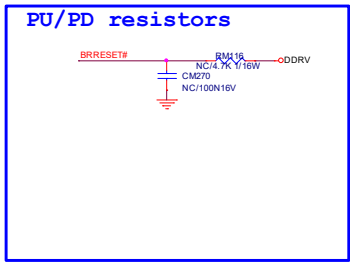


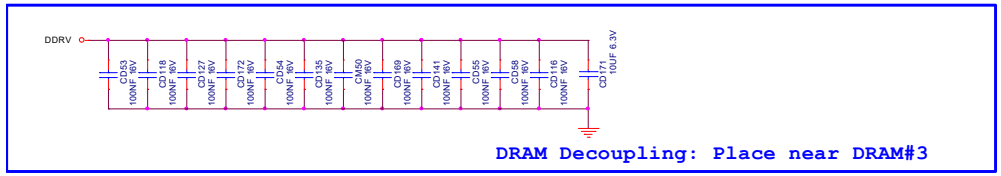


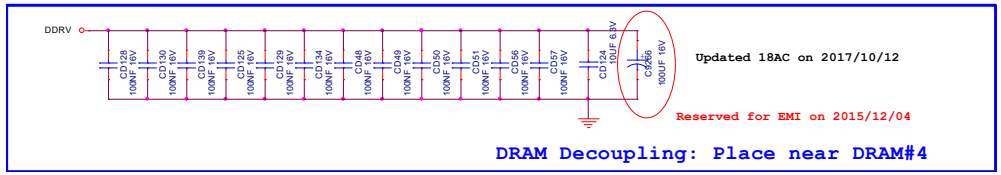


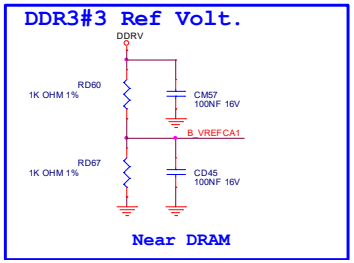


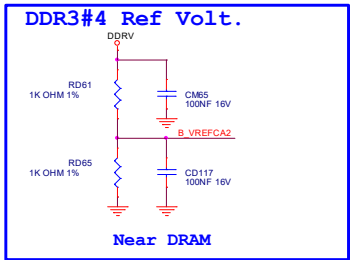




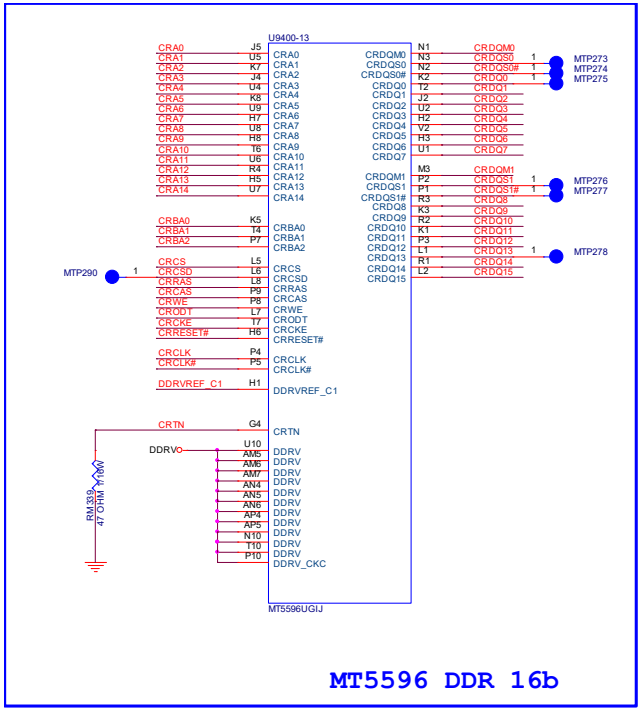


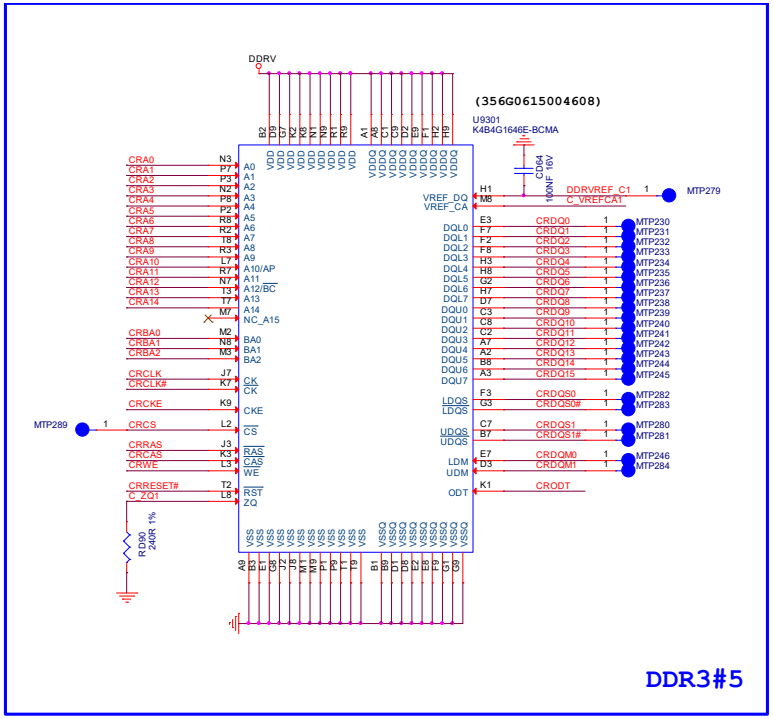


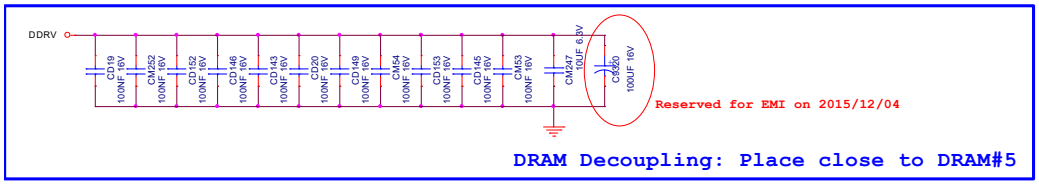


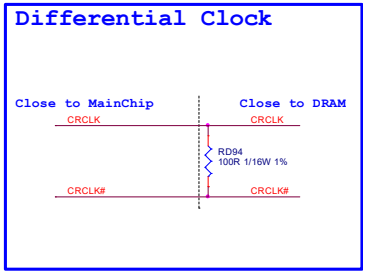


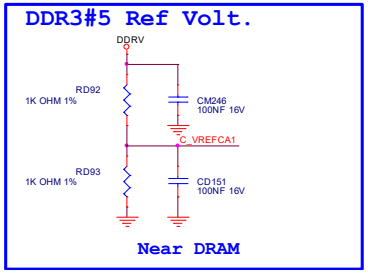
9-8-4 SOC-DDR3-5

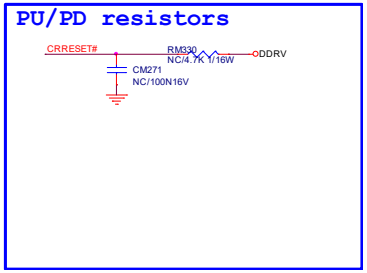




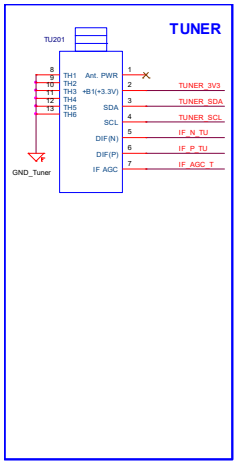


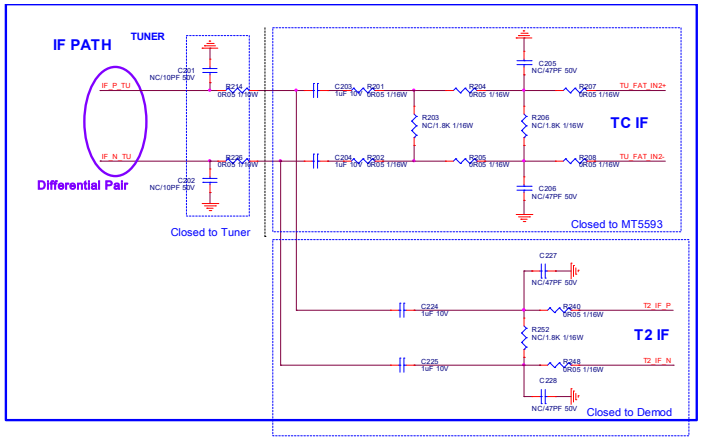


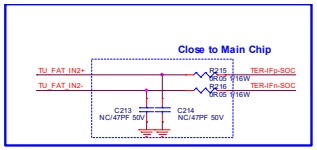


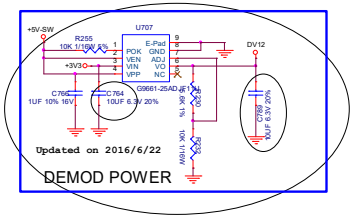


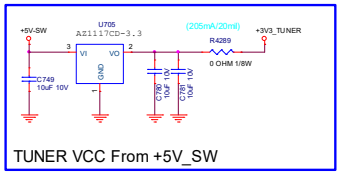
9-8-5 FE-TUNER-DEMOD-TPV

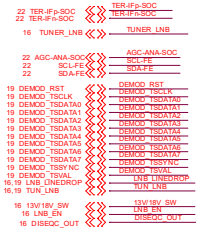


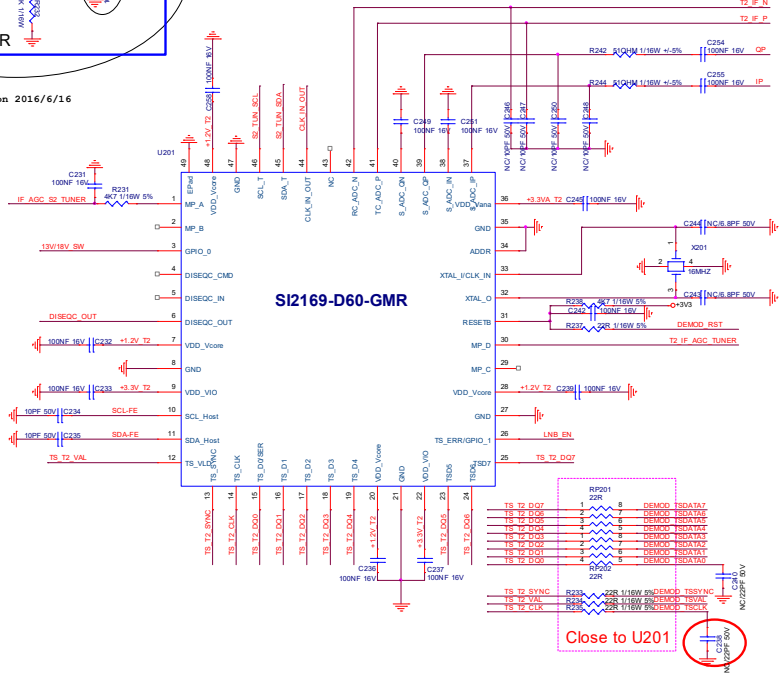


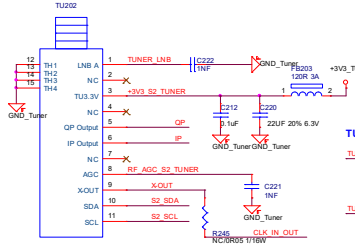


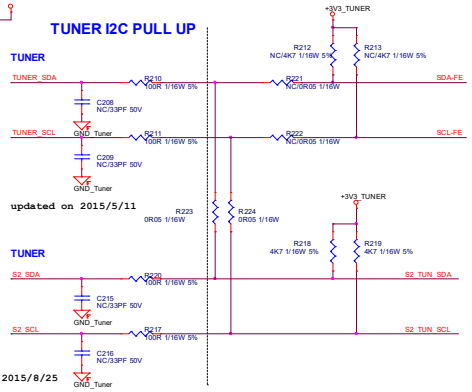


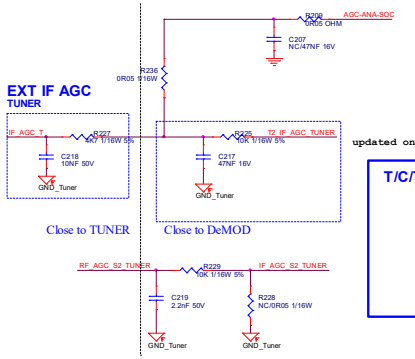


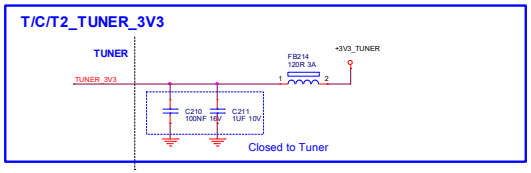










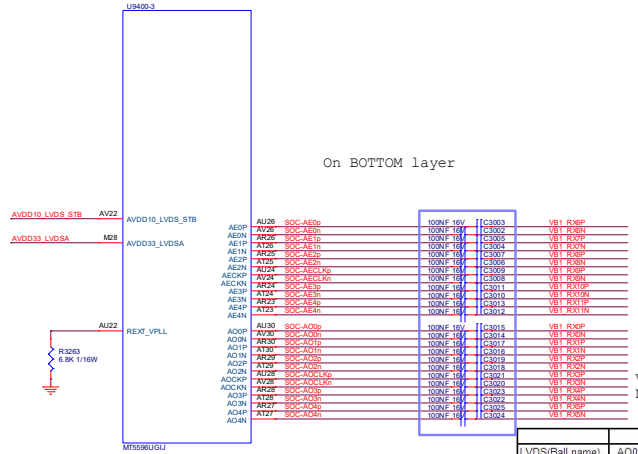


Model	Demod	R223/R224	R221/R222	R220/R217/C215/C216	R225/C217	R229/C219	C249/C251
H	NC	NC	Yes	NC	NC	NC	NC
T	T/C/T2 Si2168	Yes	NC	NC	Yes	NC	NC
K	T/C/S2 Si2167	Yes	NC	Yes	NC	Yes	Yes
K	S2 Si2166	NC	Yes	Yes	NC	Yes	Yes
S	T/C/T2/S2 Si2169	Yes	NC	Yes	Yes	Yes	Yes

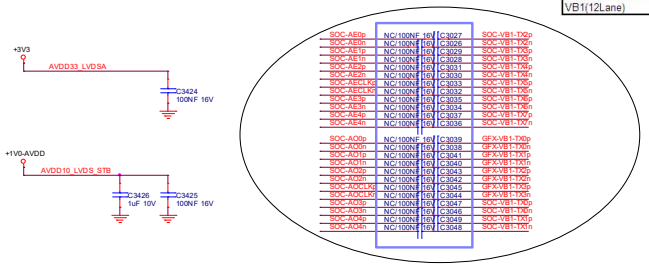
DVB-T/T2 Demodulator

9-8-6 BE-NT334a-Vx1-INPUT

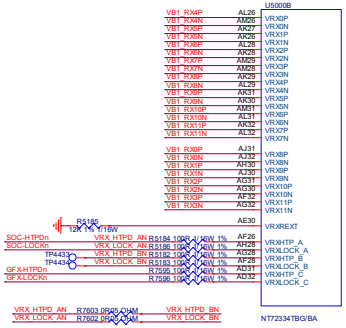
MT5596 Vx1 OUTPUT

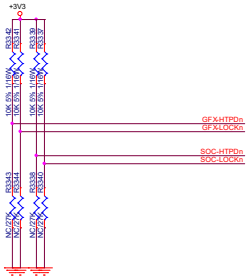


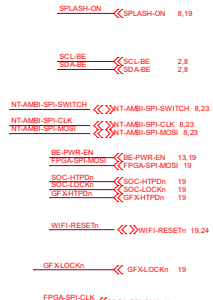
	Port A0						Port AE					
LVDS(Ball name)	AO0	AO1	AO2	AOCK	AO3	AO4	AE0	AE1	AE2	AECK	AE3	AE4
VB1(12Lane)	CH0	CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8	CH9	CH10	CH11



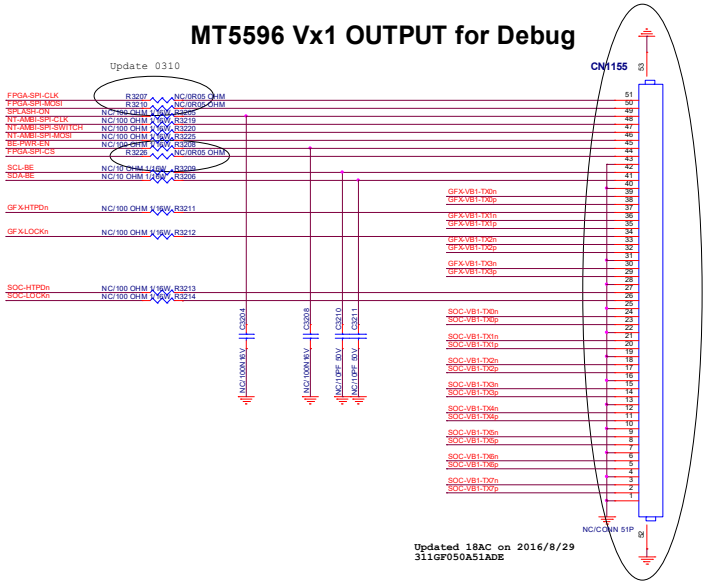
NT334 Vx1 INPUT

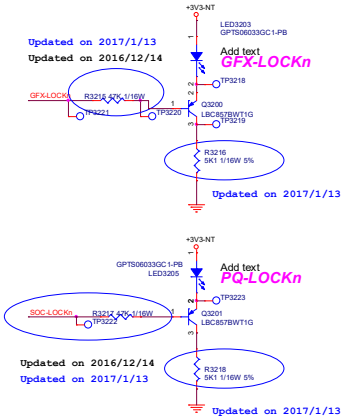






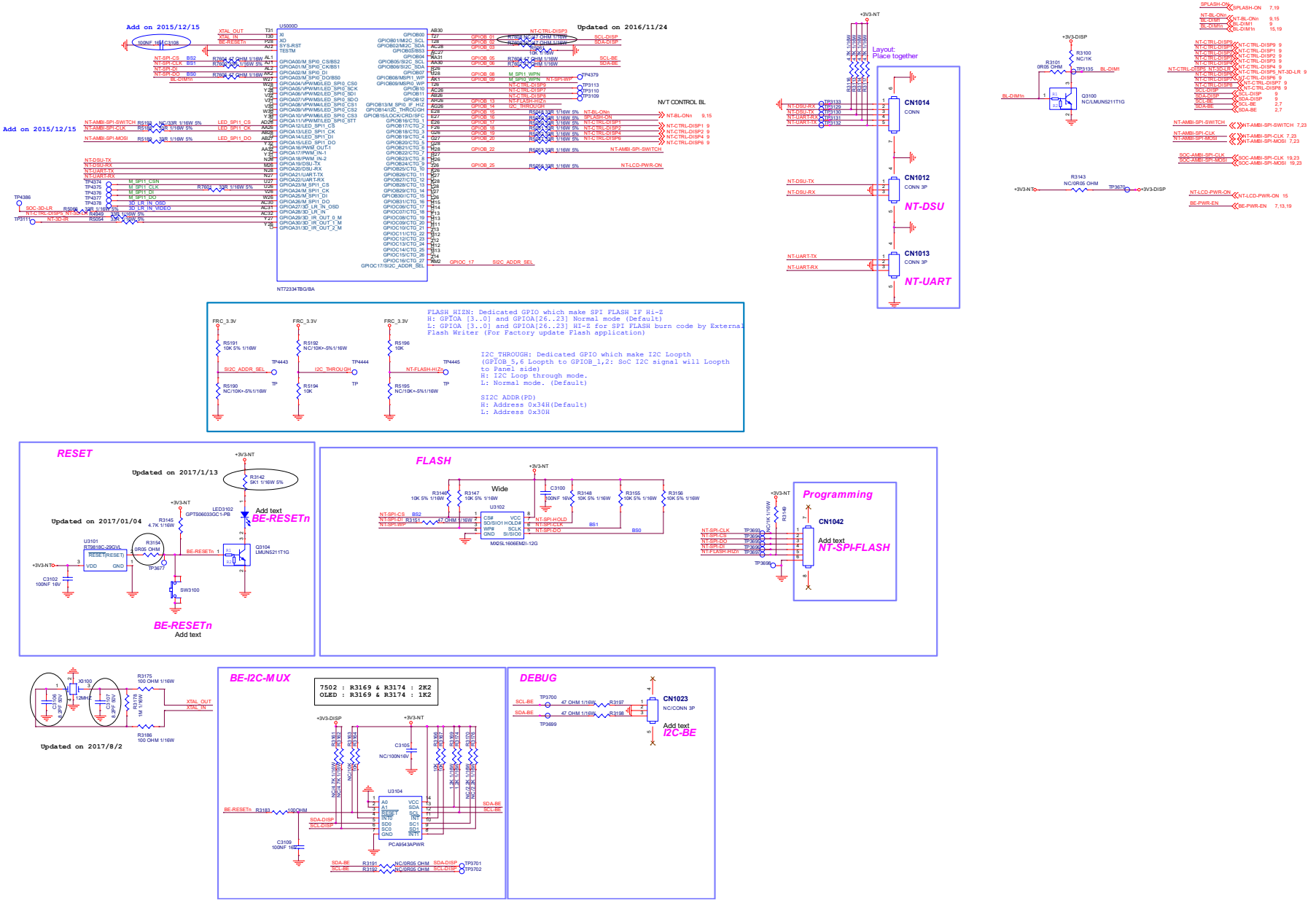
MT5596 Vx1 OUTPUT for Debug



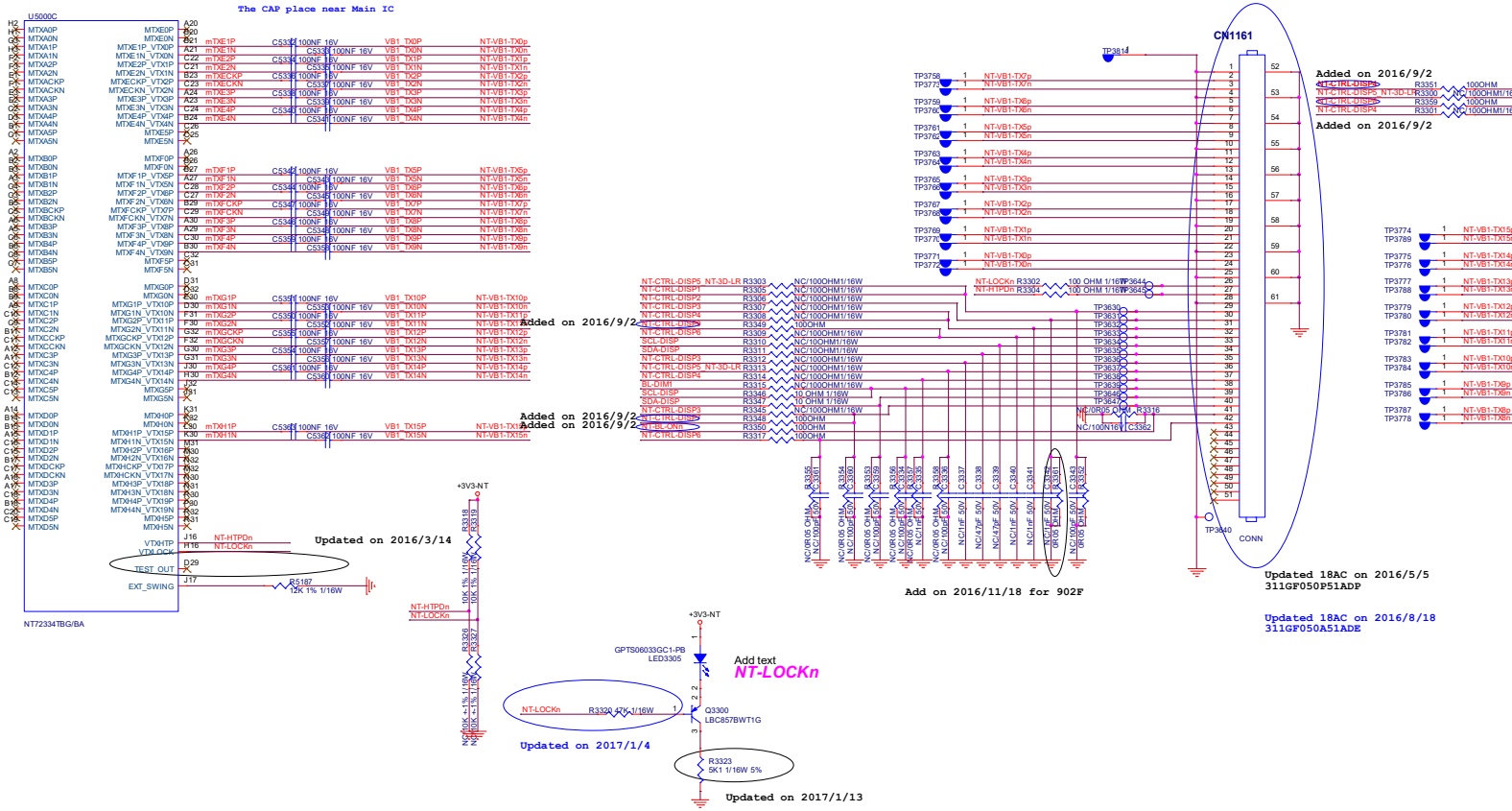


9-8-7 BE-NT334b-GPIO

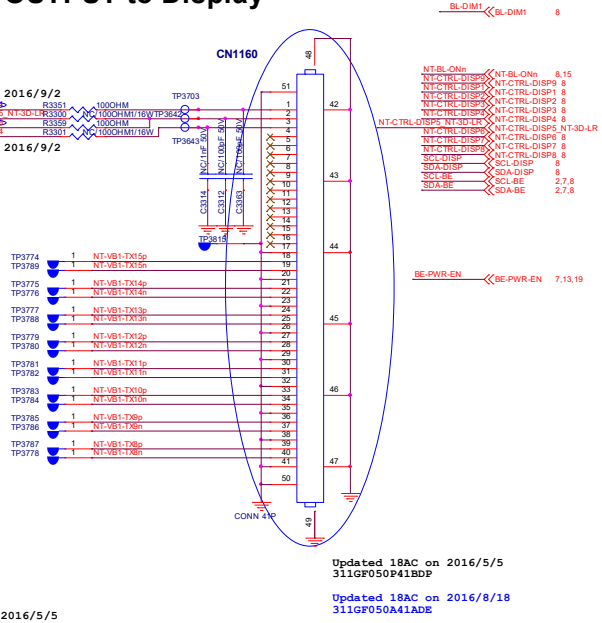
NT334 CONTROL



NT334 V-BY-1 OUTPUT

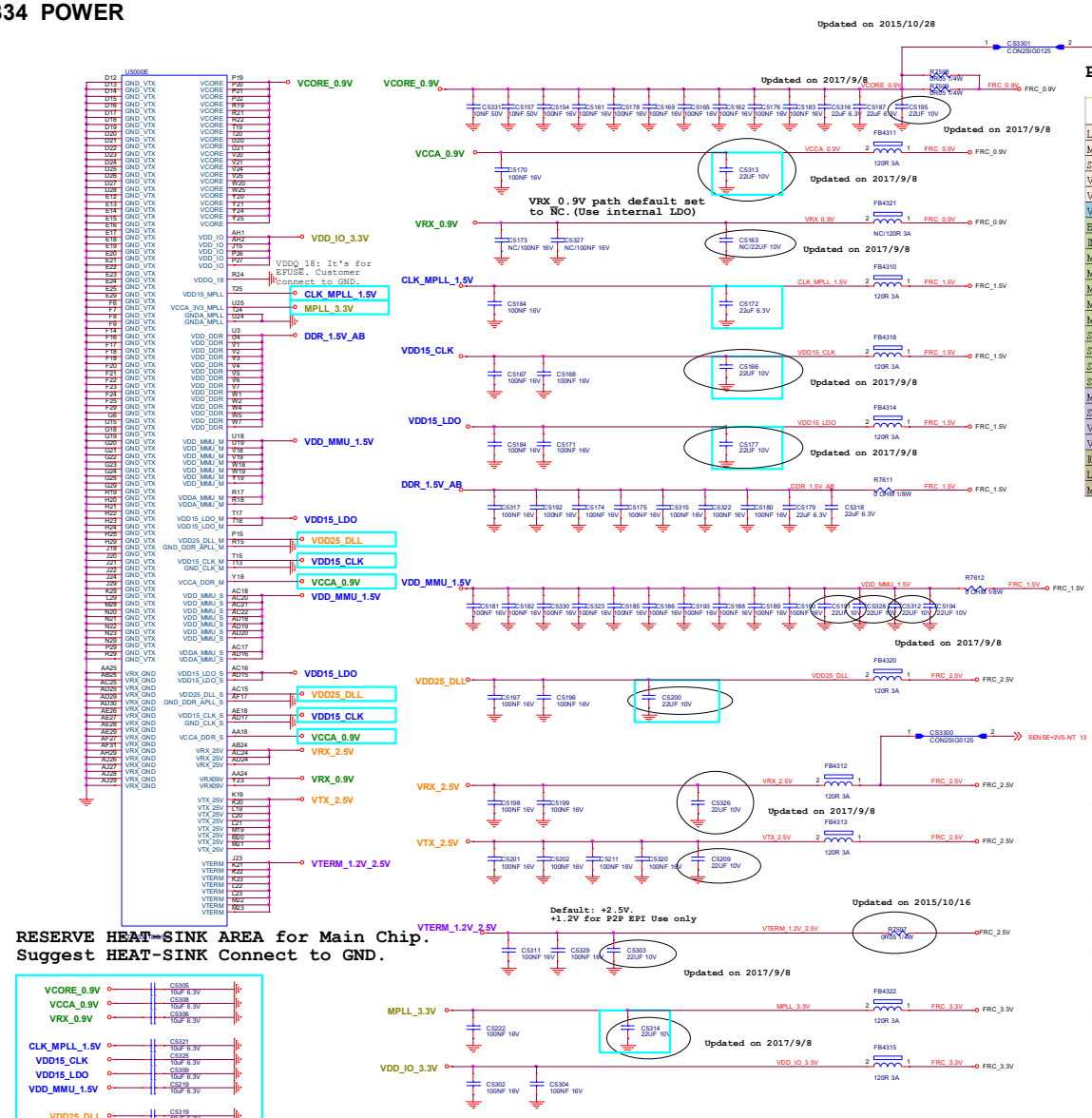


V-BY-1 OUTPUT to Display



9-8-9 BE-NT334d-POWER

NT334 POWER



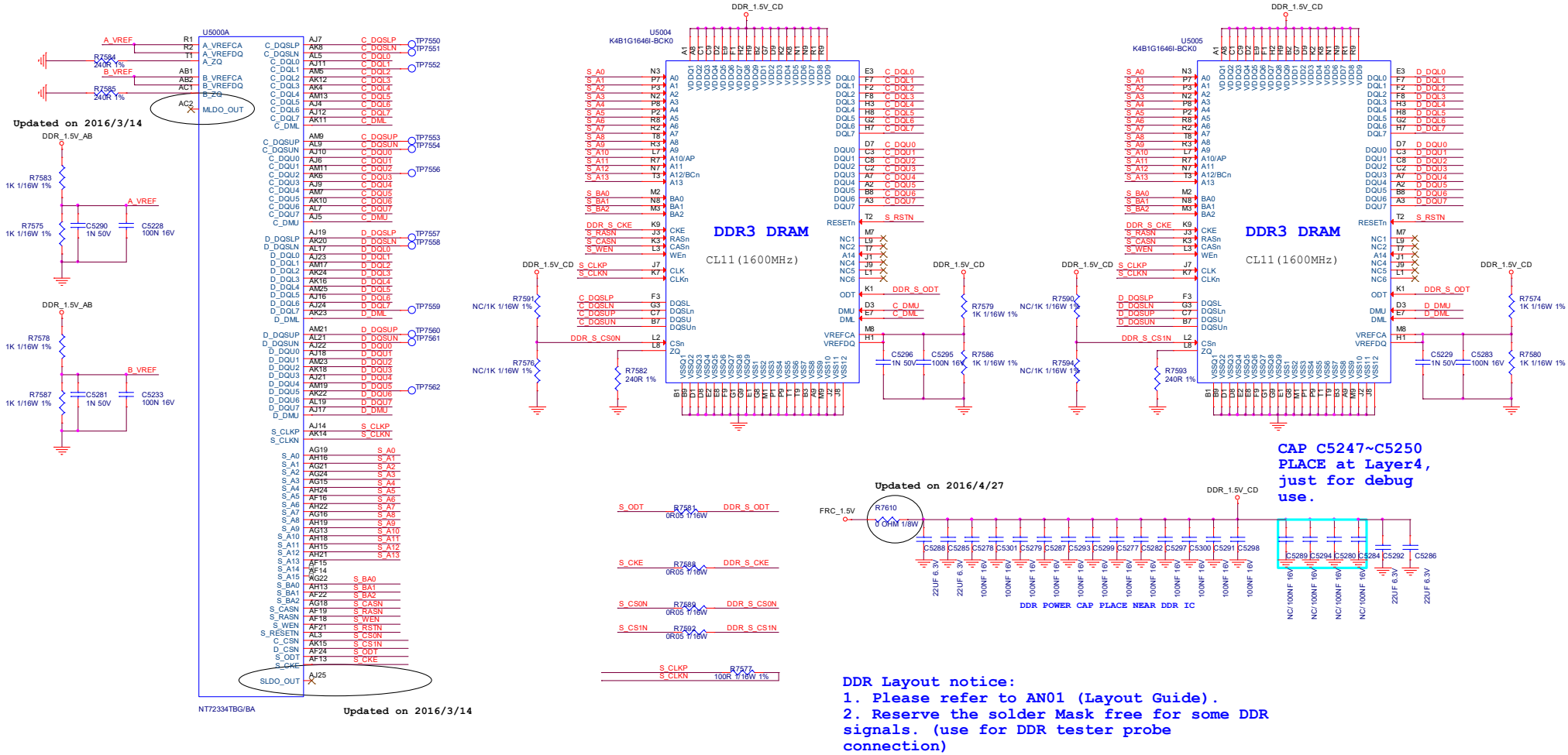
Power consumpiton estimate (Draft)

Name	Ball name	Voltage (V)	Current (mA)	Power (mW)	Total Current (mA)
LVR	LVR	0.9	0.2	0.18	
MDDR	VOCA_DDR_M	0.9	30	27	
SDDR	VOCA_DDR_S	0.9	30	27	4226.2
VCORE	VCORE	0.9	4056	3650.4	
VRX	VRX_0.9V	0.9	110	99	
VTX	VTERM	1.2	TBD	TBD	
EXT DDR	EXT DDR	1.5	284	426	
INT DDR DIE	VDD_DDR	1.5	284	426	
MDDR	VDD15_LDO_M	1.5	110	165	
MDDR	VDDA_MMU_M	1.5	68	102	
MDDR	VDD_MMU_M	1.5	273	409.5	
MDDR	VDD15_CLK_M	1.5	20	30	1540
MPLL	VDD15_MPLL	1.5	30	45	
SDDR	VDD15_LDO_S	1.5	110	165	
SDDR	VDDA_MMU_S	1.5	68	102	
SDDR	VDD_MMU_S	1.5	273	409.5	
SDDR	VDD15_CLK_S	1.5	20	30	
MDDR	VDD25_DLL_M	2.5	37	92.5	
SDDR	VDD25_DLL_S	2.5	37	92.5	828
VRX	VRX_25V	2.5	60	150	
VTX	VTX_25V	2.5	694	1735	
IO	VDD_IO	3.3	5	16.5	
LVR	LVR	3.3	1	3.3	13
MPLL	VOCA_3V3_MPLL	3.3	7	23.1	

PCB External Trace Width Calculator

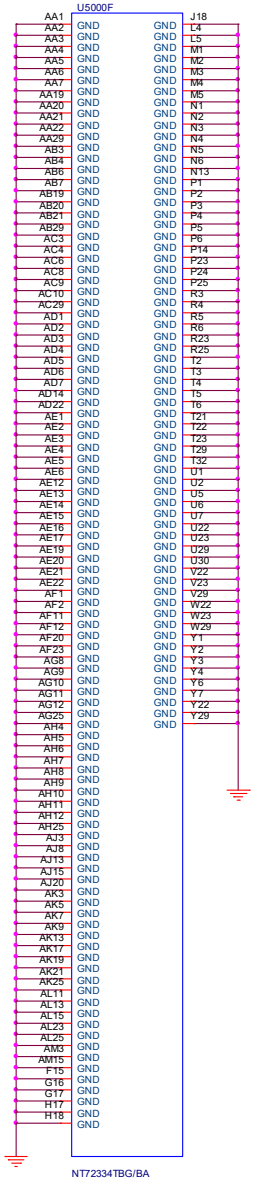
Item	Trace Width Calculator (For Layout reference)			
+0.90V	Data		Units	
	Location	Set	External	
	Temp CHANGE	Solve	20	Degree C
	Width	Solve	80	Mil
	Thickness	Solve	1.	Mil / Oz
	Current	Solve	5.509	Amp
	Data		Units	
	Location	Set	External	
	Temp CHANGE	Solve	20	Degree C
	Width	Solve	100	Mil
	Thickness	Solve	1.	Mil / Oz
	Current	Solve	6.402	Amp
+1.2V	Data		Units	
	Location	Set	External	
	Temp CHANGE	Solve	10	Degree C
	Width	Solve	20	Mil
	Thickness	Solve	1.	Mil / Oz
	Current	Solve	1.61	Amp
+1.5V	Data		Units	
	Location	Set	External	
	Temp CHANGE	Solve	10	Degree C
	Width	Solve	30	Mil
+2.5V	Thickness	Solve	1.	Mil / Oz
	Current	Solve	2.116	Amp
+3.3V	Data		Units	
	Location	Set	External	
	Temp CHANGE	Solve	10	Degree C
	Width	Solve	10	Mil
	Thickness	Solve	1.	Mil / Oz
	Current	Solve	1.01	Amp

NT334 DDR A-B

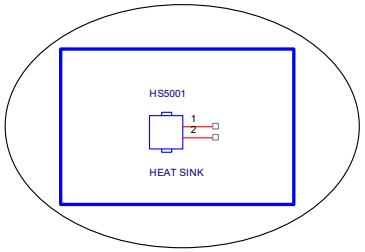

U5000A
A_VREF
B_VREF
R7584 240R 1%
R7585 240R 1%
MLDO_OUT
Updated on 2016/3/14
DDR_1.5V_AB
R7583 1K 1/16W 1%
R7575 1K 1/16W 1%
C5290 1N 50V
C5228 100N 16V
R7578 1K 1/16W 1%
R7587 1K 1/16W 1%
C5281 1N 50V
C5233 100N 16V
SLDO_OUT
NT72334TBG/BA
Updated on 2016/3/14
U5004
K4B1G1646I-BCK0
DDR3 DRAM
CL11(1600MHz)
DDR_1.5V_CD
R7591 NC/1K 1/16W 1%
R7576 NC/1K 1/16W 1%
R7582 240R 1%
R7579 1K 1/16W 1%
R7586 1K 1/16W 1%
C5296 1N 50V
C5295 100N 16V
U5005
K4B1G1646I-BCK0
DDR3 DRAM
CL11(1600MHz)
R7590 NC/1K 1/16W 1%
R7594 NC/1K 1/16W 1%
R7593 240R 1%
R7574 1K 1/16W 1%
R7580 1K 1/16W 1%
C5229 1N 50V
C5283 100N 16V
CAP C5247~C5250 PLACE at Layer4, just for debug use.
Updated on 2016/4/27
FRC_1.5V
R7610 0 OHM 1/8W
C5288 22UF 6.3V
C5285 22UF 6.3V
C5278 100NF 16V
C5301 100NF 16V
C5279 100NF 16V
C5287 100NF 16V
C5293 100NF 16V
C5299 100NF 16V
C5277 100NF 16V
C5282 100NF 16V
C5297 100NF 16V
C5300 100NF 16V
C5291 100NF 16V
C5298 100NF 16V
C5289 NC/100NF 16V
C5294 NC/100NF 16V
C5280 NC/100NF 16V
C5284 NC/100NF 16V
C5292 22UF 6.3V
C5286 22UF 6.3V
DDR POWER CAP PLACE NEAR DDR IC
R7581 0R05 1/16W
R7588 0R05 1/16W
R7589 0R05 1/16W
R7592 0R05 1/16W
R7577 100R 1/16W 1%
DDR Layout notice:
1. Please refer to AN01 (Layout Guide).
2. Reserve the solder Mask free for some DDR signals. (use for DDR tester probe connection)

9-8-11 BE-NT334f-GROUND

NT334 GROUND



NT334 HEAT SINK X90G202000200000HG(40x40) or
X90G801000100000BF(FOOTPRINT90A8010-1X) or
X90G201005300000BF(Same as SoC)

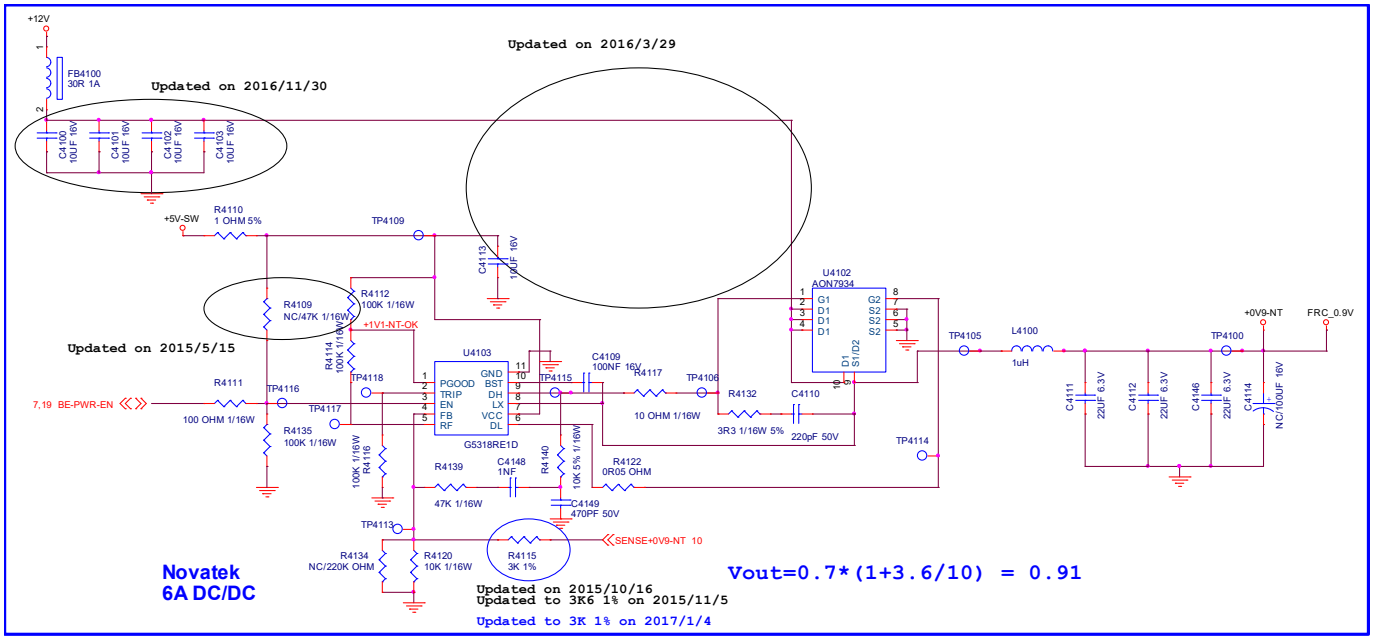


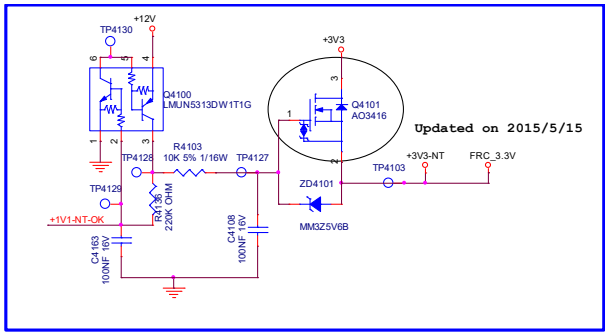
Updated 18AC on 2017/5/25
X90G201005300000BF

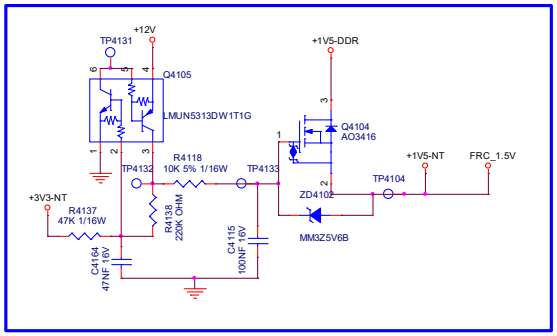
Updated 18AC on 2017/10/12
T90G80100040000ABF

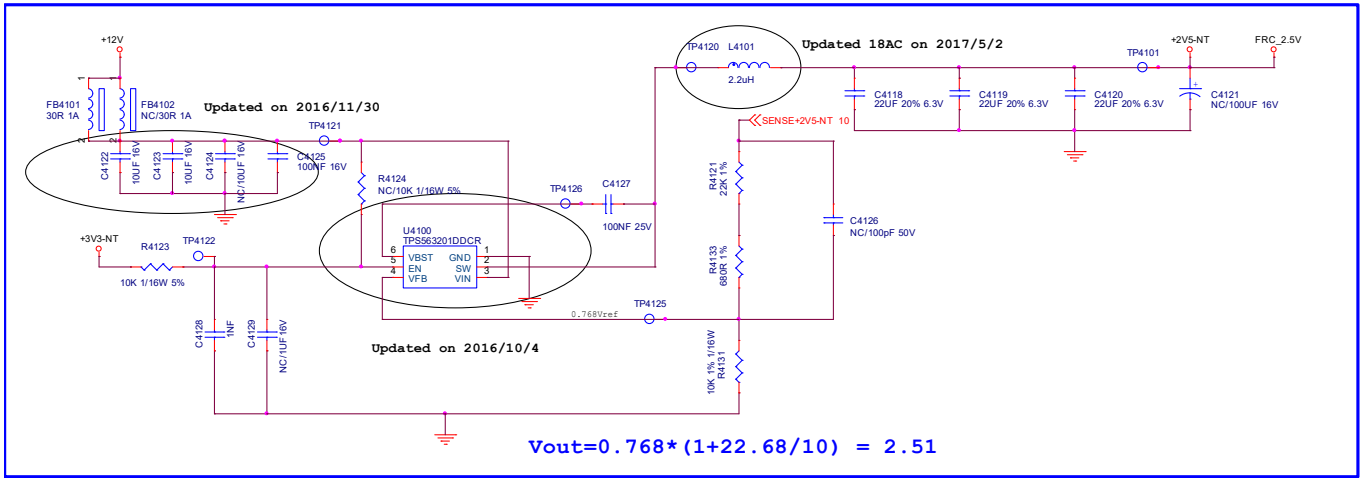
Updated 18AC on 2017/11/14
T90G601000200000BF

9-8-12 DCDC-Novatek-POWER

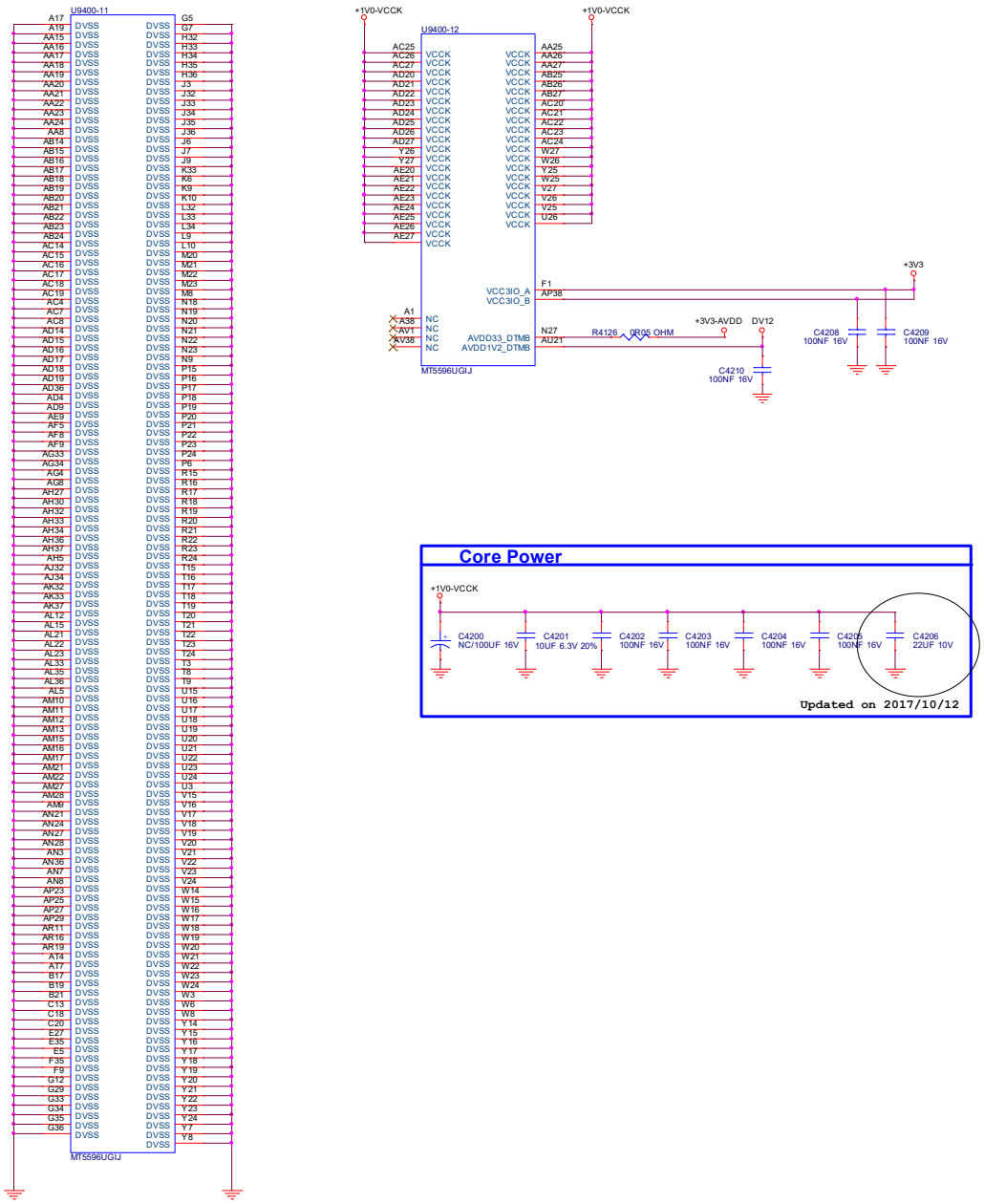




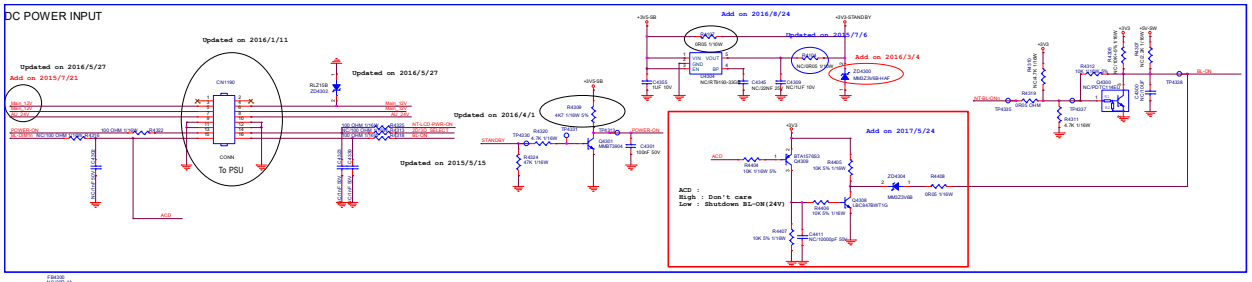


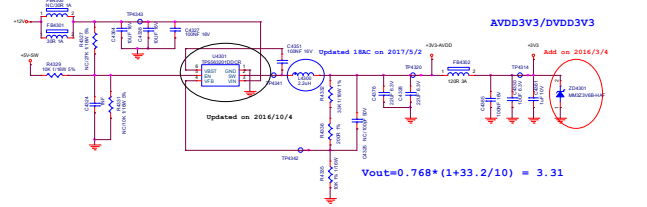


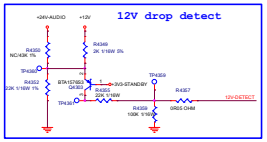
9-8-13 DCDC-SOC-VCCK-DVSS

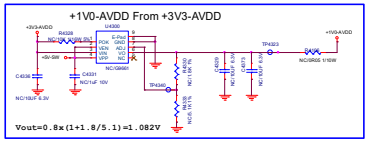


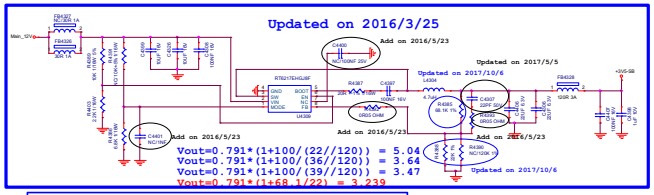
9-8-14 DCDC-SYSTEM-POWER1

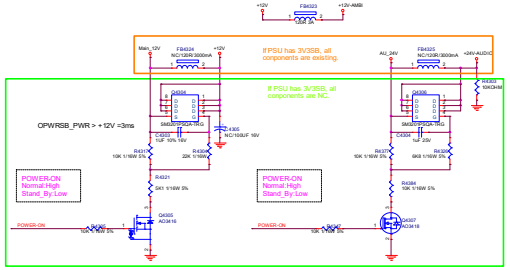


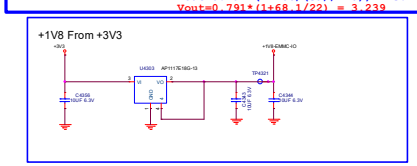


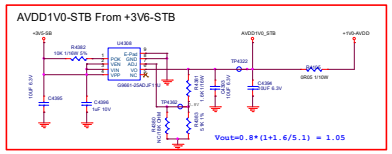


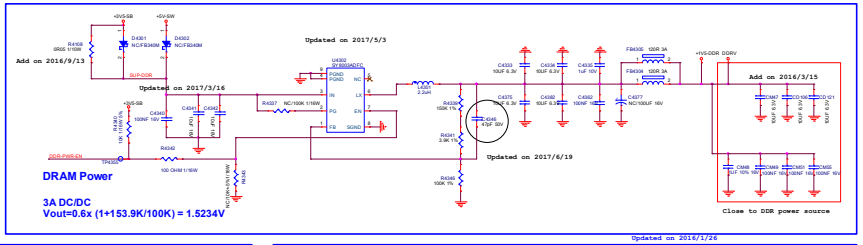


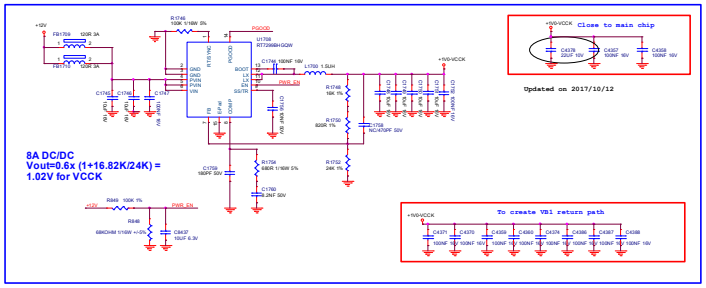


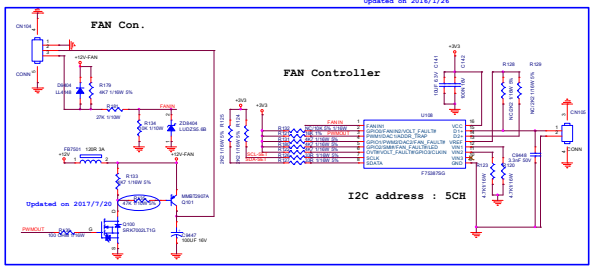




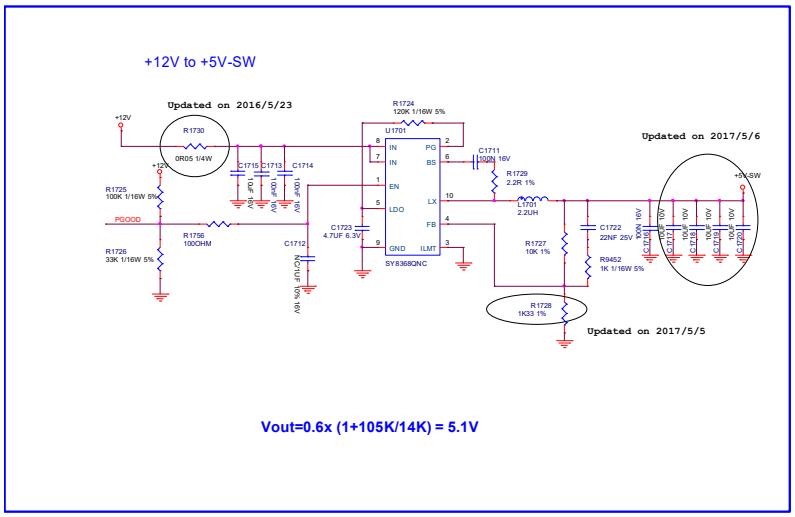


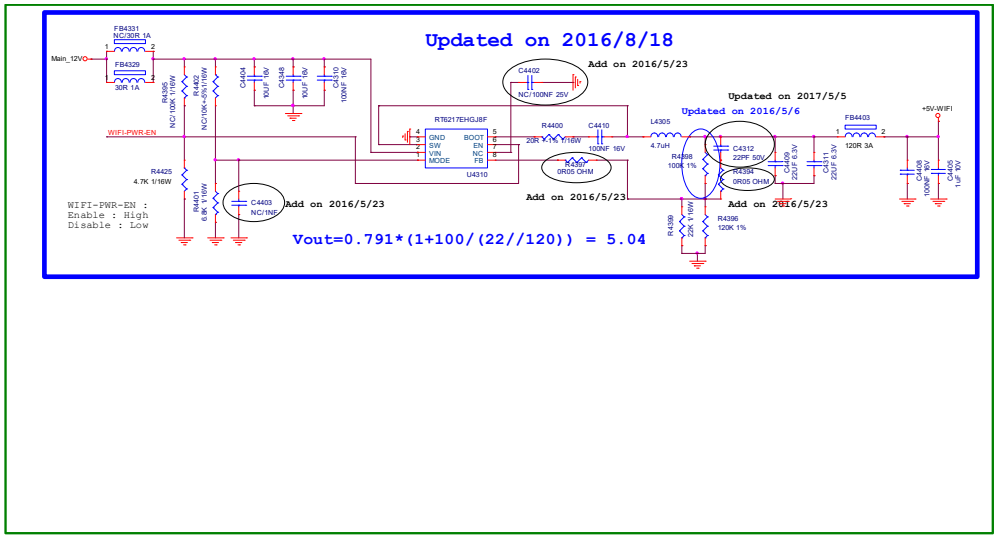


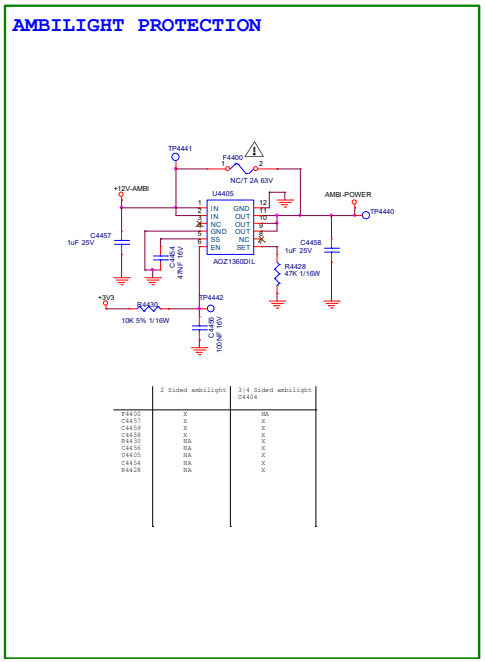




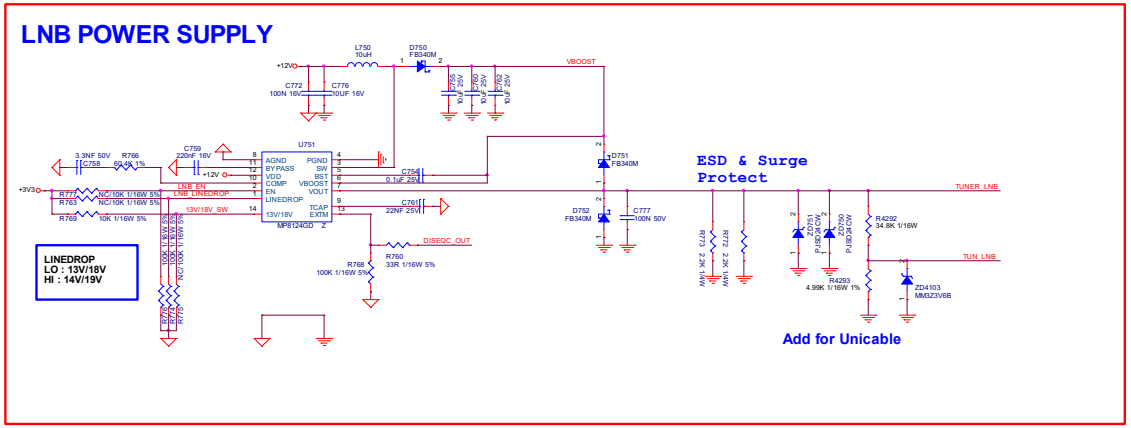
9-8-15 DCDC-SYSTEM-POWER2



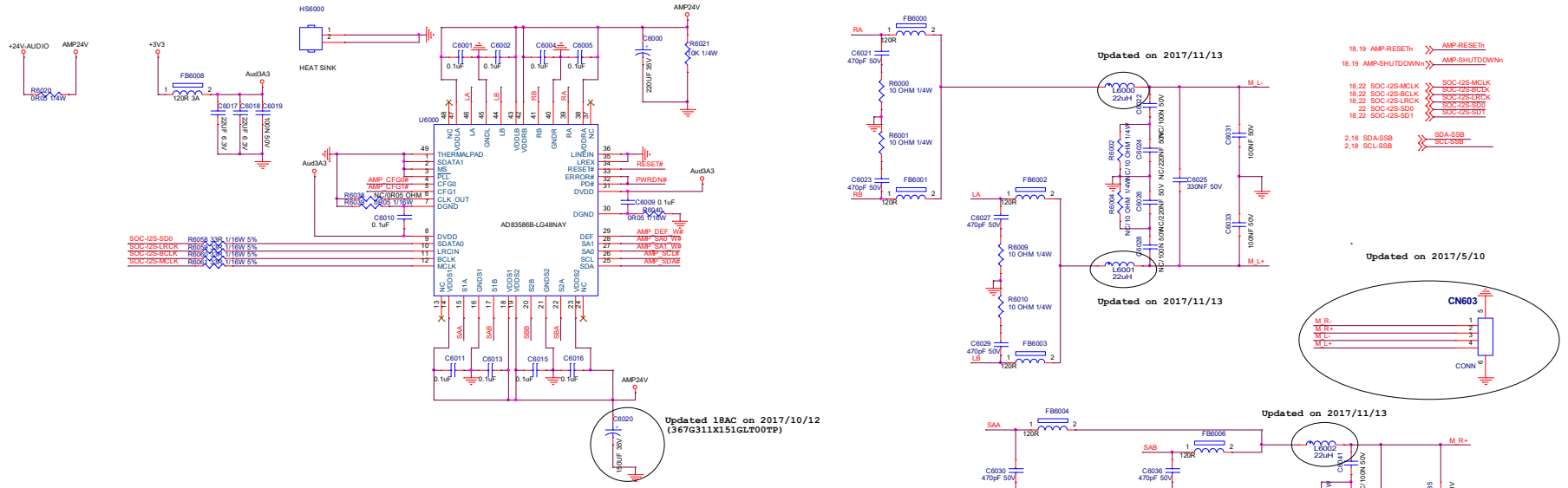


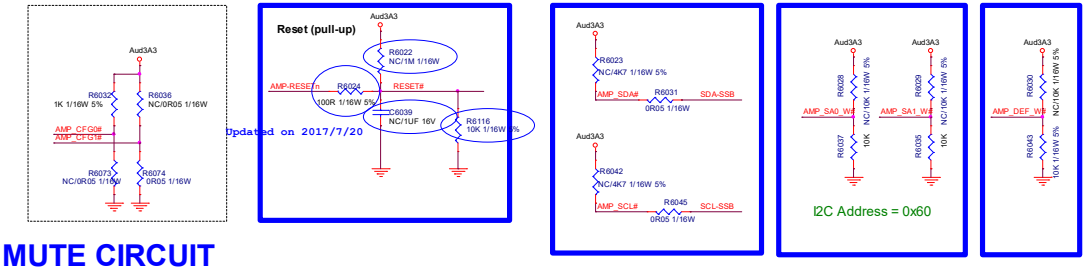


	2 Sided ambilight	3/4 Sided ambilight U4404
F4400	X	NA
C4457	X	X
C4459	X	X
C4458	X	X
R4430	NA	X
C4456	NA	X
U4405	NA	X
C4454	NA	X
R4428	NA	X

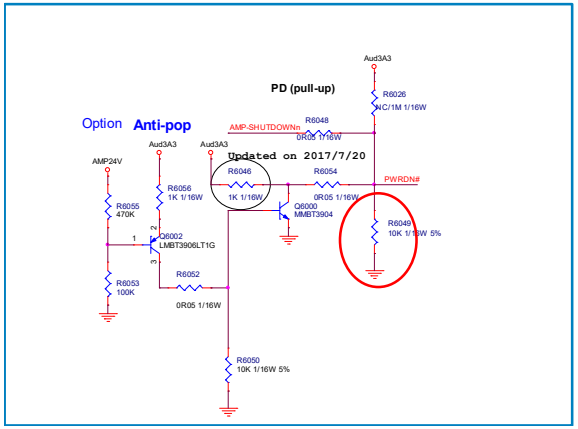


9-8-16 AUDIO-1st-CLASS-D-AMP

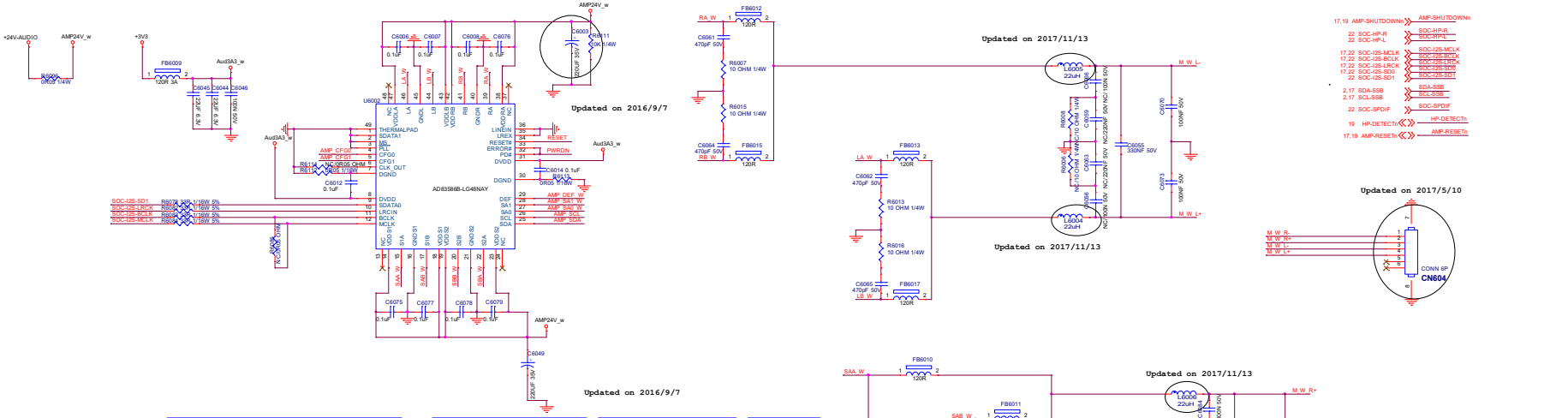


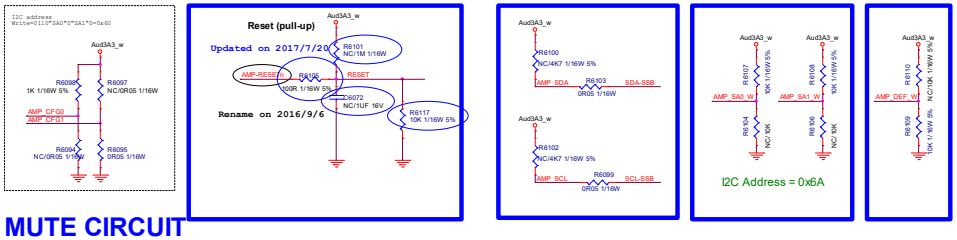


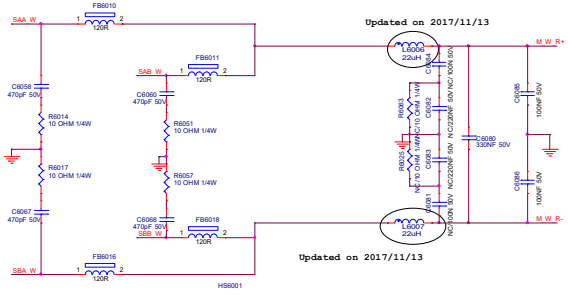
MUTE CIRCUIT



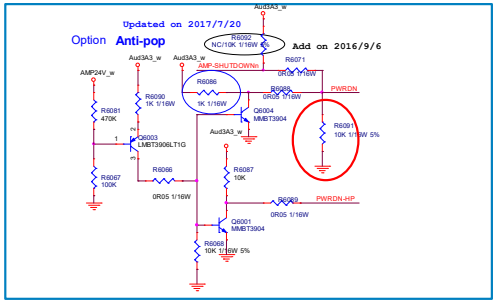
9-8-17 AUDIO-2nd-CLASS-D-AMP

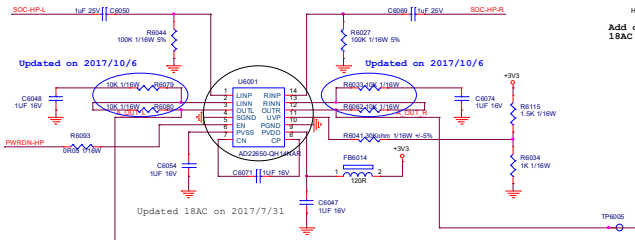


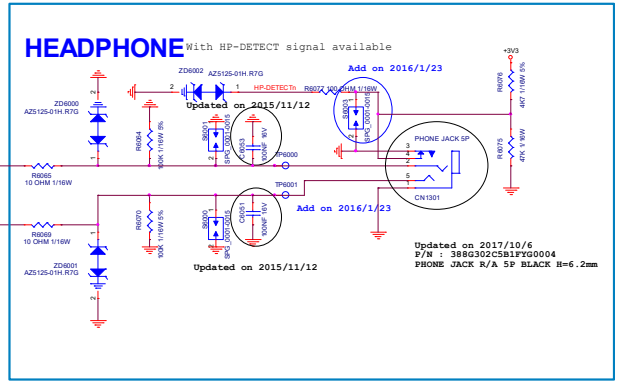




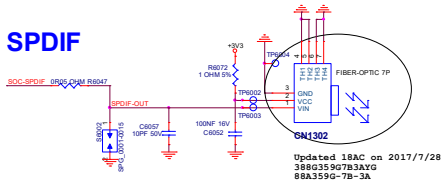
MUTE CIRCUIT



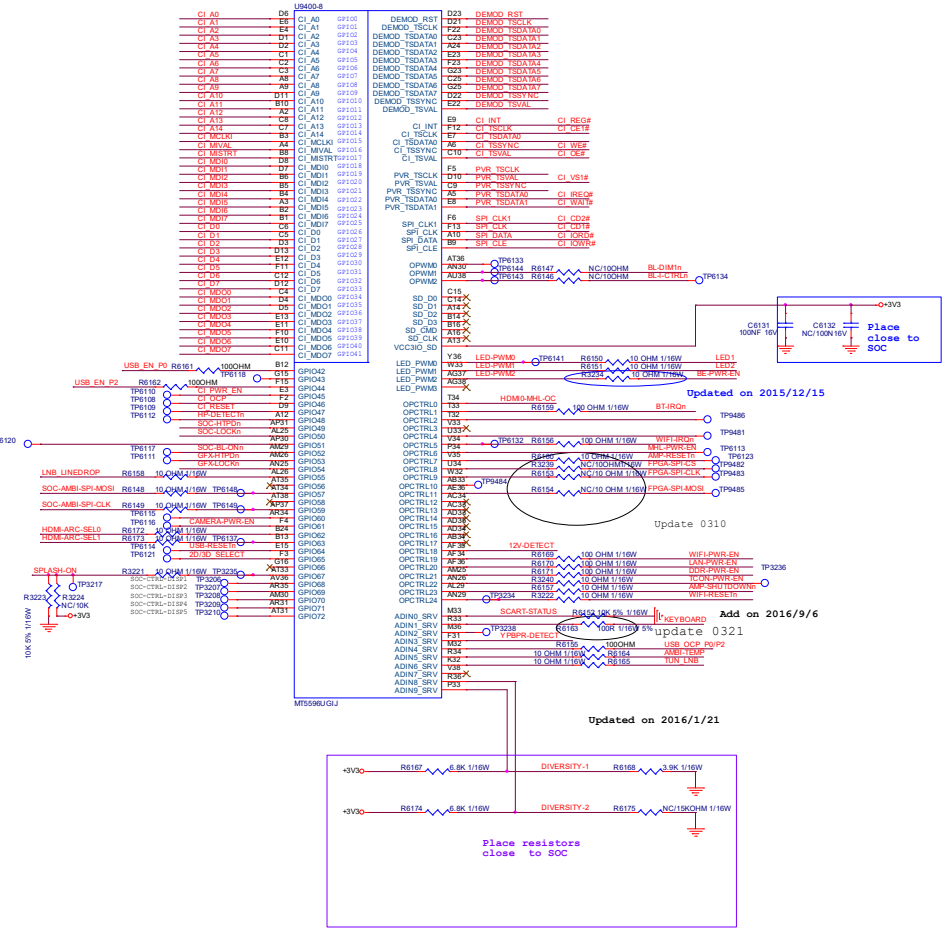


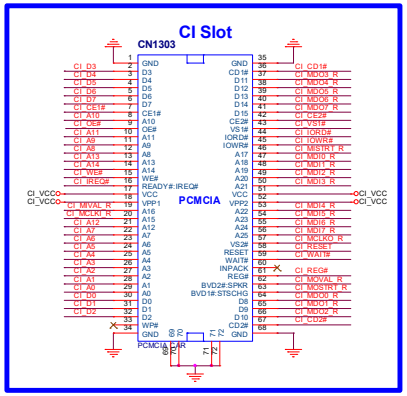


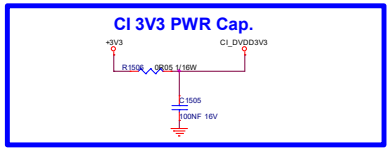
SPDIF

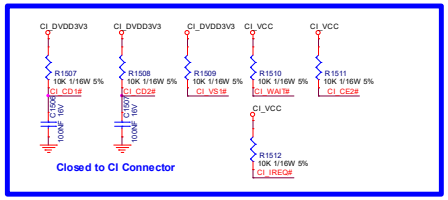


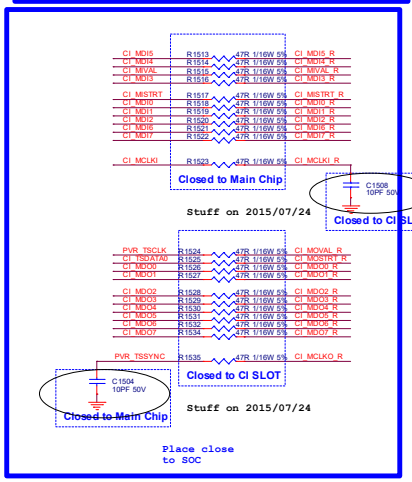
9-8-18 PCMCIA

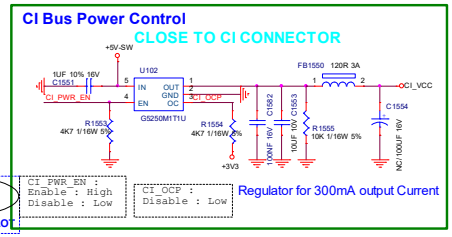






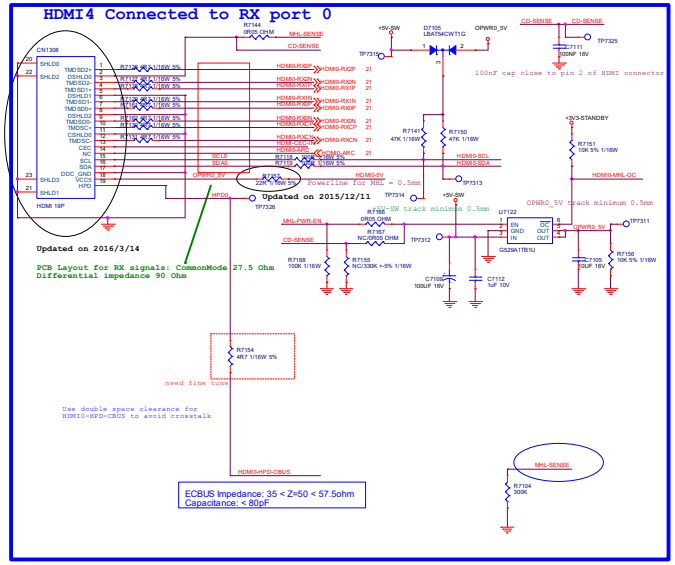


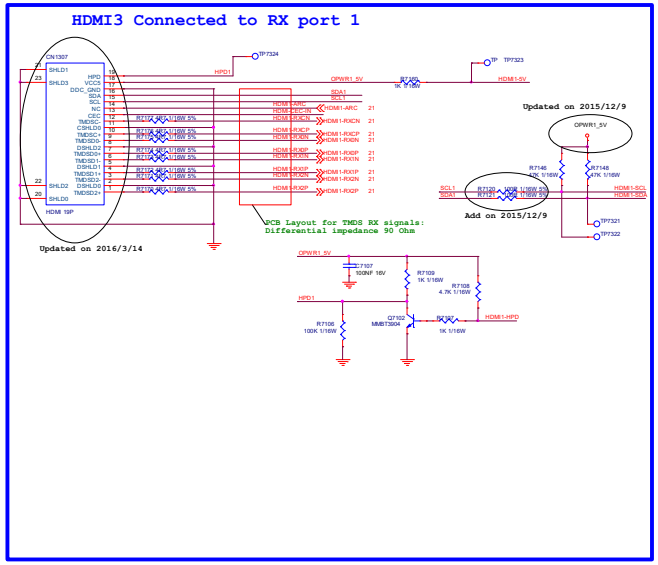


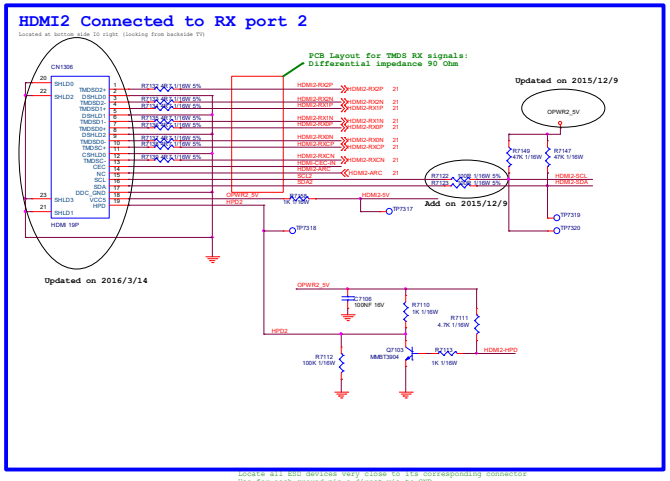


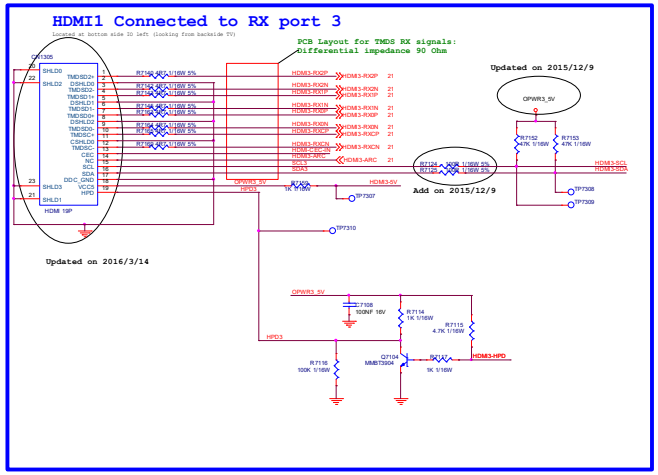
Parrel TS Output to PCMCIA damping used to close Main Chip	Parrel TS Output to Main Chip damping used to close PCMCIA
CI_MISTRT	CI_MOSTRT
CI_MIVAL	CI_MOVAL
CI_MCLKI	CI_MCLKO
CI_MDI0	CI_MDO0
CI_MDI1	CI_MDO1
CI_MDI2	CI_MDO2
CI_MDI3	CI_MDO3
CI_MDI4	CI_MDO4
CI_MDI5	CI_MDO5
CI_MDI6	CI_MDO6
CI_MDI7	CI_MDO7

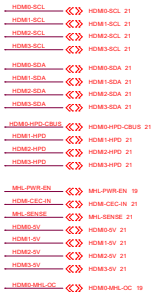
9-8-19 HDMI-INPUTS

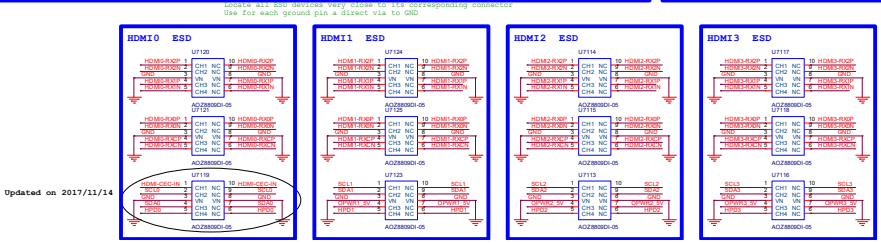






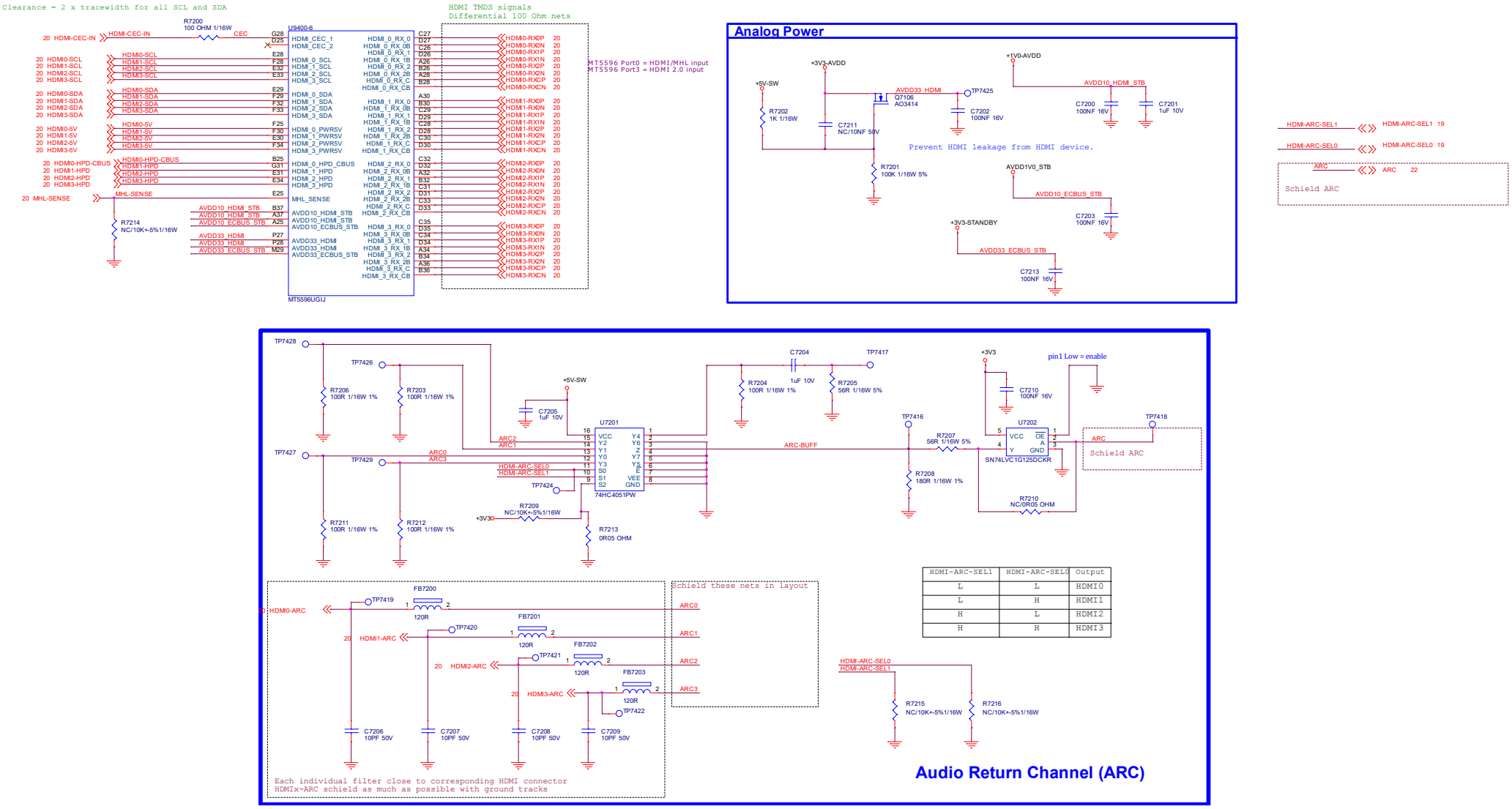






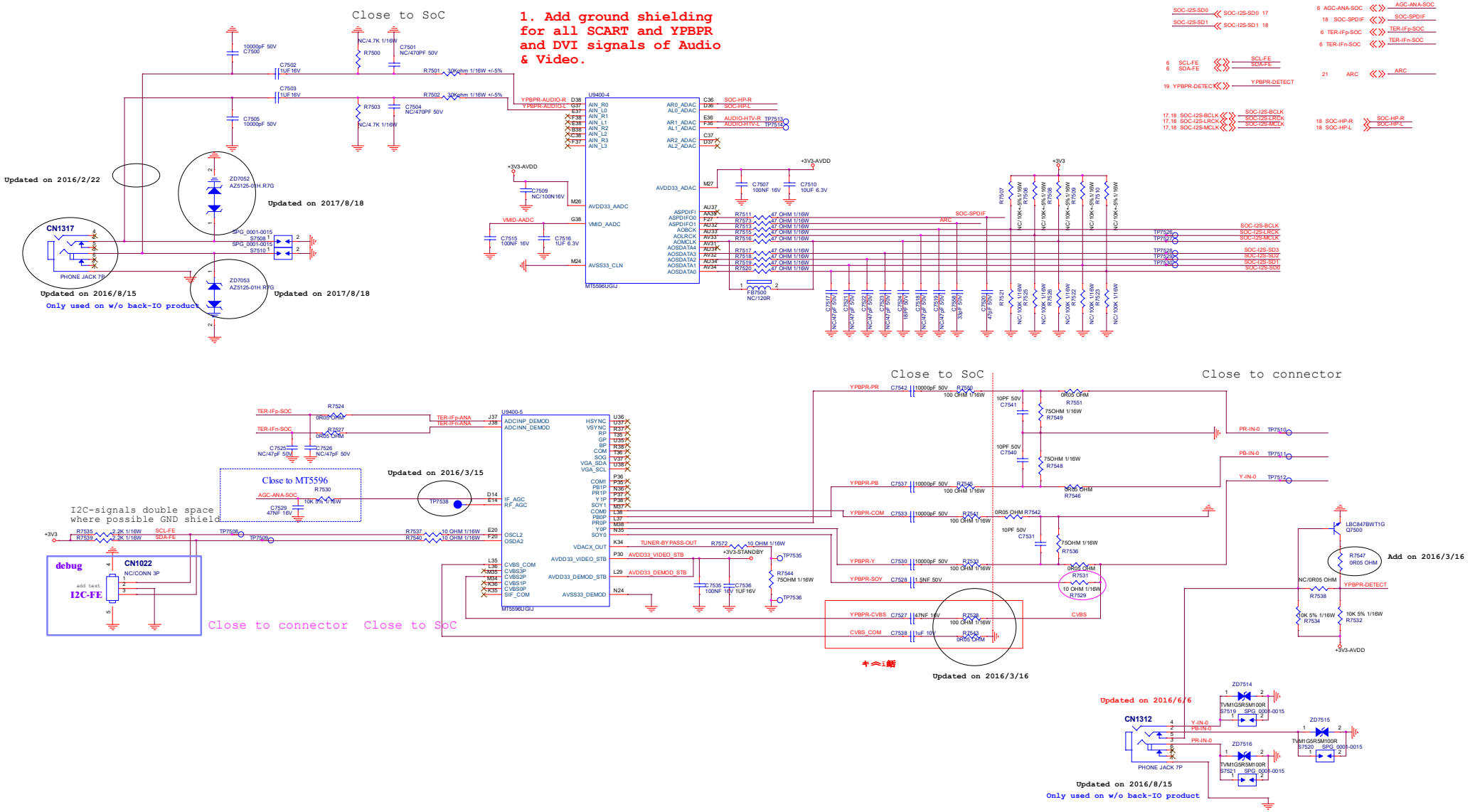
Updated 18AC on 2017/8/29

9-8-20 HDMI-SOC-ARC

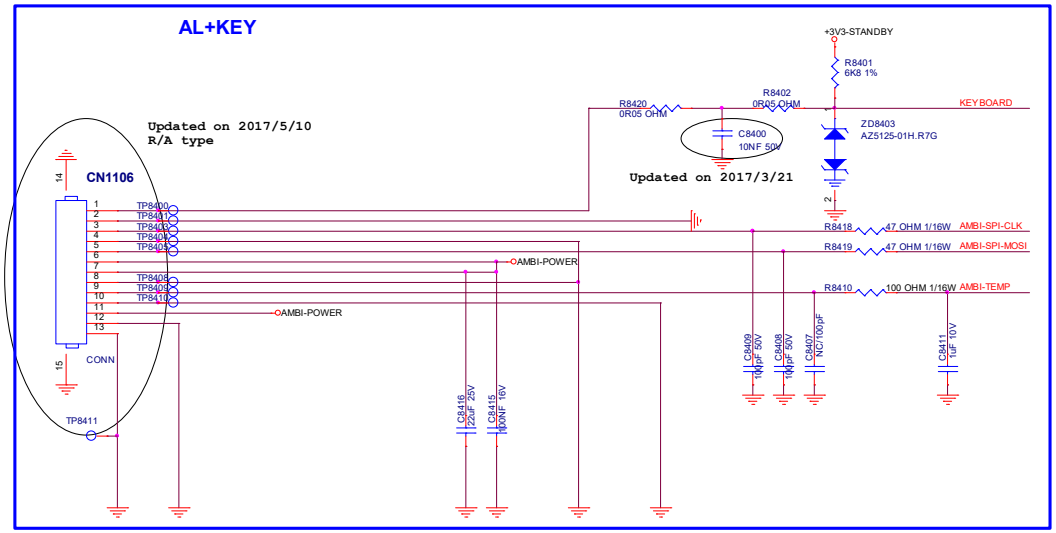


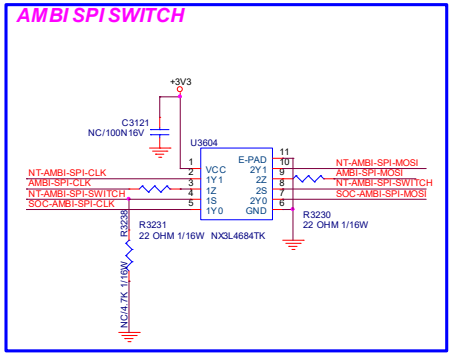
HDMI-ARC-SEL1	HDMI-ARC-SEL0	Output
L	L	HDMI0
L	H	HDMI1
H	L	HDMI2
H	H	HDMI3

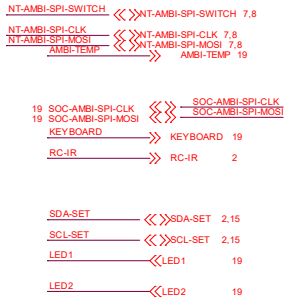
9-8-21 SCART-YPbPr-CVBS

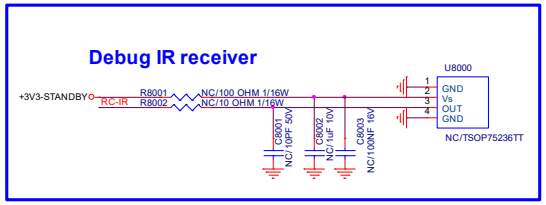


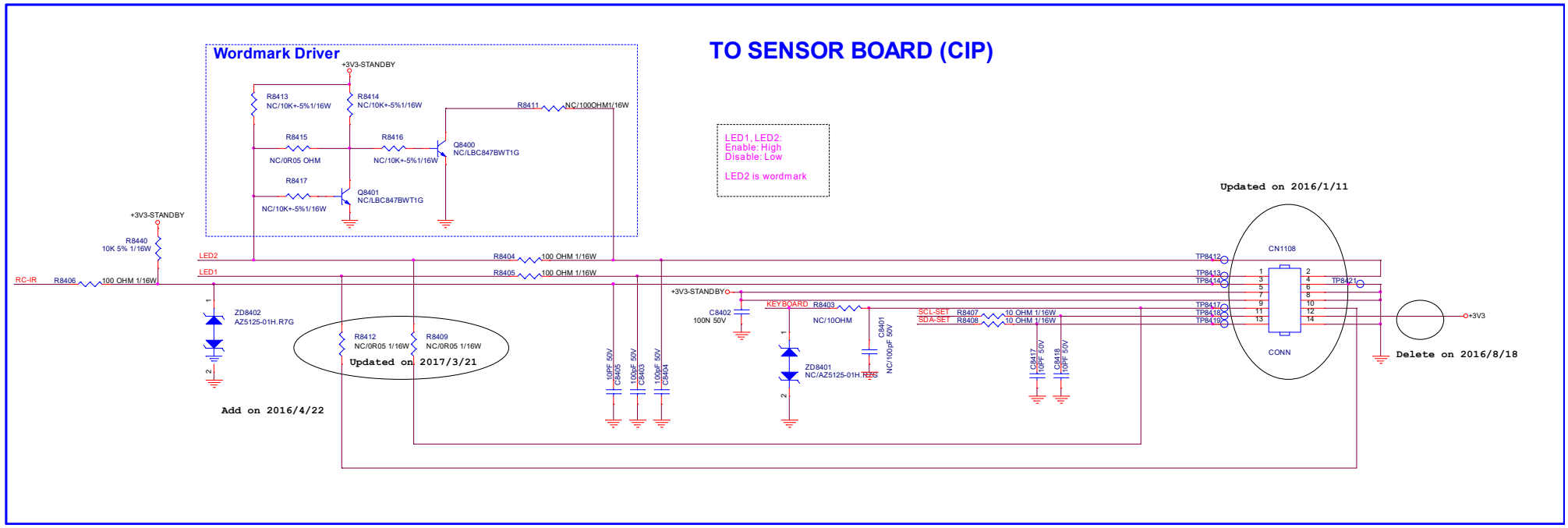
9-8-22 CTRL-CONNECTORS



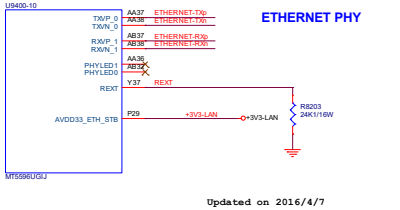


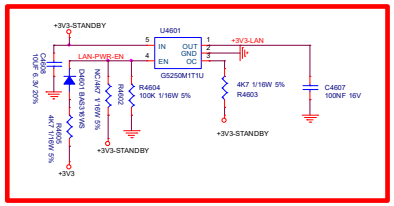


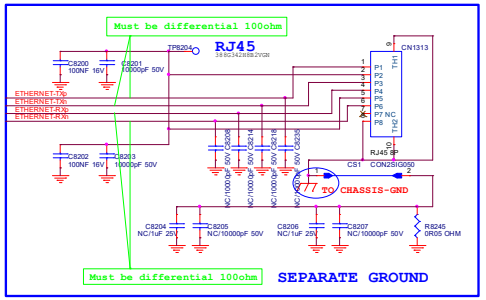


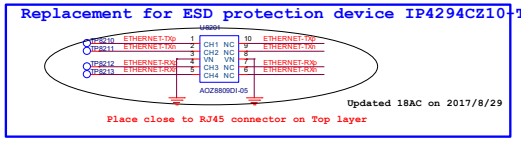


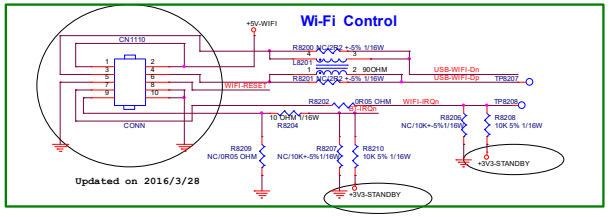
9-8-23 CTRL-ETHERNET-PHY

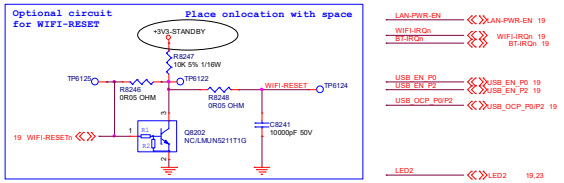




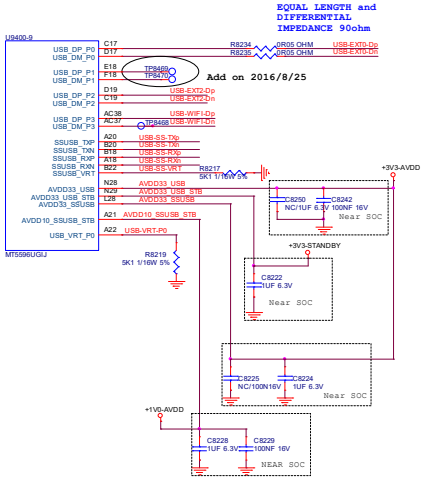


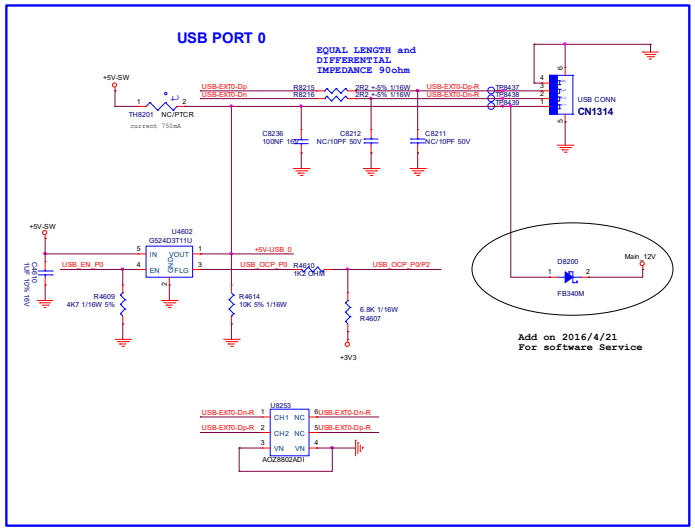


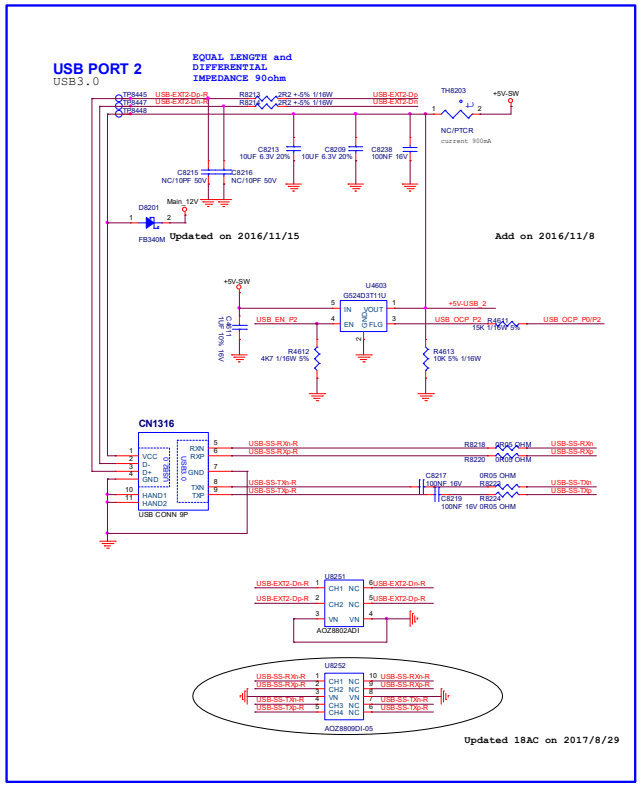


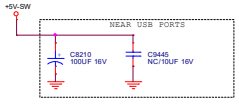


USB



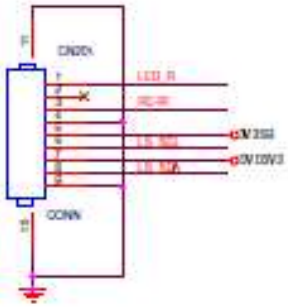


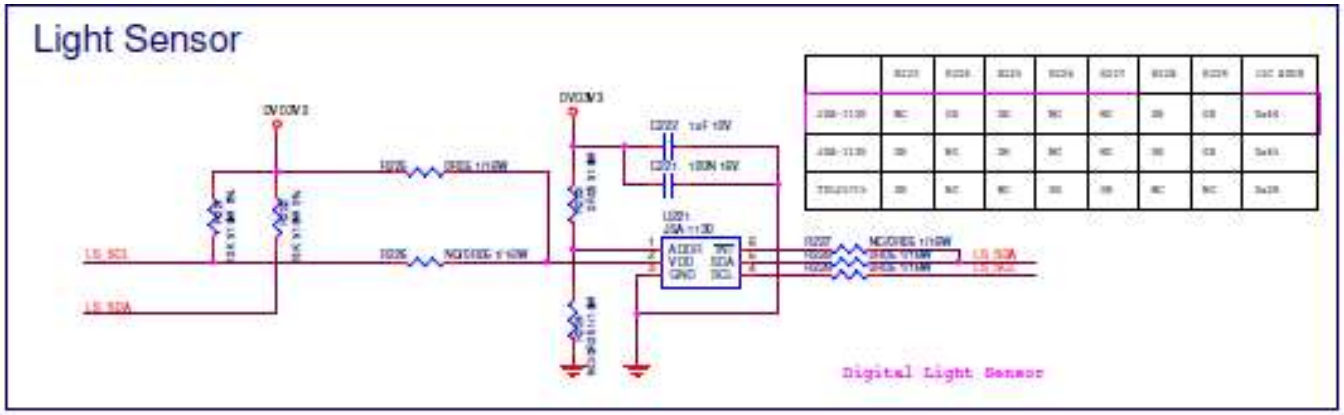


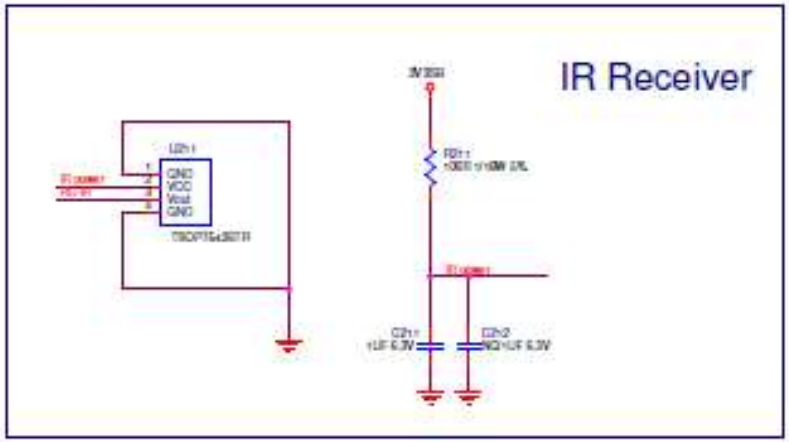


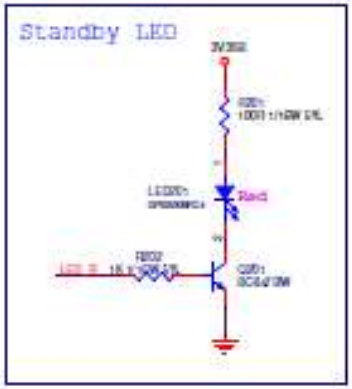
9.9 J 715G8694 IR/LED Panel (For 7503 Series)

9-9-1 LED&IR&Light sensor



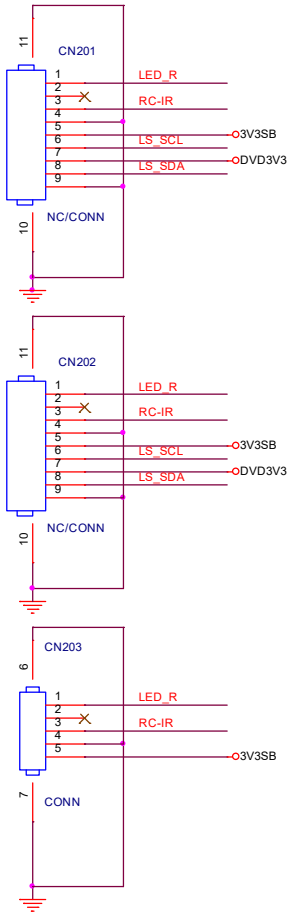


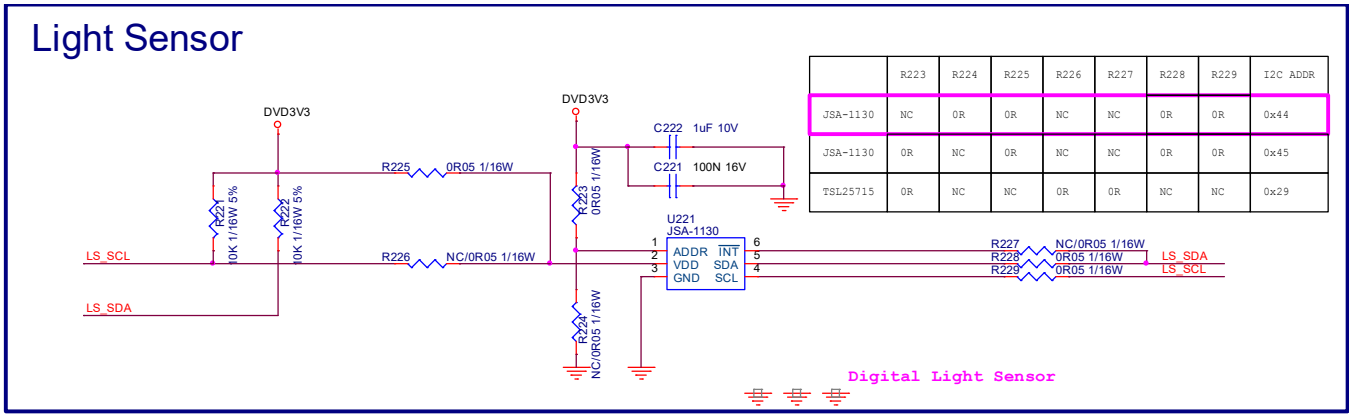




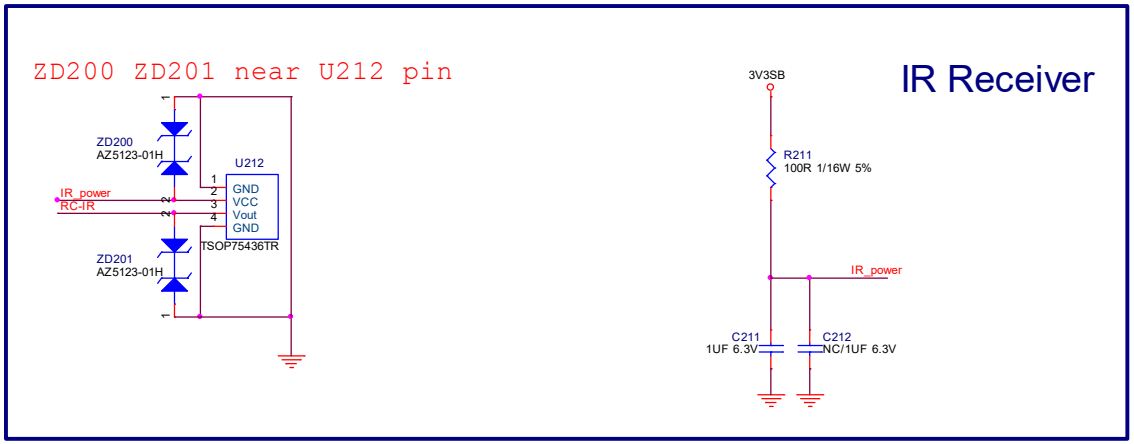
9.10 J 715G8623 IR/LED Panel (For 7303/OLED873 Series)

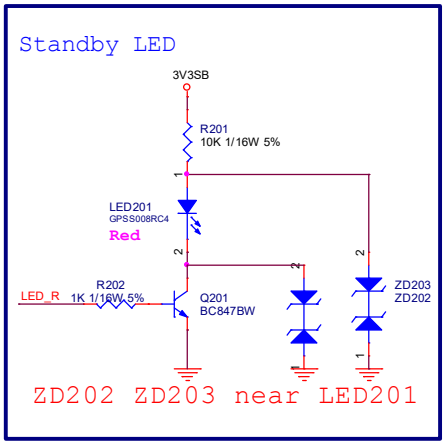
9-10-1 IR





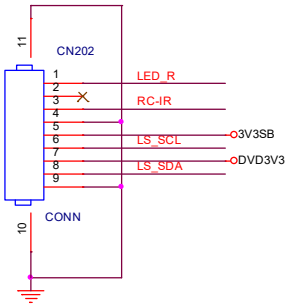
	R223	R224	R225	R226	R227	R228	R229	I2C ADDR
JSA-1130	NC	0R	0R	NC	NC	0R	0R	0x44
JSA-1130	0R	NC	0R	NC	NC	0R	0R	0x45
TSL25715	0R	NC	NC	0R	0R	NC	NC	0x29

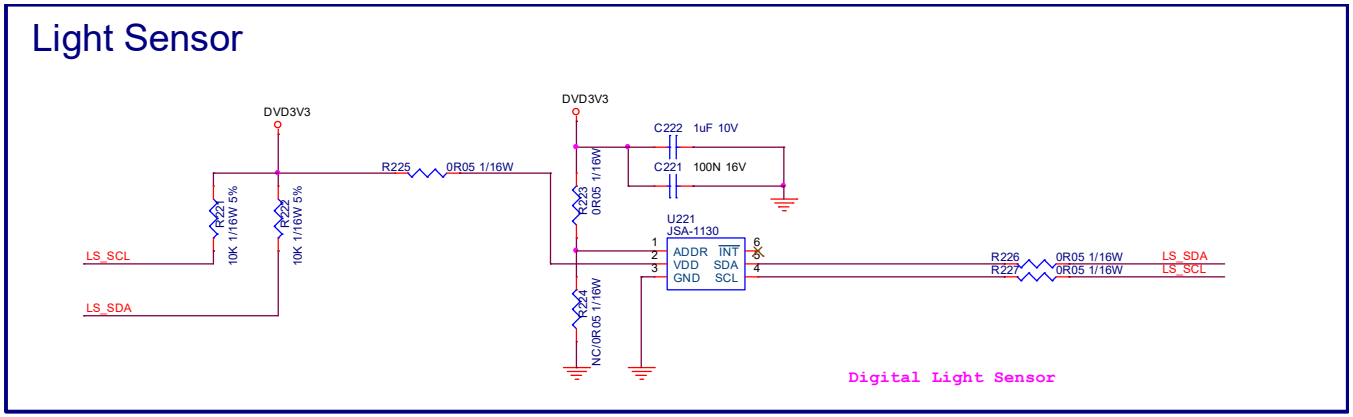


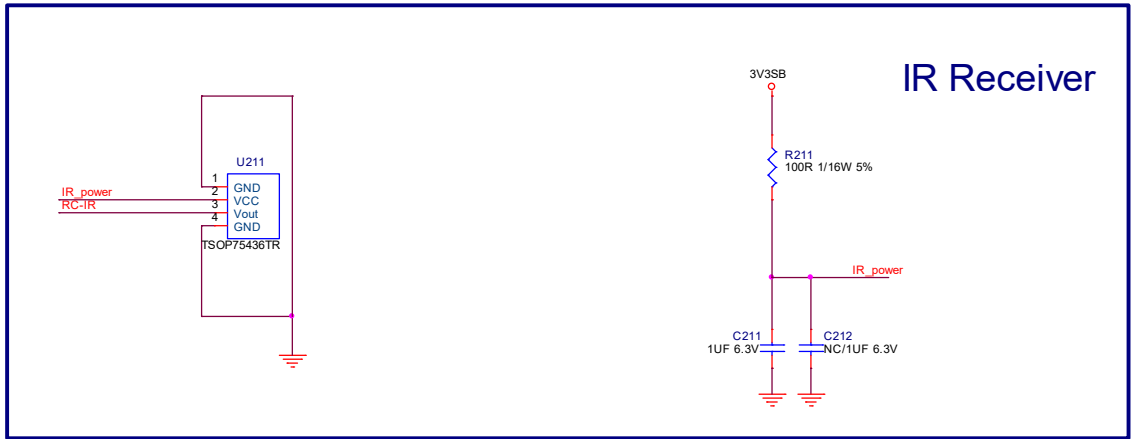


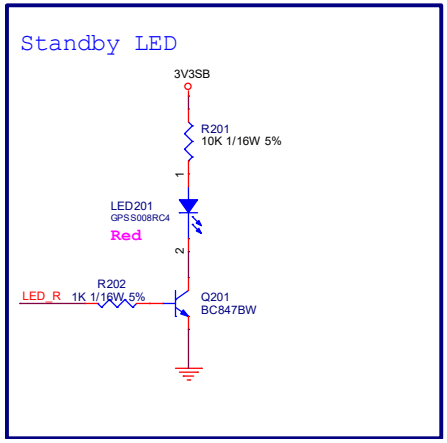
9.11 J 715G9363 IR/LED Panel (For OLED973 Series)

9-11-1 IR&STB LED&Light sensor



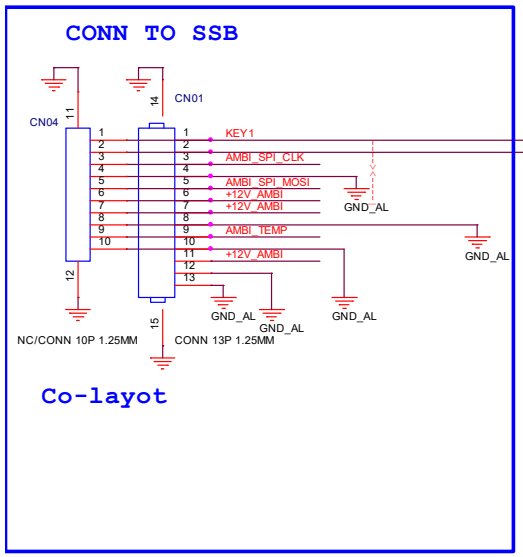


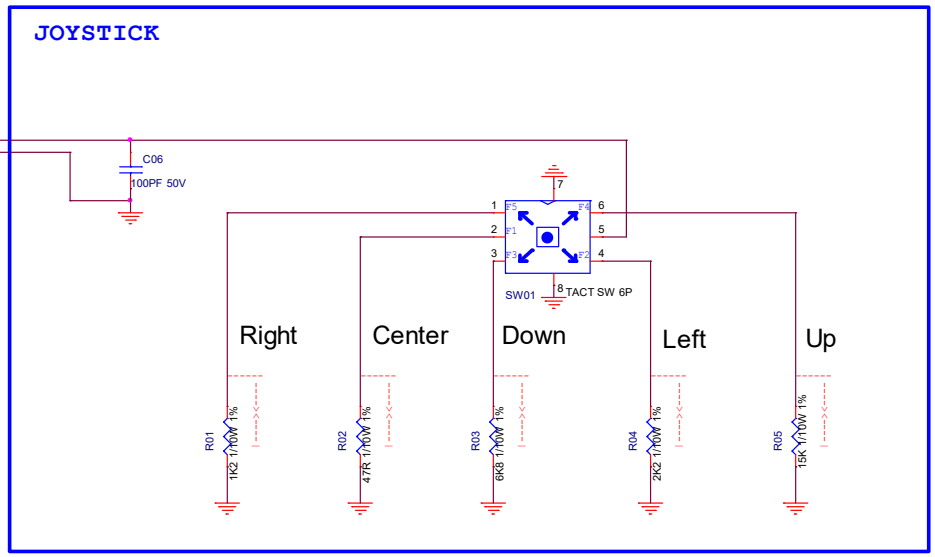


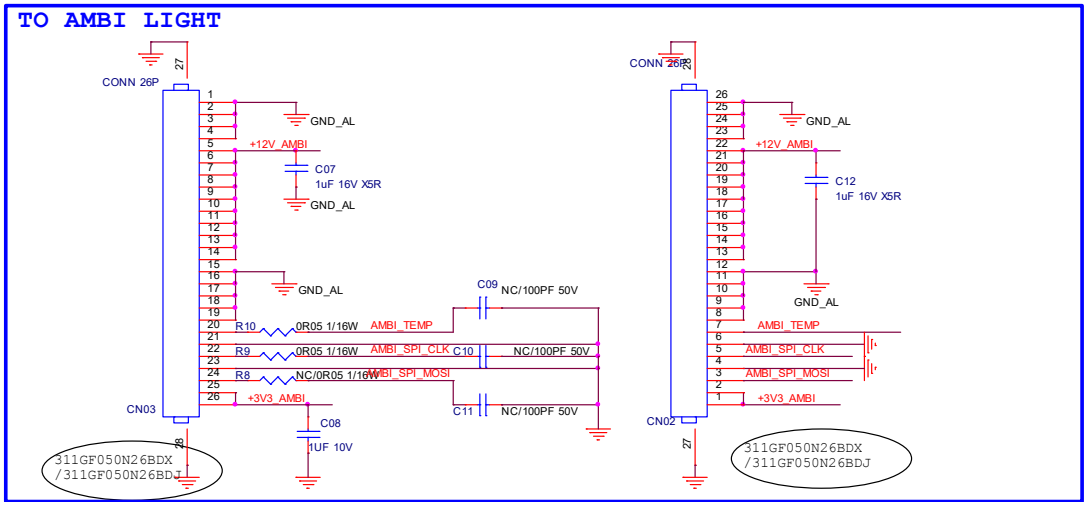


9.12 E 715G8555 Keyboard control panel (For 7303/7503/OLED873 Series)

9-12-1 Key







Joystick key define

Direction	switch	Key function	Resistance	Voltage	Range
Center	2-5 short	Menu	0R	0V	0.0 to 0.22 V
Right	1-5 short	CH+	1K2	0.5V	0.39 to 0.60 V
Left	4-5 short	CH-	2K2	0.81V	0.67 to 0.95 V
Down	3-5 short	VOL-	6K8	1.65V	1.41 to 1.87 V
Up	6-5 short	VOL+	15K	2.27V	1.93 to 2.58 V
NA	NA	No function	NA	3.3V	3.135 to 3.465V

Joystick circuit diagram

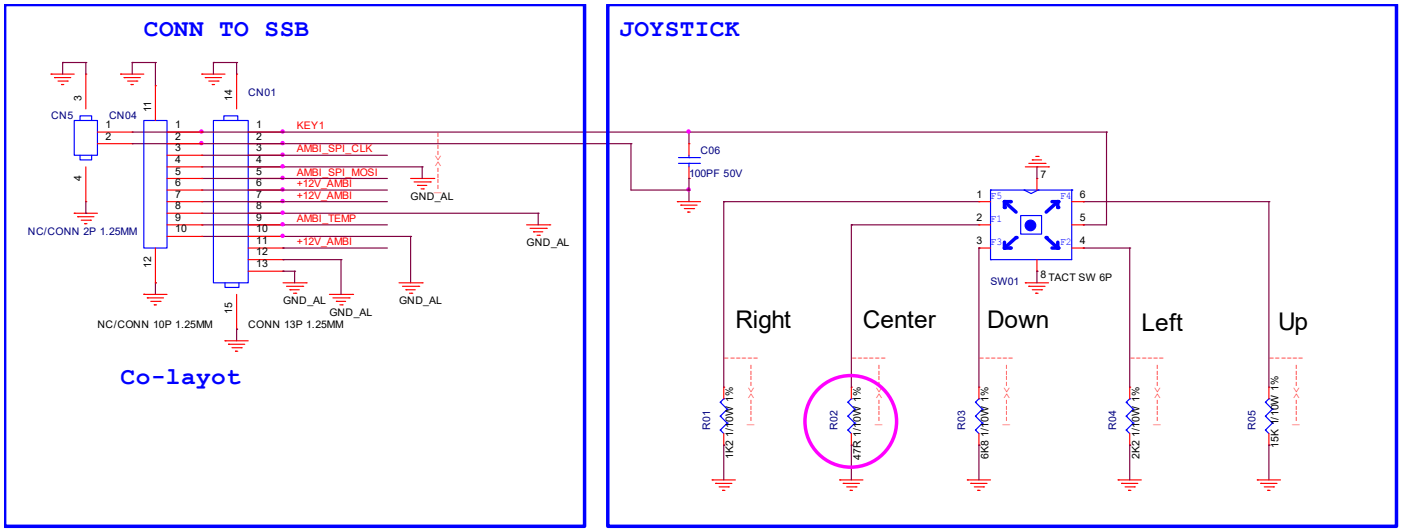
	pin1	pin2	pin3	pin4	pin5	pin6
F1		○			○	
F2				○	○	
F3			○		○	
F4					○	○
F5	○				○	

Joystick diversity for AL

	CN03	C07	R9	R10
AL2	N	N	N	N
AL3/AL4	Y	Y	Y	Y

9.13 E 715G9116 Keyboard control panel (For OLED973 Series)

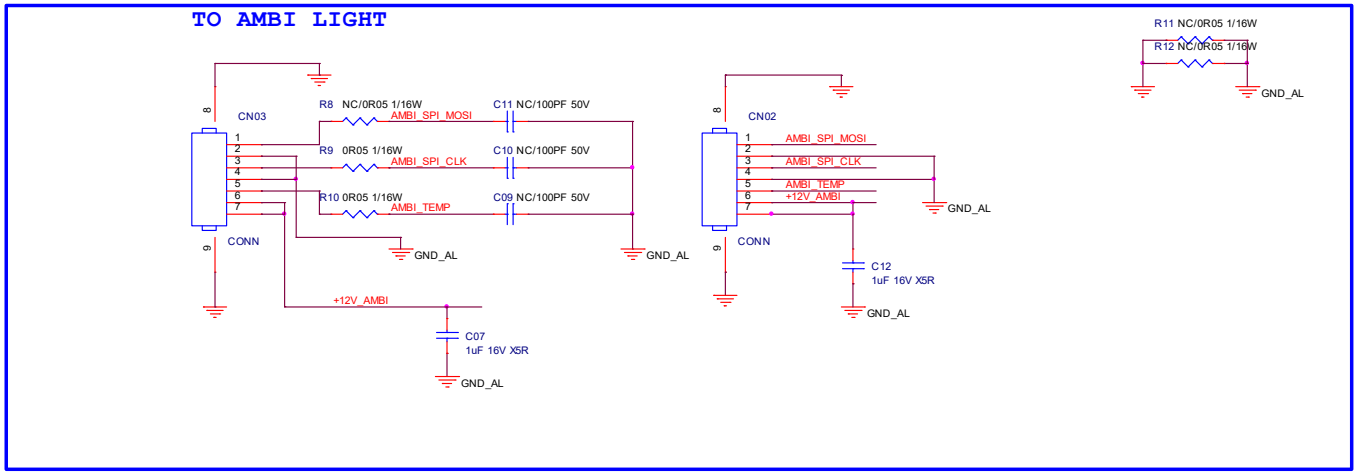
9-13-1 Key



Direction	switch	Key function	Resistance	Voltage
Center	2-5 short	Menu	47R	0V
Right	1-5 short	CH+	1K2	0.5V
Left	4-5 short	CH-	2K2	0.81V
Down	3-5 short	VOL-	6K8	1.65V
Up	6-5 short	VOL+	15K	2.27V
		No function		3.3V

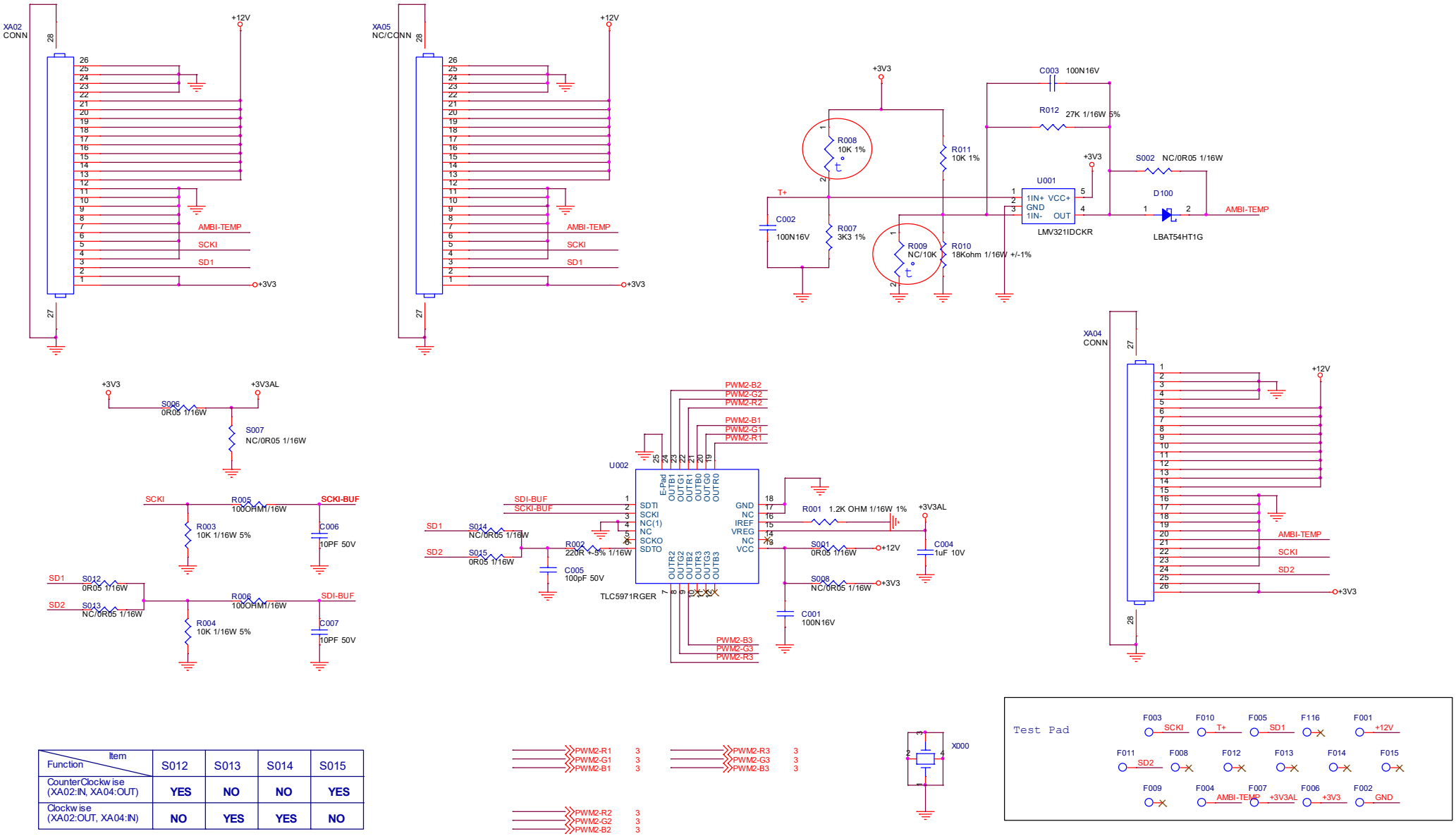
Joystick circuit diagram

	pin1	pin2	pin3	pin4	pin5	pin6
F1		○			○	
F2				○	○	
F3			○		○	
F4					○	○
F5	○				○	



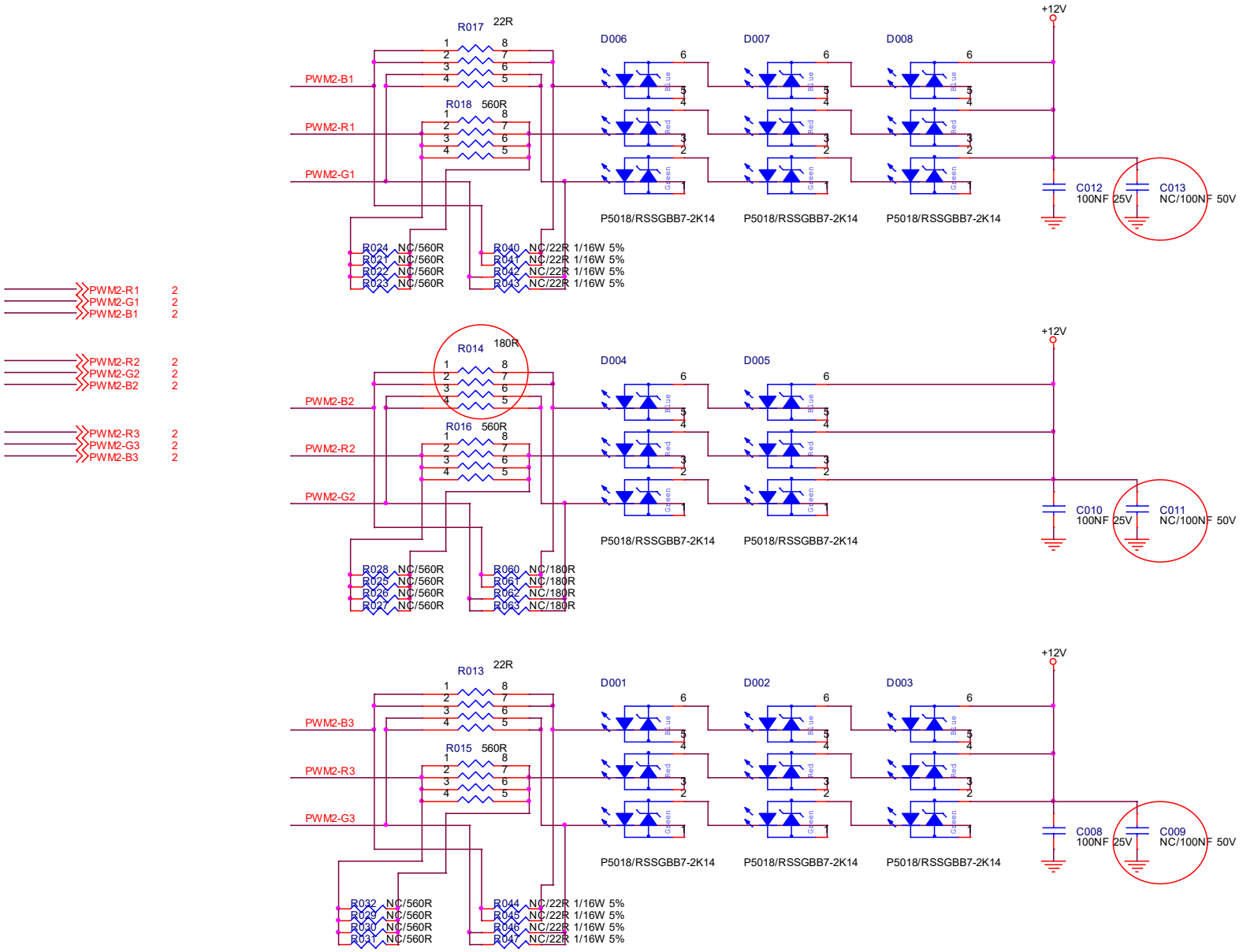
9.14 715G6981 AMBI Panel (For 43” 7303 Series)

9-14-1 TLC5971



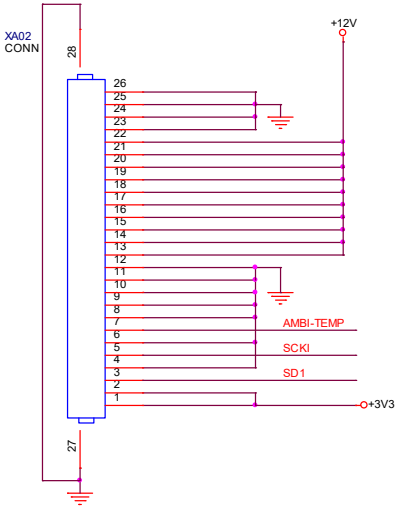
Item / Function	S012	S013	S014	S015
CounterClockwise (XA02:IN, XA04:OUT)	YES	NO	NO	YES
Clockwise (XA02:OUT, XA04:IN)	NO	YES	YES	NO

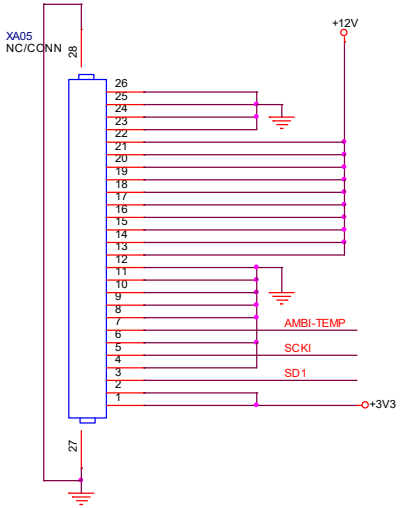
9-14-2 Ambilight 8-LED

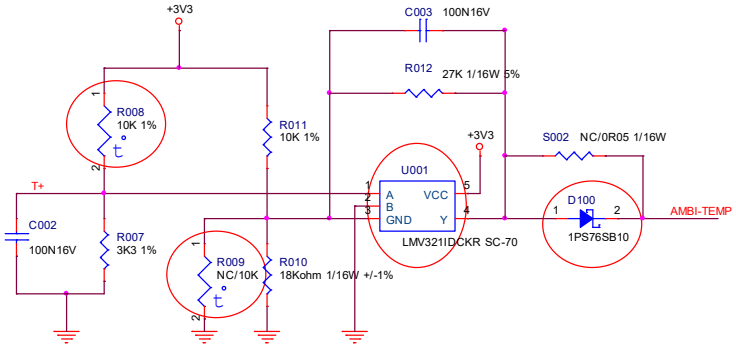


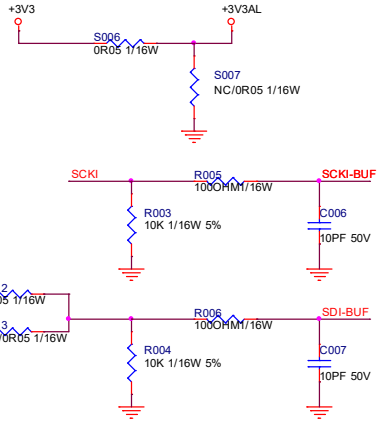
9.15 715G7004 AMBI Panel (For 65” 7303 Series)

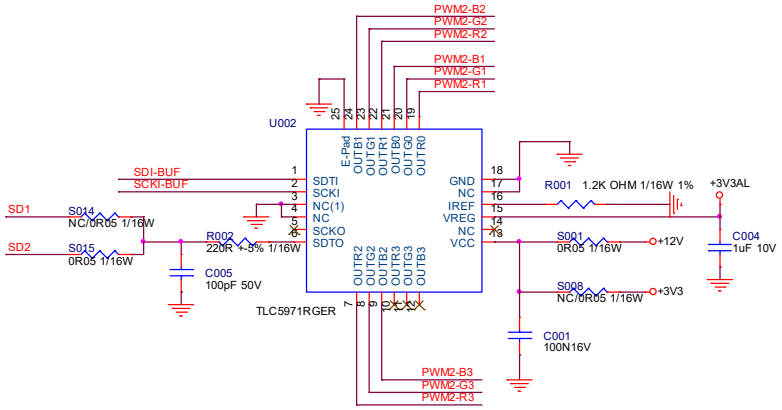
9-15-1 TLC5971

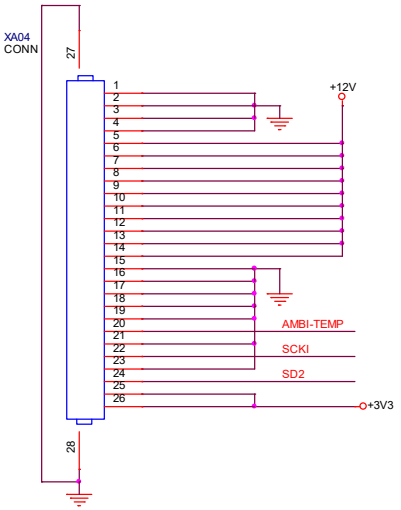




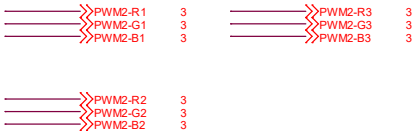


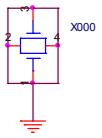


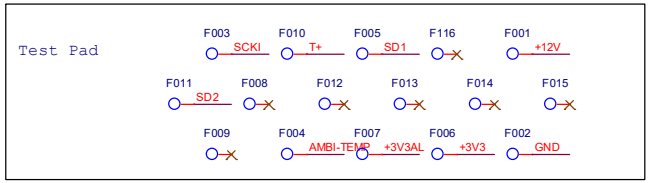




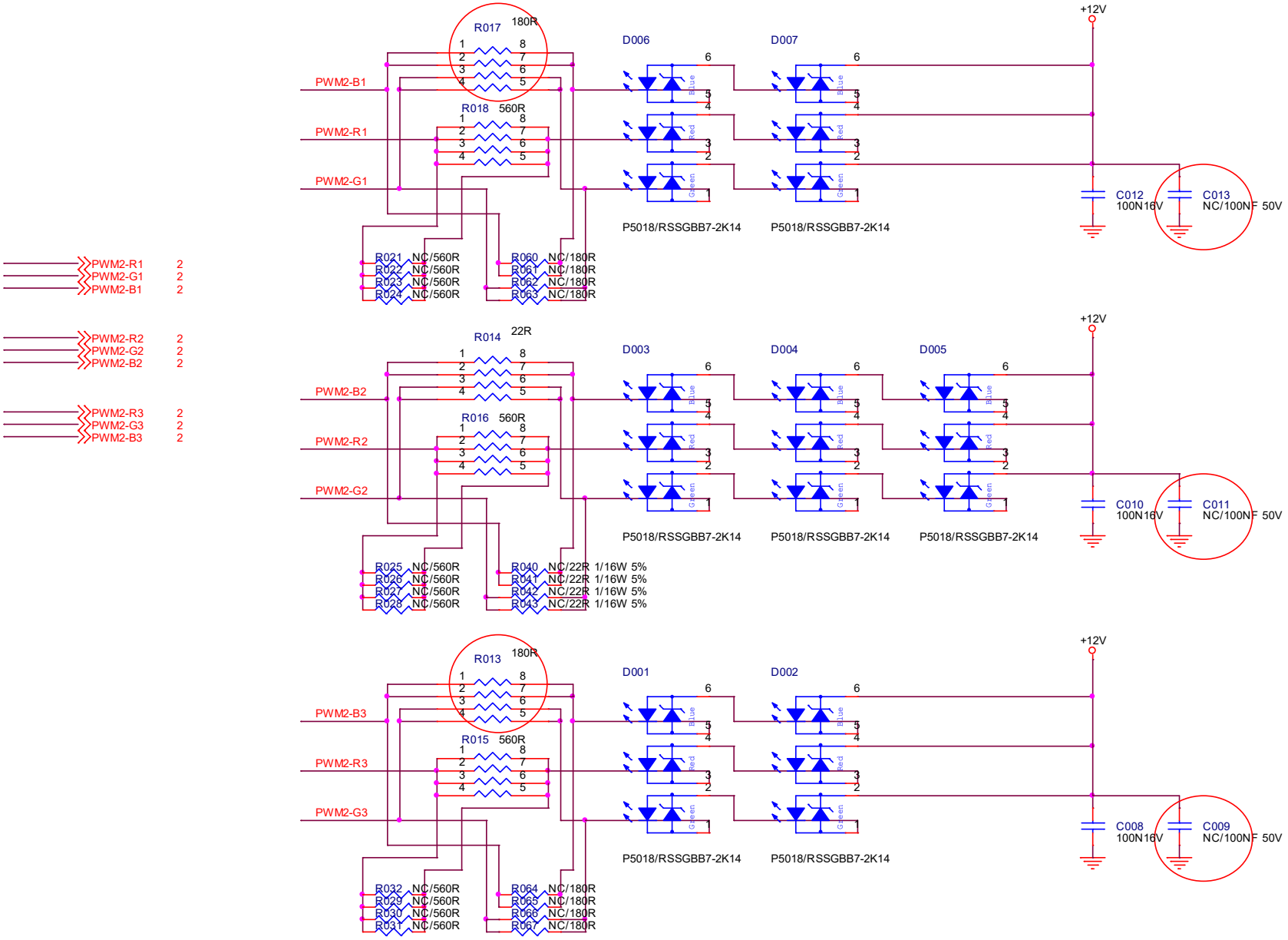
Item / Function	S012	S013	S014	S015
CounterClockwise (XA02:IN, XA04:OUT)	YES	NO	NO	YES
Clockwise (XA02:OUT, XA04:IN)	NO	YES	YES	NO





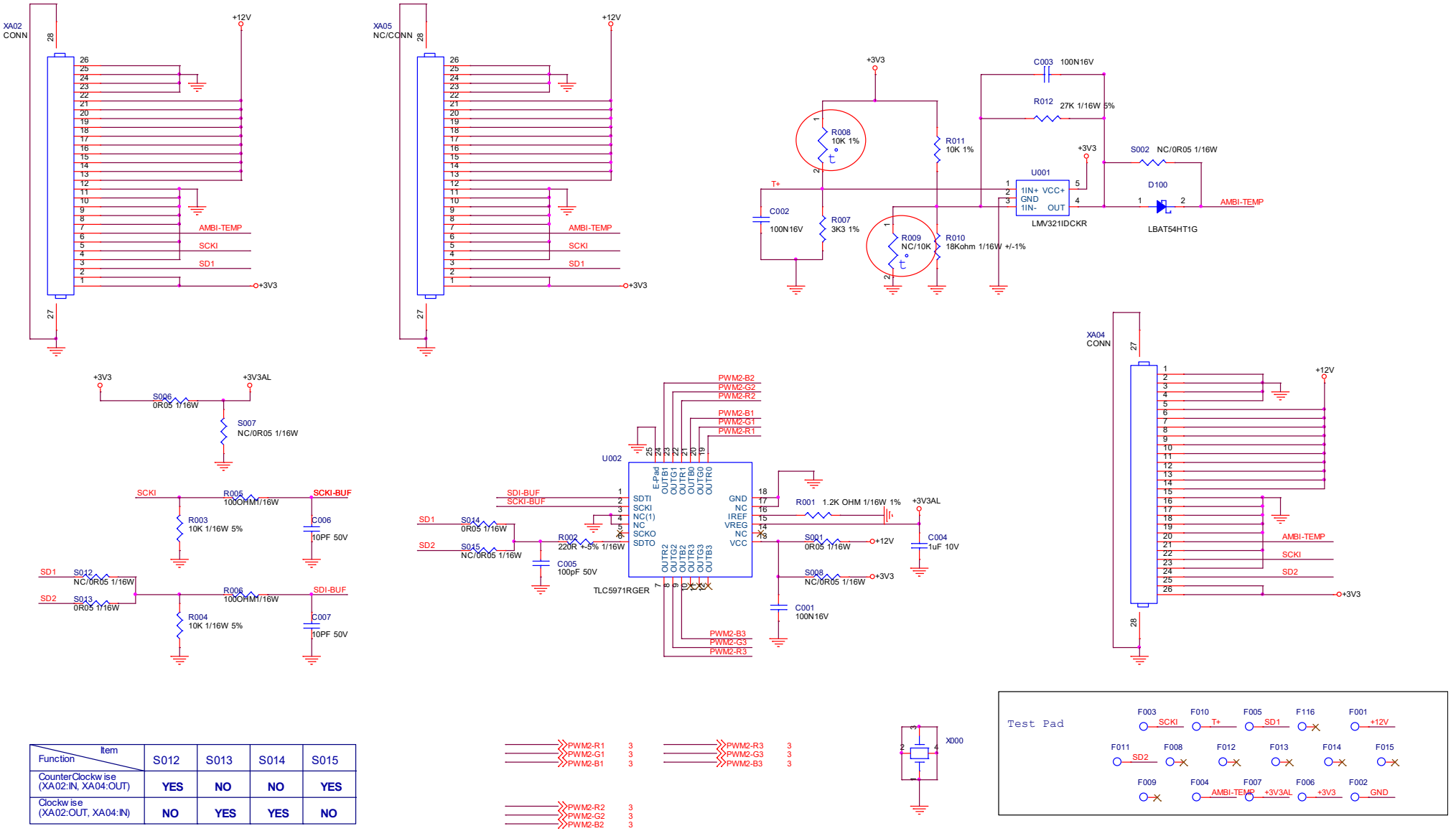


9-15-2 Ambilight 7-LED



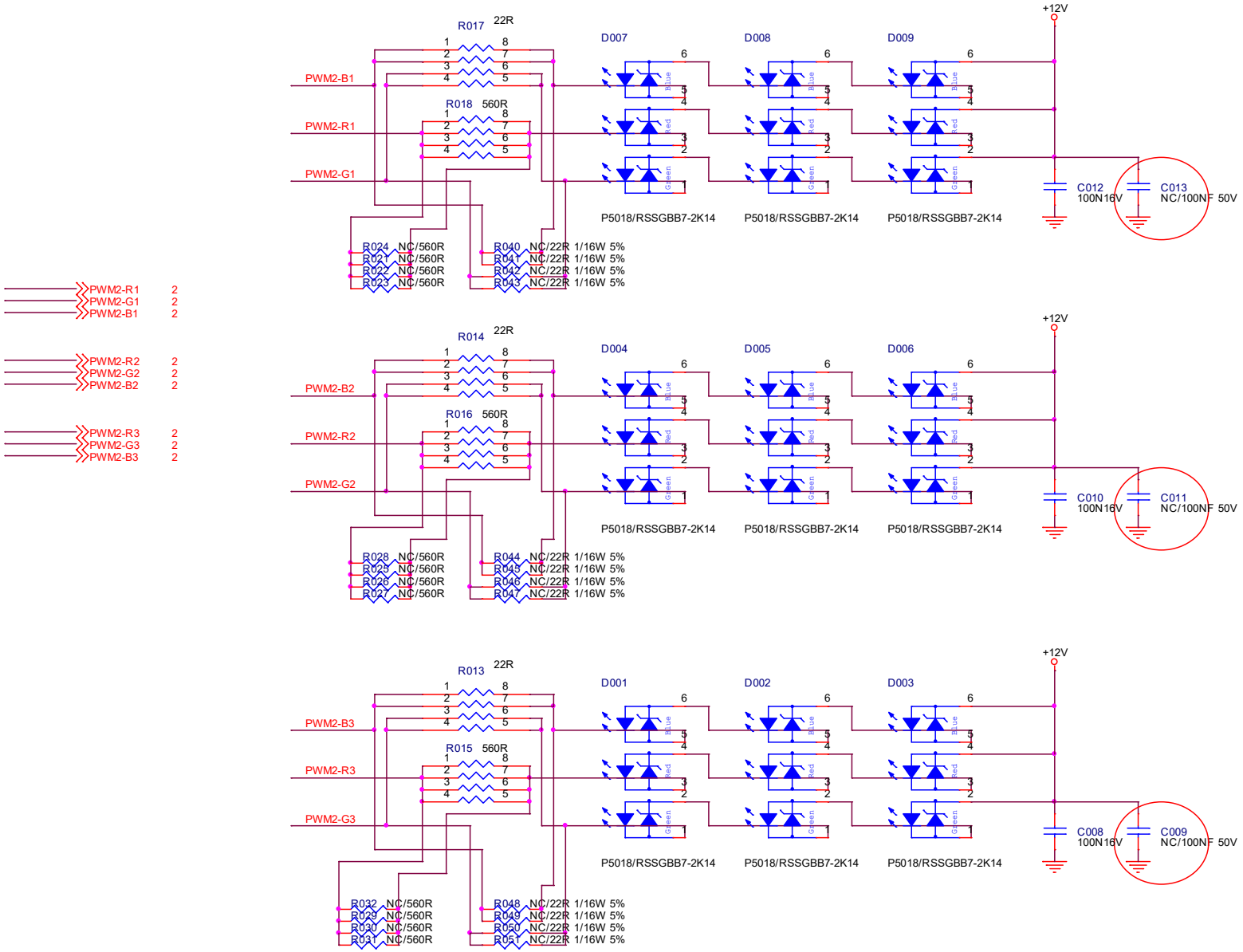
9.16 715G7006 AMBI Panel (For 49” 7503 & 50/65” 7303 Series)

9-16-1 TLC5971



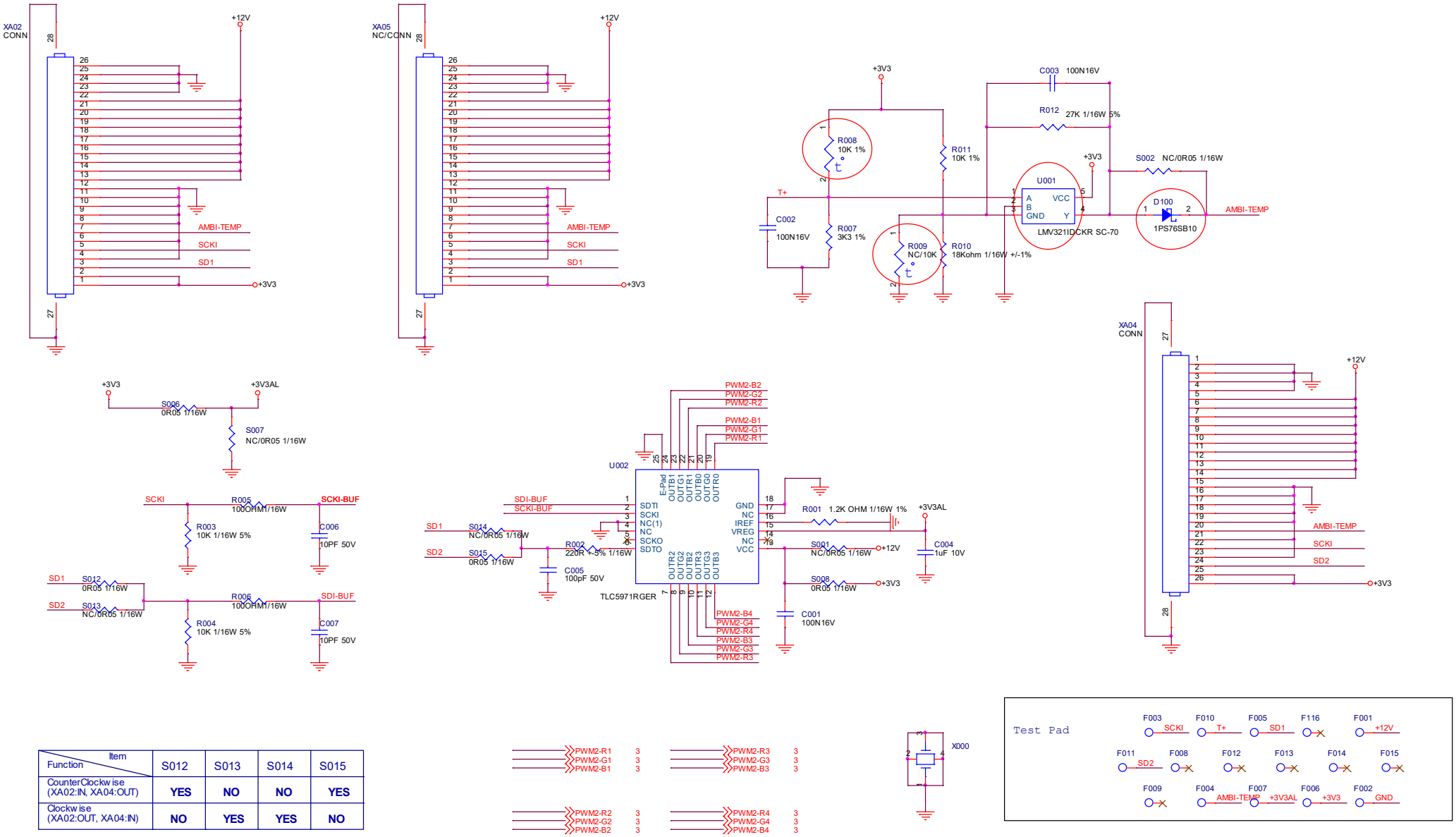
Item / Function	S012	S013	S014	S015
CounterClockwise (XA02:IN, XA04:OUT)	YES	NO	NO	YES
Clockwise (XA02:OUT, XA04:IN)	NO	YES	YES	NO

9-16-2 Ambilight 9-LED



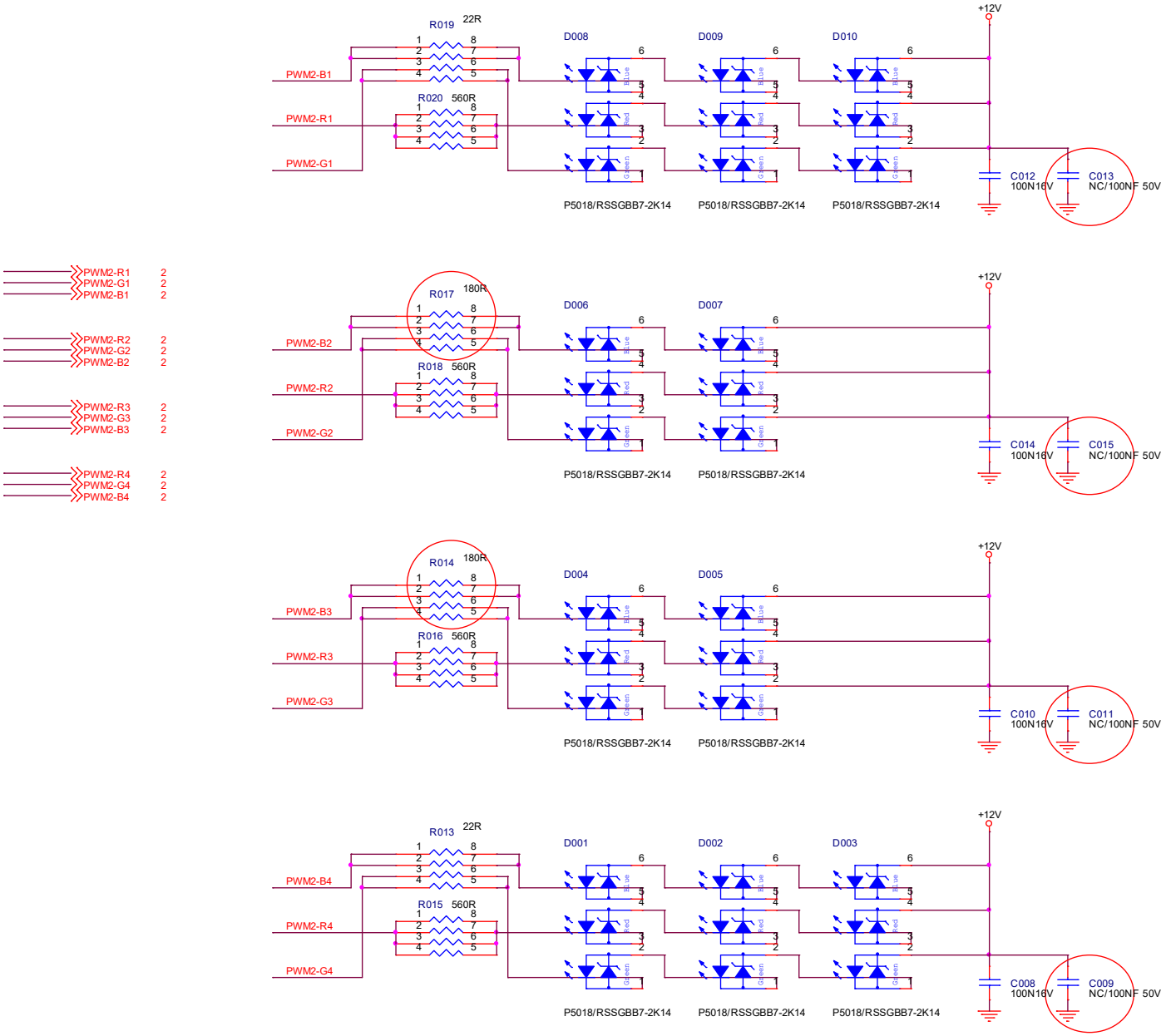
9.17 715G7007 AMBI Panel (For 49/55” 7503 & 50/55” 7303 & 65” OLED873 Series)

9-17-1 TLC5971



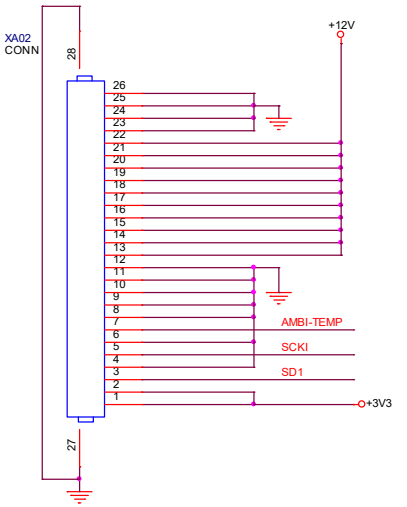
Item / Function	S012	S013	S014	S015
CounterClockwise (XA02:IN, XA04:OUT)	YES	NO	NO	YES
Clockwise (XA02:OUT, XA04:IN)	NO	YES	YES	NO

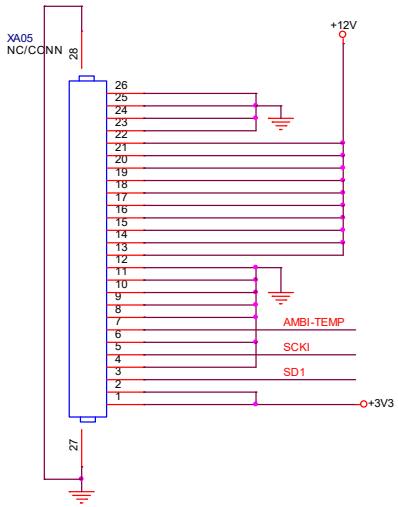
9-17-2 Ambilight 10-LED

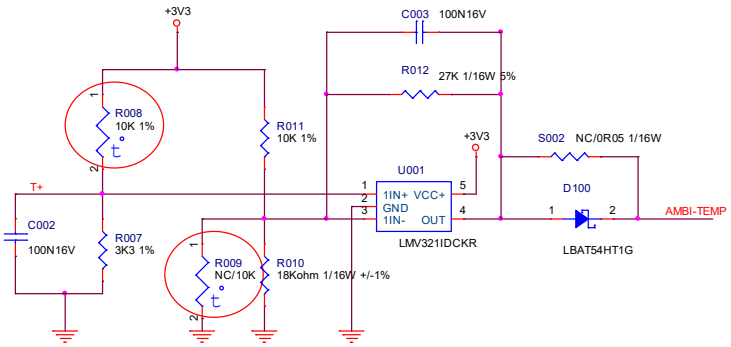


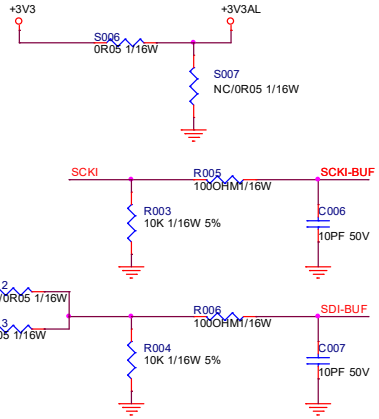
9.18 715G7008 AMBI Panel (For 65” 67303 Series)

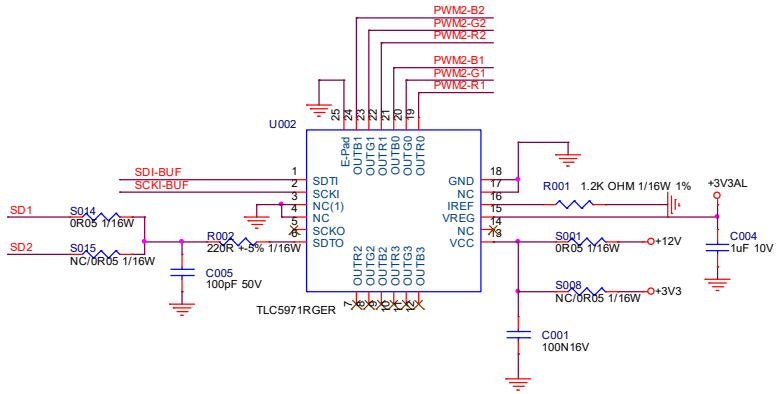
9-18-1 TLC5971

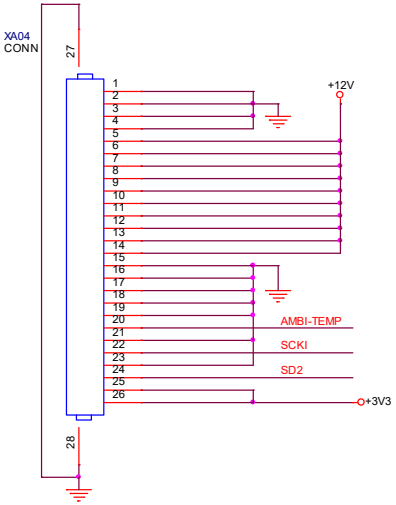




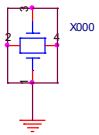


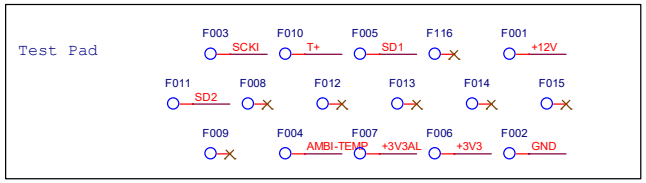




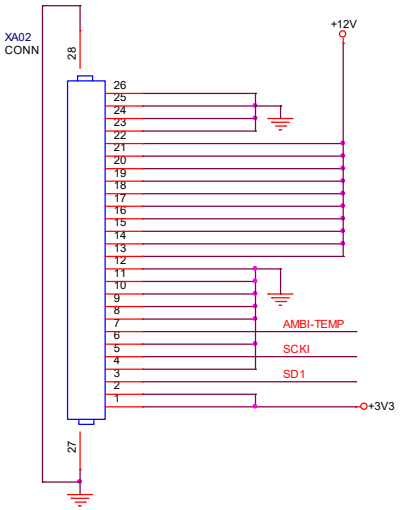


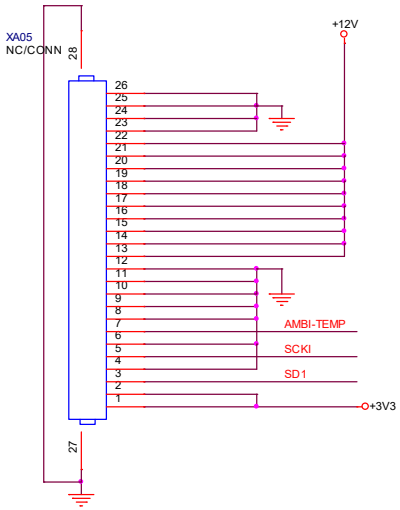
Item / Function	S012	S013	S014	S015
CounterClockwise (XA02:IN, XA04:OUT)	YES	NO	NO	YES
Clockwise (XA02:OUT, XA04:IN)	NO	YES	YES	NO

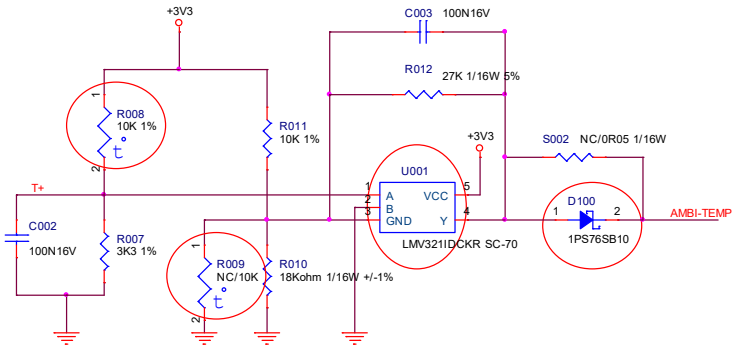


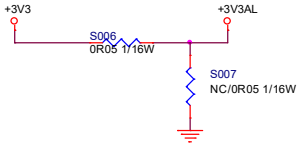


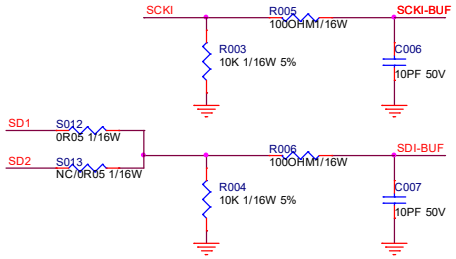
9-18-2 TLC5971_2

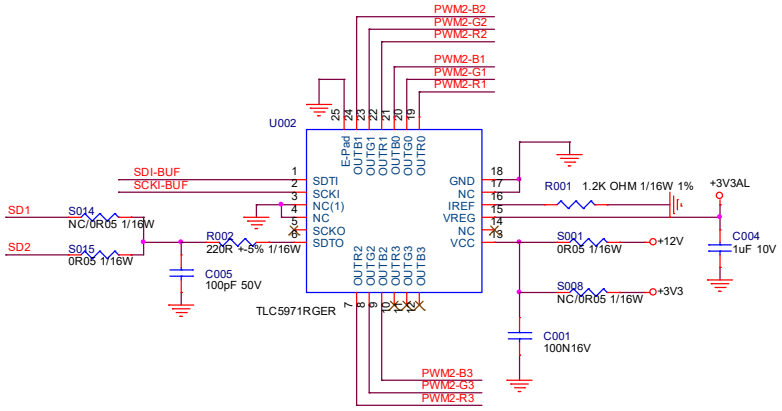


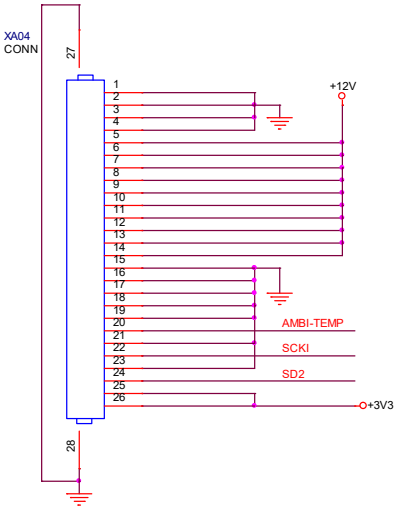




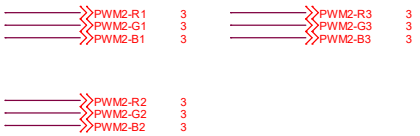


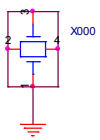


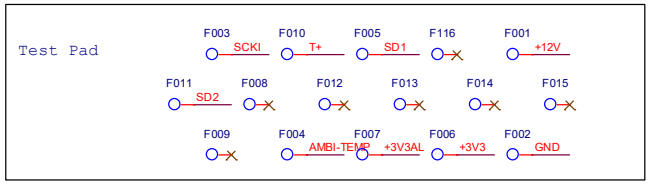




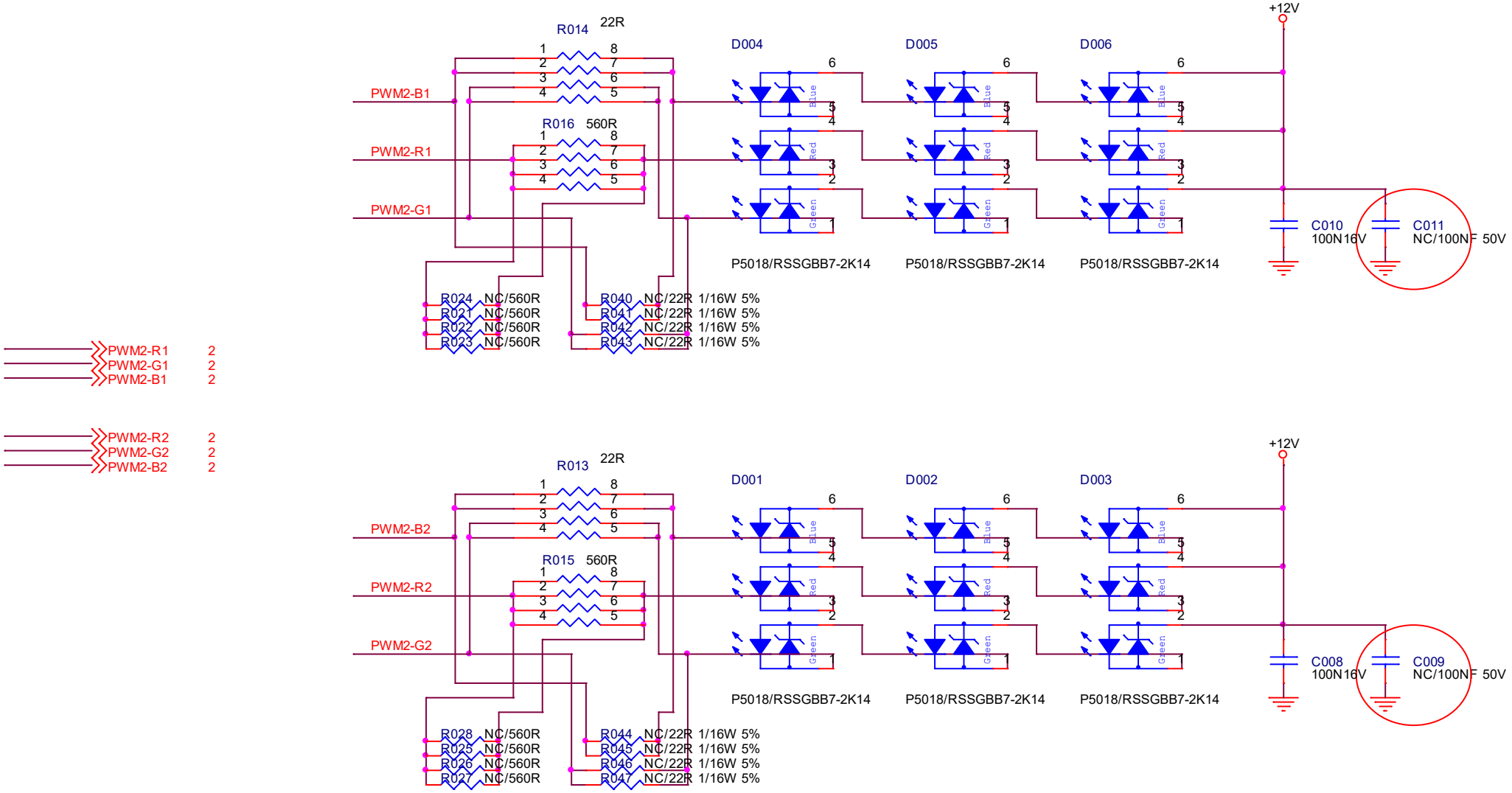
Item / Function	S012	S013	S014	S015
CounterClockwise (XA02:IN, XA04:OUT)	YES	NO	NO	YES
Clockwise (XA02:OUT, XA04:IN)	NO	YES	YES	NO



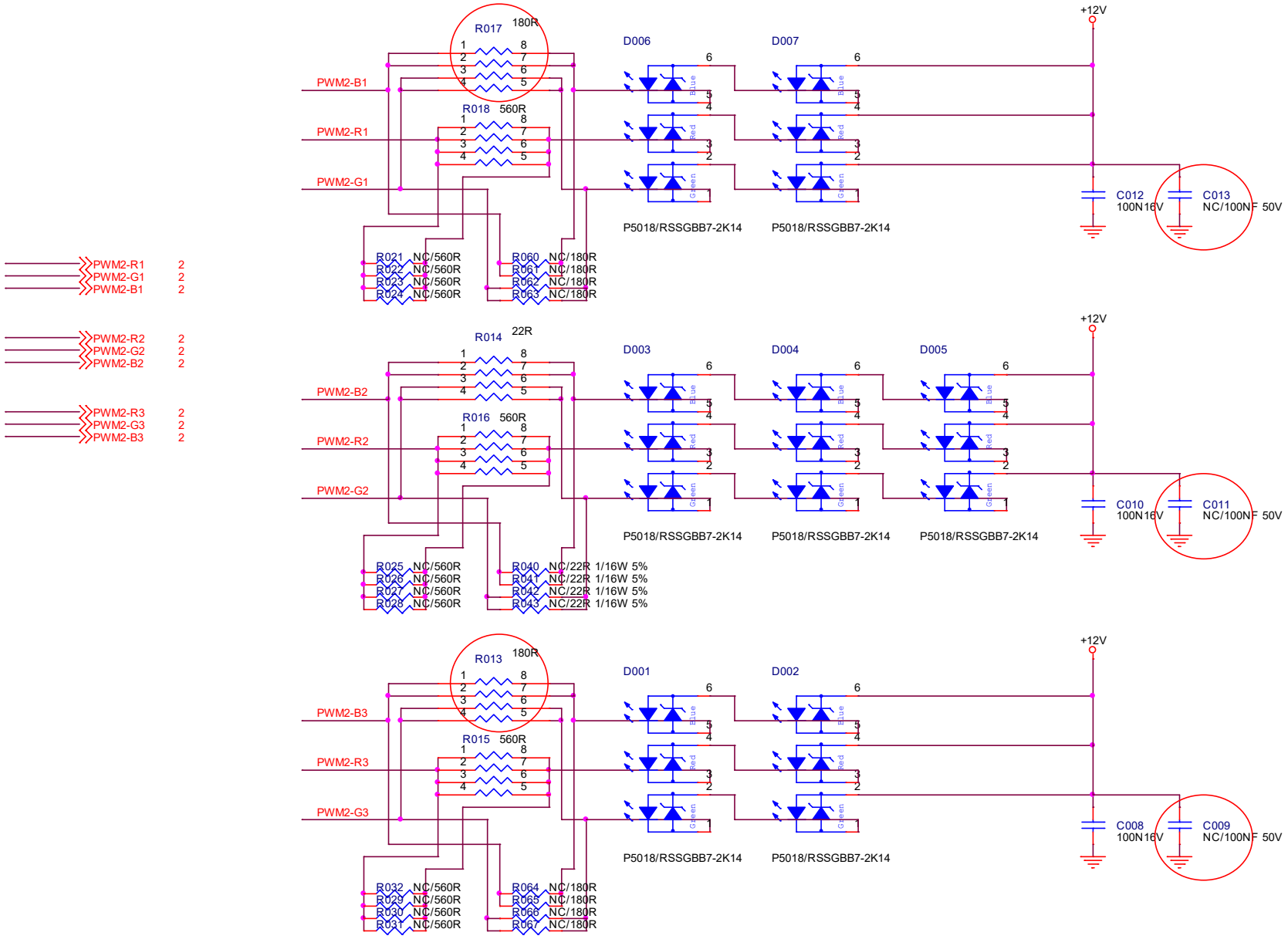




9-18-3 Ambilight 6-LED

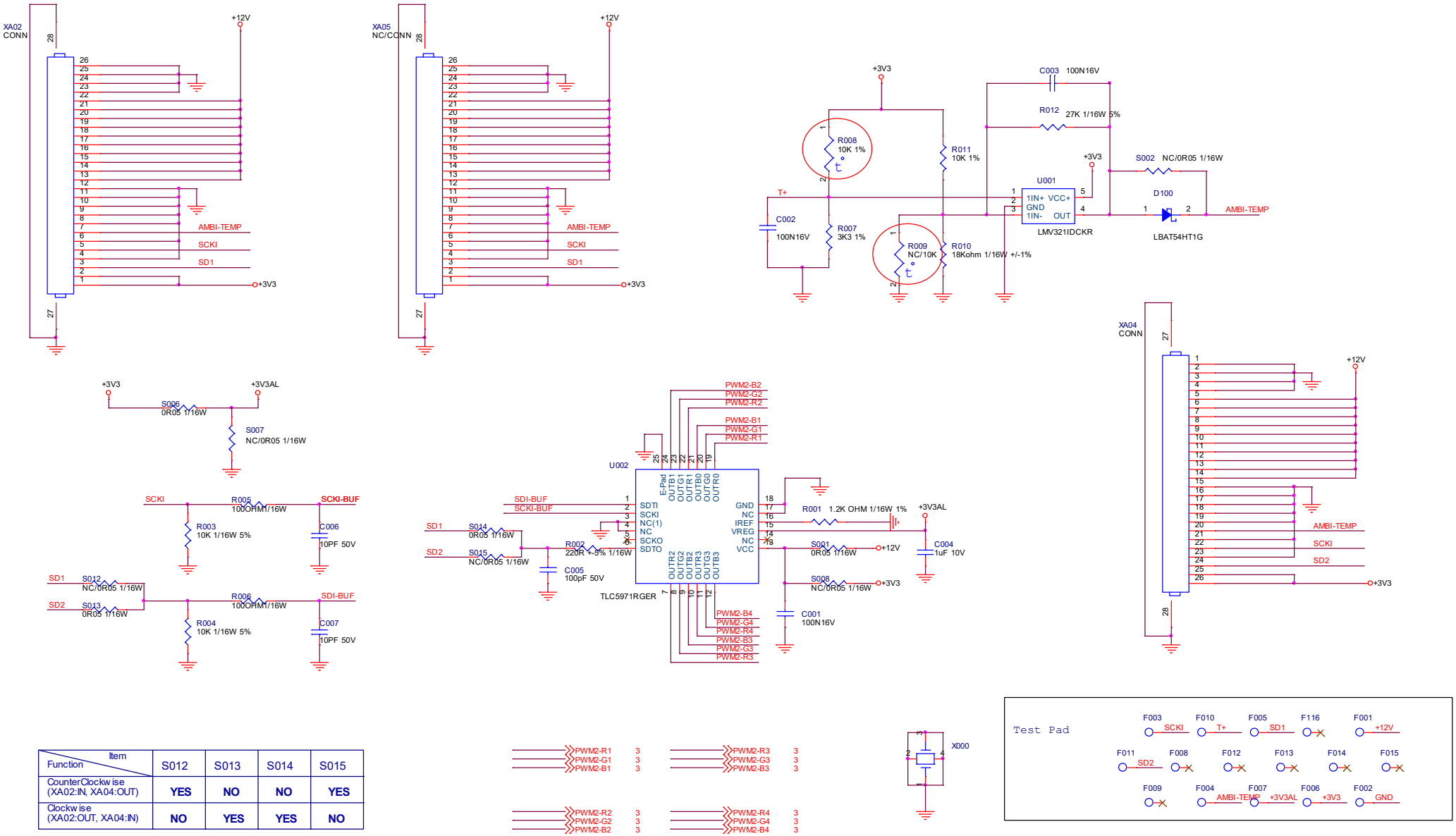


9-18-4 Ambilight 7-LED



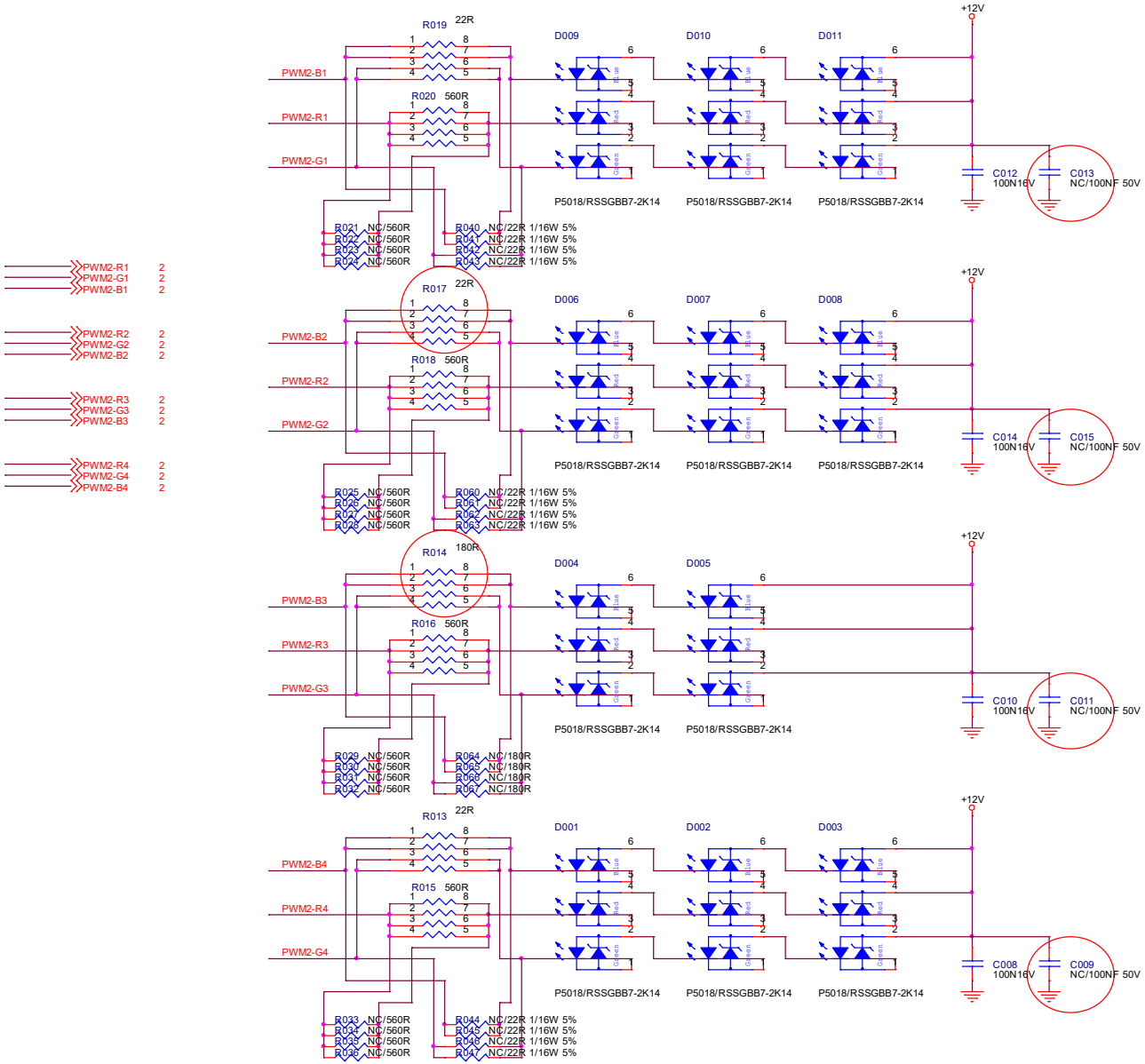
9.19 715G7865 AMBI Panel (For 55” 7303/7503 Series)

9-19-1 TLC5971



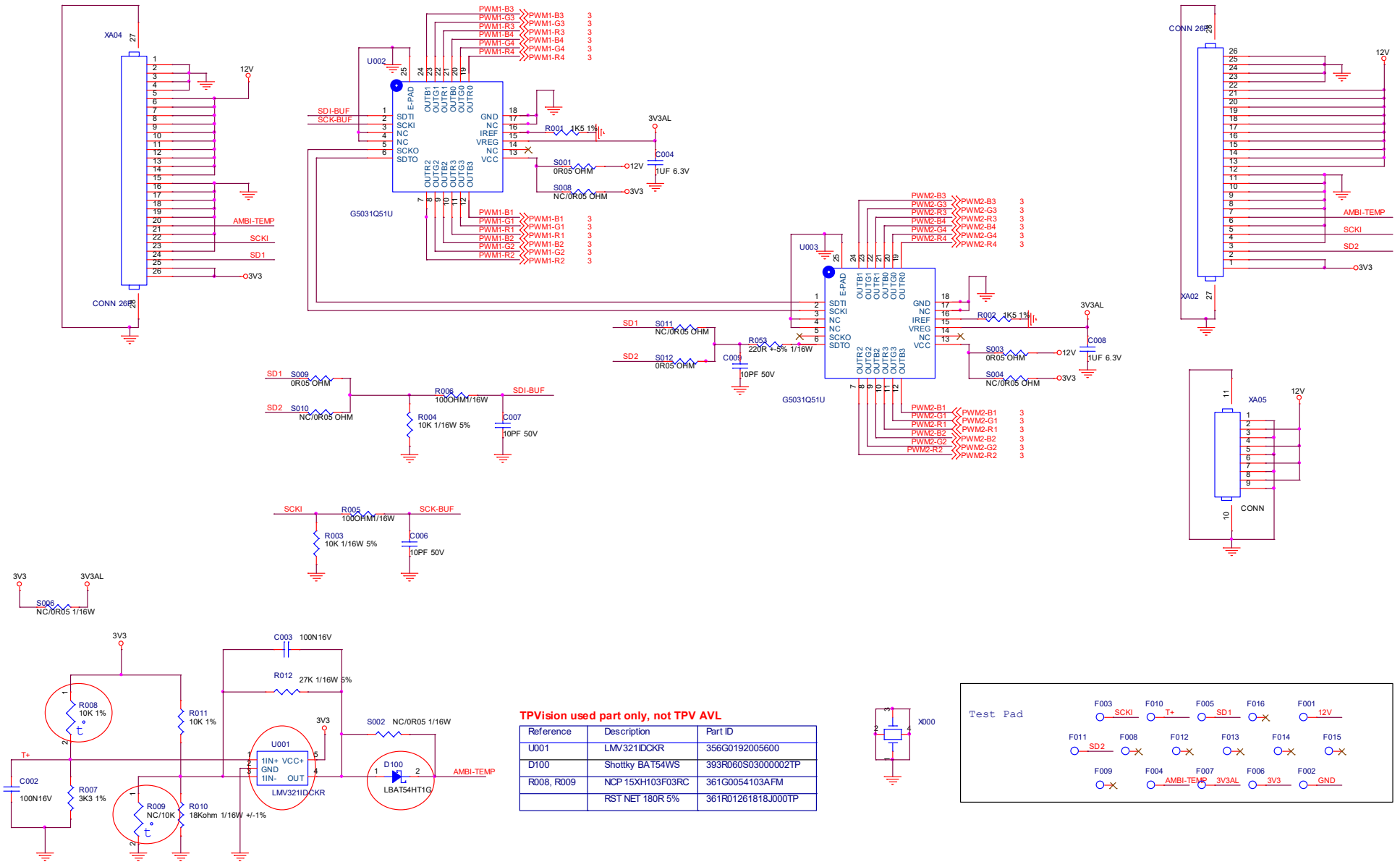
Item / Function	S012	S013	S014	S015
CounterClockwise (XA02:IN, XA04:OUT)	YES	NO	NO	YES
Clockwise (XA02:OUT, XA04:IN)	NO	YES	YES	NO

9-19-2 Ambilight 11-LED



9.20 715G8236 AMBI Panel (For OLED 873 Series)

9-20-1 TLC5971



TPVision used part only, not TPV AVL

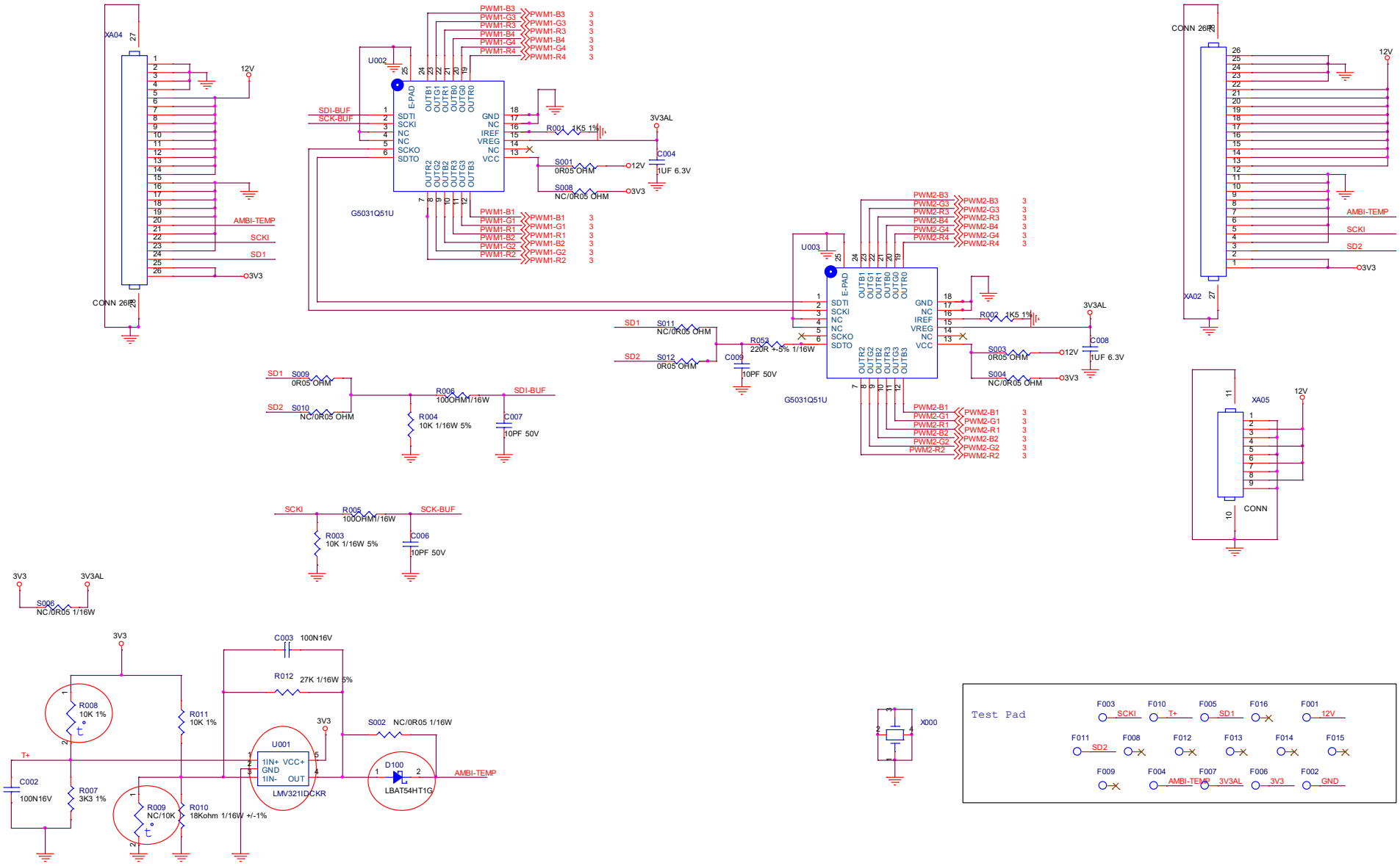
Reference	Description	Part ID
U001	LMV321IDCKR	356G0192005600
D100	Shottky BAT54WS	393R060S03000002TP
R008, R009	NCP 15XH103F03RC	361G0054103AFM
	RST NET 180R 5%	361R01261818J000TP

9-20-2 20LED


PWM2-B4
PWM2-G4
PWM2-R4
PWM2-B3
PWM2-G3
PWM2-R3
PWM2-B2
PWM2-G2
PWM2-R2
PWM2-B1
PWM2-G1
PWM2-R1
PWM1-B4
PWM1-G4
PWM1-R4
PWM1-B3
PWM1-G3
PWM1-R3
PWM1-B2
PWM1-G2
PWM1-R2
PWM1-B1
PWM1-G1
PWM1-R1
1
2
3
4
5
6
7
8
RP003
200R
RP004
560R
RP001
22R
RP2
RP4
RP8
RP7
RP13
RP12
RP11
D102
D103
D112
D113
D122
D123
D132
D133
D142
D143
D101
D104
D111
D114
D121
D124
D131
D134
D141
D144
LTW-X45T-P2H
12V
C013
C010
C011
C012
C014
C015
C016
C017
C024
C019
C018
C025
C020
C021
C022
C023
100NF 25V
100NF 50V

9.21 715G8789 AMBI Panel (For OLED 873 Series)

9-21-1 TLC5971



9-21-2 20LED

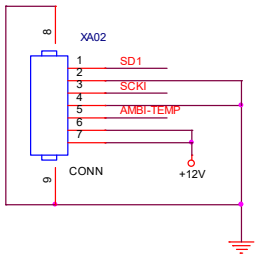

PWM2-B4
PWM2-G4
PWM2-R4
PWM2-B3
PWM2-G3
PWM2-R3
PWM2-B2
PWM2-G2
PWM2-R2
PWM2-B1
PWM2-G1
PWM2-R1
PWM1-B4
PWM1-G4
PWM1-R4
PWM1-B3
PWM1-G3
PWM1-R3
PWM1-B2
PWM1-G2
PWM1-R2
PWM1-B1
PWM1-G1
PWM1-R1
1
2
3
4
5
6
7
8
RP003 200R
RP004 560R
RP001 22R
RP2 22R
RP4 200R
RP8 200R
RP13 22R
RP12 22R
RP11 200R
D102
D103
D112
D113
D122
D123
D132
D133
D142
D143
D101
D104
D111
D114
D121
D124
D131
D134
D141
D144
LTW-X65T-P2H
12V
C013
C010
C011
C012
C014
C015
C016
C017
C024
C019
C018
C025
C020
C021
C027
C023
100NF 25V
100NF 50V

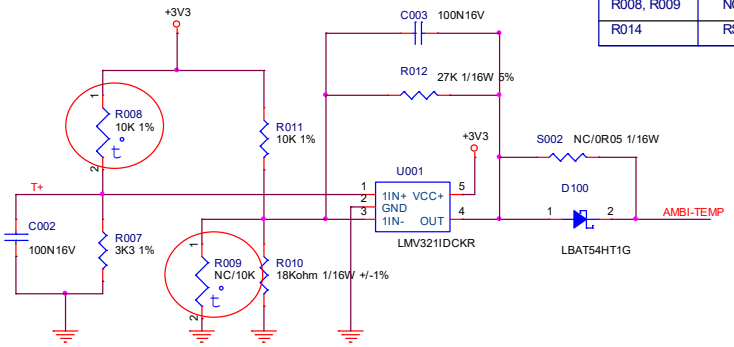
9.22 715G9108 AMBI Panel (For OLED 973 Series)

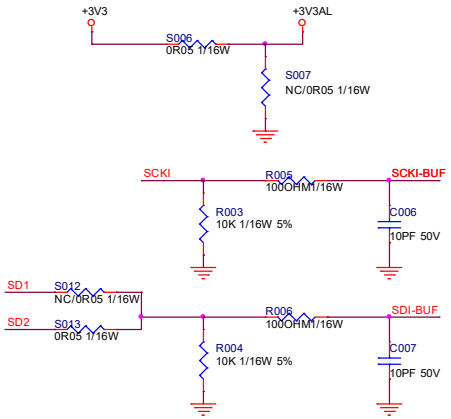
9-22-1 TLC5971

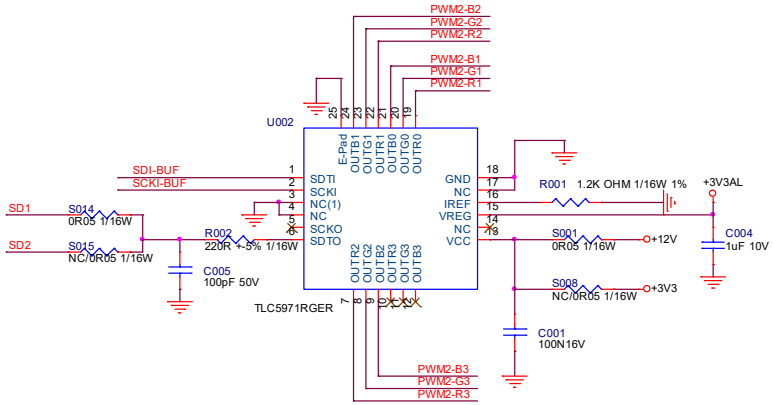
TPVision used part only, not TPV AVL

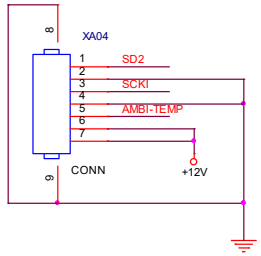
Reference	Description	Part ID
R008, R009	NCP 15XH103F03RC	361G0054103AFM
R014	RST NET 180R 5%	361R01261818J000TP



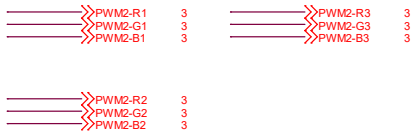


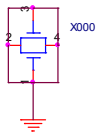


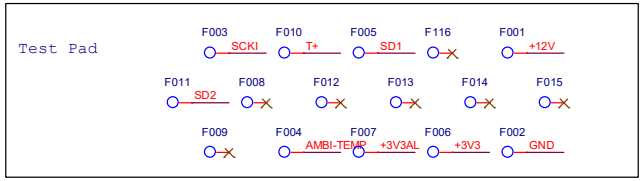




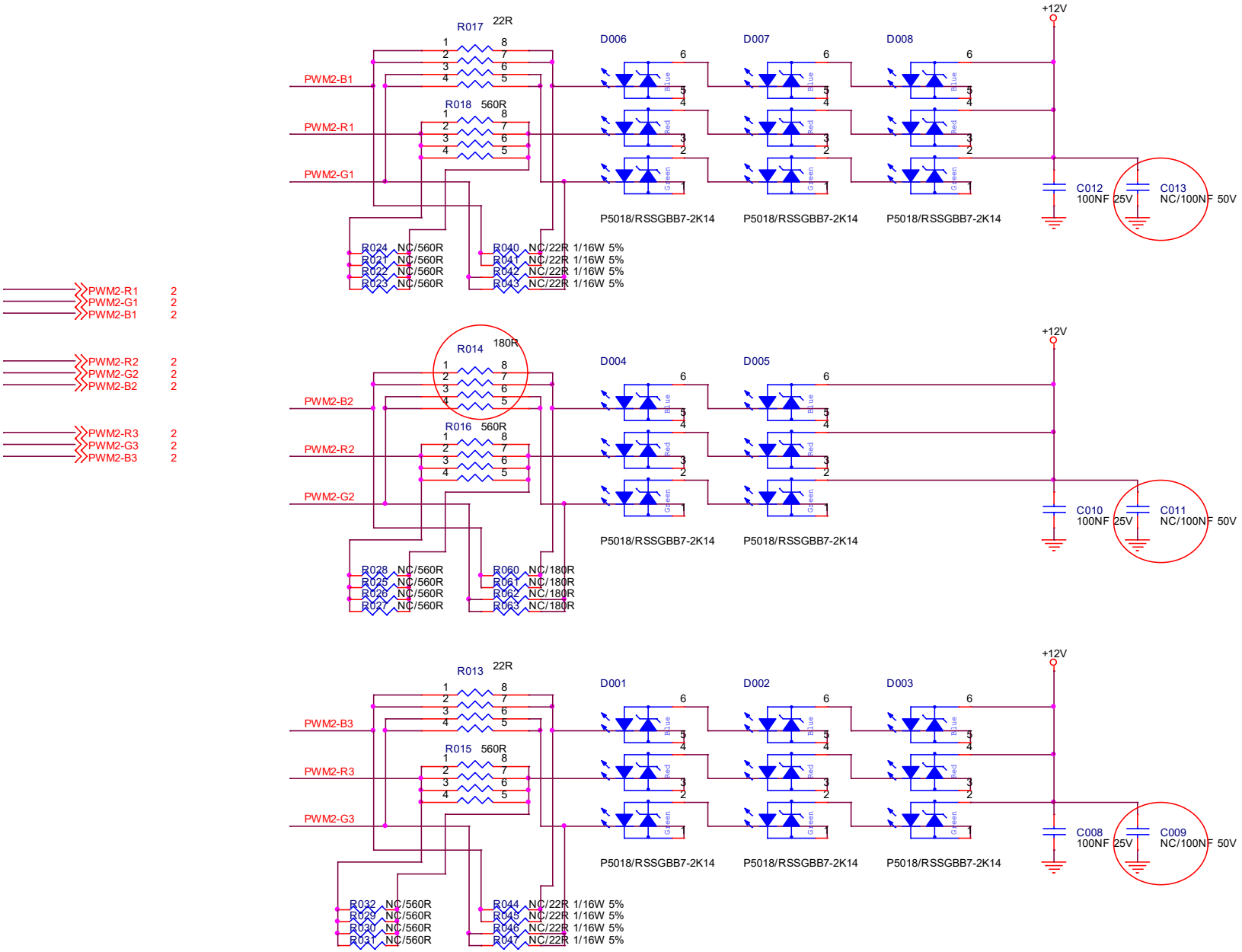
Item / Function	S012	S013	S014	S015
CounterClockwise (XA02:IN, XA04:OUT)	YES	NO	NO	YES
Clockwise (XA02:OUT, XA04:IN)	NO	YES	YES	NO





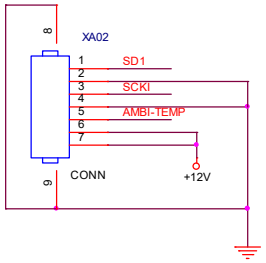


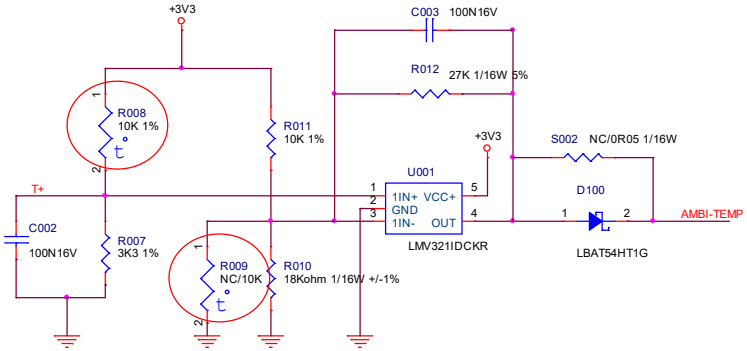
9-22-2 Ambilight 8-LED

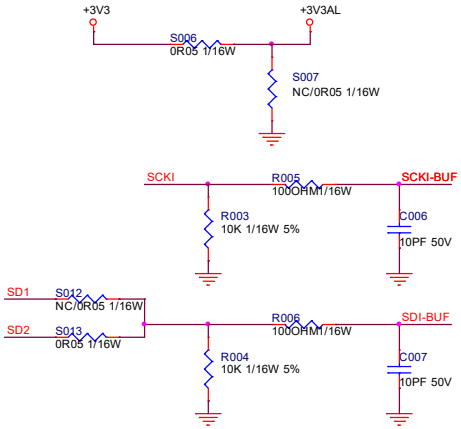


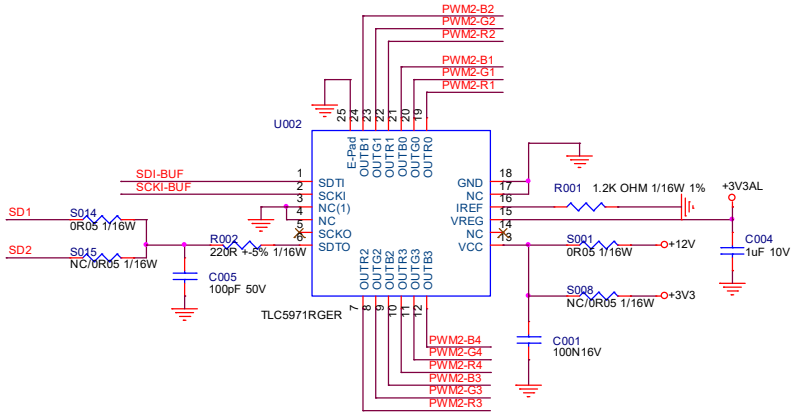
9.23 715G9109 AMBI Panel (For OLED 973 Series)

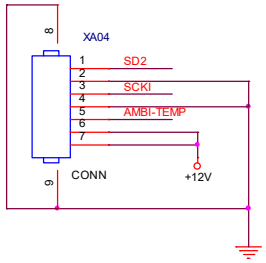
9-23-1 TLC5971



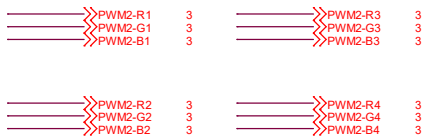


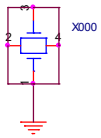


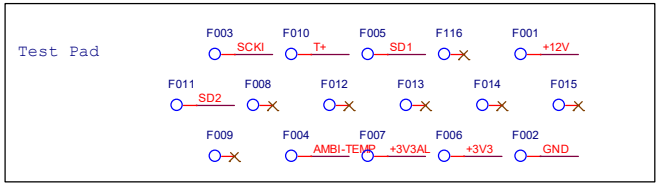




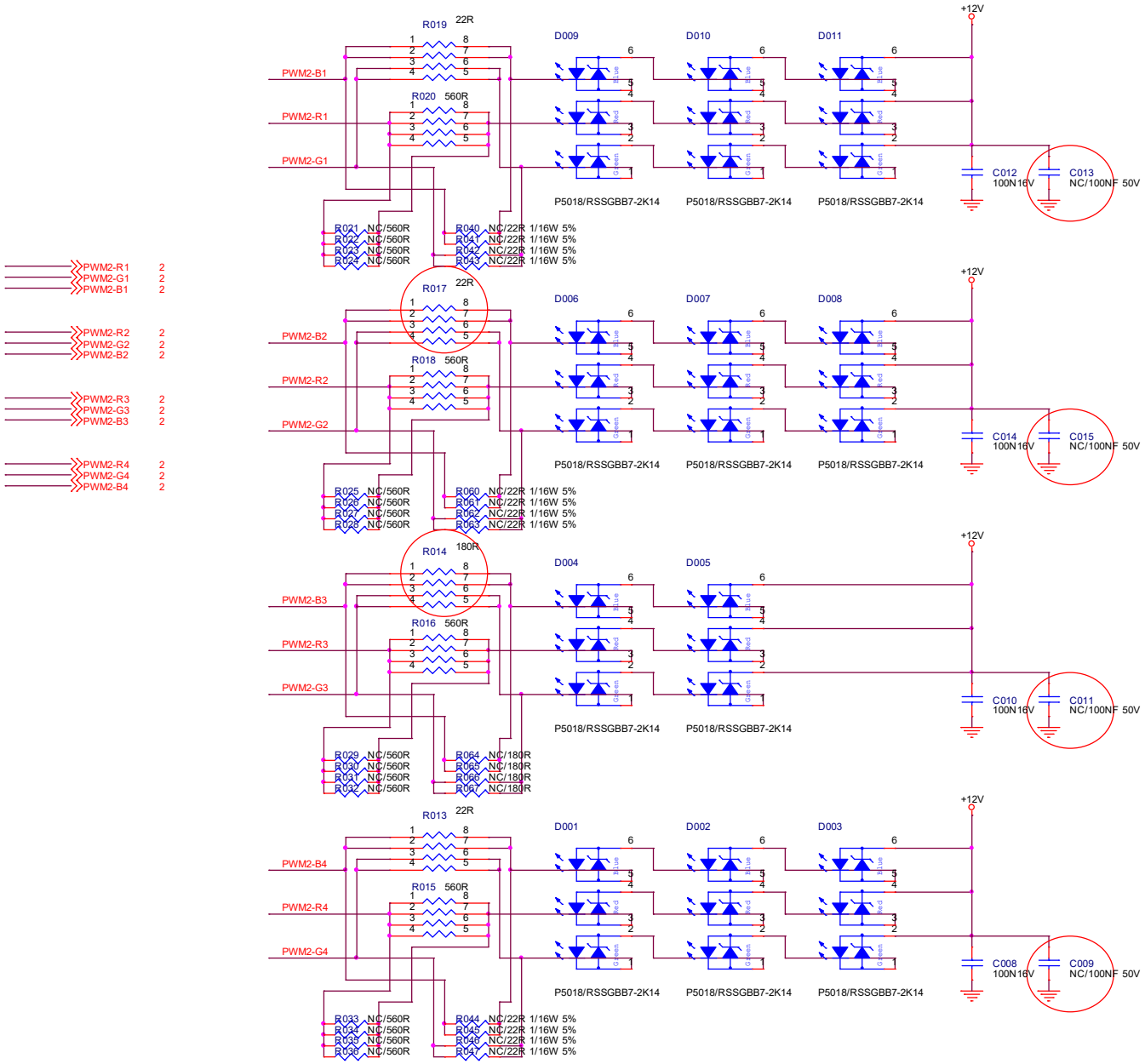
Item / Function	S012	S013	S014	S015
CounterClockwise (XA02:IN, XA04:OUT)	YES	NO	NO	YES
Clockwise (XA02:OUT, XA04:IN)	NO	YES	YES	NO





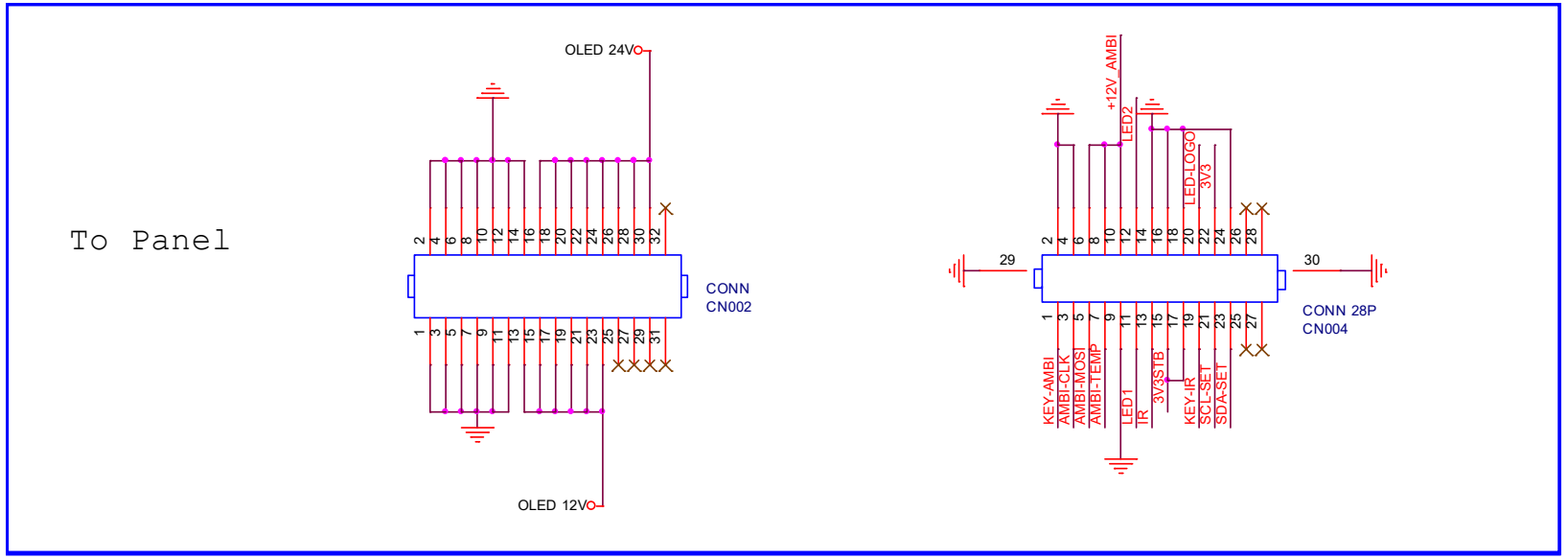


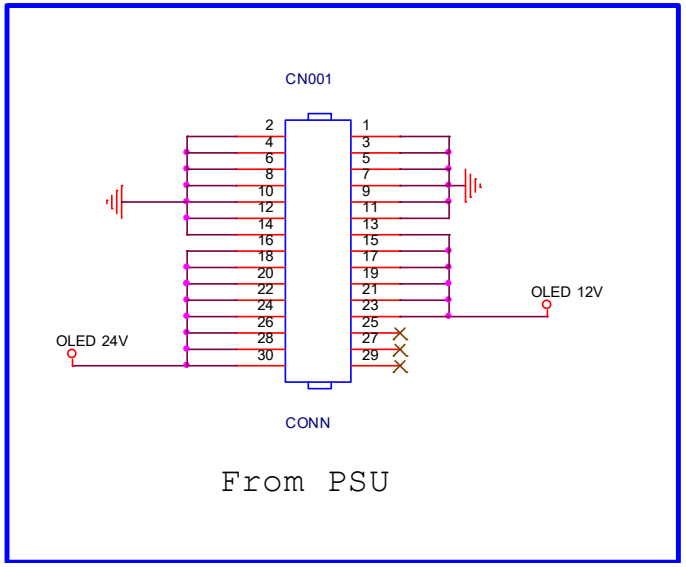
9-23-2 Ambilight 11-LED

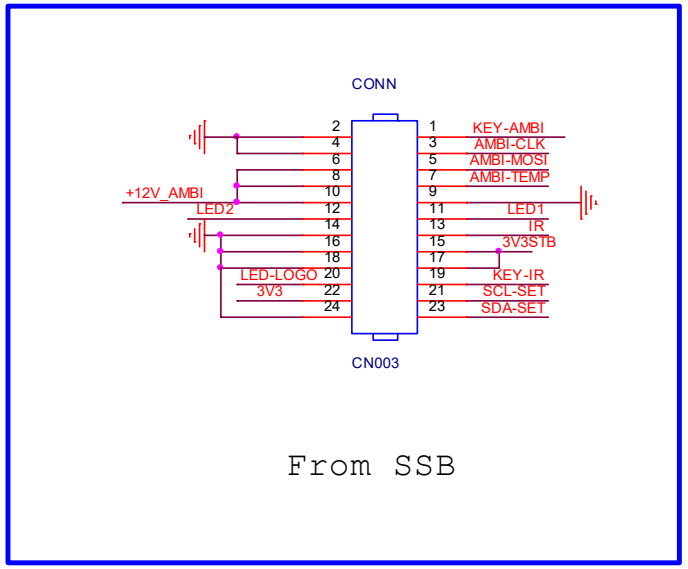


9.24 715G9155 Connection Panel (For OLED 973 Series)

9-24-1 dress wire board

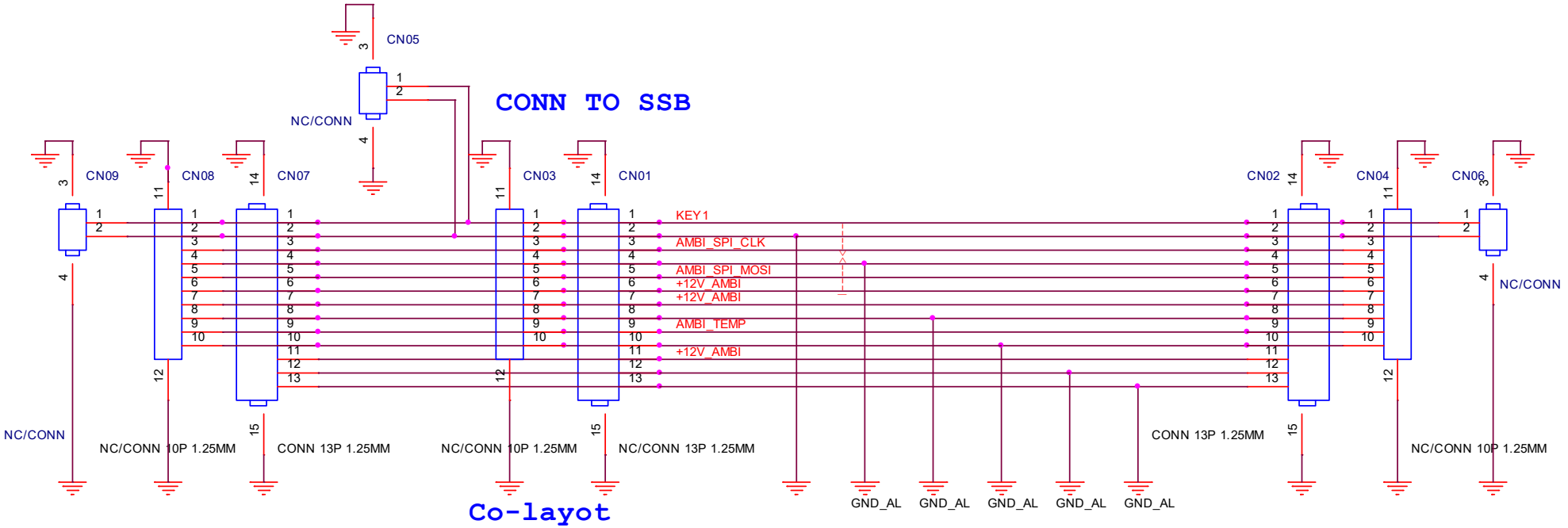






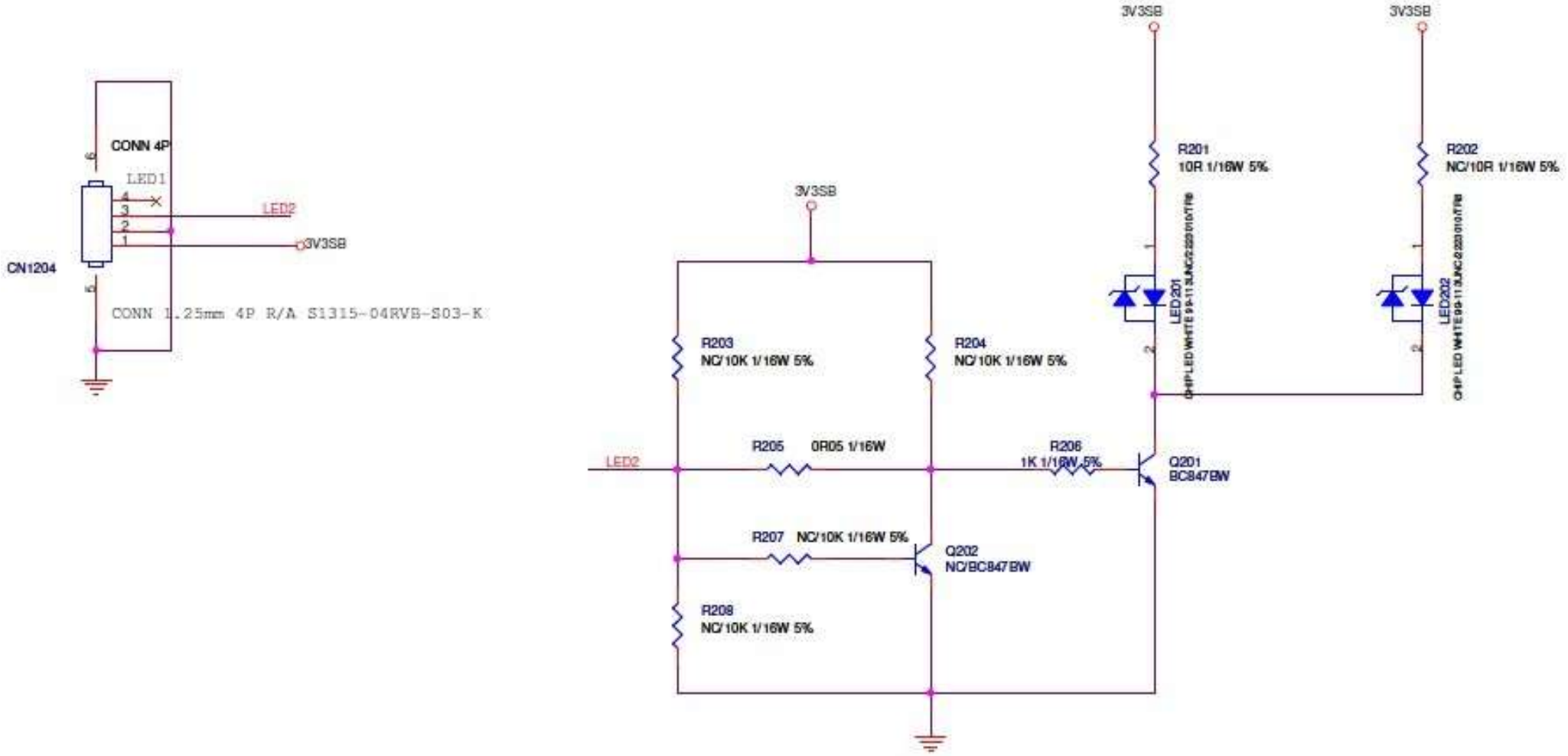
9.25 715G9181 Connection Panel (For 49” 7503 Series)

9-25-1 Interface board



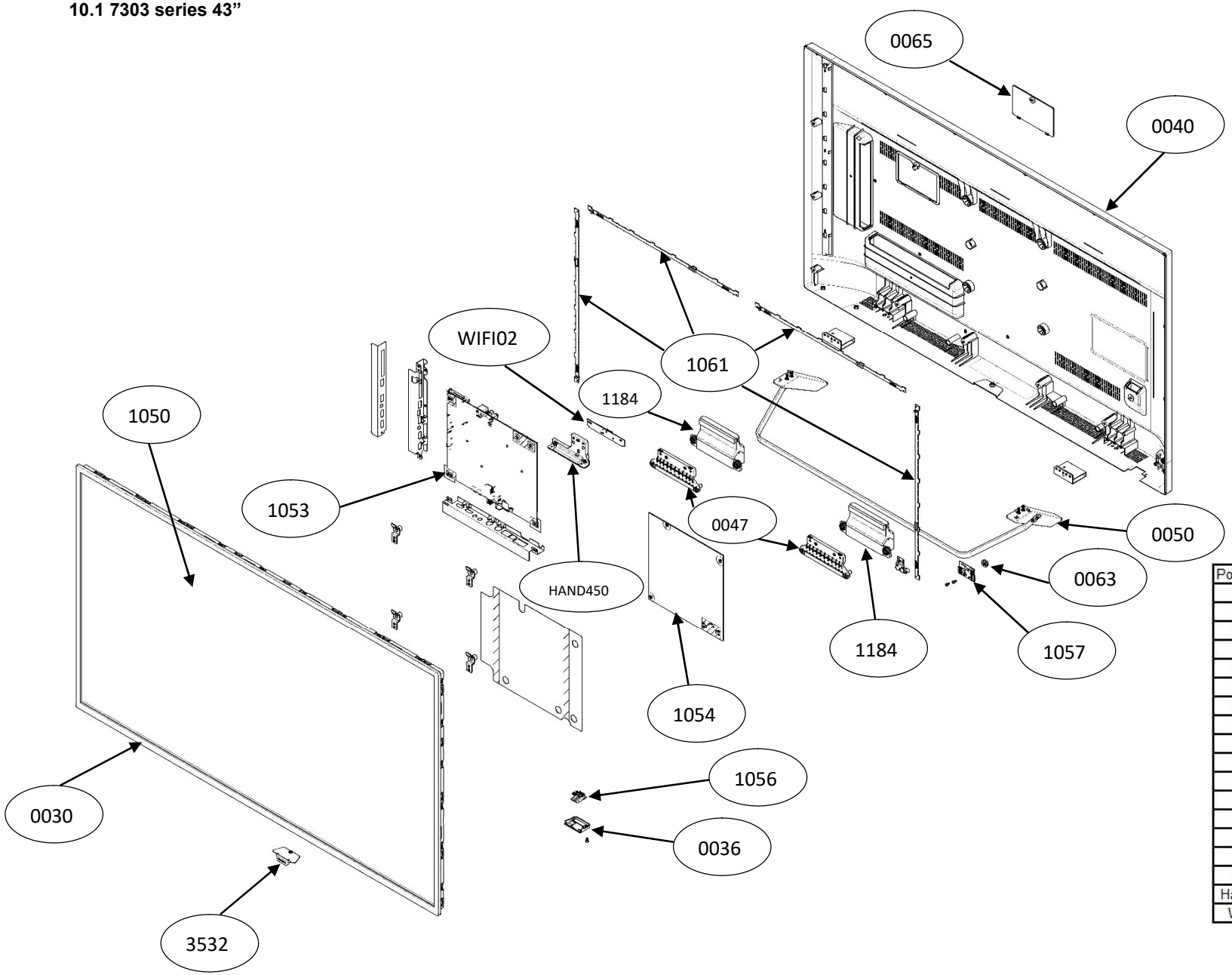
9.26 715G9001 LED Panel (For OLED 873 Series)

9-26-1 Wordmark



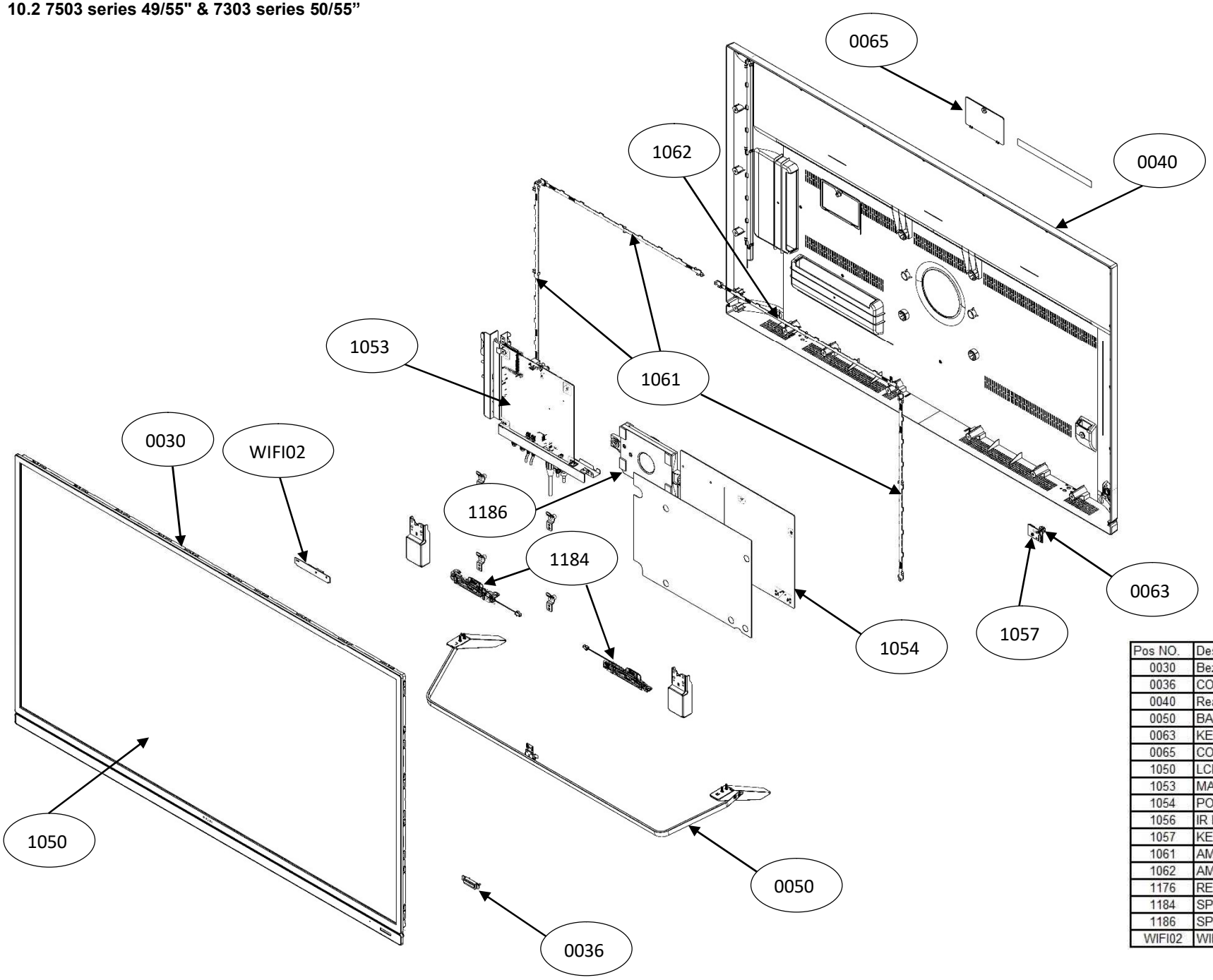
10. Styling Sheets

10.1 7303 series 43”



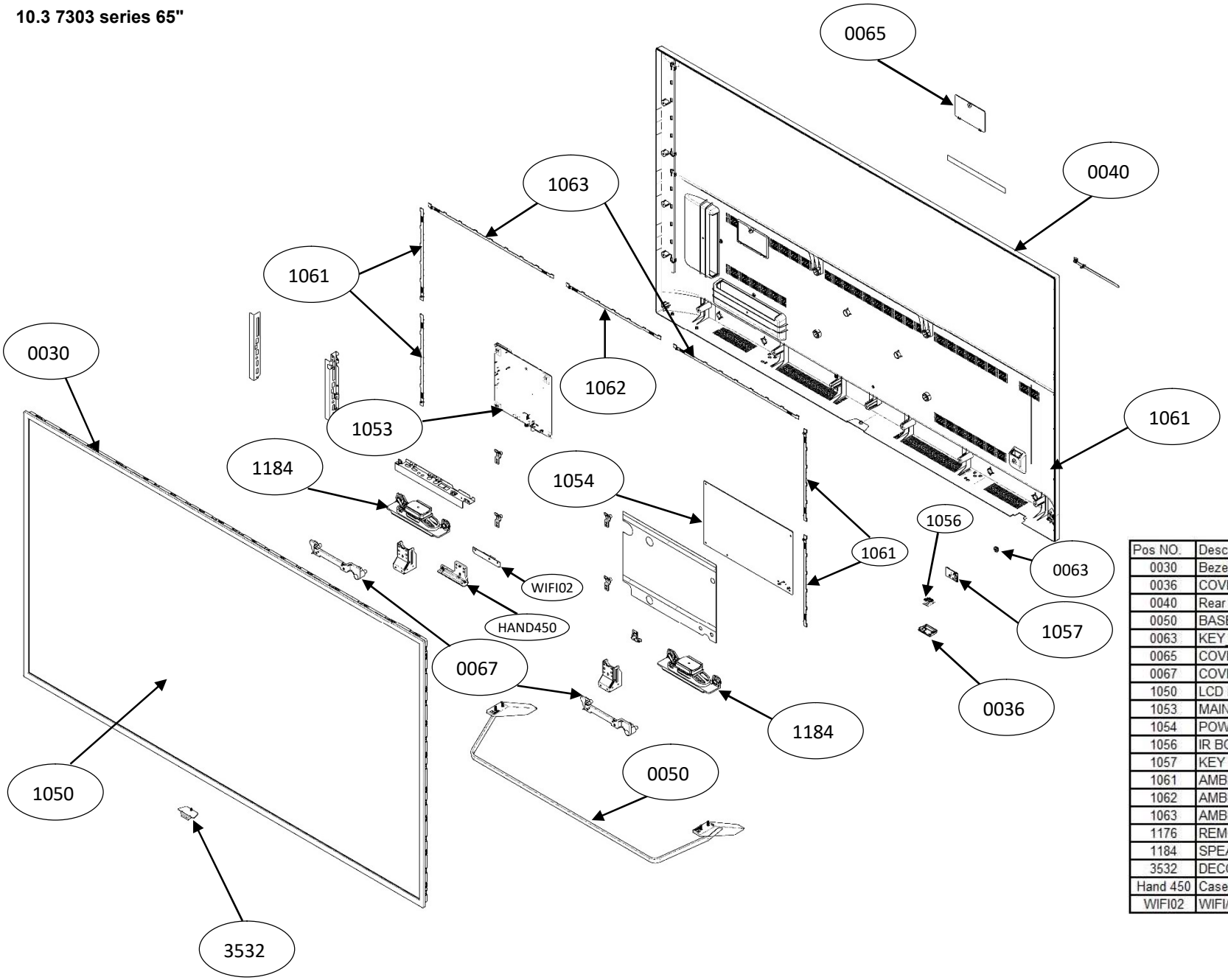
Pos NO.	Description	Remark
0030	Bezel(Integrated with panel)	
0036	COVER_LENS IR	
0040	Rear Cover	
0047	HDD Holder	
0050	BASE	
0063	KEY_FUNCTION	
0065	COVER_CLOCK_REAR	
1050	LCD PANEL	
1053	MAIN BOARD	
1054	POWER BOARD	
1056	IR BOARD	
1057	KEY BOARD	
1061	AMBILIGHT (4)	
1176	REMOTE CONTROL	Not displayed
1184	SPEAKERS	
3532	DECO_LOGO	
Hand 450	Case_holder	
WIFI02	WIFI/BT USB	

10.2 7503 series 49/55" & 7303 series 50/55”



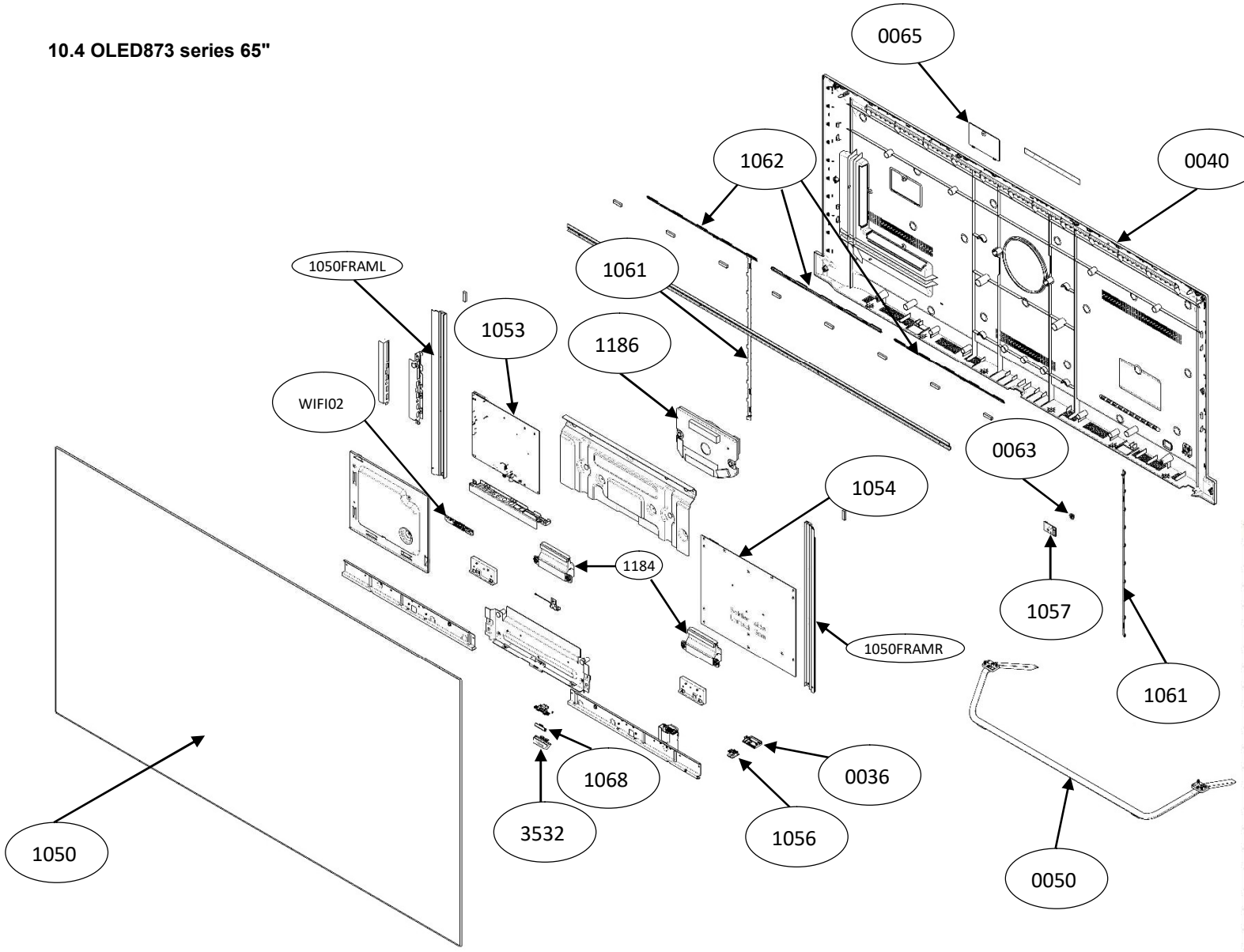
Pos NO.	Description	Remark
0030	Bezel(Integrated with panel)	
0036	COVER_LENS IR	
0040	Rear Cover	
0050	BASE	
0063	KEY_FUNCTION	
0065	COVER_CLOCK_REAR	
1050	LCD PANEL	
1053	MAIN BOARD	
1054	POWER BOARD	
1056	IR BOARD	
1057	KEY BOARD	
1061	AMBILIGHT (3)	
1062	AMBILIGHT	
1176	REMOTE CONTROL	Not displayed
1184	SPEAKERS	
1186	SPEAKER Woofer	
WIFI02	WIFI/BT USB	

10.3 7303 series 65"



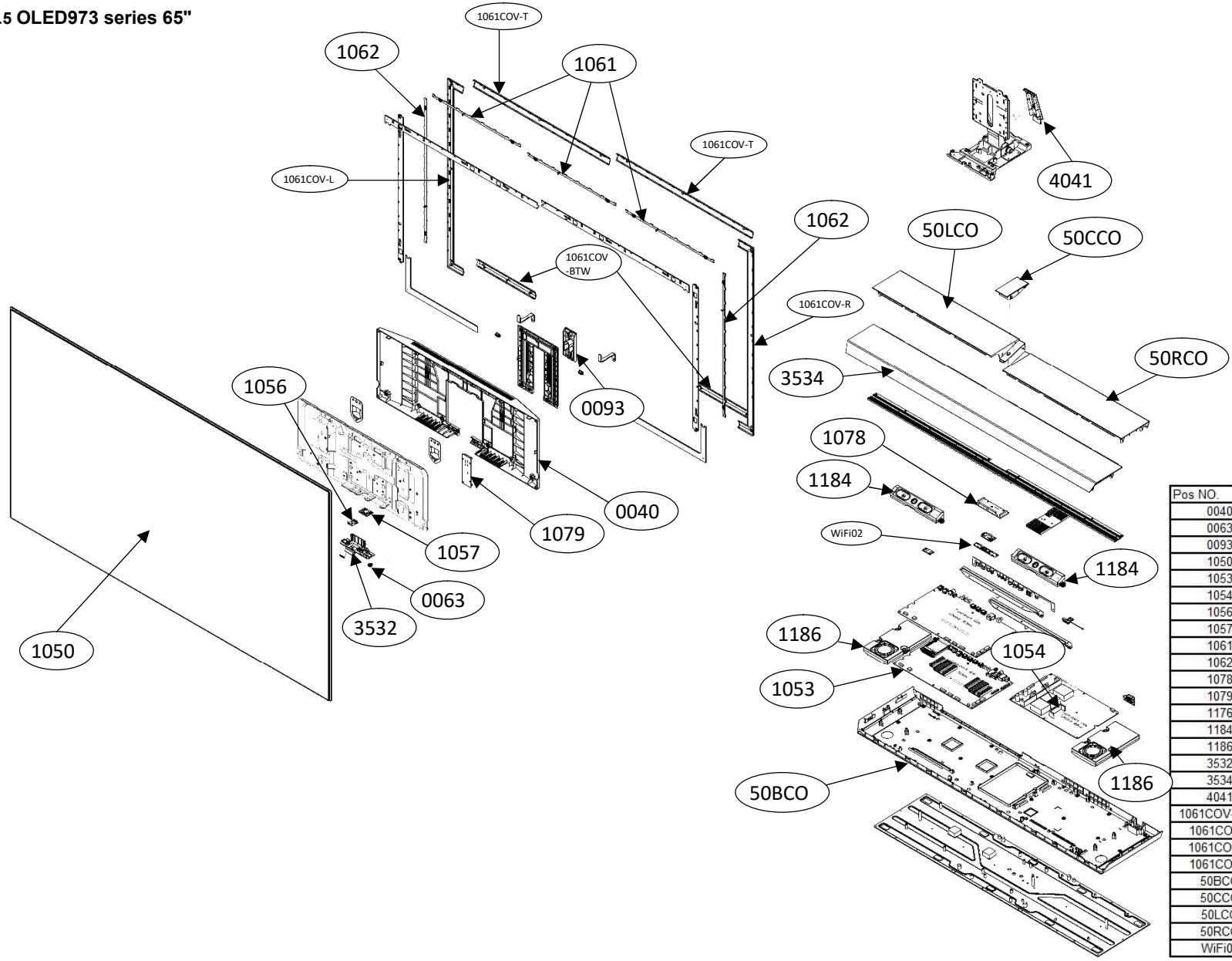
Pos NO.	Description	Remark
0030	Bezel(Integrated with panel)	
0036	COVER_LENS IR	
0040	Rear Cover	
0050	BASE	
0063	KEY_FUNCTION	
0065	COVER_CLOCK_REAR	
0067	COVER_SPK	
1050	LCD PANEL	
1053	MAIN BOARD	
1054	POWER BOARD	
1056	IR BOARD	
1057	KEY BOARD	
1061	AMBILIGHT (4)	
1062	AMBILIGHT	
1063	AMBILIGHT (2)	
1176	REMOTE CONTROL	Not displayed
1184	SPEAKERS	
3532	DECO_LOGO	
Hand 450	Case_holder	
WIFI02	WIFI/BT USB	

10.4 OLED873 series 65"



Pos NO.	Description	Remark
0036	COVER_LENS IR	
0040	Rear Cover	
0050	BASE	
0063	KEY_FUNCTION	
0065	COVER_CLOCK_REAR	
1050	LCD PANEL	
1053	MAIN BOARD	
1054	POWER BOARD	
1056	IR BOARD	
1057	KEY BOARD	
1061	AMBILIGHT (2)	
1062	AMBILIGHT (3)	
1068	LED BOARD	
1176	REMOTE CONTROL	Not displayed
1184	SPEAKERS	
1186	WOOFER	
3532	DECO_LOGO	
1050FRAML	Ambilight HOLDER_BKT_L	
1050FRAMR	Ambilight HOLDER_BKT_R	
WiFi02	WIFI/BT USB	

10.5 OLED973 series 65"



Pos NO.	Description	Remark
0040	REAR_COVER	
0063	KEY_FUNCTION	
0093	COVER_HINGE	
1050	LCD PANEL	
1053	MAIN BOARD	
1054	POWER BOARD	
1056	IR BOARD	
1057	KEY BOARD	
1061	AMBILIGHT (3)	
1062	AMBILIGHT (2)	
1078	OPTION BOARD	
1079	OPTION BOARD	
1176	REMOTE CONTROL	Not displayed
1184	SPEAKERS	
1186	WOOFER	
3532	DECO_LOGO	
3534	DECO_SHEET	
4041	COVER_CABLE COVER	
1061COV-BTW	AMBI-LIGHT BTW COVER	
1061COV-L	AMBI-LIGHT LEFT COVER	
1061COV-R	AMBI-LIGHT RIGHT COVER	
1061COV-T	AMBI-LIGHT TOP COVER	
50BCO	BASE_BTM COVER	
50CCO	BASE_CENTER COVER	
50LCO	BASE_LEFT COVER	
50RCO	BASE_RIGHT COVER	
WiFi02	WIFI/BT USB	