Colour Television | Chassis

TPM20.6E
LA

Service
Service
Service

Service Manual

Chassis name	Platform	Model name	
TPM20.6E LA	MTK5806	43PUS7805/60	55PUS7855/12
		43PUS7805/62	58PUS7805/12
		43PUS7805/12	58PUS7855/12
		43PUS7855/12	58PUS8105/12
		43PUS8105/12	65PUS7805/12
		50PUS7805/12	65PUS7805/62
		50PUS7805/62	65PUS7855/12
		50PUS7855/12	70PUS7805/12
		50PUS8105/12	70PUS7855/12
		55PUS7805/12	70PUS8105/12
		55PUS7805/62	75PUS7805/12
		55PUS7805/62	75PUS7855/12

Published by Doris /SC 2037 Quality | Subject to modification | 3122 785 21071
2020-Sep-11

1. Product information.....3
2. Precautions, Notes, and Abbreviation List.....5
3. Mechanical Instructions.....11
Cable dressing (43" 78x5/8105 series).....11
Cable dressing (50" 78x5/8105 series).....12
Cable dressing (55"/58" 78x5/8105 series).....13
Cable dressing (65" 78x5/8105 series).....14
Cable dressing (70" 78x5/8105 series).....15
Cable dressing (75" 78x5/8105 series).....16
Assembly/Panel Removal 17
4. Service Modes.....20
5. Software upgrading, Error Code and Set Option Code.....24
6. Trouble Shooting.....28
7. Electrical Diagram.....31
8. IC Data Sheet.....35
9. Circuit Diagrams.....38
9.1 715GA052 PSU.....38
9.2 715GA018 PSU.....42
9.3 715GA008 PSU.....46
9.4 715GA025 PSU.....50
9.5 715GB170 SSB.....55
9.6 715GA039 IR/LED Panel.....74
9.7 715GA031 AMBI Panel.....75
9.8 715GA032 AMBI Panel.....77
9.9 715GA033 AMBI Panel.....79
9.10 715GA034 AMBI Panel.....81
9.11 715G9946 AMBI Panel.....83
9.12 715GA030 AMBI Panel.....85
10. Styling Sheet.....87
78x5/8105 series 43"/50"/55".....87
78x5/8105 series 58".....88
78x5/8105 series 65".....89
78x5/8105 series 70".....90
78x5/8105 series 75".....91
11.Dismantling procedure for specific handling parts.....92

1. Product information

Product specifications are subject to change without notice. For more specification details of this product, see www.philips.com/TVsupport

Display Resolution

Diagonal screen size

- 43PUS78x5: 108cm/43inch
- 50PUS78x5: 126cm/50inch
- 55PUS78x5: 139cm/55inch
- 58PUS78x5: 146cm/58inch
- 65PUS78x5: 164cm/65inch
- 70PUS78x5: 178cm/70inch
- 75PUS6xx4: 189cm/65inch
- 43PUS8105 : 108 cm / 43 inch
- 50PUS8105 : 126 cm / 50 inch
- 58PUS8105 : 146 cm / 58 inch
- 70PUS8105 : 176 cm / 70 inch

Display resolution

- 3840 x 2160

Support Timing

Video support timing also includes field/frame rate 23.976Hz, 29.97Hz and 59.94Hz.

HDMI

- 480i
- 480p
- 576i
- 576p
- 720p
- 1080i
- 1080p
- 3840 x 2160p– 24Hz, 25Hz, 30Hz, 50Hz, 60Hz

HDMI - UHD

(HOME) > Settings > General settings > Input source > HDMI(port) >HDMI Ultra HD

This TV can display Ultra HD signals. Some devices – connected with HDMI – do not recognize a TV with Ultra HD and might not work correctly or show distorted picture or sound.

To avoid the malfunctioning of such a device, you can set the signal quality to a level the device can handle. If the device is not using Ultra HD signals, you can switch off Ultra HD for this HDMI connection.

- The setting **Optimal*** allows maximum up to Ultra HD (50Hz or 60Hz) RGB 4:4:4 or YCbCr 4:4:4/4:2:2/4:2:0 signals.
- The setting **Standard** allows maximum up to Ultra HD (50Hz or 60Hz) YCbCr 4:2:0 signals.

Component, Composite

Composite

- PAL,NTSC,SECAM

Component

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

Supported Input Resolution – Computer

- 640 x 480 – 60Hz
- 800 x 600 – 60Hz
- 1024 x 768 – 60Hz
- 1280 x 800 – 60Hz
- 1280 x 960 – 60Hz
- 1280 x 1024 – 60Hz
- 1366 x 768 – 60Hz
- 1440 x 900 – 60Hz
- 1920 x 1080 – 60Hz
- 3840 x 2160 – 60Hz

  Note: For HDMI Input only

Reception

- Aerial input : 75 ohm coaxial (IEC75)
- Tuner bands : Hyperband, S-Channel, UHF, VHF
- DVB : DVB-T2, DVB-C (cable) QAM

• Analogue video playback : SECAM, PAL
• Digital video playback : MPEG2 SD/HD (ISO/IEC 13818-2), MPEG4 SD/HD (ISO/IEC 14496-10), HEVC*
• Digital audio playback (ISO/IEC 13818-3)
• Satellite aerial input : 75 ohm F-type
• Input frequency range : 950 to 2150MHz
• Input level range : 25 to 65 dBm
• DVB-S/S2 QPSK, symbol rate 2 to 45M symbols, SCPC and MCPC
• LNB : DiSEqC 1.0, 1 to 4 LNBs supported, Polarity selection 14/18V, Band selection 22kHz, Tone burst mode, LNB current 300mA max
* Only for DVB-T2, DVB-S2

Sound

• Dolby Atmos® Virtualizer
• Clear Dialogue
• A.I Sound
• 5 Band Equalizer
• Output power (RMS) : 20W
• Dolby® Audio
• DTS-HD

Multimedia

Connections
· USB 2.0 / USB 3.0
· Ethernet LAN RJ-45
· Wi-Fi 802.11n(built-in)
Supported USB file systems
FAT, NTFS
Playback formats
· Video Codec: AVI,MKV,HEVC,H.264/MPEG-4 AVC,MPEG1,MPEG2,MPEG4,WMV9/VC1,VP9,HEVC(H.265)
· Audio Codec: MP3,WAV,AAC,WMA(v2 up to v9.2),WMA-PRO(v9 and v10)
· Subtitles:
- Format: SRT, SMI, SSA, SUB, ASS, TXT
- Character encodings : Western Europe, Turkish Central Europe, Cyrillic, Greek, UTF-8 (Unicode), Hebrew, Arabic, Baltic
• Maximum Supported Data Rate :
– MPEG-4 AVC (H.264) is supported up to High Profile @ L5.1. 30Mbps
– H.265 (HEVC) is supported up to Main / Main 10 Profile up to Level 5.1 40Mbps
– VC-1 is supported up to Advanced Profile @ L3
• Image Codec : JPEG, GIF, PNG, BMP, HEIF, 360 photo
Wi-Fi Certified
This TV is Wi-Fi Certified device.
Supported media server software
• You can use any DLNA V1.5 certified media server software.
• 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.

Connectivity

TV Side
• Common Interface slot: CI+/CAM
• USB 2 - USB 3.0
• HDMI 3 in – ARC-UHD - HDR
• Headphones - Stereo mini-jack 3.5mm
TV Rear
• Audio out - Optical Toslink
• USB 1 - USB 2.0
• Network LAN - RJ45
• Satellite tuner
• Antenna (75 ohm)
• HDMI 1 in - ARC – UHD-HDR
• HDMI 2 in - UHD - HDR

Power

• Mains power : AC 220-240V +/-10%
• Ambient temperature : 5°C to 35°C

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.

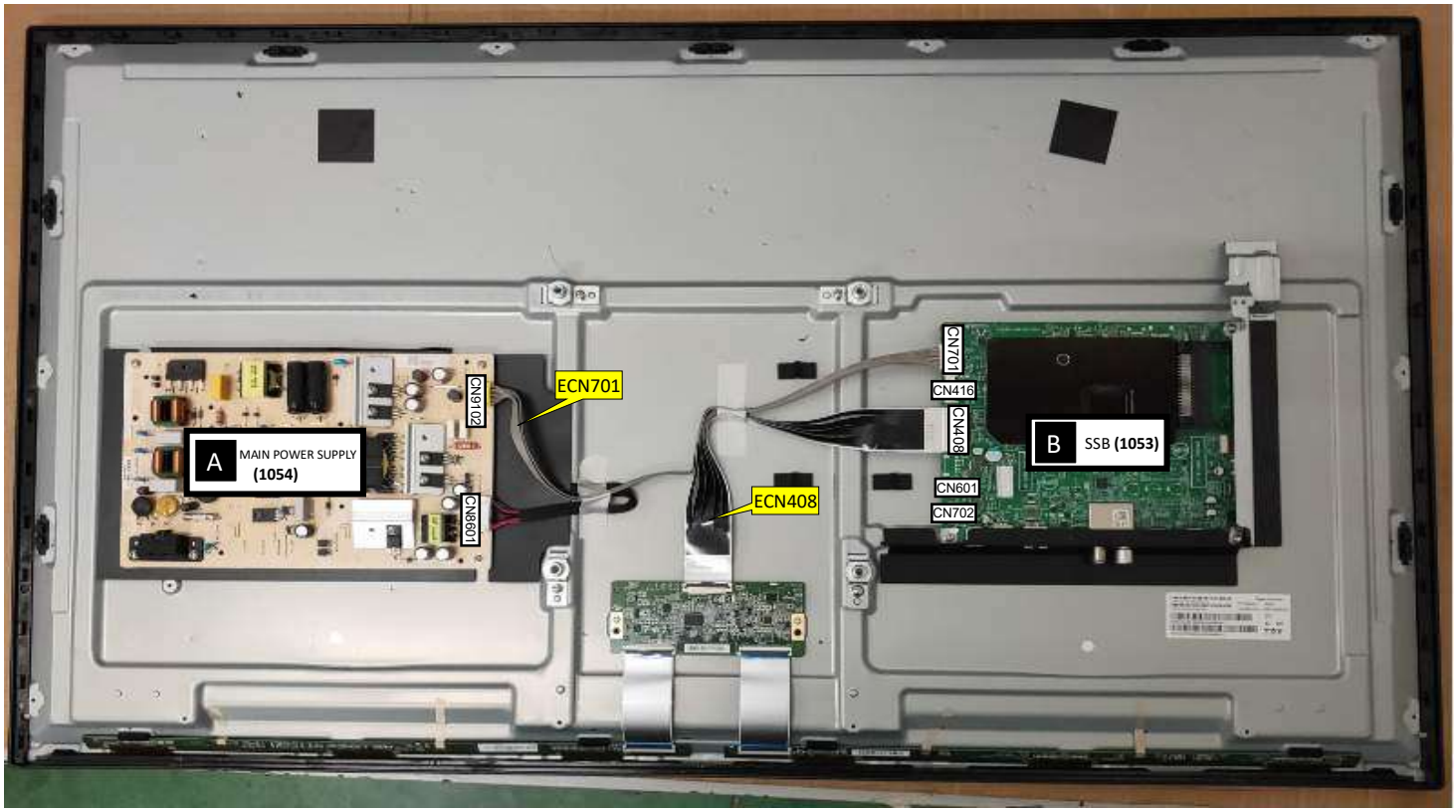
EDID	Extended Display Identification Data (VESA standard)
EEPROM	Electrically Erasable and Programmable Read Only Memory
EMI	Electro Magnetic Interference
EPG	Electronic Program Guide
EPLD	Erasable Programmable Logic Device
EU	Europe
EXT	EXTernal (source), entering the set by SCART or by cinches (jacks)
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

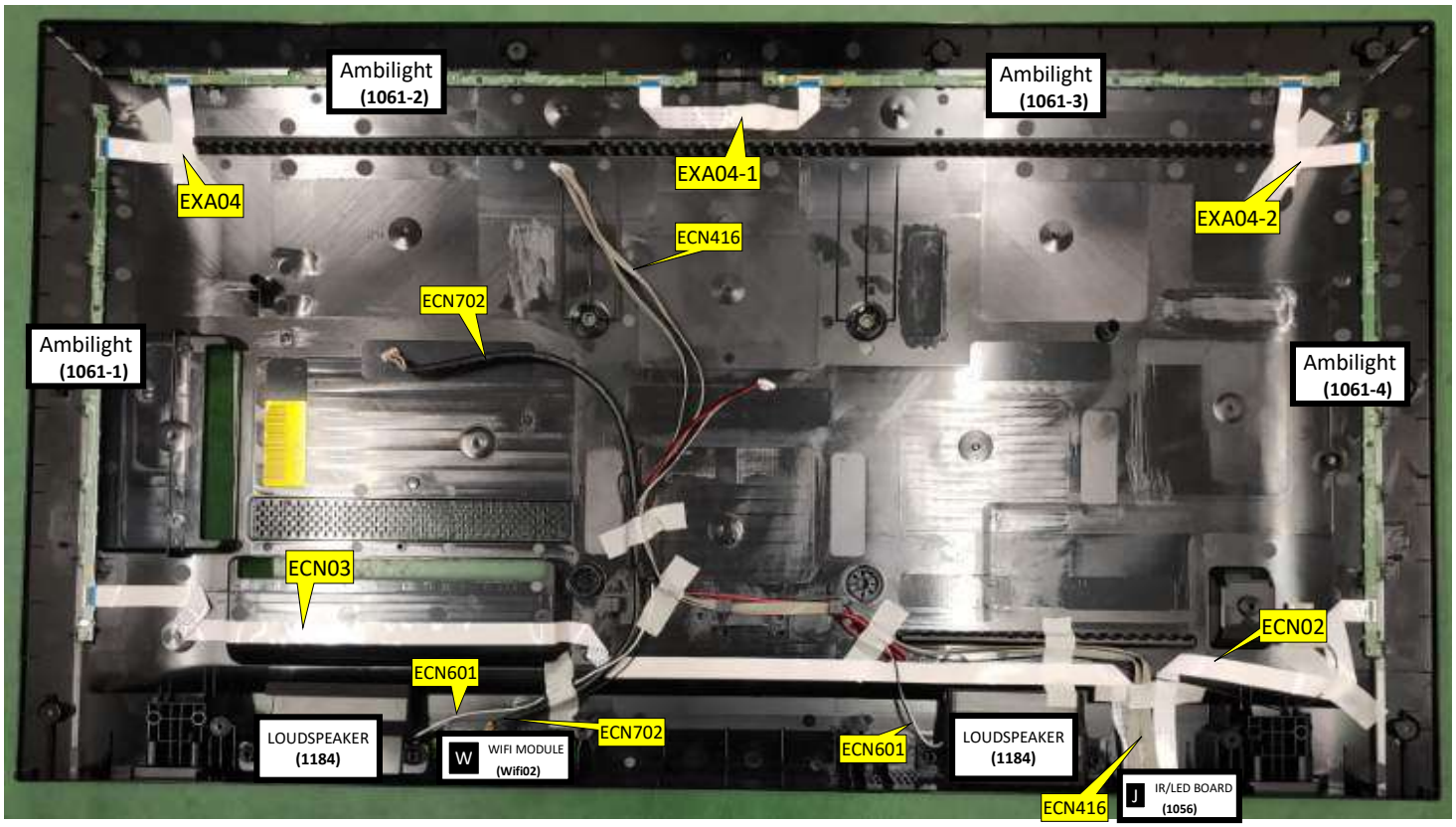
TFT	Thin Film Transistor
THD	Total Harmonic Distortion
TMDS	Transmission Minimized Differential Signalling
TS	Transport Stream
TXT	TeleteXT
TXT-DW	Dual Window with TeleteXT
UI	User Interface
uP	Microprocessor
UXGA	1600 × 1200 (4:3)
V	V-sync to the module
VESA	Video Electronics Standards Association
VGA	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

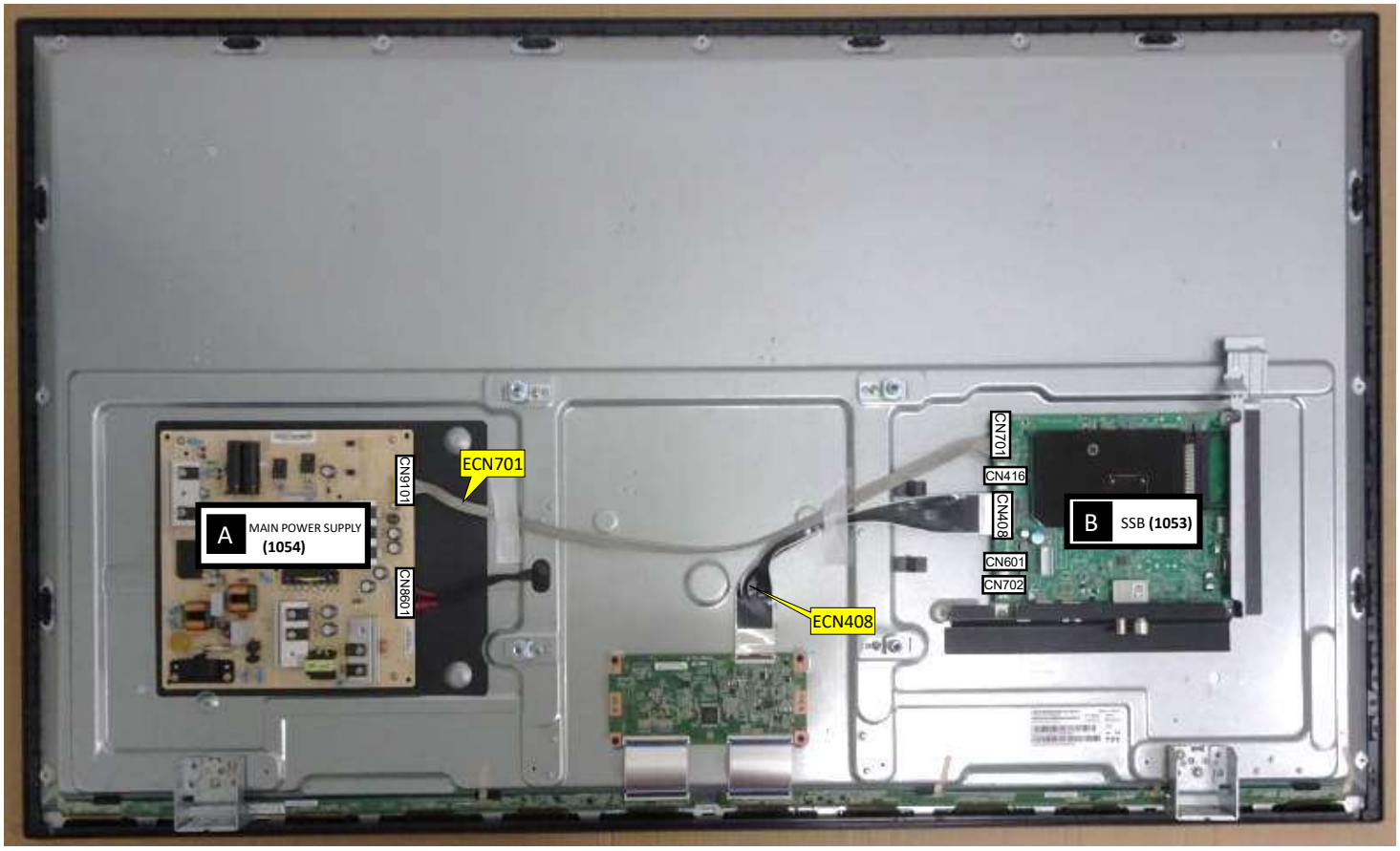
3.1 Cable Dressing



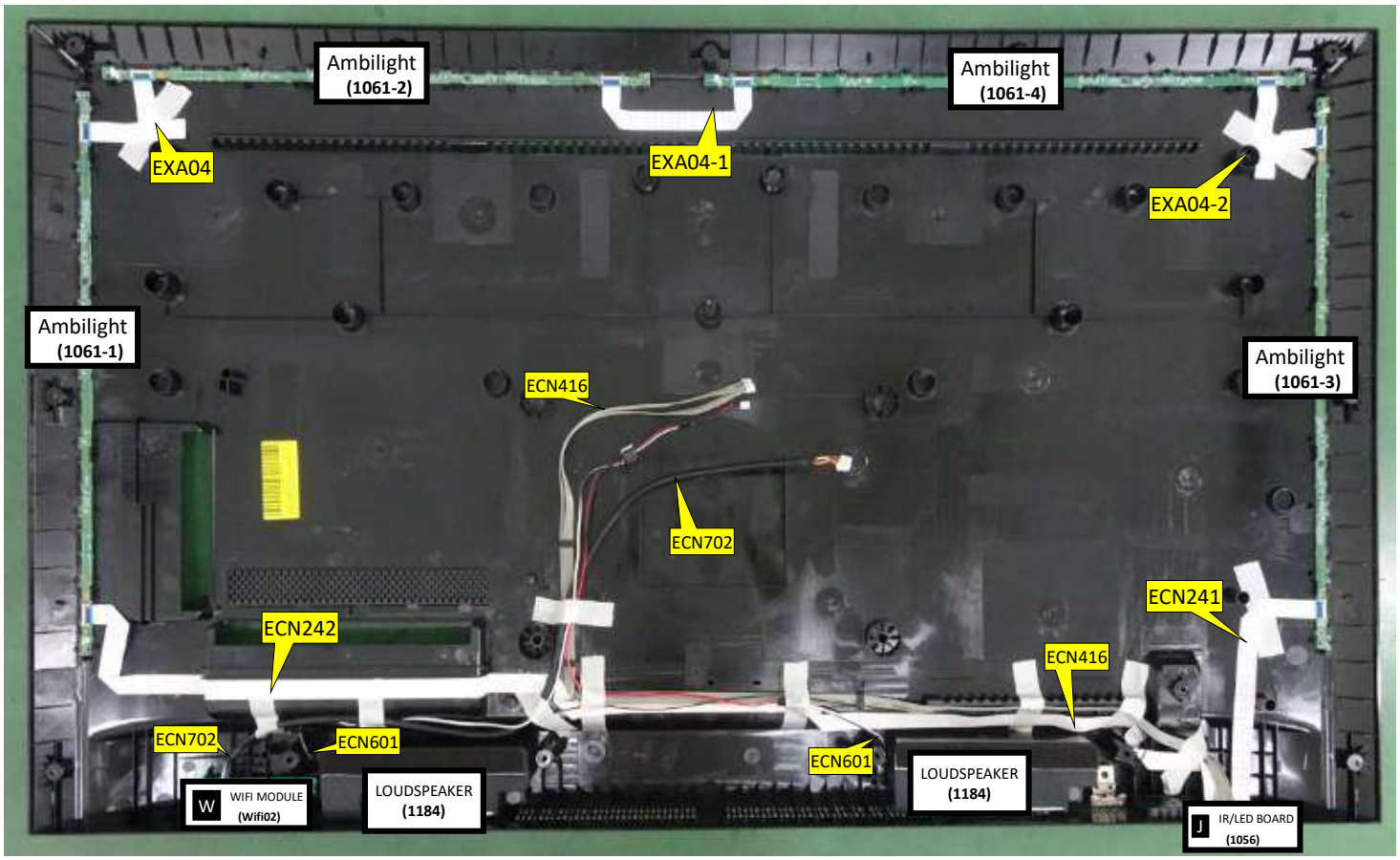
Cable dressing (43" 78x5/8105 series)



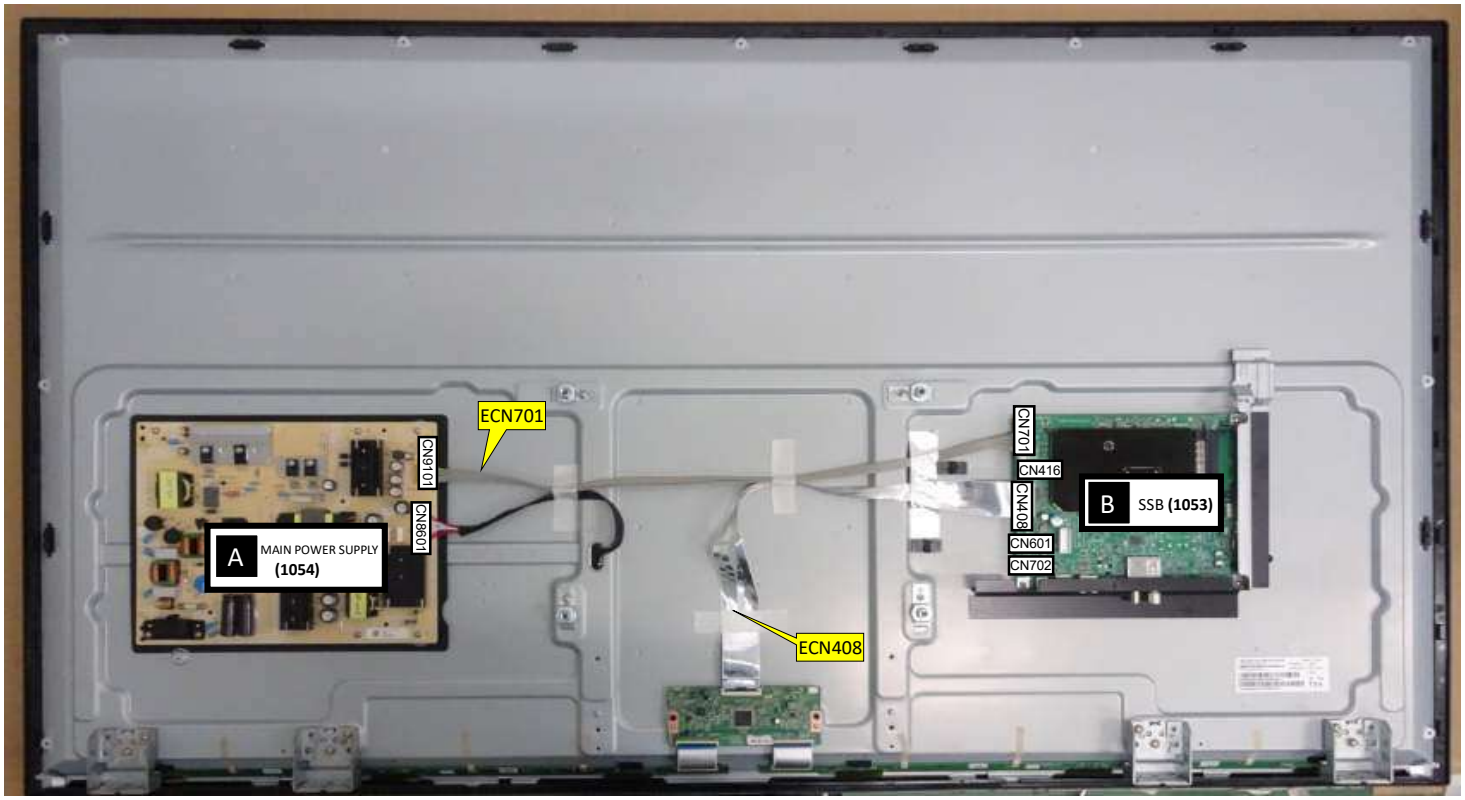
Back cover overview (43" 78x5/8105 series)



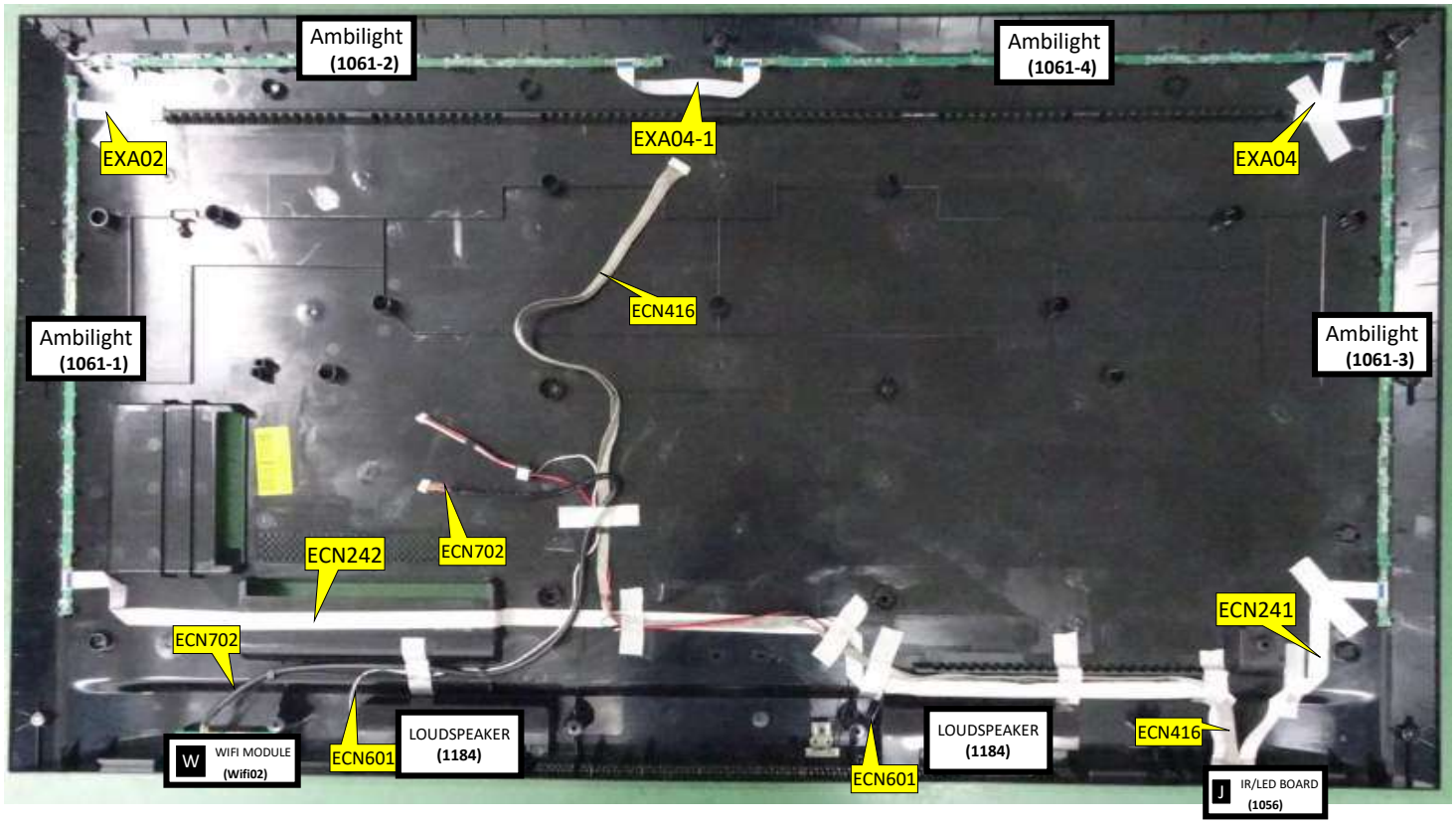
Cable dressing (50" 78x5/8105 series)



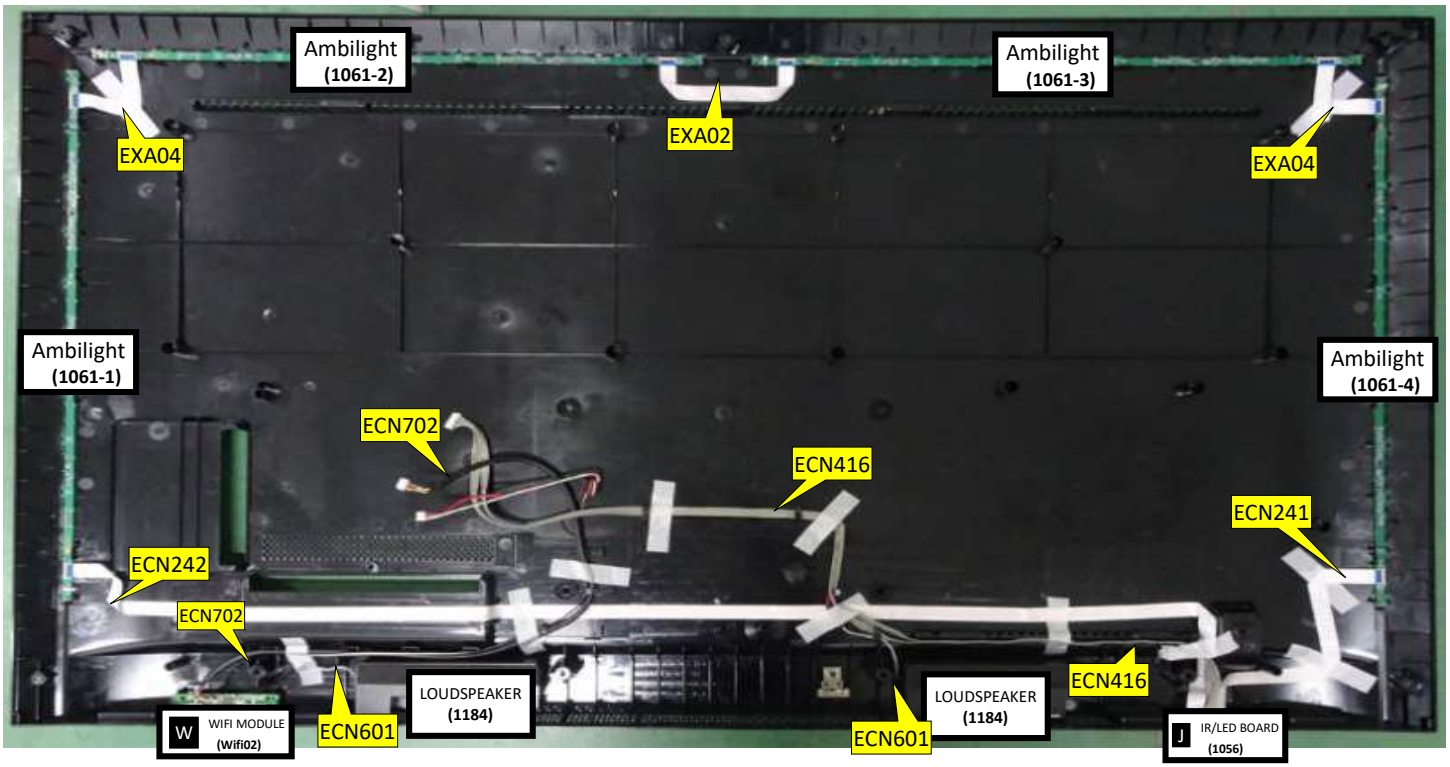
Back cover overview (50" 78x5/8105 series)



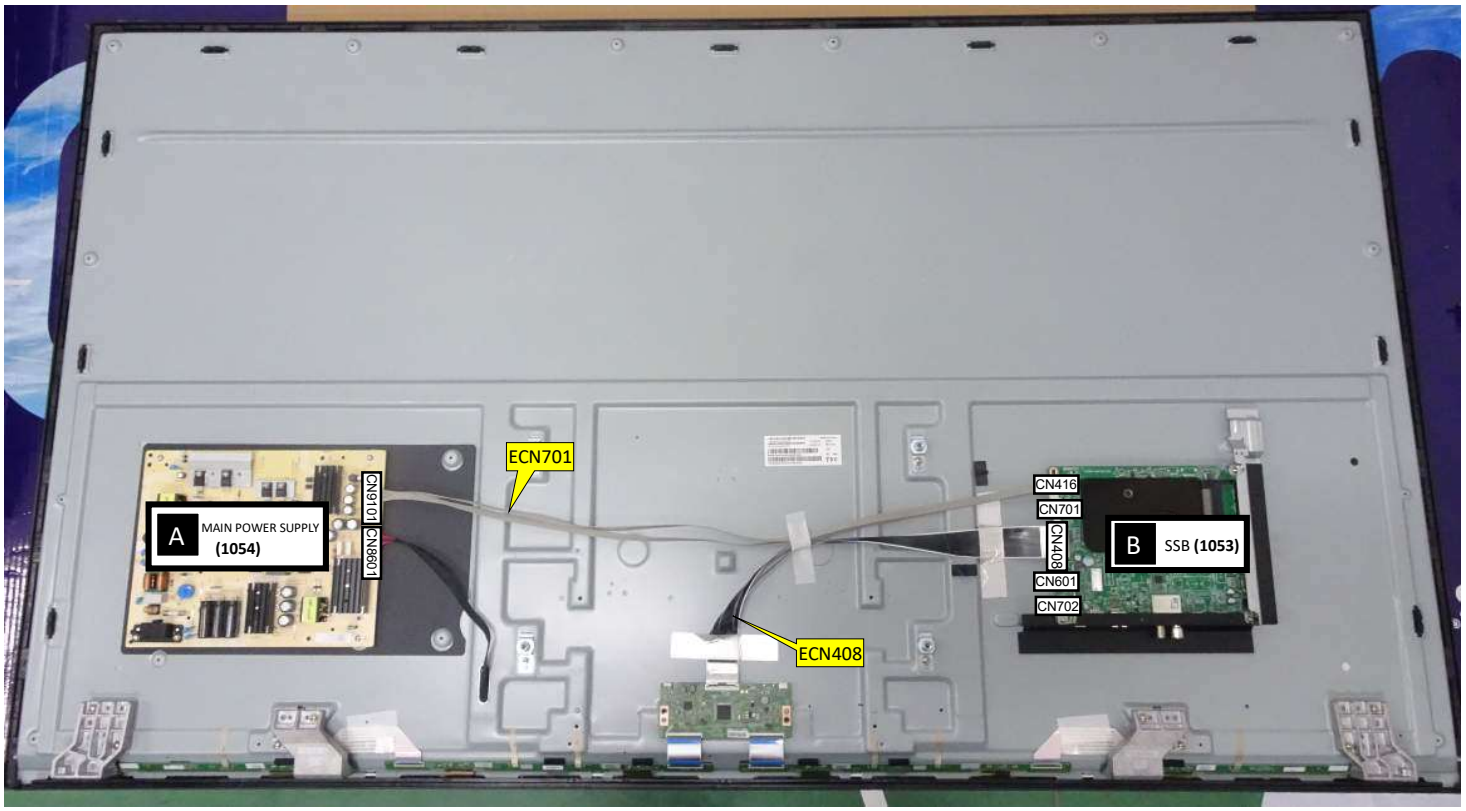
Cable dressing (55"/58" 78x5/8105 series)



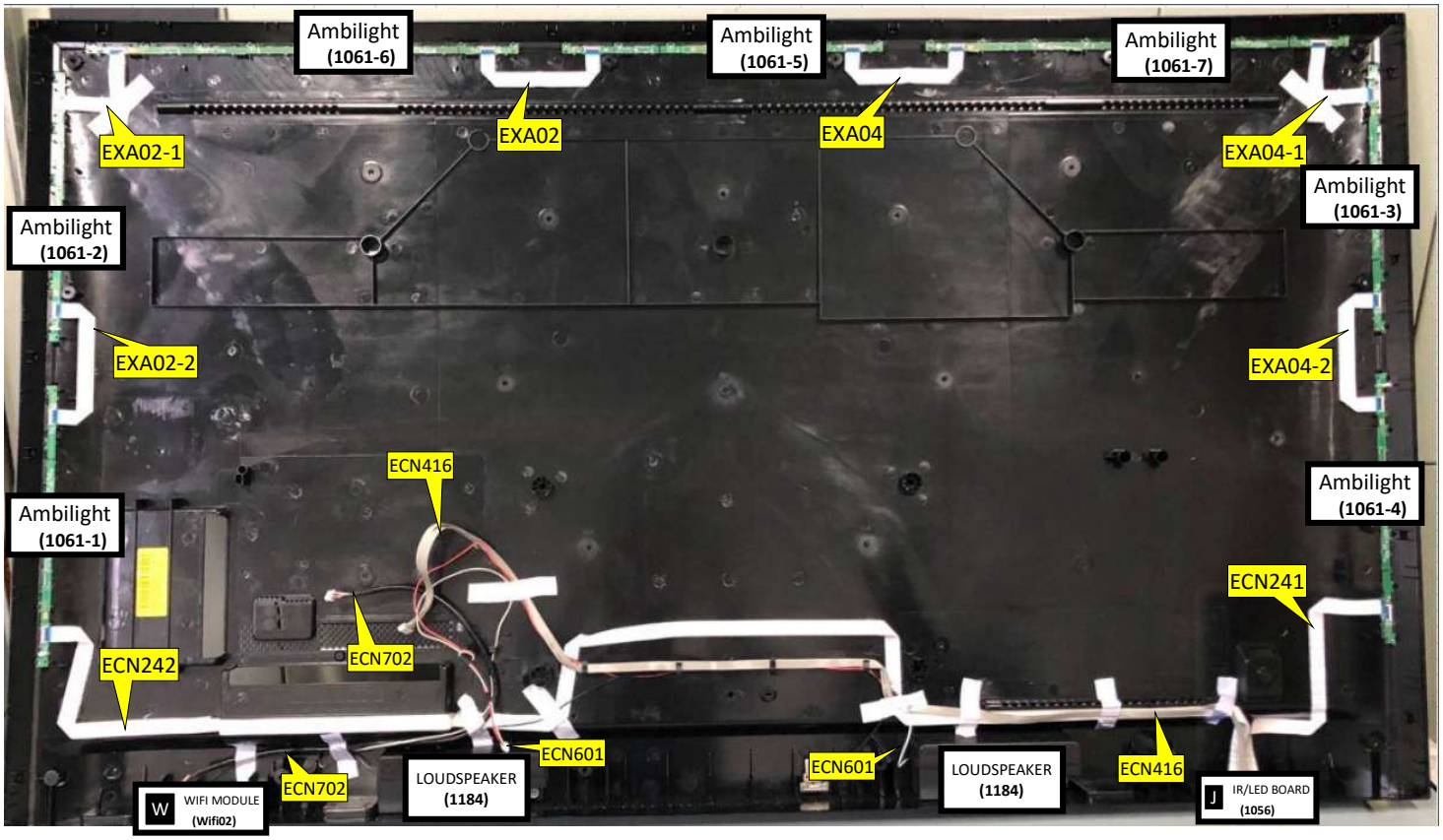
Back cover overview (55" 78x5/8105 series)



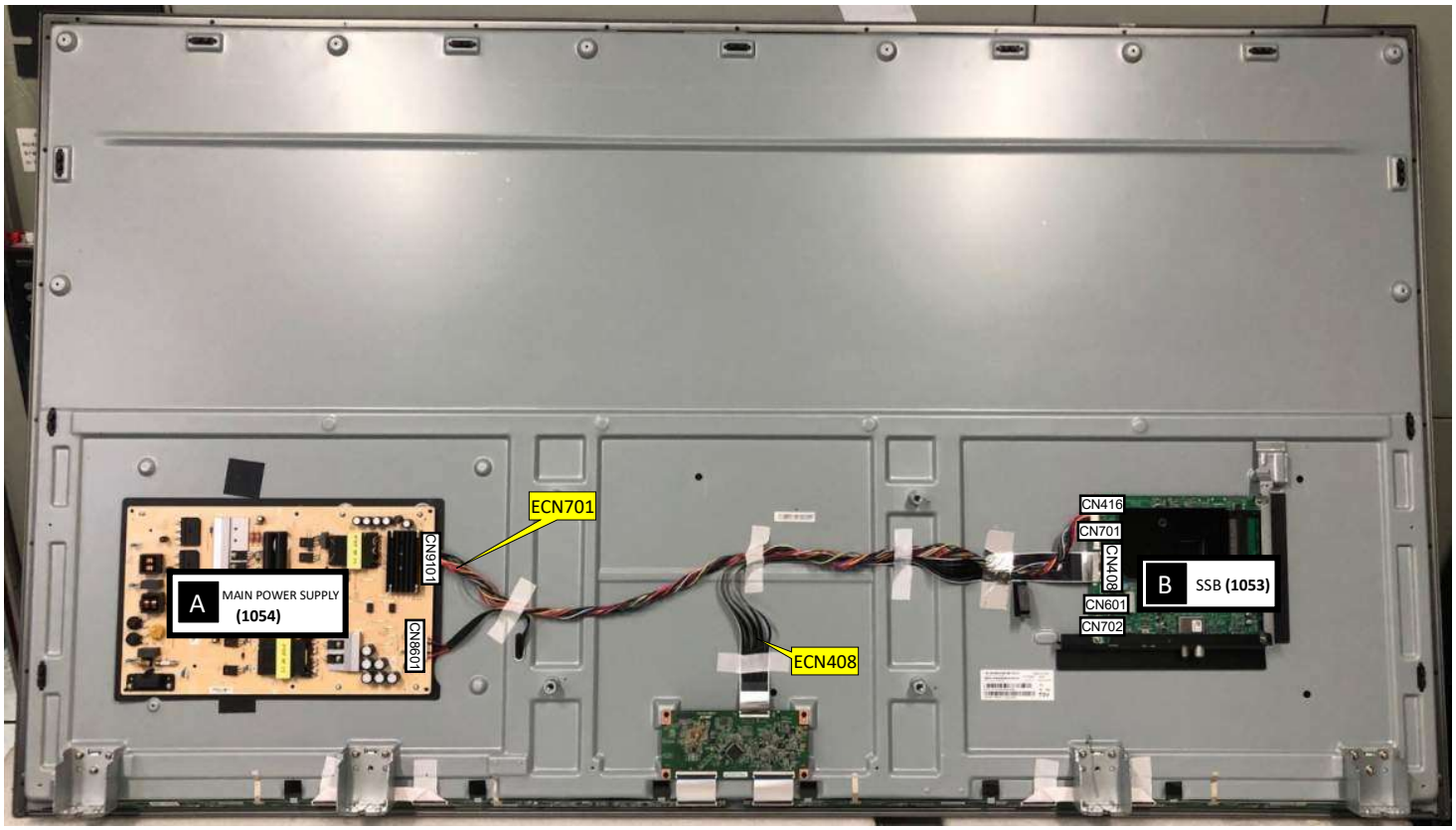
Back cover overview (58" 78x5/8105 series)



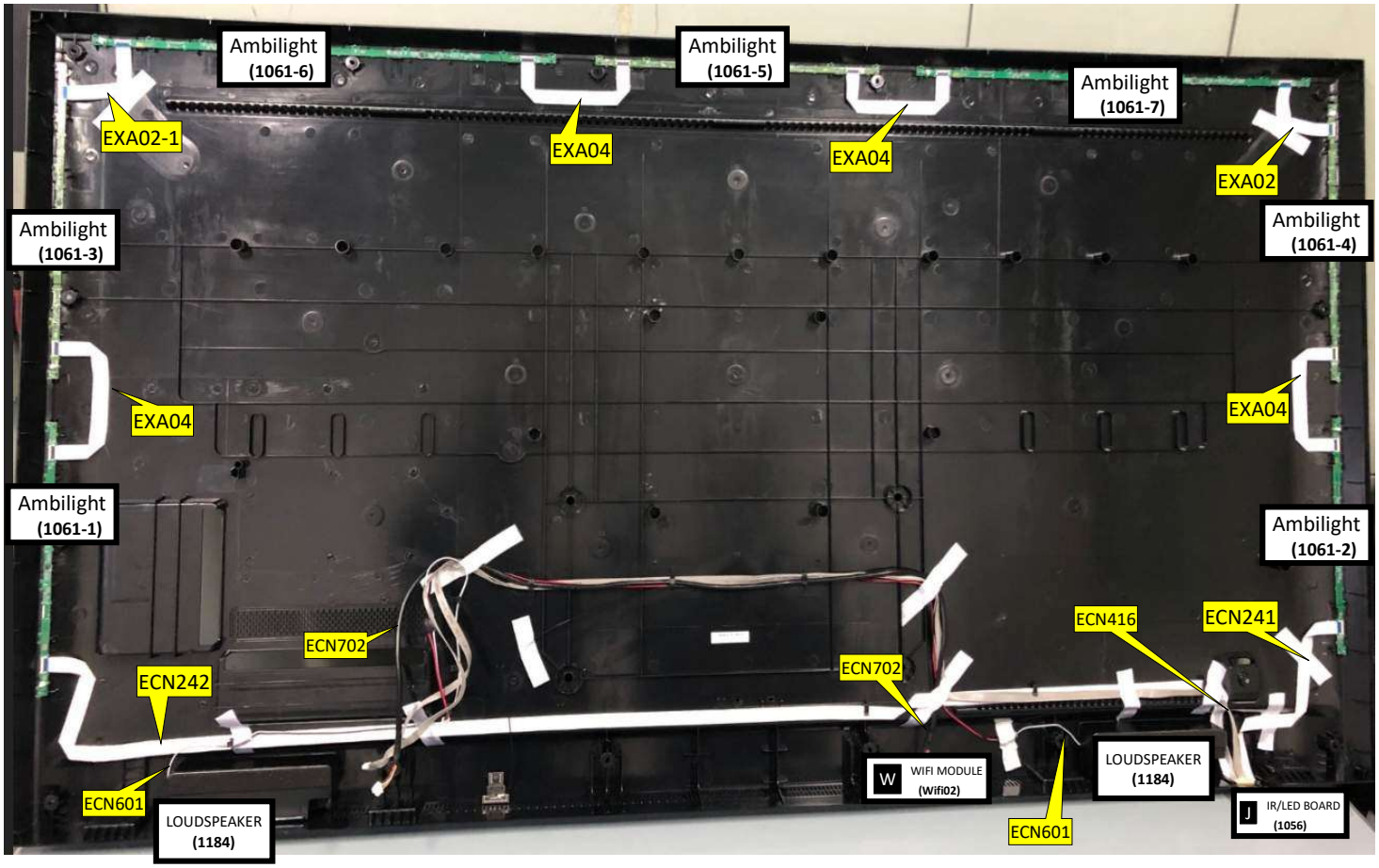
Cable dressing (65" 78x5/8105 series)



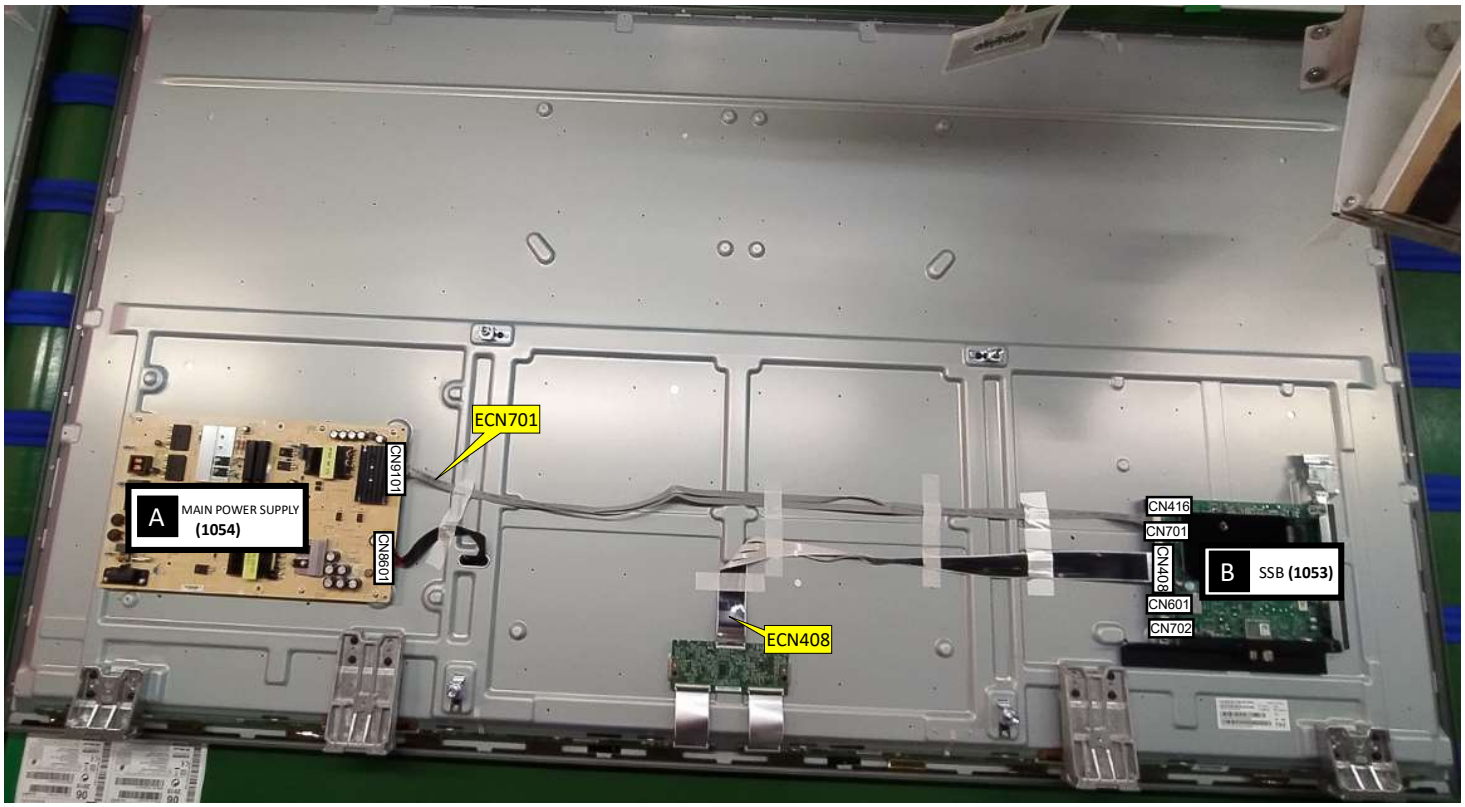
Back cover overview (65" 78x5/8105 series)



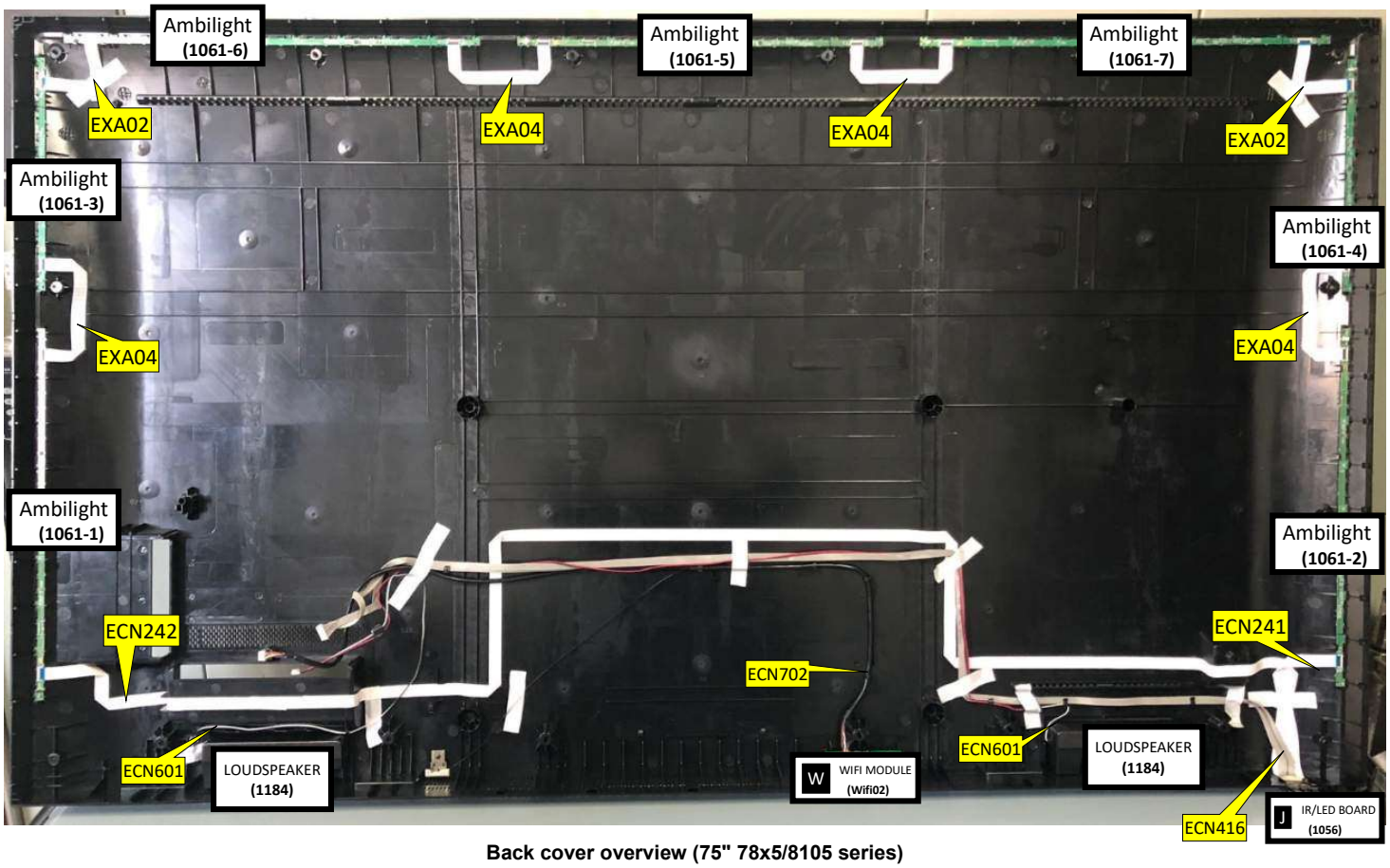
Cable dressing (70" 78x5/8105 series)



Back cover overview (70" 78x5/8105 series)



Cable dressing (75" 78x5/8105 series)



Back cover overview (75" 78x5/8105 series)

3.2 Assembly/Panel Removal

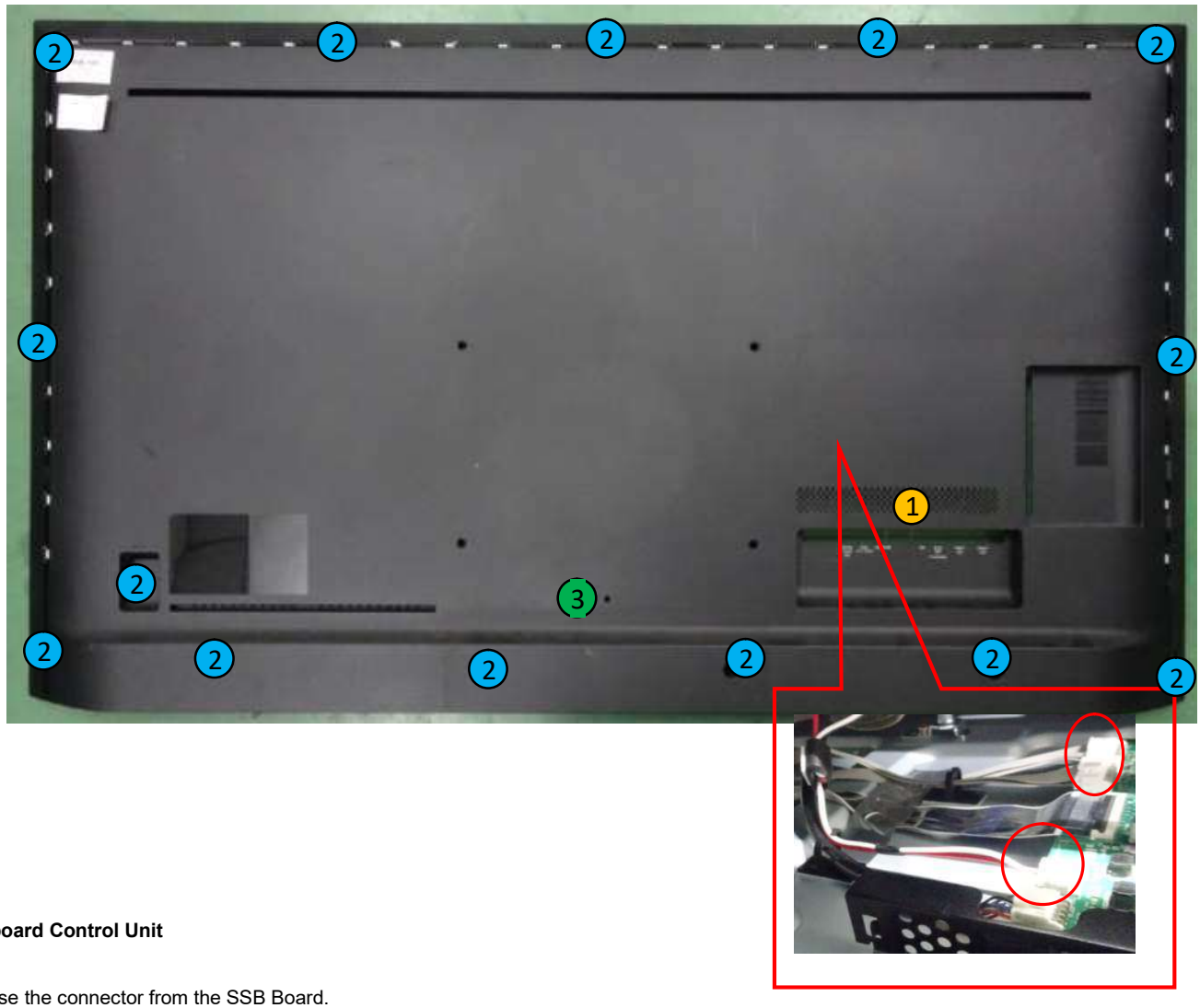
3.2.1 Stand removal

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

3.2.2 Rear Cover

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

1. Remove all fixation screws [1] ， [2]and [3] that secure the Back cover assy.
2. Unplug the connectors of IR pin、wifi pin、speaker pin 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.

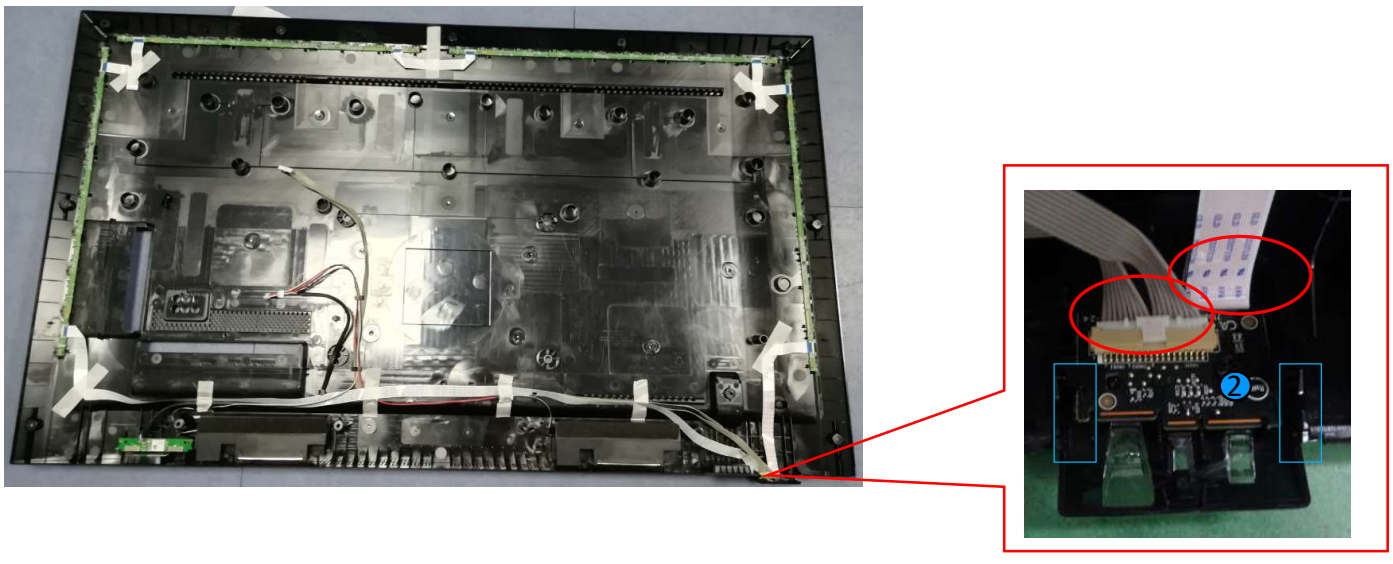


3.2.3 IR board Control Unit

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 from the keyboard control panel [2] and take it out from the Back cover.

When defective, replace the whole unit.

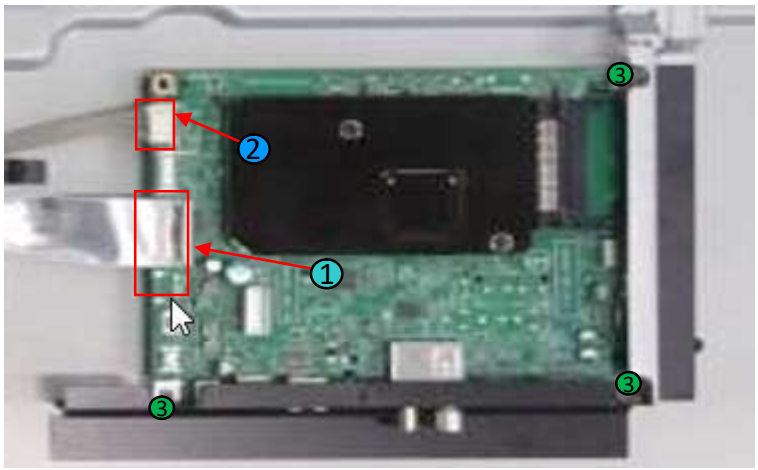


3.2.4 Small Signal Board (SSB)

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.



3.2.5 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.

3.2.6 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 from the SSB.
2. Remove fixation screw 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 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.

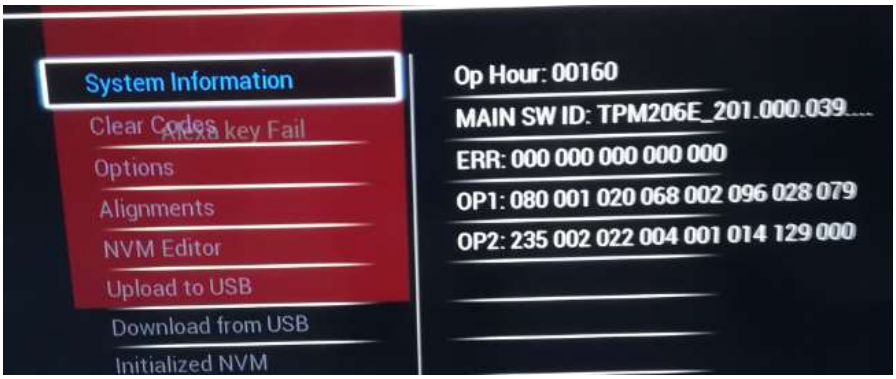
How to Exit SAM

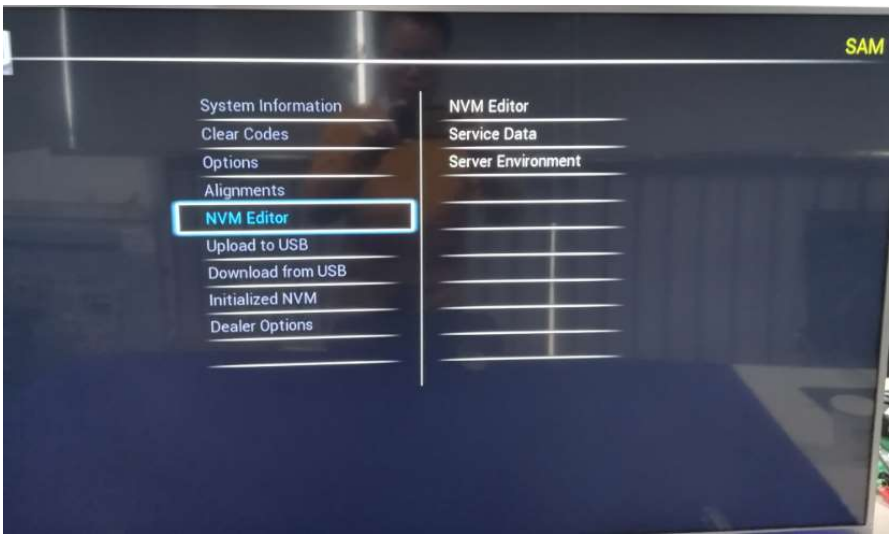
Use one of the following methods:

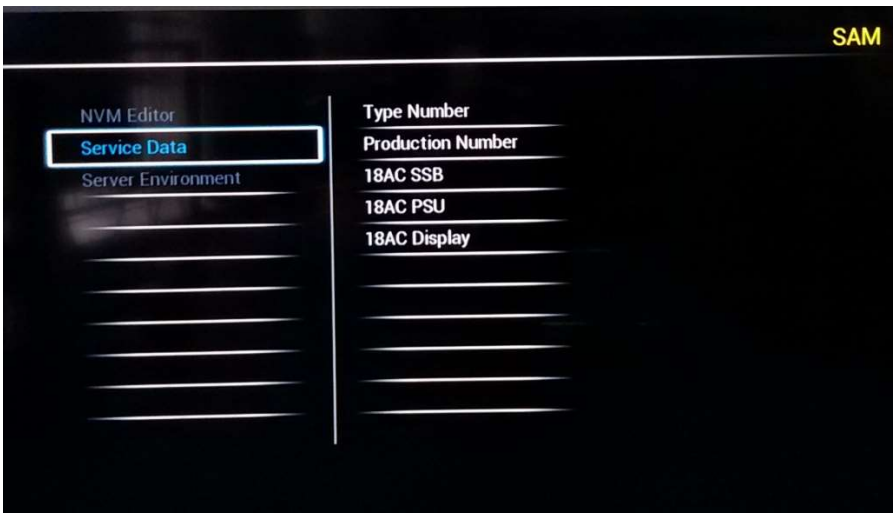
- Switch the set to STANDBY by pressing the mains button on the remote control transmitter or the television set.
- Via a standard RC-transmitter, key in “00” sequence.

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”, select “Service Data”, you can use the **UP/DOWN keys** to view and change the set Type number, the set Production Number 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

- 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

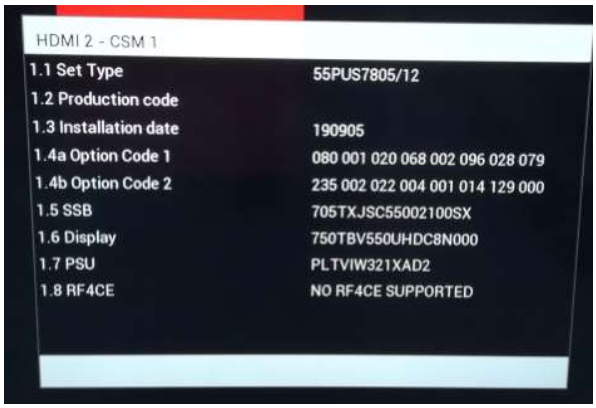
- Ignore “Service unfriendly modes”.
- Line number for every
  line (to make CSM language independent).
- Set the screen mode to full
  screen (all contents on screen is visible).
- After leaving the Customer Service Mode, the original settings are restored.
- Possibility to use “CH+” or “CH-” for channel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

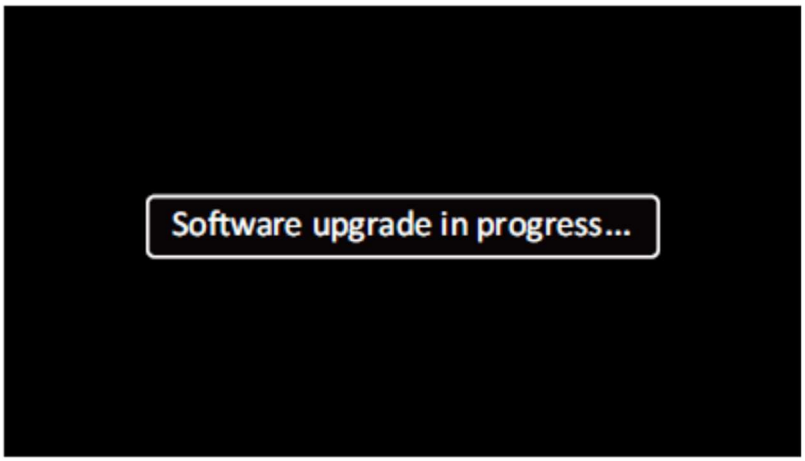
- Press the MENU/HOME button on the remote control transmitter.
- Press the POWER button on the remote control transmitter.
- Press the POWER button on the television set.

5. Software Upgrading, Error code and Panel Code

5.1 Software Upgrading

5.1.1. The following update is for .pkg file.

1. Rename the file to “upgrade_loader.pkg”.
2. Prepare a USB memory (File format: FLAT, Size: 1G~8G).
3. Copy the software to USB flash disk (root directory).
4. Switch off the TV and Insert the USB memory stick that contains the software update files in one of the TV’s USB 2.0 port.
   Note: It contains USB3.0 port, if connect on it, the software may can’t be detected.
5. Switch on the TV. The TV will detect the USB memory s tick automatically. Then a window jumps out as below:



6. When the TV software is updated, the TV will turn on again automatically. Remove your USB flash drive.
7. We can enter in CSM or Factory mode to check the current software version.

5.1.2. The following update is for .upg file.

Step 1: Ready for F/W Upgrade

1. Rename the file to “autorun.upg”.
2. Prepare a USB memory (File format: FLAT, Size: 1G~8G).
3. Copy the software to USB flash disk (root directory).
4. Switch on the TV and Insert the USB memory stick that contains the software update files in one of the TV’s USB 2.0 port.

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

Step 2: F/W Upgrade

Warning:

- Do not switch off your TV or remove your USB flash drive during the software update.
- If a power failure occurs during the update, do not remove your USB flash drive from your TV. Your TV will continue the update as soon as power is restored.
- If an error occurs during the update, retry the procedure. If the error reoccurs, contact Philips Consumer Care

1. Connect your USB flash drive (containing the software update) to the USB connector on the TV. Wait 30 seconds or until the USB drive is recognized by the TV.
2. Your TV will start loading the software automatically.
3. When the loading of the software finished, press “Start” to activate the upgrade of the TV.

Notes:

- If the USB flash drive is not detected, disconnect it and reconnect again.
- In case the software does not start loading automatically, you can also update the software manually
  1. Press (Settings) on your remote control, and select **All Settings** > **Update Software** > **Local Updates** >**USB,** and press **OK**.
  2. Select the software file and follow the on-screen instruction to install latest software on your TV.

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 following 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.

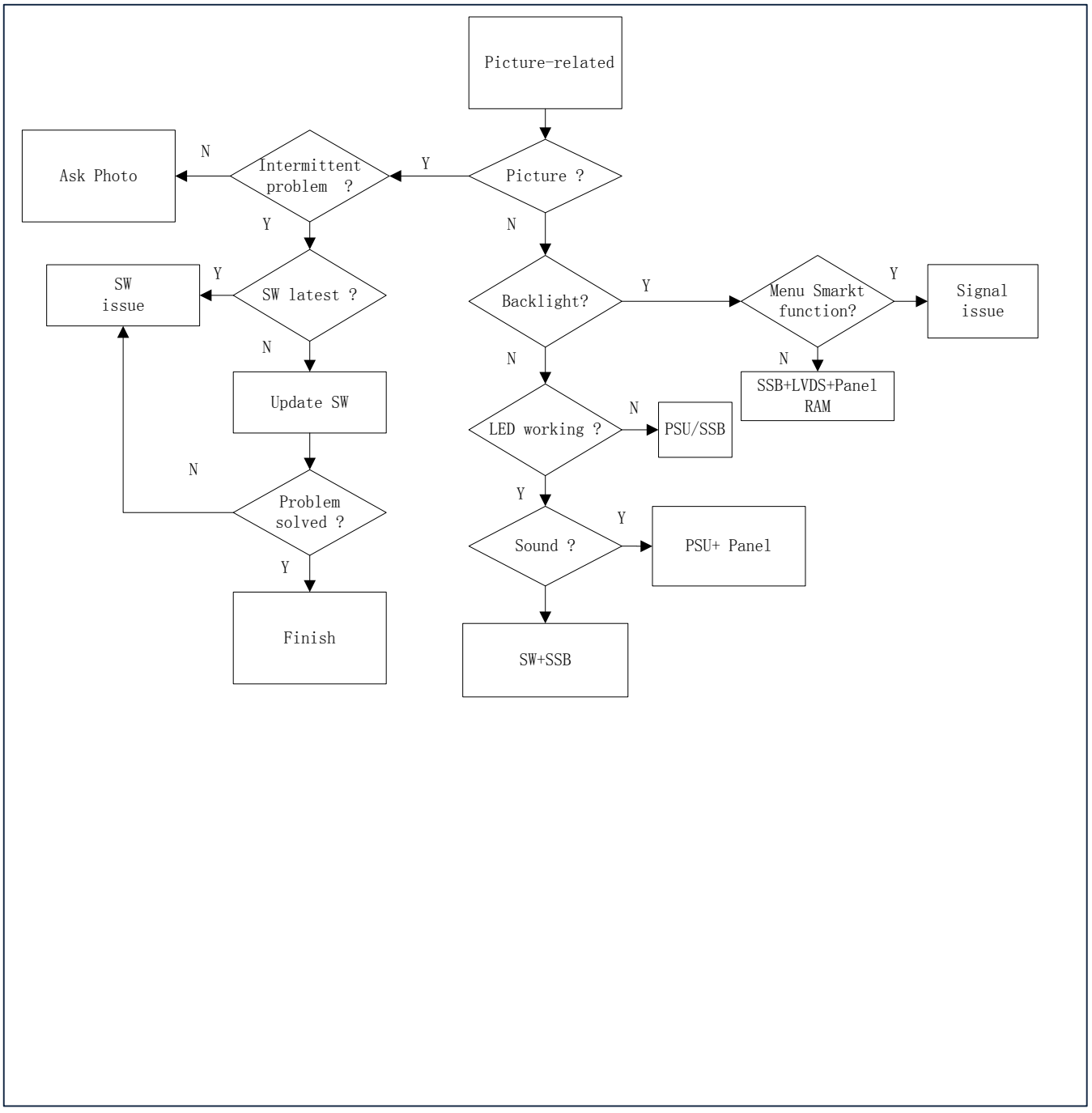
• If the contents of the error buffer have not changed for 50 hours, the error buffer resets automatically.

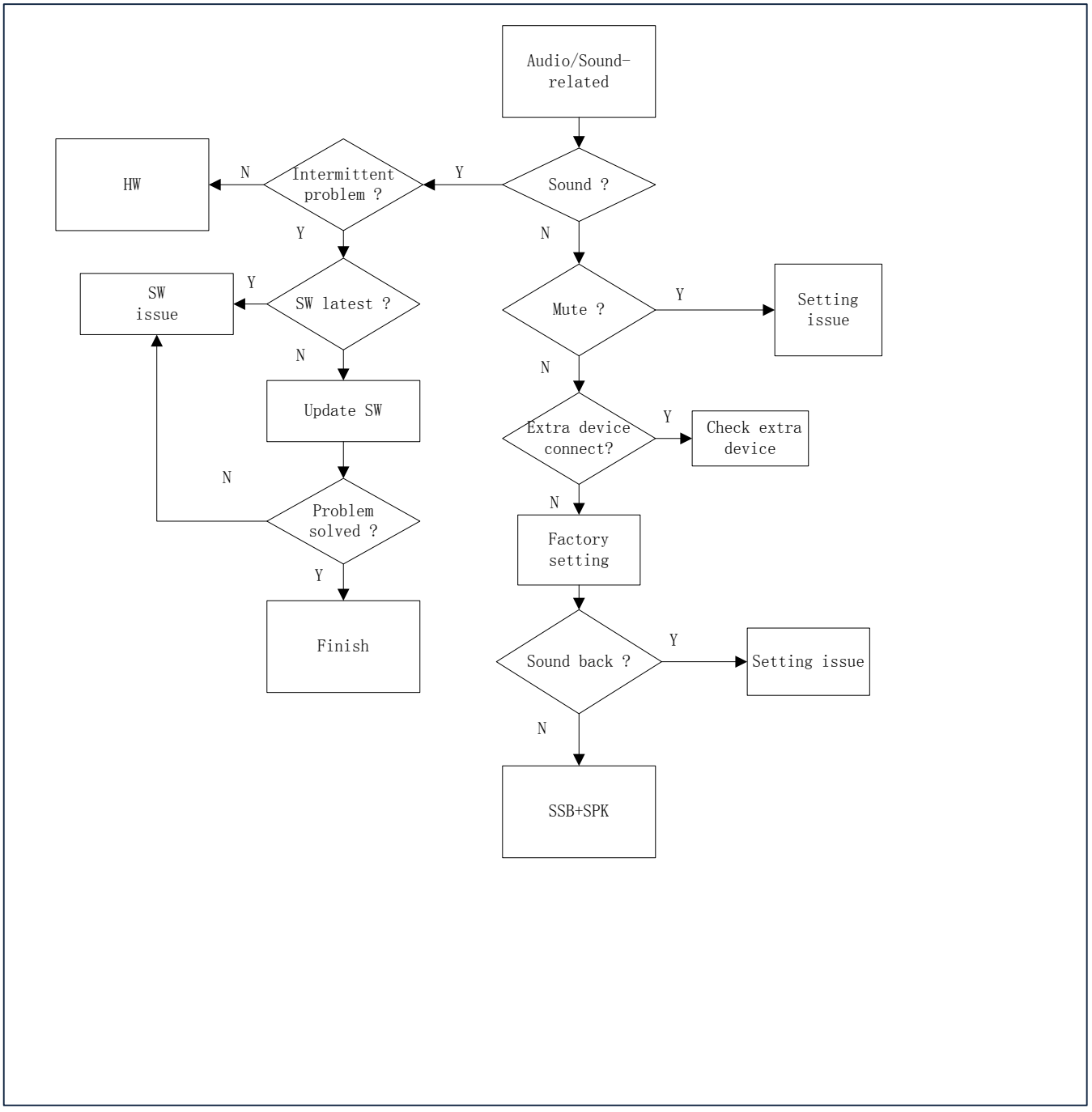
Note: If you exit SAM by disconnecting the mains from the television set, the error buffer is not reset.

5.3 Set Option 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 “Set Option Code” in below tab. After resetting the Display Code, restart the set immediately.

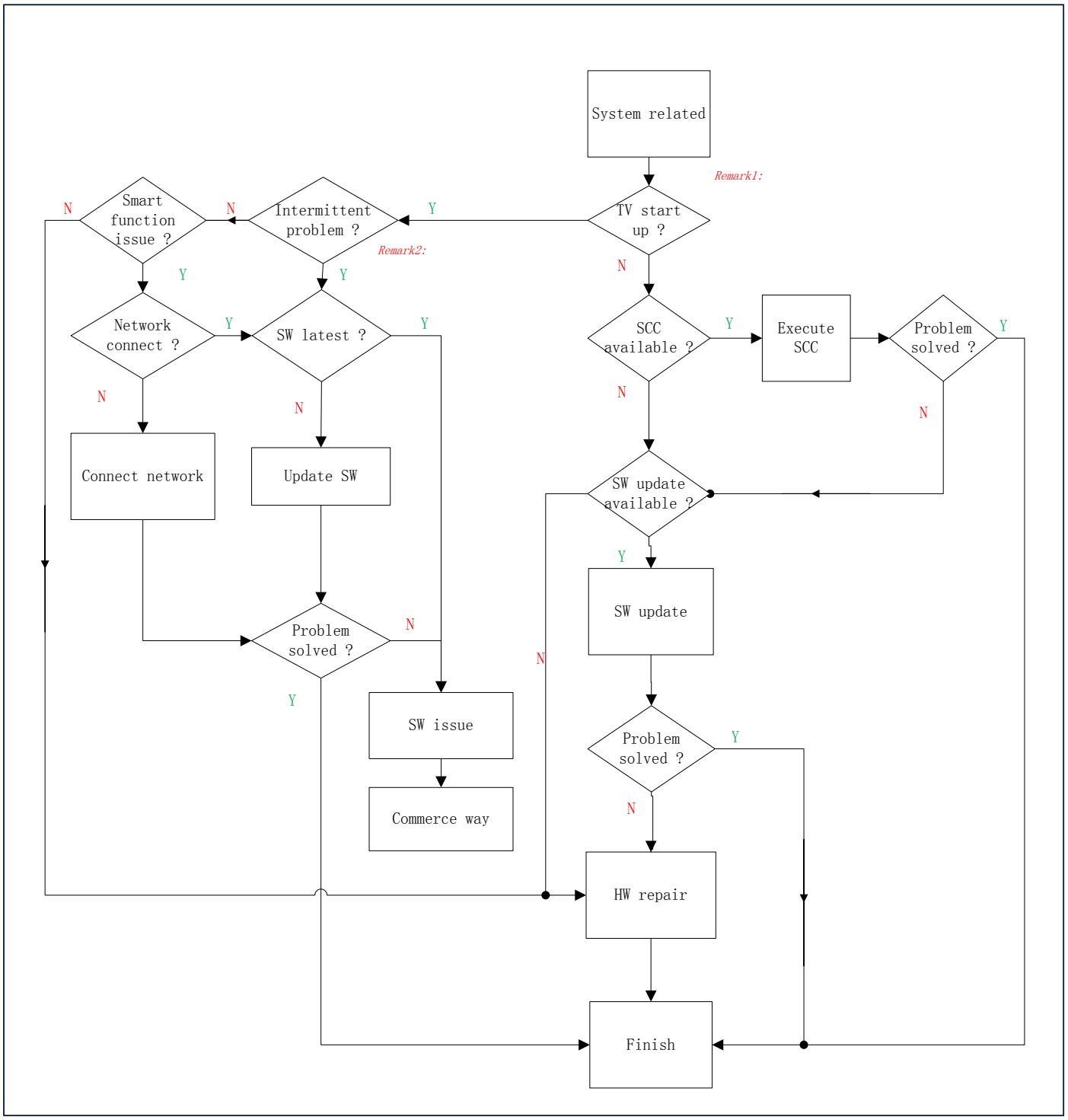
CTN_ALT BOM#	Panel Type	Set Option Code	Panel ID	CTN_ALT BOM#	Panel Type	Set Option Code	Panel ID
43PUS7805/12	TPT430U3-QVN03.U S0B1AF	032	153	55PUS7805/62	TPT550J1-QUBF84.K	051	159
43PUS7805/12	TPT430H3-QUBH10.K SA9P0D	001	113	55PUS7855/12	TPT550J1-QUBF84.K S89P0J	014	145
43PUS7805/12	TPT430B5-GT013.H S1C	034	158	55PUS7855/12	TPT550WR1-EQQ.G SMA4L	039	129
43PUS7805/60	TPT430H3-QUBH10.K SA9P0D	046	113	58PUS7805/12	TPT580F2-PV5D.Q S01D	040	155
43PUS7805/60	TPT430B5-GT013.H S1C	047	158	58PUS7805/12	TPT580B5-U1T01.D S01N	004	104
43PUS7805/62	TPT430U3-QVN03.U S0B1AM	048	153	58PUS7855/12	TPT580F2-PV5D.Q S01E	041	155
43PUS7805/62	TPT430H3-QUBH10.K SA9P0K	027	113	58PUS7855/12	TPT580B5-U1T01.D S01Q	015	104
43PUS7805/62	TPT430B5-GT013.H S1H	049	158	58PUS8105/12	TPT580F2-PV5D.Q S01G	054	155
43PUS7855/12	TPT430H3-QUBH10.K SD9P0D	012	113	58PUS8105/12	TPT580B5-U1T01.D S01W	023	104
43PUS7855/12	TPT430U3-QVN03.U S0B1AG	033	153	65PUS7805/12	TPT650U2-EQQA3.G S3A	005	131
43PUS7855/12	TPT430B5-GT013.H S1D	035	158	65PUS7805/12	TPT650J1-QUBF70.K DWP0B	042	156
43PUS8105/12	TPT430H3-QUBH10.K SA9P0G	021	113	65PUS7805/62	TPT650U2-EQQA3.G S3J	030	131
50PUS7805/12	TPT500B5-U2T01.D S01P	002	114	65PUS7805/62	TPT650J1-QUBF70.K	052	156
50PUS7805/12	TPT500-PV5D.Q S01F	036	154	65PUS7855/12	TPT650J1-QUBF90.K	016	146
50PUS7805/62	TPT500B5-U2T01.D S01AM	028	114	70PUS7805/12	TPT700B5-U1T01.D S01AM	006	105
50PUS7805/62	TPT500-PV5D.Q S01M	050	154	70PUS7805/12	TPV700B5-U2T01.D S01C	019	147
50PUS7805/62	TPT500B5-U2T01.D S01P	028	114	70PUS7805/12	TPT700U2-PV3D.Q S01F	044	157
50PUS7855/12	TPT500B5-U2T01.D S01R	013	114	70PUS7855/12	TPT700B5-U1T01.D S01AN	017	105
50PUS7855/12	TPT500-PV5D.Q S01G	037	154	70PUS7855/12	TPV700B5-U2T01.D S01E	020	148
50PUS8105/12	TPT500B5-U2T01.D S01AA	022	114	70PUS7855/12	TPT700U2-PV3D.Q S01G	045	157
50PUS8105/12	TPT500-PV5D.Q S01K	053	154	70PUS8105/12	TPV700B5-U2T01.D S01S	031	147
55PUS7805/12	TPT550J1-QUBF84.K S8WP0A	038	159	70PUS8105/12	TPT700B5-U1T01.D S01AW	024	105
55PUS7805/12	TPT550U2-EQQSMA.G SA4A	003	129	75PUS7805/12	TPT750UA-QUBF90.K S9WPA	025	149
55PUS7805/62	TPT550U2-EQQSMA.G SA4A	029	129	75PUS7855/12	TPT750UA-QUBF90.K S9WPB	026	149


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

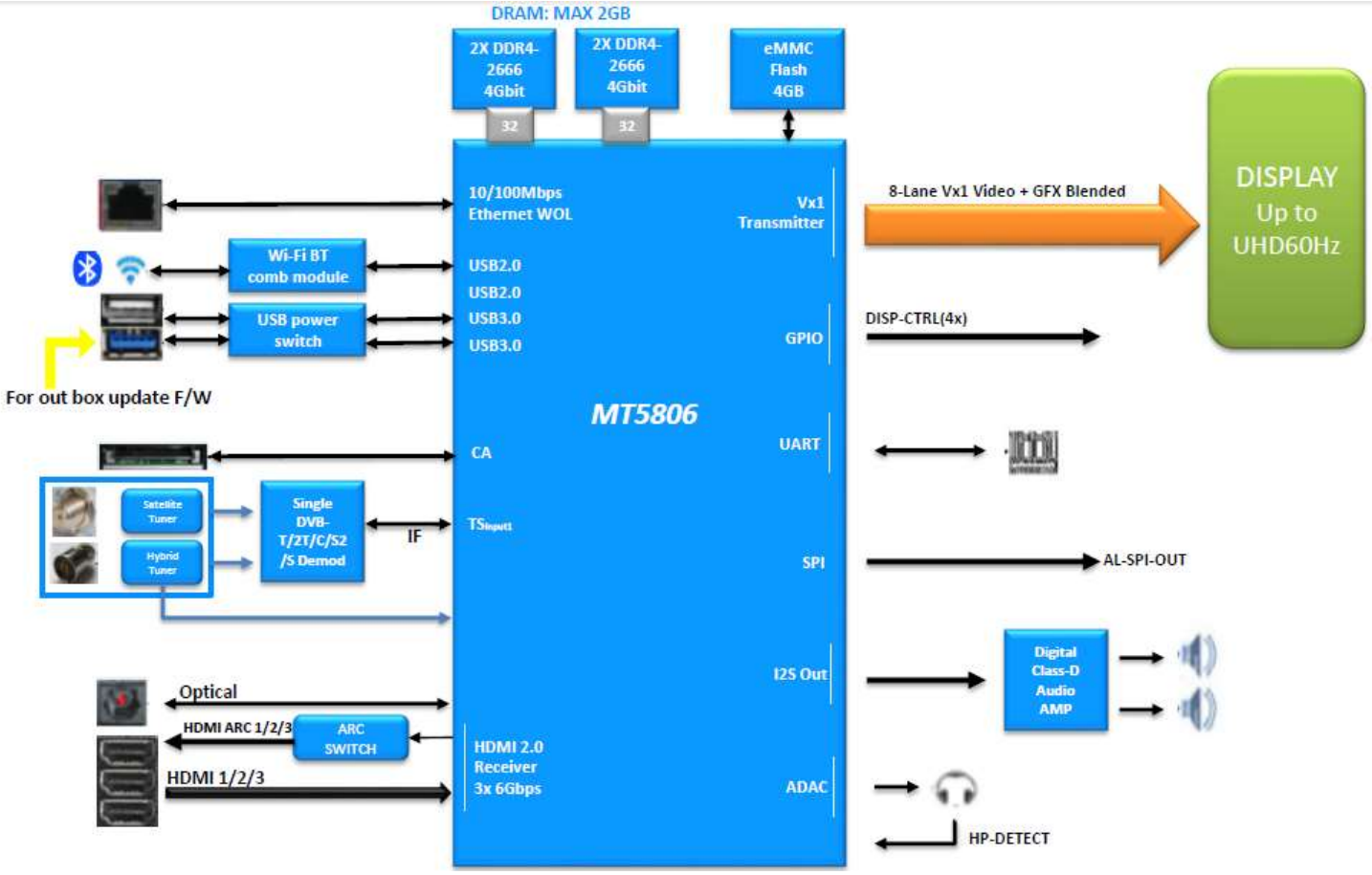
Remark2 : How to judge intermittent issue ?

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

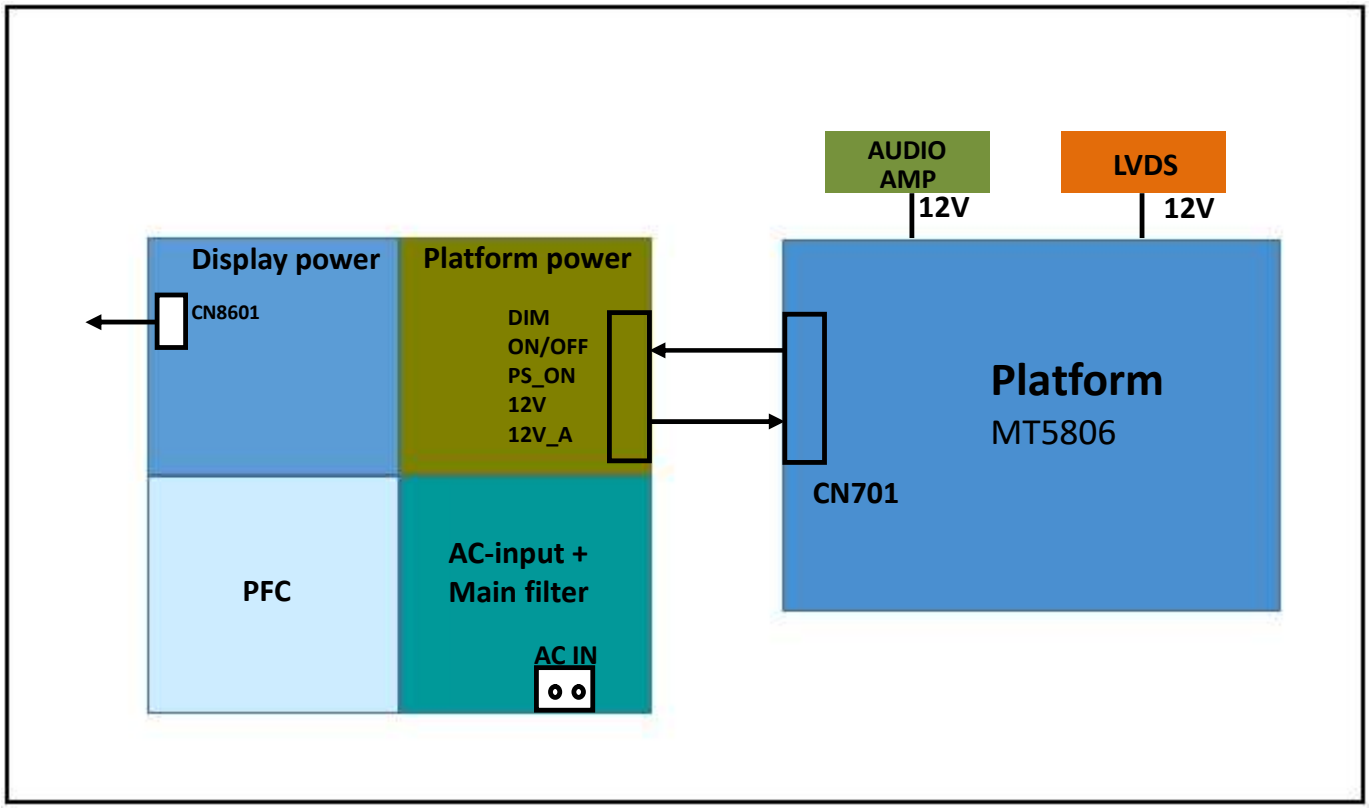
7. Electrical Diagram

7.1 Block diagram

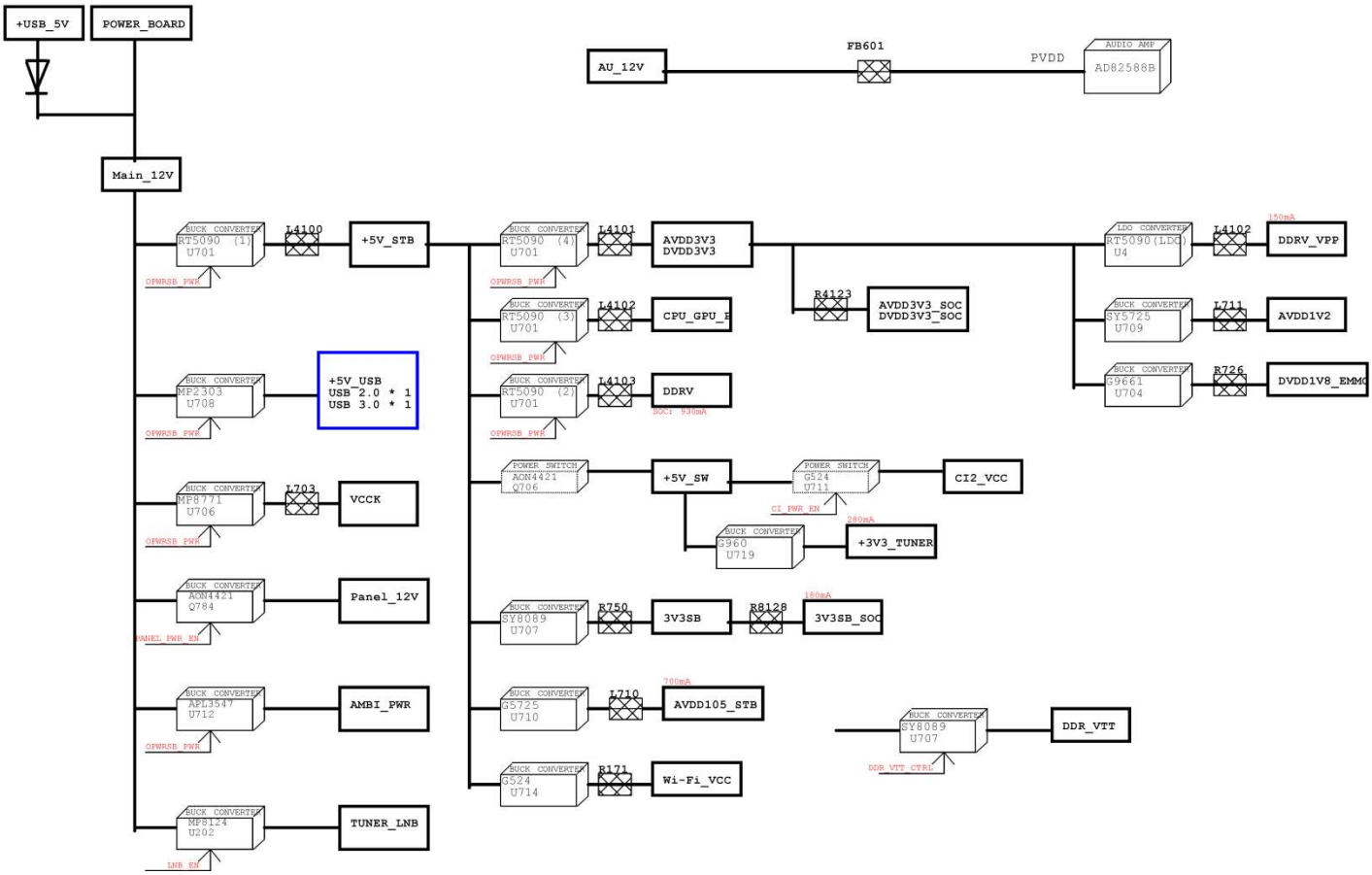


7.2 Power Supply

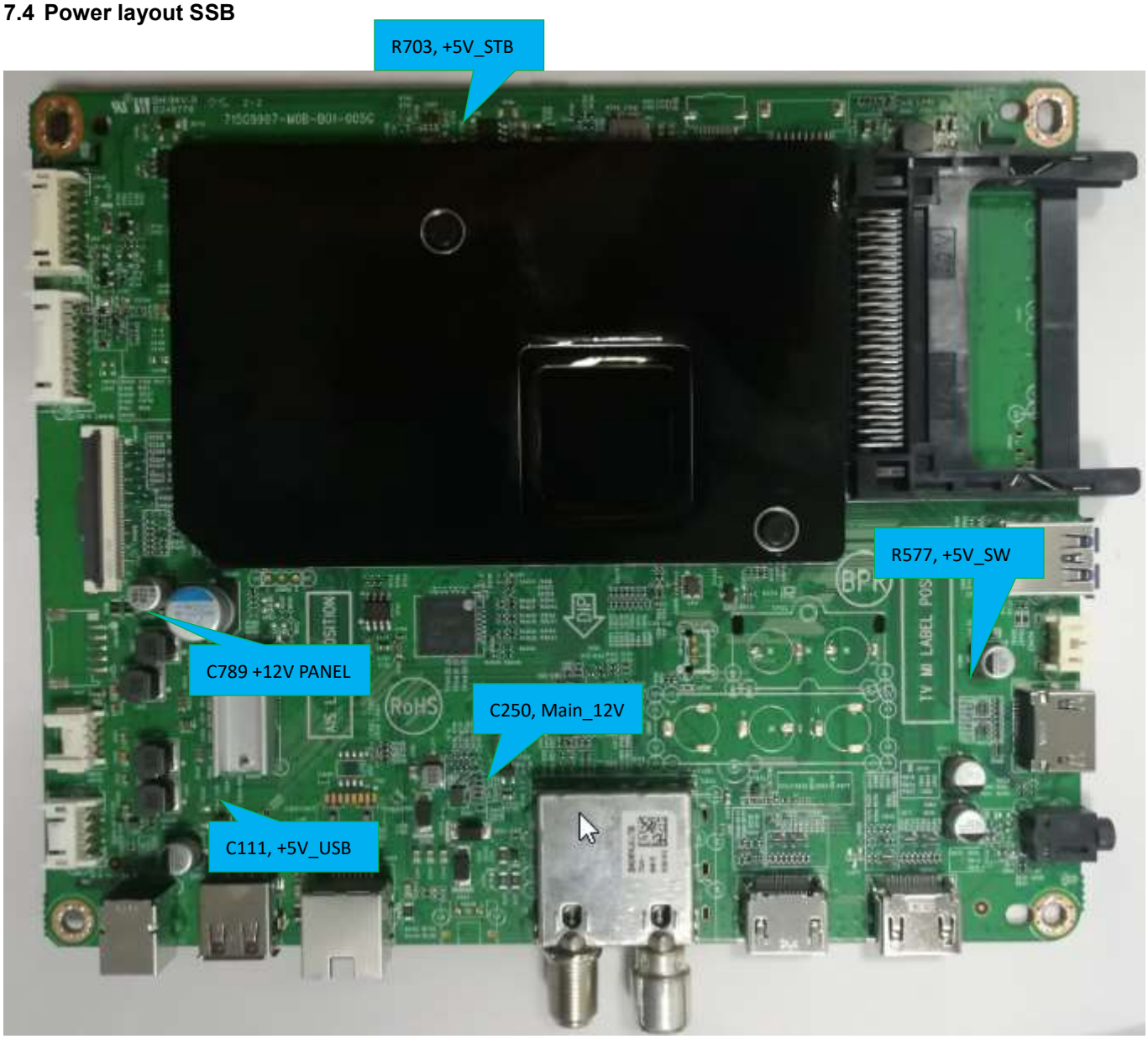
Power architecture of this platform.



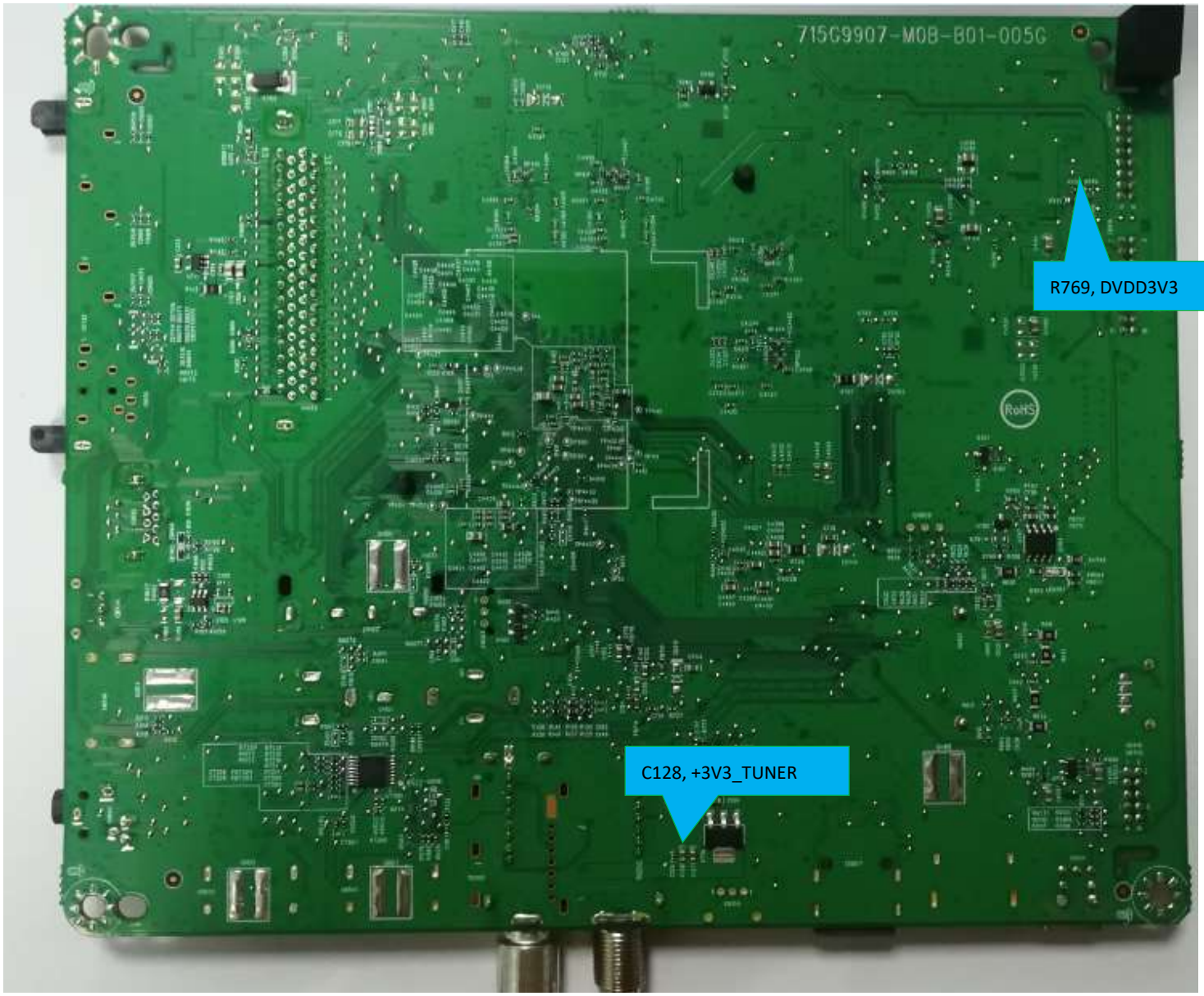
7.3 Power tree



7.4 Power layout SSB



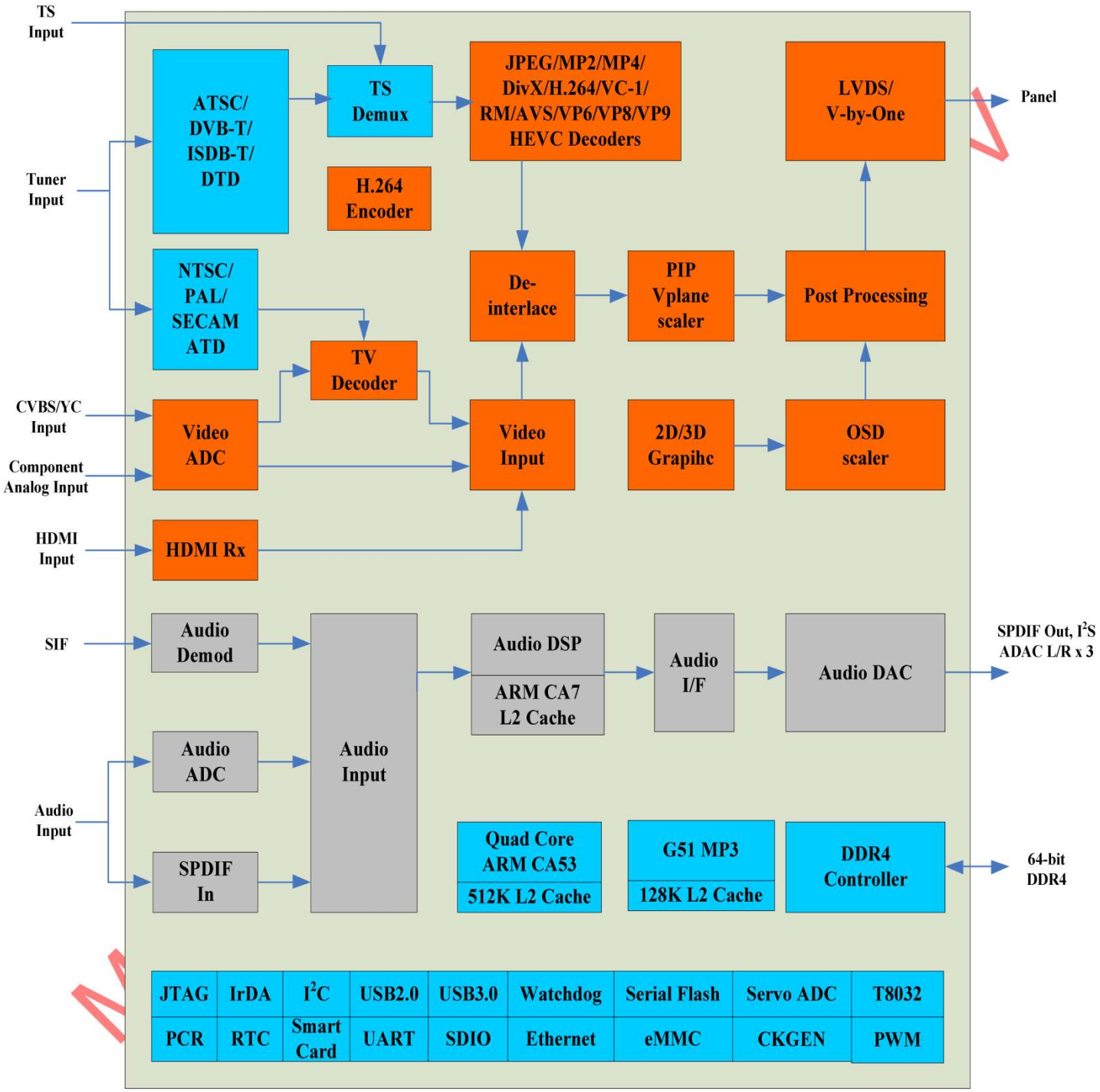
Power SSB Top View(



Power SSB Bottom View

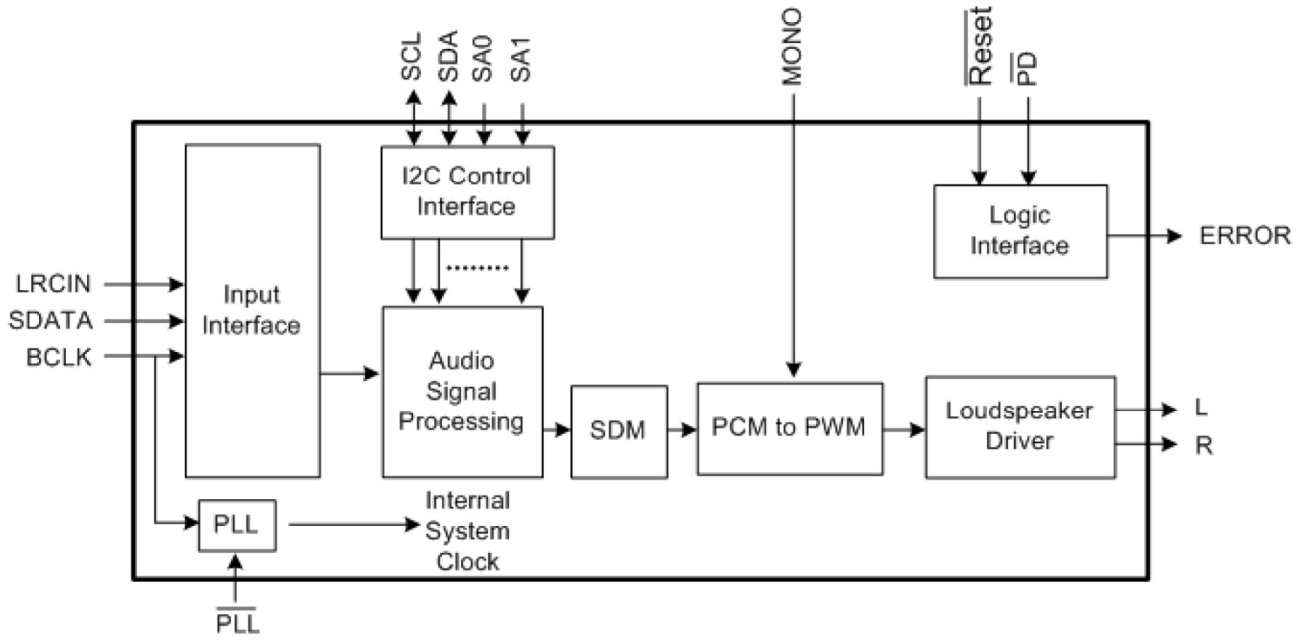
8. IC Data Sheets

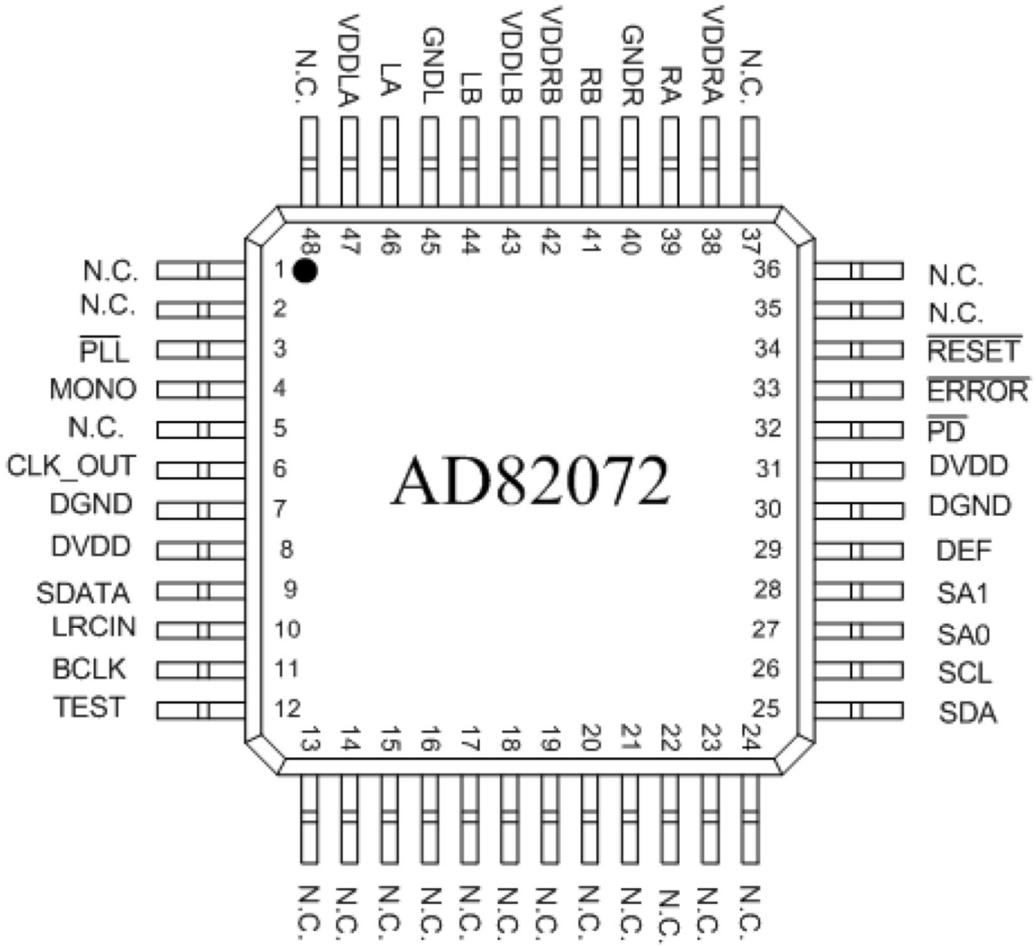
8.1 MT5806IFEQ (IC U401--Scaler)



8.2 AD82072-LG48NRY (IC U601--Audio)

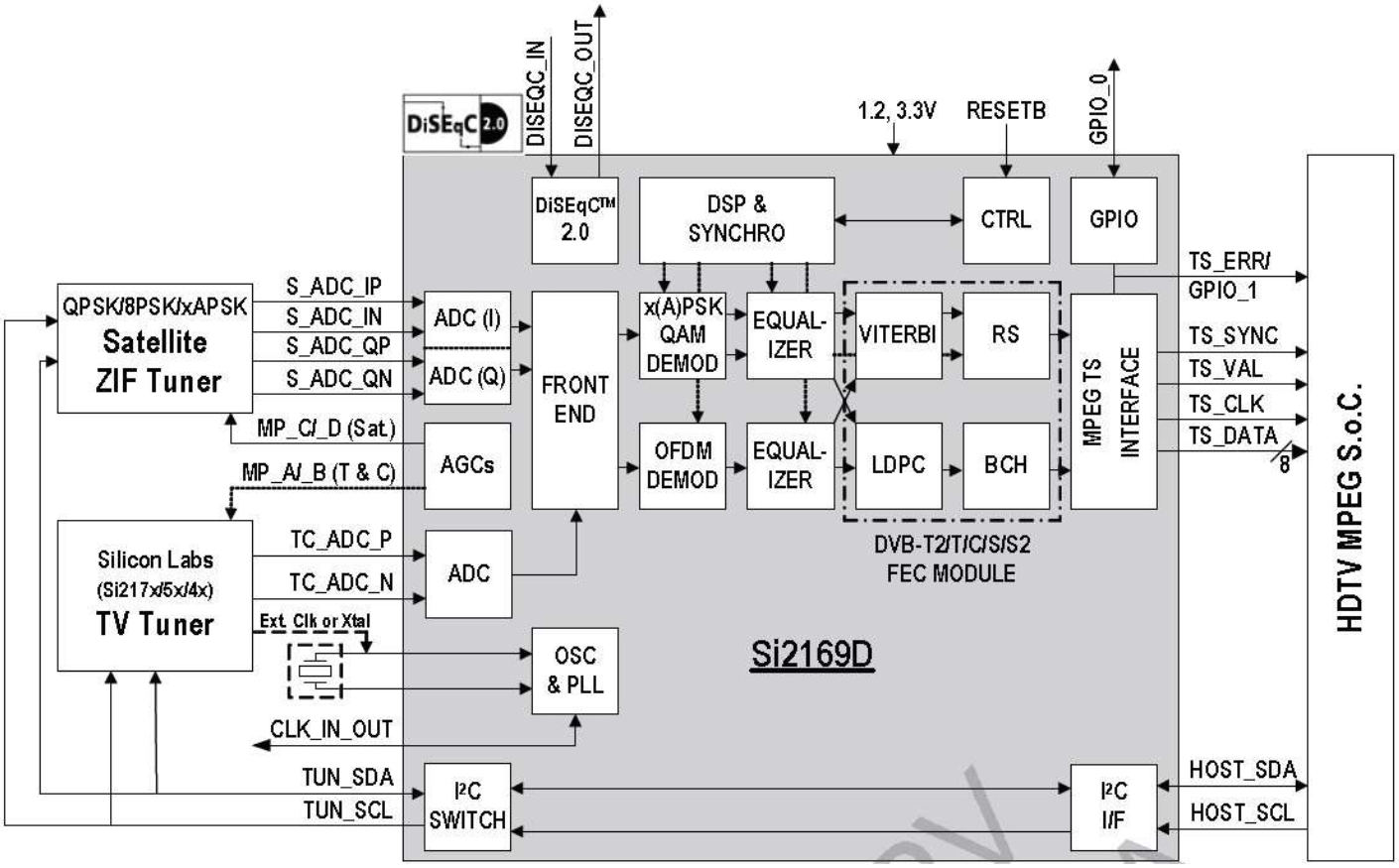
Functional Block Diagram

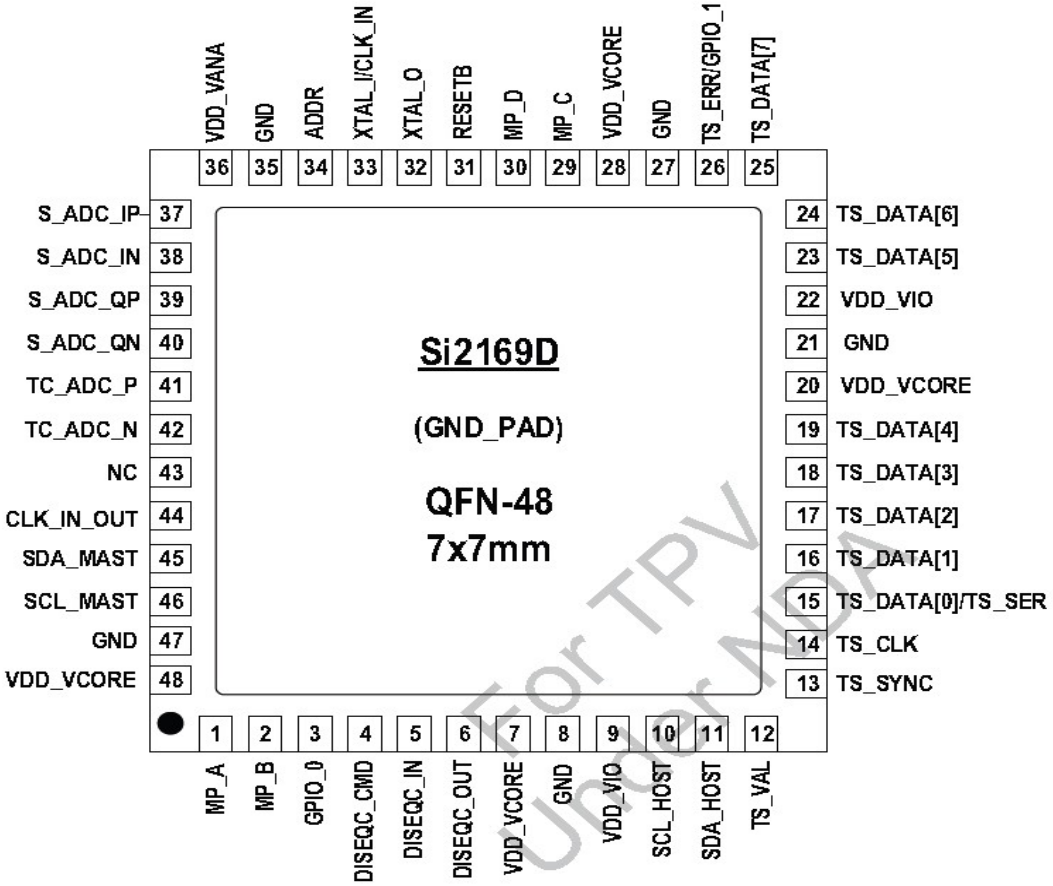




8.3 SI2169-D60-GMR (U718)

Functional Block Diagram

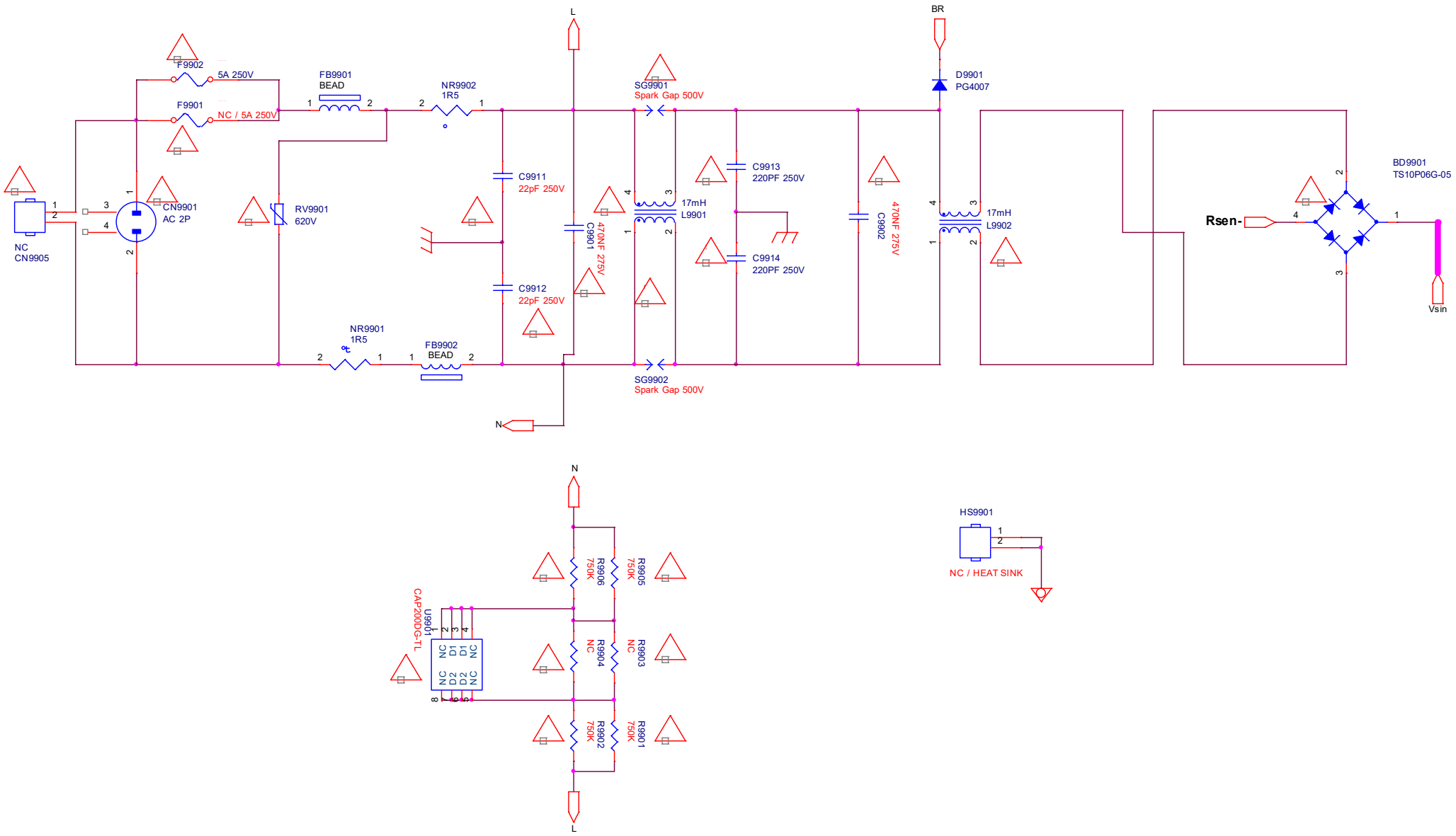




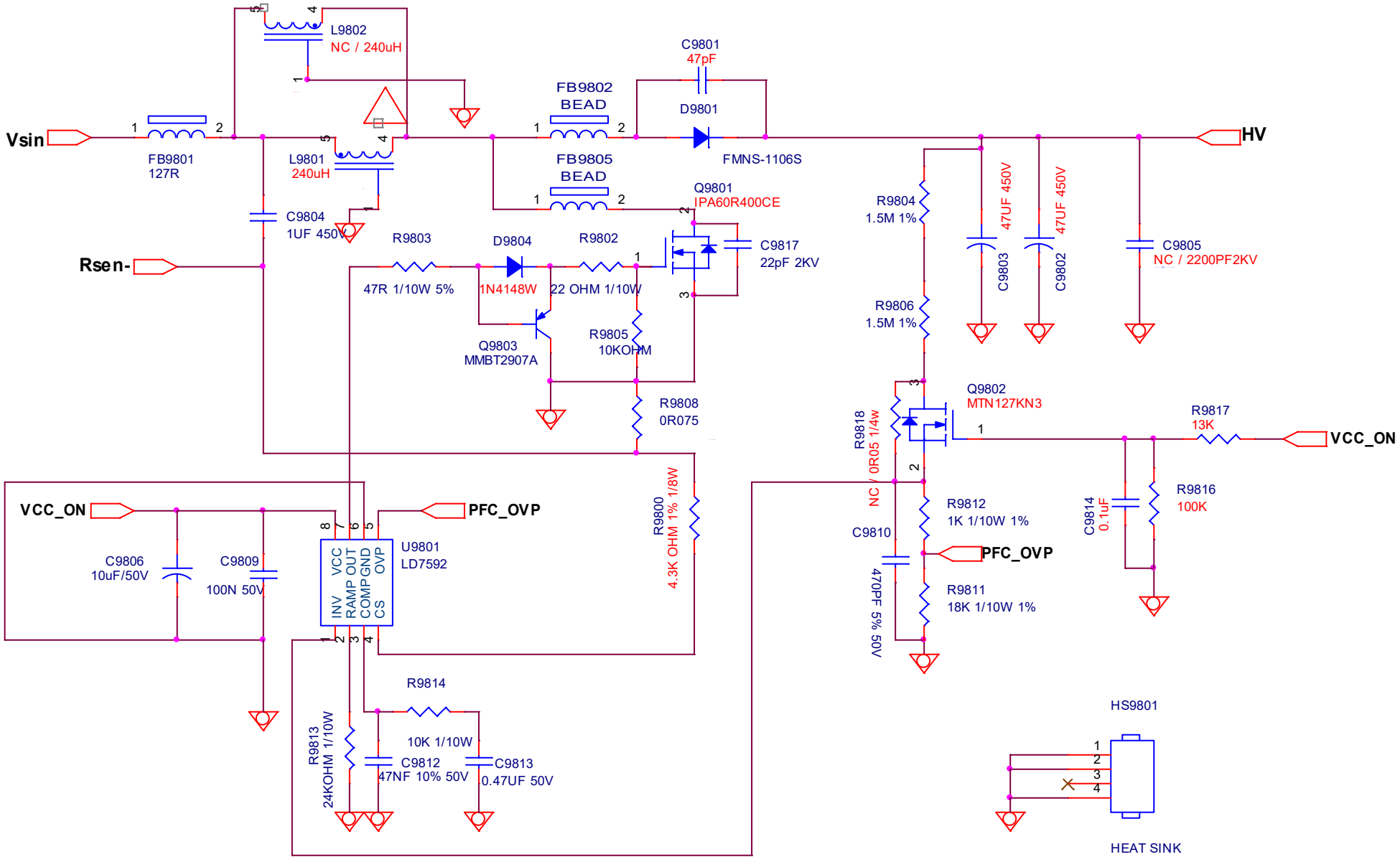
9.Circuit Diagrams

9.1 A 715GA052 PSU (For 43” 78x5/8105 Series)

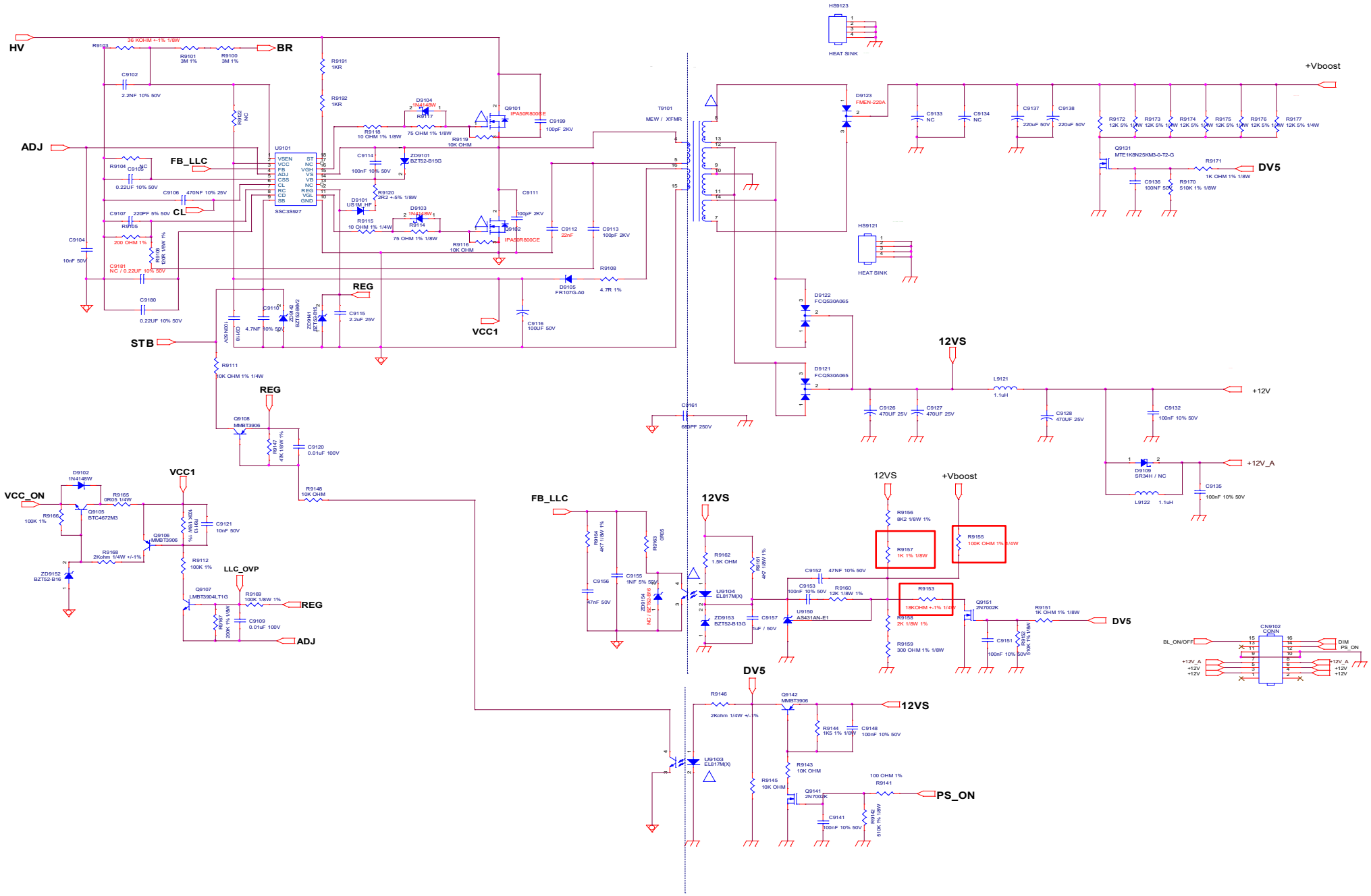
9-1-1 AC Input



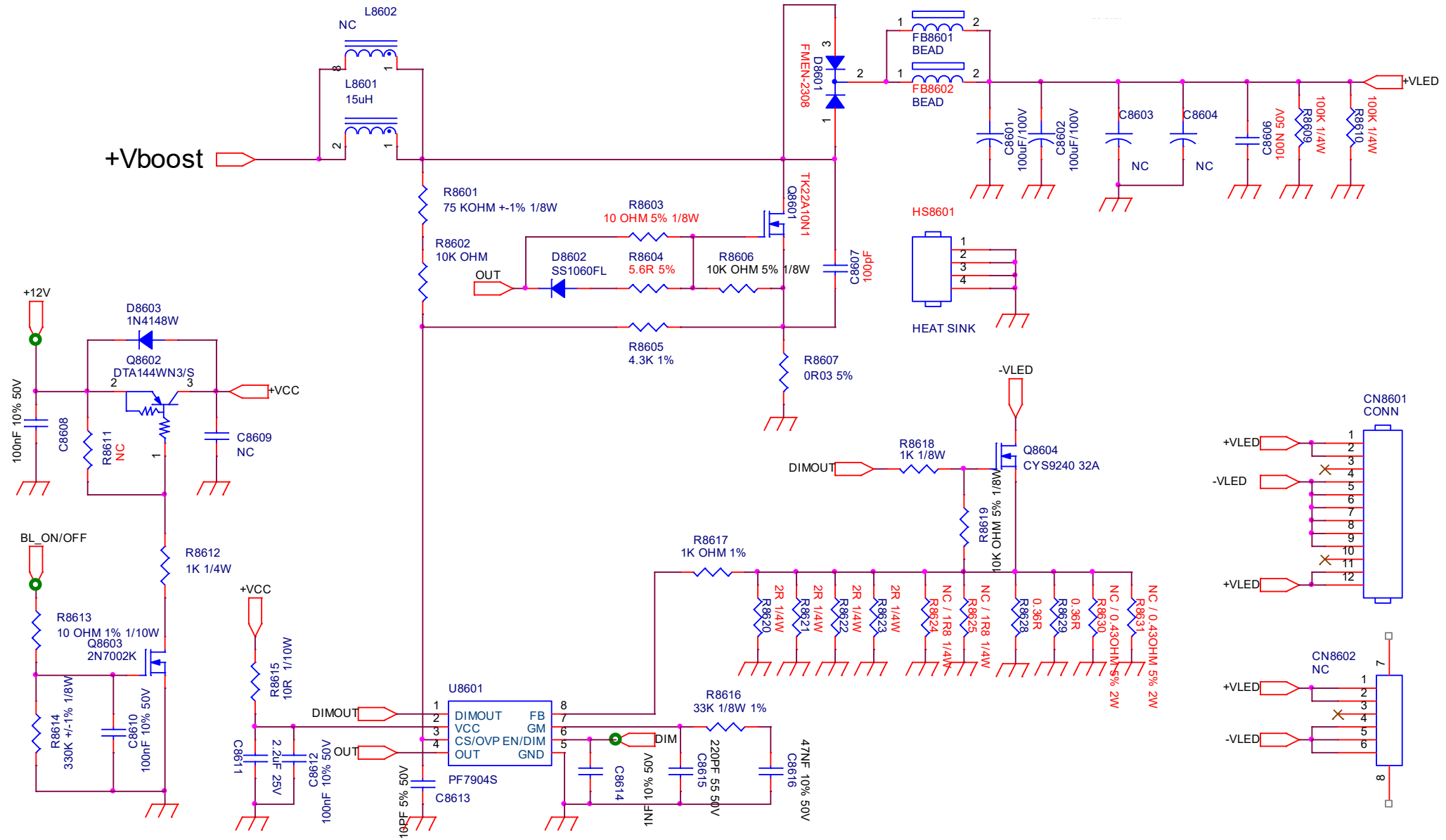
9-1-2 PFC with LD7592GS



9-1-3 Main Power

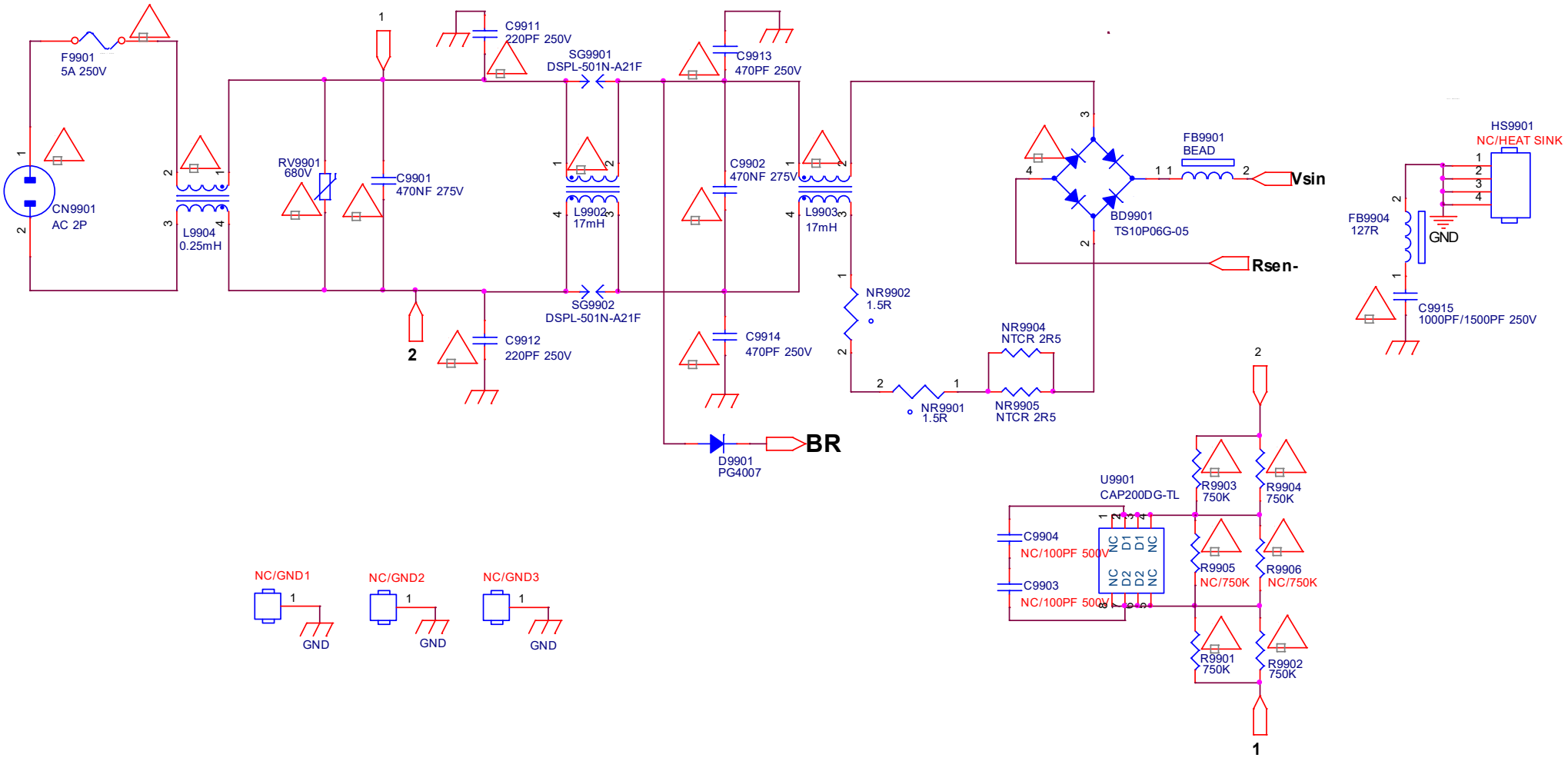


9-1-4 LED

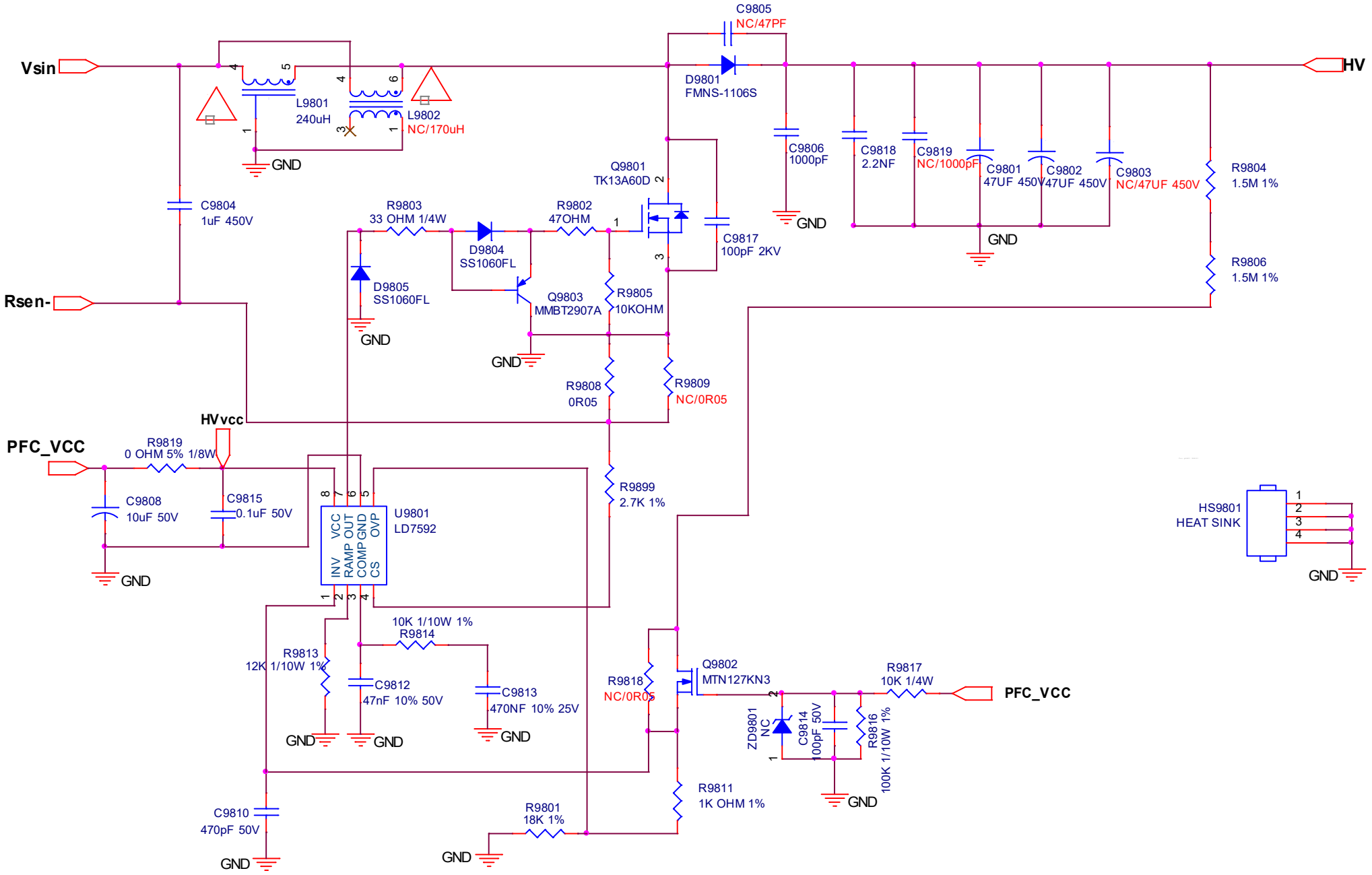

+Vboost
L8602
NC
L8601
15uH
D8601
FMEN-2308
FB8601
BEAD
FB8602
BEAD
+VLED
C8601
100uF/100V
C8602
100uF/100V
C8603
NC
C8604
NC
C8605
100N 50V
R8609
100K 1/4W
R8610
100K 1/4W
R8601
75 KOHM +-1% 1/8W
R8602
10K OHM
OUT
D8602
SS1060FL
R8603
10 OHM 5% 1/8W
R8604
5.6R 5%
R8606
10K OHM 5% 1/8W
Q8601
TK22A10N1
C8607
100pF
HS8601
HEAT SINK
R8605
4.3K 1%
R8607
0R03 5%
+12V
D8603
1N4148W
Q8602
DTA144WN3/S
+VCC
C8608
100nF 10% 50V
R8611
NC
C8609
NC
BL_ON/OFF
R8612
1K 1/4W
R8613
10 OHM 1% 1/10W
Q8603
2N7002K
R8614
330K +/-1% 1/8W
C8610
100nF 10% 50V
-VLED
R8618
1K 1/8W
Q8604
CYS9240 32A
DIMOUT
R8619
10K OHM 5% 1/8W
R8617
1K OHM 1%
R8620
2R 1/4W
R8621
2R 1/4W
R8622
2R 1/4W
R8623
2R 1/4W
R8624
NC / 1R8 1/4W
R8625
NC / 1R8 1/4W
R8628
0.36R
R8629
0.36R
R8630
NC / 0.43OHM 5% 2W
R8631
NC / 0.43OHM 5% 2W
CN8601
CONN
+VLED
-VLED
+VLED
CN8602
NC
+VLED
-VLED
+VCC
R8615
10R 1/10W
C8611
2.2uF 25V
C8612
100nF 10% 50V
U8601
DIMOUT
VCC
CS/OVP
OUT
FB
GM
EN/DIM
GND
PF7904S
C8613
10PF 5% 50V
DIMOUT
OUT
DIM
C8614
1NF 10% 50V
R8616
33K 1/8W 1%
C8615
220PF 55 50V
C8616
47NF 10% 50V

9.2 A 715GA018 PSU(For 55”/58” /65” 78x5/8105 Series)

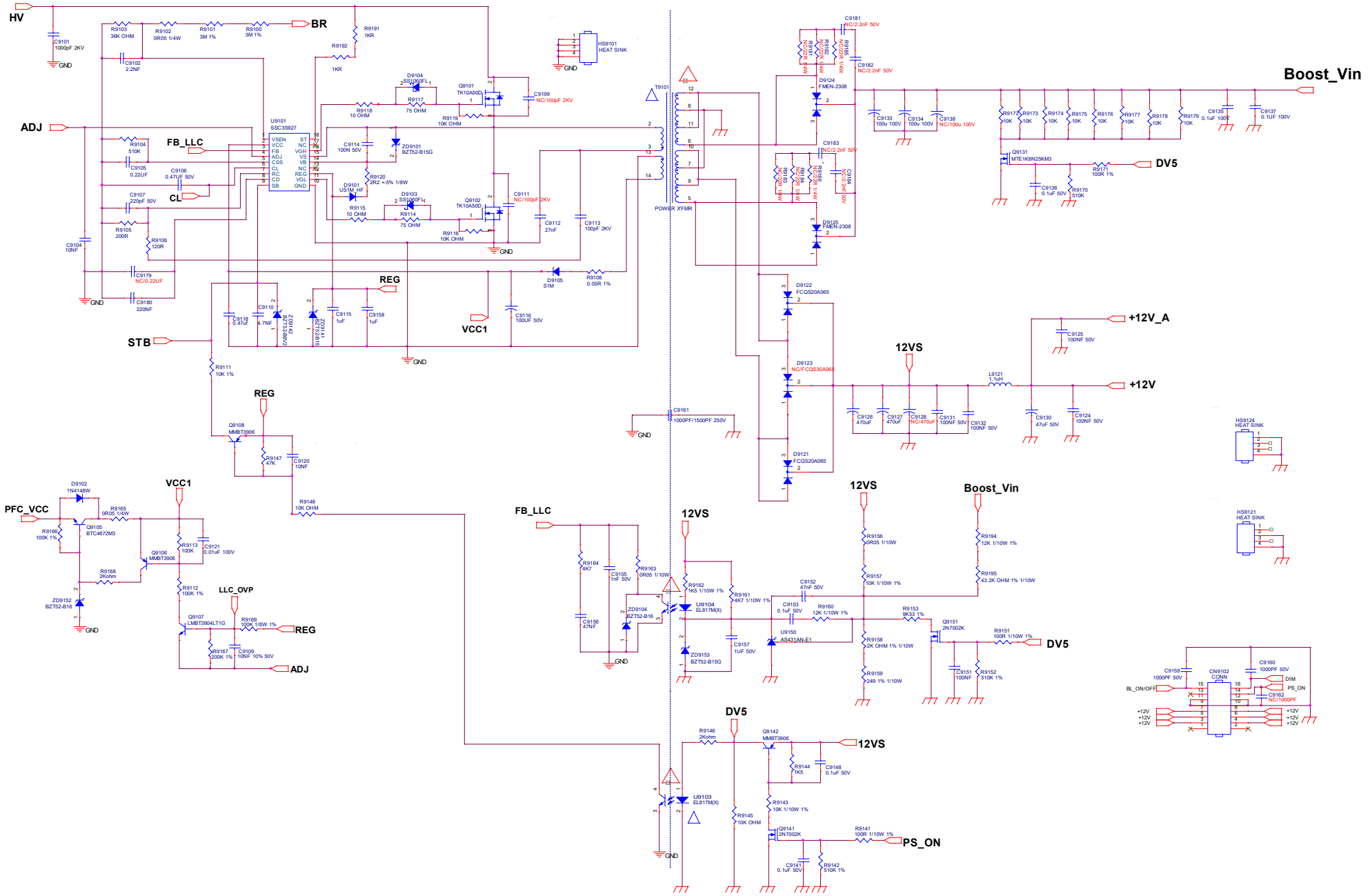
9-2-1 AC Input



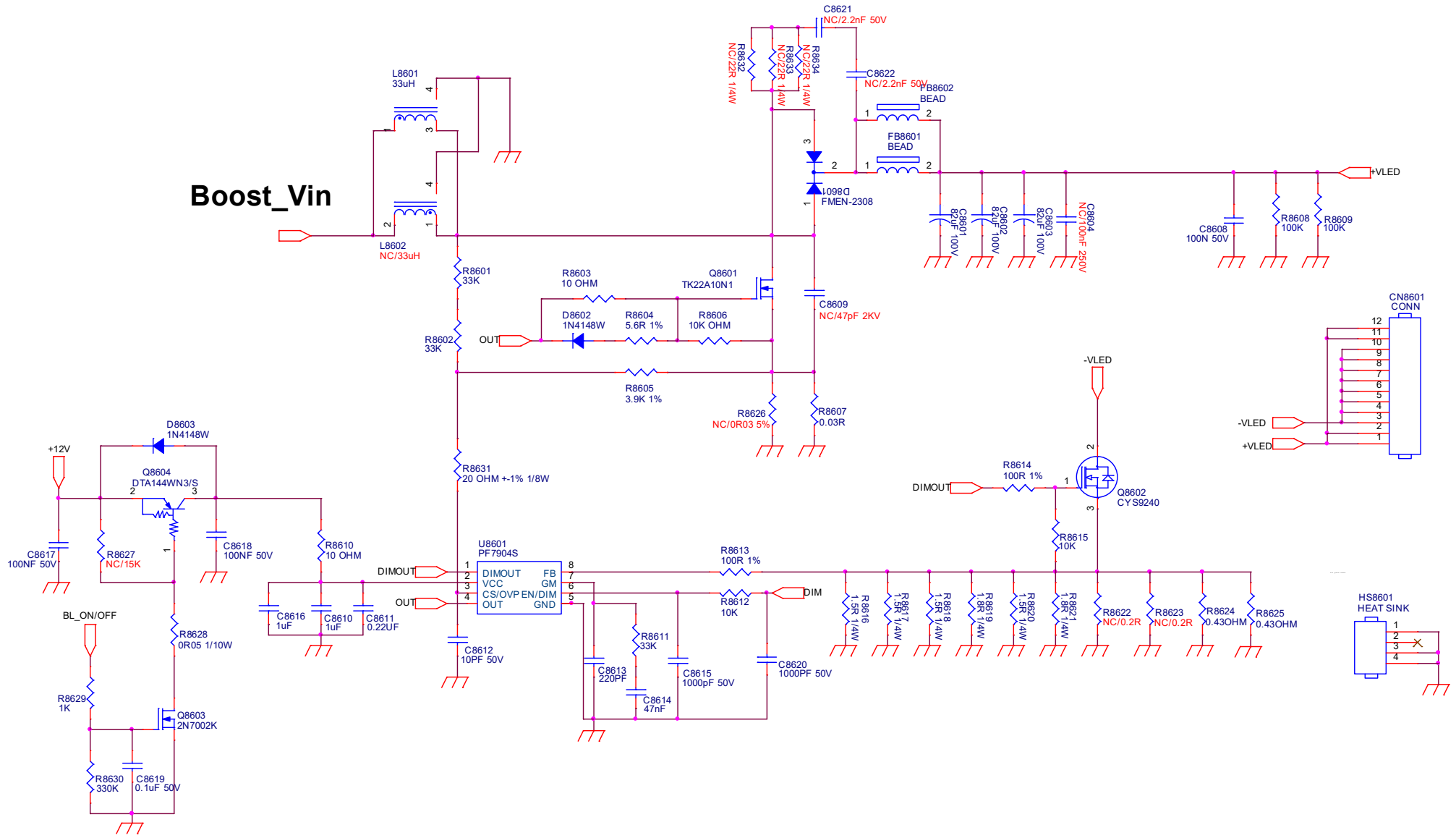
9-2-2 PFC with LD7592S



9-2-3 LLC with SSC3S927

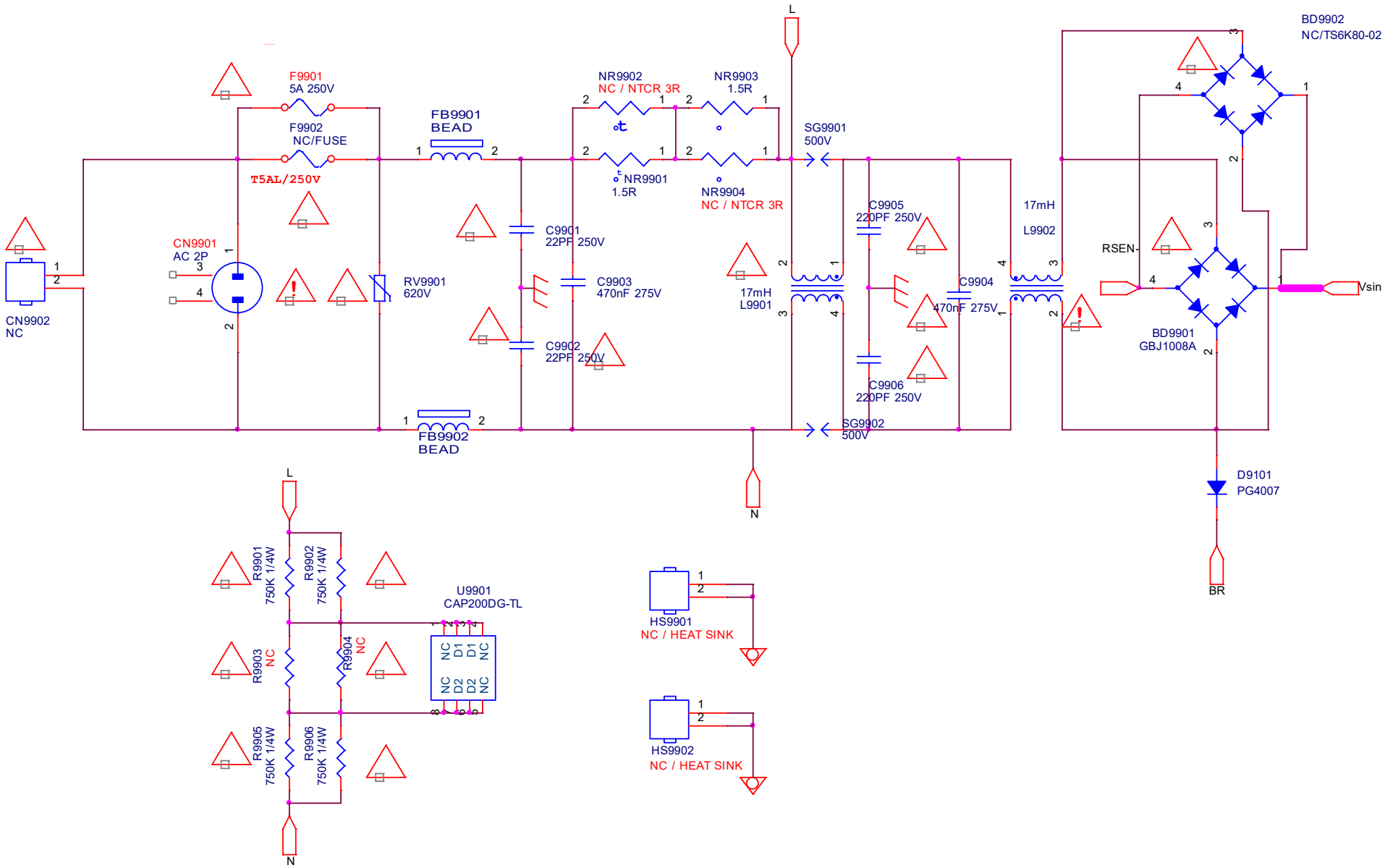


9-2-4 Driver with PF7904

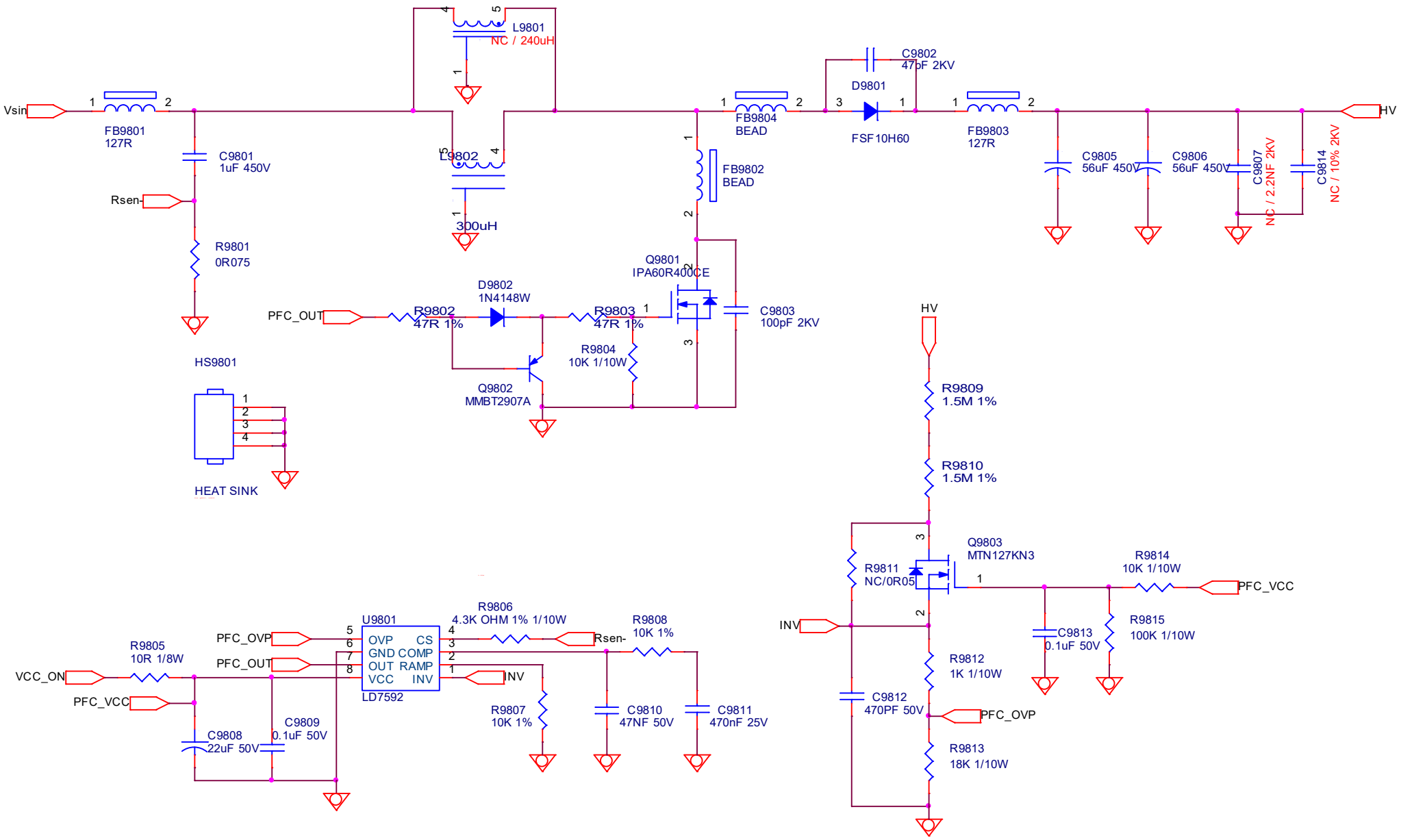


9.3 A 715GA008 PSU (For 50” 78x5/8105 Series)

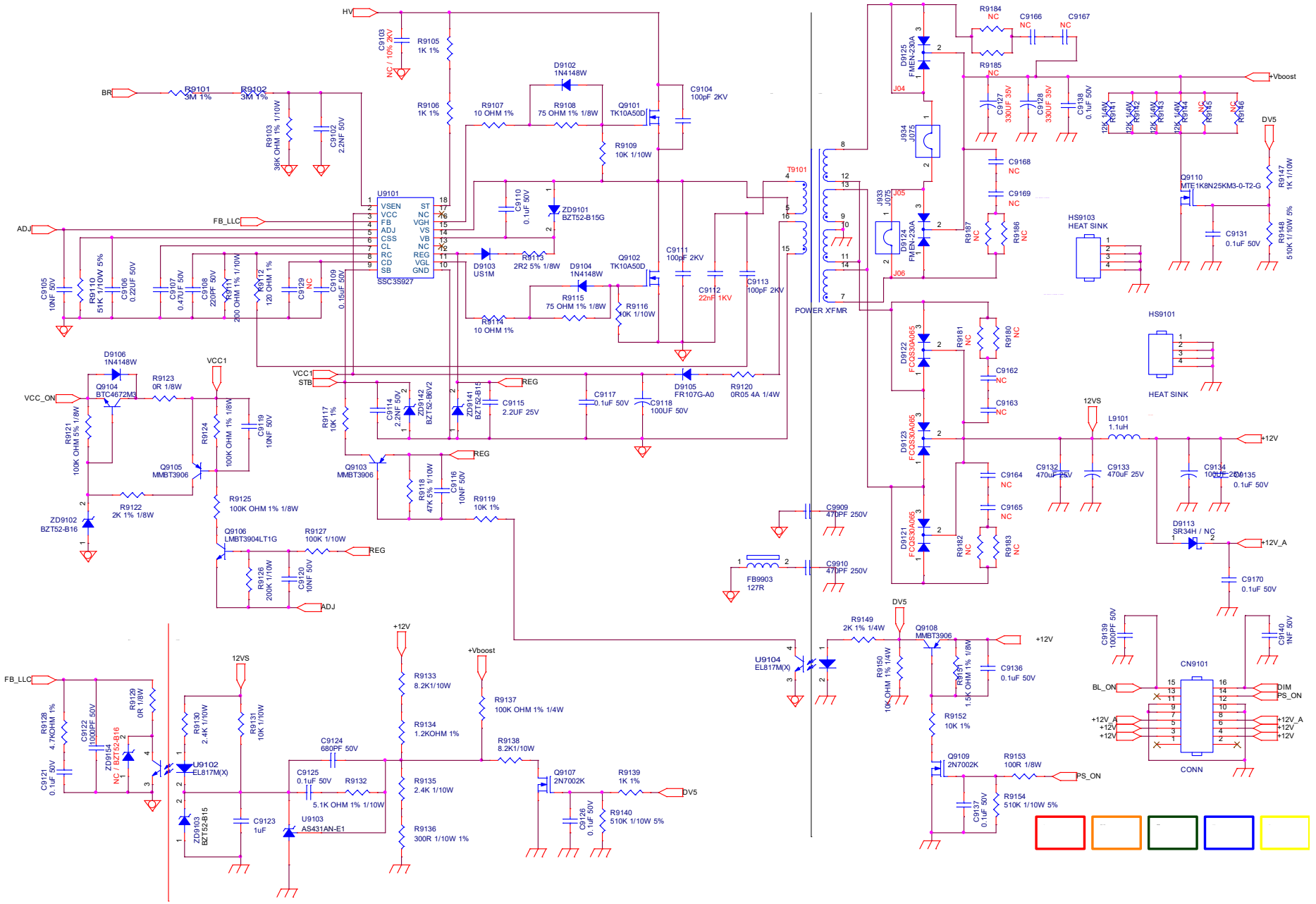
9-3-1 AC input



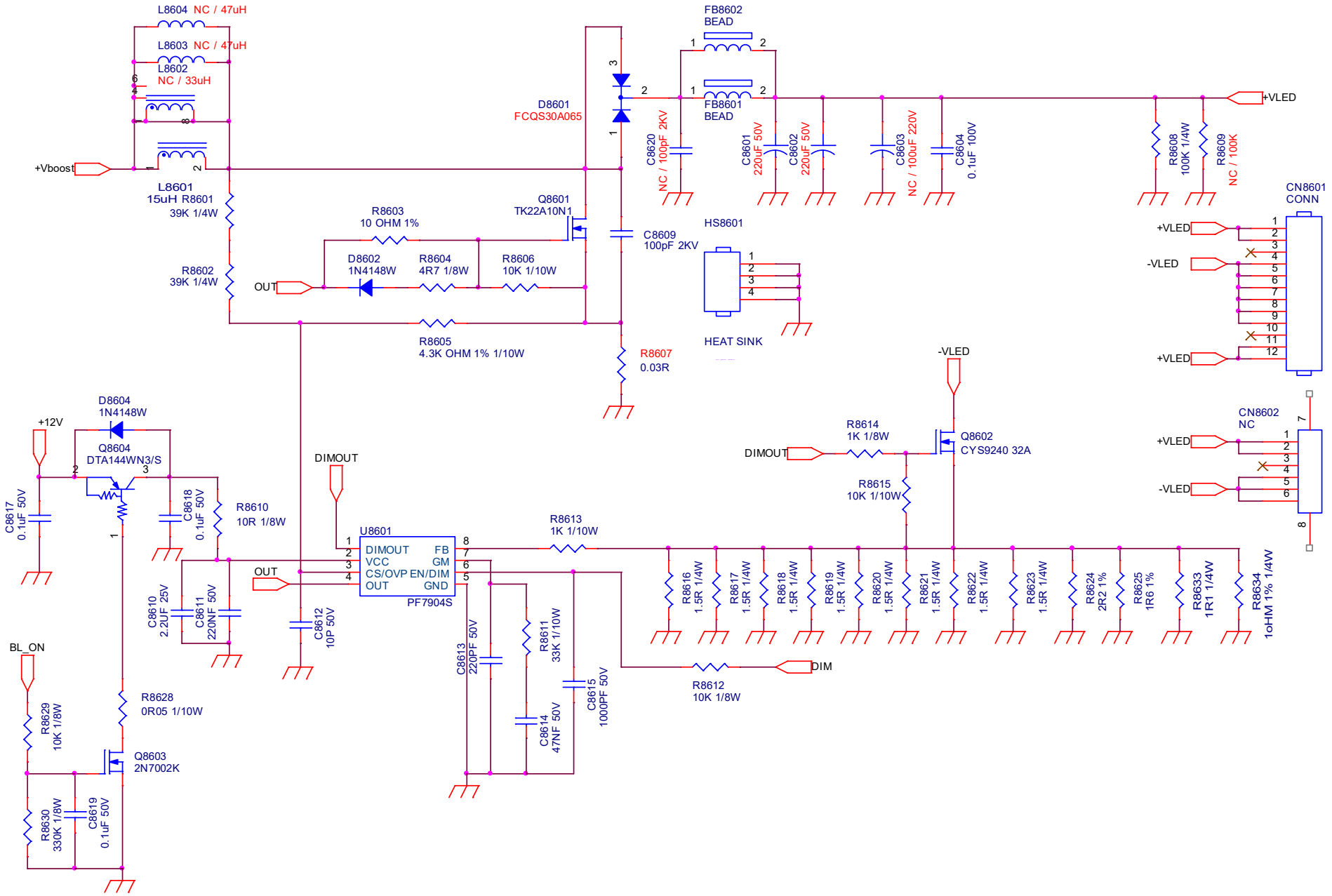
9-3-2 PFC with LD7592GS



9-3-3 Main Power

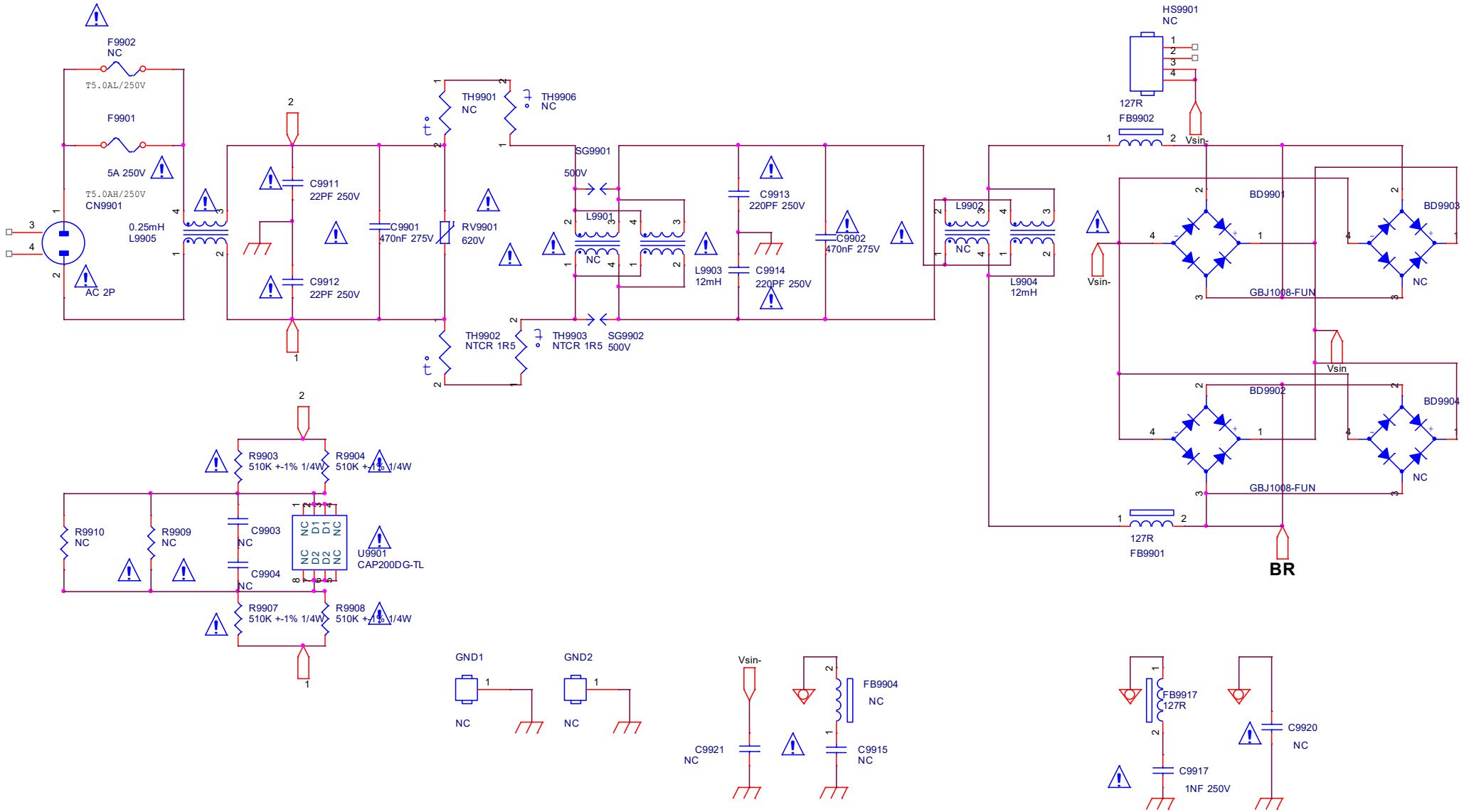


9-3-4 LED

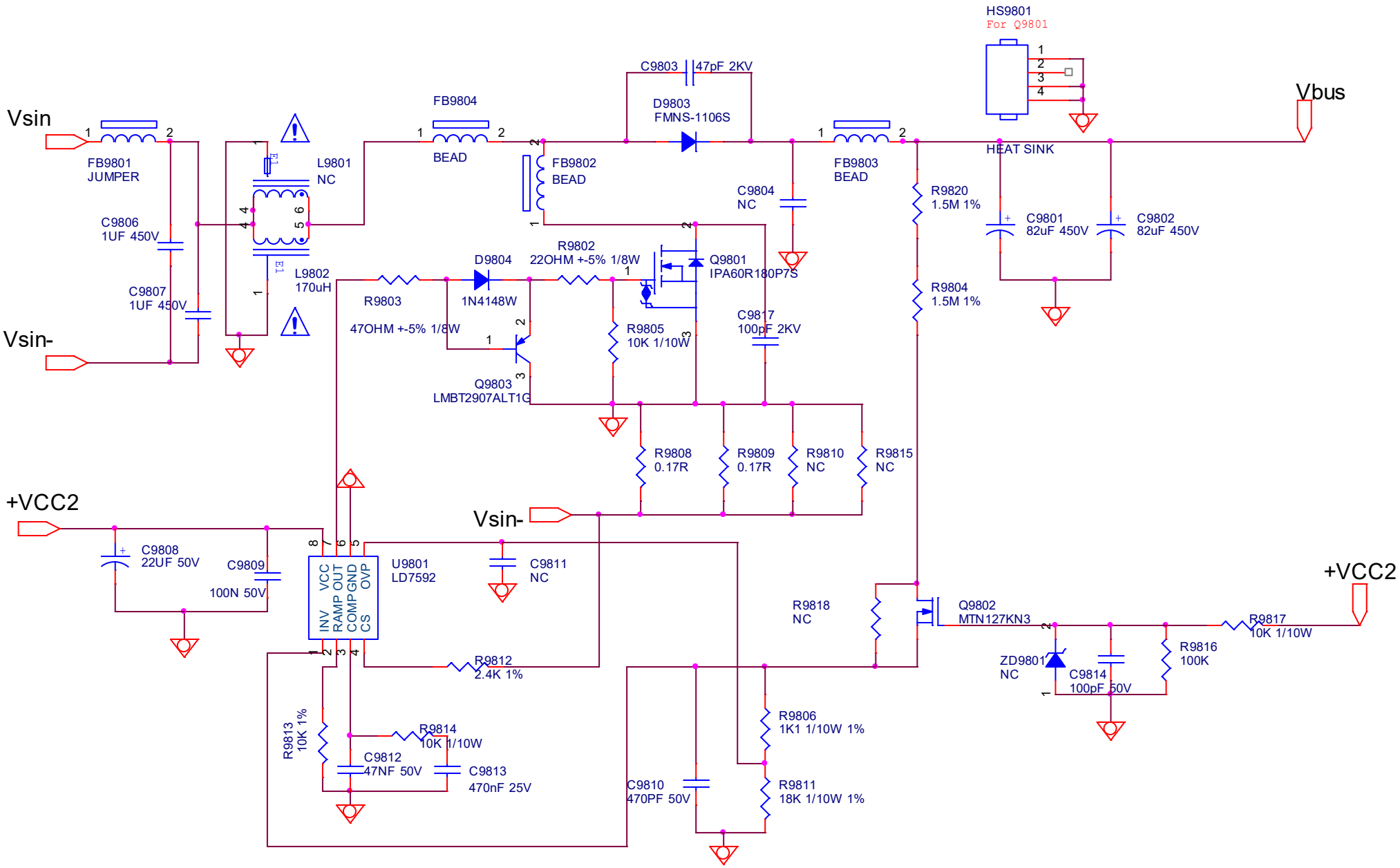

L8604 NC / 47uH
L8603 NC / 47uH
L8602
NC / 33uH
+Vboost
L8601
15uH R8601
39K 1/4W
R8602
39K 1/4W
R8603
10 OHM 1%
D8602
1N4148W
R8604
4R7 1/8W
R8606
10K 1/10W
OUT
R8605
4.3K OHM 1% 1/10W
D8601
FCQS30A065
Q8601
TK22A10N1
C8609
100pF 2KV
HS8601
HEAT SINK
R8607
0.03R
FB8602
BEAD
FB8601
BEAD
C8620
NC / 100pF 2KV
C8601
220uF 50V
C8602
220uF 50V
C8603
NC / 100uF 220V
C8604
0.1uF 100V
R8608
100K 1/4W
R8609
NC / 100K
+VLED
CN8601
CONN
-VLED
+VLED
CN8602
NC
+VLED
-VLED
D8604
1N4148W
+12V
Q8604
DTA144WN3/S
C8617
0.1uF 50V
C8618
0.1uF 50V
R8610
10R 1/8W
C8610
2.2UF 25V
C8611
220NF 50V
C8612
10P 50V
DIMOUT
U8601
DIMOUT
VCC
CS/OVP
OUT
FB
GM
EN/DIM
GND
PF7904S
OUT
R8613
1K 1/10W
C8613
220PF 50V
R8611
33K 1/10W
C8614
47NF 50V
C8615
1000PF 50V
R8612
10K 1/8W
DIM
R8614
1K 1/8W
DIMOUT
Q8602
CYS9240 32A
-VLED
R8615
10K 1/10W
R8616
1.5R 1/4W
R8617
1.5R 1/4W
R8618
1.5R 1/4W
R8619
1.5R 1/4W
R8620
1.5R 1/4W
R8621
1.5R 1/4W
R8622
1.5R 1/4W
R8623
1.5R 1/4W
R8624
2R2 1%
R8625
1R6 1%
R8633
1R1 1/4W
R8634
1oHM 1% 1/4W
BL_ON
R8629
10K 1/8W
R8628
0R05 1/10W
Q8603
2N7002K
R8630
330K 1/8W
C8619
0.1uF 50V

9.4 A 715GA025 PSU (For 70” 78x5/8105 & 75” 78x5/81x5)

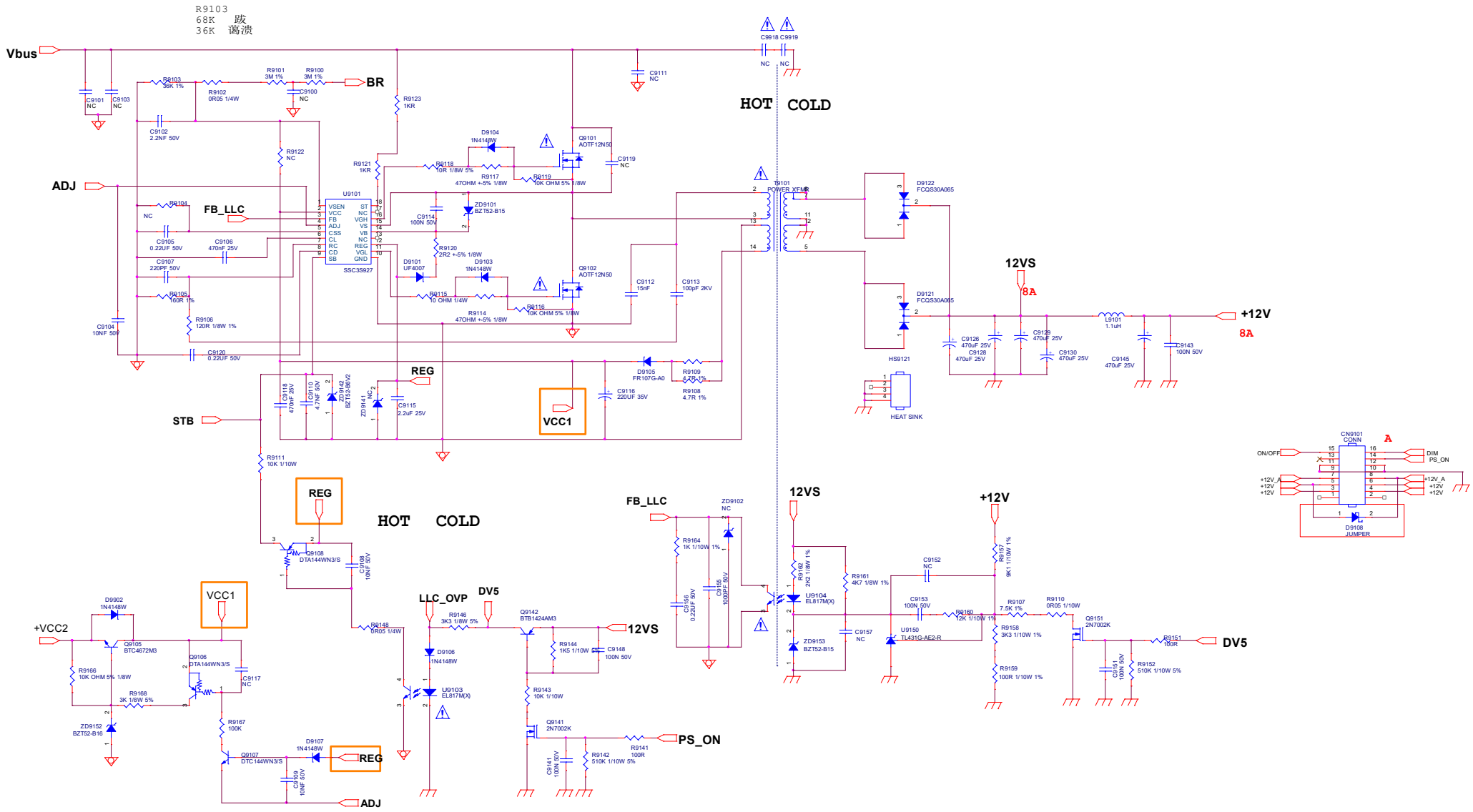
9-4-1 AC Input



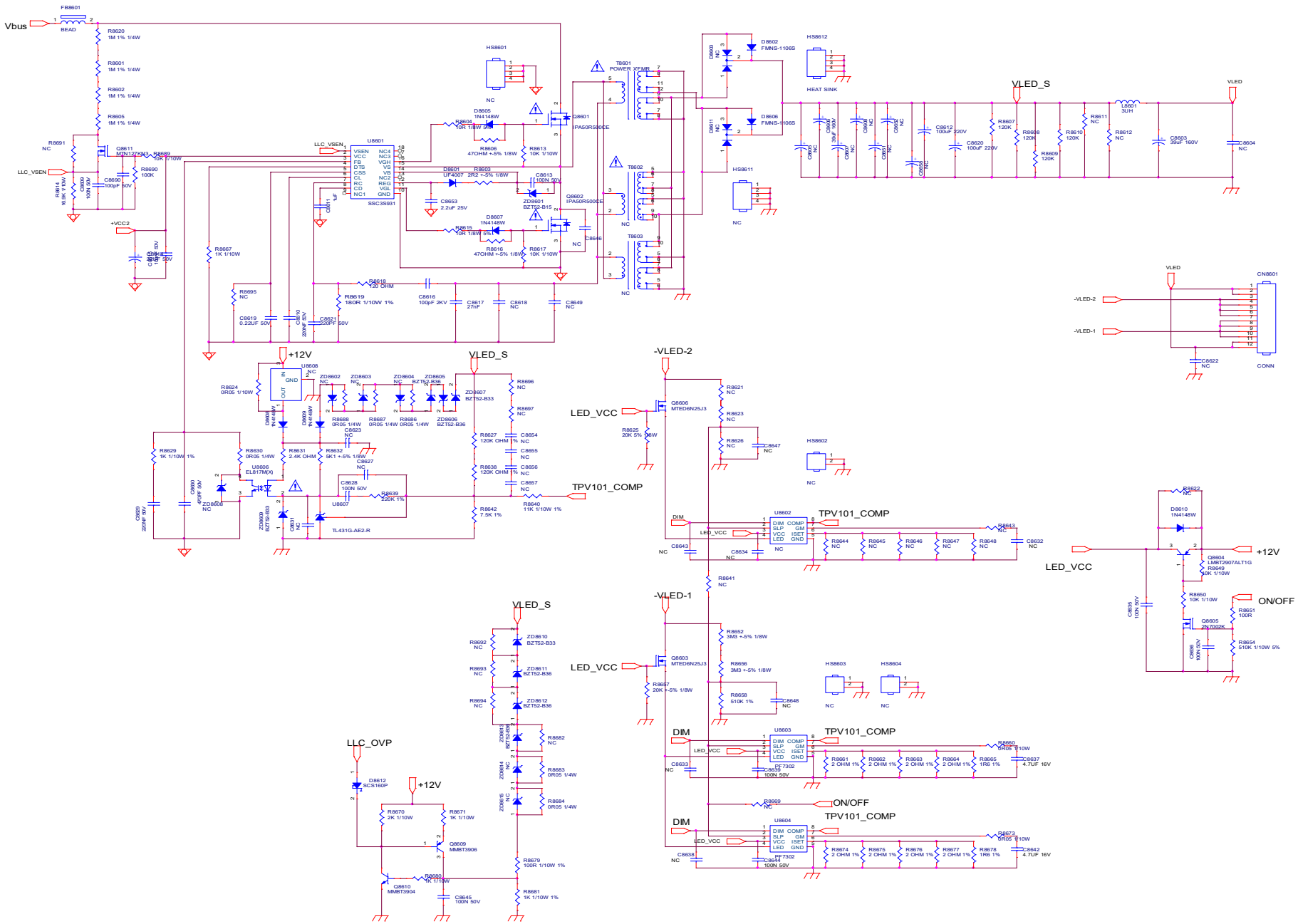
9-4-2 PFC with LD7592



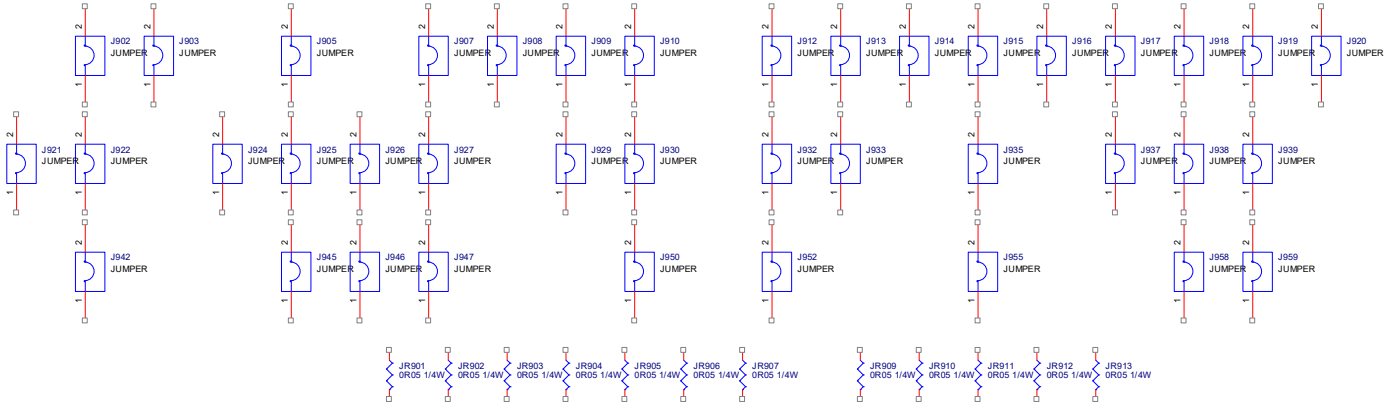
9-4-3 LLC with SSC3S927

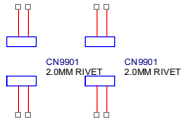


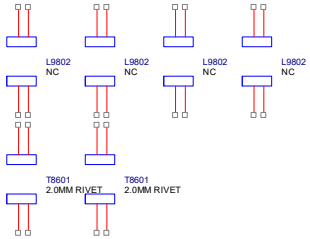
9-4-4 LLC SSC3S931 with PF7302

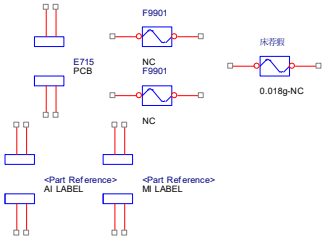


9-4-5 JUMPER


J902 JUMPER
J903 JUMPER
J905 JUMPER
J907 JUMPER
J908 JUMPER
J909 JUMPER
J910 JUMPER
J912 JUMPER
J913 JUMPER
J914 JUMPER
J915 JUMPER
J916 JUMPER
J917 JUMPER
J918 JUMPER
J919 JUMPER
J920 JUMPER
J921 JUMPER
J922 JUMPER
J924 JUMPER
J925 JUMPER
J926 JUMPER
J927 JUMPER
J929 JUMPER
J930 JUMPER
J932 JUMPER
J933 JUMPER
J935 JUMPER
J937 JUMPER
J938 JUMPER
J939 JUMPER
J942 JUMPER
J945 JUMPER
J946 JUMPER
J947 JUMPER
J950 JUMPER
J952 JUMPER
J955 JUMPER
J958 JUMPER
J959 JUMPER
JR901 0R05 1/4W
JR902 0R05 1/4W
JR903 0R05 1/4W
JR904 0R05 1/4W
JR905 0R05 1/4W
JR906 0R05 1/4W
JR907 0R05 1/4W
JR909 0R05 1/4W
JR910 0R05 1/4W
JR911 0R05 1/4W
JR912 0R05 1/4W
JR913 0R05 1/4W

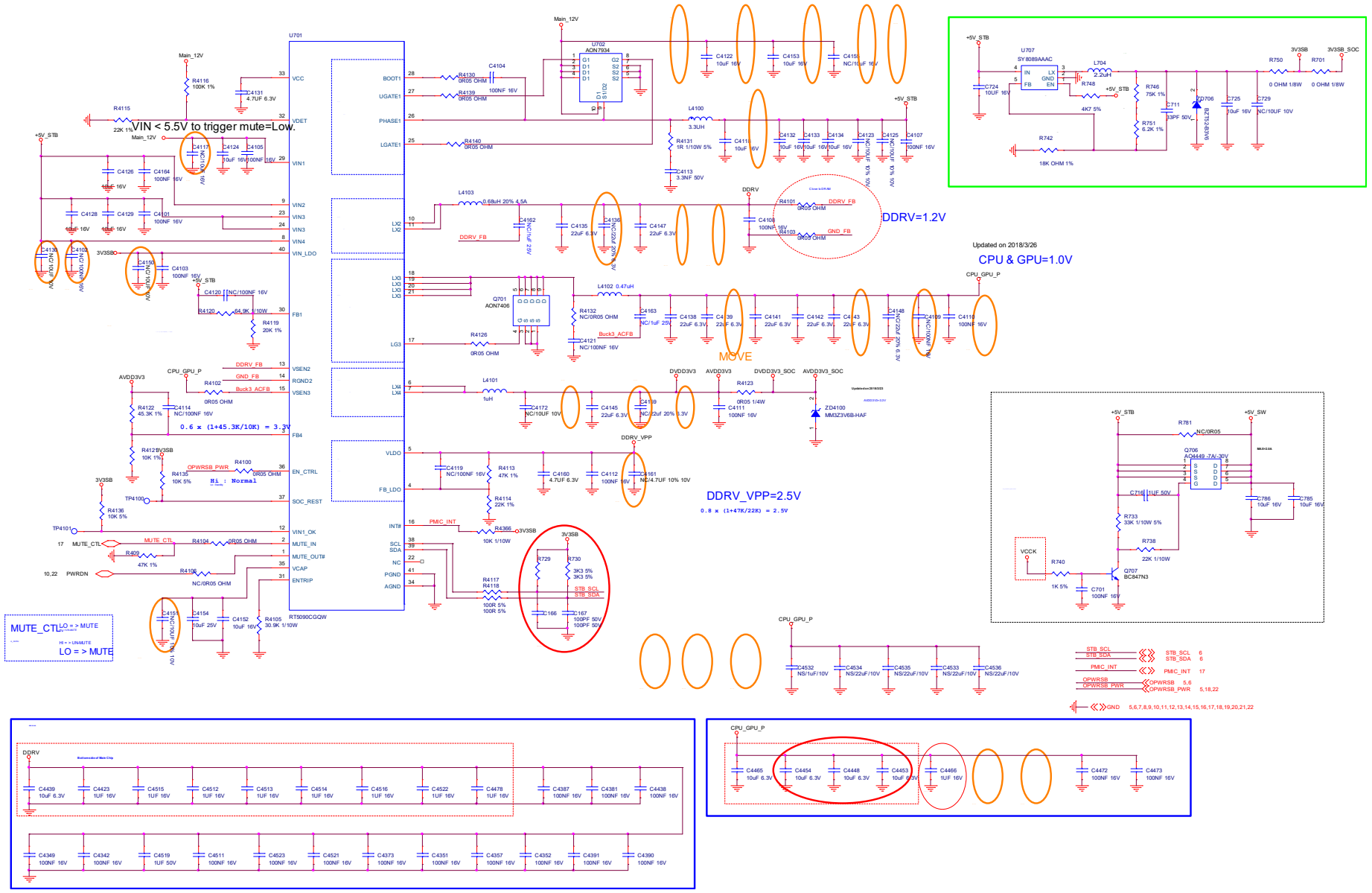

CN9901
2.0MM RIVET
CN9901
2.0MM RIVET


L9802
NC
L9802
NC
L9802
NC
L9802
NC
T8601
2.0MM RIVET
T8601
2.0MM RIVET

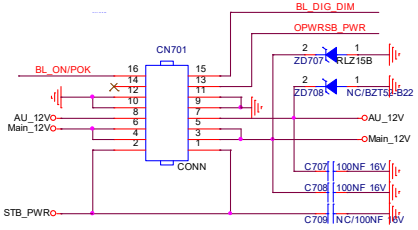

F9901
E715
PCB
NC
F9901
床形狀
0.018g-NC
NC
<Part Reference>
AI LABEL
<Part Reference>
MI LABEL

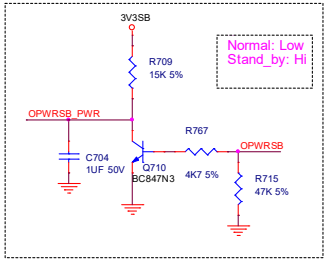
9.5 B 715GB170 SSB

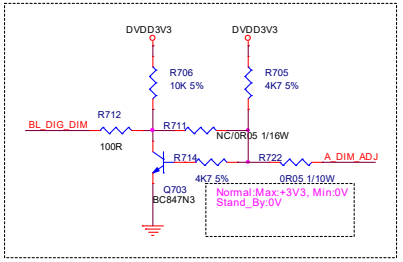
9-5-1 POWER

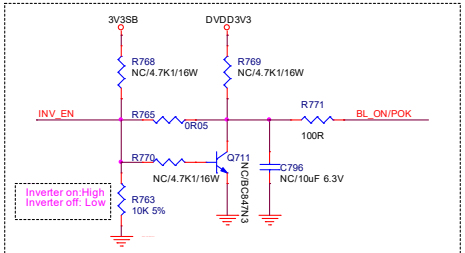


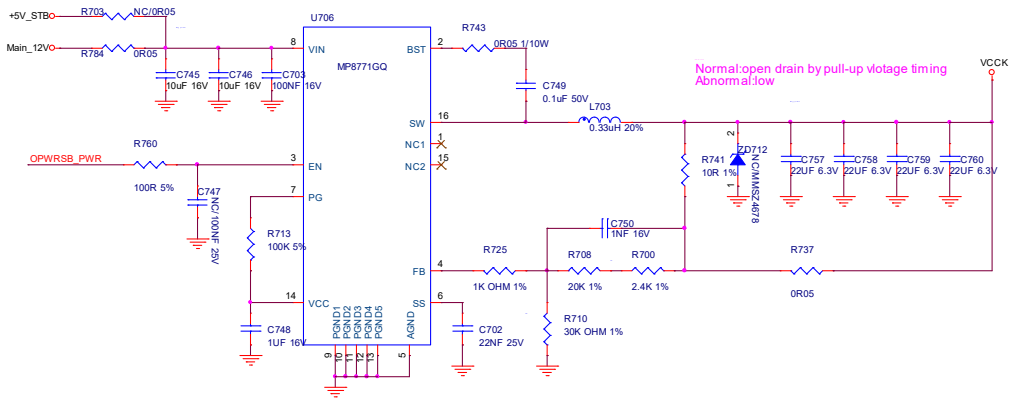
9-5-2 System Power

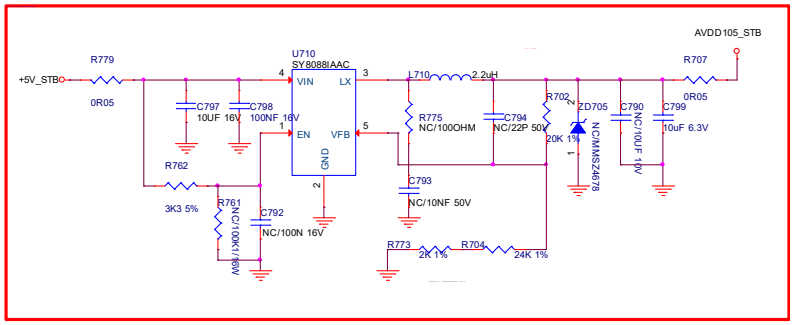


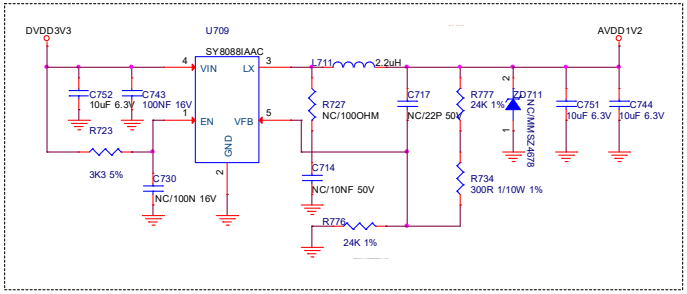


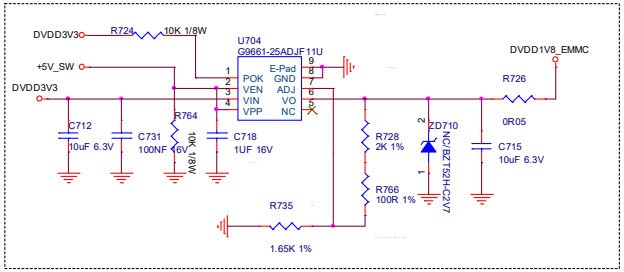


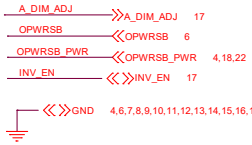


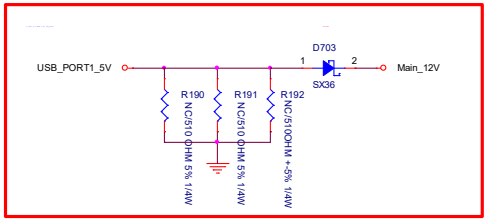


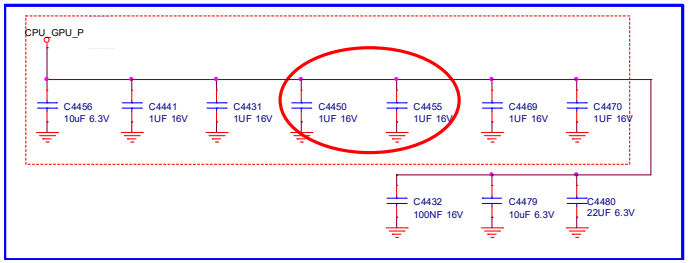


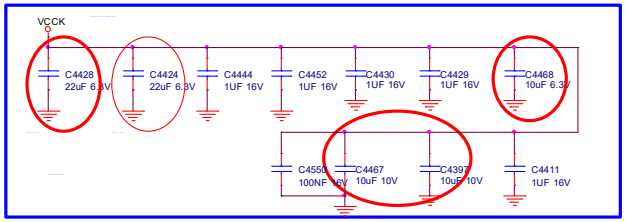




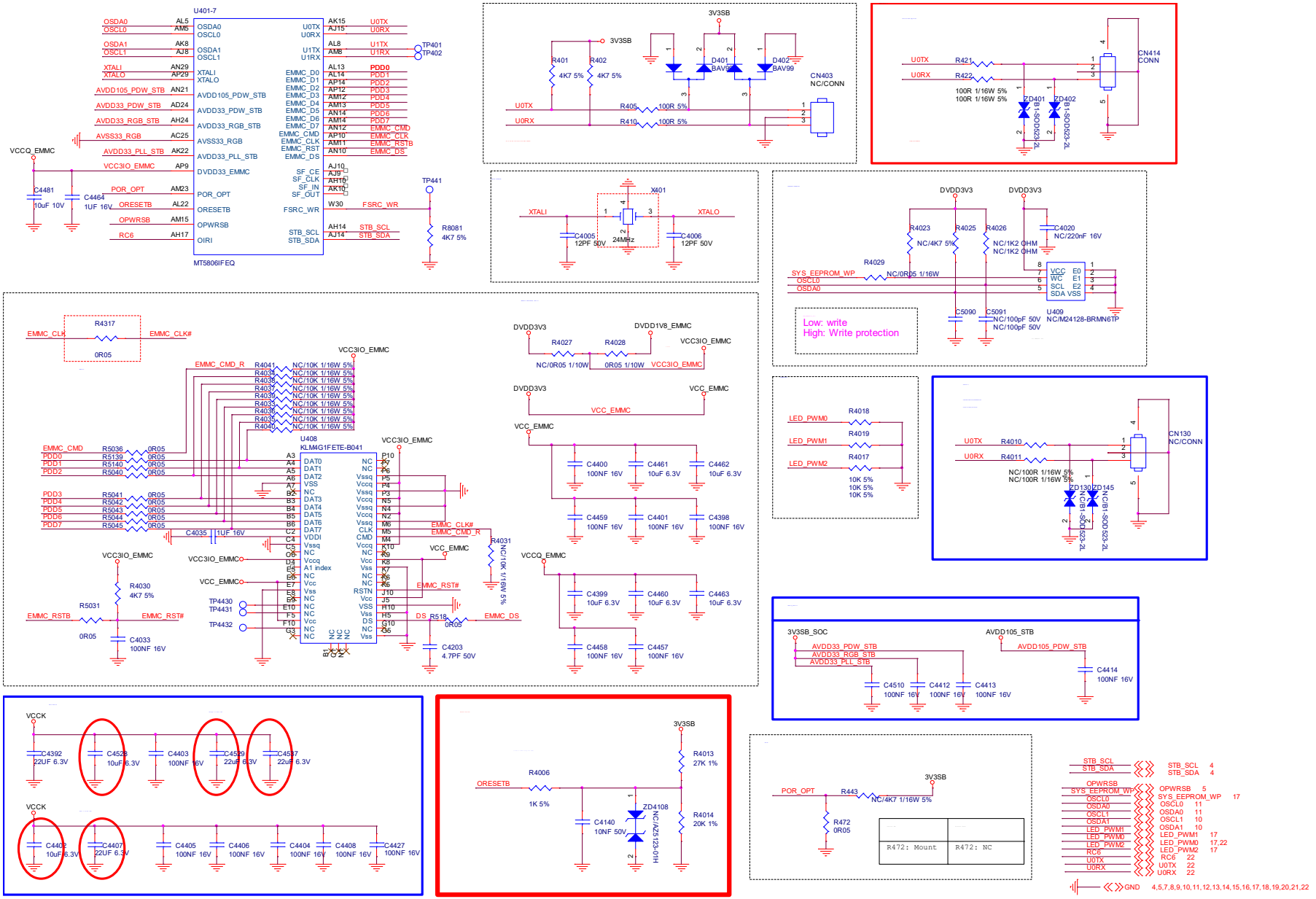




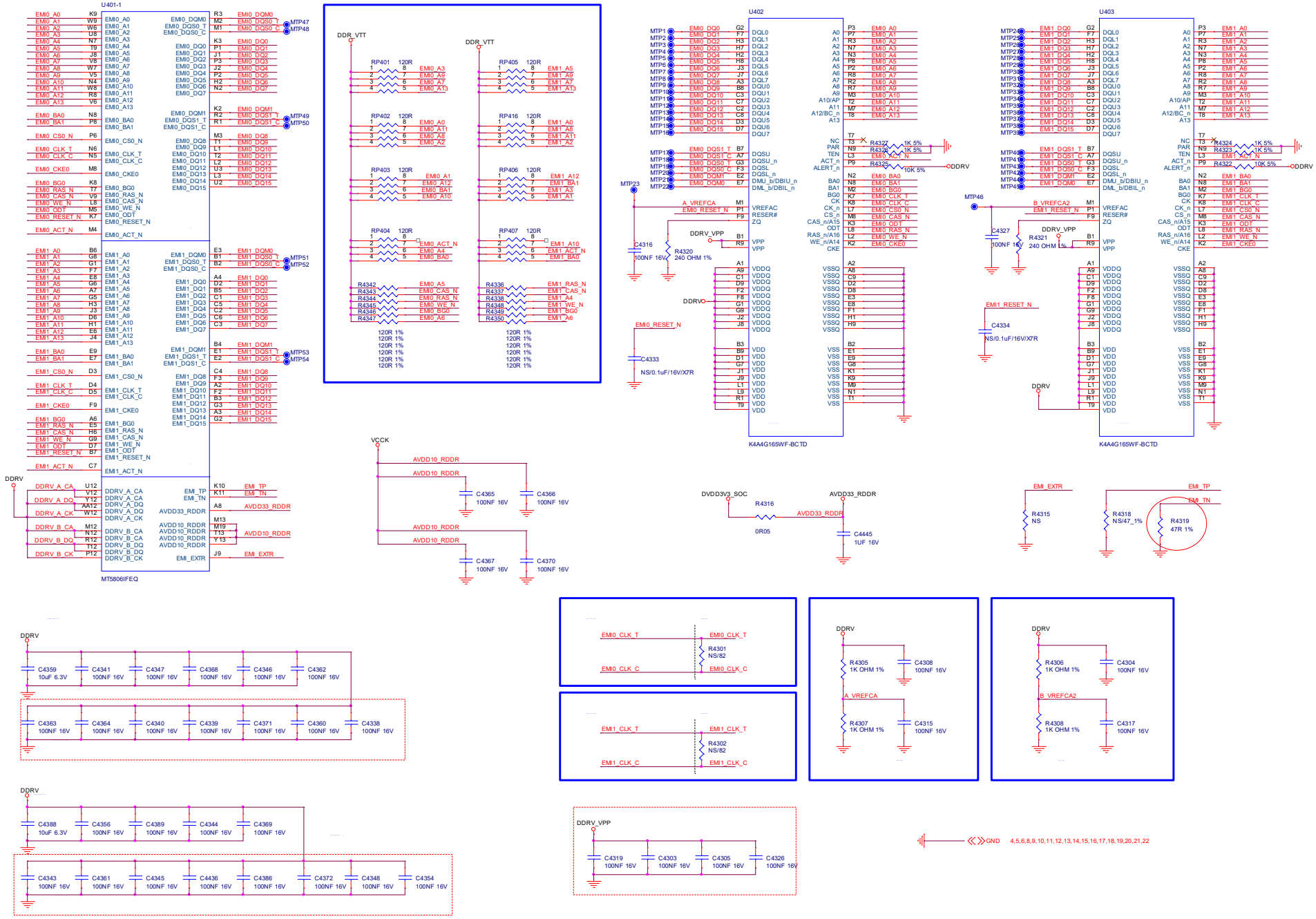




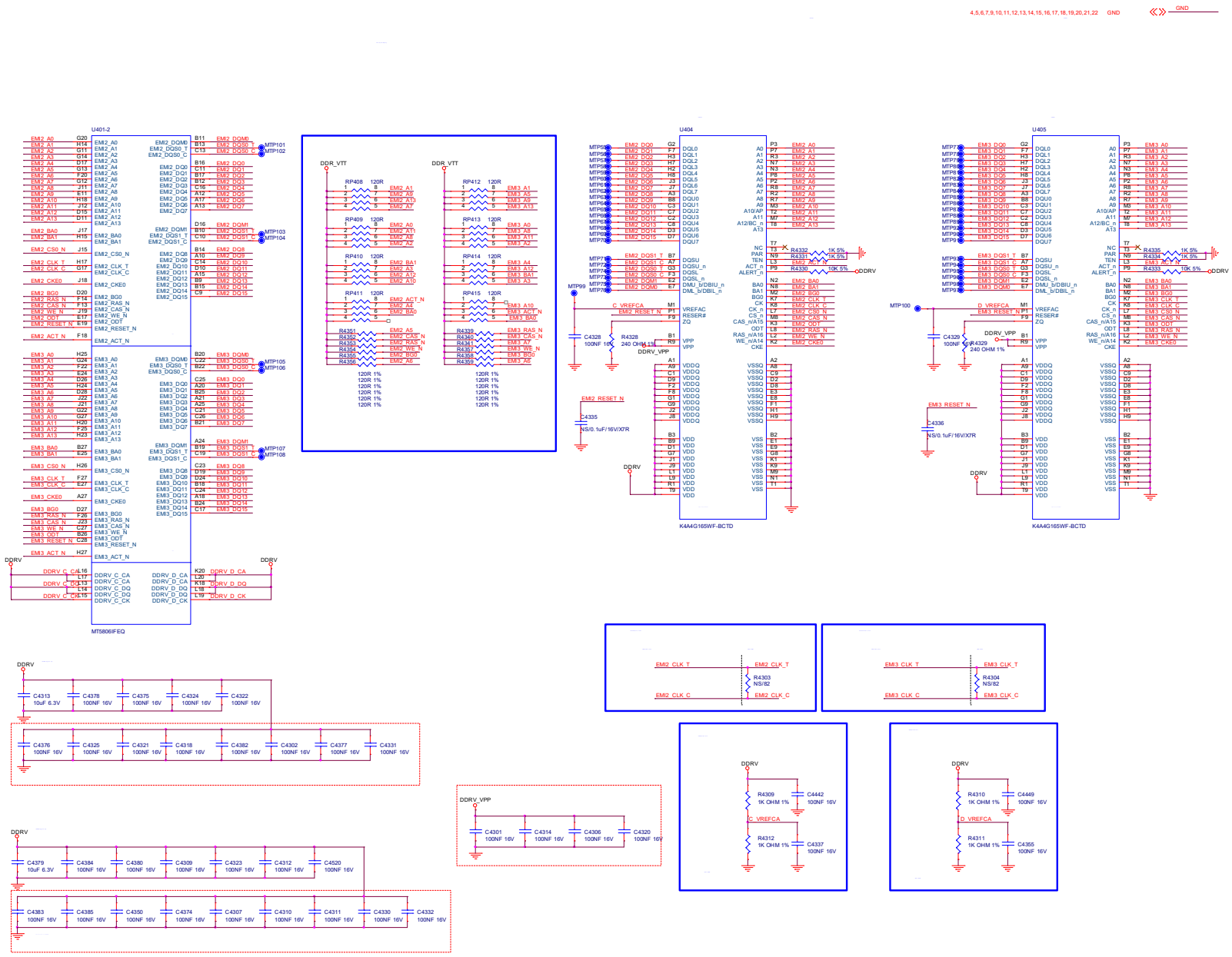
9-5-3 Peripheral



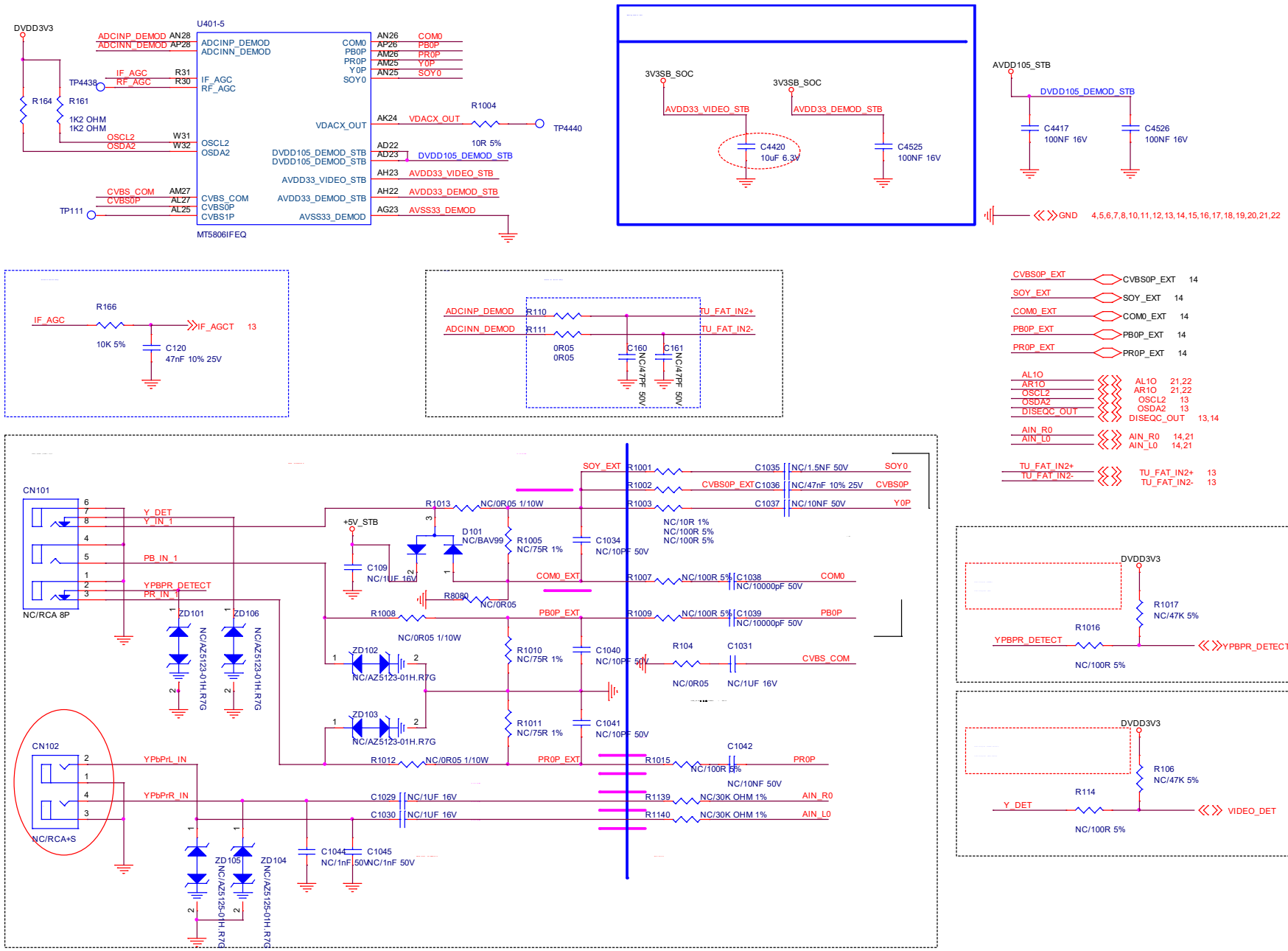
9-5-4 DRR4*2-1


U401-1
MT5806IFEQ
U402
U403
K4A4G165WF-BCTD
DDR_VTT
DDRV
VCCK
DDRV_VPP
DVDD3V3_SOC
AVDD33_RDDR
EMI_EXTR
EMI_TP
EMI_TN
GND 4,5,6,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22

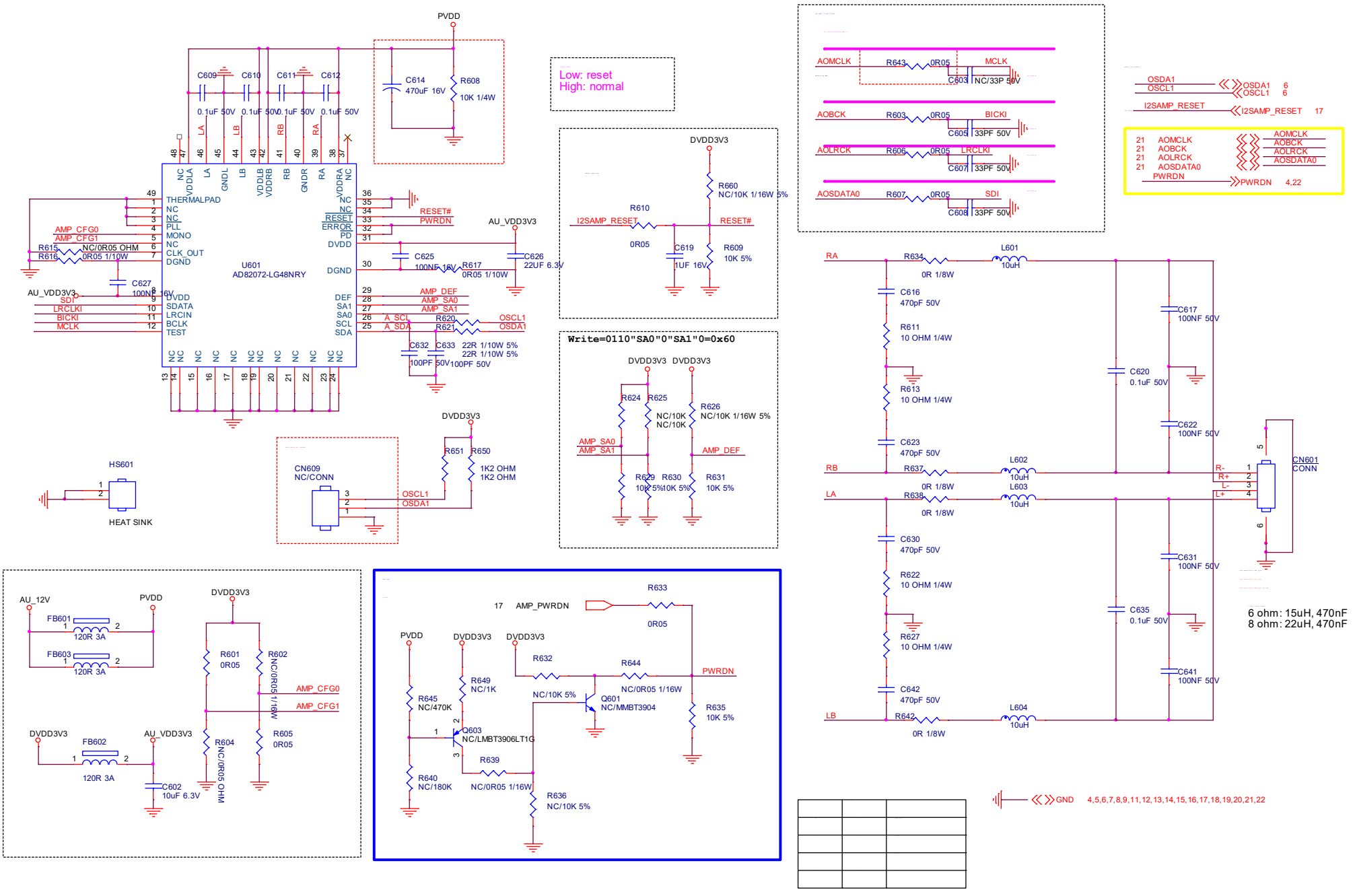
9-5-5 DRR4*2-2


GND
U401-2
MT5806IFEQ
U404
K4A4G165WF-BCTD
U405
K4A4G165WF-BCTD
DDR_VTT
DDRV
DDRV_VPP
C_VREFCA
D_VREFCA
EMI2_RESET_N
EMI3_RESET_N
EMI2_CLK_T
EMI2_CLK_C
EMI3_CLK_T
EMI3_CLK_C

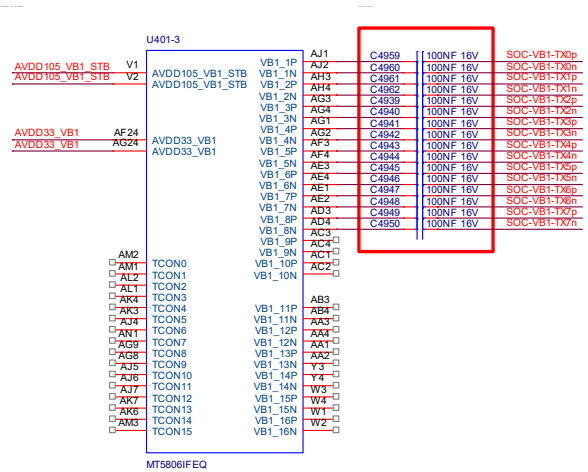
9-5-6 YPbPr/CVBS/SPIDIF

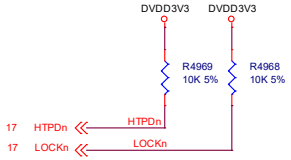


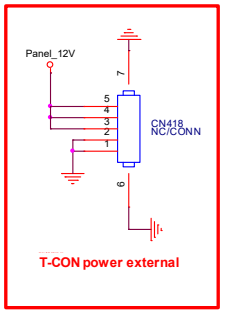
9-5-7 AUDIO AMP

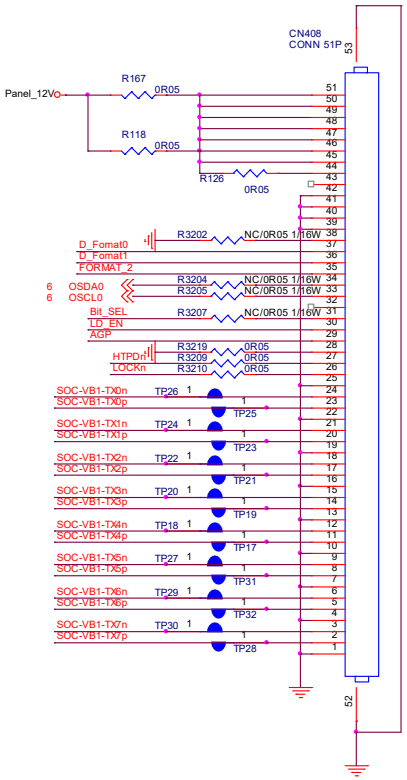


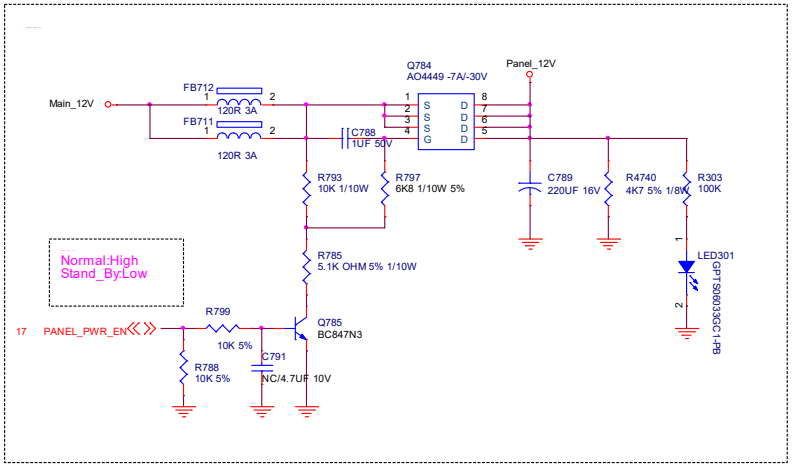
9-5-8 VB1 output

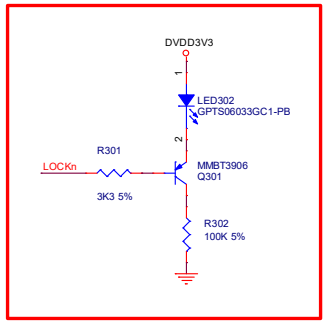


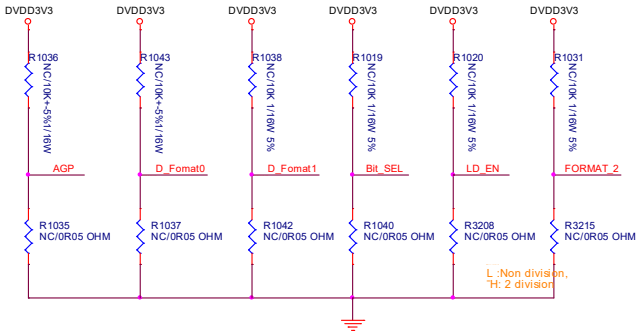


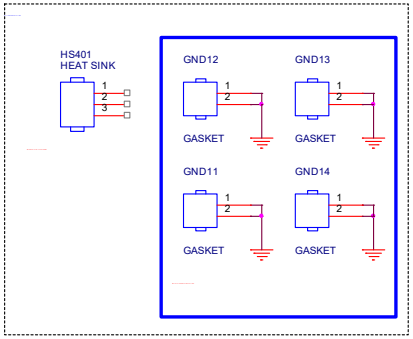


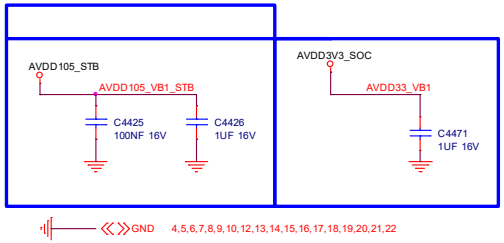




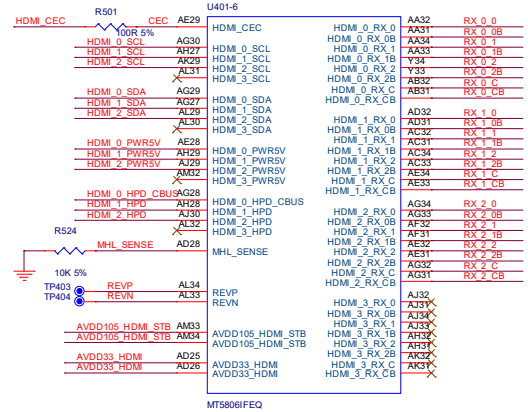


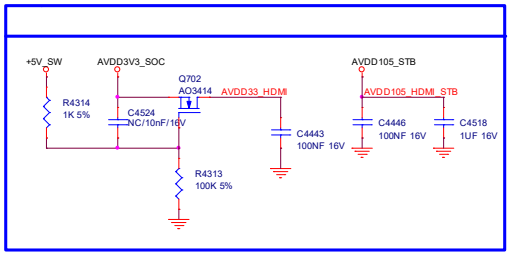


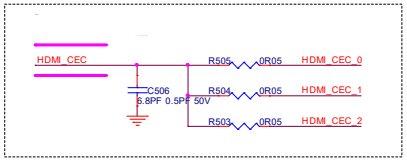


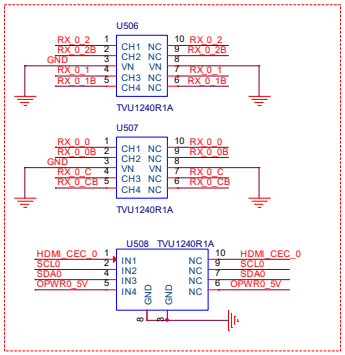


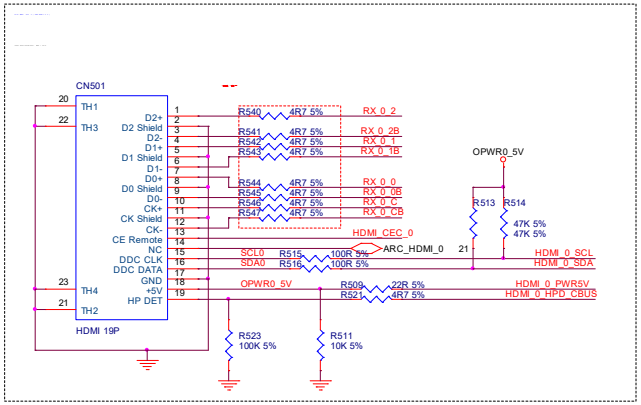
9-5-9 HDMI*

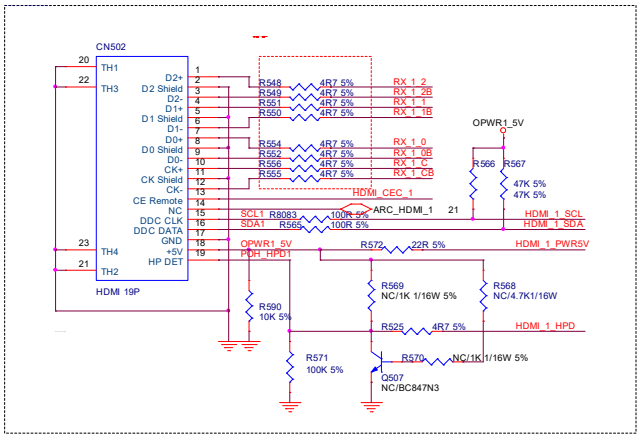


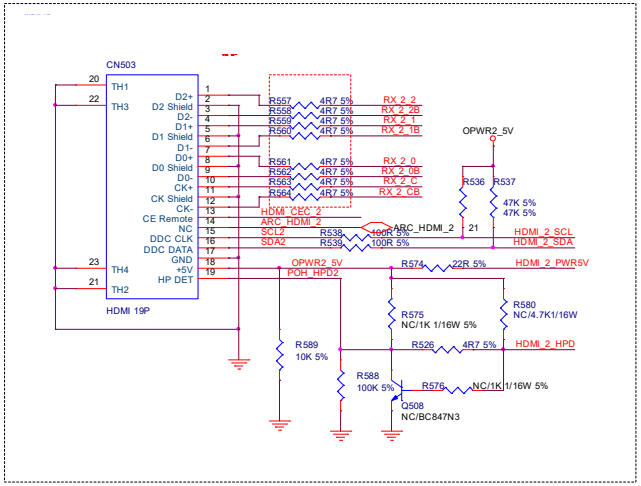


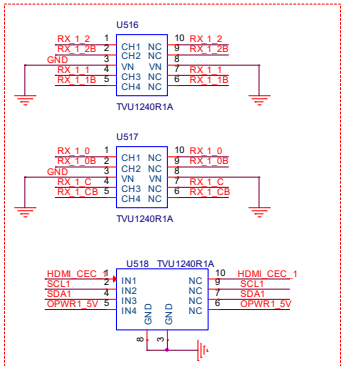


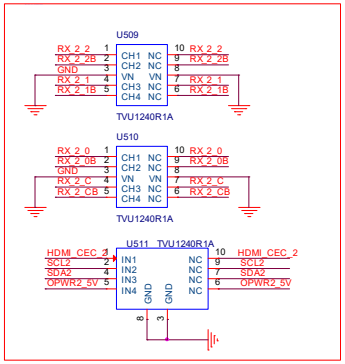






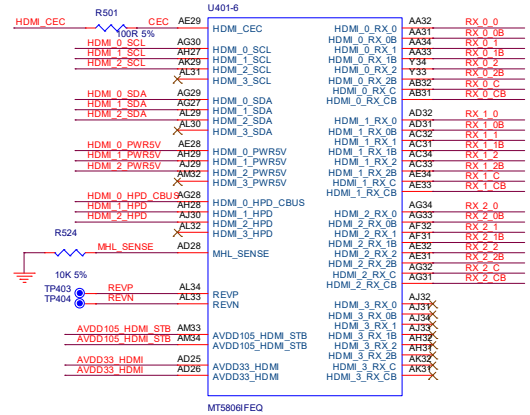


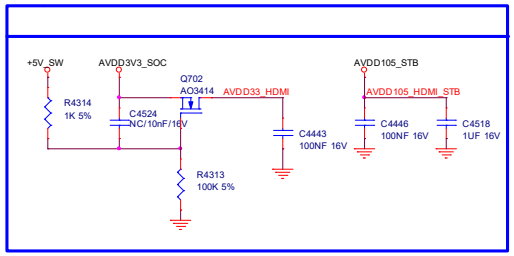


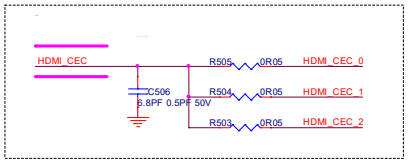


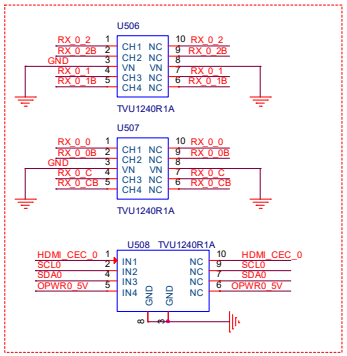
GND 4,5,6,7,8,9,10,11,13,14,15,16,17,18,19,20,21,22

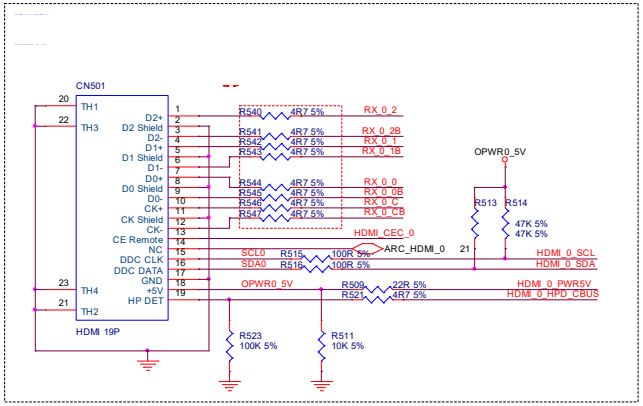
9-5-10 Tuner & Demod*

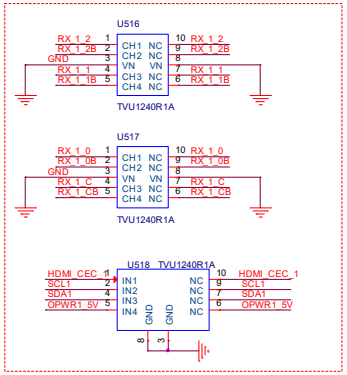


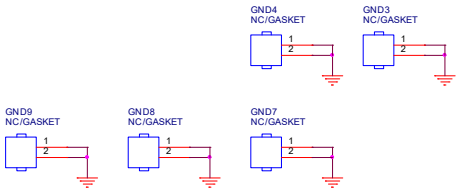


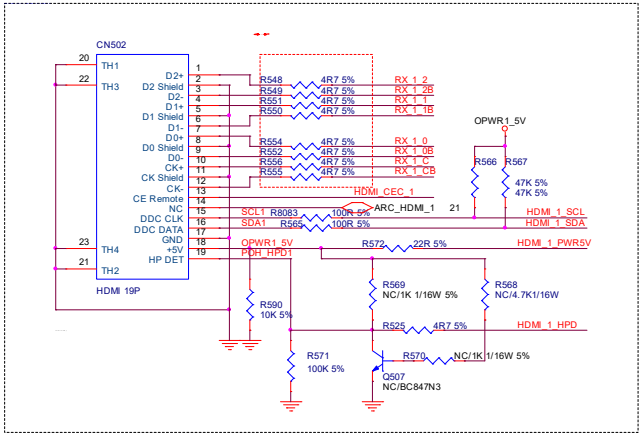


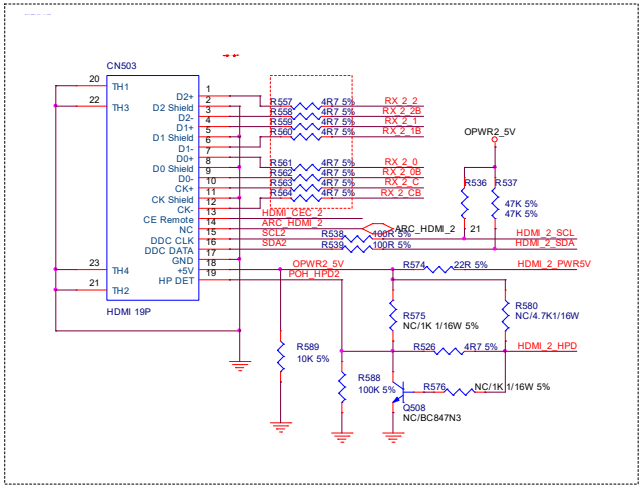


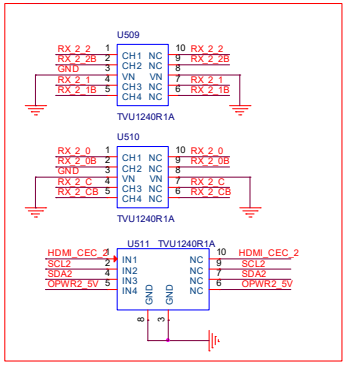






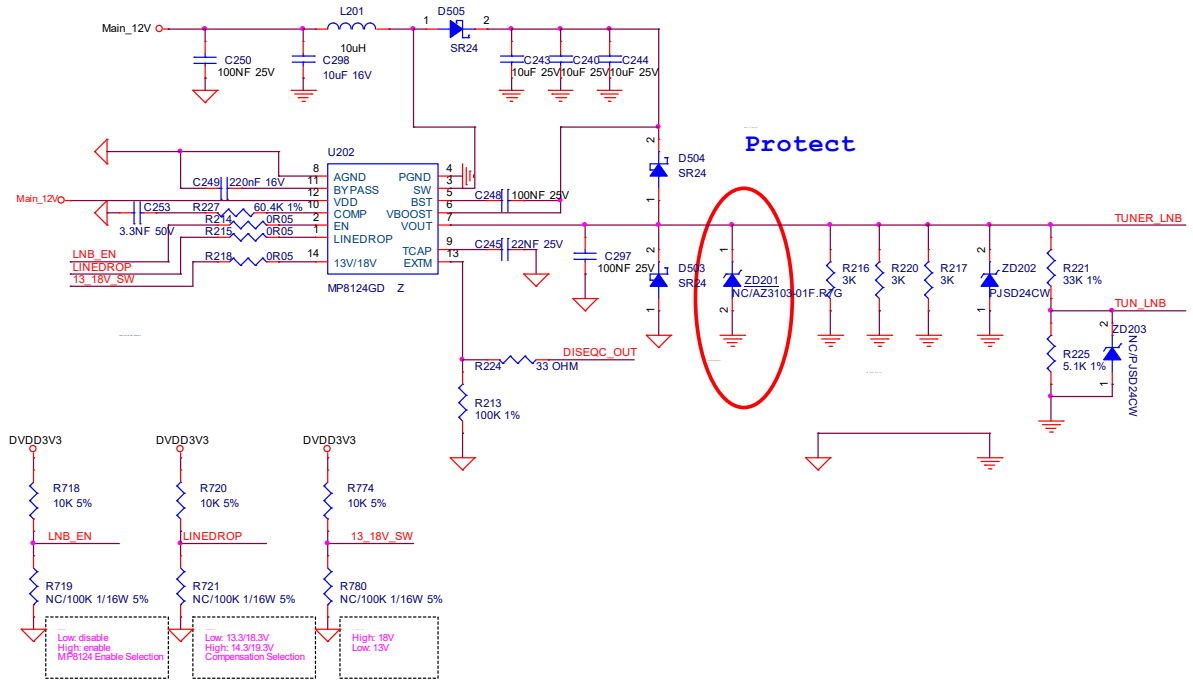


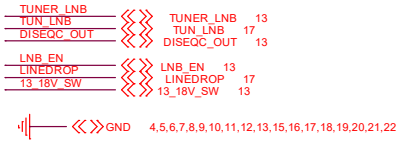


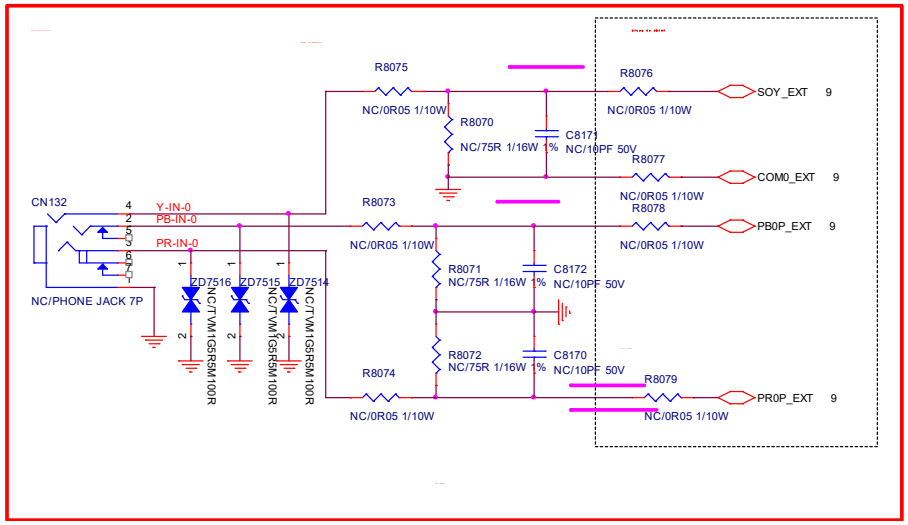


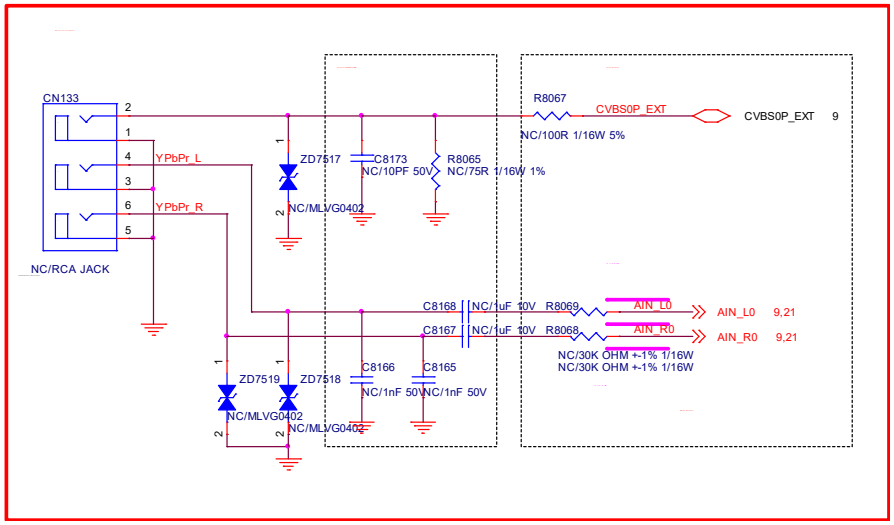
GND 4,5,6,7,8,9,10,11,13,14,15,16,17,18,19,20,21,22

9-5-11 LNB & EXT AV INPUT

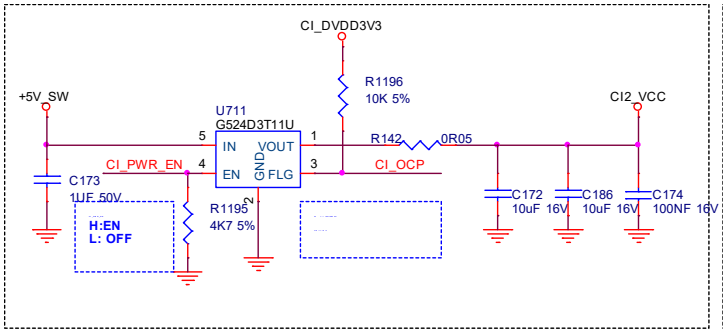


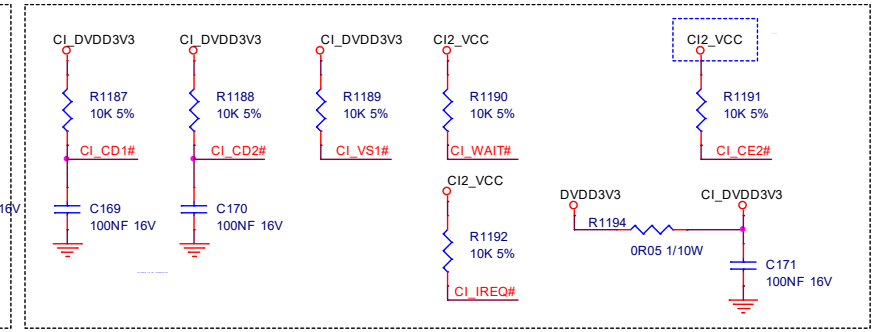


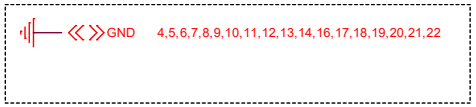


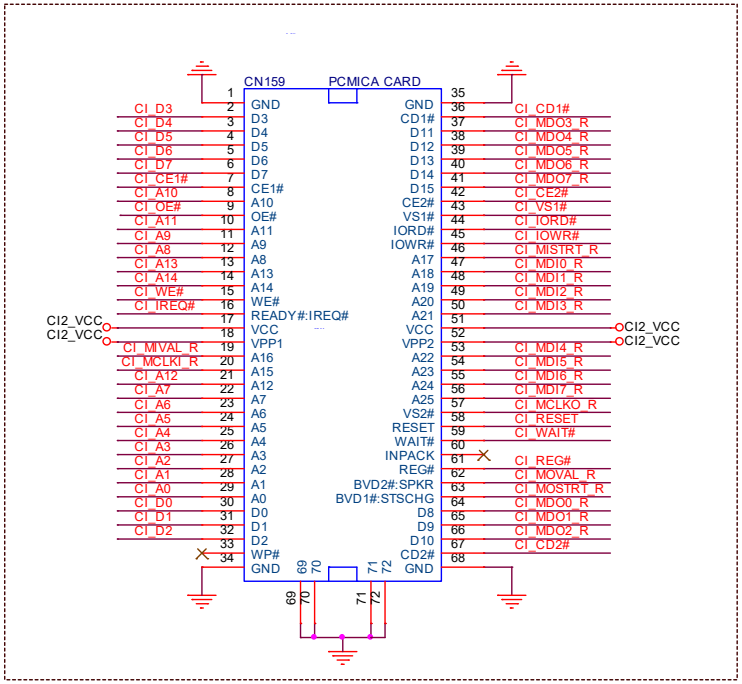


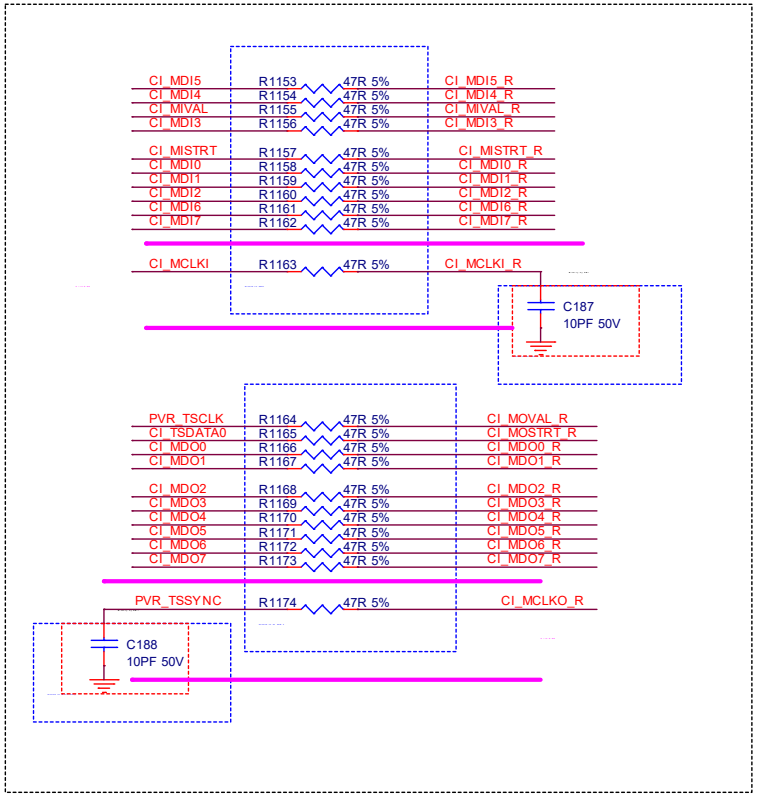
9-5-12 Internal CI

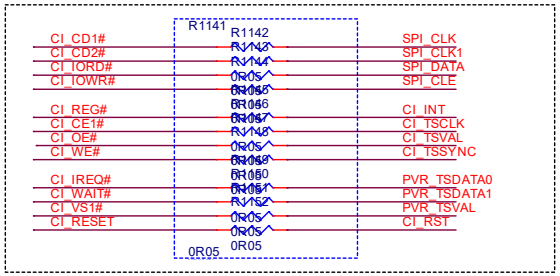


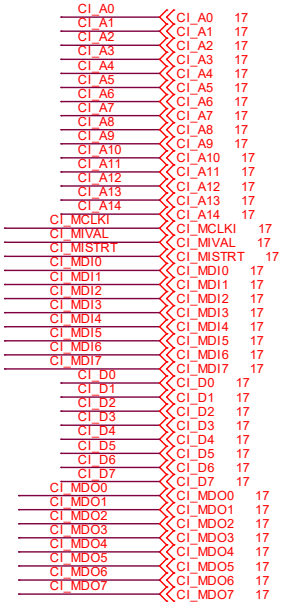


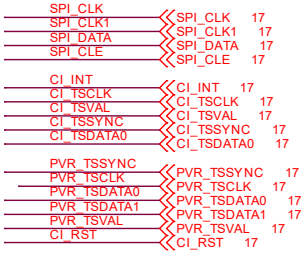




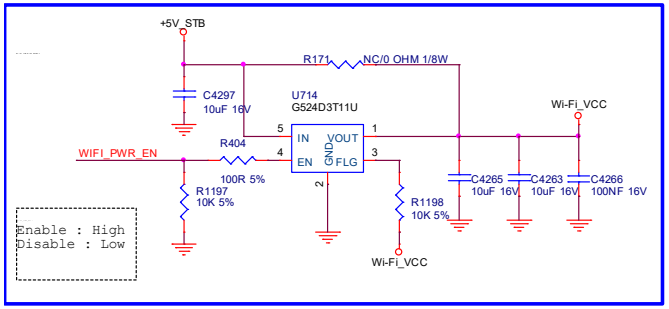


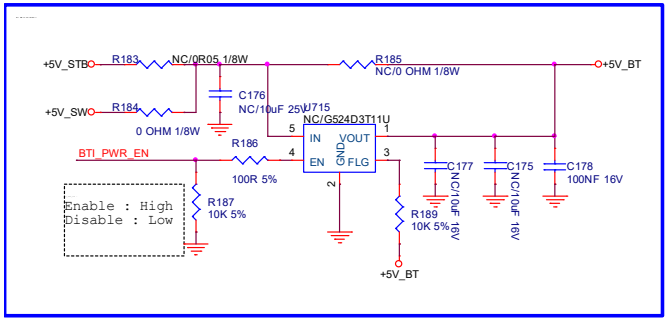


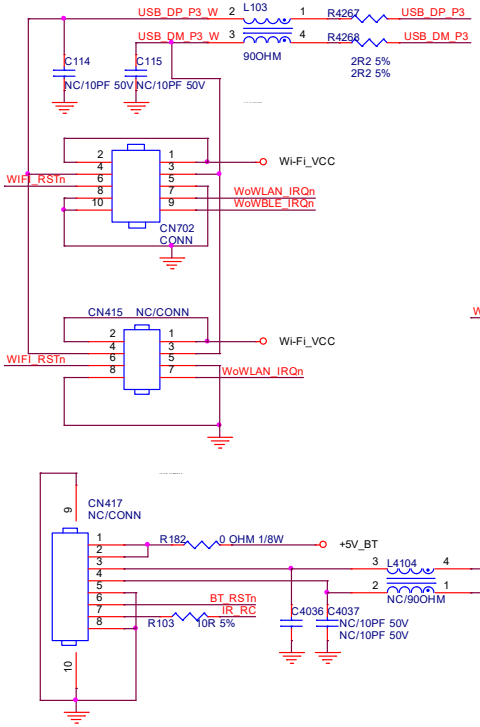


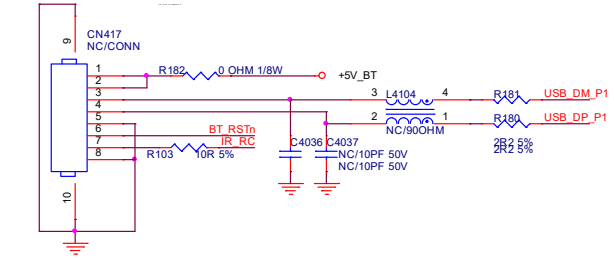


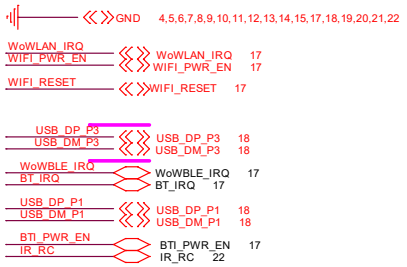
9-5-13 WIFI/KEYPAD

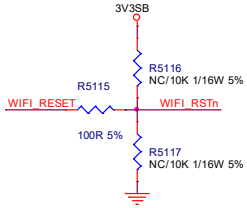


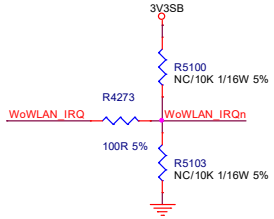


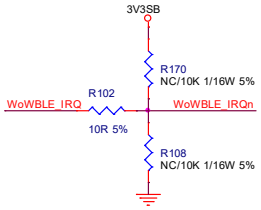


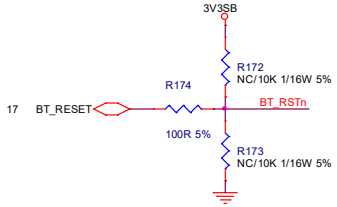




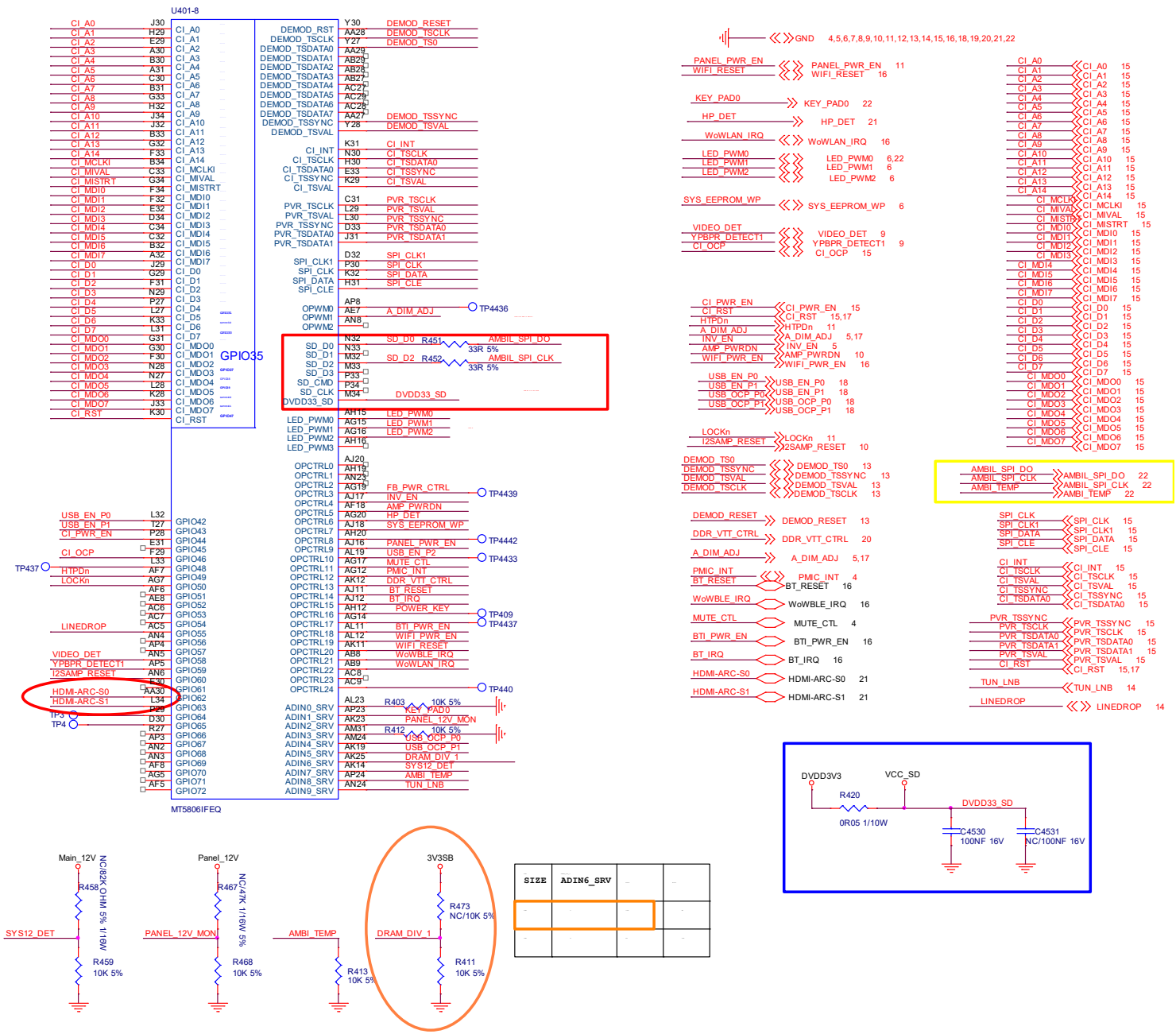




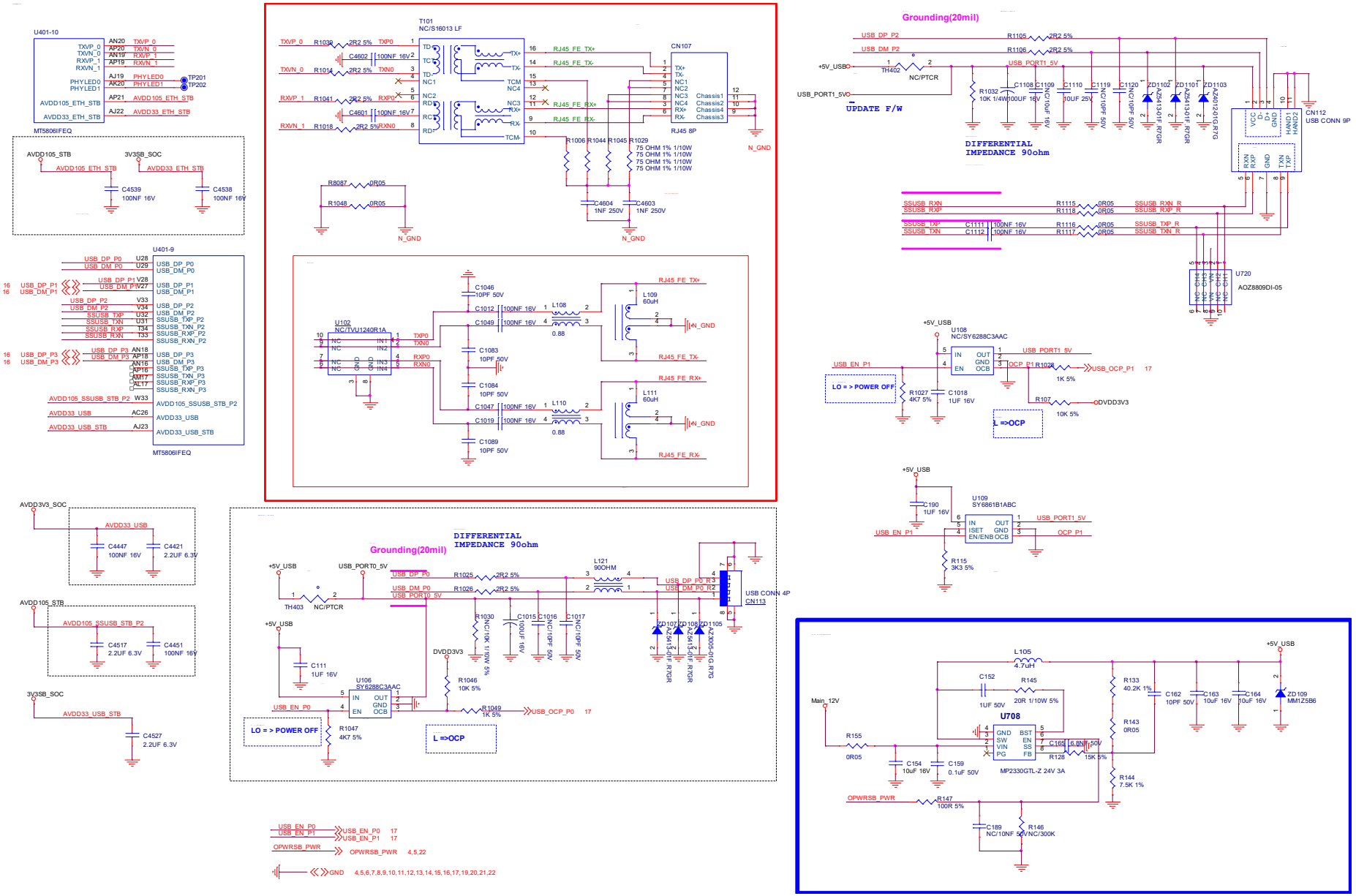




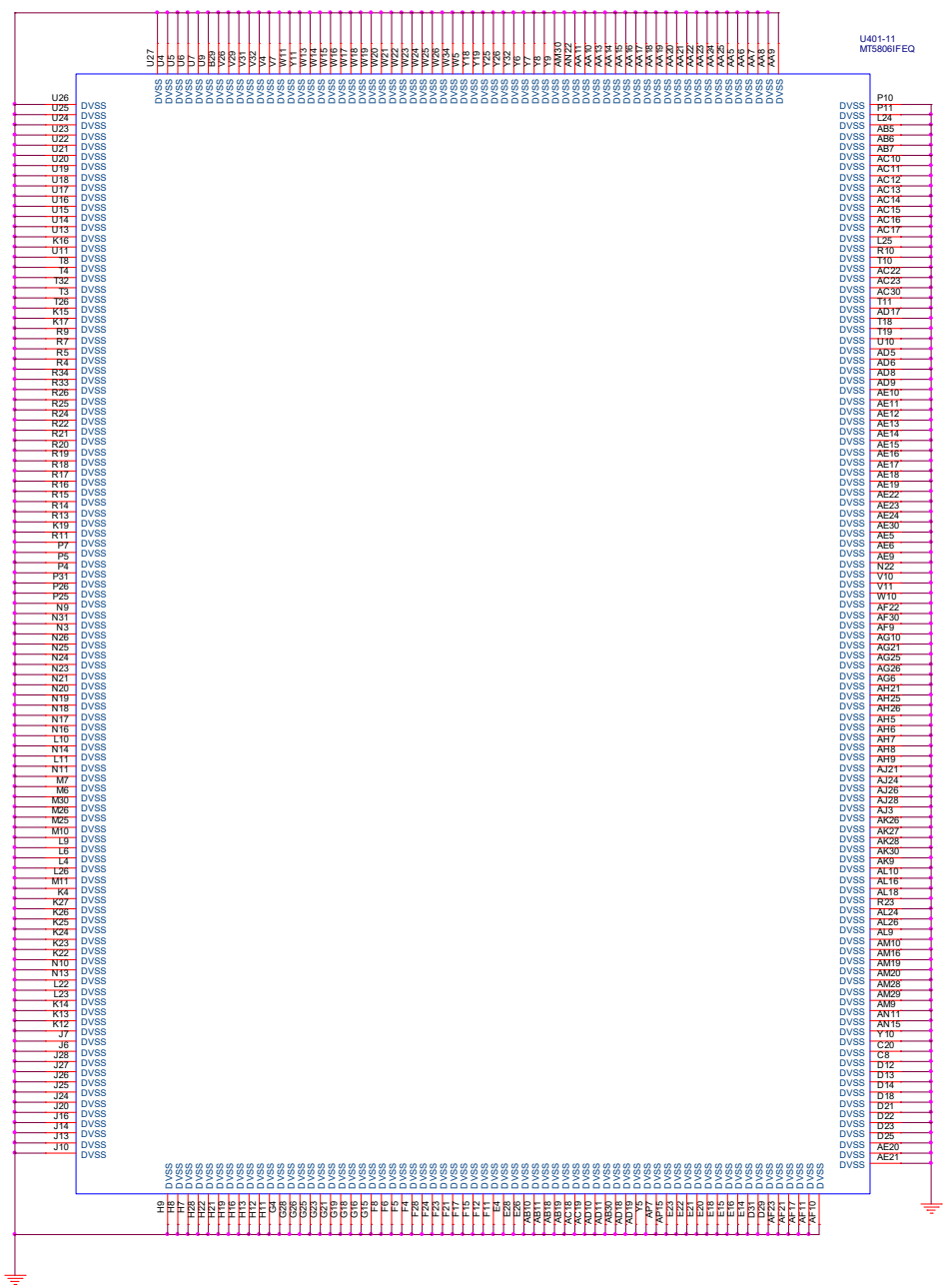
9-5-14 GPIO/ServAD

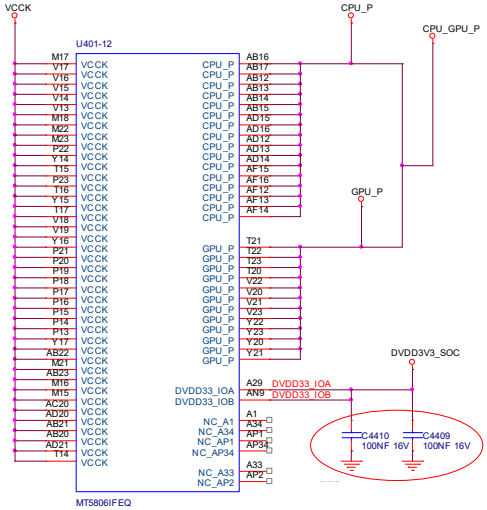


9-5-15 USB/ETHERNET PHY*

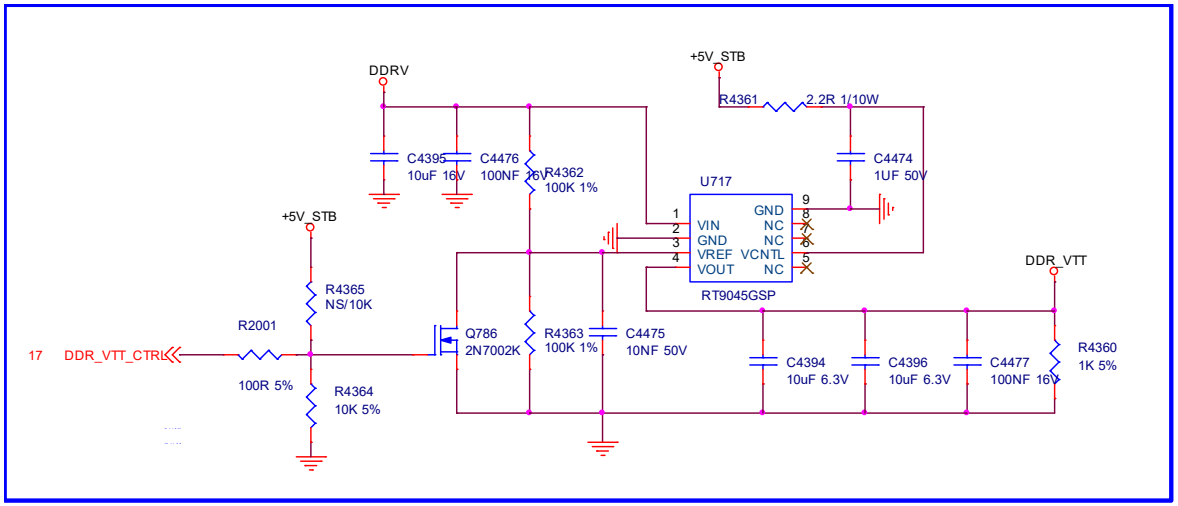


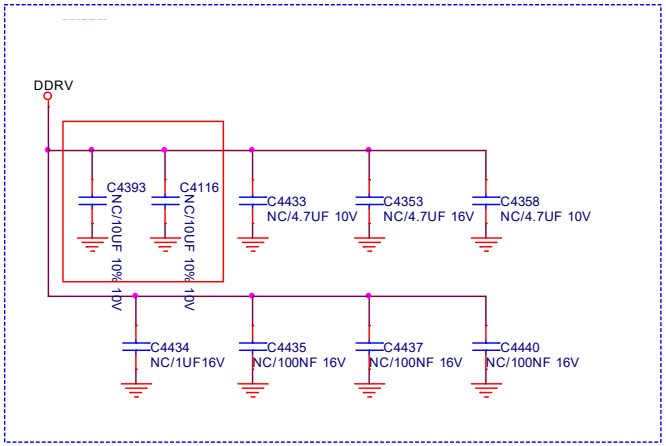
9-5-16 VCCK & DVSS

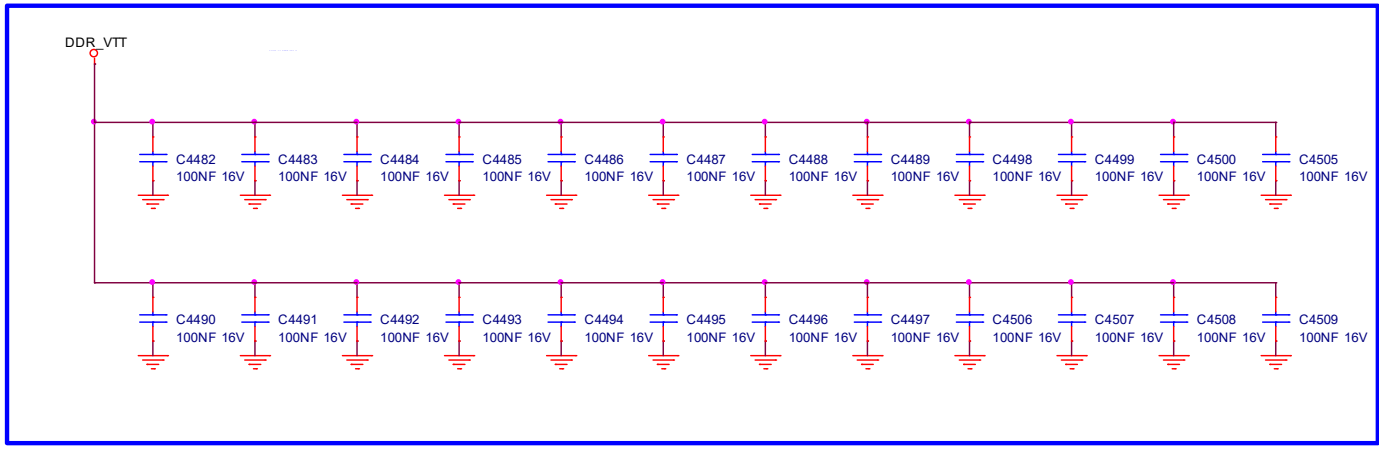




9-5-17 DDP POWER

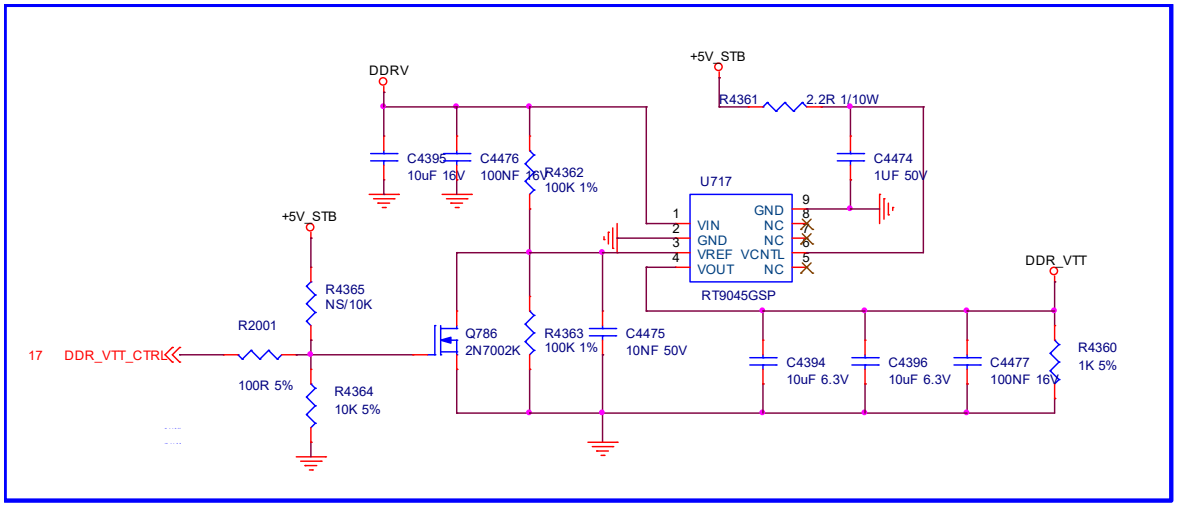


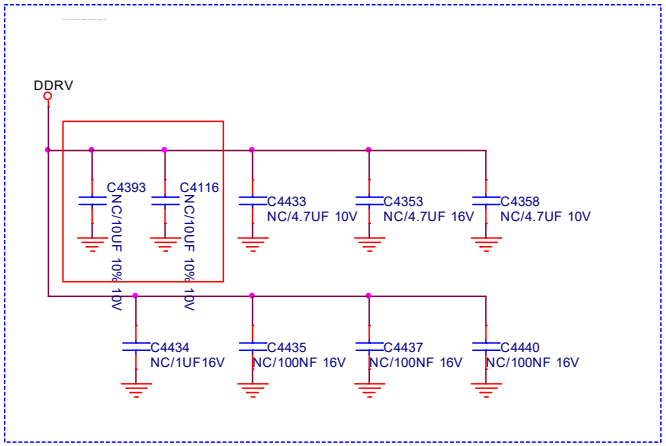


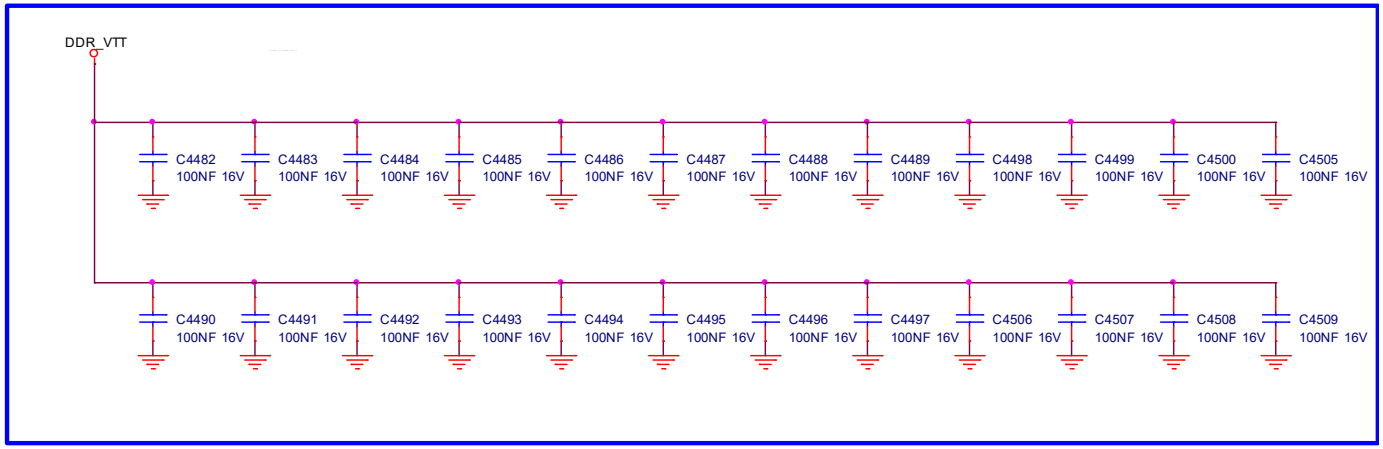


GND 4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,21,22

9-5-18 HP AND SPDIF, ARC SW

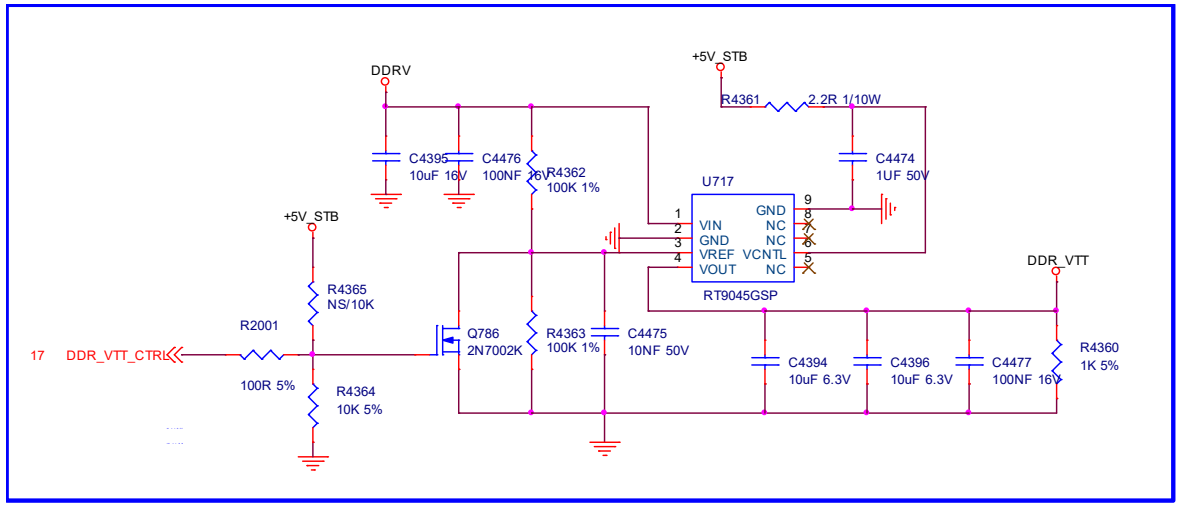


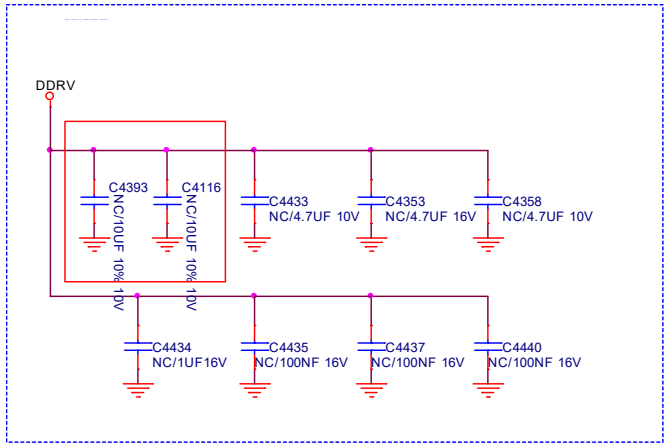


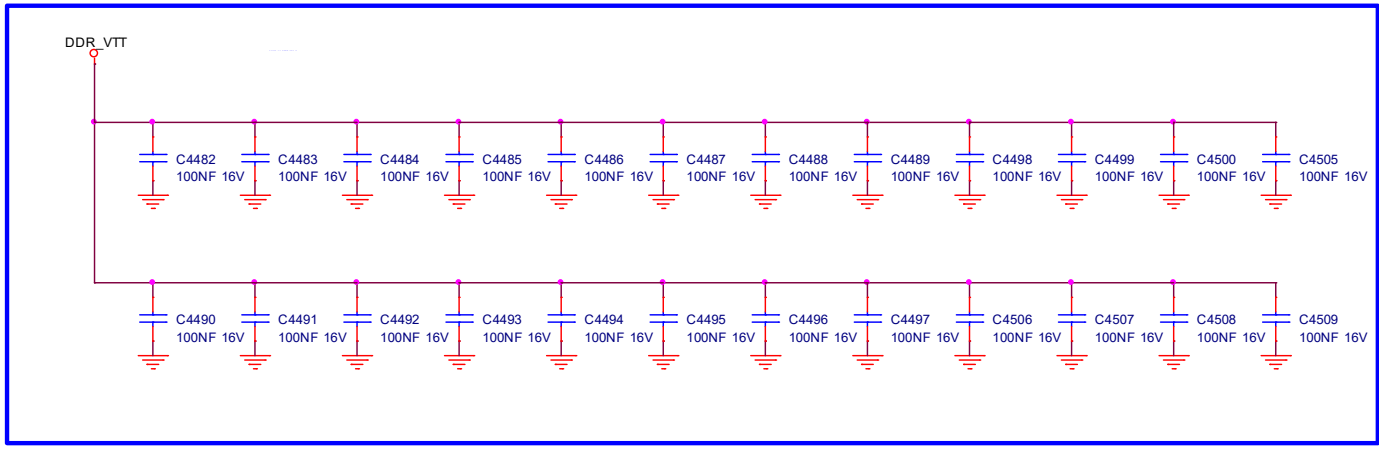


GND 4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,21,22

9-5-19 AMBILIGHT & Hotel TV



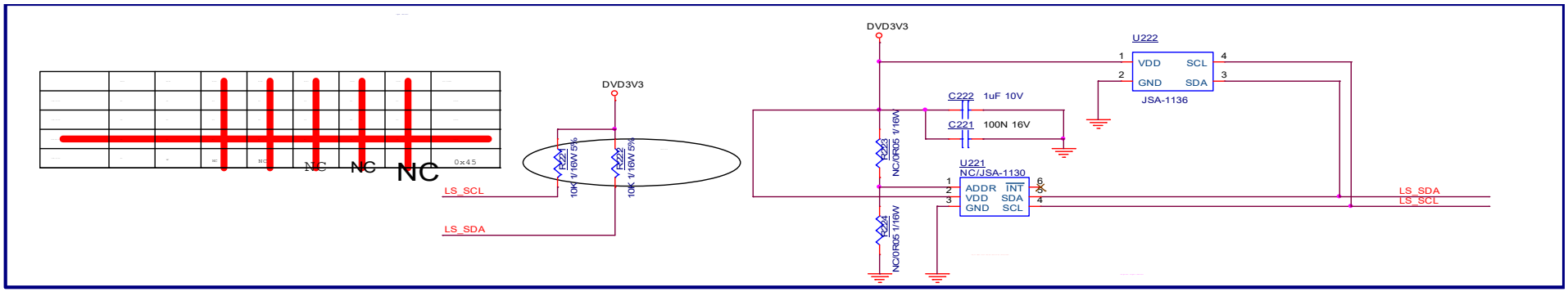


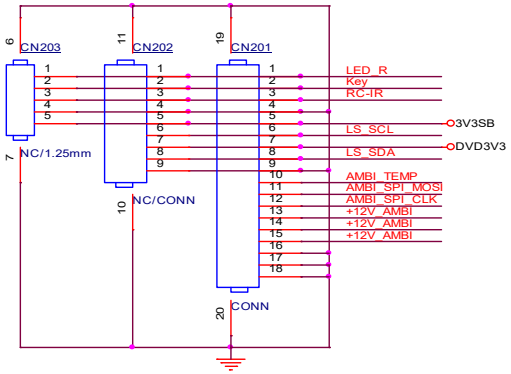


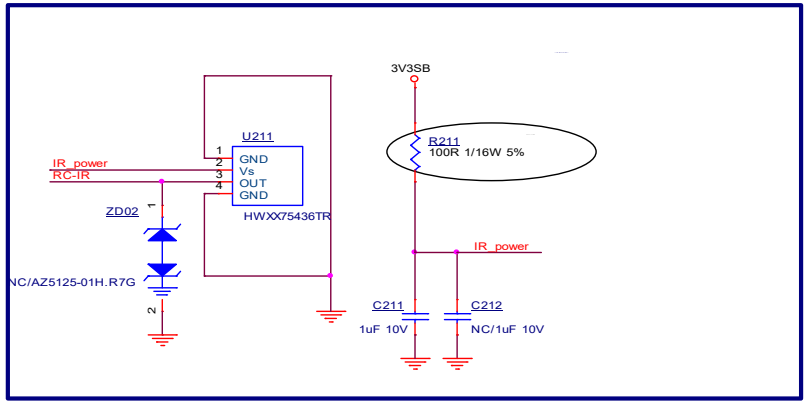
GND 4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,21,22

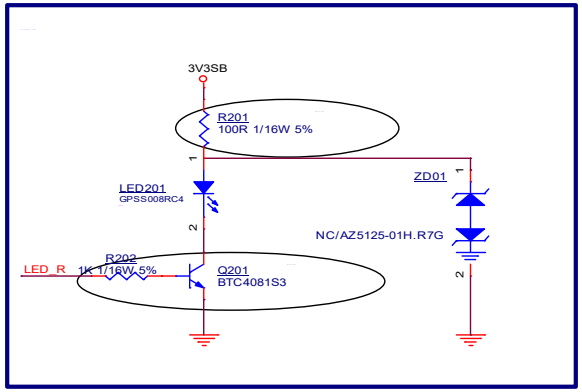
9.6 E 715GA039 IR Board

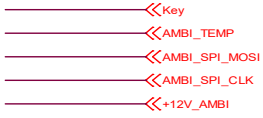
9-6-1 IR&STB LED&Light sensor

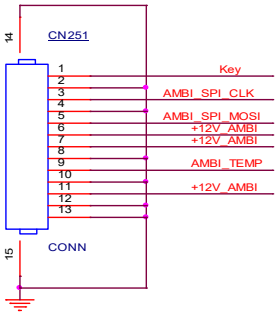


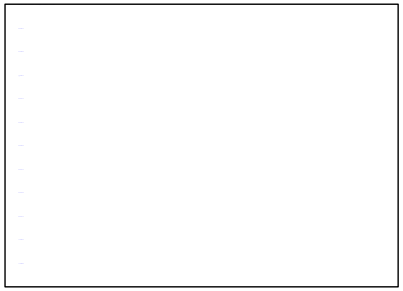


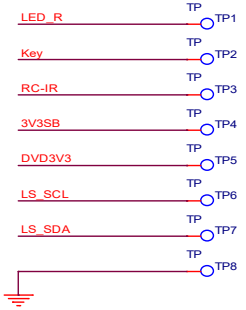






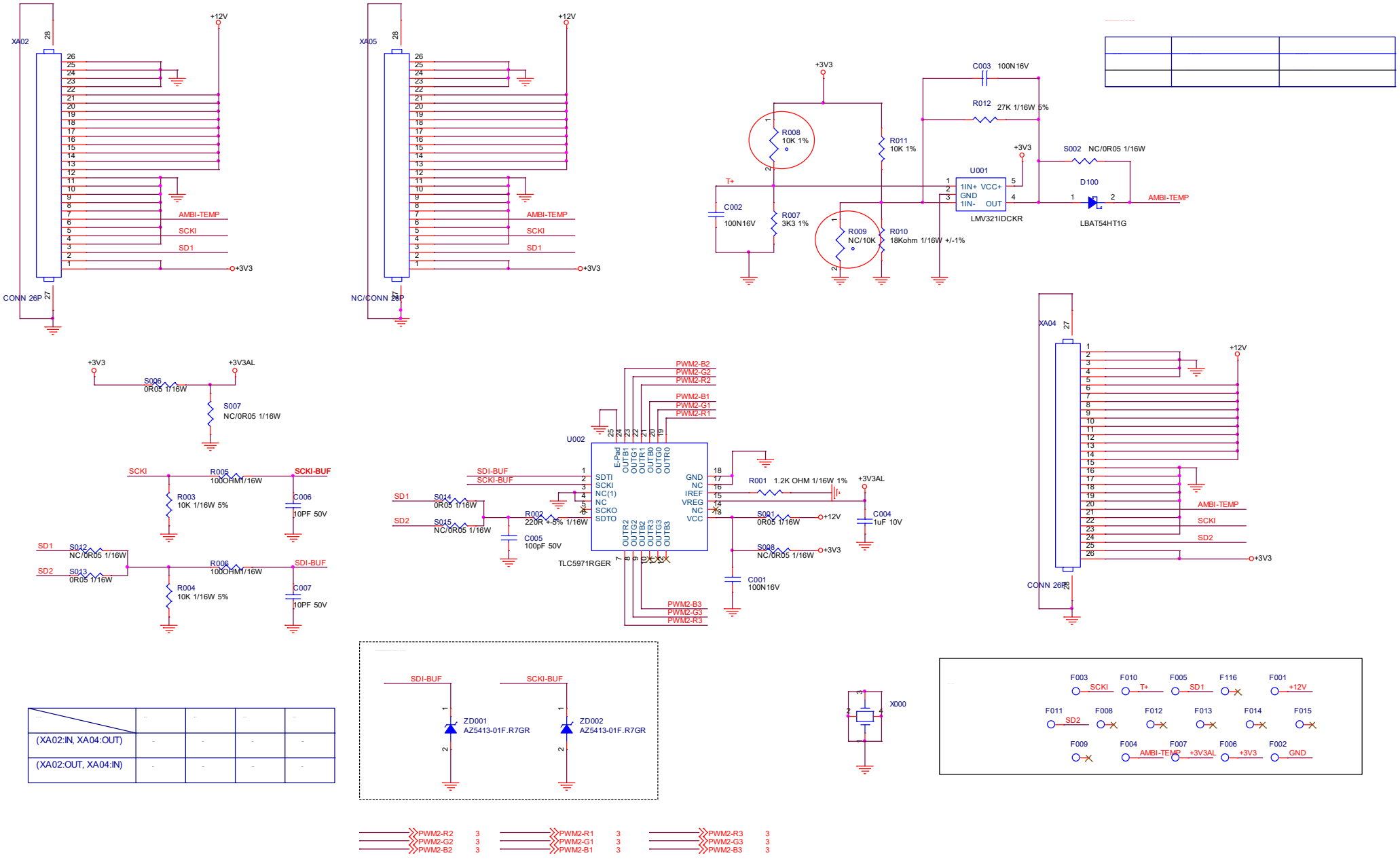




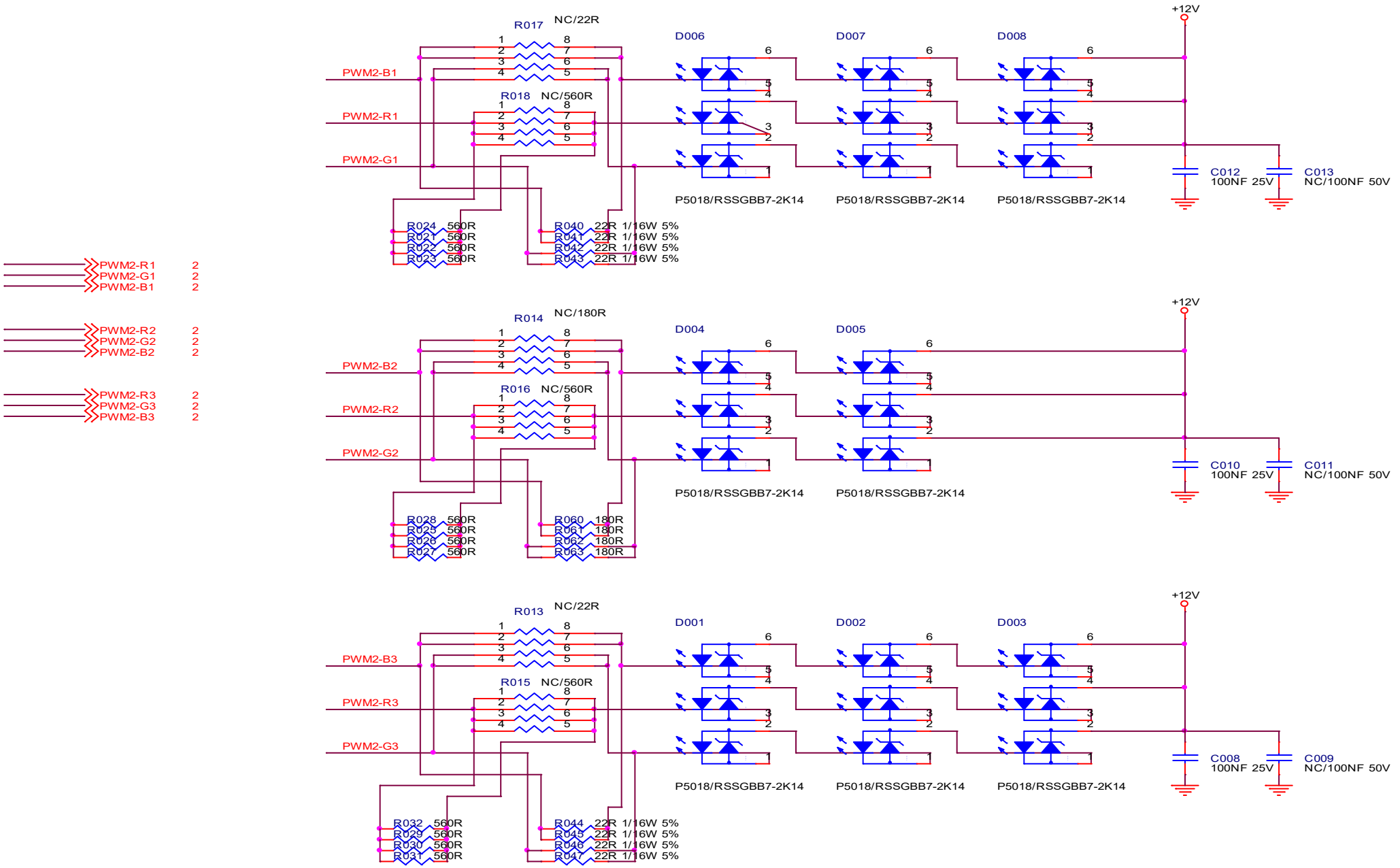


9.7 715GA031 AMBI Panel (For 43” 78x5/8105 Series)

9-7-1 TLC5971

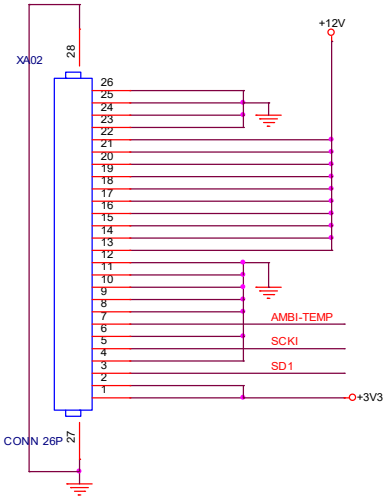


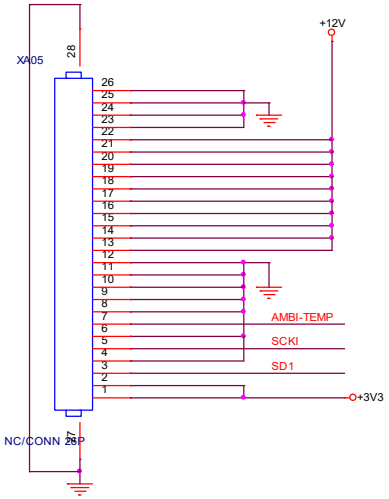
9-7-2 Ambilight 8-LED

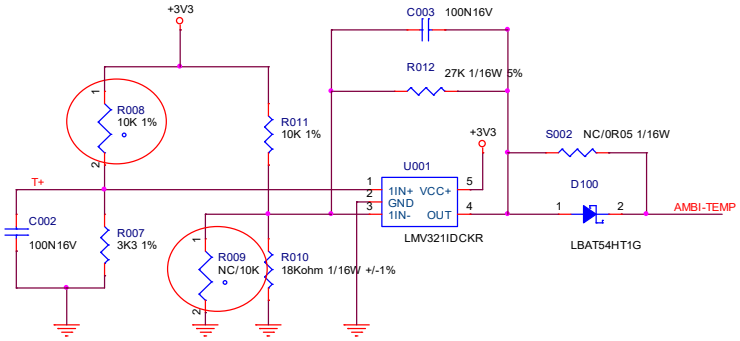


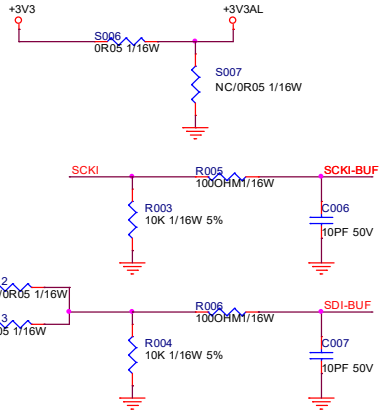
9.8 715GA032 AMBI Panel (For 50”/65” 78x5/8105 & 75” 78x5 Series)

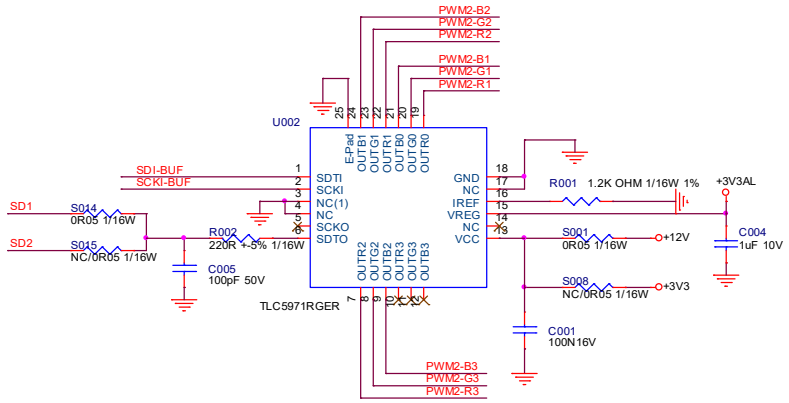
9-8-1 TLC5971

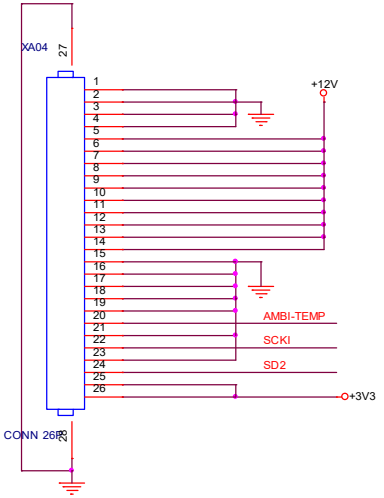




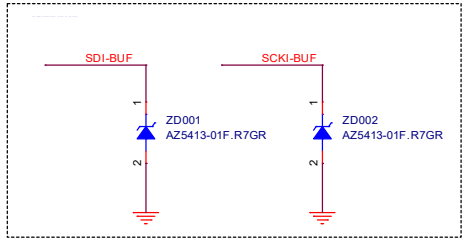


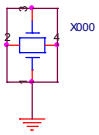


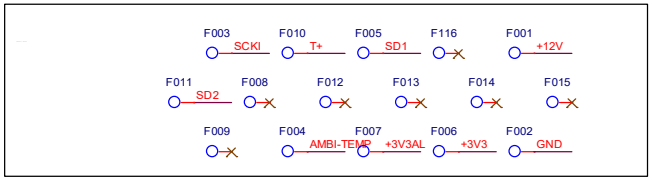




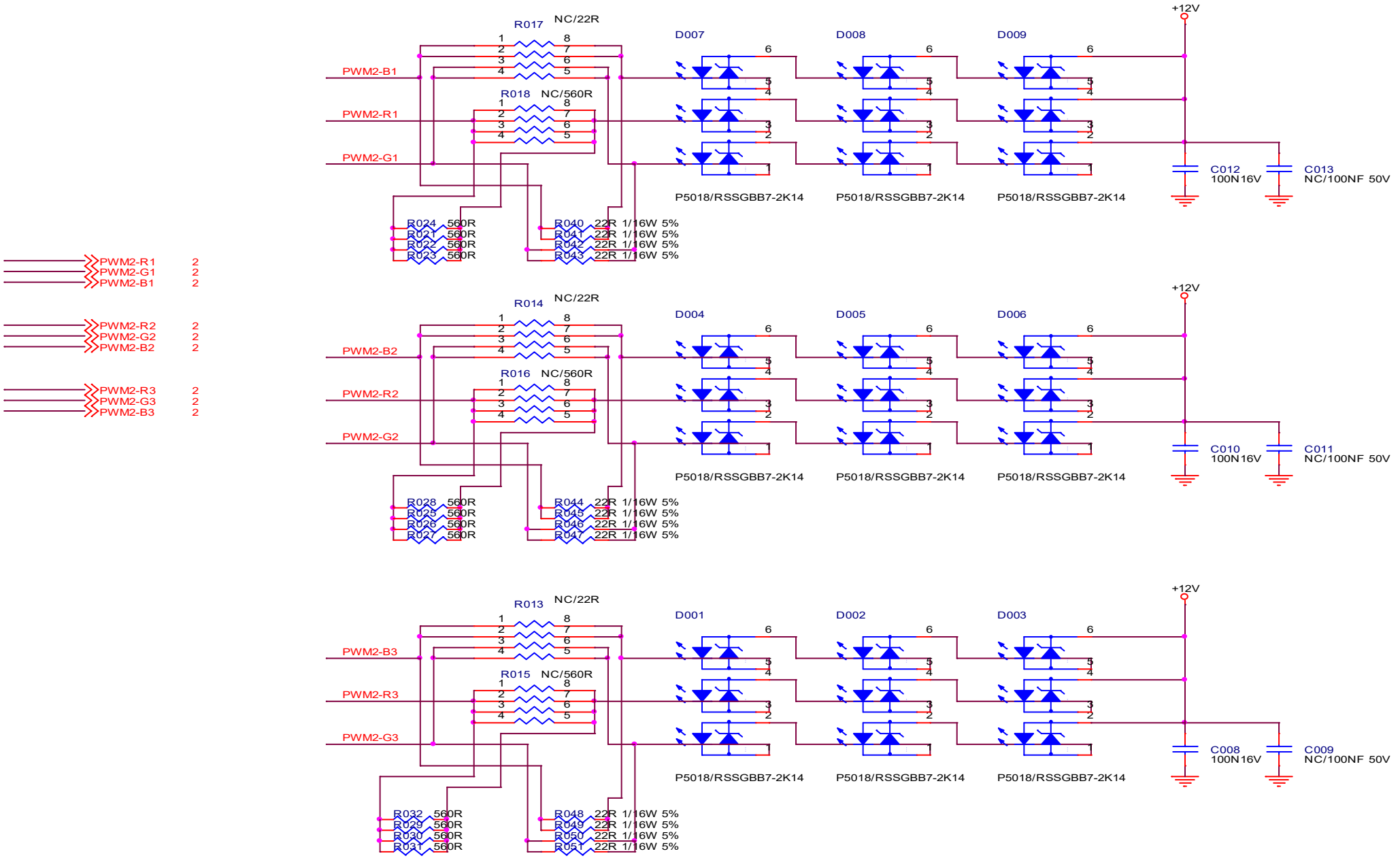
(XA02:IN, XA04:OUT)				
(XA02:OUT, XA04:IN)				





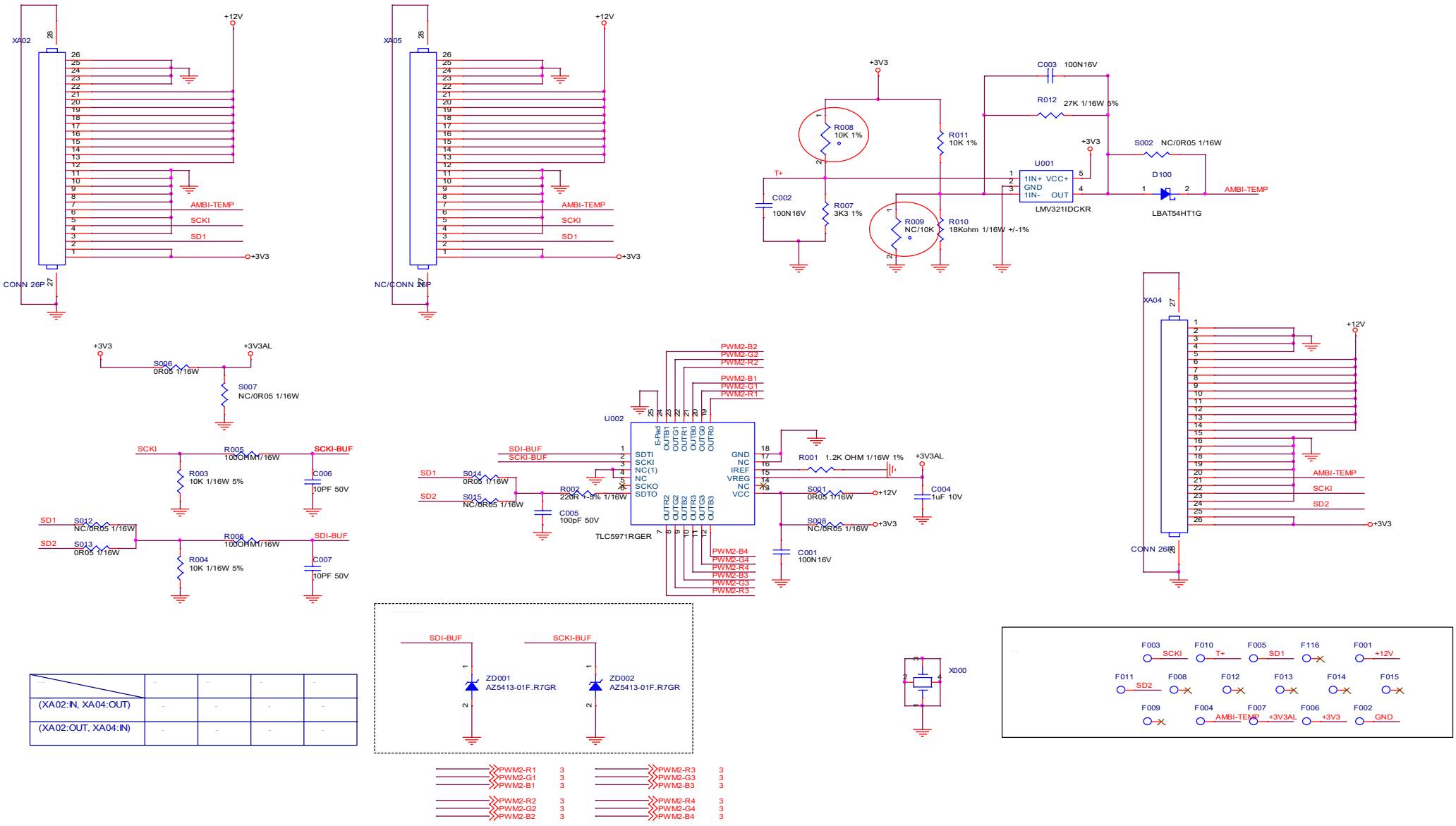


9-8-2 Ambilight 9-LED



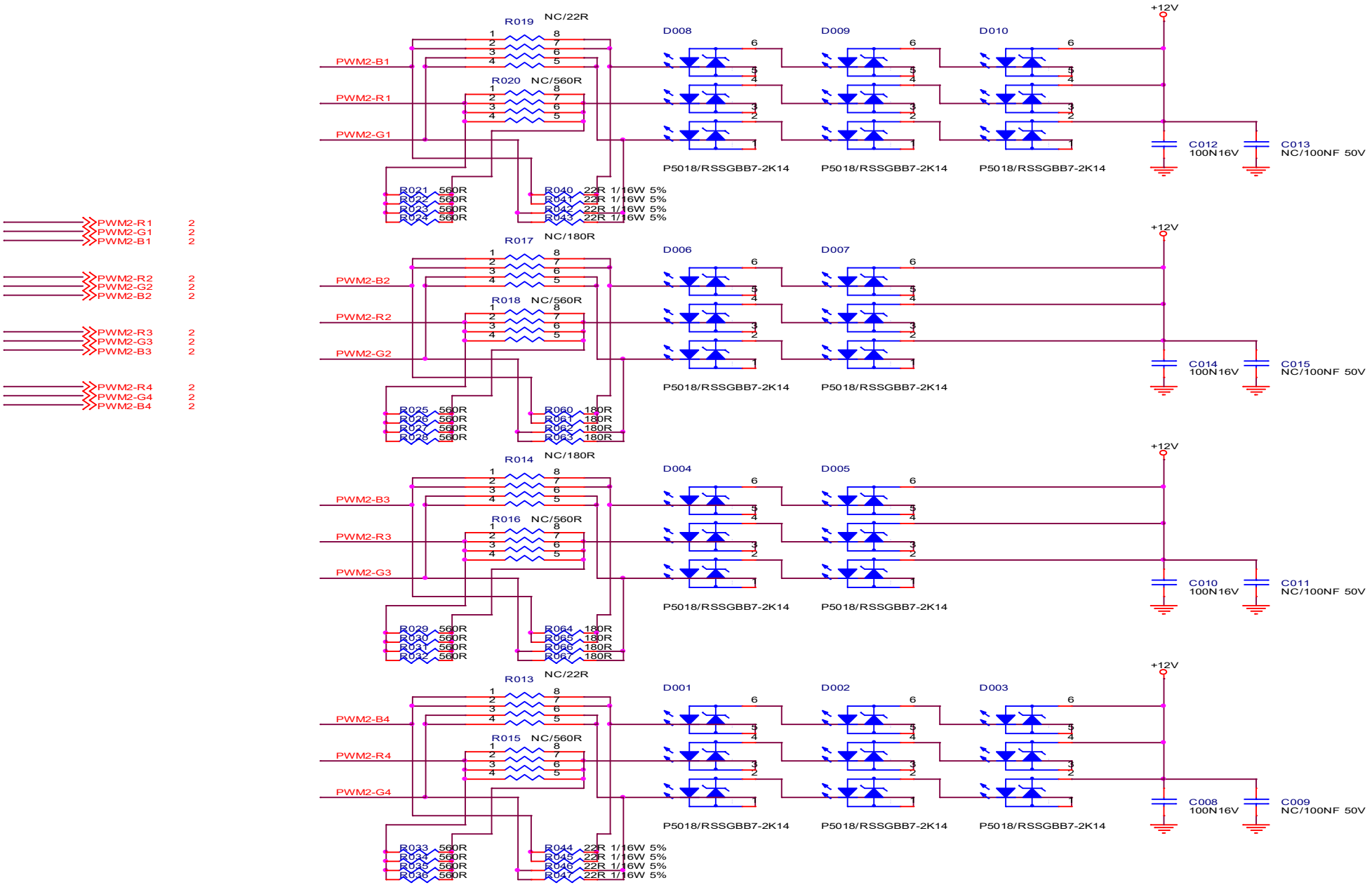
9.9 715GA033 AMBI Panel (For 50”/55”/70”/75” 78x5/8105 Series)

9-9-1 TLC5971



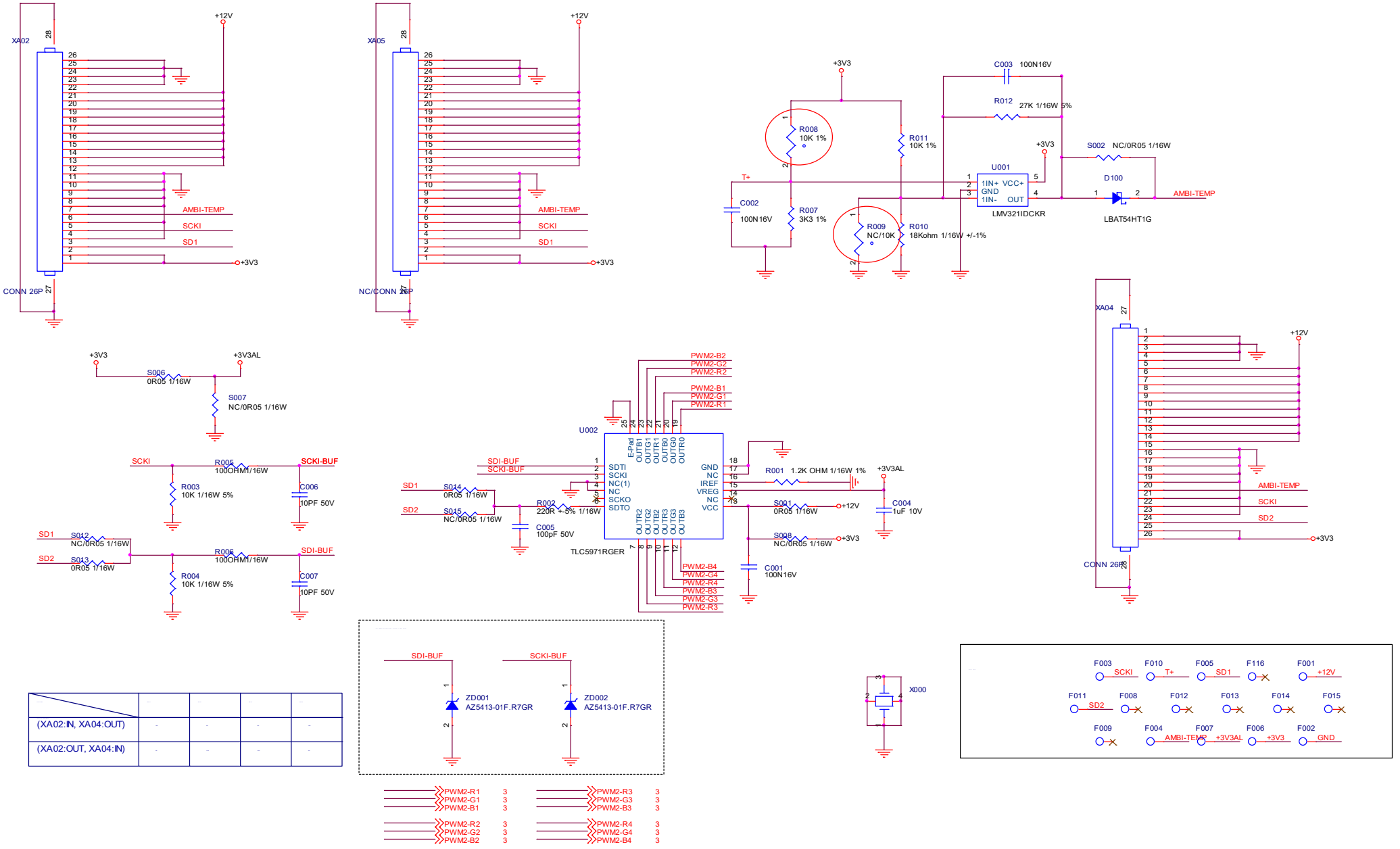
(XA02:IN, XA04:OUT)				
(XA02:OUT, XA04:IN)				

9-9-2 Ambilight 10-LED

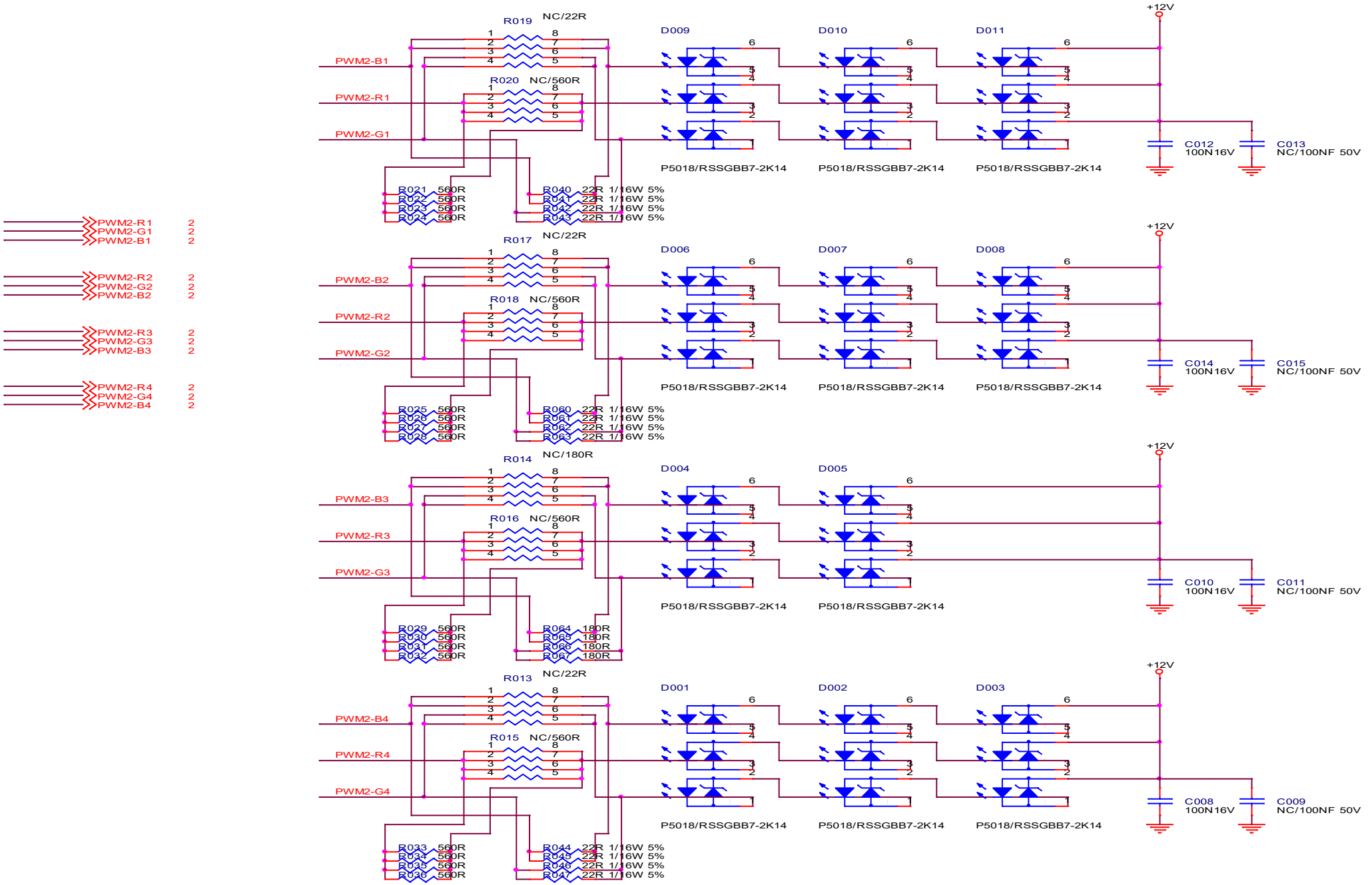


9.10 715GA034 AMBI Panel (For 55”/58” 78x5/8105 Series)

9-10-1 TLC5971

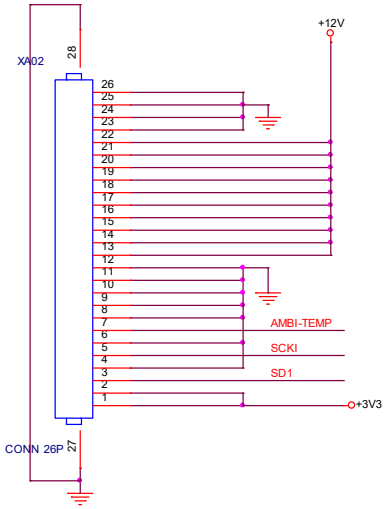


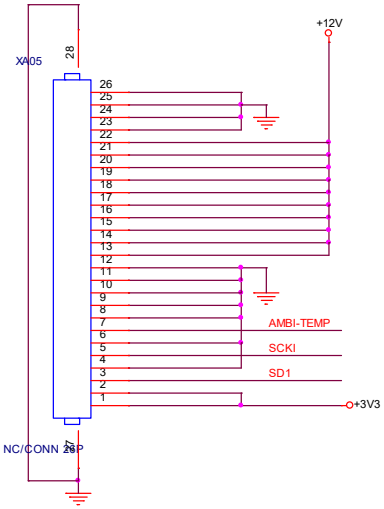
9-10-2 Ambilight 11-LED

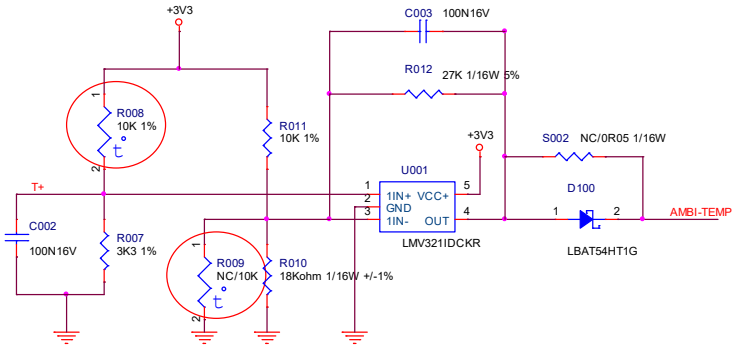


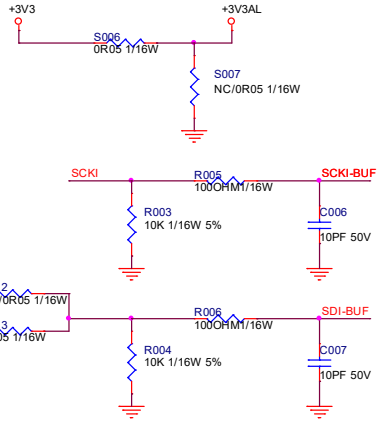
9.11 A 715G9946 AMBI Panel (For 65”/70”/75” 78x5/8105 Series)

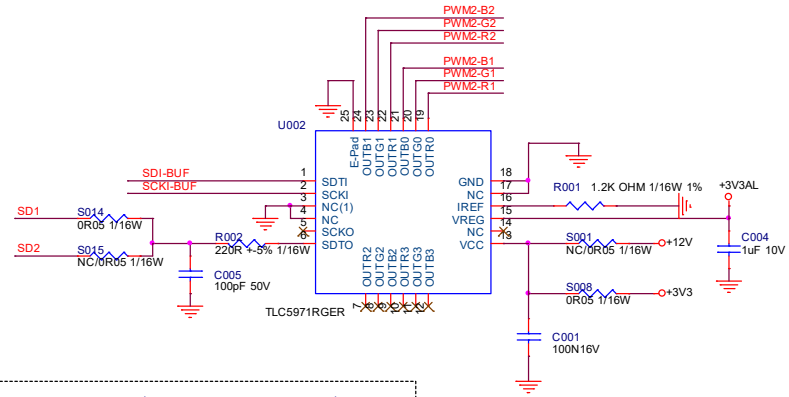
9-11-1 TLC5971

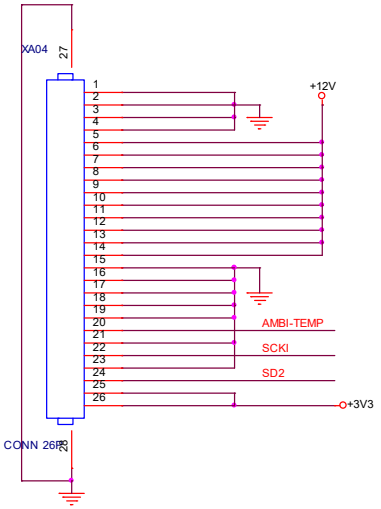


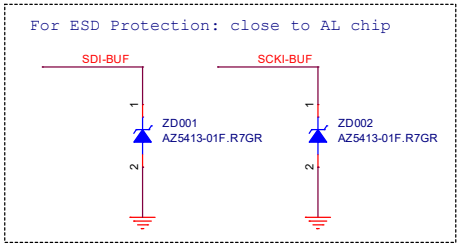


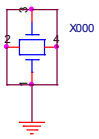


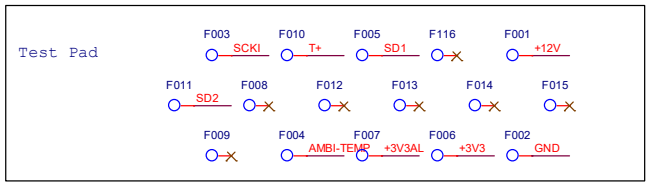




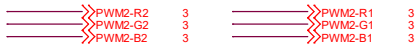




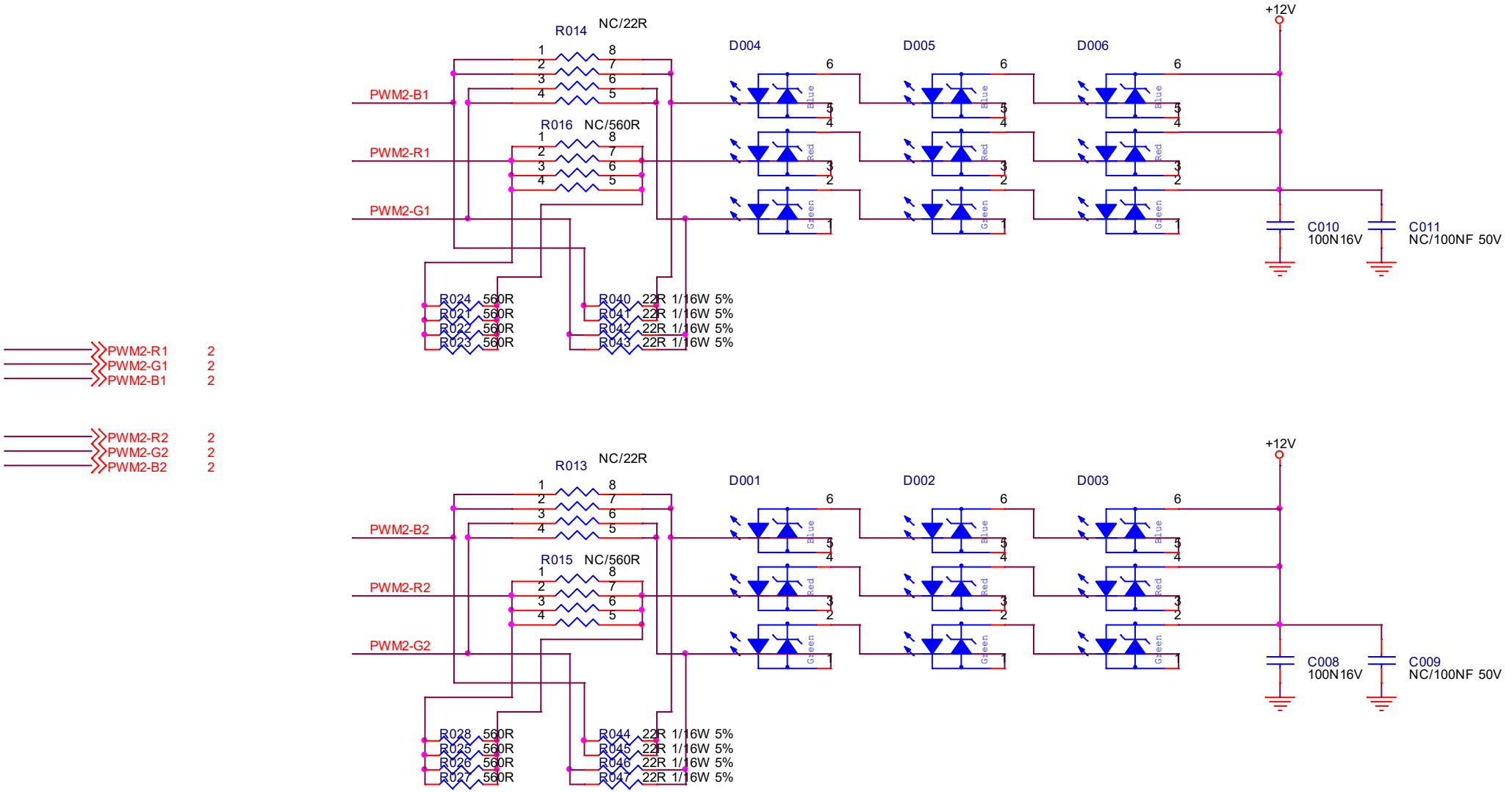




Item / Function	S012	S013	S014	S015
CounterClockwise (XA02:IN, XA04:OUT)	YES	NO	NO	YES
Clockwise (XA02:OUT, XA04:IN)	NO	YES	YES	NO

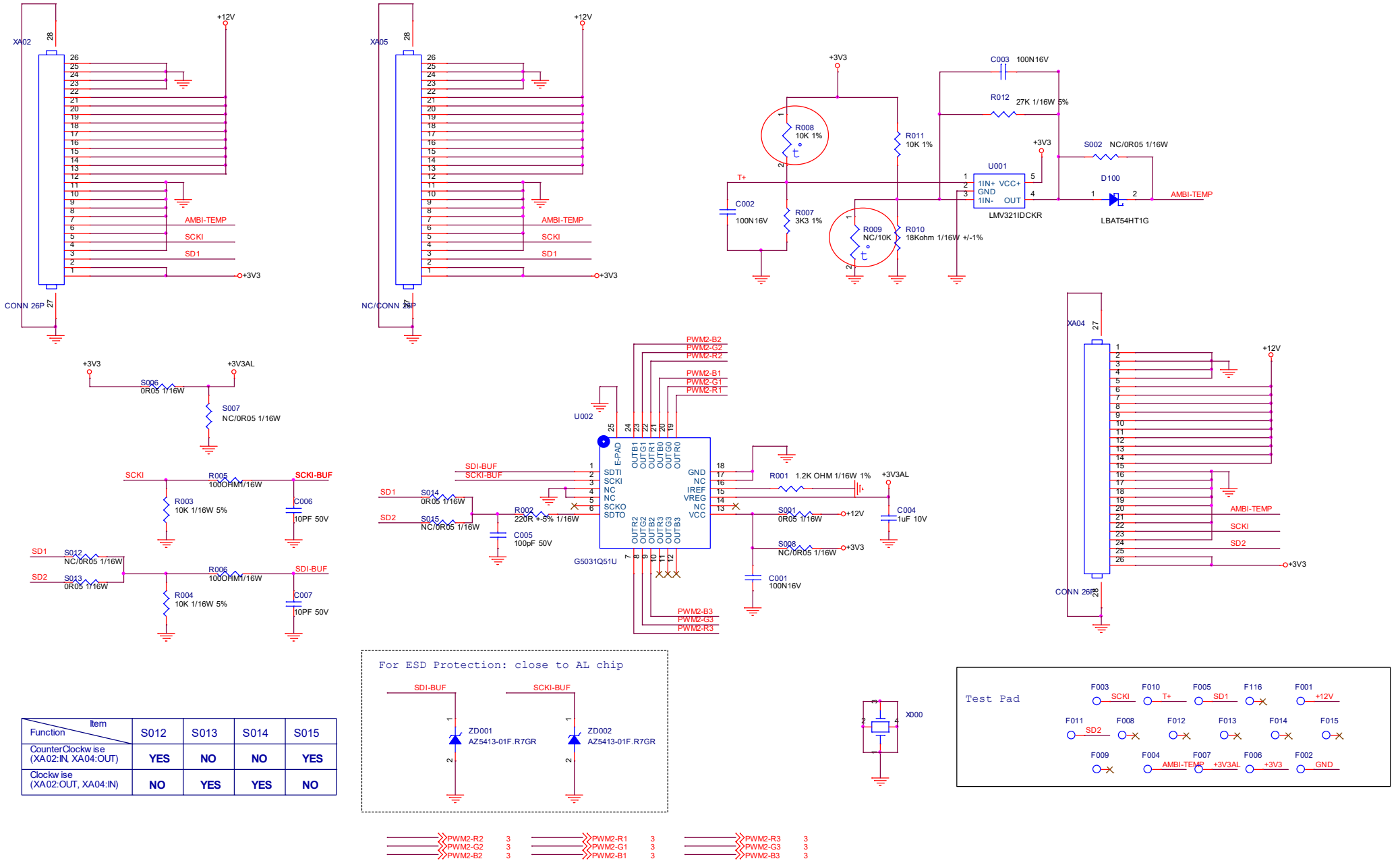


9-11-2 Ambilight 6-LED



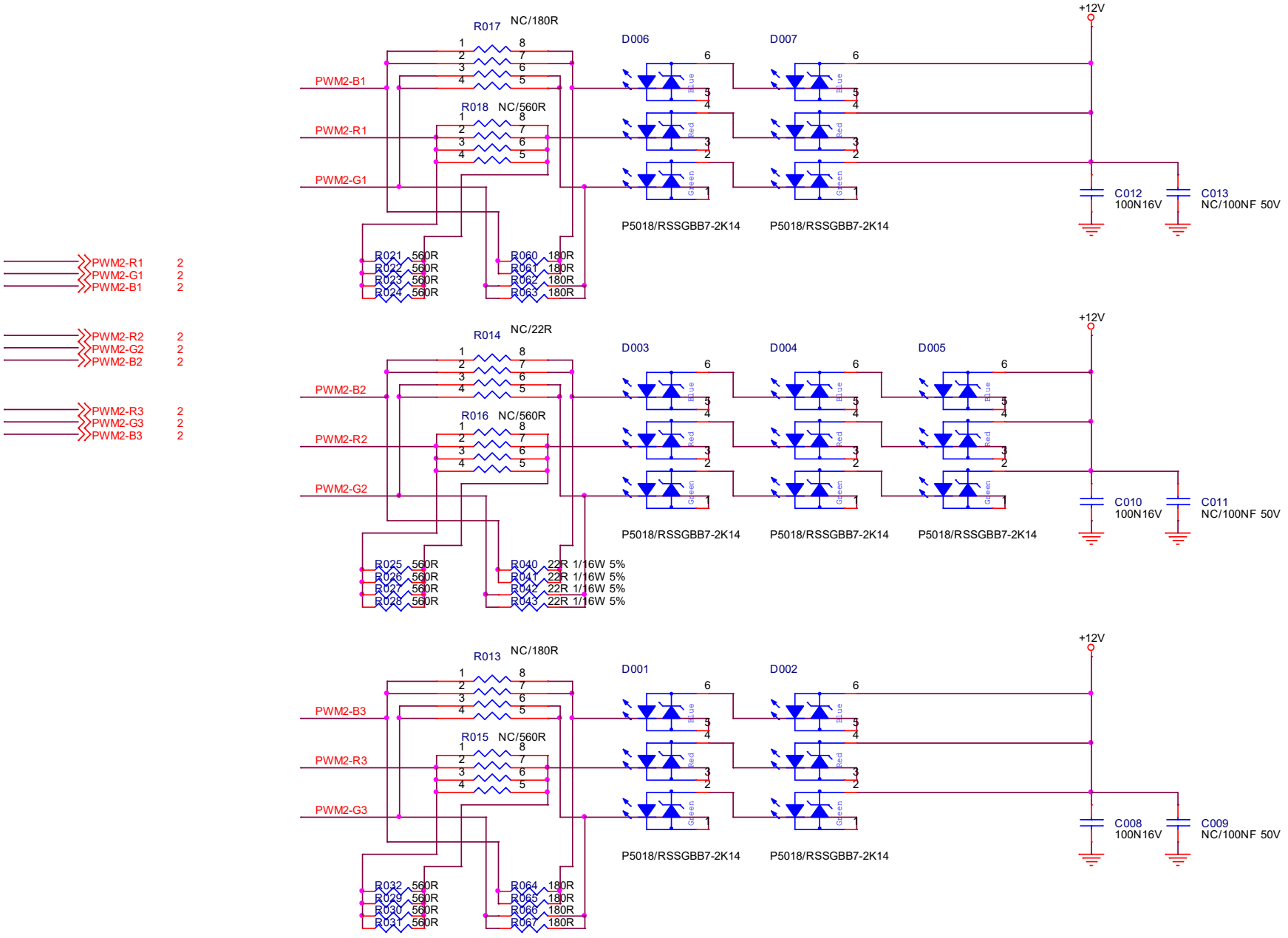
9.12 B 715GA030 AMBI Panel (For 65”/70” 78x5/8105 Series)

9-12-1 TLC5971



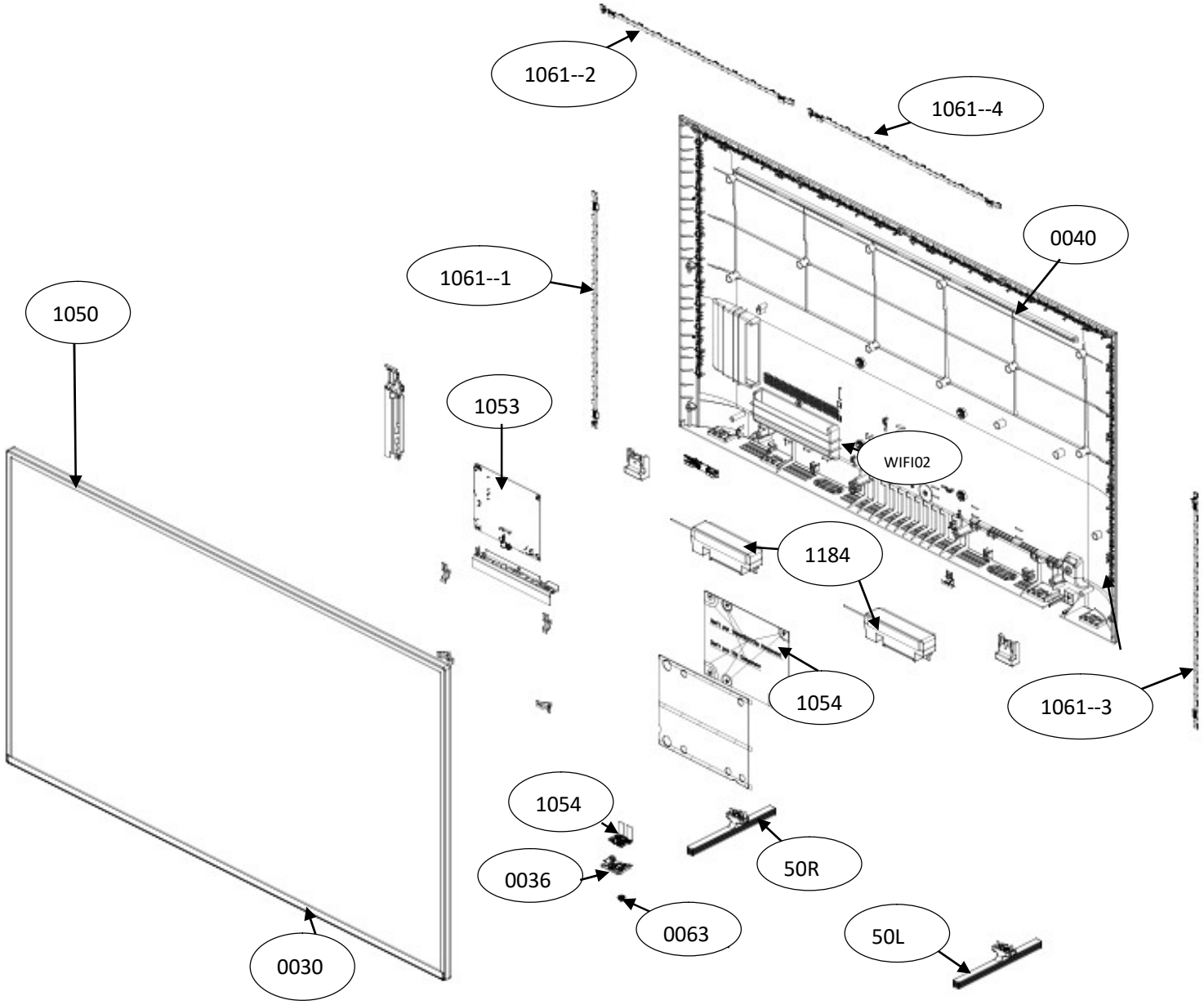
Item / Function	S012	S013	S014	S015
CounterClockw ise (XA02:IN, XA04:OUT)	YES	NO	NO	YES
Clockw ise (XA02:OUT, XA04:IN)	NO	YES	YES	NO

9-12-2 Ambilight 7-LED



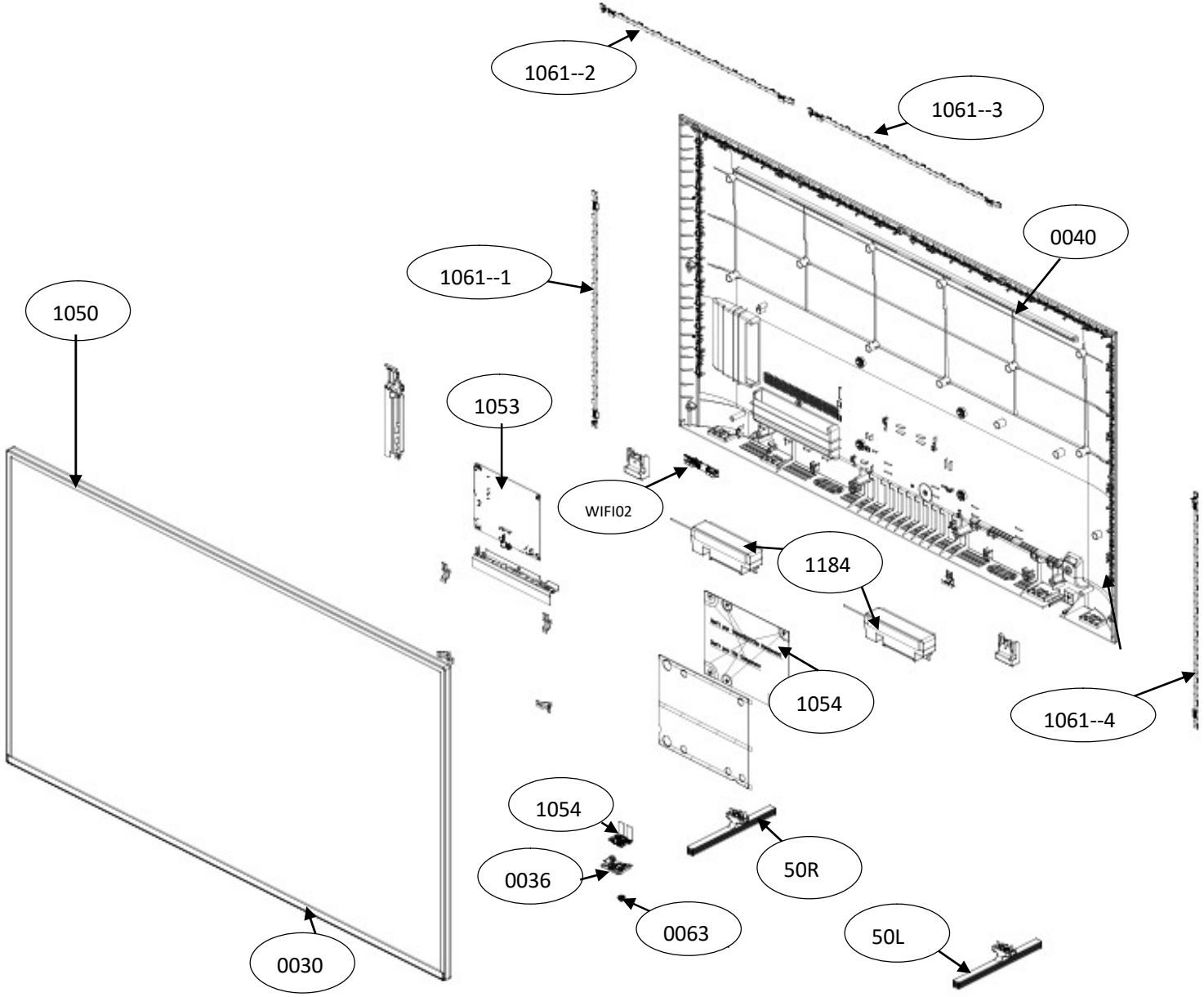
10. Styling Sheets

10.1 78x5/81x5 series 43"/50"/55"



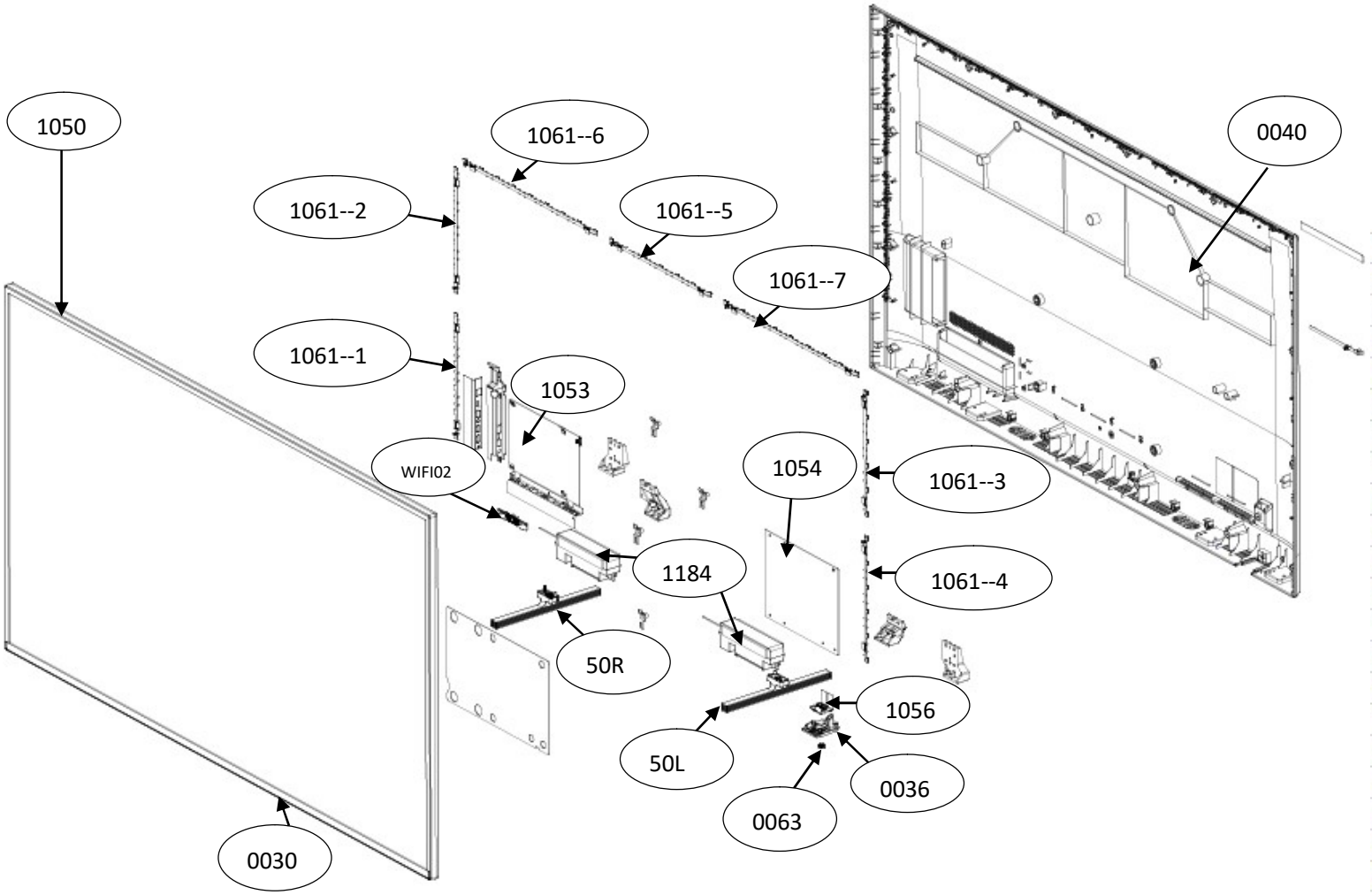
Pos NO	Description	Remark
30	BEZEL(Intergraded with panel)	
36	LENS	
40	REAR COVER	
50L	EDGE STAND – L	
50R	EDGE STAND – R	
63	KEY_FUNCTION	
1050	LCD PANEL	
1053	MAINB BOARD	
1054	POWER BOARD	
1056	IR BOARD	
1061-1	AMBILIGHT BOARD	
1061-2	AMBILIGHT BOARD	
1061-3	AMBILIGHT BOARD	
1061-4	AMBILIGHT BOARD	
1176	REMOTE PHILIPS	Not displayed
1184	SPEAKER	
WiFi02	WIFI/BT USB	

10.2 78x5/8105 series 58”



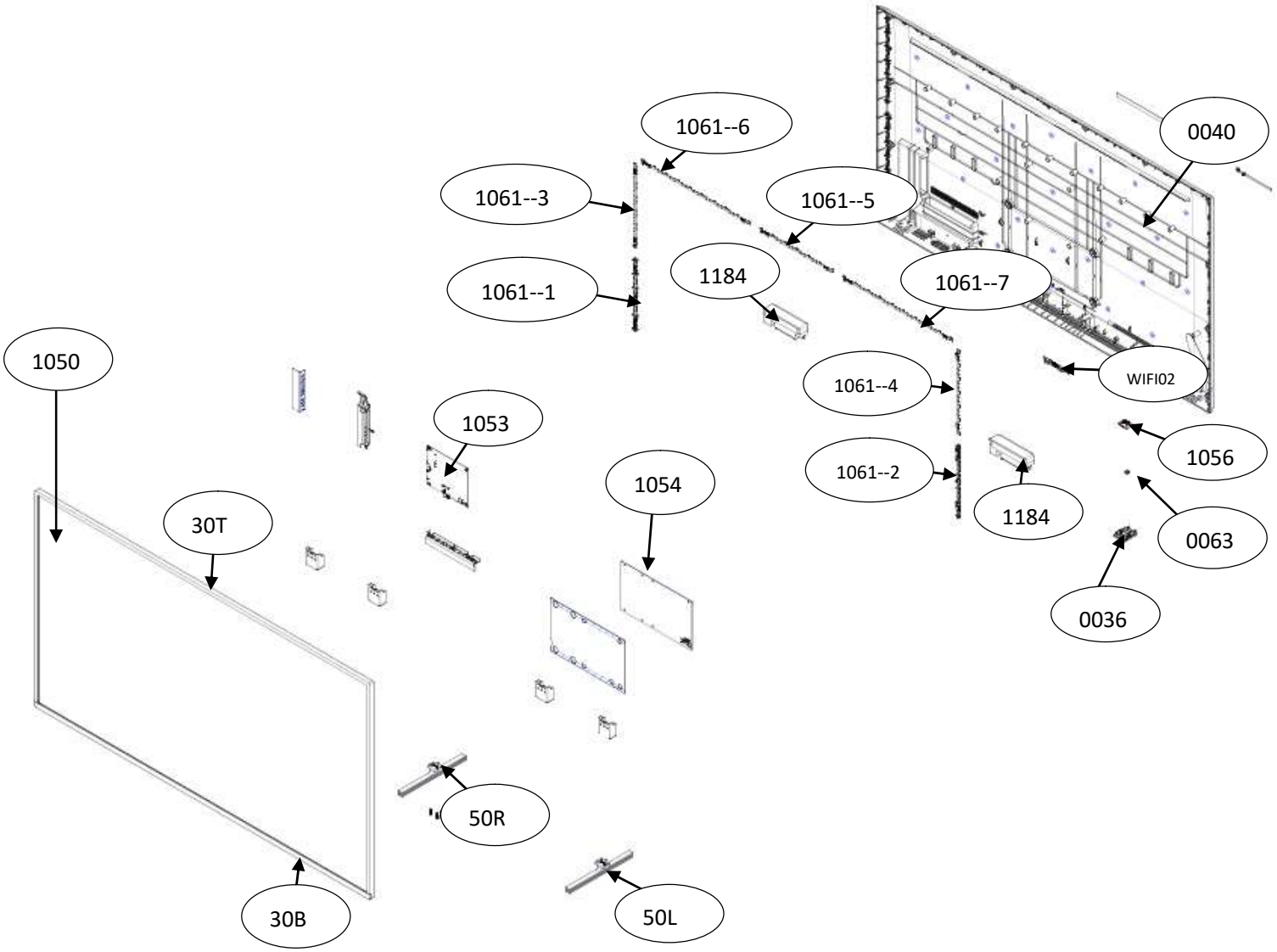
Pos NO	Description	Remark
30	BEZEL(Intergraded with panel)	
36	LENS	
40	REAR COVER	
50L	EDGE STAND – L	
50R	EDGE STAND – R	
63	KEY_FUNCTION	
1050	LCD PANEL	
1053	MAINB BOARD	
1054	POWER BOARD	
1056	IR BOARD	
1061-1	AMBILIGHT BOARD	
1061-2	AMBILIGHT BOARD	
1061-3	AMBILIGHT BOARD	
1061-4	AMBILIGHT BOARD	
1176	REMOTE PHILIPS	Not displayed
1184	SPEAKER	
WiFi02	WIFI/BT USB	

10.3 78x5/8105 series 65”



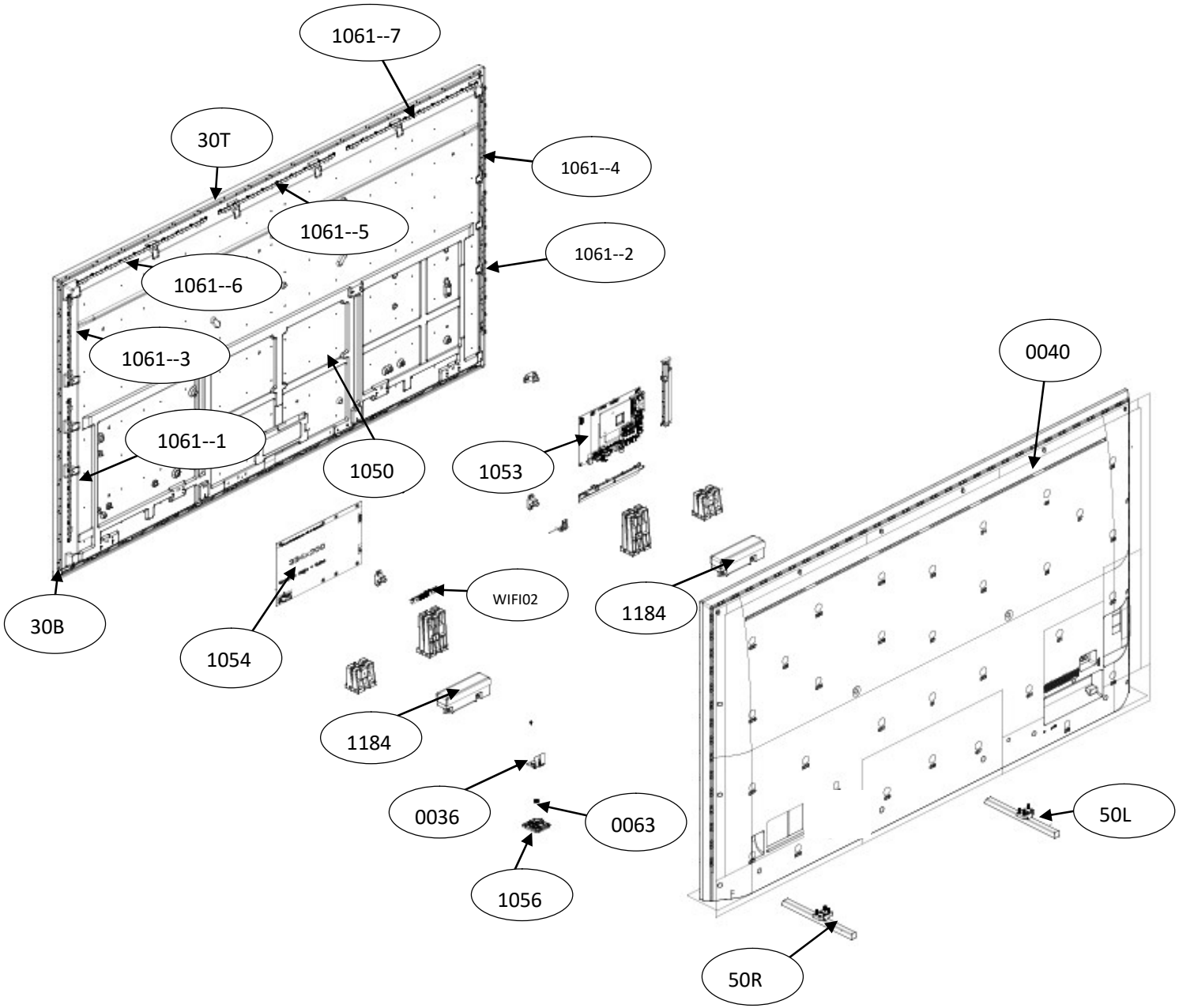
Pos NO	Description	Remark
30	BEZEL(Intergraded with panel)	
36	LENS	
40	REAR COVER	
50L	EDGE STAND – L	
50R	EDGE STAND – R	
63	KEY_FUNCTION	
1050	LCD PANEL	
1053	MAINB BOARD	
1054	POWER BOARD	
1056	IR BOARD	
1061-1	AMBILIGHT BOARD	
1061-2	AMBILIGHT BOARD	
1061-3	AMBILIGHT BOARD	
1061-4	AMBILIGHT BOARD	
1061-5	AMBILIGHT BOARD	
1061-6	AMBILIGHT BOARD	
1061-7	AMBILIGHT BOARD	
1176	REMOTE PHILIPS	Not displayed
1184	SPEAKER	
WiFi02	WIFI/BT USB	

10.4 78x5/8105 series 70”



Pos NO	Description	Remark
30B	BEZEL ASSY-D	
30T	bezel plastic front-U	
36	LENS	
40	REAR COVER	
50L	EDGE STAND – L	
50R	EDGE STAND – R	
63	KEY_FUNCTION	
1050	LCD PANEL	
1053	MAINB BOARD	
1054	POWER BOARD	
1056	IR BOARD	
1061-1	AMBI-LIGHT BOARD	
1061-2	AMBI-LIGHT BOARD	
1061-3	AMBI-LIGHT BOARD	
1061-4	AMBI-LIGHT BOARD	
1061-5	AMBI-LIGHT BOARD	
1061-6	AMBI-LIGHT BOARD	
1061-7	AMBI-LIGHT BOARD	
1176	REMOTE PHILIPS	Not displayed
1184	Speaker	
WiFi02	WIFI/BT USB	

10.5 78x5/8105 series 75”



Pos NO	Description	Remark
30B	BEZEL ASSY-D	
30T	bezel plastic front-U	
36	LENS	
40	REAR COVER	
50L	EDGE STAND – L	
50R	EDGE STAND – R	
63	KEY_FUNCTION	
1050	LCD PANEL	
1053	MAINB BOARD	
1054	POWER BOARD	
1056	IR BOARD	
1061-1	AMBI-LIGHT BOARD	
1061-2	AMBI-LIGHT BOARD	
1061-3	AMBI-LIGHT BOARD	
1061-4	AMBI-LIGHT BOARD	
1061-5	AMBI-LIGHT BOARD	
1061-6	AMBI-LIGHT BOARD	
1061-7	AMBI-LIGHT BOARD	
1176	REMOTE PHILIPS	Not displayed
1184	Speaker	
WiFi02	WIFI/BT USB	

11. Dismantling procedure for specific handling parts

As complete appliances, LCDs are deemed to be hazardous waste (e.g. 16 02 13*, 20 01 35*) in the EU according to the German Waste Catalogue Ordinance. These appliances may only be handled by authorized handling plants.

LCDs must be stored in accordance with the requirements stipulated in Appendix VIII (1) or (2) of Directive 2012/12/EU and must, amongst other things, be stored in a weatherproof manner. Containers with covers must be used when storing and transporting LCDs.

Which appliances?

- **LCDs (TVs, Monitors) using either Light Emitting Diode (LED) or Cold Cathode Fluorescent Light (CCFL) sources.**

Requirements according to ANNEX VII of DIRECTIVE 2012/19/EU on waste electrical and electronic equipment (WEEE)

Materials and components with hazardous content
LCDs may contain hazardous substances like Pb and BFRs which are covered by exemptions under the RoHS directive. However, the majority is present in the printed circuit boards assembly. In order to reduce emissions as much as possible, a complete disposal of the old appliance is required. This treatment may only be performed in authorized handling plants.

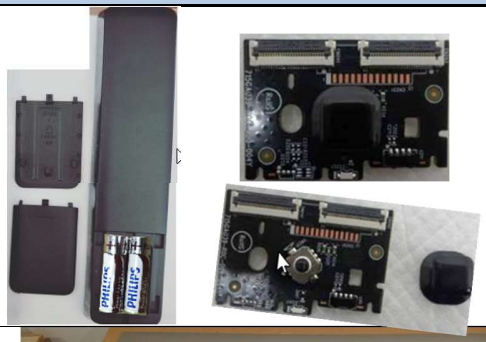
No.	Substance	relevant
a)	mercury containing components, such as switches or backlighting lamps	**N/A**
b)	batteries	✓
c)	printed circuit boards of mobile phones generally, and of other devices if the surface of the printed circuit board is greater than 10 square centimetres	✓
d)	toner cartridges, liquid and paste, as well as colour toner	**N/A**
e)	plastic containing brominated flame retardants	**N/A**
f)	asbestos waste and components which contain asbestos	**N/A**
g)	cathode ray tubes	**N/A**
h)	chlorofluorocarbons (CFC), hydrochlorofluorocarbons (HCFC) or hydrofluorocarbons (HFC), hydrocarbons (HC)	**N/A**
i)	gas discharge lamps	**N/A**
j)	liquid crystal displays (together with their casing where appropriate) of a surface greater than 100 square centimetres and all those back-lighted with gas discharge lamps	✓
k)	external electric cables	✓
l)	components containing refractory ceramic fibres as described in Commission Directive 97/69/EC of 5 December 1997 adapting to technical progress for the 23rd time Council Directive 67/548/EEC on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substance	**N/A**
m)	components containing radioactive substances with the exception of components that are below the exemption thresholds set in Article 3 of and Annex I to Council Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation	**N/A**
n)	electrolyte capacitors containing substances of concern (height > 25 mm, diameter > 25 mm or proportionately similar volume)	✓

	These substances, mixtures and components shall be disposed of or recovered in compliance with Directive 2008/98/EC	
o)	cathode ray tubes: the fluorescent coating has to be removed	**N/A**
p)	equipment containing gases that are ozone depleting or have a global warming potential (GWP) above 15, such as those contained in foams and refrigeration circuits: the gases must be properly extracted and properly treated. Ozone-depleting gases must be treated in accordance with Regulation (EC) No 1005/2009	**N/A**
q)	gas discharge lamps: the mercury shall be removed	**N/A**

Below is a sample for you to follow

Necessary information according to ANNEX VII of DIRECTIVE 2012/19/ on waste electrical and electronic equipment (WEEE)

Batteries can easily be removed from the remote control or printed circuit board assembly once the back cover of the remote control or product has been removed.



The back cover of the display can easily be removed by hand and screw driver.

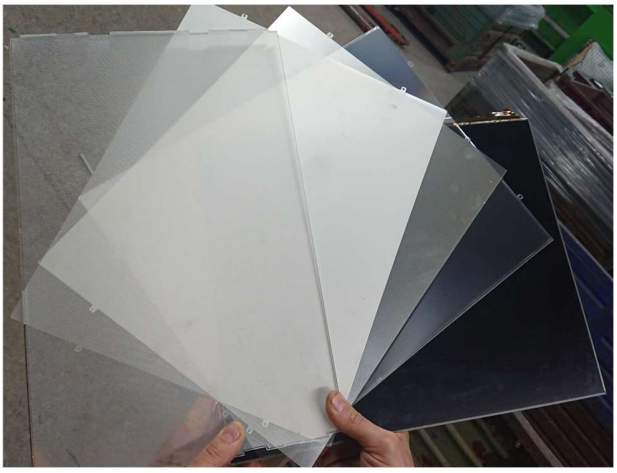
Once removed this will expose the accessible electronic units (printed circuit boards),

which can now be easily removed with appropriate tools.

The diffusion panels can be accessed by lifting the inner casing, typically held in place with clips which

can be removed with appropriate tools.

The panel consists of several plastic sheets which can be processed.



A final consideration is that of the back light which must be removed prior to processing. These may be present along either the bottom, or either side of the display as a strip of lights.

Lighting may be arranged across the entire back board of the display.

Displays of this kind will have either Light Emitting Diodes (LEDs) or Cold Cathode Fluorescent Lights (CCFL).

Plastic parts can contain brominated flame retardants

A Power cord or other external cables plugged into the back of the LCD can easily be removed by hand and/or screwdriver; 2 types of connection of power cord are typical as shown in the pictures.	  
Capacitors > 25 mm are located in the power supply units and can be removed by nipper. Possible it can be difficult to remove by nipper due to shorter leads. In this case, the capacitors can be removed by melting the solder which fixes the capacitors.